



Unlock the Potential for Oil & Gas

Siemens Oil & Gas Innovation Conference
May 8, 2018 | Hyatt Regency, Calgary, Alberta

Keynote Presentation

Discover your Untapped Assets: Digitalization for Oil & Gas



“ Focusing on digitalization efforts results in game-changing operational improvements.

Developing a digital roadmap via a collaborative approach to make your company more competitive.

”



Patrice Laporte
Vice President
Oil & Gas, North America

Discover Your Untapped Assets: Digitalization for Oil & Gas Applications

Turning data into value

The Industrial Evolution

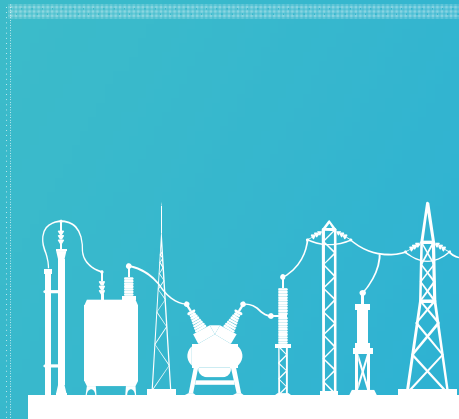
Siemens has been at the forefront of every phase

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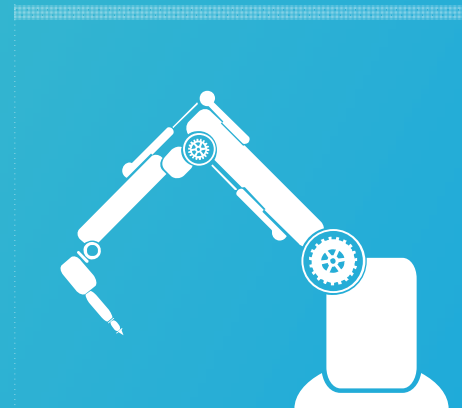
Phase 1 Mechanical Production



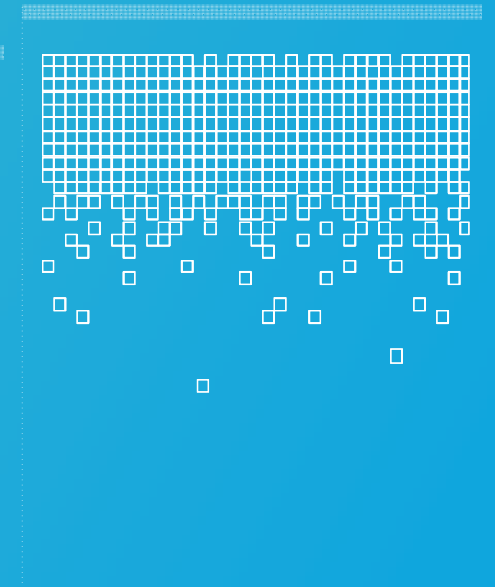
Phase 2 Electrification



Phase 3 Automation



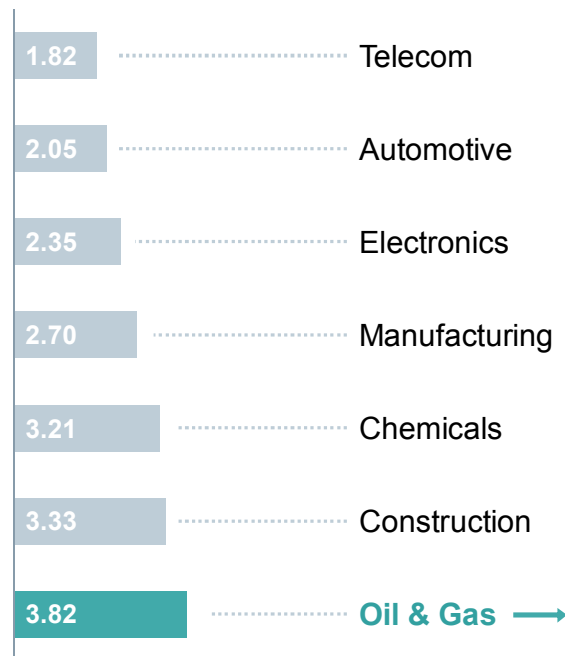
Phase 4 Digitalization



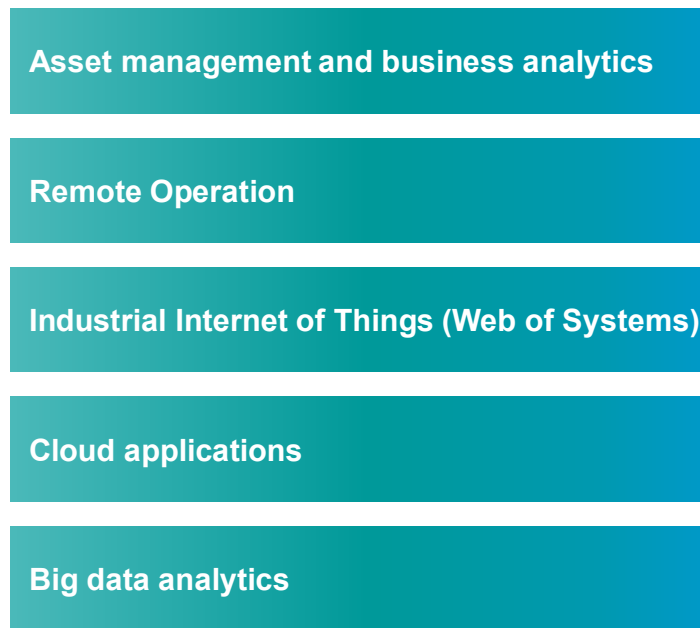
What level of maturity is your company?

Focus on digitalization efforts result in game-changing operational improvements

Digitalization by Industry



Digitalization Opportunities and Benefits



\$80B

Will be spent in the next 24 months on **operational efficiency**...

-25%

... that could lead to reduction in OPEX if **smartly spent on digital**...

↑8%

... and **produce game-changing** field recovery rates ...

+11%

... resulting in **sustained profit increase**

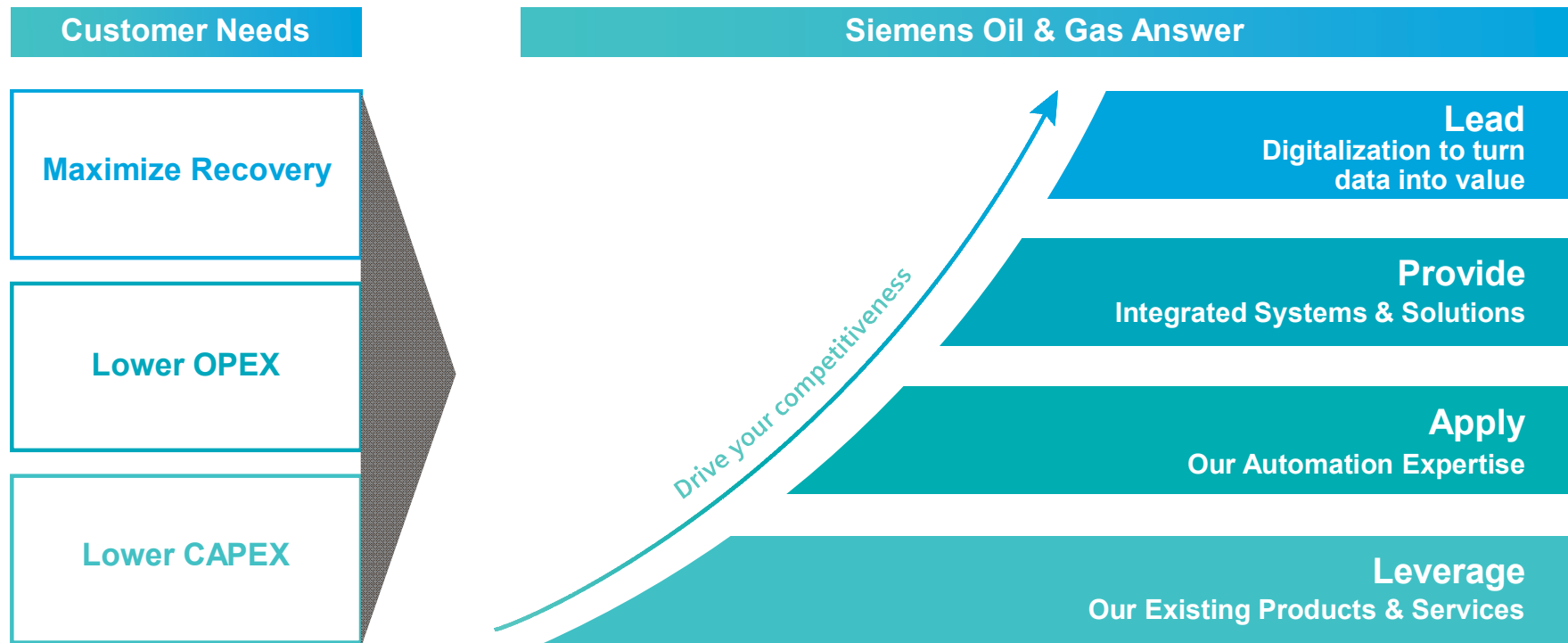
Source: McKinsey and Co; Accenture; 1 = high, 2 = medium, 3 = low, 4 = rudimentary

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Siemens Approach to Digitalization in Oil & Gas

At Siemens, Industrial Transformation Is Where We Thrive

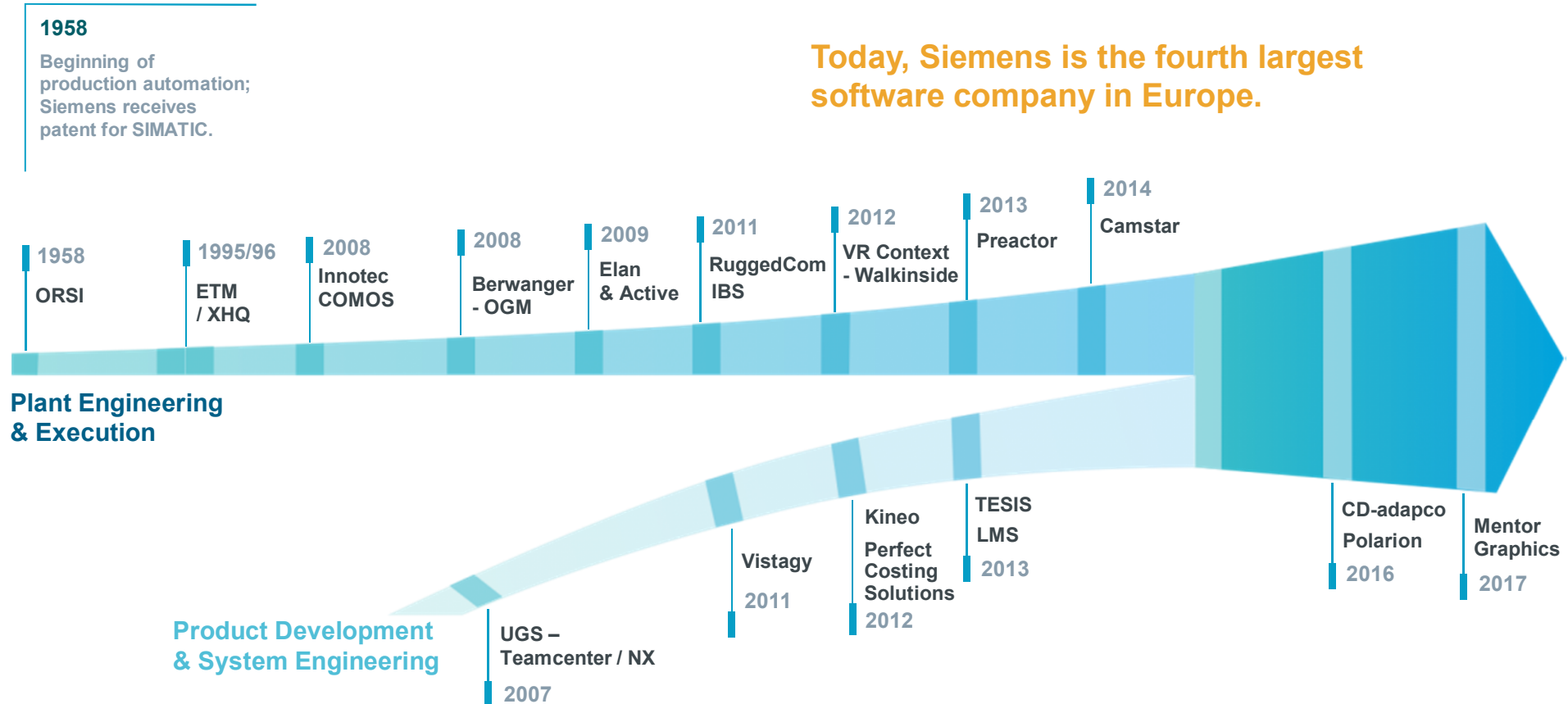
We have the requisite expertise to make our customers more competitive through digitalization



US\$ 8.5 Billion+ in Software Acquisitions since 2007

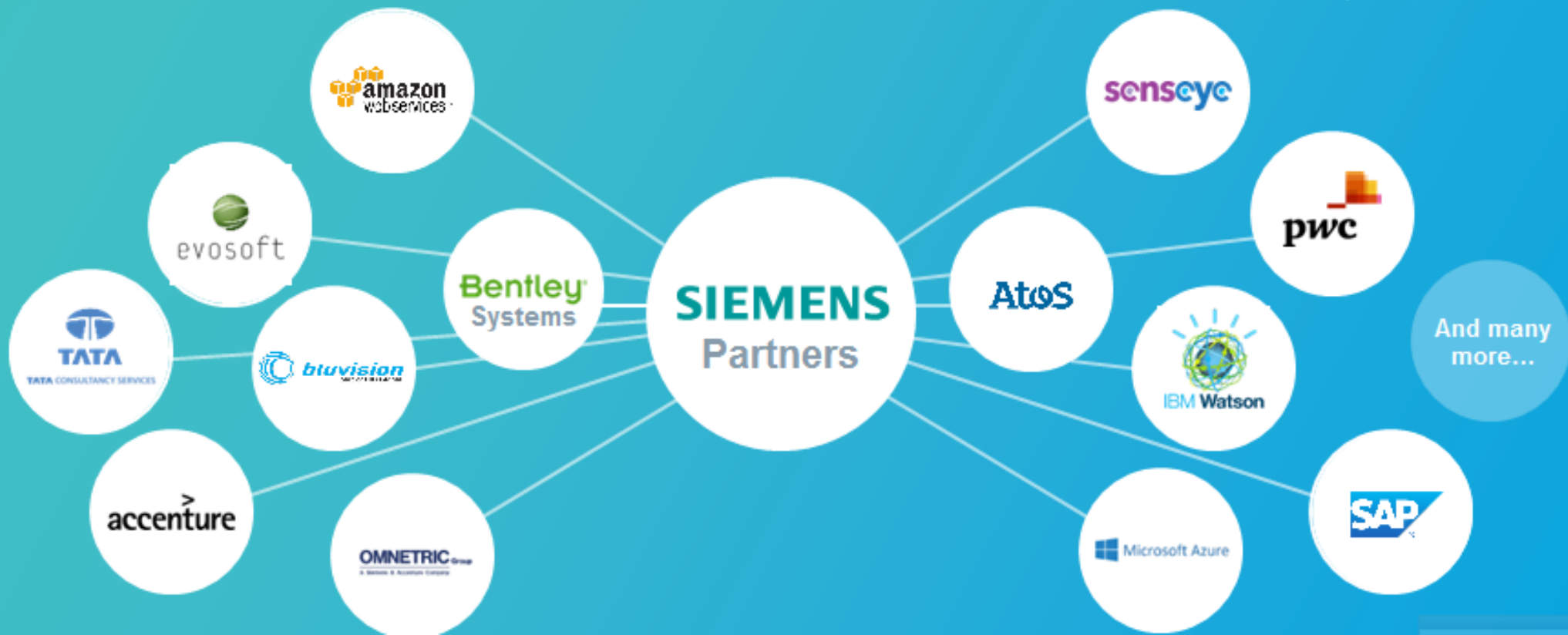
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Today, Siemens is the fourth largest software company in Europe.



Extensive Cooperation with Key Partners

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A Holistic Cyber Security Approach: More Than the Sum of Its Features

Everything we deliver is cyber secured



5 Levers of Cyber Security

- Plant security features
- Improved security processes
- Handling of incidents
- Security consciousness
- OT/IT infrastructure



Siemens Industrial Cyber Portfolio



Consulting

- Cyber gap assessment
- Security program development
- Security architecture design



Securing the environment

- Endpoint hardening
- Whitelisting deployment
- Secure remote access



Managed Services

- Anomaly detection
- Device and event monitoring
- Incident response



Testing the environment

- Vulnerability assessment
- Penetration testing
- Incident response planning

We Have Revolutionized Industries through Digitalization

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Mass Transit Industry

Barcelona – Madrid



Remote diagnosis facilitates predictive maintenance



Increased availability and avoidance of unplanned downtimes



99.9% availability of trains



Only 1 of 2,300 trips is late

Applicability to O&G
Predictive Maintenance



Marine Industry

Hamburg (Siemens Service Center)



Remote monitoring facilitates expert center support



Increased availability and avoidance of unplanned downtimes



Reduced cost for operation and commissioning



40% of all critical systems monitored in real-time with expert technical support

Applicability to O&G
Remote Monitoring



Automotive Industry

Masserati, Turin



Digital production optimizes plant design and facilitates manufacturing flexibility



Enables shorter time to market



3x more cars produced due to Siemens Manufacturing Execution System



30% less development time

Applicability to O&G
Improved Cycle Time



Health Industry

Multiple Locations Worldwide



Automated image processing enables faster diagnosis



Installed in 100+ hospitals, 20+ countries, and applied to 10,000+ patients



Enables more patients to be treated in less time



10% higher accuracy rate and detection of fractures

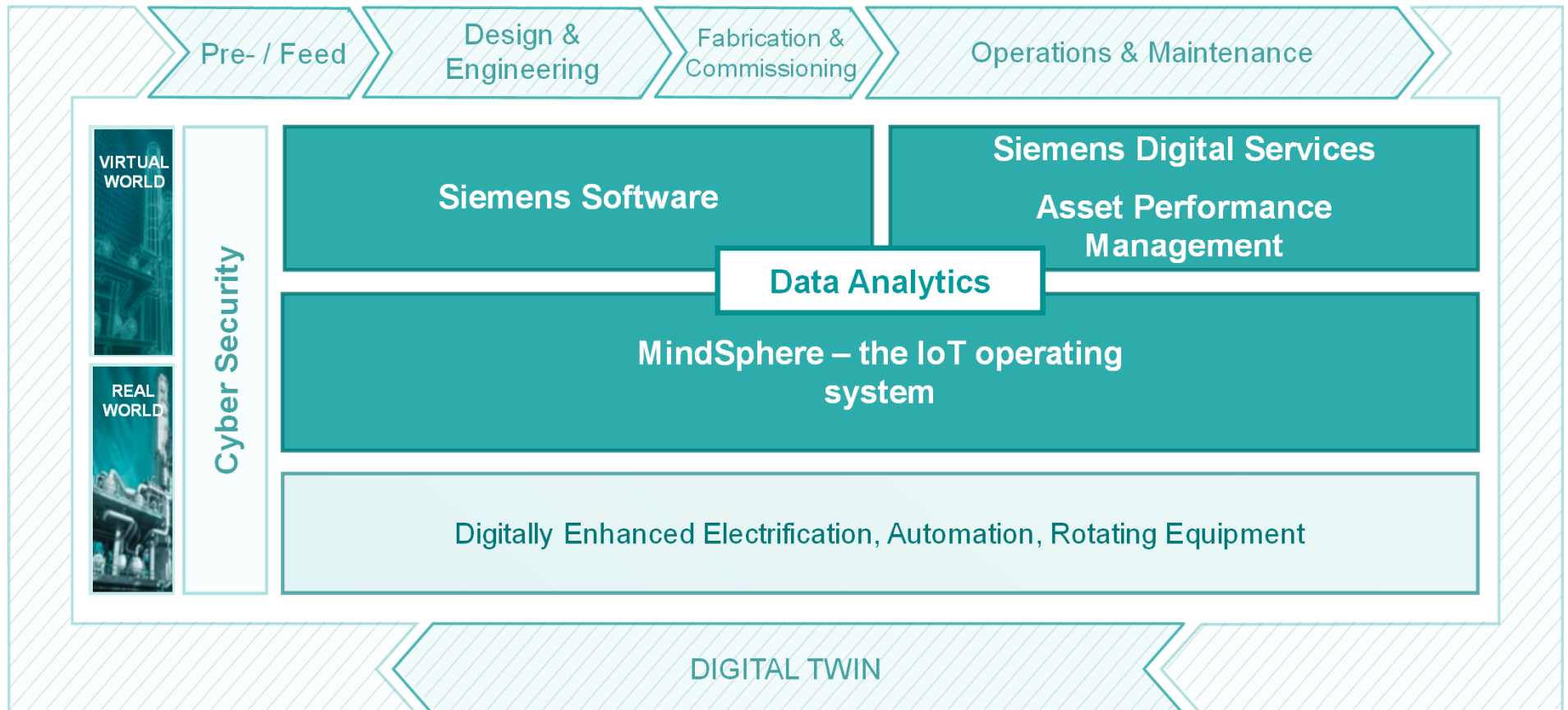


50% reduction in doctor's time for bone reading

Applicability to O&G
Image Analytics

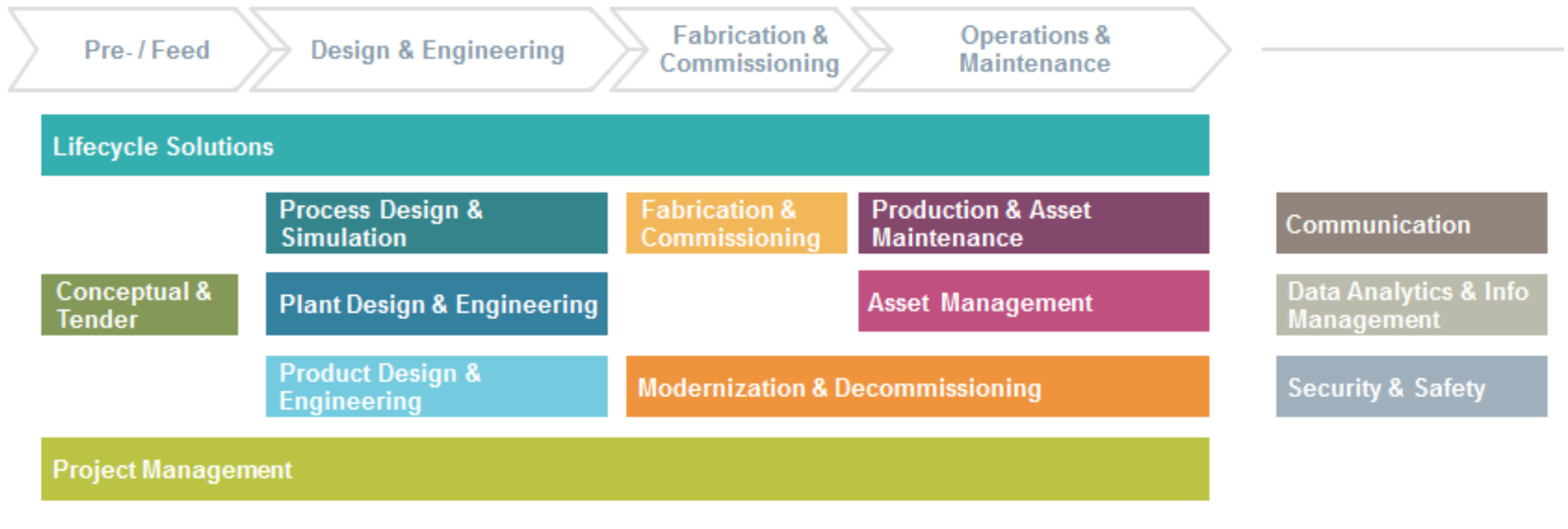
Data Across Asset Life Cycle Drives Development of 'Digital Twin'

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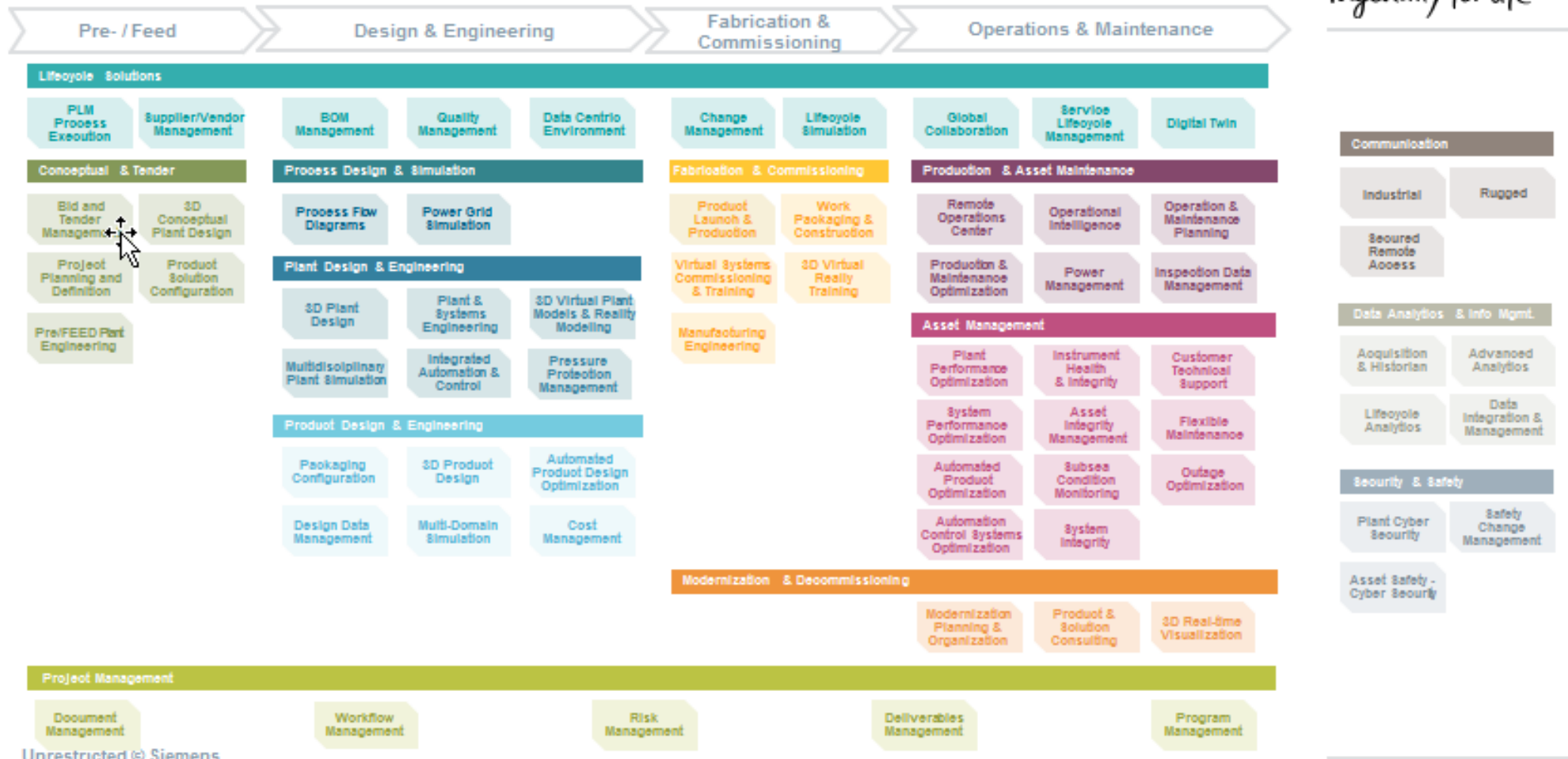
Siemens MindSphere: Oil & Gas Digital Offering

Across the O&G Lifecycle



Siemens MindSphere: Oil & Gas Digital Offering

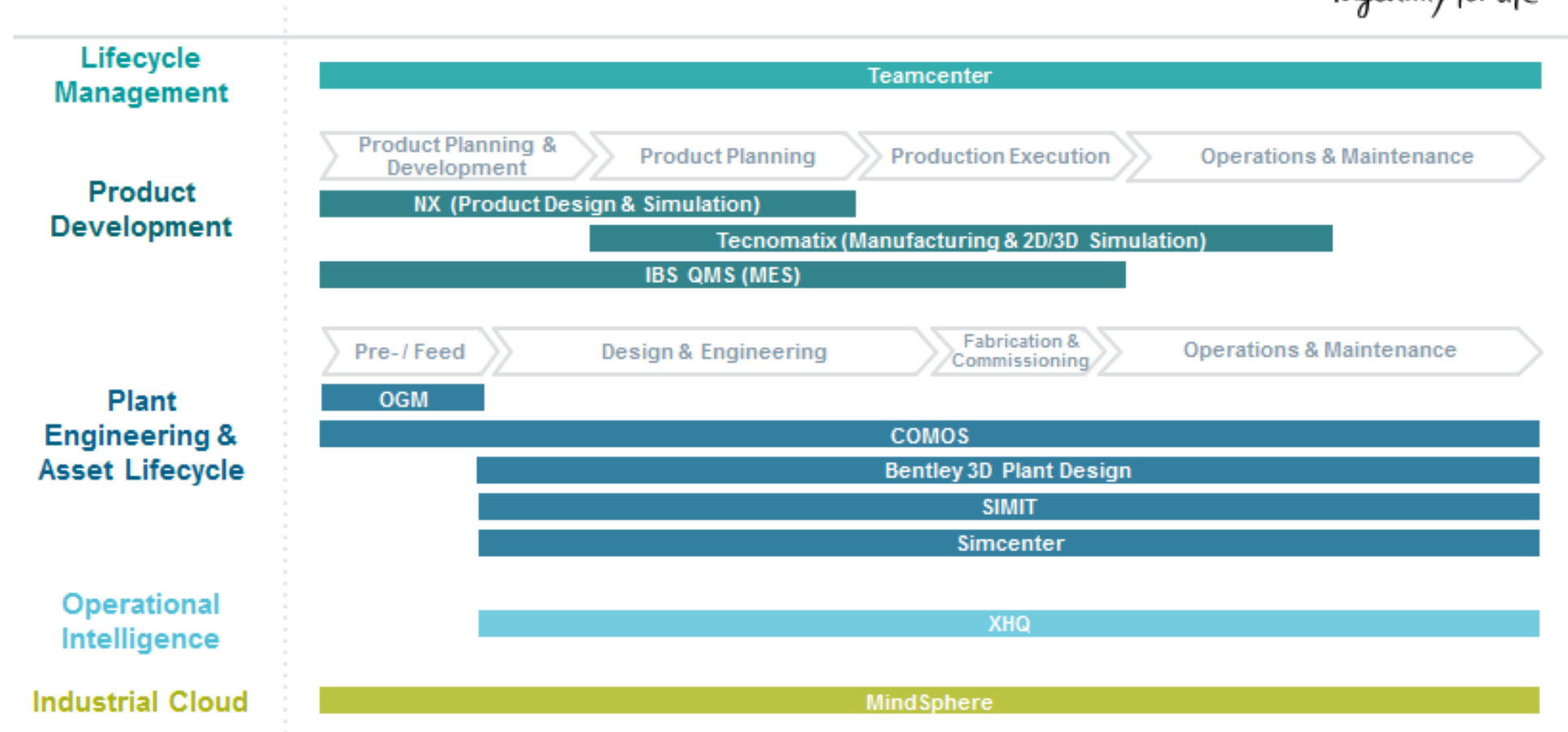
Functional View



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The Siemens O&G Integrated Software Suite



Operational Intelligence

Digital Operations Excellence

XHQ Example: Gas Turbine

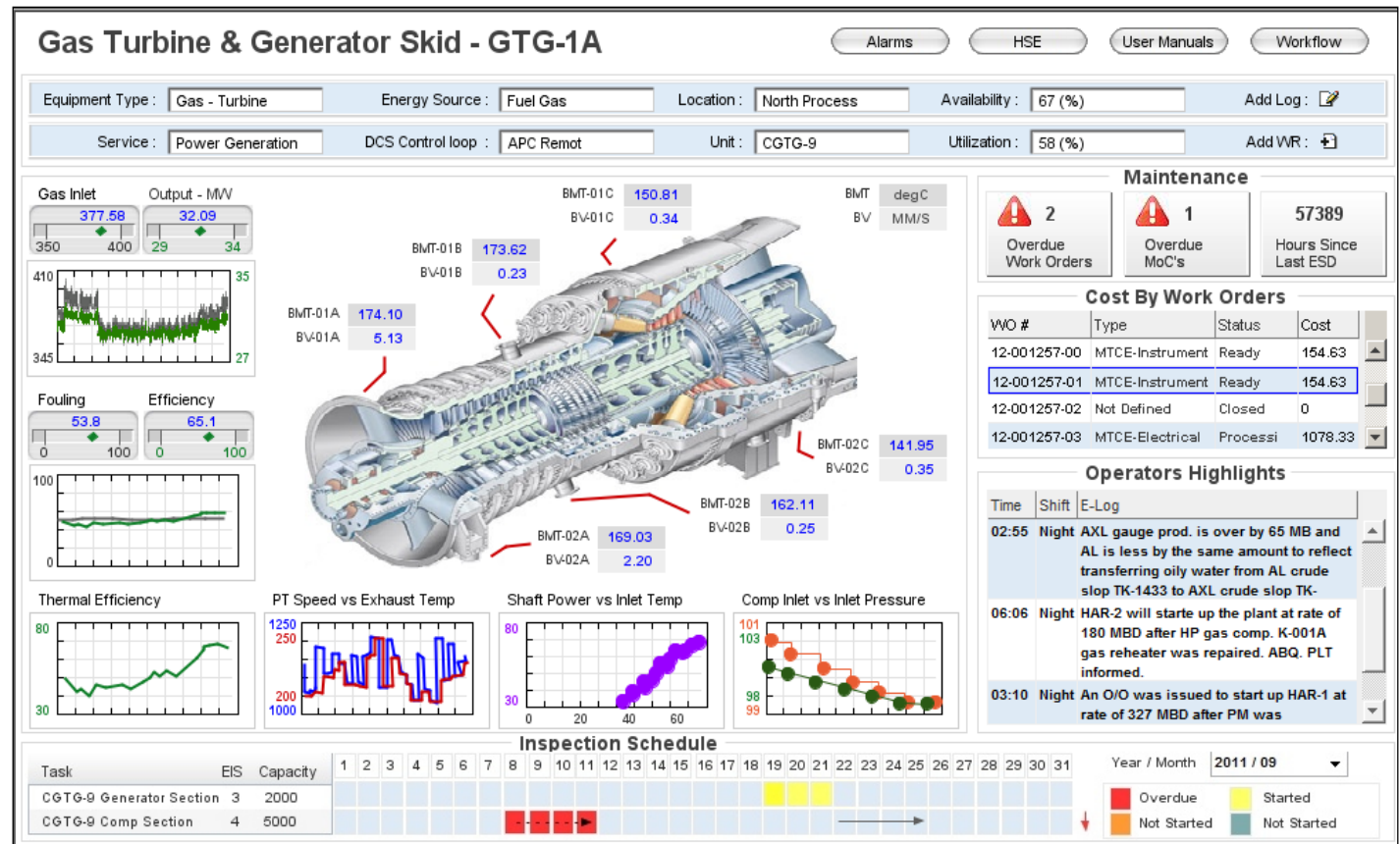


All information on one view

- Operating envelope management
- Monitoring of limits
- Integrated operator logs
- KPIs (multi source)
- Alerts on deviation detection
- Collaboration with HQ experts

Integration of multiple sources:

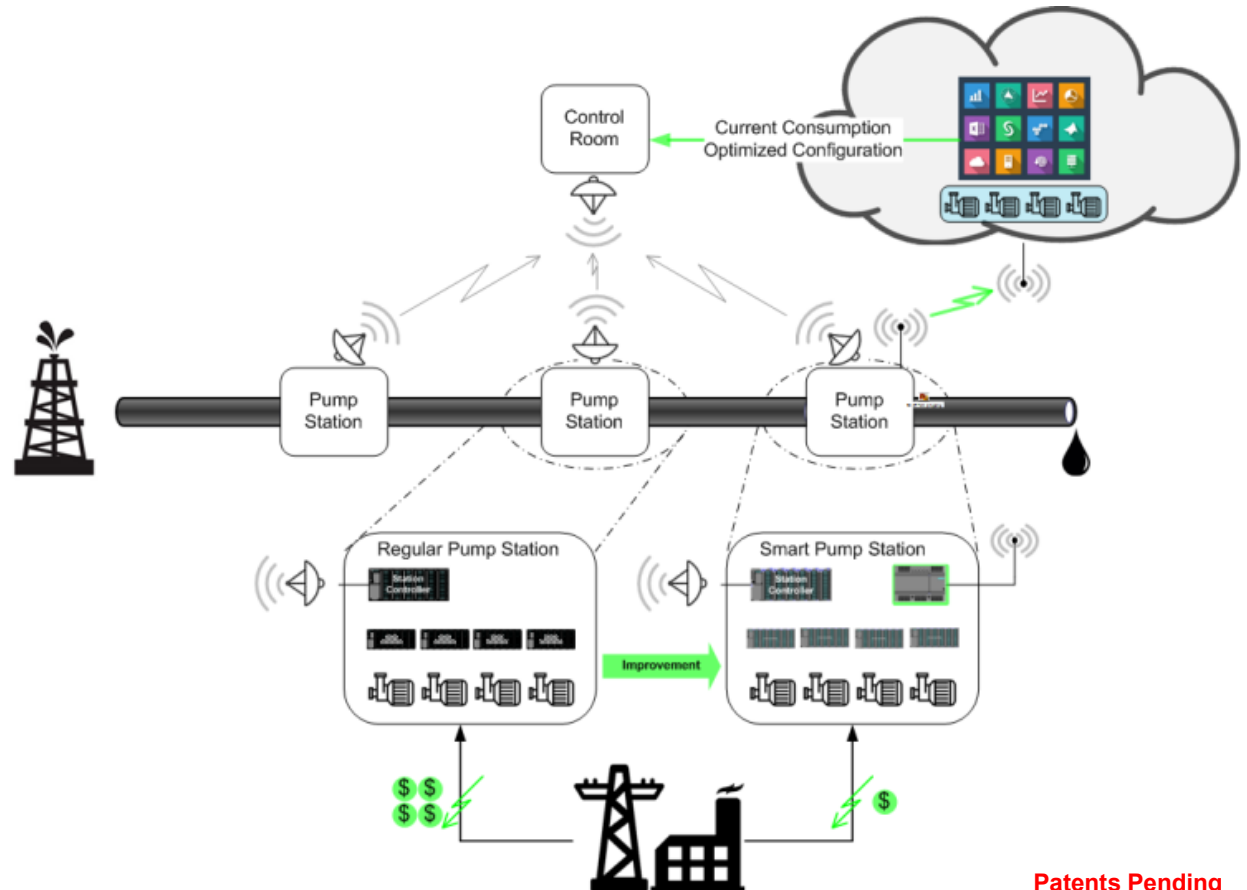
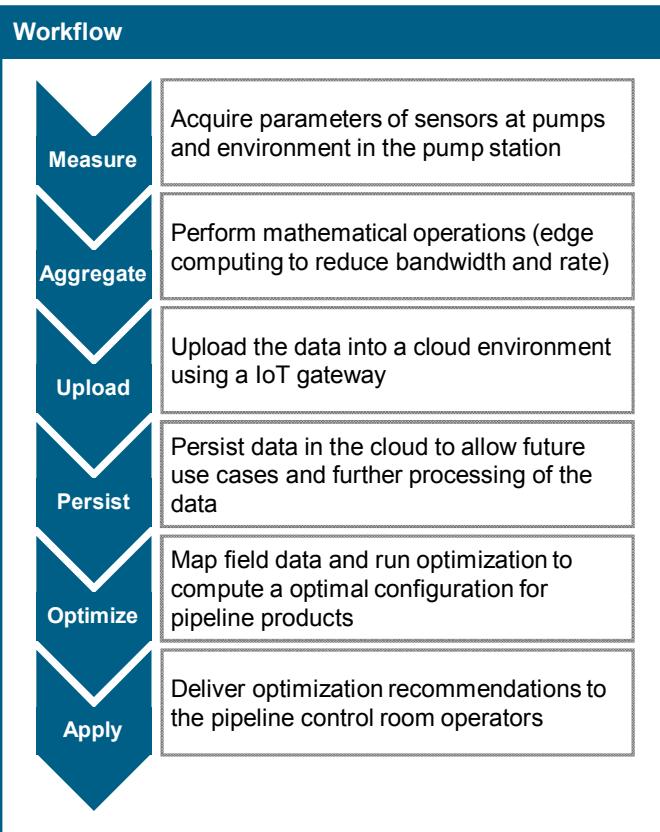
- PIMS, DCS, Alarms, ...
- External Monitoring systems
- Condition Monitoring
- Maintenance Management
- Production Planning
- Shift Book and Log Files
- Manuals, P&ID, Documentation



An example Asset Optimization from O&G

Digitalization applied to a crude oil pipeline

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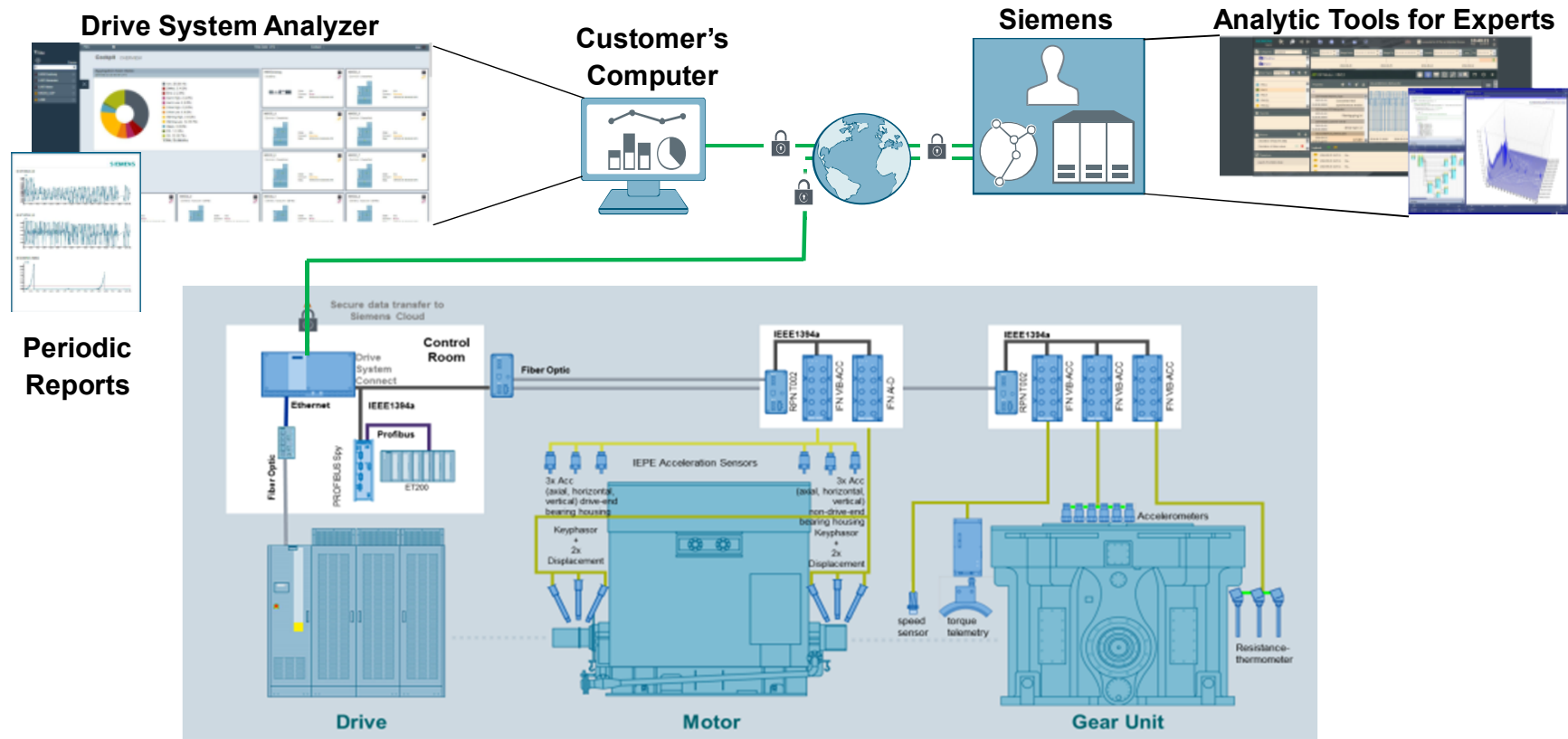


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Patents Pending

Drive Train Analytics Typical Architecture

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MindSphere

The Cloud-Based IoT Operating System



The MindSphere Platform

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MindApps

Data Analytics Apps to gain immediate insights and transform insights into actionable results.

Open Ecosystem for customers, partners and developers to create MindApps.

MindSphere

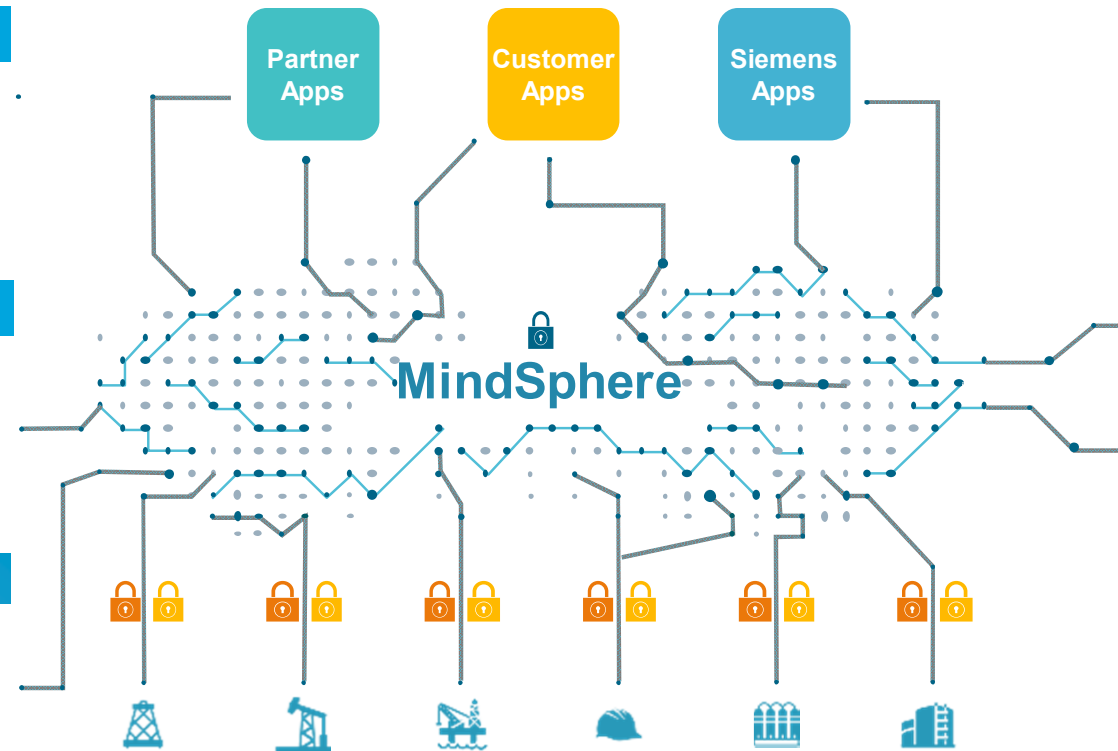
Cloud-based IoT operating system connecting OT to IT environment.

Cloud infrastructure. Public cloud, private cloud, or on-site solution as a closed system.

MindConnect

Plug & play connectivity for quick connection of Siemens assets and **Open standards** (e.g. OPC UA) to other assets.

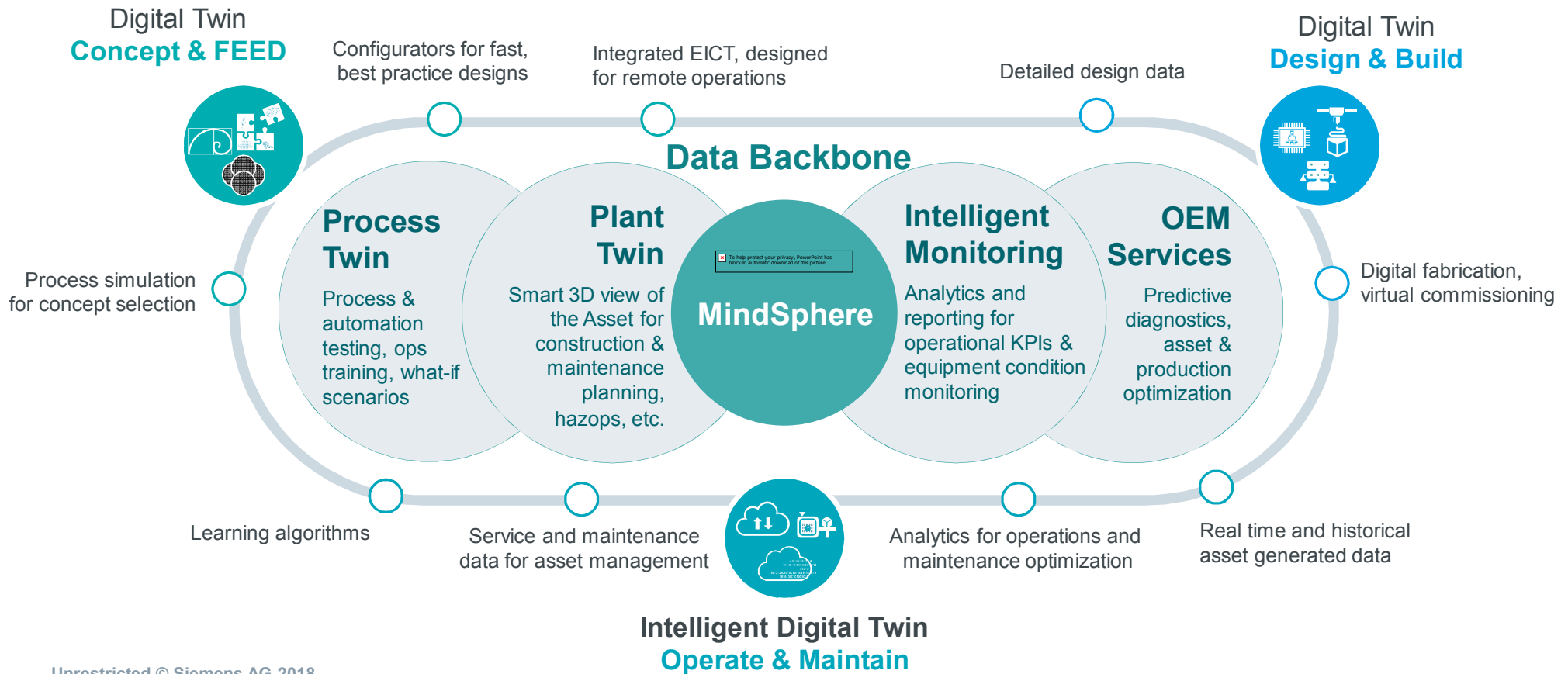
Secure and encrypted data communication.



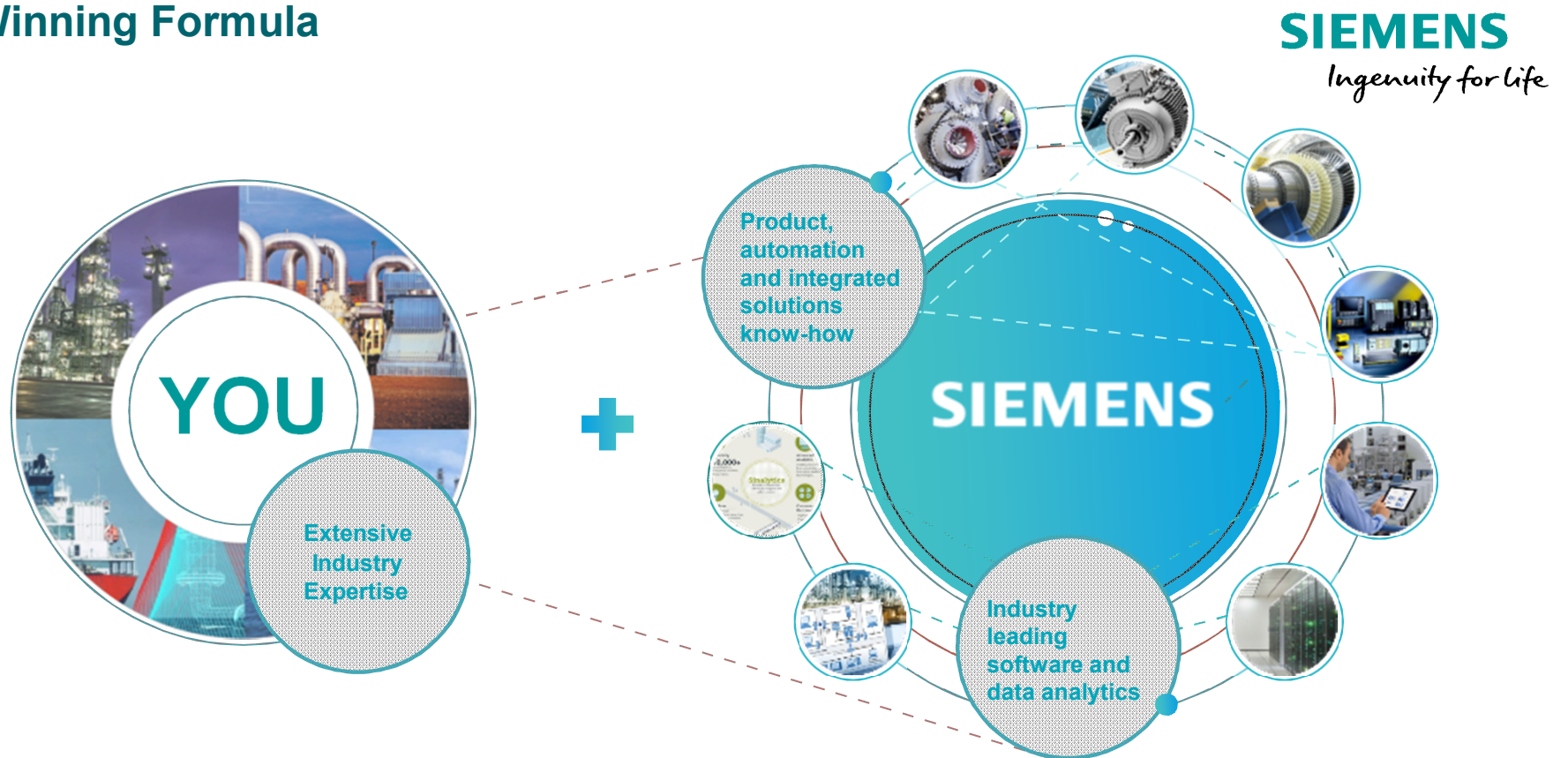
The Intelligent Digital Twin

Value added applications

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The Winning Formula



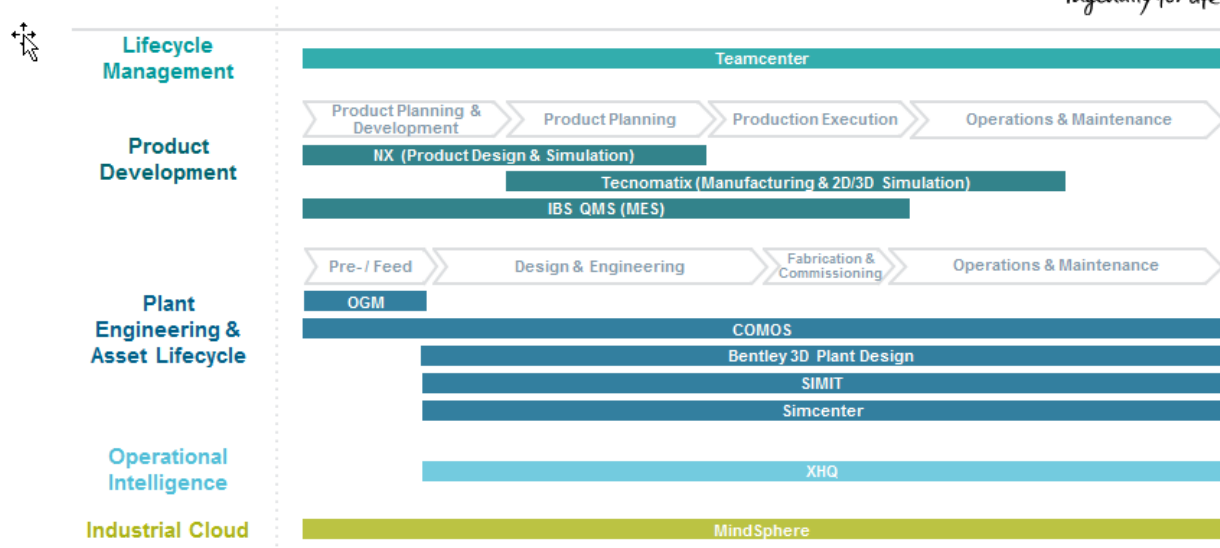
**Developing a digital roadmap via a collaborative approach
to make your company more competitive**

Thank You



The Siemens O&G Integrated Software Suite

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PowerPoint