

Impacting Manufacturing Competitiveness Through Smart Manufacturing



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A Dialogue @Centre for Social and Economic Progress (CSEP)
New Delhi
2025 July 07

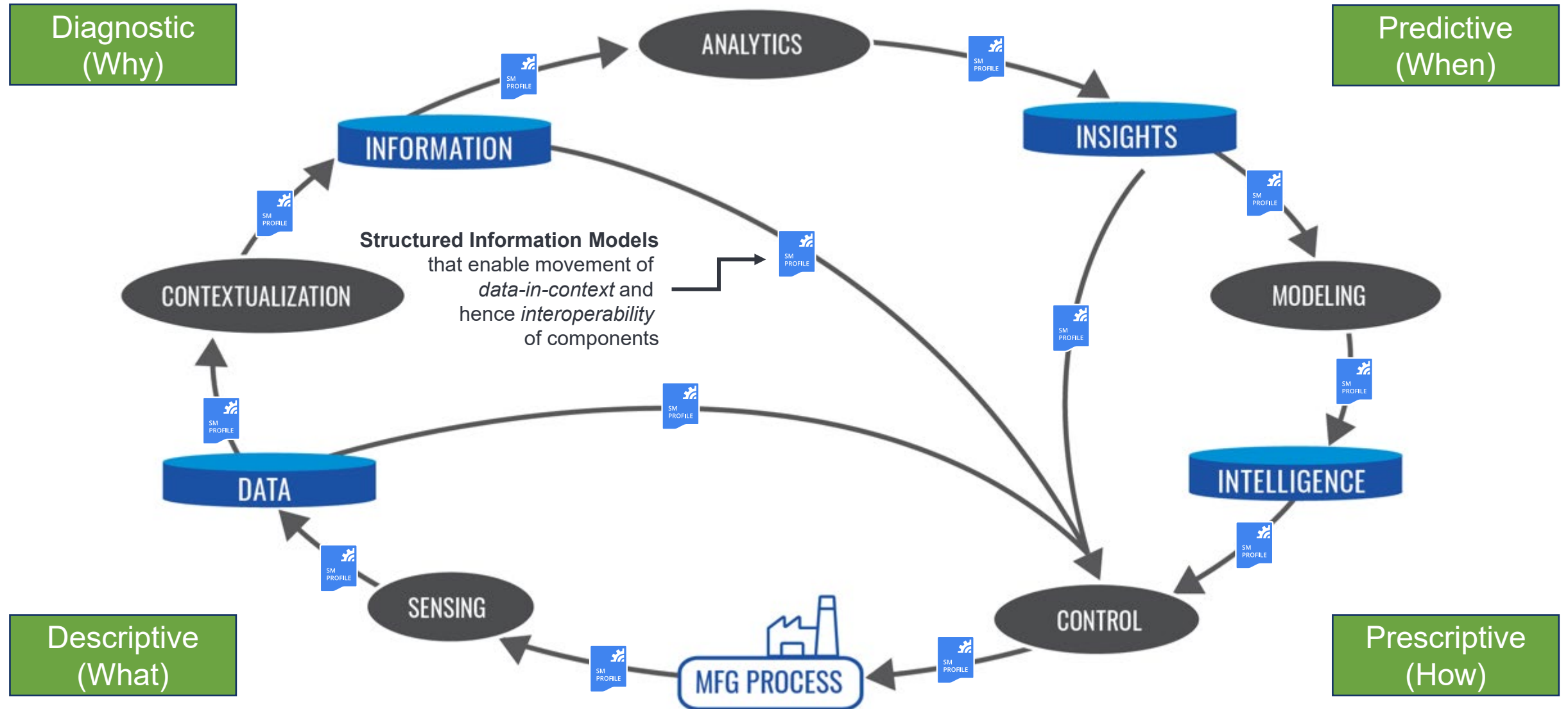
Smart Manufacturing & Impact in Industry

Challenges & Opportunities

Open Dialogue



Smart Manufacturing

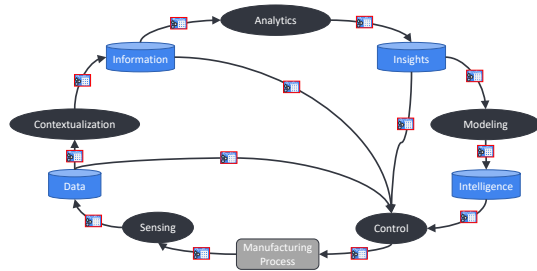


Smart Manufacturing And Impact in Industry



Impact of SM on Manufacturing

SM Building Blocks



SM Platform & Marketplace



SM Education



Model-based **Simulation**
Predictive **Modeling**
Advanced **Analytics**

Performance
Productivity
Precision

Realtime **decisions**
Process **optimization**
Optimized **control**

- ✓ Optimized Manufacturing **Process**
- ✓ Improved Equipment **Performance**
- ✓ Improved **Productivity**
- ✓ Reduced **Waste**
- ✓ Improved **Yield**
- ✓ Improved **Quality**
- ✓ Reduced **Energy** Consumption

CESMII's Use Case Demonstrations (2018-2024)

~60 Collaborative R&D Projects

55+ Participating Member Organizations

15 Industry Verticals

10-35% in Energy Reduction Demonstrated

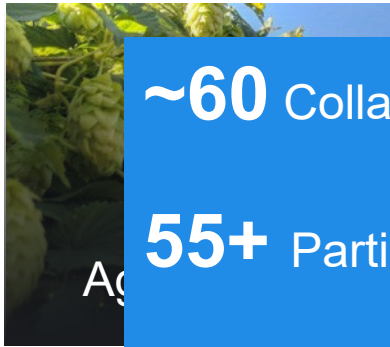
10-40% in Productivity Improvement Demonstrated

25-50% in SM Implementation Costs Demonstrated

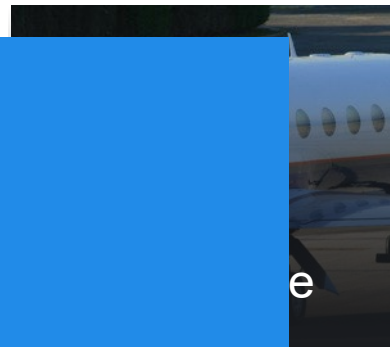
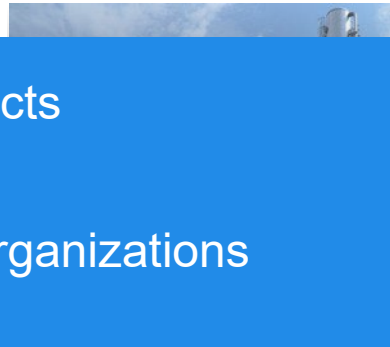
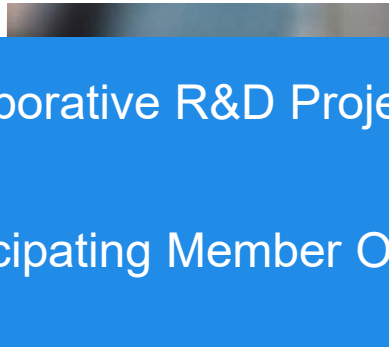
28 Projects Using ML, Predictive Modeling, Digital Twins



Steel



Ag



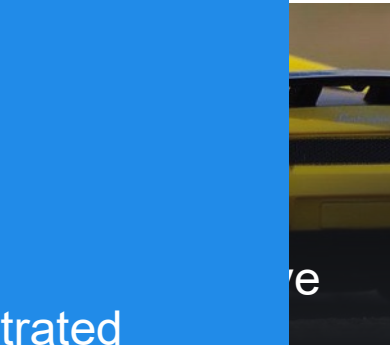
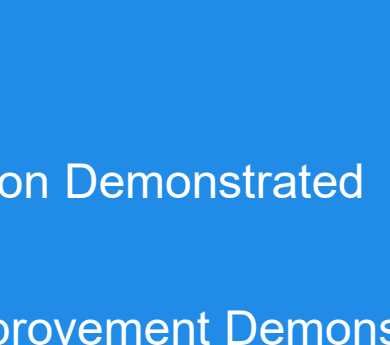
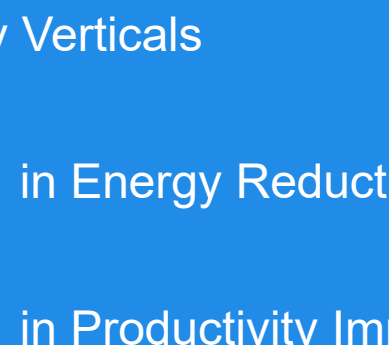
Pulp & Paper



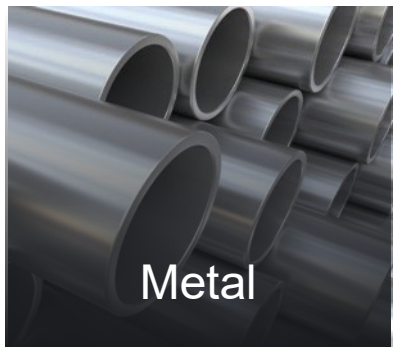
Additive Mfg



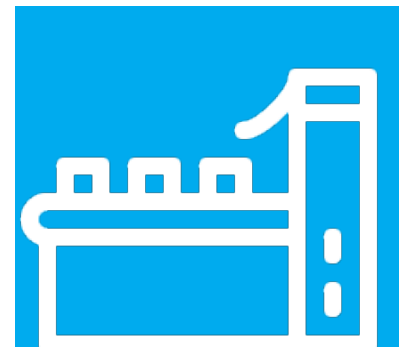
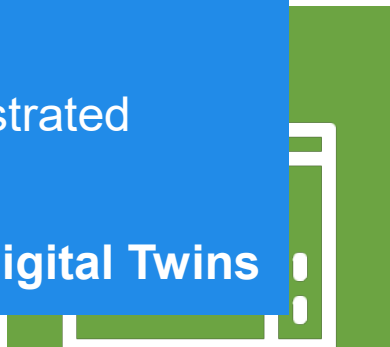
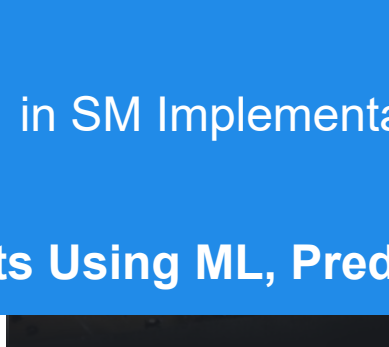
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Supply Chain & Warehousing



Metal



Images Courtesy of Creative Commons



Challenges & Opportunities



Smart Manufacturing Is Driving Advantage But Needs Focused Investment and Implementation

- **Smart manufacturing's value has been realized: Reported 20% improvement in production output, 20% in employee productivity and 15% in unlocked capacity.**
- **Workforce and talent gaps, cybersecurity and operational risks are top concerns for manufacturers.**
- **Leaders focusing on establishing the smart manufacturing technology and data foundations needed to enable artificial intelligence (AI) and advanced capabilities.**

[Deloitte Survey Reveals Smart Manufacturing Is Driving Advantage But Needs Focused Investment and Implementation](#)



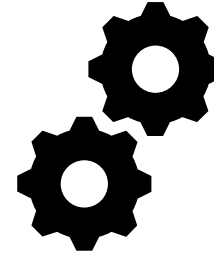
SM Adoption Challenges



Culture



Education



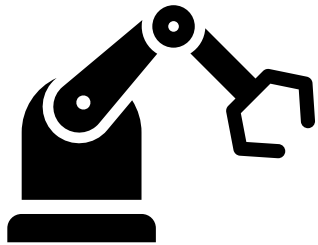
Technology



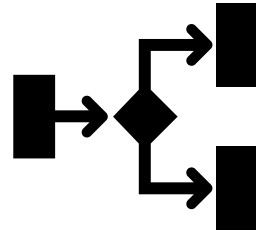
ROI



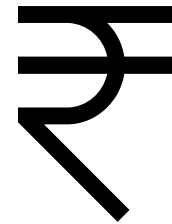
SM Adoption Challenges



Legacy
Equipment



Scaling &
Cybersecurity



Cost of
Ownership



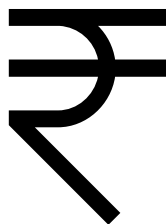
Workforce
Upskilling



Opportunities



Policy



Government
Funding



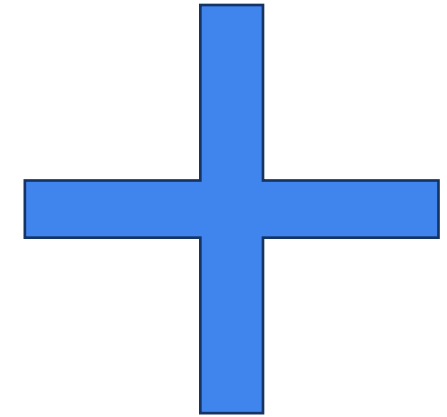
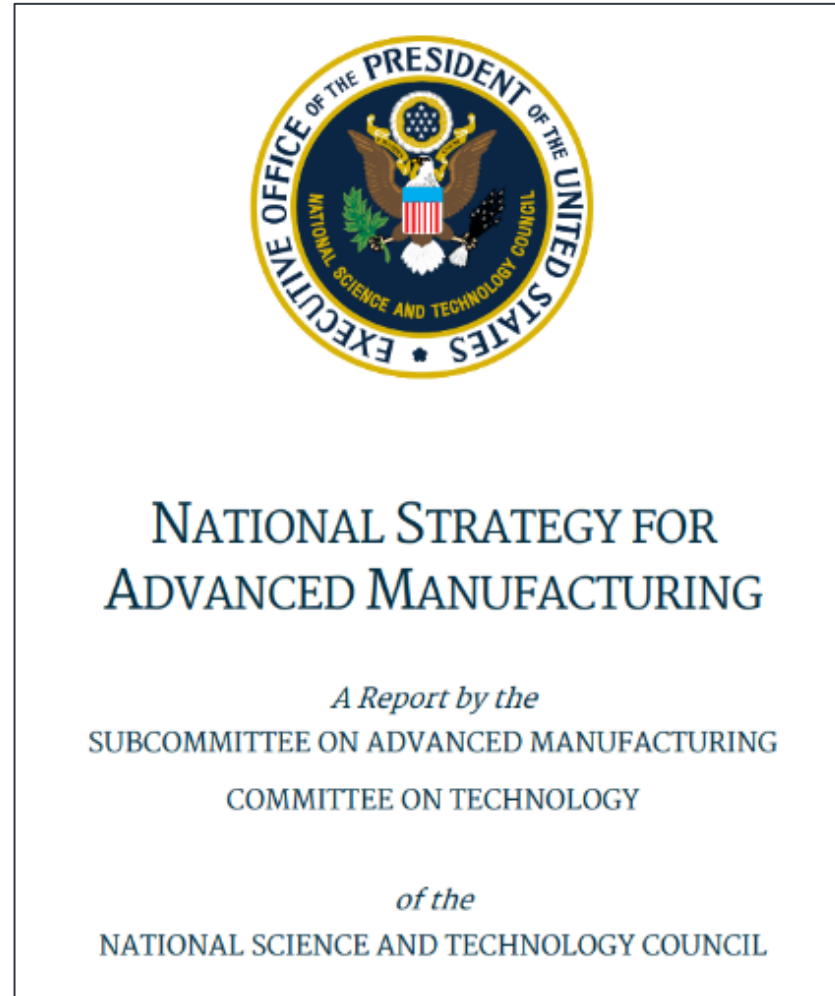
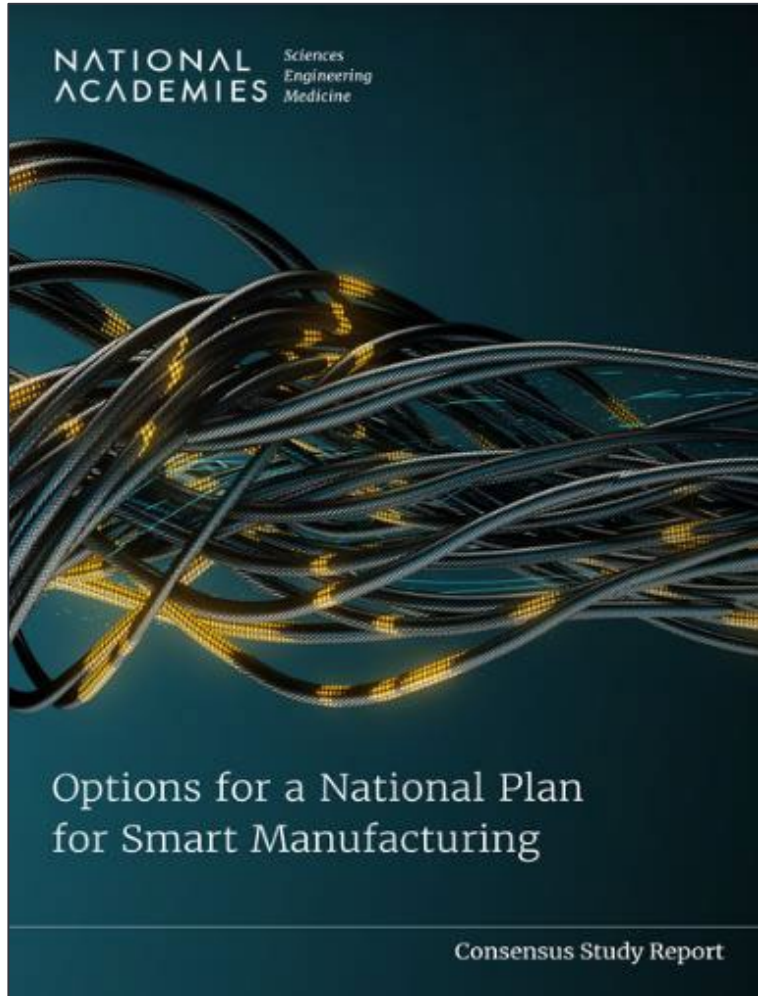
Public/Private
Collaboration



Standardization



SM in US Policy



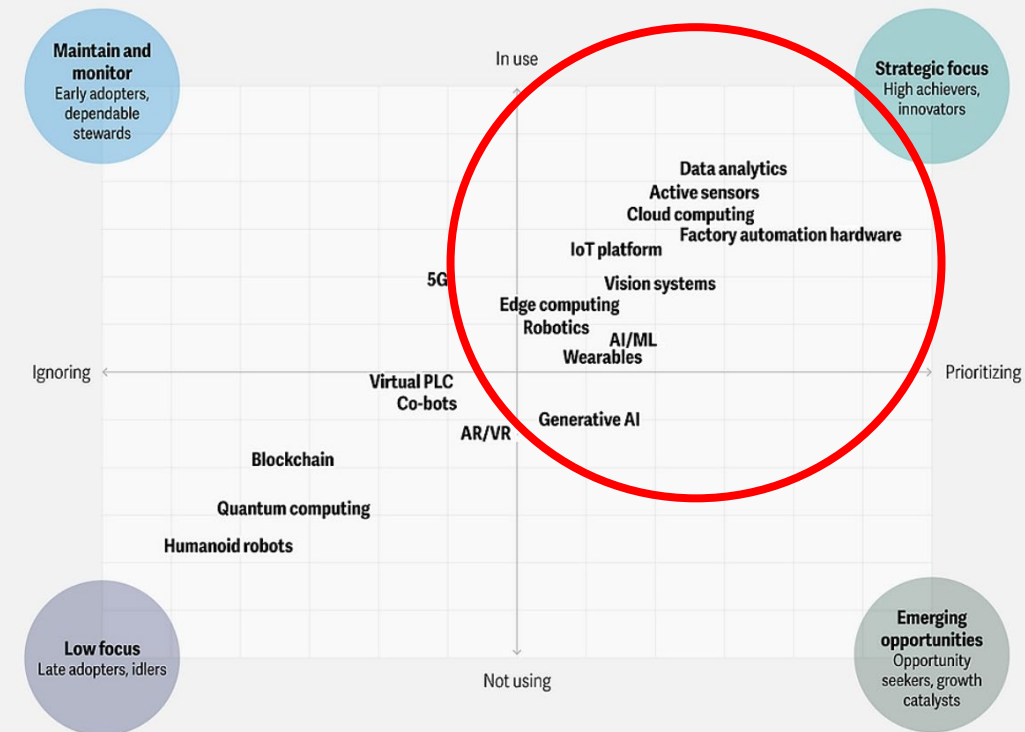
- ✓ Inflation Reduction Act
- ✓ Bipartisan Infrastructure Bill
- ✓ State funded initiatives



SM Strategy and Investments

Figure 4

Manufacturers are prioritizing data foundations for analytics and automation



Note: Only manufacturing tech and solutions shown.

Source: Deloitte analysis.

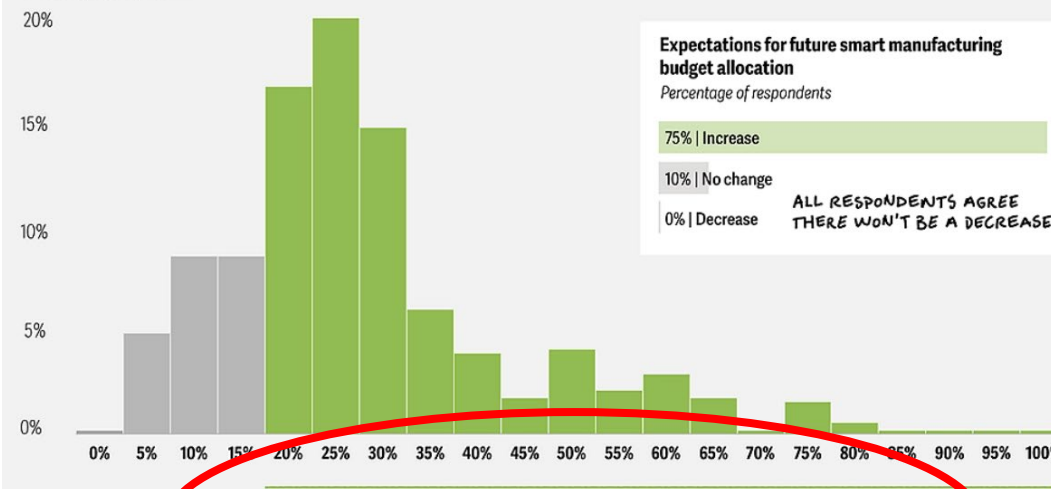
Deloitte Insights | deloitte.com/insights.com

Figure 3

Organizations plan to increase investments in smart manufacturing and operations

How much of your improvement budget are you allocating to smart manufacturing initiatives?

Percentage of respondents



78% OF TOTAL RESPONDENTS PLAN TO ALLOCATE AT LEAST 20% OF THEIR BUDGET FOR SMART MANUFACTURING INITIATIVES

Source: Deloitte analysis.

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SM is a Journey





Let's Talk!

