

The Wider Context of Space Exploration – Perspective of a Futurist

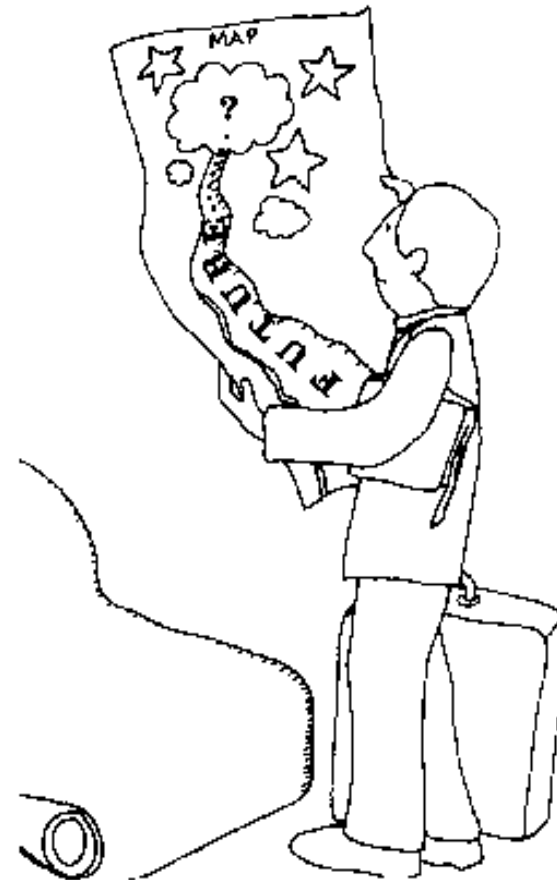
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EUROPEAN EXPLORATION WORKSHOP EDINBURGH
Reviewing the European Exploration Scenarios



Overview

- Realistic Expectations:
Societal Context in the Near
Future
- Old and New Visions:
Historical Context for the Far
Future



Context, Mapped to STEEP Sectors

Society

- Demographic Ageing
- ...

Technology

- NBIC Convergence
- ...

Economy

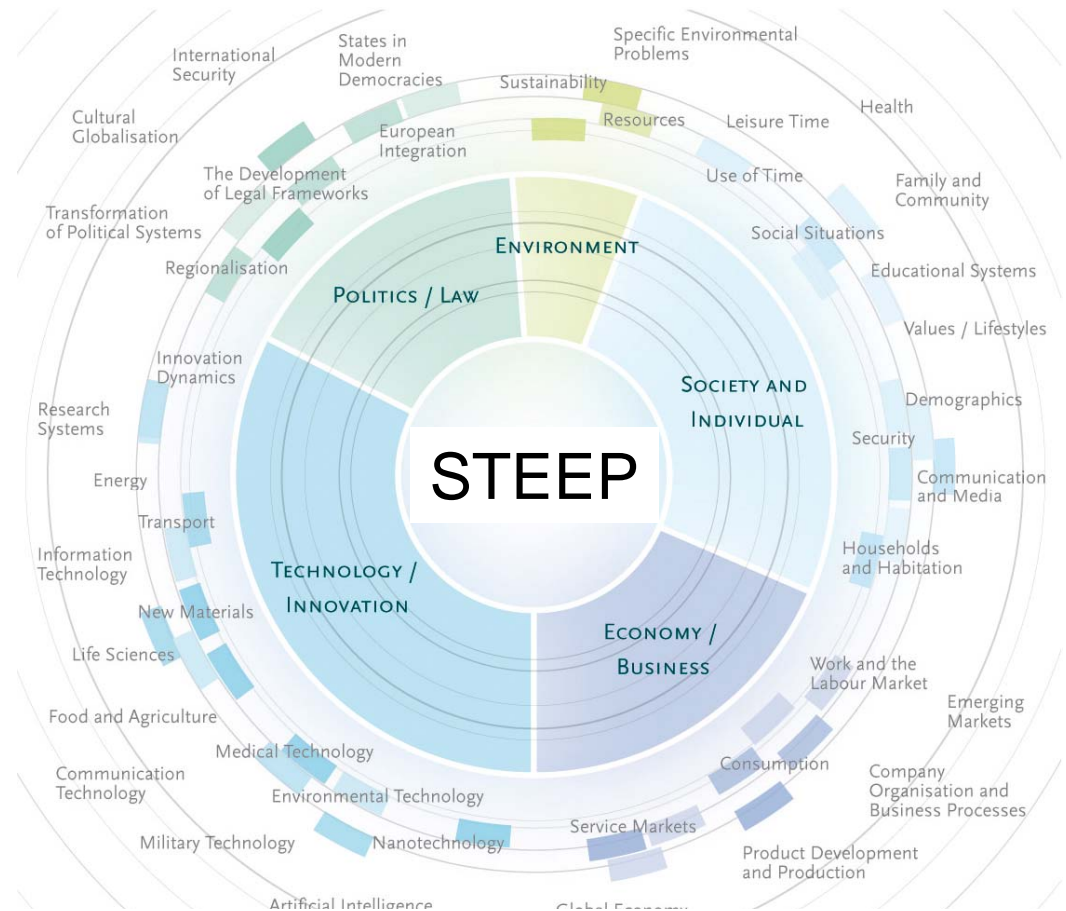
- Shift to Asia
- ...

Environment

- Climate Change
- ...

Politics

- International Security
- ...



What are Implications for Space Exploration?

Europe: Some Trends

Trends:

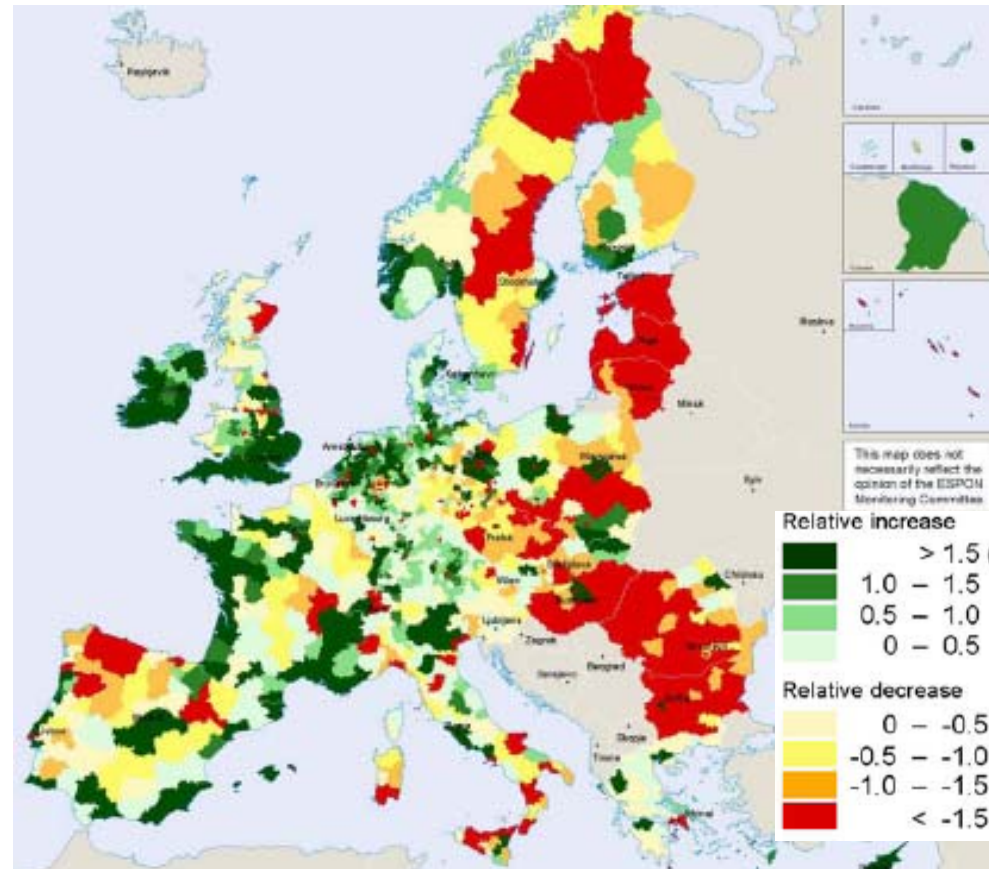
- Rising concerns about global competitiveness
- Innovation gap esp. with respect to the USA and Japan
- Demographic ageing, shrinking, migration
- Redistribution of economic growth
- Loss of social and territorial coherence...

Failure of EU to meet the Lisbon Goal (of 2000) and the Barcelona Objectives

→ **Where is Europe's place in the world of the 21st century?**

European space exploration depends on European positioning...

Redistribution of Population 1995 - 2000



Source: ESPON / Nordregio 2004

Global Power Shift

Rise of China and India

US power in decline?

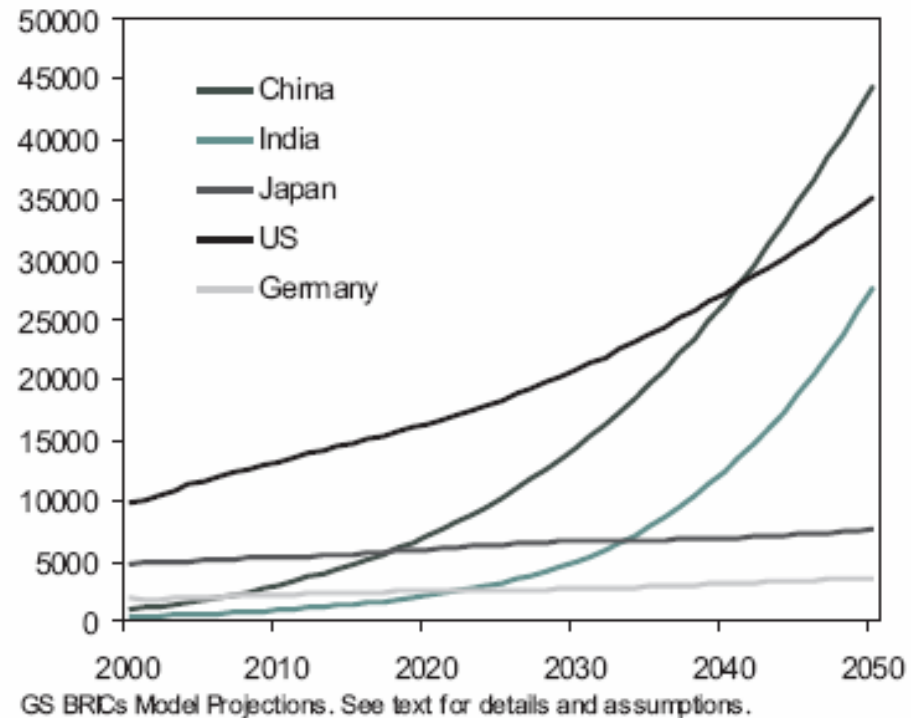
- In economic terms: quite sure, but what reactions?
- Overstretched Empire - „American Twilight“?

Closer transatlantic co-operations?

New role of old Europe?

→ *Will there be a Sino-US space race in 2020 / 2030?*

GDP China Overtakes the G3; India Is Close Behind
(2003 US\$bn)



Source: GoldmanSachs: Dreaming with BRICs, 2003

Return of Religion

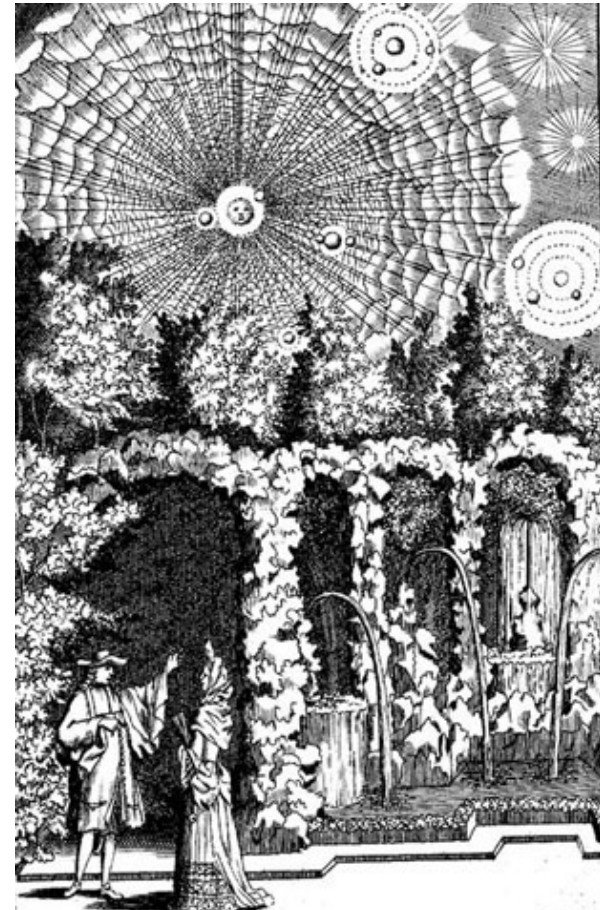
“De-secularization” trends in Western nations

- Evangelical fundamentalism
- Boom of sects: Fragmentation and recombination of belief systems
- Slow decline of large churches

Religious values and consumerism

- clashes
- and combinations

→ *Will the place of man in the (physical) universe become again a big issue?*



Fontenelle 1686:
Entretiens sur la Pluralité des Mondes

Possible Wild Cards

End of Globalisation

Political controversies between continental / religious blocs result in new cold war

Life Expectancy 120

Sudden increase in life expectancy through anti-ageing medical technology

Biotech Unlimited

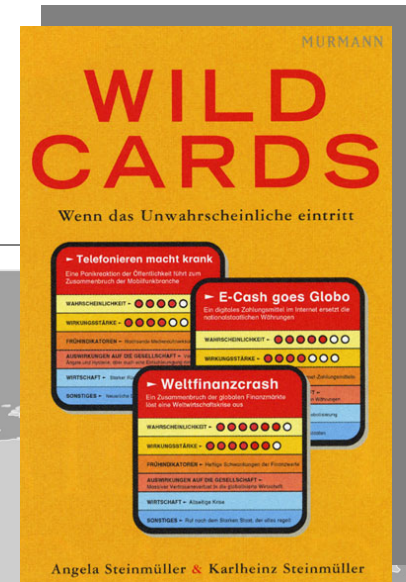
Fall of ethical barriers against gene-tech, cloning and related technologies

Cold Fusion Power

Cold fusion or similar breakthrough in energy generation revolutionizes energy systems

New Ice Age

Global warming interrupts Gulf Stream



Some Conclusions

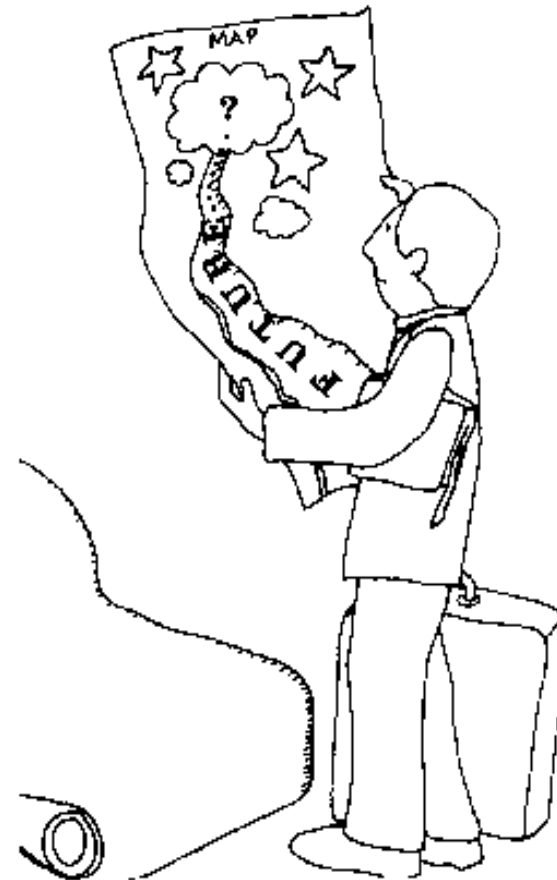
Context = challenges and wild cards.

- Europe has not yet found its place in the world of the 21st century.
- *Space exploration can benefit from European positioning – and foster it.*
- *Opportunities for space exploration arise from global competition, new technologies and from including the broader public.*
- *In the long run, trans-utilitarian rationales are the most powerful.*



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1900 – 1930: Early Spaceflight Visionaries

K. E. Tsiolkovsky

H. Oberth

R. H. Goddard

Technical foundations

Utopian visions

Contacts with science fiction

Public perception:

- Crackpots
- Pure science fiction



Willy Ley 1928

1950 – 1970: Liftoff

“Space Race”

Far-reaching projects

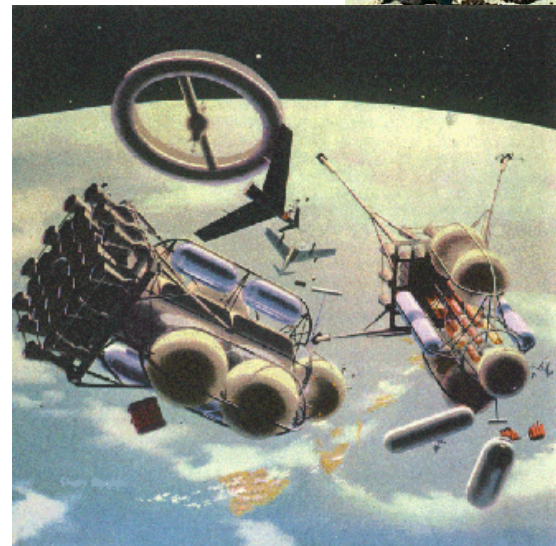
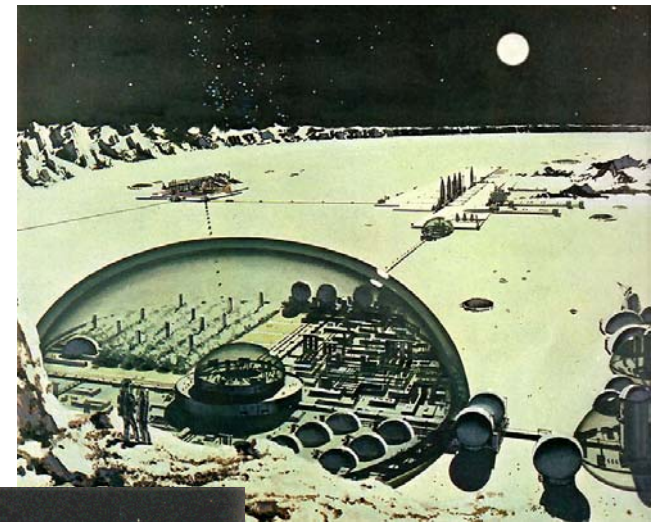
Exaggerated expectations

Public perception:

- Outright fascination

Followed by

- Public disillusionment
- Business as usual space activities



Moonbase
in 2000!

20xx: A New Age of Space Exploration

Again growing interest of (young) people in space exploration

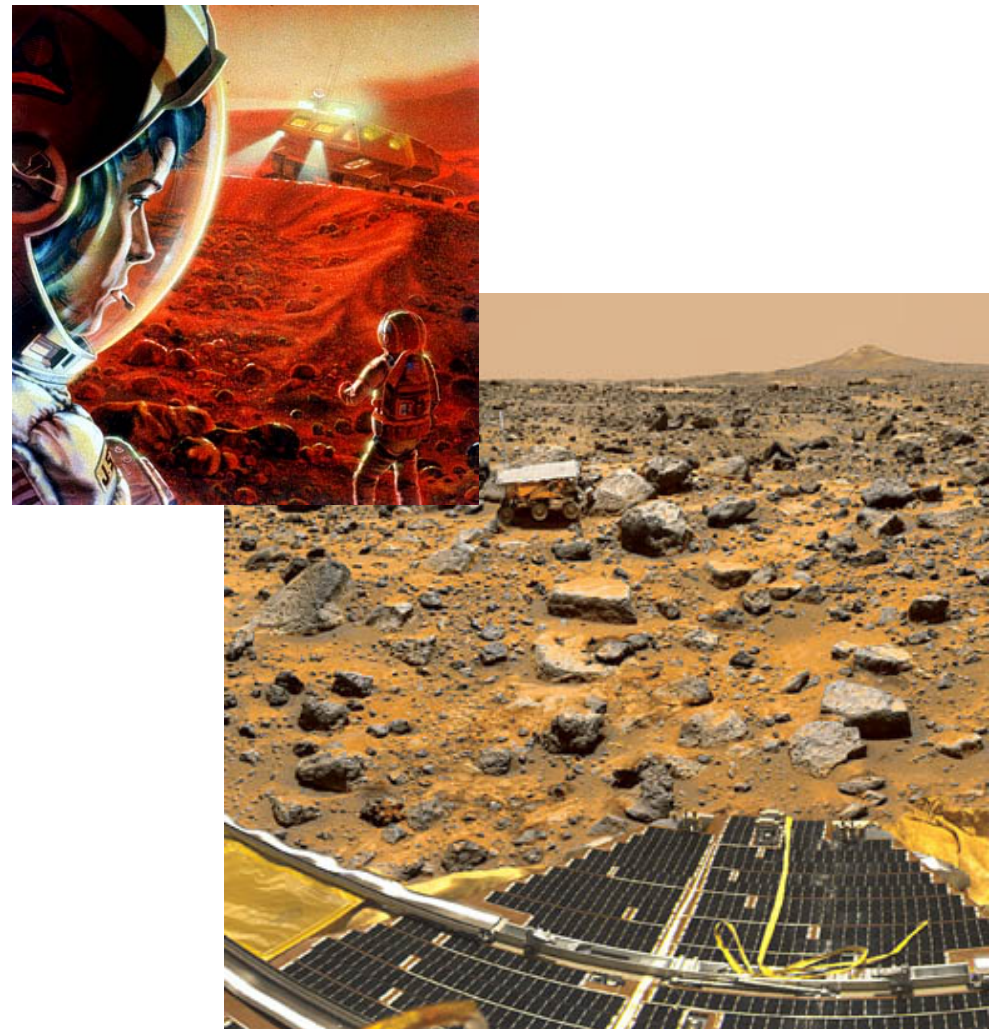
- Star Trek as “obvious” prospect!

Favorable conditions:

- Progress of technology
- Global economic growth

Adverse conditions:

- Political rivalry
- Short term economic thinking

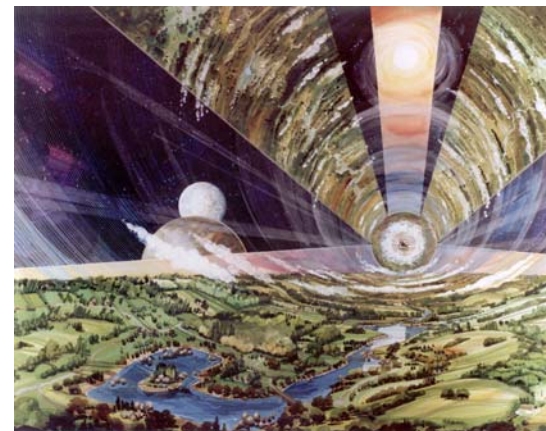


2xxx: In the Long Run

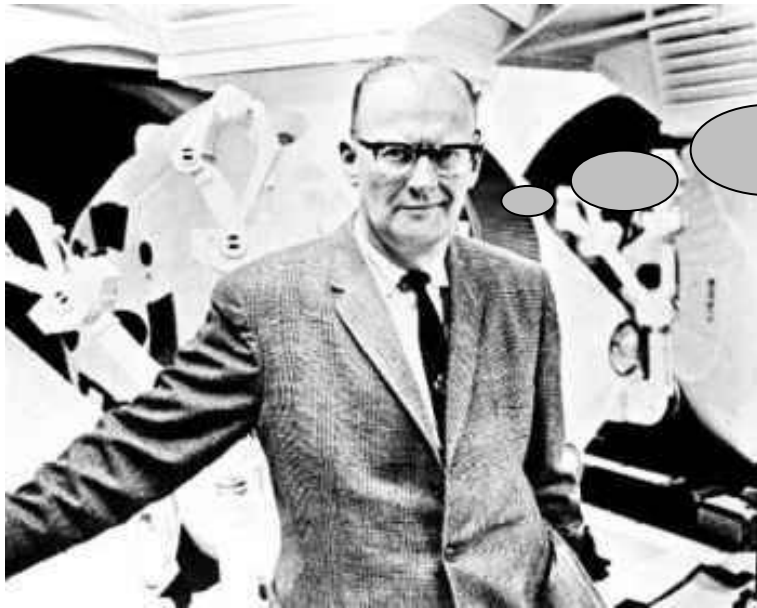
A question of time scales

- Space exploration has its own (secular) time scales.
- Hype cycles work also in space exploration – but with longer period as in IT!
- A long-term evolutionary process!

**21st Century:
Step out of Earth gravity well**



A Final Word



Arthur C. Clarke

"The only way of discovering the limits of the possible is to venture a little way past them into the impossible."

Thank you for your attention!

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