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# 5G RedCap – advancing IoT beyond 4G

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A wide range of new IoT use case possibilities will emerge with 5G standalone (SA) networks and 5G reduced capability (RedCap) technology.

Cellular IoT connections are forecast to have a CAGR of around 11 percent through to 2030, surpassing 7 billion by that time. The number of Broadband and Critical IoT (4G/5G) connections is forecast to double, reaching 4.3 billion by 2030. This rise is fueled by growing demand for new use cases and the need to shift away from legacy technologies, and is expected to be further uplifted by the introduction of 5G RedCap devices. Globally, 2G and 3G networks continue to be shut down to reform spectrum for use with 4G and 5G. By the end of 2023, 33 service providers had completed 3G switch-offs<sup>1</sup> and 24 had completed 2G switch-offs. In many markets, the phase-out of 3G networks is expected to be more rapid than for 2G in the upcoming years, as sunsetting 3G enables the reuse of spectrum to strengthen 4G and 5G user experiences. 2G networks, with their minimal use of spectrum, will continue to be utilized for voice and legacy IoT services for a longer duration.

## Unleashing the full potential of IoT with 5G RedCap

5G RedCap will cater to a wide range of use cases in industrial, enterprise and consumer applications, including smart wearables, medical devices, XR glasses, health monitors,

video surveillance cameras, wireless industrial sensors, utility/smart grid applications and Fixed Wireless Access (FWA). 5G RedCap technology will unlock new business opportunities by harnessing the advanced network functionalities offered by 5G SA networks. These include time-critical communication, enhanced positioning, high reliability, improved uplink throughput and network slicing. The increasing availability of 5G RedCap devices with 4G as the fallback technology is expected to stimulate the migration to 5G-based offerings.

5G RedCap technology is currently in its early stages. However, while commercial services have been launched in two markets, more than 10 leading service providers worldwide are currently performing tests and trials, with many more exploring the technology.

## An evolving RedCap device landscape

The RedCap device ecosystem is gaining momentum, with more module releases (both pre-commercial and commercial) that can be integrated into different devices.

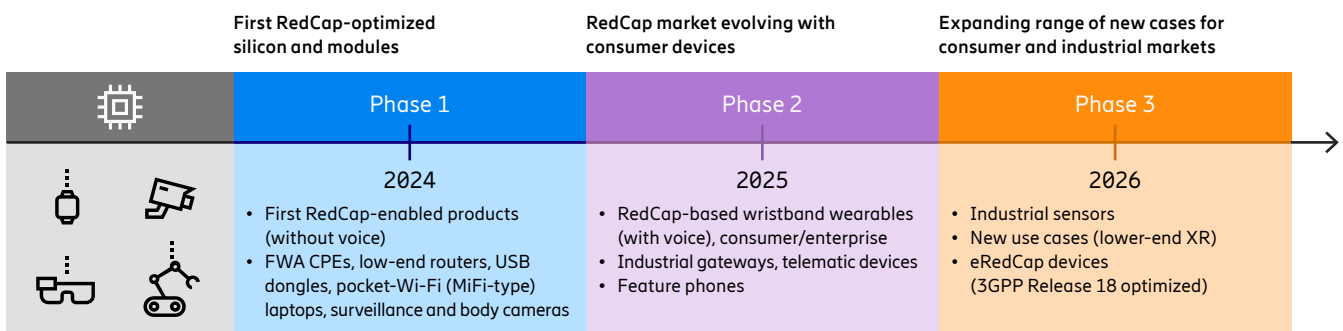
The first RedCap products were released in 2024. Ongoing testing is currently underway for inspection and surveillance cameras, as well as low-cost routers and

laptops equipped with RedCap technology. As we move into 2025, the RedCap market is set to expand into both the consumer and enterprise segments with the introduction of voice-enabled wearables, industrial gateways and telematic devices. Looking ahead to 2026, new devices are anticipated that cater to an expanding array of new use cases for consumer and industrial markets.

## Enhanced RedCap (eRedCap) broadens the addressable IoT market

eRedCap is being introduced with 3GPP's Release 18 and is designed for use cases that are currently being served by LTE Cat 1 and Cat 1 bis<sup>2</sup> technologies. eRedCap devices will feature a lower peak rate (10 Mbps versus 225 Mbps), and an optional reduced baseband bandwidth (5 MHz versus 20 MHz for data channel transmissions), enabling even lower power consumption and cost compared to RedCap. This could significantly expand the addressable market for 5G IoT devices, creating a substantial growth opportunity. eRedCap can be seen as a separate category, addressing use cases requiring reduced complexity and lower performance thresholds, while RedCap remains suited for mid-tier use cases.

Figure 27: The evolving RedCap device landscape



Note: The phases are based on Ericsson estimations.

<sup>1</sup> GSA, GAMBoD (September 2024).

<sup>2</sup> LTE Cat 1 bis is an evolved version of LTE Cat 1, providing the same capabilities with only a single antenna (instead of two), making them more compact and easier to design compared to LTE Cat 1 devices.

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