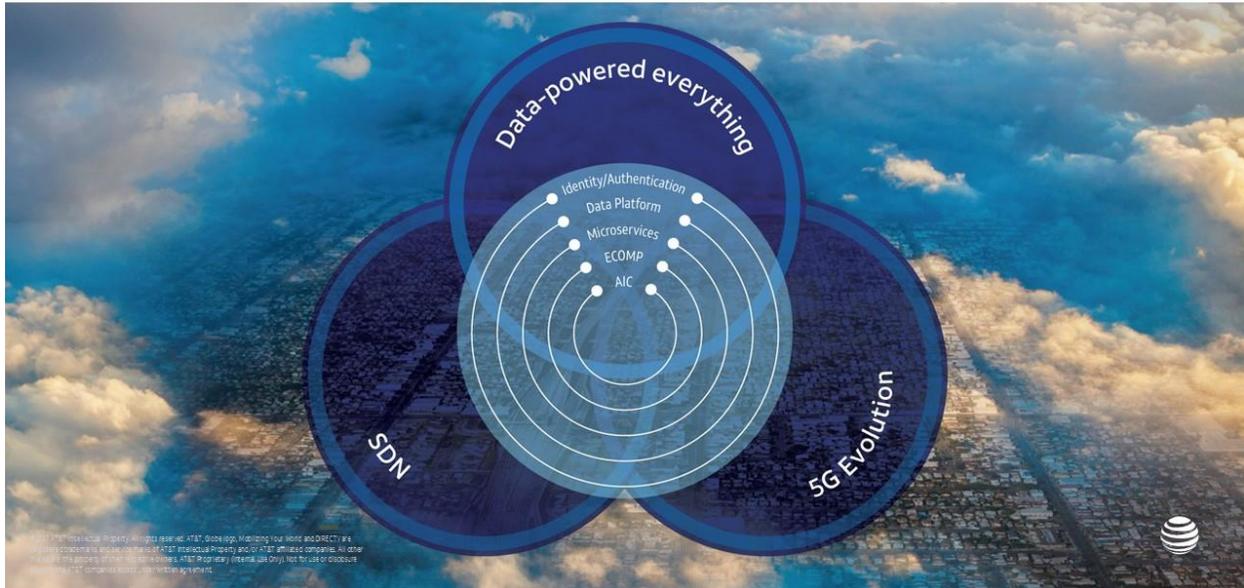


## AT&T NETWORK 3.0 INDIGO



A decade after smartphones sparked a mobile revolution, innovation is only accelerating. Games, music and movies at the touch of a button. Virtual reality. Voice-controlled home assistants. Self-driving cars. Each device and application is more amazing than the last. And yet the networks that enable all of those modern miracles are still seen largely through the same lens we used 15, even 20 years ago.

We need to think about the network in a whole new light. We should expect the network experience to evolve as rapidly as every other piece of technology in our lives.

The network of the future will be more than just another “G”, moving from 2G to 3G to 4G and beyond. It’s about bundling all the network services and capabilities into a constantly evolving and improving platform powered by data. This is about bringing software defined networking and its orchestration capabilities together with big data and an emerging technology called microservices, where small, discrete, reusable capabilities can team up as needed to perform a task. And, yes, it’s about so-called “access” technologies like 5G and our recently-announced Project AirGig. Put all that together, and you have a new way to think about the network.

We call this new network platform AT&T Network 3.0 Indigo (“Indigo”).

We see this as the third generation of modern networking. The first stage encompassed 2G wireless technology. The second stage was about 3G and 4G and laying the foundation for software defined networking and network function virtualization.

With Indigo, though, we’re thinking about a lot more than just the type of wireless connection. As we move to LTE Advanced and begin our 5G Evolution, we’re approaching a point where superfast wireless connections will become essentially indistinguishable to the end user. Once you’re on a connection

measured in hundreds of megabits, or even gigabits, per second, further incremental speed gains are harder to perceive for many applications.

What you care about is your experience. Can I get a high-quality video stream of the new season of my favorite show that launched while I was riding home on the train? Can I share a live VR feed of my trip to the beach to my followers on social media? Can my bank's data center establish a highly secure connection to AT&T's data center when I'm traveling to automatically authorize my purchases while also helping to protect me from fraud, without me ever having to know?

A lot has to happen to make this vision a reality. We're ahead of the game on much of it. And we'll increasingly look to the broader development community for open engagement to help us push further. For example, we've said that we'll virtualize 75% of our network by 2020. By transforming physical network gear into software – the same way you replaced your stereo with a streaming music app on your phone – we can add capacity faster and give our customers more control of their network services.

Data on our mobile network has increased about 250,000% since 2007, and the majority of that traffic is video. We see no sign that pace is slowing down. If we want to stay ahead of that wave, if we want our customers to continue to have a great experience, we have to become software-defined. We have already virtualized 34% of our network functionality and are on track to virtualize 75% by 2020.

At the same time, we will soon release into open source ECOMP, the orchestration engine that powers our software defined network. While ECOMP is one of the biggest software projects we've ever done at AT&T, we know we need to tap into the expertise of the broader developer community. We're currently transitioning the code to the Linux Foundation to release soon into open source. Any developer will be able to build for it. Any service provider will be able to use it.

Likewise, our Big Data team is rethinking how we analyze and track data, and how we help to secure it while respecting privacy choices and requirements. This is for our own data internally, but also to foster data-sharing communities on our network.

- This could be a healthcare data community with doctors, hospitals, pharmacies and researchers. They could collaborate on analytics in a trusted environment that spans organizations, yet controls permissions.
- It could be a smart cities coalition of governments and universities. They could conduct machine learning on broad sets of traffic data, without compromising on motorist privacy.
- It could be you, taking a trip across the country and having your credit card and smartphone sync perfectly so that the card works for you, but not for someone who steals it.

All of that – and more – is Indigo.

We know this is a radically new way to think about networks. We're all accustomed to thinking in Gs. We think this data-powered and software-defined approach is a closer match to how people will actually use and experience a network in the next few years as speeds become less of a measuring stick. And we expect this platform to evolve and accelerate over time, just like your phone's operating system and the apps that run on it.

We'll share more about Indigo and what it means for business and consumers over the coming weeks and months.