5G Deployment in the European Union’s Digital Single Market

5G Huddle
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5G - A GAME CHANGER:
**THE EU’S 5G STRATEGY IS AT THE HEART OF ITS DIGITAL SINGLE MARKET STRATEGY**

Context:

- Very profound transformation towards a digital economy
- All economic sectors impacted – digitisation of industry
- Huge opportunities, adapting is a necessity
- Global phenomenon
- Societal impact
  - Need for new skills
  - New opportunities for better services to citizens (health, public admin, education)

In EU policy response = Digital Single Market Strategy (May ‘15):

- single market for digital services of 510m customers & 20m companies
- use all policy levers: regulation, R&D policy & funds, global standardisation efforts, enforce competition policy, etc
- Protection of personal data & free flow of data in the EU
- 5G Action Plan & Code
Global 5G roll-out started – Europe well prepared:

### 5G Spectrum

**Europe**
- 2020 deadline for assignments of 5G pioneer bans in the EU. Spectrum assigned and usable in 2020 in 9 Member States:
  - 16.7% in the 700 MHz band
  - 23% in the 3.4-3.8 GHz band
  - 3.6% in the 26 GHz band

**United States**

**China**
  - 3.4-3.5 GHz for China Telecom
  - 3.5-3.6 GHz for China Unicom
  - China Mobile: 260 MHz on 2.6 GHz (2515-2675 MHz) and 4.8 GHz (4800-4900 MHz)

**Japan**
- In April 2019, the Ministry of Internal Affairs and Communications assigned spectrum to all MNOs in Japan:
  - NTT DoCoMo: 3.6-3.7 GHz, 4.5-4.6 GHz & 27.4-27.8 GHz
  - KDDI: 3.7-3.8 GHz, 4-4.1 GHz & 27.8-28.2 GHz
  - Softbank: 3.9-4 GHz & 29.1-29.5 GHz
  - Rakuten: 3.8-3.9 GHz & 27-27.4 GHz
5G ACTION PLAN (SEPT 2016): SETTING EU-WIDE TARGETS:

We are here

- Early 5G launch in selected areas
  2018

- Commercial launch of 5G services in at least one major city in all MS
  2020

- Coordinated launch in all EU’s digital single market

- 5G in all urban areas and along main transport paths
  2025

- Comprehensive roll-out with geographical and sectorial focus
EU Industry ready

165 5G trials in the 28 Member States

125 Future 5G-enabled cities

11 5G Cross-Border corridors

Number of trials

- More than 10
- Between 5 and 10
- Less than 5
- Unknown

5G Cross-Border corridors for large-scale testing

H2020 5G Cross-Border corridor projects
Supporting Vertical Pilots: 5G PPP E2E Infrastructure

Main Facility that offers Services to ICT-19 with well defined SLAs

Experimentation Facility for advanced Experimentation and Testing

Moving Experimentation Facility Site

5G-Vinni
5G-EVE
5Genesis

New Sites/nodes as of 1st of June 2019

5G-VINNI: https://www.5g-vinni.eu/facility-site/
5G-EVE: https://www.5g-eve.eu/end-to-end-facility/
5GENESIS: www.5genesis.eu
Connected & automated Mobility over cross border corridors as flagship use case, the “Rome process”

3 Supporting Projects, to be expanded:

- 5G CARMEN, Brenner corridor
- 5G CROCO, Metz Merzig Corridor
- 5G MOBIX, PT-ES and EL-TK corridors

10 Cross Border Corridors

Budget ‘21-’27: proposals for big budget towards operational deployment
Target corridors under CEF2 programme

« Strategic Deployment Agenda » under development

5G VISION & GLOBAL STANDARD-SETTING

Enhanced Mobile Broadband

Gbps bandwidth
10 Mbps/m² traffic density

Gigabytes in a second

3D video, UHD screens

Work and play in the cloud

Augmented reality

Industry automation

Self Driving Car

Mission critical application e.g. e-health

Voice

Massive Machine Type Communications

Ultra-reliable and Low Latency Communications

Smart City

Future IMT

Smart Home/Building

1 million devices/km²

True ms latency
99,999% reliability
AN ENABLING REGULATORY ENVIRONMENT FOR 5G: THE EU’S TELECOMS CODE (1):

Objectives: promote competition and innovation; stimulate investment by creating legal predictability to achieve timely deployment of 5G networks and services

→ Major overhaul of EU’s telecoms regulation – merged into a single Code – and updated notably to foster 5G roll-out
→ Key legal measure of the EU’s Digital Single Market strategy
→ Adopted in Dec 2018 & Member States to transpose in nat’l law by Dec 2020
AN ENABLING REGULATORY ENVIRONMENT FOR 5G: THE EU’S TELECOMS CODE (2):

Key measures for 5G:

- **Firm common deadlines in the EU for licensing** (= 2.5 years after technical harmonisation decision)
- **Commitments for 5G pioneer bands** (next slide)
- **Coordination mechanism for auctions**
- **Certainty of long duration licences** (at least 20 years for harmonised spectrum)
- **More flexibility in authorisation, sharing & trading** (next slide)
- **Innovation & pro-investment fee principles** (next slide)
- **Small cells: lightweight regime** (installation without permit)
AN ENABLING REGULATORY ENVIRONMENT FOR 5G: THE EU’S TELECOMS CODE (3):

Commitments for 5G pioneer bands:

Assignment deadline: 31 December 2020

- In addition to 700 MHz band covered by 2018 decision (30 June 2020)
- To re-organise and allow the use (i.e. free the spectrum and grant the rights) of the 3.4-3.8 GHz band
- To allow the use of at least 1 GHz in 24.25-27.5 GHz band
- General exceptions apply
- In line with harmonised technical conditions adopted by COM in end 2018 and Q1 2019
AN ENABLING REGULATORY ENVIRONMENT FOR 5G: THE EU’S TELECOMS CODE (4):

More flexibility in authorisation & sharing:

- Combine general authorisations, individual rights and sharing arrangements
- Minimise restrictions to spectrum use through technological solutions
- Sharing of infrastructure relying on spectrum possible:
  - by commercial agreement, subject to competition law
  - Authority to impose passive or active infrastructure sharing or local roaming if insurmountable obstacles to market-driven deployment of infrastructure
AN ENABLING REGULATORY ENVIRONMENT FOR 5G: THE EU’S TELECOMS CODE (5):

More flexibility in trading & leasing of spectrum:

- **Principle:** trading and leasing for all spectrum rights (except spectrum obtained free of charge or for broadcasting)
- **Light procedure:** intention to be notified to authority and made public
- **Transfer and lease automatically allowed**
  - where original conditions are maintained
  - if lessor remains liable for original conditions
  - unless new holder might not meet original conditions
- **Details on tradable rights to be publicly available**
AN ENABLING REGULATORY ENVIRONMENT FOR 5G: THE EU’S TELECOMS CODE (6):

Fees for right of use: to be set at level which ensures efficient assignment and use of spectrum, by:

• taking account of alternative uses of the spectrum when setting reserve prices;
• taking into account costs entailed by conditions attached to rights;
• Linking payment modalities to actual availability of spectrum

Competition measures: When granting, amending or renewing spectrum rights, authority (NRA/CA) may, in certain conditions and based on forward looking assessment of competition (market analysis), among others:

• Set spectrum caps, impose wholesale access, national or regional roaming
• Reserve spectrum for new entrants
• Refuse to grant new rights to avoid accumulation of spectrum
• Prohibit trading or impose certain conditions therefor
### EU Member States

14% 5G spectrum assigned throughout the EU*

<table>
<thead>
<tr>
<th>5G pioneer spectrum</th>
<th>Assigned and usable in 2020</th>
<th>Assigned but not usable in 2020</th>
<th>Not assigned</th>
</tr>
</thead>
<tbody>
<tr>
<td>700 MHz</td>
<td>16.7%</td>
<td>3.6%</td>
<td>79.8%</td>
</tr>
<tr>
<td>3.4–3.8 GHz</td>
<td>23%</td>
<td>2.2%</td>
<td>74.8%</td>
</tr>
<tr>
<td>26 GHz</td>
<td>3.6%</td>
<td></td>
<td>96.4%</td>
</tr>
</tbody>
</table>

* 14% represents the total amount of spectrum assigned in all Member States. The figure is expected to increase following the recently updated EU telecom rules.

11 Member States have published national 5G roadmaps
5G Cybersecurity

Interconnected and transnational nature of 5G infrastructure
Vulnerabilities, cyber incidents in one country can affect the Union, serious consequences for critical services in case of systemic and widespread disruptions

➔ Commission Communication on Secure 5G Deployment & Implementing EU Toolbox – 29.1.’20
Monitoring progress & Sharing best practice: the European 5G Observatory

- Online platform on [http://5gobservatory.eu/](http://5gobservatory.eu/)
- *Phase one indicators mainly related to « 5G Readiness of Europe»*
  - Main 5G market developments in the EU and internationally;
  - 5G pre-commercial trials and commercial 5G launches;
  - National strategies by the EU MS (EU guidance see [here](http://5gobservatory.eu/))
  - Spectrum assignments by public authorities
Thank you!

More info: