DIGITAL PLANT

HELSINKI, MAY 25TH, 2018

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accenture

ACCENTURE IS A LEADING PROFESSIONAL SERVICES COMPANY

WITH CAPABILITIES IN STRATEGY, CONSULTING, DIGITAL, TECHNOLOGY AND OPERATIONS

WE HAVE A BROAD GLOBAL FOOTPRINT

WITH OFFICES AND OPERATIONS IN 56 COUNTRIES

FACTS AND FIGURES

WE ARE ONE OF THE WORLD'S LEADING PROFESSIONAL SERVICES COMPANIES

442 000
People globally

FACTS AND FIGURES

**WE ARE ONE OF THE
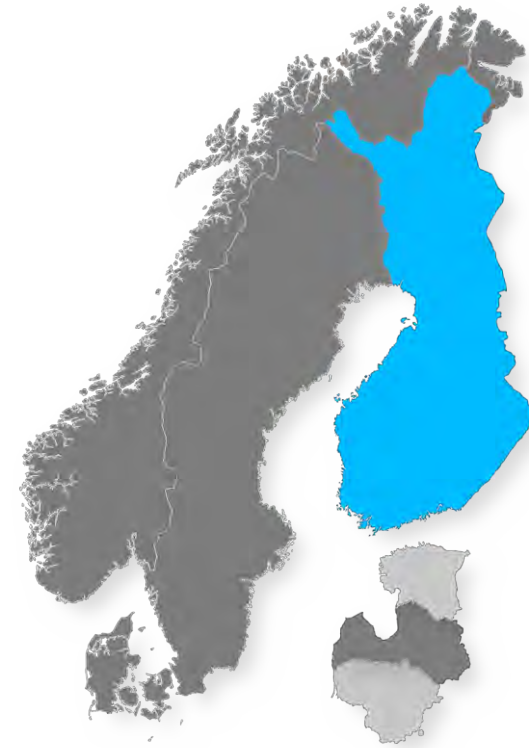WORLD'S LEADING PROFESSIONAL
SERVICES COMPANIES**

34.9

Net revenues 34.9 **billion USD**
Fiscal year ended August 31th, 2017

ACCENTURE IN THE
NORDICS **AND** FINLAND

WE HAVE A STRONG
LOCAL PRESENCE

1400
People in Finland

25+
Years in Finland

WE HELP ORGANIZATIONS ALL OVER THE WORLD MAXIMIZE THEIR PERFORMANCE AND ACHIEVE THEIR VISION

OUR WORLD IS UNDERGOING A
FUNDAMENTAL SHIFT TO THE NEW…

OLD WORLD

Information scarce

Static hierarchies

Compete to win

Individual productivity

Focus on planning ahead
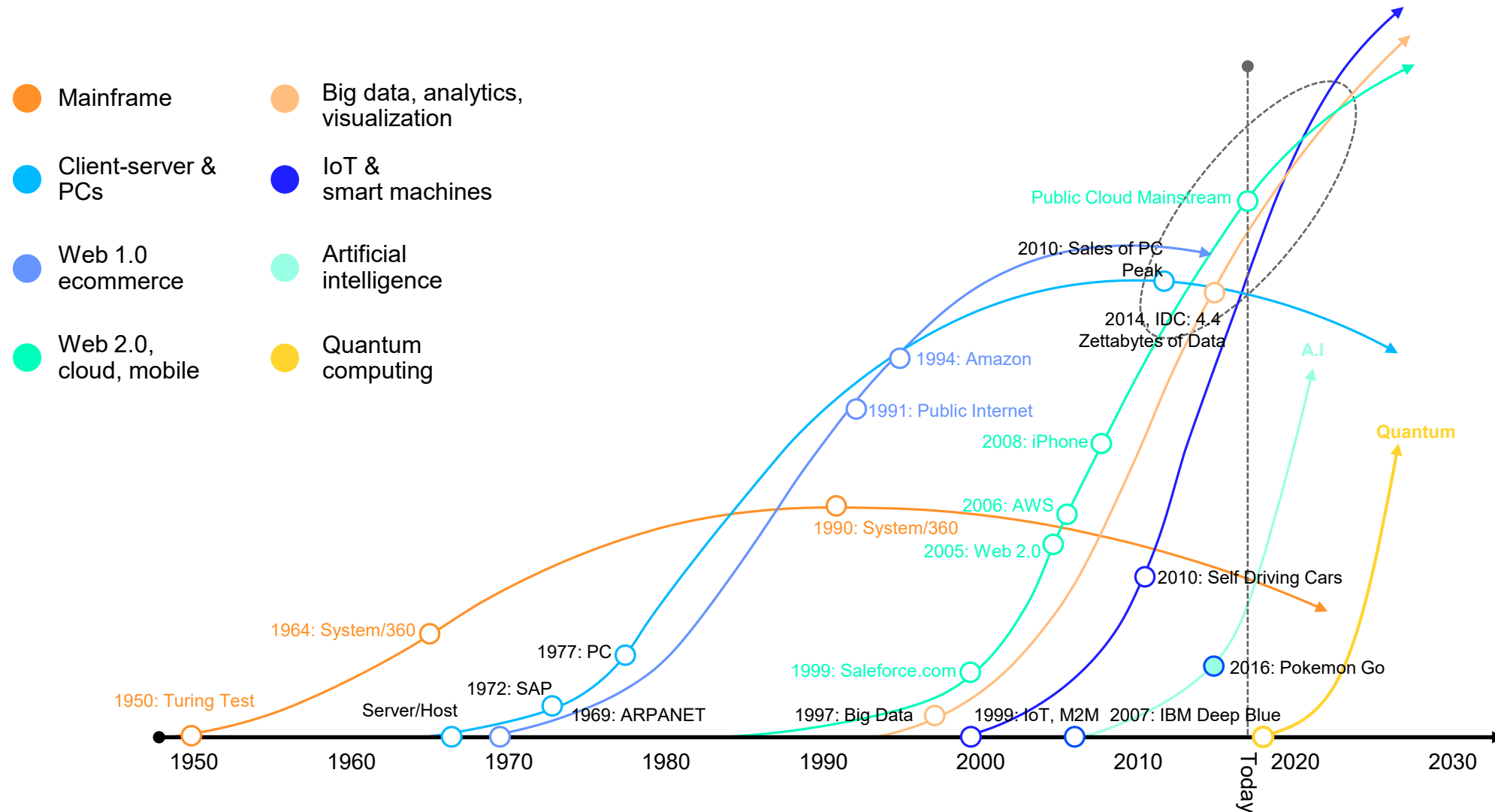
Efficiency of process

NEW WORLD

Information abundant

Dynamic networks

Collaborate to win

Collective value creation

Experiment, learn and respond
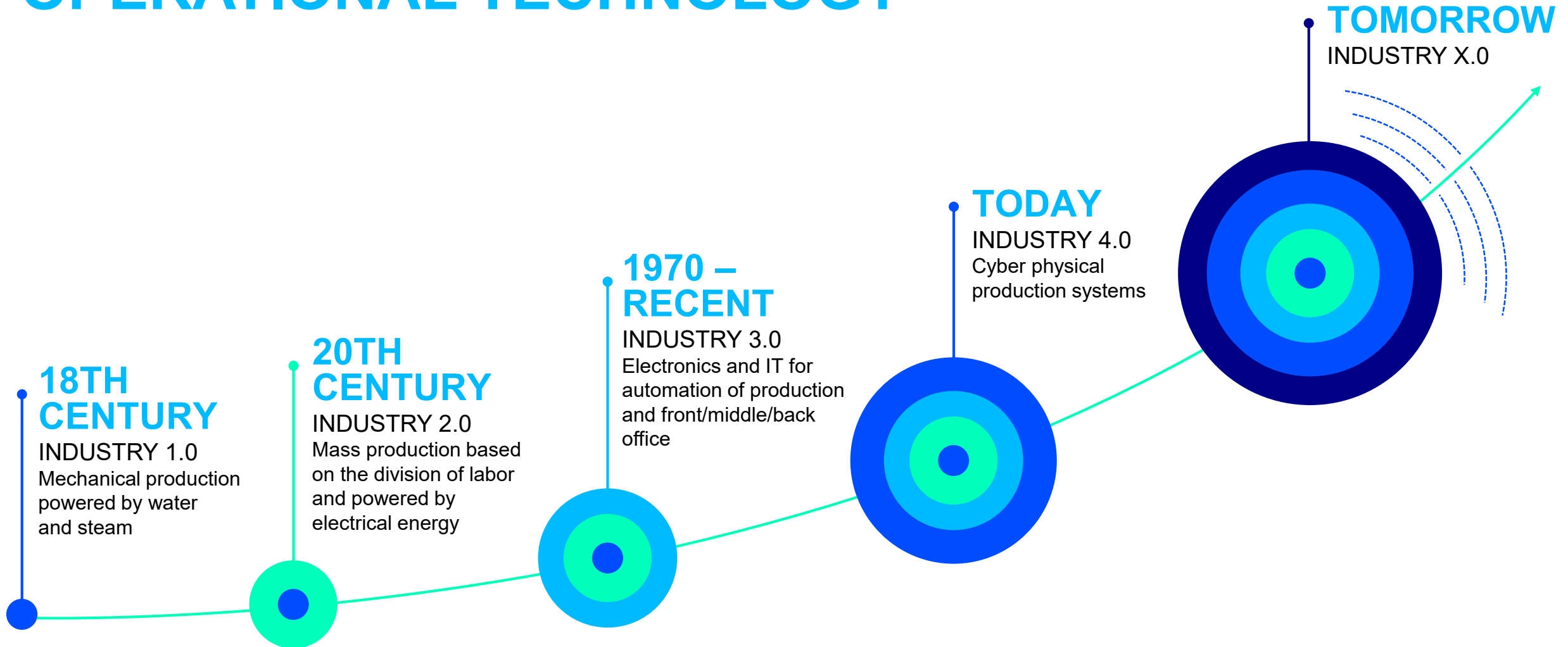
Effectiveness of outcomes

... AND DIGITAL IS ACCELERATING THIS
SHIFT IN INDUSTRY EXPONENTIALLY

Legend:
- Mainframe
- Client-server & PCs
- Web 1.0 ecommerce
- Web 2.0, cloud, mobile
- Big data, analytics, visualization
- IoT & smart machines
- Artificial intelligence
- Quantum computing

Public Cloud Mainstream

2010: Sales of PC Peak

2014, IDC: 4.4 Zettabytes of Data

A.I

1994: Amazon

1991: Public Internet

Quantum

2008: iPhone

2006: AWS

1990: System/360

2005: Web 2.0

2010: Self Driving Cars

1964: System/360

1977: PC

2016: Pokemon Go

1972: SAP

1950: Turing Test

Server/Host

1999: Saleforce.com

1969: ARPANET

1997: Big Data

1999: IoT, M2M

2007: IBM Deep Blue

1950 1960 1970 1980 1990 2000 2010 2020 2030

Today

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WE ARE ENTERING THE INDUSTRY X.0 ERA, CONVERGING INFORMATION AND OPERATIONAL TECHNOLOGY

18TH CENTURY
INDUSTRY 1.0
Mechanical production powered by water and steam

20TH CENTURY
INDUSTRY 2.0
Mass production based on the division of labor and powered by electrical energy

1970 – RECENT
INDUSTRY 3.0
Electronics and IT for automation of production and front/middle/back office

TODAY
INDUSTRY 4.0
Cyber physical production systems

TOMORROW
INDUSTRY X.0

WHAT IS
INDUSTRY X.0?

NEW SERVICES & EXPERIENCES

ACCELERATION & EFFICIENCY

INNOVATION & GROWTH

TRANSFORMATION OF CORE

DESIGN | PRODUCE | SUPPORT

DIGITAL ENABLERS

WHAT IS
INDUSTRY X.0?

NEW SERVICES & EXPERIENCES

ACCELERATION & EFFICIENCY
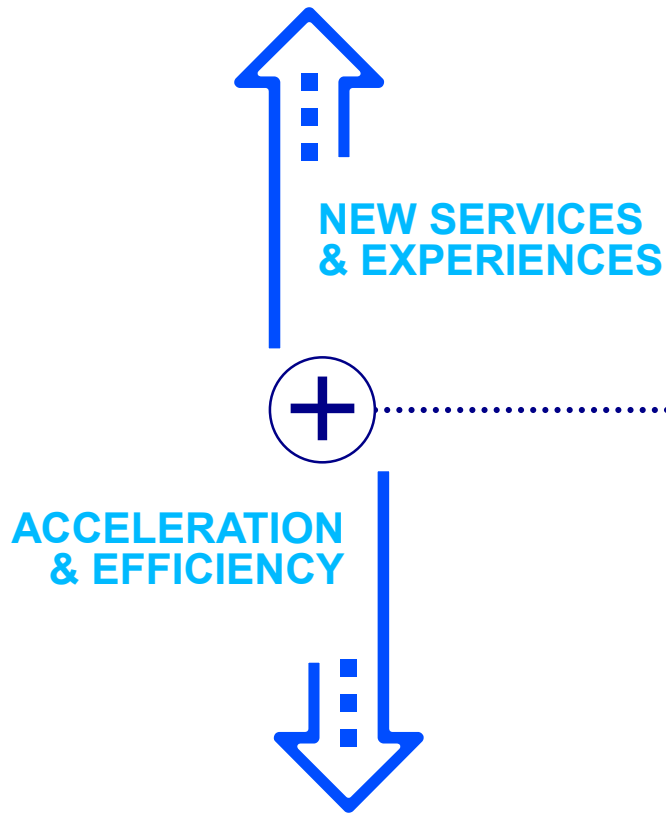
WHAT WE DO

- Invent new Smart, Connected Products and Services
- Transform business models and operations from Product to Service
- Help businesses become Software and Experience Companies
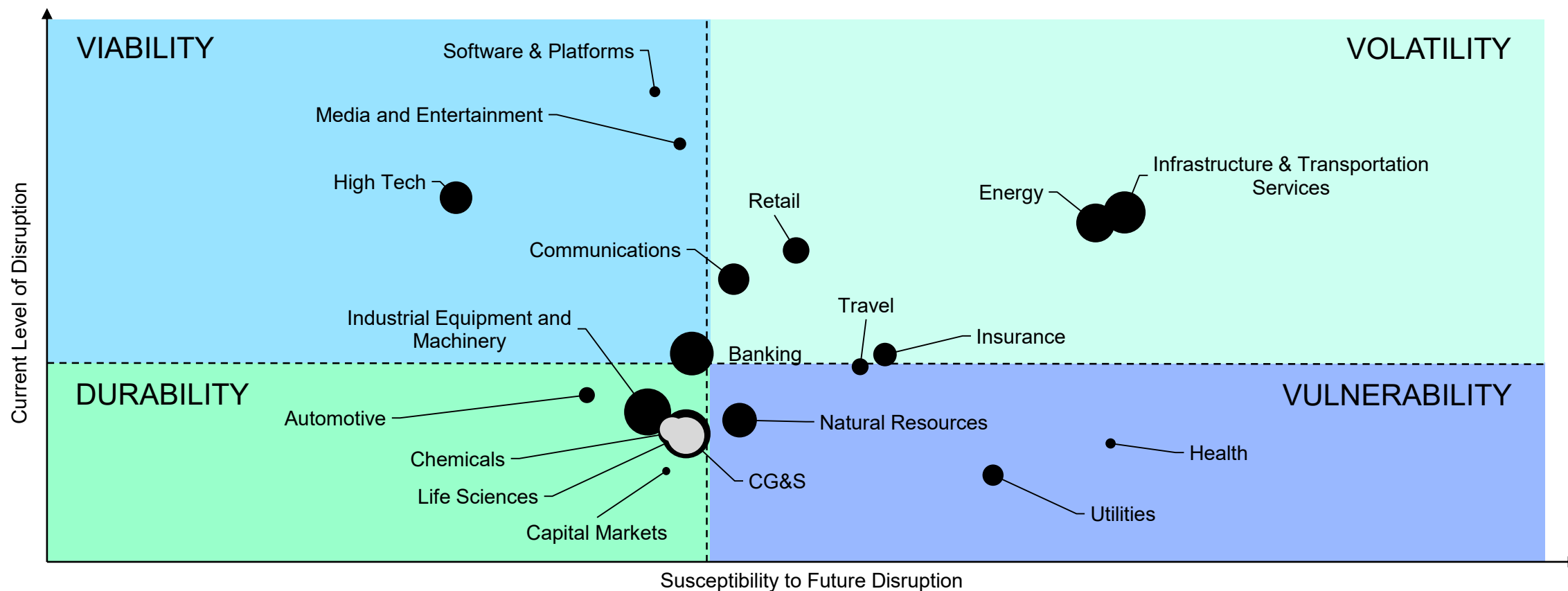- Enable companies to create and participate in New Ecosystems

- Automate core processes of R&D, Engineering, Production and Support through integrated systems
- Connect machines and sensors and Extract Data and Derive Intelligence to improve performance
- Connect and Enable Workers with new digital technologies
- Apply Next Generation Production techniques - 3DP, robotics etc.

WHAT CLIENTS GET

- New Revenue Streams from as-a-Service and Smart Connected Products
- Personalized Customer Experiences for both B2C and B2B

- Dramatically Reduced Cost and Faster Throughput
- Greater Agility and Responsiveness to demand
- Better Worker Experiences and Productivity

NORDIC INDUSTRIES IN DIFFERENT PHASES OF DISRUPTION – ACTIONS TO BE TAILORED ACCORDINGLY

VIABILITY

VOLATILITY

DURABILITY

VULNERABILITY

Software & Platforms

Media and Entertainment

High Tech

Retail

Energy

Infrastructure & Transportation Services

Communications

Travel

Insurance

Industrial Equipment and Machinery

Banking

Automotive

Natural Resources

Chemicals

Health

Life Sciences

CG&S

Utilities

Capital Markets

Current Level of Disruption

Susceptibility to Future Disruption

Total Enterprise Value (EV)

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ACCELERATING THE PATH TO VALUE

THE MORE INTELLIGENT THE INDIVIDUAL MACHINE, THE MORE EFFICIENTLY IT CAN OPERATE AND BE MAINTAINED

RETURN ON INVESTMENT / ROI

AUTONOMOUS PULL ECONOMY

- Continuous demand-sensing
- End to end automation
- Resource optimization and waste reduction

OUTCOME-BASED ECONOMY

- Pay per outcome
- New connected ecosystems
- Platform-enabled marketplace
- Industry blur

NEW PRODUCT & SERVICES

- New business models
- Pay per use
- Software based services
- Product / Service hybrids
- Data monetization

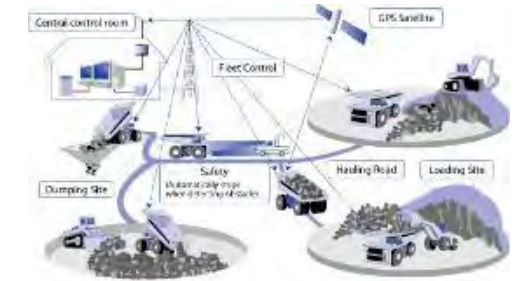### OPERATIONAL EFFICIENCY

- Asset utilization
- Operational cost reduction
- Improvement worker productivity, safety and working conditions

FROM PRODUCT TO → SERVICE → OUTCOME → PULL

AND REFINERS ARE BEGINNING TO RECOGNIZE
THE VALUE OF DIGITAL TECHNOLOGIES

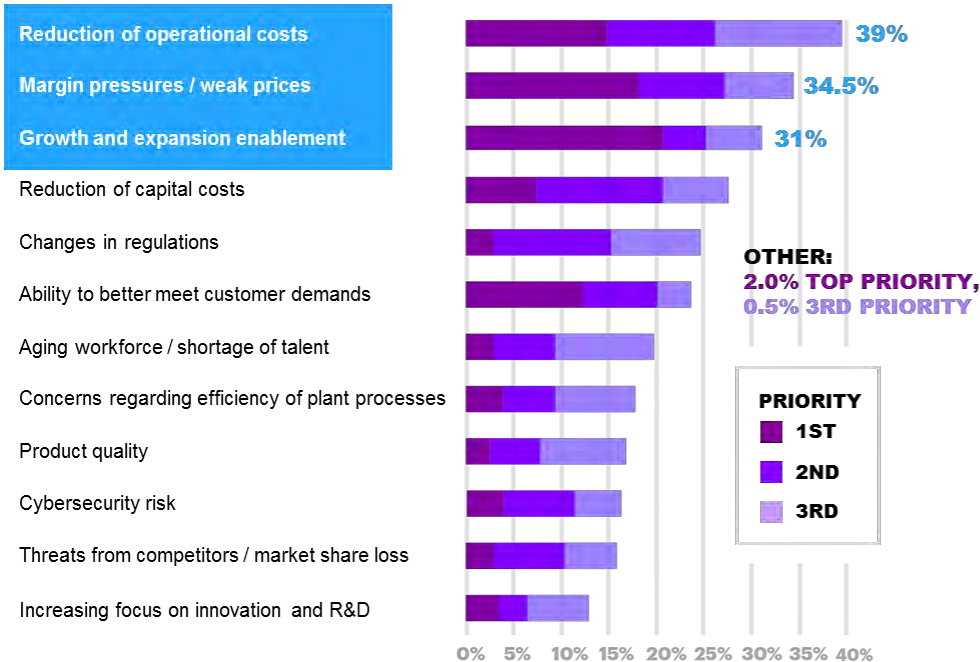### IT'S NOT "CAN REFINERS AFFORD TO" — IT'S "CAN THEY AFFORD NOT TO"?

19%

CURRENTLY RECOGNIZE DIGITAL AS ONE OF THEIR TOP 3 SPENDING PRIORITIES FOR PLANT EFFICIENCY AND PRODUCTIVITY – BUT THIS IS SET TO CHANGE
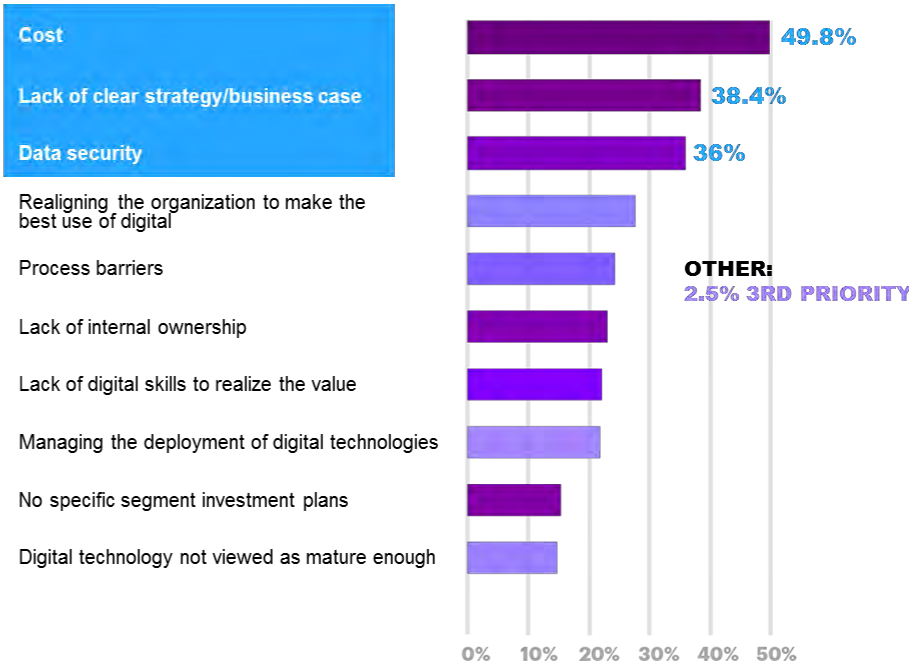
NEARLY TWO THIRDS PLAN TO INCREASE THEIR INVESTMENTS IN DIGITAL TECHNOLOGIES OVER THE NEXT THREE TO FIVE YEARS.

PRIORITIES OF DIGITAL TO REFINERS

- Reduction of operational costs — **39%**
- Margin pressures / weak prices — **34.5%**
- Growth and expansion enablement — **31%**
- Reduction of capital costs
- Changes in regulations
- Ability to better meet customer demands
- Aging workforce / shortage of talent
- Concerns regarding efficiency of plant processes
- Product quality
- Cybersecurity risk
- Threats from competitors / market share loss
- Increasing focus on innovation and R&D

OTHER:
2.0% TOP PRIORITY, 0.5% 3RD PRIORITY

PRIORITY
- 1ST
- 2ND
- 3RD

0% 5% 10% 15% 20% 25% 30% 35% 40%

Which business priorities influence the digital investments in your refining business? Please rank your top 3 with "1" as top priority.

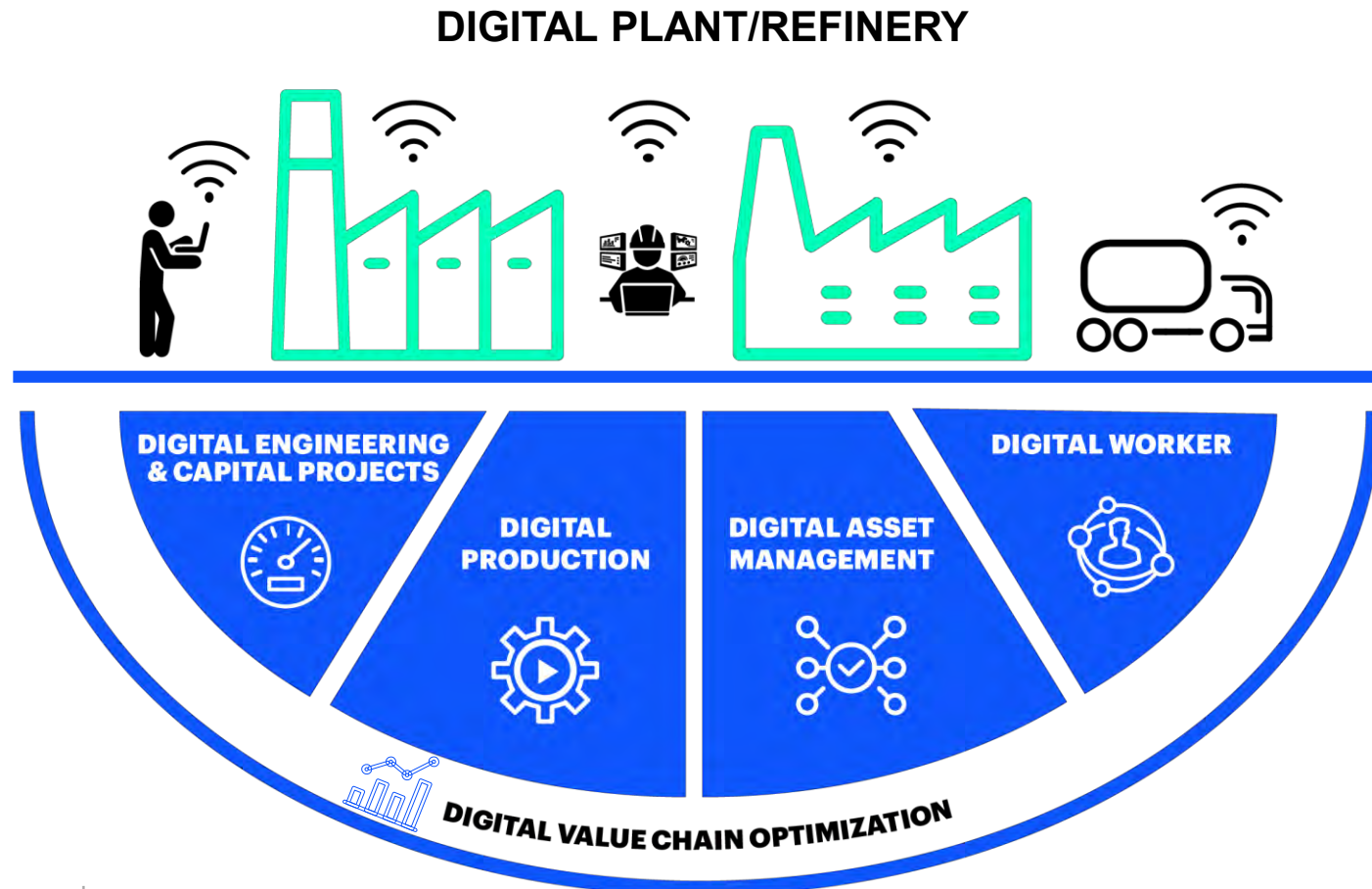### BARRIERS TO ADOPTION OF DIGITAL IN REFINING

- Cost — **49.8%**
- Lack of clear strategy/business case — **38.4%**
- Data security — **36%**
- Realigning the organization to make the best use of digital
- Process barriers
- Lack of internal ownership
- Lack of digital skills to realize the value
- Managing the deployment of digital technologies
- No specific segment investment plans
- Digital technology not viewed as mature enough

OTHER:
2.5% 3RD PRIORITY

0% 10% 20% 30% 40% 50%

Which barriers, if any, prevent successful adoption of digital technologies in your organization? Please select all that apply.

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WHAT IS DIGITAL PLANT?
FROM COLLECTION TO COGNITION

Facilitates proactive asset and operations management beyond localized optimization through applied analytics and artificial intelligence at scale.

DIGITAL PLANT/REFINERY

DIGITAL ENGINEERING & CAPITAL PROJECTS

DIGITAL PRODUCTION

DIGITAL ASSET MANAGEMENT

DIGITAL WORKER

DIGITAL VALUE CHAIN OPTIMIZATION

CONVERGENT TECHNOLOGIES ACROSS IT/OT ENABLE DIGITAL PLANT

Robotics and Robotic Process Automation (RPA)

Cloud

Video Analytics and Drones

Advanced Process Automation

IIOT

Artificial Intelligence and Machine Learning

Mobile Applications

Predictive Analysis

Data Mining and Advanced Data Analytics

The Industrial Internet in Action

Marathon Petroleum Company

Challenge
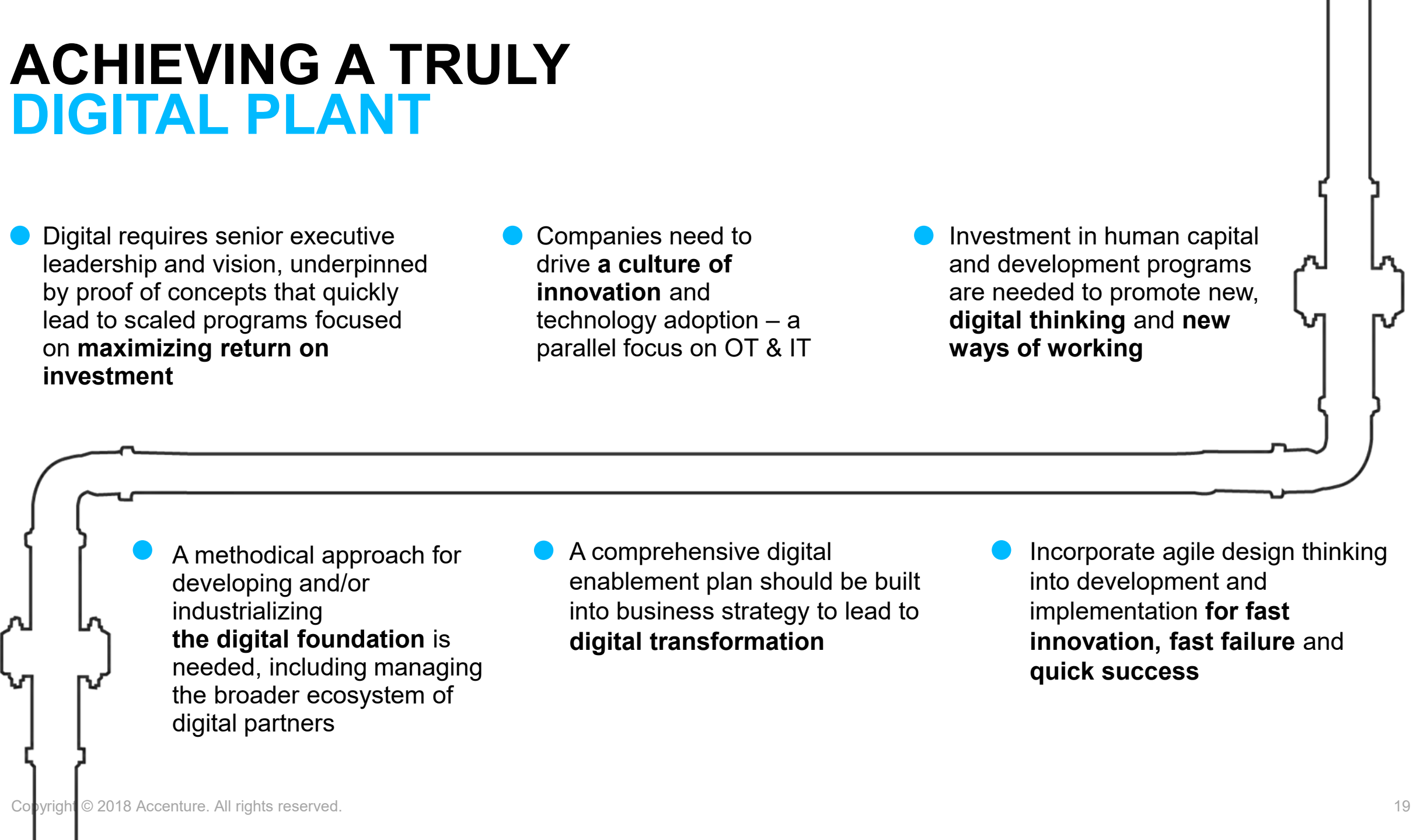- Reinforce safe work practices and support employee safety

Solution
- **Accenture** Life Safety Solution tracks employees' location in a plant, warns the individual and the plant operators of any potential nearby danger including abnormal gas levels. It can also detect employees' lack of motion ("man down") and trigger the appropriate safety protocol.
- Automatically record any safety incident to allow the plant to continuously improve their safety operational process, and in the case of evacuation, identify any missing individual in a timely manner.

Results
- 24/7 safety monitoring and timely responses to gas leaks
- Greater and more accurate safety incident reporting
- Improved compliance through personnel location monitoring

www.iiconsortium.org/case-studies

ACHIEVING A TRULY DIGITAL PLANT

- Digital requires senior executive leadership and vision, underpinned by proof of concepts that quickly lead to scaled programs focused on **maximizing return on investment**

- Companies need to drive **a culture of innovation** and technology adoption – a parallel focus on OT & IT

- Investment in human capital and development programs are needed to promote new, **digital thinking** and **new ways of working**

- A methodical approach for developing and/or industrializing **the digital foundation** is needed, including managing the broader ecosystem of digital partners

- A comprehensive digital enablement plan should be built into business strategy to lead to **digital transformation**

- Incorporate agile design thinking into development and implementation **for fast innovation, fast failure** and **quick success**

Why Participate in the Industrial Internet Consortium?

- **Collaborate and network** with like-minded leaders of the Industrial Internet: Small and large technology innovators, vertical market leaders, researchers, universities, and governments

- **Drive innovation and grow your business** by creating new industry use cases and testbeds for real-world applications

- **Join with industry innovators** in setting the technology and security direction and requirements for the Industrial Internet
    - Define and develop the reference architecture, frameworks, and security necessary for interoperability
    - Influence the global development standards process for internet and industrial systems

- **Participate in the sharing and exchange** of real-world ideas, practices, lessons, and insights

CONTACT

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