

THE ROLE OF ITALIAN INDUSTRY IN SPACE EXPLORATION

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THE ITALIAN SPACE AGENCY (ASI)

ASI has been founded in 1988 with the purpose to promote, develop and disseminate the scientific research and technology applied in the Space field.

- Specific attention to the competitiveness of the Italian Space Industry, including SMEs
- ASI operates in “integrated teams” => industry and research teams under the supervision of ASI

ITALY AND EXPLORATION

- Since 1964 Italy acts as a pioneer in space
 - Exploration is a flagship program for Italy, enhancing the competitiveness of the national industrial and scientific community
 - Participation in successful ESA and NASA programs, with challenging roles for national industries
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- A composite image featuring a satellite with large solar panels and a circular antenna dish on the left, and a large, irregularly shaped grey rock representing an asteroid on the right. The background is black.

ISS and Mars : the top priorities

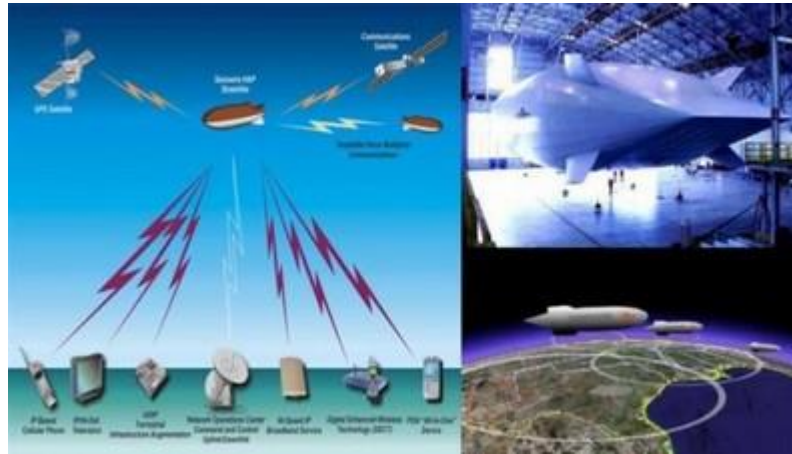
Italy considers ISS and Mars destinations as part of a single exploration process and works to maximize the technology and system synergies among these destinations as well as to exploit the respective benefits of robotic and human exploration.



EXPLORATION: the best case for a successful space industrial policy



- Economic and intellectual return out of the investments
- Worldwide international relations
- Competitiveness of the whole supply chain, from Large System Integrators (LSIs) to Small and Medium Companies (SMEs)
- Leader position in international supply chains
- Upgrade of technology capabilities and IPR
- Benefits in non-space related systems and applications



THE ITALIAN SUPPLY CHAIN

The strategic effort to encourage the development and growth of the manufacturing sector as well as other sectors of the space economy is a commitment at both national and international level in order to support industrial competitiveness.

ASI supports and foster the development of national LSI and SMEs

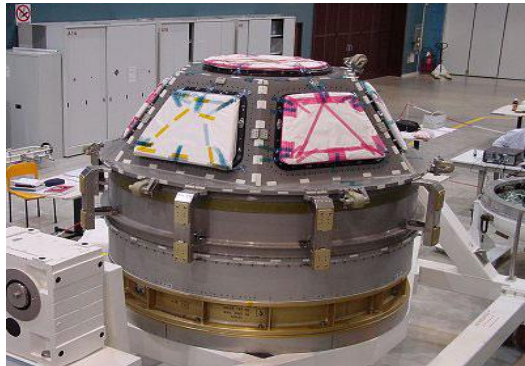


More than 50% of pressurized volume has
been built in Italy

Node 2 and 3



Cupola



Italy is the first country
in Europe in the ISS



Columbus/ATV

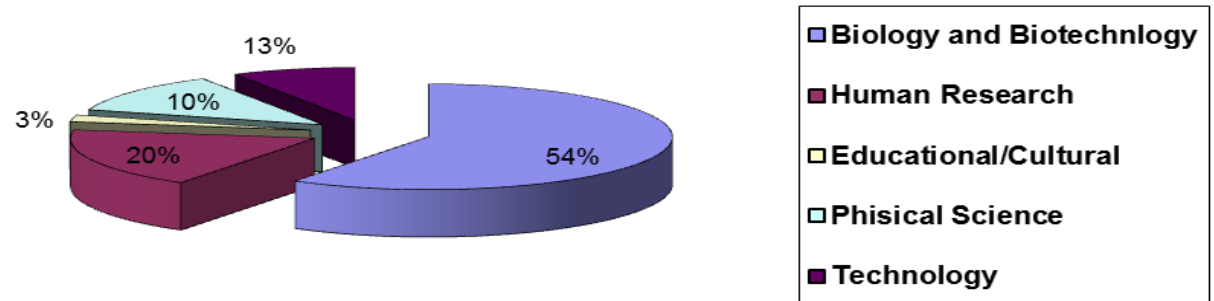


MPLM/PMM



- Since 2001, ASI has developed and operated on board 31 payloads and sponsored 70 on-board investigations, involving more than 130 principal and co-investigators.
- ALTEC center of excellence for the provision of engineering and logistics services to support operations and utilization of the ISS
- Several SMEs involved

Investigations vs Disciplines



EXOMARS

TAS-I has the overall system responsibility on all the elements of both EXOMARS 2016 and 2018

- Italian System Lead
- EDM Schiaparelli
- DREAMS
- AMELIA



- Italian System Lead
- ALD
- Drill Sampling Systems
- Ma_Miss
- ROCC

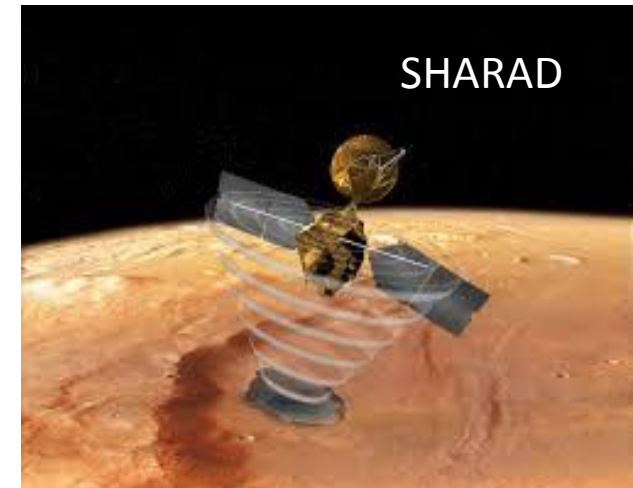
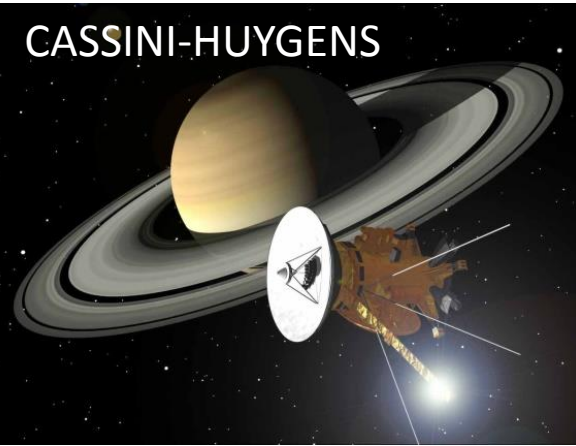
ExoMars 2016



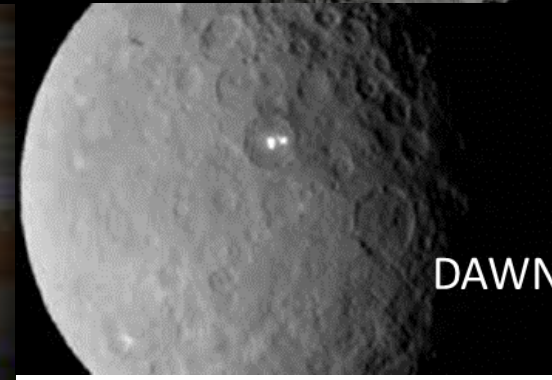
ExoMars 2018



Italy contributed in all the most relevant projects in Solar System exploration



Electro-optical payloads, robotic systems and subsystems, drilling and sampling systems, solar generators, landing systems, antennas, detectors



DEVELOPMENT OF TECHNOLOGY INNOVATIONS FOR EXPLORATION

PREPARING FOR THE FUTURE

- National study to assess national technological capabilities state of the art for contributing to the realization of an habitable module in cis-lunar orbit.
- Three technology drivers:
 - materials and structures,
 - bioregenerative environmental support systems
 - shielding from Space radiation.

ExploTech



- Focused Technology areas:
 - Habitat modules and infrastructures (including inflatable and/or deployable structures)
 - Regenerative/closed-loop and life support systems
 - Sampling technologies including Biosealing
 - Precision landing (GNC, autonomous vision based navigation)

Technology Roadmaps



- Bioregenerative technologies will be key for future developments of self-sufficient habitable modules for exploration and colonization of the Solar System. ASI has established a national working group named IBIS (Italian Bioregenerative Systems), as an open forum to network, discuss and exchange relevant information and ideas.

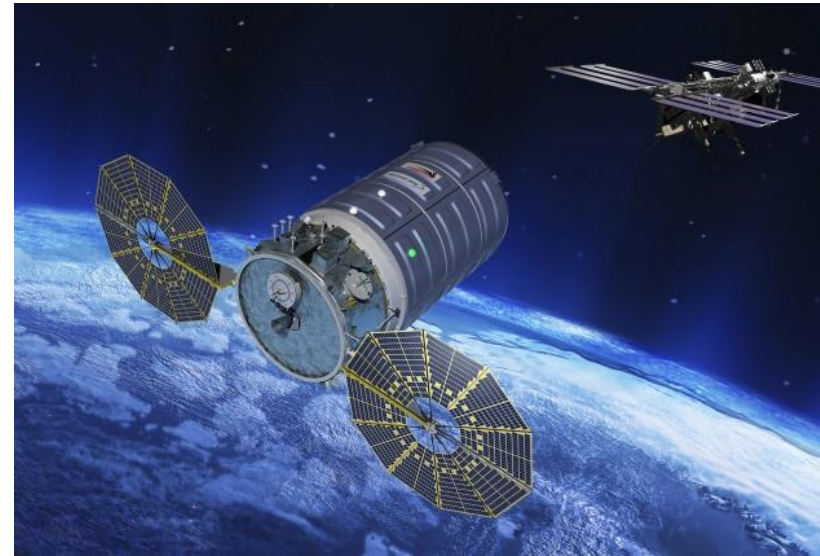
IBIS



High commitment in non-dependence and critical technologies developments

COMMERCIAL INITIATIVES

Cygnus: a successful experience of private initiative based on public funded heritage (MPLM)



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IBDM: a lesson learnt for future involvement (ex. Re-payment scheme)

A long term vision



- Outstanding contribution to the definition of a human spaceflight and exploration global scenario beyond 2020
- International concurrence to the definition of the exploration roadmap :
 - ISECG
 - ISEF
 - High Level Space Policy Group (HSPG) of EC
 - IMEWG
 - Imars
 - ESA Exploration programs
 - NASA science planetary missions

CONCLUDING REMARKS

Italy has developed numerous world-class technical assets for space exploration, a first class scientific community, a competitive industry, and a wide technological base

Thanks to successful investments Italian industry has acquired excellent capabilities and plays a relevant role in Space Exploration at worldwide level both on institutional and commercial sectors

THANKS FOR YOUR ATTENTION

