

SmartBay

A **multi-roles** system for **smart sensor** boarding
applied to **Tecnam** aircraft

Customer:

Ascent Vision

Customer Copy

Offer 13/2017 – Dec. 21th,
2017



SmartBay is a Registered Trademark owned by DigiSky srl

Founded in 2007 by the will of Maurizio Cheli (first Italian astronaut, Air Force fighter pilot, test pilot of Alenia) and Paolo Pari (electronics engineer, aviation passionate and private pilot), DigiSky is a company part of the Piedmont Aerospace District (Italy), active in the design, prototyping and manufacturing of electronic equipment (EFIS) for pilot's assistance in conducting the aircraft.

Initially accepted into the Polytechnic of Turin Incubator (I3P), DigiSky has run an intensive technology start-up program participating, fully self-funded, in some of the most important industrial research projects of the district, alongside international industry players and top EU research centres, such as the Polytechnic of Turin.

COMPANY



SmartBay: AT A GLANCE

MISSION

- SmartBay enables rapid aircraft configuration by multi-sensors air-borne
- SmartBay standardizes and automates the management of any commercial sensor during the data capturing mission
- SmartBay facilitates post-processing operation of the data collected by providing native data pre-processing capabilities
- SmartBay optimizes sensor maintenance operations (off-board)



We use non-Complex Airplane Platforms

- lower aircraft maintenance costs
- easy pilot enabling to our platform



We make reduced mission costs possible

- limited fuel consumption
- single pilot operations

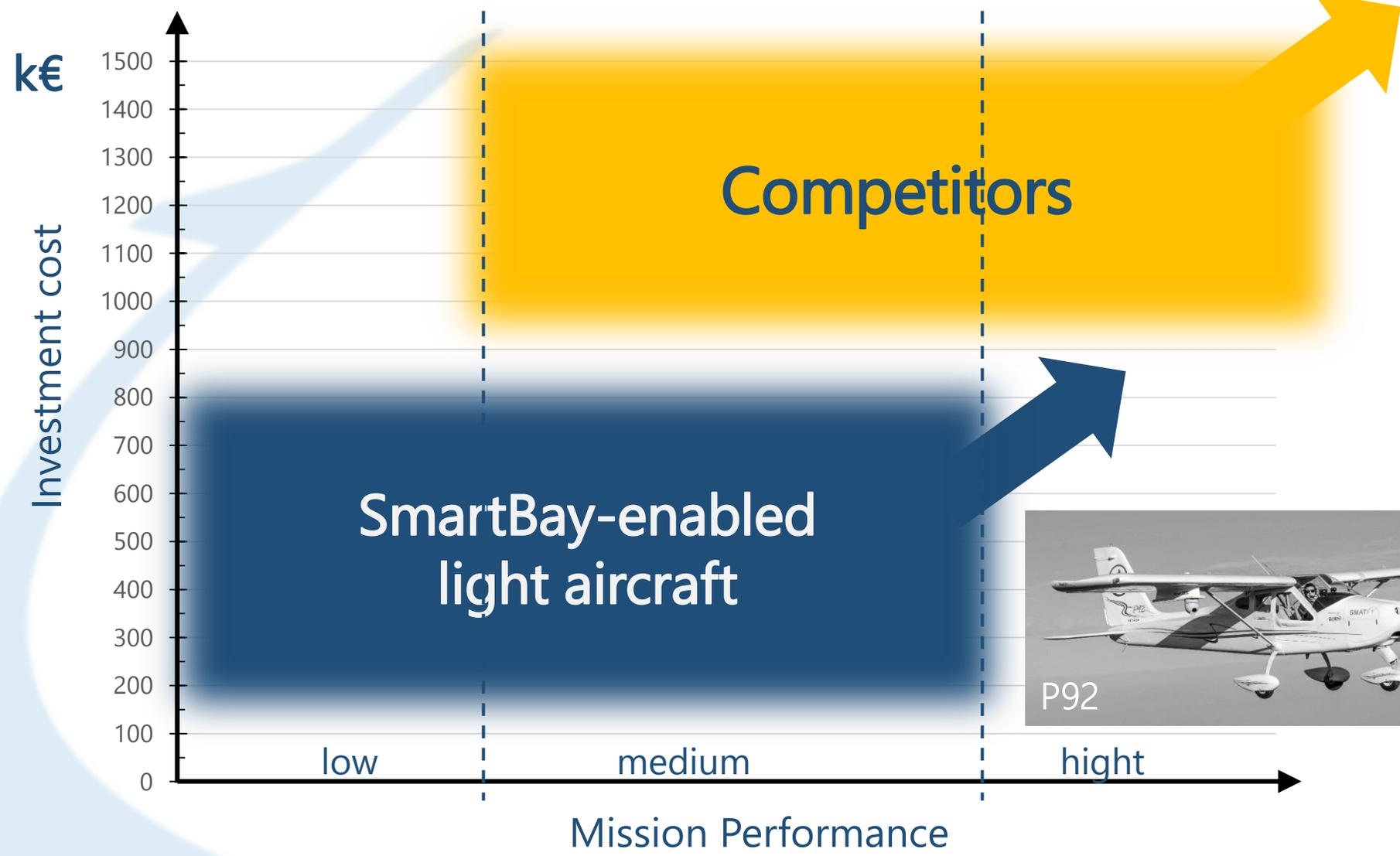
No compromises on Quality & Payloads

- high performance payloads embarkable
- universal payload “plug&play” mounting



PRODUCT POSITIONING

MARKET



Smartbay

CONCEPT

STANDARD INTERFACE FOR MULTI-AIRCRAFT SENSOR BOARDING

SmartBay is a proprietary technology that allows a wide range of commercial sensors to become airworthy.

Smartbay

Photo Cameras with gyro stabilization

Video Cameras with gyro stabilization

Laser Scanners (LIDAR)

Chemical sensors for air quality check

Hyperspectral for ground analysis

Custom Sensors

TECHNOLOGIES



Very low aerodynamic impact Wing Pylon
3 standard payloads slots carrying up to 30 kg (overall)
Multi range Power Supplies available to Payloads Sensors
Embedded Mission Computer driving Payload Sensors
Built-in IMU and RTK-GPS
Cabin Desk command & control

The proprietary built-in Mission Computer, the core Intellectual Property of DigiSky, enables:

- Mission Planning
- WiFi connectivity (to Pilot, to Hangar)
- Built-in large local Digital Storage

The Mission Computer is designed to make Single-Pilot Operations possible.

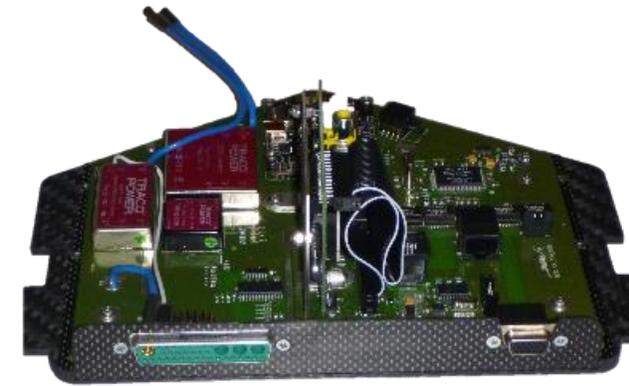


The possibility to fly up to 3 independent sensors in the same mission makes SmartBay a unique and extremely versatile tool to maximize the capacity to capture different coherent data sets during a single mission



Then Mission Computer is the heart of the SmartBay operating system:

- it allows the mission loading and management,
- it manages the real-time activation of sensors,
- it manages the packaging and dispatching of collected data
- it self-discovers installed sensors and runs their diagnosis
- It provides an HMI cockpit desk to the Pilot

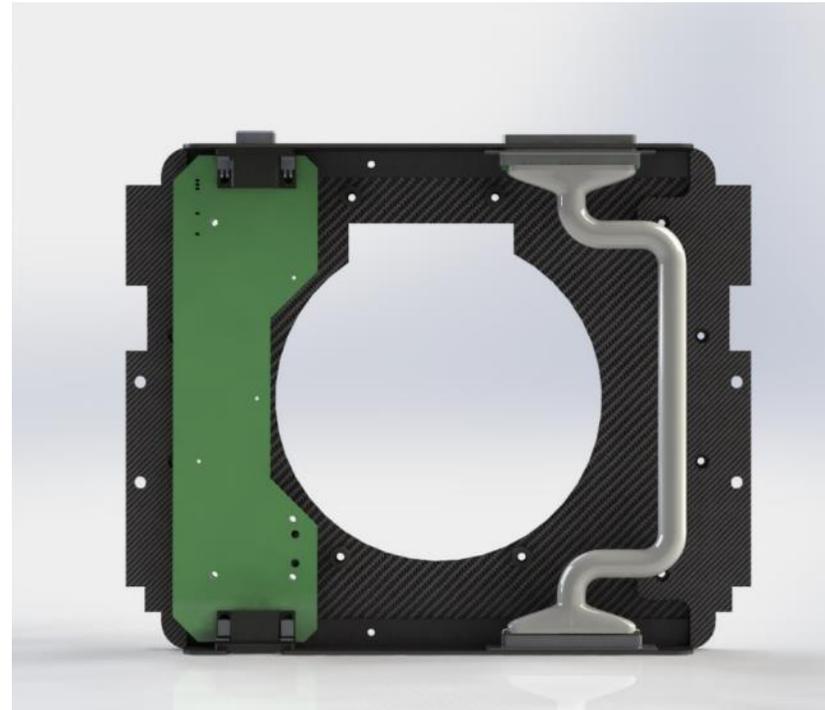


SmartBay Standard Trolley has been designed to allow a wide range of installations. Several types of COTS sensors are easily adaptable to SmartBay© Trolley, with a minimum system integration work



On customer base design, DigiSky is able to provide a pre-drilled trolley slot.

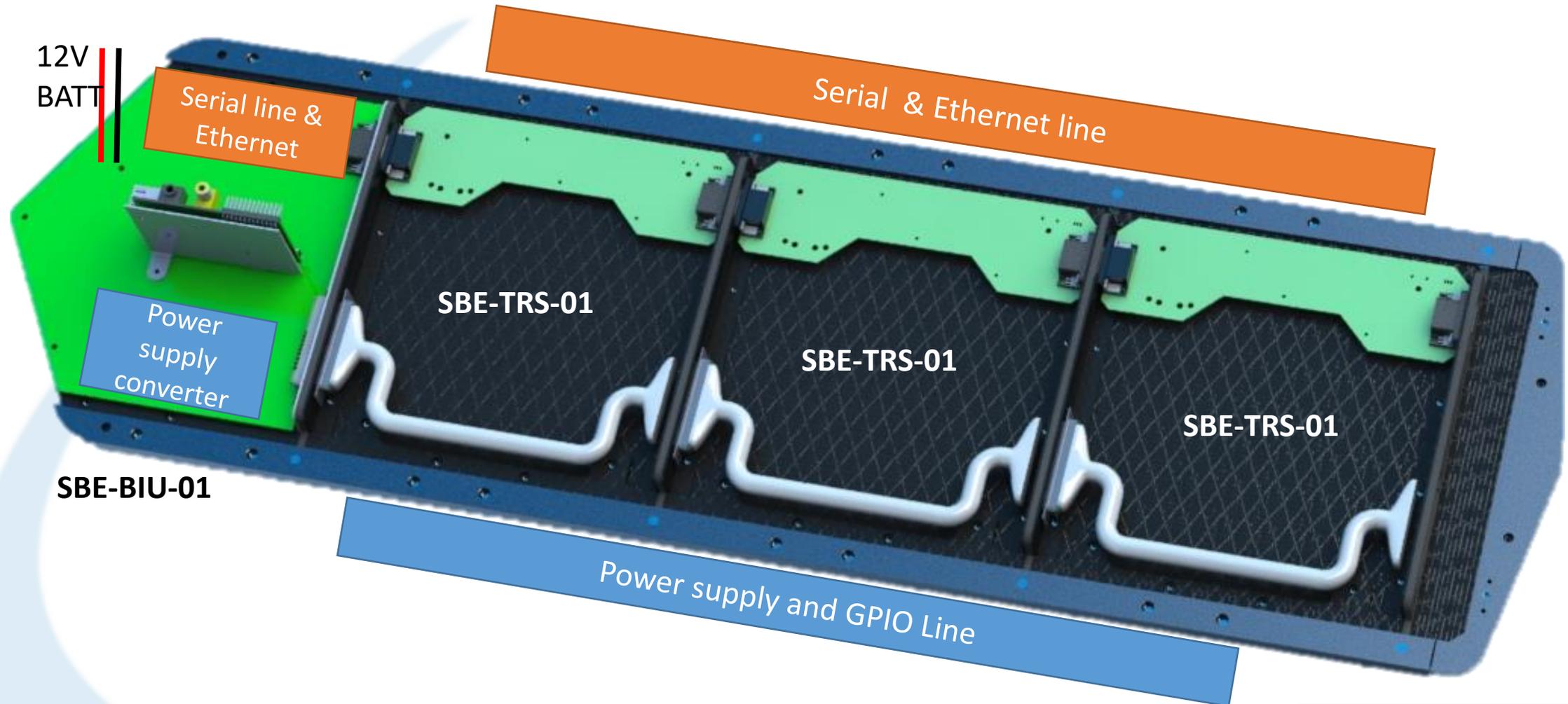
Moreover, dedicated plug&play electrical handshaking for sensor activation can also be provided.



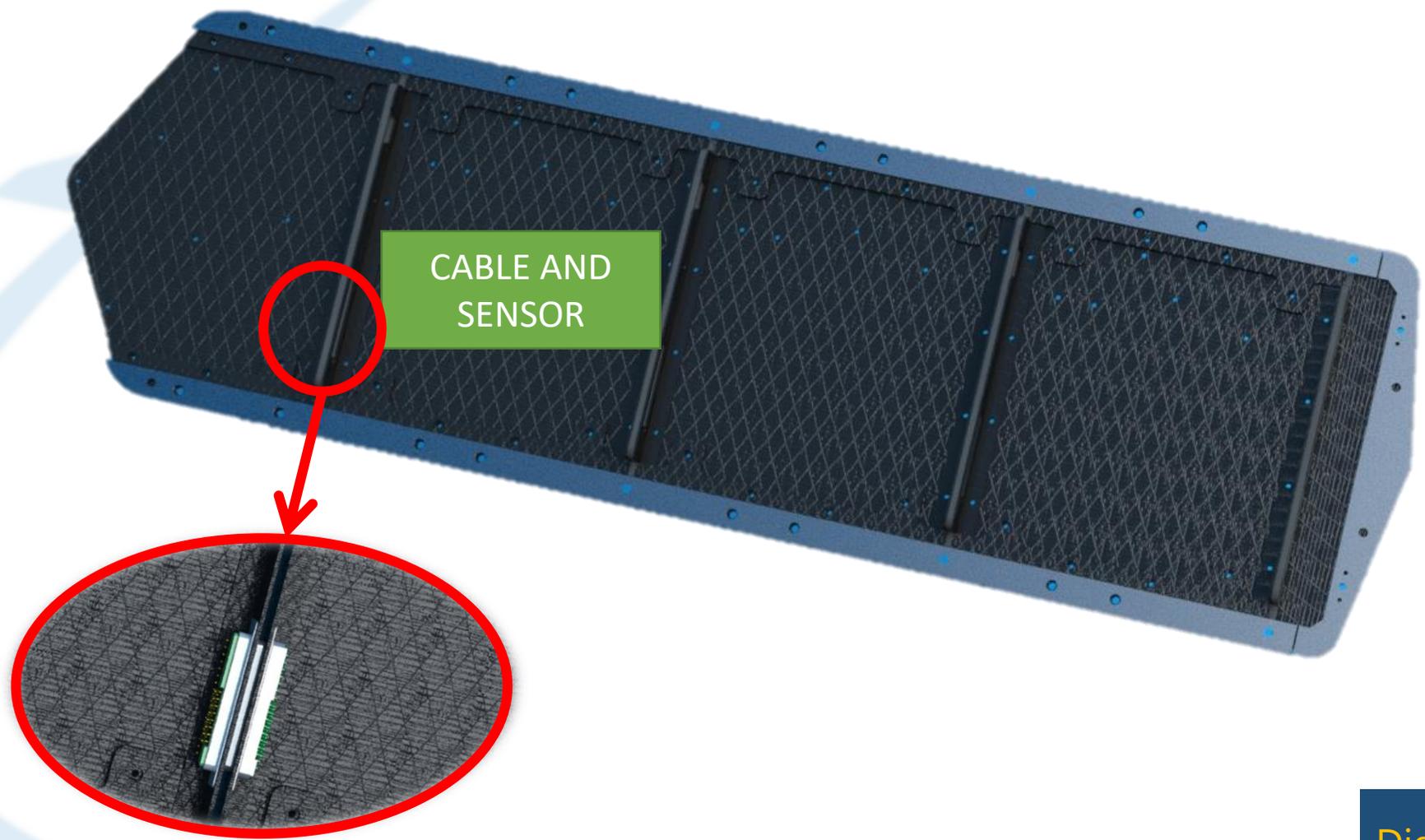
Rich &
Scalable
SmartBay
Data Bus

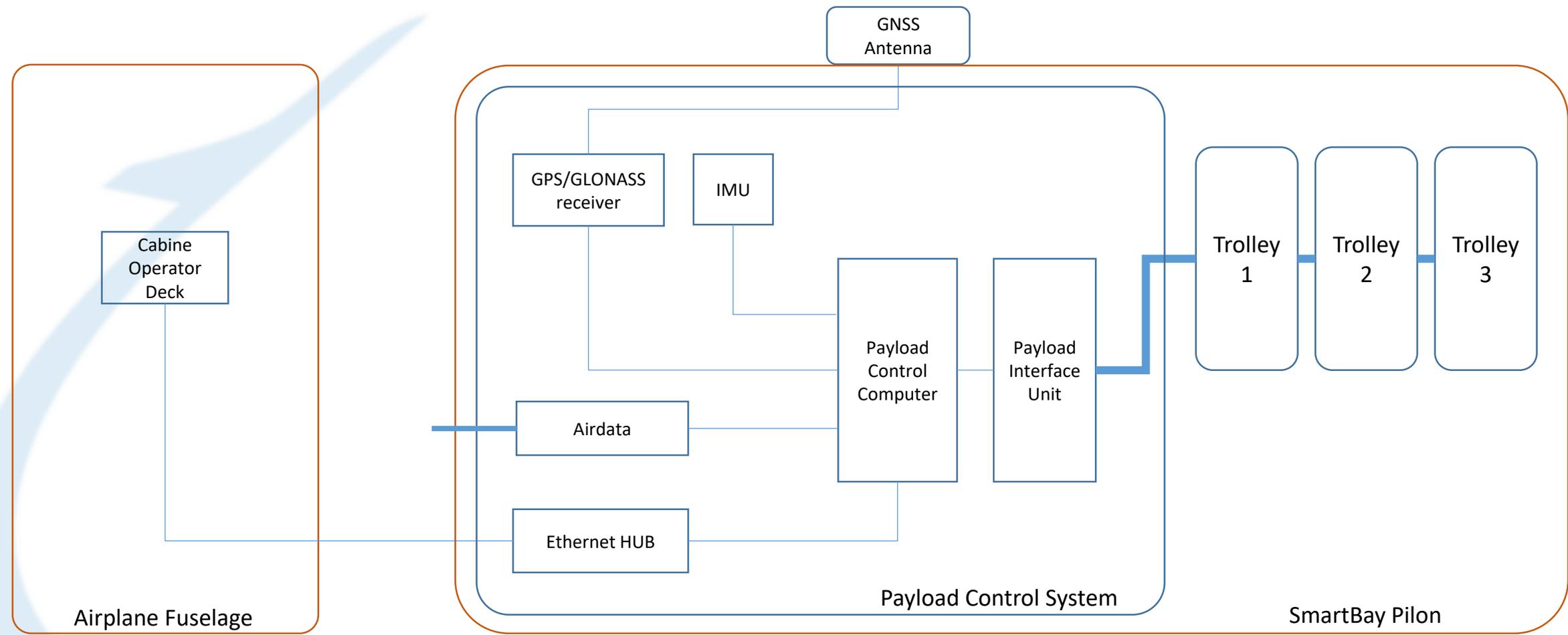
Utilities	Description
RF signal	GPS antenna direct signal
Video signal	Two channels for video signals picked up by the sensors and sent directly to the PCS
Power supply	Several types of power supplies to meet the needs of a wide range of sensors on the market. Power supplies available: 5V stab., +12V stab., -12V stab., 24V stab., 12V batt.
Analog I/O	4 channels available for analog I/O signals (0-5V)
Digital I/O	12 channels available for digital I/O TTL data Tri-state programmable.
Ethernet	Each trolley has an ethernet port for sensors connection that need or exchange data via the IP protocol
CAN	Available CAN bus for sensors that use this type of communication and data transmission protocol
FlyData	Unidirectional serial line on which they are sent to polling mode data on the conditions of the aircraft attitude, environmental conditions of humidity and temperature and its georeferencing.
Custom User	RS232 serial port that can be programmed in Tx / Rx / GND and used by a single sensor within the same sensor suite

BUS INTERFACE WIRING



BUS INTERFACE WIRING





The entry-level and universal solution for territory monitoring applications



PRODUCTS



P92-SB





SmartCamera & SmartGimble sensor suite, ready to flight configuration.

<p>Tecnam P92 Eaglet</p>	<p>Rotax 912ULS2 100HP, Sensenich, 2 Blade Fix propeller. Avionics auxiliary alternator (*) Analogic standard instruments, GMA 340 Audio Panel, GNC 255A COM/NAV, GTX 328 TDX, ELT 406 Mhz</p>
<p>SmartBay & Cabin Pilot Deck</p>	<p>Carbon fiber pylon for P92, Payload Control System, GPS-MAG external module, Payload single slot, Wiring kit, Cabin Operator Desk, Mission Management license Software, Slots covers</p>
<p>3 Standard Smart Payload Slots</p>	<p>Any Smart Payload Slot can accomodate any customer's sensor (up to 15kg and up to 6dm² front profile)</p>

<p>Tecnam P92 Eaglet</p>	<p>Already owned by customer (*) our offer integrates the existing airplane with the supply of auxiliary alternator necessary to power smartbay</p>
<p>1 SmartBay (No Cabin Pilot Deck)</p>	<p>Carbon fiber pilon for P92</p>
<p>1 Dedicated Smart Payload Slots</p>	<p>Payload single slot (excluding trolley control system); it can accomodate customer's sensor up to 15kg/sensors and up to 6dm² front profile</p>

Part Number	Qt	Description of supply items
SBE-PLN-01	1	Structural connection between wing and SmartBay Equipment. Composed of carbon fiber structure, guides front clamp and stopper and hardware kit
SBE-BIU-01	0	Bus Interface Unit composed of dedicated payload slot, PCB and hardware kit
SBE-GPS-01	0	GPS external module. Composed of GNSS antenna, GPS/GNSS receiver, antenna signal split and hardware
SBE-TRS-02	1	Payload single slot composed by carbon fiber frame. Not including trolley control system and wiring kit
SBE-WRG-01	0	Wiring kit to connect SmartBay Equipment to the cabin, including power supply cable, data cable , Ethernet CAT 5 cable
SBE-ALT-01	0	Ausiliary alternator: electric alternator unit and complementary electronic devices (filters, breakers, battery) for dedicated ausiliary power line

The supply includes a detailed installation bulletin that allows any operator to install and test the whole SmartBay system.

Installation and test operations are foreseen to be executable locally in 40 man-hours.

DigiSky offer does not consider any installation cost, which shall therefore be self-provisioned by AscentVision.

DigiSky is open to consider the option of providing local and operational support during the installation operations, by dispatching one specialized avionic engineer for 4/5 days. Such a support, if demanded, will cost 5.000 US\$, including travel expenses.

The POD and skin panel coupling is shown in Figure 107. The pod will also be glued to the carbon skin. The resin is an epoxy resin (wet lay up technology).

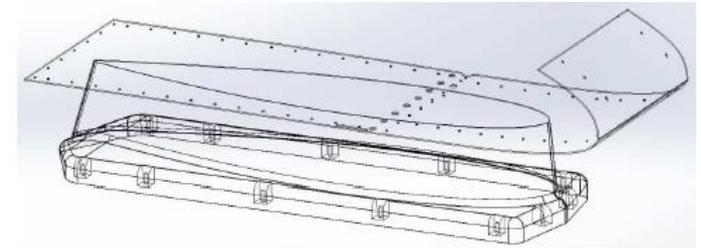


Figure 108: POD and carbon skin coupling.

