
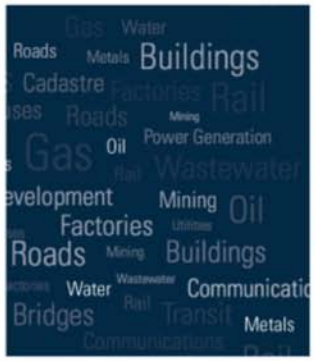




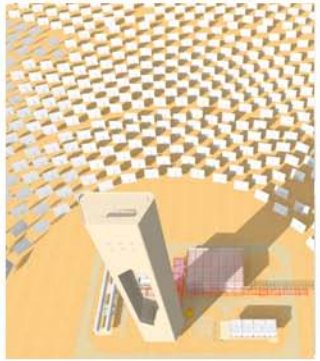



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E14- Integrating Civil Design, Mapping and Geospatial Data

Lisa Whitson, Transportation and Local Infrastructure Professional Services, Bentley Systems USA

Bentley Sustaining Infrastructure

GIS and Engineering Data Integration

GIS Data Domain

- GIS/Spatial data consist of :
  - Geometry (point, line, ploygon).
  - Business data (non-graphical attributes)
  - Domains (list of values).
  - Other administrative data needed for the GIS Spatial management.

- No standard CADD symbology *typically* stored.
  - Levels, cells, linestyles, color, etc.

- Categorized typically by ‘layers’ or ‘features’.
  - Roads, trees, borings, parcels, etc.
  - SDSFIE standards

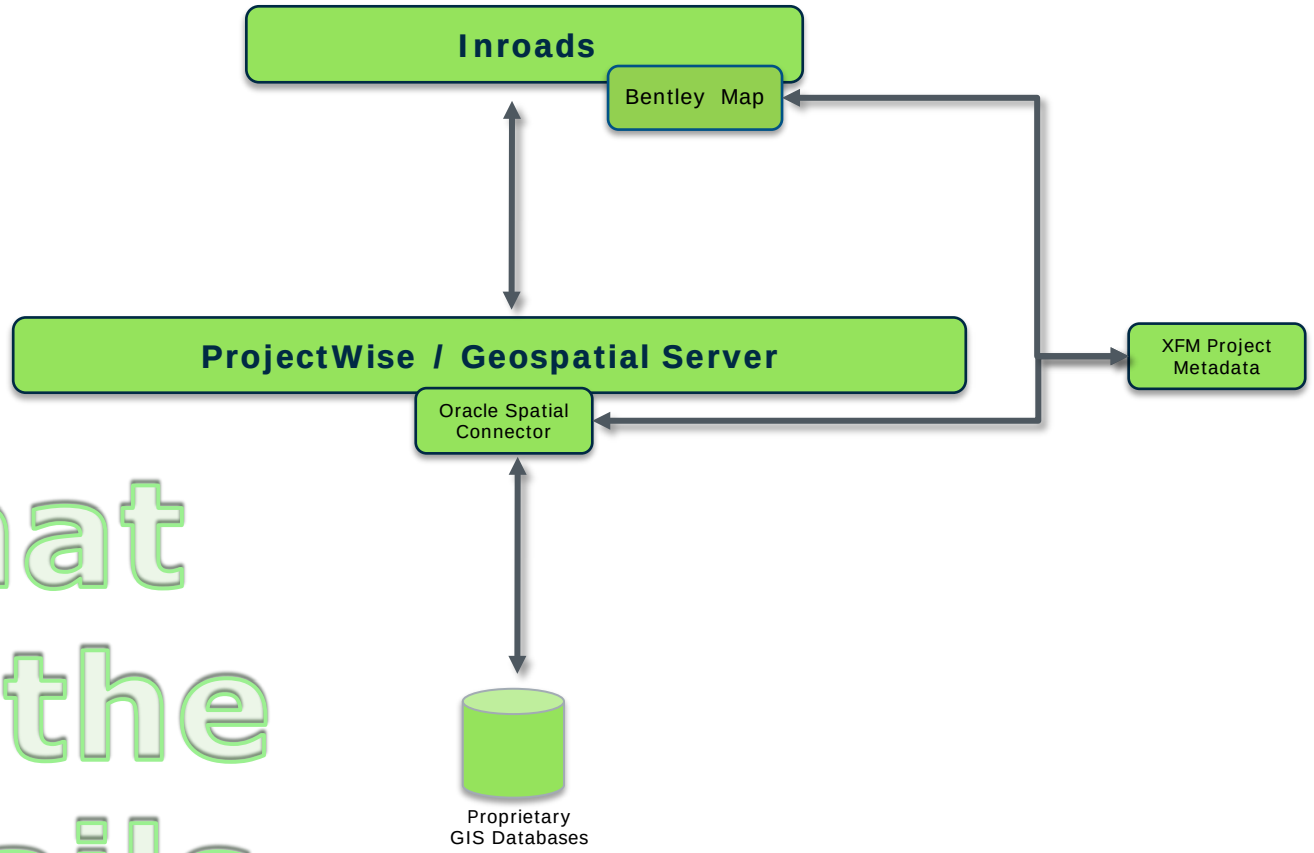
Engineering Data Domain

- Civil/Engineering data typically consist of :
  - Design data (alignments, templates, DTM, etc.)
  - Supporting GIS data (**readonly**).
  - Geometry
- Symbology
  - Used to graphically display the design data **and** construction documentation.
- Categorized typically by ‘levels’ or ‘layers’.
  - Alignments, sections, dtm, survey data, etc.
  - Tri-CAD Standards
- Engineers work in the graphical design environment.

Where is the commonality ???

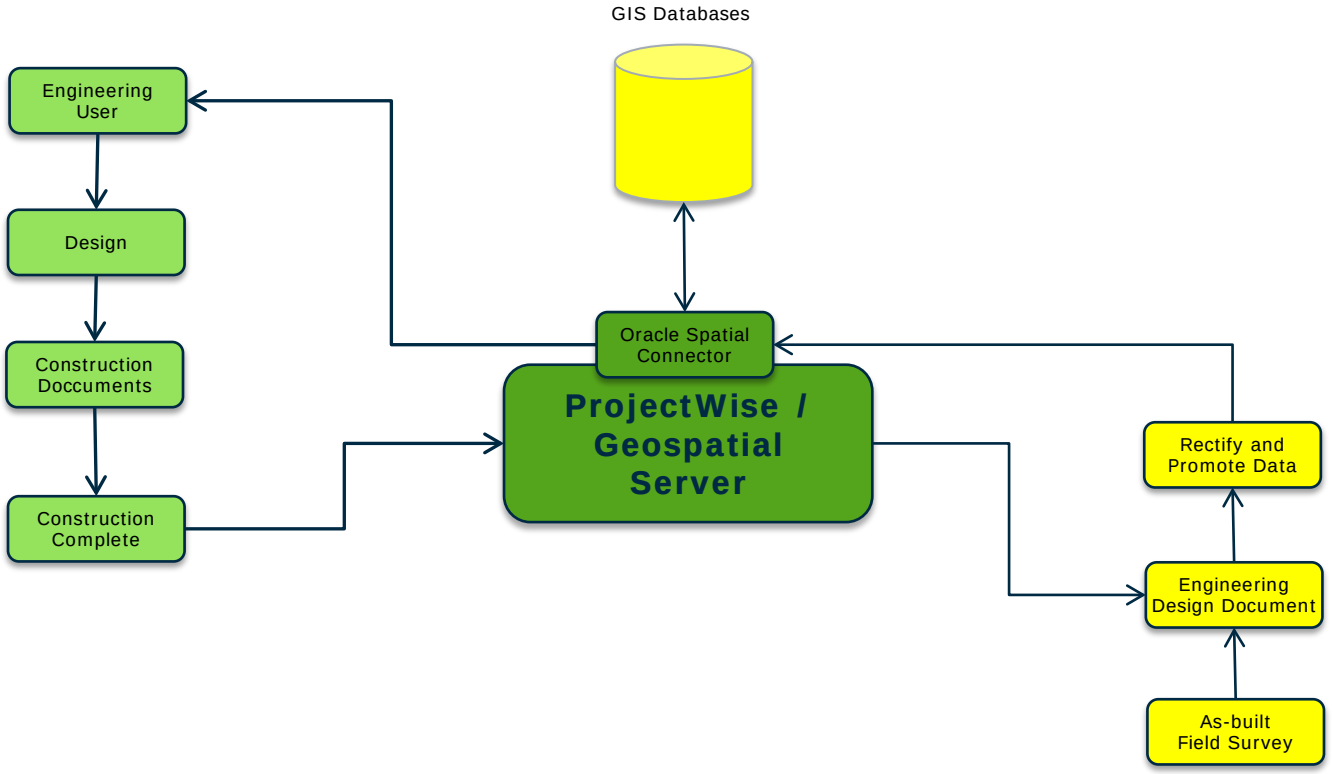
- Geometry
  - Point (lights, catch basins, manholes)
  - Line (centerlines, fences, OH and UG utilities, edge of pavement)
  - Polygon (parcels, structure outline, buildings, ponds)
- Non-Graphical attributes
  - Centerline name
  - Top elevation / depth of manhole.
  - Parcel owner name, address, parish, etc.
  - Light pole height.

How are we going to stitch these two together?



What Are the Details ?

Step through the workflow



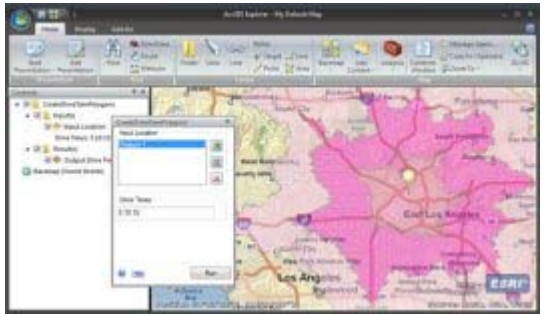
Geospatial Server and Oracle Spatial Connector Integration into the Civil Design Workflow.

Problem Definition

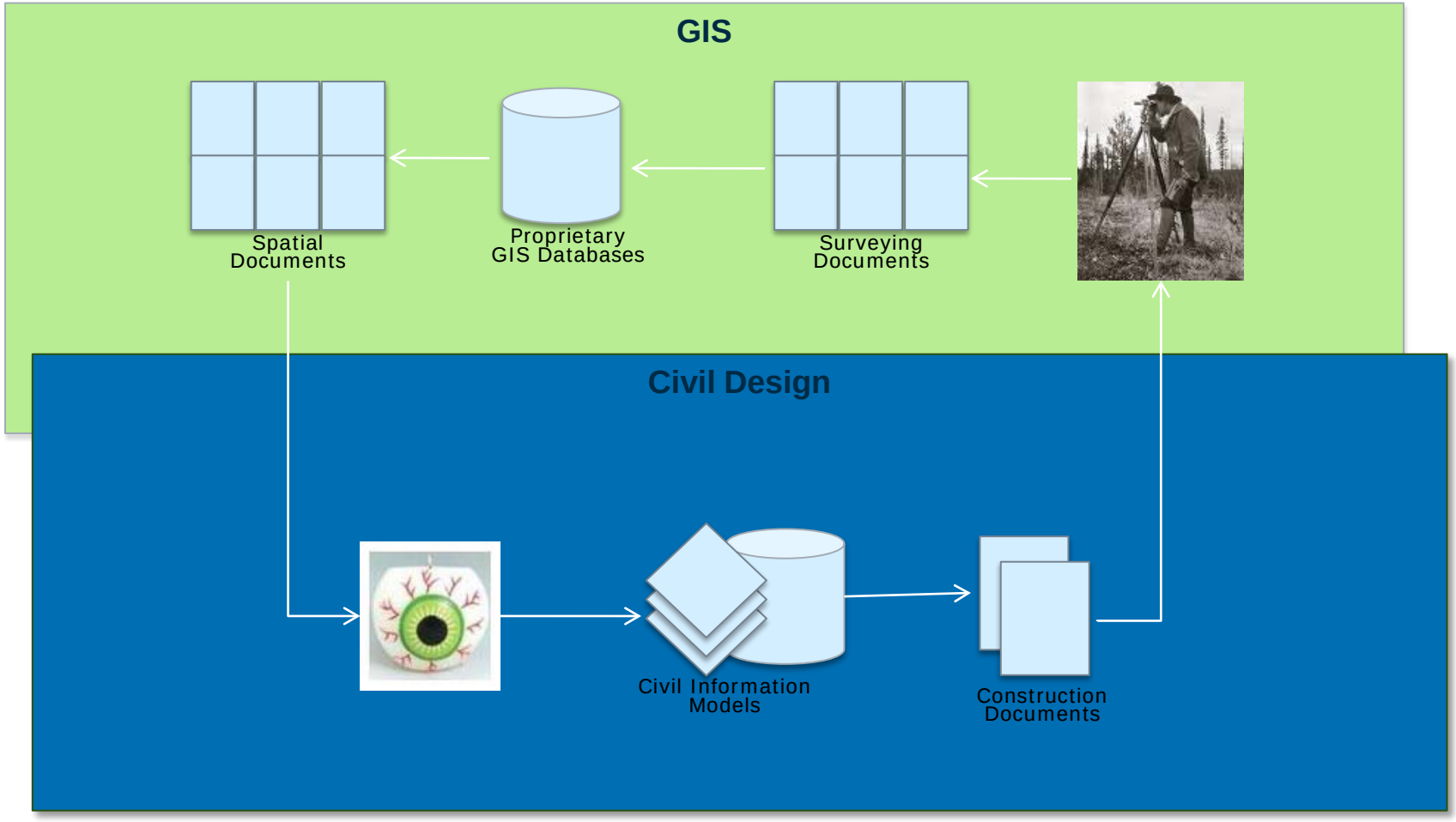
•GIS Data Domain is typically separated from the Civil Design Data Domain.

•Historically these two data domains are kept separate, for one reason or another.

•This can cause the introduction of errors, confusion and frustration.



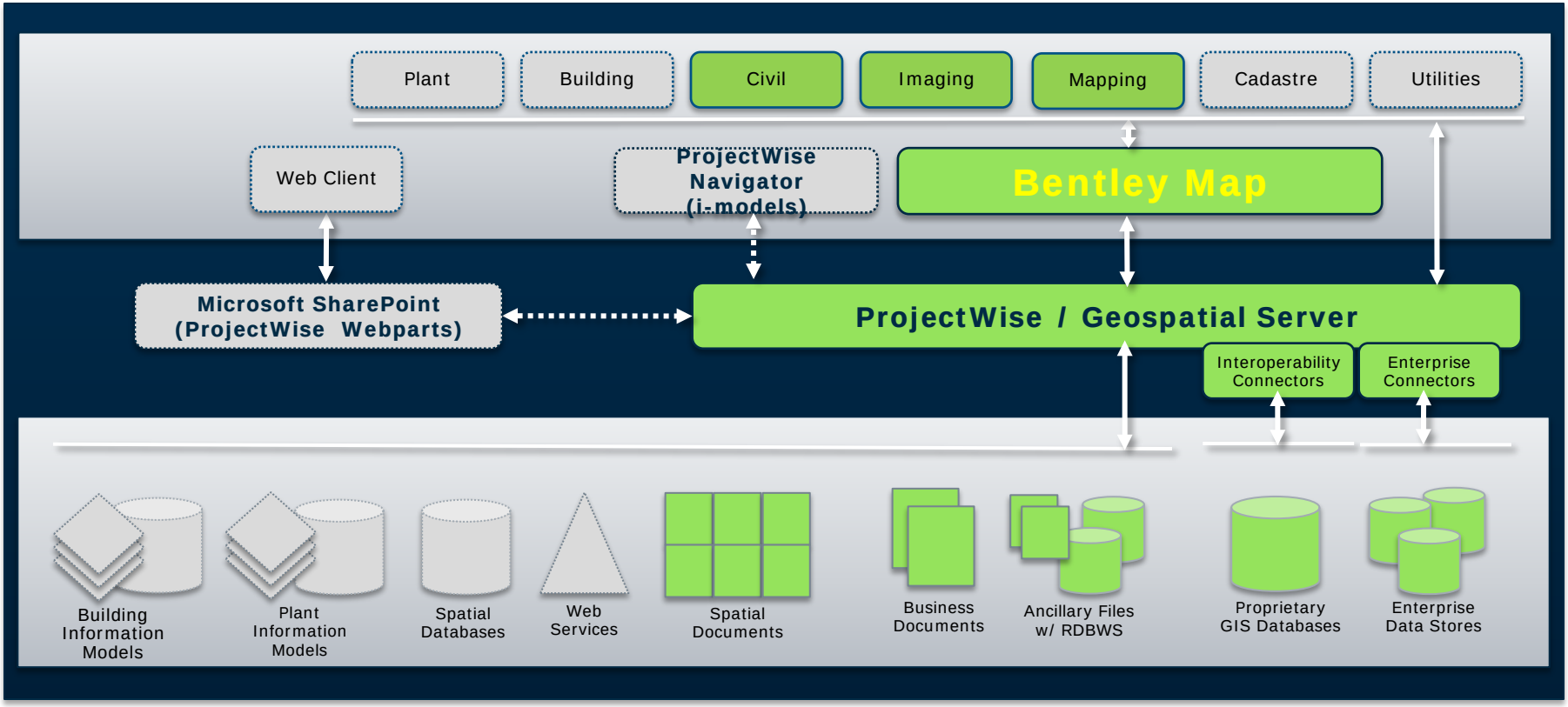
Historical Workflow



Solution Requirements

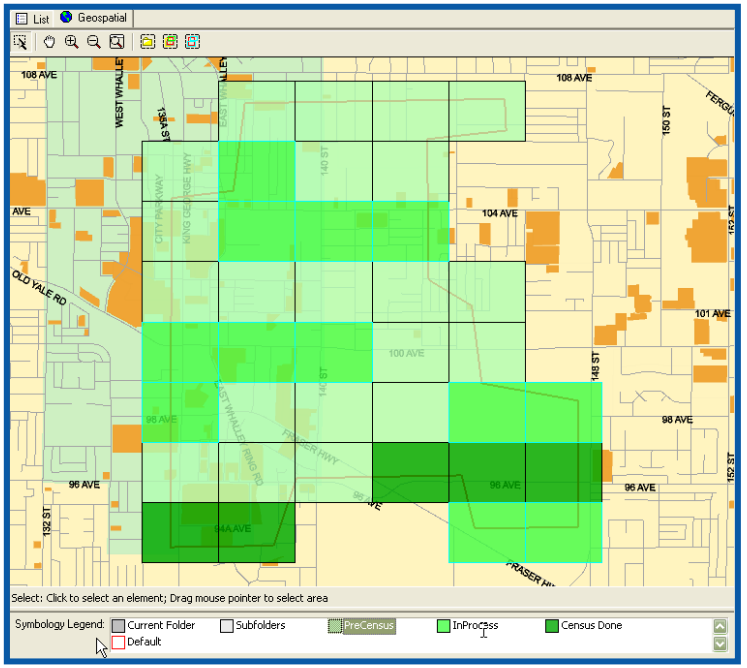
- Use Standard Bentley (COTS) applications
- Configure to the local data domains.
- Use your corporate standards.
- Maintain departmental data integrity and quality control checks.
- Provide richer data content for the Civil Design team to make timely decisions.
- Allow the Civil Design team to pull (for read only) GIS data, when needed.
- Allow the GIS team to edit, validate and post both field as-built **AND** engineering design data.

Proposed Solution Sandbox



ProjectWise/Geospatial Server

- Included with ProjectWise
- Coordinate Projection aware.
- Spatial navigation interface
  - User defined background maps.
  - Locate Projects
  - Locate ALL project documentation.
- Geospatial Searches
  - Locate documents spatially and via document attributes.
- Federation of documents.



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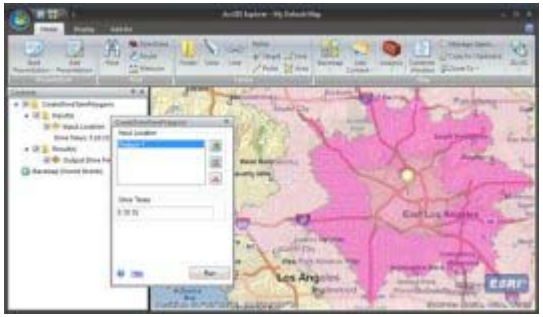
GIS Spatial Databases



- GIS Spatial Data storage.
- Maintains the GIS data schema.
  - Feature definitions
  - Domains
  - Etc.
- Each spatial data store maintains it's own schema.
- Permissions are honored for the access to the data (read and write).
- Versioning options exist for the extraction and posting of data.

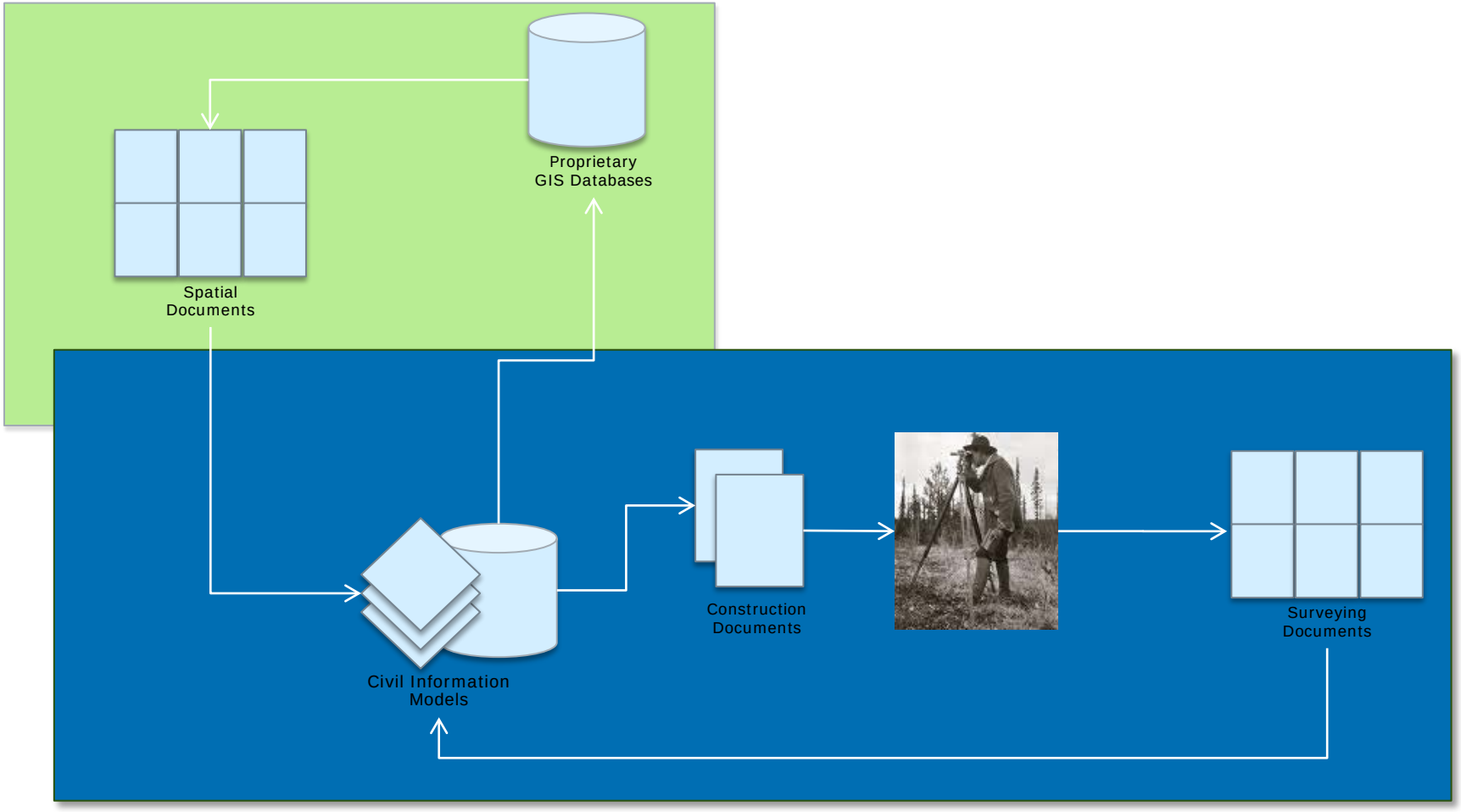
Interoperability Connectors

- Interchange between the GIS Spatial server and the Engineering environment.
- Sets up versioning
- ProjectWise users can interact with the connector thru a simple interface.
- Editing is accomplished in Bentley Map, thru a familiar user interface.
- Configured to use the corporate CADD standards for symbology.
  - Symbology (level, weight, color, linestyle, cells, text).
  - DGNLIBS, Text Styles, other MicroStation resources.

Inroads/Bentley Map – GIS Interfaces

- Review non-graphical GIS data.
- Incorporate outside civil – surveying data into project.
- “Promote” civil model data into GIS data domain.
- Post civil model data back to the GIS spatial data store.
- Produce Maps for presentation.

Information Integration Workflow



Problem Resolved

- GIS Data Domain is integrated with the Civil Design Data Domain.
- Data accessed by the user who needs it
- Data maintained by the department that 'owns' it.