

**Note:** File as 'Briefing'

**Title:** 5G Impact on the Financial Services Ecosystem

**Hook:** In this report we opine on 5G's potential to foster new and improved user experiences in the financial services sector including retail payments, personal banking, and e-commerce.

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## Introduction

After years of hype, 5G is finally becoming a reality in many places around the world. Due to factors such as the timing of 3GPP standards releases and device availability, the initial focus of 5G deployments will be mostly on enhanced 'fixed' and mobile consumer broadband services which bring ultra-fast broadband performance without wires. Over the next several years 5G networks will become ever more capable using advanced technologies like virtual network slicing and multi-access edge computing to deliver capabilities never possible via cellular wireless. These include ultra-low latency communication services and the ability to support massive numbers of IoT devices from a single radio tower. In the past few months a variety of 451 clients have asked us a similar question which boils down to "What is the expected impact of 5G on the financial services industry?". In this Spotlight report we will provide a baseline on what 5G is and how it might impact the Fiserv ecosystem.

## The 451 Take

5G is about to make the leap from market hype to mainstream. In some places in the world such as the United States and South Korea, wireless customers are already using 5G devices such as the Samsung S10 5G and accessing the first 5G commercial network services. So what? The business case for 5G is still not crystal clear and the hopeful "If we build it, they will come" is a predominate, early investment thesis. Do we really need all that performance given how we use our devices and applications today? What 'new' will 5G bring that isn't already possible? In financial services 5G could provide a booster shot to many of the apps and experiences we already use but also create completely new experiences that take advantage of 5G's performance. High bandwidth and ultra-low latency performance will make mobile commerce transactions faster, ensure seamless video experiences, better AR/VR integration into financial transactions including retail banking and m-commerce.

## 5G Basics

5G is the fifth generation of wireless cellular technology, which has evolved over the years from 1-4G (LTE). While earlier generations were predicated on delivering mostly 'consumer' capabilities, 5G takes connectivity to the next level by enabling previously impossible use cases to create a more connected world. These use cases can be grouped into three distinct categories: enhanced mobile broadband (eMBB), ultra-reliable low-latency communications (URLLC) and massive machine-type communications (mMTC).

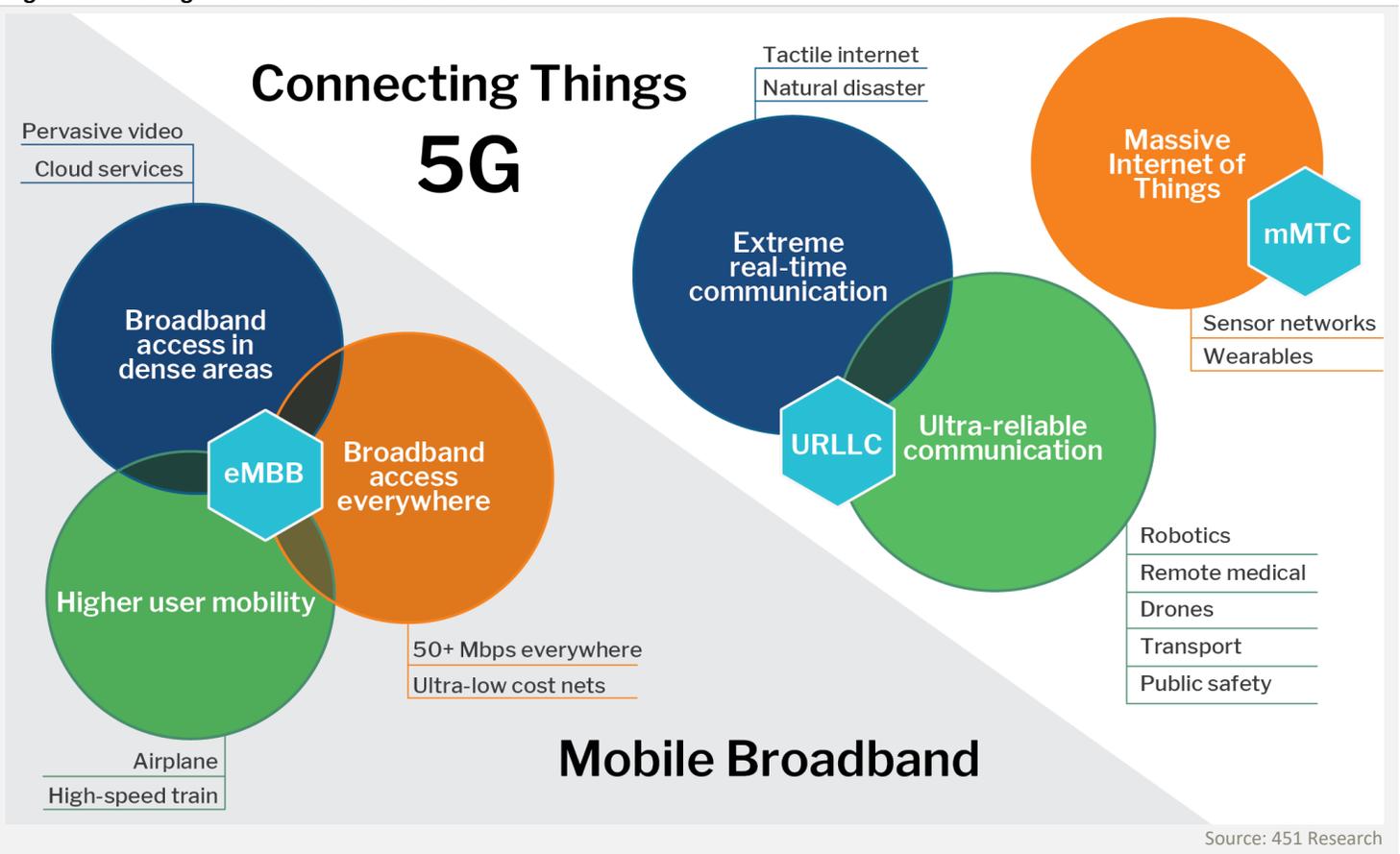
Enhanced mobile broadband (eMBB) will be the first 5G service to launch commercially and will support high-data rates (from 400Mbps to 1.5Gbps) to enable increased speed across a wide coverage area. Ultra-reliable low-latency communications (URLLC) will offer significantly reduced latency, or network delay, for mission critical communications such as autonomous vehicles, cyber-physical systems including remote surgery and advanced applications such as

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AR/VR. Lastly, massive machine type communications (mMTC) seek to improve flexibility of wireless services by optimizing the use of technologies born in the cloud.

Once fully optimized, 5G will be able to take advantage of these cloud-born technologies such as network function virtualization (NFV), software defined networking (SDN) and multi-access edge computing (MEC) to enable operators to rapidly provision new services. In the long run, 5G will usher in not only a new era of improved network connectivity but also new connected experiences for users, enabling ultra-fast download speeds (HD movies will take seconds to download), patients to be remotely monitored via connected devices, seamless AR/VR experiences for gaming or shopping, vehicles to share information seamlessly with each other and industrial machinery to be controlled remotely, to name a few applications. See Figure 1.

**Figure 1: 5G brings three distinct networks in one**



### Not Just Another “G”

While the transitions from 2G to 3G and 3G to 4G were largely driven by consumer demand for capable mobile data services, the transition from 4G to 5G is a response to enterprise functionality demands that extend beyond broadband access to the internet. Due to more stringent requirements by enterprises, 5G promises faster speeds, reduced latency and increased scalability when compared with its predecessors. To illustrate, the peak speed of 4G is ~1Gbps, the theoretical peak speed of 5G once it's fully deployed could be as high as 20Gbps.

While previous generations such as 4G used submillimeter spectrum (such as 700MHz), 5G will also utilize millimeter wave (>6GHz) to deliver increased up to 20X more bandwidth per channel. However, because of their smaller size,

millimeter waves can't travel as far as traditional radio waves, which means that traditional cell towers will have to be redesigned into smaller, more densely populated nodes. This massive densification will potentially require operators to double the number of radio access locations (RAN) around the world in the next 10 years. The need for the 5G network infrastructure expansion towards users adds costs (siting, energy, infrastructure) and complexity (more distributed topologies) and creates the need for operators to work through the local siting and licensing processes to get new radio locations and infrastructure built out.

## Potential Impact of 5G on financial services

While we are still a few years away from 5G becoming a truly mainstream technology (most operators expect to reach 50% coverage of their territories between 2023-2027) in the way that LTE is today it's useful to begin to think about how it might impact the financial services eco-system. It should also be noted that 5G is also a technology option that retailers and banks might consider augmenting or replacing wired or WLAN infrastructure they use in branches, storefronts or corporate locations today. In the list below we have focused on new experiences that 'users' can expect when connected to a 5G network with a 5G device. By 2022 we expect that 5G will;

- **Drive accelerated m-commerce growth.** 451 believes that this year the volume of m-commerce transactions (mobile browser and native app) will surpass that of e-commerce for the first time globally and will account for 55% of overall digital commerce transaction volume by 2022. Given the enhanced mobile shopping experience 5G would deliver through ultra-low latency, we anticipate it will further accelerate mobile's share of commerce.
- **Deliver on the promise of "shoppable videos".** There has been industry chatter about the potential to make purchases in videos (e.g. click on a pair of shoes someone is wearing and buy them instantaneously without redirects) for at least a decade. Through high bandwidth and low latency 5G could bring these types of experiences closer to reality.
- **Power AR/VR enabled commerce growth.** We expect 5G to help make AR/VR shopping experiences more widespread and compelling. A key use in commerce will be for "experiential" purchases like buying a vacation package or purchasing home furniture, where the added confidence of better understanding how a product looks will help to lower cognitive dissonance thus improving conversion rates.
- **Enable better and more timely geo-targeted offers.** Better responsiveness through 5G will make geo-targeted offers more accurate and timelier. We anticipate strong potential here, with 56% of consumers stating they've received a personalized offer (e.g. based on location or past purchases) from a retailer that resulted in a purchase they otherwise did not intend to make.
- **Unlock immersive, digital customer engagement opportunities.** 5G will make it possible for merchants and banks to deploy transformative and highly personalized customer service experiences. This may include concierge robots in hospitality, virtual tellers in banking and HD digital signage with facial recognition in retail.
- **Support time-sensitive banking applications.** For financial applications in corner cases where reducing milliseconds in transaction speed can mean millions of dollars, 5G has a strong story to tell. Potential applications could include high-frequency trading, cryptocurrency transactions and retail-time payments.
- **Improve fraud prevention.** By supporting more data traveling between parties in real time, 5G enables better utilization of diverse data inputs for fraud screening. This should help financial institutions and retailers

implement more robust data-driven risk scoring models that reduce false positive declines while minimizing chargebacks.

- **Enhance mPOS transactions and utilization.** 5G holds potential to accelerate mobile point of sale (mPOS) transaction processing time and improve connectivity. This could further drive adoption of mPOS into new geographies, locations, and use cases where network connections have been unavailable or too slow.
- **Catalyze wider financial inclusion.** 5G may help to further accelerate financial inclusion in emerging markets by enabling more enriching digital banking experiences. This may include immersive experiences like video chat with a banker or accelerated applications for micro-insurance.