WHAT WE DO

The Dynamic Spectrum Alliance (DSA) is a global, cross-industry, not for profit organization advocating for laws, regulations, and economic best practices that will lead to more **efficient utilization of spectrum**, fostering **innovation** and affordable **connectivity for all**.

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OUR GLOBAL MEMBERSHIP

OUR MISSION

Make spectrum abundant for broadband

- Connect the next 4 billion people
- Stimulate wireless innovation for next generation broadband
- Accelerate an inclusive digital economy

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Supporting rural broadband

Making networks more affordable

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ICT policy roadmaps

- Connect the unconnected/underserved citizens
- Stimulate innovation and adoption of new technologies (4IR, IoT, cloud, AI, blockchain, 5G)

Importance of Spectrum management?

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It's hard to regulate telecoms

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Importance of local context

- Policy perspective (priorities?)
- Local market (competition?, stakeholders?)
- Existing infrastructure (mainly 2G/3G?, fiber?)
- Available data and resources
- Understanding of what 5G means

Traditional IMT spectrum cycle

ITUNews
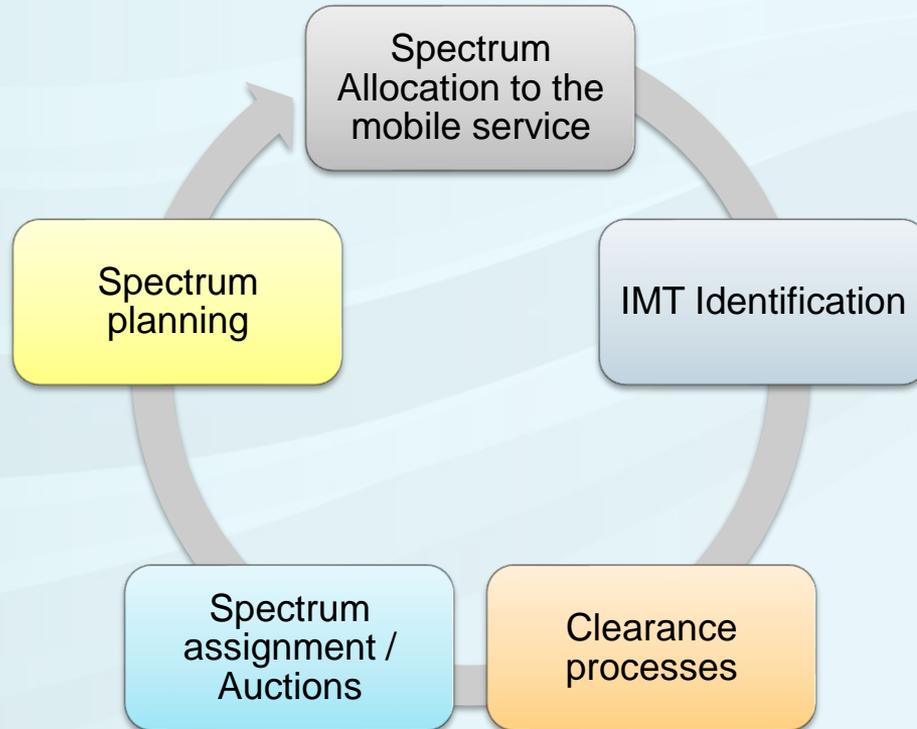
In total, 17.25 GHz of spectrum has been identified for IMT by the Conference, in comparison with 1.9 GHz of bandwidth available before WRC-19. Out of this number, 14.75 GHz of spectrum has been harmonized worldwide, reaching 85% of global harmonization.

In addition, WRC-19 has also defined a plan of studies to identify frequencies for new components of 5G. As an

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Have you considered Spectrum sharing?
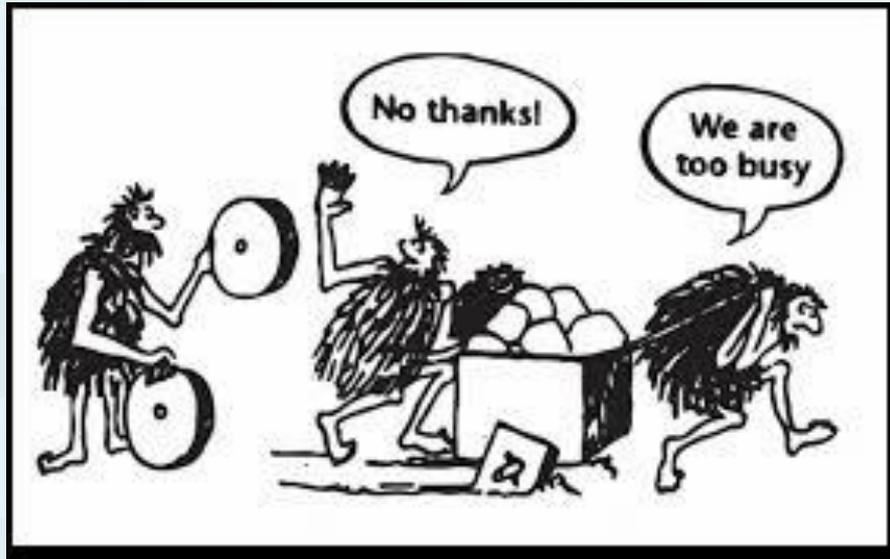
Spectrum Sharing

- All technologies are important
- Technical coexistence is possible in many cases, it is about the licensing regime.
- Clearance process are complicated and might take long time.
- Spectrum sharing is an alternative to release more spectrum for broadband (fixe and mobile), while protecting incumbents

OUR VISION
ABOUT DYNAMIC SPECTRUM MANAGEMENT

Existing incumbents **can continue** operating in the band
AND
Innovation and NEW use cases that will benefit all of us!

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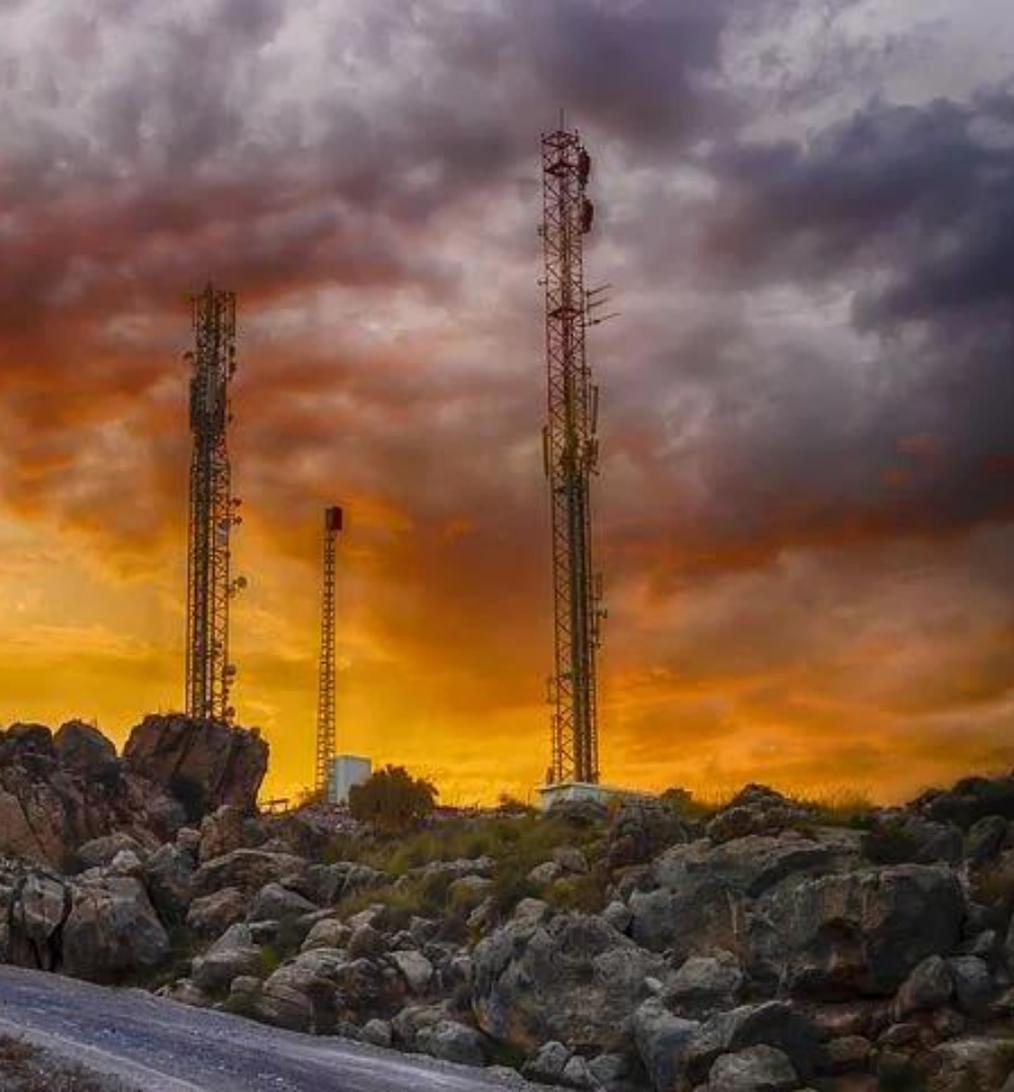
- Dynamic spectrum access: spectrum management through technological means.

- DSA is technology neutral and supports all shared spectrum technologies that promote co-existence.

  - Technology has an increasingly important role to play in spectrum management.

  - The technology required for spectrum sharing exists — the challenge is the regulatory regime.

  - DSA supports the use of geolocation databases and other interference protection mechanisms where necessary to promote greater shared use of spectrum.

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ICT policy roadmaps

- Connect the unconnected/underserved citizens
- Stimulate innovation and adoption of new technologies (4IR, IoT, cloud, AI, blockchain, 5G)

Investment?

Spectrum Sharing

- Enables new stakeholders to access Spectrum.
- The deployment of telecom networks doesn't rely exclusively on a very few number of stakeholders.
- Better coverage, not only dense environments and cities.
- Creates new opportunities, and new business cases.

Importance of the ecosystem

- Spectrum regulations

- Equipment providers

- Local service providers

- Economies of scale

- Local digital transformation projects

TVWS

Supports increasing shared spectrum use in TV whitespace that enables cost effective broadband deployment in rural areas.

TVWS also provides good building penetration that is critically important for IoT and smart city applications.

CBRS and TSSM

Ensure all parties have access to both PAL and GAA spectrum.

Supports efficient use of the band through shared access that protects incumbent services.

Supports a light-weight database to facilitate dynamic sharing in a 3-tiered framework.

WI-FI 6

Supports allocation of the band for unlicensed services to meet the demand for Wi-Fi and unlicensed services that require larger channel bandwidths.

Technology management of the band can protect incumbent services while allowing greater access to Wi-Fi.

mmWave

The propagation characteristics of mmWave bands make dynamic sharing ideal and critical to enable efficient use of spectrum.

Supports unlicensed use of the 57 – 71 GHz band, including Wi-Gig and P2M mesh network services.

Supports flexible licensing rules.
3D Spectrum Sharing

TVWS REGULATIONS

Adopted regulations

Regulatory framework published for consultation and comments received

Canada

United States

United Kingdom

Korea

Trinidad and Tobago

Colombia

Brazil

Ghana
Nigeria

Uganda

Kenya

Mozambique

Singapore

Argentina

South Africa

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SPECTRUM SHARING IN THE UK

Facilitating access to spectrum for new users plays an important role in encouraging innovation.
Objectives: to increase quality wireless broadband coverage where people live, work and travel across the UK and to encourage the development of new uses which will benefit both businesses and consumers.

OFCOM is making frequencies in the 1800 MHz, 2.3 GHz, 3.8-4.2 GHz and 24.25-26.5 GHz bands available to new users via a new spectrum sharing framework.

OFCOM anticipates that spectrum will only be available to share in remote areas, where it could be used to support private networks or wireless broadband services.

CITIZENS BROADBAND RADIO SERVICE

In the U.S., the FCC has developed a spectrum sharing model called Citizens Broadband Radio Service (CBRS) to make more efficient use of the 3.5GHz band.

It is administered and enforced by a spectrum access system (SAS) that is designed to provide dynamic and secure allocation of spectrum resources in real time.

The SAS ensures that spectrum is always available for military applications and for other public sector incumbents at the time and place it is needed.
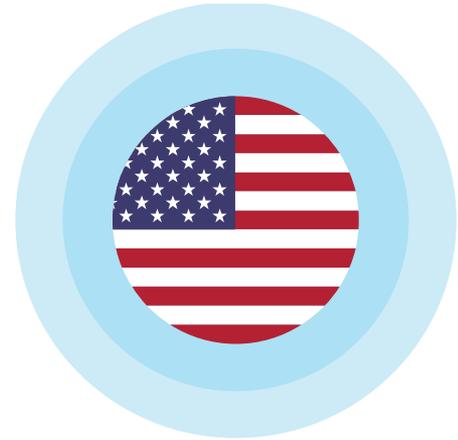
CITIZENS BROADBAND RADIO SERVICE

The CBRS is a three-tier system:

When sensors detect federal transmissions, the SAS dynamically reallocates other users in the area to alternative parts of the band.

In the second tier, spectrum is allocated to commercial users who buy priority access licenses for a specified location & period of time.

The remaining spectrum can then be used for general authorized access.

| 3MHz | 30MHz | 300MHz | 3GHz | 30GHz | 300GHz |

1
Military Spectrum Management System

SPECTRUM ACCESS SYSTEM (SAS)

2
Priority Access

3
General Authorised Access

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POLICYIMPACT
PARTNERS
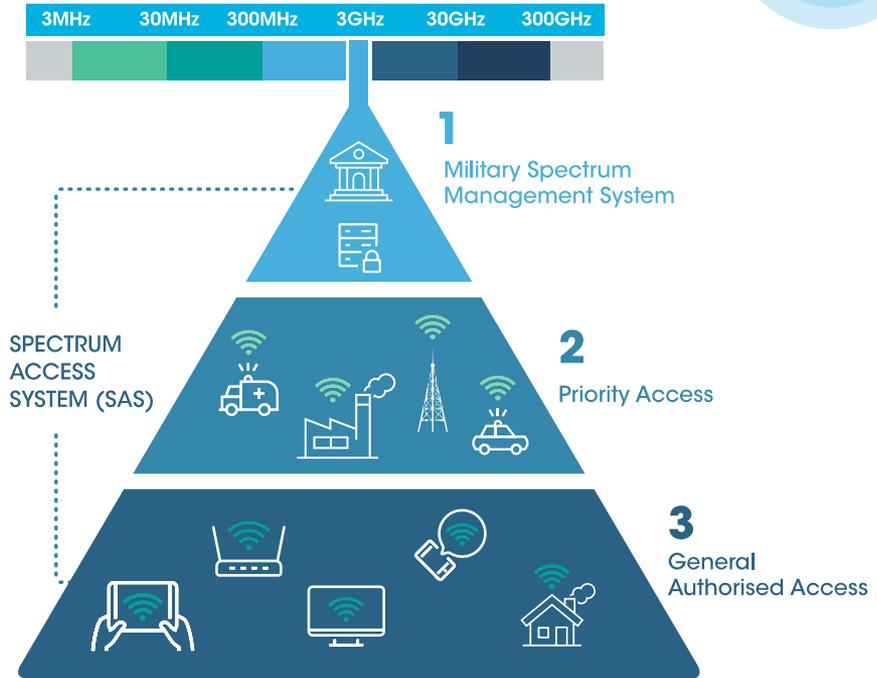
CBRS FRAMEWORK IS A SPECTRUM-SHARING SUCCESS STORY

- Full Commercial Deployment since January 27, 2020.
  Tens of thousands of CBSDs deployed, Indoor and Outdoor

- Mobile Broadband, Fixed Wireless & Private Use Cases

- PAL successful auction 105 was concluded in August 25, 2020. 3233 areas, 228 bidders winning a total of 20,625 licenses, >$4.58 billion

- 5 authorized SAS Administrators, 100 authorized models of Cellular Base Stations (CBSDs), 128 authorized Client Devices, more than 1500 Certified Professional Installers.
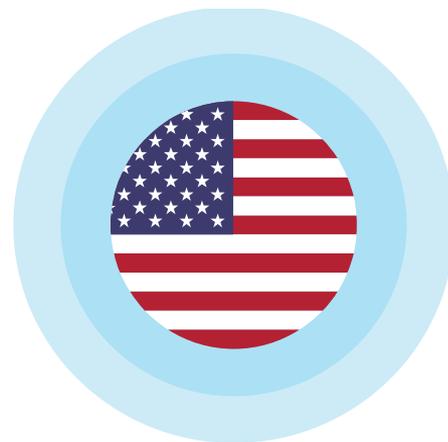
RESEARCHING THE IMT BANDS

In 2019, Policy Impact Partners (PIP) conducted in depth research into spectrum sharing models in IMT bands (similar to US CBRS) for which there are already LTE devices. The study was focused on Colombia, Malaysia and South Africa with the aim of assessing market readiness to support technology trials.

The research findings were presented at a policy workshop held in Johannesburg, South Africa in October 2019 and reported in a White Paper jointly published by PIP and the Dynamic Spectrum Alliance (DSA).
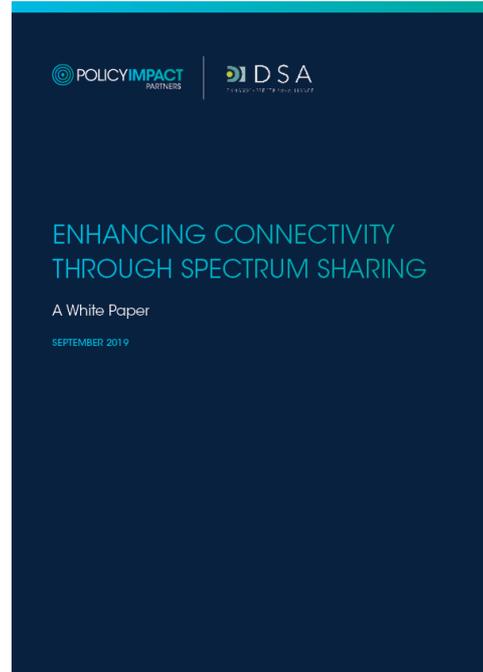
STRONG APPETITE FOR SPECTRUM SHARING IN SA

All the electronic communications licensees in South Africa interviewed by PIP expressed support for a spectrum sharing technology trial.

Sharing IMT spectrum could help provide affordable broadband to previously unserved/underserved areas of South Africa.

This is crucial to ensure communications during the COVID -19 pandemic as well as to ensure in the long term that no SA citizen is left behind in the digital age.

Spectrum sharing in IMT bands can benefit from **rapid infrastructure deployments, while end-users could choose from the wide variety of LTE-compatible devices from competing suppliers.**

POLICY**IMPACT** PARTNERS

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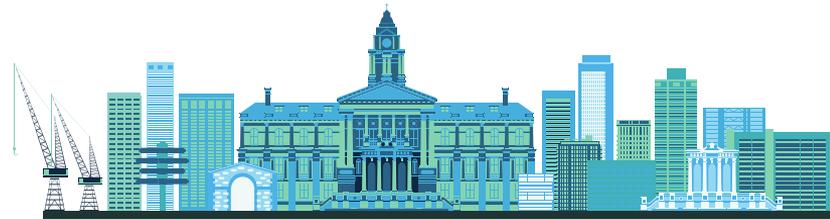
SPECTRUM SHARING FRAMEWORK

- Tier 1 users have conventional licences issued by ICASA
  - They indicate what spectrum they are willing to locally share
- Tier 2 users are new entrant connectivity providers
  - They obtain authorisation for their base stations to use spectrum ('T2 grants') from a Spectrum Sharing System (SSS)
- Tier 3 users are local businesses / private networks
  - T3 grants are issued by the SSS and provide scope for rapid access to spectrum on an opportunistic basis.

Tier 1
Incumbent users

Tier 2
Priority users

Tier 3
Opportunistic users
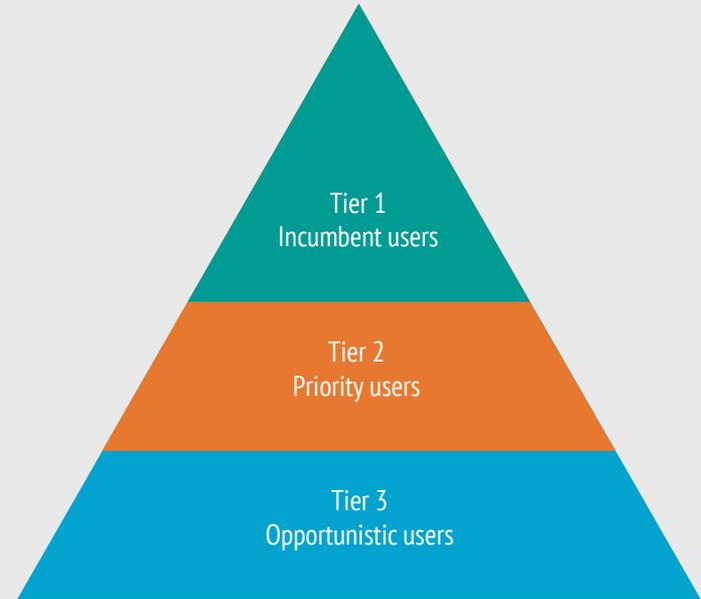
Wi-Fi 6E:

Gigabit speeds
Wider channels
Extremely low latency
High capacity
More connected devices
Energy efficiency

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VERY LOW POWER (VLP) DEVICES

LOW POWER INDOOR (LPI) DEVICES
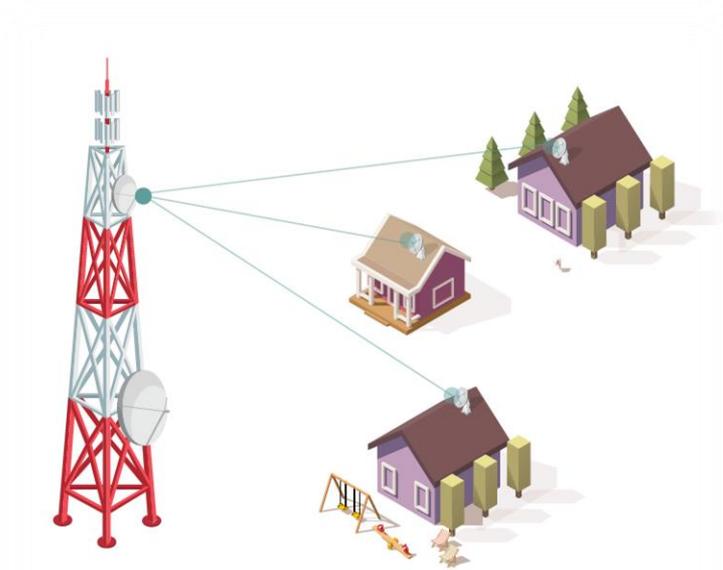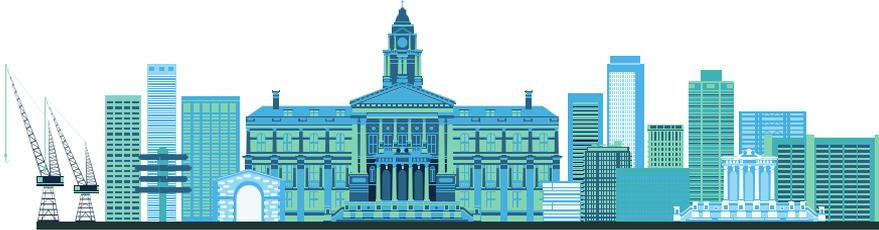
USA: REPORT & ORDER and FNPRM

The FCC´s R&O approved the addition of 1200 MHz of spectrum for unlicensed use in the entire 6 GHz band.

	5925 MHz		6425 MHz	6525 MHz		6875 MHz		7125 MHz

STANDARD POWER (Outdoors or Indoors)	UNII-5	UNII-7
LOW POWER INDOOR	UNII-5	UNII-6 · UNII-7 · UNII-8
VERY LOW POWER	UNII-5	UNII-6 · UNII-7 · UNII-8

- ▇ Automated Frequency Coordination (AFC) required
- ▇ No AFC required
- ▇ Very low power (VLP)

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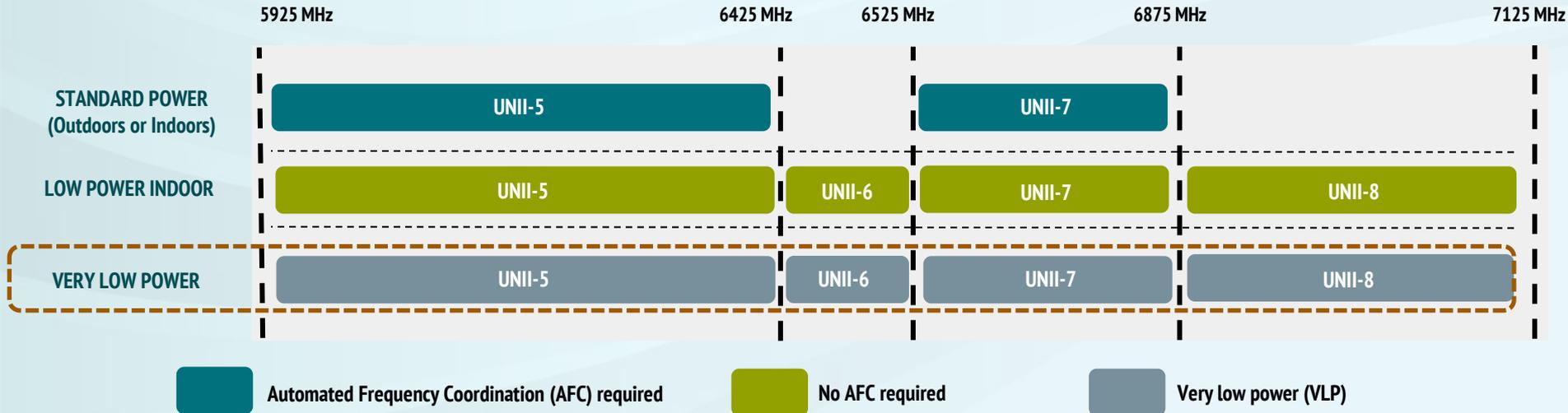
REGULATORS SHOULD PREPARE FOR WI-FI 6E

To meet the demands of today, immediate access is required.

Many countries understood that it is not an 'and/or' decision between parties, but part of their broadband and 5G strategy.

Final regulations adopted in the USA and the UK. On going process in Europe, Taiwan, South Korea, Brazil and others.

DIFFERENT OPPORTUNITIES FOR SPECTRUM SHARING

TVWS	CBRS	TSSM
Tier 1 Broadcasting Service (BS)	**Tier 1** Military Radars, FSS, FWA	**Tier 1** Incumbent users (MNOs)
Tier 2 PMSE, wireless microphones	**Tier 2** Priority Access Licenses (PAL)	**Tier 2** Priority users (MNOs, WISPs, community networks, others)
Tier 3 TVWS Devices	**Tier 3** General Authorized Access (GAA)	**Tier 3** Opportunistic users

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DIFFERENT OPPORTUNITIES FOR SPECTRUM SHARING

6 GHz	12 GHz	70/80/90 GHz
Tier 1	**Tier 1**	
FS, FSS, Mobile,	Satellite services (including NGSO satellite broadband, DBS), FS, Mobile except aeronautical mobile, BS	Fixed (point-to-point communications links) mobile, FSS
Tier 2	**Tier 2**	
EESS, SAS, RAS, UWB...	Fixed and mobile broadband deployments	5G fixed wireless backhaul, antennas in motion (including aeronautical mobile services and maritime mobile services), stratospheric Internet platforms, fixed satellites
Tier 3	**Tier 3**	
SP, LPI, VLP devices	Opportunistic users	

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GLOBAL SUMMIT

A New Spectrum Mindset

Virtual Event | November 3-5, 2020
http://dynamicspectrumalliance.org/global-summit/

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