Communications Research Centre Canada Uses ORBexpress to Successfully Port Software Defined Radio to Android

Objective Interface Systems announced that Communications Research Centre Canada (CRC) used ORB*express* communications software to achieve a record-time adaption of a complete Software Communications Architecture (SCA) radio system to a handheld Android device. The radio system, including a full core framework and FM waveform application, ran seamlessly while achieving long battery life on a single-core ARM processor.

CRC is the developer of SCARI++, a full-featured Joint Tactical Radio System (JTRS) SCA Core Framework used in software defined radios (SDR) deployed by the U.S. Army, Canadian Defense Forces and other defense forces around the world. CRC successfully demonstrated the powerful flexibility and capability of an ORB*express*-powered SDR migrating to a very small handheld Android device.

Using ORB*express* as the framework for both inter-process and intra-process communication, a CRC engineer was able to port the SCA core framework and FM waveform source code with no modifications to a mobile handheld Android device in one day. This port of the SCA core framework and waveform onto a small Android device demonstrates the availability of robust and proven COTS software tools and platforms that makes the SCA promise of easy portability a reality.

The significance of this port to Android is that the cost of entry into the SDR market has been considerably reduced for companies looking to develop SCA-based software defined radios using proven COTS software and small commodity hardware devices. A full SCA-based radio using ORB*express* runs easily on a very small form factor device while maintaining long battery life.

The CRC port of this advanced telecommunication platform reflects a multi-industry trend to take advantage of modern low-power, small form factor devices, such as Android-based devices. In addition, the computing power of these Android devices makes signal processing in software possible with just general-purpose processors. Thus, the vision of software defined radio is realized on Android devices.

“Our source is very portable but depends on third-party software. Thanks to ORB*express*, we were able to port the core framework and FM waveform without changing a single line of source code,” noted Steve Bernier, Research Program Manager, Advanced Radio Systems, CRC. “We took advantage of OIS’s expertise to figure out the right configuration for cross-compiling the application across Android’s mixed language architecture. OIS engineers provided excellent support for those questions. With the right configuration, one engineer completed the entire port of the radio and waveform in just one day.”

"The SCA uses CORBA and POSIX to create a highly portable and efficient architecture," said Claude Bélisle, Vice President of Satcom and Radio Propagation at CRC. "And because ORB*express* is the smallest and fastest real-time communications infrastructure available, capable of porting to a wide range of operating systems and processor architectures, it became incredibly easy to port a complete radio system quickly and efficiently to a brand new platform like Android."

"The power efficiency, size and cost of platforms such as Android are compelling to governments and industries alike," confirmed Joe Jacob, Senior Vice President of OIS. "CRC's SCARI++ core framework is a robust, fast core framework that is already deployed on battlefields around the world. Because of CRC's excellent engineering work over the past several years, the SCARI++ core framework is highly optimized for small form factor, low-power devices."

ORB*express* is a communications framework that enables software developers to create a unified communications architecture based on the CORBA standard across disparate systems. Designed to accommodate a broad ecosystem with multiple microprocessor architectures, operating systems and programming languages, ORB*express* easily accommodates the evolution of a product's communications without rewriting the application. The abstraction of communication services allows software developers to swiftly implement new product features, industry standards, or quality of service (QoS), and to scale such systems to larger networks.

ORB*express* is a proven and reliable communications infrastructure that shortens the time to market by allowing developers using it to focus on their unique application development challenges, not building infrastructures. Because ORB*express* supports multithreaded distributed communications, Android applications can communicate beyond the device in a background thread without impacting the responsiveness of the application's user interface.

For more information about OIS visit www.ois.com [1].

More information about CRC is available at www.crc.ca [2].

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Links:
[1] http://www.ois.com/
[2] http://www.crc.ca