

SmartPlant® Enterprise for Owner Operators

Leveraging the Engineering Design Basis Across the Plant Life Cycle



Business Case

Owner operators currently face unprecedented demands to:

- Deliver multiple new plants and major expansions of existing facilities more rapidly while utilizing finite resources
- Maintain adequate safety levels
- Deliver projects on schedule and within rigid budget constraints
- Manage time to market and deliver a high quality product in a competitive environment
- Create facilities flexible enough to meet market demands in production and product offerings
- Avoid adversely impacting the functionality and production of the existing plant while undertaking complex plant modifications
- Maintain safe, predictable production levels from existing plants, at the lowest sustainable cost, even though demand for output has never been higher
- Demonstrate to regulatory authorities the integrity of plant-maintained information
- Provide assurance that the owner operator's "virtual plant," in-plant documentation, and IT systems are consistent with the current physical state of the plant in operation
- Demonstrate that a controlled management of change (MOC) process with auditable traceability is enforced within plant operations
- Retain plant knowledge and experience in the face of increasing rates of workforce retirement

One barrier owner operators face in meeting all of these challenges is interoperability. Interoperability can be defined as the ability to manage and communicate electronic product and project data between collaborating firms and within an individual company's design, construction, maintenance, and business process systems.



The 2004 National Institute of Standards and Technology (NIST) report¹, which examined the cost of inadequate interoperability in the U.S. capital facilities industry alone, estimated the cost of poor interoperability across the complete design, build, and operate supply chain to be US\$15.8 billion annually for a total capital expenditure of US\$374 billion, or a loss of 4.2 percent of the installed cost.

Two-thirds of this loss is estimated to be borne by owner operators and represents a 2.8 percent ongoing loss on Return on Capital Invested (ROCI). For a large refinery, this represents a loss of millions of dollars each year.

Owner operators must find a way to address these interoperability issues, while focusing on their core businesses of exploration and production. SmartPlant Enterprise for Owner Operators has been designed to help owner operators address the issue of interoperability by providing prepackaged solutions that can be rapidly rolled out incorporating customer-specific requirements at low risk.

KEY FEATURES

- Rapid, low-risk implementation ensured by leveraging industry-leading, proven Intergraph® Smart Technology tools and out-of-the-box preconfigured, best-practice solutions for key owner operator work processes
- Flexibility to rapidly incorporate customer-specific requirements within predefined work processes
- Synchronization of information in maintenance, reliability, and other operations' systems to reflect changes to the dynamic plant design basis
- Reduced training needs, discovery time, and better decision making supported through the universal, user-friendly, role-based Web portal providing seamless access to data across operations' systems
- Flexible platform for third-party and legacy tool integration using leading service-oriented architectures
- Integration and interoperability provided through adoption of leading integration technologies from SAP® and Microsoft®
- Simple access to data through filtered queries and 2D/3D graphical user interface
- Traceability and auditability for key owner operator work processes such as management of change
- Seamless integration with leading reliability systems, including Meridium, will be offered

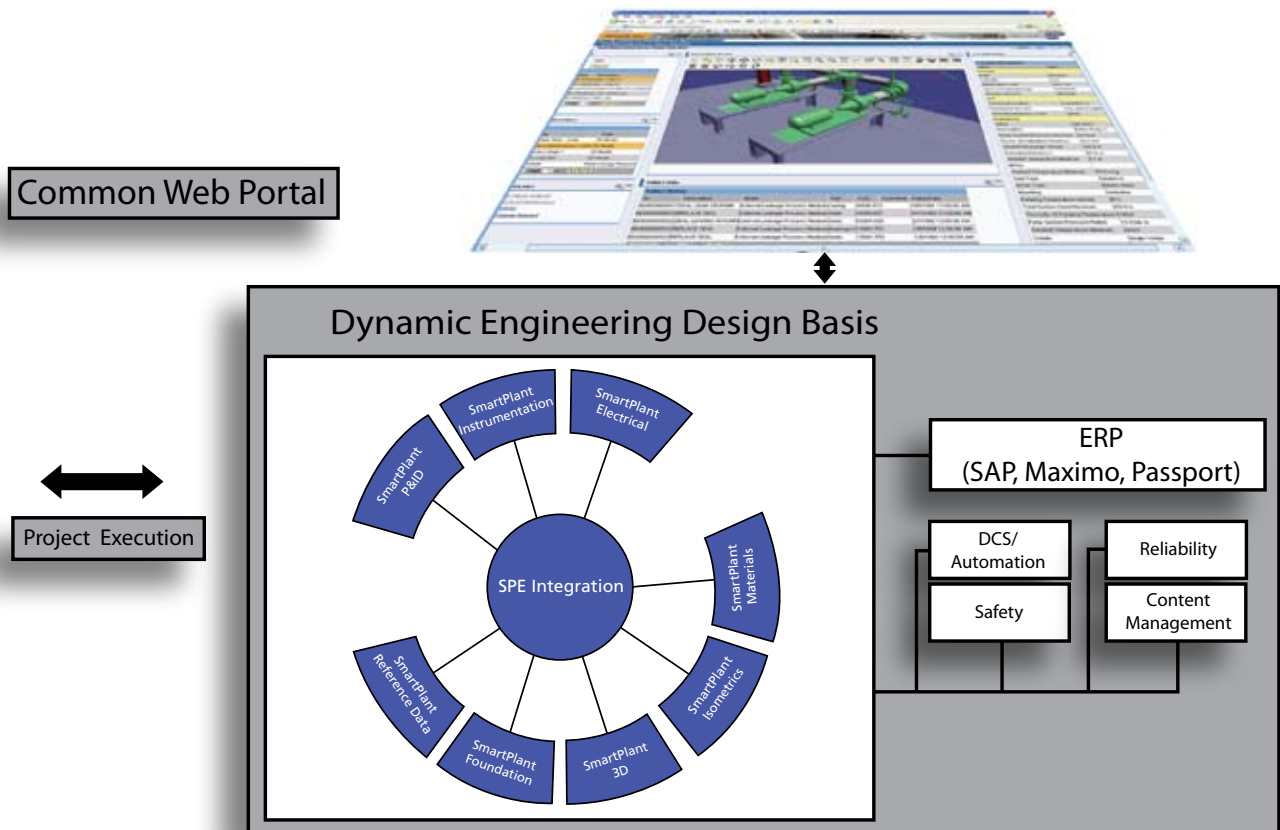
Planned enhancements in 2008 include:

- Improved information flow across the project value chain supported by a platform for seamless collaboration between the owner operator, contractors, and suppliers
- Secure, controlled management of data take-on from contractors and suppliers using a staging area for the completion and verification of information before release to operations' systems
- Management of key project execution work processes, such as MOC for projects, interface management, non-conformity/waiver management, and technical query management

¹ *Cost Analysis of Inadequate Interoperability in the U.S. Capital Facilities Industry*, National Institute of Standards and Technology, NIST GCR-04-867, August 2004.

New solution for managing the engineering design basis

Throughout the years, many leading owner operators have chosen Intergraph's industry-leading SmartPlant Enterprise integrated suite of tools to manage their dynamic engineering design basis. Building on this success, Intergraph introduces SmartPlant Enterprise for Owner Operators (SPO), offering preconfigured work processes covering the complete plant life cycle, interoperability with maintenance and other operations' systems, and a common Web portal designed for owner operators.



POWERED BY LEADING INTEGRATION TECHNOLOGIES

SmartPlant Enterprise for Owner Operators uses leading integration technologies such as SAP NetWeaver® and Microsoft SharePoint®. These technologies power the synchronization of data between the engineering design basis and other operations' systems, including legacy systems, and provide the role-based Web portal.

MANAGING CHANGE TO ENSURE CONSISTENCY WITH ERP AND OTHER OPERATIONS' SYSTEMS

SmartPlant Enterprise for Owner Operators will offer interoperability between SmartPlant Enterprise and other operations' enterprise systems. This ensures that information in enterprise resource planning (ERP), reliability, process safety, digital control systems, and more is automatically maintained to reflect change in the dynamic engineering design basis.

Information from Intergraph's SmartPlant Enterprise and other operations' systems will be seamlessly presented to the user via a common, role-based Web portal. This portal will filter and structure search results based upon user role and privileges, reducing discovery time and leading to better, faster decision making.

SUPPORTING ENGINEERING AND MANAGING PROJECT EXECUTION

During the plant design, construction, and completion/start-up phase of greenfield or brownfield projects, SmartPlant Enterprise for Owner Operators will provide preconfigured processes to support engineering and project execution work processes. These include document and data interdisciplinary review, MOC, interface management, non-conformities/waiver management, technical queries, and more.

Collaboration with contractors and suppliers will be supported by bidirectional data exchange mechanisms facilitating seamless hand-off of workflows throughout the project value chain. This reduces the time required to process incoming tasks, providing better traceability and reducing the effort related to handover of data to operations.

POWERED BY SAP NETWEAVER, CERTIFIED BY SAP

SPO supports SAP NetWeaver and integration with SAP Service and Asset Management. The SmartPlant Enterprise for Owner Operators integration with SAP has been awarded "Powered by SAP NetWeaver" certification status by SAP AG. SmartPlant Enterprise for Owner Operators exploits the power of the SAP NetWeaver platform to help ensure data synchronization and interoperability between Intergraph's industry-leading plant engineering automation suite and the enterprise asset management capabilities of the SAP Service and Asset Management solution. SmartPlant Enterprise used with SAP Service and Asset Management (through integration with SAP ERP) helps ensure synchronization between the plant engineering and plant maintenance environments employing best-practice work processes for plant management of change.

The SAP Integration and Certification Center has certified that SmartPlant Enterprise for Owner Operators properly integrates with the SAP NetWeaver Exchange Infrastructure (SAP NetWeaver XI) component of the SAP NetWeaver platform. It exchanges critical data with instances of the SAP Business Suite family of solutions and is integrated successfully with business functions exposed through the SAP NetWeaver Portal.

SAP® Certified
Powered by SAP NetWeaver®

A secure Web portal will promote simple access to the “single source of truth” where information and documentation from across the project is assembled in a common, globally accessible repository, eliminating the need for traditional document and data distribution.

These tools are integrated around a common, plant-centric data model and integration hub, ensuring data consistency between tools and facilitating low risk, rapid implementation.

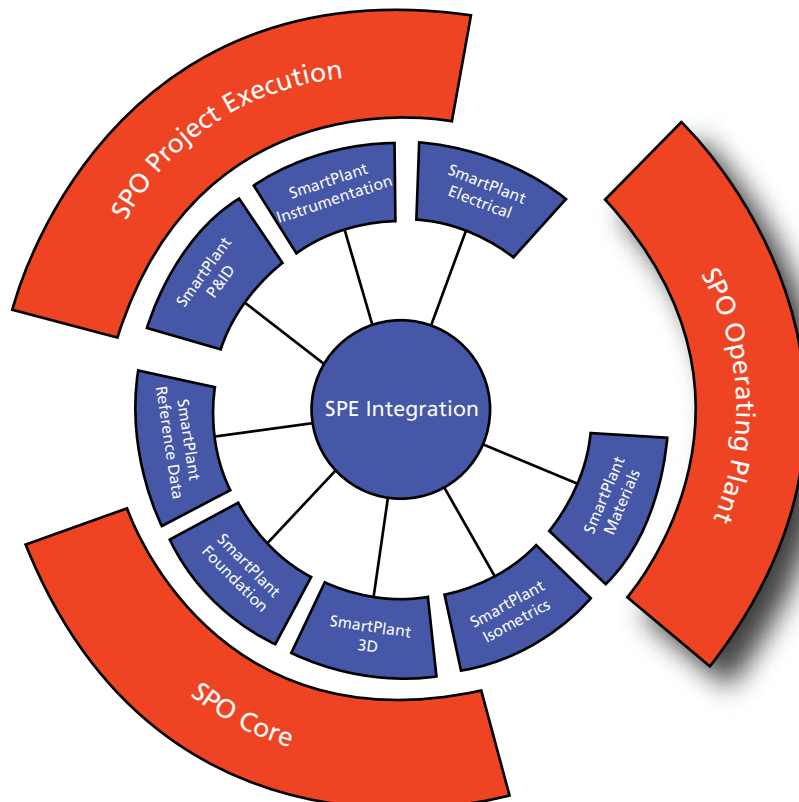
COMMON PLANT-CENTRIC DATA MODEL FOR LOW RISK, RAPID IMPLEMENTATION

SmartPlant Enterprise for Owner Operators is built on Intergraph’s proven, industry-leading, multi-discipline toolset.

The SmartPlant Enterprise for Owner Operators Core Solution includes a site license for SmartPlant Foundation, SmartPlant Reference Data, SmartPlant Isometrics (formerly I-Sketch™), and SmartSketch®. Other integrated SmartPlant Enterprise tools such as SmartPlant 3D, SmartPlant Instrumentation, SmartPlant Electrical, and SmartPlant P&ID are licensed separately and can be included as required.

“SmartPlant Enterprise for Owner Operators is designed to enable asset owners to fully exploit this engineering design data to manage asset performance and to give them a means to ensure proper maintenance of information integrity across the owner operator system landscape.”

Sid Snitkin, Ph.D.
Vice President and General Manager,
Enterprise Advisory Services
ARC Advisory Group

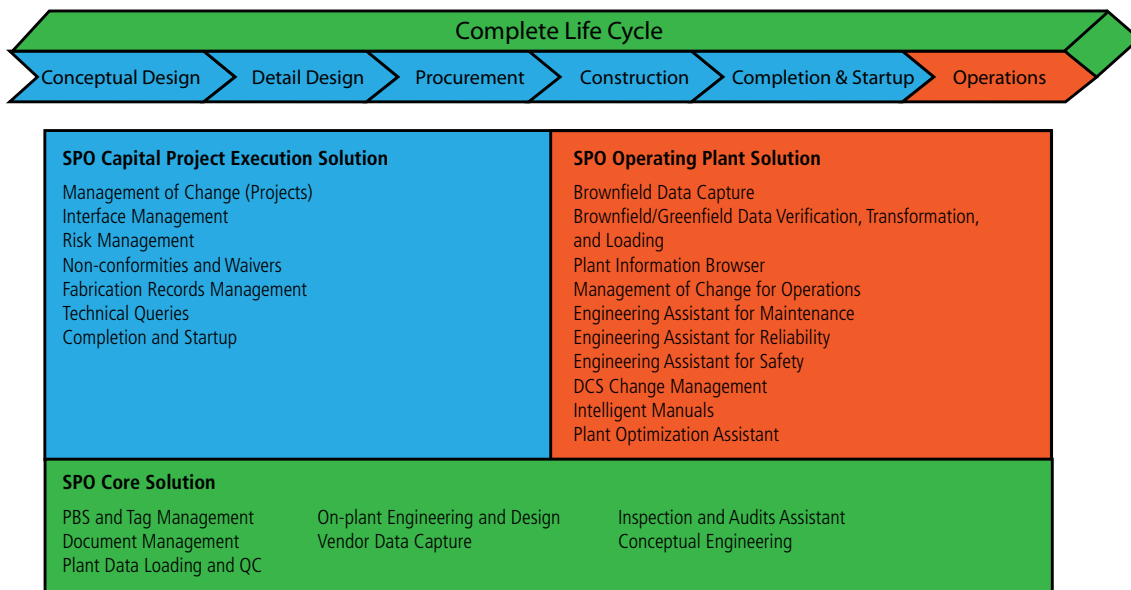


Solutions support the complete owner operator life cycle

SmartPlant Enterprise for Owner Operators is comprised of three solutions:

Solution	Work processes covered
SPO Core Solution	Complete plant life cycle – this solution is a prerequisite for the other two solutions
SPO Operating Plant Solution	Data capture from projects, transformation, loading, and operations work processes
SPO Capital Project Execution Solution – planned release in 2008	Greenfield and brownfield project execution

Each SPO solution will include business packages that offer preconfigured owner operator work processes. These business packages will be released in phases and are expected to offer a 60- to 80- percent fit for most owner operators. The work processes can be easily and rapidly adjusted to meet the specific needs of any customer.









Headquarters

P.O. Box 240000

Huntsville, AL 35813

256-730-2000

www.intergraph.com

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