

HARRIS FUTURE ASSURED COMMUNICATIONS

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INTRODUCTION

Harris has been a leader in tactical combat net radio (CNR) for over 20 years. The functionality provided to the user by Harris tactical radios has been defined by software based architecture i.e. a software defined radio (SDR). The flexibility offered by an SDR approach to radio design maintains a long term support and upgrade path for customers that embrace this philosophy.

The market for CNR has grown tremendously in the last 20 years, with more and more emphasis being placed on the acquisition of SDR by customers. The two markets that Harris addresses are the domestic US market, and the international export market.

From the turn of the century, the US domestic market has been focussed on the Joint Tactical Radio System (JTRS) SDR program with US Government funding a number of programs to meet their forecasted need from 2020 on. Harris's approach to this was to embrace this philosophy for SDR, yet apply its own resources to develop products to meet key customer needs of interoperability, flexibility and size, weight and power (SWAP). By following the tenets of the JTRS program, it allowed Harris to develop and supply US Government approved JTRS radios to the US DoD ahead of the JTRS Program schedule, making Harris the largest supplier of fielded JTRS radios to date (>170,000).

The international CNR market did not initially see any benefit in having a JTRS-like approach to their SDR acquisitions, and so Harris continued with supplying SDR architected in the 'traditional' manor. Over time, Harris leveraged the technology developed for the JTRS-approved radio platforms to develop more SDR's utilising the software communications architecture (SCA) for the international marketplace. Following this approach has made it more cost effective to develop waveforms for both types of SDR supporting domestic and international markets, e.g. HaveQuick, SATURN etc.

As waveforms and cryptographic algorithms become common to domestic and international radios, interoperability during coalition operations becomes more manageable, and the ability to provide support as well as through life functionality upgrades is also enhanced.

HARRIS'S INVESTMENT IN SDR

Harris's investment in SDR spans over 20 years and has made an outstanding contribution to the tactical radio communications marketplace.

Today, all of the functionality provided by Harris's SDR is software defined, and with the standardization of the SCA platform, future functionality development for these platforms, both Harris funded and bespoke unique developments for specific customers, is assured.

As part of this investment, Harris provides regular software updates, with new functionality as it becomes available.

TODAY'S MARKET

Harris is transitioning its international product offering to a JTRS-like SCA based radio architecture, and simultaneously the market place is itself demanding an SCA platform based architecture for future SDR procurement.

The main drivers in this market are: technology re-use (SDR provider cost reduction), interoperability, spectrum availability.

TECHNOLOGY DRIVERS

One of the main drivers for an SDR provider of multiple platforms, is the ability to re-use both hardware and software technology to develop new platforms, or rapidly add functionality to a platform at minimal cost. An SCA architected SDR allows a provider to standardise on the approach for hardware and software development and track current future customer needs to allow for easy technology insertion as appropriate.

A very large second driver moving forward is access to spectrum. As many customers have access to wideband commercial technologies that enhance their personal use of information technology (3GPP, LTE etc.) there is a growing demand for wideband communications in the military space to support the same types of rich information flow that are available in the non-military space. Unfortunately, the commercial demand for wideband spectrum has significantly outstripped the ability for governments to supply that capability to its own military forces. This is now driving the development for SDR providers to provide more for less, and two examples of this are the nascent development of the NATO narrowband waveform which

can provide up to 128 kbps of data in a single 25 kHz channel, and Harris's own ANW2 adaptive wideband networking waveform which can be scaled to support the bandwidths available over a very wide range of spectrum allowing the warfighter to take advantage of 'spectrum of opportunity' outside of the notional allocated bands when on coalition operations.

INTEROPERABILITY

Harris has been an industry leader in waveform porting between radio platforms. This includes porting Harris proprietary waveforms between different radios as well as porting government owned waveforms, such as the Soldier Radio Waveform (SRW) onto Harris' radio platforms. The flexibility provided in the SCA-based Falcon III family of radios provides tremendous waveform flexibility which is crucial as customers are now concerned with both national and multi-national missions as key requirements. Most successful deployments of SDR Harris's most successful deployments of non-SCA based SDR have been in the tactical HF, VHF and soldier radio markets. Total radio sales have exceeded 200,000 radios over 15 years. The VHF and soldier radio sales provided Harris's unique EPM capabilities at VHF, and the outstanding performance of a tailored wideband waveform for soldier radio use. The tactical HF sales were driven by interoperability. Harris has delivered over 200,000 SCA based radios, both JTRS type and non-JTRS type over the last 7 years into both the US domestic and international markets.

INVESTMENT IN SUPPORTING TECHNOLOGIES

Harris continually invests in the supporting technologies for current and future SDR platforms both for future SDR platforms and supporting technologies for current SDR platforms. This investment is balanced across the following areas to meet the perceived business need: RF Architecture, Systems Components, Vehicle Adaptors, Antenna's and supporting systems such as intercom and tactical, mobile wide area voice and data networks.

