

EURO-CARES: A Roadmap for a European Sample Return Mission Curation Facility

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WP5 Workshop and Meeting, Frankfurt



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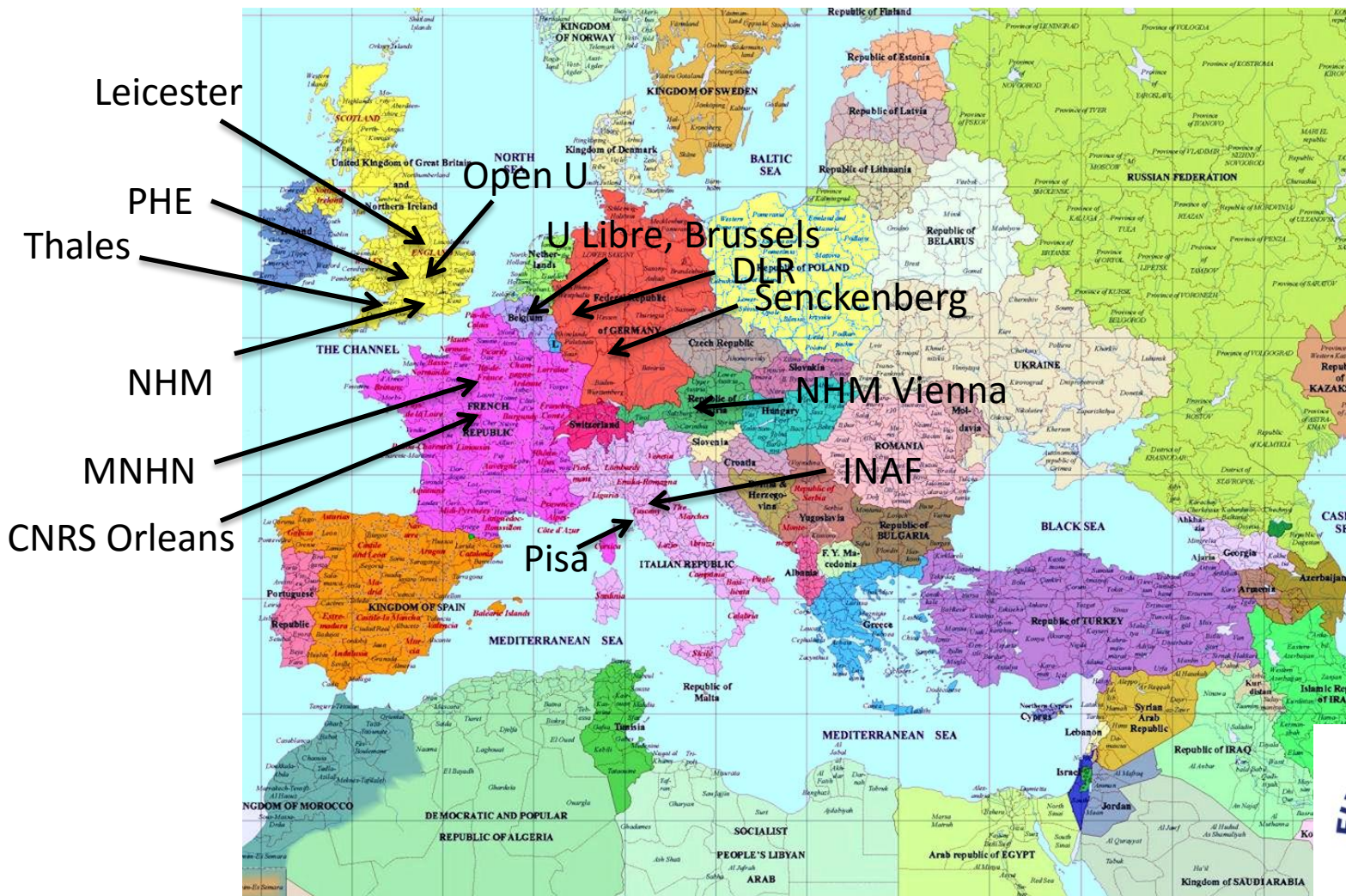


- **EURO-CARES: European Curation of Astromaterials Returned from the Exploration of Space**
- Runs January 2015- December 2018
- Mission: To roadmap a European Sample Return Curation Facility to receive and curate samples returned from **Asteroids**, the **Moon** and **Mars**



The EURO-CARES Team

13 partner Institutes representing 6 different nations



Aims and Objectives

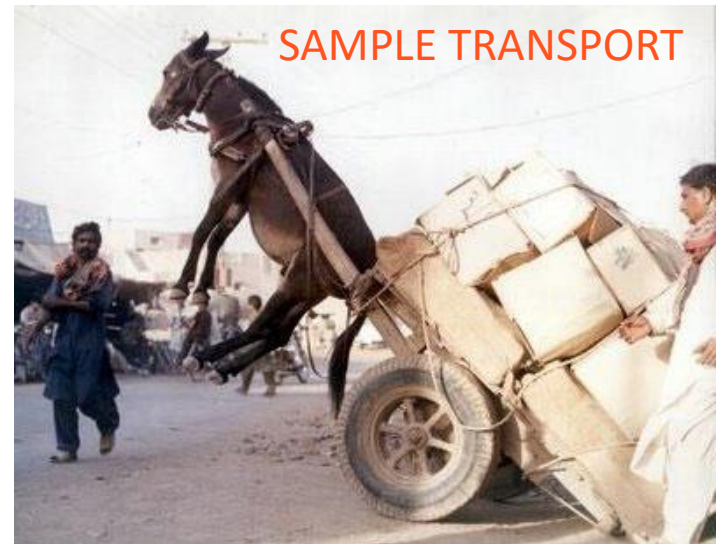
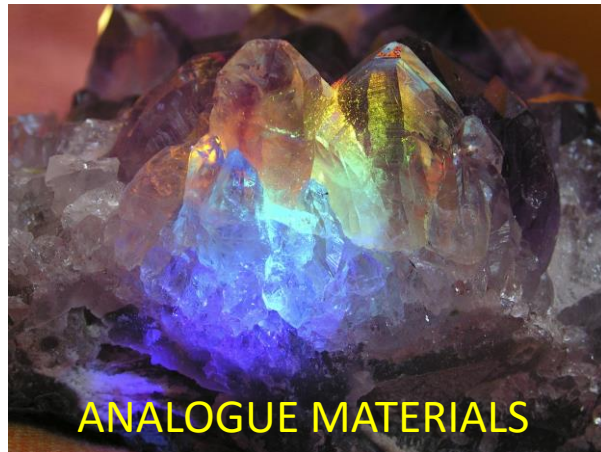
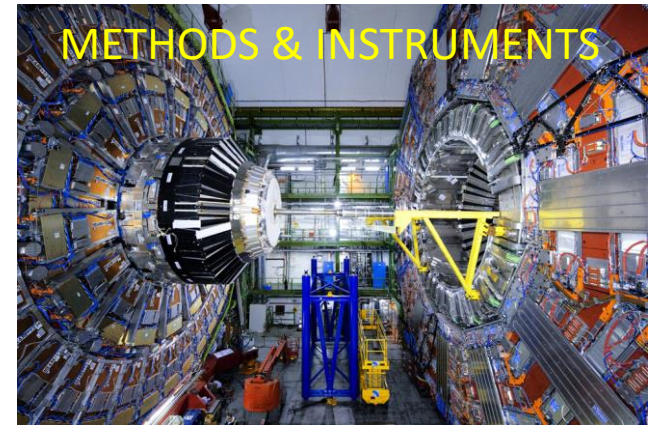
- [1] Review the **current state of the art** in extraterrestrial sample curation, by examining the work being done in Europe and internationally and to write a technical report on current best practice;
- [2] Devise a plan for **terrestrial planetary protection** that is effective, legally compliant and realistic, while minimising risk to current scientific study and optimising access to researchers for future studies;
- [3] Review current knowledge and the essential requirements for such **facilities**, including building infrastructure and design, procedures and protocols, security, environmental conditions, documentation and databasing;
- [4] Review the most suitable instrumentation for sample analysis, establish the optimum **methods and instrumentation** and identify those areas in which innovation and development will be required to enhance the curation and analytical capabilities of the ESCF;
- [5] Make recommendations regarding **the use of analogue samples** as proxies for returned extraterrestrial materials. We will establish guidelines, deliver catalogues or potential analogues, and recommendations ready to be used in the event of a sample return mission. The analogue proxies are necessary in a curatorial facility for testing sample handling, storage and preparation techniques. This includes the testing of planetary protection measures as well as validating new analytical methods.
- [6] Review suitable **portable receiving facilities** and determine the technology required in order to be able to transport samples (including those with a potential biohazard) following return to Earth most effectively.



Sample Return Missions

Mission	Year of sample return to Earth	Target	Return material	Country
Past				
<i>Apollo</i>	1969-1972	Moon	382kg rock and regolith	USA
<i>Luna</i>	1970-1976	Moon	326g rock	Russia
<i>Genesis</i>	2004	Solar Wind	Atoms implanted into various media	USA
<i>Stardust</i>	2006	Comet coma (81P/Wild-2) and interstellar grains	Grains implanted into aerogel and impacted into Al foil	USA
<i>Hayabusa</i>	2009	S class asteroid (Itokawa)	1500 grains	Japan
Future				
<i>Chang'e 5</i>	2017	Moon	2kg	China
<i>Hayabusa-2</i>	2020	C class asteroid (1999 JU3)		Japan
<i>Luna-Grunt</i>	2020	Moon	Up to 1kg	Russia
<i>Osiris Rex</i>	2023	B class asteroid (Bennu)	60-2000g rock fragments	USA
<i>Mars Sample Return</i>	mid-2020s	Mars	500g	USA-Europe?
<i>Mars-Grunt</i>	Mid-2020s	Mars	200g	Russia
<i>Phootprint</i>	2025	Phobos	?	Europe-Russia
<i>Lunar Sample Return</i>	2020s	Moon, S.Pole Aitken Basin	?	Europe-Russia

EURO-CARES Technical Work-Packages



EURO-CARES WP2 – Planetary Protection

John Brucato (INAF): Lead

Petra Rettberg (DLR): Deputy

John Bridges (LEI): Mars Sample Return

Alan Bennett (PHE): Biosafety and Biosecurity

Alessandra Rotundi (INAF): Sample analysis expert

Andrea Tozzi (INAF): Optic technology designer

Luca Carbonaro (INAF): Technician

Ralf Moeller (DLR): Biologist

John Holt (LEI): Biohazard Technology

Project Fellow (INAF): Engineer



EURO-CARES WP3 – Facilities & Infrastructure

Ludovic Ferrière (NHMW): lead

Allan Bennett (PHE): deputy

PROJECT FELLOW

John Robert Brucato (INAF)

Ernesto Palombo (INAF)

Caroline Smith (NHM)

Tom Pottage (PHE)

Vinciane Debaille (ULB)

Luigi Folco (Pisa)

External members:

Matt Genge (Imperial)



EURO-CARES WP4 – Methods & Instruments

Matthieu Gounelle (MHNP): Lead

Ian Franchi (OU): Deputy

John Brucato (INAF)

Ernesto Palombo (INAF)

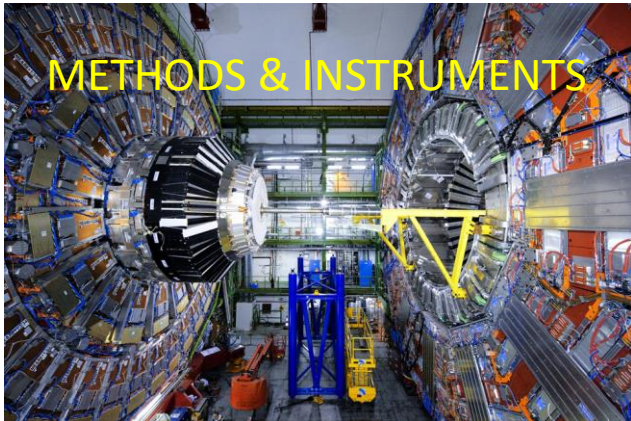
Yves Marrocchi (CNRS)

Bernard Marty (CNRS)

Sara Russell (NHM)

External members:

Jan Toporski (Witech, Germany)



EURO-CARES WP5 – Analogue Materials

Frances Westall, (CNRS) lead

Jutta Zipfel, (Senck) deputy

John Bridges (LEI)

Vinciane Debaille (ULB)

Luigi Folco (Pisa)

Joe Michalski (NHM)

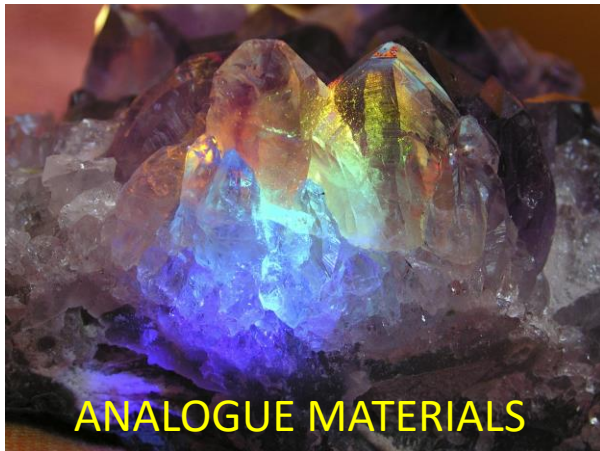
Penny Woznikiewicz (NHM)

External members:

Jesus Martinez-Frias (Madrid)

Katherine Joy (University of Manchester)

Martin Lee (University of Glasgow)



EURO-CARES WP5 – Sample Transport



John Vrublevskis (SEA): Lead

Lucy Berthoud (SEA): Recovery and Initial Inspection

John Holt (LEI): Preparation for Recovery

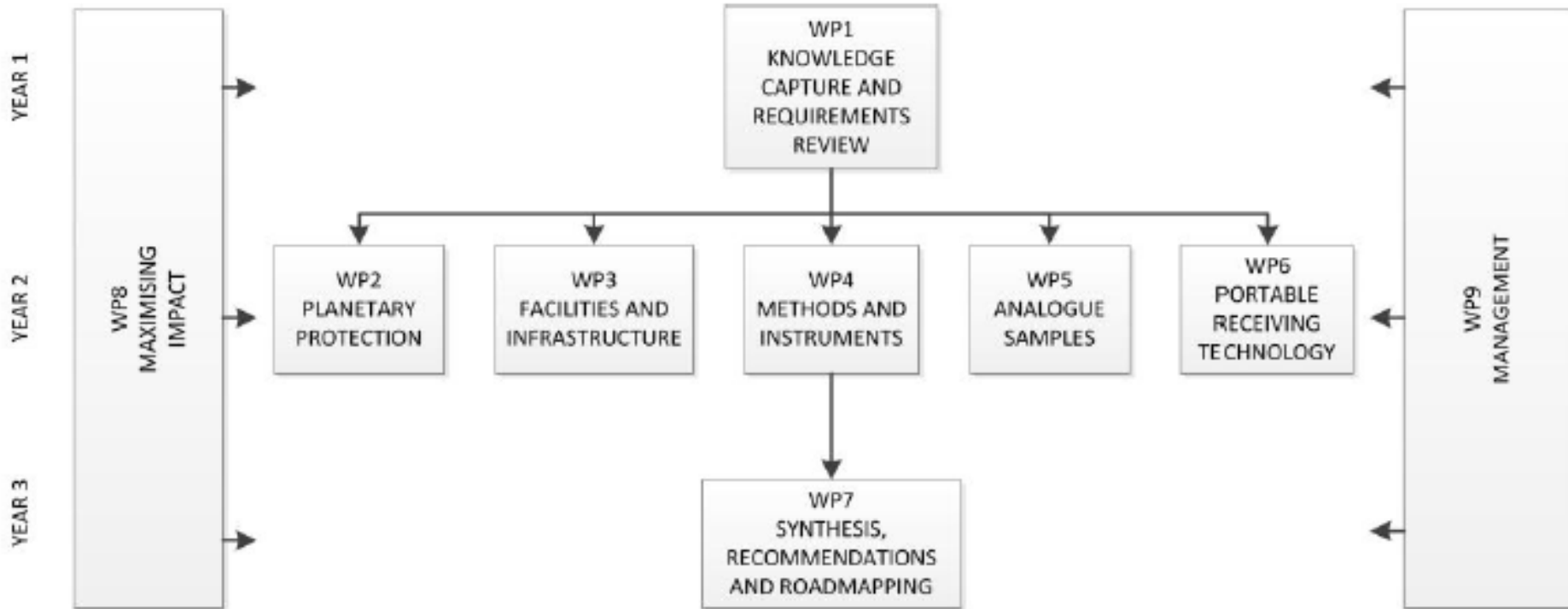
Ernesto Palombo (INAF): Transport to Curation Facility

Mike Guest (SEA): Planetary Protection and Innovations

Allan Bennet (PHE): Biohazard and Biosecurity

Stefano Matussi (SEA); Mechanical Design

Work Plan



Stakeholder Engagement



Education



Public



Government and Policy Makers



Space Agencies



Science and Engineering Peers

EURO-CARES Outreach Work-Package



Monica Grady (OU), Lead
Supported by all EURO-CARES team members

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EURO-CARES

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EURO-CARES (European Curation of Astromaterials Returned from Exploration of Space) is a three year, multinational project, funded under the European ...

Horizon 2020 EURO-CARE...

Horizon 2020 EURO-CARES WP3 ...
The meeting in Vienna is ...

WP4 Meeting - Paris

Horizon 2020 EURO-CARES WP4 ...
d'Histoire Naturelle, Paris ...

About EURO-CARES

EURO-CARES (European Curation of
Astromaterials ...

WP5 - Analogue Samples

Work Package 5 - Analogue
Samples. The aim of the ...

Meetings

Here are the dates and information
relative to the different meetings ...

Registration and Abstract ...

Registration and Abstract
Submission. Registration to ...

[More results from euro-cares.eu »](#)

[PDF] EURO-CARES (108 kB)

ec.europa.eu/rea/pdf/euro_cares_640190.pdf

EURO-CARES. Project Reference: 640190. Funded under: H2020-COMPET-2014 - Competitiveness of the European Space Sector: Technology and Science.

[PDF] EURO-CARES: PROJECT ROADMAP OF A ...



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Jan 30, 2012 - ESA's Headquarters are located in Paris. The main administrative centre, ESA HQ 'Mario Nikis' is located in the 15th arrondissement and ESA