
Trends in IoT and Mobility



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IoT & Mobility Market Trends

- Global IoT connections grew by 18% in 2022 to 14.3 billion active endpoints. Connected IoT devices are expected to grow another 16% in 2023, to 16.7 billion active endpoints
- In 2022 there were 35.4 billion connected devices deployed globally, over 51% of the total connections were related to **building automation, security, and surveillance applications**
- 75% of all deployed devices are expected to be IoT-related by 2030
- IoT expenditures are expected to cross \$1 trillion in 2023
- There is an accelerating trend of typical IoT devices used in mobility applications



Cellular IoT Connections

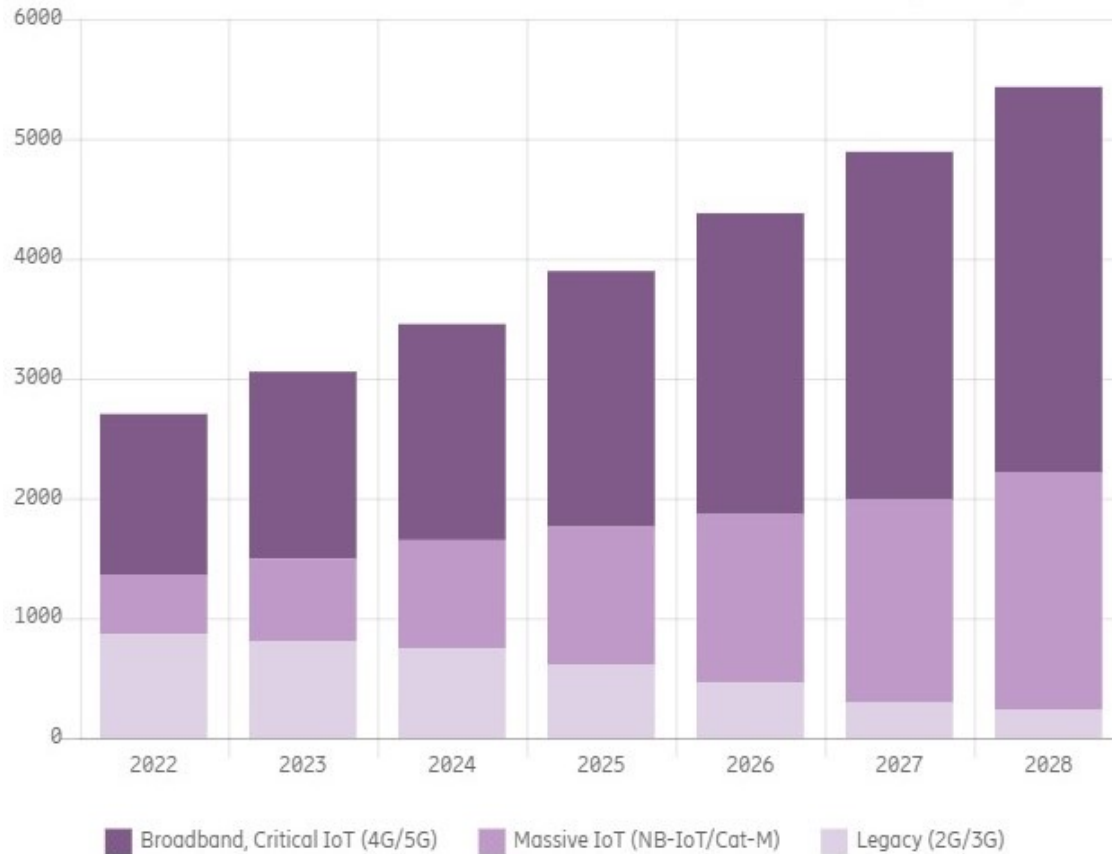
Cellular IoT

Unit: Million

Broadband, Critical IoT (4G/5G) | Massive IoT (NB-IoT/Cat-M) | Legacy (2G/3G)

Year: 2022 - 2028

Source: Ericsson (June 2023)



By the end of 2028, it is expected that 60% of cellular IoT connections will be broadband IoT, with 4G connecting the majority. As 5G New Radio (NR) is being introduced in old and new spectrum, throughput and data rates will increase substantially for this segment



IoT Platform Consolidation

“IoT services themselves don’t make enough money. The services like AWS IoT Core and Azure IoT Hub are expensive to build and maintain and by themselves they are likely not profit-making.”

Former IoT Product Lead, Microsoft

- Several major companies that were offering IoT platforms have announced discontinuations or divestments:

GE Predix	(2019)
SAP’s IoT services	(January 2023)
Ericsson IoT-A sold to Aeris	(March 2023)
Google’s IoT Core	(August 2023)
IBM’s Watson IoT Platform	(EOY 2023)
Nokia IMPACT	(???)
Bosch’s IoT Device Management	(Mid 2024)

- Some reasons for the strategic shifts:
 1. Lack of profitability in IoT services
 2. Supporting too many verticals, companies are shifting to creating solutions specific to a vertical market
 3. IoT platform must be developer friendly
 4. Relying on select partners to continue to support IoT initiatives (e.g., **Google-Litmus Automation** partnership)



LPWAN Technology Convergence

- Acquisitions are signaling a shift away from competition to co-existence and convergence:

UnaBiz acquiring **SigFox** (April 2022)


Semtech acquiring **Sierra Wireless** (January 2023)

- Some reasons for the strategic shift:

1. Experience shows most deployments utilize more than one wireless technology
2. The industry is shifting from a single LPWAN technology view to a multi-connectivity solution view
3. LPWAN companies will now be able to provide connectivity of several LPWAN technologies at the same time
4. UnaBiz announced collaborations with The Things Industries, Actility, Soracom, LORIIOT, and others to strengthen their multi-connectivity strategy



Top IoT Project Types

Main applications related to IoT projects in your organization (Global, 2022)		
Security and surveillance	40%	
Industrial automation and smart manufacturing	39%	
Process automation	39%	
Environmental, social, and corporate governance (ESG)	33%	
Advanced measurement infrastructure / smart meters	32%	
Connected consumer electronics	29%	

Base: All respondents (n = 434)

Q61. What are the main applications related to IoT projects in your organization?

Source: Frost & Sullivan



ELEVATE PARTNER SUMMIT – 2023

Technologies to Watch



Top Tech Trends in IoT & Mobility for 2023

- Edge Computing
- Industrial IoT (IIoT)
- Healthcare Remote Monitoring
- Convergence of Digital Twins and the Metaverse
- Disposable Cellular and LPWAN



Edge Computing

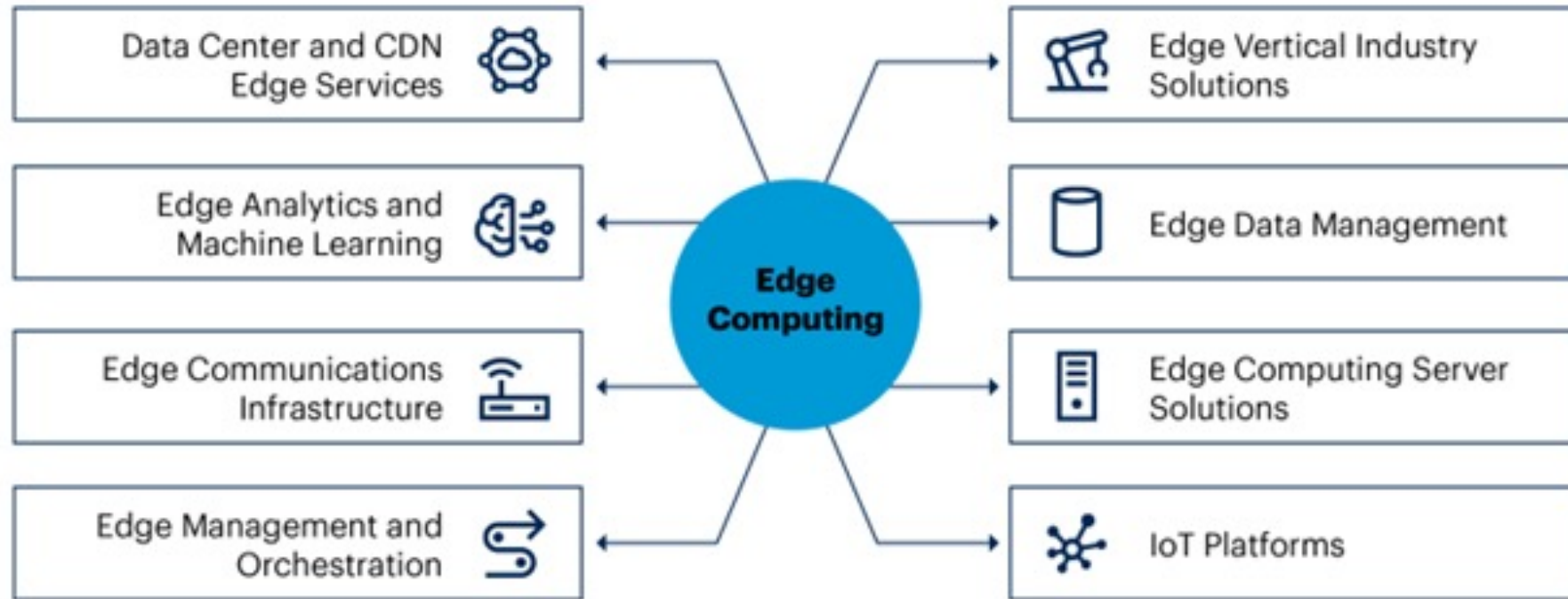
By 2023, more than 50% of new infrastructure deployed will be in increasingly critical edge locations rather than corporate datacenters, up from less than 10% today (IDC)

- In 2023 edge computing is expected to generate \$3.7 billion in revenue, a 172% growth compared to 2022.
- Edge computing addresses the limitations of centralized computing (such as latency, bandwidth, data privacy, reliability and autonomy)
- Local data storage and real-time processing support latency-sensitive applications like process control, asset management, SCADA, and more.
- 5G technology offers lower latency and higher capacity, magnifying the ability of edge compute devices to access critical cloud resources and load reactive programming.
- Edge computing is rapidly evolving, with a broad range of existing and new IT vendors creating or repositioning offerings



Edge Computing Market Segments 2023

Edge Computing Submarkets



Source: Gartner
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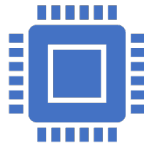


Industrial IoT (IIoT)

The global industrial IoT market size was accounted at USD 320.9 billion in 2022 and it is expected to reach around USD 1,562.35 billion by 2032. – Precedence Research



Industrial IoT is an ecosystem of devices, sensors, applications, and associated networking equipment that work together to collect, monitor, and analyze data from industrial operations



Sensors form the backbone of IIoT systems, with sensor clustering driving more complete information, but it's not just about sensors



Most IIoT deployments require a cloud platform with high degrees of analytic and ML capability, alongside being able to integrate with existing MRP and ERP systems



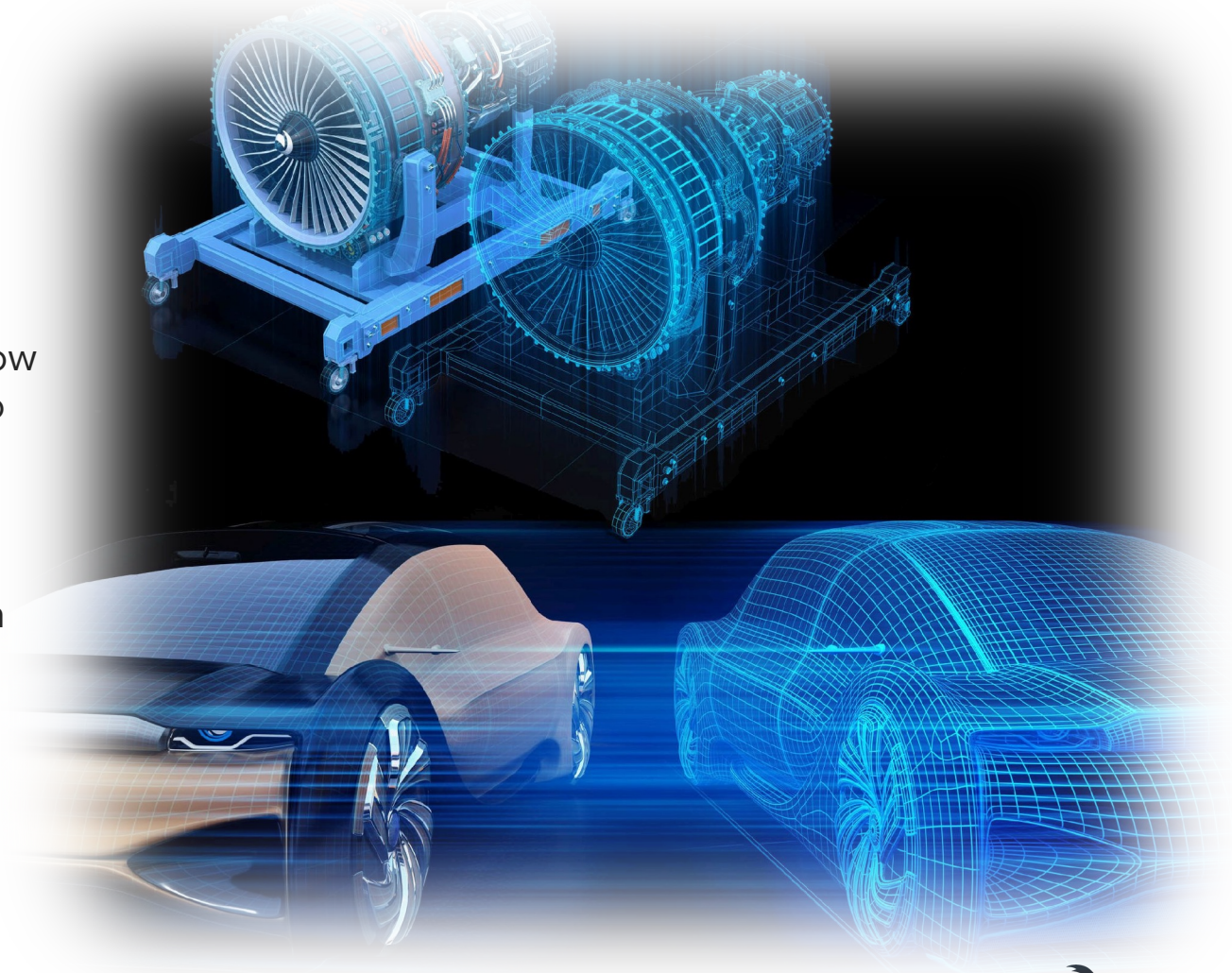
Healthcare Remote Monitoring

- The use of remote patient monitoring enables healthcare professionals to monitor patients 24/7, providing improved chronic disease management and progress tracking
- The value of the market for IoT-enabled health devices is set to hit \$267 billion by 2023, with the US the largest user.
- Global remote patient monitoring market size valued at USD \$4.4 billion in 2022 with CAGR of over 18% through 2030.
- Chronic conditions account for 90% of the healthcare costs in the U.S. annually
- Special monitors provide clinically important data pre-and post-surgery, identify symptoms, and prevent complications.
- Vital sign monitors can effectively track a patient's ECG, noninvasive blood pressure, body temp, respiration rate, and brain activity
- Home health gateways utilizing 5G/LTE cellular connections are vital components.



Convergence of Digital Twins and Augmented Reality

- Data from IoT sensors is used to build realistic digital twins. Users step inside the digital twins using AR technology like VR headsets.
- The convergence provides a better understanding of how the target works, and how adjusting variables is likely to influence business outcomes.
- Designers of factories and manufacturing plants may experiment with different machinery configurations, highlighting potential safety issues and predicting when breakdowns might occur.
- Retail planners track customer footsteps and adjust displays and promotions to monitor how this impacts customer behavior and revenue generation.



Source: Forbes

Disposable Cellular and LPWAN Devices

- Fleet and Asset Overviews 
- Location 
- Temperature 
- Motion Detection 
- Battery life 



- Shipment tracking solutions using disposable cellular and LPWAN devices are gaining traction
- Applications generally revolve around asset tracking and logistics:
 - Cargo tracking
 - Supply Chain visibility
 - Handling integrity
 - Cold-chain and pharmaceuticals
- With the incorporation of additional sensors such as temperature and motion, broader uses for disposable cellular devices are found in law enforcement, construction, healthcare and equipment rental
- Some companies currently in the disposable tracking device market:
 - Sodaq** SmartLabel
 - NanoThings** NanoTag
 - iTrak** Leaf
 - Tive** Tracker
 - EELink** Tracker

Q&A





THANK YOU

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