

Are you Investing in Industrie 4.0? Realities of the Grand Vision

Marc Halpern, P.E., Ph.D.

The Path to Achieving Industrie 4.0 Value



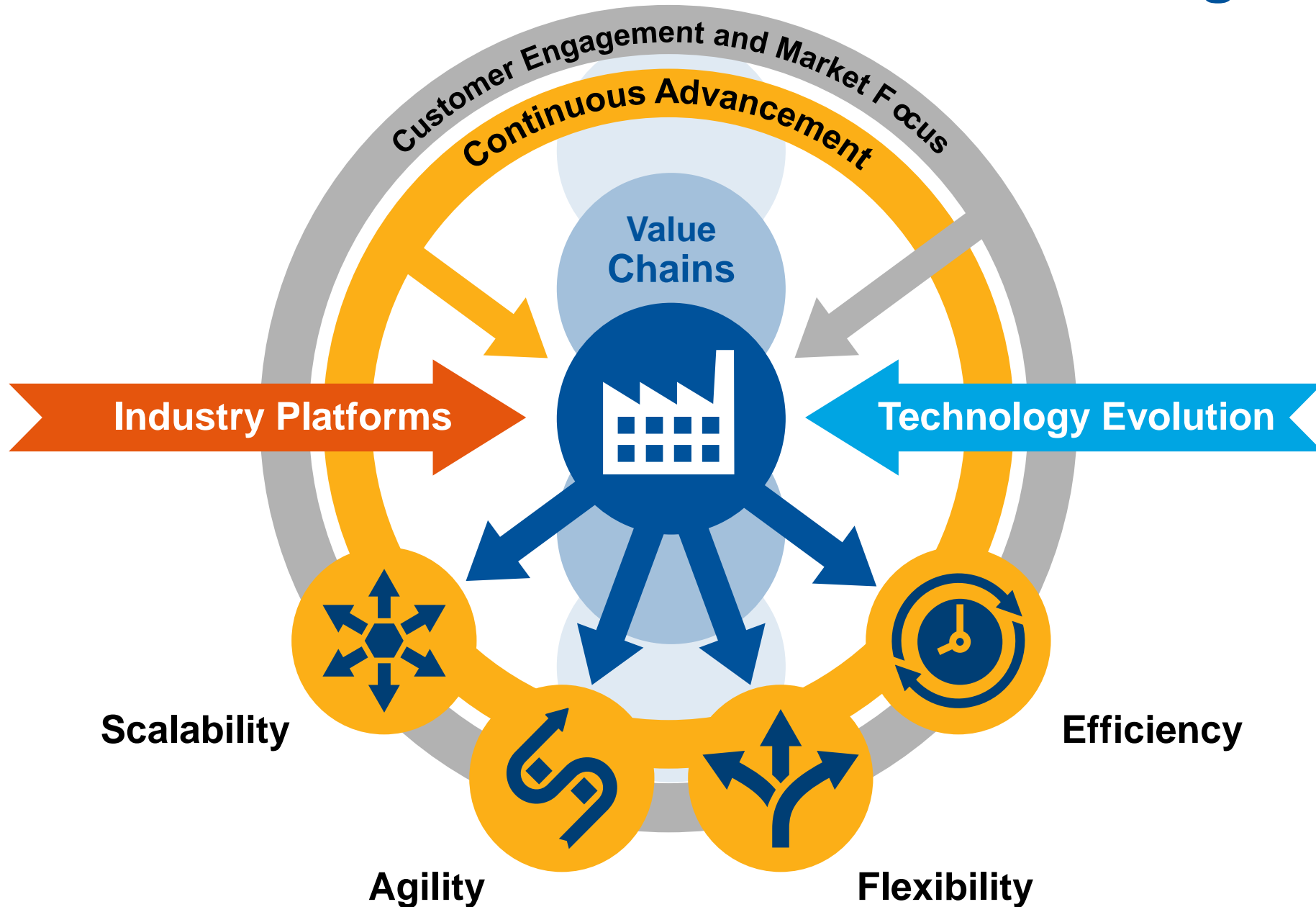
Key Issues

- What is the Industrie 4.0 vision for next-generation manufacturers?
- How are technologies and digitalization strategies evolving to fulfill Industrie 4.0 vision?
- What are the best investments and approaches to maximize manufacturers' chances of digitalization success?

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Industrie 4.0 – Vision for a Grand Manufacturing Future



Digital Business Success Goes Beyond Operations — Ambition Is About Transformation

Finding your digital business opportunities:

Modernize

Take an old value chain and modernize it with digital technologies.

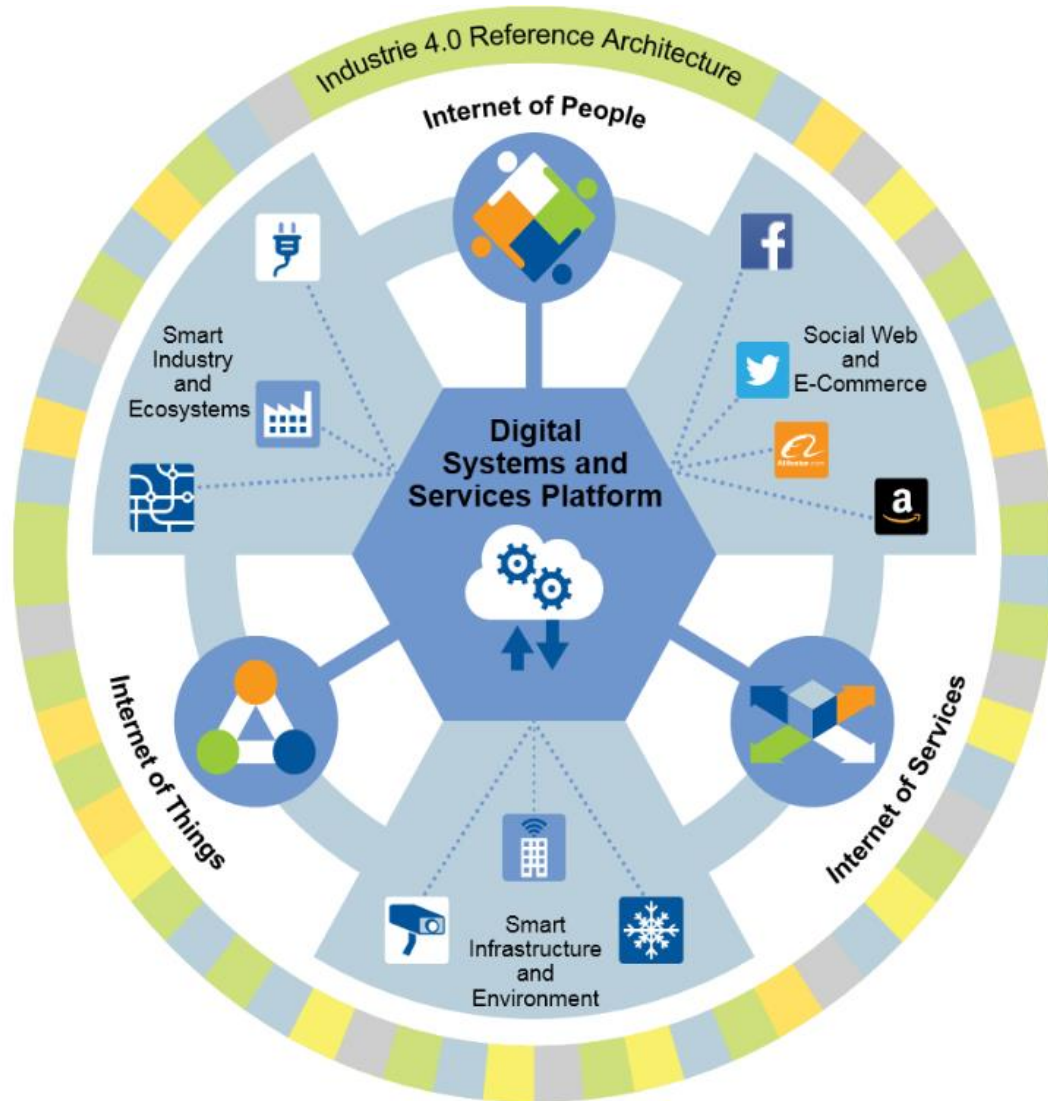
Add information to your products and boost your value output.

Take a successful digital business model and apply it to your own industry.

Take a real customer problem and fix it by converging people, businesses and things.

Innovate

Industrie 4.0 – Five Things to Consider



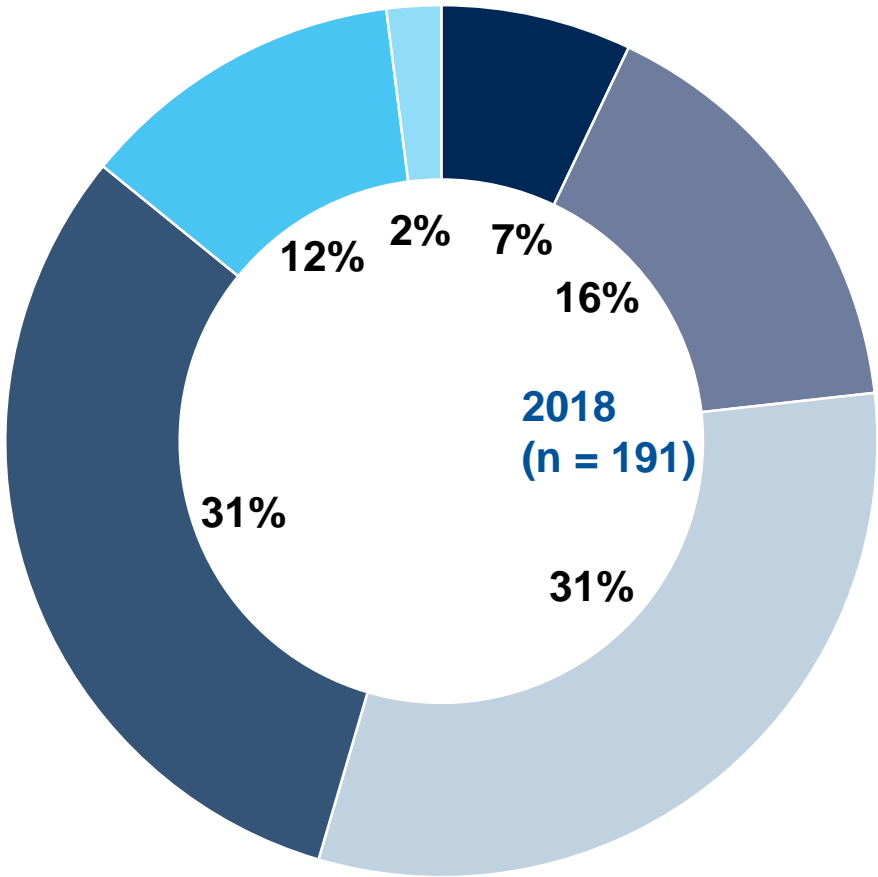
- Transformative over years
- Need standardized and localized processes and controls
- Partner with HR, labor unions, contractors
- Need differentiated approaches to internal and external co-innovation
- Understand the implications of Industry 4.0 IT on supply chain operations

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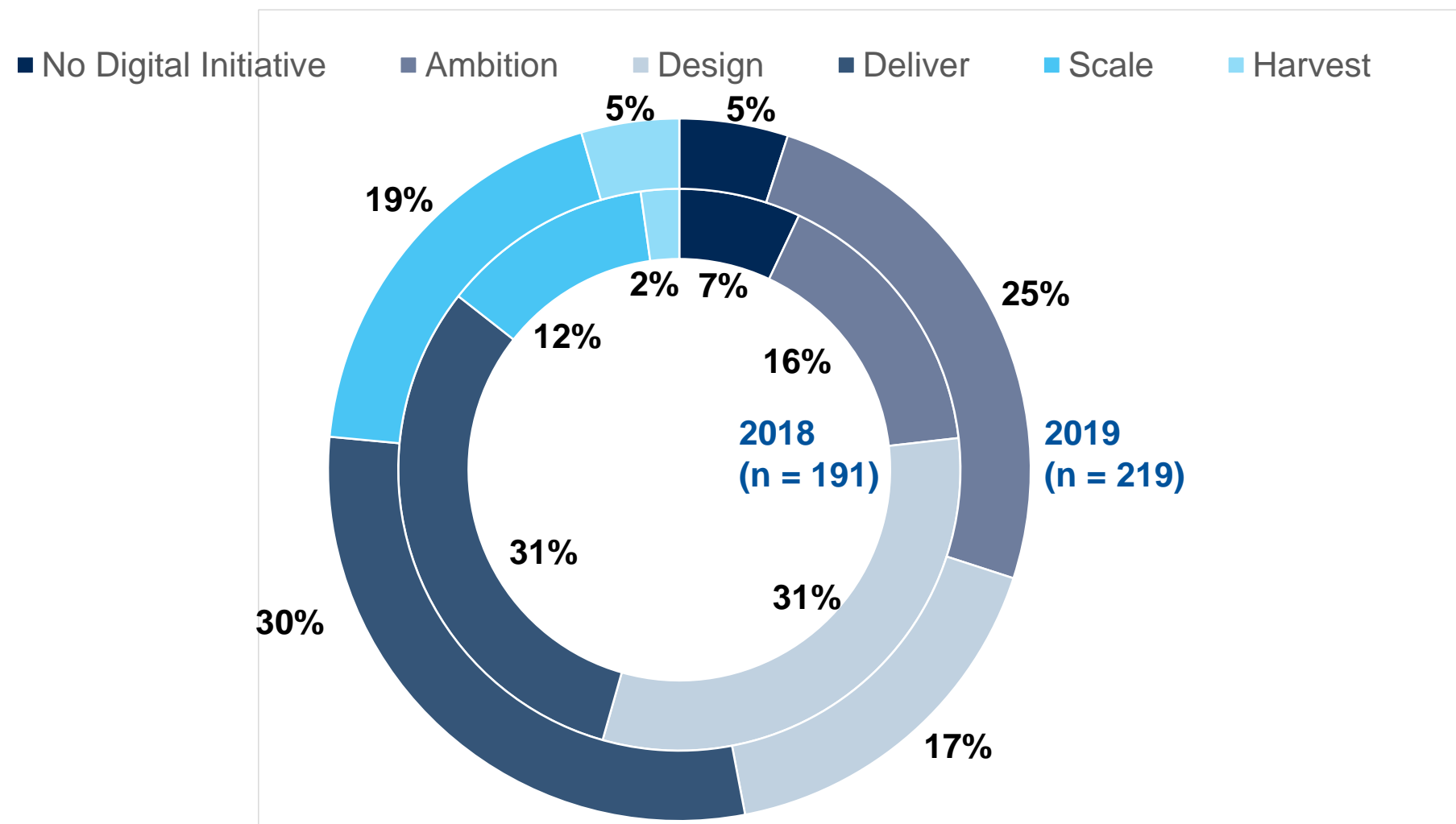
Industrie 4.0 – is Advancing

■ No Digital Initiative ■ Ambition ■ Design ■ Deliver ■ Scale ■ Harvest



Base: Heavy manufacturing respondents, excludes “Don’t know,” n varies by year.
Q: Which of these best describes the stage of your organization’s digital initiative — that is, your organization’s digitalization efforts (no digital, ambition, design, deliver, scale, refine)?

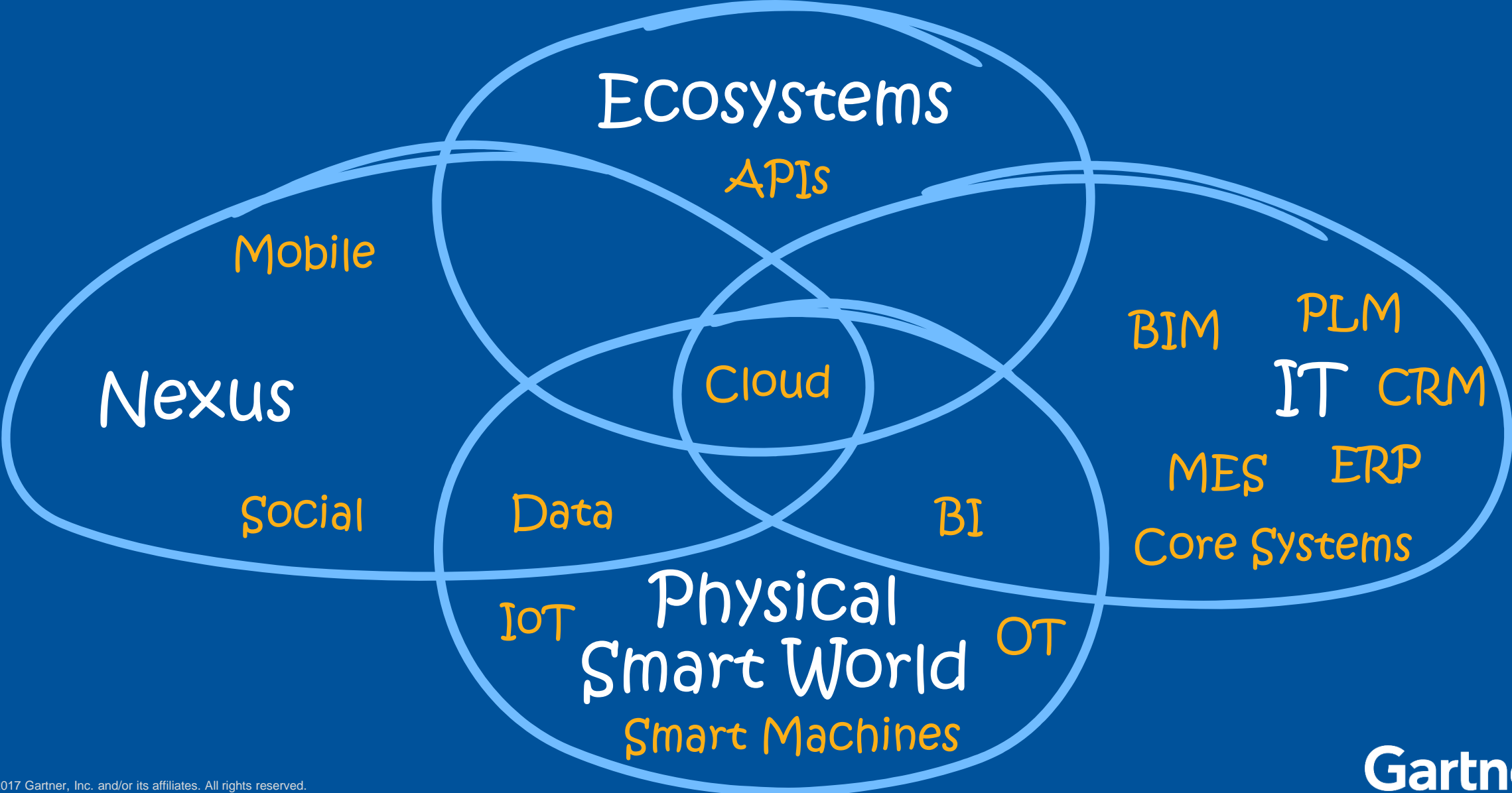
Industrie 4.0 – is Advancing but.... Advancing Slowly



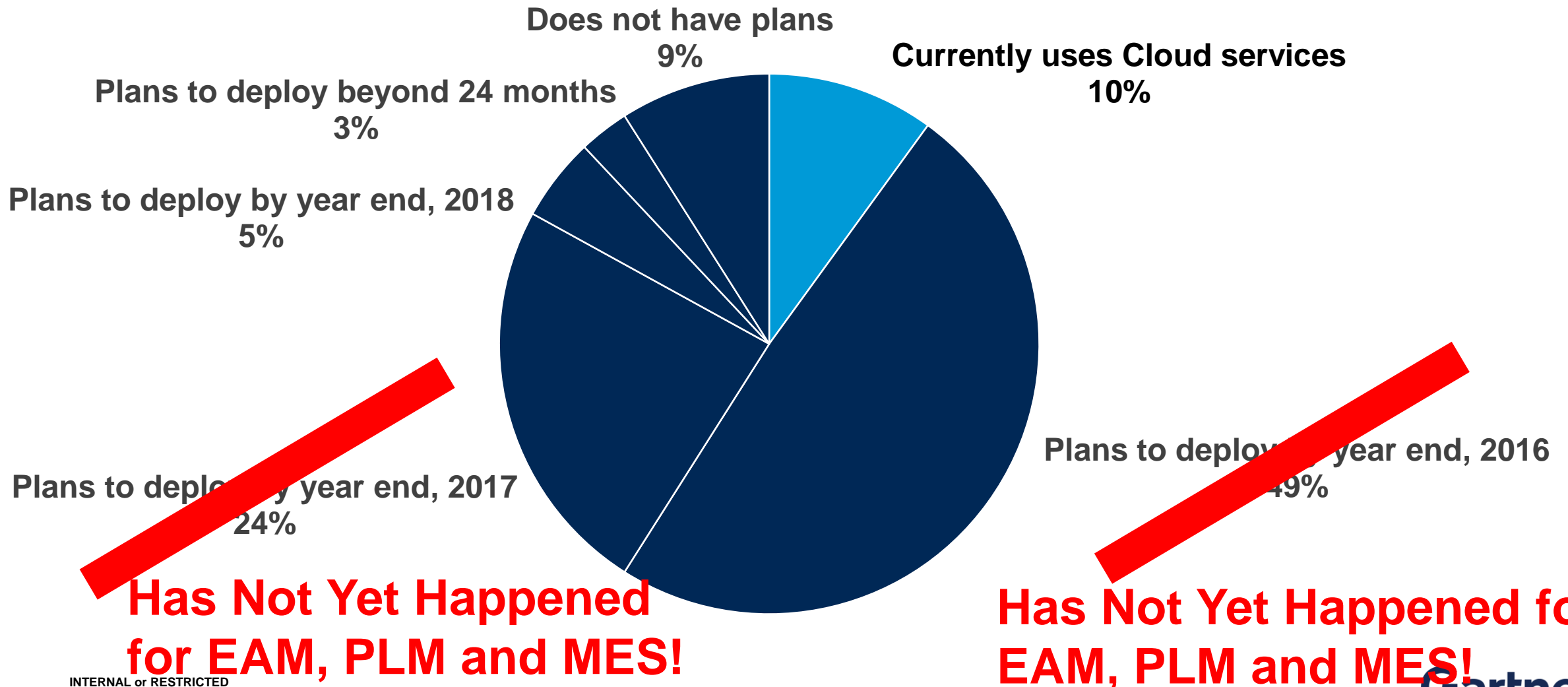
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Ecosystems Will Also Be Part of Digital Business Models

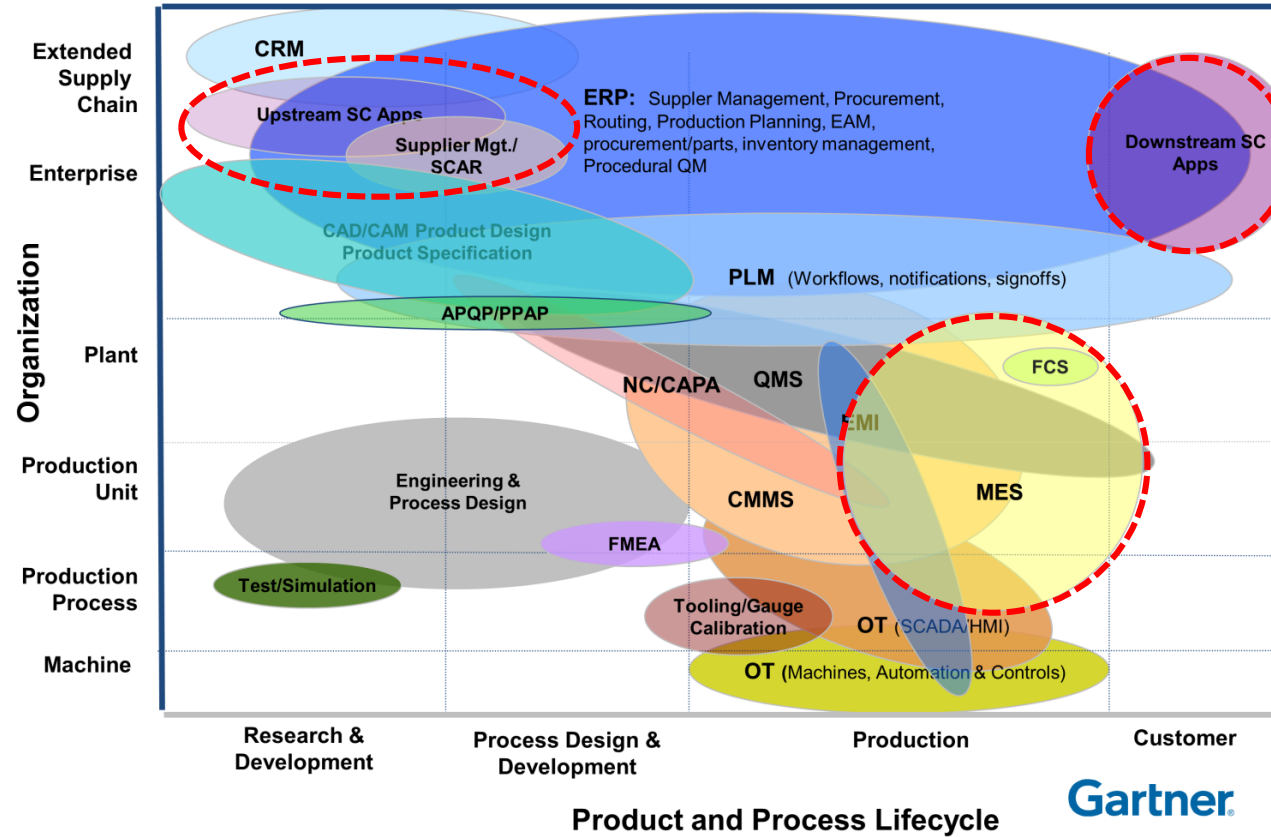


2016 Cloud Survey - Manufacturing CIOs' Cloud Optimism Does Not Reflect on EAM, PLM and MES – Yet!

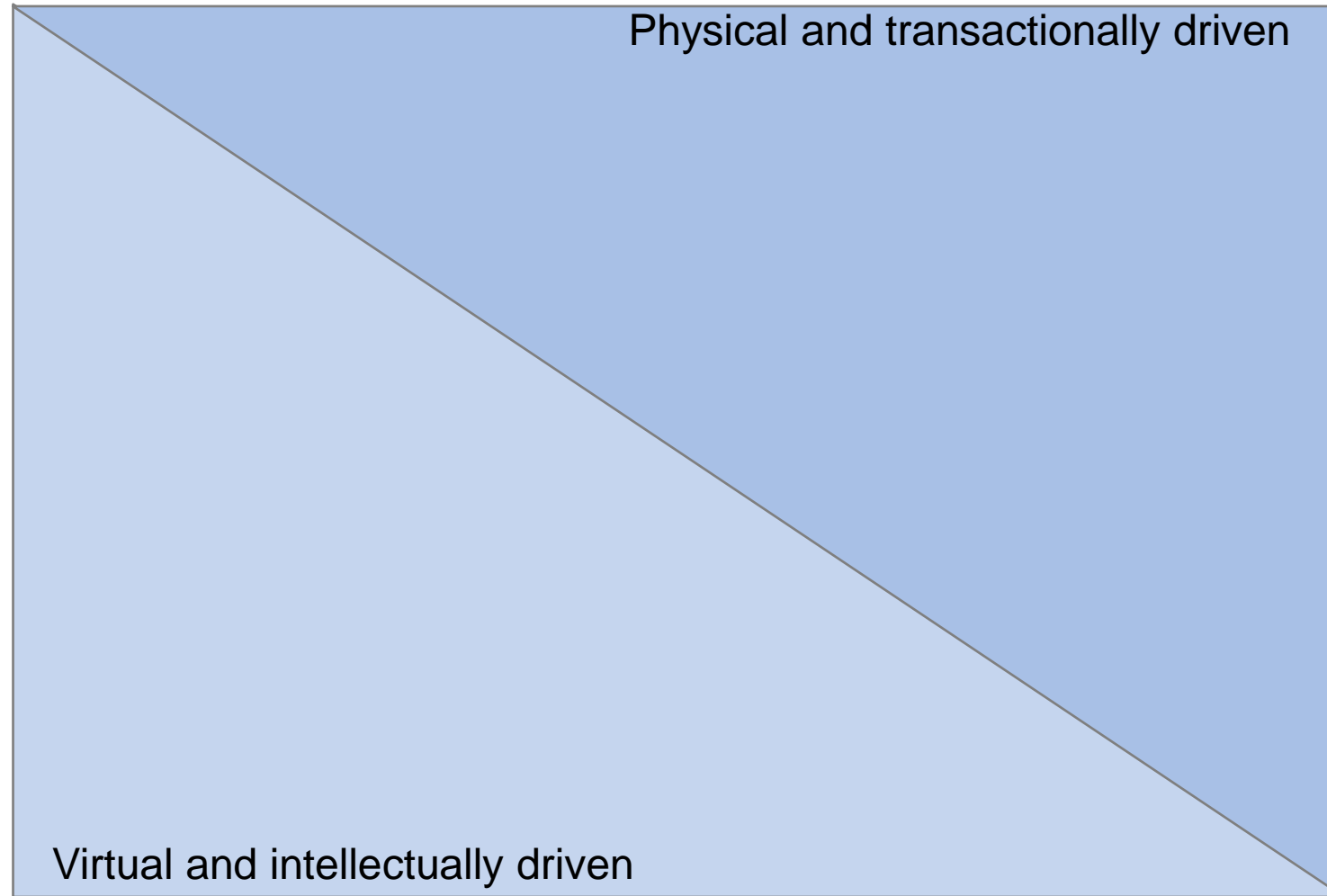


INTERNAL or RESTRICTED

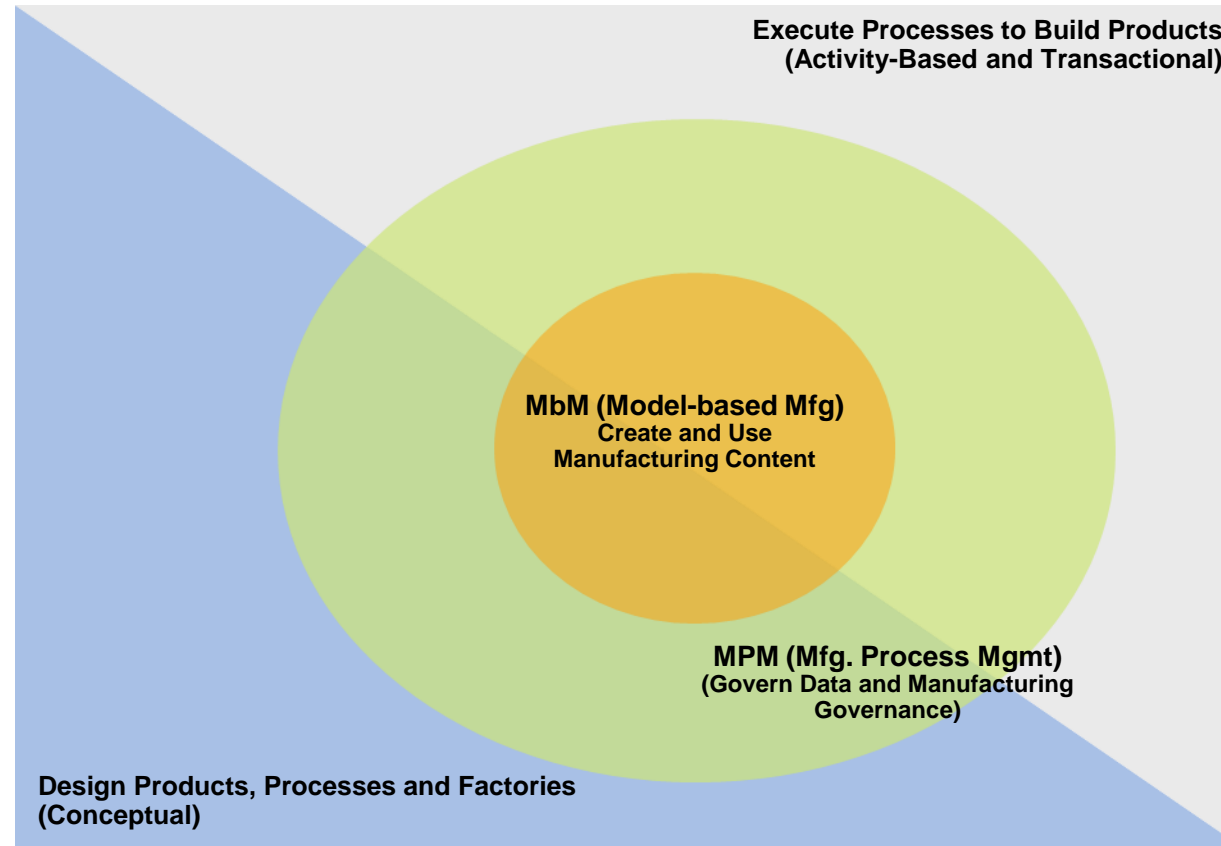
Silo Applications Create Siloes of Data



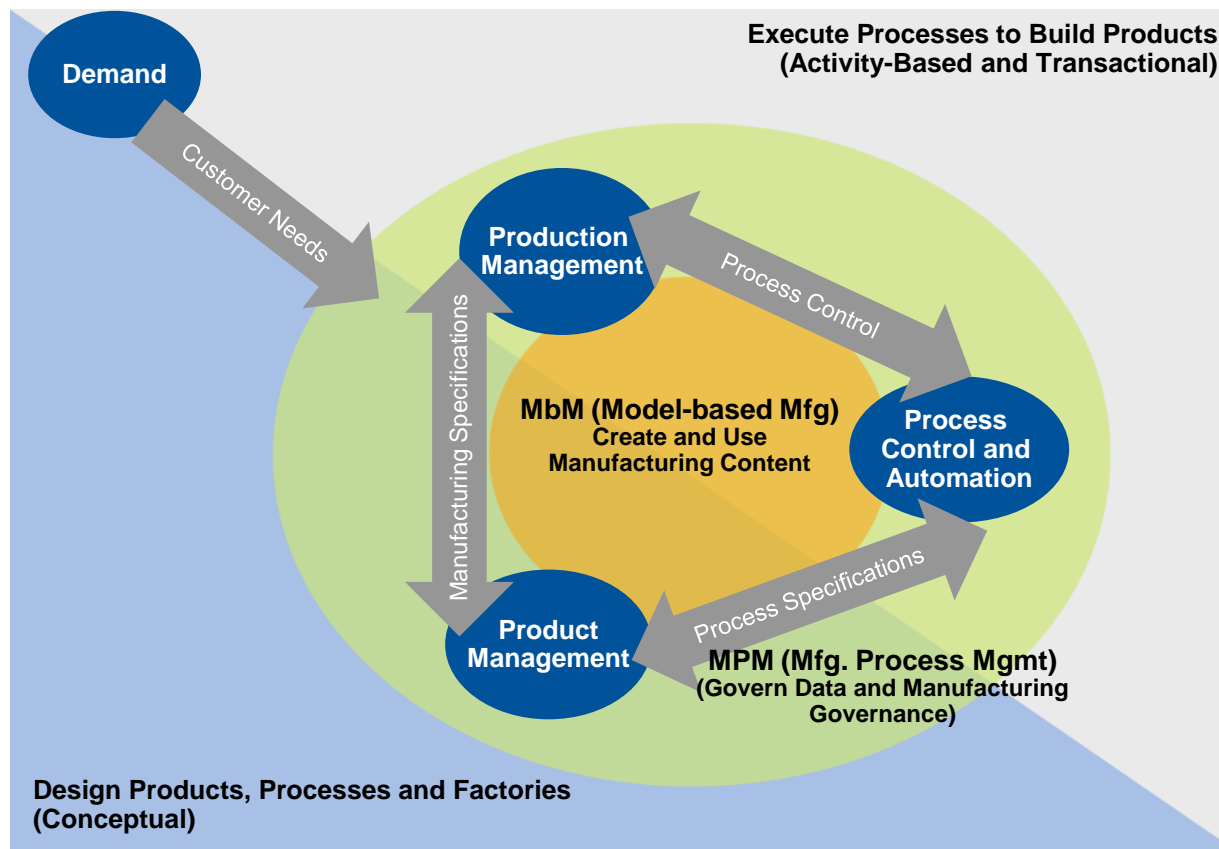
Two Domains of IT Enablement: The Virtual and the Physical



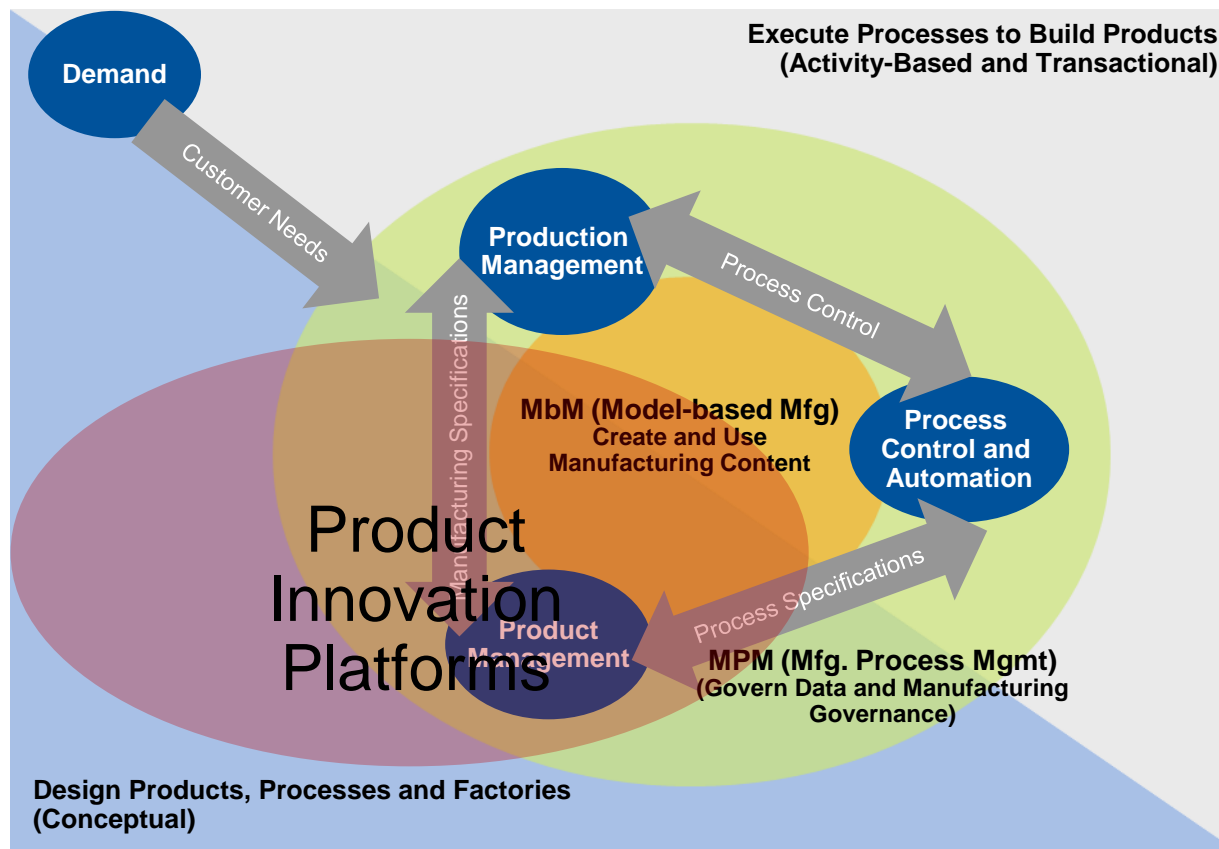
Eliminating Silos Requires Rethinking Design through Manufacturing IT Infrastructure



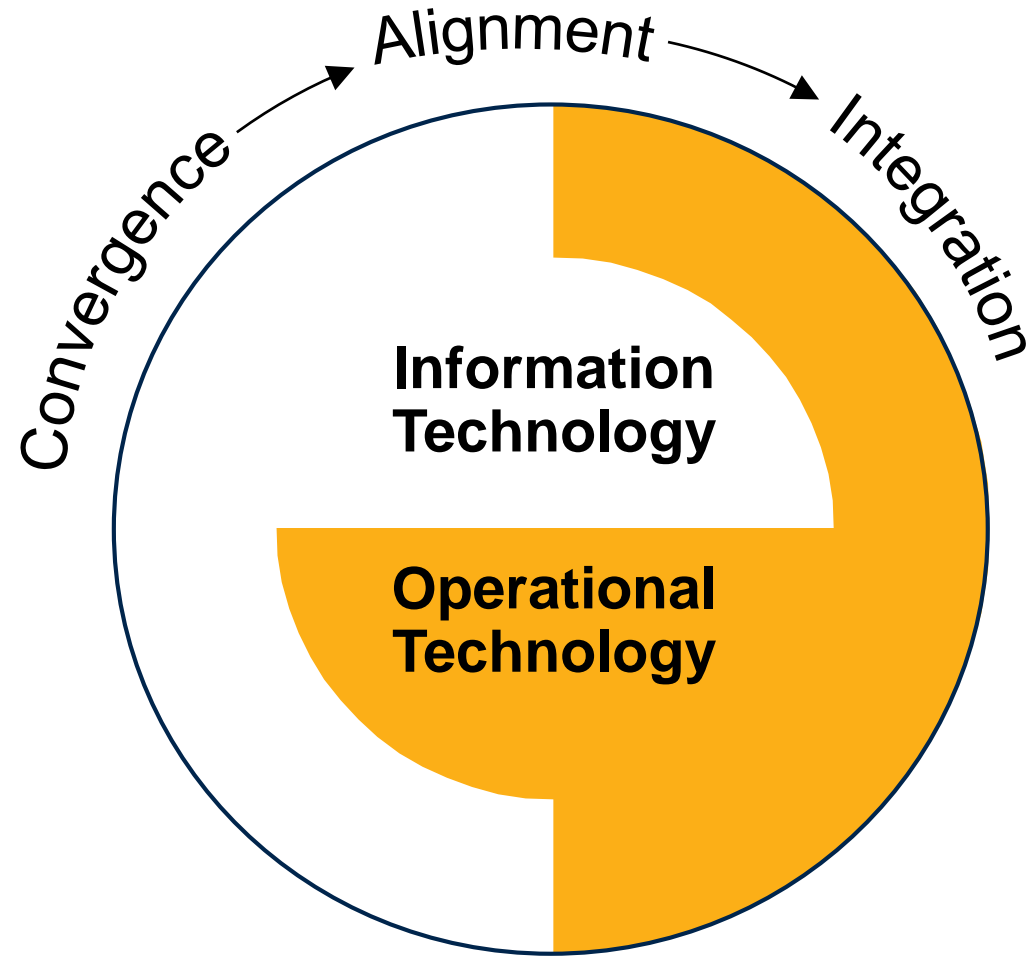
Breaking Down Silos Requires Rethinking Manufacturing IT Infrastructure



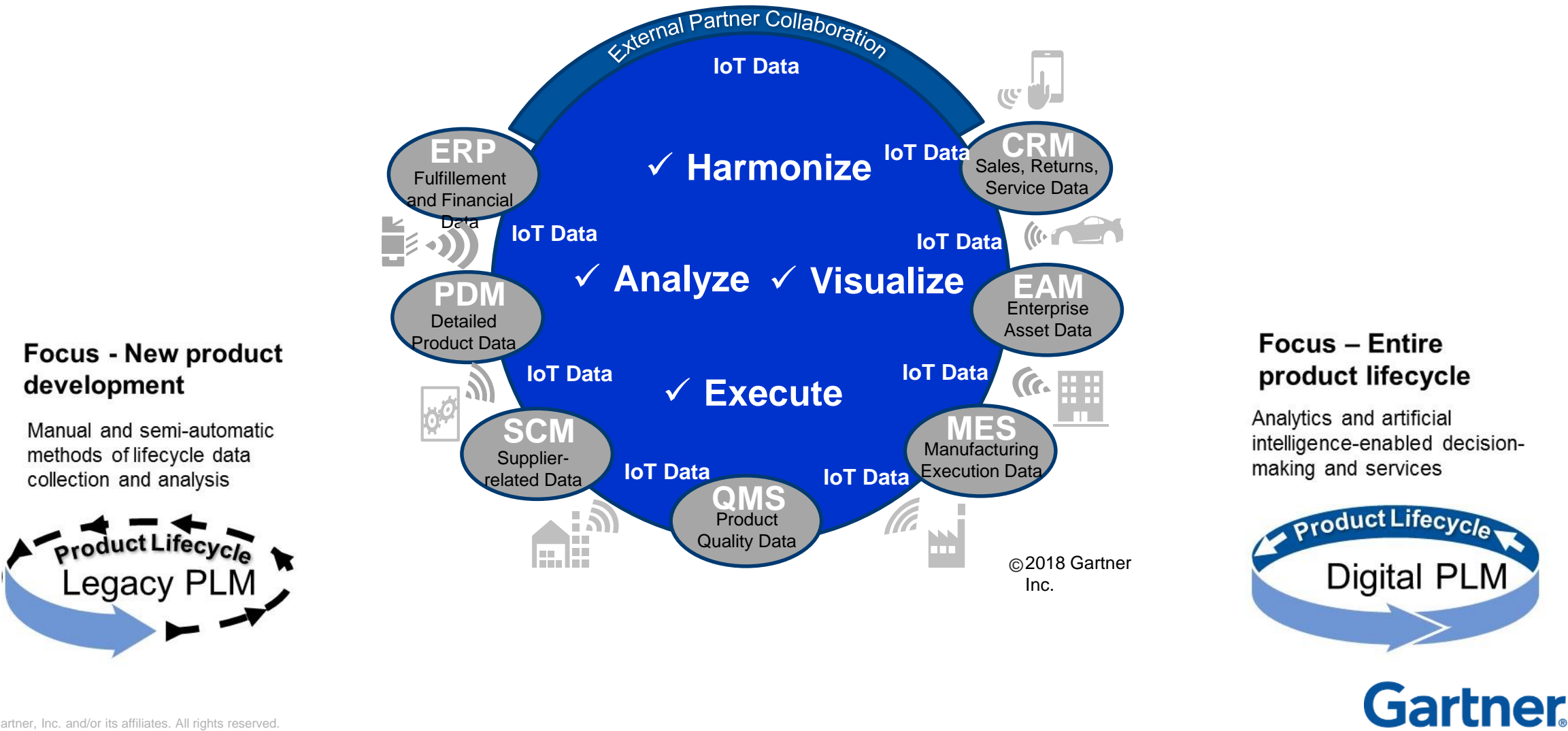
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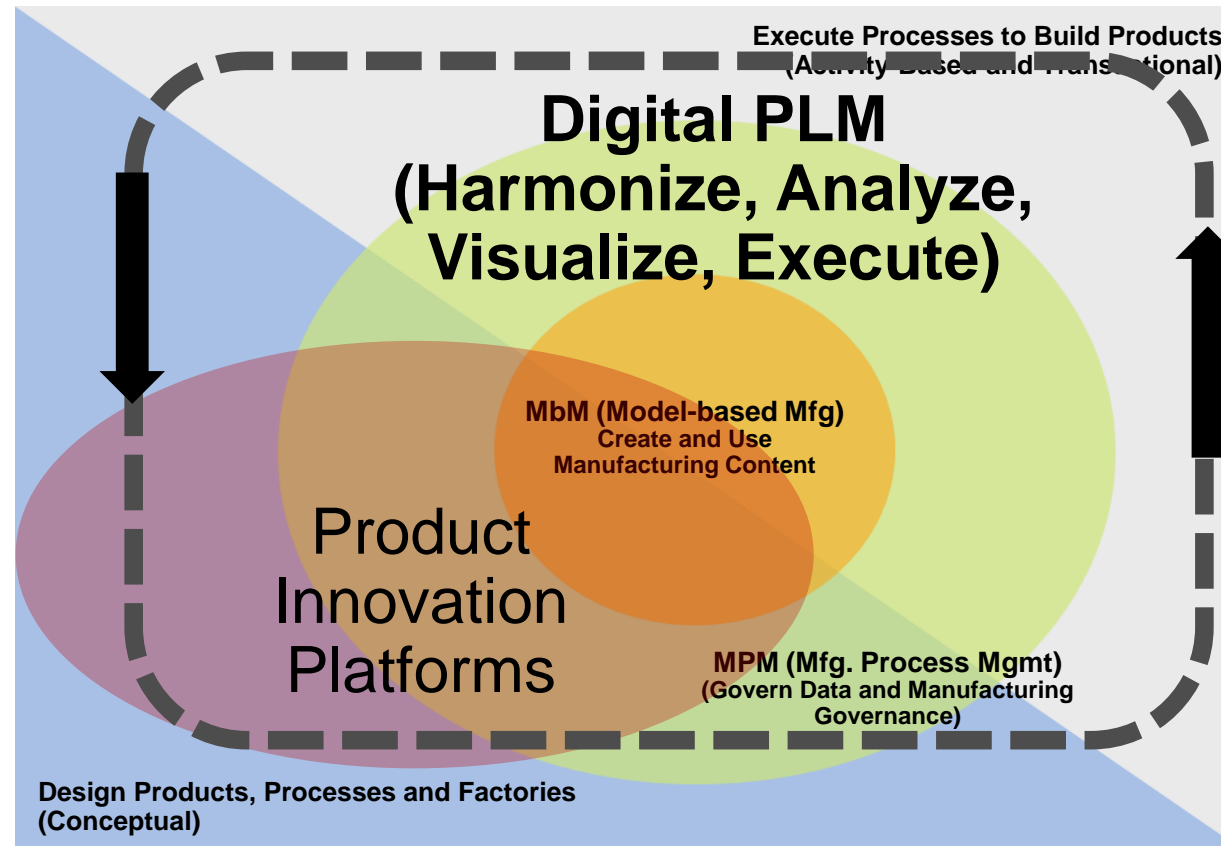
IT OT Integration Requires Alignment



IT OT Integration and IoT Enable 360 Degree Lifecycle Management



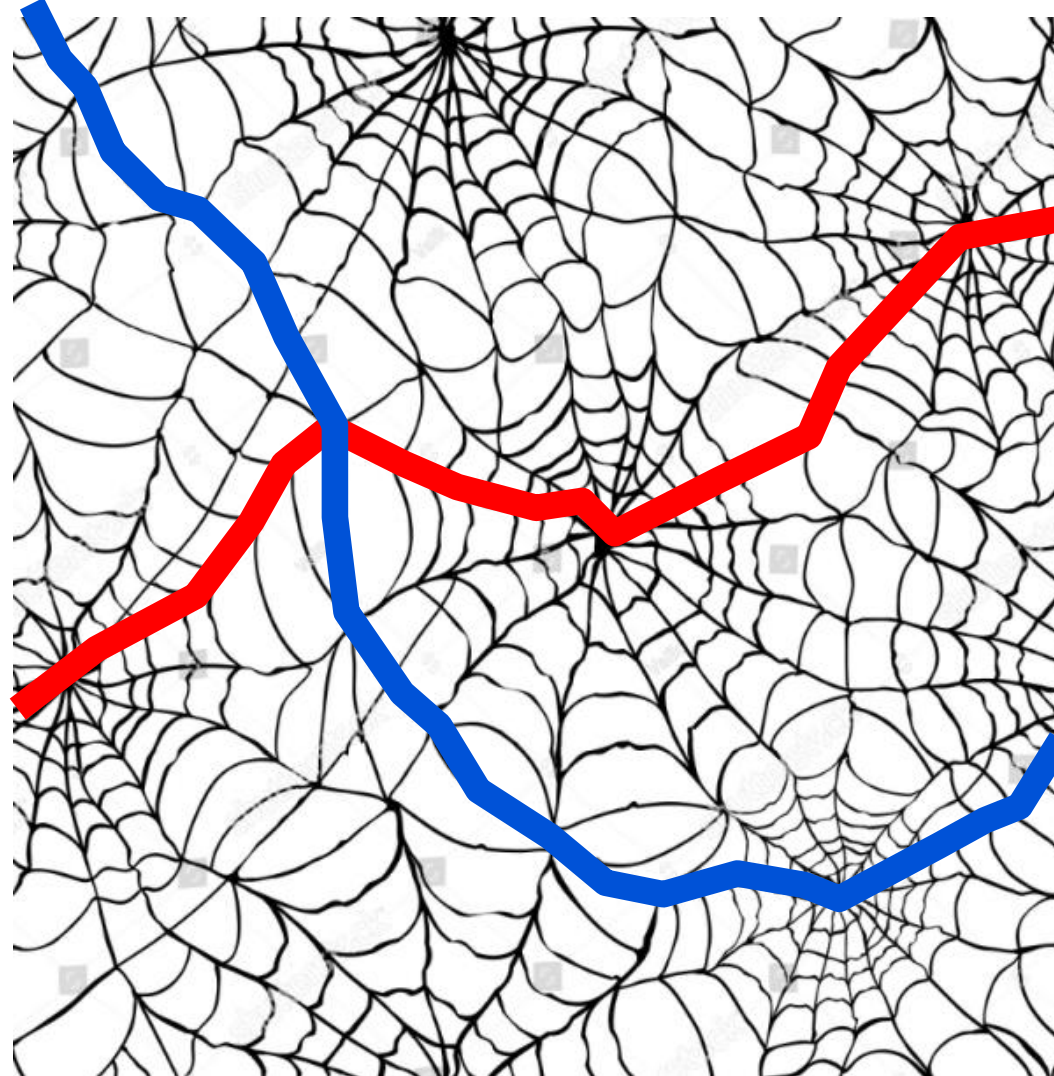
Eliminating Silos Requires Rethinking Design through Manufacturing IT Infrastructure



Digital Twins — Virtual Counterparts in a Physical World



Digital Threads Maximize the Value of Digital Twins and All Other Product, Facility, and Systems Data

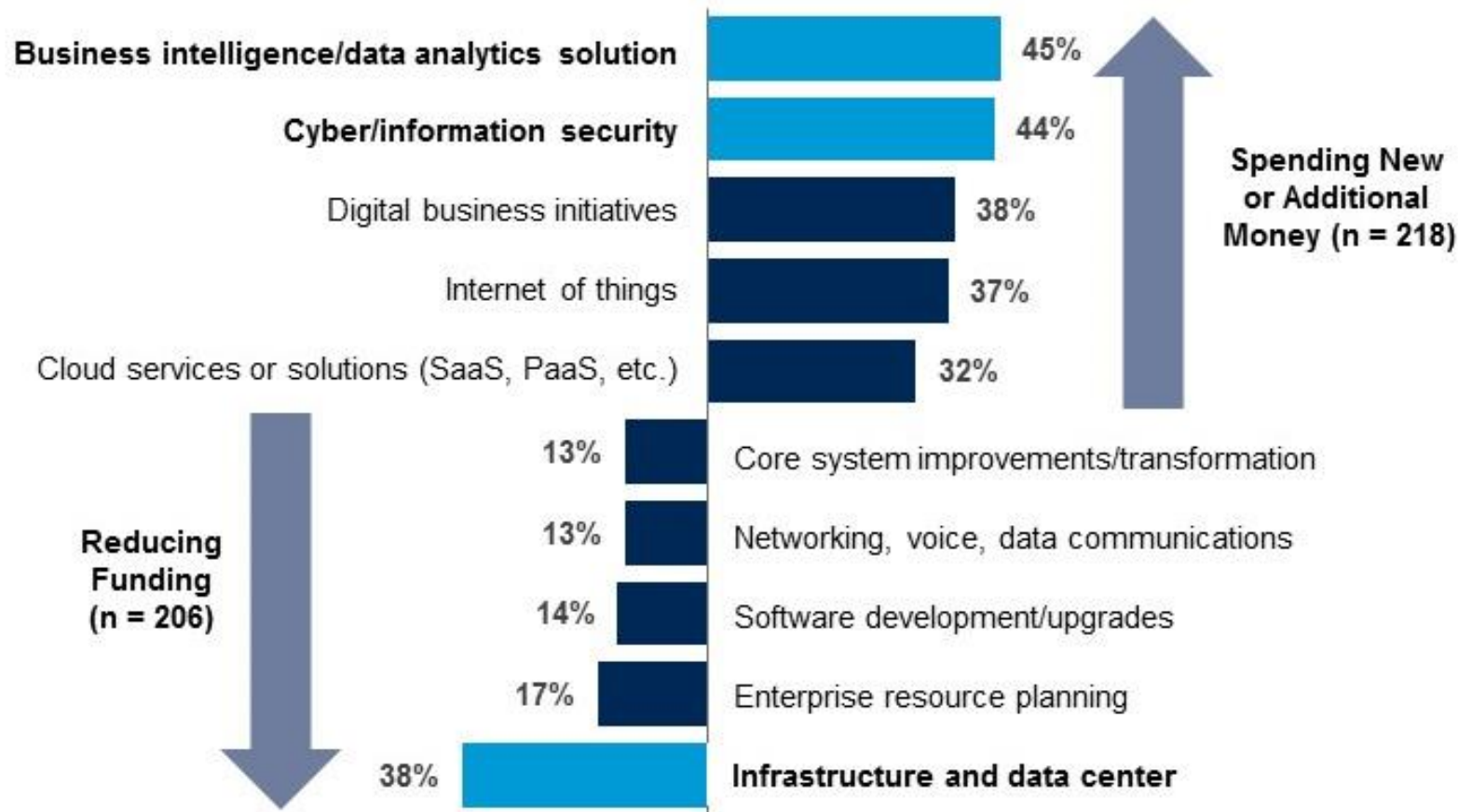


Digital Thread 1

Digital Thread 2

Gartner

BI, Data Analytics, Cyber Security Ranked as Top IT Priorities



Q: What are the technology areas where your organization will be spending the largest amount of new or additional funding in 2019? Base: Heavy manufacturing, excluding "Prefer not to answer," n = 218.
Q: What are the technology areas where your organization will be reducing funding by the highest amount in 2019 compared with 2018? Base: Heavy manufacturing, excluding "Prefer not to answer," n = 206.
Showing the five most-common answers per question, multiple responses allowed, pick from a list.
ID: 368531

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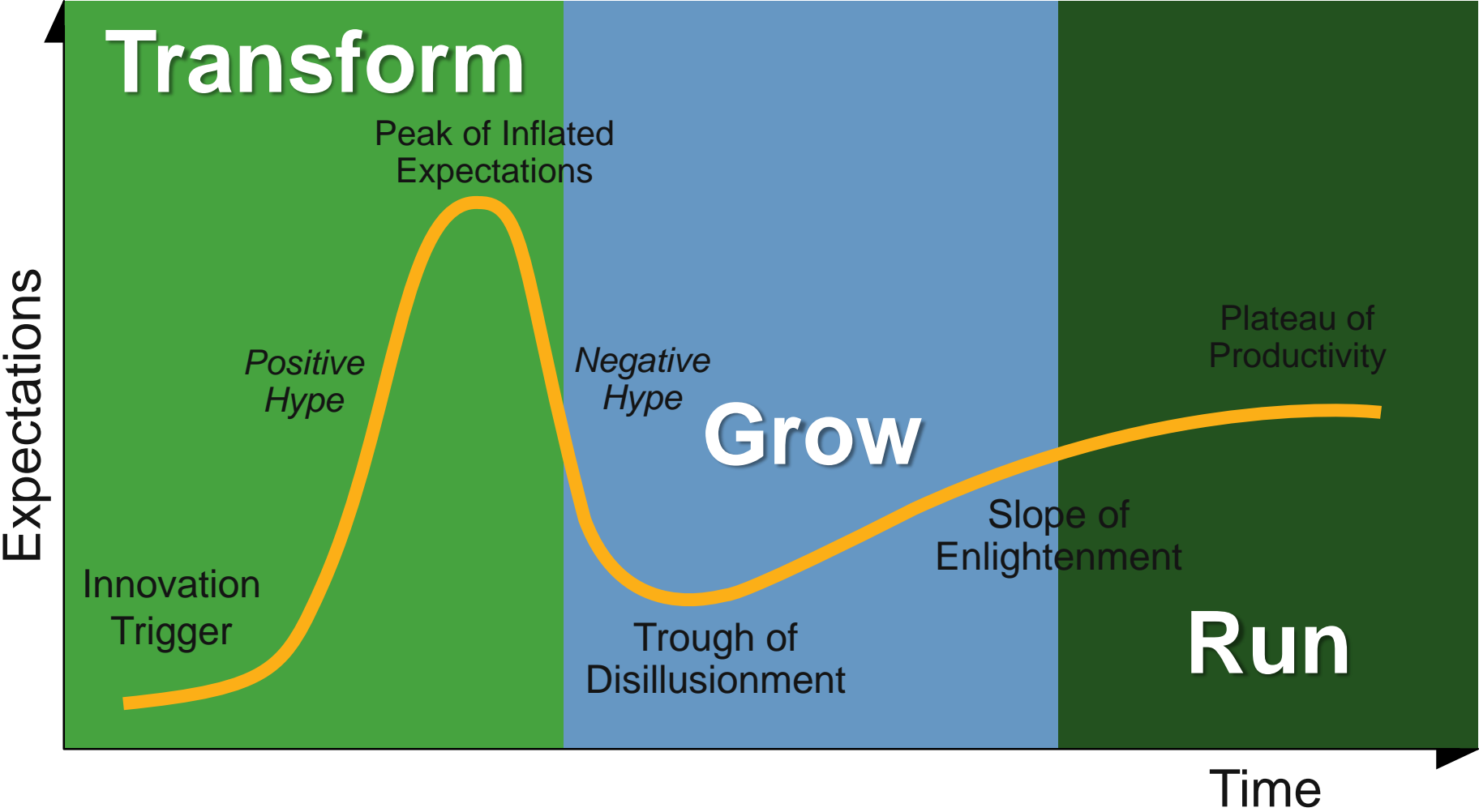
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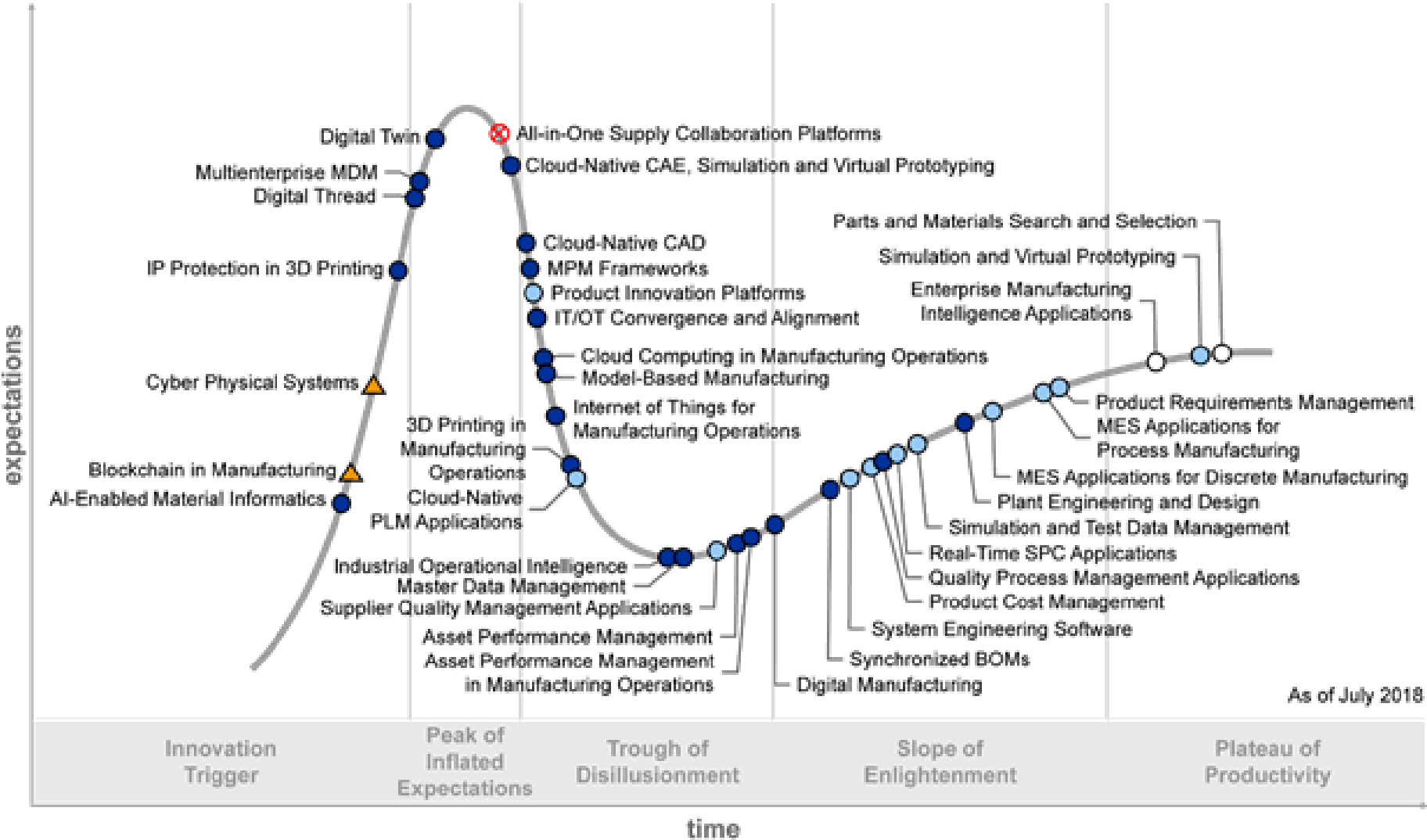
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Balancing Innovation vs. Core Capability



2018 Hype Cycle: : IT Evolution in Manufacturing



As of July 2018

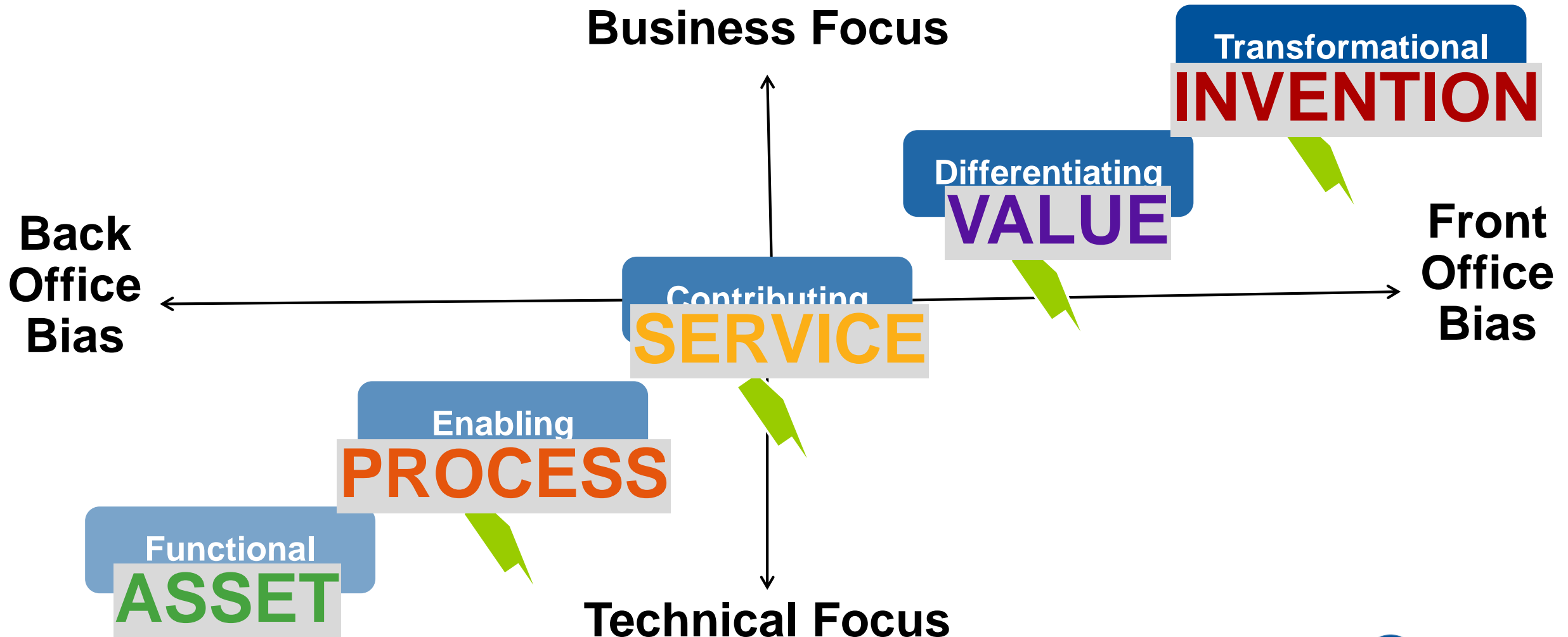
Plateau will be reached:

24 © 2018 Gartner, Inc. ○ less than 2 years ● 2 to 5 years ● 5 to 10 years ▲ more than 10 years ⊗ obsolete before plateau

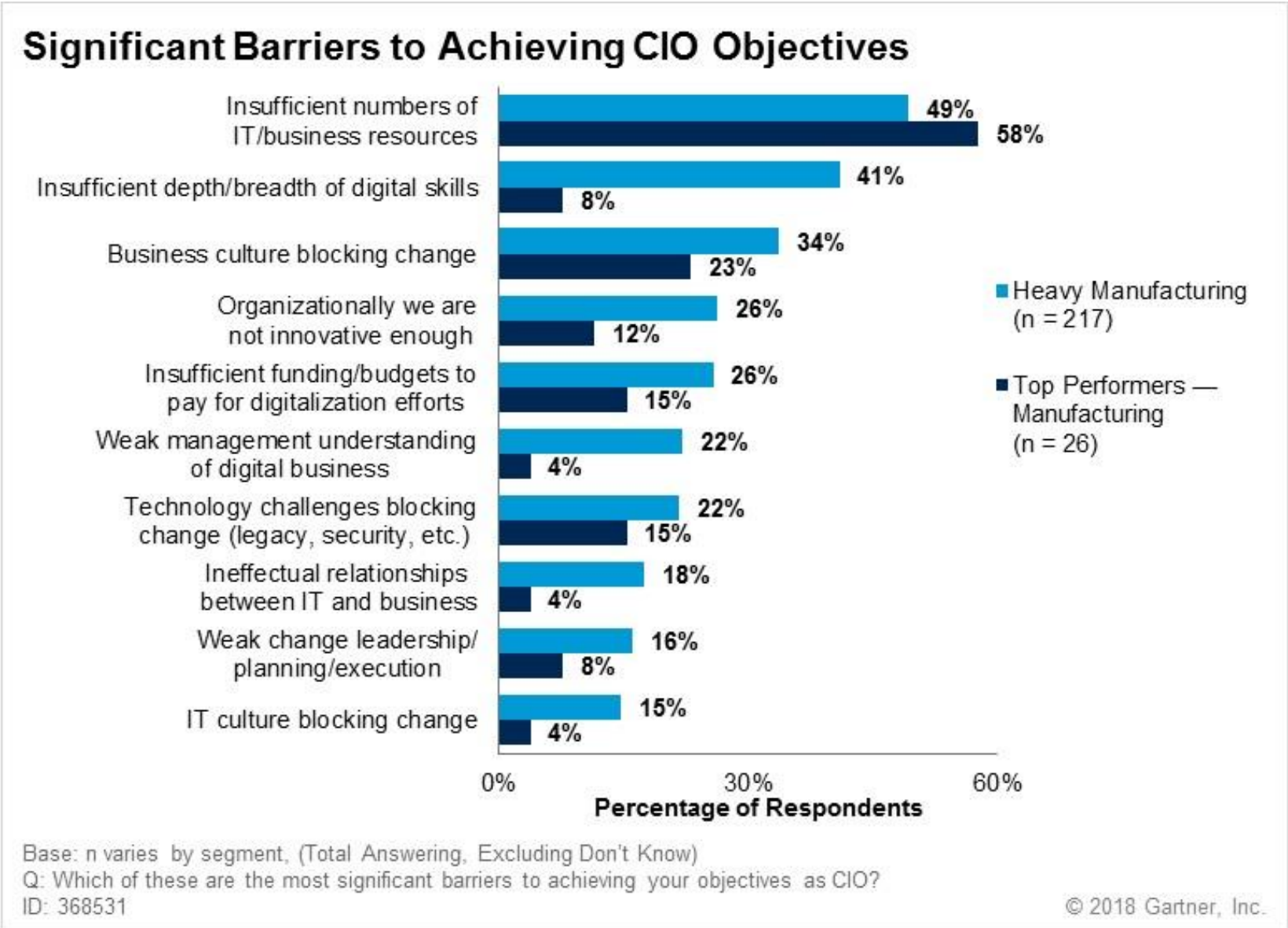
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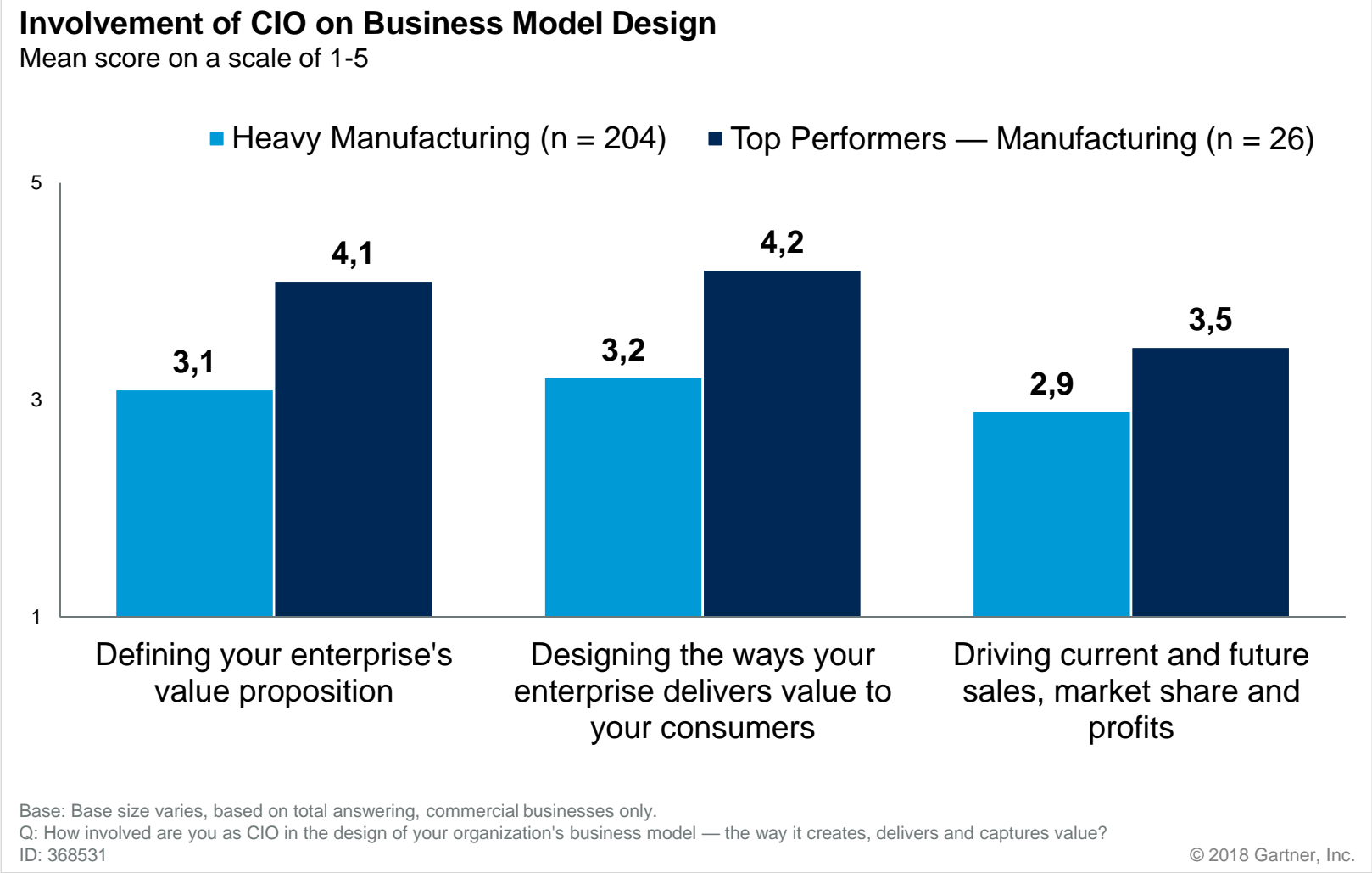
I&T Operating Model Evolves as IT center of gravity changes and IT matures



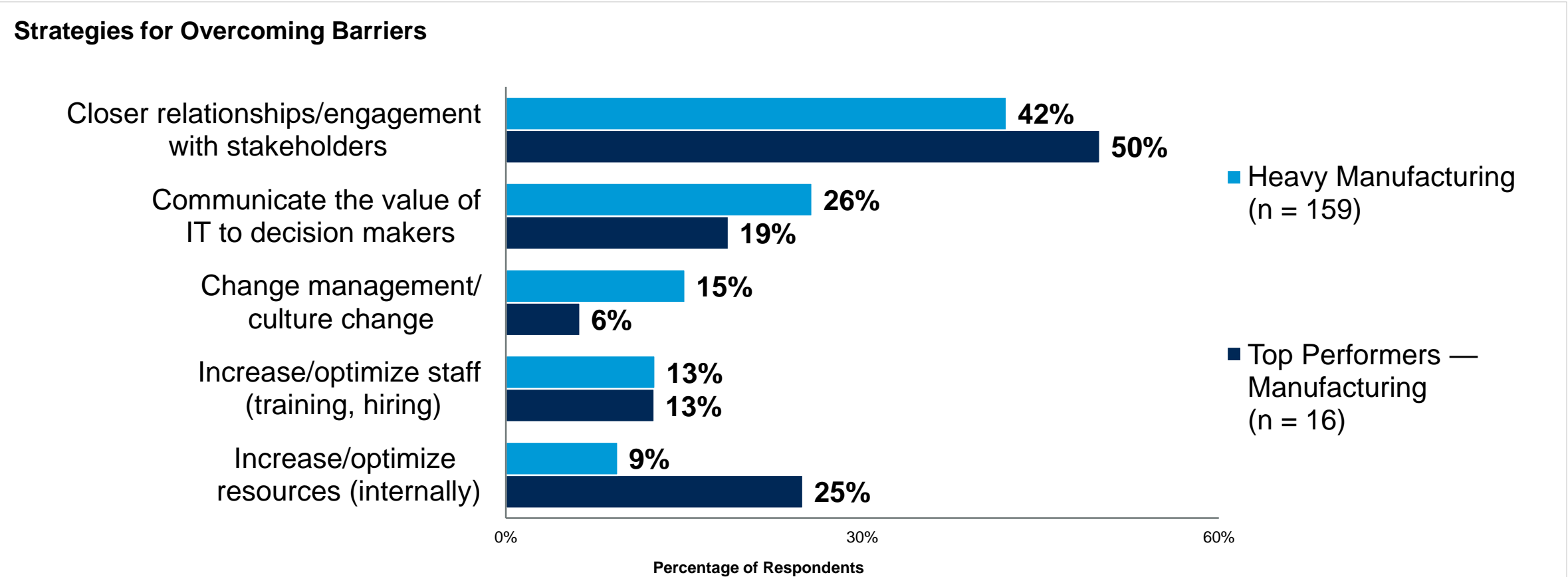
CIO Survey Suggests Top Performing Manufacturing CIOs Credit Sufficient Digital Skills and Management Support



Top Performing Manufacturing CIOs Are Involved in Business Model Design

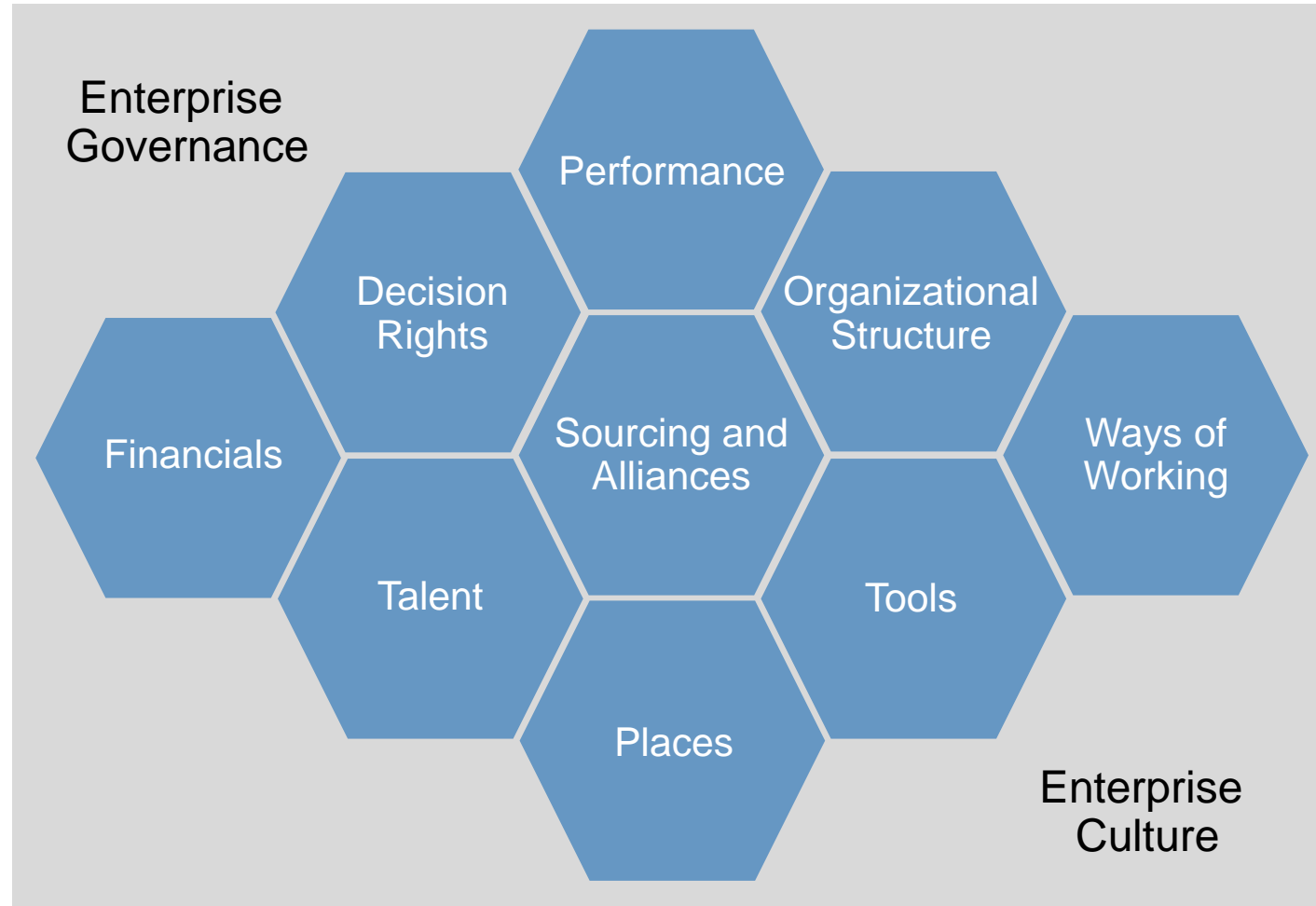


The CIO Survey Suggests These Are the Top Five Best Practices for Manufacturing CIOs to Enable Industrie 4.0

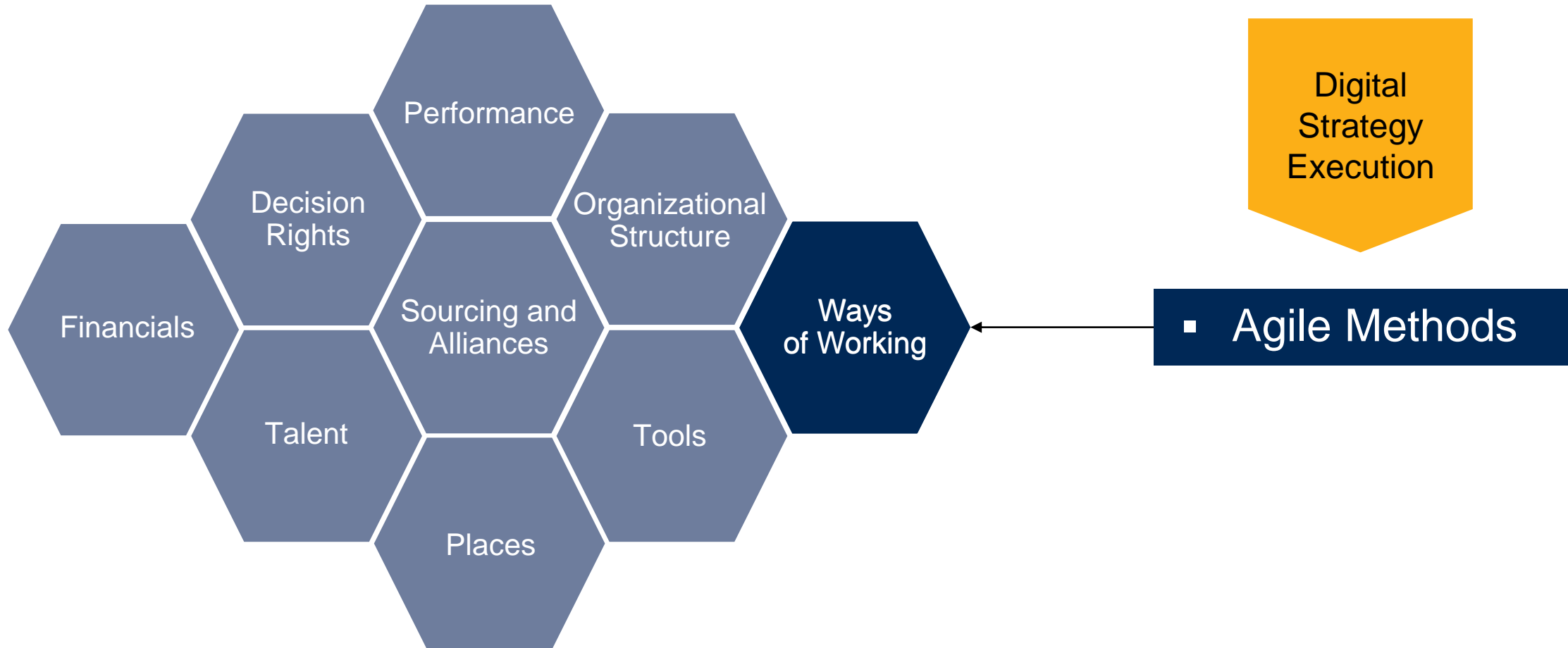


Base: n varies by segment (aware of the barriers to achieve your objectives as CIO, excluding "Prefer not to answer").
Showing top five responses among the heavy manufacturing respondents.
Q: What is your key strategy for overcoming barriers and achieving your objectives in your role?
ID: 368531

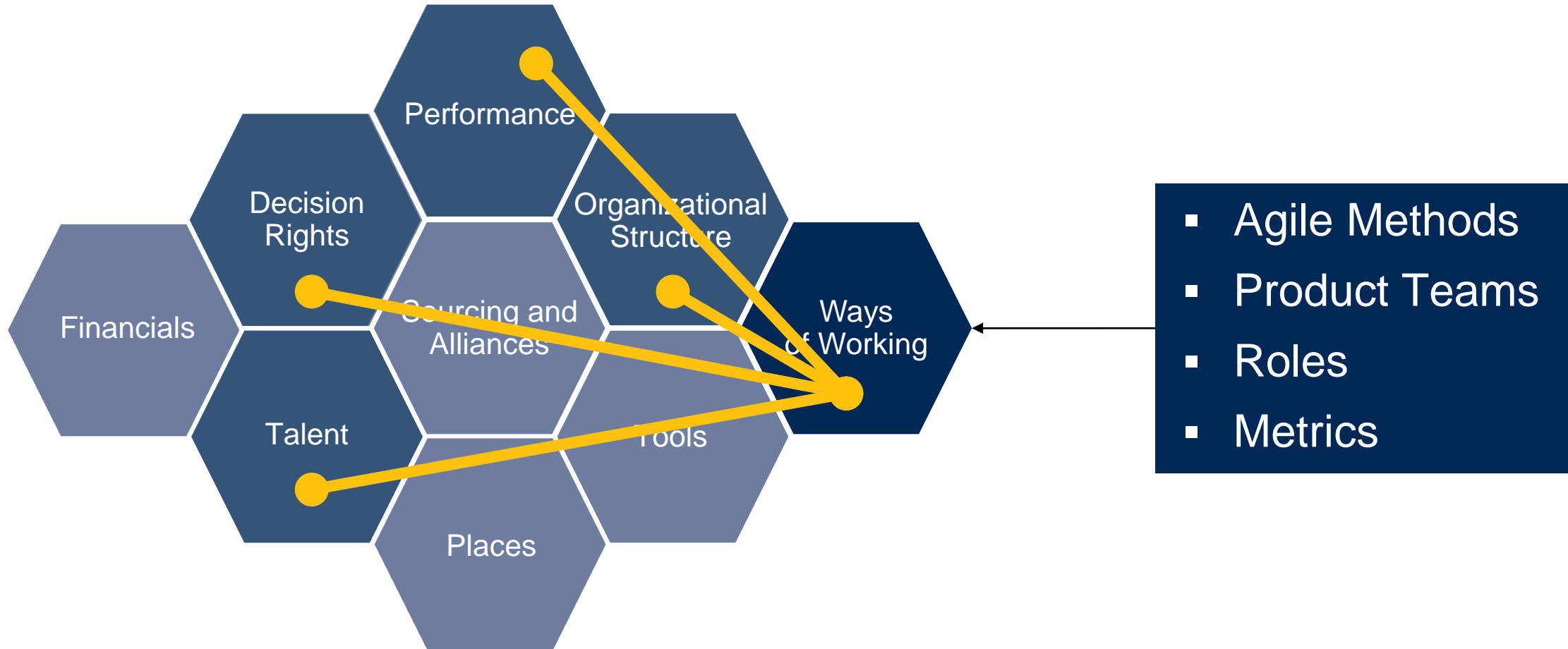
Nine Information and Technology (I&T) Operating Model “System” Components



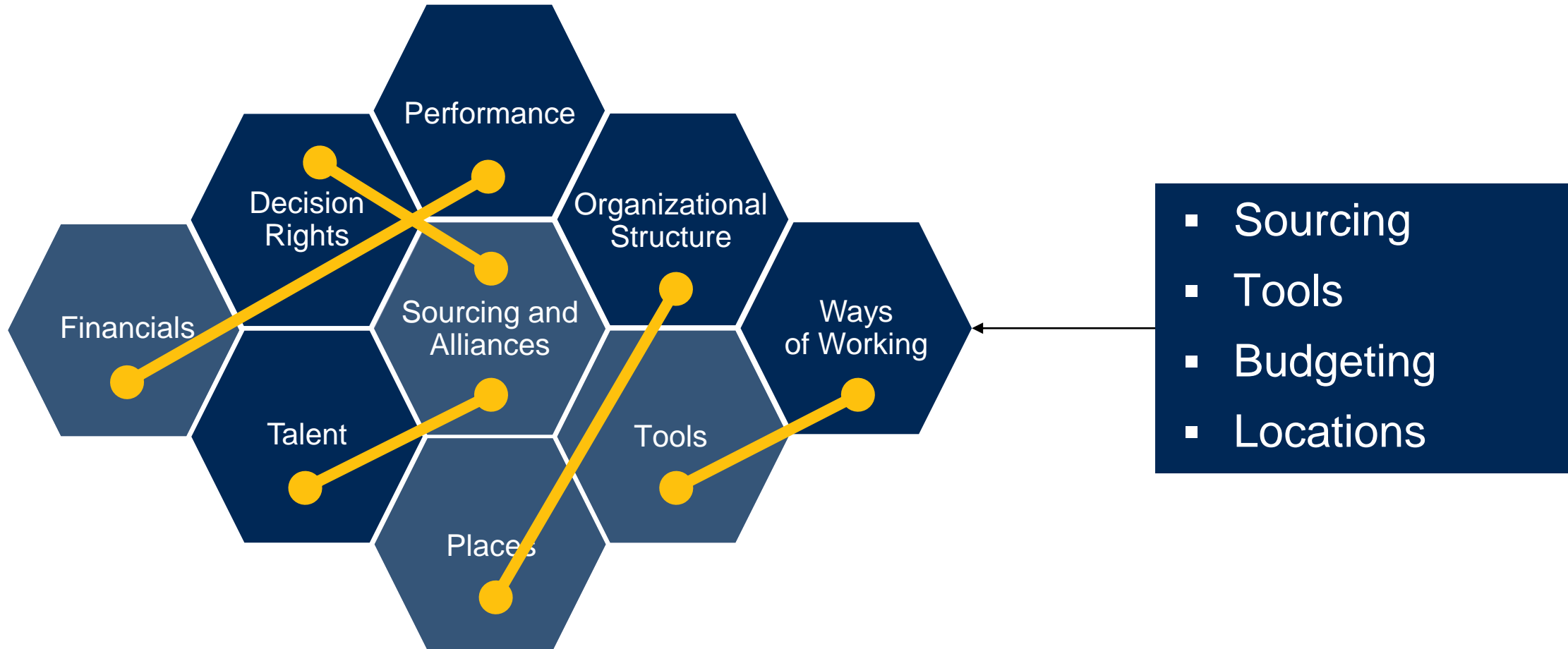
The I&T System Model in Action



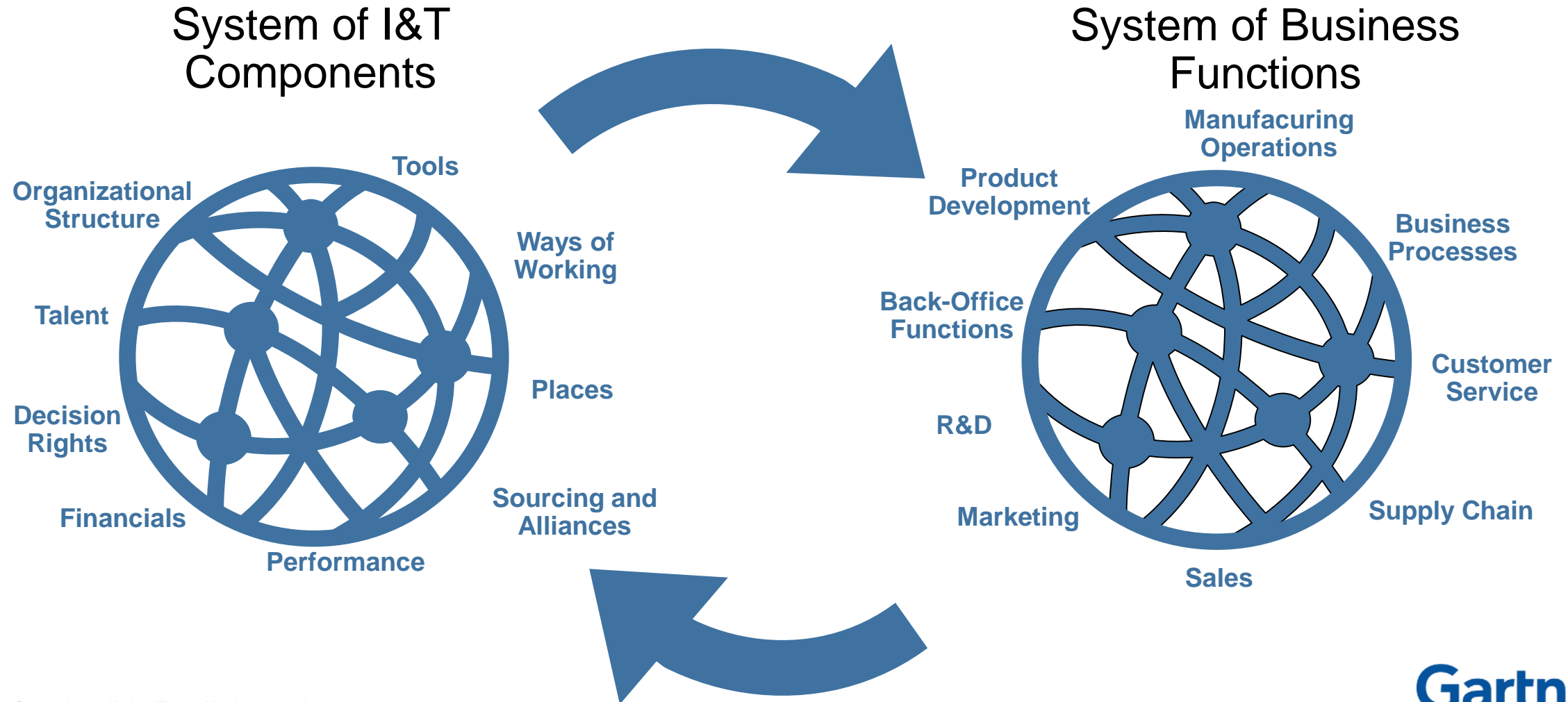
Primary Change Generates Related Change



Follow-On Changes to Complete Redesign



Enabling Industrie 4.0 Requires “System of Systems” Planning and Execution Across IT and the Business



Digital Business Success Goes Beyond Operations — Ambition Is About Transformation

Finding your digital business opportunities:

Modernize


Take an old value chain and modernize it with digital technologies.

Add information to your products and boost your value output.

Take a successful digital business model and apply it to your own industry.

Take a real customer problem and fix it by converging people, businesses and things.

Innovate




Took an old value chain
and modernized it with
digital technologies.


DMG MORI

SCHAEFFLER

B60W ID# TM2503

Machine Health 

Battery Status 

Machine Location 

Operation Hours **186**

Added information to their products and boosted customers value output.



The logo for 'ngena' is displayed in a stylized, lowercase font. Each letter is a different color: 'n' is teal, 'g' is yellow, 'e' is orange, 'n' is red, and 'a' is purple. The background of the slide features a complex, abstract network of glowing lines in various colors (yellow, green, blue, red) against a dark blue background, suggesting a digital or data-driven environment.

ngena

Took a successful digital business model and applied it to their own industry.

AXOOM

Took a real customer problem and fixed it by converging people, businesses and things.



Use Case 4

Appstore:

<https://www.axoom.com/store/>



Partnerpool:

<https://www.axoom.com/partners/>



Summary

- What is the Industrie 4.0 vision for next-generation manufacturers?
 - Use of advanced technologies and industry platforms to achieve unprecedented scalability, agility, flexibility, and efficiency
- How are technologies and digitalization strategies evolving to fulfill Industrie 4.0 vision?
 - The technologies are evolving rapidly but legacy inhibits fast adoption
- What are the best approaches to maximize manufacturers' chances of Industrie 4.0 digitalization success?
 - IT must be more educated about business priorities and more engaged with business leadership
 - Adopt a “system-of-systems” approach to orchestrate IT evolution with business evolution

Thank You!

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