Enabling Policies for 5G and IoT

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Agenda

- Enabling Policies

- Example Policies

- Recommendations

5G and IoT Policies

- Political support and coordination between different Ministries

- National/Regional plans

- Spectrum Policy

- 5G Policy Framework (small cell, backhaul, fibre ducts, incentives–subsidies etc.)

- IoT Policy Framework

- Demand creation and skill development programs

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Digital Plans and Visions

- Algeria: Vision 2035 - e-Algerie (Broadband & High Speed Broadband Strategy)
- Bahrain: Vision 2030 - National Broadband Network: Fourth National Telecom Plan
- Djibouti: Vision 2035 – Strategies for the Development of Telecom
- Egypt: Vision 2030, ICT 2030 Strategy and eMisr-National Broadband Plan
- Jordan: Vision 2025 - National ICT Strategy and Economic Growth Plan
- Kuwait: Vision 2035 (New Kuwait) - National Development/ICT/Broadband Plans
- Mauritius: Vision 2030 - National Broadband Policy
- Morocco: Maroc Digital 2020 Strategy (work continues on updated digital strategy)
- Oman: Vision 2040 - National Broadband Strategy
- Qatar: Vision 2030: National Broadband Plan and Development Strategies
- Saudi Arabia Vision 2030 and National ICT/Transformation Plans
- UAE Vision 2021 and Strategies for the Fourth Industrial Revolution and Artificial Intelligence

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Examples of 5G Strategies

- **European Union: 5G Action Plan:** *http://ec.europa.eu/newsroom/dae/document.cfm?doc_id=17131*
    - Timely deployment of 5G: a strategic opportunity for Europe
    - The need for a coordinated approach
    - A common EU timetable for the introduction of 5G:
        - i) Member States to develop, by end 2017, national 5G deployment roadmaps as part of the national broadband plans
        - ii) Every Member State will identify at least one major city to be "5Genabled" by the end of 2020 and that all urban areas and major terrestrial transport paths have uninterrupted 5G coverage by 2025.

- **Germany: 5G-Strategy** (*https://www.bmvi.de/SharedDocs/DE/Publikationen/DG/098-dobrindt-5g-strategie.html?nn=12830*)

- **USA:** Broadband Deployment Advisory Committee and 5G Fast Plan

- **UAE:** National 5G Committee

- **Saudi Arabia:** National 5G Task Force

- **UK:** 5G Strategy

- **South Korea:** Creative 5G Mobile Strategy and 5GForum (*https://www.5gforum.org*)

- **Japan:** 5G Development Roadmap toward 2020 (*http://5gmf.jp/en*)

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IoT Plans

- Brazil: National IoT Plan (Four verticals; Smart Cities, Healthcare, Agriculture and Manufacturing)

- European Union: Digital Single Market Strategy includes IoT (and Smart Cities & Communities)

- Malaysia: **National IoT** Strategic Roadmap

- Qatar: Smart Program (Tasmu)

- Saudi Arabia: Smart Cities Program

- UAE: National Smart Government and Cities Plans

- UK: IoTUK National IoT programme

- USA: SmartAmerica

IOT POLICY FRAMEWORK

- **Connectivity and interoperability**

- **Privacy and security**

- **Intelligent analytics and big data**

- **Open standards**

- **Data and device discoverability**

- **Public-private partnerships**

Please check IoT Policy principles for the Automotive, energy/environment and Healthcare at;
https://www.intel.com/content/www/us/en/policy/policy-internet-of-things-iot.html

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SPECTRUM POLICY

- Spectrum assignment and harmonization

- Technology neutrality and flexible use of spectrum

- Licenced and unlicensed Spectrum Policy

- Auctions

Harmonization

Harmonization crucial to enable:

- Global roaming

- Economies of scale

- Harmonization of radio tuning ranges, rather than exact bands

Country X

Region A, B, etc.

Countries Y, Z, etc.

Radio Tuning Range of User Devices

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Spectrum Needs of 5G
Success requires sufficient spectrum in a variety of bands with economies of scale

5G applications drive technical requirements, including type and amount of spectrum

< 1 GHz – for wide area applications, e.g. sensor networks, etc.

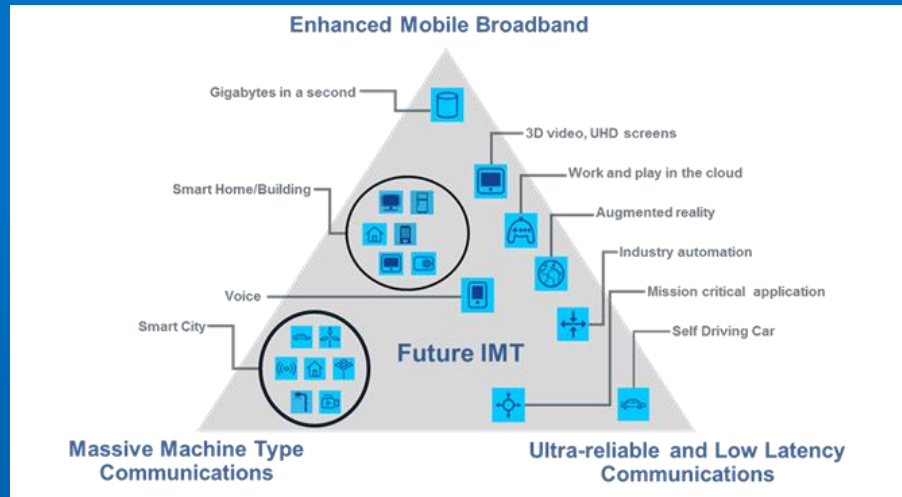< 6 GHz – for coverage/capacity trade-off, e.g. massive MIMO, outdoor-to-indoor

Higher MM Wave – for apps needing ultra-wide channels, e.g. 4k/8k video, VR, etc.

Continuous flow of sufficient, adequate, new spectrum is key to:

Expansion of wireless market to 5G and beyond

Building a strong and healthy eco-system

IMT for 2020 and Beyond

Enhanced Mobile Broadband

Gigabytes in a second

3D video, UHD screens

Work and play in the cloud

Smart Home/Building

Augmented reality

Industry automation

Voice

Mission critical application

Smart City

Self Driving Car

Future IMT

Massive Machine Type Communications

Ultra-reliable and Low Latency Communications

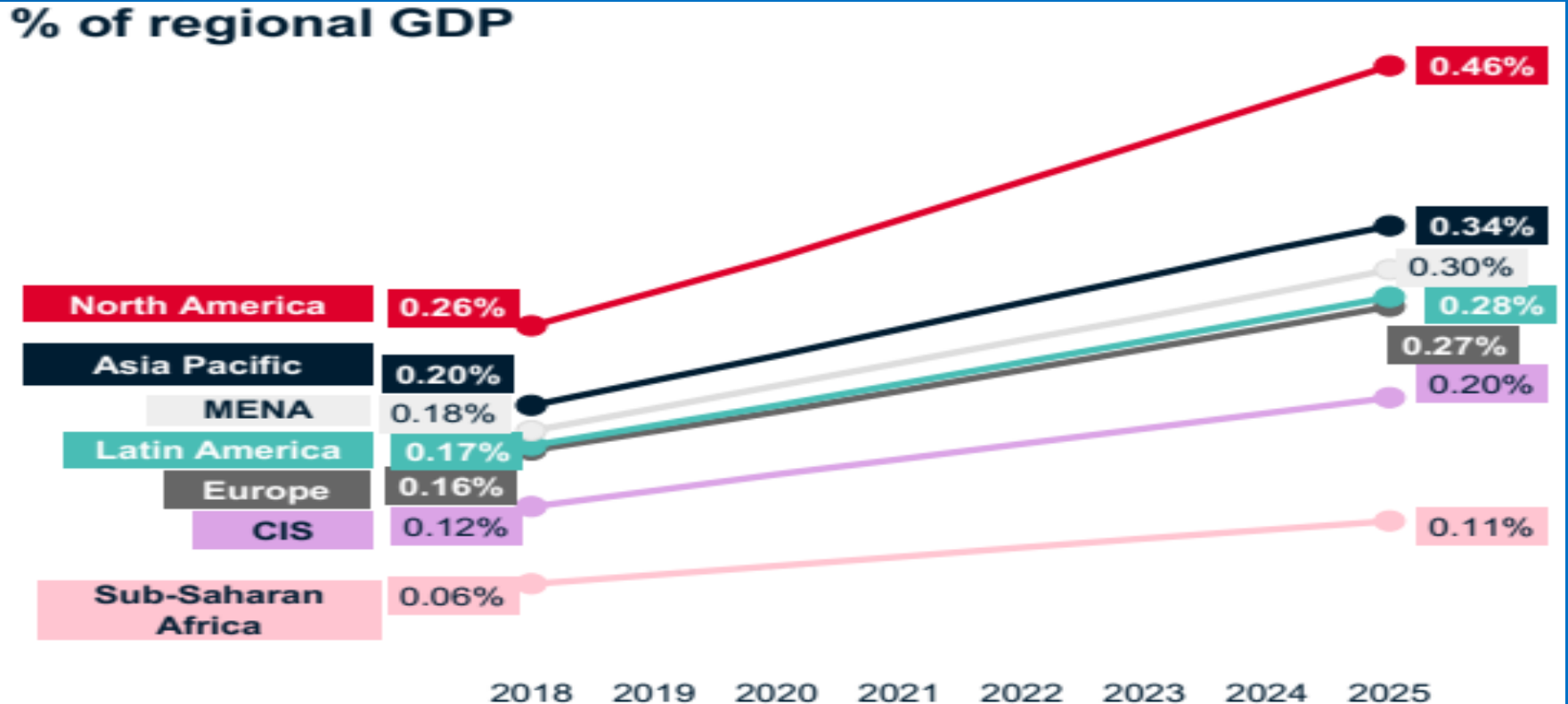1 GHz   10 GHz   100 GHz

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Spectrum Need for Wi-Fi

- There is a worldwide Wi-Fi spectrum shortfall of up to 1.6 GHz in the mid-frequency range by 2025.

- Therefore, additional spectrum need for Wi-Fi in 6 GHz (5925-7125 MHz). The USA and Europe are already moving in this direction. Opening up the 6 GHz band to Wi-Fi will accelerate the deployment of 5G capable networks.

- Intel thanks Arab States for supporting the unlicensed use of 5 GHz and 66-71 GHz for new Gigabit Wi-Fi Technologies aligned with ETSI and ITU standards/recommendations (Wi-Gig is already integrated into devices including laptops)

- It is important to continue support for the use of 66-71 GHz for unlicensed use.

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Importance of Wi-Fi

- Wi-Fi's ubiquity, flexibility and affordability have been instrumental in the growth of connectivity in emerging markets, where it has been a powerful tool for bridging the digital divide, **as well as the driver for IoT and M2M applications.**

- Wi-Fi and IMT are the most powerful wireless broadband technologies. Wi-Fi carries most of the traffic – cellular covers most of the geographical landmass. Wi-Fi and IMT are both needed to meet the 5G requirements.

- **In the 5G era, more than 70% of mobile traffic will be offloaded to Wi-Fi (up from about 50% today).**

- The evolution of Wi-Fi is well-aligned with the IMT-2020 (5G) vision of next-generation connectivity, which is grounded on ambitious and demanding requirements for capacity, latency, density, coverage, efficiency, reliability, spectrum, and number of devices. To meet the IMT-2020 goals, multiple technologies have to converge and contribute.

- New Wi-Fi technologies (such as Wi-Fi6 and WiGig) provide more capacity, lower latency and more flexible and efficient use of network resources for new smart applications.

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Economic impact of IoT on Business

% of regional GDP

Region	2018	2025
North America	0.26%	0.46%
Asia Pacific	0.20%	0.34%
MENA	0.18%	0.30%
Latin America	0.17%	0.28%
Europe	0.16%	0.27%
CIS	0.12%	0.20%
Sub-Saharan Africa	0.06%	0.11%

2018 2019 2020 2021 2022 2023 2024 2025

Source: GSMA Intelligence

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FCC's 5G Fast Plan

In USA, Broadband Deployment Advisory Committee : Formed by FCC Chairman Pai in 2017, provides advice and recommendations for the commission on how to accelerate the deployment of high-speed internet access.

- Pushing more spectrum into the marketplace; High-band, Mid-band, Low-band, Unlicensed

- Updating infrastructure policy and encouraging the private sector to invest in 5G networks. New rules and revision of existing rules to speed-up small cells.

- Modernizing outdated regulations to promote the wired backbone of 5G networks and digital opportunity for all Americans.; *Restoring Internet Freedom; One-Touch Make-Ready, Speeding the IP Transition; Business Data Services; Supply Chain Integrity.*

Ref: www.fcc.gov/5G

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OFCOM - ENABLING 5G IN THE UK

- Making spectrum available for 5G and other wireless services

- Working with Government and policy-makers to ensure access to sites is not a barrier to 5G

- ensuring access to appropriate connectivity between 5G base stations and the core network (also known as backhaul)

- ensuring net neutrality regulation is not a barrier to deployment

- acting as a facilitator, working with Government, different industry sectors and other countries to further understand potential applications of 5G

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EU- LIGHT DEPLOYMENT REGIME FOR SMALL-AREA WIRELESS ACCESS POINTS

Work continues in European Union on Light Deployment Regime for small-area wireless access points. Roadmap and Public Consultancy phases completed and it is expected European Commission will accept rules in first quarter of 2020

- 5G technologies offer prospects for new digital business models and rely on the additional installation of many small wireless access points.

- To pave the way for timely 5G rollout delivering high capacity and speeds, such small cells should be deployed in big numbers without restrictive administrative barriers.

- The European Electronic Communications Code calls on the Commission to define the necessary characteristics for small cells to be exempted from individual prior permits across the EU.
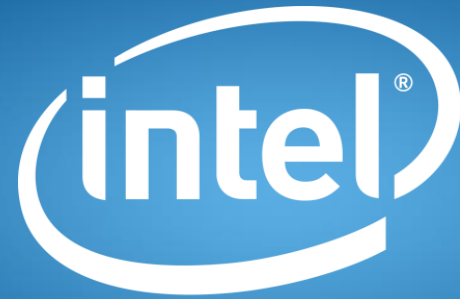
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SMALL CELL DEPLOYMENT RECOMMENDATIONS

Small cell deployment is an important option for mobile networks as they evolve to address the growing demand for mobile connectivity, improved capacity and coverage. In order to support efficient small cell deployments authorities should adopt the following policies:

1. Follow the internationally harmonised small cell power classes when developing regulations related to compliance with radiofrequency exposure limits.

2. Adopt simplified procedures for building permits for small cells (if required) based on standardised size, installation requirements and radio characteristics.

3. Accept declarations of compliance and do not require routine post-installation measurement.

4. Exempt small cell installations from location registration requirements.

5. Reduce permit costs for small cells relative to those for macrocells.

6. In respect of RF compliance provide information for consumers and local authorities based on WHO materials and recommendations.

7. Facilitate access to existing structures, electrical power and data backhaul

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Recommendations

- Develop national and regional 5G and IoT Strategies and Action Plans

- Support policy framework to accelerate the 5G and IoT and remove barriers

- Allocate sufficient low-band, mid-band and high-band spectrum for 5G

- Support Policy Framework both licenced and unlicensed bands for 5G and IoT

- Continue to support Wi-Fi in 5 GHz, 66-71 GHz and start to plan for Wi-Fi in 6 GHz (5925-7125 MHz)

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