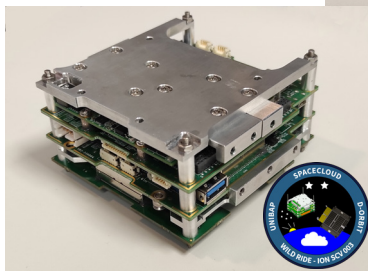
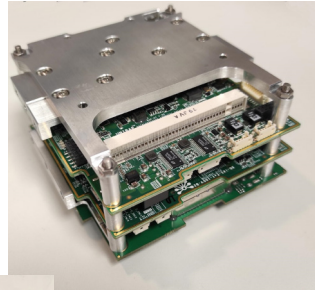


SpaceCloud® iX5-100

SpaceCloud-as-a-Service (SCaaS)
powered by
Unibap's SpaceCloud
iX5-100 FlightModel

Rapid deployment of advanced appli-
cations in space and simplified sensor
and communication handling.



Unibap SpaceCloud iX5-100 Flight Model photographs for the D-Orbit Wild RIDE ION mission in Q2 2021.

Quad core x86-64 CPU and AMD Radeon GPU paired with SATA SSD storage, Microsemi SmartFusion2 FPGA and Intel Movidius Myriad X Vision Processing Unit.

SpaceCloud-as-a-Service (SCaaS)

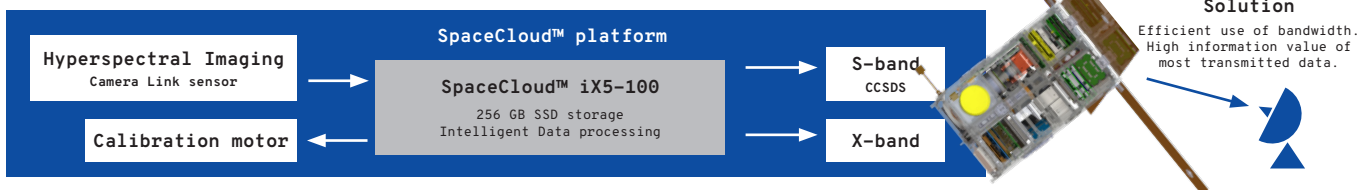
Unibap is providing on-orbit cloud edge computing, intelligent data processing, sensor management, storage, and data analytics for distribution of timely, relevant and actionable information. Unibap's radiation tolerant SpaceCloud Solutions provide a powerful and flexible infrastructure for various tasks and software resue, such as containerized application deployment, artificial intelligence, IOT frameworks, encryption, blockchain libraries etc.

SpaceCloud-as-a-Service (SCaaS) allow you to shift capitial expenditure to operational expenditure, for a lower entry point to enable intelligent data processing in space. SpaceCloud and the SCaaS pay-per-use model is being evolved in partnership with the European Space Agency Space Solution initiative.

Spaceflight heritage

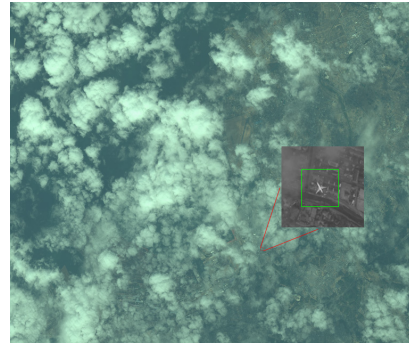
The SpaceCloud iX5-100 maiden commercial spaceflight will be on D-Orbit Wild Ride ION Mission in Q2 2021. In addition, Hawaii Spaceflight Laboratory (HFSL) has taken delivery of the iX5-100 for NASA's Hyperspectral Thermal Imager (HYTI) mission.

SPACECLOUD iX5-100 USE CASE (NASA HYTI 6U CUBESAT)



On-demand SpaceCloud Applications

Whether you have a Space Situational Awareness (SSA) payload, an Earth Observation (EO) payload, a synthetic aperture radar (SAR) payload, robotics, or any other situation where intelligent data processing is needed, the USS framework provides unique value through its massively parallel architecture and machine learning support.



Example from SpcaeCloud Application Store

Mid-air airplane detection SpcaeCloud Application developed by SaraniaSat Inc for US Space Force leveraging the onboard ENVI/IDL L3 Harris Geospatial software suite. The app scans 100 sq. kvm of World View-3 MSI spectral data and produces geolocated coordinates for detected aircrafts under 1 minute on the iX5-100.

Sensing, communication and storage

The iX5-100 offer interfaces for sensor readout and payload telemetry downlink/telecommand in combination with high speed local SSD storage in one package. iX5-100 has been validated with S- and X-band radios for the HYTI mission.

SpaceCloud iX5-100	Compute Performance
CoreMark v1.0 per cpu core	5,842.98 <small>(GCC 8.1.0 -O3 -funroll-loops -fgcse-sm -mfpmath=both -DPERFORMANCE_RUN=1 -lt / Heap)</small>
CPU [GFLOPS]	40
OpenCL GPU [GFLOPS]	87
FPGA DSP cores	72 (18x18)
Additional AI acceleration	4 TOPS Intel Movidius Myriad X Vision Processing Unit

USE CASES EXAMPLES

- Edge Cloud computing
- Earth Observation/ Disaster monitoring
- Cloud detection and sensor data preparation
- Space Domain Awareness
- Synthetic aperture radar
- Interplanetary exploration
- Autonomous vehicles operation

SpaceCloud® iX5-100 Solution - Radiation Tolerant Intelligent Data Processing in Space



Model Name **SpaceCloud iX5-100 EDU/EM** **SpaceCloud iX5-100 FM**

Processing & Memory	
Intelligent Processing Core	Unibap Qseven e20xx/e21xx compute modules Intel Movidius Myriad X VPU (miniPCIe)
RAM	2 GB DDR3 ECC (CPU/GPU), 0.5 GB DDR3 ECC (FPGA) ECC on Flight Models
Heterogeneous interconnect	PCIexpress® x2 lanes v2.0, 10 GT/s (AMD SOC <-> FPGA) mini-PCIe slot
Storage	Up to 240 GB M.2 Solid State Drive (SSD) SLC nandflash type Up to 2.8 TB M.2 Solid State Drive (SSD) TLC/MLC nandflash type 64 GB eMMC / Micro-SD card
Display output for development	HDMI output, max 4K HD
H.264 video encoding acceleration	Yes, two full-HD (1920x1080) video streams hardware accelerated
Unibap SafetyChip/SafetyBoot feature	Only on Flight Model version
I/O Interface	
Health monitoring	8 x AD590 thermistor inputs
I2C	2 (Isolated), 2 (ext. connector)
SPI	1 (ext. connector)
CAN v2.0b	1 (Isolated)
Ethernet, GigaLAN	1 (Isolated)
USB	2 x USB v2.0 1 x USB v2.0 (ext. connector) 1 x USB v3.0 (ext. connector)
Radios (Telemetry/Telecommand)	X-band (e.g. Syrlinks EWC27 100 Mbps) S-band (ISIS TXS, 4.3 Mbps)
Camera Link / LVDS	1 x Camera Link Basic / 12 x LVDS
Serial Communication	5x RS232/422 (Isolated)
Mechanical	
Dimensions	100 (W) x 100 (H) x 50 (D) mm3
Flight Casing	On request
Environmental & Electrical	
Power Consumption	10-30 W (Depending on processing and storage selection and use)
Input power voltage	12 V DC (10.5-15)
Storage temperature	0 °C to 70 °C
Operating temperature	0 °C to 70 °C
Vibration	Operating, 5 Grms, 5-500 Hz, 3 axes
Certification	IPC 610-E Class II (RoHS)
Software Support	IPC 610-E Class III (RoHS)
Software Support	
Operating System and software	SpaceCloud™ framework core OS (optional later upgrade to to SpaceCloud™ services)
SafetyBoot / SafetyChip protection	Yes on Flight Model