

# AOS Status and Path Forward

**May 17, 2023**

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**AOS Reviewed – Not Subject to Export Control**

*Pre-Decisional – AOS is in Phase A and NASA makes no commitments on the final design of the mission or instruments*

- Direction out of KDP-A
- Study Plans
- Trade Options

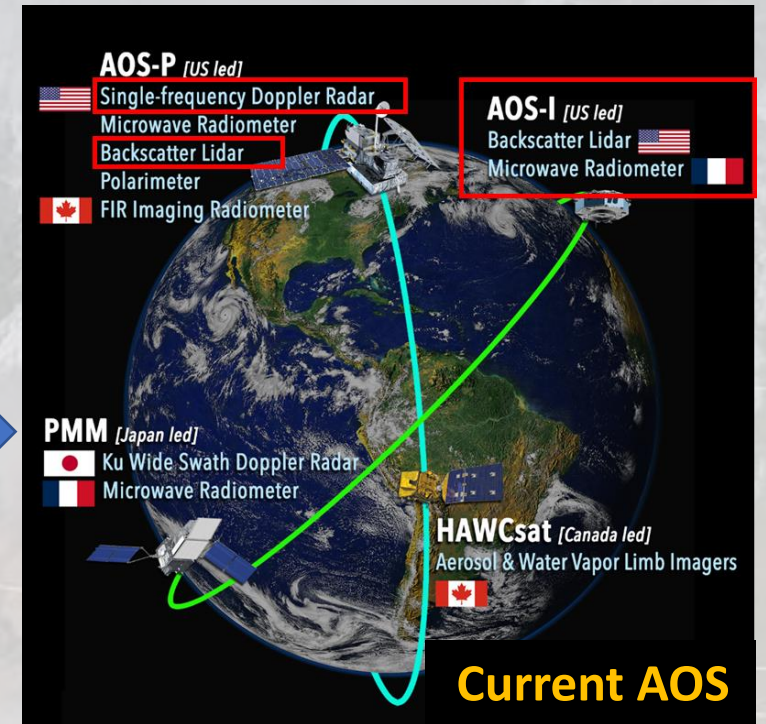
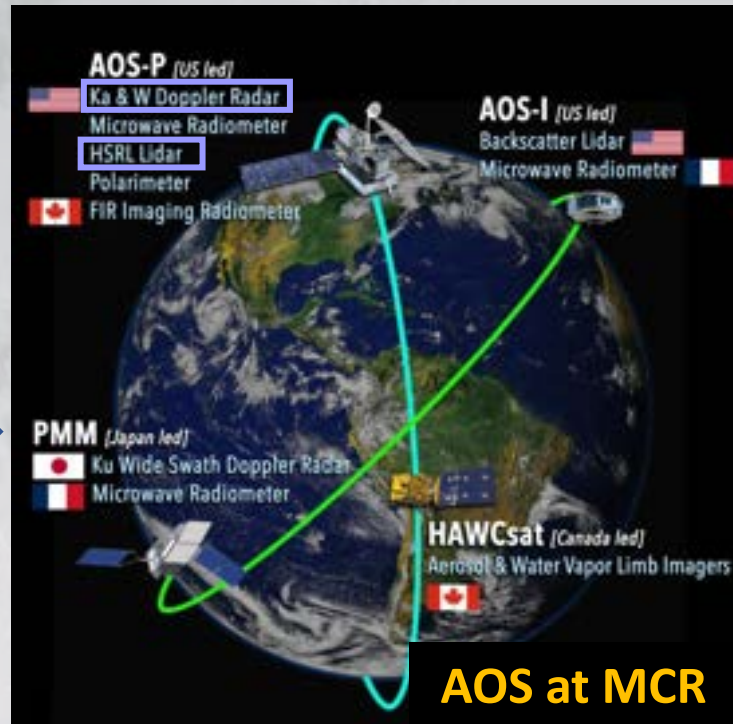
- Completed Key Decision Point-A on January 13<sup>th</sup>
- Three key changes to AOS directed at KDP-A
  - AOS-P Lidar: Change from the Clio HSRL to a Backscatter Lidar
  - AOS-P Radar: Study alternative radar concepts
  - Cost Target: Study science capability adjustments to achieve a new cost target
- Changes based on the Independent Review Board input, the Agency Acquisition Strategy Meeting outcome, and ESD budget constraints

# Phase A Study Plan builds on ACCP and Pre-Phase A Study work

- Build upon the substantial trade efforts to determine the science capability within cost constraints that led to the ACCCP recommended architecture and further refined to the MCR architecture

Subject to change with content adjustments

Subject to current trades, pending decisions, funding



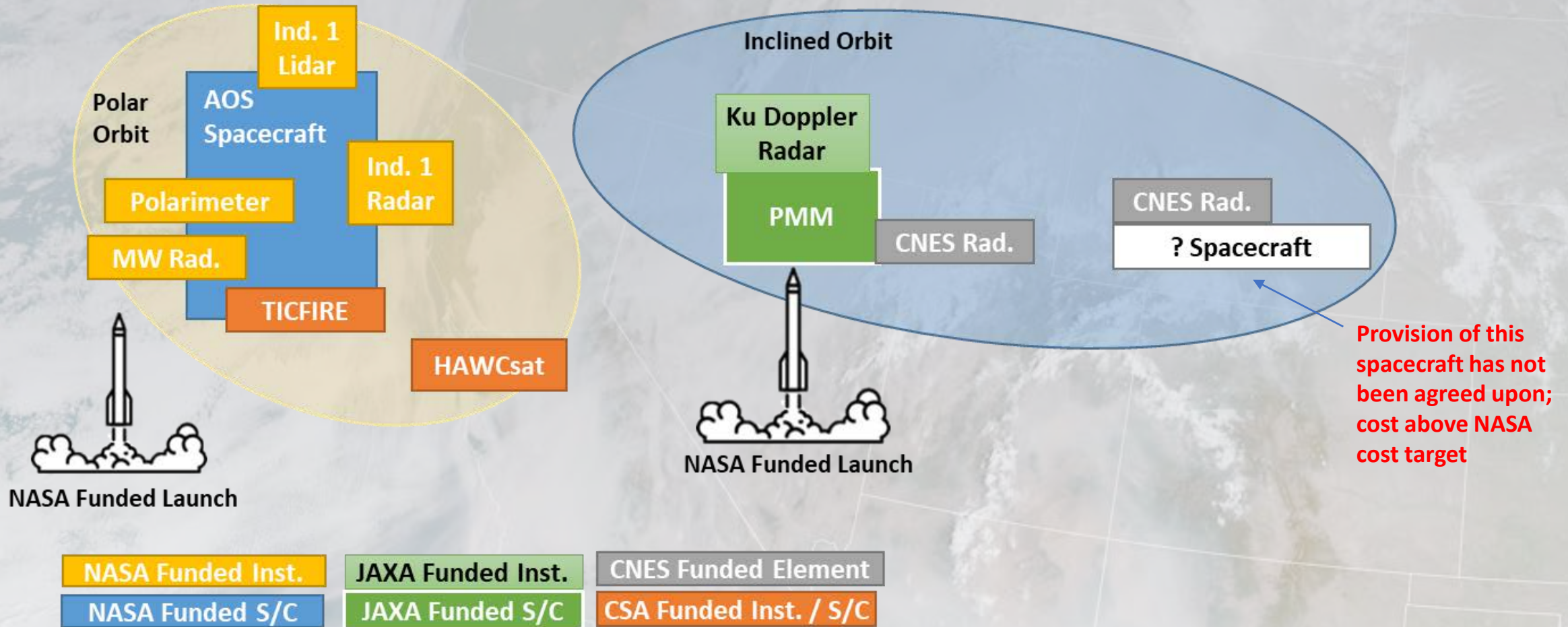
## Evolution of ACCP Study D1A Architecture to AOS Projects

- Use the MCR architecture and its supporting history as a starting point
- Incorporate the direction from KDP-A
  - The responses to the community letters clarify that HSRL is not a part of the trade space
  - Cost within target is the driver for all of the trade studies and overall determination of AOS content
  - Cost constraint is very tight and must be maintained through project execution
- Baseline AOS content through discussion with ESD in June 2023
- Status: A set of options prepared and estimated relative to cost target
  - Updated radar and lidar concepts developed for initial estimate
  - Information provided to ESD for consideration

- Detailed assessment of instrument capabilities will extend beyond the top-level content study
  - Target decision timeframes by the end of CY 2023
- Phase A study contracts planned for the instruments to define capabilities within cost constraints

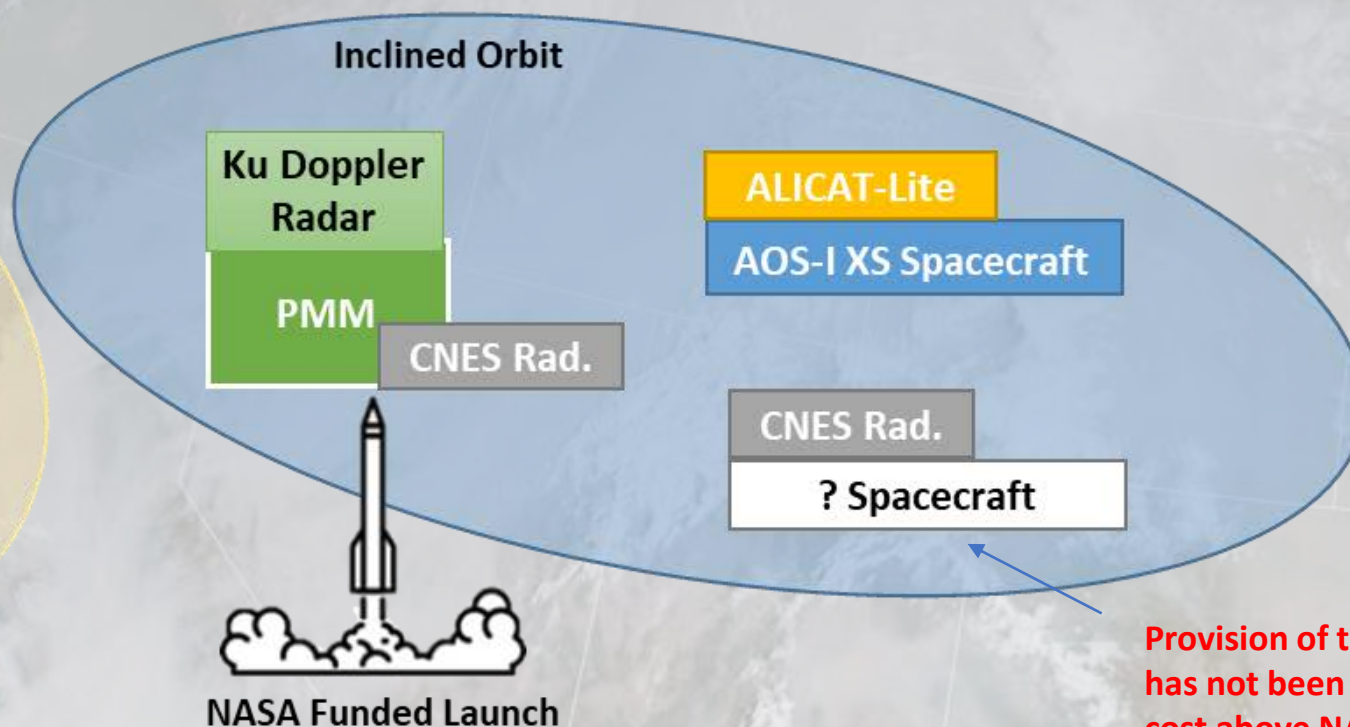
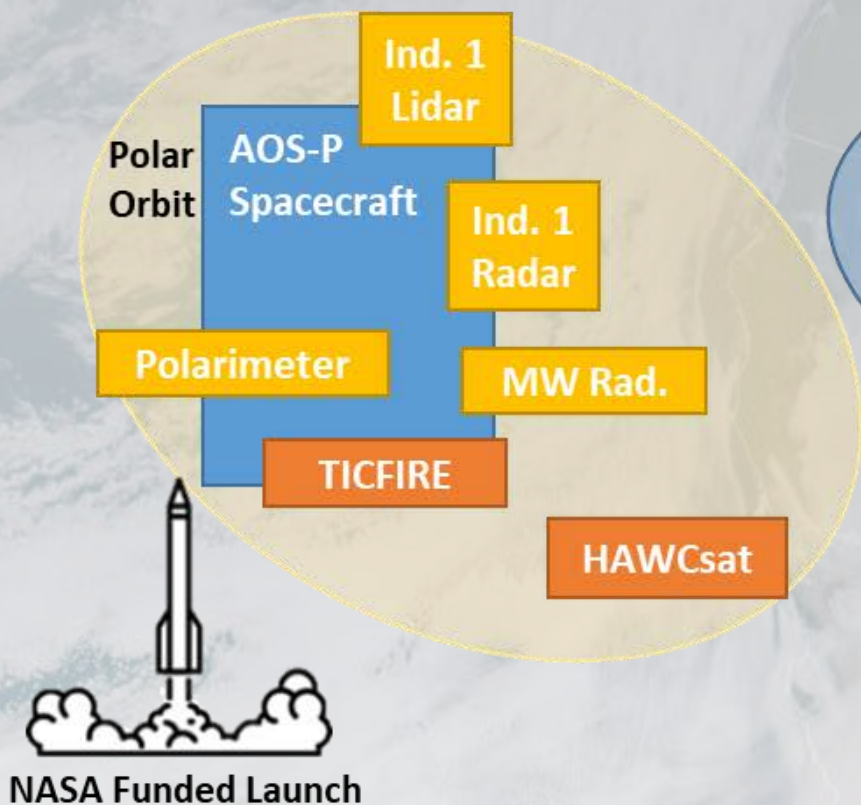
# Dual Orbit – Decadal Survey Minimum – No AOS Observatory in Inclined

Options still require detailed consideration from NASA and International Partners – agreements have not yet been made



# AOS Content Option D6a – Add Lidar in Inclined Orbit

Options still require detailed consideration from NASA and International Partners – agreements have not yet been made



Provision of this spacecraft has not been agreed upon; cost above NASA cost target

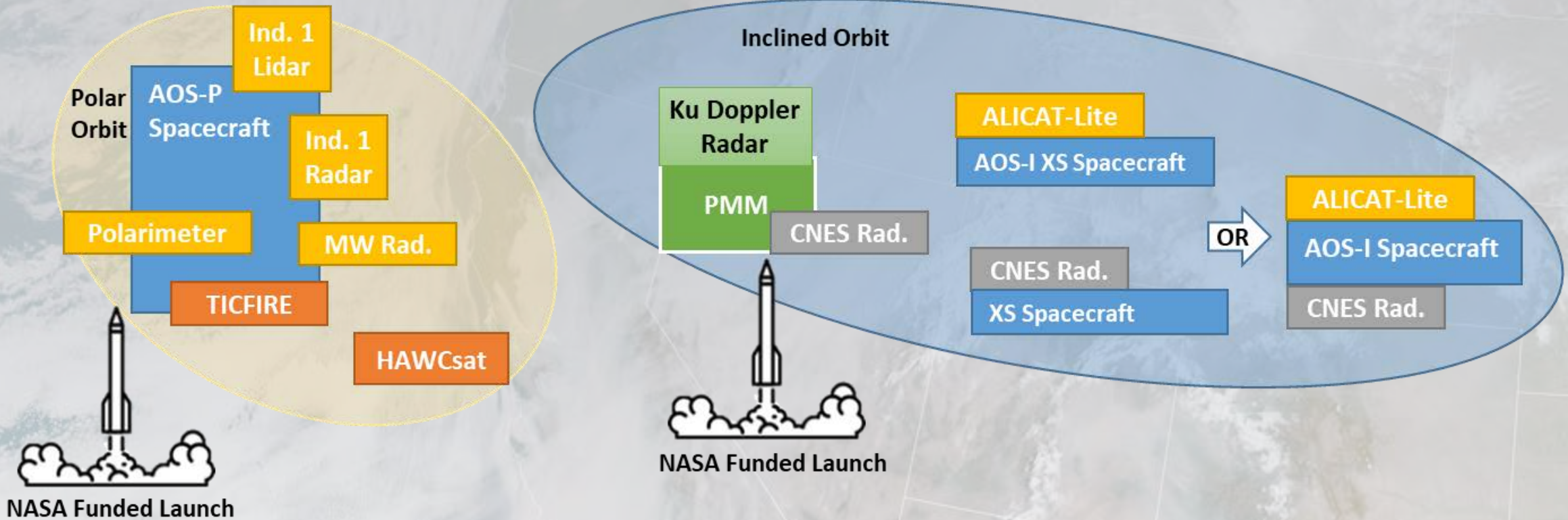
NASA Funded Inst.	JAXA Funded Inst.	CNES Funded Element
NASA Funded S/C	JAXA Funded S/C	CSA Funded Inst. / S/C

Aspects of this option have not been agreed upon; cost above NASA cost target



# AOS Content Option D8a or D4a – Add Lidar in Inclined Orbit and NASA Spacecraft Support for 2<sup>nd</sup> CNES Radiometer

Options still require detailed consideration from NASA and International Partners – agreements have not yet been made



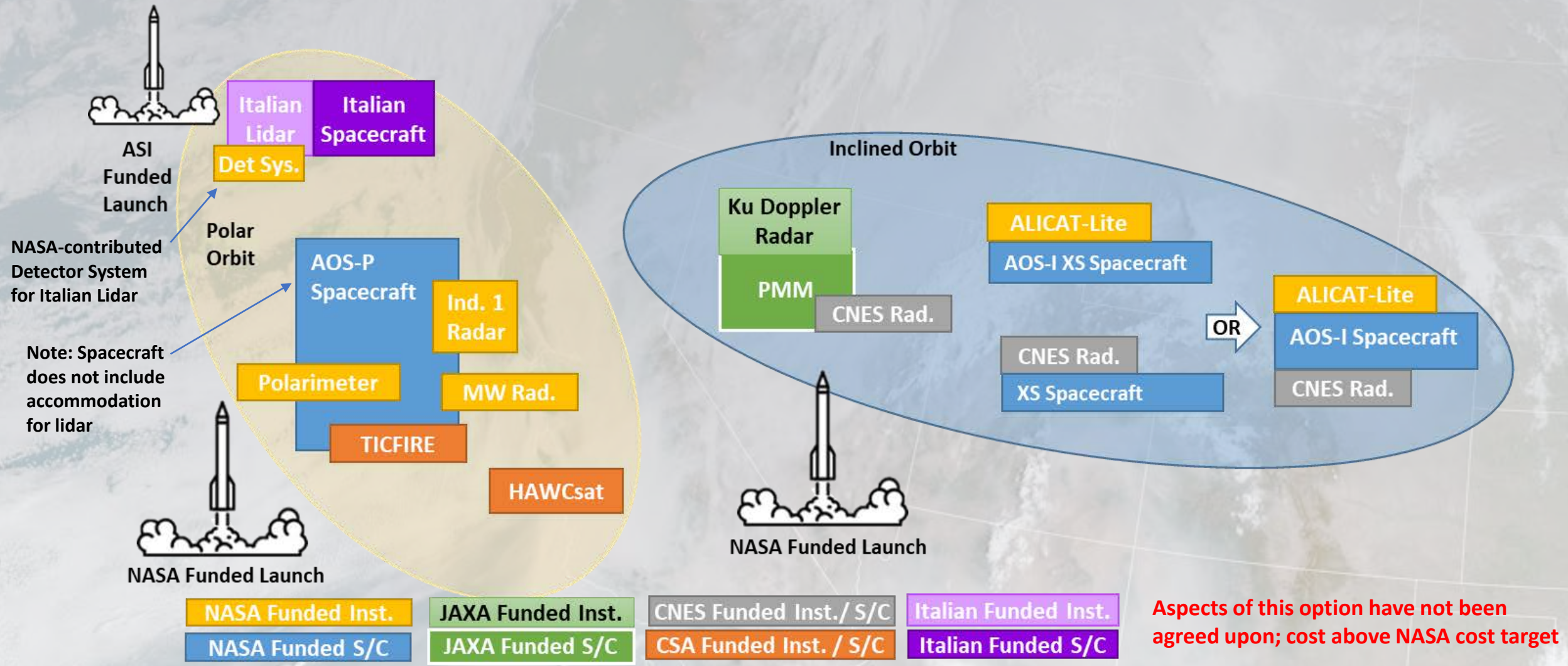
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Aspects of this option have not been agreed upon; cost above NASA cost target

# AOS Content Option D7a – Partner with Italian Lidar Mission and Add Lidar and Dual Radiometers in Inclined Orbit



Options still require detailed consideration from NASA and International Partners – agreements have not yet been made



Aspects of this option have not been agreed upon; cost above NASA cost target

- Target agreement on AOS science capability and content by June 2023
  - Hold an Interim Progress Review to assess feasibility of content options
  - Brief ESD senior management to determine the forward approach
- Proceed with planned instrument and spacecraft studies and development procurement preparations
- Complete Lidar and Radar instrument studies by end of year 2023
  - Includes study of single- and dual-band radar concepts

- ESD has selected names of AOS-Storm and AOS-Sky for the AOS elements
- Plan is to allow science capability studies develop further to determine how to roll out the use of the new names and relationships they represent