5G Monitor[1] : European initiatives

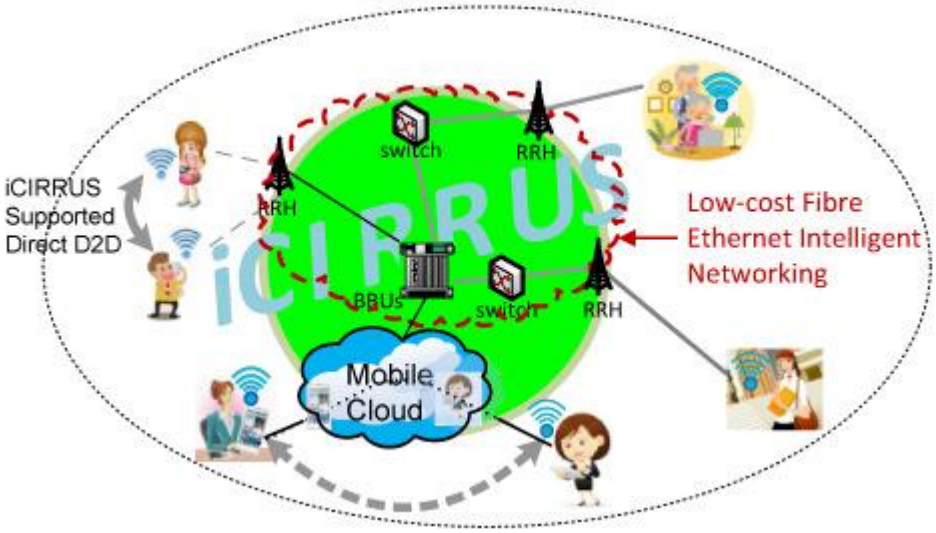
***By Alicia Jiménez, Nathan Gomes, Michael Georgiades**, February 2015*

iCIRRUS- intelligent Converged network consolidating Radio and optical access aRound USer equipment

The central aim of the iCIRRUS project (http://www.icirrus-5gnet.eu/) is to examine the advantages and challenges of bringing an Ethernet-based optical fibre fronthaul to fifth-generation (5G) mobile networks, considering the benefits of such an architecture and its effects on performance on key 5G service aims such as device-to-device (D2D) communications and mobile cloud networking.

In order to meet the goals of high spectral and energy efficiency demanded in future mobile/wireless networks, iCIRRUS proposes the combination of two key concepts: increased use of D2D communications and the use of a centralised- or cloud- Radio Access Network (C-RAN). These are integrated with a mobile cloud which can further contribute to the increased spectral and energy efficiency, and enhanced overall performance, through intelligent monitoring.

End-users will benefit from iCIRRUS by increased device battery lifetimes, improved end-device performance, improved quality of experience through high-bandwidth, low-latency services, and with added resilience by utilising the mobile cloud.



Benefits targeted by the iCIRRUS architecture proposal

[1] 5G Monitor is an edition of ceFIMS-CONNECT Monitor contributed from a project or initiative with special interest in the 5th generation mobile networks

The novel feature of iCIRRUS is to enable a converged 5G network supporting legacy mobile and fixedline services based on Ethernet transport and switching. The use of Ethernet to support all categories of the mobile network infrastructure, including Fronthaul, Midhaul and Backhaul, is something which has been distinctly lacking in the network evolution toolbox to date. Such a network infrastructure can dramatically reduce operational costs for network operators and service providers, allowing for exploitation opportunities in offering cheaper value-added services to their customers.

Using optical fibre Ethernet to support all categories of mobile infrastructure enables:

1. The possibility of a lower cost fronthaul (or midhaul) due to the widespread use of Ethernet equipment.
2. The use of Ethernet-based networking and virtual networking techniques in the fronthaul/midhaul, for flexible interconnection of Base station Baseband Units (BBUs) and Remote Radio Heads (RRHs).
3. The possibility for a converged access network transporting both fixed line and mobile fronthaul/midhaul and backhaul user data.
4. The use of standardised mechanisms over the common Ethernet fronthaul/midhaul transport for Service Level Agreements (SLAs) and Operations, Administration and Maintenance (OAM).
5. Self-Optimizing Networks (SON) enabled by the use of smart optical hardware pluggable frame/packet inspection modules, to rapidly provide information to the intelligent processing.

iCIRRUS project is coordinated by University of Kent, represented by Nathan Gomes. It will be developed in a consortium of 10 partners (University of Kent, ADVA Optical Networking Limited, Orange SA, Telekom Slovenije DD, Primetel PLC, Wellness Telecom SL, Fraunhofer, University of Essex, JDSU(UK) Ltd and IAF GmbH) from 6 different countries. iCIRRUS project started in January 2015 and it has a duration of 36 months.

‘iCIRRUS has received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement No 644526’.

About the author

Alicia Jiménez González - Wellness Telecom

She is Master Engineer in Telecommunication Sciences from the University of Seville. She is a university expert in international R&D&I Project management. She has worked as Radio Access Engineer at LCC Wireless Communication Services Spain and as international project manager for smart applications in Adevice Solutions SL. She currently works as R&D&I project manager in Wellness Telecom. She is participating in different national (CONSULTING3.0, SEDA, WePark, ADAPTA) and international (FP7 CUMULUS, CIP EPLACE, H2020 ICIRRUS) R&D projects. She is specialized in the smart cities services domain"

ceFIMS-CONNECT (www.cefims.eu) is a project funded by the European Commission within Netfutures Directorate (E), Experimental Platforms Unit (E4) .

The ceFIMS-CONNECT Monitor is an ongoing tool for Member States and Associated Countries to publish and share their national best practices, success stories and developments in the area of Future Internet and 5G , as well for European initiatives to share their news with national stakeholders, on a regular basis.

If you would like to publish an item via the ceFIMS-CONNECT Monitor, please email to the contacts below:

ceFIMS-CONNECT Project Coordinator: James Clarke: jclarke (at) tssg (dot) org
ceFIMS-CONNECT Dissemination Coordinator: Alicja Laskowska: alicja (at) man (dot) Poznan (dot) pl