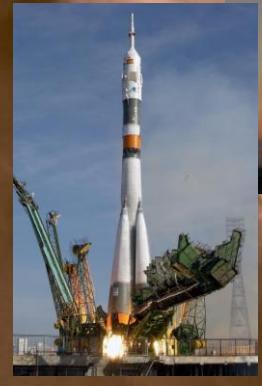




# **International Perspectives: Looking Back/Looking Ahead**

**NASA Master Forum 20  
Passing the Torch 3  
Orlando, April 19 – 22, 2011**

**R. Gerzer  
Head, DLR Institute of Aerospace Medicine**



# STS-9 (First Spacelab Mission (11-28 – 12-8, 1983)



STS-9 (FSLP) launch



Spacelab onboard of STS-9



Astronaut Ulf Merbold in Spacelab

# D-1 Spacelab Mission (10-30 – 11-6, 1985)



**Astronaut Reinhard Furrer  
after a blood draw**



**Astronaut Ernst Messerschmid**

# D-2 Spacelab Mission (4-26 – 5-6, 1993)



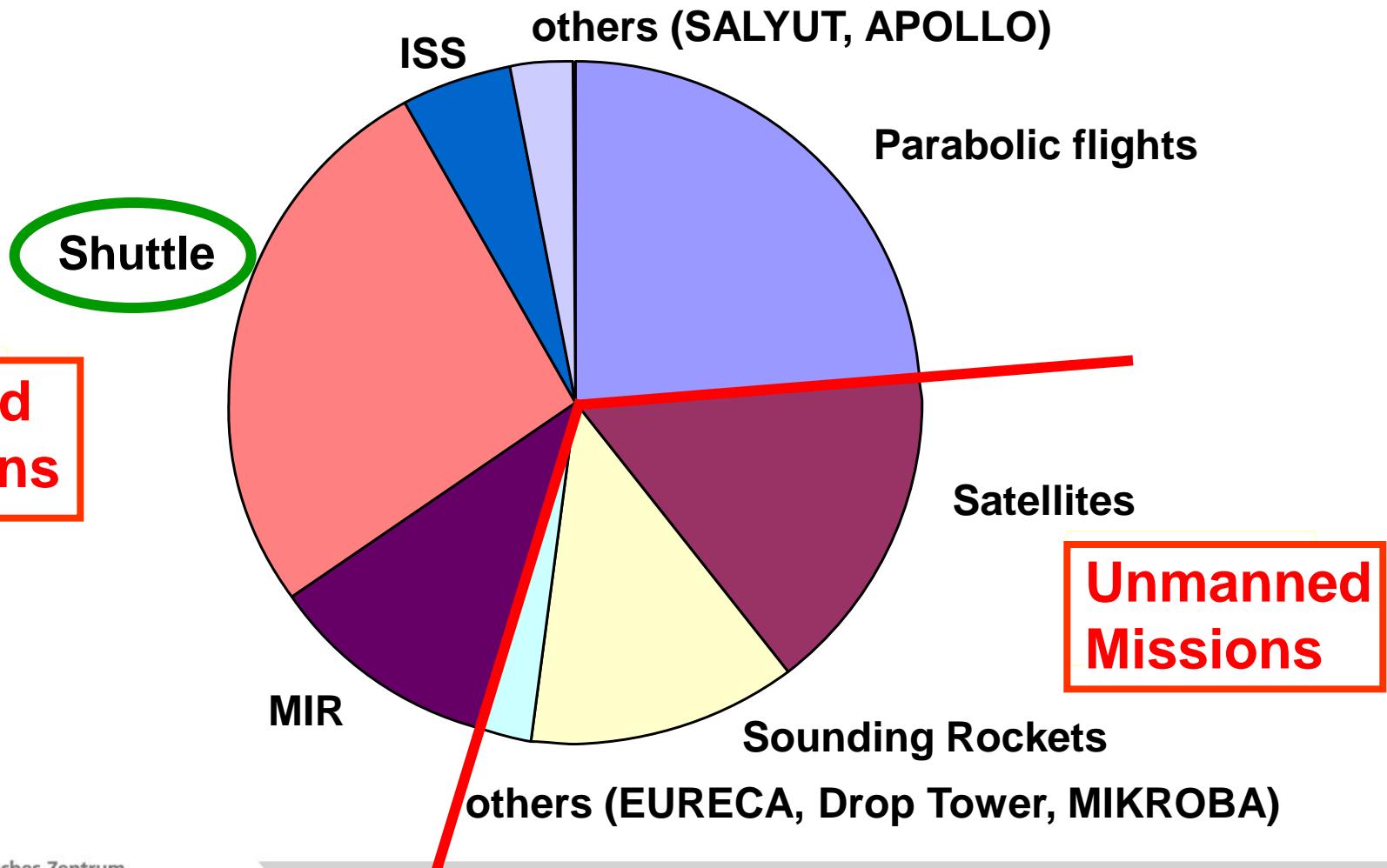
**Astronaut Ulrich Walter**



**Astronaut Hans Schlegel  
at work with the Anthrorack**

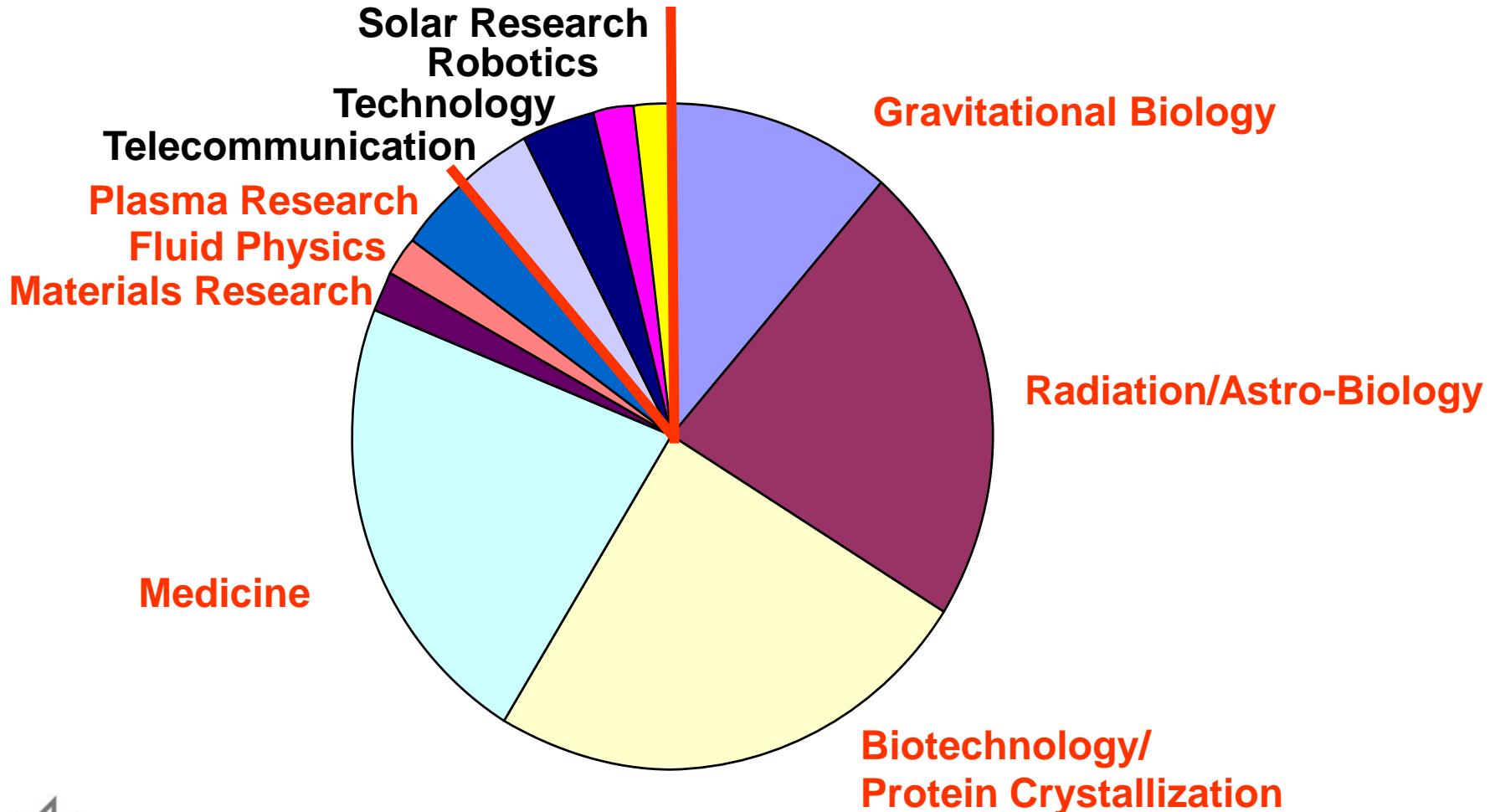
# Flight Experiments vs. Flight Opportunities in the German Space Life Sciences Program (1972-2007)

Total: 526 Experiments

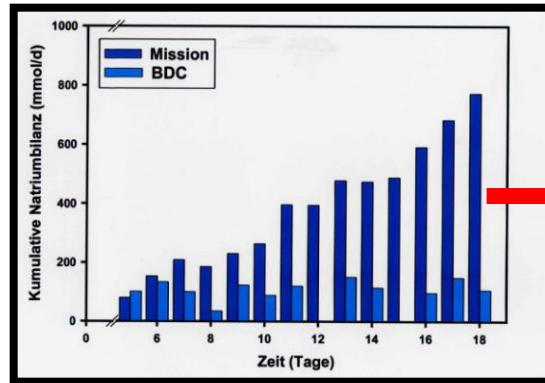


# ISS: German Experiments

completed (38) / ongoing (18) experiments (February 2011)



# Space Research Enabling Breakthroughs in Medicine



Na<sup>+</sup> binds to  
proteoglycans  
in the skin



Blood Pressure  
Osteoporosis  
Immune System





# Future Perspectives ISS and beyond

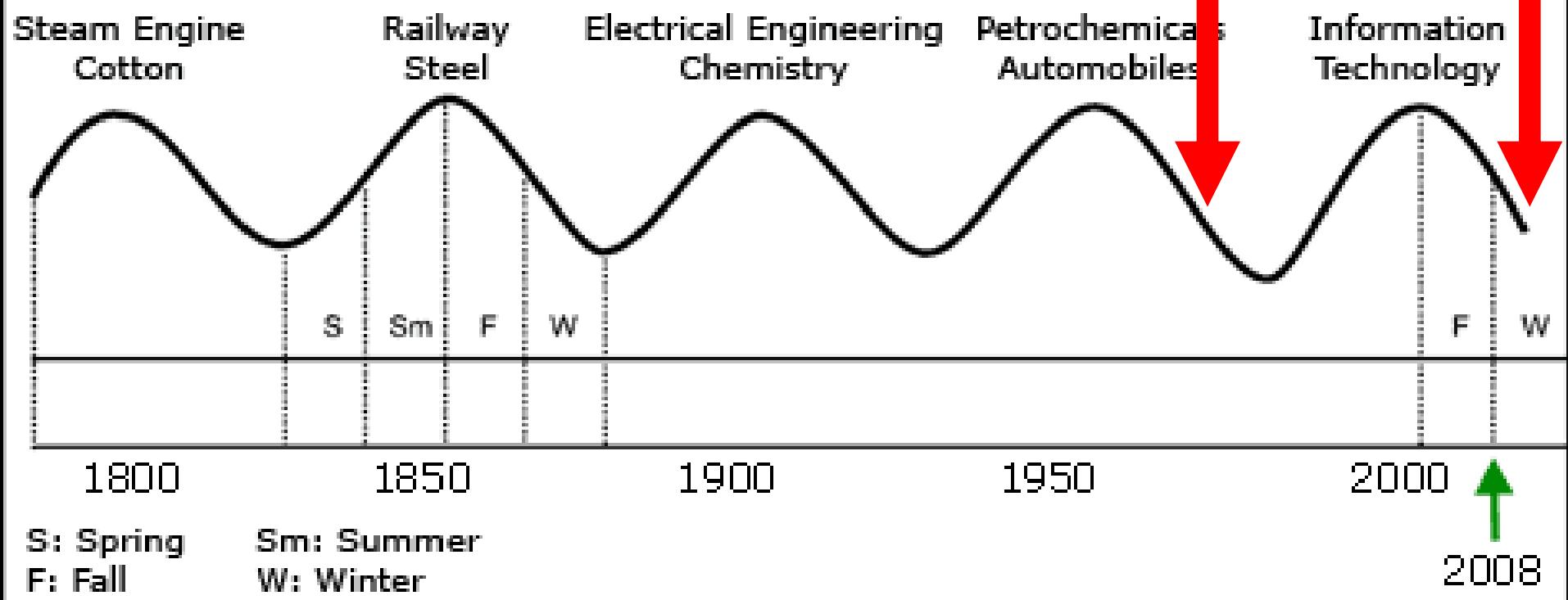
## Reasons for major investments into the future



# Human Space Program Apollo - Shuttle

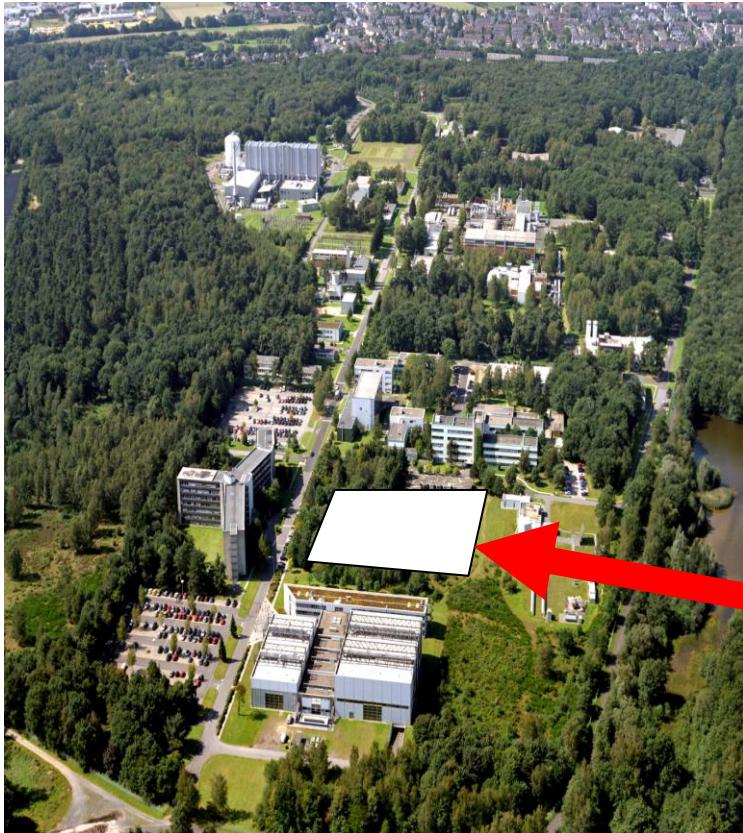
?

## The Global Economy According to the Kondratieff Wave



# :envihab

## A new DLR facility linking human exploration and the next Kondratieff Wave



In operation:  
2013



> 3500 m<sup>2</sup>



Deutsches Zentrum  
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in der Helmholtz-Gemeinschaft

Gerzer Passing the Torch 110421 12



:envihab



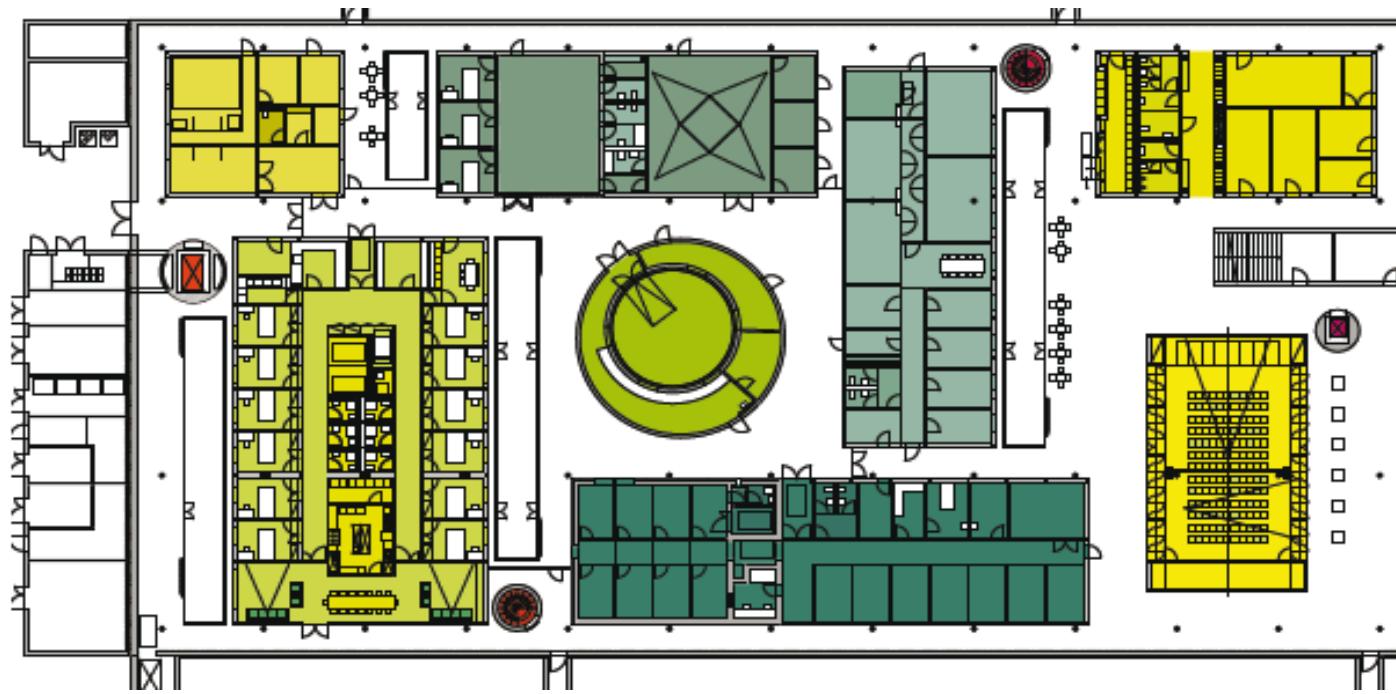
uses the fascination  
of exploration  
to inspire  
and thus to stimulate economic growth

:envihab therefore focusses on

- 
- medicine (Prevention, Individualisation, Telecare)
  - environment (Bioregeneration)
  - outreach (Engineers, Scientists)
-

Isolation –  
Immobilization –  
Prevention –  
Rehabilitation –  
Telecare –  
  
Stress –  
Complicated Tasks –  
  
Bioregeneration –  
  
Private Human  
Spaceflight –  
  
Public Outreach –

**1. Symposium  
May 22 – 24, 2011  
Cologne**



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in der Helmholtz-Gemeinschaft



A white space shuttle is shown in orbit against a dark background. The Earth is visible in the upper left, showing clouds and landmasses. A large, grey satellite dish antenna is mounted on top of the shuttle's payload bay. The shuttle has a circular NASA logo on its side.

**Let us remain successful!  
Let us inspire!**

**Let us explore!**

**Thank you  
for your attention**