



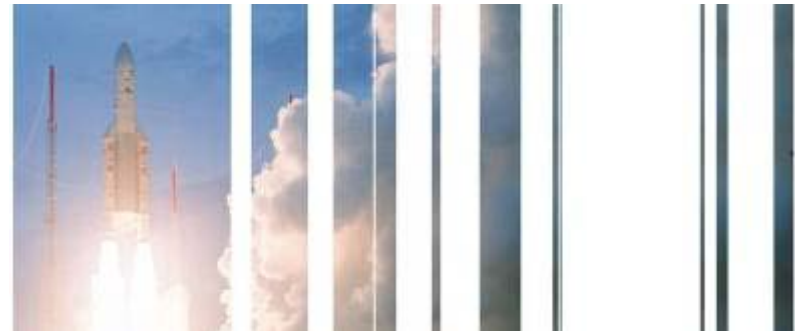


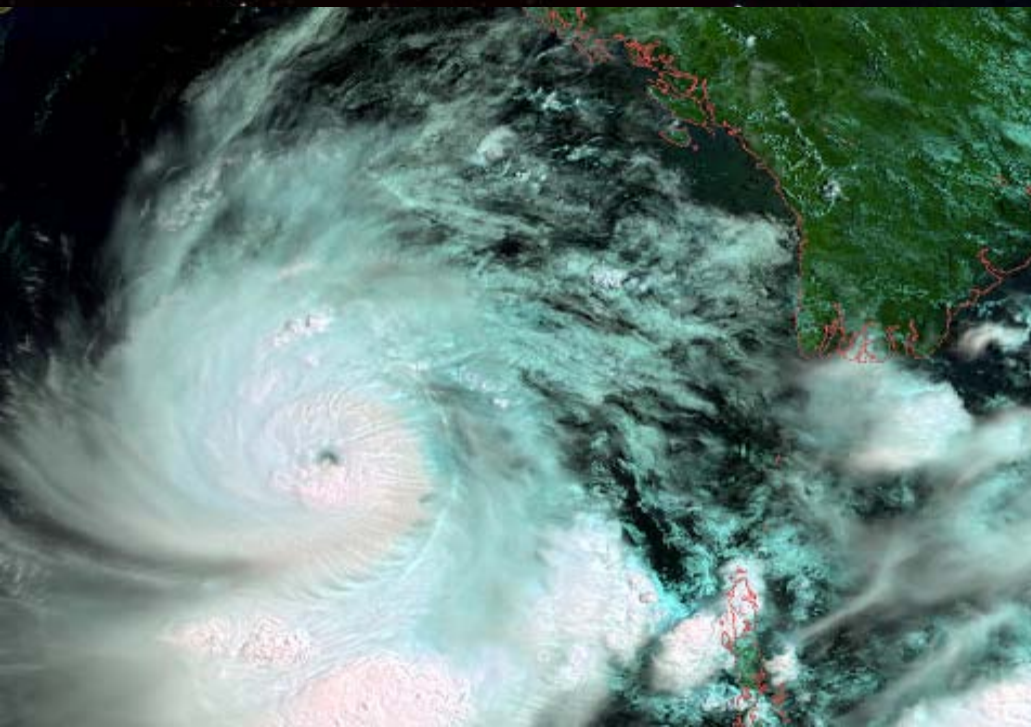
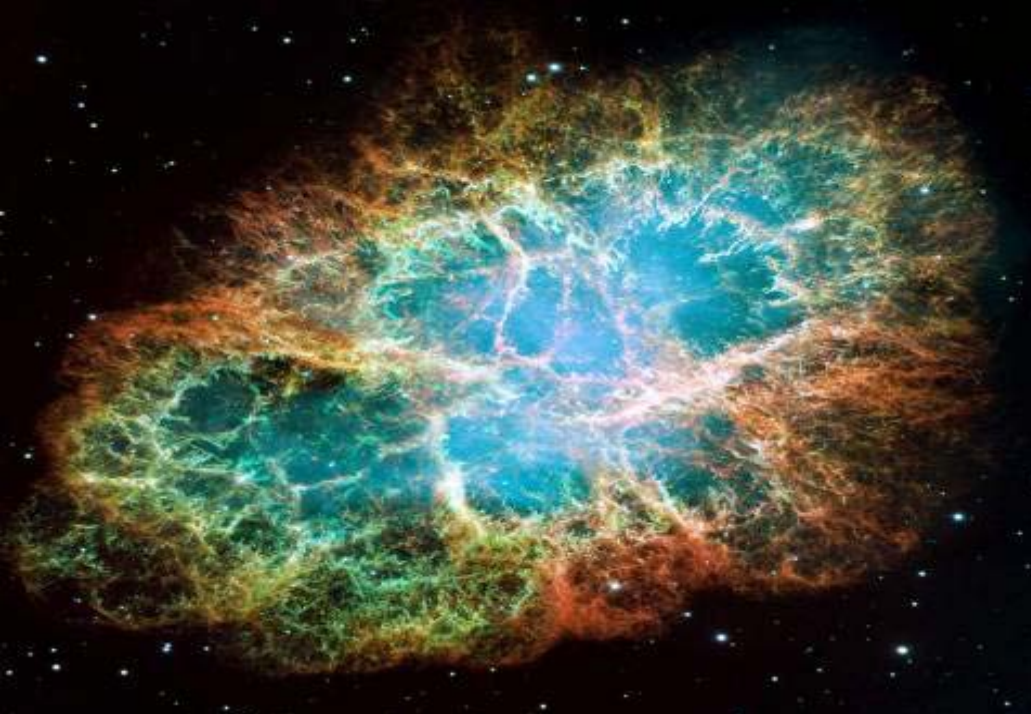
# ESA Technology Transfer Programme

C.J.J. Eldering (Niels)

10 Years ESA-Portugal -  
Bringing Technology Down to Earth

Lisboa, 07/12/2010



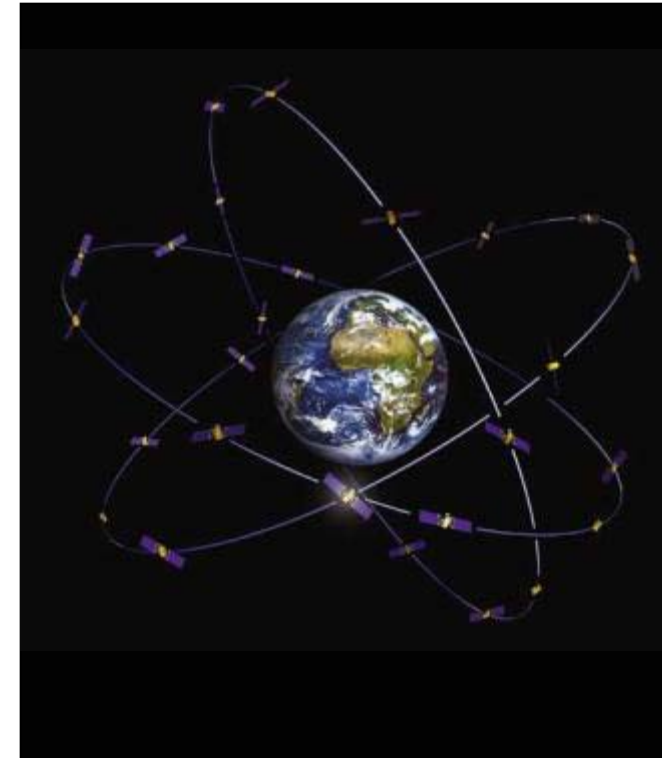




> [Vulcan 2 Engine](#)



> [SMOS](#)



> [Galileo](#)



Imagine...



## Space need:

- low weight
- strength and durability
- efficiency and reliability
- compactness
- temperature resistance
- radiation resistance
- corrosion resistance





# Brembo... Breaking lighter & greener



# Lombard Medical: SMA's shaping the Future

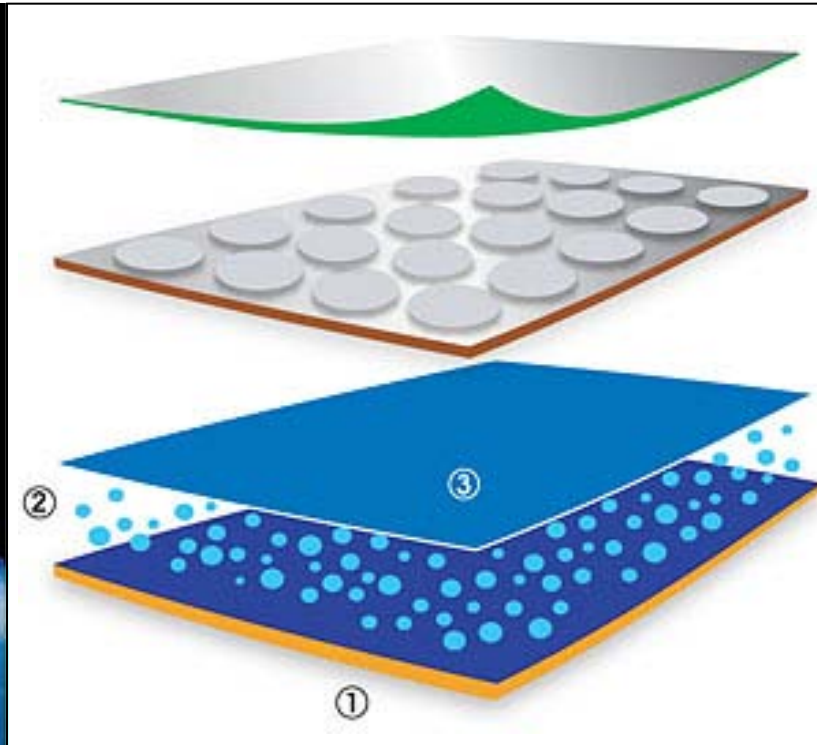


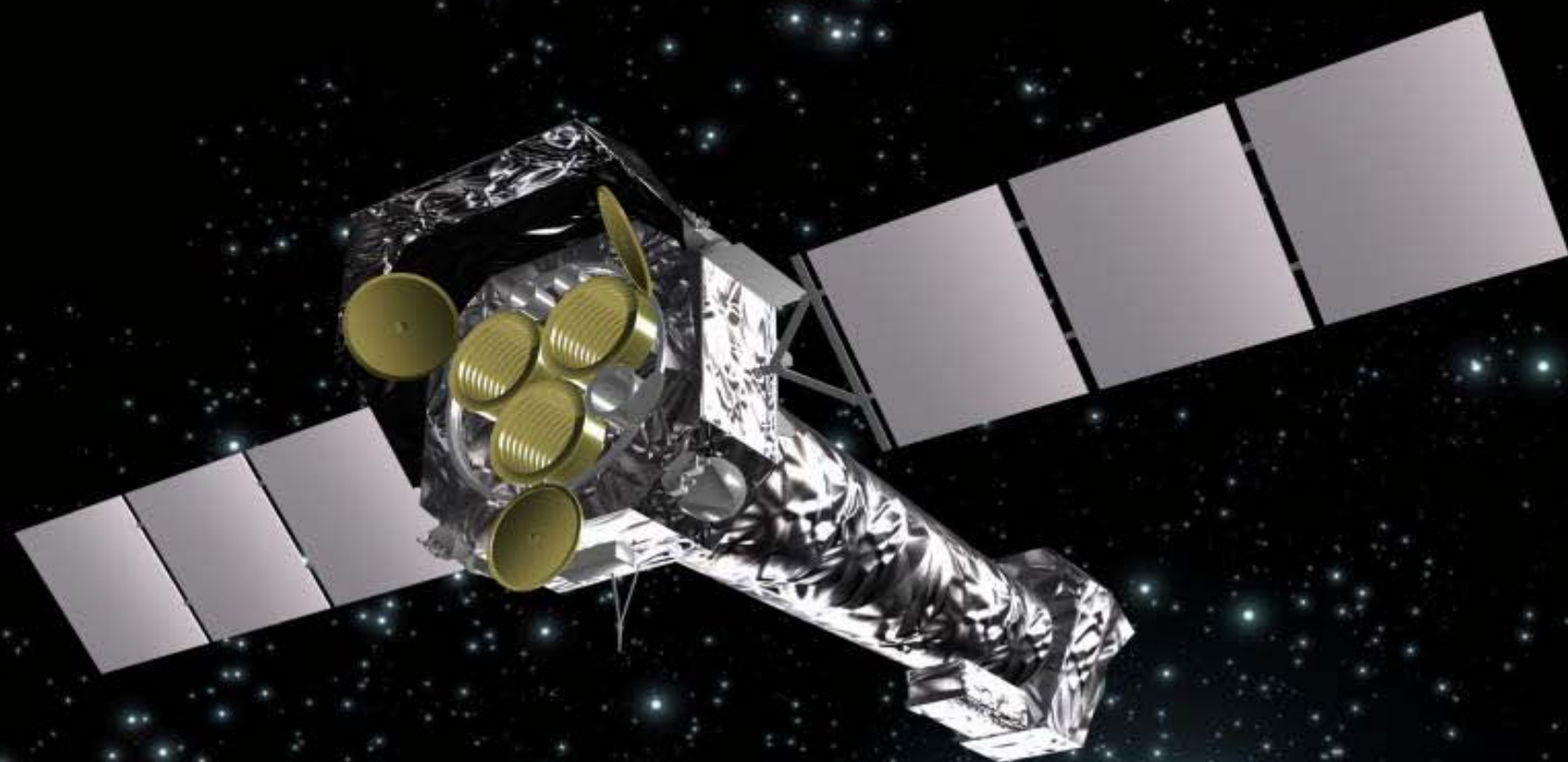
> Hubble Space Telescope (ESA/NASA)



> Shape Memory Alloys (Anson Medical Ltd, Lombard Medical Technologies Plc)

# Hydro\*jacket... safeguarding fire fighters



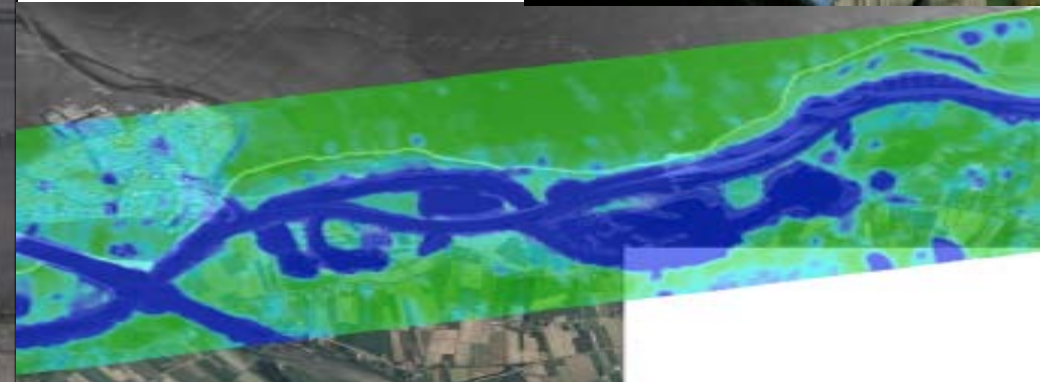
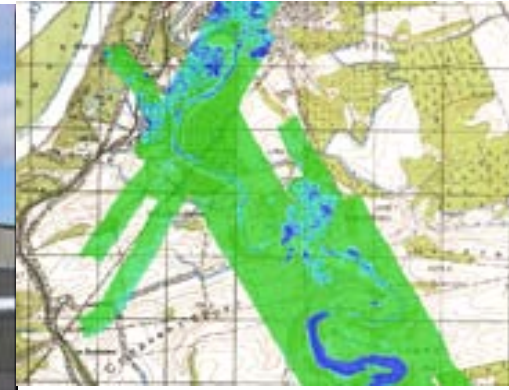


Space Instrumentation

# MetaSensing... Measuring mm deformation



# MIRAMAP...finds Water where you do not need it



ThruVision™  
Systems



Screening people on the move

> [ThruVision's TS4 generation of terrahertz scanners \(ThruVision Ltd\)](#)

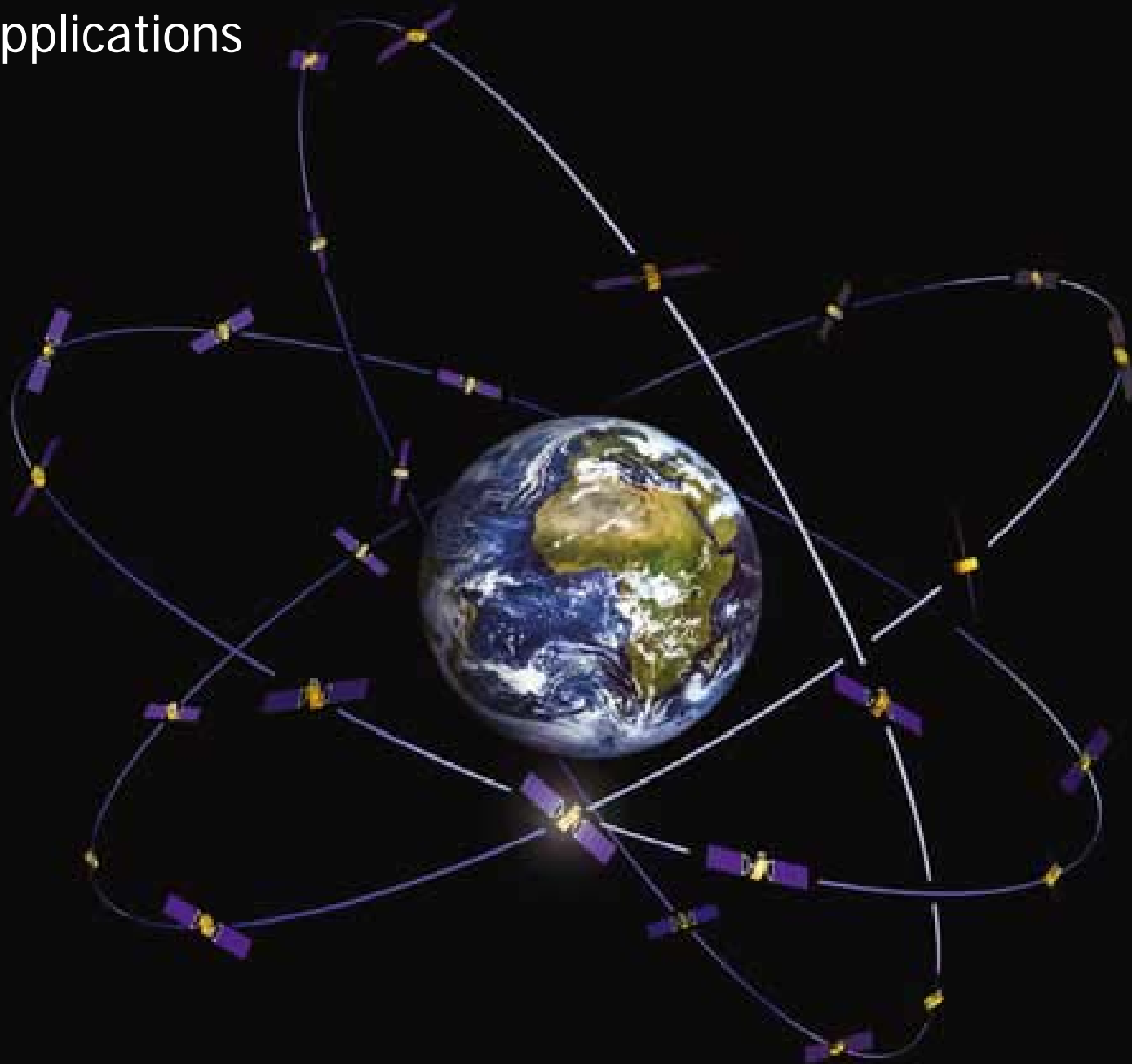
Introducing

TS4



[Click to learn more...](#)

# Satellite Applications





# iOpener... Join the Race!



> World Rally Championship (North One Sport)



> Former Dutch Minister Economic Affairs Maria van der Hoeven (iOpener GmbH)

# EstrellaSat... Fleet Managing of 650Ton Trucks



# Bliin... Your Life!





**TRAINGRID**  
Wearable technology for body monitoring

Monitoring your body:

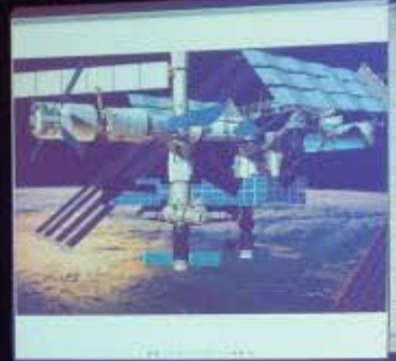
- Electrocardiogram, Temperature & Heart rate
- 3D body position & Geo-location ( GPS )
- Bluetooth link & SD flash memory

The graphic features a woman running on the right, a group of people in a boat on the left, and a heart rate line extending from the logo across the top.



COLUMBUS CONTROL CENTER

INTERNATIONAL SPACE STATION



098 12:19:02  
with Star  
2004-Apr-6 18:19  
Mission Duration  
043 18:40:08

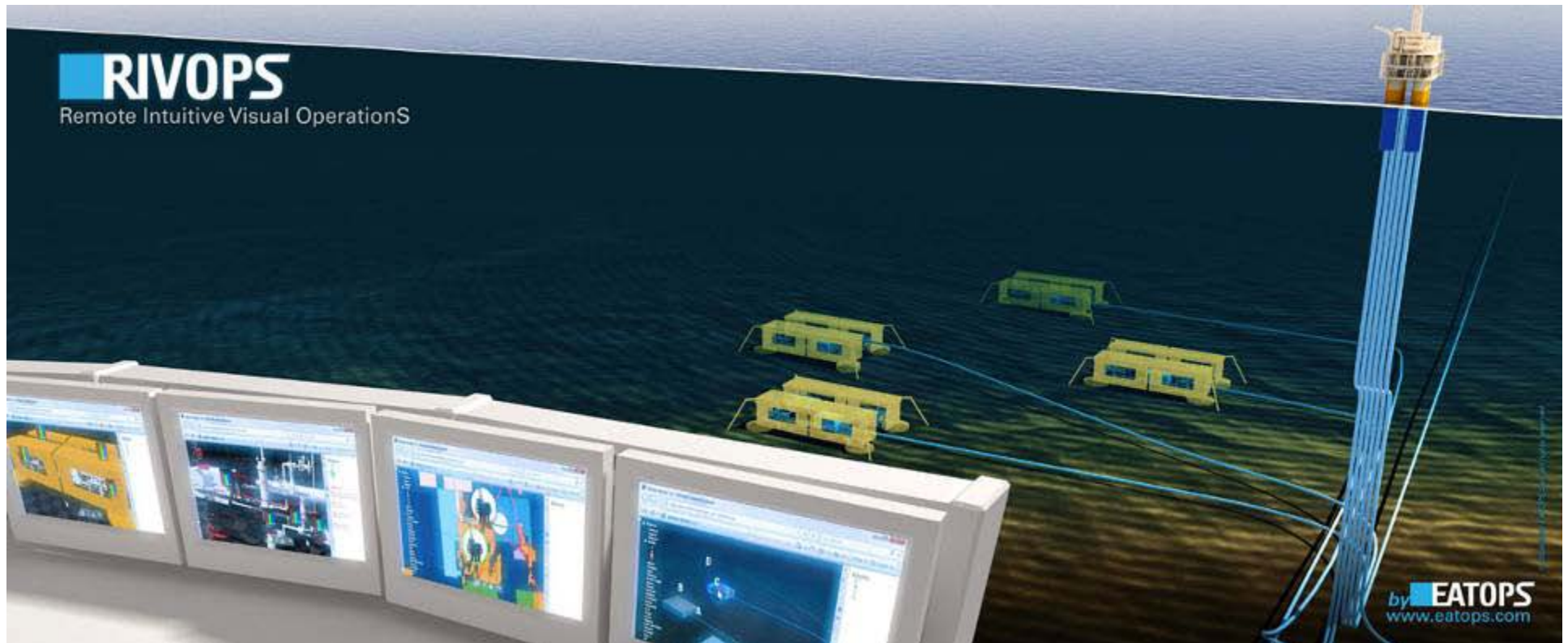
308 09:18:02  
with Star  
2004-Nov-03

098 12:19:02  
with Star  
2004-Apr-6 18:19  
Mission Duration  
043 18:40:08

308 09:18:02  
with Star  
2004-Nov-03

Mission Control

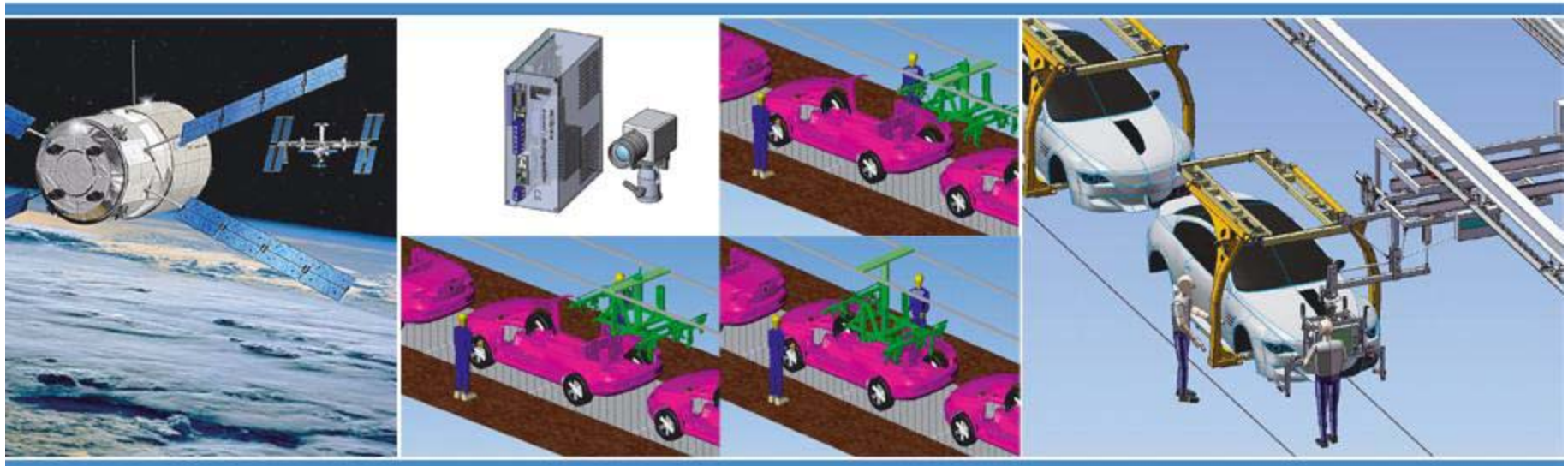
# EATOPS... Remote Intuitive Visual Operating



# Rotacional... Keeping track anywhere



# MDU Space... Docking on the assembly line





## ESA TECHNOLOGY TRANSFER PROGRAMME OFFICE

### Mission Statement

The main mission of the ESA Technology Transfer Programme (TTP) is to facilitate the use of space technology and space systems for non-space applications and to further demonstrate the benefit of the European Space Programme to the European citizens.

The Technology Transfer Programme Office (TTPO) is responsible for defining the overall approach and strategy for the transfer of space technologies and systems, including the incubation of start up companies and its funding.

# TTPO Lines of Business



Transfer of Technology,  
Services and Applications

Support

ESA's IP

Space Industry's IP

Business Incubation

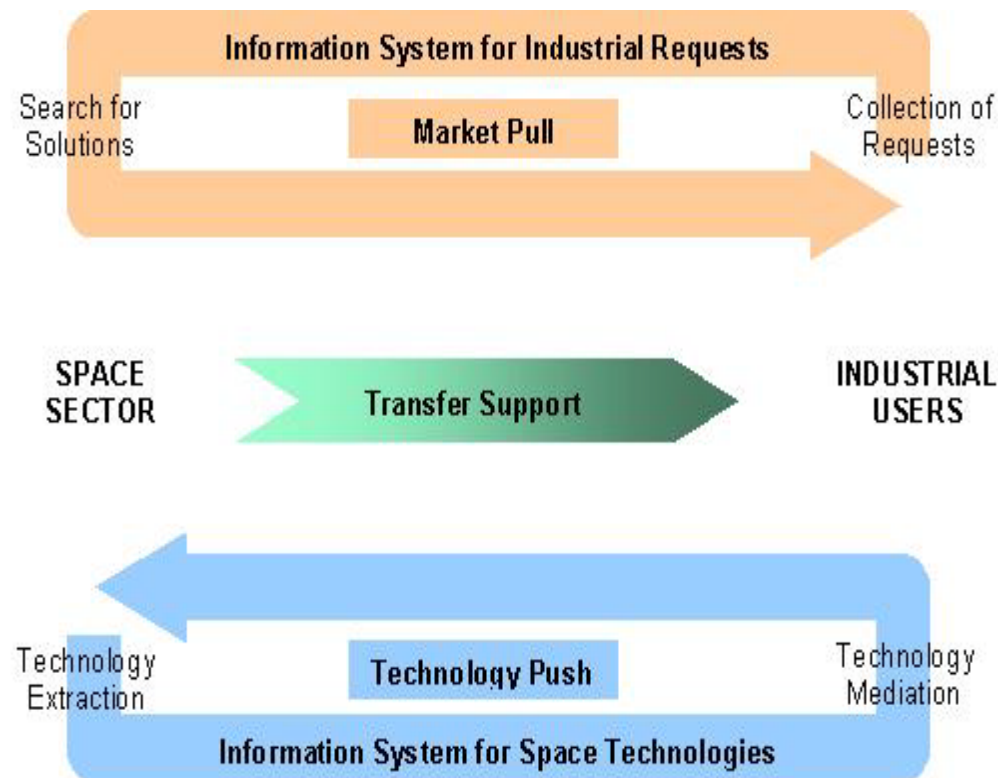
Investment

Technology  
Transfer from ESA

Technology Transfer within Industry

*European Commission (ENCADRE, KIS4SAT, e.o.)  
Enterprise Europe Network EEN (+250)  
ESA Bidders: Large industry, SMEs & Universities(>13000)  
National Space Agencies*

[www.technology-forum.com](http://www.technology-forum.com)



*NTTI's & Brokers being the local contact point for TTP projects in the country*

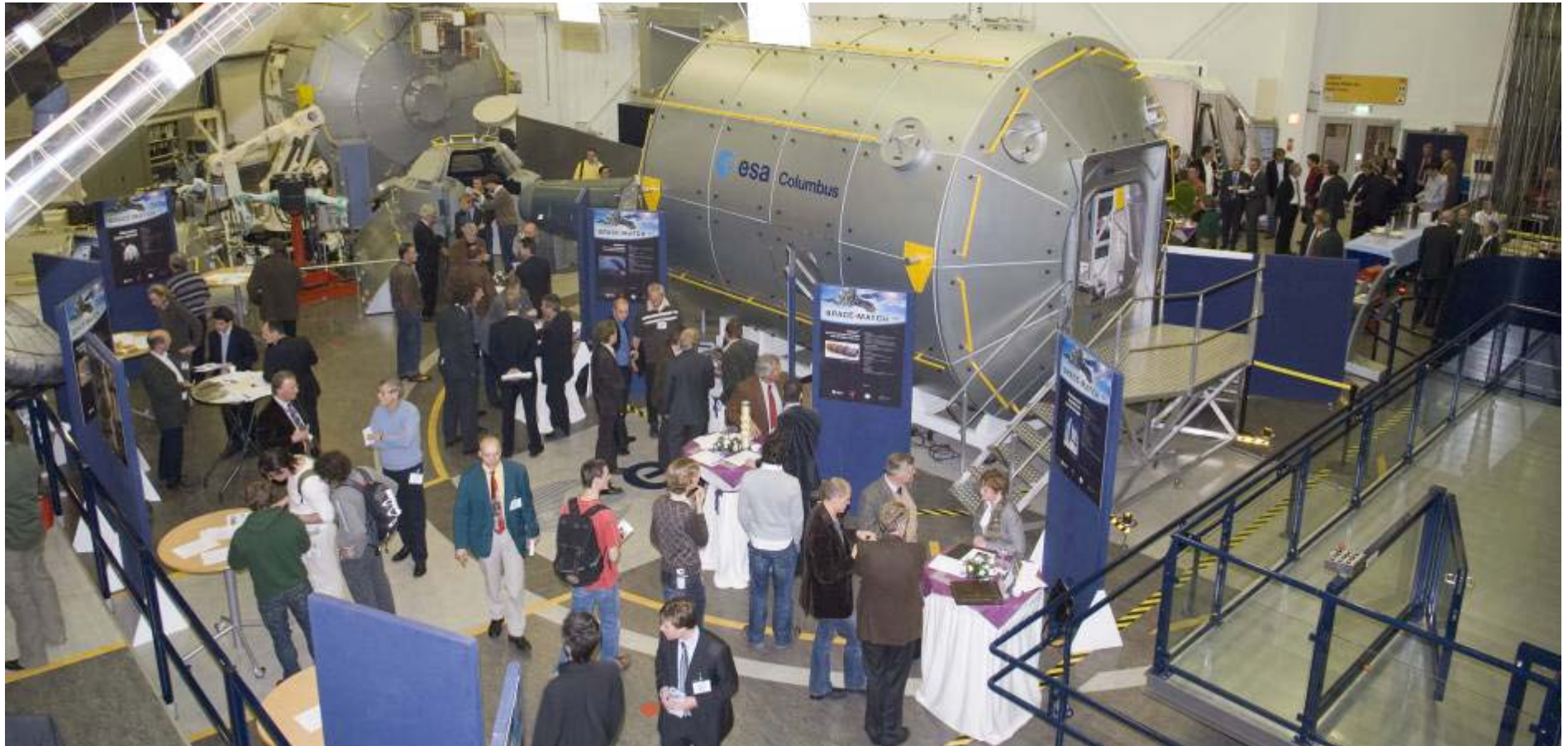
## National contact points for TTP projects

### In Portugal:

- **FCT Space Office**
- **Innova+**

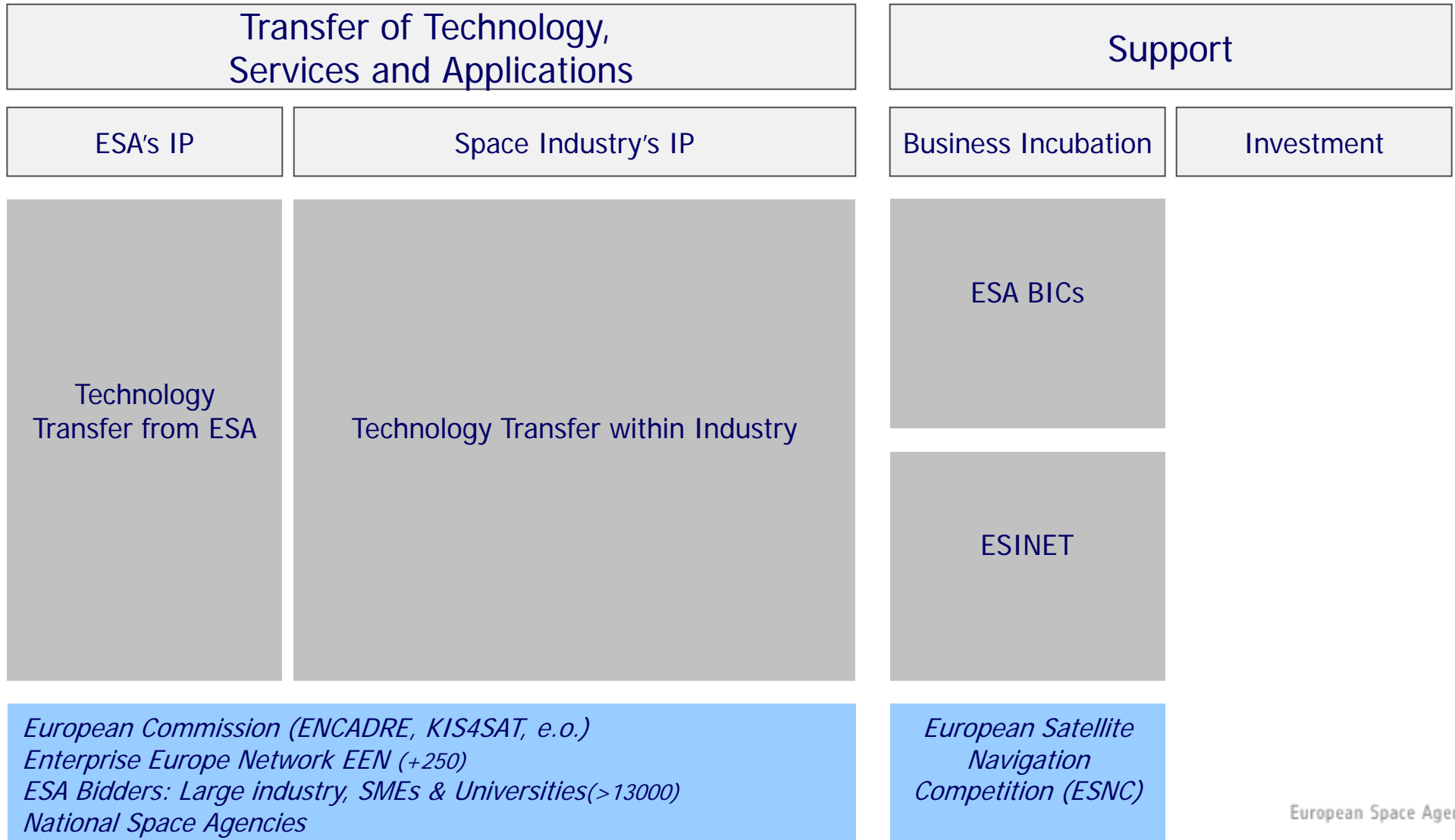
e.g. 'Technology Transfer Meeting' (12/11/2010);  
at the Portuguese Entrepreneurial Association





> Space Match 2009, Noordwijk, Netherlands

# TTPO Lines of Business



# ESA Business Incubation Centres



> Noordwijk, Netherlands (ESTEC)



> Rome, Italy (ESRIN)



> Darmstadt, Germany (ESOC)



> Oberpfaffenhofen, Germany (ASTO)



> Harwell, United Kingdom (RAL/ISIC)

# ESA Business Incubation Centres



**business  
incubation  
centre**

Noordwijk  
managed by BVT

> Noordwijk, Netherlands (ESTEC)



**business  
incubation  
centre**

Rome  
managed by bidazio

> Rome, Italy (ESRIN)



**business  
incubation  
centre**

Darmstadt  
managed by cesah

> Darmstadt, Germany (ESOC)



**business  
incubation  
centre**

Oberpfaffenhofen  
managed by AZD

> Oberpfaffenhofen, Germany (ASTO)



**business  
incubation  
centre**

> Harwell, United Kingdom (RAL/ISIC)



# Partnerships: e.g. ESA BIC Noordwijk



> Noordwijk, Netherlands

# Partnerships: e.g. ESA BIC Oberpfaffenhofen



European Space Agency



ANWENDUNGSZENTRUM

Oberpfaffenhofen



DLR

Deutsches Zentrum  
für Luft- und Raumfahrt e.V.  
in der Helmholtz-Gemeinschaft



Kreissparkasse  
München Starnberg

> [Oberpfaffenhofen, Germany](#)

# Partnerships: e.g. ESA BIC Harwell



> [Harwell, United Kingdom](#)

- **Cost-advantages**

An incubator offers cost-advantages by sharing facilities and overheads.

- **Switching Centre**

An incubator acts as a switching centre, linking people & resources together.

- **Accelerating**

By clustering access to support functions the incubatees do not need to “shop around”, accelerating the start-up process.

- **Cross-fertilization**

An incubator is a place where cross-fertilization among incubatees is stimulated.

# A Case Study



EATOPS





**TRAINGRID**  
Wearable technology for body monitoring

Monitoring your body:

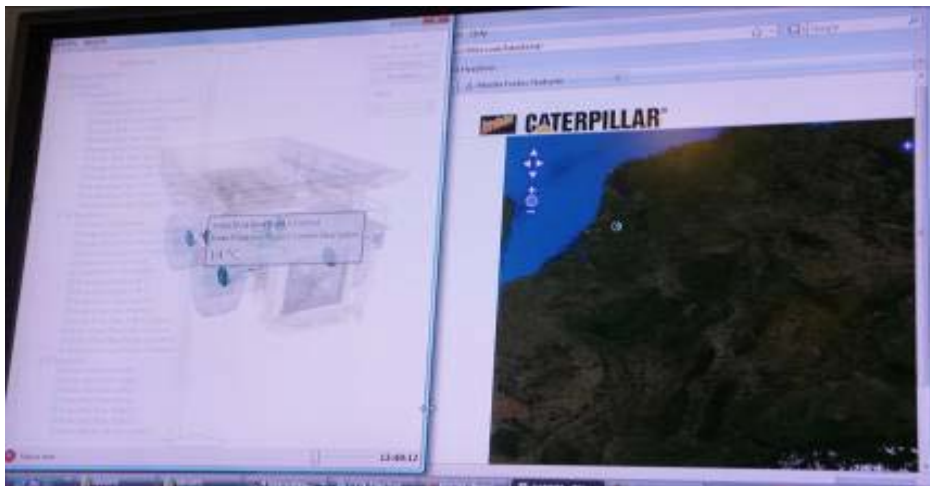
- Electrocardiogram, Temperature & Heart rate
- 3D body position & Geo-location (GPS)
- Bluetooth link & SD flash memory

The advertisement features a woman running in the foreground and a collage of images in the background showing a person in a green jacket, a person in a blue shirt, and a person in a yellow jacket.



**RIVOPS**  
Remote Intuitive Visual Operations

The advertisement shows a control room with several computer monitors displaying various data and images. In the background, there is a 3D visualization of a mining operation with yellow trucks and a tall structure. The logo for EATOPS is visible in the bottom right corner.







Engine temperature: 0 °C  
Fuel level: 0%  
Body temperature: 38 °C  
Speed: 0 Km/h  
Location: 52.22 x 4.42



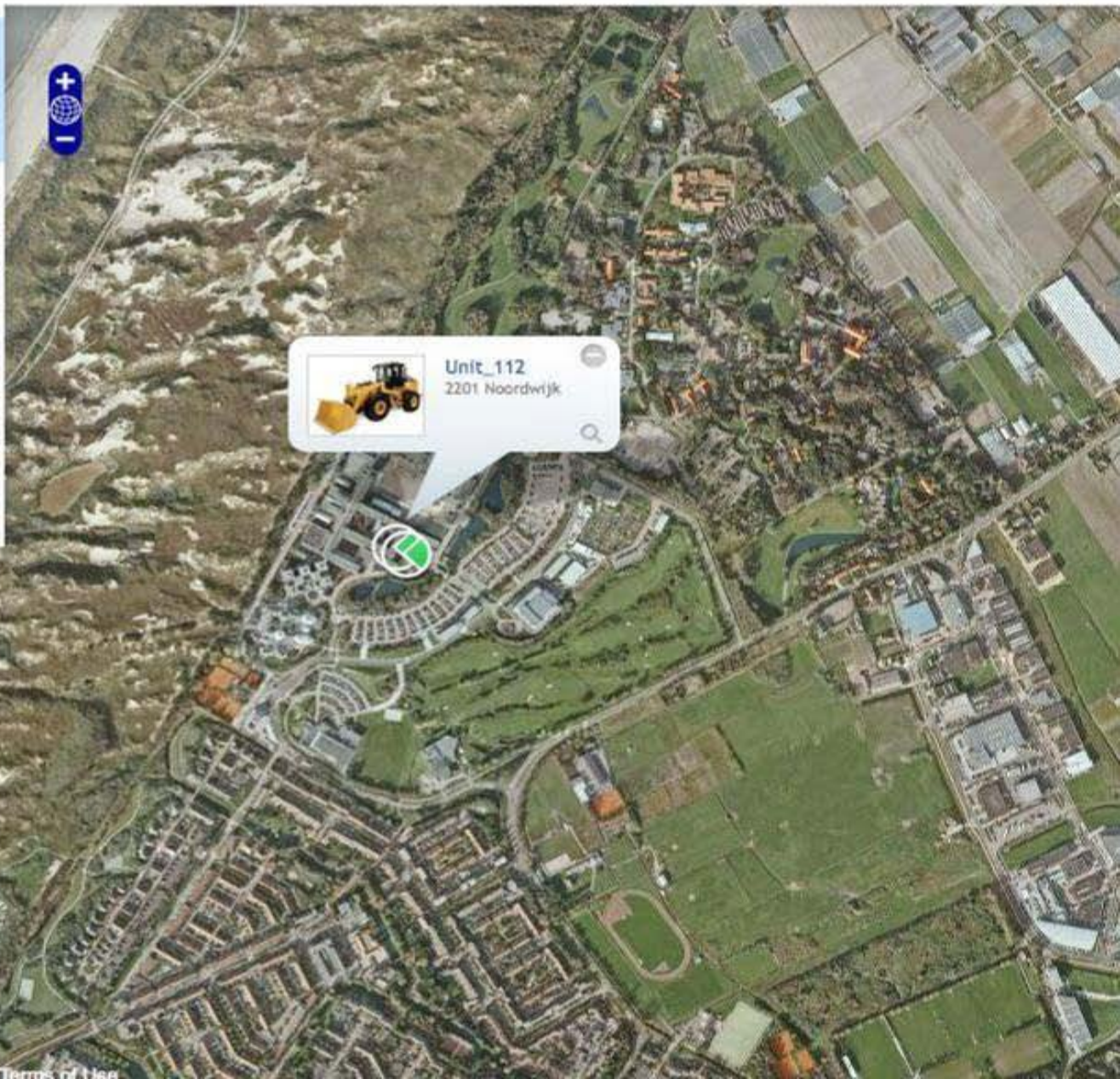
name: mechanic01  
phone: +31 24321894  
message: working on the Esat POC  
distance to truck: 20.194655703 m



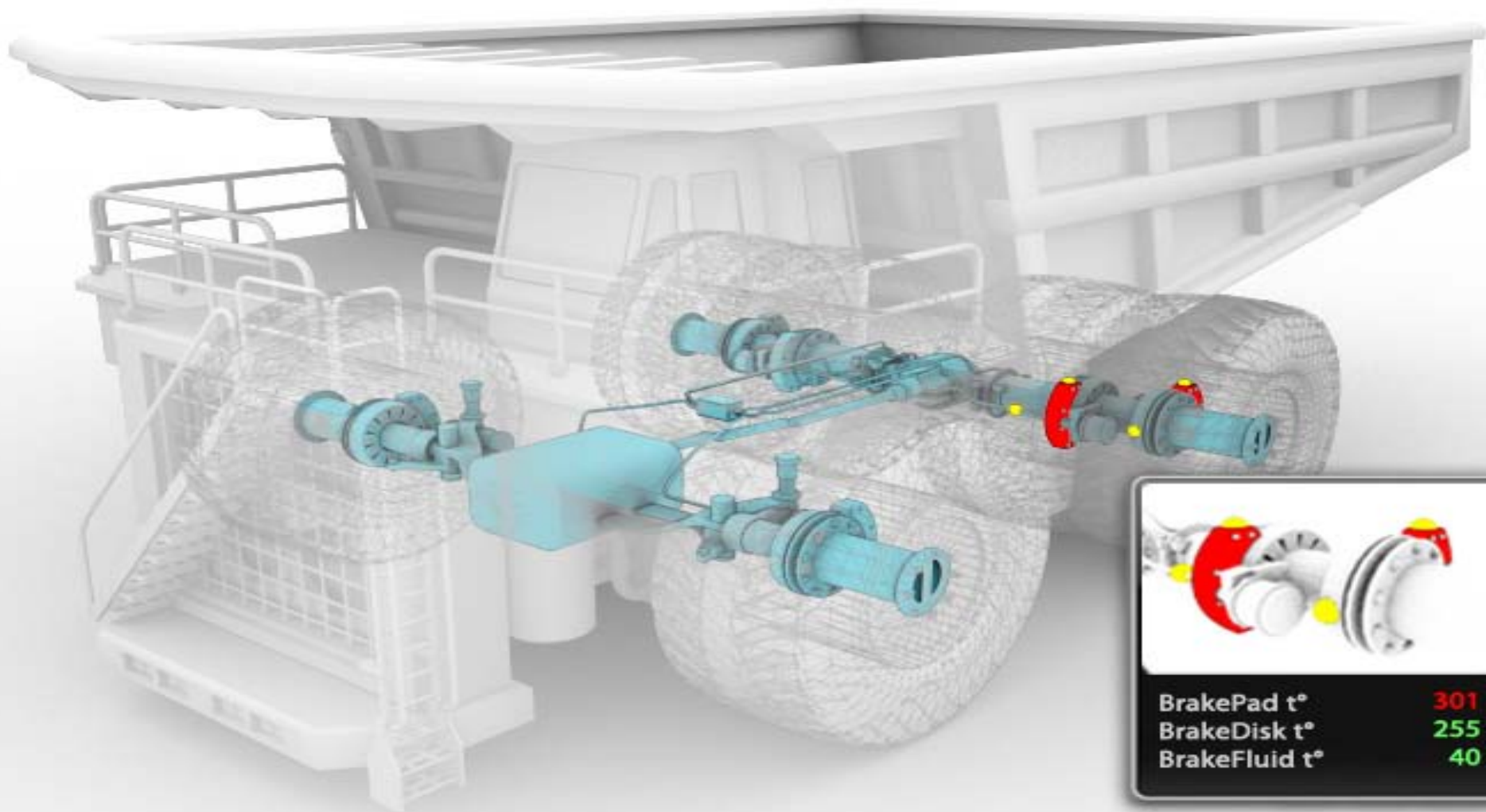
name: mechanic02  
phone: +31 24321895  
message: All working ok now  
distance to truck: 37 km



name: mechanic03  
speed: 0 m/s  
message: ESat  
distance to truck: 265.024212711 m



 **Unit\_112**  
2201 Noordwijk



BrakePad t°	301
BrakeDisk t°	255
BrakeFluid t°	40

## GRADUATION:

- ✓ Team, skills, business routines
- ✓ Business plan & investment proposition
- ✓ 1st product / integration in distribution chain

## INCUBATION SUPPORT:

- ✓ Access to expertise
- ✓ Access to services
- ✓ Access to entrepreneurial community
- ✓ Access to international partnerships
- ✓ Access to spark-funding

## START:

- ✓ Entrepreneur
- ✓ Business idea
- ✓ Technology (*depending on TRL*)



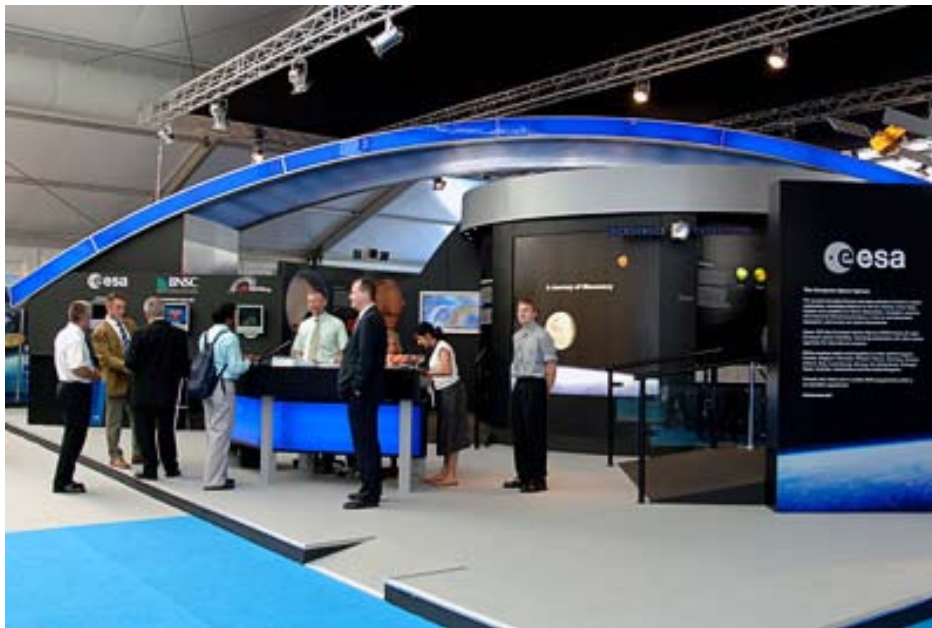
> August 14 2008: Ariane 5 with Superbird-7 & AMC-21  
Credits: ESA/CNES/Arianespace 2008

## INCUBATION SUPPORT:

- Access to business support services
- Access to entrepreneurial community
- Unique High Tech Environment
  - Technical Expertise
  - Laboratories & Workshops
- International gateway to industry
- Spark-Funding



# Joint Promotion on fairs



> Farnborough 2006, UK

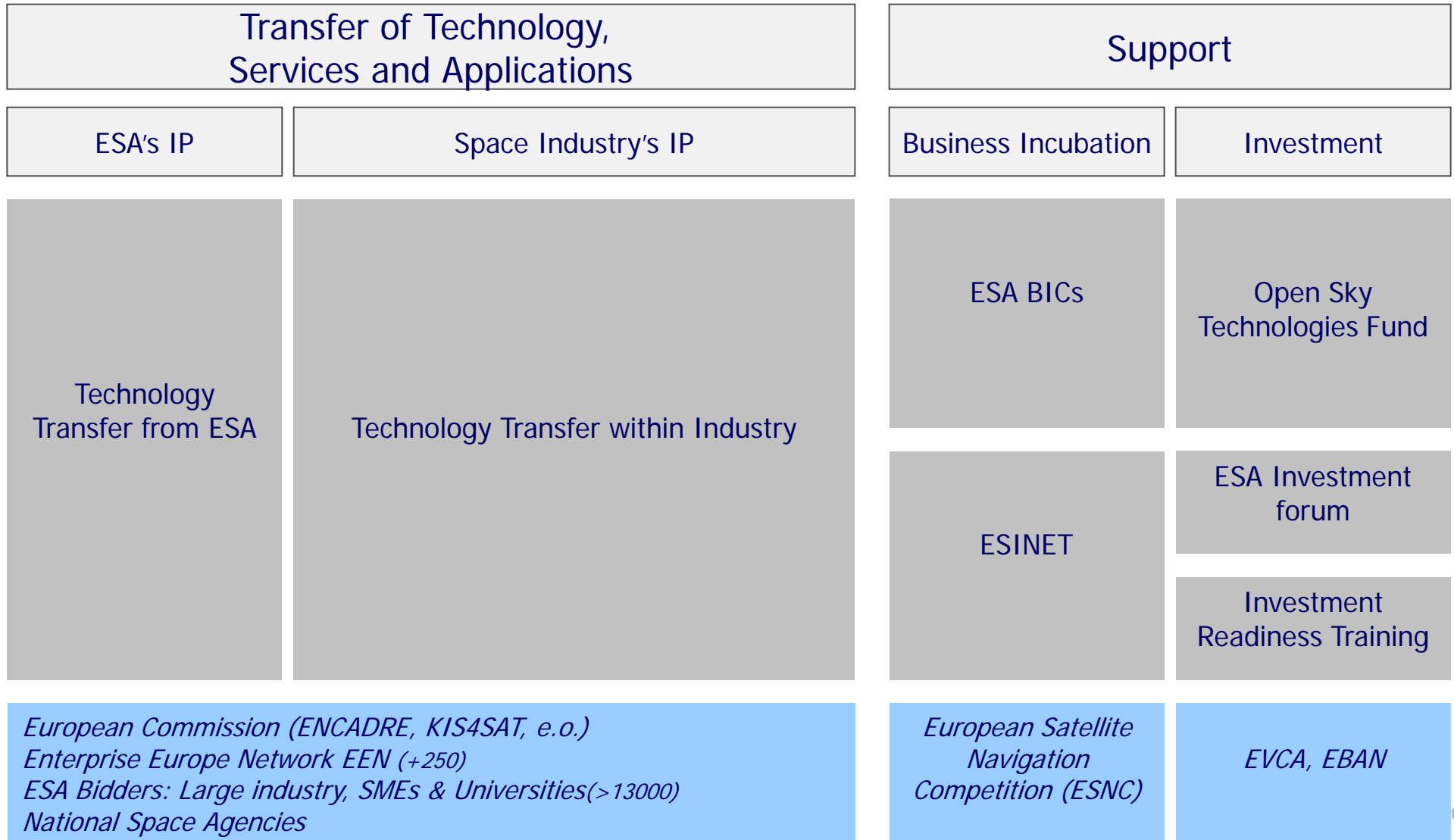


> Hannover Messe 2010, Germany

# ESA BIC supports >100 start-up companies



# TTPO Lines of Business



# ESA: Your Partner in Launching Business



ESA-CNES-ARIANESPACE / Optique Vidéo du CSG - P BAUDON

> February 12, 2009: Ariane 5 flight V187 successful launch with the HOT BIRD™ 10, NSS-9 and Spirale payloads – Credits: ESA/CNES/Arianespace 2009



## THANK YOU

Niels Eldering  
Technology Transfer Officer  
[Niels.Eldering@esa.int](mailto:Niels.Eldering@esa.int)