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Why AI-Enabled PCs Need 5G

By Bob O'Donnell

Navigating through the overwhelming stream of promising technological advancements that we all encounter every day, it's easy to get a bit skeptical. After all, many highly touted technologies end up being little more than historical curiosities.

But in some cases, technology's impact really is profound. About 30 years ago, thanks to the launch of a software application called a browser, the notion of the Internet came onto the scene and it's fair to say that business and the world changed dramatically. Now, with the launch of Generative AI tools like OpenAI®'s ChatGPT, we're on the cusp of what promises to be an equally if not even more profound set of changes.

As a result, most companies are eager to leverage GenAI to help make their employees and operations more productive. In fact, a recent study of over 1,000 US-based businesses conducted by TECHnalysis Research shows that 90% of companies who've started using GenAI have already put at least one application into production and more than 2/3 of those companies are using the top 5 GenAI applications. (See **Figure 1** for more details on the percentage of companies who are using each of the different tools.)

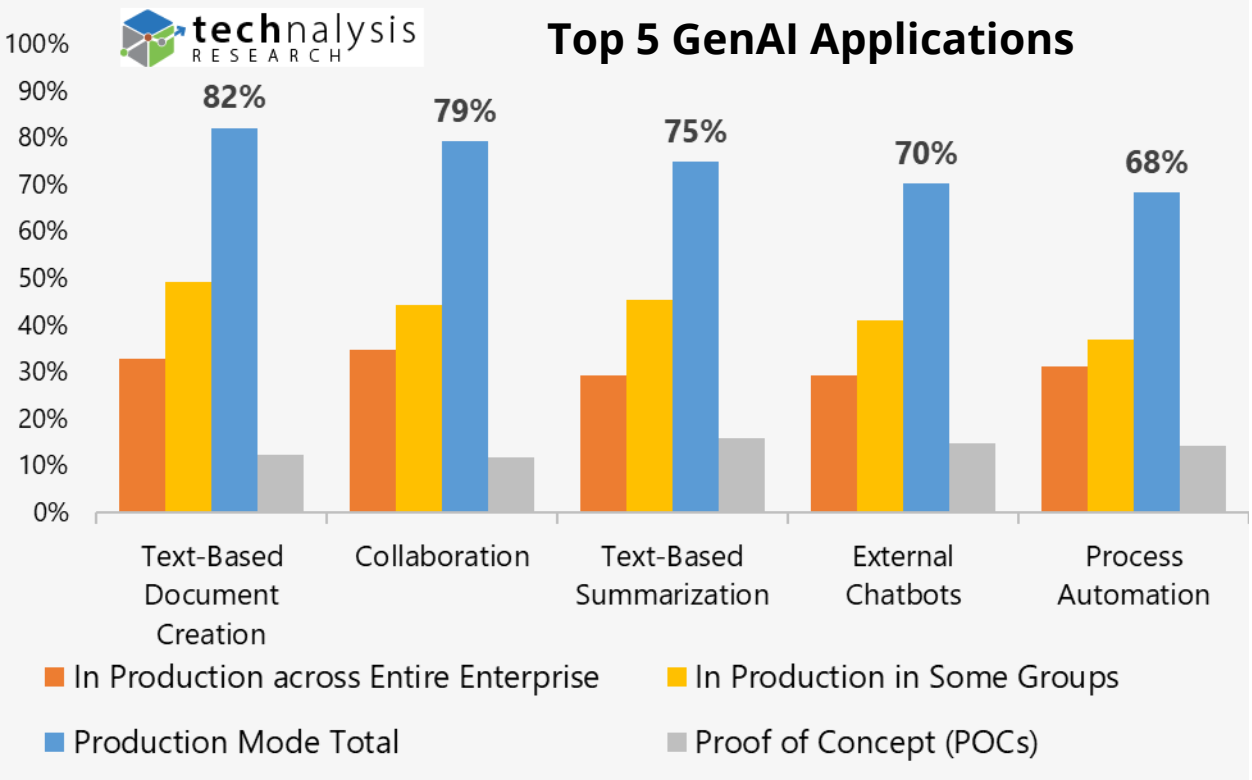

Fig. 1

At present, most of the applications offering these capabilities, including ChatGPT, Microsoft® Copilot 365 and Google® Gemini, run in the cloud. Having access to them requires the kind of consistent, speedy, always-available connection that a 5G modem-equipped PC can offer from almost any location and any environment. But another important trend being driven by interest in GenAI is the creation of a new category of PCs specifically designed to run AI applications. Microsoft® calls this new type of AI PC Copilot+ PCs. These new machines—many versions of which were recently released by all the largest PC brands including Dell®, HP®, Lenovo®, Microsoft®, Samsung® and others—incorporate specialized processors called NPUs (Neural Processing Units) that are specifically designed to make new AI-powered applications possible on the PCs themselves.

As a result, we're starting to see new AI-enhanced features being incorporated into mainstream applications from companies like Microsoft®, Adobe®, and Zoom® as well as directly into Windows itself. Over the next few years, the number and type of applications that will leverage a PC's NPU (as well as GPU and CPU) to run AI-enhanced

functions is going to explode. In fact, it will likely lead to entirely new types of applications and services.

As important and capable as these on-device AI applications are going to be, however, they will not reduce our usage and dependence on cloud-based AI applications. Some of the biggest foundation models powering these AI services need massive data centers equipped with thousands of high-end NVIDIA® and AMD® GPU chips in order to run. That's not going to be easily replicated on a PC—or, at least, not for a very long time. As a result, the most common way for organizations to use GenAI-powered applications will be a hybrid approach where some applications and services they intend to use are only in the cloud, some are only on the PC and most will end up leveraging a combination of the two: in short, Hybrid AI.

The exciting thing about Hybrid AI is that it offers the best of both worlds in that it gives full access to the most powerful hardware and software capabilities ever created, but it can also take advantage of the immediate response you get from running applications on your own PC. Plus, running applications locally lets you maintain your privacy and helps prevent personal or proprietary business information from leaking out onto the web. In addition, as we start to see the creation of AI-powered agents that automatically perform tasks on our behalf, there will end up being a complex web of interconnected AI models and applications that work across both our PCs and the web-based resources—again, Hybrid AI.

Of course, the only way that can happen on a consistent basis is via always-on connectivity and the only way to achieve that on a PC is with a built-in 5G modem and connected cellular data service. As popular as WiFi may be, there are simply too many times and too many places where it's not available, not reliable and/or risky. Broadband 5G cellular connections, on the other hand, have become nearly ubiquitous, making it the most consistent, most reliable and often the fastest means of connecting a PC with cloud-based AI applications.

Because GenAI-enabled applications are expected to become an integral part of how we all work on our PCs and because most of these applications will need to leverage an internet connection in order to function most effectively, the importance of that constant connection between the PC and the web is only going to grow. In fact, people are going to start feeling restricted in how they use their new AI-enabled PCs if those connections aren't available. That's why 5G connections are so critical .

In addition to AI applications, 5G connectivity on PCs has many other benefits as well. First, our dependence on using the web for even non-AI applications continues to grow so it's essential for PCs to be connected all the time. Unfortunately, as many frequent travelers often discover, the availability, reliability and speed of WiFi connections can be wildly inconsistent, often leading to poor-quality video-based meetings, missed emails and much more. Generally speaking, 5G data connections don't run into these types of speed issues. Plus, even if free WiFi is available, in order to get the kinds of speeds that are necessary to properly conduct a video call often requires paying an expensive daily fee, the total costs of which can add up quickly.

In addition, as has been widely reported, there are often security concerns involved in using unsecured public WiFi networks. While no type of network is completely free of security issues, there's no question that cellular network connections are more secure than most of the public, unsecured WiFi connections people often rely on.

Finally, some PC vendors have even started to use cellular connections built into PCs to do asset tracking, remote wiping of the hard drive in the event of a lost device, and other clever applications that can be a critical part of many companies' PC management services.

Carriers like Verizon have started working with PC vendors to help drive the adoption of this new category by launching dedicated unlimited 5G data plans for cellular laptops starting at $30/month for qualified purchasers. These plans help enable users stay securely connected to Verizon's 5G network from virtually anywhere.

As we launch into 2025, decision makers may want to consider upgrading their non-connected business laptops to connected laptops with cellular network capability for a few reasons. First, their laptops may be outdated and unable to run newer software, like AI applications, as intended. Second, even those with well-functioning laptops may decide to upgrade to be able to run Windows 11 because the End of Support (EOS) for Windows 10 is happening in the Fall of 2025. Finally, in my opinion, the buzz around GenAI applications leads me to believe that future PC usage demand for AI-enabled PC connected laptops on cellular network plans will be strong.

As a result, companies who want to enable their employees to have the best possible AI experience and leverage this new technology should strongly consider investing in the latest generation of AI-capable PCs and ensure that they have integrated 5G modems.

It's a combination that now makes more sense than it ever has. Thankfully, there are a number of new 5G-equipped PCs coming to market and, in conjunction with 5G data plans from carriers like Verizon, IT buyers who purchase these devices can help further many goals simultaneously, all of which can help lead to successful and productive deployments of one of the most important technologies in a generation.

Bob O'Donnell is the president and chief analyst of TECHnalysis Research, LLC *a market research firm that provides strategic consulting and market research services to the technology industry and professional financial community. You can follow him on Twitter @bobodtech.*