



SINGLE DIGITS PRESENTS

The Evolution of Cellular & Wi-Fi Networks

Over the past 30 years, cellular and Wi-Fi networks have guided and influenced the level of our connectivity expectations. Let's take a look at this progression through the past four decades to The Connected Life we live today as we prepare for a global 5G and Wi-Fi 6 rollout and the convergence of the two technologies.

80's

Always on the move, we demanded portable devices during this decade

Cellular

- 1983** Ameritech Mobile Communication (now AT&T) establishes the United States' first cellular network in Chicago, Illinois
- 1983** Motorola releases the first commercial handheld cellular phone, the DynaTAC 8000x—about 2 pounds with a price tag of \$4000
- 1983** The first commercial cellular phone call was successfully completed in 1983 when a call initiated from the parking lot of Soldier Field in Chicago was picked up in Germany by Alexander Graham Bell's great-grandson
- 1989** Motorola releases the first flip phone that could fit in your pocket or purse, the MicroTAC 9800x

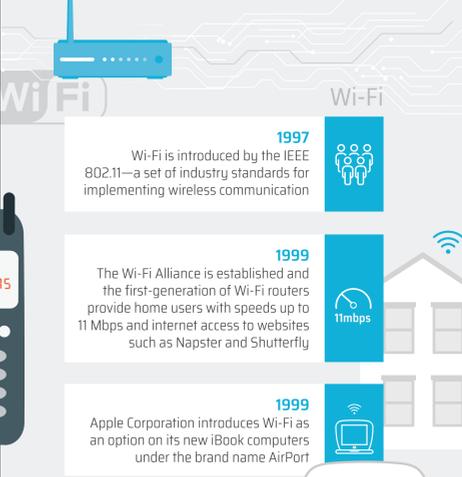


90's

The 90's were transformative in how we communicate and access information

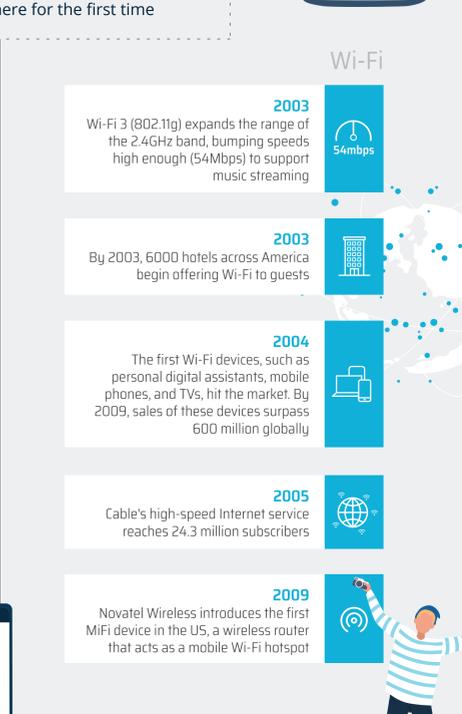
Cellular

- 1990** Twenty million global cellular subscribers, despite dropped calls, no roaming support, and no privacy
- 1992** First SMS text message is sent—the dawn of significant changes in the way people communicate
- 1993** Nokia became the first to support SMS messages with the Nokia 2110 cell phone
- 1999** Texts sent cross-network; until this time, you could only message people with the same service provider.



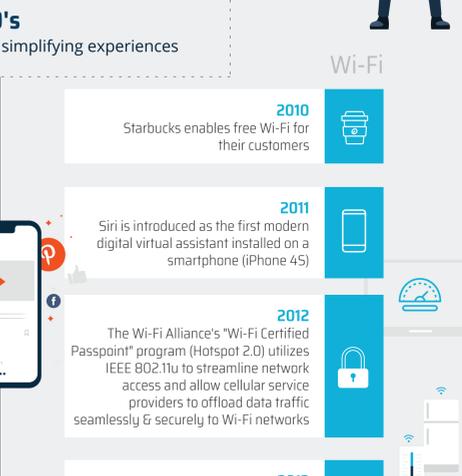
Cellular

- 2000** Americans send 35 texts per month
- 2001** Data is four times faster with 3G and accessible from any location in the world. International roaming services become a real possibility for the first time
- 2002** Text messaging becomes a global phenomenon, reaching 250 billion messages sent worldwide in a single year
- 2002** A Blackberry smartphone launches, made possible through 3G technology
- 2007** The iPhone launches, and suddenly, our digital world is in the palm of our hands as mobile phone use surpasses landline use in the US



Cellular

- 2012** "Texting" is added to the dictionary —no surprise given the number of text messages sent worldwide reaches 6.1 trillion this year (roughly 1000 messages per person)
- 2013** Internet-based mobile messaging services like Facebook Messenger, WhatsApp, iMessage, and Viber catch up with SMS messaging in terms of popularity and message volume
- 2013** 4G makes high-quality video streaming a reality for millions of consumers

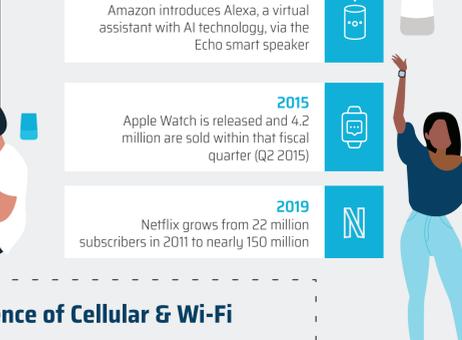


10's

The 2010's are all about simplifying experiences

Cellular

- 2010** Starbucks enables free Wi-Fi for their customers
- 2011** Siri is introduced as the first modern digital virtual assistant installed on a smartphone (iPhone 4S)
- 2012** The Wi-Fi Alliance's "Wi-Fi Certified Passport" program (Hotspot 2.0) utilizes IEEE 802.11u to streamline network access and allow cellular service providers to offload data traffic seamlessly & securely to Wi-Fi networks
- 2013** Wi-Fi 5 802.11ac significantly improves with almost 3X faster speeds and breaks the gigabit per second barrier—and more than 1Gbps in some cases
- 2014** Amazon introduces Alexa, a virtual assistant with AI technology, via the Echo smart speaker
- 2015** Apple Watch is released and 4.2 million are sold within that fiscal quarter (Q2 2015)
- 2019** Netflix grows from 22 million subscribers in 2011 to nearly 150 million



TODAY—The Convergence of Cellular & Wi-Fi

Instant connection is required everywhere. The Wireless Broadband Alliance introduces OpenRoaming as a framework to connect billions of users and things to millions of Wi-Fi networks globally and The Connected Life Experience™ takes shape

5G offers ultra fast speed and billions of new connections—keeping you online no matter where you are

The FCC votes to expand Wi-Fi into the 6 GHz band. As a result, the Wi-Fi Alliance designates the name Wi-Fi 6E to identify Wi-Fi 6 devices that can operate in the 6 GHz band

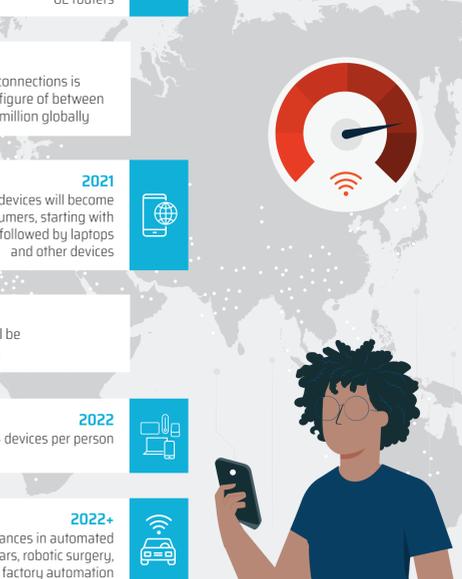


TOMORROW

The power of 5G and Wi-Fi 6 combined will power technological advancements in countless ways, including factory automation, telemedicine, and transportation, simplifying every aspect of our lives

Cellular

- 2020** Fourth-quarter release of Wi-Fi 6E routers
- 2021** The number of 5G connections is forecast to reach a figure of between 20 million and 100 million globally
- 2021** Wi-Fi 6E devices will become available to consumers, starting with smartphones, followed by laptops and other devices
- 2021** 5 billion devices will be networked globally
- 2022** An estimated 13.4 devices per person
- 2022+** We'll see great advances in automated trains, self-driving cars, robotic surgery, and factory automation



The convergence of 5G and Wi-Fi 6 networks is the future and essential to answering the consumer's demand for **The Connected Life Experience™**

Learn more at www.singledigits.com or call us at 603.580.1539 to get started!

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