



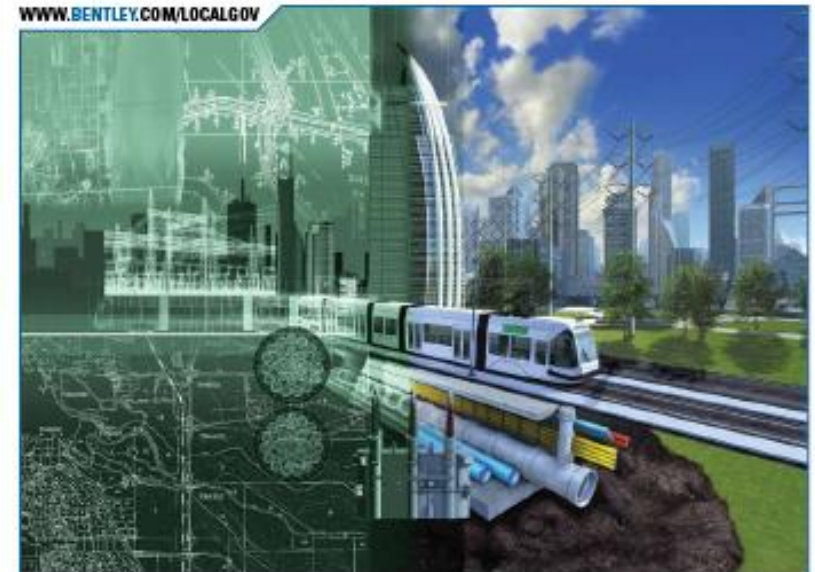
D1 – Geospatial update

Peter Byrn, Bentley

V8i

Agenda

- Nye releases & intro
- Keith Bentley – V8i Launch Broadcast
- Geo-platforme
- 3D CIS/CIM – nyt koncept
- Spørgsmål m.v.



BENTLEY. ADVANCING GIS FOR LOCAL GOVERNMENT.

With Bentley's integrated GIS and infrastructure engineering solutions, local governments are empowered to deliver ever-improving services to their citizens.

Bentley's mission of advancing GIS for infrastructure enables one of the core functions of a local government: from land development and cadastral management, to civil engineering, utilities infrastructure management and all government initiatives.

For local government organizations around the world, only Bentley's geospatial solutions including the cities of Paris, Helsinki, Amsterdam, Dallas, Toronto, Calgary, and Los Angeles.

Enable infrastructure leaders with Bentley's real world GIS solutions for local governments.

For more information, contact your Account Manager or visit www.bentley.com/localgov

KEY PRODUCTS

- Bentley® Map
- Bentley® Cadastre
- Bentley® Geo Web Publisher
- Bentley® Geospatial Server
- Water Utility Solutions
- Electric Utility Solutions
- Road Solutions
- Light Rail Solutions
- Communications Network Solutions



ADVANCING GIS FOR INFRASTRUCTURE

© 2011 Bentley Systems, Incorporated. Bentley Map, Bentley MapServer, Bentley Geo Web Publisher, Bentley Geospatial Server, Bentley Water Utility Solutions, Bentley Electric Utility Solutions, Bentley Road Solutions, Bentley Light Rail Solutions, Bentley Communications Network Solutions are registered trademarks of Bentley Systems, Incorporated or Bentley Software, Inc. All other marks contained herein are the property of their respective owners.

Bentley: *Sustaining Infrastructure*



Our mission is to provide solutions to Design – Build – Operate the world's infrastructure with the goal of:

- Sustaining our society
- Sustaining the environment
- Sustaining the profession

Om Bentley Systems, kortfattet

- USD 450 millioner i omsætning
- 15% forøgelse per år
- 20% investeres i R&D
- 2.800 ansatte
- Kontor i 51 lande
- Brugere i 169 lande



Nye releases – klar til download nu!

- MicroStation V8i, **08.11.05.17**
- MicroStation PowerDraft V8i, **08.11.05.17**
- Bentley Map V8i, **08.11.05.26**
- Bentley Descartes V8i, **08.11.05.25**
- Bentley View V8i, **08.11.05.17**
- ProjectWise V8i, **08.11.05.16**
- SELECT Server, **08.11.01.64**
- M.fl.
- 2. "bølge" kommer 6. december...

V8i

Continuity

V8i

Interoperability

Breadth and Depth

V8i Means Continuity

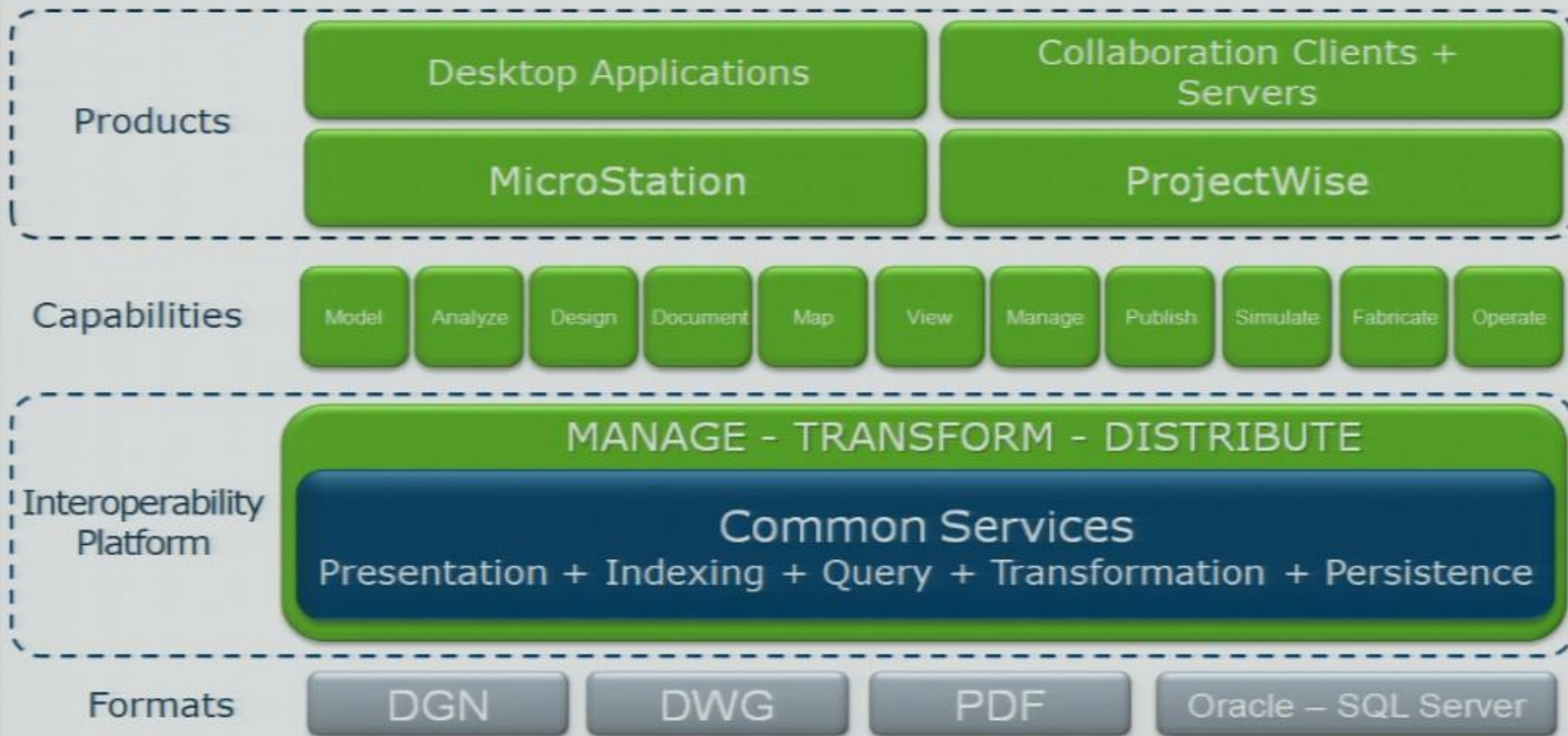
V8i

- Represents the full potential of the V8 generation
- No DGN file format change
- Works seamlessly with prior versions of MicroStation
- ProjectWise manages prior versions of applications seamlessly

V8i Means Interoperability

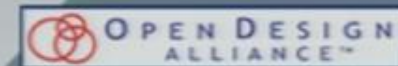
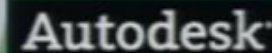


Interoperability Platform



Interoperability Platform

- Manage
 - Files
 - Relationships
 - Workflows
 - Transform
 - Normalize
 - Aggregate
 - Decompose
 - Reorganize
 - Filter
 - Distribute
 - Connect to business systems
 - Industry Standards
- ✓ ISO 15926
 - ✓ DWG
 - ✓ IFC
 - ✓ Revit
 - ✓ PDS
 - ✓ XML, G
 - ✓ aecXML
 - ✓ LandXML
 - ✓ XMPLar
 - ✓ TansXML
 - ✓ PDF
 - ✓ ESRI
 - ✓ WMS
 - ✓ Web S



The Interoperability Agreement



Autodesk®



+
Object Enablers
APIs
Technical Support

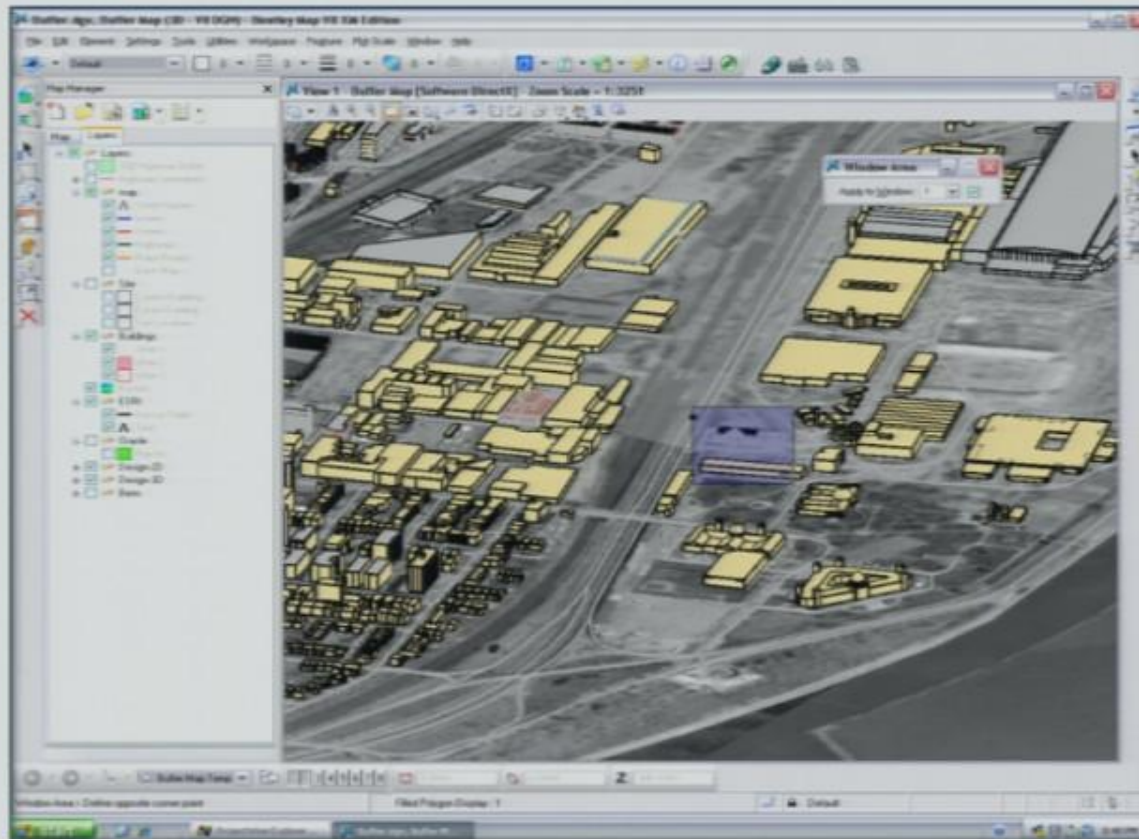
+
Object Enablers
APIs
Technical Support

Sustaining Infrastructure: V8i

- *Intuitive:* Design Modeling
- *Interactive:* Dynamic Views
- *Intrinsic:* Geo-Coordination
- *Incredible:* Project Performance
- *Interoperable:* Interoperability Platform



Intrinsic: Geo-Coordination



V8i

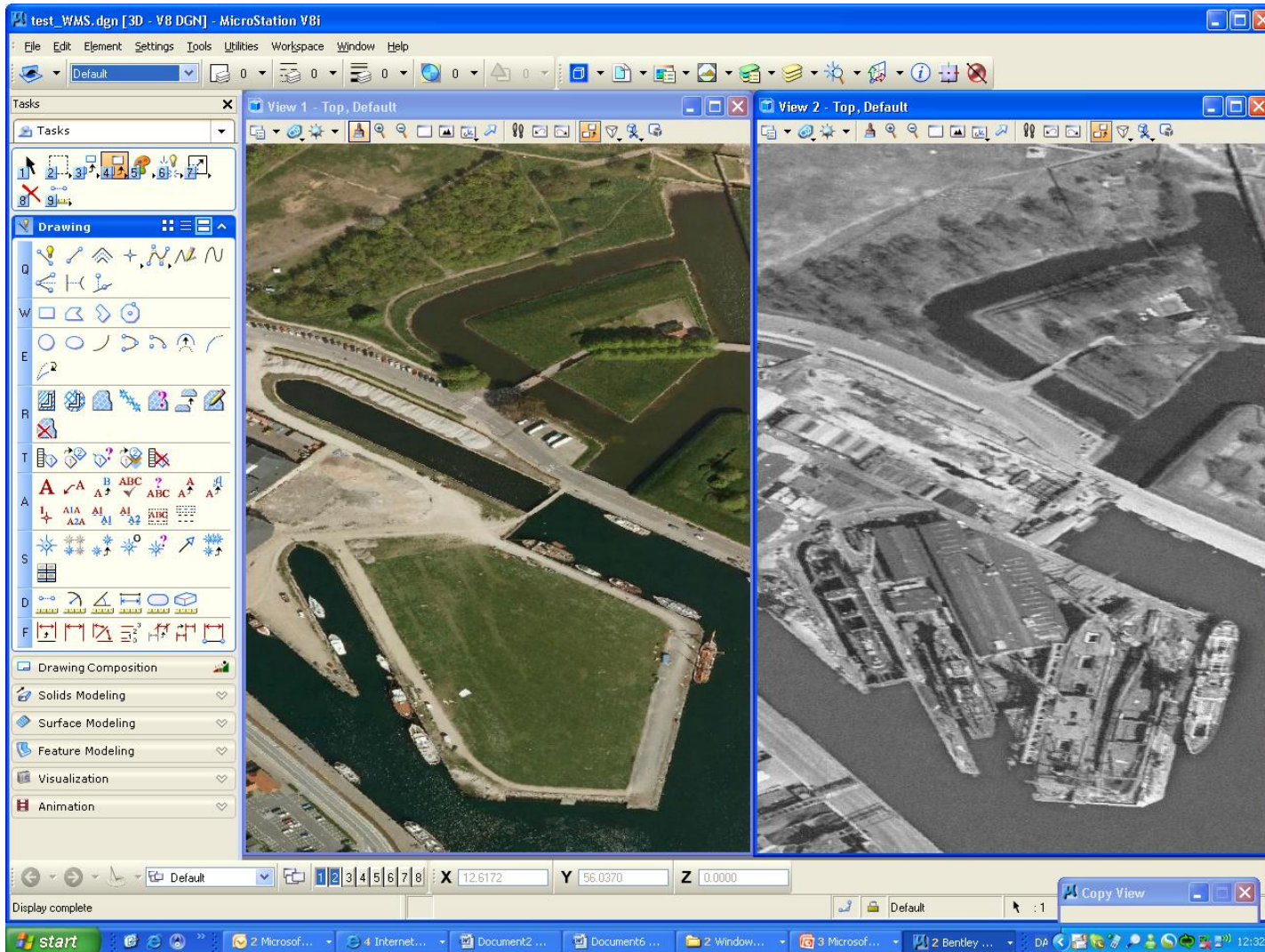
MicroStation V8i – Some Highlights...

Keith Bentley
CTO

Sponsored by: **Microsoft**

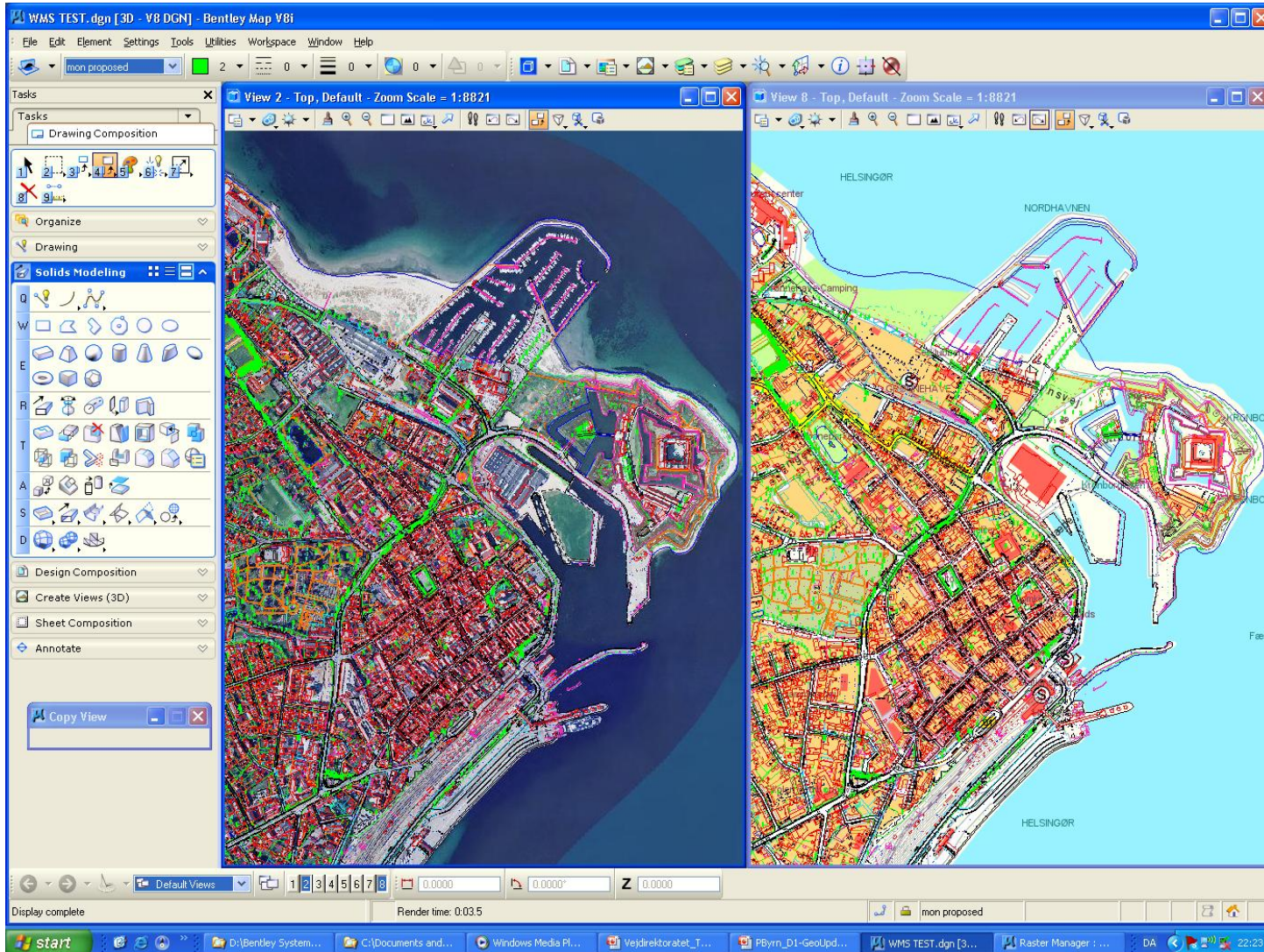
 **Bentley**
Sustaining Infrastructure

WMS/WFS support



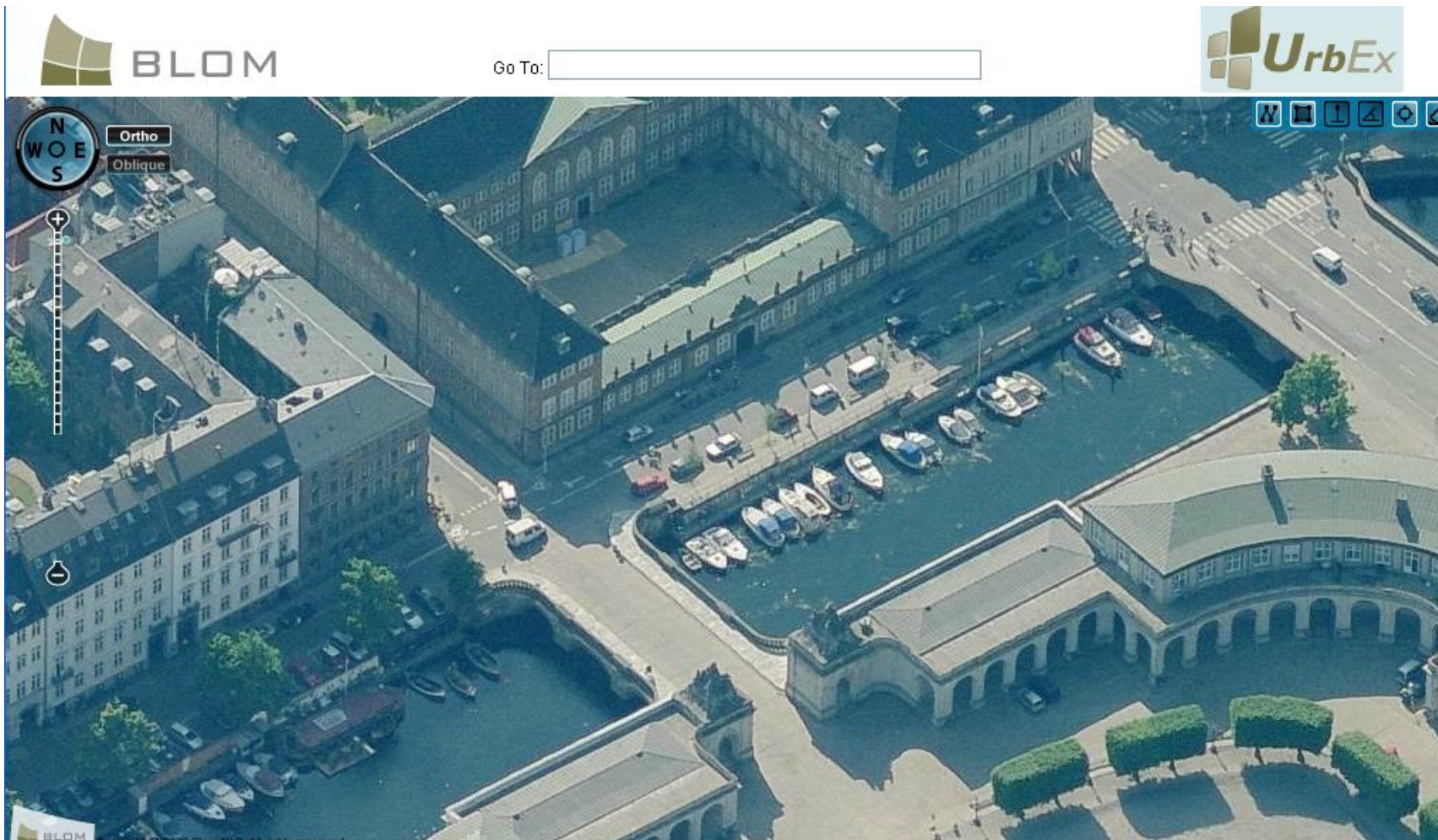
DDO Land
- 1954
- 2008

WMS/WFS support



- DDO Land
- KRAK
- Teknisk kort

WMS/WFS support



Koordinatsystemer

The screenshot displays the MicroStation V8i interface with the 'Select Geographic Coordinate System' dialog box open. The background shows a 3D topographic view of a city. The dialog box is divided into several sections:

- Library:** A tree view showing various geographic coordinate systems categorized by region (Africa, Asia, Europe, Greenland, etc.). Under 'Europe', the 'Danish System 1945' and 'KP2000' sub-folders are expanded, showing specific coordinate systems like 'ETRS89 Kp2K-Zealand'.
- Coordinate System:** A table of properties for the selected system (ETRS89, Kp2K-Zealand):

Name	ETRS89, Kp2K-Zealand
Descrip	ETRS89 / Kp2000 Zealand
Projecti	Transverse Mercator
Source	EPSG, VG. 3, 2197 [Large and scale topographic ma
Units	Meter
Central	12°00'00,0000"E
OriginL	00°00'00,0000"N
Scale F	0,99995
False E	500000
FalseN	0
Quadral	Positive X and Y
Minimur	00°00'00,0000"E
Maximu	00°00'00,0000"E
Minimur	00°00'00,0000"N
Maximu	00°00'00,0000"N
- Datum:** Information about the datum: ETRF89, European Terrestrial Reference Frame, 1989 (== WGS), and a note that it is variously equivalent to WGS84.
- Ellipsoid:** Information about the ellipsoid: GRS1980, Geodetic Reference System of 1980, with parameters like Equi, Polax, Ecc, and Spheroid.

At the bottom of the dialog box are 'Ok' and 'Cancel' buttons. The Windows taskbar at the bottom shows the system clock at 12:05 and several open applications.

V8i

WWW.BENTLEY.COM

 **Bentley**
Sustaining Infrastructure

Løsninger



Bridges



Buildings



Cadastre and Land Development



Campuses



Power Generation



Rail and Transit



Communications



Electric and Gas Utilities



Factories



Roads



Metals and Mining



Water and Wastewater



Oil and Gas



Cadastre and Land Development Solution Product Map

Public Works

Bentley Electric
Bentley Gas
Bentley Expert Designer
Bentley Water
Bentley Wastewater
Haestad Methods Solutions
Bentley PowerCivil
Bentley Architecture



Civil Engineering

InRoads
Bentley MXROAD Suite
GEOPAK Civil Engineering Suite
Bentley PowerCivil
Bentley PowerSurvey
InRoads Suite



Data Management

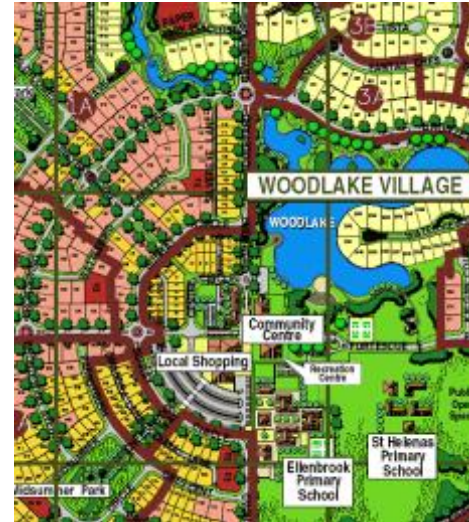
Bentley Geospatial Server
Bentley Geo Web Publisher
ProjectWise Connector for Oracle

ORACLE
DATABASE **10g**



Field Force Automation

Bentley PowerMap Field
Bentley OnSite



Mapping and GIS

Bentley Map
Bentley Cadastre
Bentley PowerMap
Bentley CADscript
Bentley Descartes
Bentley I/RAS B



Plattformen – nøgle produkter

Three broad categories of products:

- Imaging:
 - Bentley Descartes
(Bentley I/RasB legacy monochrome product)
- Desktop GIS:
 - Bentley Map and its derivatives
(PowerMap, PowerMap Field)
- Server GIS:
 - Geospatial Server and its individual components
(PW Geospatial Management, Connector for Oracle Spatial, Connector for ArcGIS)
 - Geo Web Publisher

Plattformen – nøgle produkter

Bentley Descartes

- Is the only imaging solution that is truly integrated with MicroStation for high productivity visualization, mapping, and raster-to-vector conversion in a single product.
 - High Performance Image Display
 - Dynamic Visualization Creates Realistic and Lifelike Images
 - Rapid Interpretation and Conversion
 - High-fidelity Imaging to Support Precision Mapping and Engineering
 - Document Cleanup, Editing, and Enhancement
 - Flexible Image Manipulation
 - Create Image Mosaics
 - Supports a Wide Variety of Industry Formats

Plattformen – nøgle produkter

Bentley Descartes – New in V8i

- Enhanced "Merge" Tool
 - Improvements to the Merge tool provide the ability to rasterize the vector elements in the output rasters.
- Edition of 3D Oriented Rasters
 - It is now possible to edit rasters attached in any orientation with Descartes editing tools. In previous versions of Descartes, only rasters attached parallel to the XY plane were editable. Most of the editing tools now have a "Work in Image Plane" toggle.

Plattformen – nøgle produkter

Bentley Descartes – New in V8i

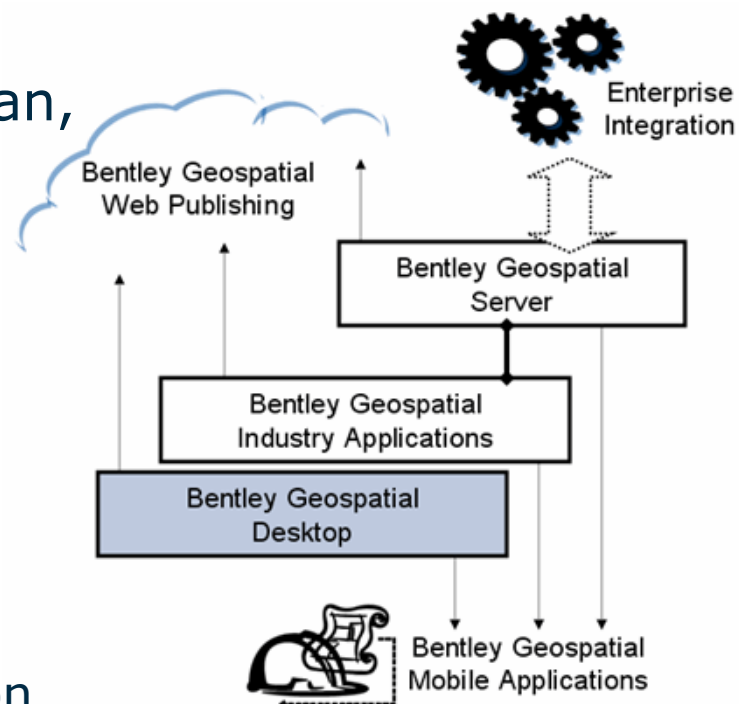
- Binary Files Enhancements
- Resize Canvas
- Dynamic Raster Snap
- Local Transform Tools
- Vectorize Enhancements
- Copy/Paste are Now Integrated with the Windows Clipboard
- Resample a Raster to another Coordinate System
- New Filters



Platforme – nøgle produkter

Bentley Map

- A full-featured GIS designed to address the unique and challenging needs of organizations that map, plan, design, build, and operate infrastructure:
 - All the Power of MicroStation
 - Map Manager
 - XML Feature Modeling
 - Oracle Spatial Editing
 - Topology Model and Maintenance
 - Spatial Analysis and Presentation
 - Map Generation and Print Preparation
 - Interoperability
 - GIS Development Platform



Plattformen – nøgle produkter

Bentley Map – New in V8i

- Query and Data Browser tools – Query any Bentley Map based data source using a simple forms based tool. Have the results appear in a spreadsheet like view to be located, sorted, filtered or exported to a variety of formats. The query and browse tools give the user full access to the properties available in a Bentley Map session.
- Enhanced Print Preparation tools – The enhanced print preparation tools include multiple viewport support, overlapping viewport marking, coordinate annotation and more. The new tools are tightly into MicroStation workspaces using DGNLIB concepts.

Plattform – nøgle produkter

Bentley Map – New in V8i

- Oracle Single Sign-on – Now users can connect to Oracle data sources using their Windows credentials without having to specify a separate username and password.
- Bentley Map V8i also contains performance improvements and addresses a number of known issues.
- And lot more...

Plattform – nøgle produkter

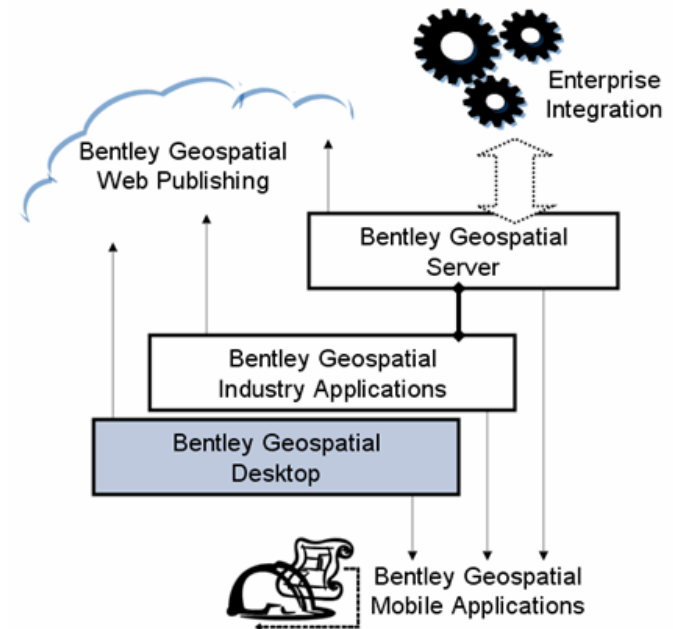
Bentley Geospatial Server

- The Geospatial Platform Product Line is the foundation of all the Geospatial Asset Classes...
 - Cadastre and Land Development
 - Water
 - Electric & Gas Utilities
 - Communications
- The Geospatial Platform Product Line is entirely built on MicroStation and ProjectWise components and technology.

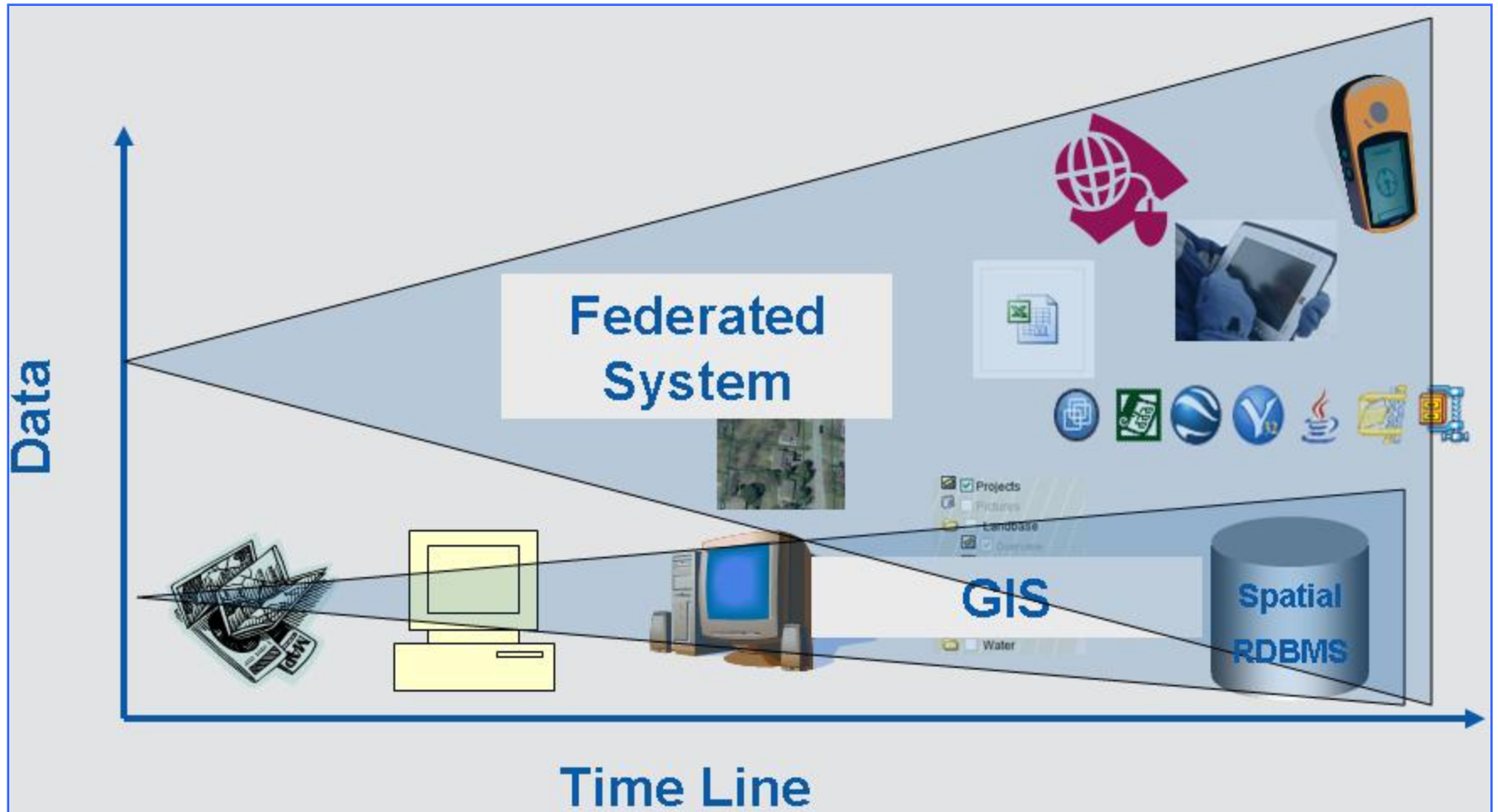
Platforme – nøgle produkter

What is Bentley Geospatial Server?

- Bentley Geospatial Server
= Enterprise GIS
- The idea is simple:
 - Index rather than convert
 - Find rather than search
- Allows managing, indexing, editing, and plotting of:
 - Structured information, fixed schema
 - Spatial Database, DGN/XFM, Shapefile, ...
 - Unstructured information, no schema
 - Raw DGN, DWG, Word, PowerPoint, ...

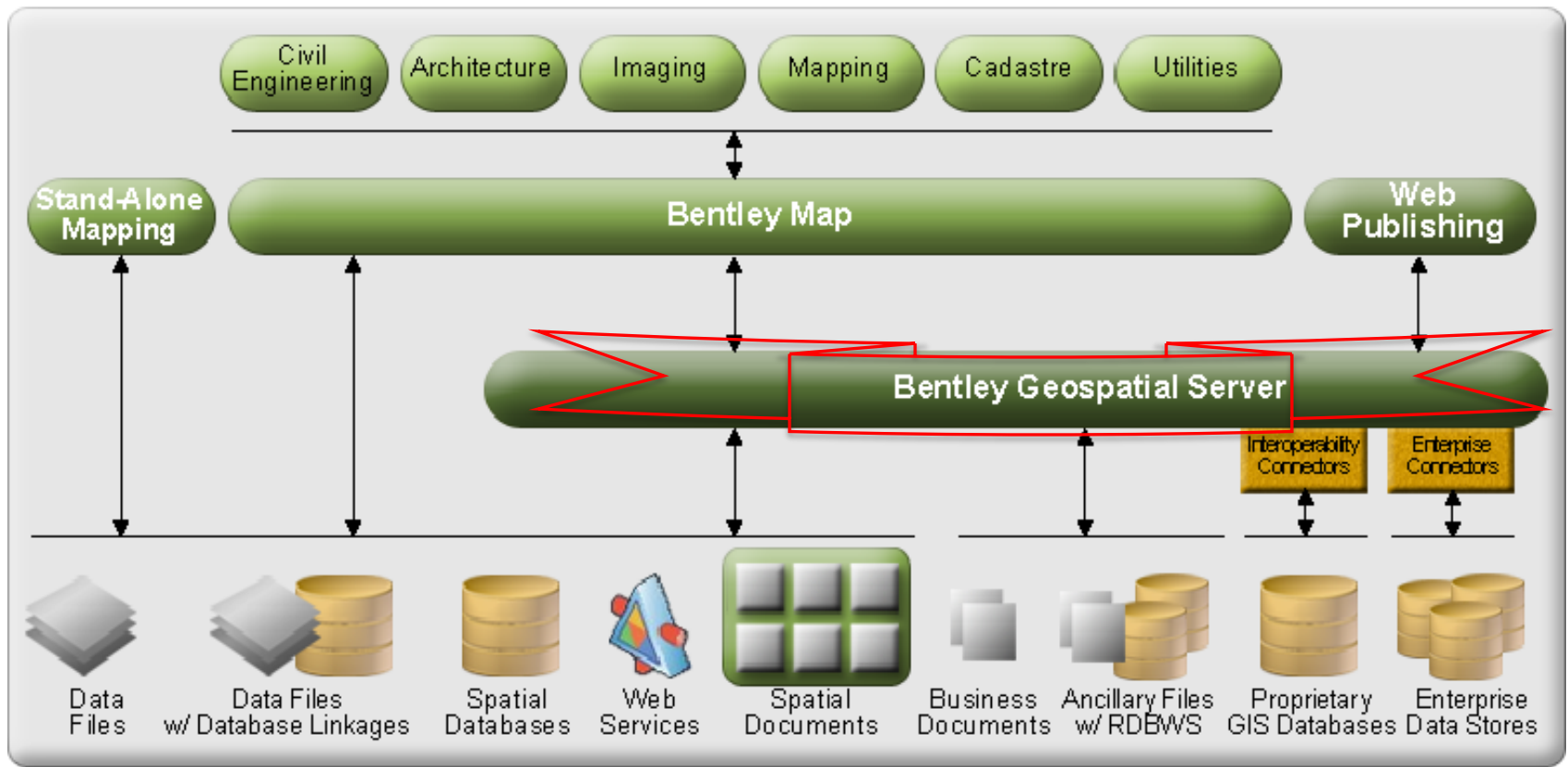


The Bentley Geospatial Server Way



Bentley GIS/Geospatial Products

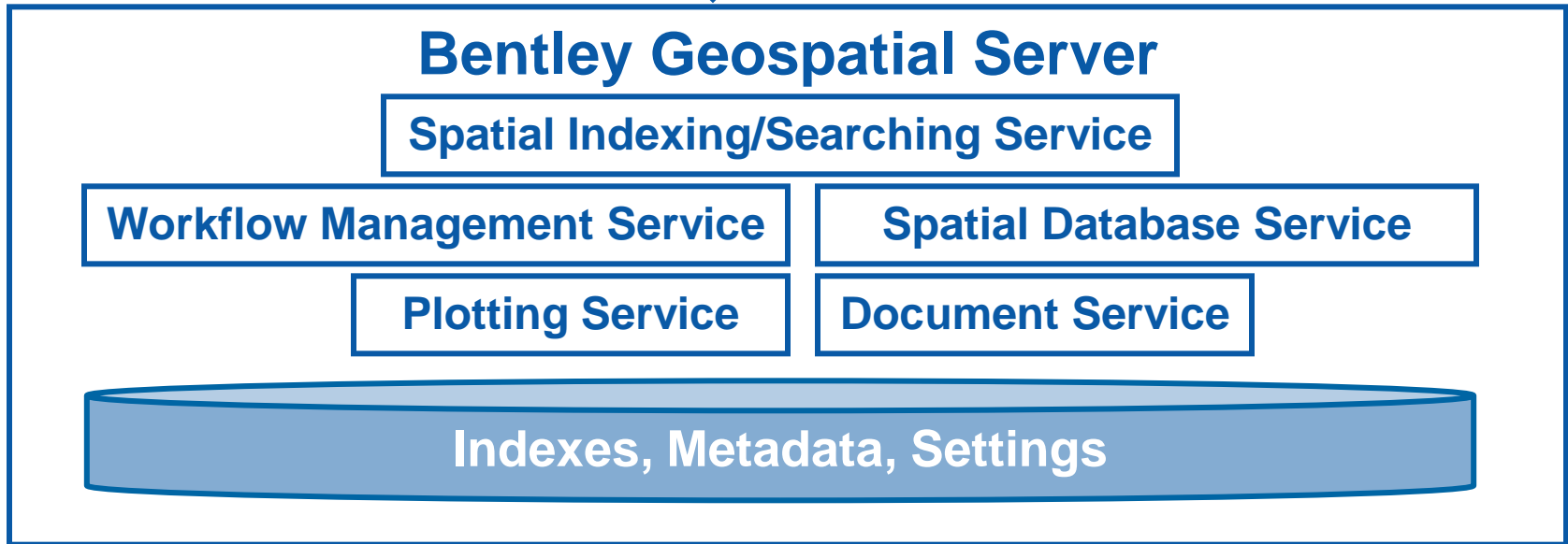
The Geospatial Solution



What is the Bentley Geospatial Server?

- A portfolio of the following products:
 - PW Integration Server
 - Bentley Geospatial Management
 - PW Connector for Oracle
 - PW Interplot
- Integrated for *geospatial* needs
- Five Services:
 - Document Service
 - Spatial/Indexing Searching Service
 - Workflow Management Service
 - Spatial Database Service
 - Plotting Service

Bentleys geospatiale server arkitektur



Dokument/Projekt Spatial indksering

The image shows a GIS software interface with a file list on the left and a map on the right. A search dialog box is overlaid on the map. Red arrows indicate the flow of information:

- Arrows point from the 'Survey' folder and its contents in the file list to the map area.
- An arrow points from the 'Spatial Location' property in the search dialog to the map area.
- An arrow points from the search dialog back to the file list.

File List:

- Survey
- BD021.DGN
- BD022.DGN
- C013.DGN
- Checklist.xls
- contour5_arc.dbf
- contour5_arc.prj
- contour5_arc.sbn
- contour5_arc.sbx
- contour5_arc.shp
- S013.DGN
- SL013.DGN
- TR013.DGN
- W013.DGN
- wp013.dgn

Search Dialog Box:

Define Search - <new search>

Search

Specify what are you looking for

Look for: Documents

Find documents that match these criteria

Document is in specified region

OR Group (1)

Environment attribute labels from: Project

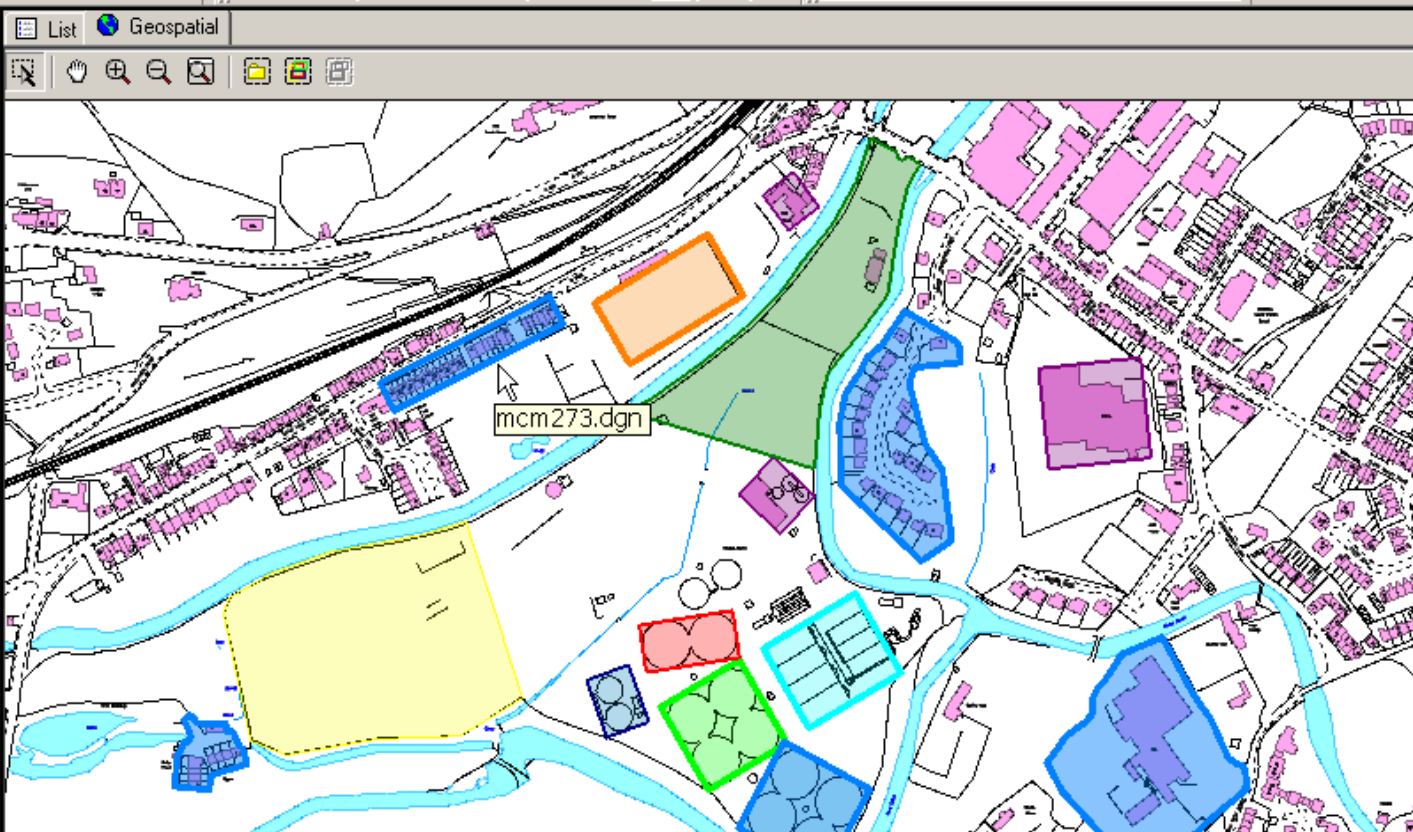
Define criteria

Criterion Type	Property	Attribute
Geospatial	Spatial Location	

Value:

Buttons: Add Criteria, Add OR Group, OK, Cancel, Apply

- ProjectWise Explorer Datasources
 - geoweb:Pwise (Wayne Marsh)
 - Documents
 - A Project Structure
 - Project A
 - Project B
 - Crossrail
 - dmsSystem
 - DWF
 - ESRI Data
 - Hookups
 - ManuDocs
 - MapInfo
 - Mapping
 - Misc
 - Movies
 - National Grid Project Data
 - P&ID
 - PDF Data
 - Photos
 - Plant Data
 - PlotPlans
 - ProjectWise Reports
 - Scott Wilson
 - SharedFiles
 - SpecSheets
 - Transmittal Recipients
 - Transmittal Sets
 - TS-D1-84
 - TS-D1-85
 - TS-D1-86
 - TS-D1-97
 - Components
 - Custom Folders
 - Wayne Marsh
 - Saved Searches
 - Search Results



Select: Click to select an element; Drag mouse pointer to select area

Symbology Legend:

Current Folder	Subfolders	MicroStation	AutoCAD	Microsoft Word	Microsoft Excel
Microsoft PowerPoint	Acrobat PDF	ESRI Shapefile	Images	Default	

Document Attributes Folder Attributes

View: <Default>

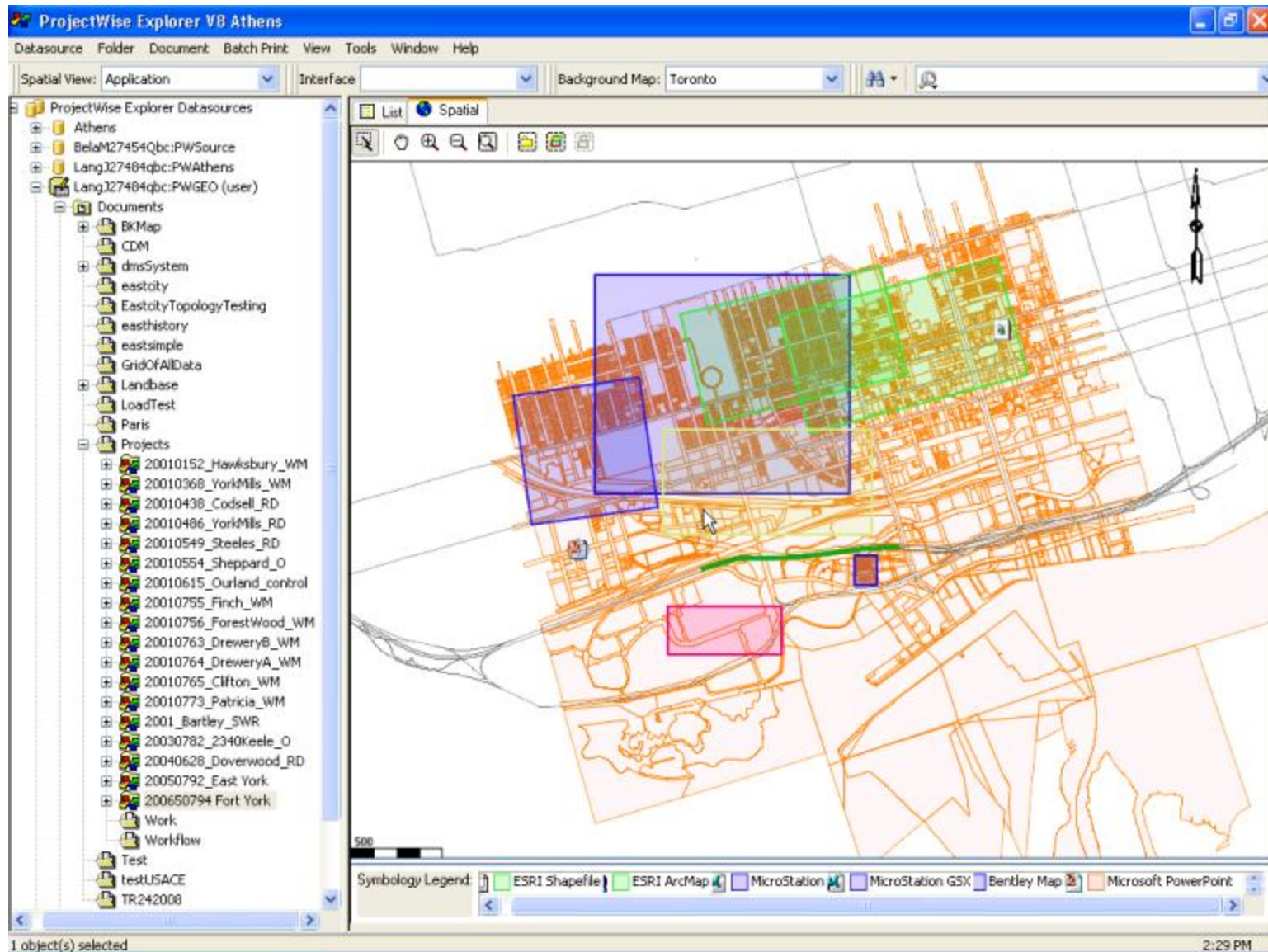
Property name	Property value	Property name	Property value
Name	mcm273.dgn	Description	mcm273
Folder Name	Project A	Folder Description	Project A
Environment	National Grid Transco	Storage	Storage Area 1
File Name	mcm273.dgn	File Size	65024
Workflow	Default Workflow	State	Draft
Created By	Administrator	Created	01/08/2005 12:02:03
Updated By	Administrator	Updated	01/08/2005 12:12:58

Plattformen – nøgle produkter

Bentley Geospatial Server – New in V8i

- Document Service
 - Delta file transfer
- Spatial Indexing and Searching Service
 - Simplified searches
 - Better background map
 - Using Bentley GeoWeb Publisher Engine
 - Better performance
 - More formats
 - Live Oracle Spatial, Live DGN, SHP, WMS

Better background map



Plattformen – nøgle produkter

Bentley Geospatial Server – New in V8i

- Spatial Indexing and Searching Service (Cont.)
 - Linear Referencing Support
 - Add linear referencing tab in PWE
 - Allows linearly referencing document and folder/Projects

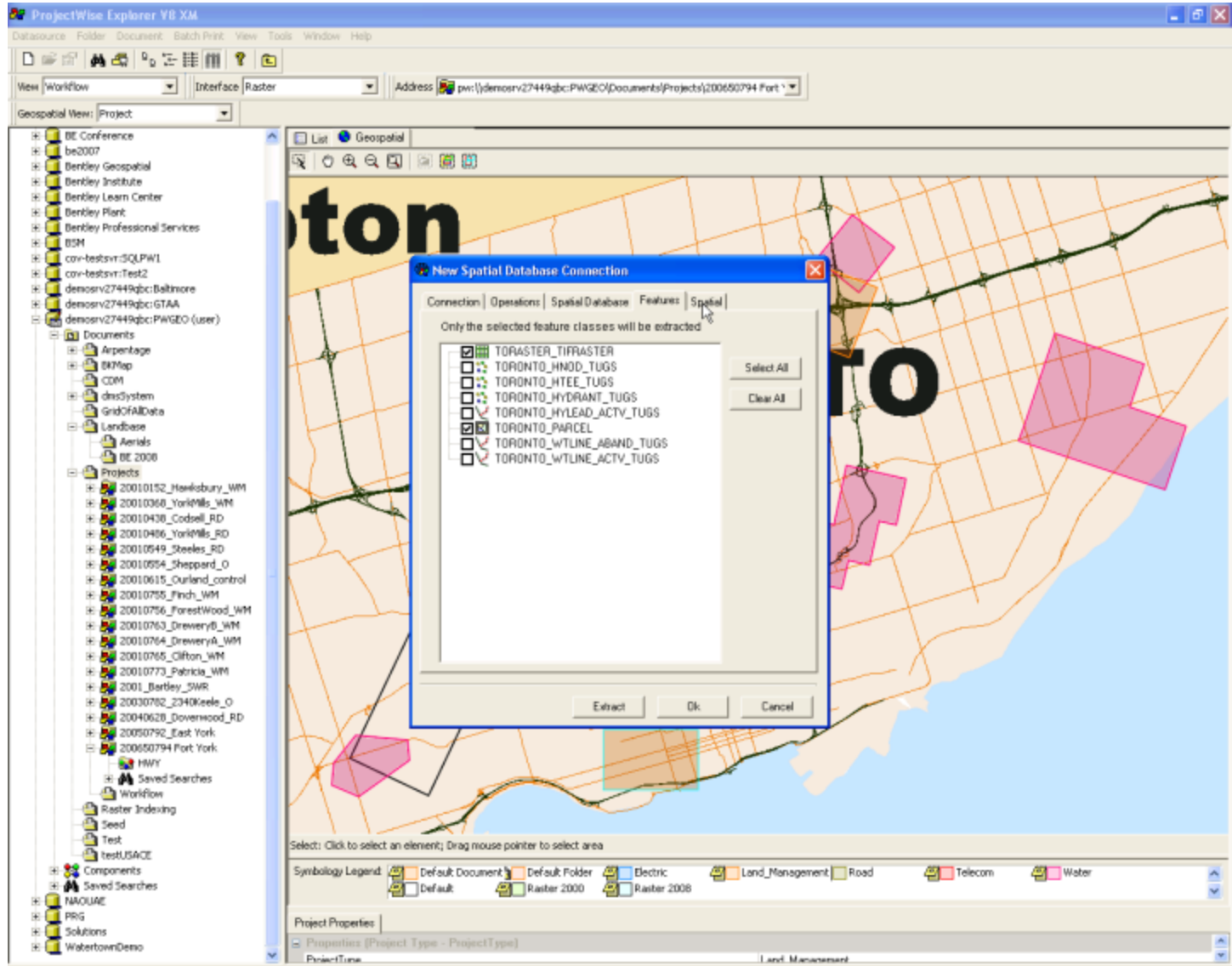


Plattformen – nøgle produkter

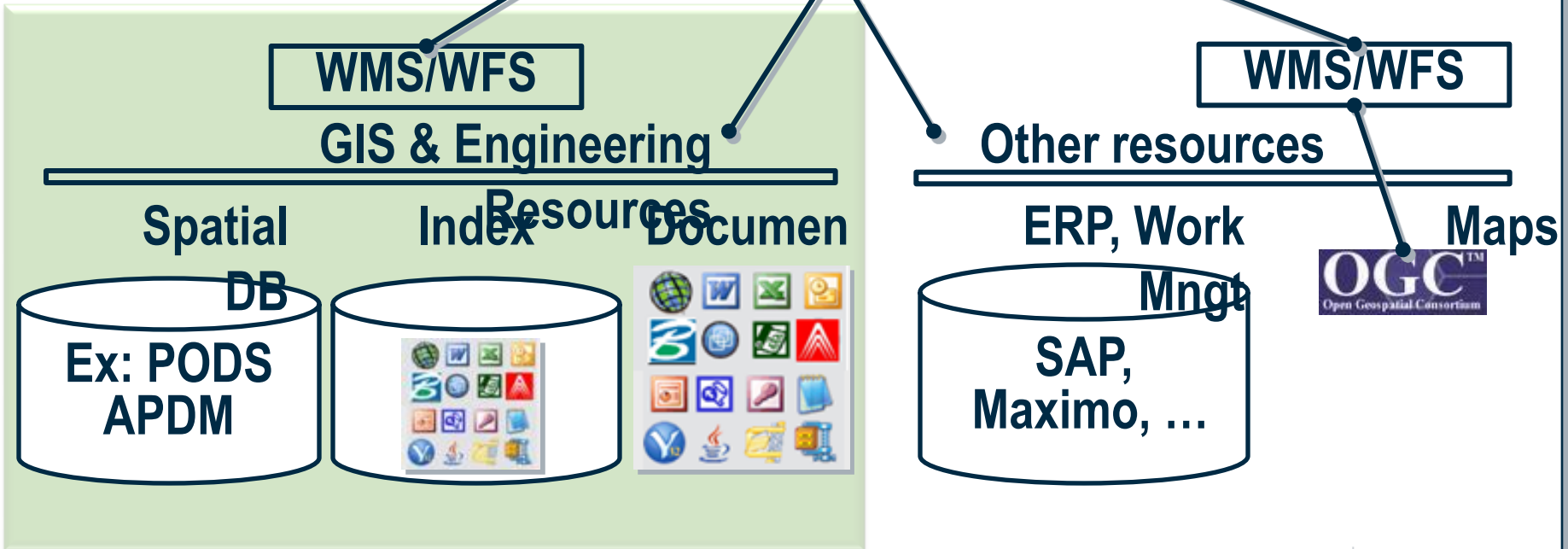
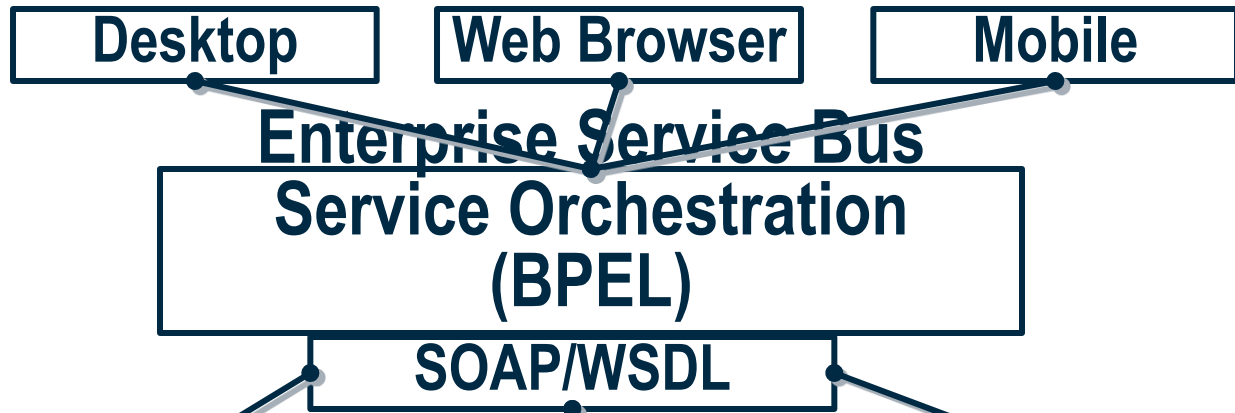
Bentley Geospatial Server – New in V8i

- Spatial Database Service
 - Oracle GeoRaster
 - Oracle Cartographic Text
 - ArcSDE Raster
- Web
 - SOA->Standard OGC (WFS, WMS)
 - SOAP Wrapper and WSDL (Post-Athens)
 - Geospatial Web Part

Oracle Georaster



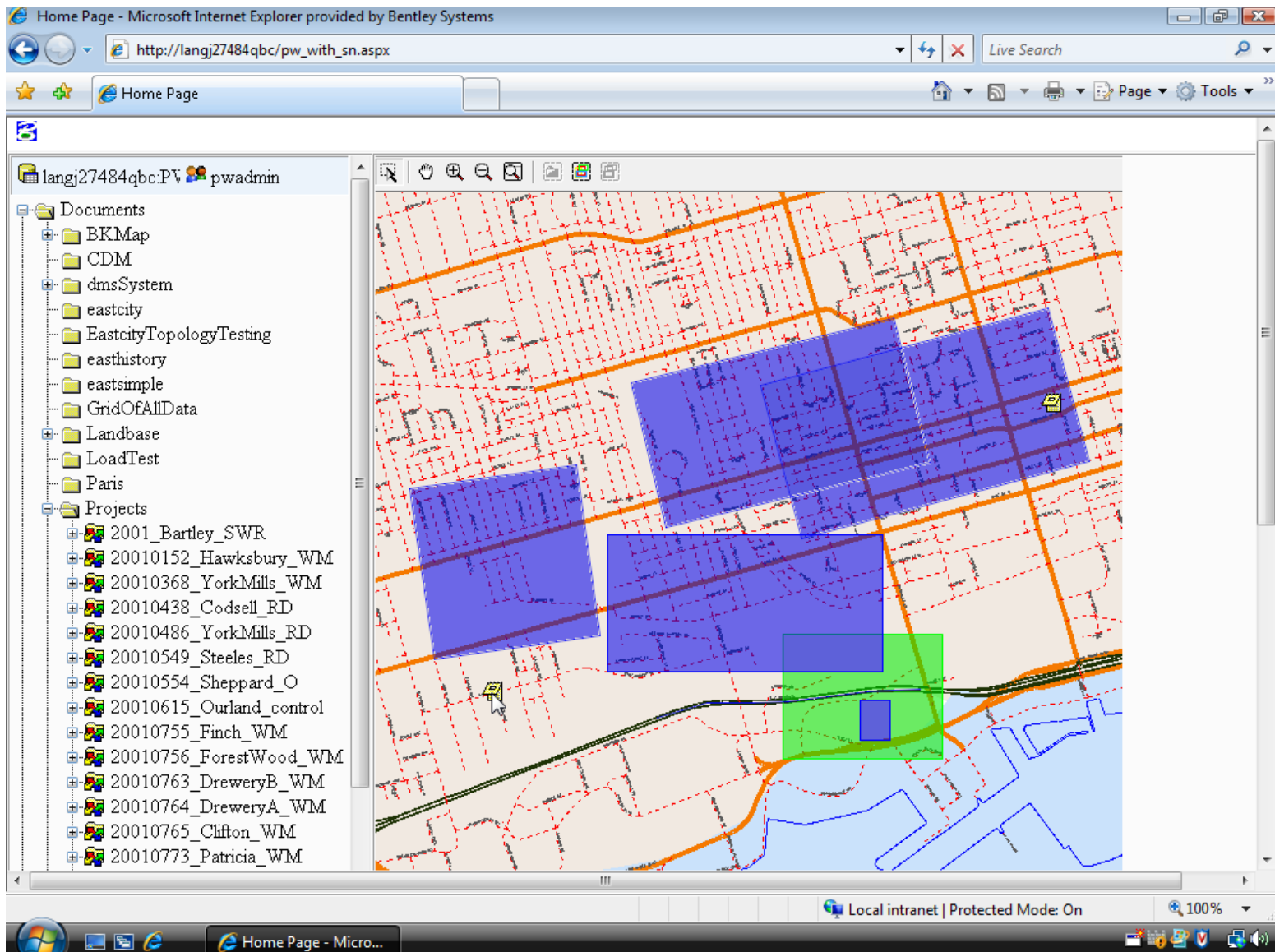
Service-oriented architecture (SOA)



Plattformen – nøgle produkter

Geo Web Publisher

- Enables a wide range of applications such as municipal information systems, image or drawing archives, map-based navigational sites, project sites, and public information portals.
 - Improve productivity
 - Capitalize on your investment in information
 - Publish Native Oracle Spatial Information
 - Support of OGC Standards
 - High Performance, Quality Publishing
 - Spatial Analysis
 - Thematic Mapping
 - Advanced Query and Reporting
 - Low Cost of Ownership



V8i

WWW.BENTLEY.COM

 **Bentley**
Sustaining Infrastructure

3D GIS: 3D CIS/CIM – nyt koncept! *3D City Information System & Modeling*



Definition

Bentley defines a “3D City Information System” as a system allowing the management of all the city’s infrastructure data, from 3D urban models to detailed infrastructure designs (including 3D/2D, over-ground/underground, interior/exterior with multiple level of details, ...) for seamless modeling, analysis, visualization and distribution to all targeted consumers...

Datainsamling

Laserscanning från mark och luft



Projektering av infrastruktur

Väg, järnväg, tunnlar, bergum



Hela världen i 3D

Datahantering, informationmodeller, geografisk IT
CAD-hantering, 3D-databaser, 3D-GIS, systemarkitektur



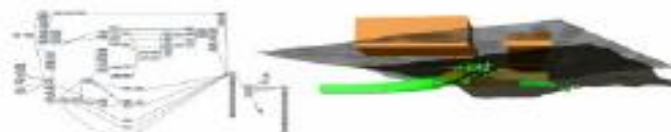
Installationsdesign

VA, Elnät, etc



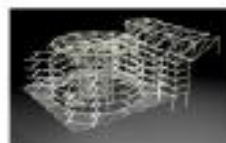
Arkitektur

Byggnadsinredning, utformning & visualisering



Byggnadskonstruktion

Koordinering och produktionsmodeller



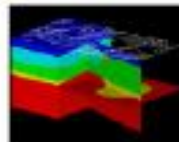
Landskapsarkitektur

Stadsplanering, offentliga rum
landskapsplanering, visualisering



Geologiska modeller

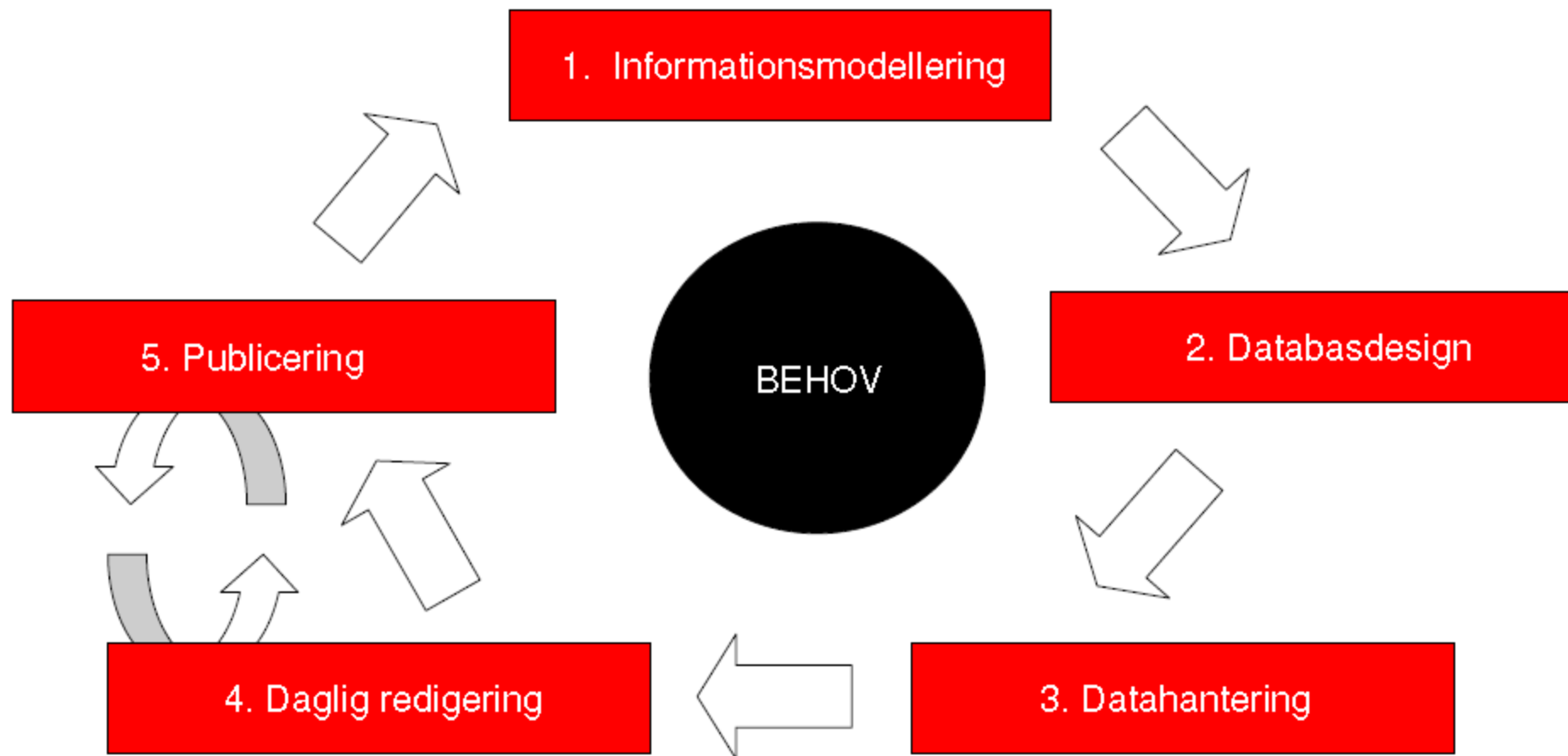
Observation, tolkning & interpolation



Vanliga 3D-frågor

- Vilket 3D-material behövs köpas in?
- Hur skall materialet handlas upp?
- På vilket sätt skall 3D-data samlas in?
- Hur kan man effektivt mäta in 3D-data?
- I vilken struktur skall 3D-data lagras?
- Vilken/vilka mjukvaror behövs och varför?
- Hur ska mjukvaror kopplas samman?
- Vilka möjligheter finns att sprida data?
- Hur kan ändringar i data ajourföras?
- Hur bygger man upp en fungerande plattform?

Iterativ process för 3D-datalagring



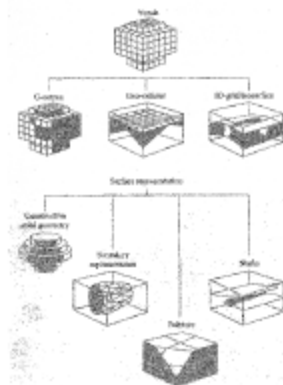
Informationsmodellering

Informationsmodell

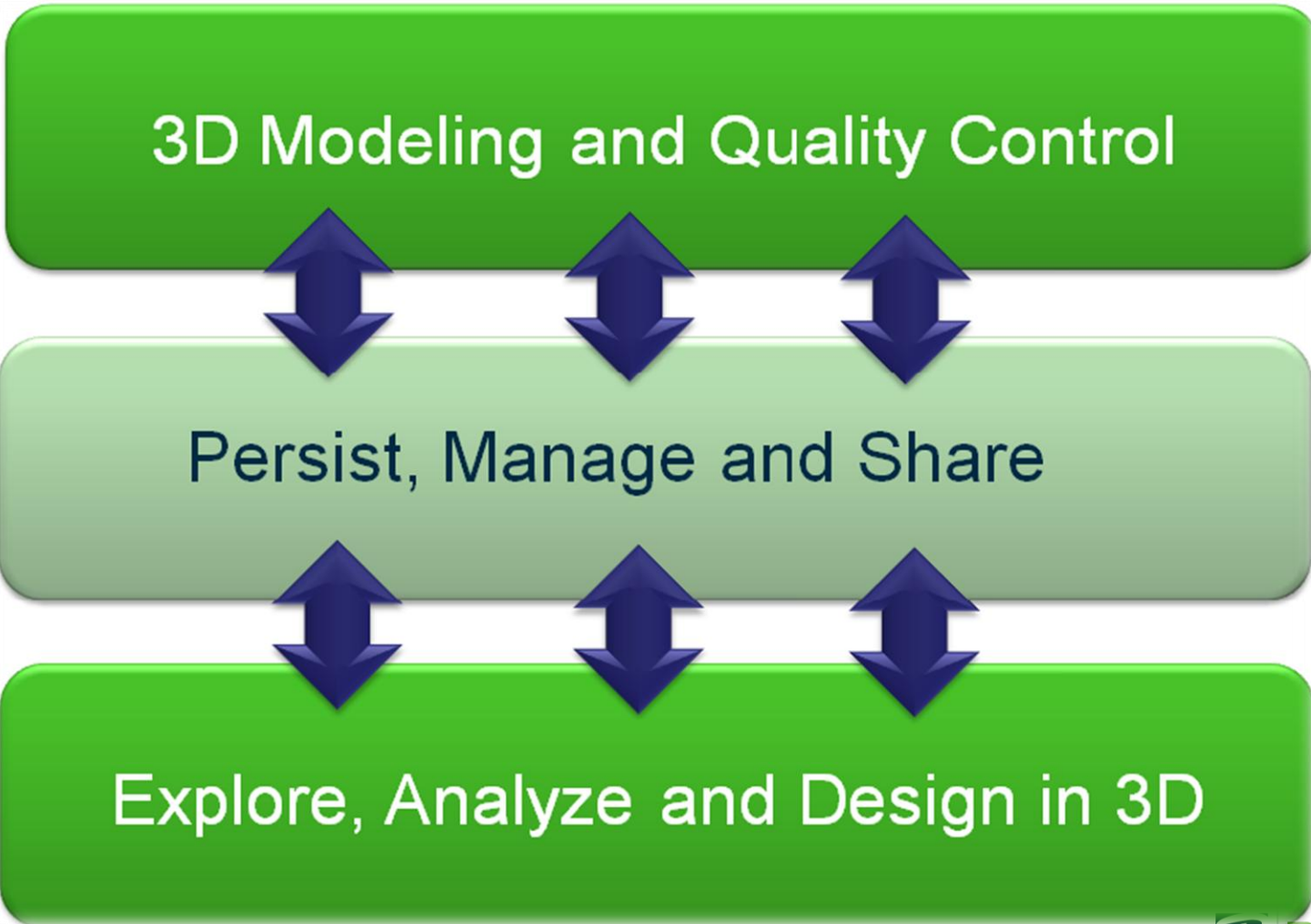
Semantik, geometri och hierarki

Strategi

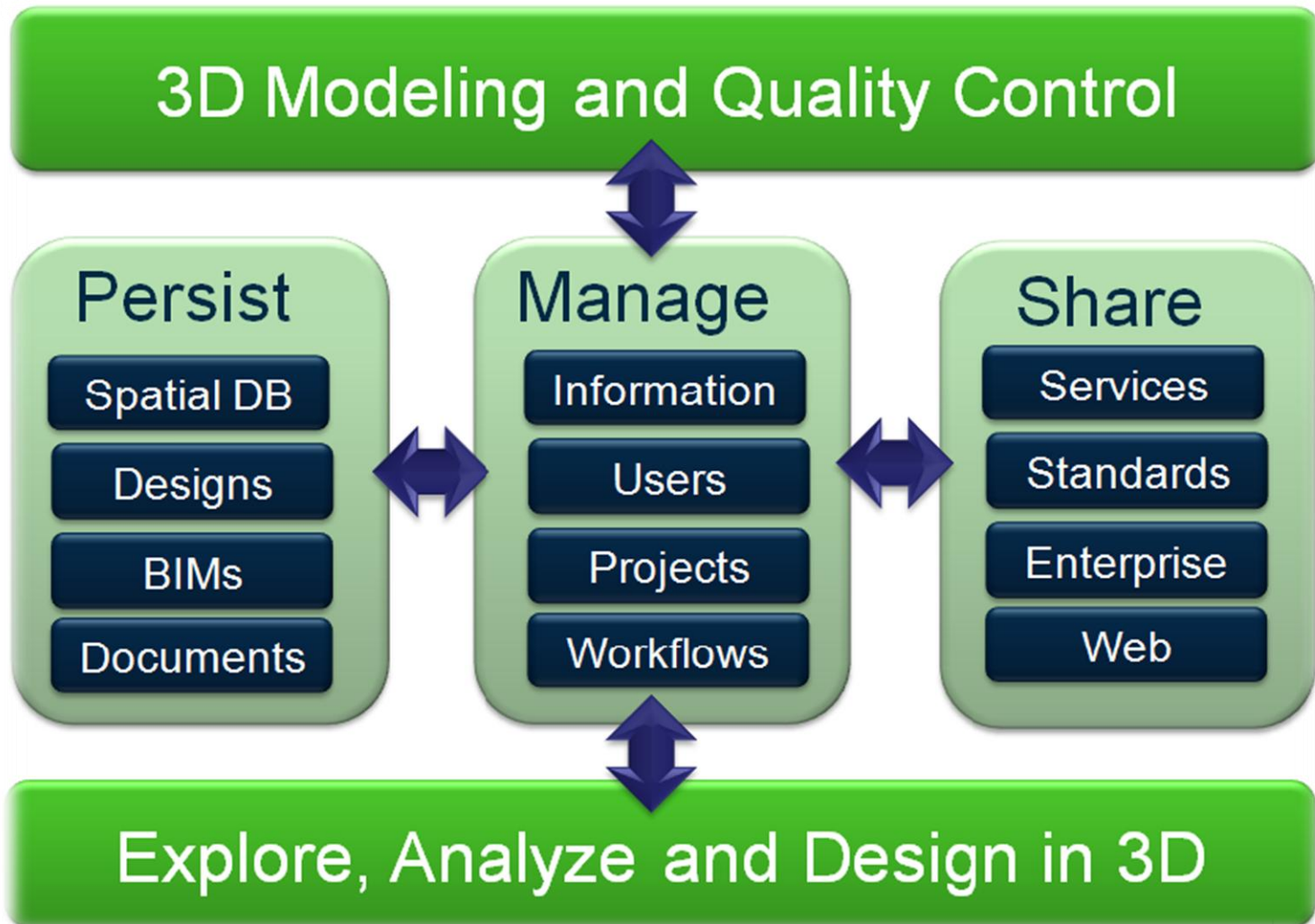
- Informationsmodell i 3D skall vara användbar i dagens verktyg (gäller främst geometri)
- Erfarenheter för primärkartan bör inkluderas
- Internationella standarder bör anpassas för Svenska kommuner (CityGML och IFC)
- Strong typing & utbyggbar modell



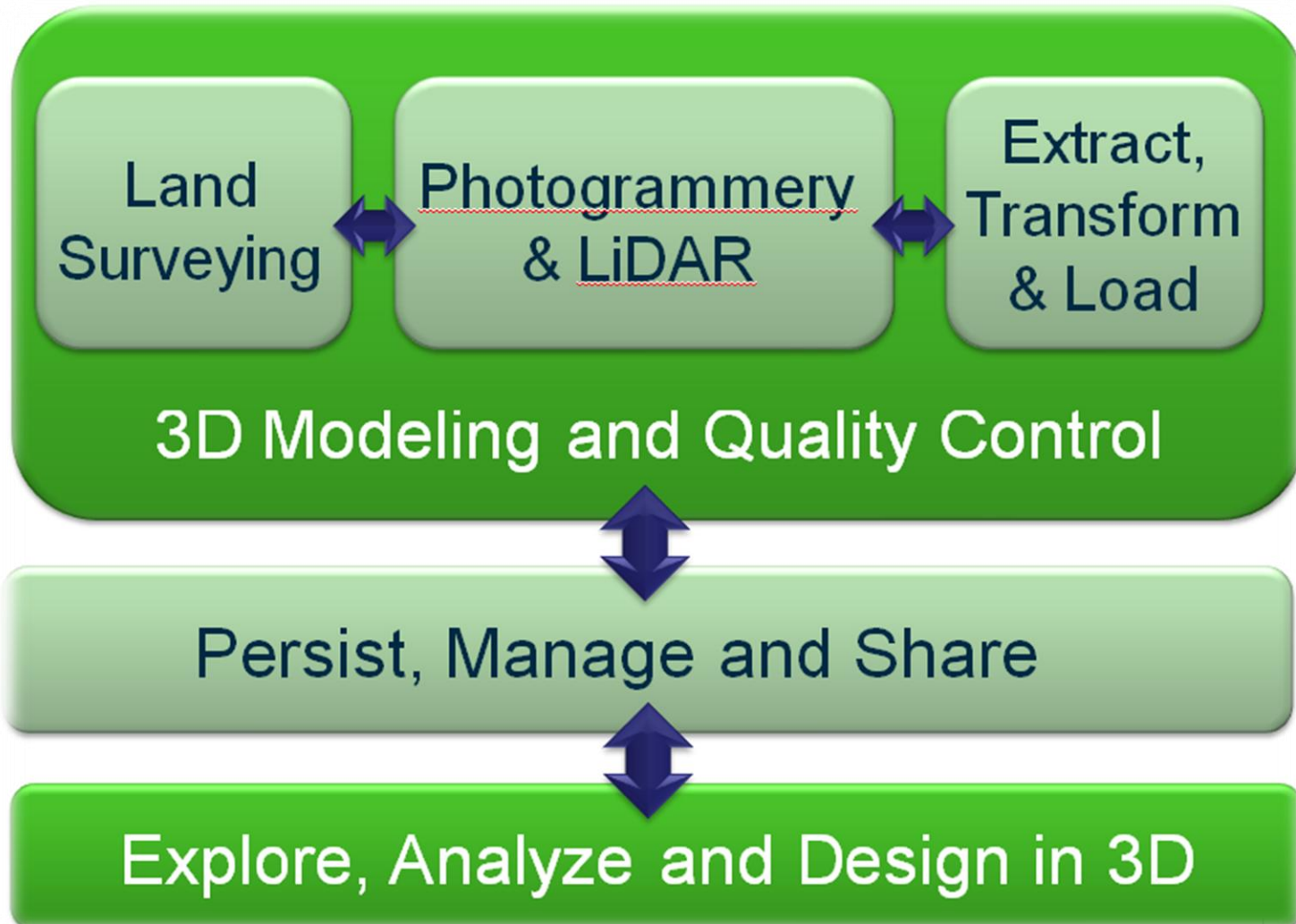
De primære komponenter i 3D CIS/CIM



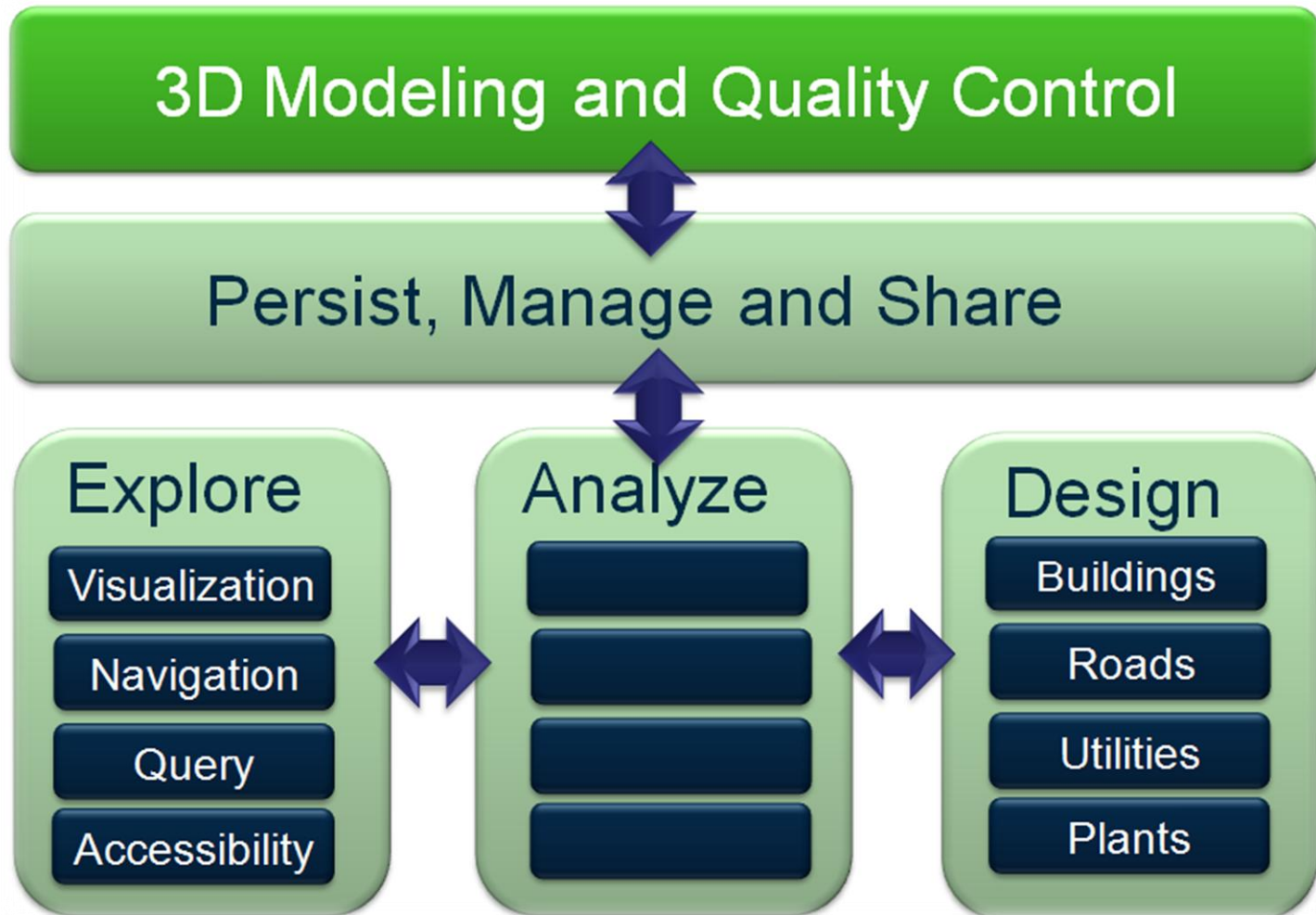
Platforms grundlaget i 3D CIS/CIM



Teknikker for modellering



Support of diverse business processes



Seminar 28. november 2008

- Reservér dagen
- Titel: 3D GIS – By og landskabsmodellering
- Tema
 - 3D City Information System (3D CIS)
 - 3D City Information Model (3D CIM)
- Èn-dags seminar

Seminar 28. november 2008 - Agenda



3D CIS/CIM Agenda (DRAFT, release 1.6) for the 28. November:

FRIDAY 28. November 2008

9:45-10:00 – Registration and Coffee

10:00-10:05 – Welcome; Peter Byrn (Bentley – DA/SE/ENG)

10:05-10:30 – Part 1: Introduction to Bentley's 3D City Information System & Modeling (CIS/CIM) concept – Bentley's future 'highway'. Why a 3D CIS/CIM? – How can the user benefit etc.; User case examples; Peter Byrn & Timo Tuukkanen (Bentley – DA/SE/ENG)

10:30-11:30 – Geodata for 3D City & Urban modeling: What kind of geodata can we acquire today, and what can we expect in the future? Two leading Scandinavian mapping and geodata companies will explain:

- C3 Technologies (www.c3technologies.com), Ludvig Enggård (SE/ENG)
- BLOM (www.blomasa.com), Bo Overgaard (DA/ENG)

11:30-12:30 – "Skånsk" Christmas lunch

12:30-13:30 – Solutions based on LIDAR for 3D City & Urban modeling: What kind of applications and tools exist today from 3. parties, build on-top of Bentley technology? Two companies, a Finnish and a German company, will give some very interesting examples of that:

- Terrasolid (www.terrasolid.fi), Esa Haapa-aho (ENG)
- PHOCAD (www.phocad.de), Christoph Effkemann (ENG)

13:30-14:30 – Part 2: Introduction to Bentley's 3D City Information System & Modeling (CIS/CIM) concept; How to get there and what will be Bentley's focus?; Alain Lapierre, Chief Architect geospatial products and solutions (Bentley – ENG)

14:30-14:45 – Break; Coffee

14:45-16:00 – What platforms, tools and functionalities are available today from Bentley; Tuomo Olkkonen (3D Data Management and GIS) & Lars Moth-Poulsen (3D Building & Object modeling and Design; Use case: "Det Digitale Byggeri") & Mats Dahlberg (3D Infrastructure, Site & Maintenance Development) (Bentley – DA/SE/ENG)

16:00-16:15 – End of the seminar; summary and what will be the next steps...

16:15-17:00 – If you are interested, and have time, please explorer and elaborate Bentley's and our guest's and partners solutions and products.

17:00-? – Social Event... for those who still have some energy left

Note! A practical issue related to the Danes. From the Copenhagen Central Station (Hovedbanegården) there will be a bus picking you up if needed, which drives you directly to the seminar in Lund.

SATURDAY 29. November 2008

For these who might stay overnight, there will be arranged a guided Copenhagen-tour at Ny Carlsberg Glyptotek, Saturday the 29. starting 10:30 incl. Lunch (www.glyptoteket.dk). Please let us know, also if you need assistance with hotel booking.



V8i

WWW.BENTLEY.COM

 **Bentley**
Sustaining Infrastructure

Bentley User Conference

BE Conference 2009 | May 12-15 | Charlotte, NC

2008 Agenda Tracks

- BIM and Beyond
- Bridge Information Modeling (BrIM)
- Cadastre and Land Development
- Communications
- Oil and Gas
- Mining and Metals
- Electric and Gas Utilities
- Power Generation
- Rail and Transit
- Roads
- Water and Wastewater



BE Communities: Professional Networking Website

The screenshot shows the BE Communities website in a Microsoft Internet Explorer browser window. The address bar displays "http://community.be.org/". The page features a dark blue header with the "Be Communities BETA" logo and navigation links for "Sign in", "Join", and "Help". Below the header is a green navigation bar with tabs for "COMMUNITIES", "MEMBERS", "FORUMS", "WIKI", "BLOGS", and "RESOURCES".

The main content area is divided into several sections:

- Welcome!**: A large banner with a stylized orange head icon and a "Join Now!" button. Text reads: "Welcome to BE Communities! This is where the world's infrastructure communities come together to connect, communicate, and learn from each other."
- FEATURED**: A section titled "Solutions" with a description: "Empower the sharing of best practices, ideas, and content that apply to integrated applications and services built on an open platform and are designed for the entire lifecycle of the infrastructure asset and are tailored to the needs of the various professions. Becoming a member of the Solutions Community that you are involved with is simple -- BE Communities members can go to the Communities area and select the Solutions tab."
- ACTIVE FORUMS**: A list of forum topics including "Anyone knows Bentley M...", "array type", "Avatar - neither use n...", "Persistent Check Boxes", "TR - graphFunction desc...", "Thread listing title m...", "What is a Tag and...", "AutoCAD 2008, AutoPLAN...", "Generate Feature Type...", "RSS Feed query", and "View All Forums".
- NEWS**: A section with a notice: "Changes will be pushed to this site fairly frequently for the next couple of weeks, so previously referenced outages may occur. If they do happen, we anticipate them to not last for long. We apologize in advance for any temporary inconvenience that may take place."
- POPULAR BLOG POSTS**: A list of blog entries including "In the Land of the Rising Sun" by Phil Chouinard, "If it is overcast and misty..." by Phil Chouinard, "Back in the USSR" by Phil Chouinard, and "View All Blogs".
- POPULAR WIKI TOPICS**: A list of wiki topics including "Wiki".
- POPULAR TAGS**: A list of tags including "3D", "Architecture", "Bentley Library", "BIM", "Book Publishing", "Building", "DDD", "design", "Dimension Driven Design", "Fair Stand", "Learning", "maxwell", "MicroStation", "photorealistic", "raytracing", "rendering", "Show building", "test", "testlab", "Training", "Tutorial", "utilities", "utility", "video", "visualization", and "Browse All Tags".

The browser's status bar at the bottom shows "Done" and "Internet" with a 100% zoom level.



Kontaktinfo

Peter Byrn

peter.byrn@bentley.com

+45 45 46 00 64