



ISIS – Innovative Solutions In Space

Company Presentation

3rd UNISEC-Global Meeting July 3-5, 2015

Julien Hennequin – Sales Manager

j.hennequin@isispace.nl

ISIS group - overview

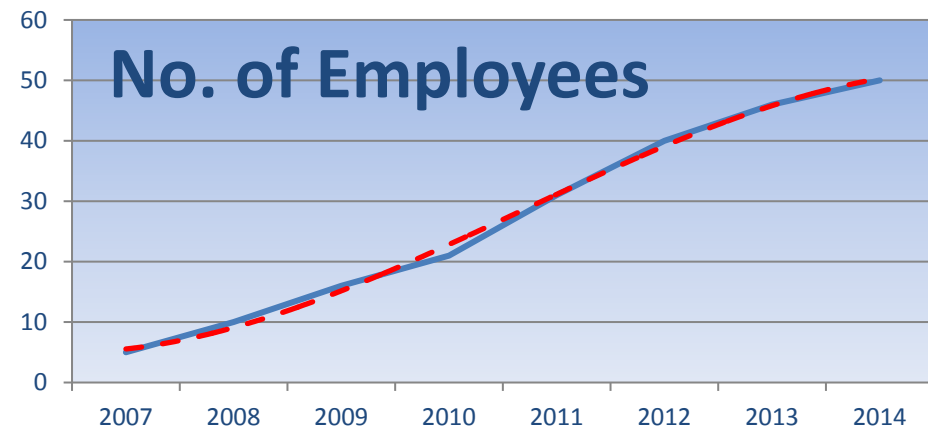
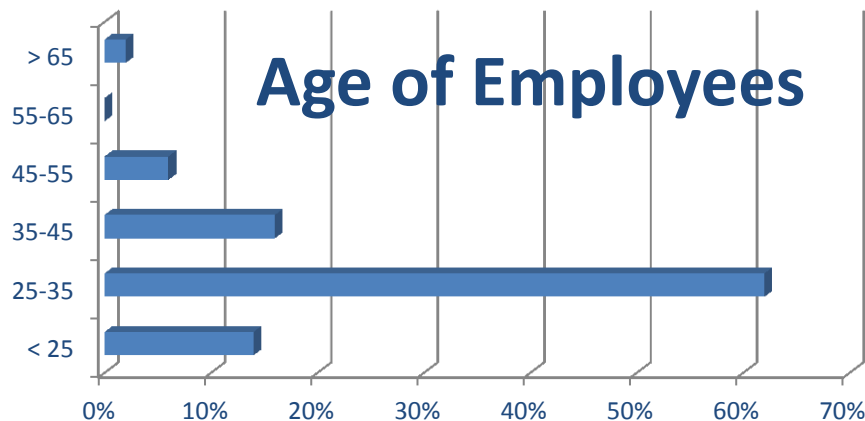
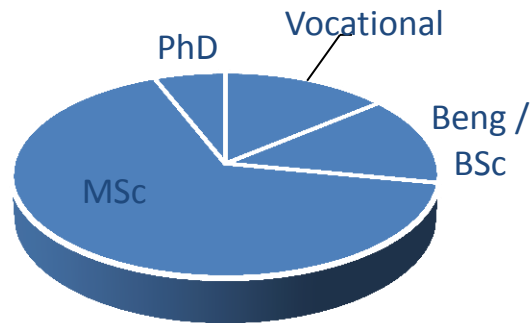
- Founded in 2006, spin-off from Delfi-C3 project
- Currently about 50 staff (FTE)
- Provider of small satellite products and services
- Vertically integrated small satellite company
- Offices in Delft, The Netherlands and Somerset West, South Africa





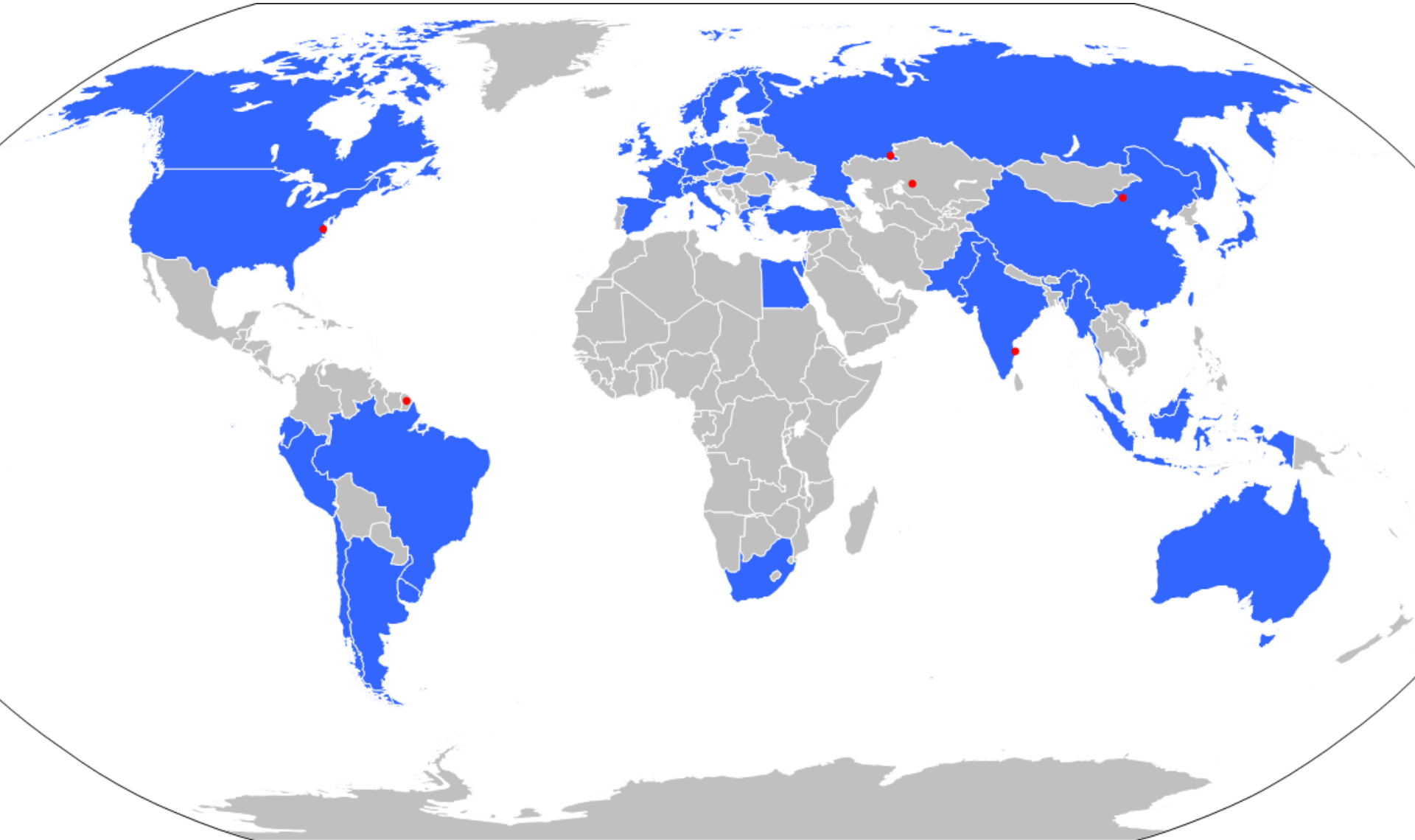
People at ISIS

- 50 FTE
- 45% international
 - 20 Nationalities
 - 12+ languages





Internationally active





Main Activities

Products

- CubeSat Avionics
 - Radios
 - Antennas
 - Solar Arrays
 - OBCs
 - Etc.
- Ground Stations
- Operations Centers
- Support equipment
- Software Tools
- Both standardized and custom developments

Launches

- Launch Services
 - DNEPR
 - Soyuz
 - Long March
 - VEGA
 - ANTARES
 - Falcon-9
 - PSLV
- Piggy back
 - CubeSats
 - Nanosats
 - Microsats
- Associated Services
 - Testing
 - Insurance

Missions

- Turn key solutions
 - CubeSat platforms
 - Payloads
 - Ground segment
 - Launch
 - Operations
- Fast implementation times
- Including training, knowledge transfer and co-development

Applications

- Based on satellite networks
 - Radio Astronomy
 - Maritime Monitoring
 - Agriculture
 - Communications
- Global Coverage
- High revisit times
- Fully integrated solutions



Nanosatellite Products



CubeSatShop.com | isispace.nl | isilaunch.com

The one-stop-shop for all your CubeSat and nanosat systems...



CubeSatShop.com is an ISIS initiative

- Home
- CubeSat Structures
- Communication Systems
- Power Systems
- Solar Panels
- Attitude Control Systems
- Antenna Systems
- On Board Computers
- Launch Adapters
- Support Equipment
- CubeSat Cameras
- CubeSat Kits and Buses
- Ground Stations
- Training Simulator

- QB50
- QB50 & CubeSatShop
- QB50 Subsystems

Welcome to the CubeSatShop, the one stop webshop that offers a broad range of products for CubeSats and nanosatellites in general. The webshop offers standardized, off-the-shelf components and subsystems from a variety of manufacturers.

Categories



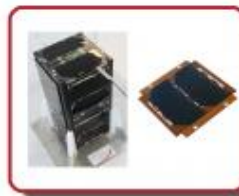
CubeSat Structures



Communication Systems



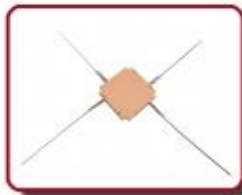
Power Systems



Solar Panels



Attitude Control Systems



Antenna Systems



Command & Data Handling



Cameras & Payloads



Login to Cubesatshop

Username

Password

Remember me ☒

[Forgot your password?](#)

[Forgot your username?](#)

Shop News

Unveiling the ISIS On Board Computer



ISIS has now made available for you its new high performance On Board Computer, providing extra interface and



Platform Specifications

Mass: 2 -3 kg

Power: 5W peak, 3W AOP

Downlink: 10 kbps

Pointing knowledge: $< 5^\circ$

Pointing Accuracy: $< 10^\circ$

Orbit determination: -

Propulsion: -

Payload Accommodation

Mass: 1 kg

Power: 4W peak, 1,5W AOP

Data Storage: > 2 Gbit

Possible Payloads

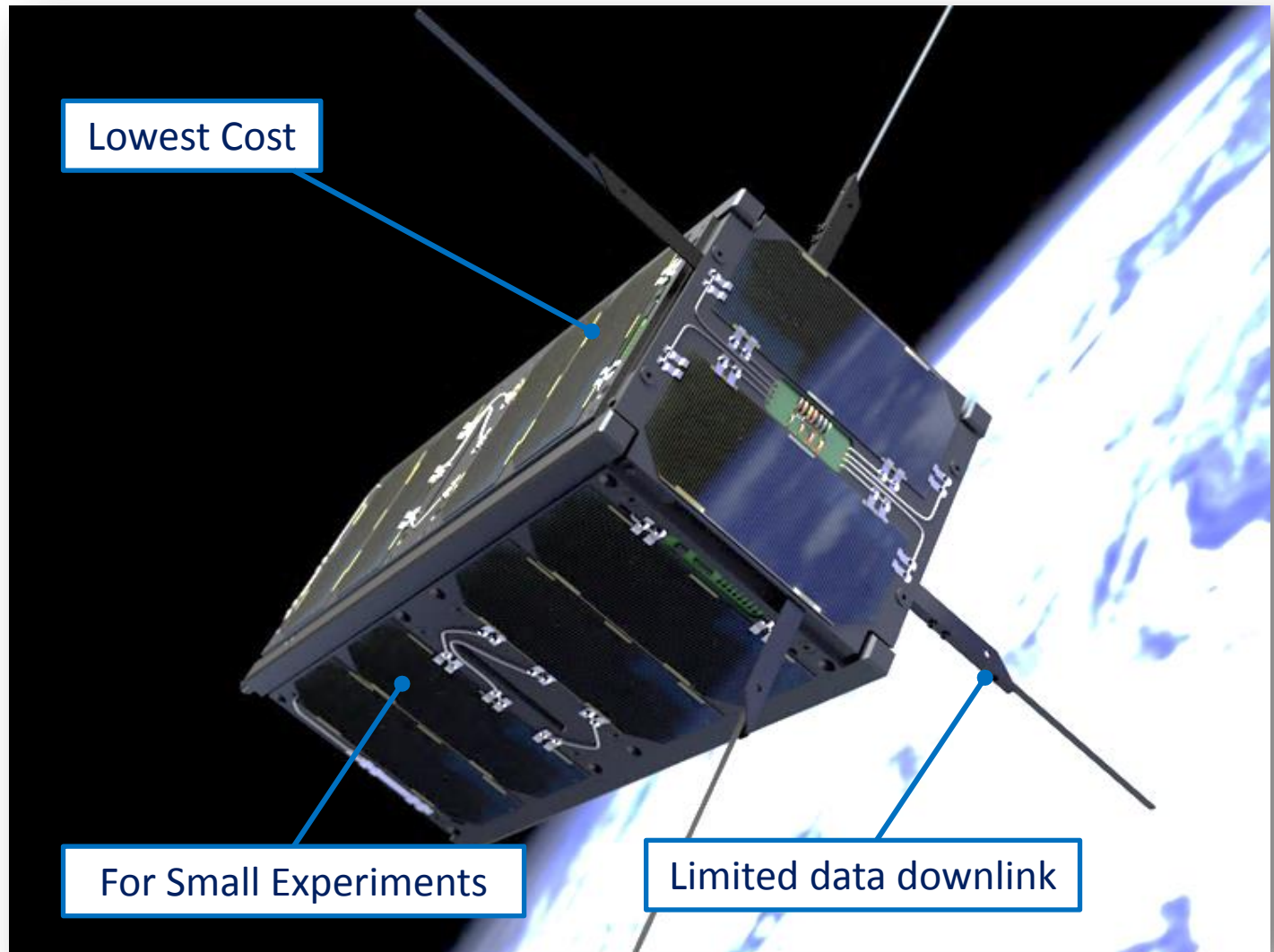
Small camera

Technology demonstrator

Space Weather

Launch Options

Dispenser: ISIPOD



Lowest Cost

For Small Experiments

Limited data downlink

ISIS 2-Unit CubeSat Platform

First CubeSat Mission Capability



Platform Specifications

Total mass: 4 kg
Power: 20W peak, 10W AOP
Downlink: 100-1000 kbps
Pointing knowledge: $< 0.1^\circ$
Pointing Accuracy: $< 1.0^\circ$
Orbit determination: GPS
Propulsion: -

Payload Accommodation

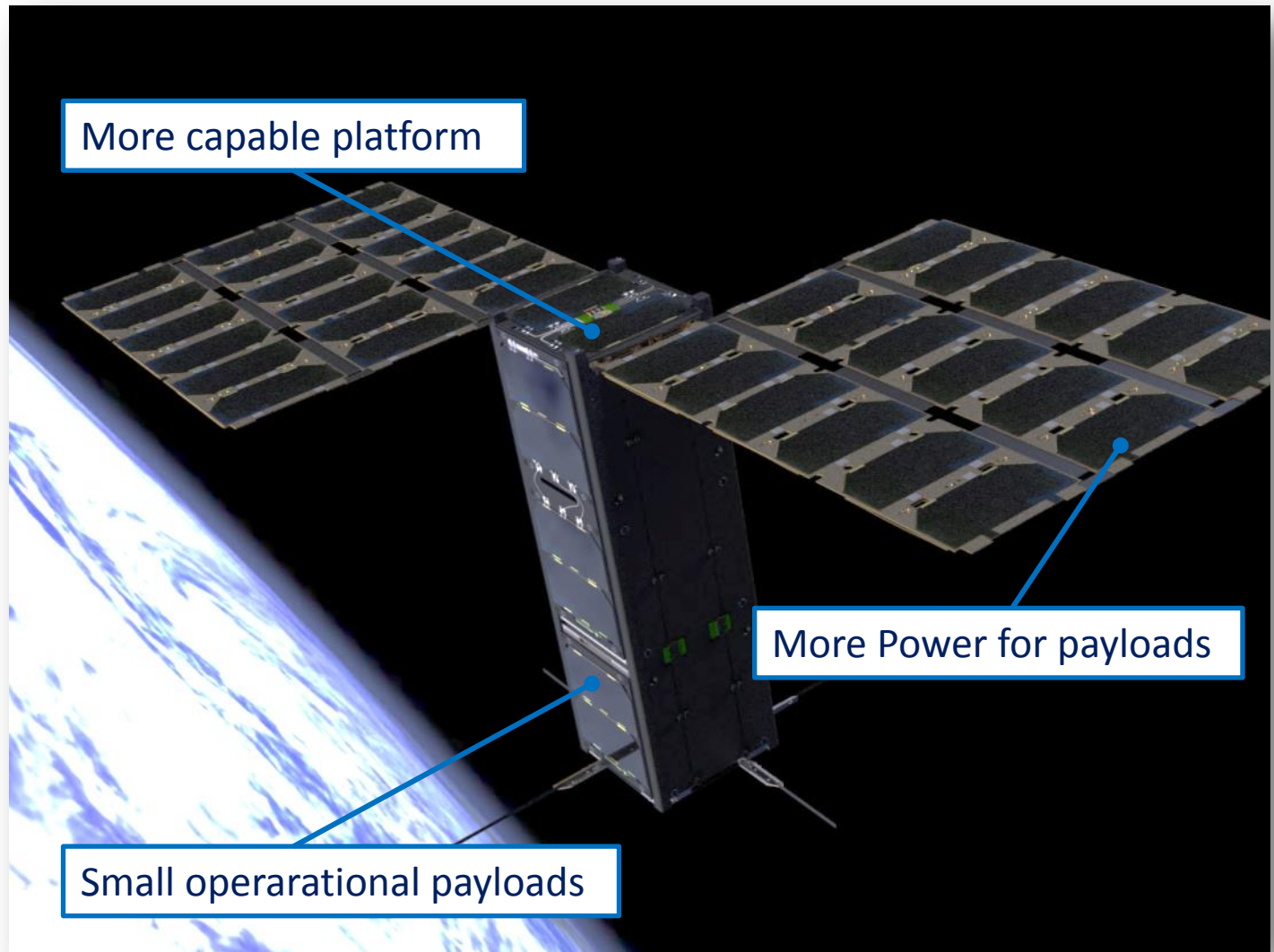
Mass: 1-2 kg
Power: 20W peak, 10W AOP
Data Storage: $> 20\text{Gbit}$

Possible Payloads

SAT-AIS receiver
Science payload
Mid-resolution imagers

Launch Options

Dispenser: 3U ISIPOD / QP



ISIS 3-Unit CubeSat Platform

Low cost operational missions



Platform Specifications

Mass: 15-20 kg
Power: 25W peak, 15W AOP
Downlink: 1-10 Mbps
Pointing knowledge: $< 0.05^\circ$
Pointing Accuracy: $< 0.2^\circ$
Orbit determination: GPS
Propulsion: Optional

Payload Accommodation

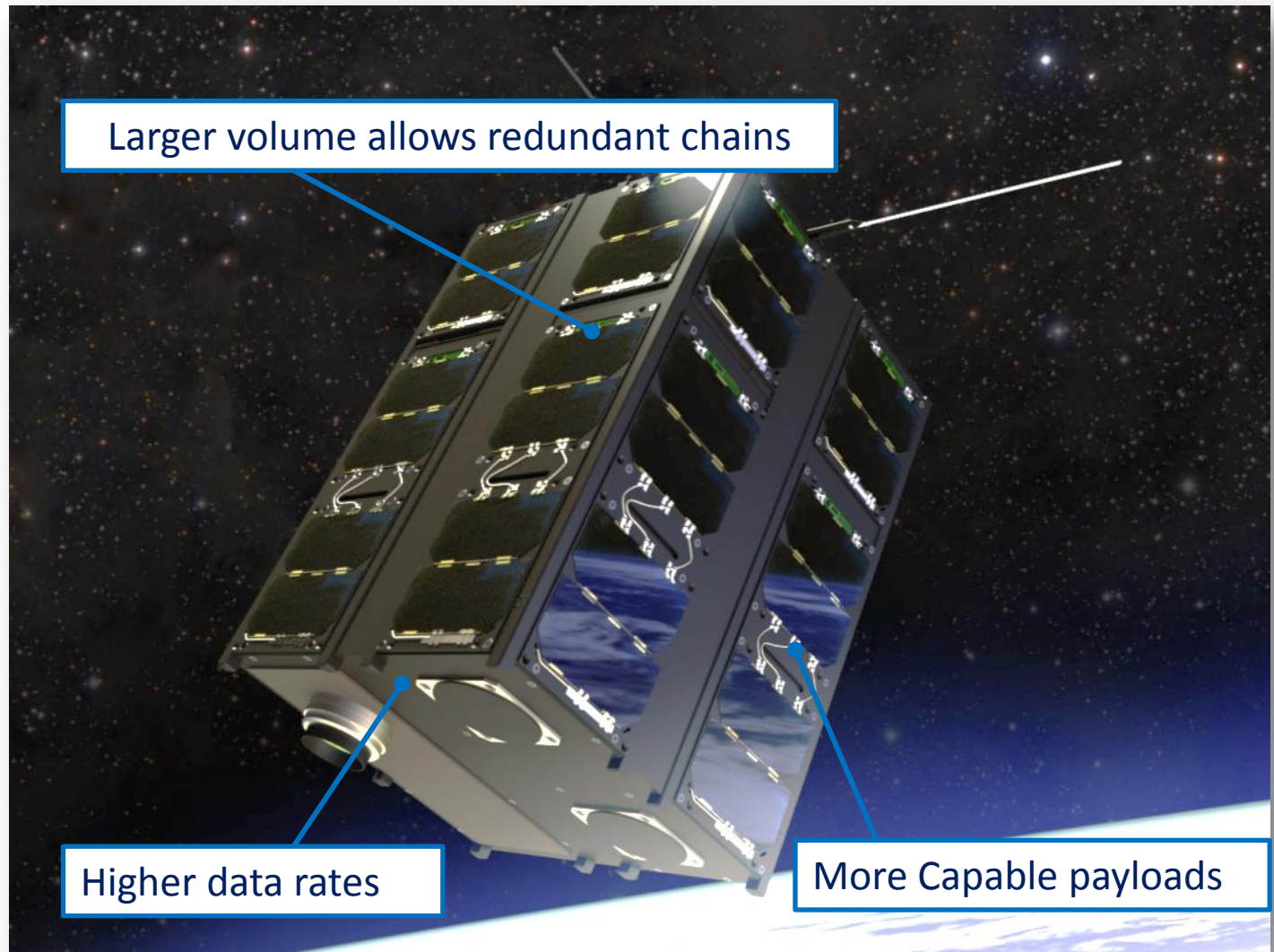
Mass: 5-10 kg
Power: 20W peak, 10W AOP
Data Storage: > 100 Gbit

Possible Payloads

Thermal Infrared Imager
Multispectral imagers
Science payload
Mid-resolution imagers

Launch Options

Dispenser: 12U Quadpack



ISIS 12-Unit CubeSat Platform

Operational remote sensing mission

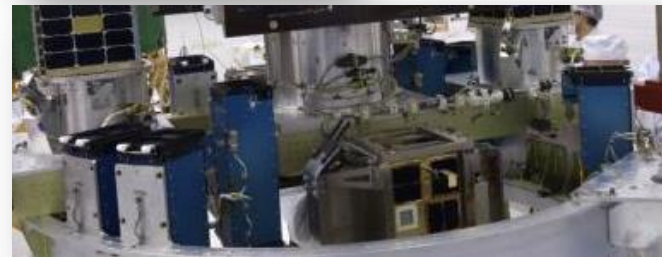
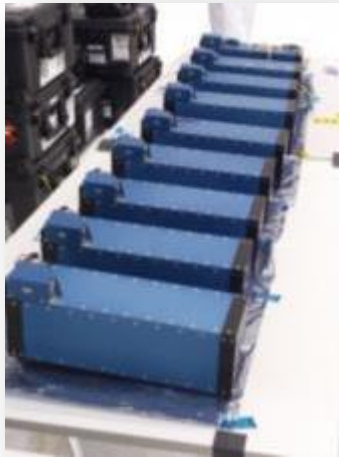


Training Programs

- ISIS is offering various training programs universities, industry and institutes.
- Training is based on part or all of the following items, at ISIS facilities or on site:
 - Hands on training on representative generic engineering model
 - Mission and ground station operations
 - System Engineering and Mission Design courses
 - Mission and requirements definition.
- Few examples:
 - Nayif-1 Program (EIAST, American University of Sharjah, UAE)
 - Cepheus Mission (SOLARMEMS, Spain)
 - Paris Observatory, France



ISILaunch Launch Services





Typical launch services

Difference:

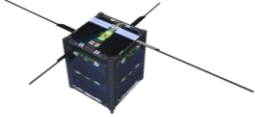

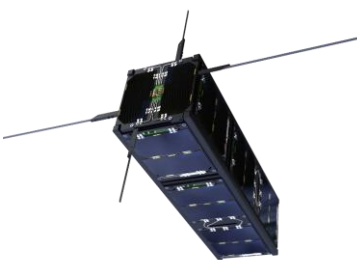


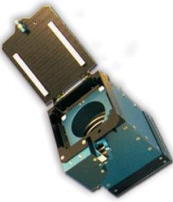

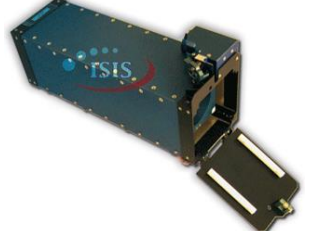
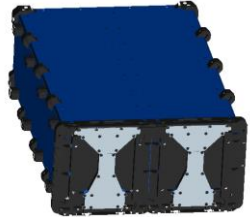
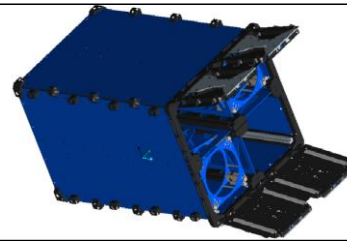
- Launch service provider; operator of launch vehicle
- Launch service broker; intermediary, acting on behalf of (multiple) satellite developer(s)

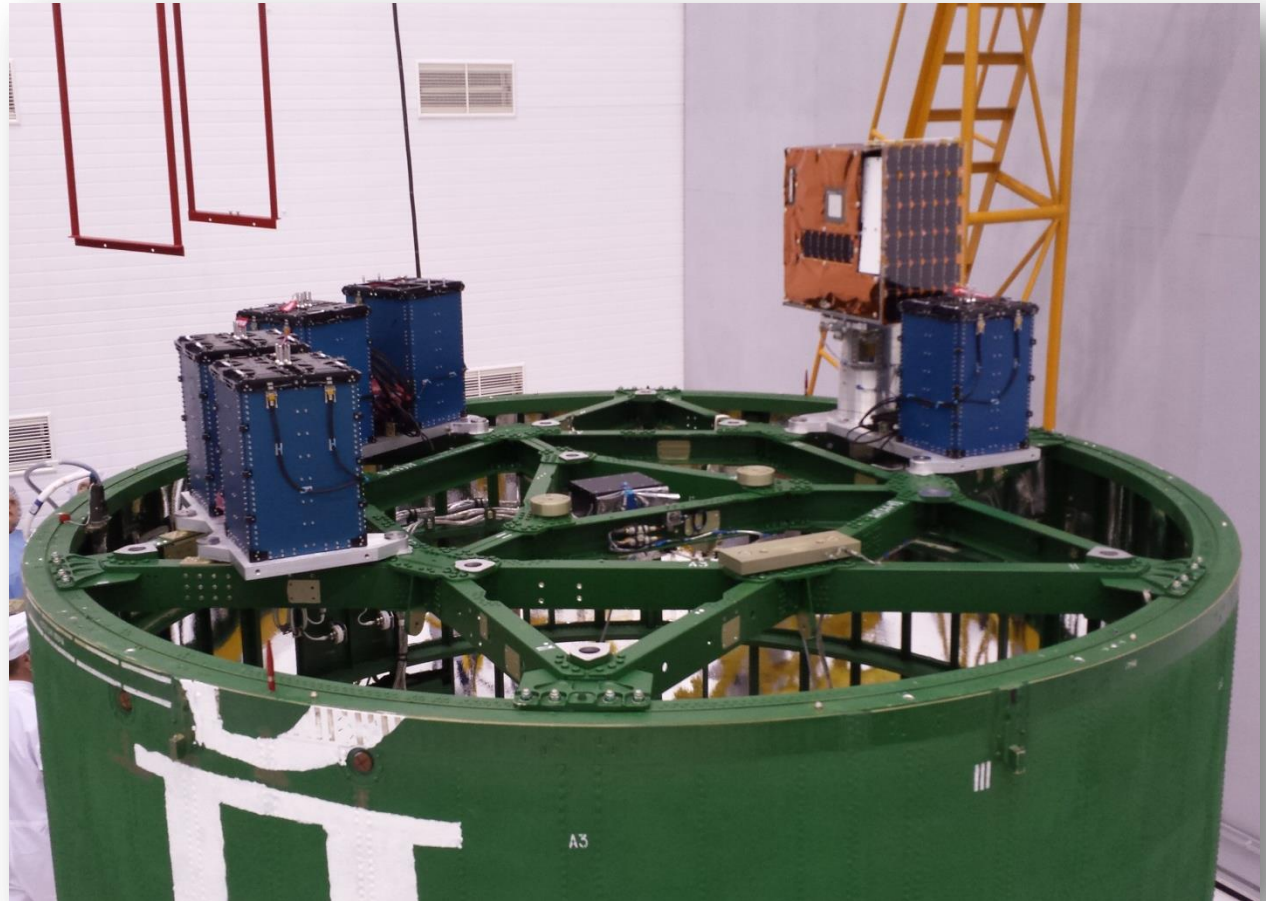
“Why have a SmallSat launch brokering service:”

- for satellite developers:
 - Fully arranged launch; focus on satellite development
 - Experienced party as representative single point of contact
 - Minimum overhead, travel, documentation
- for Launch Service Providers:
 - Experienced party single point of contact
 - Standardized interface control, documentation, test reports

Standardize Launch interfaces

- For the small ones; containerized
- offers flexibility in accommodation
- Enables early launch slot booking

				
1U CubeSat	2U CubeSat	3U CubeSat	6U CubeSat	12U CubeSat
				
1U ISIPOD	2U ISIPOD	3U ISIPOD	6U ISIPOD or 6POD	12U ISIPOD or 'QuadPack' (4x 3U)





ISILaunch opportunities

Period	Orbit	Containerized Payloads				Nano/Micro	Micro	Micro
		1U/2U/3U	6U	12U	16U	< 25 kg	< 75 kg	< 250 kg
Q3 2015	650 km circular, 6-8°	Manifest CLOSED						
end 2015	450x720 km, 97.8°	Manifest CLOSED						
end 2015	550-600 km circular, SSO	Manifest CLOSED						
Q1 2016	550 km circular, 31°	Manifest CLOSED						
Q1 2016	550-600 km circular, SSO	Manifest CLOSED						
Q2 2016	500 km circular, SSO	Manifest CLOSED						
mid 2016	600-700 km circular, SSO	TBC						
mid 2016	475 km circular, SSO	Y	Y	Y	Y			
mid 2016	650-700 km circular, SSO	TBC	TBC					
mid 2016	500-600 km circular, SSO	TBC	TBC					
H2 2016	550-600 km circular, SSO	Y	Y	Y	Y			
H2 2016	600-630 km circular, SSO	Y	TBC	TBC				
end 2016	550-600 km circular, SSO	Y	Y	Y	TBC			
H1 2017	500-600 km circular, SSO	Y	Y	Y	Y	Y	Y	TBC
H1 2017	500-550 km circular, SSO	Y	Y	Y	Y	Y	Y	Y
H1 2017	550-600 km circular, SSO	Y	Y	Y	Y	Y	Y	Y
mid 2017	600-700 km circular, SSO	Y	Y	Y	Y	Y	Y	Y
H2 2017	500-600 km circular, SSO	Y	Y	Y	Y	Y	Y	Y
H2 2017	500-700 km circular, SSO	Y	Y	Y	Y	Y	Y	Y

For more information, please contact Abe Bonnema | launches@isispace.nl



ISIS : facts and figures (03-07-15)

- More than 90 ISIS subsystems in Space on 28 different missions
- More than 120 Deployable Antenna Systems and 75 Communications systems sold for various missions.
- More than 20 platforms integrated in house and delivered.
- More than 45 CubeSats launched on 6 different launch vehicles



ISIS : A responsible partner

- ISIS is involved in the following international discussion groups and collaborations:
 - Nanosatellite Environment Test Standardisation. (NETS)
 - ITU discussion group on simplified notification and co-ordination procedures for CubeSats
 - European Space Agency discussion group on Space Debris Mitigation
 - International Space Law committees (COPUOS etc.)
 - Education Programs (UNISEC Global, MIC, Netherlands education programs)



ISIS Contact information:

Motorenweg 23,
2623 CR Delft,
The Netherlands

Tel: +31 15 256 9018

Email: info@isispace.nl

Web: www.isispace.nl



Thank you for your attention!

Julien Hennequin- J.Hennequin@isispace.nl - 003 1 15 256 9018