

## Dissemination Report

June 2015

### 2015 Smart Radio Symposium

(International Workshop on Smart Radio with Emphasis on 5G Applications)

주관 : 대한전자공학회, CR·SDR포럼, 한양대 HY-MC연구센터, 인하대 지능형 스펙트럼 엔지니어링 연구센터, 한양대 BK21 Plus 융합IT기반 미래가치 창조 인재양성 사업단

일시 : 2015년 6월 3일 (수) 10:00~17:00    장소 : 한양대학교 HIT 6층 대회의실

SALUS has been represented in the **2015 Smart Radio Symposium - International Workshop on Smart Radio with Emphasis on 5G Applications**. The Symposium was hosted by Hanyang University on June 3 in Seoul, Korea. The audience was composed by European Telecommunications Standards Institute (ETSI) delegates and a large number of Korean experts. The Symposium has been co-organized by the Institute of Electronics and Information Engineers, the Korean Institute of Communications and Information Sciences, the Korean Society of Satellite Technology, Electronics and Telecommunications Research Institute and, Hanyang University.

The Workshop program was as follows:

Time	Program List	
9:30~	Registration	
<b>Session 1 - Chairman : Prof. Seungwon Choi, Hanyang Univ., KOREA</b>		
10:00~10:30	Small Cell Technologies for IEEE 802.22b Spectrum Sharing System	Dr. Sung Hyun Hwang, ETRI, KOREA
10:30~10:40	Opening Address	Prof. Jae Moun Kim, Chairman, CR•SDR Forum
10:40~10:50	Welcome Address	Dr. Young Moo Lee, President, Hanyang Univ.
10:50~11:00	Encouragement Address	Prof. Byung Gook Park, President, IEIE
11:00~11:10	Coffee Break	
11:10~11:50	Keynote speech I: "5G Technology and Applications"	Dr. Jin Sung Choi, SK telecom, KOREA
11:50~12:30	Keynote speech II: "5G Mobile Communications for a Connected World and Recent R&D Results"	Dr. Wonil Roh, Samsung Electronics, KOREA
12:30~14:00	Lunch & Exhibition	
<b>Session 2 - Chairman : Prof. Dong-joon Shin, Hanyang Univ., KOREA</b>		
14:00~14:30	Reconfigurable Radio and Radio Virtual Machine	Dr. Vladimir Ivanov, LG Electronics Inc, Korea
14:30~15:00	Latest R&D achievements on TV White Space Technologies at NICT	Dr. Kentaro Ishizu, NICT, JAPAN
15:00~15:10	Coffee Break	
15:10~15:40	Recent Results and New Approaches of Cognitive Radio Architectures Towards 5G – Activities in ETSI RRS WG 1 and in European Research Projects	Dr. Michael Gundlach, Nokia Networks, GERMANY (Chairman of ETSI TC-RRS WG1)
15:40~16:10	ETSI solutions supporting a future 5G framework – Spectrum Sharing, SW Reconfigurability and mmWave Technology	Dr. Markus Dominik Mueck, Intel mobile communication, GERMANY, Chairman of ETSI TC-RRS & Board Member of ETSI)
16:10~16:20	Coffee Break	
16:20~16:50	Green oriented Multiple Interface Management for 5G Multi-Techno HetNets	Dr. Isabelle Siaud, B COM and Orange Labs, FRANCE Ms. Anne-Marie ULMER-MOLL, Orange Labs, FRANCE
16:50~17:20	The Ultimate 5G Development Platform Supporting Any Spectrum, Any Air Interface, and Any Number of Antennas	Mr. Manuel Uhm, Ettus Research, USA
<b>Exhibition</b>		
HY-MC Research Center (Hanyang Univ.)	4x4 MU-MIMO Test-bed for 5G	
NICT (JAPAN)	TV White Space Equipments developed at NICT	
SSE-ITRC (Inha Univ.)	Efficient Spectrum Analysis Simulator	
JAYS	Keysight Test& Measurement Solution	
Ettus Research	Ettus Research/National Instruments USRP Exhibits	

The Organizing Committee Chair, Prof. Seungwon Choi (Hanyang Univ.) stated that "The technical workshop was meaningful not only because Korea gets a good opportunity for playing an important role in contributing to the outcome of an EU standard but also because it provided an open forum for both Korean and European experts to discuss Smart Radio technologies and 5G."

Of special interest to SALUS were the discussions on 5G technology, including the operator's perspective, timelines, applications and recent results that could be of potential interest to the PPDR community. Of note were the discussions on:

- IEEE 802.22 standard (Enabling Broadband Wireless Access Using Cognitive Radio Technology and Spectrum Sharing in White Spaces) and its enhancements (amendment b);
- Intelligent coordination between Licensed and Unlicensed spectrum;
- Reconfigurable Radio, Radio Virtual Machine and Certification path/procedures;
- New Cognitive Radio Architectures towards 5G;
- The new Radio Equipment Directive (RED);



Figure 1: SALUS Project Coordinator with ETSI RRS members at the entrance of Hanyang University