

# SMARTPLANT<sup>®</sup> ENTERPRISE

INFORMATION MANAGEMENT









# 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. 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 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



**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.

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**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

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## 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.   |

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 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 turn-arounds 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 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 revisioned, versioned, cross-referenced, and controlled. A hybrid DMS, PDM, EDM, PLM, CM, and WF in a single 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

## 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 turn-around 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.

## 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 and Visualization
- Information Management
- Engineering and Schematics
- Procurement, Fabrication, and Construction
- 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 our 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 Intergraph today.





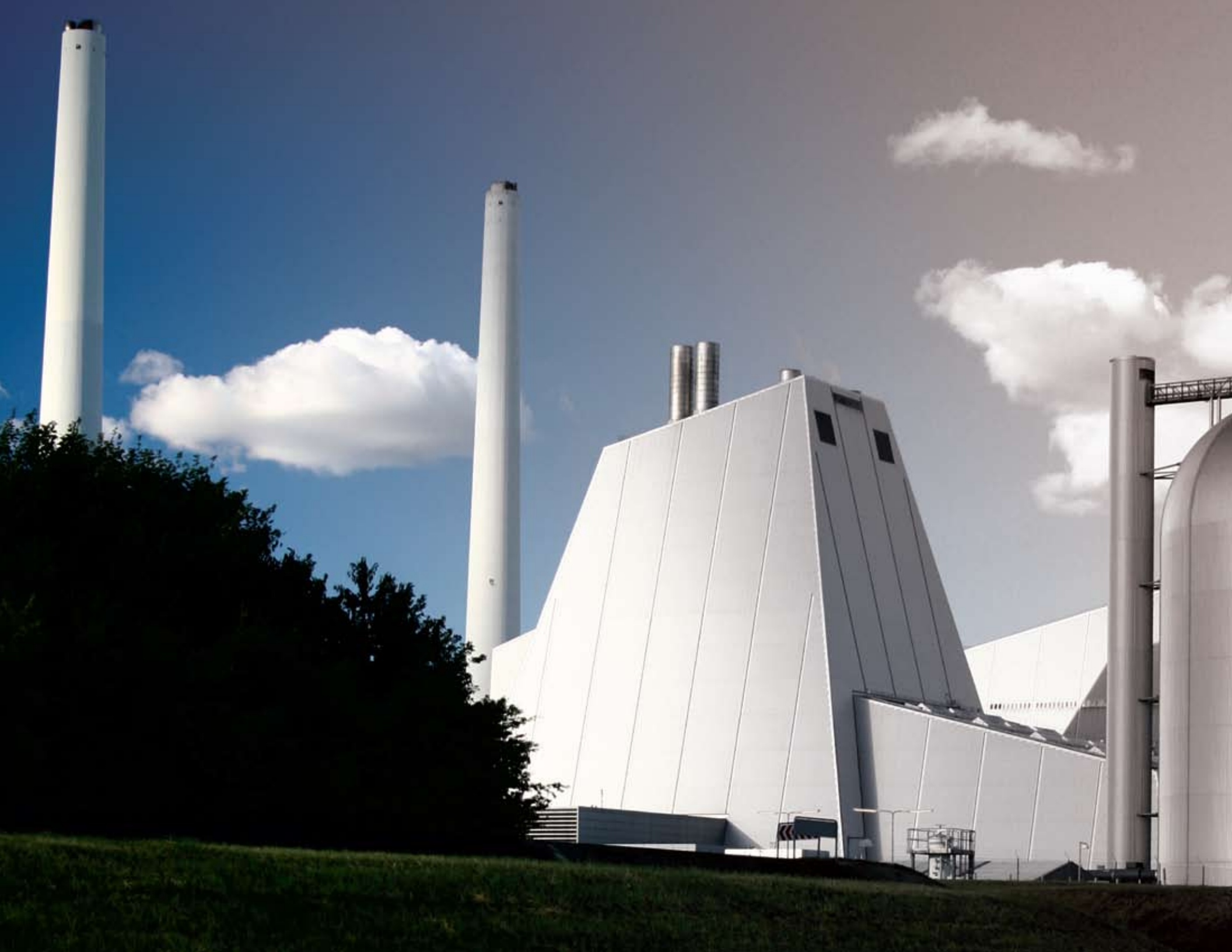


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**Fluor sees significant potential in SmartPlant Enterprise to provide improvements in data integration. Our investment in this execution platform is a key part of Fluor’s strategy to maintain industry leadership in improving execution excellence through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

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Glenn Gilkey  
Vice President, Project Execution Services  
Fluor Corporation





# ABOUT INTERGRAPH

Intergraph is the leading global provider of engineering and geospatial software that enables customers to visualize complex data. Businesses and governments in more than 60 countries rely on Intergraph's industry-specific software to organize vast amounts of data into understandable visual representations and actionable intelligence. Intergraph's software and services empower customers to build and operate more efficient plants and ships, create intelligent maps, and protect critical infrastructure and millions of people around the world.

Intergraph operates through two divisions: Process, Power & Marine (PP&M) and Security, Government & Infrastructure (SG&I). Intergraph PP&M provides enterprise engineering software for the design, construction, and operation of plants, ships, and offshore facilities. Intergraph SG&I provides geospatially powered solutions to the defense and intelligence, public safety and security, government, transportation, photogrammetry, utilities, and communications industries.

For more information, visit [www.intergraph.com](http://www.intergraph.com).



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**SOLUTION**



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