



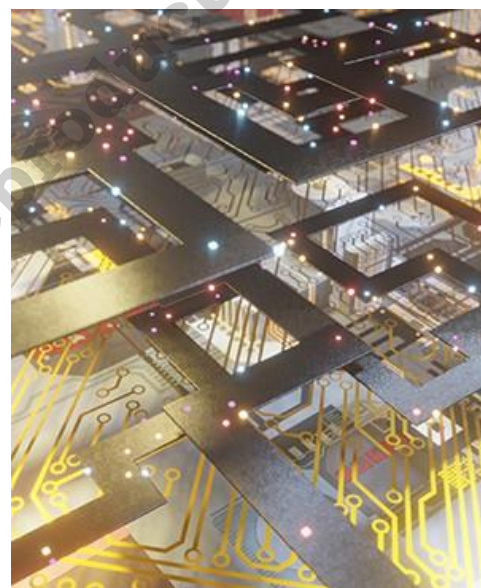
[www.pipelinepub.com](http://www.pipelinepub.com)

Volume 20, Issue 12

## The New Network Ecosystem

By: [Douglas Tait](#)

The communications industry has undergone a major paradigm shift over the past decade, significantly impacting all industries and reshaping network ecosystems. Cloud technology has laid the foundation for Artificial Intelligence (AI), leading to a revolutionary shift into all industries. AI is rapidly changing how we build networks and is accelerating cloud services into the communications space. With the cloud taking on more network processing, the Internet of Things (IoT) and edge computing have become more relevant. AI, IoT, edge, and cloud are redefining networks and creating a new network paradigm that is changing how businesses communicate. Together, these technologies create a new, interconnected and intelligent communications ecosystem, driving innovation and growth.



### Edge Computing and IoT

Innovation in every industry could be enhanced by access to real-time, secure, reliable communications enabling their services. A few examples of this kind of innovation include:

- Helping first responders save more lives by quickly connecting the right personnel and information to a called-in incident.
- Enabling construction scheduling and disputes to be readily resolved by giving access to real-time data to the contractors, owners, and architects from a construction site.
- Allowing restaurants to readily adjust prices, optimize the kitchen, and better maintain inventory by connecting all the data points in real time.
- Helping factories and utilities to run more efficiently by not only monitoring their sensors in real time but allowing them to issue commands out to actuators in milliseconds.
- Enabling healthcare providers to provide better service by giving instant access to real time and historical patient data to all authorized hospital staff and clinicians.

Real-time data, or real-time communications between processes and people, has applications in every industry. Building these kinds of systems was previously fiscally impossible due to the high cost of on-premises processing and networking. Shifting most of the services to the cloud, leveraging commodity networks, and the development of more affordable end devices, are opening businesses to a new realm of possibilities.

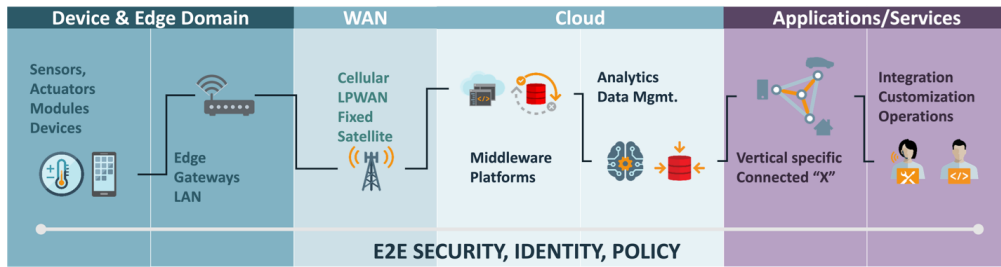


Figure 1  
[click to enlarge](#)

The key ingredients making the paradigm shift to the new network ecosystem, as depicted in Figure 1 above, include:

1. Devices: affordable sensors, actuators, smart phones, video cameras, tablets, and even PCs.
2. Edge Computing: the combination of a small computer, WIFI, and SIM enabled, edge computers handle local connections, aggregate data, cache, or disconnected processing, as well as local IoT device management.
3. Network: reliable access through a public mobile network to either a public cloud or a private cloud.
4. Industrial Cloud Applications: best-of-breed industry focused solutions.

This architecture, encapsulated in following diagram, can be applied to any industry:

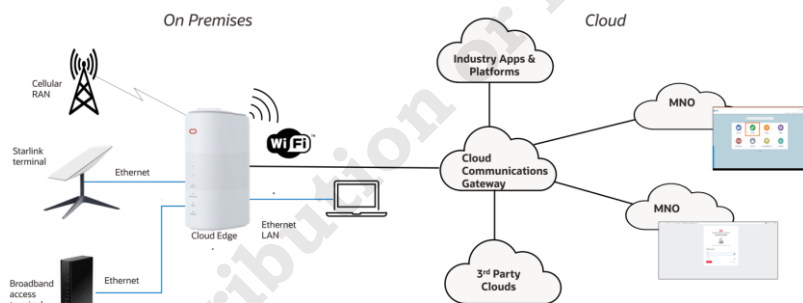


diagram  
[click to enlarge](#)

The concept of IoT has been around for decades but has remained niche due to the overarching cost to build an IoT system. By moving the primary IoT processing into a cloud “subscriber” economic model, and by providing a localized edge computer, IoT becomes an affordable, innovative networked solution.

## Artificial Intelligence (AI)

The rapid entry and accessibility of AI has left C-level executives challenged to see where and how this fits into their business model or how their business model needs to evolve. Just when companies are finally figuring out how to secure their networks, how 5G affects their bottom line, and which IoT technologies are required to run their business, along comes AI to upset the apple cart. AI has created a new network economy where services like speech-to-text, digital assistance, or language recognition, may be readily introduced into a network architecture.

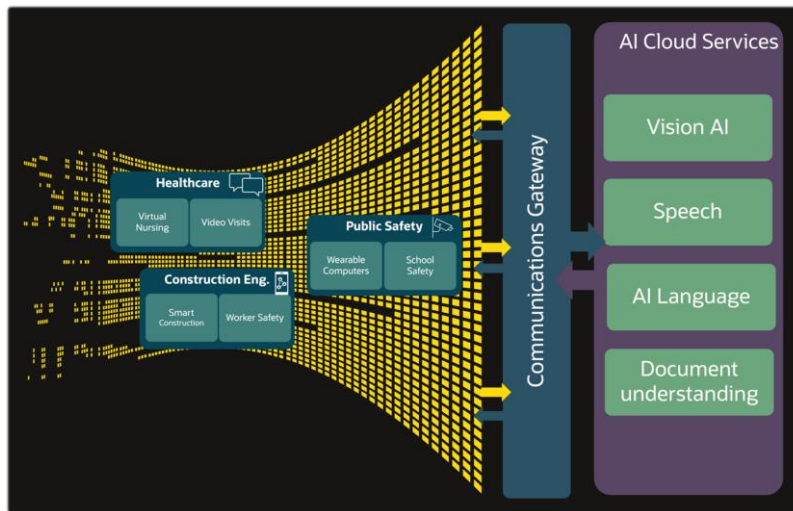


Figure 2  
[click to enlarge](#)

When viewed as a whole, AI may seem a complicated and a somewhat unnerving prospect. But dividing AI into its constituent components makes specific AI services easier to adapt, while greatly enhancing the service well beyond their intended use. For example, adding facial or object recognition to a video security system could dramatically enhance the security profile. Including speech-to-text into recorded calls could produce a transcript to memorialize the discussion. Different languages may be identified and translated in real time during calls.

AI is far too big, complex, and expensive for most companies to own, but AI embedded in a cloud service allows companies to tap into the capabilities as a subscription model, only consuming and paying for what is used. While generative or conversational AI has now become readily available in IT or over the internet, connecting AI to existing telecommunications requires additional processing to mediate and coordinate a voice network into AI cloud services, as represented in Figure 2 above by the communications gateway.

## When and Where Do I Go AI?

Metrigy's *AI for Business Success 2024-25* research study found that more than 48 percent of companies are actively using AI in customer and employee interactions, with an additional 33 percent running AI pilots. This is dramatically up from the 27 percent using AI in 2023. Why the sudden leap? The answer: access to AI services. Prior to 2023, there was little to no access to AI solutions, and any AI solution was quite expensive. Now every IT company or public cloud offers AI solutions as either an add-on to existing solutions or interfaces for programs to access AI services. Figure 3 below is a snapshot of cloud AI services, the AI supporting platforms and infrastructure:

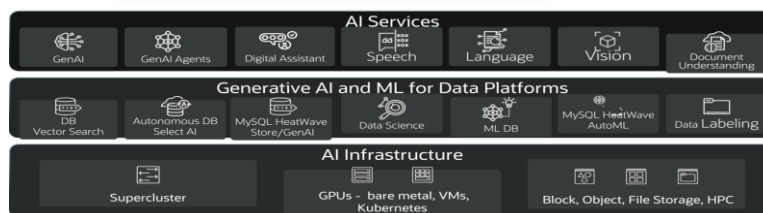


Figure 3  
[Click to enlarge](#)

Conventional wisdom for any business project would be to examine the problem you are trying to solve, the business goals, and the resources provided. But the rollout of AI has been anything but

conventional, and the integration of AI services may be taxing. Most companies have taken a lab or “proof-of-concept” approach to AI. A communications proof-of-concept provides a low risk, cost effective way to explore the potential of AI technologies, helping to make the final solution more robust, scalable, and aligned with the goals of the business.

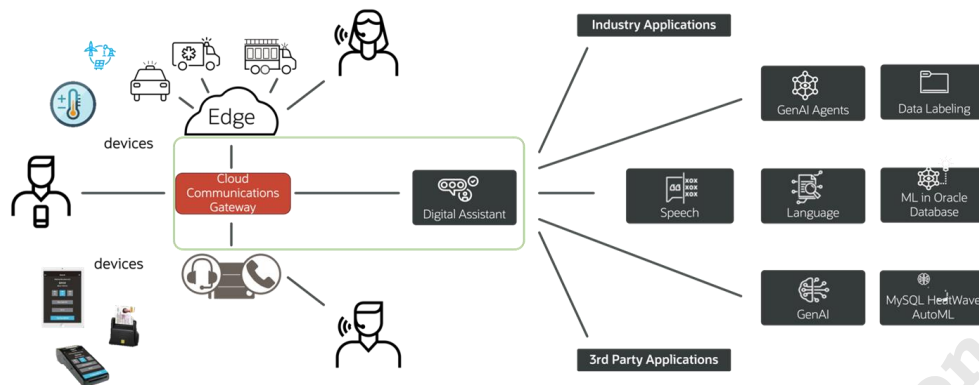


Figure 4  
[click to enlarge](#)

For a communications network, the most obvious place to insert AI elements is where customers interact, either with the network or with each other. Where the access to AI is not directly from the internet, such as voice calls, IoT devices, or streaming video, a cloud communications gateway is required to make connections from a given network into cloud AI services, as illustrated in Figure 4, above. The AI services that readily enhance a customer experience are speech-to-text, language recognition, machine learning, GenAI, and a digital assistant. The information that AI services may provide in communications include:

- Voice transcription: Captures a written record of voice/video communications which could be added for record keeping.
- Text-to-speech: Enhances interactive voice systems.
- Customer name recognition: Automatically pulling up their records and preferences.
- Call or dialogue summary: Summarizing an interaction in a legal or clinical setting could be useful in any industry that requires reporting.
- Recommendations: Prompts can be suggested based on the call dialogue, such as writing a script for a patient or scheduling a second meeting.

## The New Network Ecosystem

Cloud computing is changing communications, ushering in IoT and providing greater access to AI. The rapid entry of AI into every industry has CSPs searching for the right architecture for their ongoing 5G deployments. With readily available access to AI, and service infrastructure moving to the cloud, network communication providers are looking at hybrid cloud solutions utilizing edge computing while inserting AI. The key to successful innovation is connecting IoT and edge devices to cloud resources and services.