Integration of Industrial Knowledge and ICT Technologies

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Content

“Re-Industrialization” is the New Trend

“Industrial Internet + AI + 5G” is the New Infrastructure of Industrial Digital Transformation

Building Industrial Knowledge and Data Driven Ecosystem

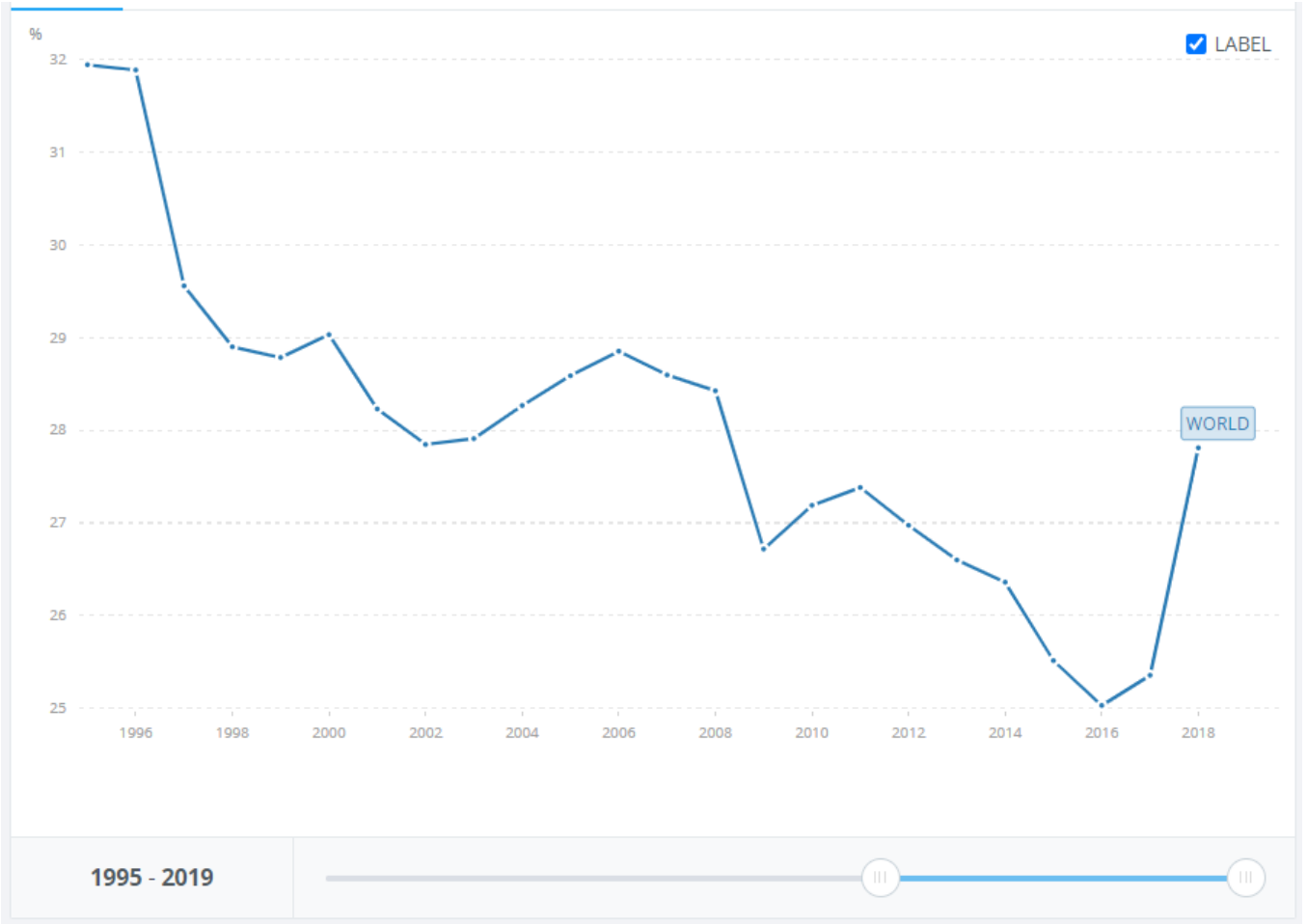
Future Outlook of Industry

“Re-Industrialization” is the New Trend

Re-Industrialization

Using convergence of emerging technologies and Industries to optimize and upgrade organization structure in order to return to the tangible economy

≠Repetition of the old industrialization



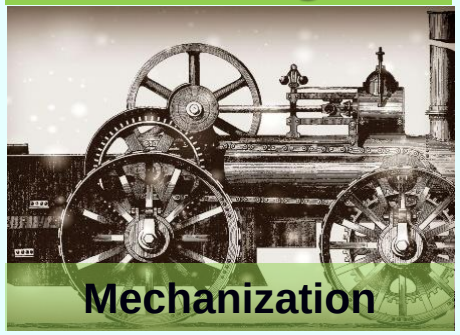
Source：World Bank，Industry (including construction), value added (% of GDP)

Demand Side Driving Evolution of Industrial Processes

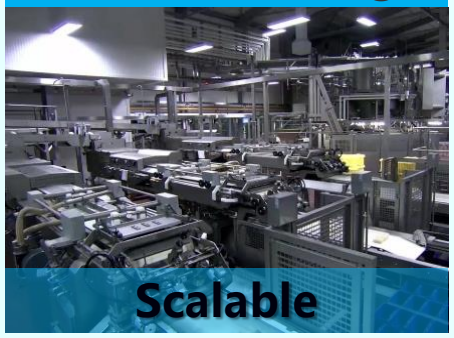
Design/R&D → Sourcing → Production → Sales → Services

The Fourth Industrial Revolution: Transformation of Industrial Perspective

Steam Age



Electrification Age



Age of Information

Supply Side: Productivity Demand

Age of Intelligence

Demand Side: Value Demand

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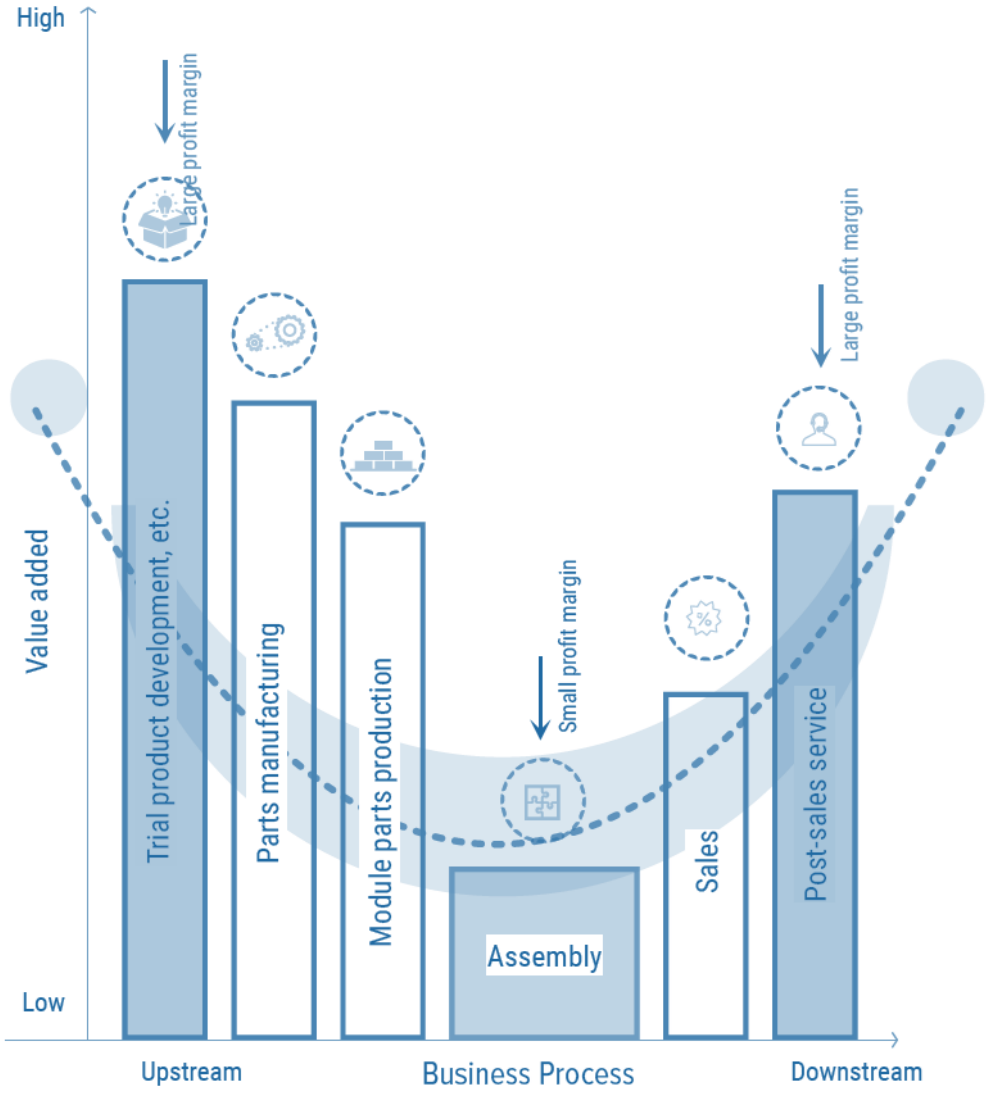
Products & Services Innovation is Key to Organizations' Survival



Source: Acer Group Shi Zhengrong

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Drivers and Challenges of Chinese Industrial Enterprises' Digital Transformation Journey

What are the top three drivers of Chinese industrial enterprises digital transformation?

- Efficiency gains: The ability to share resources across
- Operational optimization: Improved throughput/service reliability at the same or lower cost
- Security: More comprehensive security coverage

What are the top three challenges of Chinese industrial enterprises digital transformation?

- 供应链缺乏灵活性和适应性
- 用户需求快速改变
- 信息化设备运营负担大

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Source: IDC 2019 Industrial Enterprise Research, n = 152

Building Industrial Knowledge Platform through Industrial Internet

Manufacturing Processes

Role of Industrial Internet

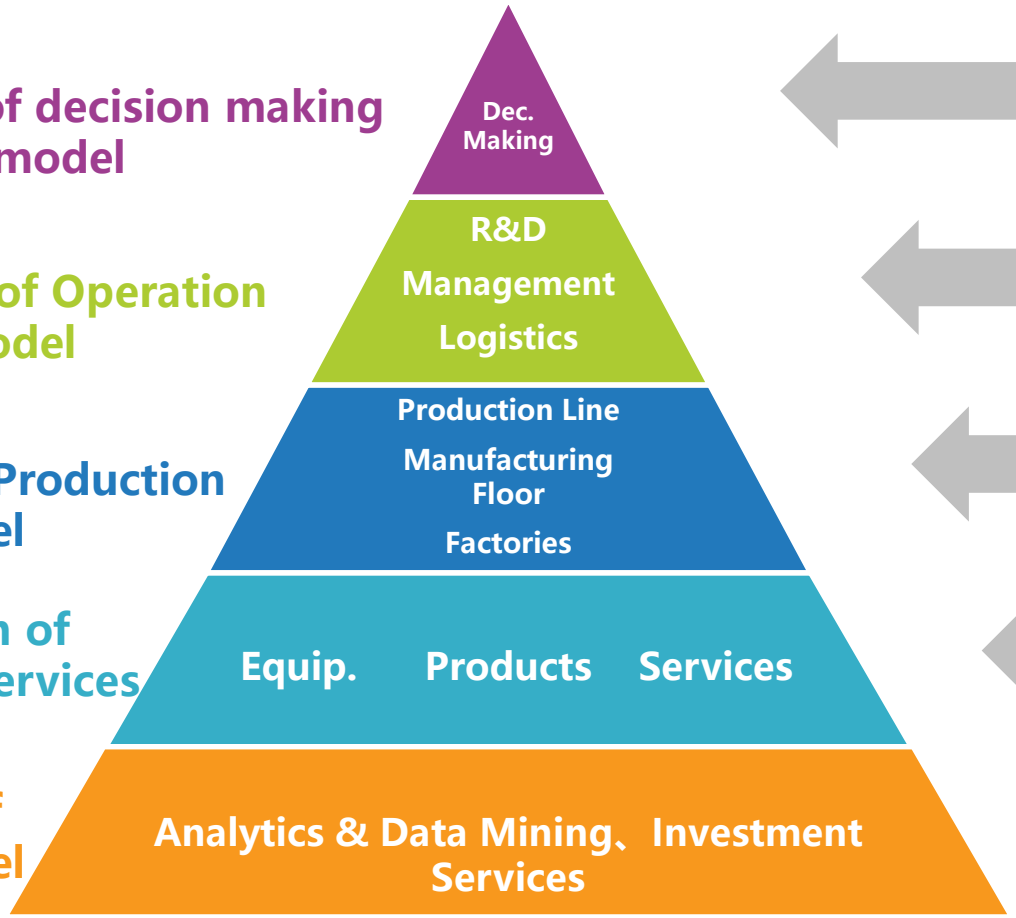
Innovation of decision making model

Innovation of Operation Model

Innovation of Production Model

Innovation of Products & Services

Innovation of Business Model



- Real-time data integration and analysis
- Integration of in-house data and cross-industry supply chain
- Realization of M2M, data collection through IoT devices and paperless operations for enterprises.
- Development of intelligent products and services
- Predictive product maintenance through IoT devices and big data
- Financial and Insurance Services for high-value equipments

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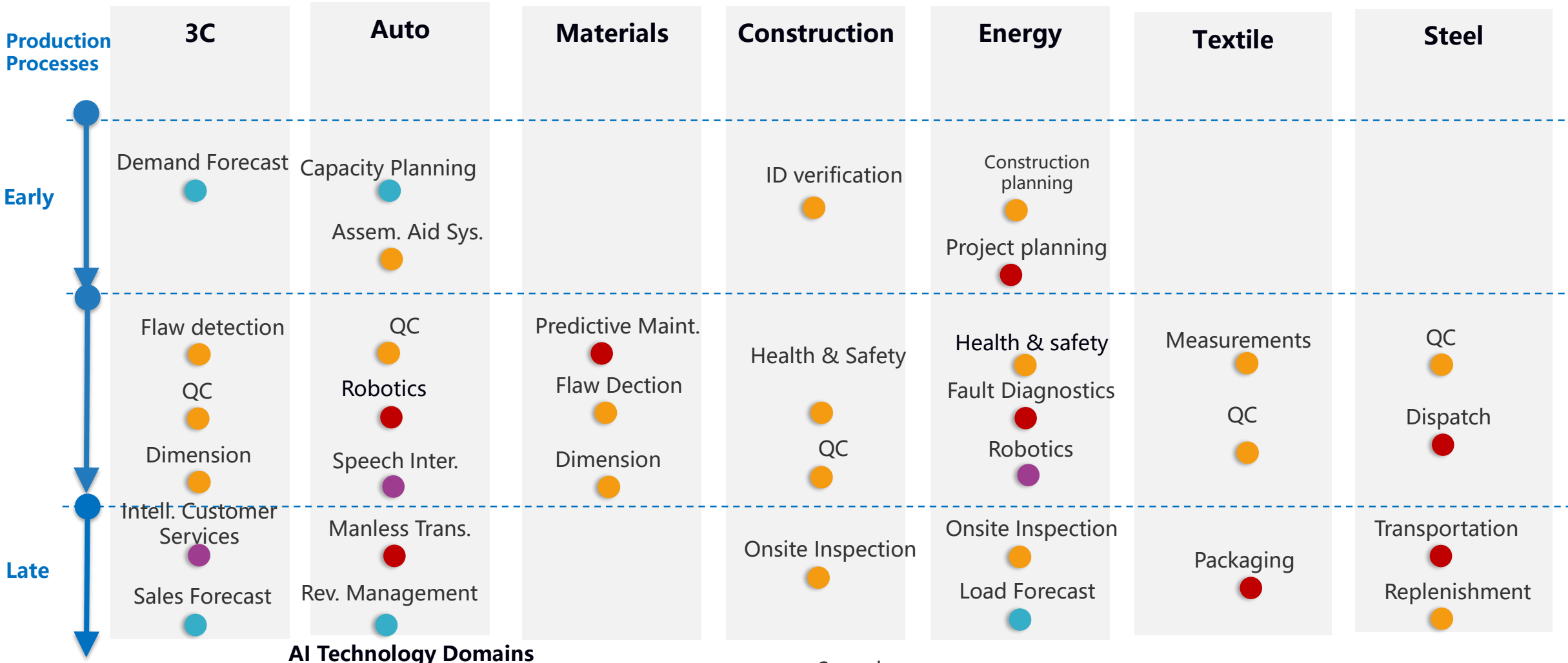
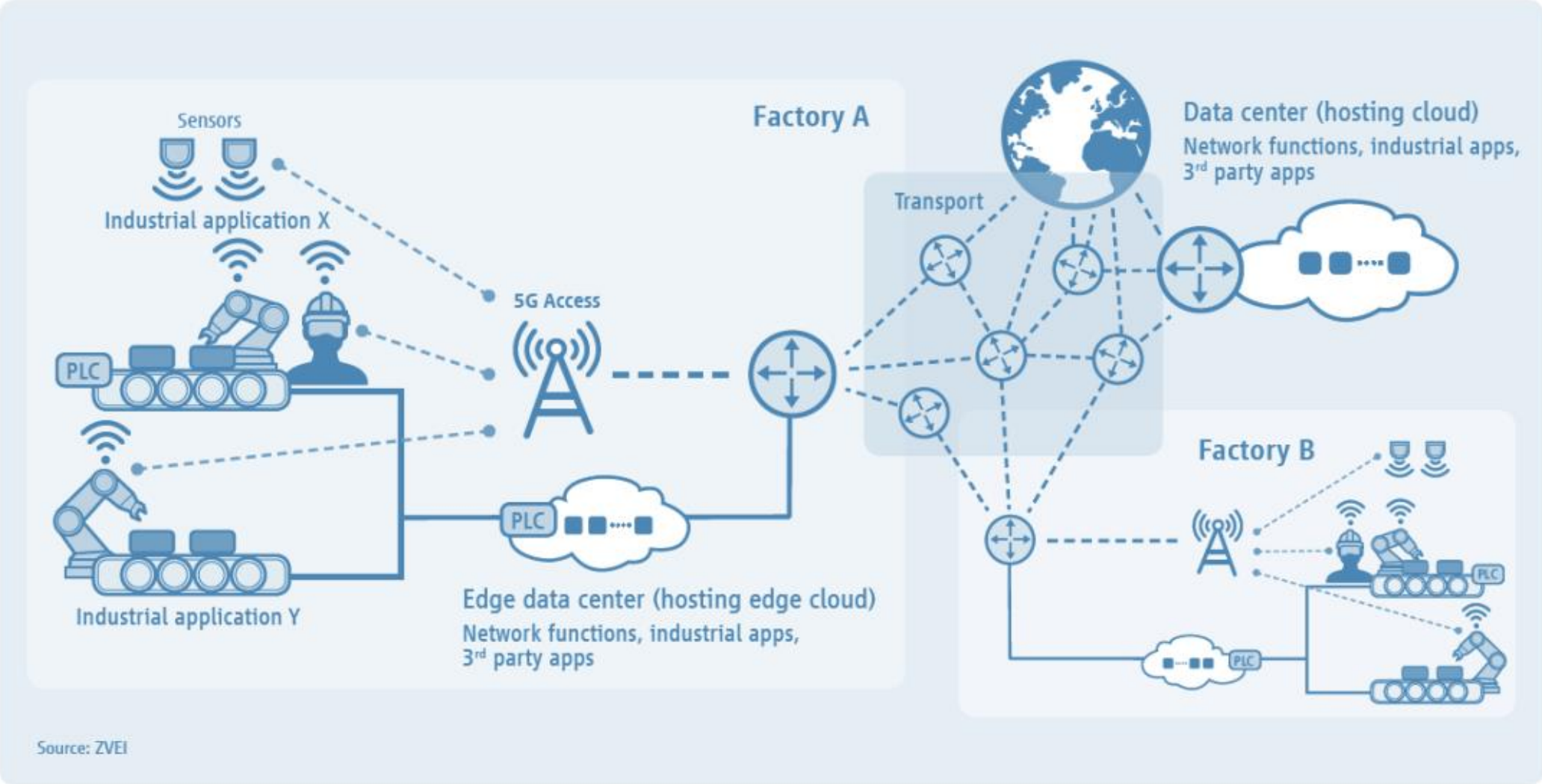
Source: IDC, 2018.

Software-defined Industrial Knowledge Platform



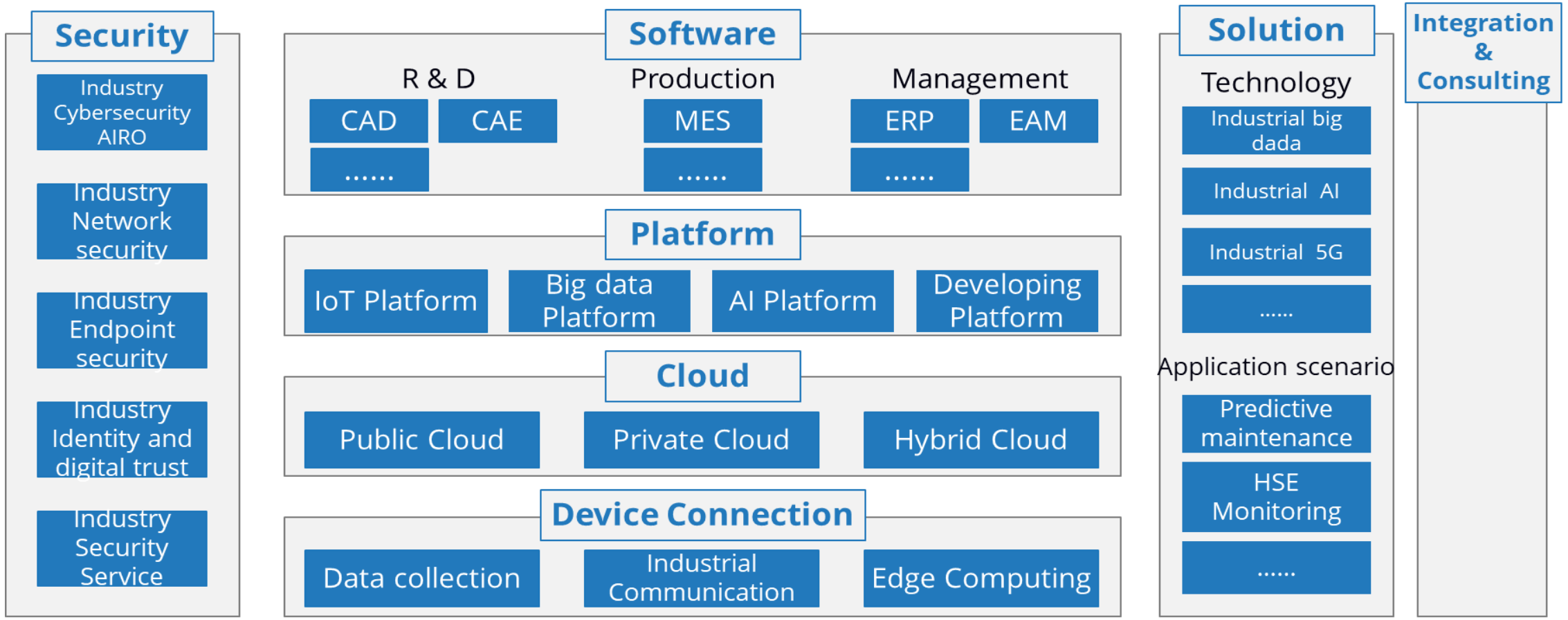
Source: IDC, Industrial AI Applications, 2020

5G is a Key Method for Wireless Collection of Industrial Data



Industrial Internet is a Diversified and Integrated Industrial Ecosystem

Guided by solving industrial problems, it integrates industrial knowledge, skills and tools of multiple disciplines to form a comprehensive problem-solving framework and a value chain with the participation of multiple stakeholders



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Four Ways Which Industrial Internet is Changing the Manufacturing Industry

Innovation

- Open innovation (Open source)
- Customer centric, requirements focus

Business Model

- Individualization
- Service oriented

Management

- Predictive maintenance
- Enterprise production resource allocation

Production

- Variety
- Smaller batch
- Production flexibility

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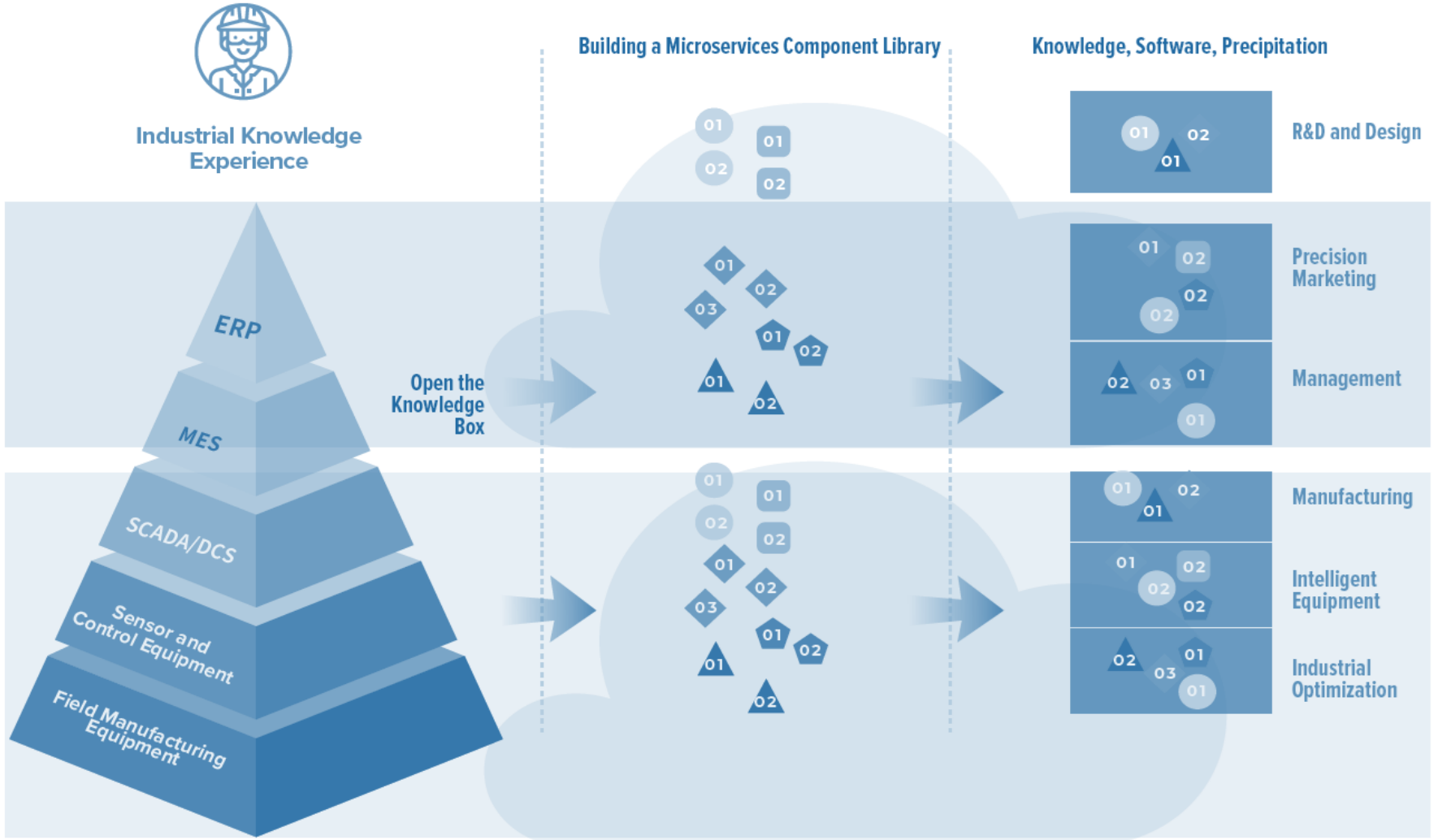
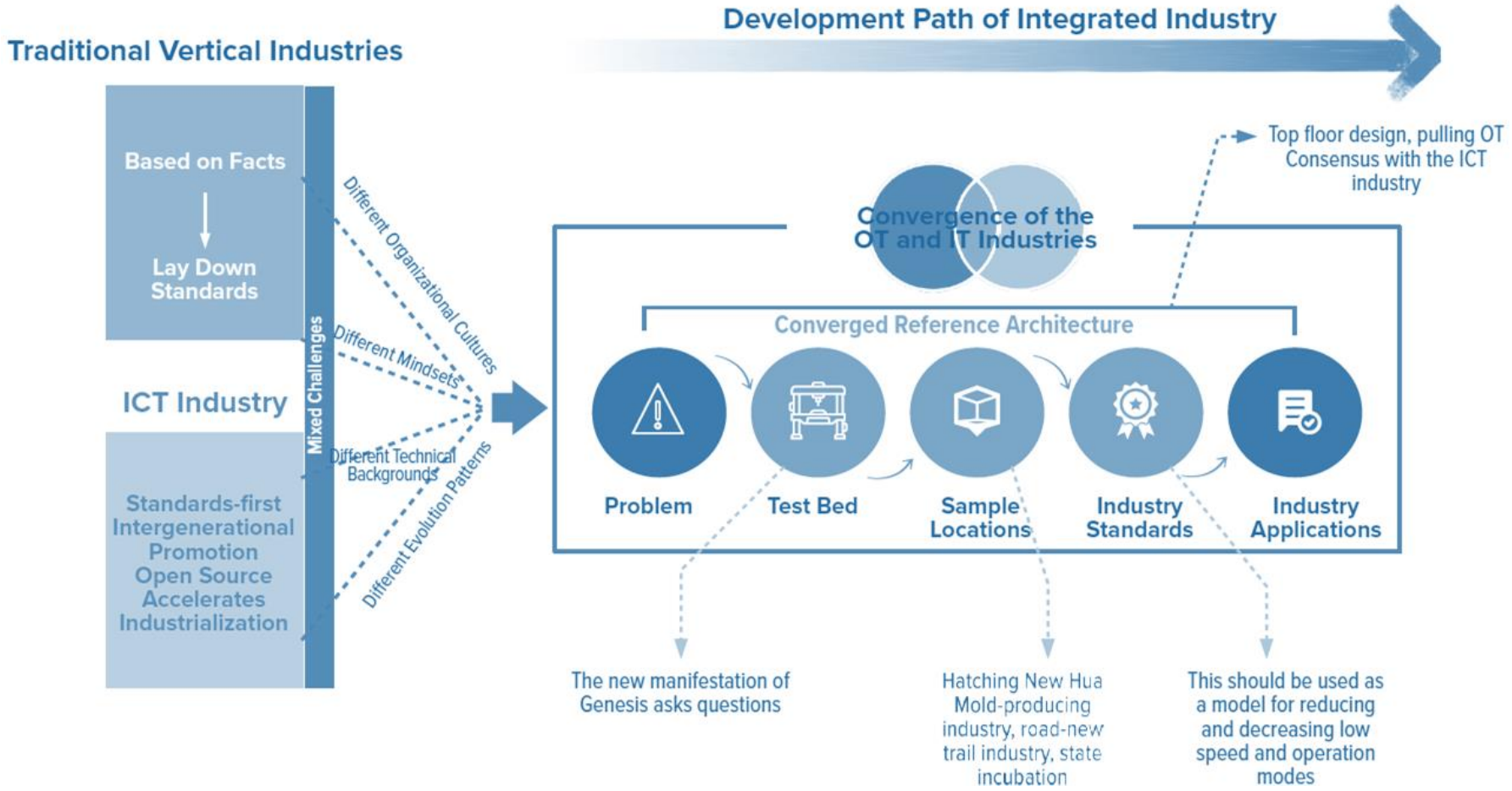
Convergence of IT & OT to Build Industrial Knowledge Platform



Industrial Internet Enabling Integrated Industrial Development Model



Main Use Cases of Industrial Internet

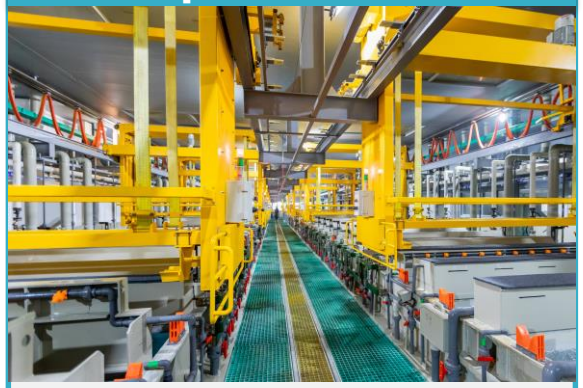
Product Life-Cycle Management

- Product tracing
- Predictive Maintenance
- Design feedback

Production Process Optimization

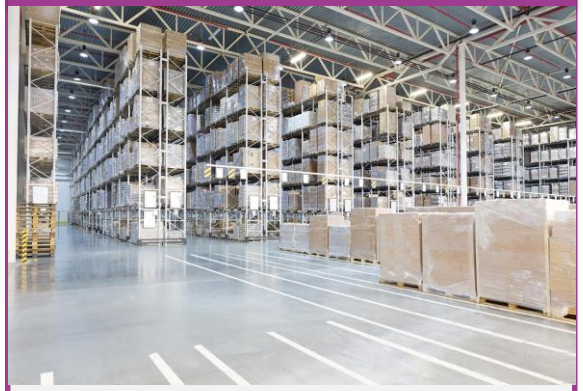
- Production process
- Quality Control
- Equipment Maintenance

Enterprise Decision Optimization



- Supply Chain Management
- Production Control
- Decision Management

Resource Allocation



- Collaborative Manufacturing
- Customization
- Sourcing & Innovation

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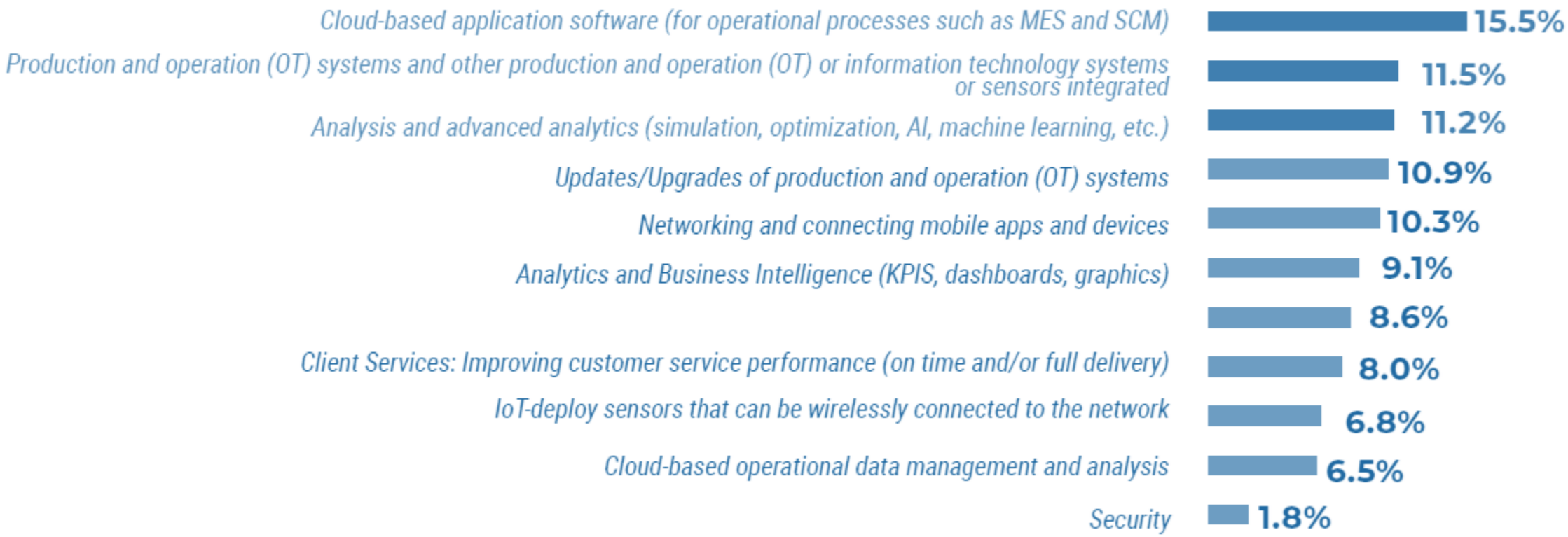
Technology Innovation

Figure X: Industrial Enterprises' Top 3 Investment Priorities in Operational Technology (OT)-Related Initiatives



Source: IDC 2019 Industrial Enterprise Research, n = 152

Business Innovation – Nongbo WoTu Industrial Park

At present, more than 1000 enterprises have been contacted with more than 140 enterprises having signed service or cooperation agreements. 15 ecosystem partners have been developed, involving digital workshop, product lifecycle management, intelligent production, industrial design and simulation.

Ningbo WoTu Industrial Park

Enabling

- Investment
- Policy
- Digital Capabilities
- Developers

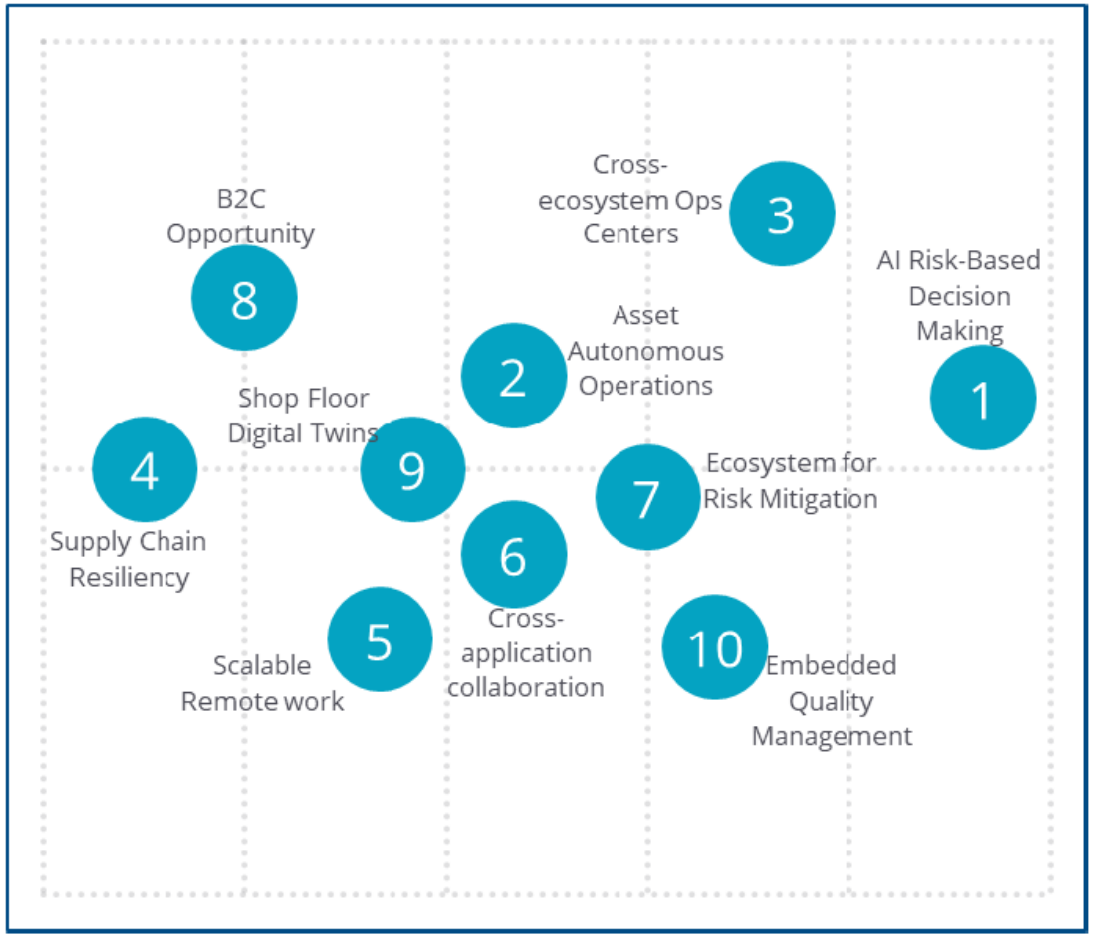
Services

- Software
- Park Fuctions
- Connected Cars
- Industrial Intelligence

Industry Applications

- R&D
- Production
- Sales
- Supply Chain

IDC FutureScape: WW Manufacturing 2021 Predictions



1. **By 2026, 70% of G2000 companies will use AI to develop guidance and insights for risk-based operational decision-making, compared to less than 5% of G2000 today**
2. By 2022, to support autonomous operations, organizations will increase their investments in data governance, Digital Engineering organizations, and digital operations technologies, by 40%
3. By 2024, 50% of G2000 organizations will develop industry ecosystem digital operation centers to monitor capacity, expertise, market, & environmental conditions, for 50% faster time to market
4. By the end of 2021, 90% of all manufacturing supply chains will have invested in the technology and business process necessary for true resiliency, resulting in productivity improvements of 5%
5. By 2023 manufacturers will reduce on-site personnel by 30%, utilizing machine vision and AR/VR to scale offsite expertise to onsite, delivering engineering and maintenance support from anywhere
6. By 2023, 25% of manufacturers will consolidate their enterprise applications through solutions that can enable multi-vendor capabilities and streamline the Industry 4.0 technology stacks requirements
7. By 2024, 60% of manufacturers will participate in distributed supply chain network to reduce the risk of an unplanned disruption in their value chain
8. **By 2022, due to COVID-19, 70% of consumer-facing manufacturers will leverage new direct-to consumer channels, producing up to 15% more profits, improved customer satisfaction, and business resiliency**
9. **By 2023, 30% of manufacturers will enhance their shop-floor digital twin with real-time signal transponder data, this will lead to an 80% reduction logistic bottlenecks on shop-floor and storage areas**
10. By 2024, 75% of manufacturers will embed quality management across the value chain, including the supply chain and field service, reducing overall cost of quality (COQ) by 25%

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