

# Cellular Internet of Things

## Background and plan

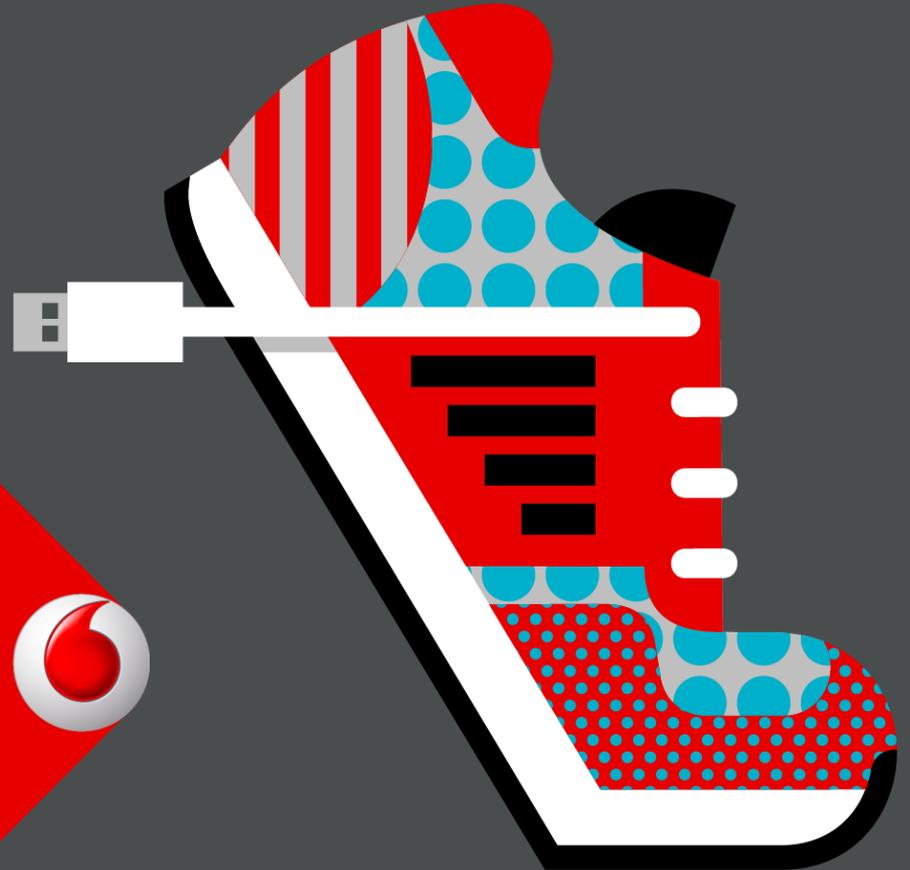
Vodafone



3GPP RAN plenary#68

15 – 18 June 2015

C1 - Public

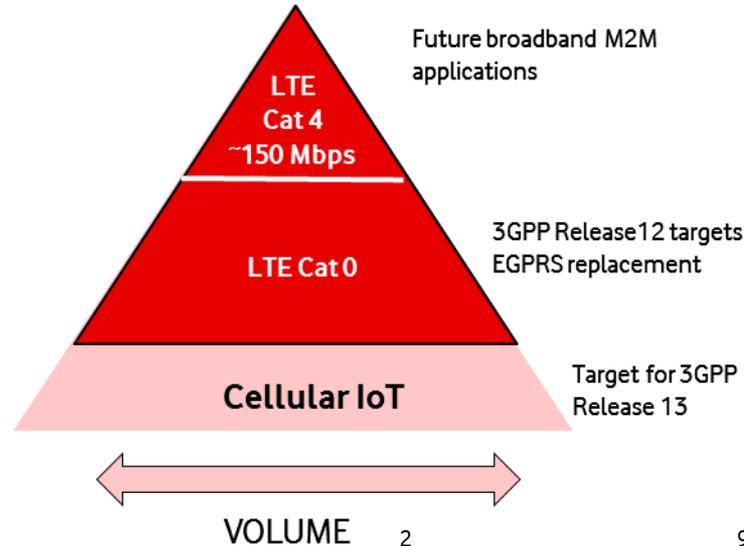


# Cellular Internet of Things: Background to start

- White paper:

<http://www.cambridgewireless.co.uk/docs/Cellular%20IoT%20White%20Paper.pdf>

- “... in the IoT market, the challenge is to obtain the connectivity that is needed to unlock the potential for connecting billions of devices...”



# Cellular Internet of Things: recent status

- Current market scenario
  - Vast market for very low cost devices?
  - Non-3GPP competition appearing
    - designing new devices and installing own radio networks
    - appear to have convinced commercial backers about their business case.
  - Key question: what can 3GPP do to enable operators to compete?
- Current 3GPP M2M technology
  - Low data rate segment dominated by 2G
  - Vast majority of 2G M2M devices are not EDGE-capable

Page 29 of Ericsson June 2014 Mobility report: <http://www.ericsson.com/res/docs/2014/ericsson-mobility-report-june-2014.pdf>

→ Module cost: need to be cheaper than GSM



# Vodafone's targets

- **Data service:** Small, acknowledged datagrams
- **Cost:** Module cost much lower than GSM
- **Coverage:** “everywhere”, especially deep in buildings
- **Battery Life:** 10 years
- **Infrastructure:** Reuse existing ‘coverage layer’ cell sites
  - Especially, reuse of masthead equipment
- **Service:** Predictable quality from use of operator’s licensed spectrum
- **Security :** Suitable for professional M2M use



GP-140421.zip

And mostly importantly,

- **Deliver in time:** Rapid standardisation in Rel-13



# CloT Standardisation Progress

- 3GPP TSG GERAN
  - Target to “do better than GSM” implied GERAN work
- SI Timeline:
  - GP-140421, GERAN Study on “Cellular System Support for Ultra Low Complexity and Low Throughput Internet of Things” opened end May 2014. [ FS\_IoT\_LC]
  - TR 45.820v1.0.0 in March 2015 (60%);
  - TR 45.820v1.3.0 in May 2015 (75%);
  - Expected completion August 2015
- TR 45.820 covers both “evolved GSM” and “clean-slate, new concepts”

<http://www.3gpp.org/DynaReport/45820.htm>



# CloT Standardisation Progress (cont...)

- Potential Work Items
  - Likely that both Evolved GSM & clean-slate approaches will meet objectives of SI
- Clean-slate concepts not clearly covered by GERAN (or RAN) ToR
- PCG/OP meeting#34 (2015 April) consulted:
  - Evolved GSM concepts Work Item in GERAN
  - Clean-Slate Work Item for RAN





# post-PCG: Vodafone's suggestion for Work Item calendar

- Movement to RAN blocks 'Clean-slate' WI progress in September
- Planned Meeting Schedule
  - RAN 1/2: 5 – 9 October 2015, Malmo, Sweden
  - RAN 3: 5 – 9 October 2015, Sophia Antipolis, FR
  - RAN 4: 12 – 16 October 2015, Sophia Antipolis, FR
  - RAN 1/2/3/4: 16 – 20 November 2015, Anaheim, USA
  - RAN 1/2 ad hoc: 14 – 18 December 2015, TBD
  - RAN 1/2/4(ad hoc): 11 – 15 January 2016, TBD
  - RAN 1/2/3/4: 15 – 19 February 2016, Malta

} Additional meetings



# Proposal for Meeting logistics

- Extra parallel streams in RAN 1 and RAN 2.
  - To not compete with R13 LTE MTC for meeting time
  - To not disrupt the companies' existing delegations
  - Allows existing RAN WG delegates to continue focus on LTE-A R13 completion
- Some parallel sessions in RAN 4
- RAN 3 work (if any) in main session (common with Rel-13 LTE MTC)
- Organise GERAN WG1/WG2 and RAN WG1/WG2 (CloT ad hoc) sessions in time-division/parallel manner. e.g:
  - GERAN 1      “evolved GSM”      morning
  - RAN 1          “clean slate”              afternoon
  - GERAN 2      “evolved GSM”      afternoon
  - RAN 2          “clean slate”              morning



# Summary

- M2M market developing fast
- Non-3GPP competition is appearing
- Vodafone wants 3GPP to provide the capability for low-cost, extended-coverage, long battery life solutions
- Reuse of 3GPP architecture
- Rapid standardisation desired
- Rel-13 completion feasible
  
- **If we keep moving fast, 3GPP connectivity could, globally, unlock its potential**



Thank you

