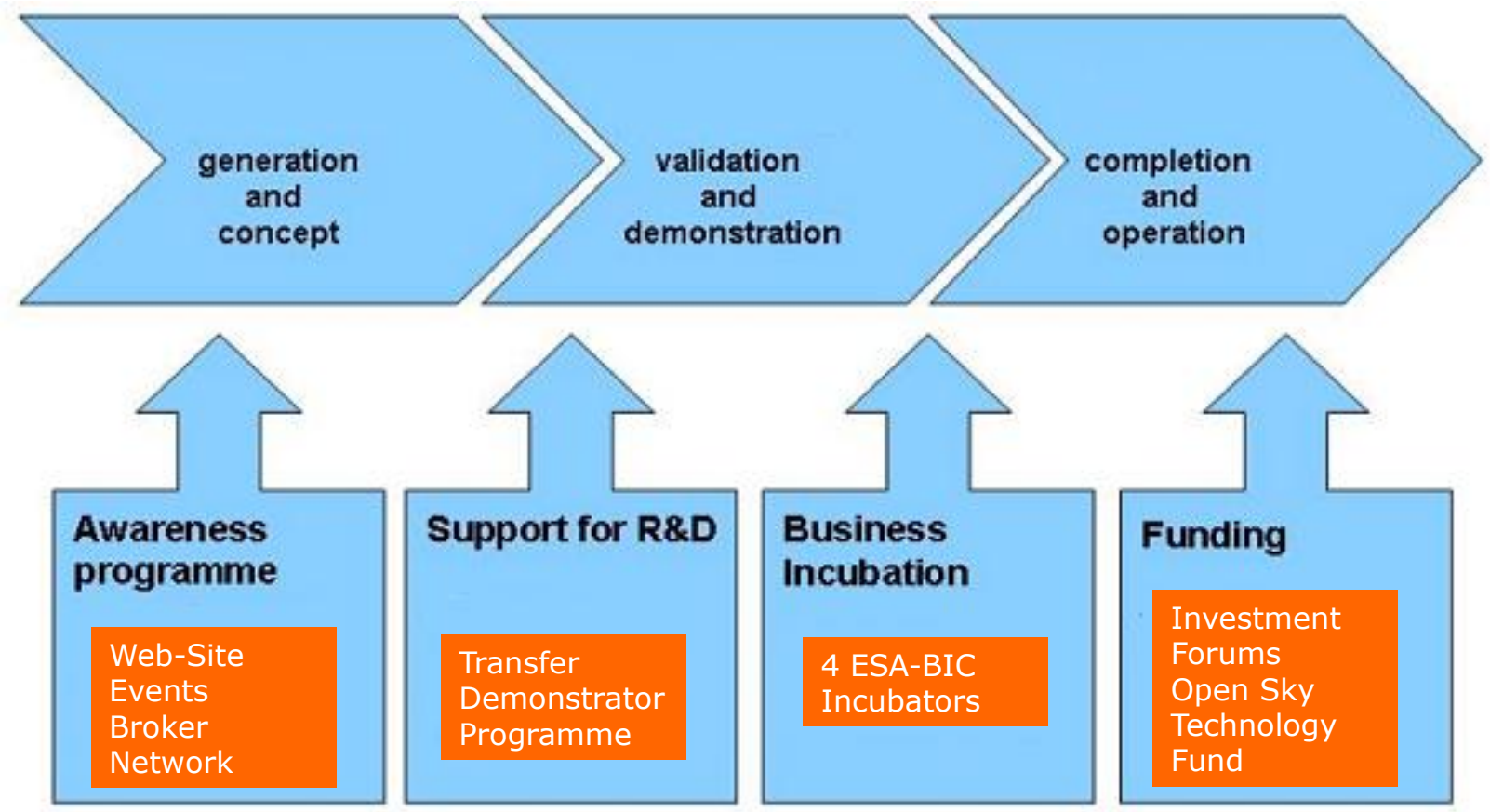
Innovation from Space and the Energy Challenge

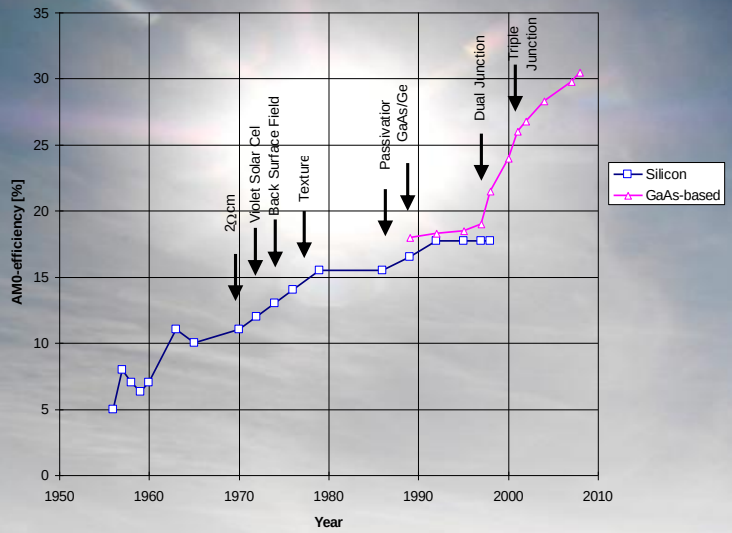
Callum Norrie, ESA Technology Transfer Programme Office

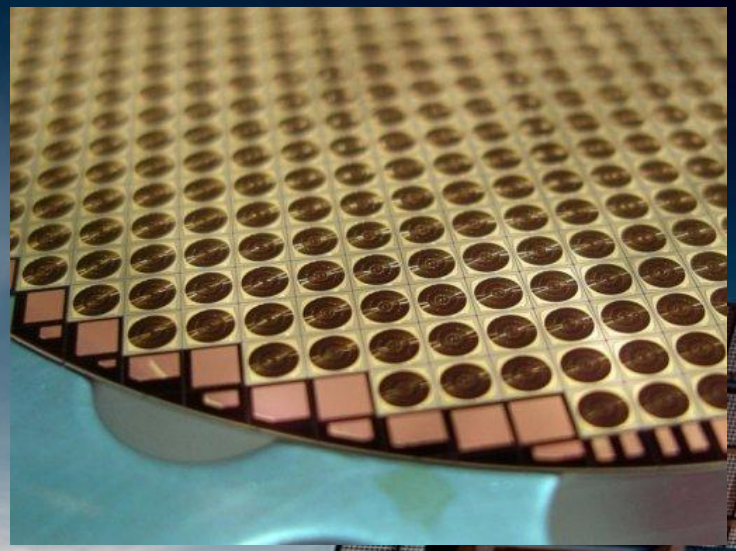
IEA Meeting, 27th April 2010

Technology Transfer Programme Office
Lines of Support vs Innovation Chain

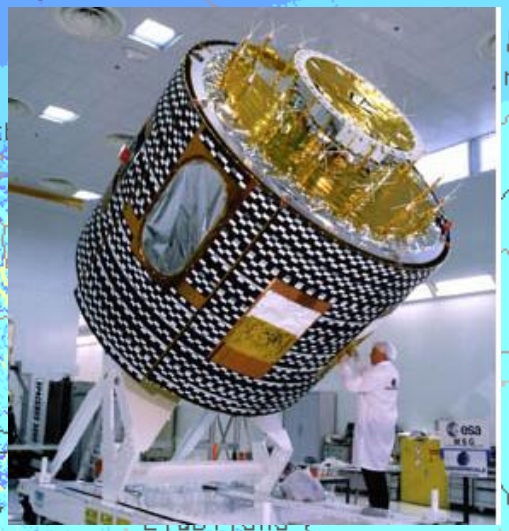


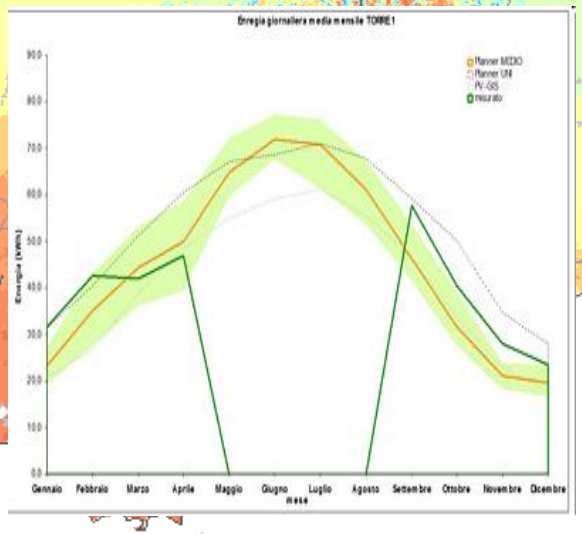
Concentrating Photovoltaics with Triple Junction GaAs Solar Cells





Space Systems
Improving Efficiency of Solar Power



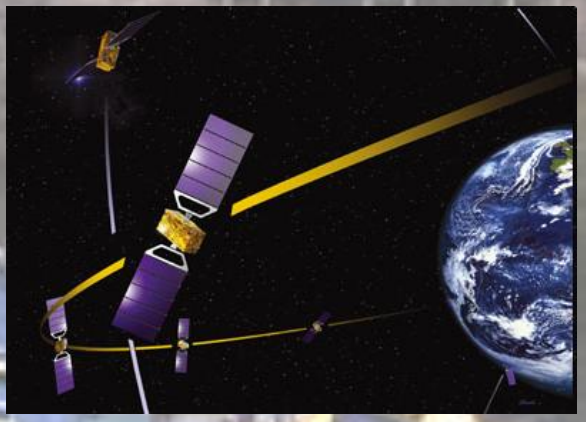


Augsburg
Freisgau
Muenchen
Zuerich
Luzern
Bergamo
Milano
Brescia
Verona
Padova
Venezia
Trieste
Rijeka
Parma
Modena
Genova
Bologna
Massa
Rimini
Prato
Firenze
Livorno

100 km

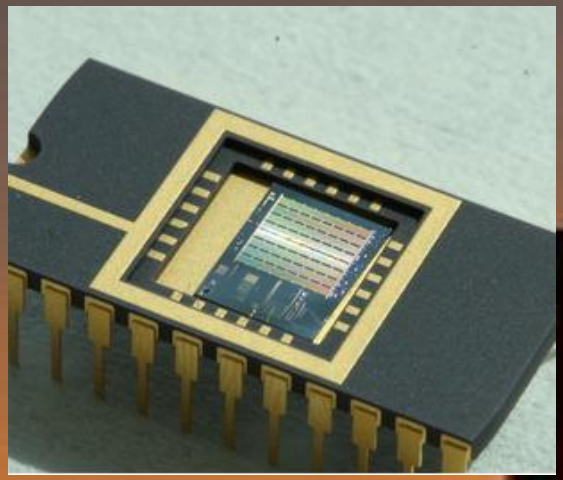
900
1000
1100
1200
1300
1400
1500
1600
[kWh/m2]

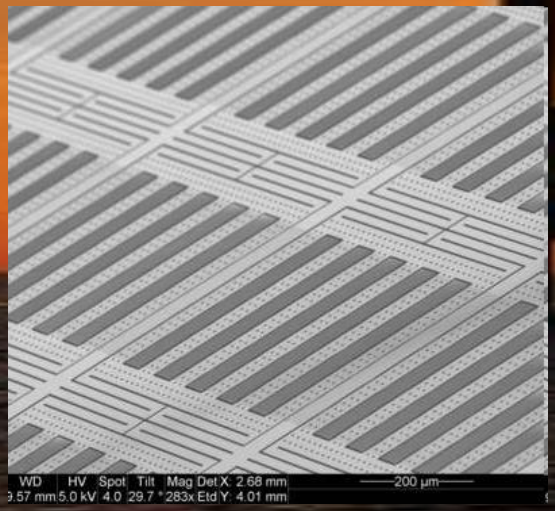
Saving fuel with smart vehicles and smart driving



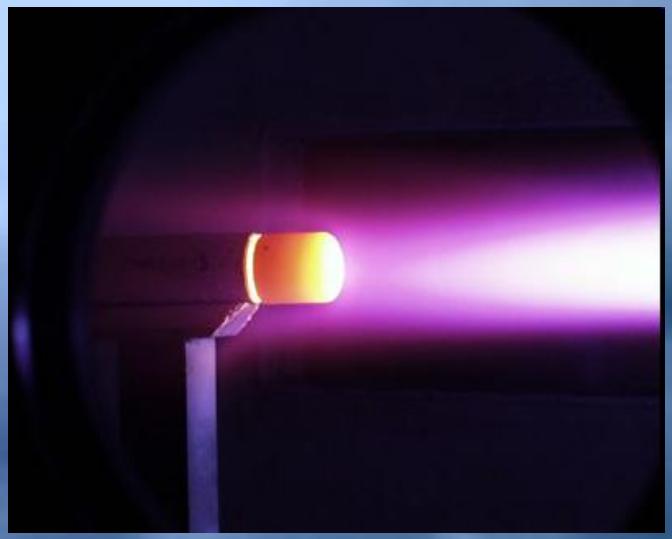
Tracking your Carbon Footprint

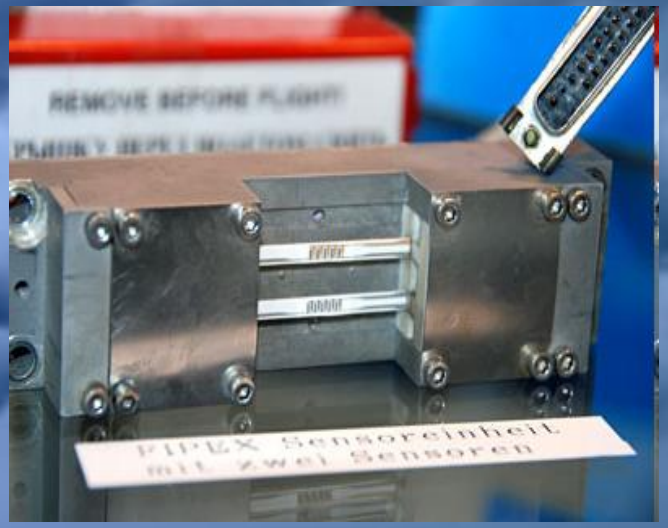
MEMS sensors to protect oil rigs from dangerous gases



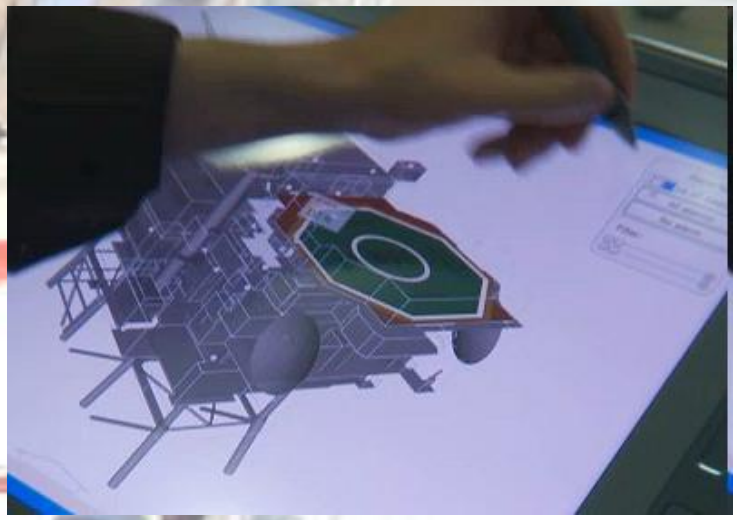


Space Sensors reduce emissions from Heating Systems



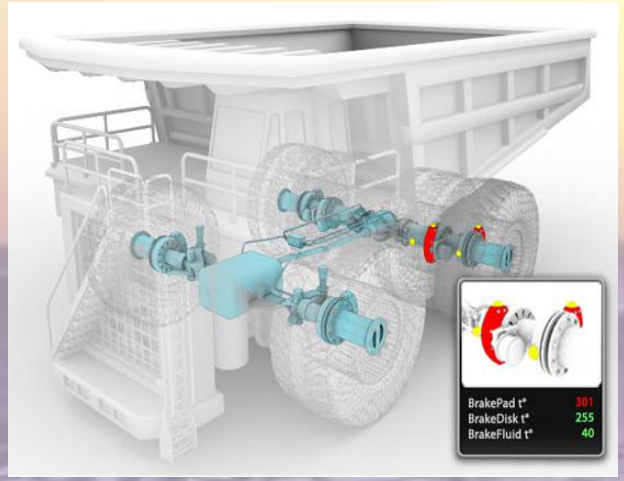


Monitoring of Offshore Oil and Gas Fields



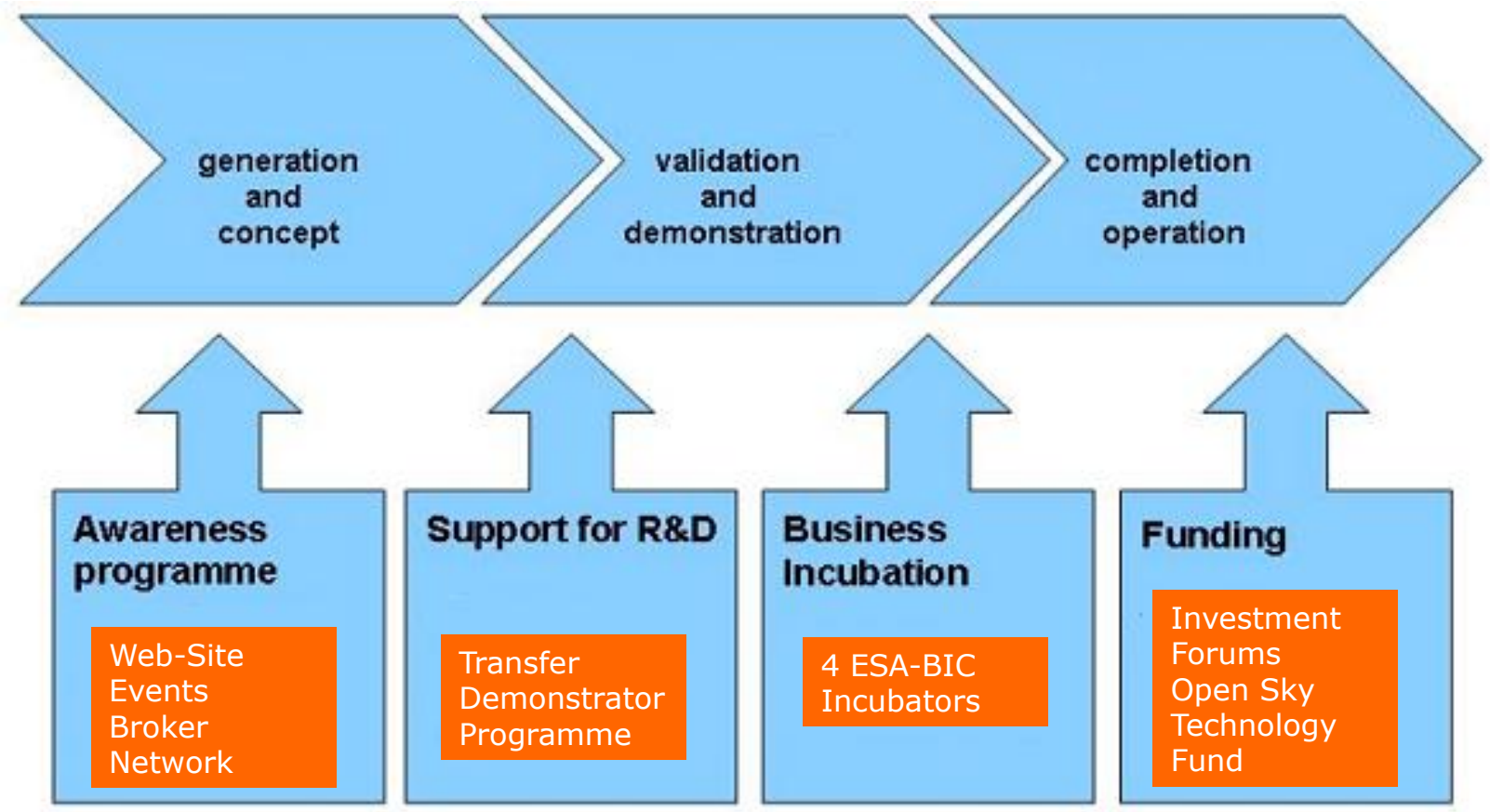
Detection of Natural Resources using Gradiometers

Monitoring of Heavy Mining Machines



Optimisation of Windmill Efficiency

Technology Transfer Programme Office
Lines of Support vs Innovation Chain



Transfer Demonstrator Projects 2009

1. **Inasmet-Tecnalia, Spain** – Multifunctional structure technology
2. **Imperial College London, UK** – Technology developed for high performance space science magnetometers
3. **FormTech GmbH, Germany** – Technology originally developed for hydrazine storage vessels for Ariane V
4. **Omnidea Lda, Portugal** – Technology developed under ESA contract for high pressure gas vessels **Stam s.r.l.**
5. **Genova, Italy** – Innovative gearbox technology developed in part for a soil measurement instrument
6. **Max-Planck-Institut für extraterrestrische Physik, Germany** – Plasma generation technology developed fort he International Space Station
7. **IMMG S.A., Greece** – Multifunctional cellular sandwich panel technology validated under ESA contract
8. **SciSys Ltd, UK** – Software developed for automatic mission decision making
9. **CSEM, Switzerand.** Technology originally developed for the ESA Long Term Survey System.
10. **COSINE Science & Computing BV, The Netherlands** – Technology originally developed for the Astrolab mission

ESA Business Incubations Centres (BICs)

1. Four ESA BICs operational in Germany, Italy and the Netherlands
2. Longest Established at ESTEC. As at end of 2008, 49 companies "graduated"
3. Selected companies receive technical, managerial and financial support.
4. Linked to the European Union ESINET network
5. A new ESA BIC is planned for Harwell, UK in partnership with STFC as part of the International Space Innovation Centre. Target of 10 new companies a year.

Selected Activities of the Technology Transfer Programme Office

Open Sky Technology Fund

1. Private/ESA Investment Fund
2. First round closed spring 2010 with €15 Million
3. Targeting companies using space-related technologies or satellite applications in non-space applications
4. Operated by Triangle Venture Capital Group
5. Contact b.geiger@triangle-venture.com

ESA Investment Forums 2010

1. Opportunity for space originated/related companies to pitch for investment
2. 20 May, Stuttgart, Germany
3. 5 October, Milan, Italy
4. Contact www.e-unlimited.

A few points to (re-) consider

1. Innovation – and no less for technology innovation - is a people business.

2. Our job is not to innovate but to create the conditions for innovation.

3. Technology advance has spin-offs with innovation in areas that are beneficial to society and often unforeseen.

Thank you for your attention

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