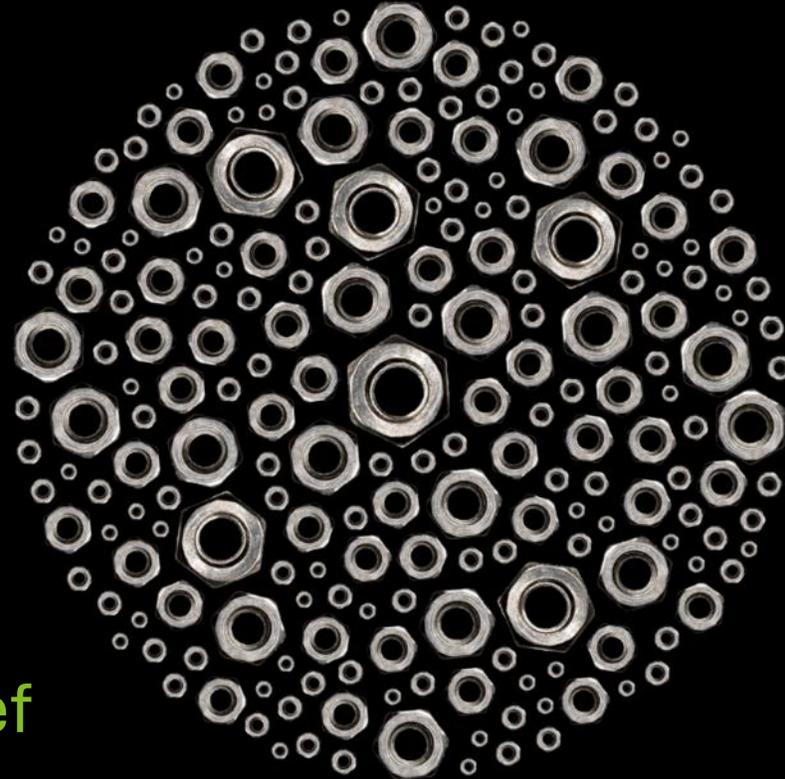


**Deloitte.**

# Dbriefs



## Smart Manufacturing & Operations Survey Dbrief

September 16, 2025



# Survey overview

## Summary

Deloitte's **2025 Smart Operations Survey** captured **600** responses during **August – September 2024**.

Respondents are executives from companies with an annual revenue of US\$500 million or greater, more than 1,000 employees, and either headquarters or operations in the United States. Companies represented include. consumer products, industrial products and construction, energy and chemicals, mining and metals, automotive, transportation, aviation, life sciences, and technology

### PERCEPTION



**92%**

Of organizations believe smart operations solutions will be the main driver of competitiveness in 3 years



**93%**

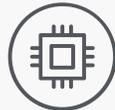
Of organizations believe that smart operations will transform the way products are made, up from 83% in the 2019 study

### TECHNOLOGY



**3**

Technologies identified with the greatest ROI: Cloud, GenAI, 5G



**30%**

Of organizations companies' 2024 operating budget was technology investment, from 23% in 2023



**78%**

Of organizations reported some level of sensorization and foundational infrastructure<sup>1</sup> in use



**63%**

Of manufacturers indicate AI is a top investment priority over the next 2 years<sup>2</sup>

### CHALLENGES



**Hiring requisite skills** remains challenging, especially with the shift in skillset needed with smart operations<sup>2</sup>



**41%**

Of organizations struggle to hire<sup>3</sup> frontline workforce (e.g., operators)



**70%**

Of organizations struggle to hire AI and engineering talent<sup>4</sup>



#### Challenges beyond talent:

- Strategy and value tracking
- Stakeholder buy-in and cross-functional collaboration
- Tech modernization and complexity
- Macroeconomic factors

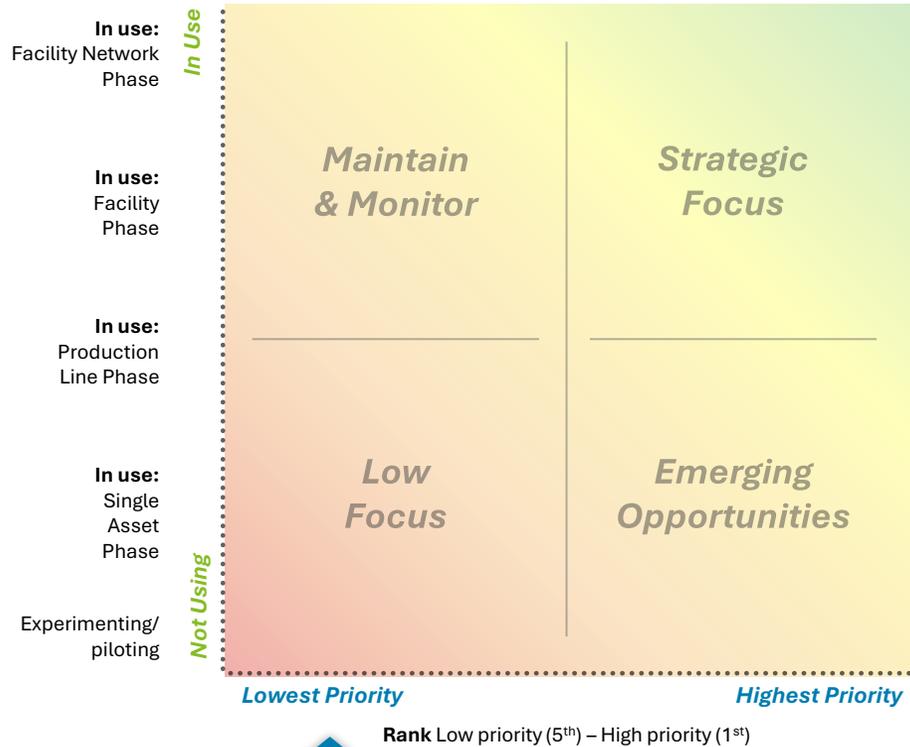
Source: Deloitte Smart Manufacturing Study, Deloitte Insights, 2025. 1: Foundational technology includes but not limited to network infrastructure, active and passive sensors, etc. 2: Competing for talent: Recasting perceptions of manufacturing. 3: Struggle to hire: Responded "Significantly challenging" or "Challenging to a moderate extent." 4: Technical skill includes IT/OT/Data Science/Data Engineering/Application Development/Cybersecurity

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# Current Trends: Technology, Automation, and Data Analytics

# Analysis - 2x2 Investment Prioritization

Which of the following core manufacturing / operations systems, technologies, and solutions are you currently adopting and/or investing in to support Smart Operations initiatives?



What do you plan to prioritize investing in within the next 24 months?

## Focus Area

The **essential drivers** of smart manufacturing and operations (e.g., advanced engineering, automation, factory synchronization, and digital workforce development).

## Core Mfg. / Ops. System

The **core systems** for production, asset, quality, product, warehouse, and building management, all unified by strong network infrastructure.

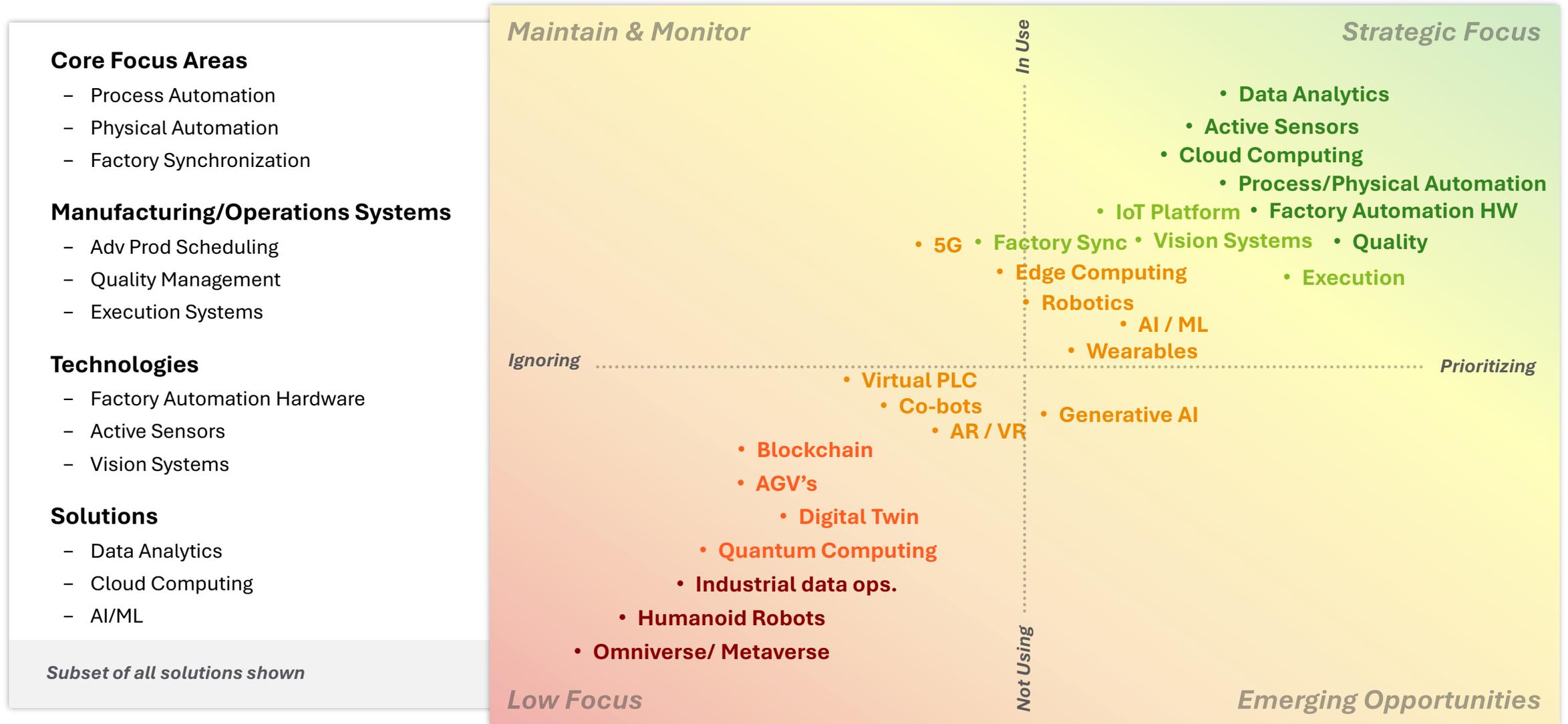
## Technologies

The **advanced technologies** shaping modern industrial environments (e.g., advanced sensing, immersive technologies, and automation hardware).

## Solutions

The **digital technologies** that enable **intelligent, connected,** and agile industrial operations through advanced computing, analytics, connectivity, and immersive digital environments.

# 2x2 of investment areas: Identified areas of investment compared to existing progress of Smart Manufacturing

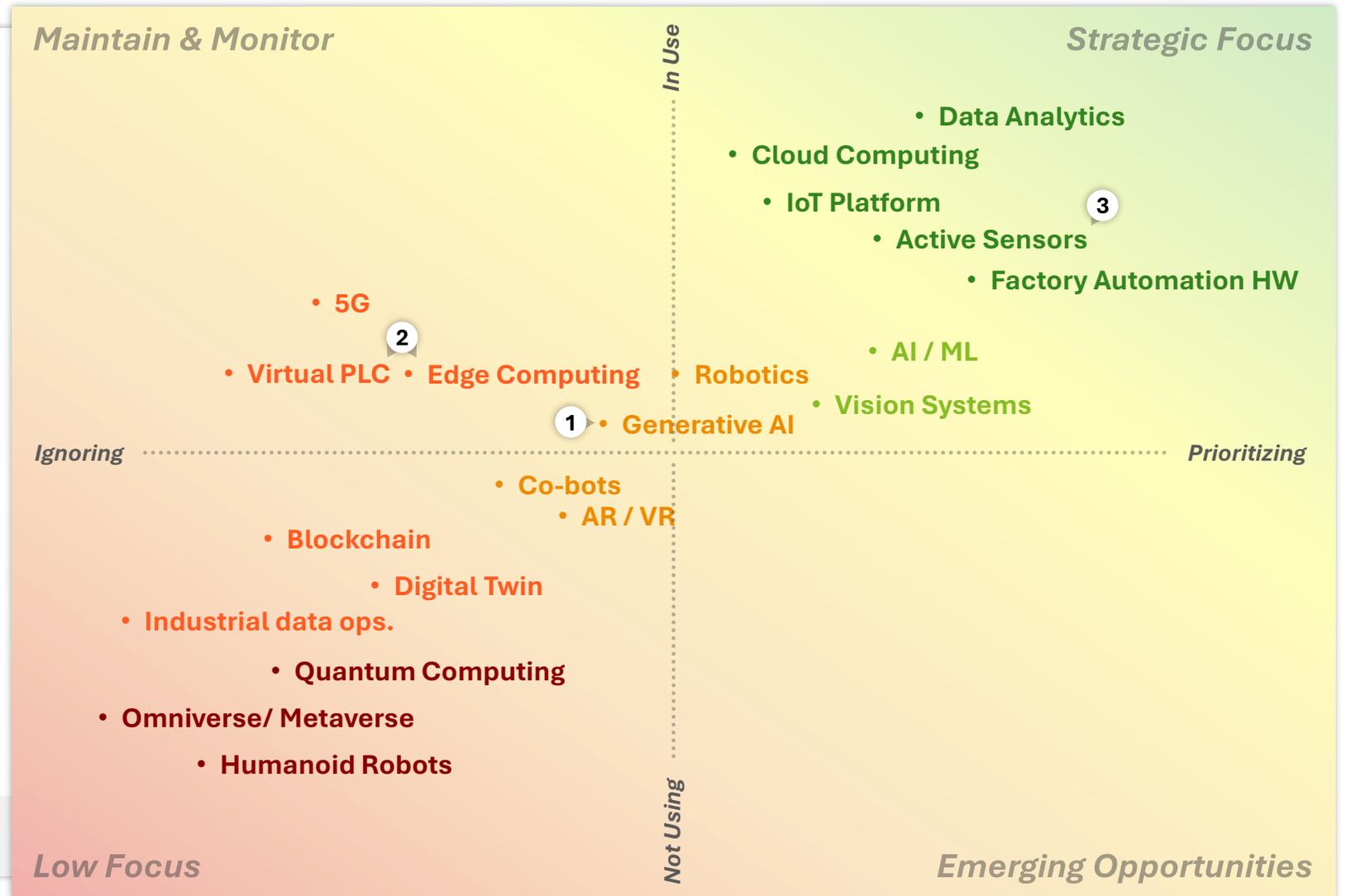


# 2x2 of investment areas: Discrete Manufacturing

## Industry Insights

- 1 **Higher adoption of GenAI** reflects increased complexity of product designs and larger volumes of structured data
- 2 **Decreased prioritization of Edge Computing and Virtual PLC** may indicate lower real-time data demands and sufficiency of existing infrastructure
- 3 **Slightly lower adoption of Active Sensors** reflects predictable, repeatable processes that do not require continuous measurement of physical properties

Subset of all solutions shown

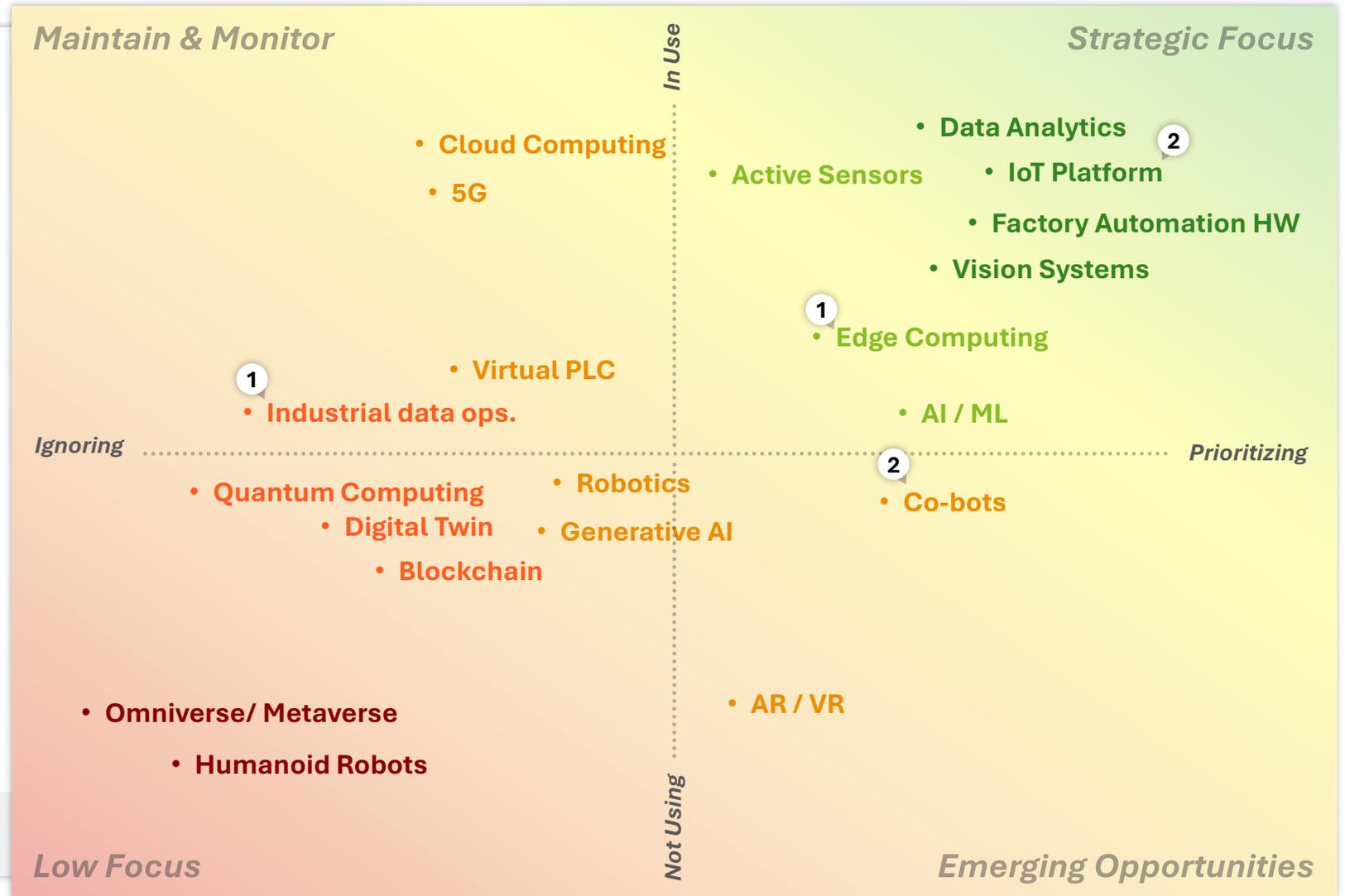


# 2x2 of investment areas: Process Manufacturing

## Industry Insights

- 1 **Significantly higher usage of Industrial Data Ops and Edge Computing** to unify, contextualize, and analyze the vast, complex data generated from continuous production
- 2 **Higher prioritization of IoT Platform and Co-bots** reflects need for integration of thousands of sensors and devices to support regulatory compliance. Co-bots can operate in hazardous conditions (e.g., chemicals), increasing worker safety.

Subset of all solutions shown



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# Bridging Workforce Gaps

# Smart Operations initiatives are expected to have a significant impact on workforce skill needs

Specifically, the need for frontline functional skills is projected to decline, whereas demand for advanced technical competencies—already challenging to source in the current labor market—is anticipated to rise

Skill type	Hard to find	Headcount decrease	Headcount increase
<b>Technical skill</b>			
Cybersecurity	72%	5%	55%
Data science / Data engineering	71%	7%	56%
Information Technology (IT)	69%	8%	62%
Operations Technology (OT)	69%	10%	52%
Application development	69%	9%	44%
<b>Functional skill</b>			
Continuous improvement	54%	12%	30%
Production / operations supervisors	51%	36%	13%
Production / operations management	48%	31%	18%
Planning and scheduling / production control	46%	40%	14%
Frontline workforce (e.g. operators)	41%	47%	10%
Quality	41%	40%	13%
Maintenance	41%	32%	22%
<b>NA</b>			
Design engineering	58%	24%	29%

**60%**

Of organizations consider “Developing workers to adapt to the ‘Factory of the Future’: Creating confidence that the workforce can fully harness smart manufacturing” **the most important Human Capital concern**

In terms of **priority focus areas for investment** within the next two years, the following were selected as first or second priority:

- 1. Process Automation** (46%)
- 2. Physical Automation** (37%)

Investment in automation may be seen as an important element in alleviating skilled labor shortages and maximizing productivity.

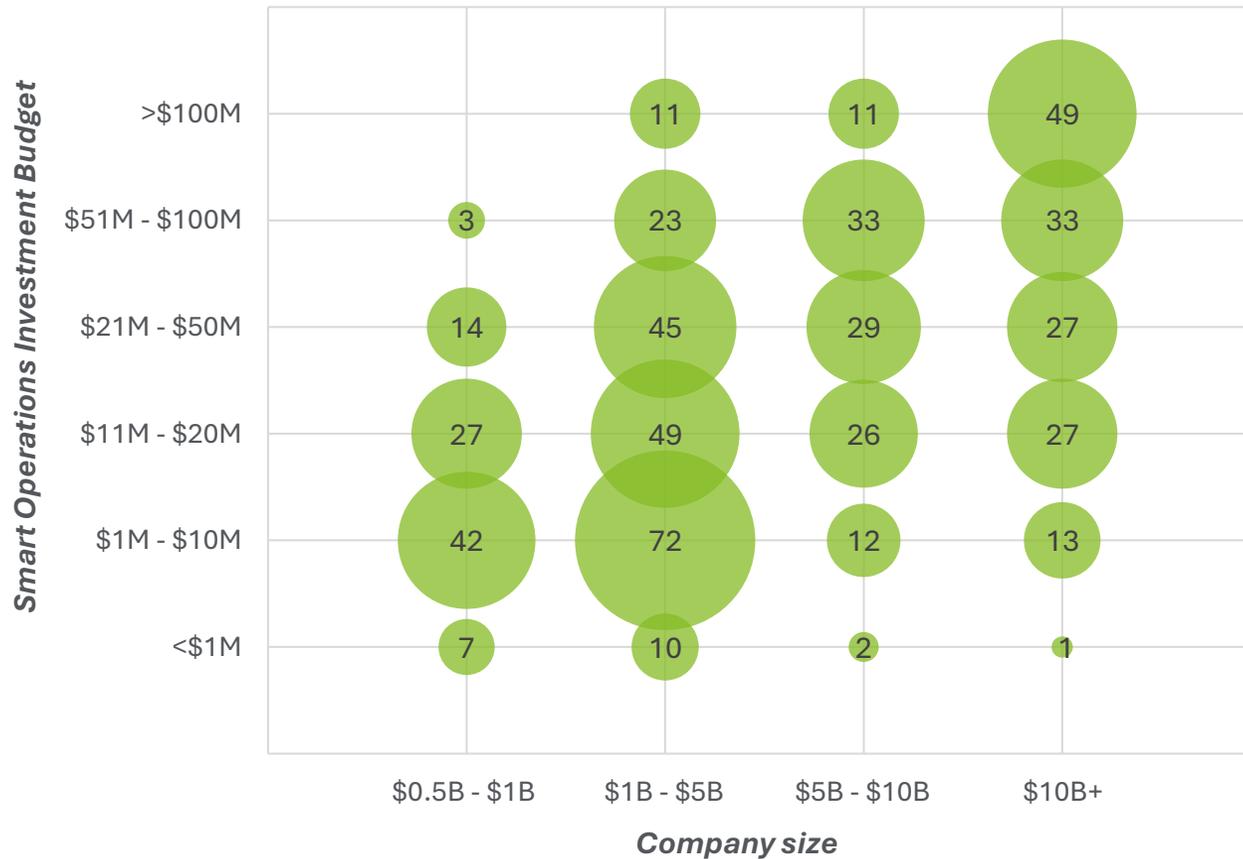
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# Value

# How organizations are investing in smart operations technology

As expected, the scale of investment roughly tracks with enterprise size, with smaller companies investing modestly and much larger companies investing an order of magnitude more

### Smart Ops. Investment vs. Company Size



## 75%

Of respondents expect their global budget for **Smart Operations initiatives to increase** in the next fiscal year. The other 25% expect no change

## 49%

Of respondents dedicate **20% - 40% of their manufacturing improvement budget** to Smart Operations Initiatives

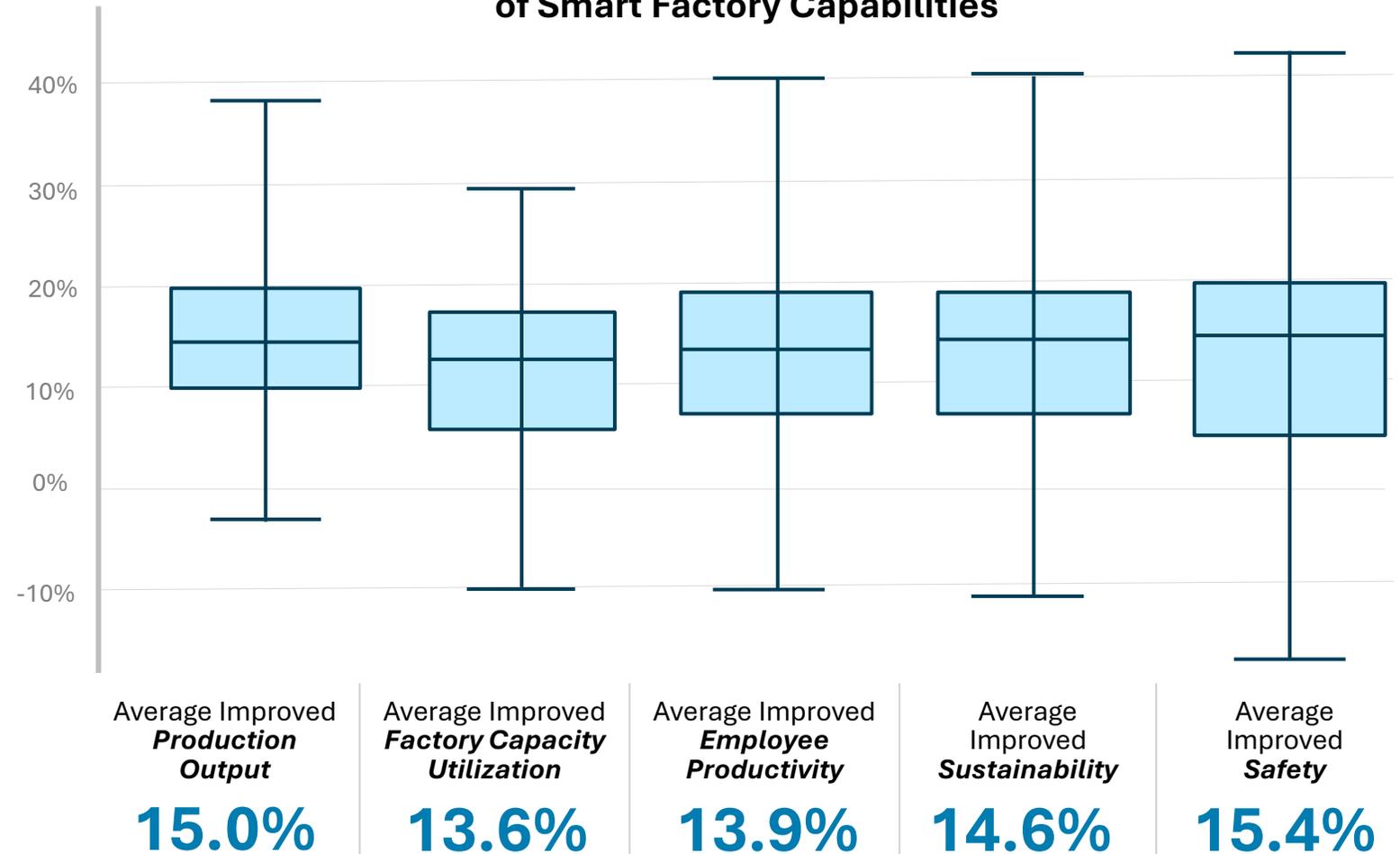
# Smart Operations benefits across business metrics

**77%**

Of respondents ranked **Operational Benefits** as Rank 1 or Rank 2 of benefits they are looking to achieve (49% had Operational Benefits as Rank 1)

**Financial (44%)** and **Product/Offering (38%)** benefits had similar average rankings

### Improvement Observed after Implementation of Smart Factory Capabilities



# Question and answer





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# Poll #1

**How would you describe your current level of expertise or familiarity with smart manufacturing & operations (including technologies like IoT, automation, data analytics, and digital twins)?**



- A. I am new to the topic and have little to no direct experience.
- B. I have basic awareness and understand key concepts, but limited hands-on experience.
- C. I have moderate experience—I've participated in projects or initiatives involving smart manufacturing & operations.
- D. I am highly experienced—I lead or manage smart manufacturing & operations programs and am familiar with advanced concepts and applications.

## Poll #2

**Which of the following solutions are you currently adopting and/or investing in to support Smart Manufacturing initiatives? (Select all that apply)**



- A. 5G
- B. Artificial Intelligence / Machine Learning
- C. Blockchain
- D. Cloud computing
- E. Data analytics
- F. Digital twin
- G. Edge computing
- H. Generative AI
- I. Industrial data operations
- J. Internet of Things (IoT) platform
- K. Omniverse / Metaverse
- L. Virtual programmable logic controller (PLC)

## Poll #3

**What methods is your company using to build the new digital skills that are part of Smart Operations transformation? (Select all that apply)**



- A. Curating training available externally through open-source resources (e.g., TED talks, YouTube videos, etc.)
- B. Delivering training using courses developed by vendors or 3rd parties
- C. Developing and executing in-house trainings
- D. 'Devwork' (i.e., developmental assignments that are intended to expand employee skills)
- E. Establishing an off-site location for research and development of technologies
- F. Hiring new talent
- G. Joining a technology consortium
- H. Partnering with universities
- I. Using contract and/or contingent labor
- J. None of these/We are not doing anything

## Poll #4

**Has your organization experienced a significant shift in its cost profile over the past 12 months?**

- A. Yes, there has been a major increase in costs
- B. Yes, there has been a major decrease in costs
- C. Yes, there has been a significant reallocation of costs (e.g., shifting spend between departments or categories)
- D. No, our cost profile has remained largely unchanged
- E. Not sure / Prefer not to answer

