

# Commercial Space Debris Removal Solutions

ASTROSCALE

Nobu Okada, Founder & CEO

UNISPACE+50 Space and Industry

June 18, 2018



# Space Debris Threatens Space Sustainability



1950



2018

# More Dependency on Space Technologies



Traffic Control



Weather



Broadcasting



Disaster management



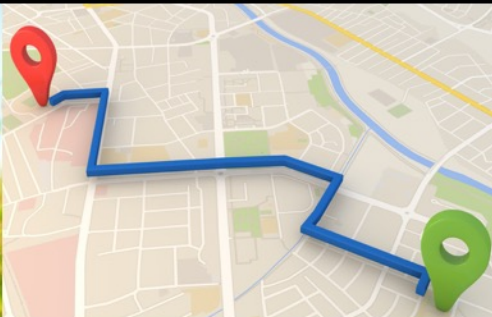
Security



Earth observation



Navigation



Time Stamp



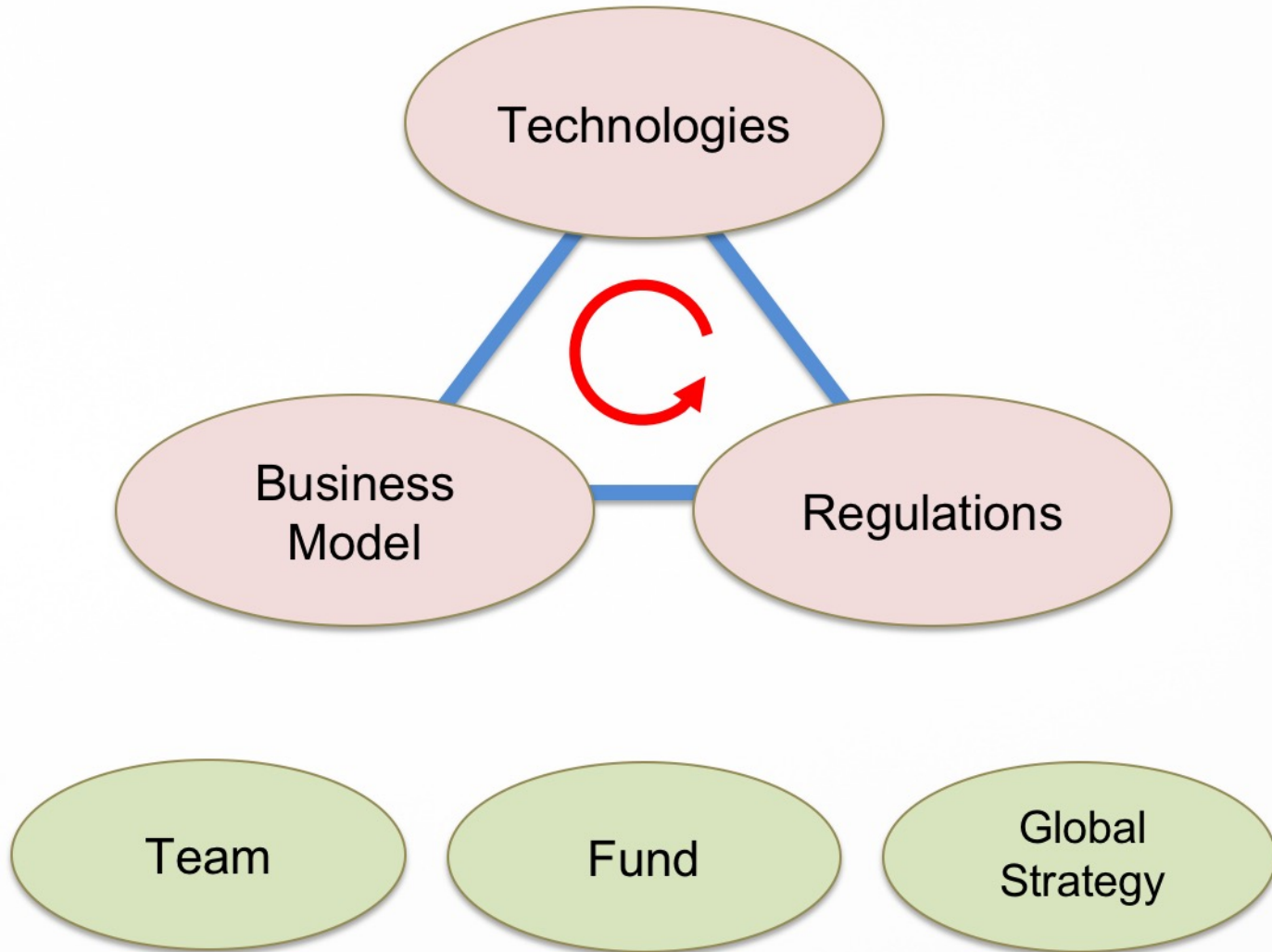
Communication



Big data



# Challenges for Space Debris Issues



# Astroscale: An International Company Solving a Global Problem



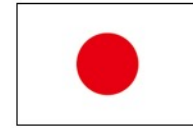
Founded: May 4, 2013  
Team: 46  
Capital: \$53M  
Mission: Secure long term  
spaceflight safety for  
future generations



Astroscale US (2018)



Astroscale UK (2017)



Astroscale Japan  
(2015)



Astroscale Singapore (2013)

# Management Team

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Nobu Okada  
Founder & CEO



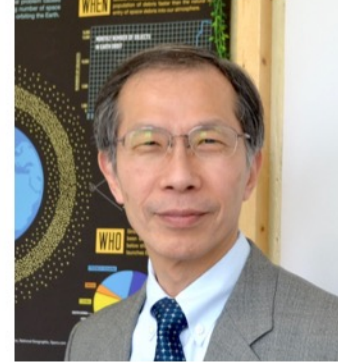
Chris Blackerby  
Group COO



John Auburn  
Director, ASUK  
and Global Business  
Management



Ai Makino  
Director, Finance and  
Administration



Akira Okamoto  
Director, Technology  
and Mission  
Management



Miki Ito  
President, ASJP and  
Director, Mission  
Support

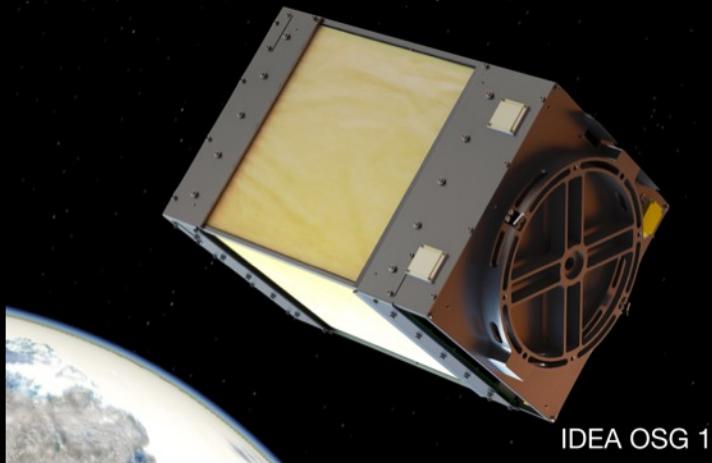
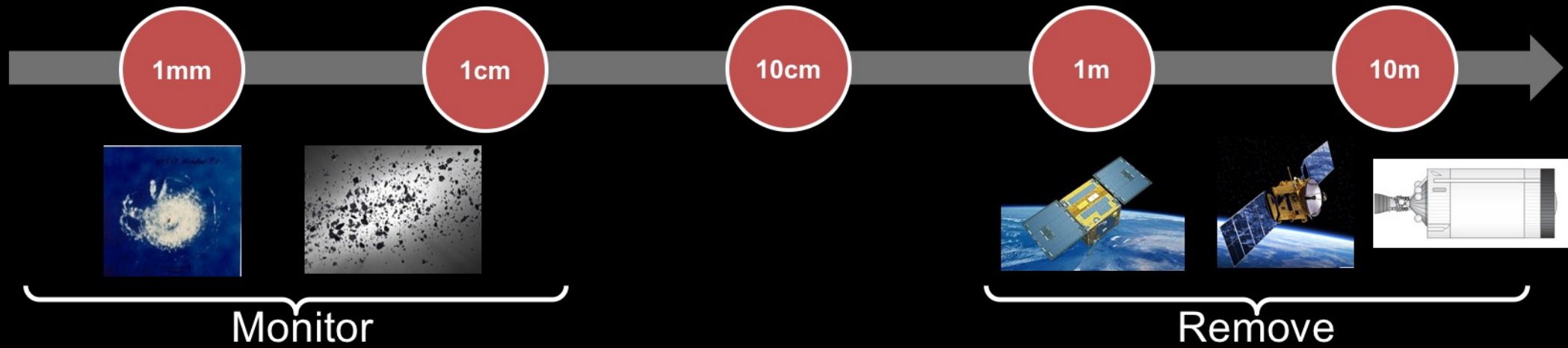
# ASTROSCALE SPACE SWEEPERS

SINCE 2013

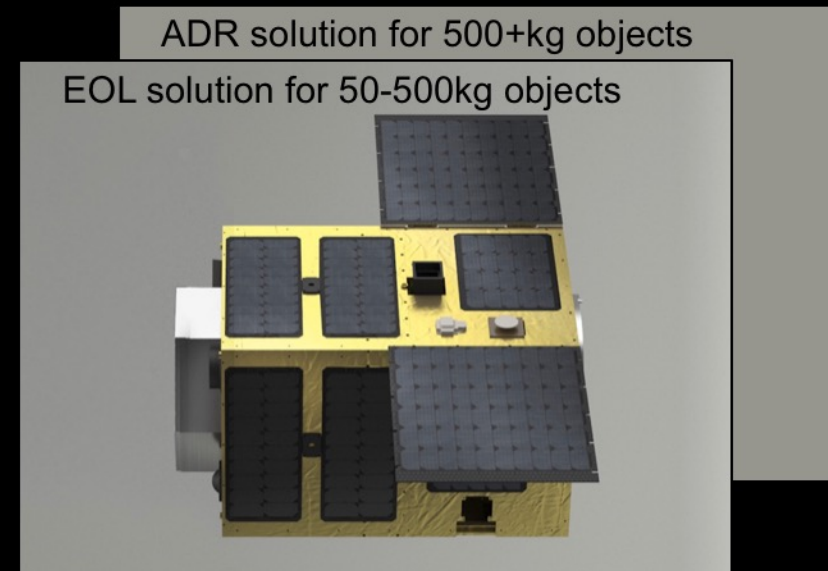


Tokyo Office

# Technological Approaches



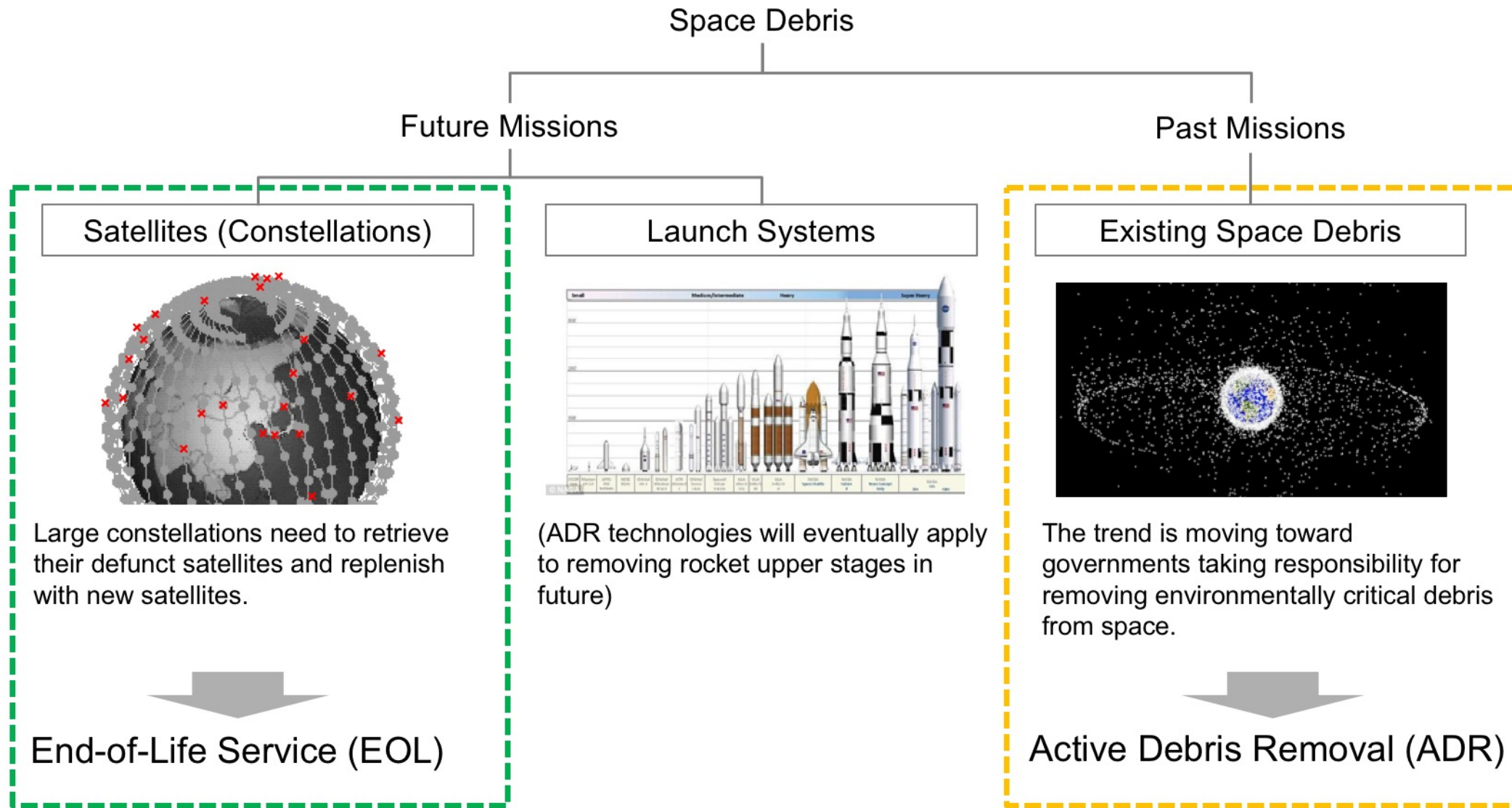
Sub-millimeter sized debris monitoring satellite  
IDEA OSG 1 (Launched on Nov 28, 2017)



Debris removal demonstration satellite  
ELSA-d (2019)



# Business Opportunities in Debris Removal



# EOL and ADR



Services	<b>End of Life (EOL)</b> <b>“Don’t add any more debris”</b>	<b>Active Debris Removal (ADR)</b> <b>“Remove debris that is already there”</b>
<b>Potential customers</b>	Constellations, Private Satellite Operators	Governments, International framework
<b>Target Objects</b>	<ul style="list-style-type: none"> <li>- Satellites that have failed in orbit or reached end of operational lifetime</li> <li>- 50~500kg</li> </ul>	<ul style="list-style-type: none"> <li>- Environment Critical Objects</li> <li>- 500kg+</li> <li>- Existing debris</li> </ul>
<b>Rationale</b>	<ul style="list-style-type: none"> <li>- Business continuity and maximize revenue</li> <li>- Adhere to best practices and public demands</li> </ul>	<ul style="list-style-type: none"> <li>- Demonstrate commitment to orbital sustainability</li> <li>- Assure spaceflight safety for all operators</li> </ul>
<b>Global Responsibility</b>		
<b>Technical concept</b>	Semi-cooperative approach and capture	Non-cooperative approach and capture

# Awards (2017~2018)





**ASTROSCALE**

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For Responsible Use of Space