

The ESA Knowledge Exchange Programme

Partner Company benefits, Knowledge Exchange and spinout companies resulting from UK investment in ESA space science, space exploration, and Earth observation

David Newnham
KITE Club Knowledge Exchange Service
BARSC Workshop – 3rd May 2007
DTI Conference Centre, London



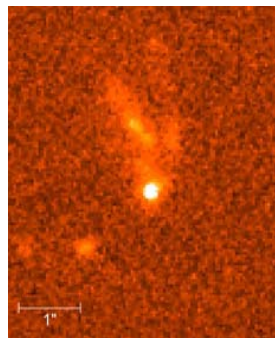
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From the violent universe to homeland security

- The Science & Technology Facilities Council has supported technology for gamma astronomy for over 40 years.
- This and further support for two PPARC/RSE Enterprise Fellowships led to the formation of Symetrica in 2002.
- In November 2006, Smiths Detection announced a \$222m contract for handheld radiation instrumentation for the US Department of Homeland Security for dirty bomb detection.
- Each instrument incorporates Symetrica detectors and electronics.

Gamma-ray burst

PRC99-09, STScI OPO, A. Fruchter (STScI)
and NASA



Gamma-ray detector
Smiths Detection



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Our Industry Engagement Strategy

Spread technologies to broader market areas:

- Through industry & interdisciplinary collaborative research.
- By supporting entrepreneurial activity in our community.

Support UK academic and industrial leadership in the Science & Technology Facilities Council programme through Programme Technology Development.



Key Connections with Business

Technology Capability

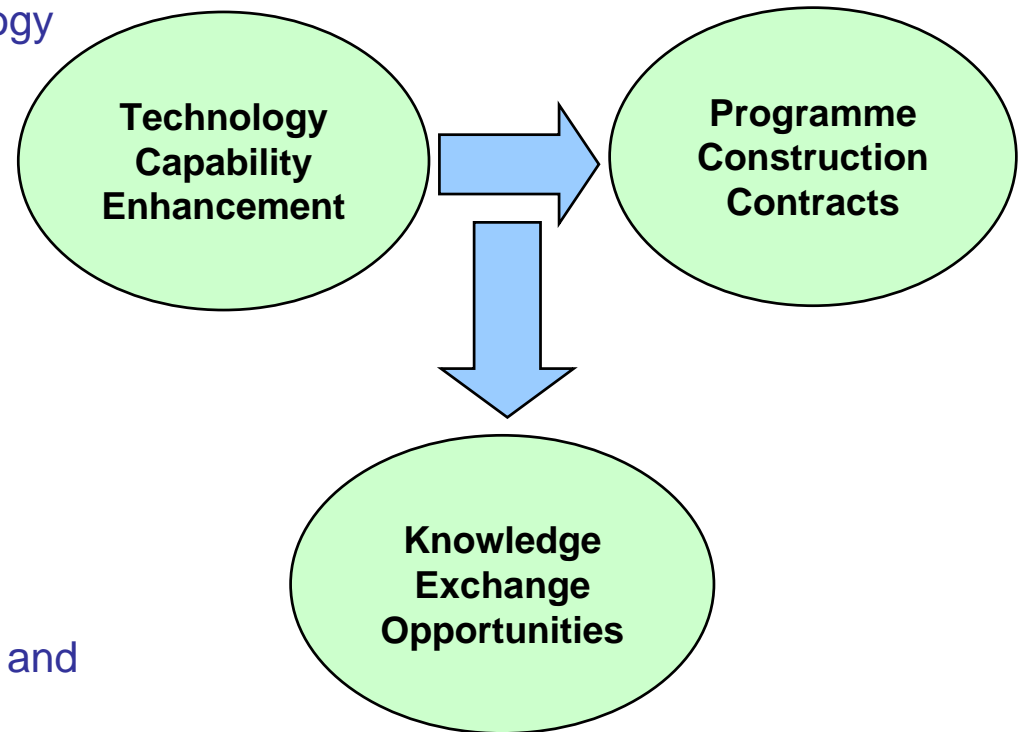
- Developing early-stage technology capability for ESA programmes

Business Opportunities

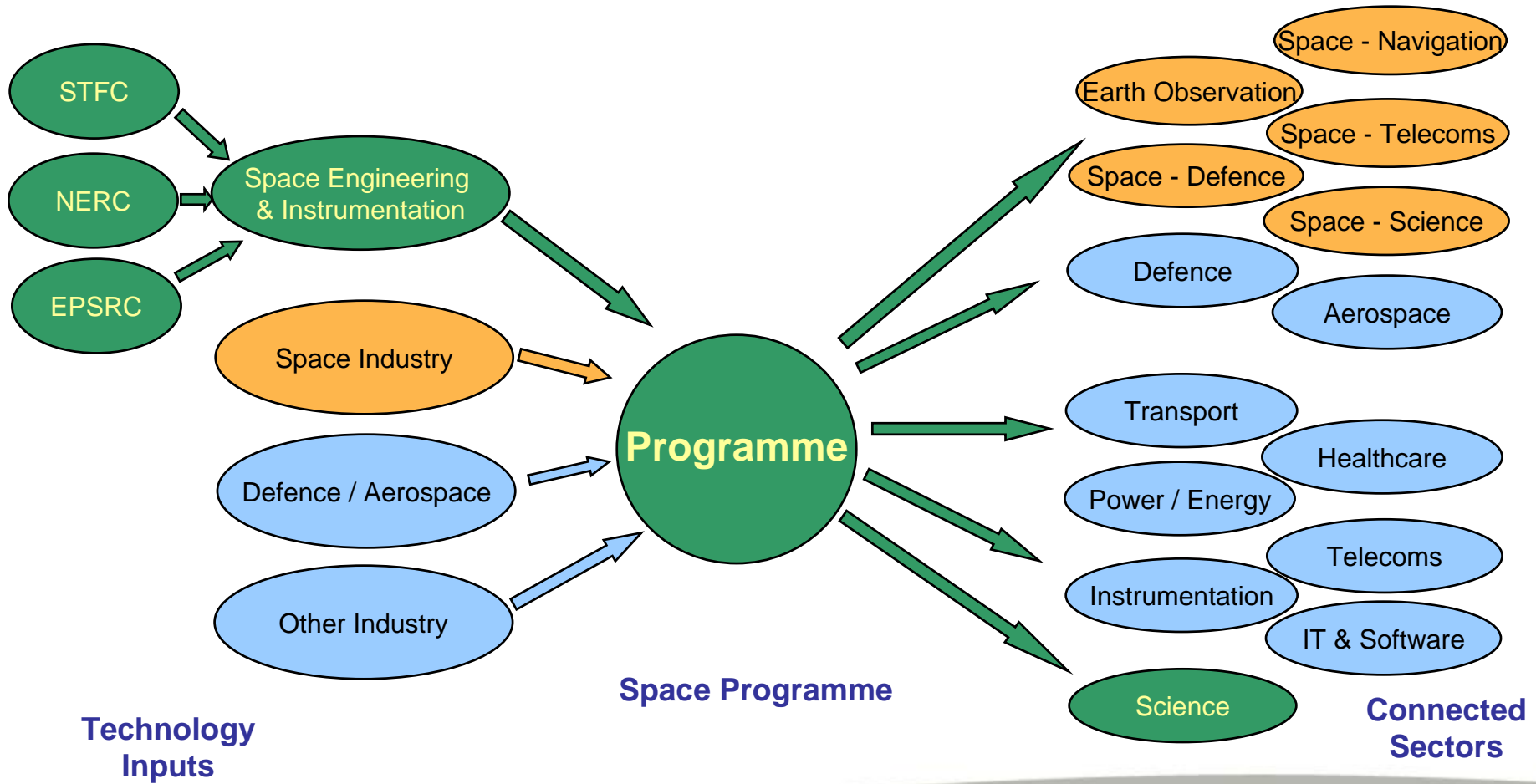
- At construction stage

Knowledge Exchange

- Benefits to upstream and downstream space sector, aerospace, defence and other sectors
- Skills and experience of current and future staff



Knowledge Exchange in the Space Sector



Support Programmes

ESA Technology Transfer Network

- Supporting Technology Transfer from ESA programmes.
- UK representation through JRA Aerospace.



European Space Incubator and ESINET

- Supporting spinout formation and incubation.
- UK representation through Hertfordshire Business Incubation Centre.



European International Space Station Business Club

- Offering the opportunities that space provides to European industry from research in weightlessness, to technology demonstration, to sponsorship.



Support Programmes (continued)

KITE Club

- Established business network includes defence, security, aerospace, space sector activities.
- Recent additional funding for ESA activities by the UK Office of Science and Innovation and delivered on behalf of BNSC partners.



Sensors Knowledge Transfer Network

- The UK Sensing and Instrumentation Network.
- We focus on the Instrumentation industry and the scientific Research Facilities market.
- Aims to provide industry with a joined-up approach to the market for Research Facilities.
- Space is included as a 'Research Facility'.



Technology Examples

Solar Arrays

Electric Propulsion

Synthetic-Aperture Radar

Cryogenics

AOCS Sensors

Robotics

Aerothermodynamics

On-board Radio Navigation Receivers

Thermal and Space Environment Software

Tools and Interfaces

Energy Storage (Batteries)

Microprocessors and Microelectronics

Mechanisms and Motors

Chemical Propulsion

Ground-System Software

On-board Computers and Data Systems

On-board Payload Data Processing Systems

On-board Software

TTC Transponders

Pyrotechnic Devices

Thermal Heat Pipes and Fluid Loops

Power Management and Distribution

Inflatable and Deployable Structures

Solar Array Drive Mechanisms and Deployable Booms

Upper Stage Propulsion

But it's not all about technology – data and services from space are even bigger business...



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What are we doing?

Technology Market Evaluations

- Mapping of UK space technology research groups to missions & harmonisation themes
- Autonomous systems
- Downstream space technologies
- Instrumentation

KITE Club Workshops and Business Briefings

Promoting Funding Opportunities

- Programme Technology Development, Collaborative Development and FP7 opportunities

Linking to the Sensors KTN, ESA Technology Transfer Network, etc – in particular working with JRA to support key Technology Transfer prospects

Outcomes

- Collaborative Development Projects
- Spinouts & Licences



Collaborative Research & Development

Industry-supported research

ESA Knowledge Transfer initiatives

PIPSS (Science & Technology Facilities Council)

- £375k (FEC) for up to 3 year partnerships
- £80k (FEC) for mini-PIPSS pilot projects (<1yr)
- Discipline Hoppers (with MRC)

Partnership Research Grants (NERC)

- >£25k (FEC) typically £100-250k <3year projects (50% funded)

Knowledge Transfer Partnerships (DTI, Research Councils)

Technology Programme Collaborative R&D (DTI, Research Councils)

EU Framework 7



Skills Transfer and Capacity-Building

PIPSS Fellowships (Science & Technology Facilities Council)

CASE and CASE-Plus Studentships (Science & Technology Facilities Council, NERC, EPSRC)

Royal Society Industrial Fellowships (NERC, EPSRC)

Spinouts and Entrepreneurship

Support from Knowledge Exchange Service

Science & Technology Facilities Council/RSE Enterprise Fellowships

Environment Young Entrepreneurs Scheme (NERC)

Follow-on Fund (NERC, Science & Technology Facilities Council)

Innovation Fund (NERC)

UK Research Councils' Business Plan Competition

ESINET fund being raised

Rainbow Seed Fund (Science & Technology Facilities Council, NERC)



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University of Leicester & Forensic Science Service Ltd

£200k PIPSS award

From planetary imaging & image analysis to trace evidence identification (e.g. blood, semen, bruises, fibres, and paint flecks)

Core techniques are multi/hyper-spectral imaging and image analysis

- Building the partnership 9 months
- From application to award 9 weeks
- Research project 14 months
- Time to market ~3 years



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What next?

Join networks and talk to the people

- Register for KITE club
- Register on KTN databases

Participate in workshops

- Instrumentation from Space 18.7.07
- Meet the Buyer – Autumn 2007

Make business out of space

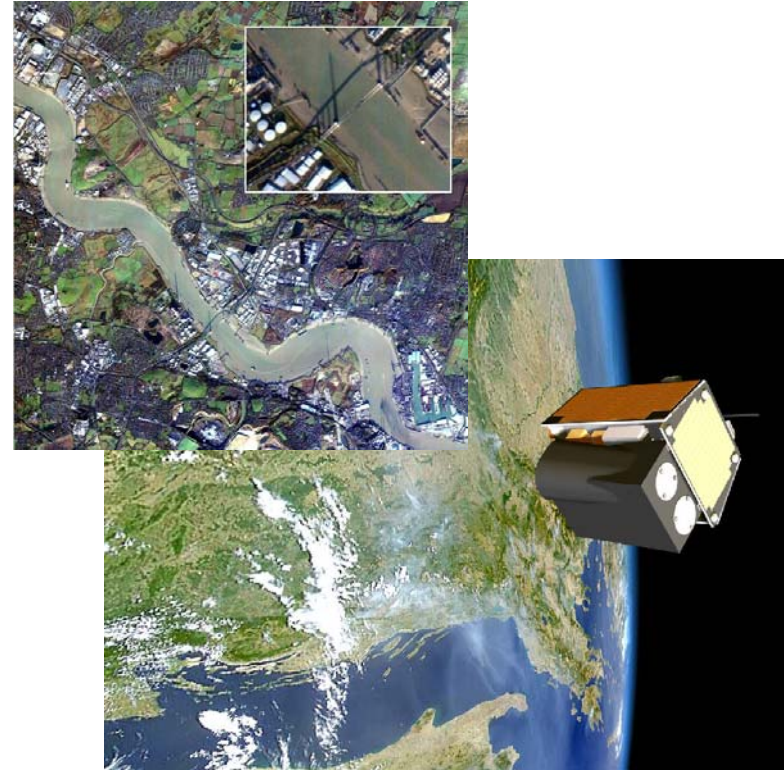
Thank you for listening

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