Industrial Leadership and SMEs …from Invention to Innovation Experience from aviation and space

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Deutsches Zentrum für Luft- und Raumfahrt

Hearing on Horizon 2020
European Parliament,
Brussels, Tuesday 20 March 2012,

EUROPEAN PARLIAMENT

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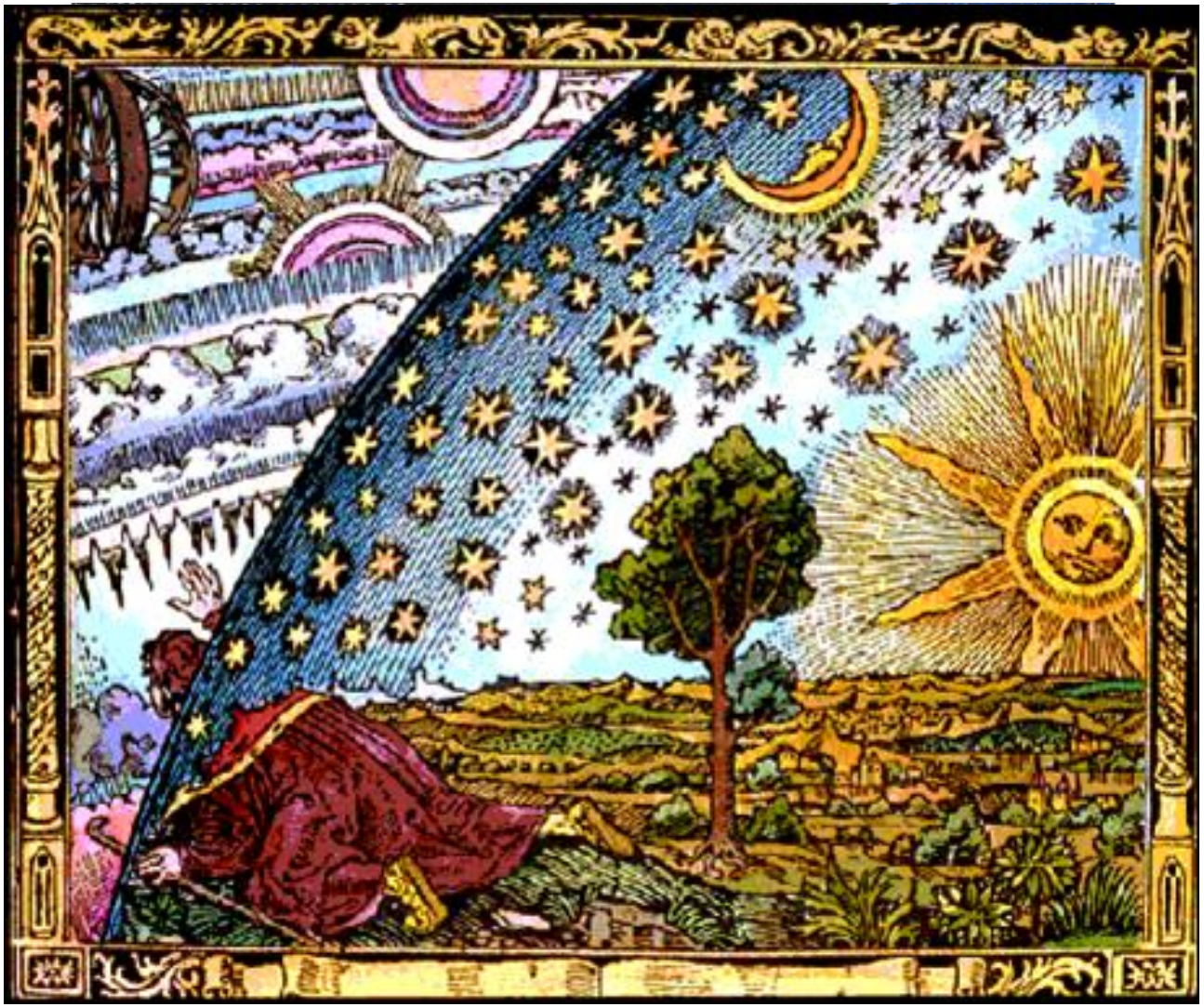
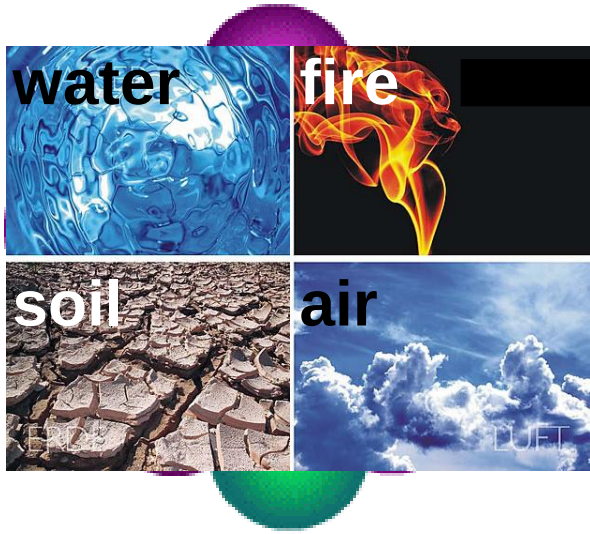
Global challenges

- climatic change
- mobility
- communication
- energy
- shortage of resources
- demographic development
- conflicts and catastrophes
- health
- ....

…curiosity of mankind…knowledge for tomorrow





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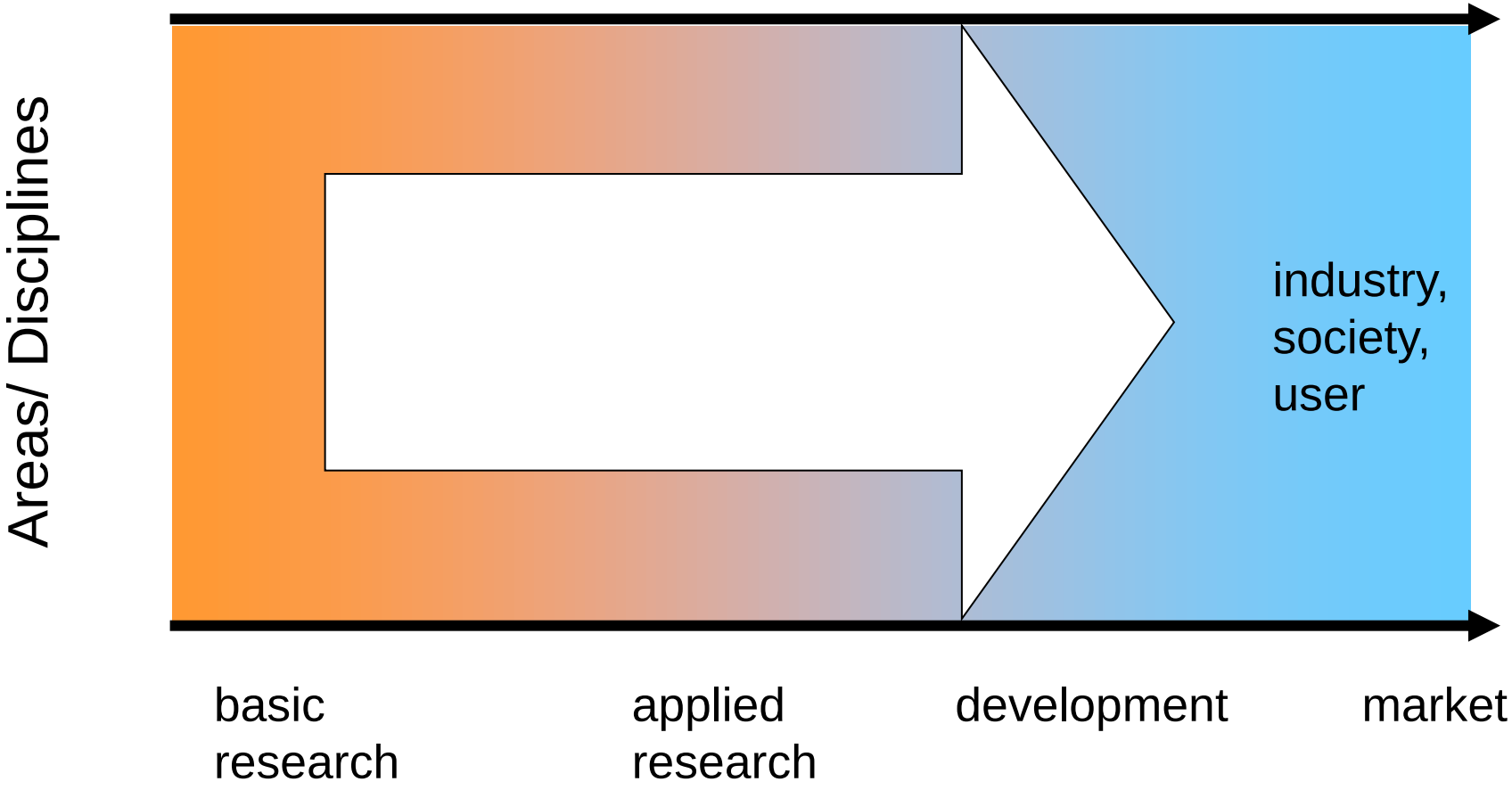
Invention → Innovation



Examples for European Industrial Leadership

Key success factors

- Recognition and acceptance for the need of European collaboration on all levels

- Political (and private) will to establish and strengthen the respective European sectors

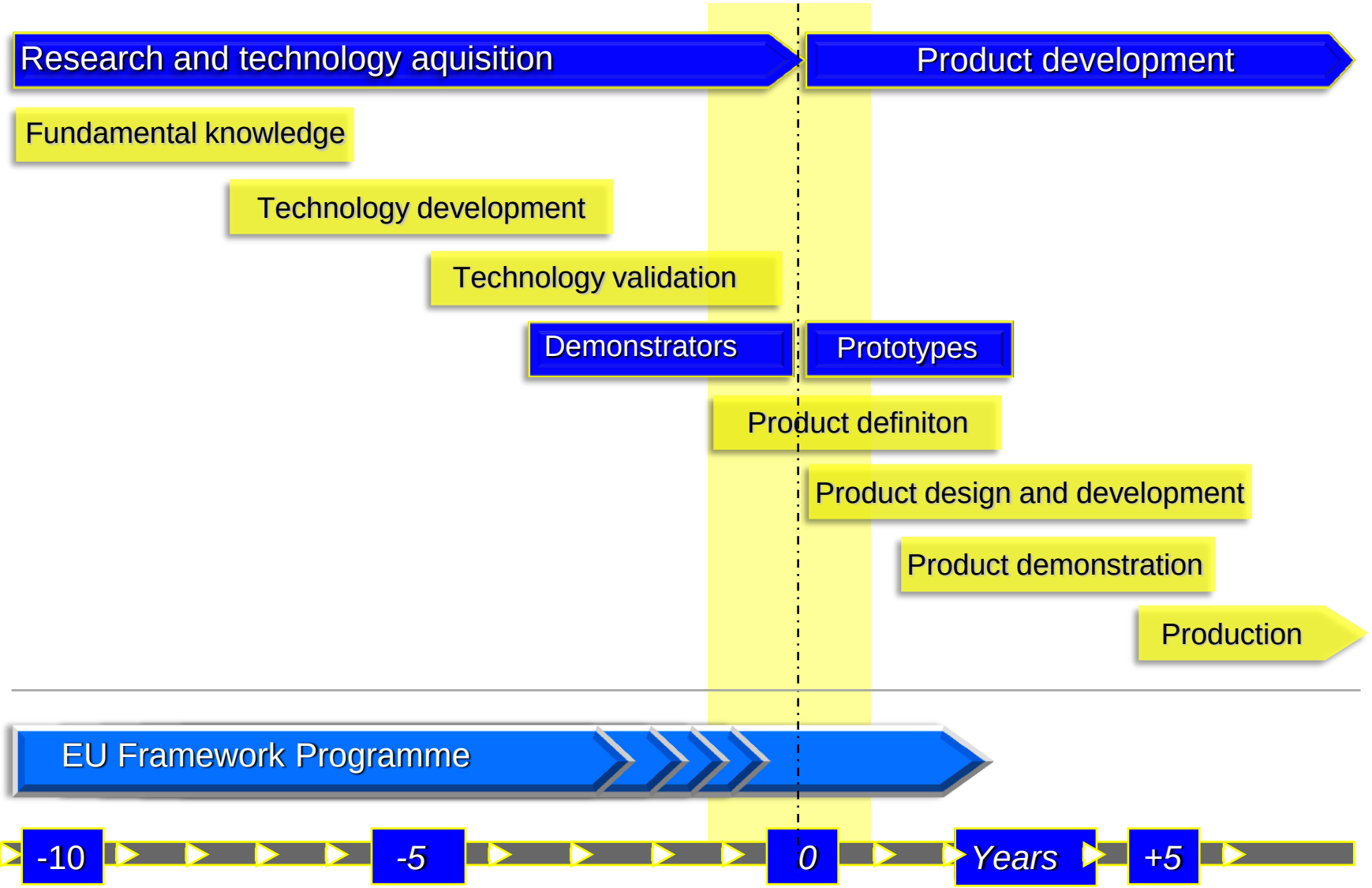
- Set-up and continuous development of common European research and innovation strategies under involvement of all necessary stakeholders

- Strategy implementation in a harmonised way, but under individual responsibilities in European, national, regional and private research and innovation programmes.

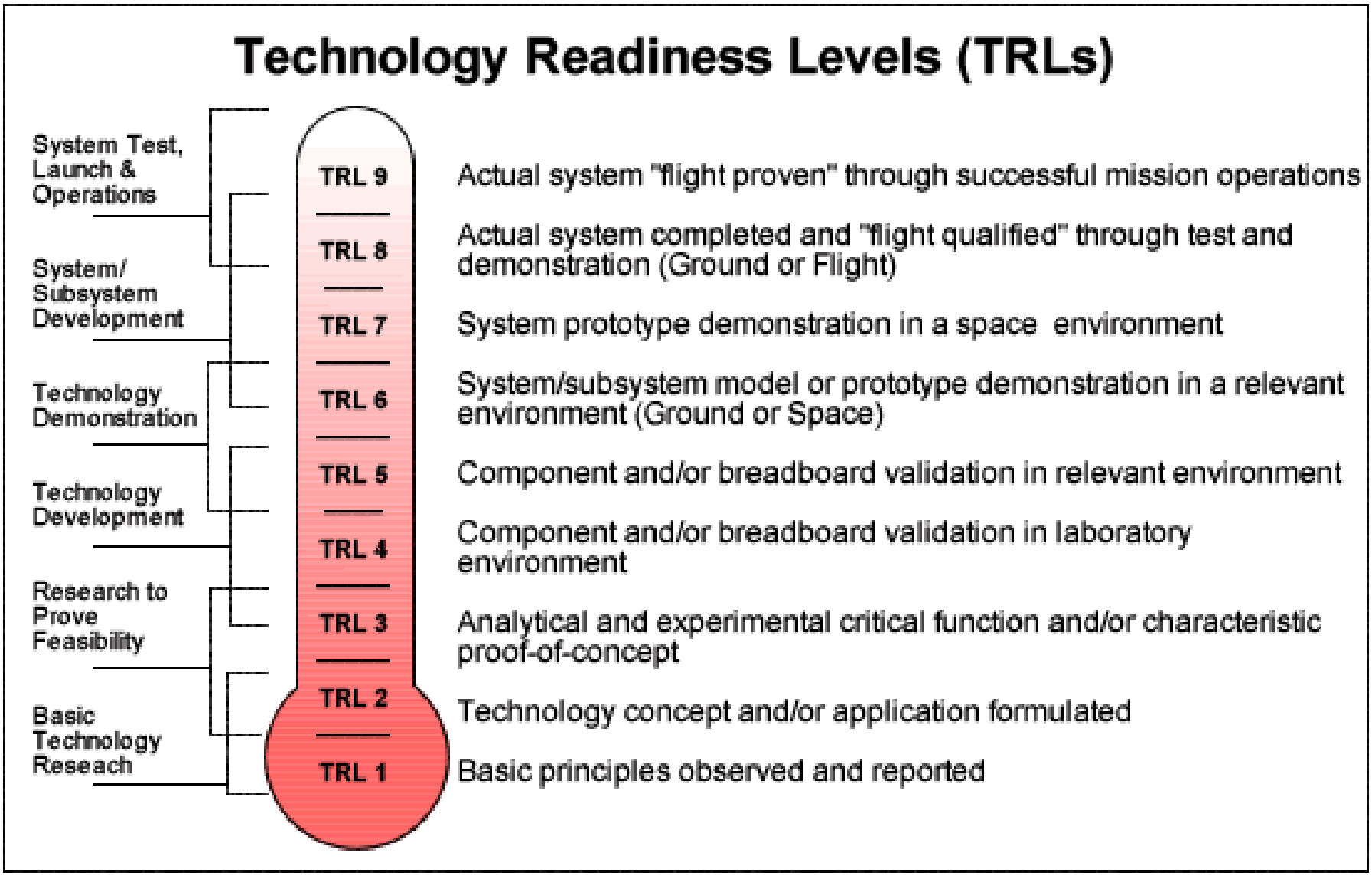
- Appropriate funding on European, national, regional and private level covering the entire research and innovation chain with dedicated instruments (small, medium and large projects)

- Existence of an uninterrupted chain of economic value added

Innovation process needs appropriate funding



Classification of innovation steps in aerospace



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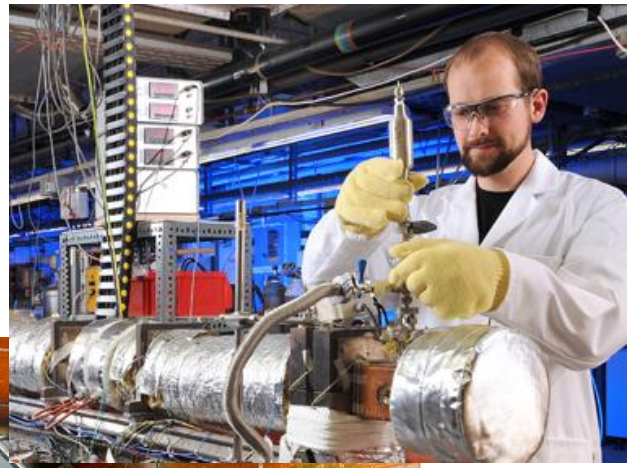
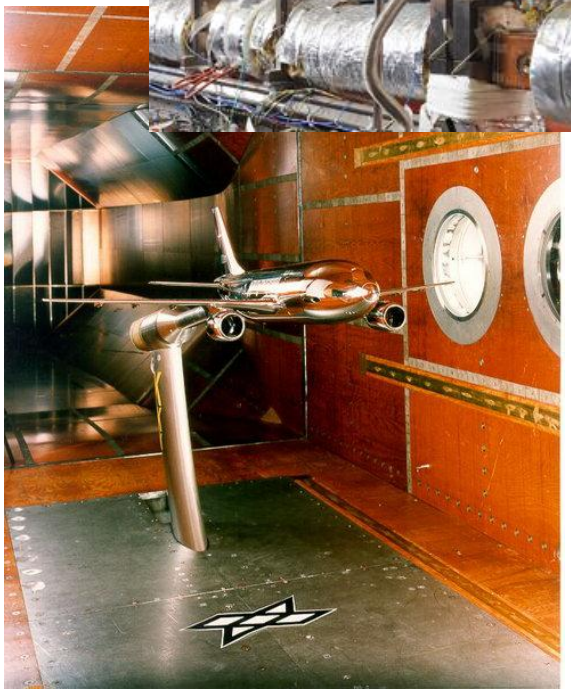
Role of National Research Centers

- Taking fundamental knowledge in cooperation with Academia (TRL 2 - 3)
- Developing new technologies in cooperation with industry (TRL 3 – 5/6)
- Testing and demonstration in support to successful industrial products (TRL 9)
- Educating young researchers





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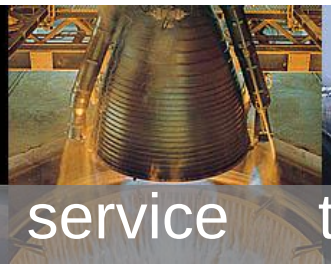
Research Center
&
German Space Agency
&
Project Management Office



DLR-Mission

- To explore Earth and the Solar System; to conduct research into the preservation of the environment, into mobility and into public safety, and to address societal questions on behalf of public customers
- **To bridge the gap between basic research and innovative applications and to transfer knowledge and research results to industry** and the political sphere through mediation and consultation as well as through the provision of services
- To shape Germany‘s space commitment and represent its interests internationally as a governmental function
- To make a significant contribution towards enhancing Germany as a science and business location as well as to stimulate growth in Europe
- To train young scientists in order to enhance the innovative capabilities

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Aerospace…worldwide cooperation

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National and International Networking

Customers and partners: Governments and ministries, agencies and organisations, industry and commerce, science and research

World

Europe

Germany

Deutsches Zentrum für Luft- und Raumfahrt

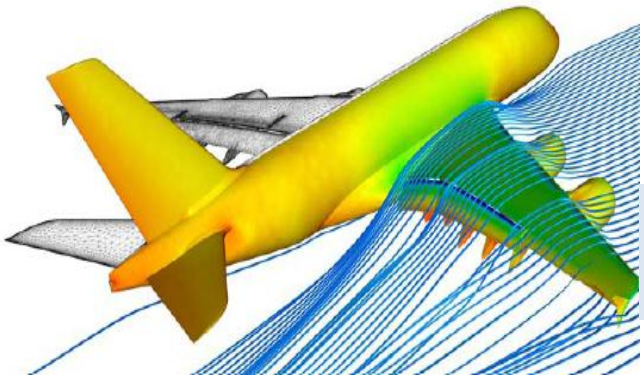
Strategic Research and Innovation Agenda (SRIA)

ACARE

Road map for aviation research, development & innovation - New European Aviation Research Strategy (NEARS) project

Content aligned to five goals of Flightpath 2050:

- **Meeting Societal and Market Needs**
- **Maintaining and Extending Industrial Leadership**
- **Protecting the Environment and the Energy Supply**
- **Ensuring Safety and Security**
- **Prioritising Research, Testing Capabilities & Education**



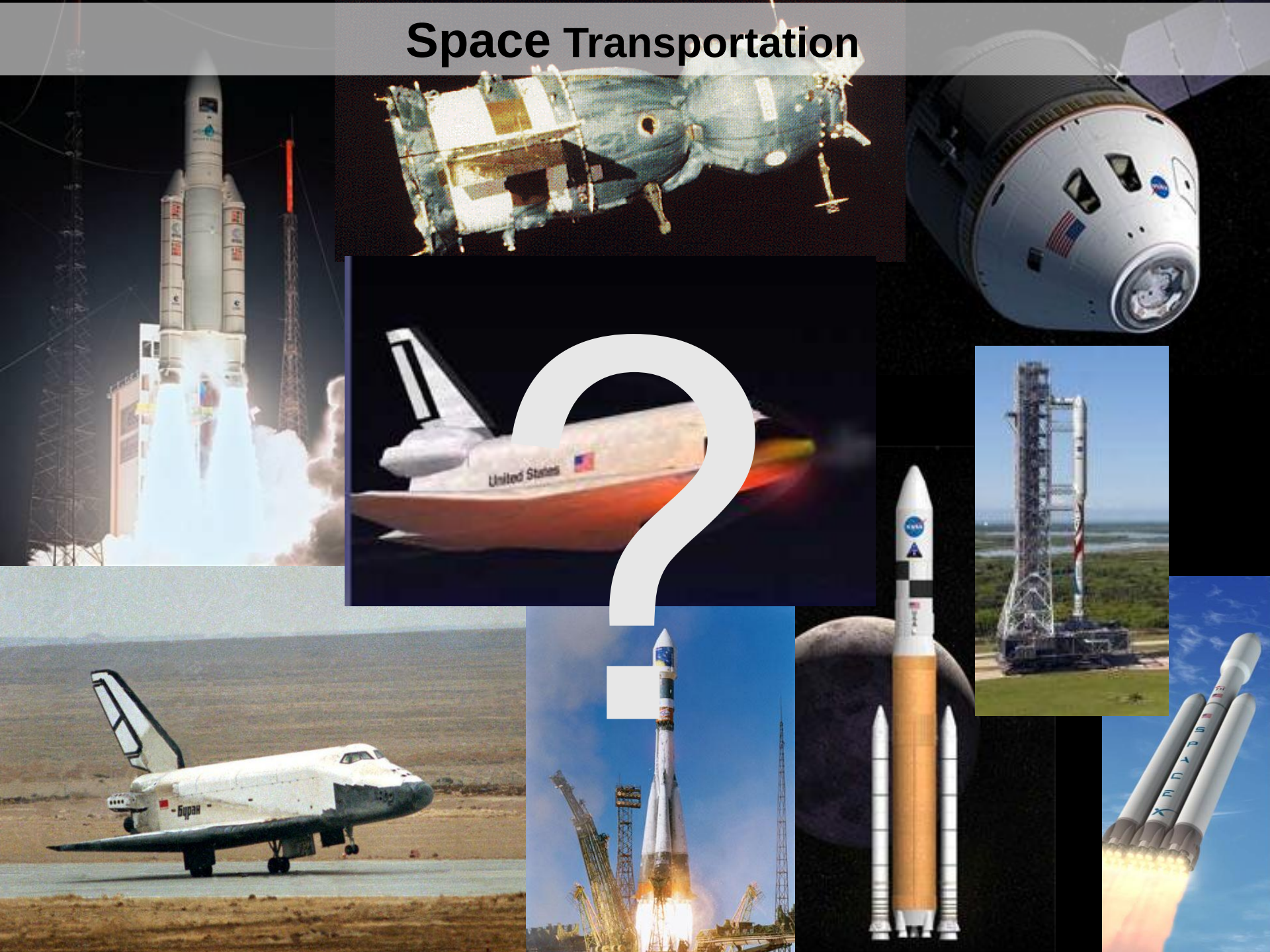
Publication in 2012 to inform the European Research Framework on Aviation Research in Europe

SRIA Success Factors

- **Recognise Aeronautics and Air Transport System as a distinct European and national priority and enabler for growth**
- **Identify and preserve Europe's research infrastructure requirements**
- **Maintain dedicated R&T support mechanisms at both European & National level**
- **Encourage sustained flow of competent, trained and motivated people**
- **Supply chain – ensure coordination at all levels from integrator to SME in innovation and exploitation**

International Space Station

Space Transportation



Further aspects of European Space Policy:

various satellites

control centers

European space port

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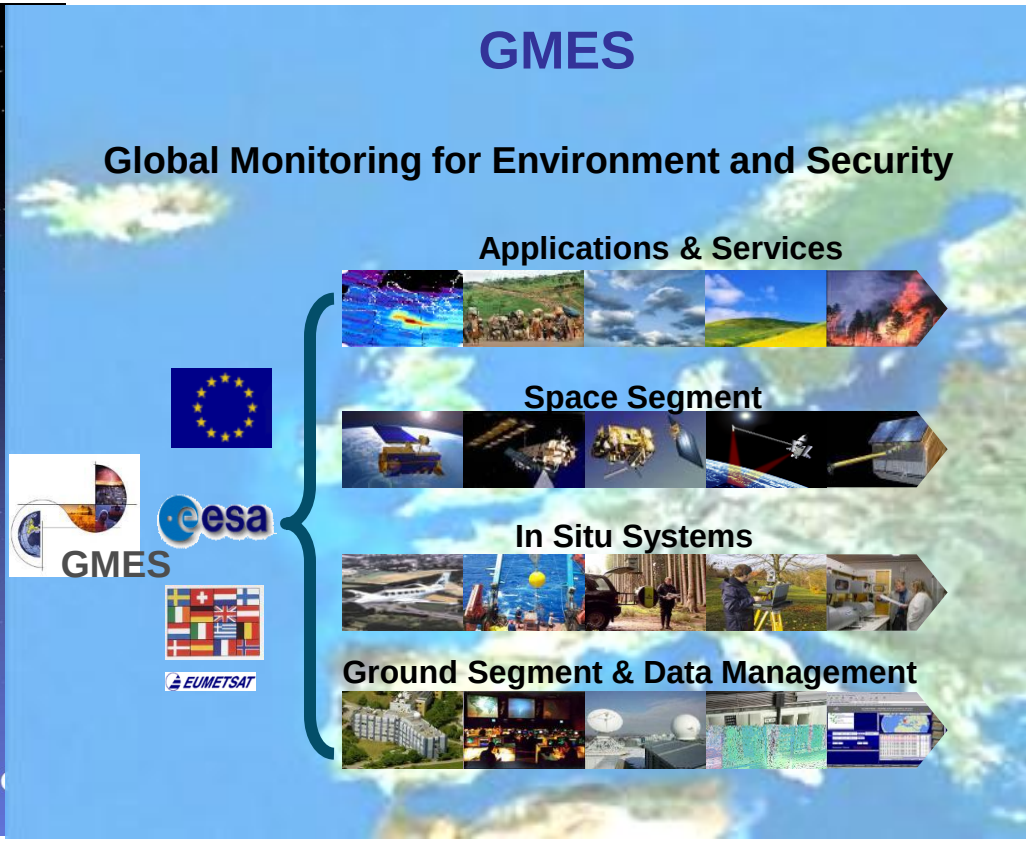
European Space-Flagship Programmes



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Precision Approaches through Satellitenavigation

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RCAS: Railway Collision Avoidance System

Safety through Satellitenavigation

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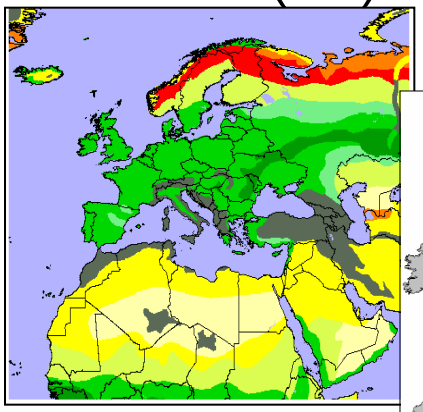
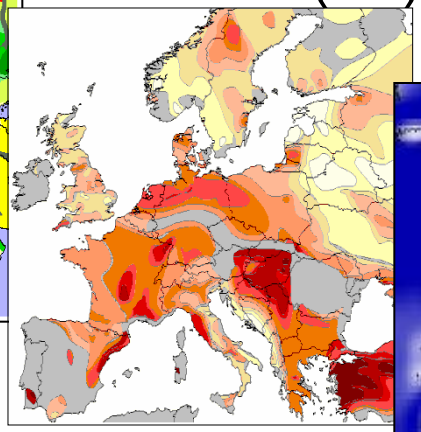
Unlocking the renewable energy potential through Earth observation by satellites

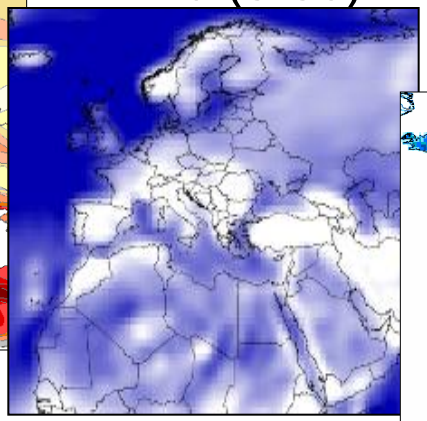
Biomass (0-1)



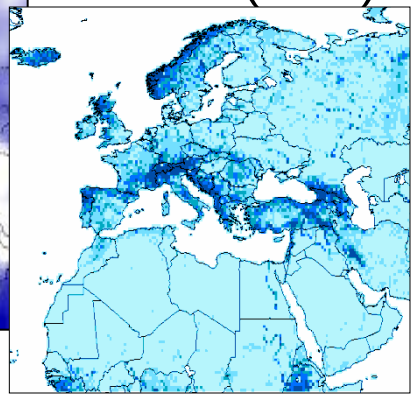
Geothermal (0-1)



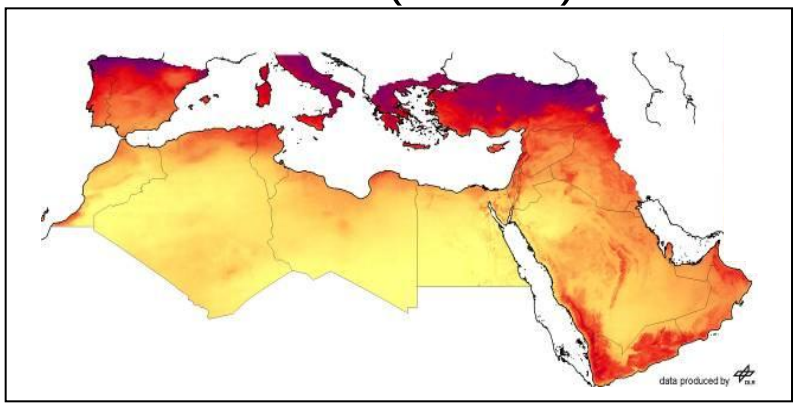
Wind (5-50)



Water (0-50)



Solar (10-250)



(power production in $GWh_{el}/km^2/a$)

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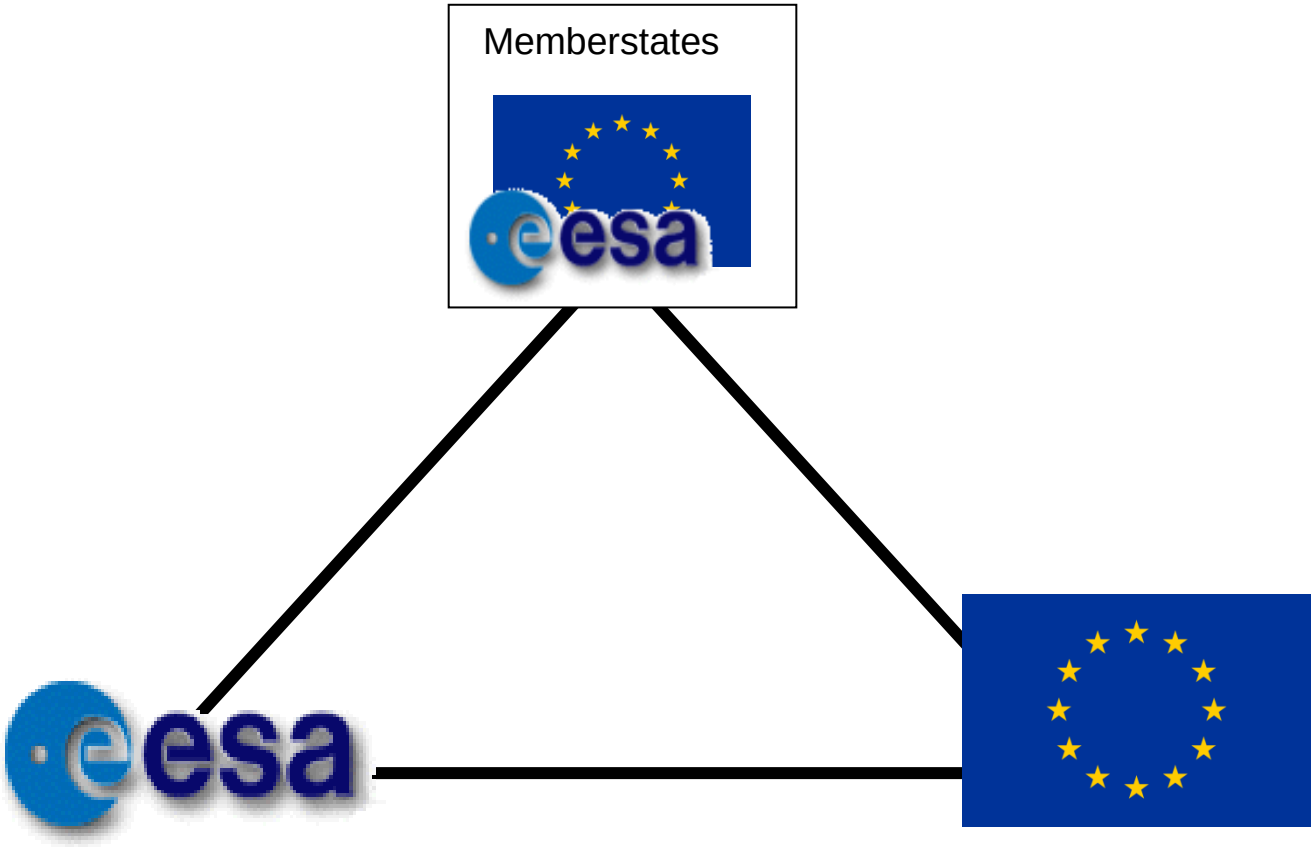
European Public Leadership in Space



Recommendations in order to gain and maintain European Industrial leadership

- Set-up research and innovation programmes based on agreed European research and innovation strategies
- Provide appropriate and dedicated funding on European, national, regional and private level to realise R&I strategies (e.g. continuation of aviation activities in H2020 as successfully done in FP4 -7)
- Provide funding for H2020 corresponding to EU2020 strategy goals
- Maintain successful proven instruments needed for the distinct innovation steps:
  - Small projects for technology development
  - Medium sized projects for technology validation
  - Large projects like Clean Sky, SESAR for system demonstration
- Provide attractive funding schemes for all research actors
- Support of the completion and of the sustainability of the chain of economic value addes

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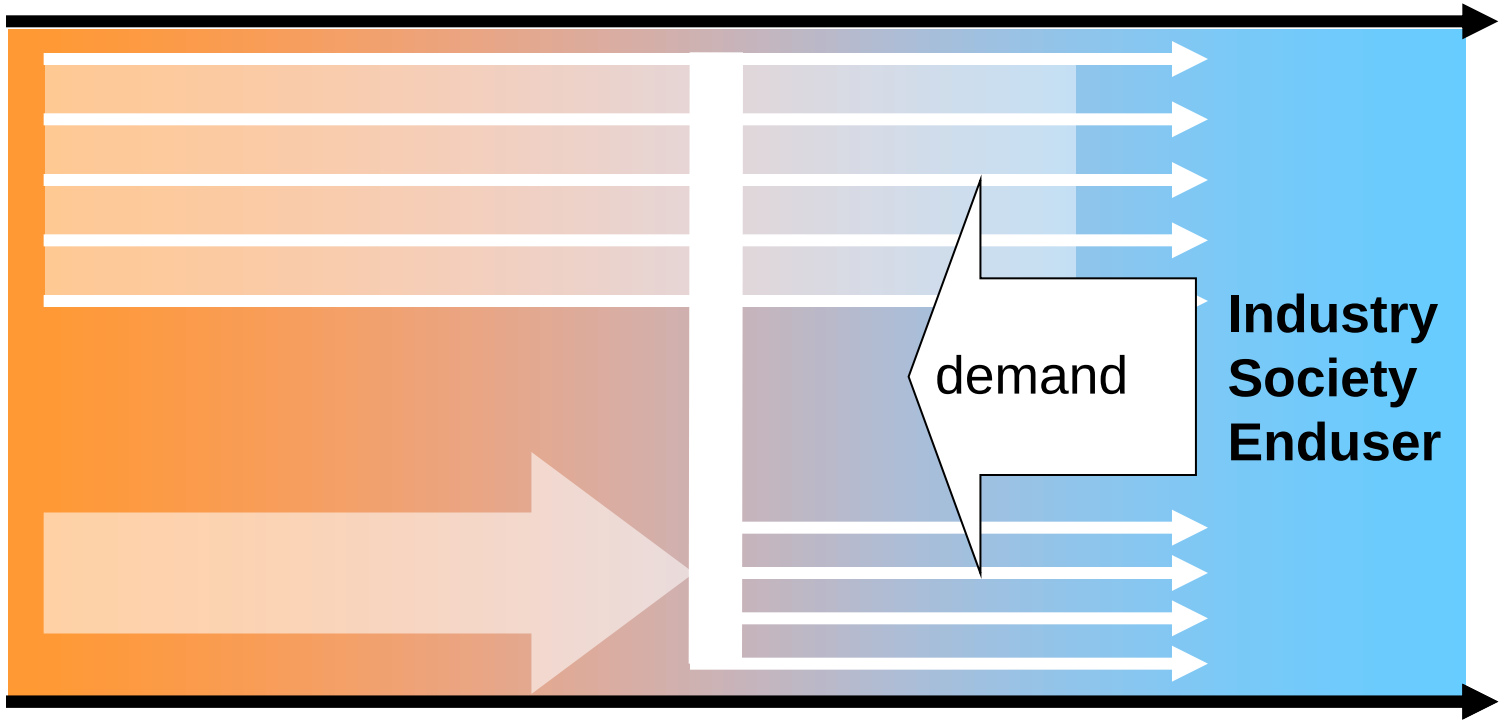
Invention → Innovation

Aeronautics
Space
Energy
Transport
Security

…
…
Water
Agriculture
Entertainment
Medicine



basic research | applied research | development | market

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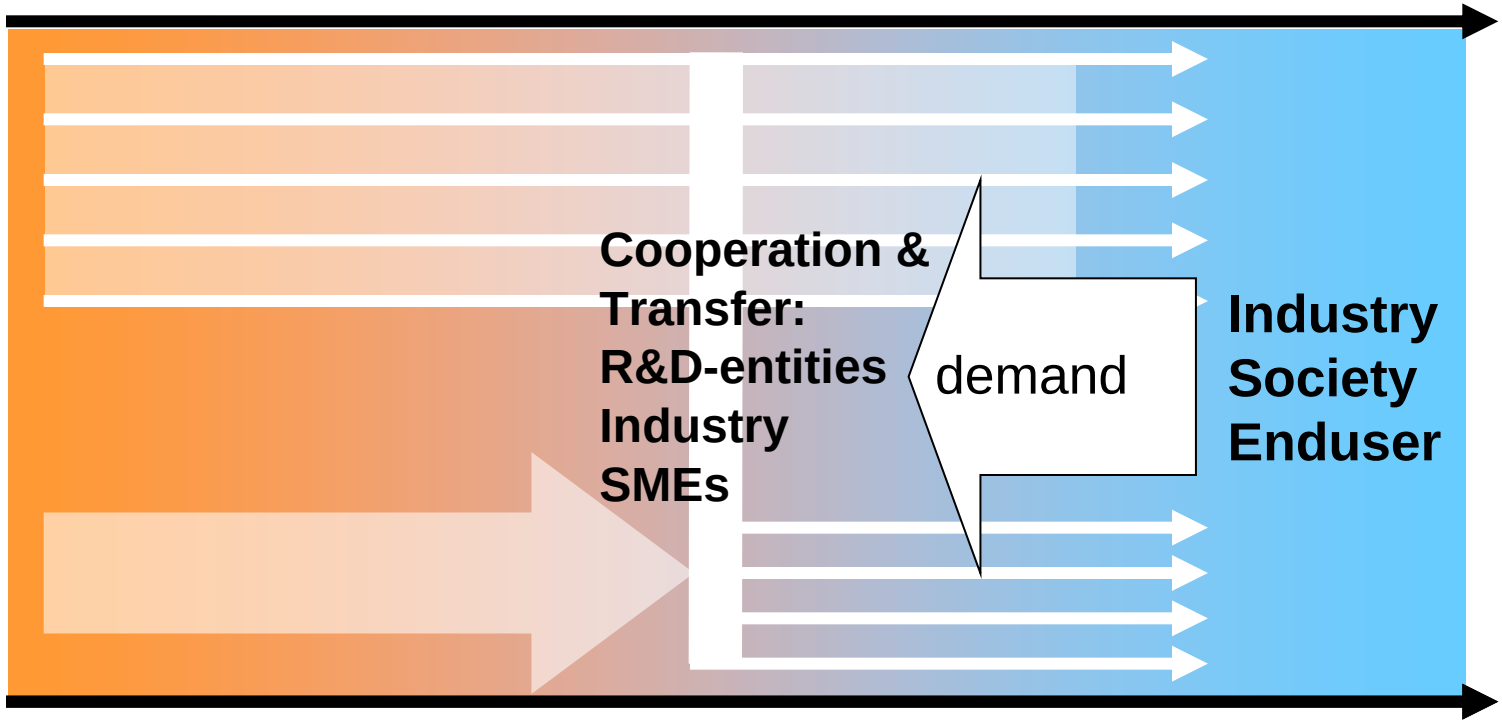

basic research | applied research | development | market

Knowledge for
Tomorrow

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