



Engineering Analysis, Intelligent Solutions



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Presentation Topics

- ProLytX update
- Using HIVE with SPI
- Functional safety and TestDrive
- Engineering applications hosting
- Planning for Business Continuity

Experience Filling the Engineering / IT Gap

If more than one are accountable, no one is accountable.

Engineering

**Information
Technology**

SP P&ID

SPI

TESTDRIVE

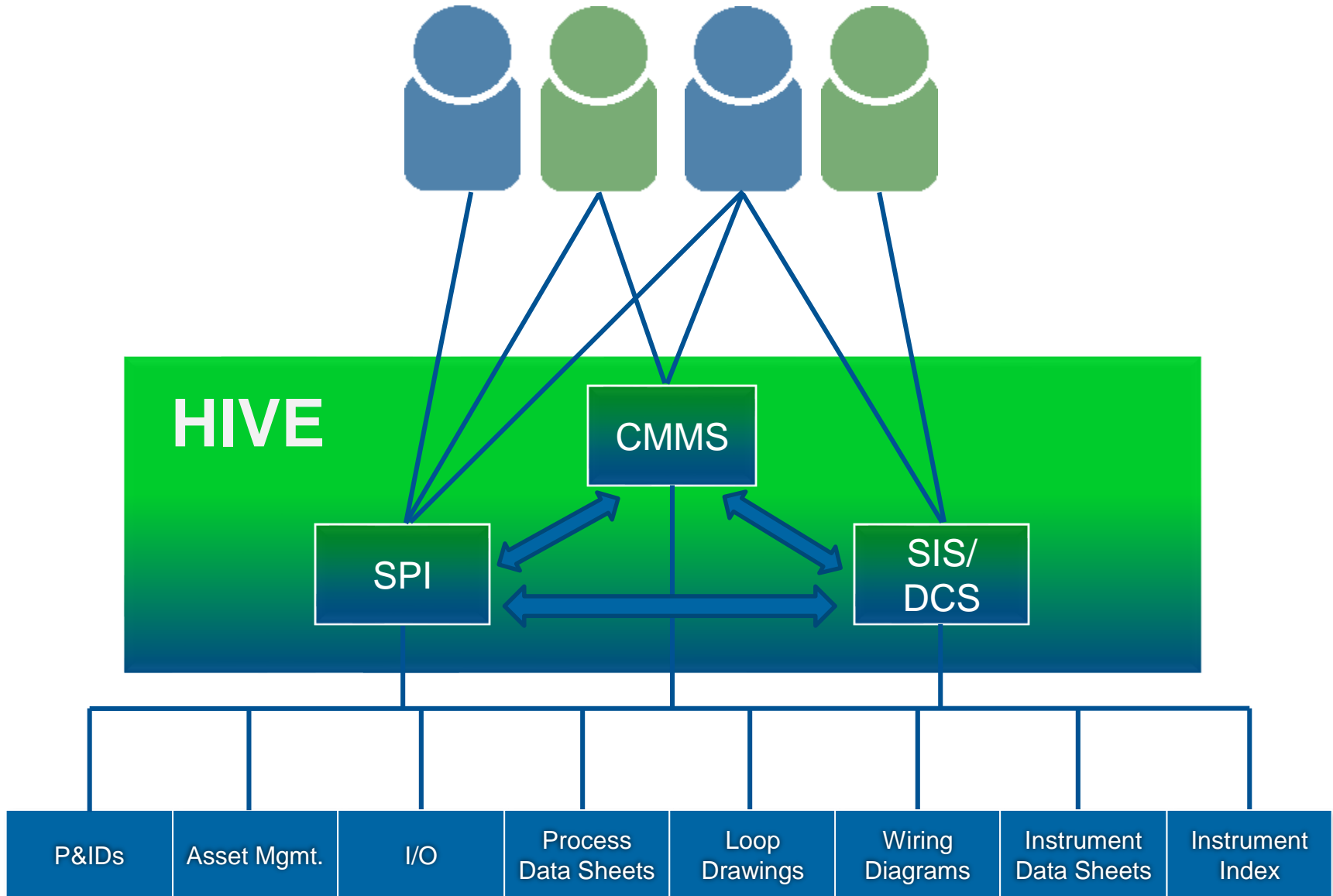
ProLytX growing

- We are 48 people
- Executing projects around the world – North America (including Canada), South America, Europe and Asia.
- Growing internal tools and commercializing them.
- Partnering with Hexagon and other software vendors and solution providers.

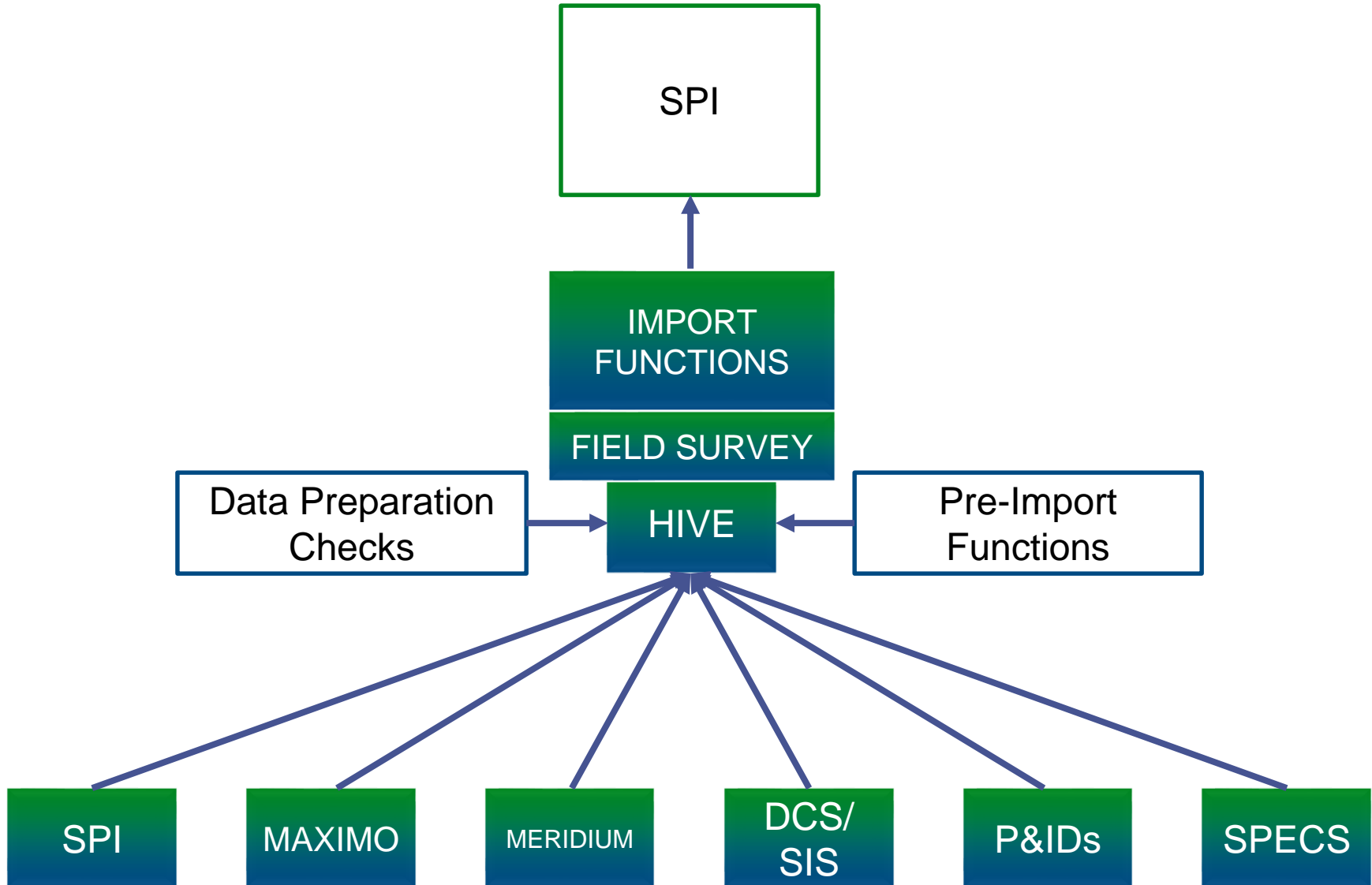
- SPI Data Migration
- SPI (INtools) legacy upgrades
- SPI Training
- SPI Hosting (private and 3-rd party)
- Work process consulting & governance
- Quality Control
- Project Progress Reporting
- Cross-analysis (vs. DCS/SIS/AMS/P&ID)

* The same is done for SP P&ID

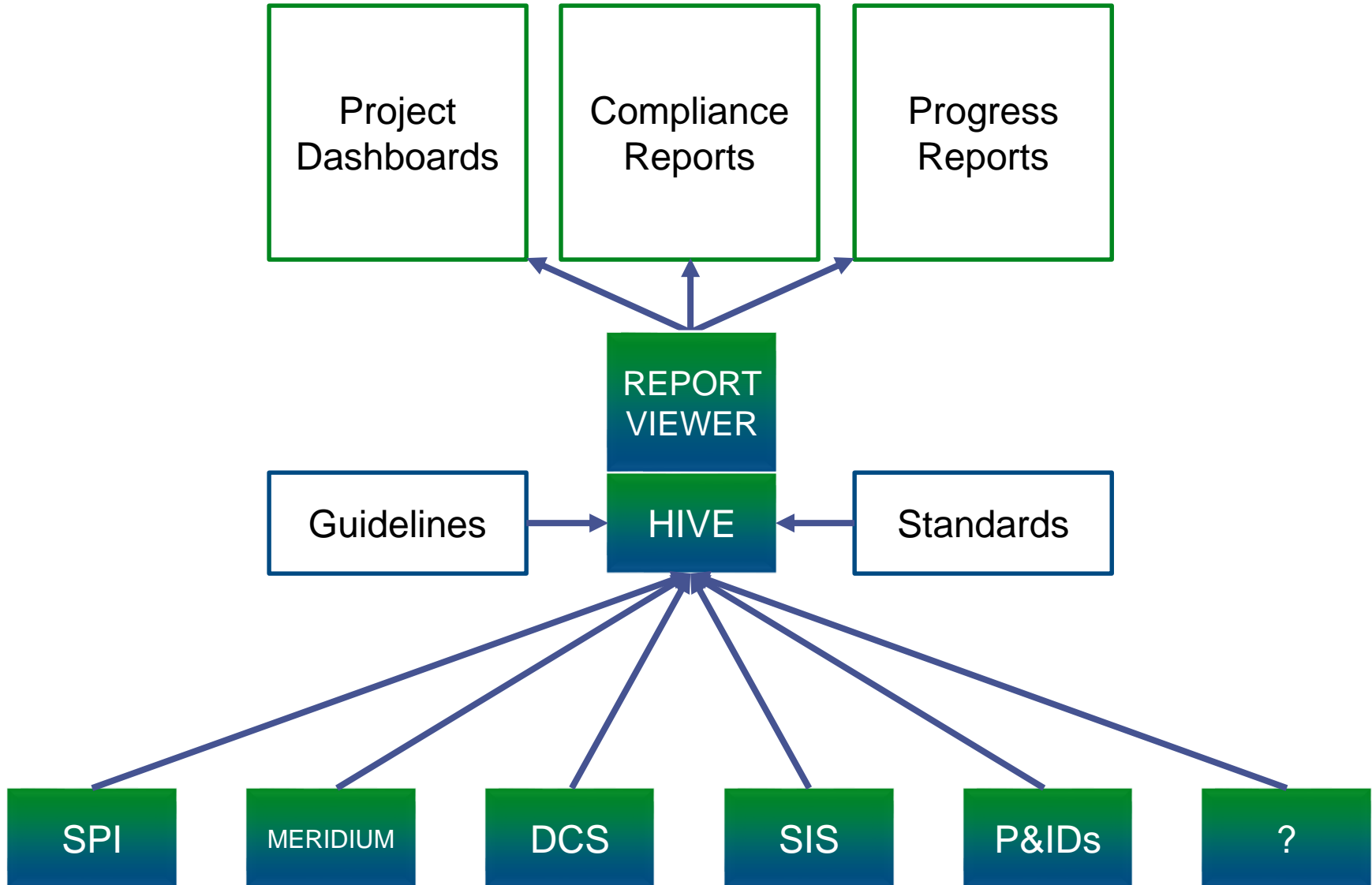
ProLytX HIVE as a service



Applying HIVE to SPI Data Migration

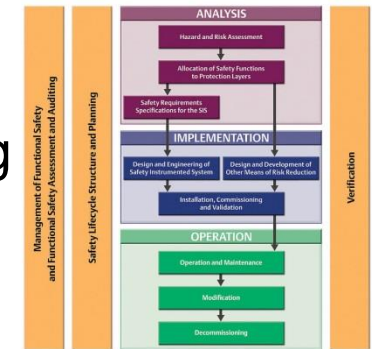


Integrated QA/QC



Functional Safety Needs

- Functional Safety Reviews
 - Assessments – review/report the 'state' of a facility or project with regards to S84/IEC61511.
 - Audits - review the 'state' of a facility or project with regards to their own functional safety procedures or corporate requirements.
- Creating functional safety documentation/plans including
 - Functional Safety Plans
 - Safety Requirement Specification (SRS) Documents
 - Programming Standards
- 3rd Party Verification and/or Validation. Including:
 - Procedure Development with Built-in Simulation Services
 - FAT / SAT Facilitation
 - Turnaround / Commissioning Support



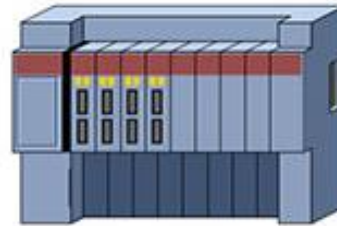
How Validation is done today

How logic Validation is done today

- FAT
- SAT
- **EVERY TURNAROUND** (OR MORE OFTEN)
 - a critical subset of logic is tested
 - a critical subset of instruments are loop tested and/or calibrated

Company ABC Safety Analysis Function Evaluation Chart		Timers	Max Override 10 Minutes	Max Override 10 Minutes	Max Override 10 Minutes	Max Override 10 Minutes	Delay Output 10 seconds	Delay Output 10 seconds
Plant ID		Override - Reset Tag	PB_START	PB_START	PB_START	PB_START		
Sheet 13 of 13		Cause No	Valve 110 - Close	Valve 120 - Open	Valve 130 - Close	Valve 230 - Close	Valve 220 - Open	Valve 210 - Close
Effect No	Timers		1	2	3	4	5	6
Temperature TT 101 > 110 °F	PTD 20 s	1	4R	4R	4R	4R	4N	4N
Temperature TT 102 > 110 °F	PTD 20 s	2	4R	4R	4R	4R	4N	4N
Temperature TT 103 > 110 °F	PTD 20 s	3	4R	4R	4R	4R	4N	4N
Temperature TT 104 > 110 °F	PTD 20 s	4	4R	4R	4R	4R	4N	4N
Temperature TT 105 > 110 °F	PTD 20 s	5	4R	4R	4R	4R	4N	4N
Temperature TT 106 > 110 °F	PTD 20 s	6	4R	4R	4R	4R	4N	4N
Effect No 1		7	R	R	R	R	N	N

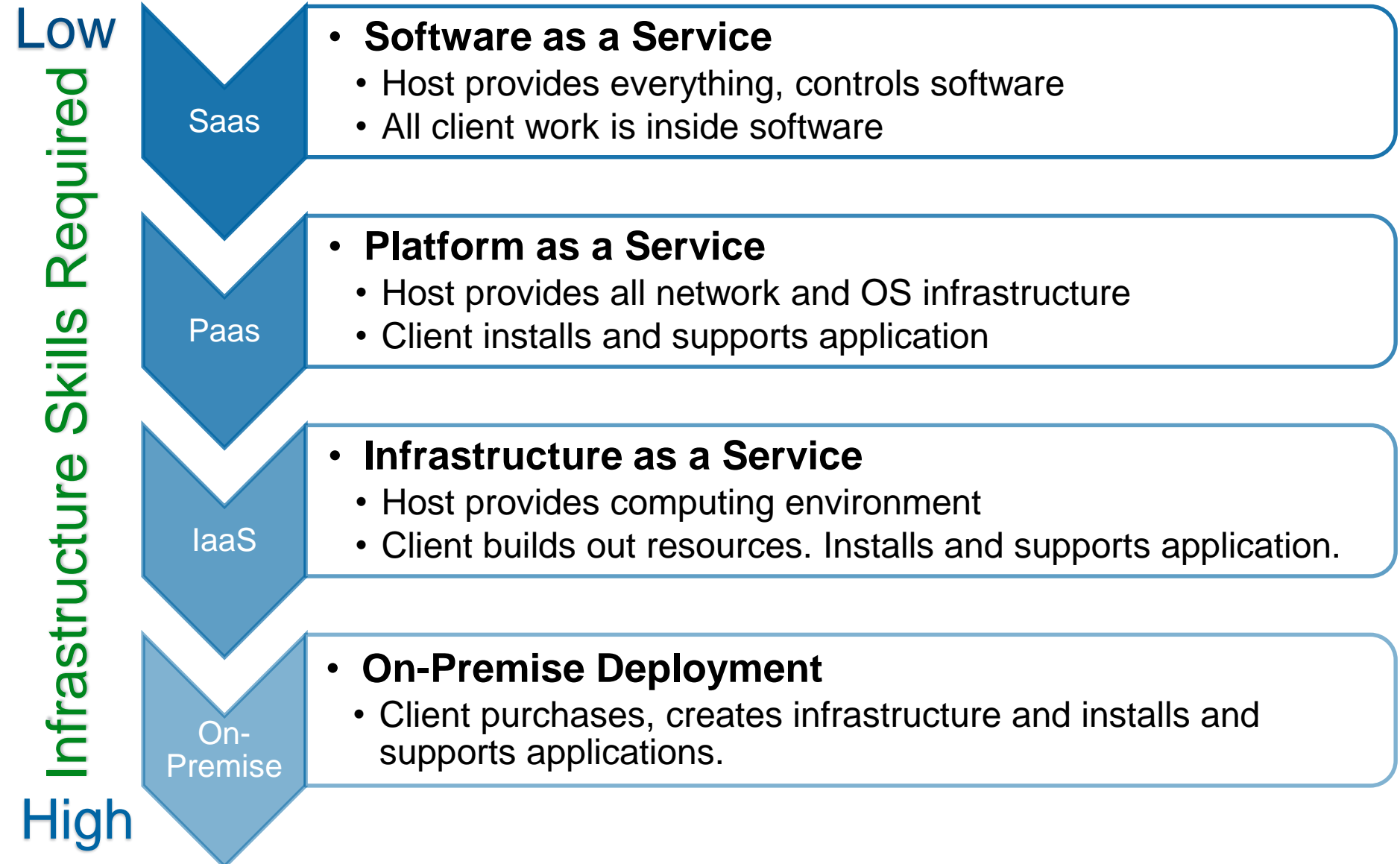
Step Change



Logic Solver

- Test Drive started out validating the logic solver.
- Extended to automating loop checks of final elements
- HART sensors loop checks.
- Direct communication with SIS hardware

Traditional Types of Cloud Services



Private Cloud Service model - infrastructure

- Purchases from a commercial cloud provider to provide a framework to custom build
 - Citrix/RDS Framework
 - Custom-sized VMs for each application
 - Security and compliance services
 - Backup and Recovery services
 - Domain and Directory services (dependent or independent of client's domain)
 - Logging and other Analytical services
 - Scheduling services to reduce costs

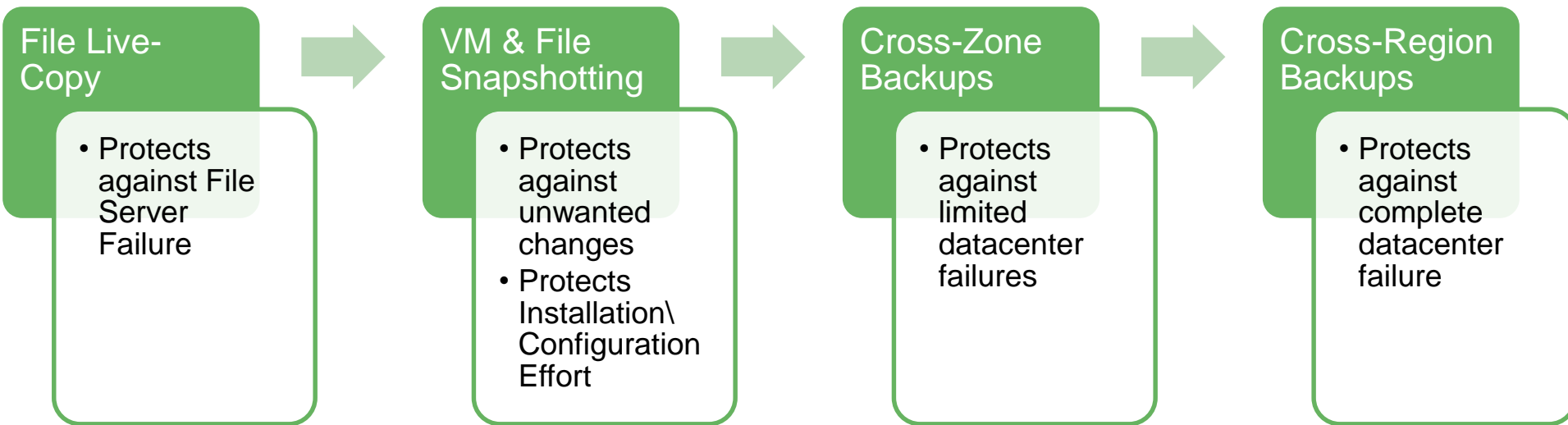
Provides the Robustness of a commercial IaaS, the Customization of a PaaS, and the Ease-of-Use of a SaaS.

Private Cloud Service model - applications

- Leverages application expertise to install and configure engineering applications. Including 2D, 3D, Database or Web apps
- Client can be given differing levels of access to self-service
 - License management,
 - Application configuration,
 - User management, or
 - Write custom tools.

Provides the Robustness of a commercial IaaS, the Customization of a PaaS, and the Ease-of-Use of a SaaS.

Business Continuity Planning in the Cloud



IT Governance Documentation Includes

- Definition\Detection of failure
 - Recovery Process
 - Testing Process
- Responsible Parties and Required Actions
 - Defined RPO/RTO Times

Cloud provides a framework for good BCP, but does not remove the need for governance to plan and execute.

Q&A / Discussion

