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HDR-HF : High Data Rate technology for High Frequency communications

End-user Workshop

09 February 2012, Thales Communications and Security premises,
Colombes, France

146, Boulevard de Valmy, F-92704 Colombes, France

Magellan building



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Aims and Scope

Nowadays, the solution commonly used to interconnect heterogeneous networks, consists in linking them at the Network layer through the use of the Internet Protocol (IP). However, the use of standard IP applications over highly variable and unreliable media, with large round-trip times, such as the HF channel results in poor performance, even with the optimizations proposed by STANAG 5066 and 4538. As a consequence, the High Frequency (HF) communication link often represents a bottleneck in military networks, with a great impact on the user quality of service (QoS).

The aim of the EDA project “High Data Rate Technology for High Frequency Communication (HDR-HF)” is to propose and demonstrate a solution for efficient Very High Data Rate (VHDR: ≥ 64 kbps) military communications over the HF channel. This way, HF radios can be used to transmit standard multimedia (audio, image) and data (web browsing, email, file transfer) applications through the internet, in a way that is completely transparent for the end-user.

Its main technical objectives are:

- Increasing the link capacity through the design of an wideband radio transceiver and a new robust VHDR HF waveform.
- Optimizing bandwidth usage by taking into account IP problematics in native mode, through the use of robust header compression techniques (RoHC), and the development of a performance enhancing proxy, to enhance the performance of TCP/IP applications over the HF.
- Implementing differentiated QoS management, in conjunction with data link-level retransmissions, to schedule the various traffic flows according to their specific requirements, while improving the link reliability for the most demanding applications.
- Offering new enhanced audio and image services : MELPe wideband encoder, selective and progressive JPIP image transmission and image processing techniques.
- Building an on-air demonstration test-bed to evaluate the performance of the proposed system through different scenarios derived from military requirements and operational needs.

An equally important objective in this research was the cost-effectiveness of the proposed solution, resulting from the best use of the technology and techniques already available on the market, and the interoperability of the developed technology with existing standards.

This work was partially funded by the Walloon region and the German and French Ministries of Defence, and contracted by the European Defence Agency (EDA), in the framework of the IAP4 Captech.

The consortium is composed of five partners, from three countries: THALES Communications and Security (TCS), France; THALES Belgium SA (TBE), Belgium; FRAUNHOFER Institute for Integrated Circuits (FhG IIS), Germany; UCL and MULTITEL (MULT), Belgium.



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End-users of military HF radios and research and technology entities having an interest in military HF communication systems, are kindly invited to participate to the end-user workshop of the HDR-HF Programme which will take place at Thales Communications and Security premises, in Colombes, France, on February 09th, 2012.

The project team will present the architecture of the technical solution and make a live and interactive demonstration of the system capabilities on a real ionospheric link, between the two Thales sites of Colombes, France and Tubize, Belgium. They also expect feedback on the relevance of the proposed solution with regard to military requirements and real operational scenarios.

See leaflet for further details.



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Agenda

February 09th, 2012, 9:00 – 18:00

Item #	Duration		Subject	Who
Morning session				
1	09:00	09:30	Welcome coffee	
2	09:30	09:45	Introduction	Michael SIEBER
3	09:45	12:00	Project Overview: <ul style="list-style-type: none">▪ Project context, motivations and goals▪ Main technical challenges▪ Overview of the proposed system architecture▪ Performance on real HF link▪ Q&A, Discussions	Project Team
4	12:00	14:00	Lunch	All
Afternoon session				
5	14:00	17:30	Demonstrations on real HF link	Project Team
6	17:30	18:00	Wrap-Up <ul style="list-style-type: none">▪ Conclusions▪ Directions for future work	Project Team
7	18:00	19:00	Cocktail	All



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Visitor Details Form

Once filled-in, to be returned to: isabelle.icart@thalesgroup.com
latest by **January 27th, 2012**

EDA HDR-HF End-user Workshop February 09 th , 2012 Thales Communications and Security premises, Colombes, France	
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