SCA Test Evaluation and Certification Workshop – 17 April 2008

The Software Defined Radio (SDR) Forum, will host an all-day workshop on Software Communications Architecture (SCA) test, evaluation and certification. This workshop to be held Thursday, April 17 in Rome, Italy, in conjunction with the Forum's general meeting (April 14-17), will allow government and industry leaders from around the world to meet to discuss requirements and key issues in international test and certification of SCA technologies. The goal of this workshop is to capture requirements from the international SCA stakeholders to lay the foundations of future test, evaluation and certification of SCA-based radios and other products. This workshop can be regarded as the first step of a process, leading to projects within the SDR Forum that will define concepts, strategies, methods and recommendations that address this goal.

Workshop Program At a Glance

8:30 to 8:40	Welcome – John Chapin, Chair of the SDR Forum
8:40 to 9:00	Opening Remarks – Ruediger Leschhorn, Chair of the SCA Test & Evaluation Group and Vice Chair of the SDR Forum
9:00 to 9:30	"European Approach for SDR Certification" – Michel Gari, European Defense Agency
9:30 to 10:00	"Systematic Approach to Requirements Collection and Analysis in the Area of Reliable Telecommunication Systems for Security Forces" –Franco Oliveri, Joint Research Centre of the European Union Commission
10:00 to 10:15	Coffee Break
10:15 to 10:45	"SCA Test, Evaluation and Certification Requirements" – Rick Barfoot, NATO
10:45 to 11:15	"SCA Test, Evaluation and Certification - the view from Finnish SDR programme" – Heikki Rantanen, Principal Scientist, Finnish Defence Forces Technical Research Centre
11:15 to 11: 45	"Views, Requirements and Wishes for SDR Test and Evaluation Activities" – Jonathan Marchal, CELAR/TEC/STR/labo radio
11:45 to 1:15	Networking Luncheon – During lunch there will be table top displays and demonstrations of relevant technologies from the following companies: • CRC • EtherStack • PrismTech • Zeligsoft
1:15 to 1:45	Presentation by Ministero Della Difesa (TBD)
1:45 to 2:15	"A European view on standardization and European Software radio Architecture" – Rob van Heijster, TNO
2:15 to 2:30	Coffee Break

2:30 to 3:00 "Certification of the open-source SCA Reference Implementation (SCARI) " – Hughes Latour, CRC
3:00 to 3:30 Presentation by CDAC (TBD)

3:30 to 4:30 Round Table/Panel Discussion on the "Way Forward" Moderated by Ruediger Leschhorn
4:30 to 5:00 Closing Remarks and Next Steps

Program Details

9:00 to 9:30 "European Approach for SDR Certification" – Michel Gari, European Defense Agency

The Test & Evaluation capacities landscape in Europe is fragmented, there are overcapacities and gaps. The European Defence Agency is in charge of catalysing efforts from its participating Member States to optimize the European Defence Test & Evaluation Base. One pragmatic approach is to take the opportunity of new capability development projects to concretise the DTEB optimisation in a given technical area.

Communication capability in Europe for military users and civil security users will be sustained more and more by SDR equipments. But, for the time being, we have to face a shortfall in terms of European SDR Certification capabilities. One of the challenges that the EDA has to take up is to coordinate ongoing and future initiatives from the military community and the civilian security community:

- first, on the establishment of common standards regarding software architecture and interfaces based on the SCA and APIs already released by the JTRS JPEO,
- second, on the development of European T&E capabilities, in a form of a network of governmental, European and private Test Facilities and certification bodies.

9:30 to 10:00 "Systematic Approach to Requirements Collection and Analysis in the Area of Reliable Telecommunication Systems for Security Forces" –Franco Oliveri, Joint Research Centre of the European Union Commission

Security Forces need reliable, interoperable communications, even the more so during joint cross border operation or when collaboration with other agencies is required.
We believe that SDR is an excellent solution to the interoperability problem, but it will be effective only if a great deal of effort will be put into the initial phase of scenario definition and requirement analysis.

While military forces have a long lasting tradition in defining their needs and requirements in a structured way and NATO put a lot of effort to solve interoperability issues through common, agreed standards, the situation is significantly different for security and public safety

organizations, which don't have such background and very often cannot rely on a centralized technical support to properly define their needs in the area of communications. Such unstructured approach causes severe interoperability problems.

The presentation will describe a systematic approach to requirements collection and analysis in the area of reliable telecommunication systems for security forces. We will also present the views of the JRC on the importance of a European Network of Test and Evaluation facilities to provide support to Users and the Industries in the critical phase of system verification and validation as well as during the integration of system of systems.

The presentation will also provide an overview of the ongoing project sponsored by the EC in the area of SDR as well as of the future Calls of the FP7 that could be of interest for SDR related projects.

10:15 to 10:45 "SCA Test, Evaluation and Certification Requirements" – Rick Barfoot, NATO

NATO's principle concern is the wireless interoperability between its member nations, and also with another non-NATO nations that contribute forces to NATO led operations. As such NATO and its nations define and agree a range of waveform standards for interoperability in different parts of the electromagnetic spectrum. To ensure resulting implementations of these standards are interoperable testing is needed for the over the air interface. Therefore NATO's prime interest is in interoperability testing.

However NATO recognises the potential of Software Defined Radio in helping nations implement these waveforms. Adoption of common software architecture, such as the SCA, will allow re-use or portability of waveform applications across different radio platforms. At this point there are no NATO plans to develop a NATO SCA test capability, but NATO is keen to ensure that such capabilities exist at the national government or national industrial level.

10:45 to 11:15 "SCA Test, Evaluation and Certification - the view from Finnish SDR programme" – Heikki Rantanen, Principal Scientist, Finnish Defence Forces Technical Research Centre

Software Defined Radio (SDR) has been a fascinating topic for a decade or more but within Europe it is just now that appropriate actions are being taken on multilateral basis to agree with the issues, the standards and the testing needed to give substance to the hopes for the communication transparency that SDR technology can enable. As an important initiative European Defence Agency (EDA) has kicked off working group to define the framework for European military SDR standardisation and certification.

At European level, Software Defined Radio (SDR) technology has being developed with the support of the European Commission in its research framework programme. SDR is seen as a

dual-use technology which would enable secure communications for both military and civil units in European crisis management.

Several big European SDR projects have started last year and new ones will start this year. Some of them aim to build readiness to manufacture first European SDR radios after 2010 and other have longer term vision for next generation SDR radios. These projects will have notable effect on SDR architecture development, definition of European SDR certification facilities and European SDR interoperability. European Defence Agency (EDA) aims to promote the co-operation and dialogue between these projects in the spirit of a joint civilian/military endeavour in order to guarantee the European SDR interoperability, consistent certification capabilities and waveform portability between SDR radios from different manufactures.

Despite of the aiming to the coherent European approach in SDR development, standardisation and certification, challenges still exist concerning European SDR interoperability and waveform portability. European big SDR projects like WINTSEC and ESSOR are going to define different SDR architectures and consequently diverse certification procedures and tools.

The position of civilian mobile communication companies to the SDR technology is not clear. This is a big obstacle for the common European standardisation and certification of SDR. Many of these companies have indicated that the need for SDR standardisation is too early for civilian radio systems. Some of them even see SDR as a flexible and programmable implementation technology without need for standardisation and certification.

The development of future generic Waveform Development Environments (WDEs), divergence of SDR architectures, the adaptation of SCA in civilian mobile communication, development and wider acceptance of OMG SDR architecture and future openness of JTRS SCA will have major effect on future test, evaluation and certification of European SCA based products.

11:15 to 11: 45 "Views, Requirements and Wishes for SDR Test and Evaluation Activities" – Jonathan Marchal, CELAR/TEC/STR/labo radio

CELAR is a technical centre for information warfare technologies. It belongs to French procurement agency (DGA) within the French Ministry of defence. Technical topics such as electronic warfare, electronic components, information security and C3I are in its domain. Since 1968, CELAR developed skills in civilian and military telecommunications systems, from infrastructured networks to satellites and wireless mobile tactical systems. CELAR has an experience in multinational certification activities; indeed, it hosts since 1999 the "European MIDS Interoperability Verification Facility". CELAR is involved in software radio domain, providing expertise for French software radio advanced studies in particular in support of the "European Secured SOftware Radio" initiative, which represents a substantial contributor for standardisation and certification work in Europe. Today CELAR intends to develop a SDR certification capability within the framework of a network of certification centres. The presentation will detail how CELAR is developing a software radio test bed and is involved in the EDA SDR certification capability preparation group. It will also give CELAR views, requirements and wishes in the scope of SDR test and evaluation activities for certification

purpose. Secondly, the presentation will introduce a high level presentation of the ESSOR initiative.

1:15 to 1:45 Presentation by Ministero Della Difesa (TBD)

1:45 to 2:15 "A European view on standardization and European Software radio Architecture" – Rob van Heijster, TNO

The presentation will give a view on standardization and certification from an European perspective. The European Union develops multiple initiatives to come to a European SDR standard called ESRA (European Software Radio Architecture). Projects like E2R, WINTSEC, SCORED and EULER are all working towards this objective.

Relevant for the development of standards is the issue of what should be achieved using the standards. Currently three issues are of interest:

- Portability
  Conformity of platform and waveform. This is to certify that a given waveform will run on a given platform.
- Interoperability
  Conformity of the "system over the air". This is to certify that the waveform will communicate "on air" with platforms running the same waveform or with legacy equipment that comply with the applicable radio standard (e.g. FM, TETRA).
- Reliability
  Conformity with the operational environment. This is to certify that communication is maintained in operational ("harsh") environments.

Current European activities work on:

- Which level of standardization can be achieved;
- Which existing SDR standards can be referred to;
- How to stimulate technology innovation;
- How to keep standardization achievable, avoiding unnecessary costs

The ideal standard shall only define the interfaces within SDR:

- Waveform-platform interface.
  This is the basic interface for portability
- Eventually intra-waveform interfaces, should they become relevant
- Air interface (antenna)
- "User"-interface (I/O ports, microphone etc.)
- INFOSEC-interface, where applicable

The presentation will elaborate the above given view in more detail.

2:30 to 3:00 "Certification of the open-source SCA Reference Implementation (SCARI) " – Hughes Latour, CRC

In 2004, the SDR Forum sponsored the Communications Research Centre (CRC) for the upgrade and certification of the SCA Reference Implementation (SCARI) open source project. CRC developed a Java-based implementation of the SCAv2.2, along with a demonstration application, and worked with the JTRS office to certify the SCARI-Open implementation. The implementation is available on CRC's web site has been downloaded over 10,000 times since then and has been used by academia and industry as an entry into the SDR world. This presentation will provide an overview of the JTRS Test Application (JTAP) certification software along with a few lessons learned from our certification experience. We will also present results obtained through the certification of the SCARI.

3:00 to 3:30 Presentation by CDAC (TBD)