S4PRO

SMART AND SCALABLE SATELLITE HIGH SPEED PROCESSING CHAIN

S4Pro Project Overview

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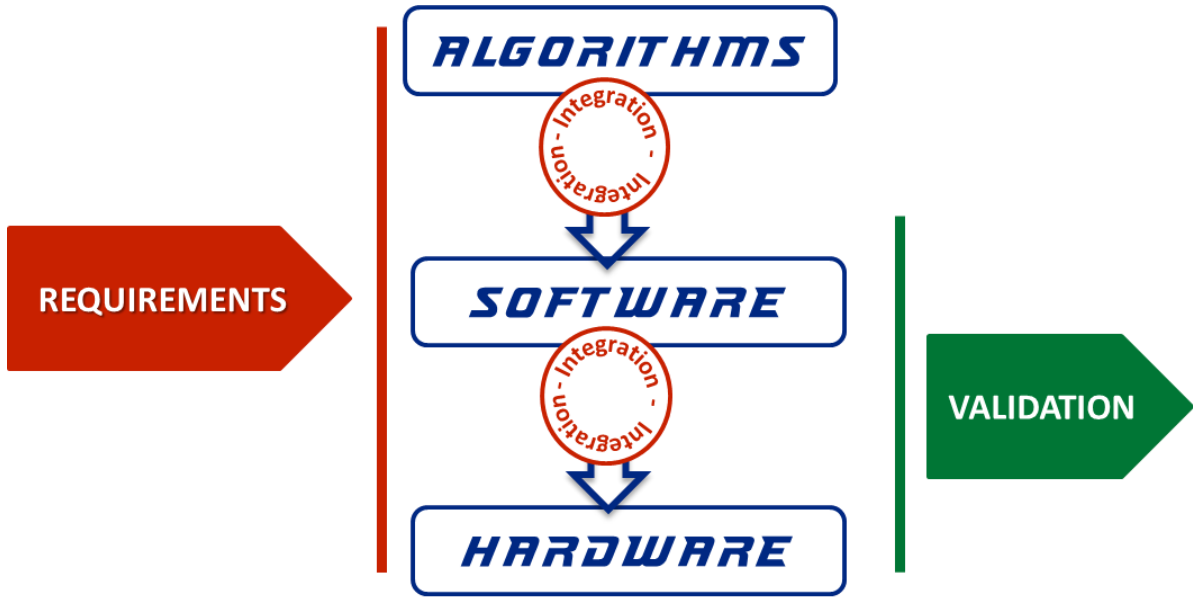
INTRODUCTION

- S4Pro stands for: **S**mart and **S**calable **S**atellite high **S**peed **Pro**cessing Chain
  - Reference missions and algorithms optimisation
  - Processing System software and performance benchmarks
  - Hardware system and integration
  - Validation up to TRL6

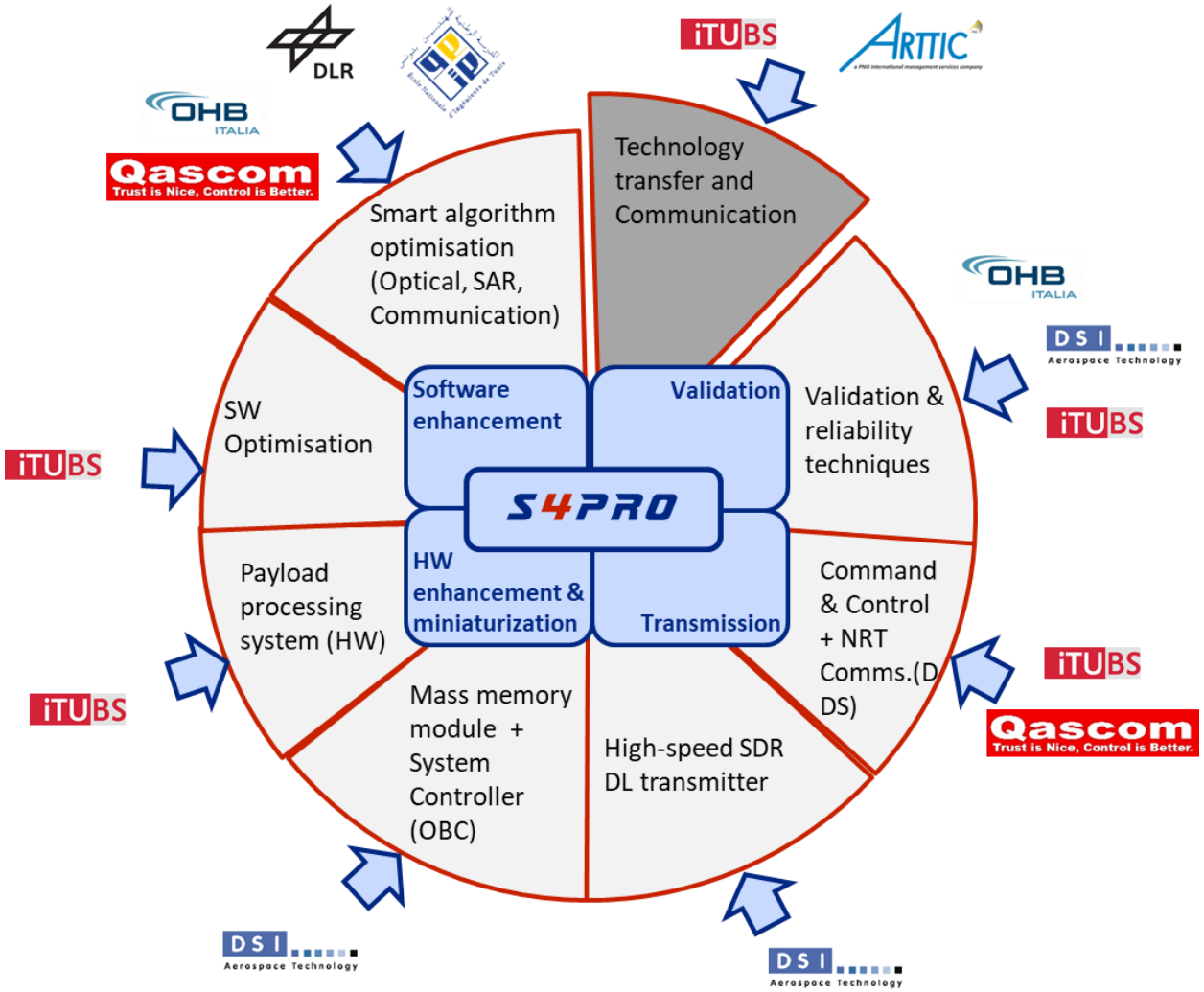


KEY FACTS

- ✓ START DATE: 1st November 2018
- ✓ DURATION: 36 months
- ✓ BUDGET: 2.654.391 €

S4PRO PARTNERS

- The S4Pro Consortium is comprised of 7 partners representing 3 European and 1 Associated (Tunisia) countries:
  - 3 SMEs: iTUBS, DSI, QASCOM
  - 1 industrial partner: OHB Italia
  - 1 Research Centre: DLR
  - 1 University: ENIT
  - 1 Innovation Management Consultancy: ARTTIC



PROJECT OBJECTIVES

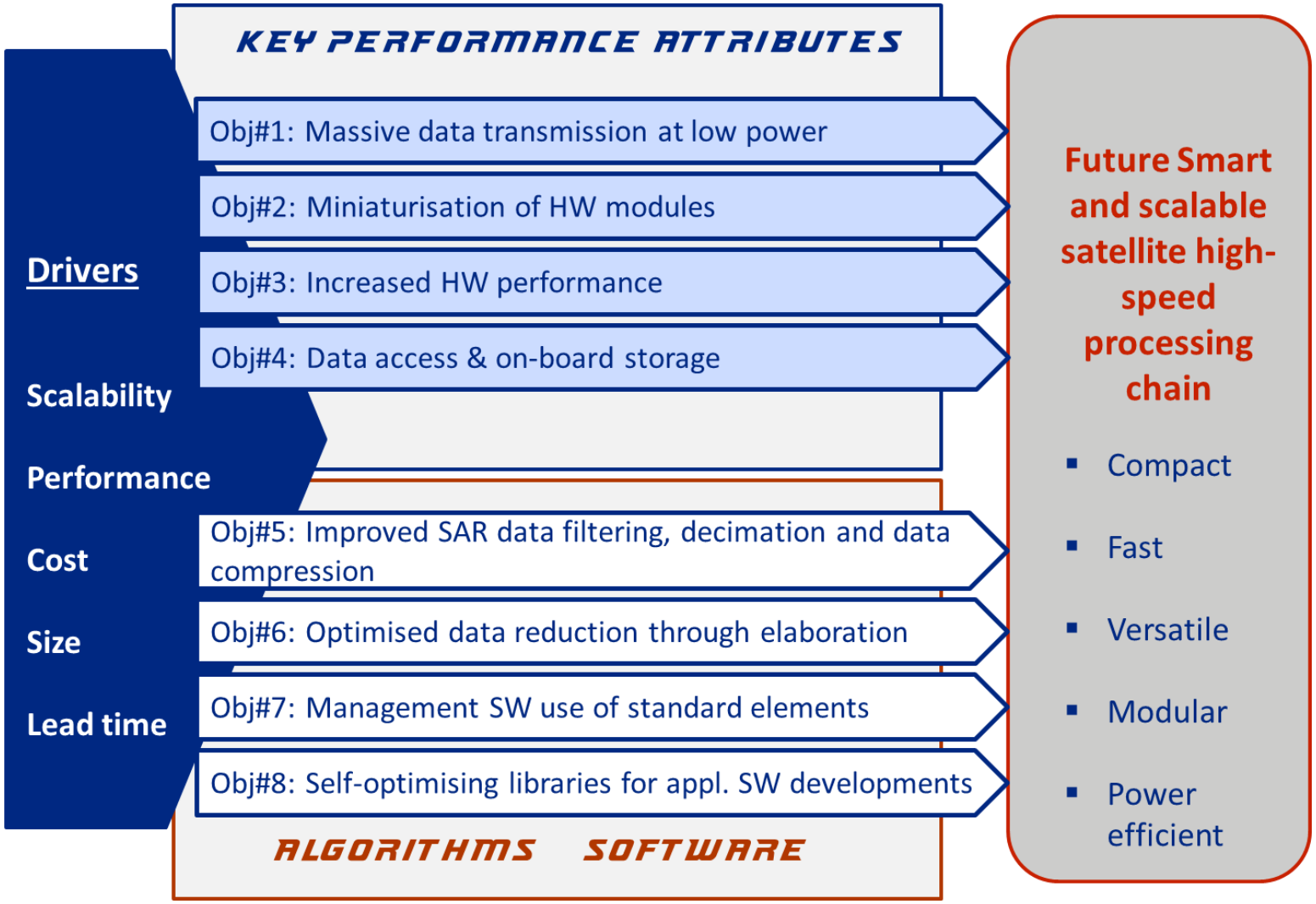
S4Pro Objectives fit into two larger categories:

HW aspects

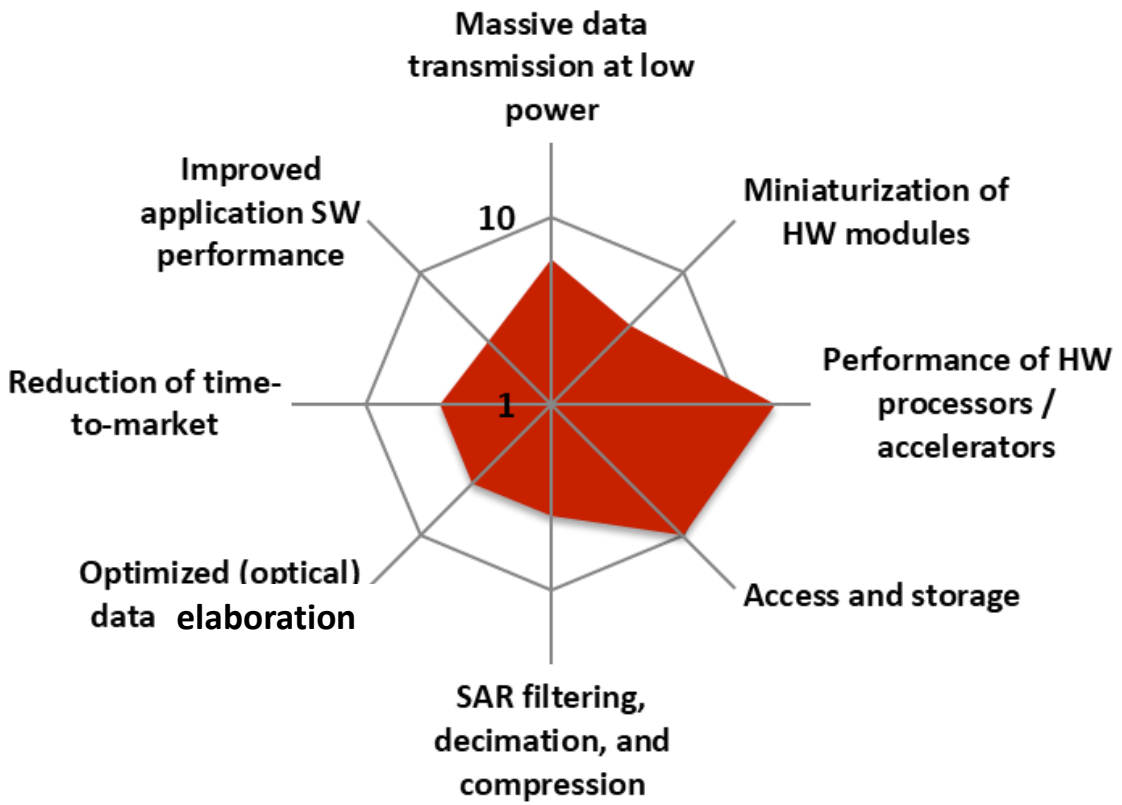
Objectives 1-4

Mission related algorithms and system software

Objectives 5-8



PROJECT OBJECTIVES



S4Pro Objectives / Factor of improvement	SOTA*	PBSOTA**
Massive data transmission at low power	1	6
Miniaturization of HW modules	1	4
Performance of HW processors / accelerators	1	16
Access and storage	1	10
SAR filtering, decimation, and compression	1	4
Optimized (optical) data elaboration	1	4
Reduction of time-to-market	1	4
Improved application SW performance	1	3

**SOTA – State-of-the-art*
***PBSOTA – Progress beyond the State-of-the-art*

INNOVATION

- The following products and services will emerge from the S4Pro Results:

HIGH SPEED DATA CHAIN

providing compact high-end payload data processing and high data rate wireless communication for small EO satellites

COMPLEX ALGORITHMS

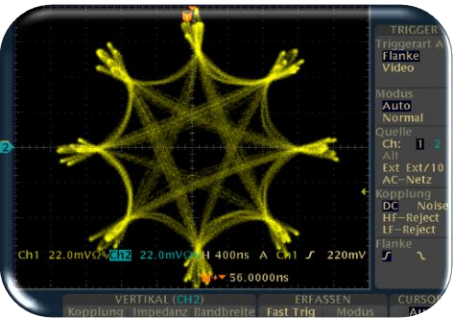
making it possible to compress data before transmission, reducing downloading time and saving memory space

EMBEDDED SW LIBRARY

Enabling signal & image processing routines for present and future mission scenarios

OPTIMIZED HW SW

enabling data compression, data-chain transmission and improved memory storage



GENERIC HIGH PERFORMANCE SDR

that is interoperable with RF or optical front-ends

HW SW MODULES

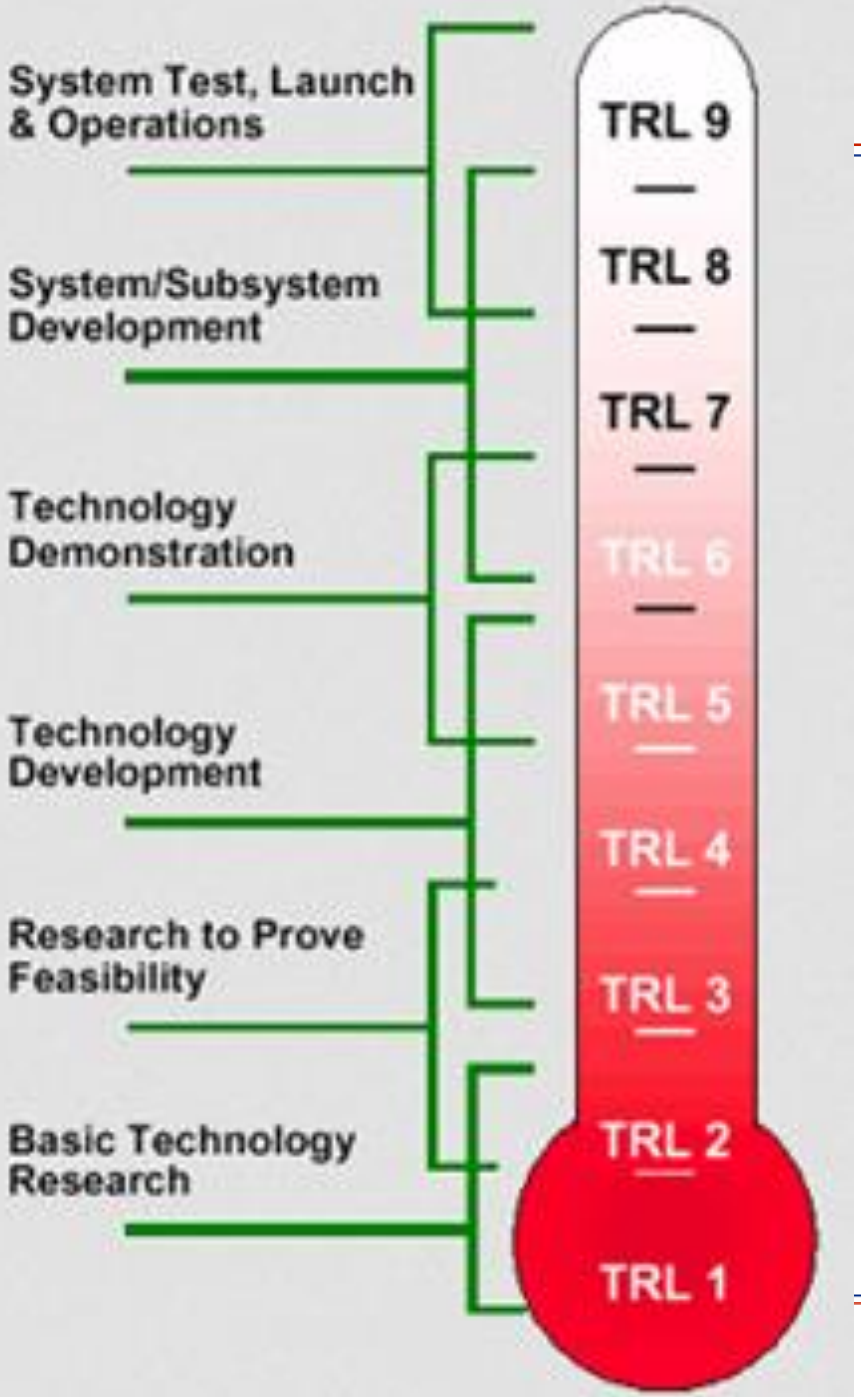
as enabler for high bandwidth transmissions for nano- and small satellites a key enabling element for the next generation of EO satellites.

SOFTWARE TOOLCHAIN

to support multiple advancing communication standards (CCSDS and DDS)

BUSINESS AND ORGANISATIONAL MODELS

Knowledge transfer, including associated countries and establishment of new partnerships and exchanges.



TRL LEVEL

Technology	TRL at S4Pro start	Target TRL
High-performance Scientific and Signal Processing Software Libraries	TRL3	TRL6
Management SW		
Communication and navigation SW		
Mass memory	TRL3+	
Payload processing unit	TRL3	
High-Performance Multi-Core Processor		
Optimised algorithms for on-board SAR pre-processing	TRL3+	
Optimised and application algorithms for Optical	TRL3	
Wide-band modem for small satellites	TRL4	
Wide-band SDR		
TT&C + GNSS module		

EXPECTED IMPACT

- Improvement in the capability (miniaturisation and power reduction, precision, efficiency or other characteristics) with respect to existing EO missions
- Improvement in state-of-the-art technologies in key areas such as optical and radar systems in terms of processing, compression, storage and transmission
- Enabling synergic use of heterogeneous Earth Observation constellations
- Greater industrial relevance of research actions and output by deeper involvement of industry, including SMEs, and stronger take-up of research results
- Foster links between academia and industry and with other industries
- Strengthening Europe's position in industrial competitiveness in technologies for Earth observation payloads and missions
- Independence from single HW vendors

THANK YOU

ANY QUESTIONS?

iTUBS

DSI Aerospace Technology

DLR

OHB CGS

Qascom Trust is Nice, Control is Better.

ARTTIC a PNO international management services company

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