Convergent Networks and Services

Seminar topics 2015.

1. Convergence of Web and Multimedia communication: Web Real-Time Communication – WebRTC

Advisor: Markosz Maliosz

WebRTC enables web browsers with Real-Time Communications (RTC) capabilities without any additional software component install (plugins, etc.) only via simple JavaScript APIs. Because browsers become SIP end-points, for example, a simple audio and video chat application can be run inside the web browser. IETF has also created an RTCWeb working group for the standardization of the protocols.

Contents:

- Architectural model, signalling and media plane
- Elements and functions of the API
- Problems, issues with WebRTC
- Supported browsers, WebRTC applications
- Impact of Web RTC on IMS and legacy telecom services

Sources to start with:

1. Loreto, S.; Romano, S.P., Real-Time Communications in the Web: Issues, Achievements, and Ongoing Standardization Efforts, Internet Computing, IEEE, Volume: 16 , Issue: 5
2. http://www.webrtc.org/

2. IMS in the cloud

Advisor: Markosz Maliosz

Currently telecom services are implemented on carrier grade platforms within private networks. As Cloud Computing emerges as a new technology for converged infrastructure and shared services, operators investigate the possibility to use telecom services, such as the IMS, over a cloud based infrastructure., e.g. see Project Clearwater [1].

Contents:

- Why to use the cloud for IMS? Advantages / disadvantages
- Carrier grade requirements
- Dynamic service creation
- Network function virtualization

Sources to start with:

1. Project Clearwater, Technical details: http://www.projectclearwater.org/technical/
2. Cloud computing and EPC / IMS integration: new value-added services on demand. Fabricio Carvalho de Gouveia, Sebastian Wahle, Niklas Blum, and Thomas Magedanz. MobiMedia, (2009)

3. Gamification

Advisor: Rolland Vida

Gamification is the use of game thinking and game mechanics in non-game contexts to engage users in solving problems. Gamification has been called one of the most important trends in technology by several industry experts. It can potentially be applied to any domain, converting users into players. In the essay you should of course insist on its applicability in telecommunications and networking.

Contents:

- What is gamification? Some brief examples not related to networking
- Gamification and crowdsourcing. Incentivising participatory sensing applications
- Gamification and social networks (Foursquare, Facebook, etc.)
- Gamification and peer-to-peer. Gamification vs. free-riding

Spources to start with:

1. http://www.getmoreengagement.com/gamification/gamification-roundup-may-5-may-12-2013
2. Gamification Research Network, http://gamification-research.org/

4. Mobile network offloading

Advisor: Rolland Vida

Mobile data offloading is the use of complementary network technologies for delivering data originally targeted for cellular networks. The main complementary network technologies used for mobile data offloading are Wi-Fi, femtocell, and integrated mobile broadcast.

Contents:

- Cellular and Wi-Fi network interworking
- Small Cell offloading
- Opportunistic offloading

Sources to start with:

1. http://www.aptilo.com/mobile-data-offloading/wifi-offload-3g-4g
2. An Iterative Double Auction Mechanism for Mobile Data Offloading, http://georgeiosifidis.net/wp-content/uploads/2011/03/DataOffloading_IDA_CR.pdf

5. Telco – OTT

Advisor: Csaba Simon

Over The Top (OTT) services are provided by third parties over telecom operator's network. The subscribers will replace the added value services of the operators with free services. This is a threat to the current business models of the operators. One counter measure could be the introduction of the Telco OTTs.

Contents

- What is OTT and how affects the telecommunication sector?
- How and why may Telco-OTT help telecom service providers to maintain profitability?
- Telco-OTT services, solutions

Sources to start with:

1. http://www.analysysmason.com/Research/Content/Viewpoints/Telco-OTT-case-studies-Sep2012-RDMV0/
2. http://servicearchitecture.wp.tem-tsp.eu/files/2012/04/PID2045297.pdf

6. Challenges of Information Centric Networking

Advisor: Csaba Simon

In the current Internet content can be retrieved if certain hosts containing the information are identified and contacted. Information Centric Networking (ICN) proposes the direct naming and operating on information objects instead. For real time communications, dynamic content and other network scenarios there is a need to develop further the initial static ICN proposal.

Contents:

- ICN and CCN overview
- Challenges for media streaming in dynamic environment
- Voice or video services in ICN environment

Sources to start with:

1. http://telematics.poliba.it/publications/2013/ett_2741_Rev.pdf