Can You Seize the 5G Revenue Opportunity?

5G technology is here, but can you make a 5G business?

Nearly

10% of all
mobile connections will be 5G by 2023 (IDC)

$1 trillion
capex to be spent on 5G between 2018 and 2025 (GSMA)

In 2019, 5G became a commercial reality, but its true potential lies in the future, and is largely unknown
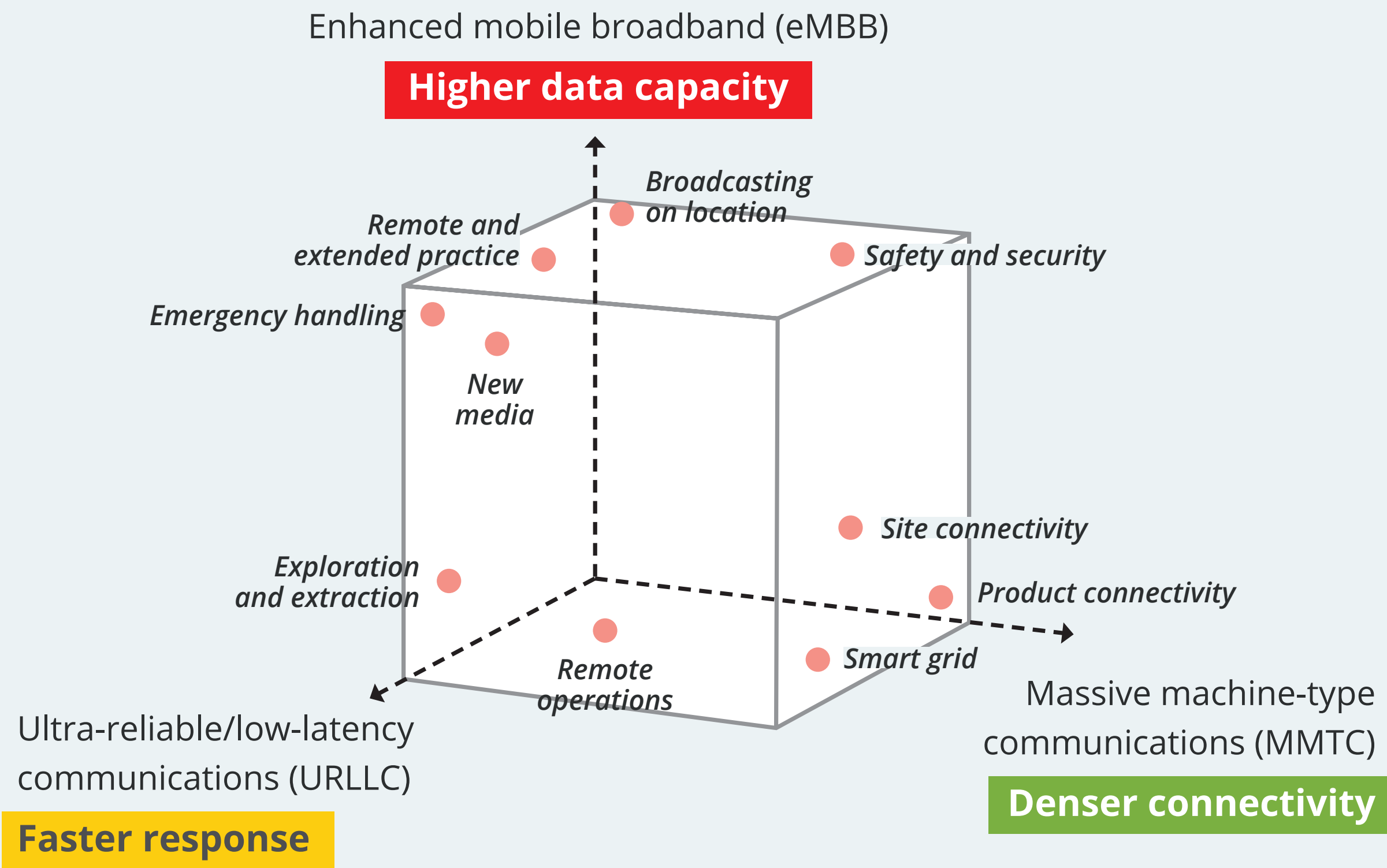
How do you prepare for the unknown?

CSPs must ask themselves: **?**

○ Have I identified vertical use cases, and partners, to start building my 5G business?

○ Can I integrate with partners to build targeted services?

○ Can I support new business models to make these use cases a commercial reality?

○ Am I agile enough to grow my 5G business with new use cases and business models that nobody has thought of yet?

5G capabilities expand the scale and scope of the enterprise opportunity for mobile operators

Enhanced mobile broadband (eMBB)

Higher data capacity

Broadcasting on location

Remote and extended practice

Safety and security

Emergency handling

New media

Site connectivity

Exploration and extraction

Product connectivity

Remote operations

Smart grid

Massive machine-type communications (MMTC)

Denser connectivity

Ultra-reliable/low-latency communications (URLLC)

Faster response

eMBB enables:
- High-volume data transfer
- High-definition streaming
- Less capacity contention between devices

URLLC enables:
- Remote command and control
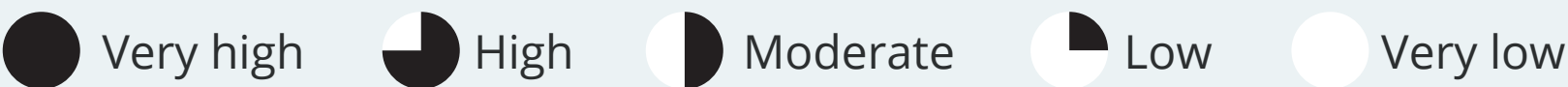- Instant-response applications
- AI-driven automation

MMTC enables:
- More connections per object
- Co-located IoT applications
- Massive-scale IoT

From smartphones and SIMs to connectivity and solutions for mission-critical operations — 5G will create **new revenue opportunities** that mobile operators must seize

Finding the 5G opportunity: manufacturing

Legend: ● Very high ◖ High ◑ Moderate ◔ Low ○ Very low

5G importance by property

		HIGHER DATA CAPACITY	FASTER RESPONSE	DENSER CONNECTIVITY	TOTAL 5G IMPACT
Site connectivity	Connectivity for workers, equipment, site vehicles, and IoT devices — 5G can be a key technology enabler for the aims of Industry 4.0	◕	◔	●	Very high
Product connectivity	Tracking products during production and after shipment, collecting data on usage and condition for servicing	◔	◔	●	Moderate
Remote/ centralized operations	Control of production lines, mobile robots, and vehicles; centralized monitoring and maintenance, performed by humans, AI, or both	◗	●	◕	High

Early examples: 5G test network at factory in Worcester, in the U.K.; boost output by reacting in real time to production events and by pre-empting failures

5G-enabled manufacturing (5GEM) research projects include flexible monitoring, predictive maintenance, and information flow to machine operators and unmanned vehicles

Finding the 5G opportunity: energy
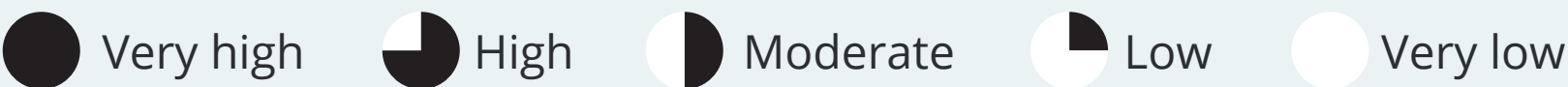
● Very high　◖ High　◐ Moderate　◔ Low　○ Very low

5G importance by property

			HIGHER DATA CAPACITY	FASTER RESPONSE	DENSER CONNECTIVITY	TOTAL 5G IMPACT
⊞	**Smart grid**	Asset management, infrastructure control, smart metering and consumption	◔	◐	◖	Moderate
🌐	**Exploration and extraction**	Remote surveying, using robots and AGVs to build and operate facilities in hazardous environments	◖	●	◐	Very high
🛡	**Safety and security**	Monitoring of facilities, infrastructure, and workers for security, safety, and efficiency	●	◔	◖	High

Early examples:　5G network at Pernis Refinery in Rotterdam harbor: preventive maintenance, leak inspection by drones, AR for site engineers

Testing 5G for more flexible operation and maintenance of electricity distribution components, smart grid elements, and switch and control signals

Finding the 5G opportunity: healthcare
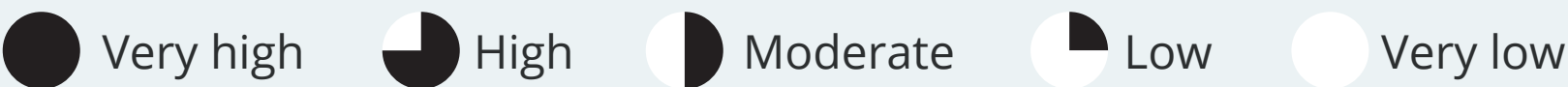
| ● Very high | ◕ High | ◑ Moderate | ◔ Low | ○ Very low |

5G importance by property

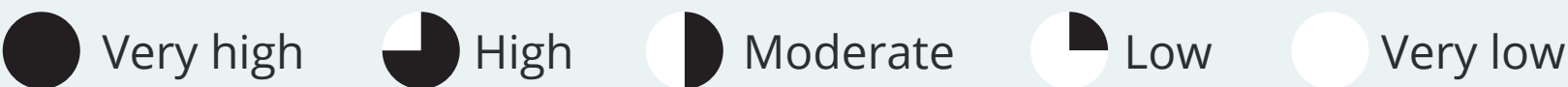|			HIGHER DATA CAPACITY	FASTER RESPONSE	DENSER CONNECTIVITY	TOTAL 5G IMPACT
	Emergency handling	Remote patient assessment and treatment, equipment control, dedication of network resources	●	●	○	Very high
	Remote and extended practice	Diagnosis and treatment, staff guidance and collaboration, remote control of equipment	●	◑	○	High
	Training and education	Virtual-reality-based training, augmented reality-guided training, real-time remote tuition, haptic simulation	●	●	○	Very high

Early examples: 5G-connected ambulances, with high-resolution video and AR between paramedics and hospital staff; triage and emergency treatment while the patient is in transit

Ultrasound over 5G, with a remote specialist guiding a paramedic through the procedure using haptics, and assessing the resulting high-definition images in real time

Finding the 5G opportunity: media

● Very high   ◖ High   ◐ Moderate   ◔ Low   ○ Very low

5G importance by property

		HIGHER DATA CAPACITY	FASTER RESPONSE	DENSER CONNECTIVITY	TOTAL 5G IMPACT
Broadcasting on location	Send content from source to production and distribution facilities, for location and outside broadcasts	●	○	○	Moderate
Stadium media services	Stadium event media (e.g., commentary, choice of video angle, VR), high-capacity coverage	●	◔	◔	Very high
New media	Entertainment and information content using new media types such as 360-degree video, AR, VR, haptics, holograms	●	●	○	Very high

Early examples:

AT&T installed a 5G network in the Dallas Cowboys stadium, and plans services including live AR game data and the ability to "pose" virtually with players in pictures
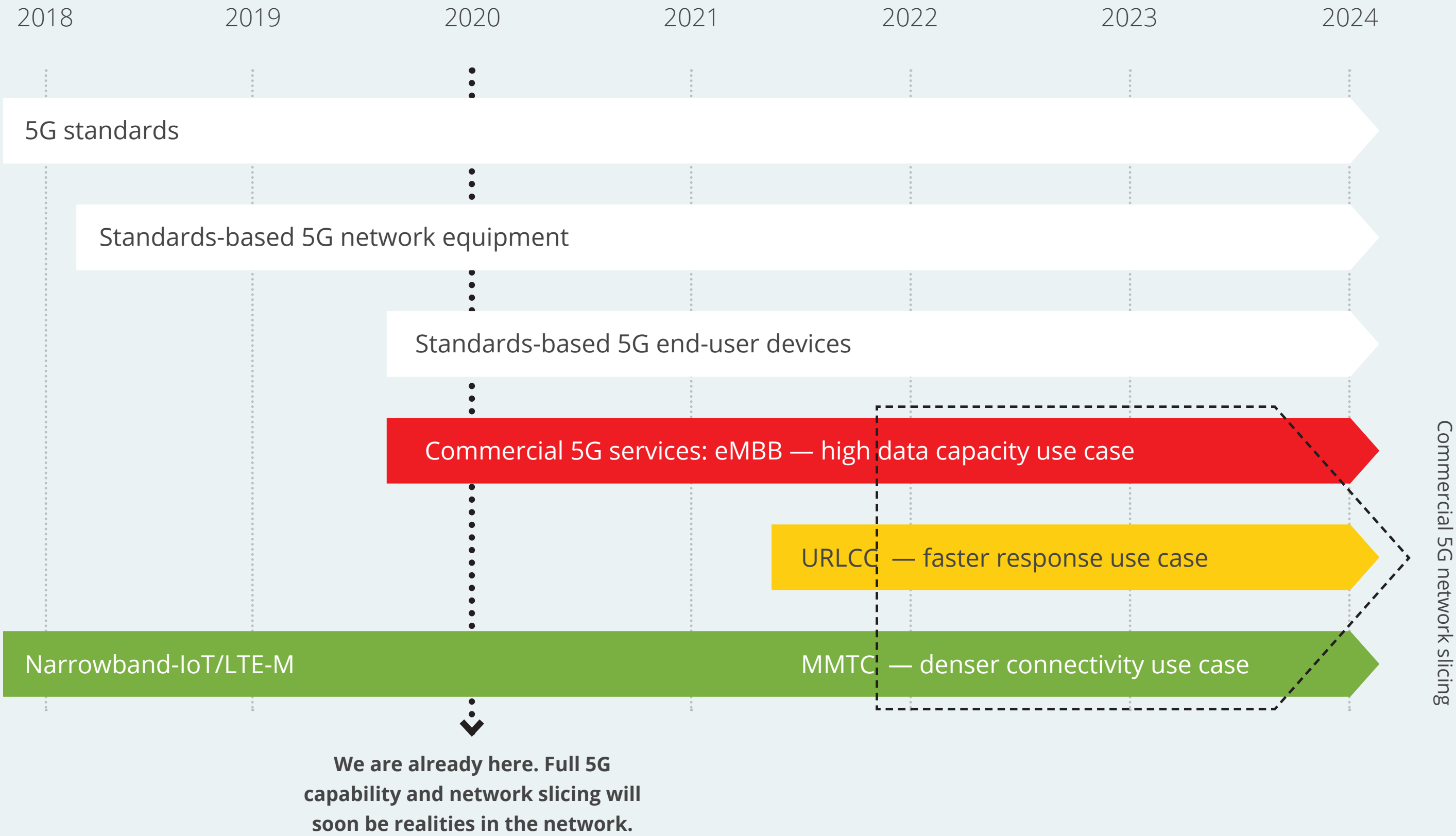
BT Sport is trialing production broadcast from Wembley Stadium, over EE's 5G network; EE is bundling BT Sport content with 5G service plans, and delivering it to mobile devices

Advanced 5G capabilities will emerge rapidly

Operators must ensure they are ready and able to build monetizable services on new 5G capabilities as they come online. That means getting ready **NOW**.

? What do IT systems need to be able to turn the 5G opportunity into profitable services?

| 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 |

5G standards

Standards-based 5G network equipment

Standards-based 5G end-user devices

Commercial 5G services: eMBB — high data capacity use case

URLCC — faster response use case

Narrowband-IoT/LTE-M   MMTC — denser connectivity use case

Commercial 5G network slicing

We are already here. Full 5G capability and network slicing will soon be realities in the network.

5G business models demand **flexibility**, **agility**, and everything **real time**

Old business models ...

CSP

- CSP provides services, bills according to agreed contracts based on established factors
- Customer pays the CSP

Customer

... become new, more complex business models

CSP ⟷ **Partner**

5G business models as yet unknown:

- What exactly will CSPs be charging for?
- Who will pay who, when, and how?

Customer

CSP

- Partners are essential because 5G services involve end-to-end problem solving, not just connectivity.
- 5G business models will be complex and varied.

Customer

Partner
Partner
Partner
Partner
Partner
Partner

IT systems must support experimentation, scaling what works and quickly discarding what doesn't.

5G services demand simple self-service for customers and partners

Business models may be complex, but managing them must be simple

Customers need › To order and manage services with just a couple of clicks, and have a strong omni-channel ecosystem taking in new touchpoints such as new IoT devices and smart vehicles

Partners need › Easy onboarding and integration through APIs, as well as robust partner management to support their diverse business models and services

CSPs need › Quick design, creation, and deployment of services with user-friendly interfaces for non-technical users, as well as order management to support real-time delivery of complex, on-demand services

Supporting quick time to market for all new 5G-enabled services

Simple and easy access for those who need it must be coupled with thorough and pervasive security — new 5G applications put connectivity into critical functions, and security risks cannot be tolerated.

5G data explosion demands new approach to data and security
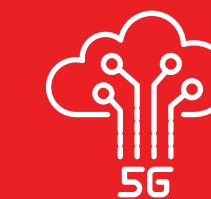
5G *means*

- Massive increase in device numbers
- Devices with more complex data feeds and functionalities
- Edge computing requirements for latency and resilience
- Massive increase in signalling data
- Massive increase in management data

DATA EXPLOSION

IT systems will need:

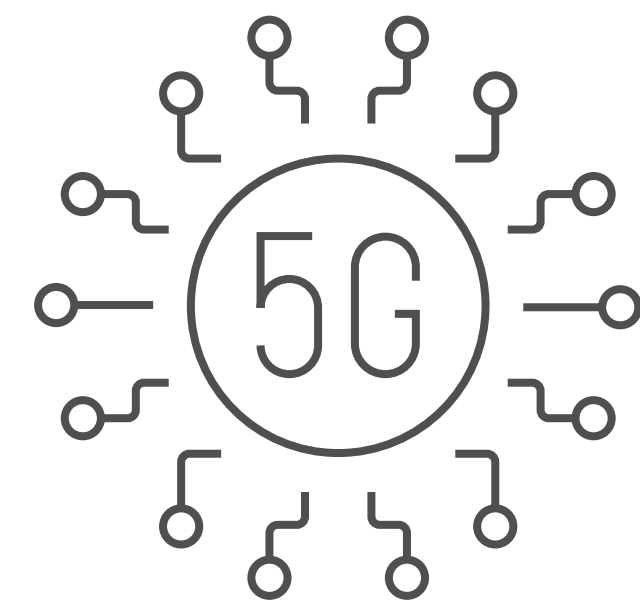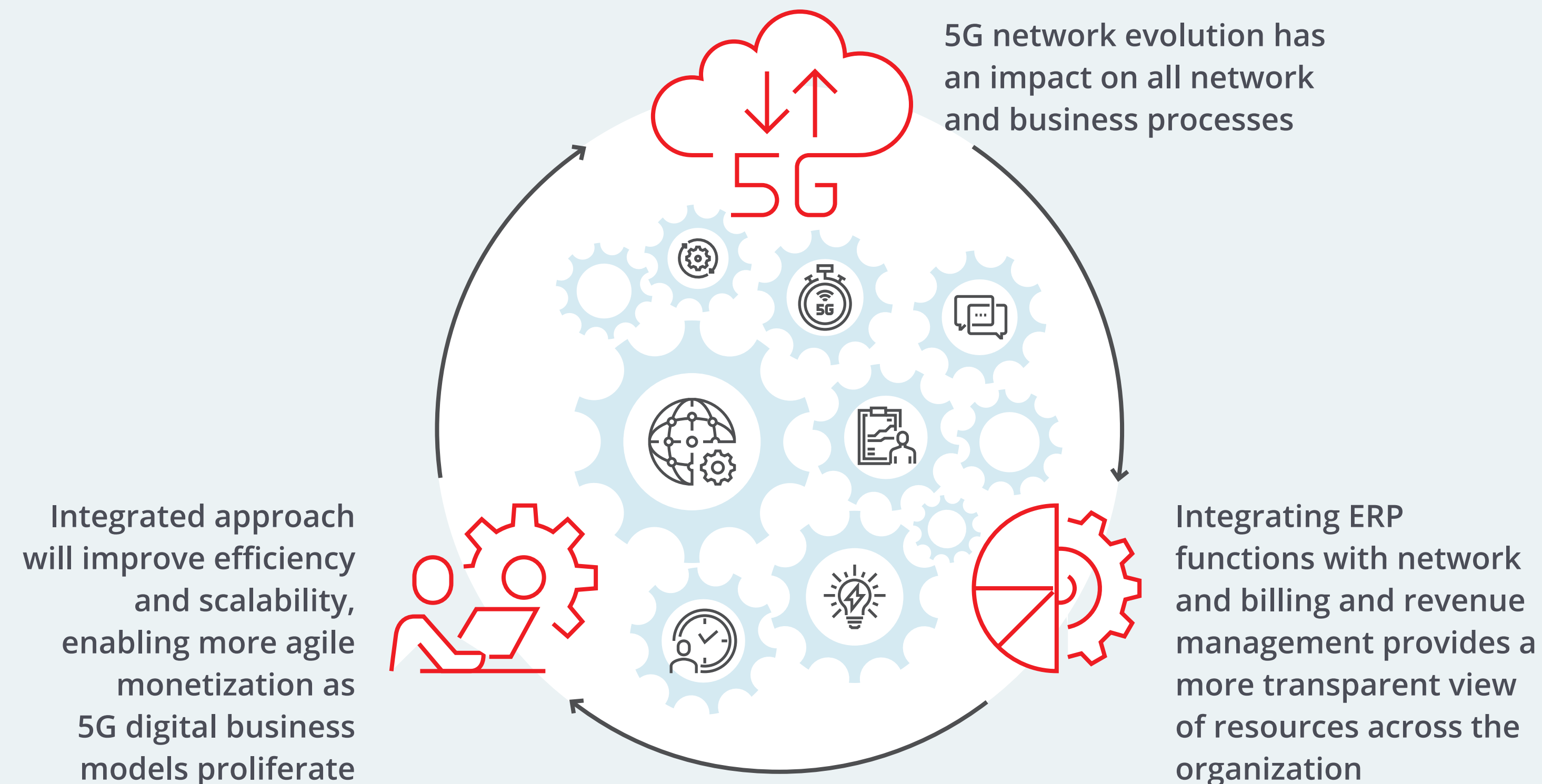Data management platforms to cope with new data processing and storage paradigms

Pervasive AI, enabling massive data to be analyzed and acted on in real time, as 5G application demand increases

Security integrated at all levels, from device to core and everything in between; larger data volumes lead to higher risks, and many 5G applications will be very intolerant of risk

Agility, cohesion, and rapid scaling needs require enterprise and network resource planning integration

5G network evolution has an impact on all network and business processes

Integrating ERP functions with network and billing and revenue management provides a more transparent view of resources across the organization

Integrated approach will improve efficiency and scalability, enabling more agile monetization as 5G digital business models proliferate
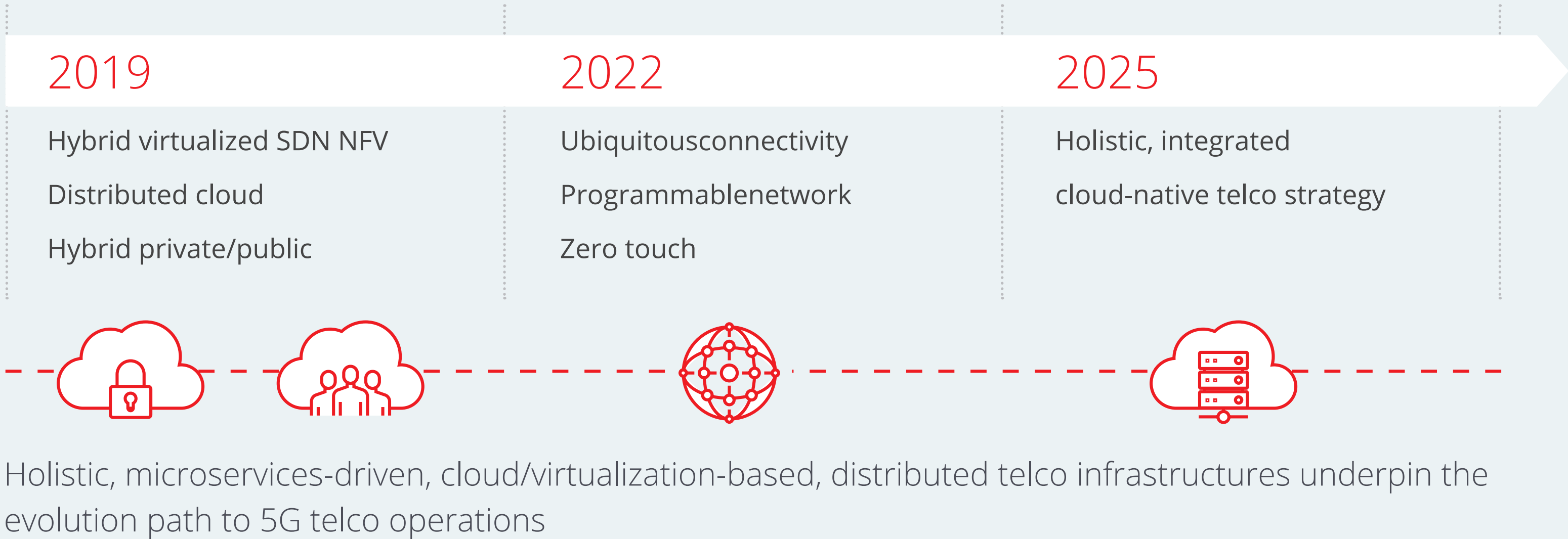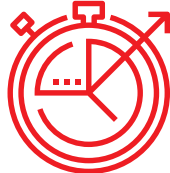
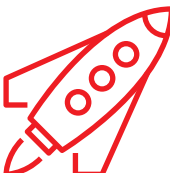The 5G data explosion impact is felt here too — appropriate data management and integration of AI are essential.

Holistic telco cloud strategy underpins the evolution to 5G

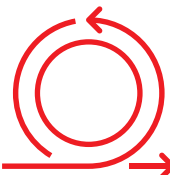Telco cloud evolution happening in parallel and supporting 5G

2019
Hybrid virtualized SDN NFV

Distributed cloud

Hybrid private/public

2022
Ubiquitousconnectivity

Programmablenetwork

Zero touch

2025
Holistic, integrated

cloud-native telco strategy

Holistic, microservices-driven, cloud/virtualization-based, distributed telco infrastructures underpin the evolution path to 5G telco operations

Cloud underpins improvements in **operational efficiency:** continuous closed loop self-healing, scaling resources due to virtualized, private/public, and distributed cloud infrastructures

Innovation booster: new markets, net new services, upsell revenue opportunities, outrun commodity rat race

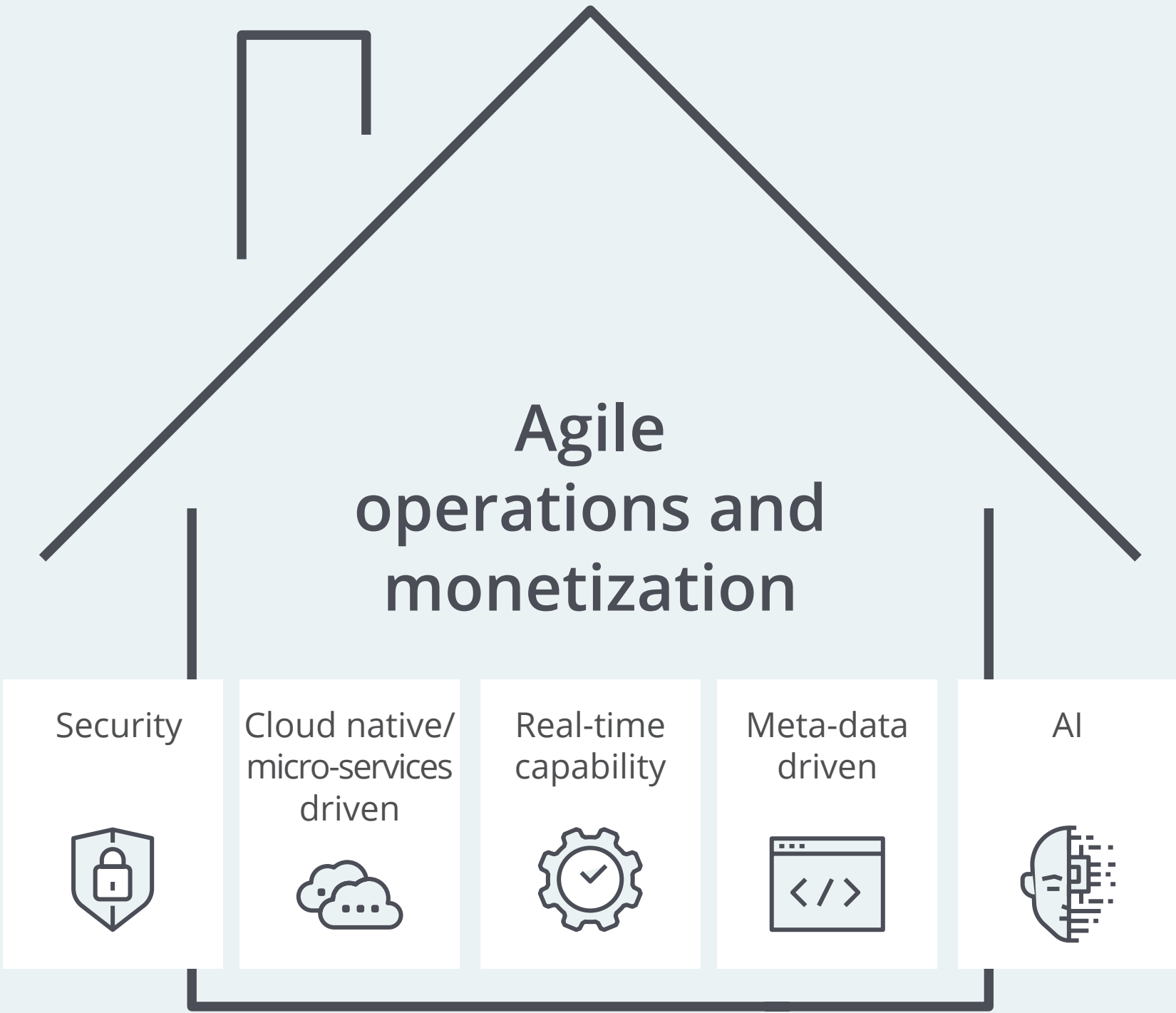**New business models:** pay-as-you-go and pay-as-you-grow enable B2B2B and B2B2C

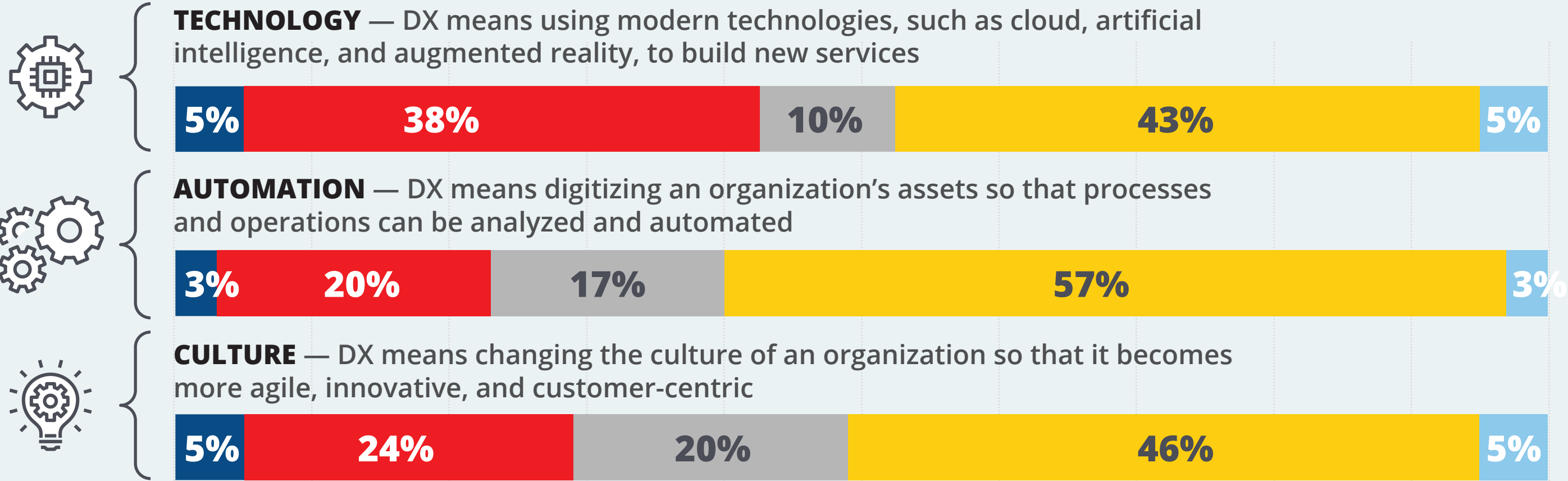**Agility:** time to market reduced from months to hours

Monetization: of event-based, cognitive, transactional 5G services

Are you ready to monetize 5G?

The right technology foundations must be in place

Agile operations and monetization

| Security | Cloud native/ micro-services driven | Real-time capability | Meta-data driven | AI |

Preparations for 5G monetization are part of the journey to total organizational DX maturity

TECHNOLOGY — DX means using modern technologies, such as cloud, artificial intelligence, and augmented reality, to build new services

| 5% | 38% | 10% | 43% | 5% |

AUTOMATION — DX means digitizing an organization's assets so that processes and operations can be analyzed and automated

| 3% | 20% | 17% | 57% | 3% |

CULTURE — DX means changing the culture of an organization so that it becomes more agile, innovative, and customer-centric

| 5% | 24% | 20% | 46% | 5% |

● *Small, ad hoc projects, with no companywide DX vision or plan*

● *Business units are doing their own DX projects, with limited sharing or collaboration with other units*

● *A companywide digital strategy exists, but it is under-resourced or has not made much progress*

● *A companywide digital leadership team and strategy is in place, leading DX across operational, service, and customer-facing teams*

● *DX has already transformed your business and operations*

Are you ready to monetize 5G?

Cloud is the key

Cloud solutions can help CSPs enhance their capabilities at speed and deliver some of the essential properties for 5G success:
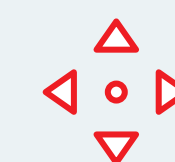
The flexibility to experiment with new business models, potentially with multiple partners

The power to scale fast when a successful new model is found

Actionable, data-driven insights to improve performance and grow customer relationships in real time

The real-time functionality that modern businesses require

Don't let IT become a roadblock to 5G's full potential.

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