

OIL & GAS ENGINEERING WEBCAST SERIES PRESENTS

# Simplifying Specifications and Process Management

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*Ingenuity for life*

# Surveys indicate Capex project challenges

- McKinsey Global Institute cites:
- Costs and timelines are underestimated, and benefits are overestimated. This is systemic.
- Low productivity and poor execution based on bad estimates. Inefficiencies caused by incomplete design, lack of clear scope, ill-advised shortcuts, and even computational errors in scheduling and risk assessment.
- Organizational structures and ad hoc standards inhibit effective decision making. This is caused by incongruent goals and objectives at different layers of management and in multi-company engagements.

# Key webcast takeaways:



- Discover how to produce and validate project documentation faster, and more accurately.
- Learn how to minimize risk through structured, automated processes and efficient document management.
- Establish corporate governance in developing and producing project documents.
- Reduce risk and maintain safety while accelerating the specifications process.



# About the viewer panel



## Technical problems?

- Click on the "Question Mark Symbol" on the upper right hand corner of your screen, where you will be directed to a list of system checks
- Send a question from the "Ask a Question" window. Individual technical questions will be answered in the "Answered Questions" on the left hand side of your screen

## Slides:

- Click the four pronged arrow button at the top right corner of the slides to view an expanded window
  - Slides should change automatically
- Click on "Download Webcast Slides" under "Event Resources" for a PDF of all slides
  - Warning: The PDF will be a large file

## Archive:

- Within 7 days, an archive with Q&A will be posted
- We will send an email to registered attendees with hyperlink
- Can also access from [www.controleng.com](http://www.controleng.com) home page

# Speakers



Presenter: Thomas Behrens, Siemens Portfolio Development Executive, Energy



Presenter: Jim Ferranti, Pre Sales Engineer, Siemens



Q&A Panelist: Amanda Miller, Pre Sales Engineer, Siemens



Moderator: Kevin Parker, Senior Contributing Editor, CFE Media & Technology

# Simplifying Specifications and Process Management

*Never Build Out of Spec Again*



## AGENDA

1	Introductions
2	Industry/Business Trends
3	Smart Specifications with Siemens Unified Solution
4	Open Discussion



# Industry Trends

Siemens Energy Webinar



# Business Drivers

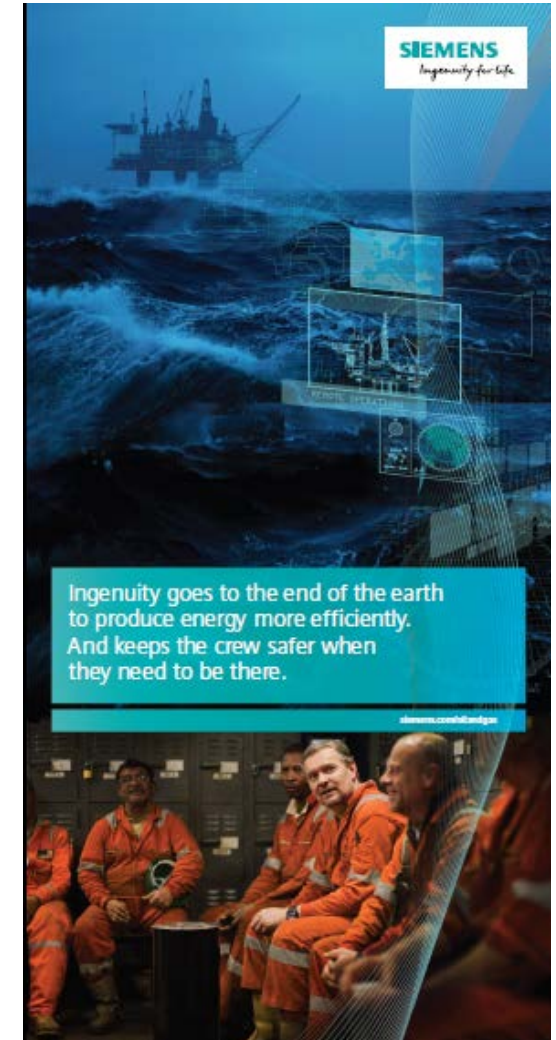
## 'Lower-for-Longer' O&G Market Conditions

In an environment where low oil prices are lower for longer, or possibly forever, energy companies must rethink their entire asset lifecycle:

- Reduce Cost of Operations
- Redesign and Simplify Projects
- Invest in Alternative Energies
- Mitigate Risk and Increase Predictability

Faster | More efficient | More predictable | More reliable | Safer

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# Digitalization Changes Everything, Everywhere

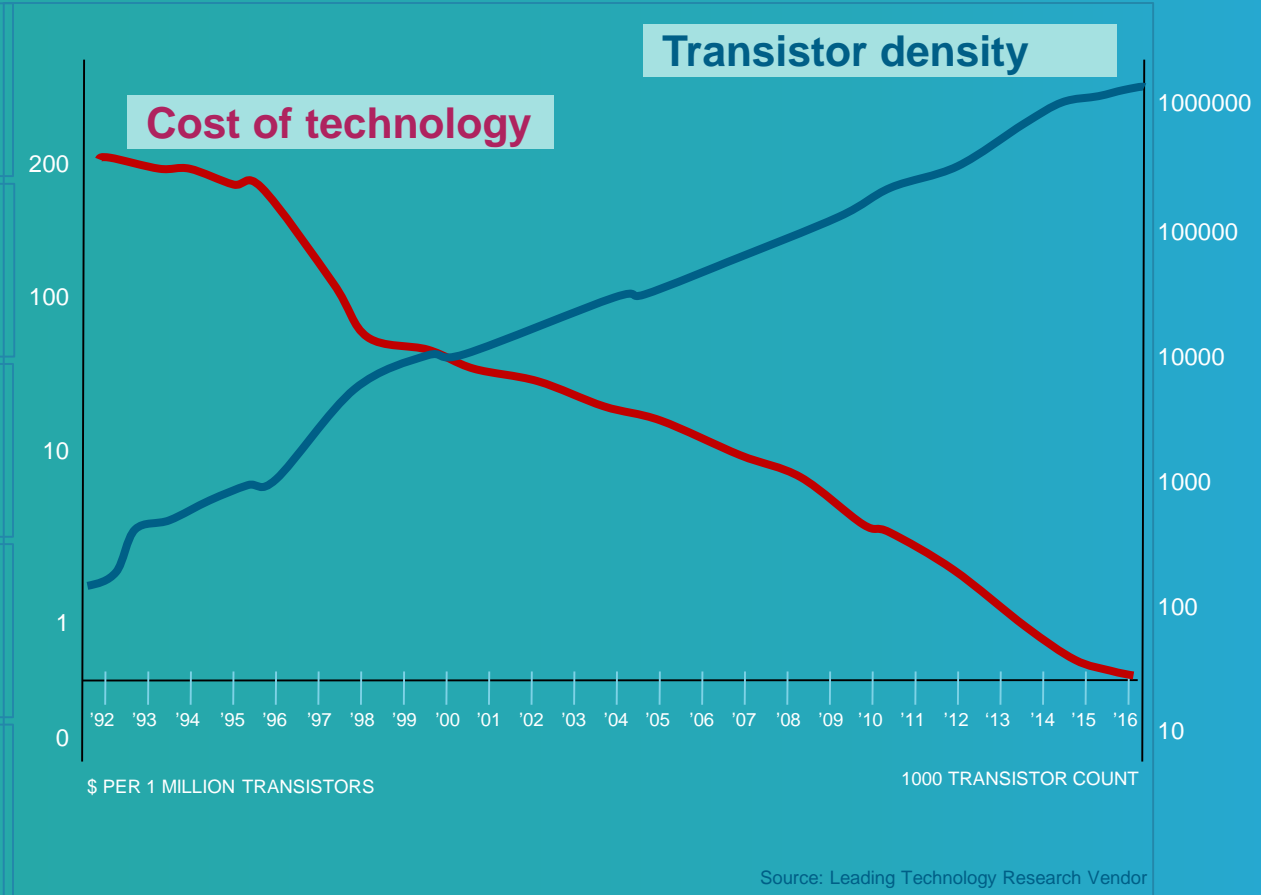
The pace of technological advances is fueling digital transformation

## The cost of key technologies is falling

	DRONES	2007	<b>\$100,000</b>	COST PER UNIT
		2013	<b>\$700</b>	
	3D PRINTING	2007	<b>\$40,000</b>	
		2014	<b>\$100</b>	
	INDUSTRIAL ROBOTS	2007	<b>\$550,000</b>	
		2014	<b>\$20,000</b>	
	SENSORS	2007	<b>\$30,000</b>	
		2014	<b>\$80</b>	
	SMART PHONES	2007	<b>\$449</b>	
		2015	<b>\$10</b>	

Source: Accenture Technology Vision 2015

## Implications of Moore's Law



# The Results...Impacts to the Industry

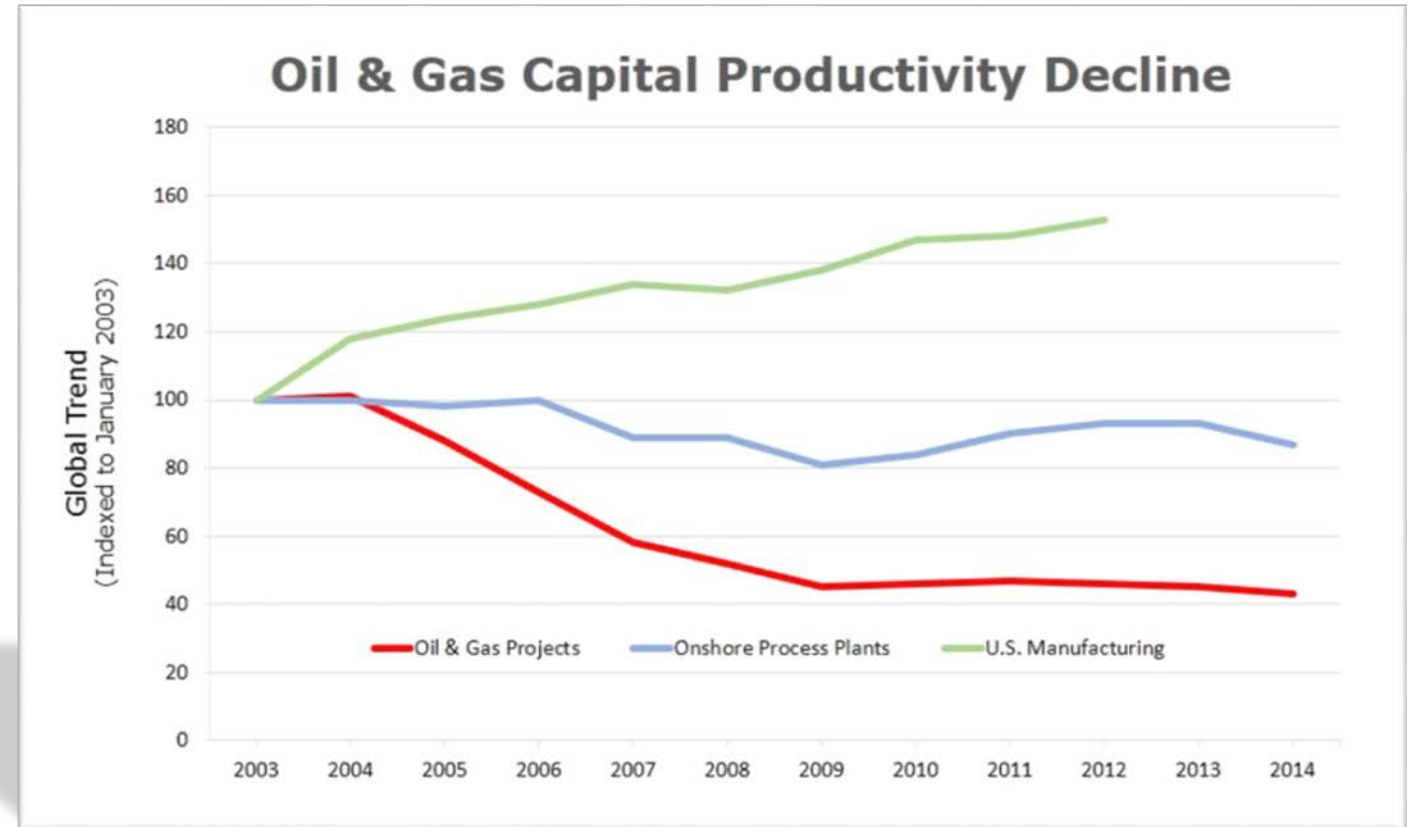
## As a result...

- While manufacturing capital productivity increased over the last decade, E&P capital productivity **declined by over 60%**
- Even in favorable conditions (\$100+ bbl), the industry **missed an opportunity** to innovate
- According to a Cisco, fewer than **one third** of Oil & Gas project leaders can deliver the right information to the right stakeholders in a timely manner
- While unit costs across the board in the O&G industry continue to fall (sensors 30%, storage 40%, etc), the real cost of extracting a marginal barrel of oil **increased over 75%** over the past decade

Source: <http://www.ipaglobal.com/e-p-industry-s-lost-decade>

Source: Oil & Gas Monitor

Source: Construction Industry Institute

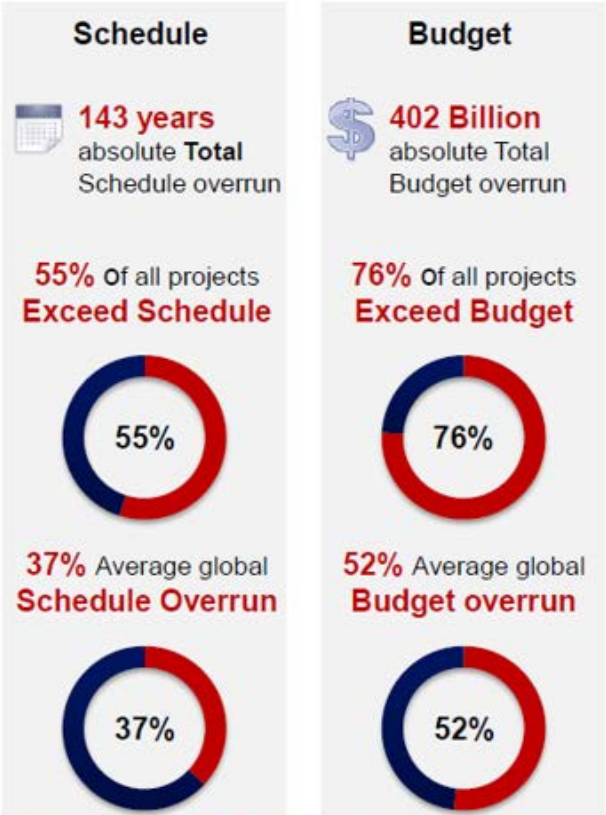
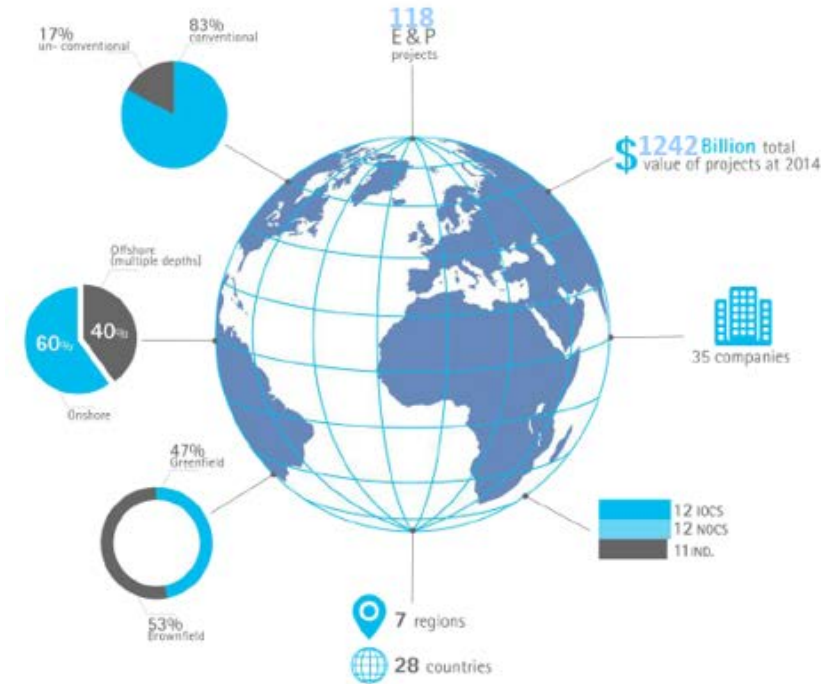


# Project Schedule & Budget Overruns the Norm



“Our research estimates that **98 percent of megaprojects suffer cost overruns of more than 30 percent; 77 percent are at least 40 percent late.**”

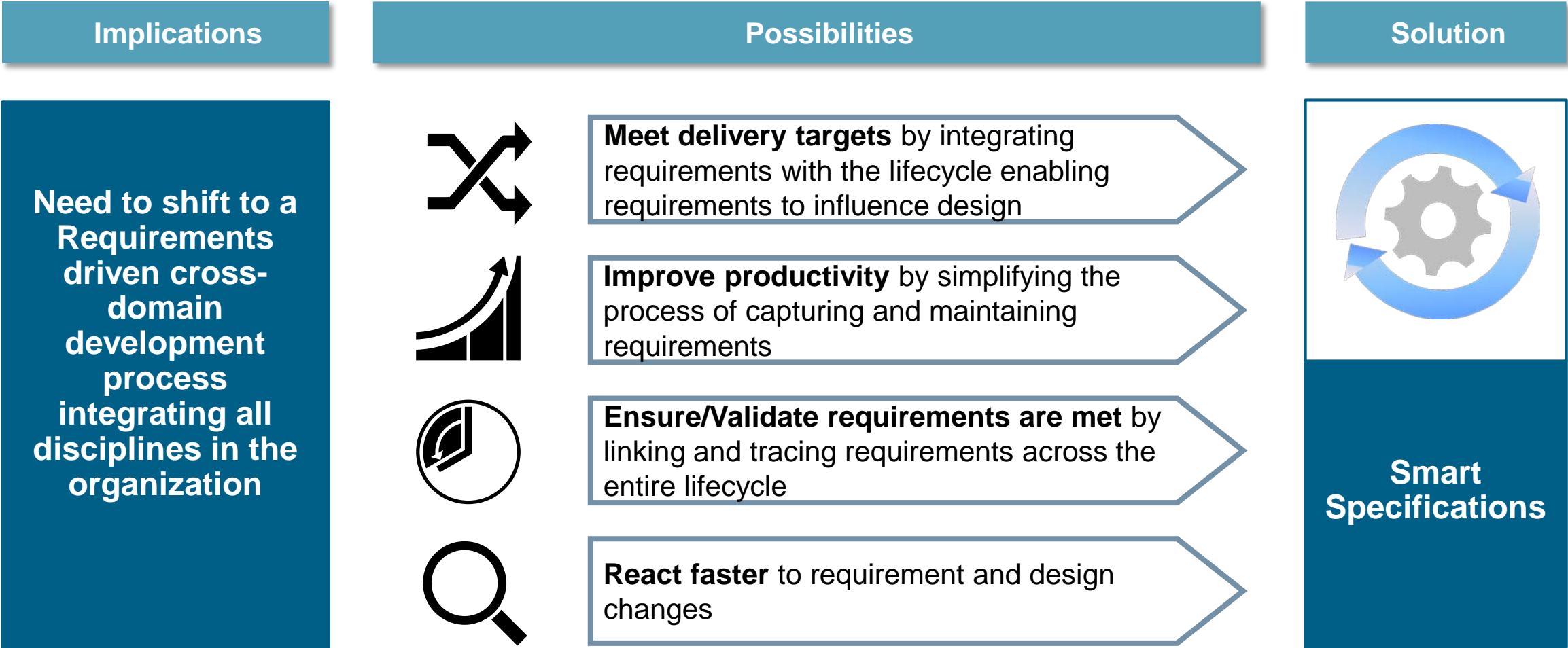
Source: McKinsey&Company: McKinsey Productivity Sciences Center June 2015



Source: “The Future of the Oil & Gas Industry Project”, World Economic Forum in Partnership with Accenture, 2014-2015  
Note: Schedule and budget overruns= projection at FID vs. September 2014 actuals or estimates



# Business Impact and Opportunity



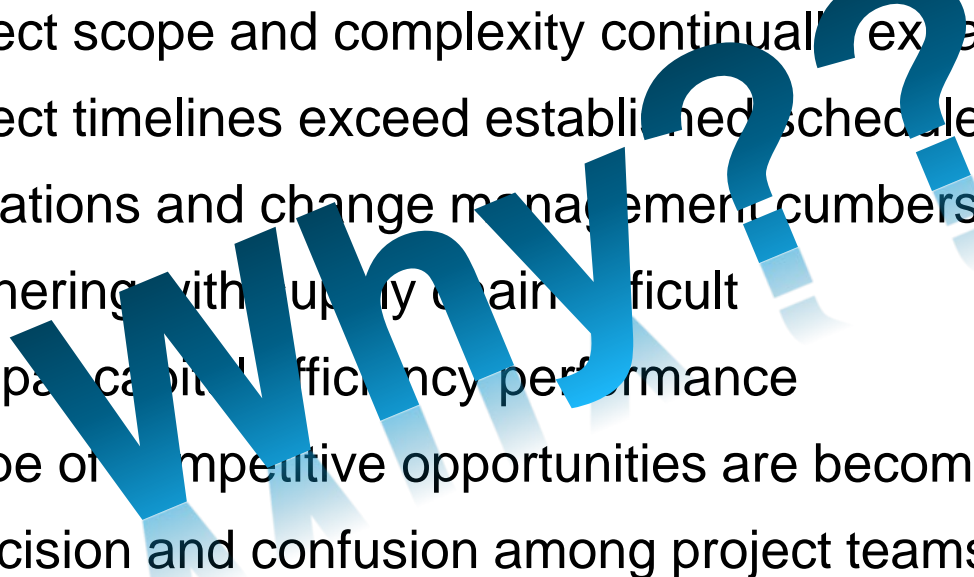


A full-page photograph of an offshore oil rig under a blue sky with clouds. In the foreground, a worker in an orange jumpsuit, white hard hat, and safety glasses stands on a platform, looking up at a large blue vertical pipe. To the right is a white industrial container. In the background, the complex steel structure of the oil rig is visible. A semi-transparent cyan wireframe model of the rig is overlaid on the background, and several red lines representing data or connections are overlaid on the left side of the image.

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**Business Impacts**



- 
- Project scope and complexity continually expanding
  - Project timelines exceed established schedules
  - Deviations and change management cumbersome
  - Partnering with supply chain difficult
  - Sub par capital efficiency performance
  - Scope of competitive opportunities are becoming deeper
  - Indecision and confusion among project teams



### Incomplete or flawed requirements



# Organizational Disconnects



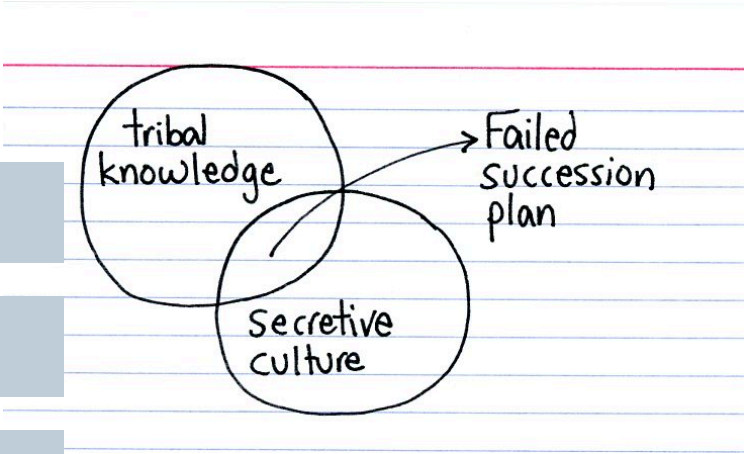
Dispersed Teams

Tool Silos

Aging Workforce

Inconsistent Ad-hoc Processes

Accountability



# THAT'S WHY WE BUILT POLARION

A unified solution for the entire Specification and Requirements Lifecycle



## Collaboration

- Cross-Functional Teams
- Automated Workflows
- Zero Client Footprint
- Software Reach



## Reuse

- Reuse Based Development
- Reuse Requirements
- Reuse Tests Cases
- Reuse Objects
- Reuse Code



## Traceability

- Deep Granular Relationships
- Granular Code Traceability
- Documents Traceability
- Object Traceability
- Process Traceability
- Historical Traceability



## Interoperability

- Open Architecture & APIs
- Central Test Management
- Unified Issue Tracking
- Extensions
- Open APIs



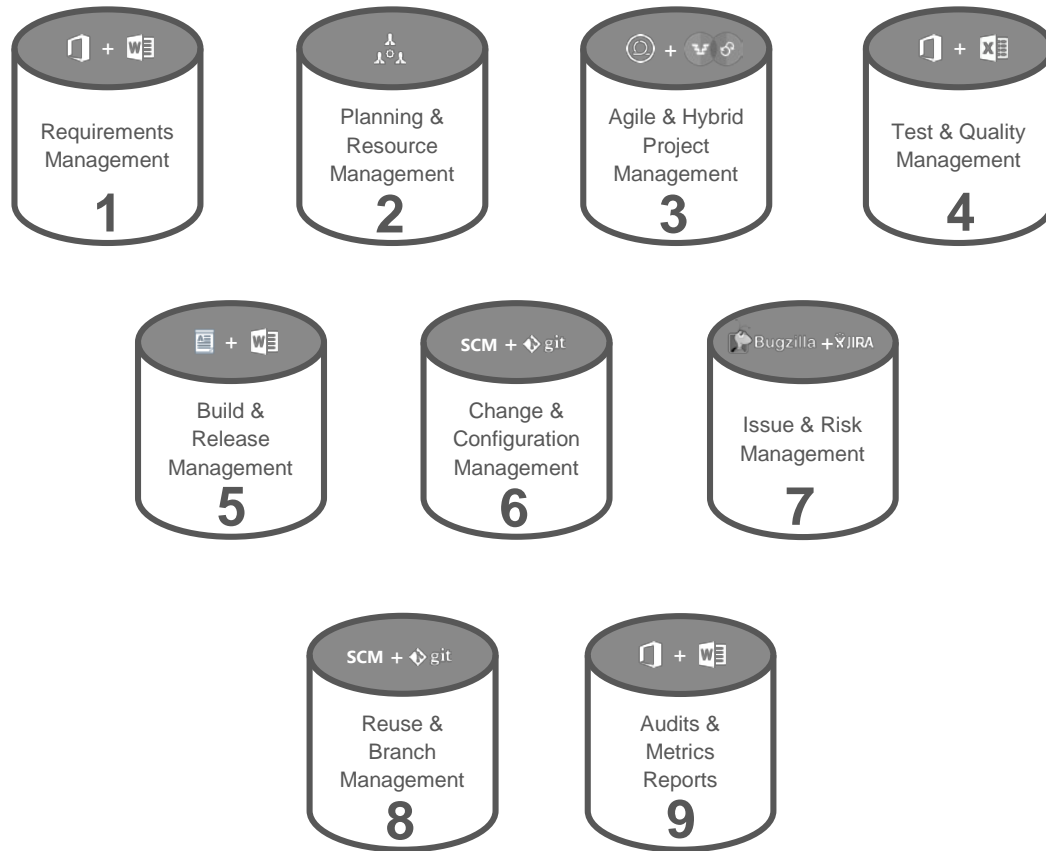
## Compliance

- Automated
- Industry Specific Templates
- E-Signatures
- Automatic Audit Trails
- Workflow Assurance

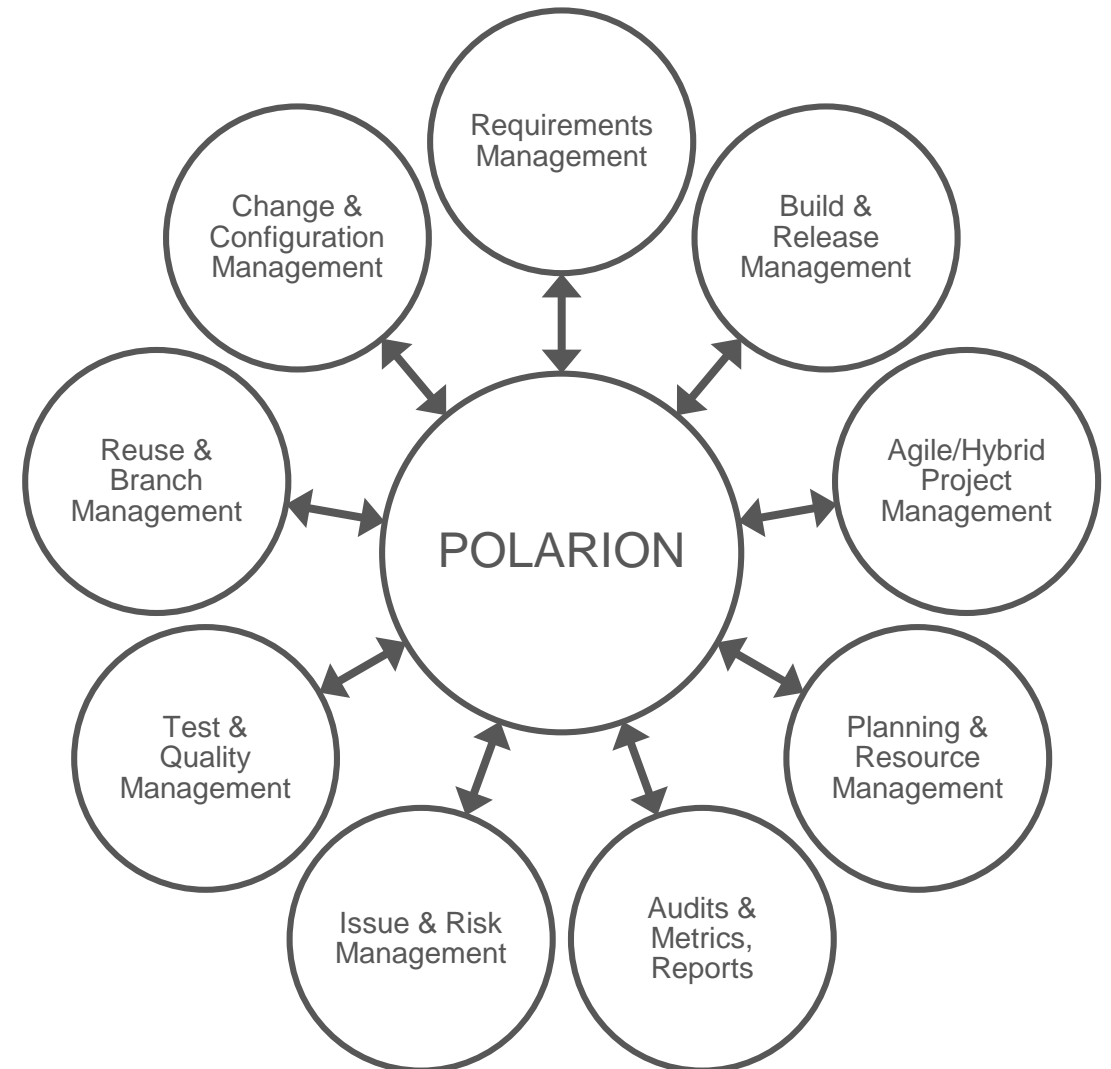


# IT'S A NEW WAY OF THINKING

## Traditional Siloed Software Development Approach



VS.





A full-page background image of an offshore oil rig under a blue sky with clouds. A worker in an orange jumpsuit and white hard hat is visible in the foreground, working on a blue structure. A semi-transparent, glowing blue wireframe model of the entire rig is overlaid on the scene, illustrating augmented reality (AR) technology. Red lines also trace paths through the rig's structure.

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# SMART Specifications



Specific, measurable, accurate, realistic, traceable



- Document creation a tedious manual process
  - External PDF documents received by customers/stakeholders parsed, copy/paste, and individually saved
  - New document must be validated against original PDF and frozen
  - External elements need to be distinguishable from internally created requirements
  - Reusing documents as either stand alone or in parent/child relationship subject to mistake
  - Difficulty in creating nested (child/parent) requirements
- Change Management
  - Traceability a highly manual and time consuming process and subject to error or omissions
  - Risk priority assignment and verification
  - Differentiating internal from external specifications difficult
- Reporting



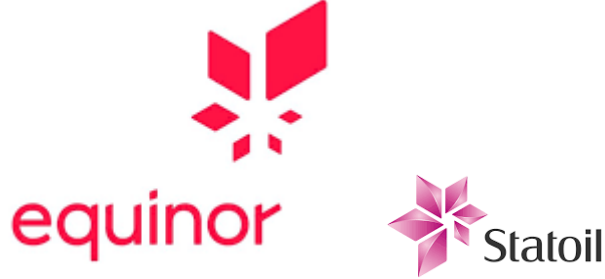
Specific, measurable, accurate, realistic, traceable



## Key points why TFMC chose Polarion:

- OOTB Reporting capability
  - No extra modules needed for building custom reports
- Ease of use
  - Faster onboarding due to Polarion's user friendly interface
  - Process and workflows match existing methods
- Quick to stand up
  - Stand alone application – no dependence on other applications
  - Centralized management – easy integration with other tools
  - Lightweight web based client, no need for special client application
- Cloud based
  - Reduced IT overhead
  - Greater focus on

# Customer Success: Equinor/Statoil



## Initial State:

- Requirements captured in all competence areas
- Requirements disciplines unique to each of the competence areas
- Document management solution
- Excel for “traceability”
- Manual branching and versioning of documents

## Challenges:

- Document status difficult to identify
- Difficulty in managing individual requirements within a document
- Manual traceability labor intensive and time consuming
- Manual methods prone to errors causing significant revenue loss
- Individual silos of data difficult to manage

# Customer Success: Equinor/Statoil



## Solution State:

- ALM, RM, and Reviewer licenses
- Migrated data from DocMap document management solution into Polarion
- High visibility through unified collaboration
- Load balancing and failover architecture
  - 2 node cluster
  - Staging server for system validation and testing

## Business Value:

- Branching and Merging simplified adaptation of requirements documents for each discipline area
- Significant time reduction in preparing specifications documents
- Consistency and governance maintained between different operating units
- Flexible and targeted reports that are easy for any user to build

*“What we see is a maturing in our organization with respect to requirement writing and requirement governance. This maturing combined with possibilities enabled by use of a requirement management tool will lead to more “fit for purpose” specifications and improved requirements.”*

**Torleif Saltvedt**

*Project Leader Management System  
Statoil*



...from our customers



*“The use of Polarion during the DO-178B audit was, simply stated, incredible. The Designated Engineering Representative (DER), Defense Department representative, and the two representatives from the prime contractor (software quality and software engineering) all remarked that Polarion was “impressive.”*

Task	Efficiency Gains
Complete document catalog	467%
Complete pre-audit review	658%
Summarize traceability architecture	657%

A Major Aerospace Manufacturing company

*Polarion drastically improved the collaboration of stakeholders by tearing down the walls between organizational units and encouraging them to participate in a comprehensive product development approach.“*


*Jörn Tiedjen ,LMT Lammers Medical Technology*

50%

TIME REDUCED  
creating new requirements

### U.S. FAA Flies High with Polarion

”Polarion takes new feature requests quickly, and that’s great!”



80%

TIME REDUCED  
on traceability management

### Spancion Significantly Reduces Traceability Management Time

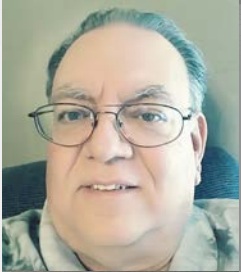
SPICE Level 2 reached in short time

Polarion is the first to deliver a full ALM tool qualified for ISO 26262 / IEC 61508

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# Submitting Questions, Exit Survey and Archive

## Questions?

Type your question in the “Ask a Question” box on the Webcast Console and click “Send.” We will get to as many questions as we have time for. Questions that are for today’s presenters will be answered verbally during the Q&A session.

## Exit Survey:

Please take a moment to answer a few questions on our exit survey that will pop up on your screen at the conclusion of the webcast. We use the answers to help make improvements to our webcast program.

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