



IMT Spectrum Policy for enabling high quality, widespread and affordable broadband services for all

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1

Agenda

- **Intel's Vision and Future Data Traffic**
- **Spectrum Policy**
- **WRC-15 (IMT related Agenda Items)**
- **Affordability**
- **Recommendations**

**Other names and brands may be claimed as the property of others.*

2

Intel's Vision and Future Data Traffic

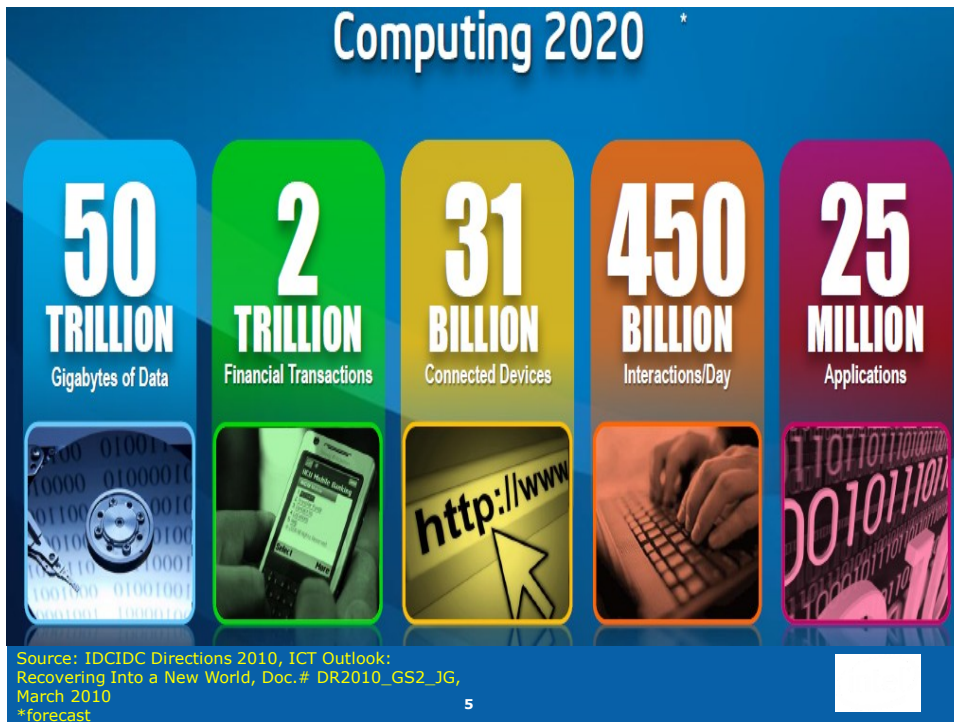
3

Intel's Vision

This decade we will create and extend computing technology to connect and enrich the lives of every person on earth.



4



5

Global Mobile Data and Internet Traffic, 2011-2016

By Geography (PB per Month)

	2011	2012	2013	2014	2015	2016	CAGR 2011-2016
North America	119	259	493	844	1,305	1,964	75%
Western Europe	180	366	684	1,161	1,705	2,438	68%
Asia Pacific	206	438	832	1,503	2,614	4,323	84%
Latin America	40	77	146	267	455	738	79%
Central and Eastern Europe	34	68	134	253	439	706	83%
Middle East and Africa	18	45	91	187	378	635	104%

Source: Cisco

6

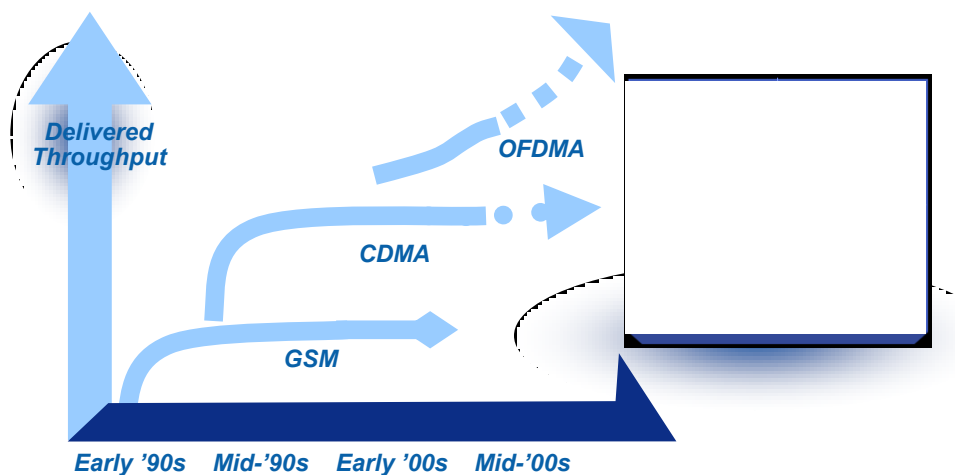
Bandwidth & Business

- **Economic viability of a service provider's business case is highly sensitive to the size of the spectrum allocation license**
- **Spectrum available for deployment determines base station capacity**
- **Capacity constraints accelerate the need to split cells**
- **Excessive cell splitting causes significant operating and financial issues for operators**
 - Increases capital and operating expenses resulting in increased cost to deliver data
 - Additional cells increase interference issues for subscribers
 - Creates quality of service issues for subscribers
 - Limits operators from providing high bandwidth applications such as video and music downloads
 - Limits the number of subscribers that can be served by the operator

Increased bandwidth enhances overall efficiency of the network and reduces cost of network deployment

7

Shift to OFDMA based Mobile Technologies



CDMA=Code Division Multiple Access, OFDMA=Orthogonal Frequency Division Multiplex Access

8

Urgent Need for More Spectrum

(including the Digital Dividend, 2.6GHz and 1.8GHz bands)

- Mobile broadband connections across the Arab States are expected to increase 255 per cent by 2017.
- The release of additional spectrum could raise the Arab States GDP by US\$ 108 billion between 2015 and 2025.
- 5.9 million additional jobs could be created by 2025.

Source: GSMA Report

9

Intel's Spectrum Policy

Intel's Spectrum Policy

Development of a National Broadband Plan including Spectrum

- Technology Neutrality & Service Flexibility
 - Flexibility in regulations to encourage technology growth and adoption
 - Allow licensee to choose any appropriate broadband wireless technology
- Support Policies to facilitate ubiquitous, widespread, affordable broadband
 - Large block aggregates: (ex: 30 MHz or more)
 - Support secondary markets (spectrum trading)
 - Allow nomadic use in a fixed band (stationary when in use)

Many Nations and organizations support Technology Neutrality

WRC-15 (IMT related Agenda Items)

WRC-15 Agenda Item 1.1

- Resolution 233 (WRC-12)
 - Studies on frequency-related matters on IMT and other terrestrial mobile broadband applications
 - Additional spectrum requirements
 - Potential candidate bands (including compatibility studies)
- Intel actively participating in discussions in WP 5D (for IMT), WP 5A (for RLANs) and JTG 4-5-6-7
 - Suitable frequency ranges and spectrum estimates being finalized in May (WP 5A) and July (WP 5D).
 - Sharing studies and development of draft CPM text in JTG 4-5-6-7

WRC-15 Agenda Item 1.2

- Resolution 232 (WRC-12)
 - 694-790 MHz in Region 1 to be co-primary for Mobile
 - Allocation becomes effective immediately after WRC-15

Two main issues:

- 2x30 or 2x40 MHz
 - Focus on economies of scale, roaming, technical feasibility
- Level of protection for broadcasting

Affordability

15

Affordable Broadband

- [Competition](#)
- [Universal Service Policy](#)
- [Tax Policy](#)
- [Subsidy Programs](#)

16

Third Billion Program (Prepaid Broadband)

The initial cost of “broadband+computer” is sometimes too high, especially for first-time buyers

Third Billion Program

- Affordable “Broadband + Computer+ Content” Package.
- Reaching the Next Billion with prepaid Telco Program.
- Government support is important for the program to lower the prices (subsidization, USF, Taxation etc.).

Recommendations

Broadband Success Formula

- Competition
- Spectrum Assignment
- National Broadband and Implementation Plan
- Universal Service (ensure each citizen has access)
- Demand (content, public education, e-government, e-health, e-commerce, e-learning etc.)
- **Effective usage of ICT technologies at schools by students and teachers (digital literacy)**

19

EU Digital Agenda

Pillar I: Digital Single Market

Pillar II: Interoperability and Standards

Pillar III: Trust and Security

Pillar IV: Very Fast Internet

Pillar V: Research and Innovation

Pillar VI: Enhancing e-skills

Pillar VII: ICT for Social Challenges

<http://ec.europa.eu/digital-agenda>

EU Digital Agenda - Pillar IV: Very Fast Internet

New services such as high definition television or videoconferencing need much faster internet access than generally available in Europe. To match world leaders like South Korea and Japan, Europe needs download rates of 30 Mbps for all of its citizens and at least 50% of European households subscribing to internet connections above 100 Mbps by 2020. The Digital Agenda aims to turn this ambition into reality by stimulating investments and proposing a comprehensive radio spectrum plan.

[Action 42: Adopt an EU broadband communication](#)

[Action 43: Funding for high-speed broadband](#)

[Action 44: European Spectrum Policy Programme](#)

[Action 45: Foster the deployment of NGA networks](#)

[Action 46: Member States to develop national broadband plans](#)

[Action 47: Member States to facilitate broadband investment](#)

[Action 48: Use structural funds to finance the roll-out of high-speed networks](#)

[Action 49: Member States to implement European Spectrum Policy Programme](#)

USA National Broadband Plan – Short Term

1. Design policies to ensure robust competition and, as a result maximize consumer welfare, innovation and investment.
2. Ensure efficient allocation and management of assets government controls or influences, such as spectrum, poles, and rights-of-way, to encourage network upgrades and competitive entry (**Make 500 megahertz of spectrum newly available for broadband within 10 years, of which 300 megahertz should be made available for mobile use within five years**).
3. Reform current universal service mechanisms to support deployment of broadband and voice in high-cost areas; and ensure that low-income Americans can afford broadband; and in addition, support efforts to boost adoption and utilization.
4. Reform laws, policies, standards and incentives to maximize the benefits of broadband in sectors government influences significantly, such as public education, health care and government operations.

USA National Broadband Plan – Long Term Goals

At least 100 million U.S. homes should have affordable access to actual download speeds of at least 100 megabits per second and actual upload speeds of at least 50 megabits per second.

Every American community should have affordable access to at least 1 gigabit per second broadband service to anchor institutions such as schools, hospitals and government buildings.

The United States should lead the world in mobile innovation, with the fastest and most extensive wireless networks of any nation.

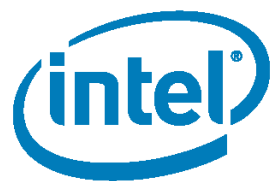
Every American should have affordable access to robust broadband service, and the means and skills to subscribe if they so choose.

To ensure the safety of the American people, every first responder should have access to a nationwide, wireless, interoperable broadband public safety network.

To ensure that America leads in the clean energy economy, every American should be able to use broadband to track and manage their real-time energy consumption.

Recommendations

- Develop detailed National/Regional Broadband and Implementation Plans, including spectrum and universal service policy, by setting measurable time bounded goals (AREGNET and AICTO could lead and play important role).
- Provide coordination between Ministries and get political support from Presidents-Prime Ministers for National/Regional Broadband Plans.
- Provide More licensed spectrum for operators and unlicensed spectrum for Wi-Fi use.
- Foster Fibre Backbones, Next Generation Networks and broadband services.
- Apply Technology and service neutrality, flexibility within licensed use (like LTE in GSM/3G bands).



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