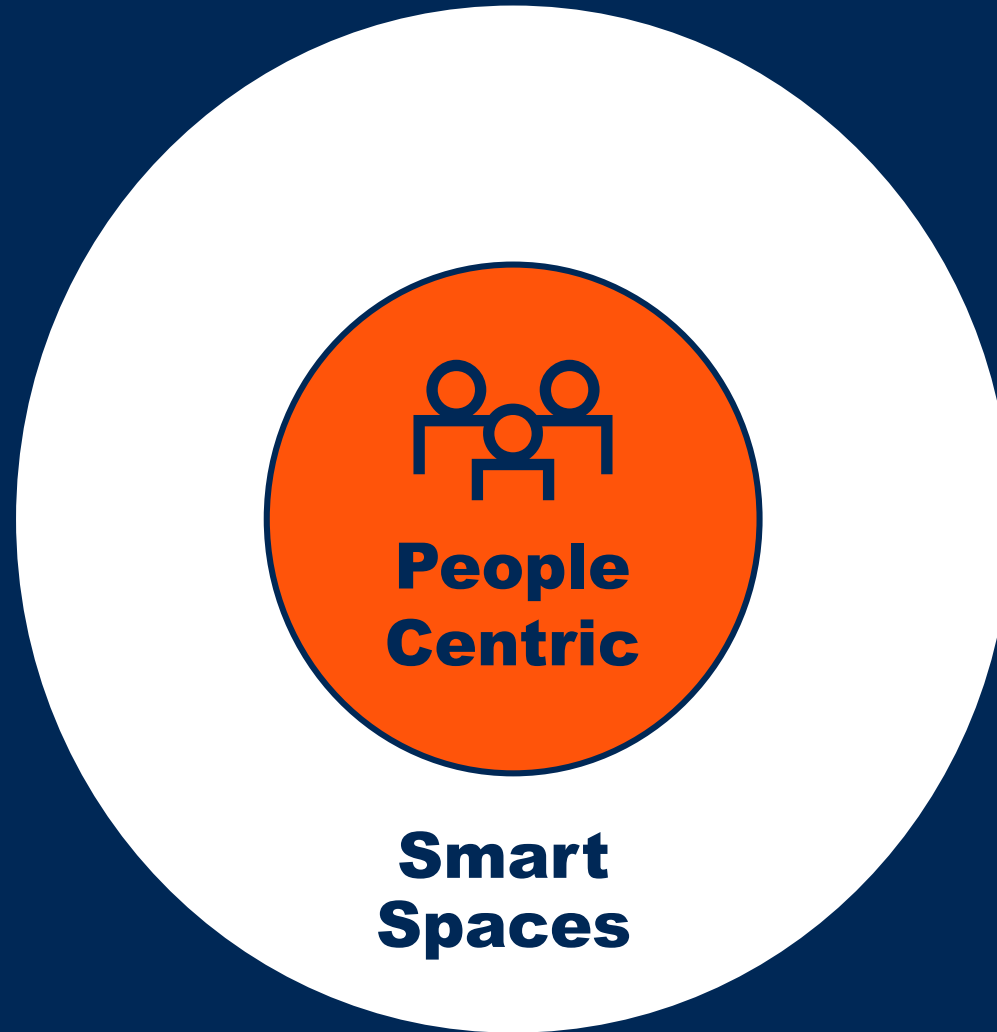
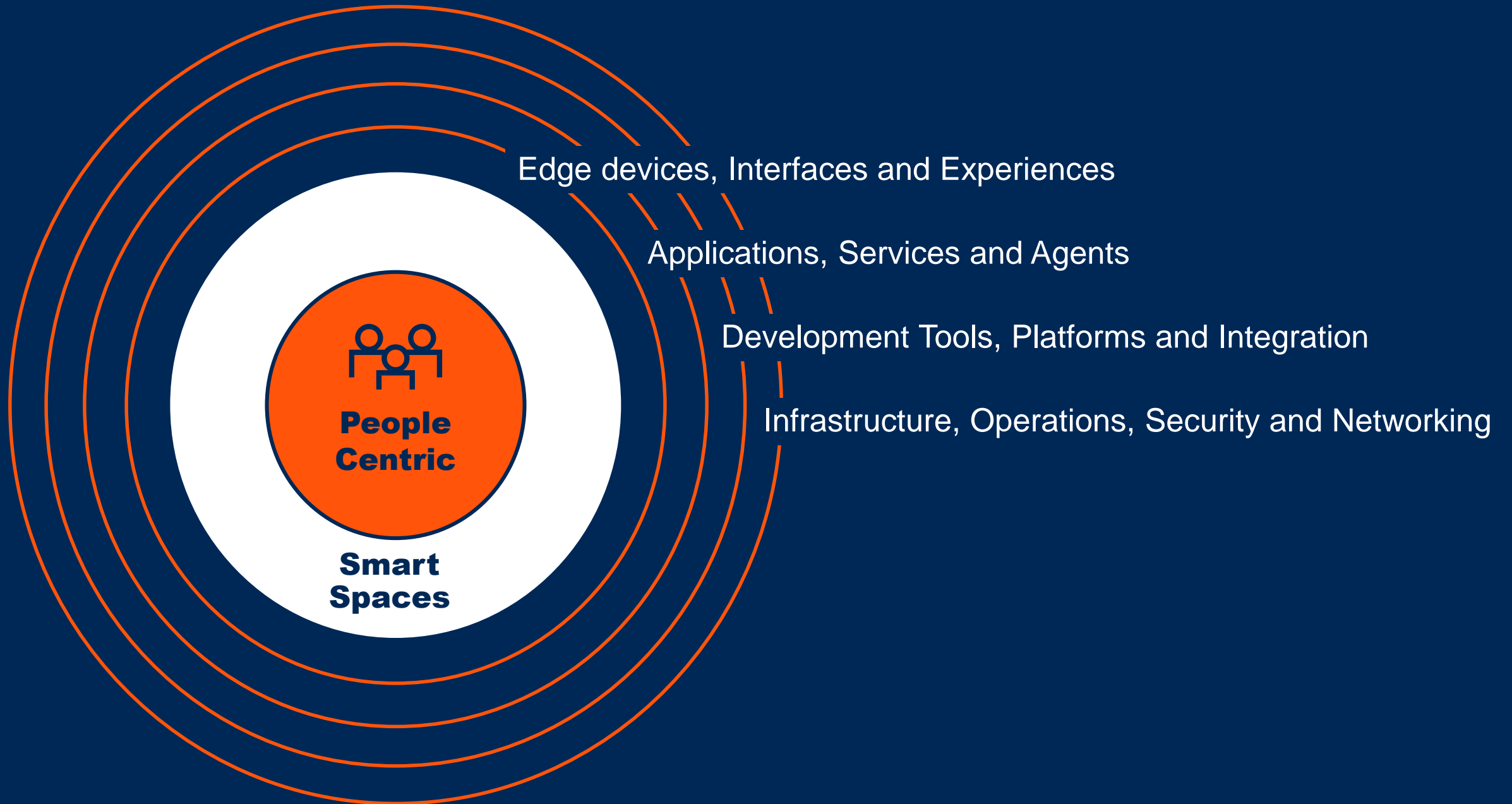


**September 2019**

# The Top 10 Strategic Technology Trends for 2020





## People-Centric



**Hyperautomation**



**Multiexperience**



**AI Democratization**



**Human Augmentation**



**Transparency and Traceability**

## Smart Spaces



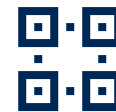
**Empowered Edge**



**Autonomous Things**



**Distributed Cloud**



**Practical Blockchain**



**AI Security**

# Hyperautomation

The goal of Hyperautomation is to automate anything that can be automated.

The no. 1 use case for AI is process automation.

Source: [“AI Use Cases, Tales From the Trenches: A Gartner Trend Insight Report”](#) (G00373320)



# The Path to Hyperautomation

## Task Automation

(Rules, RPA)

## Process Automation

(Workflow and iBPMS)

## Business Operations

(DigitalOps)

**Simple  
Automation**

## Event Processing

APIs and Feeds  
Adaptive Architectures

## Conversational UX

Chatbots, Smart Speakers  
Virtual Assistants

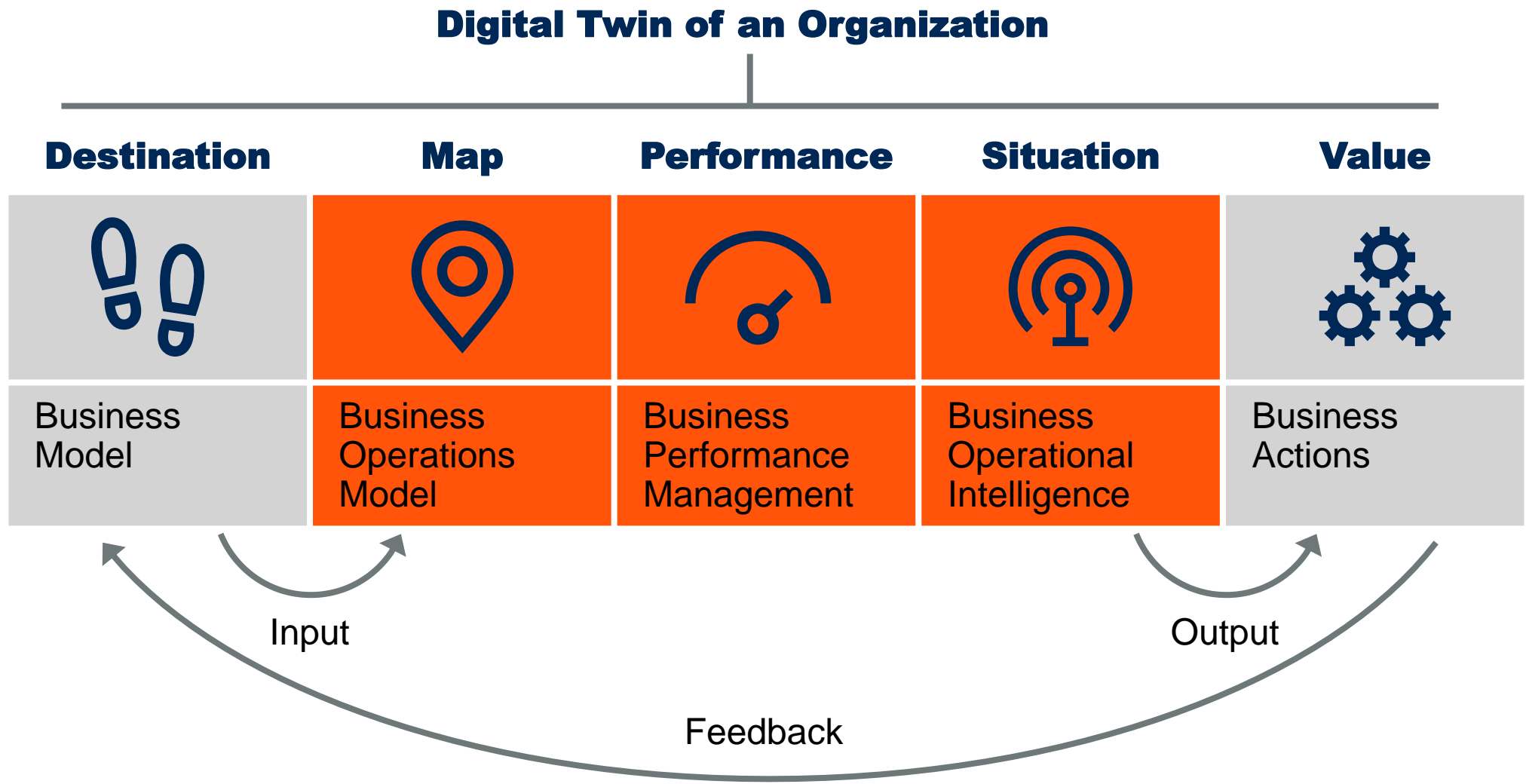
## Intelligence

AI and Machine Learning  
Advanced Algorithms

**Hyperautomation**



# Hyperautomation Through DigitalOps



# Multixperience

By 2021, at least one-third of enterprises will have deployed a multixperience development platform to support mobile, web, conversational and augmented reality development.



Voice



Eye Tracking



Gesture



Emotion



Position



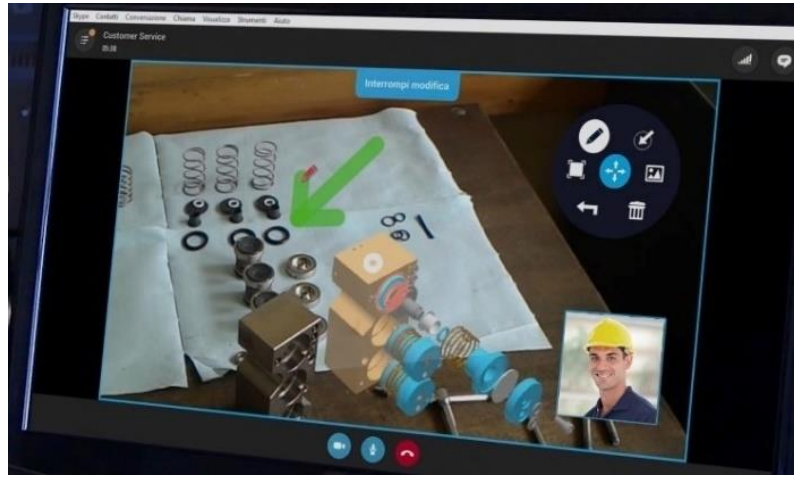
Many more...

Source: Technology Insight for Multixperience Development Platforms (G00351300)

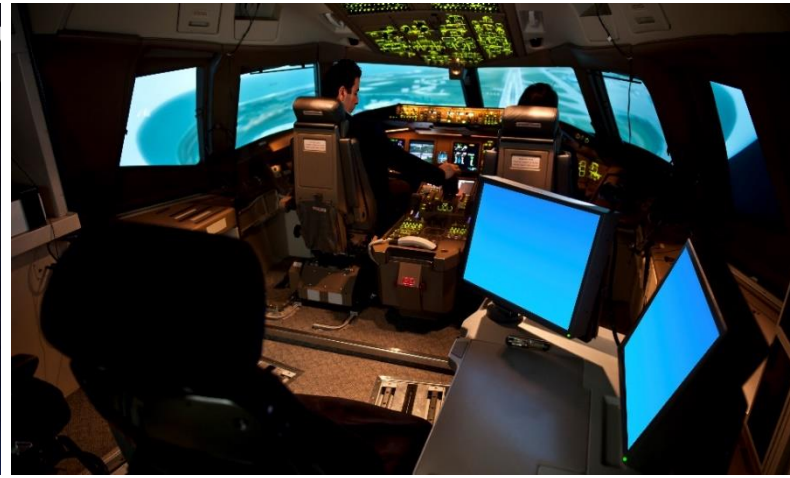




# Immersive Environments Will Change the Way We Perceive and Interact



**Field Service**



**Training**



**Collaborative Design**

# Evolving From Web to Multiexperience

## UX

- Desktop to responsive
- Static to dynamic UI
- Portable

+

- Apps economy
- Smart devices
- Untethered and offline

+

- Conversational
- Immersive
- Sensory

2000's  
**Web**

2010's  
**Mobile**

2020's  
**Multiexperience**

- DB and web service integration
- SOA
- Hosted

+

- REST and API-driven
- MASA
- Cloud

+

- Edge Computing
- Serverless and event-driven
- AI-augmented

## Systems

# AI Democratization

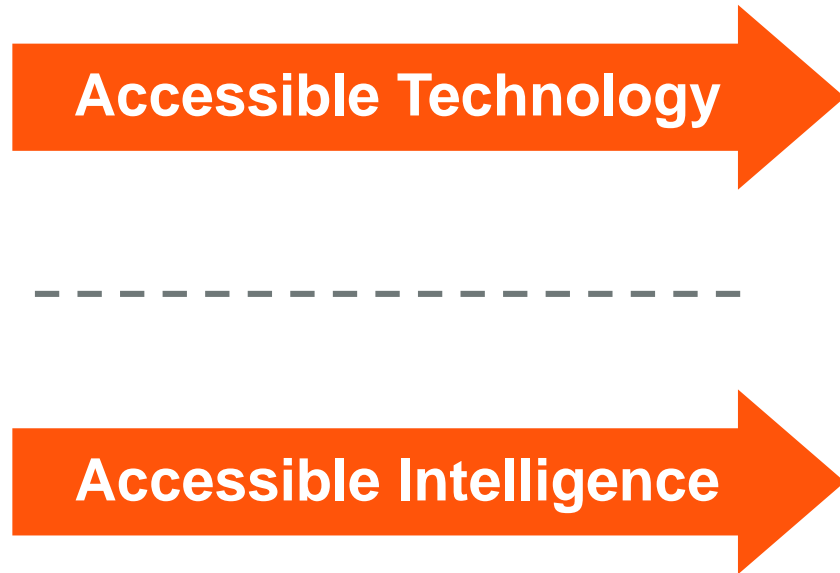
By 2020 the number of citizen and developer data scientists will grow five times faster than the number of highly skilled data scientists.

By 2024, low-code application development will be responsible for more than 65% of application development activity.

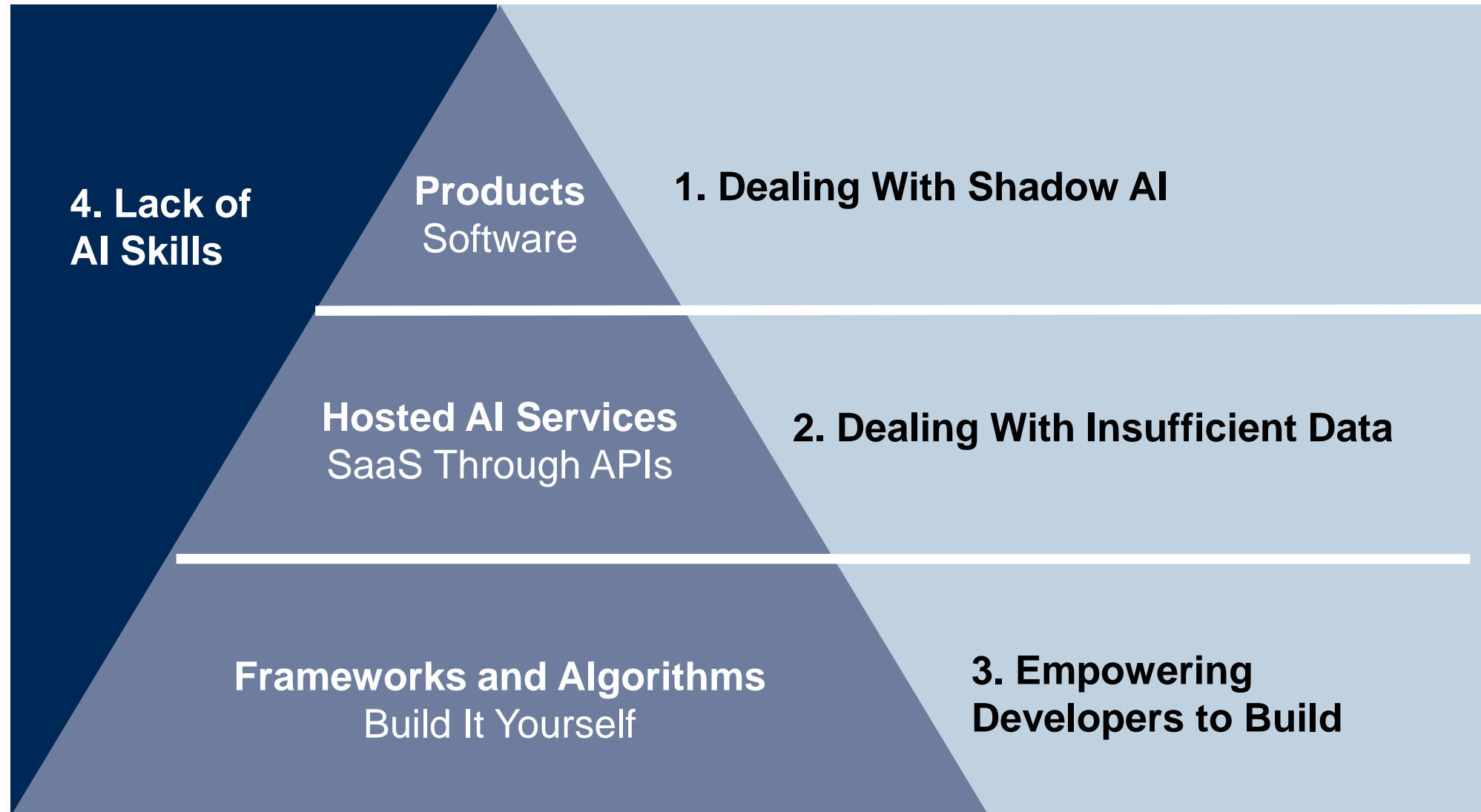
Source: Low-Code Development Technologies Evaluation Guide Published 26 February 2019 - ID G00381782



# Democratization Is About Empowering Everyone



# Four Challenges Driving Democratization of AI



ID 376162



# Human Augmentation

By 2025, 40% of enterprises will shift from designing for humans to architecting humans themselves by adopting human augmentation technologies and methodologies.

Source: Maverick\* Research: Architecting Humans for Digital Transformation (G00389205)



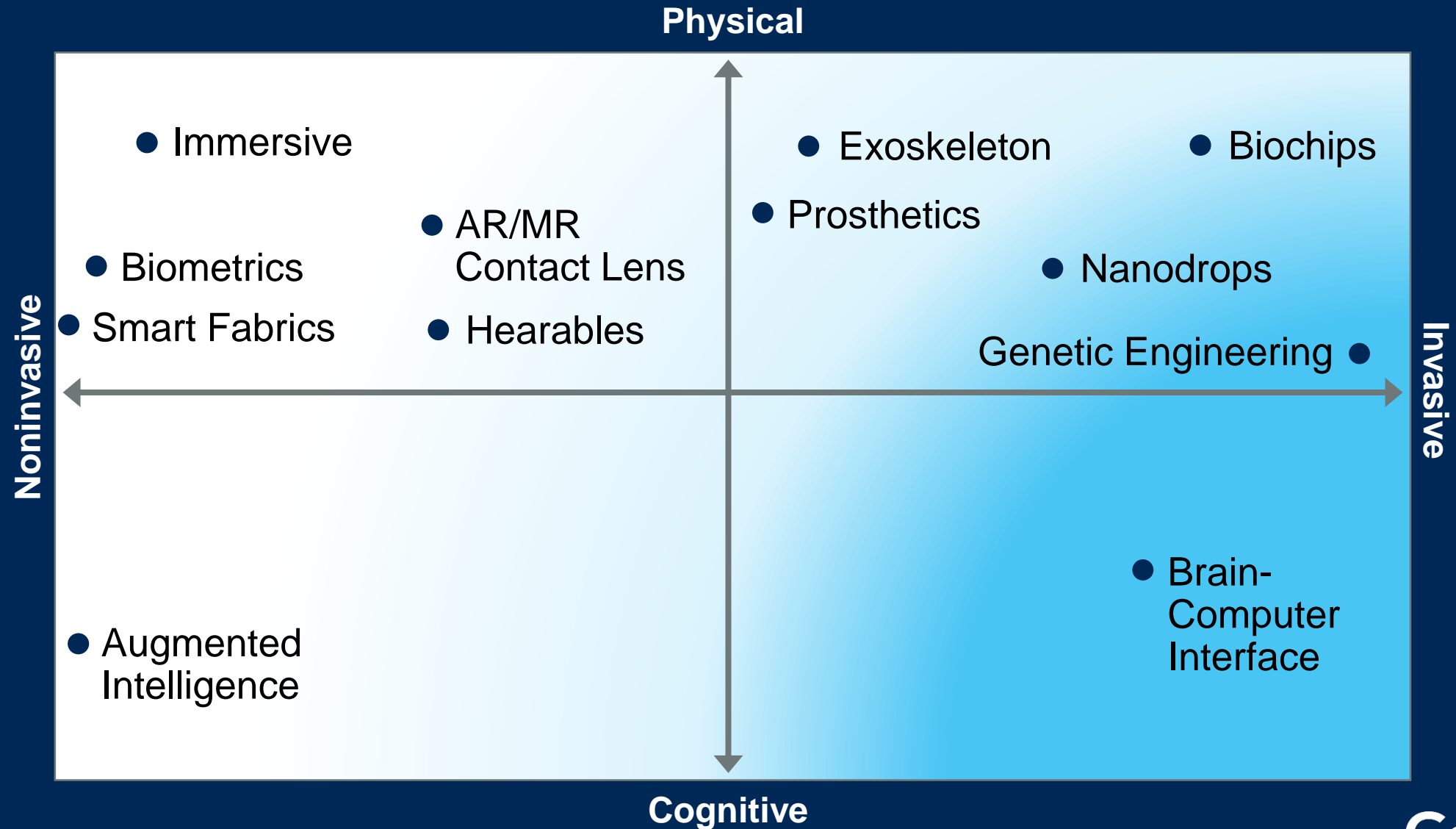
Image Source: Ford: EksoVest is the latest example of advanced technology Ford is using to reduce the physical toll on employees during the vehicle assembly process, lessening the chance of worker fatigue, injury or discomfort



# Physical Augmentation



# Would We, Could We, Should We, Must We





# Transparency and Traceability

By 2023, over 75% of large organizations will hire artificial intelligence specialists in behavior forensic, privacy and customer trust to reduce brand and reputation risk.

Source: Top 10 Data and Analytics Technology Trends That Will Change Your Business (G00379563)



# The Trust Crisis

Counterfeit Reality

Omnipresent IoT data collection

Fake news and reviews

Misuse of data

Algorithmic bias

Ecosystem trust

Opaque algorithms

Addictive applications

Unauditable AI

Unauthorized data harvesting



Government



Consumers



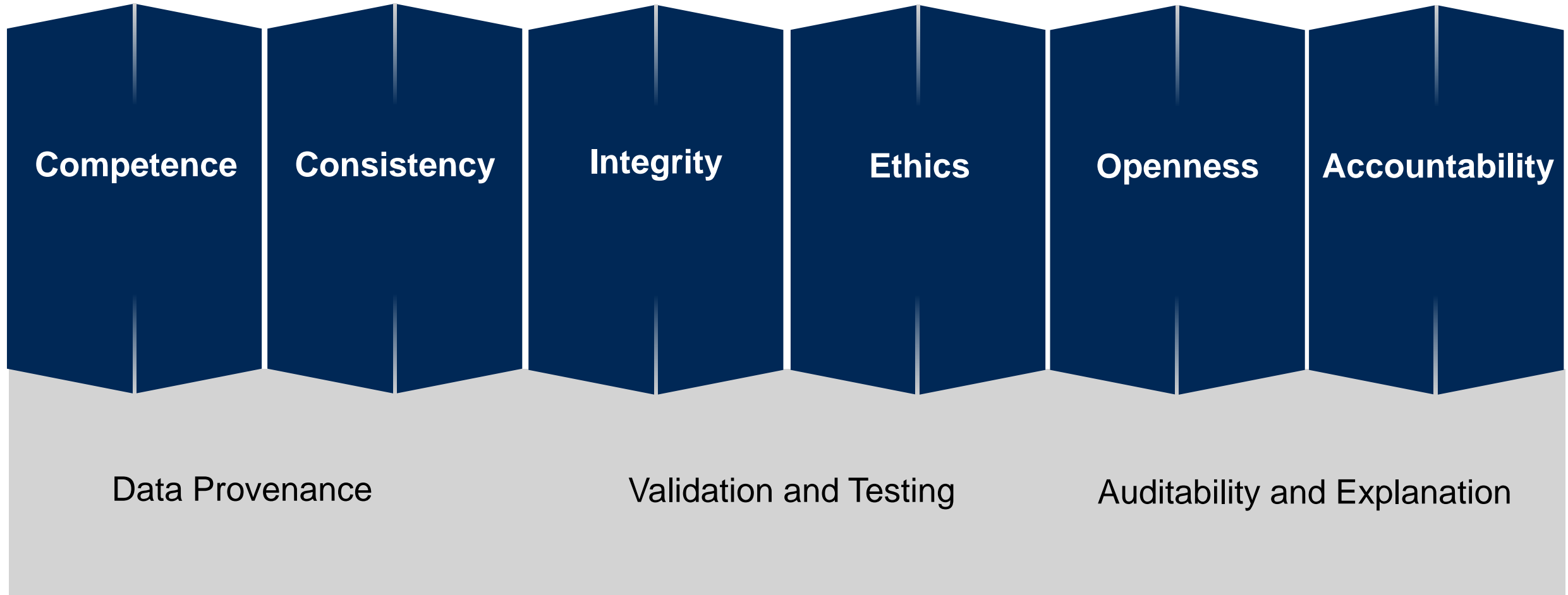
Business



Investors



# Six Pillars of Trust



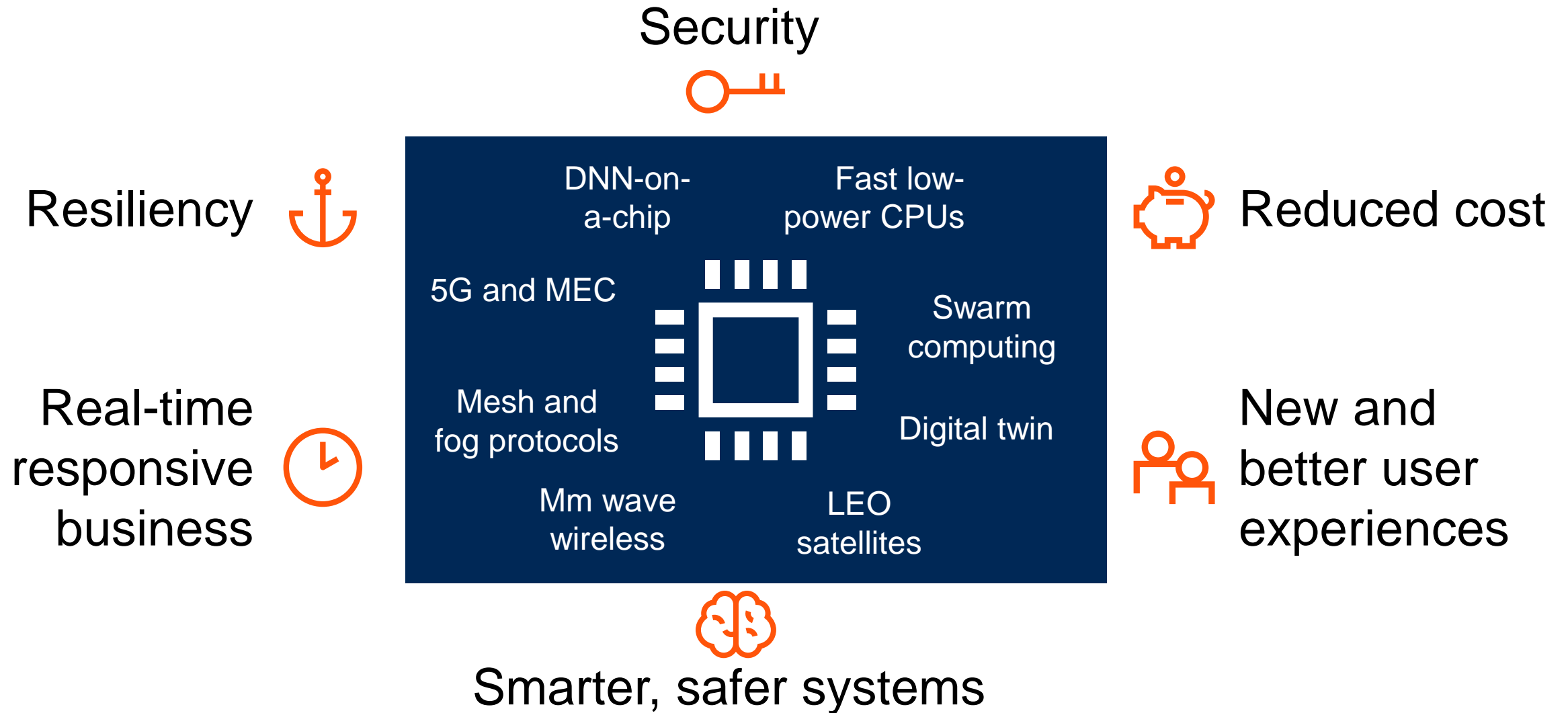
# Empowered Edge

By 2023, more than 50% of enterprise-generated data will be created and processed outside the data center or cloud, up from less than 10% in 2019.

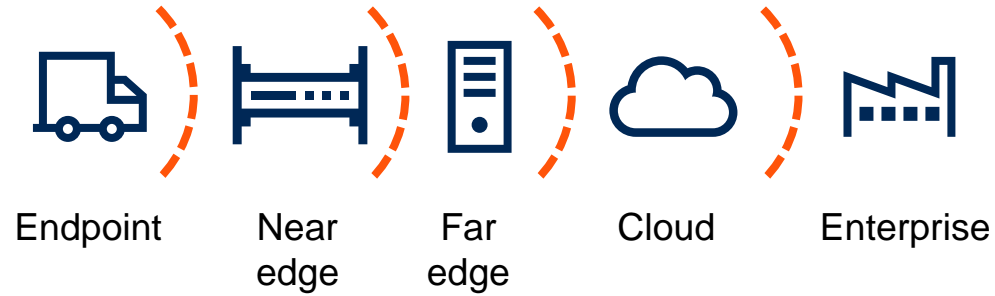
Source: 5 Questions a Tech CEO Must Address When Proposing an AI-Enabled Edge Project (G00407161)



# Technology Enables the New Business Edge



# Toward a Smarter, Faster, More Flexible Edge



## Edge 2019

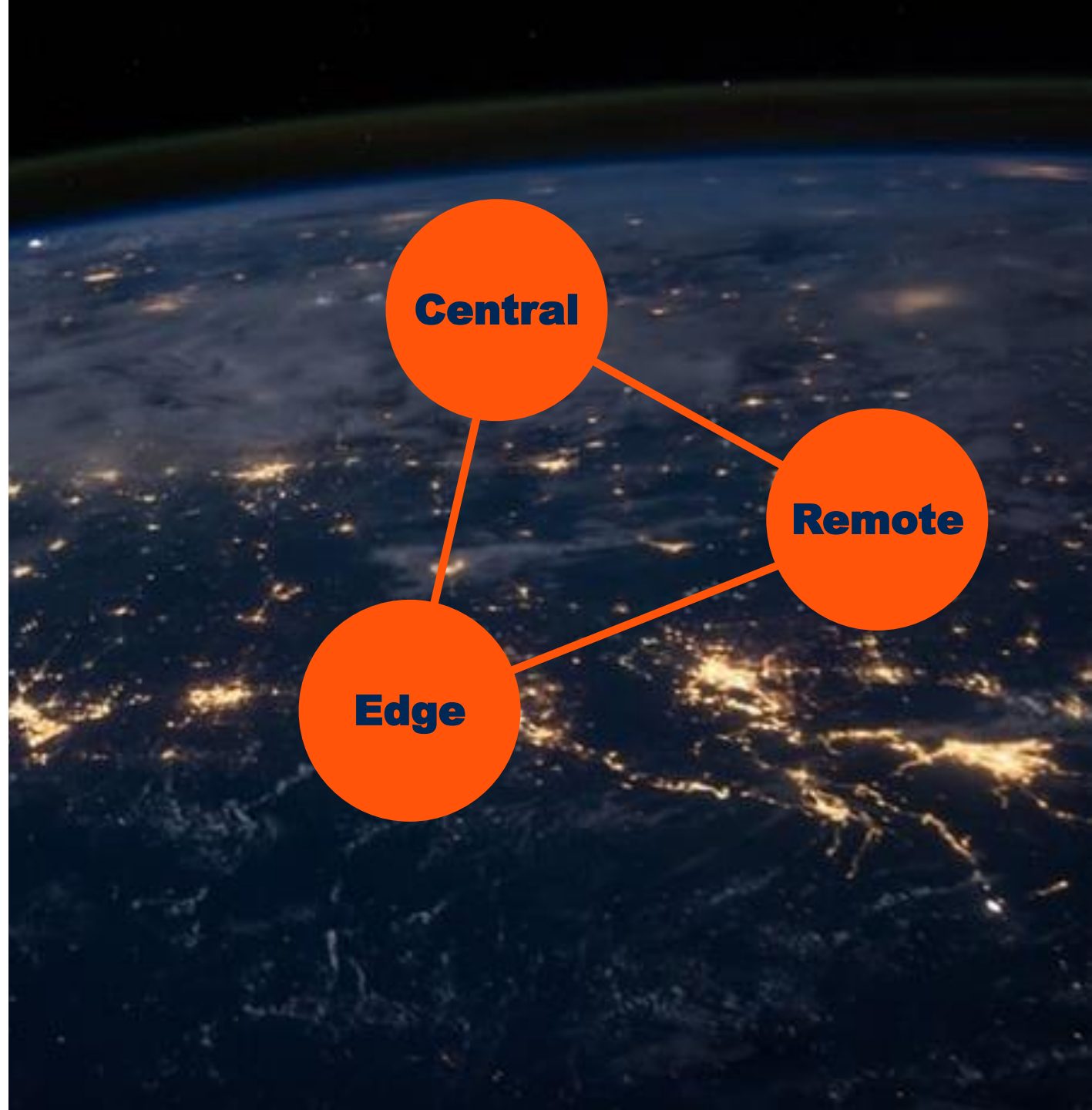
Static processes  
Hierarchic architectures  
Static network topology  
Edge and cloud

## Edge 2025

Adaptive Processes  
Fog/mesh architectures  
Dynamic network topology  
Distributed Cloud to the edge

# Distributed Cloud

By 2024, the majority of cloud service platforms will provide services that execute at the point of need.





# Hybrid Cloud Sets the Stage

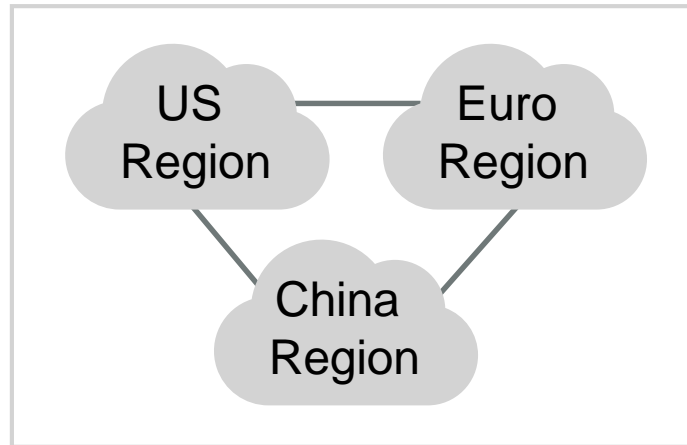
  
On-Premise  
and Remote  
Locations

Enterprise  
Data Center



  
Centralized  
Public Cloud  
Architecture

Provider  
Data Centers



- Private cloud service architecture does not reflect the Centralized Cloud Service.
- Enterprise owns and is responsible for design, development, deployment, governance, operations, evolution and update.

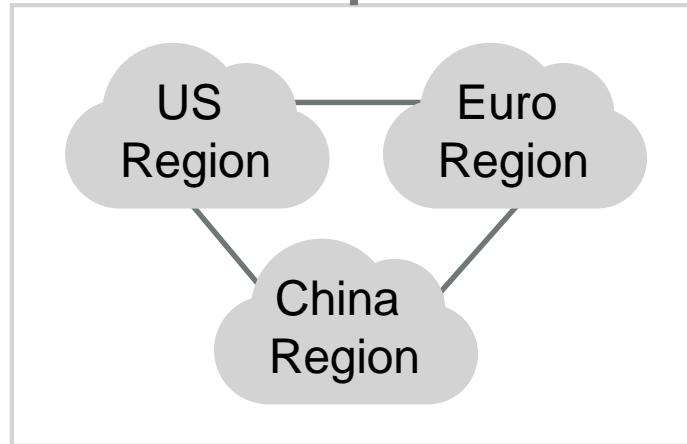
# Distributed Cloud Fixes the Hybrid Problem

  
On-Premise  
and Remote  
Locations

Enterprise  
Data Center



Provider  
Data Centers



  
Centralized  
Public Cloud  
Architecture

- Public cloud service architecture is replicated on-premise or is complimentary to the centralized service.
- Provider owns and is responsible for architecture, development, deployment, governance, operations, evolution and update.

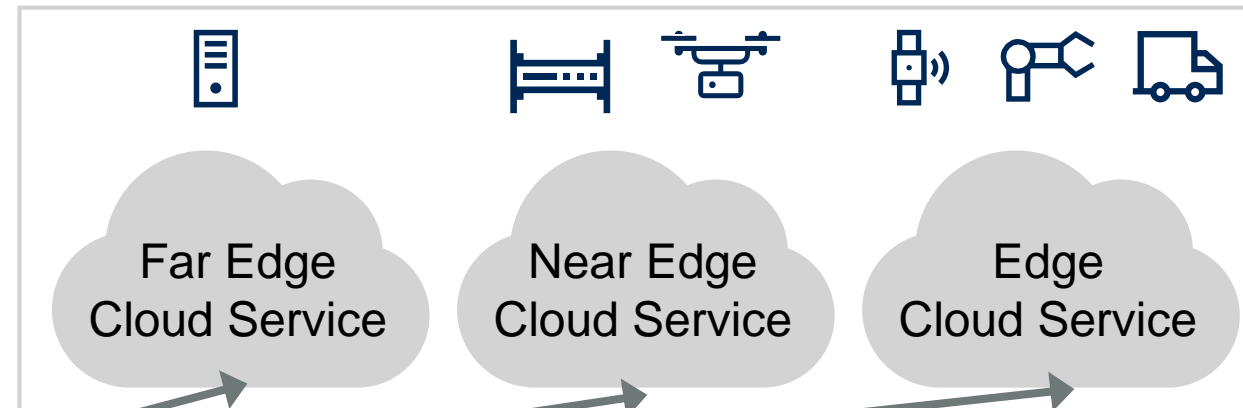
# Distributed Cloud Extends to the Edge

  
On-Premise  
and Remote  
Locations

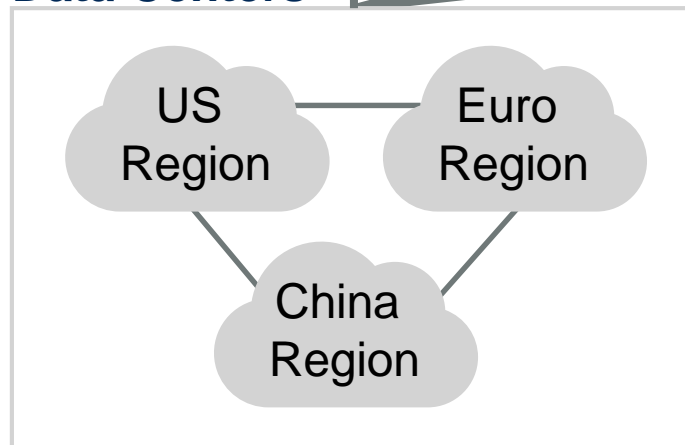
Enterprise  
Data Center



IoT/Edge



Provider  
Data Centers



  
Centralized  
Public Cloud  
Architecture

Consuming enterprise retains ownership, governance, operations, and update of the physical components – especially as distributed service move toward the edge.

# Autonomous Things

By 2025, more than 12% of the newly produced vehicles will have Level 3 or higher autonomous driving hardware capability.

Source: How to Assess Opportunities in Autonomous Things (G00402843)



Image Source: [NAVYA Media Kit](#)



# Autonomous Things

Robots



Drones



Vehicles/Ships/Aircraft



Appliances

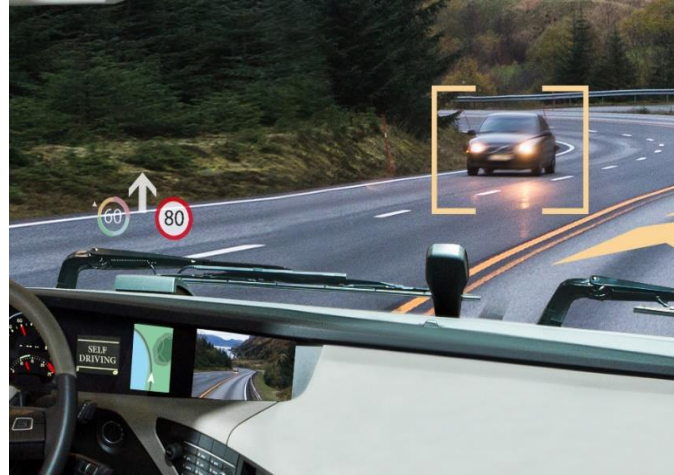




# Key Technical Capabilities of Autonomous Things

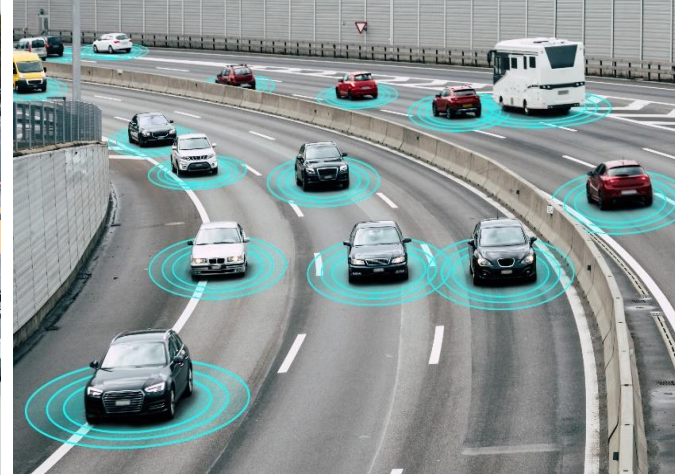
## Perception

Lidar  
Radar  
Vision  
Sensors  
SLAM



## Mobility

GPS  
HD Maps  
Geofencing  
Navigation



V2X  
Swarm Management  
Robot Fleet  
Management



## Collaboration



Computer Vision  
Motors/Actuators  
Tactile Sensors

## Manipulation



# Practical Blockchain

By 2023, blockchain inspired technology will support the global movement and tracking of \$2 trillion of goods and services annually.

Source: Predicts 2019: Blockchain Business (G00374378)

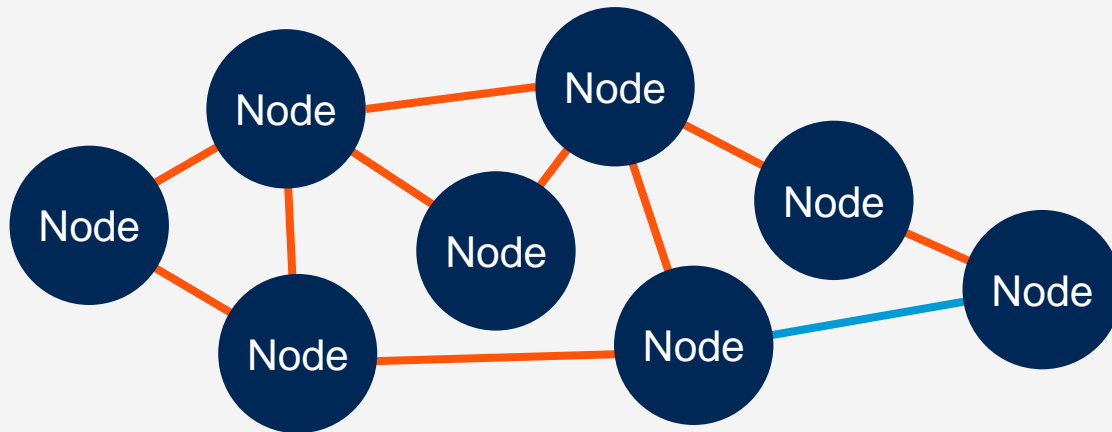


# What Is a Blockchain? A “Distributed Ledger”

Distributed Ledger of Bitcoin Transactions (Tx)



Ledger Replicated Across Peer-to-Peer Network



**Immutable records**

**Distributed ledger**

**Encryption**

**Distributed consensus**

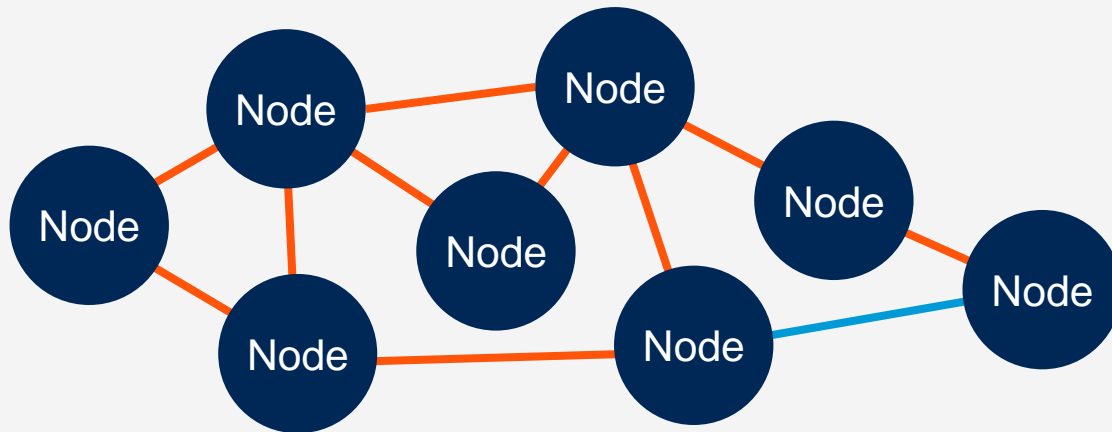
**Tokenization**

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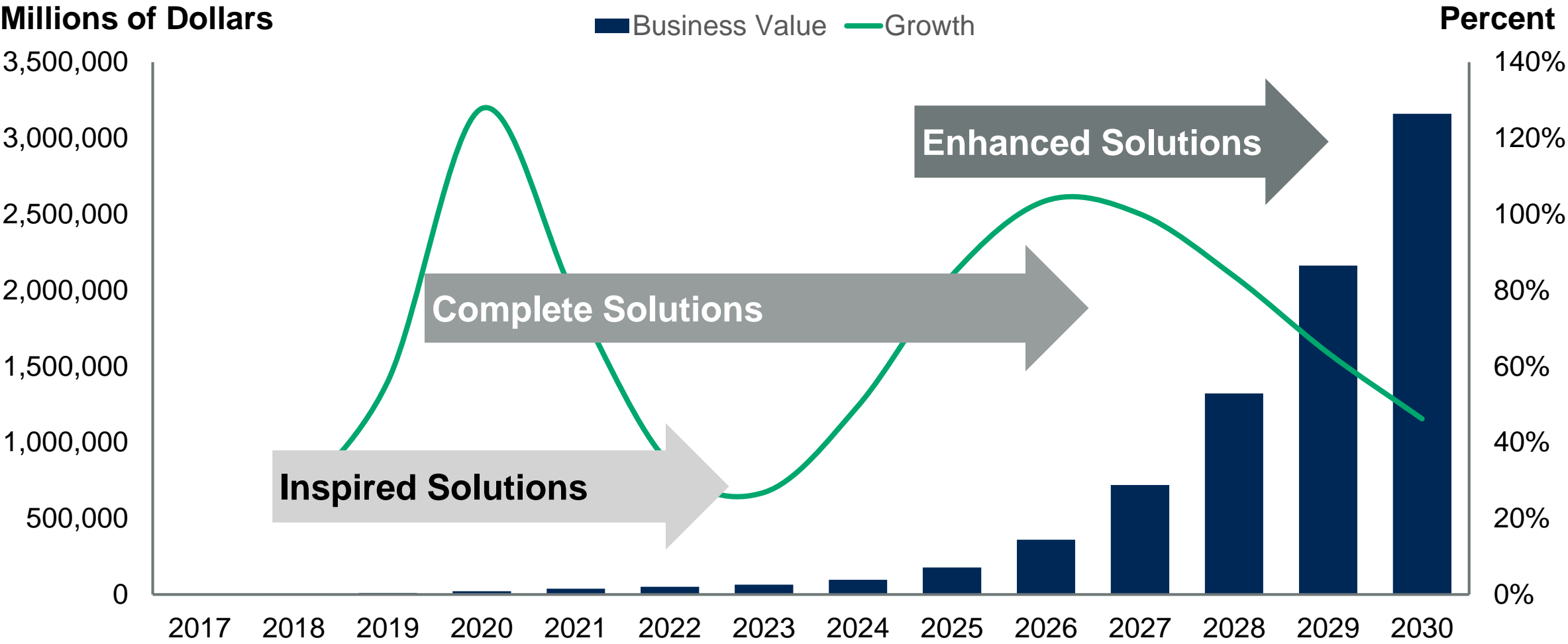
**Encryption**

~~Distributed consensus~~

~~Tokenization~~

Permissioned blockchains don't use tokens as incentives for validators participating in distributed consensus mechanisms

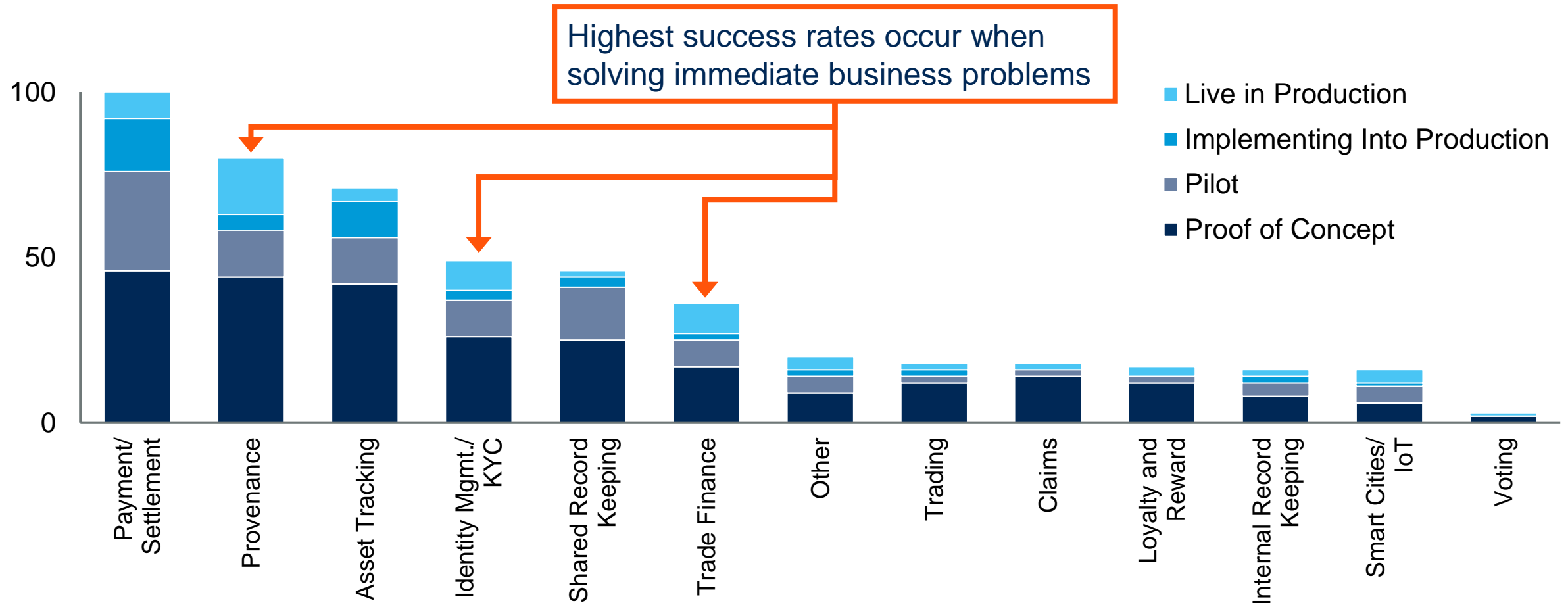
# Business Value Reflects a Measured Evolution



Blockchain Business Value – [“Forecast: Blockchain Business Value, Worldwide, 2017-2030”](#) (G00325744)



# The Business Needs to Lead on Blockchain



**For success, blockchain initiatives must be demand-led, not solution-led**

N = 490, excludes use cases with the phases of "Strategy Consulting" and of "Other" ID387725,  
Blockchain Use Cases – ["Blockchain Trials Show Pragmatism Emerging Across Industries"](#) (G00387725)

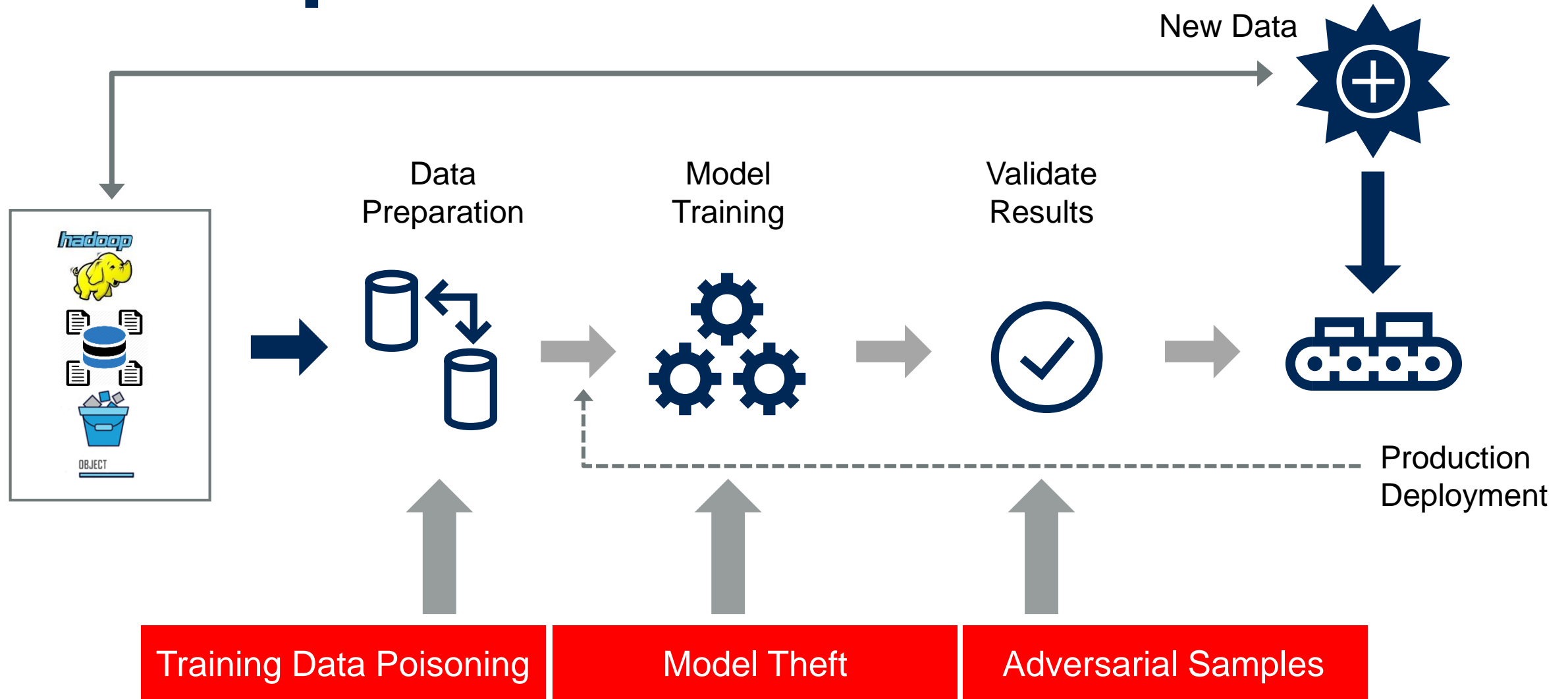
# AI Security

Through 2022, 30% of all cyberattacks will leverage training data poisoning, AI model theft or adversarial samples.

Source: Anticipate Data Manipulation Security Risks to AI Pipelines (G00373743)



# Your AI Pipelines Are at Risk



# AI Can Transform Security to Be More Effective

## Security Challenges Are Increasing:

- Points of attack expand dramatically with IoT and highly connected systems
- Rate and type of attacks expand
- More sophisticated attacks and complex patterns of attacks

Assume ML is developed well:

- Sufficient amounts of high-quality training data
- Low bias and variance
- Low error rates



Then an ML anomaly detection or classification algorithms can have higher detection rates than any rule-based algorithm (and even humans in some areas)

**Big assumptions!**

## People-Centric



**Hyperautomation**



**Multiexperience**



**AI Democratization**



**Human Augmentation**



**Transparency and Traceability**

## Smart Spaces



**Empowered Edge**



**Autonomous Things**



**Distributed Cloud**



**Practical Blockchain**



**AI Security**