THALES COMMUNICATIONS

MPDL

Multi Platform Data Link for airborne ISTAR

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Your needs

To achieve supremacy,

the military commanders need from the theatre

of operations images transmitted:

- in real time
- at high data rate
- at long range
- with an efficient use of RF spectrum

Our Solution

Innovative: No need of meeting point

One important advantage of MPDL compared to the existing High Rate Data Link system is its ability to establish the communication between Surface station and the Airborne without the need to plan a space / time meeting point. Because long range communications in X and Ku band induces the use of directive antennas, the up to know solution consisted to place the airborne in a pre-planned location at a given time and then to steer the surface and the airborne antennas one each other knowing surface station location.

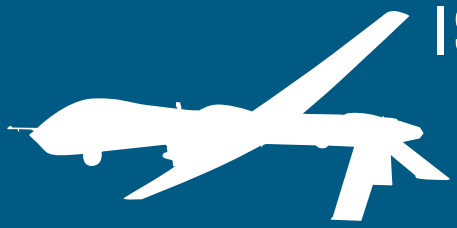
Our solution, free of operational constraint and already implemented in MPDL, consists to base the High Rate Data Link system on a hybrid duplex architecture. The high rate X / Ku link is controlled through a Low Rate Data Link in UHF band.

Propagation property in UHF band allows long range with omnidirectionnal antennas. So the establishment of the X/Ku link just need exchange between surface and airborne platforms of their respective location. The use of our UHF radio implementing TRANSEC and COMSEC techniques procures a high level of security during the transmission of touchy information in real time such as platforms locations.

Sparing of bandwidth

MPDL achieves a very low bit error rate at long range and high data rate thanks to powerful forward error code from DVB technology. MPDL uses much less spectrum bandwidth at same user data rate thanks to new modulations techniques such as 8-PSK.

Real time for airborne ISTAR



Recent conflicts have underlined the importance of Airborne ISTAR (Intelligence Surveillance, Targeting And Reconnaissance) assets to get updated information from the theatres of operations.

One recent innovation on Airborne ISTAR assets is the integration of HDRL (High Rate Data Link) to transmit in real time accurate information collected from the battlefield by the on board sensors.

So the HRDL is a major element of airborne ISTAR assets as it contributes to the reduction of the cycle OODA Observation / Orientation / Decision / Action, key factor of military operations success.

System description

MPDL in its hybrid duplex version consists in a Ku band High data rate down link and an half duplex UHF low data rate bi-directional link used to establish and control the Ku band link.

The Ku band data link consists in an airborne sub-system composed of 3 Line Replaceable Units :

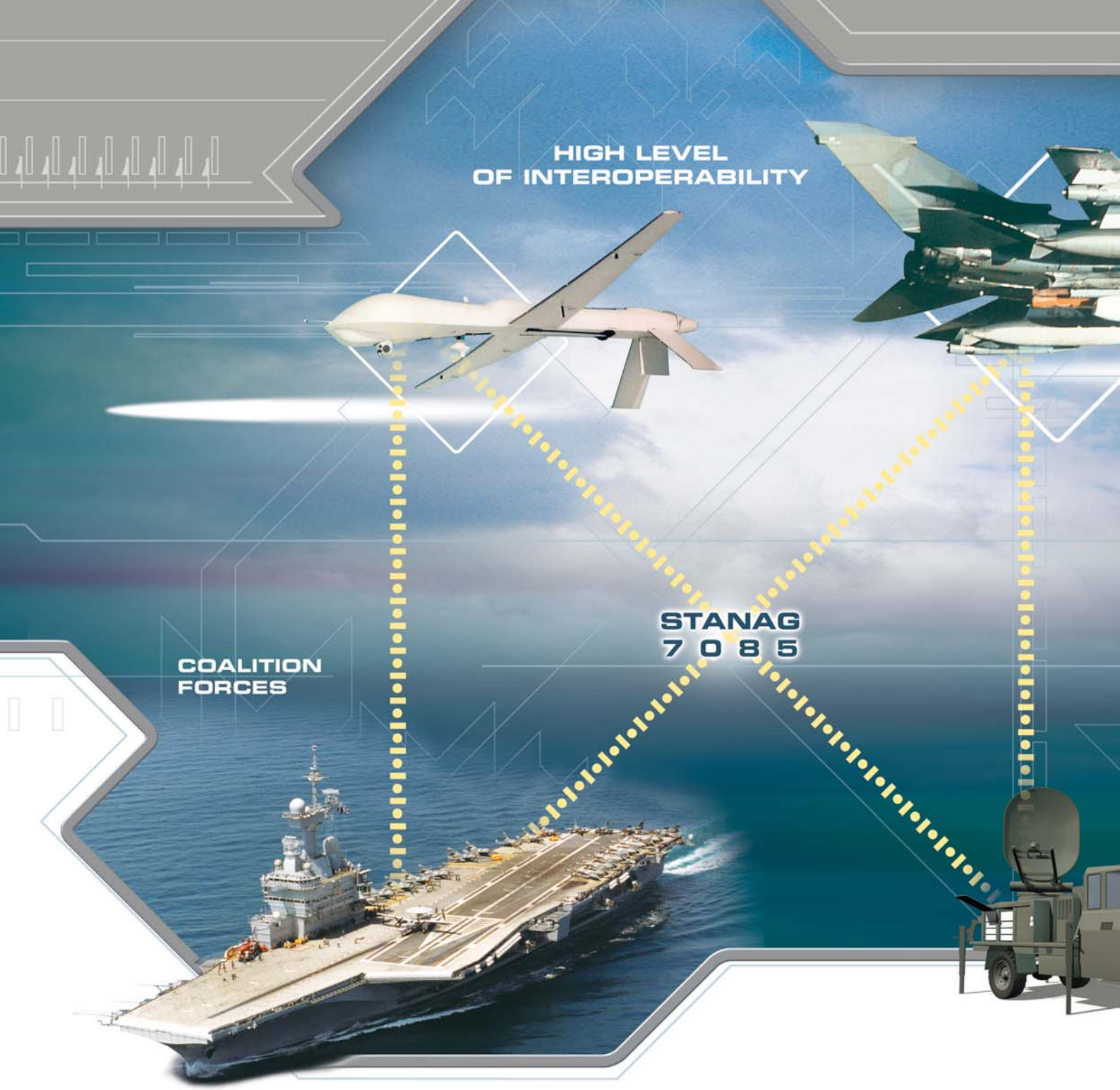
- The airborne digital unit
- The airborne Ku power amplifier unit
- The airborne Ku band antenna unit

And in a Surface sub-system composed of 3 Line Replaceable Units :

- The surface Ku band antenna unit
- The surface Ku LNA unit
- The surface digital unit

The UHF data link consists in :

- An UHF airborne terminal and its blade antenna
- An UHF surface terminal and its antenna



With efficient use of RF spectral resources

Various techniques aims at reducing the required bandwidth. On one hand, the compression techniques aim at reducing the amount of data to be transmitted. And in the other hand modulation techniques aim at transmitting more information in a given bandwidth.

Thanks to the use of DVB technology MPDL requires half the bandwidth, compared to existing High Rate Data Link systems.

And Secure

MPDL provides encrypted transmission on both the X / Ku link and the UHF link. In addition the UHF link is highly protected against jamming with very fast frequency hopping techniques when the X / Ku link take benefits of its directive antennas to procure Low Probability of Intercept (LPI) and Low Probability of Detection (LPD).

Real time
for airborne Intelligence Surveillance TArgeting and Reconnaissance (ISTAR)

Innovation coming from the latest technologies

Our Expertise

IN STANDARDS

Thales Communications is a key player in numerous NATO Standard Agreements.

Concerning High Rate Data Link, Thales Communications is deeply involved in:

- Stanag 7085 Datalink for ISR systems,
- Stanag 4609 Motion Imagery and Metadata definition,
- Stanag 7023 Imagery format.

REFERENCES

The THALES Group's long-term commitment to R&D maintainsthe level of excellence that is the defining feature of high-tech industry.

THALES Communications invests more than 10% of its result in R&D to master the New Technologies of Information and Communications (NTIC) such as Digital Video Broadcast (DVB), Moving Pictures Experts Group (MPEG) or Joint Photografic Experts Group (JPEG)…

In High Rate Data Link products

High Rate Data Link products range includes new technologies such as DVB for modulation, µ-tube for power amplifier.

• 1980 - AGATHA

High rate data link for Horizon.

• 1990 - RAPHAEL

High rate data link
for Synthetic Aperture Radar
Recce Pod.

• 2003 - RECO NG

High rate data link for Electro Optic
Recce Pod.

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