Europeans: Once Explorers, Always Explorers

ESA's Space Exploration Plans

UK Space Conference

Manchester
1 June 2017

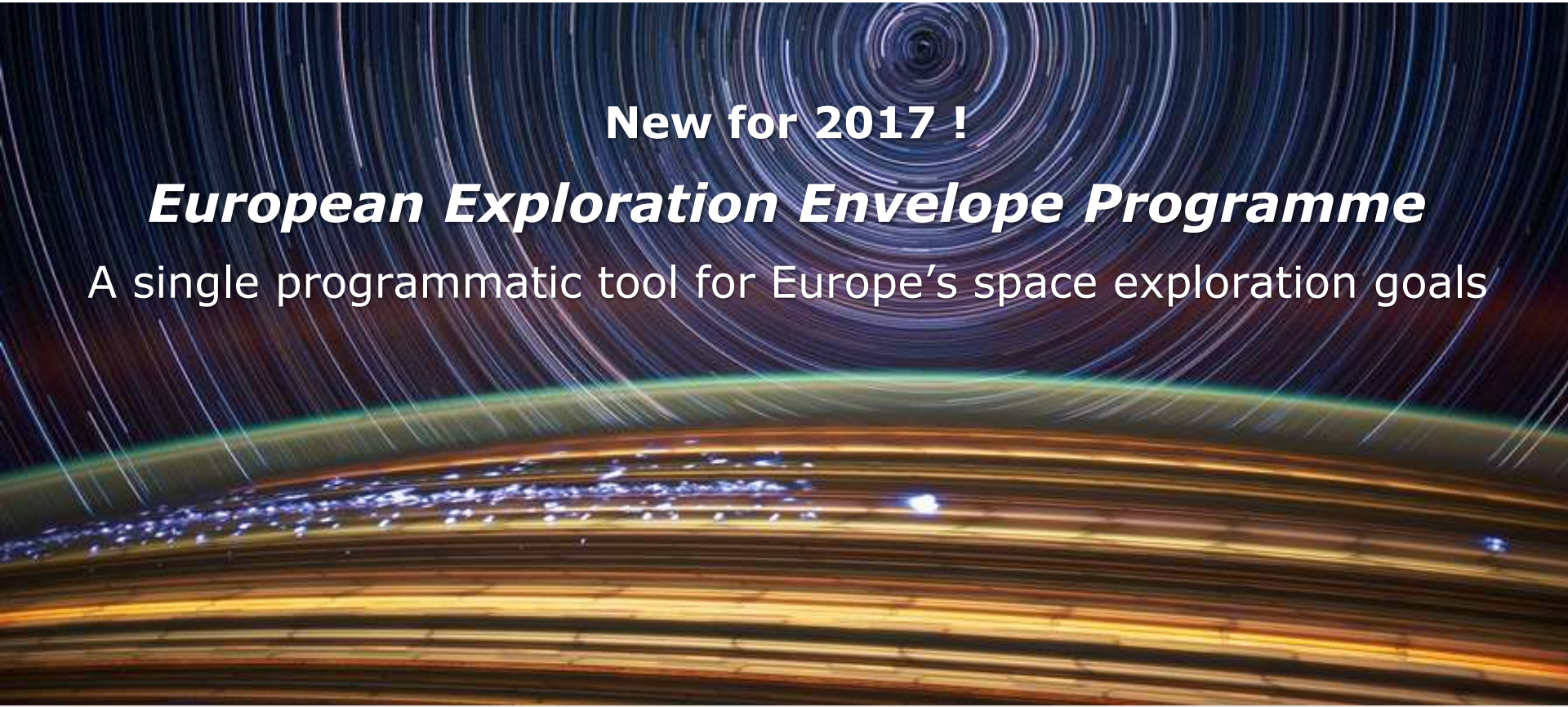
Why Explore ?

New knowledge

Challenge driven innovation

Inspiration

Global partners



New for 2017 !

European Exploration Envelope Programme

A single programmatic tool for Europe's space exploration goals

E3P content: 2017-2022

Safe ISS operation & astronaut missions

Service modules for first two Orion missions

World-class science in the space environment

First Mars life search mission

First European science & technology for lunar surface

New human and robotic missions readied for decision at CM19

Technology, Commercial Partnerships and Benefit Management

Commercial Partnerships driving Exploration

Exploitation of LEO – Looking beyond the ISS

Humans beyond LEO - Deep Space Gateway and Orion

<u>Outcome</u>

Addressing key challenges :

- High power electric propulsion
- Radio-biological protection
- Logistics and life support

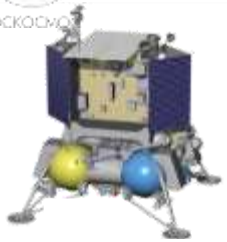
First European Astronaut missions beyond LEO

New opportunities for science and applications

Opens access to lunar surface

Roscosmos/ESA Cooperation on Lunar Exploration

RUSSIAN MISSION ROADMAP



Luna-25
Luna-Glob
(Lander)

2019

Luna-26
Luna-Resurs
(Orbiter)

2020

Luna-27
Luna-Resurs
(Lander)

2022

PILOT-D: navigation camera demonstrator

SPECTRUM: ground segment support to all missions

PILOT: Descent & Landing Navigation & Hazard Avoidance System

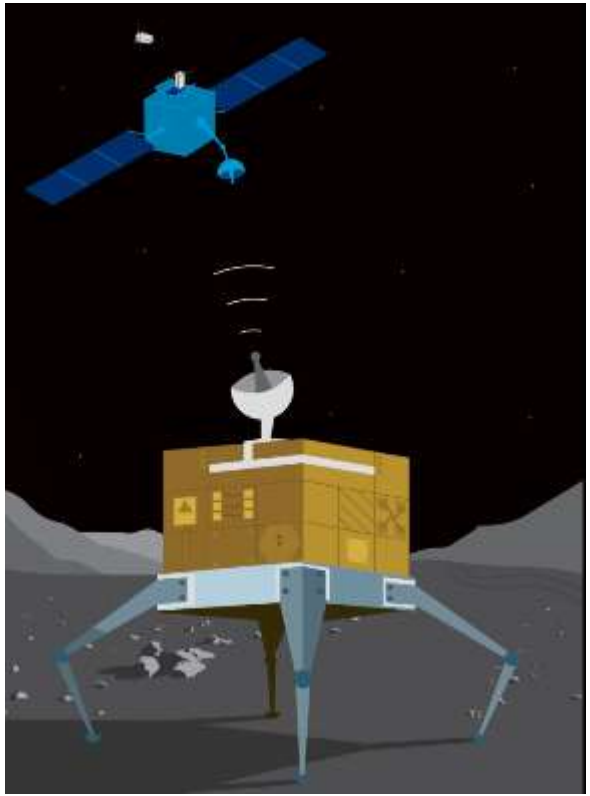
PROSPECT: Drilling & Sample Analysis Package

EUROPEAN LUNAR PRODUCTS

Lunar Robotic Commercial Partnership

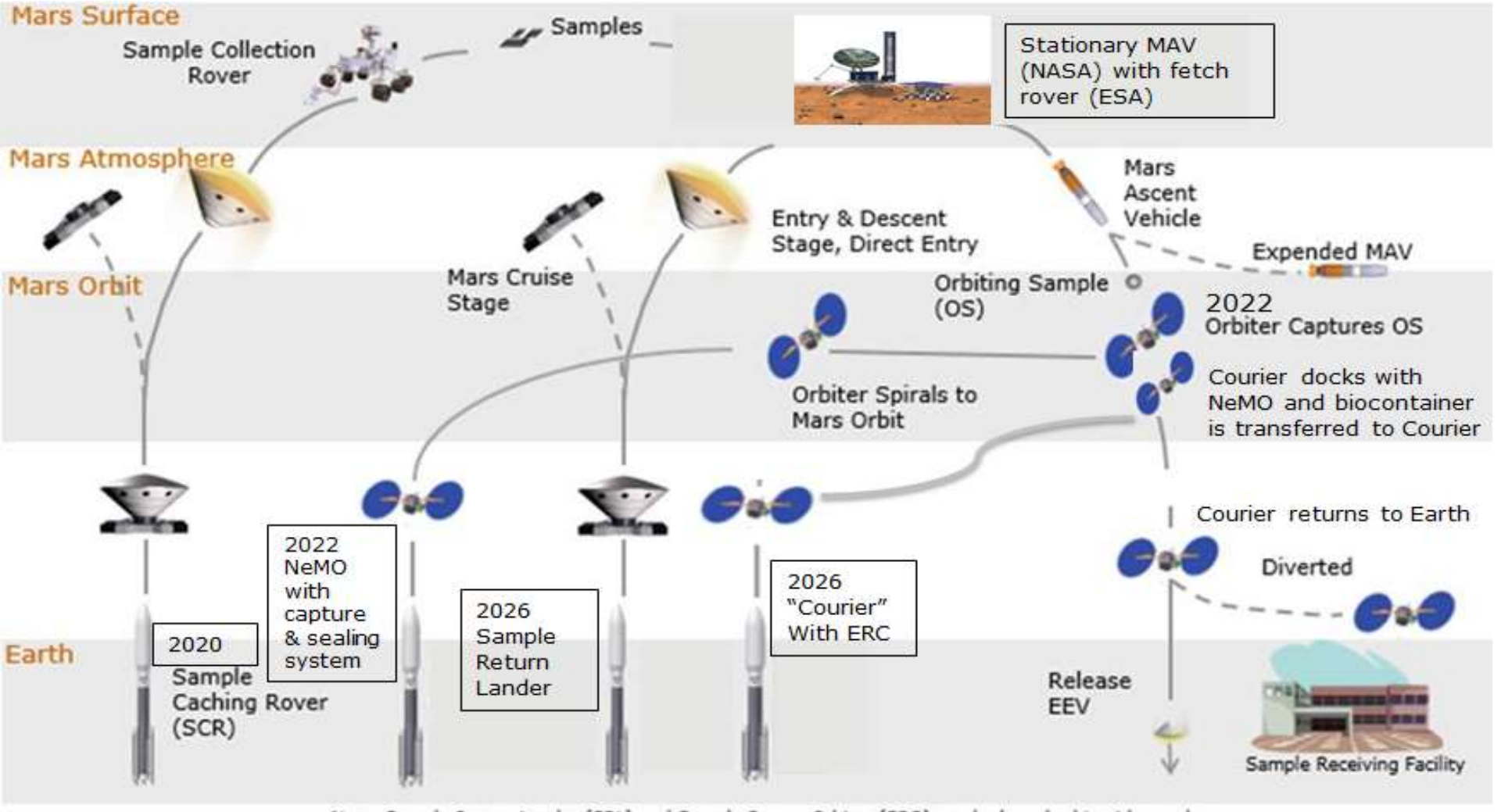
Outcomes

- Validation of ISRU processes/technologies
- Opportunistic lunar science
- Established commercial services for lunar exploration
- Academia engagement through education payloads
- Coordinated mission campaign with international Partners



Demonstration Mission for Human Lunar Surface Access

- Demonstration of integrated human-robotic mission scenario
- Return of lunar samples
- Risk reduction for human missions
- Establishment of logistic cargo lander



Note: Sample Return Lander (SRL) and Sample Return Orbiter (SRO) can be launched in either order

Goals for 2020s