

2025 제 10 회 초소형위성 워크숍

Presentation [3-3]

## 궤도상 수송서비스

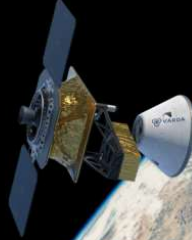
김 현 준

한국항공우주연구원





# 궤도상 수송서비스



김현준



한국항공우주연구원  
KOREA AEROSPACE RESEARCH INSTITUTE

[kris@kari.re.kr](mailto:kris@kari.re.kr)

Small Launch Vehicle Research Division(SLRD)

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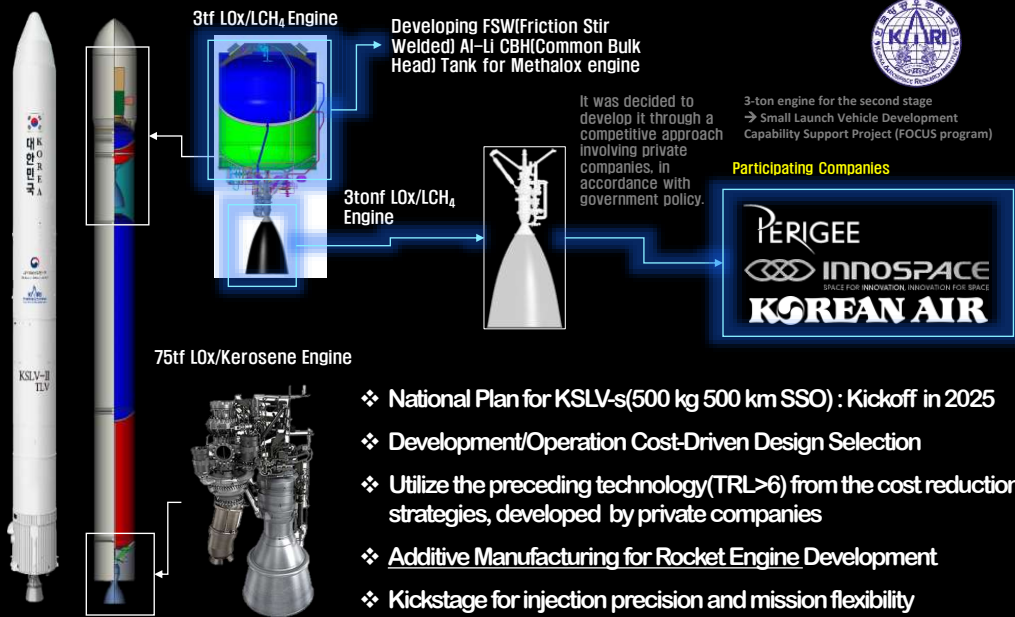


## Background for OTV

# Methalox Initiative of KARI

FOCUS: Fostering Overall Industry-Competencies for Upper Stage

3/23

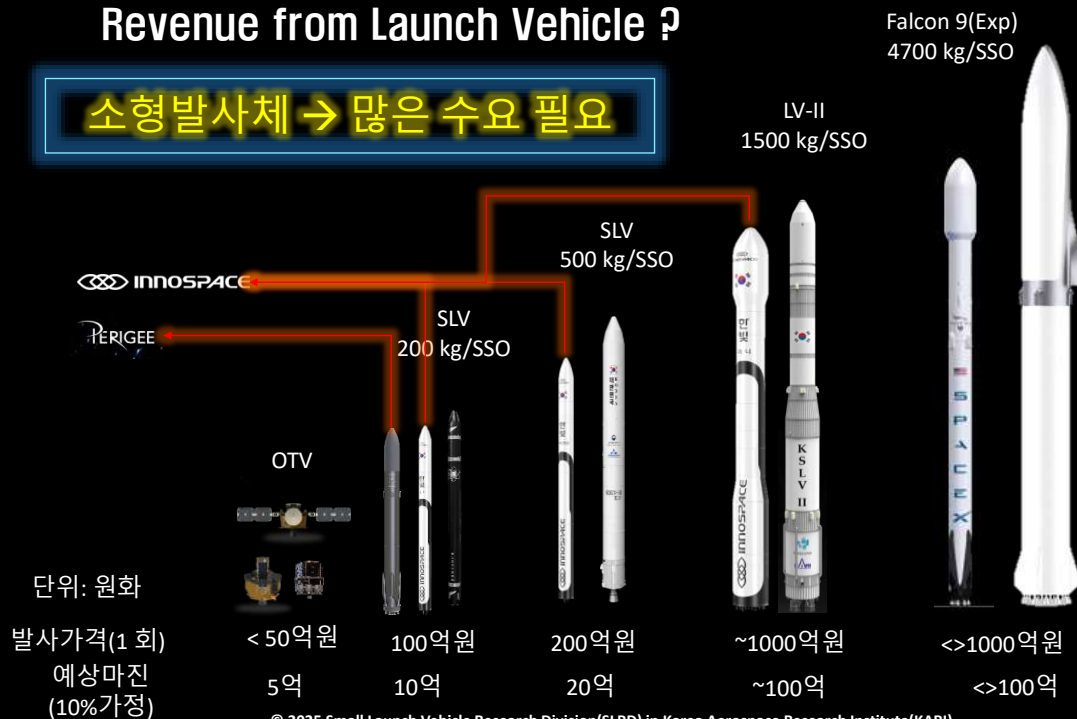


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## Revenue from Launch Vehicle ?

4/23

소형발사체 → 많은 수요 필요

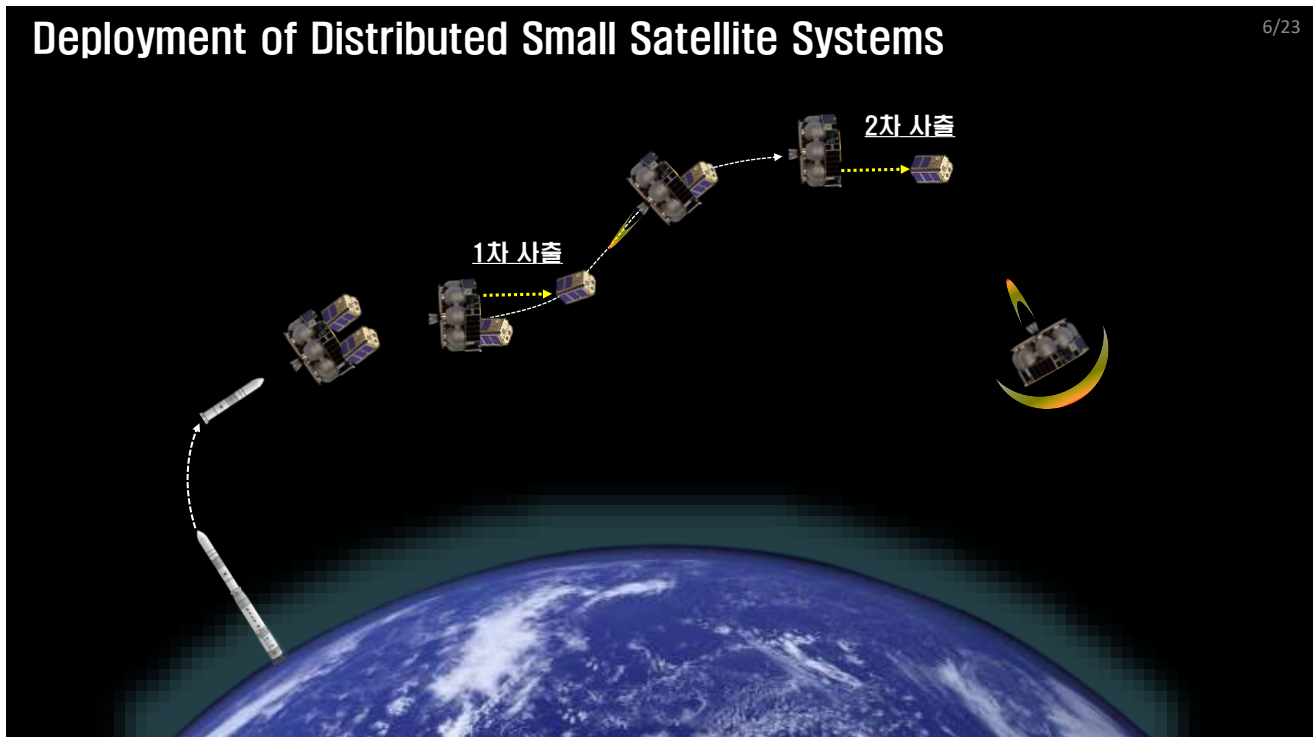




## Applications with OTV in KARI

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## Deployment of Distributed Small Satellite Systems



7/23

## Ritonavir(Form III) 제조 ; COVID-19 화이자 원료

2024.02.21



## Manufacture

## Separation

Space p  
system

Capsule transporter

## Space transporter

## Re-entry

## Parachute

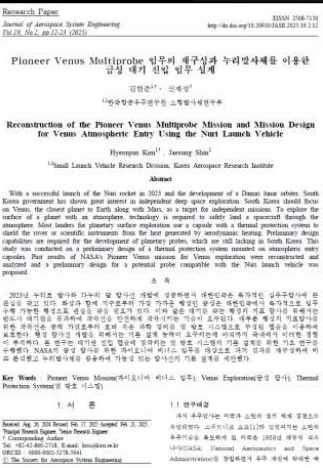
## Launch

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## 7/23

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Korea AeroSpace Research Institute

**ibS** 기초과학연구원  
Institute for Basic Science

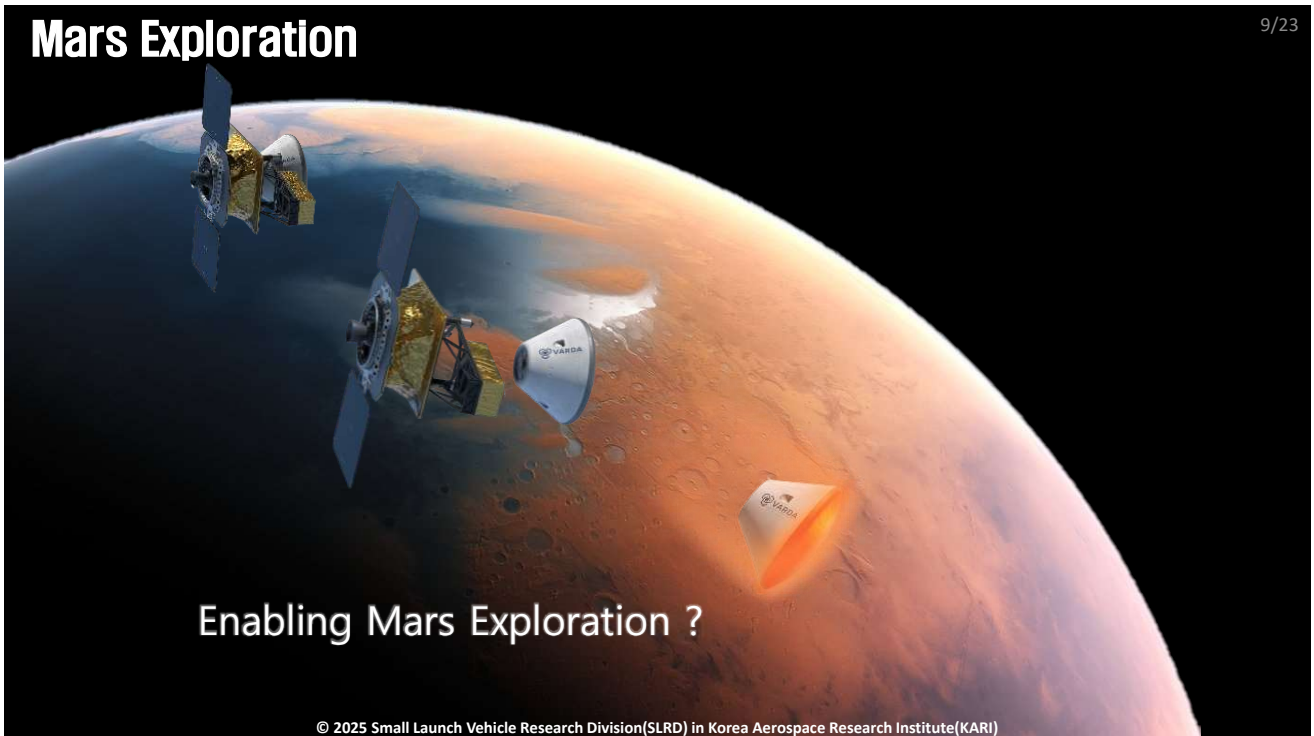
## Enabling Venus Exploration ?

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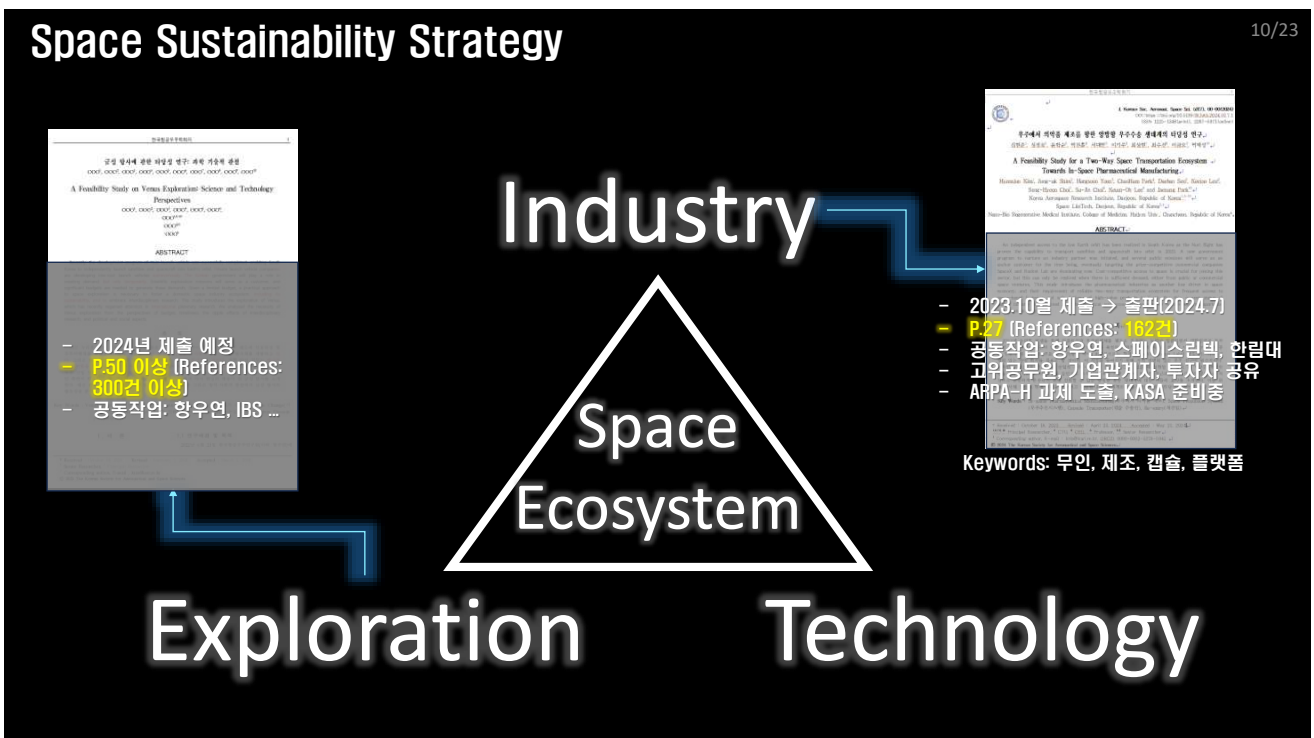
# Mars Exploration

9/23



# Space Sustainability Strategy

10/23





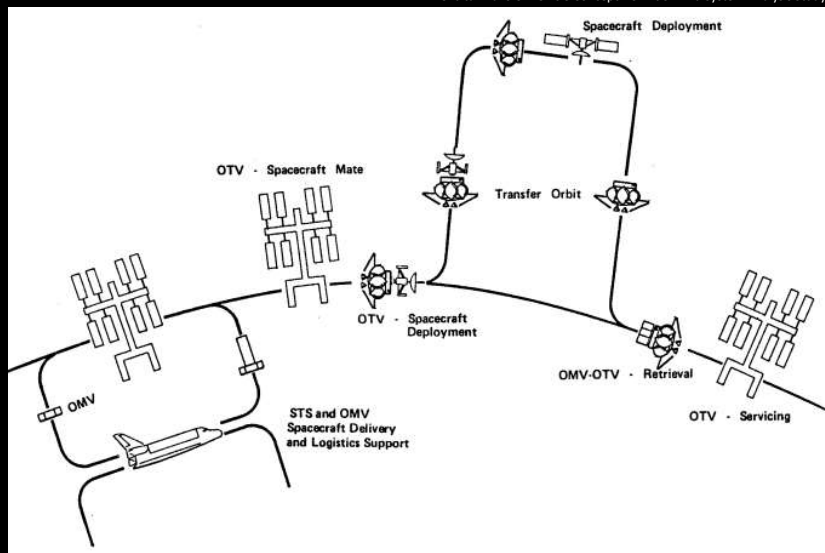
## OTV(Orbital Transfer Vehicle)

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### OTV/OMV 정의

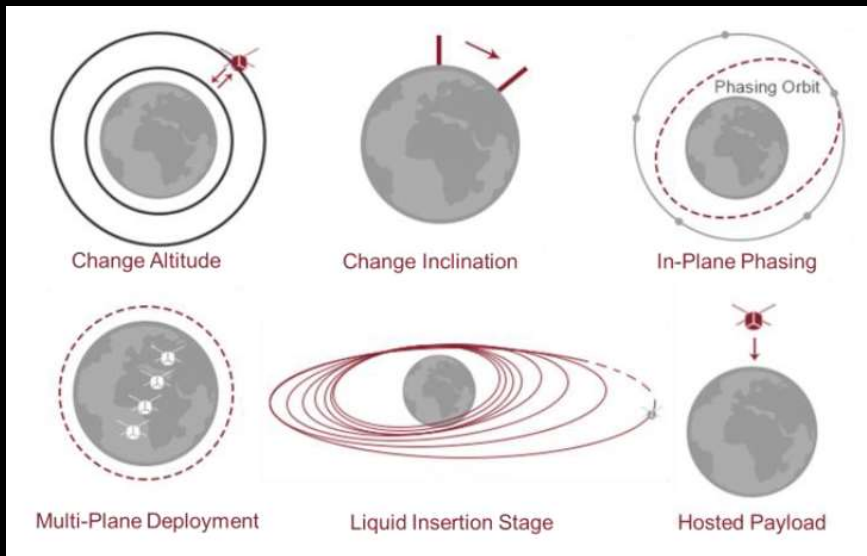
- OTV(Orbital Transfer Vehicle) → 궤도간 수송체
- OMV(Orbital Maneuvering Vehicle) → 궤도상 기동체

Orbital Transfer Vehicle Concept Definition And System Analysis Study



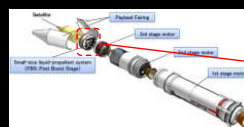
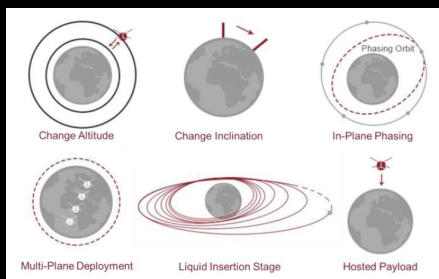
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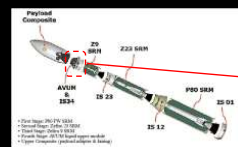
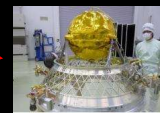


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## 궤도-간 수송선



Epsilon - PBS



VEGA - AVUM



Electron - Photon



MEV (Northrop Grumman)



Orbiter (Launcher)



OSSIE (URAX)



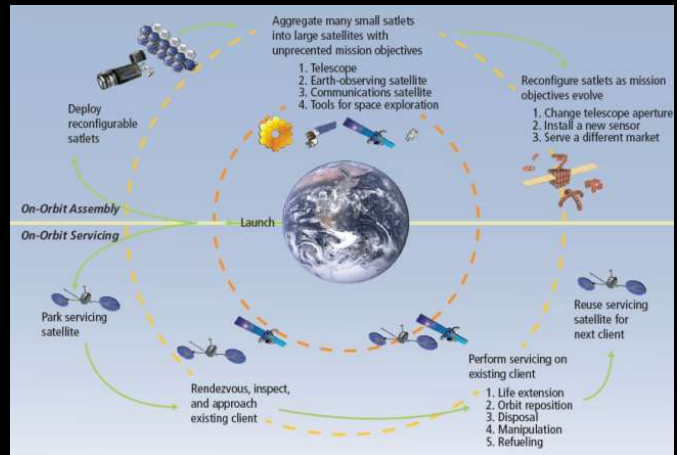
Vigoride (Momentum Space)

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## OTV의 제공 서비스

15/23

- 기존 위성 대상 서비스 – “In-Orbit Servicing”
  - 랑데부-도킹을 통해 기존 위성의 궤도 조정/재급유/수리/모듈교체/폐기 등의 서비스를 제공
  - 개발비용이 높고 부가가치가 높은 대형 위성(주로 GEO 위성)이 서비스 제공 대상
- 궤도-내 수송 서비스 – “In-Orbit Transportation”
  - 페이로드(소형 위성)를 싣고 발사체에 의해 저궤도에 진입 → 다양한 궤도로 수송(재진입 임무 포함)

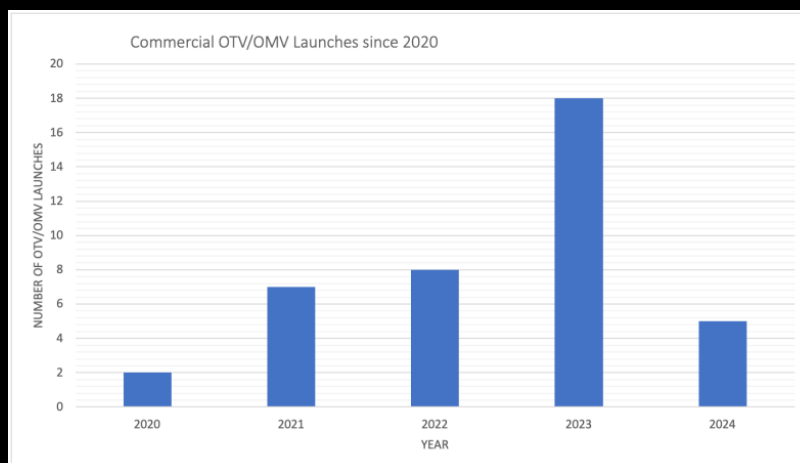


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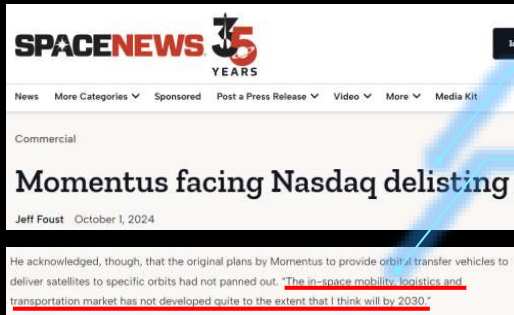
## OTV/OMV 발사

16/23

- OTV(Orbital Transfer Vehicle) → 궤도간 수송체
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**(Momentum) 2024.10.1**  
나스닥 상장폐지 위기

**in-space mobility**, 물류 및 운송  
시장은 **2030**년까지는 제가  
생각하는 만큼 발전하지 않았습니다



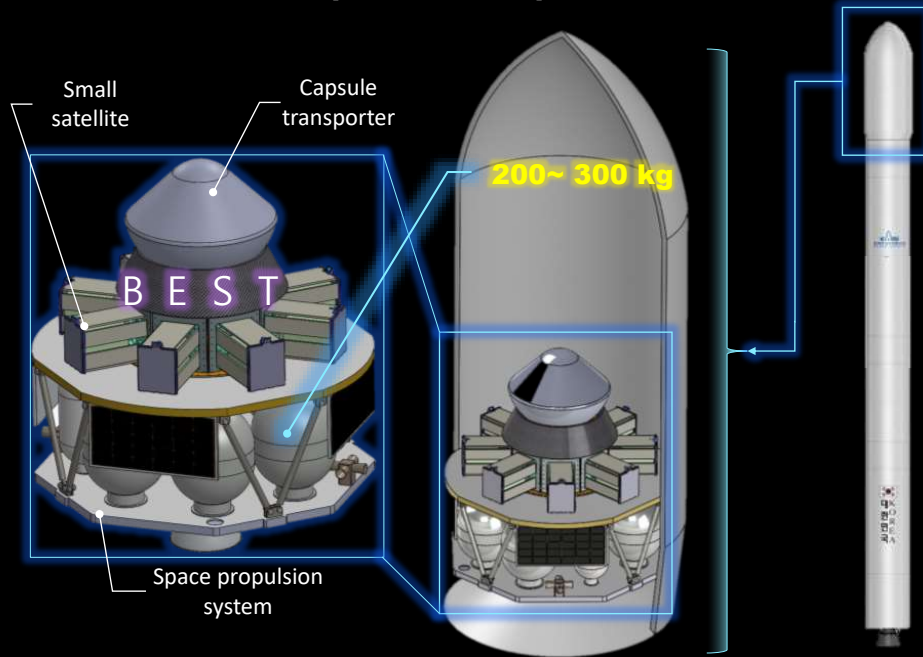
**(Impulse space) 2024.10.4**  
미 우주군 **3,450**만 달러 계약  
체결



## OTV Development in KARI

# Conceptual Modelling of Space Transporter and Satellites

19/23



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## Developing Various Thrusters

20/23



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