

Etude de Bearingpoint sur sur l'adoption de la 5G industrielle en France et en Europe



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Industrial 5G Beyond Connectivity : what it takes to scale

Ouassim Driouchi, Telecoms & Innovation Partner | March 2026



01

INTRODUCTION

OBJECTIVES, METHODOLOGY AND SCOPE

Objectives of the study



Understand market dynamics

Scope : 2 European leading economies



Key points of market analysis

Offerings and demand | Maturity level
| Benefits | Hurdles and challenges



From a cross-sectorial perspective

Targeted Industries: Manufacturing |
Transportation & logistics | Automotive |
Event/media | Etc.

Wide range of providers : Operators | Integrators
| Hyperscalers | Equipment vendors



Identify key levers to accelerate 5G use cases scaling



Supported by worldwide benchmarking



Ecosystem and Levers

Diversity of key levers : Sales | Operations |
Technology | Regulation

Diversity of actors : All value chain players |
Including regulation authorities



Across the project lifecycle

Pre-sales > Delivery > Maintenance



Estimate the reachable market



Baseline scenario

Business as usual

- Limited coordination across stakeholders
- Incremental use cases
- Gradual & limited adoption



Optimistic scenario

Growth levers activated

- Based on key levers effectively deployed
- Assessment of economic value generated

Collaboration with Digiworld Institute for a qualitative study based on C-level interviews from industrial 5G providers and users

Broad panel of stakeholders interviewed across the industrial and provider sectors

Expert board for critical review of the study

International benchmarking and market studies

50+ interviews with players conducted in France & Germany

Industry



Providers



Study realized in collaboration with the Digiworld Institute and a board of experts



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-  **Guillaume DE LAVALLADE**
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Insights from market leading countries & high impact enterprise examples



Desk research corroborated with leading market research firms




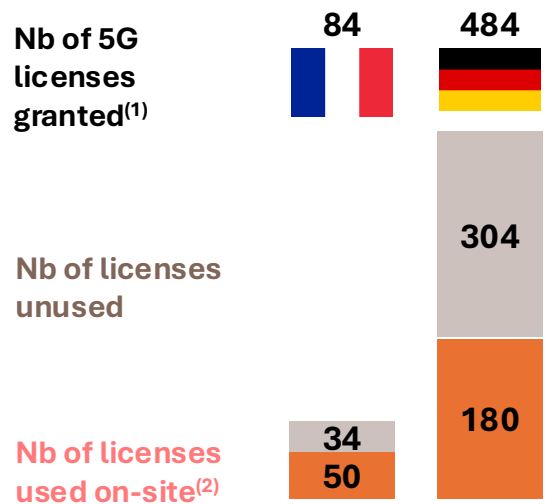


02

INDUSTRIAL 5G MARKET TODAY
UNDERSTANDING THE DISCONNECT BETWEEN
VENDOR'S READINESS AND BUYER'S
ADOPTION

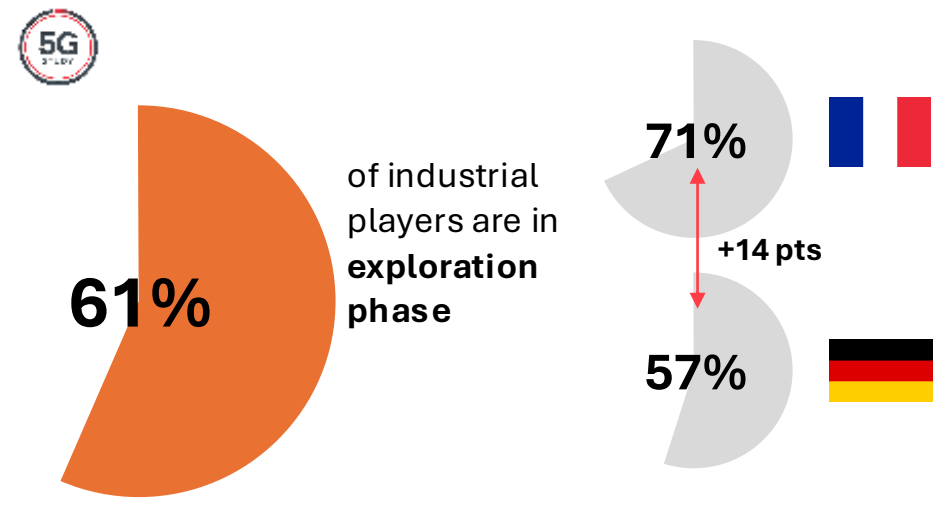
Despite Germany leading France in 5G site deployment, **61% of potential buyers remain in the exploration phase**

Scope of our study : 




When spectrum regulation makes the difference

	France	Germany
Governance	Indirect Access Operator led	Direct Access Manufacture led
Hardware	Specific: Delayed device availability.	Standardized Uses 5G core ecosystem.
Cost Model	Process-based: Hidden costs of admin coordination	Surface based Low & predictable
Licence duration	Before 2024 : 2 years Since 2024 : 10 years	10 year



Germany’s industrial 5G leadership is driven by an early regulatory head start in direct spectrum licensing, combined with a dense manufacturing base. In contrast, France’s initial short-term, operator-centric model created a 'scaling bottleneck' that lasted until late 2025."

“In France, industrial 5G is still largely in an exploration phase: regulatory constraints, limited access to spectrum, and authorization requirements slow down initiatives. By contrast, Germany benefits from a more flexible and clearer framework, creating an environment that is far more conducive to experimentation and the scaling of industrial 5G.”



“The gap in 5G adoption between France and Germany is largely structural and stems from a fundamental difference: Germany has historically pursued a strong and sustained industrial policy”



(1) Data compiled from official regulatory filings provided by the Bundesnetzagentur (BNetzA) and Arcep, and (2) cross-referenced with the European 5G Observatory, 2025

While **65% of suppliers** consider themselves **ready to scale**, **ROI** and **organizational** constraints are the **2 major hurdles** leading to low adoption

Scope of our study :



65%

of suppliers consider themselves **ready to scale**



61%

of industries **struggle to demonstrate ROI**



78%

of industrial stakeholders view the **organizational challenge** as a major issue for scaling industrial 5G



Capabilities, portfolios, and delivery models are perceived as mature, especially in France.

Value is often diluted by pilots, one-off integrations, and weak linkage to operational KPIs.

Unclear ownership, IT/OT silos, and fragmented governance prevent replication. 5G also changes operational practices, hence teams must be **trained and ready to use it**.

“ We offer a **fully commercial-ready industrial 5G portfolio**, featuring a **structured pricing catalogue**, standardized CAPEX/OPEX models, square-meter-based pricing, and a clear flagship product : hybrid 5G”



“ It costs €50,000. I had to pay half of it to run the test. They did not want to invest because **they did not yet see the added value that 5G could bring.** ”

AKKODIS

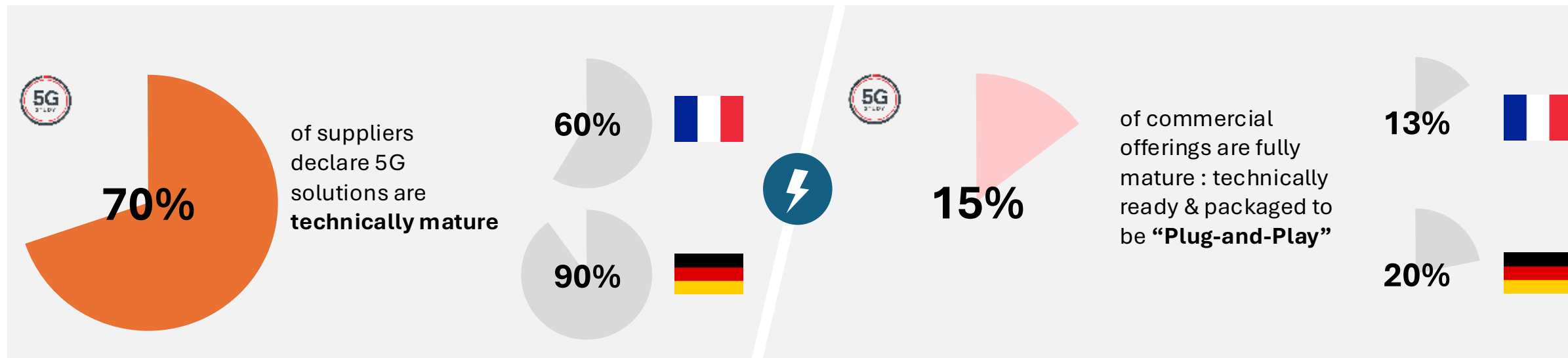
“Within SMEs and mid-caps, **alignment across the CEO-CIO-Production Director triad is essential**. Projects progress most effectively when plant managers are convinced by business use cases, rather than by technology alone”



P. Herbert | Senior Advisor

While **70% of suppliers** claim to be technically **mature**, only **15% of 5G solutions** are truly packaged as **Plug-and-Play** for industrial operations

Scope of our study : 



Radio, core, and basic architectures are largely proven, especially in Germany. From a technology standpoint, industrial 5G is **no longer the main bottleneck**.

Integration effort, operating complexity, and site-specific design still dominate. This gap explains why industrial customers experience 5G as **projects to build**, not **solutions to buy**.

“ Today, our private 4G and 5G and edge computing offerings are ready, the technological maturity is there, what remains is to accelerate adoption. ”

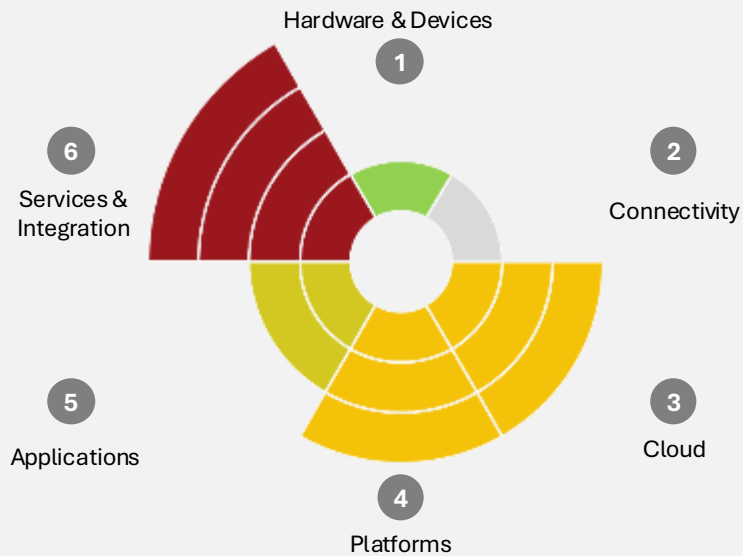


“ For us, 5G will never be plug and play, it has to be integrated with our private networks and our business tools. ”



As the market evolves, **solution providers are shifting** to integration, platform and cloud offerings in order **to capture business value and ease 5G adoption**

Where will competition be the fiercest by 2030?



By 2030, competition will be fiercest in **4 services, integration, and 6 platforms** because this is where industrial 5G creates and captures value at scale.

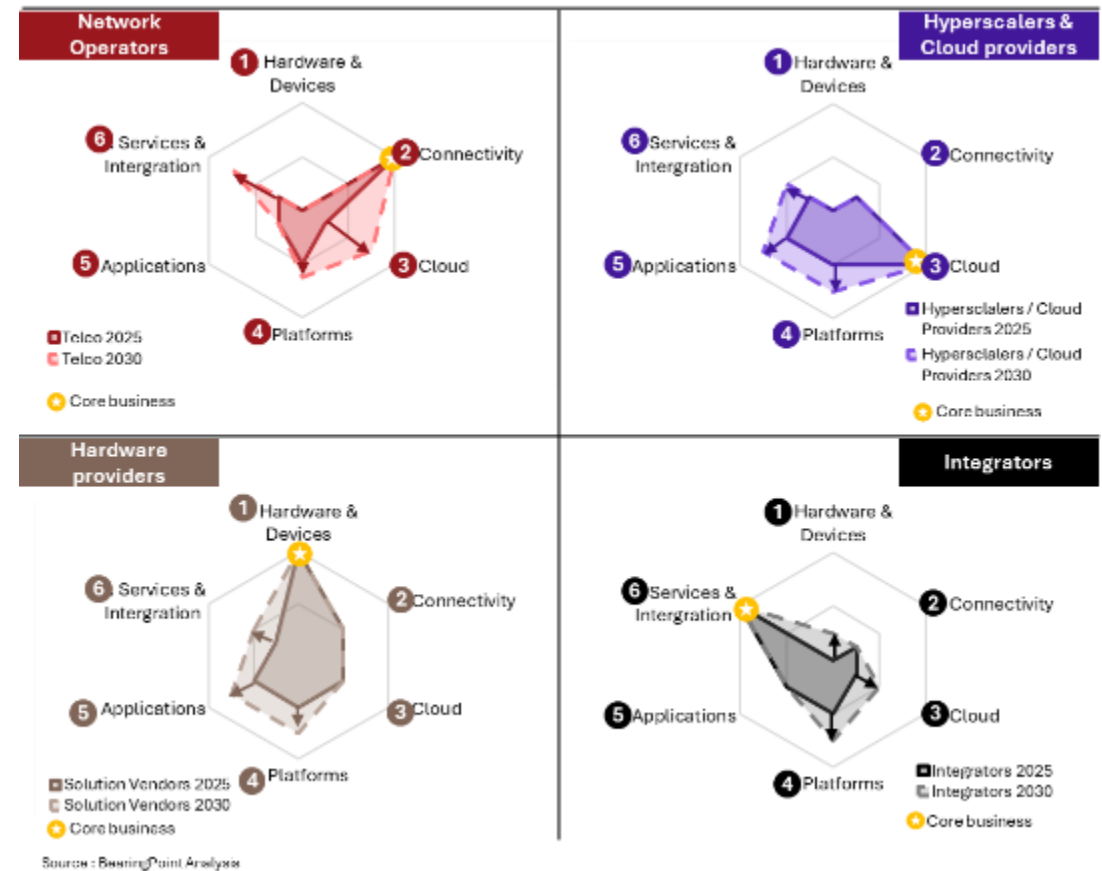
Connectivity and hardware are becoming increasingly standardized, while integration determines how well 5G works with OT systems, cloud, edge, and applications.

Platforms then lock in this integration by orchestrating data, operations, and lifecycle management across sites.

As a result, the competitive battle shifts from building networks to owning integration and operational control.

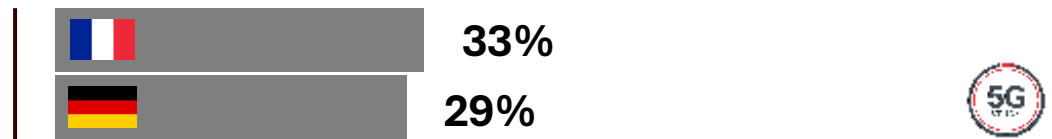
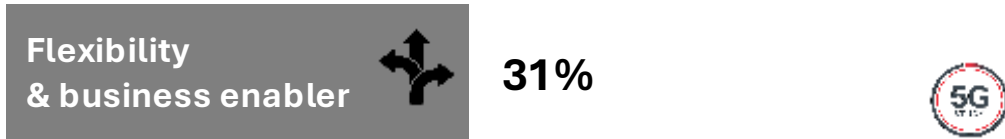
NB : The chart shows the cumulative shift in positioning between 2025 and 2030 across all player groups. For each actor, the change on a given dimension equals the 2030 score minus the 2025 score, and these shifts are then summed across players to indicate where competition intensifies most by 2030.

Key 5G players positioning on the 5G B2B value Chain & expected 2030 evolution



Better connectivity and operational efficiency are the 2 main drivers of industrial 5G

Scope of our study :




Bridging the IT/OT gap is the ultimate scale enabler: Industrials who align connectivity and reliability with operational efficiency are transforming 5G from pilot programs into a powerful business enabler for industry-wide growth.

In Germany, connectivity is now perceived as the bedrock of the smart factory, making superior network performance and operational efficiency inseparable, effectively two sides of the same coin.


*“Any loss of connectivity directly disrupts our employees’ work. With Wi-Fi, we faced recurring issues related to interference, physical obstacles, and handover. **Adopting industrial 5G is no longer an exotic choice, it is simply another industrial project, driven by operational needs.**”*



“Connectivity is a foundational tool for industry. Like any essential instrument, it must be reliable. Without robust connectivity, automation cannot function properly, operational efficiency collapses, and industrial processes come to a standstill”



Manufacturing & Automotive, Transportation & Logistics and Energy & Utilities are the key targeted sectors for 5G projects

Scope of our study: 

Manufacturing & Automotive



89%



Transportation & Logistics



78%



Energy & Utilities



67%



Event & Media



33%



How 5G enables Mercedes-Benz to build any car, on any line, at any time

- With the factory 56 project at Sindelfingen, Mercedes deployed a dedicated private 5G network to create a seamless, high-bandwidth, and ultra-reliable digital canopy over the entire production floor.
- The factory can pivot between different vehicle models (ICE, Hybrid, or Electric) on a single line with minimal downtime.
- 5G connects hundreds of autonomous transport systems that deliver parts to the cars in a "just-in-sequence" flow.


“Across large industrial, transportation, or event-driven sites, 5G is being explored to address concrete operational needs like geolocation, flow management or autonomy, with deployment choices highly dependent on specific operational constraints.”

SFR

“Critical infrastructure companies like airports, ports, and energy companies are among the few sectors where 5G private networks are actually operational. In most other sectors, companies are still in the pilot or observation phase.”

GSMA

MCX, mobile automation, augmented operator and remote operation are the critical use cases requested and deployed

Scope of our study : 

Mission critical operations & security

Unified mission-critical voice, video, and data communications to replace legacy systems

85%  

Mobile Automation

Large-scale orchestration of Autonomous Mobile Robots (AMRs) and Automated Guided Vehicules (AGVs)

80%  

Augmented Operator

Real-time AR/VR integration supporting complex maintenance and remote expert assistance for the workforce

50%  

Remote operation

Controlling heavy machinery from a secure office to remove workers from hazardous environment

45%   



Seamless Digital Continuity in Maintenance Centers

- For SNCF, the deployment of a private 5G network has provided **uniform coverage, uninterrupted mobility, and guaranteed service quality** across its industrial maintenance centers. Technicians move continuously across 10 to 30-hectare facilities while relying on digital work applications, making seamless connectivity essential
- At the Rennes technicenter, SNCF **replaced many Wifi access points with a single 5G antenna covering the entire site**, supporting 500 connected terminals with consistent performance

“The purpose of 5G for us is to **connect mobile robots, to connect autonomous logistics systems, and even driverless transport**. [...] And the purpose of 5G is to completely free ourselves from the company’s internal network, for cybersecurity, and to access our data centers directly.”



“Overall, **5G is used as a backup communication method for everything related to the supervision and control of installations**. [...] If there is a connection issue we switch to 4G or 5G.”





03

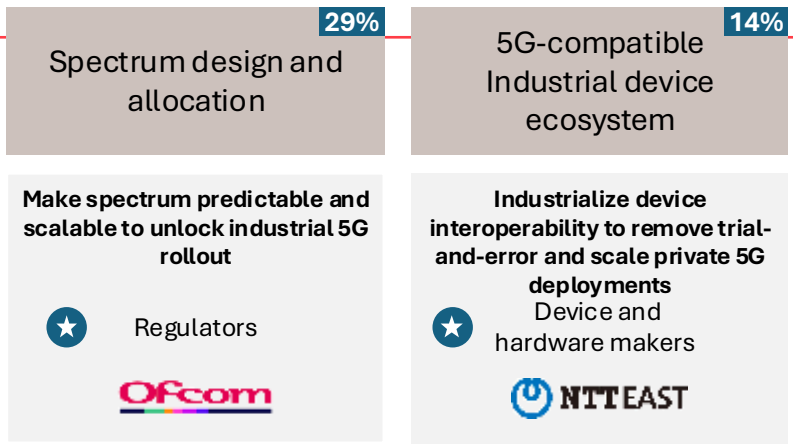
LEVERS FOR GROWTH

USE CASE SELECTION, END TO END VALUE
PROPOSITION, MANAGING FIELD CONCERNS,
VERTICALIZATION

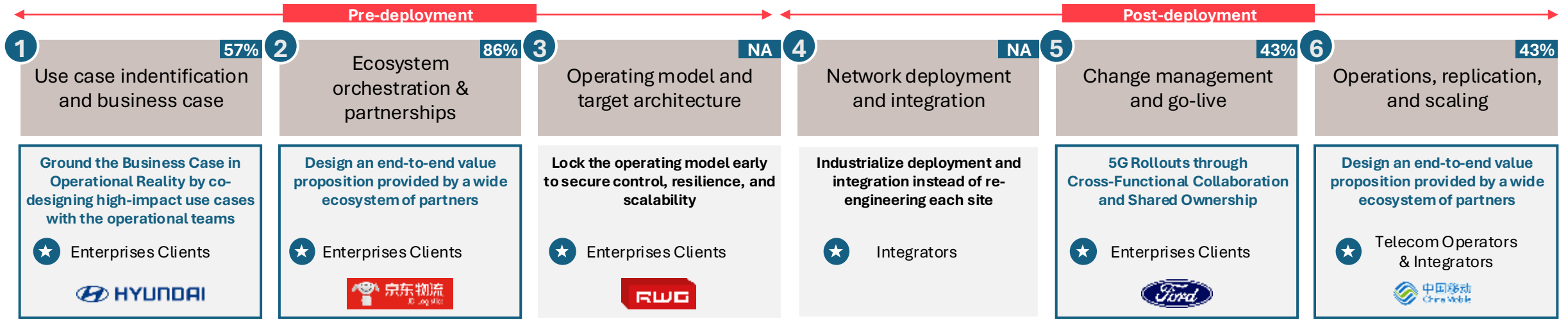
Which key levers are the most relevant for scaling 5G industry?

- ★ Key player impact on the considered step
- abc « Must-have » levers
- x% % of stakeholders view the lever as essential

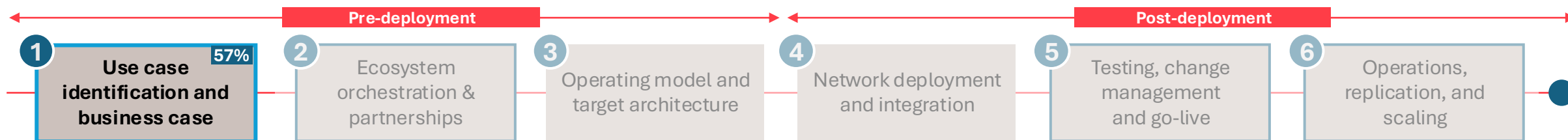
Market Foundations – enablers for the Industrial 5G project lifecycle






Industrial 5G project lifecycle



Ground the Business Case in Operational Reality by **co-designing** high-impact use cases **with the operational teams**



Key levers

 <p>Enterprise Clients</p>	<p>Select 2-3 operational use cases only, with clear impact on production, quality, safety, or logistics</p>
 <p>Enterprise Clients</p>	<p>Engage the shop floor team early in the project: Make plant teams own rollout and acceptance, and integrate safety, protocols change windows, and operational constraints</p>
 <p>Telecoms operators & Integrators</p>	<p>Structure use case discovery: Run use-case workshops, benchmark vs Wi-Fi and wired, and define a clear pilot-to-replication roadmap with industries</p>

Key examples



From pilots to replicable production use cases

- **3 selected use cases only:**
 - Wireless end-of-line inspection
 - AGV / AMR intralogistics
 - AI vision & safety
- **OT-led ownership:** plant teams own rollout and acceptance
- **Structured scale path:** Test → Pilot → Production → Replication (Ulsan → Georgia)

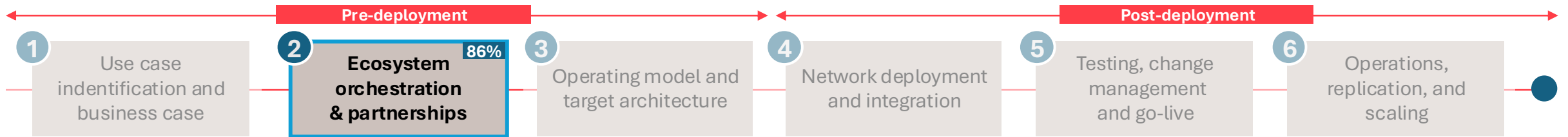
Impact

- Reduced line bottlenecks and overtime
- Faster inspections across 6,000 vehicles/day
- **+60% production capacity unlocked** (30k → 500k units/year)



The images illustrate the application of 5G technology in manufacturing. The top image shows an AGV (Autonomous Guided Vehicle) in a factory setting. The middle image shows a worker in a factory environment. The bottom image shows a car on a production line, with the Hyundai logo and 'BRAND' visible.

Design an end-to-end value proposition provided by a wide ecosystem of partners



Key levers

All vendors

Orchestrate the ecosystem: pre-integrate OT vendors, cloud, edge and cybersecurity partners and define governance and revenue-sharing upfront

All vendors

Use modular, stage-based pricing: pilot → first site → multi-site rollout, allowing scaling without renegotiating contracts

Key examples

FOR ITS PARTNERS

ZTE, HUAWEI, AI-LINK, 中国移动 China Mobile, 中国电信 China Telecom

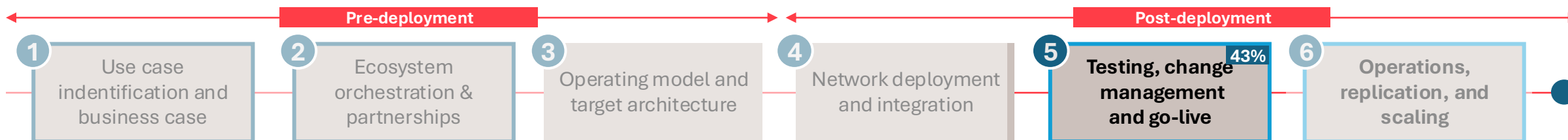
JD Logistics (China)

- **Pre-integrated ecosystem:** telecom operators, OT automation, devices, cloud/edge under one blueprint
- **Stage-based rollout:** first 5G logistics park, then expansion across dozens of warehouses
- **Unified partner governance** across sites

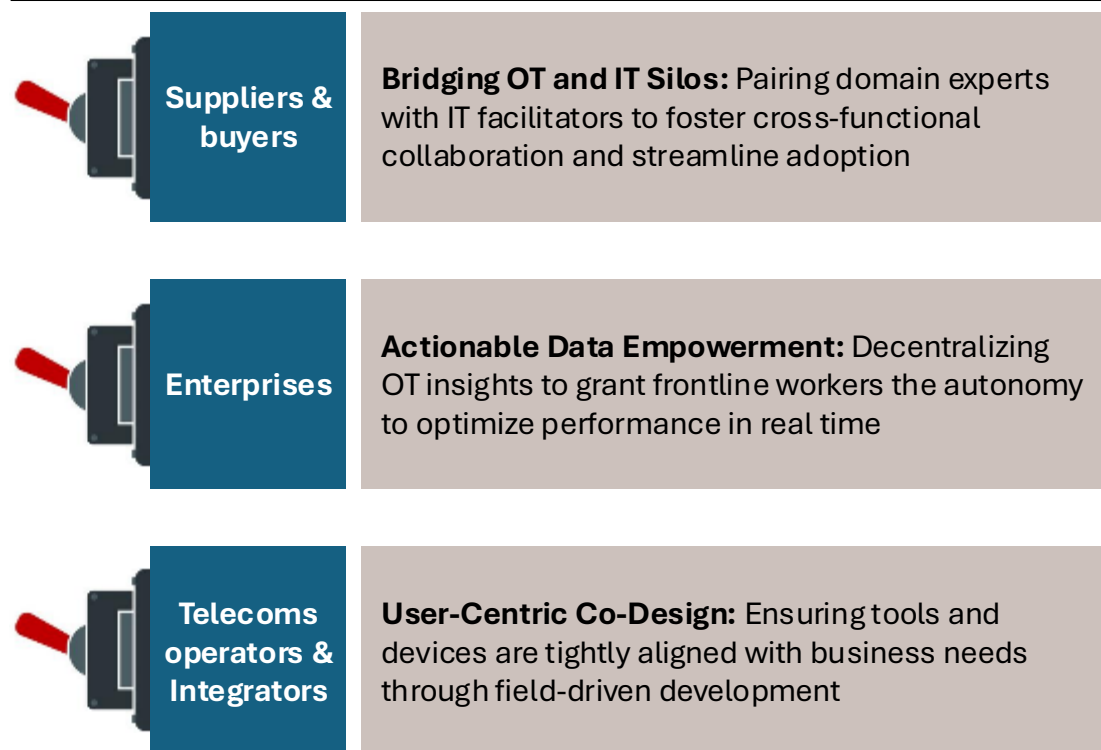
Impact

- +200% warehouse transport efficiency
- -70% connection timeouts, near-zero packet loss
- Full 5G coverage, reduced manual intervention

5G Rollouts through Cross-Functional Collaboration and Shared Ownership



Key levers



Key examples

Ford

What they did :

- **The "Digital Mentors" Program:** Senior expertise complemented by juniors driving 5G and AR adoption.
- **User-Centric AR Co-Design:** AR headset designated with floor operators, defining mission critical KPIs
- **Democratization of OT Data:** Real-time 5G data delivered directly to shop floor tablets

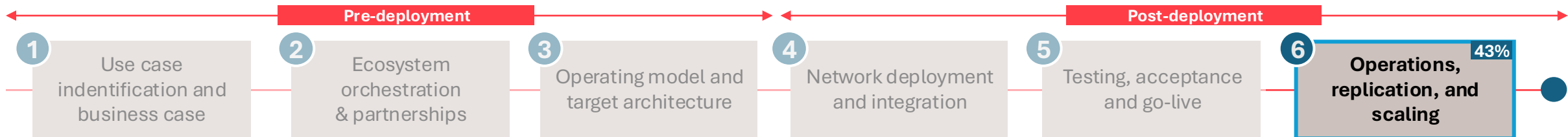
Why it scales :

- **Neutralizing Organizational Friction:** 5G rollout seen as a career upgrade (≠ technological replacement).
- **Overcoming Data Resistance:** 5G was reframed as a security shield and a stress reducer for Electric Vehicle




Impact :

- **Industrializing Expertise:** New production lines launched with 50% faster local team training.
- **Social Proof" Model:** Peer-endorsed tool, rapidly replicated across plants

Productize industrial 5G into vertical, use-case-ready solutions to ease large-scale adoption



Key levers

 <p>Telecoms operators & Integrators</p>	<p>Convert proven deployments into vertical solution packages, combining validated architectures, devices, applications, and operating models per industry.</p>
 <p>Telecoms operators & Integrators</p>	<p>Offer use-case-ready commercial bundles, with predefined scope, KPIs, SLAs, and pricing instead of generic connectivity offers.</p>
 <p>Telecoms operators & Integrators</p>	<p>Reuse standardized delivery and operating models across sites, reducing redesign, integration effort, and time to scale.</p>

Key examples



What they did :

- Shift from **project-based private 5G** to **vertical solution packages**
- Industry-specific offers, ports, mines, factories
- Pre-packaged architecture, devices, apps, operating model, KPIs

Why it scales :

- **Standardized vertical templates**
- **Use-case-ready commercial bundles**
- **Repeatable delivery and operating model**
- **Value framed in operational KPIs**

Impact :

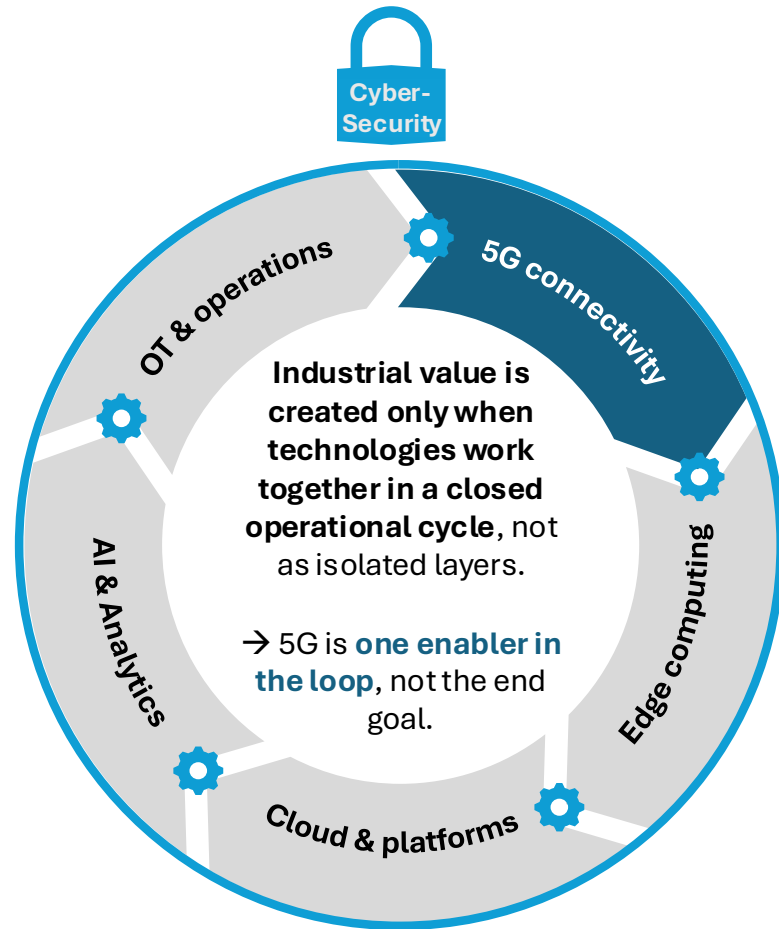
- **10+ vertical 5G solution systems**
- **15,000+ industrial 5G use cases deployed**
- **Up to 46% reduction in underground manpower in mining**

Smart Mining Solution

Smart Mining Solution is a comprehensive intelligent system that integrates the high-speed, low-latency, and large-scale data capabilities of 5G technology with other advanced information technologies to provide a series of innovative applications for the mining industry.



Industrial 5G scale is an **integration game** within a **broader technological ecosystem**



- **Operational Continuity (Zero-Failure Mobility):** Eliminated the "handover latency" crippling Wi-Fi networks; 5G ensures **99.999% reliability** for *Proteus* AMRs moving at high speeds, removing micro-stoppages that previously compounded into hours of lost productivity per week.
- **Infrastructure Rationalization (CAPEX Efficiency):** Achieved a **>10:1 reduction ratio** in network hardware by replacing dense Wi-Fi access point grids with sparse 5G small cells, drastically cutting cabling costs and installation time for new Fulfillment Centers.
- **High-Fidelity Quality Assurance:** Unlocked the bandwidth required for **4K video ingestion** from robotic arms (e.g., *Sparrow*), allowing real-time defect detection algorithms to run centrally without saturating the local spectrum.

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