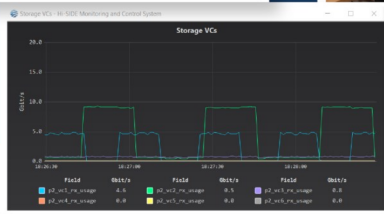
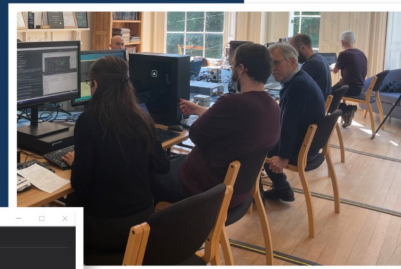


## End to End Demonstration

Between June 13<sup>th</sup> and 16<sup>th</sup> 2022 the integration and end-to-end demonstration of the Hi-SIDE data chain technology took place at STAR-House in Dundee. During this event, we:

- Integrated 6 HSDC elements (network, instrument, processor, mass memory, compressor, downlink) into a complete data chain.
- Validated the integrated data chain in terms of data transport, broadcast rate, error handling and data management.
- Performed an end to end demonstration of the HSDC data chain.



As part of the demonstration scenarios, representing major data processing sequences on-board satellites were implemented across the HSDC. These included end to end demonstrations of:

- Storage and playback of images from a SpaceFibre Camera at 9 Gbit/s
- Compression and storage of hyperspectral images at 7 Gbit/s on a CCSDS 123.0-B-2 based compression.
- Encryption and storage of files via the high performance data processor (HPDP) at 70 Mbit/s
- Packet error burst correction up to 25% using the Hi-SIDE file protection scheme
- Transmission and playback of images via the RF downlink at 5 Gbit/s per channel
- Data transmission via the optical downlink at 10 Gbit/s

This demonstration proved the capacity of the Hi-SIDE HSDC architecture to process, store and transmit data from instrument to ground at data rates up to 10 Gbit/s, which was the original target of Hi-SIDE.

Furthermore, with planned development of the HSDC technology beyond the Hi-SIDE project achieving data rates of 50 to 100 Gbit/s is expected to be possible.

The Hi-SIDE project is a collaboration between the following companies, universities and research institutes. Find out more about the partners involved in the project at

[www.hi-side.space/project-](http://www.hi-side.space/project-)

- ♦ AIRBUS DEFENCE AND SPACE
- ♦ TESAT SPACECOM
- ♦ DLR
- ♦ STAR-DUNDEE
- ♦ STAR-BARCELONA
- ♦ INTEGRATED SYSTEMS DEVELOPMENT
- ♦ KONGSBERG SPACETEC
- ♦ ERZIA TECHNOLOGIES
- ♦ UNIVERSITAT AUTONOMA BARCELONA
- ♦ NATIONAL AND KAPODISTRIAN UNIVERSITY OF ATHENS
- ♦ MODUS RESEARCH AND INNOVATION



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[Hi-SIDE](https://www.linkedin.com/company/hi-side)

# Beyond Hi-SIDE



## Hi-SIDE may be complete, but for our partners, the work will continue!

Hi-SIDE's overarching goal was to increase the amount of information that Earth Observation satellites could collect, process, store, and deliver to the ground by developing an enabling high-speed data chain technology.

The project has generated new knowledge that will influence the design of future satellite payloads. The architecture designed and demonstrated by Hi-SIDE will enable future EO satellites to be equipped with instruments that provide higher resolution and more detailed data than was previously possible; improving the quality of data available for Earth Observation applications.

Through exploitation of the project outcomes Hi-SIDE will result in the introduction of at least 9 new products and 2 enhanced products to the satellite systems market. Many of these products will be deployed on-board satellites in the near future, and will contribute to future-proofing Europe's EO satellite fleet.



Hi-SIDE demonstrated the following products developed as part of an integrated data chain:



Double click on the element of interest to learn more about it and see photos and videos from the demonstration event!

Event Gallery



## Are you interested in learning more about the Hi-SIDE technology?

Visit our website where you can access video interviews with the technology developers, read about the specific advances that were achieved at each stage of the data chain and view the outcomes and achievements from the end to end demonstration of the integrated HSDC architecture.

[www.hi-side.space/demo](http://www.hi-side.space/demo)