

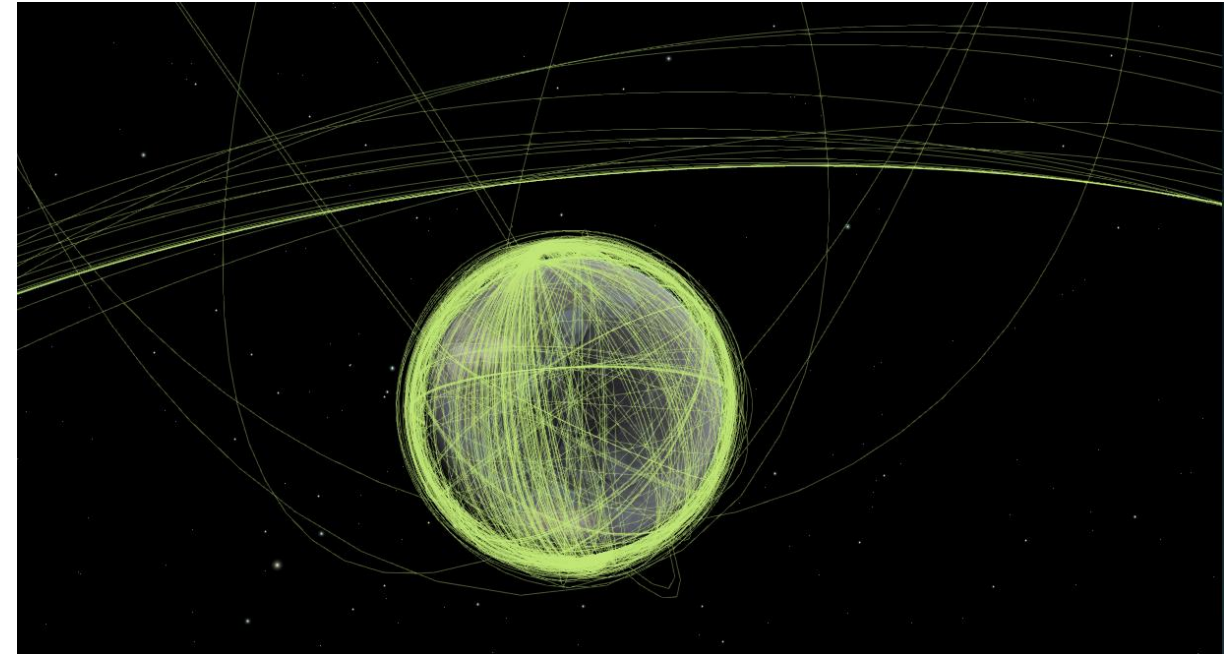
UNIVERSITÀ
DEGLI STUDI
DI PADOVA

Design, analysis and performance evaluation of innovative focal plane assemblies for space telescopes

Giovanni Trevisanuto - 40th Cycle

Admission to the 1st year - 13/11/2024

- Earth Observation from satellites is experiencing a significant growth
- New small satellites constellations are reshaping the EO market
- High demand for data with ever improving spatial and temporal resolution



Operational EO satellites. Credits: ESRI.



Dove satellite. Credits: Planet Labs.



EarthNext satellite. Credits: Officina Stellare.



Focal Plane Assembly

Must ensure
stability under
different operating
conditions

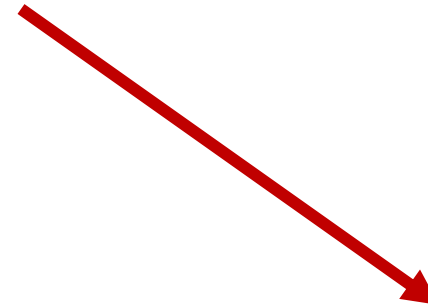
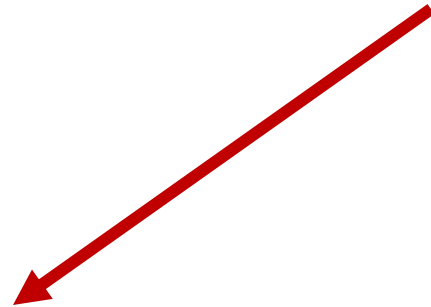
Design is crucial

Must ensure
correct alignment
of the sensors with
the optical axis

AIV/AIT is crucial



Exploring innovative FPA designs

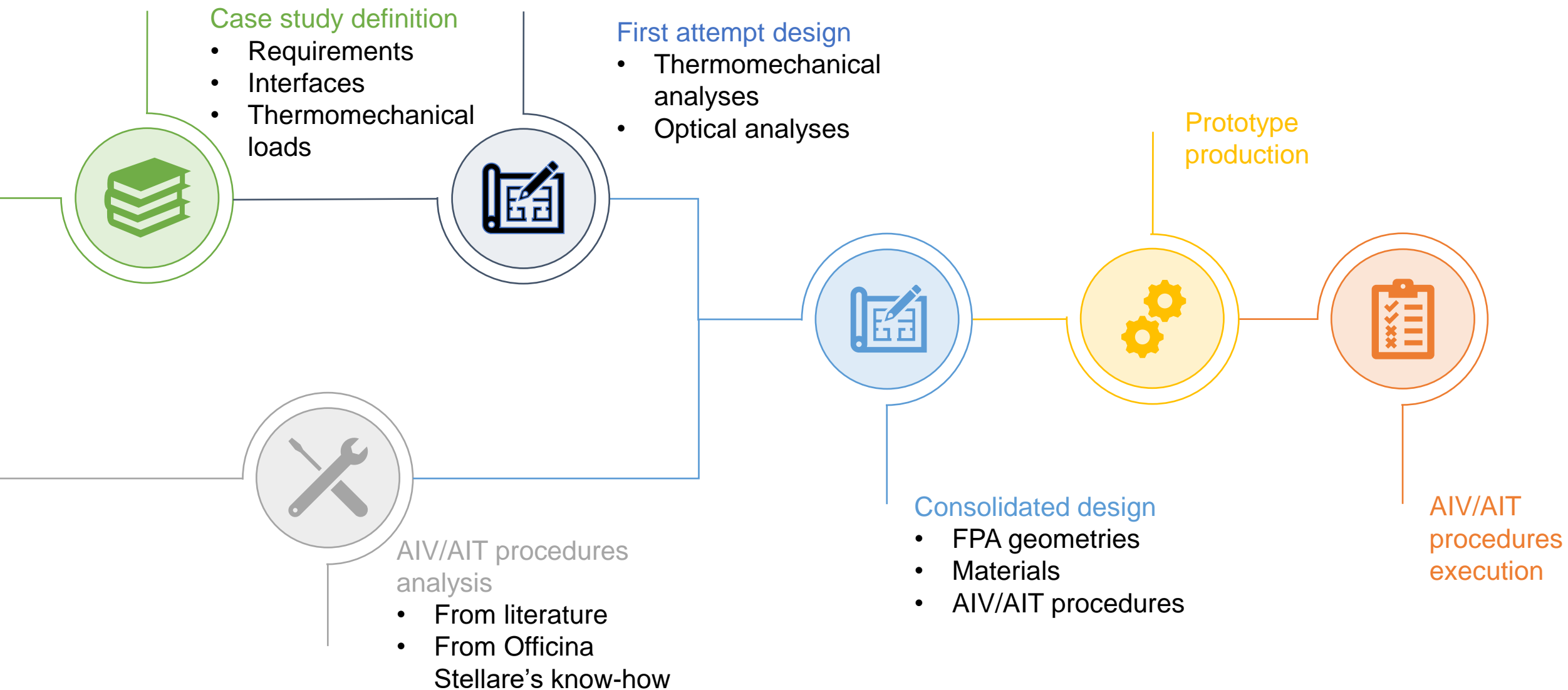


High performance

Simple integration



Research structure





High-level timeline



Case study definition

- Requirements
- Interfaces
- Thermomechanical loads

First attempt design

- Thermomechanical analyses
- Optical analyses

Prototype production

Consolidated design

- FPA geometries
- Materials
- AIV/AIT procedures

AIV/AIT procedures execution

AIV/AIT procedures analysis

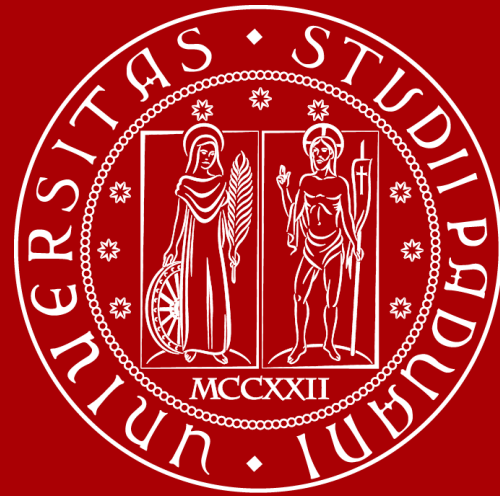
- From literature
- From Officina Stellare's know-how

First year

Second year

Third year

Thanks for the attention



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