ISIS – Innovative Solutions In Space
This is not a toy – Overview of nanosatellite applications
ISIS – Innovative Solutions In Space BV

Company Presentation

We can provide all the components of your mission.

CUBESAT PRODUCTS

1000’s of subsystems since 2006
Cover complete satellite avionics
Includes space and ground segment

LAUNCH SERVICES

271 satellites launched since 2009
World record: 101 satellites at once
Use ISIS’ deployers and sequencers

TURN-KEY MISSIONS

Involved in 30+ missions since 2013
Includes insurance & in-orbit delivery
Training and knowledge transfer
ISIS – Innovative Solutions In Space BV

Turnkey missions

United Nations/Jordan Workshop:– B. Chamot, Amman, March 2019
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CubeSat form factors
Different capabilities, different applications

<table>
<thead>
<tr>
<th></th>
<th>1U</th>
<th>3U</th>
<th>6U</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight</td>
<td>1 kg, 10x10x10 cm</td>
<td>6 kg, 10x10x34 cm</td>
<td>12 kg, 10x22x34 cm</td>
</tr>
<tr>
<td></td>
<td>Cost-effective</td>
<td>Increased performance</td>
<td>High-power, large surfaces</td>
</tr>
<tr>
<td></td>
<td>Education and training</td>
<td>Small science and tech-demo</td>
<td>RF-based application</td>
</tr>
</tbody>
</table>

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CubeSat form factors
Different capabilities, different applications
Small is beautiful...

... and cheaper to build and launch
Power in strength

Advantages of a constellation of small satellites

- Improved revisit times
- Increased coverage
- Scalability
- Failure tolerant
- Low data latency
Radio amateur 1U mission

Hands-on learning with an actual satellite

<table>
<thead>
<tr>
<th>Platform</th>
<th>1U</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload</td>
<td>RF transponder</td>
</tr>
<tr>
<td>Frequencies</td>
<td>Amateur UHF and VHF</td>
</tr>
<tr>
<td>Secondary features</td>
<td>File download, various sensors</td>
</tr>
</tbody>
</table>
Earth observation 3U mission

Ship detection and more with visible spectrum camera

A 5-meter resolution camera allows to detect medium sized ships (> 30m) as well as the wake from fast-moving ships. However such a camera can be used for many other application, with the same satellite.

<table>
<thead>
<tr>
<th>Platform</th>
<th>3U</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payload</td>
<td>1.5U RGB camera</td>
</tr>
<tr>
<td>Ground resolution</td>
<td>5.2 m @ 550 km</td>
</tr>
<tr>
<td>Image size (swath)</td>
<td>21 x 16 km @ 550 km</td>
</tr>
</tbody>
</table>
Earth observation 3U mission
True color (RGB) vs. Multispectral (7 bands, ‘false color’)

Detect physical objects ("direct")

Detect events in specific spectral bands ("indirect")
RF monitoring 6U missions
Improving asset tracking and situational awareness

ISIS has worked and is working on several missions using technologies relevant to Situational Awareness. In particular:
- We have developed an AIS receiver that has been used in space since 2013
- We have developed satellites for machine-to-machine missions
- We are developing satellites for radar detection
Applications
Nanosatellites are used to solve real problems
Thank you for your attention

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