国家基础地理信息中心
NGCC National Geomatics Center of China

Upgrade the Datasets in NSDI for Smarter Services – with the Cases of China

By

Dr. JIANG Jie

Dept of GeoInformaiton Service Platform

National Geomatics Center of China

October 7, 2015

Jeju, Republic of Korea

Outlines

- The development of NSDI in China
- Data Upgrade for better services
- Suggestions

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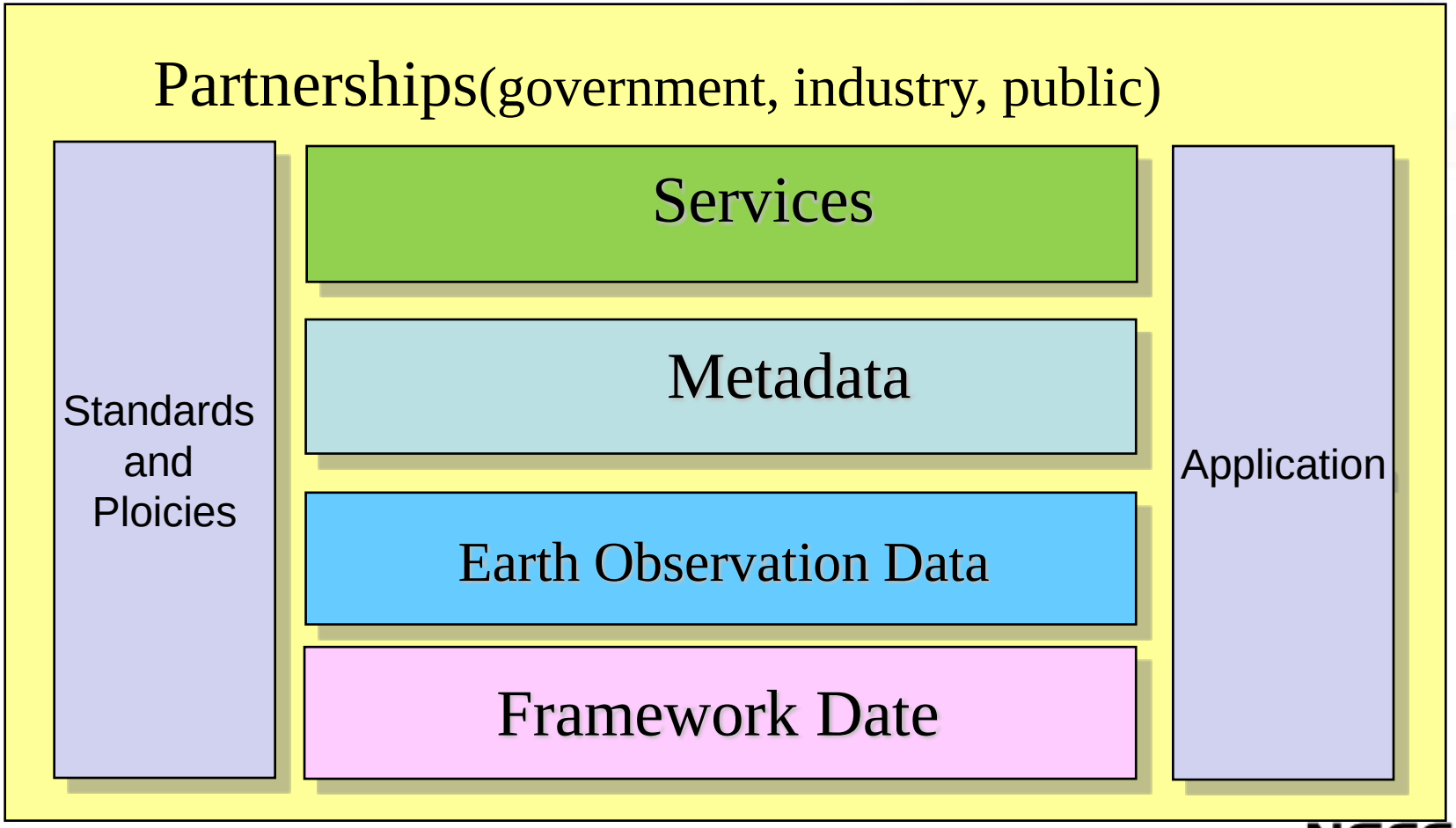
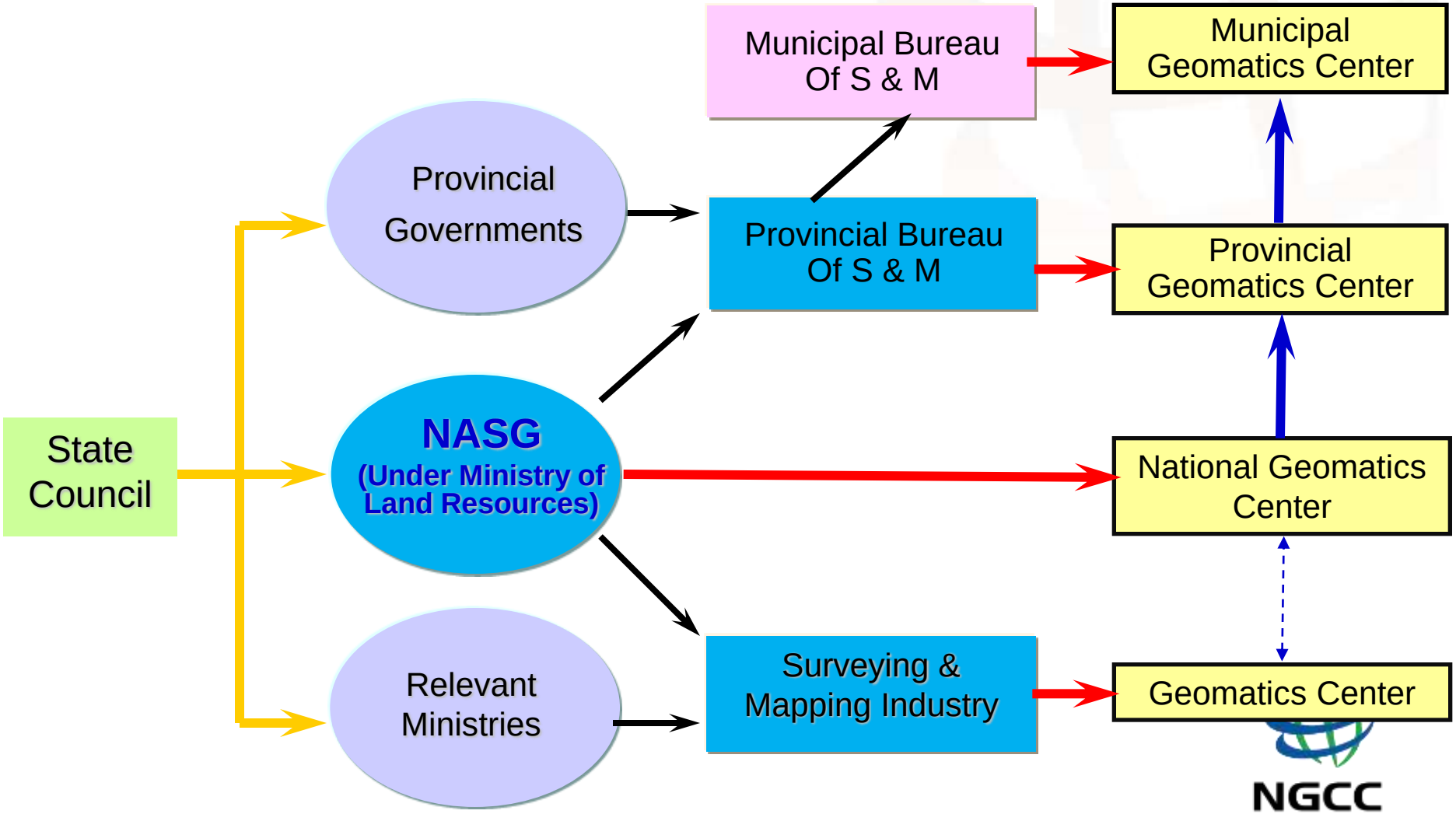
Components of NSDI in China



Policies

-- Surveying and Mapping Agencies in China



NASG: National Administration of Surveying, Mapping and GeoInformation

Standards

ISO/TC211

Standardization Administration of China (SAC)

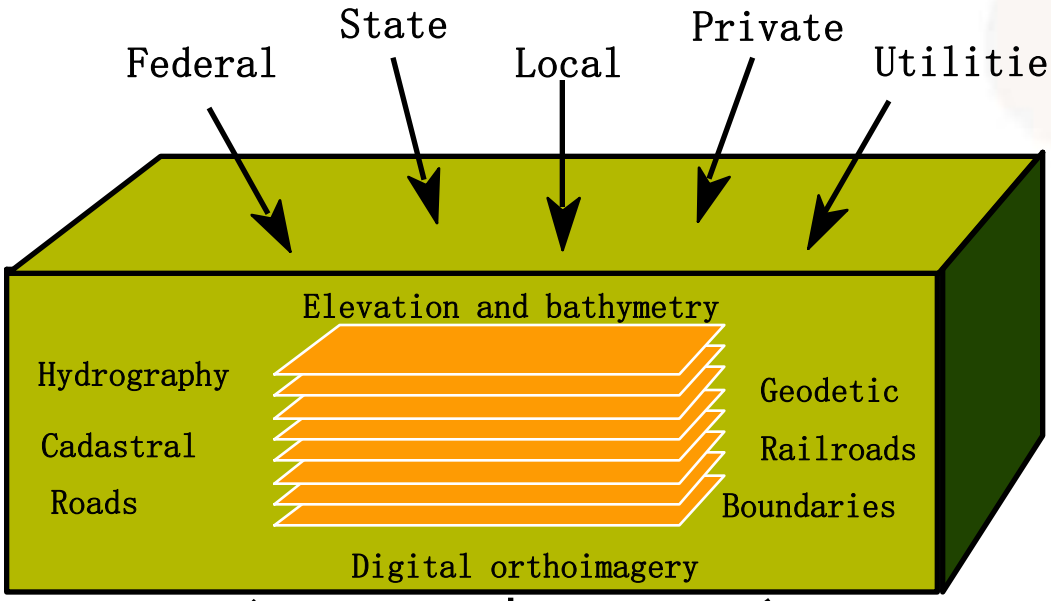
National Administration of SMG(NASG)

Geospatial information Standardization Tech Committee (SAC/TC230)

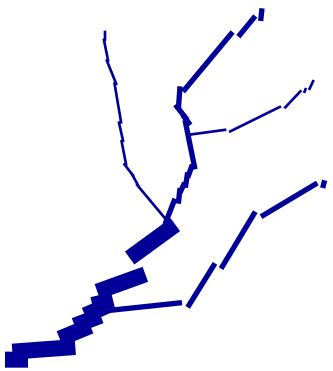
Standardization Institute of S&M

National Geomatics Center

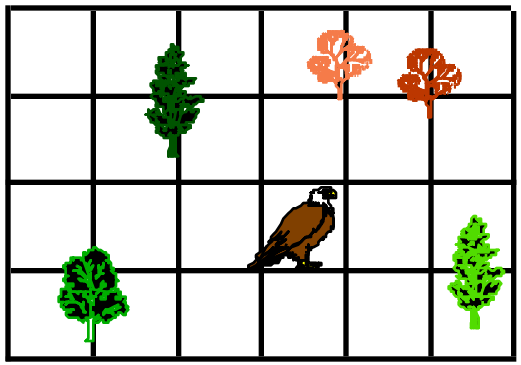
Framework Data



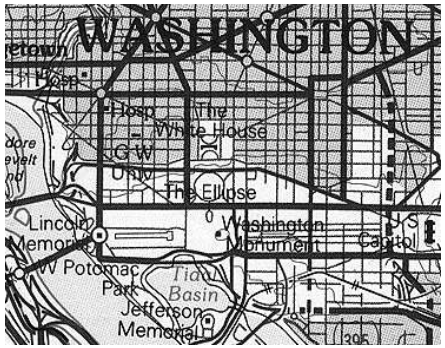
Core of NSDI



Spatial Analysis



Base for Other Data



Finished Maps

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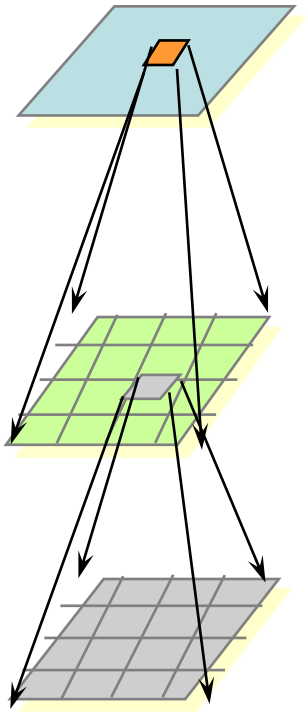
Framework Data

-- Multi-scale Topographic Map



National invested and maintained

Provincial invested & maintained

Municipal invested & maintained

1:4 m

1:1 m

77 map sheets

1:250k

816 map sheets

1:50k

24218 map sheets

1:10k

1:5000

Cover 50% territory

1:2000

1:1000

1:500

Cover built-up area of most cities

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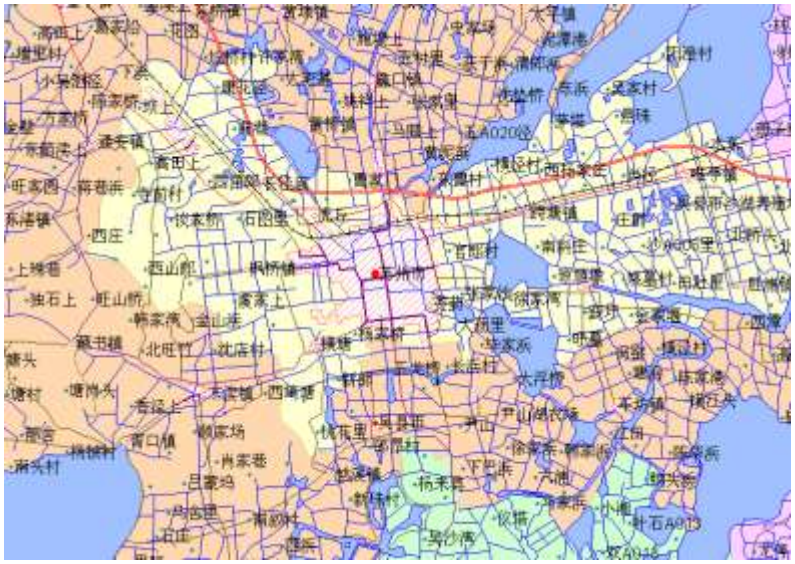
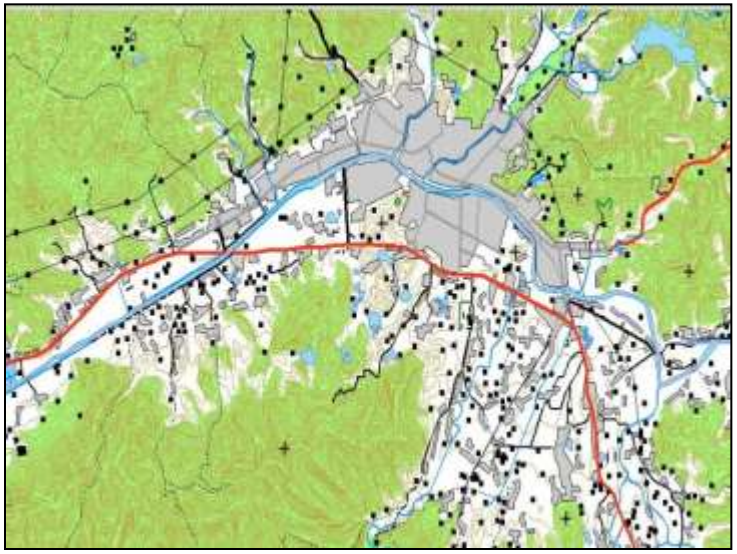
Framework Data

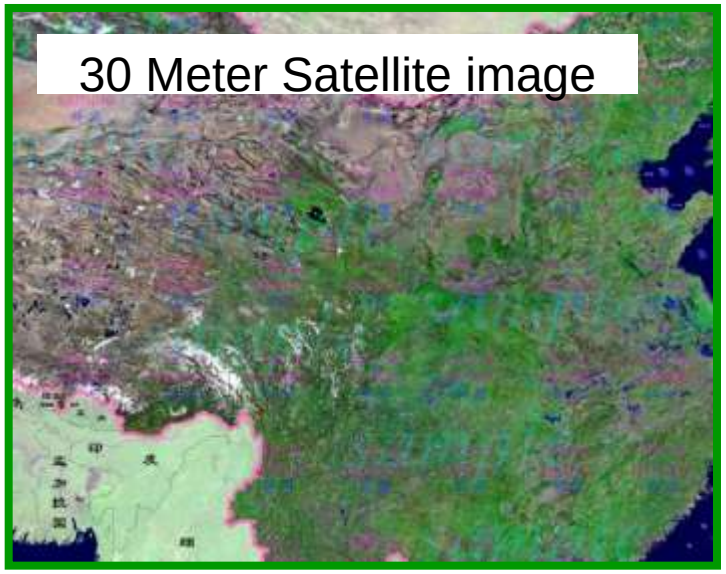
--Vector Datasets

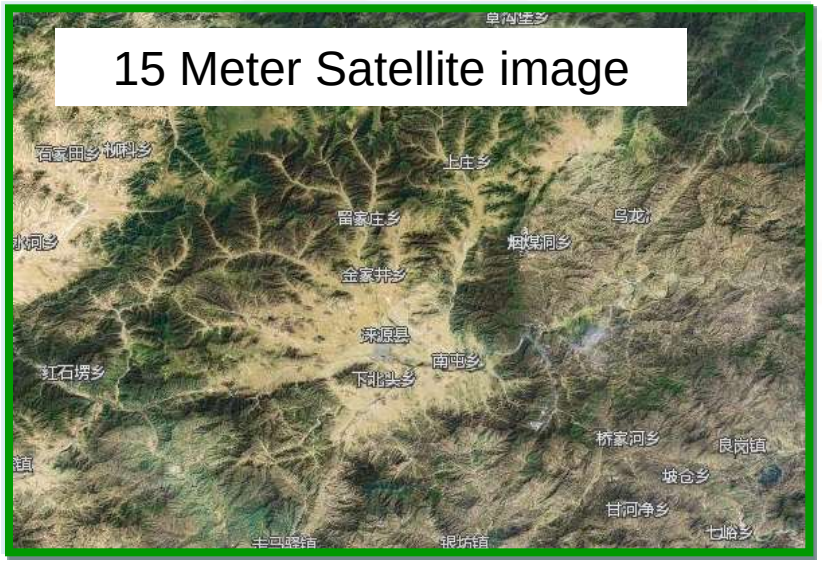


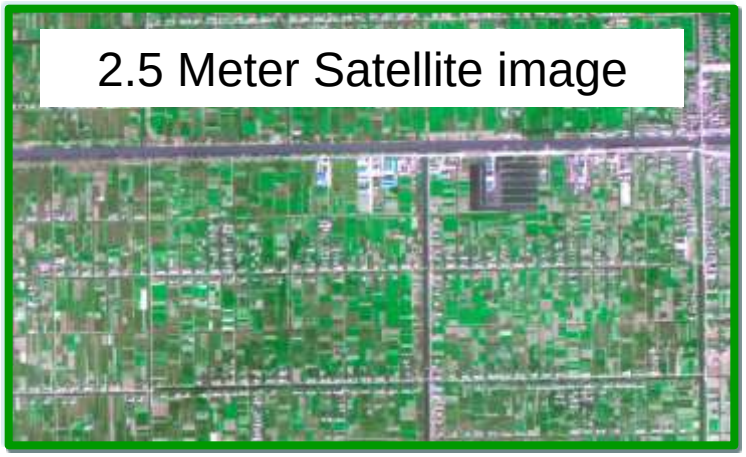


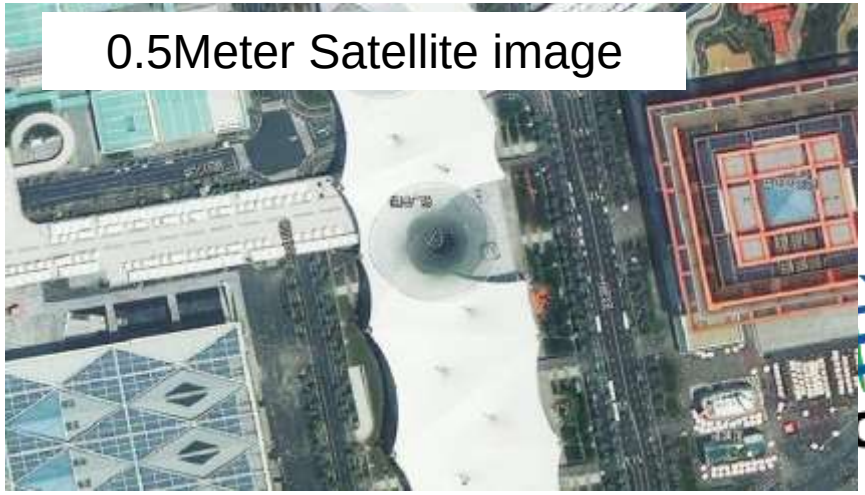
Framework Data

--DOM Datasets



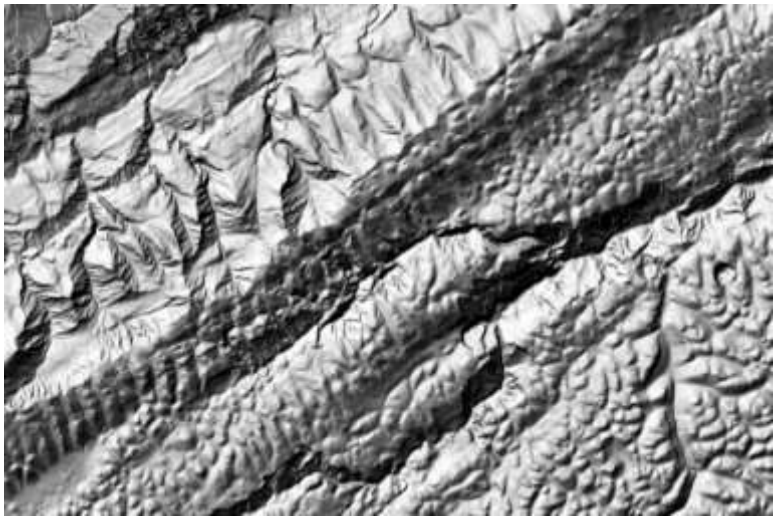


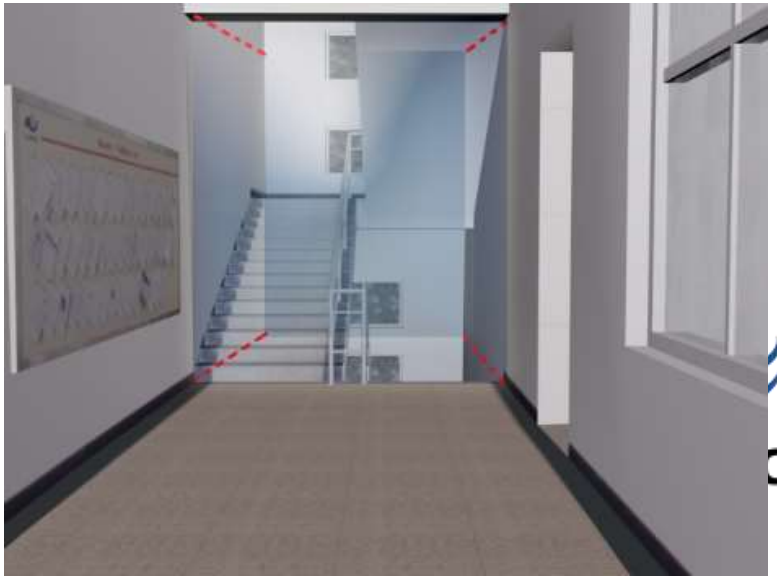




Framework Data

--DOM Datasets

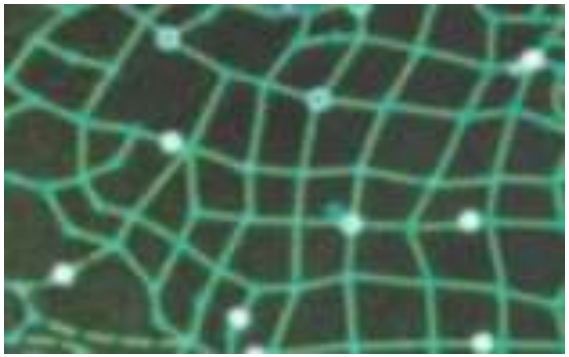




Framework Data

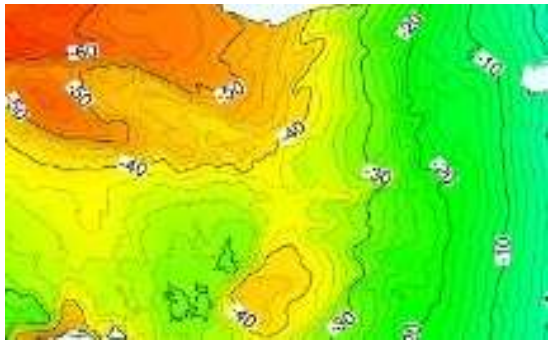
--Geodetic Datasets

Astro-Geodetic Network



Leveling Network

GPS Network



Basic Gravity Network

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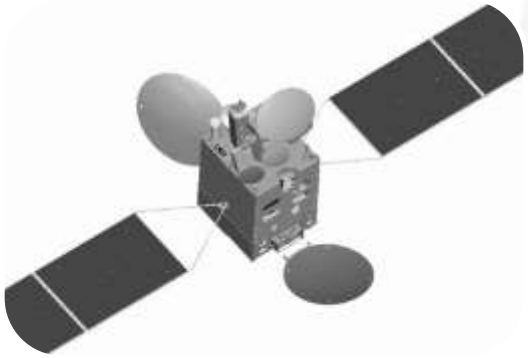
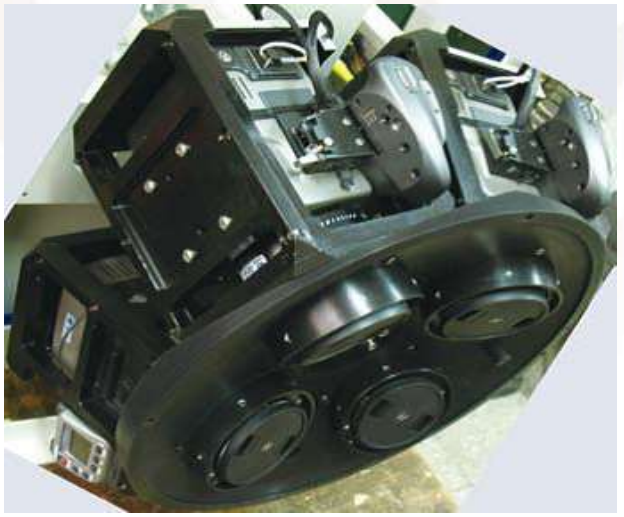
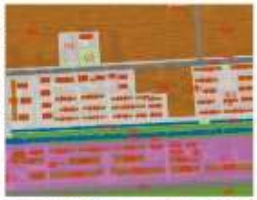
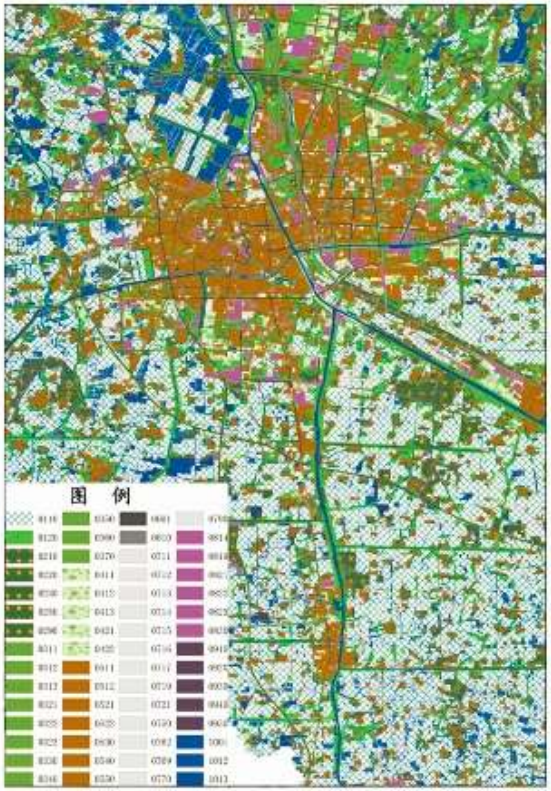
Earth Observation Data





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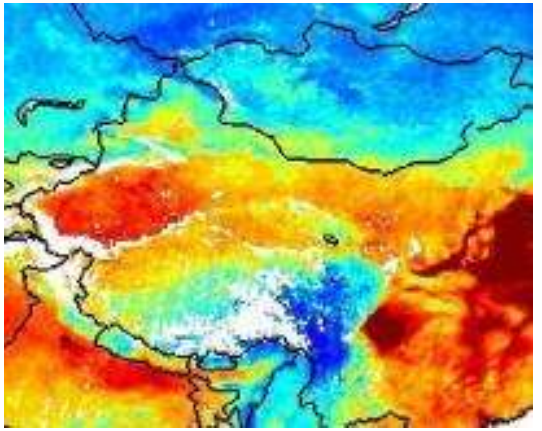


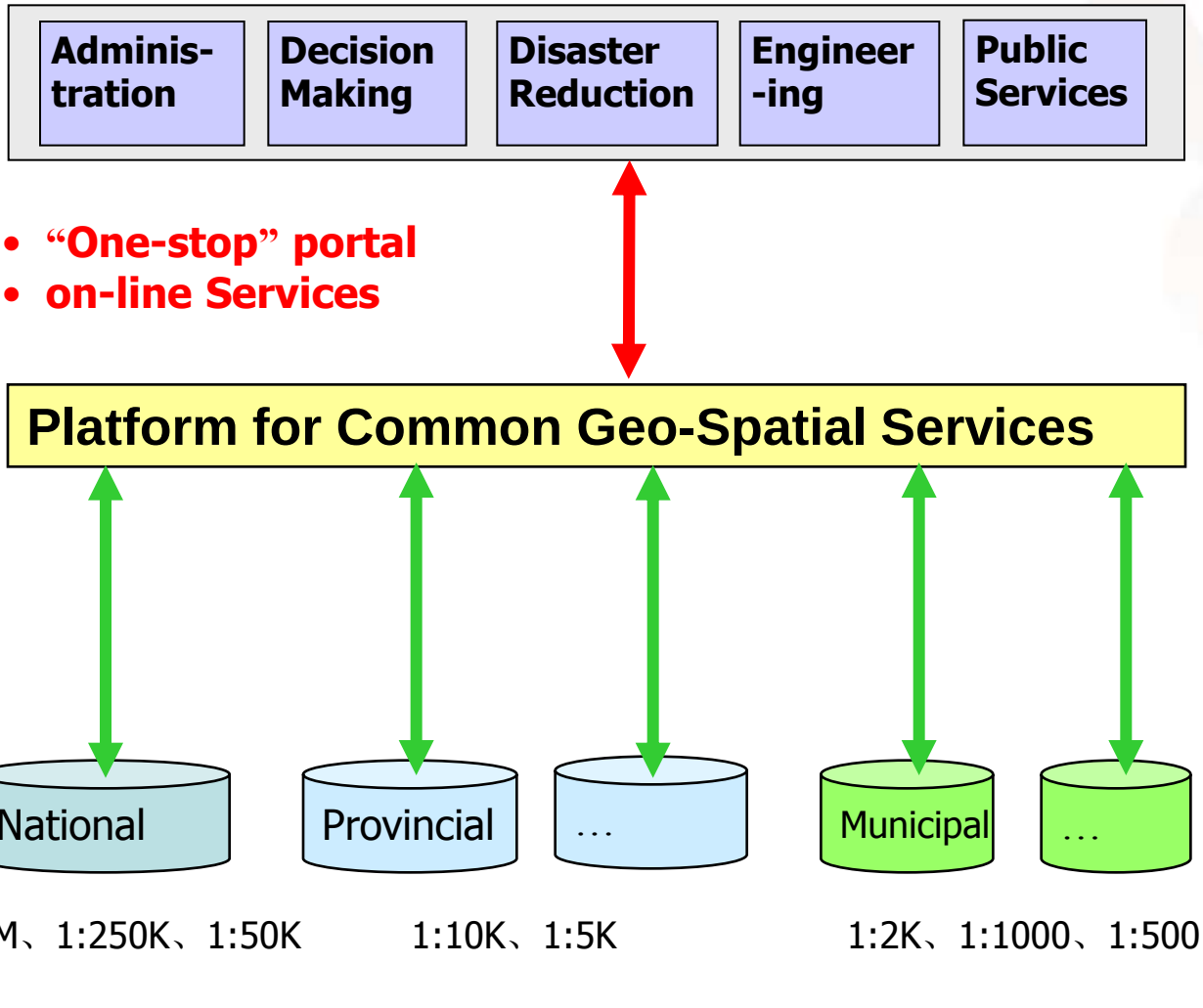
Service
-- Data Distribution

- ✓ Mata data searching
- ✓ Hard Copying

..GCC

Service

-- Web-based Platform (Portal)

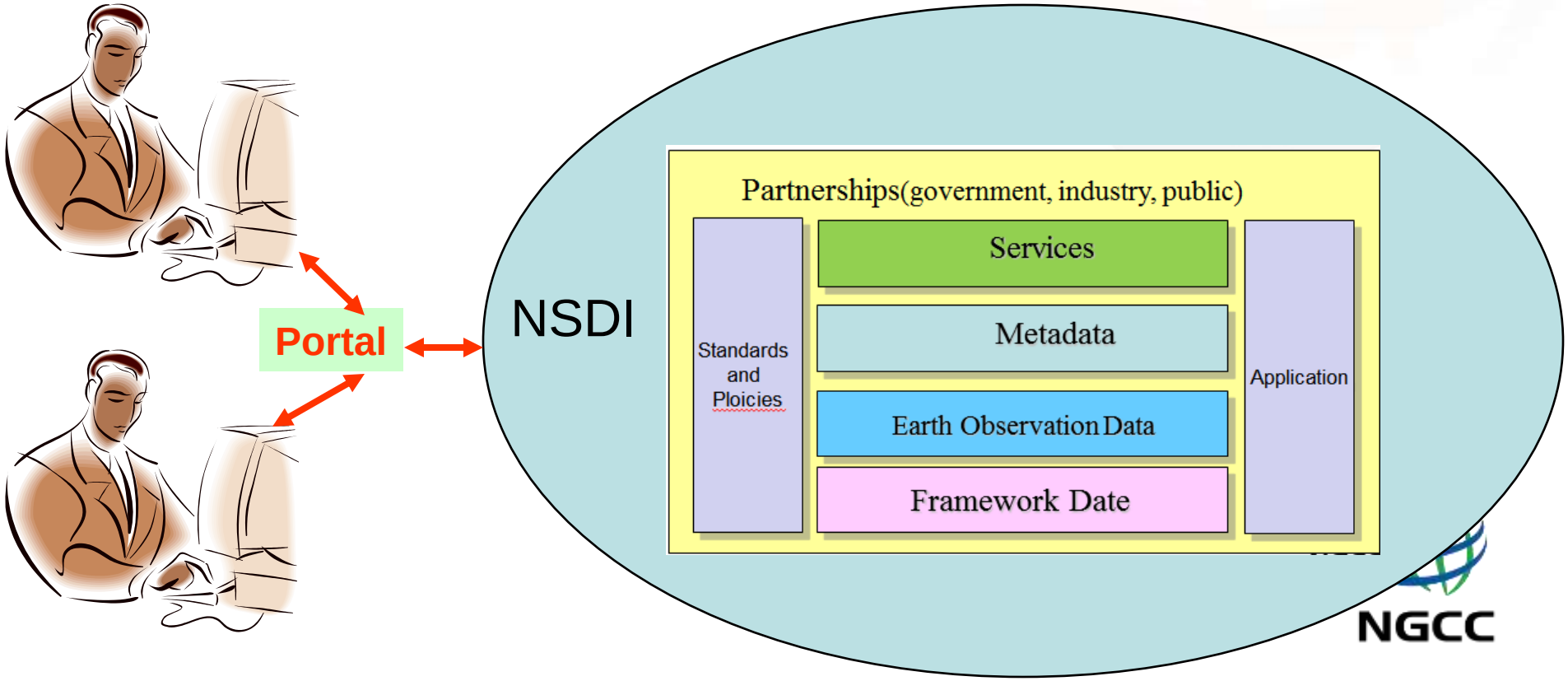


Service

-- Web-based Platform (Portal)

Portals are the 'Face' of NSDI

-- provide the critical linkage between the data of SDI and its use



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Service
-- Web-based Platform (Portal)

Benefits of the Portal

- Provides Organized Access to Geospatial Resources
  - Gateway to a spatial data infrastructure

- Value to Organization
  - **Collaboration** - Publish, share, and disseminate data and GIS Web services across the SDIs
  - **Searching** – Discover, connect to, and utilize GIS data and Web services
  - **Awareness** – Organize geospatial resources in one place for the Agencies
  - **Categorization** – Catalog GIS data and web services within the context needed

- Supports / Facilitates:
  - Faster discovery
  - Direct access and use
  - Improvement of data quality and coverage
  - Collaboration for new data collection

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Outlines

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- Suggestions

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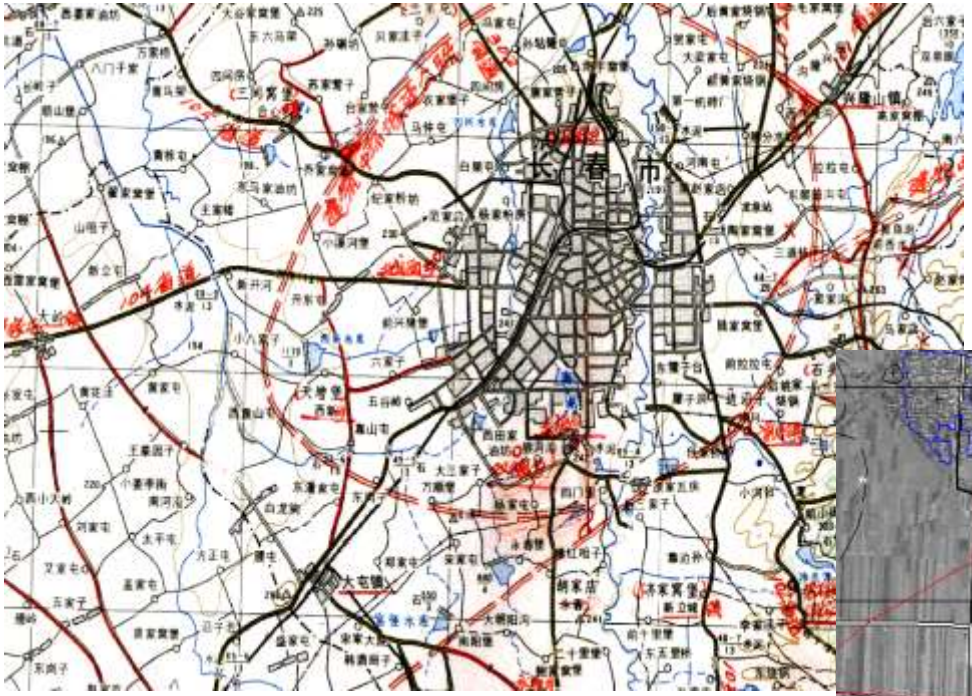
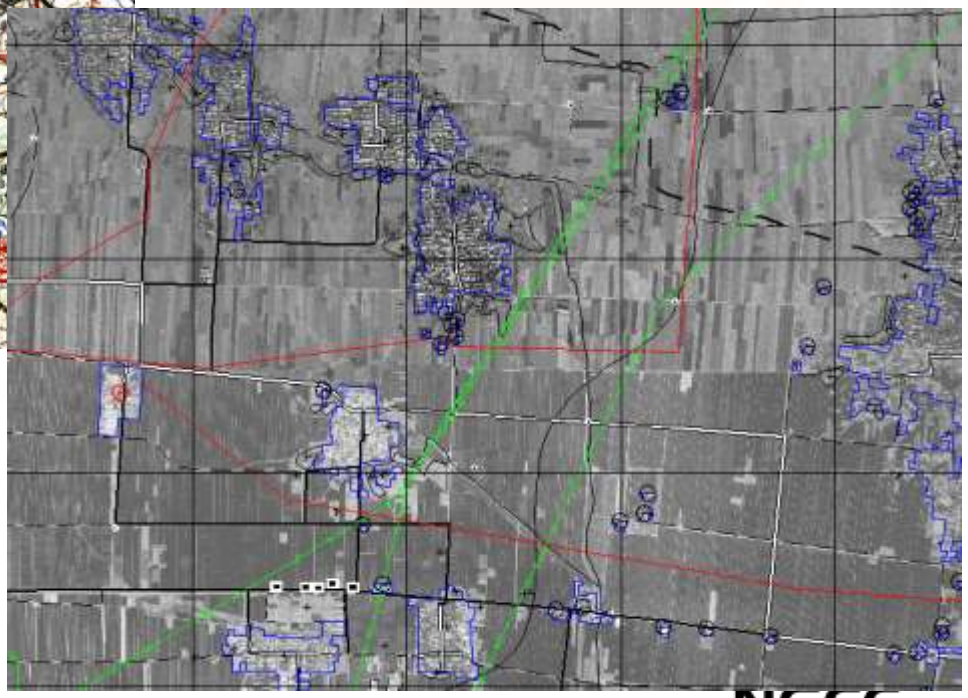
Upgrade for Smarter Services

-Updating





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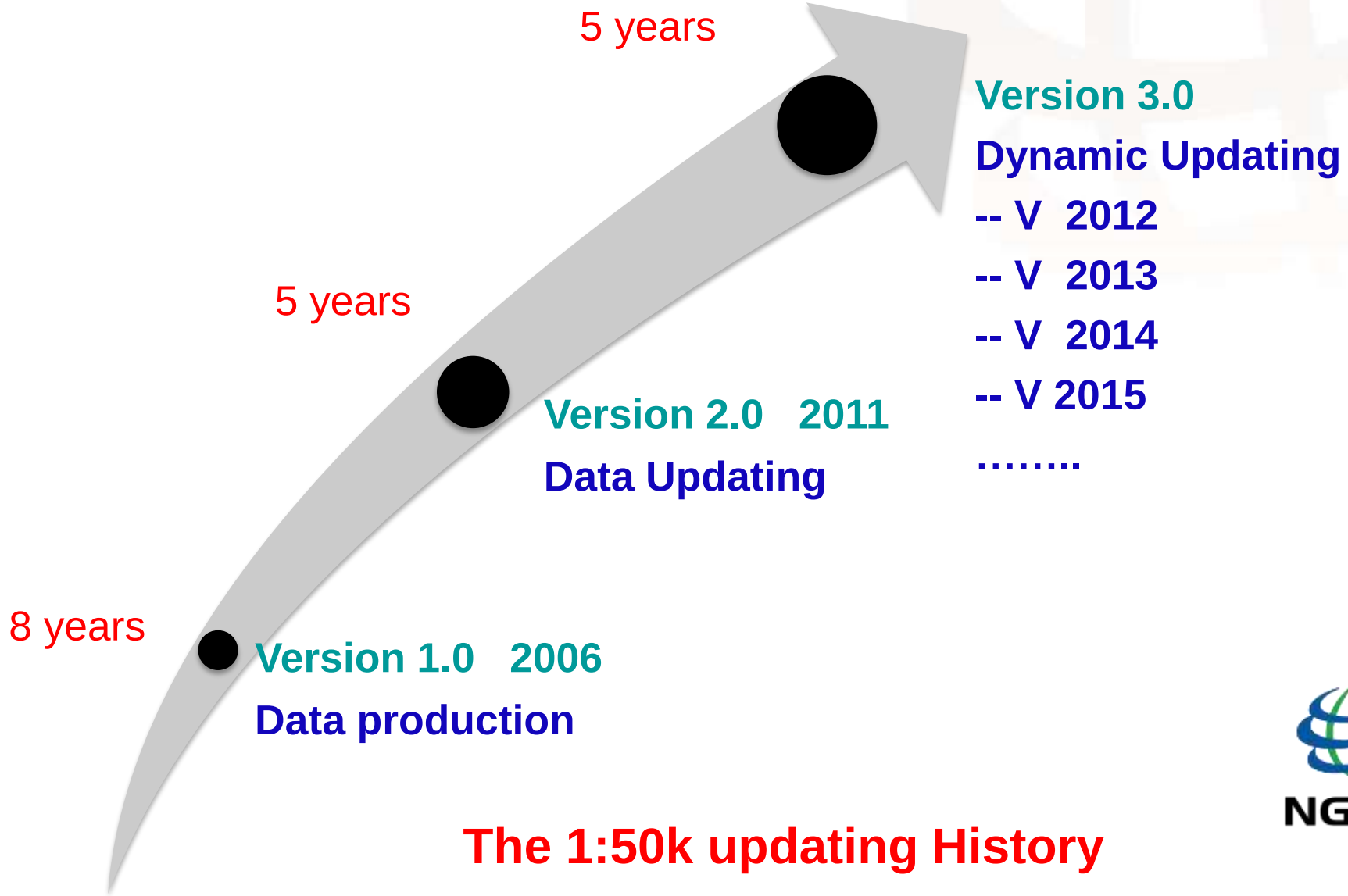
Rapid and constant change

Upgrade for Smarter Services

-Updating



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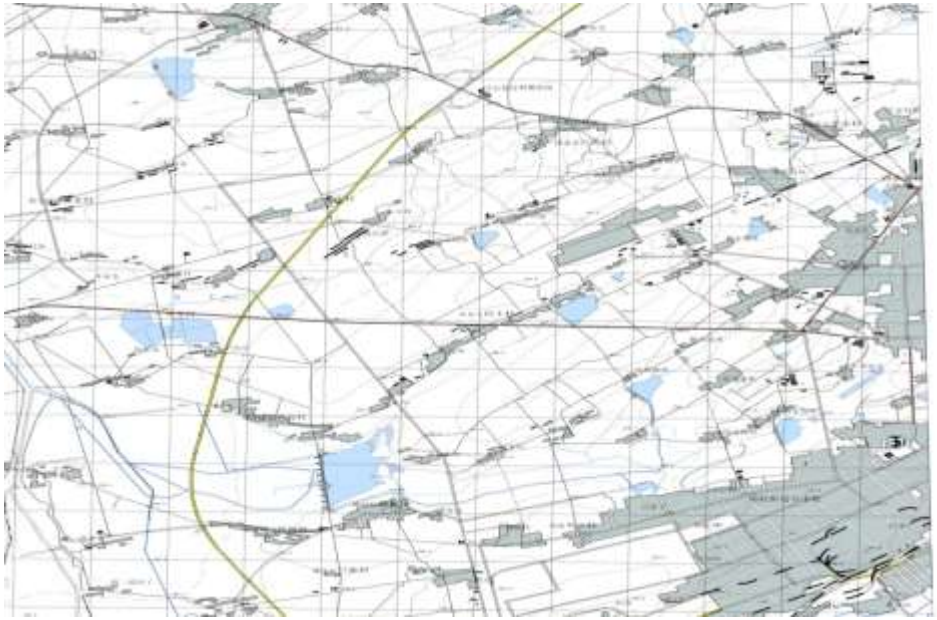
The 1:50k updating History

Upgrade for Smarter Services
-Updating



Before updating

Before updating

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Upgrade for Smarter Services

-Updating

Before updating

Before updating

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Upgrade for Smarter Services

-Updating

Before updating

Before updating

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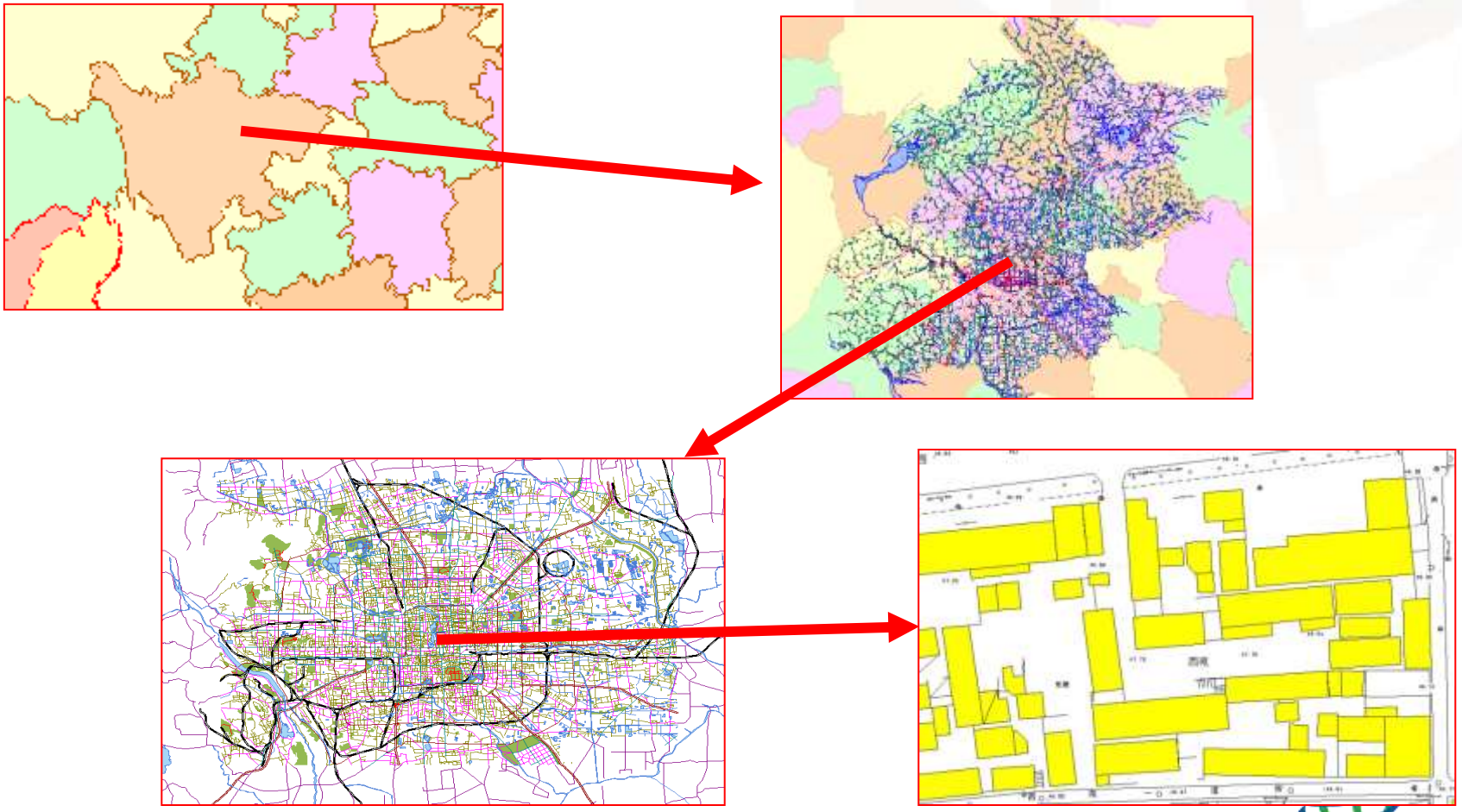
Upgrade for Smarter Services

-Harmonization & Re-modelling



- Distributed Datasets with same standards

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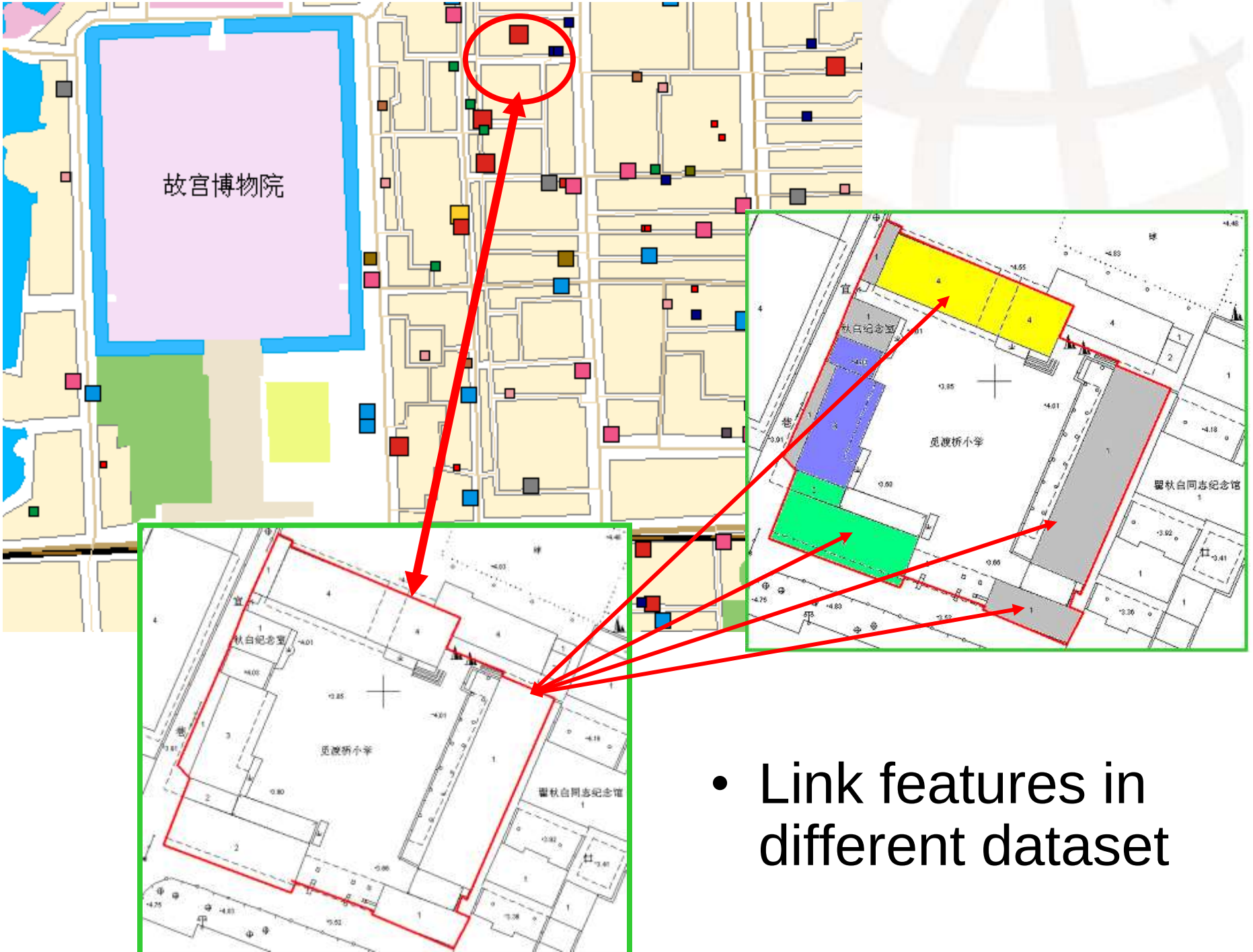
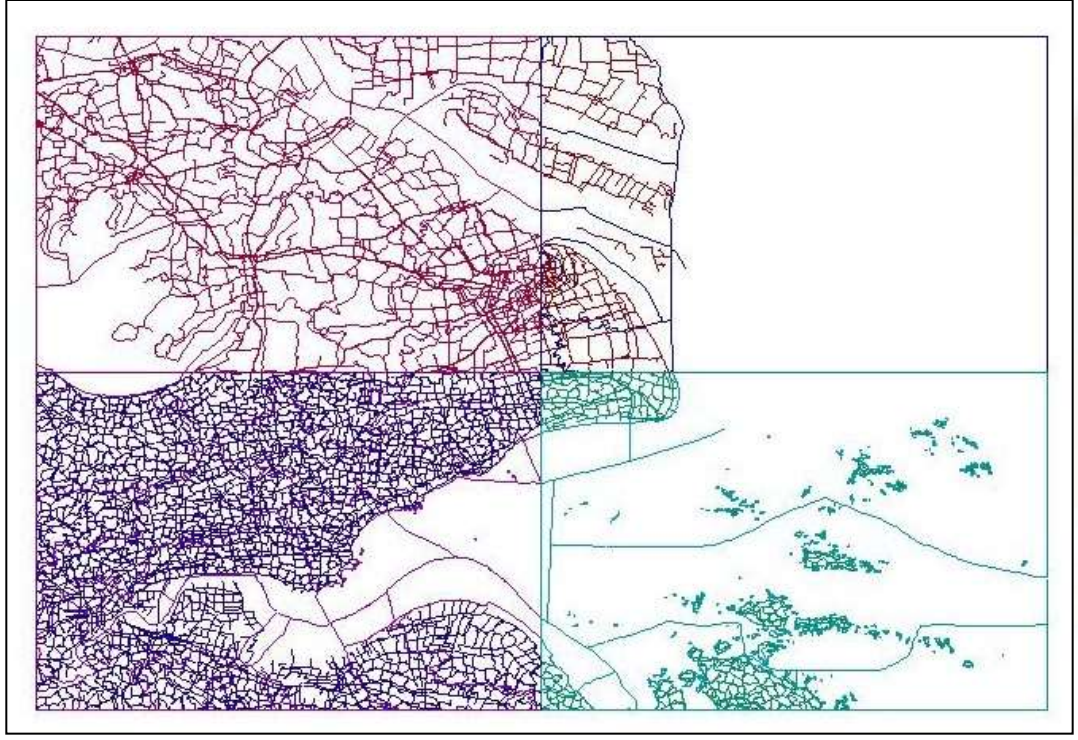
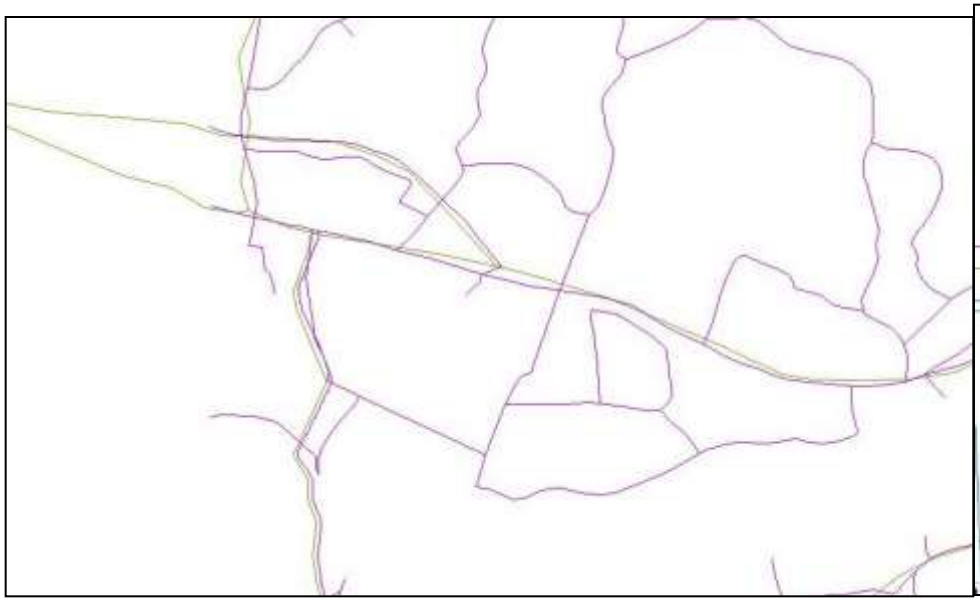
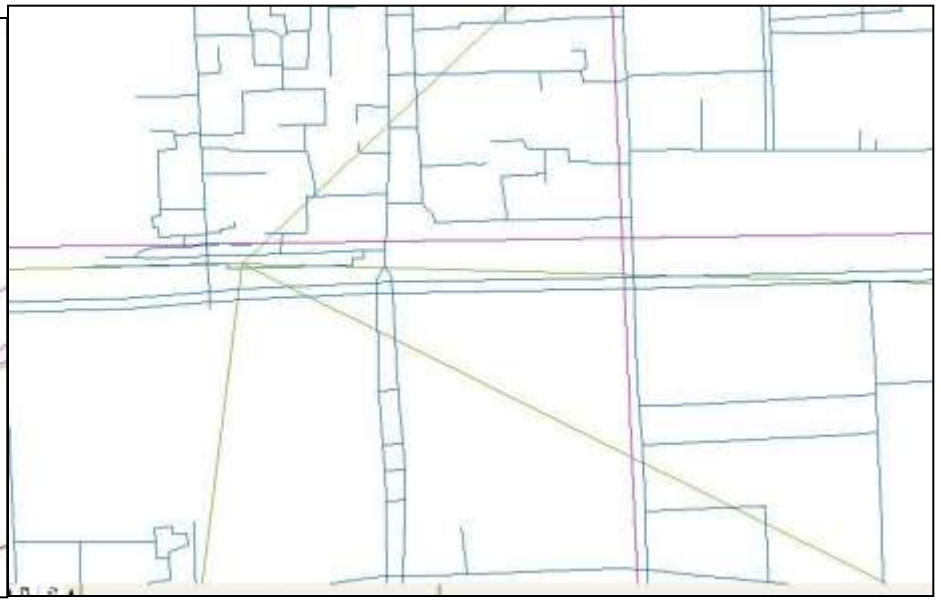
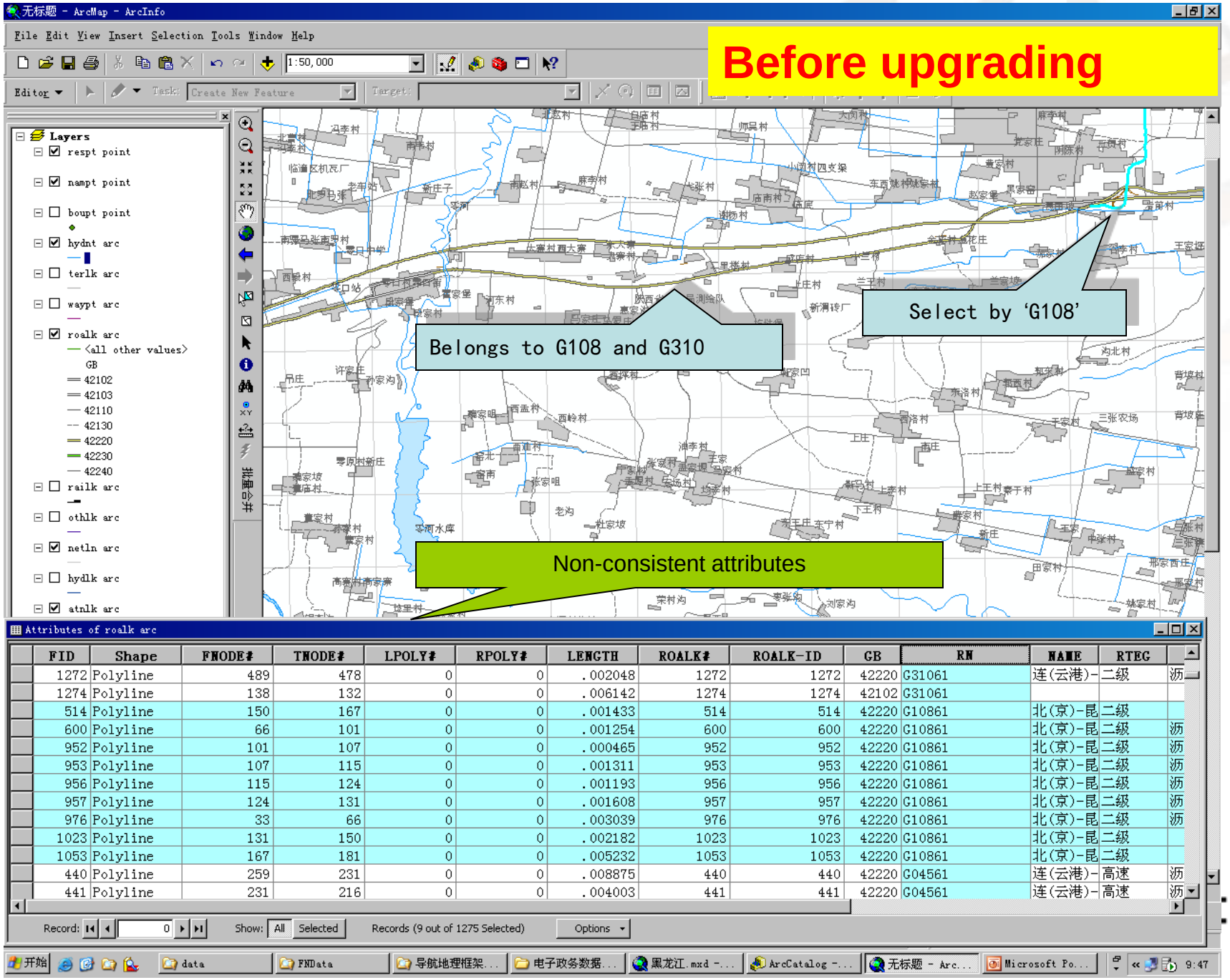


- Link features in different dataset





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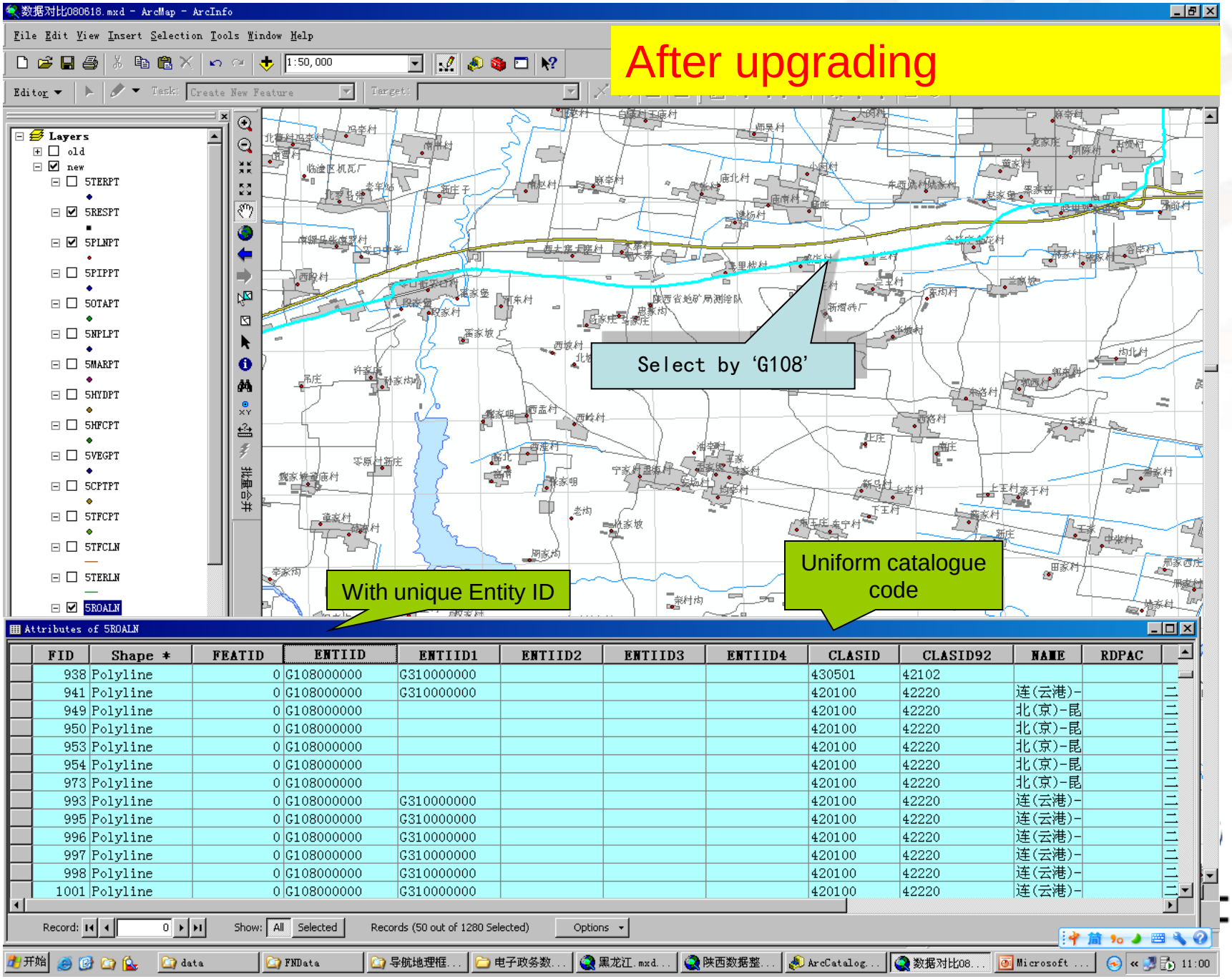
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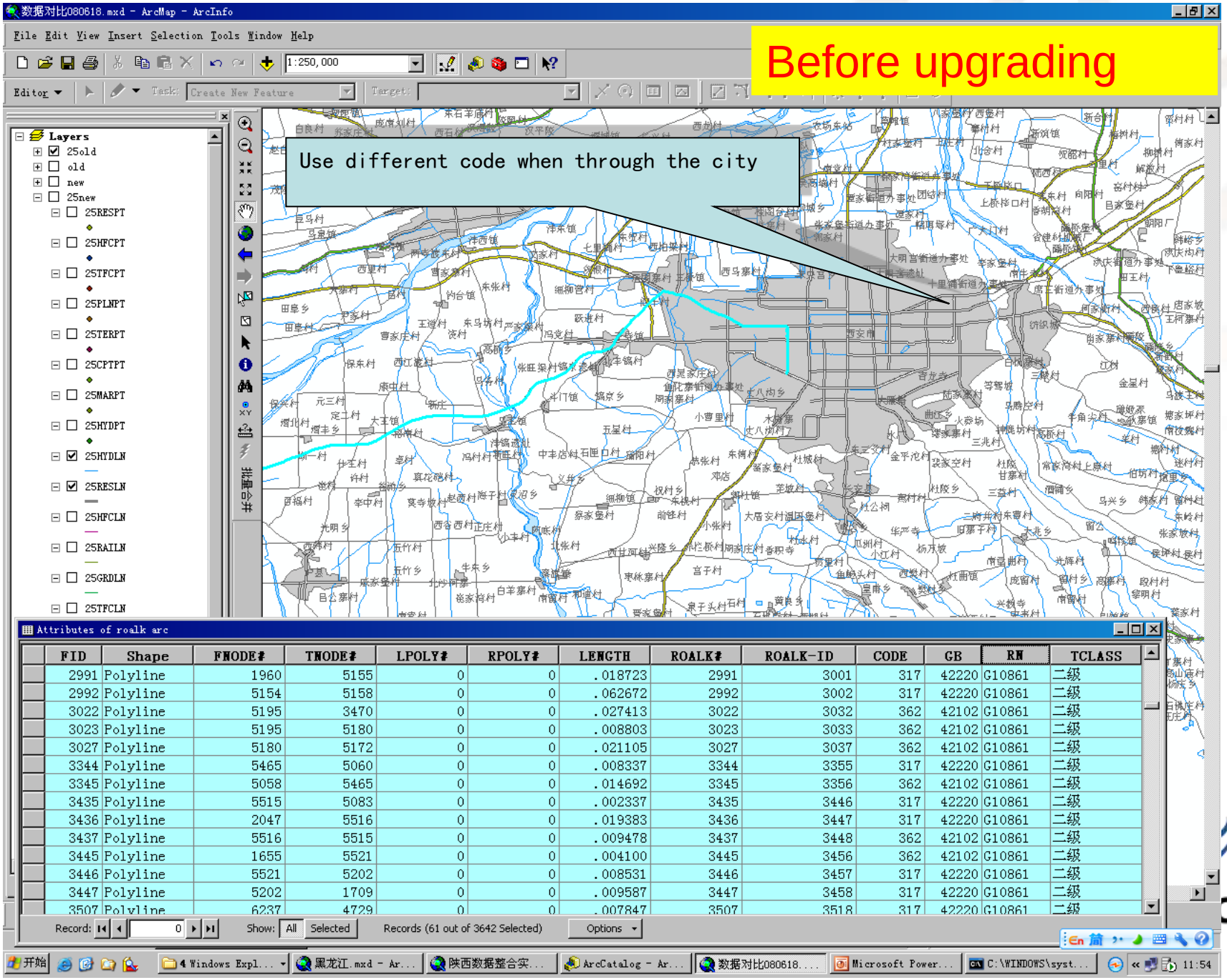

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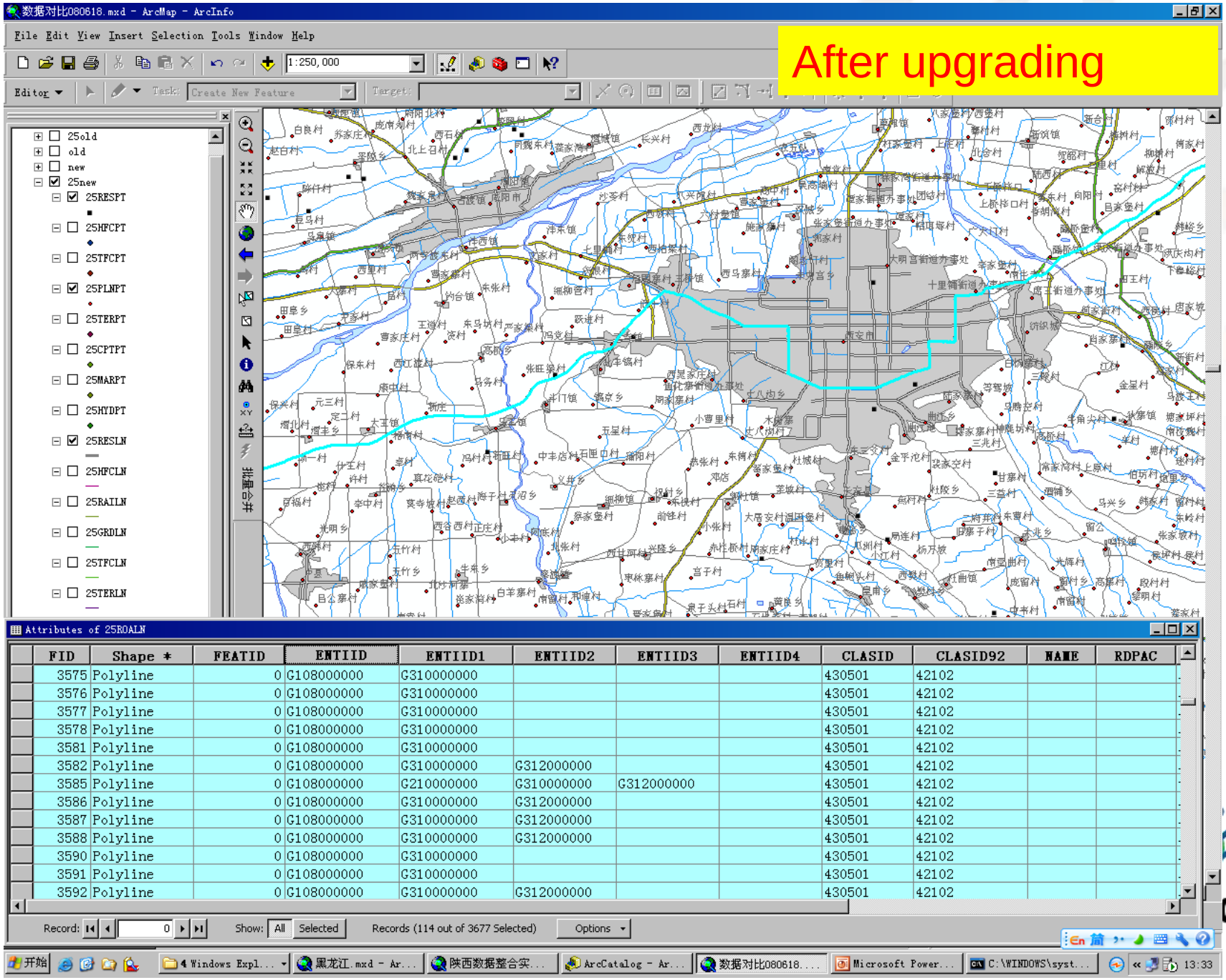
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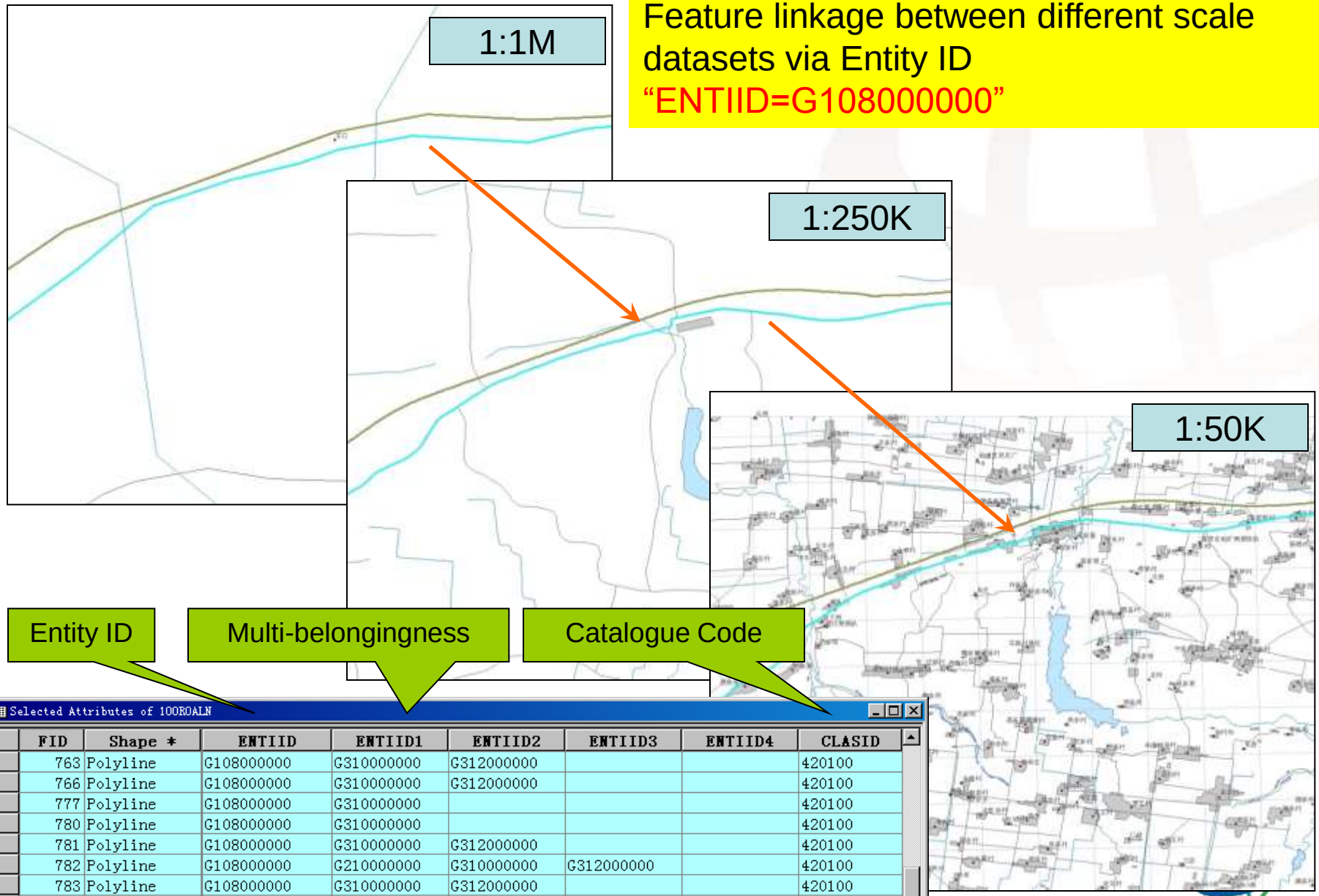
陕西数据整合实...
ArcCatalog - Ar...
数据对比080618....
Microsoft Power...
C:\WINDOWS\syst...
13:33

Feature linkage between different scale datasets via Entity ID
"ENTIID=G108000000"



Selected Attributes of 100ROALN

FID	Shape *	ENTIID	ENTIID1	ENTIID2	ENTIID3	ENTIID4	CLASID
763	Polyline	G108000000	G310000000	G312000000			420100
766	Polyline	G108000000	G310000000	G312000000			420100
777	Polyline	G108000000	G310000000				420100
780	Polyline	G108000000	G310000000				420100
781	Polyline	G108000000	G310000000	G312000000			420100
782	Polyline	G108000000	G210000000	G310000000	G312000000		420100
783	Polyline	G108000000	G310000000	G312000000			420100
789	Polyline	G108000000	G310000000				420100
811	Polyline	G108000000	G310000000				420100

Record: 1 Show: All Selected Records (48 out of 1798 Selected) Options

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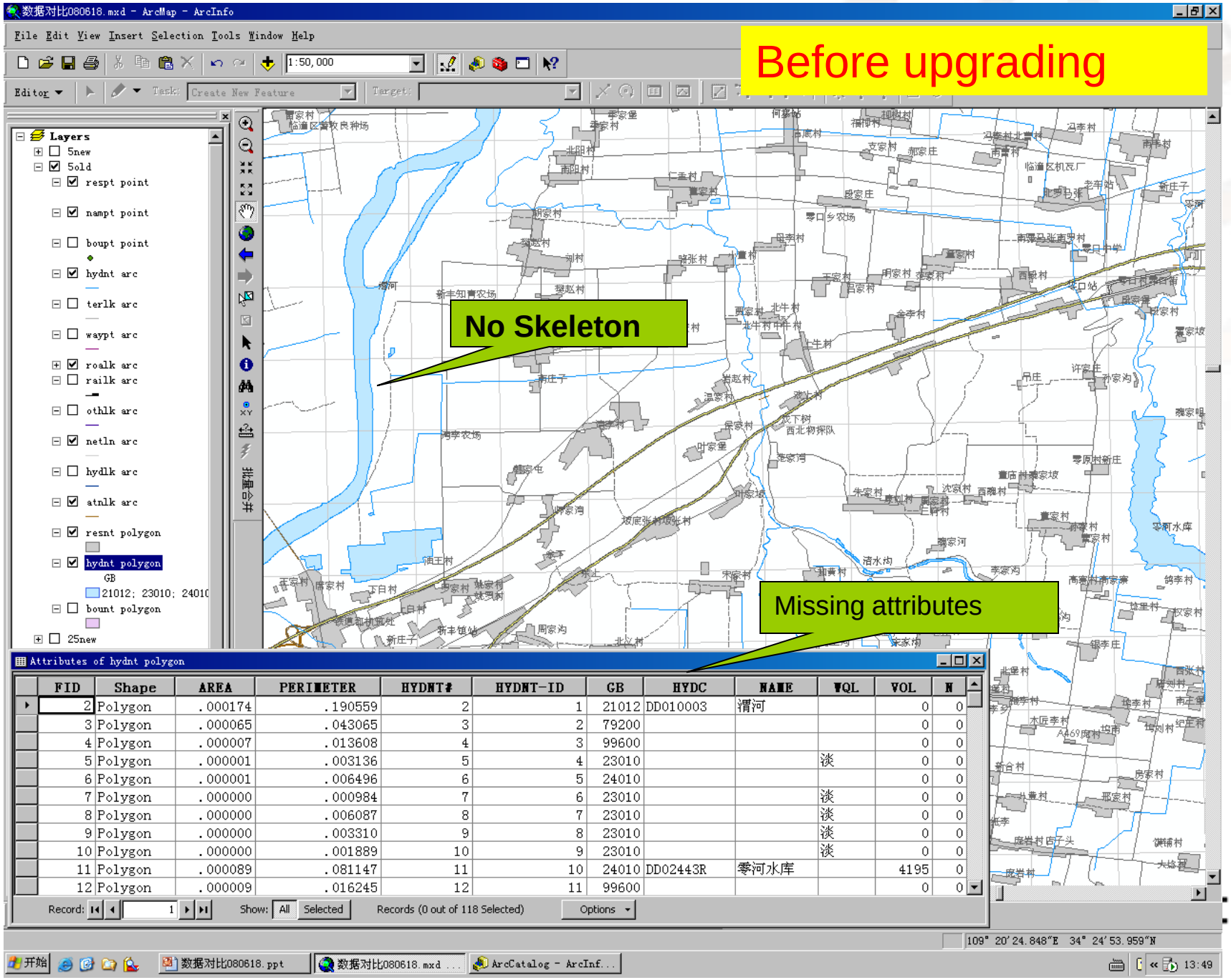
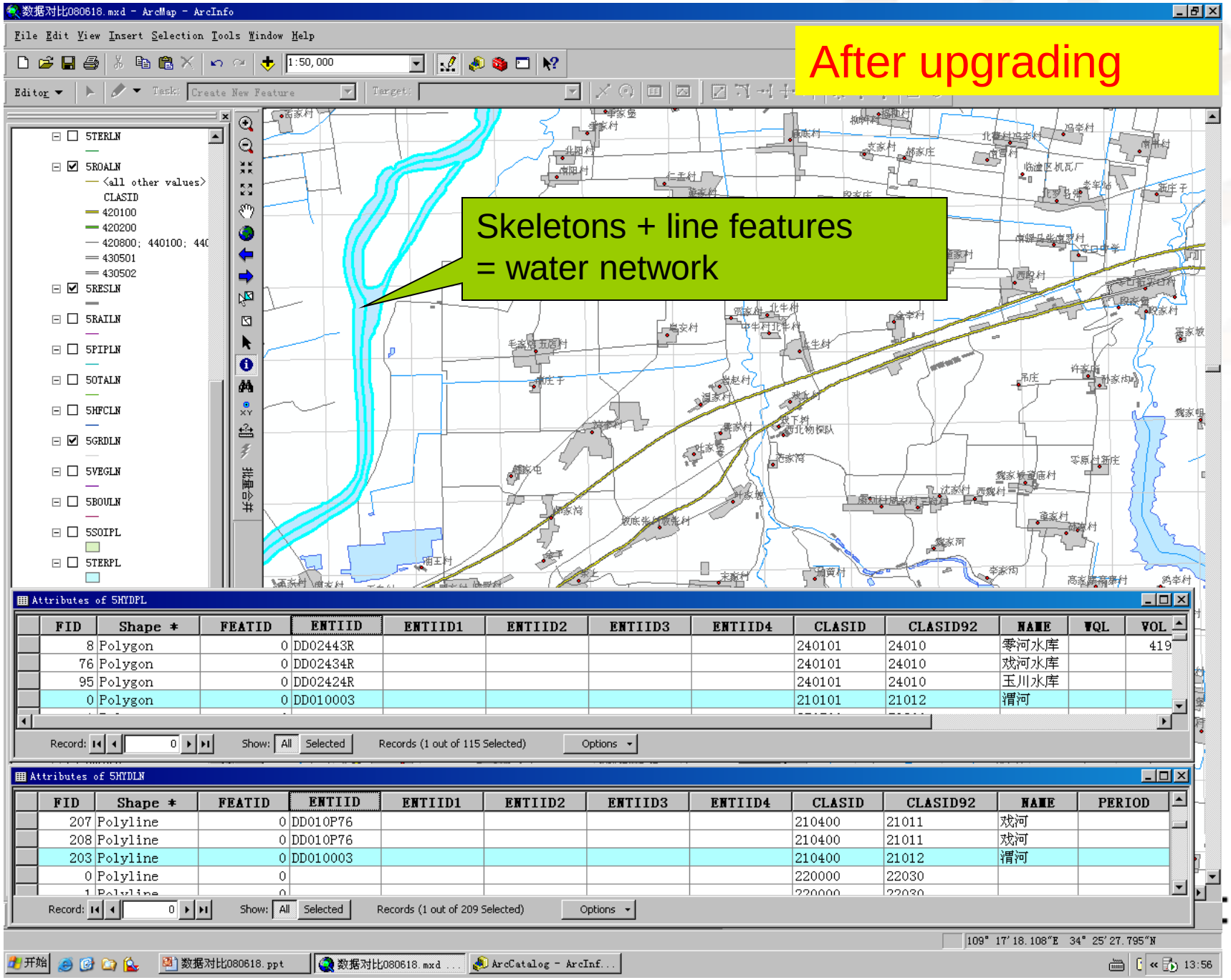
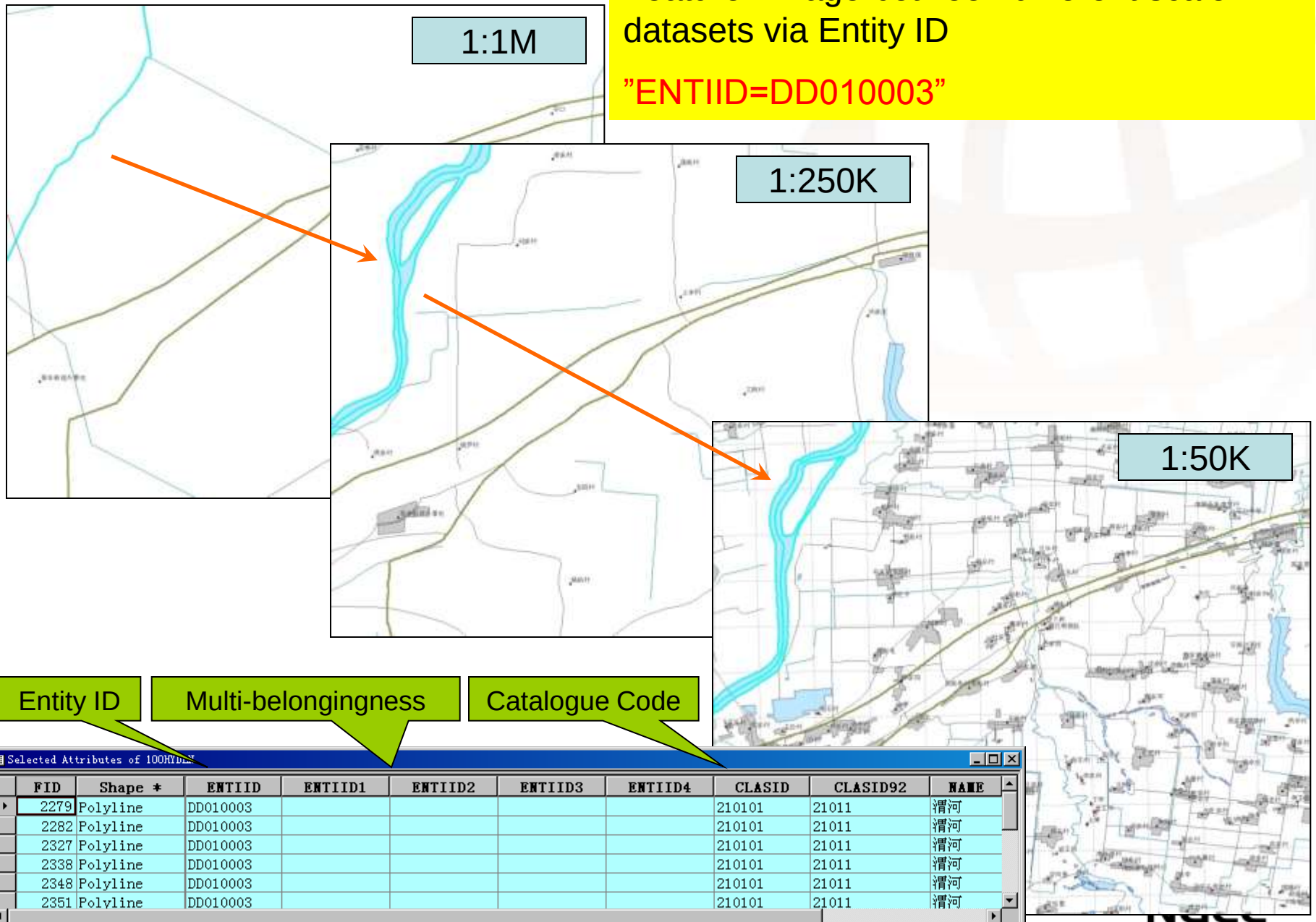

Before upgrading
数据对比080618.mxd - ArcMap - ArcInfo
File Edit View Insert Selection Tools Window Help
Editor
Task: Create New Feature
Target:
Layers
5new
5old
respt point
nampt point
boupt point
hydnt arc
terlk arc
waypt arc
roalk arc
railk arc
othlk arc
netln arc
hydlk arc
atnlk arc
resnt polygon
hydnt polygon
GB
21012; 23010; 24010
bount polygon
25new
No Skeleton
Missing attributes
Attributes of hydnt polygon
FID Shape AREA PERIMETER HYDNT# HYDNT-ID GB HYDC NAME WQL VOL N
2 Polygon .000174 .190559 2 1 21012 DD010003 渭河 0 0
3 Polygon .000065 .043065 3 2 79200 0 0
4 Polygon .000007 .013608 4 3 99600 0 0
5 Polygon .000001 .003136 5 4 23010 淡 0 0
6 Polygon .000001 .006496 6 5 24010 0 0
7 Polygon .000000 .000984 7 6 23010 淡 0 0
8 Polygon .000000 .006087 8 7 23010 淡 0 0
9 Polygon .000000 .003310 9 8 23010 淡 0 0
10 Polygon .000000 .001889 10 9 23010 淡 0 0
11 Polygon .000089 .081147 11 10 24010 DD02443R 零河水库 4195 0
12 Polygon .000009 .016245 12 11 99600 0 0
Record: 1
Show: All Selected
Records (0 out of 118 Selected)
Options
109° 20' 24.848"E 34° 24' 53.959"N
开始
数据对比080618.ppt
数据对比080618.mxd ...
ArcCatalog - ArcInf...
13:49


数据对比080618.mxd - ArcMap - ArcInfo
File Edit View Insert Selection Tools Window Help
After upgrading
Skeletons + line features
= water network
5TERLN
5ROALN
<all other values>
CLASID
420100
420200
420800; 440100; 440
430501
430502
5RESLN
5RAILN
5PIPLN
5OTALN
5HFCLN
5GRDLN
5VEGLN
5BOULN
5SOIPL
5TERPL
Attributes of 5HYDPL
FID | Shape * | FEATID | ENTIID | ENTIID1 | ENTIID2 | ENTIID3 | ENTIID4 | CLASID | CLASID92 | NAME | VQL | VOL
8 | Polygon | 0 | DD02443R | | | | | 240101 | 24010 | 零河水库 | | 419
76 | Polygon | 0 | DD02434R | | | | | 240101 | 24010 | 戏河水库 | |
95 | Polygon | 0 | DD02424R | | | | | 240101 | 24010 | 玉川水库 | |
0 | Polygon | 0 | DD010003 | | | | | 210101 | 21012 | 渭河 | |
Record: 0 Show: All Selected Records (1 out of 115 Selected) Options
Attributes of 5HYDLN
FID | Shape * | FEATID | ENTIID | ENTIID1 | ENTIID2 | ENTIID3 | ENTIID4 | CLASID | CLASID92 | NAME | PERIOD
207 | Polyline | 0 | DD010P76 | | | | | 210400 | 21011 | 戏河 |
208 | Polyline | 0 | DD010P76 | | | | | 210400 | 21011 | 戏河 |
203 | Polyline | 0 | DD010003 | | | | | 210400 | 21012 | 渭河 |
0 | Polyline | 0 | | | | | | 220000 | 22030 | |
Record: 0 Show: All Selected Records (1 out of 209 Selected) Options
109° 17' 18.108"E 34° 25' 27.795"N
开始
数据对比080618.ppt
数据对比080618.mxd
ArcCatalog - ArcInf...
13:56

Feature linkage between different scale datasets via Entity ID

”ENTIID=DD010003”



Entity ID

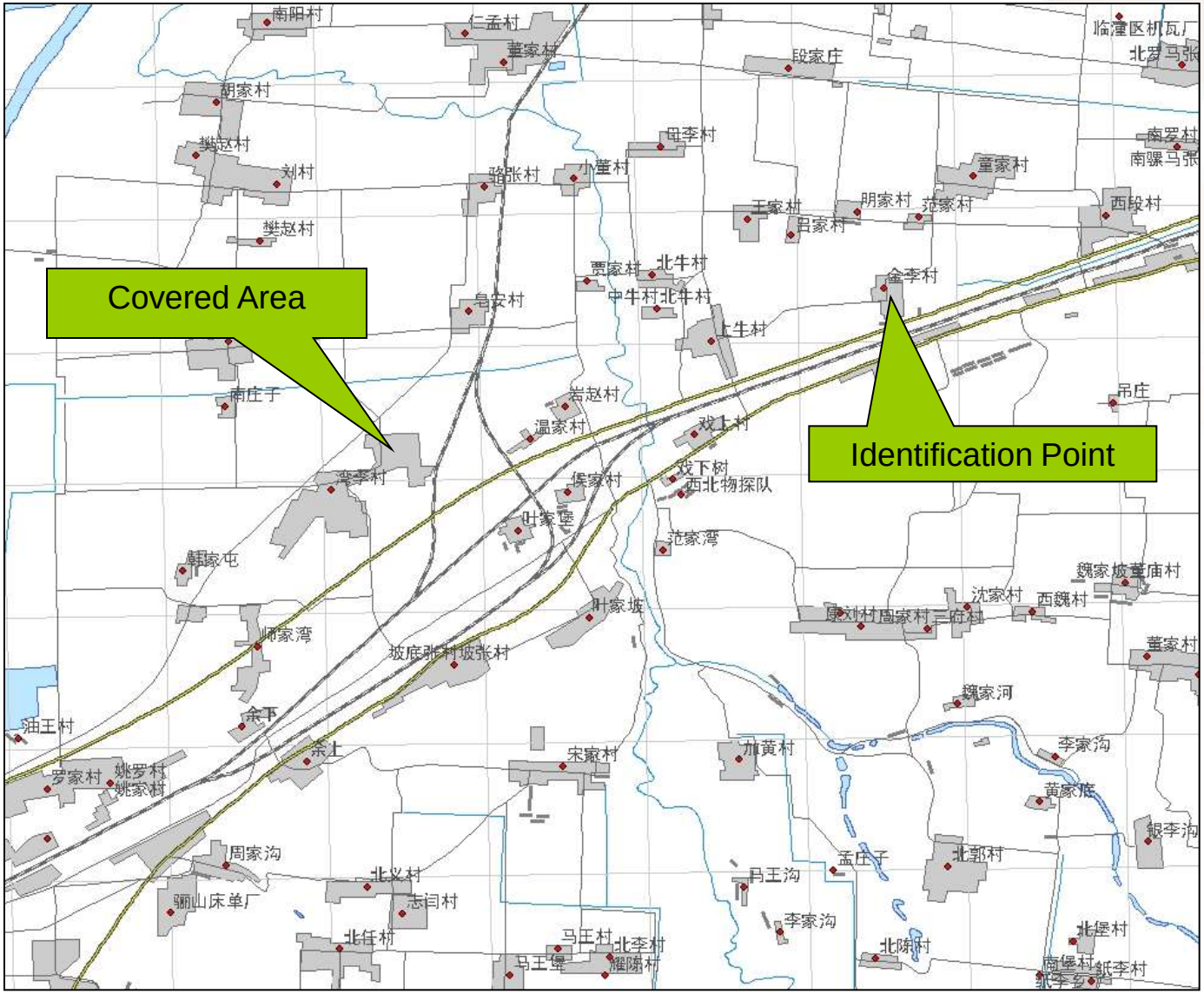
Multi-belongingness

Catalogue Code

Selected Attributes of 100HYDRO

FID	Shape *	ENTIID	ENTIID1	ENTIID2	ENTIID3	ENTIID4	CLASID	CLASID92	NAME
2279	Polyline	DD010003					210101	21011	渭河
2282	Polyline	DD010003					210101	21011	渭河
2327	Polyline	DD010003					210101	21011	渭河
2338	Polyline	DD010003					210101	21011	渭河
2348	Polyline	DD010003					210101	21011	渭河
2351	Polyline	DD010003					210101	21011	渭河

Record: 1 Show: All Selected Records (13 out of 6363 Selected) Options



Settlements:

- Identification Point – As Key Feature to link Social-economic information
- Covered Area- As background for displaying

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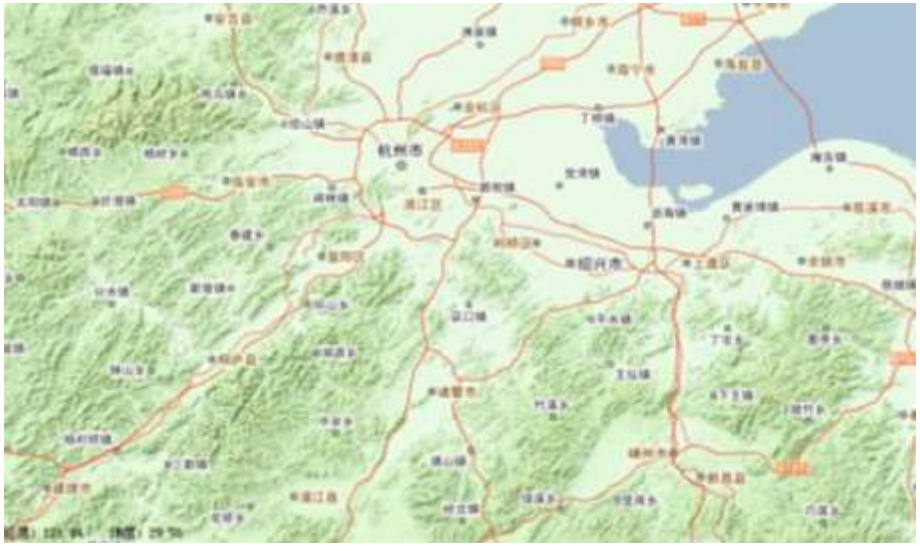
Upgrade for Smarter Services

-Cartography for on-line Services



Upgrade for Smarter Services

-Cartography for on-line Services

Level of Details

Outlines

- The development of NSDI in China
- Data Upgrade for better services
- Suggestions

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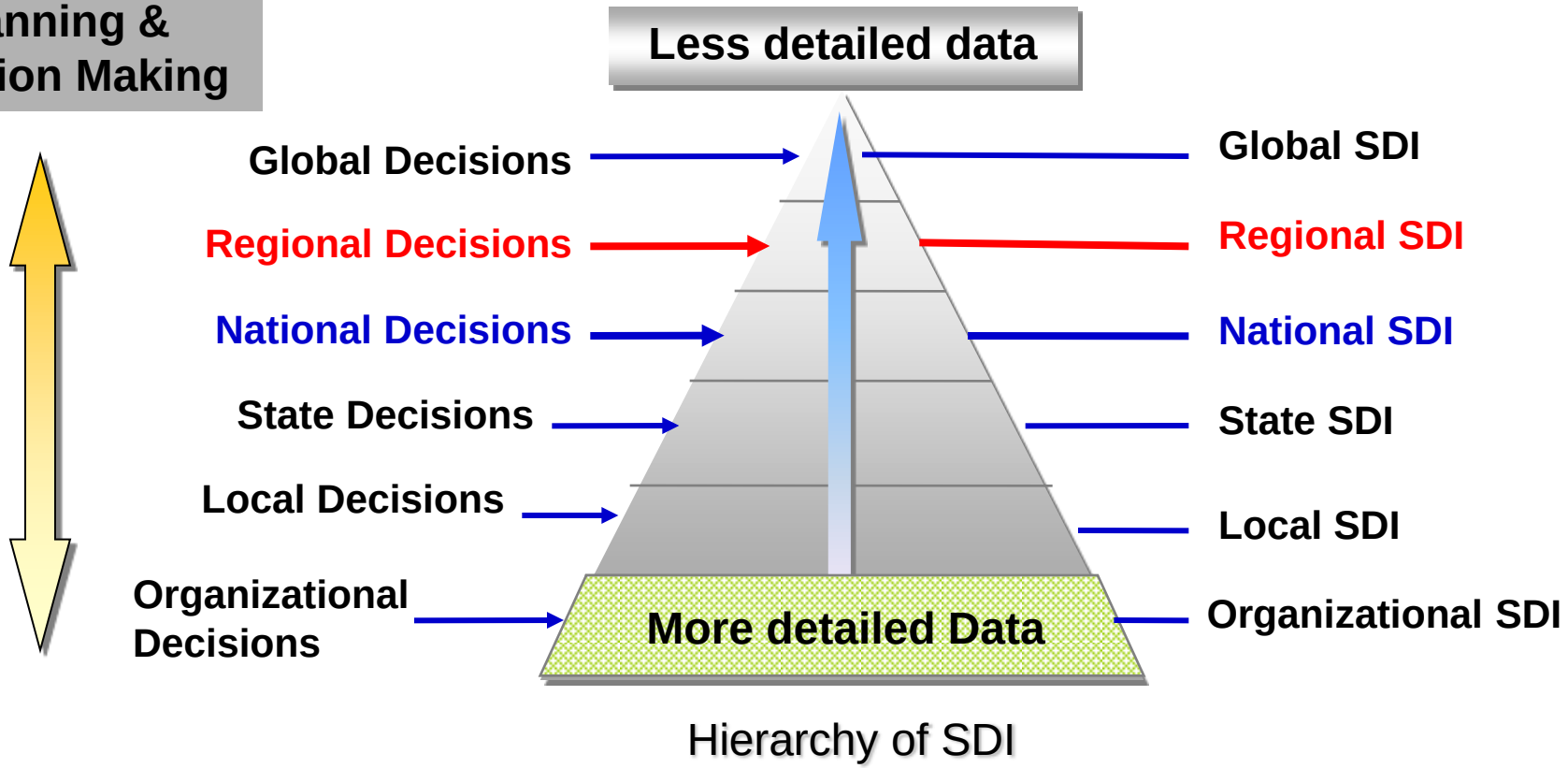
Suggestion
-- Regional SDI for AP

Strategic Planning & Decision Making



Hierarchy of SDI

Success depends on cooperation between individuals and agencies

Ian Williamson, Meeting of PCGIAP, 2004

Suggestion
-- Regional SDI for AP

- European Commission Directive 2007/2/EC: establishing an Infrastructure for Spatial Information in the European Community (INSPIRE) to ensure that the spatial data infrastructures of the Member States are compatible and usable in a Community and transboundary context.
- The Directive requires that common Implementing Rules (IR) are adopted in a number of specific areas (Metadata, Data Specifications, Network Services, Data and Service Sharing and Monitoring and Reporting).

Why not Build a Regional SDI for AP Region !

国家基础地理信息中心
National Geomatics Center of China
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Thanks