

# Integrating Custom Data Sources into the ArcGIS Framework

## Example: INTERLIS Transfer Files



2004



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2004



# Overview

- **Switzerland**
- **INTERLIS**
- **PlugInWorkspaceFactoryHelper**

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# Switzerland



- **Homeland of the Purple Cow**

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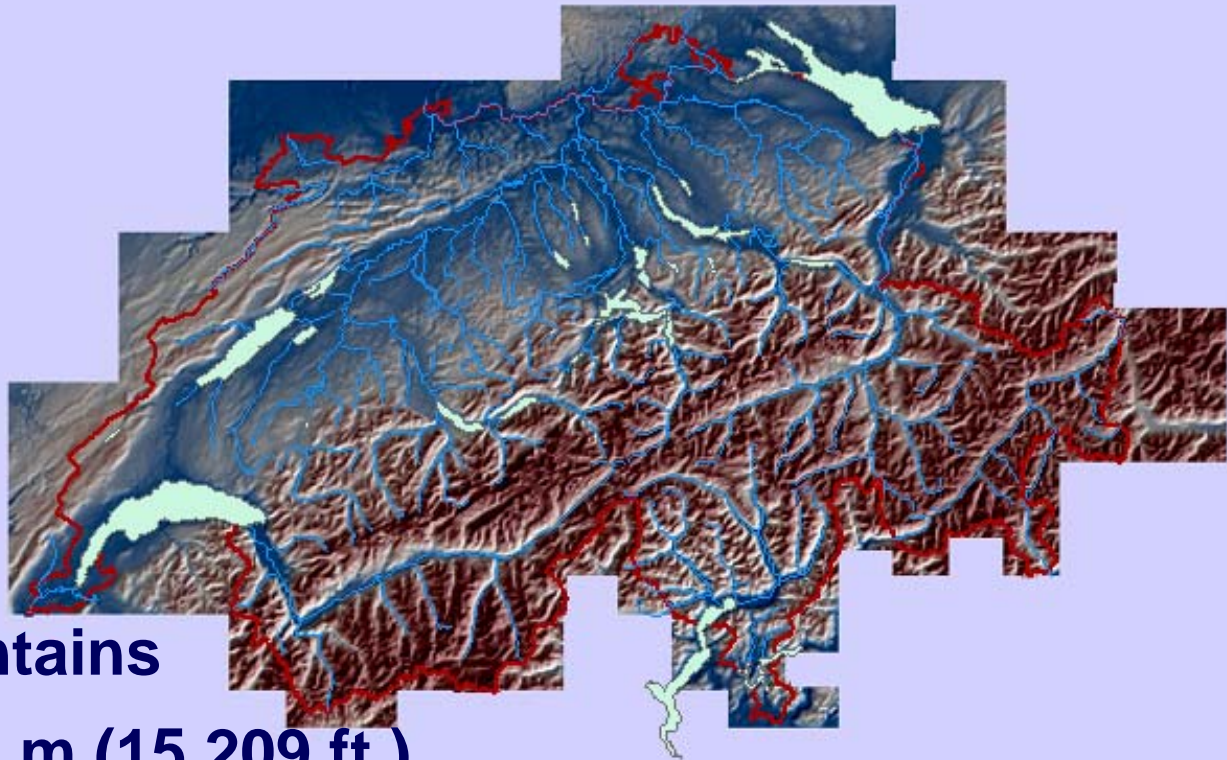
ESRI<sup>++</sup>

# Switzerland

- Between Germany, France, Liechtenstein, Austria and Italy
- 41.293 m<sup>2</sup>



# Switzerland



- 60 % Mountains
- Up to 4634 m (15.209 ft.)

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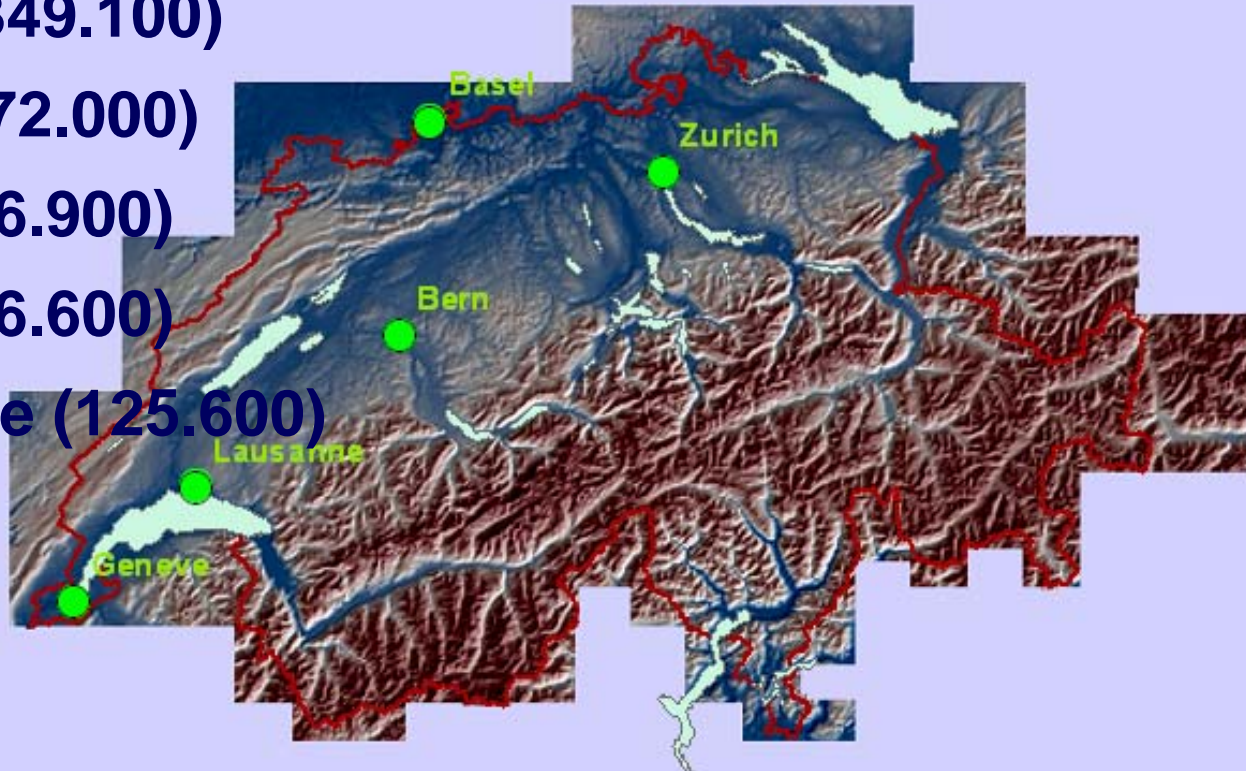
# Switzerland

- **7 Million People (427 per mi<sup>2</sup>)**
- **They speak**
  - **German 65 %**
  - **French 18 %**
  - **Italian 12 %**
  - **Rätoromanisch 1 %**



# Switzerland

- Zürich (349.100)
- Basel (172.000)
- Genf (166.900)
- Bern (136.600)
- Lausanne (125.600)







- **Since 1991**
- **A data transfer mechanism for land information systems**
- **A precise data description**

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- **Used as official survey data interface (AVS)**
- **1998 regulated by law (SN612030)**
- **Used by a lot of other authorities and organisations**

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- **KOGIS – Organisation for the coordination of geographic information and geographic information systems**

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- **Two main components**
  - **A data description language**
  - **A data transfer format**



## ■ Data description language

- Names
- Numbers
- Explanations
- Reserved Words
- Comments

```

TRANSFER Datenkatalog;
MODEL Grunddatensatz_GR
DOMAIN
LKoord = COORD2 480000.000 70000.000
840000.000 300000.000;
HKoord = COORD3 480000.000 70000.000 -200.000
840000.000 300000.000 5000.000;
Hoehe = DIM1 -200.000 5000.000;
Genauigkeit = [0.0 .. 700.0]; !! in cm
TOPIC Fixpunkte =
TABLE LFP =
Entstehung: -> LFPNachfuehrung; !! Beziehung 1-mc
Nummer: TEXT*12; !! Vergabe durch Landestopographie
NumPos: LKoord;
NumOri: OPTIONAL SchriftOri; !! Default: 100.0
NumHALi: OPTIONAL HALIGNMENT; !! Default: Center
NumVALi: OPTIONAL VALIGNMENT; !! Default: Half
Geometrie: HKoord // Geometrie innerhalb Entstehung ^. Perimeter //;
LageGen: Genauigkeit;
Art: (LFP1, LFP2); !! Triangulationspunkte I-III. Ordn., IV. Ordn.
Herkunft: OPTIONAL Bestimmung;
IDENT
Nummer;
Geometrie;
END LFP;
END Fixpunkte.
END Grunddatensatz_GR.
FORMAT FIX WITH LINESIZE = 75, TIDSIZE = 10;
CODE
BLANK = DEFAULT, UNDEFINED = DEFAULT, CONTINUE =
DEFAULT;
TID = I32;
END.
  
```



- **Data transfer format**
  - **Physical structure**
  - **Logical structure**

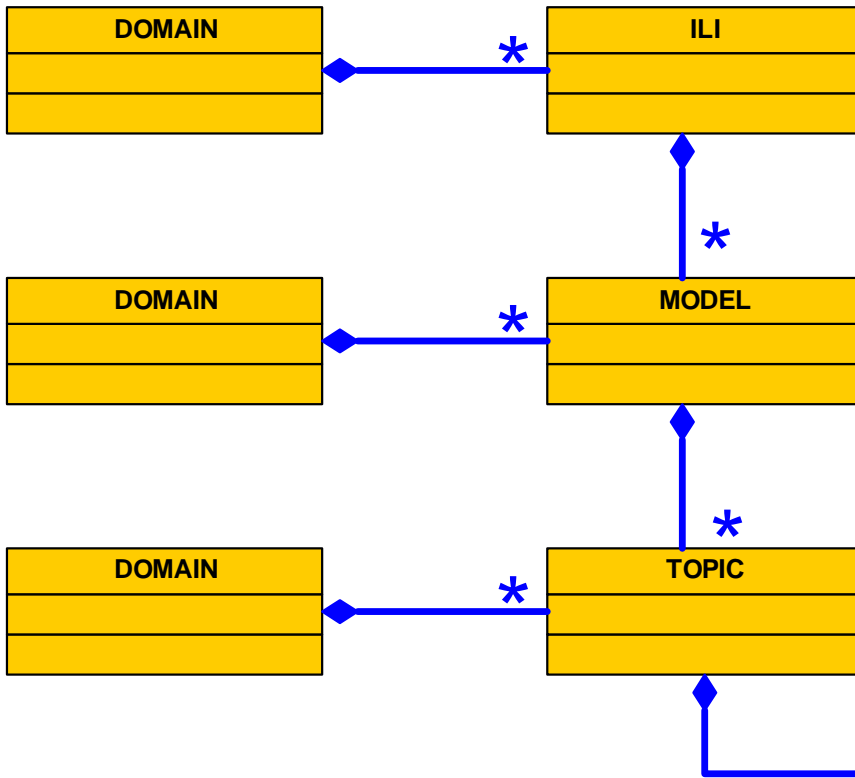
```

TRANSFER Datenkatalog;
MODEL Grunddatensatz_GR
DOMAIN
LKoord = COORD2 480000.000 70000.000
840000.000 300000.000;
HKoord = COORD3 480000.000 70000.000 -200.000
840000.000 300000.000 5000.000;
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Genauigkeit = [0.0 .. 700.0]; !! in cm
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Geometrie: HKoord // Geometrie innerhalb Entstehung ^. Perimeter //;
LageGen: Genauigkeit;
Art: (LFP1, LFP2); !! Triangulationspunkte I-III. Ordn., IV. Ordn.
Herkunft: OPTIONAL Bestimmung;
IDENT
Nummer;
Geometrie;
END LFP;
END Fixpunkte.
END Grunddatensatz_GR.
FORMAT FIX WITH LINESIZE = 75, TIDSIZE = 10;
CODE
BLANK = DEFAULT, UNDEFINED = DEFAULT, CONTINUE =
DEFAULT;
TID = I32;
END.
  
```





TRANSFER Datenkatalog;  
 MODEL Grunddatensatz\_GR  
 DOMAIN  
 LKoord = COORD2 480000.000 70000.000  
 840000.000 300000.000;  
 HKoord = COORD3 480000.000 70000.000 -200.000  
 840000.000 300000.000 5000.000;  
 Hoehe = DIM1 -200.000 5000.000;  
 Genauigkeit = [0.0 .. 700.0]; !! in cm  
 TOPIC Fixpunkte =  
 TABLE LFP =  
 Entstehung: -> LFPNachfuehrung; !! Beziehung 1-mc  
 Nummer: TEXT\*12; !! Vergabe durch Landestopographie  
 NumPos: LKoord;  
 NumOri: OPTIONAL SchriftOri; !! Default: 100.0  
 NumHAlI: OPTIONAL HALIGNMENT; !! Default: Center  
 NumVAlI: OPTIONAL VALIGNMENT; !! Default: Half  
 Geometrie: HKoord // Geometrie innerhalb Entstehung ^. Perimeter //;  
 LageGen: Genauigkeit;  
 Art: (LFP1, LFP2); !! Triangulationspunkte I-III. Ordn., IV. Ordn.  
 Herkunft: OPTIONAL Bestimmung;  
 IDENT  
 Nummer;  
 Geometrie;  
 END LFP;  
 END Fixpunkte.  
 END Grunddatensatz\_GR.  
 FOR ... = 75, T  
 COD  
 BLA ... NED = D  
 TID =  
 END. \* \* \* \* \*



SCNT  
 GEOS 4 Export  
 2406001421

////

MTID Datenkatalog  
 MODL Grunddatensatz\_GR  
 TOPI Fixpunkte  
 TABL LFP

OBJE 0 1 12550414 751365.030 148084.250 100.0 0 \  
 CONT 3 751362.030 148084.250 3208.840 3.0 0 4.0 0 0 100.0 \  
 CONT 1 0  
 OBJE 1 1 12550518 753181.000 151569.780 100.0 0 \  
 CONT 3 753178.000 151569.780 2835.250 3.0 0 4.0 0 0 100.0 \  
 CONT 1 0  
 OBJE 64 1 12550401 751312.750 157594.520 100.0 0 \  
 CONT 3 751309.750 157594.520 2265.410 3.0 0 4.0 0 0 100.0 \  
 CONT 1 0  
 OBJE 117 1 12350447 750664.900 159129.070 100.0 0 \  
 CONT 3 750661.900 159129.070 1315.030 3.0 0 4.0 0 0 100.0 \  
 CONT 1 0  
 OBJE 128 1 12350551 753001.700 159310.260 100.0 0 \  
 CONT 3 752998.700 159310.260 1530.070 3.0 0 4.0 0 0 100.0 \  
 CONT 1 0  
 OBJE 215 1 12350443 751296.860 159765.230 100.0 0 \  
 CONT 3 751293.860 159765.230 1507.540 3.0 0 4.0 0 0 100.0 \  
 CONT 1 0  
 OBJE 229 1 12350550 753360.400 159739.950 100.0 0 \  
 CONT 3 753357.400 159739.950 1258.270 3.0 0 4.0 0 0 100.0 \  
 CONT 1 0  
 OBJE 251 1 12350442 751543.720 159906.960 100.0 0 \  
 CONT 3 751563.180 159906.920 1255.500 3.0 0 4.0 0 0 100.0 \  
 CONT 1 0  
 OBJE 329 1 12350643 755136.250 160082.840 100.0 0 \  
 CONT 3 755133.250 160082.840 2162.660 3.0 0 4.0 0 0 100.0 \  
 CONT 1 0  
 ETAB  
 ETOP  
 EMOD  
 ENDE

## ■ Model-File

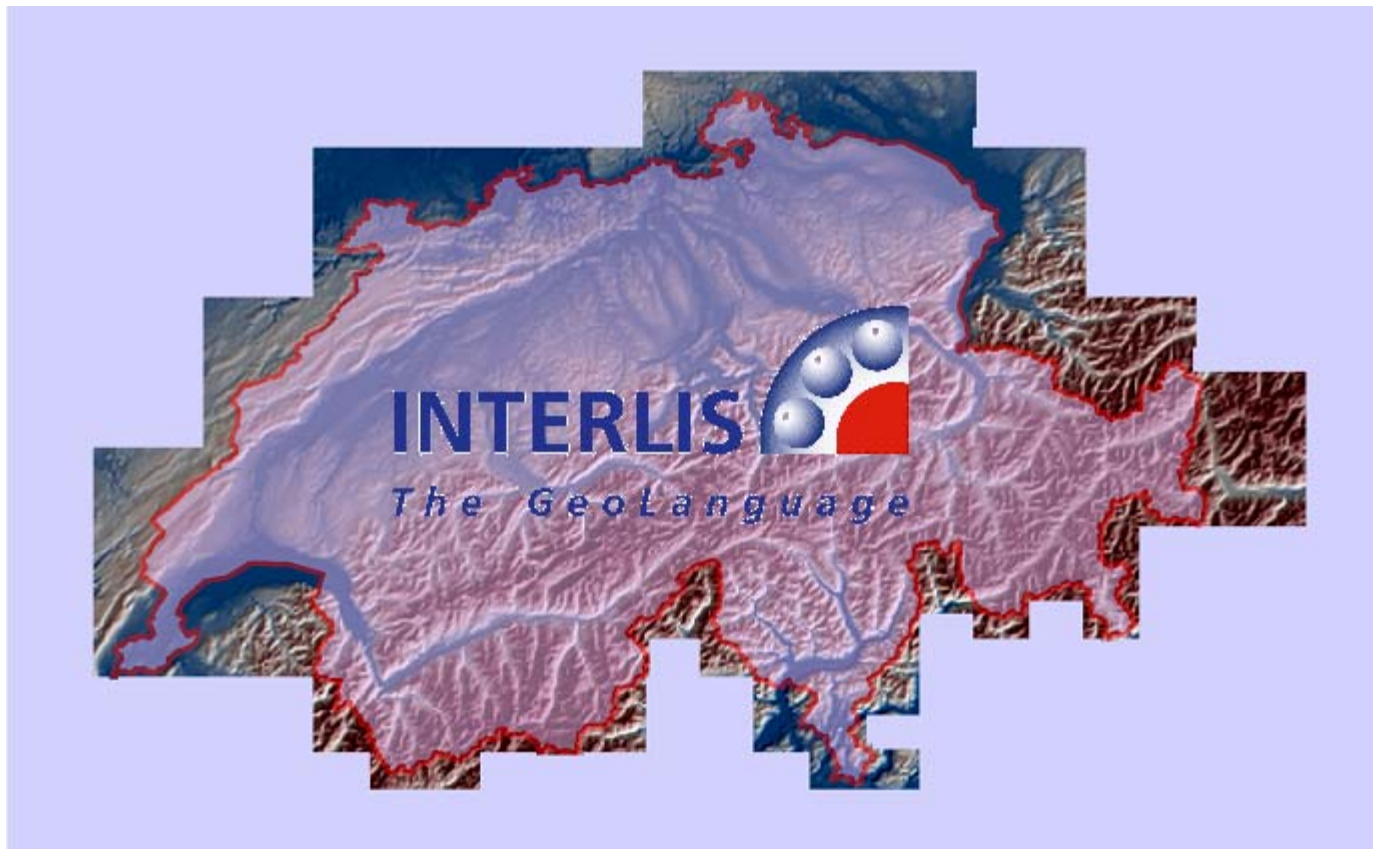
### ■ .ILI Extension

## ■ Format-File

### ■ .FMT Extension

## ■ Transfer-File

### ■ .ITF Extension



# PlugInWorkspaceFactoryHelper

- You must know about
  - ArcObjects
  - GeoDatabase Access Objects
  - Extending ArcObjects

# PlugInWorkspaceFactoryHelper

## ■ ArcObjects

- Software components for
  - ArcGIS Desktop
  - ArcGIS Engine
  - ArcGIS Server
- Development Framework (Developer Kit)
- Documentation, Diagrams, Help Files
- Examples

# PlugInWorkspaceFactoryHelper

## ■ GeoDatabase Access Objects

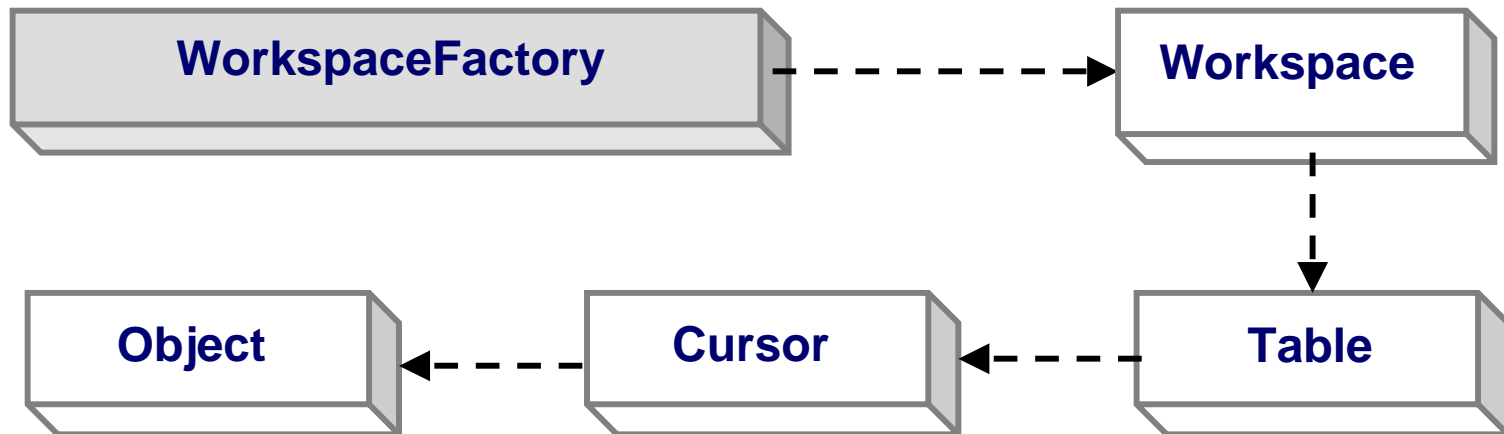
- Create Data
- Read Data
- Modify Data

## ■ Generic Datamodel

- WorkspaceFactory
- Workspace
- Dataset
- Cursor
- Row



# PlugInWorkspaceFactoryHelper



- **Connect to Workspace (Access, Shapefile, ArcSDE)**
- **Open Table or FeatureClass**
- **Reading Objects (using a Cursor)**

# PlugInWorkspaceFactoryHelper

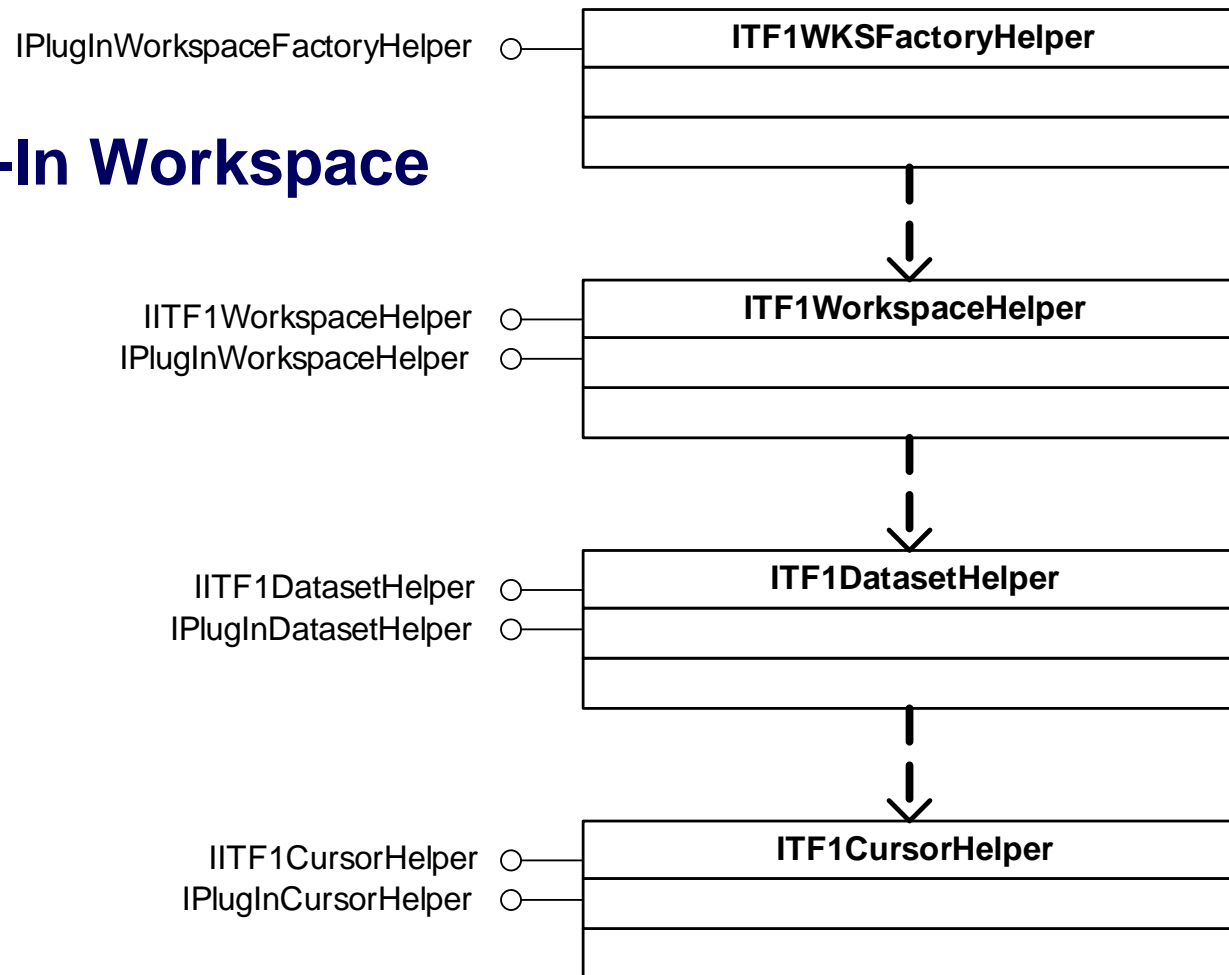
- **Extending ArcObjects**
  - **Read only Plug-In Datasource**
    - **ArcCatalog**
      - **Browse**
      - **Preview**
      - **Manage**
    - **ArcMap**
      - **Select**
      - **Render**
      - **Query**
      - **Label**
      - **Join**

# PlugInWorkspaceFactoryHelper

- **Server (.dll) with several Classes**
  - **IPlugInWorkspaceFactoryHelper**
  - **IPlugInWorkspaceHelper**
  - **IPlugInDatasetHelper**
  - **IPlugInCursorHelper**

# PlugInWorkspaceFactoryHelper

## ■ ITF1 Plug-In Workspace



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# PlugInWorkspaceFactoryHelper

## Demo

