RESONANT ‘BREAKING THROUGH THE NOISE OF 5G IN EUROPE’ WEBINAR SERIES

JULY 20, 2021

UNLOCKING THE POTENTIAL OF 5G IN EUROPE

THE ROLE OF RF FILTERS

SAFE HARBOR STATEMENT

This document contains forward-looking statements. The words “believe,” “may,” “will,” “potentially,” “estimate,” “continue,” “anticipate,” “intend,” “could,” “would,” “project,” “plan,” “expect” and similar expressions that convey uncertainty of future events or outcomes are intended to identify forward-looking statements. Forward-looking statements may address the following subjects among others: the status of filter designs under development, the prospects for licensing filter designs upon completion of development, plans for other filter designs not currently in development, potential customers for our designs, the timing and amount of future royalty streams, the expected duration of our capital resources, our hiring plans, the impact of our designs on the mobile device market, and our business strategy. Forward-looking statements are inherently subject to risks and uncertainties which could cause actual results to differ materially from those in the forward-looking statements, including, without limitation, the following: our limited operating history; our ability to complete designs that meet customer specifications; the ability of our customers (or their manufacturers) to fabricate our designs in commercial quantities; the ability of our customers to sell products incorporating our designs to OEMs; our dependence on a small number of customers; the ability of our designs to significantly lower costs as compared to other designs and solutions; the risk that the intense competition and rapid technological change in our industry renders our designs less useful or obsolete; our ability to find, recruit and retain the highly skilled personnel required for our design process in sufficient numbers to support our growth; our ability to manage growth; and general market, economic and business conditions. Additional factors that could cause actual results to differ materially from those anticipated by our forward-looking statements are under the captions “Risk Factors” and “Management’s Discussion and Analysis of Financial Condition and Results of Operations” in our most recent Annual Report (Form 10-K) or Quarterly Report (Form 10-Q) filed with the Securities and Exchange Commission. Forward-looking statements are made as of the date of this document, and we expressly disclaim any obligation or undertaking to update forward-looking statements.

We may refer to information regarding potential markets for products and other industry data. We believe that all such information has been obtained from reliable sources that are customarily relied upon by companies in our industry. However, we have not independently verified any such information.

‘EUROPE 5G’ WEBINAR PARTICIPANTS

Independent Industry Expert

- Joe Madden (Moderator): Mobile Experts

Resonant Advisory Board

- Clint Brown
- Rubén Caballero
- Glen Riley
- Peter Gammel

Resonant Team

- George B. Holmes – CEO
- Dylan Kelly – COO
- Mike Eddy – VP, Corporate Development

‘EUROPE 5G’ WEBINAR AGENDA

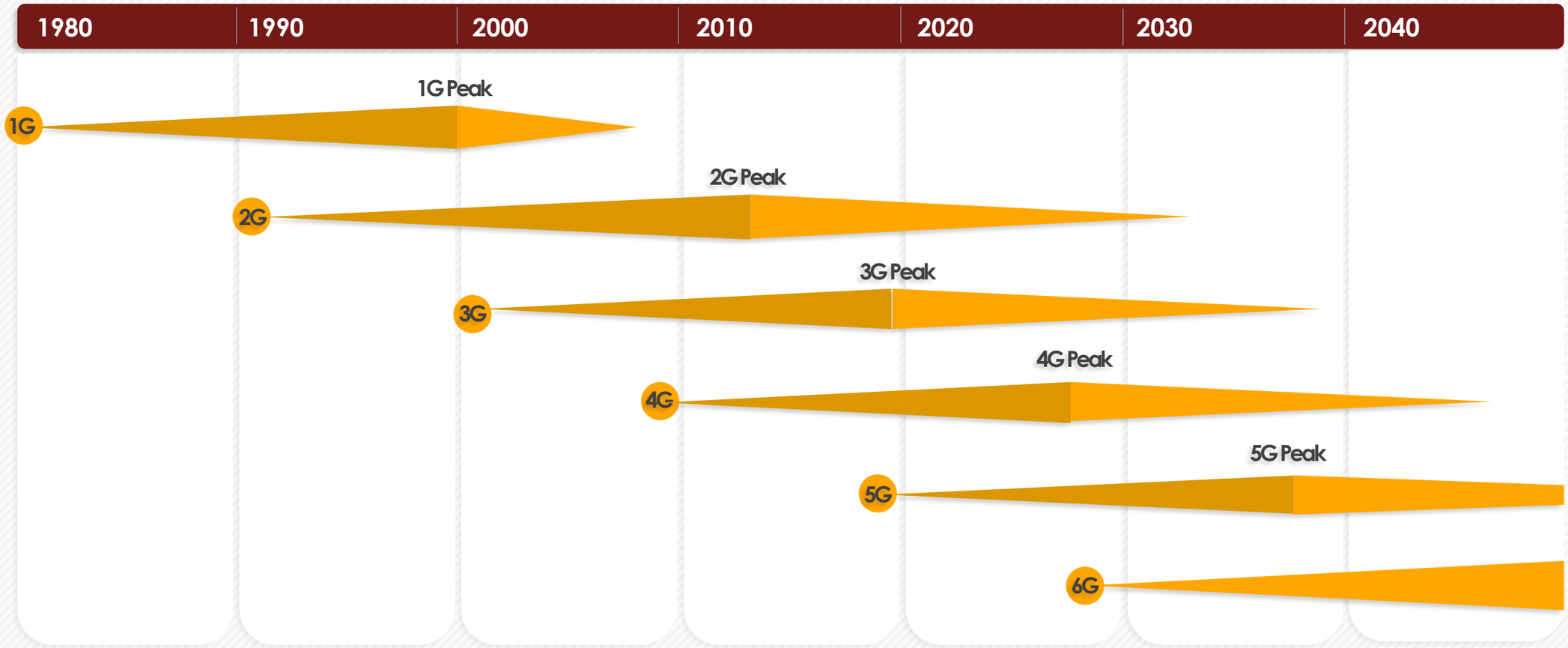
1. The Evolution from 1G to 5G
2. Drivers of 5G Technology Adoption
3. The Role of 4G, Wi-Fi, UWB & Relationship to 5G
4. About RF Filters
5. 5G’s Rollout in Europe
6. Technology Advancements that Enable ‘True 5G’

A MARKET DRIVEN BY DATA NEEDS

With more connected devices, higher performance networks are needed to keep up with demand for data and speed

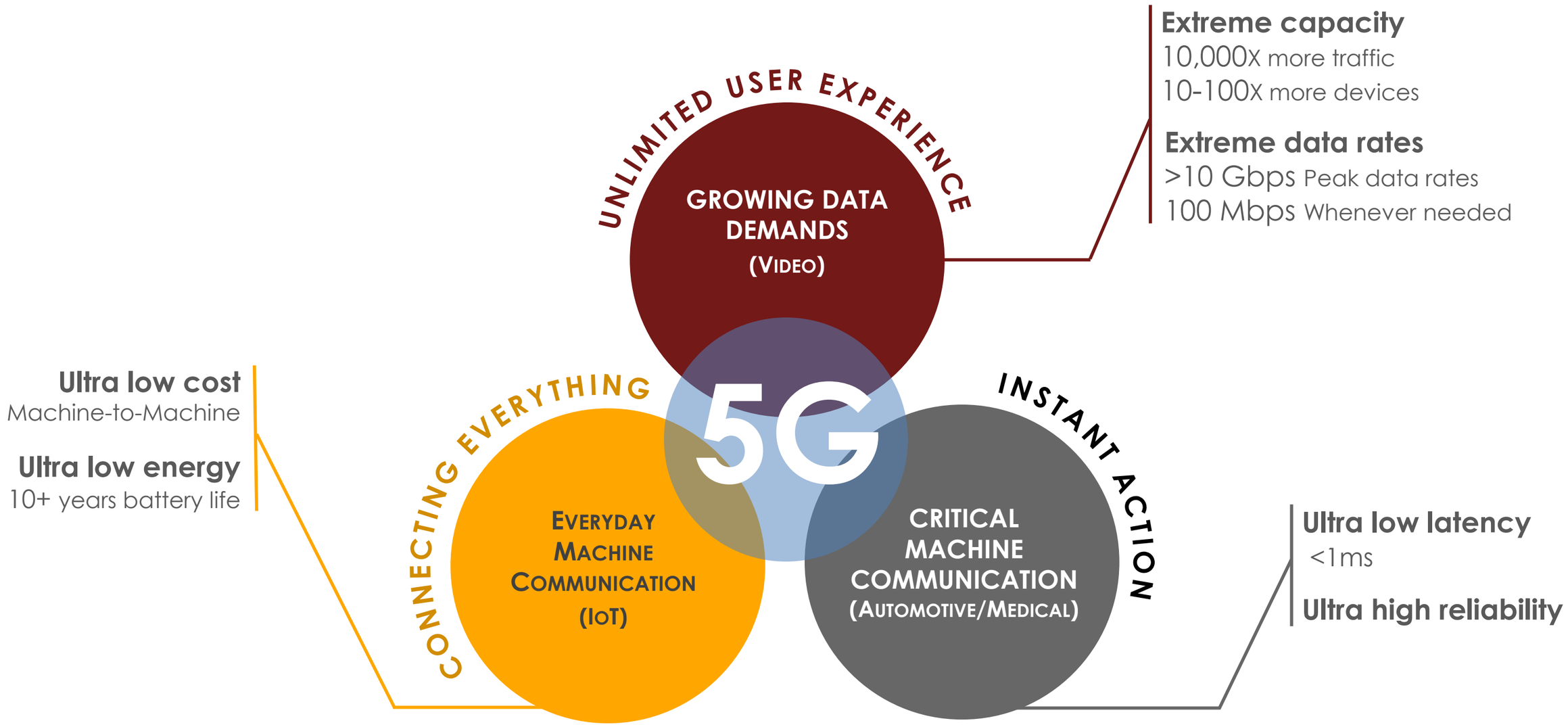
1G	2G	3G	4G	5G	6G
1980s	**1990s**	**2000s**	**2010s**	**2020s**	**2030s**
Basic voice service (calls only)	Text messaging Introduced	Mobile data focused	Mobile video focused	20x faster 25x lower latency than 4G	

TIMELINE OF CELLULAR GENERATIONS



Source : Rysavy Research, Cisco VNI

MAIN DRIVERS OF 5G
MORE DATA – QUICKLY & RELIABLY



WHY 4G STILL MATTERS IN THE MOVE TO 5G

- The 5G transition will take many years
- 4G to serve as a backstop to 5G coverage – limited range/penetration of 5G signals
- Eventually, 4G RF filter market will become commoditized
- Fabless-Foundry Model:
  - Reliable, stable filter supply
  - Low cost, high quality
  - Superior wideband performance

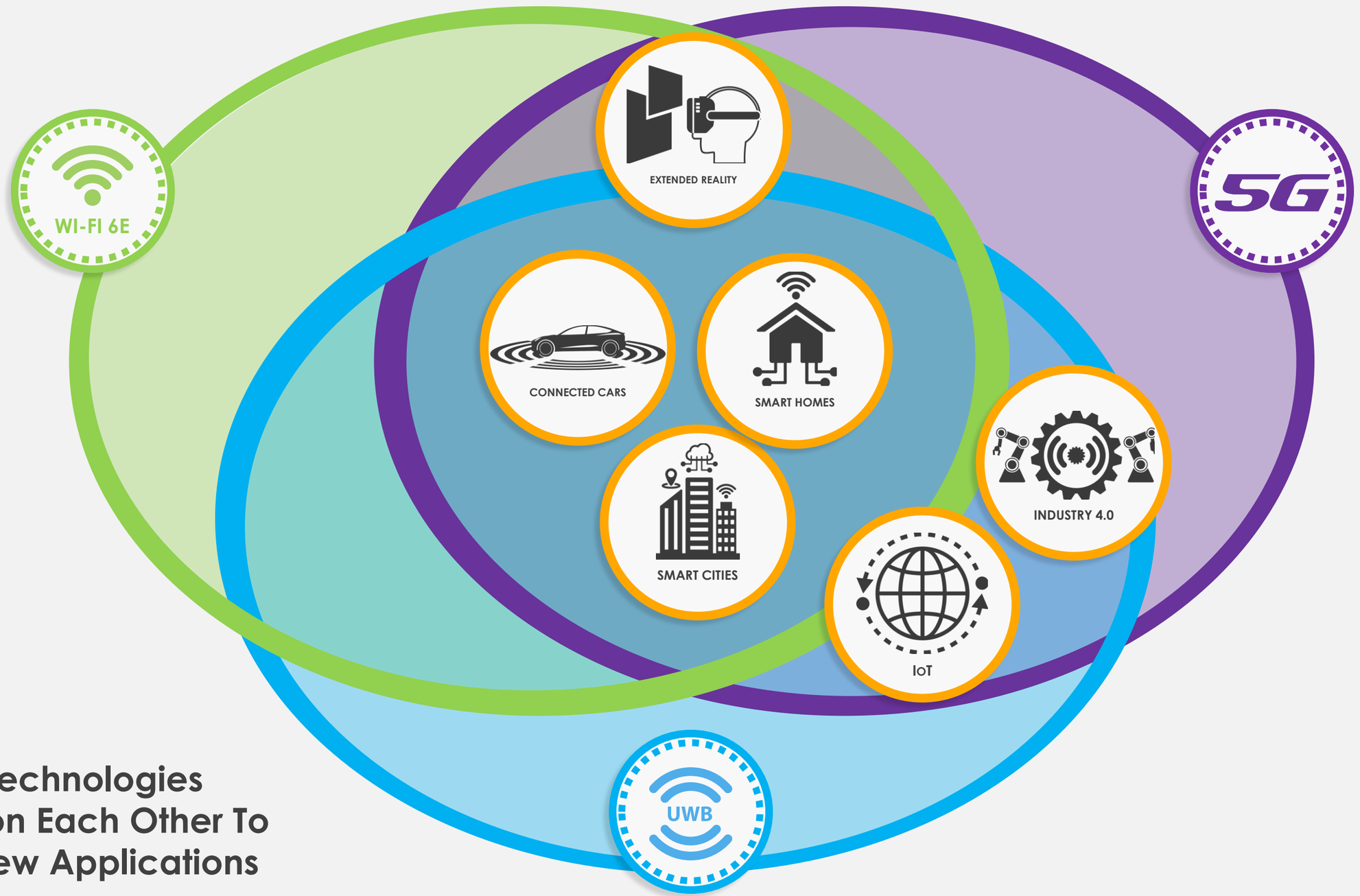
WHAT ROLE DOES WI-FI PLAY FOR 5G?

- Similar to 4G, Wi-Fi 6/6E (next-gen) will serve as an added tool for data overload
- Complements 5G service and enables innovation for IoT
- Wi-Fi 6/6E operates at similar frequencies & bandwidths to 5G
- **Therefore, the same (or very similar) RF filters for 5G are also needed for Wi-Fi 6/6E**

The Cisco® Visual Networking Index
Source: Cisco 2019a

Wi-Fi 6/6E acts as a backstop to 5G so consumers have a seamless experience

NEXT-GENERATION, ULTRA-FAST WIRELESS TECHNOLOGIES
WORKING TOGETHER TO UNLOCK NEW APPLICATIONS

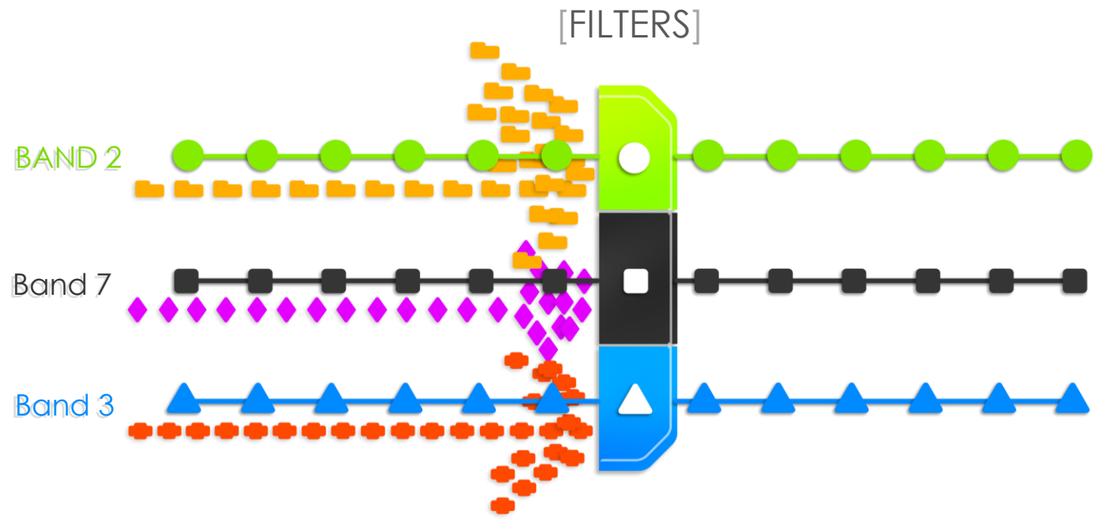


Wireless Technologies Depend on Each Other To Unlock New Applications

WHAT IS A FILTER? WHY DO THEY MATTER?

RF filters are inside many wireless devices and are used to **ensure only the "right" frequencies (signals) pass** through to a particular device, while also filtering out unwanted signals

Without RF Filters…calls, texting, downloading videos, streaming & IoT is not possible

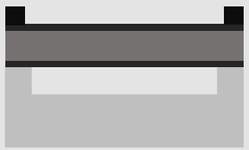
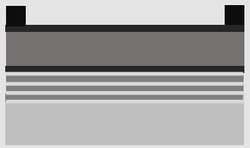
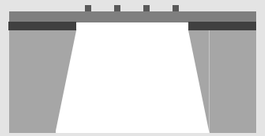


1G — Low Frequency, Low Speed, Easy to Design. **Early phones had ~1-2 Filters**

2G **3G** **4G**

5G — High Frequency, Extreme Speeds, Difficult to Design. **5G phones could have >100 Filters**

WHAT TYPES OF FILTERS ARE USED?

SAW *Surface Acoustic Wave*	TC-SAW *Temperature-Compensated Surface Acoustic Wave*	FBAR *Bulk Acoustic Wave*	SMR-BAW *Bulk Acoustic Wave*	XBAR® *Bulk Acoustic Wave*
				
Wireless Network	Wireless Network	Wireless Network	Wireless Network	Wireless Network
2G 3G 4G	4G	4G	4G	5G
Steps in Manufacturing	Steps in Manufacturing	Steps in Manufacturing	Steps in Manufacturing	Steps in Manufacturing
				
Simple & Low Cost Process	Simple & Low Cost Process	Complex & High Cost Process	Complex & High Cost Process	Complex & Low Cost Process

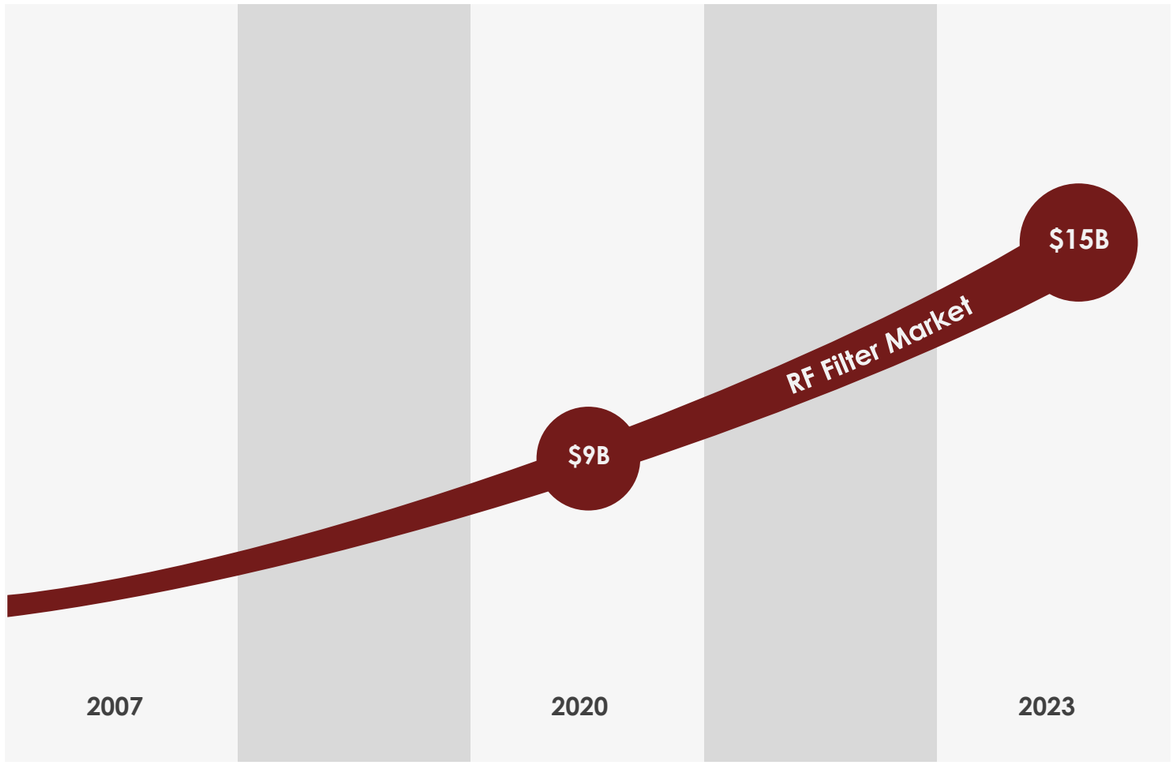
Lower Frequency & Bandwidth → **Higher Frequency & Bandwidth**

5G COMPETITIVE LANDSCAPE AND MARKET SIZE

Leading Manufacturers Working Towards 5G Filter Solutions

- **Murata**
- **Qorvo**
- **Skyworks**
- **Broadcom**
- **Qualcomm**

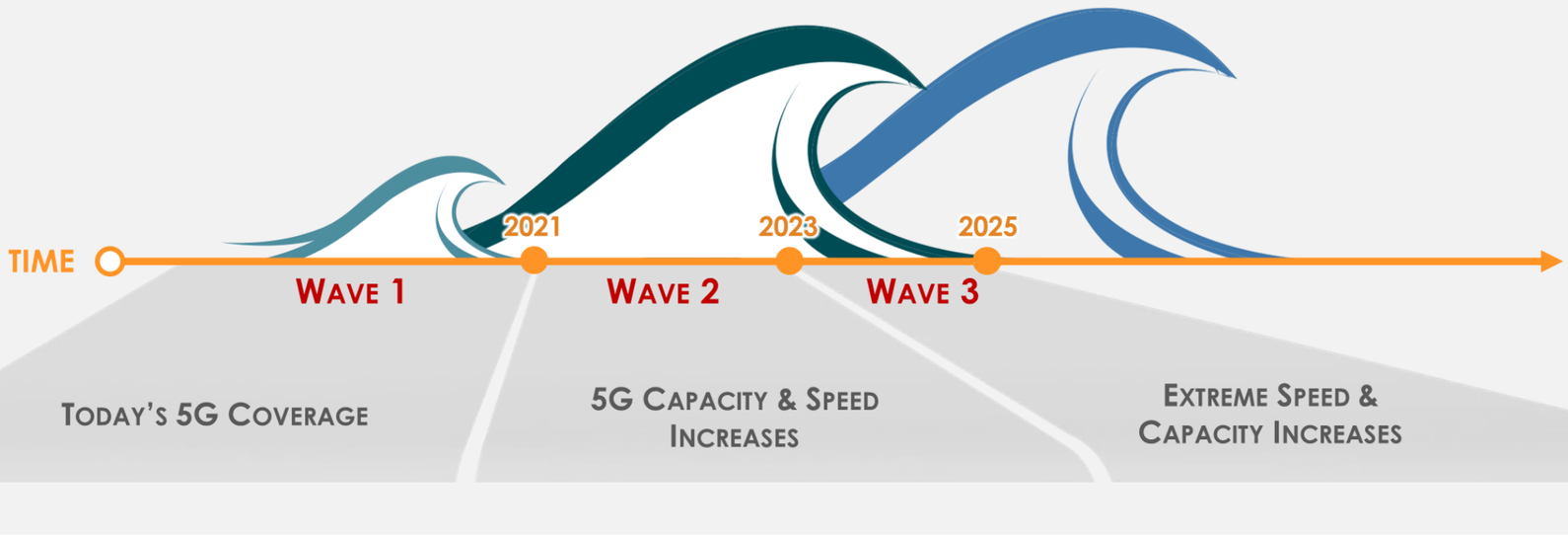
RF Filter Market – The Largest & Fastest Growing Segment



Source: Navian

By 2030, the 5G market is expected to contribute roughly $7.6 trillion to the global economy

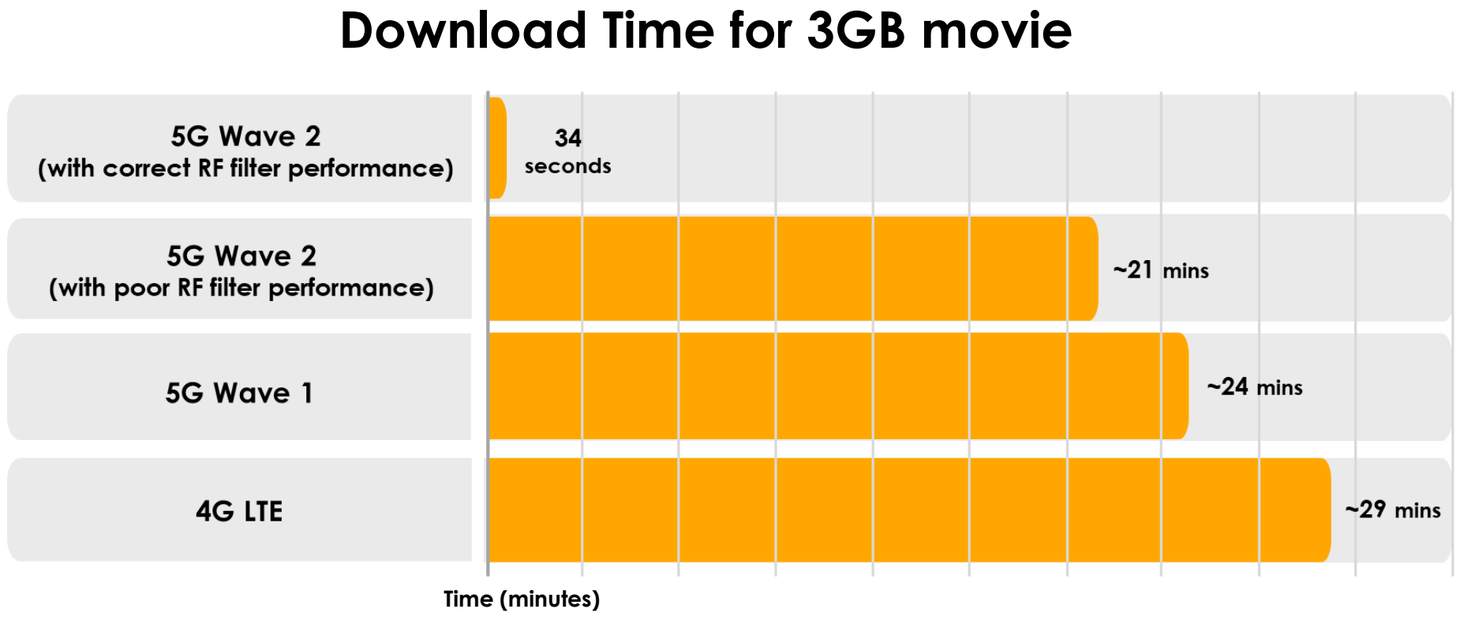
5G FIRST WAVE IS HERE
STILL NOT AT 'REAL' 5G SPEEDS



Performance of 5G Wave 2 With Proper RF Filters

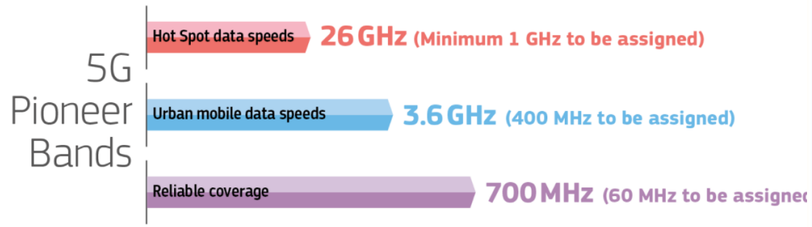
Performance of 5G Wave 2 Without Proper RF Filters

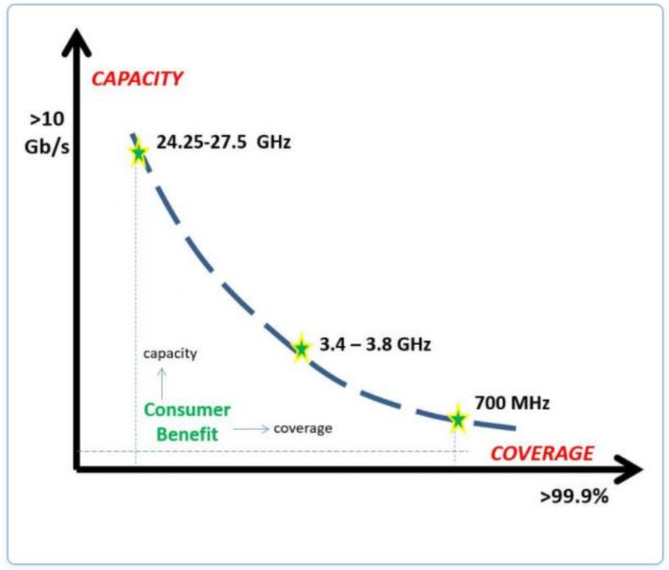
Performance Today

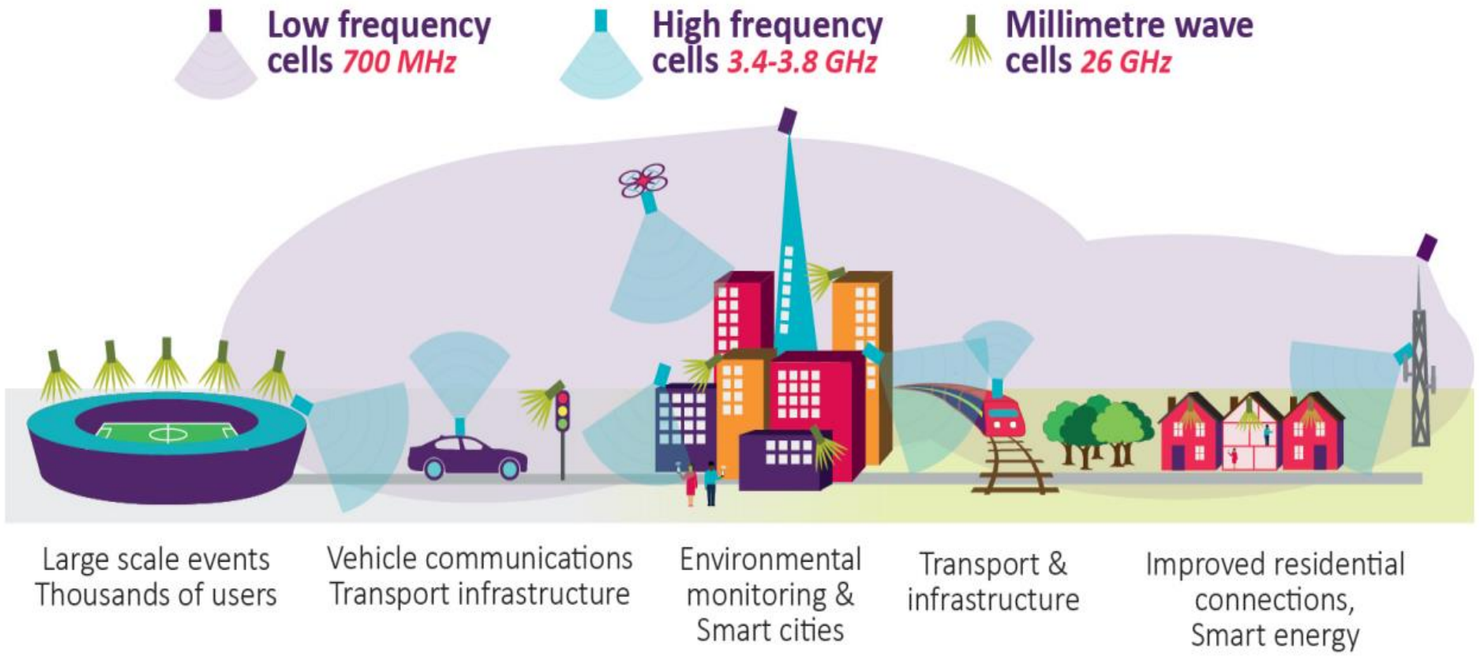


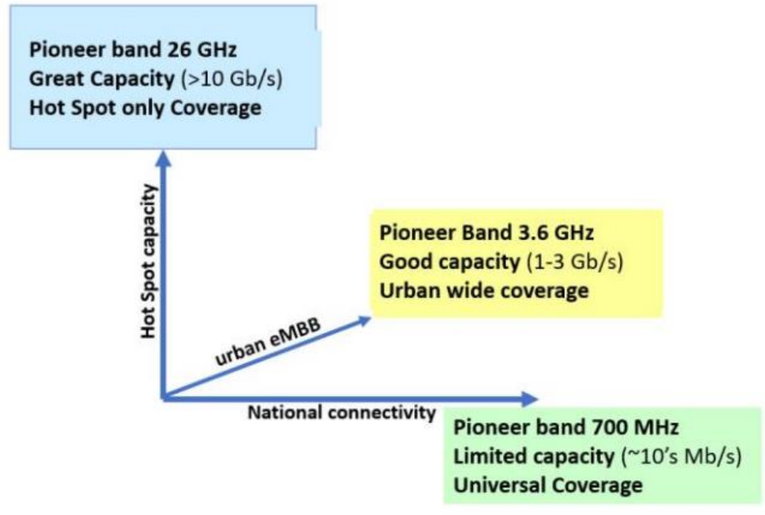
EUROPE 5G STRATEGY
PIONEER BANDS

- 3 harmonized bands for 5G deployment
  - 700MHz, 3.6GHz and 26GHz



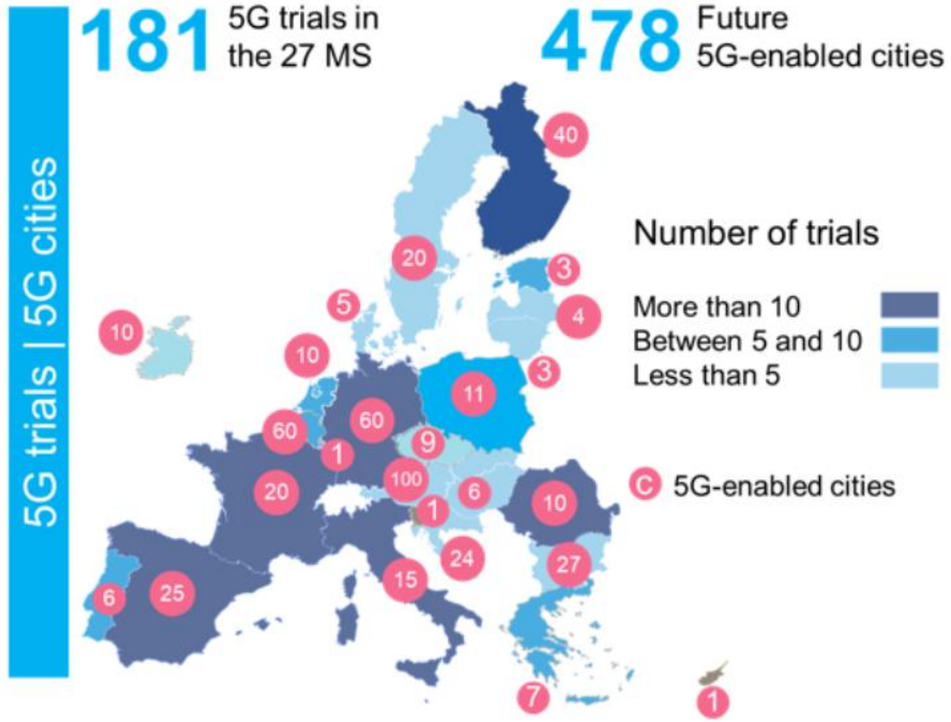


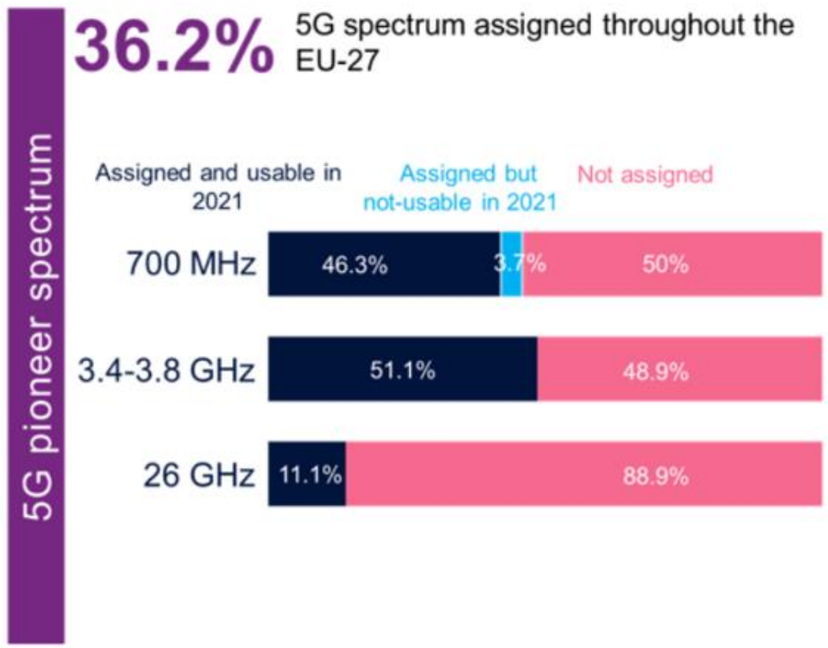




STATUS OF 5G IN EUROPE

- Huawei situation, COVID and auction delays have slowed 5G in Europe
  - ~45% of 4G infrastructure in Europe is Huawei
  - NSA 5G requires compatibility with 4G
- Renewed urgency to catch up
  - Recent Auctions (in 2021) closed in UK, Denmark, Sweden, Spain and Slovenia
  - Bids much lower than US (200-400M EUR)
  - Good for operators
- Lower 6GHz spectrum allocated for Unlicensed use

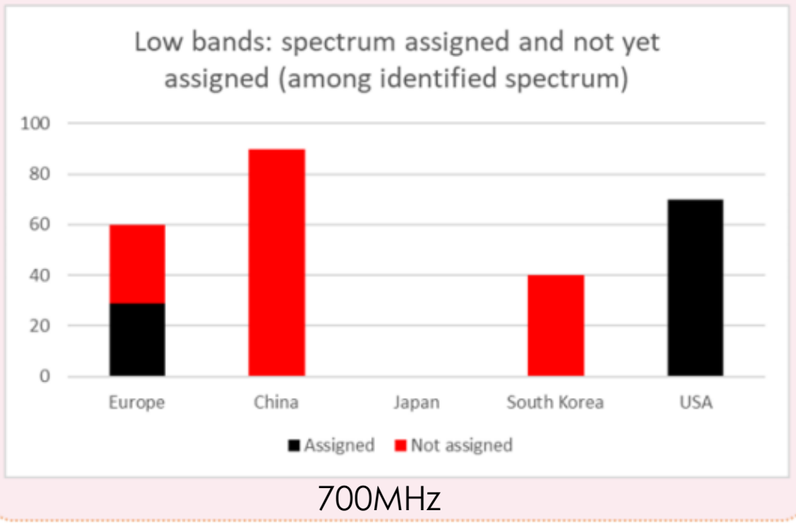




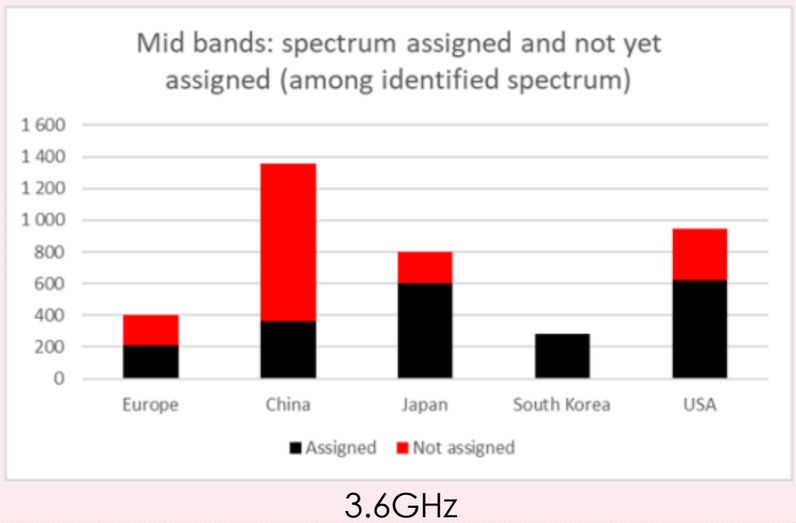
WHERE DOES EU STACK UP?

March 2021

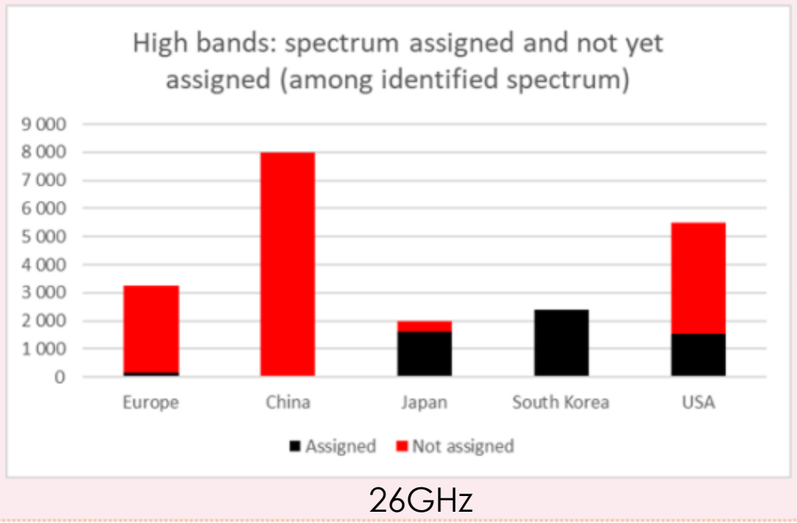
5G SPECTRUM



700MHz



3.6GHz



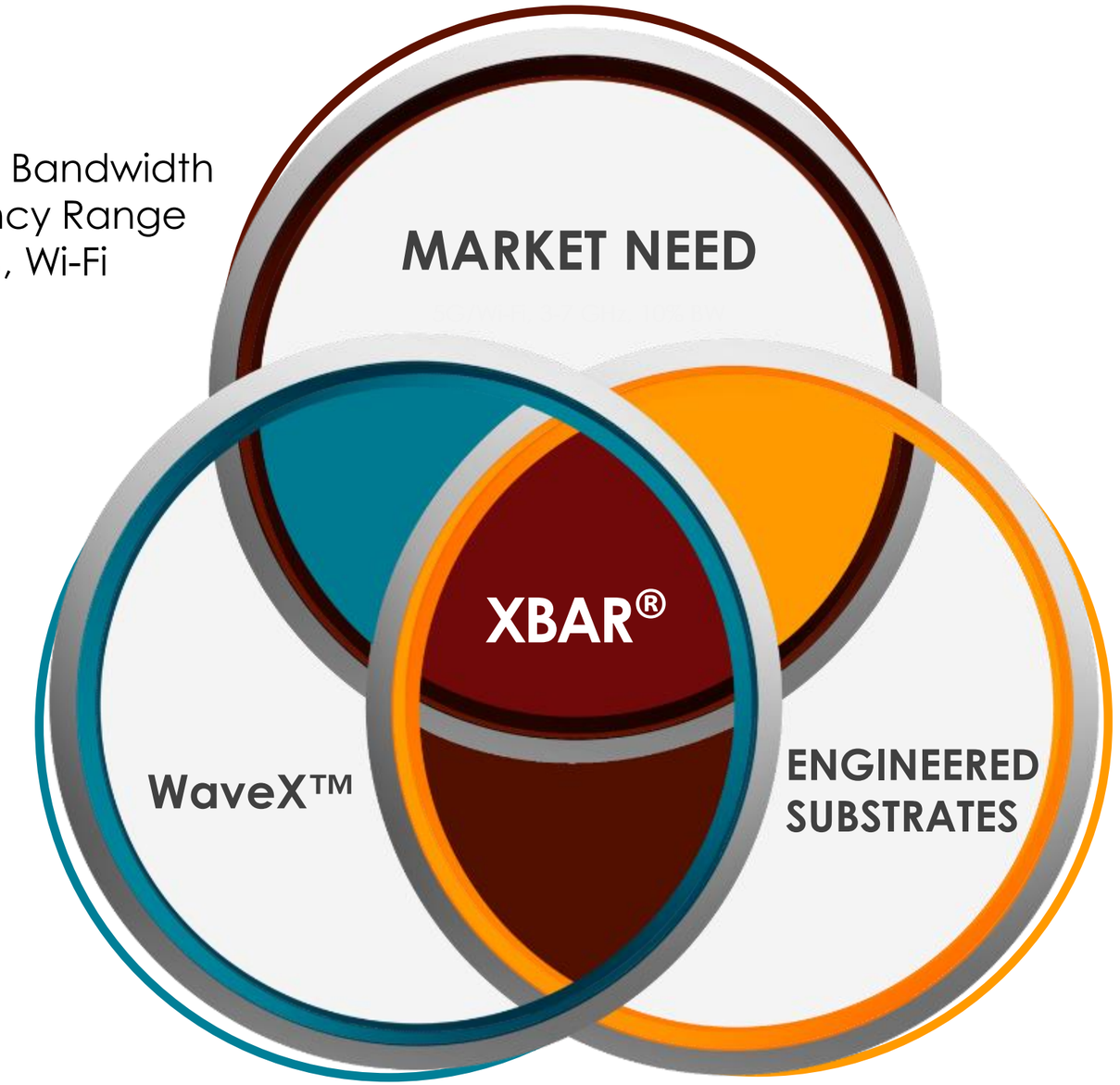
26GHz

5G NETWORKS				
5G mode (NSA/SA[1])	NSA	NSA	NSA	NSA
Number of 5G base stations	700,000+	150,000+	~50,000	~40,000
Use of DSS[2]				Yes
Use of mmWave bands	No	No	Planned in 2021	Yes

[1]: Non Stand Alone / Standalone
[2]: Dynamic Spectrum Sharing

THE BIRTH OF A NEW FILTER TECHNOLOGY

- >10% Fractional Bandwidth
- 3-7GHz Frequency Range
- 5G NR, 5G NR-U, Wi-Fi
- High power



XBAR®

- Invented using WaveX™
- Fabricated on POI substrates
- Meets 5G and 5-7GHz Wi-Fi requirements

- Multi-Physics, Electronic Design Automation (EDA) Platform
- Full Finite Element Model
- Extremely Accurate
  - Pre-fab simulation to Measured

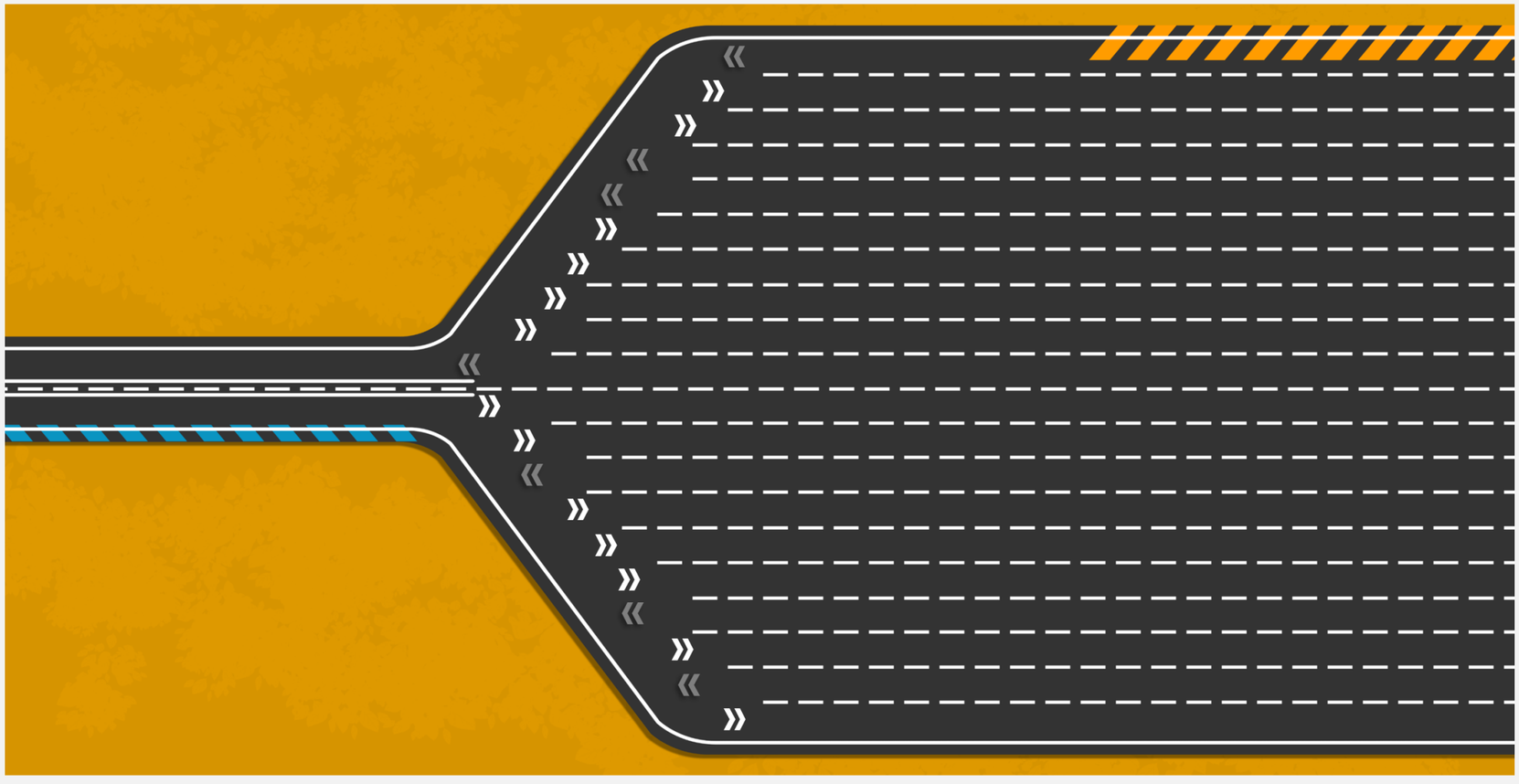
- Piezo-On-Insulator (POI)
- LN-On-Silicon
- Thin Film Piezo (300nm-900nm)
- Single crystal piezoelectric

5G CHANGES THE LANDSCAPE

XBAR® Based Filters

ENABLING FULL-SPEED 5G

- Invented using Resonant's WaveX™ (a proprietary software platform)
- Meets 5G and 5-7GHz Wi-Fi requirements
- Simple structure, leverages standard industry process



Resonant's 5G XBAR® Is The Only Proven RF Filter Technology That Can Natively Meet the Requirements of 5G & Wi-Fi 6

THE 5G WAVE IS COMING

Resonant.com

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RESN@mzgroup.us

BIOGRAPHIES OF THE PARTICIPANTS

Resonant Advisory Board

Clint Brown – Resonant Advisory Board Member
Mr. Brown has been serving on Resonant's Advisory Board since 2020. Clint served as Director of Business Development Mobility Wireless Connectivity at Broadcom. He has also been a Wi-Fi Alliance Board Director since 2005, serving as Treasurer and Vice Chairman. Brown has more than 30 years of leadership experience in sales, business development and marketing experience, specializing in semiconductor-based wireline and wireless communication technologies.

Rubén Caballero – Resonant Board Member & Advisory Board Member
Mr. Caballero has been serving on Resonant's Board and Advisory Board since 2019. Rubén is currently the Corporate VP of Engineering, Devices & Technology, in the Mixed Reality & AI Division at Microsoft. He previously served as Vice President of Engineering at Apple where he was one of the founding leaders of the iPhone hardware team and later expanded his role to include iPad, Apple Watch, Macintosh and all other hardware products.

Peter Gammel – Independent Industry Expert
Dr. Gammel has almost 40 years of experience in the semiconductor industry- starting at Bell Laboratories - focused on differentiated device technology. He has managed successful startups, such as SiGe Semiconductor, and has spent significant time in Asia, most recently in Japan managing BAW development for Skyworks. He is currently CTO at GlobalFoundries.

Glen Riley – Advisory Board Member
Mr. Riley joined Resonant's Advisory Board in 2020. Glen retired after spending 15 years in several key executive positions at TriQuint Semiconductor, which merged with RFMD in 2015 to form Qorvo, Inc. He has over 30 years of experience in the semiconductor industry growing businesses in the RF, foundry, optical, and storage markets.

BIOGRAPHIES OF THE PARTICIPANTS

Resonant Team

George Holmes – Chairman & CEO
Mr. Holmes joined Resonant in 2016. He has more than 30 years of leadership experience in sales & marketing and management. Prior to joining Resonant, George worked as Chief Commercial Officer at both Tigo Energy and Energous, and held C-Suite roles at SolarBridge Technologies, Agere Systems (formerly Lucent MicroElectronics), Ortel Corporation, Level One Communications, and Symmetricom. Holmes' leadership and experience have returned to shareholders over $2 billion in enhanced shareholder value.

Dylan Kelly – COO
Mr. Kelly has more than 20 years of leadership experience in semiconductor product development, product marketing, and high-volume manufacturing. Prior to joining Resonant, Dylan served as President and Chief Operating Officer for pSemi (acquired by Murata). Dylan is also the author of numerous technical papers and has 49 issued and pending patents. Kelly's leadership and experience have returned to shareholders over $300 million in enhanced shareholder value.

Mike Eddy – VP Corporate Development
Dr. Eddy has 30 years of experience in the wireless industry. Previously, he was president and founder of ANTONE Wireless, a leader in the 4G network infrastructure enhancement products that was acquired by Westell Technologies, Inc. Before that, Dr. Eddy held several senior management positions at Superconductor Technologies Inc. Dr. Eddy earned his Ph.D. in Solid State Chemistry from Oxford University and his MBA from Pepperdine University.