

The background of the slide is a deep space image featuring a complex network of purple and pink filaments, likely representing the cosmic web, set against a dark field of stars and distant galaxies.

The ESA Challenge

Space Science roadmaps for the Cosmic Vision plan 2015-2025

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Science on Low Cost Space
Missions
PPARC KITE club meeting
24 Januray 2007, London





Herschel



Solar
Orbiter



JWST

Cosmic Vision



GAIA

2009-2015



LISA

Astrophysics



Planck



Bepi

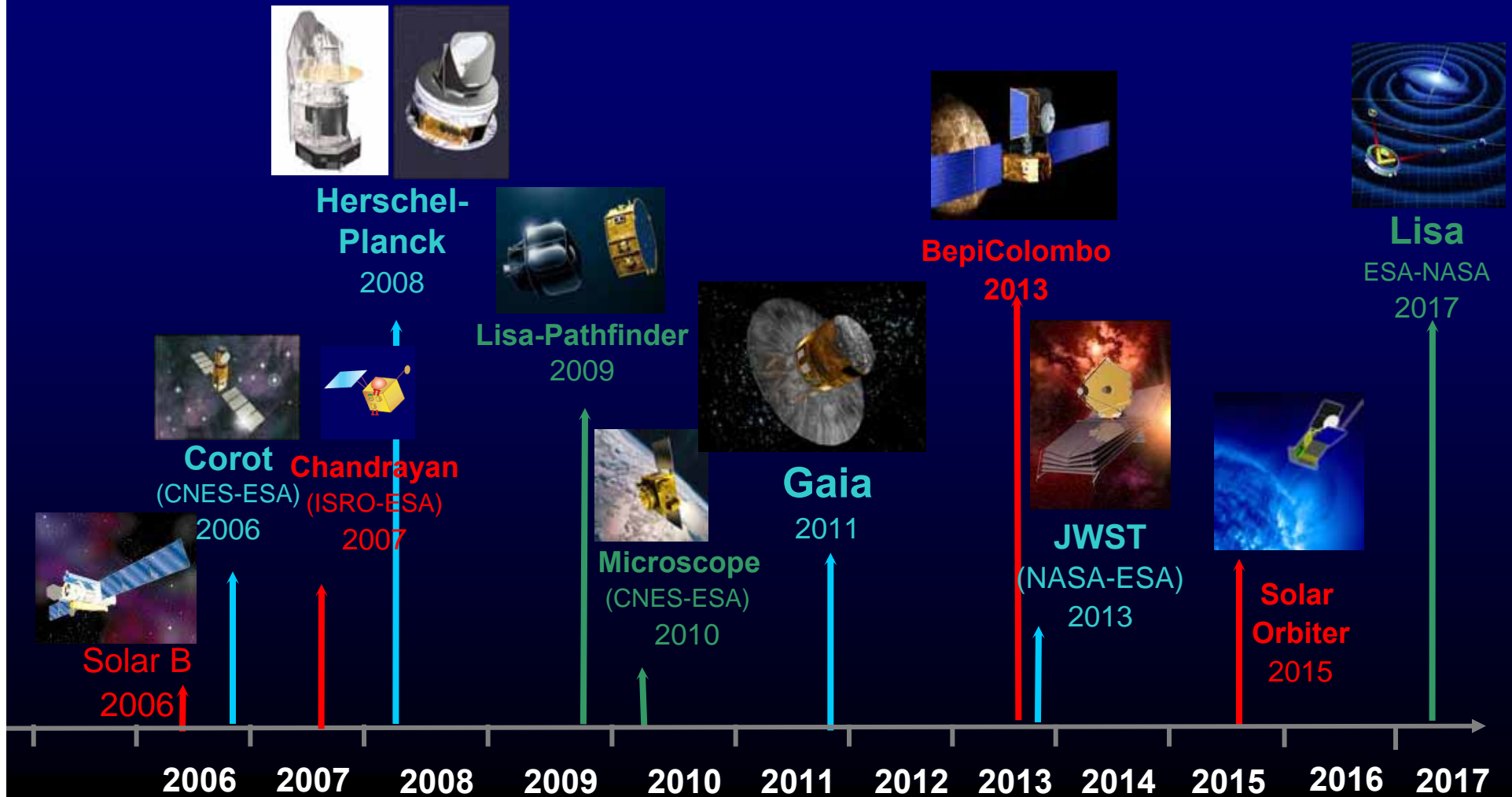
Colombo

Planetary missions
Planetary missions

+

**Science
brought by
Exploration Programme
(Aurora)**

Missions in preparation



ESA's new long term plan
for space science

COSMIC VISION

2015-2025

*Cosmic Vision
2015-2025*

Cosmic Vision process

Cosmic Vision 2015 –2025 process launched on 2 April 04 with call for Science themes

1 June 04: deadline for proposal submission

July 04: Analysis of responses by the ESA Science advisory bodies (AWG, SSWG, FPAG, SSAC)

15-16 September 04: Workshop in Paris (~400 participants)

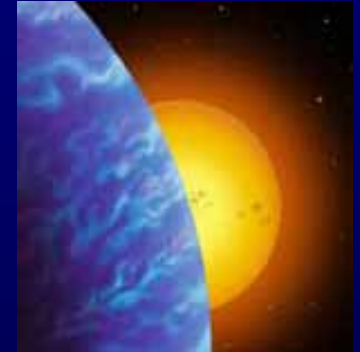
Nov 04: progress report to SPC

Spring 05: presentation of Cosmic Vision 2015-2025 to community

May 05: Final Presentation of Cosmic Vision to SPC

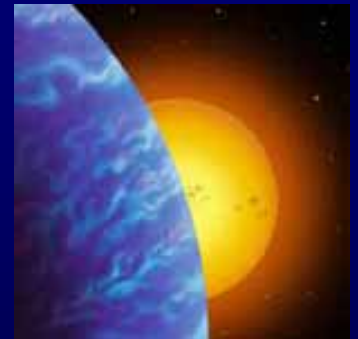
Grand themes

1. What are the conditions for life and planetary formation?
2. How does the Solar System work.
3. What are the fundamental laws of the Universe?
4. How did the Universe originate and what is it made of?

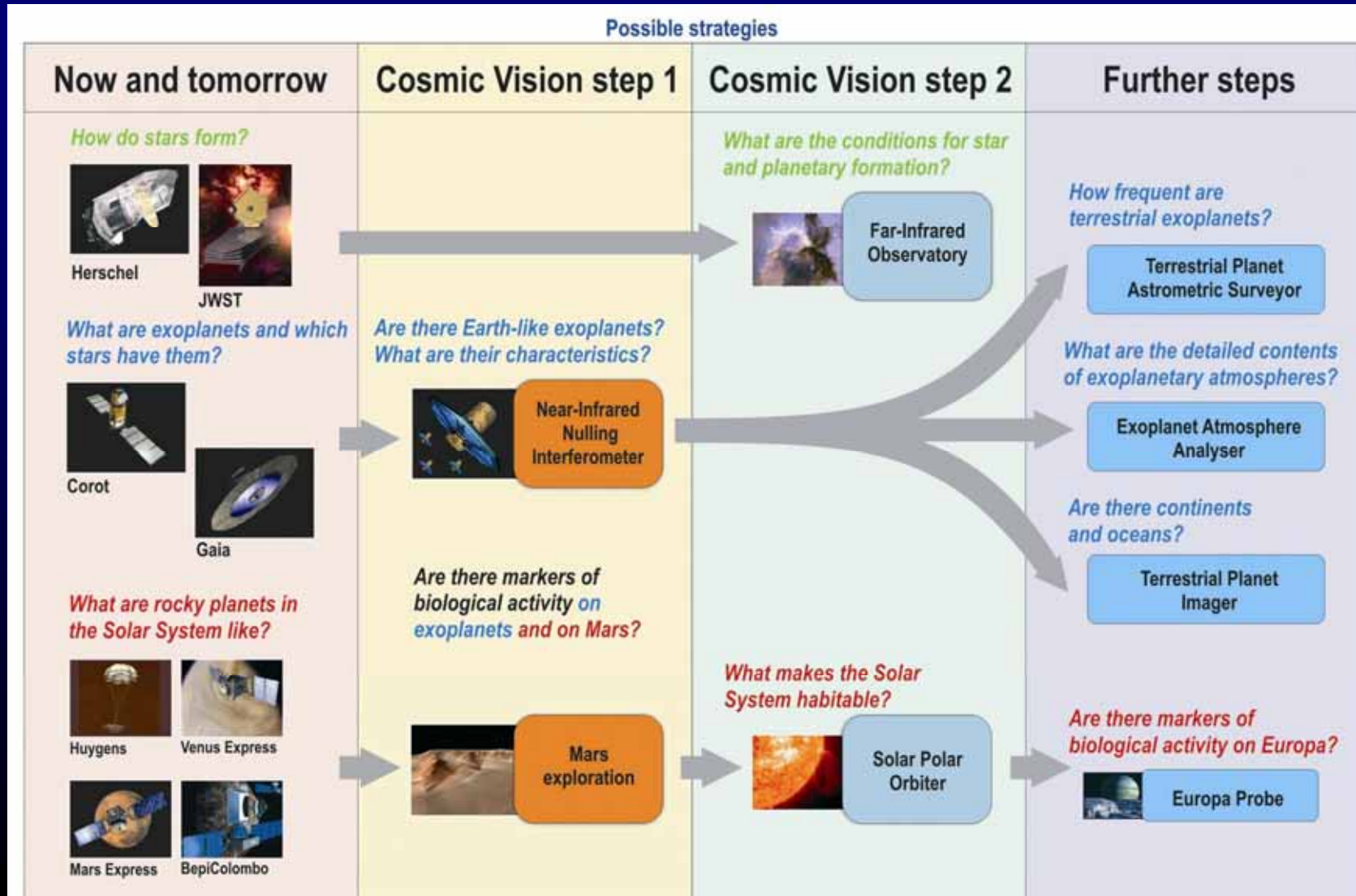


1. What are the conditions for life and planetary formation?

Place the Solar System into the overall context of planetary formation, aiming at comparative planetology



1. What are the conditions for planetary formation and the emergence of life?



2. How does the Solar System work ?

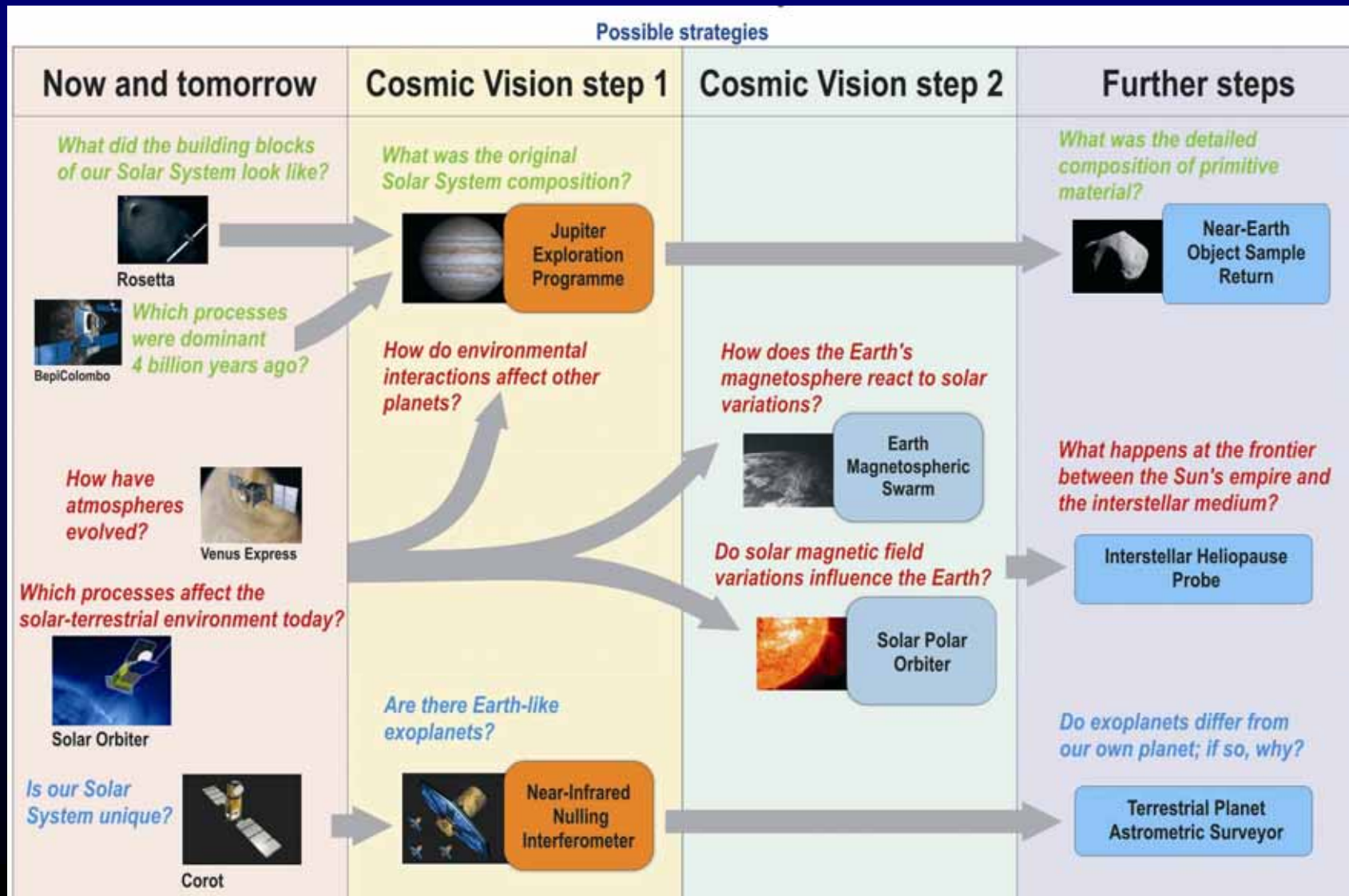
2.1 From the Sun to the edge of the Solar System

2.2 Gaseous Giants and their Moons

2.3 The Building Blocks of the Solar System: Asteroids and Small Bodies



2. How does the Solar System works?



3. What are the fundamental laws of the Universe?

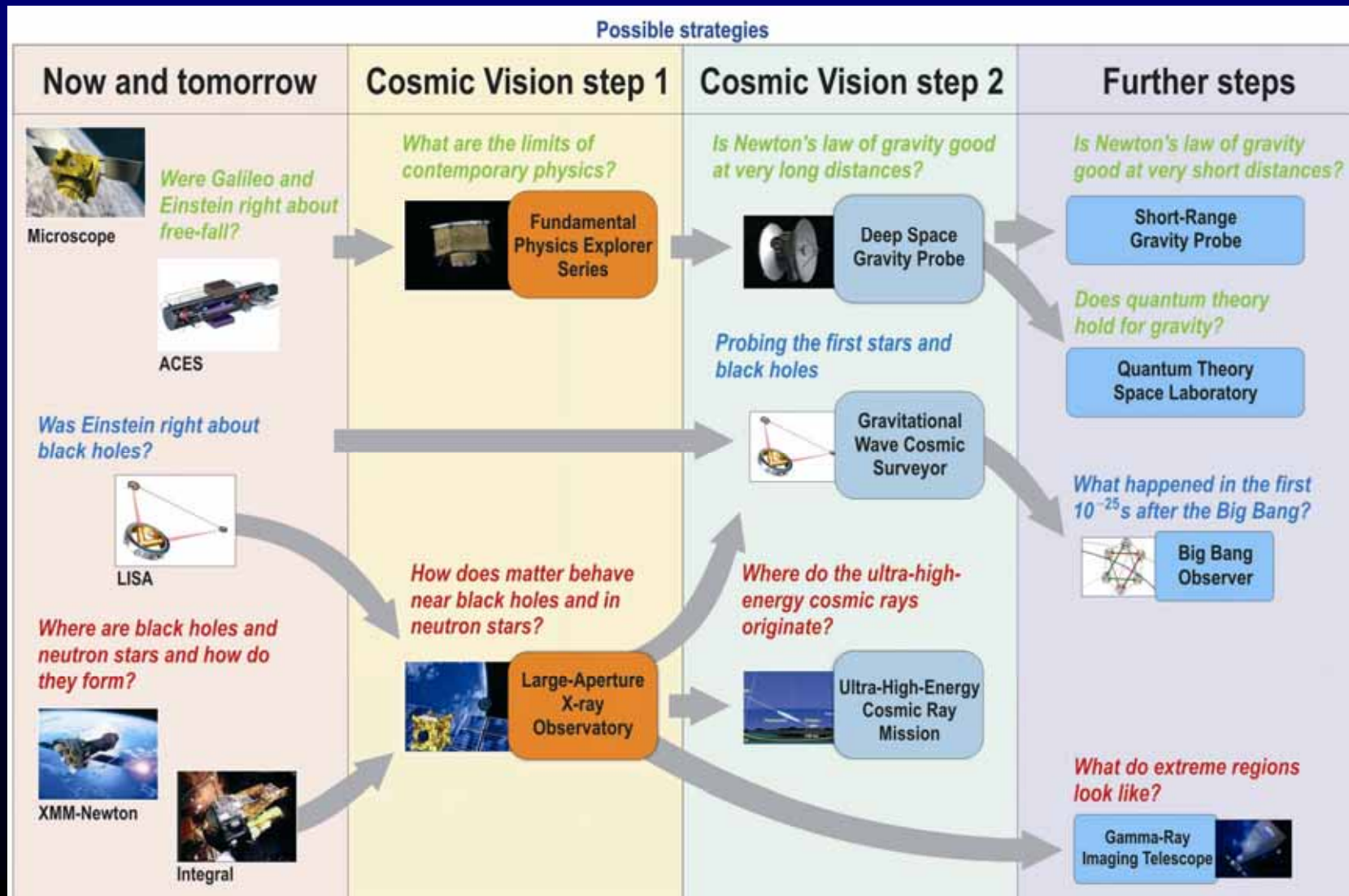
3.1 Explore the limits of contemporary physics

3.2 The gravitational wave Universe

3.3 Matter under extreme conditions



3. What are the fundamental laws of the Universe?



4. How did the Universe originate and what is it made of?

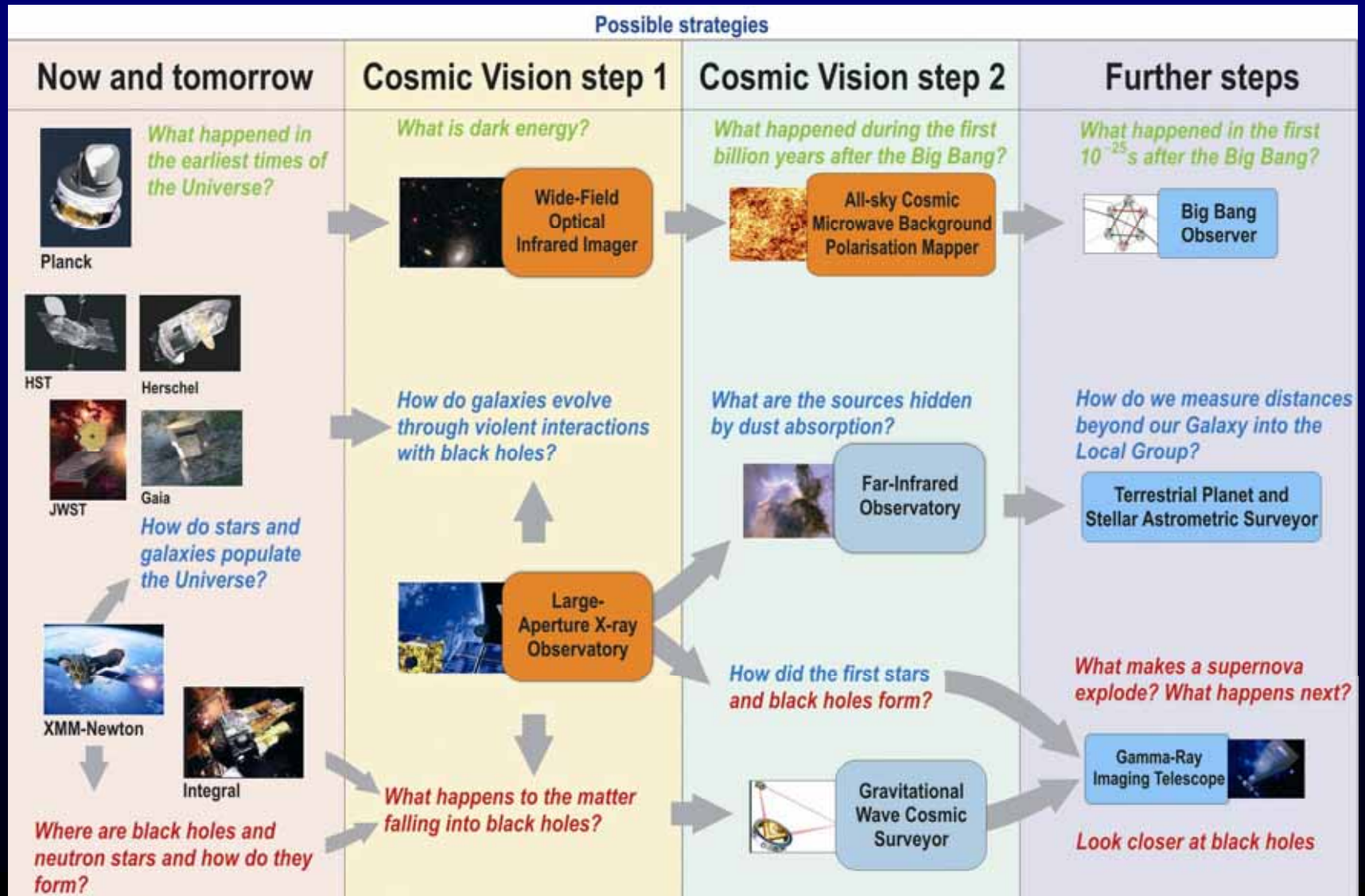
4.1 The early Universe

4.2 The Universe taking shape



4.3 The evolving violent Universe

4. How did the Universe originate and what is it made of?



COSMIC VISION 2015 – 2025

Implementation

Programme Slices

- To implement the major objectives of **Cosmic Vision 2015-2025** while keeping flexibility of planning, 2-3 programme slices of a 3~4 year period each are foreseen for missions to be launched in 2015-2025.
- Balance of scientific disciplines will depend on mission mix (size, number and sequence of missions) and inclusion of international cooperation.
- The forthcoming **Call for Mission Proposals** will cover the first slice (2015 – 2018). Next slices to be implemented through subsequent Calls.

Mission Mix

- **ESA should concentrate on what MSs cannot do and only ESA can do.**
- **Cosmic Vision plan to concentrate on implementation of complex missions (L missions, 2yr budget max) and medium complexity missions (M missions, 1 yr budget max).**
- **The implementation of a small ESA (≤ 75 M€) mission programme is not considered.**
- **Mission frequency (in a steady-state situation): 1 launch every 18 months.**

Mission Mix

- **First Call for Mission Proposals to aim at the final selection of 1 “medium” and 1 “large” mission).**
- **Future Calls structured to meet the needs of flexibility and balance of the Cosmic Vision plan.**
- **Complementarity with nationally and internationally led missions must be assured and structured so that the ESA participation be identified in the Call for Mission Proposals.**

2007 Call for CV Mission Proposals

First Call for implementation of CV2015-2025, release end Feb 07.

Available budget for first slice: ~ 950 M€.

The Call will be fully open:

No a priori size restriction, but clear cost guidelines

Mission could be;

**a small/medium size M project (≤ 300 M€ cost to ESA) or
smaller projects totalling 300 M**

a large ESA led L project (≤ 650 M€ cost to ESA)

**L mission will serve for long term technological development
for possible launch in ≥ 2018 .**

1M + 1 L missions will eventually be implemented.



Schedule of Call for proposals

Call for mission proposals released	Feb 2007
Letters of Intent due	early March 2007
Briefing to proposers at ESTEC	end March 2007
Mission proposals due	end June 2007
WG select 3 <u>S-M</u> & 3 <u>L</u> missions for study phase	Oct 2007

All dates to be confirmed!

M Missions schedule

Assessment phases	June 2007–Dec 2008
Internal assessment phase in 2007	
Competitive industrial assessment in 2008 (emphasis on payload, cost and risks)	
Presentation of study results	Jan 2009
WG/SSAC recommendation for selection	April 2009
SPC confirmation of 2 missions for definition study	May 2009
Start of 2 competitive Industrial Definition studies	Nov 2009
WG/SSAC recommendation for 1 mission	Apr 2011
SPC confirmation of 1 mission for ITT issue	May 2011
SPC approval of CaC and P/L formal agreement	Feb 2012
Industrial implementation phase	May 2012
Launch	Mid 2017

L Mission concept schedule

Study and Technology identification phase	Nov 2007–June 2009
WG/SSAC recommendation for 2 missions	Oct 2009
SPC confirmation of 2 missions for definition study	Nov 2009
Two competitive Industrial Definition studies	Jan 2010-June 2011
WG/SSAC prioritisation	Sep 2011
SPC confirmation of 1st mission for ITT issue	Nov 2011
SPC approval of CaC and P/L formal agreement	July 2012
Industrial implementation phase	Sep 2012
Launch	2018

Conclusion

- **Cosmic Vision is based on a portfolio of missions of various sizes selected from successive calls allowing to progressively develop a plan achieving continuity and balance in the implementation of the scientific priorities embedded in the Cosmic Vision themes.**
- **The new plan will be implemented via a set of successive selection cycles of mission proposals for launching space missions in the 2015-2025 time frame.**
- **It provides the flexibility needed to adjust the pace of implementation to the evolution of the financial situation of the programme.**