"Derfor skal der anvendes Bentley MAP"

Gijsbert Noordam, Bentley

Vejle, 11 November 2007

My topics for today...

1. Development of the Bentley geospatial product portfolio

   Why Bentley Map?

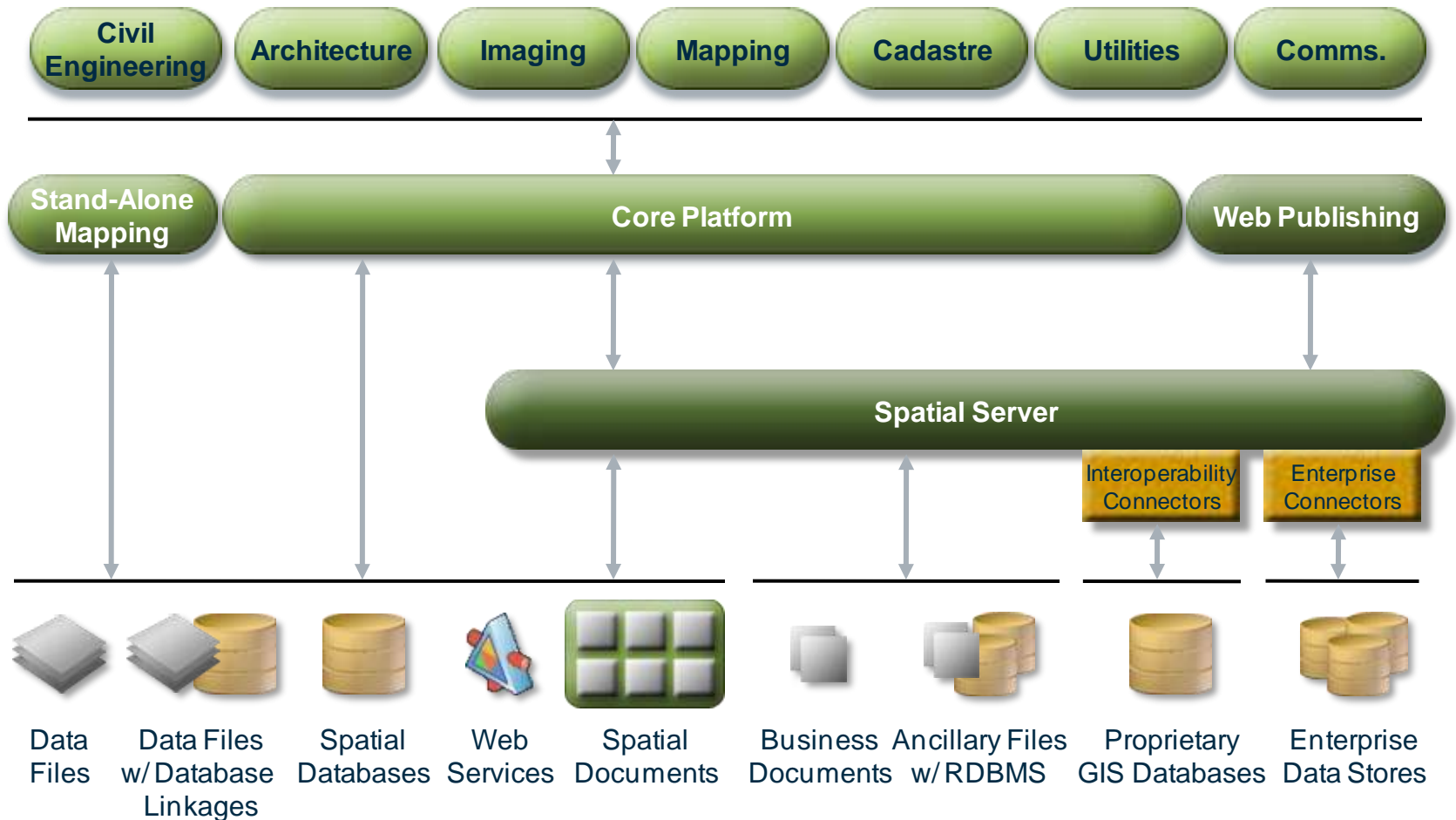2. Migration strategy

   How do we migrate?

   What's in it for us?

3. Bentley Map **V8***i*

# Bentley Geospatial development

Why Bentley Map?

Bentley®

The Bentley Geospatial Solution

| Civil Engineering | Architecture | Imaging | Mapping | Cadastre | Utilities | Comms. |

| Stand-Alone Mapping | Core Platform | Web Publishing |

Spatial Server

Interoperability Connectors | Enterprise Connectors

Data Files | Data Files w/ Database Linkages | Spatial Databases | Web Services | Spatial Documents | Business Documents | Ancillary Files w/ RDBMS | Proprietary GIS Databases | Enterprise Data Stores

The Bentley Geospatial Product Portfolio

- Web Publishing
- Geospatial Server
- Industry Applications
- Enterprise Integration
- Geospatial Desktop
- Mobile GIS

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The Geospatial Desktop needs to be a:

- Design and editing platform
  - MicroStation engine, rich toolset, 3D

- Modeling environment for geospatial objects
  - Using the XFM engine (XML based Feature Modeling)
  - Support for Geometry and Topology-based modeling

- Interoperability platform
  - Interface with common GIS formats, Oracle Locator/Spatial
  - Deployable in personal, two-tier and *n*-tier architectures

- Platform for GIS Analysis
  - Sophisticated, yet easy to use
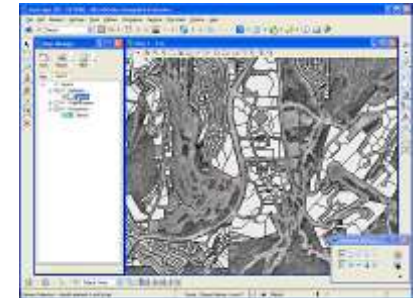
Bentley Map

Bentley PowerMap

Object modeling comparison

	MicroStation GeoGraphics	Geospatial Desktop
Geometry-based Features	✓	✓
Topology-based Features		✓
Group Features (Categories)	✓	✓
Property Based Symbology		✓
Property Based Annotation		✓
Parent-Child Relationships		✓
Peer-to-Peer Relationships		✓

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Why object modeling?

- Create Models, not just Drawings
  - Smart placement tools build intelligent engineering models for infrastructure management

- Improve Standards
  - Symbology and annotation based on asset attributes

- Build Smarter Software
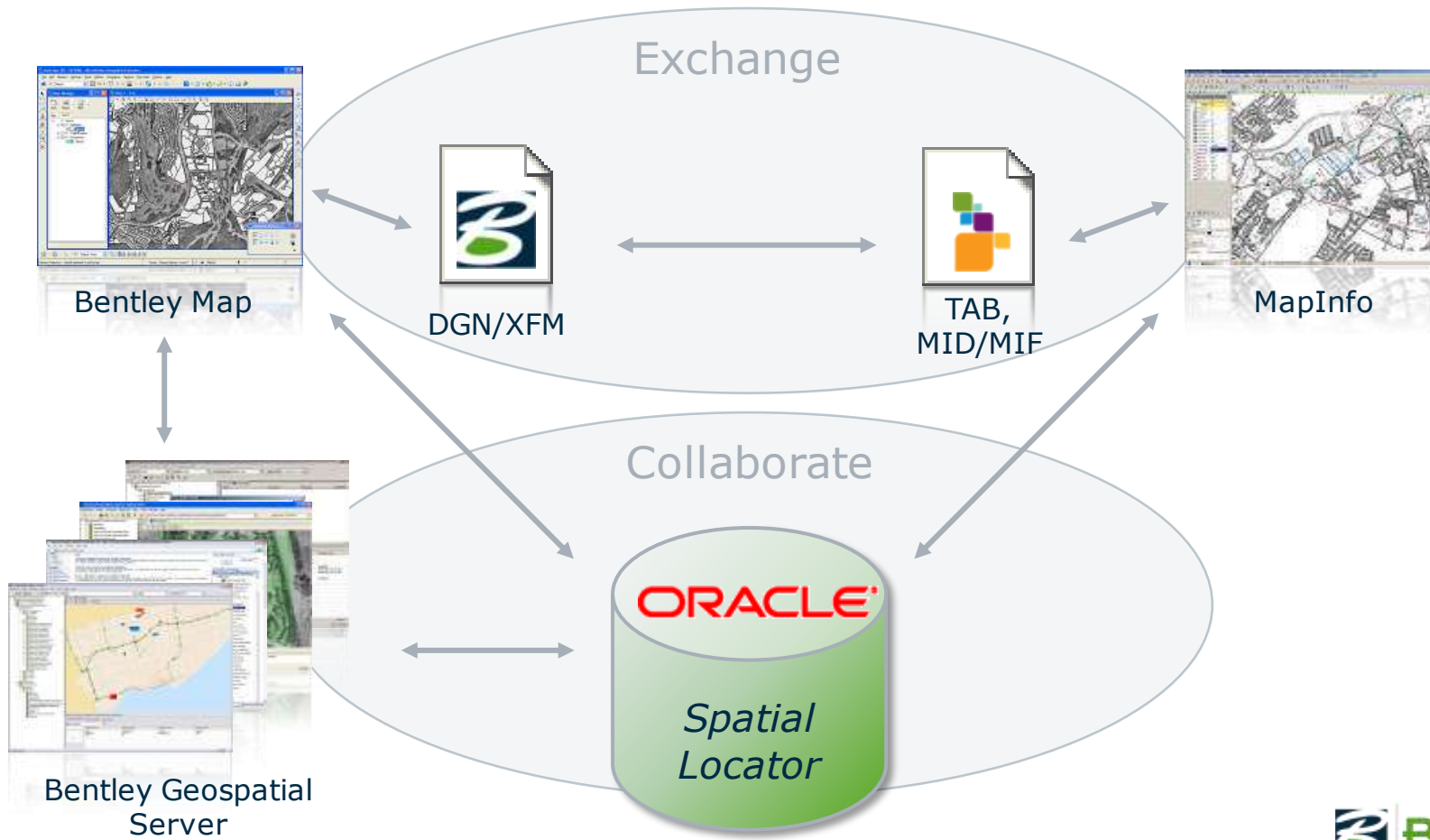 - User defined placement routines ensure accuracy

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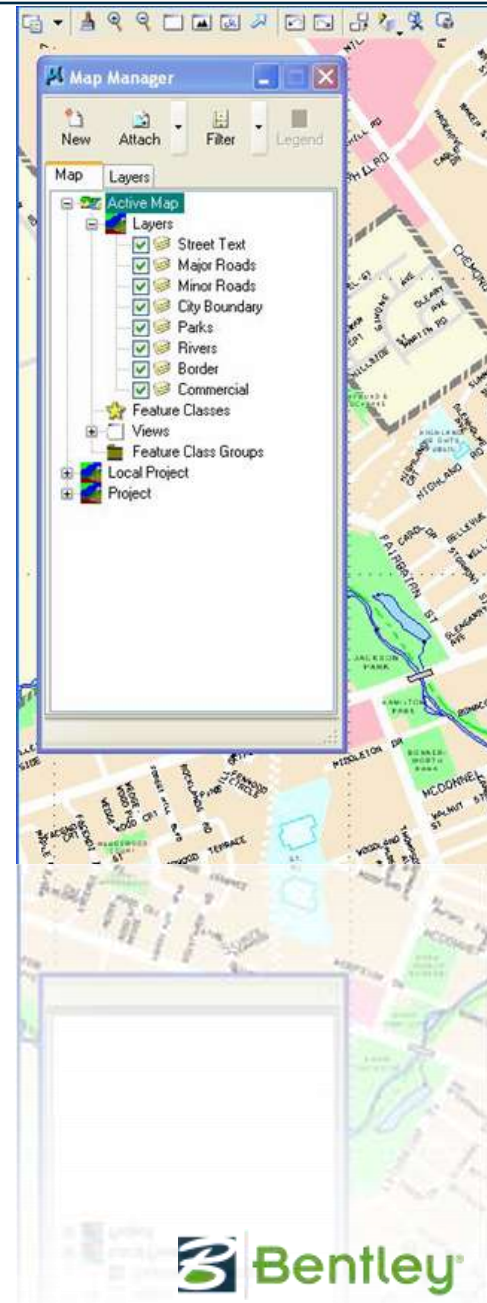
Interoperability comparison

	MicroStation GeoGraphics	Geospatial Desktop
Import/Export SHP	✓	✓
Reference SHP		✓
Import/Export MID/MIF	✓	✓
Import/Export TAB		✓
Reference TAB		✓
Import/Reference Oracle		✓
Read/Write Oracle	✓	✓

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Bentley Map – ArcGIS interoperability

Exchange

Bentley Map — DGN/XFM — SHP — ArcGIS

Collaborate

Bentley Geospatial Server

Geodatabase

| ArcObjects |
| ArcSDE |
| RDBMS |
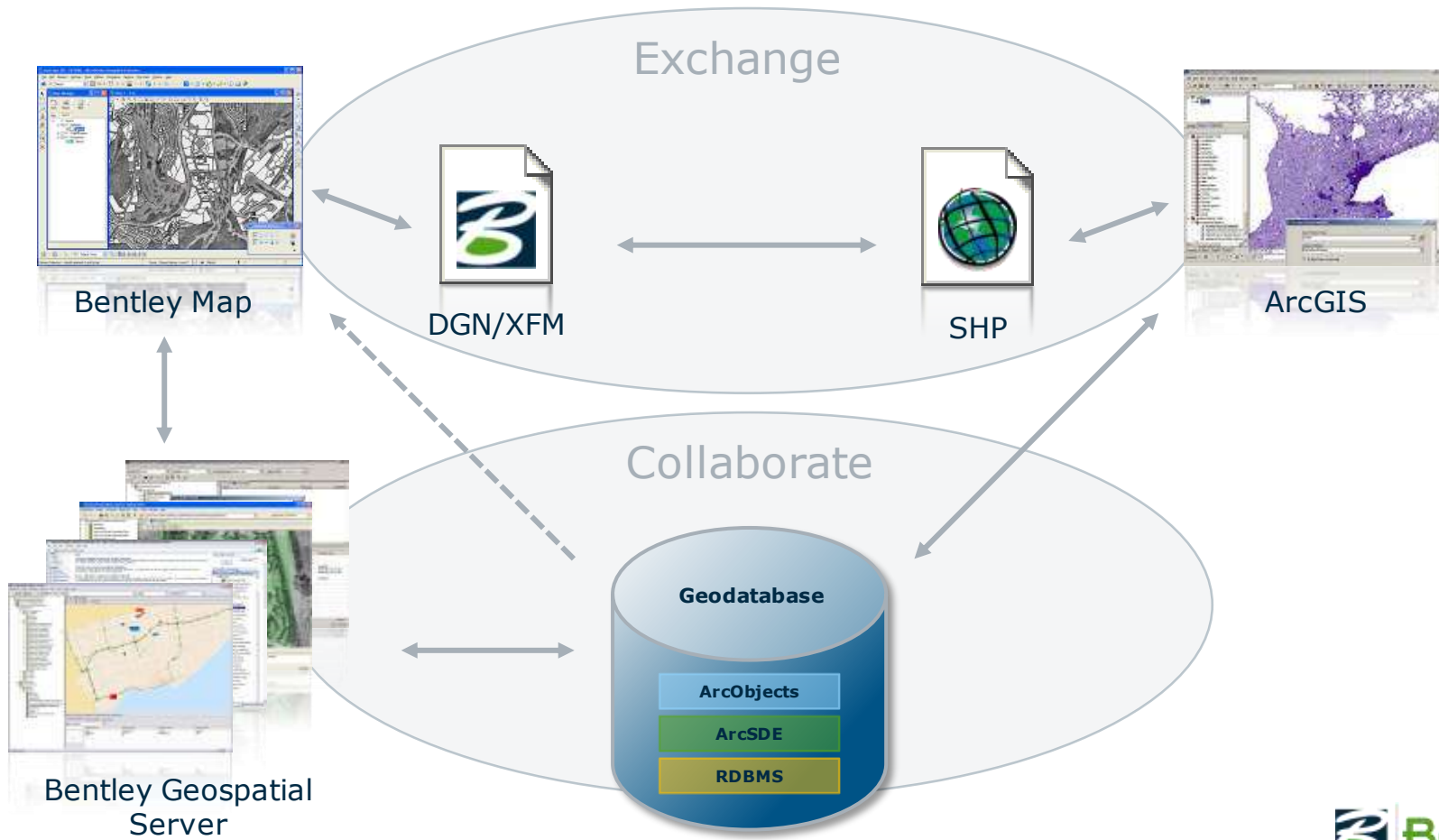
Bentley Map – MapInfo interoperability

Exchange

Bentley Map

DGN/XFM

TAB,
MID/MIF

MapInfo

Collaborate

Bentley Geospatial
Server

ORACLE

*Spatial
Locator*

Bentley Map – Oracle interoperability

Other GIS Systems Compliant with Oracle Spatial

ORACLE

Spatial Locator

Any PL/SQL Client

Bentley Map via Two-Tier Direct Connection

Bentley Geospatial Server

Bentley Industry Applications via Two-Tier Direct Connection

Bentley Map via Enterprise Connection

Bentley Industry Applications via Enterprise Connection

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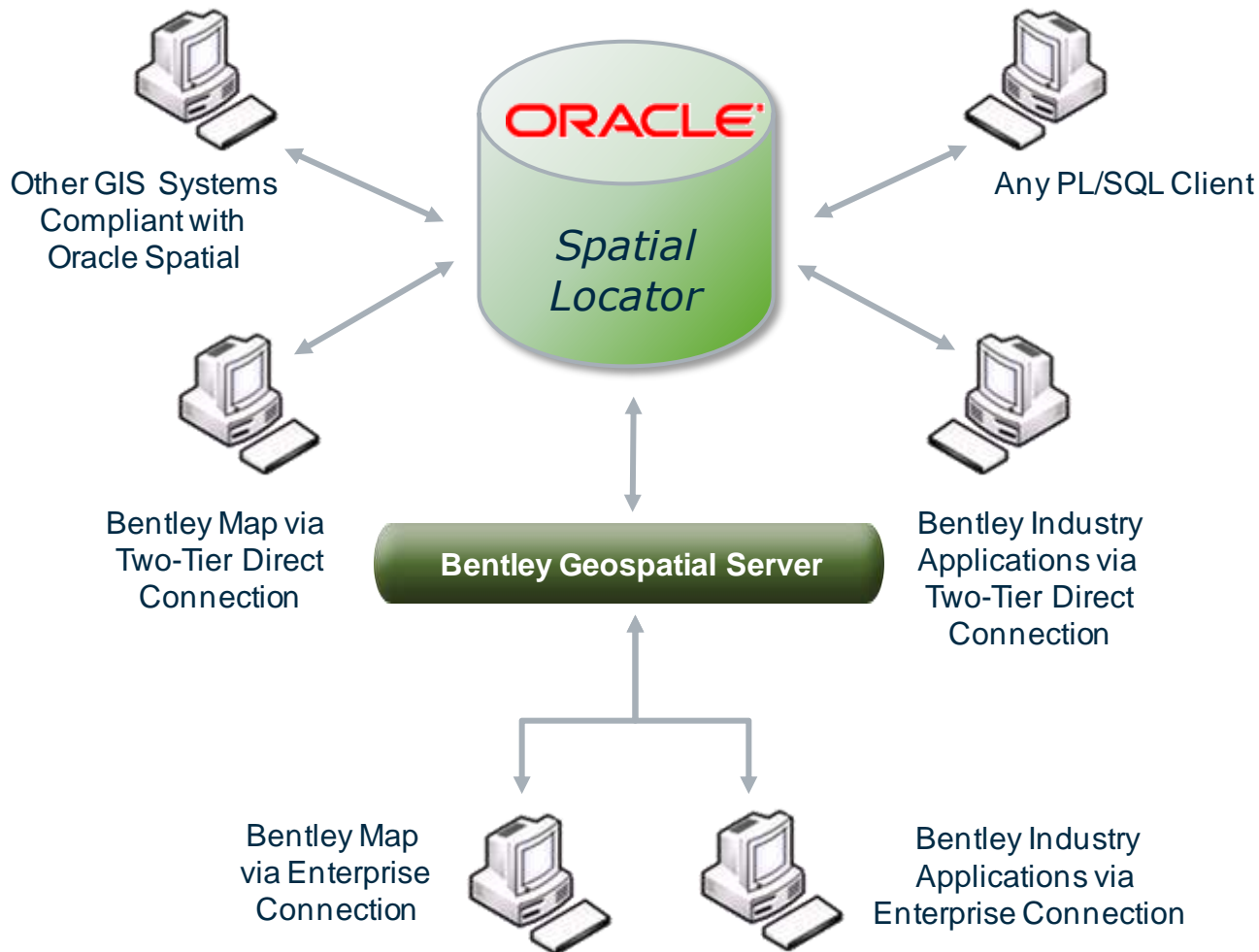
Migration strategy

How do we migrate? What's in it for us?

Let's be fair...

- Data migration is *never* easy

- Major issues will have to be dealt with:

  - Data syntax and semantics

  - Data quality

  - Scale

  - Backward compatibility

- Only worth it when the benefits are clear
  - E.g. securing the data, increasing middle/long-term productivity, better compatibility…

# Migration is a five-step process

1 — **2** — **3** — **4** — **5**

Prepare

Export

Remodel

Register

Use

Bentley
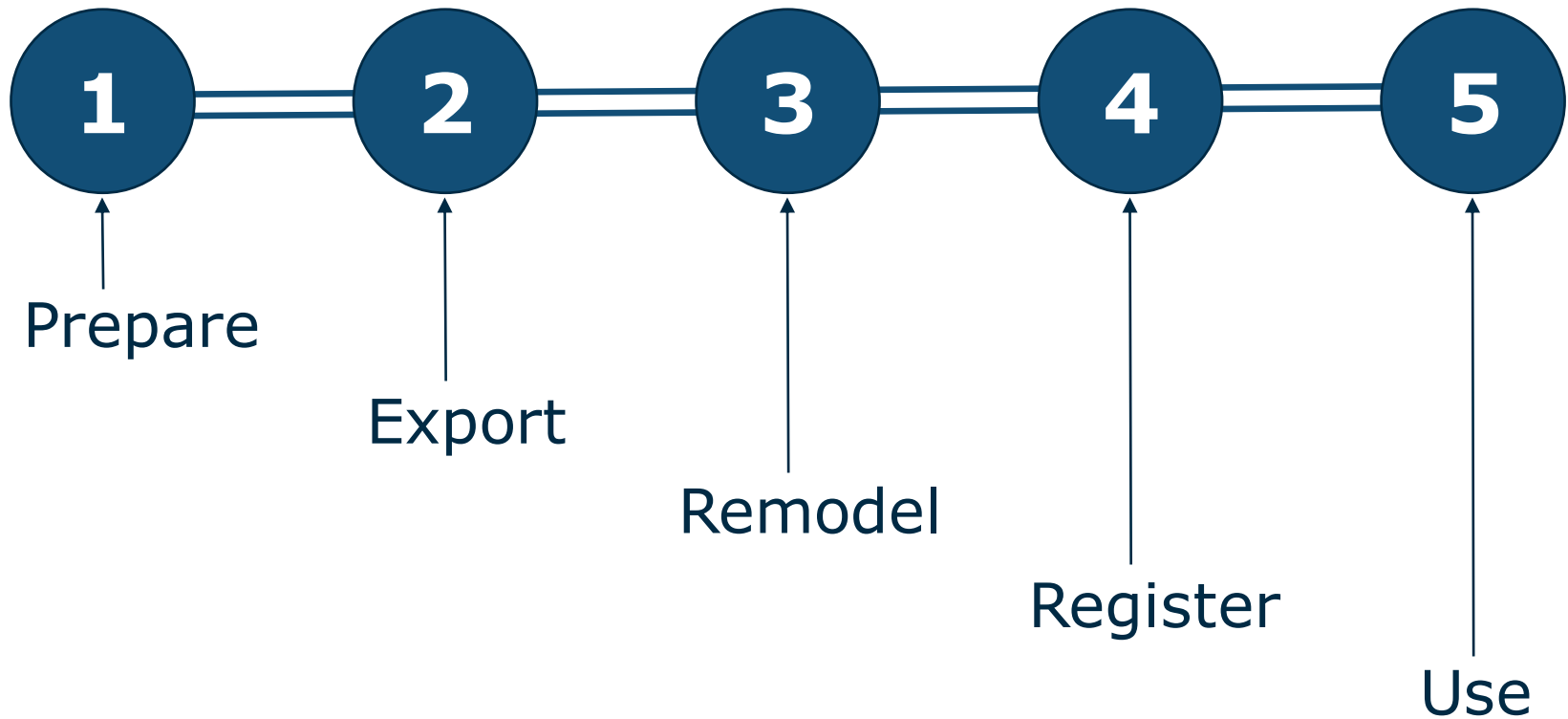
Step 0 – current data set

- MGE/GG-based data set

  - Oracle as feature/attribute database

  - Feature extended with custom columns

  - Hundreds of features

  - Intensive use of reference files

  - Mix of data and end-product

  - Scale (covering the entire country)

Step 1 – preparing the data

- Creating an Oracle infrastructure & schema

- Configuring a migration environment

  - Regulating batch processes, logging…

- Verifying, possibly modifying the data

  - Check data for cleanness, completeness

  - Changing geometry

    - E.g. Centroid/boundary to Polygon conversion

  - Storing textual information
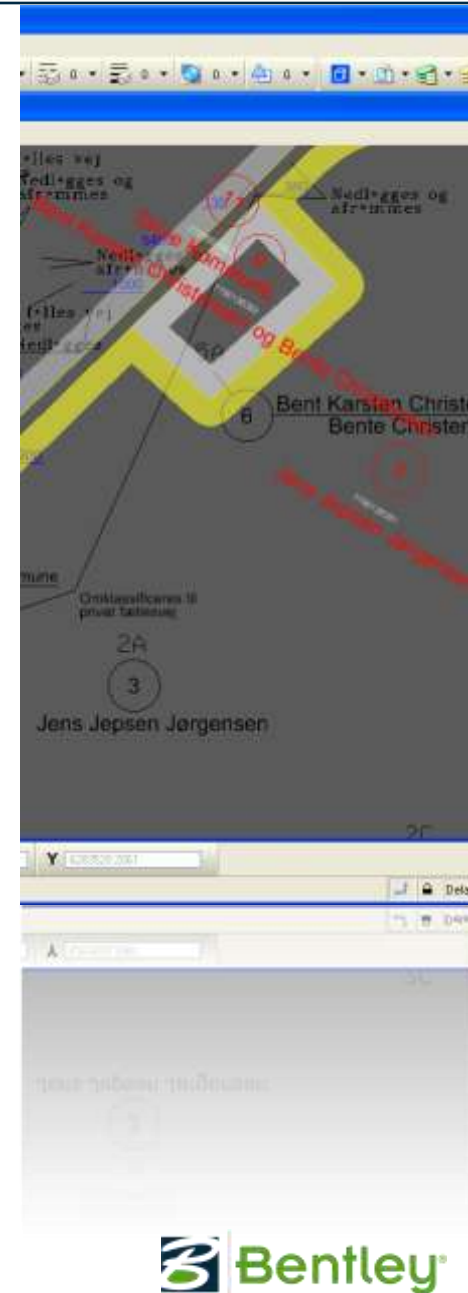
Step 2 – Data export

- Transferring the data using DGN2SDO

  - Tool developed for data migration to Oracle

    - 'Non-intelligent' DGN data
    - MicroStation GeoGraphics/MGE modeled data
    - DGN/XFM data

  - Generates statements to populate an Oracle schema

    - SQL*Plus statements for table creation, indexing…
    - SQL*Loader statements to load the data
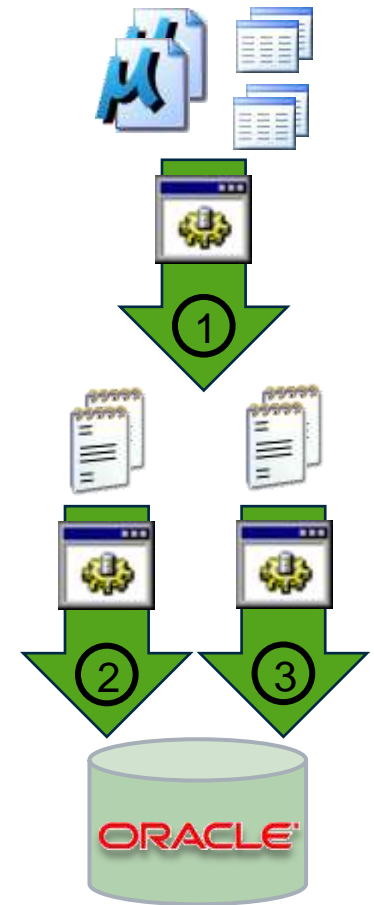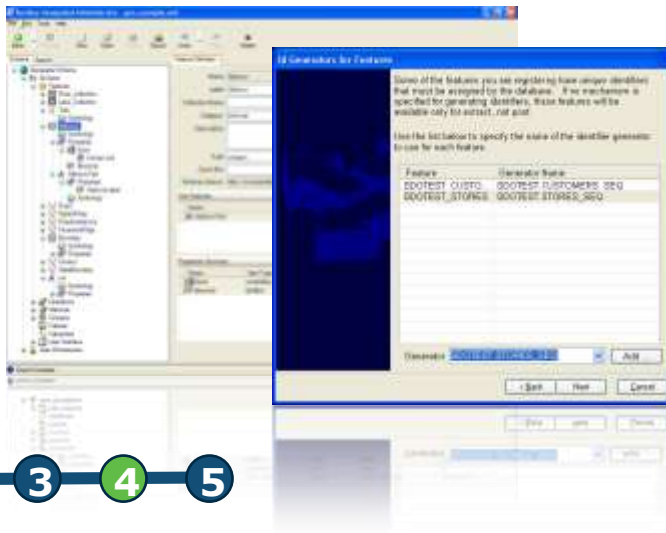
Step 3 – Remodeling the data

- Data loaded in Oracle can be further optimized:
  - Enriching 'non-intelligent' data
    - Using text and text node element content, cell names
    - Connecting non-intelligent and intelligent data through spatial queries
  - Consolidating groups of features
    - To symbolize them on extraction using property-based symbology
  - Establishing parent–child and peer–to–peer relationships
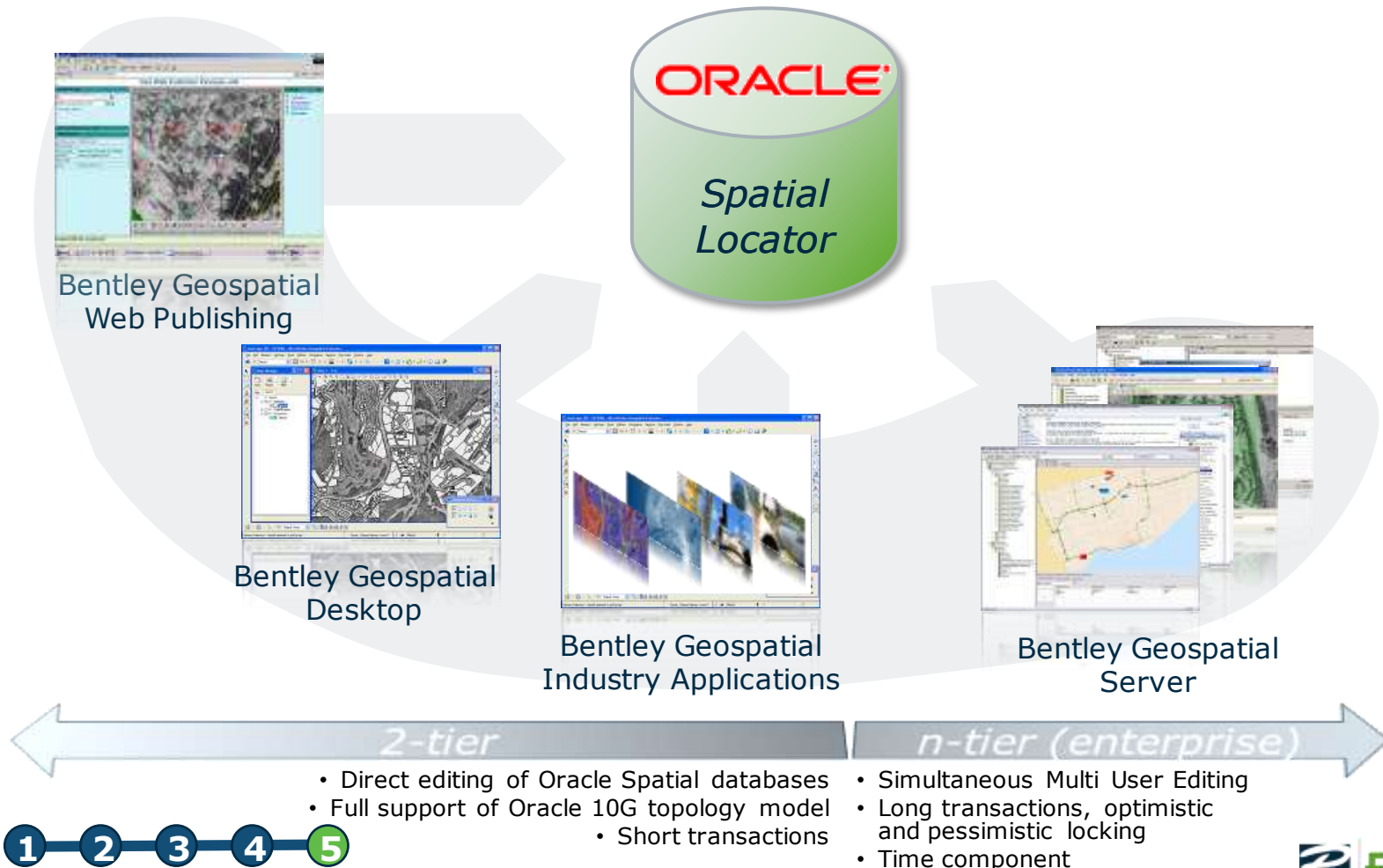   - Graphical and non-graphical
    - Using database constraints

2A

3

Jens Jepsen Jørgensen
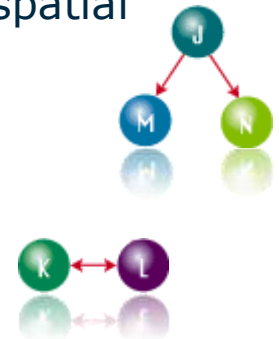
Step 4 – Registering the data

- The spatial database contents are "discovered" and mapped to Bentley's XFM object model
  - 'Static' registration with Bentley's geospatial administration tools
  - 'Dynamic' registration with Bentley Map's *Interoperability* dialog

Step 5 – Using Oracle & Bentley Map

Bentley Geospatial
Web Publishing

ORACLE®

*Spatial
Locator*

Bentley Geospatial
Desktop

Bentley Geospatial
Industry Applications

Bentley Geospatial
Server

2-tier — n-tier (enterprise)

- Direct editing of Oracle Spatial databases
- Full support of Oracle 10G topology model
- Short transactions

- Simultaneous Multi User Editing
- Long transactions, optimistic and pessimistic locking
- Time component

① ② ③ ④ ⑤

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Benefits

1. Data is part of an interoperability framework
   - Stored in an industry standard data store
   - Easily converted to other GIS formats

2. Data is secured in a robust multi-user editing environment
   - Choice in transaction models
   - Ability to include history, time stamps
   - Track and trace on the editing process

3. Data is stored as intelligent objects
   - Sophisticated modeling environment
   - Tailor-made productivity tools

Bentley Map V8*i*

What is new?

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Development along two lines

- The Bentley Geospatial Solution centers around two priorities:

1. Geospatially enabling the platform products (MicroStation and ProjectWise)

2. Providing a comprehensive Geospatial product portfolio
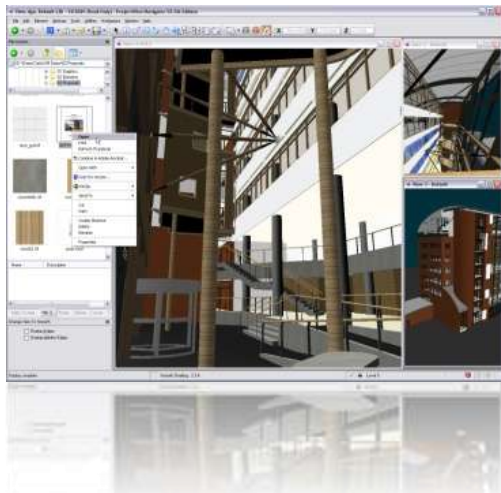
Platform 2006: Bentley – Google integration

- KML Export

- 3D-Warehouse integration

- Sketchup support

- Integrating publishing with *Google Maps* (meshups)

- ...
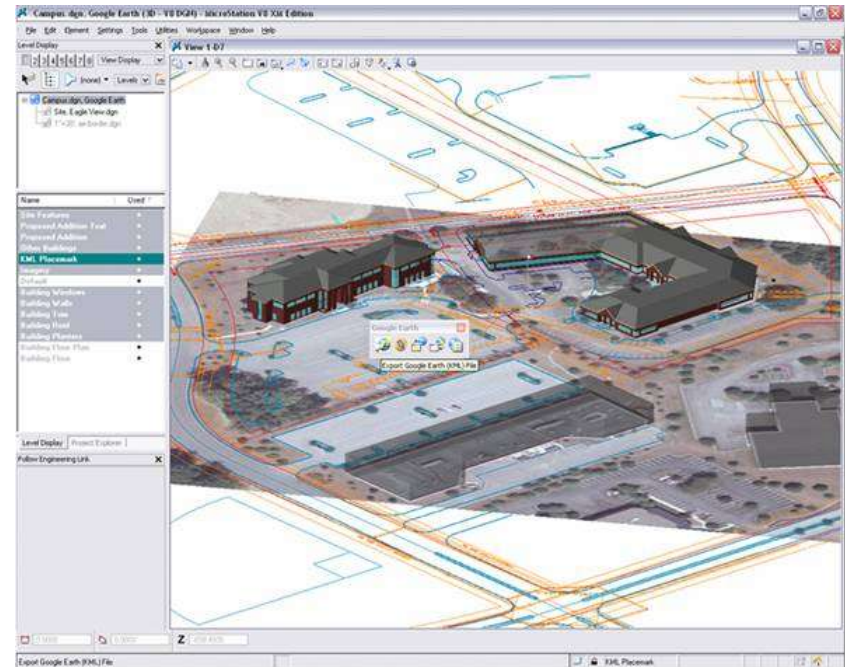
Platform 2008: Geo-Coordination

- Assign spatial location

- Automatic re-projection for Attach, Display and Search

- Management of Projections

- Import / Export of spatial data

Bentley Applications
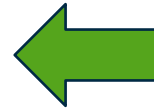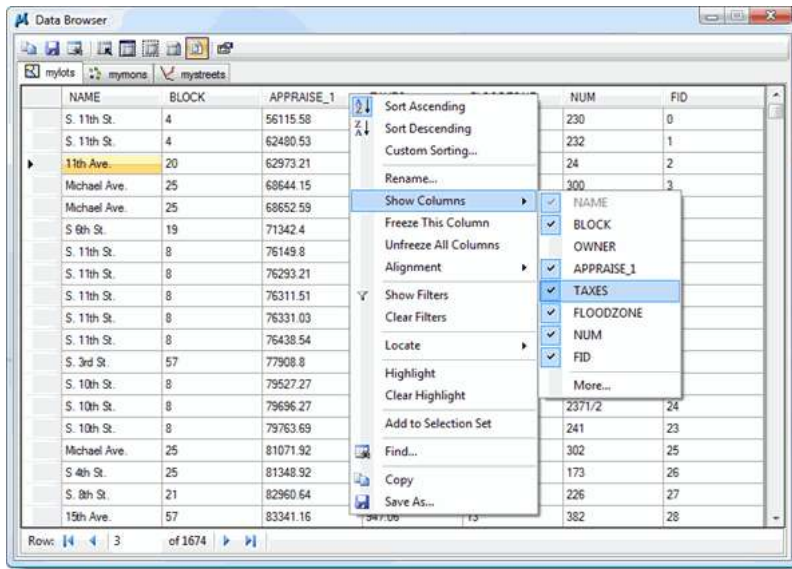**Building – Civil – Geospatial – Plant**

Geo-Coordination

External Sources
WMS
Google Earth
GPS

MicroStation

ProjectWise
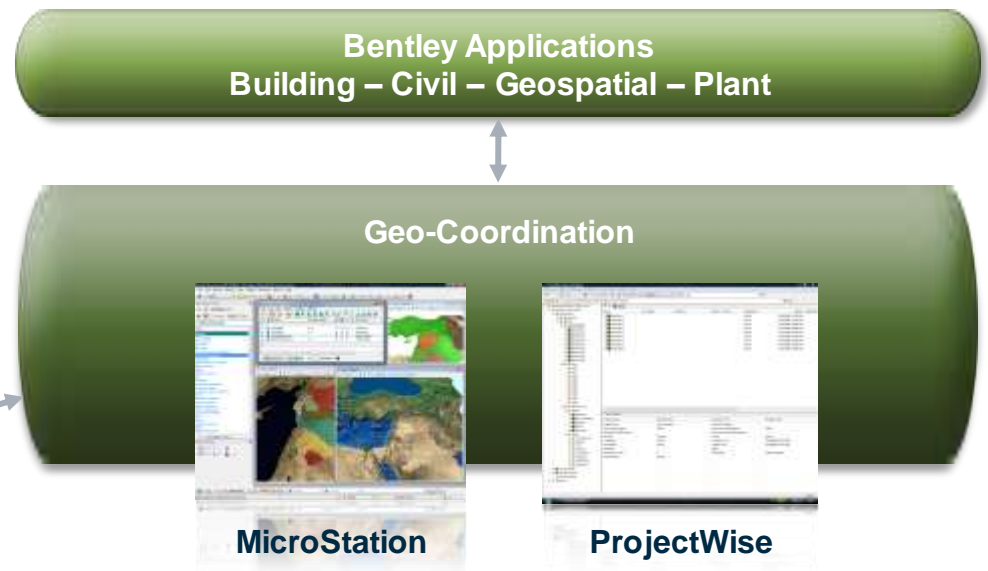
Bentley

Back to Bentley Map...

- First achievement is that we have **V8***i* release!
  - All the functionality of the XM Edition
 - Plus incremental improvements

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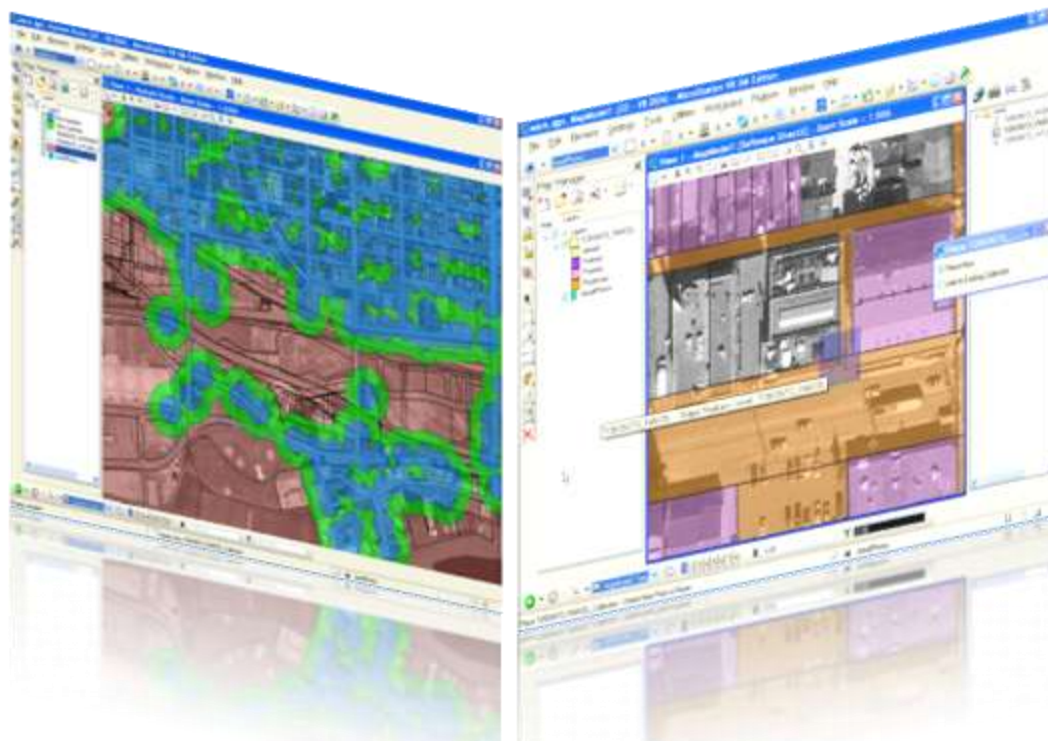
Property (=attribute) improvements
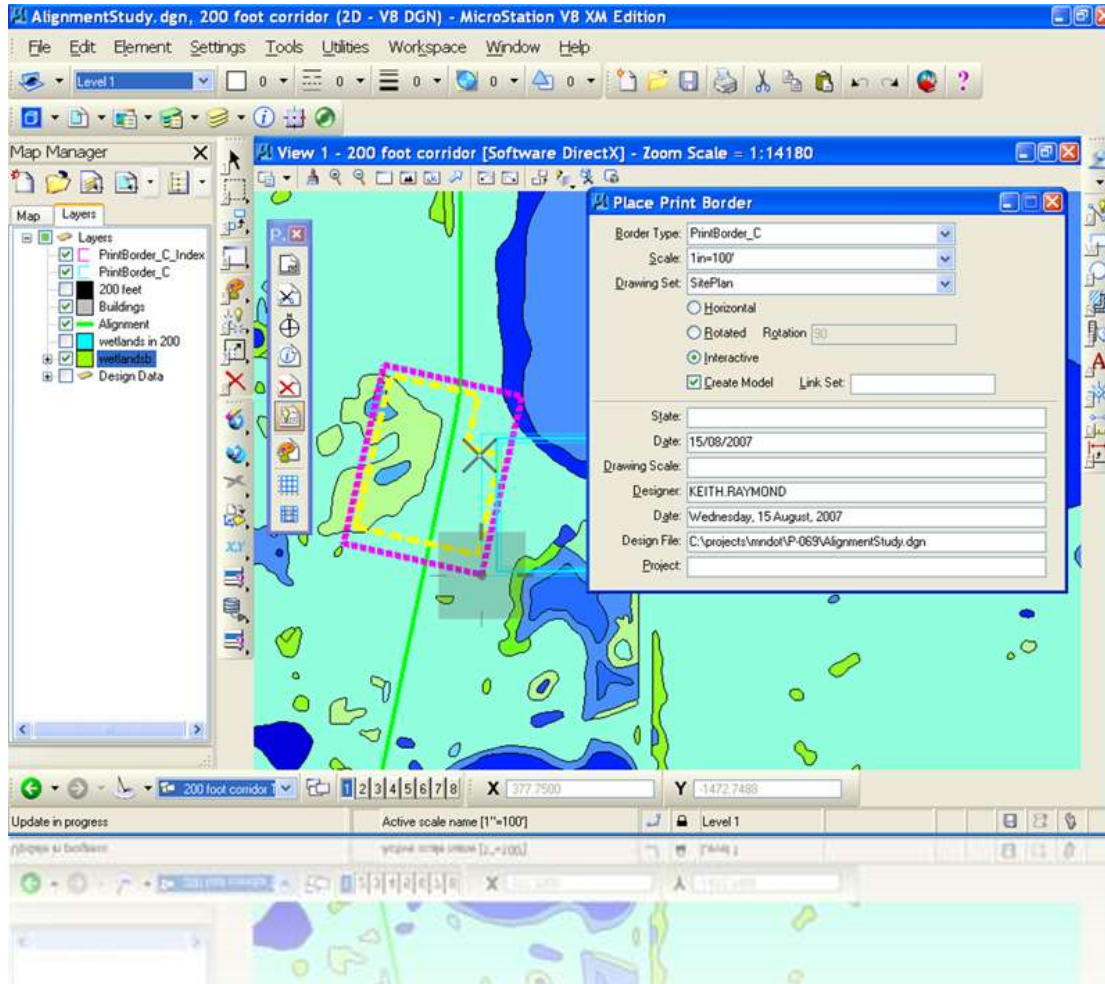
- New Data Browser

- New Search and Query tool

Oracle improvements

- Enhancing the XM Edition…
  - Oracle Single-Sign-On (SSO)
  - Oracle Spatial X and Y Scale Support
  - Oracle Spatial Decimal Degree Rotation Support
  - Oracle Spatial Nested Sub-Feature Support
  - Oracle Spatial Non-Graphical Sub-Feature Support
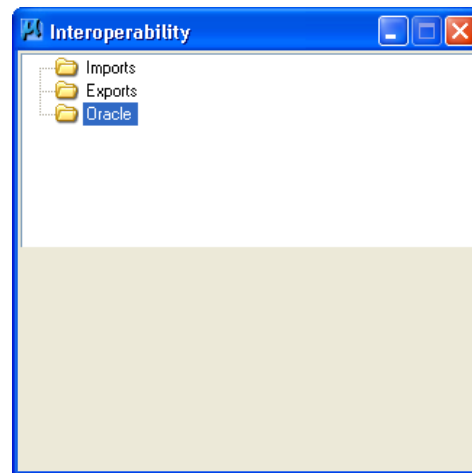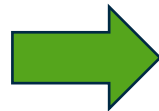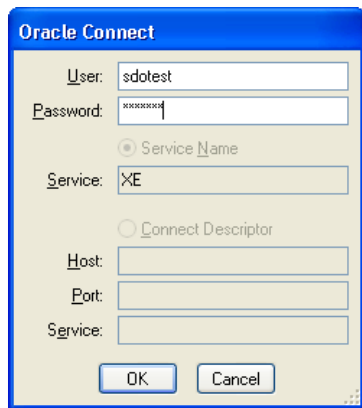
Print Preparation

Questions?

question afhøre (fx witnesses), afhøre (fx witnesses), betvivle (fx witnesses), diskussion (fx witnesses), drage i tvivl (fx I do not question his motives), emne (fx I do not question his motives), pinligt forhør (glds), sag (glds), spørge (vb), spørge (vb), spørgsmål (sb), spørgsmål (sb), tortur (sb), tvivl (fx there is some question about his qualifications), tvivl (fx there is some question about his qualifications), udspørge (fx there is some question about his qualifications), undersøge (fx there is some question about his qualifications)

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