Digital Transformation
Let our X Revolutionize your why
Leading the Way:
Our customers’ perspective on digital transformation
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**DID YOU KNOW...**

An expanded digital version of Insight magazine with added content can be found online. [bit.ly/PPM-Insight](http://bit.ly/PPM-Insight)
Bridging the Gap

I have been fortunate to speak to many customers over the past couple of months, and it doesn’t seem to matter if they are from an EPC or owner operator, one theme recurs consistently: Digital Transformation.

In some respects, in our industry, this is a new concept or perhaps a new term for something that has been more widely understood. Either way, ours is an industry that has been slower than the norm to adopt and slower to realize the benefits.

There are many reasons, and some are not at all trivial. Constructing complex assets is a seriously challenging pursuit, and getting it right is of paramount importance. It supersedes the latest and greatest tech fad, and it is far more than being able to illustrate innovation.

Given what is at stake, it is understandable that tried and true work processes have been left untransformed. Let’s face it … there is no safe space for testing new processes where human and environmental safety is concerned.

With the advent of more sophisticated systems, artificial intelligence and very detailed simulations, we are closer than ever to very-safe innovation. And hearing from our customers, this is an area of high demand. Businesses are sold on the digital shift; the greater challenge lies in making it happen.

The focus of this issue of Insight concentrates on this domain, and we highlight the strides we are taking with customers to bridge the gap between the possible and the actual. We are continuing the journey of being a strategic digital partner for our customers, and we are excited about what we will achieve together.

Best Regards,
HxGN SDx™

DIGITALLY TRANSFORM YOUR ASSET LIFECYCLE

HxGN SDx™ is a modular, cloud-based asset lifecycle information management (ALIM) solution that optimizes efficiency, improves profitability, and ensures safety throughout the facility lifecycle. A web-based, data-centric SaaS solution, HxGN SDx creates a trustworthy digital twin that is intelligently connected to your work processes. Compliant with the CFIHOS international standard, HxGN SDx leverages the data within the digital twin to provide value-added work processes covering the complete facility lifecycle, improving project and operational efficiency while reducing risk. It is interoperable with engineering design tools and other operations systems to ensure consistent, complete and correct engineering master data. It provides facility operators a vastly improved way of working.

hexagonppm.com
The Three D’s are consuming conversation within the technology community today: *Digitization, Digitalization, Digital Transformation.*

You can’t get to one without the other.

Companies involved in the engineering, procurement, construction, operation and maintenance of large industrial facilities need to recognize where they are along this line of progression before they can chart a path to the finish line of the safest, most efficient assets possible.

We’re not talking about simply enhancing or refining the way customers design, build and manage their businesses. This is a substantial process transformation from start to end.
Hexagon PPM President Mattias Stenberg contemplates this evolution daily as he meets with clients and software developers to forge an advantageous transition.

**Insight:** On the most basic level, explain the difference in digitization, digitalization and digital transformation.

**STENBERG:** Digitization is that first step of making data digital, of creating a .pdf with intelligent tags so that you can easily locate the data. Digitalization is when you merge that smart data with other technologies, like artificial intelligence or advanced analytics techniques. And with digital transformation, you connect digitalization across the enterprise.

You know, 36 percent of companies in our industries say they are employing a big data and IoT strategy, but only 13 percent say they make use of intelligent data. There is a lot of room to help customers make this transition.

**Insight:** How can PPM help our customers take their digitized data and make it more valuable?

**STENBERG:** A lot of times, people think they have to go out and create new data. Much of the time, the data is already there. Companies have gigabytes and terabytes of data. We have solutions through our HxGN SDx™ offering to find the data, make it intelligent and searchable. Our customers have to tell us what they want to get out of their data. You can teach AI to play chess because the rules are set; you know what success looks like. Where AI doesn't work is if you don’t specify the problem and you don’t determine what is considered winning.

**Insight:** So, we have to glean this from our clients? We can’t just hand them a solution to plug in?

**STENBERG:** Right. HxGN SDx is our next-generation information management platform. We have taken our 30 years’ experience in the IM space and combined some 20 to 25 products into one platform, using the latest infrastructure and visualization technology. We have strong feature functions and an excellent user interface.

**Insight:** How important is updating the user interface?

**STENBERG:** We’ve always provided a lot of data, but where the world is going, it is important that solutions aren’t only technically capable but easy to use. That is what the modern user expects. We are making large investments in that.

**Insight:** Is the user interface more important to owner operators than EPCs?

**STENBERG:** In the past we’ve been mainly focused more on the technology and capability of our solutions. The owner operator market is one where ease of use is important because you don’t have as many “super users”; they have distinct roles, and they’re not using every feature. Each role must find data for those specific roles. It’s important to make it role-based. That is what is new in the SDx platform.

**Insight:** How are Hexagon acquisitions impacting what PPM can provide its clients?

**STENBERG:** In October 2017 we acquired Luciad, which provides a 5D platform, where you can visualize the plant for the owner, where all the workers are at any one moment in time, and you can connect that to a schedule of activities in the plant. That has immense safety implications. In January, we acquired IBS Continuum Edge, which we are marketing as Intergraph Smart® Completions. It’s a great solution for commissioning.

**Insight:** What was the strategy behind purchasing Continuum Edge?

**STENBERG:** If you look at our solutions stack, one of our unique selling points is that we are the only company in the world that has an interoperable, integrated solution from end to end of the facility’s lifecycle: from early design, to detail design, to procurement of materials, to fabrication and construction, and now completions, then on to operations and maintenance. We did not have completions in our offerings, and we felt it was a perfect fit. We are seeing lots of interest in Smart Completions. We’ve seen the pipeline double and then double again.

**Insight:** How does Intergraph Smart Cloud fit into all of this?

**STENBERG:** As the level of collaboration increases in the industries we serve, the need to have a single platform that’s easily accessible by contractors, partners and customers is becoming a must-have. Cloud is a prerequisite platform for future innovations including IoT, big data analytics, artificial intelligence and, of course, digital transformation.

Patricia McCarter is the senior content marketing manager at Hexagon PPM. She is based at corporate headquarters in Huntsville, Alabama, USA.
Let our X revolutionize your why

Digitization
= data capture

Digitalization
= captured data is used to improve a process

Digital Transformation
= optimal efficiency is achieved by digitalizing processes across a business
Digital transformation doesn’t have to be daunting

Charles Darwin might have been on to something. The biologist noted more than 150 years ago that natural selection favors the adaptable. Today, we can see how commercial success favors those who are proactive in changing their work processes to incorporate new and better ways of doing things.

Herein lies the dilemma: How can large industrial projects and operations make the giant leap into digital transformation without introducing unintended risk?

Not all steps have to be huge. Wading – not diving – can be an effective methodology when contemplating the pool of digital transformation. A journey of 1,000 miles begins with a single step, right?

And digital transformation – also known as DX – is a journey ... one filled with multiple intertwined goals that ultimately leads to an optimized, hyper-connected business ecosystem. What you need is a roadmap, a strategy where human expectation is as important as technological components such as the cloud, artificial intelligence, the Internet of Things, mobility and big data analytics.

Imagine your workspace as a transparent sphere, with no silos or hard-lined boundaries that prevent you from seeing around the corner. Your access to your company’s progress and processes is limited only by your curiosity.
Don’t improve your handover process ... 

eliminate it!

It’s time to try something new.

The traditional approach to managing handover of project information is time-consuming and costly ... between 1 percent and 3 percent of total investment costs.
xGN SDx™ creates a digital thread running across all phases of a project to provide a comprehensive, sharable digital twin platform for digital transformation.

The HxGN SDx Projects module – developed over a two-year research and development effort with a U.S.-based oil and gas major – supports the planning, submission and validation of information deliverables on projects. It impacts both data-centric deliverables such as tag registers, cross references and 3D models, as well as document deliverables such as vendor documents.

Enter, the “digital twin” of the facility, which is incrementally built up from information submitted by contractors and vendors as the project evolves. 3D models from a wide range of suppliers can be converted and loaded into the system with the intelligence needed to support intelligent navigation with other data and 2D hot-spotted drawings and documents.

Data can also be extracted from information deliverables submitted as unstructured documents and drawings and be consolidated into the digital twin. All project stakeholders – contractors, vendors, authorities – can submit or access information based on access rights determined by a combination of role and organization using a zero-footprint web client that just needs access to a web browser.

The digital twin created during the project is automatically available for all SDx modules, including HxGN SDx Operations, which provides the processes for maintaining the digital twin during the operations phase. This means that the digital twin is carried forward intelligently through each stage of the project, avoiding the need to transfer or recreate information.

This eliminates the need for final project handover to operations.

During this phase, SDx can be integrated with other operational systems such as SAP EAM and OSIsoft PI System, which extends the scope of the digital twin to include maintenance and real-time data, thus ensuring consistent master data management.

SDx is based on the CFIHOS (Capital Facilities Information Handover Specification) for information handover, which defines the data and documents required by owner operators including:

- Data required to populate operational software systems
- Data and documents required for specific work processes
- Data and documents required for Process Safety Management compliance

SDx details the destination for all data and documents to be handed over from contractors, which maintains the form and format of load files required to keep operational software systems evergreen.

The CFIHOS standard and validation rules can easily and quickly be supplemented as needed to meet project/facility specific needs.

To help our customers implement CFIHOS-based handover successfully on their projects, PPM has prepared best practice guideline documents and specifications.

These documents are based on v1.3 of CFIHOS and will be updated as CFIHOS and our SDx platform evolve.

Adrian Park is the vice president for business development for Hexagon PPM’s information management solutions. He lives in Norway.
Digital transformation in the oil and gas industry is a hot topic. As an industry, we know why we need to do it – 86 percent of surveyed industry professionals understand the benefits – which leaves the big question of how to do it. It all comes down to building your digital transformation ecosystem, the wider setting in which you’re going to make things happen.

Digital transformation requires an ecosystem of partners, each an expert in their own area, collaborating with you and with each other. At the very least you will need:

- An industry/innovation consultant
- Change management expert
- Technology partners (solution providers, system integrators, etc.)

If some of these capabilities already exist in your business, plug them into the project. If not, you can fill the gaps with external partnerships. Our experience suggests that very few companies have the up-to-date, deep expertise in-house that is required to undertake a wide-ranging digital transformation project.

Discover how some of the biggest names in the oil and gas industry, as well as construction leaders, made digital transformation work for them.

// ROYAL DUTCH SHELL

A great example of an oil and gas company that has taken the lead on digital transformation by building a strong network of partners is Royal Dutch Shell.

When the outlook for oil and gas started to dim earlier this decade, Shell started building a digital transformation ecosystem of strategic suppliers and partners to facilitate the transition to a data-centric (rather than document-centric) operating environment. With the price of oil in free fall, the company recognized the importance of digital technologies in managing costs during the development and execution of major capital projects.

“The core challenge is driving down cost inflation in design, construction and engineering,” said Shell CEO, Ben van Beurden. “This won’t be easy, but it’s not impossible. Standardization and supply chain integration are key factors.

“We’re working to create an Integrated Engineering Environment (IEE).

“We expect key savings in design and engineering to come from the single-source availability of up-to-date design information … semi-automated data validation … and consistency checking across disciplines, locations and contractors.”
INNOVATION ON SHELL PRELUDE

Another example is Shell’s floating LNG behemoth, Prelude, which arrived at its destination offshore Western Australia early in 2017. As the world’s largest floating offshore facility, Prelude will be used to open new natural gas fields at sea – something that would not have been commercially viable prior to the launch of this vessel.

“We’ve taken the learnings from this and applied them to potential projects for the future,” said van Beurden. “We now have a standardized design. And we can add different pre-designed topside modules and offloading systems, depending on the composition and location of the gas reservoir.

“Working with our strategic suppliers on topics like replication, standardization and scope rationalization, the Prelude project led to spin-offs like FLNG Lean.”

// PETRONAS

Malaysia’s state energy company, Petronas, is also at the forefront of oil and gas digital innovation. The company has taken a “step change,” or breakthrough approach, to harnessing digital technology to boost efficiency, reliability, safety and commercial excellence, with a focus on experimentation and collaboration.

In the early years of this decade, Petronas recognized the importance of good, clean data and its role in improving operational efficiency and implemented a project to ensure readiness. The benefits include asset integrity and process safety, improved maintenance management, cost reduction, increased production and decommissioning preparedness.

The first step was to collect laser scan data for its downstream assets, a major undertaking that took the company’s Group Technical Solutions division more than five years. In 2015, laser scan work commenced on its offshore assets. The data was then migrated into Petronas Engineering Data Management System (P-EDMS), a web-based engineering design and data management system that leverages a suite of Intergraph Smart solutions.

BENEFITS OF AN INTEGRATED DATA MANAGEMENT SYSTEM

Petronas’ P-EDMS provides a single platform to integrate and manage a range of engineering applications and solutions. It is customized for the company’s applications and is fully configured to Petronas technical standards.

It gives all employees and contractors the ability to access and work on the same data, which can be accessed anywhere, anytime. Universal Management of Change (MoC) is a key benefit of the platform, Petronas’ Mohd Nizam Mohd Nasir told the Digital Energy Journal conference.

“When we do any engineering design changes – for example, we replace a compressor – it is automatically updated into SAP. That is the beauty of it,” he said. “We want to ensure efficient (data) handover from design from development to operation to maintenance.”

Another benefit is minimizing the time employees spend searching for data. For example, when relying on paper drawings and documents to conduct an offshore inspection, it can take up to four weeks just to find the required information.

A dynamic information management system such as P-EDMS gives you access to the documents in “seconds,” Nasir said, allowing engineers and other key personnel to focus on their core function, rather than searching for documents.
Enterprise-wide digital transformation as part of a major change initiative has proved successful for Shell and Petronas. What about companies and contractors looking to drive digital change within a smaller scope – claiming incremental gains by digitalizing processes, for example?

Let’s step outside the oil and gas industry and look at another sector facing similar challenges – construction.

U.S.-based electrical contractor Corbins Electric strives to offer its clients state-of-the-art technologies and lean construction best practices and is considered a leader in commercial and heavy industrial projects. However, Corbin’s internal processes did not reflect the innovative solutions offered to clients, says business solutions manager J.D. Martin.

“Like many contractors, we were burdened by paperwork,” said Martin. “In construction, our success is defined by our ability to complete a job with less hours than was used to bid it – yet we were requiring a significant amount of time from our field workforce to fill out paperwork.”

As a quick hack to digitalize some of these processes, Corbins Electric implemented Catavolt – a secure rapid development platform that enables you to create connected mobile apps, in a week, ready for full deployment in 60 to 90 days. (Catavolt became part of the Hexagon portfolio in 2017)

The company has deployed more than 40 customized apps, mobilizing processes such as timesheets, tool tracking, accounting and material requisitions. It has also recorded 60 percent year-on-year revenue growth in recent years, which it attributes directly to eliminating these types of paper-based processes.

“We immediately increased our speed of business,” Martin said. “We are able to get relevant information faster and more accurately. We are also able to drive the correct behaviors that support our core values, because we now have standard operating procedures with respect to nearly all field paperwork.”

Rework also immediately decreased. “This means better efficiency with time, which translates to value-added actions, which provides a greater potential for customer satisfaction and profit earnings,” Martin said.

The innovation process itself is arguably the most interesting part of the Corbins Electric story. Once the first app was built and the Catavolt infrastructure was in place, the company crowd-sourced productivity ideas from the workforce. Recognizing that many frontline employees have a wealth of ideas for making their day-to-day working lives easier, Corbins Electric’s senior leadership team offered them the freedom and the structure to turn the best ideas into reality.

The company also engaged interns from local universities to generate concepts for new apps – after all, who understands digital processes better than the generation that has grown up with the technology?

The Corbins Electric approach is the perfect example of digital innovation approached incrementally, and yet no less effectively than enterprise-wide digital transformation.
IoT sensors, big data analytics, artificial intelligence, machine learning, and augmented reality are at a tipping point and will drive the next generation of industrial innovation.

The most frequent challenge our customers experience is how to get started. It can be daunting for even the most progressive organizations. Hexagon PPM recommends an iterative approach: Focus your efforts on a single problem space rather than trying to do everything at once.

Also crucial in starting the digital transformation journey is choosing a technology architecture and platform that will support current and future initiatives.

OTHER CRITICAL FACTORS TO CONSIDER:

CENTRALIZATION – Can I aggregate and store my organization's massive amounts of data while making it accessible to the “innovation engines” that can help me derive business value from what I'm capturing?

SCALABILITY – Do I have a platform that will allow me to grow? A recent IDC study forecasted that worldwide data production will grow to 163 billion terabytes per year by 2025. That's ten times more data than we produce today.

SECURITY AND CONTROL – Will my data be protected from malicious threats and exploitation? According to a study by Accenture, corporate security breaches increased by 27 percent in 2017. Do I have a trusted partner that has a proven track record of operating a secure environment?

CONTEXT – Do I have a platform that is tailored to my industry? As much as we would like to believe that data is just data, having a platform that is built to account for the uniqueness of a specific industry is critical to success.

ACCESS TO INNOVATION – Do I have built-in access to the latest technology innovations shaping the digital transformation landscape? Can I quickly and cost-effectively take advantage of breakthroughs in analytics, artificial intelligence and machine learning without having to understand every technological detail?

Hexagon PPM built Intergraph Smart® Cloud to provide customers a solid, scalable, secure foundation for their digital transformation initiatives. It was designed to securely unify and centralize data while being able to control access to various organizations and groups – be they internal consumers, partners, contractors, customers or third parties.

Smart Cloud is also capable of delivering access to the “innovation engines” of major public cloud providers, including Microsoft and Amazon, and we ultimately build many of those capabilities directly into our products. The ability to take large data sets and perform sophisticated analytics and feed machine learning algorithms that can provide new insights and opportunities for automation will be critical to drive competitive advantage going forward.

Alexander Heublein is the vice president of Cloud Services at Hexagon PPM. He lives in Atlanta, Georgia, USA.
Digital transformation has become the No. 1 Business Imperative for executives across all industries.
It is the pivotal opportunity to make a good company great, but it is also a threat to the very existence of companies that do not successfully make the transition quickly enough. Digital transformation is not seen as an option, but a prerequisite for survival, and the speed of transformation is now the key to competitive advantage.

For asset intensive industries – which typically are not in the forefront of adopting new technologies – digital transformation is being driven by lower capital expenditure and the need to deliver projects on schedule and to budget.

For operations, the drive is to reduce operating expenditure and comply with increasingly stringent regulatory frameworks. There’s also the need to tackle the “great shift handover,” as retiring workers are being replaced by millennials who demand a different work process and access to information.

For Hexagon PPM, digital transformation is not a new journey. For years we’ve been providing data-centric design tools; rule-based design verification; end-to-end flow of data between tools to manage design, procurement, materials management and construction; and a central consolidated repository for data with work processes to manage change.

SO, WHAT HAS CHANGED?

What’s new is the speed with which new technologies are maturing and the convergence of these technologies to enable them to work together. In the last year, we’ve launched our ground-breaking zero footprint web client enabling users to create, update and navigate data and 2D/3D/laser scan graphics with just a web browser, as well as our SAP-certified interoperability with SAP EAM.

We’ve unveiled our web-based collaboration platform enabling EPCs and owner operators to plan and exchange data/documents and incrementally build the “digital twin” during the project.

Also, recently launched is our RESTful APIs, which enable simple and fast interoperability between our asset lifecycle information management platform and third-party systems.

As part of the Hexagon corporation, Hexagon PPM is well-positioned to exploit the technologies of our sister divisions … solutions that have already seen success in automotive, aerospace, security, infrastructure and government.

These technologies include artificial intelligence, augmented connectivity, sensor and data fusion, image and video analytics, robotics and drones, edge computing and blockchain. We are also actively engaged with our corporate visualization center in areas such as augmented, virtual and extended reality.

We are engaging other major players – such as OSIsoft – to provide seamless interoperability between real-time and asset lifecycle information, and we are entering into collaborative strategic agreements with key customers to ensure our development efforts are focused on the areas that will bring best business value.

Our customers will see us bringing new business capabilities to market at an increasing pace, helping you reimagine the way your company works and accelerating your digital transformation.

Adrian Park is the vice president for business development for Hexagon PPM’s information management solutions. He lives in Norway.
For asset-intensive industries, one of the challenges in transforming operational processes is lack of digital information about the installed properties within plants.

Information is stored in silos, with master data in operational systems not centrally managed or up-to-date. Starting a digital transformation journey is critical to the forward progress of operational systems. However, how can digital transformation be successfully executed if base information is missing or inconsistent?

To successfully start a digital transformation journey on the plant floor, several milestones must be achieved:

- All operational systems must “speak the same language” and share the same master data.
- Management of change processes must ensure accurate and up-to-date master data sets describing the asset base are always available.
- Operational system users should have simple access to all detailed engineering information: 3D models, laser scans, intelligent PIDs, etc.

Hexagon PPM is dedicated to taking this journey with our customers. Our asset lifecycle information management (ALIM) tools are a significant contributor to this initiative, which can begin with our first major integrator: off-the-shelf, SAP-certified master data synchronization integration.

This integrator, along with ALIM tools, transforms engineering plant structures and tags into SAP PM maintenance structures and functional locations (FLOC), streamlining operational changes with notifications and SAP work orders.

We are currently investing in a similar integration with OSIsoft PI System and Asset Framework. This integration continues the vision of feeding all operational systems with the same set of master data. It also allows OSI PI users to combine their analytics with access to engineering information. At the same time, engineers will be able to view live or historian data in direct context with their job.

Hexagon PPM information management tools are serving the needs of asset-intensive industries’ digital transformation by leveraging engineering data and serving this to operations and maintenance users in the systems they already use … in the context of their work processes, without the need to learn to use additional products.

Highly performant automation and deep integration ensure cross-application, consistent master data management.

Nils van Heijnsbergen is director of integrated solutions for Hexagon PPM. He is based in Germany.
The Los Angeles Department of Water & Power (LADWP) is one of the largest U.S. municipal utilities, serving 4.1 million residents and businesses on a $4.25 billion budget. The city relies upon a complex water system network to support its huge population growth.

The utility’s Water Engineering and Technical Services (WETS) Division uses its Capital Improvement Program Management System (CIPMS) to oversee and manage a 10-year capital water system program currently consisting of more than 200 projects with a budget of $6.5 billion. The scope of the CIPMS encompasses budgeting, forecasting, performance and earned value management, scheduling and resource management.

**CHALLENGES**

One of the primary purposes of the WETS CIPMS is to track the progress of 28 critical projects that are necessary to meet requirements enacted by California’s Department of Public Health to improve the quality and safety of the state’s water supply. Failure to complete the projects by the regulatory deadline could result in substantial fines and other penalties.

Facing a variety of challenges – from lengthy manual data entry to a lack of performance metrics to time-consuming report generation – the organization decided to implement an upgrade of the aging CIPMS, which had originally been deployed in 2001. The upgrade, using EcoSys™ as its central hub, created an integration, reporting and analysis platform to address the demand for greater cost accountability and government reporting.

**SOLUTIONS**

Through utilizing EcoSys as the capital planning and reporting hub between Primavera P6, the mainframe budget system, and the legacy general ledger system, LADWP can standardize project structures, milestones and coding to allow for easy comparisons against actual performance.

Workers can also automate data sharing of actuals, budgets and schedules to eliminate manual and duplicate data entry; quick revisions can be made to project schedules and cash flow to determine true capital needs.

By using role-based dashboards, managers and engineers have immediate access to project information.

With the successful implementation of the EcoSys solution, the LADWP’s water system is continuing to develop enhanced metrics for monitoring project performance as well as expanding executive level reporting. Officials have decided to also use EcoSys for operations & maintenance (O&M) budgeting and for use by the power system.

Benefits include substantial time reduction for monthly data processing (reports generated in minutes, not days); immediate visibility into project performance, creating a “feedback loop” for identifying and correcting problems; and reduction of data errors from manual extraction and transfer of data.

An additional advantage? As a web-based solution, EcoSys required little incremental IT resources after deployment!

Adam Goldfarb is marketing director for EcoSys, project performance solutions. He is based in New York, New York, USA.
From the inception of its Singapore Neste Renewable Diesel fuels refinery in 2007, Neste committed to the use of PDS® for design, construction and maintenance of the plant. Since then, Neste has benefitted from an up-to-date, accurate digital plant model and from the reuse, standardization and automation provided by the system.

Ten years later, Neste recognized that Intergraph Smart® 3D was firmly established and proven in the market, and that costs and challenges of maintaining the legacy environment were beginning to mount; the time to update the future of the digital asset had arrived.

SMART 3D ... BUT HOW?
Neste was faced with a choice: either migrate the existing plant model to Smart 3D or leverage tools such as SmartPlant® Interop Publisher to reference the existing PDS model within a Smart 3D environment.

Initially, Neste favored the reference option, believing that it would reduce data migration project risks and provide a satisfactory solution in the medium term. After discussion with various stakeholders, however, the migration option began to look increasingly promising.

Neste, continuing a close and long-standing business relationship, contacted TecSurge to discuss the merits of the two approaches, and this consultation identified several factors in favor of migration:

- Eliminate requirement to maintain PDS skills for ongoing design and support; Smart 3D expertise is much more readily-available
- Enable Neste to retire legacy infrastructure and software, simplifying its IT landscape
- Unleash all capabilities of Smart 3D without being constrained by legacy system
- Simplify the digital asset environment, enabling Neste to more easily report on and update data across the entire refinery
UNDERSTANDING THE CHALLENGE

The Singapore refinery project consisted of three migrations:

• Piping specification and catalog data in SmartPlant Reference Data (SPRD) needed to be enhanced, integrated and tested with Smart 3D

• PDS physical model needed to be migrated to Smart 3D

• Orthographic and piping isometric drawings needed to be configured and regenerated in Smart 3D

Neste also required the preparation of a full Smart 3D hanger and support library to its specifications and to populate the migrated Smart 3D model with the resulting supports.

PARALLEL ACTIVITY STREAMS

The technical work began with a thorough consistency check between PDS piping specification and catalog data contained in the Neste SPRD database. This resulted in several corrections, after which Smart 3D interfacing was configured, and piping specifications were fully tested.

In parallel, TecSurge began the development, configuration and testing of a Smart 3D hanger and support library to suit Neste’s requirements.

AUTOMATION PAYS DIVIDENDS

The original PDS model did not contain pipe support graphics, but relied upon “logical” markers to indicate support locations and types. TecSurge used a combination of proprietary automation and manual effort to populate the Smart 3D model with the newly developed hanger and support symbols and assemblies.

Once the model migration was completed, TecSurge used a combination of proprietary automation and manual effort to configure and regenerate the existing plant orthographic and piping isometric drawings. Close collaboration ensured an efficient and seamless delivery.

A SUCCESSFUL OUTCOME

An additional benefit obtained from this migration approach is that it delivered the results of a tailored Smart 3D implementation combined with the migrated model, allowing Neste to dramatically reduce the time to production compared with a more traditional sequential approach.

The successful completion of this project means that Neste is set to gain all the benefits accruing from the adoption of Smart 3D, as well as the savings in support, infrastructure and training from retiring the legacy PDS environment.

Patrick Mackinlay, principal consultant at TecSurge, directs product management and technology for the company.
Project execution has changed; everything needs to be better and faster. Tighter budgets and schedule pressures have increased, while projects are becoming more complex.

Customers who have utilized Hexagon PPM’s decades-old legacy solution PDS® should consider upgrading to Intergraph Smart® 3D, the world’s only next-generation 3D design solution specifically tailored for the most multifaceted industrial projects.

Several of PPM’s most successful customers have migrated from PDS to Smart 3D, and their experiences have been so positive, they want to share their process.

William Fronheiser, principal structural designer for Linde Engineering North America, acknowledged that while the upgrade required training and diligence, his company’s work quality has improved greatly and collaborating across continents is easy.

Why do you choose to use Smart 3D over PDS?
Fronheiser: Instant updates with screen refreshes to evaluate other disciplines are very beneficial, especially with global workshare projects. We can quickly resolve problems and keep the design on track with minimal downtime by seeing an up-to-date model with a click of a button.

Have you benefited from the transition?
Fronheiser: Most definitely. Among the many new and beneficial features it offers, the drawing extraction feature of Smart 3D has increased our productivity and quality of work, at the same time reducing the hours required to do the work.

What do you prefer about using Smart 3D?
Fronheiser: One of the many benefits of using Smart 3D is being able to maintain a live link to a model in SmartSketch®, making 2D drawing production and updates and revisions easy and simple. Once the link is established, the 2D drawing extraction process is all but seamless. This increases our quality and productivity, with the added benefit of reducing the costs required to perform the work.

Do you find it difficult to go from PDS to Smart 3D?
Fronheiser: Yes, but with support from work colleagues and with additional training classes, it made the transition easier.

How does Smart 3D improve your day-to-day work over using PDS?
Fronheiser: We work-share projects between offices on several continents and have the capability to have global teams collaborate, see work progress instantaneously and produce drawings globally. Smart 3D allows the work to progress seamlessly and keeps projects on schedule, under budget, with high quality.

What would you say to others facing the transition of PDS to Smart 3D?
Fronheiser: Practice/use the software! Users need to have daily interaction with the software to maintain skill level. Our corporate HQ states one full year with daily use to be proficient.

Ashley Ranguelov is the program manager for Hexagon PPM’s 3D visualization and engineering/schematics solutions. She is based in Huntsville, Alabama, USA.
Upgrading for Operations, Not Just Design

BY PATRICIA McCARTER

BASF

Nearly 30 years ago, BASF’s North American advertising campaign helped the chemical company become a well recognized name on the consumer level with the slogan: “At BASF, we don’t make a lot of the products you buy. We make a lot of the products you buy better.”

And today, BASF is a front runner in the industry when it comes digital transformation; it is in the midst of upgrading its systems landscape for capital investments and technical support for operations.

At some of its plants, BASF currently utilizes Hexagon PPM’s market-leading 3D modelling PDS® software, with efforts to advance to Intergraph Smart® 3D, which breaks through the barriers of traditional technology to enable a truly rules-driven, iterative design environment.

BASF Project lead for Engineering Data Management & Digital Plant Michael Höchel said this project began in 2016, with the goal of creating a digital working process environment driven by business needs. Ultimately, BASF wants to digitize its plants, which supply products for industries like the automotive, agriculture and construction markets.

“We want to establish a global platform that drives efficiency and quality in all our engineering & technical services based on a life cycle approach,” said Höchel, who is based at corporate headquarters in Ludwigshafen, Germany.

Utilizing Smart 3D, BASF establishes data driven working processes for all distinct aspects of the production asset lifecycle. The company also utilizes SmartPlant® Instrumentation, SmartPlant P&ID as well as other PPM solutions.

“The 3D model is a powerful tool,” Höchel said. “Think about maintenance ... search and find, constructability checks, safety and plant optimization. In many cases, we as a plant owner and operator can use the 3D model across the lifecycle. The 3D model is not just a project tool for engineering, procurement and construction (EPC).”

Höchel said BASF is working closely with Hexagon PPM President Mattias Stenberg and software developers to evaluate further collaboration opportunities.

Arndt Teinert, senior E&M IT manager also based at BASF’s headquarters, said the introduction of Smart 3D in BASF is on a good way, and data migration for example from PDS will likely happen in the next year.

“Mattias has announced that Hexagon wants to support not only EPC but also the operators of production plants utilizing PPM tools,” Arndt said. “We are happy about that. We have been involved in defining new functionalities for Smart 3D that we need in the next release, and we are working with the PPM team to make that happen.

“It’s not just about designing plants. It’s a lifecycle approach based on innovation.”

Patricia McCarter is senior content marketing specialist and editorial director for Insight Magazine for Hexagon PPM. She is based in Huntsville, AL, USA.
Fusion for Energy

EcoSys™ will now serve as enterprise cost management system for Fusion for Energy (F4E). F4E is the European Union’s organization that manages the EU’s contribution to ITER, the world’s largest scientific partnership aiming to demonstrate fusion as a viable and sustainable source of energy.

EcoSys offers a complete platform for budgeting, cost forecasting and project performance management, allowing F4E to analyze project costs faster and improve predictability. It provides the flexibility to tailor the solution for F4E’s varied departments and locations in Barcelona, Spain; Cadarache, France; and Garching, Germany.

Kevin Baker, head of the F4E project management department, said, “We are pleased with our decision to implement EcoSys at Fusion for Energy. EcoSys has given us a robust and easy-to-use financial planning system. Hexagon PPM’s consultants on the project provided F4E with exactly what we needed, and their focus on project delivery ensured that the configured software was delivered on schedule and on cost.”

Plant Design Solutions

Hexagon PPM announces the acquisition of Plant Design Solutions (PDS), a Houston-based software and services distributor. With this announcement, PPM’s CADWorx® & Analysis Solutions group has transitioned to a U.S. direct sales model.

“Over the years, we’ve had many requests from clients across the United States who want to work more directly with us. As these requests have grown, we have chosen to move to a direct sales model to more closely serve our U.S. clients,” said Rick Allen, president of CADWorx & Analysis Solutions.

PDS and its employees are now part of Hexagon PPM, and clients can continue to work with their familiar reps. Len Kalmer, president of PDS, and Carl Adams, vice president of PDS, are now executive consultants with CADWorx & Analysis Solutions.

“At PDS, our commitment to our clients has always come first,” said Kalmer. “We are very happy that our clients will still get the best support and services from the Hexagon PPM team.”

PT Green Gold

PT Green Gold Engineering (Green Gold), a leading contractor to Southeast Asia’s mining and minerals industry, has selected Intergraph Smart® 3D as its in-house 3D design solution to maximize accuracy and efficiency during project delivery.

As the developer of RECYN, a cutting-edge technology that recovers cyanide and dissolved metals from metal plant process streams and detoxifies tailings, Green Gold wanted to move towards an intelligent, data-centric operating environment. After an evaluation of the industrial 3D design tool market,
Smart 3D was selected for its ability to support real-time concurrent design, intelligent rules and relationships, task-based modeling and the creation of automated deliverables.

“Green Gold has a reputation for innovative project delivery, and that requires best-in-class design and technology tools. Smart 3D is the best choice to help us achieve our goals,” said Robert Cooper, Green Gold’s engineering manager.

Severstal Project
Severstal Project, a general engineering design contractor for PJSC Severstal, successfully executes 3D design projects by using Intergraph Smart® 3D. Severstal Project has also extended its use of Hexagon PPM solutions to further improve the in-house 3D design capabilities and project execution efficiency.

In the future, Severstal Project aims to use Smart 3D as the enterprise-wide environment for 3D modeling applications. Currently, Smart 3D is used for important projects such as reconstruction of blast furnaces and other projects executed for PJSC Severstal, one of the leading Russian metallurgical companies.

Severstal Project General Director Krasushkin Yuri Vladimirovich said, “Intergraph Smart 3D has enabled us to bring our engineering design to the next level. As a truly data-centric solution, it enables clash detection already during the design phase and brings us the competitive edge we have needed.”

Universiti Kuala Lumpur Malaysian Institute of Chemical & Bioengineering Technology
Universiti Kuala Lumpur Malaysian Institute of Chemical & Bioengineering Technology (UniKL MICET) has selected engineering and design solutions from Hexagon PPM to train and certify Southeast Asia’s next generation of plant/structural designers and draftsmen.

Three PPM solutions – Intergraph Smart® 3D, SmartPlant® Instrumentation and SmartPlant P&ID – will underpin UniKL MICET’s Plant Design and Modeling Smart 3D Software (PIPE) Professional Certificate program, which will be conducted in new, state-of-the-art facilities on the Malacca campus.

The program provides a holistic overview of the disciplines essential in the design of process plants and other industrial structures, including overall facility design, instrument data management, and piping and instrumentation diagram (P&ID) development and management.

This cross-discipline approach is crucial in the current industry environment, where organizations are looking to break down silos between departments to optimize digital technologies.

“Hexagon PPM’s engineering and design solutions are predominant on Southeast Asia’s current energy and construction projects, so it was important for UniKL MICET to train students on the industry standard. This will help companies to reduce training costs down the track,” said Dr. Ahmad Naim Ahmad Yahaya, dean of UniKL MICET.

Singapore Construction Projects
HxGN SMART™ Build was awarded a grant under Singapore’s Construction Productivity RD&D Grant Call for Building Information Modeling (BIM). The grant will serve as a collaboration platform to support virtual design and construction (VDC) practices for selected construction and infrastructure projects across the country.

The Building and Construction Authority (BCA) initiated the grant in March 2017 as part of its drive to integrate stakeholders across the construction value chain through BIM collaboration and VDC practices in Singapore.

PPM demonstrated SMART Build’s powerful functionality for multi-party collaboration, visualization and issue/task-based tracking and management.

Hexagon PPM President Matias Stenberg said, “Hexagon PPM is focused on helping our customers in the architecture, engineering and construction market realize the benefits of smart digital facilities and city infrastructure. We look forward to working with the BCA to shape change in building and construction across Singapore.”
Follow our social channels to stay up to date with the news and views of interest to people who design, create, operate and manage industrial projects of all sizes. Our blog Insights is also a great source for PPM information.


An expanded digital version of Insight magazine – with added information on Partners & Projects, Launches & Releases, customer stories and more – can be found online. When you visit the zmags.com site, be sure to access the Insight archive.

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Follow our social channels to stay up to date with the news and views of interest to people who design, create, operate and manage industrial projects of all sizes. Our blog Insights is also a great source for PPM information.

Join the Winners Circle

Submit a project using Hexagon PPM tools on a challenging project for a chance to win prizes. bit.ly/PPM-CustomerAwards

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bit.ly/PPM-Calendar

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