

Time in Market ... Asset Lifecycle Information Management

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BIG CAPITAL EXPANSION FOR U.S. PORTS
REPAIRS, LESSONS FROM NEW ZEALAND QUAKE
BUILDERS, UNIONS SET FOR FACE-OFF IN NYC
COMPOSITES PUSH MAINE WIND-POWER PLANS



ASSET MANAGEMENT

ALIGNING DATA FOR THE LIFE CYCLE

Construction teams are successfully working with owners and technology vendors to solve the Rubik's Cube of construction: capturing data into facilities models so managers can up and running from day one

McGraw-Hill CONSTRUCTION

Data for the Life Cycle

Owners see the value of capturing the information in building models and have new tools to accomplish it By Tom Sawyer

TEXAS A&M KEEPSAKE



COVER STORY ASSET MANAGEMENT

For owners, the Rubik's Cube of construction is reducing, repurposing and augmenting design and construction data into accurate and useful facilities models for operations and maintenance. Now, owners, designers, builders, facilities managers and vendors are working together on projects around the country to solve the puzzle. They say they are not only succeeding, but the payoff is significant.

"It's really catching on. Owners are starting to realize the value of it," says Hyle Griffith, vice president for BIM services at Brooklin & Associates Inc., Austin, Texas. Brooklin is the owner's trip and project manager for construction and data capture on a \$110-million health sciences center at Texas A&M University in College Station, Texas. "When it came up a couple of years ago, I didn't know how I was going to get it done, but I knew it was possible," Griffith says.

As it turns out, delivering data from the construction phase into the life-cycle model is not as challenging as Griffith once feared. The introduction of relatively easy-to-use tools and process adjustments are the key. And the discipline the process imposes is improving construction quality and speeding delivery.

"It's really valuable," says Andy Deschenes, regional director of virtual design and construction at Skanska USA Building Inc., Parsippany, N.J. "It's on the front edge of where design and construction are going."

On a recent project to expand a co-generation facility serving the University of Massachusetts Hospital, Skanska coordinated with the owner's facilities management (FM) team and field-data collection software vendor Veda Systems to devise a system using mobile devices, including iPads and tablet PCs, to pull most information into a life-cycle-database during construction. The process required analysis of need and planning, but it paid dividends by smoothing out the execution. "The extensive planning helps us be more efficient as we go along," Deschenes says.

"The great thing is that we are doing a lot of this out in the field. Supervisors have iPads along over their shoulders—they don't have to shuttle between the jobsite and the trailer. A lot of this info gets grabbed out there when it's hot. [Workers] are punching right into the database with field reports as things get put in place," Deschenes says. "That's where you are going to see BIM continue to grow—with more applications in the field."

The shift to life-cycle facilities modeling is more like a movement with many interlocking components than a trend. Forward-thinking owners who want FM models, such as the General Services Administration and the U.S. Army Corps of Engineers, are playing leadership roles, as are corporate owners such as Eli Lilly and Co. and numerous health-care organizations. City and state governments, colleges and universities also are driving demand.

The owners all are after the same thing: to improve the quality of construction and make the data handed over to facilities truly useful, rather than being either a paper or digital landfill as in the past.

Playing supporting roles are the designers, contractors and subs who must adjust their ways of capturing component data and accurate as-builts through the building phase. Also supporting are the equipment manufacturers who are the sources for the specifications, warranties and maintenance data that FM managers need. Research all that is an array of blue-sky thinkers and technology vendors testing and coordinating ideas and standards, delivering field-data collection hardware and creating systems and data management platforms to bring it together (see p. 29).

Texas A&M's Intelligent Handover

At Texas A&M University, a two-building Health Sciences Center has become a proving ground for intelligent handover. The center consists of a \$68-million health education building, a \$60-million medical

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Poor Asset Information can be Disastrous

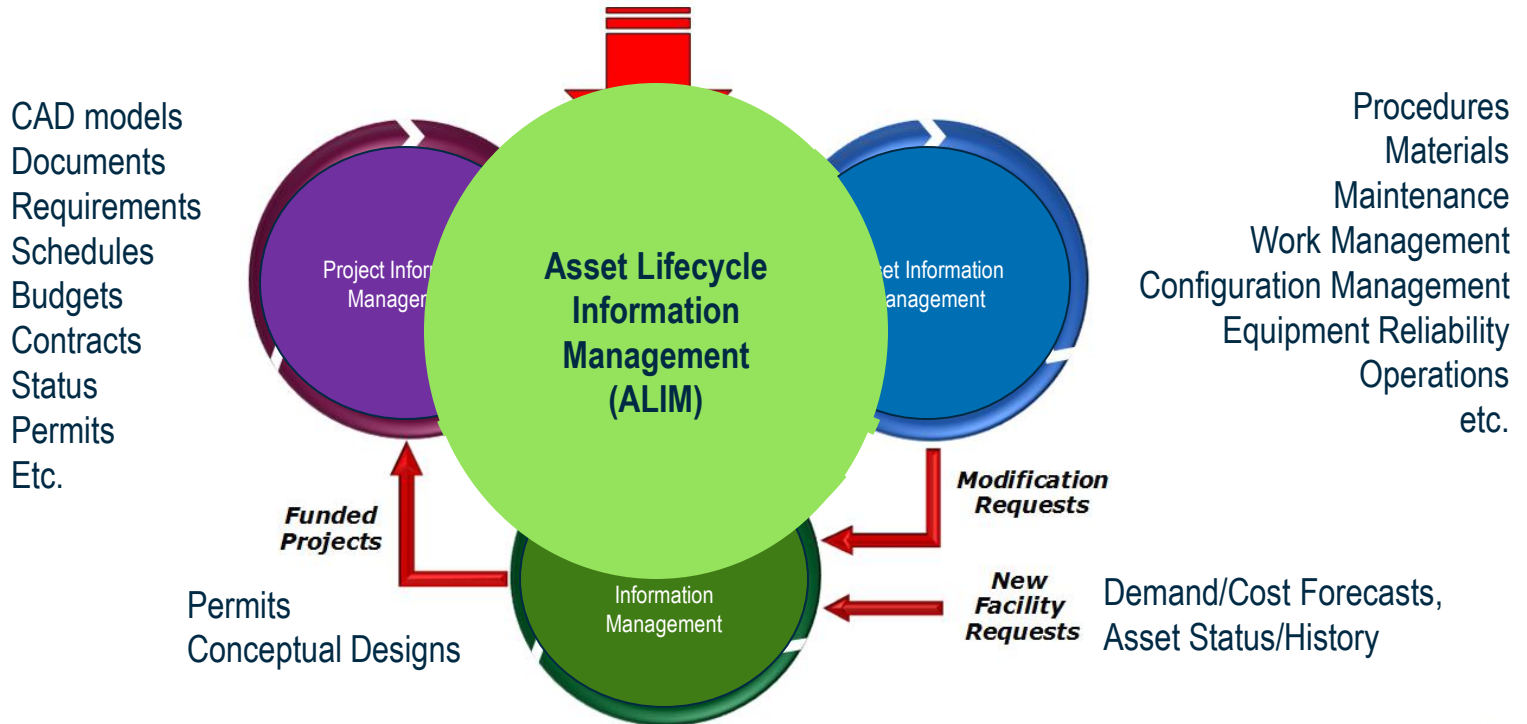
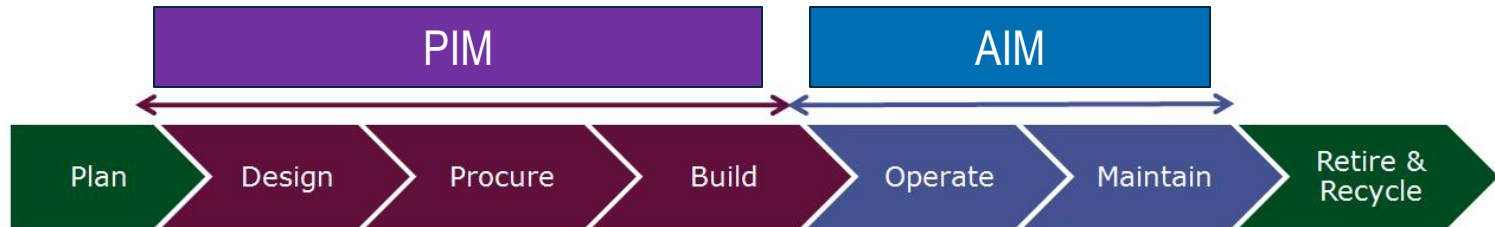


“... we learned that the blowout preventer had been modified in unexpected ways...”

“... BP told us the modifications on the BOP were extensive. After the accident, they asked Transocean for drawings of the blowout preventer. Because of the modifications, the drawings they received didn't match the structure on the ocean floor.. ...”

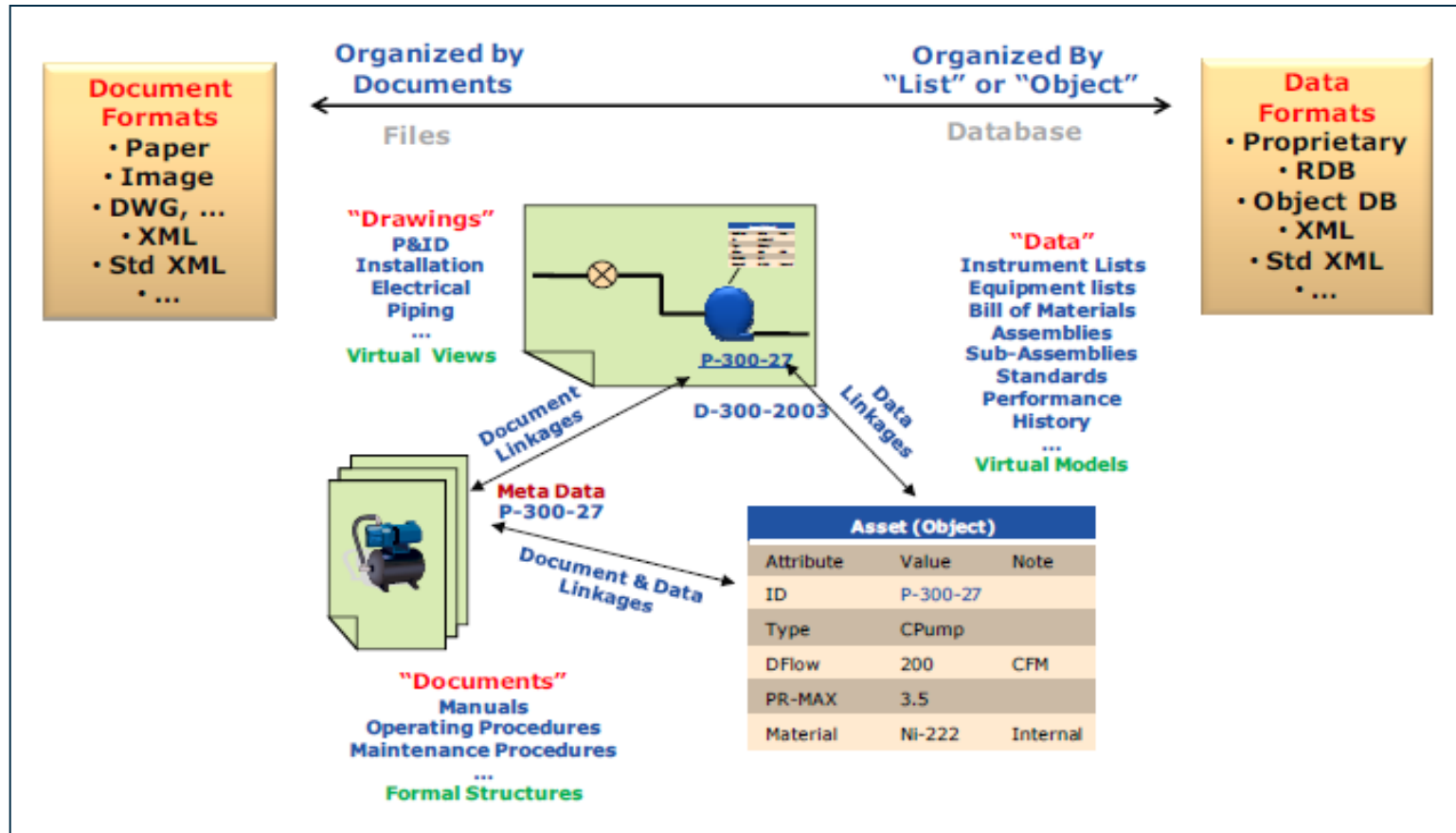
Source: House Committee on Energy and Commerce hearings on the Deepwater Horizon disaster

Asset Lifecycle Information Management (ALIM)



Forecasts, Projections, Status Reports, Histories, Configurations, Permits, Regulations, etc.

Ideal Asset Information Management



Source: ARC Advisory Group

In reality....Some common causes...

- **Project Delivery**

- Difficulty locating data
- Incomplete information
- Incorrect version of data
- Design changes / re-work
- Late detection of clashes / anomalies
- Difficult team co-ordination

- **Operation & Maintenance**

- Ownership of asset data
- Incomplete / inaccessible data
 - Physical
 - Contextual





Cost Analysis of Inadequate Interoperability in the U.S. Capital Facilities Industry

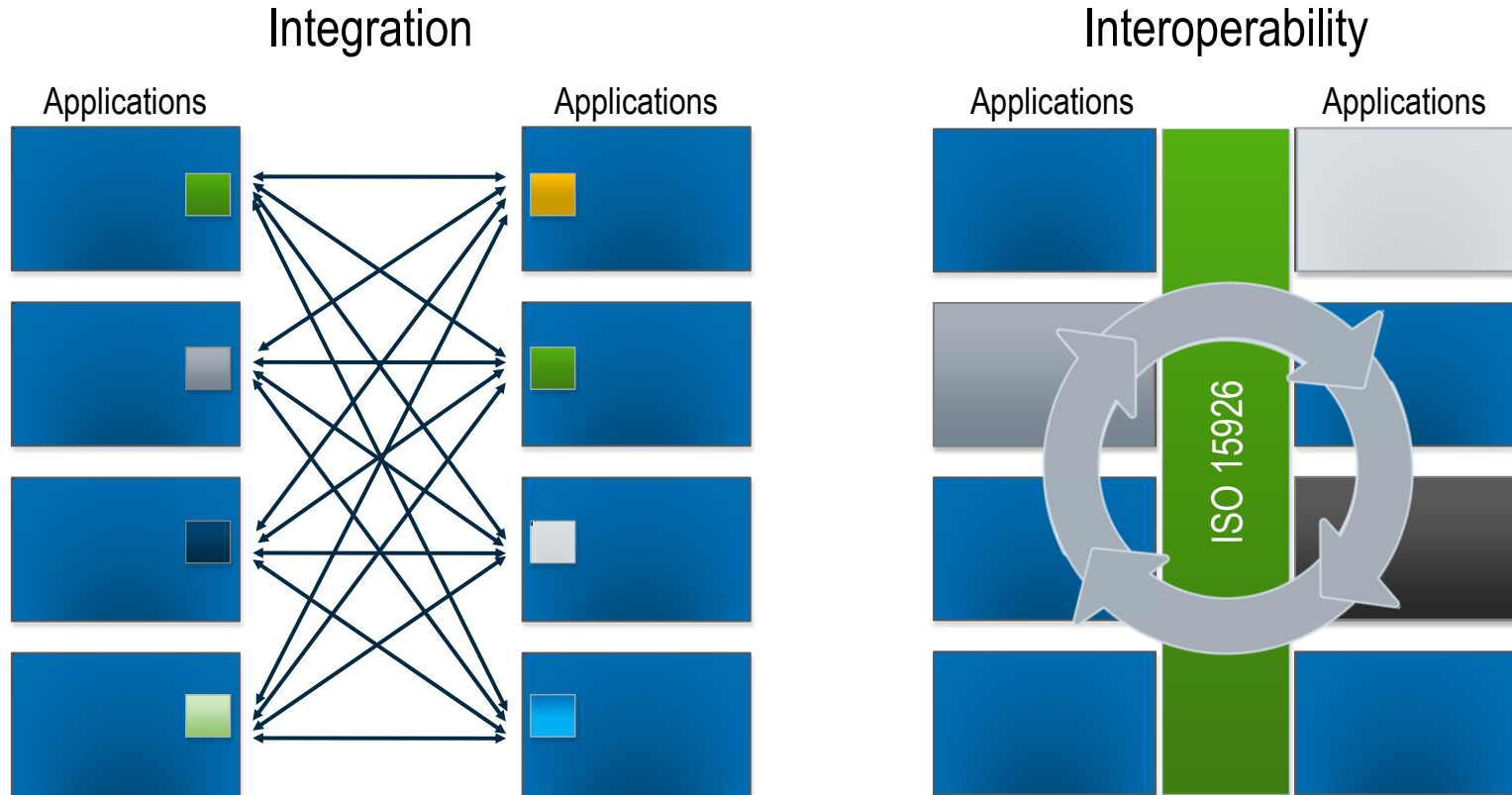
40% of engineering time is spent locating & validating information

Poor communications between people and systems wastes **30%** of project costs

The delivery of reliable data defining the asset upon completion can deliver a saving in O&M cost of **14%** per annum.

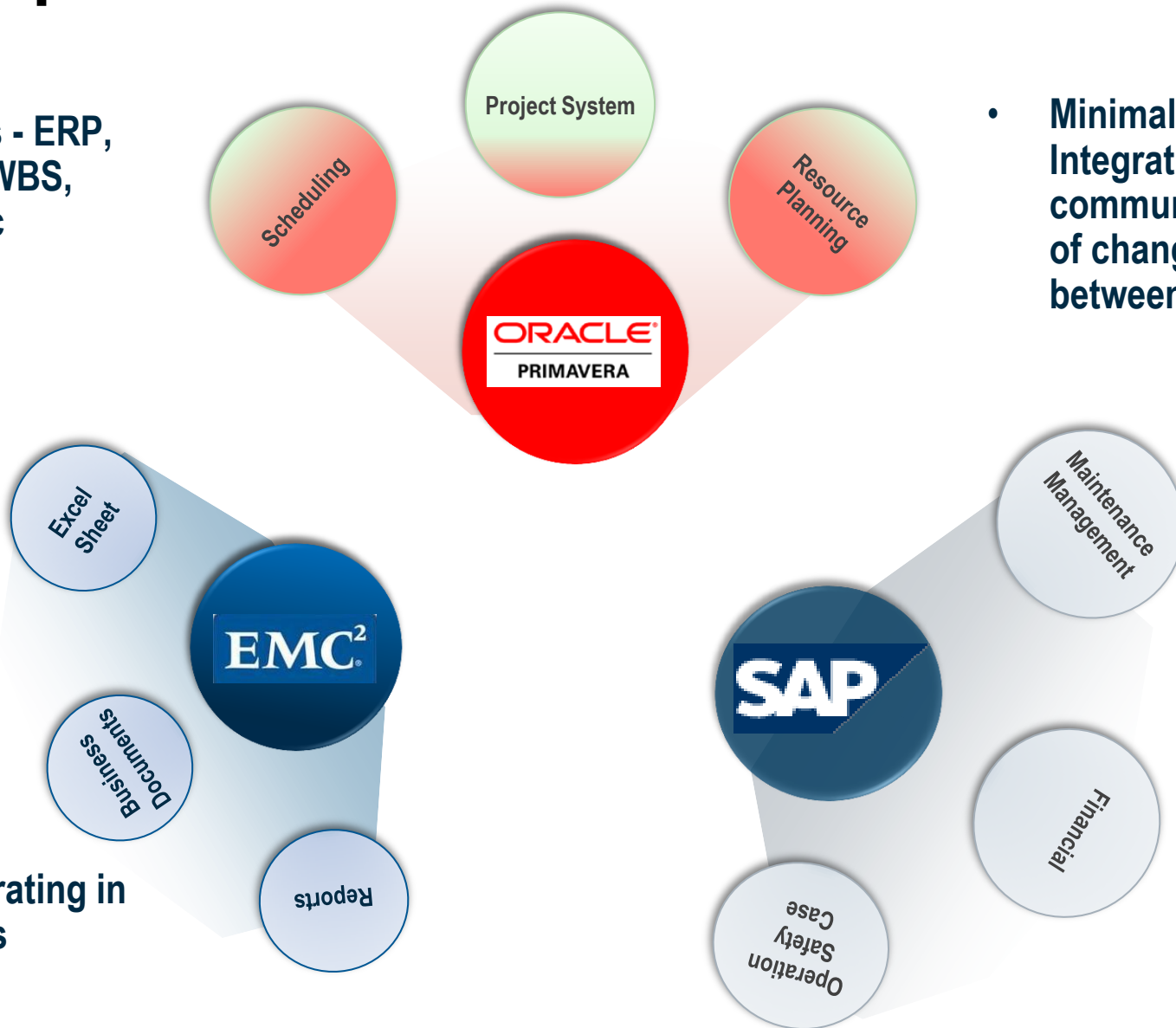
Integration and Interoperability

Key it once and connect or merge my information with your information



Silo Operation

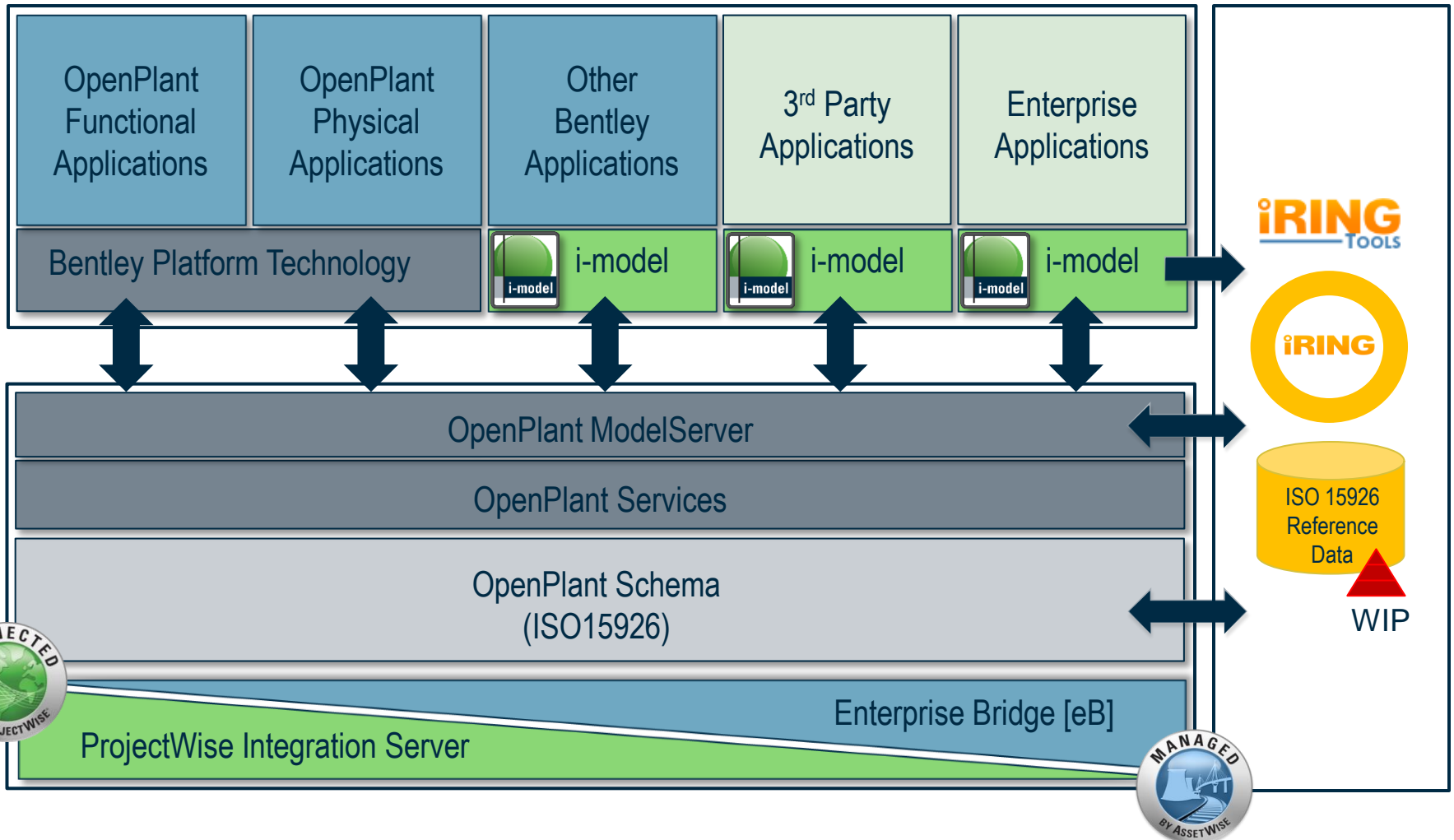
- Multiple Systems - ERP, EMMS, WBS, CAD, etc



- Minimal Integration - No communication of change between apps

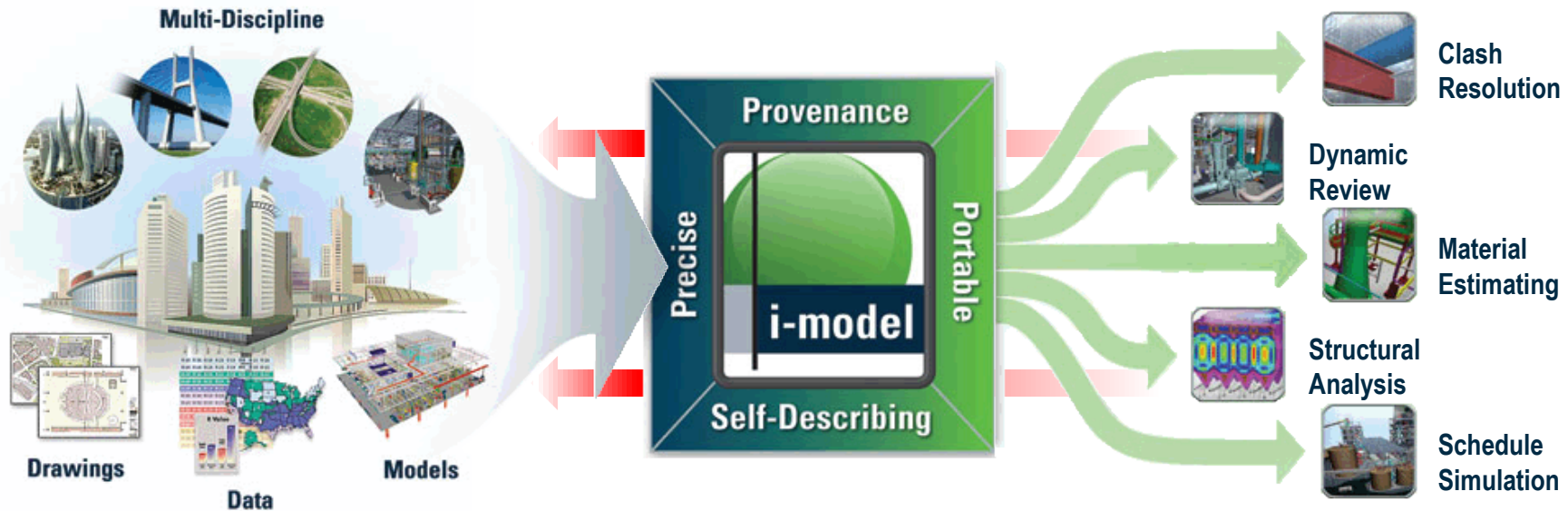
- Operating in Silos

Tying into the OpenPlant Design Environment



i-model Container

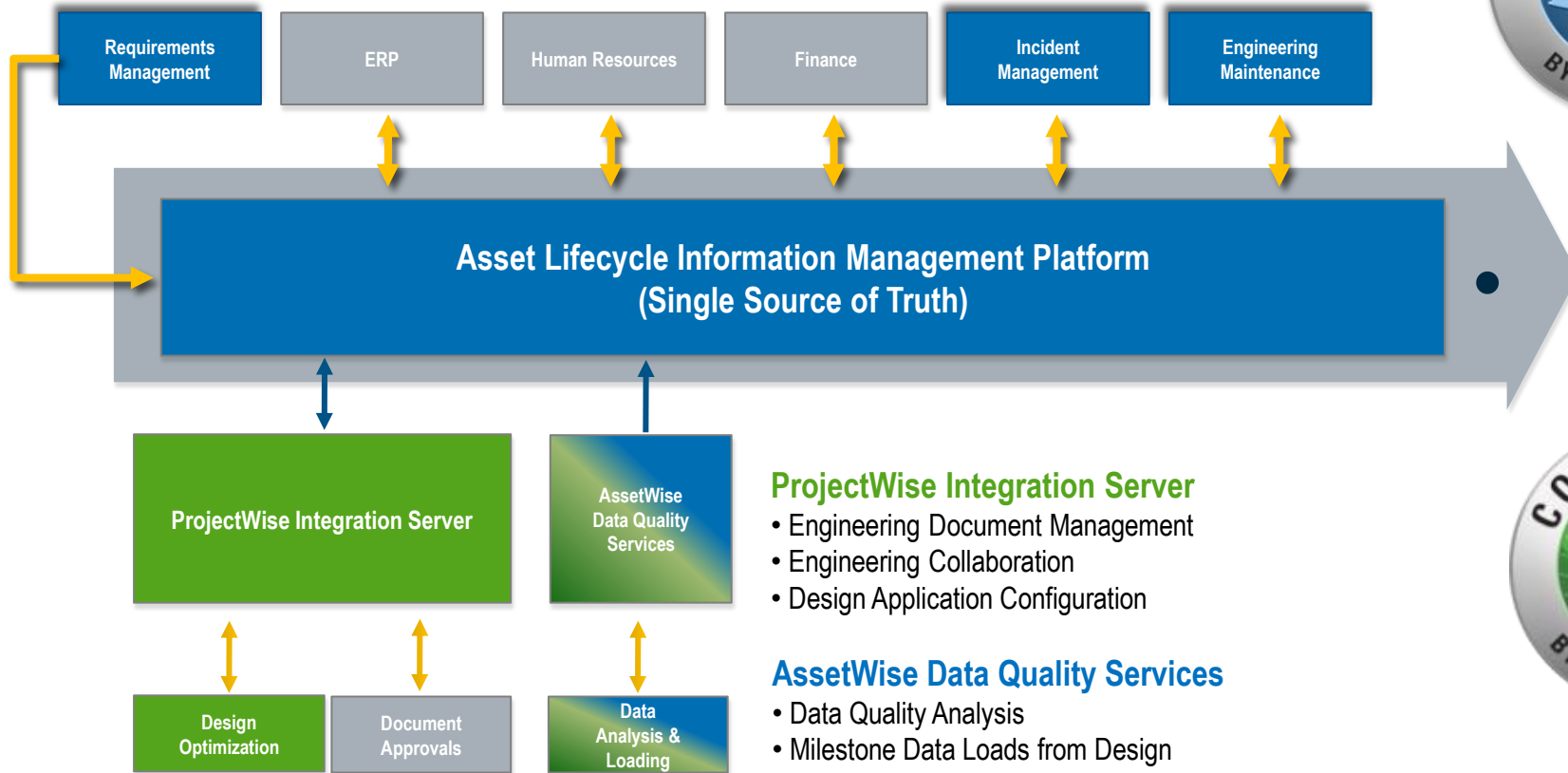
Open Information Exchange



Infrastructure for Asset Engineering and Operations

Asset Operations

- Maintain
- Repair
- Compliance
- Safety
- Inspect
- Replace



ProjectWise Integration Server

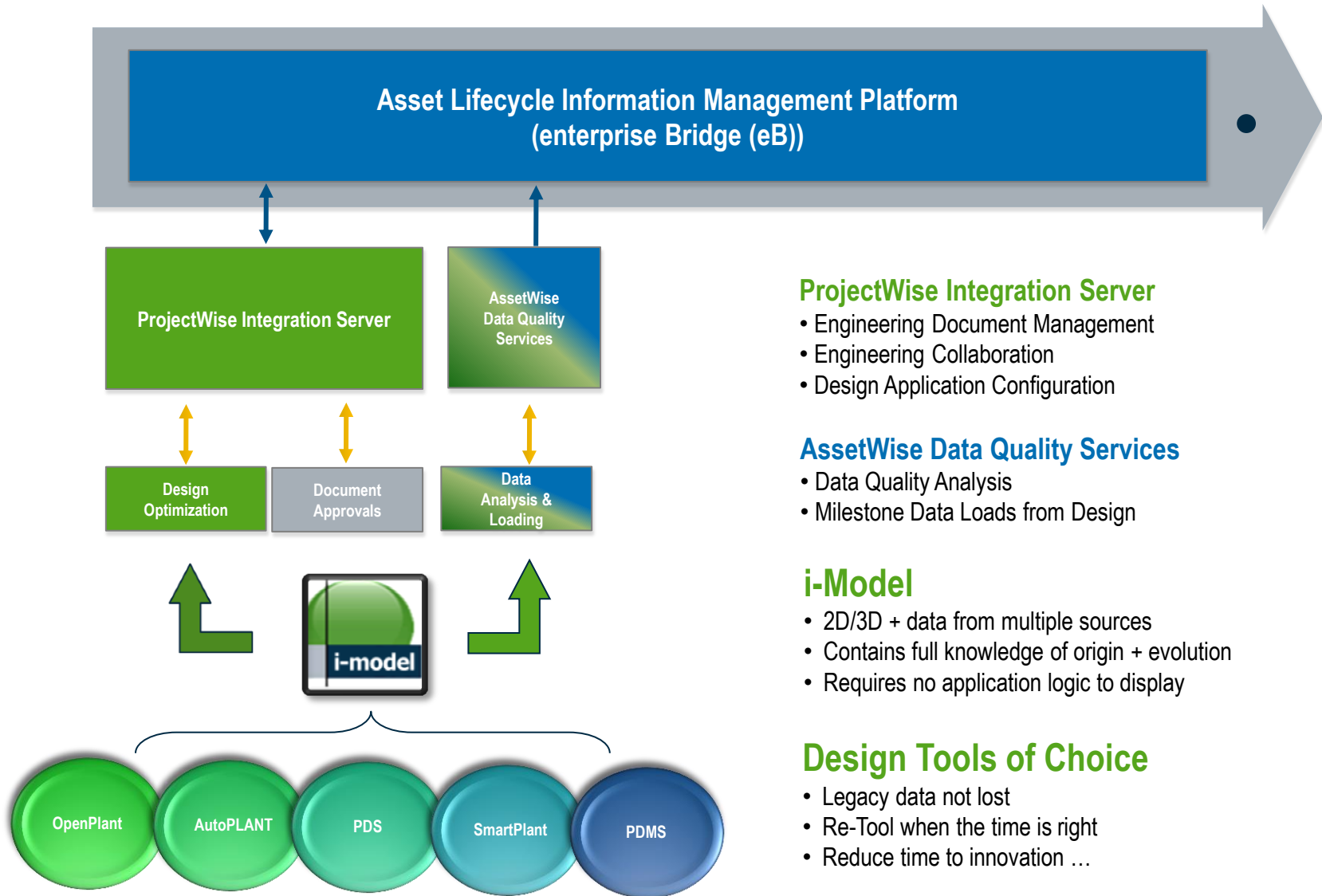
- Engineering Document Management
- Engineering Collaboration
- Design Application Configuration

AssetWise Data Quality Services

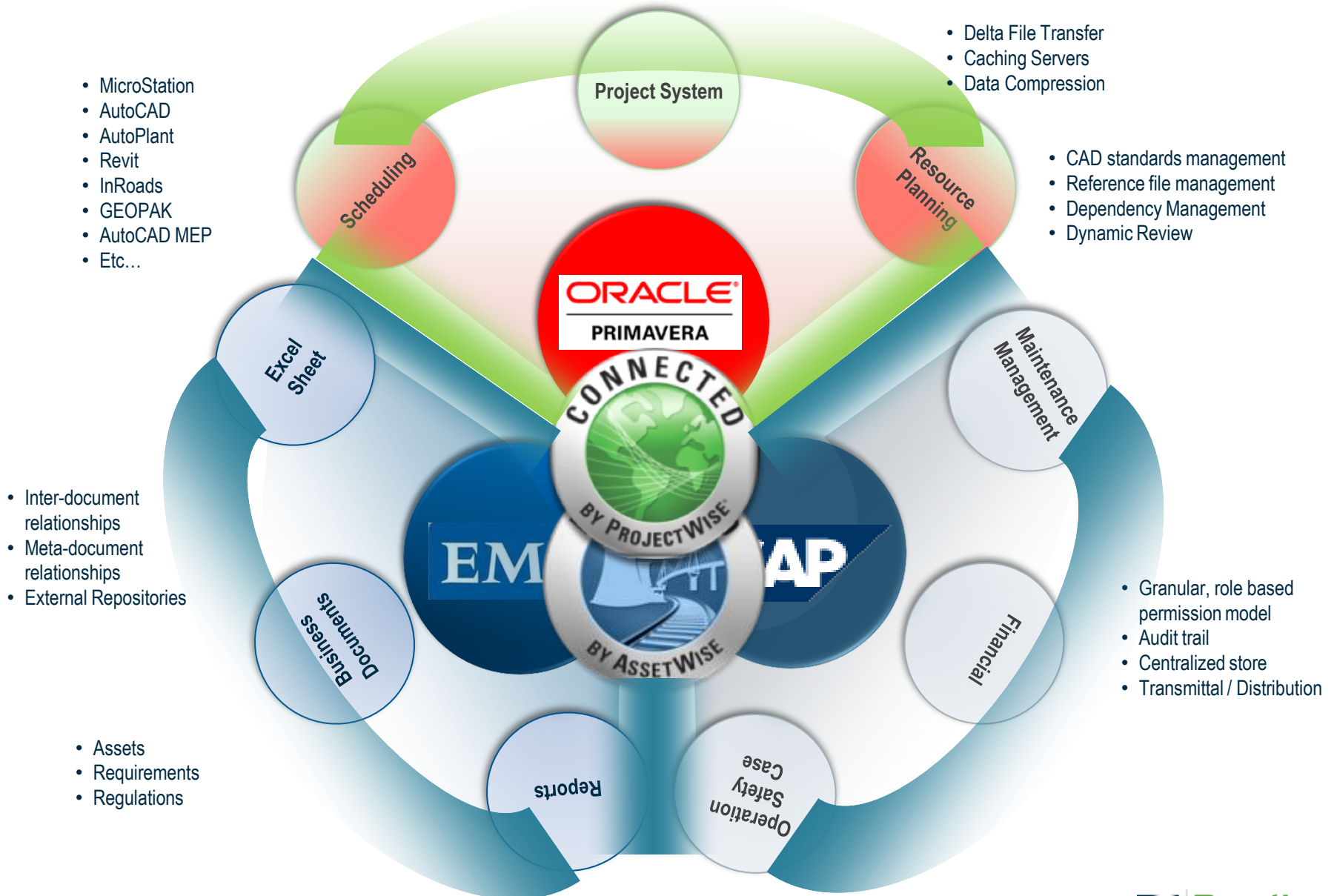
- Data Quality Analysis
- Milestone Data Loads from Design



Infrastructure for Asset Engineering and Operations



Interoperable Information Management Platforms



Thank You