



Greywale
Management

Communiqué
Industry News



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INDUSTRY NEWS:

5G Summit emphasizes EU leadership of wireless industry!

Validates Greywale Management Technology, Innovation & Investment Priorities

Greywale Management

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h.hamdoun@greywale.com

For more details and for any questions about this report please contact Hassan Hamdoun, PhD on

h.hamdoun@greywale.com (www.greywale.com)

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INDUSTRY NEWS:

5G what is means to You!

Validates Greywale Management Technology Innovation & Investment Priorities

On February 10, 2014 **Huawei Europe** hosted the 5G Europe summit in Munich, Germany. A two day high profile summit discussing Europe leadership on 5G, developments and business opportunity. The summit focuses on 5 core areas: leadership, business priorities & opportunities, technology candidates, technical challenges and market preparedness. The summit brought top leaders on 5G from industry, research and government bodies.

1. For the first time Mobile internet users exceed fixed- broadband internet users (PCs,desktops,etc)(Ericsson Mobility report 2013).
2. Huawei has set aside **\$600M in R&D** on 5G that does not include the investment on developing of networks and infrastructures for 4G and 5G. Huawei expecting 5G networks to be operational by 2020.
3. European Commission (EC) infrastructure Private Partnership Project (PPP) fund of €700M is set aside for 5G research. The partnership will be operational by end of 2014. This will be matched by similar amount by the industry participants.
4. 100+ research and industry participants and taking part in the PPP.
5. Success of 5G in Europe is critical to success of 5G globally.

Participants: Deutsche Telekom, Telefonica , Alcatel-Lucent, EE Limited, NTT DocoMo , Ericsson, Nokia Solutions and Networks , University of Surrey, BMW , of Kaiserslautern, Vodafone, Eurescom and European Commission.

Quick Resources

1. Huawei hosts 5G Europe submit
http://www.huawei.eu/files/events/documents/20140210_5g-summit_programme.pdf
2. European commission Private Partnership Project (PPP) for 5G
http://ec.europa.eu/research/press/2013/pdf/ppp/5g_factsheet.pdfNCTA Agreement:
<https://www.ncta.com/sites/prod/files/VOLUNTARY-AGREEMENT-ENERGY-EFFICIENCY-OF-SET-TOP-BOXES.pdf>
3. www.metis2020.oic
4. <http://www.ericsson.com/res/docs/2013/ericsson-mobility-report-june-2013.pdf>
5. Greywale Management Service Provider Energy Taxonomy <http://greywale.com/wp-content/uploads/2013/09/Greywale-SP-Energy-Taxonomy.pdf>



KEY POINTS

1. 5G investment is at critical state.

- a. South Korea will invest \$1.5B within 6 years on technologies related to 5G technologies.
- b. Huawei has set aside \$600M in R&D by end of 2018 on 5G that does not include the investment on developing of networks and infrastructures for 4G and 5G. Huawei expecting 5G networks to be operational by 2020.
- c. Europe vision is to take the lead on 5G and hence current partnership and this 5G summit is important step forward.
- d. Hence, European commission is talking the lead with private partnership project (PPP) fund of \$700M which will be matched by the industry for 5G research.
- e. It is expected that 5G will create \$10B of services, technologies and business opportunities.

2. Policy regulation is critical at this stage

- a. Europe with a strong lead on regulation of telecommunications has the capacity to reshape the industry.
- b. 5G PPP is important development as investment with backing from regulators (3GPP).
- c. The EU Horizon 20:20 research framework funding on key technologies for the ICT and telecommunications industry is key driver.

3. 5G is not only about speed

- a. 5G will be characterized by **1000x** the speed of current networks (10Gbps) and will transform the landscape of wireless communications for years to come.
- b. New services and applications – integrating software and networks, CDN and integration with the cloud and IoT and new innovations.
- c. 5G will affect the whole infrastructure despite that RAN development and innovations in 5G are expected to be the major and the key.

4. 5G PPP

- a. 100 organizations
- b. Focus is at the services level domain at the moment.
- c. 125M Euros project budget.

5. 5G Phases

- a. Current phase 2012-present – Research, with projects such as METIS
- b. Testing and deployment – 2017 time frame.
- c. System optimization and trials 2019-2020.

6. Challenges

- a. Research-industry associations & collaborations need to be maintained as open as possible.
- b. Infrastructure has to be open to other companies.
- c. Inventing new ways of working- e.g. open sources.
- d. Pull and push is needed – research and industry on technical, regulation and business models aspects of 5G development.
- e. New millimeter waveform and spectrum will be needed for 5G air interface. Still in its research infancy, research consortium and industry role is to take this to a mature level.

6.1 Timeframe

- a. Time is critical in achieving consensus on what 5G will look like.
- b. Constricting challenges of having mature deployed infrastructure.
- c. Non-technical challenges are problematic and even harder to address than technical ones, e.g., market preparedness.
- d. Currently, in addition to air interface challenges and spectrum for 5G, there is a debate on what will the core and backbone architecture utilizes to carry such capacity increase.

6.2 Government policies/staffing

- a. 5G will take jobs out of other industries.
- b. E.g., Tube strikes in London- were about reduction in ticket officers due to smart cards and cloud services– need to be prepared for this.

6.3 Business policies & models

- a. EU telecom sector is very critical with 7M jobs.
- b. Europe accounts for 40% of worldwide telecommunications market of networks infrastructure and technologies. Nearly €200 billion in 2012 in terms of network infrastructure supply. Hence business in Europe for 5G is promising.
- c. Pre-competitive phase cooperation and then allowing innovations and competition to occur.
- d. e.g. Whatup instant messaging company has 400M subscribers- Initially backed by venture capitalist from California.

6.4 Market preparedness & cooperation

- a. 3GPP technology policies need to match the government policies.
- b. Balanced approach in society is needed.
- c. Do we need a single Market, e.g. Europe? Probably not.
- d. e.g. Orange and Dutch telecom cooperation at the procurement level

6.6 Market openness

- a. Create environment for startups to grow
 - i. Allow startup to innovate and grow (e.g. Whatsup)
- b. Deployment stage challenges
 - i. E.g. 3G deployment and spectrum auctions were problematic and hindered progress of 3G.
 - ii. In fact, 3G market was not there as it relies on smart phone market penetration to be high which occurred later.

INDUSTRY RECOMMENDATIONS

1. For mobile communications operators

- a. Develop an innovation strategy around 5G.
- b. Leverage the investment on 5G and exploit the opportunity to understand more about your position in the market in relation to your business model, energy strategy and innovation management.
- c. Stay ahead of competition and regulations and avoid time delays by working now to ensure your wireless products and mobile services are future proof and standards ready.
- d. Recognize that 5G as not just a new technology but as an opportunity to launch new products and services- again your innovation strategy comes handy here. Contact us for more info.

2. For mobile communications vendors

- a. Ensure you are in tune with the development of 5G and details of PPP partnership.
- b. Ensure you understand the full picture and phases of 5G development so that your products, hardware, software and services are in line with the market trends and demands. Contact us for details of how to go about this.

3. For Semiconductor Manufacturers

- a. Work with mobile communications vendors and 5G technology providers to create end-to-end system architectures that ensure appropriate manufacturing tools and models for 5G chipsets.
- b. News like in this Communiqué helps you identify upcoming market trends and to align R&D technical directions and plans of the 5G chips, Transceiver units (TRUs) and hardware market.

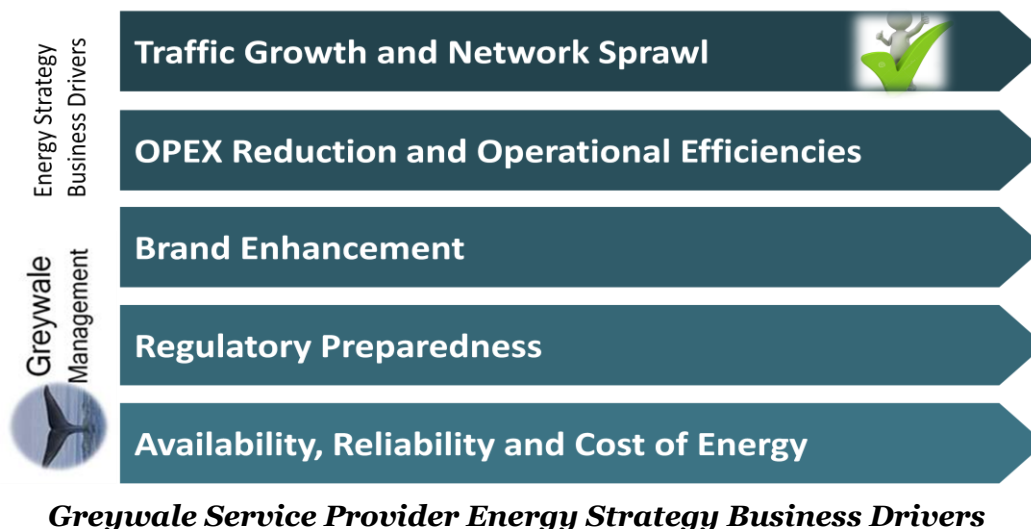
4. For Consumers

- a. If you are data savvy and new services enthusiast consumer and have a choice in service provider select the one with the holistic understanding of

- current 4G offerings as an enable for future services and products not just speed.
- b. Look for the one with strongest “green” brand as 5G is expected to cut energy and operational costs massively.

GREYWALE VALIDATION

One of the primary tenants of the Greywale Telco Energy Strategy is **Traffic Growth and Network Sprawl**. As an example of this was noted in the whitepaper The Greywale Service Provider Energy Strategy Taxonomy ² (November 2013). Certainly 5G is the key in meeting this traffic growth demand. The question is how service providers can leverage this. This is referred to as innovation strategy’. Contact us for more info.



CLOSING REMARKS

5G will transform the wireless industry as did the GSM in the early days. Europe consensus and leadership made GSM a success. However, there are lessons to learn here especially with regards to uptake of 3G. 5G will need the cooperation of Europe research and industry, investment and market openness for technological innovations.

5G will enable huge increase in the network capacity that will ease the current **Traffic Growth and Network Sprawl** and expected to **save 90% of energy** per service provided.

There are still several challenges to address before the 5G jigsaw is clear. Network architecture, energy efficiency, backward compatibility to 4G & 3G, cost effectiveness in terms of utilizing small cells or large cell and implications on handsets. Such challenges can only be addressed at a global

scale by cooperation between research and industry as well as encouraging new business models and open market. To know which of those challenges benefit your company products or services, contact us. Also to begin discussions on addressing energy issues and start the process of creating a long term energy strategy please contact me at h.hamdoun@greywale.com or +44 7861437690

ABOUT THE AUTHOR



Hassan Hamdoun, PhD, senior analyst, Greywale Management.

He received his Ph.D. in Wireless Communications from Swansea University, United Kingdom. He received his M.Sc. (ENG) in Electronics Engineering (distinction) from the University of Sheffield, UK, and the B.Sc. (Hons) in Electrical Engineering from the University of Khartoum, Sudan.

He worked in setting up the first Sudanese Electronic Payment Network (SUDAPAN) with the Electronic Banking Services (EBS) and the central Bank of Sudan. He then joined the Sudanese mobile telephone company (Zain-Sudan) as a radio engineer and a regional team leader for EDGE and 3G integration and implementation projects.

Today, he focuses on service provider energy strategy technologies, energy efficiency solutions, technical analysis and standards. Dr Hamdoun is also involved in projects and research in the area of ICT for sustainability, energy efficient network design and holistic approaches to addressing energy costs, OPEX and CAPEX in communications systems and networks from both technical and business perspectives. A Current project is researching sustainable solar powered broadband access with African universities and institutions. He can be reached at h.hamdoun@greywale.com

ABOUT GREYWALE MANAGEMENT

Greywale Management is an international consulting firm focusing on service provider energy strategy. It provides strategic marketing, market research and business development services for service providers, equipment vendors, energy solution providers and semiconductor vendors.

It focuses on managing innovations in both large organizations and startup companies.

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ABOUT GREYWALE COMMUNIQUES

Greywale Communiqués give you timely analysis of industry news and issues related to energy issues affecting network operators across the globe. They provide terse salient summaries, key points to consider and tangible recommendations for participants across the ecosystem.

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