Facilitating access to space supporting scientific and technological advancement

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RESEARCH IN OUTER SPACE

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THE NEW SPACE ECONOMY IS ENABLING MULTIPLE SECTORS ON EARTH

TELECOMMUNICATION, INTERNET, IoT
- Low cost internet for billions of people
- Connect remote areas

EARTH OBSERVATION, CLIMATE CHANGE
- Information on water cycle and air quality
- Forecast and mitigate pollution

AGRICULTURE ENHANCEMENT
- Monitor crop development
- Reduce use of water and pesticides
- Mitigate famines

OIL AND GAS INDUSTRY
- Detect and monitor leakages
- Find new potential resources

FOREST MANAGEMENT
- Sustainable forestry
- Preserve wildlife

AUTONOMOUS DRIVING, NAVIGATION
- Monitor and predict traffic
- Detect parking slots
“In-Orbit demonstration/Validation (IOD/IOV) is a unique tool to boost industry’s competitiveness by eliminating the famous “valley of death” and accelerating the deployment of innovative technology.”

“This maturity level is crucial to enable the competitiveness, non-dependence and innovation of the European space sector.”

(European Commission)
## SCIENCE & TECHNOLOGY IN MICROGRAVITY

### APPLICATIONS

<table>
<thead>
<tr>
<th>Technology Demonstrations</th>
<th>Science</th>
<th>Earth Observation &amp; Remote Sensing</th>
<th>Space Situational Awareness</th>
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<td>Moving from the lab to the real world (i.e., from TRL 5 to 7).</td>
<td>Life &amp; Physical science (e.g. biology, physics, chemistry, astronomy, earth science, engineering, medicine) All branches of space science can potentially benefit from in-orbit experimentation</td>
<td>Land Mapping, Monitoring and Management</td>
<td>Collision avoidance, debris monitoring, nuclear detection and still imagery</td>
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- **Technology Demonstrations**: Moving from the lab to the real world (i.e., from TRL 5 to 7).
- **Science**: Life & Physical science (e.g. biology, physics, chemistry, astronomy, earth science, engineering, medicine). All branches of space science can potentially benefit from in-orbit experimentation.
- **Earth Observation & Remote Sensing**: Land Mapping, Monitoring and Management.
- **Space Situational Awareness**: Collision avoidance, debris monitoring, nuclear detection and still imagery.
ION Satellite Carrier: Space Transportation and IOD/IOV

A “cargo” satellite capable of transporting satellites into the right orbit and into the right place in space

Technology developed in-house since 2011 and proven in space provides the foundation for current and future services

1. **FASTER TIME-TO-REVENUES** and positioning in target orbit
2. **LAUNCH COST REDUCTION**: deploy a constellation in multiple orbits on a single mission
3. **FASTER TIME-TO-SPACE**: ride on the first available launcher
4. **REDUCTION IN NUMBER OF SATELLITES**: ION replenishes constellations faster so there is less need for spare satellites
5. **LOWER MANUFACTURING COST**: reduced need for propulsion decreases costs

**ION ADVANCED SERVICES**

- **IN-ORBIT VALIDATION AND DEMONSTRATION**
- **BACKUP SATELLITE FOR AN EXISTING CONSTELLATION**
- **INTEGRATING SATELLITE SERVICES VIA PAYLOADS HOSTED ON ION**
- **SATELLITE COMMUNICATION HUB SERVICES**

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- **Time reduction from launch to revenues**: Up to 85%
- **Lower cost for constellation deployment**: Up to 40%
<table>
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<th>Feature</th>
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<td>Simpler</td>
<td>Customer provides the payload (e.g., experiments, technology), D-Orbit brings it into orbit. Customer needs only to focus on the experiment/technology itself, greatly simplifying the development cycle.</td>
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<td>Frequent Launch Opportunities</td>
<td>Multiple launch opportunities per year: launch as soon as you are ready!</td>
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<td>More Affordable Service</td>
<td>Low-cost space missions for Research &amp; Innovation (R&amp;I): (1) use of existing commercial ground facilities, (2) sharing the platform’s power supply, (3) avoid cost of building and launching a satellite, (4) more cost-effective alternative to traditional space launches into orbit.</td>
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<td>Scalable, Versatile and Customized</td>
<td>Possible to integrate payloads taking into consideration specific user needs.</td>
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<td>Tech. and Research Advancement</td>
<td>Customer’s product is market-ready sooner. Shorter timescales for research results.</td>
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