

Achieving Ubiquitous IoT Connectivity

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Agenda

- IoT Market Context
- IoT Market Maturity
- Network Developments and The Approach of Ubiquitous Connectivity
- Is 5G The Answer?

European IoT Adoption Continues to Rise

Q. What are your organization's plans for deployment of an IoT project?

49%

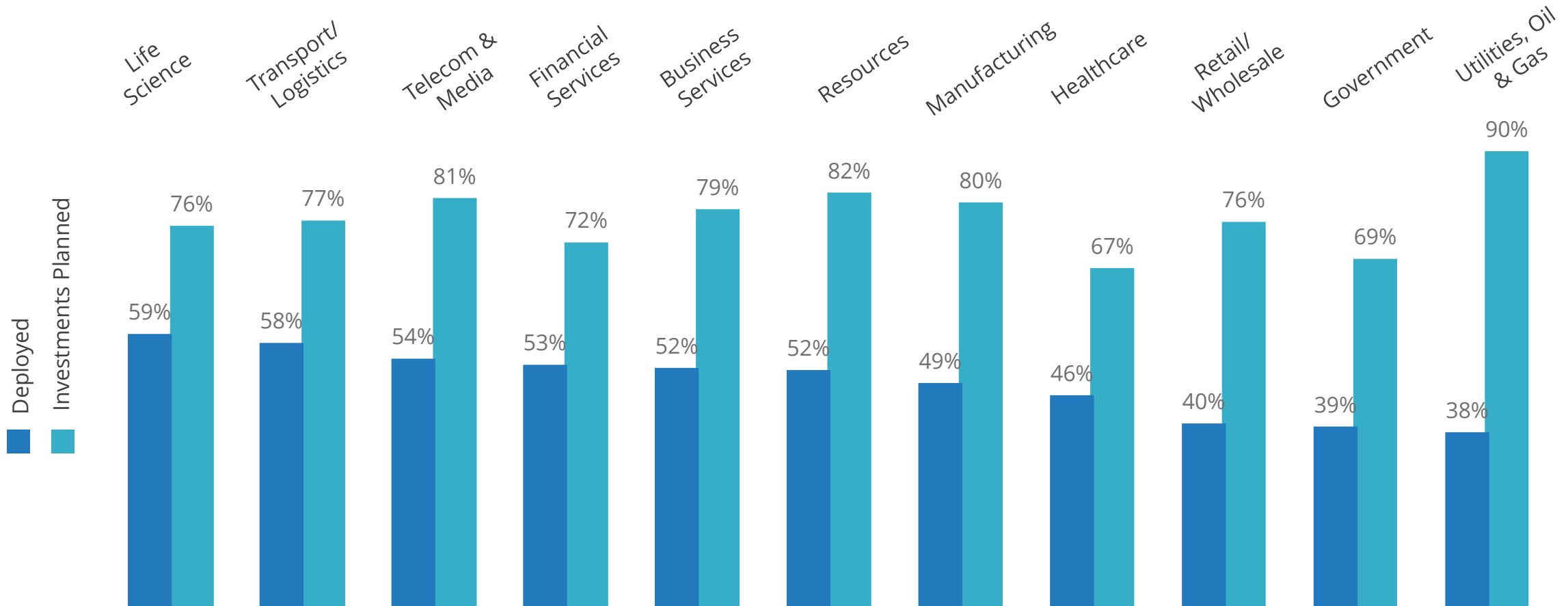
Have Deployed

77%

Planning Investments

Significant Differences by Vertical, But All Are Heading In The Same Direction

Q. What are your organization's plans for deployment of an IoT project?



Base: All respondents; N=939
Source: IDC's European IoT Survey, Nov 2020

How Do IoT Markets Handle Challenging Times?

Q. As a result of the COVID-19 outbreak and the subsequent economic and market impacts, which of the following statements are true for your organization?

Share of respondents (European organizations) agreeing or strongly agreeing with the statements:

Covid struck a blow

We cut our IoT budget this year 42%

We added/are adding IoT projects 47%

But IoT helped to address the problem

IoT is helping us to cut costs. 63%

IoT is helping manage new workplace conditions (e.g. safety) 61%

And it is a key to digitalization

IoT will be a core part of digitalization strategy, positioning for the post-Covid... 57%

And now a new set of crises...

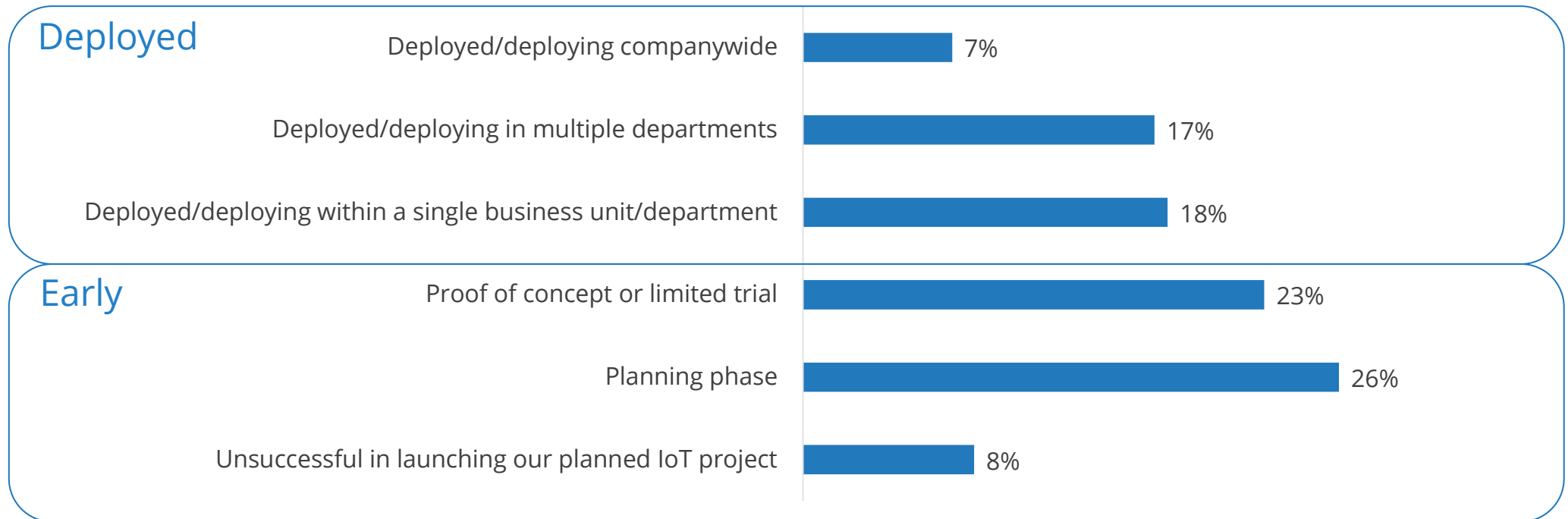
Still Far From a Mature Market

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High Ambitions, but It's Still Early

Maturity of IoT Deployments

Q. Which of the following best describes how mature the majority of your IoT projects are today?



Source: IDC's European IoT Survey, Nov 2020 (n = 463, base = those using IoT)

Top Challenges Holding Back IoT Projects

1



Costs

2



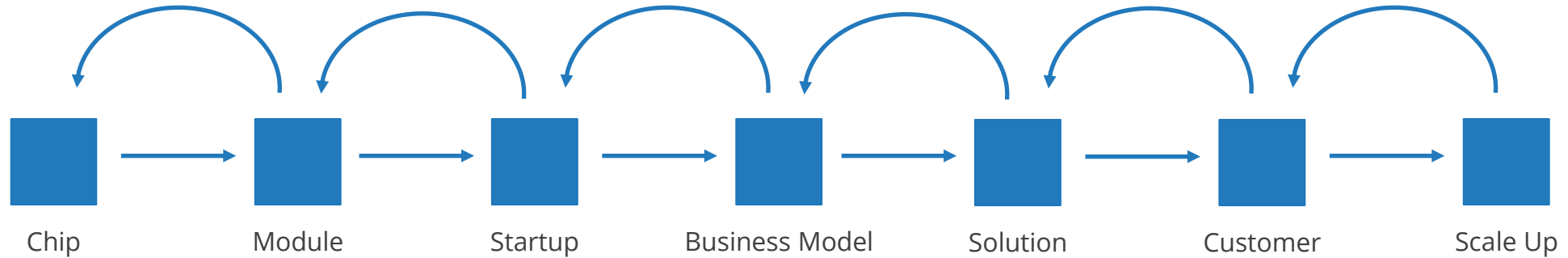
Complexity

3



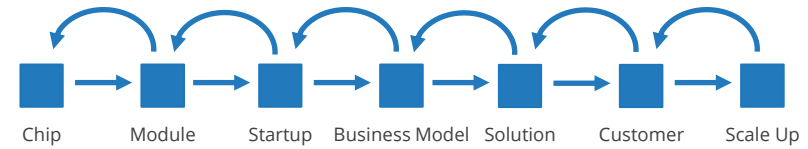
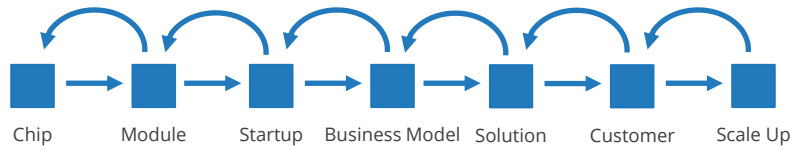
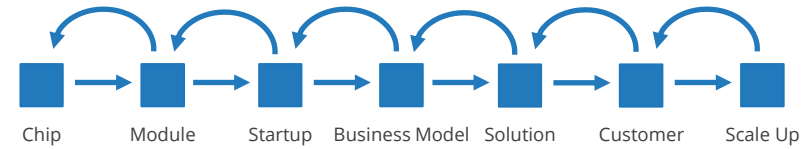
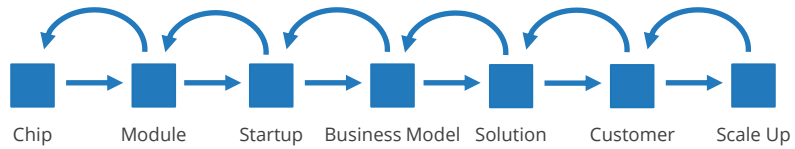
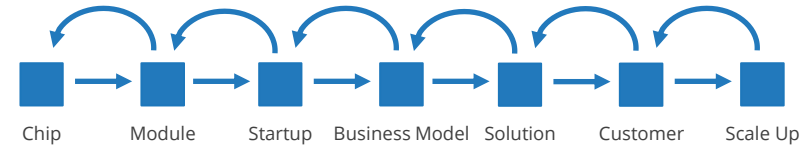
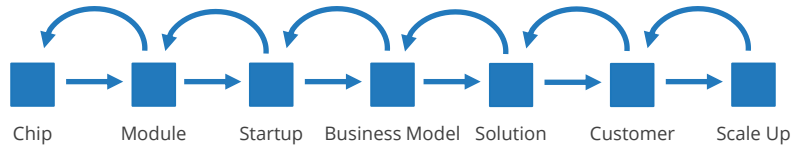
Security

Overcoming Challenges Takes Time



- Commercialization takes time and iteration
- Custom deployments take time, cost, skills

Hundreds of Use Cases; Hundreds of Solutions and Ecosystems to Built

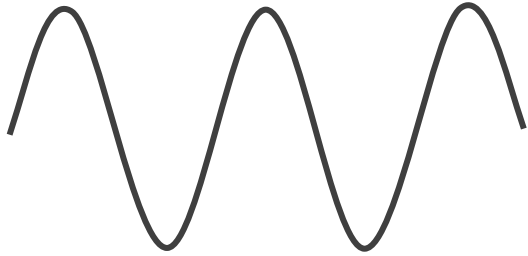


How Close to Ubiquitous Connectivity Are We?

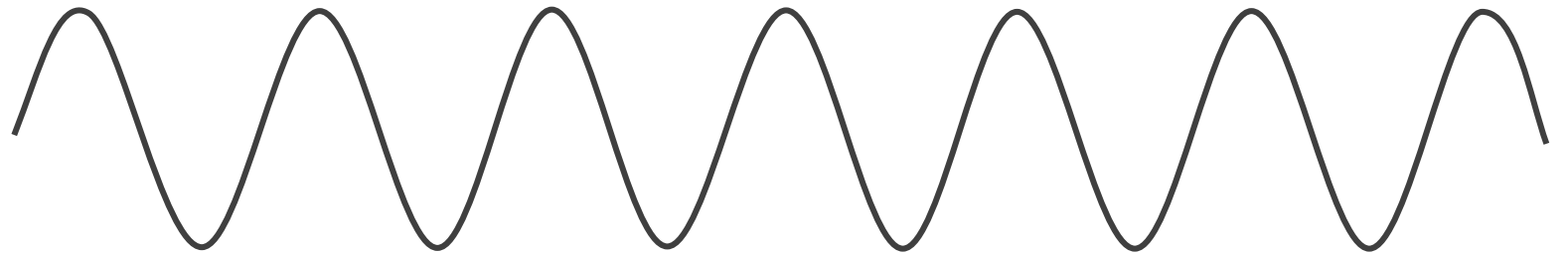
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Ubiquitous Connectivity, but High-Cost and High-Powered

WiFi/Bluetooth and Similar



4G Networks



- Higher speed
- Higher cost
- High power usage

- Surveillance cameras
- Image analysis
- Connected cars
- OTA software updates

Zigbee and Similar



2G/3G Networks

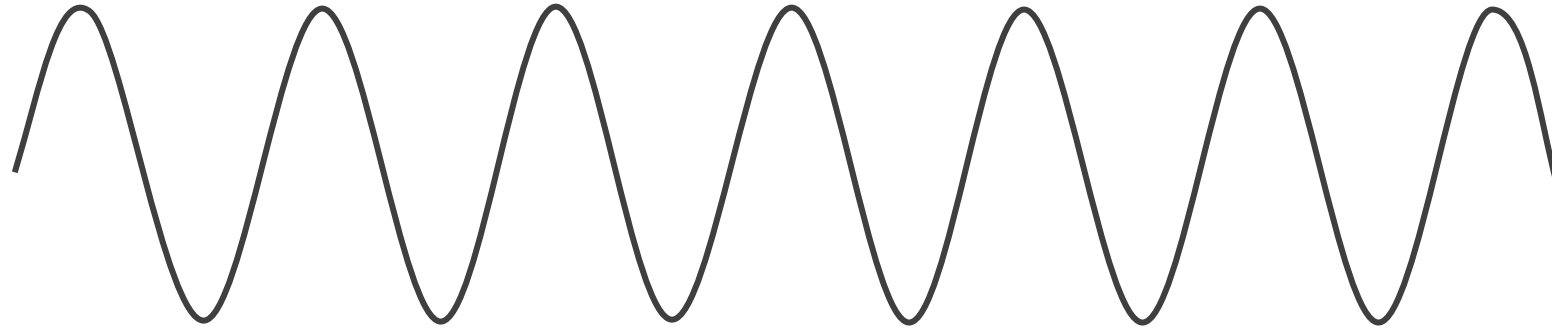


- Low speed
- High power
- Long distance (WAN)
- Low-cost modules
- Moderate-cost connectivity

- Electrical meters
- Asset tracking (powered devices)
- Vending machines
- POS terminals

Optimizing for IoT

4G Networks



With 2G/3G
Shutdowns
Underway...

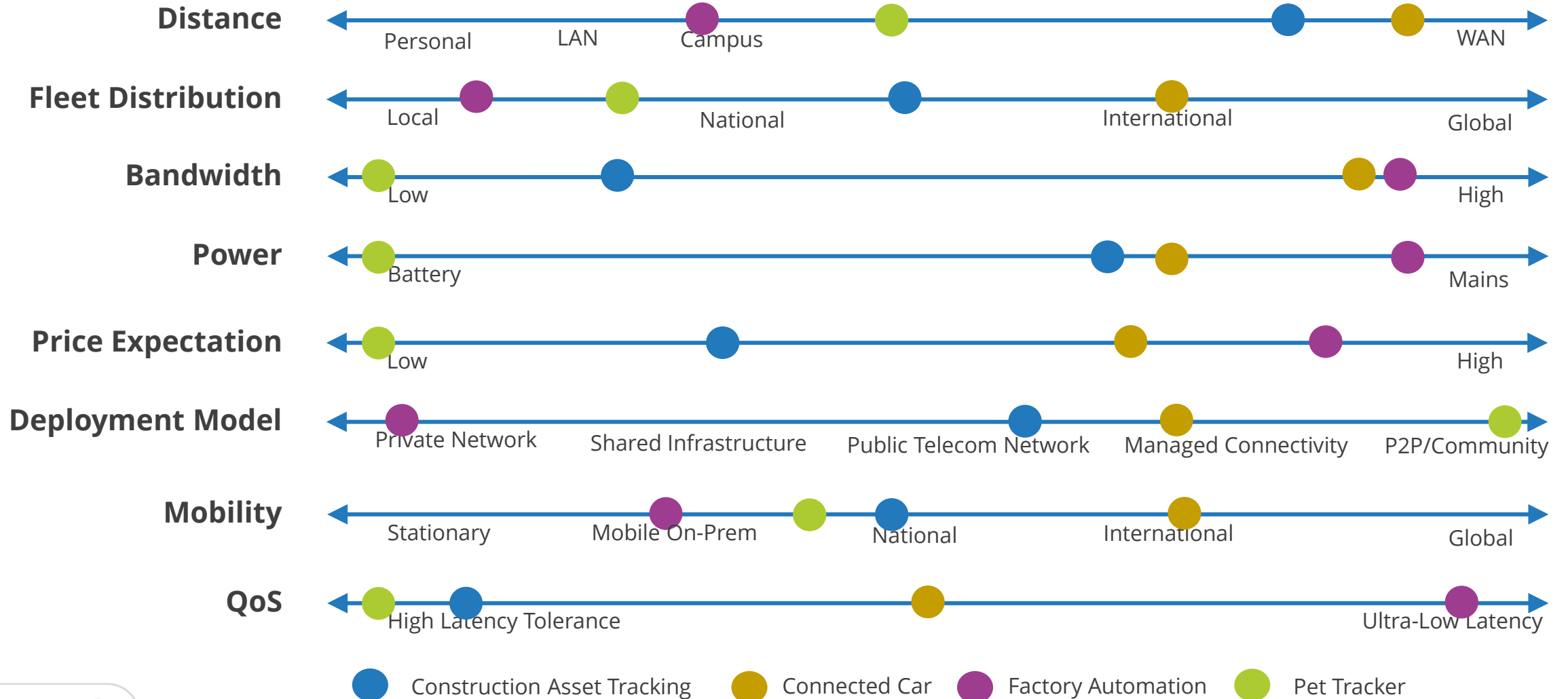
...LPWAN Networks Offer an Upgrade



LTE-M
NB-IoT
LoRaWAN

- Optimized for low-power
- Long battery life (several years)
- Long distance
- Deep in-building and underground coverage
- Low bandwidth, low traffic, low cost
- Water meters
- Environmental sensors
- Parking sensors
- Smoke detectors
- Flood detectors

Achieving Ubiquitous Connectivity Means Optimizing for Many Different Requirements



The Promises of 5G

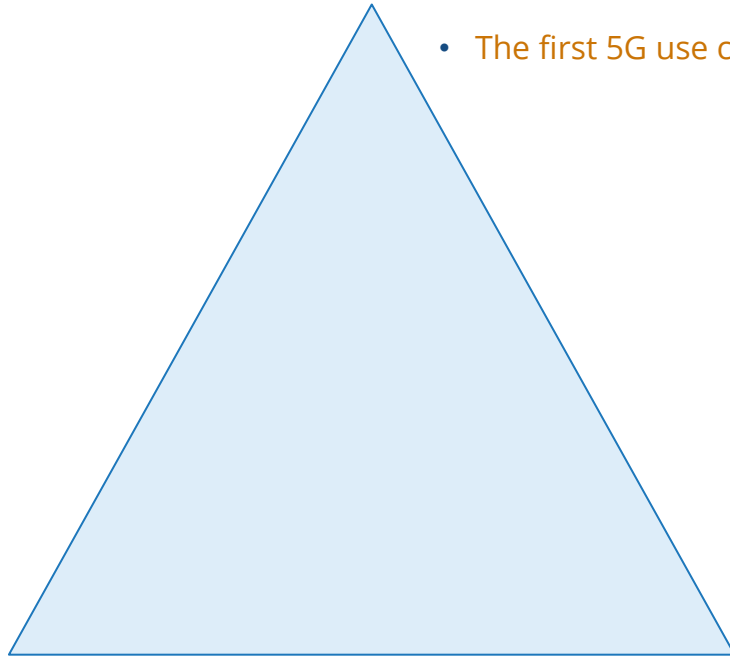
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5G Promises to Be All Things to All Use Cases ... Eventually

Enhanced Mobile Broadband

- The first 5G use case

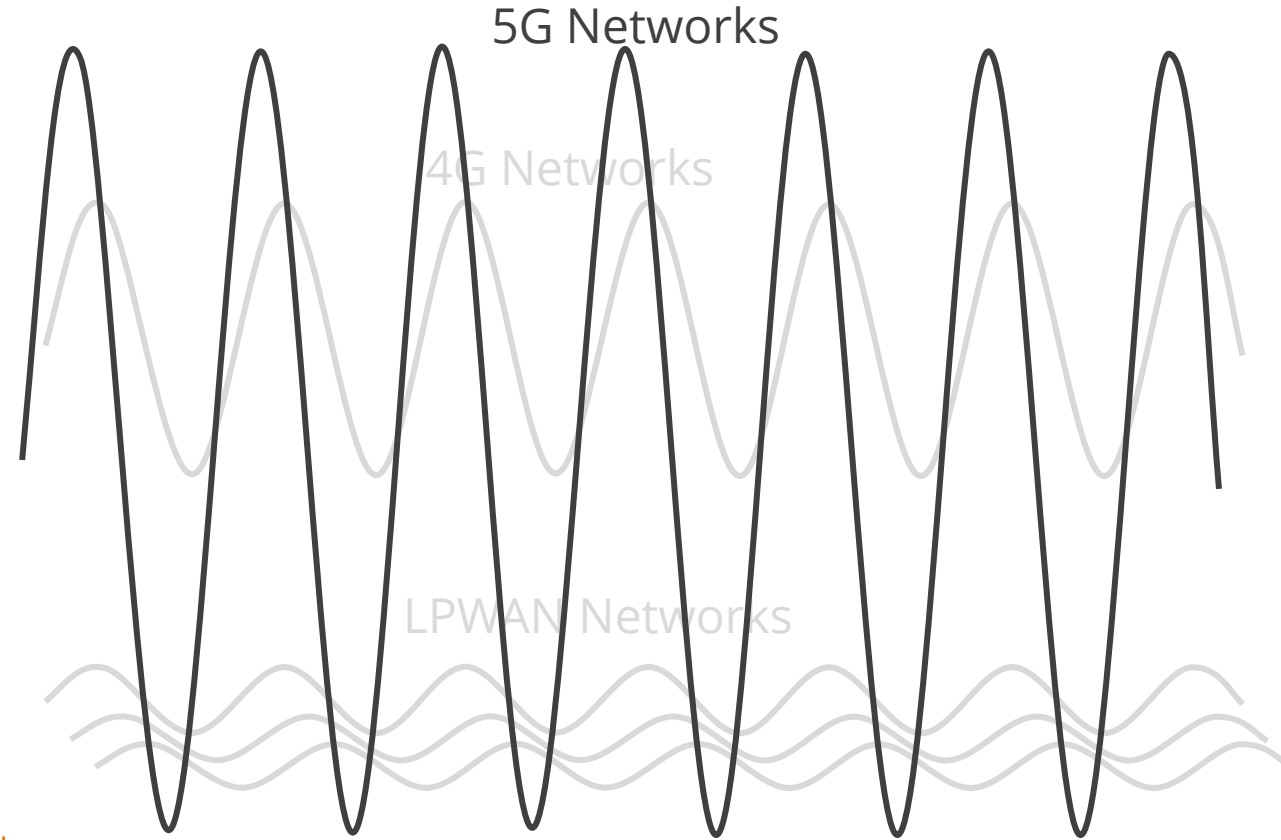


Critical Communications
(Low Latency)

Massive Machine-Type Communications
(Upgrade to LPWAN)

- Network slicing on 5G SA networks is approaching

- 5G RedCap will not be widespread until late in the decade



Still Early for 5G – And Not Yet Addressing Massive IoT

5G Module Example:

Telit FN980 5G M.2 sub-6



QTY	PRICE
1	\$436.00
1	€409.80

NB-IoT/LTE-M Module Example:

Telit ME310G1-W1 CAT-M1/NB-IoT S.SKU LGA



QUANTITY	PRICE
1	\$21.30
1	€20.00



Telefónica says its 5G network covers 30% of Germany's population

Telefónica Germany, which operates under the brand name O2 says it now operates 10,000 5G antennas in the country.



German government aims for full 5G population coverage by 2030

This goal was unveiled by the Ministry for Digital Affairs and Transport in its new Gigabit strategy plan.

5G Will Make A Huge Impact on Industries

Short-term:

- Broadband
- Private 5G networks for industrial settings



Most 5G IoT use cases will **take many years to develop**

- Private 5G is attracting very strong interest from enterprises
- Massive IoT will persist with LPWAN for several years, before 5G RedCap becomes widespread

Key Takeaways

- **IoT Market Context**
 - Organizations are convinced of the importance of IoT, but many still struggle to deploy
 - Complexity is still a great challenge, and that is largely due to the huge array of use cases, value chains and ecosystems that must be developed
 - IoT adoption is seen as a crucial tool in good and bad times
- **Ubiquitous Connectivity Is About Addressing Many Factors**
 - We had ubiquitous networks, but with narrow capabilities
 - Now in difficult transition from few networks to many, tailored for very different needs
 - IoT use cases have very different connectivity requirements; vendors and operators are making progress in addressing them
- **5G Is Not The Cure For Everything – But a Multi-Network Approach Is**
 - 5G promises a brilliant future, but it will take a decade to get there
 - Increasingly, optimal networks and devices will be available for all purposes – so the pressure shifts back toward software and solution developers



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