

Facilitation of 5G Field Trials

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Chairman of Network Architecture Committee

The Fifth Generation Mobile Network Promotion Forum (5GMF)



Everything tells me to work on 5G...



Presented at 5G Summit Brooklyn

Now what ?



On my way home from NY

We are standing between 5G and beyond...

5GMF Network Architecture Committee

Responsibilities

- To research the overall architecture of 5G mobile networks.
- To research the conditions and technologies required to build the network infrastructure necessary for 5G mobile.

Activities

The Network Architecture Committee is engaged in the following activities.

- Work with other committees to establish the technical requirements necessary for the deployment of 5G mobile.
- Conduct research into network prerequisites necessary for use in the flexible architecture necessary to build 5G mobile networks.
- Report on a wide range of opinions related to 5G mobile through information exchanges with a wide variety of domestic and international organizations.

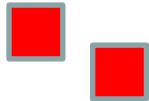
Publish White Paper on Network Architecture
Advocate Network Slicing/Softwarization for Extreme Flexibility

Without Network Slicing/Softwarization

UE

eMBB

(enhance Mobile Broadband)



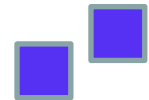
URLLC

(Ultra Reliable and Low Latency Communication)

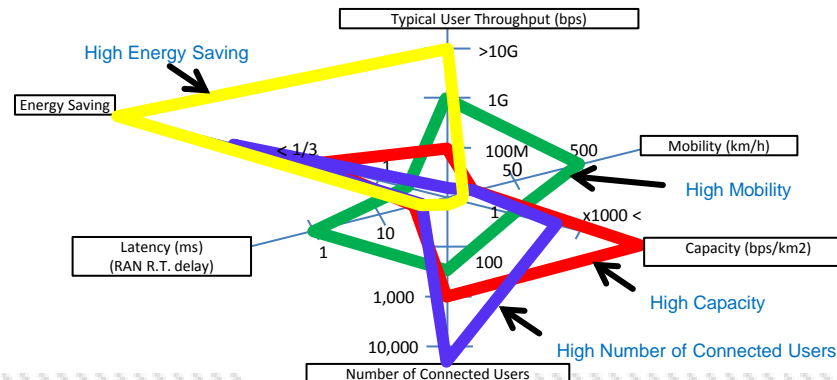
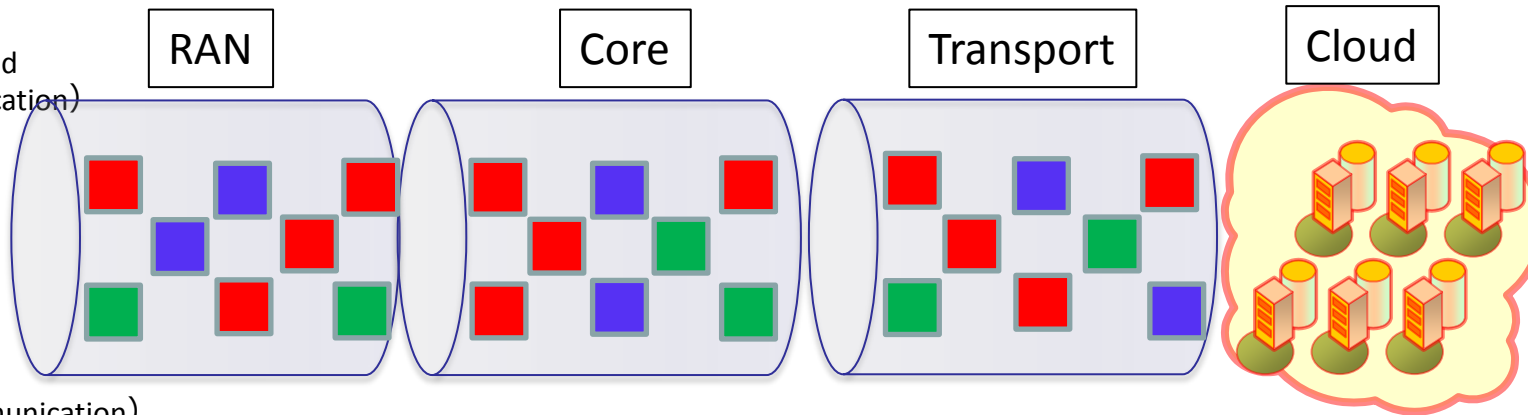


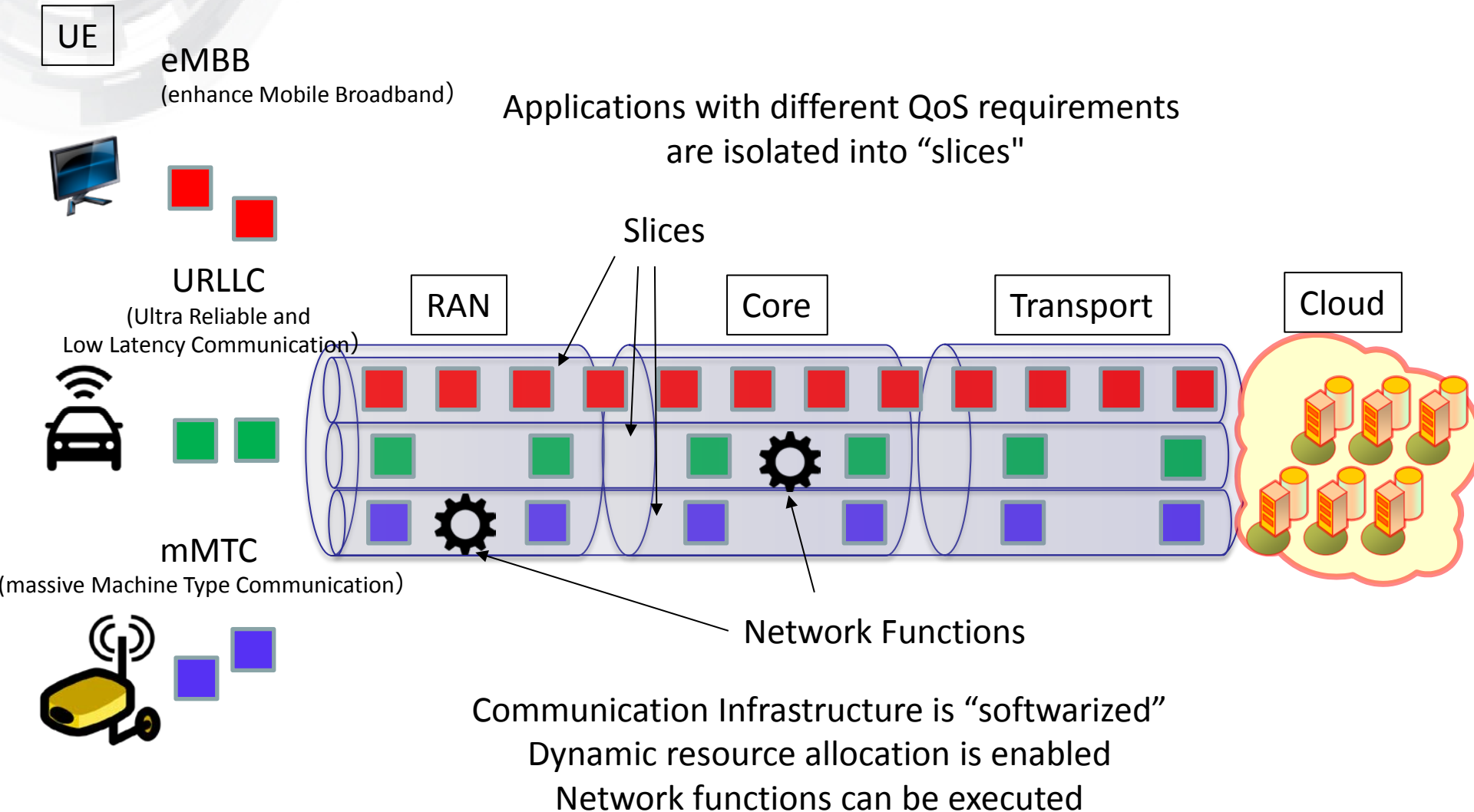
mMTC

(massive Machine Type Communication)



Applications with different QoS requirements share the same end-to-end communication channel





Field Trials have started (2017/5/16)

MIC press-released the next step.



▶ ご意見・ご提案 ▶ English

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報道資料

平成29年5月16日

5G総合実証試験の開始

総務省は、第5世代移動通信システム（5G）実現による新たな市場の創出に向けて、様々な利活用分野の関係者が参加する5Gの総合的な実証試験を開始します。

1. 背景・目的


5Gは、3Gや4Gを発展させた「超高速」だけでなく、「多数接続」、「超低遅延」といった特徴を持つ次世代の移動通信システムであり、本格的なIoT 時代のICT 基盤として、早期実現が期待されています。

総務省では、5Gの実現に向け、要素技術を確認するための研究開発の推進、国際的な標準化活動を進める観点からの国際連携の強化、5G用に割り当てる周波数の確保等に取り組んでいます。

今年度からは、5Gの実現による新たな市場の創出に向けて、様々な利活用分野の関係者が参加する5Gの総合的な実証試験を開始します。

総務省としては、2020 年（平成32 年）の5Gの実現を目指し、これらの取組を加速してまいります。

2. 実施概要

今年度の実施概要は、[別紙](#)  のとおり。

Various Field Trials Already Started...



8K Video Content Delivery from Tokyo Sky Tree (2017/5/23)

<http://www.sankeibiz.jp/business/photos/170523/bsj1705230500001-p1.htm>

PRESS RELEASE
MAY 23, 2017



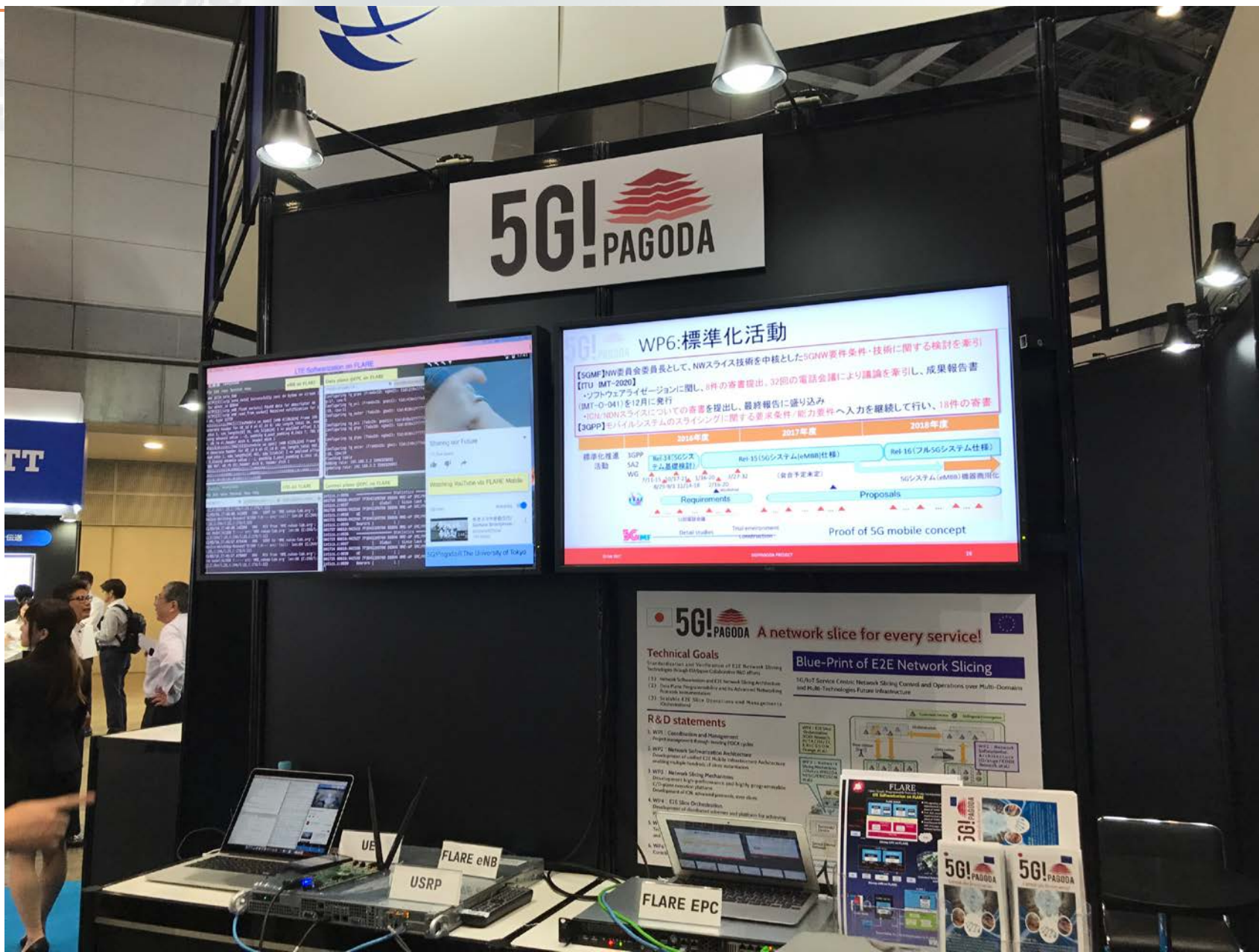
Live demo of network slicing for robotics

- Ericsson demonstrates the world's first 5G network slicing solution with multiple slices on the same device in cooperation with NTT DOCOMO, INC.
- Allows for services with different network requirements, such as latency, capacity and security, using robots for building automation.

Ericsson (NASDAQ: ERIC) are demonstrating the world's first 5G network slicing solution supporting multiple network slices on the same device with NTT DOCOMO, INC. The solution, is shown at 5G Tokyo Bay Summit 2017 from May 24 to 26, addresses use cases where robots are used for building automation into public and private infrastructure. The solution could also be used for other industries.

<https://globenewswire.com/news-release/2017/05/23/994965/0/en/Live-demo-of-network-slicing-for-robotics.html>

5G Pagoda Exhibition@Wireless Technology Park 2017



WP6:標準化活動

【5GMP】NW委員会委員長として、NWスライス技術の中核とした5GHW要件条件・技術に関する検討を牽引
 【ITU-T IMT-2020】
 ・ソフトウェアライゼーションに関し、8件の寄書提出、32回の電話会議により議論を牽引し、成果報告書
 ・IMT-2020(4G)を12月に発行
 ・ITU-T IMTスライスについての寄書を提出し、最終報告に盛り込み
 【3GPP】モバイルシステムのスライシングに関する要件条件、能力要件へ入力を継続して行い、18件の寄書



5G! PAGODA A network slice for every service!

Technical Goals

- 1. Service Slicing and Realization of E2E Network Slicing
- 2. Network Slicing and E2E Network Slicing Architecture
- 3. New Core Programmability and Network Slicing Architecture
- 4. Network Slicing Architecture
- 5. Network Slicing Architecture

R&D statements

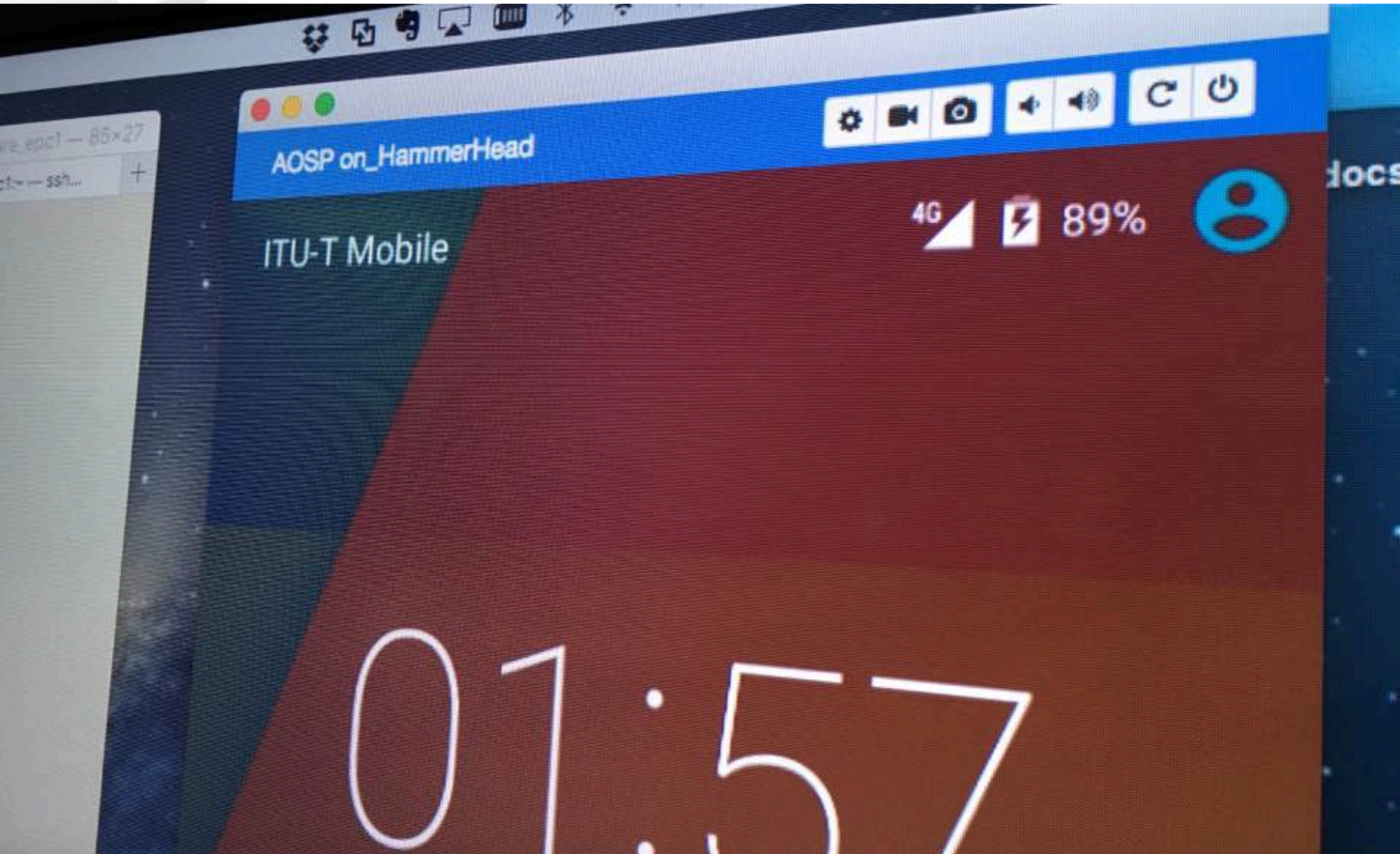
1. WPI: Coordination and Management
Project management through IMT-2020 update
2. WPI: Network Slicing Architecture
Development of initial E2E Network Slicing Architecture including edge network, of core network
3. WPI: Network Slicing Architecture
Development of high performance and high programmable E2E network architecture
4. WPI: E2E Network Slicing
Development of distributed network and platform for achieving
5. WPI: E2E Network Slicing
Development of distributed network and platform for achieving
6. WPI: E2E Network Slicing
Development of distributed network and platform for achieving

Blue-Print of E2E Network Slicing

5G/6G Service Control, Network Slicing Control and Operations over Multi-Domains and Public Technologies Future Infrastructure




ITU-T Mobile !?



Softwarized Infrastructure Projects


- **TIP (Telecom Infra Project) Facebook (US)**
- **OpenCellular@TIP**
- **PAWR (Platform for Advanced Wireless Research) NSF (US)**
- **OAI (Open Air Interface) Eurecom (France)**
- **Coherent@5GPPP**
- **Norma@5GPPP**

- **5G! Pagoda@EU-Japan UTokyo/Aalto U et.al. (Japan/Finland)**
A Network Slice for Every Service

Federal Communications Commission

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Open for business: FCC's New Experimental Licensing System Accepting New Applications

April 14, 2017 - 11:15 am
By [Julius Knapp](#) | Chief, Office of Engineering & Technology

The Commission's experimental licensing program has played a key role throughout the years in the process of developing innovative new products and services. This new type of experimental license allows greater flexibility for parties—including universities, research labs, health care facilities, and manufacturers of radio frequency equipment—to develop new technologies and services while protecting incumbent services against harmful interference.

Today, we are pleased to [announce](#) that our experimental licensing system can now accept applications for program licenses. Parties may apply for an experimental program license using the existing Form 442 application for experimental licenses at <https://apps.fcc.gov/oetcf/els/forms/442Dashboard.cfm>. Once approved, licensees may go on the new "Experiments Notification System" website and begin registering new program experiments. The website is available at <https://apps2.fcc.gov/ELSExperiments/pages/login.htm>. The program license registration system continues the FCC's commitment to encouraging research and development.

<https://www.fcc.gov/news-events/blog/2017/04/14/open-business-fccs-new-experimental-licensing-system-accepting-new>



FCC GRANTS NYU WIRELESS EARLY 'PROGRAM EXPERIMENTAL LICENSE' FOR CUTTING-EDGE WORK THROUGHOUT THE RADIO SPECTRUM

FCC Taps NYU WIRELESS Center in Tandon School of Engineering to Test New Experimental License Portal Designed to Make the Application Process More Efficient for Innovators

POSTED APRIL 14TH, 2017

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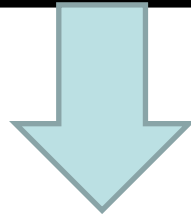
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Challenges for now

5GMF Network Architecture Committee

Publish White Paper on Network Architecture
Advocate Network Slicing/Softwarization for Extreme Flexibility



- **Facilitation of 5G Field Trials**
 - **Spectrum**
 - **Experimental Radio Station Licensing**
 - **Special Field Experiment Zones**
 - **Cloud / Edge Computing Testbeds**

