

AMBIC

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Czech Space week

29.11.2023

Mission concept

Mission Goals

The AMBIC mission will provide
high-resolution Earth observation data
to government users
independent of foreign data sources,
by involvement of Czech space industry
and
increasing their capabilities and prestige.





Czech Advanced Platform (CAP)

- Satellites mass 80-200 kg
 - Low orbit 500-550 km
- Planned service life 3 – 5 years
- Adaptation to a wide range of missions:
 - scientific and commercial
- Speeding up the stages of design, production, testing, ...

Users

- The team organized several meetings with governmental users to discuss their needs and opportunities in terms of optical data applications
- Significant differences in the use of image data between institutions
- Actual users were assessed
- More demand is expected over time



Use Cases

**Over 30 use cases has
been identified**

- Monitoring of critical events
- Detection of illegal logging
- Monitoring of infrastructure construction
- Detection of illegal constructions
- Monitoring of future highway corridors
- Monitoring of trees near the railway, their health status, potential risks, etc.



Use Cases

**Over 30 use cases has
been identified**

- Indication of urban greenery
- Detection of uncultivated agricultural land
- Monitoring of waste landfills
- Monitoring of ecologically polluted areas
- Monitoring of national parks
- Light smog monitoring

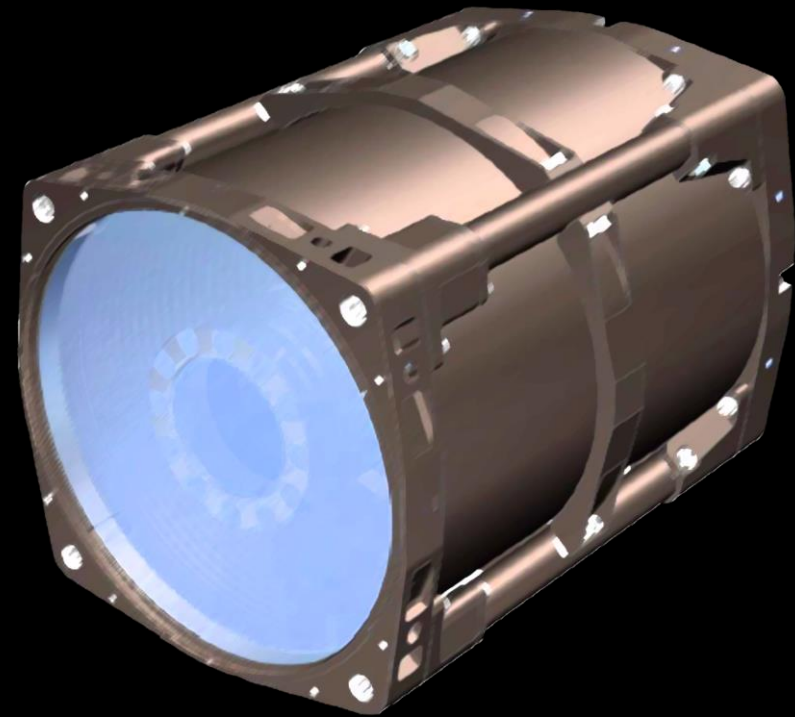


Primary Payload

Primary optical payload:

TriScape200 by Simera Sense:

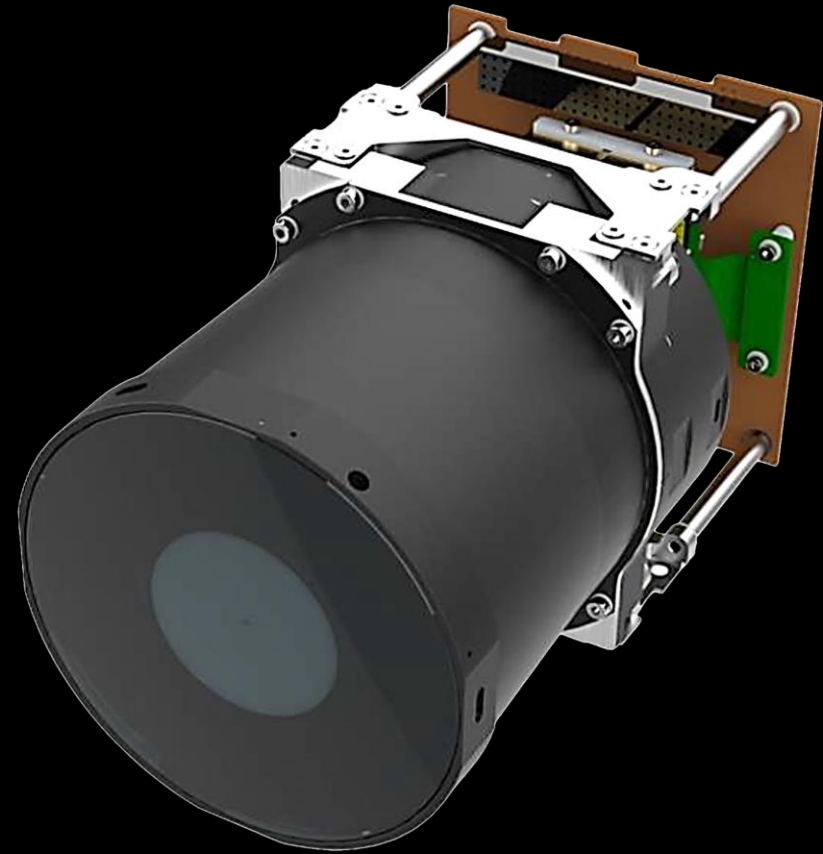
- Visible spectral range
- 1.5m GSD from 500 km orbit
- Full FOV 1.6° (cross-track) / 1.2° (along-track)
- 14 x 10.5 km ground footprint from 500 km orbit
- 128 Gigabyte non-volatile storage capacity for over 1000 full-resolution image frames



Secondary Payload

Secondary optical payload:
MultiScape100 CIS by Simera Sense:

- 1 panchromatic and 7 multispectral channels
- 4.75m GSD from 500 km orbit
- Full FOV 2.22° (cross-track) /1.67° (along-track)
- 128 Gigabyte non-volatile storage capacity for over 1000 full-resolution image frames



Fast delivery mode

Critical Events



Standard delivery mode

Common Events



Data products



Archive

- Raw PAN Product
- Raw MS Product

Fast delivery mode

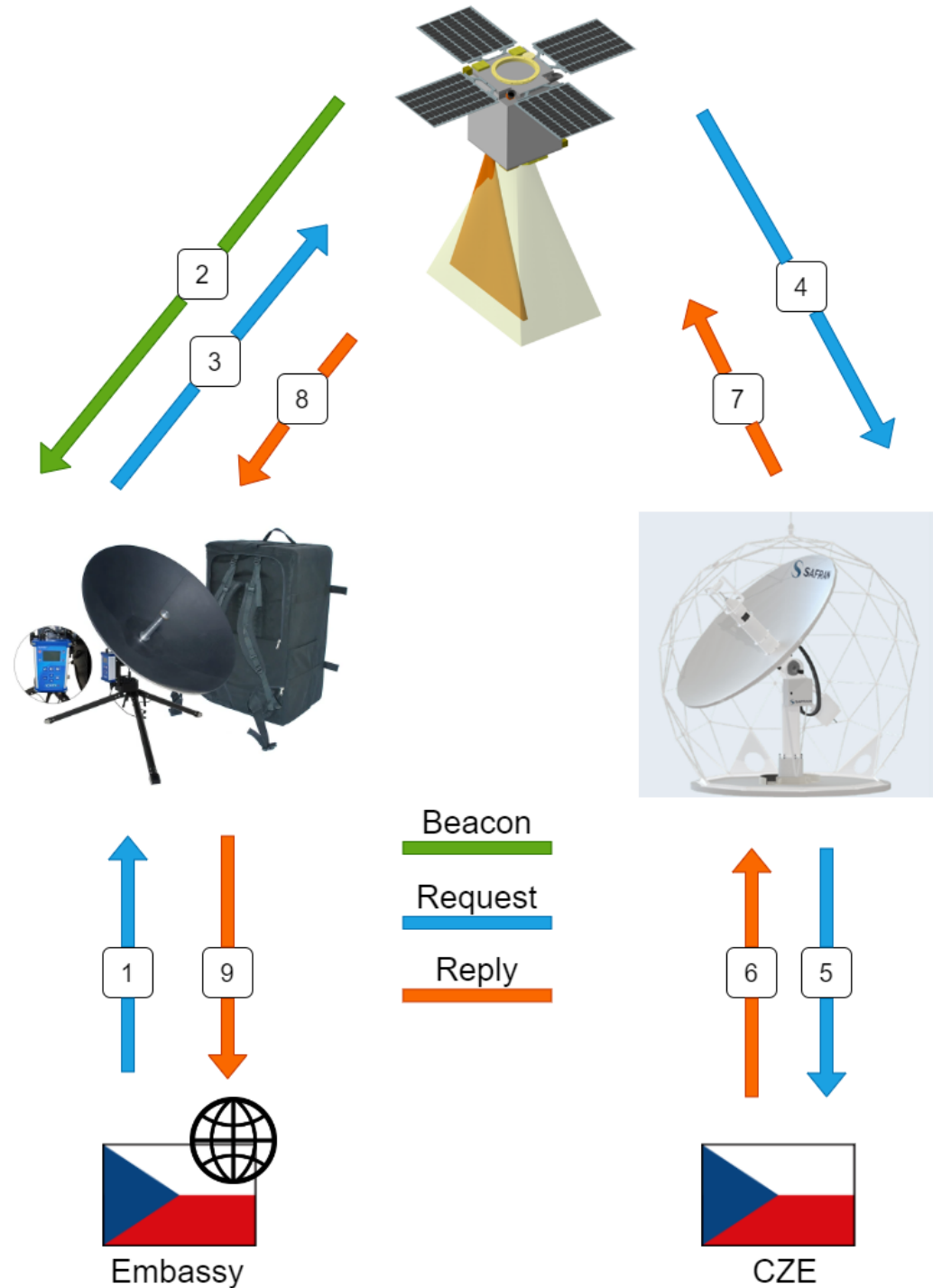
- Level-1 Rapid PAN Product
- Level-1 Rapid MS Product

Standard mode

- Level-2 PAN Product
- Level-2 MS Product
- Level-3 Pansharpened Product

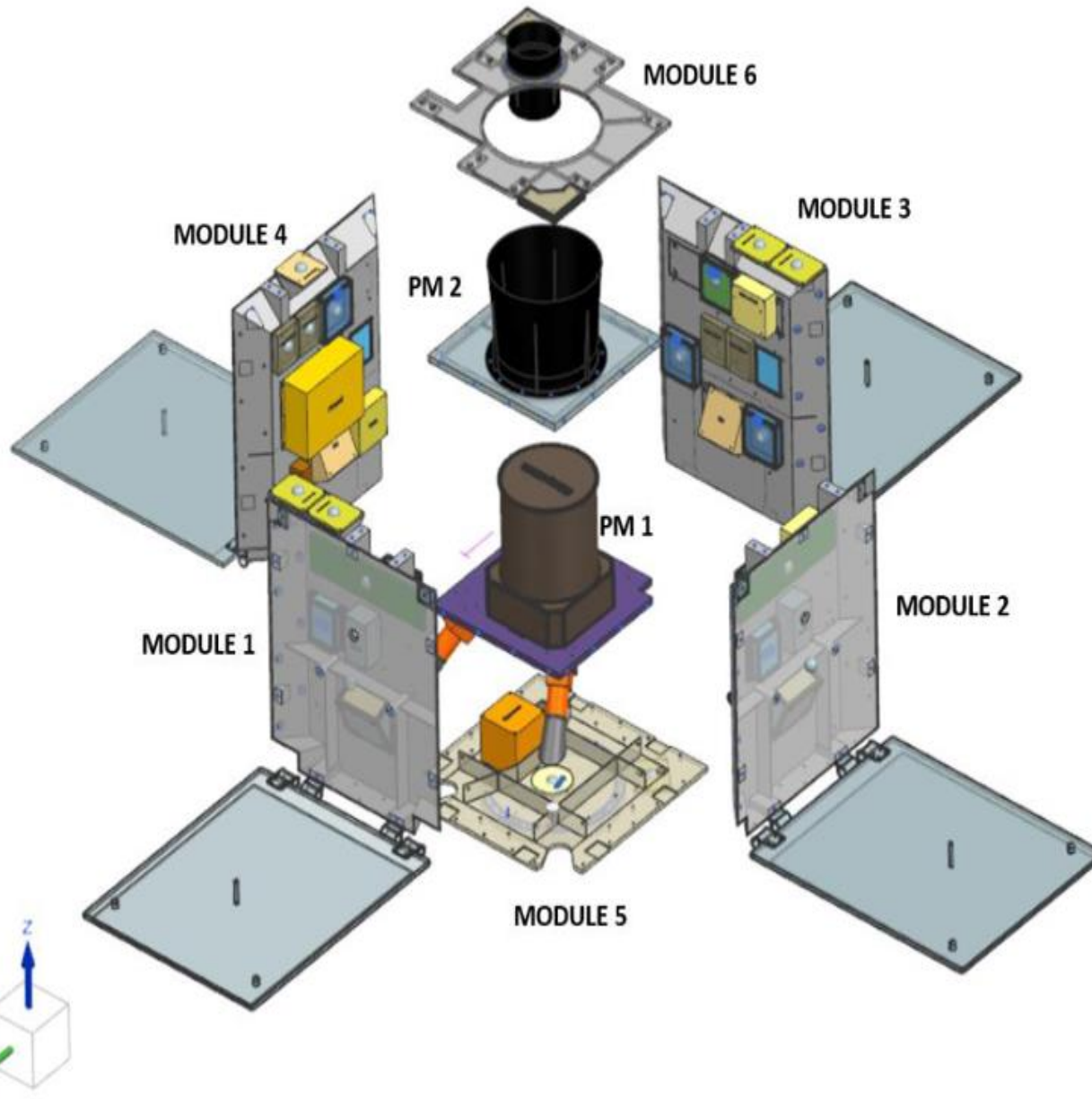
Secondary Payload ESSM

- Encrypted Short Satellite Message system
- Secure communication channel between Czech embassies and Czech Republic
- Without any 3rd party network (e.g., GEO satellites, ground networks or GPS)
- UHF Beacon, S-band data transfer
- Portable ground user terminal



AMBIC Platform

- Satellite mass 99 kg incl. margin
- SSO orbit, altitude 550 km
- Planned service life 3 years
- 6+2 modules
- Batteries distributed throughout the S/C modules
- Comm: UHF, S-Band, X-Band


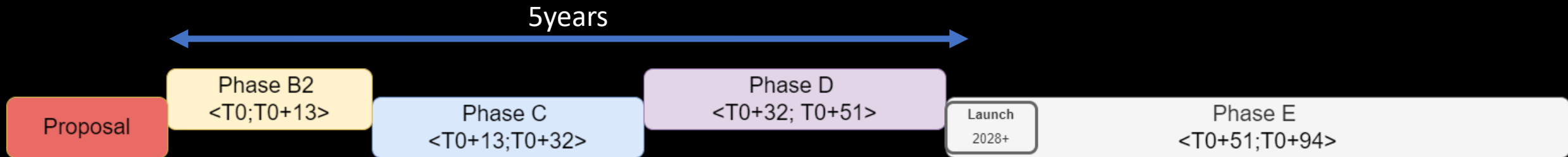


Mission concept – Benefits

- Mission will provide:
 - High-resolution imaging data serving government needs
 - Bidirectional communication worldwide – Encrypted Satellite Short Messages – (technological demonstrator)
 - Modular platform – microsatellite platform applicable for any mission
- Mission will demonstrate:
 - **technical** capabilities for possible future GSD<1m EO mission
 - **management** capabilities to orchestrate consortium to build the entire mission.



Schedule assessment



Phase	Duration	Review	Purpose	Preliminary Date
B2	13	KOM	Kick Off Meeting	T0
		PDR	Preliminary Design Review	T0+13months
C	18,7	CDR	Critical Design Review	T0+32 months
D	19,3	TRR	Test Readiness Review	T0+44 months
		TR	Test Review	T0+51 months
E	42,3	LRR	Launch Readiness Review	T0+52 months
		CR	Commissioning Review	T0+58 months
		ELR	End Of Life Review	T0+94 months

Baseline partners in the mission

- VZLU performed capabilities research on the Czech space industry and identified possible partners
- Strong involvement Czech space industry
- 80% funds of the space segment will be provided to Czech industry



AMBIC & Czech Space Plan

- Industry/Academia cooperation
- Generation of new capabilities
- Be Innovative, Disruptive, Excellent



AMBIC & Czech Space Plan

- Create, protect & exploit intellectual property rights
- Maximize the return on investment
- Long term sustainability



THANK YOU



AMBIC Czech Eyes in Space



Ministerstvo dopravy

