NEXT STEP IN CONTROL SYSTEM ENGINEERING

INTERGRAPH SMART® INSTRUMENTATION

CONTENTS

1. INTRODUCTION

Engineering companies and plant owners look for engineering solutions that improve business and lower the risk of project execution and plant operations.

The basics of engineering have not changed that much over the years, such as specifying an instrument or connecting the wiring. What has changed are the business drivers, including:

- Schedule
- Cost
- Project size
- Time to market
- Distributed engineering

To best address these drivers, Hexagon PPM offers Intergraph Smart® Instrumentation. Take advantage of the solution's innovative capabilities to create and manage your control system engineering data.

2. WHY CHOOSE INTERGRAPH SMART INSTRUMENTATION?

2.1 MARKET LEADERSHIP

Smart Instrumentation is the clear market leader. This gives you many benefits, including:

2.1.1 Proven Performance

More than 30,000 professionals use the extensively tested solution on projects in various industries and configurations. Benefit from user input and proven project execution scenarios.

2.1.2 User Forums

Take advantage of a wealth of experience in the forum of ideas, requirements, and specifications submitted by users.

2.1.3 Partners

With seamless interfaces to automation and other vendors such as Emerson, Honeywell, and Fluke, you can benefit from their input combined with the powerful functionality of Intergraph Smart Instrumentation. For example, innovative marshalling with CHARM from Emerson and wireless design.

2.2 COST OF OWNERSHIP

2.2.1 Start from Day One

Smart Instrumentation is delivered as a ready-to-use solution featuring engineering content such as default datasheets, a symbol library, and an installation details library. This gives you a running start to beginning productive project execution.

Smart Instrumentation is widely used, which means that there are many experienced personnel available. This is a definite benefit if you need to expand your staffing levels.

2.2.2 Hexagon Stands by You

We follow Hexagon's core value to stand by you, whether during project execution or plant operations. With Hexagon offices around the world, help is literally just around the corner. This lowers your risk and gives you peace of mind.

2.3 VALUE PROPOSITION

Smart Instrumentation is the proven, best choice with an innovative approach to control system engineering. Gain a clear value proposition to enhance your business.

2.3.1 I³ Value Proposition

- Innovative
- Rules- and relationship-driven for deliverables consistency
- Automation
- Workflow-driven
- Indispensable
- Change control
- Automatic creation of deliverables as data views
- Inspirational
- Opportunity to re-think the work process
- Automatic wiring
- Mass editing
- Integration with engineering and vendor solutions

3. INNOVATIVE CAPABILITIES

3.1 BUILD INSTRUMENT LISTS FOR ESTIMATES AND INDEXES

The development and maintenance of instrument indexes are critical functions of process control systems design and engineering work processes.

Associated index data, such as document cross references, I/O requirements, statuses, and services, needs to be up to date and accessible to all members of the control systems team and related communities. Smart Instrumentation creates an integrated environment that automates the work processes of building, managing, and publishing the instrument index.

Fit for the different process, power, mining, and shipbuilding industries for the complete lifecycle from conceptual design all the way to operations.

3.2 DESIGN AND AUTOMATICALLY CREATE DELIVERABLES

Design and then automatically create your deliverables, such as loop diagrams, directly from the design base. Smart Instrumentation boosts productivity and creates a true representation of the design on the deliverables during all project stages. This gives you consistency through all of your deliverables.

3.3 MAKE THE RIGHT DECISION EARLY

The sooner you can fix a problem, the more money you can save, as Table 1 illustrates:

Table 1: Costs increase when errors are found later in the workflow.

Stage at Which an Error is Found	Possible Cost
Design Phase	$1
Downstream Disciplines	$50
Construction	$1,000

Smart Instrumentation offers a powerful and unique rules engine that enables you to verify design while designing. This helps you avoid the costs of making a series of updates. You can also reduce the risk of finding a change late in the process. Enforce design practices even with changing resources.

3.4 INTELLIGENT DATASHEETS

Datasheets are key deliverables, so it's important that they are accurate for purchasing and maintaining the devices. The new datasheets available in Smart Instrumentation are not only industry-driven with respect to content but are also intelligent to help you input the right data with rules, such as gas or fluid duty types of processes, and select lists to make faster and more consistent entries. Smart Instrumentation helps you quickly and consistently perform data entry.

3.5 PROJECTS IN PROJECTS

Projects within projects are common during the plant operational phase. Smart Instrumentation supports as-built projects. This enables you to execute projects such as revamps or plant modernizations while keeping your data consistent, avoiding risk during operations. This very complex work process, specified and driven by the industry, is fully supported by Intergraph Smart Instrumentation. This is all to support the as-built workflow ensuring operations works with the latest and current data to make their decisions.

3.6 OPEN AND FLEXIBLE

With Smart Instrumentation, you can make specific modifications to meet specific project needs.

An application program interface can create interfaces to external solutions that complement Smart Instrumentation. Plus, an out-of-the-box interface with most automation vendors enables you to access their online component catalogs and drive DSC configuration. Powerful import capabilities enable data import from external sources to jumpstart design, increase productivity, and boost data quality. Also, this interface can connect to your ERP solution, such as SAP, to support your plant maintenance operations.

Smart Instrumentation also offers the web API to enable connection to external complementary solutions.

3.7 CHANGE MANAGEMENT

The one thing that is certain in engineering is change. There is no problem with changes, as long as you know what changed and where it changed. Smart Instrumentation offers change management capabilities that highlight any changes and report on the variance between design versions, including clouding, changes, or coloring.

3.8 ENGINEERING STANDARDS-ENABLED

Smart Instrumentation supports industry engineering standards, often out-of-the-box, such as KKS for the power industry.

3.9 CONNECT TO THE PHYSICAL DESIGN

At some point, instruments must be located in the 3D design model so that they can be located correctly, both process-wise and operational-wise. Smart Instrumentation offers an automated link to create the instrument's 3D representation based on the vendor dimensional data. The piping designer can place this 3D representation, ensuring that the isometrics and interference checking are correct.

3.10 AUTOMATED WIRING

Smart Instrumentation helps you with one of the most time-consuming tasks – wiring. Comprehensive automatic wiring capabilities enable you to hook up the instruments and control system, automate the cross-wiring, and verify the connectivity. The connectivity (relationships) associated with the rules is one of the most powerful capabilities in Smart Instrumentation. This also addresses one of the most time-consuming and error-prone tasks in control system design.

3.11 INTEGRATION WITH ENGINEERING TASKS

Smart Instrumentation offers integration with upstream and downstream tasks, such as Intergraph Smart P&ID, Intergraph Smart Electrical, and Intergraph Smart 3D. Smart Instrumentation can be used for small, medium, and mega-projects. The solution gives you the flexibility to work the way that best fits your needs, supporting both connected and disconnected worksharing. Smart Instrumentation covers the complete lifecycle from basic engineering through detail design, commissioning to operations and maintenance.

4. CLEAR CHOICE

Smart Instrumentation is the clear choice over the next-best alternative (see Table 2). With an innovative approach to control system engineering, you can enjoy a solid value proposition to enhance your business and deliver real benefits.

Table 2: Smart Instrumentation shows a clear advantage over the next-best alternative.

Capability	Smart Instrumentation	Next-Best Alternative
Market Leader	✔	
Instrument Index	✔	✔
Automatic Creation of Deliverables	✔	
Rules-driven to Make the Right Decision Early	✔	
Intelligent Datasheets	✔	

Project in Projects	✔	
Open and Flexible	✔	✔
Change Management	✔	
Engineering Standards-enabled (DIN, ANSI, KKS)	✔	
Connected to the Physical Design (3D)	✔	
Automated Wiring	✔	
Integration with Engineering Tasks	✔	
Hosting Support	✔	
Fieldbus Design	✔	✔
Content (Symbols, Standards, etc.)	✔	

4.1 PROOF-POSITIVE

To see specific tasks with associated value, see our Interactive Business case. This includes a specific case such as calibration and how it benefits you with information from customers, partners, an ROI calculator to see the true business value, and more.

4.2 CHOOSE SMART INSTRUMENTATION

To join the winning team and experience the benefits that Smart Instrumentation offers, contact your local Hexagon office for additional information.

About Hexagon

Hexagon is a global leader in digital solutions that create Autonomous Connected Ecosystems (ACE). Our industry-specific solutions create smart digital realities that improve productivity and quality across manufacturing, infrastructure, safety and mobility applications.

Hexagon's PPM division empowers its clients to transform unstructured information into a smart digital asset to visualize, build and manage structures and facilities of all complexities, ensuring safe and efficient operation throughout the entire lifecycle.

Hexagon (Nasdaq Stockholm: HEXA B) has approximately 20,000 employees in 50 countries and net sales of approximately 3.5bn EUR. Learn more at hexagon.com and follow us @HexagonAB.