A Phased Approach to Effective 5G Implementations

With 5G technology now beginning to empower a wide range of innovative new apps and capabilities that have the potential to affect every part of a business, it is time for organizations to develop more detailed and specific plans for effectively utilizing 5G. However, to create useful plans, it is important to understand that many of 5G's capabilities and functionality will roll out over time. Moreover, the capabilities that 5G delivers are so broad that to go from zero to full implementation in one huge leap would be overwhelming and likely result in failure. For these reasons, a phased approach will be most likely to deliver a successful outcome.

Understanding that 5G technology itself is arriving in phases and that coordinating use cases with this rollout will improve the odds of success. It is useful to understand some of the key phases of 5G. Early rollouts are referred to as non-standalone 5G, meaning that the new 5G radio access network will be overlaid on the existing 4G LTE core network. The standalone 5G rollout will come later, using the 5G radio access network on a brand-new 5G core network. In addition, different parts of the 5G spectrum, with different capabilities, will arrive at different times. Organizations can learn as they go and take advantage of the phased-implementation approach to build up the knowledge they will need to make their long-term 5G adoption fully successful.

This reinforces the benefit of building a 5G strategy using a phased, or "crawl, walk, run," approach to the plan. The "crawl" phase is about getting started with smaller, more manageable use cases that are well supported by currently available 5G and potentially 4G LTE networks. The goal is to gain experience with these use cases and ramp up functionality as future 5G capabilities arrive. The "walk" phase will likely use only 5G technology and start to take advantage of higher speeds and bandwidth of mid-band spectrum to provide completely new functionality. The "run" phase will arrive with full availability of all 5G network options and be comprised of mission-critical, foundational systems that can support use cases that would be seen as futuristic at present.

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Variables to inform a 5G adoption plan

Building a specific adoption plan for your business requires matching the planned 5G use cases with the three key variables of 5G technology: speed, latency and geographic coverage. Evaluating these variables as key inputs to your strategic plan will help create a more useful outcome and eliminate most of the surprises going forward. The technology variables include the following:

- **Speed and bandwidth:** The "crawl, walk, run" approach may match the 5G speed and bandwidth capabilities that will become available over time. For example, some enhanced mobile broadband (eMBB) use cases may be possible using today's low-band 5G networks, and as speed increases, the same app may become more robust over time. Developing a plan that aligns with the rollout of faster 5G options will position organizations to move more quickly as high-speed options become more broadly available.

- **Latency:** This aspect is important because lower latency is critical for numerous machine-to-machine or Internet of Things (IoT) use cases. For example, autonomous vehicles and devices will require very low latency. The "crawl, walk, run" strategy will also give organizations the time to review their use cases for low-latency 5G and identify how they can be deployed depending on the availability of 5G networks with low, very low and exceedingly low latency.

- **Geographic coverage:** Another aspect of 5G that needs to be included in phased implementation plans is the geographic coverage needs of specific use cases. The goal is to match the use case to the geographic coverage of higher-speed 5G networks using mid-band and mmWave spectrum. There is already very broad geographic coverage of low-band 5G. For example, an app for real-time virtual experiences that needs the highest possible 5G speeds may be limited to cities or dense population areas where mmWave spectrum will be available first.

What "crawl, walk, run" looks like today

To provide more direct and practicable insight, it is important to look at the phased approach as it stands today. What is clear is that there are immediate benefits to be had. One population of workers that could immediately benefit from 5G are remote field workers, such as electricians, plumbers, service techs and other workers
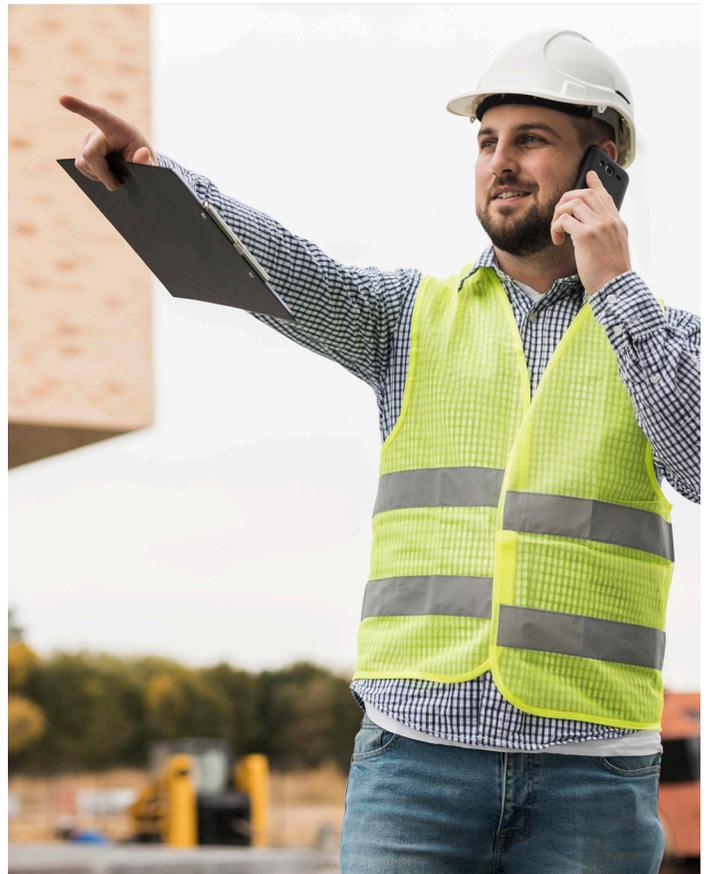
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in trades where there is no office and the bulk of their workday is spent connecting remotely. These workers depend on remote connectivity to conduct video calls, access and update files and forms, and otherwise interact with the home office to complete projects on time and on budget.

Taking a broader perspective of use cases, it's possible to develop some level of understanding as to how the "crawl, walk, run" strategic approach can be viewed today. The following provides that wider perspective:

- **Crawl:** Right now there are numerous ways the first 5G use cases can be deployed. The starting point is the initial adoption of 5G networks and devices (phones, tablets) offering 30 to 50 Mbps bandwidth. The focus is either making current applications more usable or new apps that can be deployed now. Examples include better performance for existing use cases, with improved speed and bandwidth enabling

from virtually any location. The speed increase for file transfers (uploads and downloads) will be noticeably faster, making it possible to empower remote users with more access to important data. This will drive improved productivity gains, particularly at remote work sites that need full access to information and applications.

- **Run:** This phase will be a bit further down the road, leveraging future and more advanced capabilities of 5G beyond just speed (e.g., low latency). One use case will be interactive or immersive experiences potentially including graphical or instructional overlays via augmented and virtual reality headsets. This may support better on-the-job training or the ability to have teams simultaneously work on big-picture projects and experience them together virtually. With the ability to integrate human and digital experiences, organizations will benefit from faster operations overall, higher quality of service and more impactful customer experiences that improve retention.

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data-intensive remote applications and eventually early-stage connected IoT. One specific use case might be enabling reliable video calls in more locations to keep teams updated and aligned, reducing the need for in-person meetings.

- **Walk:** The second step will occur in conjunction with the expansion of the 5G network, specifically the low- and mid-band spectrum, for a faster experience closer to 300 Mbps. This performance increase will make it possible to improve several use cases. One example is the availability of high-definition video calls to or

Key takeaways

5G is no longer an emerging technology, and it is time for organizations to explore use cases and exciting new apps and solutions 5G could support. The key is to take the first step now and explore where "crawling" can deliver a competitive edge in the near future. Gaining relatively immediate benefits from current 5G networks is simpler than many might think. Both field and in-office workers will benefit from the evolution of 5G, and a phased adoption plan must consider both.

T-Mobile is a leader in 5G technology and solution support services. It has already deployed the first standalone 5G network, along with the largest nationwide 5G network. T-Mobile's commitment and experience in delivering broader geographic implementation of technologies such as mid-band spectrum and standalone 5G make it an ideal partner to consult. For more information on how you can build your plan for 5G and a better understanding of how T-Mobile can support your 5G activities, visit **www.t-mobile.com/business/coverage**.