

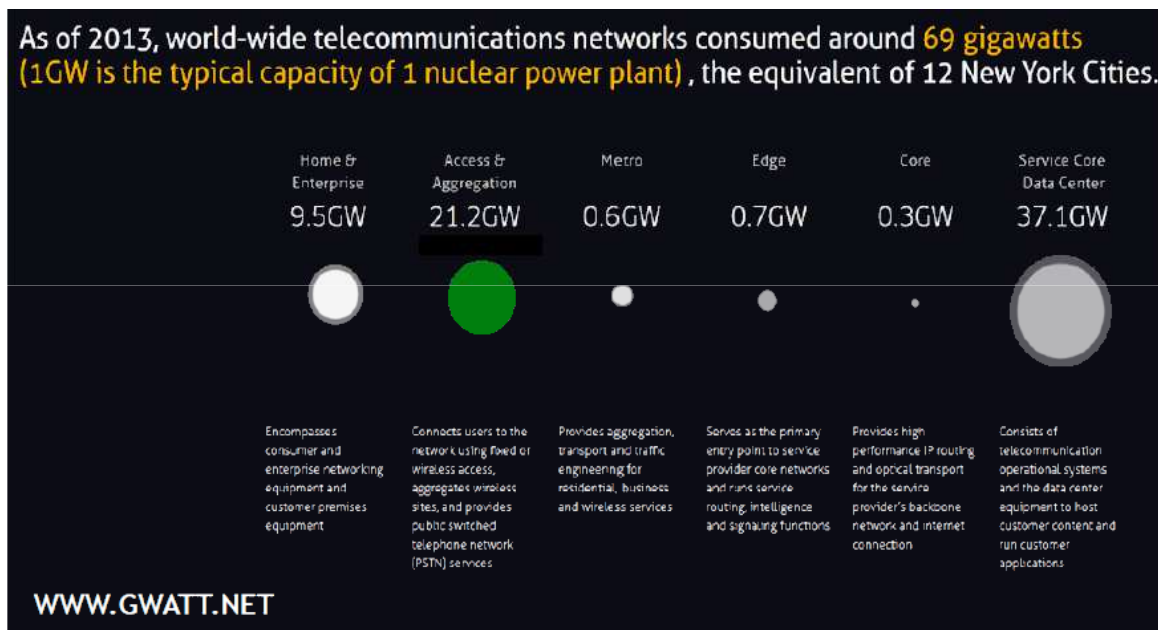


Panel discussion on "Green networking and renewable energy sources"

Oliver Blume (Alcatel-Lucent Bell Labs)
Madrid, 14. April 2015

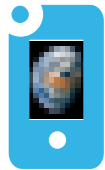
Status of Network Power Consumption 30% consumed in access networks...

As of 2013, world-wide telecommunications networks consumed around **69 gigawatts** (1GW is the typical capacity of 1 nuclear power plant), the equivalent of 12 New York Cities.



The source of traffic growth

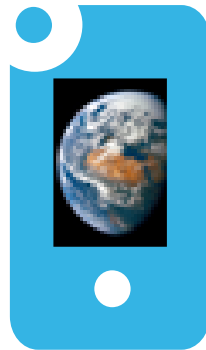
89x growth of mobile IP traffic 2010-2020



13x
pixel

3" Feature phone
240 x 320 Pixel

5 MB / month 2011
(0.1 GB / month 2016)



3x
pixel

5,3" Smart phone
800x1280 Pixel

0.25 GB / month 2011
4.2 GB / month 2016



10" Tablet 1536 x 2048 Pixel

0.77 GB / month 2011
6.5 GB / month 2016

Numbers from Cisco VNI Mobile Forecast Highlights, 2011 – 2016

What will this do to energy consumption?



**ICT contributes 2% of
global CO₂ footprint**

**(comparable to aviation or
street lightening)**



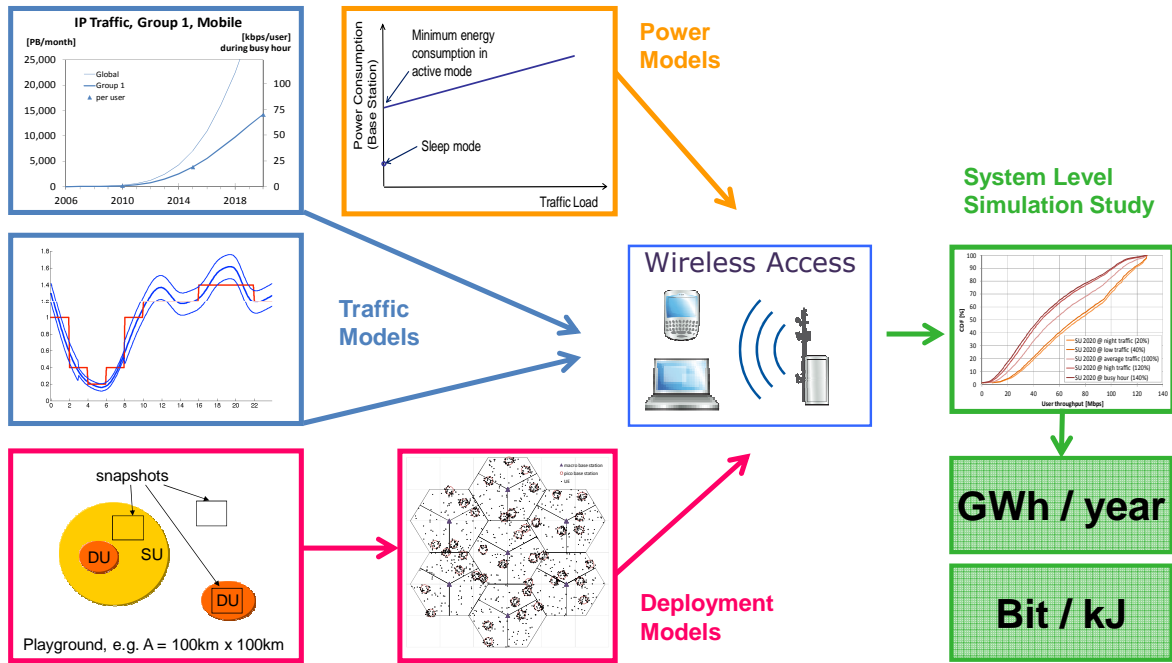
Mobile IP Traffic in NA, WE, Jp
growing by 89x between 2010-2020

Growing to 40% ?

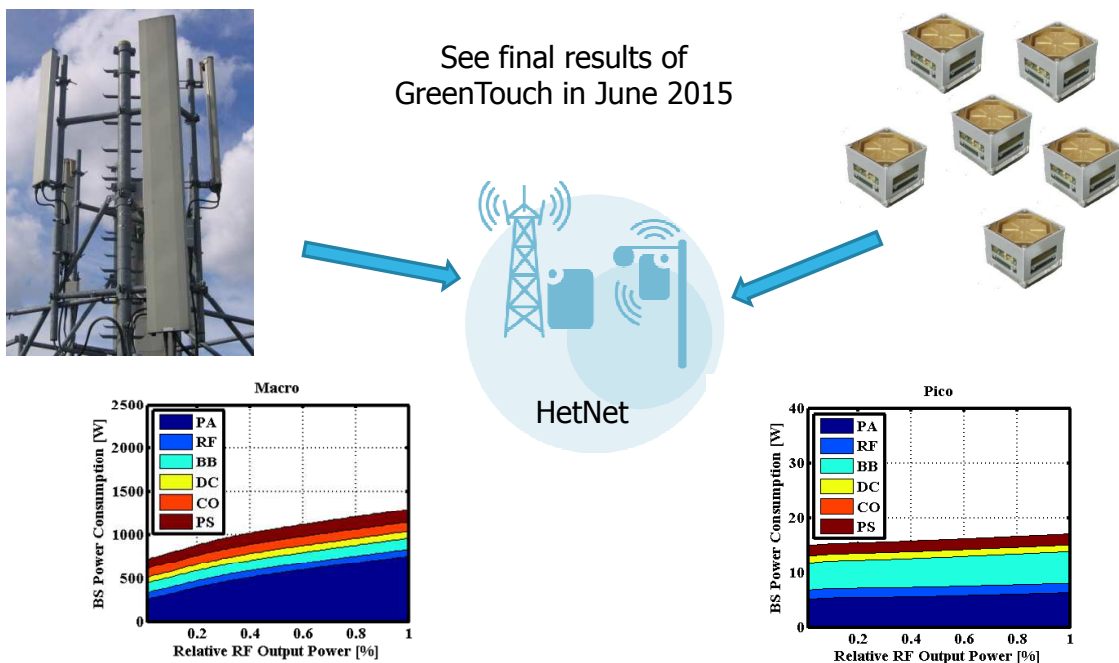
Fatally flawed conclusion !

GreenMeter Methodology for Wireless Access

to compute energy consumption of nation wide mobile networks



The traffic growth can be absorbed efficiently by adding small cells to macro networks (HetNets)



Energy efficiency as enabler for renewable supply

Small cells with Solar power supply



References

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- „GreenTouch Green Meter Research Study: Reducing the Net Energy Consumption in Communications Networks by up to 90% by 2020“, GreenTouch White Paper, June 2013
- O. Blume et al., „Energy Efficiency of LTE networks under traffic loads of 2020“, ISWCS 2013, Ilmenau, Germany, August 2013
- R. Litjens et al., “Assessment of the Energy Efficiency Enhancement of Future Mobile Networks”, submitted to WCNC 2014, Istanbul, April 2014
- C. Desset, O. Blume, H. Zhang, M. Chrysallos, B. Debaillie; “Quantitative analysis of energy saving potential in future cellular base stations and networks”. Submitted to JSAC, March 2015

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