

Overall QB50 Requirements

Document Approach

Technical Requirements

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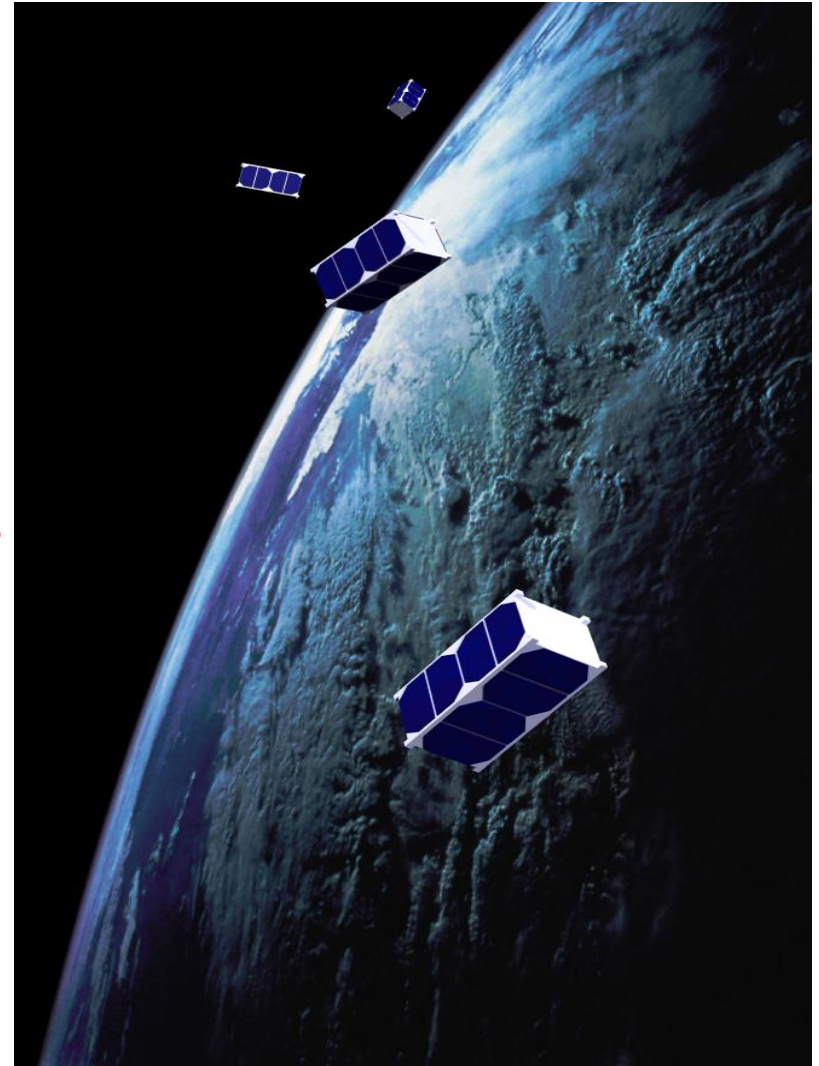
von Karman Institute for Fluid Dynamics
Rhode-Saint-Genèse (Brussels)

5th QB50 Workshop

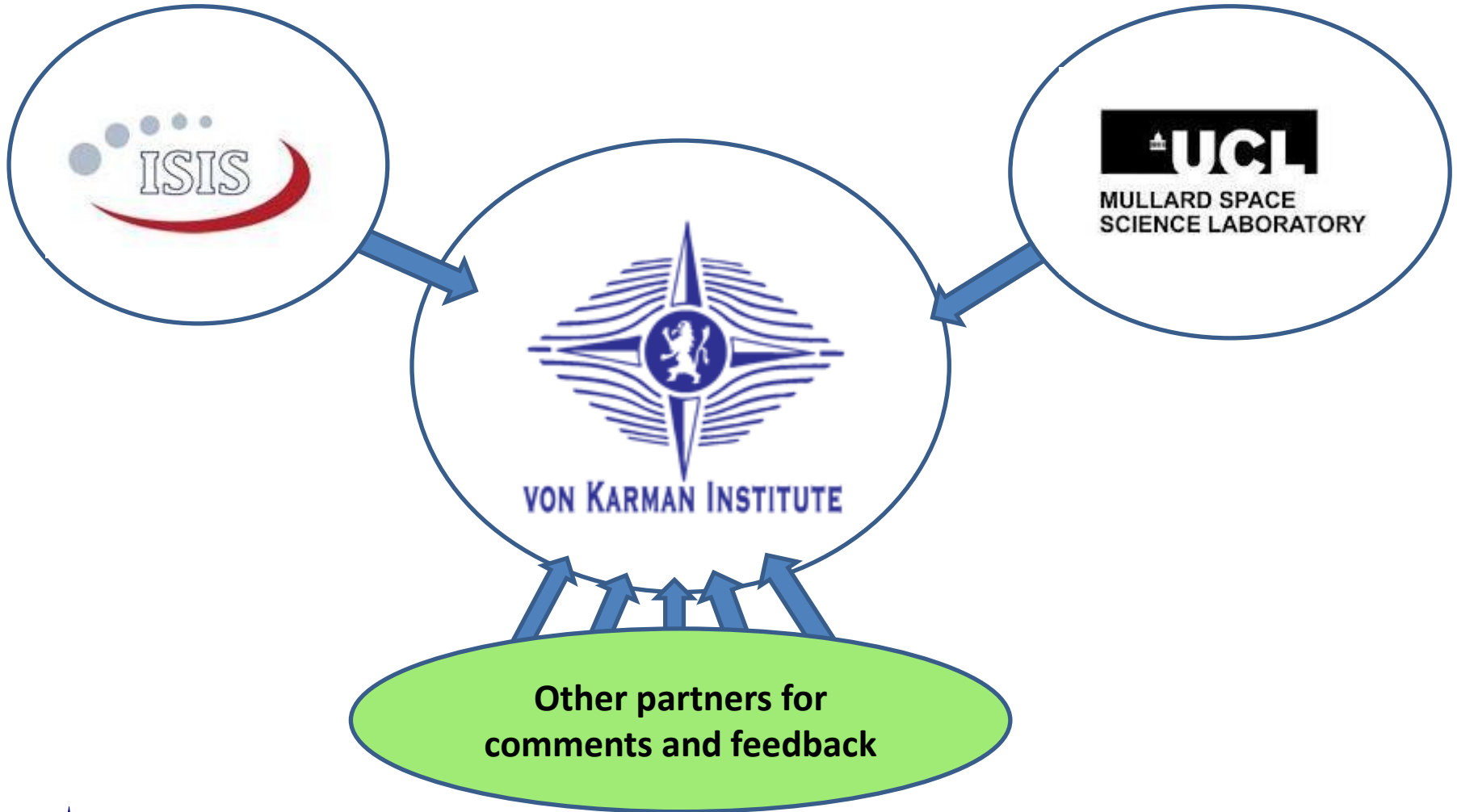
29 Jan 2019

Rhode-Saint-Genèse, Belgium

*von Karman Institute
for Fluid Dynamics*



- Team effort



- Meet mission objectives
 - science return
- Working Groups (WG) provide input
 - expertise in the field (ODWG, GFWG, SPWG)
- Prepare for PDR
 - PDR document template will be provided
- Uncertainty still exists
 - TBCs and TBDs will be frozen before CDR
- Req. that are TBCs and TBDs
 - will not be more stringent than what they are
- Based on the CubeSat proposals
 - reasonable and feasible

- System Requirements and ICD
 - available on QB50 website by 1 Feb 2013
- Contact for any questions about the document
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- Workshop presentations
 - available on QB50 website by 1 Feb 2013

- CubeSat Systems Requirements
- VKI



- Environmental Testing Requirements
- LV Provider

- Qualification and Acceptance Testing Requirements
- LV Provider

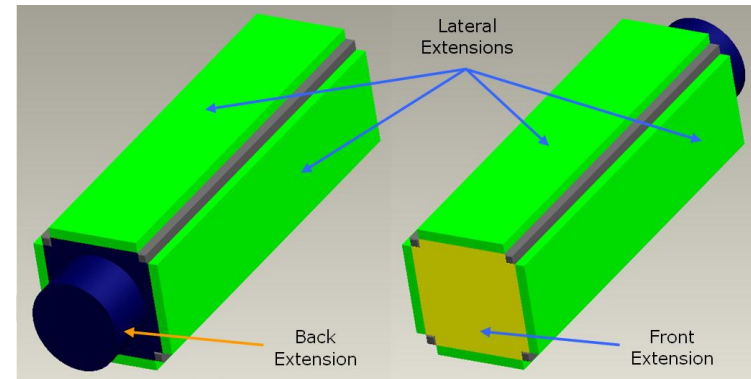
- Deployment System ICD and Requirements
- ISIS (Cesar Bernal)



- Science Payload ICDs and Requirements
- MSSL (Dhiren Kataria)



- QB50-SYS-1.1.1.
 ...2U shall be 100 x 100 x 227mm
 ...3U shall be 100 x 100 x 340.5mm
- QB50-SYS-1.1.2.
 ...shall fit entirely within the extended volume...
- QB50-SYS-1.1.3.
 ...mass shall be no more than 2.0kg for 2U and 3.0kg for 3U



Attitude Determination and Control Subsystem



- QB50-SYS-1.2.1.
...shall be able to recover from tip-off rates of up to $10^\circ/\text{s}$ within 2 days (TBC)
- QB50-SYS-1.2.2.
...shall have an attitude control with pointing accuracy of $\pm 10^\circ$ and pointing knowledge of $\pm 2^\circ$ from its initial launch altitude of 350km down to at least 200km (TBC)

- QB50-SYS-1.3.2.
...shall be able to survive in a powered-down state without battery charging, inspection or functional testing for a period of up to 2 months (TBC)

On-Board Computer and On-Board Data Handling



- QB50-SYS-1.4.2.
 - ...shall collect whole orbit data and log telemetry every minute
- Satellite Control Software
 - Ground station interface software
 - CubeSat Control System
 - Operations User Interfaces software
 - Communications handling with the DPAC and MCC

Telemetry, Tracking and Command



- QB50-SYS-1.5.1.
...shall use a downlink data rate of 9.6 kbps
- QB50-SYS-1.5.2.
...shall communicate a volume of at least 2
Megabits of science data per day....
- QB50-SYS-1.5.7.
...shall use an uplink data rate of 1.2 kbps
- QB50-SYS-1.5.9.
...CubeSat provider shall have access to a
ground station.....to send telecommands....

Thermal



- QB50-SYS-1.6.1.
...shall maintain all its electronic components within its operational temperature range while in operation and within survival temperature range at all other times

- QB50-SYS-1.7.1.
...shall be designed to have a lifetime of at least 3 months....
- QB50-SYS-1.7.3.
All RBF items shall be identified by a bright red label....containing...
“REMOVE BEFORE FLIGHT” or
“REMOVE BEFORE LAUNCH” and the name of the satellite printed in large white capital letters

REMOVE BEFORE LAUNCH
QB50 – MYCUBESAT

Thank you for your attention!