
# Archive – Technical Training

## Autodesk Topobase Administrator

# Disclaimers

- This course was created for Autodesk Topobase 2009. The contents of this course are not intended for other versions of Autodesk Topobase.
- We may make statements regarding planned or future development efforts for our existing or new products and services. These statements are not intended to be a promise or guarantee of future delivery of products, services or features but merely reflect our current plans, which may change. Purchasing decisions should not be made based upon reliance on these statements.
- The Company assumes no obligation to update these forward-looking statements to reflect events that occur or circumstances that exist or change after the date on which they were made.


Autodesk

# Chapter Overview

- Chapter provides basic information about Autodesk Topobase 2009:
  - Components
  - Configuration

- Enables an administrator to:
  - Launch and use Topobase Administrator.
  - Understand introductory Topobase terminology.
  - Perform first steps in managing data.

Basics

Autodesk®

# Chapter Objectives

- By the end of this chapter, you will be able to:

  - Launch and use Topobase Administrator
  - Understand Topobase terminology
  - Explain workspace, document, topic, feature class and domain and Area Topology
  - Create new documents
  - Import geographical Excel-Data
  - Use the area topology functionalities
  - Use the Data Checker

# 2.2 Launching Autodesk Topobase 2009

- From Windows Desktop
  - Select **Start menu > Programs > Autodesk > Autodesk Topobase 2009 > Autodesk Topobase Administrator 2009** from the Windows task bar.

- On first login, click **Options** and provide:
  - Username: **TBSYS**
  - Password: *****
  - Oracle net service name: **orcl**

- Select Workspace to be opened.

- Topobase Client task pane appears in Map 3D window.

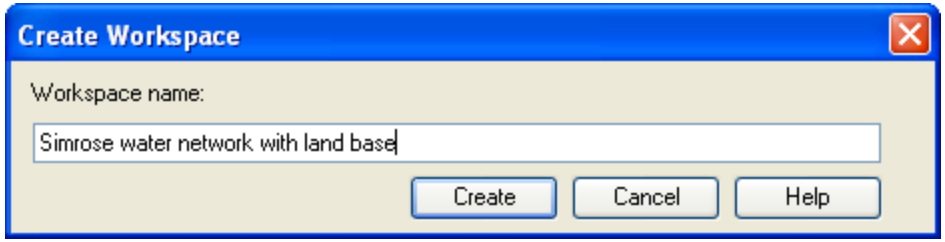
# 2.3 Workspace

- A workspace brings together one of more documents to combine the data
  - Document examples include land base, water network, gas

- A Topobase administrator prepares and configures workspaces for Autodesk Topobase 2009 users.

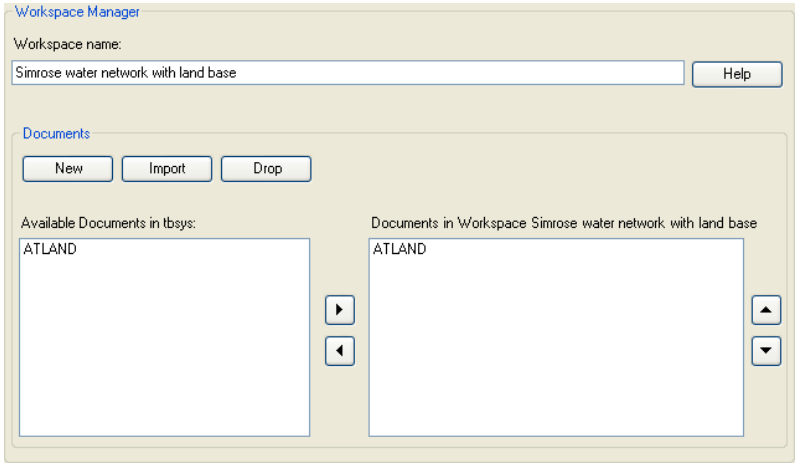
# 2.3.2 Creating a Workspace

- To create a workspace, launch Topobase Aministrator.
  - Select **Workspace** menu > **Create** and then type **Simrose water network with land base** in the Create Workspace form. Click **Create**.



# 2.3.3 Assigning Documents

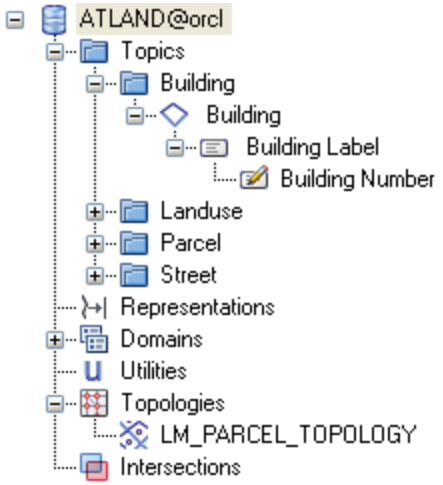
- Database schemas (documents) are listed in the Workspace Manager pane



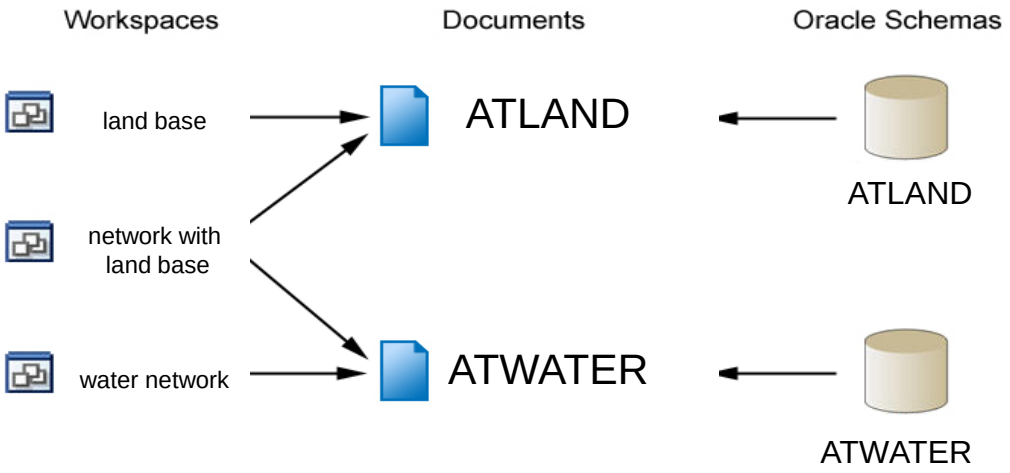

- To assign the document **ATLAND** to the open workspace, select the document in the left listbox and click ▸.

# 2.4 Data Model Administrator

- The Data Model Administrator enables an administrative user to manage data components in a document tree format.



# 2.4.1 Documents



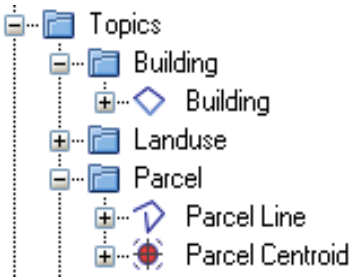





Autodesk

# 2.4.2 Topics

- A document contains one or more topics.
- Think of a topic as a container that organizes feature classes.
- A topic is represented by a folder icon in the data model administrator



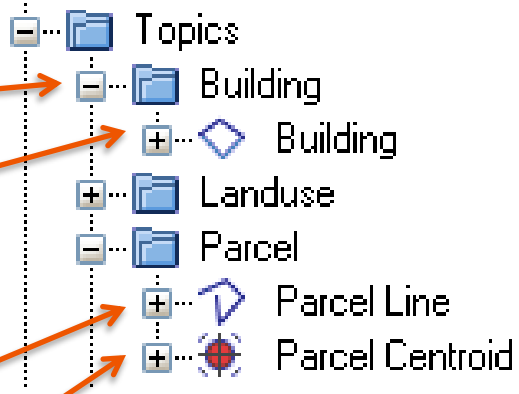
# 2.4.3 Feature Classes

- Topic—contains one or more feature classes.
- Feature class—an Oracle database table containing geometry and attribute data about features such as polygons, points, or lines.
- Tables—basic unit of data storage in an Oracle database.
  - A **column** refers to an attribute that describes the data.
  - A **row** is a collection of column information corresponding to a single record.

# 2.4.3 Feature Classes +

- Example

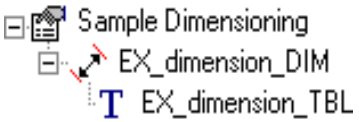
- Building topic contains
- Building polygon feature class




- Parcel topic contains
- Parcel line feature class
- Parcel centroid feature class

- You can group multiple feature classes into the same topic as shown in the Parcel topic.

# 2.4.3 Feature Classes ++

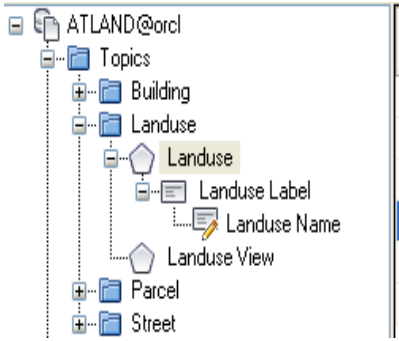
| | | |
|---|---|---|
|  | Attributes | Attribute table (without geometry) |
|  | Centroid | A special point that represents an area defined by line strings |
|  | Collection | Features with arbitrary geometry (line, point, etc.) |
|   | Dimension | A dimensioning feature class consists of three related tables: Attribute feature class, Dimension feature class, and Label feature class |
|  | Label | A Label feature class is used for text |

# 2.4.3 Feature Classes ++

| | | |
|---|---|---|
|  | LineString | A LineString feature contains polylines |
|  | Compound LineString | A compound LineString is a group comprising two line string feature classes |
|  | Polygon | A polygon feature class contains closed polygons |
|  | Compound Polygon | A compound polygon is a group comprising a line string and a polygon feature class |
|  | Point | A point feature class contains points |

# 2.4.4 Domains

- Domains—look-up tables in Oracle database, contain valid values for attributes of feature classes



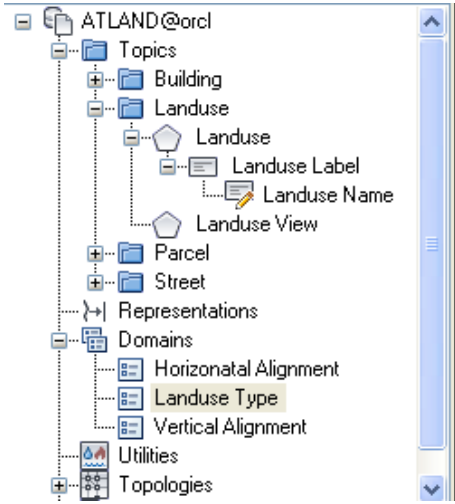

| Name | Caption | Unit | Data Type | Leng | Sc | Optional | Default | Relation(s) |
|---|---|---|---|---|---|---|---|---|
| FID | Feature ID | | Number | 10 | | False | | |
| GEOM | Geometry | | Geometry | 1 | | True | | |
| AREA | Area of the polygon | square meter | Number | 20 | 8 | True | | |
| ID_LANDUSE_TYPE | Landuse Type | | Number | 10 | | True | | LM_LANDUSE_TYPE_TBD.ID |
| NAME | Name | | Varchar2 | 100 | | True | | |
| NAME_LABEL | Name_Label | | Varchar2 | 100 | | True | | |

- The Landuse feature class attribute ID_LANDUSE_TYPE is related to the domain Landuse Type (ID_LANDUSE_TYPE_TBD).

# 2.4.4 Domains +

- Domains—represented by 

- Domain table for Landuse Type example:

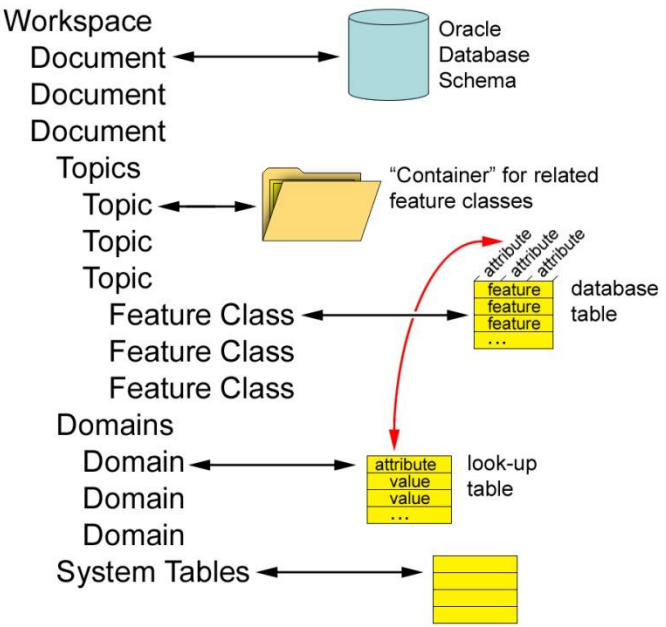



| Key | Value | Short Value | Active |
|---|---|---|---|
| 8 | Industry Medium | Ind Med | ☑ |
| 9 | Open Space Agriculture | OSp Agri | ☑ |
| 10 | Open Space Contours | OSp Con | ☑ |
| 11 | Open Space Park | OSp Park | ☑ |
| 12 | Open Space Recreational Area | OSp Rec | ☑ |
| 13 | Public Service Church | PSe Church | ☑ |
| 14 | Public Service Government | PSe Gov | ☑ |
| 15 | Public Service Medical | PSe Medical | ☑ |
| 16 | Public Service School | PSe School | ☑ |
| 17 | Residential Center | Res Cen | ☑ |
| 18 | Residential High | Res High | ☑ |
| 19 | Residential Low | Res Low | ☑ |
| 20 | Residential Medium | Res Med | ☑ |

# 2.4.5 System Tables

- System Tables—Topobase administrative tables stored in the schema, contain metadata and configuration information for the application

- Users may or may not be able to view the system tables depending on their permissions for data access.



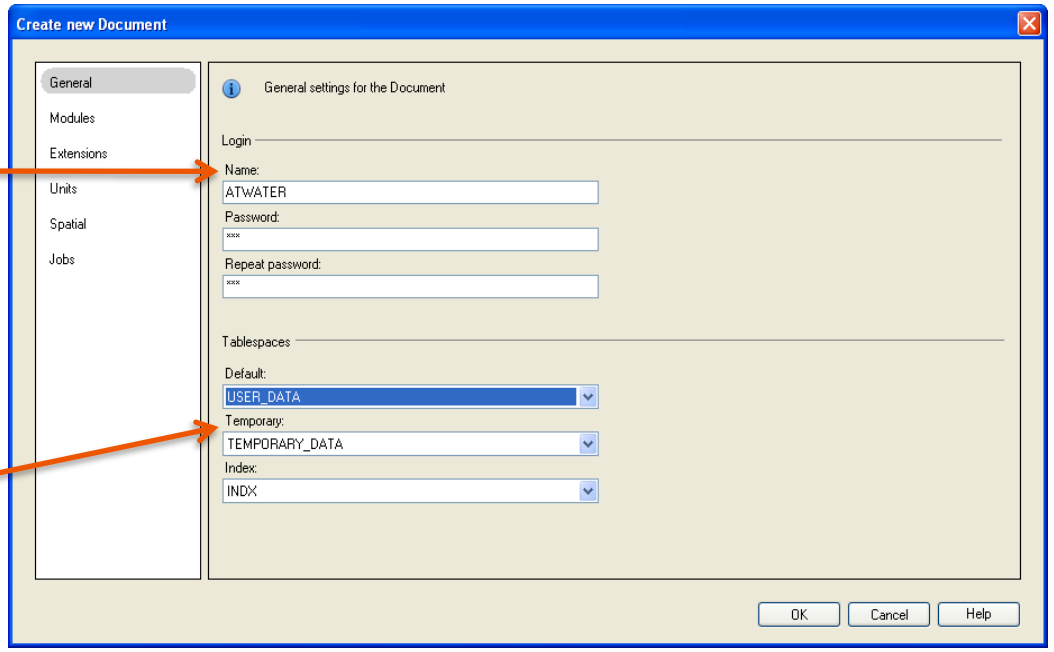





Autodesk

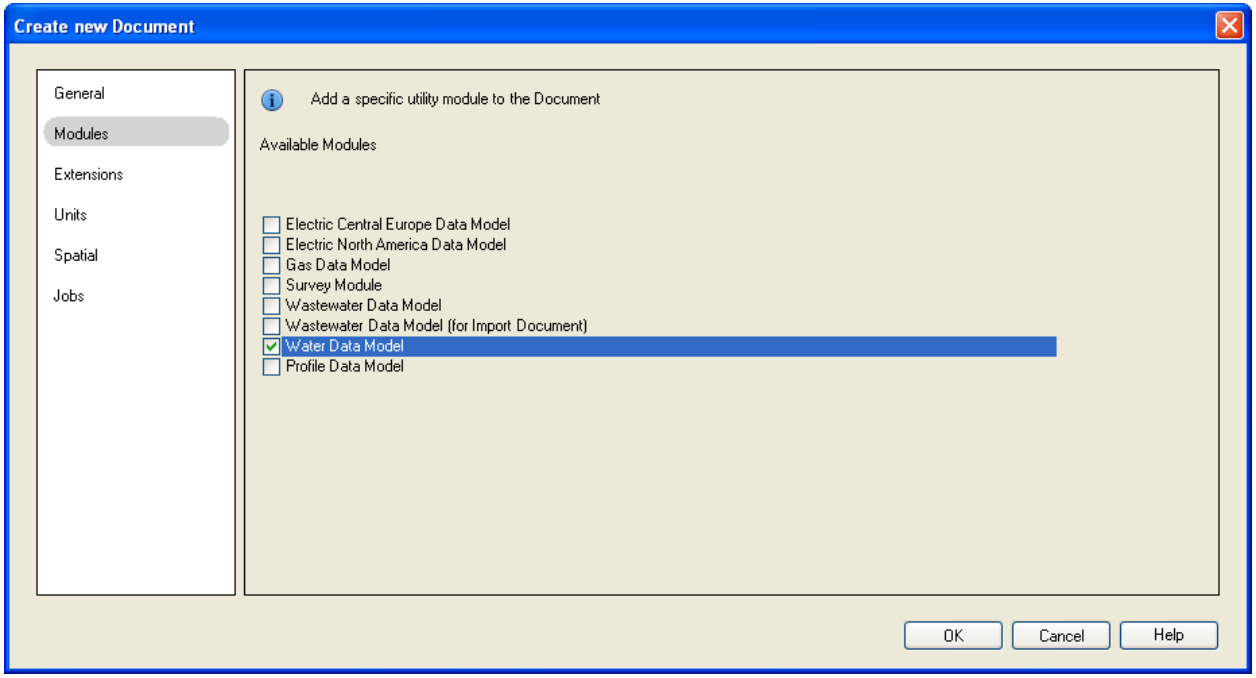
# 2.5 Creating a New Document

- Name: Document name is the name that the associated schema will have in the Oracle database
- Tablespace names depend on the Oracle installation.

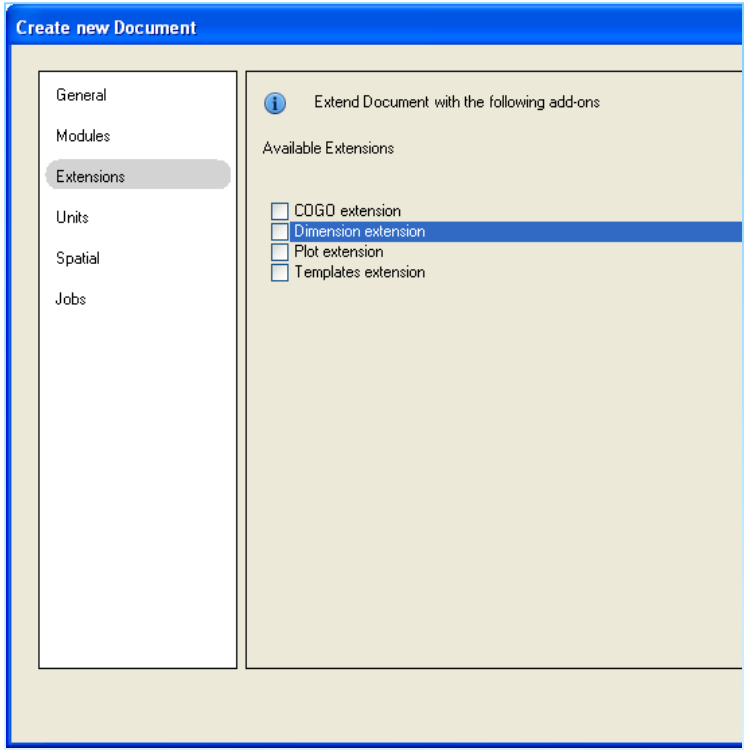


# 2.5.2 Modules

- Modules section—allows you to create a vertical utility module as part of your new document



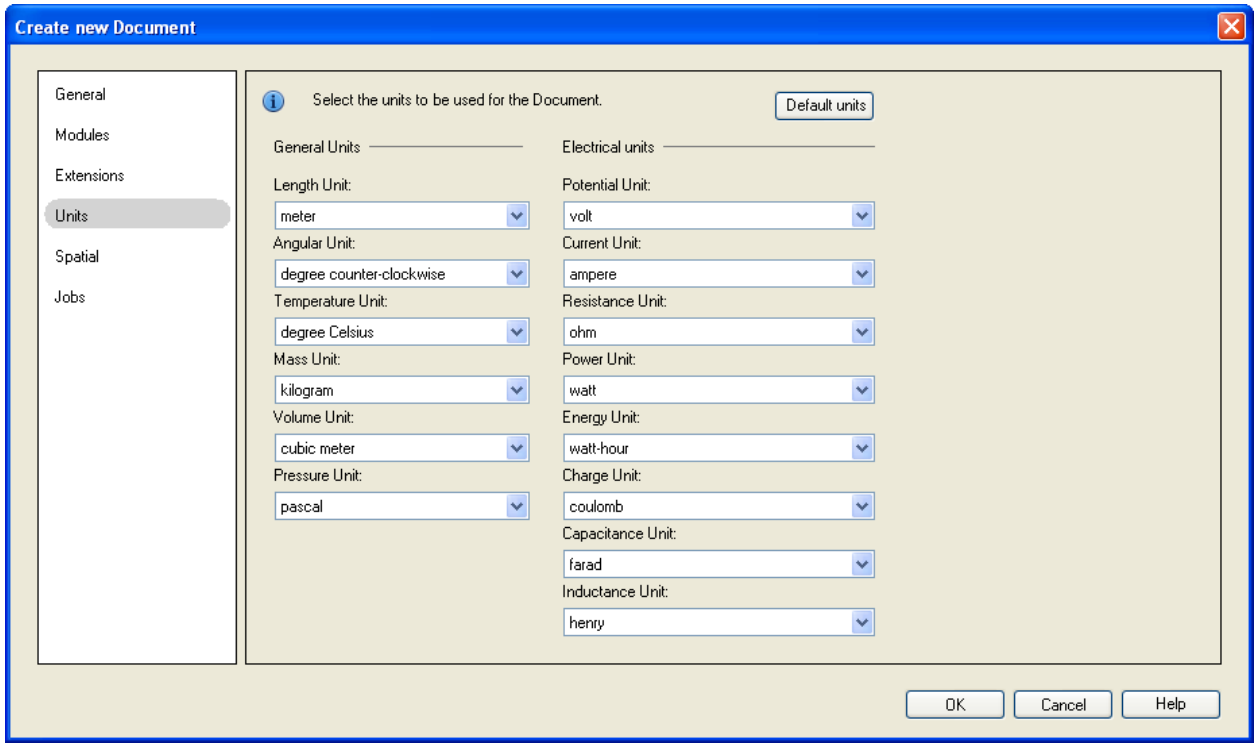
# 2.5.3 Extensions




- **COGO**—adds the COGO construction feature classes
- **Dimension**—adds the default feature classes for orthogonal and aligned dimensioning
- **Plot**—Adds the plot feature classes
- **Template**—adds the template feature classes

All extensions are toggled off for this example.

# 2.5.4 Units



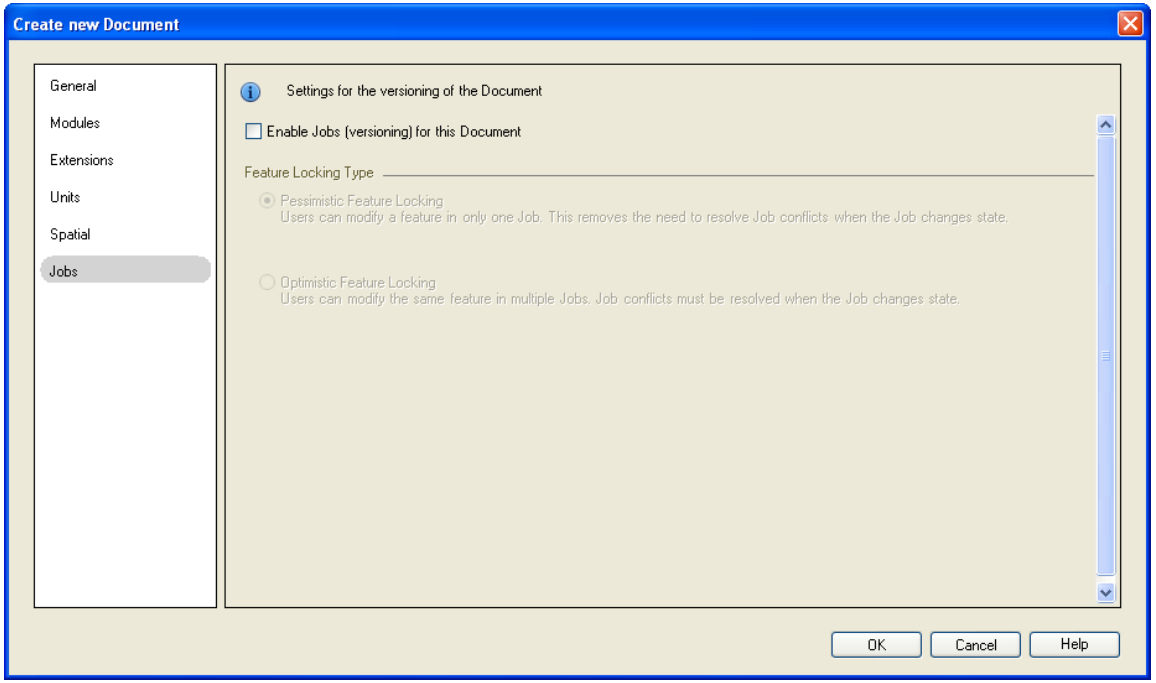
# 2.5.5 Spatial

- The Spatial section enables you to adjust the spatial settings applied to the data in the document. The spatial settings you can adjust are:

- **Dimensions** 2D to store plane geometry, 3D to enable 3D support
- **Tolerance** the minimum separation required between two coordinates for them to be distinct
- **Northing** *y* coordinate, the difference in latitude between two positions as a result of movement north or south
- **Easting** *x* coordinate, the difference in longitude between two positions as a result of movement east or west
- **Elevation** the difference in height between two positions as a result of movement up or down
- **Spatial Reference ID** set the appropriate coordinate system for your document

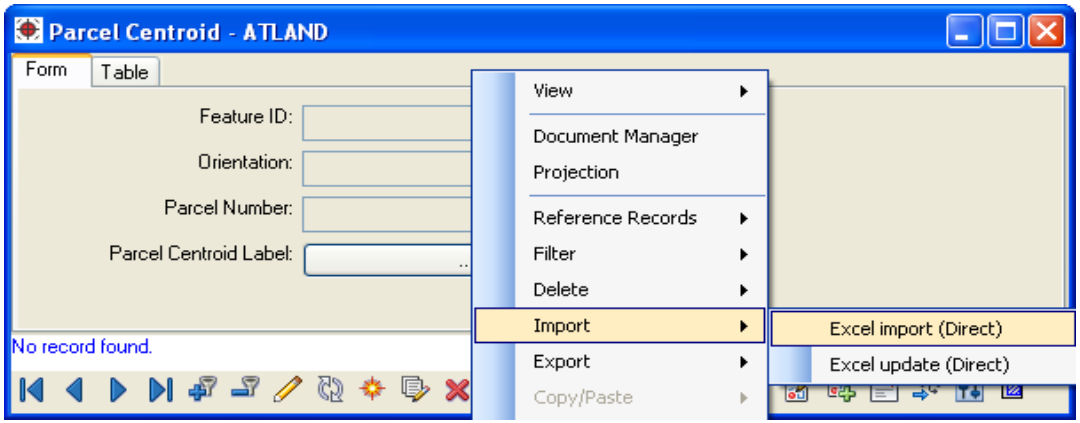
# 2.5.6 Jobs

- If job versioning will be used, toggle on Enable Jobs.



# 2.6 Importing *x,y* Coordinates from an Excel Spreadsheet +

- Right-click in the window for the context menu.
- Select Import > Excel import (Direct).





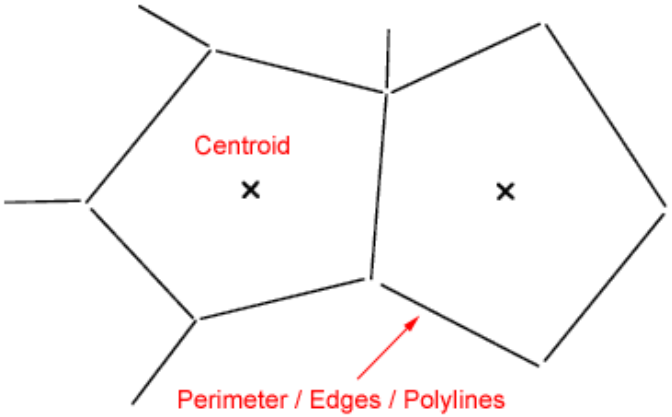



Autodesk

# 2.7 Area Topology

- Topology makes GIS powerful by defining the spatial relationships between objects.

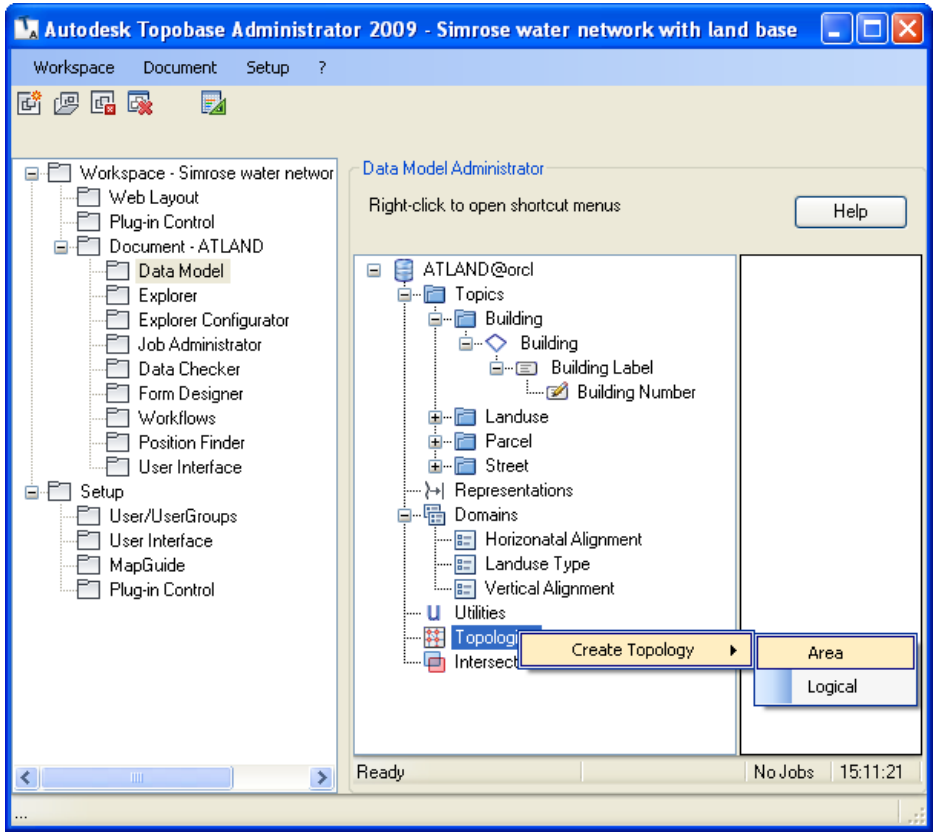
- You can use a line feature class and a point feature class to create an *area topology*.
  - The lines are called edges.
  - The points are called centroids.
  - The region inside the edges is a polygon.



# 2.7.1 Define the Area Topology

To create a new area topology named LM_PARCEL_TOPOLOGY:

In the Data Model Administrator, right click Topologies, then select **Create Topology > Area** from the shortcut menu.



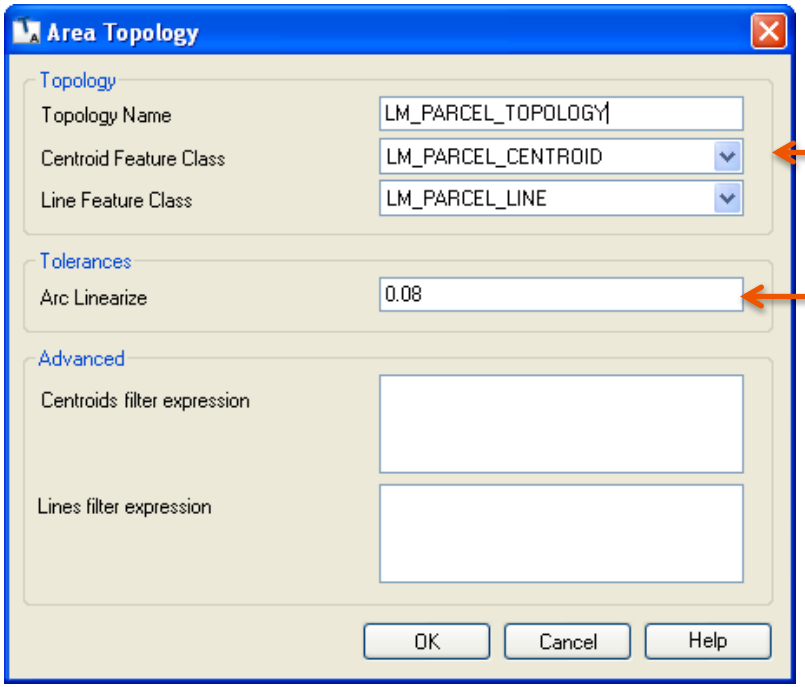





Autodesk

# 2.7.1 Define the Area Topology +

Resulting Area Topology form:




Enter Topology values.

By using the **Arc Linearize** tolerance, you can control how Topobase repairs minor overlapping of arc segments.

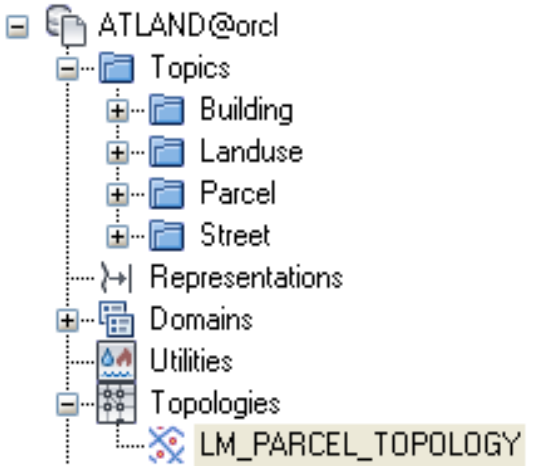




Autodesk

# 2.7.1 Define the Area Topology ++

To initialize, right-click LM_PARCEL_TOPOLOGY and select **Initialize topology** in the shortcut menu that appears.



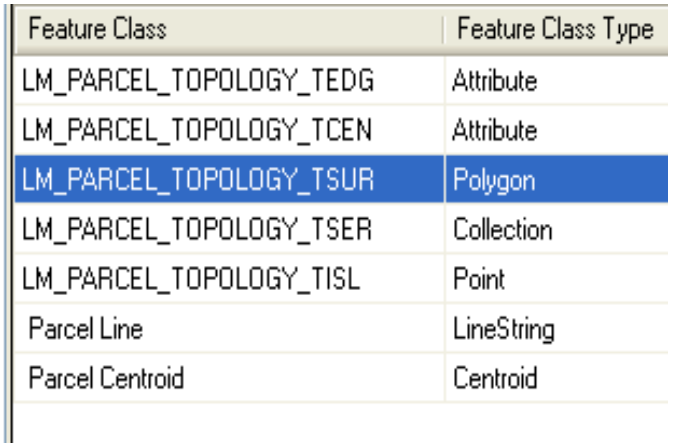
# 2.7.1 Define the Area Topology +++

The right pane of the Data Model Administrator shows the feature classes associated with the LANDUSE topology.

You specified both the Parcel Line and Parcel Centroid feature classes.

Topobase created the following feature classes:

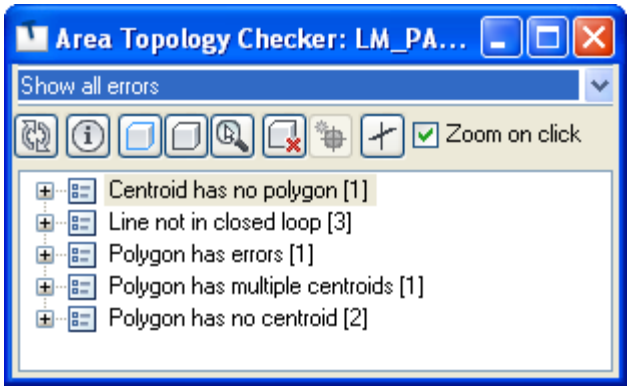
**LM_PARCEL_TOPOLOGY_TEDG**
**LM_PARCEL_TOPOLOGY_TCEN**
**LM_PARCEL_TOPOLOGY_TSUR**
**LM_PARCEL_TOPOLOGY_TSER**
**LM_PARCEL_TOPOLOGY_TISL**



| Feature Class | Feature Class Type |
|---|---|
| LM_PARCEL_TOPOLOGY_TEDG | Attribute |
| LM_PARCEL_TOPOLOGY_TCEN | Attribute |
| LM_PARCEL_TOPOLOGY_TSUR | Polygon |
| LM_PARCEL_TOPOLOGY_TSER | Collection |
| LM_PARCEL_TOPOLOGY_TISL | Point |
| Parcel Line | LineString |
| Parcel Centroid | Centroid |

# 2.7.2 Topology Checker +

- The topology checker analyzes the Topology and shows a structured list of error descriptions.
- You can examine the results using the tools at the top of the window:




 Refreshes the list

 Opens the feature class form of the selected feature

 Highlights the selected features on the map, based on the node selected.  for multiple features in a node.

 Unhighlights any feature currently highlighted

 Zooms to selected features

 Deletes selected features

 Creates missing centroids

 Finds intersecting lines

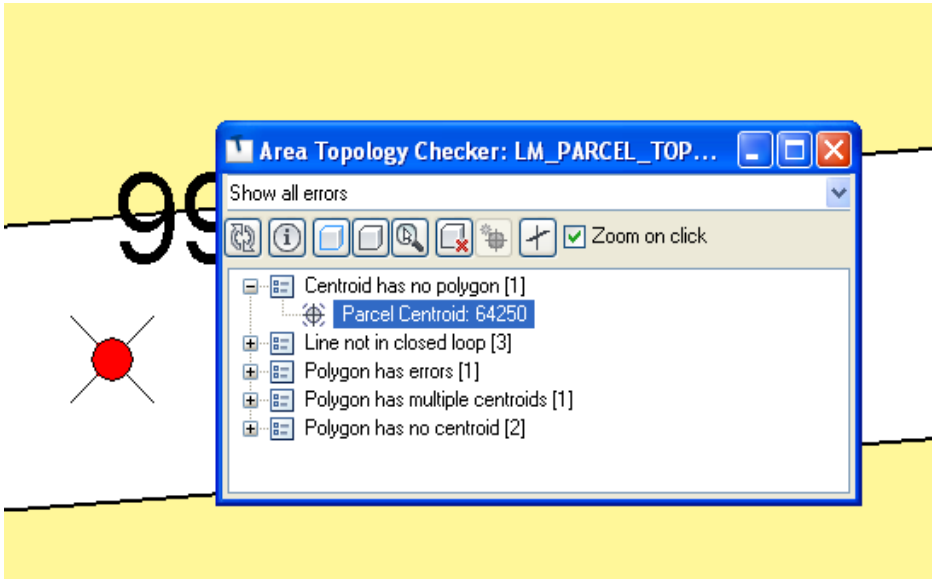




Autodesk

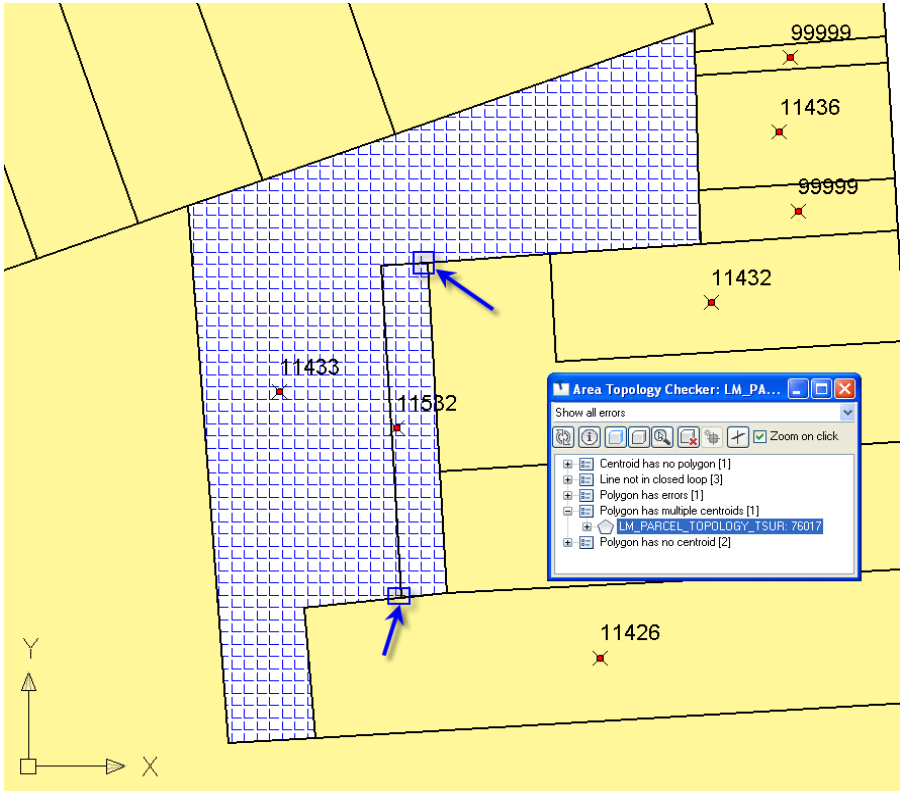
# 2.7.2 Topology Checker Error

## Centroid has no polygon



# 2.7.2 Topology Checker Error

## Polygon has multiple centroids



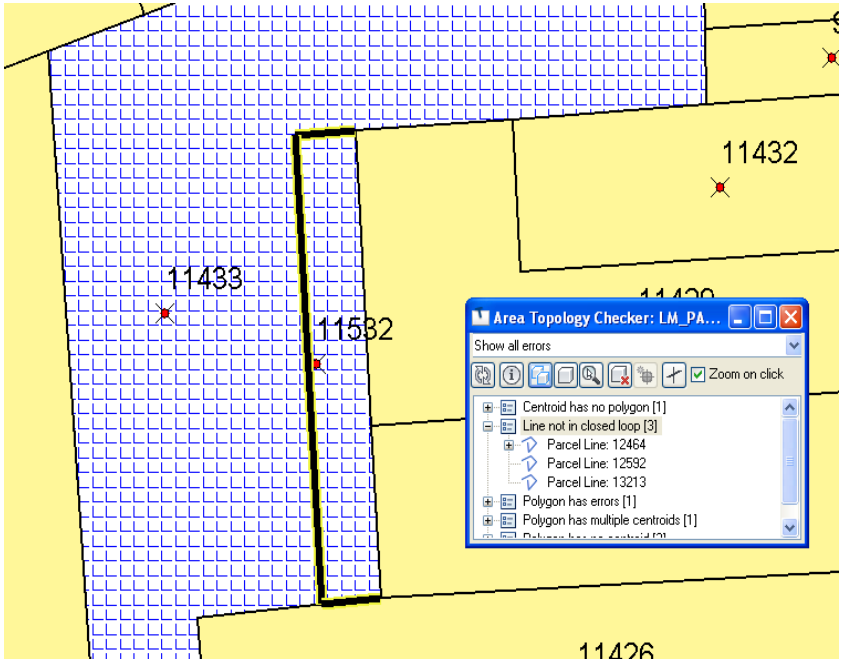


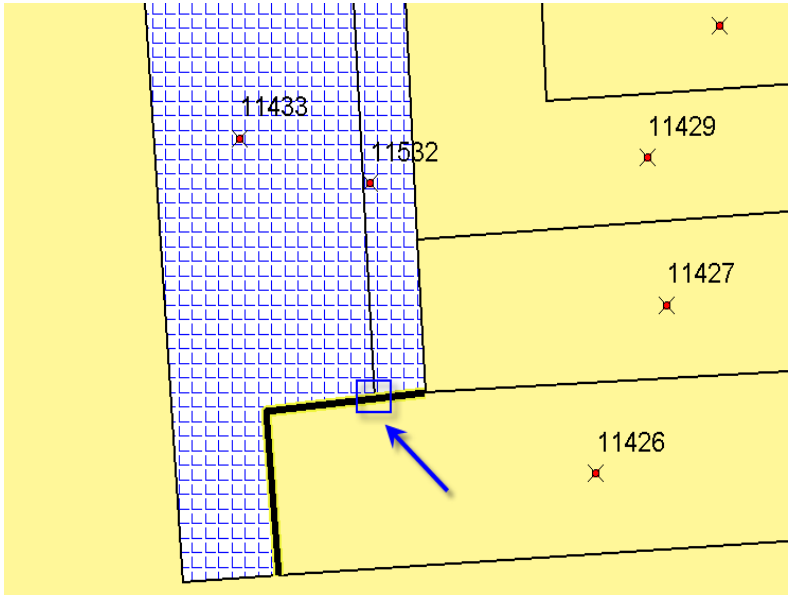



Autodesk

# 2.7.2 Topology Checker Error

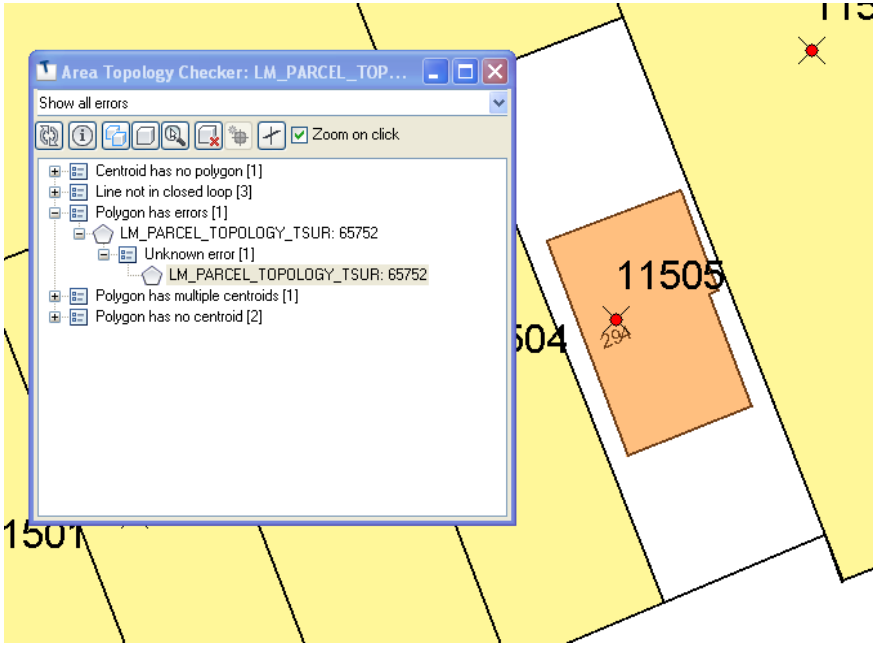
## Line not in closed loop

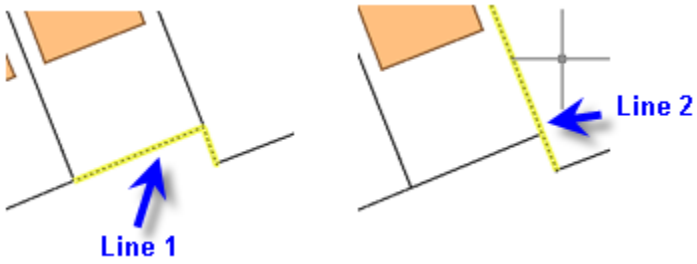


# 2.7.2 Topology Checker Error

## Polygon has errors



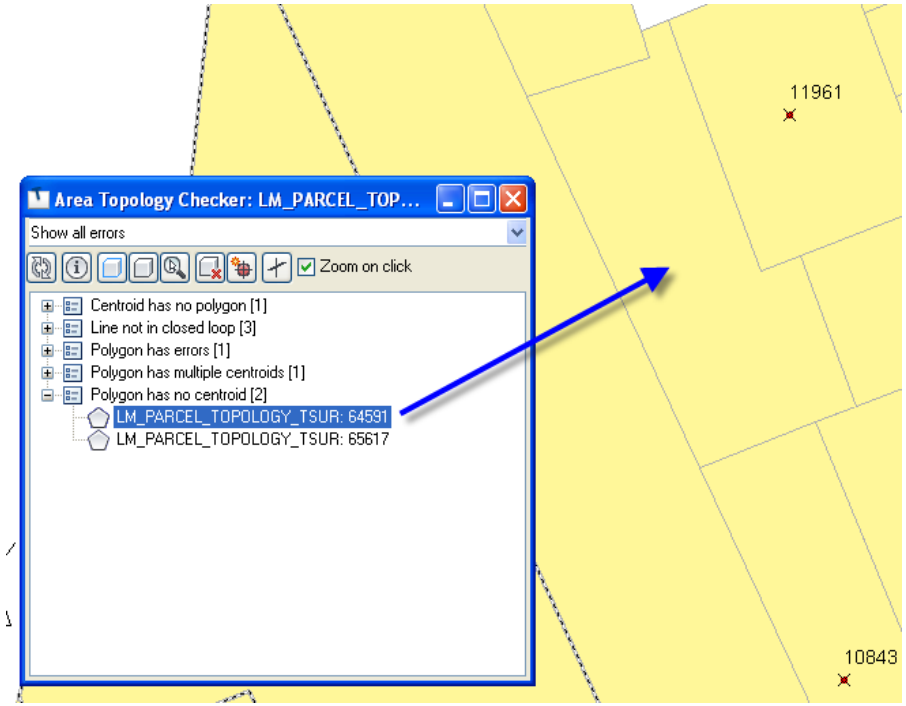





Autodesk

# 2.7.2 Topology Checker Error

## Polygon has no centroid




Click  for the automatic generation of a new centroid feature for the listed Polygon.

# 2.8 Data Checker

- Use the Topobase Data Checker to validate the quality of your data.

- The Data Checker can be run:
  - Manually
  - On demand
  - On a scheduled basis

# 2.8.1 Data Check Process

- A check consists mainly of a SQL statement which analyzes the data and returns the errors.
- If the Select statement doesn't return any rows, then the data is correct.
- The SQL statement must have the following syntax:

```
SELECT fid
FROM <feature_class_to_be_checked>
WHERE <check_condition>
```

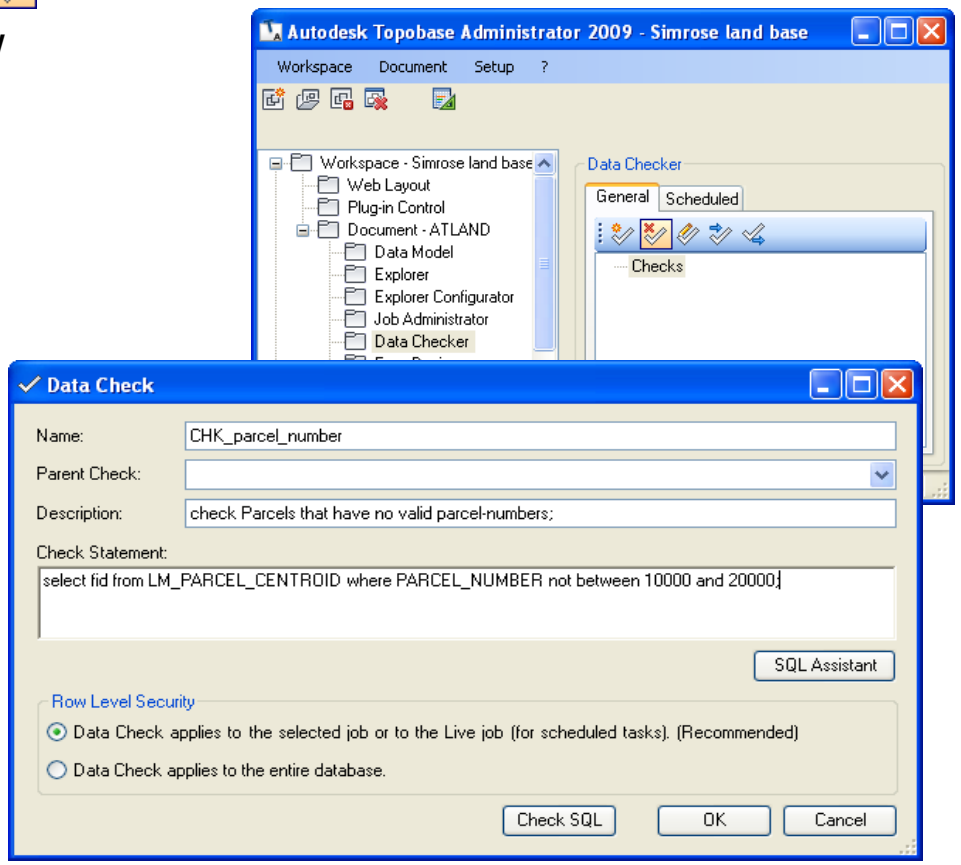
- The SQL statement has to return the FID to allow the display of features in Topobase Client.

# 2.8.1 Define the Data Checker

To define a new check, **click** and the Data Checker window appears.

1. Choose recommended **Row Level Security.**

2. Use **SQL Assistant** for support creating SQL statements.



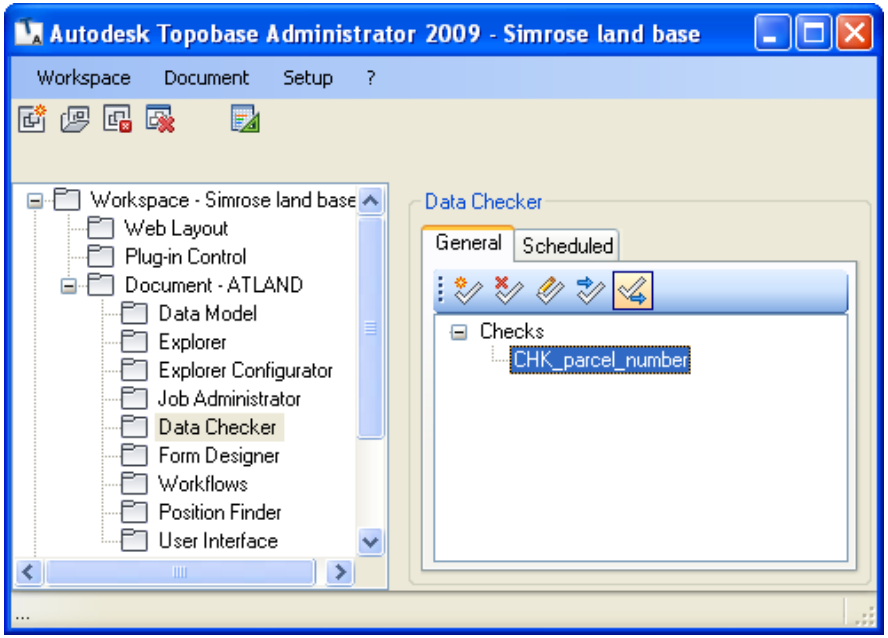





Autodesk

# 2.8.1 Define the Data Checker +

Click to save the defined Data Check to an XML file.








Autodesk

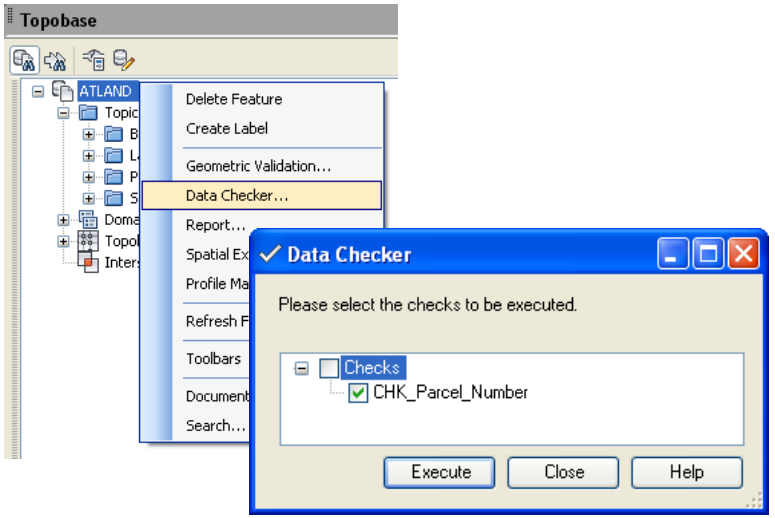
# 2.8.1 Define the Data Checker ++

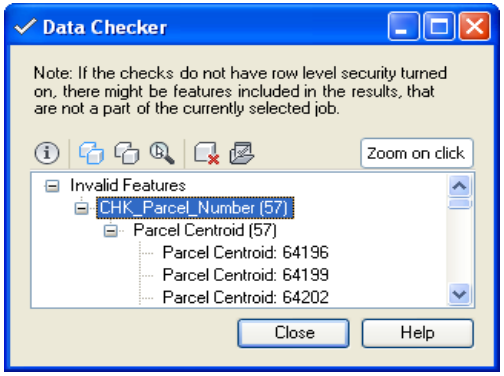
***Run the data checker***

1. Right-click **ATLAND** and select **Data Checker** from the context menu.

2. Check **CHK_Parcel_Number** and click **Execute**.

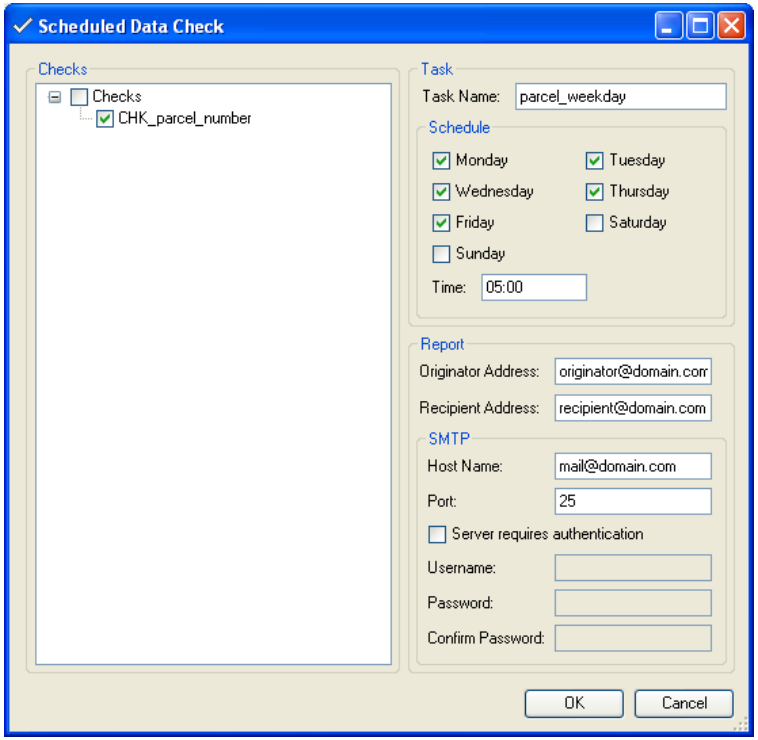
3. Results are displayed in the Data Checker window with functions similar to the topology checker.



# 2.8.2 Define a Scheduled Data Checker

In the Data Checker, select the **Scheduled** tab and **click**  to define a new schedule.



# 2.10 Chapter Summary

- You should now be able to:

  - Launch and use Topobase Administrator
  - Understand Topobase terminology
  - Explain workspace, document, topic, feature class and domain and Area Topology
  - Create new documents
  - Import geographical Excel-Data
  - Use the area topology functionalities
  - Use the Data Checker

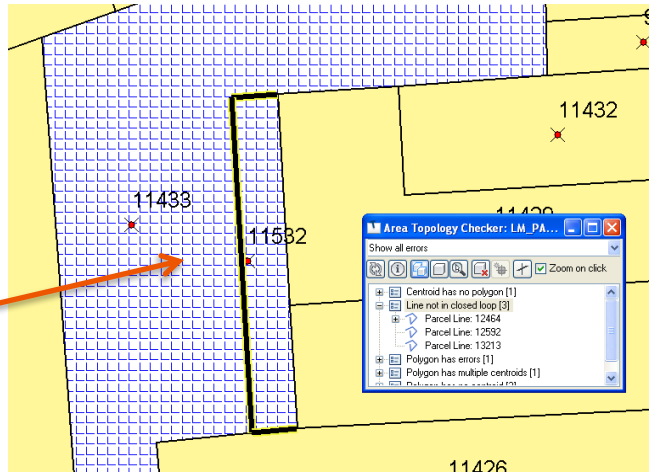
# Additional Slides

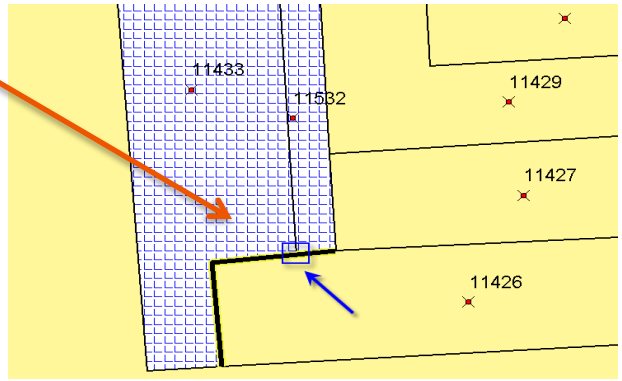
# Lab Exercise—Topology Checker Error

## Line not in closed loop

1. Select **Line not in closed loop [3]**. The actions you perform now are for all features with this type of error.
2. Click  to **highlight** all features.

- This is the same polygon shown in the previous error. You can see that those three lines highlighted should define a new polygon.
- If you select the line at the bottom, you can see that it is overlapping one of the three lines.




**Correction:**

1. Trim the highlighted line to the common end points marked by the rectangle.
2. Activate object snap to facilitate the editing.
3. The two polygons are generated automatically and the old polygon is removed.



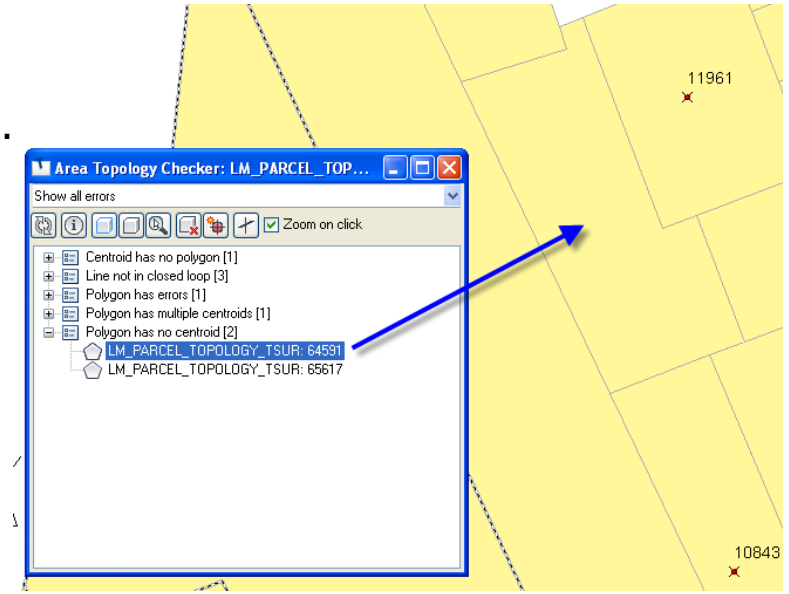


Autodesk

# Lab Exercise—Topology Checker Error

## Polygon has no centroid

- Select **Polygon has no centroid [2]** and click the first node.
- The polygon does not have a centroid.




**Correction:**

1. Click  for the automatic generation of a new centroid feature for the listed Polygon.
2. Complete the attribute data and create a label for the new centroid, if necessary.





Autodesk

Autodesk®