

Cosmic Vision 2015-2025 Technology Plan

Industry day, Estec 21 November 2008

This file corresponds to one of a series of presentations made during this meeting. The complete set of presentations is available to download from:

<http://sci.esa.int/CVIndustryDay2008>

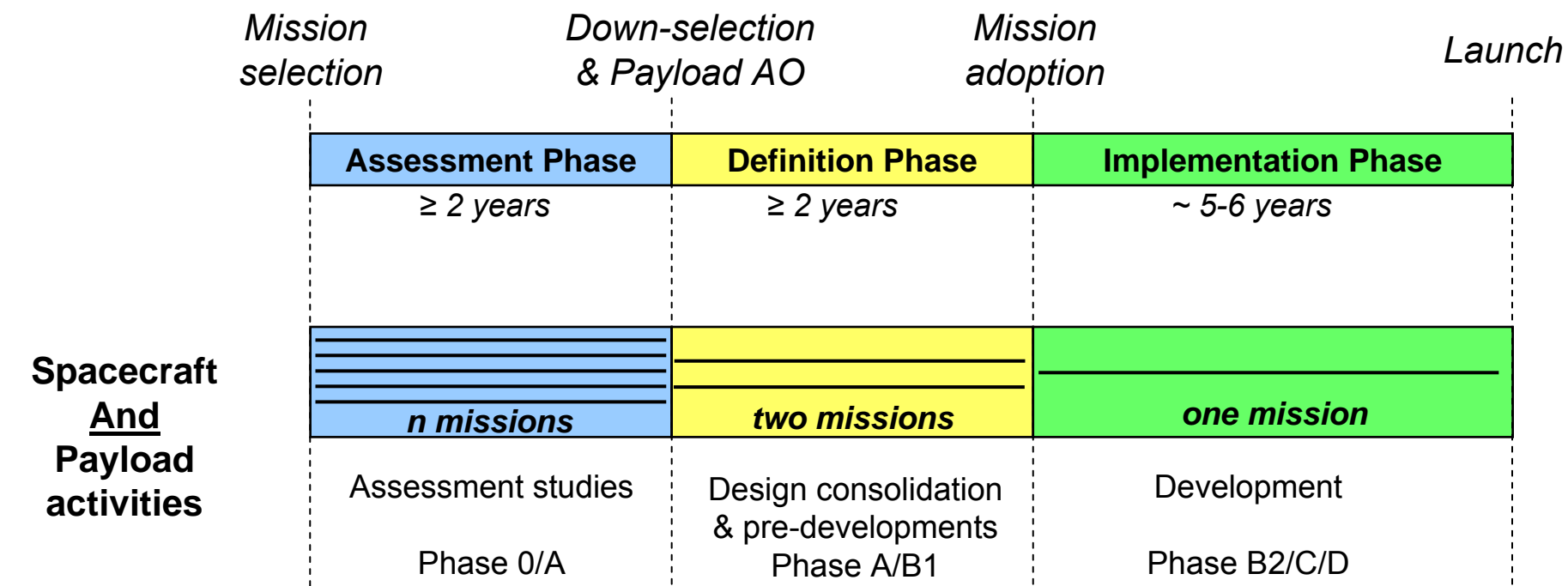
Agenda

1- Status of Cosmic Vision Plan	10:00 - 10:40
General Status - F.Safa	
2- Overview of M-Class missions	10:40 – 11:30
Solar Orbiter – Ph.Kletzkine	
Cross-Scale, Marco-Polo – P.Falkner	
Plato, Euclid – N. Rando	
3- Overview of L-Class missions	11:30 – 12:10
IXO mission – N.Rando	
LISA – A.Gianolio	
Outer Planet Mission – P.Falkner	
4- Technology Development Plan Implementation	12:10 – 12:30
Implementation procedures – M.Bavdaz	
Implementation schedule – M.Bavdaz	

General Status

Mission Assessment Phase

First slice of Cosmic Vision Plan: Six M-Class and three L-Class missions are being assessed



ESA / Member States agreements

LOE

MLA

more on cosmic vision: <http://sci.esa.int/science-e/www/area/index.cfm?fareaid=100>



Directorate of Science and Robotic Exploration

M class missions

- **Six missions studied**
 - ✓ Five from CV 2015-2025 first Call: Euclid, Plato, SPICA, Marco-Polo & Cross-Scale
 - ✓ Solar Orbiter now included in CV slice 1
- **Current progress is compatible with a M-mission down-selection end 2009/early 2010 and a launch in 2017/2018**
 - ✓ Phase 0 completed for all M missions. All industrial studies completed in Sept 09,
 - ✓ Technology Plan (TDP) in place for ESA and in progress for Member States on instrumentation
 - ✓ Technical readiness status vs 2017-2018 launch: should be achievable, based on Phase 0 ESA studies
- **Budget compatibility: The overall CV budget envelope (~ 900 ME) can reasonably accommodate two (or more) M missions**
 - ✓ Will be further consolidated by the end of the Assessment Phase, following consolidation of Member State contribution on the Payload

Missions: Short term schedule

- **Industrial studies**

- ✓ Funded by ESA General Study Programme (GSP)
- ✓ All studies are organised in three phases
 - Design trade-offs & baseline selection (Phase 1)
 - Detailed design (Phase 2)
 - Programmatic (Phase 3, 1 month)
- ✓ Mid-term (baseline selection): Dec 08-Jan 09
- ✓ Study completion: Sept 2009

- **National Payload Studies**

- ✓ Instrument national studies are made in parallel with industrial studies
- ✓ Interface with the Study Science Team, Industry and Instrument teams ensured by ESA

L class missions

- **Three L-missions are being studied: Outer Planet mission (Laplace or Tandem), IXO and LISA**
 - ✓ Phase 0 completed for all L missions,
 - ✓ Technology Plan (TDP) in place for ESA and in progress for Member States on instrumentation
 - ✓ Slower progress than for M missions, due to international context, technical complexity and “primary” between Laplace/Tandem: Industrial studies not yet started, call for Instrumentation studies not yet issued.
- **Technical readiness status vs 2018 launch: Not demonstrated**
 - ✓ Poor for Outer Planet missions and IXO, based on Phase 0 ESA studies and TDP elaboration.
 - ✓ Subject to LISA Pathfinder success in-orbit and to satisfactory technology development progress for LISA.
- **Budget compatibility: None of the missions can be afforded within the overall CV budget envelope, without international collaboration.**

L missions: International collaboration scheme and constraints

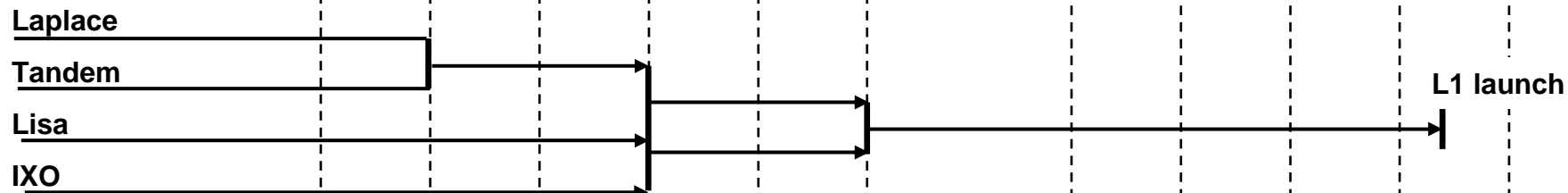
- **The three L missions are today foreseen in collaboration with the United States, and in addition for some with Japan**
 - ✓ Was the case for LISA: ESA/NASA mission
 - ✓ Was the case for Outer Planet Missions
 - ✓ Recent evolution for XEUS, re-named IXO (International X-ray Observatory)
 - ✓ But NASA budget constraints are not compatible with L-mission launch before 2020
- **Target launch date for L1 mission is now 2020**
 - ✓ Realistic schedule vs budget and technology preparation
 - ✓ The Outer Planet down-selection (Jupiter or Saturn) is confirmed for beginning 2009 and will be jointly done by ESA/NASA

L missions: Short term schedule

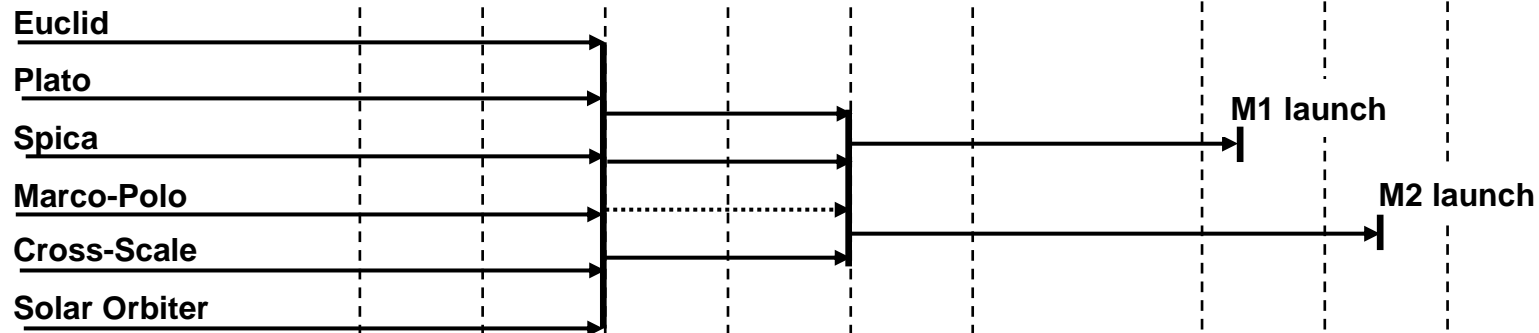
- **IXO Phase 0 (ESA study):** **Oct-Nov 08**
- **Laplace/Tandem down-selection:** **Jan 09**
- **IXO and Outer Planet studies (all dates preliminary)**
 - ✓ Invitation to Tender: April-May 2009
 - ✓ Industrial Studies: July 2009-Dec 2010
 - ✓ Call for Instrument studies: Feb-March 09
- **L1 mission down-selection:** **beginning 2011(tbc)**

Cosmic Vision timeline summary

L-class missions



M-class missions



2007 2008 2009 2010 2011 2012 2017 2018 2019 2020



Directorate of Science
and Robotic Exploration