



DIGITAL GOLD NUGGETS IN MANUFACTURING?

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Evolution of Data Management Concepts in Operations

- From Scientific Management to AI
 - Time and Motion Study
 - Statistical Quality Control
 - Operations Research
 - Machine Learning
- From transactions to AI
 - Management Information Systems
 - Decision Support Systems
 - Business Intelligence
 - Big Data and Analytics



"In God we trust, all others must bring data".

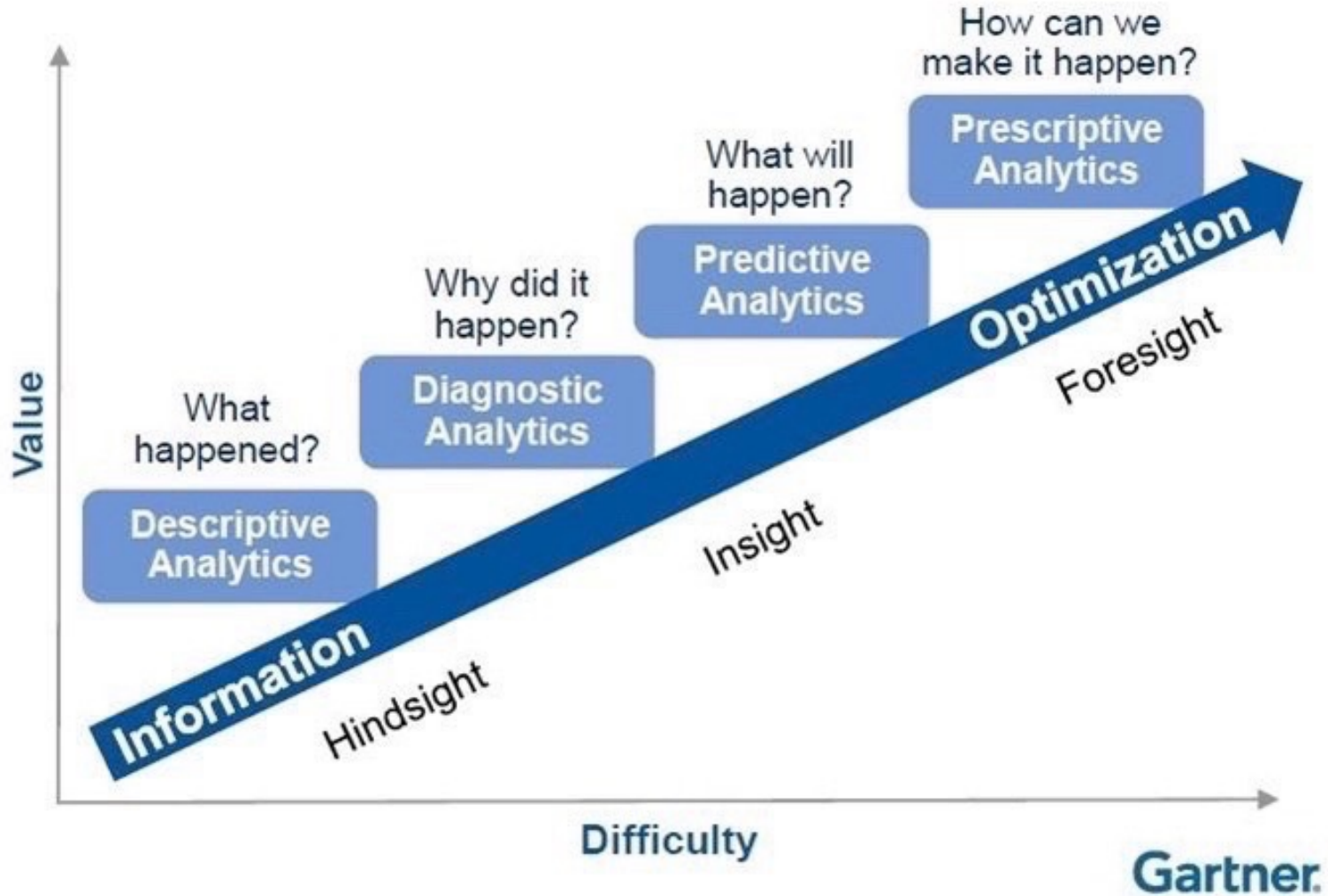
W. Edwards
Demming (1900-93)



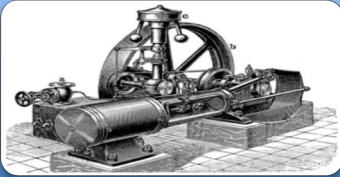
VALUE EXPLOITATION INDUSTRIAL PERSPECTIVE



Maturity of Analytical Capabilities



The Fourth Industrial Revolution



FIRST Industrial Revolution

- Introduction of mechanical production facilities with the help of water and steam power



SECOND Industrial Revolution

- Introduction of division of labor and mass production with the help of electrical energy



THIRD Industrial Revolution

- Use of electronic and IT systems that further automate production

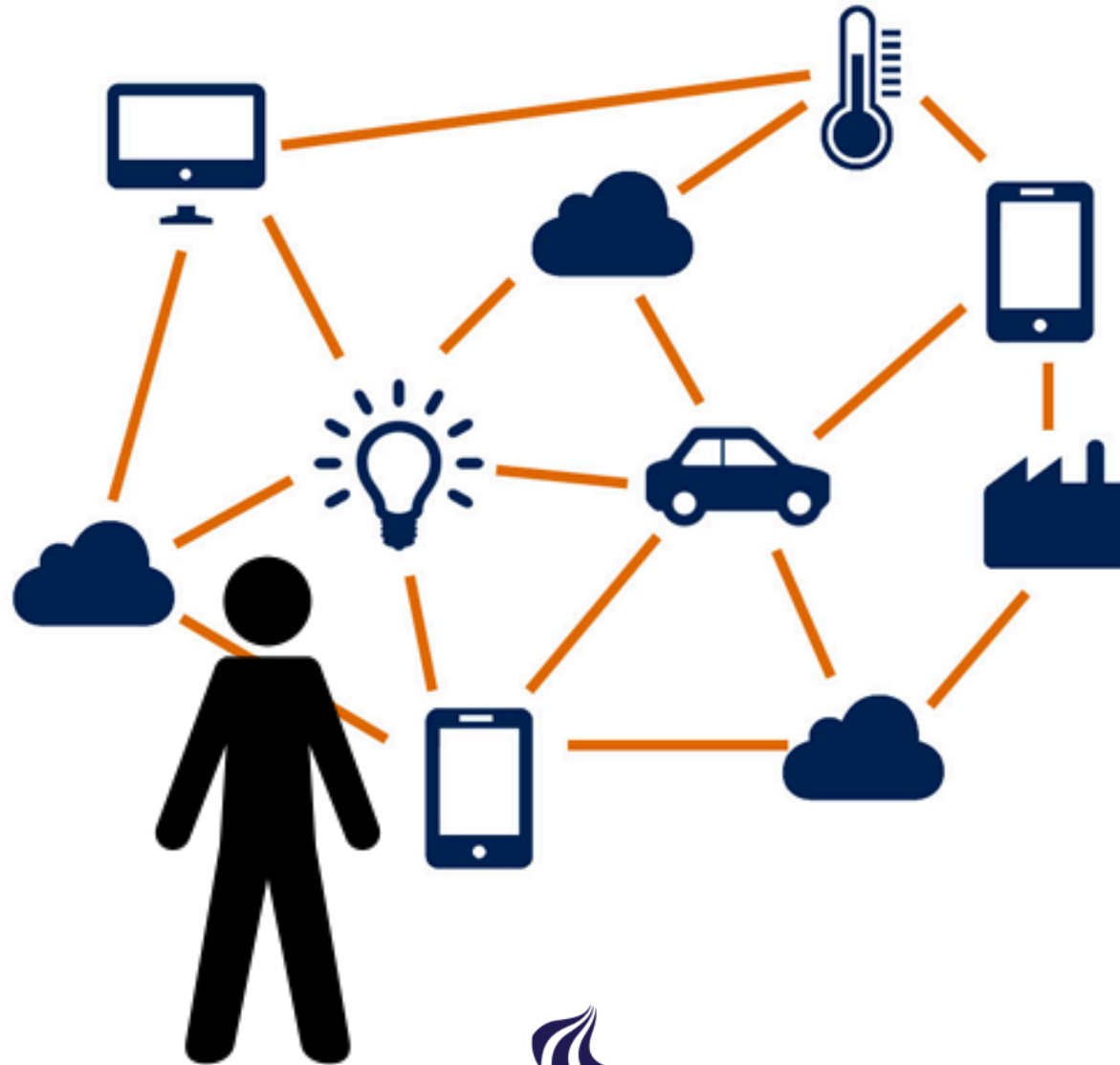


FOURTH Industrial Revolution

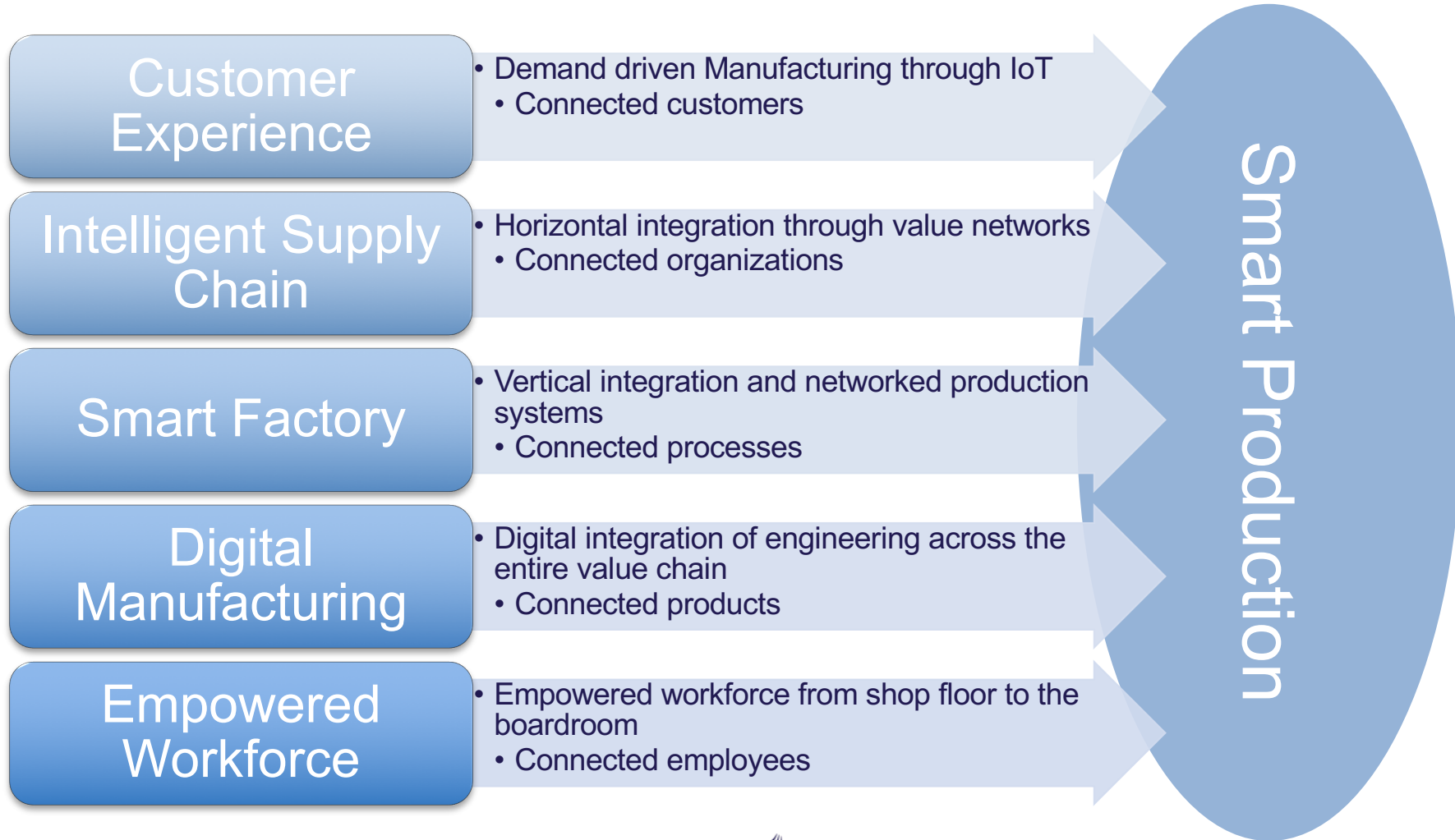
- Convergent physical, bio and digital systems



Making Sense of Smart Production

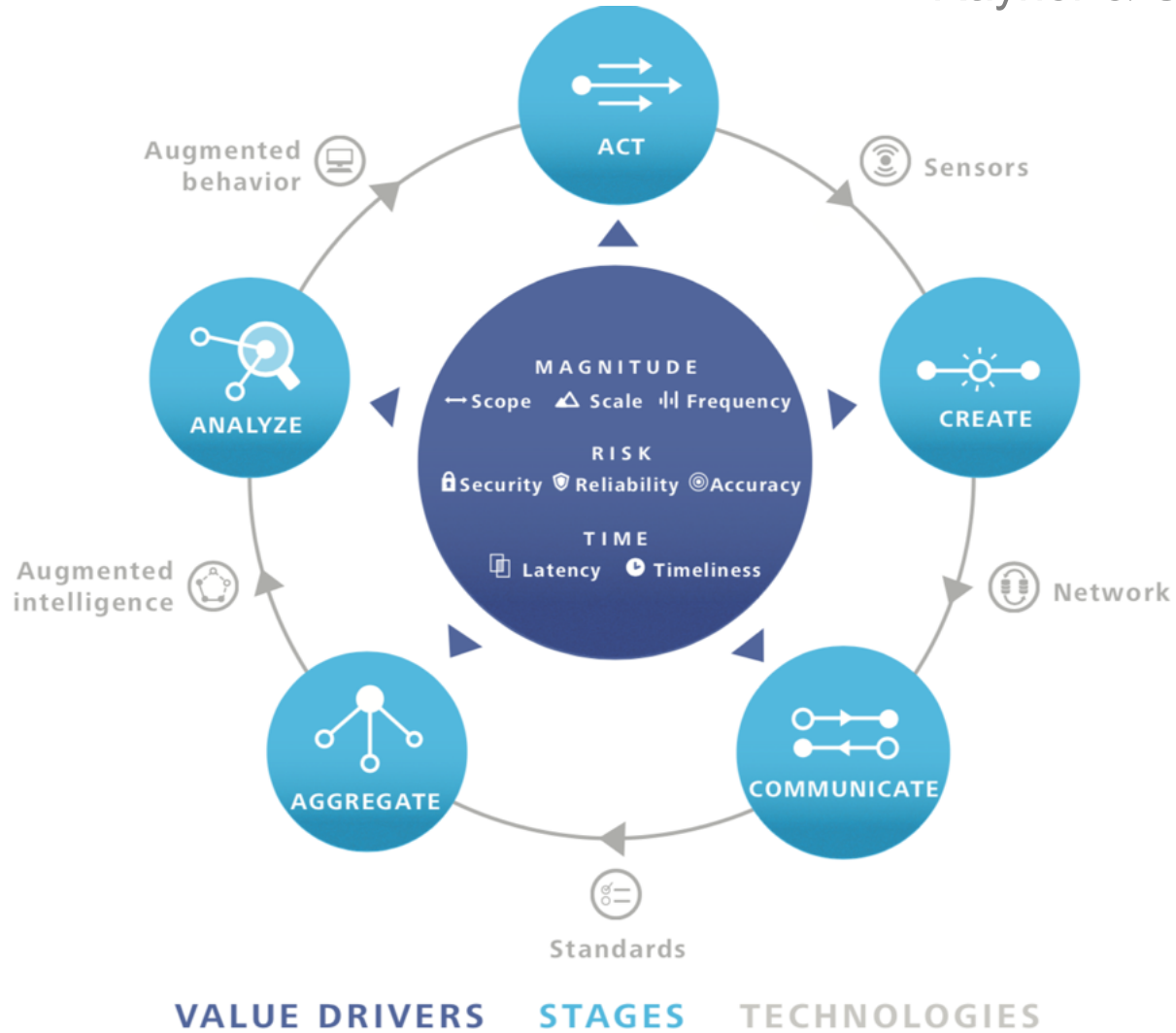


Towards Smarter Production Systems

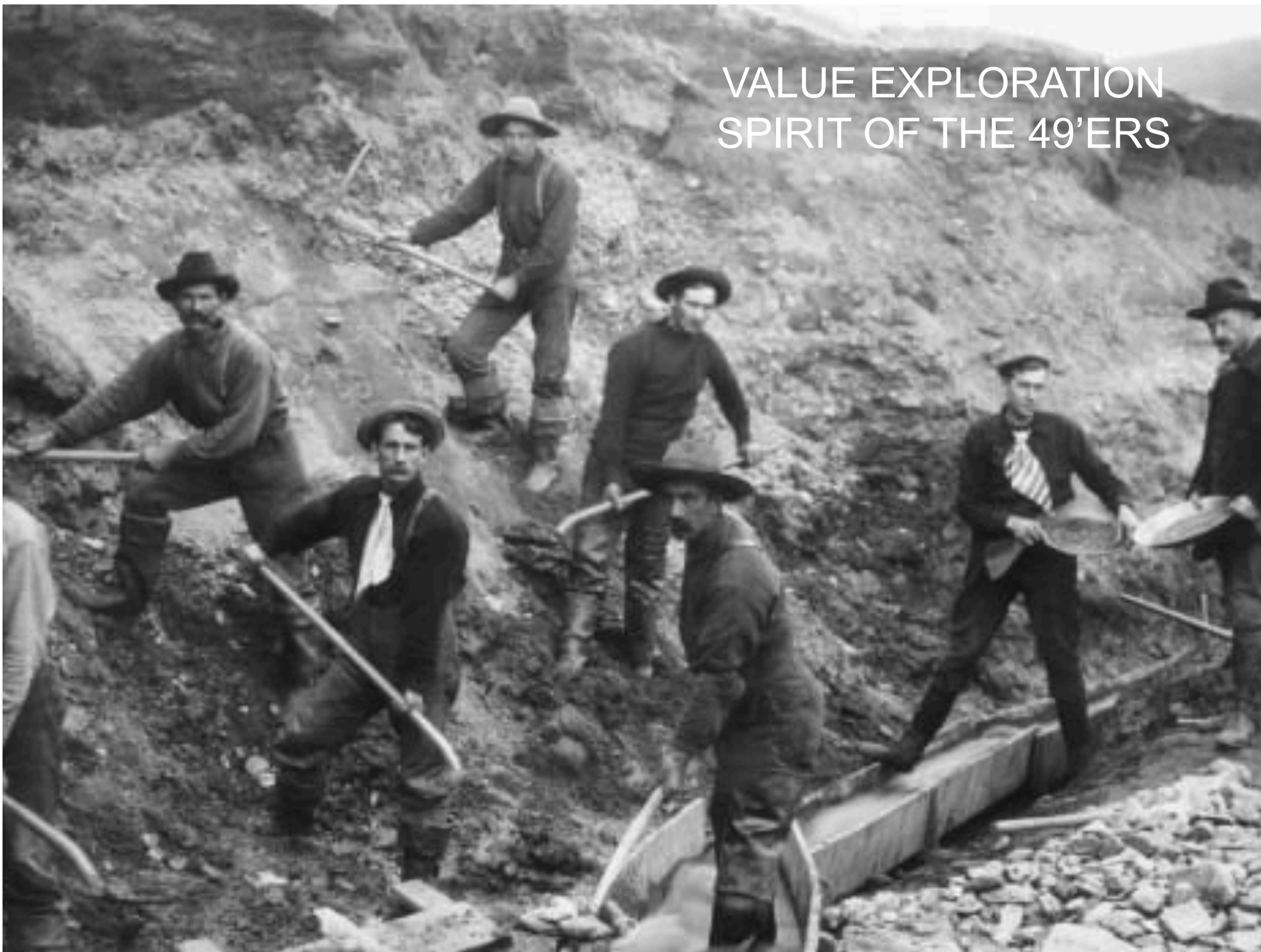


The Information Value Loop

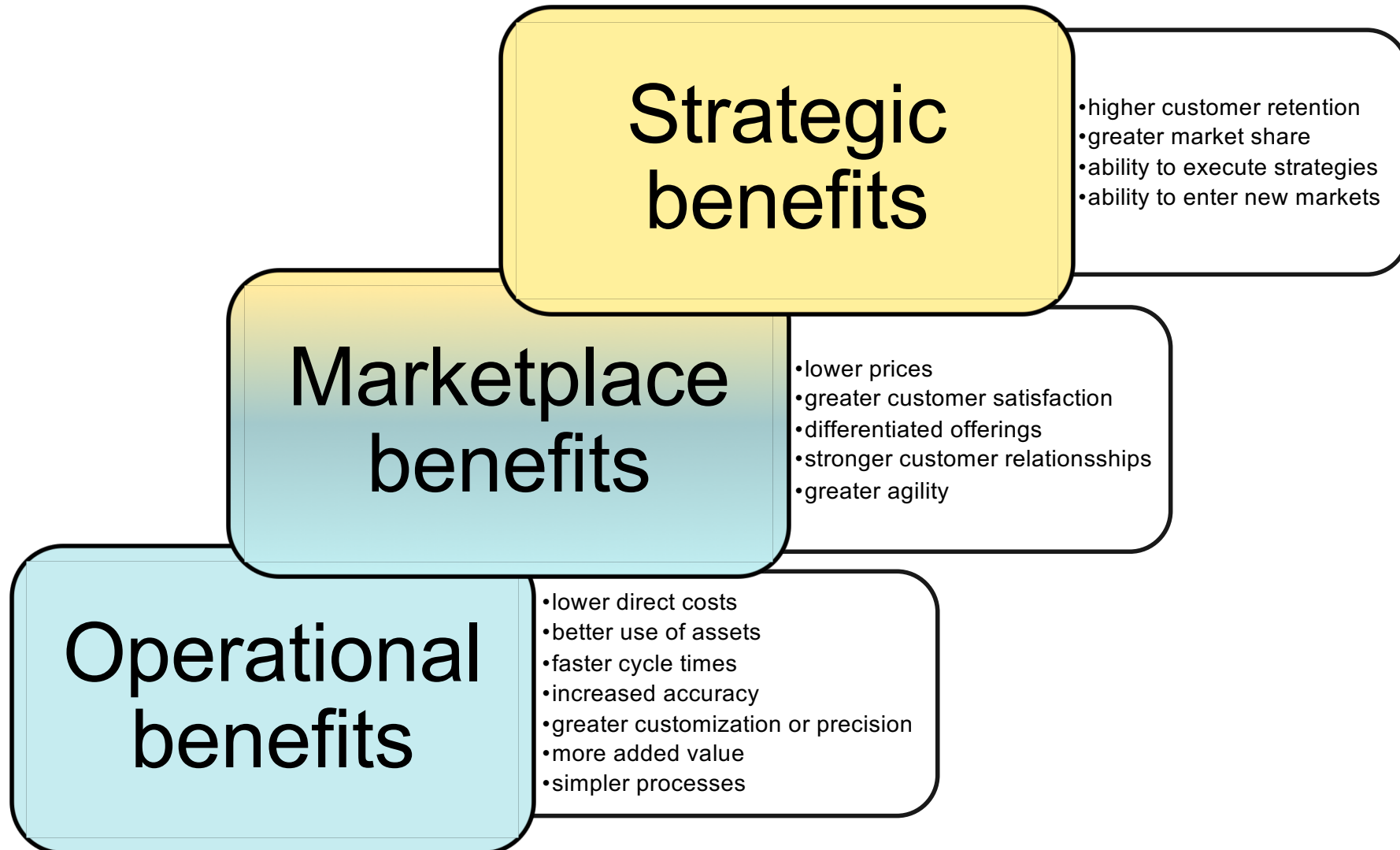
Raynor & Cotteleer, 2015



VALUE EXPLORATION
SPIRIT OF THE 49'ERS



Operational Innovation



Mode 1: Data-driven Value Exploration

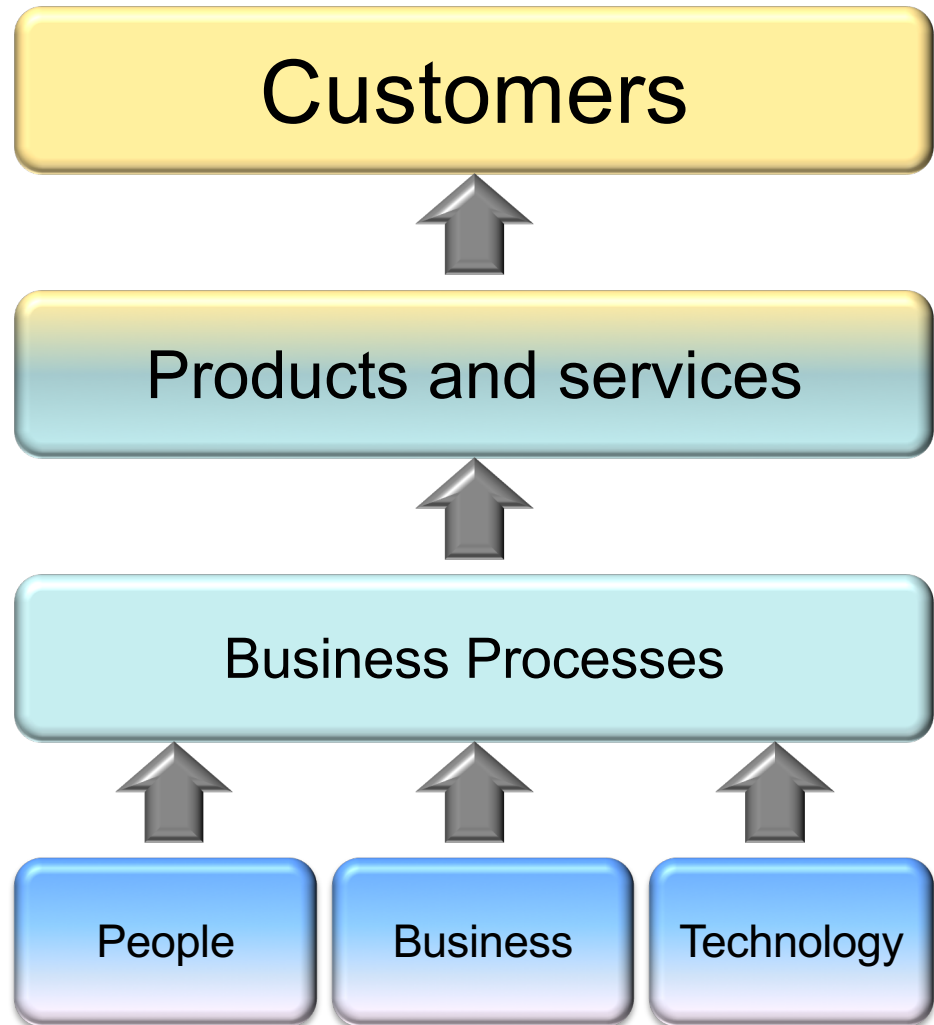


- Starting point
 - Abundance of data
- Value proposition
 - To be investigated
- Cases
 - Business Process Mining, Customer Insight



Mode 2: Business-driven Value Exploration

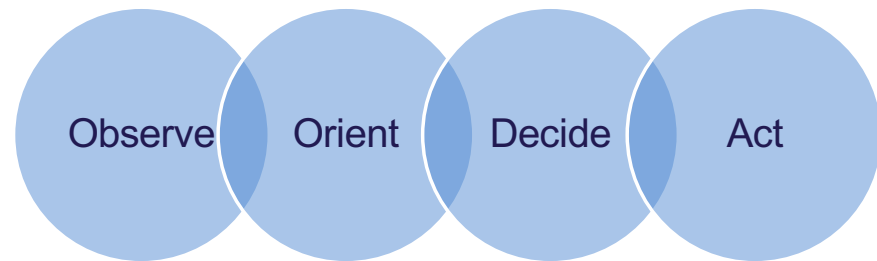
- Starting Point
 - Business Problem/Issues
- Value Proposition
 - Optimal resource utilization
- Cases
 - Business Process Management
 - End-to-end value chain optimization



Mode 3: Opportunity-driven Value Exploration

- Starting Point
 - Customer and Competitors
- Value Creation
 - “Getting inside opponents OODA loop”
- Cases
 - Business Process Innovation
 - Lean Startup

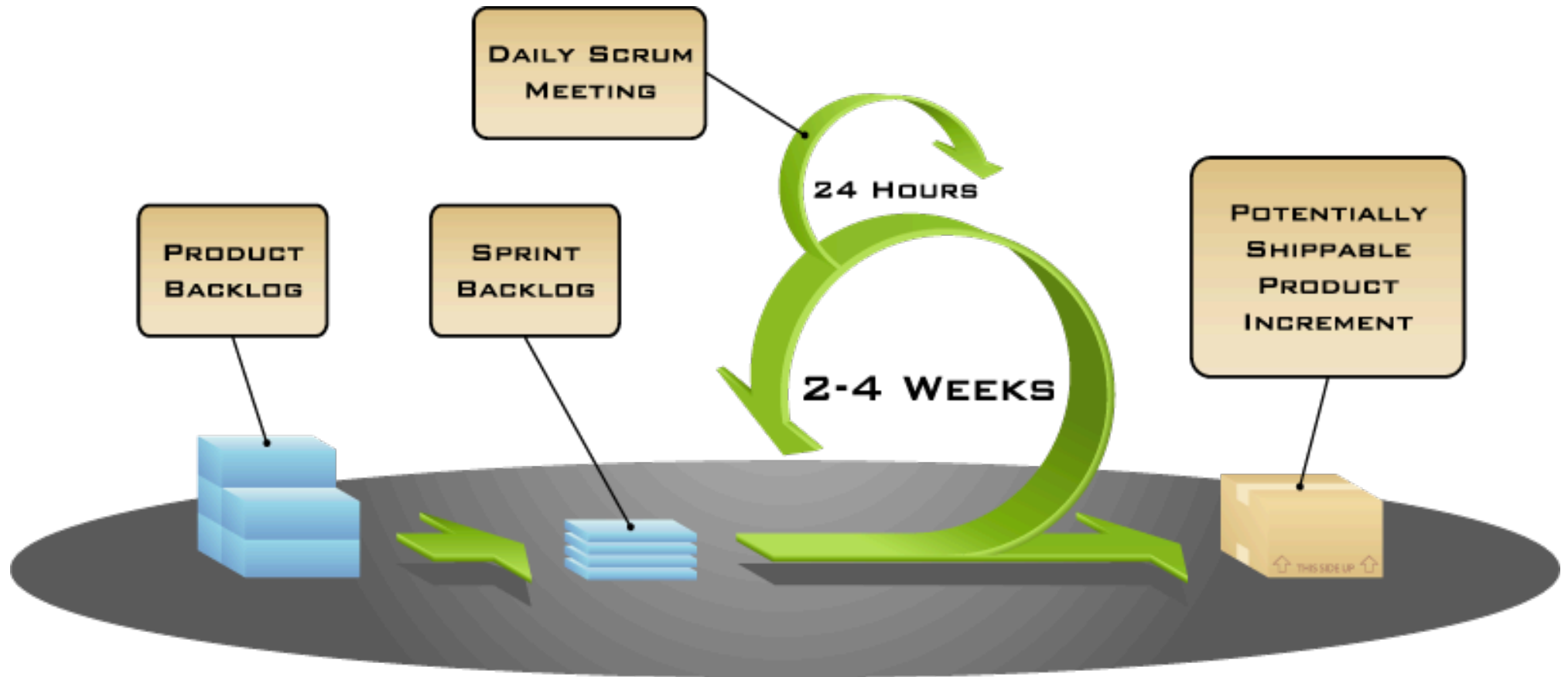
The Essence of Winning and Loosing



The OODA loop is the cycle observe–orient–decide–act, developed by military strategist and United States Air Force Colonel John Boyd. Boyd applied the concept to the combat operations process, often at the operational level during military campaigns.



Agile Development Process



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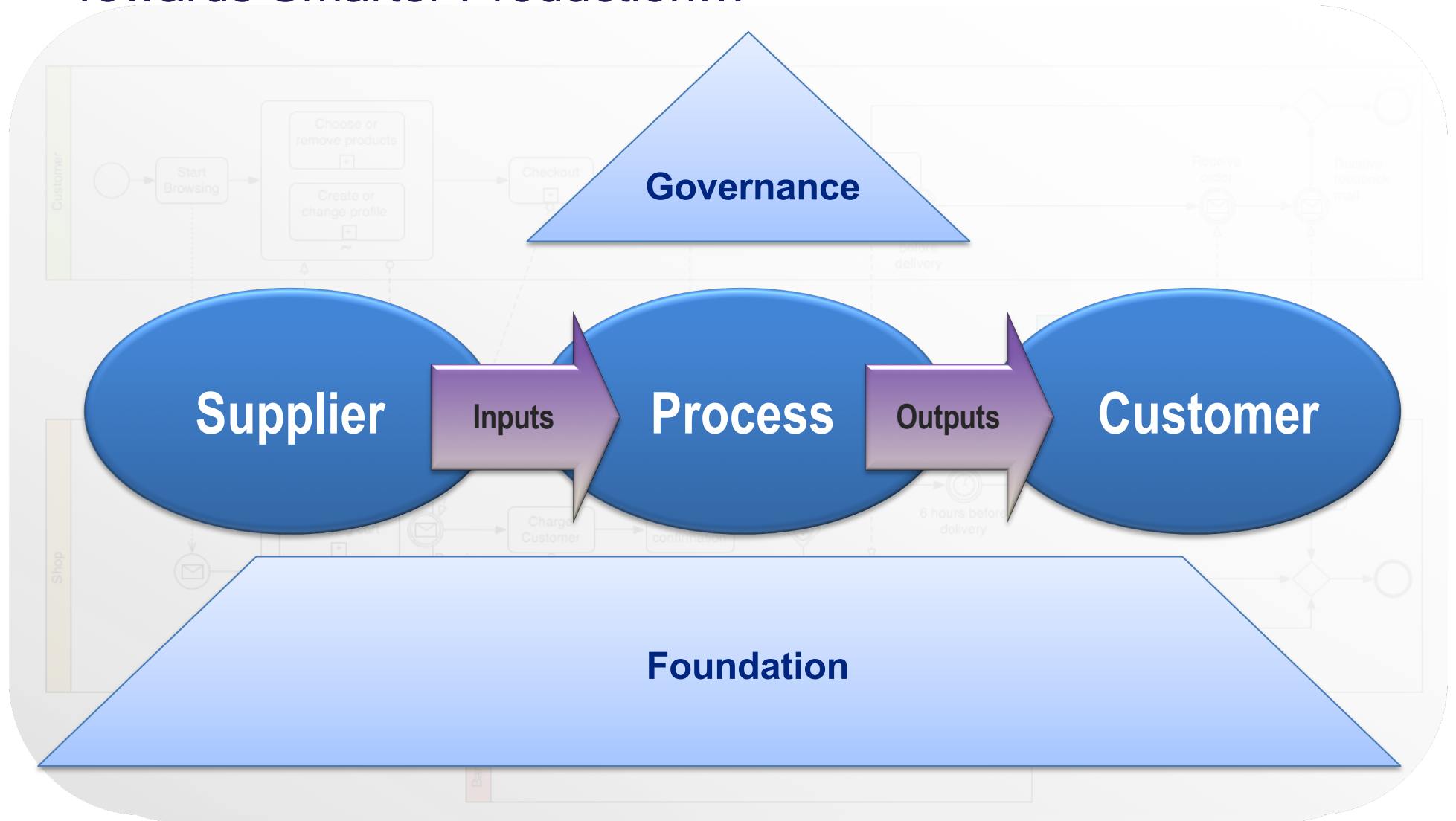


Digital Compass

McKinsey, 2016



Towards Smarter Production...



Summary and Conclusions

- Organizations need to embrace all the three modes of value exploration as well as value exploitation
- This require a proactive and differentiated approach to management
- To capture the gold nuggets require scaling and this comprise a challenge



Reflections from the back of the theater



- Digital transformation is ubiquitous
- Organizational transformations is a prerequisite
- From managing change towards staging change
- We don't want to talk about
 - Failed IT projects
 - Security and trust

