# STDM 1.7 User Manual

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# Preface

This document is the original user guide of the Social Tenure Domain Model (STDM) software. The software components described in this document are registered trademarks of their respective providers and are therefore subject to legal requirements. STDM is subject to the GNU General Public License. For more information regarding STDM, please visit the website at: www.stdm.gltn.net.

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# Introduction

## Social Tenure Domain Model

The Social Tenure Domain Model (STDM) is a pro-poor, gender responsive and participatory land information system developed by the Global Land Tool Network (GLTN). It is one of twenty-six land tools being developed, tested and applied by GLTN partners to promote secure land and property rights for all.

STDM, as it stands, has the capacity to broaden the scope of land administration by providing a land information management framework that would integrate formal, informal and customary land systems and administrative and spatial components. STDM makes this possible by incorporating tools that facilitate recording of all forms of land rights, all types of rights holders and all kinds of land and property objects/spatial units regardless of the level of formality.

## Core Values

STDM's core values and principles are pro-poor, good governance, equity, subsidiarity, sustainability, affordability, systematic large scale, and gender responsiveness.

## The STDM Universe

STDM is a pro-poor, participatory and affordable land tool that broadens the scope of land administration by incorporating all person/s to land relationships beyond formal/legal land rights, cognizant of the continuum of land rights. STDM has four inter-related components. These are:

1. A new way of thinking about land records
2. A free and open-source software package to record information about land
3. An approach of collecting data about land
4. A way of using and disseminating information about land

The STDM Universe consists of an extensible data model, conceptual and operational model, database implementation, software modules and an extensible architecture.

## What's New in STDM Version 1.7?

STDM 1.7 is a full release which includes new features, enhanced functionality and stability improvements. One of the key highlights is the integration with GeoODK where STDM data profiles can be directly exported to ODK XForms specification. Other changes include additional options for customizing a data profile's social tenure relationship; the ability to change the order of **Entities** and **Columns**; better integration with QGIS Attribute Table and styling, major bug fixes to the **Documents**

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**Designer**; inclusion of three document template samples for the three sample STDM profiles; minor enhancements and bug fixes throughout the whole STDM modules and; stability improvement to support STDM handle forms and data in non-English languages. The user interface has been translated to French, Portuguese, Arabic and German.

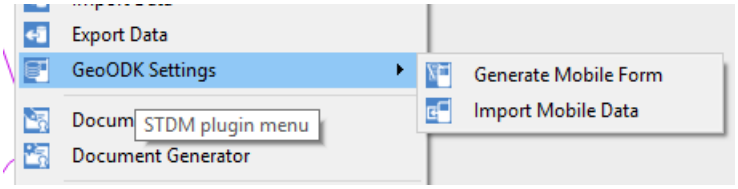
We would like to thank our partners and everyone else who supported the development, documentation, testing and translation of the tool. In a special way, we would like to acknowledge:

- DW - for sponsoring the development of the mobile extension for integrating STDM with GeoODK as well as translation to Portuguese;
- UCBC and UN-Habitat Goma - for translating the user interface to French;
- Metaspatial - for translation to German;
- UN-Habitat Palestine Office - for translation to Arabic

The following sections summarize the new features in STDM 1.7.

# Mobile Support

Mobile data collection is supported as a new feature in this release. GeoODK, ODK and Kobo Collect application can now be used for data collection with forms generated from STDM data model (profile). This generated form conforms to the ODK standard and XFORM syntax supporting a wide collection of attributes such text, pictures, geographic data, list, numbers, barcodes e.tc.




A **Generate Mobile Form** command provide an interface that immediately convert the current STDM profile into a mobile data collection form.

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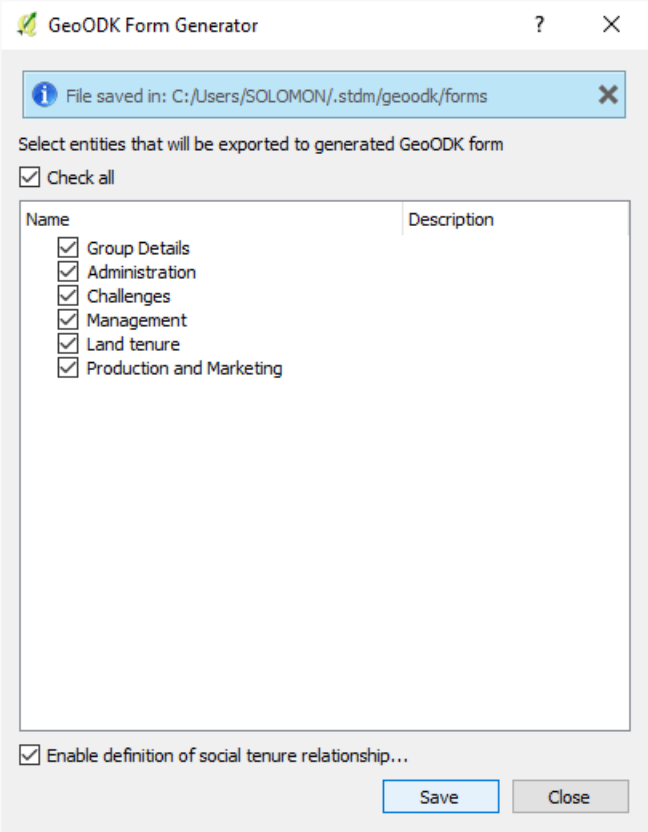


Additionally, the collected data can be imported into STDM using mobile data import wizard in a simple interface that pulls data from mobile device into STDM database.

Mobile support enhances the power of STDM creating a shift from pen and paper data collection so that data can be electronically collected using mobile devices and transferred into STDM in a simple user friendly interface. The mobile applications are freely available from Google Play. The user will only need to create STDM profile then go to generate mobile form. Once generate, the form can be uploaded to mobile via USB cable to the application folder in the mobile device or fetched from an Aggregate server hosted within the network and data collection can ensure from there.

The are several advantages that comes with this feature.

The complex mobile data template design process is made easier.

The forms are generated from the existing STDM profile that reflects STDM database.

Easily to integrate field data with the STDM database back in the office or over the network

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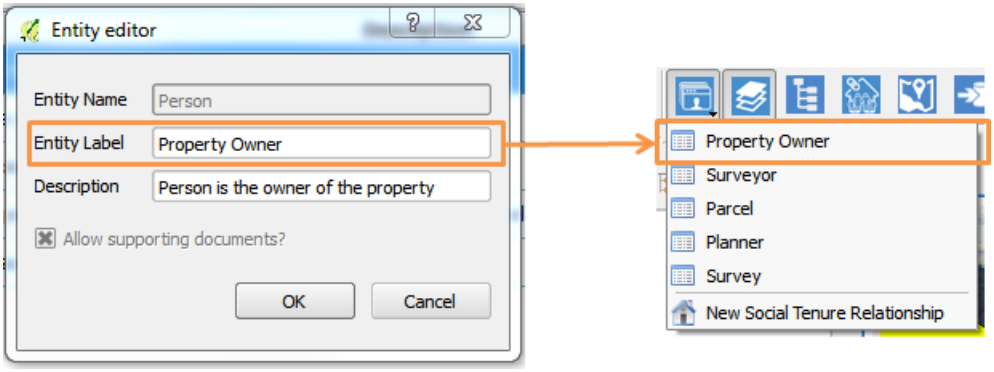
# Database Configuration

## Entity Label

Entities can now have customized labels. The labels can be more descriptive and user friendly than the entity names hence making the purpose of an entity to a user clearer.




## Entities and Column Ordering

With STDM 1.7 it is now possible to change the order of created entities and columns by simply dragging and dropping. The creation order for entities has an effect on how entities appear on the STDM menu, while the columns creation order reflects on how they appear on the forms.

## Column Label

Labeling of columns on a form is now easily customizable. You can now choose which label will appear next to a column field on a generated form. Normally, a label of a column is auto-generated from the value entered in Column Name field when creating columns. Now, with version 1.7, a new field called in the column editor allows you to change that behavior by letting you enter a value that will be used as a column label on the auto-generated form, see image below.

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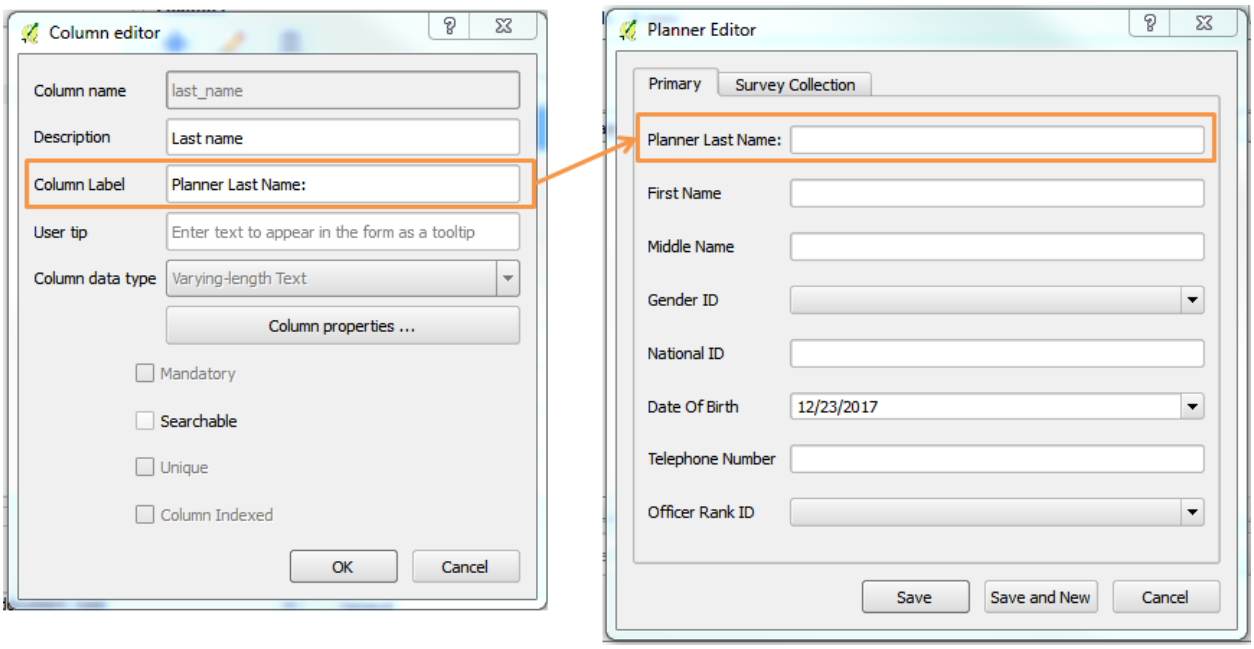


# Defining Social Tenure Relationship

## Multiple Spatial Units

Defining Social Tenure Relationship in the configuration wizard now has been improved to allow multiple spatial units for a single party or multiple parties. Prior to this, it was only possible to have a single spatial unit participating in a social tenure relationship.

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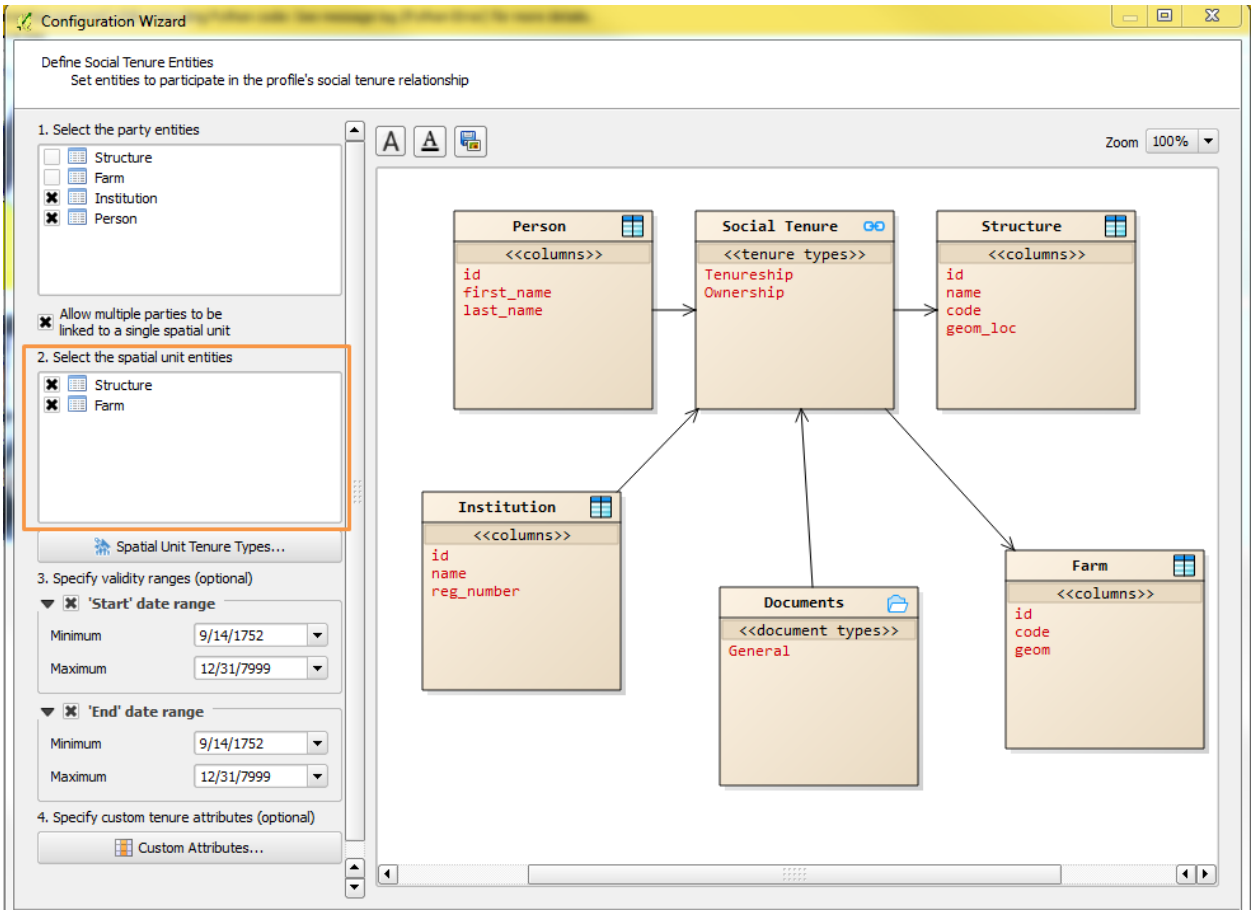
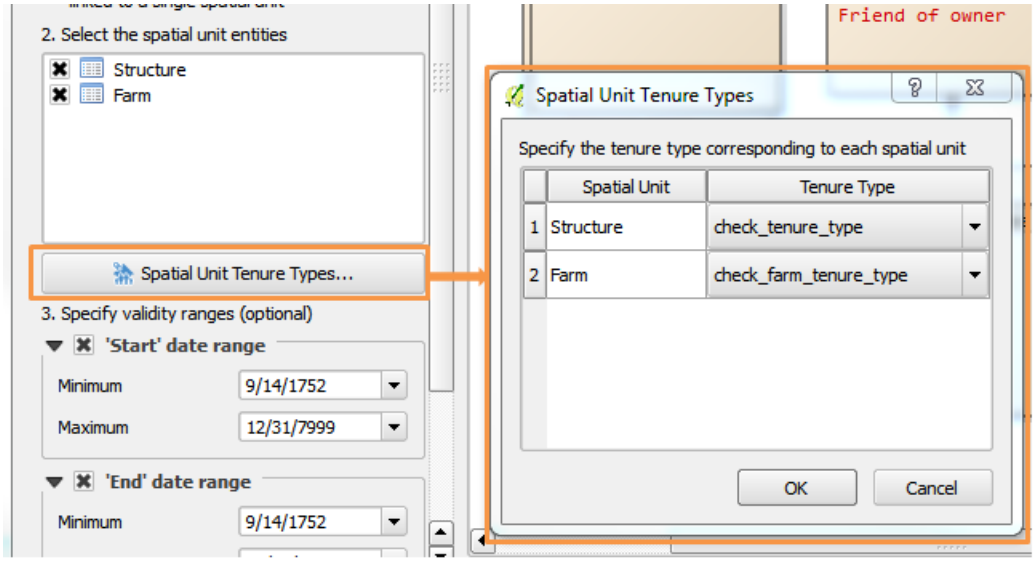



# Spatial Unit Specific Tenure Type

For cases where you have multiple spatial units, it is now possible to assign different tenure type for each spatial unit participating in a Social Tenure Relationship.

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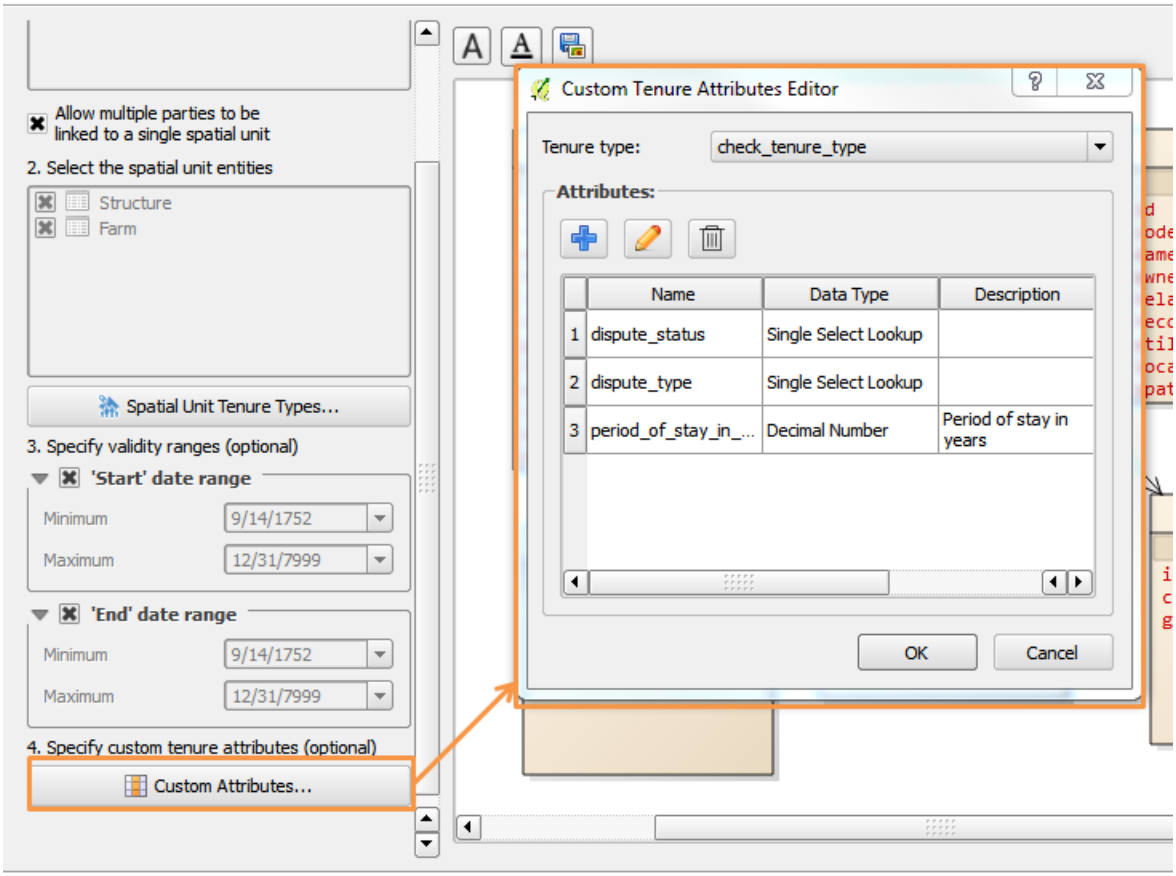
# Custom Tenure Information

To add more flexibility to tenure information, STDM 1.7 adds a new feature that allows a user to add extra custom attributes to different tenure types when configuring a profile. Example of such custom attributes on tenure types would include added information on a disputed property ownership. For more details, see the main system documentation.




# Social Tenure Relationship Modules

## Social Tenure Relationship (STR) Editor

### Multiple Spatial Unit Entities

With ability to choose more than one **Spatial Units** in the **Configuration**, the **Social Tenure Relationship** editor has added support to switch between Spatial Units to select spatial unit records. This is very useful when a profile contains more than one properties such as parcel and structure, farm and house, etc. The image below shows the Spatial Unit drop down menu.

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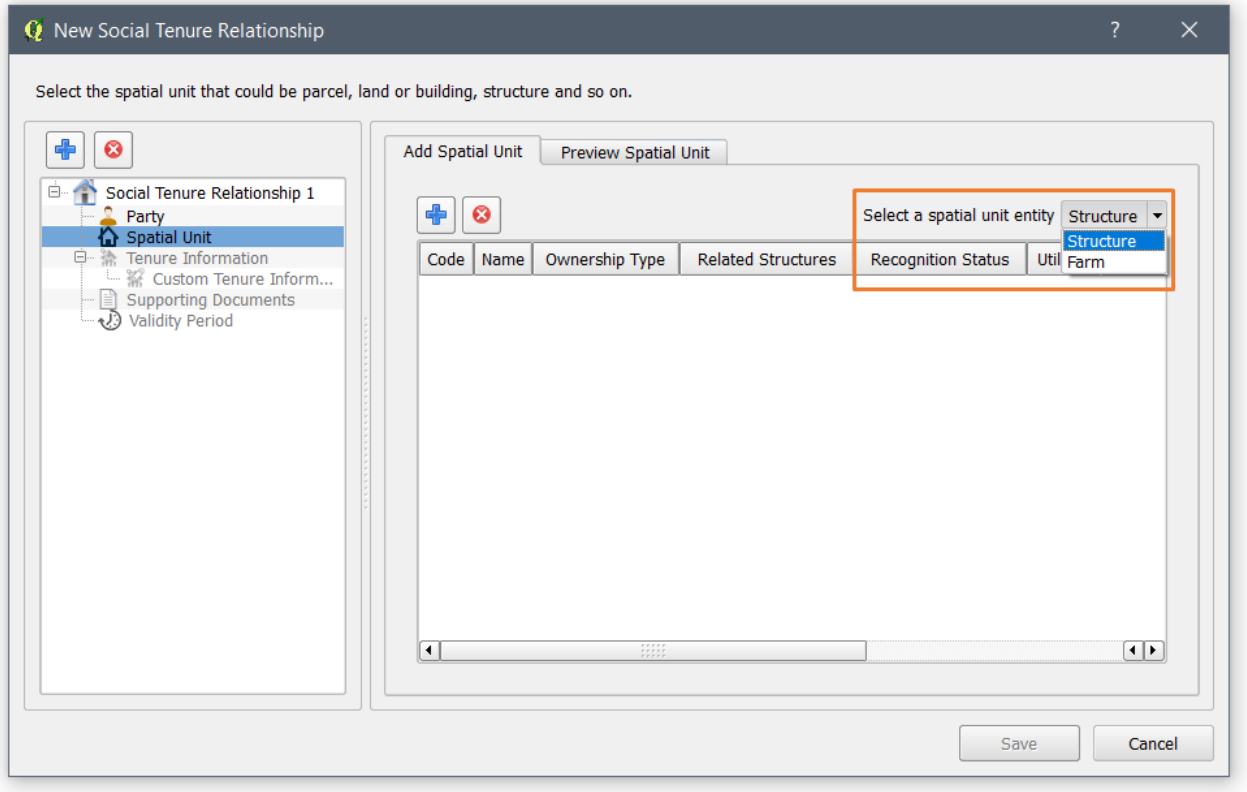


# Custom Tenure Information

Another major addition to STDM 1.7 is the ability to add **Custom Tenure Information** that provides more freedom to add additional fields related to tenure. Consequently, the **Custom Tenure Information** form is added in **Social Tenure Relationship editor** as shown below.

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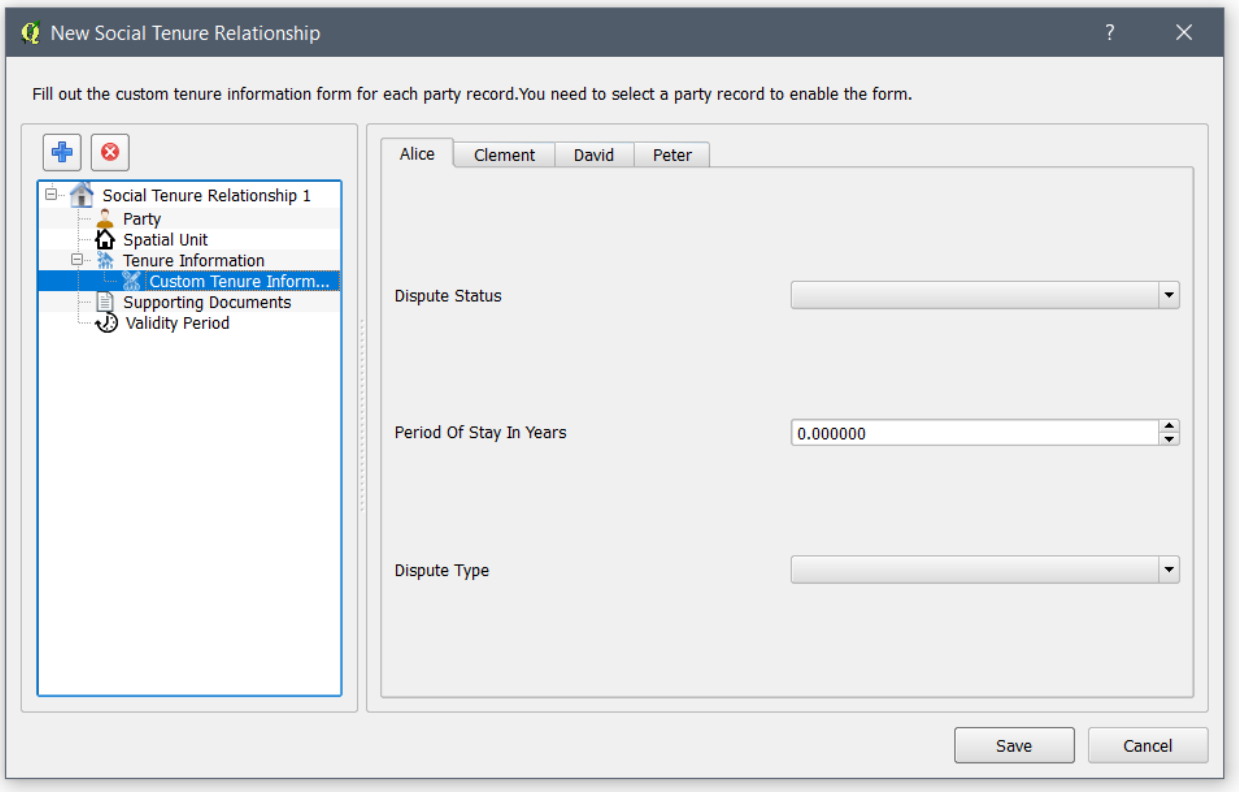


# View Social Tenure Relationship

The View Social Tenure Relationship has benefited from an improved performance with internal changes to the search query and display. There is a noticeable change in querying speed but not a significant change in the result box as shown in the image below.

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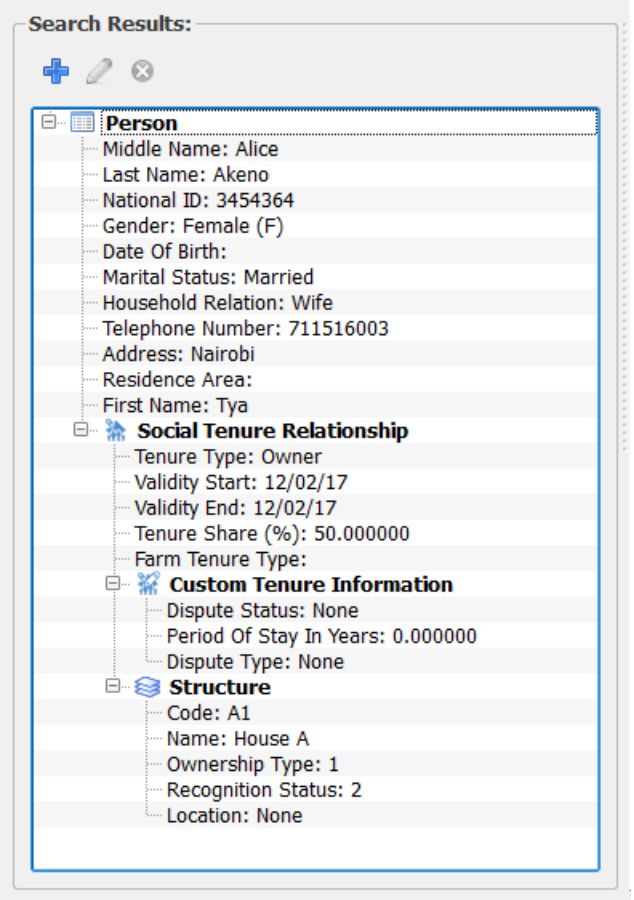


The noticeable addition is the **Custom Tenure Information** under **Social Tenure Relationship** item.

# Spatial Unit Manager

## QGIS Attribute Table and Styling STDM Layers

A better integration is done with QGIS to style STDM layers using Lookup, Related Entity, and Administrative Unit columns. Previously these columns were showing ids of the parent table. By joining the parent tables to STDM layers, it is possible to show the values when in QGIS Attribute Table and under Layer Properties when styling layers. When styling using Lookup, Related Entity, and Administrative Unit columns make sure you use the columns followed by "Value" suffix as shown in the image below.

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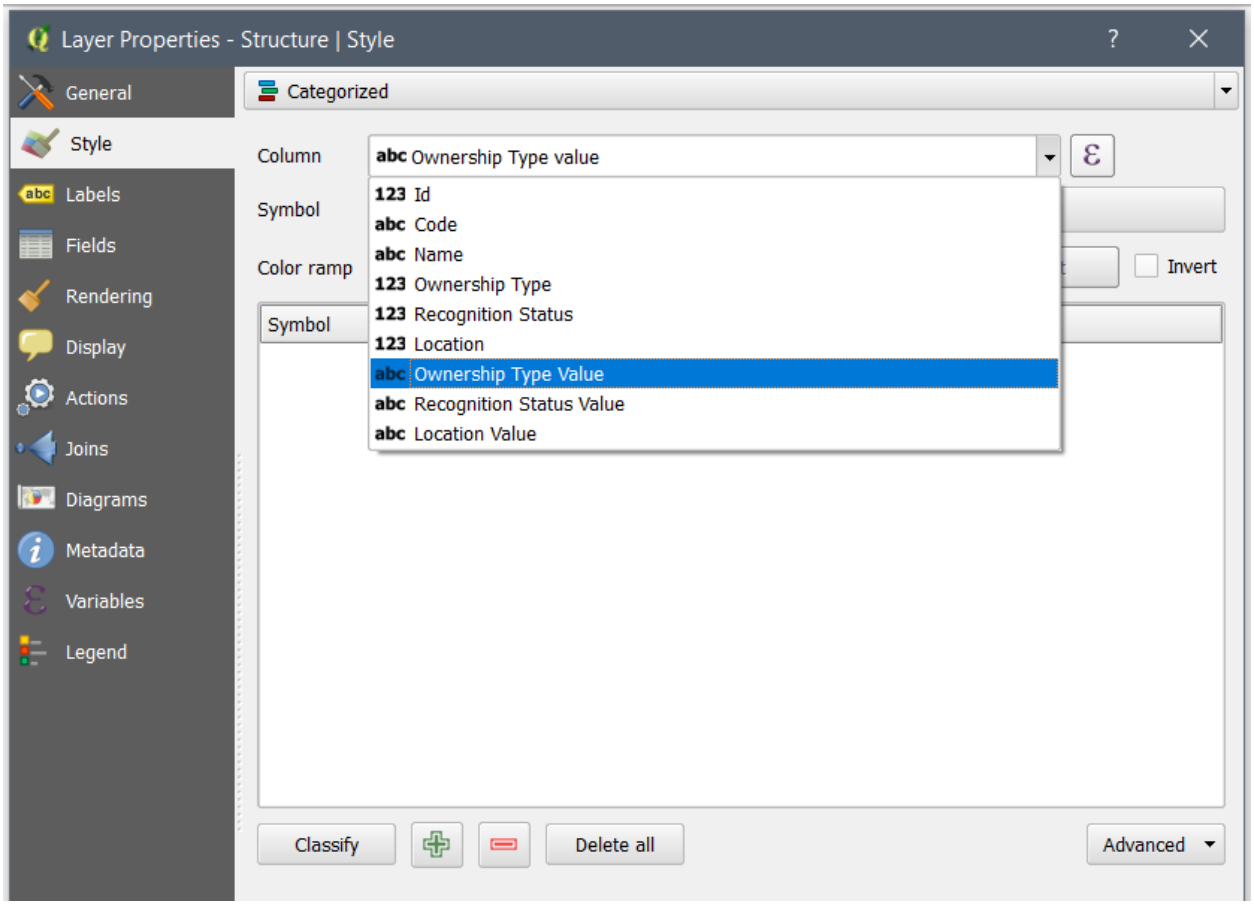


# Spatial Entity Editor

The GPS Importer is enabled by default to allow users to adding and editing a record from the Entity Browser. This reduces complication in for users as they are no longer required to add and select the layer to which the data is added. Editing saved GPS feature is now possible which is very useful when a wrong feature is imported. Users can just edit a record and import the correct one to replace the geometry saved earlier (see the image below).

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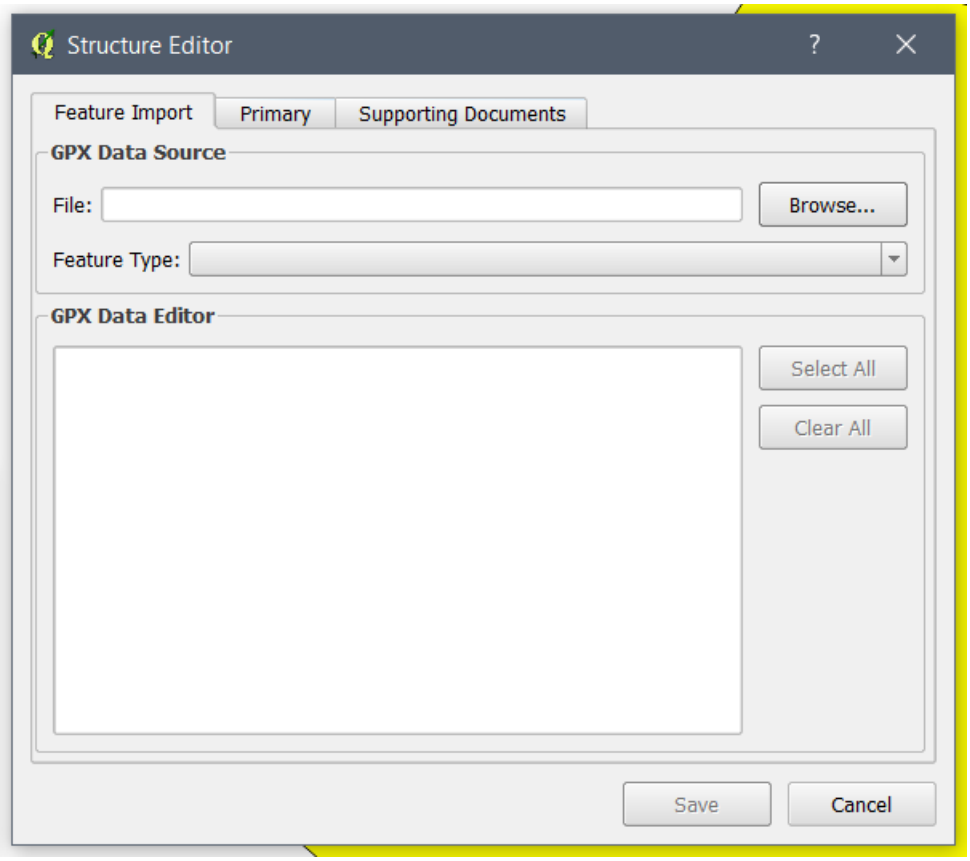


# Documents Designer

## Sample Templates

To make it easy for users to understand and design templates, new sample templates are incorporated. These templates can be customized in Documents Designer and used. Their names corresponds to the spatial units of each profiles.

The following templates are added into the template folder automatically:

- **certificate_of_structure_occupancy_sample** - Informal Settlement Profile
- **certificate_of_parcel_ownership_sample** - Local Government Profile
- **certificate_of_garden_occupancy_sample** - Rural Agriculture Profile

## Saving Template

In the previous versions of STDM, clicking on the save button results in a dialog asking the user to write the file name even though a file name is provided in the previous save. In STDM 1.7, a dialog is no longer shown if the file is saved. Instead the saved changes are applied in the same file.

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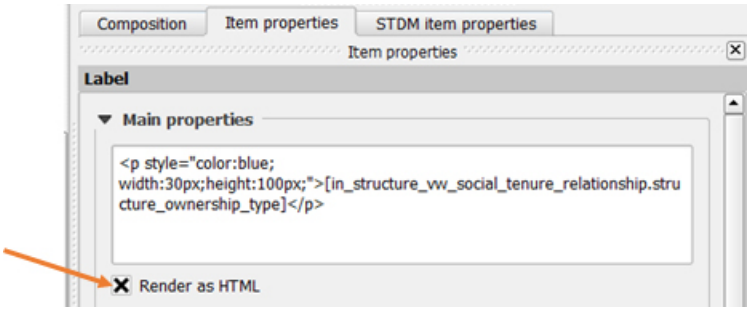
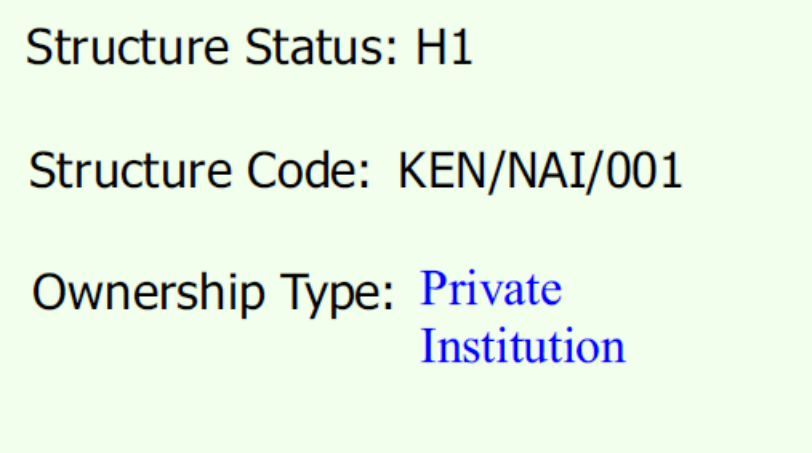
# Styling and Text Wrapping in Data Labels

It is now possible to style and apply text wrapping on **Data labels** using HTML. To apply HTML, **Render as HTML** checkbox needs to be checked. Text wrapping is already possible in Attribute Table using the **Appearance** options under **Item** properties.




The above code looks like the following on the generated document.




# Adding Text in Data Labels

Users can now add text that acts as a label to the data label by adding it in front or after the data label. This reduces the number of items added to the template, which makes it easier to align, re-size, move items, etc. The image below shows example implementation.

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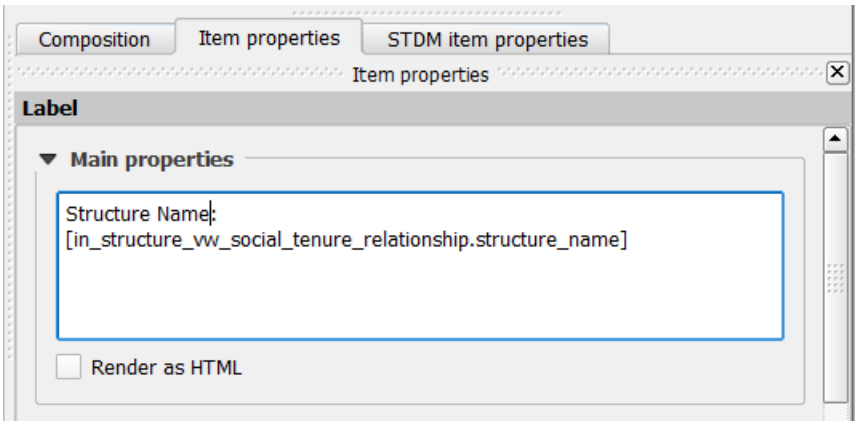


# Document Generator

A button has been added to enable users to open the output folder once the output documents have been generated. The image below highlights the button.

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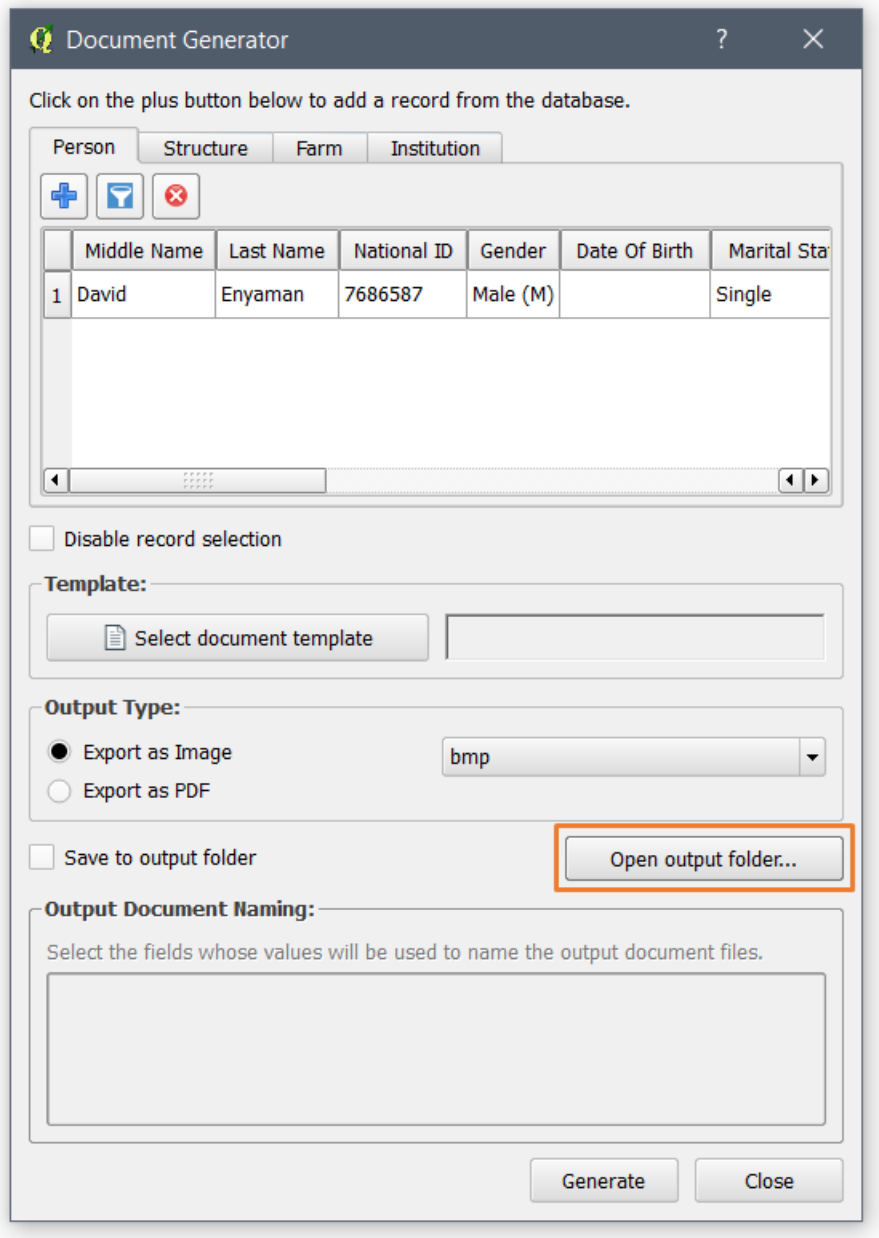


# General

## Software Packages

The all-in-one installer for STDM 1.7 is built upon the following packages: PostgreSQL v9.6, PostGIS 2.2 and QGIS 2.18. STDM is also compatible with QGIS 2.14 and 2.16. See the links below for the full list of feature updates in QGIS.

QGIS 2.16

QGIS 2.18

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# Multilingual Support

The STDM user-interface has been translated to Arabic, French, German and Portuguese. In addition, users can use any language to create a form using Column Label. Lookup values and data input accepts any UTF8-based text.

# Getting Technical Support

To access help topics, use the table of contents. Depending on the context of the support services required, you can use the online resource below to get in touch with GLTN's STDM team.

- For more information, please visit www.stdm.gltn.net or subscribe to: lists.osgeo.org/cgi-bin/mailman/listinfo/stdm-user

- To receive important news and updates around STDM in general, subscribe to: lists.osgeo.org/cgi-bin/mailman/listinfo/stdm-announce

- If you experience any issue while working with STDM, please report it so that developers can check and fix it. To report a bug, subscribe to: lists.osgeo.org/cgi-bin/mailman/listinfo/stdm-dev or post it in GitHub at: https://github.com/gltn/stdm-plugin/issues

To browse the source codes or extend the core platform, access the repository here: https://github.com/gltn/stdm-plugin

**Note**: While asking an STDM related question via the mailing lists, kindly provide the following information.

- A descriptive title for your email
- The computer's operating system and version
- The exact STDM version used at that moment
- The process taking place when the system broke down, e.g. new installation, re-installation, system update, etc.
- The exact error that has occurred. If possible, attach a screenshot or copy of the error text along with the email.

# System Requirements

## Operating system Requirements

**Windows:**

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A Windows 7 Service Pack 1

B Windows 8

C Windows 8.1

D Windows 10

**Linux Based:**

E Debian

F Ubuntu

G Fedora

H Red Hat

I openSUSE

# Hardware Requirements

2 At least 2GB of RAM

3 At least 2GB free disk space

4 1024x768 screen resolution or higher

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# Installing STDM

# Before Installing

## What do I need to install to have a fully functional STDM?

In the provided installation package, there are core components of software packages that are mandatory for an installation of STDM to work properly.

The following need to be installed:

- QGIS (current version 2.18)
- PostgreSQL (current version 9.5)
- PostGIS (current version 2.2)
- Sample data - this is optional if you want to have a sample data to manipulate and test features of STDM.

## Do I need to uninstall previous installation of the above software?

This is not necessary if you are working with QGIS 2.14 or higher and PostgreSQL 9.5 or higher. If you have lower versions, we cannot guarantee the full functionality of STDM. However, in such a case, you need to do the following:

1. Start QGIS normally and wait for it to load

2. Download the latest version of STDM plugin from GitHub: https://github.com/gltn/stdm by adding STDM download repository in the QGIS Plugin manager. See instructions here (Download From repository)

4. Using PostgreSQL database Administrator i.e **pgAdmin** ( ), create a new database called **stdm**.

5. Install PostGIS extension created for the PostgreSQL version you are using. You can download it from http://postgis.net/install/.

6. On the QGIS window, check if STDM is enabled on the menu and toolbar

# Using Bundled STDM Installer

The bundled installer is the custom installer that is built to help you easily install STDM and dependent software packages.

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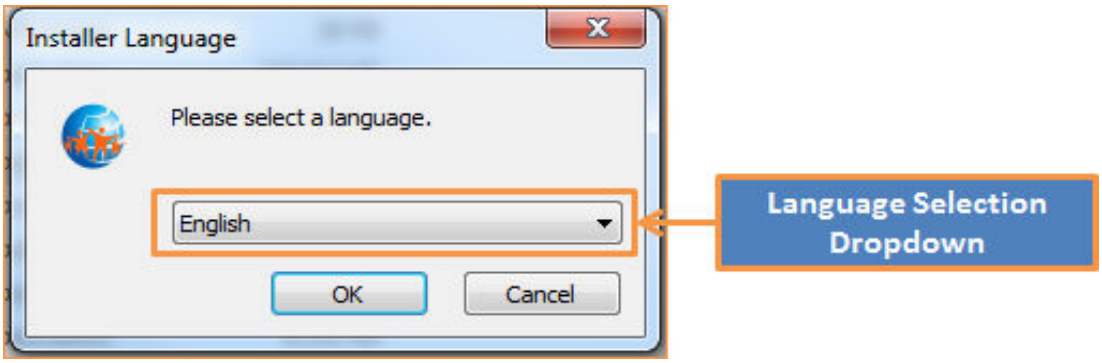
**Note**: For **32bit** machine please select and run **STDM-1.7-Final-x32.exe** setup file. For **64bit** machines run **STDM-1.7-Final-x64.exe** setup file.

**Installation steps**

**1.** Start the installer by double clicking on the setup file.

2. A language selection window similar to the one shown below will appear.




3. Click the dropdown to select a language of your choice then click **OK** button to proceed.

STDM currently supports four languages these are: English, French, Portuguese, and Arabic.

4. A **Welcome** page (shown below) of the installer will appear, read the instructions and click **Next** button to proceed.

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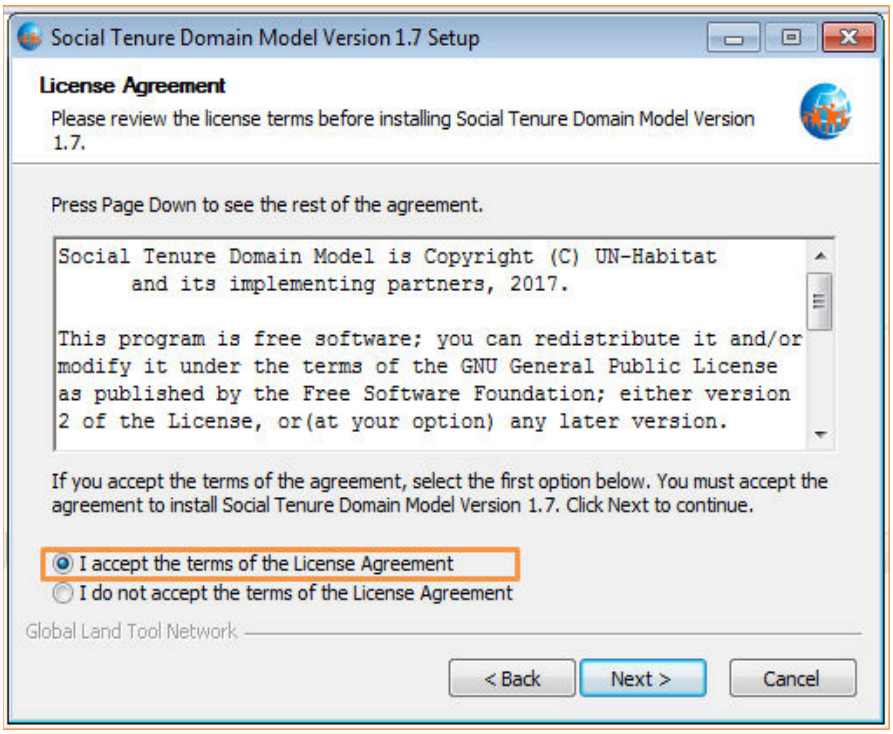
**5. License Agreement page will appear. Carefully read the license**. If you accept the terms and conditions, select '**I accept the terms...**' option (highlighted below) then click **Next** to proceed.




6. **Choose Components** page will appear. This page allows you to select the products (software) that you wish to install.

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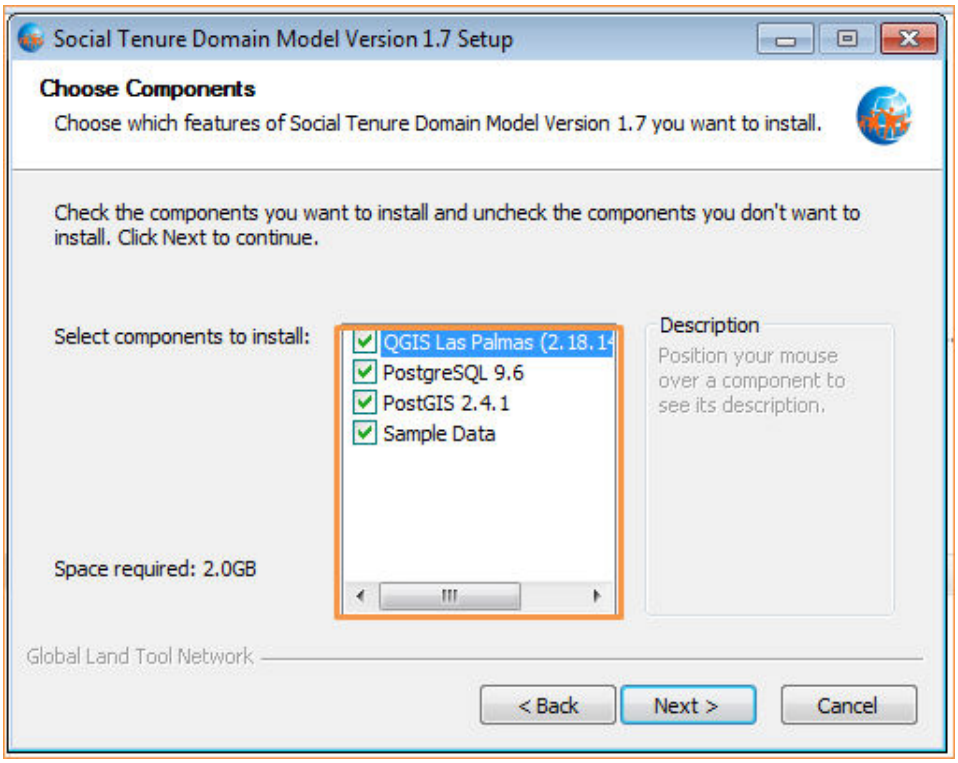


Currently the installer allows you to install four products, these are:

A **QGIS 2.18 for STDM** – This will install QGIS software with STDM plugin embedded

B **PostgreSQL 9.6** – This will install PostgreSQL database server software. All the data in STDM will be stored here. If you do not have PostgreSQL already installed in your machine make sure you select this option, STDM will not work without this software.

C **PostGIS** – This installs the GIS plugin for PostgreSQL. Make sure you select this option, STDM will NOT work without this package.

D **Sample data** – This will install sample files for STDM plugin. This is not a mandatory package, but if you are a new STDM user, it is recommended you install so as to have some practice data.

***Note**: If you already have PostgreSQL or PostGIS installed, the installer will skip installation of those components even if you had selected them on the component selection list.*

After you make your selection, click **Next** to proceed.

7. **Database Connection Properties** page. This page will only show if you selected to install **PostgreSQL** database in the previous step.

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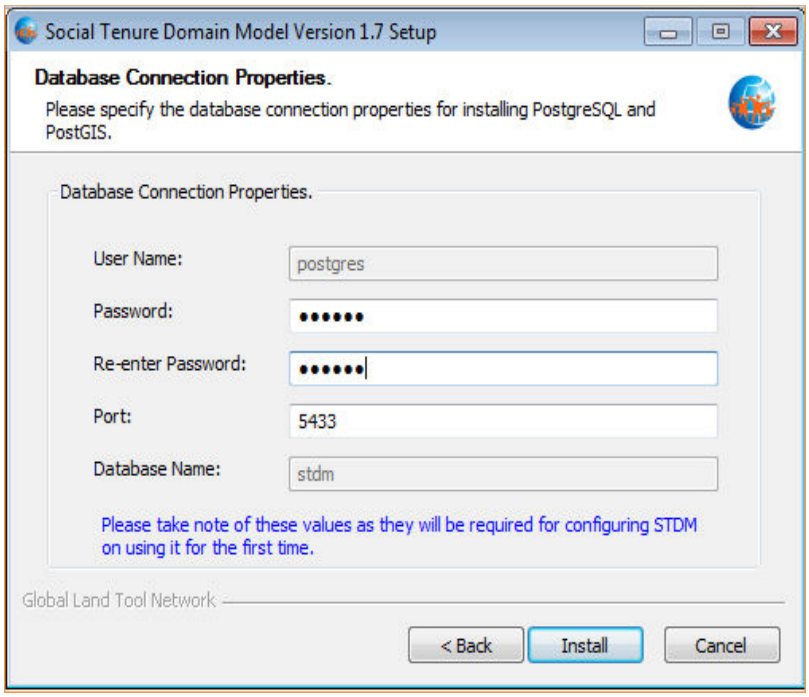


The database connection property page allows you to setup the necessary user credentials that allows you access PostgreSQL database and STDM.

Enter a unique password, but remember it is absolutely important **NOT** to forget this password, you will not be able to access STDM without it. We recommend you leave the rest of the fields with the defaults provided. For more details on PostgreSQL connections setup please see documentation in https://www.postgresql.org/docs/9.6/static/runtime-config-connection.html.

8. **Installing** page. This page initiates the installation process, installation progress will be indicated by the green progress bar, while the installation progress log will be shown as text on the progress window. Depending on the speed of your machine, this process might take at most 15 minutes.

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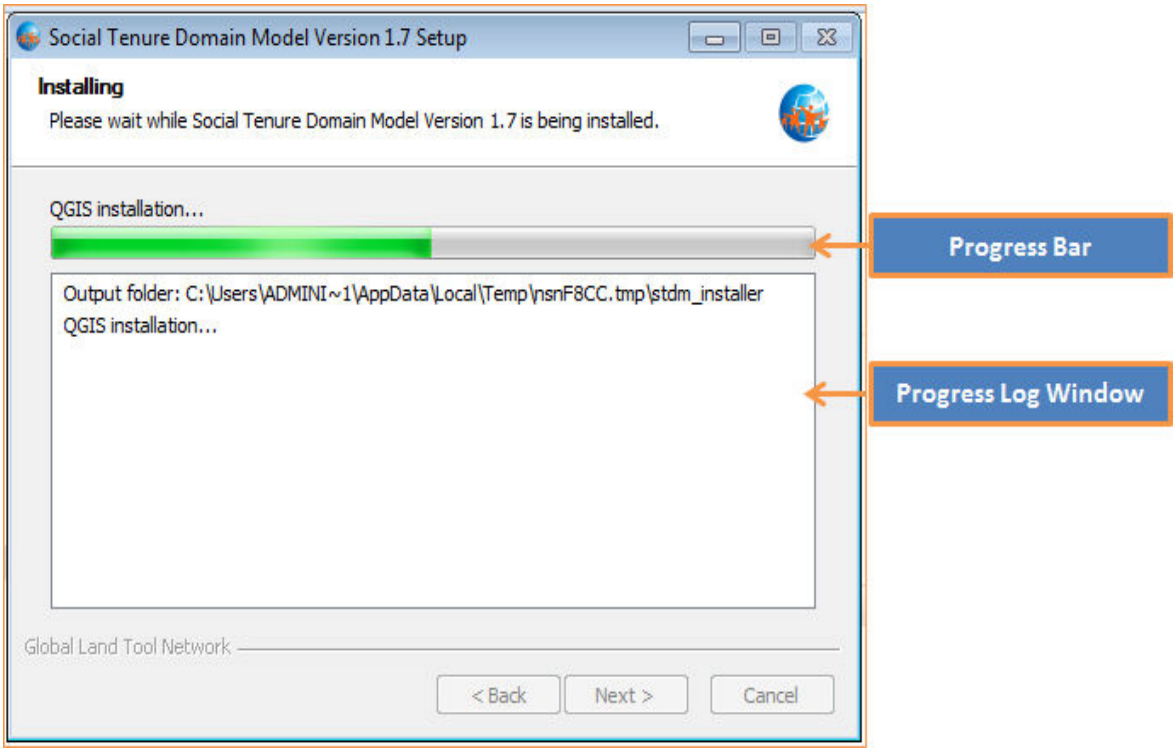
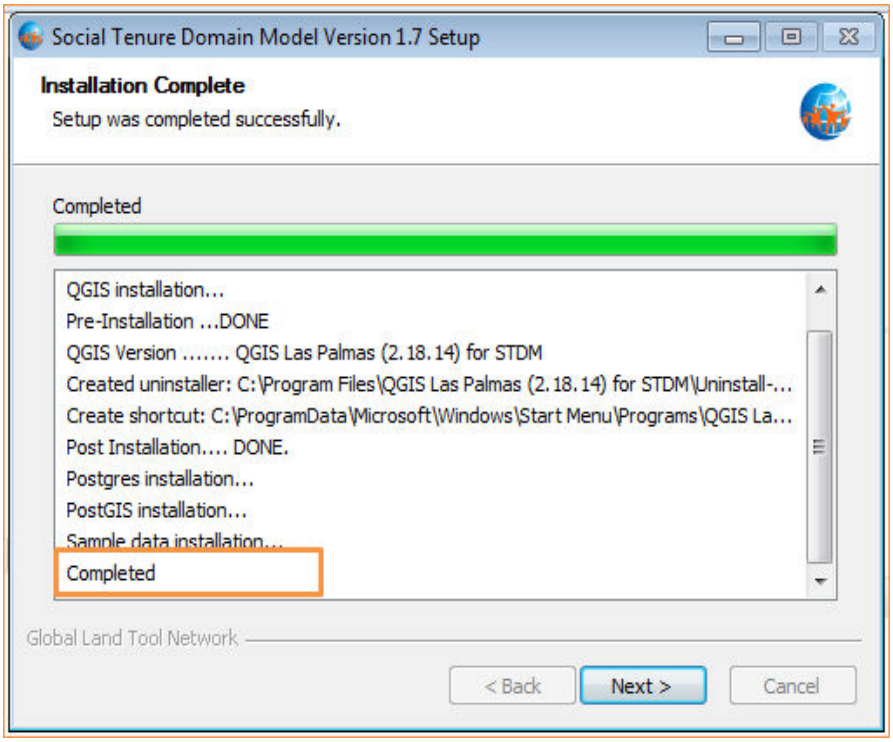



9. **Installation Complete** page. This will appear once the installation completes successfully, click **Next** to proceed.




10. **Finish** page. Click **Finish** button as shown in the image below to close the installer application window.

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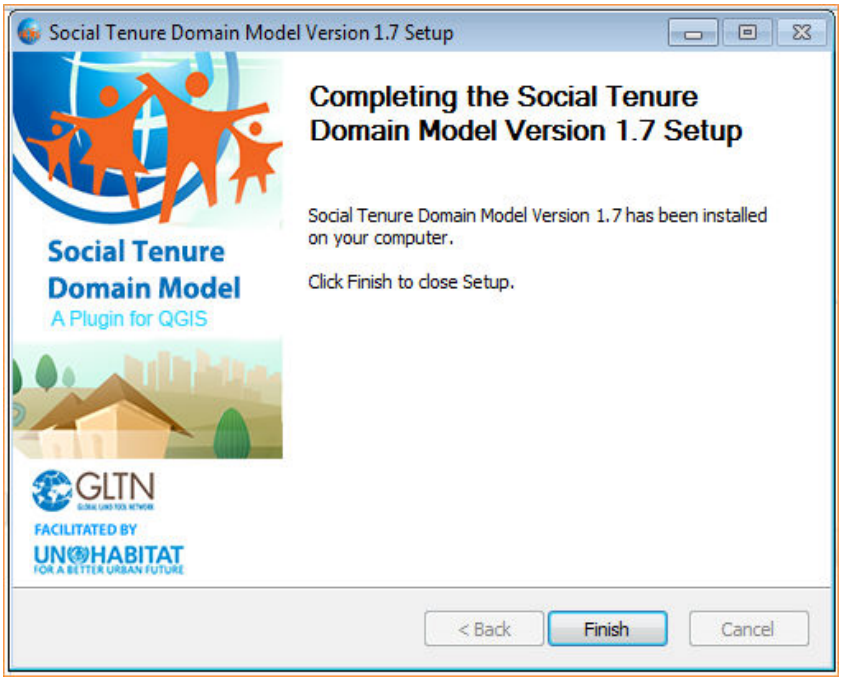
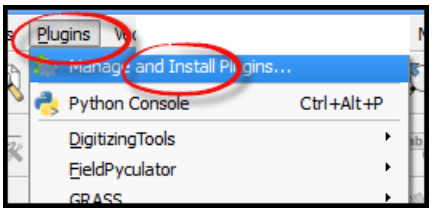



To run **QGIS for STDM,** double click on the icon created on your computer desktop.

# Installing from GLTN Plugin Repository

For users with an already existing installation of QGIS version 2.14 or higher and who do not want to uninstall the current version, we recommend that you download STDM plugin from the repository using the following steps.

- Start QGIS normally and wait for it to load
- Go to menu **Plugins -> Manage and Install Plugins ...**




- Wait for the plugin to fetch available plugins from the web repository (only if online)
- On the **Plugins** dialog select **Settings** tab

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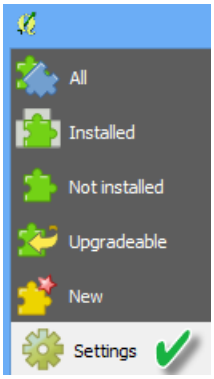
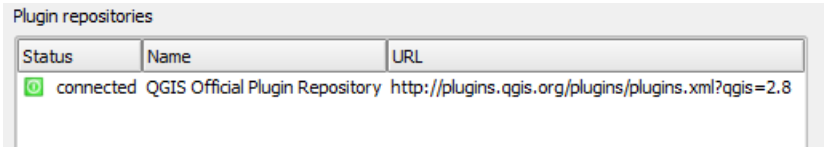


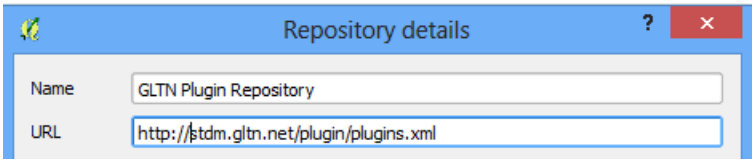

Available repositories will be shown under "**Plugin repositories**"



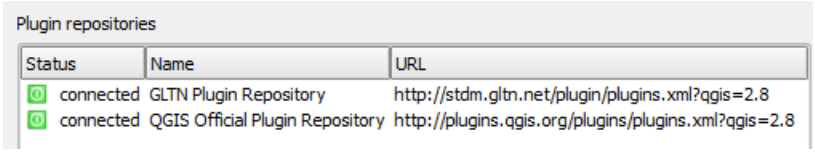

- Click on the Add button ( Add... ) to open repository details dialog. The dialog allows you to enter additional repository properties,

To add STDM plugin repository, please enter the details as follows;

1. In the Name field enter: **GLTN Plugin Repository**
2. In the URL field enter: http://stdm.gltn.net/plugin/plugins.xml
3. Ensure the **Enabled** option is checked then select **OK** to close.




- Click on the OK button to dismiss the dialog.
- The dialog will try accessing the added repository (if online), and pull the linked plugins. If successful, the repository will be added to the list.




- While still on the Plugins window select the **Not installed** tab, look for STDM plugin on the list of `Not installed` plugins. Select it and click Install plugin.

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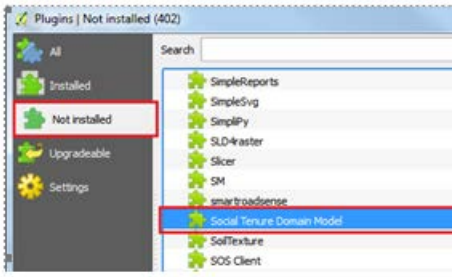
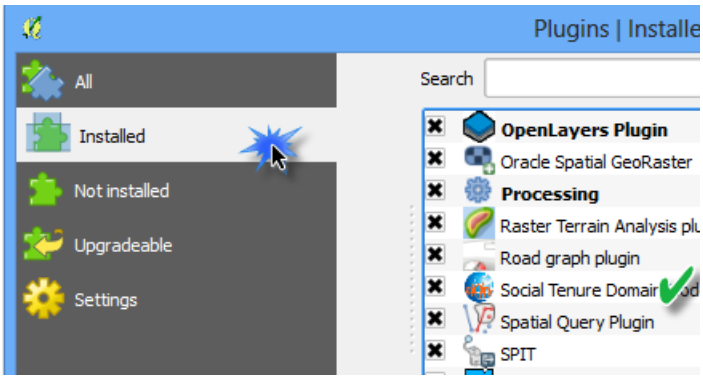
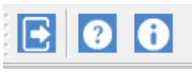



- QGIS will download and install STDM plugin. The plugin should now be available on the **Installed tab** and also on the QGIS main panel.




- Click close to dismiss the dialog.

You are now ready to start using STDM. On the QGIS Toolbar, you will see the image below.



# Uninstalling QGIS for STDM

**Note**: It is strongly recommended to backup your .stdm folder and the database before uninstalling STDM and used packages.

To uninstall QGIS for STDM follow the steps below.

1. On your windows machine, click on **Start** button to access the **All Programs** menu option.

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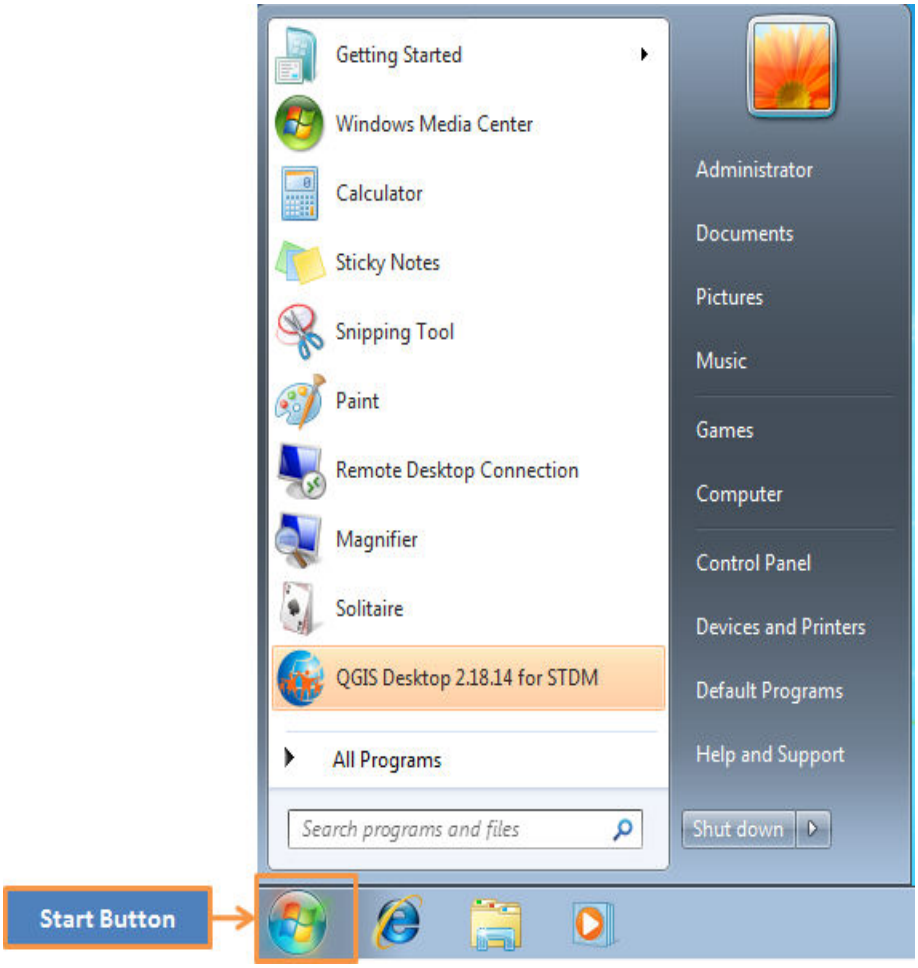


2. Click on **All Programs** menu option to access the folder with QGIS for STDM installation.

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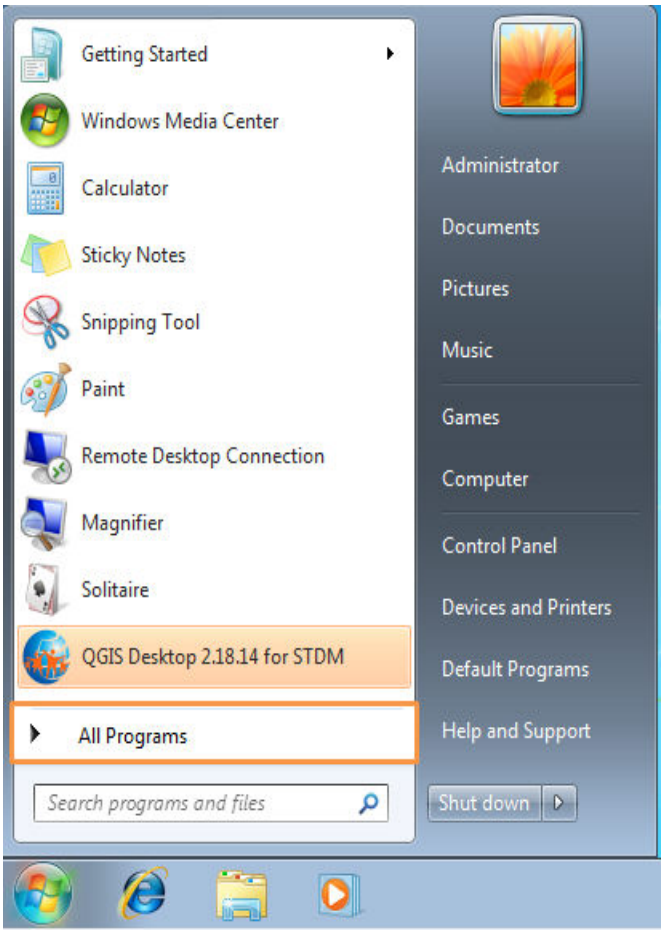


3. Click once on the **QGIS Las Palmas (2.18.14) for STDM** menu option to access the uninstaller application.

4. Click the **Uninstall QGIS** icon to open the uninstallation program

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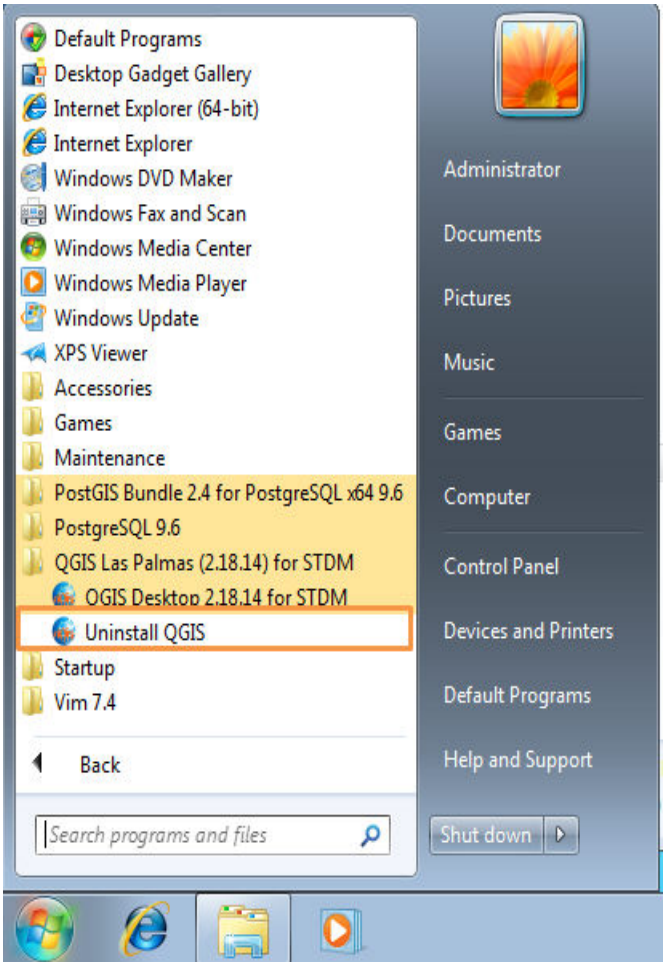


5. On the **Welcome** page click **Next** button to proceed.

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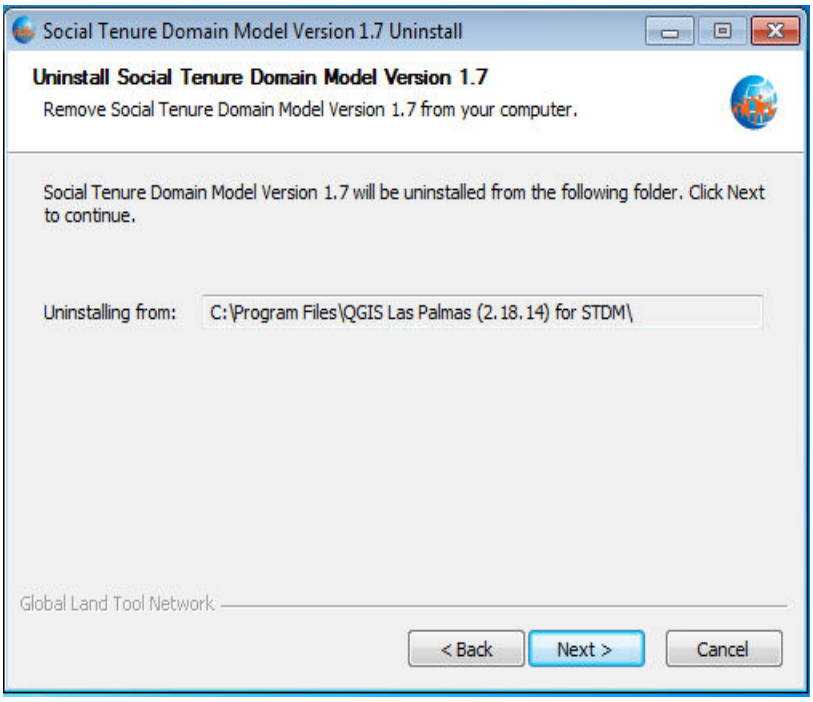
6. **Uninstall Folder** page, this shows you where files will be deleted will happen, click **Next** to proceed.




7. **Choose Components** page, this allows you to select which products you need to uninstall. Currently, the uninstaller program allows you to remove four products, these are: **QGIS**, **PostgreSQL**, **PostGIS** and **Sampler data** package.

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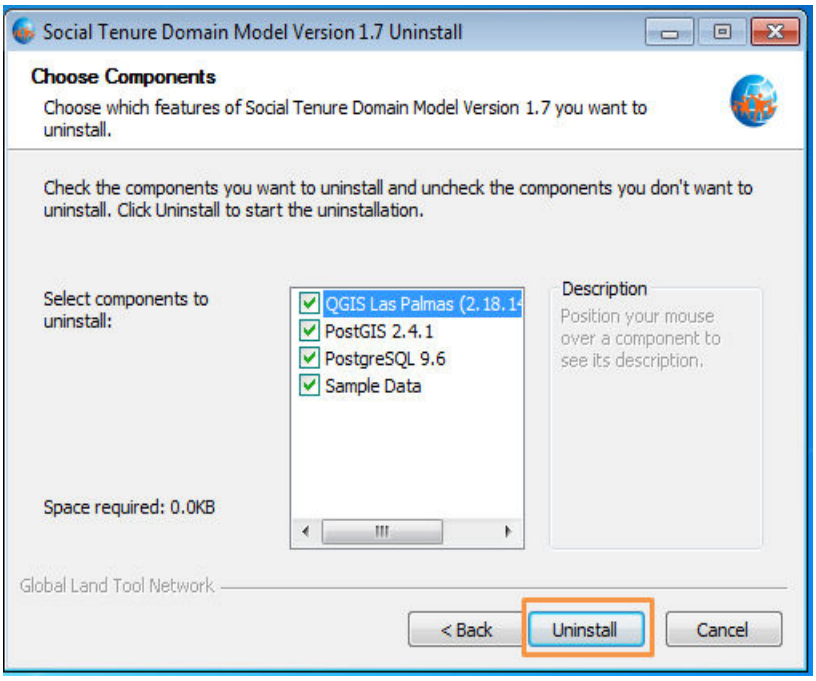
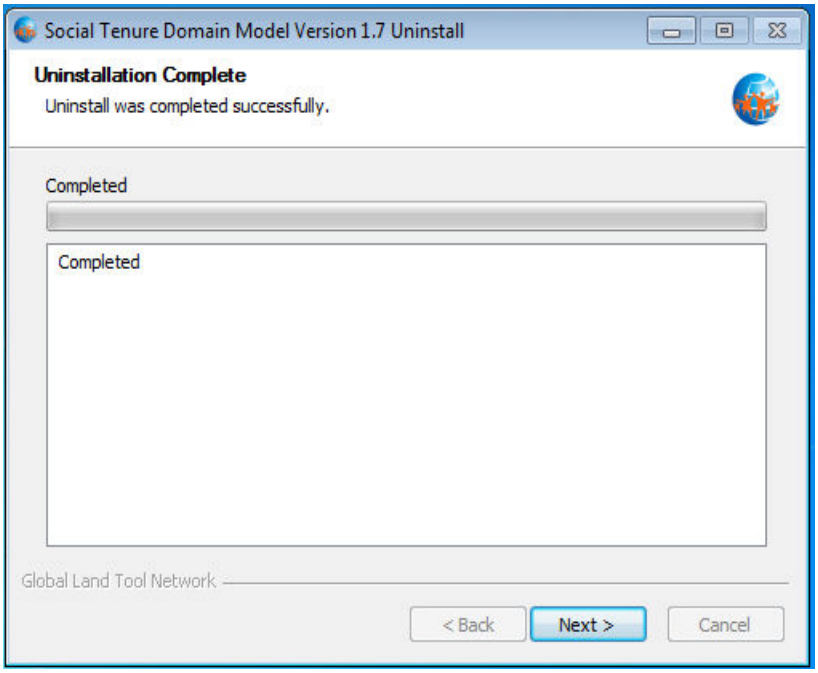



Click **Uninstall** button to start the uninstallation process.

8. **Uninstallation Complete** page, this page will appear after successful uninstallation of all the products you selected. Click **Next** to proceed.




9. **Finish page**, click **Finish** button to close the uninstallation application window.

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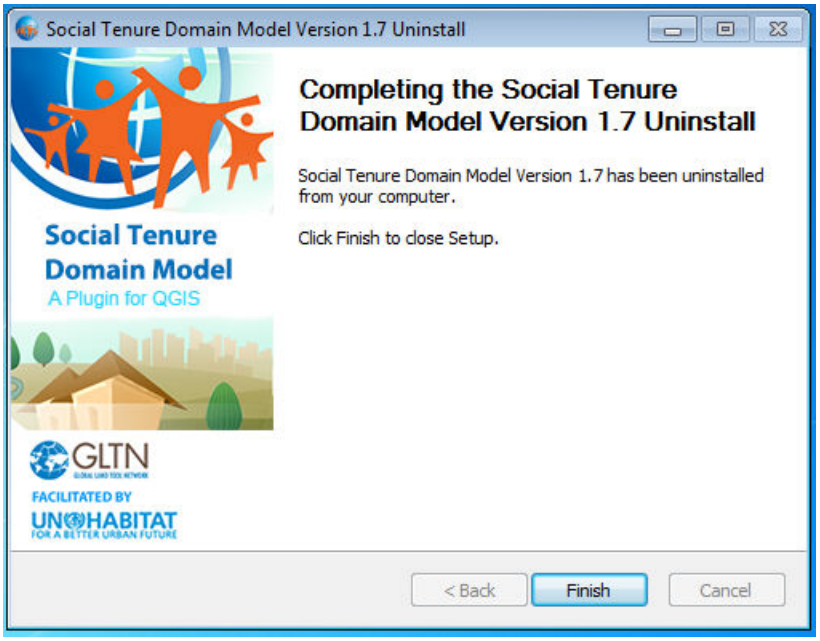


# Migration from Previous Version

Migration from the previous versions of STDM is seamless. The migration will not affect your data. The migration process is handled by the Upgrade Module of STDM. The module executes automatically when you login to STDM 1.7 for the first time after upgrading from STDM version 1.0 and above. You can also run it manually to upgrade upto STDM 1.4 configuration by clicking on the Upgrade button in the options Menu. Then, the configuration will be updated automatically to STDM 1.7 configuration.

When upgrading from STDM 1.0/ 1.1 to STDM 1.7 configuration, the following will take place:

1. A new **configuration.stc** will be created based on **stdmConfig.xml** inside the **.stdm** folder under the user directory.

2. Your existing configuration file, **stdmConfig.xml** will **not** be removed.

3. A new profile will be created based on the old configuration profile name.

4. New tables will be created based on the old table names with a prefix of the first two words of the profile name.

5. The existing tables and data will **not** be deleted.

6. All the new tables will be populated with data that was stored in the old tables to allow you access your data in the new version.

7. Update your templates by replacing the old tables, views, and directories with the new tables, new views, and directories.

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- Custom views will be re-created with the same name with 'new_' prefix.
- Always use views with **new** prefix for custom views.
- The default **social_tenure_relations** view will be [**entity_table_name]_vw_social_tenure_relationship** view. There will be a separate view for **Parties,** and **Spatial Unit Entities.**
- The views will not be deleted but you should not use them to create new templates as they will not be updated henceforth. Use the new views.

8. If you upgrade manually while having a newly created configuration through the configuration wizard or the default configuration template, it will be re-named with a format configuration_year_month_date_hour_minute.stc format. E.g. configuration_2016_08_24_02_03.stc. The extension **stc** might not be visible based on your Operating System file extension display setting.

When upgrading from STDM 1.4 to STDM 1.7, the following will take place.

1. New **Social Tenure Relationship Entity** columns will be added, namely *tenure share, validity start, validity end*.
2. The existing *party_id* column in the **Social Tenure Relationship Entity** will be replaced by the name of the entity followed by '_id'.

When upgrading from STDM 1.5 to STDM 1.7, there will be no change in both the database and configuration.

# Automatic Upgrade

The automatic upgrade happens when you login to STDM for the first time after upgrading to STDM 1.7.

To upgrade automatically, follow the steps below.

1. You will be asked to agree on the terms and conditions of STDM. This might not be shown if you are migrating from STDM 1.4.

In case you have uninstalled QGIS with its registry using third party uninstallers, STDM might lose all the directory settings.

In such a case, you will see the **Directory Settings** dialog requiring you to select the supporting document, template and output folders. At the top, the **Directory Settings** dialog explains for what purpose STDM uses those directories to help you remember the folders. Click on the folder browse button ( ) to select the required folders (see the image below).

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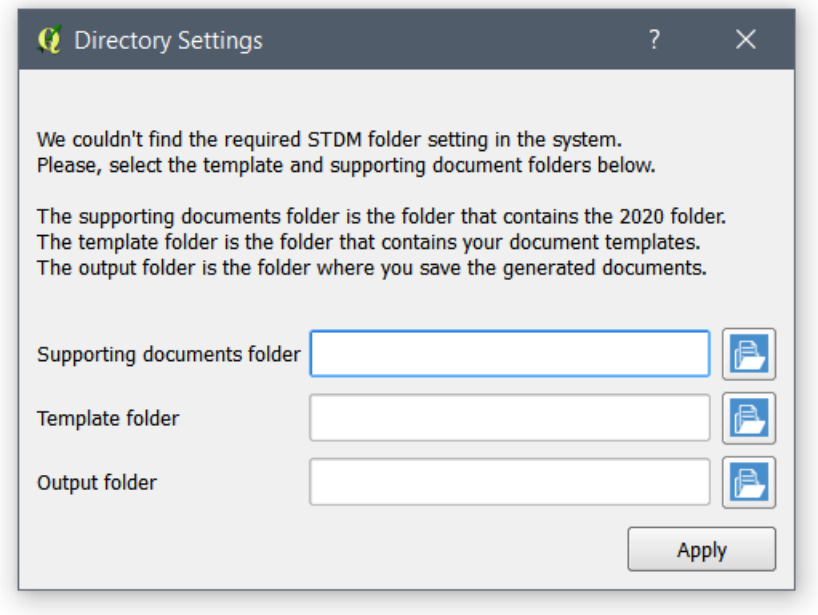
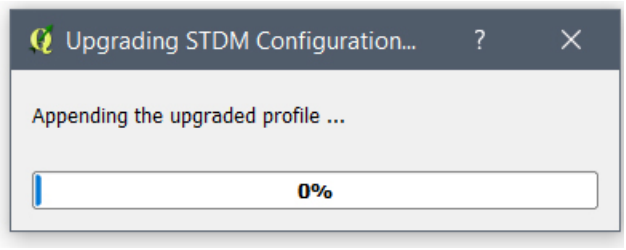



**Note:** Closing the Directory Settings dialog without selecting and applying the settings will lead to the cancellation of the migration process. This will lead to the temporary loss of access to the existing profile, data, and templates.

If you do not see the dialog, it means, your directory setting is not removed from your system.

The upgrading of the configuration takes place.

You will see a progress dialog that looks like the following image.




Ensure you do not interrupt the upgrade process as the process involves your data. To reduce the risk of interruption, the progress bar cannot be closed by clicking on the close button; this also prevents QGIS from being closed.

Once the process is complete, you will see a popup requesting you to view changes and new features of STDM (see the image below).

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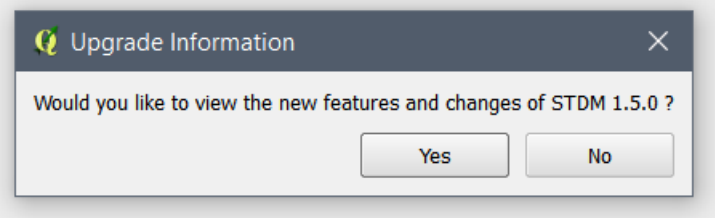
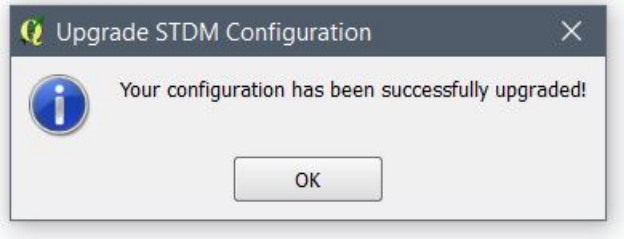



It is recommended to view it. Click the **OK** button to view the changes and new features or click on the **No** button if you do not wish to see the changes.




You will now be able to see your profile with the default profiles of STDM.

You can explore these profiles and on the way learn the capabilities of STDM 1.7 configuration. If you don't need them, you can delete them as discussed in Deleting Profiles topic.

You can also customize the profiles by changing their entities, columns, etc using Copy Profile and Save as Draft features in the Configuration Wizard.

In case of a failed upgrade, you can upgrade using the Manual Upgrade option.

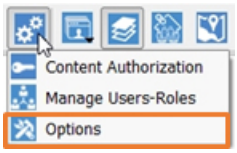
**Note**: Once you make a successful upgrade, you will no longer be able to revert back to an old configuration. The Upgrade button will be disabled.

# Manual Upgrade

If the automatic upgrade failed, you can still make the upgrade from the Options Module to upgrade from STDM 1.0 or 1.1 to STDM 1.4. After upgrading to STDM 1.4, the configuration will be automatically updated to STDM 1.7.

1. Open the Options module by looking for **Options** under Admin Settings menu located in STDM Toolbar or STDM menu.

Click on **Options** menu as shown in the image below.

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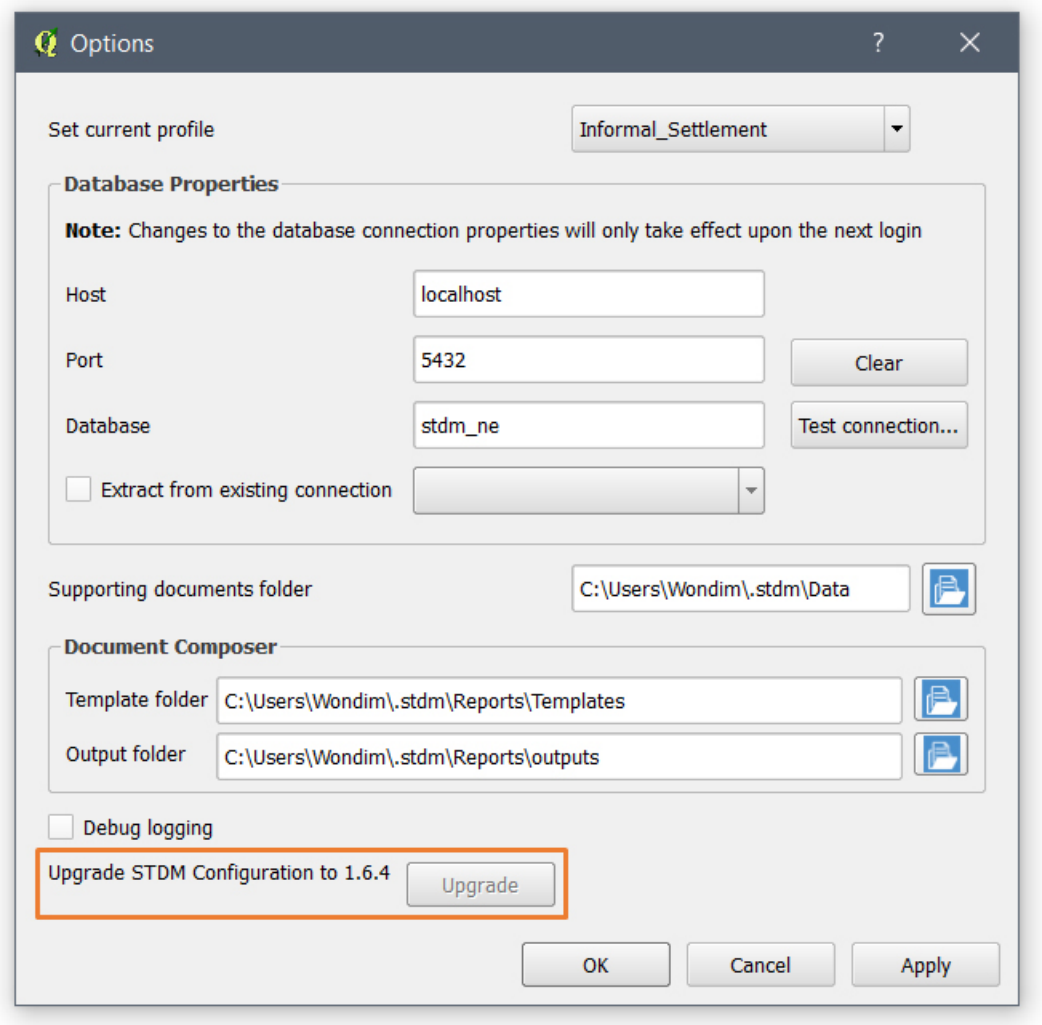
2. Once the **Options** module opens, go to the bottom of the module and locate **Upgrade STDM Configuration to 1.4** with the **Upgrade** button as highlighted below.




3. Click on the **Upgrade** button.

In case you have uninstalled QGIS with its registry using third party uninstallers, you risk losing all the directory settings on STDM.

In such a case, you will see a dialog box requiring you to select the supporting document, template and output folders. Click on the folder browse button ( ) to select all the required folders (see the image below).

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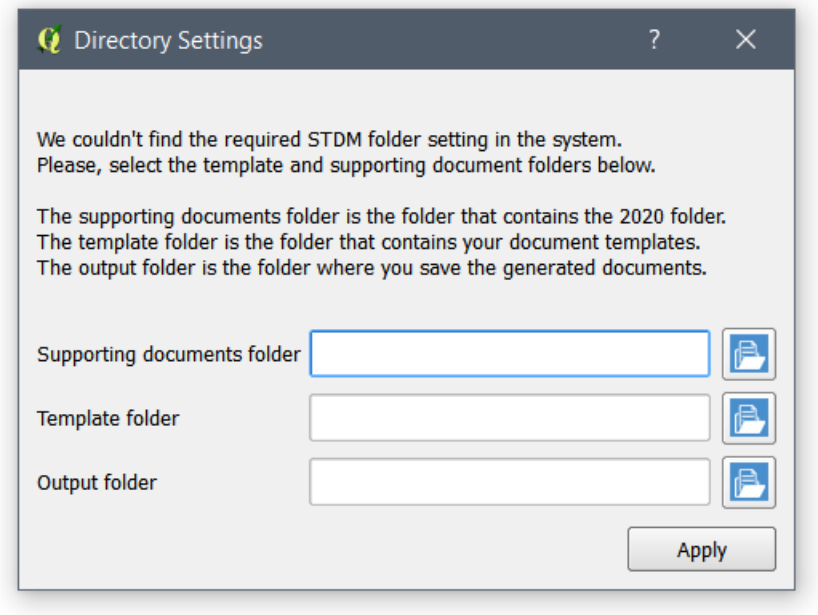
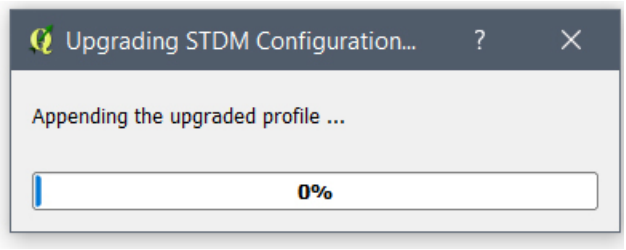



**Note:** Closing the Directory Settings dialog without selecting and applying the settings will lead to the cancellation of the migration process. This will lead to the temporary loss of access to the existing profile, data, and templates.

If you do not see the dialog, it means your directory setting is not removed from your system.

This leads to the starting of the upgrade process. You will see a progress dialog as shown below.




Please ensure that you do not interrupt the upgrade process involves your data. To reduce the risk of interruption, the progress bar cannot be closed by clicking on the close button; this also prevents QGIS from being closed.

Once the process is complete, the progress bar disappears and you can start to use STDM.

**Note**: Once you make a successful upgrade, you will no longer be able to upgrade an old configuration.

# Failed STDM Installation

STDM Installation could fail due to various reasons such as infected Computer, incomplete uninstallation of the old version, etc. For solutions, check the following sub-topics.

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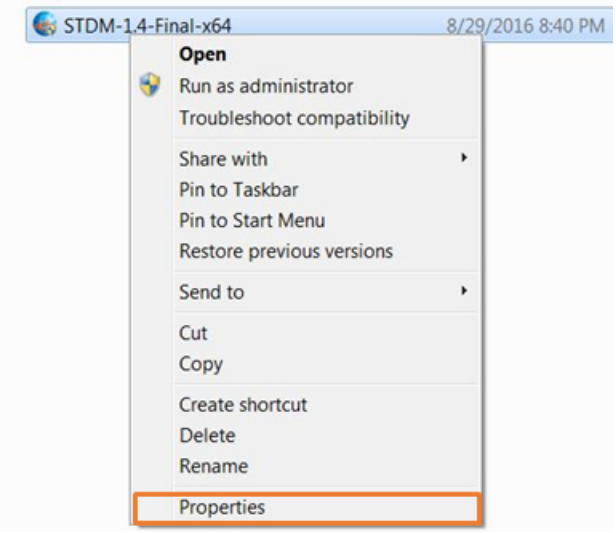
# Failure to Install on Windows 7

This happens when you try to install STDM Bundled Installer on Windows 7 without Service Pack 1. The installer suggests to upgrade to Service Pack 1.

To install STDM in compatibility mode, follow the steps below.

1. **Right-click** on the installer and click on **Properties** item in the **Context** menu (see the image below).




2. Click on **Compatibility** tab as shown in the image below.

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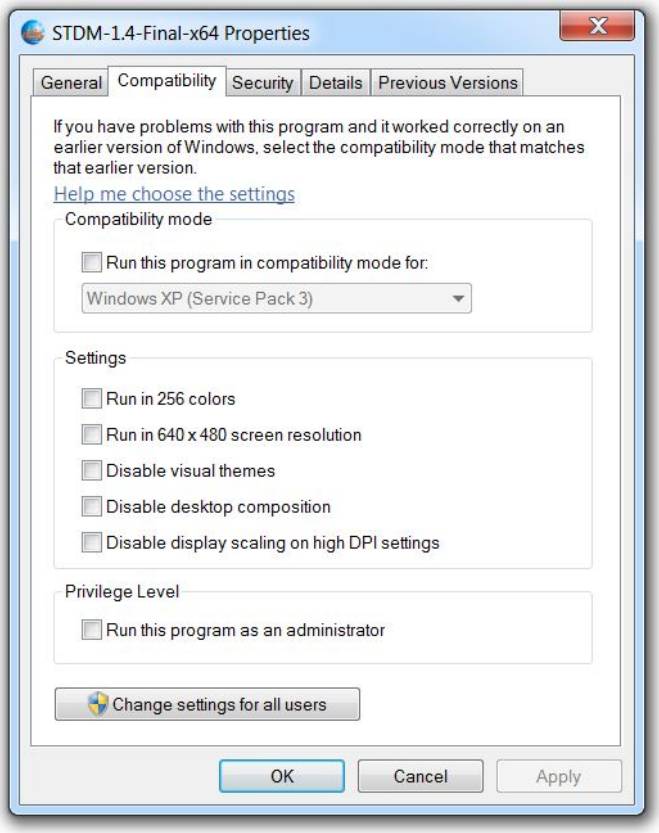


3. Inside the **Compatibility mode** box, check on the checkbox, **Run this program in compatibility mod for:** and select **Windows 7** as shown below**.**

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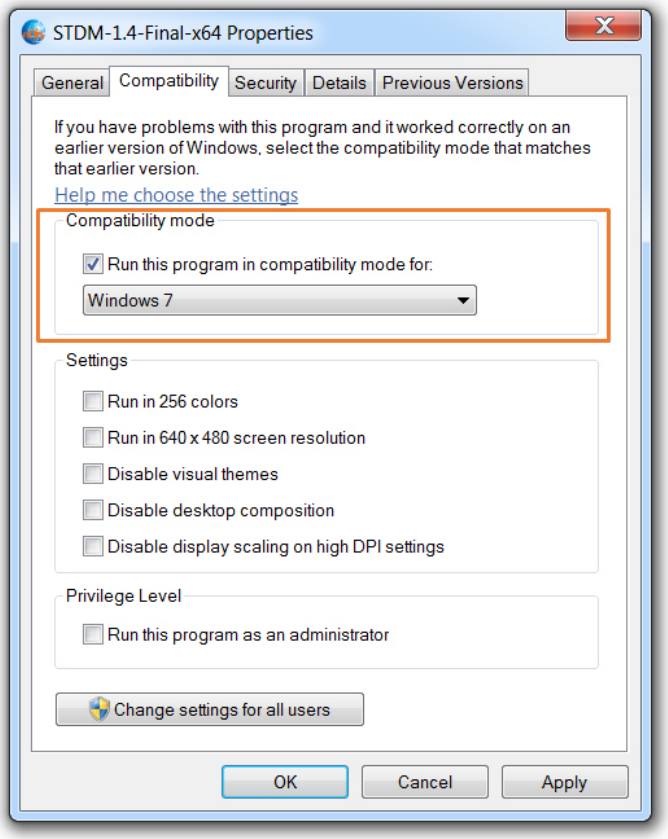


4. Locate the buttons at the bottom. Click on the **Apply** button and then click on the **OK** button.

5. Double click on the STDM bundled Installer to start the installation. It should now start installing normally as discussed in the topic, Using Bundled STDM Installer.

# Failure to Install on Windows Server

The failure could happen because of Windows Server password complexity requirement specified here.

Thus, to solve this issue from happening, when setting **postgres** user password, follow the requirements below, which is specified by Microsoft.

1. Passwords must not contain the user's entire **samAccountName** (Account Name) value or entire **displayName** (Full Name) value. Both checks are not case sensitive:

- The **samAccountName** is checked in its entirety only to determine whether it is part of the password. If the **samAccountName** is less than three characters long, this check is skipped.
- The **displayName** is parsed for delimiters: commas, periods, dashes or hyphens, underscores, spaces, pound signs, and tabs. If any of these delimiters are found, the **displayName** is split and all parsed sections (tokens) are confirmed not to be included in the password. Tokens that are less than three characters in length are ignored, and substrings of the tokens are not checked. For example, the name "Erin M. Hagens" is split

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into three tokens: "Erin," "M," and "Hagens." Because the second token is only one character long, it is ignored. Therefore, this user could not have a password that included either "erin" or "hagens" as a substring anywhere in the password.

2. Passwords must contain characters from three of the following five categories:

- Uppercase characters of European languages (A through Z, with diacritic marks, Greek and Cyrillic characters)
- Lowercase characters of European languages (a through z, sharp-s, with diacritic marks, Greek and Cyrillic characters)
- Base 10 digits (0 through 9)
- Non-alpha-numeric characters: ~!@#$%^&*_-+=`|\(){}[]:;"'<>,.?/
- Any Unicode character that is categorized as an alphabetic character but is not uppercase or lowercase. This includes Unicode characters from Asian languages.

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# Getting Started with STDM

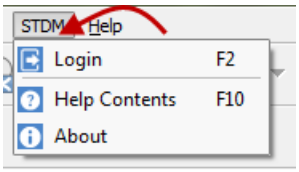
# User Interface

The user Interface for STDM is embedded within QGIS Main Window. To access STDM, QGIS Main window must be opened first.

STDM appears as follows in the QGIS Main Window.

### Default view

1. STDM menu has few menu items or buttons when you are not logged in. When you click on the menu from the QGIS Menu bar, the following menu items appear as shown in the image below.




You can also see the STDM toolbar inside QGIS Toolbars area as shown below.

**Login** - Prompts you to connect to the database and access full STDM items. A username and password is required to connect.

**Help Contents** - Provides access to STDM user manual.

**About** - Displays summary information about STDM and the currently installed STDM version.

### Full view

Login credentials are required to access full menu items especially if you are the administrator.

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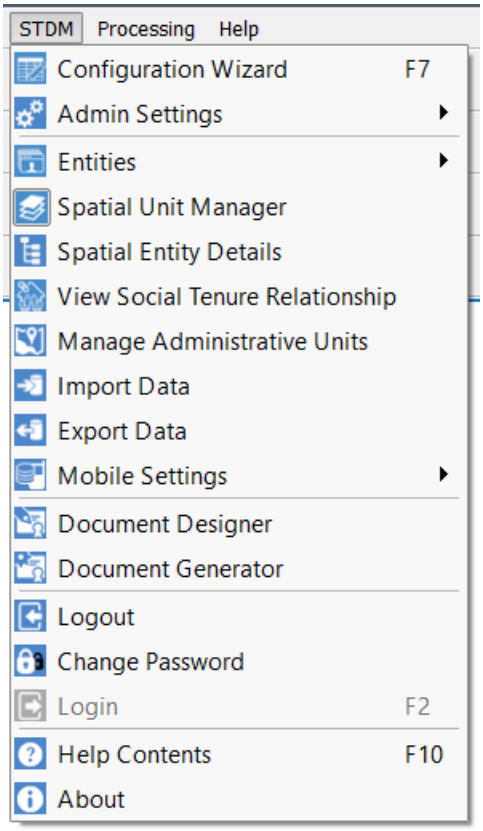
**STDM Menu Items**

The image below shows the different STDM menu items.




**STDM Toolbar Buttons**

**Current Profile Selection Drop Down** - The drop down menu enables you to change the current profile of STDM.

**Configuration Wizard** - Brings up the configuration wizard that allows you to set paths used by STDM and create and customize profiles with entities, columns, lookups and values. It also enables you to define Social Tenure Relationship, which can be later used to add related data. To launch the Configuration Wizard, you can also use the keyboard shortcut - F7.

**Admin Settings: Content Authorization** - allows you to grant access such as Create, View, Edit, Delete to other STDM functions.

**Admin Settings: Manage Users-Roles** - Brings up a dialog for you to create users and roles for accessing various STDM functionalities.

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**Admin Settings: Options** - Brings up a dialog that enables you to change the current/active profile, modify database properties, modify STDM folders, and upgrade STDM configuration manually.

**Entities Menu** - The entities menu is composed of entity tables with buttons of add, edit, and delete. You can add a new record using the add button and select and edit data using the form. It also enables you to access the New Social Tenure Relationship wizard to define the relationship between party and a spatial unit.

**Spatial Unit Manager** - Activates or deactivates the docked STDM spatial unit manager

**Spatial Entity Details** - Initializes the **Spatial Entity Details** that enables you to select a feature on the **Map Canvas** and view the details of the record and **Social Tenure Relationship** information if applicable.

**View Social Tenure Relationship** - Opens a window that allows you to define and view defined social tenure relations in the database.

**Manage Administrative Units** - Brings up the dialog that enables you to define geographic zones and administrative areas as per the project scope.

Access to these administrative areas is provided in the forms using foreign keys definitions.

**Import Data** - The wizard allows you to import maps or attribute data into specific module/ table in STDM database.

**Export Data** - The wizard allows you to export data from STDM database into several output formats.

**Mobile Data Management** - The menu enables you to access **Generate Mobile Form** and **Import Mobile Data** sub menus.

**Generate Mobile Form** - This enables you to generate mobile form from the current STDM profile.

**Import Mobile Data** - This enables you to import data from a mobile collected using GeoODK compliant app.

**Document Designer** - Brings up the QGIS Composer window with STDM toolbar items to allow you create document templates to be used when generating reporting and certificate formats.

**Document Generator** - Provides a dialog that allows you to generate report specific module reports from the designed templates.

**Logout** - Closes the current session and returns you to minimal view.

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**Change Password** - Enables you to change the password of the current user in the current session.

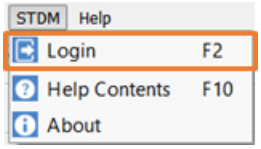
# Logging into STDM

**Note:** Make sure QGIS is started and running while STDM is visible in QGIS interface tool bar.

To start QGIS, look for this Icon and double click to run it. If you are using the custom build, downloaded from STDM website, click on the QGIS Desktop icon to start.

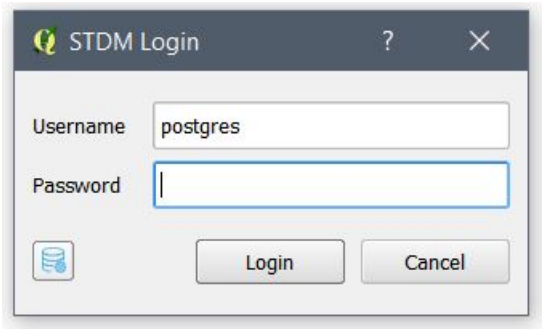
**1.** Click the login menu located under the STDM Menu or the login button located under the STDM toolbar, as highlighted below.

**Login menu:**




**Login button:**

A login dialog will pop up. You are required to provide login credentials using the default user (postgres) created during installation of the software.




a. **Username**: The *default username is* ***postgres without quotes.*** An administrator can create user accounts for new users.

b. **Password**: Provide the password used when installing STDM using the Bundled Installer or the one created by the system administrator.

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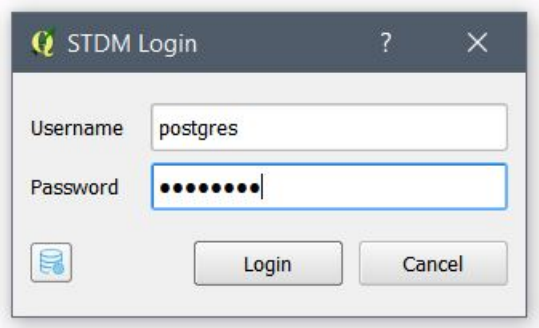
If you have installed the required software separately, use the password that you used to login to PostgreSQL database server.

**Note**: If you are intending to use STDM in a network environment, request the system administrator for username and passwords.




**2.** Then, click on **Login** button or hit the **Enter** button on the keyboard.

The cancel button closes the login dialog and stops the login process.

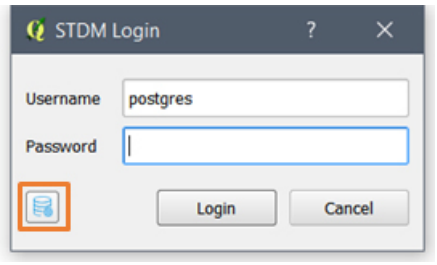
**3**.When successfully logged in, you will see the full STDM toolbar as shown below.

# Logging into a Different Database and Server

In addition to logging in to the default STDM database as shown above, you can always change the database settings to login to a different database. This is also possible in the Options module after login as discussed in the Options topic.

To change database properties, follow the steps below.

1. Click on the database icon located in the login dialog as highlighted below.




2. A PostgreSQL Database Connection dialog pops up as shown below.

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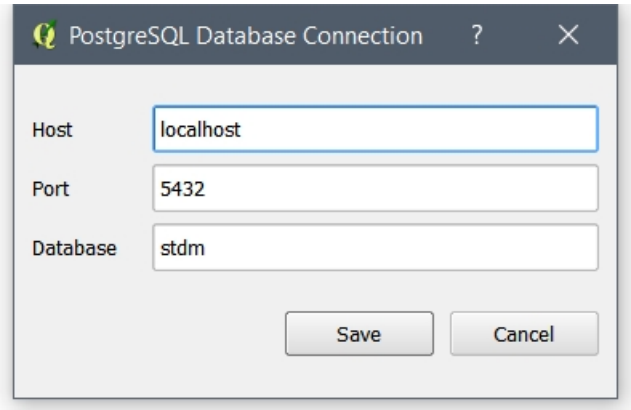


The PostgreSQL Database Connection loads with the currently used properties.

a. **Host** refers to the location of a computer that has hosted the database server (PostgreSQL). If the database server is installed in your own computer, you have to enter **localhost** as shown above. However, when PostereSQL that holds the database is installed in an office network, the IP address will be different from localhost. It could be a number like 192.168.0.23 or any other number with such format as specified by the system administrator. This is relevant when STDM is installed for governmental or non-governmental organizations with a centralized database server.

b. **Port** refers to an endpoint of communication for the database server (postgreSQL). To access the database from STDM, we need to know its port. The most common port values for PostgreSQL are **5432, 5433,** or any other port as specified during installation.

c. **Database** refers to a storage location in which the entire data of STDM is stored. By default, during installation, it is set as **stdm**. You can enter any other database that you want to connect to after installation using PostgreSQL administration software called pgAdmin III. If you want to use your own database, make sure the PostGIS extension is installed and added to the database that STDM uses. Otherwise, STDM cannot run.

3. After making changes to the database properties, click on the **Save** button.

If you do not want your changes to be saved, press the Cancel button. Clicking on both buttons results in the closing of the dialog.

4. You can now login to the new database that you have specified.

# First Time Login

When you login to STDM for the first time you will see the following.

1. A request to agree with STDM Terms and Conditions.

2. A request to run the Configuration Wizard with a dialog shown below.

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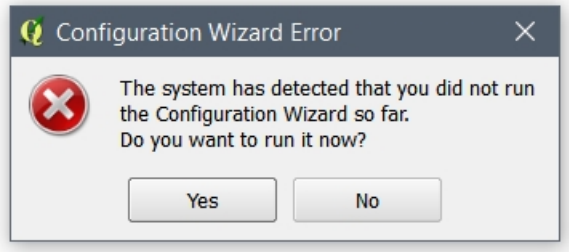



The Configuration Wizard enables you to set STDM used folders, create profiles, create database tables for entities, columns, lookup tables, and Social Tenure Relationship that are required by most STDM modules. The Configuration Wizard is discussed under Creating and Customizing STDM Profiles topic starting with Getting Started with the Configuration Wizard topic.

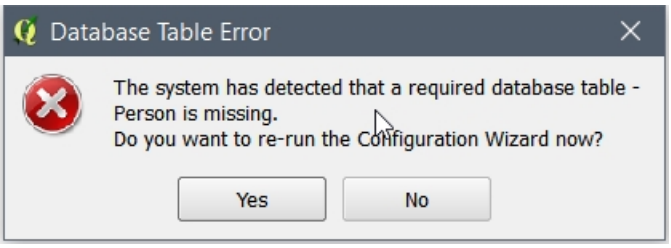
You can also use the default profiles of STDM. In this case, you just need to click on the **Next** button of the Configuration Wizard until you reach the last page of the wizard. Then click on the Finish button to create the database tables and save the settings.

It is recommended to click on the **Yes** button that will start the Configuration Wizard.

If you choose not to run the Configuration Wizard by clicking on the **No** button, you cannot access most of the modules as they rely on the database tables in STDM.

**Note:** This is not applicable for users migrating from older versions of STDM.

3. If you have no database table for a module you are trying to open, a Database Table Error that looks like the one below is shown. The missing table specified depends on the module you are trying to launch.




To fix this, you can click on the **Yes** button to start the Configuration Wizard.

# Logging out of STDM

To log out of the QGIS wizard, you must be logged in. Click the logout button . This immediately logs you out of the STDM system and the STDM command buttons disappears.

From here the log in button will be available for a later login.

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# Working with Sample Data

The sample data is provided during the STDM installation. It is saved in **C:/Users/your-user/.stdm/SampleData** folder. Replace **your-user** with the currently logged in PC User. The sample data is used for examples in this documentation.

This sample data contains several forms of data;

1. Georeferenced map data (basemap/Raster data)

2. Persons data in *csv format (in excel sheets).

3. Shapefiles (Vector data)

4. GPX files (GPS points data)

To use the sample data, make sure QGIS is started and running while STDM is visible in QGIS interface tool bar.

# Resetting 'postgres' Password in Local Server

**Note:** This will only work if the user has access to the localhost machine. The password cannot be reset for a remote server running PostgreSQL.

**Synopsis:** The steps below will temporarily disable password authentication which will then enable you to set a new password before finally re-enabling password authentication.

1. Browse to the location of the PostgreSQL installation i.e. **C:\Program Files\PostgreSQL\9.x\data** and locate the file named **pg_hba.conf**. Open this file using any text editor such as Notepad or preferably, Notepad ++ (click here to download). If you are using Notepad, make sure you have chosen **All Files** in the file type selection as shown below:

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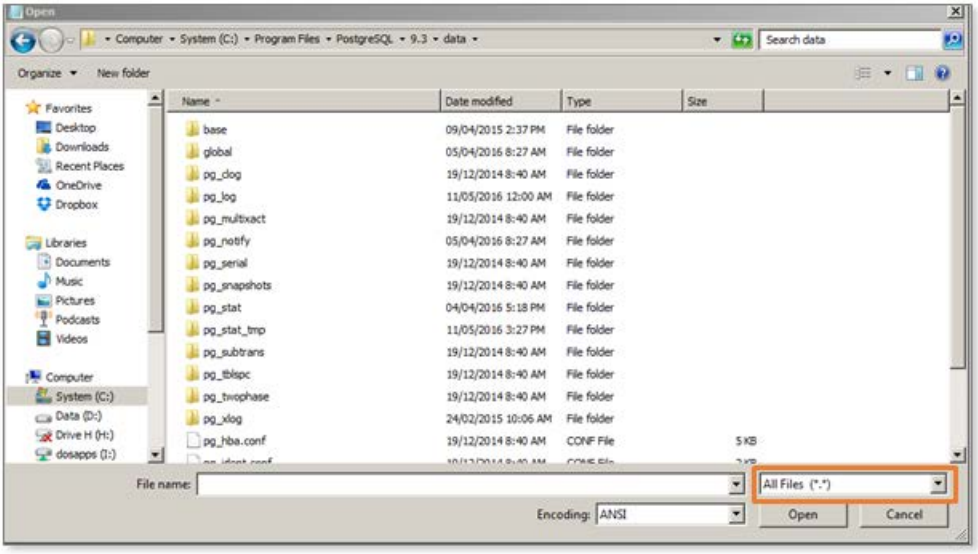


2. Once the file is open, scroll to the bottom of the file and locate the following lines:

```
# TYPE  DATABASE        USER            ADDRESS                 METHOD

# IPv4 local connections:

host    all             all             127.0.0.1/32            md5

# IPv6 local connections:

host    all             all             ::1/128                 md5
```

3. Change the *md5* text (as highlighted in red above) to *trust*. The updated text should now look like as shown below. Save changes in the file.

```
# TYPE  DATABASE        USER            ADDRESS                 METHOD
# IPv4 local connections:
host    all             all             127.0.0.1/32            trust
# IPv6 local connections:

host    all             all             ::1/128                 trust
```

4. In order for the new changes to take effect, the PostgreSQL Windows service needs to be restarted. To load the window showing all services running in the computer, click **Start** then

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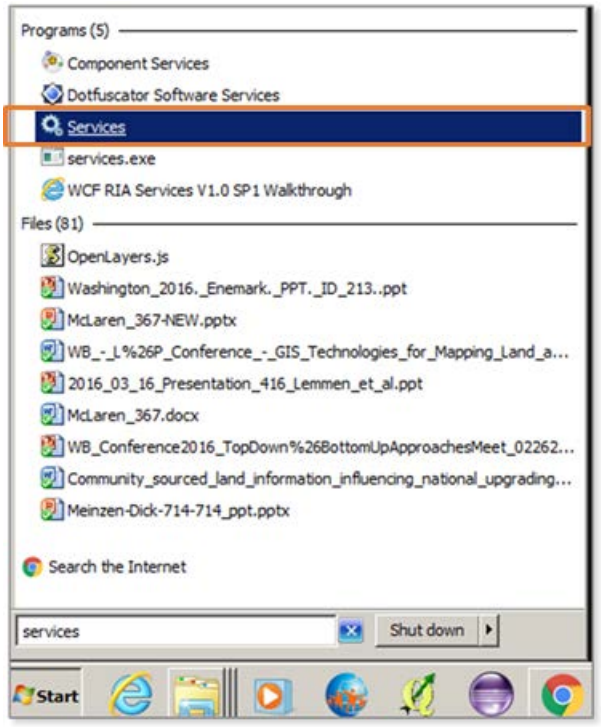
type ‘services’ in the search textbox. In the resulting list of matching items, click Services as shown below:




5. In the Services window, locate the PostgreSQL service which is usually named **postgresql-x64-9.x- PostgreSQL Server 9.x**. Right click and select **Restart** so that the new changes can be applied.

6. Click Start > PostgreSQL 9.x > pgAdmin III to start the PostgreSQL database manager. Double click on the node, named ***PostgreSQL 9.x (localhost:54xx)***, under *Servers* group; a password window will appear. Since we have disabled the need for a password, click on the **OK** button and the **postgres** account will be logged in as shown in the image below.

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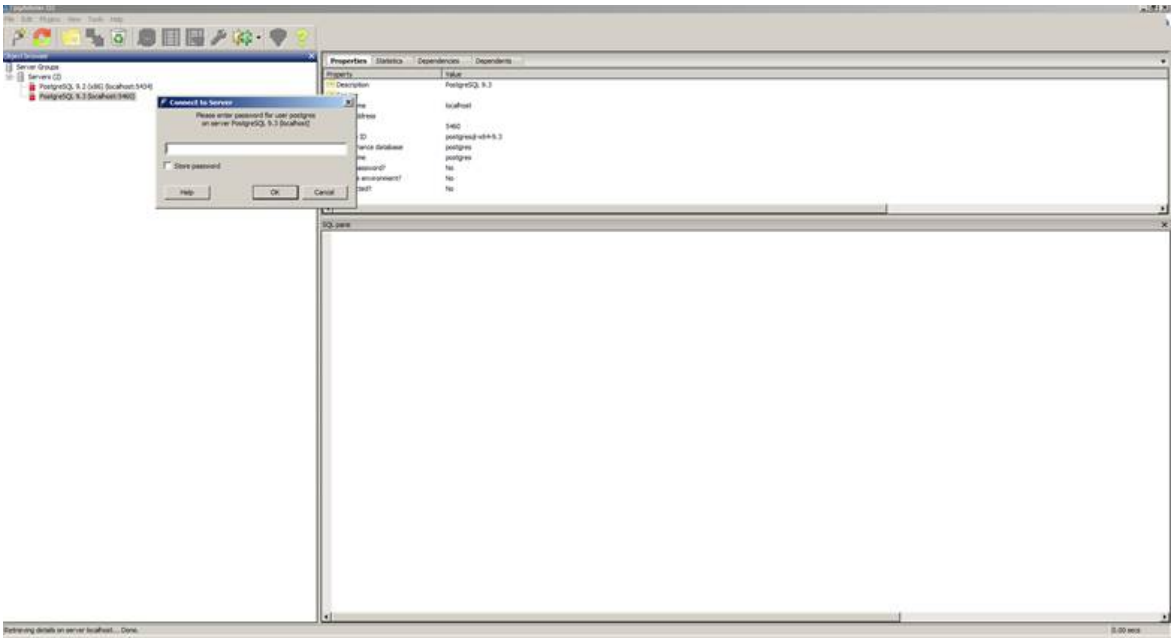
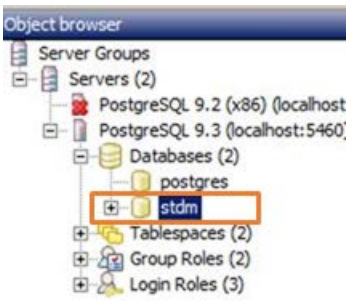


7. Once logged in, click on the **Database** node then select any database under it.




8. The next step is to run a query that sets the new passwords for the postgres user account. With the database node selected (for example, **stdm** in the step above), click on the 'Execute arbitrary SQL queries' icon in the toolbar.

   In the resulting SQL Editor window, type the following command:

   **ALTER USER postgres with password 'new-password';**

   In place of **new-password**, enter your desired password.

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Do not forget to enclose the new password in single quotes.

While still in the SQL Editor window, click the 'Execute query' icon in the toolbar. The query should run successfully with no errors.

9. Close the SQL Editor, choose No when requested to save changes.

10. Close pgAdmin III.

11. We need to re-enable password authentication. This is done by restoring the initial authentication settings. In this case, repeat step 1 above to open **pg_hba.conf**.

12. Scroll to the bottom and replace the following section with the original text i.e. the new text should read:

```
# TYPE  DATABASE    USER        ADDRESS           METHOD
# IPv4 local connections:
host    all         all         127.0.0.1/32      md5

# IPv6 local connections:

host    all         all         ::1/128           md5
```

Save changes in the file.

13. Follow steps 4. and 5. above to restart the service.

14. Restart QGIS and try login into STDM using the following credentials:

Username: **postgres**

Password: ***[new password set in step 8. above]***

---

*x* refers to the minor version number of PostgreSQL i.e. 9.1, 9.2, 9.3, 9.4 or 9.5

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# Creating and Customizing Data Profiles

## Getting Started with the Configuration Wizard

Creation and management of profiles is done through the profile configuration wizard. The wizard has several pages that allow you to configure and manage your data profiles.

To access the wizard, click the Configuration Wizard icon on the STDM plugin toolbar as shown below.

As seen in the image below, each configuration process on the wizard is represented by a single page with an interface that is divided into three sections. These sections are:

- Upper section - Step/page description
- Middle section - Profile setup section
- Bottom section - Navigation section

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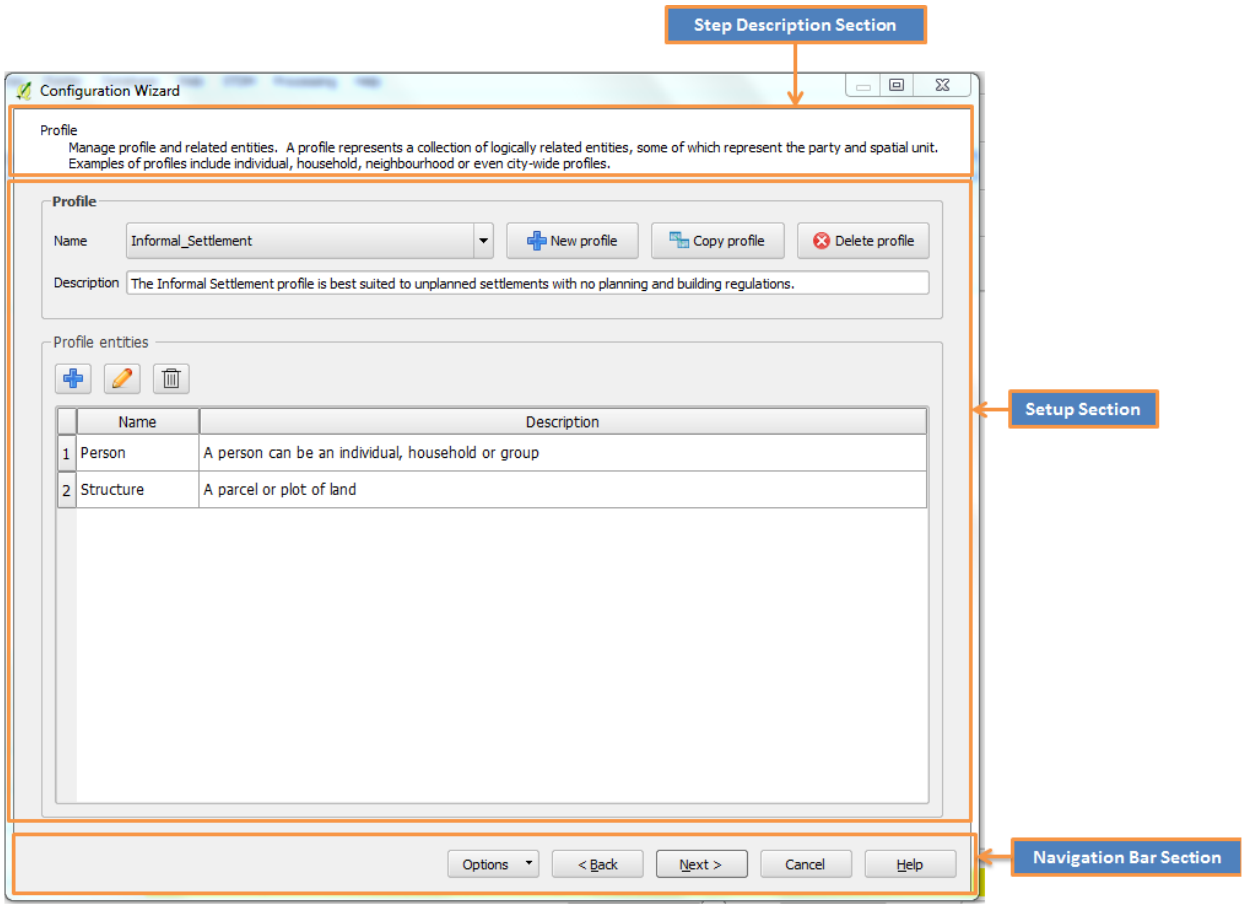


To access a step on the wizard, use the buttons on the navigation bar.

# Navigation buttons

**Back button** - Allows you to navigate backward through the wizard steps. The button takes you one step backward from your current step. This button remains disabled, if you are in the first page of wizard.

**Next button** - Allows you to navigate forward through the wizard steps. The button takes you one step forward from your current step. This button remains disabled, if you are in the last page of the wizard.

**Cancel button** - Used to terminate the configuration process and exit the wizard dialog.

**Finish button** - This button will appear when you get to the final step of the wizard. The button allows you to save your profile configuration settings into the database.

**Close button** - Allows you to close and exit the wizard.

**Help button** - Used to access the help manual.

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# Creating and Saving of settings

Every time you open the configuration wizard, it will read and load previously saved configuration settings from a file called **configuration.stc**. The configuration wizard will now be in an *edit mode.* In this mode you can create, edit or delete items - profiles, entities, columns or lookups.

**Note:** It is important to know, during edit mode any changes (create, edit or delete) you do on the wizard will NOT be saved in the database or in the configuration file until the Finish button is clicked at the last step of the configuration wizard.

In total STDM wizard has five steps, each step represents a different configuration section for the profile. The following section of the document will show details of each step.

# Creating Draft Configuration

Starting from STDM version 1.7, a new feature was added allowing you to save your current configuration as a draft copy.

If you are customizing a detailed profile that might take you hours or days to finish, you can pause the process, save your work as draft then continue later without losing data. In the previous versions, for you to save your work, you had to complete the customization and commit your work to the database by clicking the **Finish** button. The down side of committing to the database restricts you from most of the customization options such as changing entity, column, and lookup names, changing **Social Tenure Relationship** entities, changing column data type, etc. These restrictions are no longer applicable when you save a newly created configuration or copy profile as draft.

There are three ways a draft configuration can be created during the process of customizing the configuration.

- Manual draft creation.
- When you are in the middle of customization, then you click Cancel button, you will get a popup to save the changes as a draft configuration.
- When you create a copy profile, a draft configuration is automatically created for you.

# Creating Draft Configuration Manually

To create a draft configuration manually, follow the steps below.

1. Click the **Configuration Wizard** icon on the STDM plugin menu to open the **Configuration Wizard** window.

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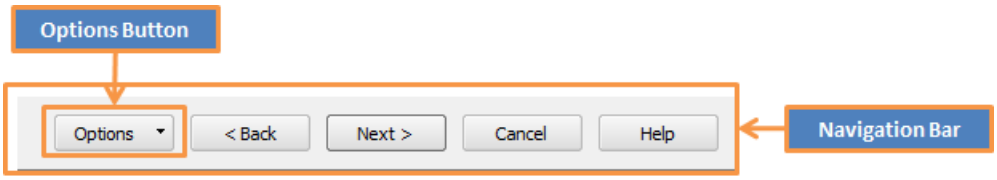
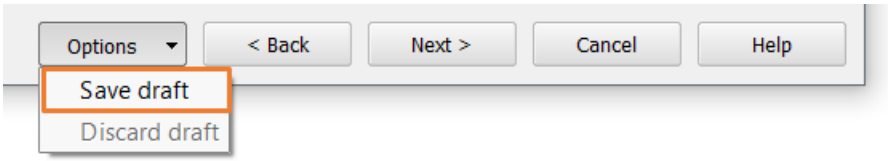
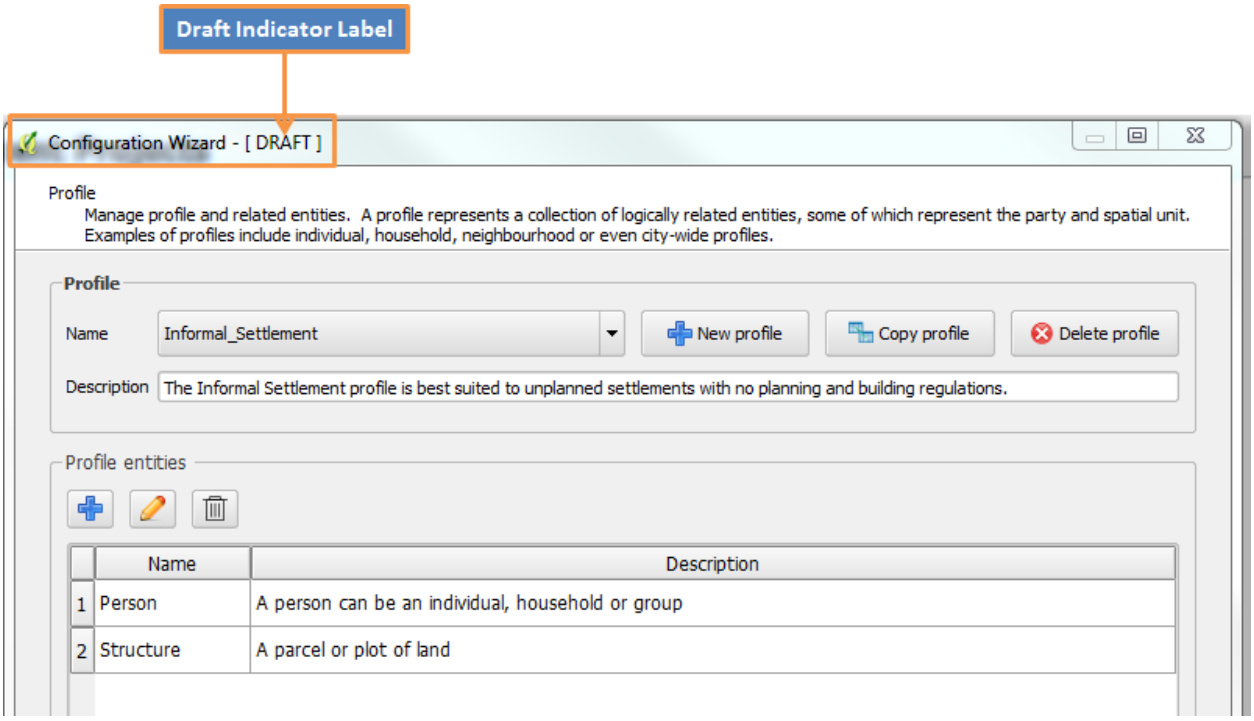
2. When the Configuration Wizard window open, click the **Options** button on the Navigation bar to load the draft saving menu option as shown in the image below.




3. To save your configuration as draft, click on the **Save draft** menu as shown in the image below.




4. A draft configuration will be created and the title bar of the **Configuration Wizard** will indicate a label **'[DRAFT]'** as shown in the image below.




5. You can now continue with the customization. If you cancel the process at any stage, all the work you've done will automatically be saved as a draft copy.

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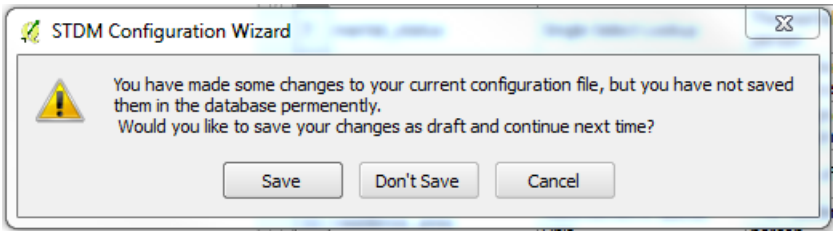
# Creating a Draft Configuration by Cancelling the Configuration Process

The second way of creating a draft copy of the configuration happens when you abort the customization process by clicking on the **Cancel** button located at the bottom of the **Configuration Wizard**. To create a draft configuration this way, follow the steps below.

1. Click the **Configuration Wizard** icon on the STDM plugin menu or toolbar to open the **Configuration Wizard** window.

2. Customize the configuration.

3. To exit the configuration wizard, click the **Cancel** button. A warning message prompting you to save your work as draft will popup as shown in the image below.




4. To save a draft and close the wizard, click the **Save** button, but to abort, click the **Don't Save** button in the message box, all the changes will be lost. To abort the cancellation process and go back to the configuration wizard, click the **Cancel** button.

5. The draft configuration will be saved and will be loaded automatically next time you open the wizard.

# Creating Draft by Copying a Profile

The third options of creating a draft configuration happens when you make a copy of a profile. Once you make a copy of a profile, a draft configuration is created and the copy is created in there. To see this process in action, see the section Copying Profile.

# Deleting a Draft Configuration

## Manual Delete

To delete a draft configuration, follow the steps below.

1. Click the **Configuration Wizard** icon on the STDM plugin menu to open the **Configuration Wizard** window as highlighted in the image below.

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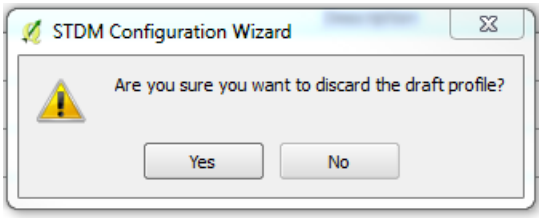
2. If a draft configuration exists, the configuration wizard will load it and indicate that on the title bar with a label **'[DRAFT]'**.

3. Click **Options** button on the Navigation bar to reveal the draft menu options.

4. To delete the draft, click the **Discard** option.

5. A warning message box will popup as shown below.




6. To discard the draft configuration, click **Yes** button. To abort the discarding process, click **No** button.

7. If you chose **Yes** in the previous step, the draft will be deleted and the **'DRAFT'** label on the wizard title bar will be cleared.

## Automatic Draft Deletion

The second way a draft configuration is discarded is when you customize your configuration up to the end. When you click on the **Finish** button in the **Configuration Wizard**, all the data is saved in the database, and if this was a draft configuration, then it will automatically be discarded. The assumption here is that you have successfully finished with your customization and successfully committed all your work permanently to the database, hence no need to keep a draft copy.

# Configuring Directory Settings

## Modifying Supporting Document Path

Supporting document path is the location for storing documents that supports the Social Tenure Relationship. Examples of supporting documents are scanned certificates, pictures in different

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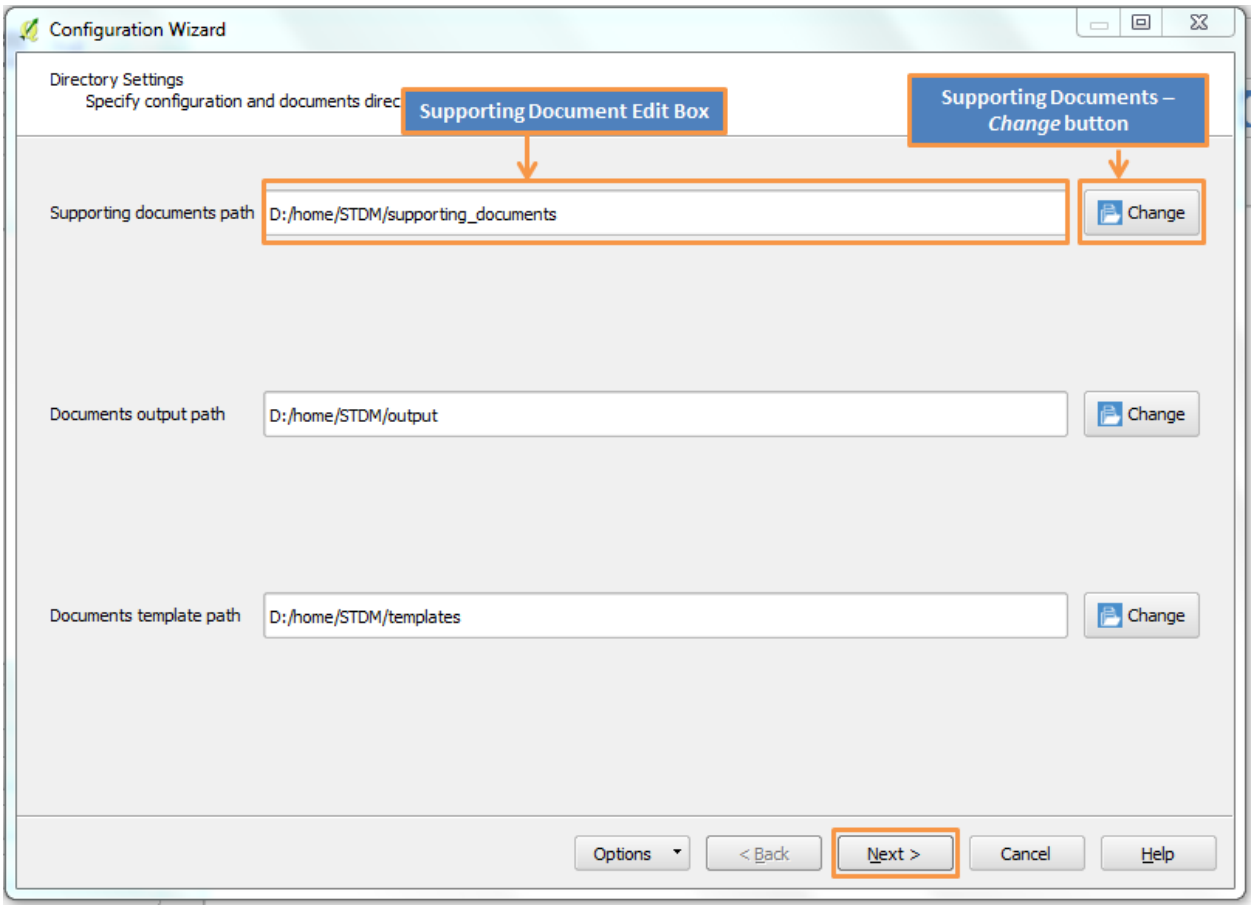
formats (PNG, JPG or JPEG) or even PDF documents. To modify the default supporting document path follow the steps below.

1. Click the Configuration wizard icon on the STDM plugin menu to open the Configuration Wizard window.

2. On the **Directory Settings** page of the Configuration Wizard, click the **Change** button next to the **Supporting Documents Edit** Box.




3. A file **Select folder** dialog will open allowing you to choose a new location for saving your files.

4. Locate the folder you would like to use for storing Supporting Documents.

5. Click **Select Folder** button to set new location as shown below.

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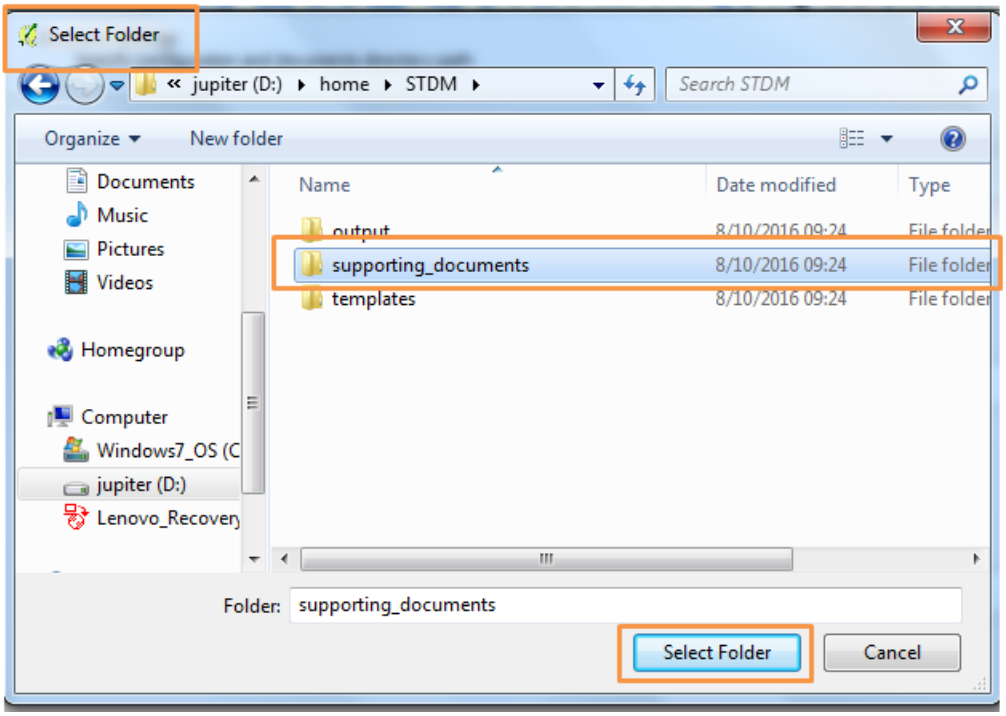


6. The new folder path should now show on the **Supporting Document** textbox.

7. You can configure the rest of the directory settings **(Output and Template)** paths or click **Next** to proceed with saving the modification.

# Modifying Documents Output Path

Output path is the storage location for documents that are generated when you generate documents using the STDM Document Generator. Generated documents can be of different formats, but the most commonly used formats are PNG, JPG, JPEG or PDF.

To modify this path on the configuration wizard, follow the steps below.

1. Click the Configuration wizard icon on the STDM plugin menu to open the Configuration Wizard window.

2. On the **Directory Settings** page of the Configuration Wizard, click the **Change** button next to the **Output Path Edit Box**.

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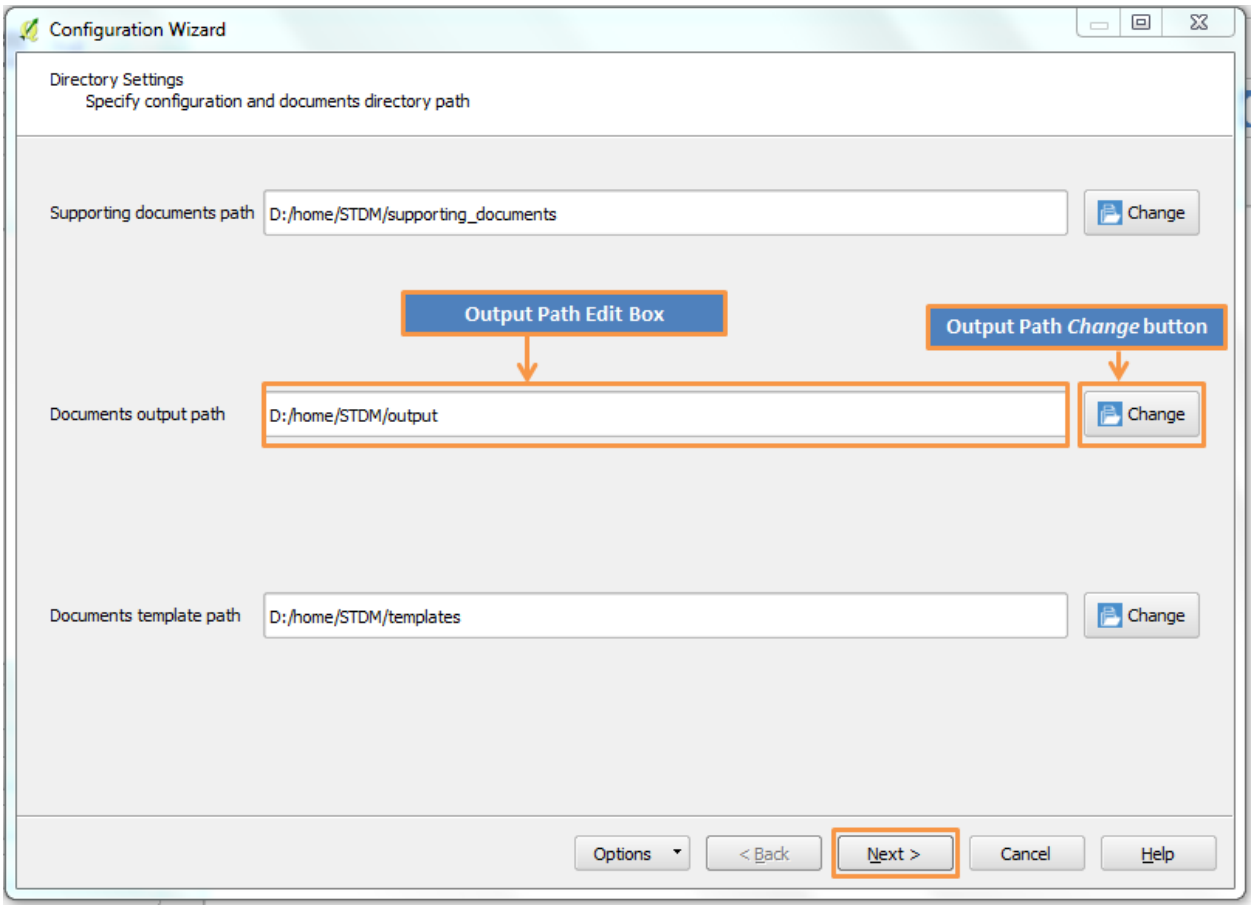


3. A file **Select folder** dialog will open allowing you to choose a new location for saving your files.

4. Locate the folder you would like to use for storing supporting documents.

5. Click **Select Folder** button to set new location as shown in the image below.

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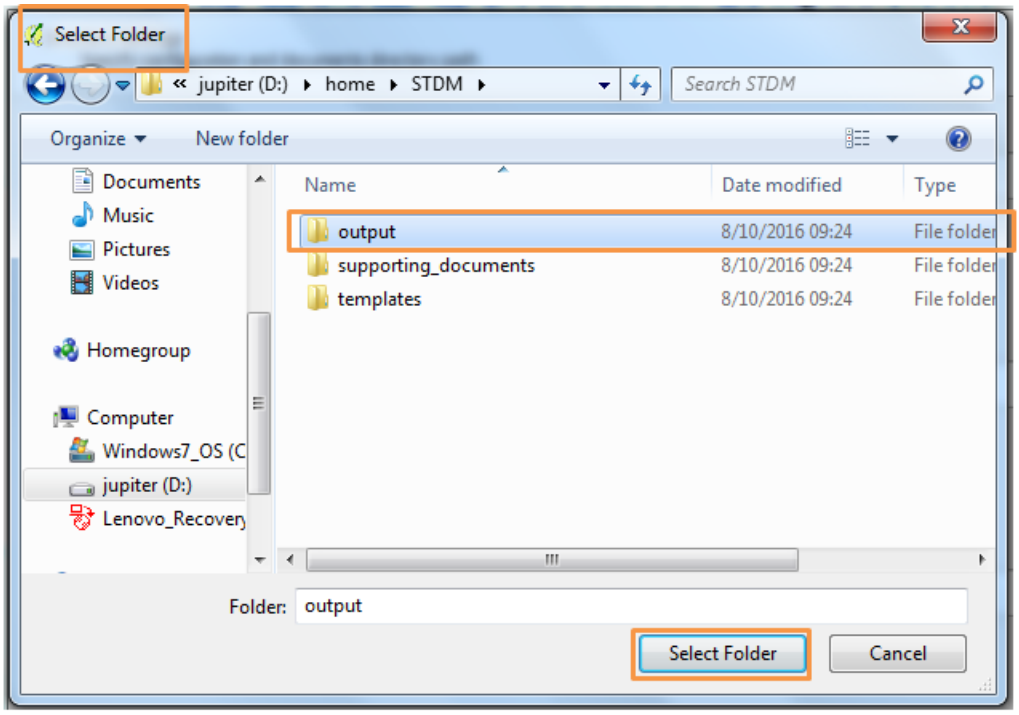


6. The new folder path should now show on the **Output Document** textbox as shown above.

7. You can configure the rest of the directory settings **(Supporting Documents and Template)** paths or click **Next** to proceed to update the settings.

# Modifying Template Path

A **Template** is a file type that specifies the layout and data settings required for producing a report; such reports include certificates, tabular reports,, parcel information cards etc. In STDM, you create a template using the Document Designer. Once you design and save the templates, they are automatically stored in **Template path**, defined in the configuration wizard under **Directory Settings**.

To modify the default **Template Path,** follow the steps below.

1. Click the Configuration wizard icon on the STDM plugin menu to open the Configuration Wizard window.

2. In the **Directory Settings** page of the Configuration Wizard, click the **Change** button next to the **Template Path** textbox.

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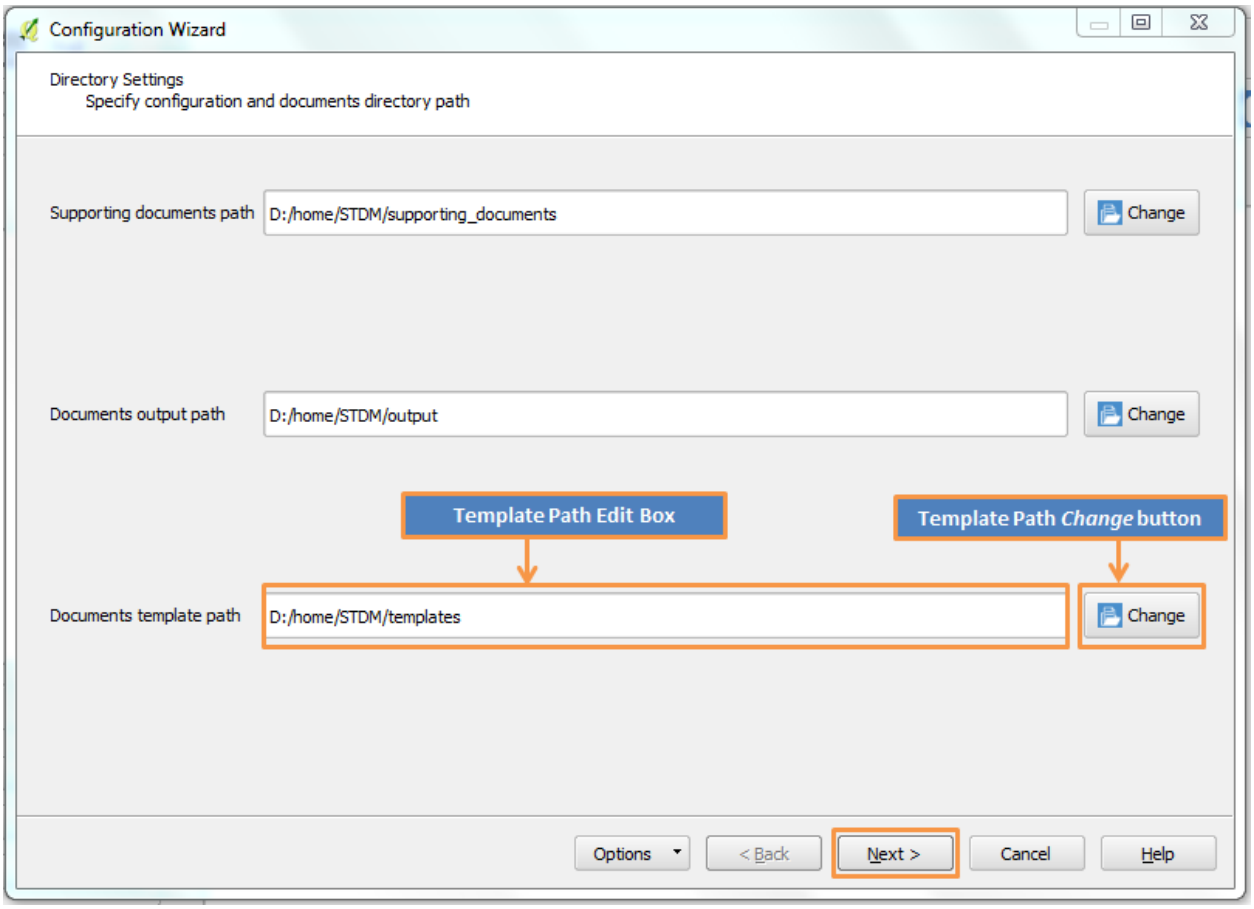


3. A file selection folder dialog will open, allowing you to choose a new location for saving your files.

4. Locate the folder you would like to use for **Template Documents**.

5. Click **Select Folder** button to set new location.

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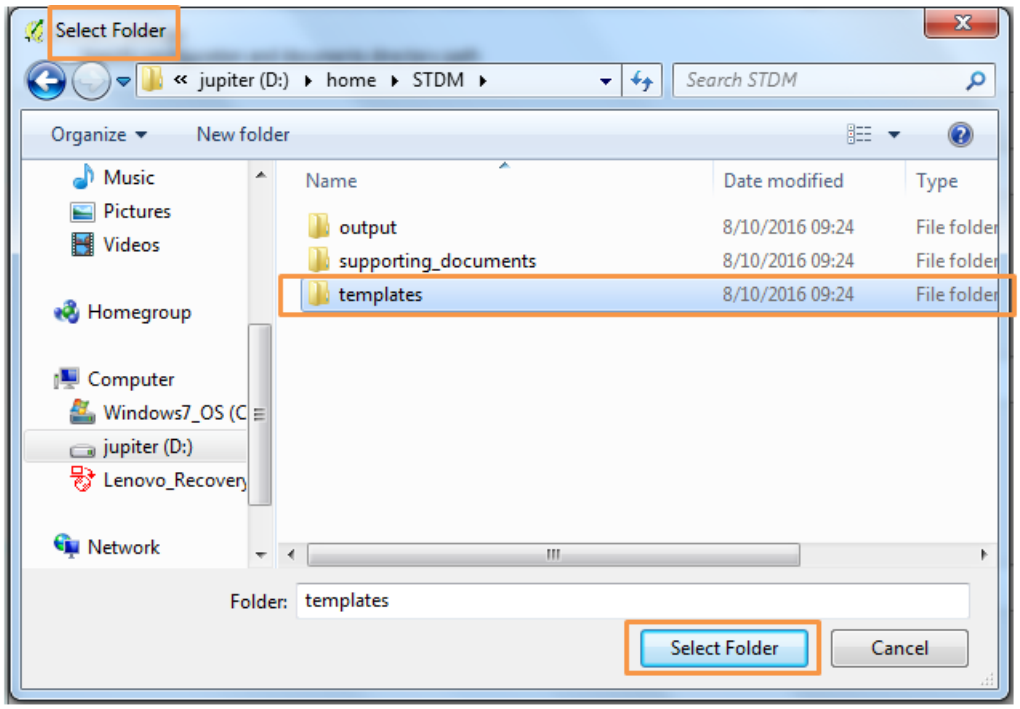


6. The new folder path should now show on the **Template Document Edit Box** as shown above.

7. You can configure the rest of the directory settings **(Output or Supporting Documents)** paths or click **Next** to proceed with saving the modification.

# Configuring Profiles

## Creating Profiles

A profile represents a collection of logically related entities, some of which represent the party and spatial unit. STDM ships with three pre-configured sample profiles. These are:

Informal Settlement, Local government and Rural Agriculture. The image below shows how the profile page appears as shown in the image below.

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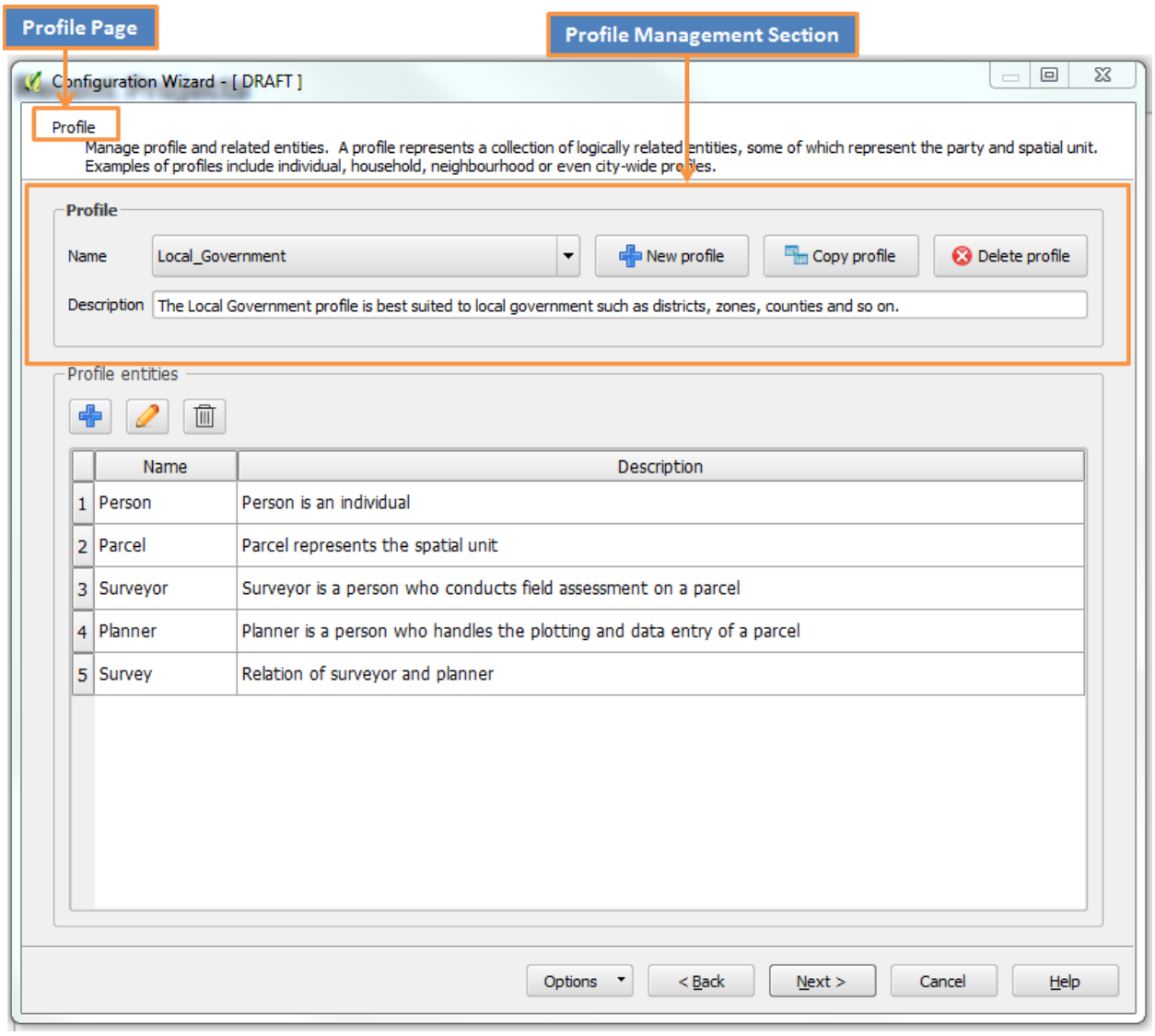
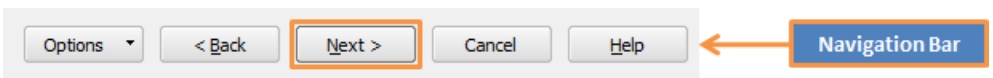



To create a new profile, follow the steps below.

1. Click the **Configuration Wizard** icon on the STDM plugin menu to open the **Configuration Wizard** window.

2. When **the Configuration Wizard** window opens, click the **Next** button on the wizard Navigation bar.

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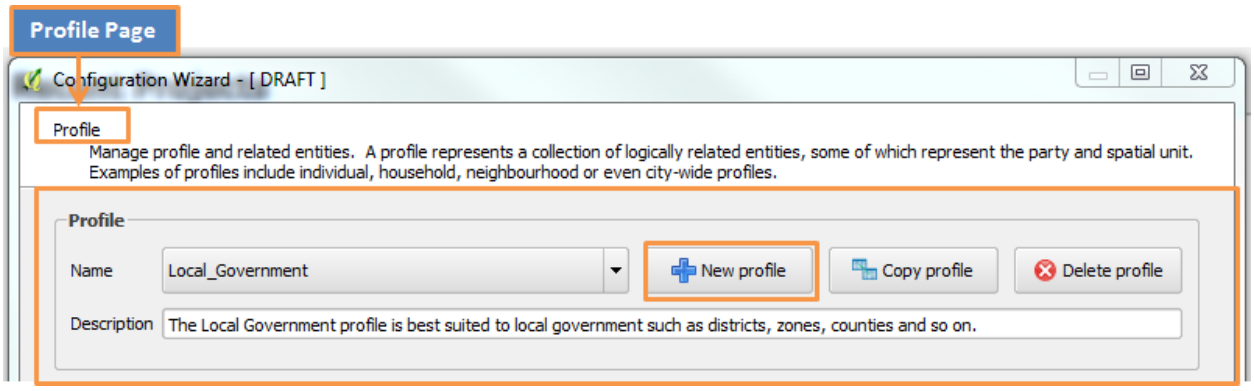
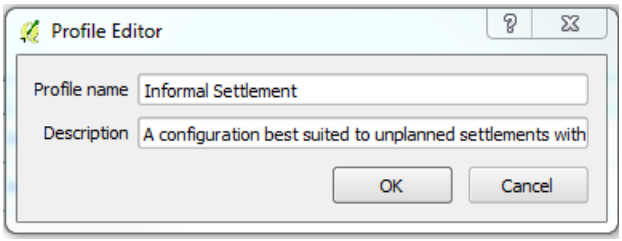
3. When you get to the **Profile** page, click the **New Profile** button on the **Profile Management Section** as shown in the image below.




4. A **Profile Editor** window will open to allow you enter details of the new profile as shown in the image below.




5. On the **Profile Editor** window, enter the following details.

- **Profile name** - This is a mandatory field that represents the name of the profile you want to create. For example, **Local Government**.
- **Description** - A brief narrative of what your profile represents.

6. When you are done, click the **OK** button to save your work and close the **Profile Editor** window. If you wish to close the **Profile Editor** without saving any details, click the **Cancel** button.

7. If the profile was saved correctly it should appear on the **Profile** *Select* dropdown.

**Note:** The **Profile Editor** window will not allow you to save without entering the **Profile name**.

# Copying Profile

Using STDM version 1.7, you can create a new profile from an existing one via the copy functionality. Not only is this feature a time saver, it helps you customize new profiles from the existing ones.

Copying a profile gives you the ability to:

- change the profile, entities, columns, and lookup name

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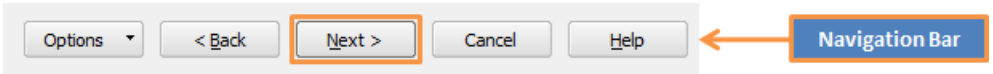
- delete entities, columns, and lookups
- re-define **Social Tenure Relationship**
- change column data type,
- enable and disable supporting documents from an **Entity**.

To make a copy of a profile, follow the steps below.

1. Click the **Configuration Wizard** icon on the STDM plugin menu to open the **Configuration Wizard** window as shown in the image below.

2. When **the Configuration Wizard** window opens, click the **Next** button on the wizard Navigation bar as shown in the image below.




3. When you get to the **Profile** page, select the profile of your choice then click the **Copy Profile** button on the **Profile Management Section** as shown in the image below.

4. A **Copy Profile** dialog window will open similar to the one shown below.

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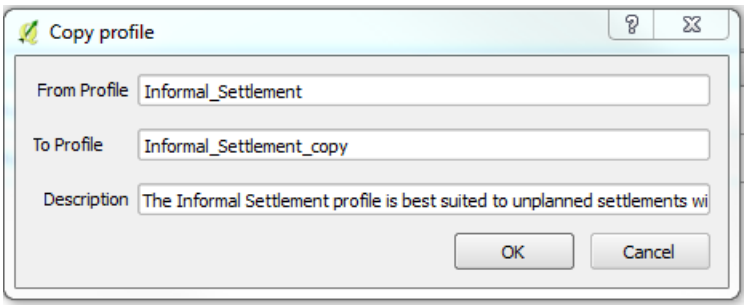
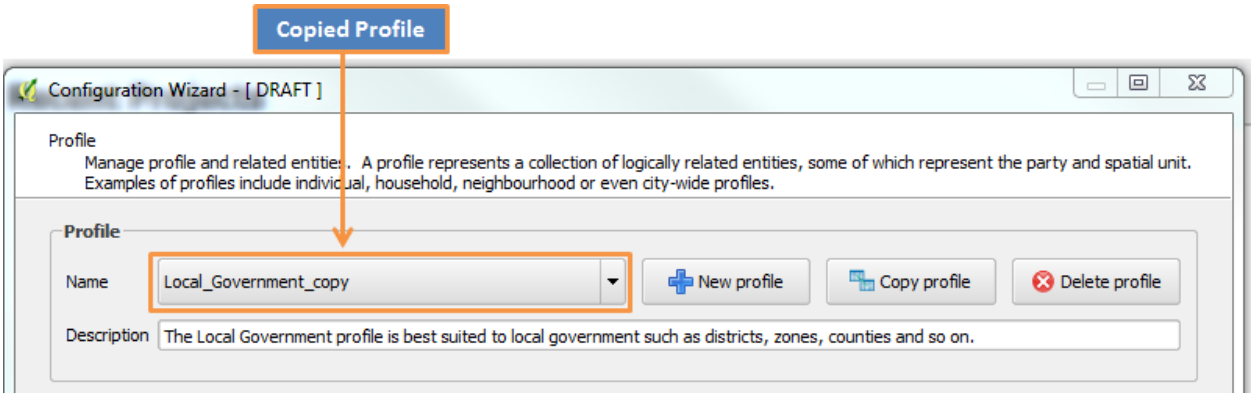



5. On the edit box titled **To Profile**, enter the name of the copy profile you want to create. By default the **To Profile** will be pre-populated with the name of the profile you want to copy from appended with the word **'_copy'**.

6. On the edit box titled **Description,** enter the description of the new profile.

7. Click on the **OK** button to create a copy profile, however, if you wish to abort the copy process click the **Cancel** button.

8. If you have clicked on the **OK** button in the previous section, a copy profile will be created, and will now be available on the Profile selection drop down as shown in the image below.




8. Now you can customize the copy profile.

# Customising Profiles

With the new version of STDM, you can customize your existing profiles at any time. The process of adding, editing or deleting items related to the profile is what is known as profile customisation. Once you save your customisation, this changes will reflect both logically on the profile and also at the database level.

To customize your profile, follow the steps and the links below.

1. Click the **Configuration Wizard** icon on the STDM plugin menu or toolbar to open the **Configuration Wizard** window.

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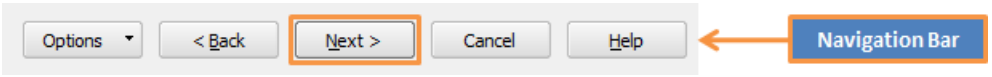
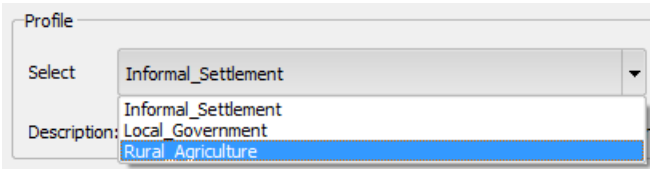
2. When the **Configuration Wizard** window opens, click the **Next** button on the wizard Navigation bar.




3. When you get to the **Profile** page, click the **Profile Select** dropdown button on the Profile Management Section as shown below.




4. Select the profile you would like to customize. Once selected, contents related to that entity are loaded and displayed in various pages of the configuration wizard.

5. To perform customisation of various items follow any of the links below.

a. Customize profile by adding entities - Creating Entities.

b. Customize profile by editing entities - Editing Entities

c. Customize profile by deleting entities - Deleting Entities

d. Customize profile by creating Lookups - Creating Lookups

e. Customize profile by editing Lookups - Editing Lookups

f. Customize profile by deleting Lookups - Deleting Lookups

g. Customize profile by enabling many parties to a single spatial unit - Setting One or More Parties per Spatial Unit

6. When you are done with any of the customisation, click **Next** on the **Navigation Bar** to access the last Page and save your changes.

**Important Notes:** Customizing of Social Tenure Relationship is NOT allowed once it has been defined and saved in the database.

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# Deleting Profiles

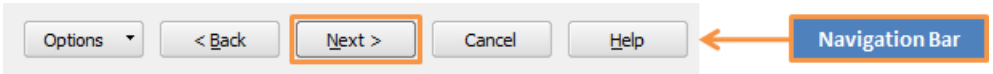
Deleting profiles involves removing all the items that represent a profile both logically and physically on the database. Logically these items include, **Entities, Lookups, Lookup Values** and **Social Tenure Relationship** definitions. At the database level, these items are represented as **Tables** and **Views**.

Great care should be taken before deleting a profile as it is a non-reversible process. Once a profile is deleted you cannot access the profile and data stored on the profile tables.

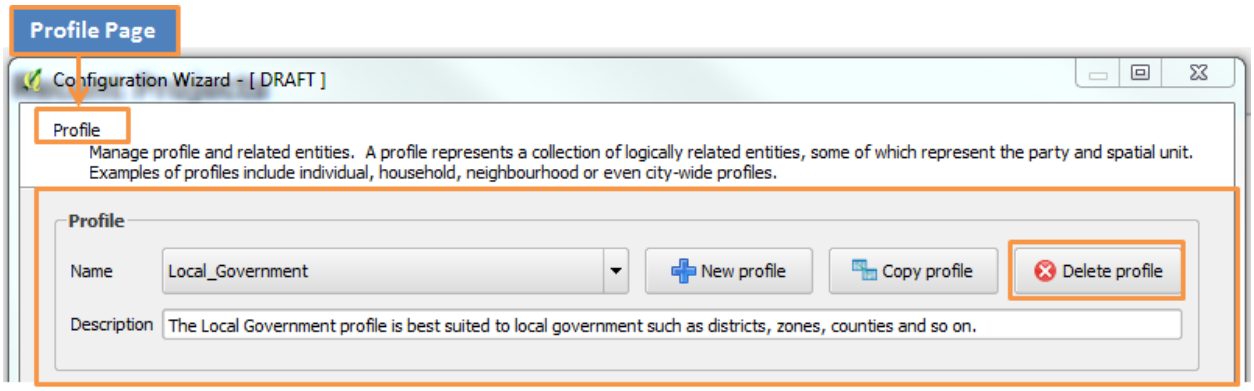
To delete a profile, follow the steps below.

1. Click the **Configuration Wizard** icon on the STDM plugin menu to open the **Configuration Wizard** window.

2. When the **Configuration Wizard** window opens, click the **Next** button on the wizard Navigation bar.




3. When you get to the **Profile** page, click the **Delete Profile** button on the **Profile Management Section**.




4. A warning dialog window, (see image below) will popup reminding you of the consequences.

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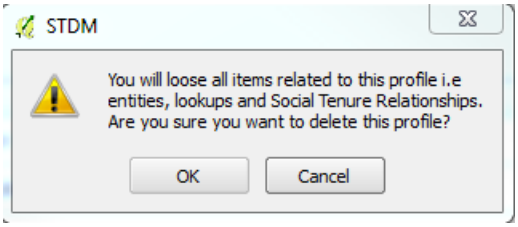


5. If you wish to delete and close the warning dialog window, click the **OK** button. However, to abort the delete process and close the warning dialog window, click the **Cancel** button.

6. If the profile was deleted, it will be removed from the list in the **Select Profile** drop down.

# Configuring Entities

## Creating Entities

An entity represents a unit of storage within a profile. It represents a real-world object that can easily be identified e.g. person, farmer, plot or structure. In the profile, these real-world objects are logically represented as entities, while at the database level, they are represented as tables or table views.

To create a new entity, follow the steps below.

1. Click the **Configuration Wizard** icon on the STDM plugin menu to open the **Configuration Wizard** window.

2. When the **Configuration Wizard** window opens, click the **Next** button on the wizard **Navigation Bar (once)** to access the **Profile** Page.

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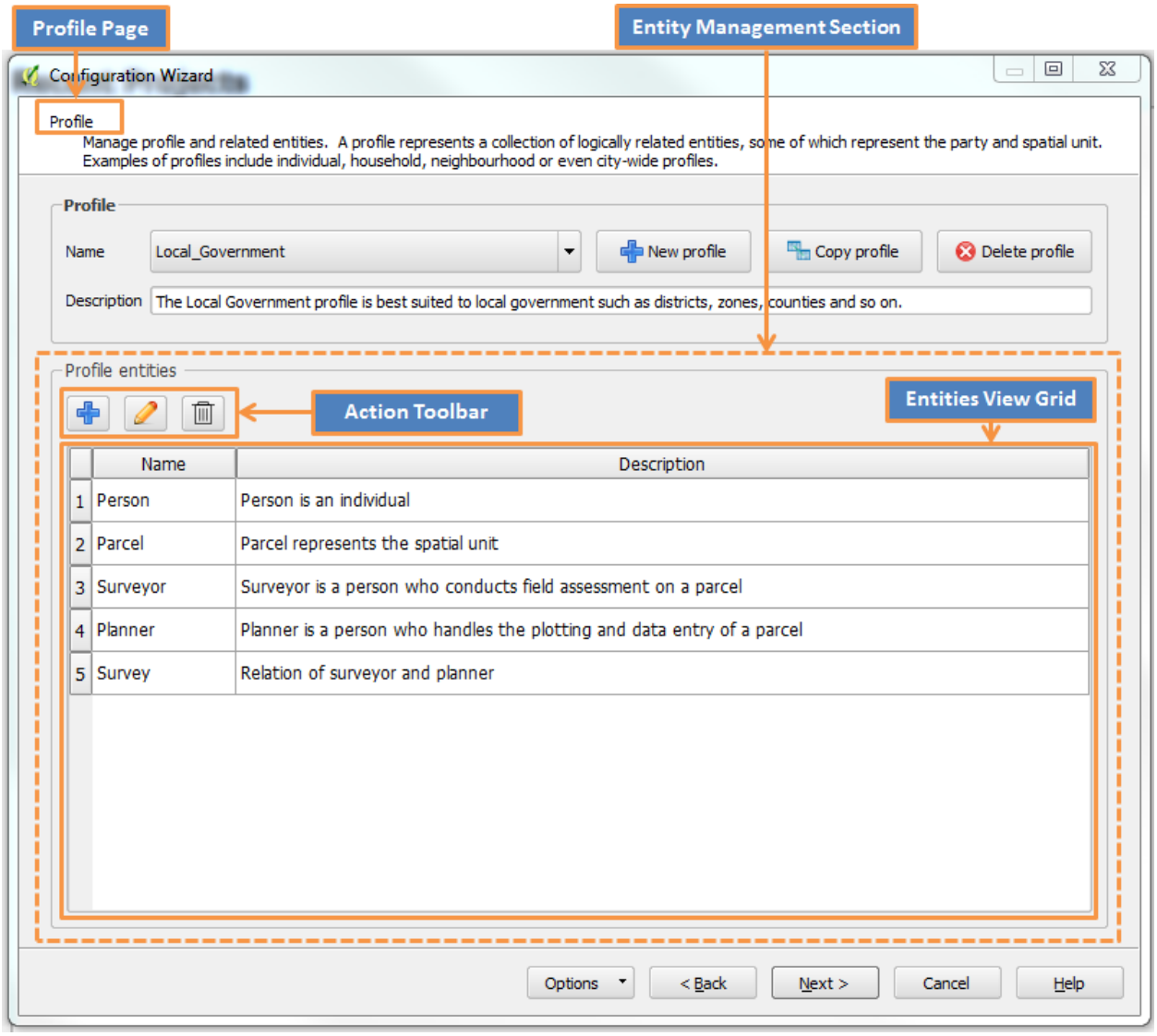


3. On the **Entity Management Section**, click the **Add** button on the **Action Tool bar**.

4. An **Entity Editor** window will open as shown below.

5. Enter all the required fields to describe your entity.

- **Entity Name** - Mandatory field for your entity name. A profile cannot have two entities sharing the same name; the name you choose for your entity should be unique in your current profile.

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- **Entity Label** - An optional label to customize the name of an entity. Whatever name you type here for a given entity, will be the one to appear throughout the STDM menus.
- **Description** - Brief narrative of what the entity represents in your current profile.
- **Allow supporting documents** - Check this option if your entity will have supporting documents functionality.

6. To save and close the entity editor window, click the **OK** button. If everything was entered correctly and no errors were found, the new entity should appear on the *Grid* on the entity section. But if you want to abort and exit the creation of the new entity, click the **Cancel** button.

**Important Notes:**

**Note 1:** Entity name is a mandatory field; you cannot save an entity without entering an entity name.

**Note 2:** System will pop an error if you attempt to save an entity with a name that already exist on the current profile.

**Note 3:** If you enter a label for an entity the, the menu text of this entity will equally change as the image below:

# Editing Entities

Editing an entity process allows you to change properties of an existing entity. You might be forced to edit an entity in cases where you might have misspelled or entered a wrong name or description for your entity.

To edit an entity, follow the steps below.

1. Click the **Configuration Wizard** icon on the STDM plugin menu to open the **Configuration Wizard** window.

2. When the **Configuration Wizard** window opens, click the Next button on the wizard **Navigation Bar (once)** to access the **Profile Page**.

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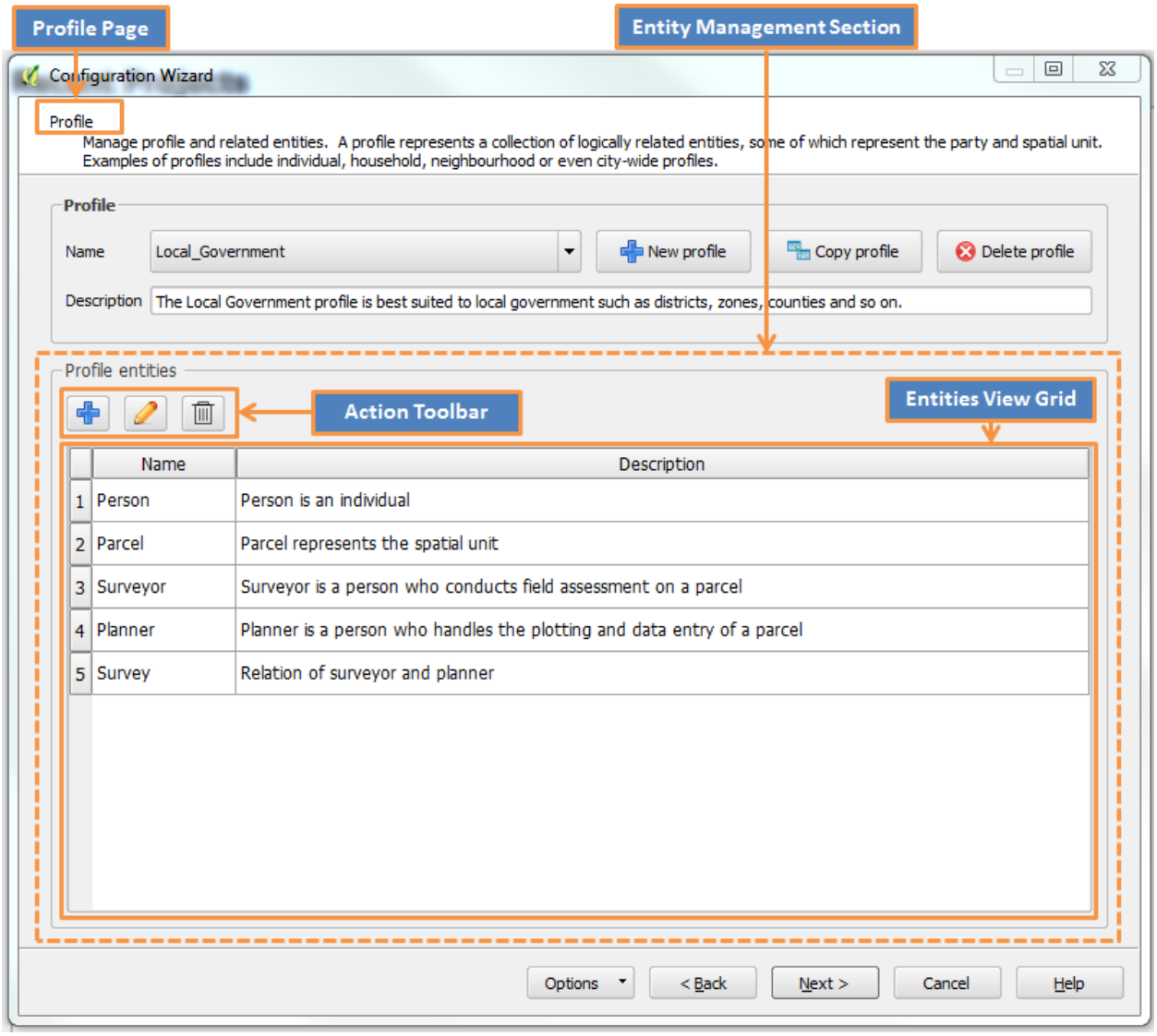
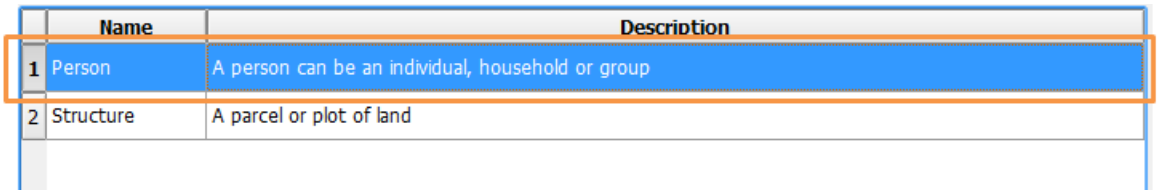
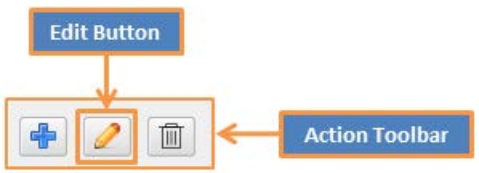



3. On the **Entities View Grid**, click to select an **Entity** you wish to edit as shown below. The selected entity should now be highlighted with a different colour to indicate selection.




4. On the **Action Tool bar**, click the **Edit** button.

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5. **Entity Editor dialog** window will open with fields **(Name, Description and Supporting documents check box)** pre-populated with details of the selected entity as shown in the image below.

6. Make your changes

7. To save and close the **Entity Editor**, click the **OK** button. If you wish to cancel your changes and close the Editor window, click the **Cancel** button.

8. If you saved your work, the new changes should now show on the *Entities View Grid*.

**Important Notes**

**Note 1:** If the entity has already been saved in the database from the previous configuration sessions, the system will not allow you to edit the *Entity Name* or change *Supporting document* check box fields. When the *Entity Editor* window opens the two fields will be disabled. The only property you will be able to edit is the *Description.* However, if this is a new entity then all the fields *(Entity Name, Description* and *Supporting documents* check box) are eligible for editing.

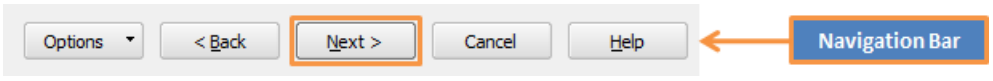
# Deleting Entities

As part of entity management, **Configuration Wizard** allows you to delete existing entities.

To delete existing entities, follow the steps below.

1. Click the **Configuration Wizard** icon on the STDM plugin menu to open the **Configuration Wizard** window.

2. When the **Configuration Wizard** window opens, click the **Next** button on the wizard **Navigation Bar** (**once**) to access the **Profile Page**.




3. On the **Entities View Grid**, click to select an entity you wish to edit. The selected entity should now be highlighted with a different colour to indicate selection.

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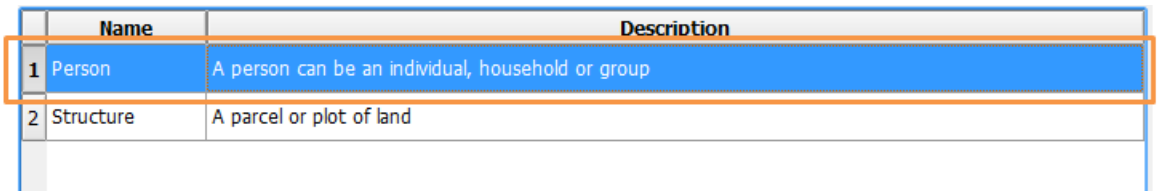
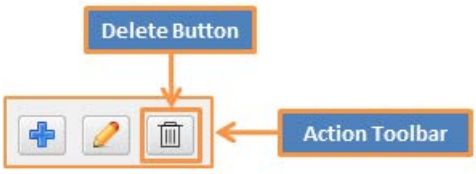
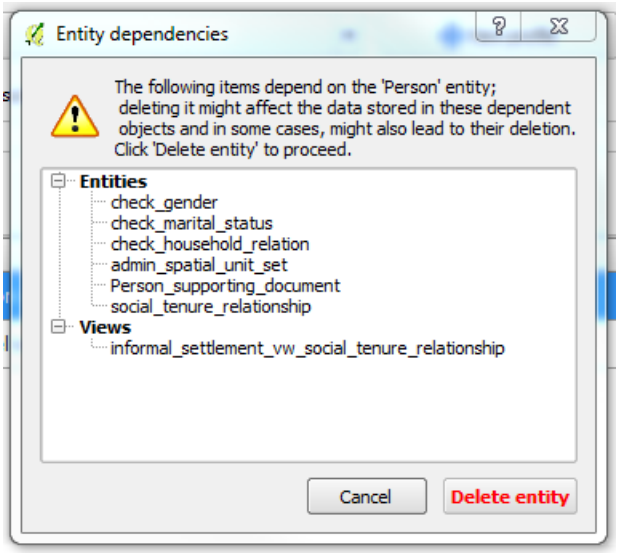



4. On the **Action Toolbar**, click the **Delete** button.




3. If there are other items in the profile referencing this entity, an **Entity Dependency** warning dialog will popup to show you the items as shown in the image below.




4. Read the warning message on the **Entity Dependency** window **carefully.** If you are sure you want to delete the entity and close the dialog window, click the **Delete entity** button. However, if you wish to abort the delete process and close the dialog, click the **Cancel** button.

5. If you clicked the **Delete entity** button on the **Entity** dependency dialog window, the deleted entity will be removed from the **Entity View Grid** in the wizard.

**Note:** Entity Dependencies dialog will NOT show if the entity you are deleting has no items referencing it. Clicking **Delete** button on the **Entity View Grid** will remove the selected entity without any warning.

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# Configuring Columns

## Creating Columns

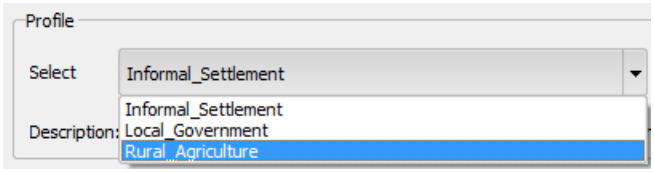
Columns are the properties of an entity. Columns are the actual locations where data is stored in a database - think of columns as pigeon holes that hold data values. Each column in an entity must be represented by a unique name and must have a **data type** that defines which type of data will be stored in that column. Example of columns for a **Person Entity** would be **first_name, last_name, gender or date_of_birth, etc.**

To create a column on an entity, follow the steps below.

1. Click the **Configuration Wizard** icon on the **STDM Plugin Menu** to open the **Configuration Wizard** window.

2. When the **Configuration Wizard** window opens, click the *Next* button on the wizard **Navigation Bar** (**once**) to access the **Profile Page.**

3. From **Profile Select** drop down, choose a **Profile** you want to customize.




4. All the related entities, lookups and lookup values for the selected profile should load onto various pages of the wizard.

5. Click the **Next** button on the **Navigation Bar** to access the **Entity Customisation** page as shown in the image below.

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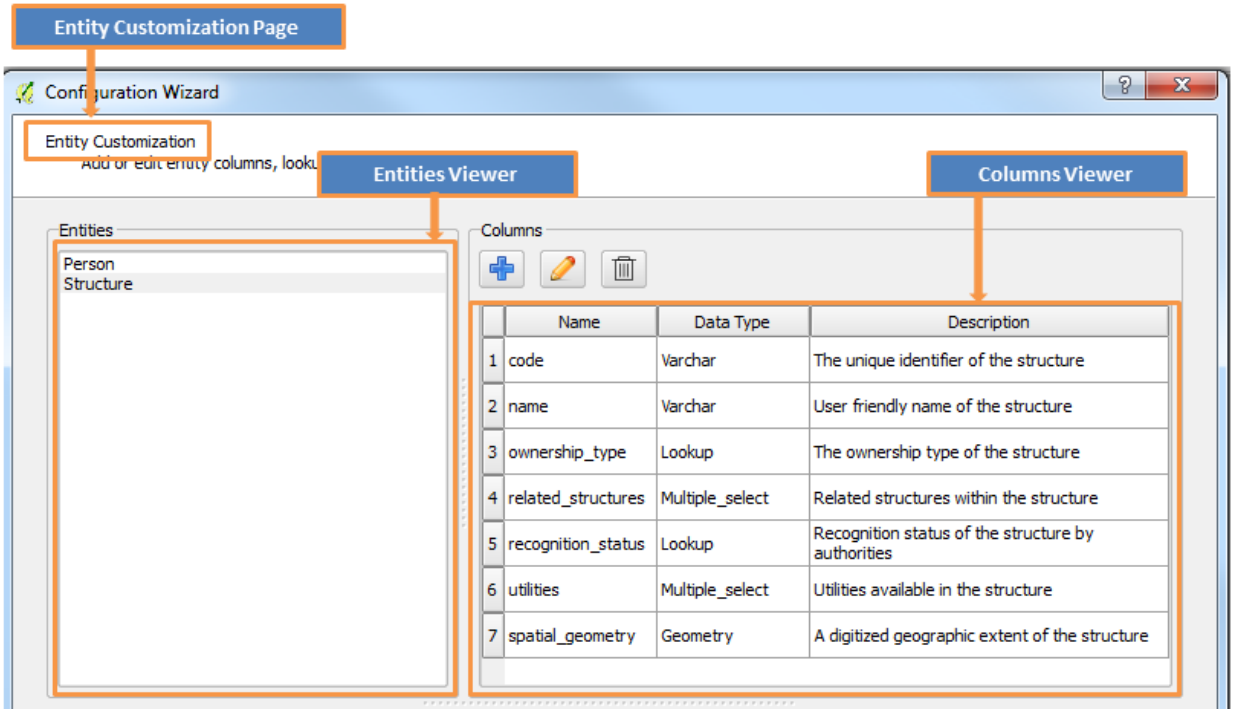
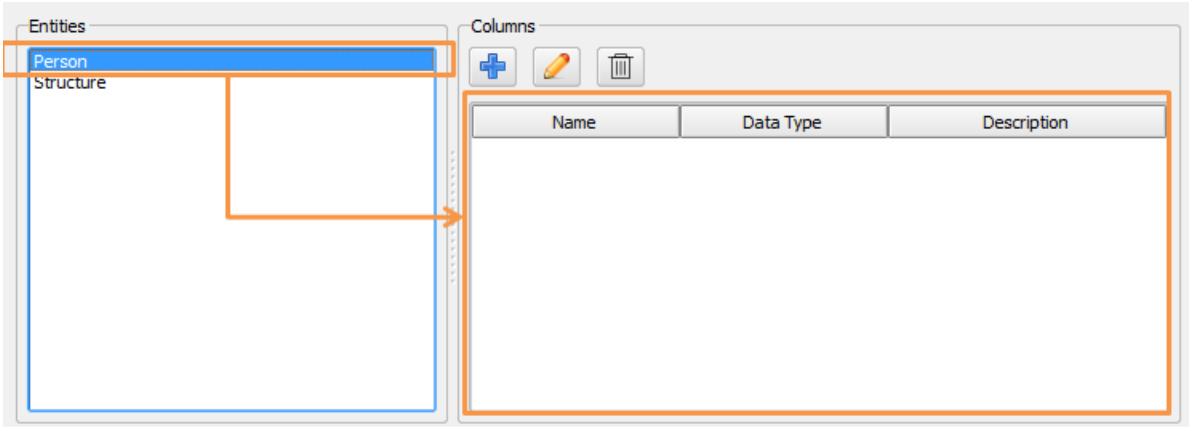
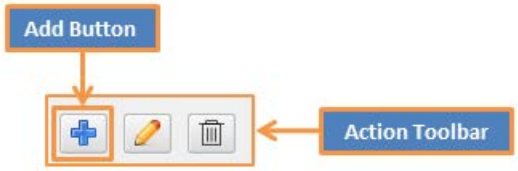



6. On the **Entities Viewer**, click to select an entity to customize. The selected entity should now have a highlighted color indicating selection as shown in the image below.




7. If you selected a new entity the **Columns Viewer** section should be empty.

8. On the **Columns Viewer** section, click the **Add** button on the **Action Toolbar** as shown in the image below.

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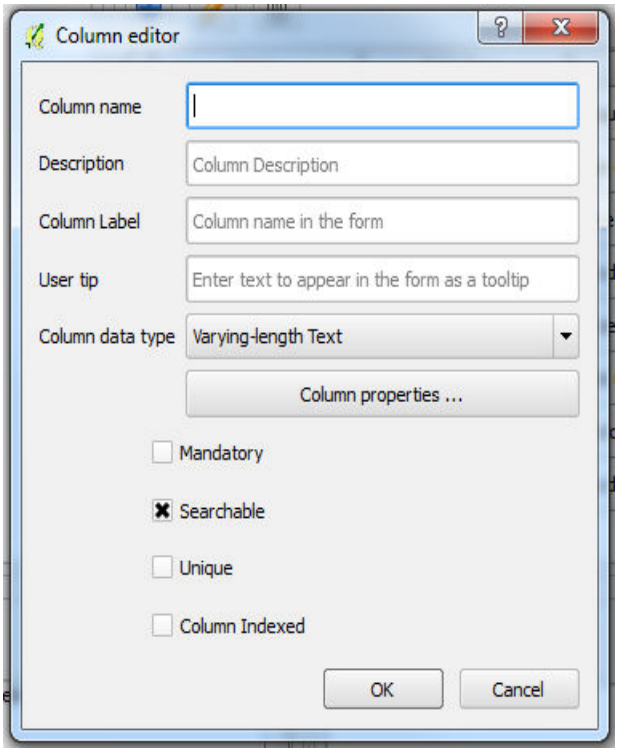
9. A **Column Editor** window should now open to enable you create a new column as shown below.




10. Enter the following details for your column

**a. Column name** - Name used to define a single property on an entity. For example, on an entity *Person* you can have a property named *first_person.*

Important things to remember when entering a Column name;

1. Column name should only be in lower case.
2. Spaces are not allowed in a **Column** name. All spaces you enter will automatically be replaced with an underscore (_) character.

3. This field is mandatory; you cannot create a column without it.

The following are reserved keywords in STDM; you cannot use them as column names.

- *id*
- *documents*
- *spatial_unit*
- *supporting_document*
- *social_tenure*
- *social_tenure_relationship*
- *Geometry*

**b. Description** - Long string text that explains the meaning of the column in an entity. Field is optional; you can create a column without it.

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**c. Column Label** - A custom name that you may wish to appear on the data form. The name entered here will override the **Column Name** when the form containing this column is accessed.

**d. User tip** - Short text that appears next to this column on the data entry form for this entity, guides the users on what to enter on this column. This field is optional; you can create a column without it.

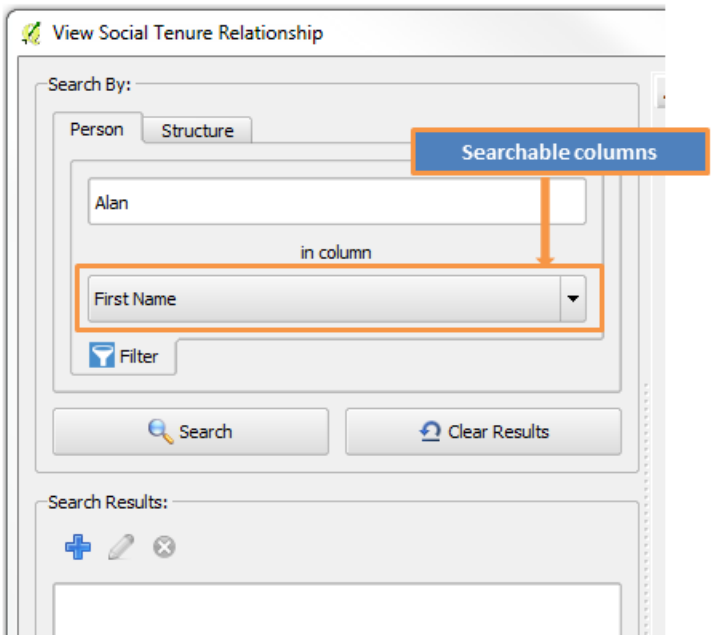
**e. Column data type** - Defines the type of value that should be stored in this column in the database. Every column **MUST** define a data type property. STDM supports twelve different data types to choose from depending on the value you want to store in your column. Understanding Column Data Types topic explains in-depth the meaning of each supported data type.

**f. Columns property button** - It opens a window to enter default values for the column depending on the selected data type. Setting of these properties is mandatory for the following data types:

- *Geometry*
- *Related Entity*
- *Single Select Lookup*
- *Multiple Select Lookup*

**g. Mandatory check box** - This makes the column a mandatory field when being entered on the data form.

**h. Searchable check box** - Columns marked as searchable will be used as filter fields when searching for an entity in various data browsing windows e.g. the **View Social Tenure Relationship** window. Please see below.

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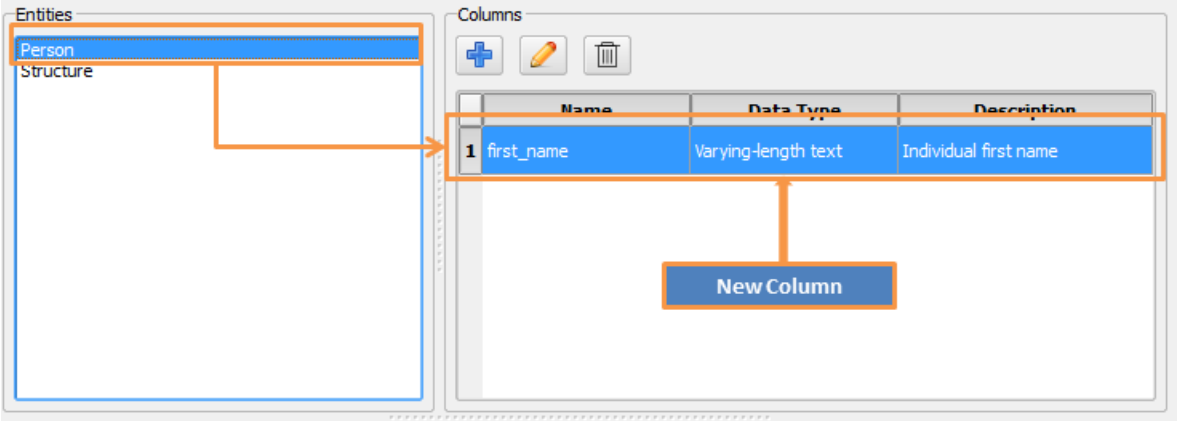
**i. Unique check box** - When enabled, this box guarantees uniqueness for a record in an entity. No two records in an entity with the same values for the column are allowed.

**j. Column Index check box** - This allows an index to be created in the database based on the column. Indexing guarantees speedy results when searching for a record in a database.

11. Once you have entered the required fields for the column, click the **OK** button to save the column and close the **Column Editor** window. However, if you wish to abort your column creation process, click the **Cancel** button.

12. If you saved your column successfully it should now appear on your **Columns Viewer** section as illustrated below.




# Understanding Column Data Types

Data type is a categorization of data in an entity. An entity can store different types of data depending on the data type configured on each entity column. Integers, decimal values, strings, lookup values can be stored in one entity but separated by columns of different data types.

STDM supports twelve different data types for your columns i.e. Varying-length text, Unlimited-length text, Whole number, Decimal number, Date, Date and time, Geometry, Yes/No, Related Entity, Single Select Lookup, Administrative Spatial Unit, and Multiple Select Lookup.

Each of this data types are suited for different purpose and are configured differently. The following section will discuss in-depth about each of this data type and show you simple examples on their usage.

## 1. Varying-length text

These are alpha-numeric character strings of length *n* (*n* should be less than 4000 characters). If you select this Varying-length text data type and you do not specify a length, STDM will set the column to have a default maximum of 30 characters.

**Example:**

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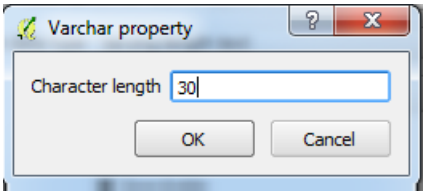
| Column Name | Value |
|---|---|
| *first_name* | *Alan* |
| *middle_name* | *Mathison* |
| *last_name* | *Turing* |

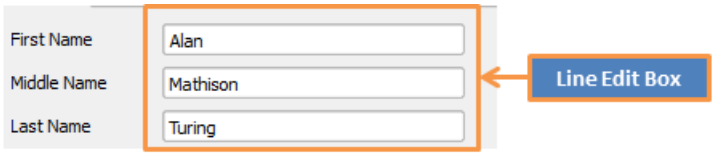
**Properties to set: Understanding Column Data Types**

Character length




**Form widget:**

*Line Edit Box*




## 2. Unlimited-length text

This is an alpha-numeric character string of unlimited length.

**Example:**

| Column Name | Value |
|---|---|
| *comment* | *This is a multi-line text edit, you can type a long text on ...* |
| *notes* | *Write some notes* |

**Properties to set:**

None

**Form widget:**

*Multiple Line Plain Text Edit Box.*

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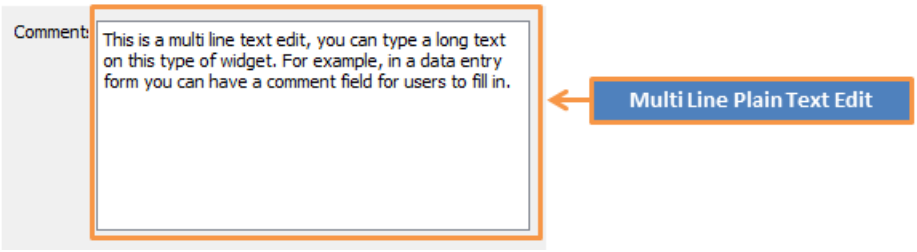



## 3. Whole Number

This data type will store numeric characters only; no string characters are allowed on this field.

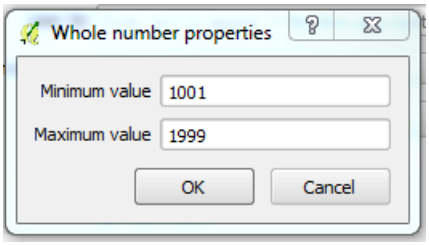
**Example:**

| Column Name | Value |
|---|---|
| *serial_number* | *2521001* |
| *plot_code* | *10001* |

**Properties to set:**

Minimum value

Maximum value




**Form Widget:**

*Spin Edit Box*

## 4. Decimal Number

This data type will store real numbers with fixed precision and scale (decimal places).

**Example:**

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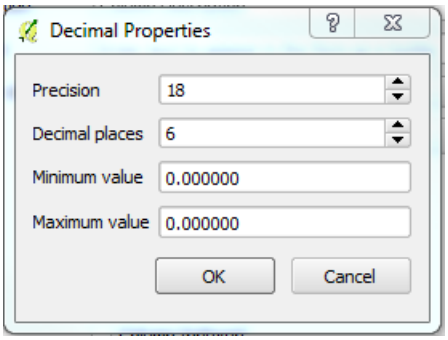
| Column Name | Value | Precision/Decimal places |
|---|---|---|
| *Area* | *85.678* | *Precision: 5 Decimal places: 3* |
| *value* | *633.56* | *Precision: 5 Decimal places: 2* |

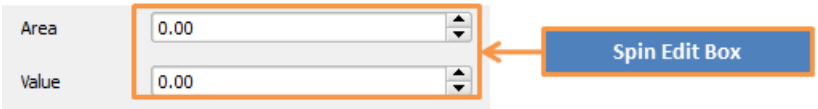
**Properties to set:**

- **Precision** - The total allowed digits in the decimal number.
- **Decimal places** - Also known as scale; is the number of digits to the right of the decimal point in a number.
- **Minimum value** - Lower bound constraint for acceptable decimal value.
- **Maximum value** - Maximum bound constraint for acceptable decimal value.




**Form widget:**

*Double Spin Box*




## 5. Date

Column with Date data type will store a date value.

**Example:**

| Column Name | Value |
|---|---|
| *dob* | *01/01/1980* |

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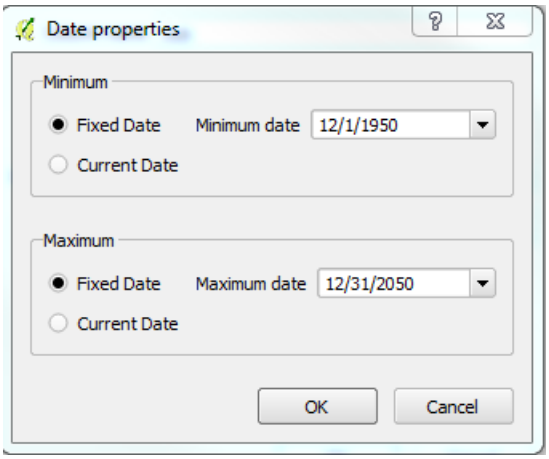
| | |
|---|---|
| *date_of_survey* | *12/08/2015* |

**Properties to set:**

**Minimum** - Fixed or Current date; This puts a lower bound constraint for the minimum date value that can be entered on a column defined with a date data type.

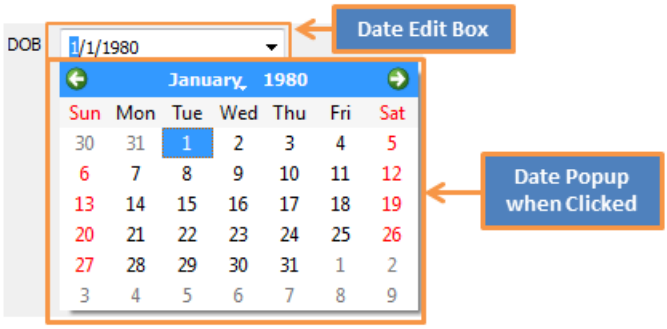
**Maximum** - Fixed or Current date; This puts an upper bound constraint for the maximum date value that can be entered on a column defined with this data type.

If **Current Date** is selected, then the current date (at the time the form is loaded) will be set as the minimum or maximum date.




**Form widget:**

*Date Edit Box*




## 6. Date with time

Data type will be for columns that want to store date and time values.

**Example:**

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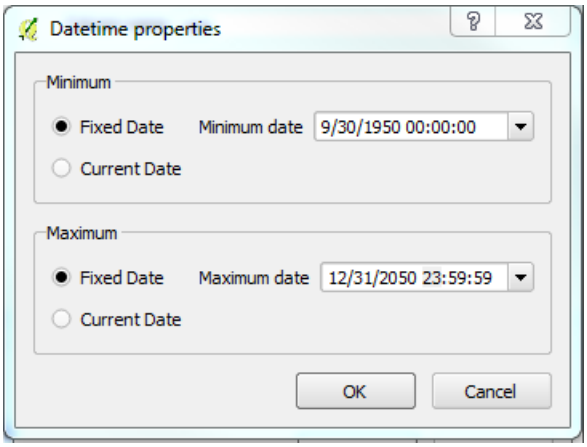
| Column Name | Value |
|---|---|
| *record_date* | *01/01/1980 12:30:00* |
| *log_time* | *12/08/2015 01:14:05* |

**Properties to set:**

**Minimum** - Fixed or Current date and time. This puts a lower bound constraint for the minimum date value that can be entered on a column defined with a date data type.

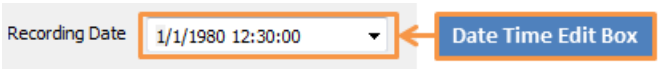
**Maximum** - Fixed or Current date and time. This puts an upper bound constraint for the maximum date value that can be entered on a column defined with this data type.

If **Current Date** is selected, then the current date and time (at the time the form is loaded) will be set as the minimum or maximum date.




**Form widget:**

*Date/Time Edit*




# 7. Geometry

This represents 2D vector types. Used for columns with spatial data.

**Example:**

| Column Name | Value |
|---|---|

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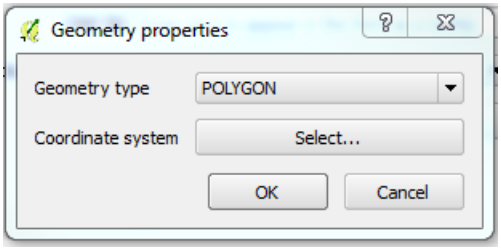
| | |
|---|---|
| *location* | *geometry data* |

**Properties to Set:**

a. Geometry Type - STDM ships with six different vector geometry types for selection, these are - *Point, Line, Polygon, Multipoint, Multiline and Multipolygon.*

b. Coordinate System - This is selected from QGIS Coordinate Reference System (CRS). It depends on the regional extent of the area you want to work in.




**Form widget:**

None.

## 8. Yes/No

This represents a **True/False** column which stores a single value from only two possible choices, e.g. *True or False, 1 or 0, Yes or No.*

**Example:**

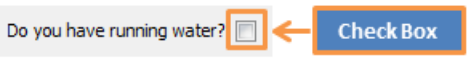
| **Column Name** | **Value** |
|---|---|
| *running water* | *True* |

**Properties to set:**

None

**Form widget:**

*Check Box*

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# 9. Related Entity

The column with this data type will have a foreign key relationship with another column in a different Entity. Values in a column using Related Entity data type are picked from a Primary Entity, which acts as the master reference.

**Example:**

| Column Name | Value |
|---|---|
| *enumerator* | *5* |
| *respondent* | *20* |

**Properties to set:**

Primary Entity - This is the Entity you want to create a relationship with. It is where you pull values from.

Primary Unique column - This is the column from the *Primary Entity.* We store this unique key in our *Related Entity* column to establish a link with the *Primary Entity.*

Display column - Columns to show on the selection form when fetching data from the *Primary Entity*.

**Widget on form**

# 10. Single Select Lookup

Data type allows you to pick single values from a *Lookup Entity* that is linked to the column.

**Example:**

| Column Name | Value |
|---|---|
| *marital_status* | *Single* |
| *gender* | *Female* |

**Properties to set:**

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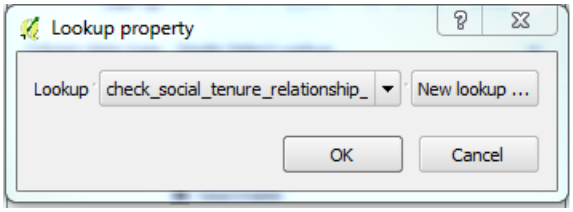
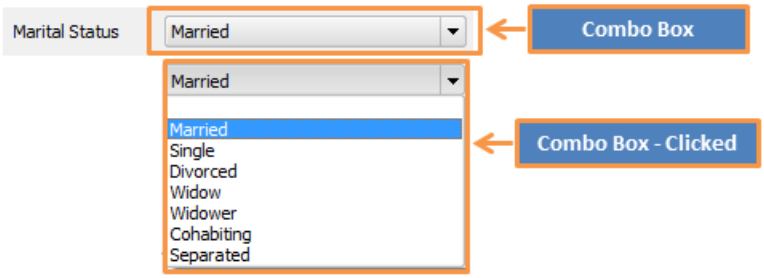
Lookup - This is a Lookup Entity that is linked to a column. Data will be fetched from this lookup.




**Widget on form:**

*Combo Box*




## 11. Administrative Spatial Unit

This data type creates a lookup column that fetches its data from the **Administrative Units Entity**. You are not required to setup the lookup relationship explicitly. Once you choose this data type for your column, STDM will automatically create a **Single Select Lookup** pointing to the **Administrative Units Entity** for you.

**Properties to set:**

None

**Widget on form:**

## 12. Multiple Select Lookup

The data type allows you to create a multiple selection column. Multiple values for this column are fetched from the **Lookup Entity** that you setup on **Column Property** window.

**Properties to set:**

Lookup - This is the Lookup Entity used by the column to fetch multiple values.

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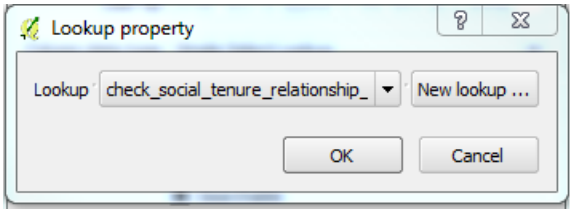
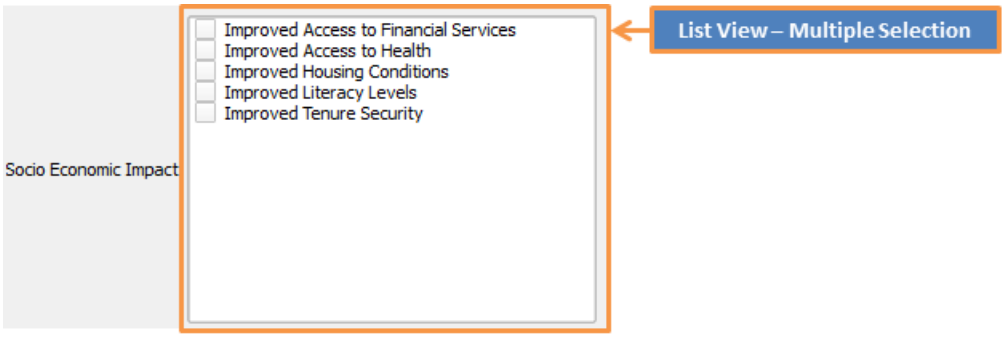



**Widget on form:**

*A list with check Box.*




# 13. Auto Generated Code

This column data type can be used to create codes for unique identifier columns such as structure number, house number, plot number, etc. The data type may have just a serial number such as 001, 002, etc or a code with a prefix such as KE/NRB/0001, E001, etc.

**Properties to set:**

**Prefix source**

This refers to the entity from which the prefix codes that are added in front of the serial number are drawn from.

The options are:

- **None** - only a serial number will be shown.
- **admin_spatial_unit_set** - the code prefixes are drawn based on the Administrative Units Manager, in which the codes of the selected administrative unit and higher labels are added in front of the serial number.
- **current profile lookup entities** - the code prefixes are drawn from the code of the selected lookup value.

**Separator**

This refers to the symbol or character separating each code element.

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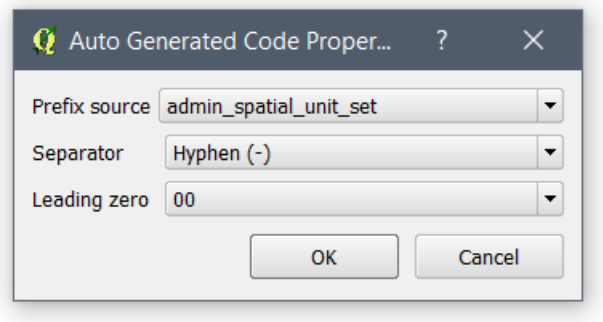
**Leading Zero**

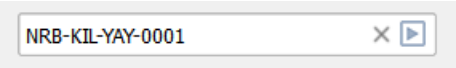
This refers to the zeros that are part of the serial number that are added in front of the increasing numbers. The image below illustrates the **Auto Generated Code Property**.



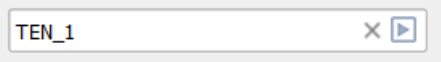

**Widget on form:**

You need to click on the code icon on the right side of the form widget to generate the unique code. If you have chosen a prefix source in the **Auto Generated Code Property,** you need to select the prefix source from the **Administrative Unit Selector** or the **Lookup Value Selector** that helps you to generate the code.

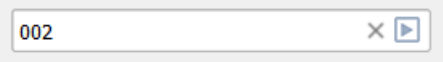
The image below shows auto-generated code widget created with a prefix source from **admin_spatial_unit_set**, hyphen separator and two leading zeros (00).




The image below shows auto generated code widget created with a prefix source from a **lookup entity**, underscore separator and no leading zeros.




The image below shows auto generated code widget created with a no prefix source, no separator and two leading zeroes (00).




**Note**: If the prefix source is None, the **Separator** drop down is disabled because separator has no usage in this case.

# Editing Columns

To edit a column, follow the steps below.

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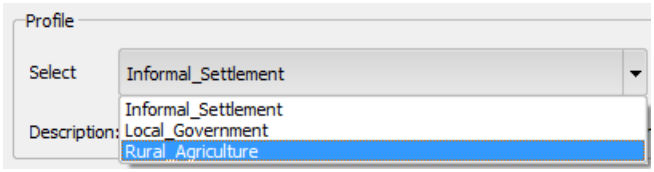
1. Click the **Configuration Wizard** icon on the **STDM Plugin Menu** to open the **Configuration Wizard** window.

2. When the **Configuration Wizard** window opens, click the *Next* button on the wizard **Navigation Bar** (**once**) to access the **Profile Page**.

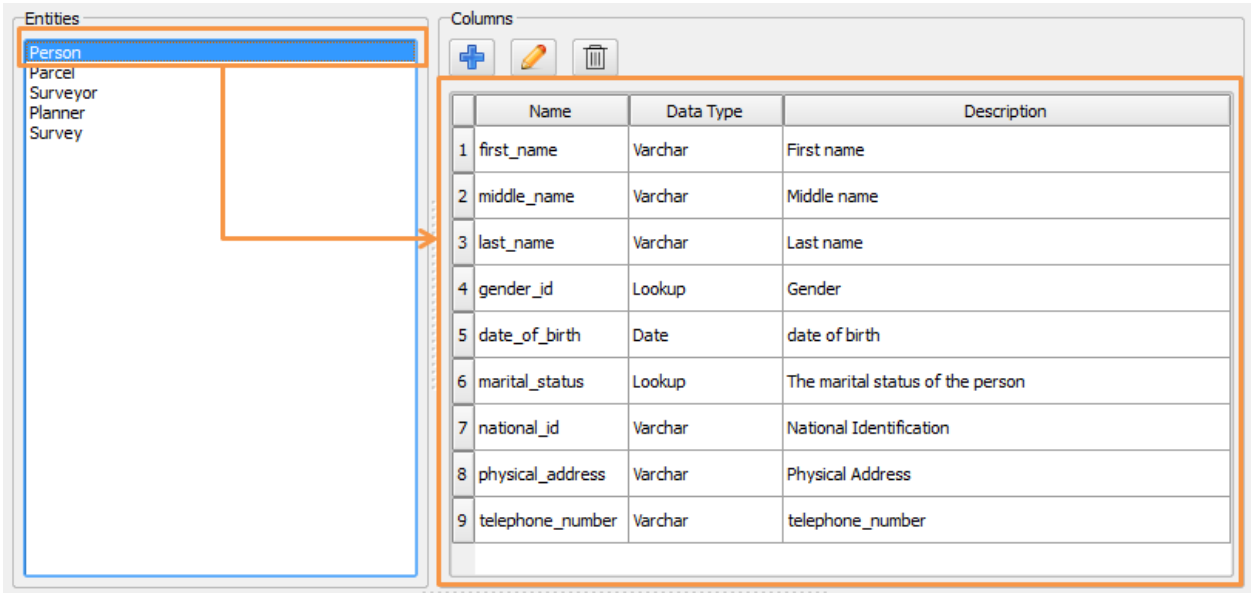
3. From **Profile** drop down, choose a **Profile** you want to customize.




4. All the related entities, lookups and lookup values for the selected profile should load onto various pages of the wizard.

5. Click **Next** button on the **Navigation Bar** to access the **Entity Customisation** page.

6. On the **Entities Viewer**, click to select an entity to customize as illustrated in the image below. The selected entity should now have a highlighted color indicating selection. On the **Columns Viewer,** a list of all columns that belong to this entity will be displayed.




7. On the **Columns Viewer**, click to select the column you wish to edit, then click the **Edit** button.

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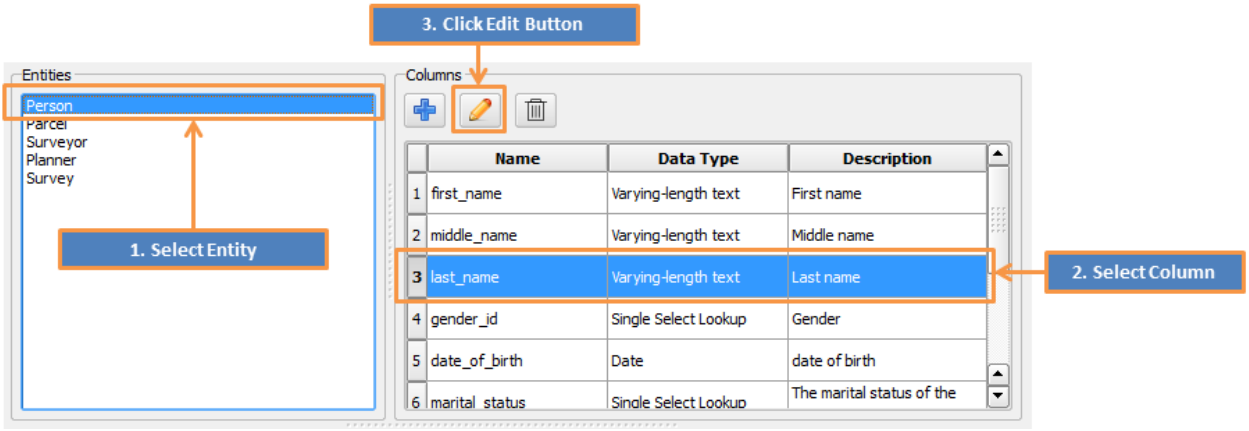
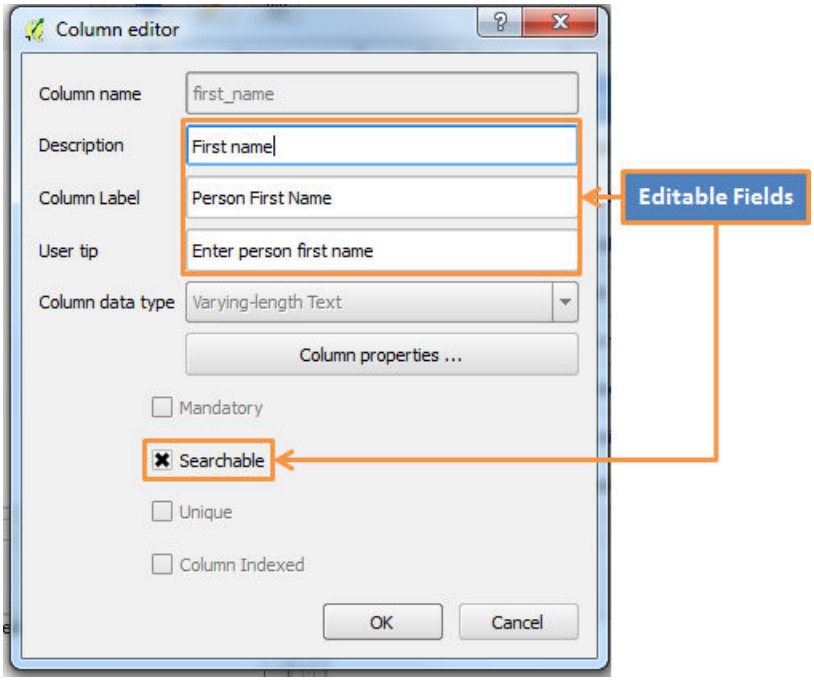



8. The **Column Editor** should open with fields pre-populated with details of the selected column as shown in the image below.




9. Make the relevant changes.

10. Once you are done, click the **OK** button to save the edits and close the **Column Editor**. To abort the editing process and close the **Column editor**, click the **Cancel** button.

11. If the editing and saving was successful, new changes should now reflect on the **Columns Viewer** on the **Entity Customization Page** of the wizard.

**Note:** If a column you intend to edit has already been saved in the database from a previous configuration process, you will NOT be able to edit the following fields;

- Column name

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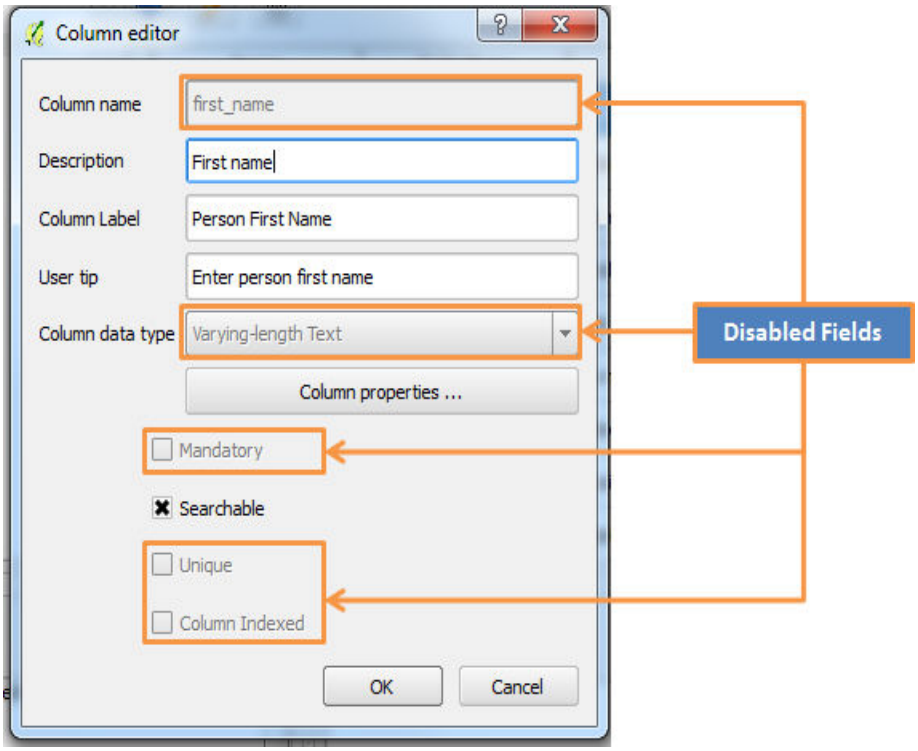
- Column data type
- Column properties



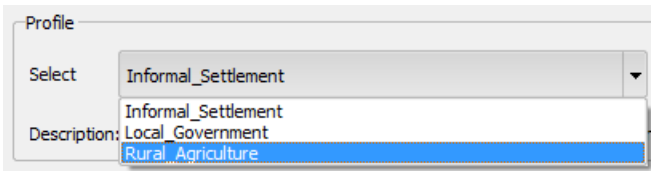

# Deleting Columns

To remove a column from an entity, follow the steps below.

1. Click the **Configuration Wizard** icon on the **STDM Plugin** menu or toolbar to open the **Configuration Wizard** window.

2. When the **Configuration Wizard** window opens, click the *Next* button on the wizard **Navigation Bar** (**once**) to access the *Profile Page*.

3. From **Profile Select** drop down, choose a **Profile** you want to customize.

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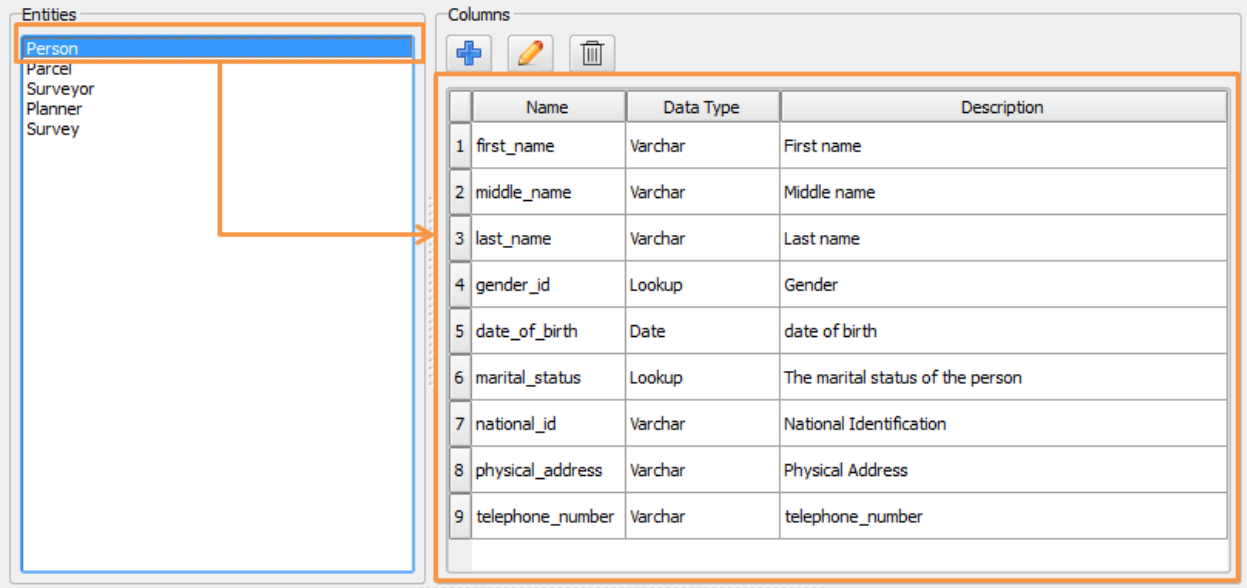
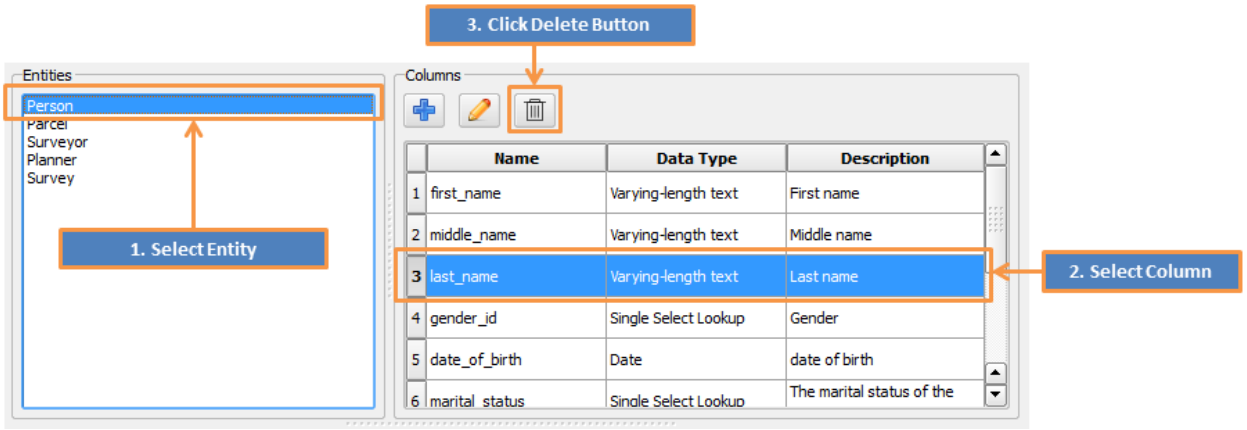
4. All the related entities, lookups and lookup values for the selected profile should load onto various pages of the wizard.

5. Click the **Next** button on the **Navigation Bar** to access the **Entity Customization** page.

6. On the **Entities Viewer**, click to select an entity to remove a column from. The selected entity should now have a highlighted color indicating selection. On the **Columns Viewer** a list of all columns that belong to this entity will be displayed.




7. On the **Columns Viewer**, click to select the column you wish to edit, then click the **Delete** button.




8. If a column has dependencies, a Column Dependencies warning window will open. This window, as seen in the image below, shows you which entities and database views depend on the column you want to delete. This window will warn you of the implications of deleting the column. Read carefully before proceeding.

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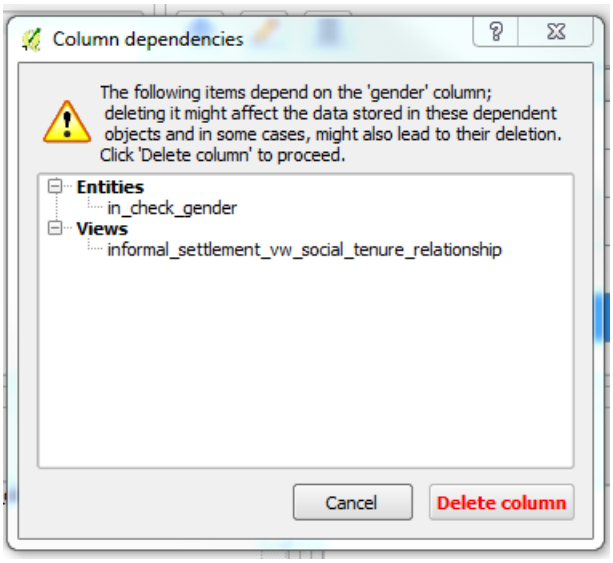


9. If you wish to remove the column from the entity completely and close the **Column Dependency** dialog, click the **Delete column** button. However, to abort the delete process, click the **Cancel** button.

10. If the delete is successful, the column should be removed from the **Columns Viewer** on the wizard.

### Important Notes

**Note 1:** Column Dependency dialog is not shown if the column you are deleting is not used by other entities or views.

**Note 2:** Once you delete a column, data stored in the column will be lost permanently.

# Re-ordering Columns

In a newly created profile, it is possible to re-arrange the order of columns on which they appear on the **Columns Viewer**.

To re-order the columns on the **Columns Viewer**, follow the steps below.

1. Create columns on an **Entity** as illustrated in Creating Columns section.

2. On the **Columns Viewer** click and hold the mouse (left mouse button) on the column you wish to move.

3. Now drag the column to a different position on the list of columns.

4. Release the mouse on the new position.

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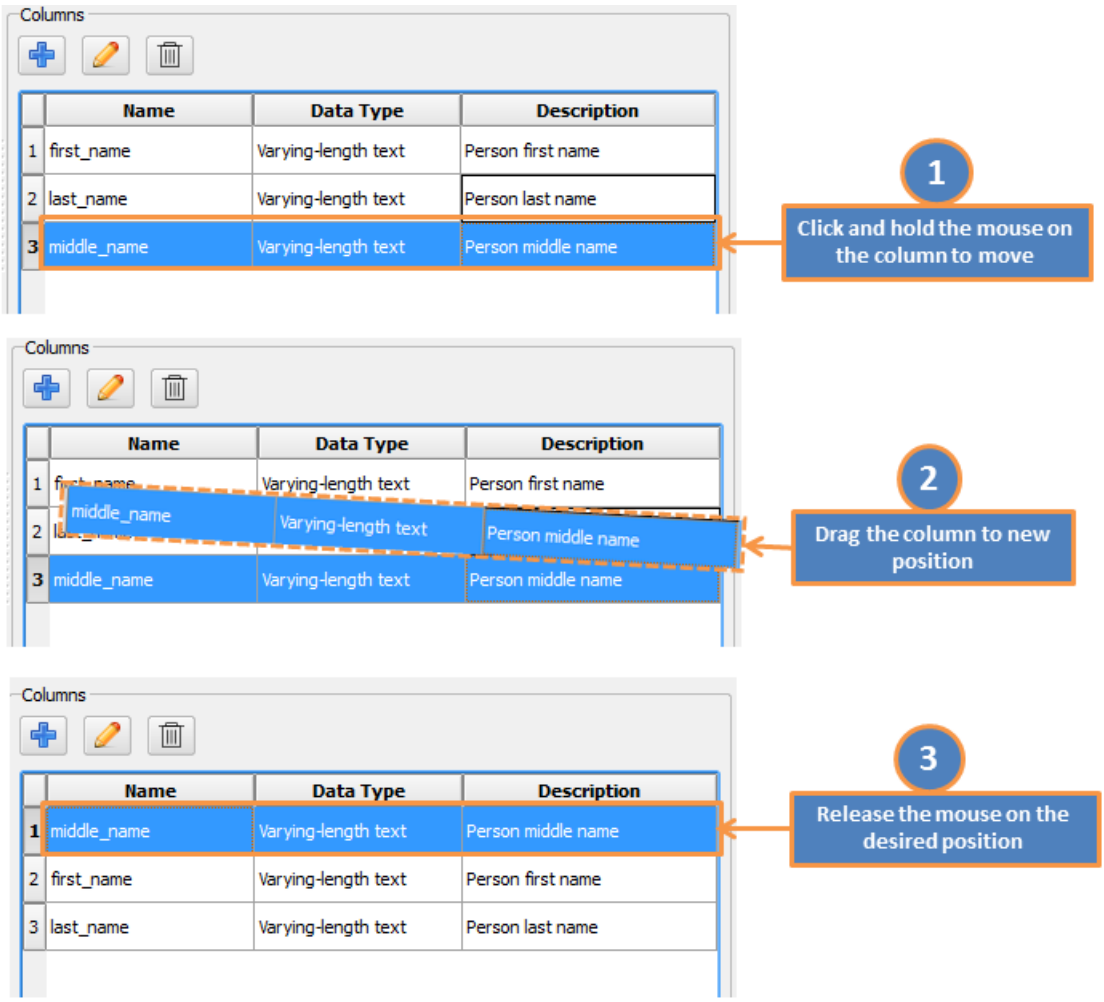


5. Your column should now be in a new position. Save the configuration to effect the changes.

# Configuring Lookups

## Creating Lookups

Lookups are special entities used to store values that rarely change. The values from the lookups are used by other entities with columns of type **Single Select Lookup** and **Multiple Select** to quickly retrieve values when entering data. For example, when creating a person entity, the column gender, which has **Single Select Lookup** as the data type will have a drop down widget that retrieves values from a lookup entity **check_gender** as shown in the image below.

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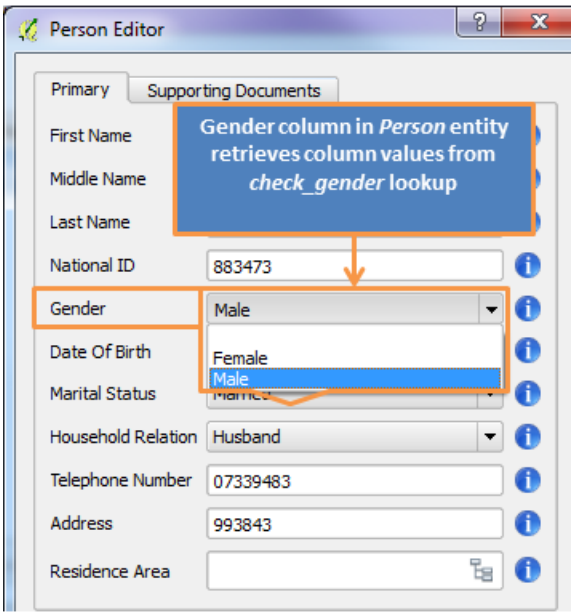


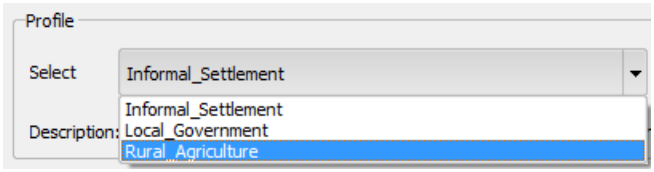

Each lookup entity **must** have a list of values - **lookup values. T**he following section shows you how to create a lookup and related lookup values.

To create a lookup entity, follow the steps below.

1. Click the **Configuration Wizard** icon on the **STDM Plugin** menu to open the **Configuration Wizard** window as illustrated below.

2. When the **Configuration Wizard** window opens, click the *Next* button on the wizard **Navigation Bar** (**once**) to access the **Profile Page**.

3. From **Profile Select** drop down, choose a **Profile** you want to customize as shown below.




4. All the related entities, lookups and lookup values for the selected profile should load onto various pages of the wizard.

5. Click **Next** button on the **Navigation Bar** to access the **Entity Customisation** page illustrated below.

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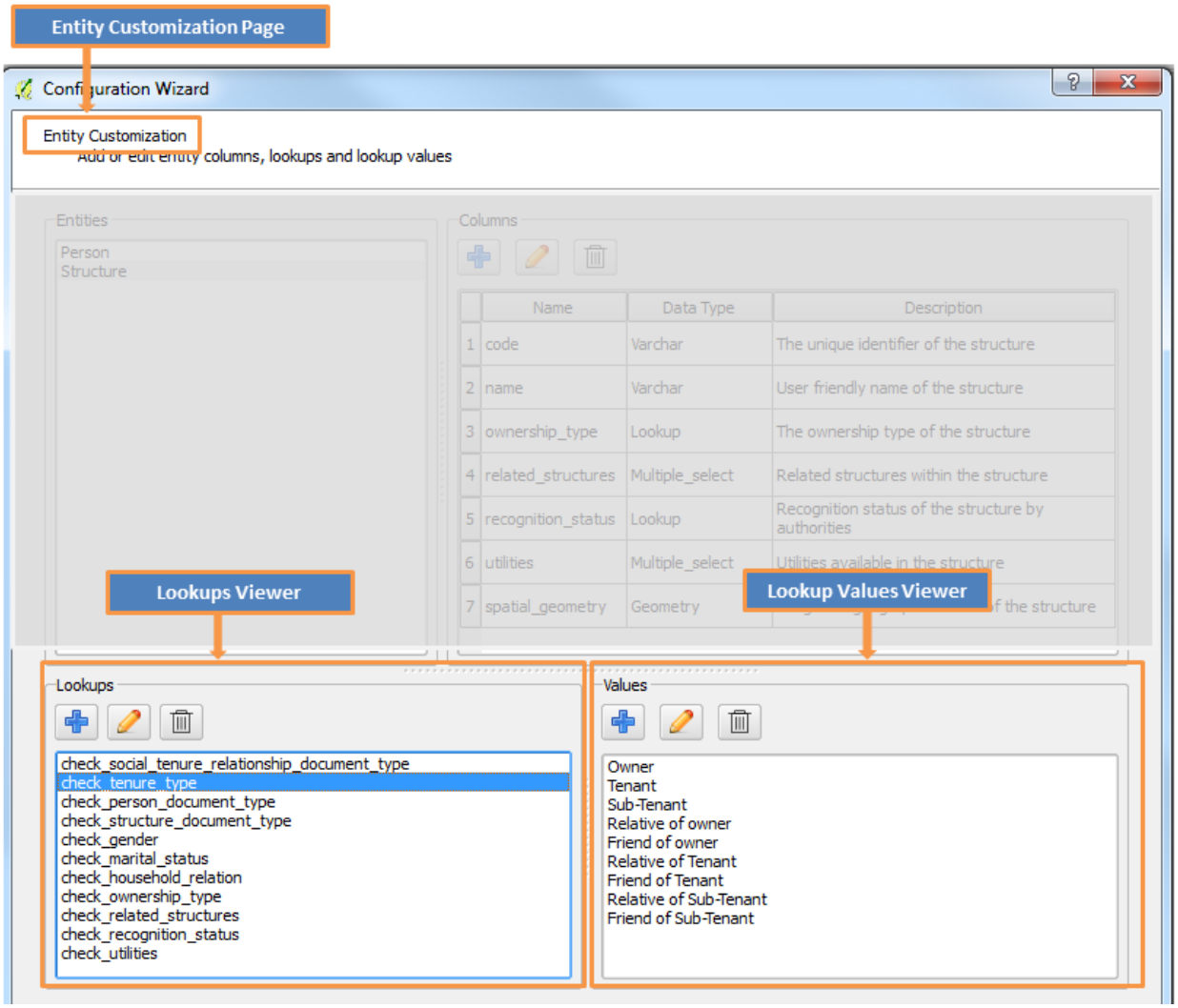
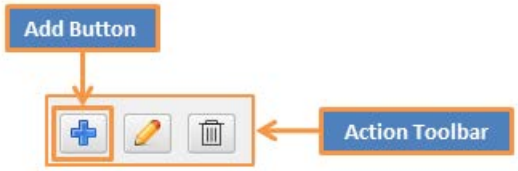
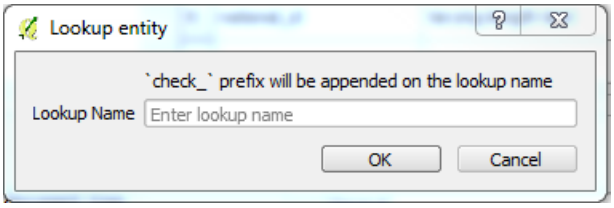



6. On the **Lookups Viewer** section, click the **Add** button on the **Action Toolbar** as shown below.




7. A **Lookup Entity** window will open with a single field to enter a lookup name as shown below.




8. Enter the lookup name on the field provided.

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The following are things to remember when entering a lookup name.

- Lookup names are all in lower case letters.
- Spaces within a lookup name are not allowed. All spaces will automatically be converted to an underscore (_) character. For example, 'marital status' will be *'marital_status'*
- A prefix *'check_'* is appended on every lookup name. For example, if you create a lookup with name *'gender'*, the name will be saved as *'check_gender'.*

9. To save your lookup and close the **Lookup Editor**, click the **OK** button. To abort the creation process and close the **Lookup Editor**, click the **Cancel** button.

10. If creating and saving of lookup was successful, the new lookup will show on the **Lookups Viewer**.

11. Now you can proceed to **Creating Values** section to add values to this lookup.

**Important Notes**

**Note 1:** When you create a new profile, two lookup entities are created automatically. These are:

1. *check_social_tenure_relationship_document_type*

2. *check_tenure_type*

**Note 2:** You cannot proceed to the next step of the wizard if a lookup you have created has no values.

# Editing Lookups

To edit the lookups, follow the steps below.

1. Click the **Configuration Wizard** icon on the **STDM Plugin Menu** to open the **Configuration Wizard** window.

2. When the **Configuration Wizard** window opens, click the **Next** button on the wizard **Navigation Bar** (**once**) to access the **Profile Page**.

3. From **Profile Select** drop down, choose a **Profile** you want to customize.

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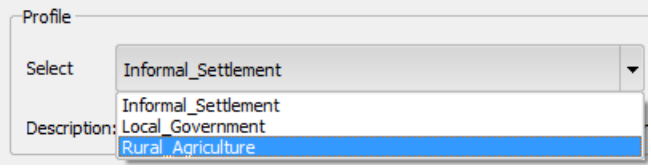
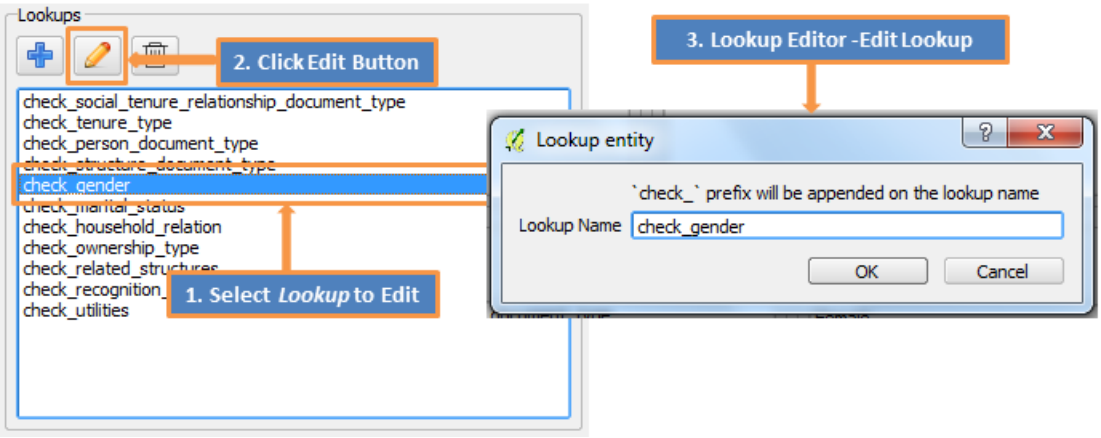



4. All the related entities, lookups and lookup values for the selected profile should load onto various pages of the wizard.

5. Click the **Next** button on the **Navigation Bar** to access the **Entity Customisation** page.

6. On the **Lookups Viewer Section**, click to select a lookup you want to edit.

7. Once a lookup is selected, click the **Edit** button on the **Action Toolbar** of the **Lookups Viewer** as shown below.




8. **Lookup Editor** will open with the **Lookup Name** field pre-populated with the name of the selected lookup as shown in the image above.

9. Edit the Lookup Name field.

10. To save your changes and close the **Lookup Editor**, click the **OK** button. To abort the edit action and close the editor, click the **Cancel** button.

11. If you saved your edits, changes should now reflect on the **Lookups Viewer**.

# Deleting Lookups

To delete a lookup entity from a profile, follow the steps below.

1. Click the **Configuration Wizard** icon on the **STDM Plugin Menu** to open the **Configuration Wizard** window.

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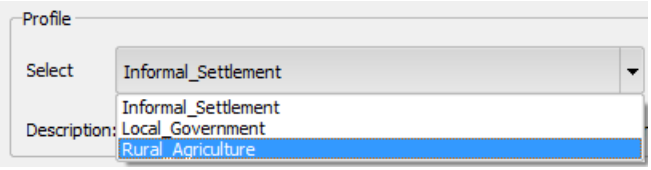
2. When the **Configuration Wizard** window opens, click the **Next** button on the wizard **Navigation Bar** (**once**) to access the **Profile** page.

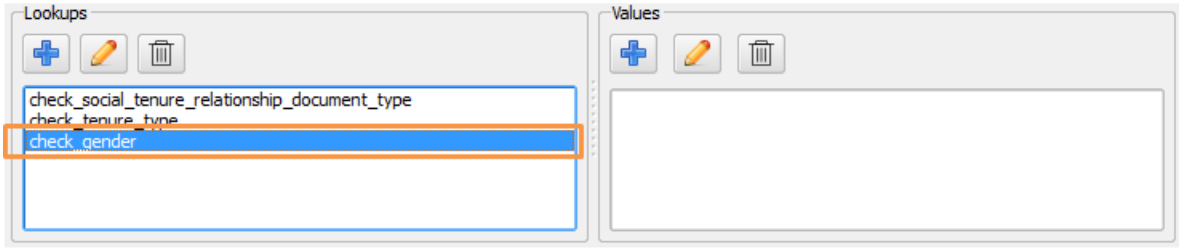
3. From **Profile Select** drop down, choose the **Profile** you want to customize as shown in the image below.



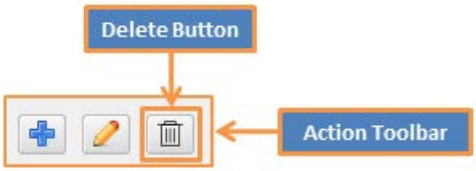

4. All the related entities, lookups and lookup values for the selected profile should load on various pages of the wizard.

5. Click **Next** button on the **Navigation Bar** to access the **Entity Customisation** page.

6. On the **Lookups Viewer Section**, click to select a lookup you want to delete as illustrated in the image below.




7. On the **Lookups Section**, click the **Delete** button on the **Action Toolbar** as shown below.




8. A warning window will pop up to ask you to confirm the delete action as shown below.

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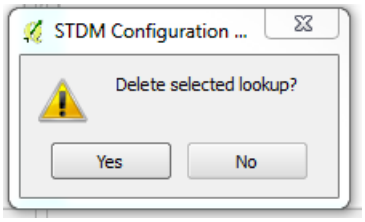
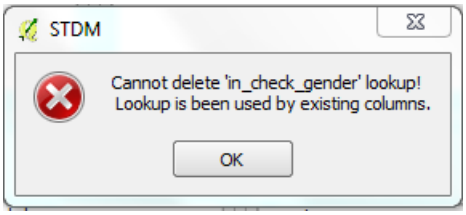



9. If you click **Yes**, the selected lookup will be deleted from the profile. However, if you click **No**, the warning window will close and nothing will happen.

**Note:** The system does not allow you to delete a lookup that is been used by other entities. You will get an error message, shown below, when you attempt to delete such a lookup.




# Configuring Lookup Values

## Creating Values

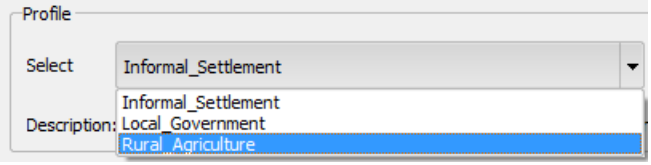
A lookup value represents the actual data that is stored in a lookup entity. For example, a lookup entity *check_gender*, values stored would be '*Female' and 'Male'.*

To create a lookup value, follow the steps below.

1. Click the **Configuration Wizard** icon on the **STDM Plugin Menu** to open the **Configuration Wizard** window as shown below.

2. When the **Configuration Wizard** window opens, click the **Next** button on the wizard **Navigation Bar** (**once**) to access the **Profile** page.

3. From **Profile Select** drop down, choose the **Profile** you want to customize as shown below.

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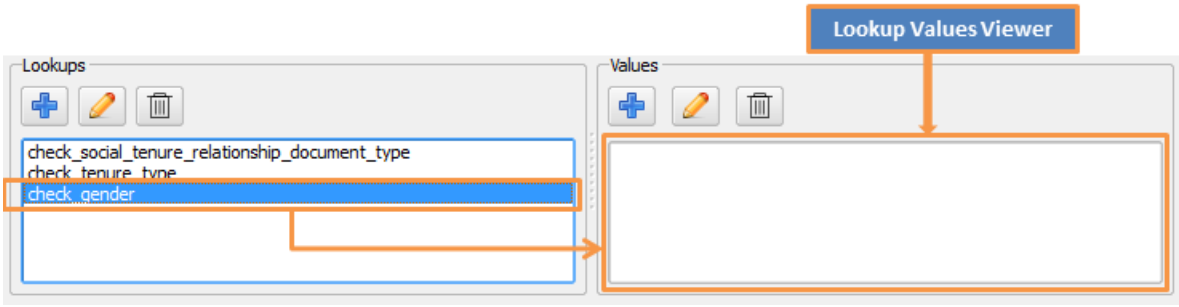
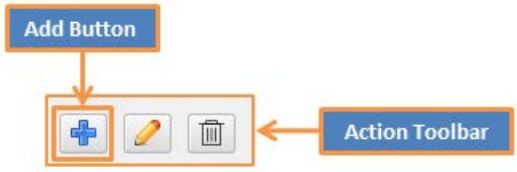
4. All the related entities, lookups and lookup values for the selected profile should load on various pages of the wizard.

5. Click the **Next** button on the **Navigation Bar** to access the **Entity Customisation** page.

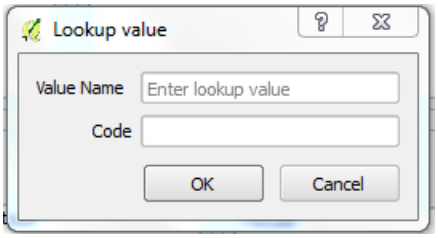
6. On the **Lookups Viewer Section**, click to select a lookup you want to add values as shown below.




7. On the Values section, click the Add button on the Action Toolbar.




8. A Lookup Values Editor will open as shown in the image below.




9. Enter your data on the following fields.

> **Value Name** - A mandatory field for value name, this field must be provided before saving the value. Example of a *Value Name* for a lookup *check_gender* would be '*Female*'
>
> **Code** - A short character string that can be used in place of a value name. For example, for value '*Female'* the code would be *'F'*, value '*Male'* code would be *'M'.*

10. When you are done entering the data, click the **OK** button to save and close the editor window. If you wish to abort the creation process, click the **Cancel** button.

11. If you saved your new value, it should now appear on the Lookup Values Viewer section.

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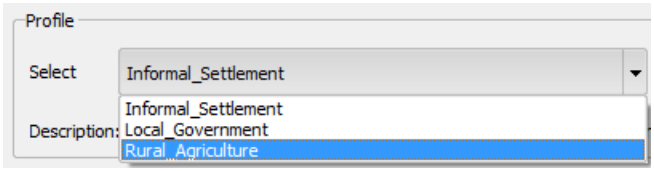
# Editing Values

To edit a lookup value, follow the steps below.

1. Click the **Configuration Wizard** icon on the **STDM Plugin Menu** to open the **Configuration Wizard** window.

2. When the **Configuration Wizard** window opens, click the *Next* button on the wizard **Navigation Bar** (**once**) to access the **Profile** page.

3. From **Profile Select** drop down, choose the **Profile** you want to customize as shown below.




4. All the related entities, lookups and lookup values for the selected profile should load on various pages of the wizard.

5. Click the **Next** button on the **Navigation Bar** to access the **Entity Customization** page.

6. On the **Lookups Viewer Section**, click to select a lookup. If there are values already available for the selected lookup, they will be displayed on the **Lookup Values Viewer**.

7. Select the lookup value you want to edit.

8. On the **Action Tool bar** of the **Lookup Values Viewer** section, click the **Edit** button.

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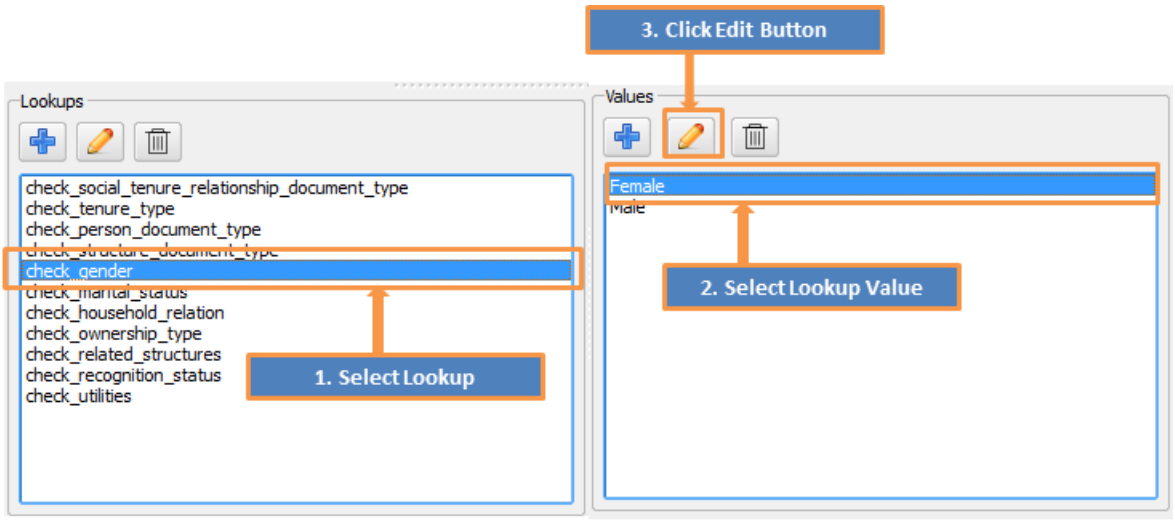
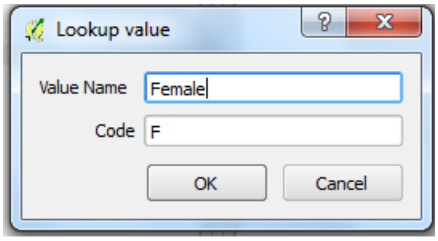



9. The **Lookup Value Editor** will open with fields pre-populated with values from the selected lookup value as indicated below.




10. Make your changes.

11. Once done, click the **OK** button to save your edits and close the **Lookup Value Editor**. However, if you wish to abort the edit process and close the editor, click the **Cancel** button.

12. If you edited the **Value Name**, the changes should now reflect on the **Lookup Values Viewer**.

# Deleting Values

To remove a lookup value from a lookup entity, follow the steps below.

1. Click the **Configuration Wizard** icon on the **STDM Plugin Menu** to open the **Configuration Wizard** window.

2. When the **Configuration Wizard** window opens, click the *Next* button on the wizard **Navigation Bar** (**once**) to access the **Profile** page.

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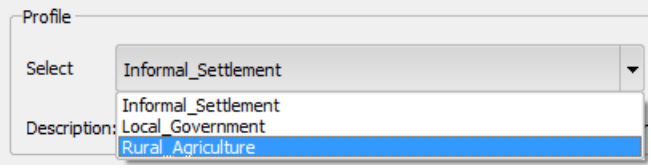
3. From **Profile Select** drop down, choose the **Profile** you want to customize as shown below.



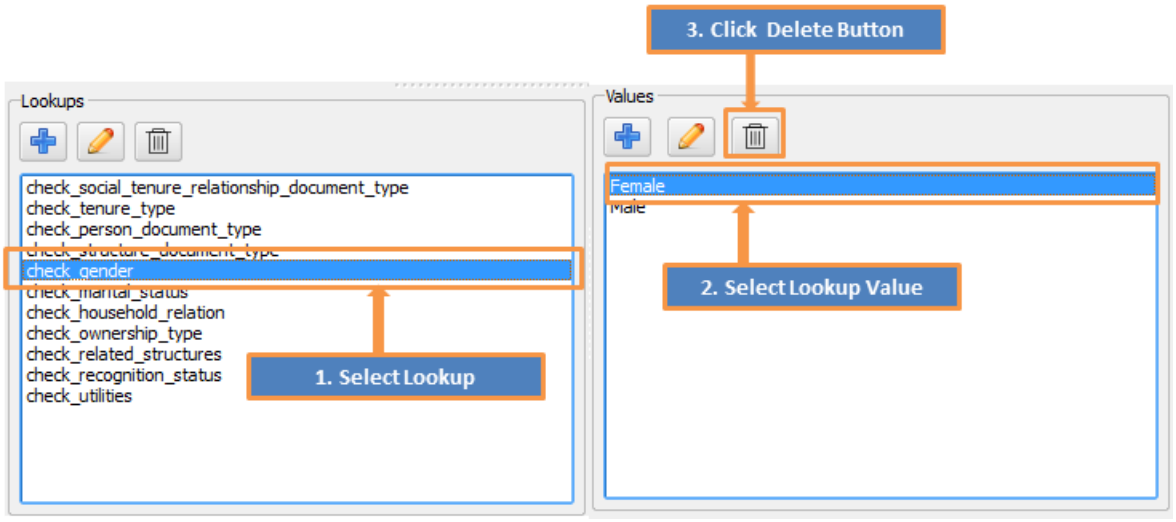

4. All the related entities, lookups and lookup values for the selected profile should load on various pages of the wizard.

5. Click the **Next** button on the **Navigation Bar** to access the **Entity Customization** page.

6. On the **Lookups Viewer Section**, click to select a lookup. If there are lookup values already available for the selected lookup, they will be displayed on the **Lookup Values Viewer**.

7. Select the lookup value you want to edit.

8. On the **Action Toolbar** of the **Lookup Values** Viewer section, click the **Delete** button as shown in the image below.




9. The lookup value will immediately be removed from the list of values.

# Re-ordering Values

After creating lookup values for the first time on a **Lookup Entity**, it is possible to re-arrange the order on which they appear on the **Lookup Values Viewer**.

To re-order the **Values** on the **Lookup Values Viewer**, follow the steps below.

1. Create lookup values on a **Lookup** as illustrated in Creating Values section.

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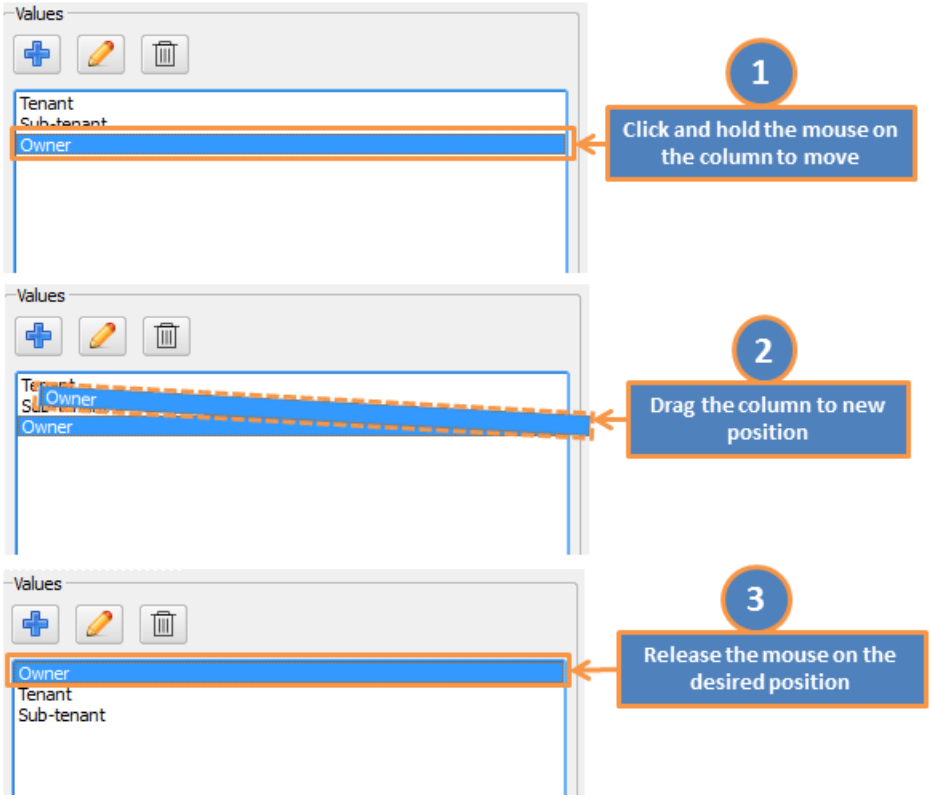
2. On the **Lookup Values Viewer** click and hold the mouse (left mouse button) on the value you wish to move.

3. Now drag the value to a different position on the list of values.

4. Release the mouse on the new position. These steps have been illustrated below.




5. Your value should now be in a new position.

# Defining Social Tenure Relationship Entities

## STR Overview

The Social Tenure Relationship page has been revamped to allow users define social tenure relationships in a more versatile manner than before. The page has been divided into different sections as shown in the image below.

**Sections:**

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1. **Parties Selection** - A check box list to select party entities that will participate in the STR.

2. **Multiple party selection check box** - Check box to enable or disable multiple parties to be linked to a single spatial unit.

3. **Spatial Units Selection List** - A check box list to select spatial units that will participate in STR mapping.

4. **Tenure Types Selection** - Button to open a selection box to choose tenure type for different spatial units.

5. **Tenure Validity Date Range** - Section to select a valid start and end date range for a tenure.

6. **Tenure Custom Attributes** - A button to open extra property window to define for a tenure type. This feature is optional.

7. **STR Diagram** - A diagram showing a visual representation of the STR mapping.

# Selecting Party and Spatial Unit Entity

Party entity in a social tenure relationship represents a person or organization that plays a role in rights transaction. An organization can be a company, municipality, state, tribe, farmer cooperation or even a community.

Spatial Unit entity in a social tenure relationship represents a single area (or multiple areas) of land and/or water. In STDM, it is a prerequisite for an entity representing a spatial unit to have at least one geometry column.

To select **Party** and **Spatial Unit** entities for **Social Tenure Relationship**, follow the steps below.

1. Click the **Configuration Wizard** icon on the **STDM Plugin Menu** to open the **Configuration Wizard** window.

2. When the **Configuration Wizard** window opens, click the **Next** button on the wizard **Navigation Bar** (**once**) to access the **Profile** page.

3. From **Profile Select** drop down, choose the **Profile** you want to customize as shown below.

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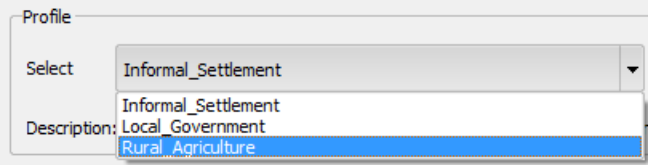


4. All the related **Entities, Lookups, Lookup values** and **Social Tenure Relationship** tables for the selected profile should load on various pages of the wizard.

5. Click **Next** button on the **Navigation Bar** (**twice**) to access the **Defining Social Tenure Entities** page as indicated in the image below.

6. To define a party or multiple parties for STR, click on the check box next to an entity in the **Party Entities Selection** list box.

7. To select **Spatial Unit Entity/Entities**, check any one of the spatial units in the check box selection list. Entities that appear on this list **must** have a **Geometry** column defined.

## Define Tenure Type for Spatial Units

You can define a tenure type for each selected spatial unit, to define this follow the steps below:

a. Click on the **Spatial Unit Tenure Type** button to open Spatial Unit Tenure Type window.

b. The following window will open

c. To select a tenure type for each spatial unit, click the **Tenure Type** dropdown box next to the spatial unit

d. Once you make a selection, close the Spatial Unit Tenure Types window.

## Define Tenure Validity Period

The STR module allows you to set a validity period for a tenure. The tenure period is defined by a start and an end date. To set these dates follow the steps below.

8. To set a **Start validity date**, click on the Minimum and Maximum date selection control to choose a date in the **Start** date range box.

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9. To set an **End validity date** for a social tenure, click the Minimum and Maximum date selection control to choose a date in the 'End' date range box

## Specify Custom Tenure Attributes - Optional

STDM allows a user to add more information related to a tenure type. For example holders of a farm tenure in a given community might be involved in farm dispute. To record details of this dispute on this tenure, you use the custom attribute feature. These attributes are basically columns (same as the one used in an Entity). To add custom columns to a tenure type follow the steps below.

a. Click on the Custom Attributes button

b. A **Custom Attribute Editor** window similar to the one below will open.

c. On the **Tenure Type** dropdown, select a tenure type you wish to add extra attributes

**Adding, Editing and Deleting an Attribute**

- To **Add** an attribute, click the **Add** button and follow the steps shown in Creating Columns section above.

- To **Edit** a attribute, click to select an attribute on the attributes grid then click the **Edit** button. Follow the steps highlighted in section Editing Columns above.

- To Delete an attribute, click to select an attribute on the attributes grid then click **Delete** button. A warning box will appear similar to the one show below, click **Yes** to remove the attribute, otherwise select **No** to abort delete action.

d. To save the attributes you created, click the **OK** button on the Save/Cancel action tool bar.

10. Once you make your selections, click the **Next** button to proceed to the last page of the wizard.

**Important Notes.**

**Note 1: Party** and **Spatial Unit** entities should not be the same.

**Note 2:** The **Spatial Unit** entity **must** have one **Geometry** column defined to qualify as a spatial unit entity.

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**Note 3:** Specifying **Custom Attributes** for a tenure type is strictly optional and should not hinder the setting up of STR for a given profile.

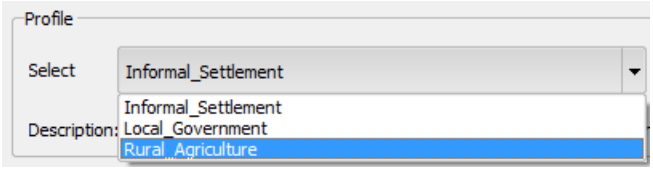
# Setting One or More Parties per Spatial Unit

Ideally, Social Tenure Relationship is defined by two entities - Party entity and a Spatial Unit entity. To allow multiple parties to share a single spatial unit, for example, different persons sharing land rights to a single plot, follow the steps below.

1. Click the **Configuration Wizard** icon on the **STDM Plugin Menu** to open the **Configuration Wizard** window.

2. When the **Configuration Wizard** window opens, click the **Next** button on the wizard **Navigation Bar** (**once**) to access the **Profile** page.

3. From **Profile Select** drop down, shown in the image below, choose the **Profile** you want to customize.




4. All the related **Entities, Lookups, Lookup values** and **Social Tenure Relationship** tables for the selected profile should load on various pages of the wizard.

5. Click the **Next** button on the **Navigation Bar** (**twice**) to access the **Defining Social Tenure Tables** page.

6. Click on the check box titled **Allow multiple parties to be linked to a single spatial unit** below the **Party Selection List Box** as shown in the image below.

7. Once checked, click *Next* button to proceed.

# Save Configuration to Database

For all your profile customisation to be stored permanently, they must be saved in the database. This process involves translating all profile **Entities** and **Lookups** that are created on the **Configuration Wizard** into physical database tables and database views in the STDM database.

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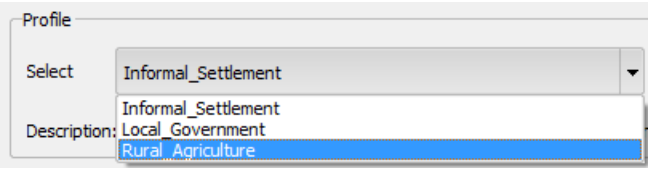
To save your configuration changes to the database, follow the steps below.

1. Click the **Configuration Wizard** icon on the **STDM Plugin Menu** to open the **Configuration Wizard** window.

2. When the **Configuration Wizard** window opens, click the **Next** button on the wizard **Navigation Bar** (**once**) to access the **Profile** page.

3. From **Profile Select** drop down, shown in the image below, choose the **Profile** you want to customize.




4. All the related **Entities, Lookups, Lookup values and Social Tenure Relationship** tables for the selected profile should load on various pages of the wizard.

5. Perform any necessary customisation.

6. Click the **Next** button on the **Navigation Bar** until you get to the **Save Configuration** page as shown in the image below.

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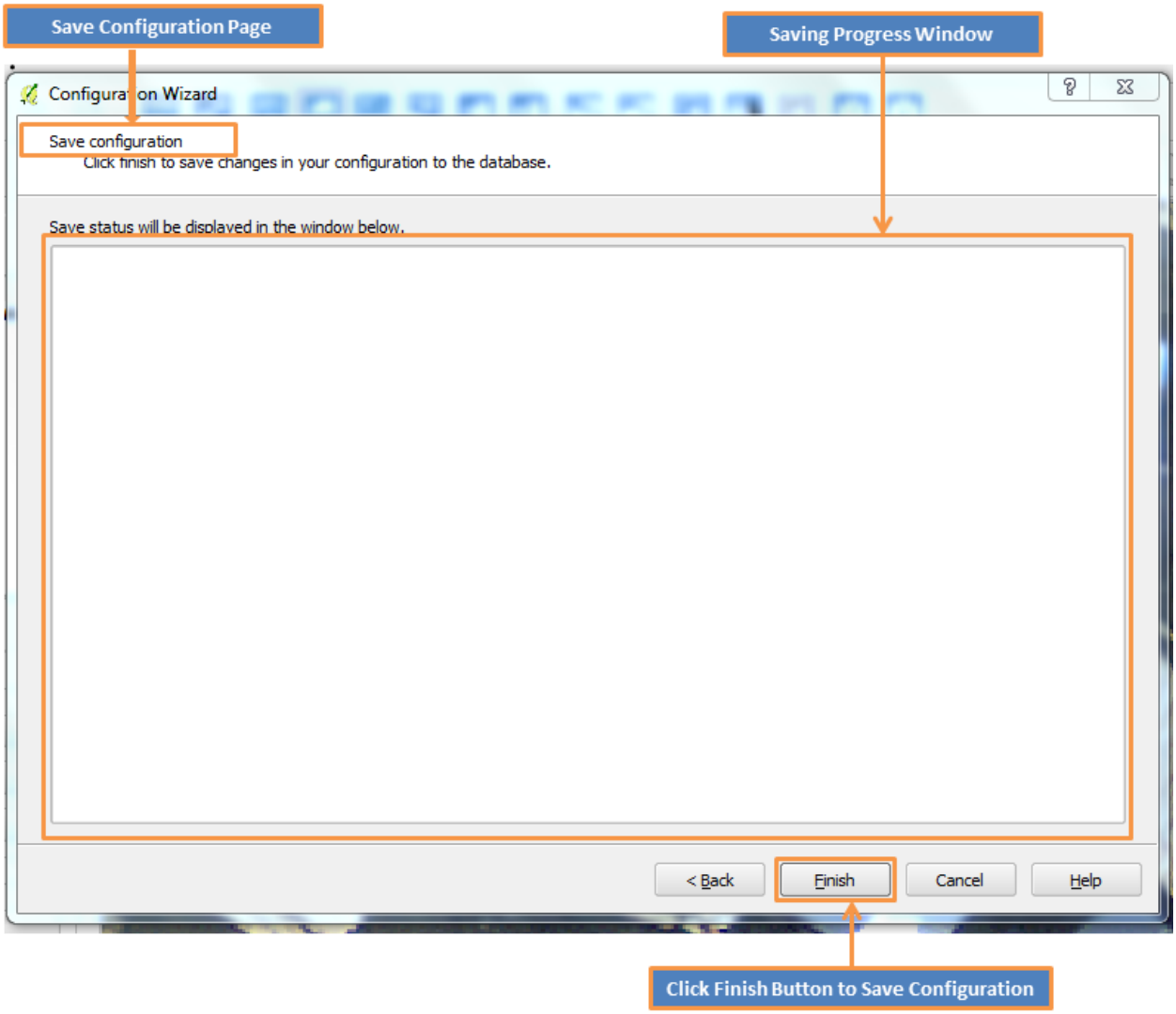


7. To save your configuration, click the **Finish** button.

8. Saving progress activity will show on the **Saving Progress** window.

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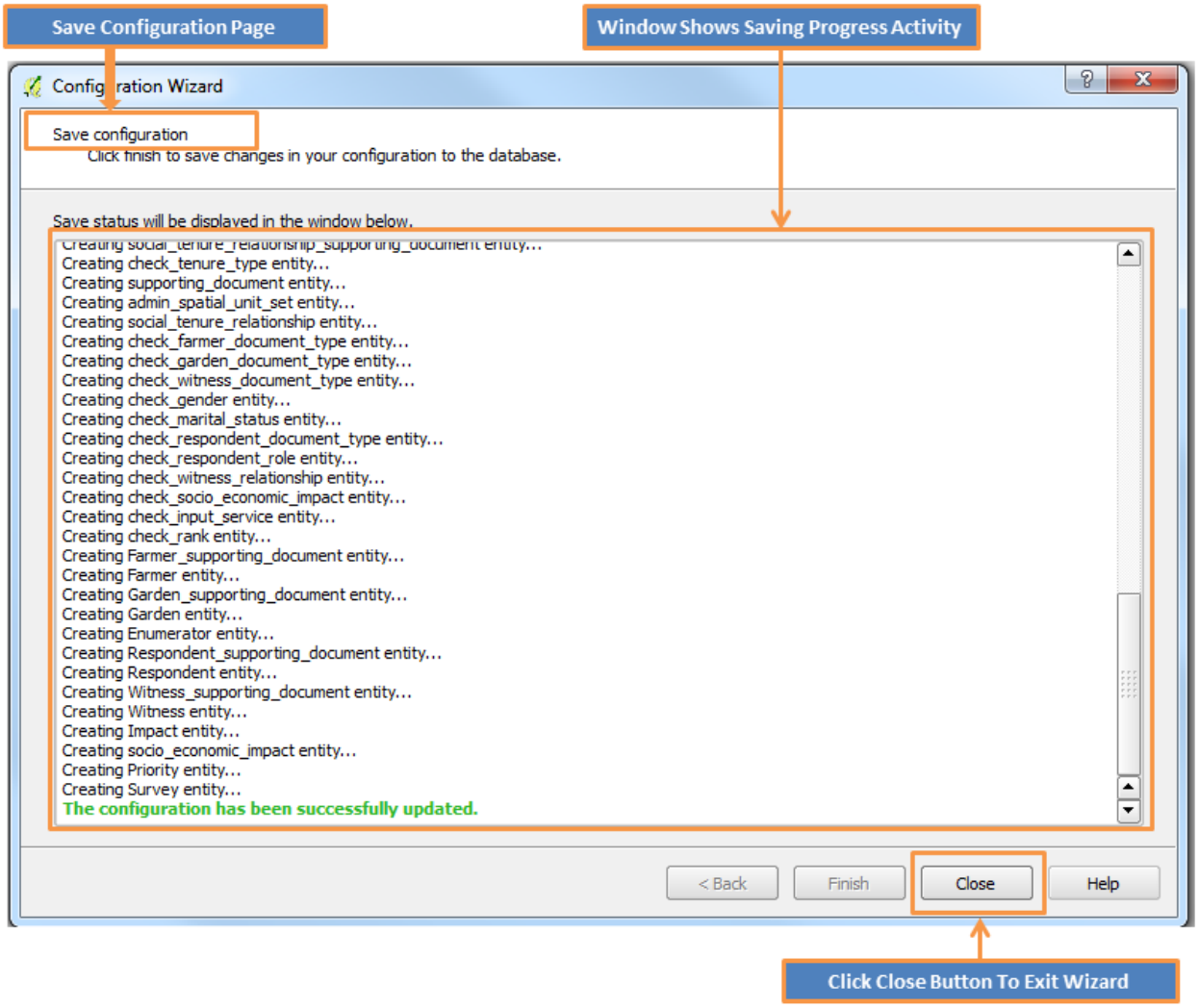
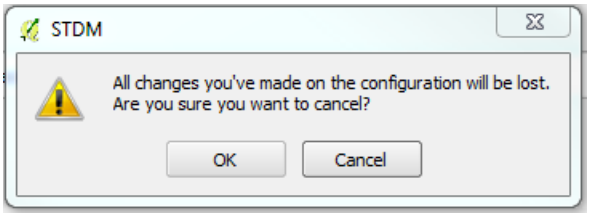



9. If saving is successful, click the **Close** button to exit the **Configuration Wizard** window.

**Important Notes**

**Note 1:** An error message will be shown in **red** font in the **Progress Activity** window if the **Configuration Wizard** encounters an error during the saving process.

**Note 2:** To prevent you from accidently losing your work (if you had done any changes on any profile), a warning message will popup when you click the **Cancel** button on the Navigation Bar of the **Configuration Wizard** as shown in the image below.

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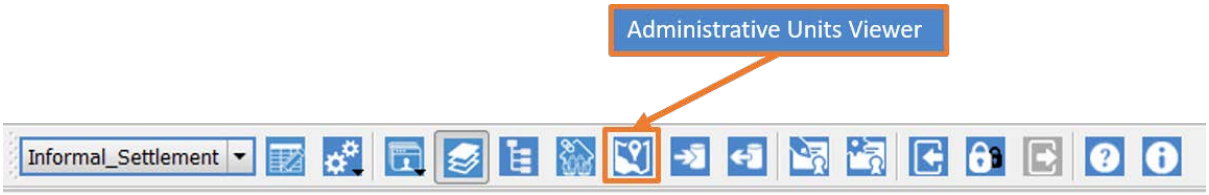
# Managing Entity Data

At the heart of STDM lies the flexibility to manage tenure data such as administrative units, entities, spatial data, and social tenure relationships. The following sub topics guide you on how to manage tenure data that leads to a successful implementation of a flexible Land Information System powered by STDM.

# Managing Administrative Unit

Administrative units are set up on a hierarchical/cascade structure. For example, from country to province, then district, division and location. This could also be explained as a form of a parent unit to a child unit relationship.

**1.** To access the administrative unit management, click on its button on the tool bar shown in a red box below.




The **Administrative Units Viewer** displays to enable adding new administrative units as shown in the image below.

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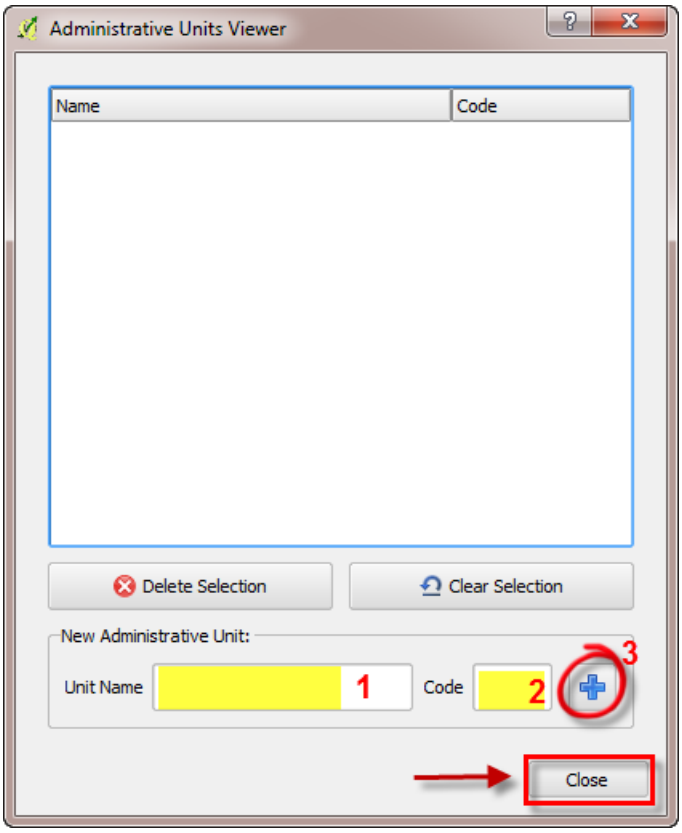
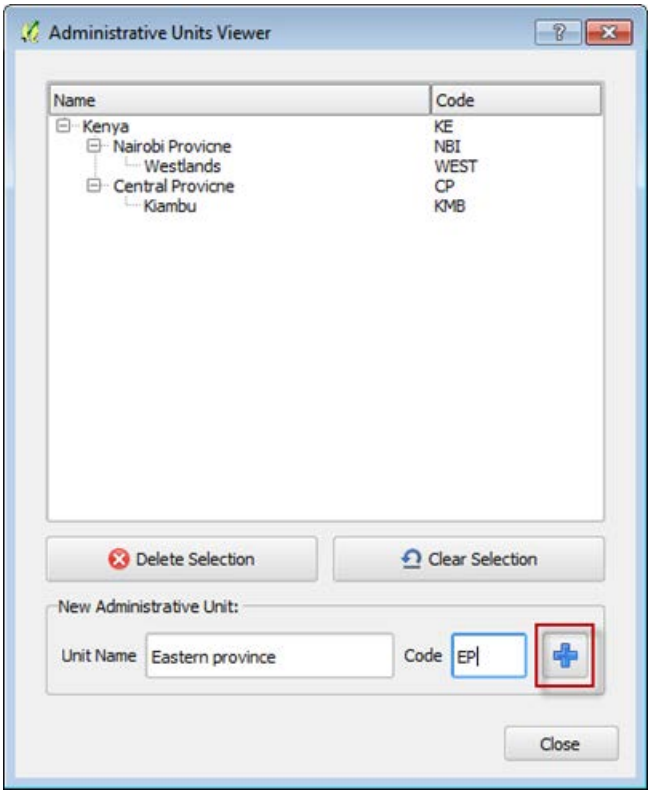



A sample of Administrative units prepared is shown below.

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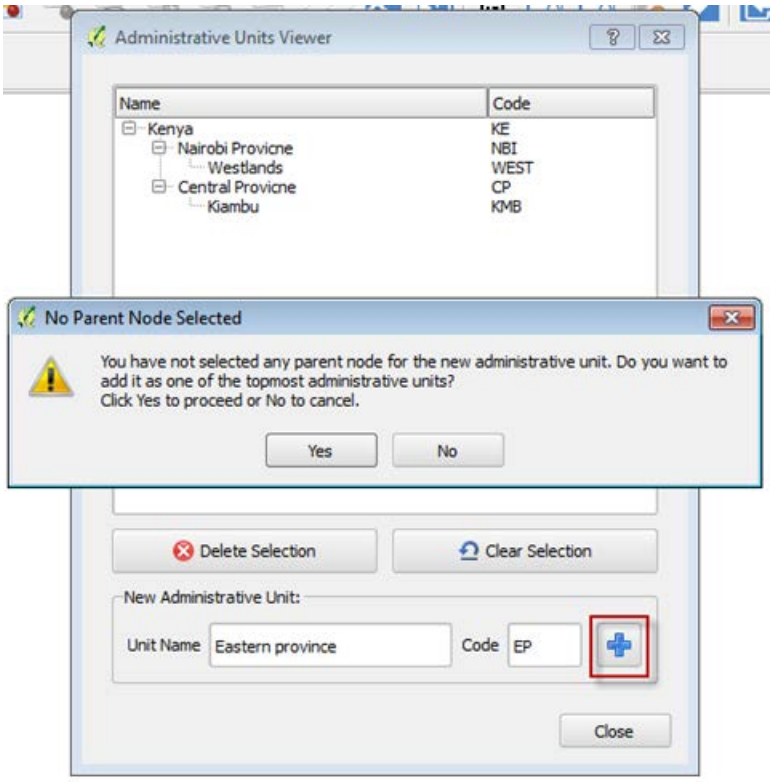
**2.** To set up a new administrative unit, type down its name and on the unit name field and its code on the code field.

The system sets a new unit as a parent unit if no existing unit is selected during a new unit creation.

If an already created unit is selected during creation of a new unit, the new unit will be the child unit and will appear below the selected unit.

**3.** If user intends to create a new parent unit when an already created unit is selected on the cascading view, click on the **Clear Selection**, button on the management wizard to reset selection.

4. Next, click on the **Add** button ( ) shown in a red box below to enter the new unit name and code.




An alert message appears showing that the current unit will be a parent unit. To proceed, click **Yes**.

# Deleting an Administrative Unit

The **Administrative Units Viewer** also has the option of deleting a unit.

**1.** To do this select on an intended unit on the unit cascade and click on **delete** selection.

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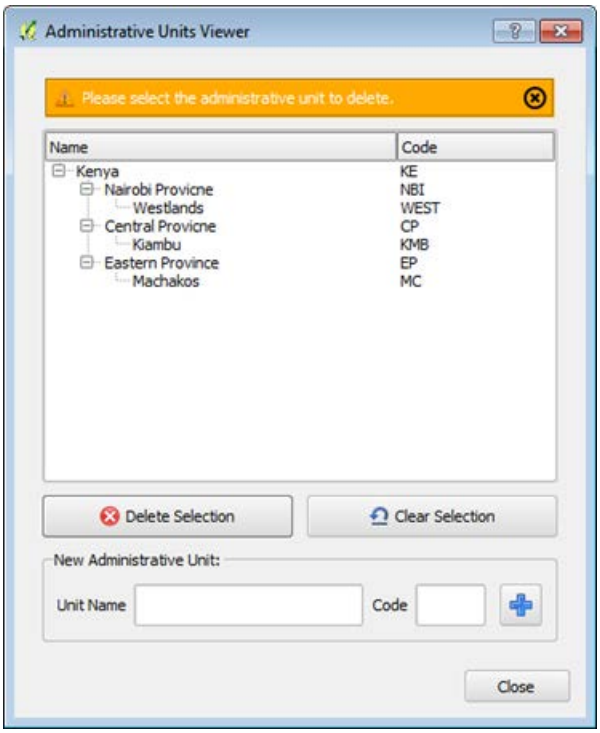
If the selected unit is a parent unit, the delete action will erase the unit and its children unit(s) below it. The image below illustrates how to select an intended unit on the unit.




# Managing Entities

Entity in STDM refers to a database table in which a specific data is stored. Examples of entity in STDM include person, party, parcel, etc.

Each entity has an **Entity Browser** that loads any existing data from the database. The entity browser has buttons for adding, editing or deleting records (see the image below). You can also make searches based on searchable columns specified in the **Configuration Wizard**. An entity browser looks like the image below.

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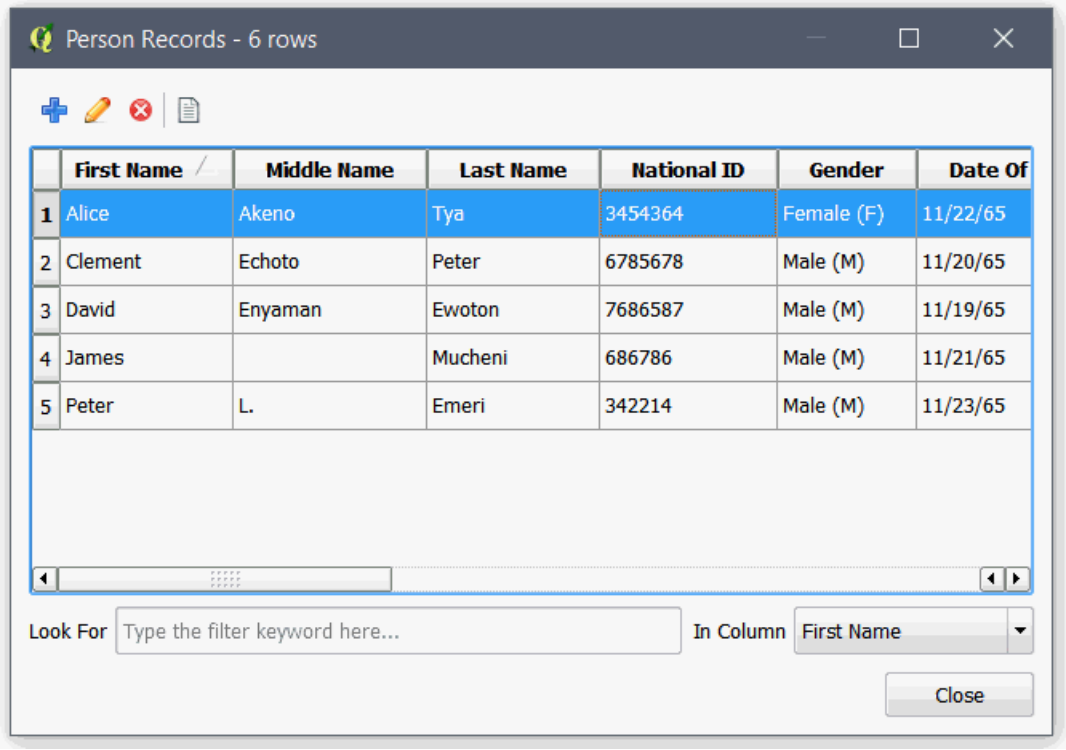


Entity Browser Tool buttons

- Add Records (Not available for spatial entities - to add a spatial record, you have to digitize a feature or import a record)

- Edit Record

- Delete Record

- View Document

**Managing Entities** refers to the process of adding, querying, editing and deleting records. The next sub-topics elaborate how to add, edit and delete records.

**Note:** The tool buttons at the top may vary depending on the entity.

# Adding a Record

Adding a record from Entity browser is possible for non-spatial entities. As spatial entities have geometry, a geometry needs to be digitized and an attribute data needs to be appended with the geometry once the digitalization is finished. To add a spatial entity record, by digitalization read Digitizing in a Spatial Entity Layer topic.

To add a new record, follow the steps below.

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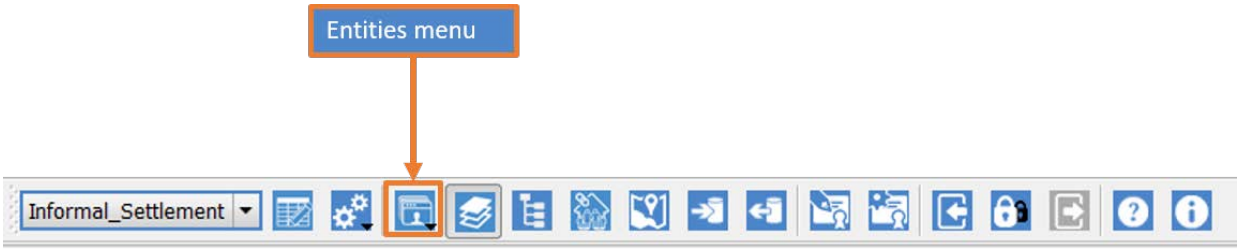
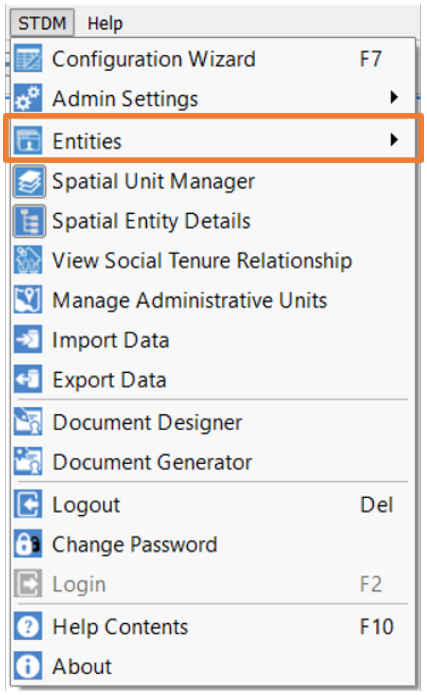
1. Go to the STDM Toolbar and click on **Entities** menu as illustrated in the image below.




You can also click on **STDM Menu** located under **QGIS Menu** and click on the Entities sub-menu as show in the image below to find the Entities sub-menu.




2. Open any Entity Browser you wish to view with the exception of New Social Tenure Relationship.

3. The Entity Browser of the entity you have selected loads a table similar to the one shown below. If you have not added any record, the table will be empty.

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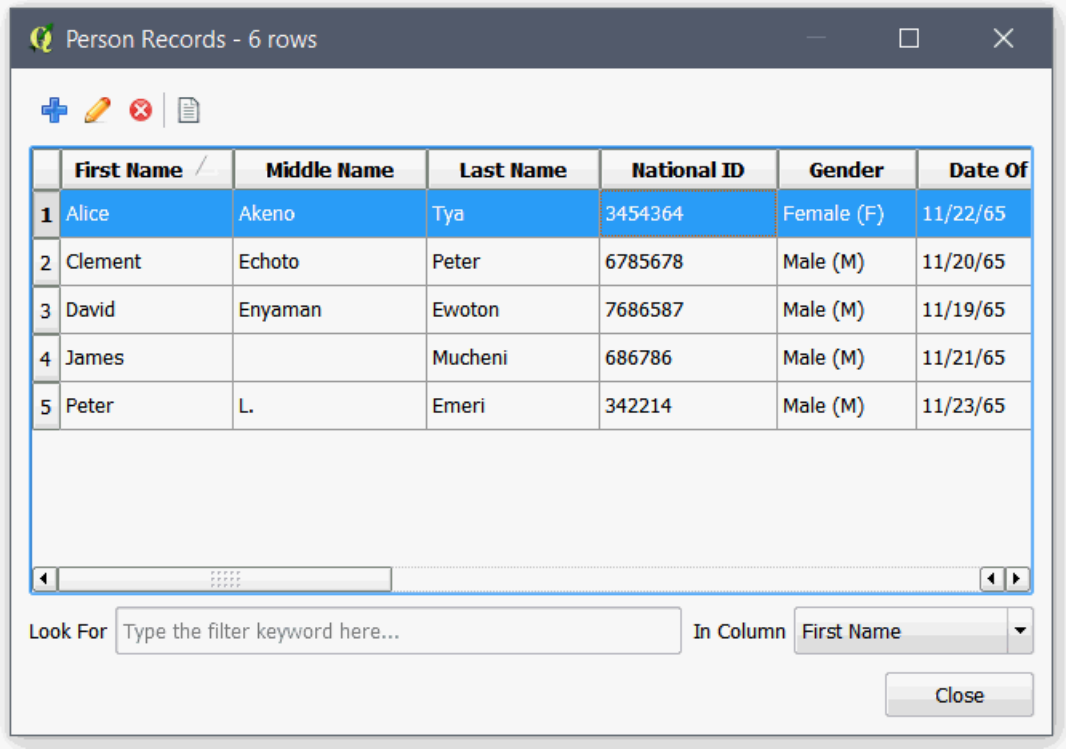
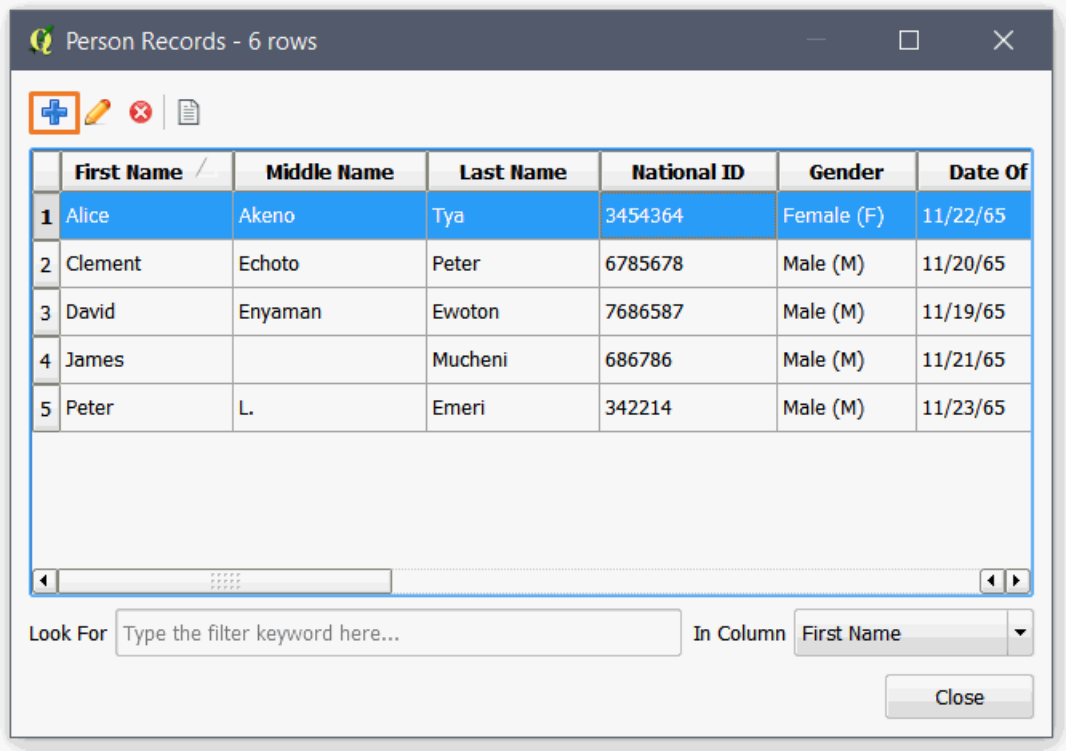



4. Click on **Add** button as shown in the picture below.




5. A pop-up dialog appears with a form (see the image below).

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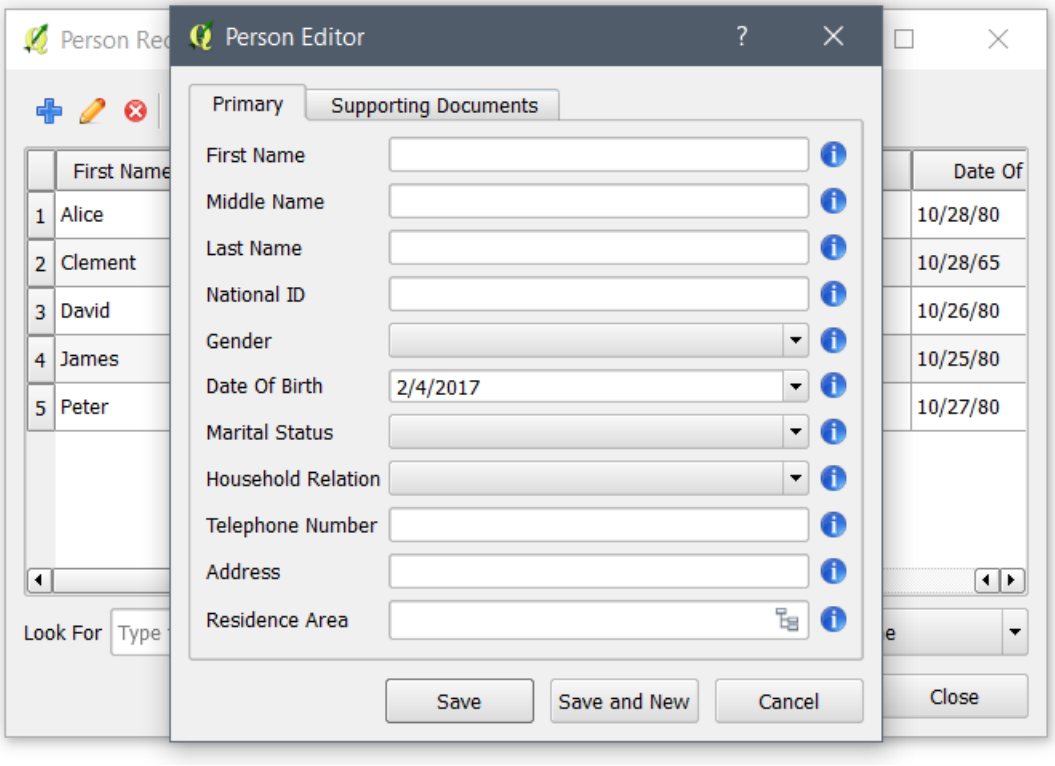
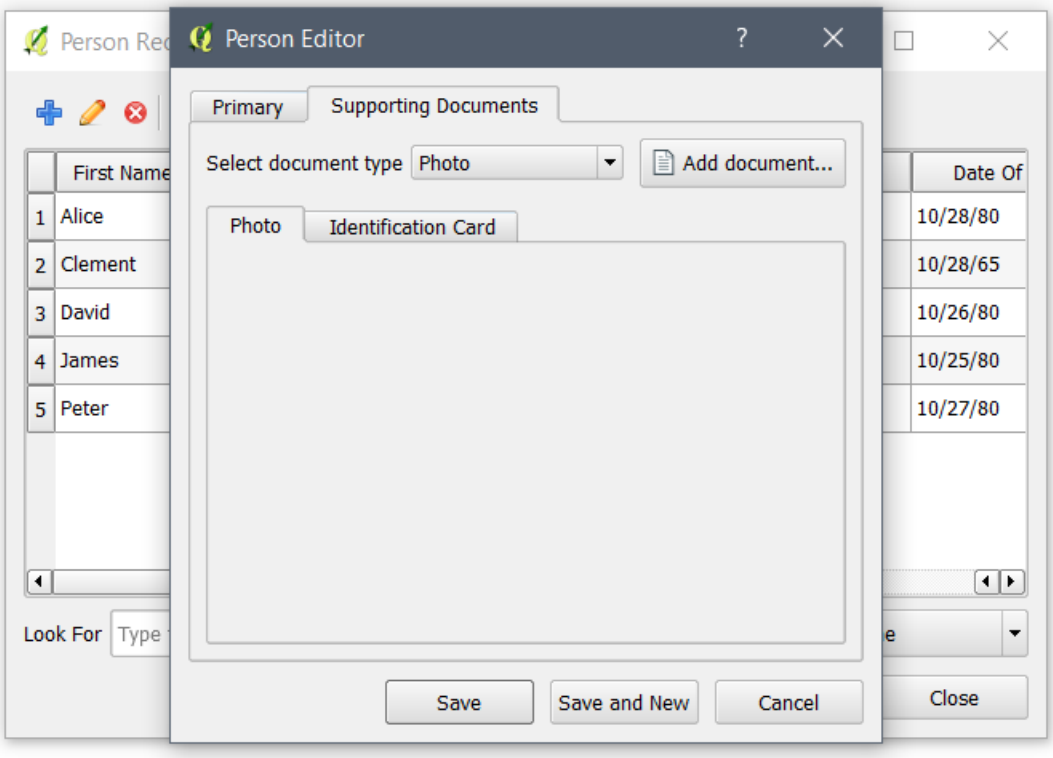
**Primary Form Tab**




**Supporting Documents Tab**

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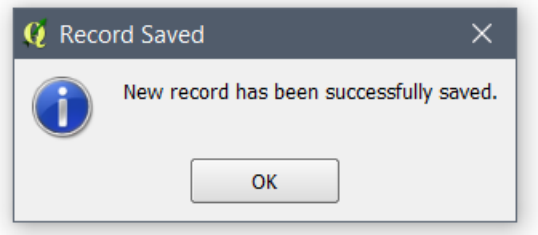
6. Fill out the form under the Primary tab.

5. If the entity does not have supporting document option, click on the **Save** button. Otherwise, proceed to the topic Uploading Supporting Documents without saving.

If the form is properly entered, a success message pops up, as shown below.




# Uploading Supporting Documents

If an entity is supporting documents enabled, which can be activated in the Configuration Wizard Entities page, uploading supporting documents is possible.

If you have more than one document type, a tab will be created. You can click on the tabs or the drop down menu to upload the documents.

To upload a supporting document, follow the sub-steps below.

1. Choose on the document types by clicking on the tabs or the drop down menu. Then, click on the **Add Supporting Document** button as shown below.

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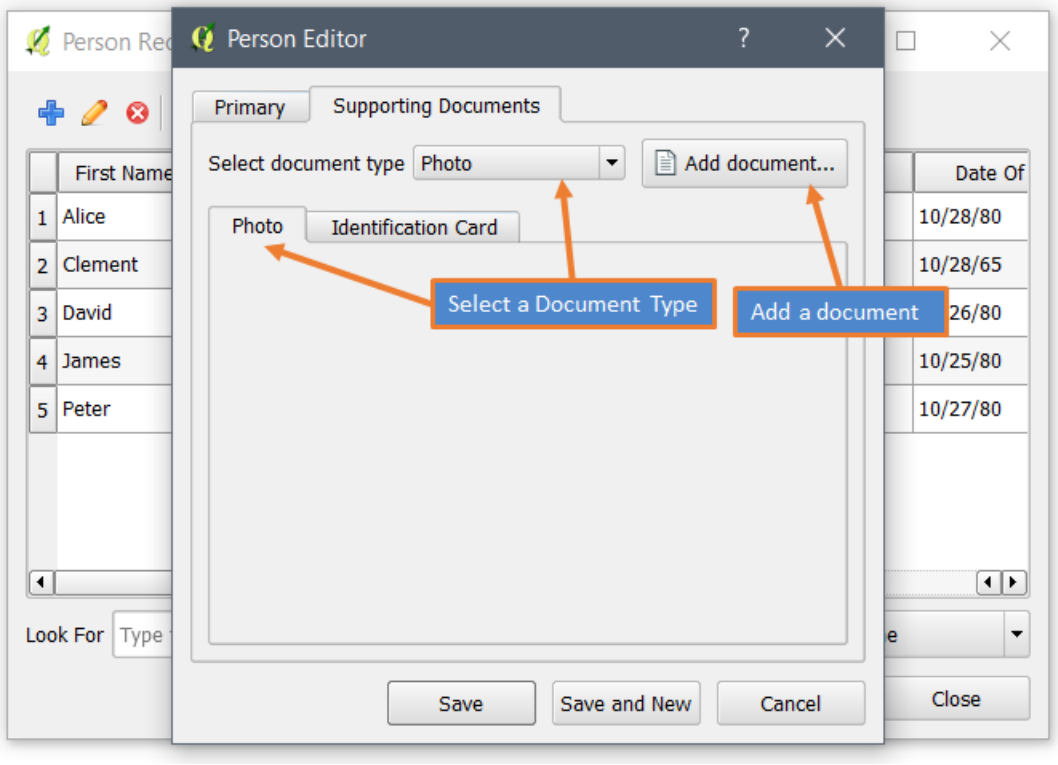
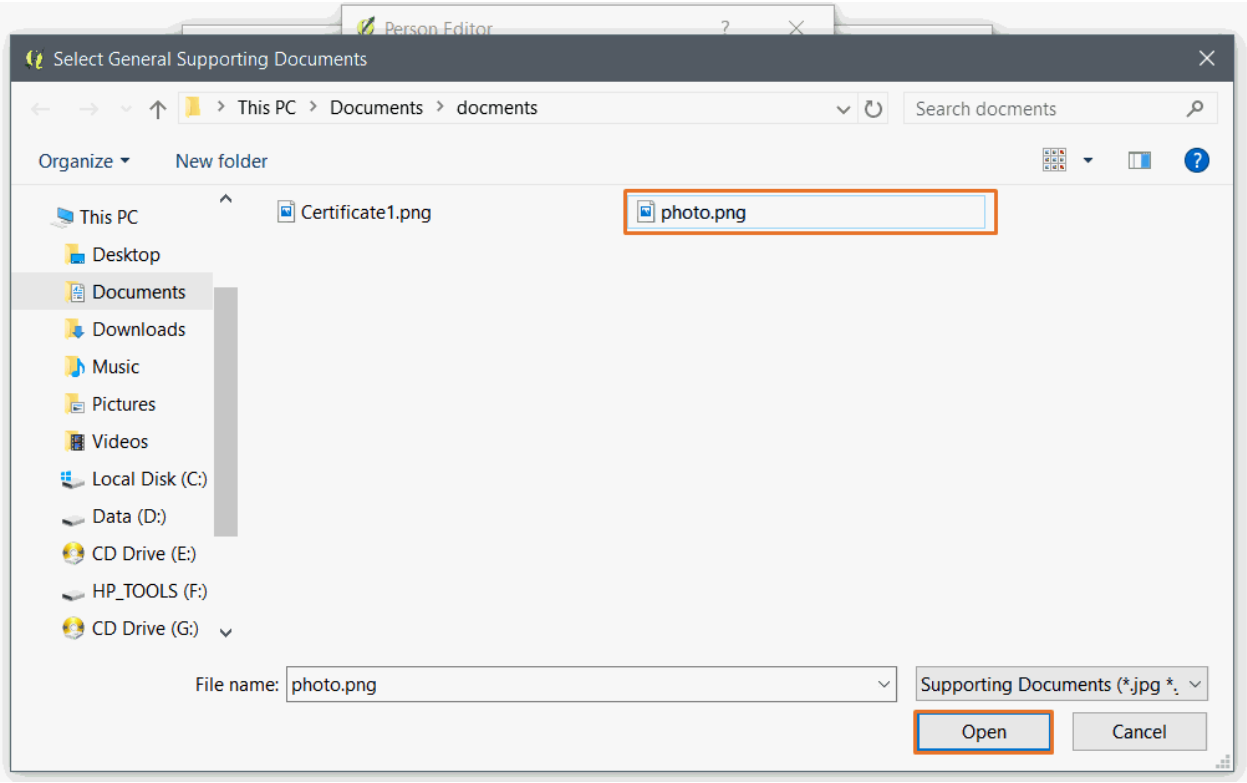



2. Choose a file to be uploaded by looking for the files in your Windows Explorer and then click the **Open** button as shown below.

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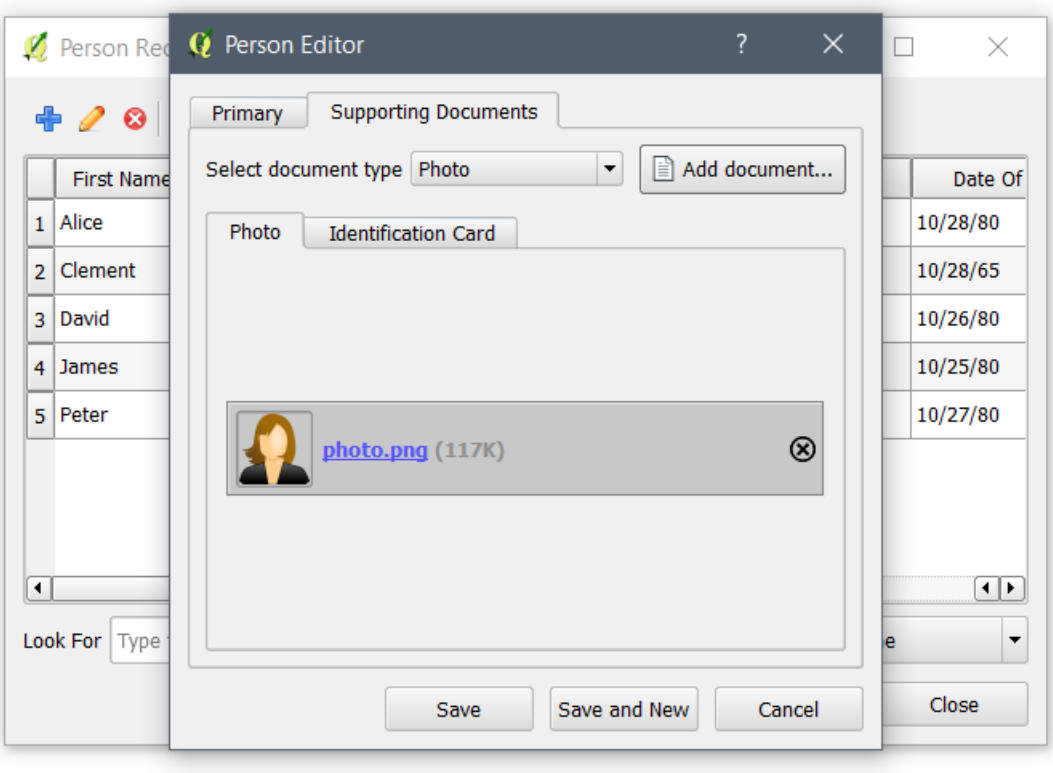
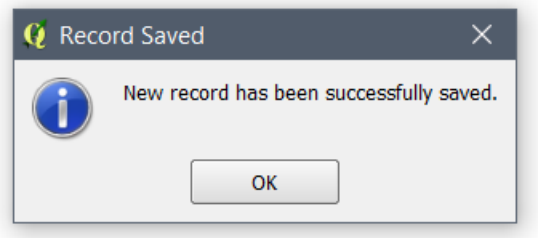
You will be able see the uploaded file added in the tab you have uploaded to, as shown below.




You can view the documents by clicking on the file name. If needed, you can remove the documents by clicking on the Remove icon ( ⊗) on each Document bars.

3. Click on the **Save** button. If the form is properly entered, a success message pops up, as shown below.




A new record will be added in the Entity Browser and you can see it added as a row.

# Adding Multiple Records

Adding multiple records might be a bit time consuming. This is because, after saving a record using the **Save** button, it was required to click on two buttons to access the entity editor to add another record. In STDM 1.7, this issue is solved with the addition of the **Save and New** button. The button does the same thing as the **Save** button but reloads the form without showing a success message. To continue adding several records click on the **Save and New** button as highlighted in the image below.

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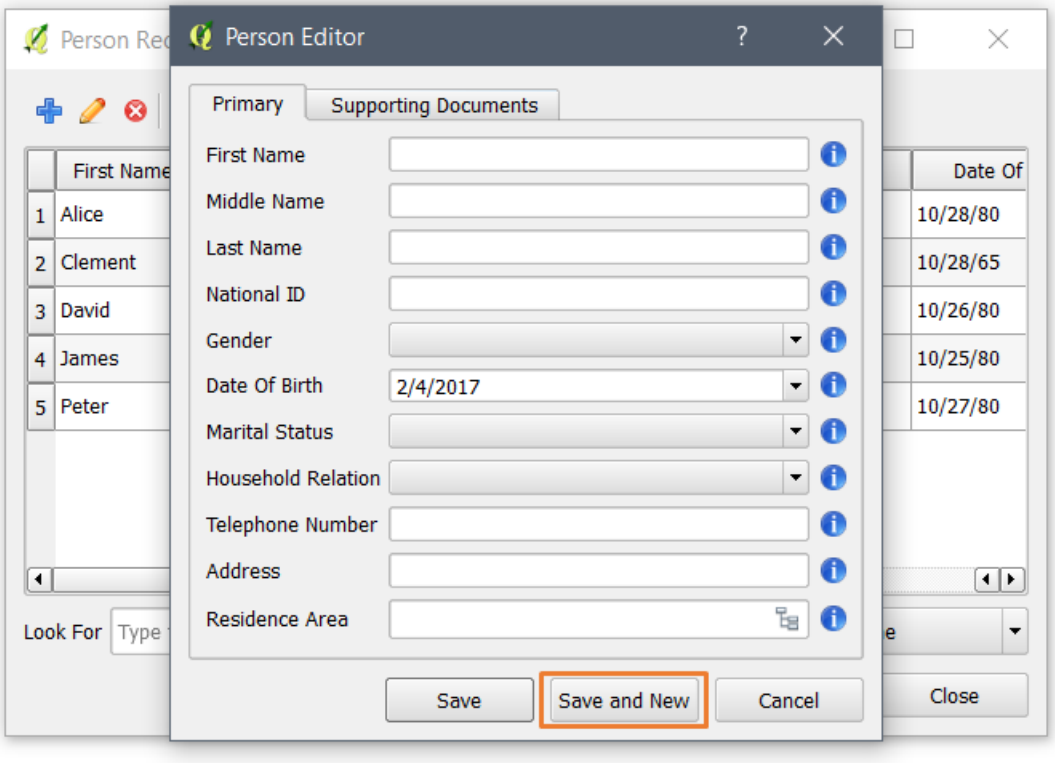


# Adding a Record Using a Subform

A **Subform** is a form that is inserted in another form. The main form is called **Primary** form, and the form that is enclosed in **Primary** form is called **Subform**. A form/subform combination is sometimes referred to as a hierarchical form, a master-detail form, or a parent-child form.

When you create your profile, there might be cases when one **Entity** is related to another **Entity**. For instance, you may have an entity called **Person** that contains information about an individual. However, there might be another **Entity** called **Household** that contains a general information about the whole family. In this case, you can link the **Person Entity** to the **Household Entity** using the **Related Entity** column discussed in Understanding Column Data Types topic. When you link two **Entities** a **Subform** is created in the parent **Entity** form. In this case, in the **Household Entity** form a **Subform** for the **Person Entity** is created. Consequently, after adding a record in the **Primary** form, you can also add a record using the **Subform**, which in this case will enable you to add a record for the **Person Entity**.

The **Subform** in STDM data entry form is created in a tab next to the **Primary** tab with the name of the child Entity follow by the word **Collection**. If the child **Entity** is **Person**, the **Subform** is called **Person Collection**.

To add a record using Subform, follow the steps below.

1. Add a record into the **Primary** form using the steps discussed in Adding a Record topic.

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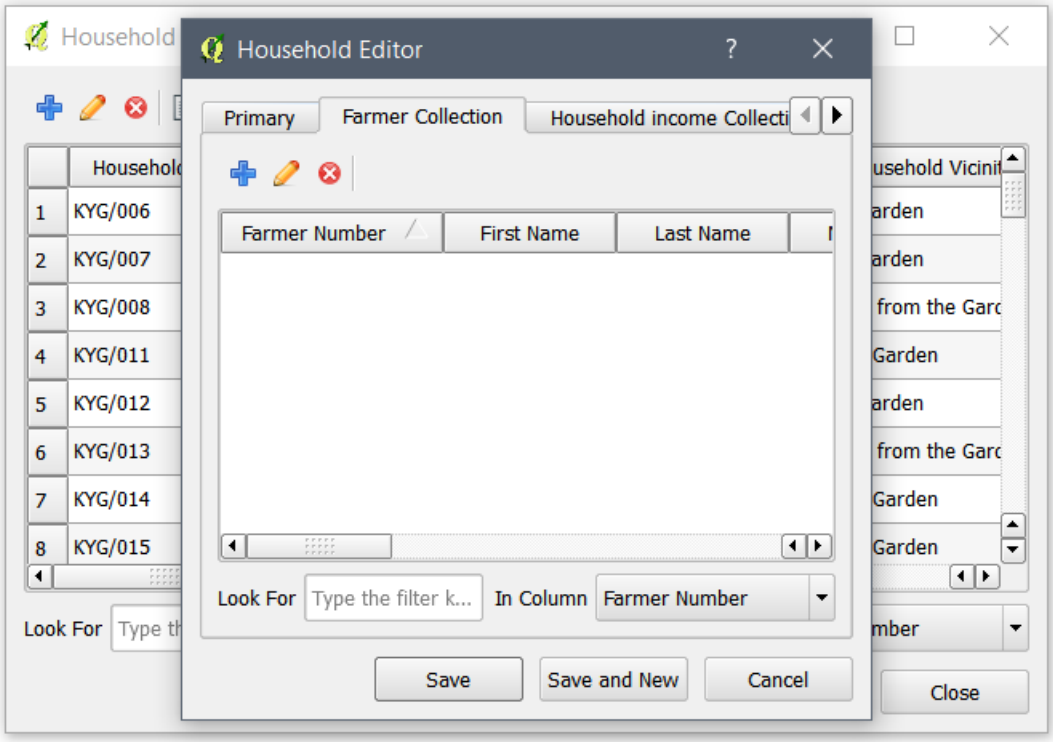
2. Locate the **Subform** tab by looking for a tab containing the Entity name followed by Collection. The image below shows a **Farmer Collection** tab which is a **Subform** of **Household Entity**.




3. Click on the **Add** button ( ) as shown in the image below.

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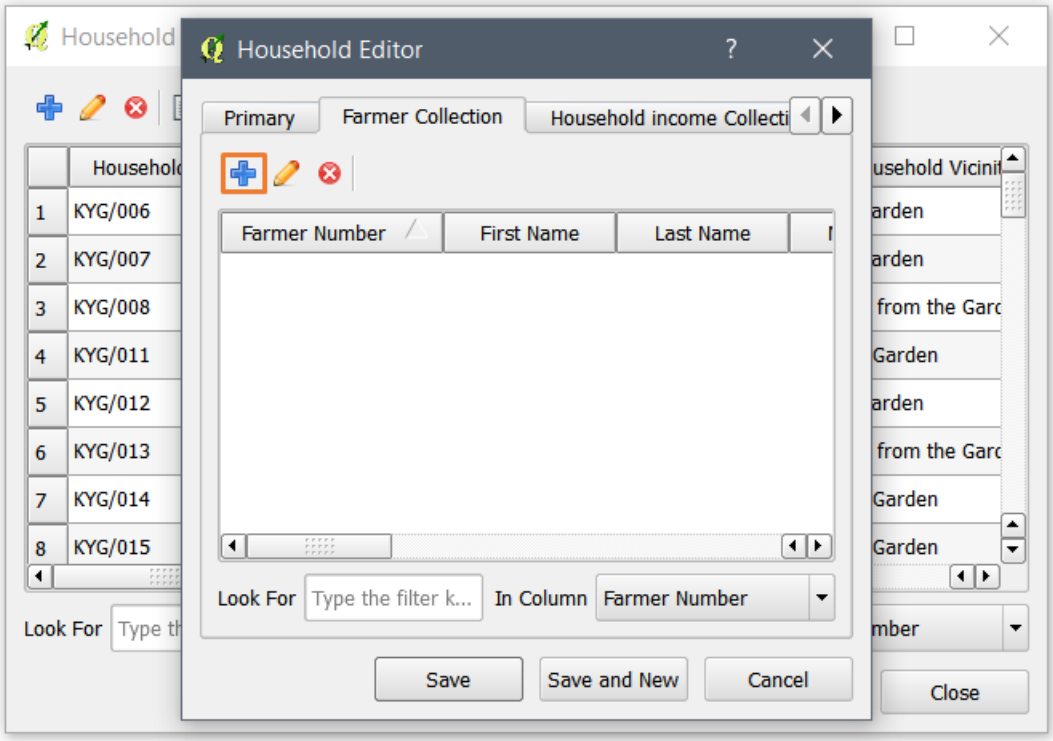
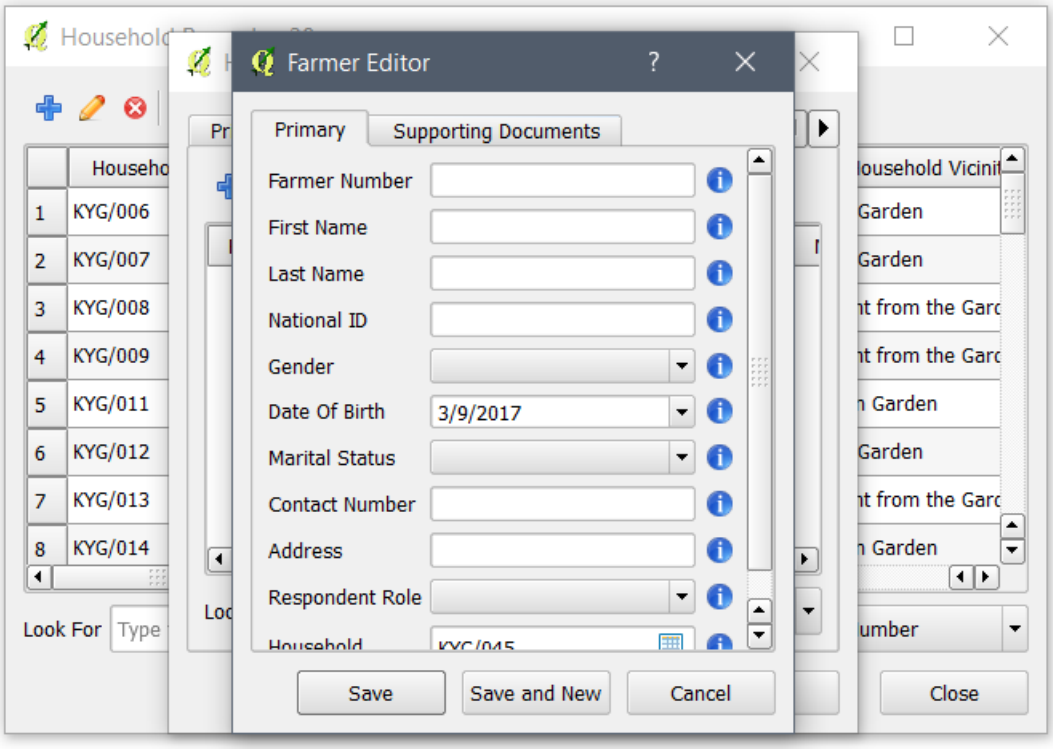



4. The Subform appears as shown in the image below. Fill out the form and click on the Save button. This will save the record temporarily and also added in the **Subform Entity Browser**. It will be saved permanently when you also save the Primary form.

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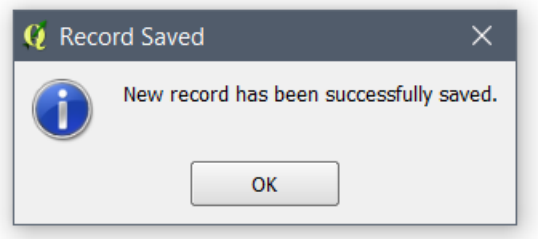
5. You can also upload supporting documents and add more records by clicking on the Save and New button.

6. Once you have completed adding records in the **Subforms**, save the primary form by clicking on the **Save** button. This will also save the **Subforms**.

If the forms are properly entered, a success message pops up, as shown below.




A new record will be added in the Entity Browser and you can see it added as a row.

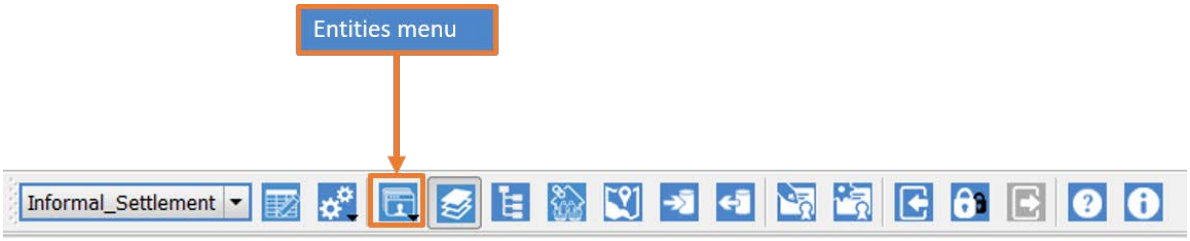
# Querying a Record

In addition to adding records, the Entity Browser enables you to search and find any data using filters. This capability makes it easy to find a record for information purpose, and to perform operations like editing, document viewing and deleting.

## Searching

The steps below show how to search for data.

1. Go to the **STDM Toolbar** and click on **Entities** menu as illustrated in the image below.




You can also click on **STDM Menu** located under **QGIS Menu** and click on the Entities sub-menu as shown in the image below to find the Entities sub-menu.

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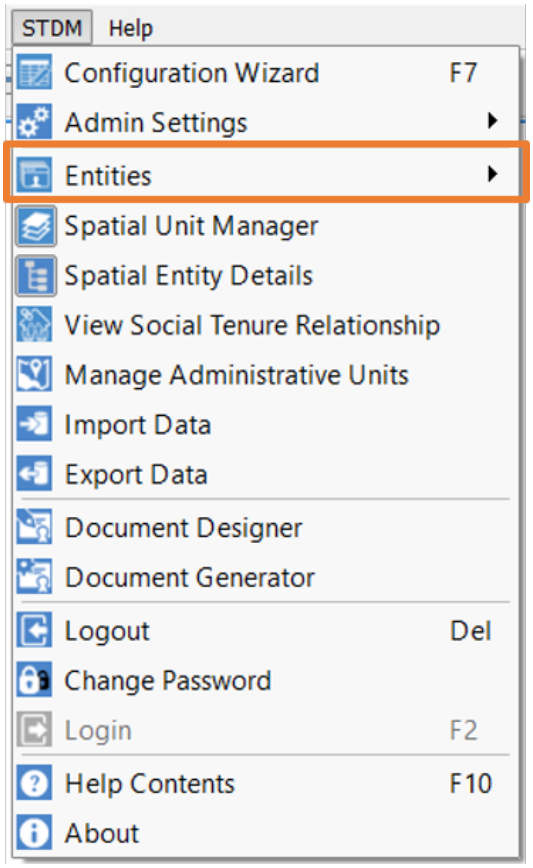
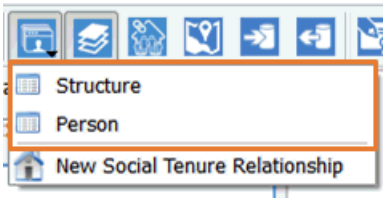



2. Open any Entity Browser you wish to view with the exception of New Social Tenure Relationship.




3. The Entity Browser of the entity you have selected loads similar to the one shown below. If you have not added any record, the table will be empty.

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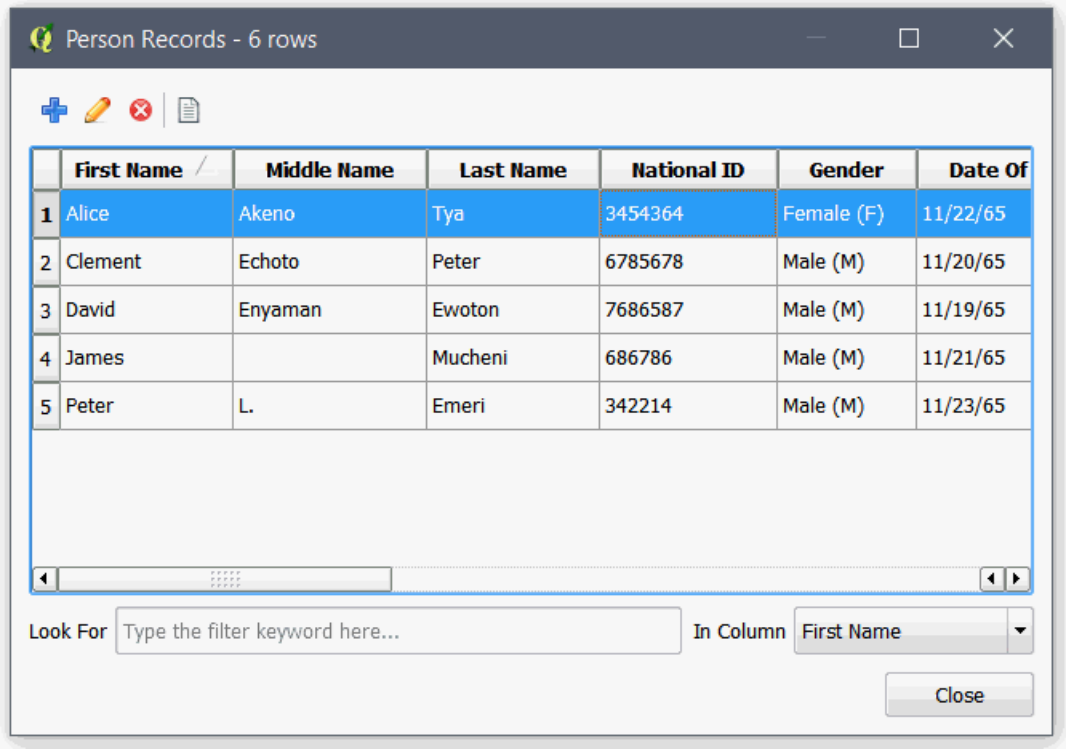
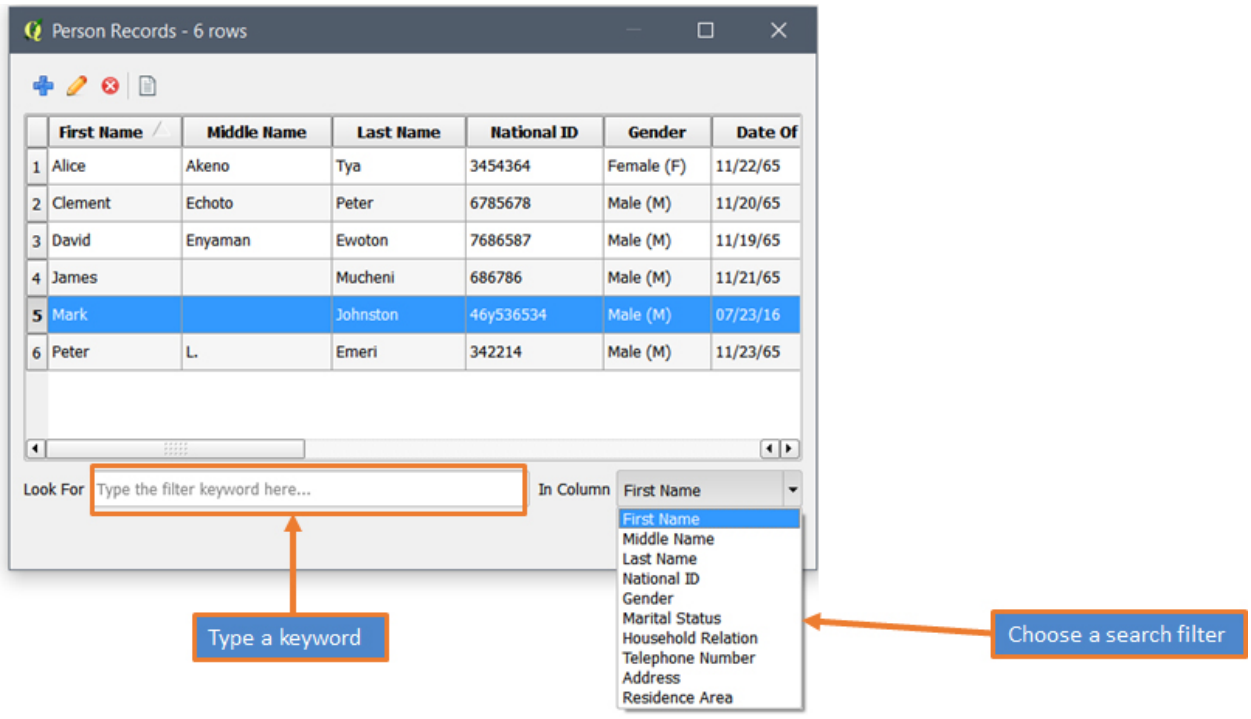



2. In the Entity Browser, select the filter and enter a keyword to search for records as shown in the image below.




3. Only the search result appears (see the image below). The filtered list will continue appearing until you clear the keyword.

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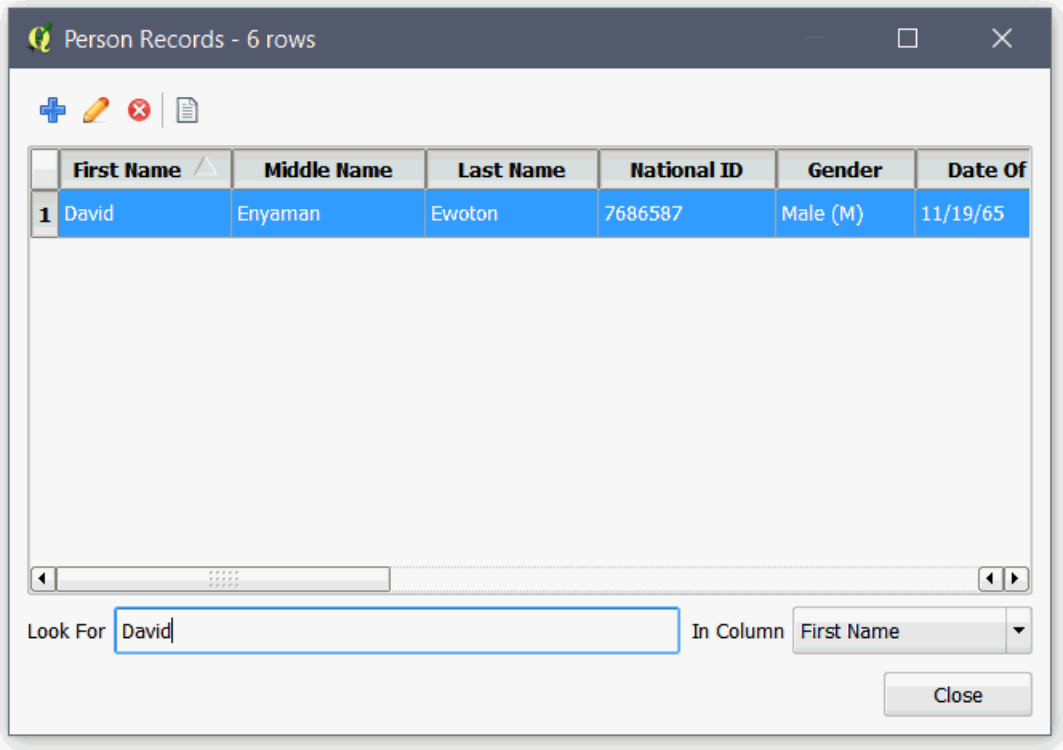


**Note**: To perform further operations such as editing, and deleting a record, you must select the record.

# Viewing a Supporting Document

STDM provides a document viewer in which you can view supporting documents without going to the folder of the document, from within STDM.

To view a document, follow the steps below.

1. Search for a record from Entity Browser as explained in the preceding topic.

2. Select a record.

3. Click on the **View Document** icon as highlighted below.

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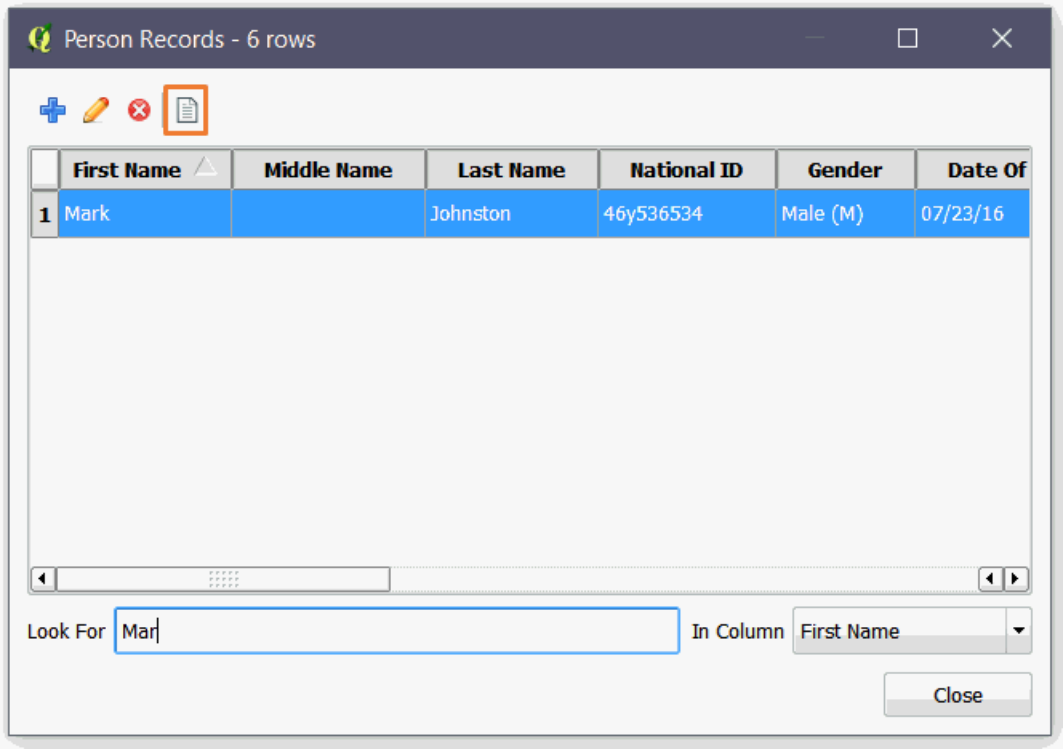
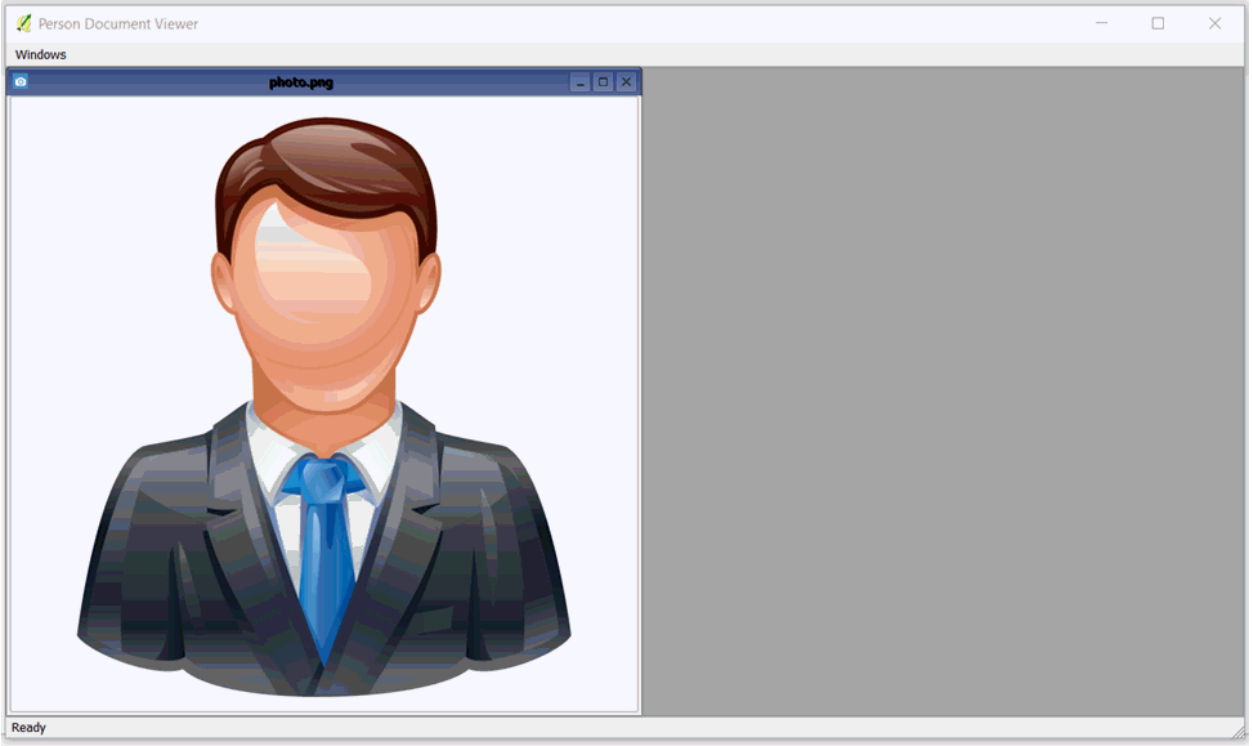



4. You can view the uploaded document as shown below.




You can resize and maximize the image if necessary.

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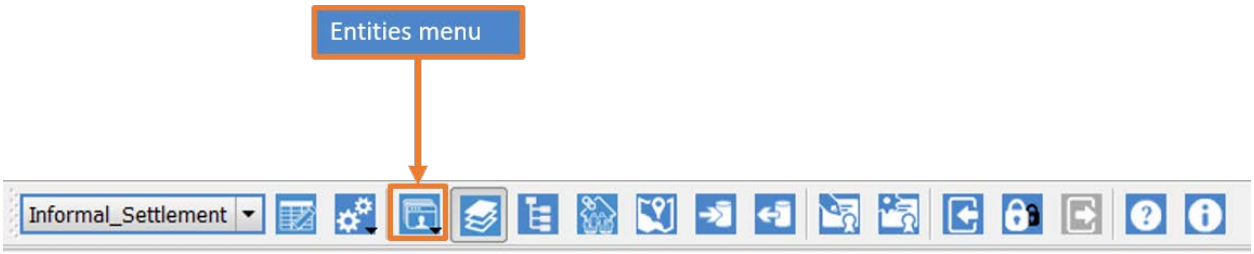
# Editing a Record

Editing involves modifying the existing records using the form. You can modify any field you wish including supporting documents.

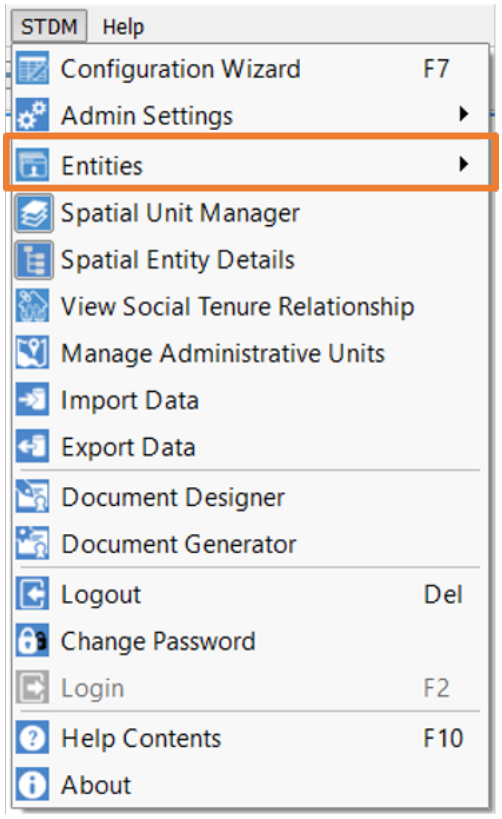
To edit a record, you need to first search for the record you wish to edit. The searching is especially useful when you have large number of records.

To edit a record, follow the steps below.

1. Go to the STDM Toolbar and click on **Entities** menu.




You can also click on **STDM Menu** located under **QGIS Menu** and click on the Entities sub-menu as shown in the image below to find the Entities sub-menu.

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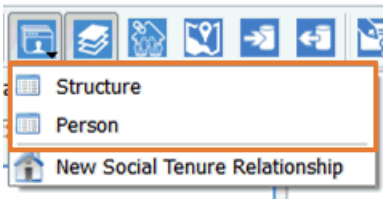
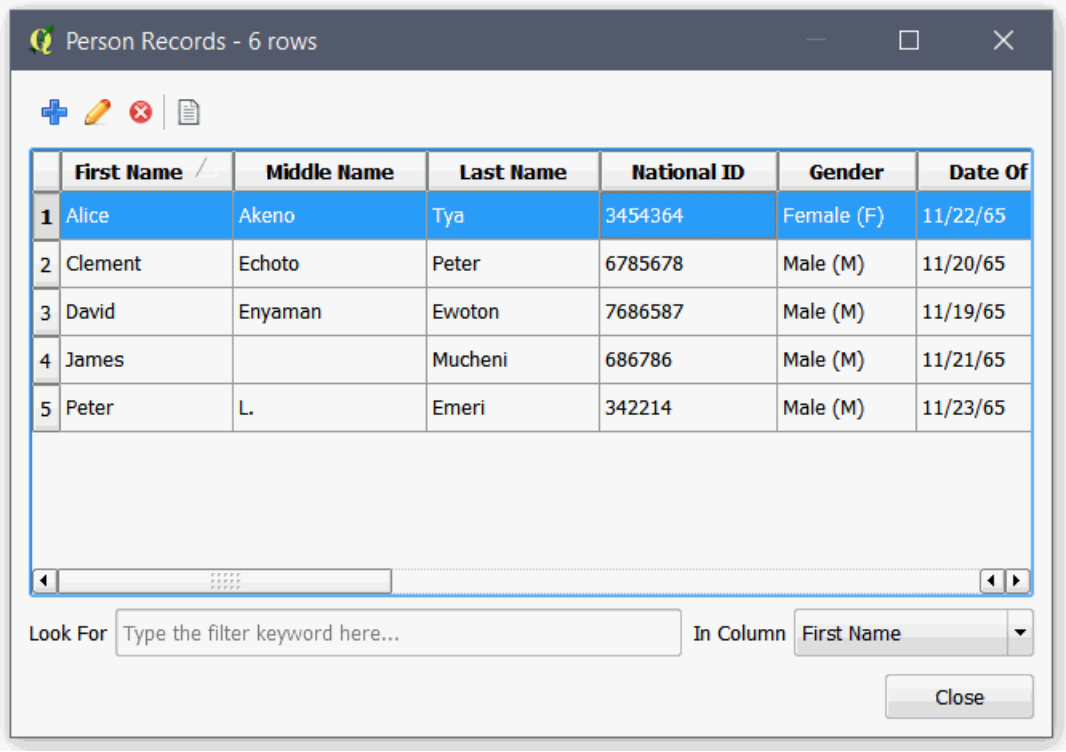
2. Open any Entity Browser you wish to view with the exception of New Social Tenure Relationship.




3. The **Entity Browser** of the entity you have selected loads similar to the one shown below.




2. In the **Entity Browser,** select the filter and enter text to search for a record as shown in the image below.

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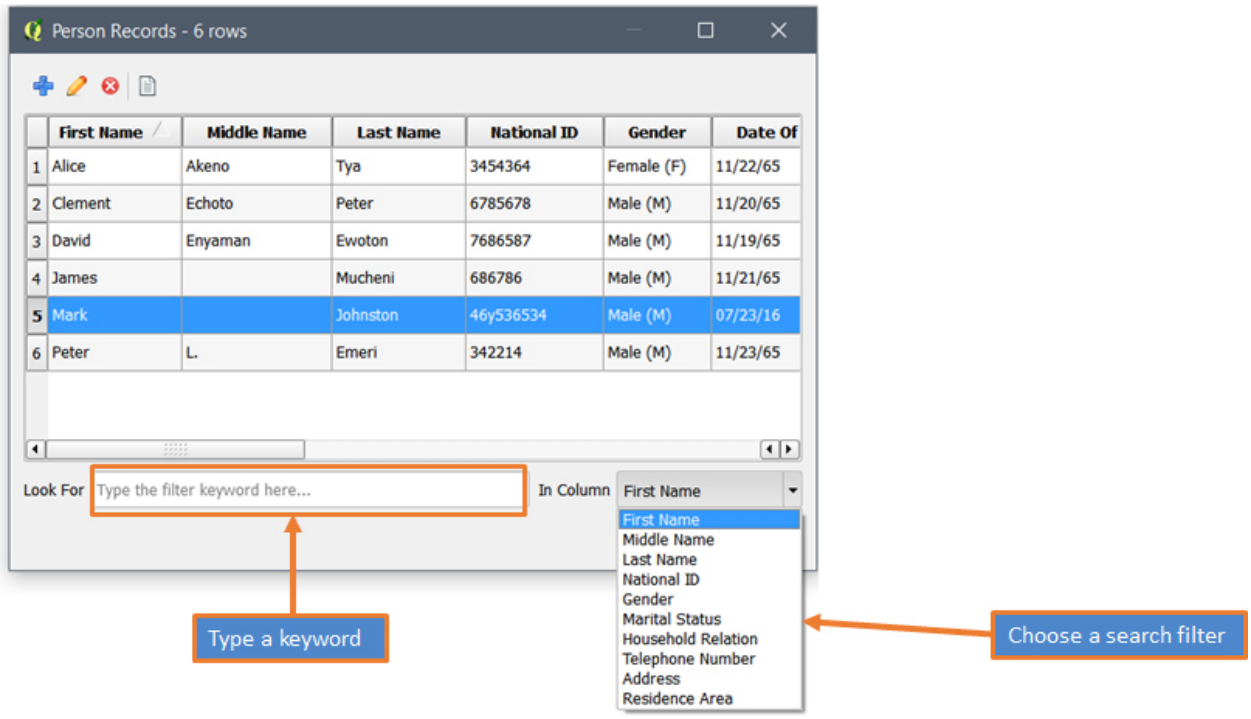
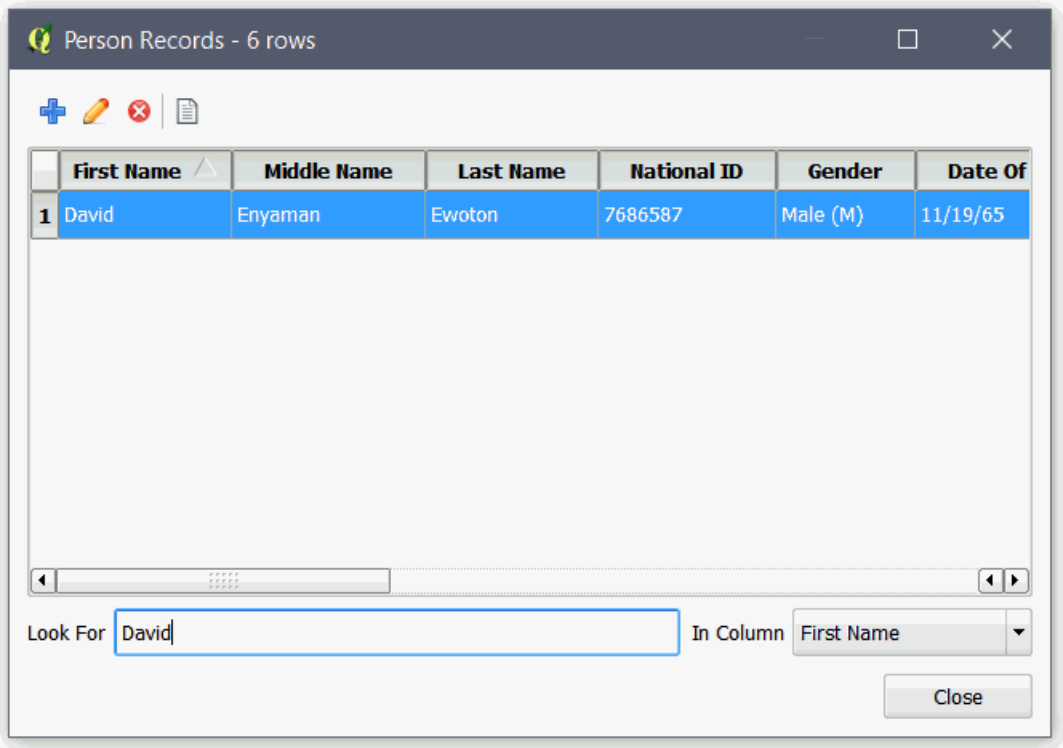



3. Only the search result appears (see the image below). The filtered list will appear until you clear the keyword.




2. As shown above, select a row/record you would like to edit and click on the **Edit** button as shown in the picture below or double click on the row you would like to edit.

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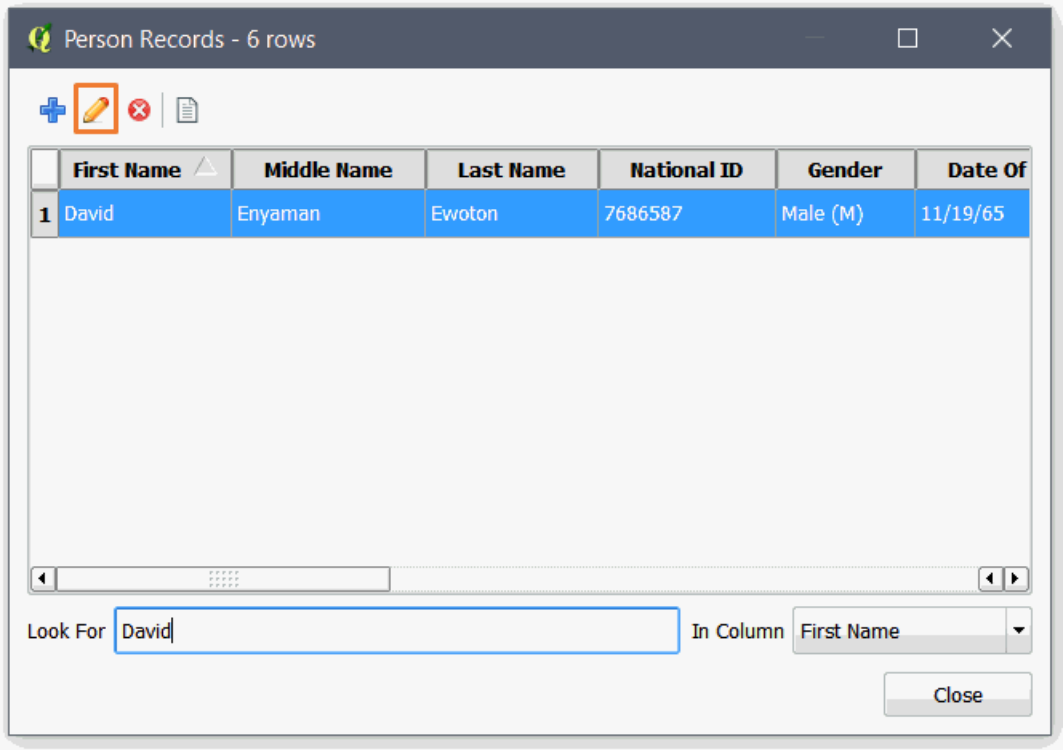
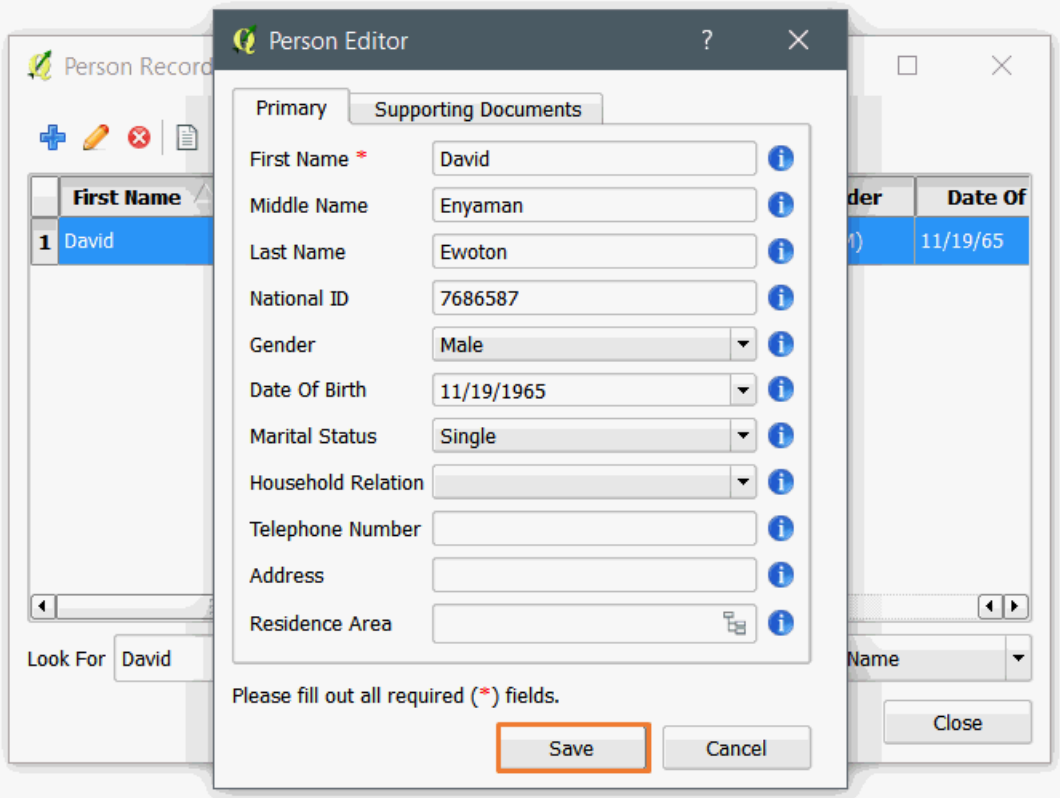



3. A pop-up dialog appears with a form as shown below.

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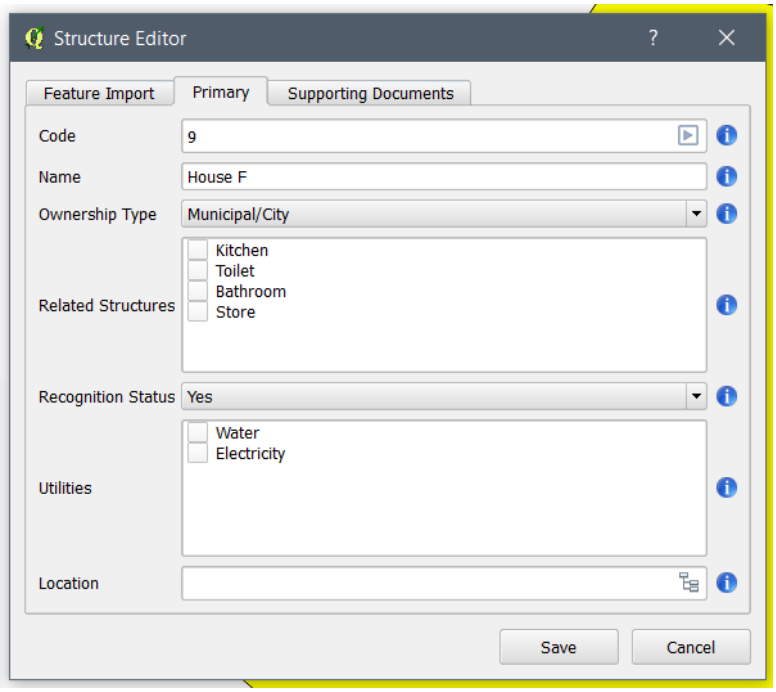
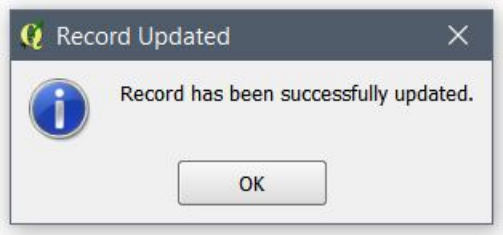
In Spatial Entity, the form has the GPS file import tab. If you are not updating geometry, you do not need to input anything there. You can click on the Primary tab to edit attributes as shown below.




4. The Editor form loads the data of the selected record. Modify the form and supporting documents and click on the **Ok** button.

A success message (see the image below) pops up if the form is filled correctly.




After a success message has been displayed, the form hides and you can see the changes in Entity Browser.

# Editing a Record Using a Subform

A **Subform** is a form that is inserted in another form. The main form is called **Primary** form, and the form that is enclosed in **Primary** form is called **Subform**. A form/subform combination is sometimes referred to as a hierarchical form, a master-detail form, or a parent-child form.

When you create your profile, there might be cases when one **Entity** is related to another **Entity**. For instance, you may have an entity called **Person** that contains information about an individual. However, there might be another **Entity** called **Household** that contains a general information about

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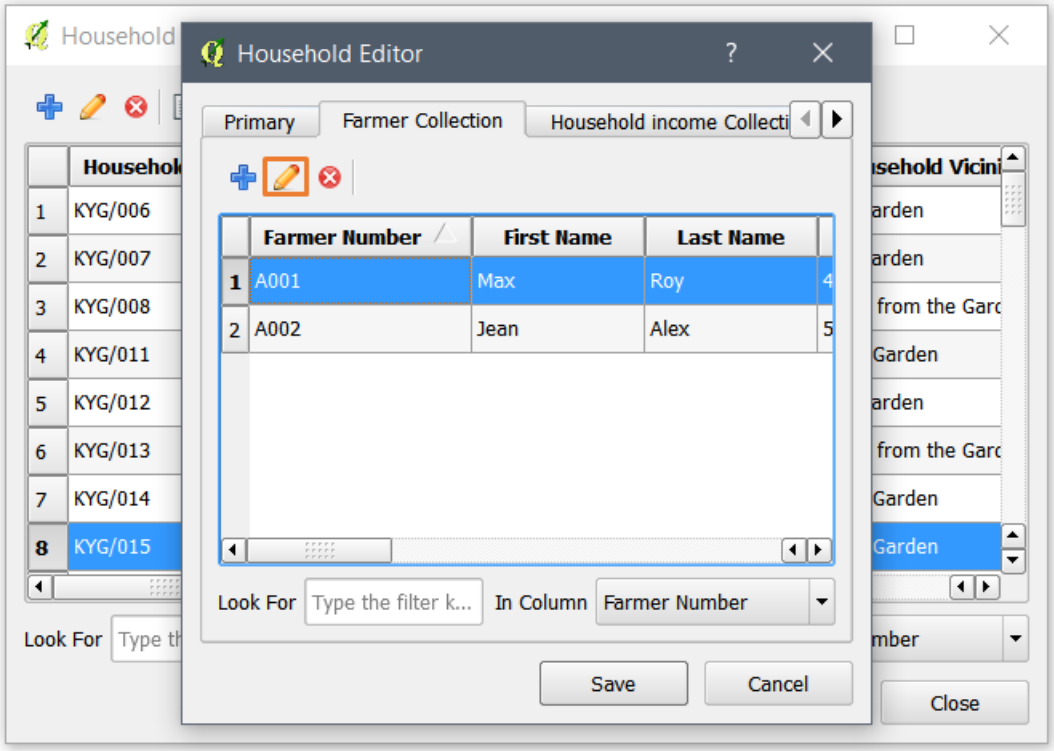
the whole family. In this case, you can link the **Person Entity** to the **Household Entity** using the **Related Entity** column discussed in Understanding Column Data Types topic. When you link two **Entities** a **Subform** is created in the parent **Entity** form. In this case, in the **Household Entity** form a **Subform** for the **Person Entity** is created. Consequently, after adding a record in the **Primary** form, you can also add a record using the **Subform**, which in this case will enable you to add a record for the **Person Entity**.

The **Subform** in STDM data entry form is created in a tab next to the **Primary** tab with the name of the child Entity follow by the word **Collection**. If the child **Entity** is **Person**, the **Subform** is called **Person Collection**.

To edit a record using Subform, follow the steps below.

1. Edit a record in the **Primary** form using the steps discussed in Editing a Record topic.

2. Locate the **Subform** tab by looking for a tab containing the Entity name followed by Collection. The image below shows a **Farmer Collection** tab which is a **Subform** of **Household Entity**. To edit a record, search and select a record and click on the **Edit** button ( ) as shown in the image below.




3. The **Subform** loads with the selected record so that you can edit the record as shown in the image below. Update the form where necessary and click on the Save button. This will update the record temporarily and also added in the **Subform Entity Browser**.

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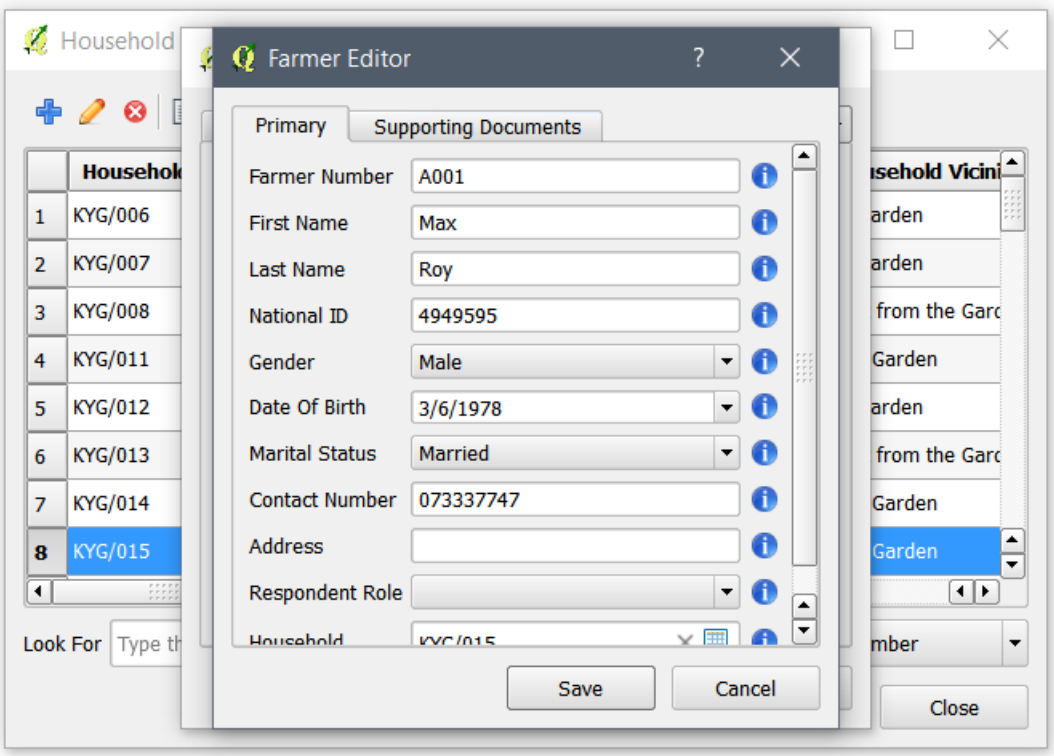
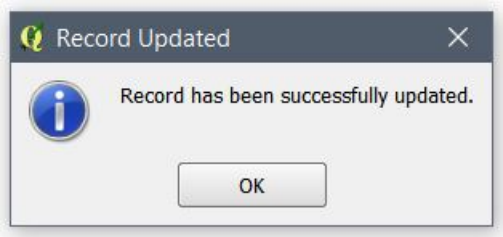



4. Once you have completed updating records in the **Subforms**, save the primary form by clicking on the **Save** button. This will also save the **Subforms**.

If the forms are properly entered, a success message pops up, as shown below.




The existing record will be updated in the Entity Browser and you can see the change.

# Deleting a Record

You can completely delete a record and its associated supporting documents. Once, a record is deleted, it **cannot** be restored. Make sure that you do not need the record before deleting.

To delete a record, you need to first search for the record you wish to delete. The searching of the record is especially useful when you have large number of records.

To delete a record, follow the steps below.

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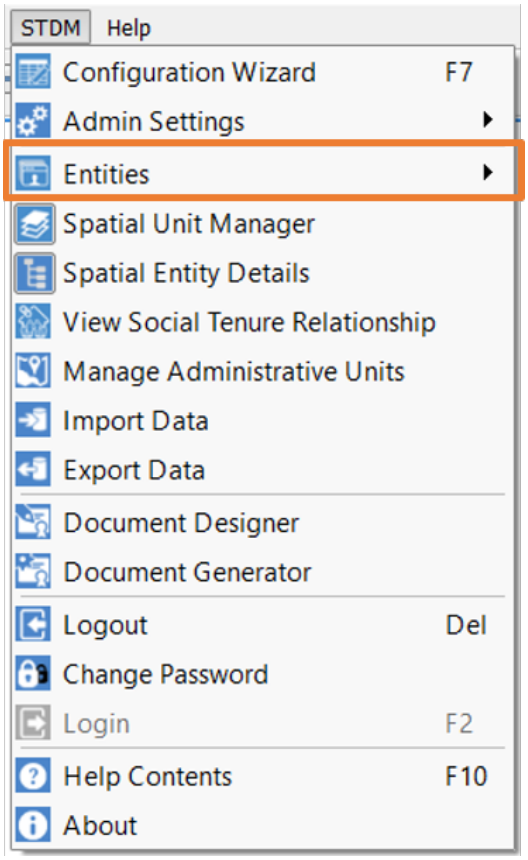
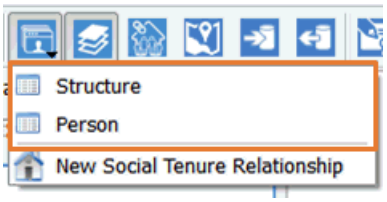
1. Go to the STDM Toolbar and click on **Entities** menu.

You can also click on STDM Menu located under QGIS Menu and click on the **Entities** sub-menu as show in the image below to find the Entities sub-menu.




2. Open any **Entity Browser** you wish to view with the exception of **New Social Tenure Relationship** as shown in the image below.




3. The **Entity Browser** of the entity you have selected loads similar to the one shown below.

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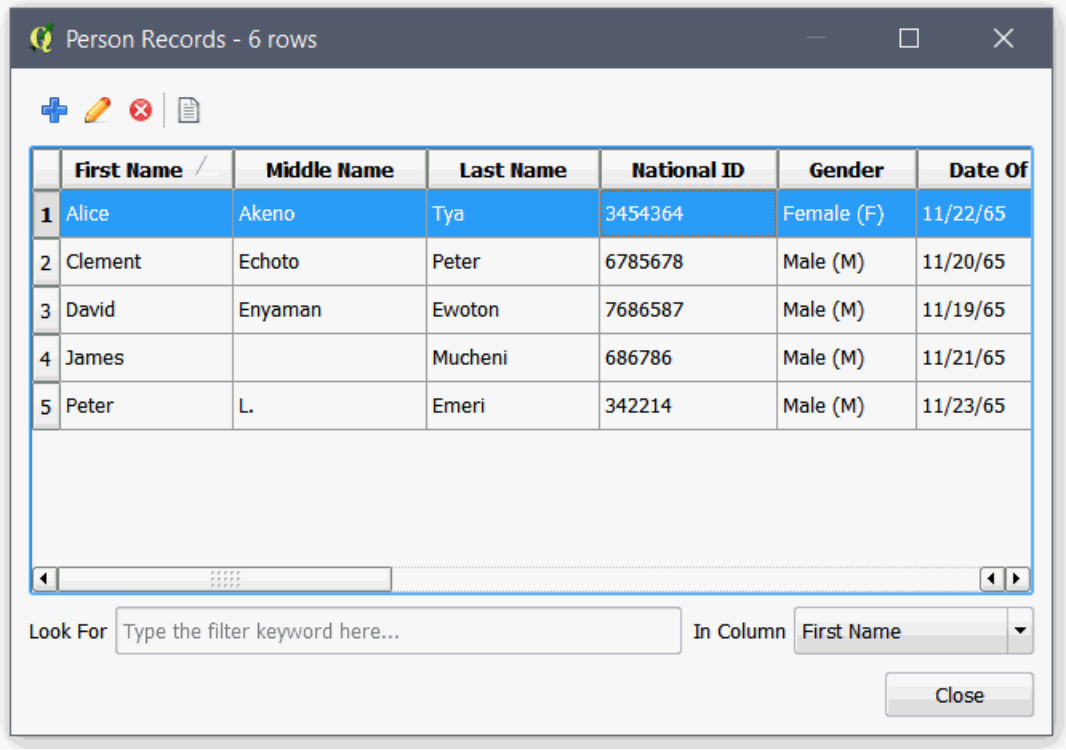
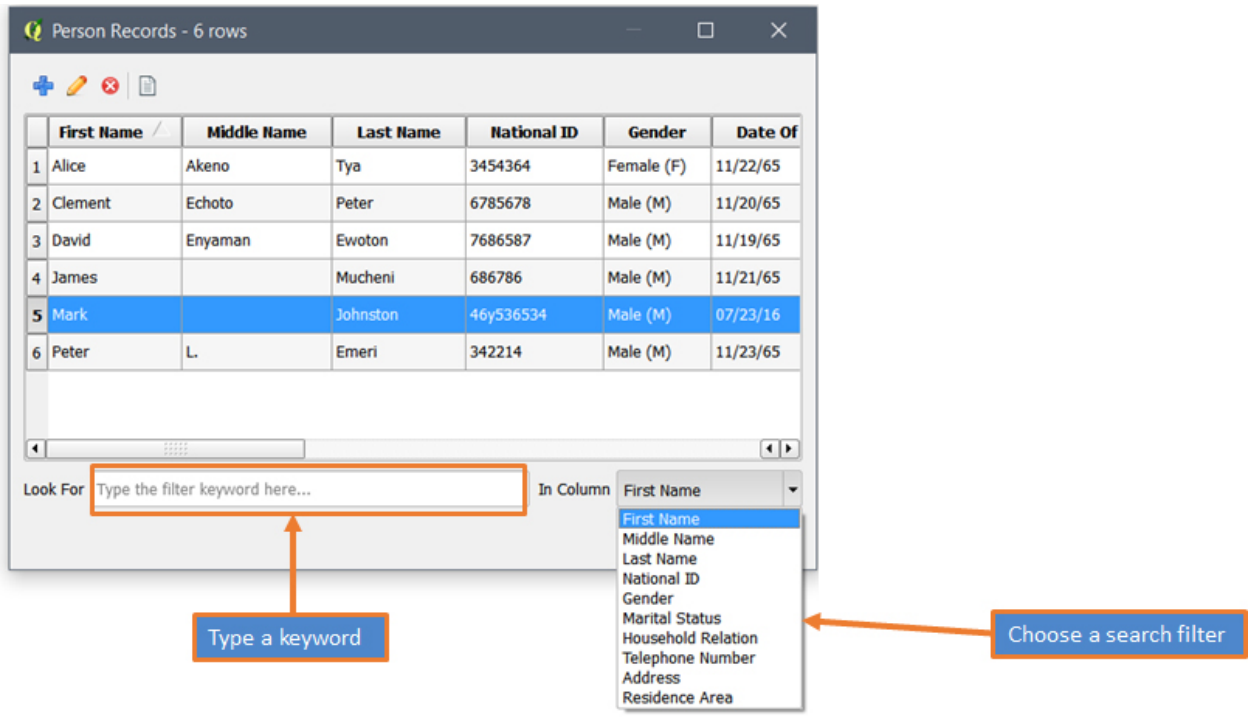



4. In the **Entity Browser**, select the filter and enter text to search for a record as shown in the image below.




5. Only the search result appears (see the image below). The filtered list will keep appearing until you clear the keyword.

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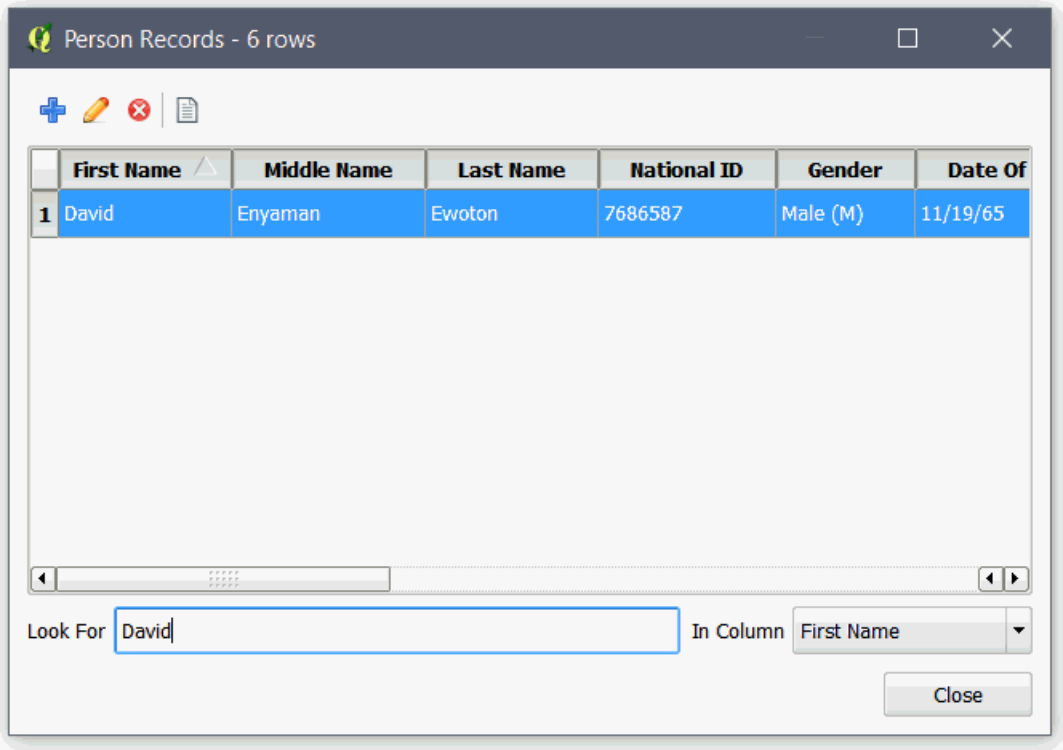
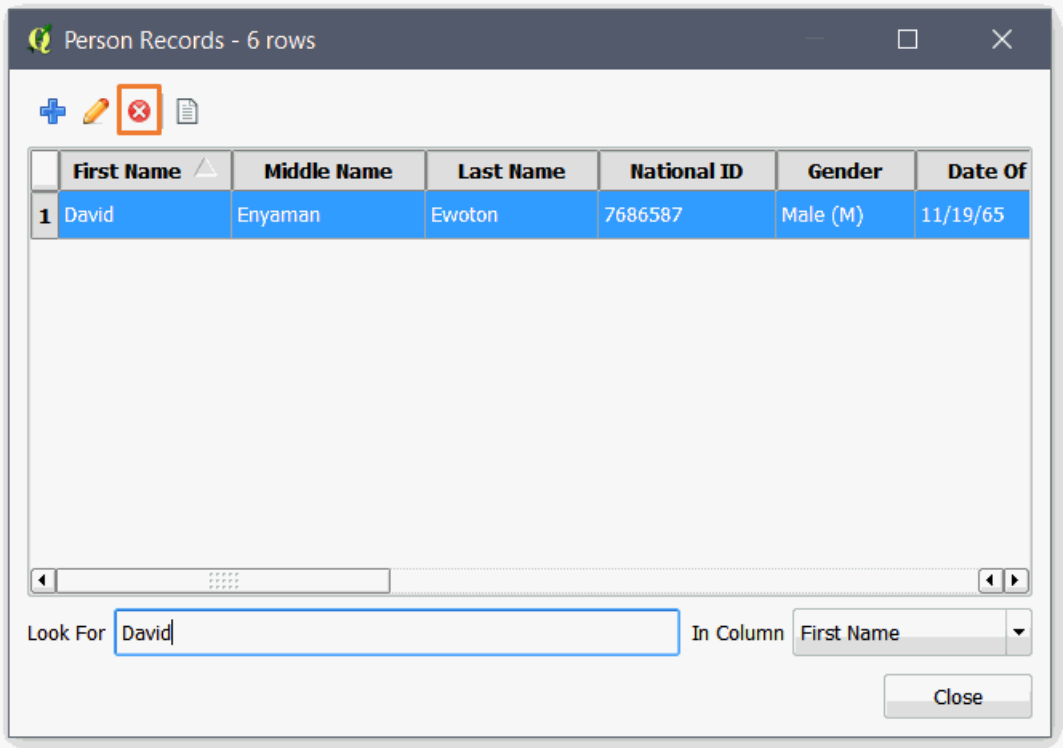



6. As shown above, select a row/record you would like to delete and click on the Delete ( ) button as shown in the picture below.




7. A warning dialog appears to warn you that once deleted, it cannot be recovered, as shown below.

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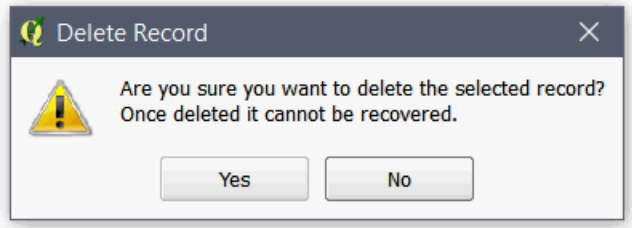


8. If you click on the **Yes** button, the record will be removed. If you click on the **No** button, the record will not be deleted.

# Managing Spatial Data

As already discussed, STDM is a QGIS plugin that enables you to utilize all the great features of the most popular open-source geo-spatial software, QGIS. Consequently, you can use any QGIS features and also benefit from QGIS features that are customized for STDM. The customized QGIS features make it very easy to manage spatial data in STDM.

**Spatial Entities** can be created just like any other entity. A spatial entity is an entity with at least one geometry column as defined in the **Configuration Wizard**. A spatial entity should have at least one geometry column and an attribute data, that holds non-spatial data.

STDM supports point, line, polygon, multipoint, and multiline and multipolygon geometry.

In STDM, at least one spatial entity is required to be used as a spatial unit. A spatial unit is a spatial entity that participates in social tenure relationship. A spatial unit holds data of a parcel, structure, farmland, etc. You can also create other spatial entity holding different spatial data.

The following sub-sections enable you manage spatial data.

# Adding Imagery data

An imager data refers to a map image that could be a satellite image or scanned map with world real coordinates. The process and steps of Geo-referencing is explained in Geo-referencing a map image topic.

To add Imagery data to the **Canvas** follow the steps below.
**1**. Click **Add Raster Layer button** to add the imagery data into the canvas as shown in the image below.

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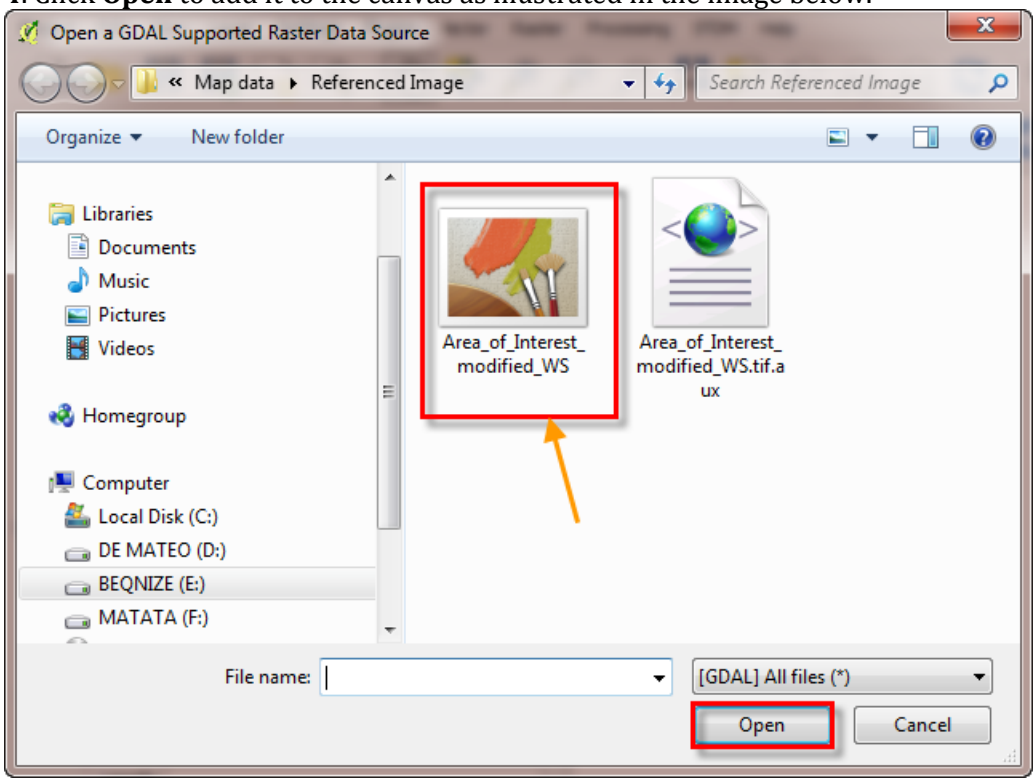
**2**. Browse to where the imagery data source is located.
**3.** Select the imagery data.
**4**. Click **Open** to add it to the canvas as illustrated in the image below.




The Imagery data appears on the window as shown below.

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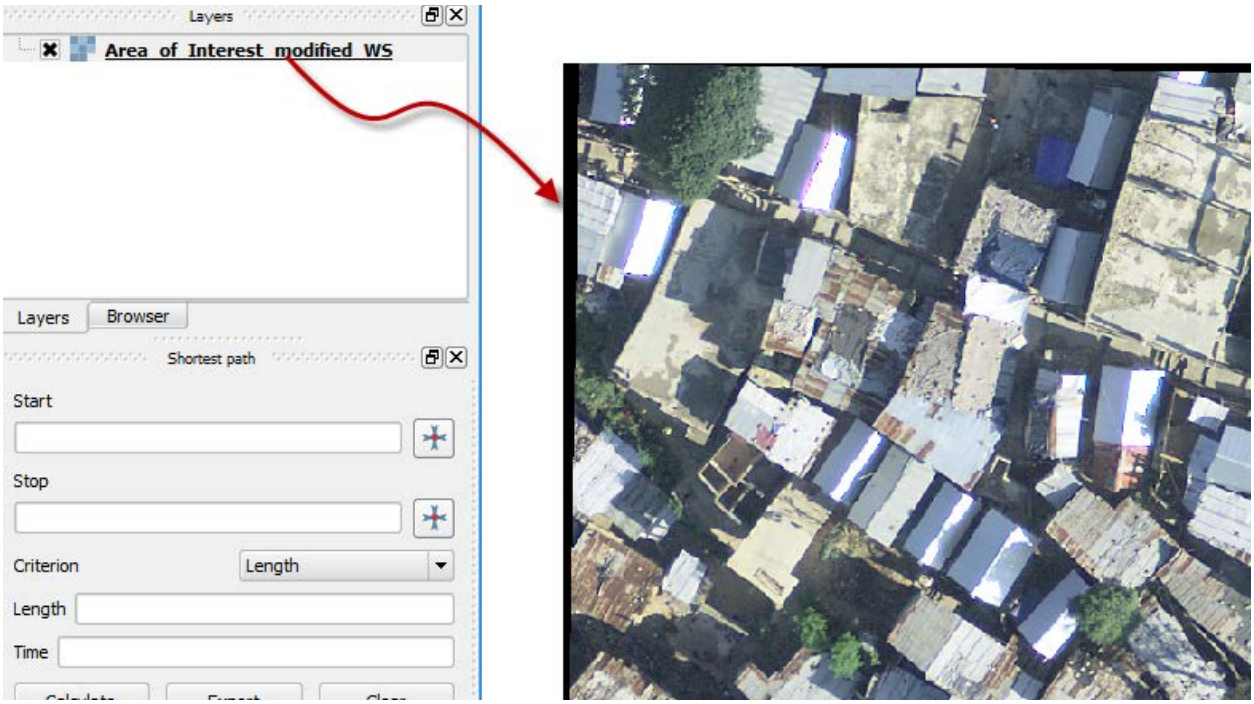



Some of the tools that you can use to move the imagery data are;

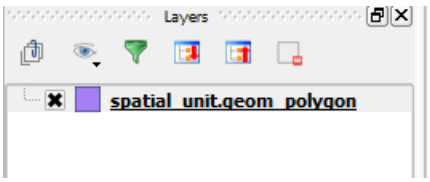
This is used to Pan the map to a desired location.

This helps to zoom in to a working area of interest.

This helps to zoom out on the map.

# Renaming Spatial Entity Layer

The image below shows the Layers Panel of QGIS. The STDM layer name shown in the image below is not very appealing. To set a friendly display name, ensure the layer is selected.




Click

on the spatial unit manager.

Provide a friendly name on the change display name dialog as shown in the image below then click **OK** to change the name.

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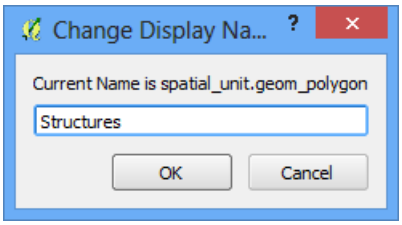


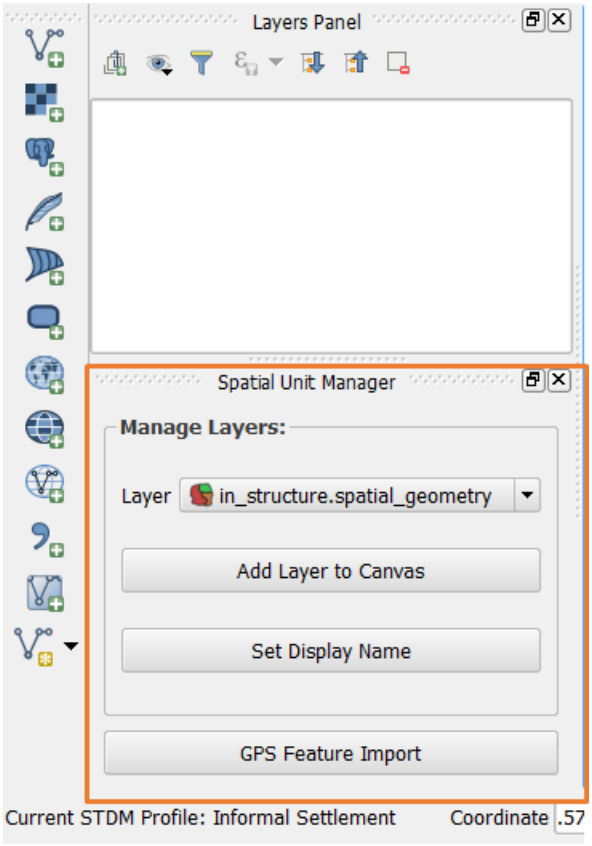

**Note**: Changing layer names through the Spatial Unit Manager only applies to layer in STDM database.

# Adding a Spatial Entity Layer

To visualize a spatial entity layer, we have to add it into **QGIS Map Canvas**. The QGIS **Map Canvas** is at the centre of QGIS interface on which added maps layers are displayed.

**To add spatial entity into the map canvas, we use Spatial Unit Manager f**ollow the steps below.

1. Enable the **Spatial Unit Manager**. By default, the Spatial Unit Manager is added to QGIS left side below the **Layers Panel** as shown in the image below.




If it is not enabled, click on the **Spatial Unit Manager** button (see the image below) on the Spatial Unit Manager sub-menu under the STDM Menu to enable it.

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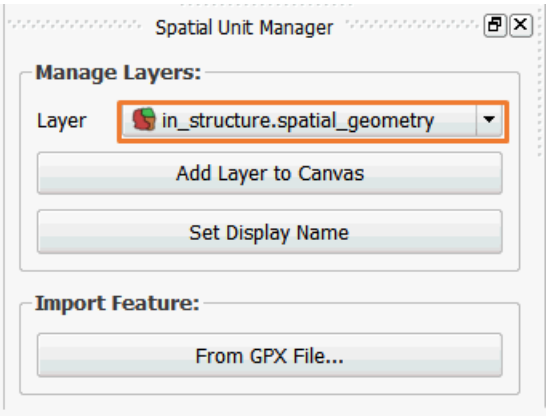
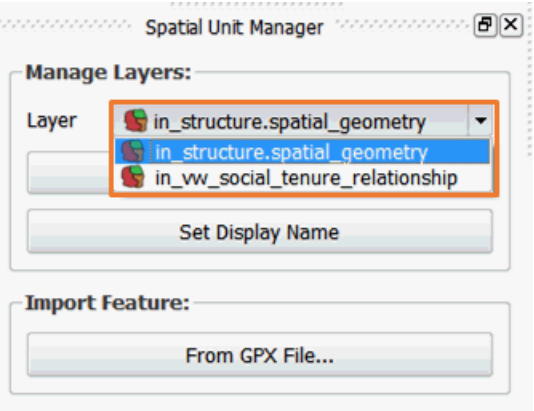
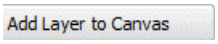
Clicking on the button or the sub-menu enables the **Spatial Unit Manager**.

2. Select a spatial entity geometry. By default, the spatial unit geometry is the first in the Layers combo box as shown below.




If you wish to add another entity geometry, click on the layers drop down as shown below.




3. Add the geometry you wish to QGIS Map Canvas and Layers Panel by clicking on 

as shown below.

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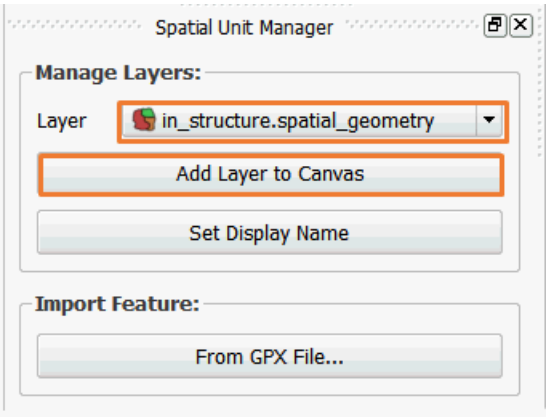
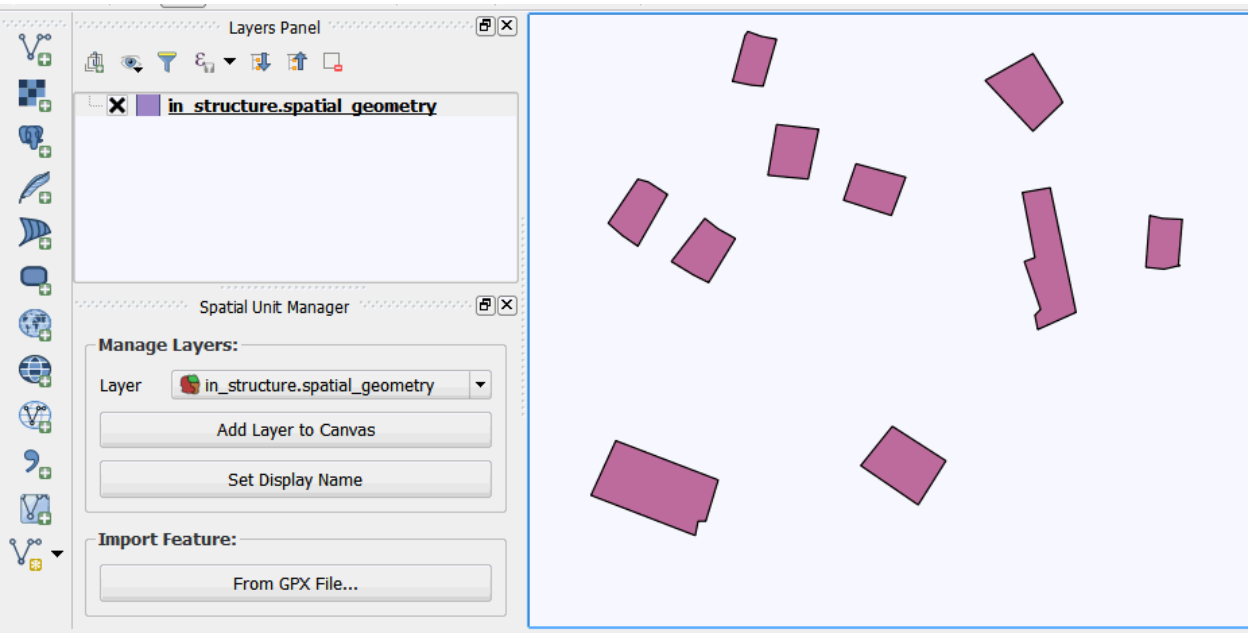



Once added you will be able to see your layer in the layers panel and the map canvas as shown in the image below.




# Digitizing in a Spatial Entity Layer

One way of adding a new record in a spatial entity such as spatial unit, is by digitizing a feature using a base map imagery. The other ways of adding a new record are by importing a spatial data and by importing a GPS data.

Ensure the Imagery or base map layer is added on QGIS map canvas. To add an imagery data, follow the steps on Adding Imagery data topic.

The following steps explain how to digitize a polygon that could be a plot, parcel, structure and any other area.

You can digitize line or point using similar steps.

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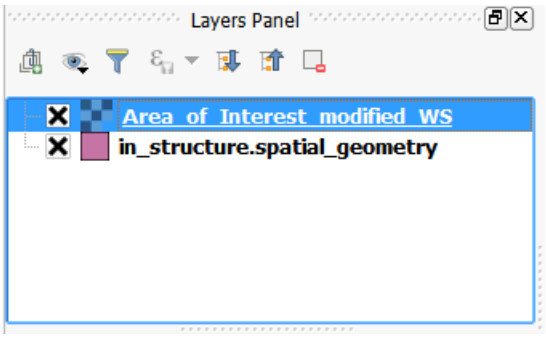
1. Add an imagery data as explained in Adding Imagery data topic.

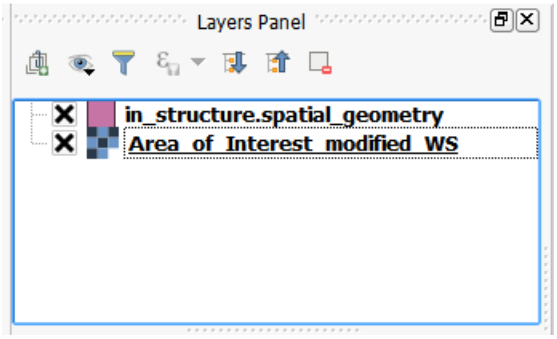
2. Then add a spatial entity layer in to QGIS Map Canvas that you wish the new polygon to be added to.

**To add a spatial entity layer follow the steps in Add a Spatial Entity Geometry topic.**

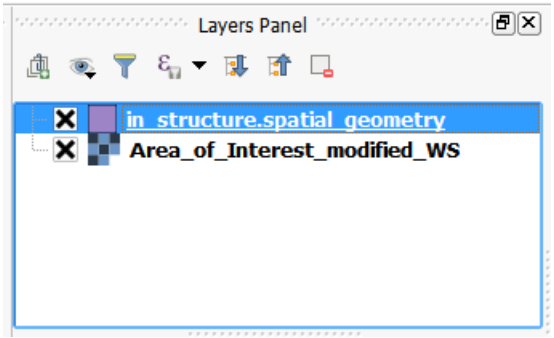
3. Once the layers are added, you will see them listed as the image below. Make sure the spatial entity layer is above the imagery. Select and drag and drop to change their order.




The correct order is the spatial entity layer at the top and the imagery below it, as shown in the image below. This is needed so that the spatial entity geometry is not hidden under the imagery.




4. Select the spatial entity layer to digitize features into, as shown below.




This results in the placement of the spatial entity geometry above the imagery as shown in the image below.

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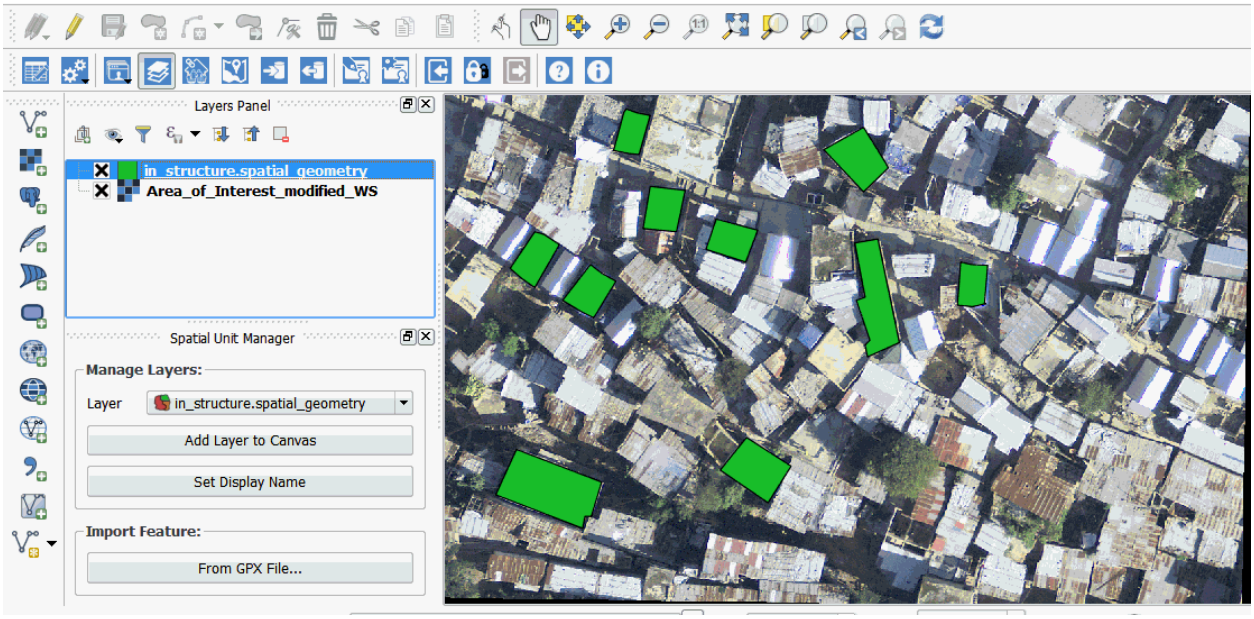
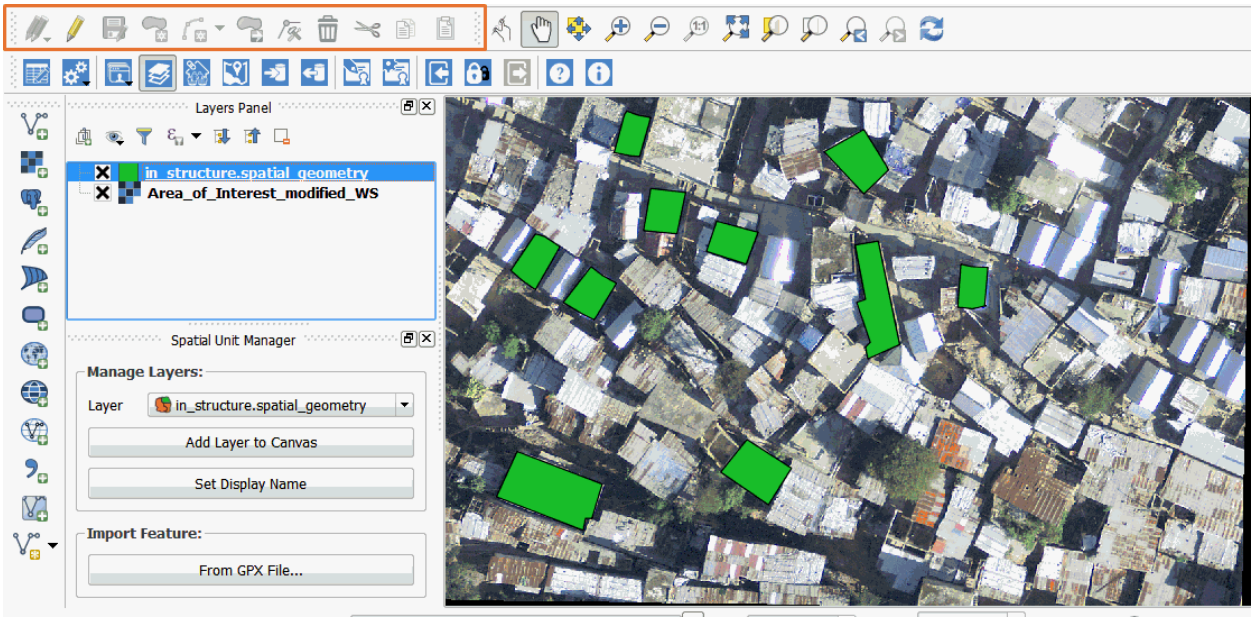



5. Locate the **Digitizing Toolbar** of QGIS that is highlighted in the image below.




**6.** Click the **Toggle Editing tool** in the **Digitizing Toolbar** as highlighted below. This will turn your selected layer to edit mode.

7. The **Toggle Editing tool** enables most of the digitizing tools. Select the **Add Feature Tool** as highlighted below.

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8. Find an area on top of which you would like to add a feature. This could be a demarcated plot, a house, etc.

9. Zoom close to the area you wish to digitize and start clicking on one of the corners of the area. Then, move your cursor to the next corner and click on the next corner.

Do the same for all the corners in the area.

Once you are done clicking on all corners. Right-click on the area.

10. A spatial entity form pops up, allowing you to input attribute data on the feature as shown below.

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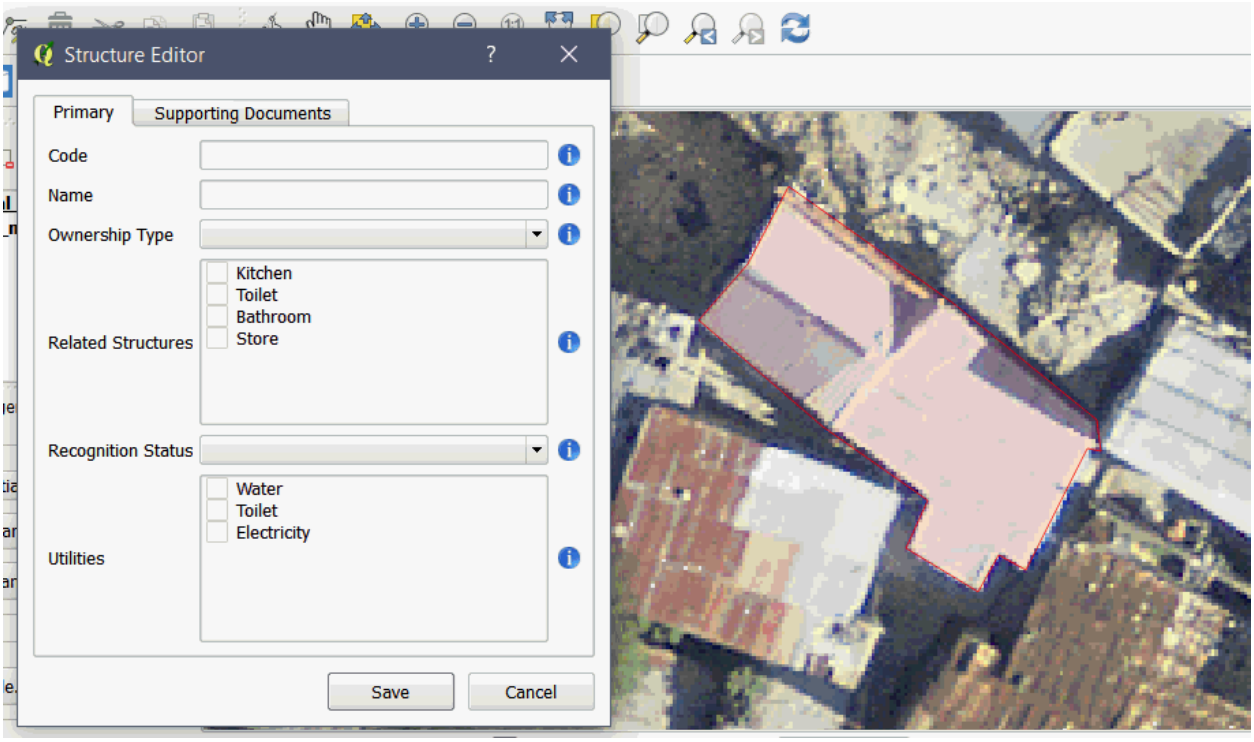
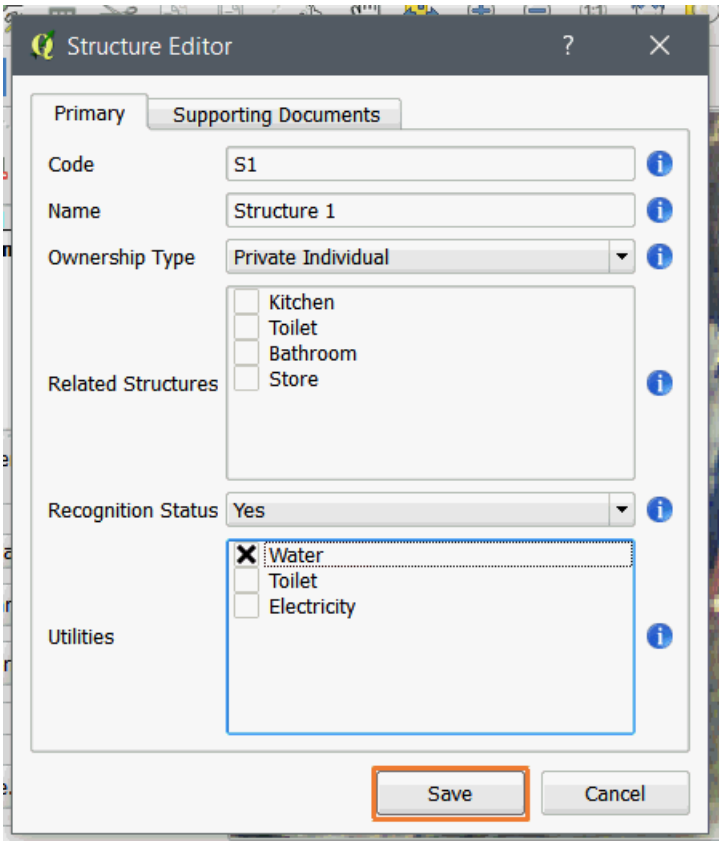



Fill out the form and click on the **Save** button as shown below.

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This will save the data temporarily until you click on the Save button in the digitizing toolbar. When saved, the digitized feature appears on the layer as shown below.

Continue adding more features. by repeating **Steps 9** and **10**.

11. Save your work into STDM database. Your digitized features will only be added into the STDM database when you click on the Save button in the Digitizing toolbar as highlighted in the image below.

12. End your editing session by clicking on the **Toggle Editing** tool as highlighted below.

This will disable all tools as shown below.

Check your saved data by going to the Entities menu and by selecting the Spatial Entity Menu.

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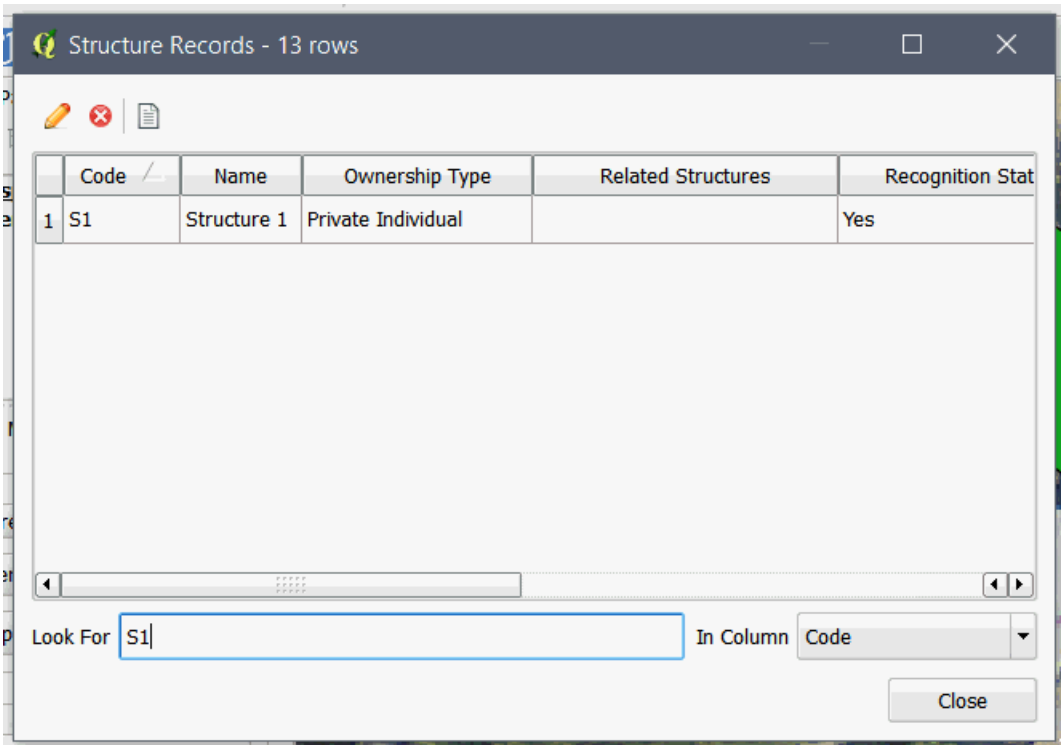
This opens your spatial entity Browser. Search for the latest record as shown below.




In the Entity browser, you can select the record and edit the attribute data.

**Tips:**

**Undo a selection of a corner:** To undo a selection of a corner while digitizing, press the **Backspace** button on your keyboard.

**Undo feature creation:** To undo a feature creation, that temporarily removes a feature from the layer, click on the **Undo** button on **QGIS Edit Menu**.

**Redo feature creation:** To redo a feature creation, that temporarily restores a feature from the layer, click on the **Redo** button on QGIS Edit Menu.

**Cancel current digitized feature:** Press the **Escape (Esc)** button on your keyboard to stop digitizing and cancel what you have started.

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# Importing GPS Data

**GPS Feature Import** tool is a special functionality within STDM that allows uploading, editing of GPS field recorded features and saving into STDM **Spatial Entity**.

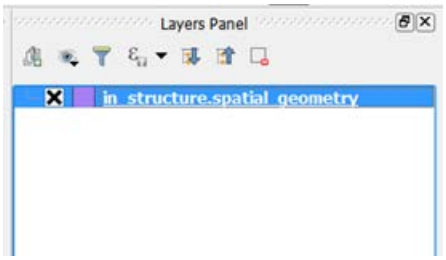
**GPS Feature Import** tool provides the following functionalists.

- Upload of **.gpx** files.
- Selection of feature type for the uploaded file.
- Editing and visualization of a feature.
- Creation and saving of feature attribute data.

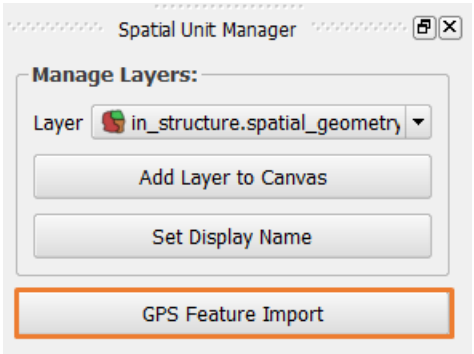
The steps below describe the process of importing GPS recorded features into STDM **Spatial Entity**.

1. Add a spatial entity layer into the map canvas using the steps under Adding a Spatial Entity Layer topic.

2. Once the layer is added select the layer in the **Layers** panel as shown below. Click on it to select the layer.




3. On the **Spatial Unit Manager**, click on the button **GPS Import Feature** as highlighted in the image below.




4. The **GPS Feature Import** dialog appears as shown in the image below.

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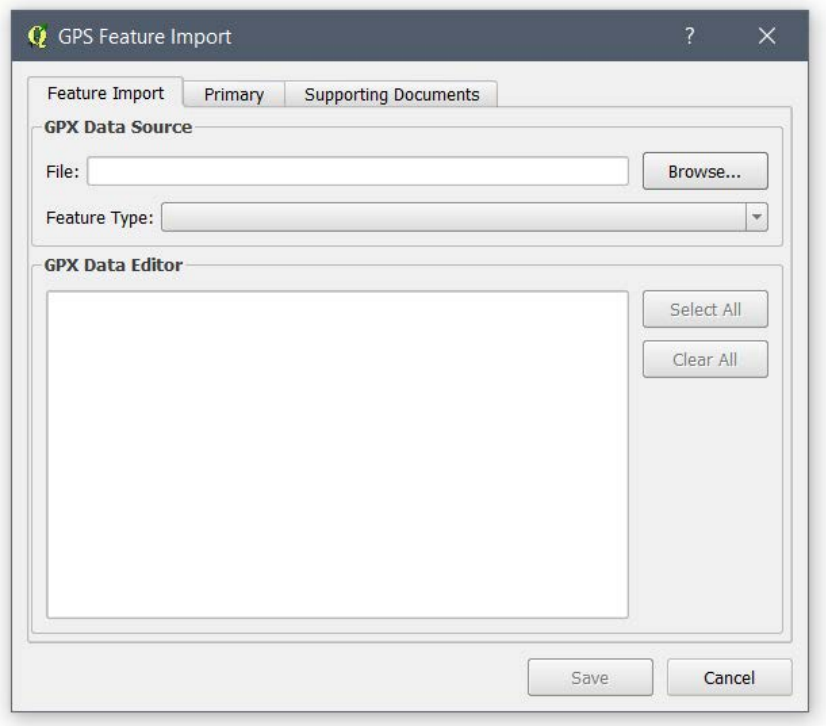


The **GPS Feature Import** module loads with a **Feature Import** tab and the **Entity Editor** that enables you to add a record as discussed in Adding a Record topic.

5. Select the GPX file. When you click on the **Browse** button as highlighted below, a window will pop up to allow you to choose a **GPX** file from your computer. You can also drag **.gpx** file into the file path text box. Once you select a file with an extension of **.gpx**, it will be added in the file text box.

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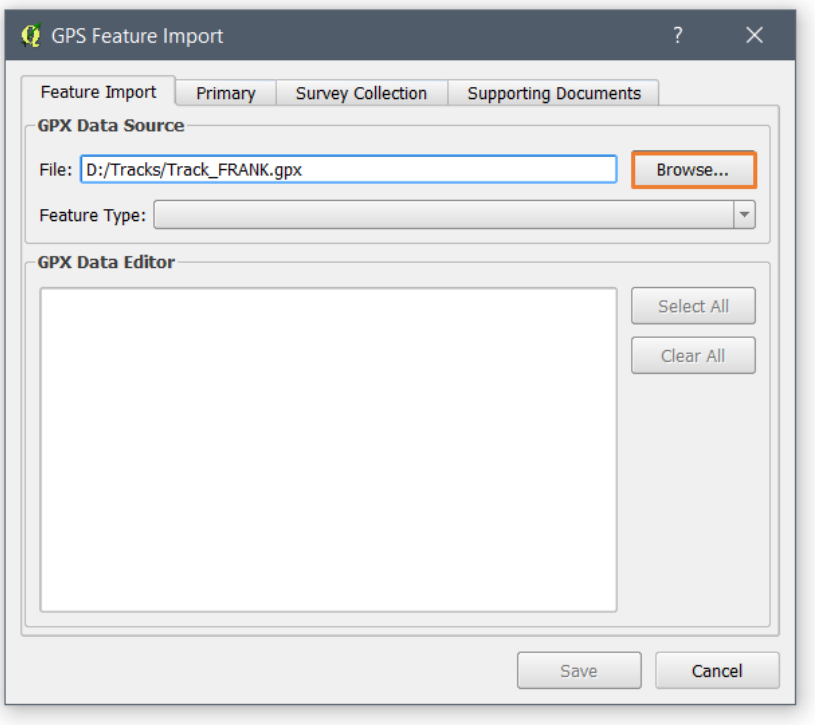


6. Once the **Feature Type** is enabled, click on the drop-down button to select a **GPX Feature type** that relates to the added **.gpx** file as demonstrated in the previous step.

Currently the **GPS Feature Import** tool supports the following GPX formats;

- **Waypoint**: An individual point among a collection of points with no sequential relationship.
- **Track**: Ordered list of waypoints describing a path or a line.
- **Route**: Ordered list of waypoints representing a series of significant turn or stage points leading to a destination.

When you select a feature type, the following takes place.

- The GPX Data Editor box is populated with a table containing points that are in the .gpx file. You can select, and unselect points using the checkbox in the first column of the table.
- A Preview feature is rendered in QGIS **Map Canvas** as illustrated in the image below. The Preview feature shape changes based on the removal and selection of points. Highlighted points are differentiated with QGIS default selection colour, in this case yellow (see the image below).

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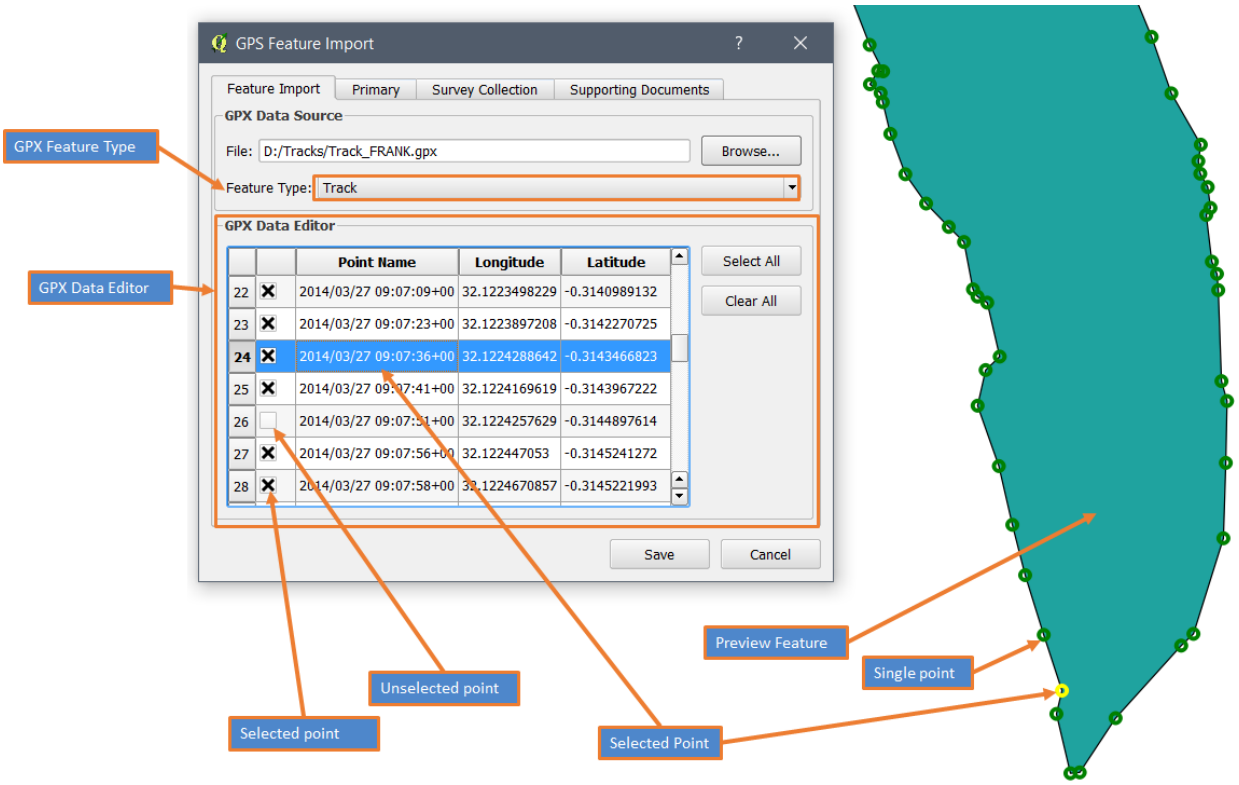


The table enables you to choose points you would like to import. This is achieved by clicking on the checkbox shown on the first column of the table if it is not checked.

Remove points that are not needed or points that are wrongly recorded by removing the selection. To remove the selection, click on the checkboxes on first column.

**A removed point**, from which the checkbox selection is removed, is also removed from the feature on map. This results in the change in the shape of the feature.

**An included point**, with a checkbox checked, can be seen with a green round marker on the map, as shown in the figure above. This means that the points with a green round colour will be included in the feature created from the GPS points.

To check all checkboxes, click on the **Select All** button as shown in the image below. This will redraw the feature in the map canvas showing all the data points. All data points would be imported into STDM if this option is chosen.

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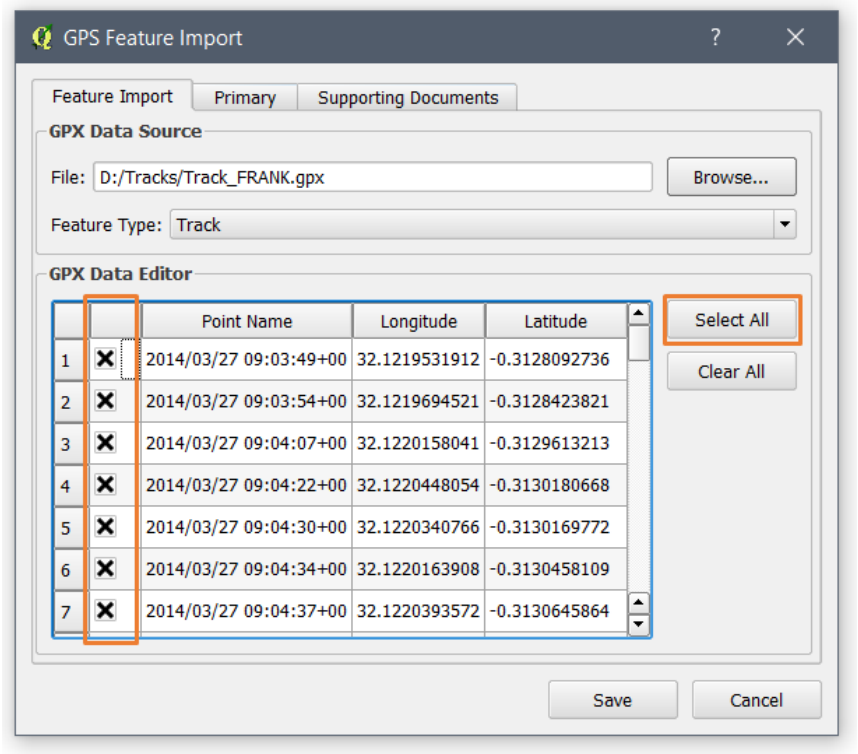
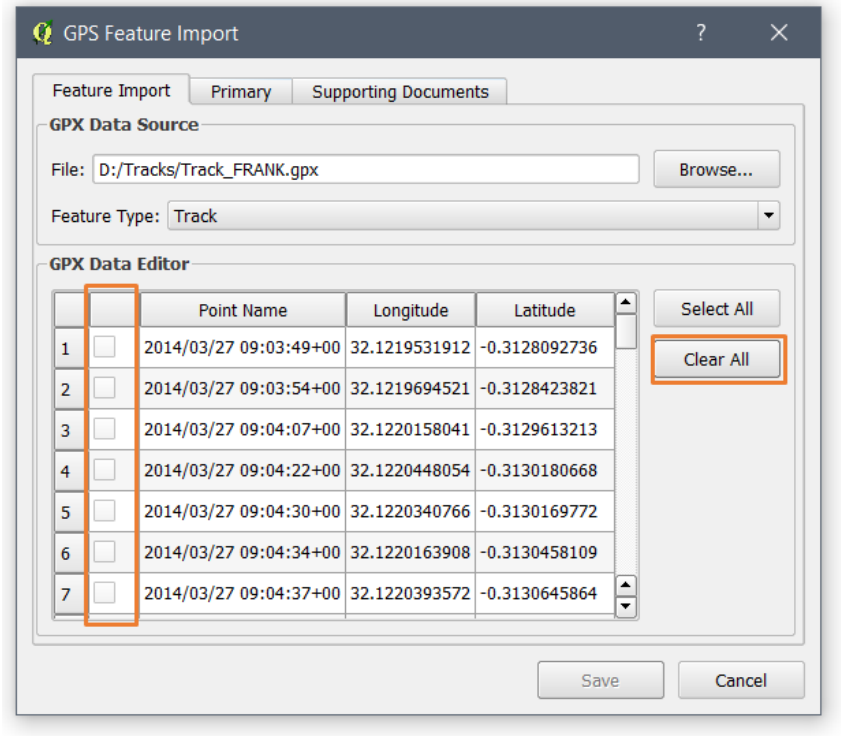



Click on **Clear All** button (highlighted in the image below) to uncheck all points in the GPX Data Editor and to clear the feature from the map canvas. Doing this prevents you from importing GPX data into STDM as no points would have been checked for import.

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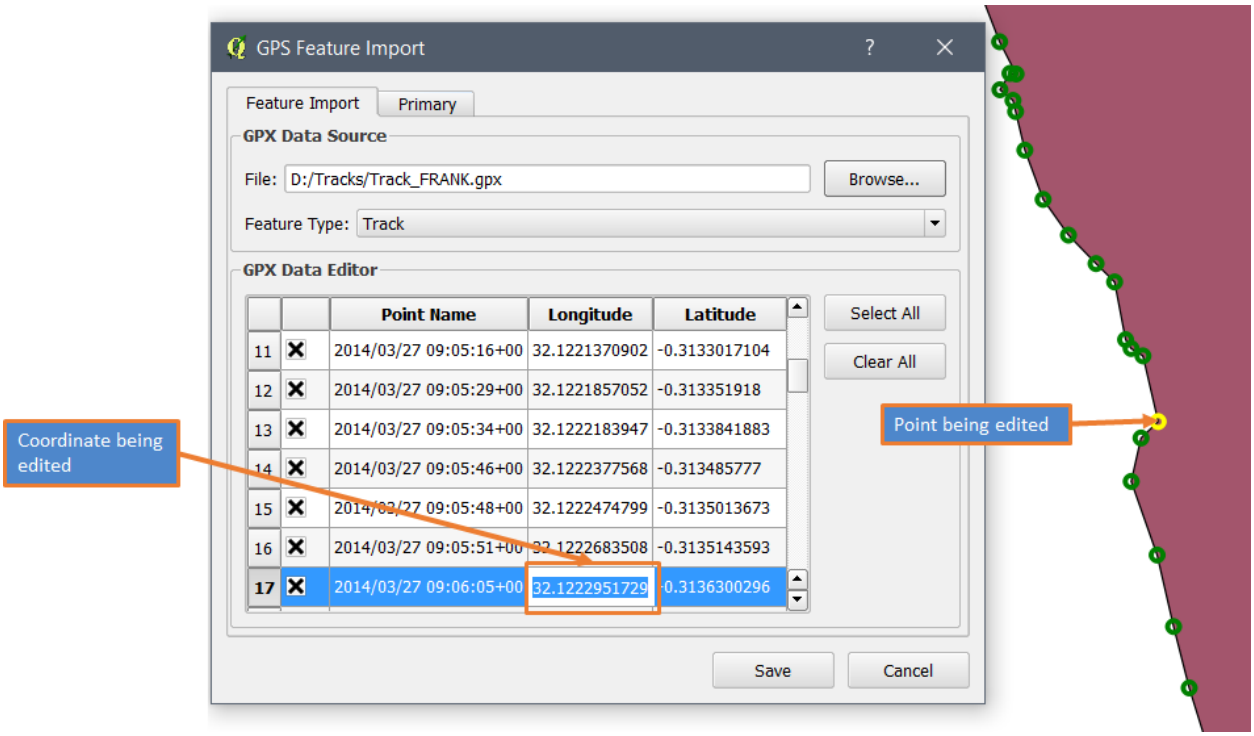
You can also change the values of the coordinates if needed. Double click on a coordinate (**Longitude** or **Latitude** field) to change its value as shown in the image below. Complete the edit by hitting **Enter/Return** keys on the keyboard. This has the effect of redrawing the feature on the **Map Canvas**.




If you want to sort the order of the **Points**, you can use the drag and drop feature. To sort the points, select a Point you would like to move. While clicking on the selected row/ **Point**, move your cursor to make the row float. You can now move it with your cursor and drop it in a row you want it to be moved as shown in the image below.

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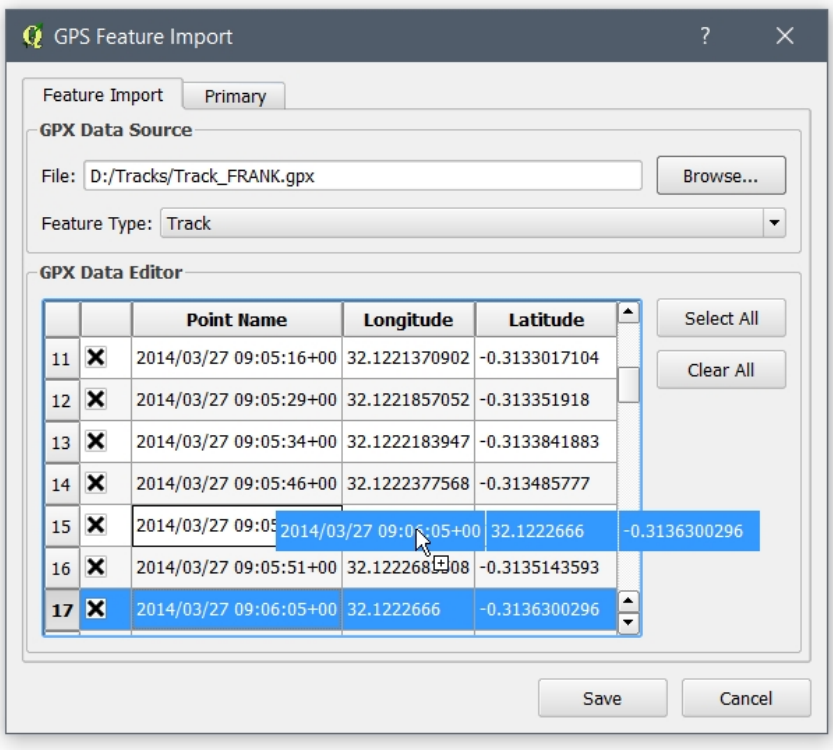
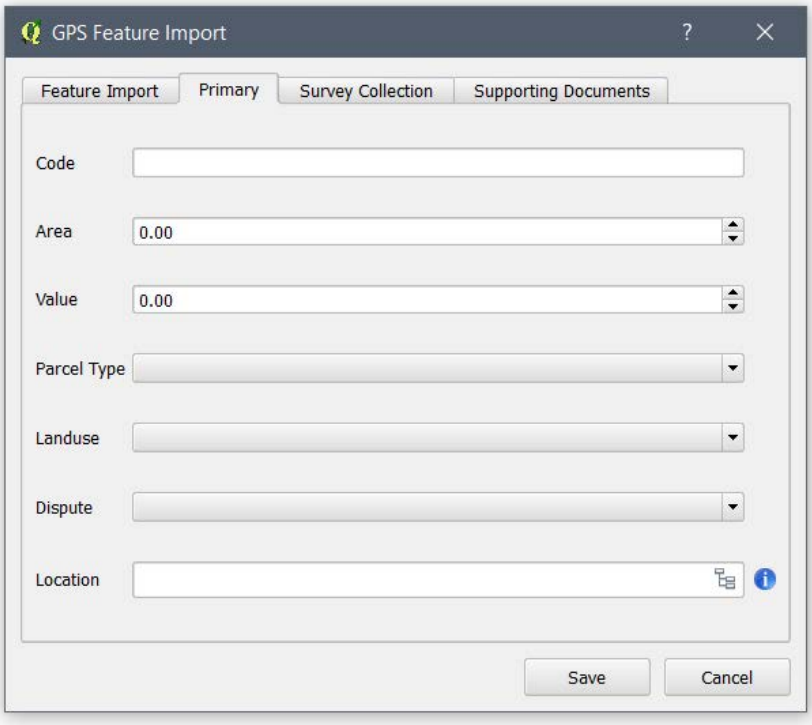



7. Once you finish choosing the points, click on the **Primary** tab to add attribute information as shown in the image below.

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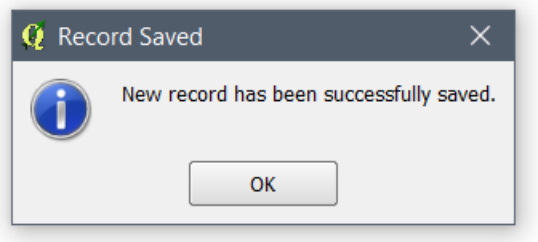
Fill out the form with relevant information uploaded supporting documents if needed. You can also upload supporting documents. Using the Collection tab, you can link the record to a related entity if the entity is referenced by another entity. For more in working with Entity Editor, review Adding a Record topic.

Once done, click on the **Save** button to add the feature into the spatial entity with its attribute data added using the form.

A success message, as shown in the image below, pops up.




Click on the **OK** button on the message box. This will take you back to the Feature Import tab where you can edit, check or uncheck previously uploaded GPX data points. You can as well at this point select different **Feature Type** or upload a new GPX file altogether. You can also click on the Cancel button of the GPS Feature Import dialog to close the window, when you finish importing **GPS Features**. You can check the result by viewing the added feature in the map canvas and its attribute data in the entity browser.

If the feature is a **Line**, a line will be drawn when the user selects the corresponding vertexes comprising the line feature.

Similarly, for a **Point** feature, only one point is selectable to import to STDM database.

**Note**: If you wish to learn about the feature but lack a .gpx file, you can use the STDM Sample data **gpx** files. The sample data is located in **.stdm** folder under your user folder inside **SampleData/Sample_GPX_Data** folder.

# Viewing Extents of Spatial Entity Features

Once you have imported a spatial record or digitized it, you can view each added geometry using the map canvas. The Spatial Entity Browser is further customized to highlight and zoom into a record's feature that you have selected.

Follow the steps below to view the geometry of a selected record.

1. Go to the STDM Toolbar and click on Entities menu as shown below.

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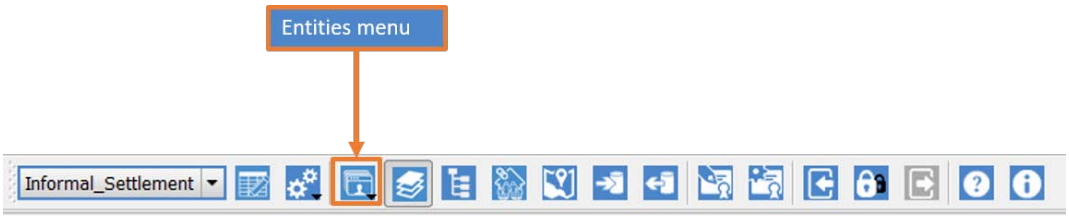
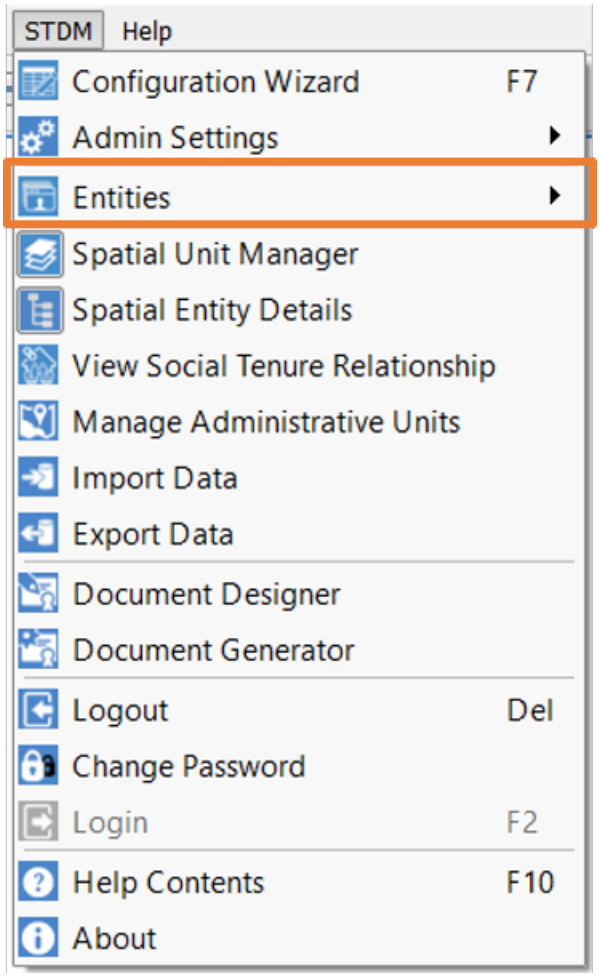



Alternatively, you can click on the STDM Menu located under QGIS Menu and click on the Entities sub-menu as shown in the image below.




2. Open an **Entity Browser** of any entity containing a geometry column.

3. A **Spatial Entity Browser** opens, positioned in the bottom left corner of QGIS unlike non-spatial entity browser as shown in the image below. This is to allow better visibility to the **Map Canvas**.

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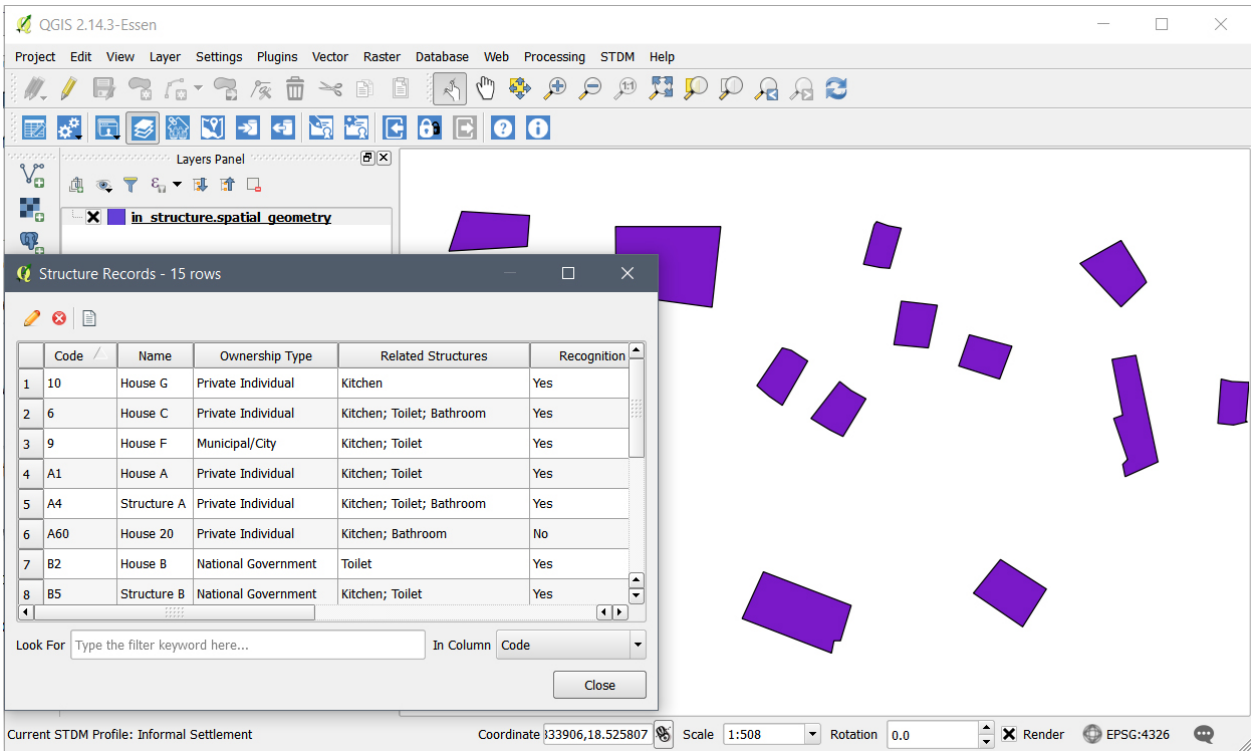
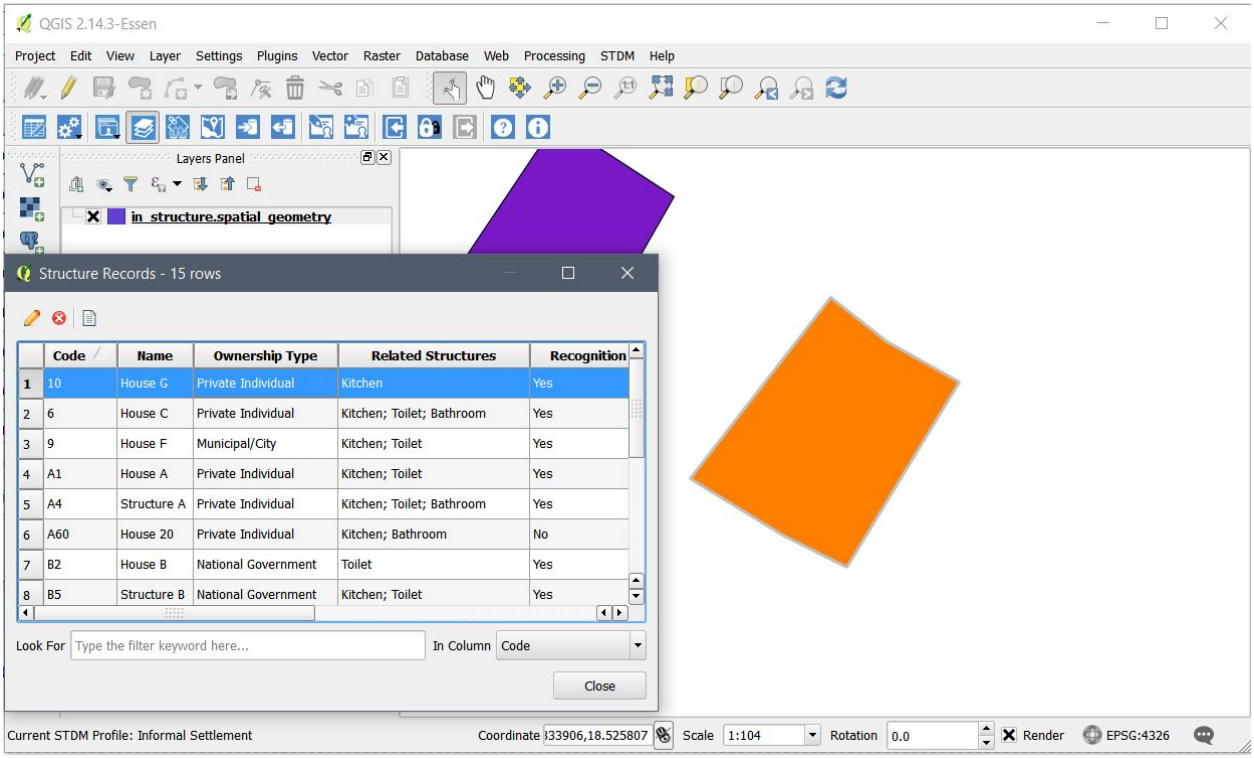



4. Select a row to view a feature attached to a record as shown below.




When you select a row, its attached geometry appears in the map canvas as shown in the above image.

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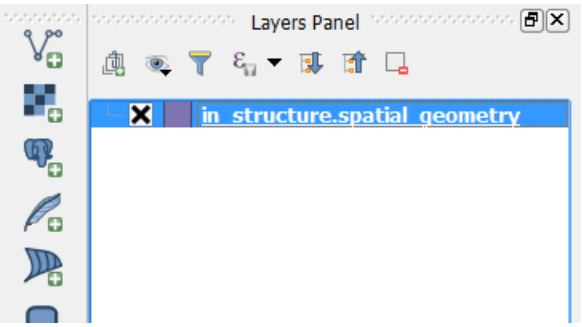
When you click on the Close button, the active layer gets removed from the map canvas.

# Viewing a Spatial Entity Details

The **Spatial Entity Details** enables you to see a tree like details of a **Spatial Entities** and **Views** by selecting a feature or features on **the Map Canvas**. In addition, you can edit and delete relevant records.

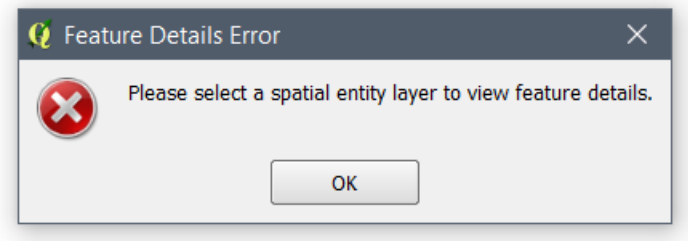
Follow the steps below to view a Spatial Entity Details.

1. To enable the Spatial Entity Details, you need to add an STDM layer and select the layer as shown in the image below.




2. Click on the **Spatial Entity Details** button located in the **STDM Toolbar** as highlighted in the image below.

If you haven't selected any layer, you will see the following error message.




If you have selected a layer that is not an STDM **Entity** or **View** layer, you will see the error message below.

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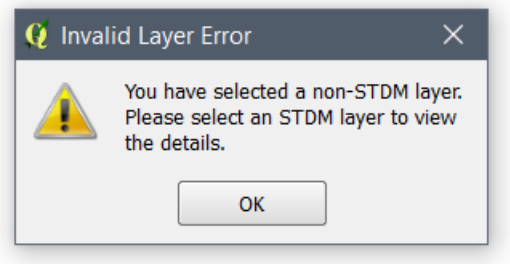
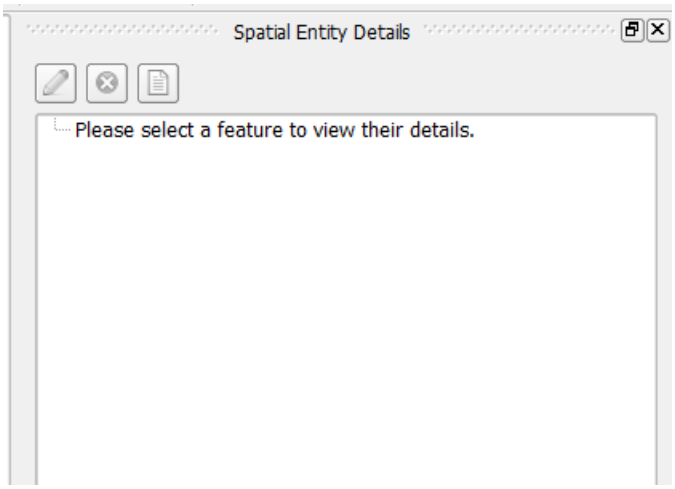



3. If you have selected an STDM layer in the **Layers** panel, a box appears on the right side of the QGIS Map Canvas as shown in the image below. This the box in which the details of a clicked feature in the Map Canvas appears. Moreover, your mouse cursor changes from the default arrow to QGIS **Feature Select** cursor ( ).




4. To view the details, you need to click on one or more feature on the **Map Canvas**.

To view the details of a single feature, click on a feature that belongs to an STDM layer.

As soon as you click on a feature, the record's details appear as shown in the image below.

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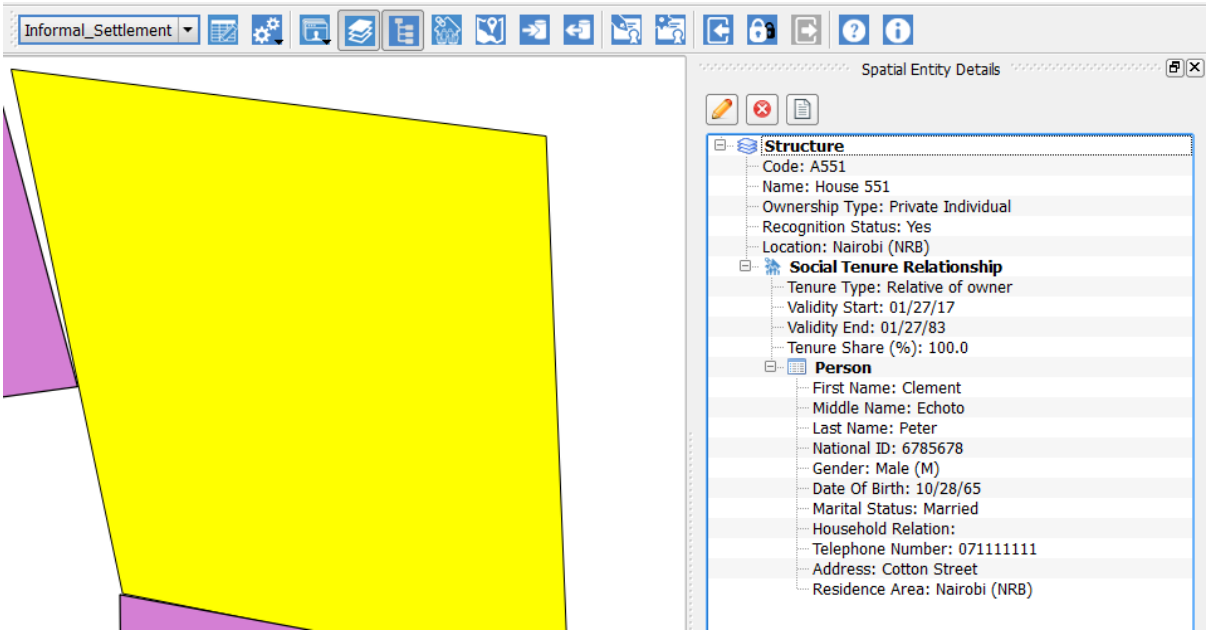
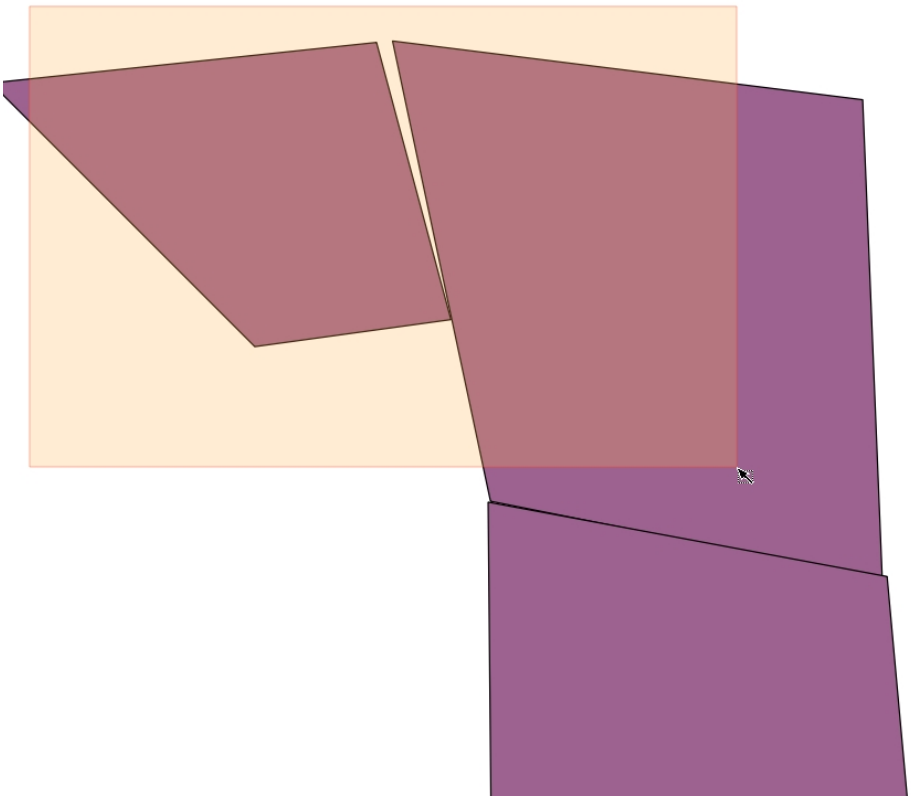



Click on the **Plus** button to expand and the **Minus** button to collapse the details tree.

To view the details of multiple features, click on a one point in the **Map Canvas** and start dragging the cursor to the bottom right direction to expand the selection area as shown in the image below.



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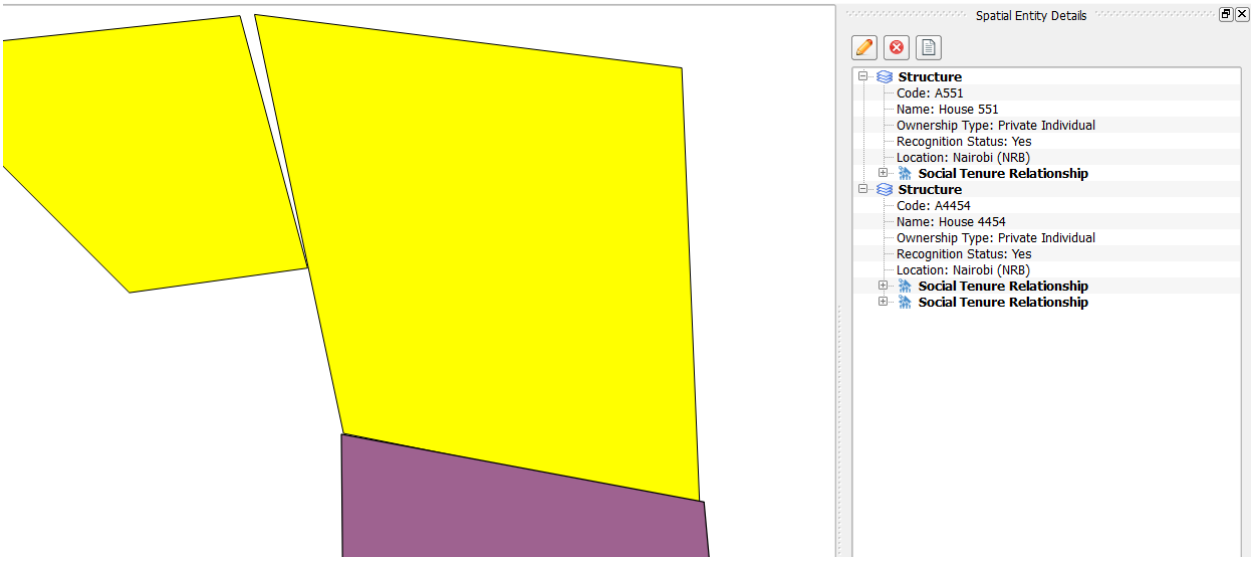
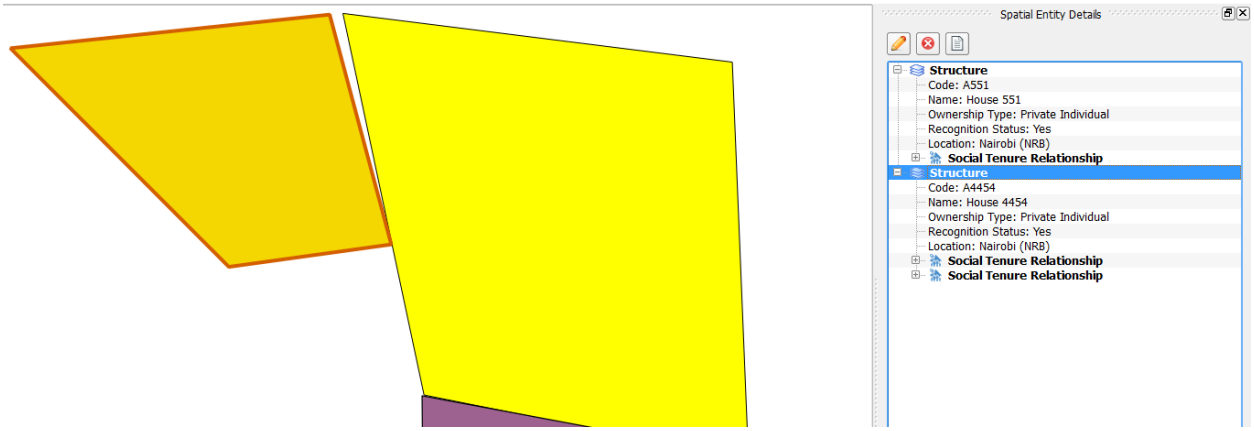
Once, you have covered the features you would like to select, release the cursor. It could take few seconds to load the details of the selected features.

The details of each feature appears in the **Spatial Entity Details** box as shown in the image below.




To identify which detail stands for which feature, click on Spatial Entity name as shown in the image below.




5. You can edit, delete and view supporting documents of the Entity records in the details using the buttons highlighted in the image below.

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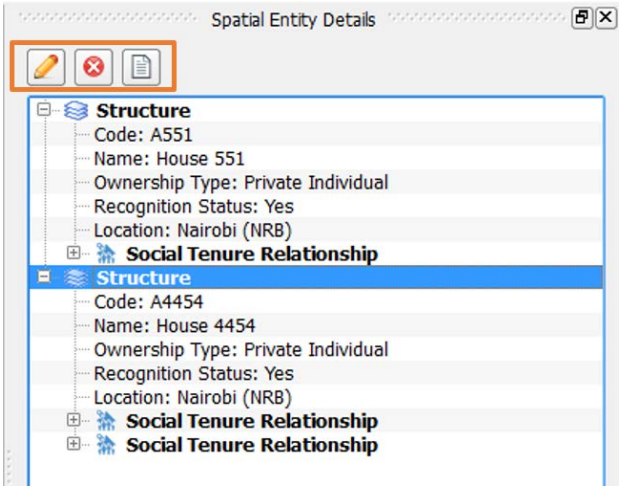


You can edit all Entity records. On the other hand, it is not possible to delete records linked to a **Social Tenure Relationship** record. This means, you cannot delete a party record as it only appears when it is linked to a **Social Tenure Relationship** record. You cannot edit or delete **View** records as views by nature are not editable. In addition, you cannot view supporting documents of **View** records as they not linked to a supporting document. More details of editing and deleting Entities is discussed in Managing Entities sub-topics. Editing and Deleting Social Tenure Relationship records is discussed in Managing Social Tenure Relationship sub-topics.

**Note**: **The Spatial Entity Details** only works for STDM **Entity** and **View** layers.

# Managing Social Tenure Relationship

'People – land' relationships can be expressed in terms of persons, group of people and institution (parties) having a right to parcel, garden, or structure (spatial units). In STDM, this right is called Social Tenure Relationship (STR).

The Social Tenure Relationship has its own table that stores each person's relationship to a spatial unit. Most importantly, it also gives you an option to choose the type of social tenure relationship between the person and the spatial unit. In addition, you can upload a supporting document that can be any document you think is useful for informational purpose and as evidence.

The STR table has two modules that are used to create, edit, and search STR.

## Creating a Social Tenure Relationship

Creating a Social Tenure Relationship is carried out through a module called **New Social Tenure Relationship**.

The module enables you to do the following:

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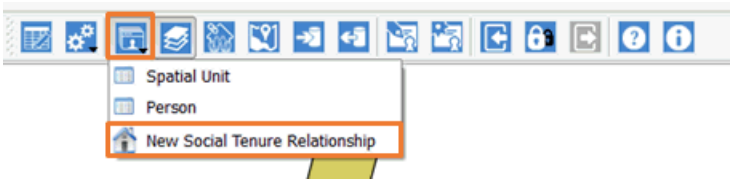
- Add a person or persons
- Add a spatial unit
- Choose a social tenure relationship type for each persons added
- Specify tenure share in percent
- Upload supporting document that is related to social tenure relationship
- Set tenure validity period

To create a social tenure relationship, follow the steps below.

1. Start the **New Social Tenure Relationship** module.

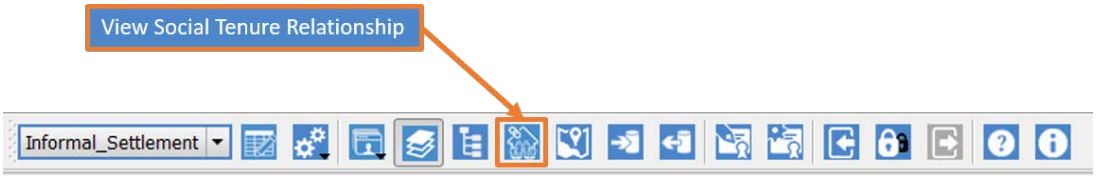
There are two ways of starting **New Social Tenure Relationship** module.

The first way is through **Entities** menu by selecting **New Social Tenure Relationship** sub-menu as shown in the image below.




The other option is from View Social Tenure Relationship module.

First click on View Social Tenure Relationship button on STDM toolbar.




Inside **View Social Tenure Relationship**, click on the add ( ) button, located inside Search Result as shown below.

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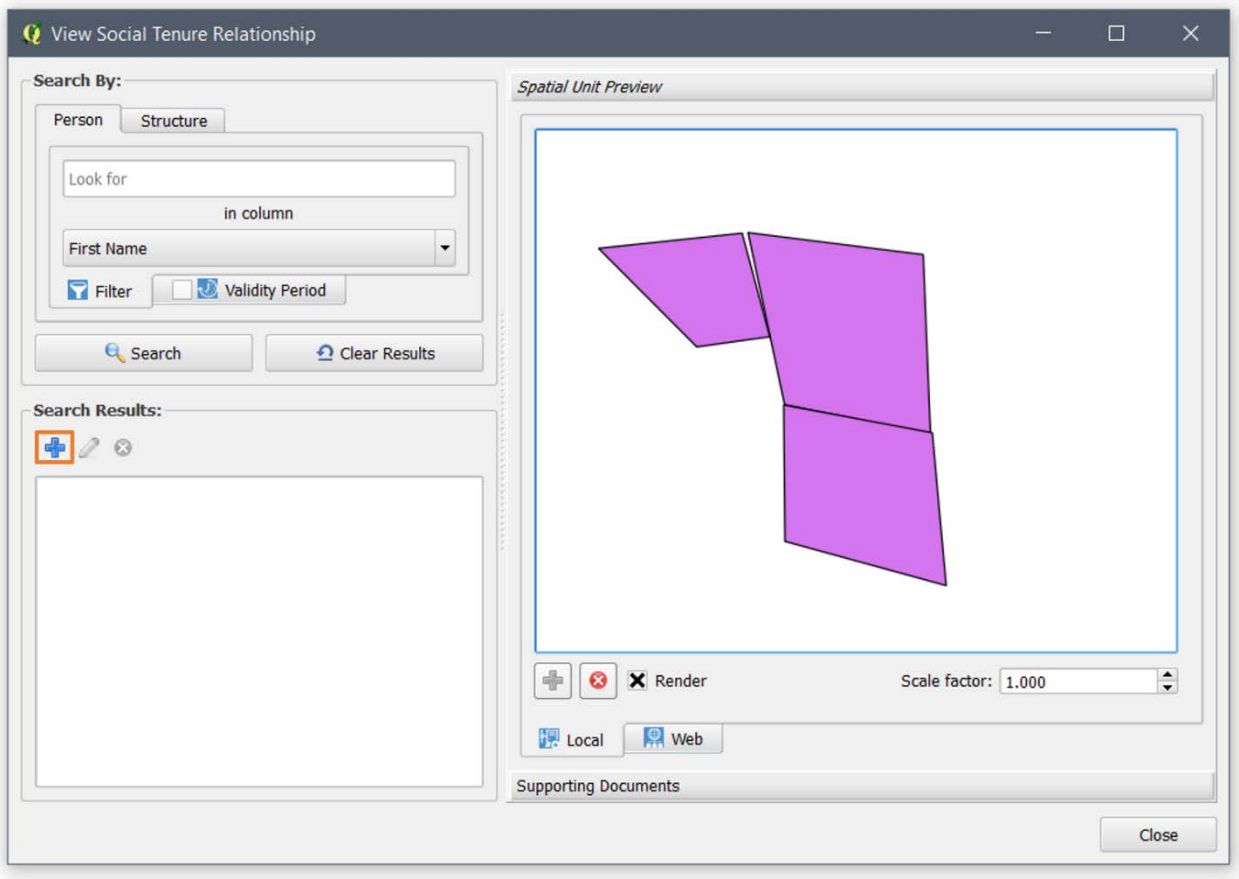


2. You will see the module below. After reading the description, click on **Party** item in the left side to add a party record.

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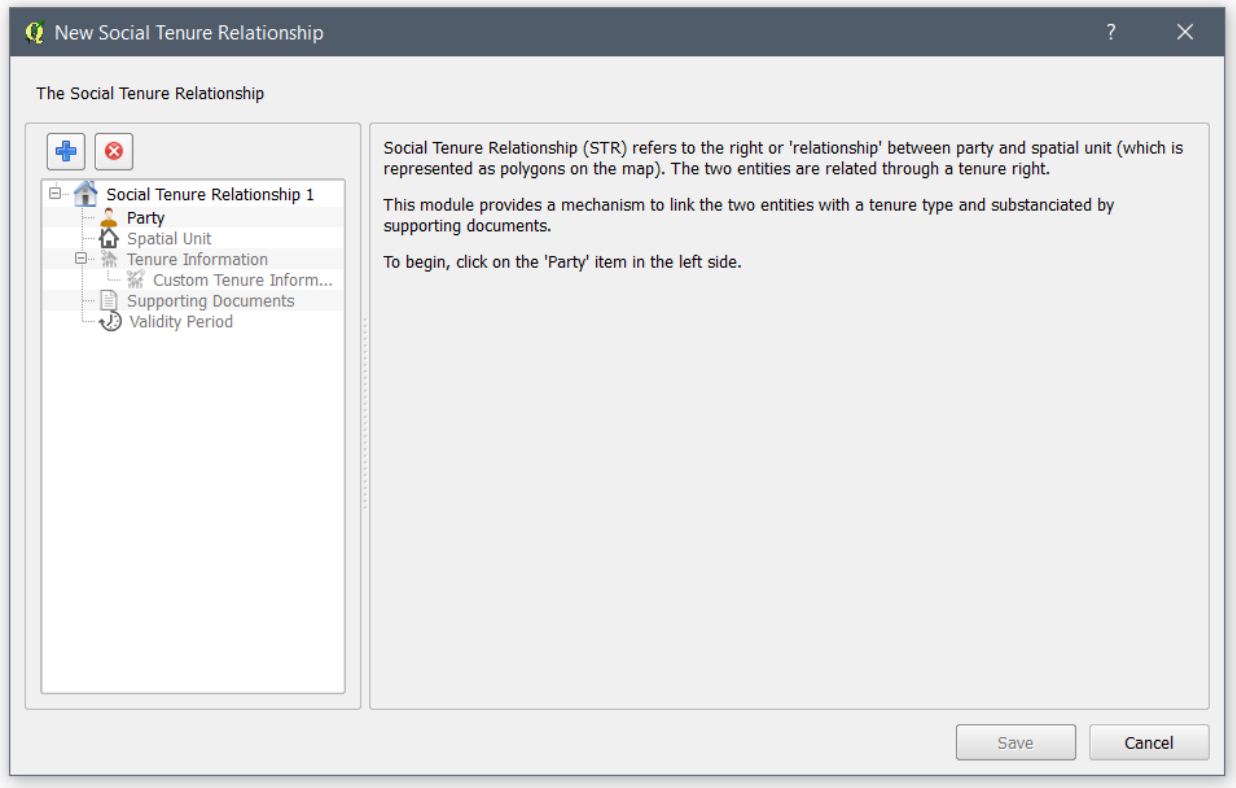


3. On **Party** page (see the image below), you can add the party record to be linked to a spatial unit/structure/parcel. If you have allowed multiple parties for one spatial unit, you can add more than one person. If you have selected more than one entity to be a party entity, you can switch to another party entity using the party selection combo box as highlighted in the image below.

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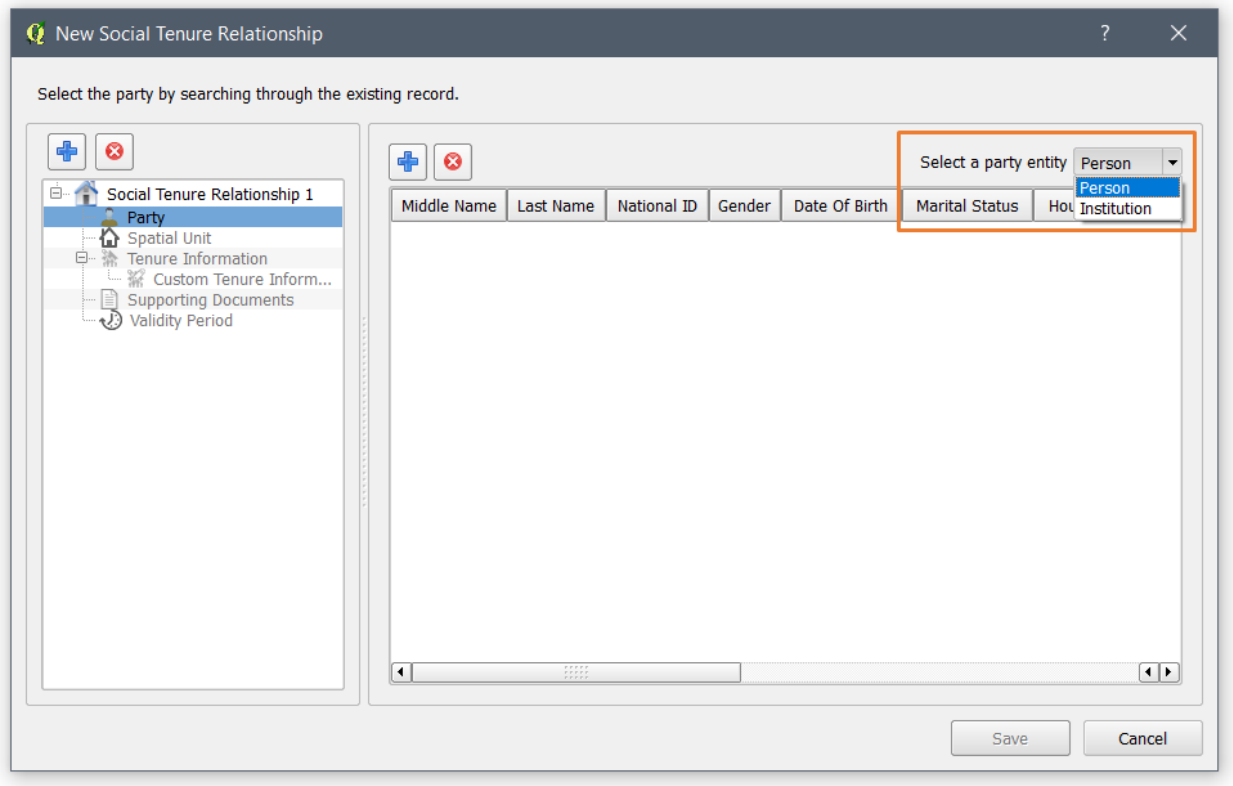


Click on the **Add** button ( ) to open the **Person Records** and select records.

4. Select a record that you would like to add. You can search for the party record you would like to add. Then, select it and click on the **Select** button as shown below.

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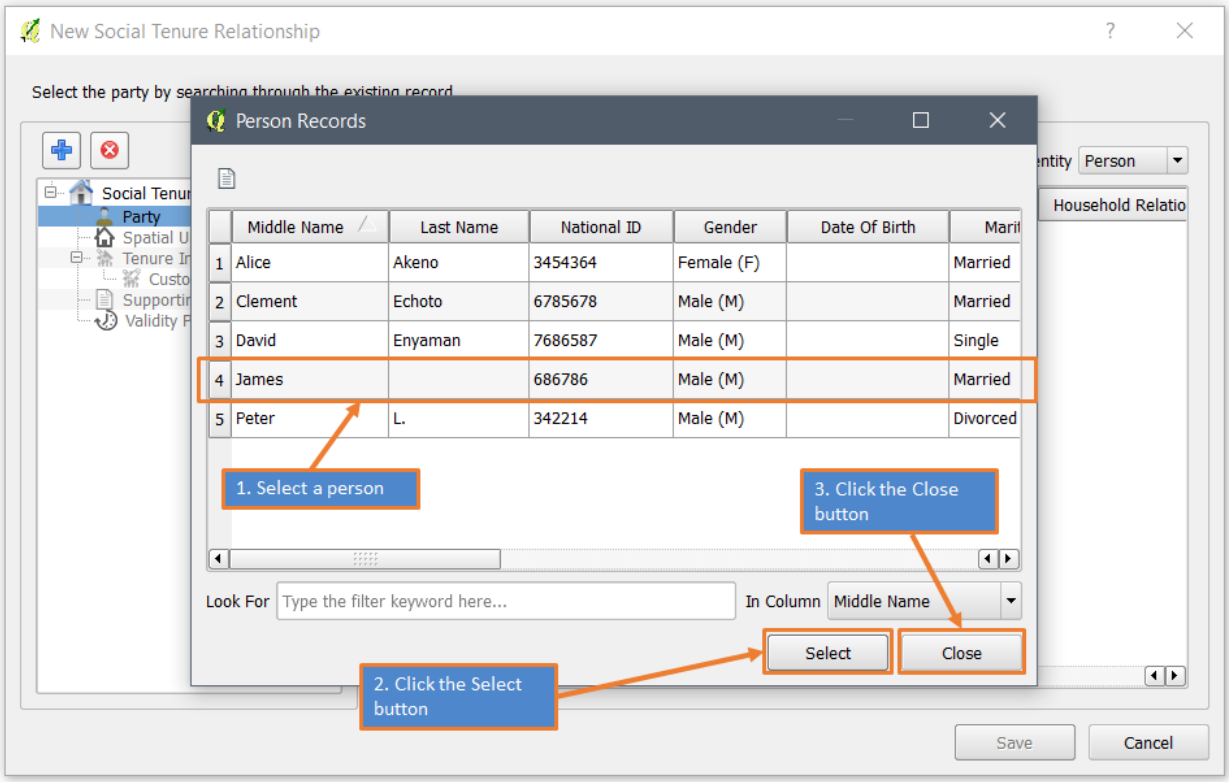


If you want to add multiple records that are not continuous, follow the sub-steps below.

a. Press the **Control** (Ctrl) key on your keyboard

b. While still pressing the **Control** key, select another record you want to add.

If you want to add multiple records between two rows, follow the sub-steps below.

a. Select a record that will be the first selection in the range.

b. Press the **Shift** key on your keyboard

c. While still pressing the **Shift** key, select the last row in the selection range

When you finish selecting all records, click on the **Close** button as highlighted in the image above.

Once you click the close button, you will see all the selected records in the page as shown below.

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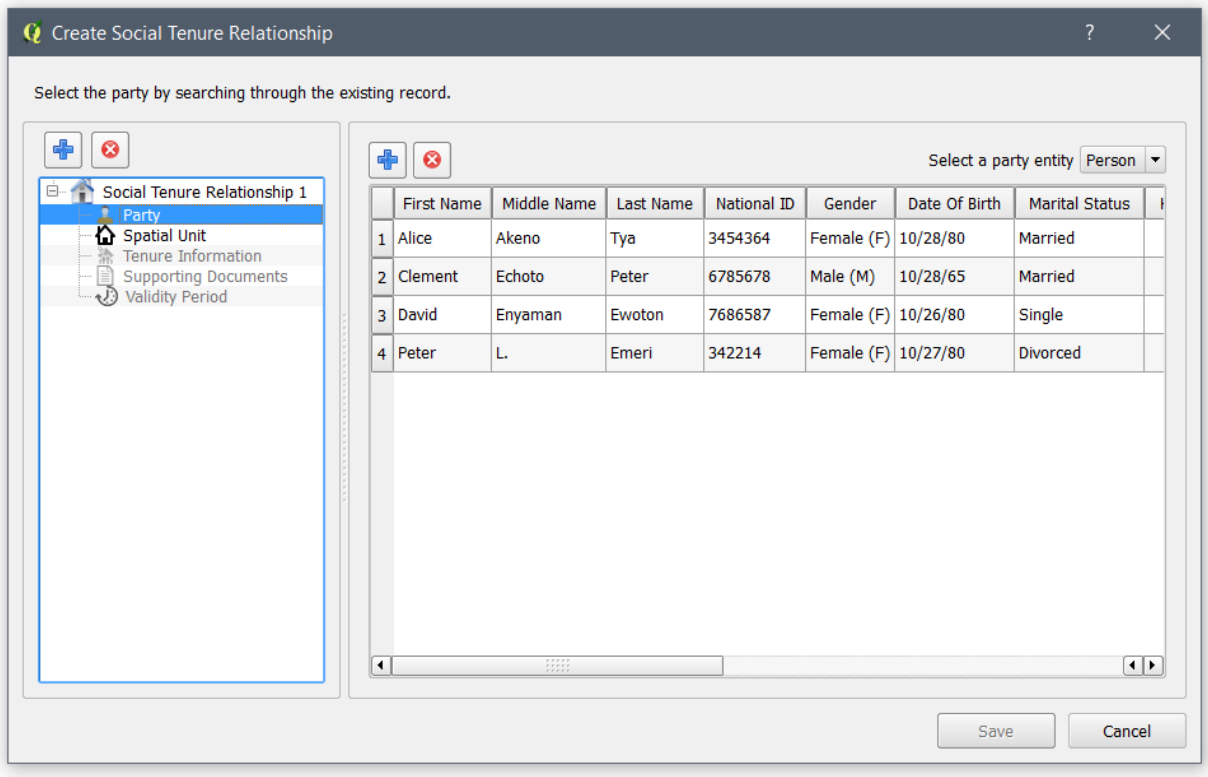


You can remove records by selecting a record and by clicking on the **Remove** button ( ).

5. Once you add records in the **Party** page, you will see the **Spatial Unit** item becomes active and clickable. Click on it, to open the **Spatial Unit** page.

6. You need to choose which spatial unit entity is linked to the party records selected. Use the drop down menu on top right corner to select the **Spatial Unit** entity as shown below.

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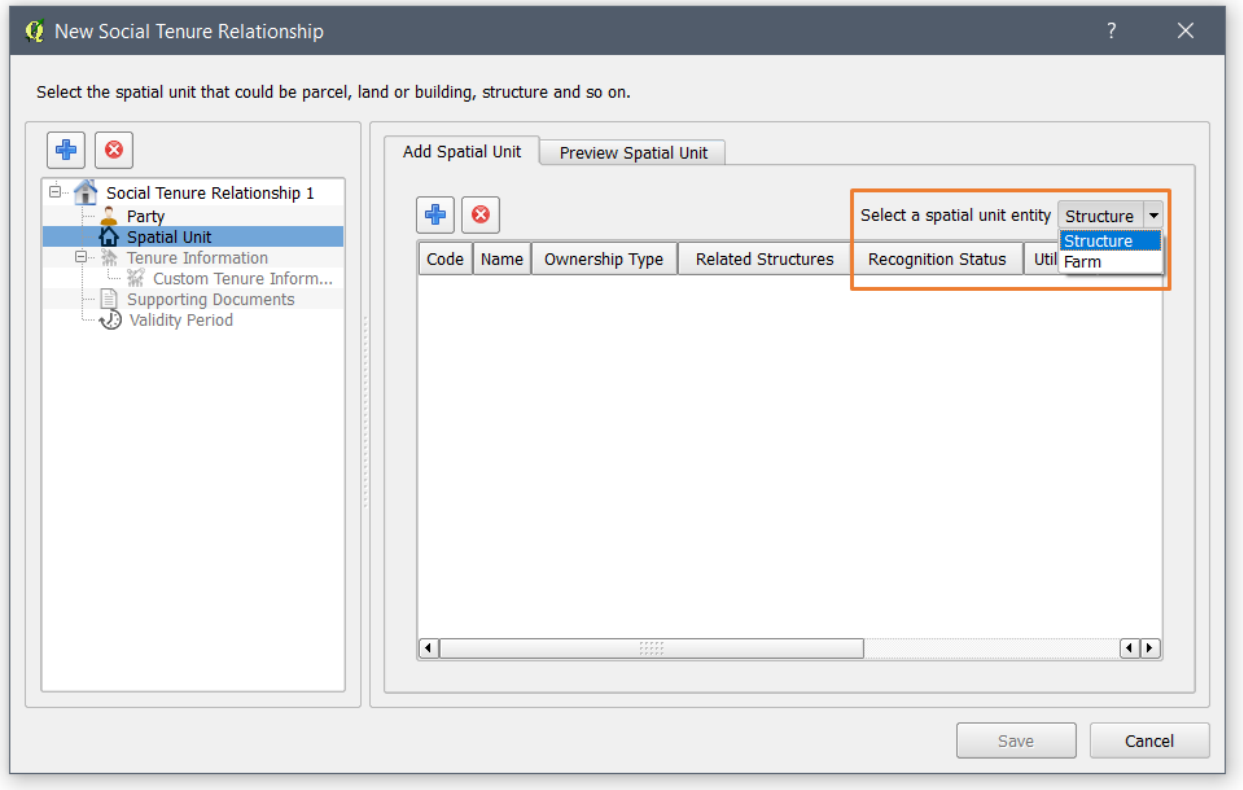


7. Once you have selected a **Spatial Unit** entity, you have to select a spatial unit by clicking on the **Add** button as shown in the image below.

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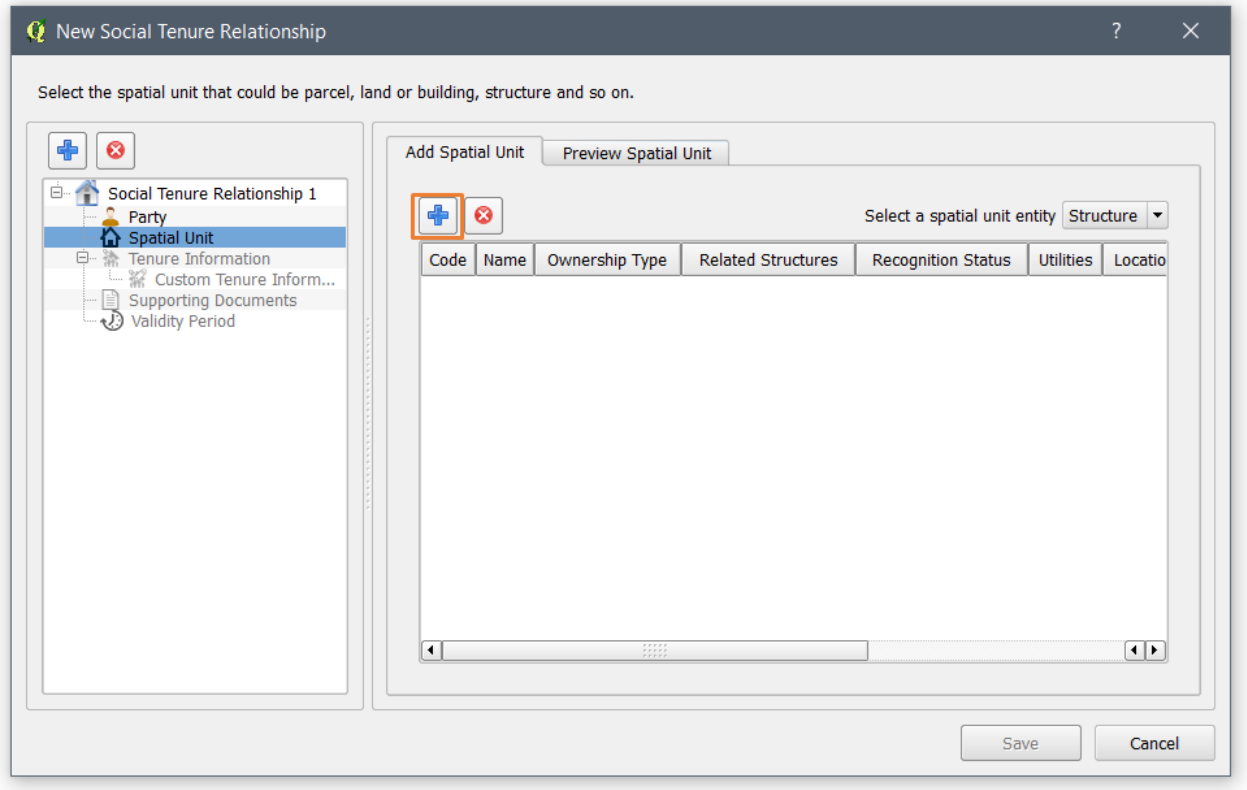


8. When you click on the **Add** button (), the Spatial unit/Structure Record Window appears to allow you select a spatial unit.

Select one spatial unit that should be linked to the parties/ persons that you have selected as shown below. You can use the search tool to look for the spatial unit you would like to add. Then, click on the **Select** button and click on the **Close** button.

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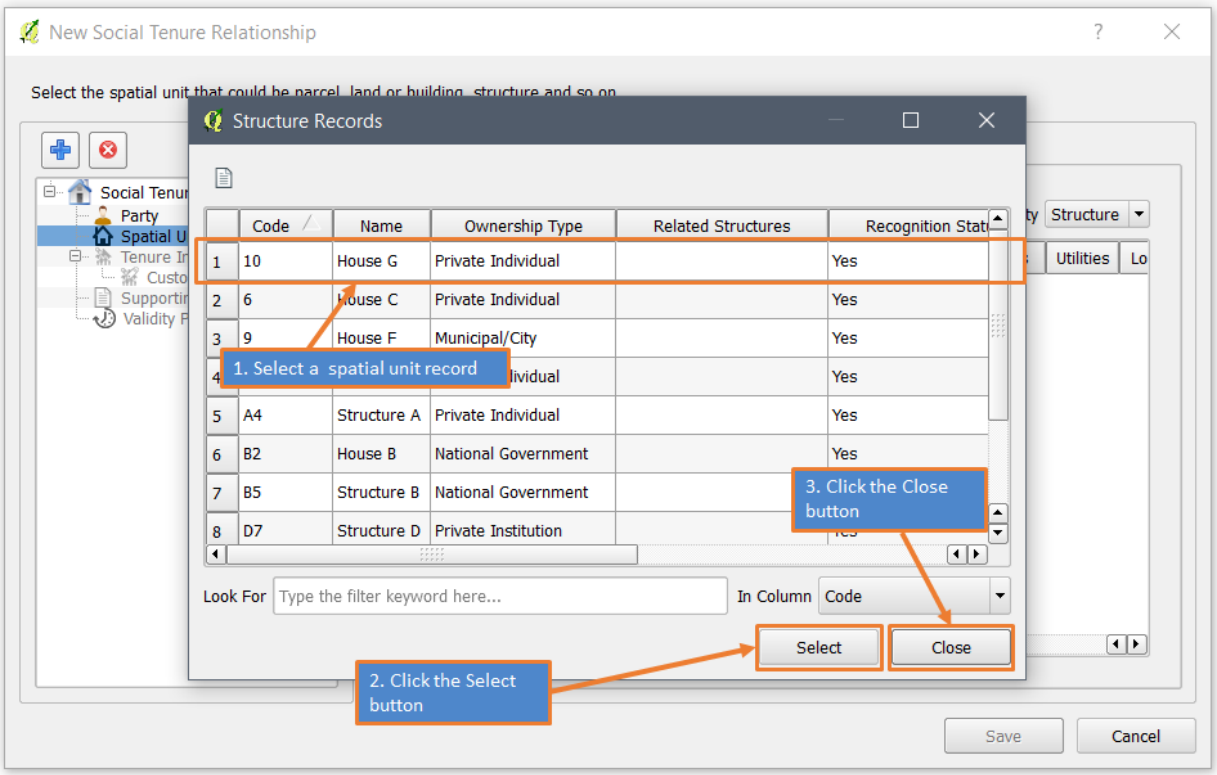
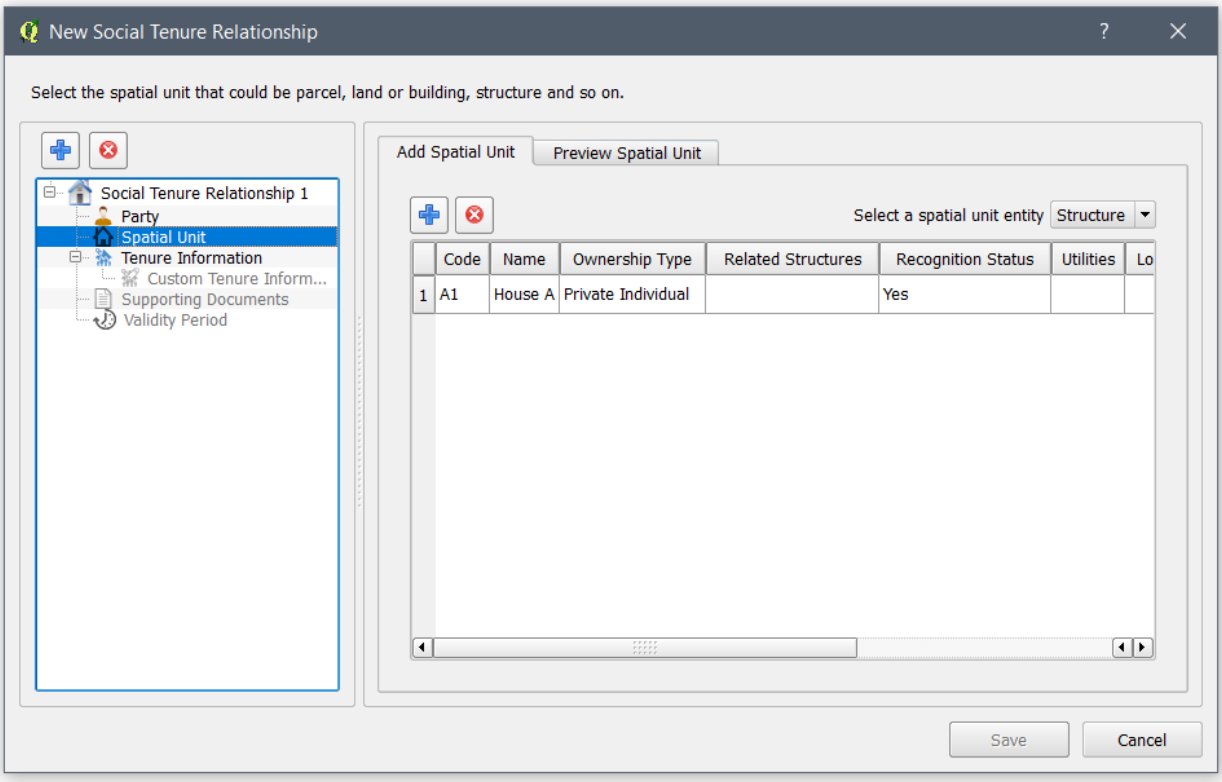



Once you have clicked the close button, you will see the selected records in the page as shown below.

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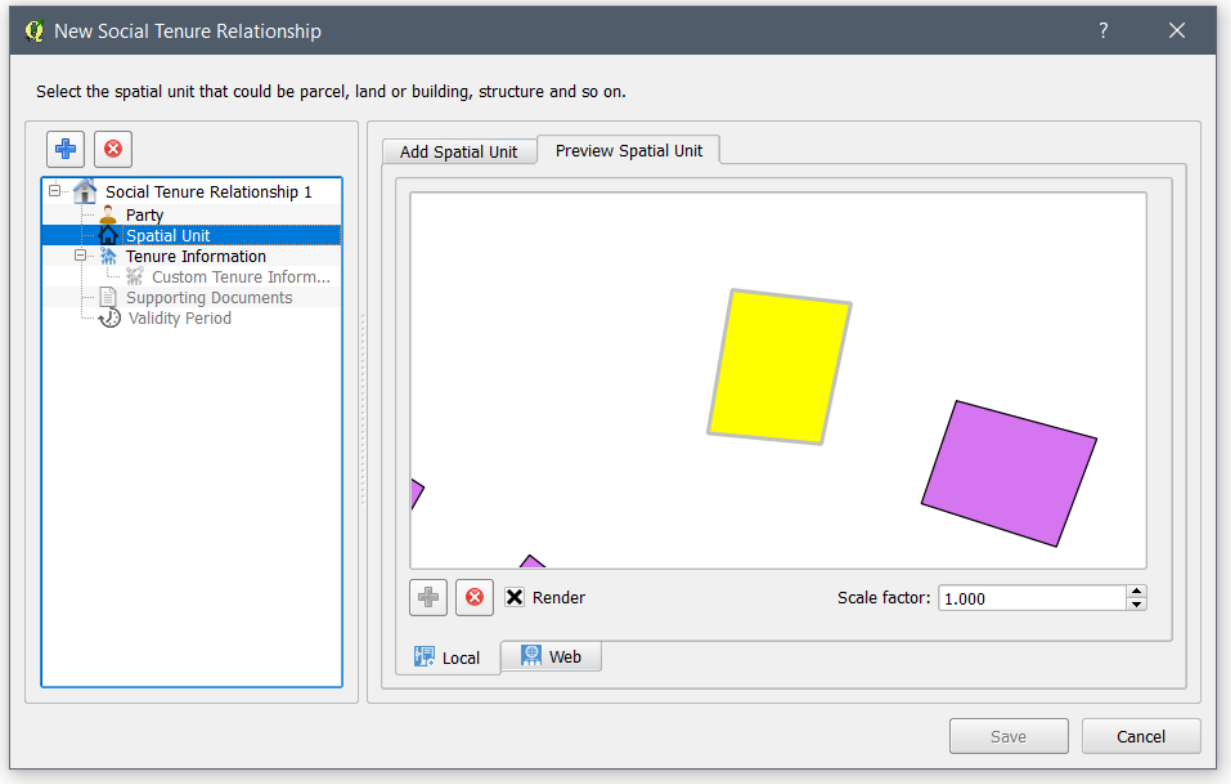
You can remove a record by selecting it and by clicking on the remove button ( ).

You can view the selected spatial unit in a web map and local map. The base layers used in the web map are Google map and Open Street map. You can choose one of them.

**Note**: Web overlay may vary from the actual representation in the local map.




9. Once you select a spatial unit record, the Tenure Information item becomes active. Click on it, to open the **Tenure Information** page. This page loads a row for each party you have added in the Party Information page.

Select the tenure type of each party records in the first column by clicking on the drop down menu after looking at the **person** record next to it as shown in the image below. Specify the tenure share by choosing share percentage in the second column as shown in the image below.

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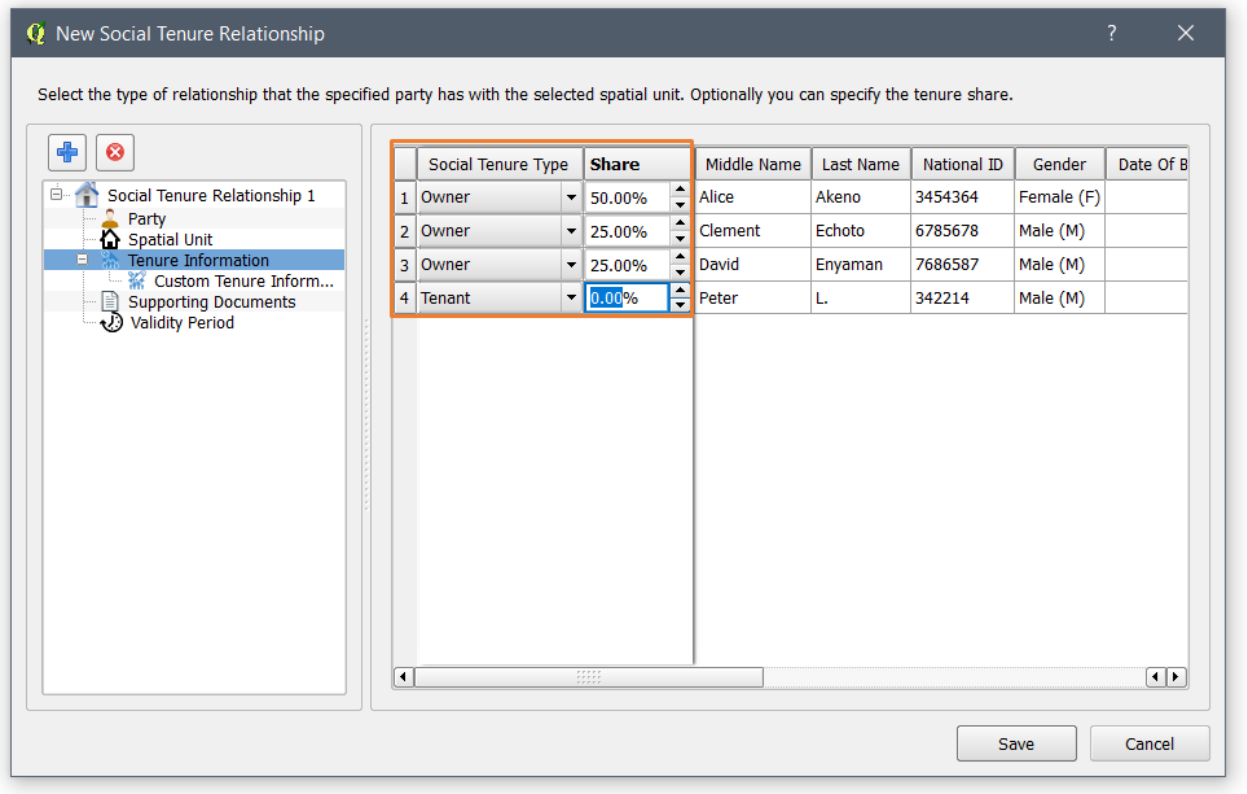


10. Once you have selected all the tenure type rows, the **Custom Tenure Information** item and other items becomes active. Click on **Custom Tenure Information** to add additional tenure information as shown below.

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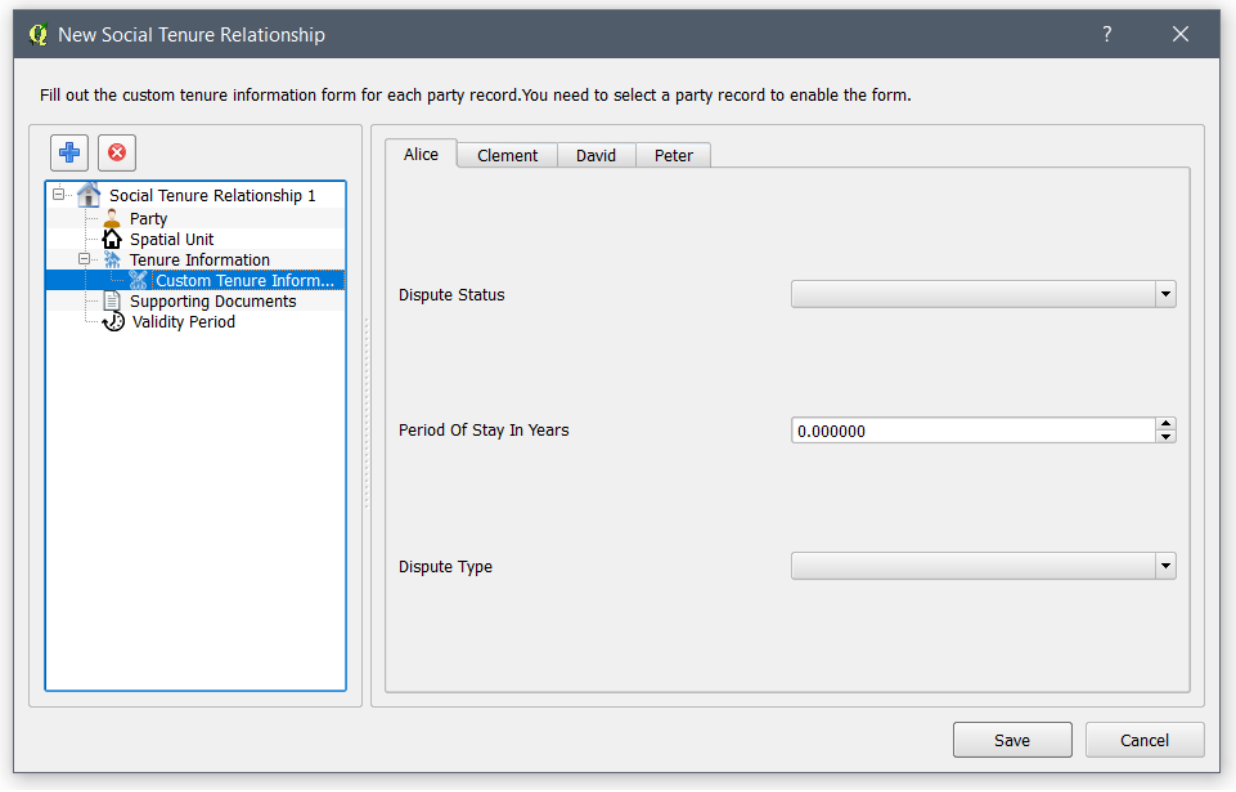


**Note**: The Custom Tenure Information is a form containing additional Social Tenure Relationship fields that is added when Defining the Social Tenure Relationship. For each **Party** record added, there will be a separate form identified by the value of the first column, in this case **First Name**.

11. Once you have filled all **Custom Tenure Information forms,** click on the the **Supporting Documents** item.

**Note**: The page enables you to upload supporting documents for each document type specified in the **Configuration Wizard**. The supporting document could be any relevant document that could be used as evidence or information for the social tenure relationship.

**Note**: If you have added more than one party, you will view information that specifies that a copy will be made for each document you have uploaded. This is to mean that when you upload one document, a unique copy will be created for each party. Thus, you can access each uploaded document from the social tenure relationship of each party. If only one party is linked to the spatial unit, you will not view this message. The uploaded document will only be accessible from the specified person or spatial unit.

**Note**: If you have more than one document type, a tab will be created and you can click on the tabs or the drop down menu to upload the documents in to it.

12. To upload a supporting document, choose the document type by clicking on the tabs or the drop down menu. Then, click on the **Add Supporting Document** button as shown below.

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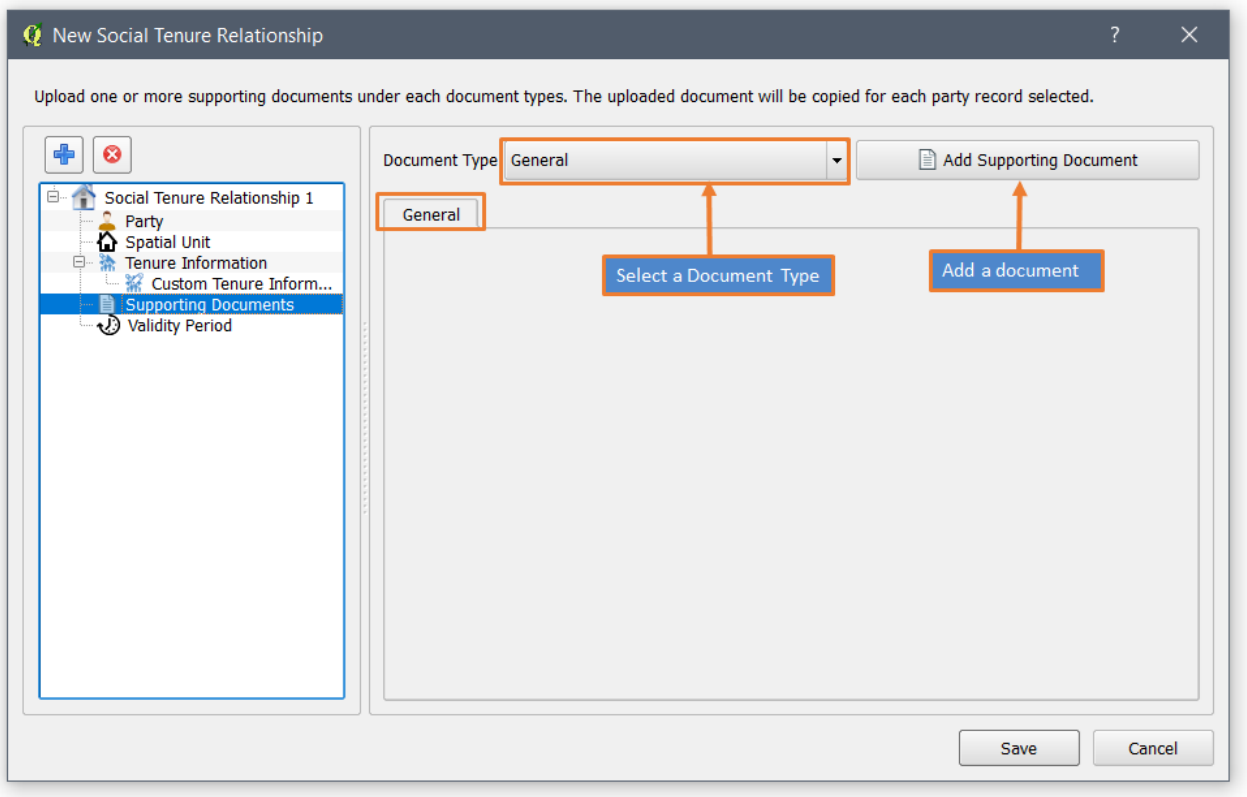


13. Choose a file to be uploaded by looking for the files in your Windows Explorer. Then, click on the **Open** button as shown below.

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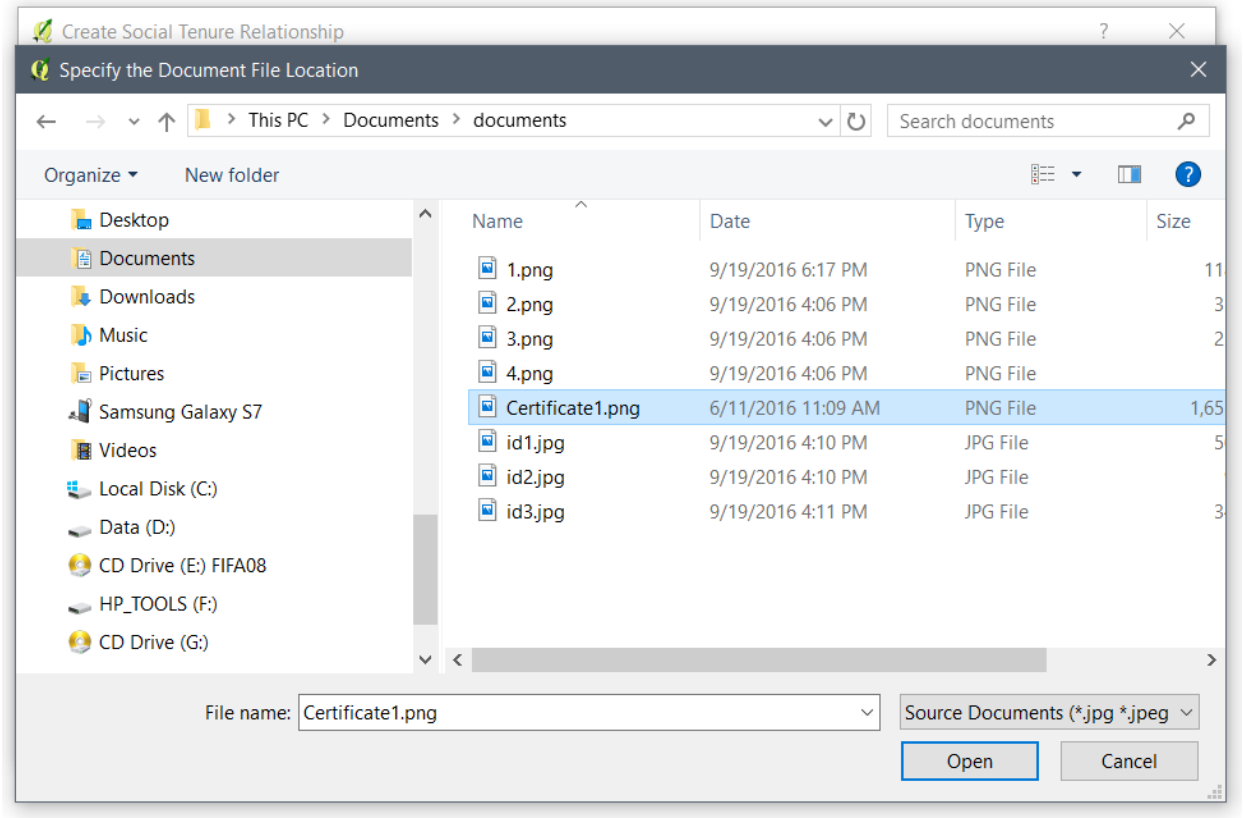


When you click the **Open** button. a copy of the same document will be created for each party as shown in the image below.

You can view the documents by clicking on the file name. You can remove the documents by clicking on the **Remove** icon (⊗) on each document bar.

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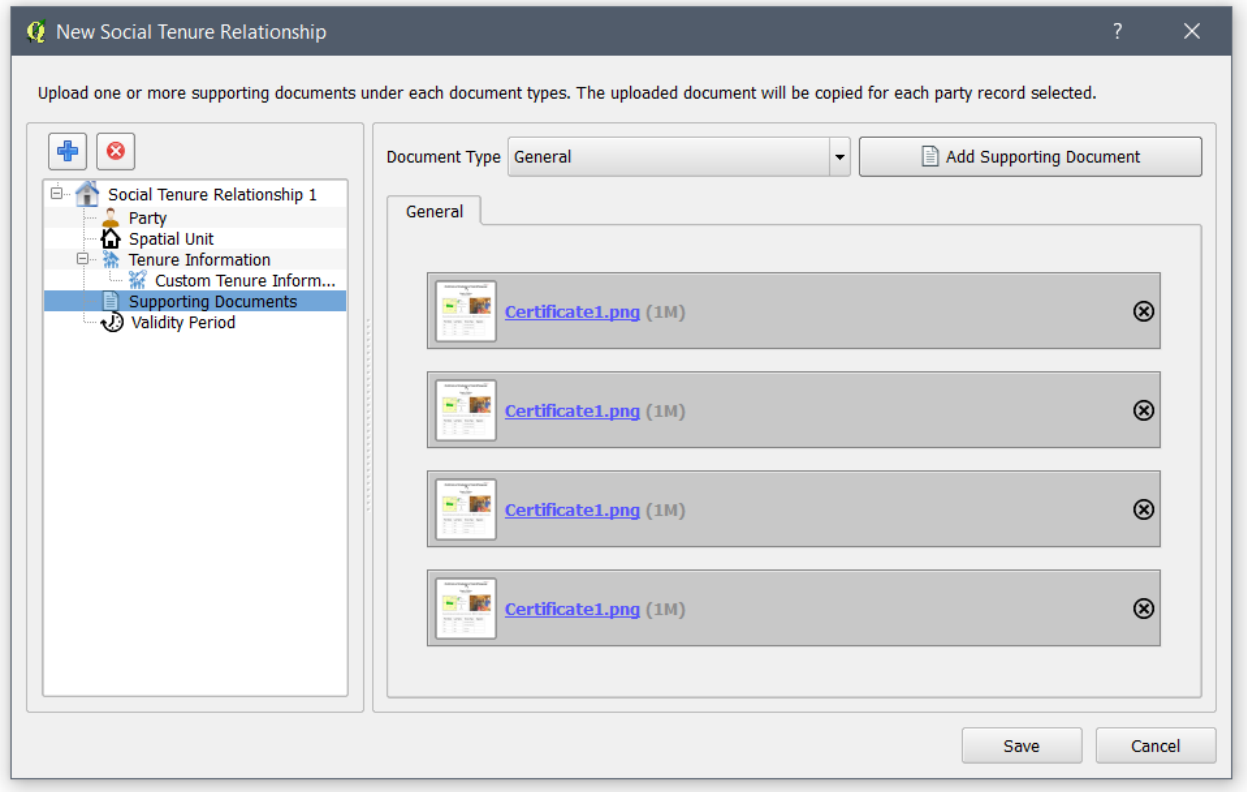


11. Specify the validity period of the tenure agreement by selecting the date range using the **Validity Period** component as shown in the image below. You can use the **Tenure duration** box to quickly set the validity end date. The **Tenure duration** can increase the date by year or by month. For instance, when you specify **100** on **Tenure duration** while **In years** radio button is selected, it will add 100 years on the end date with reference to the start date.

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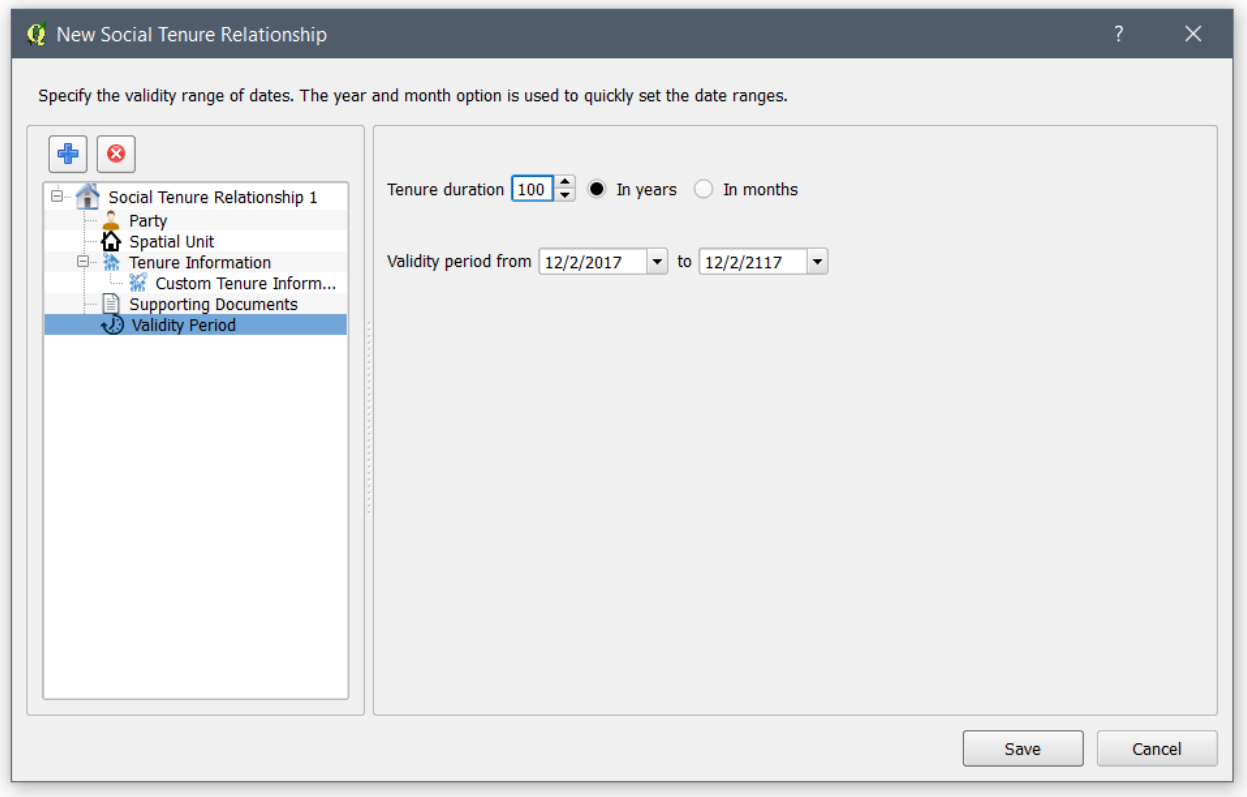
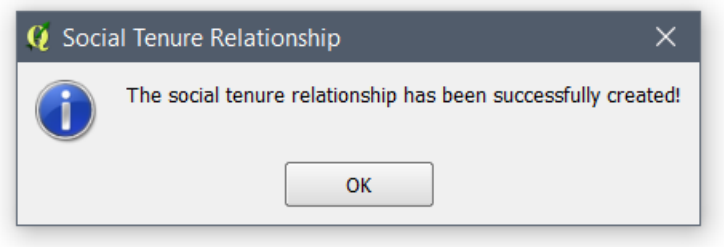



12. To save the social tenure relationship to the database, you have to click on the **Finish** button at the bottom of the module.

Once you click on it, you will see a success message as shown in the image below. Click the **OK** button as highlighted below, to close the **Social Tenure Relationship** editor.




# Querying/ Viewing Social Tenure Relationship

To view the social tenure relationship, click on the **View Social Tenure Relationship** button from the **STDM toolbar** as shown below.

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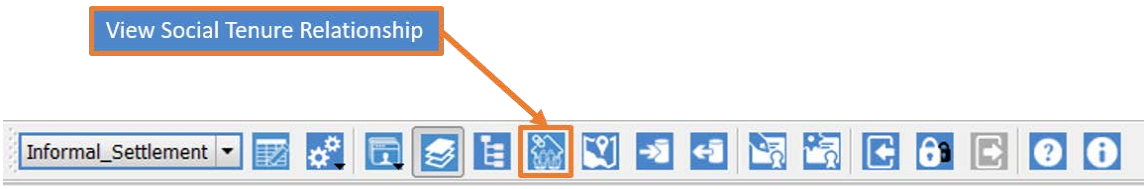
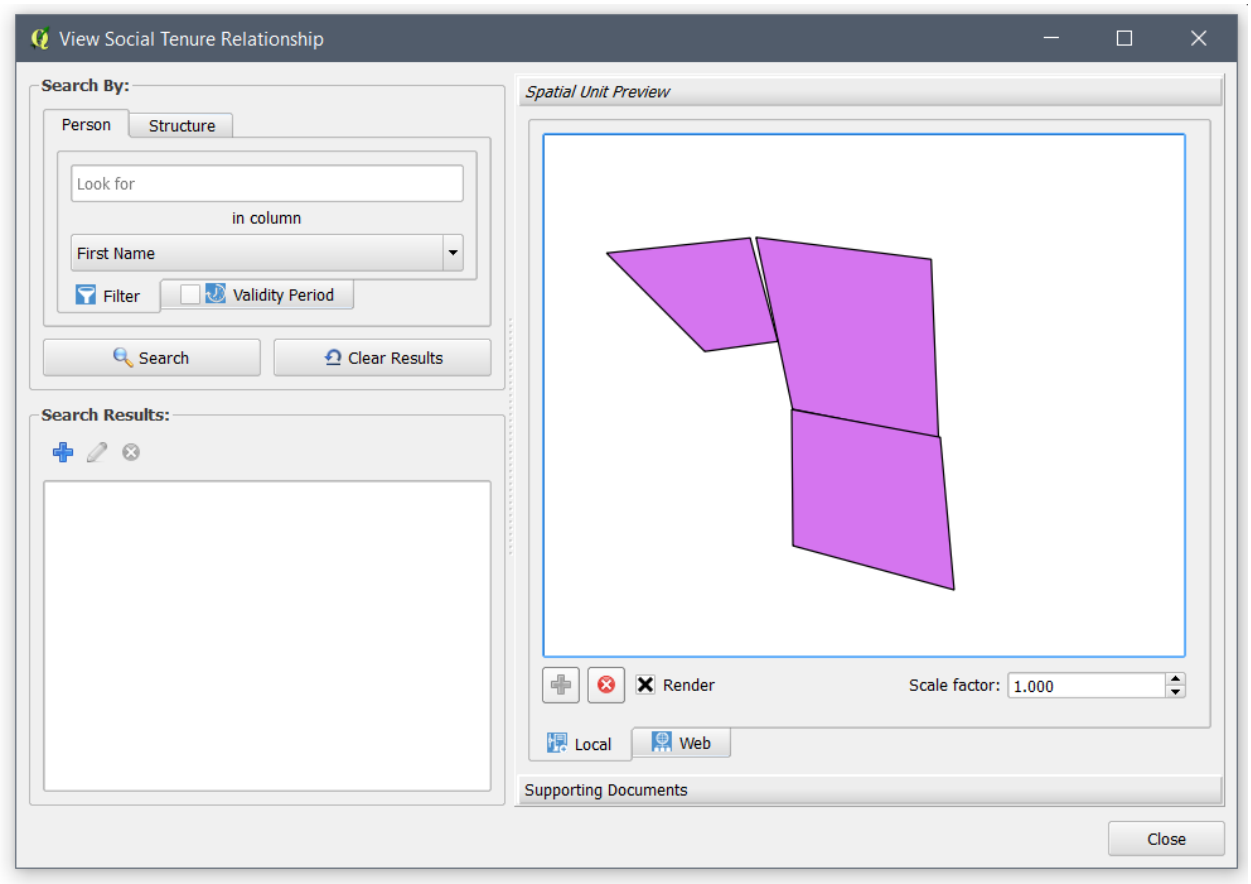



This should start the View Social Tenure Relationship module as shown below.




The entities that were selected as Social Tenure Relationship entities in the Configuration Wizard will appear as shown in the image below. Each tab has a search tool that enables you to search a record's social tenure relationship.

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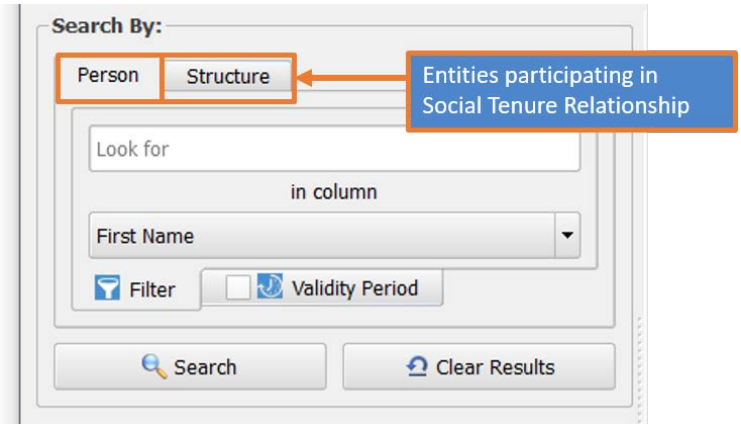
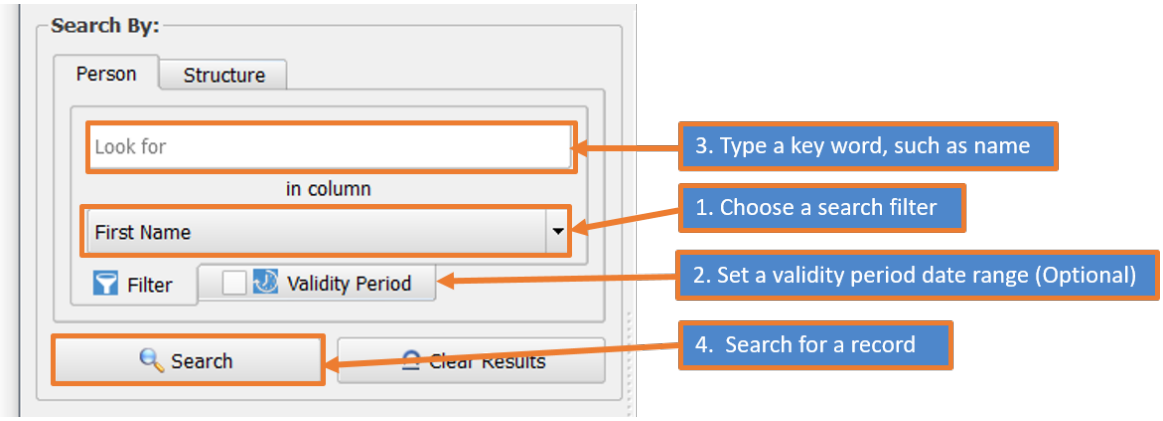
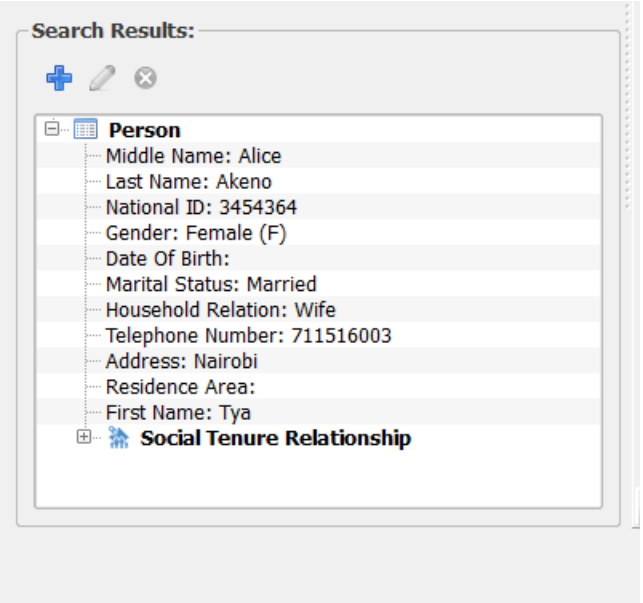



*2.* First select a filter that you will use to search a record and then type the keyword such as First Name of the person you are looking for. Then, click the **Search** button (see the image below).




**3.** The search results appear on a panel as shown below.

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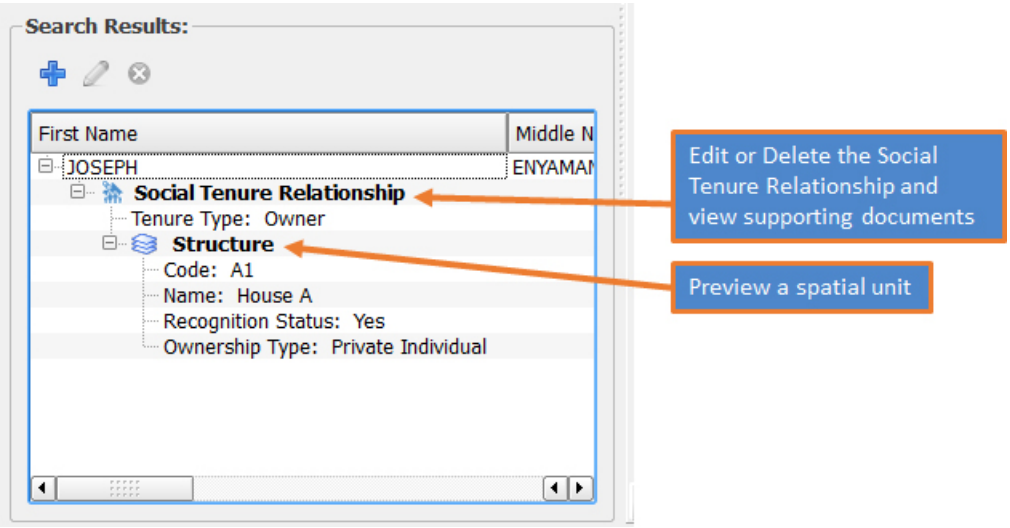
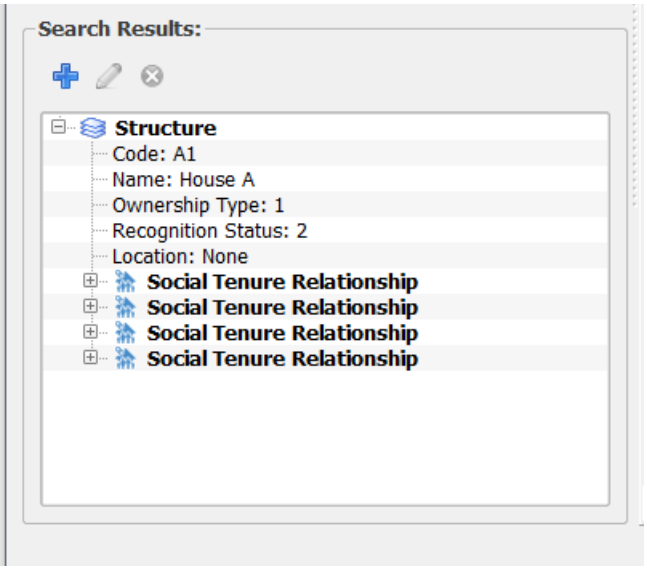
When you click on the plus icon (⊞) you will see all the social tenure relationship related information of the record.




The search result for a **Spatial Unit** is similar to **Party** based search as shown below.




If no social tenure relationship is defined for the record you are searching for, a **No STR Defined** item is displayed as shown below.

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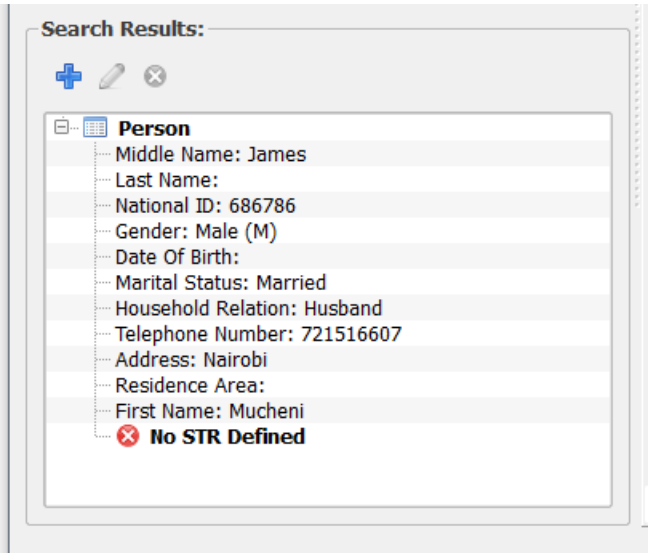
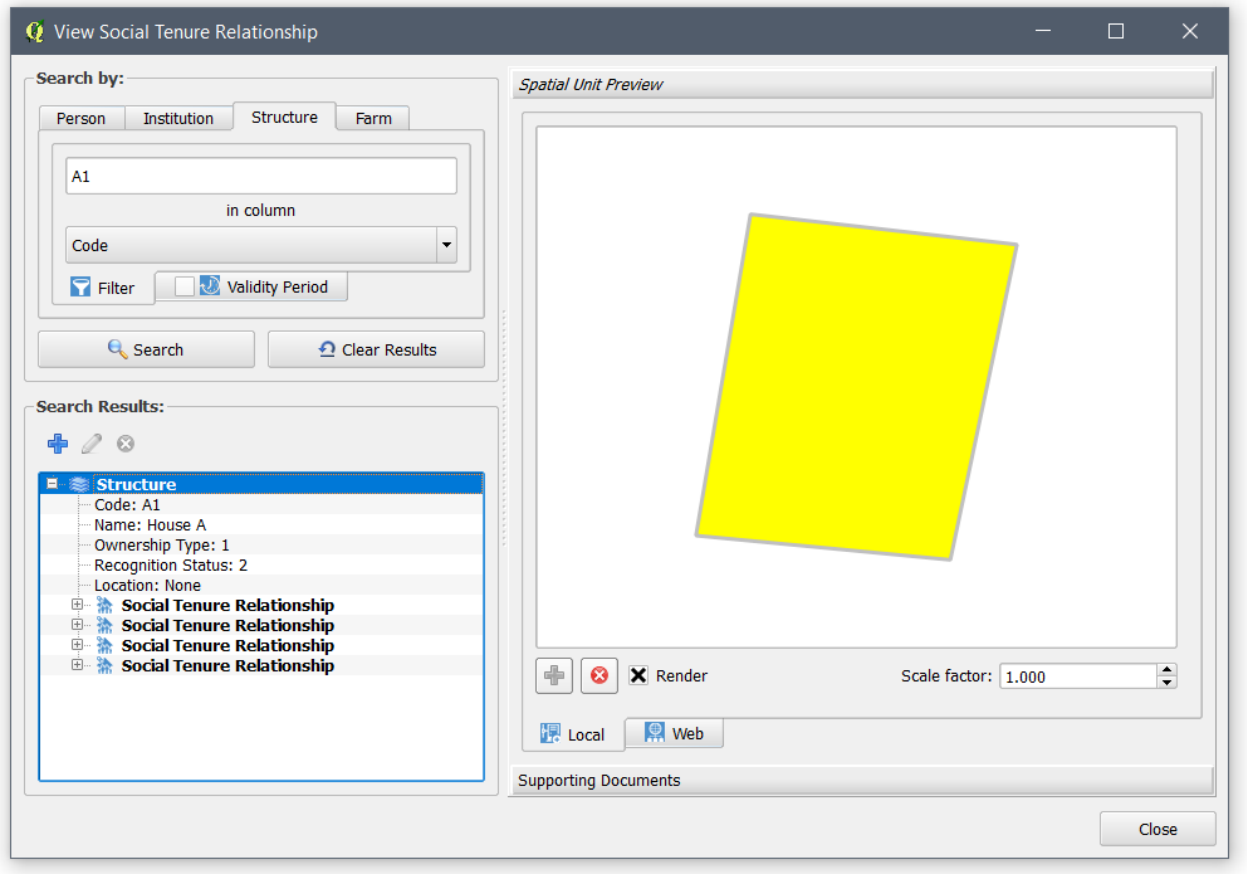



4. When the first row is clicked, you can see the preview of the structure in the Spatial Unit Preview box as shown below. You can also preview the spatial unit in the party/ person search result page by clicking on the spatial unit/ structure.




If your computer is connected to the Internet, you can also view it on a Google Map and Open Street Maps as a base layer, as shown below.

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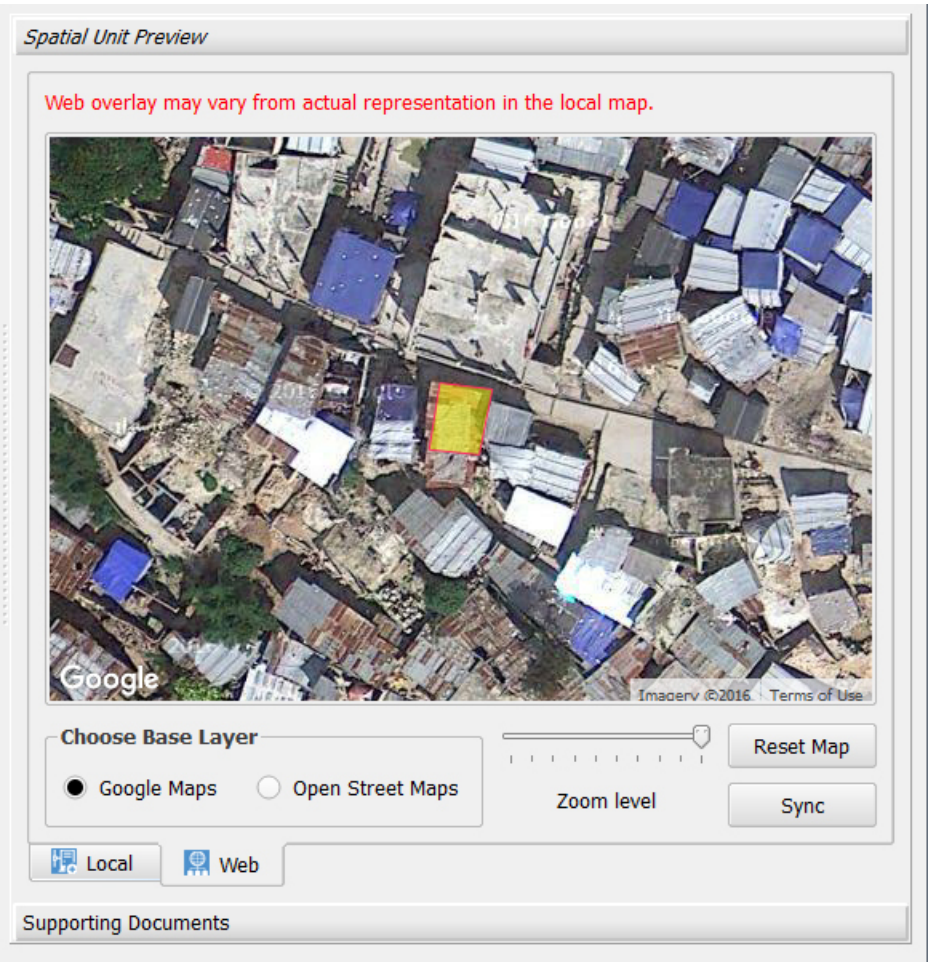


5. Clicking on the **Social Tenure Relationship** row will enable you to open the box for Supporting Documents as shown in the image below.

This also enables the buttons to edit and delete the social tenure relationship.

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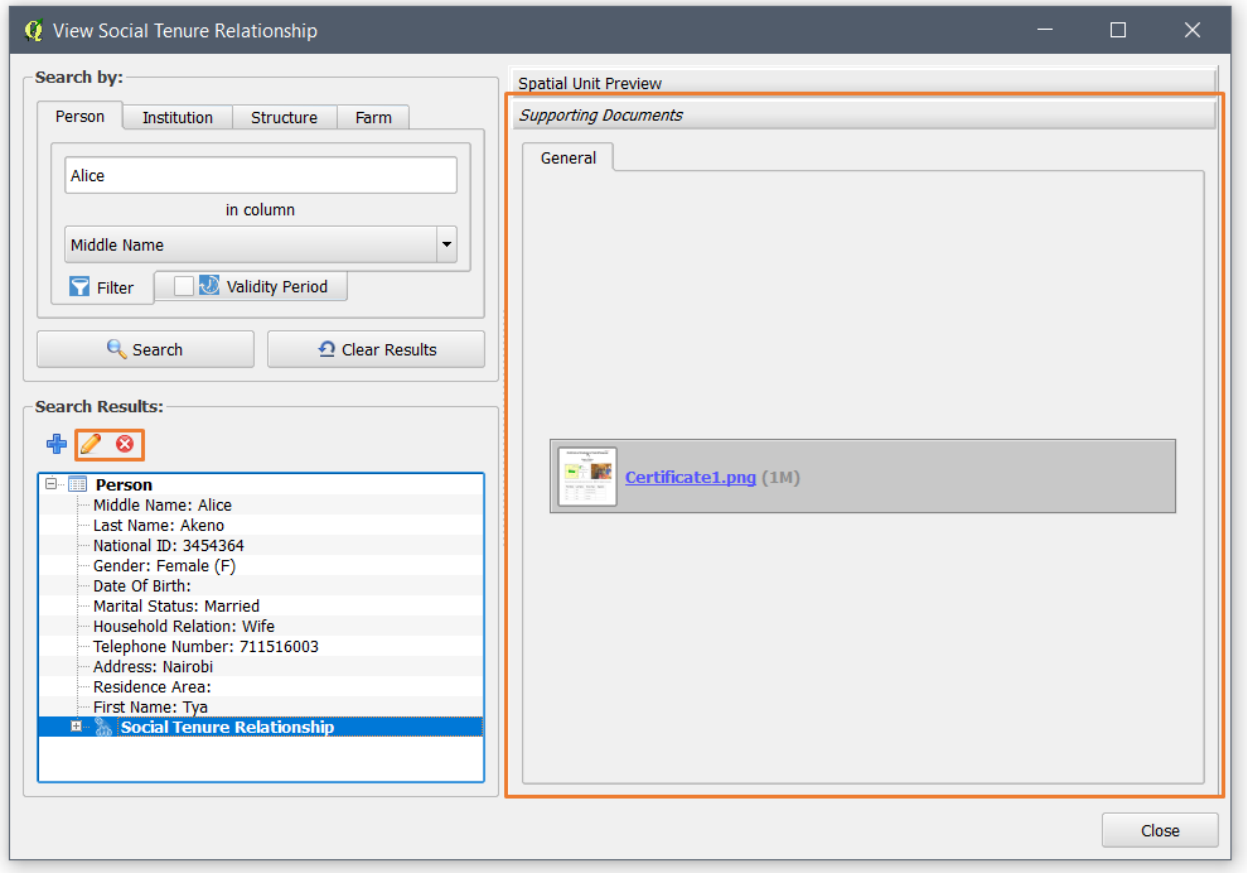


6. Click on the file name of the document to view the supporting document without going to the directory of the file, within STDM interface.

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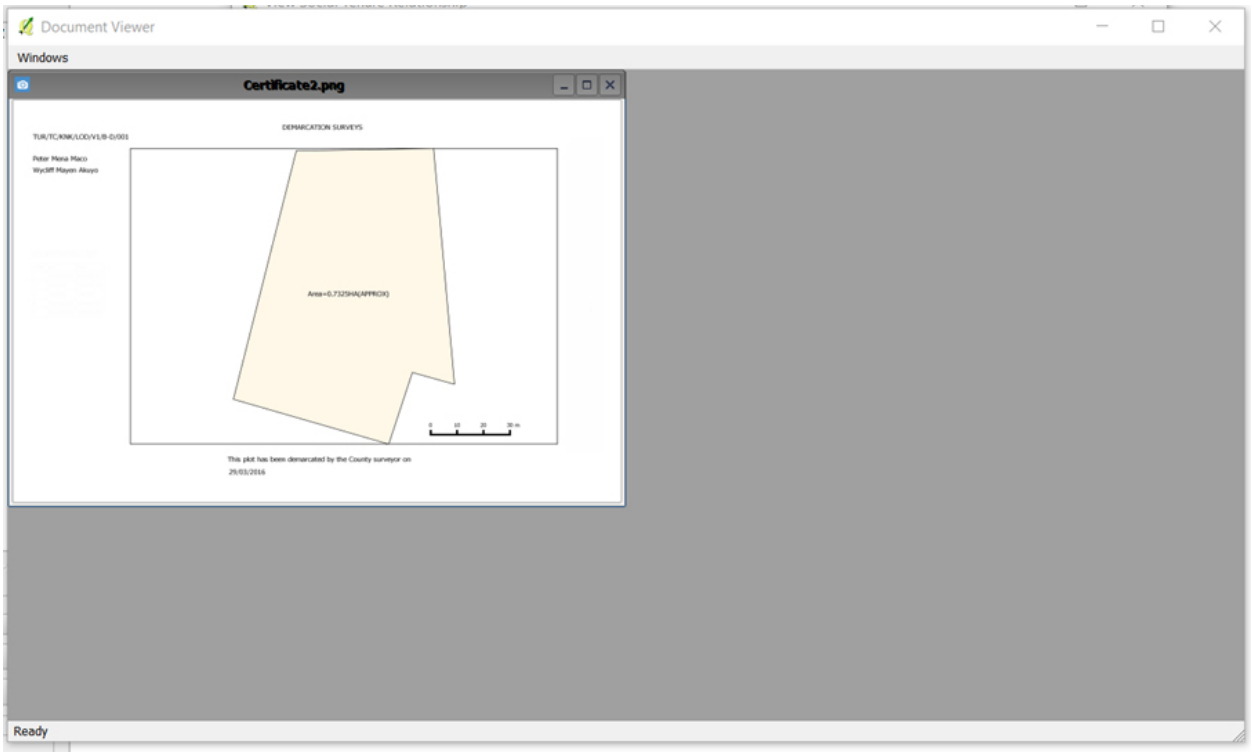


You can expand an image. Moreover, you can view more than one image in the same window. Close it or minimize it when you are done viewing the document.

7. From the person record, you can view the spatial unit geometry, by clicking on the spatial unit row as shown below.

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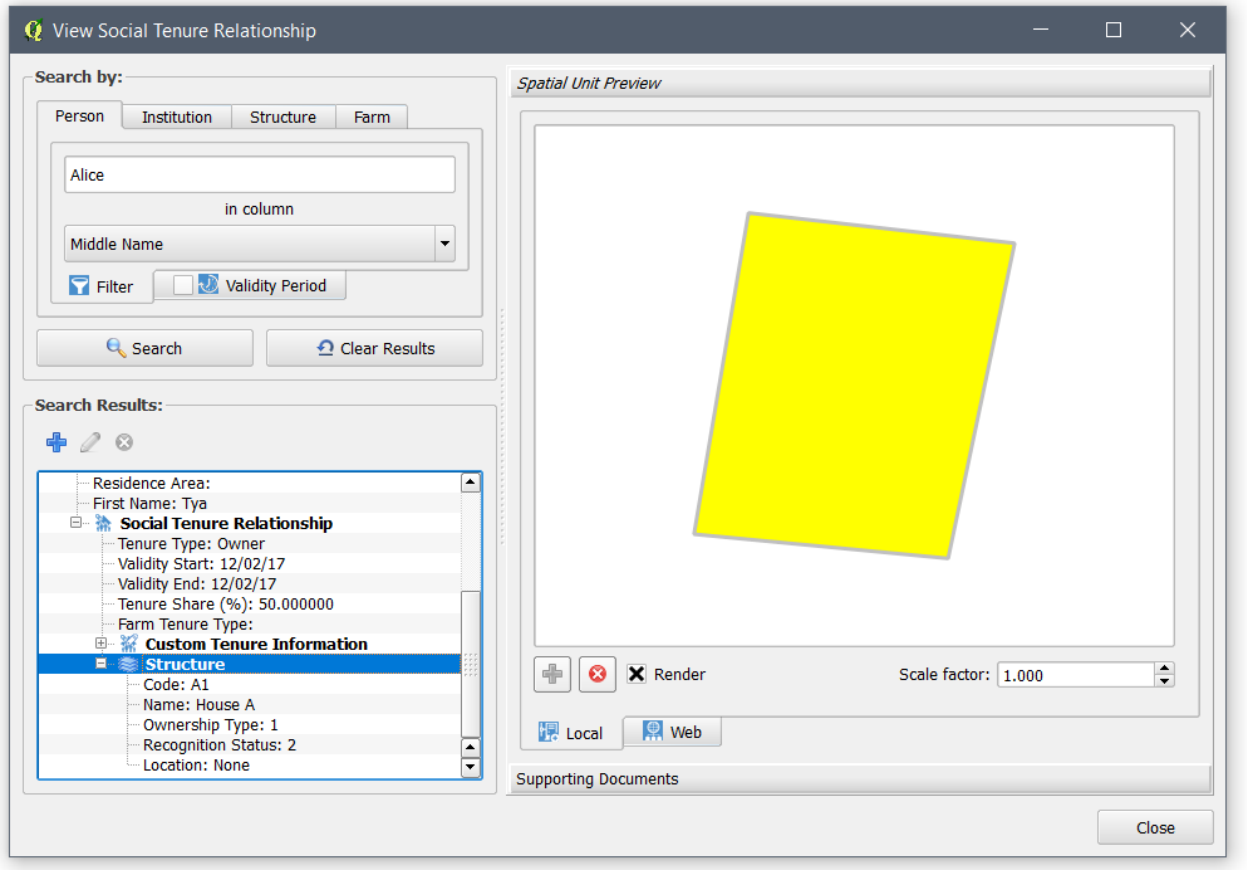
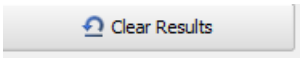



**8.** To clear search results, click on **Clear Results** button 

or make a new search.

9. Click the **Close button at the bottom** to hide the module.

# Editing Social Tenure Relationship

Editing a **Social Tenure Relationship** enables you to modify a social tenure relationship of a party as well as a spatial unit. This option will enable you to modify the party/ person, the spatial unit, the tenure type, the tenure share, the supporting documents uploaded for the social tenure relationship and the tenure validity period. Adding multiple records is not possible while editing because each social tenure relationship corresponds to one party. Replacing party and spatial unit, however, is possible.

It is similar to the **New Social Tenure Relationship** module. The edit module opens with all social tenure relationship information loaded into it so that you can modify it.

To edit a social tenure relationship record, follow the steps below.

1. To start **Editing Social Tenure Relationship** module, we need to first make a query using View Social Tenure Relationship as explained in Querying/ Viewing Social Tenure Relationship topic.

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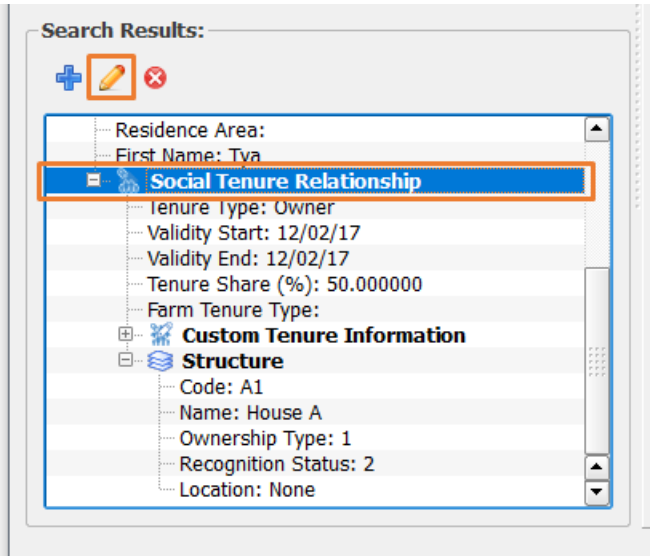
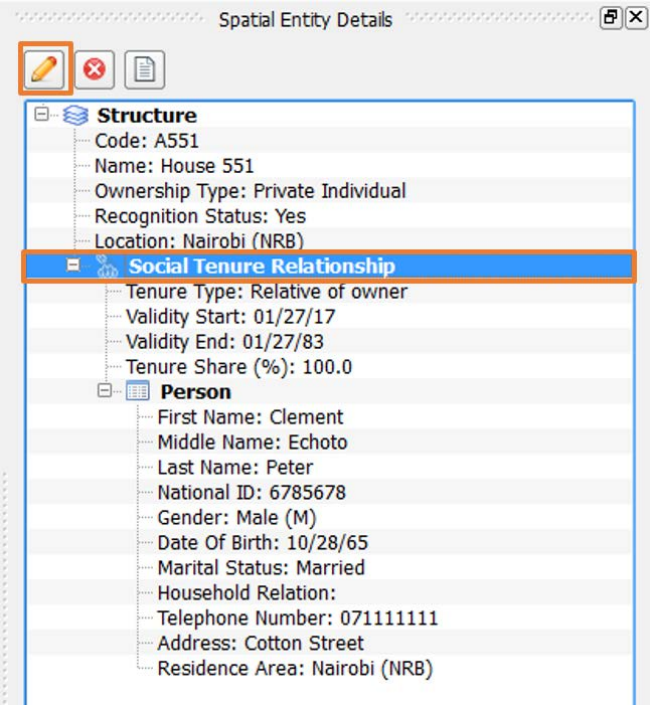
Alternatively, we can get the feature details of a **Spatial Unit** using the **Spatial Entity Detail** module discussed in Viewing a Spatial Entity Details topic.

2. A record that has a social tenure relationship displays a result similar to the image below. Click on the **Social Tenure Relationship** row to enable the **Edit** button that is located above the search result.




You can also edit a **Social Tenure Relationship** record from the Spatial Entity Details by clicking on the **Social Tenure Relationship** item and clicking on the **Edit** button as shown in the image below.

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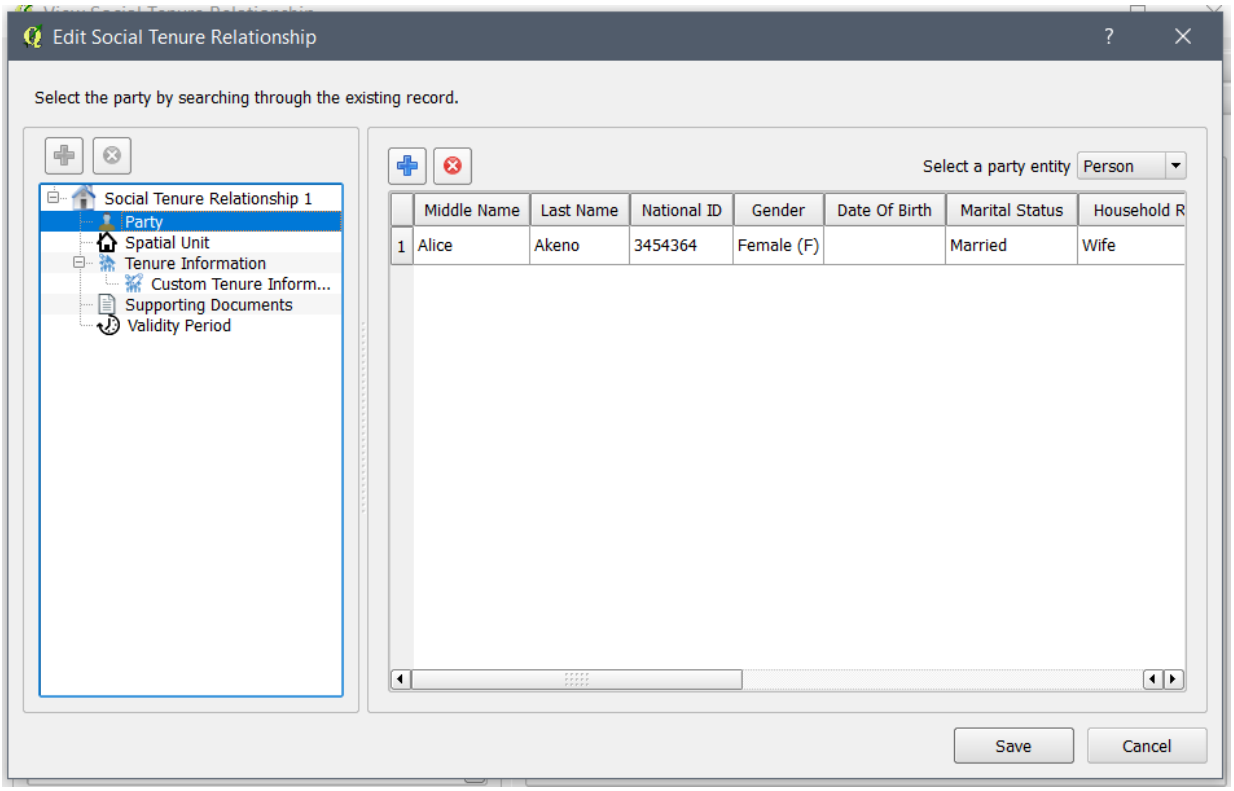
3. When you click the **Edit** button or menu (), you will be able to see the **Edit Social Tenure relationship** module as shown below.




Editing a Social Tenure relationship is similar to creating a Social Tenure Relationship. The major difference is that you can only have one party/ person as each social tenure relationship corresponds to one person. It is the same for spatial unit.

As a result, when you try to add another party on top of the existing one, the existing record will be replaced by the newly selected one. The same applies in the spatial unit page.

# Deleting a Social Tenure Relationship

Deleting a social tenure relationship will lead to the removal of the link between a party and a spatial unit. In addition, any supporting document will be removed from the database and STDM documents storage location.

To delete a social tenure relationship record, follow the steps below.

1. Make a Query using **View Social Tenure Relationship** as explained in Querying/ Viewing Social Tenure Relationship topic.

2. A record that has a social tenure relationship displays a result similar to the image below. Click on the Social Tenure Relationship row to enable the **Delete** button that is located above the search result. Then, click on the **Delete** button ().

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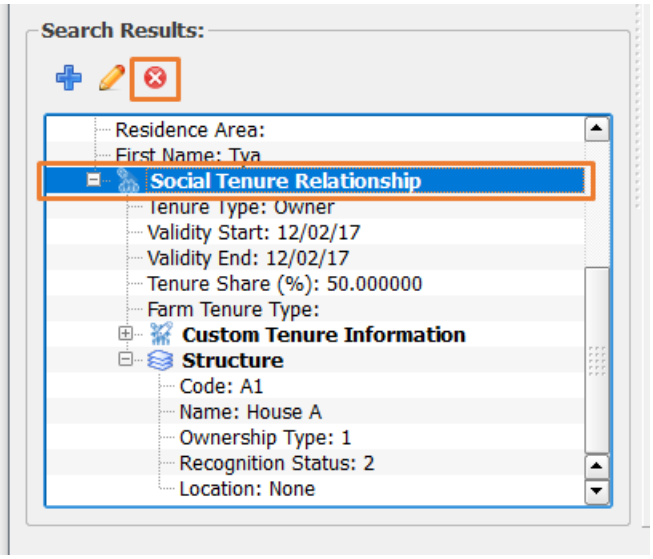
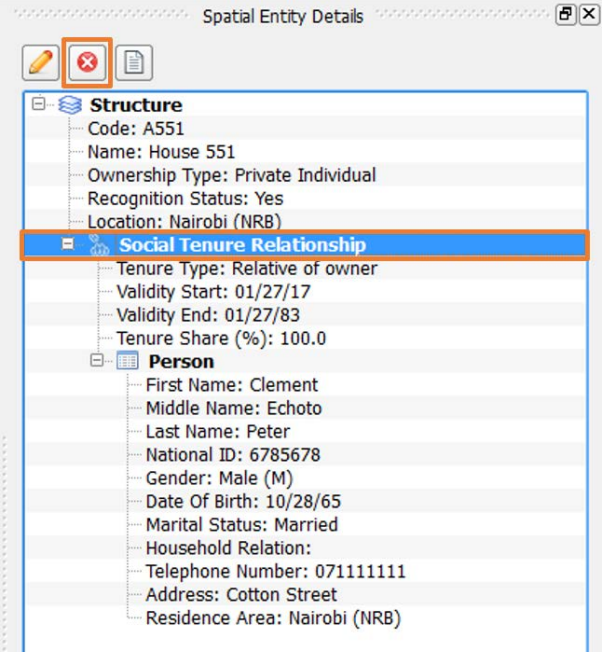



You can also delete a **Social Tenure Relationship** record from the Spatial Entity Details by click on the **Social Tenure Relationship** item and clicking on the **Delete** button as shown in the image below.




3. A dialog, illustrated below, appears when you click on the delete button or menu.

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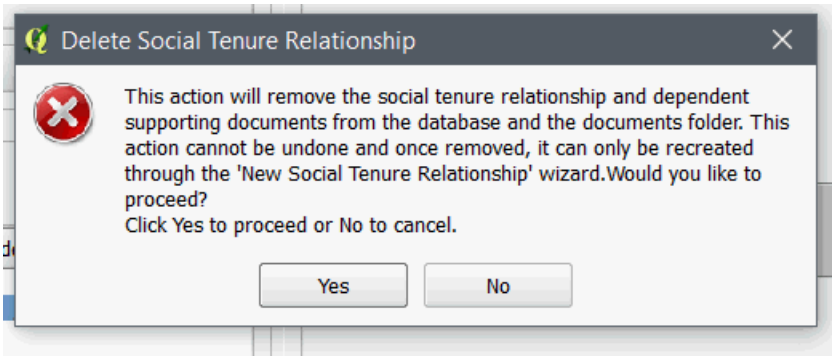


4. After reading the message, click on the **Yes** button, if you still want to delete the social tenure relationship. If you do not want to delete the social tenure relationship, click on the **No** button.

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# GeoODK integration with STDM

# What is GeoODK?

## Introduction

GeoODK is a mobile application supported by Android platform that runs on many smartphones today. The application is based on ODK (Open Data Collection Kit) which is out-of-the-box free suite of open source application bundled together to help users to author, collect and manage field data collection.

GeoODK enables the design of forms using spreadsheet like Microsoft Excel or OpenOffice that can be converted to Extensible Markup Language (XML) and can then be uploaded to GeoODK application in the mobile device for data capture. The supported data formats includes: text, numeric and decimals, single choice or multiple choices, photos and videos. Geographic data in form of GPS coordinates or a series of GPS coordinates for complex geometry types are also supported. The data can therefore be downloaded using USB connection to the computer or sent via the internet to a remotely configured server.

Whether its social economic survey, health or census data, the advantages of GeoODK comes in handy in the field since the application supports both offline and online data collection depending on the availability of internet. Once the form is designed and uploaded, no further editing is required in the field. Therefore, the data collection can be consistent across many devices without unauthorized changes to the form.

In addition to GeoODK, several other tools based on ODK do exist that works like GeoODK. Such tools include ODK Collect which is a light weight version of GeoODK to support quick data collection in the field, Kobo Collect, Survey CTO, Ona Collect and Form hub. These tools are based on XForm, a graphical form of XML or HTML that supports designing data inputs forms for mobile and the web. The choice of these tools will depend on familiarity to the user and perhaps the application context. Basically, most of these tools assume online usage where data is managed in a server environment and therefore, setting up may incur costs for subscriptions in addition to cloud data management.

# Integration with STDM

From the background of associated technical challenges in setting up and getting started with XForm design for ODK supported tools, STDM adopted an approach that would simplify the design of the forms to work seamlessly with the available set of ODK tools. In so doing, this additional feature in STDM simplifies the design process modelautomatically generating ODK forms matching the current data profile.

The conceptual design of integration is configured such that once the data model is customized using the STDM data configuration wizard, users can generate the mobile forms immediately and got to the field for data collection.

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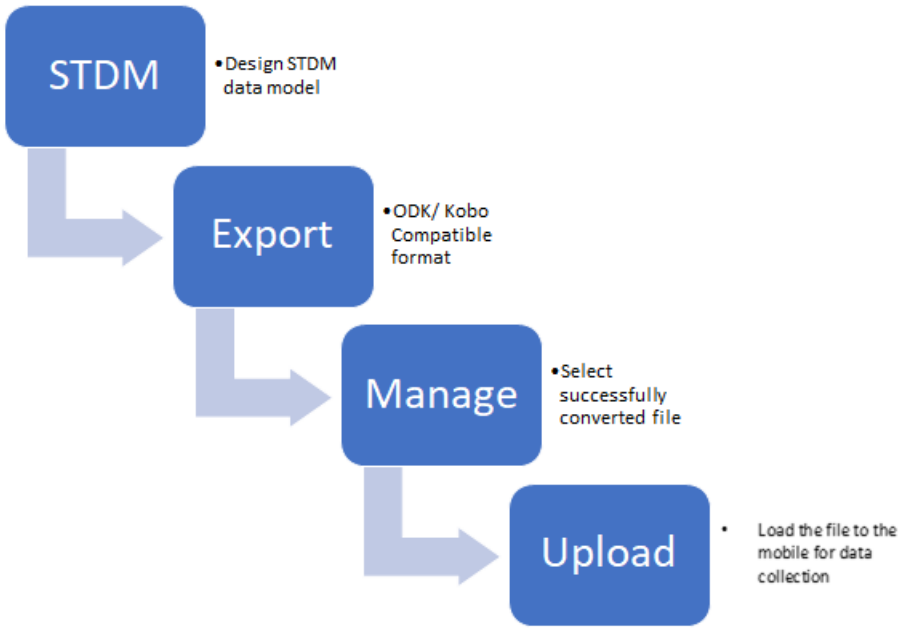
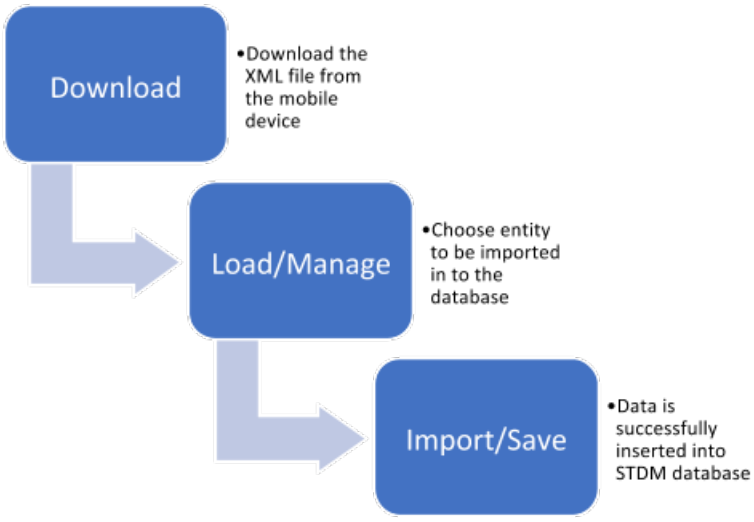
# Generating mobile forms from STDM




Once the forms have been generated and data collection is completed in the field, the saved mobile data can be imported easily into STDM using the GeoODK data import wizard.

# Importing data from the field




Once the forms are generated and data collection is completed in the field, the data collected can be imported easily into STDM using the GeoODK data import wizard.

**Note**: Successful data import procedure assumes that the STDM **Profile** has not been modified.

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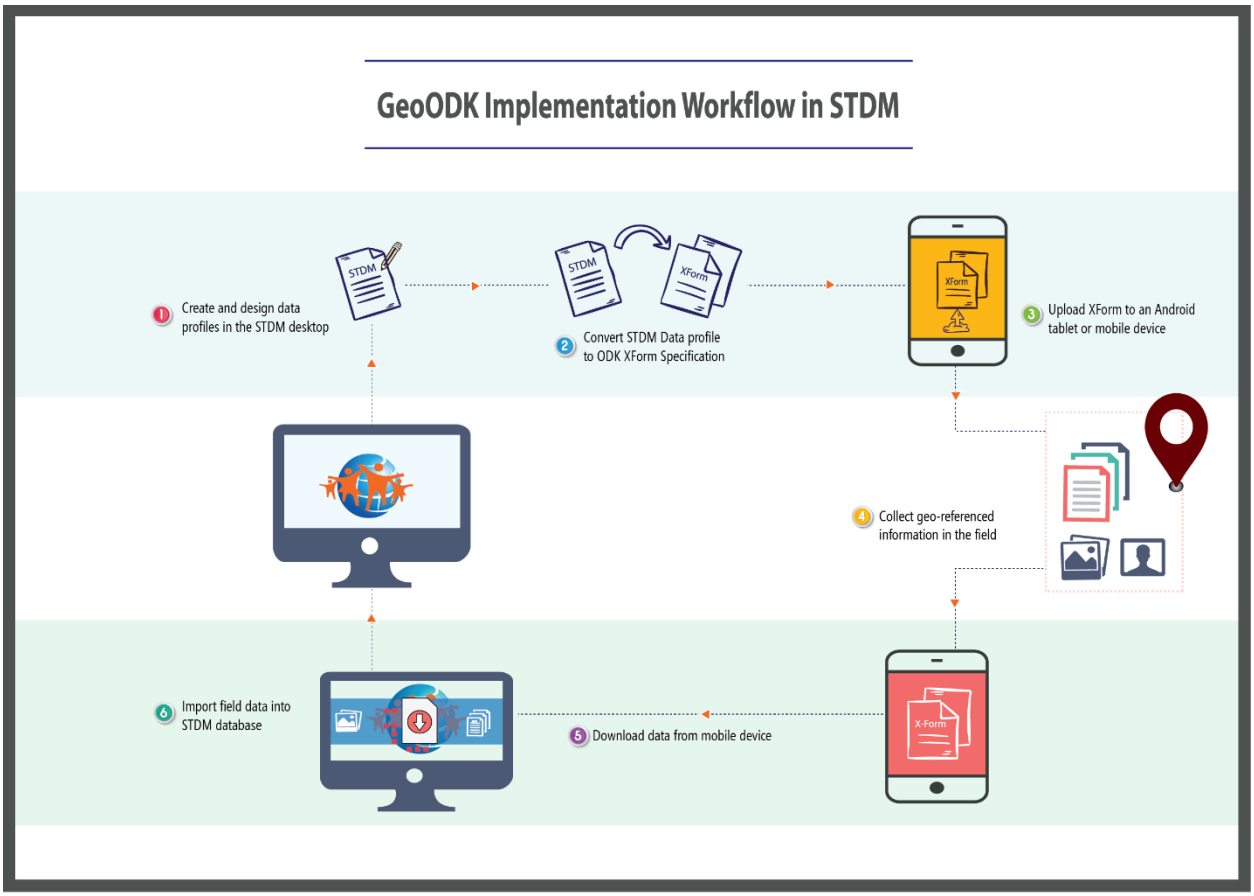


# Setting up GeoODK on Mobile device

## Installing the app from Google Play

This step assumes that the user is having or using an Android mobile device that can access Android play services to download the latest version of GeoODK . This subsequent step follows normal procedure for installing any application on Android smartphone.

Having successfully installed the GeoODK application on your mobile device, to launch the application, search for GeoODK in the installed applications list. Once found, tap on the GeoODK icon to open.

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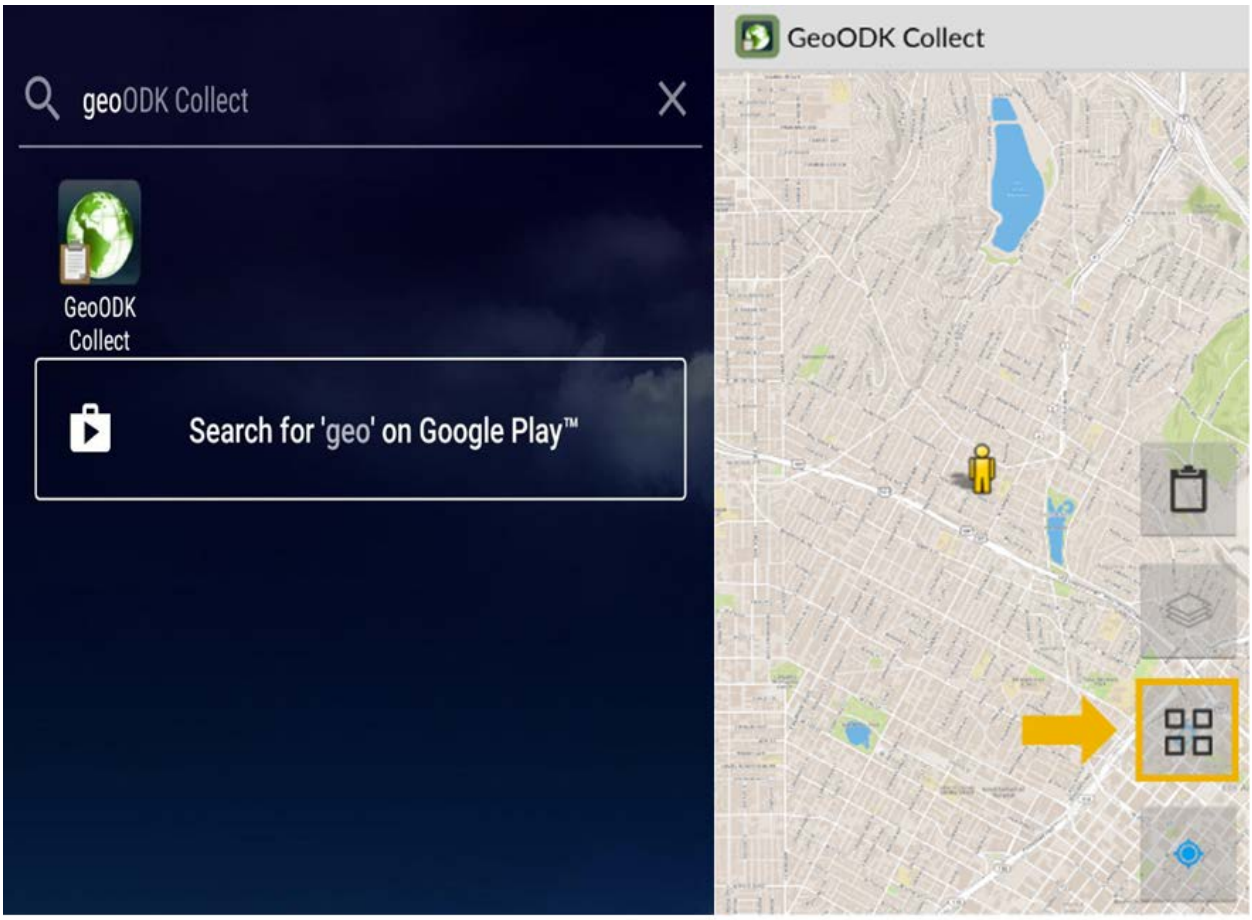


Now you are ready to setup the mobile data collection using GeoODK. All customization required to work with the GeoODK will be accessible or done through the settings button as shown in the screenshot above.

The default map visible on the GeoODK app is Google Maps. The default zoom location is set to your current location. Users can navigate by panning or zooming in and out on the screen.

For more information on this, visit GeoODK website.

# Installing GeoODK Server

GeoODK sever can be installed to support data upload from the field in real time and therefore eliminating the back to office process of uploading and downloading the data each time the field work is done. The server helps to merge data from several mobile devices in the field and data can be accessed once sent. The mobile device must be connected to the internet for the data submission to the server. Custom server can be developed and setup to work with GeoODK. See more information at https://opendatakit.org/use/aggregate/.

For offline use, a remote server can also be setup to handle the data where internet connection is limited. A local server requires installation of Tomcat and running either MySQL or PostgreSQL database . This setup is very straight forward and requires minimal understanding of database and

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web server setups. For GeoODK user, ODK Aggregate and ODK Briefcase are some of the packaged applications to ease installation of server environment. ODK Aggregate can be deployed to Google's App Engine, Amazon's EC2 cloud services, and to webservers running Tomcat with MySQL or PostgreSQL databases.

In both cases, a super user account need to be created for data management and authorization of forms access by the filed data collectors. See further information https://opendatakit.org/use/aggregate/oauth2-service-account/

A general awareness disseminated by ODK is the consideration of the several parameters before setting up the server environment. These considerations include:

- Internet Access: Without good internet access, the online setup will not suffice for real time access of data and therefore, a local setup may be necessary. The collected data and finalized forms will be accessible to the server once the connection is established with the server.
- Computer skills: Installing server tools like Tomcat for deployments and database applications such PostgreSQL and MySQL require technical aptitude.
- Support network and personnel for successful implementation of field process, data management and backups.
- Technical Infrastructure and data integrity.
- Costs and subscriptions for online infrastructure.

# Using GeoODK feature in STDM

## Getting started

The integration of GeoODK in STDM enables you as the user to easily generate XFORM compliant xml file from the configured STDM profiles that are supported by many ODK apps such as ONA, FORM HUB, GeoODK, KOBO Collect, Survey CTO, ENKETO etc. The generated form will work similar to other forms generated with online application and can be managed through existing ODK data management applications such as FORMHUB, KOBO TOOLBOX or ODK Aggregate.

To use this feature, one is expected to first run the STDM data configuration wizard for first time of use. Otherwise, the currently loaded profile will be used in generating forms. The generated form will be saved in the STDM data folder (i.e. .stdm/geoodk/forms) bearing the name of the current profile for instance,

would be Local_Goverment.xml.

The selection of entities under the current profile is flexible and requires at least one entity selected for successful generation of the form.

**Note**: if the selected entity has lookup entities or related entities, it is strongly advised that the lookup values and code are given before generating forms.

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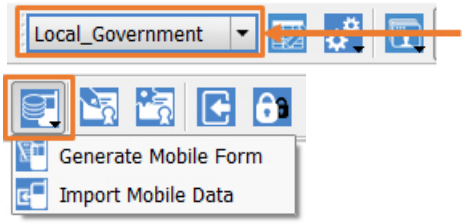
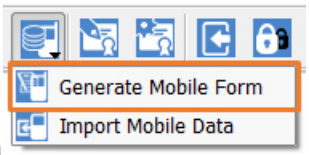
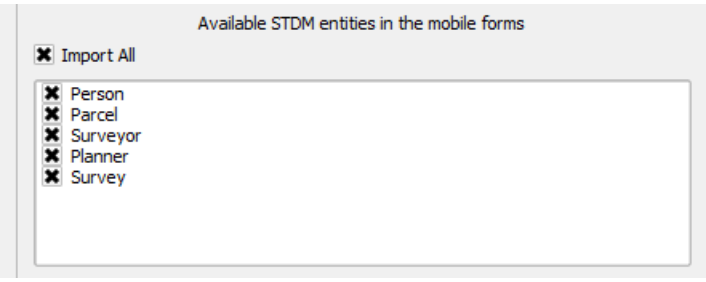
# Generating Mobile Forms

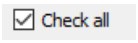
1. Start QGIS from the Start Menu or Desktop shortcut.

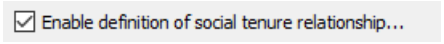
2. Login into STDM.
3. Change the profile to desired one. 

4. Click mobile data generation icon.
5. On the pop up menu select Generate Mobile Form 

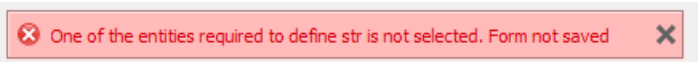
6. A new dialog pops up.

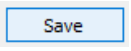



7. Check or uncheck **Check all** to toggle the selected entities. 

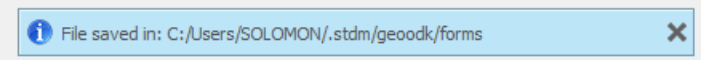
8. Custom selection can also be done to allow only selected items to be included in the form.
9. Check **Enable definition of Social Tenure Relationship…** to allow STR fields to be captured in the form. 

10. Unchecking this option will not create those fields in the generated form.
11. Remember for Social Tenure Relationship definition, both parties must be selected on list otherwise, an error message will be returned to the user while saving.




12. Also, if an entity was created and marked as **supports documents**, the document capturing will be enabled in the form.
13. Click Save to generate the form based on the selected entities. 

14. The following information will appear at the top of the dialog.




15. Go the location of the folder to access the form.

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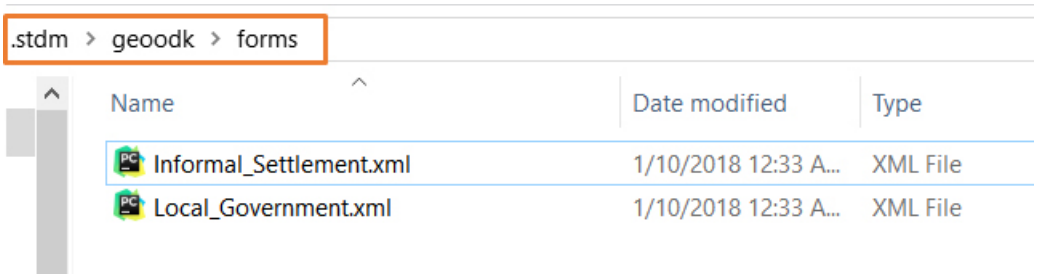


# Transferring generated form to mobile device.

**Note**: Ensure the mobile phone is installed with GeoODK app or any other XForm supporting app. For this exercise, GeoODK, ODK and Kobo Collect are considered.

1. Connect the mobile device using a USB cable.
2. Ensure you have provide access to your device storage in the phone by tapping on the USB options on your phone.
3. Set the options to Transfer Files as shown below.

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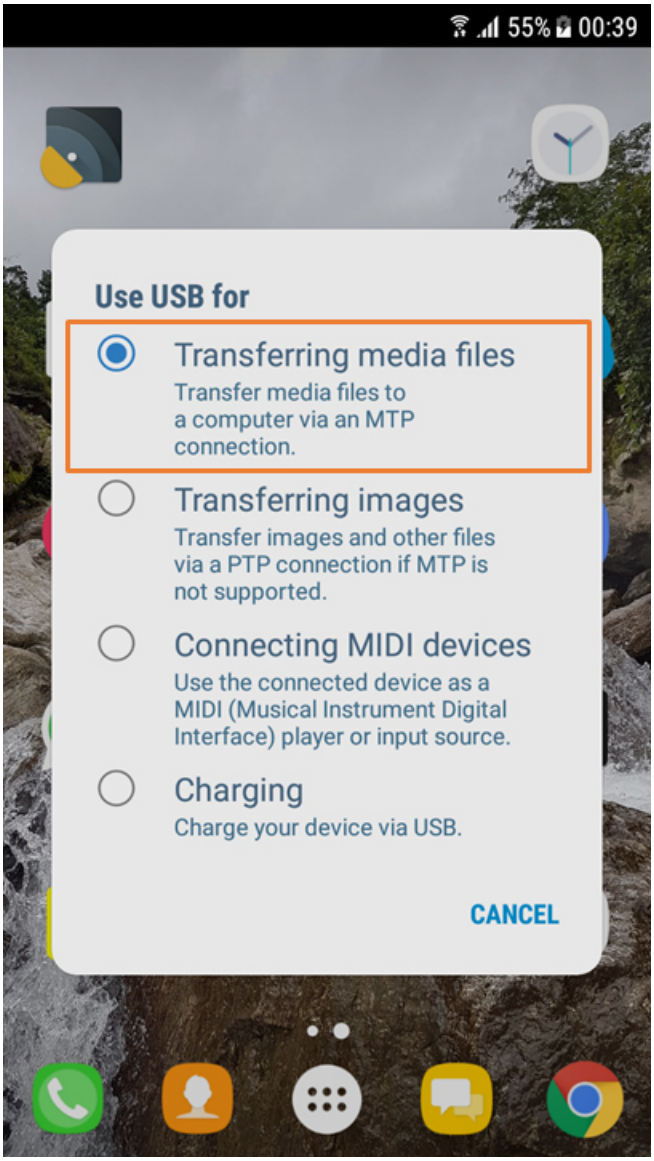
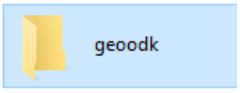



4. Open the phone internal storage drive from your computer (Sometimes, if you have not installed SD Card in your phone memory, one drive will be listed.)




5. Under internal storage, located GeoODK folder inside.
6. If you installed ODK app, the folder will be ODK. For Kobo Collect the folder will be called kobo.
7. Open the selected folder (i.e. ***This PC\Xperia Z5\Internal shared storage\geoodk\forms***)
8. Copy the generated geoodk xml file into this folder in your phone.
9. Exit and disconnect the phone after copying the file.
10. All is set for data collection in the field.

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# Importing Data

This process has two options for importing data. However, the server based import is still under development.

Having collected all the data from the field, connect the phone to your computer using the USB cable and browse to geoodk/ odk or kobo folder. The folder of interest is called instances. Copy all the data in this folder and paste it somewhere in the computer.

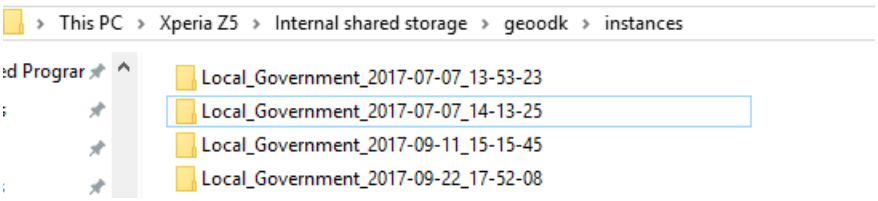
Generally, once an instance has been recorded from the field, the instance filename is similar to xform name. However, in the local storage within the mobile device, the instances bear the name of the xform and the timestamp. Each data instance is saved in a different folder following the same naming convention.

# Importing GeoODK Data from the Mobile Device

The current working import module is through USB cable connected to the computer from the phone.

1. Connect your phone onto the computer using USB cable.
2. Allow accessing the phone storage devices from the USB connections options notifications
3. Ensure the phone is loaded onto your computer.

4. Browse the internal storage location to your app data folder i.e geoodk (***This PC\Xperia Z5\Internal shared storage\geoodk\instances)***




5. Copy all the folders that matches the data collection form and your STDM profile.
6. Paste them in the STDM data folder within your computer under the same path (I.e

**Assumptions**: STDM tool and QGIS software are installed, started and logged into STDM and the profile of interest is selected as the default profile.

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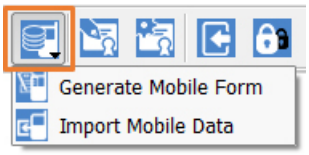
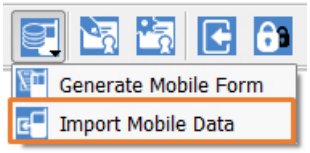
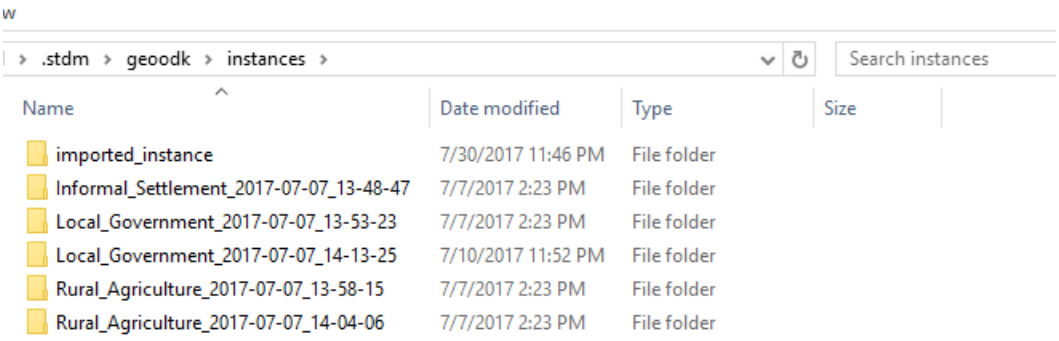
7. Click Mobile data management icon on STDM toolbar/ menu.

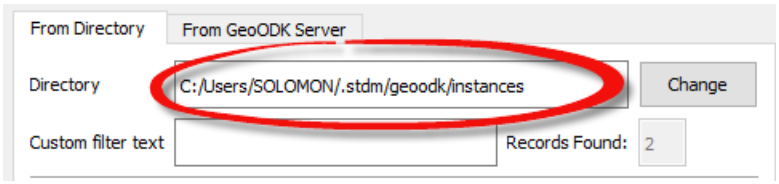


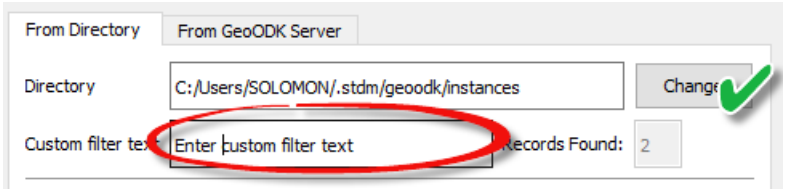

8. Select **Import Mobile data.**
9. The default download location within the STDM working folder will be loaded i.e:




10. STDM will automatically pick the default location with the downloaded instances.




11. Where the user has renamed the instances folder to a different name, the given name can be entered under **Custom filter text**. The user need to change the directory to the one where instances are located so that the new path is loaded with the new filter.




12. Based on the current profile, the dialog will filter the names of downloaded folder that matches the name of the current profile as files ready to import.
13. The dialog will give a count of the number of found instances in the current directory.

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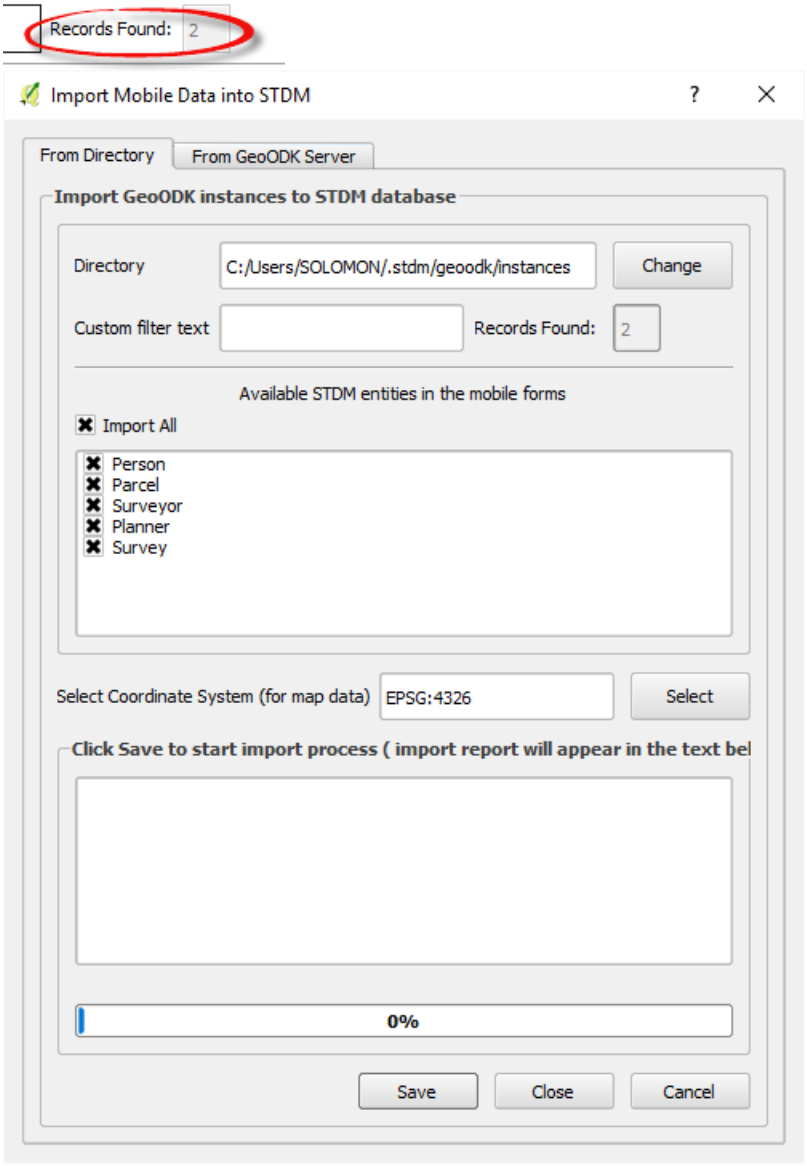
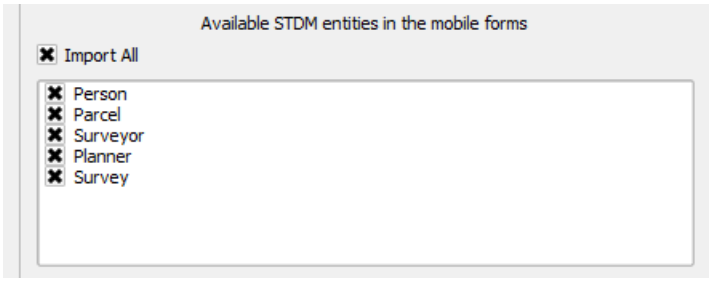



14. If the returned number does not reflect what has been downloaded, the user can check the data and ensure the naming or filter text matches the instances.
15. The available entities will be returned to the user for selection. These were entities whose information was captured in the field.

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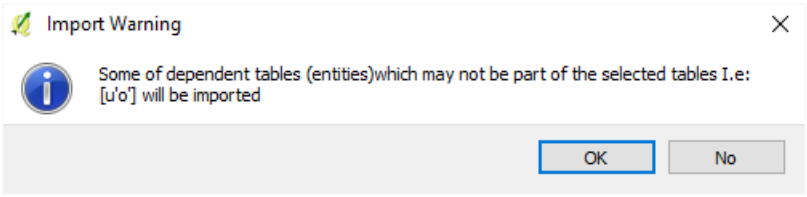
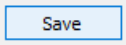
16. If **Import all** is checked, all the entities and entered information in each of the instance file will be saved in STDM database.
17. Uncheck this to ensure only the required entities are imported in the database.
18. If some entities are selected and some are not, the import process will inspect whose entities depends on others (i.e Parent and child table), a notification message will be given.




19. By clicking **No**, the import process will be aborted.
20. Click **Save** once to save mobile data into database. 

21. If no selection is done, all the available entities will be imported in all records.
22. The user has the option of specifying the coordinate system for geometry data before import process is started. The default Spatial Reference System is the one defined in the STDM configuration or data model.
23. The progress bar will show you the progress in the import process.
24. In case of an error during import, go into geoodk folder in STDM working directory and look for a file called **history.txt** and scroll to the last entry and see the last import statement to adduce the problem in the data i.e:

```
File instance 1 :
C:/Users/SOLOMON/.stdm/geoodk//instances/Local_Government_2017-07-07_13-53-23/uuida8e2db91-7dbc-4f40-af5b-c59312bb0461.xml
lo_parcel -- parent table import succeeded: True 2017-09-19 19:20:52.312000
lo_surveyor -- parent table import succeeded: True 2017-09-19 19:20:52.607000
lo_planner -- parent table import succeeded: True 2017-09-19 19:20:52.873000
lo_person -- import succeeded: True 2017-09-19 19:20:53.358000
lo_survey -- import succeeded: True 2017-09-19 19:20:53.487000
File instance 2 :
C:/Users/SOLOMON/.stdm/geoodk//instances/Local_Government_2017-07-07_14-13-25/uuid956b079f-58ca-4766-a195-9938c8ac0d01.xml
lo_parcel -- parent table import succeeded: True 2017-09-19 19:20:54.294000
lo_surveyor -- parent table import succeeded: True 2017-09-19 19:20:54.661000
lo_planner -- parent table import succeeded: True 2017-09-19 19:20:54.901000
lo_person -- import succeeded: True 2017-09-19 19:20:55.335000
lo_survey -- import succeeded: True 2017-09-19 19:20:55.490000
```

# Starting GeoODK App in the Mobile Device

Depending on the make of your phone, follow the instructions on the phone screen to make the phone discoverable in the computer. Ensure that you have allowed access to the phone internal storage. Having done so, Open the internal memory of the device (by default the geoodk folder will be in internal memory otherwise use SD card) and wait for the folder to be visible.

1. Open the GeoODK app in your mobile device
2. Go to settings and start collect Data
3. Select the desired form and start data collection
4. For mapping data in the form, ensure you are in a open space and wait for a moment for accuracy of the location to improve.

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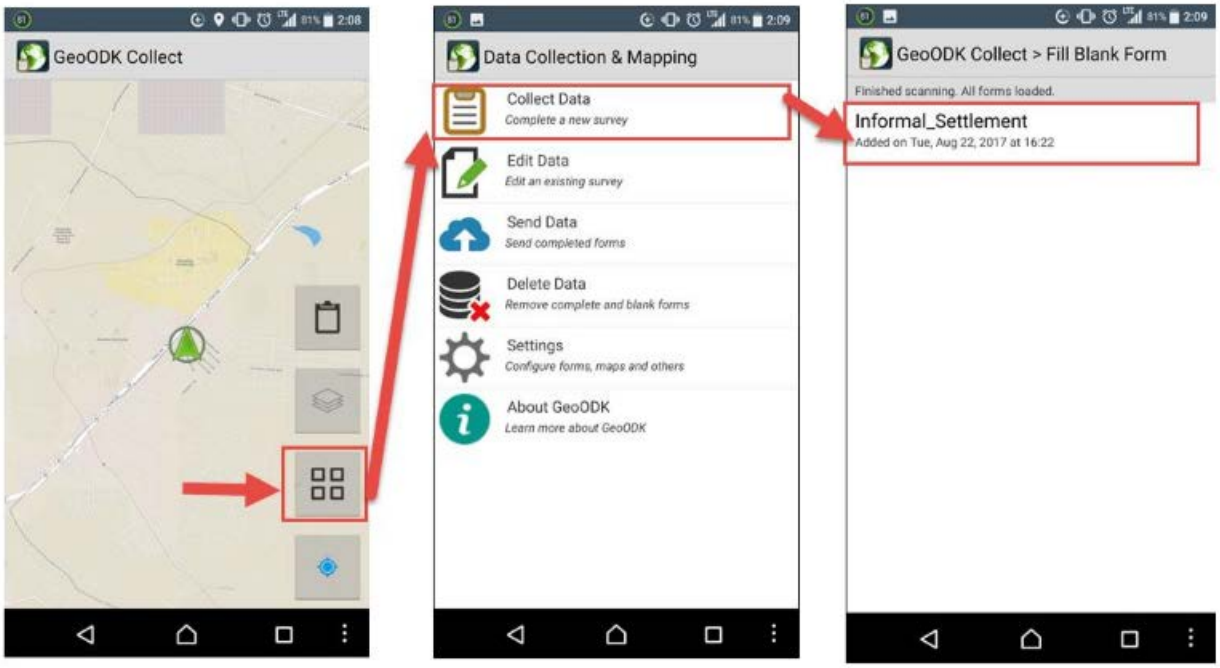
The image below summarizes the steps.

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# Designing and Generating Documents

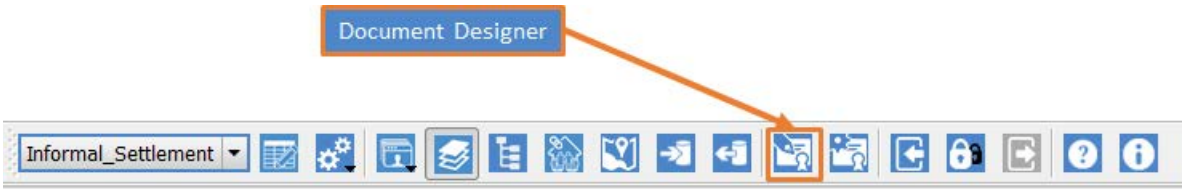
## Designing a Document Template

Document Designer is an STDM module that enables you to design a template so that you can generate documents based on STDM database automatically. Document Designer is built on top of QGIS Print Composer. This enables Document Designer be able to use different features and tools of the Print Composer. Using Document Designer, you can create templates that can be used for title deeds, certificates, letters, parcel maps, statistical reports and so on. Once a document template is designed, you can generate documents for one or more records using Document Generator as explained in Generating Documents Using Templates topic.

**Note:** when designing a template, make sure you are creating it for the correct profile and entity. If you create a template while logged into one profile and later try to generate a document while logged into another STDM profile, the template file will not be visible.

## Getting Started with Document Designer

To start the **Document Designer**, click on its button on the STDM toolbar as shown below.




When you click on the **Document Designer** button, the **Document Designer** module loads as shown in the image below.

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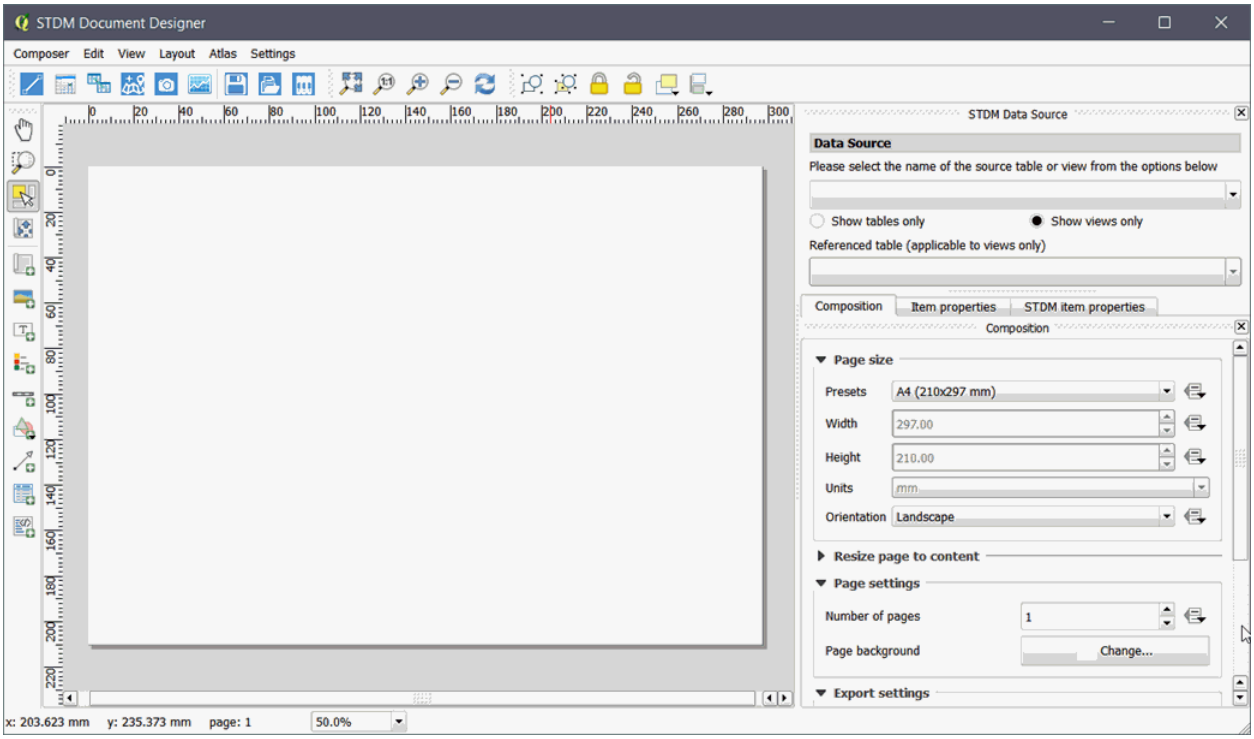


The designer will start with an empty white page where you can add different items to create a template.

It is recommended to use the sample templates already included in STDM. For each default profiles in STDM, there are sample templates.

These templates can be customized in Documents Designer and used. Their names corresponds to the spatial units of each profiles.

The following templates are added into the template folder automatically:

- **certificate_of_structure_occupancy_sample**
- - Informal
- Settlement Profile
- **certificate_of_parcel_ownership_sample**
- - Local Government
- Profile
- **certificate_of_garden_occupancy_sample**
- - Rural Agriculture
- Profile

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# Database Views for Document Templates

## What is Database View?

**Database View** is just a table that is created using a database query. The query could be from one or more tables. For instance, you can create a view that only shows female party members. This view automatically gets updated when new female party members are added. If we also remove a female from the party table, the record will be removed from the view.

## STDM Views

STDM configuration automatically creates **Social Tenure Relationship** V**iews** that lists details of party, spatial unit and tenure related information for party records that are linked to a spatial unit using the Social Tenure Relationship module. The STDM **Views** are classified into two major groups.

1. **Party views** - are created for each party entity that is participating in STR. **Party Views** contain:

- An auto generated serial id
- The party records data
- The social tenure relationship of the party records
- The spatial unit id they are linked to.

2. **Spatial Unit view** - lists all records linked to parties through STR. The **Spatial Unit View** contains:

- **Spatial Unit id** as an **id** column
- All other **Spatial Unit** record data

These views are very useful to generate documents such as certificates. Ineligible person cannot be listed in the **Social Tenure Relationship Views**, which thus act as a good checking mechanism when issuing a certificate.

## View Names

The STDM **View** name is generated using the following format.

**[table_name]_vw_social_tenure_relationship**

In place of the **table_name**, the table name of the entity is used.

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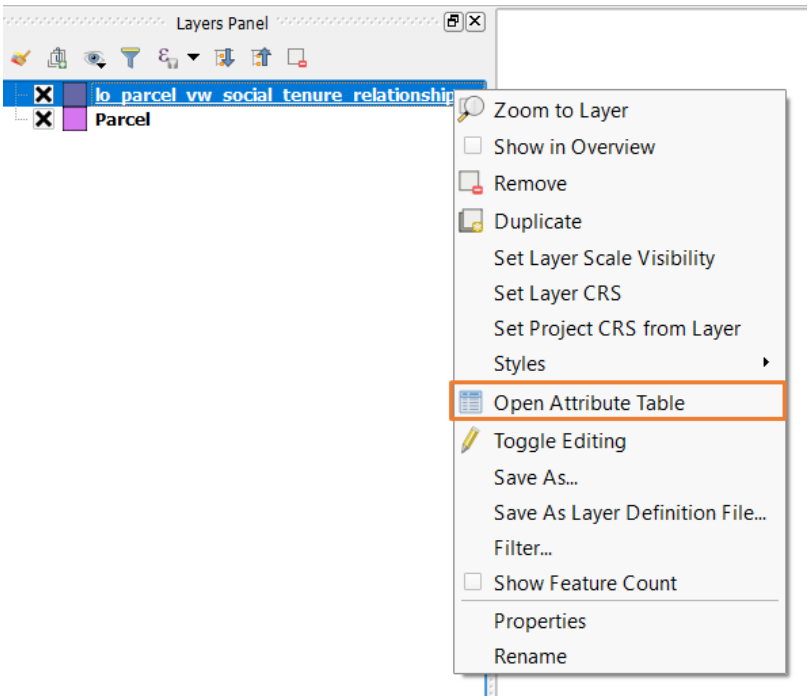
## View Layer

**Spatial Views** in STDM can be visualized as a map layer in QGIS **Map Canvas**. To add a view layer into the **Map Canvas**, follow the steps in Adding a Spatial Entity Layer topic. The only thing you need to do while adding the layer is, identifying the view layer. If you have not set a display name, the layer name looks like your **Spatial Unit** table name followed by **_vw_social_tenure_relationship**.

# Viewing View Data

Viewing the data of a view is possible using the QGIS **Attribute Table**. Once you add the view layer in the Map Canvas, right-click on the layer in the **Legend** panel and click on Open Attribute Table, as shown in the image below.




You will see a table containing the view data.

# Custom Views

**Custom views** refer to views that are created manually by a user. The **STDM views** might not fulfil all your needs. In such cases, you can create custom views. Custom views can help you generate documents for single records. Most importantly, you can create custom views that enable you to produce aggregate reports.

# Useful Links

http://www.postgresqltutorial.com/managing-postgresql-views/

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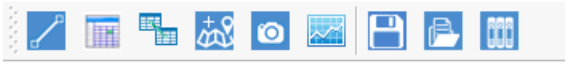
http://www.postgresqltutorial.com/postgresql-views/

# Tools of Document Designer

The following sub-topics explain the different components of the **Document Designer**. These tools could be toolbars and panels that are created either by STDM or QGIS.

## STDM Document Designer Toolbar

The **Document Designer toolbar** is located at the top of Document Designer. The figure below shows the toolbar.



The tools allow you to perform several tasks. Functionalities of the tools are explained below.

- **Line** - initializes the drawing of lines in the template

- **Data Label** - initializes the drawing of labels that uses STDM database table column.

- **Attribute Table** - used to add attribute table in the temple.

- **Map** - Enables you to add map on the document template which should be linked to a spatial unit table.

- **Photo** - enables you to initialize the drawing of a photo box in the template.

- **Chart** - enables you to initialize the drawing a chart box in the template.

- **Save Template** - enables you to save the template.

- **Open Template** - opens a template list from which you can choose a template folder.

- **Manage Document Templates** - opens a tool that can edit (rename) and delete a selected template file.

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# STDM Data Source

An STDM report must contain a data source which contains data that will be used in the underlying document. Depending on the desired output of the report, the data source can simply be from an STDM table corresponding to an entity or a database view that represents a more complex relationship between different entities such as those participating in a social tenure relationship. In both cases, the data source must include a set of fields that will be used across the report. These data fields can then be used directly in some data-driven items (such as data labels or maps) or be linked to related fields in other data-driven items (such as attribute table, photo, graphs, etc.). When the report is processed, the data resulting from the queries run on the data source will be dynamically inserted and linked to the corresponding data-driven items based on the item configuration specified at design time.

If you wish to generate a map based document using the default Social Tenure Views, you need to use the Spatial Unit View. However, if you need to include information about the party in the map based document, you can link it through the Attribute Table item instead of Data Label item. However, if your configuration does not allow multiple party records to be linked to a spatial unit record, you can use Party Views as a data source.

This panel enables you to select a table that will be the source for data label, map, attribute table, photo, and chart. One data source should be used for the entire template. Once you choose a data source, every item you add should either use the data source as a source or provide a linking column to another table that provides the content to a template item.

The panel is located in the right side of Document Designer as highlighted in the image below.

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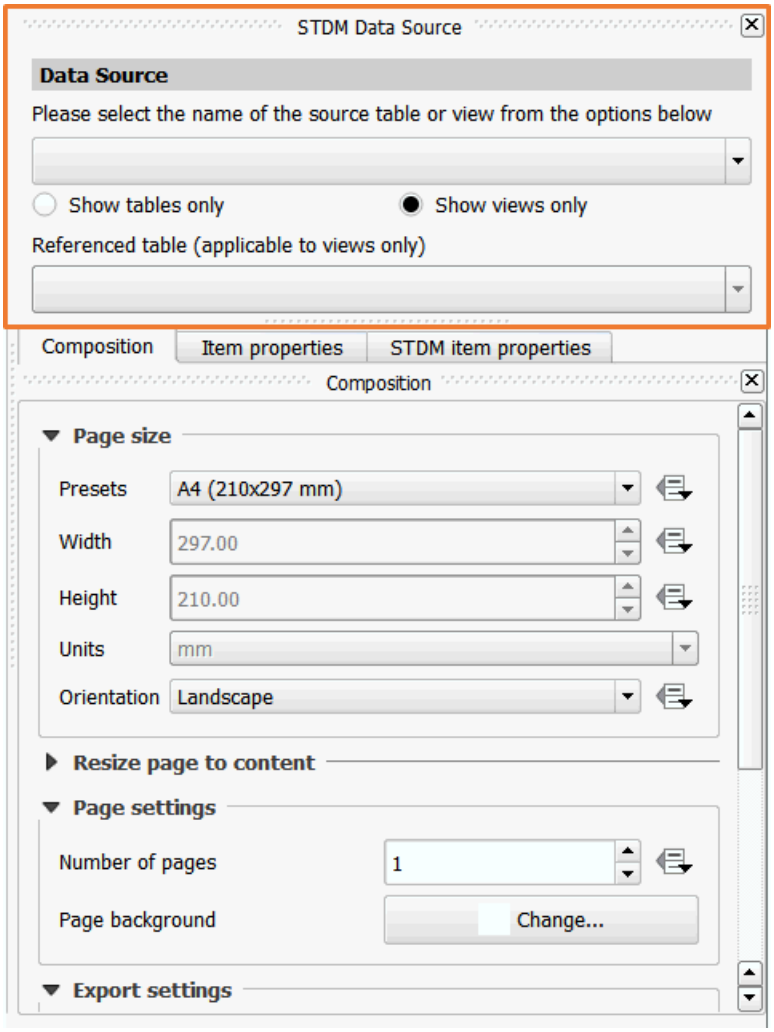


# STDM Item Properties

The STDM item properties enable you to choose a column that will be used by template items such as data label and photo.

The panel has a drop down menu from which you can choose a column for a given template item.

The **STDM item properties** panel is located in the right side of the STDM Document Designer. The image below illustrates the panel.

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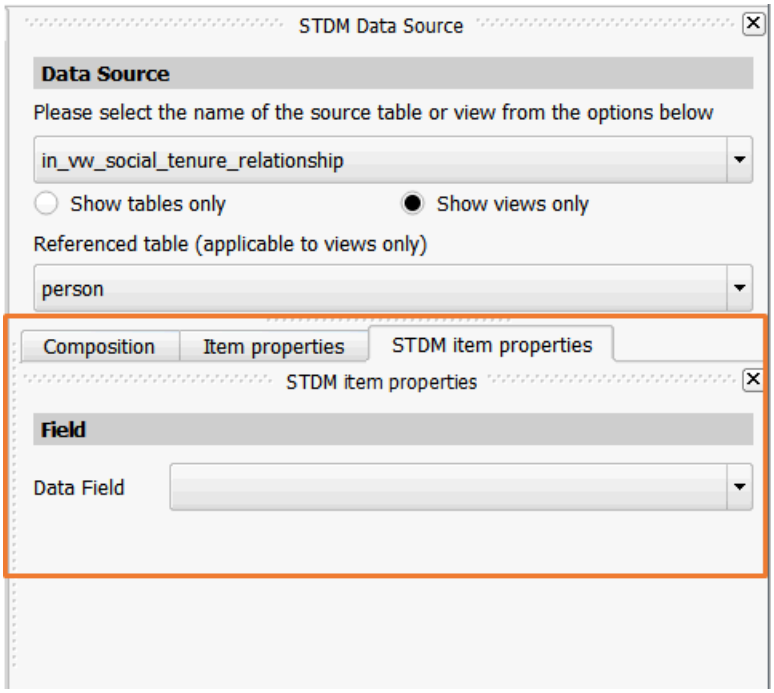


# Composition

**Composition** enables you to customize the page layout, size, quality and grids. It is also located in the right side of Print Composer.

See the image below.

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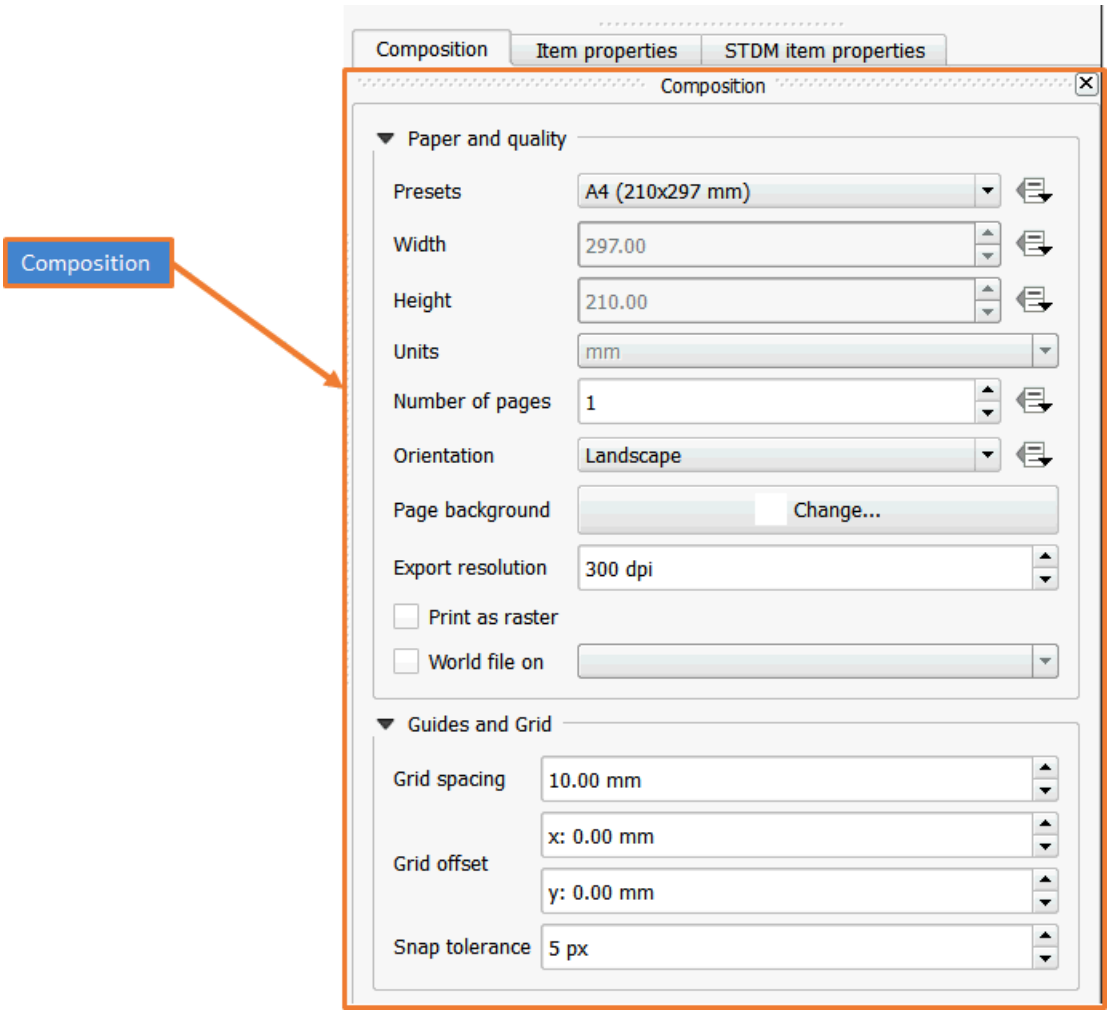


# Item Properties

Item properties tab enable you to modify each item on the template with several options such as adding text, alignment, font size and color, margin and so on.

This is useful in modifying the appearance of an item.

The image below shows the **Item properties** panel.

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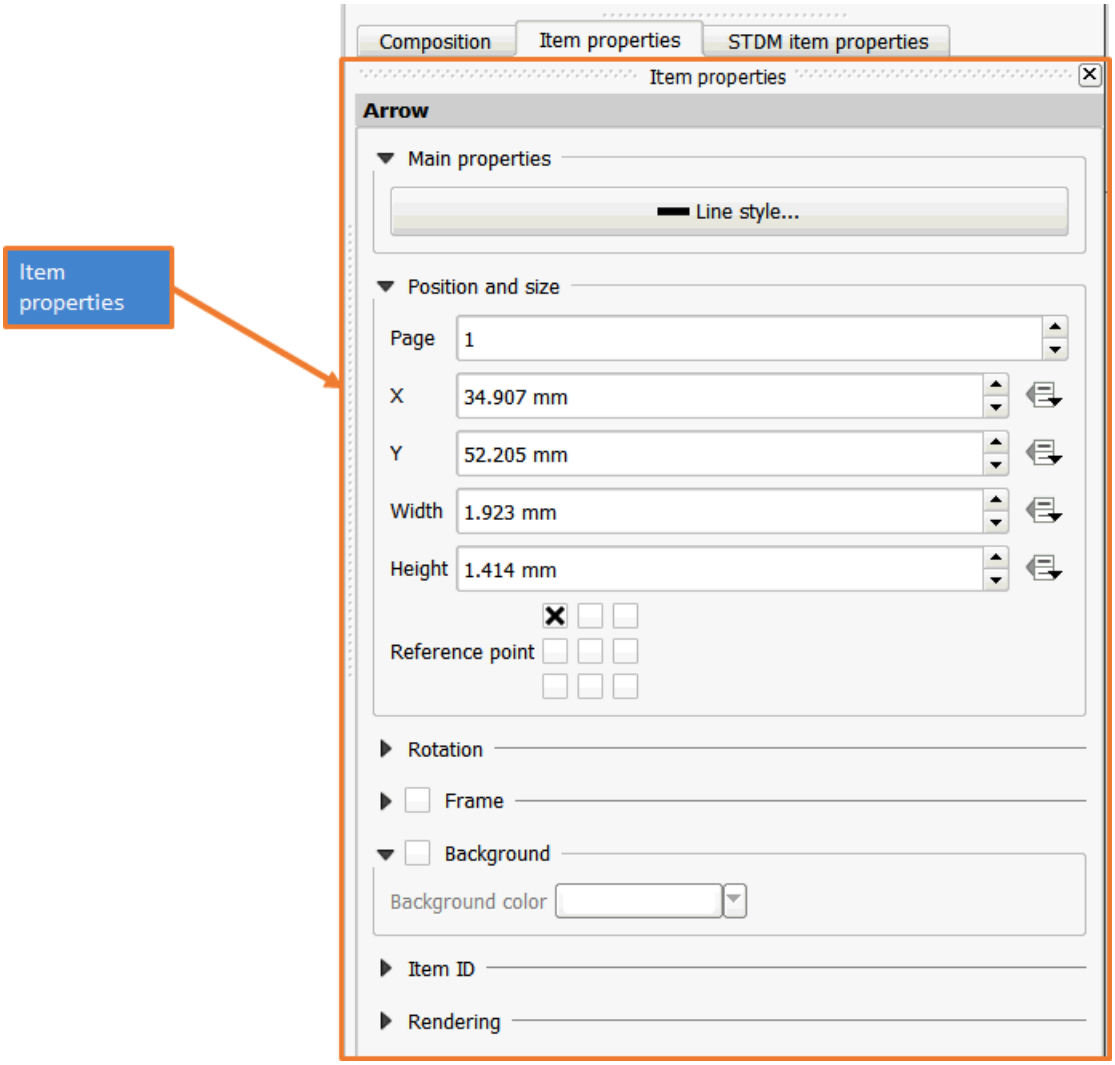


# Composer Item Toolbar

Composer Item toolbar has tools that enable you to add items such as label, image, legend, scale bar, shapes and arrows. In addition, controls for selection, pan and zoom are also found in this toolbar.

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# Customizing a Template Page

The template page refers to the white box located below the STDM Document Designer toolbar (see the image below).

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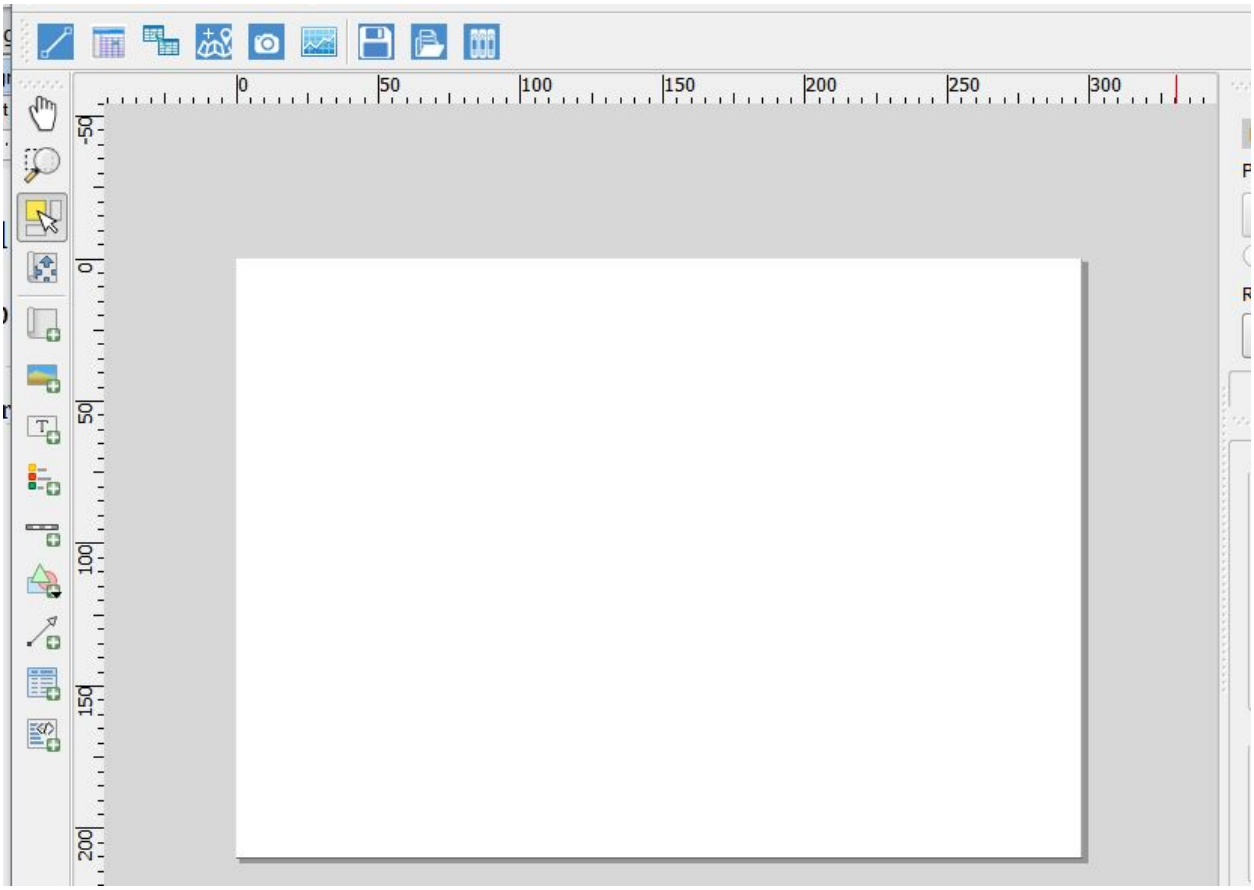


The **Document Designer** by default opens with one page having a landscape page layout.

However, you can modify the page properties using the composer panel located in the right side of the page.

The composer panel's options are illustrated below.

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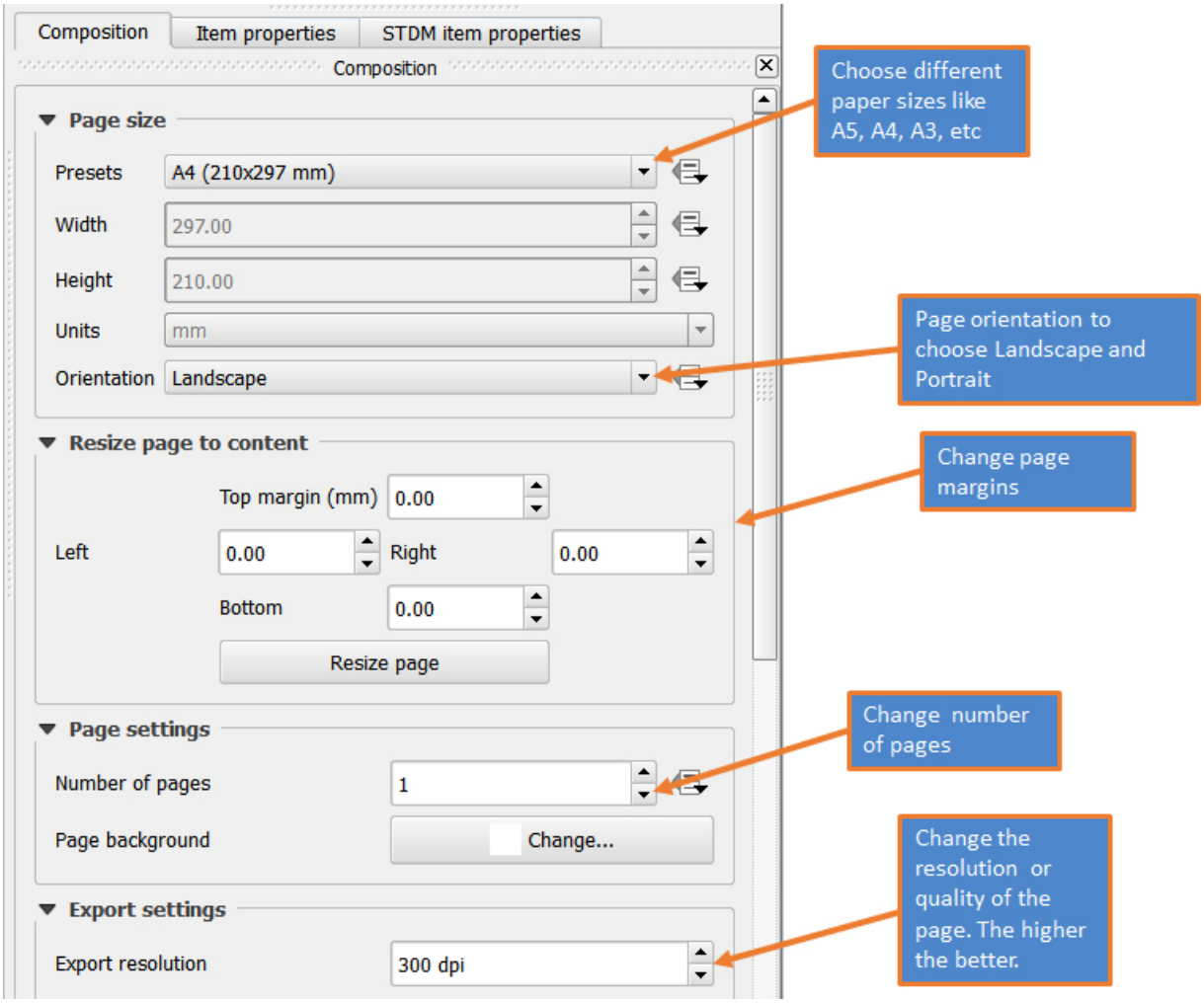


Once you have finished modifying the page, you can add items on the page as explained in Adding Items into a Template topic.

# Adding Items into a Template

The Document Designer enables you to add almost anything you may need in your template. You can add items that use STDM database as a source and your own custom inputs such as logos, photos, text, title, backgrounds, etc. that might make the generated certificate attractive and complete.

The diagram below explains the relationship of the STDM data source and the template items that are data driven and static.

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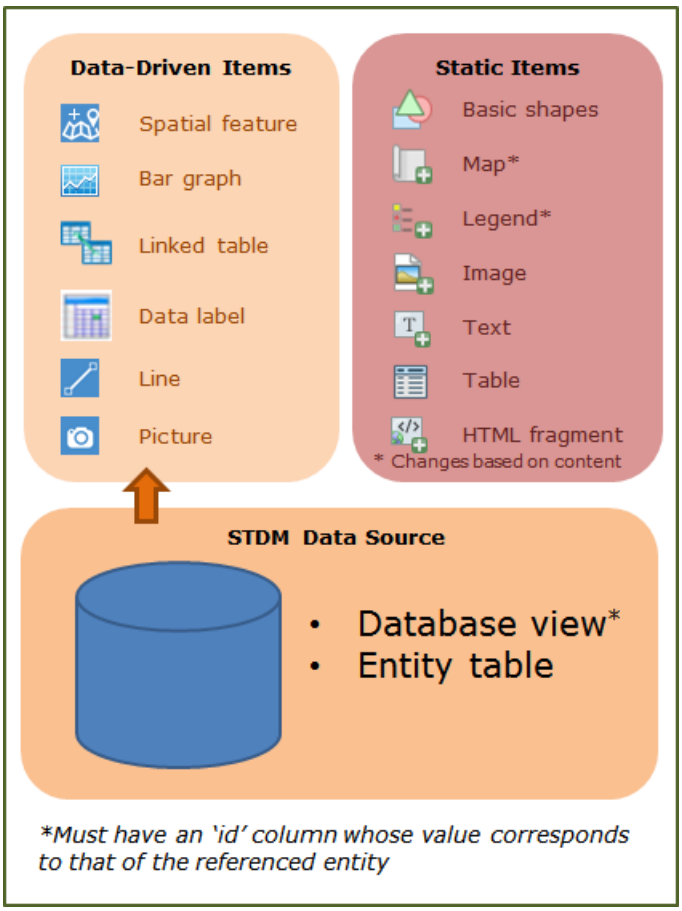


Before starting to design, it is good to carry out the following.

- Create a template design on paper or on Microsoft Word Document. This will help you know what you need to add in the template.
- Identify the data source to be used. To know the data source, you can view your record through Entity Browser.
- Have a record already added into the database to test your template.
- Identify your profile social tenure relationship view.

# Static Items

Static items refer to items in the template that do not change. They do not pull content from the STDM database. Static content include line, image, label, shapes, etc.

## Adding a Line

A line could be used as a separator, signature line, etc. It has no linkage with the STDM database.

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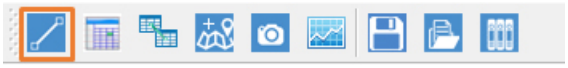
To add a line, follow the steps below.

1. Click on the **Add Line** button located in STDM Document Designer Toolbar, as highlighted below.



2. Click at one point in the template page and drag the cursor. When you are satisfied with the light and position of the link, release it.

While dragging it, you can see a red line and a cursor that looks like the plus (+) sign as illustrated in the image below.

When you release the cursor, a black line will be created, as shown below.

3. Adjust the line. The default line that is created may not suit your needs. If that is the case, you can modify the line by changing the size, orientation, colour and style.

Follow the steps below to adjust the line.

A. Change the size of line:

a. Select the line

b. Hover your cursor on top of the boundary of the line.

c. When you see a two directional arrow (see the image below), click on it and move it outwards to increase its size or inwards to reduce its size.

B. Changing the style of the line

a. Click on Item Properties tab as shown below.

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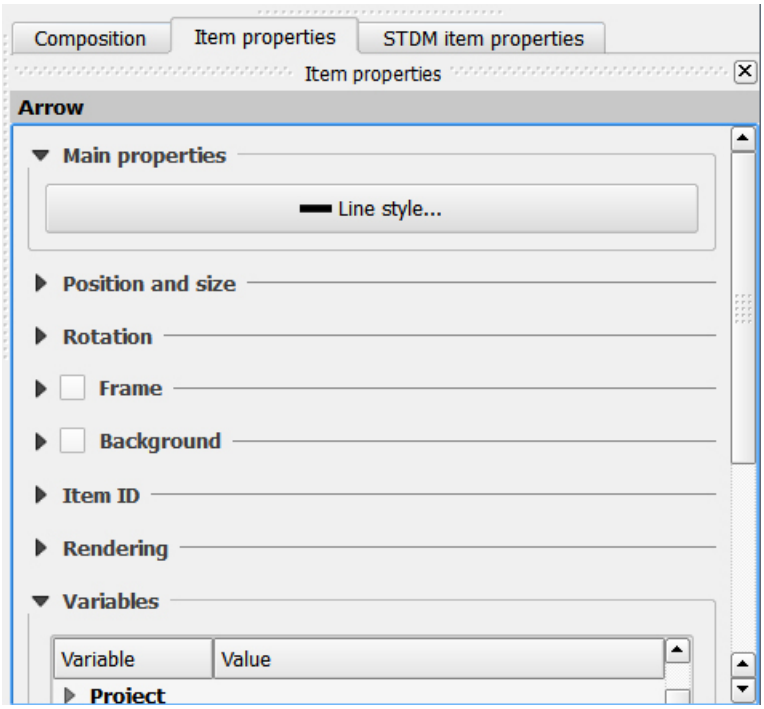
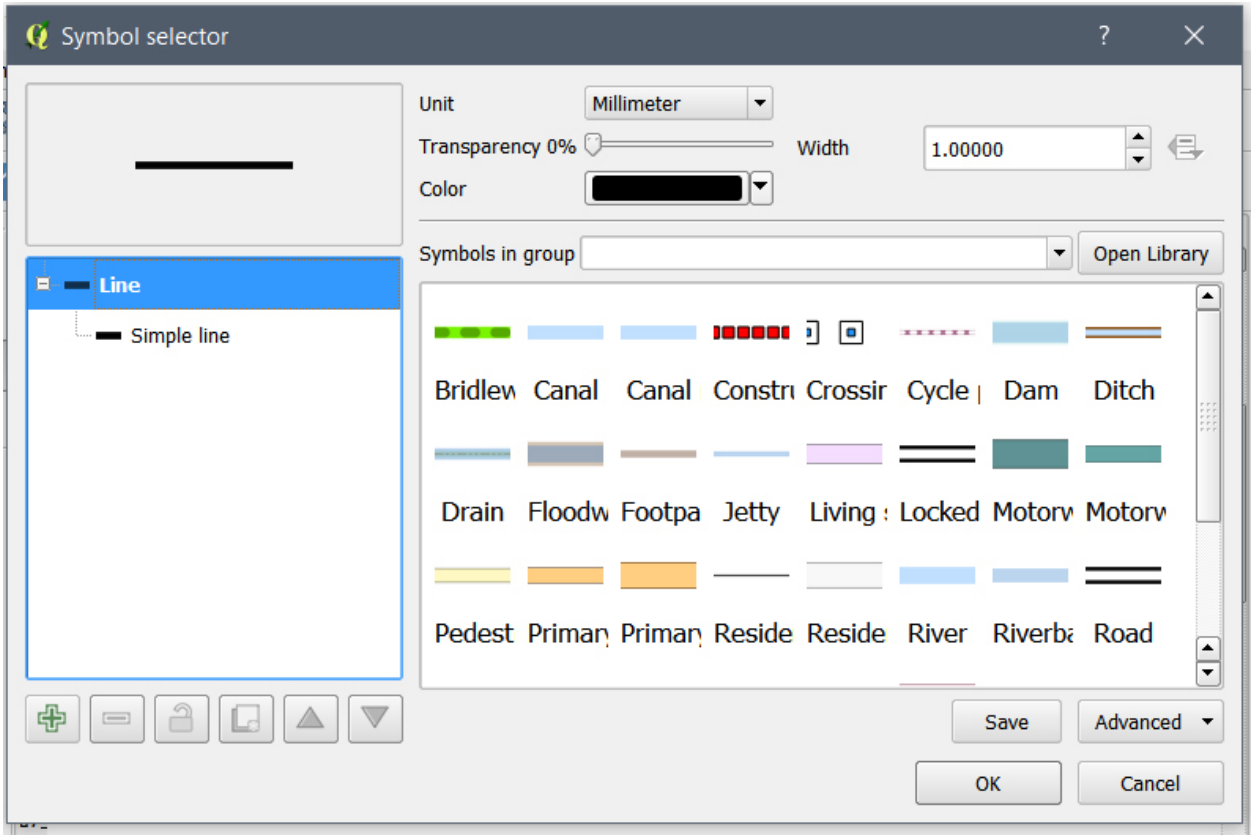



b. Click on **Line style** button under Main properties box to launch Symbol selector as shown below.

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**Unit and Width**: Choose a unit and set width under Width using the up and down arrow or by entering a number.

**Transparency**: Change the transparency of the line using the slider.

**Line Symbols**: Change line symbols by choosing from the symbols in the box or by opening the library.

You can do more changes to the line using options under the item properties.

## Add Image

You can add any external image such as logos, backgrounds, etc into the template.

Follow the steps below to add images.

1. Click on the **Add Image** button located in Composer Item toolbar (see the image below).

2. Start creating an image box by clicking on one point that will be its top left corner. Then start dragging the cursor to the bottom right direction to expand its size.

While dragging it, you can see a red box and a cursor that looks like the plus (+) sign as illustrated in the image below.

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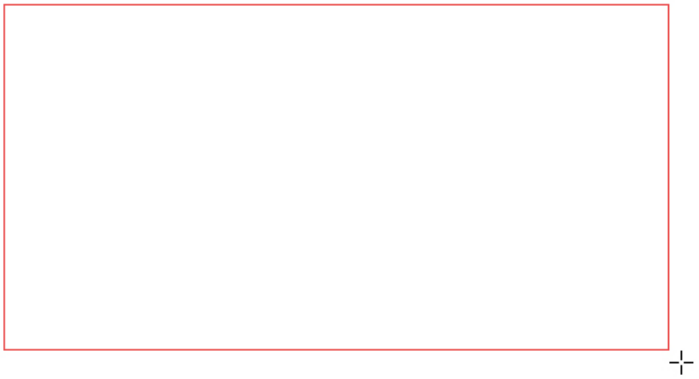
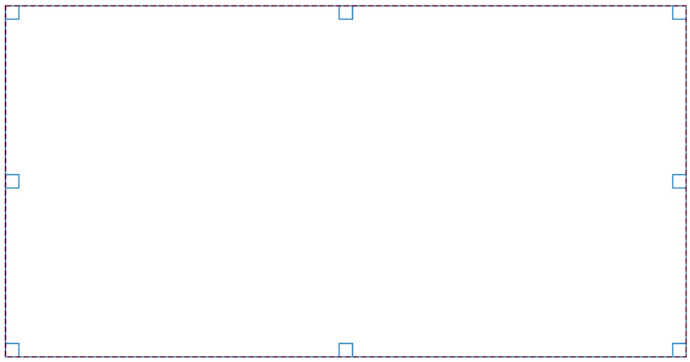


When you release it, a box like the image below will be created.



You can always resize the image box by pressing its corners and moving your cursor.

3. There are two options of adding image. You can add an image by browsing a file by clicking on the indicated button on step 1 or by expanding Search Directories menu and selecting one of the images provided by QGIS.

You can set the resize mode of the image in case the image is bigger than the image box.

You can change the placement of the image inside the image box as shown in step 3 of the image. Middle is recommended.

If you are using icons provided by QGIS, you can change their body and outline colour, and the outline width.

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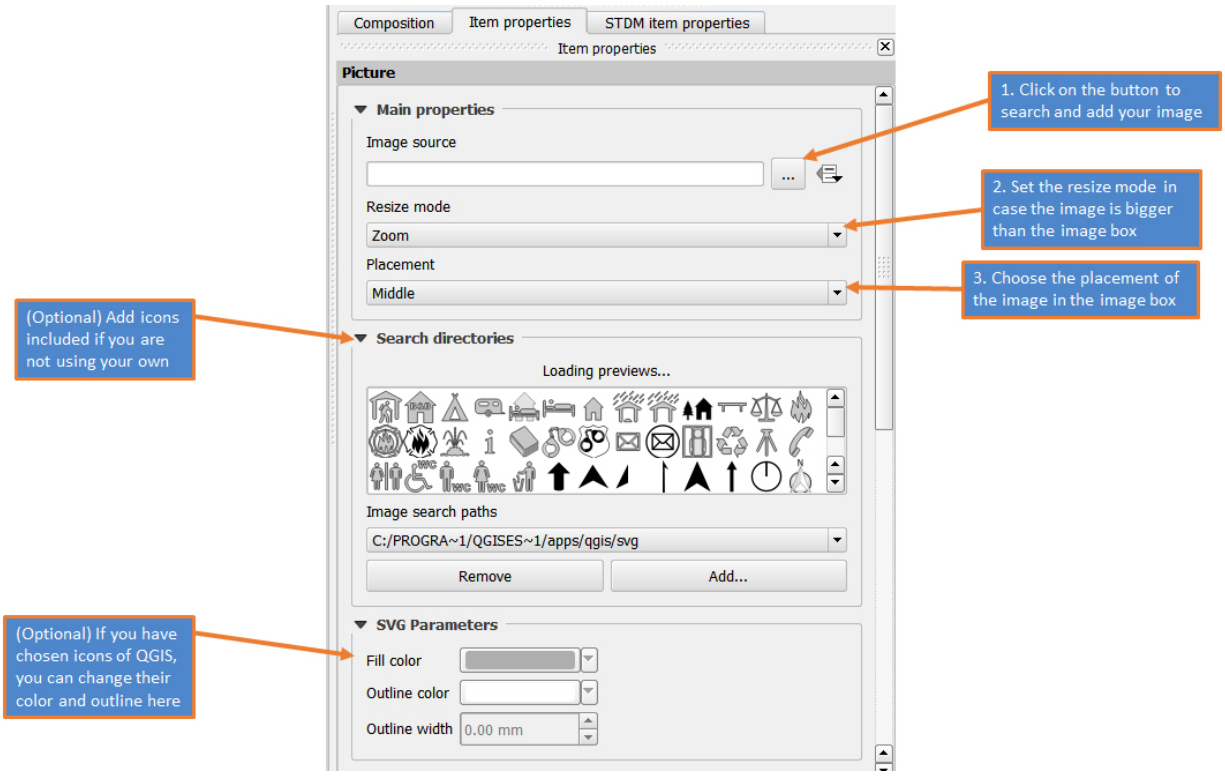


You can scroll down in item properties and change the image orientation and position.

## Adding a Label

A label here refers to a simple text that could be a title, paragraph, or just a word. This type of label is different from the data label as the text must be manually entered. This is useful when you want to add static contents that will not change. The Add new label tool enables you to add the text box. You then have to type your text and customize it using Item properties.

Follow the steps below to add a label.

1. Click on the **Add New Label** button located in Composer Item toolbar (see the image below).

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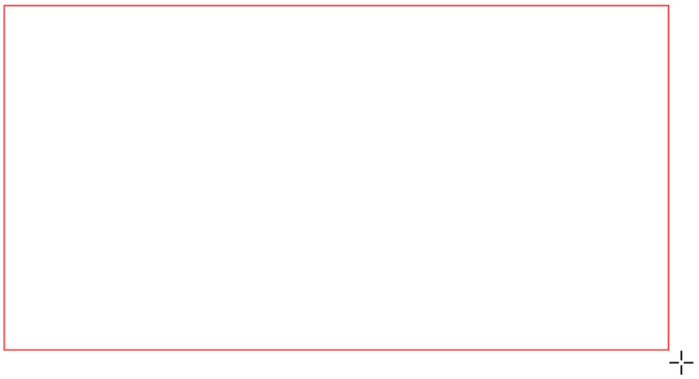
2. Start creating a text box by clicking on one point in the template page that will be its top left corner of the label. Then, start dragging the cursor to the bottom right direction to expand its size.

While dragging it, you will see a red box and a cursor that looks like the plus (+) sign as illustrated in the image below.



When you release the cursor, a box similar to the image below will be created.

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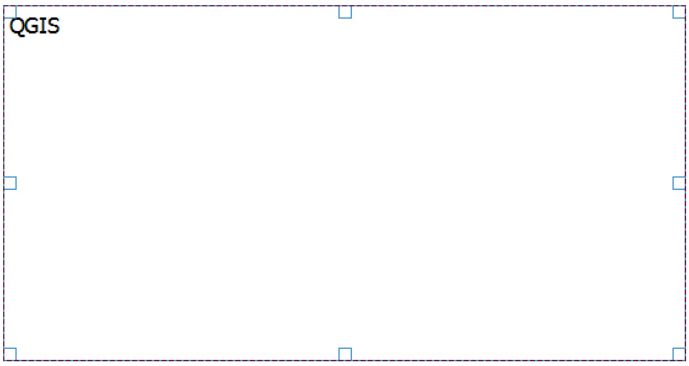
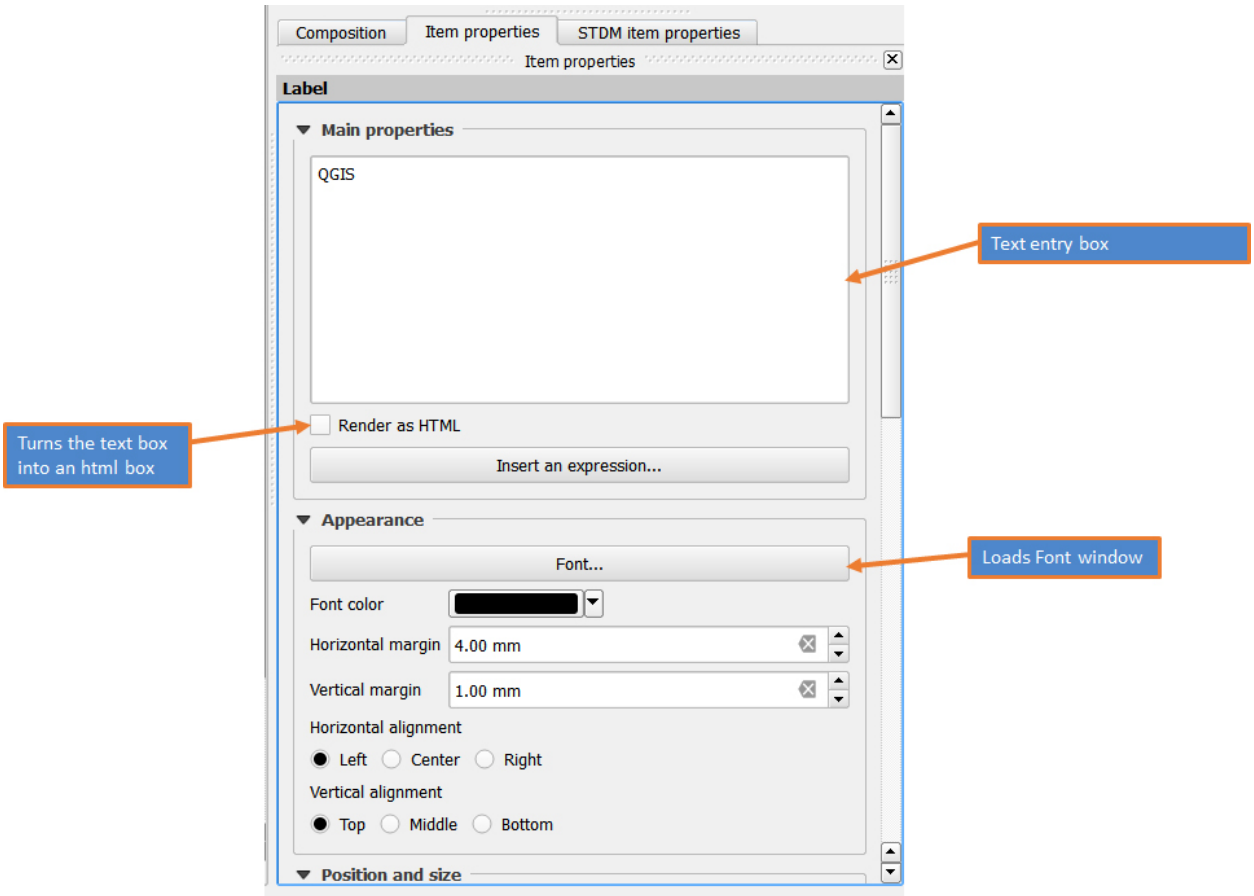



The text box could be one line or multiple lines. You can always resize it by pressing its corners and moving the cursor outwards or inwards.

As you can see, the text QGIS is added in the text by default. You can then remove it and replace it with any text you want to add.

3. Add a text and customize it using Item Properties as shown below.




**Main Properties**

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Under main properties, you can add the text in the white text entry box.

You can also convert the text box into an HTML page where you can add HTML tags to style your text. To enable HTML, you need to check the option **Render as HTML**.

**Note**: This requires basic knowledge of HTML

For instance, if you type the following in the white text entry box

```
<strong>QGIS</strong>
```

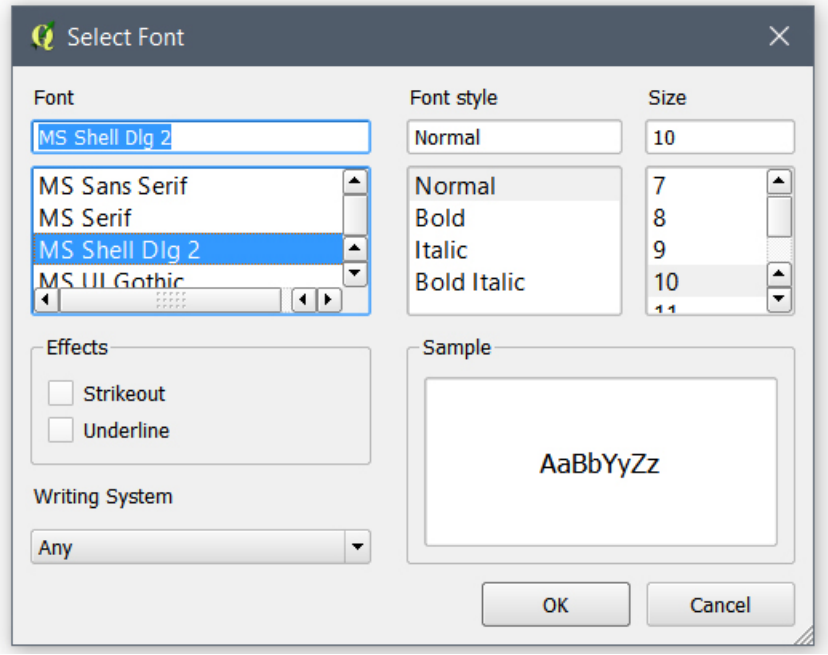
You will see the text turned to bold in the template page.

**Appearance**

In the appearance box, you can modify the font and position of the text such as margin and alignments.

To change the font, click on the **Font...** button as indicated in the above image. You will then get the image below.

Modify the font properties and click on the **OK** button.




# Data Driven Items

Data driven item refers to template items that pulls their content from STDM database. The items such as data label, map, legend, photo, attribute table, and chart are data driven.

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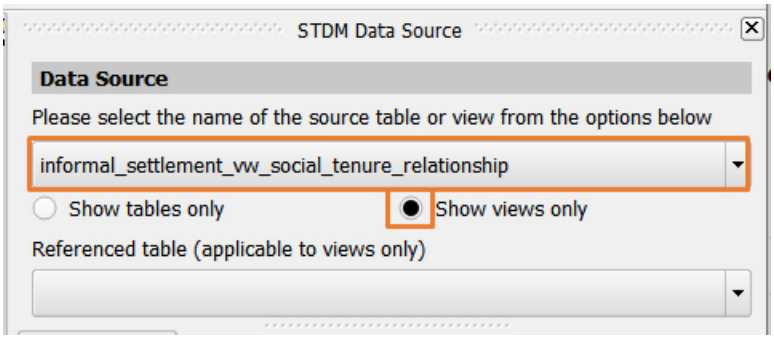
## Adding a Data Label

A data label refers to a label or a text whose value is populated from the STDM database. The source (table and column) of the data label must be specified while designing the template. Thus, when a document is later generated using a template, the data label will be populated / filled by a value from the selected record's column value.

To add a data Label in Document Designer template, follow the steps below.

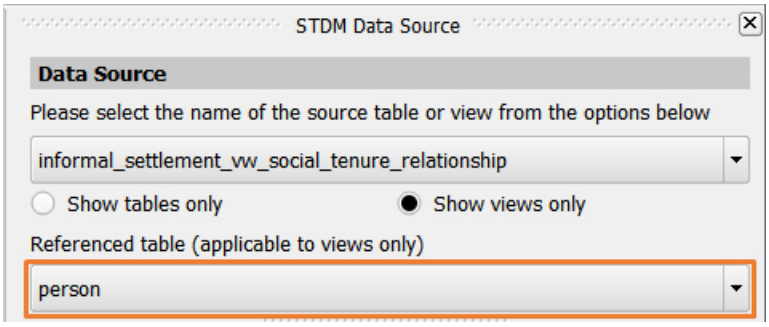
1. Select a data source by choosing a table or a view as shown below.




**Note**: Only the current profile tables and all views in STDM database load.

**Note**: Make sure you have selected a view of the current profile. STDM generated views start with the profile name. Thus, choose a view that starts with the current profile name.

2. Select a **referenced table**. The **referenced table** option is only applicable for view data source (see the image below). **A referenced table** refers to a table that the template will be working for. In other words, the reference table forces the template to only work for a certain entity. This is useful when Generating a document.




For this demonstration, the Person table is used as a referenced table but you can choose any other based on your needs.

**Note**: The above two steps are mandatory for views and the first step is mandatory for a table data sources.

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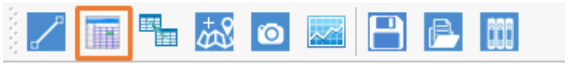
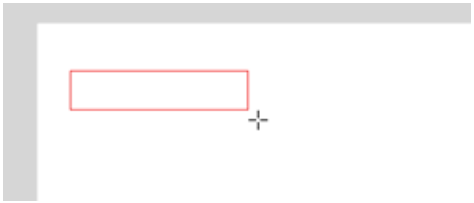
3. Click on the **Data Label** button located in STDM Document Designer toolbar (see the image below). This enables you to draw a data label in the template.

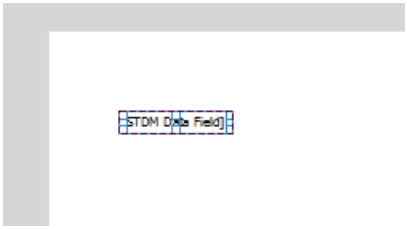


4. Click at one point in the template page and drag the cursor. Release the cursor in the area you wish to add the label box.

While dragging it, you can see a red box and a cursor that looks like the plus (+) sign as illustrated in the image below.



When you release it, a box labelled [**STDM Data Field]** will be created, as shown below.




This box [**STDM Data Field]** will be replaced by a value that comes from the database.

5. While the box is selected, open the STDM item properties to choose the column, the Data Label will use. The Data Field / column will populate the data label when a document is generated using the template.

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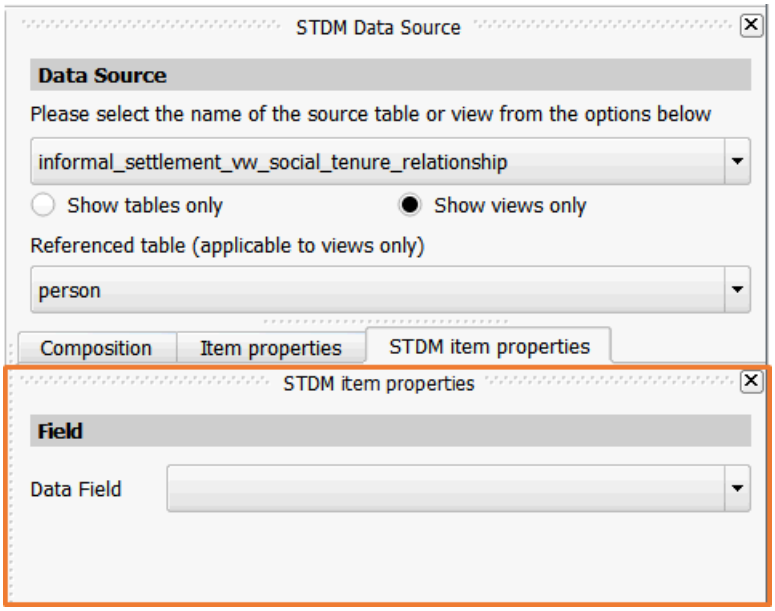
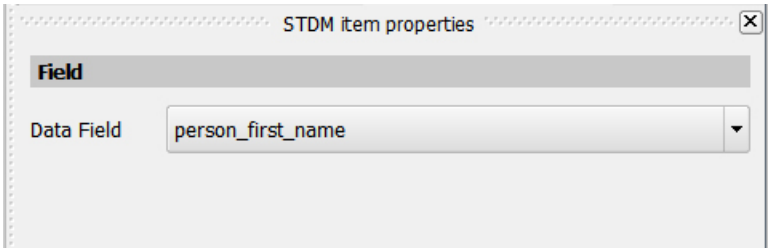
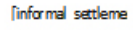



.

Choose the column you want the Data Label to use. For instance, for a person, you can choose the **person_first_name** column as shown below.




When you select a data field, the Data label text will change from **[STDM Data Field]** to the table name you have chosen. See the image below.




6. Repeat step 4 and 5 to add items from the same view. If you wish to add a data label from another table, start from step 1.

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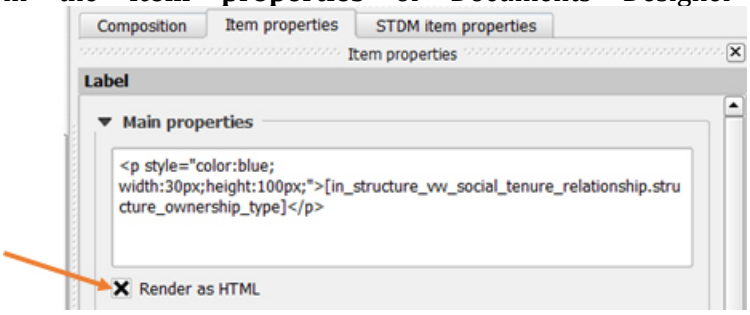
## Styling Data Labels

You style the data label by enabling HTML using the checkbox, **Render as HTML option** as located in the **item properties** of Documents Designer as shown in the image below.

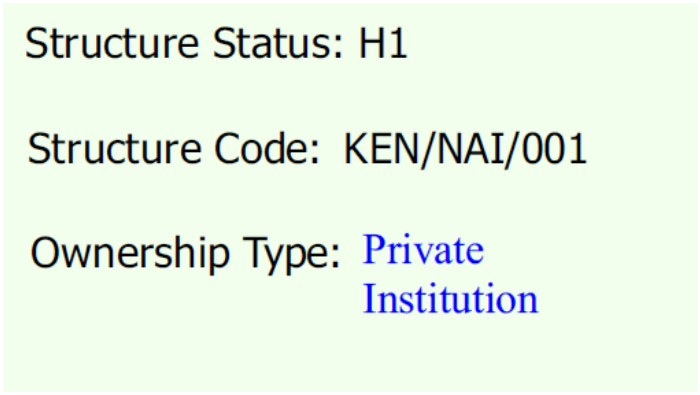



You need to add HTML style to modify the appearance of the data label. This enables you to add styles such as text wrapping, colour, etc. as shown below.

This is achieved after selecting the data source field of the data label then by wrapping the data label in HTML **p** (paragraph) tag.

```
<p style="color:blue;width:30px;height:100px;">
[in_structure_vw_social_tenure_relationship.structure_ownership_type]</p>
```

The following code modifies the appearance of the data label in the following way.




`style="color:blue;width:30px;height:100px;"` is the style affecting the appearance. `Color: blue` changes the colour of the label to blue. `Width:30px` – restricts the width of the data label to 30 pixels only. The width of the data label box should be at least same as the width or larger. `Height:100px` - restricts the height of the data label to 100 pixels only. The width of the data label box should be at least same as the width or larger as shown below.

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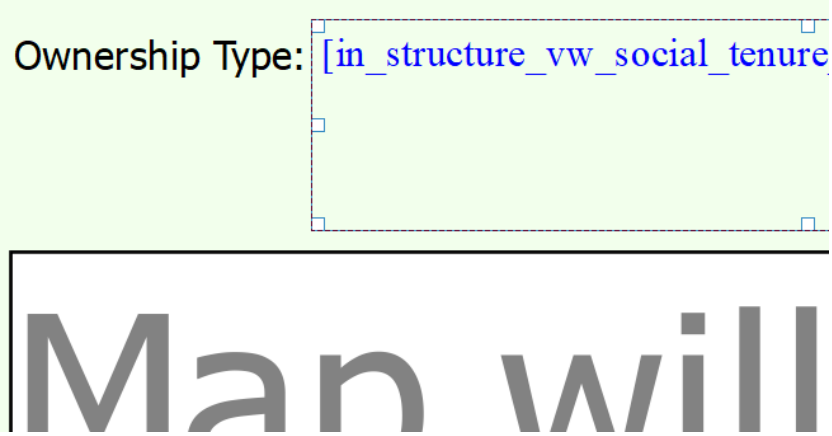


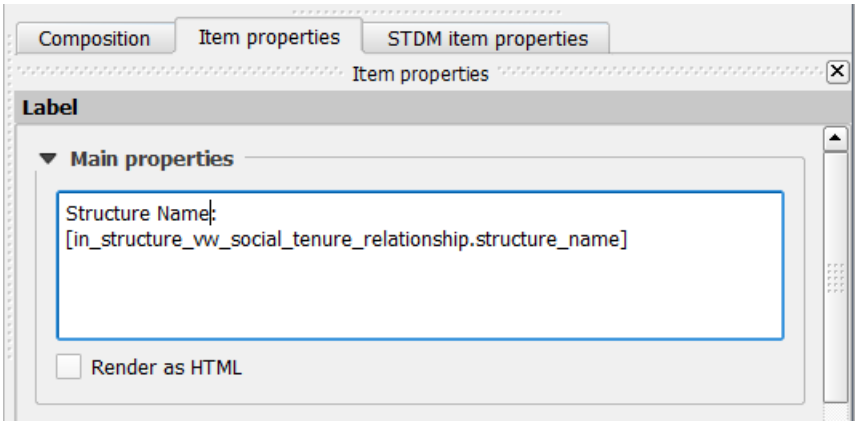

Users can add any height, width, colour using RGB or hex colour codes and any other HTML styles.

**Important Notes:**

- Make sure not to remove or modify the data label part starting with '[' and ending ']' manually. Use the STDM Data Source panel instead to change data source field.
- If Render as HTML checkbox is uncheck all the HTML code will appear as text.

## Adding Text in Data Labels

Users can also add text that acts as a label to the data label by adding in front or after the data label. This reduces the number of items added to the template, which makes it easier to re-size, move items, etc. The image below shows example implementation.




**Important Notes:**

- Make sure not to remove or modify the data label part starting with '[' and ending ']' manually. Use the STDM Data Source panel instead to change data source field.
- If Render as HTML checkbox is uncheck all the HTML code will appear as text.

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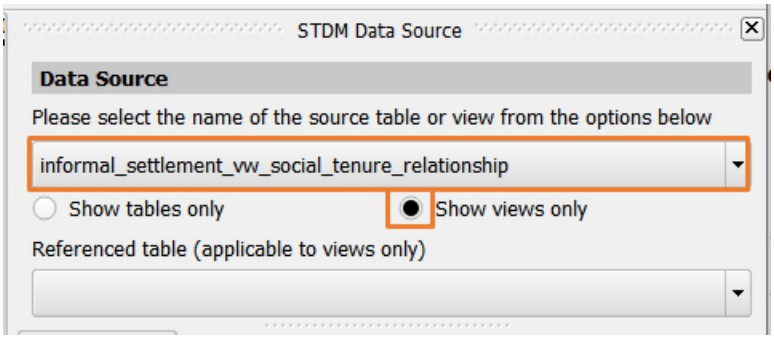
# Adding Map

In STDM, each spatial unit record has a geometry that can be seen in the map canvas. In addition, whenever a new social tenure relationship is created, a row is also added in **table_name_vw_social_tenure_relationship** view. The table_name could be **Party** or **Spatial Unit** table names. The **Spatial Unit view** also adds the geometry of the Spatial Unit. For more information, read Database Views for Document Templates topic.

**To add a map into the template, follow the steps below.**

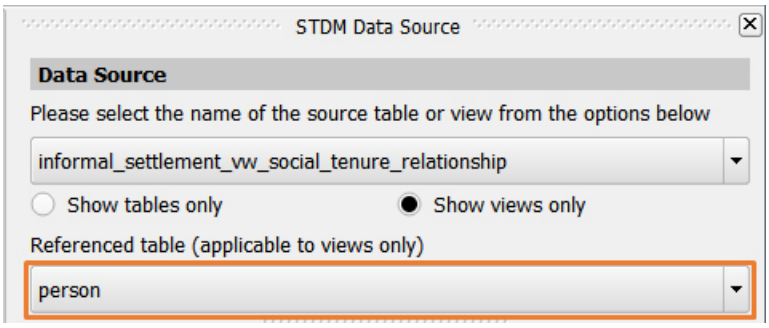
1. Select a data source by choosing a table or a view as shown below.




**Note**: Only the current profile tables and all views in STDM database load.

**Note**: When choosing a view, make sure you have chosen the view that is created using current profile tables. You can identify that by looking at the profile name at the beginning of view name.

2. Select a **referenced table**. The **referenced table** option is only applicable for view data source (see the image below). **A referenced table** refers to a table that the template will be working for. In other words, the reference table forces the template to only work for a certain entity. This is useful when Generating a document.




For this demonstration, the Person table is used as a referenced table but you can choose any other based on your needs.

**Note**: The above two steps are mandatory for views and the first step is mandatory for table data sources.

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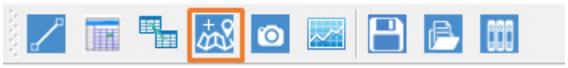
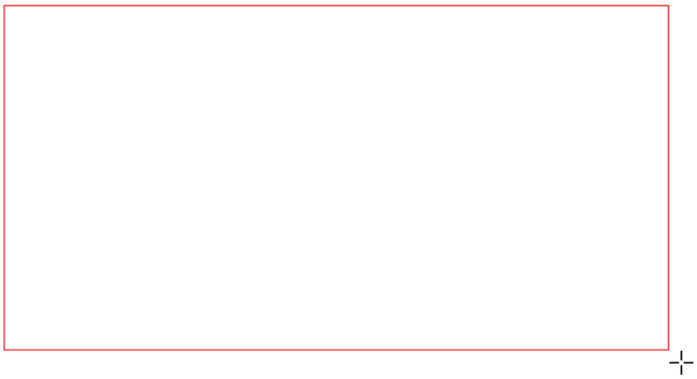
3. Click on the **Add Map** button located in STDM Document Designer toolbar (see the image below). This enables you to the draw a data label in the template.



4. Start creating a map box by clicking on one point that will be its top left corner. Then start dragging the cursor to the bottom right direction to expand its size.

While dragging it, you will see a red box and a cursor that looks like the plus (+) sign as shown in the image below.



When you release it, a box like the one below will be created.

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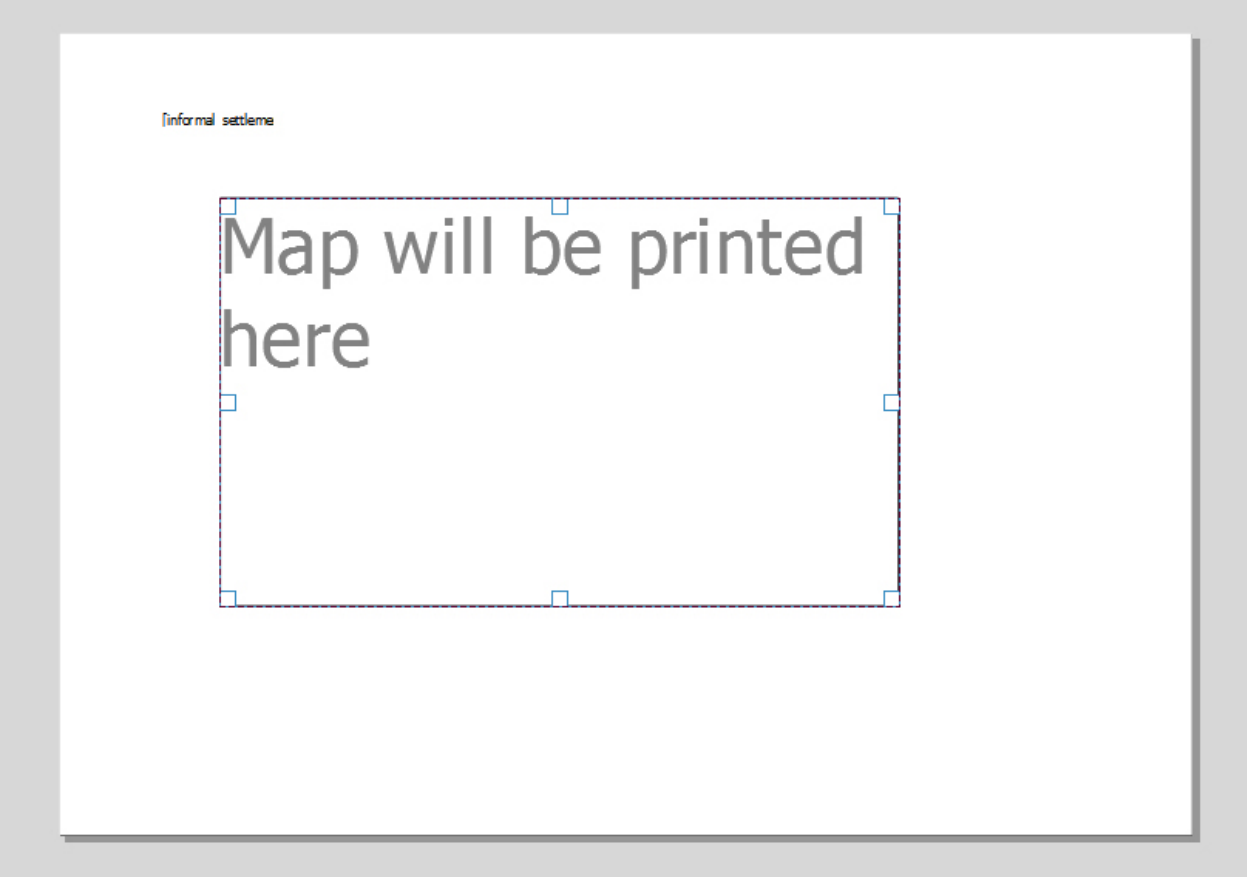


5. Make sure you have selected the map as shown in the above image and open the STDM item properties tab as shown below.

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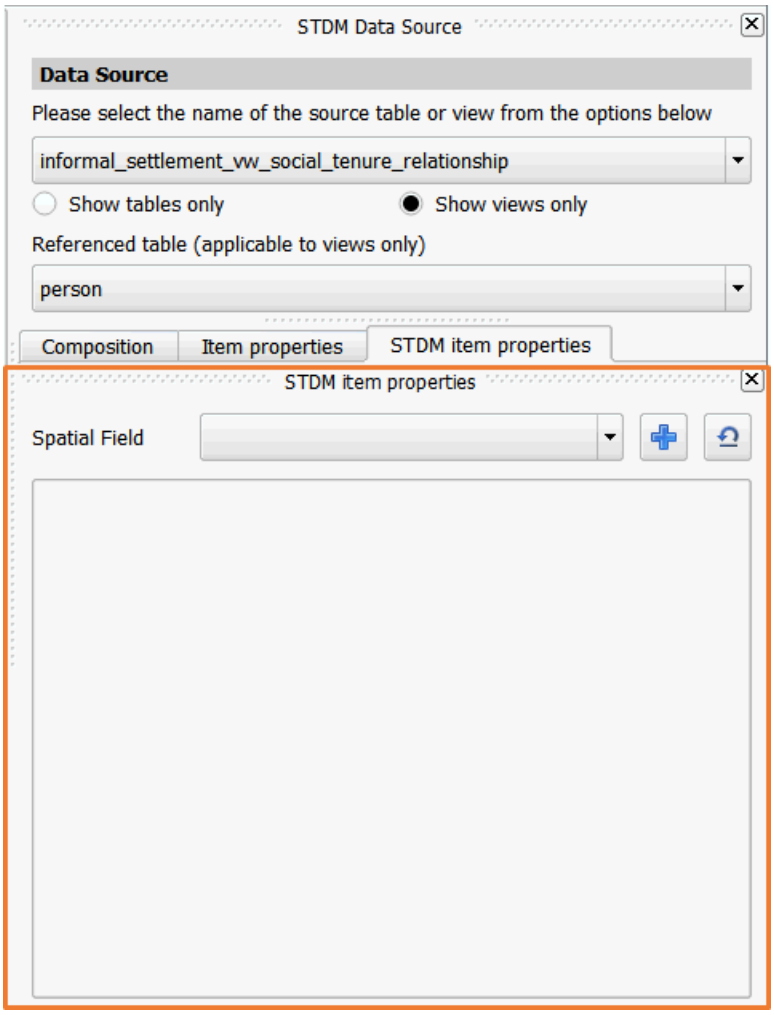


6. Select the **Spatial Field**. The spatial field refers to the column holding a geometry. Choose a geometry column from the drop down menu as shown below.

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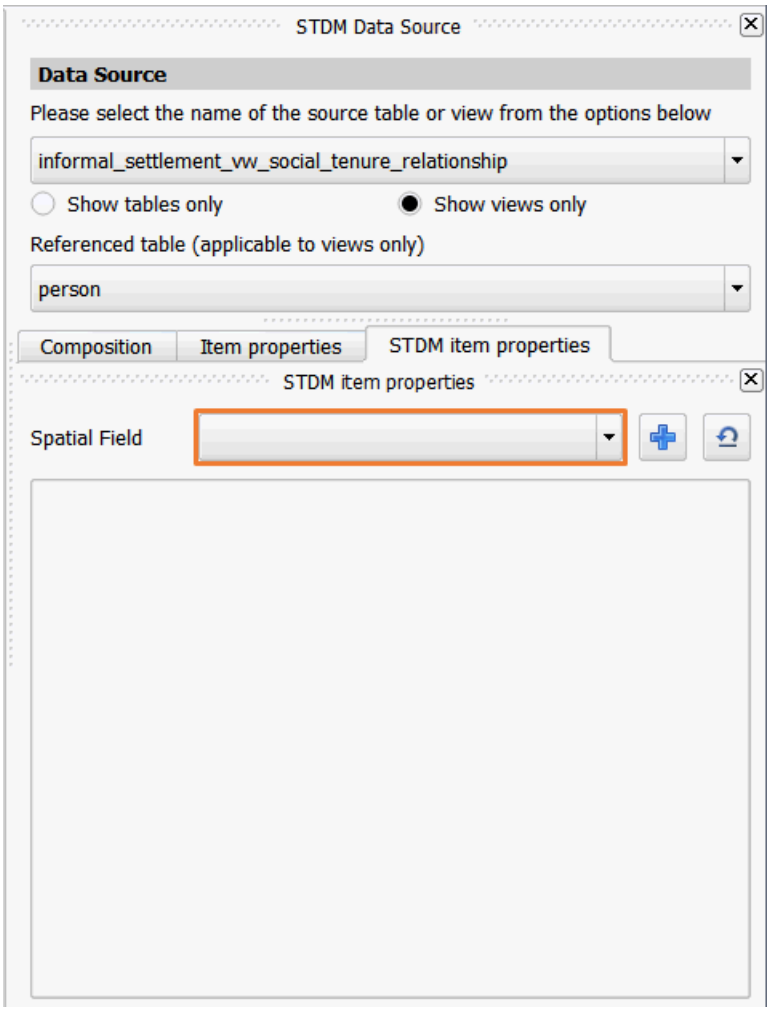
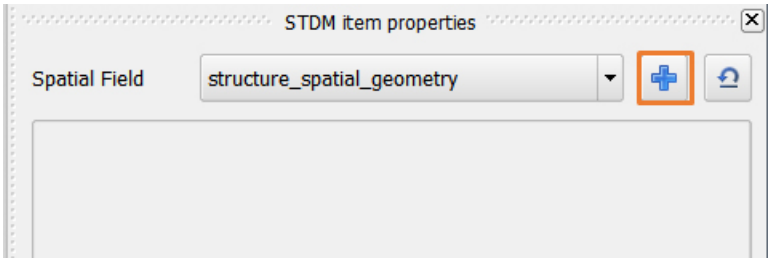



**7. Once you have selected the geometry field, click on the Add Button (✚) next to the drop down menu, as highlighted below.**




8. Choose the column that will be used as a label for the legend in the highlighted drop down menu below. **Legend label** refers to a column that will be used to label the geometry. For instance, if the map is for a spatial unit entity, its label field could be its name or code.

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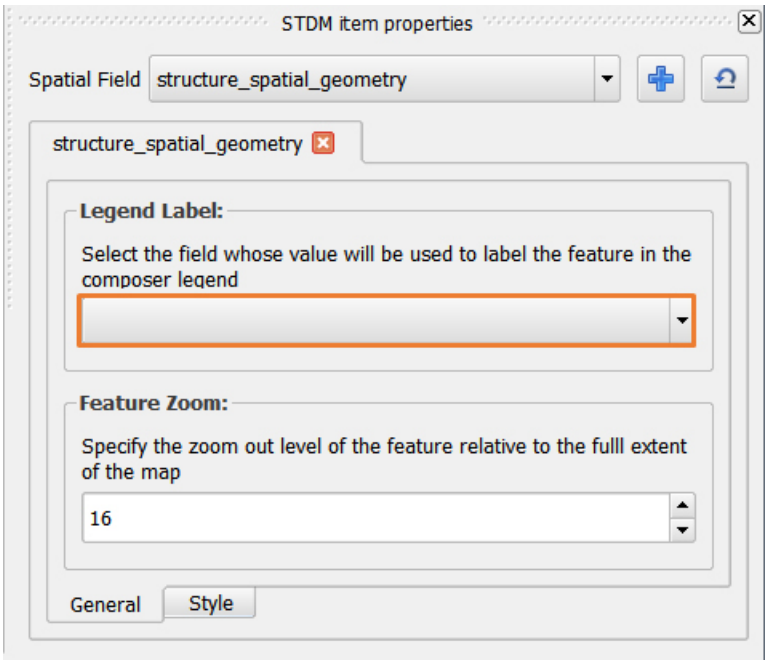
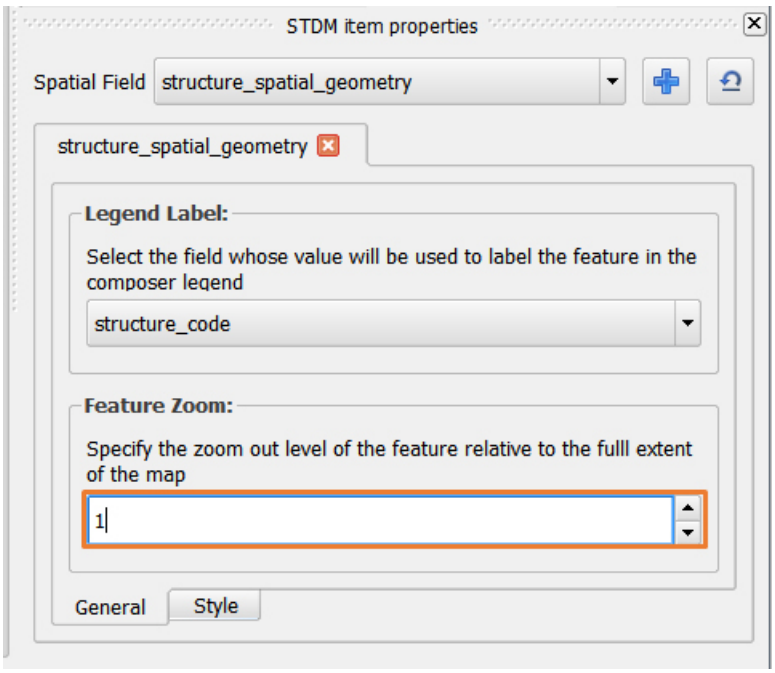



9. Change the **Feature Zoom**. The Feature Zoom refers to the zoom level of features as compared to the map area. If the value is 1, it means, the feature will fill the entire map area. If the value is 16, it zooms out the feature and reduce the feature coverage in the map. For spatial units, zoom level 1 or 2 is recommended to fill most part of the map (see the image below).




10. Click on the Style tab at the bottom to modify the style of the map (see the image below).

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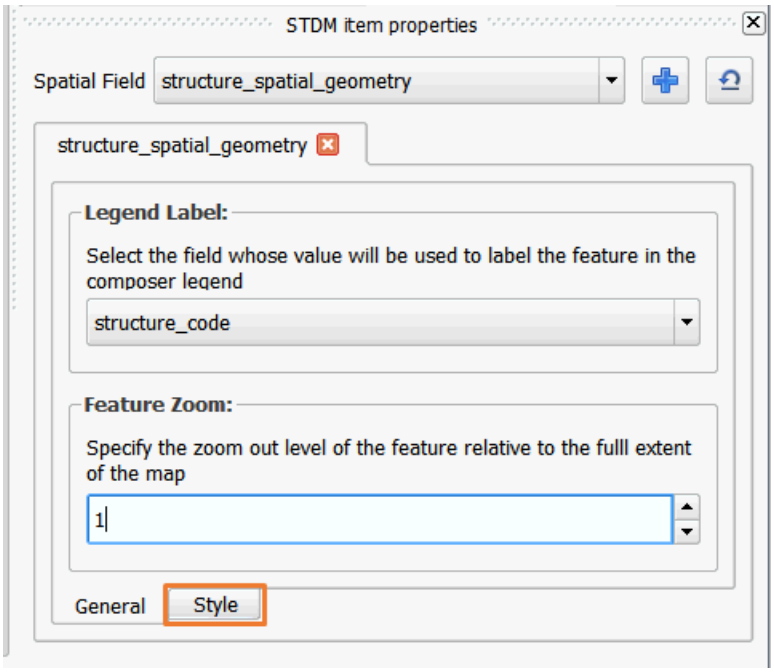
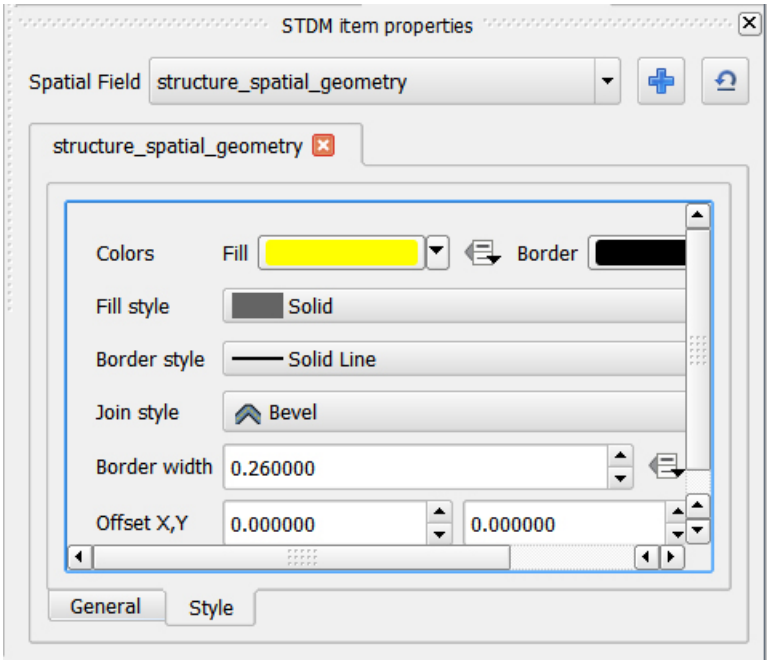



11. If the default style does not suit you, modify the style. The style tab looks like the image below.

All the settings below modify the appearance of the feature.




## Adding a Legend

A legend shows colour and symbol used in a map and its representing field. Accordingly, we need to add a map first before creating a legend.

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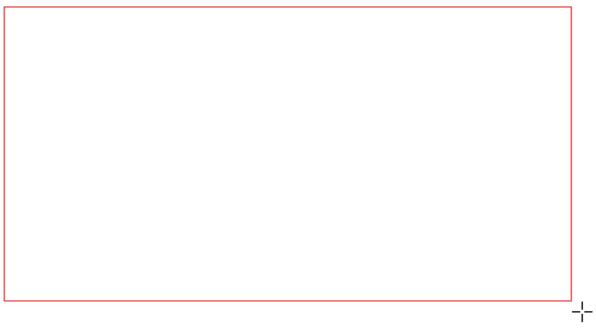
To create a legend, follow the steps below.

1. Add a map as explained in Adding a Map topic.

2. Click on the **Add new legend** button located in Composer Item toolbar (see the image below).

3. Start creating a legend box by clicking on one point in the template page that will be its top left corner of the legend. Then start dragging the cursor to the bottom right direction to expand its size.

While dragging it, you will see a red box and a cursor that looks like the plus (+) sign as shown in the image below.



When you release it, a box like the image below will be created.

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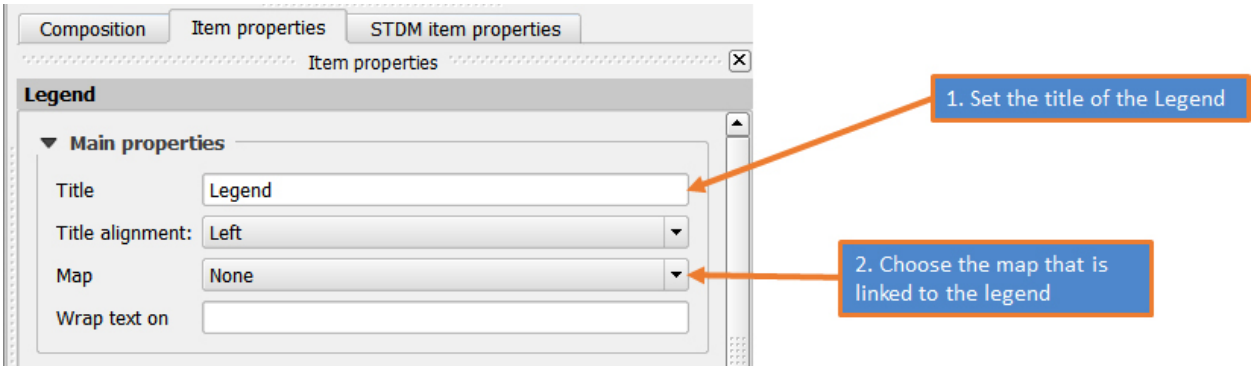
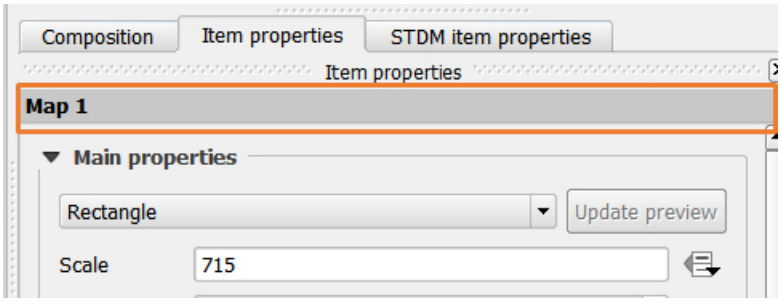
You can always resize the legend box by pressing its corners and moving your cursor outwards or inwards.

4. Set the legend options in Item Properties (see the image below).

The most important option in the Item Properties is the selection of the map that will be linked to the legend.




If you only have one map, clicking on the drop down, will enable you to see Map 0. Thus, you have to choose Map 0. If you have more than one map, you have to know with which map you are linking the legend. To identify the map's name, click on the map and go to **Item Properties** tab. At the beginning of the tab, you will see the map's name (see the image below).




As the above image shows, the map's name is **Map 1**.

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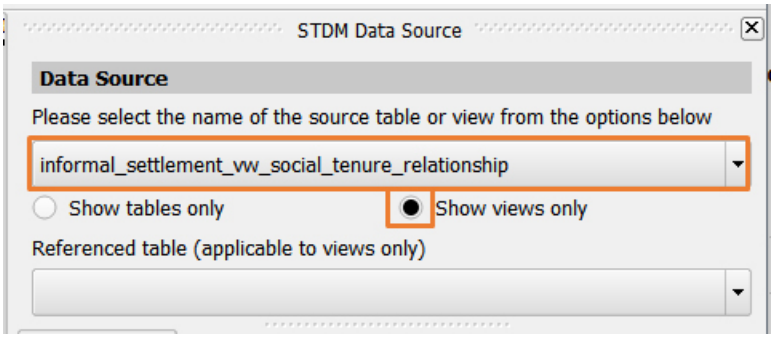
## Adding Photo

A photo could be any image that is uploaded as a supporting document in the entity editor/ form and the new social tenure relationship wizard. This feature is very useful when you wish to attach documents or photos inside a generated document.

To add photo, follow the steps below.

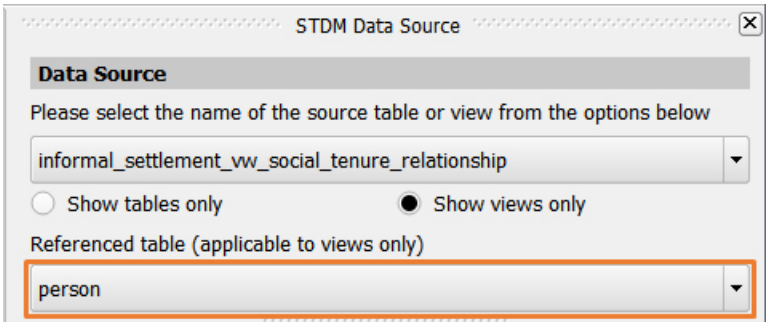
1. Select a data source by choosing a table or a view as shown below.




**Note**: Only the current profile tables and all views in STDM database load.

**Note**: When choosing a view, make sure you have chosen the view that is created using current profile tables. You can identify that by looking at the profile name at the beginning of view name.

2. Select a referenced table if you have chosen a view in the data sources as shown above (see the image below). A referenced table refers to a table that the template will be working for. In other words, the reference table forces the template to only work for a certain entity. This is useful when Generating a document.




For this demonstration, the Person table is used as a referenced table but you can choose any other based on your needs.

**Note**: The above two steps are mandatory for views and the first step is mandatory for table data sources.

3. Click on the **Add Photo** button located in STDM Document Designer toolbar (see the image below).

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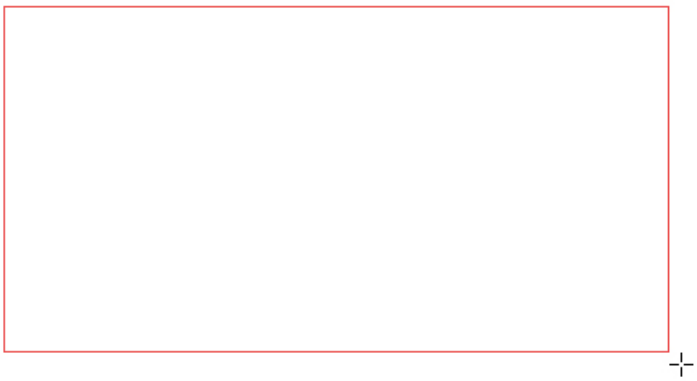
4. Start creating a photo box by clicking on one point in the template page that will be its top left corner of the photo. Then start dragging the cursor to the bottom right direction to expand its size.

While dragging it, you can see a red box and a cursor that looks like the plus (+) sign as shown in the image below.



When you release it, a box like the one below will be created.

5. Make sure you have selected the photo box as shown in the above image and open the STDM item properties tab as shown below.

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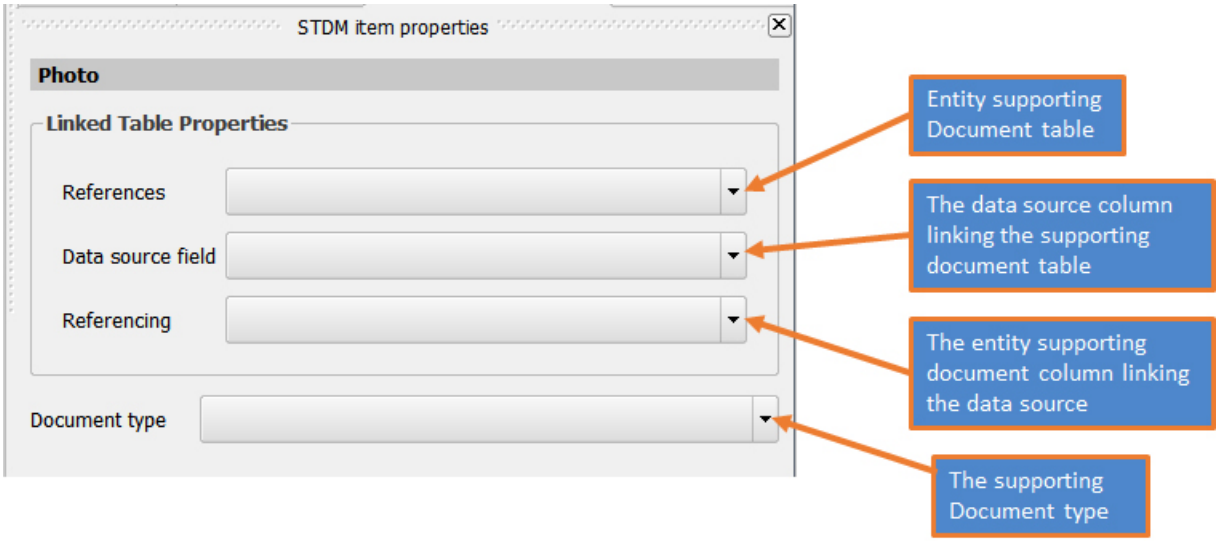


**References** refers to an entity supporting document table name that contains the reference of a supporting document uploaded to an entity. An entity supporting document table is created by STDM with the following format.

**profile_prefix_entity_name_supporting_document**.

For instance, a Social Tenure Relationship supporting document looks like

**lo_social_tenure_relationship_supporting_document**.

**lo** refers to the profile prefix of Local Government profile.

**Data source** field refers to a data source column that is also included in the entity supporting document table.

**Referencing** refers to the entity supporting column linking the data source, which has similarity with Data source field in its function here.

**Document type** refers to the supporting document type that you have specified in the Configuration Wizard. The default document type is General. If you add more document types for a given entity, you find them listed in the **Document type** drop down menu.

Make your selection similar to the one shown in the image below.

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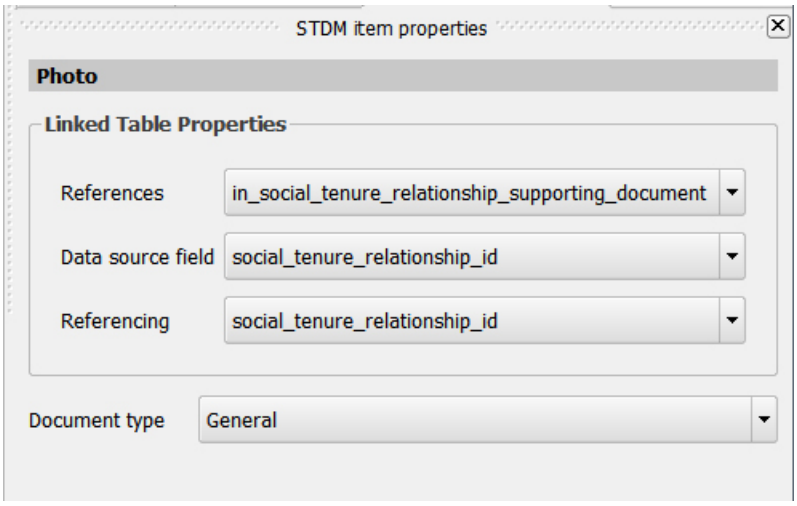


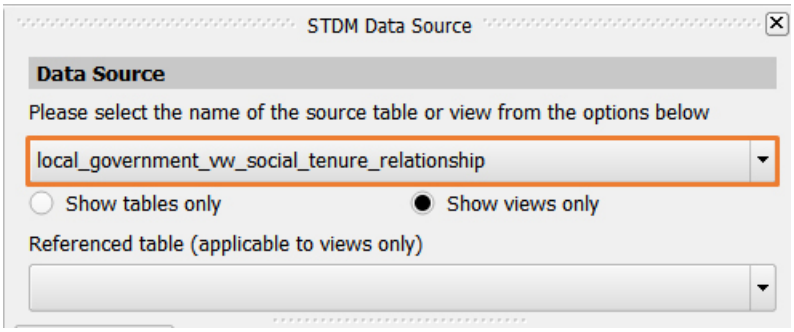

For instance, the above selections will enable you to properly add documents used for social tenure relationship. If you want to use a supporting document of another entity, look for your entity name in place of **social_tenure_relationship**.

## Adding Attribute Table

Attribute table refers to a table that holds non-spatial data. Attribute table can be used for a single row record or aggregate data. It is created from a specific database table or view.

To create an attribute table, follow the steps below.

1. Select a data source by choosing a table or a view as shown below.




**Note**: Only the current profile tables and all views in STDM database load.

**Note**: When choosing a view, make sure you have chosen the view that is created using current profile tables. You can identify that by looking at the profile name at the beginning of view name.

2. Select a referenced table if you have chosen a view in the data sources (see the image below). A referenced table refers to a table that the template will be working for. In other words, the reference table forces the template to only work for a certain entity. This is useful when Generating a document.

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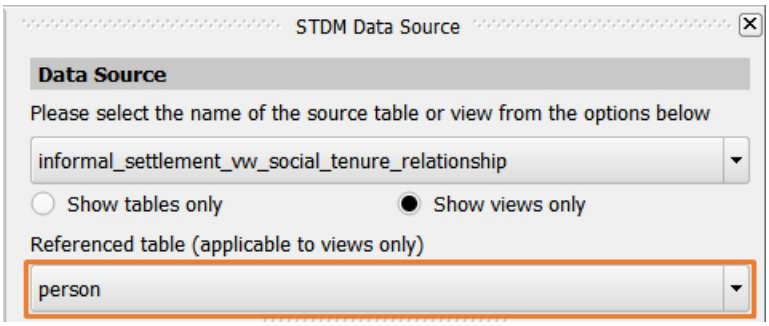
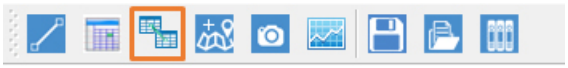



For this demonstration, the Person table is used as a referenced table but you can choose any other based on your needs.

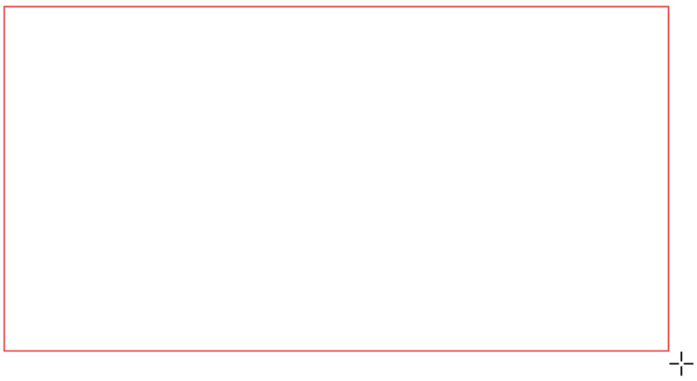
**Note**: The above two steps are mandatory for views and the first step is mandatory for table data sources.

3. Click on the **Add attribute table** button located in STDM Document Designer toolbar (see the image below).



4. Start creating a table box by clicking on one point in the template page that will be its top left corner of the table. Then start dragging the cursor to the bottom right direction to expand its size.

While dragging it, you can see a red box and a cursor that looks like the plus (+) sign.



When you release it, a sample table is created (see the image below). This table changes based on your selection in **STDM item properties.**

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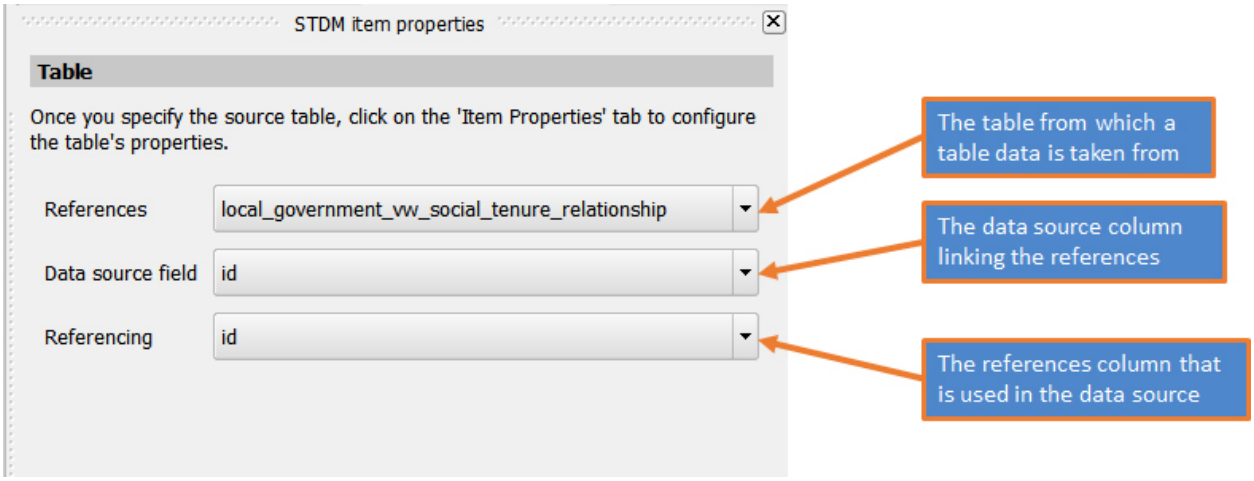
| id | Code | Area | Value | Parcel Type | Landuse | Special Landuse | Dispute |
|---|---|---|---|---|---|---|---|
| 25 | tesfdsf | 0 | 0 | 2 | 0 | 2 | 0 |
| 26 | add | 0 | 0 | 0 | 2 | 0 | 0 |
| 27 | add | 0 | 0 | 0 | 0 | 0 | 0 |
| 28 | rem | 0 | 0 | 0 | 0 | 0 | 0 |
| 29 | add2 | 0 | 0 | 0 | 0 | 0 | 0 |

5. **Make sure you have selected the table box as shown in the above image. Proceed to open the STDM item properties tab as shown below.**

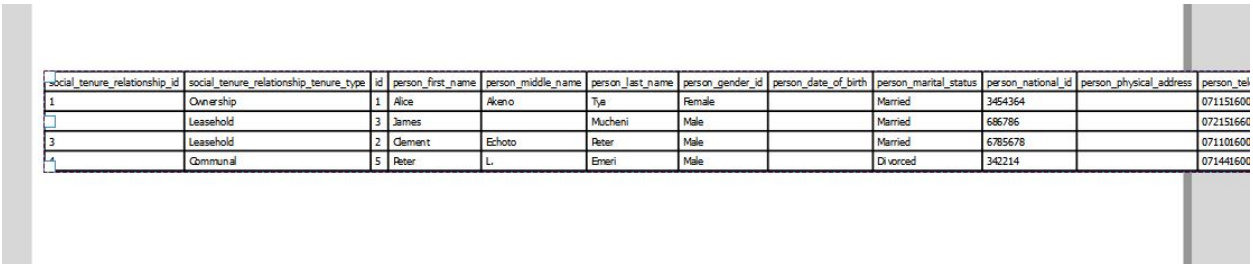



**References** refers to any table that is used as a data source of the table. Here you will find all tables and views of the current profile. Choose a table that you want the table data to be based on.

**Data source field** refers to a data source column that is used to link the reference with the data source table.

**Referencing** refers to the references table column linking the data source, which has similarity with Data source field in its function here.

6. The attribute table is created based on the data source and properties you have set. See an unformatted attribute table below.



| social_tenure_relationship_id | social_tenure_relationship_tenure_type | id | person_first_name | person_middle_name | person_last_name | person_gender_id | person_date_of_birth | person_marital_status | person_national_id | person_physical_address | person_tel |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Ownership | 1 | Alice | Akeno | Tye | Female | | Married | 3454364 | | 071151600 |
| | Leasehold | 3 | James | | Mucheni | Male | | Married | 686786 | | 072151660 |
| 3 | Leasehold | 2 | Clement | Echoto | Peter | Male | | Married | 6785678 | | 071101600 |
| | Communal | 5 | Peter | L. | Emeri | Male | | Divorced | 342214 | | 071441600 |

The rest of the steps show how you can format the table.

7. Style and format the attribute table. The table is formatted and styled using Item properties tab, as shown below.

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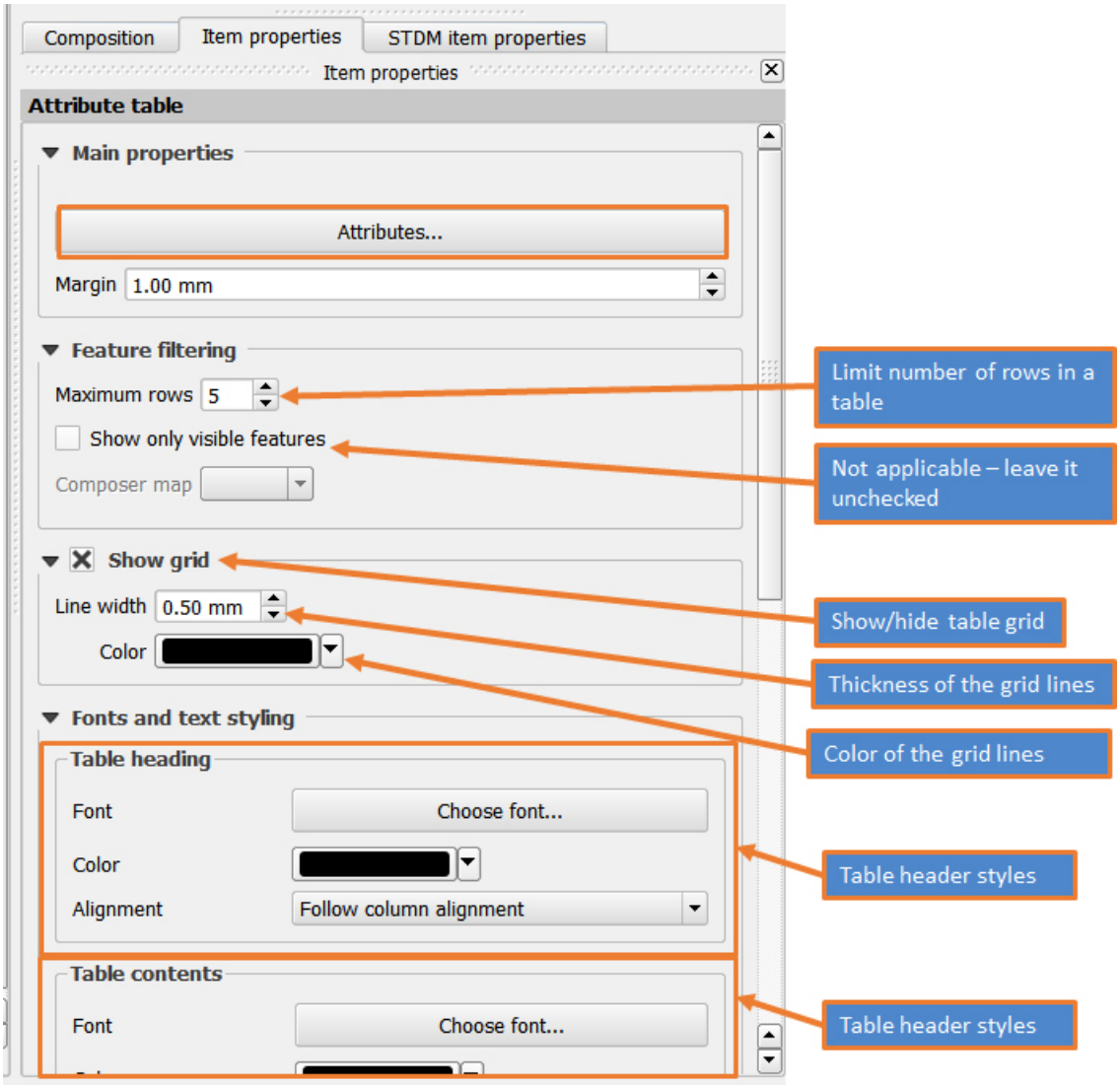
See the descriptions on the image below.




To make style changes, refer to the above image on the **Item properties** and scroll down to make more changes.

To format the attribute table, click on the **Attributes...** button that is highlighted in the above image of the Item properties.

When you click on **Attributes...** button, you will see the following window.

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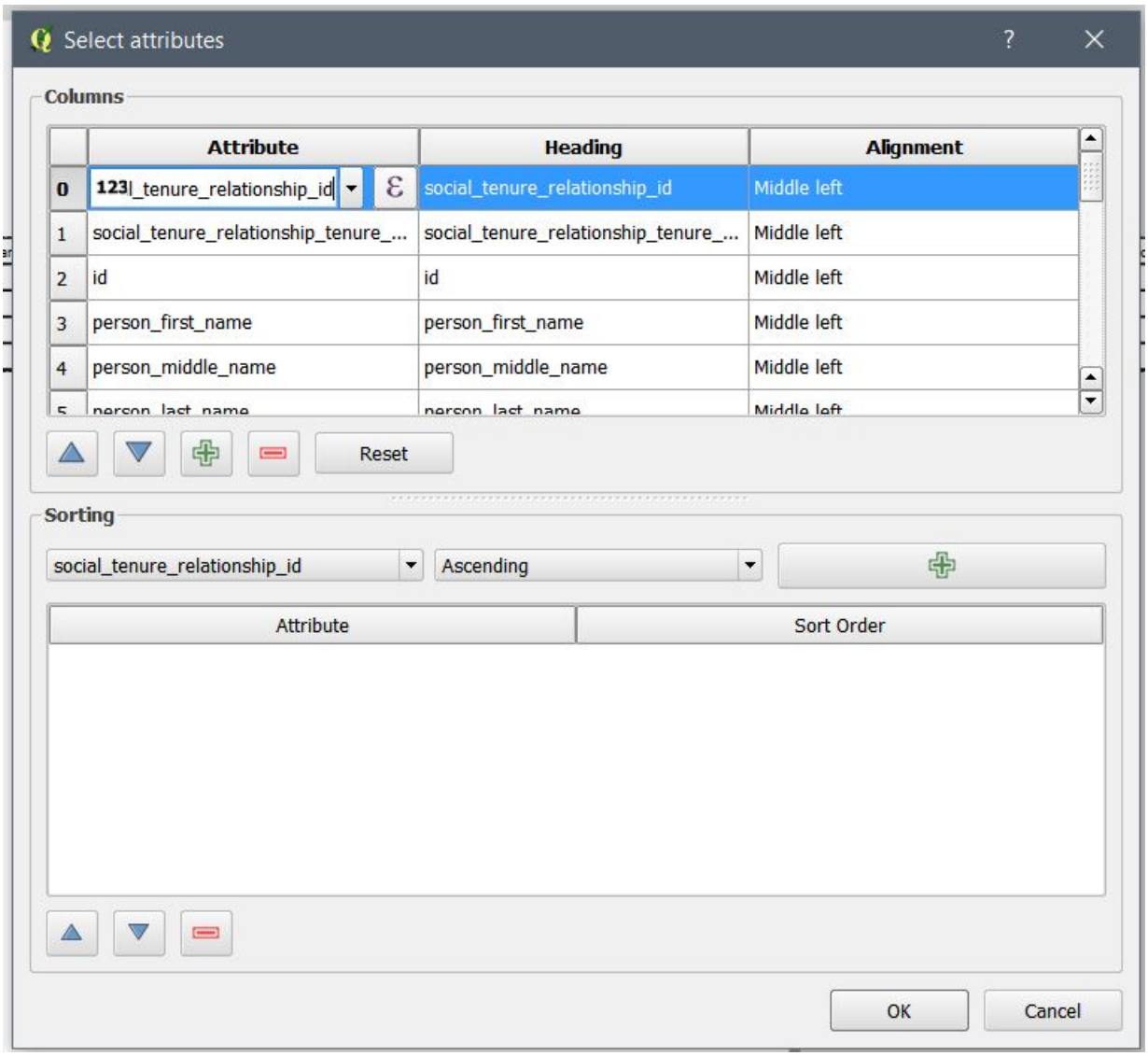


The buttons of **Attributes** dialog are explained below.

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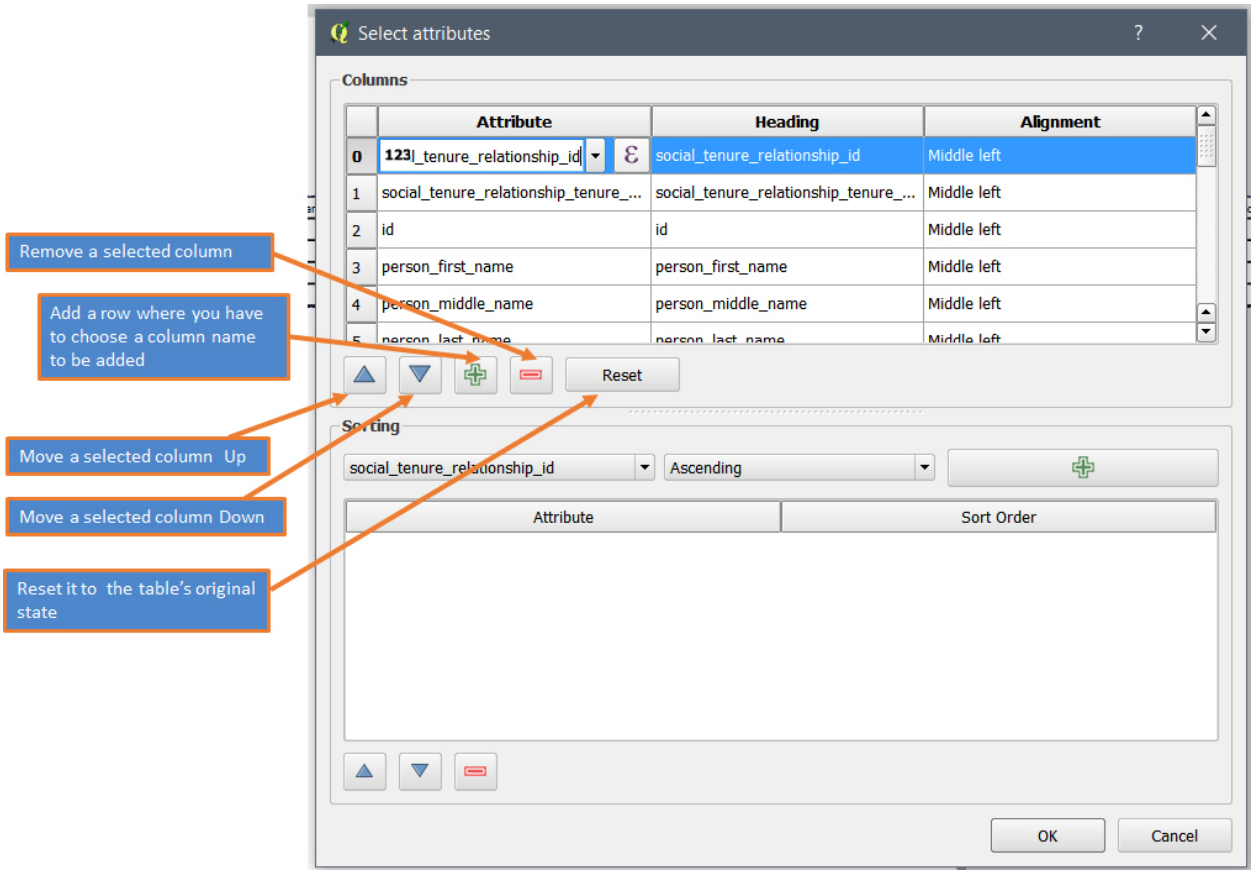
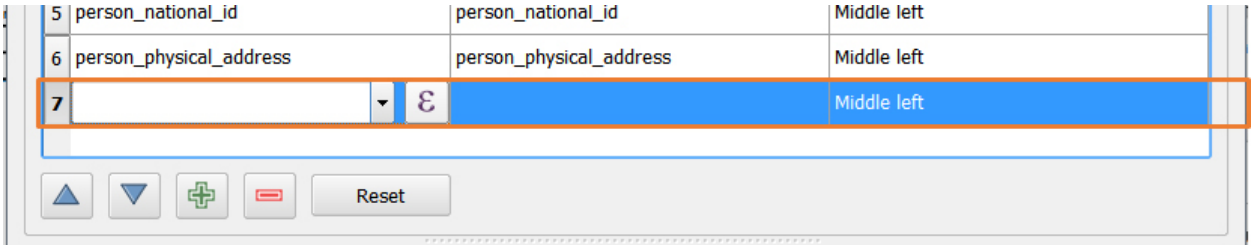



a. Adding a column

By default, all the columns in a table are loaded. You may need to remove unwanted columns to create your final table.

If you accidentally remove columns that you might require, you can add them using the add button as shown in the above image.

An empty newly added column looks like the image shown below.




You then have to choose the column by clicking on and choosing columns from a drop down menu as shown below.

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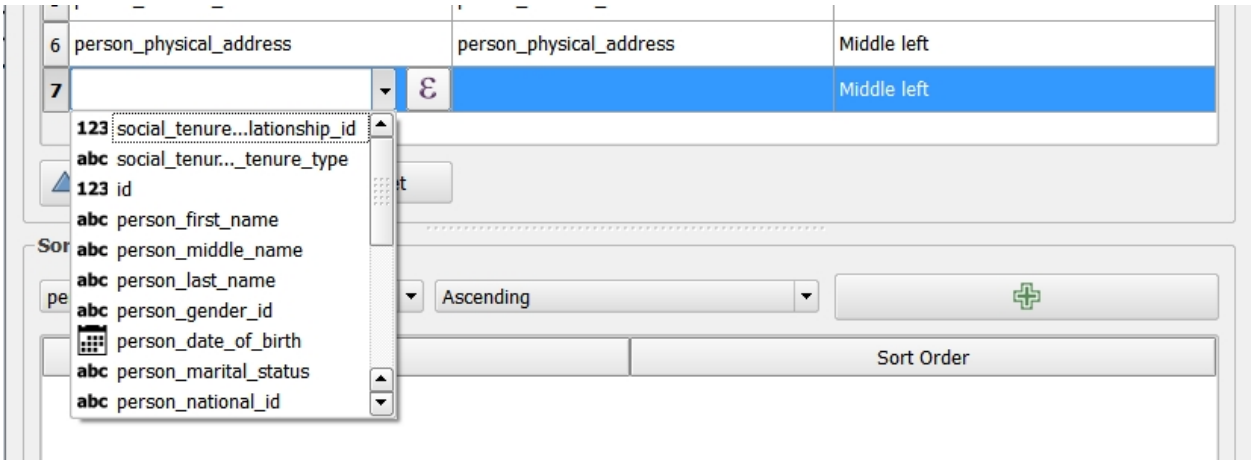


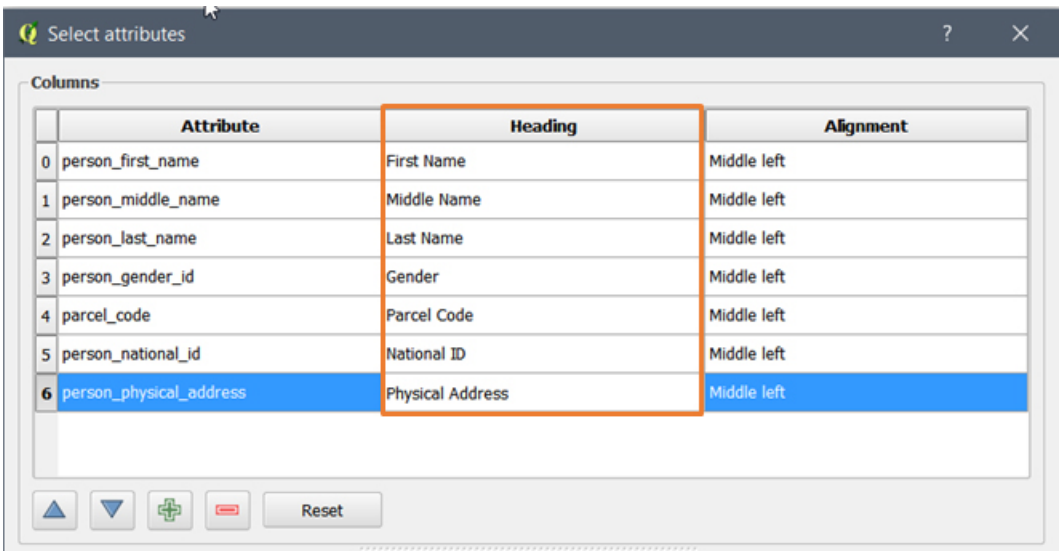

b. Removing columns that are not needed

To remove a column, select on a row and click on the Remove button.

b. Formatting the column names

Columns of STDM database or any other database have an underscore instead of spaces and lower cases instead of title cases. This may not be desirable in the generated document.

The appearance of the column can be changed in the Attributes dialog by manually typing preferred heading of the column under the Heading as highlighted in the image below.




c. Change alignment of columns by choosing your preferred alignment under the Alignment column.

8. Once you are done, click on the **OK** button of the attributes dialog to save and close the dialog. See the image below.

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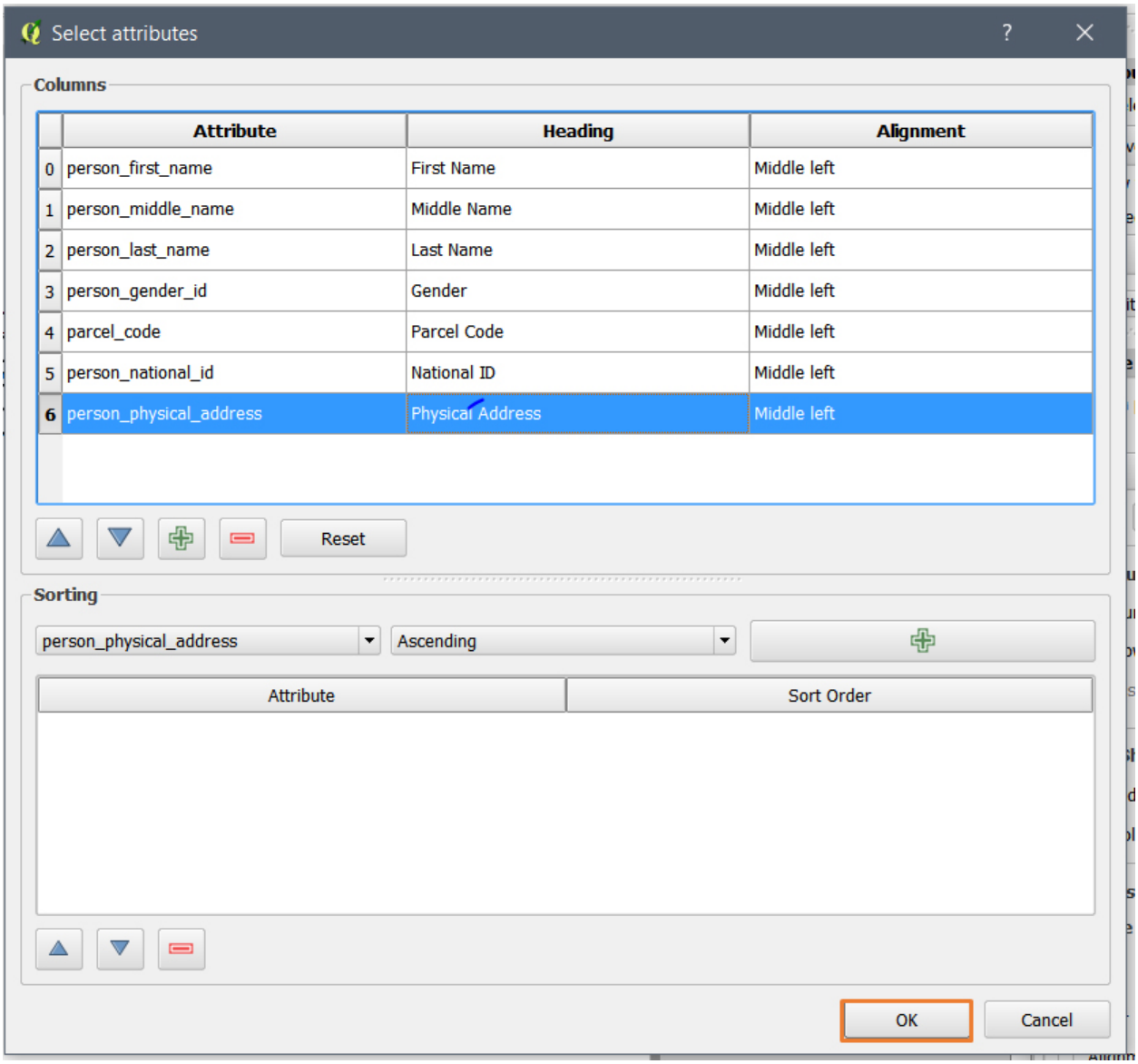


9. Once you click on the **OK** button, the table gets updated. The image below shows the final table customized on the bases of above steps.

| First Name | Middle Name | Last Name | Gender | Parcel Code | National ID | Physical Address |
|---|---|---|---|---|---|---|
| Alice | Akeno | Tya | Female | 1 | 3454364 | |
| James | | Mucheni | Male | 1 | 686786 | |
| Clement | Echoto | Peter | Male | 1 | 6785678 | |
| Peter | L. | Emeri | Male | 1 | 342214 | |

**Note**: Currently, due to a bug in QGIS Print Composer, the formatting will be lost if you open the template again.

Thus, it is advised to format the table before saving the template for the last time.

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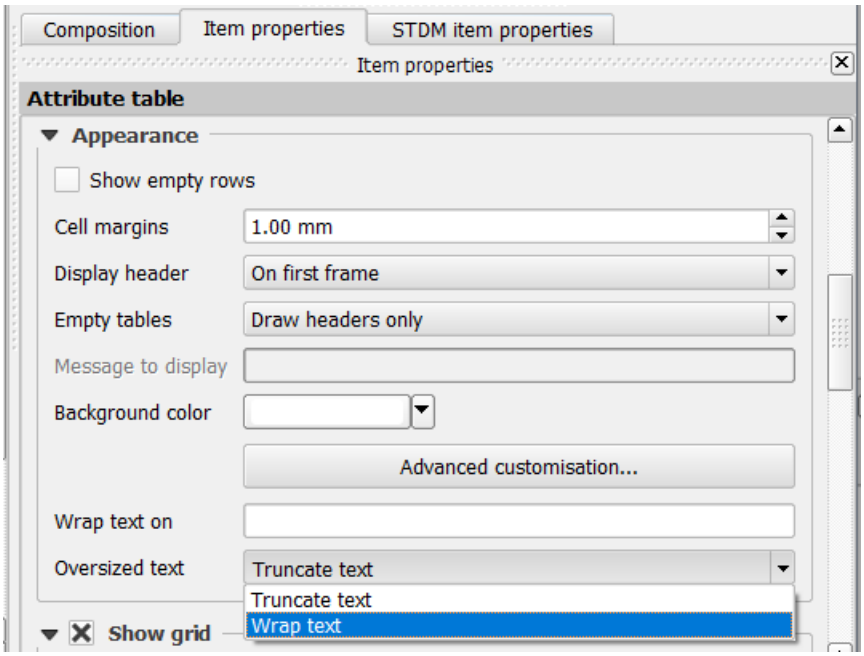
## Wrapping Text in Attribute Table

Text in the Attribute tables can be warped so that the do not stretch beyond the size of the table. You can also apply other styling functionalities as shown in the image below.




## Adding a Chart

You can add charts whose data is derived from the STDM database. Currently, only vertical bar graphs are supported. More chart types will be added in the next major release.

The charts are best suited for an aggregate data. This requires the creation of more views linked to the default view that comes with STDM. The steps below will enable you understand how to create a basic view. The steps in creating an advanced chart are similar to those elaborated below. However, you will need to add more views that are linked to the default view.

To add charts that use STDM database, follow the steps below.

1. Select a data source by choosing a table or a view as shown below.

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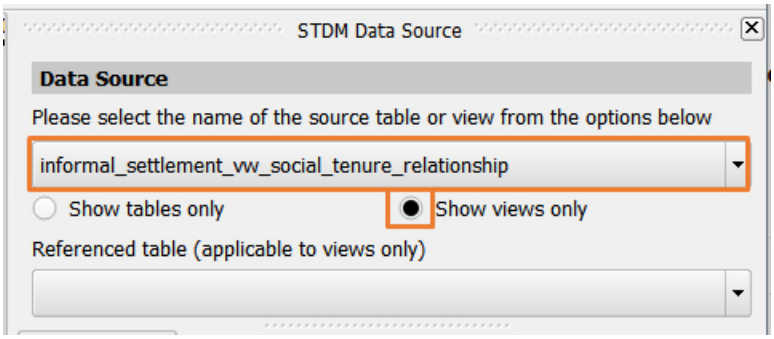
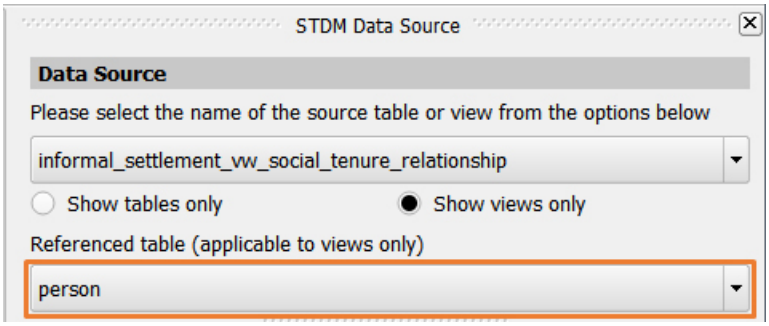



**Note**: Only the current profile tables and all views in STDM database will load.

**Note**: When choosing a view, make sure you have chosen the view that is created using current profile tables. You can identify that by looking at the profile name at the beginning of view name.

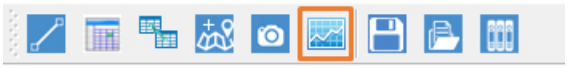
2. Select a referenced table if you have chosen a view in the data sources as shown above (see the image below). A referenced table refers to a table that the template will be working for. In other words, the reference table forces the template to only work for a certain entity. This is useful when Generating a document. When we choose the referenced table, it means we are forcing the template only work for the selected reference table.




For this demonstration, the Person table is used as a referenced table but you can choose any other based on your needs.

**Note**: The above two steps are mandatory for views and the first step is mandatory for table data sources.

3. Click on the **Add Chart** button located in STDM Document Designer toolbar (see the image below). This enables you to add an image that is uploaded into STDM.



4. Start creating a chart box by clicking on one point in the template page that will be its top left corner of the chart. Then start dragging the cursor to the bottom right direction to expand its size.

While dragging it, you can see a red box and a cursor that looks like the plus (+) sign as shown in the image below.

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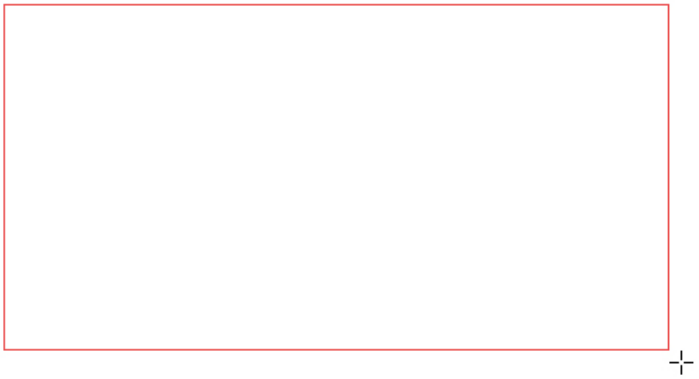
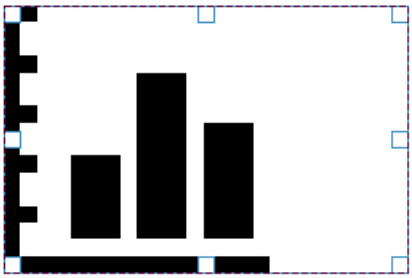


When you release it, a box like the image below will be created.



5. Make sure you have selected the chart box as shown in the above image and open the **STDM item properties** tab. You will see the following.

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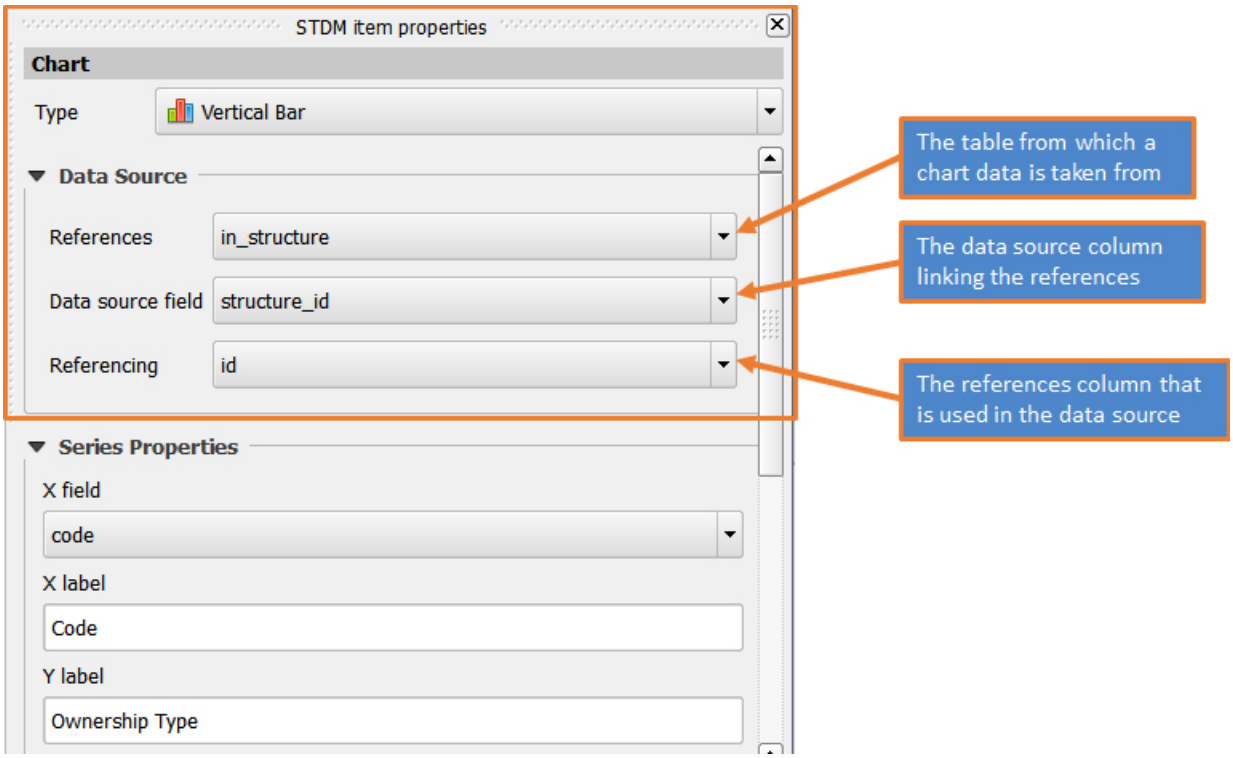


**References** refers to any table that is used as a data source of the chart. You will find all tables and views of the current profile. Choose a table that you want the chart data to be based on.

**Data source field** refers to a data source column that is used to link the reference with the data source table.

**Referencing** refers to the references table column linking the data source, which has similarity with Data source field in its function here.

6. Choose Series Properties, which refers to the X axis field and the Y axis label in the chart.

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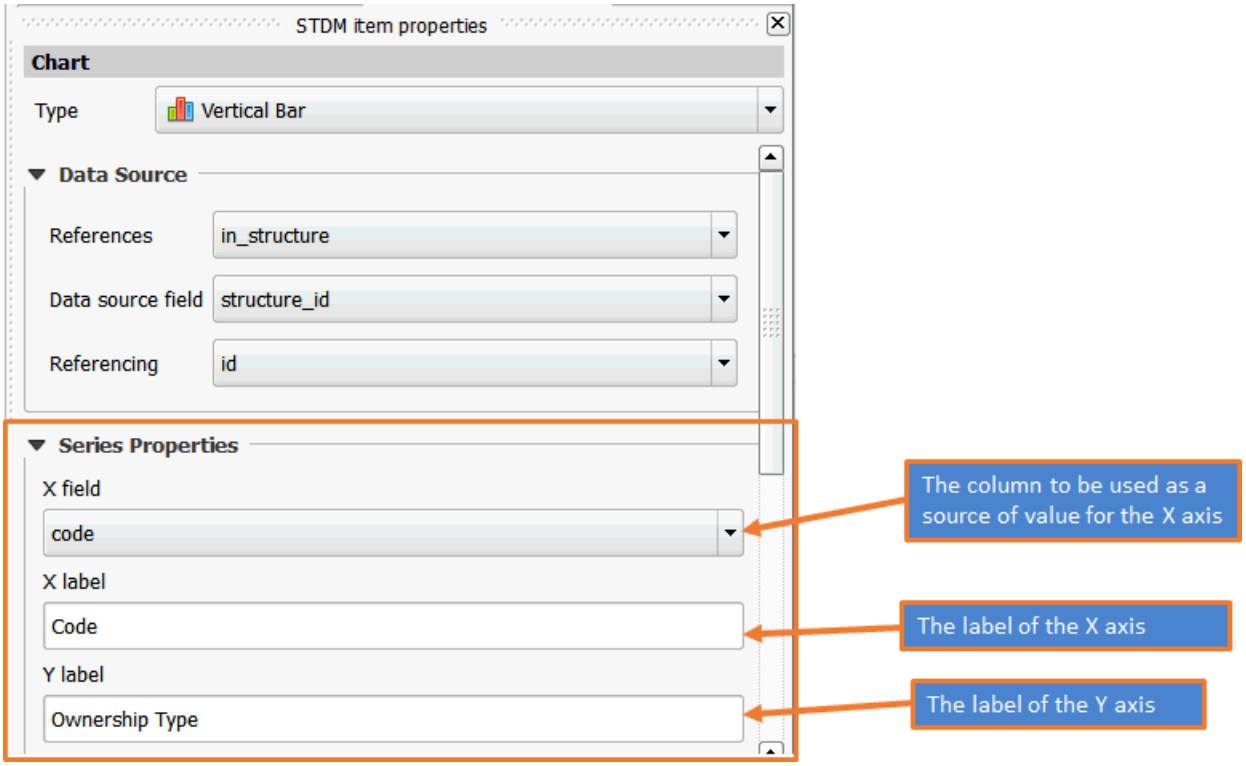


The fields and labels in the above image refers to the following.

**X Field** refers to the column to be used as a source of data for the X- axis.

**X label** refers to the label of the X-axis.

**Y label** refers to the label of the Y-axis.

Proceed to choose the Y-axis field in the next box explained in the next step.

7. Choose the value field (Y-axis value source column), legend name, and chart colour.

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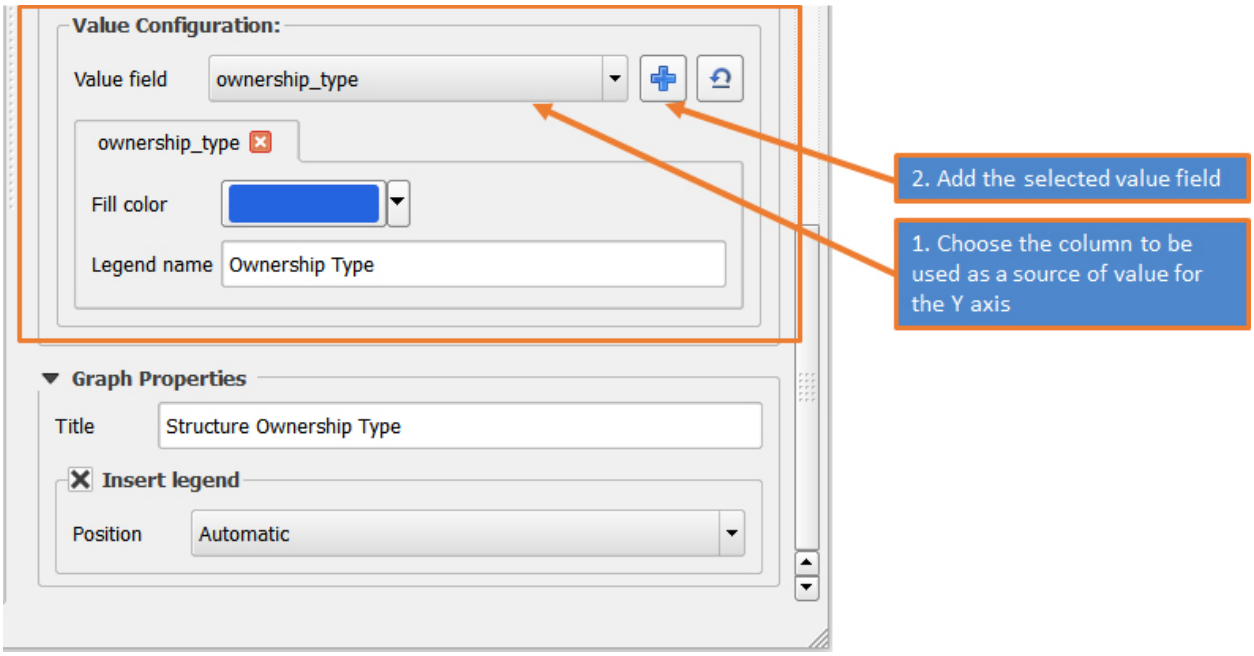


**Value field** refers to the Y-axis value (see in the image above). The selected column in this case is *ownership_type* but you can choose any other column you wish.

**Fill colour** refers to the colour of the bar in the chart. Click on the **blue box** and choose other colours if you would like to change it.

**Legend name** refers to the title of the legend box. Normally, this refers to the Y-axis value/ the Value field.

8. Choose the graph properties by adding title of the chart, and by enabling and setting the position of the legend. See the image below.

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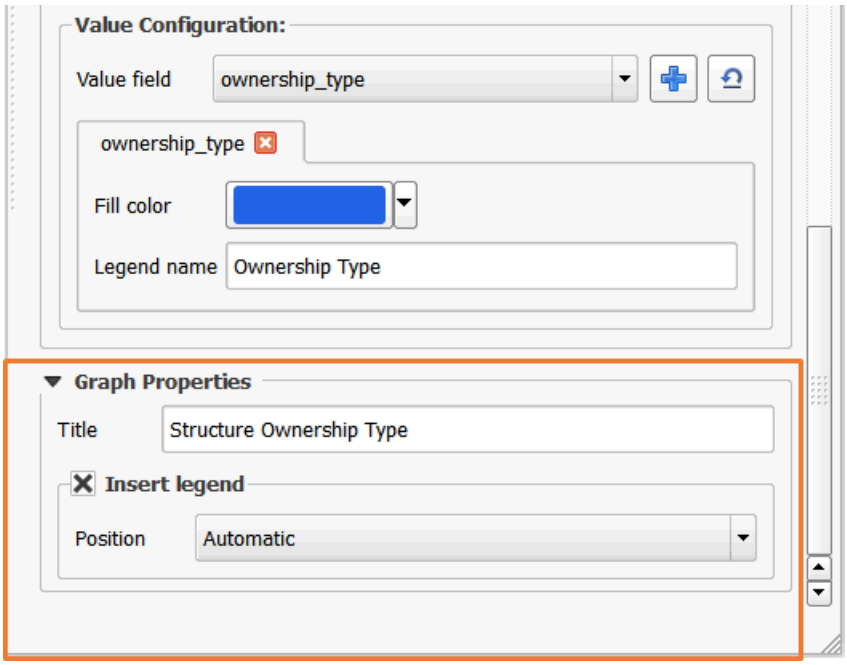



If you do not check **Insert legend checkbox**, the legend will not be shown in the generated document.

The default position of the legend is **Automatic**, which means, it will be placed anywhere in the chart area where there is a space. This is recommended to avoid overlapping of the legend with the chart bars. You can also choose other positions by clicking on the drop down menu.

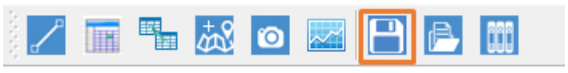
# Managing a Template

After adding different items into the template as discussed in Adding Items into a Template topic, you have to save it so that you can use it to generate a document.

## Saving a Template

To save a file follow the steps below.

1. Click on the **Save** button located in **STDM Document Designer Toolbar**, as highlighted below.



2. A popup appears. Type a file name of the template and press the **OK** button.

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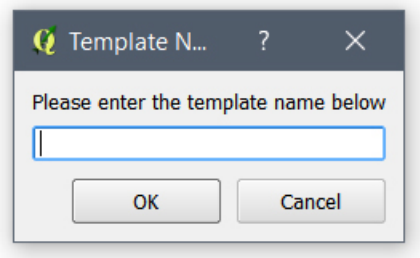
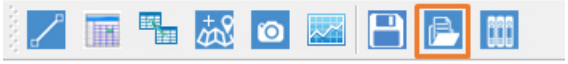



The file is saved in the template folder as specified in the Configuration Wizard or Options.

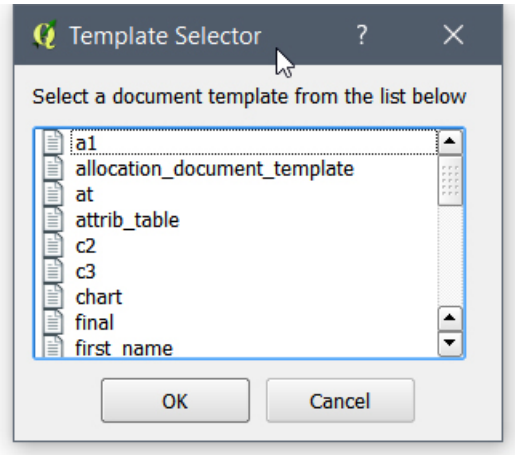
# Opening a Template

To open a template file, follow the steps below.

1. Click on the **Open Document Template** button located in STDM Document Designer Toolbar, as highlighted below.



2. A dialog opens with the list of existing templates (see the image blow). Choose the template you would like to open and click on the **OK** button.




The template loads in a new Document Designer window.

# Editing File Name and Deleting a Template

Editing of template file names and deleting of template is done in the same dialog.

To edit a file name, follow the steps below.

1. Click on the Manage Document Template button located in STDM Document Designer Toolbar, as highlighted below.

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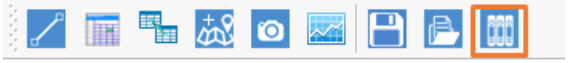
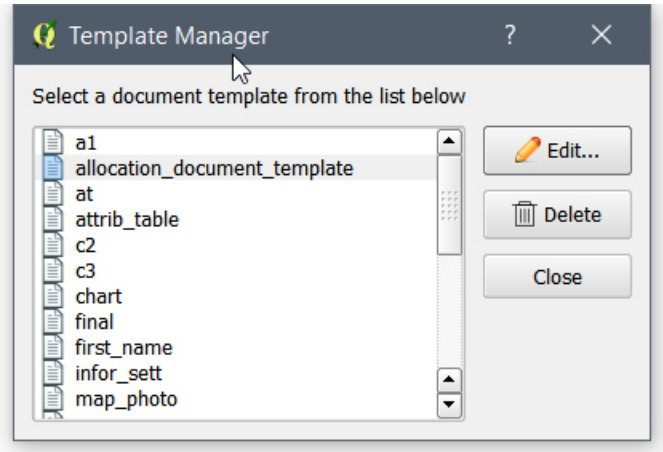
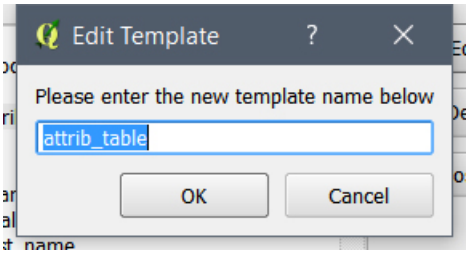


2. **Template Manager** opens up as shown below.




3. Select on one of the templates listed in the white box.

4. If you want to change the file name, click on the **Edit** button. This will load the selected template name in an editable box (see the image below).




Then, modify the name and press the **OK** button to change the file name.

Follow the steps below to delete a template file.

1. Open the Template manager

2. Select a template you want to delete.

3. Click on the **Delete** button on the right side of the Template Manager.

4. A popup appears warning you not to delete the template (see the image below).

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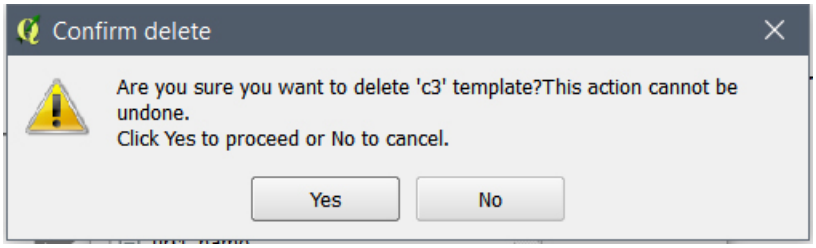


If you still want to delete the file, click on the **Yes** button. If you are not sure, click on the **No** button.

# Learn More about QGIS Print Composer

As already discussed, Document Designer is built on top of QGIS Print Composer. Thus, learning more about QGIS Print Composer will help you understand Document Designer.

Visit the Print Composer documentation page by clicking on the link below.

QGIS User Manual - Print Composer

# Generating Documents Using Templates

Generating a report is an important component in STDM that is pivotal for the dissemination of information on land. This information will be used in various ways for example in the making of informed decisions, good management of resources, security of tenure, etc.

Once you have created a template using Document Designer, you can use Document Generator to generate documents in file formats such PDF and different image formats.

The generation of documents is based on entities and database views that are used as a data source to design the template.

You can generate documents for selected records. This is mainly applicable when you want to generate documents such as certificates of ownership, title deeds, allocation document for a party or a spatial unit. In addition, you can even generate a letter based on a record entry in STDM. For instance, in a local government setting, a letter template can be designed to be used for a confirmation of survey on a parcel that can then be used for approval. For this purpose, you can use the Survey and related entities as a data source in local government profile included in STDM 1.7 installation. The letter could have information that shows a survey date, the applicant, the surveyor and the location with a field for signatures.

You can also generate documents that are used for reporting purposes. The document templates could be designed from a database view created from custom queries that provide aggregate information. Aggregate views are not created in STDM by default as user requirements vary. Currently, only social tenure relation view is created. Using aggregate views, you can create templates that use charts.

To generate a report based on the designed template follow the steps below.

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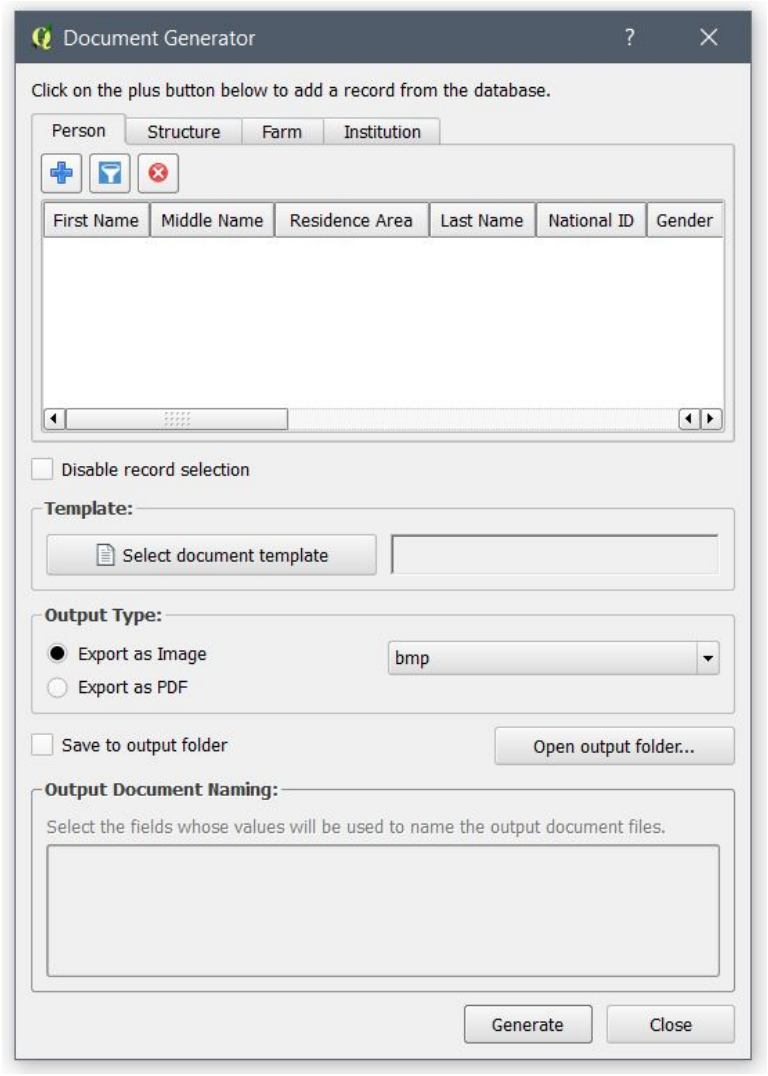
**Important Note:** Do not generate a document using a template that is open in Document Designer. This will block you from adding any more items into the template. To avoid this issue, close and open the Document Designer and open the template.

**1.** On the STDM toolbar, select **Document Generator** button.

The Document Generator module loads as shown below.




The top part of the dialog has tabs that represents all the core entities (see the image below). If you add a new entity in the Configuration Wizard, a new tab will be added automatically.

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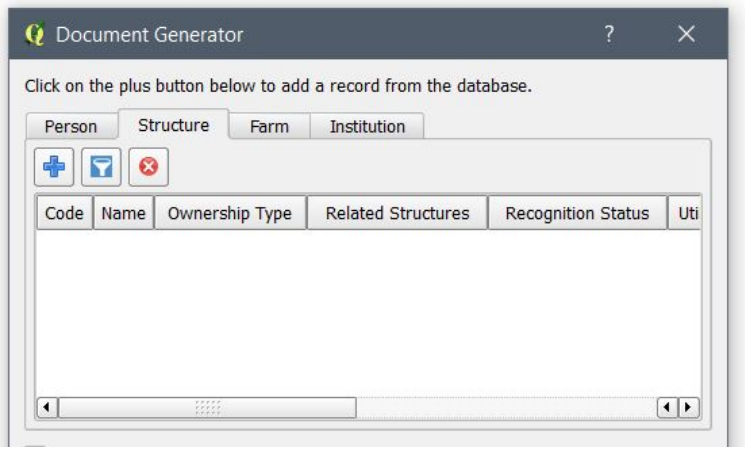


2. If you are generating a document using aggregate data, proceed to step 4.

On the top part of the entity tab, click on the **Add** button ( ) to add a record whose details you wish to appear in the generated document.

The **Entity Browser** appears so that you can select a record of the entity.

3. Select a record using the Entity Browser dialog or the QGIS Expression dialog.

**A. Adding a record using the Entity Browser dialog**

The image below shows how you can select a record using the **Entity Browser**.

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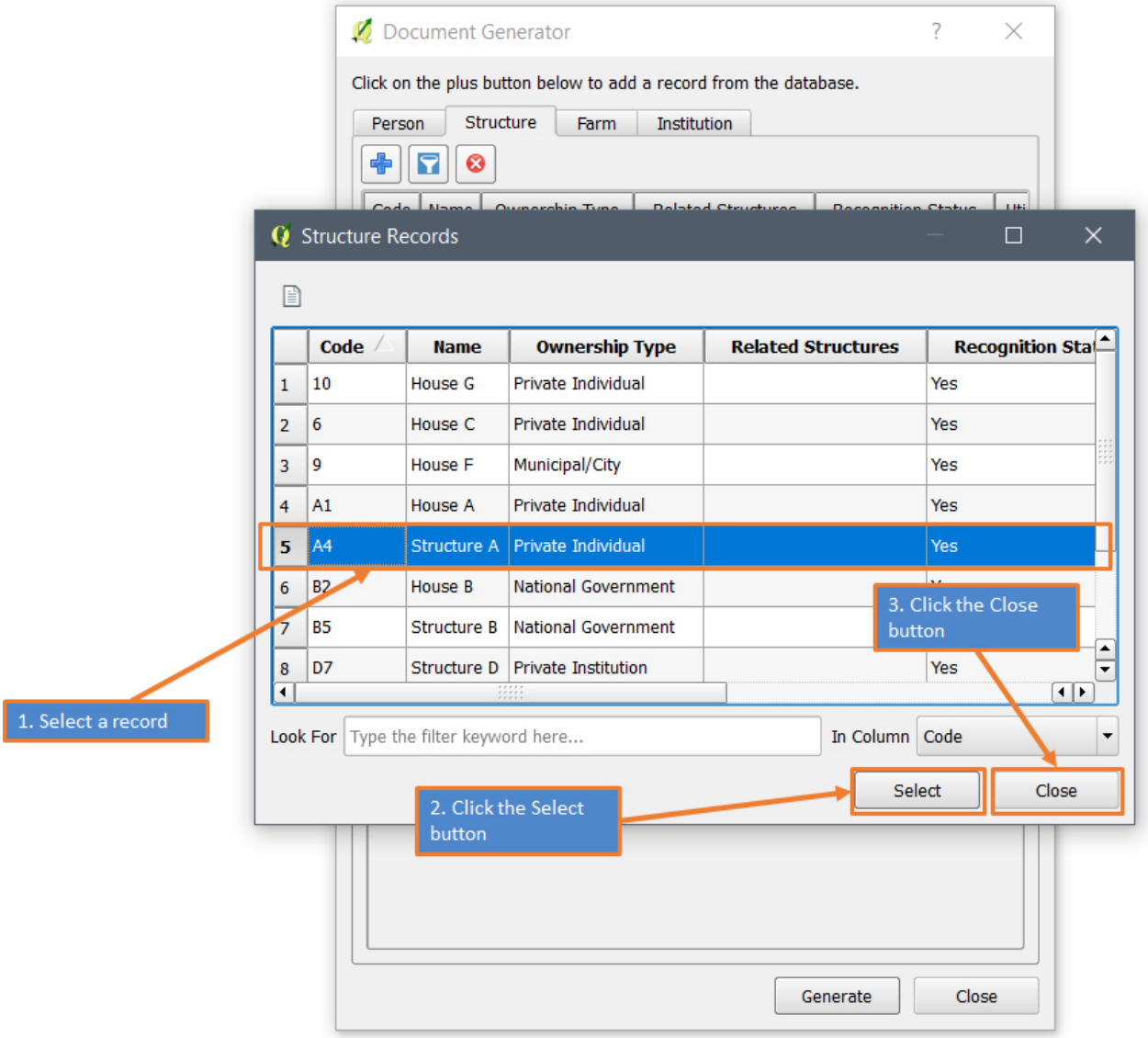


In case you have large records, you can first make a search as discussed in Querying a Record topic.

If you want to add multiple records that are not continuous, follow the sub-steps below.

a. Press the **Control** (Ctrl) key on your keyboard

b. While still pressing the **Control** key, select records you want to add.

If you want to add multiple records between two rows, follow the sub-steps below

a. Select a record that will be the first selection in the range.

b. Press the **Shift** key on your keyboard

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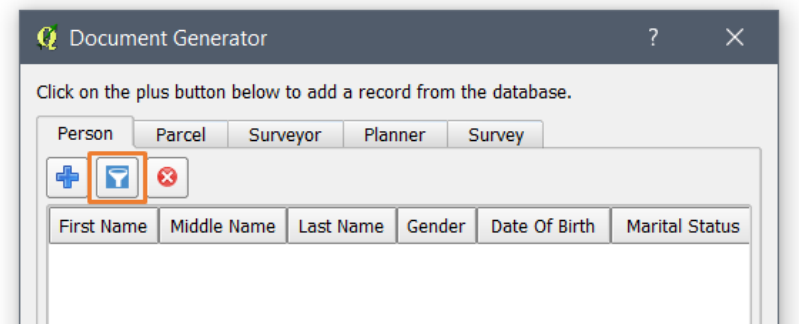
c. While still pressing the **Shift** key, select the last row in the selection range

If you want to remove records that are already added, select it and click on the remove icon ( ).

**B. Adding a record using QGIS Expression** dialog

The sub-steps below show how you can select a record using the **QGIS Expression** dialog.

a. Select the Expression button located inside the **Document Generator** next to the **Add** button as shown below.




The QGIS Expression dialog opens as shown in the image below.

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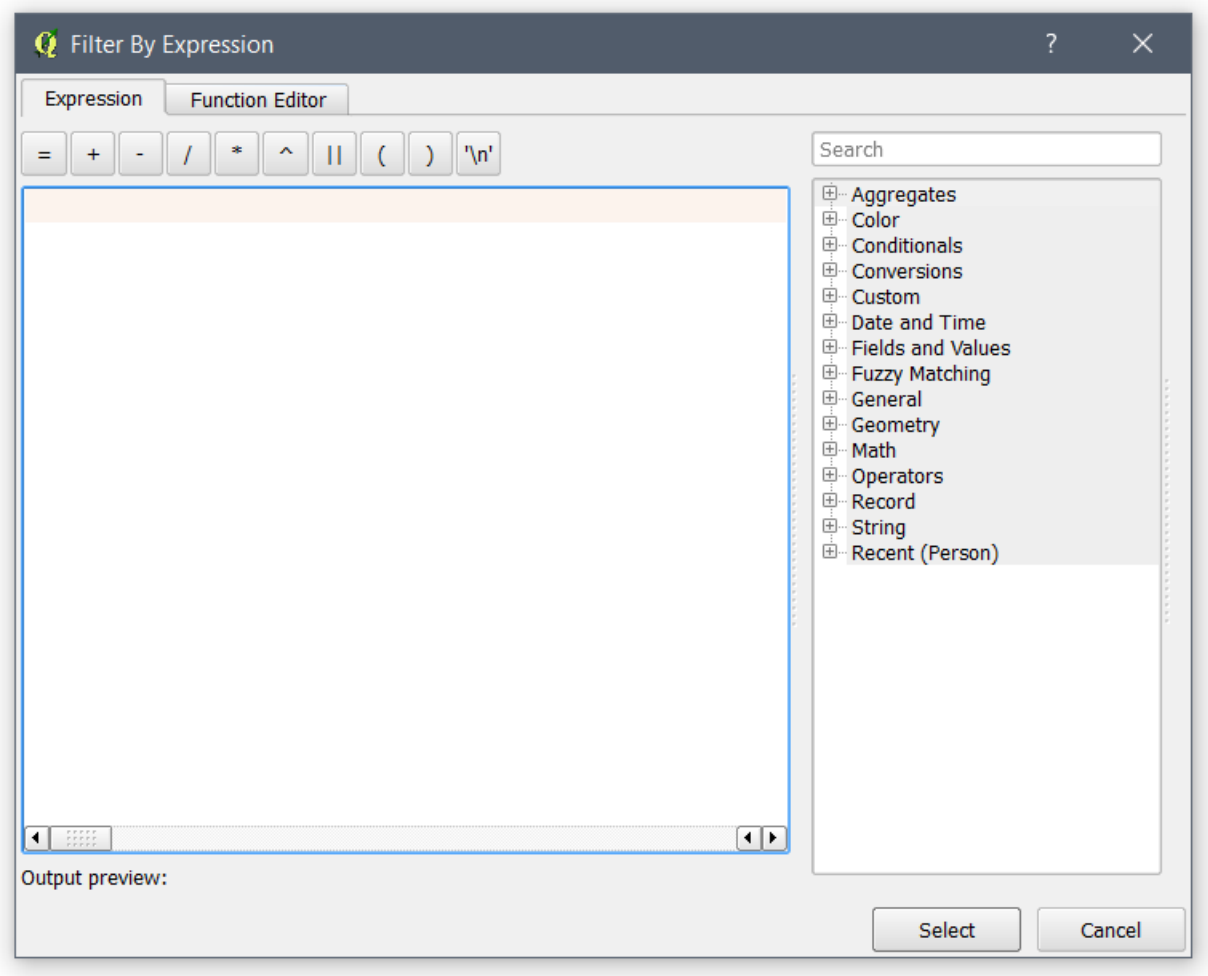


b. On the right side, expand the **Fields and Values** tree item as shown in the image below. You will see all the columns/fields of the selected **Entity**.

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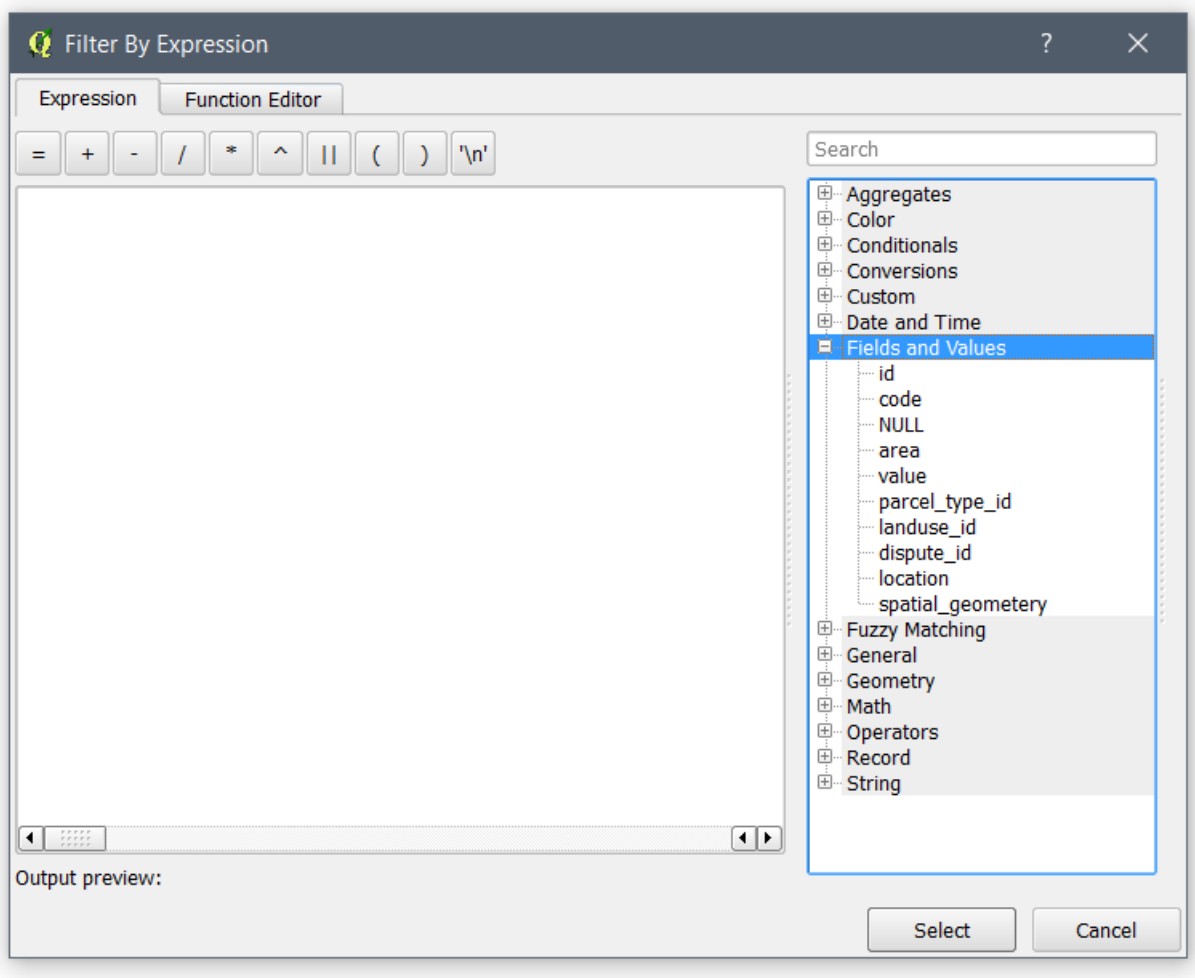


c. Double click on one field/ column you would like to use as a search filter. The field will be added in the white box in the left side as shown below. In this case, "code" is used.

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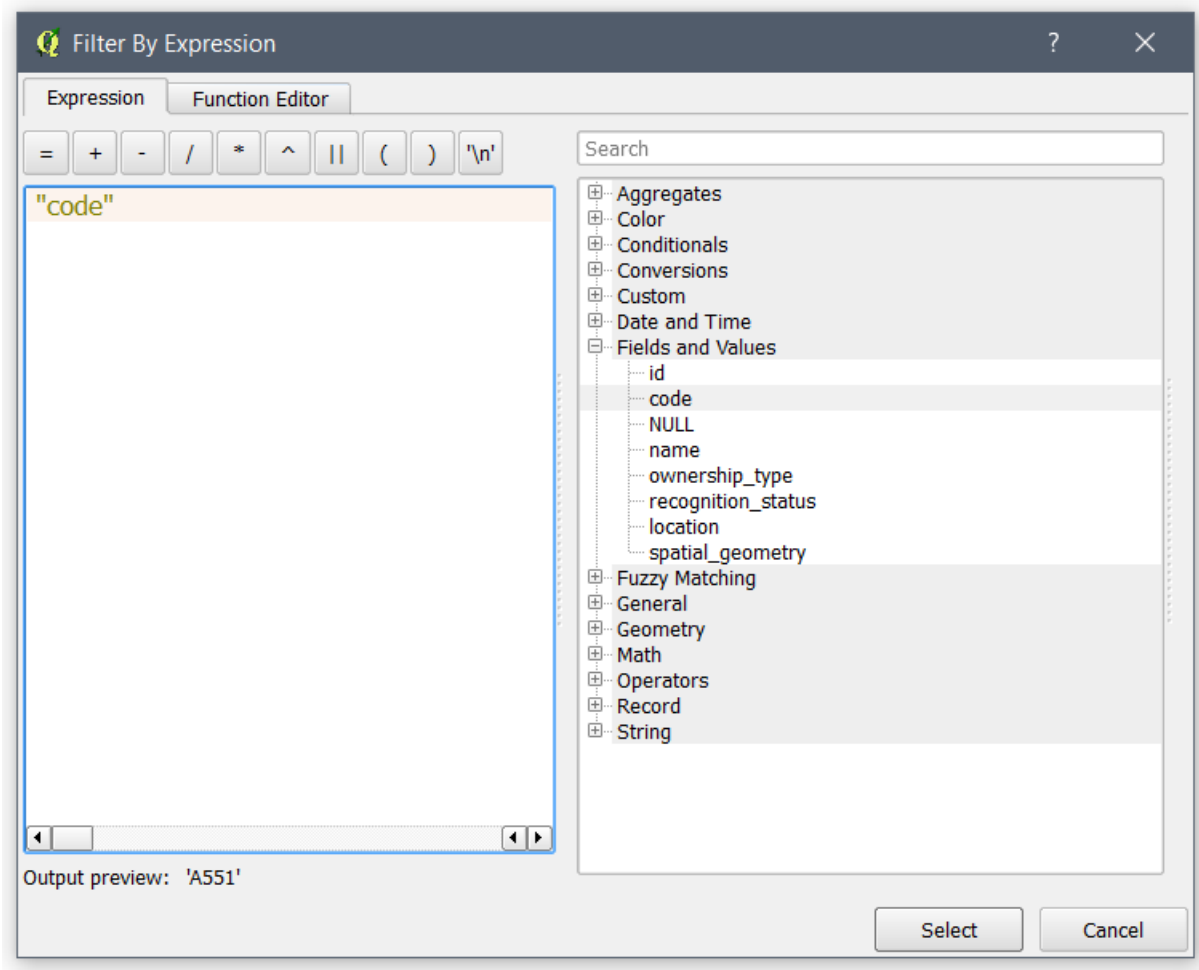


d. Click on the relevant sign you want to use. In this case the equal (=) operator is used as highlighted in the image below.

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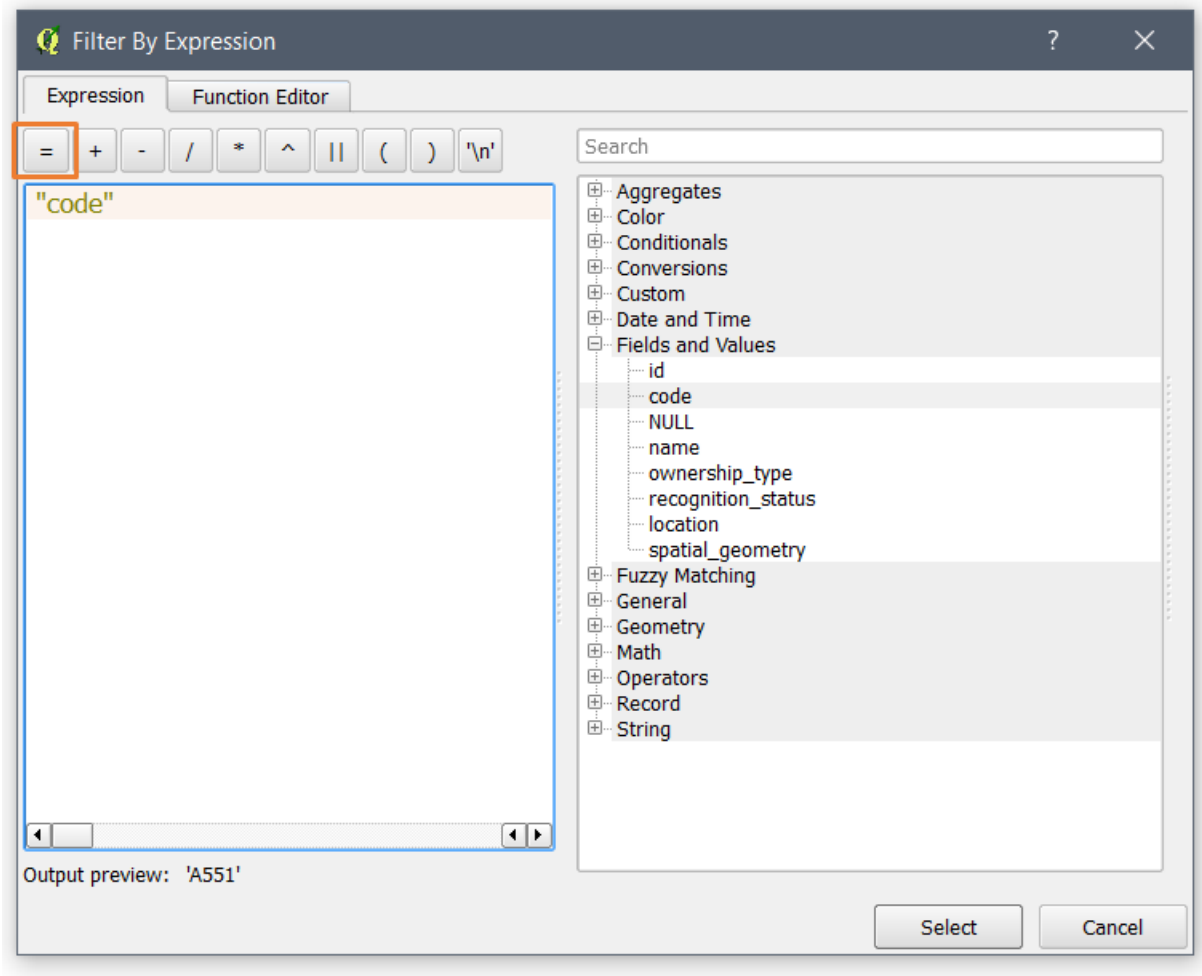


e. When you click on the sign, you will see the sign added as shown in the image below.

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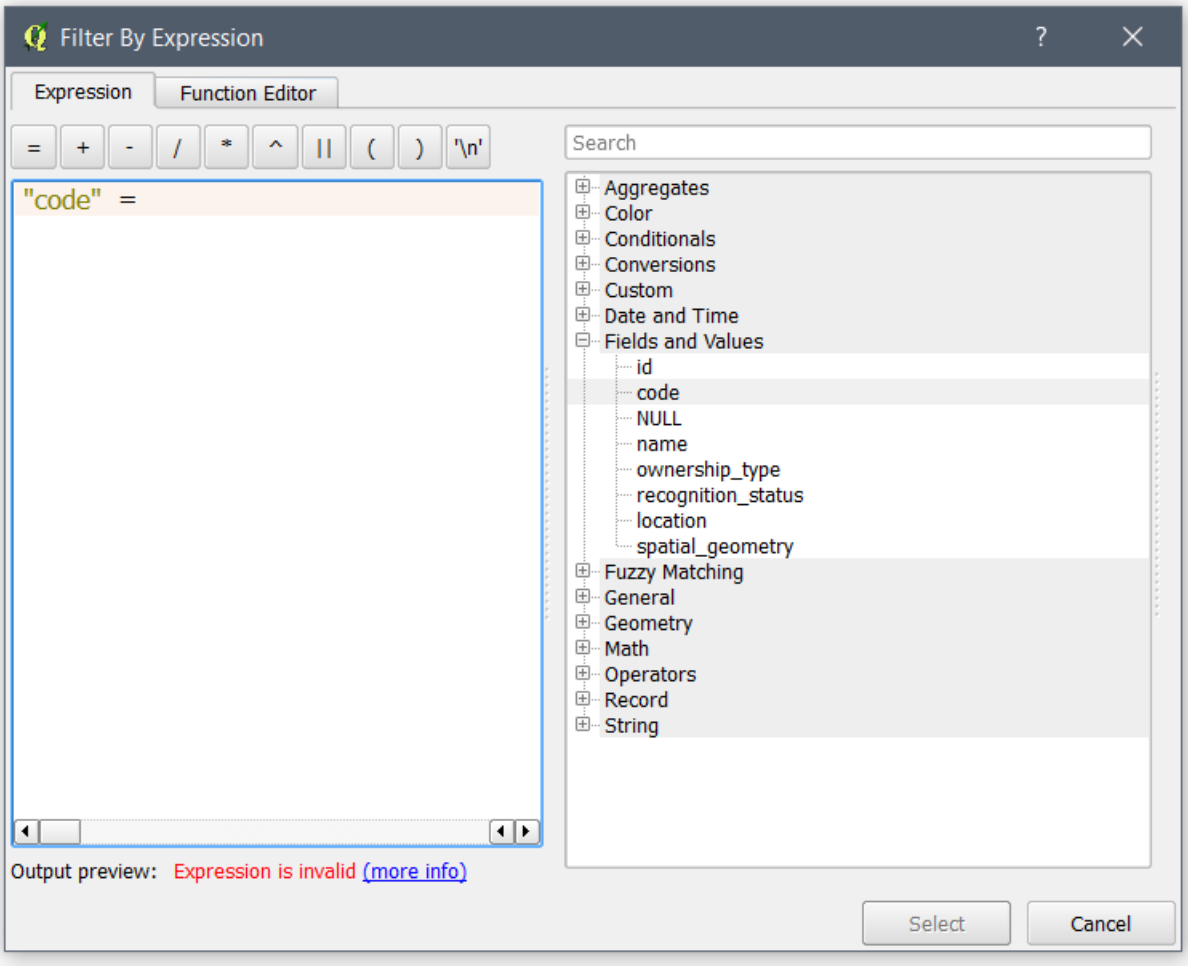


f. Type the value you would like to search as shown in the image below. In this case, it should be a relevant value for the **code** column.

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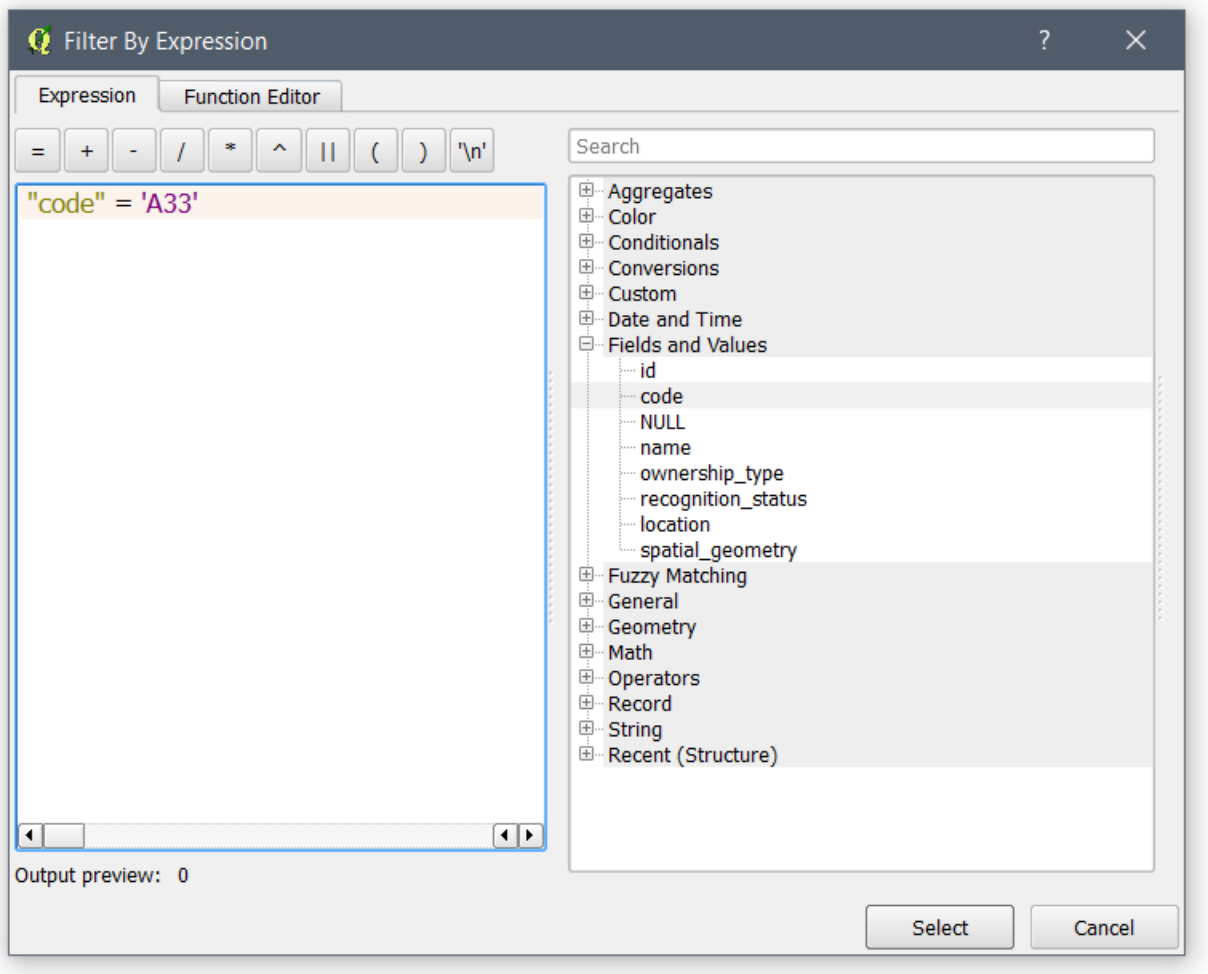
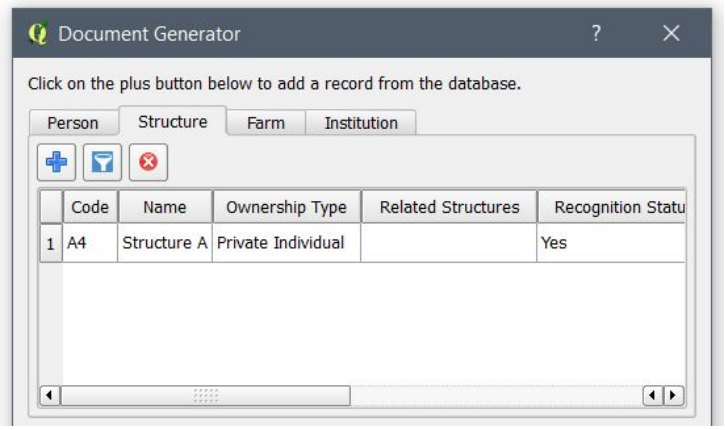



**Note**: textual data should be written in between single quotes, as shown above. Numeric data should be written without quote.

g. Click on the **Select** button to load the record into the Document Generator, **Entity Record Selector** as shown in the image below.

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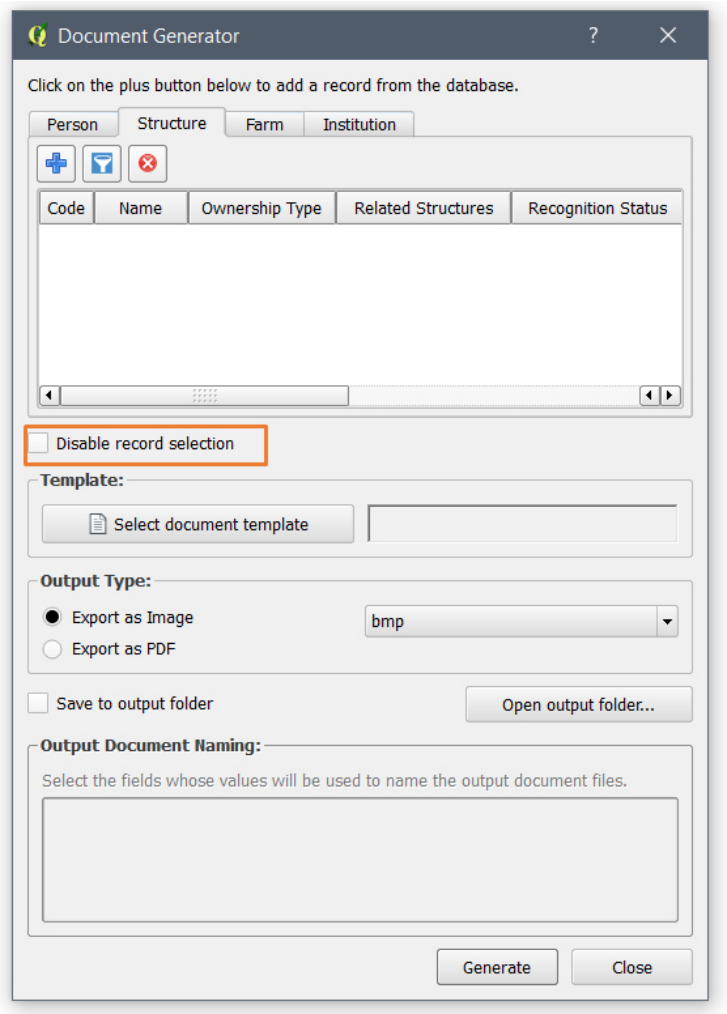
If you want to remove records that are already added, select it and click on the remove icon ( ).

4. If you are using templates that are designed for aggregate data reporting, check on the option **Disable record selection** (highlighted below). This disables the selection of records and the template will fully use all the contents of the data source.




6. Select a **document template** that you want your generated document to be based on.

To select a document template**,** click on **Select document template** button as highlighted below.

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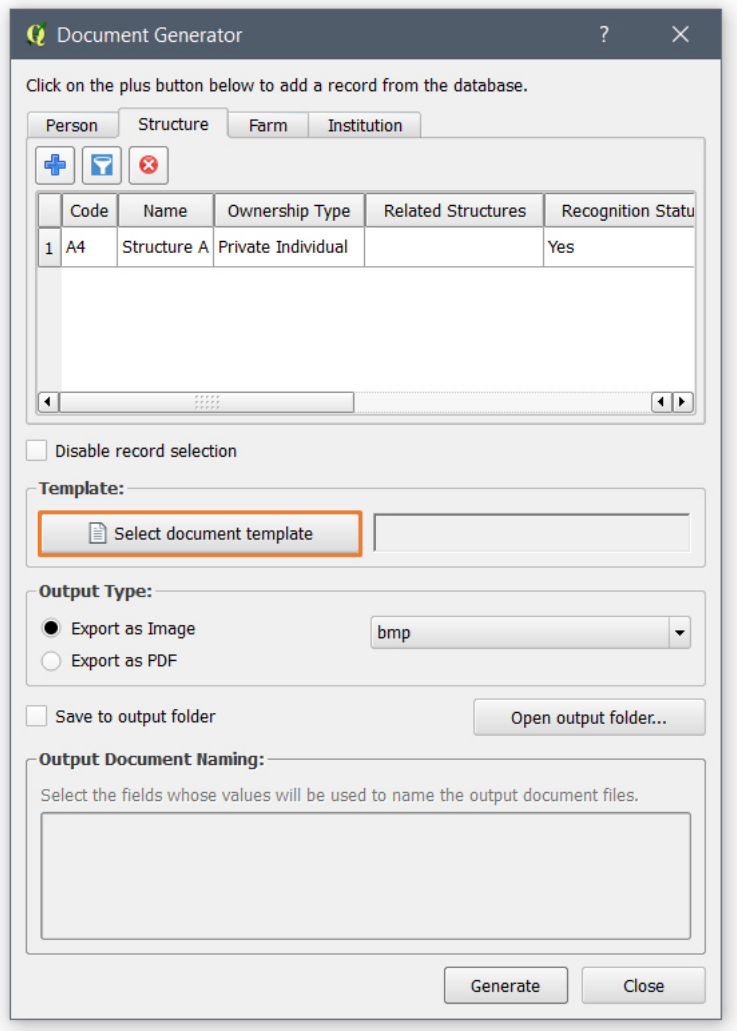
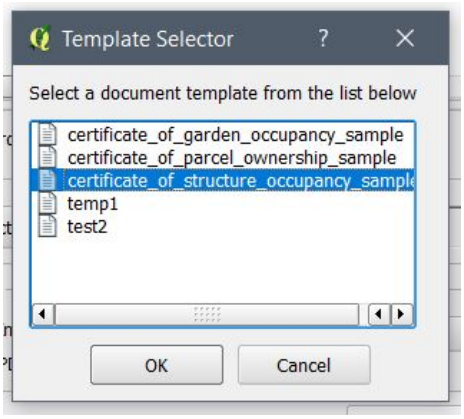



A template selector appears showing all templates designed for the current entity.




Click on the template you want to use and click on the **OK** button.

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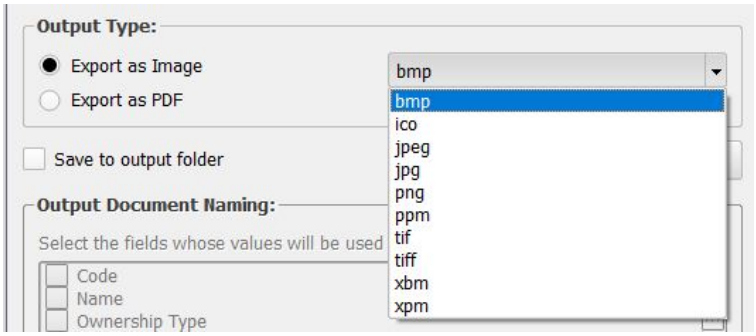
**Note**: Only matching templates to the selected entity load. For instance, a template that used **Person** as a Referenced table in STDM Data Source of document designer will not be visible when you want to generate documents by selecting a **Structure** record.

7. Choose the output format of the generated document. You can choose several **image formats** or a **PDF** format as shown below.

If you have chosen the Export as Image radio button, the image format drop down menu becomes active. You can then select an image format that you want (as shown below).




8. Set the saving location and the file name of the document.

You can save the generated document either in a location that you have chosen or in the output folder as specified in the Configuration Wizard or Options.

**A. Saving in preferred location**

If you wish to save it in a location that you have chosen, make sure Write to output folder options is unchecked.

Click on the **Generate** button.

A Windows Explorer pops up so that you choose the file name and location of the document to be generated (as shown below).

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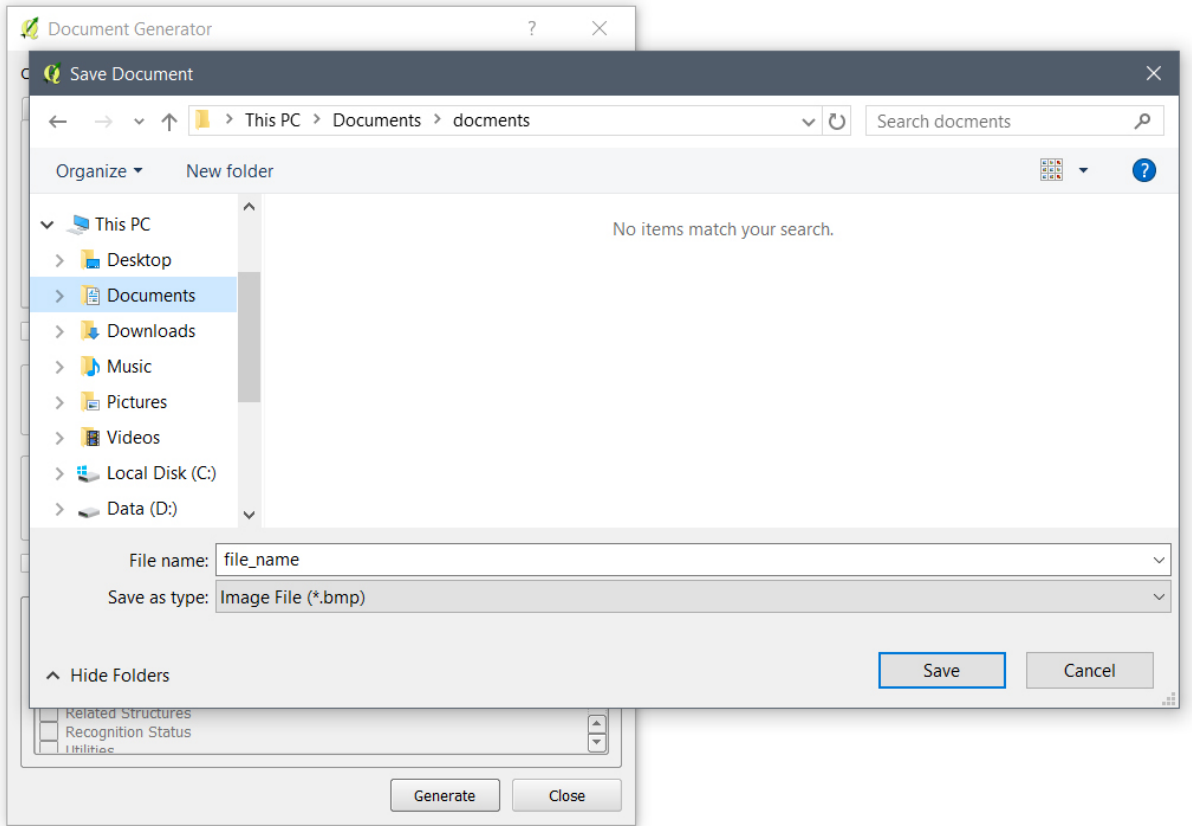
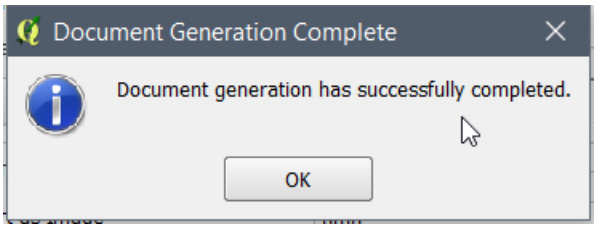



After choosing the folder and file name, click the **Save** button.

If the record selected is found in the table that the template used, you will view a message that shows that the generation was successful as shown below.




Click on the **OK** button.

The document has now been successfully generated. You can browse to the saved location to see the document.

**B. Saving in the Output Folder**

If you want to use the output folder, check on the **Save to output folder** checkbox as shown in the image below.

The box **Output Document Naming** gets active so that you can also choose and sort the values to be used in the document file name.

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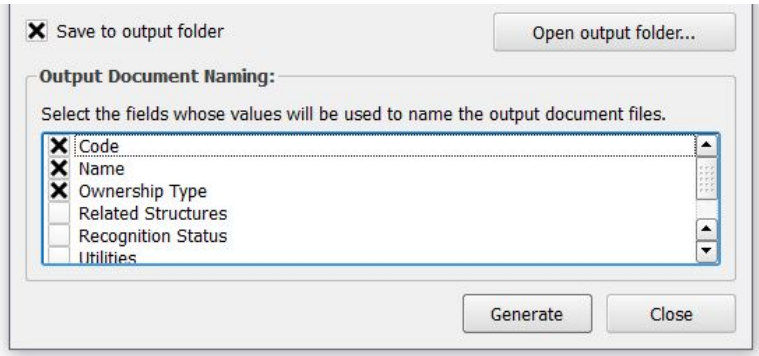
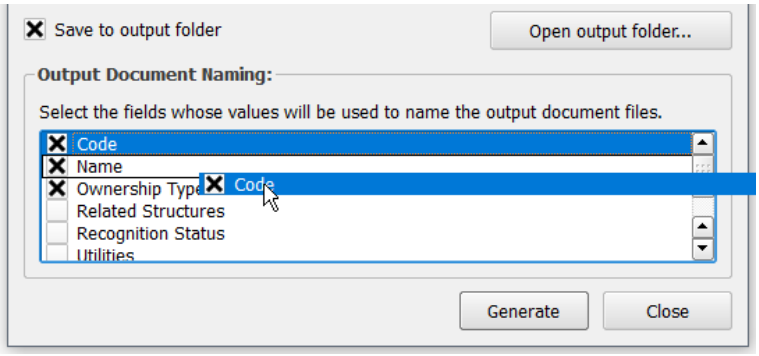
Check on the checkbox in front of the column that you want the file name to draw values from.

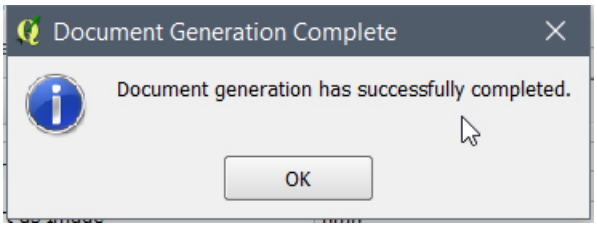



If necessary, sort the order of columns by selecting, dragging and dropping them to the position you want them to be as shown below.




Click on the **Generate** button.

If the record selected is found in the table that the template used, you will see a success message that shows that the generation was successful.




Click on the **OK button**.

The document has been successfully generated. You can browse the output path to see the generated document. If you have not opened the **Output** folder, click on **Open output folder..** button as shown below.

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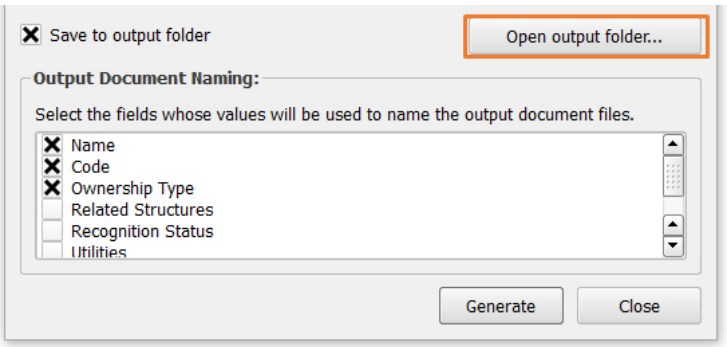


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# Managing Data Import and Export

## Formatting Spreadsheet Data

We can import data contained in a CSV (Comma Separated Value) file format created in Microsoft Excel and similar products. The following sub-topics enable you to format your data so as to easily import it into STDM database without an error.

## Adding a Date into a Cell

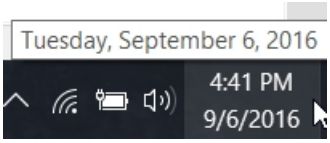
Importing a CSV file with a date data could fail with an incompatible format in the CSV file and the database. Thus, to properly import data, the date format in the CSV file should be the same as the STDM database.

The STDM database uses the same format as your computer date format.

To know your computer date format, follow the steps below.

1. Look at the Taskbar date format.

2. Hover on the date to know which one is the date, month and year (see the image below).




The image above shows the date format is **m/d/yyyy.** In other words, month number, date number, and the year separated by forward slash. The format could differ from computer to computer based on your system language. The above date format is based on US English language.

Accordingly, the date to be entered in the spreadsheet/CSV file should be in the same format.

For instance, if the original data has a format of 23/05/2013, it should be formatted to 5/23/2013 in the CSV file so that STDM can accept it.

**Note:** If you are importing it into a Server, contact the system administrator to identify the correct date format.

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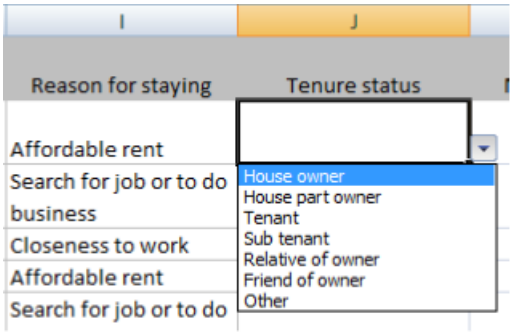
# Creating Lookups in Microsoft Excel



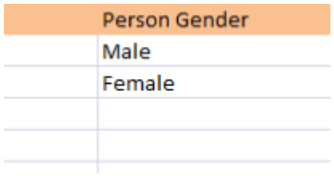

Drop-down list makes data entry easier in Excel and restricts data recording to that in the list.

This eliminates typing errors as well as saving on time. A drop-down list can be in column or row format.

Steps to follow when creating a list in Excel column:

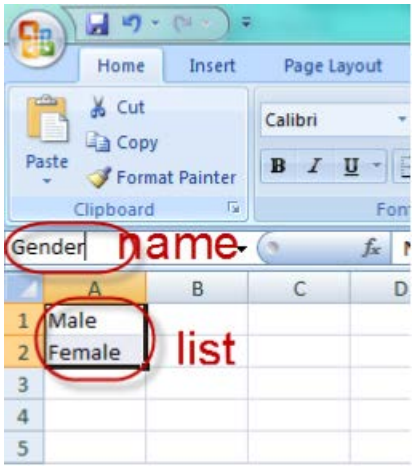
1 Define the entries for the list in the order you want it to appear e.g. [Male, Female}

2 Type the list in the given cells without having a blank cell in-between.




The list may be in the same or different worksheets.

- For a list in a different worksheet, type the **list** on that worksheet and define a **name** for it.

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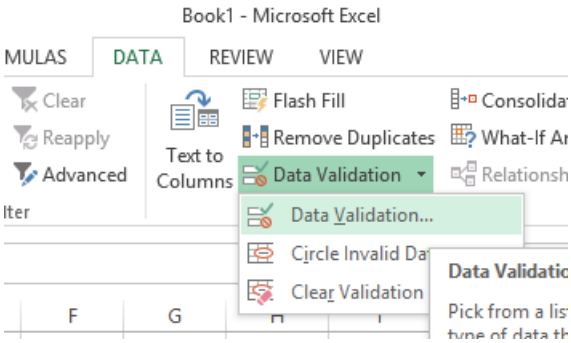
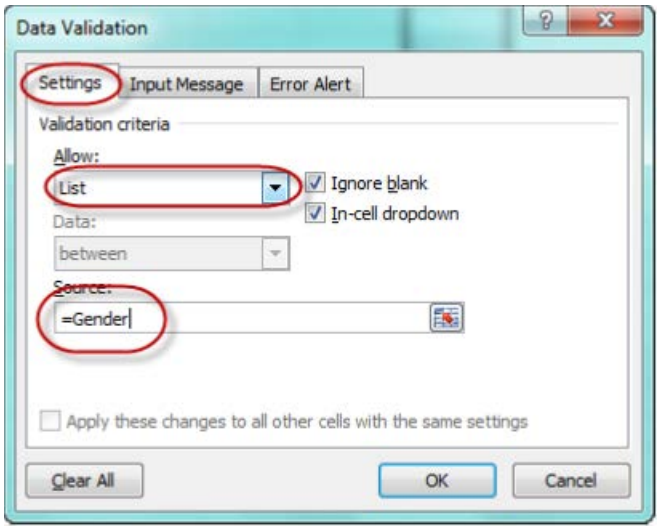
# Adding the List to a Cell

- On the working sheet, select the cell you want.
- On the **Data** menu, click **Data Validation.**




- Click the first tab **Settings** tab in the new dialog window.




In the **Allow** drop-down box select **List.**

Specify the source of the list;

- If the list is in the current worksheet, enter a reference (range) to your list in the S**ource** box
- If the list is in another worksheet, enter the name that you defined for the list in the **Source** box.

In both cases, make sure that the reference or name is preceded by an equal sign (=).

To specify whether the cell can be left blank, select or clear the **Ignore blank** check box

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## Removing Drop-down List

- Select the cell within the list
- Click the **Data** menu and then click **Data Validation**.
- In the **Data validation** dialog box that pops up and click the **Setting** tab and then click **Clear All** button at the bottom of the dialog.

For more information, go to:

- http://www.spreadsheets.about.com/od/excelformatting/How_to_Use_Excel_Formatting_Features_Format_Excel_Spreadsheets.htm

## Capitalizing Cell Text

The example uses random cells numbers.

To extract and capitalize the first name from the name collection, use the following function:
**=IFERROR (PROPER (LEFT (A2, (FIND (" ", TRIM (A2))-1))),"")**
To extract and capitalize the last name from the name collection, use the following function:
**=IFERROR (PROPER (RIGHT (A2, (LEN (TRIM (A2))-FIND (" ", TRIM (A2))))),"")**
To extract and capitalize sex information if defined as MALE, FEMALE, M or F in the Sex collection, uses the following function:
**=IF(D2="MALE",PROPER(D2),IF(D2="M","Male",IF(D2="F","Female",IF(D2="FEMALE",PROPER(D2)))))**

To check if an integer cell is defined or set as a blank text if specified as zero:

**=IF (F2>0, F2,"")**

To set an option cell as a blank text it's specified as NA:

**=IF (W2="NA","", PROPER (W2))**

**For more help, visit**

https://support.office.com/en-us/excel

# Importing Attribute Data

Attribute data here refers to the non-spatial data imported into the STDM database. Attribute data for instance may refer to Party Records. The process of data import is similar for all modules.

Before importing, make sure that you are logged in, QGIS is running and STDM tool bar is active.

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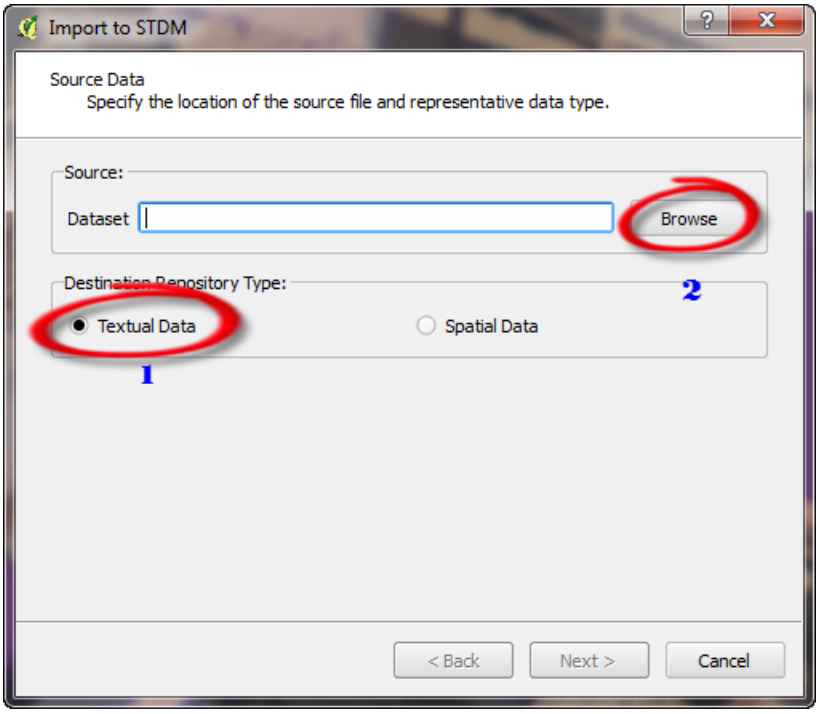
**1.** Click on the **Import Data button** on the STDM tool bar as shown below.




2. Browse to the location of file (excel file) in the directory.

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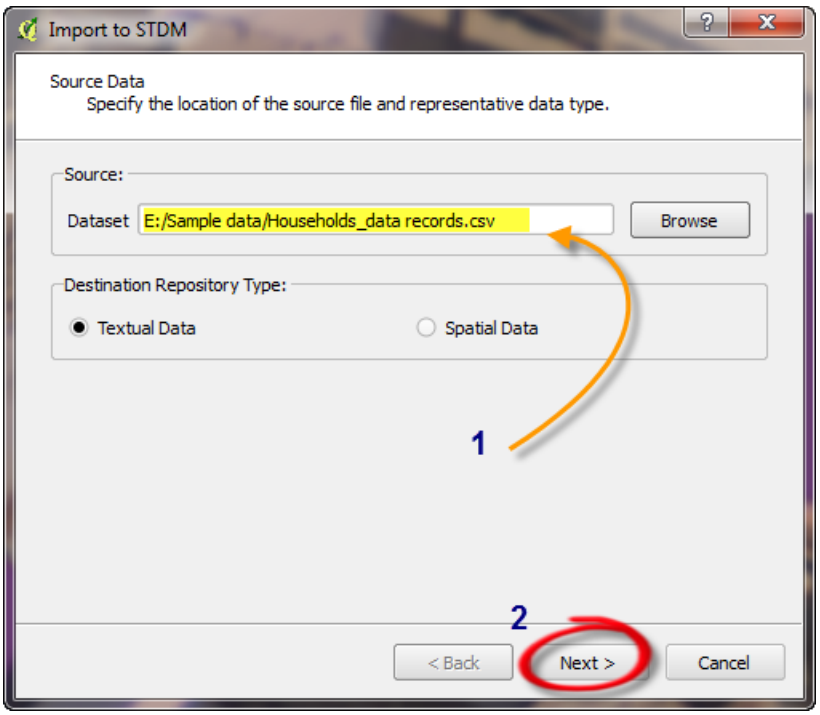
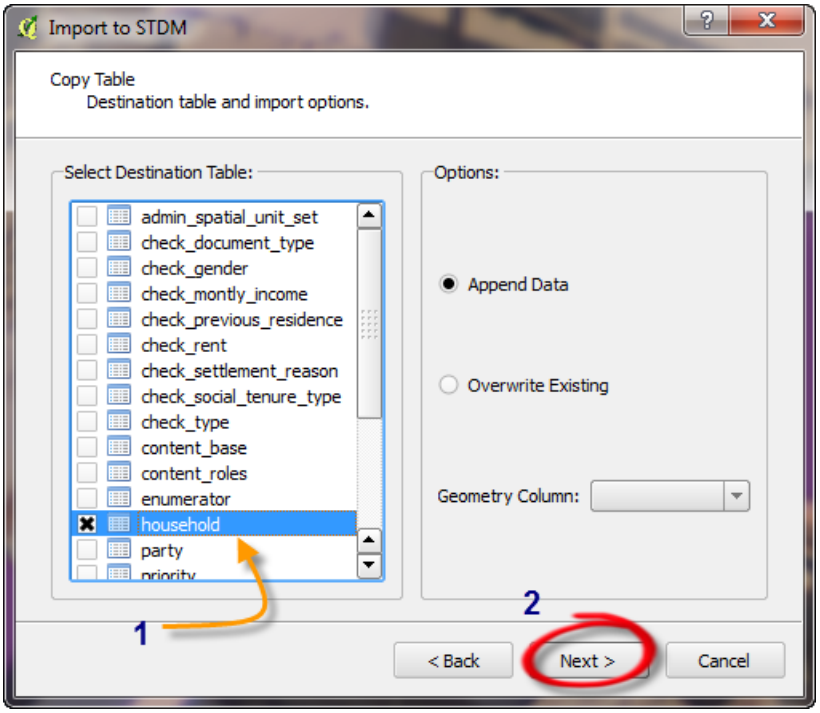



3.Click **Next** and then select the destination table.




5. Perform source column to destination column matching for the required field.

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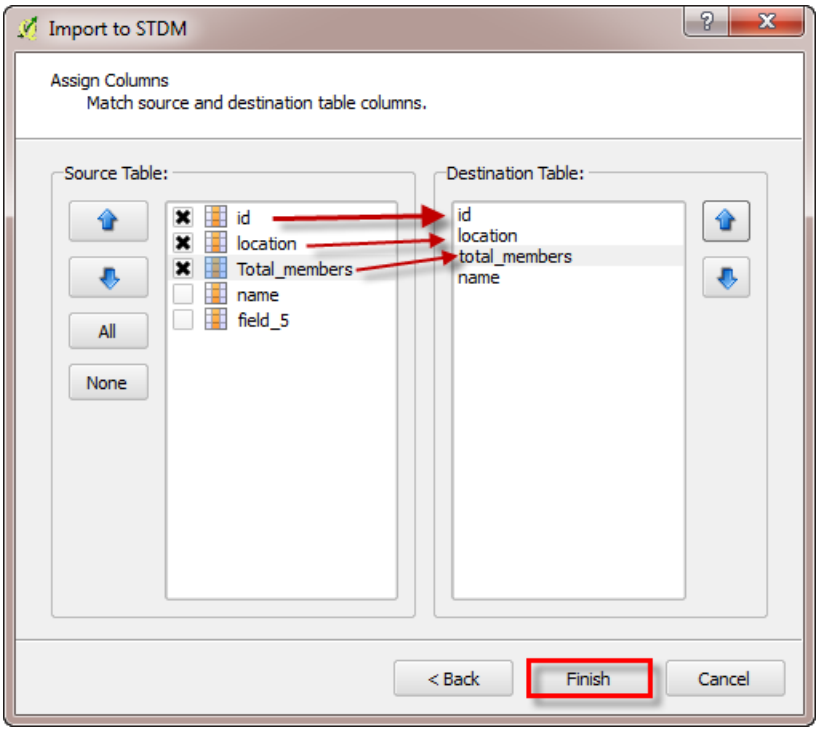
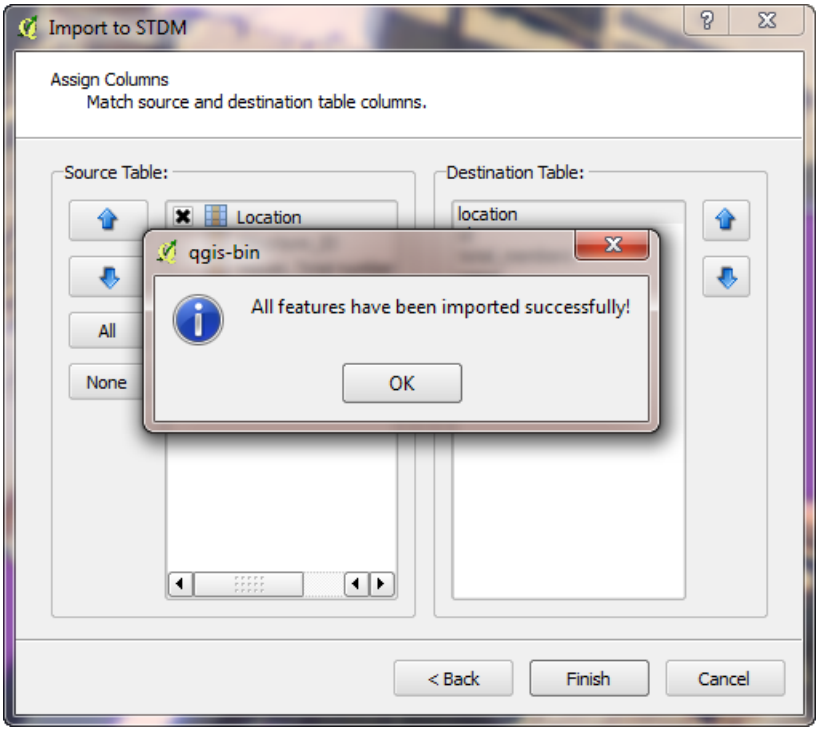


These are navigation arrows that allows you to match the columns in the two panels

6. Click **Finish** to import the data.

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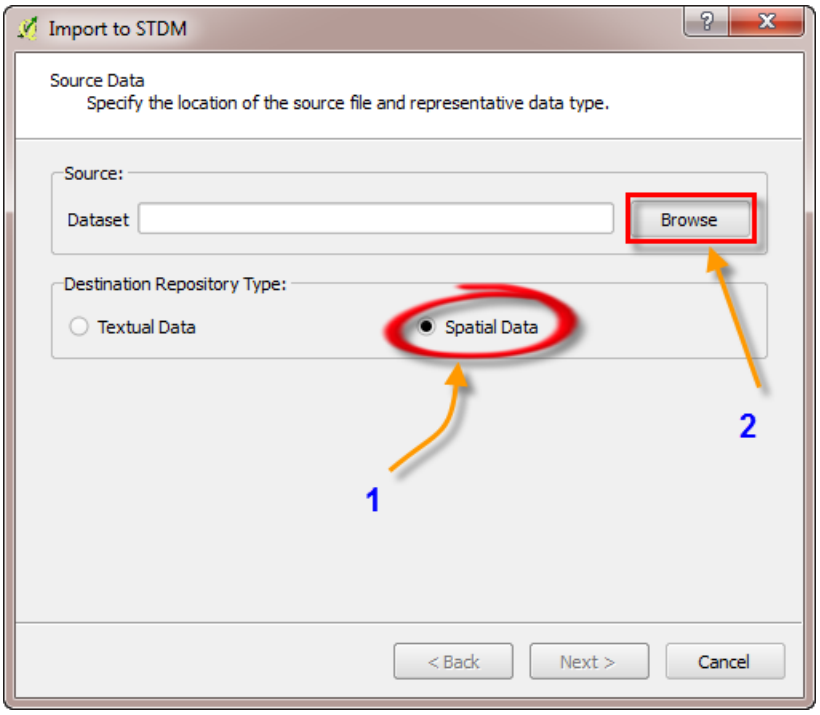
# Importing Spatial Data

Spatial Units can be imported into the STDM database from a shapefile, autoCAD or comma separated values.

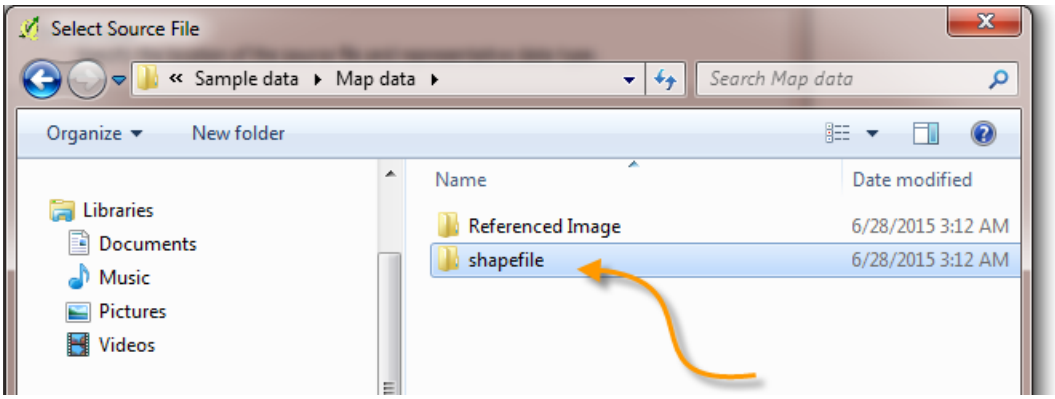
1. To import, click on the **Import Data** button ( ) located in STDM toolbar. A dialog box appears allowing you to browse to the source folder of the data to be imported.

2. Check the **Spatial data** circle to enable/activate it.

3. Browse to the folder where the shape files (spatial data) is stored.




**4.** Go to the **Sample data** folder⇒**Map Data**⇒and select **shapefiles** and open the shape files

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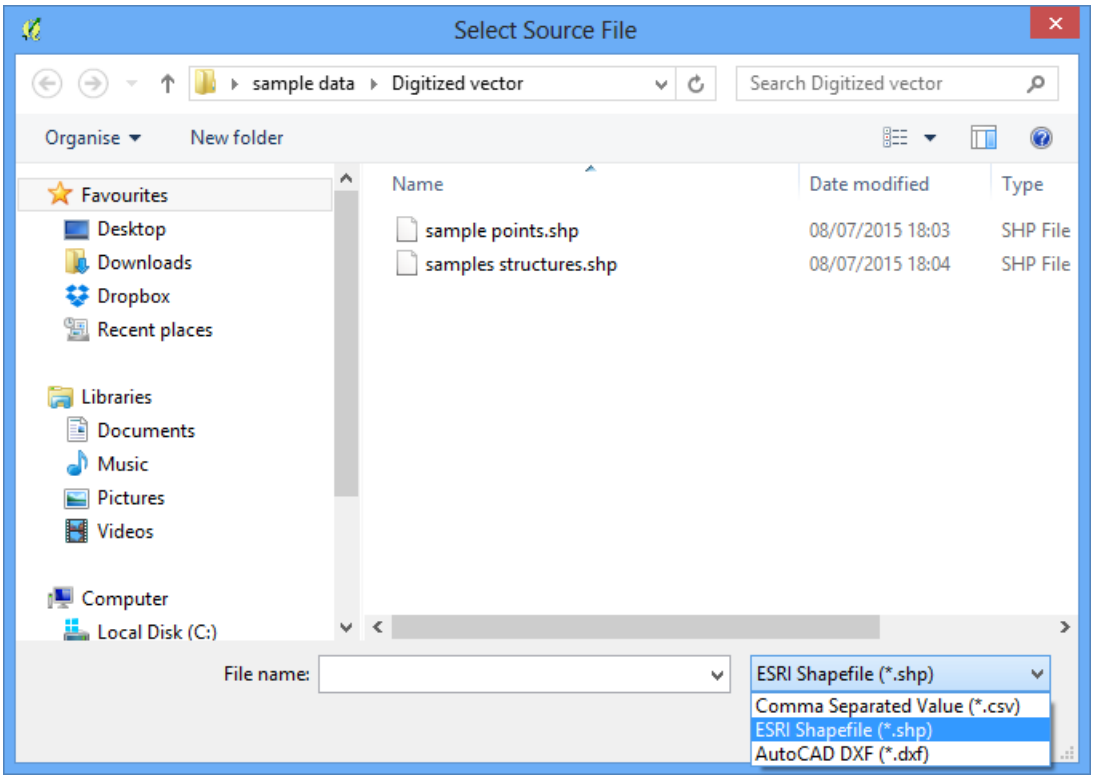
If nothing is displaying on the opened folder, make sure that the file format is in **ESRI Shapefile (*.shp)** as shown below.




**5**. Select the file and Click **Open.**

6. Click **Next** to continue.

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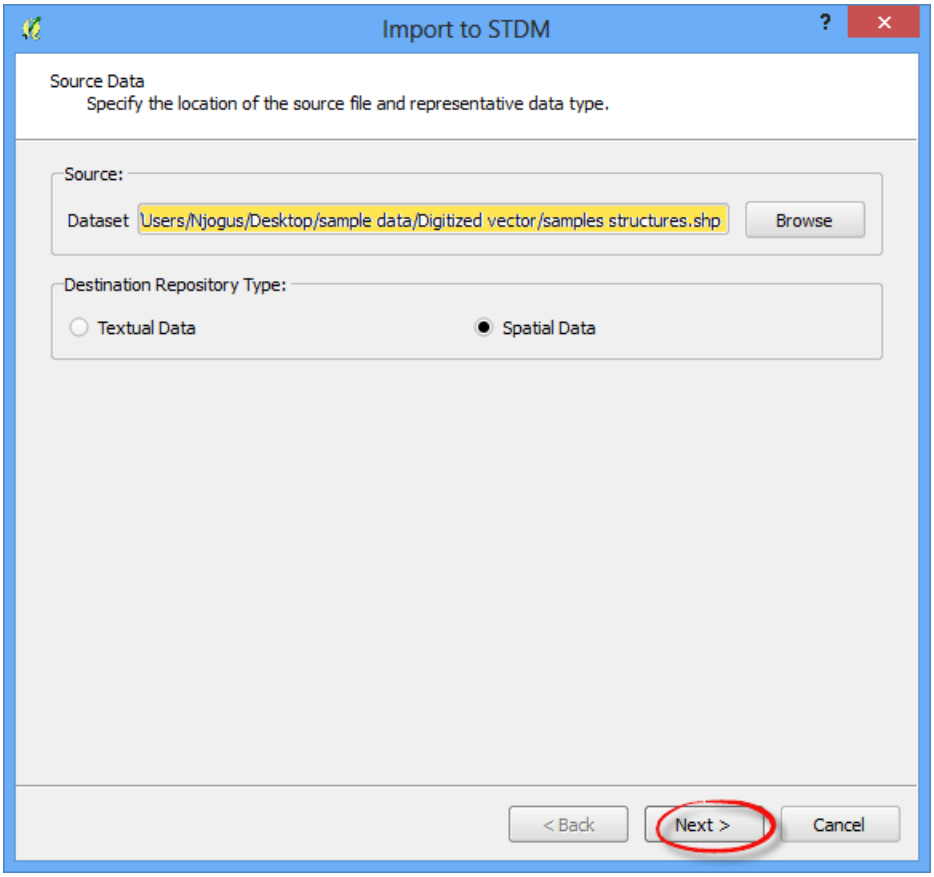


A dialog box appears allowing you to specify the **destination table** and the **Geometry** of the data being imported.

**7.** Select the destination table of the data by checking/enabling the **Spatial_unit.**

**8.** In the Geometry Column, a drop down list allows you to choose the data type of your data. Select **Polygon**

**9.** Click **Next** to continue

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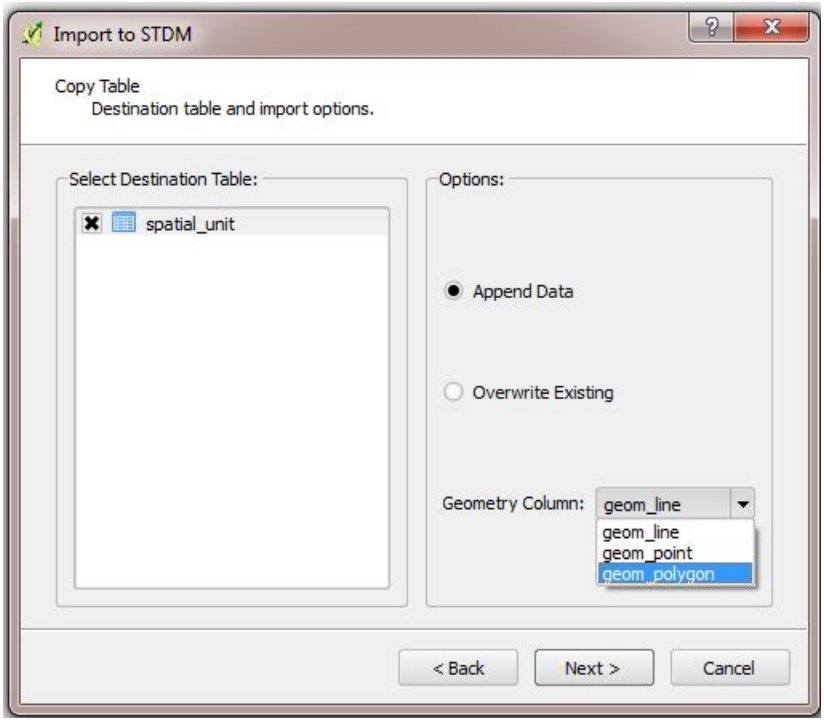
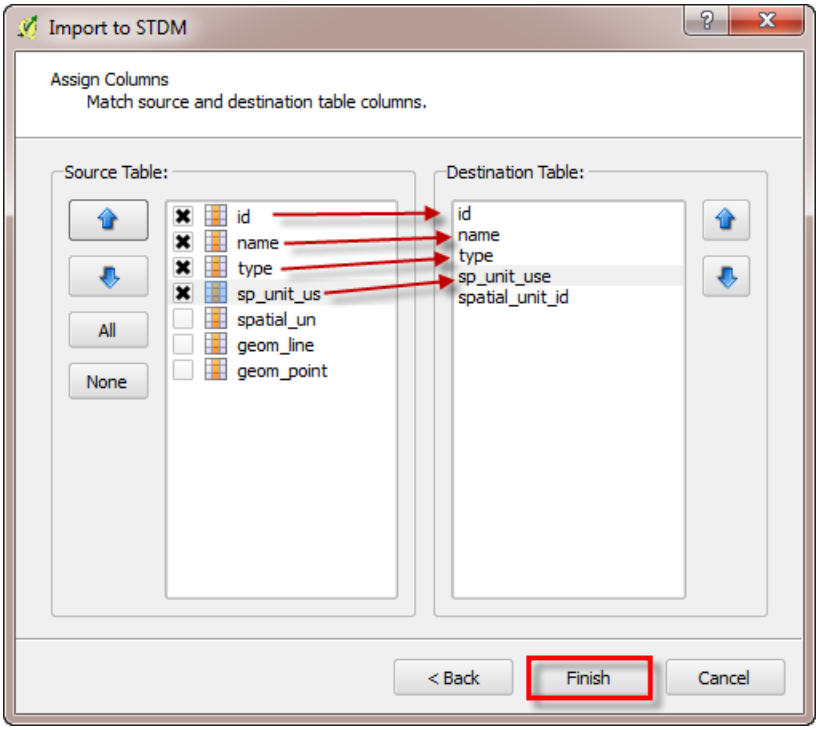



A dialog box appears allowing you to match source and destination table column. Use the "UP" and "DOWN" buttons to match the columns.

10. Click on the **Finish** button.




The spatial units have now been imported into the STDM database.

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A notification will pop up showing you that the data has been imported successfully.

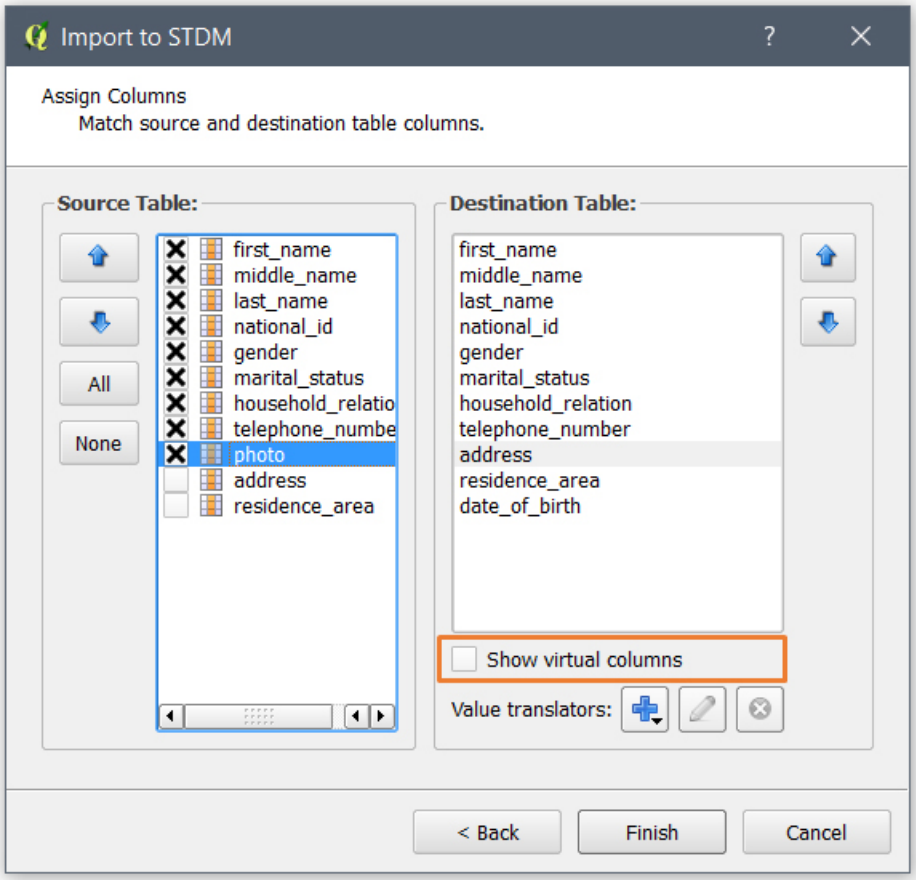
# Importing Supporting Documents

While importing spatial and attribute data, we can also import supporting documents added for each record. To import the supporting documents, on the csv file, you need to add the path or the file name of the files to be imported for each records in the csv file, as shown in the image below.

| F | G | H | I | J | K |
|---|---|---|---|---|---|
| marital_st | household | residence_ | telephone_numbe | address | photo |
| 1 | 1 | 0 | 711516003 | | 1.png |
| 1 | 1 | 0 | 711016005 | | 2.png |
| 1 | 1 | 0 | 721516607 | | 3.png |
| 2 | 0 | 0 | 710516044 | | 4.png |
| 3 | 0 | 0 | 714416007 | | 6.png |

Once you have saved your csv file. Follow the steps of importing attribute data as shown in Importing Attribute Data topic up to step 5. Then, follow the steps below.

1. Select on **Show virtual tables** checkbox as shown below.

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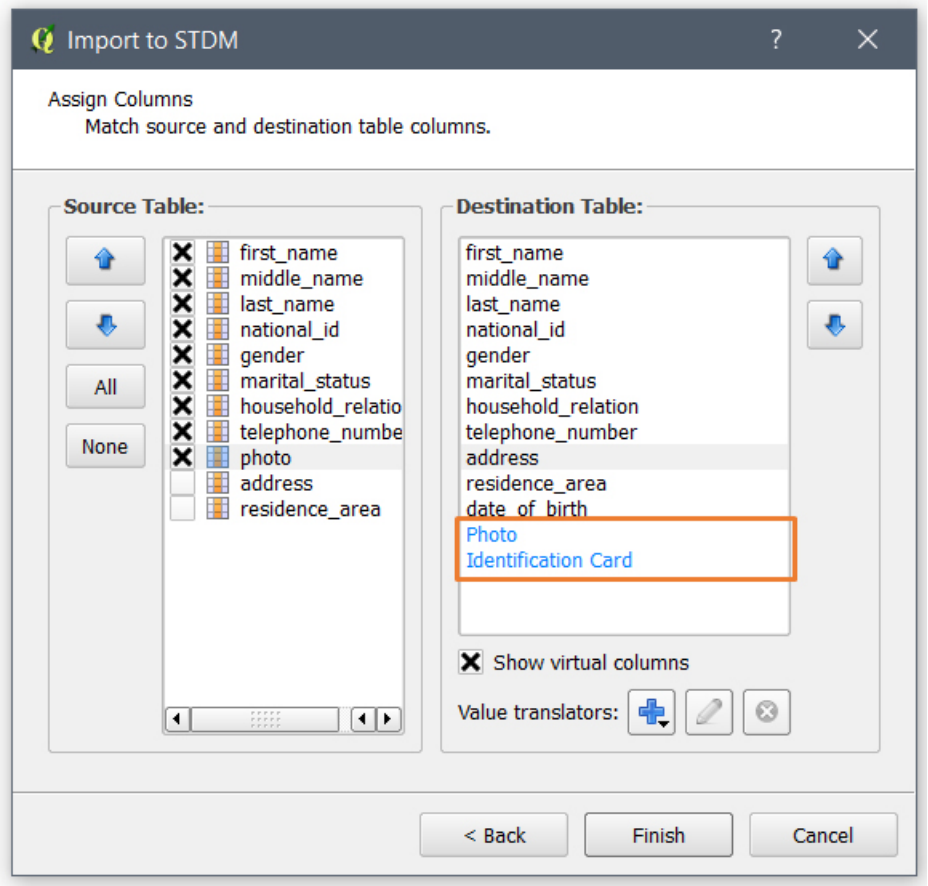
2. When **Show virtual columns** is checked, the selected entity's supporting document types loads as shown below.




3. Align the supporting document type in which you want to insert a supporting document. In our case it is **Photo document type**. Move **Photo** up to be in-line with photo of the source table (see the image below). In addition, align other columns of the source and destination table.

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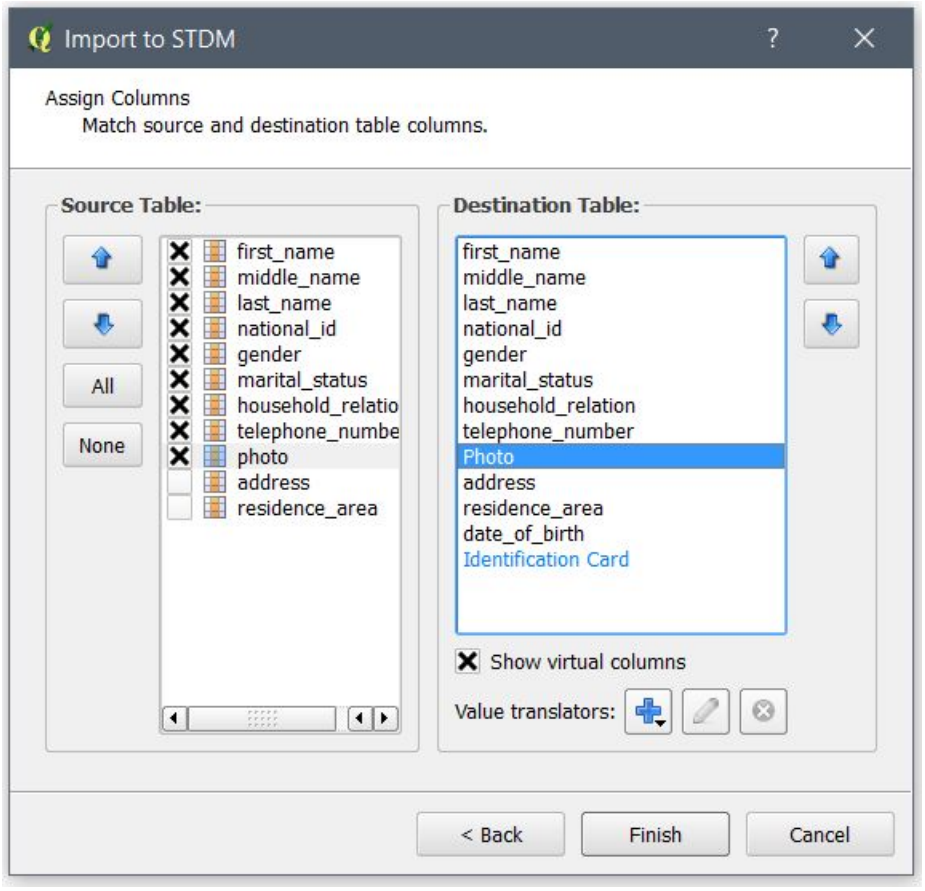


4. Click on the **Add** ( ) button located below **Show virtual columns** checkbox to see the **Supporting documents** menu as shown below.

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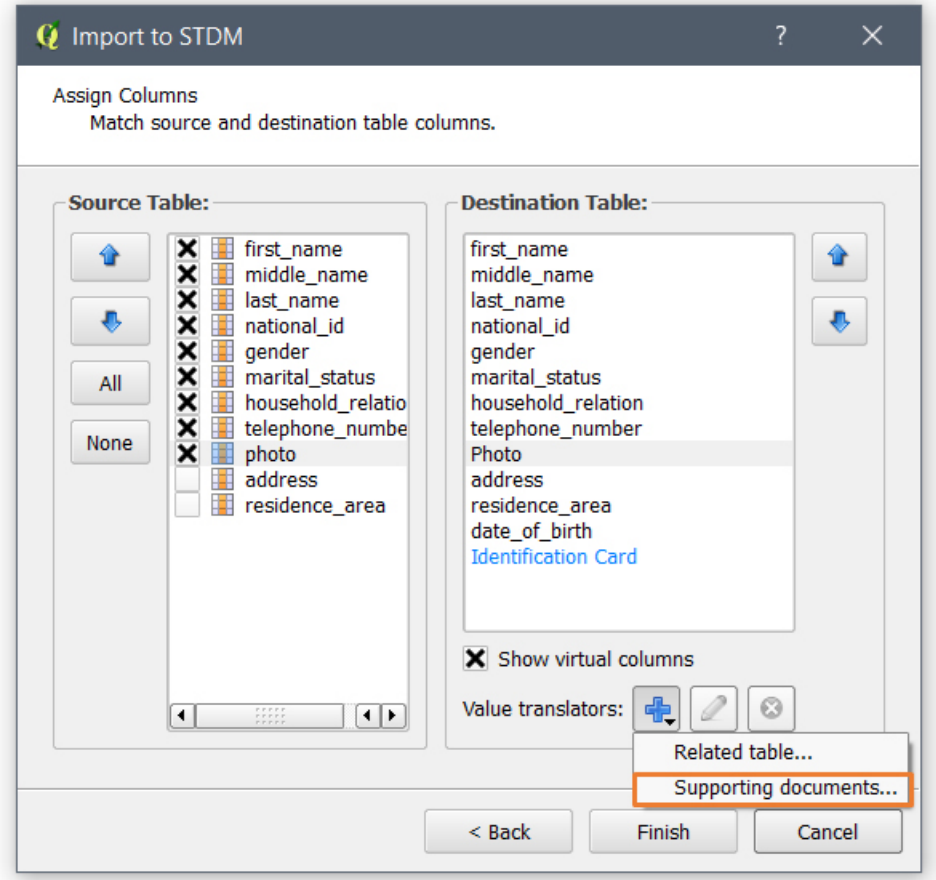
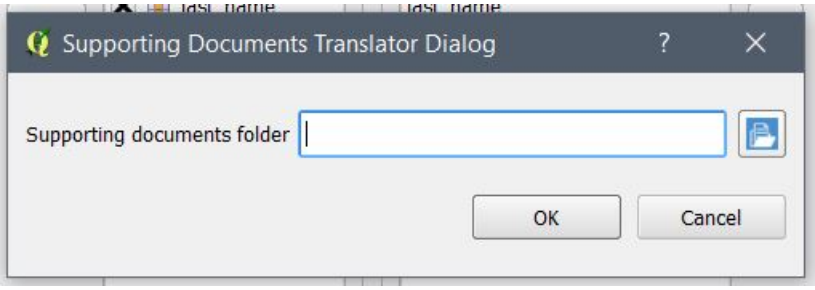



5. Choose the **Supporting documents** menu to open a popup for choosing the file path of the supporting documents to be imported.




6. Click on **the folder** icon next to the white box to browse for the folder and when you reach where you would like to import the data, click on the **Select** button. Once selected, you will see the path added as shown below.

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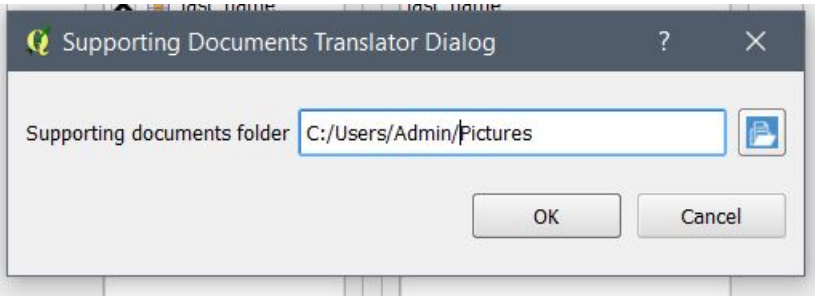


Click on the **OK** button to save the path.

7. Click on the **Finish** button. A success message is shown if you have specified the folder of the documents and if you have properly aligned the other columns.

# Importing Data to Related Table Columns

You can import data to a related entity column in the destination table using the **Related Table Translation** module.

In order to implement this translator, the source table must contain at least one column that refers to a unique value in a related table such as a household code that a person belongs to. During the translation process, the system will attempt to lookup this value and extract a corresponding value ideally, the value of the foreign key column and use this value in the primary reference table.

**Example:** Say we have a person CSV file that we would like to import to the person table in the STDM database; the source data contains a household code column that refers to the household in which the person belongs to. Through the related table translator, we are able to link each person's row to the corresponding household that he/she belongs to using the household code.

**Illustration:**

| Surname | Other Names | Household Code |
|---|---|---|
| Gitau | John | TY67OP |
| Gachoka | Agnes | NJ89A |
| Adhiambo | Laureen | TY67OP |
| Kimani | Anthony | NJ89A |

Table 1: Person data in CSV format

**To import this data:**

1. Click on the import icon to load the import data window as shown below.

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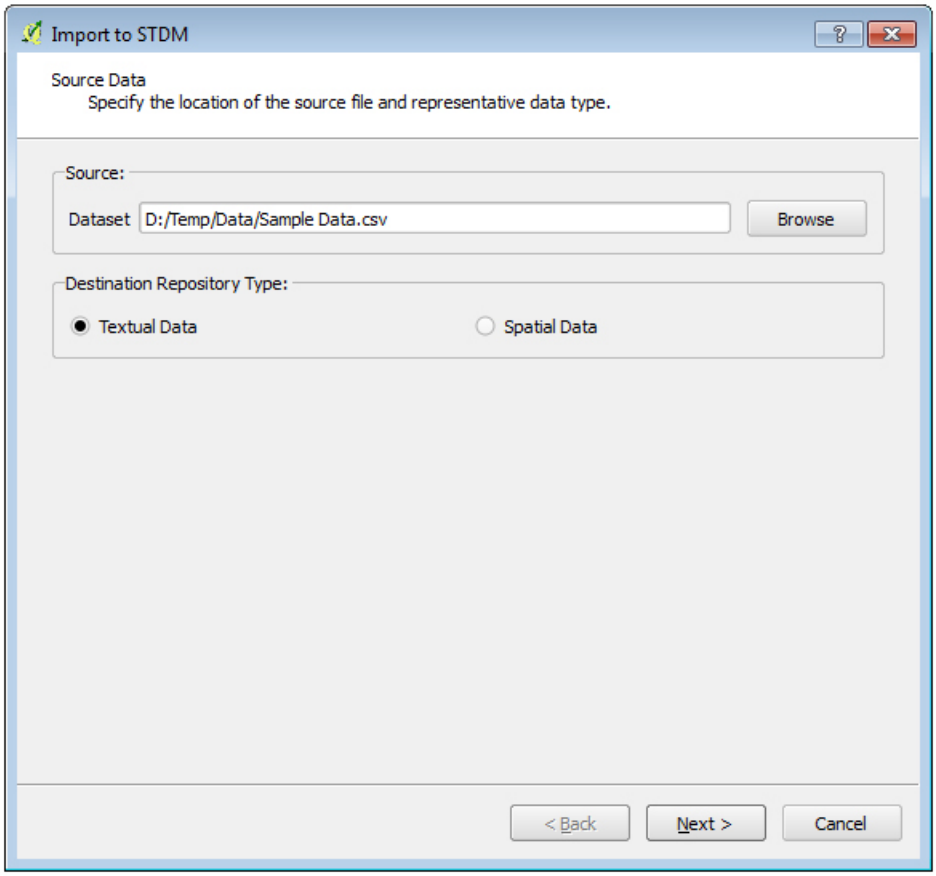


2. Specify the data source and select the table type i.e. spatial or textual.

3. Click **Next** to select the destination table. In this case, our destination table is **person**.

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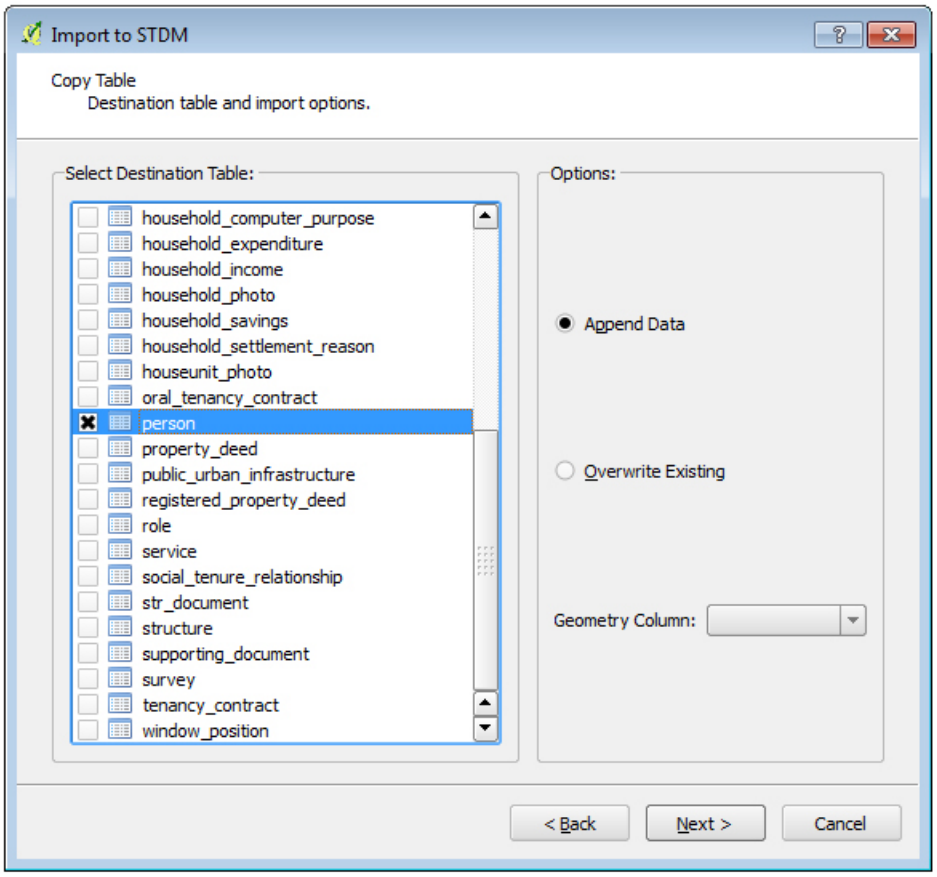


4. Click **Next** to load the column matching page. Based on the data provided, we shall match the columns as follows:

| Source Table Columns | Destination Table Column |
|---|---|
| **Surname** | last_name |
| **Other Names** | first_name |
| **Household Code** | Household_id |

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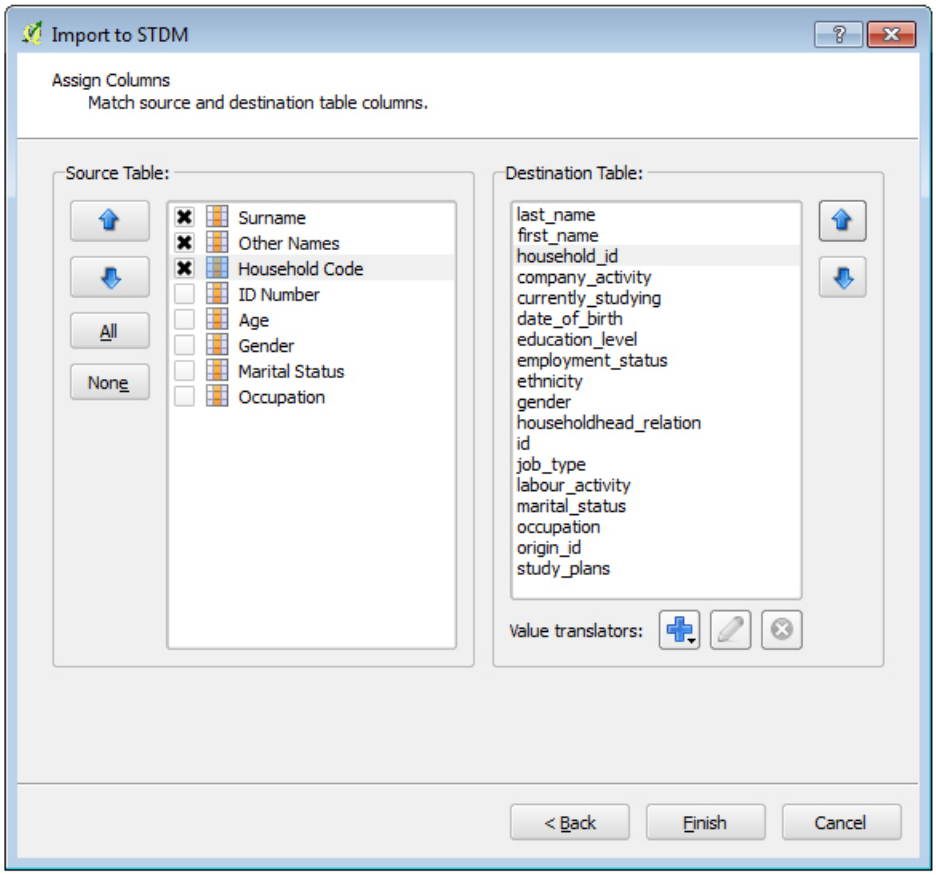


5. We now need to specify how the system should handle and use value from the *Household Code* column to link it to the *household* table through the **household_id** column in the **person** table. To do this, click on the **household_id** column to select it then click on the **plus sign** at the bottom next to the **Value translators** label. Select **Related Table…** option to load the dialog for specifying how the data will be linked.

6. In the **Related Table Translator Configuration** dialog, the destination table settings are fixed as they are based on the import configuration that we specified prior to loading the translator dialog. Our focus will be on the **Referenced Table Settings** – in this case, we want to instruct the system that the *household_id* column in the *person* table should be linked to *id* column in the *household* table. However, we need to further instruct the system that it needs to link this data by using the value from the *Household Code* column in the CSV file and lookup it up in the *code* column in the *household* table. Hence, the dialog settings will be as follows:

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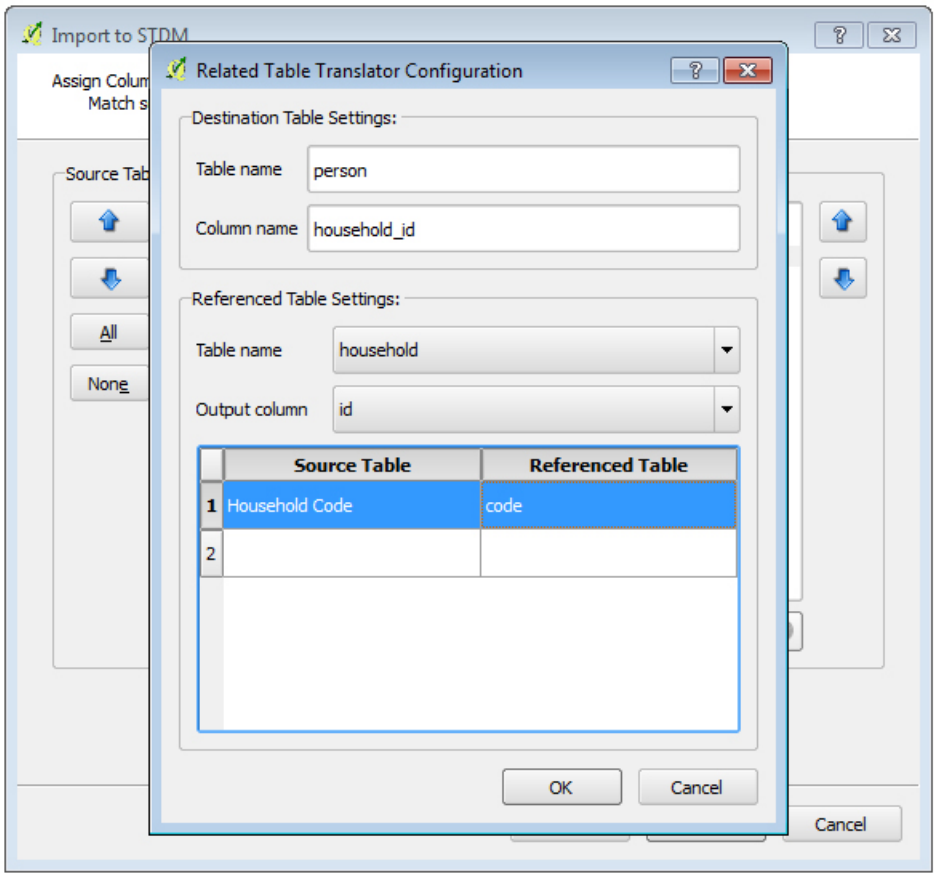


7. Click **OK** to save these settings.

8. Click on Finish to start the import process. STDM will now lookup the household id using the household code and insert it into the **household_id** column in the **person** table.

# Importing into Lookup Columns

You can import data to a lookup column in the destination table using the **Lookup Table Translation** module.

In order to implement this translator, the source table must contain at least one column that refers to a unique value in a related table such as a gender that a person belongs to. During the translation process, the system will attempt to lookup this value and extract a corresponding value ideally, the value of the lookup column and use this value in the primary reference table, which is the lookup table.

**Example:** Say we have a person CSV file that we would like to import to the person table in the STDM database; the source data such as a spreadsheet that contains a gender column that has the gender of each record as **Male** and **Female**. However, if the destination table column uses a gender lookup table, the values in this lookup column is stored as integer, representing the id of the lookup value - Male or Female. Through, the **Lookup Table Translator**, we are able convert each value in the csv

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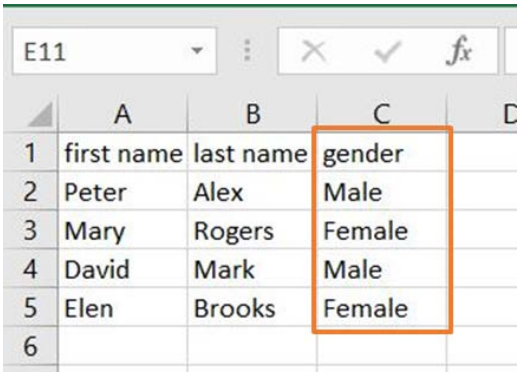
file that is a text with a value of Male or Female to an integer corresponding to the id of the lookup values - Male and Female.

The steps below clarifies how you can convert data stored as a text in a source table (csv, shp, etc) to an integer that corresponds to the id of the lookup value being converted from the source table.

1. Prepare the source table such as a csv with a lookup value written into it. In this case, a gender information is added with values Male and Female as shown in the image below.




2. You need to create a lookup table and add the values of Male and Female in the Configuration Wizard as discussed in Creating Lookups topic. Make sure the values in the lookup table and in your source table (eg. csv file) have the same case and spelling. Otherwise, it will not import correctly.

3. Start the Import Data module located in the STDM toolbar as highlighted in the image below.

4. Choose the T**extual data** radio button and choose the **csv** file by clicking on the **Browse** button as shown in the image below. You can also use a spatial data if needed.

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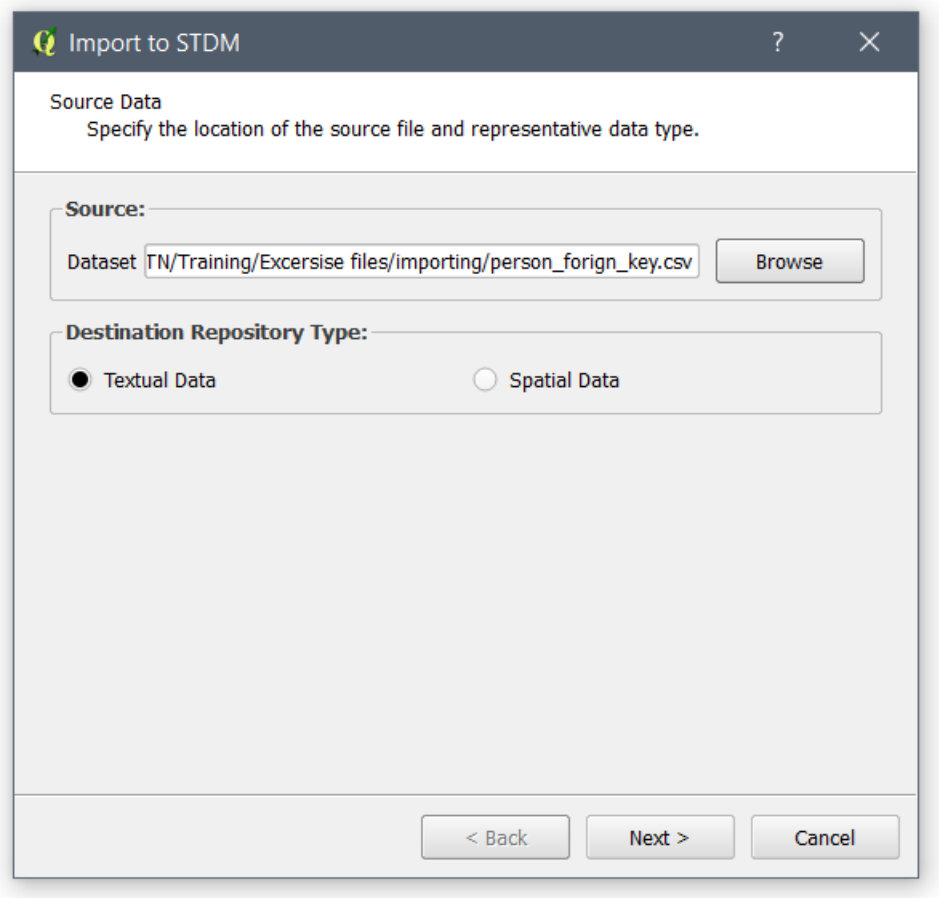


5. Choose the table to which the data is going to be imported into and click on the **Next** button. In this case, it is the person table that is selected as highlighted in the image below.

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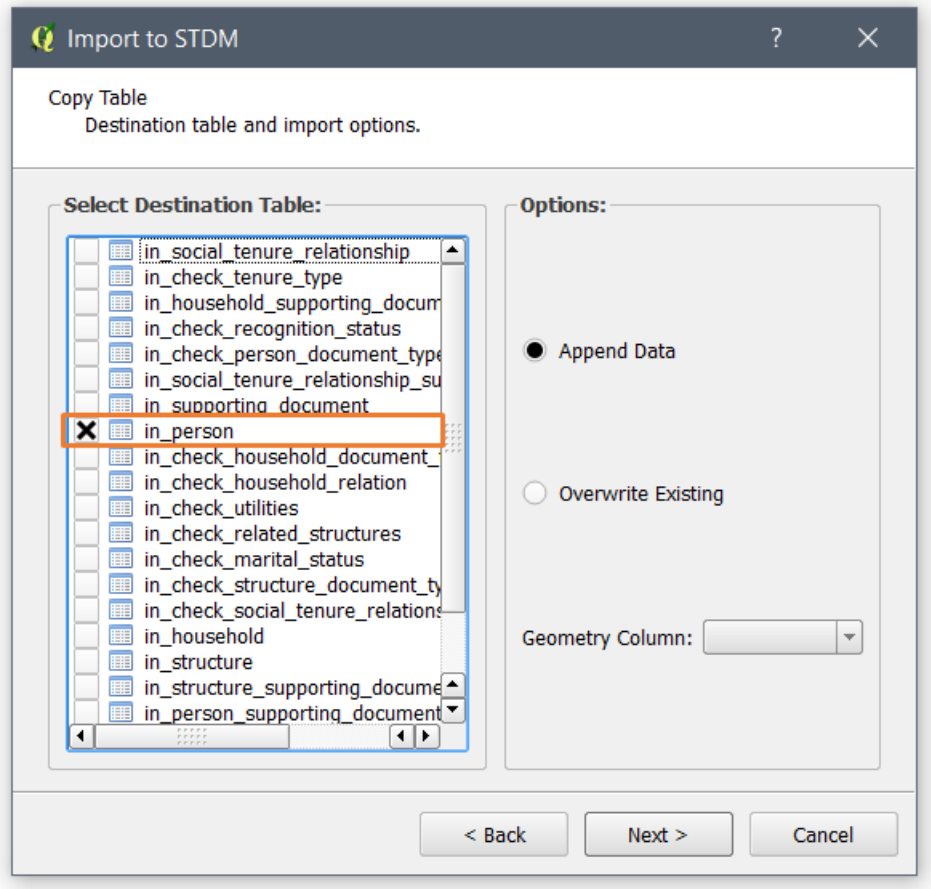


6. Align the source and destination columns as shown in the image below so that they are in line and we can import data into the correct column. To align them you can use the up and down arrows or using a drag and drop. Then check all the columns you want to import data from. Make sure you have also selected the lookup column as shown in the image below.

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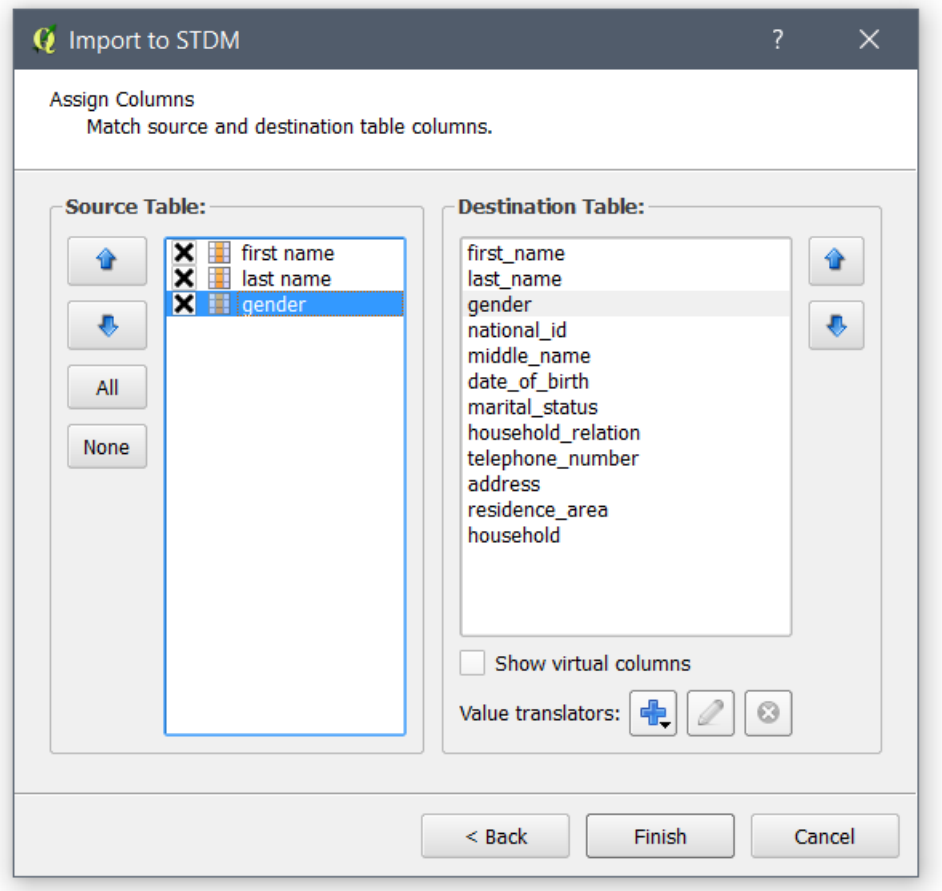


7. Click on the **Value Translators Plus** button and click on **Lookup values** menu item as shown in the image below.

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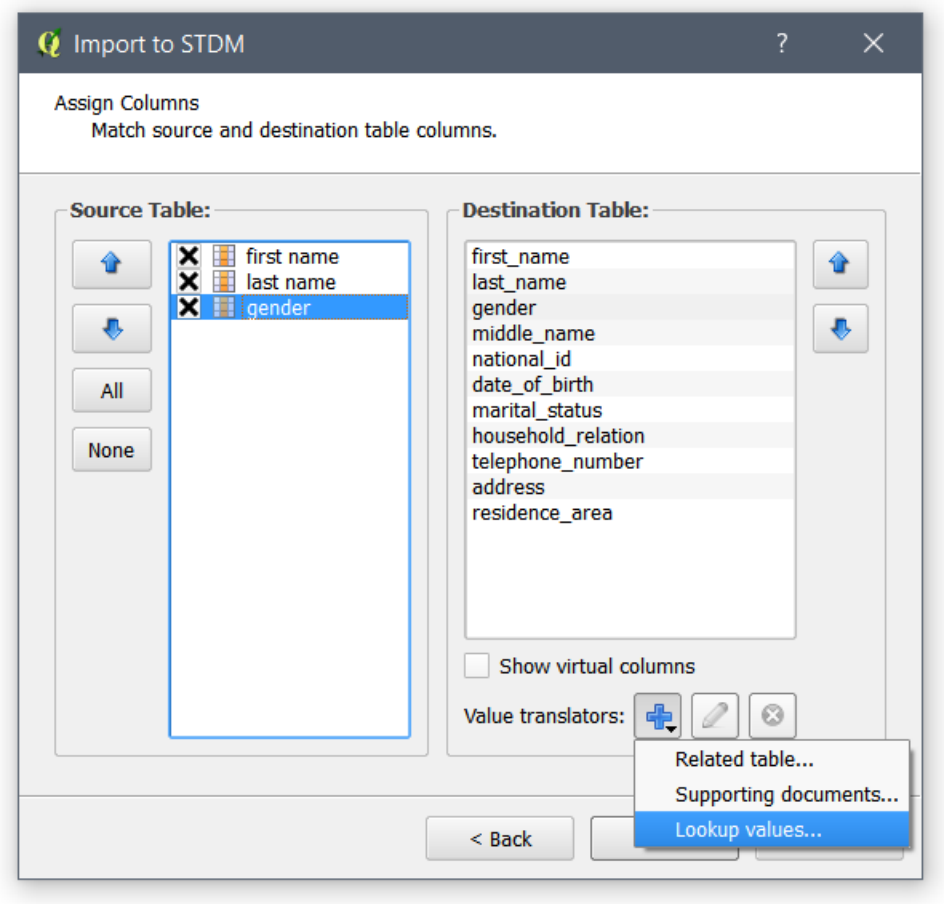
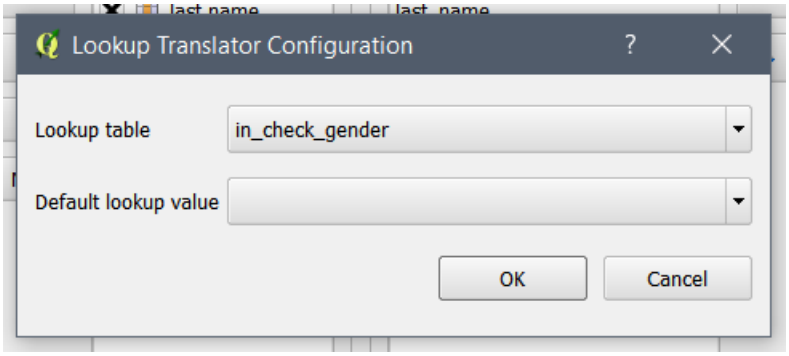



8. The **Lookup Translator** popup window loads. Choose the lookup table in which the lookup values are translated. In this case we have used the gender lookup so we have to use the gender lookup named **check_gender** as shown in the image below.




9. The **Default lookup value** drop down enables you to choose a lookup value to that will be used in case the source table has no value or invalid values. This might be relevant in some cases. Click on the **Ok** button.

10. You can now access the main **Import** wizard. Here you can edit the existing value translator using the Edit button or remove it completely. When done, click on the **Finish** button to finish the importing. If successful, you will see a success message as shown in the image below.

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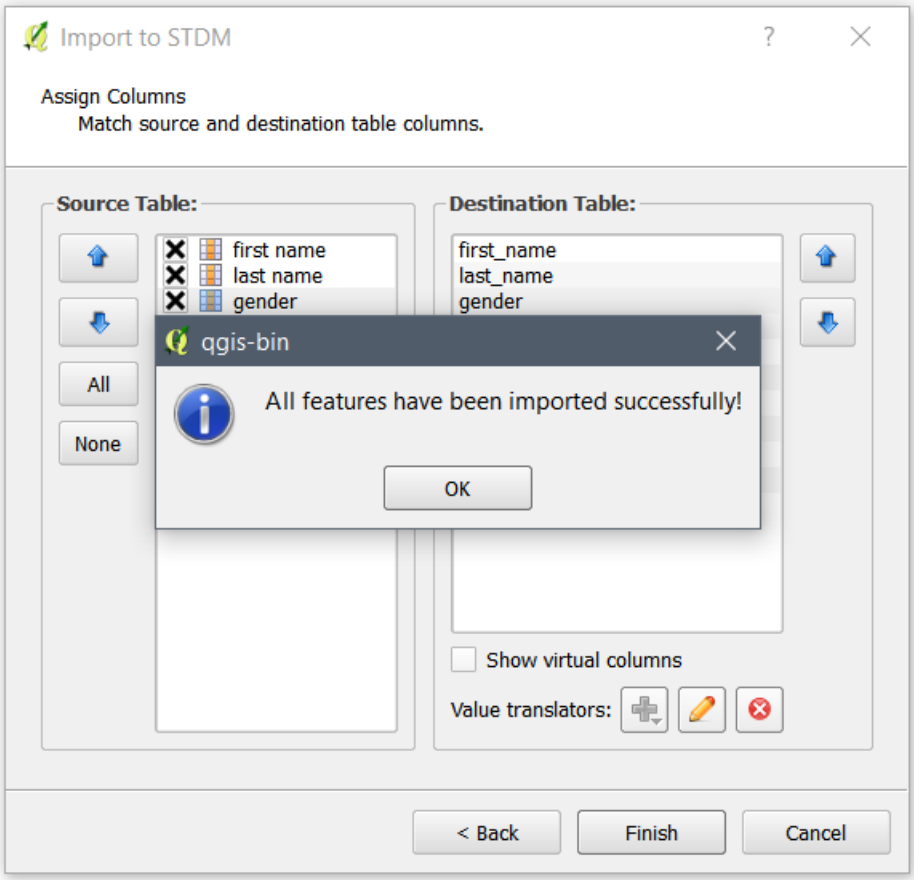


# Export Data from the STDM

**1.** Select Export Data command item from the menu.

**2**. An export STDM Data pops up allowing you to choose the **destination file** and **format**.

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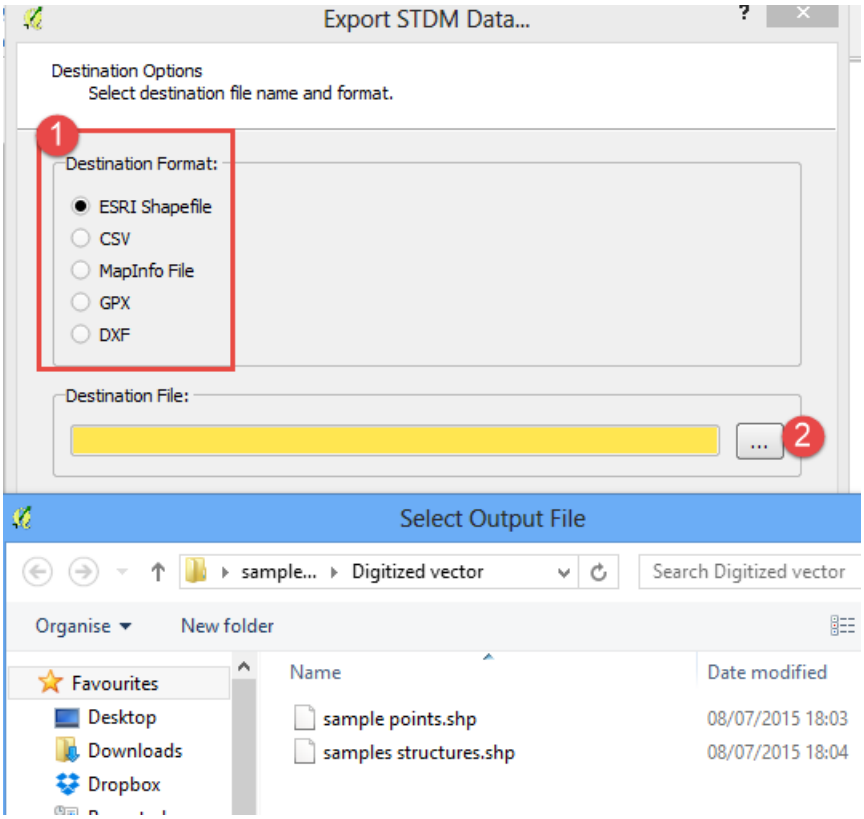


**3.** Select the destination format from the list.

4.Browse to save location of the file (Destination File)

**4.** Enter a name for the file to be created.

**5.** Click **Save** on the file save dialog

**6.** Click **Next** to proceed.

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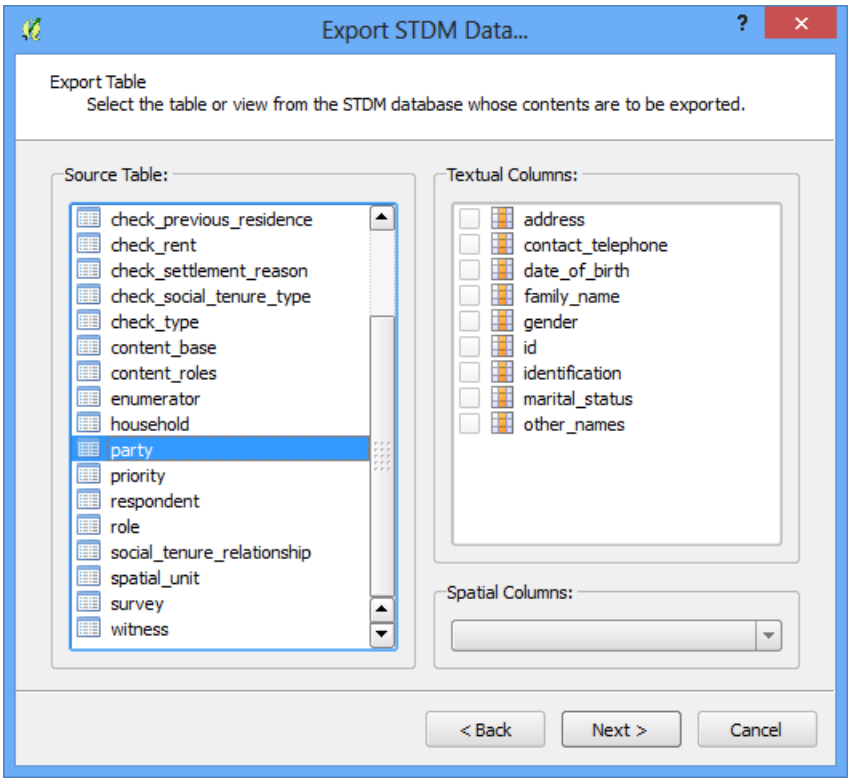


**7.** Select the table data to be exported from the left **Source table.**

**8**.Check by marking the **textual columns** you wish to be exported on the right. Click the **Next** button to proceed.

**9.** Likewise, when exporting spatial data, select it in the data **source table** and select the required fields (**Textual columns** in the right side) that will appear on the final generated file as shown in the image below.

If the data source table has geometry columns, the geometry column to be exported need to be selected.

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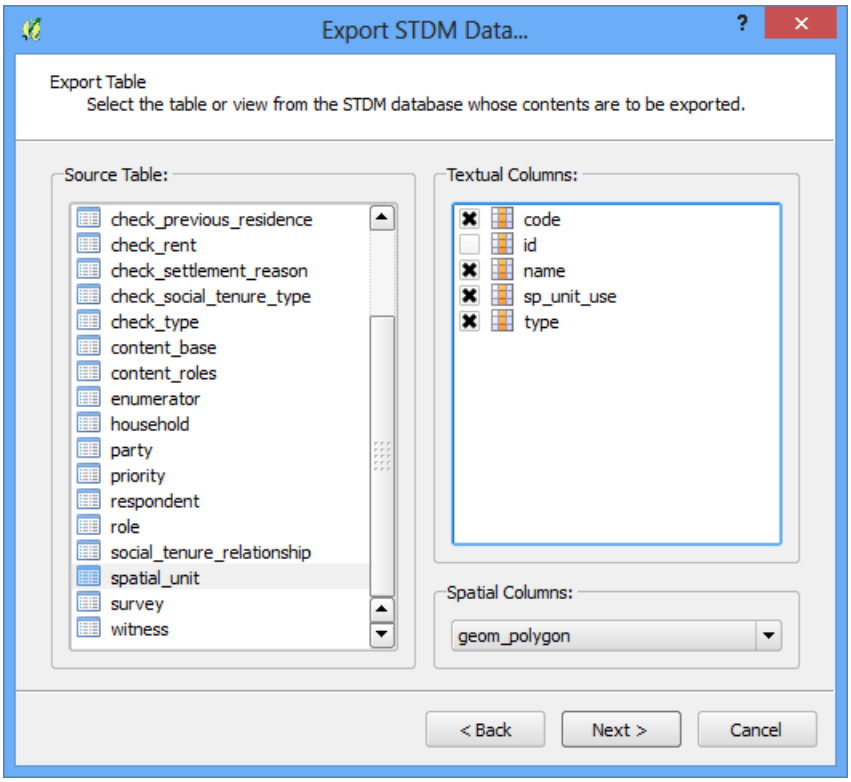


**10.** Click the **Next** button to proceed to the next page.

If specific queries need to be implemented on the resultant data, they can be specified using the **Query Builder** in the next page as shown below.

If no queries are required, clear the **Query Builder** check box.

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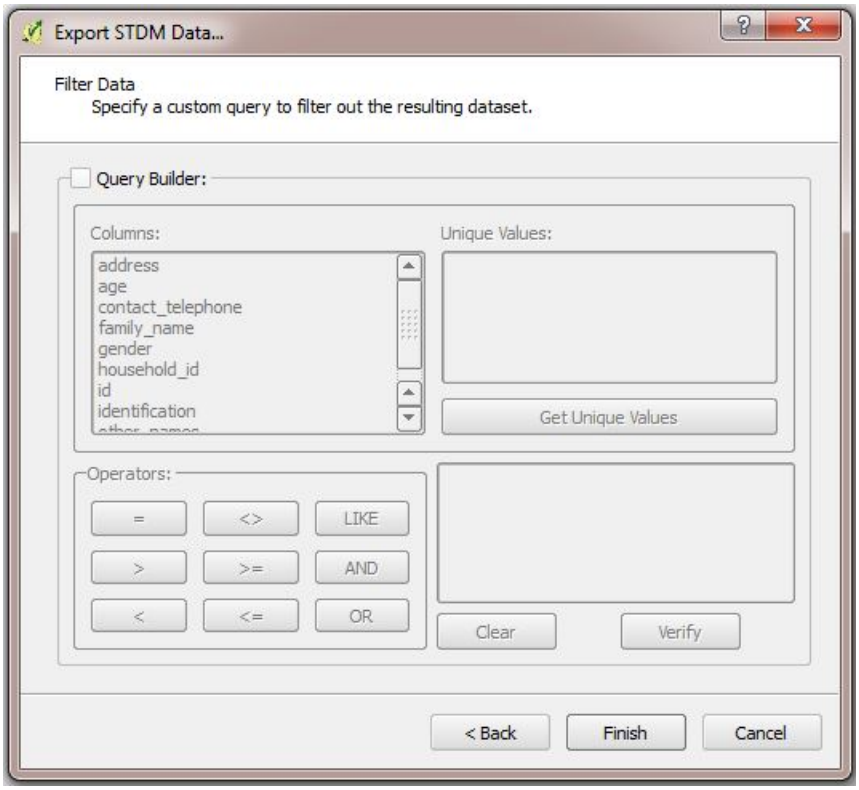


**11.** Click **Finish**.

A message box will prompt the response when the action is completed. Dismiss the dialog.

Browse to the location of the file to see the results. If you are not satisfied with the result, the process can be repeated with new options.

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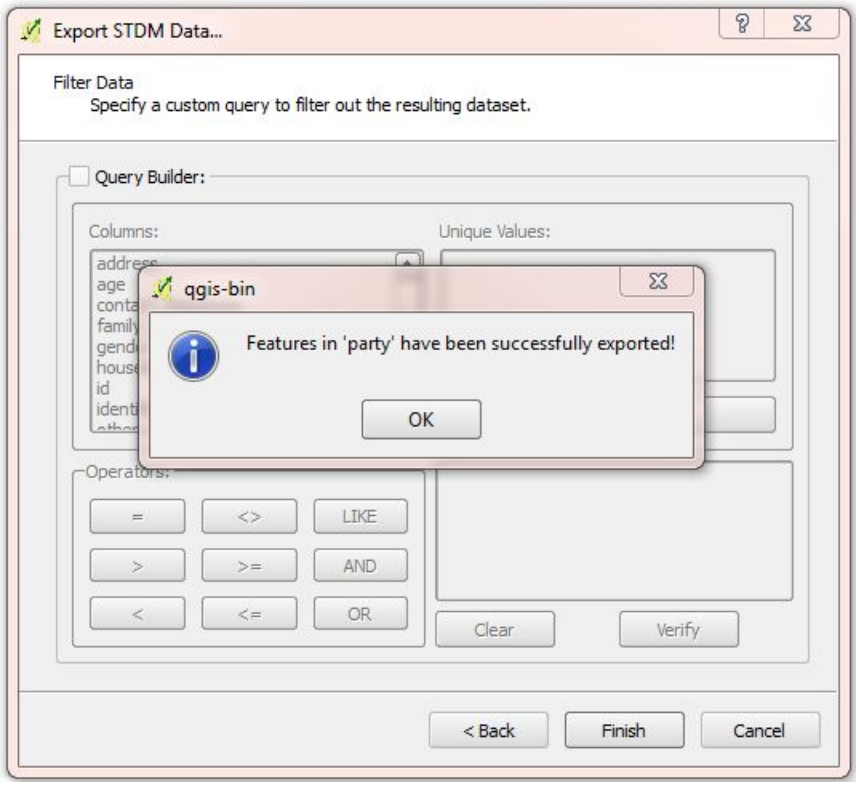


12. Click on the **OK** button to finish the process.

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# Settings

# Managing User and Roles

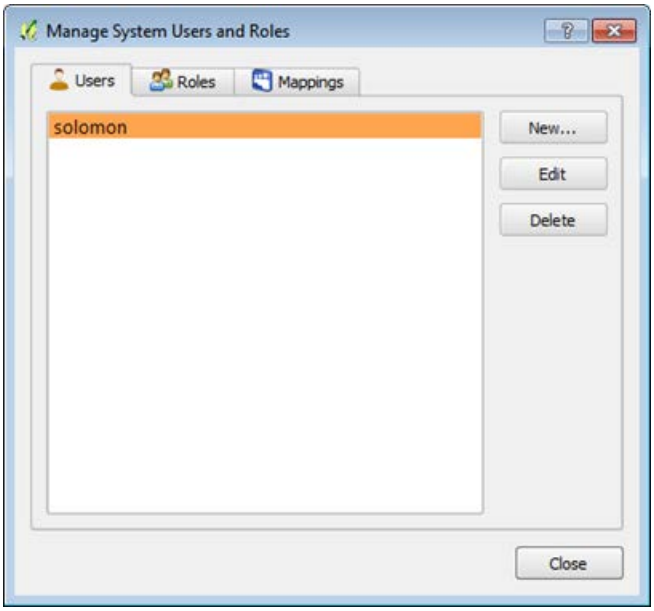
## User Management

To manage user roles and administrative settings, follow the steps below.

**1.** Click on the **admin settings** button shown in a red box.

**2.** From the drop down contents, click on the item named **manage user roles.**

The dialog below appears. Here, you can manage users by creating, editing and deleting them.




A **user** is person authorized to manage and manipulate content set up on the configuration wizard.

The data management dialog will appear with the default user created. However, more users can set up new accounts for content management.

## Create a User

To create a new user, follow the steps below.

**1**. Click on the **New...** button to input the required information.

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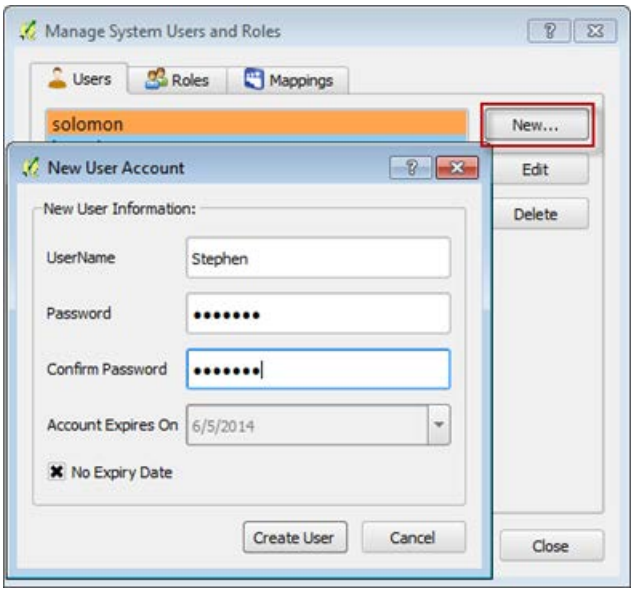
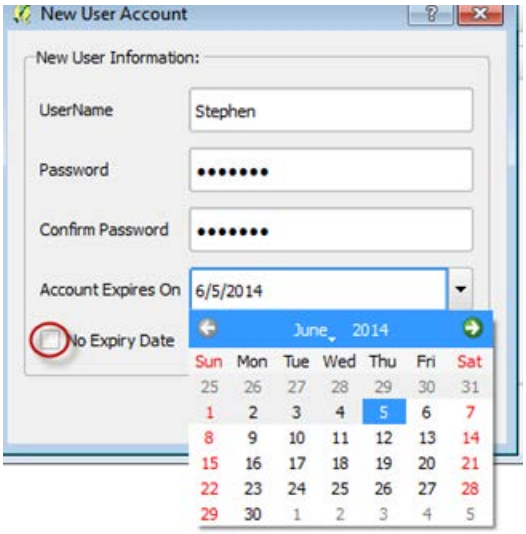



On the new user dialog, input the user name and create a password to login with as shown in the image above.

The new user created can be given a timeline after which the user account created will expire.

By clearing the **No Expiry Date check box**, the expiry date set up will be deactivated.




**2.** Click on the **date** button and set up an expiry date for which the new user account will be active.

**3.** Once done, click on the **Create user** button on the dialog to create the new user.

# Edit a User

The user management dialog also has a user editing option.

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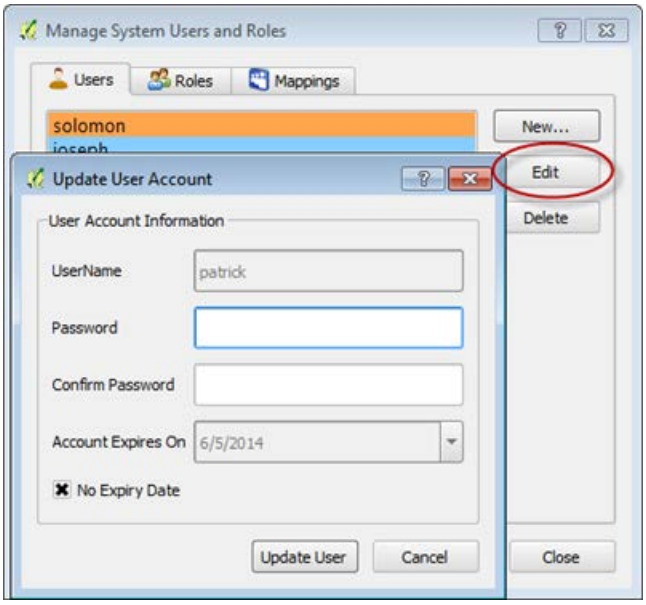
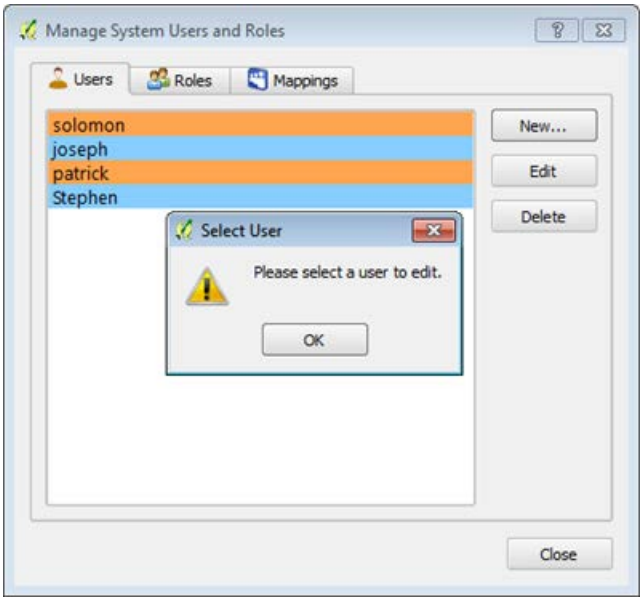
**1.** To edit an already created account, select the user to be edited then click on the **Edit** button.




On the user update dialog, user can make any changes required.

**2.** Once done, click on the **update** user button to effect the changes.

If user clicks on the edit button before selecting an account, a warning dialog appears.




**3.** Click on the **OK** button and select a user account to edit.

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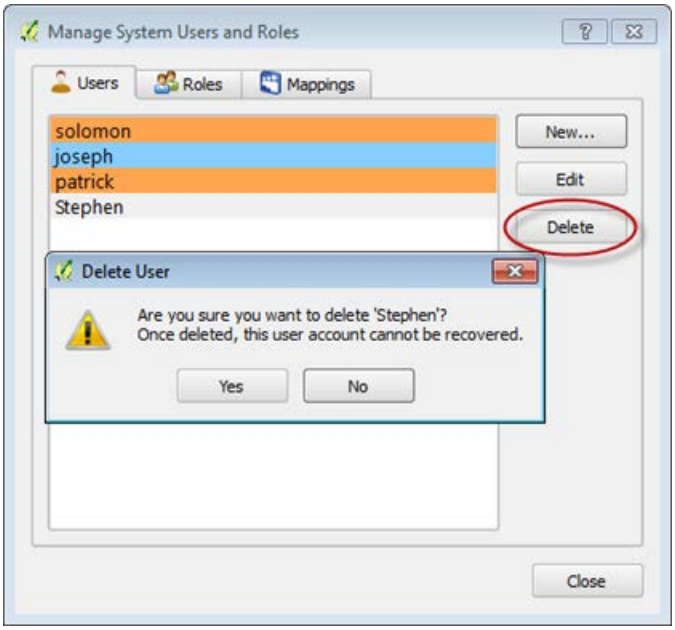
## Delete a User

The user management dialog also has the option to delete an account




**1.** Select which user account to be deleted.

**2.** Click the **Delete** button.

A delete user warning appears. The user can confirm the delete action by clicking on the **Yes** button to proceed. This will erase the account from the user list and any roles associated with the account .

# Role Management

A role is an entity that can own database objects and have database privileges. A role can be considered a "user", a "group", or both, depending on how it is used.

To manage roles on the management dialog, click on the **roles** button circled in red below.

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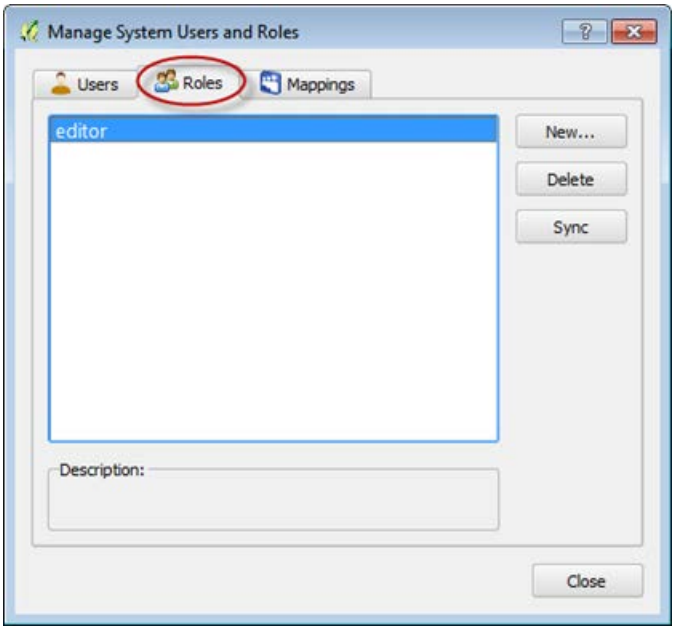
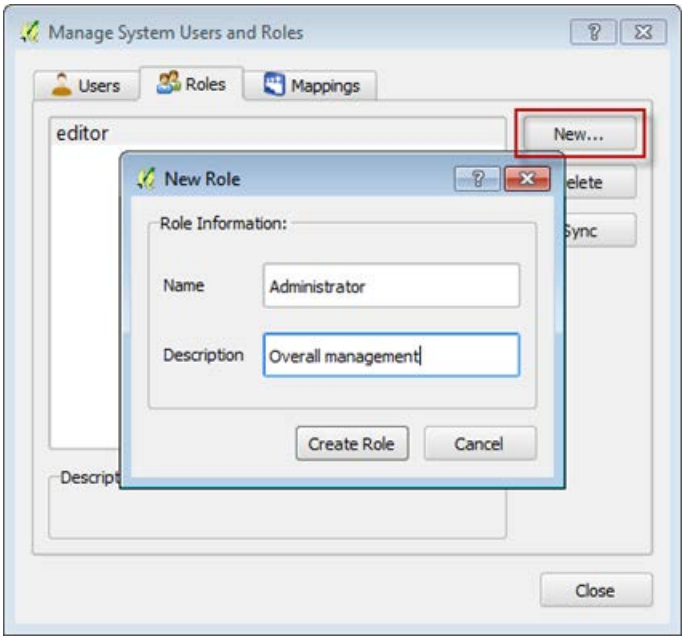



Default roles created will launch on the dialog. User has an option to create new roles for the users.

## Create a Role

To set up a new role, follow the steps below.

**1**. Click on the '**new**' button on the dialog.




**2.** On the new role dialog, input the name of the role and its description.

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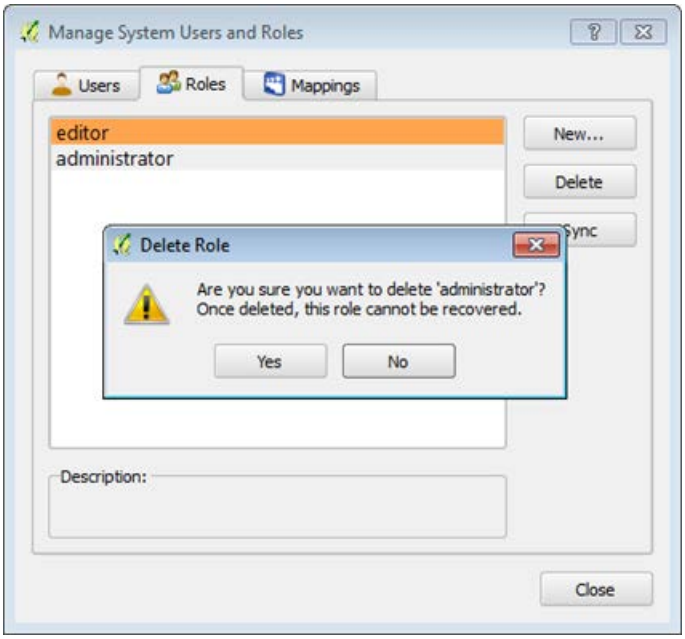
**3.** Next, click on **Create Role** for the new role to be created.

# Delete Role

The role management dialog also has a delete option to delete a created role.

**1.** First **selects** a role to delete.

**2.** Next, click on the **Delete** button to erase the role.




A warning dialog appears and on this action and the user is required to confirm the delete action.

**3.** Click on the **Yes** button if you wish to proceed with the action.

# User Mappings

It is at this point that the user authorizes who has access to the content.

Various roles created are assigned to various users for management and execution.

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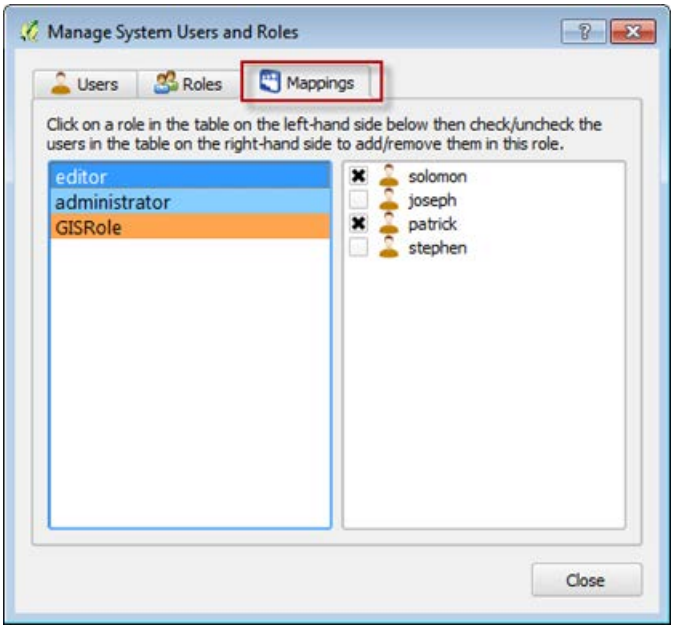



**1.** Click on the **mappings button** at the top of the management dialog for grouping.

The roles will appear on the left side of the dialog and the users will appear on the right.

**2.** Select a role to assign users by clicking on it. Next **check** or **uncheck** the box against a user to assign that role to that user.

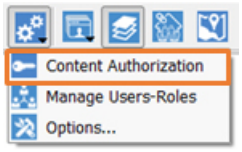
Do this for all the roles so that no roles are left unassigned.

# Content Authorization

This is the point where various roles are assigned their content. Each role is given certain content to be executed by the user assigned to that role

**1.** To achieve content authorization, click on the **admin settings** button on the STDM toolbar.

**2.** Select **content authorization** as shown below.




The dialog below will appear and it is on this wizard that the user assigns the content to roles.

**3.** To do this, user clicks on a content item on the left side of the dialog and assigns it to a role on the right side of the dialog by **checking or unchecking** the box against the role depending on whether the user is approving or disproving the assignment.

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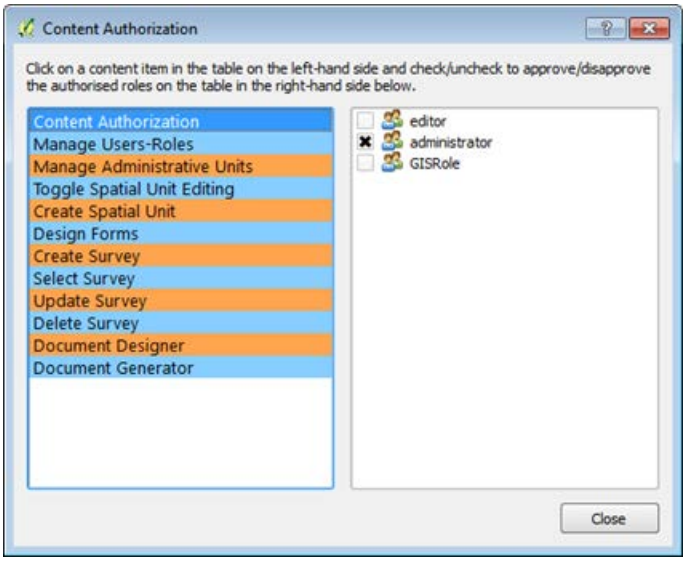



A role can be assigned multiple content depending on the nature of the content and the role description. Once all content is assigned its role, click on the **Close** button.

# Options

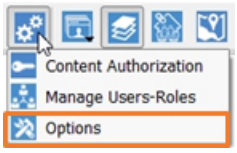
The Options Module enables you to change the current/active profile, which enables you to change profiles without logging out.

In addition, you can modify the database connection setting of STDM that enable you to switch to a different database.

You can also modify directories used by STDM.

To open options Module, look for Options under Admin Settings menu located in STDM Toolbar or STDM menu.

Click on **Options** menu as shown below.




The Options module loads as shown below.

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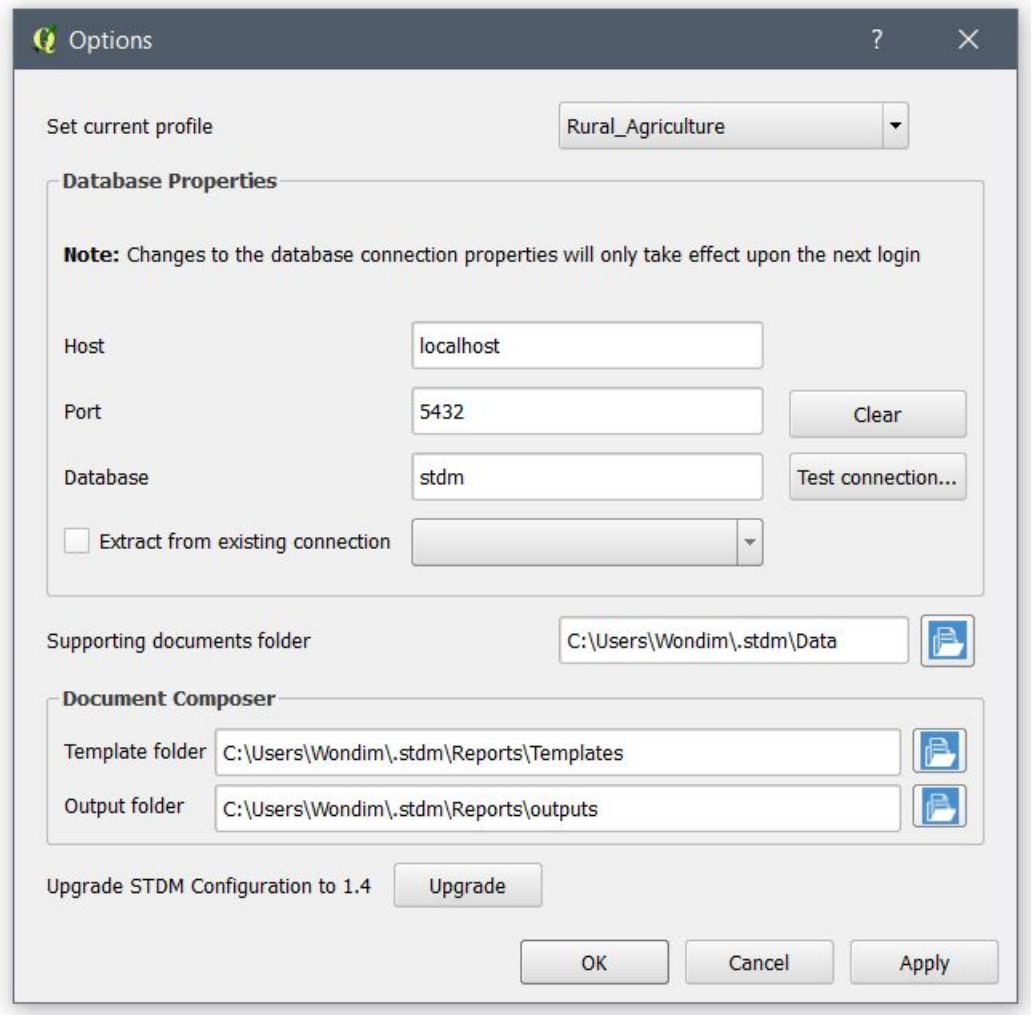


The sub-topics discuss each features of the Options module.

# Changing the Current Profile

As you can easily create profiles in the Configuration Wizard, switching between profiles is achieved in just two clicks. These profiles are created and customized by the Configuration Wizard. Once you create a new profile, you can then switch to it.

To change the current profile, follow the steps below.

1. Open the Options module as explained in Options topic.

2. At the top of the Options module, click on the drop down menu labelled **Set current profile**. It holds list of profiles in your Configuration.

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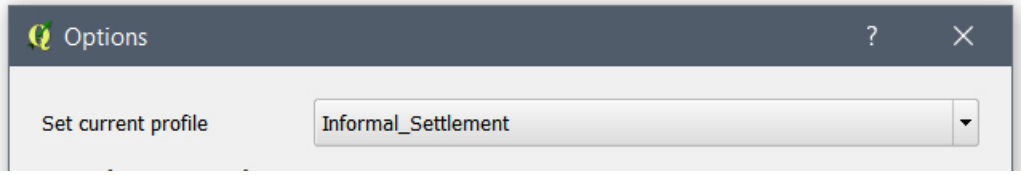
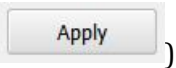
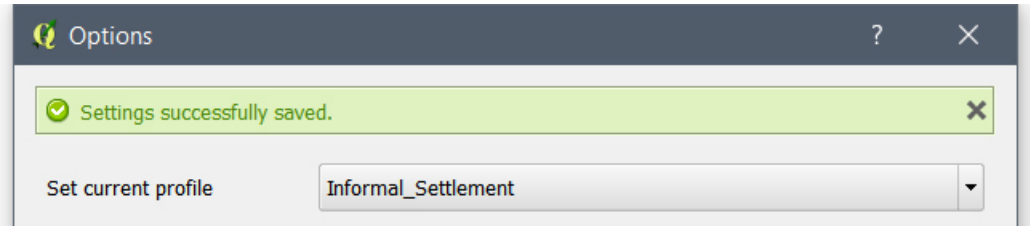


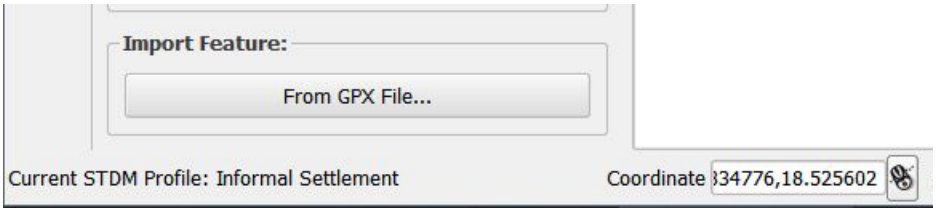

3. At the bottom of the module, click on the **Apply** button ( 

).

This will lead to a success message as shown below.




You can also see the changed profile in QGIS status bar as shown below.




Changing the current profile leads to the following.

- Removal of the STDM layers
- Change of Entity Menu items by the newly loaded profile entities.
- Change of the Current STDM Profile text in QGIS status bar.
- Change of tables participating in social tenure relationship.
- Change of list of tables that are accessed throughout STDM.
- All STDM modules reload to capture the newly loaded profile and database tables.

# Modifying Database Connection Settings

The **Options** module enables you to modify your current STDM database connection settings. This setting change requires logging out of STDM for the change to be applied.

You can change the database server host, port and database connected.

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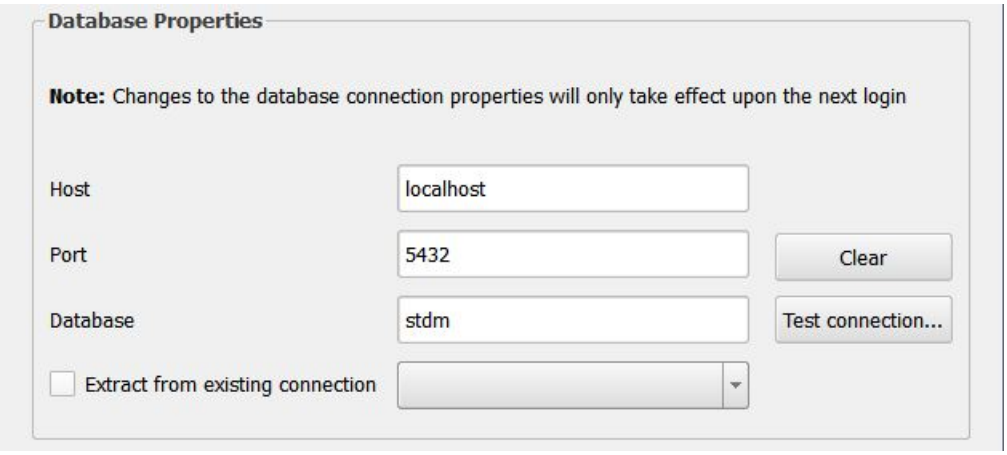
To change the database connection, follow the steps below.

1. You can type the values in the **Database Properties** box as shown below.



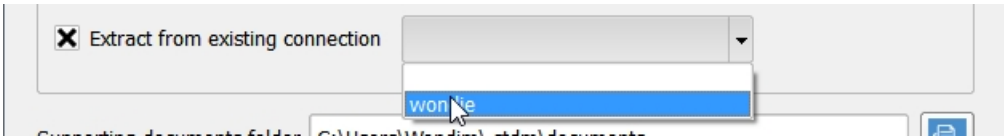

a. **Host refers to** the location of a computer that has hosted the database server (PostgreSQL). If the database server is installed in your own computer, you have to enter **localhost** as shown above. However, when PostereSQL that holds the database is installed in an office network, the IP address is different from localhost. It could be a number like 192.168.0.23 or any other number with such a format as specified by the system administrator. This is relevant when STDM is installed for governmental or non-governmental organizations with a centralized database server.

b. **Port** refers to an endpoint of communication for the database server (postgreSQL). To access the database from STDM, we need to know its port. The most common port values for PostgreSQL are **5432, 5433, or any other port as specified during installation.**

c. **Database** refers to a data storage location in which the entire data of STDM is stored. By default, during installation, it is set as **stdm**. You can enter any other database that you want to connect to after installation using PostgreSQL administration software called pgAdmin III. If you want to use your own database, make sure the PostGIS extension is installed and added to the database that STDM uses. Otherwise, STDM cannot run.

2. If you have already saved a database connection in QGIS's DB Manager, you can extract it by checking on **Extract from existing connection** option.

The drop down next to the checkbox gets enabled and if you have a saved connection. Click on the drop down menu and select one item (see the image below).




3. You can also test the connection setting that you have added by clicking on the **Test connection...** button as highlighted below.

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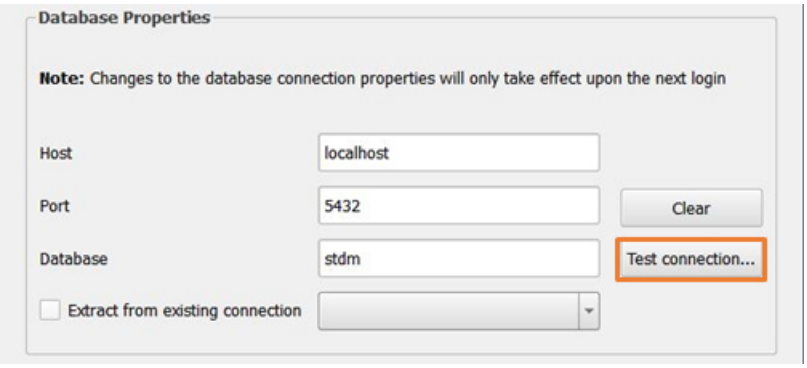
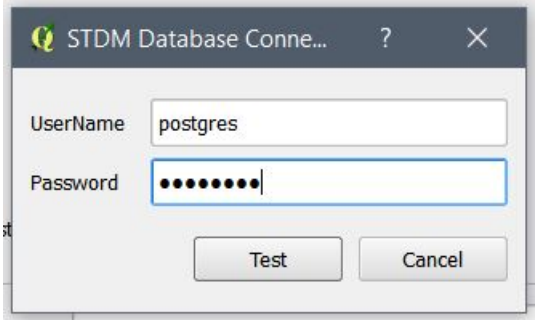
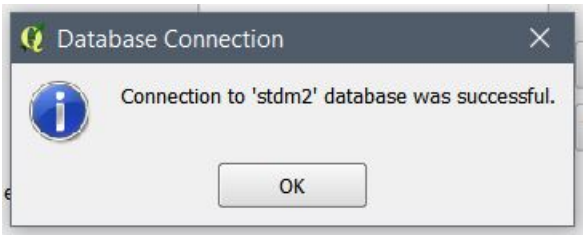



When you click on Test connection... button, a popup appears where you have to enter your database username and password (see the image below).




Next, click on the **Test** button to check if the database properties you have filled are valid. If the connection is successful, a success message is shown (see the image below).




A successful connection means that you can change your database connection with no errors.

Once you have modified the connection setting, click on the **Apply** button (

).

Logout of STDM for the changes in the database connection to be applied.

If you are connecting to a new database or a database that does not have the latest configuration, run the **Configuration Wizard** to create STDM database. Failure to do this will mean no access to most modules of STDM. In this case, when you try to access STDM modules you will see an error message similar to the one shown in the image below.

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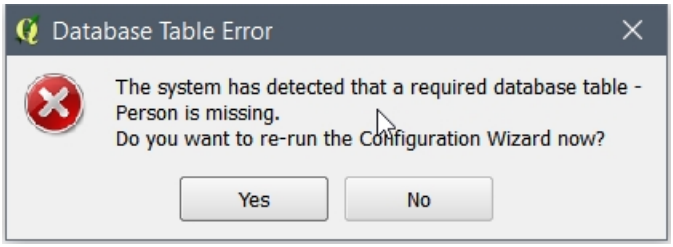
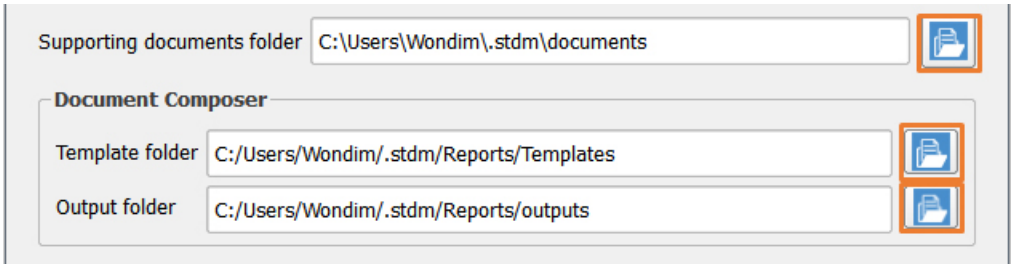


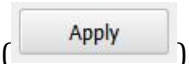

# Modifying STDM Folders

The **Options** module enables you to modify folders used by STDM.

You can change the supporting document folder, template folder and the output folder.

To modify the paths, you just have to click on the folder icon on each path as shown below and select a folder.




Once you have modified the folders, click on the Apply button ( 

).

This will result in the reloading of all STDM modules to pick the changes in STDM folders.

# Upgrading Old Configuration

If you miss the upgrading of STDM configuration from STDM 1.0 or 1.1 to STDM 1.4, you can still make the upgrade from the Options Module. The migration process is discussed in greater detail in Migration from Previous Version topic.

1. In the **Options** module, go to the bottom of the module and locate **Upgrade STDM Configuration to 1.4** with the **Upgrade** button as highlighted below.

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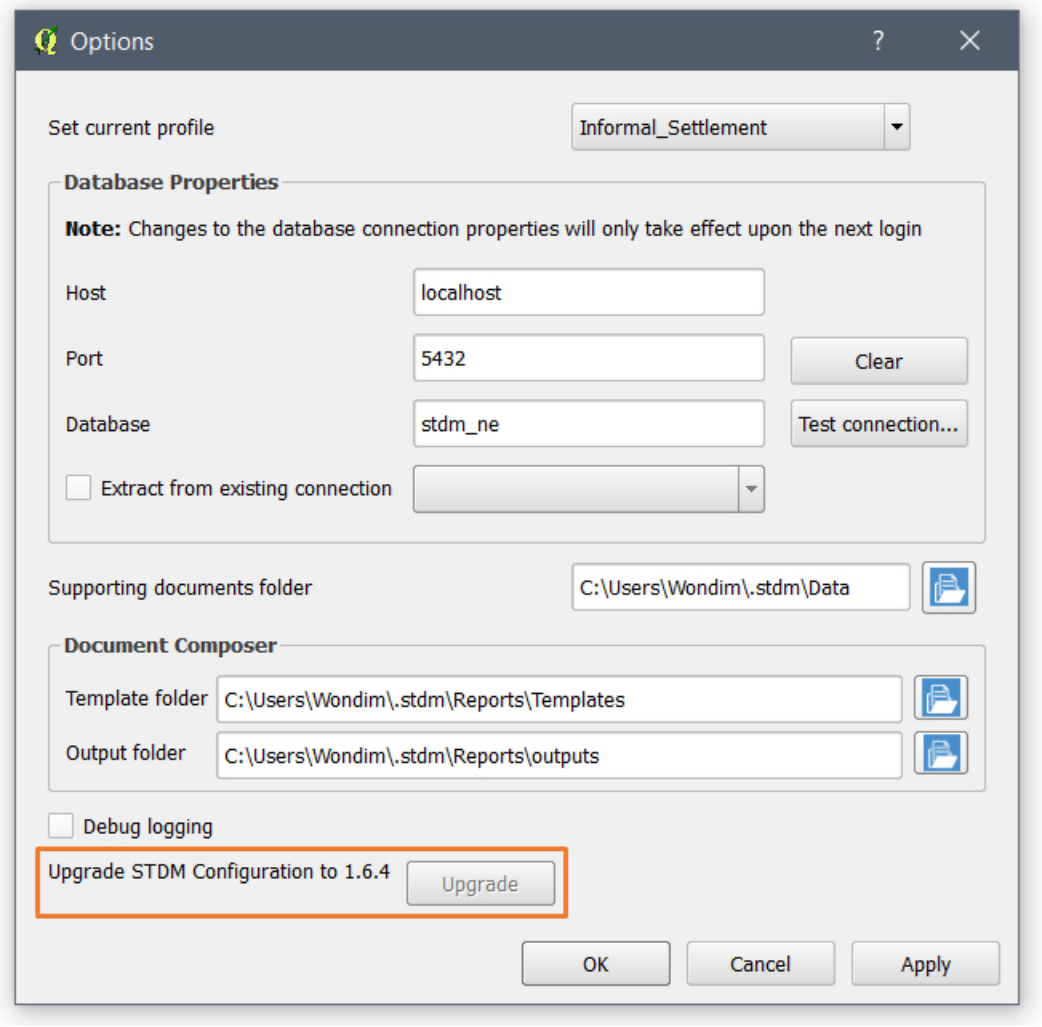


2. Click on the **Upgrade** button.

In case you have uninstalled QGIS with its registry using third party uninstallers, STDM might lose all the directory settings.

In such a case, you will see a dialog requiring you to select the supporting document, template and output folders. Click on the **folder browse** button ( ) to select all the required folders (see the image below).

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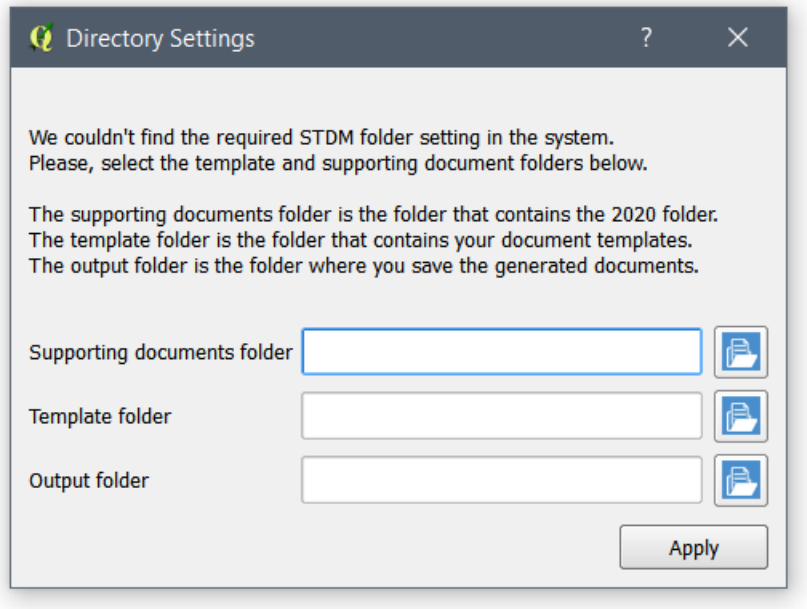
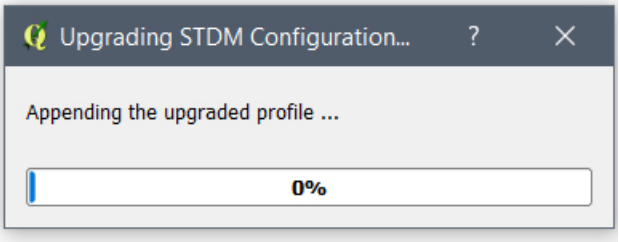



**Note:** Closing the **Directory Settings** dialog without selecting and applying the settings will lead to the cancellation of the migration process. This will lead to the temporary loss of access to the existing profile, data, and templates.

If you did not see the dialog, it means your directory setting is not removed from your system.

This leads to the starting of the upgrade process. You will see a progress dialog as shown below.




It is not recommended to interrupt the upgrade process as the process involves your data. To reduce the risk of interruption, the progress bar cannot be closed by clicking on the close button. This also prevents QGIS from being closed.

Once the process is complete, you will be able to use STDM with the updated configuration, database and templates.

**Note**: Once you make a successful upgrade, you will no longer be able to upgrade an old configuration. The **Upgrade** button will be disabled.

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# Annex A: Working with Spatial Data in QGIS

## Working with GPS

It is advisable to use GPS device in the open field to avoid obstruction from buildings and trees, which hinder visibility of satellites when collecting data. Working with GPS in an obstructive environment reduces the accuracy of the final data. Depending on the GPS device, a GPS receiver must be locked to signals from at least 3- 4 satellites to be able to calculate the position. The higher the signal strength in terms of satellite signals, the higher the accuracy/reliability.

## Before using GPS

Global Positioning System (GPS) refers to a satellite-based navigation system constituting a constellation of 24 satellites and their ground stations.
The use of GPS circles around precise positioning of objects and people including scientific studies for the purpose of obtaining useful information relative to their geographic locations.
When using GPS, the GPS device needs to communicate with the satellite at real time to give the positions.
This is why it is advisable to use GPS device in the open field to avoid obstruction from buildings and trees, which hinder visibility of satellites and ultimately reduces the accuracy of the final data.

## What to know when using GPS in the field

While using GPS in the field it is important to take note of the following.
What affects the accuracy of the data?

- Objects such as buildings, mountains, tall trees, etc. have a reflection effect to the transmitted signal which may cause delay to the received signal thereby introducing errors.

- These objects also have an obstruction effect, which blocks the signals and reduces the number of available satellites.

- The amount of humidity or density of the clouds in the atmosphere also affects the signal strength. It can slow down the signal as it passes through them, which affects the overall accuracy of the obtained position.

## Working with Garmin GPS data

Refer to Garmin website www.garmin.com for detailed description on how to capture data using Garmini GPS.
Having collected field data using the GPS, office work remains important to put the collected data to usable format.
Garmin by defaults stores its data in World Geodetic System (WGS 84).
This becomes easy to use as it can be overlaid to Google maps and other global maps or images.
To learn how to download using STDM gps module, go to importing gps data

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# Downloading GPS Data from QGIS

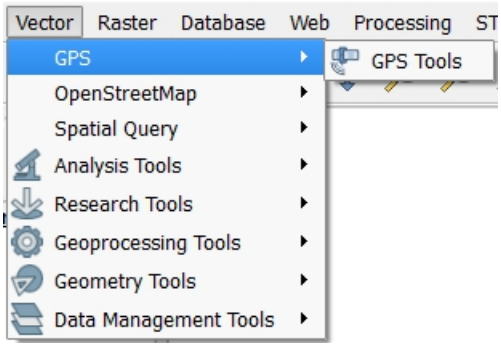
To download a GPS data from a GPS, follow the steps below.

**1.** Connect the GPS to your computer (i.e. using USB cable).

**2.** Ensure the device is visible in your computer.

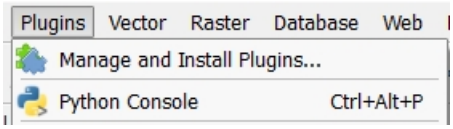
**3.** Start QGIS normally.

**4.** Launch the GPS **plug-in** from QGIS, Vector **> GPS > GPS Tools** as shown in the image below.




If the GPS sub-menu is not visible under the Vector Menu, it means the plugin is not enabled. To enable the plugin, follow the sub-steps below.

a. Click on the **Plugins Menu** in QGIS Menu as shown below.




b. Click on **Manage and Install Plugins...** sub menu.

c. Click on **Installed** on the left side as shown in the image below. Then look for GPS Tool in the list of plugins in the search box as shown in the image below.

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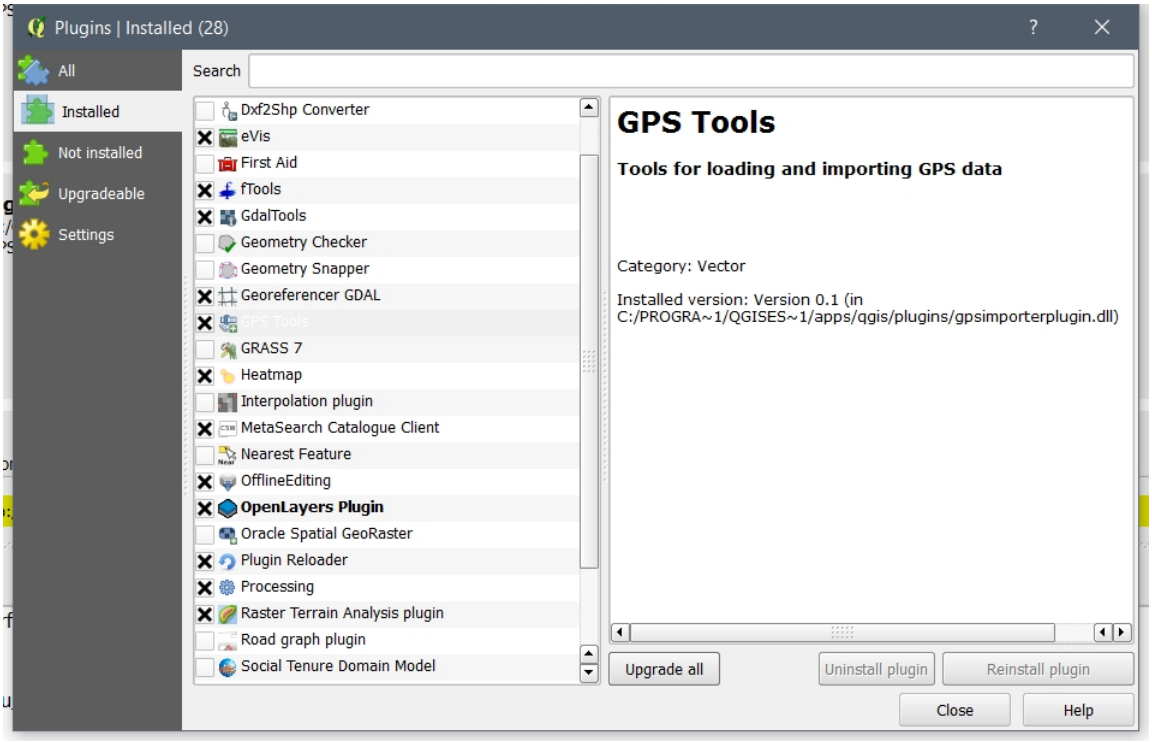
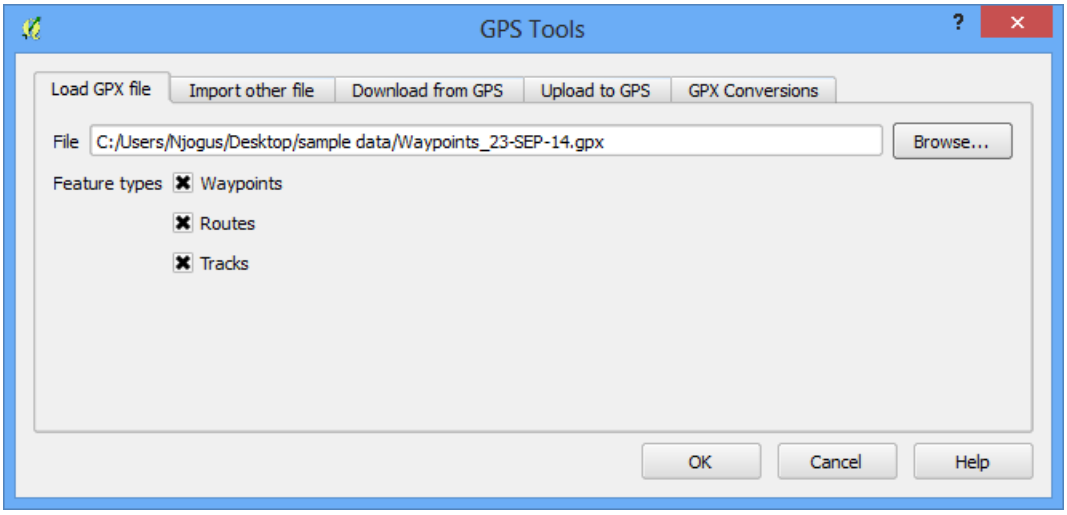



d. When you find the **GPS Tool**, enable the plugin by clicking on the checkbox in front of the label **GPS Tool**.

e. Click on the Close button at the bottom of the **Plugins** module.

A new dialog box appears that allows you to browse to the location of field data from the GPS.




5. Select on the first tab **Load GPX file.**

6. Browse to the location of GPS data and Click **OK**.

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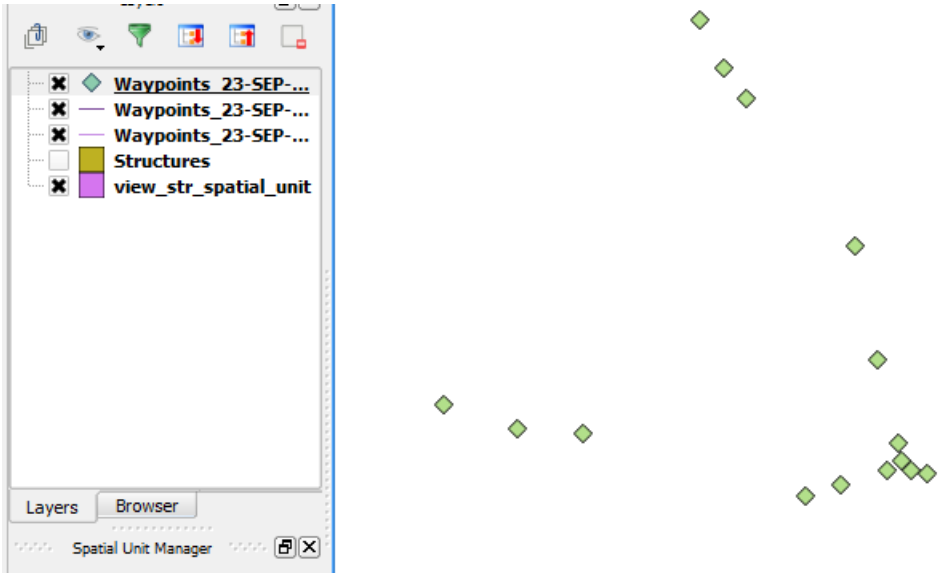


The loaded data should appear as scattered points depending on what was captured as shown in the image above.

7. Locate the **Waypoints** layer with a point icon in QGIS Layers Panel. In our example, the **Waypoint** with a point feature is the first layer. **Right-click** on it.

8. Select **Save as** in the shortcut panel and enter the details as required.

9. Specify the format, coordinate system for the new layer. If you do not specify the format, the source layer CRS original will be used as shown in the image below.

**Note:** *For above data, the coordinate system used was:* ***WGS 84.***

*For the format,* ***ESRI Shapefile*** *format is preferred because it is supported by many GIS software.*

***Do not*** *check the* ***Skip attribute creation*** *check box.*

10. Provide the output path.

11. Click on the checkbox **Add saved file to map.**

12. Click on the **OK button**.

A new layer will be created and added to the QGIS map canvas.

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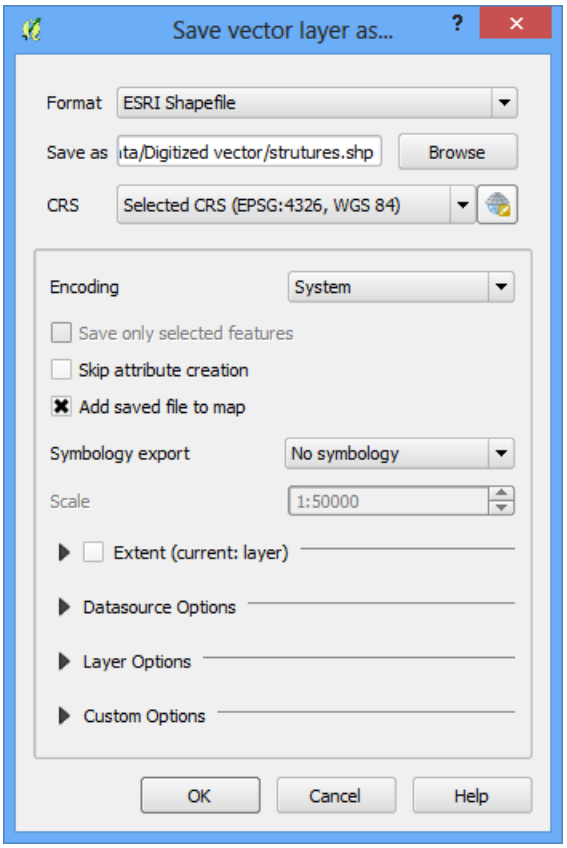
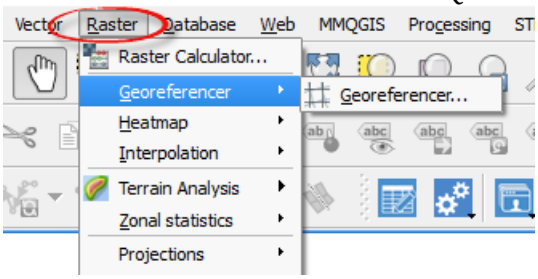



# Geo-referencing

Geo-referencing is the process of introducing world real coordinates on to a raw image so that the final product is a spatially enabled map that can give location of features in the two-dimensional space.

Steps:

**1.** Click on the **raster menu** on the QGIS interface.




**2.** On the drop down content click **georeferencer** > **georeferencer.** A dialog box will appear. The **Georferencing** pop up window will appear, allowing you to load a raster image.

**3.** Click on the button that is highlight in the image below.

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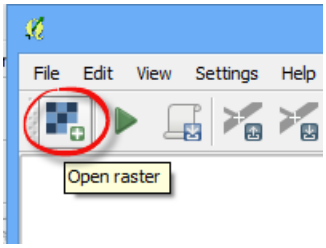
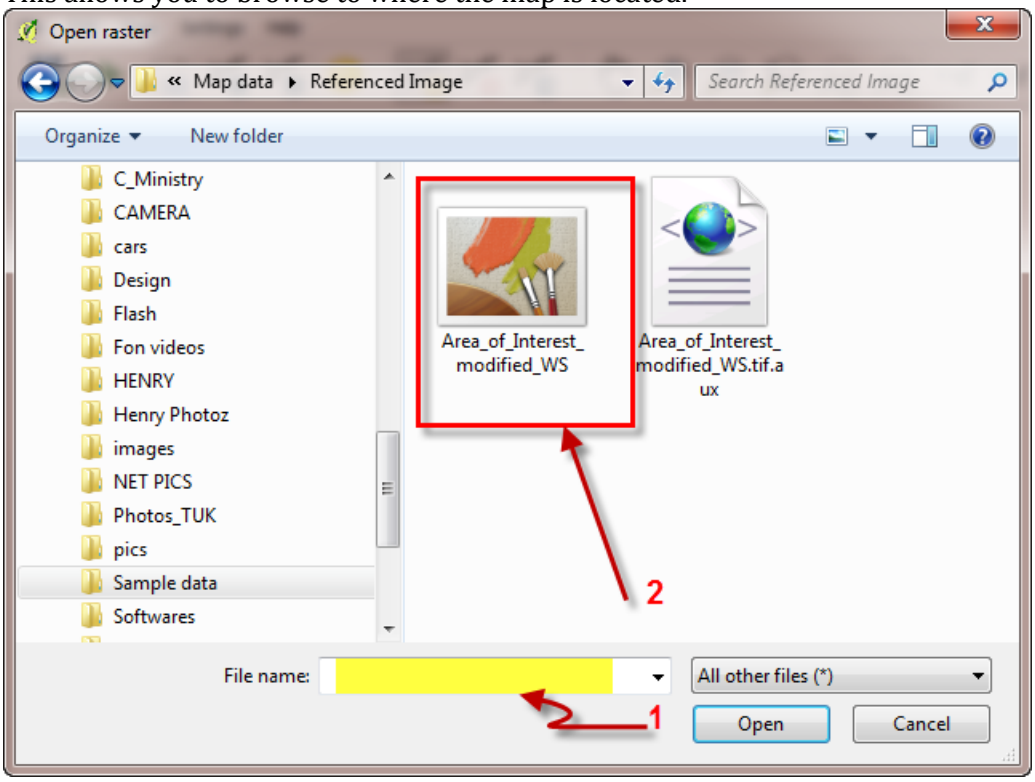



This allows you to browse to where the map is located.




4. Select the File name you wish to **georeference** (Many Image formats are supported).
**5.**Click Open to load the map. The Raster Data is loaded on the **Georeferening** window as shown below.

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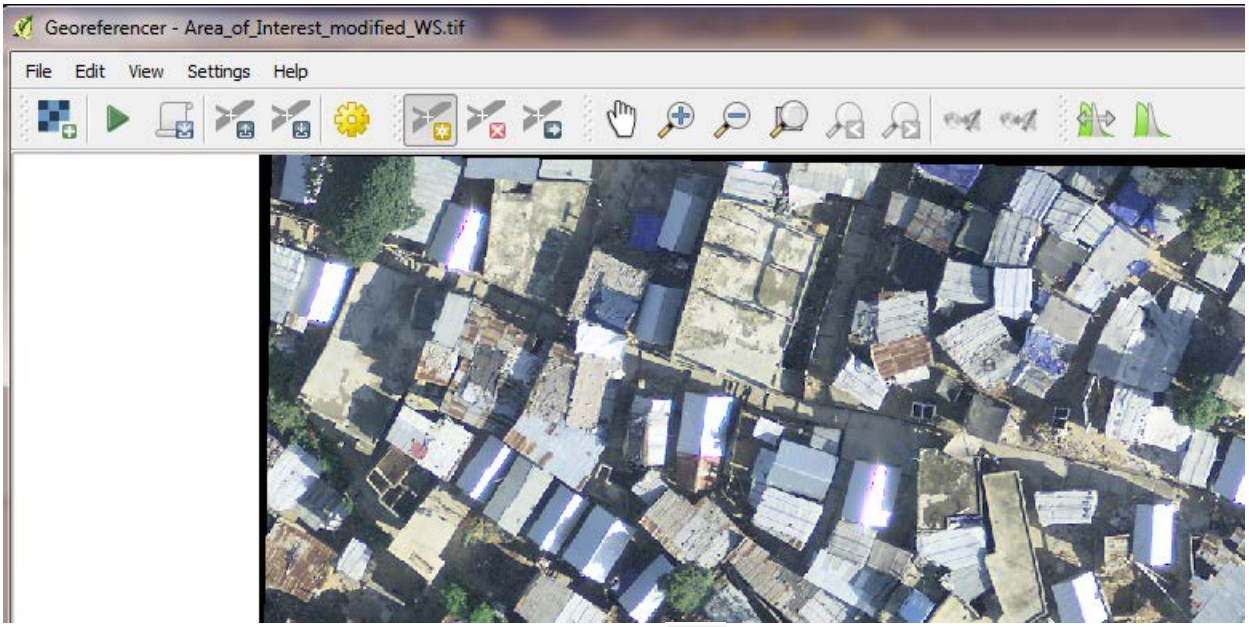
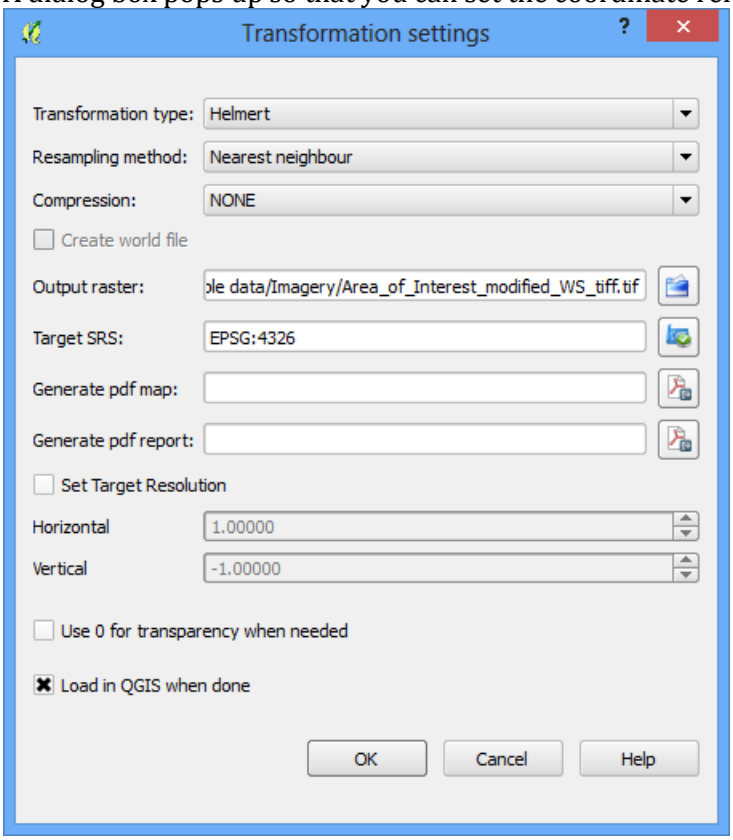



**6.** To set properties of georeferencing, Click the icon (transformation settings).
A dialog box pops up so that you can set the coordinate reference system.




Identify at least two points with well-known points on the map that you will use to georeference with.
Assign at least two ground control points (GCPs) to enable the georeferencing.

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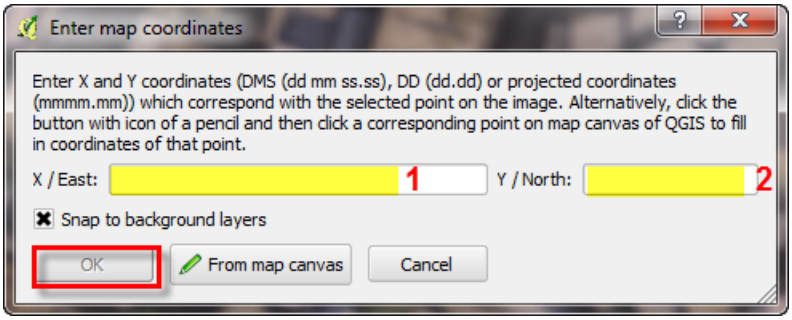
**Note:** Set the **Transformation type** as **Helmert** and **Resampling method** as **Nearest neighbour** so as not to change the colour code of pixel.
In the output raster, give the georeferenced image a name. Next, select the reference system to be used in Target SRS.
**7**. Select the **Load in QGIS when done** checkbox and click the **OK** button.

8. With identified points on the map and with their coordinates, Use the **Add Point** button ( ) to add control points on the map.
Once you click at any point on the map, the popup below shows up allowing you to enter the coordinates of that point.

9. Do this for the other points and then click on the ***OK*** button for each pair of points entered.




10. In the **Georeferencing** popup window toolbar, click on the **Run** button ( ) to load all the points.

**11.** Then **close** the georeferencer dialog box.

**12.** Load the geo-referenced image using the icon (open raster) in the QGIS interface view for viewing the geo-referenced image.

**Note***:* This is one way of entering the coordinates during the geo-referencing.

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# Glossary

## A

**Attribute Data:** Attribute Data - refers to a textual data that is appended to a spatial data.

## D

**Database:** Database is a collection of information that is organized so that it can easily be accessed, managed, and updated. STDM uses relational Database software called PostgeSQL that provides the database for STDM.

**Dialog:** Dialog refers to a popup window that holds a feature of STDM or a message.

## E

**Entity:** Entity, in STDM, refers to a distinct database table in which a specific data is stored. Examples of entities in STDM include person, parcel, etc.

**Entity Browser:** Entity Browser refers to a table like module of STDM in which all records of an entity are loaded from the database table of the entity.

## F

**Feature:** Feature mainly refers to a single record that is composed of attribute information and spatial geometry. Feature could be a functionality of a system.

## G

**Geo-referencing:** Geo-referencing - is the process of introducing world real coordinates on to a raw image so that the final product is a spatially enabled map that can give location of features in the two-dimension space.

**Geometry:** Geometry refers to a digital geographical extent or position a physical structure. The most common geometry in STDM is spatial unit that could be parcel, structure, house, and garden.

**GIS:** Geographic Information System. GIS is a computer system for capturing, storing, checking, and displaying data related to positions on Earth's surface.

**GLTN:** Global Land Tool Network. The Global Land Tool Network (GLTN) is an alliance of global regional and national partners contributing to poverty alleviation through land reform, improved land management and security of tenure particularly through the development and dissemination of pro-poor and gender-sensitive land tools.

**GPS:** Geographic Positioning System. GPS is a global navigation satellite system (GNSS) that provides location and time information in all weather conditions, anywhere on or near the Earth.

**GPX:** GPX - refers to the file format that holds coordinates of any physical structure in a GPS Device. The GPX file needs to be uploaded to STDM using The GPS tool.

## L

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**Line:** Line - refers to a digital geographical bounder of a physical structure that doesn't have a close ending. This could be road and river.

**Lookup Table:** Lookup Table - refers to a table that is composed of frequently used lists such as tenure type, document type and any other list that you create. The lookup tables are created in the Configuration Wizard and are composed of lookup values that are the list of items and their corresponding codes. For instance, the gender lookup table has Male and Female Values. The code is an optional field which could be M for Male and F for Female. The lookups can be used as a drop down list in STD Forms that makes adding and editing records easy.

## M

**Module:** Module refers to an STDM window that has one or more functionality.

## P

**Party:** Party - is a general term that refers to a person, individual, household, organization, institution or any other entity for which a spatial unit can be assigned with a relationship that is determined by social tenure type.

**Point:** Point refers to a digital geographic position of any physical structure that is represented by a single point. A point data could represent towns, villages, and any other small structure.

**Polygon:** Polygon refers to a digital geographic boundary of any physical structure that is represented by a completely enclosed physical structure.

**PostGIS:** PostGIS is a free and open-source plugin of PostgeSQL, that gives PostgreSQL a spatial capability.

**PostgreSQL:** PostgreSQL is an open source relational database management system that stores data in an organized manner.

**Profile:** Profile refers to an STDM profile that is composed of entities, columns, lookups, and setting that is used to generate database tables that will be used by different modules of STDM.

## Q

**QGIS:** QGIS (Quantum GIS) is a free and open-source Geographical Information System Software. QGIS is the software the hosts STDM. QGIS provides many features related to spatial data. STDM has extended and customized QGIS to fit STDM users' needs.

**Querying:** Querying refers to the process of searching for data in a database.

## R

**Record:** Record refers to a single row in a database table.

## S

**Shapefile (shp):** Shapefile (shp) is a popular geospatial file format that stores vector data such as points, lines, polygons, multipoints, multilines, and multipolygons. The extension of a shapefile is .shp.

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**Spatial:** Spatial refers anything related to space. The word spatial is used thought STDM to refer to any data or element that has digital absolute geographical location.

**Spatial Unit:** Spatial Unit - refers to an area of land or water that is associated with people with a certain right as specified by a concerned body. A spatial unit is a spatial entity with a distinct geographical coordinates. A spatial unit is linked to a party through Social Tenure Relationship Wizard. Spatial unit could be parcel, garden, structure, etc.

**SQL:** Structured Query Language. SQL is a programming language used to communicate with database servers such as PostgreSQL Server.

**STDM:** Social Tenure Domain Model

**STR:** Social Tenure Relationship

## T

**Table:** Table - refers to a storage location. In STDM you can create a table by simply creating an entity in STDM Configuration Wizard.

## V

**View:** View refers a database table that stores queries and display data as a table. In STDM, the default view starts with vw prefix.

## W

**WGS84:** The World Geodetic System 1984. WGS84 is a datum featuring coordinates that change with time. WGS84 is defined and maintained by the United States National Geospatial-Intelligence Agency (NGA).

**Wizard:** Wizard refers to a window that has multiple pages, in which you can go from one page to another by clicking the next and back buttons. STDM has few wizard type modules, such as the Configuration Wizard, the New Social Tenure relationship, the Import Wizard, and the Export Wizard.

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