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## Leveraging Geospatial Information

Bentley's Flexible Geospatial Approach

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**Bentley**  
Sustaining Infrastructure

Raise some questions

Show consequences

Share ideas & experiences

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# Leveraging Geospatial Information

Today Bentley Geospatial solution is flexible

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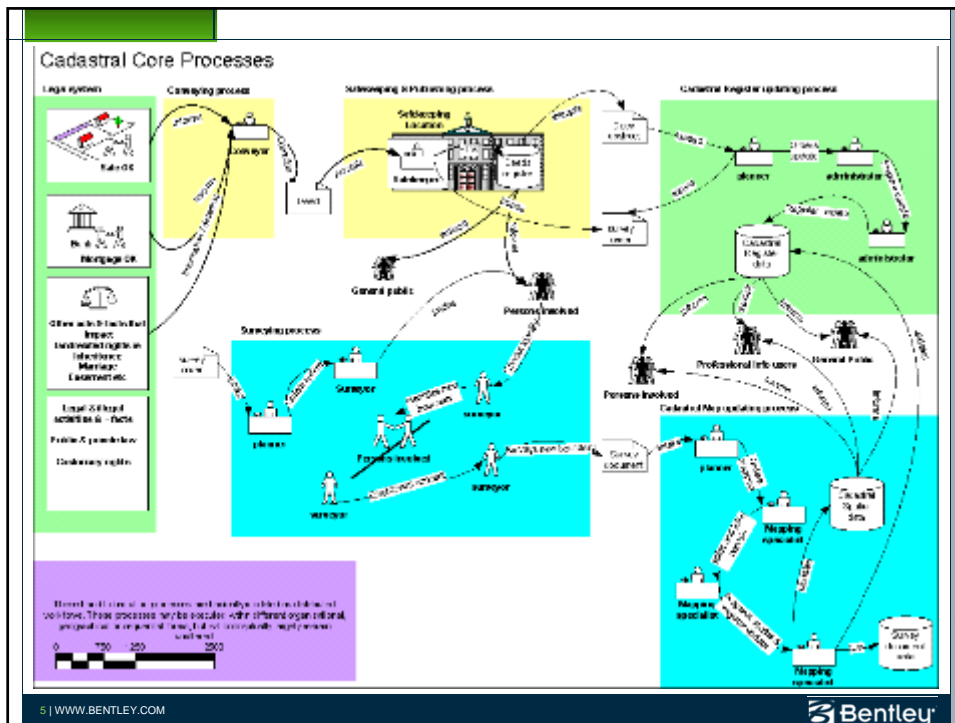


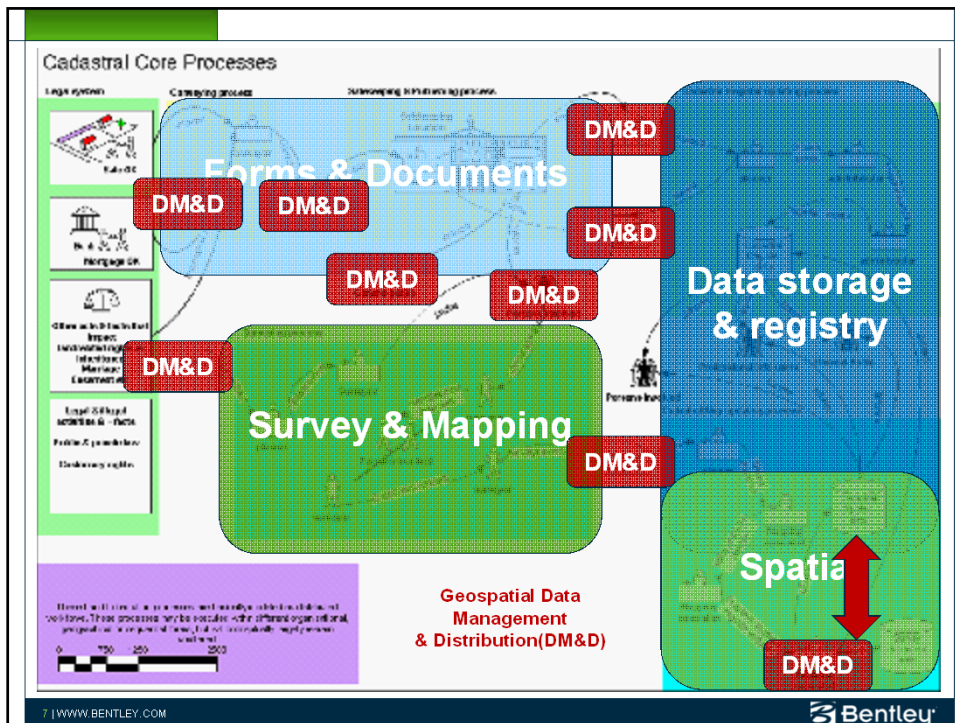
But times are changing and the role of surveyors is changing as well. The big swing could be named "from measurement to management". As mentioned above this does not imply that measurement is no longer important, but due to technology development, the role of the surveying is changed towards managing the measurements. The change also means that surveyors increasingly contribute to building sustainable societies as

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# Flexibility

Bentley provides flexible access to the enterprise information

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# Entry Points



**Data**

**Geospatial desktop  
clients**

**Geospatial server**

**Geospatial publishing  
tools**

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# Data

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## Spatial Data (Information) Integration

### 1. Data exchange

- Common GIS data formats like ESRI Shapefiles or MapInfo TAB, MID/MIF & DGN/XFM;
- CAD formats such as DGN and DWG;
- XML-based exchange formats such as LandXML or GML

### 2. Data collaboration

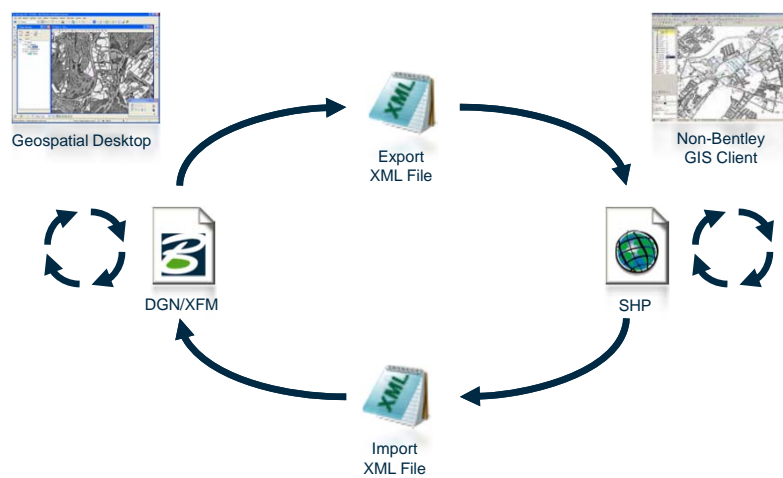
- Sharing one common spatial database
- Oracle Spatial/Locator, ArcSDE
- Two-tier or *n*-tier architecture

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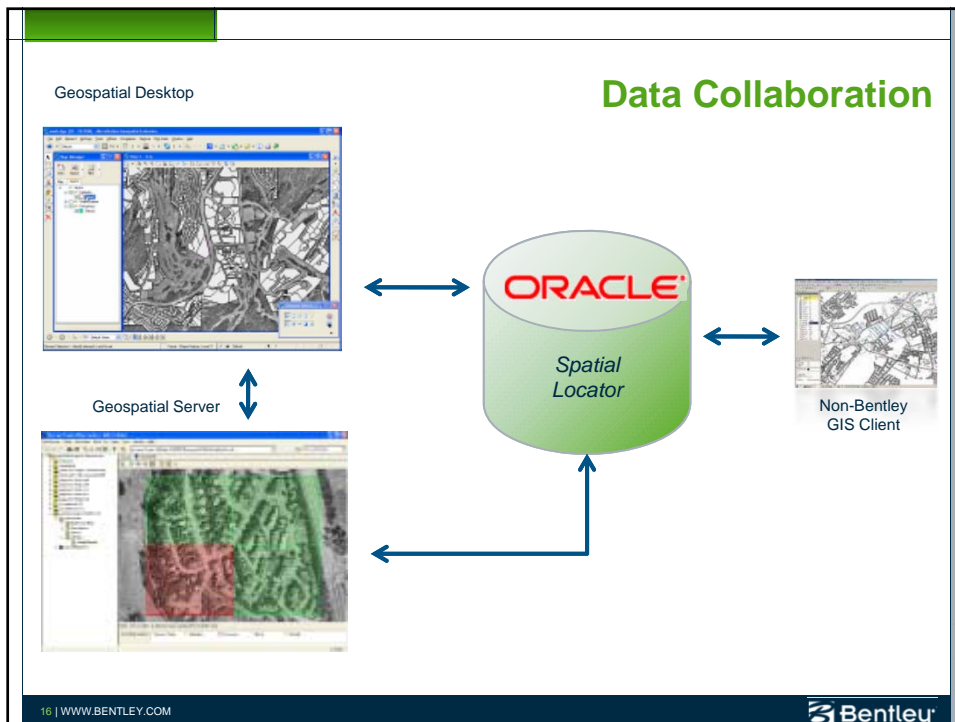
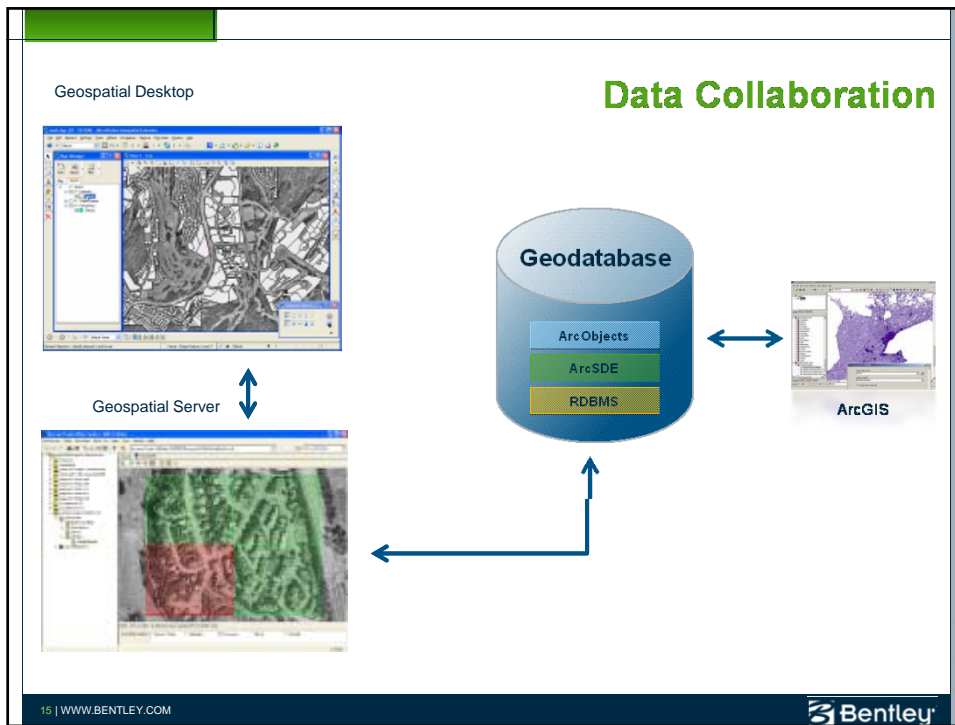
## Data exchange editing life-cycle



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# Geospatial Desktop Clients

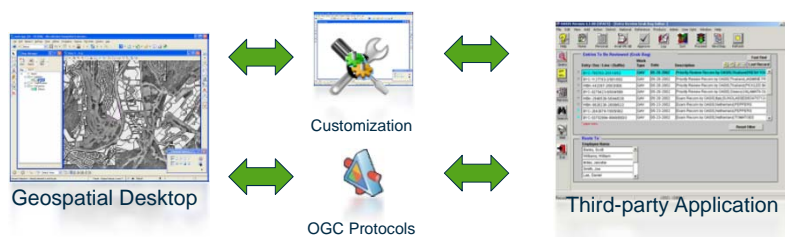
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## Integration with Geospatial Desktop Clients

- Creating point-to-point connections
  - Using *Customization*
    - Using APIs to create an interface with other applications
  - Using *Common protocols*
    - using ISO/OGC protocol-based functionality to interface with other applications



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## Integration with Geospatial Desktop Clients

- Suited when the integration scope is limited
  - Allowing access to geospatial data for a limited number of applications
  - E.g. form-based applications needing a geospatial interface
- Products are to be designed to be customized
- Wide choice of development options
  - Scripting, VBA, .NET, C++, and C#
- 'Proven' approach to integrating applications

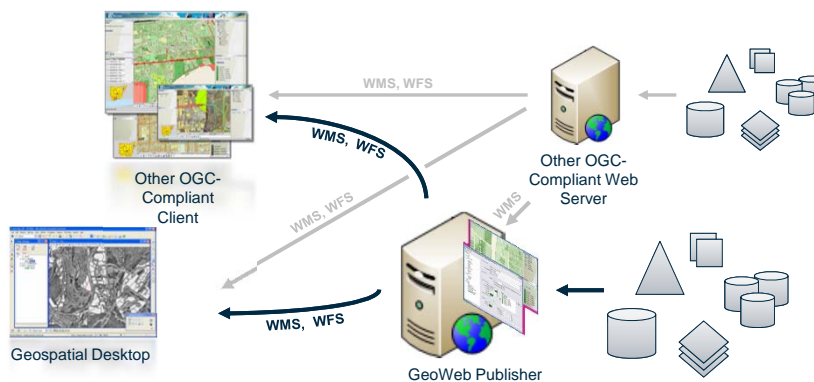
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## Integration with Geospatial Desktop Clients

- Common protocols:
  - Example architecture leveraging OGCs WMS/WFS using Geospatial products



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# Geospatial Server & Publishing

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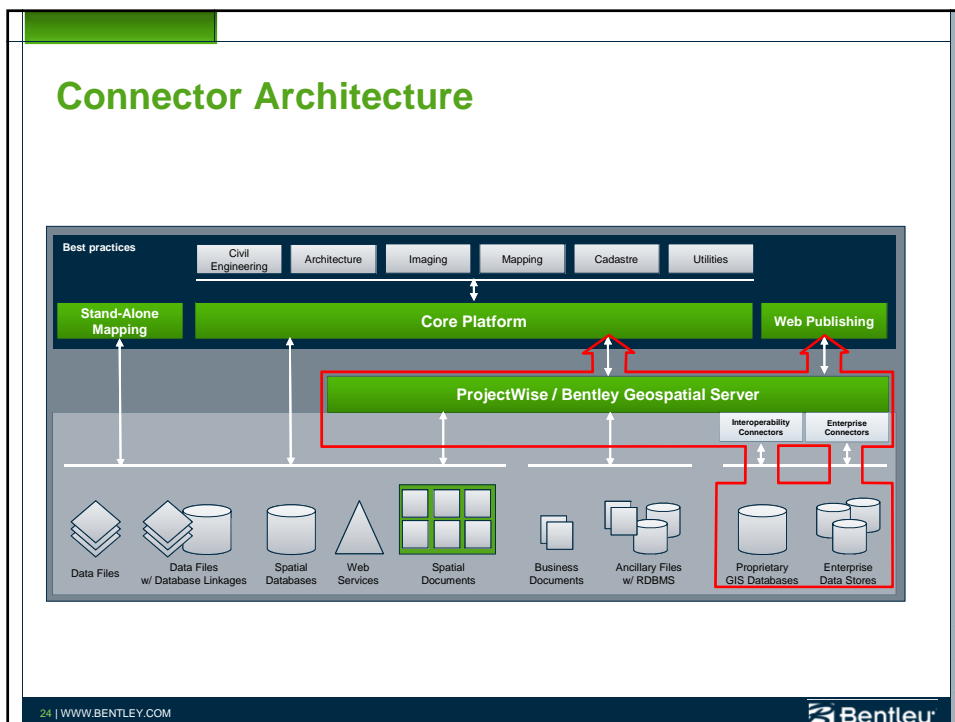
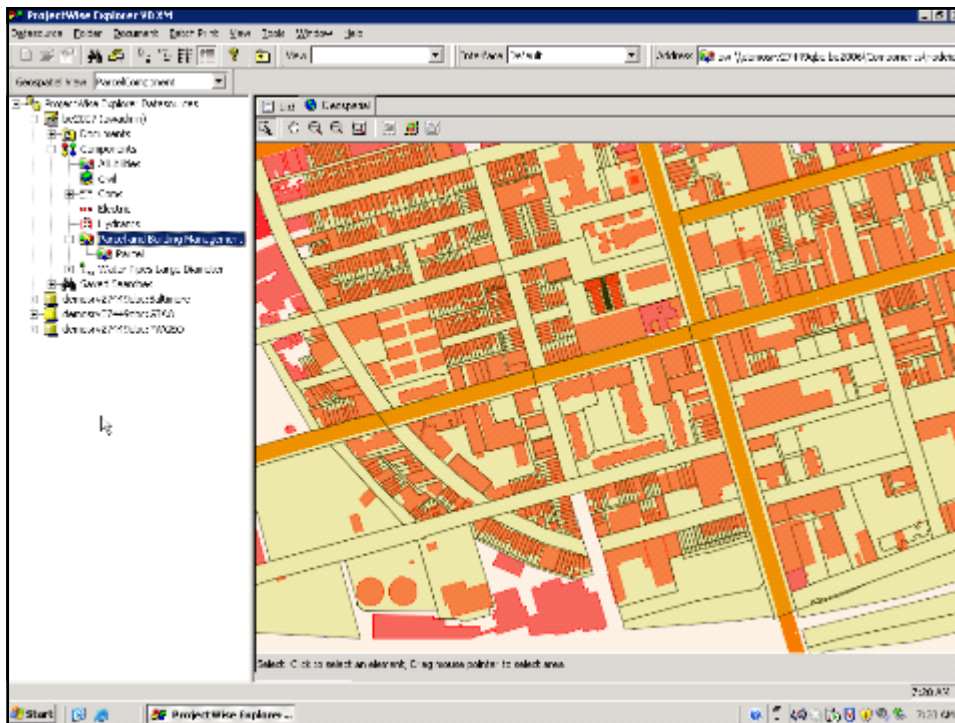
## Integration with (Geospatial) Server

- Natural entry point for Enterprise Integration
  - Server to server integration approach
- Using a Connector architecture
  - Interoperability connectors
    - interfacing with enterprise geospatial data stores (e.g. ArcSDE, Oracle Spatial/Locator)
  - Enterprise connectors
    - Interfacing to other, non-geospatial enterprise platforms (e.g. SAP)
- Unique benefits through *Federated Data Management*

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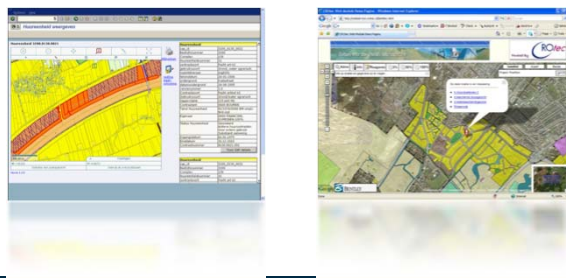


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## Integration with Geospatial Publishing Tools

- Using a publishing server architecture
- Integration paths:
  1. Logical integration using portals
  2. Logical integration using mash-up technology
  3. Integration based on web-services (SOA, SOAP, REST, KML, GeoJSON, GML, WMS, WFS, etc)



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## Conclusion

- The need for enterprise integration is clear
- Every main purpose for enterprise integration is met by one of Bentley's geospatial enterprise integration options:
  - *Data (information) Integration* ← data exchange, collaboration
  - *Process Integration* ← connector architecture, customization
  - *Vendor Independence* ← commitment to open standards, protocols
  - *Common Interface* ← portal, mash-up, or services integration
- Flexibility is key

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