

5G: The future of Mobile Internet

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About the GSMA



THE GSMA
WAS FOUNDED
IN
1987

12 OFFICES WORLDWIDE:



LONDON



DUBAI



ATLANTA



BRUSSELS



BARCELONA



HONG KONG



BRASILIA



BUENOS AIRES



SAO PAULO



NAIROBI



NEW DELHI



SHANGHAI



The GSMA
represents
the interests
of mobile
operators
worldwide



UNITING
NEARLY
800
MOBILE
OPERATORS



WITH
300+
COMPANIES
in the broader mobile ecosystem



The world's leading mobile industry events,
Mobile World Congress and Mobile World
Congress Shanghai, together attract

130,000+
people from across the globe each year

The GSMA works to deliver a regulatory environment
that creates value for consumers by engaging
regularly with:



MINISTRIES
OF TELECOMS



TELECOMS
REGULATORY
AUTHORITIES



INTERNATIONAL &
NON-GOVERNMENTAL
ORGANISATIONS



CONNECTING
27,000+
Industry Experts

Exclusively for GSMA Members,
InfoCentre² is your place to
connect with a global
community of industry experts

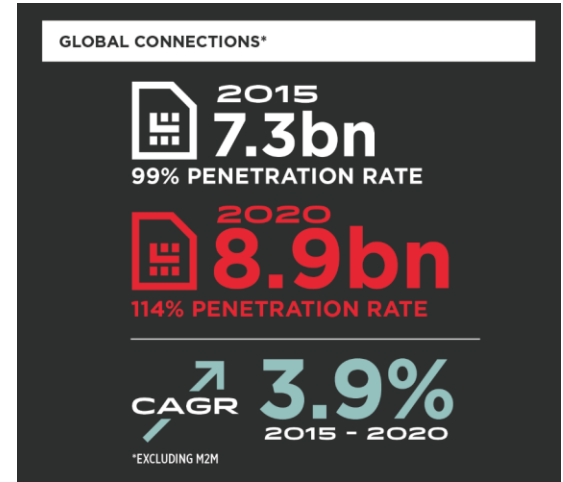
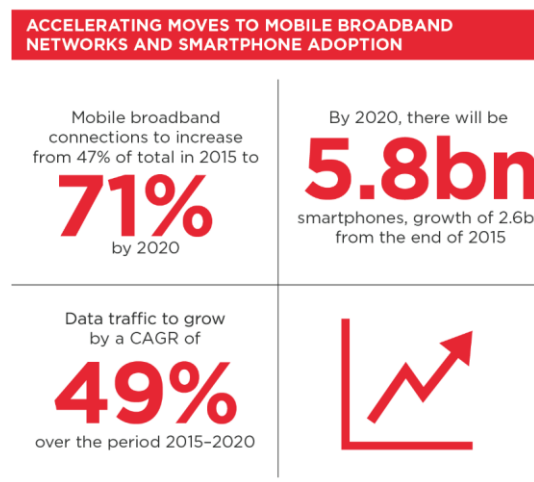
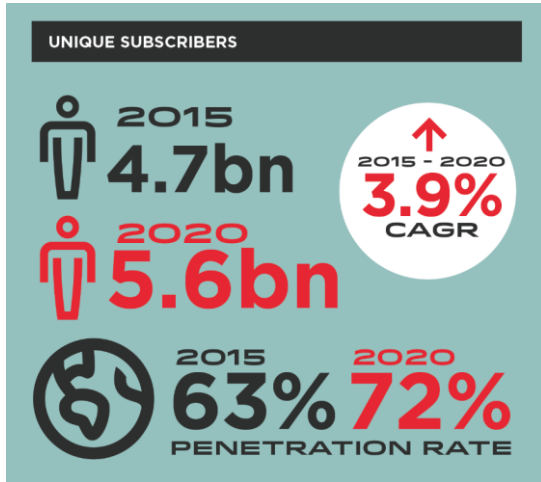
GSMA Working Groups
provide frameworks and
standards in commercial,
operational and
technical matters that help
maintain and advance
mobile industry ecosystems



**7.5
BILLION+**
MOBILE CONNECTIONS
WORLDWIDE




The mobile economy 2016





The mobile economy 2016

4G 

4G networks are now available in 151 countries across the world.

MOBILE CONTRIBUTING TO ECONOMIC AND SOCIAL DEVELOPMENT ACROSS THE WORLD



Delivering digital inclusion to the still unconnected populations
Mobile internet penetration
2015: 44%
2020: 60%



Delivering financial inclusion to the unbanked populations
270 live services in 90 countries as of December 2015



Delivering innovative new services and apps
Number of M2M connections to reach 1bn by 2020

MOBILE INDUSTRY CONTRIBUTION TO GDP



1.9bn 

Mobile money services are now available to 1.9 billion people globally.



Mobile coverage in Europe

Population coverage driving deployment

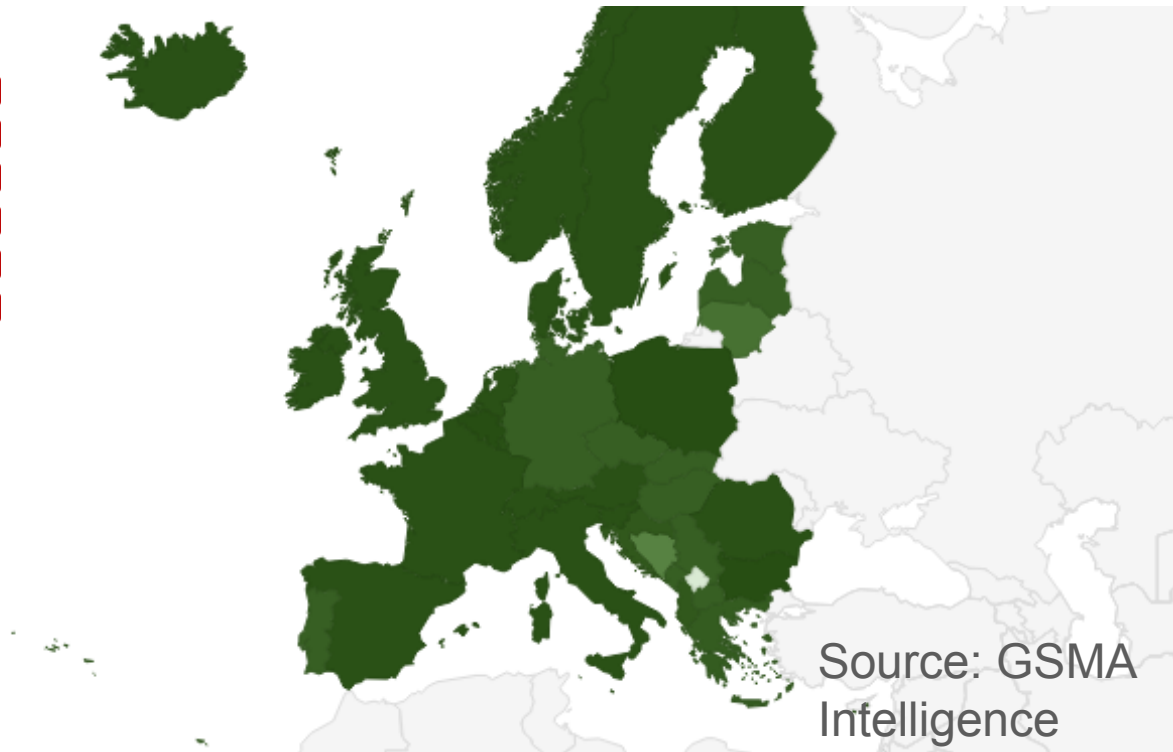
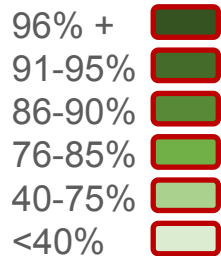
- Priority is to provide coverage in populated areas first (meeting spectrum licence targets)
- 4G is the fastest technology to be deployed already surpassed 3/4 of the population coverage
- 2G coverage in Europe almost total

Radio Technology (Generation)	Coverage (population)
GSM (2G)	99%
UMTS (3G)	96%
LTE (4G)	76%

Aggregated European coverage by population (source: GSMAi)



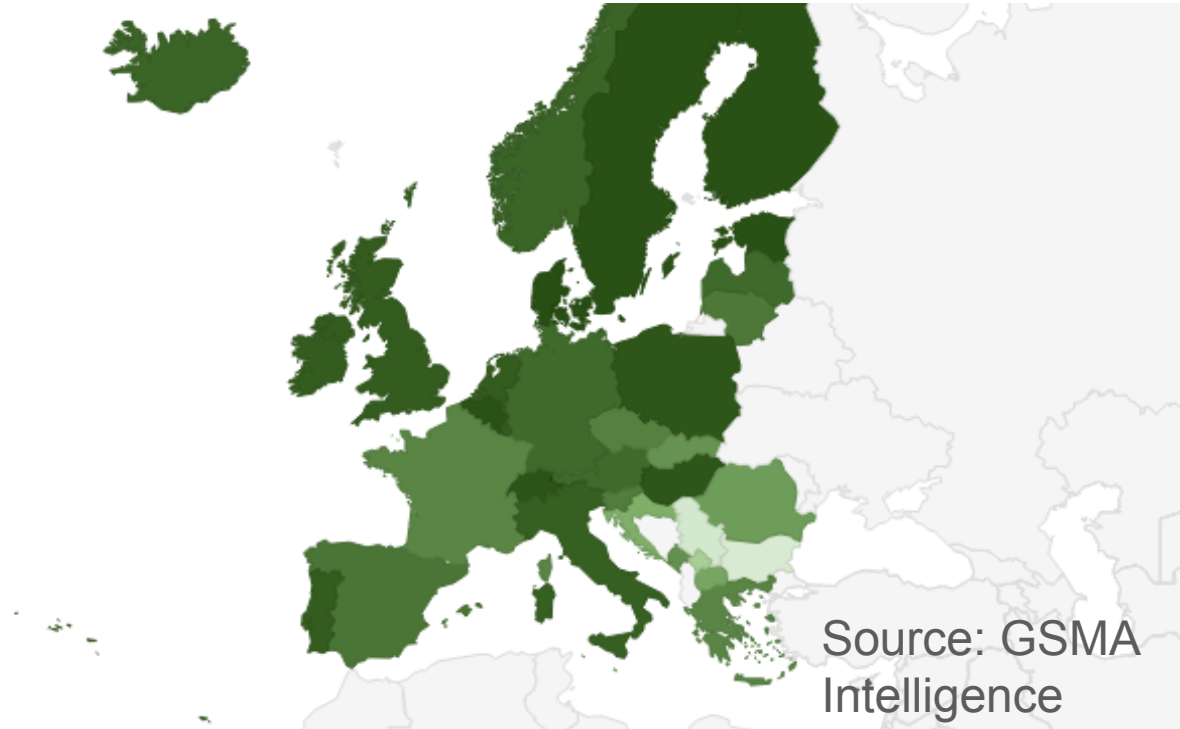
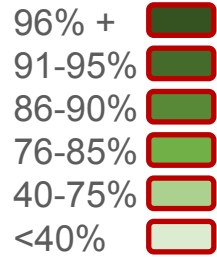
3G network coverage by population



Source: GSMA
Intelligence



4G network coverage by population



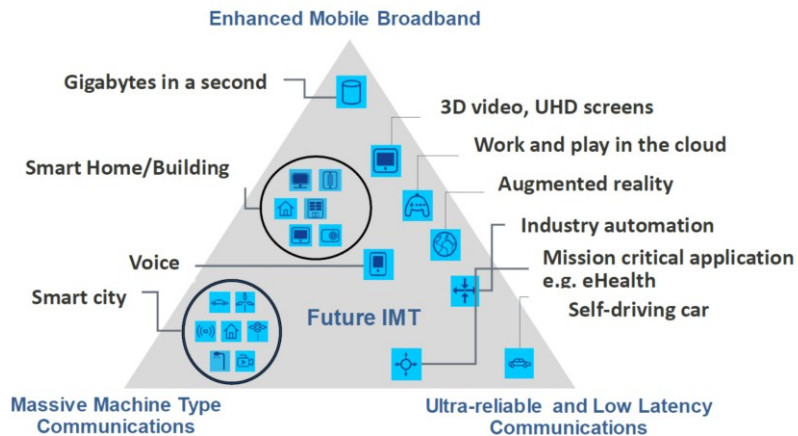
Source: GSMA
Intelligence



Challenges to Ubiquitous Coverage

Spectrum consideration	Network expansion strategy	Logistical considerations (for remote areas)
<ul style="list-style-type: none">• Radio signals weaken faster the higher the frequency• Adding cells increase interference lowering the system capacity• Large cells possible at below 1 GHz spectrum (700 MHz, 800 MHz), but need favourable terrain	<ul style="list-style-type: none">• Viability of cell depends on the traffic carried by the cell• Populated areas and road network take precedence• This is true also in advanced networks	<ul style="list-style-type: none">• Backhauling-transporting data to and from the cell reliably• Site maintenance-security of site, antenna tilting, upgrading, visits• Operation – e.g. Electricity supply• Site Costs – e.g. rental and planning rules

The Future for Ubiquitous Coverage?



ITU-R WP5D/TEMP/548-E: IMT Vision, February 2015

5G as an Ecosystem

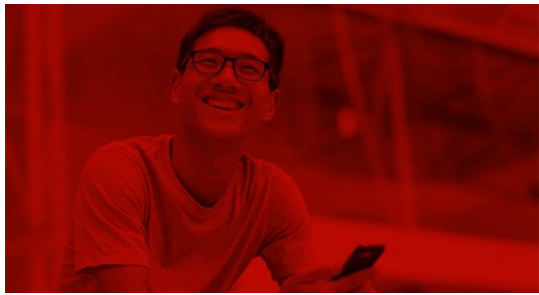
- New 5G radio technology is likely to be suitable for hotspot-like coverage
- 5G Core however could be designed to support wide variety of access technologies
- Heterogeneous network deployment holds the key to ubiquitous mobile service

Potential Solutions: Policy levers



How can regulations help?

- Ensure spectrum suitable for wide area coverage is made available for mobile communications
- Better and faster to access sites for base station deployments
- Less restrictive planning permissions



Thank you