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Digital OilField

The NEW wave…

Oil & Gas Market Dynamics

50%

Decline in oil price since June 2014

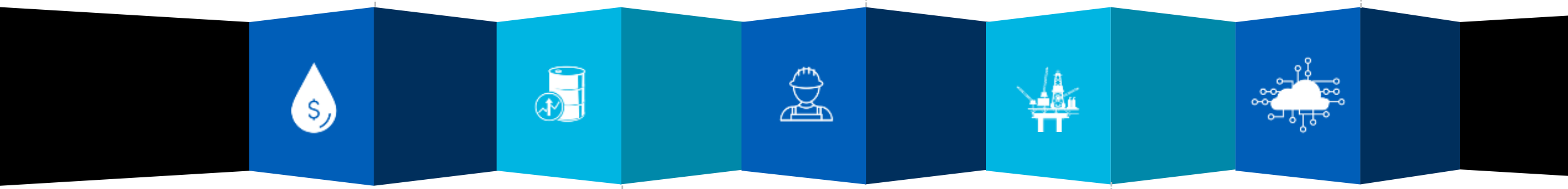
40-60%

Of workforce to retire in the next 5 to 10 years

11%

Improvement in EBIT driven by the adoption of the Internet of Everything (IoE)

For a $50 Billion O&G Company



100M+

Barrels of oil and liquid fuels per day globally (IEA five-year outlook), indicating the growing demand

$20B

Average impact in unscheduled downtime or almost 5 percent of production in the process industries

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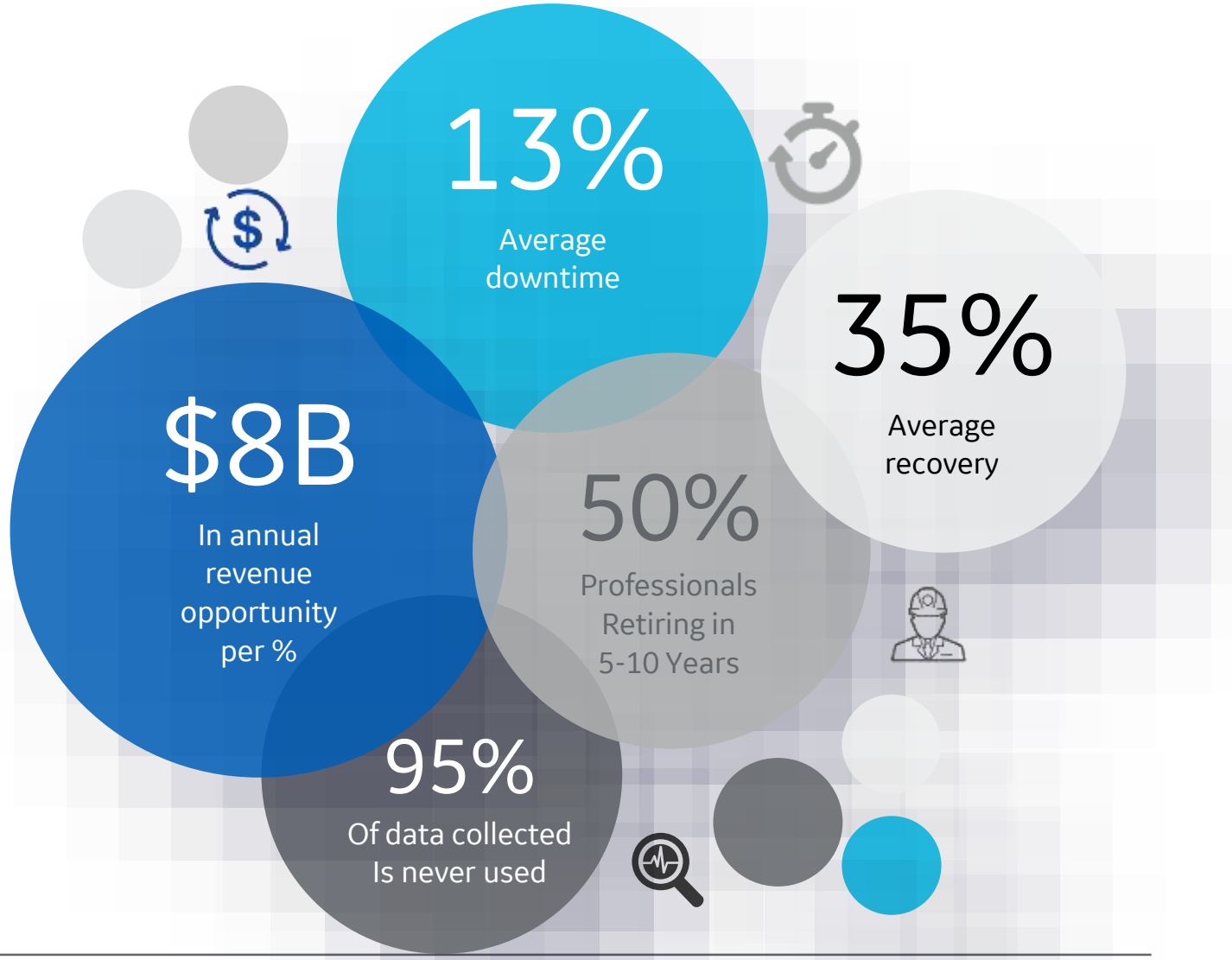
Upstream Needs

Onshore, Offshore/FPSO, Subsea

- Increase capital efficiency & profitability
- Reduce marginal cost
- Minimize downtime
- Improve health, safety and environment
- Digitize knowledge of retiring workforce
- Find productivity gains hidden in data & workflow silos



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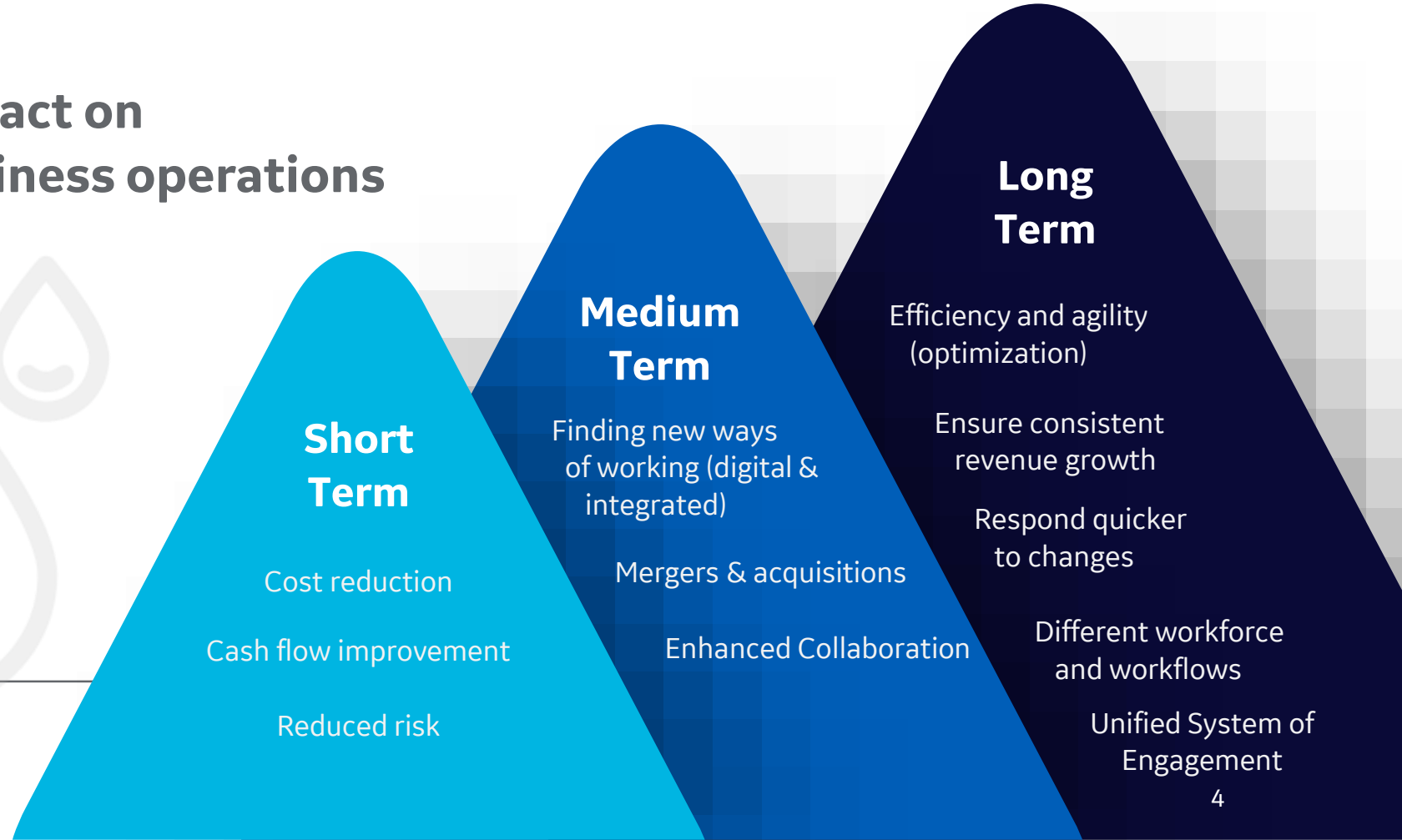
Impact of Extended Low Oil Price

Impact on business operations



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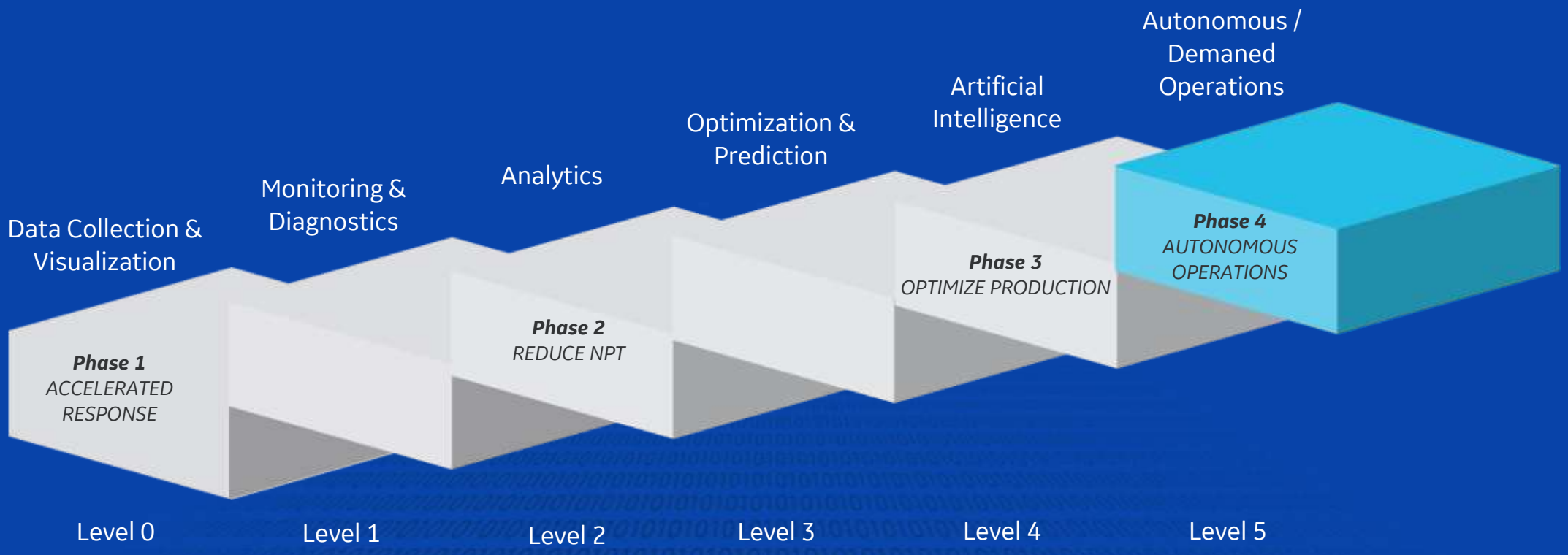
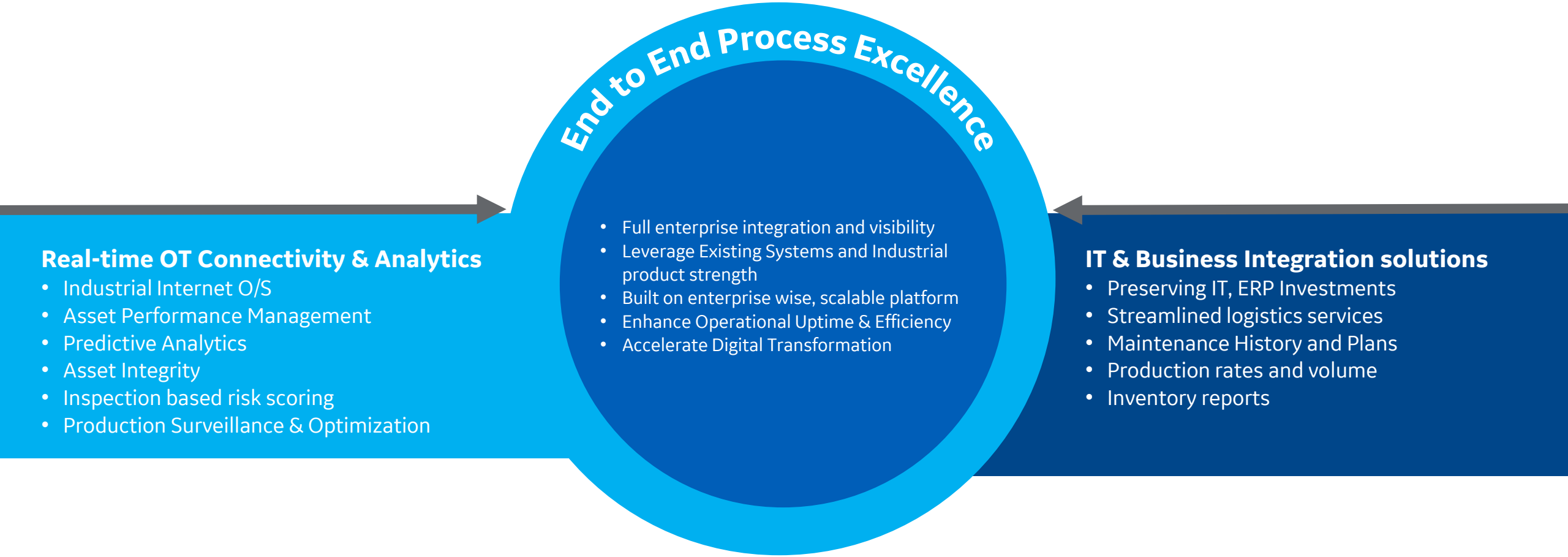
Digital Transformation Journey Has Already Begun



Digital Transformation Hinges Upon Connecting IT &OT

Interoperability drives process efficiency in Oil & Gas



Real-time OT Connectivity & Analytics

- Industrial Internet O/S
- Asset Performance Management
- Predictive Analytics
- Asset Integrity
- Inspection based risk scoring
- Production Surveillance & Optimization

IT & Business Integration solutions

- Preserving IT, ERP Investments
- Streamlined logistics services
- Maintenance History and Plans
- Production rates and volume
- Inventory reports

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Start from the value…

Customer Value →

Insights	Reliability & Life	Compliance & Integrity	Maintenance & Utilization	Resources	Production	Process	Design & Planning
• Obtain a unified view • Reduce response time • Prioritize actions	• Reduce unplanned downtime • Extend asset life	• Ensure regulatory compliance • Reduce asset risk	• Reduce planned downtime • Improve asset lifecycle cost, utilization.	• Optimize resources (non-asset) based on real-time condition	• Increase throughput • Improve recovery	• Increase process efficiency	• Optimize capital investments

Complexity →

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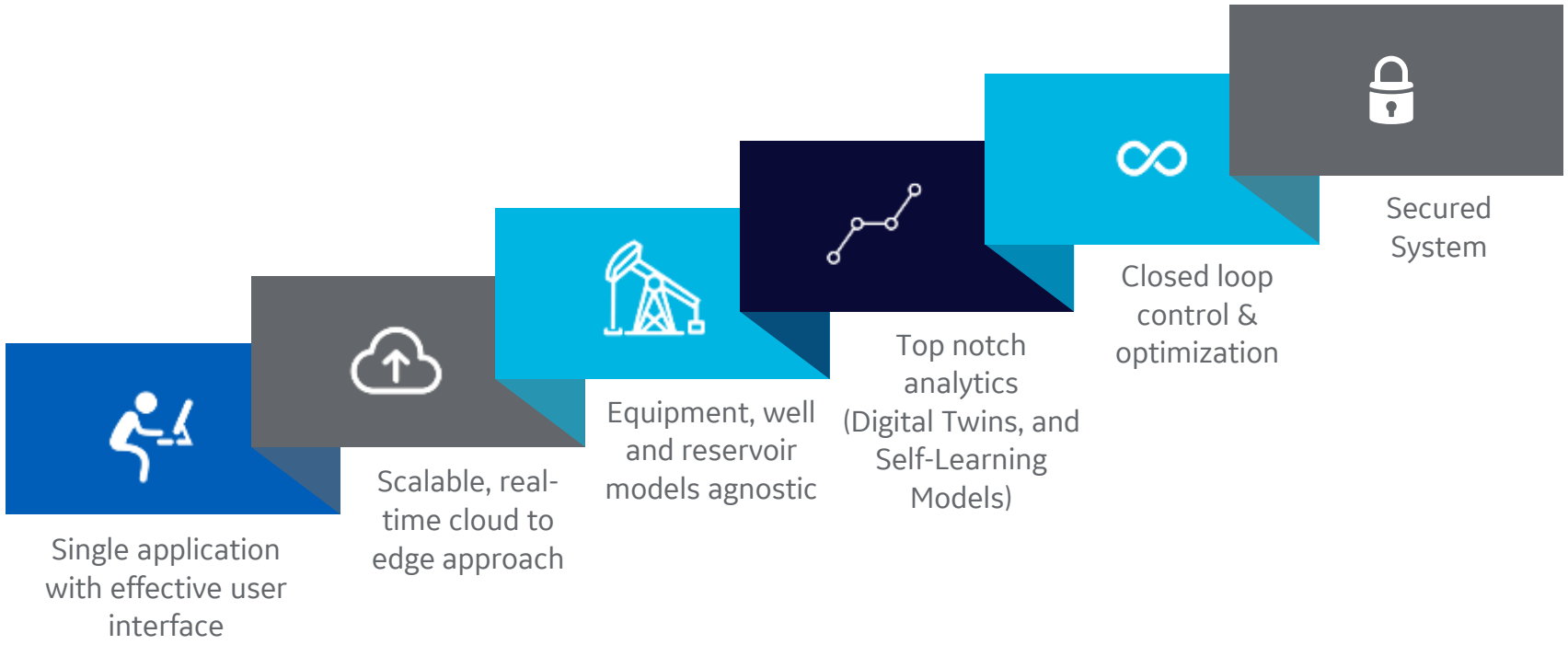
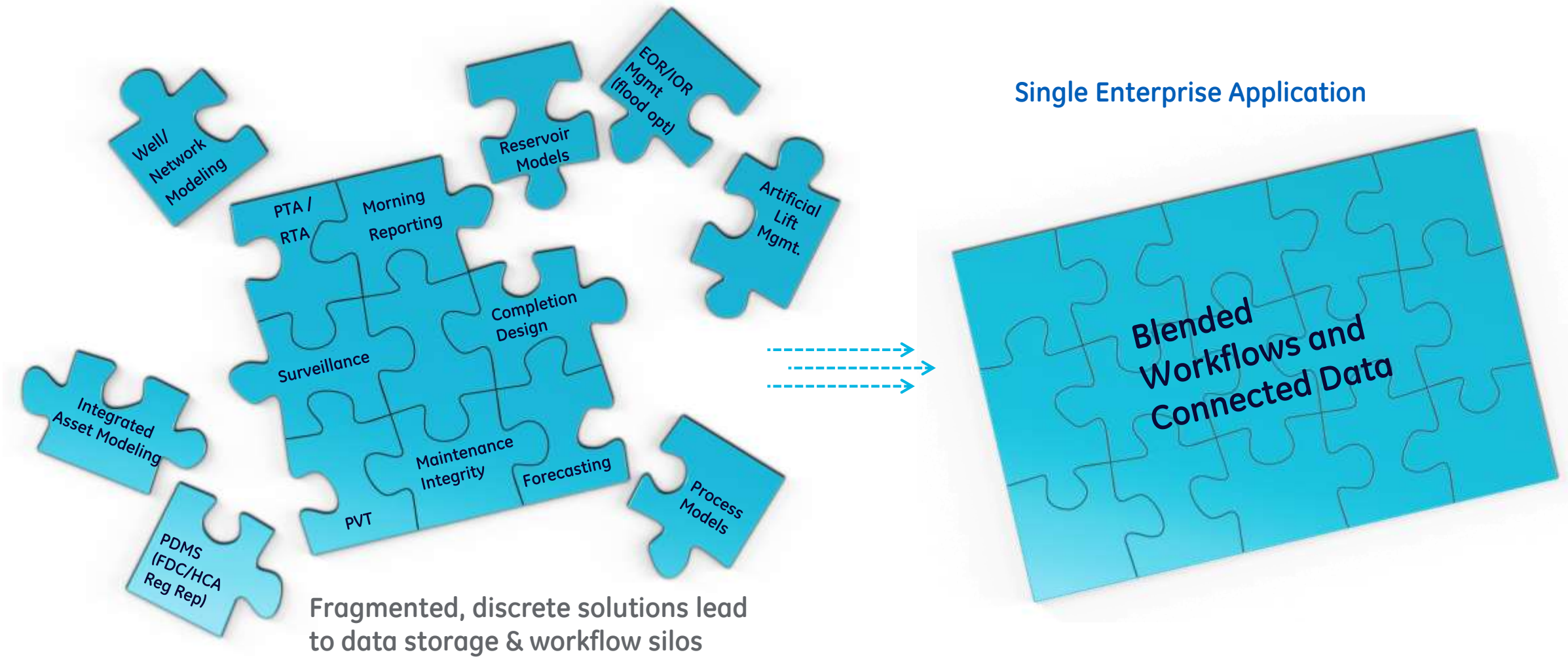
System Requirements...the basics



Defragmentation is a must… it is not an SI exercise



Fragmented, discrete solutions lead to data storage & workflow silos

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Deterministic or Statistical… Neither!

Process

Raw Data

Observations
Billions - Trillions

Machine Learning / AI

Rich Data
Hundreds - Thousands

Hybrid – Physics Analytics

Business Decisions
Tens - Hundreds

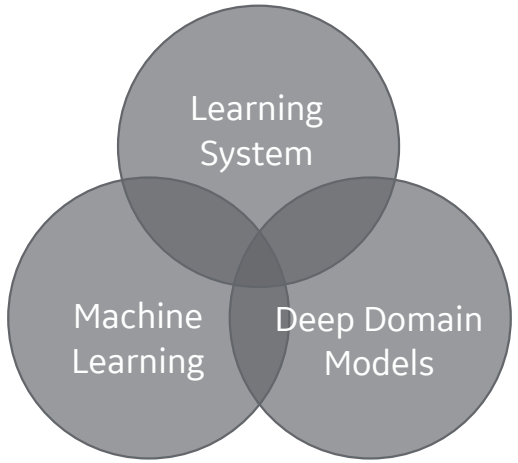
Integrated Solutions

Asset e.g. Artificial Lift

System of Assets
e.g. Well

System of Systems
e.g. Oilfield

Approach



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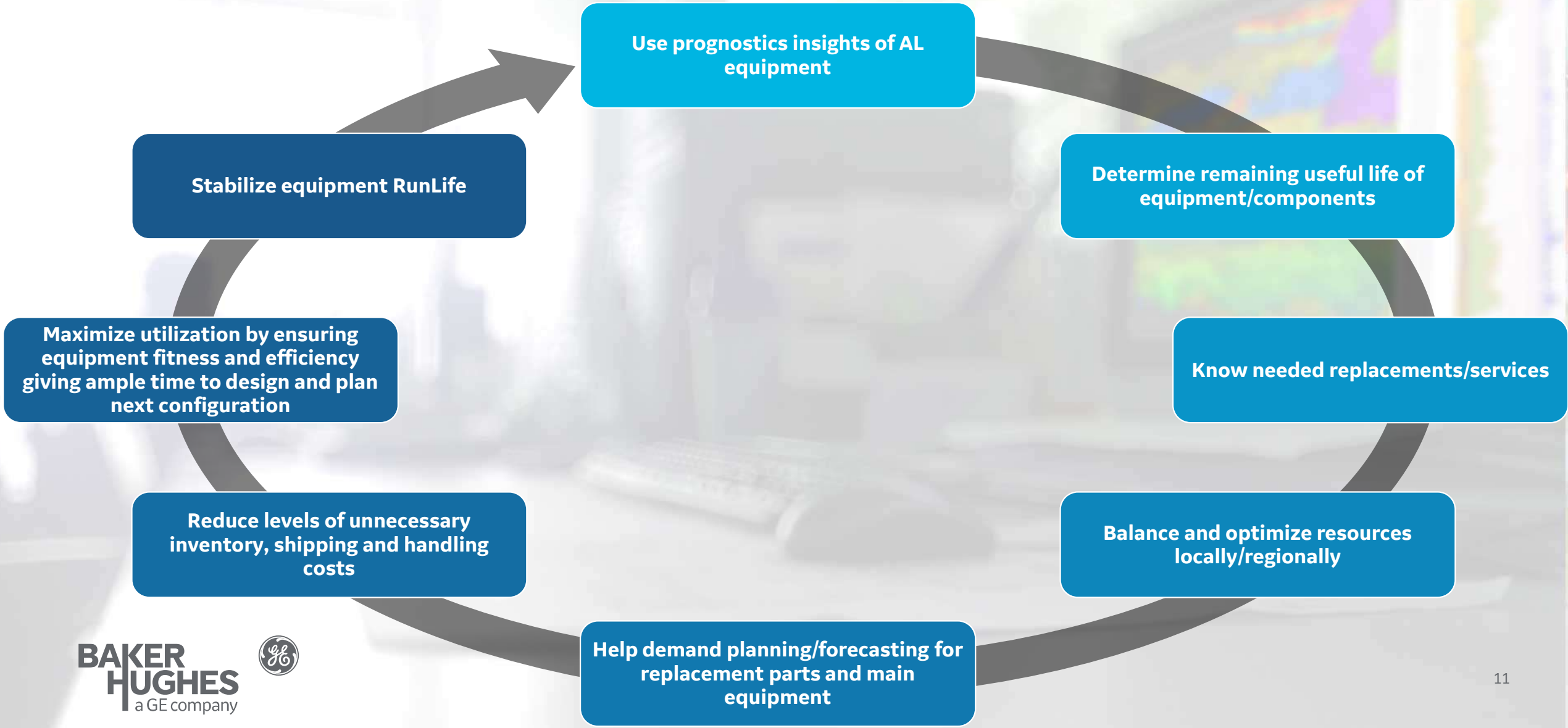
Operational Example



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Digital Transformation Can Make a Difference…

Upstream

- 2-3% improvement in production volumes
- 5-10% variable cost reductions
- 15-25% reduction in primary preventative maintenance costs
- 10-15% reservoir optimizer NPV increase
- 10-20% lift optimizer production increase
- 30-60 day lead time for equipment failure early warning

Midstream

- 65,000 barrels estimated reduction in pipeline spills
- 3% estimated reduction in accidents and injuries

Downstream

- 15% improvement in employee productivity
- 25-50% automation of manual process
- 1.5-2.5% cut in operating costs
- 20% decrease in capital expenditures

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How To Get Started

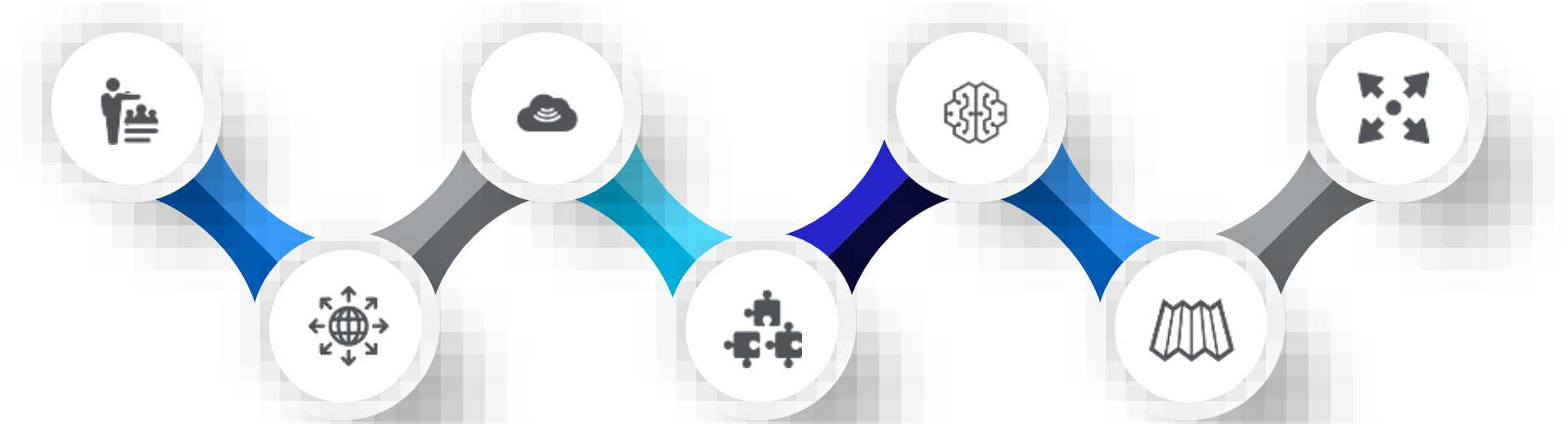
Sponsor from the top

Begin with the cloud at the core

Leverage

Data science and machine learning to do the heavy lifting

Start small, then scale fast



Define and spread your enterprise

Level digital vision and appoint a leader with strong governance to execute

Integrate

Interoperability and eliminating process and operational silos is key

Build a roadmap

with milestones and staged targets for value delivery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