

Space policy and astrobiology

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THE RATIONALE FOR SPACE ACTIVITIES

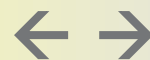


- Markets and jobs
- Communications
- Mobility
- Climate / weather
- Disaster management
- Resources management
- Pace-setting technologies and capabilities (systems, innovation, reliability, quality, miniaturisation, materials)

- Security / peace
- Welfare
- International and intercultural cooperation
- Exploration
- Life in space
- Humans in space (work, research, tourism)
- Leadership / influence / prestige
- Sustainable development

- Knowledge
- Origin / past / future
- Understanding
- Discovery / curiosity
- Culture
- Responsibility
- World view
- Fascination
- Emotion / inspiration
- Authenticity
- Identity / identification
- Disruption / progress

utilitarian



trans-utilitarian

LINKS BETWEEN ASTROBIOLOGY AND SPACE POLICY



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RELEVANCE IN SPACE POLICY

- Currently there is no State or international Organisation that has a dedicated program or element in its space policy for astrobiology
- European Astrobiology Network Association (EANA)
- Elements are contained in missions for Space Exploration
 - Concentrate on finding primitive extra-terrestrial life the Moon, on Mars, Titan or Enceladus
 - Search for Exoplanets
- Dimensions of Exploration contain implications for Astrobiology
 - Political
 - Societal
 - Legal
 - Ethical

DIMENSION OF EXPLORATION

POLITICAL



- Most recently space applications were more popular with decision makers than exploration
- Missions require substantial investments and international cooperation
- Challenges to justify the required funds vis-à-vis the public
- Missions take a long time and probability of success are highly risky and thus not opportune for election cycles
- Efforts by Associations and Think Tanks ESPI – “Humans in Outer Space – Interdisciplinary Odysseys”



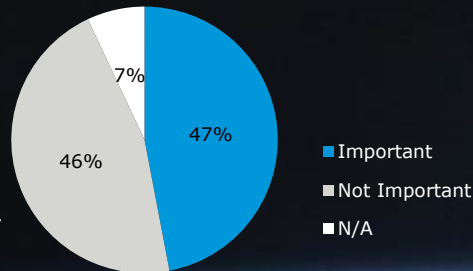
ESA's Rosetta Mission 1993-Today

DIMENSION OF EXPLORATION SOCIETAL



- Europeans are divided on the importance of space exploration

Space Exploration



Source:
Eurobarometer
2014

Reasons for Exploration		Reasons against Exploration	
Test new technologies	63%	There are more pressuring issues	72%
Make unexpected scientific discoveries	53%		

- Discoveries can lead to fundamental societal changes
 - New awareness about the own existence
 - Consequences on the use of resources in the universe
 - Uncertain relations bear potential of conflicts

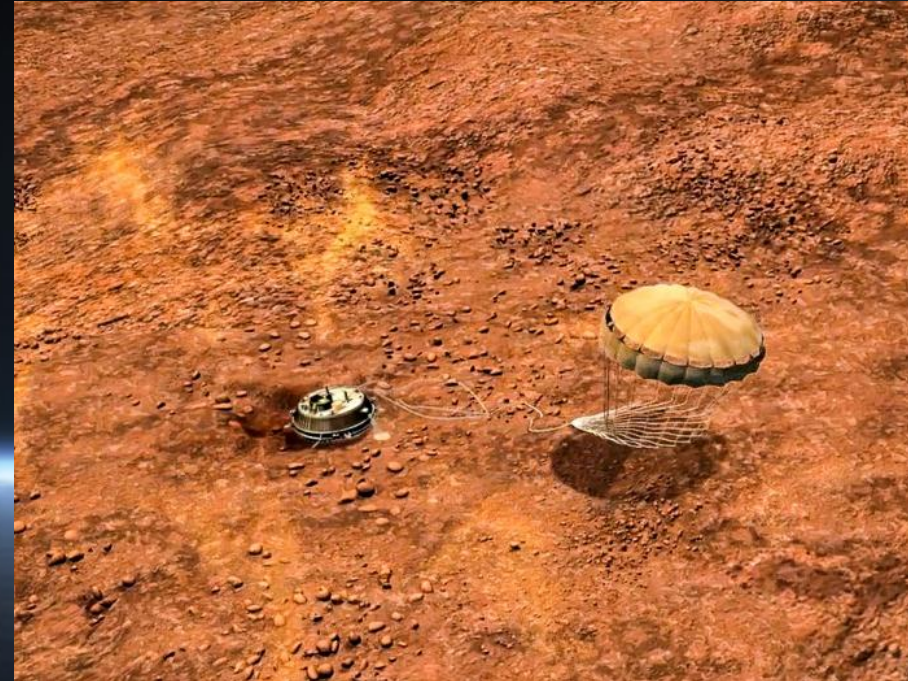


ESA's EXO Mars Mission

DIMENSION OF EXPLORATION LEGAL



- Freedom of use and exploration of outer space
- The Outer Space Treaty provides a basis by urging to avoid harmful contamination (Article IX)
- Efforts by international organisation to create guidelines
 - ICSU; COSPAR:
 - COSPAR planetary protection guidelines (2002)
 - IAA:
 - Declaration of Principles Concerning Activities Following the Detection of Extraterrestrial Intelligence (1989/2010 rev.)
 - Cosmic Study: Protecting the Environment of Celestial Bodies (2010)

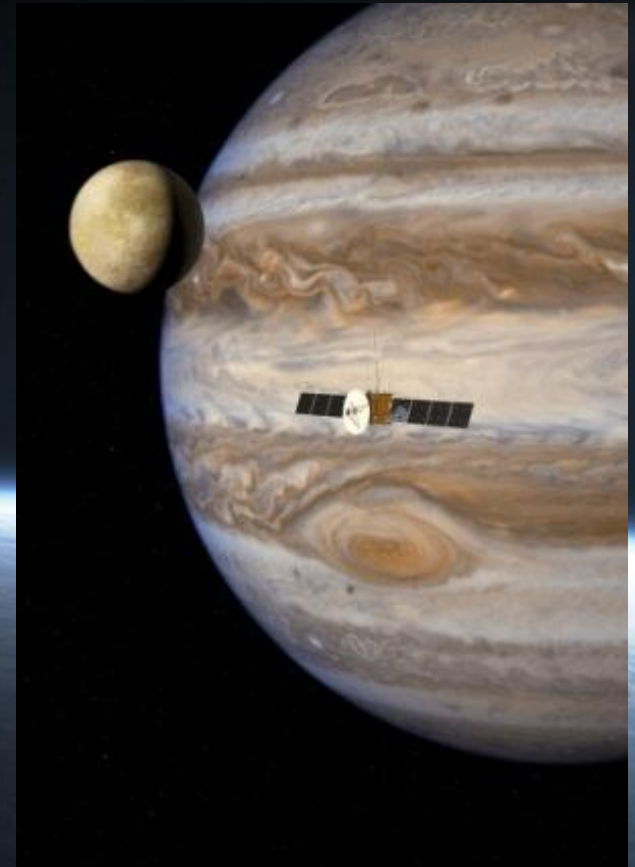


ESA's Huygens Landing

DIMENSION OF EXPLORATION ETHICAL



- Central question: What are the underlying motives and guiding principles?
- Communitarian vs. Individualism
 - Sustainable science of learning and understand at a distance
 - Imposition of our species and self-interest driven
 - Exploration as part of evolution



ESA's JUICE Mission

RESULTING POLICY ASPECTS OF ASTROBIOLOGY

- There are no dedicated policies in support of astrobiology
- The overall perspective is loose and requires exceptional initiatives by key decision makers
- The legal framework poses no binding limitations, but several recommendations increase the complexity and scope for astrobiology
- There are several open ethical questions on the management of discoveries



ESA ideas for a Moon Village

FURTHER DEVELOPMENT REQUIREMENTS FOR ASTROBIOLOGY 2.0?

- Key scientific discoveries are necessary to spark public and political interest
- Mission proposals need to include hard and soft benefits
 - New technologies with application on Earth
 - International cooperation as cultural exchange
- Space law needs to set standards that incorporate sustainable science while allowing room for evolution



Model of alien life
William Sellers, University of Manchester