



ArcGIS 10.4 for INSPIRE: INSPIRE Geodatabase Templates Installation Guide

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1 Introduction

The purpose of this document is to provide instructions on installation of the ArcGIS 10.4 for INSPIRE Geodatabase Templates. The target audience of this document is existing ArcGIS for INSPIRE users who want to upgrade the geodatabase to ArcGIS 10.4 for INSPIRE and first-time users who want to install ArcGIS 10.4 for INSPIRE directly on their machines.

2 System Requirements

See the System Requirements section of the ArcGIS for INSPIRE web help at

- [English](#)
- [French](#)
- [German](#)
- [Spanish](#)

3 Installation

To apply the ArcGIS 10.4 for INSPIRE Geodatabase Template, you must first install the template and then follow instructions to load data for the INSPIRE database. If you already have ArcGIS 10.3, 10.3.1 or ArcGIS 10.3.1 Update 1 geodatabase, you can still use it with 10.4 software. If you have ArcGIS 10.2.1 or 10.2.2 for INSPIRE Geodatabase, you will need to upgrade to 10.3 or newer version.

3.1 Prerequisites

3.1.1 Database User Rights

3.1.1.1 ArcGIS 10.4 for INSPIRE

Prior to ArcGIS 10.1 SP1 for INSPIRE, there have been some limitations when connecting to an enterprise geodatabase. The user connecting to the geodatabase when running the service needed to be the data owner.

Start from 10.1 service pack 1, this limitation has been eliminated. The product now supports connecting to and creating INSPIRE services as a user but not necessarily the INSPIRE data owner. This upgrade allows a clear separation of database roles, as the "service user" only needs read access to the INSPIRE schema data. This is more in alignment with common security practices for IT production environments.

Starting from 10.1 service pack 1, the following privileges are necessary for the user to connect to the INSPIRE geodatabase, and it no longer requires the create view privilege.

- Read privilege to the INSPIRE geodatabase.
- Insert, update, and delete access for the PredefinedDatasets table. The table is used for creating stored queries for INSPIRE download services.

Make sure that the user interacting with the database layer is allowed to create and delete database views. For that, grant specific rights on the database level to the user:

```
GRANT CREATE VIEW TO <USER|ROLE>;
```

```
GRANT DELETE VIEW TO <USER|ROLE>;
```

3.2 Install

The geodatabase implementation of the INSPIRE data models is defined using the Esri geodatabase XML description. For more detailed information, see "XML Schema of the Geodatabase" at support.esri.com/en/knowledgebase/whitepapers/view/productid/43w/metaid/695.

The latest version of the INSPIRE Esri geodatabase template file can be found in the ArcGIS for INSPIRE distribution folder (e.g., <ArcGIS for INSPIRE_DVD>\GDB Templates).

3.3 Create a new INSPIRE Geodatabase

In order to support additional data themes for INSPIRE II and III, start with 10.3 more flexibility are added so that user have the option to create geodatabase for Annex I, data themes for Annex II and III such as LC, GE, either individually or any of the combinations, the overall process is like the following:

1. Create the common info tables for ArcGIS for INSPIRE
 - Import ArcGIS XML workspace document a4icomon.xml (e.g., <ArcGIS for INSPIRE_DVD>\GDB Templates)
2. If you would like to create or add the ArcGIS Geodatabase for INSPIRE Annex I, load the respective record sets into the tables created in step 1. Precisely:
 - a. Select the "Load XML RecordSet Document" option on LayerInfo table and select <ARCGIS FOR INSPIRE_DVD>\GDB Templates\A1\A1_LayerInfo.xml as the source to load
 - b. Select the "Load XML RecordSet Document" option on RelationshipInfo table and select <ARCGIS FOR INSPIRE_DVD>\GDB Templates\A1\A1_RelationshipInfo.xml as the source to load
 - c. Select the "Load XML RecordSet Document" option on SpatialObjectTypeInfo table and select <ARCGIS FOR INSPIRE_DVD>\GDB Templates\A1\A1_SpatialObjectTypeInfo.xml as the source to load

Note: When loading recordset, make sure SPATIAL_OBJECT_TYPE field matches between source and target
 - d. Select the "Load XML RecordSet Document" option on SubtypesInfo table and select <ARCGIS FOR INSPIRE_DVD>\GDB Templates\A1\A1_SubtypesInfo.xml as the source to load

Note: When loading recordset, make sure SPATIAL_OBJECT_TYPE field matches between source and target
 - e. Import (schema only) the XML workspace document <ARCGIS FOR INSPIRE_DVD>\GDB Templates\A1\A1.xml into the geodatabase

3. If you would like to create or add the ArcGIS Geodatabase for INSPIRE Land Cover, load the respective record sets into the tables created in step 1. Precisely:
 - a. Select the “Load XML RecordSet Document” option on LayerInfo table and select *<ARCGIS FOR INSPIRE_DVD>\GDB Templates\LC\lc_LayerInfo.xml* as the source to load
 - b. Select the “Load XML RecordSet Document” option on RelationshipInfo table and select *<ARCGIS FOR INSPIRE_DVD>\GDB Templates\LC\lc_RelationshipInfo.xml* as the source to load
 - c. Select the “Load XML RecordSet Document” option on SpatialObjectTypeInfo table and select *<ARCGIS FOR INSPIRE_DVD>\GDB Templates\LC\lc_SpatialObjectTypeInfo.xml* as the source to load

Note: When loading recordset, make sure SPATIAL_OBJECT_TYPE field matches between source and target
 - d. Select the “Load XML RecordSet Document” option on SubtypesInfo table and select *<ARCGIS FOR INSPIRE_DVD>\GDB Templates\LC\lc_SubtypesInfo.xml* as the source to load

Note: When loading recordset, make sure SPATIAL_OBJECT_TYPE field matches between source and target
 - e. Import (schema only) the XML workspace document *<ARCGIS FOR INSPIRE_DVD>\GDB Templates\LC\lc.xml* into the geodatabase
4. If you would like to create or add the ArcGIS Geodatabase for INSPIRE Geology, load the respective record sets in the tables created in step 1. Precisely:
 - a. Select the “Load XML RecordSet Document” option on LayerInfo table and select *<ARCGIS FOR INSPIRE_DVD>\GDB Templates\GE\ge_LayerInfo.xml* as the source to load
 - b. Select the “Load XML RecordSet Document” option on RelationshipInfo table and select *<ARCGIS FOR INSPIRE_DVD>\GDB Templates\GE\ge_RelationshipInfo.xml* as the source to load
 - c. Select the “Load XML RecordSet Document” option on SpatialObjectTypeInfo table and select *<ARCGIS FOR INSPIRE_DVD>\GDB Templates\GE\ge_SpatialObjectTypeInfo.xml* as the source to load

Note: When loading recordset, make sure SPATIAL_OBJECT_TYPE field matches between source and target
 - d. Select the “Load XML RecordSet Document” option on SubtypesInfo table and select *<ARCGIS FOR INSPIRE_DVD>\GDB Templates\GE\ge_SubtypesInfo.xml* as the source to load

Note: When loading recordset, make sure SPATIAL_OBJECT_TYPE field matches between source and target
 - e. Import (schema only) the XML workspace document *<ARCGIS FOR INSPIRE_DVD>\GDB Templates\GE\ge.xml* into the geodatabase

5. Follow steps as above if you want to create or add the ArcGIS Geodatabase for INSPIRE Mineral resources, Land use, Statistical units. Please note that Mineral Resources requires the Geology template which must be loaded in the enterprise geodatabase.

If you want load all implemented data themes (Annex I, LC, GE, MR, LU, SU) all at once, you can load ArcGIS Workspace document "A4I_AllInOne_10.4.xml" in one simple step.

After completing the steps above, the geodatabase can be used as target geodatabase for populating INSPIRE data for the data themes installed in the geodatabase.

Example: General steps for importing ArcGIS XML workspace:

1. Start ArcCatalog.
2. Right-click your spatial database connection and choose Import > XML Workspace Document (figure 1).

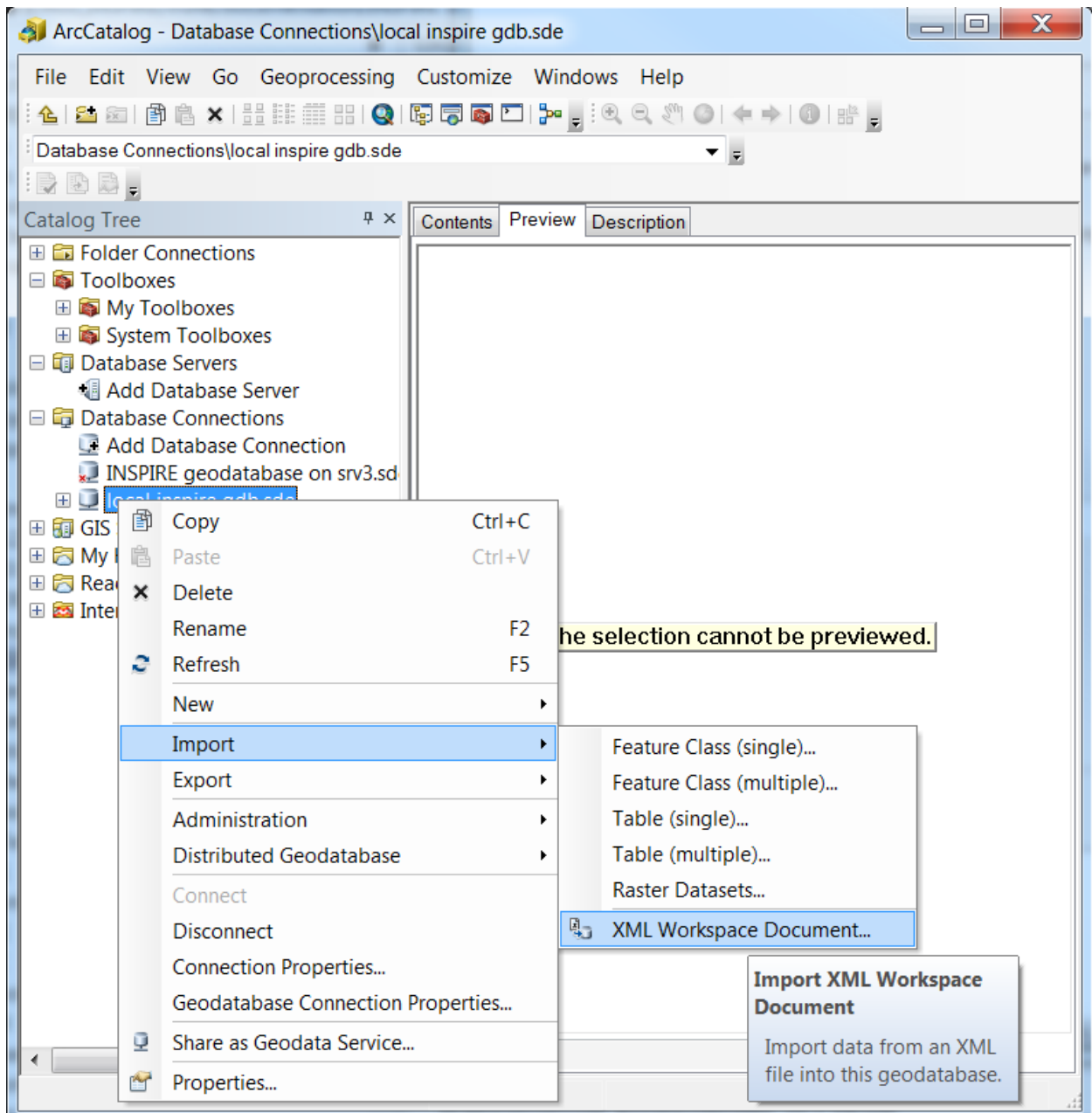


Figure 1: Import of XML Workspace Document

3. Navigate to the desired xml workspace file (e.g. <ArcGIS for INSPIRE_DVD>\GDB Templates\a4icommon.xml and click Next (figure 2). Make sure you have selected the Data option, because the workspace document contains some information required to run ArcGIS for INSPIRE correctly.

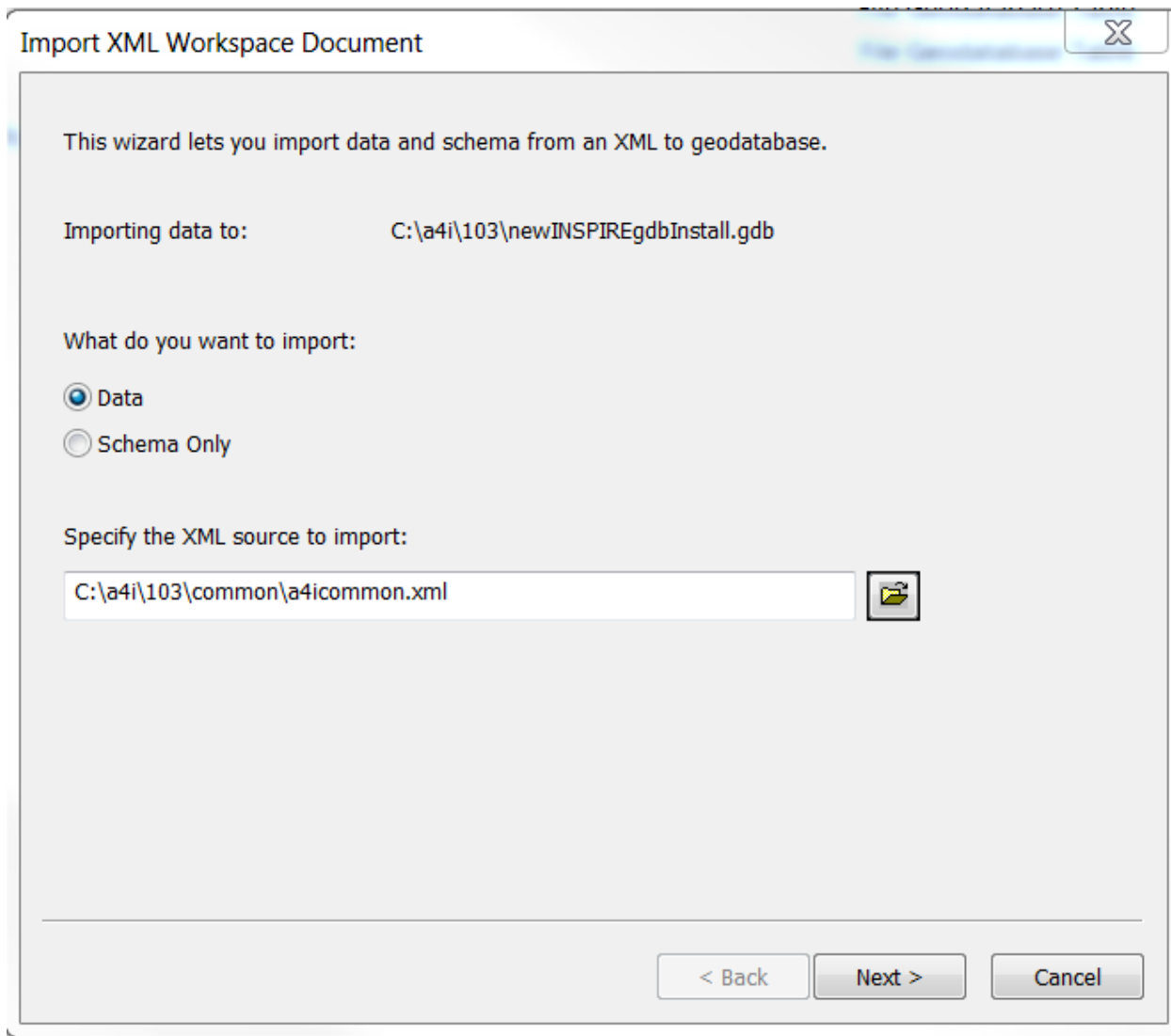


Figure 2: Specify XML Workspace Document to Be Imported

4. Click Next. ArcCatalog displays a table that indicates the details of objects to be created (figure 3). The table includes the following columns: Type, Source Name, Target Name, and Config. Keyword. Each type can be a table, a feature class, or a domain.

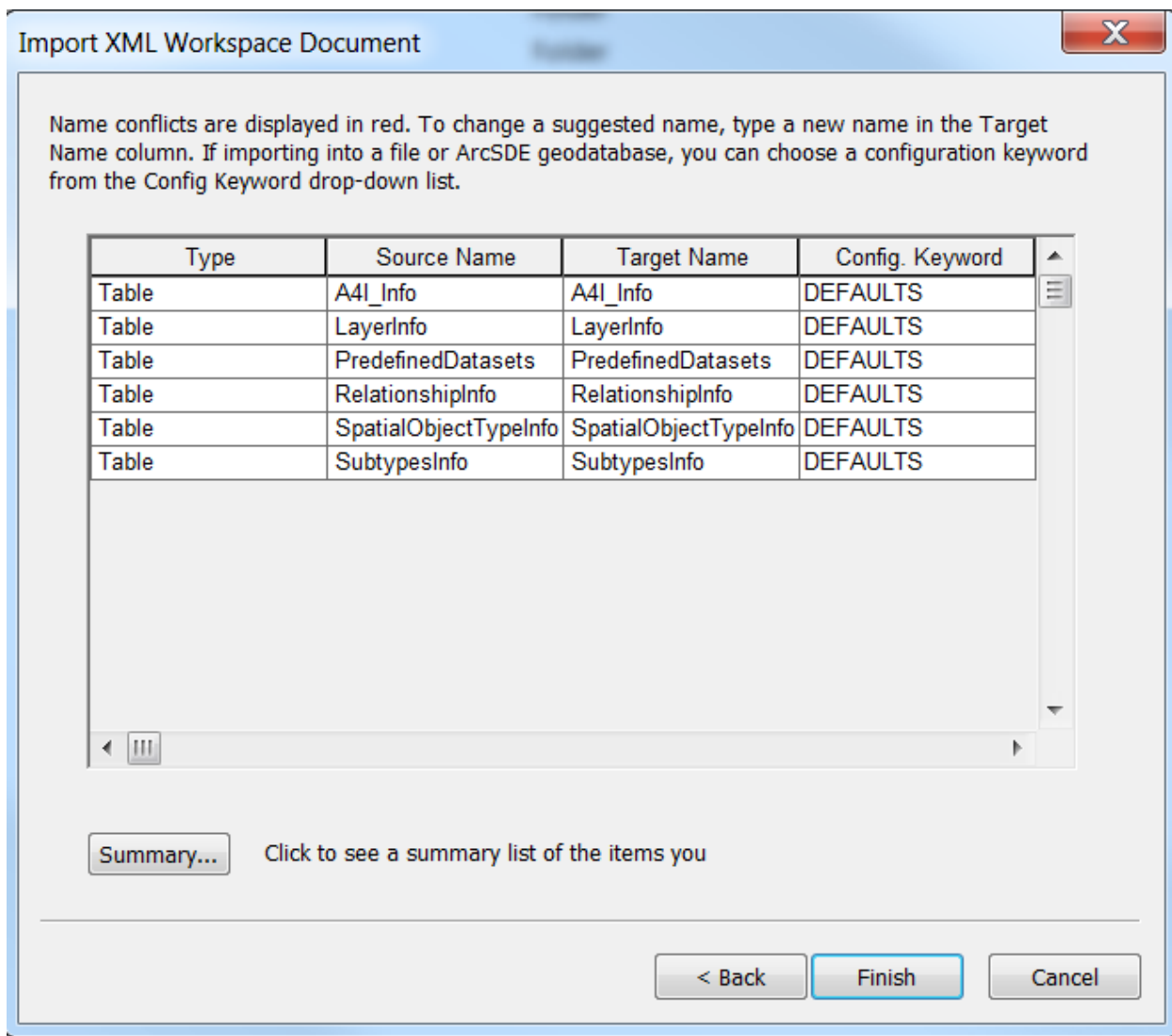


Figure 3: Overview of Feature Classes and Tables to Be Imported

- Click Finish to complete the import. ArcCatalog imports the data and creates the geodatabase for INSPIRE common tables.

Detailed documentation can also be found in the web help topic "Importing a geodatabase schema from an XML workspace document," at

http://resources.arcgis.com/en/help/main/10.2/#/Importing_a_geodatabase_schema_from_an_XML_workspace_document/003n0000002q000000.

3.4 Update the INSPIRE Geodatabase

You would need to read this section only if you would like to upgrade from an earlier version of ArcGIS for INSPIRE geodatabase template, please also verify that your database is still supported at ArcGIS 10.4 for INSPIRE.

Note: You will need to apply the changes below incrementally starting from your current version to 10.4.

3.4.1 Updating the INSPIRE Geodatabase from ArcGIS 10.3.1 Update 1 to 10.4

INSPIRE 10.3.1. Update 1 geodatabase implements the new V4 of the INSPIRE schema, it includes Annex I, LC, GE data themes. If you are using this geodatabase template version of Annex I, LC or GE, there is no other updates are needed for 10.4. If you want to use new data themes added in 10.4, you can add those data themes (MR, LU and SU) by following the steps in Section 3.3.

3.4.2 Updating the INSPIRE Geodatabase from ArcGIS 10.3/10.3.1 to 10.3.1 Update 1

10.3/10.3.1 geodatabase implement V3 of the INPIRE schema, it contains Annex I, LC and GE data theme, the 10.4 software continue to work with this version of the INSPIRE geodatabase.

If you are planning to implement the new geodatabase template and you already have the geodatabase at version 10.3/10.3.1, please see table below to help you understanding the differences between version 3 of the application schemas (included in ArcGIS 10.3/10.3.1 for INSPIRE) and the new version 4 (included with ArcGIS 10.3/10.3.1 Update 1 for INSPIRE and ArcGIS 10.4 for INSPIRE). Land Cover and Geology templates are not different from the version in 10.3/10.3.1.

Please also be aware that when transitioning to version 4 the ArcGIS map documents (mxd) previously generated would have to be recreated.

Theme	FeatureType	GDB template change	GML schema change	added	deleted
AD	ad:Address		x		
	ad:AddressAreaName		x		
	ad:AdminUnitName		x		
	ad:PostalDescriptor		x		
	ad:ThoroughfareName		x		
AU	au:AdministrativeBoundary		x		
	au:AdministrativeUnit		x		
	au:Condominium				
	stat:NUTSRegion				x
	mu:Baseline	x	x	x	
	mu:MaritimeBoundary	x	x	x	
	mu:MaritimeZone	x	x	x	
	bgr:Bio-GeographicalRegion		x		x
	bui:Building				x
	bui:ControlTower				x
CP	cp:BasicPropertyUnit				

	cp:CadastralBoundary				
	cp:CadastralParcel				
	cp:CadastralZoning		x		
GN	gn:NamedPlace		x		
	hb:Habitat				x
HY	hy-n:HydroNode		x		
	hy-n:WatercourseLink		x		
	hy-n:WatercourseLinkSequence				
	hy-n:WatercourseSeparatedCrossing				
	hy-p:DrainageBasin				
	hy-p:RiverBasin				
	hy-p:FluvialPoint				
	hy-p:Rapids				
	hy-p:Falls				
	hy-p:LandWaterBoundary		x		
	hy-p:Crossing		x		
	hy-p:Lock		x		
	hy-p:ShorelineConstruction		x		
	hy-p:Sluice		x		
	hy-p:Ford		x		
	hy-p:DamOrWeir		x		
	hy-p:Watercourse		x		
	hy-p:StandingWater		x		
hy-p:Embankment	x	x	x		
hy-p:Shore	x	x	x		
hy-p:Wetland	x	x	x		
	geo:SpringOrSeep				x
	geo:VanishingPoint				x
	er:HydroPowerPlant		x		x
	nrz:Embankment		x		x
	ugs:PumpingStation		x		x
	ugs:Pipe		x		x
	nrz:InundatedLand		x		x
	lc:GlacierSnowfield				x
	lc:Shore		x		x
	lc:Wetland				x

TN	net:CrossReference				
	net:Network				
	net:NetworkConnection		x		
	net:GradeSeparatedCrossing				
	tn:TransportNetwork				
	tn:MaintenanceAuthority		x		
	tn:AccessRestriction		x		
	tn:MarkerPost				
	tn:VerticalPosition		x		
	tn:ConditionOfFacility		x		
	tn:TrafficFlowDirection		x		
	tn:RestrictionForVehicles		x		
	tn:OwnerAuthority		x		
	tn-a:AirLinkSequence				
	tn-a:AirRoute		x		
	tn-a:AirNode				
	tn-a:DesignatedPoint				
	tn-a:RunwayCentrelinePoint		x		
	tn-a:AerodromeNode				
	tn-a:Navaid		x		
	tn-a:TouchDownLiftOff				
	tn-a:ProcedureLink				
	tn-a:StandardInstrumentArrival				
	tn-a:StandardInstrumentDeparture				
	tn-a:InstrumentApproachProcedure				
	tn-a:AirRouteLink		x		
	tn-a:AirspaceArea		x		
	tn-a:TaxiwayArea				
	tn-a:RunwayArea		x		
	tn-a:ApronArea				
	tn-a:AerodromeArea				
	tn-a:LowerAltitudeLimit		x		
	tn-a:ElementLength		x		
	tn-a:AerodromeCategory		x		
	tn-a:UpperAltitudeLimit		x		
	tn-a:ElementWidth		x		
	tn-a:FieldElevation		x		
	tn-a:UseRestriction		x		
	tn-a:SurfaceComposition		x		
	tn-a:AerodromeType		x		
tn-a:ConditionOfAirFacility		x			
tn-c:CablewayLinkSet					
tn-c:CablewayLinkSequence					
tn-c:CablewayNode					
tn-c:CablewayLink		x			

tn-ra:RailwayLine				
tn-ra:RailwayLinkSequence				
tn-ra:RailwayNode		x		
tn-ra:RailwayStationNode				
tn-ra:RailwayYardNode				
tn-ra:RailwayLink				
tn-ra:RailwayYardArea				
tn-ra:RailwayStationArea				
tn-ra:RailwayArea				
tn-ra:RailwayStationCode		x		
tn-ra:RailwayElectrification		x		
tn-ra:DesignSpeed		x		
tn-ra:RailwayUse		x		
tn-ra:RailwayType		x		
tn-ra:NominalTrackGauge		x		
tn-ra:NumberOfTracks		x		
tn-ro:RoadNode		x		
tn-ro:RoadLinkSequence				
tn-ro:RoadLink				
tn-ro:RoadServiceArea				
tn-ro:RoadArea				
tn-ro:VehicleTrafficArea				
tn-ro:Road				
tn-ro:ERoad				
tn-ro:RoadServiceType		x		
tn-ro:NumberOfLanes		x		
tn-ro:FormOfWay		x		
tn-ro:RoadSurfaceCategory		x		
tn-ro:RoadName		x		
tn-ro:FunctionalRoadClass		x		
tn-ro:SpeedLimit		x		
tn-ro:RoadWidth		x		
tn-w:WaterwayLink				
tn-w:WaterLinkSequence				
tn-w:PortNode				
tn-w:WaterwayNode		x		
tn-w:FairwayArea				
tn-w:PortArea				
tn-w:TrafficSeparationSchemeRoundabout				
tn-w:TrafficSeparationSchemeLane				
tn-w:TrafficSeparationSchemeSeparator				
tn-w:TrafficSeparationSchemeCrossing				
tn-w:FerryCrossing				
tn-w:MarineWaterway				
tn-w:InlandWaterway				

	tn-w:Buoy				
	tn-w:Beacon				
	tn-w:FerryUse		x		
	tn-w:CEMTCClass		x		
	tn-w:ConditionOfWaterFacility		x		
	tn-w:WaterTrafficFlowDirection		x		
	tn-w:RestrictionForWaterVehicles		x		
PS	ps-f:ResponsibleAgency				x
	ps-f:ProtectedSite		x		x
	ps:ProtectedSite		x		
	sr:OceanRegion				x
	sd:SpeciesDistribution				x
	wfd:WFDGroundWaterBody				x
	wfd:WFDTransitionalWater				x
	wfd:WFDRiver				x
	wfd:WFDLake				x
	wfd:WFDCoastalWater				x

About Geographic named place

When switching to version 4 of the geodatabase template you will have the option of implementing the simple profile or the full GN profile for NamedPlaces. The simple profile corresponds to the one implemented in previous releases of ArcGIS for INSPIRE.

The A4I_info table included in the geodatabase template indicates which profile will be used, by default the value (see row with GN_PROFILE property) is SIMPLE_NP_FULL which implements the full and richer content model, if the value is set to "SIMPLE" the simple profile is used. The INSPIRE Feature Download Service for the named place spatial object will honour the A4I_Info table GN_PROFILE configuration.

When using the simple profile, the gml property "gn:name/gn:GeographicalName/gn:spelling/gn:SpellingOfName/gn:text" is mapped to the geodatabase field "gnNamedPlace(P|L|MP|S)_name/name". When using the full profile, this field is ignored. The property is mapped to "gnNamedPlace(P|L|MP|S)_name_spelling/text" instead.

3.4.3 Updating the INSPIRE Geodatabase from ArcGIS 10.2.2 to 10.3

If you would like to upgrade an existing 10.2.1 or 10.2.2 INSPIRE geodatabase to 10.3, please follow the steps below:

- Add GDBTEMPLATE_NAME field to LayerInfo
- Add GDBTEMPLATE_NAME field to SpatialObjectTypeInfo
- Use ArcMap to calculate value for GDBTEMPLATE_NAME field value to "A1" for layerInfo for all Annex I entries
- Use ArcMap to calculate value for GDBTEMPLATE_NAME field value to "A1" for SpatialObjectTypeInfo for all Annex I entries
- Update value for GDB_VERSION in A4I_Info to "10.3"
- If you would like to add Land Cover Theme or Geology Theme (Optional) follow the add geodatabase template instructions in the previous section.

3.4.4 Updating the INSPIRE Geodatabase from ArcGIS 10.2.1 to 10.2.2

The geodatabase template has not changed from 10.2.1, it will continue to work with 10.2.2 and no update is needed.

3.4.5 Updating the INSPIRE Geodatabase from ArcGIS 10.1 SP1 Patch 1 to 10.2.1

If you already have an ArcGIS for INSPIRE Annex I geodatabase upgraded to ArcGIS 10.1 SP1 Patch 1 for INSPIRE, the optional change is on Table "A4I_Info": attribute GDB_VERSION value is updated to "10.2.1".

3.4.6 Updating the INSPIRE Geodatabase from ArcGIS 10.1 SP1 to ArcGIS 10.1 SP1 Patch1

- A field (width_void) has been added to indicate whether width_lower/width_upper is NIL for hypSurfaceWaterL, hypSurfaceWaterP and hypSurfaceWaterS. You might use the following steps to update the geodatabase: make sure no other user is connecting to the database to be updated when performing the update
 1. Rename hypSurfaceWaterL, hypSurfaceWaterP and hypSurfaceWaterS
 2. Import GDB_Template_Annex_I_SP1_Patch1_Updates.xml included in the patch package.

3.4.7 Updating the INSPIRE Geodatabase from ArcGIS 10.1 to 10.1 SP1

- The LayerInfo table has been updated to better handle layer order and support definition queries.
 - Updated LayerInfo table changes the ID values of point, multipoint, line, and surface sublayers to allow an "order by" selection from Addin so line layers will automatically be placed above surface layers.
 - All point layers will not reside within the 4000–4999 range.
 - All multipoint layers will not reside within the 5000–5999 range.

- All line layers will not reside within the 6000–6999 range.
- All surface layers will not reside within the 7000–7999 range.
- For example: The layer PS.ProtectedSitesHealthAndWelfare.MP had ID 196; now it has ID 5196.
- Updated LayerInfo table adds the {0} placeholder for those definition queries pointing to a different table. The placeholder will be replaced during runtime with the qualified table name prefix.
- If you don't have any custom change to the LayerInfo table for 10.1, you can simply rename the old LayerInfo table and import the new LayerInfo table for 10.1 SP1 (GDB_Template_Annex_I_Table_LayerInfo.xml).
- There are no other geodatabase template changes to 10.1 SP1.

3.4.8 Updating the INSPIRE Geodatabase from ArcGIS 10 to 10.1

There are basically five changes that have been made to the geodatabase template in comparison to the template included in ArcGIS for INSPIRE 1.0 SP2:

- Renaming of field isolation from table sdSpeciesDistribution
Makes an update of your existing geodatabase mandatory
- Definition queries for Administrative Units theme in table LayerInfo
Makes an update of your existing geodatabase and services mandatory if you are exposing Administrative Units data
- Introduction of several indexed fields on the whole data model
Update of your geodatabase is strongly recommended as it improves performance
- New Table A4I_Info
Geodatabase update optional
- Improved antialiasing for feature classes and fields
Geodatabase update optional

See " MigrationGuide_ArcGISForINSPIRE_10_1_EN.pdf " for a detailed explanation of the changes and improvements.