

SmartPlant® Enterprise
Information Management



→ SmartPlant® Enterprise

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INDUSTRY CHALLENGES

Engineering, Procurement, and Construction Companies (EPCs)

At both ends of the upstream/downstream owner/operator spectrum, EPCs face taxing challenges. Through end-to-end contracts, EPCs can take advantage of total life cycle integration and information management strategies without the concerns normally associated with short duration projects. However, with this increased freedom comes the challenge of proper infrastructure selection and deployment to meet this window of opportunity.

For “business-as-usual” expansion, refurbishment, and automation projects, the benefits of integrated information management must be scalable to meet the needs of micro- and multi-threaded projects, in addition to mega-projects.

Owner/operators (O/Os)

Increasing fluctuation in commodity prices brought on by increased global demand against constrained production capacity will have a number of impacts on owner/operators. Upstream supply companies release capital for end-to-end rapid development construction projects for new or expanded facilities to increase supply-side feedstock. With rapid deployment, controlled handover and information control become even more critical if delays and overruns are to be avoided.

For downstream processing companies, costly feedstock drives the need to contain cost at every conceivable opportunity to maintain competitiveness. With a headcount being steadily reduced by retirement, natural attrition, outsourcing, downsizing, or automation, the goals to retain knowledge while increasing productivity and safety are diametrically opposed without good information management for decision support.

INTEGRATED INFORMATION MANAGEMENT

Process, power, and marine engineering is now a fully global market for execution and operation. This demands collaboration, delivery, and integration of information between heterogeneous systems in a secure and timely manner. Differentiation, security, and protection of knowledge capital will become more critical. When teams and virtual organizations engage the skills of low-cost/high-value distributed centers, it not only facilitates the rapid “pick-up,” re-orientation, and turnaround of tasks, but also enables fine-grained project control over stretched communication channels. Therefore, tools and infrastructure need to be as flexible as the business processes deployed. They also need to be as adaptable and adept at managing the small as well as the mega-project, and in doing so, they need to fully support standards for communication, security, and longevity. This is particularly true for the extended enterprise of multiple partners, suppliers, and owners collaborating on joint ventures.

Successful information management improves productivity through the identification, quantification, and delivery of valid, significant, and contextual information where:

- “Everything” is too much and “too little” is even worse
- Distance, applications, and systems infrastructure should not be the barrier or excuse. The only barriers to overcome should be “the desire to do more” and “contractual satisfaction.”

THE INTERGRAPH® SOLUTION

A growing number of EPCs and O/Os are deploying integrated information management. This move is fueled by a number of market dynamics. Intergraph provides the information management solution that empowers SmartPlant Enterprise integration – SmartPlant Foundation. This “e-Engineering Integration Hub” is multi-dimensional in its deployment capabilities, options, and benefits, such as:

Engineering Handover

SmartPlant Foundation greatly enhances handover. By keeping the traditional data warehouse or document vault from execution into operations, you can cut handover expense by as much as 40 percent and reduce handover time from weeks to days. SmartPlant Foundation consolidates and harmonizes data from multiple sources, including engineering partners and



“SmartPlant Foundation addresses a number of key requirements for Hyundai, including built-in best practices for key work processes and overall flexibility in a proven, commercial system. The SmartPlant Foundation implementation is aimed at better controlling engineering processes and thus improving Hyundai Engineering’s capabilities in executing global projects. Based on current functionality, we believe this is much more economical than developing the software internally.”

H.S. Han
General Manager Engineering Division
Hyundai Engineering Co. Ltd.

INTEGRATION IS CRITICAL

Ability	Tool	Benefit
Presentation Integration	Portal	Unify interface and information presentation to ensure rapid assimilation and understanding. Provide a "single point of access to the truth."
Data Integration	Repository	Consolidate and aggregate data from multiple heterogeneous sources to provide the "single reliable source of the truth."
Application Integration	Adaptors	Move consolidated information between applications.
Business Process Integration	Workflow	Take advantage of overarching delivery, collaboration control, and execution.
Extensible Composite Applications	Applets	Benefit from new applications that use a high-integrity repository.

equipment vendors, into a form compatible for uploading to operations systems that require engineering data.

Application Integration

SmartPlant adaptor tools reduce the risk of error between task-oriented applications through just-in-time data sharing. Benefit from the intelligence captured in one application to drive the content in another.

Extensible Collaborative Applications

You can take advantage of a high-integrity, consolidated data set without the cost and overhead of data duplication, replication, and synchronization – for example, SmartPlant Expert Project Completion System (PCS). This applet (like others in the SmartPlant Expert series) makes use of the existing SmartPlant Foundation repository. SmartPlant Expert PCS is an applet that manages the mechanical completions tests, and consolidates and tracks punch lists during the handovers between the construction, precommissioning, commissioning, and startup phases. Performing mechanical completions on top of the active engineering database provides a comprehensive, project-wide

view, as opposed to the rather limited, traditional site-oriented or site-specific completion approaches. Additionally, it enables continual visibility of project status, a capability not provided by traditional, standalone packages.

"Engineering Companion" Between Real-time and Plant ERP Systems

Benefit from a constant source of engineering truth, supporting maintenance, purchasing, and HAZOP functions. Minute-by-minute decisions that affect product quality and throughput are naturally supported by real-time systems. Longer term planning, scheduling, and optimization are supported by ERP. During the workflow, if there is a gap, decision support enabling in-depth analysis for where used, date used, and what-if analysis of the ever-changing plant configuration is provided, replacing the myriad of "island" systems consulted today.

Supplier Gateway for Technical Information

Technical information exchange with the supply chain complements the procurement processes and supports inventory optimization.

Continuous Improvement of the "Information Asset"

Brownfield re-engineering, de-bottlenecking, and turnarounds can be executed with minimum outage.

Client and Regulatory Remote Review Portal

SmartPlant Foundation provides a cheaper, easier, and more immediate solution than "being there" for the design and compliance review, without the need for the "designer's" tool.

Change Impact Analysis and Management with Configuration Control

Assess the cost, breadth, and depth of exposure before, during, and after change execution to ensure that nothing is missed when information is captured or measured.

Document Management, Document Control, Lists, and Sheets

Traditional documents and virtual data sheets and lists can be revised, versioned, cross-referenced, and controlled. A hybrid DMS, PDM, EDM, PLM, CM, and WF in one environment provides an innovative solution unmatched in the industry.

CONNECTIVITY AND CLARITY

Important aspects of the SmartPlant Enterprise are the freedoms to exert global command and control over integrated information:

- Workshare between integrated remote people and systems alleviates discontinuity, manages inconsistency, and exercises finer-grained control
- Collaboration and data isolation respect the ownership and IPR issues of partners
- Solutions with appropriate and flexible integration mechanisms improve collaboration
- Support for broad and narrow band as well as disrupted communication channels matches a wide variety of infrastructure needs

These are just some of the principles driving the SmartPlant Enterprise strategy today and in the future. It supports integrity on three fronts:

- **Design basis**
What was planned to be there
- **Operating basis**
The physical asset, or what is actually there
- **License basis**
What is required for regulation and safety to be there



"As our e-engineering hub, SmartPlant Foundation will help ensure that Clough further improves control of engineering information and documentation. Clough and its clients will be using the same system, configured for our own respective businesses, thereby greatly improving data handover. Clough's ultimate goal is to integrate our Intergraph engineering and procurement solutions to shorten schedules and optimize resources to better manage project delivery."

Simon High
CEO
Clough Services

WHY INVEST IN INTEGRATED INFORMATION MANAGEMENT?

Integrated Information Management delivers three major business benefits:

■ **Reduced Time-To-Market (TTM)**

Design and construct the plant asset, avoiding schedule slippage, within budget and operating at capacity, to meet the market window of opportunity

■ **Maximized Time-In-Market (TIM)**

Reduce unplanned outages and startup delays, optimize engineering turnaround planning, and prevent safety, hazard, and regulatory risks that would otherwise halt production

■ **Optimized Operating Parameters (OOP)**

Make the most of what you have the least of – time, resources, and windows of opportunity – to gain more of what you need: throughput, safety, and profit

Each of these benefits will mean something different to you depending on your role, your organization, and where in the plant life cycle you operate. But one thing is certain – all of these differentiators are similarly affected by the highly interrelated and interdependent, volatile, and distributed information that is plant information. How you manage this information is the single greatest business differentiator.

About Intergraph

Intergraph Corporation is the leading global provider of spatial information management (SIM) software. Security organizations, businesses, and governments in more than 60 countries rely on the company's spatial technology and services to make better and faster operational decisions. Intergraph's customers organize vast amounts of complex data into understandable visual representations, creating intelligent maps, managing assets, building and operating better plants and ships, and protecting critical infrastructure and millions of people around the world.

THE INTEGRATED SMARTPLANT FAMILY

Beyond standalone use, Information Management is also part of the SmartPlant Enterprise. SmartPlant Enterprise offers best-in-class applications and a low-risk, step-wise implementation approach to realizing a truly integrated engineering enterprise. SmartPlant Enterprise includes:

- 3D Modeling & Visualization
- Information Management
- Engineering & Schematics
- Materials Management & Project Controls
- SmartPlant Alliance Program

NEXT STEPS

There is no right or wrong time to start, and no problem too big or too small to benefit from the integrated Information Management solution. Keep the big picture in mind when deploying a solution, because the business constraints you find today will not be the same tomorrow. Be pragmatic and evolutionary. To discover how this solution could help your business, contact us today.

What our customers say

“Fluor sees significant potential in SmartPlant Enterprise to provide improvements in data integration. Our investment in this execution platform is a key part of Fluor’s strategy to maintain industry leadership in improving execution excellence through the use of specific technologies.”

Glenn Gilkey
Vice President, Project Execution Services
Fluor Corporation

“Intergraph’s strategic direction and technology for engineering, information integration and management... is consistent with Air Products’ continuing innovation and needs.”

Robert Conley
Vice President, Global Engineering
Air Products

“Suppliers now send their information to Statoil only once and it will be held only once. The volume of final documentation required in user manuals for plant operations has typically been reduced by more than 80 percent by stripping out standard equipment data and documentation, and it is bringing large benefits to Procurement.”

Bjørn Henrik Magnus
PIM Advisor
Statoil

“SmartPlant Foundation will provide an increased value for partners and customers by enabling concurrent multi-site engineering based on an integrated framework supporting global operations. Engineering data stored in non-proprietary formats will add significant value to our relationships with strategic partners, handover to owner/operator organizations as well as to general reuse of data.”

Trond Bynes
Vice President for Operations & Facilities
Vetco Aibel



HEADQUARTERS

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Asia-Pacific 61-2-9929-2888

Europe

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Northern 47-66-98-58-58
Southern 33-1-45-60-31-71
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