Why 6G Matters Now

Making the case for strong and focused attention on 6G foundations.

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Foundational connectivity for the AI era

With standards in development, it is vital that vendors, operators, and policymakers focus attention on the technology decisions that will shape 6G through the 2030s.

Prototype 6G systems are already in trials, and pre-standard networks and devices are planned for the 2028 Los Angeles Summer Olympics. The first commercial networks are expected in 2029, with global deployments starting in 2030.

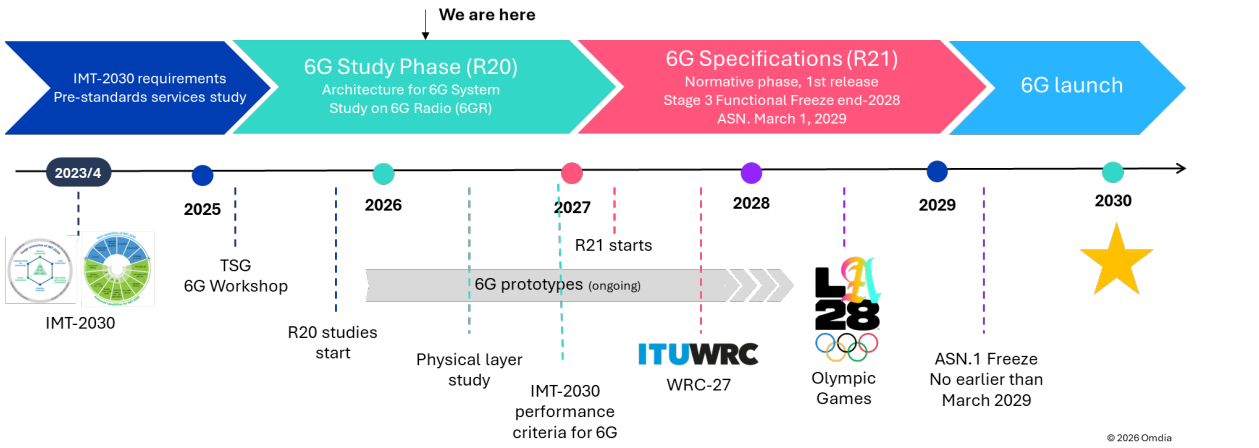
The opportunity is to create the next-generation connectivity fabric that will connect the devices, processes, and applications that define the artificial intelligence (AI) era. 6G expands the role of wireless beyond connectivity by integrating sensing, digital twins, and physical AI to unlock new classes of service and experience.

This analyst note discusses why it is important for mobile network operators, technology innovators, and policymakers to focus on 6G right now—today!

A 6G timeline – key events to track

A near-term 6G timeline is shown in **Figure 1**, and a longer-range timeline in **Figure 2**. The period from 2025 through to 2029 is most critical in shaping the initial standard. Decisions made in this period will resonate through the decade that follows.

Figure 1: Near-term 6G timeline



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Strategic technology ownership and influence

With standards work underway, there is a window of opportunity to influence how the fundamentals of the 6G system are specified. This includes the air interface, the system architecture, new protocols, and the role of AI in the network. Consider the following market makers:

- **For mobile network operators:** It is vital to direct standards toward practical, real-world deployment and operating scenarios. The operator voice is essential to keep 6G development focused and grounded in reality. Network operators will be the biggest investors in 6G infrastructure and must act to ensure their needs are represented.
- **For leading technology developers (from silicon to software and system vendors):** The standards process is an opportunity to bring R&D and innovation to the wider ecosystem and secure a foundational role in next-generation wireless. For others, participation in standards is a chance to stay up to date with the state of the art and align with industry priorities.
- **For government and policymakers:** Wireless is one of the key underpinnings of a connected society. Focused attention at this stage of 6G can ensure national industrial priorities are supported and can help key industry verticals prepare for faster adoption and more quickly capture the associated productivity gains. At a broader social level, policymakers can help ensure critical resiliency, privacy, trust, and security requirements are considered early in the 6G development process.

Spectrum allocation and technology ecosystem

Allocation of spectrum that can be used for 6G is a multiyear process. Globally, it is important for each national and regional jurisdiction to identify and make available new spectrum. A “spectrum pipeline” is critical for investment planning and building a technology and product ecosystem around the chosen band combinations.

In many markets, the upper 6GHz band (e.g., 6425–7125MHz) and/or centimeter wave spectrum in the new Frequency Range 3 (FR 3) (e.g., 7125–8400MHz) look promising. To maintain market competition, there should be sufficient spectrum for each national operator to have a “reasonable” allocation of new spectrum. The ideal is that each operator has access to the 3GPP maximum channel bandwidth of 400MHz.

In some markets, there is also a need to look for new spectrum in the mid-band range to allocate on an exclusive use and/or on a shared use basis. With World Radio Congress 2027 (WRC-27) on the near horizon, regulators have a lot to do to prepare for 6G.

Identify and track AI state of the art

Ahead of standardization, the IMT-2030 and 3GPP study groups worked to identify the key service requirements that would direct 6G development. Regional initiatives such as the Next G Alliance (US), 6G SNS (Europe), and the Bharat 6G Alliance (India) also help to identify and shape end-user requirements for 6G. These are useful and valuable initiatives.

It is vital for 6G developers to stay close to advances in the wider, real-world technology ecosystem that moves faster and less predictably than mobile standards. Today, this means tracking advances across the AI economy. Examples include advances in physical AI and autonomy (robots, vehicles), agentic AI, generative AI, and adjacent areas such as personal device constellations (including XR glasses, wearables, etc.), the aerial economy (especially drones), in environmental sensing and monitoring, and much more.

The emerging application space is extraordinarily rich and diverse, presenting the mobile industry with a greater opportunity than ever before. To make sure 6G can enable and serve AI, it is critical for the mobile industry to socialize the technology with the wider ecosystem and explain its benefits and capabilities.

6G itself will be an AI native design. AI will be deeply integrated across every layer of the 6G system, from the physical layer through to the core. “AI for network” will enable systemwide optimization and create infrastructure that can adapt in real time and autonomously to the user context and service type.

“Standard tracking” prototypes for fast launch

Deep and early involvement in standards helps organizations to stay as close as possible to 6G technology. Long before specifications are completed, leading vendors will have created prototype solutions that closely track standards to run proofs-of-concept, demonstrations, and field trials. Pre-standard pilot projects will produce learnings that can help improve standards during the development phase.

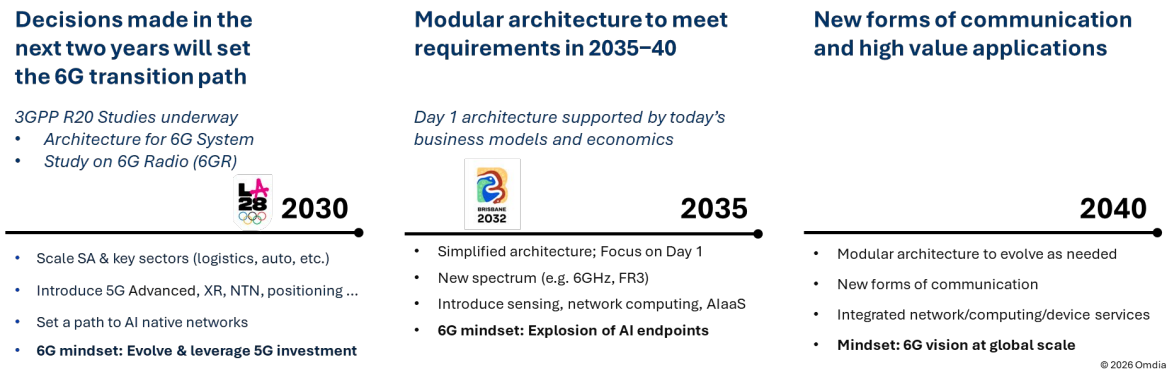
By closely tracking standards, industry players can design critical silicon components ahead of time, enabling the industry to quickly produce working products when the first standards are finalized. Standards-tracking development is a major investment in R&D and engineering that pays out later.

Standards-tracking prototype solutions can be used to create demo systems at high profile events, such as the 2028 LA Summer Olympics, and to build awareness about the capabilities of 6G in the wider online ecosystem. If, as intended, 6G delivers new capabilities that can improve productivity, then earlier and faster adoption will accelerate the economic gains.

Stay agile – a lot can change, fast

Decisions made in the next three years will resonate through the decade as 6G scales globally and becomes the dominant connectivity technology. **Figure 2** presents a longer-range timeline that emphasizes how much of the future remains unknown and why it is vital for industry to take a modular approach to 6G evolution. Above all else, it is an argument to stay close to technology, customers, and the application space.

Figure 2: A long-range 6G timeline (in phases)



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