DATA SYSTEMS

AEROSPACE TESTING TELEMETRY

Products & Services

SAFRAN

A WORLD LEADER
IN FLIGHT TEST INSTRUMENTATION AND TELEMETRY

SAFRAN DATA SYSTEMS SUCCESSFULLY SATISFIES CUSTOMER NEEDS ALL AROUND THE WORLD

We are Telemetry

50 years of experience in flight test instrumentation and telemetry solutions in the most challenging environments and more than 50 customers make Safran Data Systems a top partner.

Focusing on customer needs

With a deep sense of dedication, our priority is to understand the most demanding customer expectations and provide robust, high quality and reliable solutions.

Building long-lasting confidence

Our customers demand new capabilities to meet technology advancements. Forging partnerships ensures our products provides product advancements in time to meet evolving test requirements.

Now a Safran company

In early 2018, Zodiac Aerospace was integrated within the Safran company, making Safran Data Systems enter in an international high-technology group with more than 84,000 employees located in 30 different countries.

OFFERING END-TO-END FLIGHT TEST AND TELEMETRY SOLUTIONS FROM SENSORS TO ANALYSIS

With our wide expertise as a full turnkey solution provider, Safran Data Systems aims at giving the best experience for customer's flight test campaign, for both in the air and on the ground.

From data acquisition units, dedicated or embedded recorders, switches, transmitters, flight termination receivers, antennas, receivers, ground recorders to full capable software suite, our offer encompasses all your FTI instrumentation needs.

COMPREHENSIVE SOLUTIONS
FOR ANY FLIGHT TEST AND TELEMETRY APPLICATION

FIELD-PROVEN PRODUCTS FOR A SPAN OF USE-CASES FROM UAVS TO SPACE VEHICLES


GQ-1 Predator
General Atomics


PW1000G
Pratt & Whitney


Racer
Airbus Helicopters


SH-60
LM Sikorsky


Rafale
Dassault Aviation


MC-21
Irkut


A400M Atlas
Airbus DS


777
Boeing


FASGW
MBDA


Stratobus
Thales Alenia Space


A350-1000
Airbus


Ariane 6
ArianeGroup

COTS PRODUCTS FOR TAILORED SOLUTIONS

COTS products result from decades of experience in testing, enabling standalone or network tailored solutions for any platform scale.

Safran Data Systems keeps designing and implementing new technologies and solutions to ensure the future of acquisitio n and telemetry.

OVER THE LIMITS


Exposed areas


Harsh environments


Cybersecurity concerns

HIGH-END TECHNOLOGIES
AND INNOVATION

TAKING PART IN GREAT CHANGES

As an active member of the FTI community, Safran Data Systems takes part in many international conferences, participates in technology advances through numerous publications. Safran Data Systems also sponsors a regular international Testing in Motion Seminar and Lab Workshop oriented toward innovation in Flight Testing. Safran Data Systems supports active members for the Telemetry Standards Coordinating Committee (TSCC), Recorder Reproducer Vendor Working Group and RF Vendors Working Group.

DATT SUMMIT DEFENSE & AEROSPACE TEST & TELEMETRY

ettc European Test and Telemetry Conference

TIM Testing in Motion

ITC/USA International Telemetering Conference

SPACE SYMPOSIUM Space Foundation

CONTRIBUTING TO THE COMMUNITY STANDARDS

Safran Data Systems contributes to the community standards with a high level of expertise. As a long time key contributor and currrently active with further development such as the IRIG 106 Chapter 10 “Digital Recording Format” since the early stages of this standard. Safran Data Systems was initiator and is now a key contributor to the development of IRIG 106 Chapter 7 “Packet Telemetry Downlink”. Safran Data Systems developed the first assets compliant to this standard. Chapter 7 is an advanced method to transport both legacy PCM Chapter 4 time division multiplexed data along with Packet Telemetry Data via legacy telemetry means.

Safran Data Systems investment in new developments and innovative programs:

- High performance wireless data acquisition solutions in harsh environments
- Low-power smart intrumentation

Safran Data Systems recently showed its innovativeness by proposing:

- Integrated signal-conditioning instrumentation for launch vehicles
- First large-scale Ethernet based FTI distributed architecture flying in 2005
- Error-free C-band telemetry downlinks
- High bandwidth high definition video link in fighters and near-space vehicle
- First generic analog acquisition module

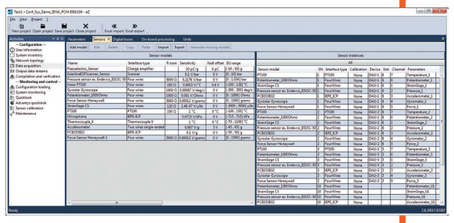
eZ: INTEGRATED FTI SOFTWARE
SUITE AND SERVICES

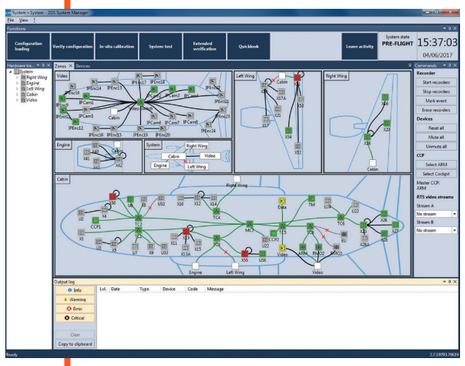
EFFICIENTLY PREPARE AND ANALYZE YOUR FLIGHT TEST CAMPAIGN

From configuration of the testing architecture to live processing, eZ gives to our customers all the necessary tools to efficiently manage the whole testing architecture and functionalities.
With a user-friendly interface, this unique suite encompasses early configuration, last-minute integration of new devices, live visualization and powerful post-processing.

INTEGRATED SENSOR CALIBRATION MANAGEMENT

eZ is a highly-reliable FTI system configuration software and a fully integrated tool for sensors calibration. The user is guided for a first-time-right setup thanks to wizards and auto-setups.
Productivity tools fasten the setup while advanced discovery eases architecture changes.



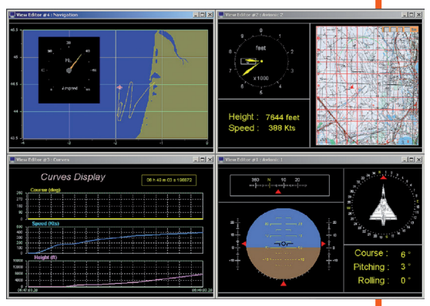


MORE INFORMATION LESS DATA

Our on-board processing solution enables to decrease your telemetry downlink load by reducing data size.
Cloud computing interface provided by eZ offers intuitive and smooth customization of processing within the instrumentation.

EFFORTLESS CONFIGURATION FOR DISPLAY AND PROCESSING

Convenient layouts and functionalities for any use case.
On-board processing capacities of our equipment are fully configurable within eZ.
TMATS export is also provided for configuration of third party data processing and display software.



FASTER POST FLIGHT DATA ANALYSIS

Discover the extended capacities of the eZ for data analysis suite page 15.

Photo © NASA

DATA AND VIDEO ACQUISITION
AND RECORDING

XMA AND MDR, THE MODULAR ACQUISITION UNITS FOR A SCALABLE FTI NETWORK

The combined families of data acquisition and recording units offer all of the functionalities needed for your on-board acquisition FTI (independently or simultaneously):

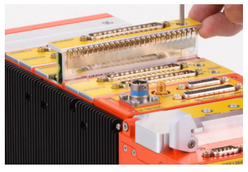
- Data and video acquisition,
- Live processing,
- PCM Chapter 4 or Chapter 7 outputs,
- Chapter 10 streaming,
- Full Ethernet network,
- And many more...

Our products' modularity enables a wide scalability from a single-unit all-in-one system up to very large architectures with no limitation.

They are compliant with IENA, iNet, Ethernet, IRIG 106 Chapter 4 and many other standards. Tailor your system whatever your needs: ARINC bus, Strain gauges, Video inputs, data logging...

XMA

- Ruggedized design for harsh environments,
- Modularity (stackable) for an optimized footprint in narrow spaces,
- Universal analog conditioning module and on-board live processing.



MDR

- High-bandwidth recording capacity up to 800MBits/s,
- Multi-file and in-destination recording,
- Wide range of video interfaces,
- Several Tera-Bytes storage capacity with no limitation.

Heim

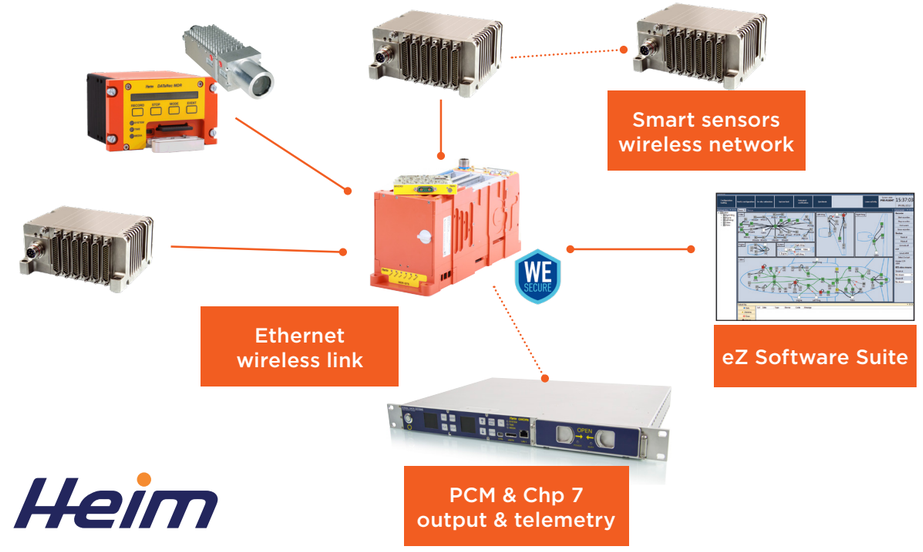
MDR-GT/-GTS, HIGH SPEED DATA RECORDING AND HIGH CAPACITY STORAGE

The MDR-GT/-GTS is a brand new hardware platform that expands the boundaries of the airborne recorder's flexibility.

Thanks to cutting-edge electronics, buses and storage canister, the system allows to record data from multiple very high speed sensors and offers up to 16Gbps recording bandwidth and up to 64TB storage capacity.

It can be connected to multiple analog sensors and digital buses. As a rich featured system, it is equipped in its baseline with Wireless capability, Gigabit Ethernet and IRIG 106 Chapter 4 and Chapter 10/7 ports, for data recording and dissemination. The MDR-GTS variant offers advanced cybersecurity features including Data at Rest (DAR) protection capabilities and a Removable Secure Operational Disk (RSOD).

Thanks to all these capacities, the MDR-GT/-GTS is now the new heart of a big-scale FTI architecture.



Heim

HIGH-DEFINITION VIDEO CAMERAS

Take advantage of low-latency, synchronized full HD video recording in your installation for purposes ranging from external communication to live monitoring and image analysis.

Cameras are miniaturized and ruggedized for any indoor and outdoor application.

DATA COMMUNICATIONS

CHAPTER 4 OR CHAPTER 7 COMPACT GATEWAY

Our new generation of gateway is fully compliant with IRIG 106 Chapter 4 and also IRIG 106 Chapter 7.

IRIG 106 Chap 4 is an IRIG standard widely used in the Flight Test community for multiplexing Synchronous and Asynchronous data into a single PCM stream.

This standard has evolved over the years, from Type 1 to Type 2, adding capabilities and, mainly, improving the efficiency of handling asynchronous data insertion into the PCM stream.

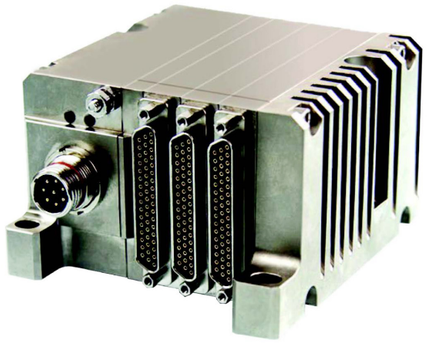
Based on this last evolution has been developped the IRIG 106 Chapter 7 version 2017, new IRIG 106 standard, designed to multiplex any type of data in a standard PCM telemetry channel.

The IRIG 106 Chapter 7 gateway can merge several PCM outputs, Video channels and Ethernet data streams into a single PCM telemetry channel which can be transmitted to the ground using a regular Transmitter, whatever the Frequency Band (typically L, S or C) and/or Modulation type (FM, SOQPSK,) including Coding or not.

The compact and highly ruggedized design allows the gateway to be installed on any type of test vehicles even in harsh environment.

This versatile gateway expands existing instrumentation systems transmitting efficiently heterogeneous data streams.

The modular-based design allows various configurations tailored to users' specific needs.



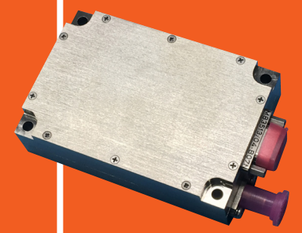
Heim

STAND-ALONE OR INTEGRATED SWITCHES

Dedicated equipment enable a strong capacity of switching data flows in your architecture, Gb-switch or highly ruggedized equipment are available.

However, the NEX and MHUB modules also offer you switching capacities integrated in XMA or MDR for a lighter solution.

STAND-ALONE OR EMBEDDED TRANSMITTERS



The small size, light weight and robustness of our transmitters make them ideal for integration in narrow space with harsh environment.

Safran Data Systems makes available several versions of transmitters which can be either used as stand-alone transmitters or embedded into our XMA (data acquisition units) to minimize the footprint of instrumentation.

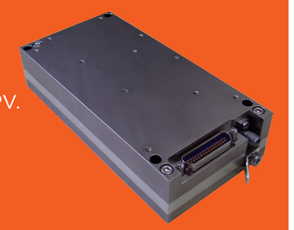
Available as L-band, S-band and C-band, they offer several programmable options:

- output power (typically up to 10W),
- modulation (PCM/FM, SOQPSK-TG, multi-h CPM, etc.),
- coding (LDPC).

New versions are offering advanced features like STC, COFDM and can be tailored to customers' needs. Also customized form-factor transmitters and boosters are available for more demanding applications like for space (radiation tolerant).

FLIGHT TERMINATION RECEIVERS

The highly reliable FTR140 offers its compact package and fully digital operation for use on any type of missiles, UAVs, targets or RPV. It has been qualified on both MIL STD-461E and MIL STD-810F.



TRACKING AND RECEPTION

FULL RANGE OF TELEMETRY ANTENNAS

All flying platforms such as aircraft, helicopters, UAVs, missiles, launch vehicles are covered by our wide range of antennas. Being future-proof, they have the capability to cover all bands for telemetry (L, S, C).
COMTRACK is the ideal antenna for fast deployable and transportable solutions thanks to its very light weight, compactness and easy installation.

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SPARTE family, with 3 main types (SPARTE 300, SPARTE 500, SPARTE 700) are a field-proven product family delivered to customers worldwide, for mission-critical applications.
It provides a full coverage of each and every need whatever the distance to be covered and the constraints of the flight trials.
The SPARTE family can also be used for shipborne and mobile applications without any compromise on performance.

A FULLY SCALED OFFER TO MEET YOUR SPECIFIC NEEDS

RTR AND COMPACT RX-1 RECEIVERS

With more than 30 years of experience in designing and providing telemetry receivers, Safran Data Systems has designed products which take the advantage of the high-quality of the RF front-end combined with a powerful FPGA-based signal processing engines.

With a focus in providing modular and scalable solutions, Safran Data Systems offers two products, the RTR and the RX-1 receiver, with the same level of performance (quality of reception, demodulation and decoding) and integrating all functions from combining features, demodulations to data streams over Ethernet.

Among key features:

- Multiple frequency bands (IF, P, L, S, C),
- Multiple inputs from 1 to 4,
- Space, frequency diversity-combining,
- Adaptive Equalizer,
- Demodulation (PCM/FM, SOQPSK, STC, etc.),
- Decoding (LDPC, etc.),
- Data encapsulation (DQE, DQM),
- Data outputs under different formats (chapter 10, etc.).

Used as reference for critical applications (missile or launcher telemetry), the RTR is also used widely by space agencies around the world. Taking advantage of the technology of the RTR, the RX-1 is a perfect fit for mobile telemetry applications and when high number of channels of reception is required.

BEST SOURCE SELECTOR (BSS)

The Best Source Selector enables real-time automatic selection of the best signal received simultaneously from different antennas targeting the same airframe.

It allows seamless hand-over from different antennas (either extending the reception range or securing data reception while one antenna does not provide relevant data):

- Up to 8 inputs (Analog signal or PCM data),
- Programmable selection criteria: Eb/No, DQE/DQM, frame synchronizer status, majority vote,
- Data output: PCM (data and clock), PCM stream in Chapter 10 packets on Ethernet.

TELEMETRY AND SIGNAL RECORDERS

RSR RECORDERS

Safran Data Systems RSR offers multi-channel Intermediate Frequency (IF) as well as Radio Frequency (RF) signal recording/reproducing, and additional data types such as IRIG-B, AGC, PCM (analog or data&clock) and analog baseband.

It provides the safest data recording for one-shot flight tests such as missiles and launch vehicles. It also provides full capability of range validation prior to a flight.

GMDR RECORDERS

GMDR is a powerful ground station data recorder that seamlessly integrates into customers' existing test center architecture. It hosts a live-signal reconstruction capability and intelligent data reduction and dissemination:

- Input Data types: PCM, ETHERNET, ARINC 429, MIL-STD-1553, CAN, analog, serial, discrete...
- Video interfaces: DVI, SDI, PAL, NTSC, RTP...

Compatible with MDR on-board recorder, GMDR offers the capability to read data straight from MDR modules for a top-quality recording and replay. Now Ch7-compatible.

TURNKEY GROUND STATIONS

Safran Data Systems ground station design is based on the deep understanding of customers' requirements, topology of test field and global testing architecture.

Such solution typically includes antennas (fixed, mobile or shipborne), receivers, recorders, decommutation system to provide the user a ready–to-use station answering all his requirements.

From small stand-alone shelter to large-scale facility, Safran Data Systems helps building dedicated ground station based on our field-proven solutions.

With our wide expertise and as a full turnkey solution provider, Safran Data Systems aims at giving the best experience for customers' flight test campaign, for both in the air and on the ground.

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DATA ANALYSIS

DECOMMUTATION, DISPLAY AND PROCESSING REPLAY AND ANALYSIS TOOLS

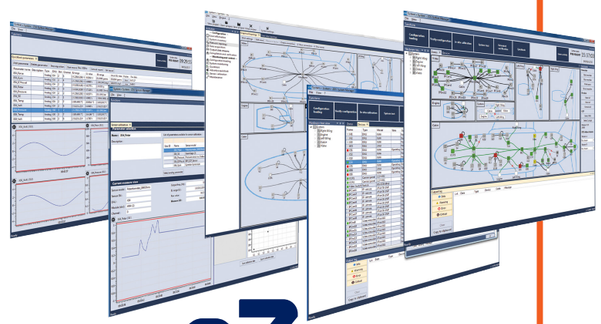
eZ Software Suite is a key decommutation system allowing real-time and post test display and analysis of all flight parameters.

Decommutation, display and distribution of acquired data through:

- Real-time and post processing,
- Engineering units conversion,
- Intuitive data display,
- Storage of raw and engineering units data.

No need to define decommutation scheme, eZ automatically imports the on-board FTI configuration.

GROUND PROCESSING OF CHAPTER 4, CHAPTER 10 AND OTHERS



SERVICES

TEST & DEPLOYMENT

We support you through the whole life cycle of our products, with adapted solutions from standard repair to long term total care maintenance contract.

- Equipment and system installation service,
- Embedded firmware and software suite update,
- Obsolescence management services,
- Extended warranty.

GLOBAL SUPPORT FOR YOUR TESTING

Safran Data Systems provides high level of testing expertise through test pilotes, flight test engineers and others qualified staff.

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POWERED BY TRUST

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