

# “The €/£10million Question”:

How Innovation Intermediaries Support Smart Specialisation?

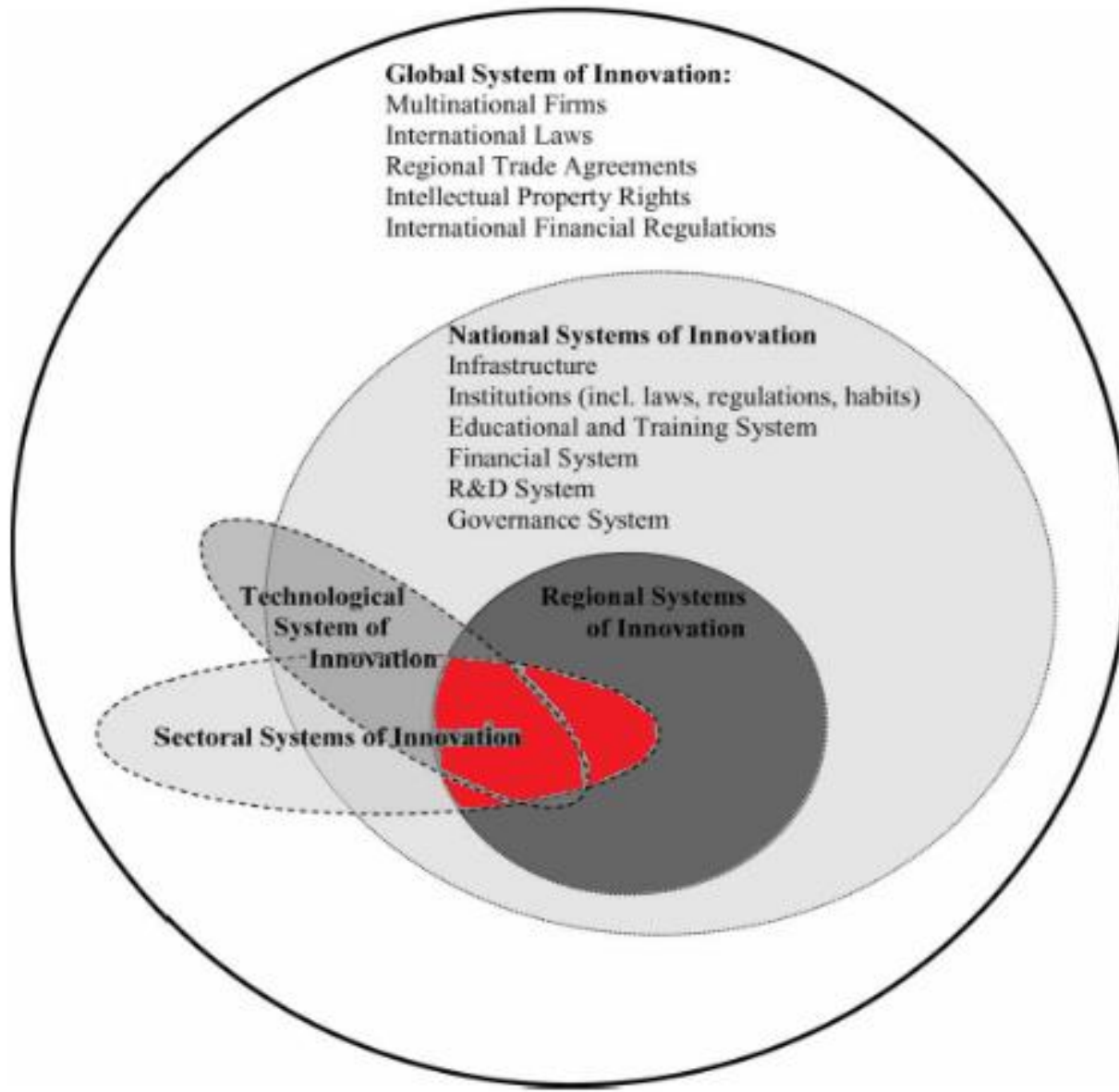
*“New Space” Sector in Slovenia and Scotland*

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# Space Industry, Innovation and S3

- Clustering - Smart Specialisation - Industrial Strategy
- Geographically-bound Sectoral Systems of Innovation (GSSI)
- Role(s) of Innovation Intermediaries?
- An exploratory study:
  - New Space Sector
  - Scotland and Slovenia



From Frenz and Oughton, 2005

“An innovation intermediary is an organisation or a group within an organisation, *whose main objective is to carry out interventions enabling innovation*, either directly by enabling the innovativeness of one or more firms, or indirectly by enhancing the innovative capacity of regions, nations, or sectors.”

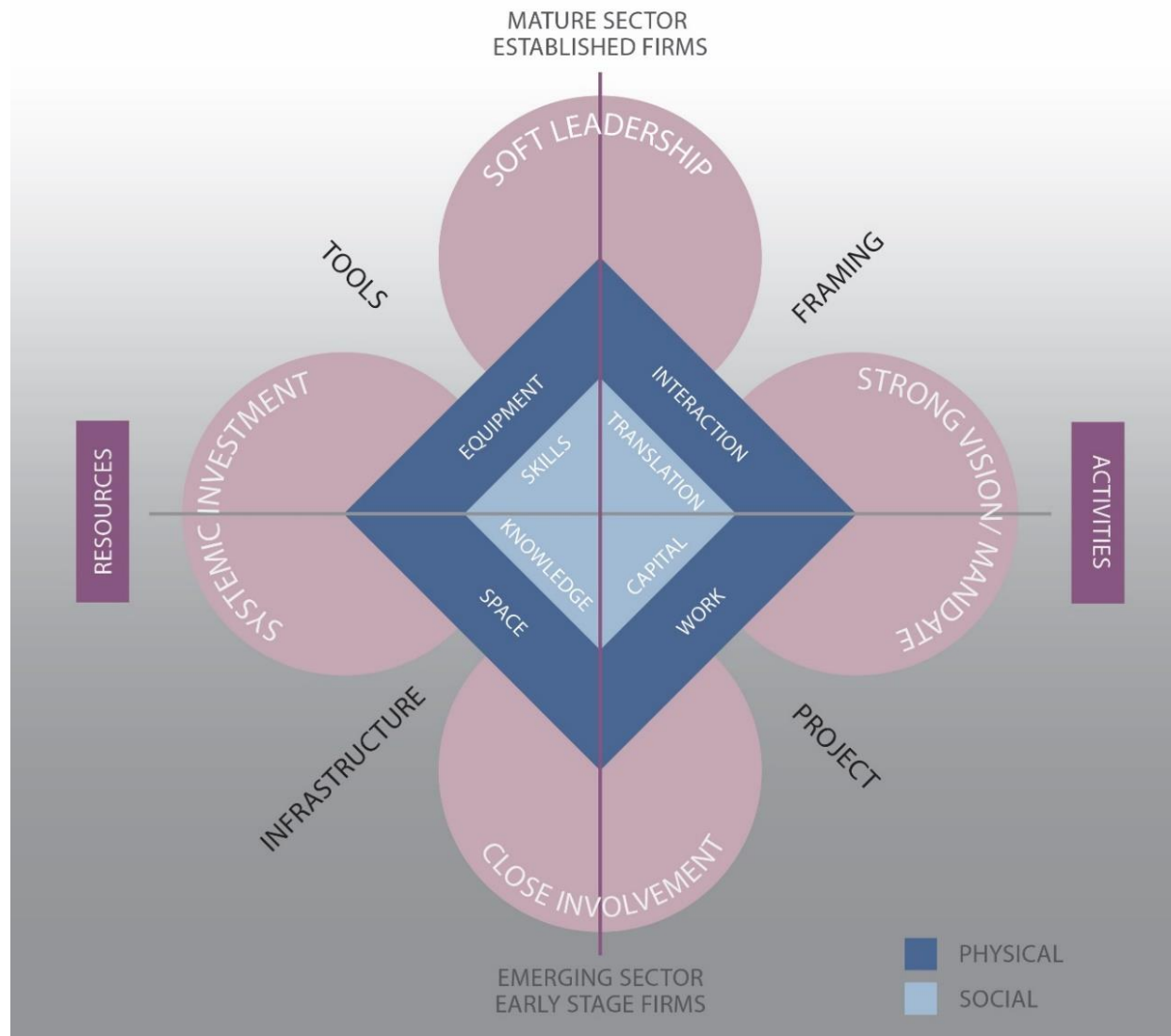
(adapted from Dalziel, 2010)

*“[...] the literature is currently too fragmented (Howells, 2006, Van der Meulen et al., 2005) [...]” and “we possess only a limited ‘understanding of these entities, their role, their functions, and their activities in different contexts’ (Abbate et al., 2013 p.235)”*

(Hannon, Skea and Rhodes, 2014:8)

	RESOURCES		ACTIVITIES	
	provision of infrastructure and tools for the use of innovation stakeholders		active engagement in defining and developing future innovation products	
	<b>INFRASTRUCTURE</b> provision of system-level resources	<b>TOOLS</b> provision of specific deployable resources	<b>FRAMING</b> activities deployed to facilitate wider system development	<b>PROJECT</b> specific innovation projects to interlink stakeholders and further specific innovation pathways
<b>Physical</b>	<p><u>space</u> networked provision of physical space for use by stakeholders</p> <p><i>i.e. hireable offices at the intermediary-run facilities; hireable rooms for events</i></p>	<p><u>equipment</u> provision of specialist or otherwise inaccessible tools and devices</p> <p><i>i.e. hireable facilities; development of new R&amp;D and qualification environments</i></p>	<p><u>interaction</u> active development of opportunities for engagement of stakeholders</p> <p><i>i.e. organisation of, and attendance at, conferences; events; workshop; fora</i></p>	<p><u>work</u> active engagement with innovation projects and investment of staff effort</p> <p><i>i.e. work on R&amp;D and commercialisation projects; innovation process management</i></p>
<b>Social</b>	<p><u>knowledge</u> systemic provision knowledge (IP) for deployment in innovation processes</p> <p><i>i.e. IP/knowledge generation and distribution; knowledge mapping and database</i></p>	<p><u>skills</u> provision of expertise, advice and workforce</p> <p><i>i.e. hireable expertise; formal training; informal experiences; outreach amongst potential recruits</i></p>	<p><u>translation</u> active brokerage between stakeholders and identifying development trends</p> <p><i>i.e. involvement in, and leadership of, the development of policy (reports), standards; sector promotion to stakeholders, other sectors and wider public</i></p>	<p><u>capital</u> active deployment of resources (financial or otherwise) to an innovation project</p> <p><i>i.e. mobilizing soft and hard capital for R&amp;D and commercialisation projects</i></p>

# New Typology of Innovation Intermediaries' Interventions



# Roles of interventions

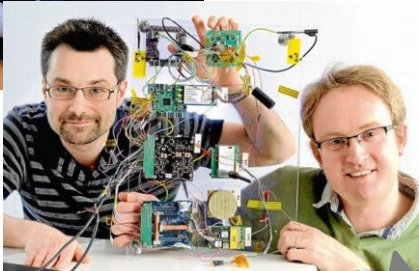
(c.f. Kilelu, et. al., 2011's six functions and Klerkx and Leeuwis, 2008's five challenges):

- To **remove barriers for innovation** by providing resources and action to address bottlenecks and challenges.  
Physical - Equipment Resources; Social – Capital Activities
- To **proactively create conditions encouraging innovation**, with stimulus, promotion and investment.  
Physical – Space Resources; Social – Skills Resources
- To **create purchase in the innovation**, especially by assisting in the development of markets (often external to the sector).  
Physical – Interaction Activities; Social – Translation Activities
- To **enact a particular vision** for future of the (economic) activity in a sector.  
Physical – Work Activities; Social – Knowledge Resources



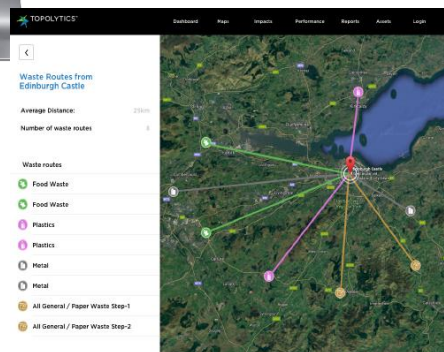
# New Space Sector

- Industry Transition (Adlen, 2011)
  - from “classical” towards “New Space”
- Growth
  - size, value, (political) importance,...
- Scotland/Slovenia
  - Peripheral emergence
  - Empirics
    - Critical size
    - Representative structure
  - Specificities (devolution, research/engineering tradition, etc.)
- Value Chain (OECD, 2011)
  - **upstream** (hardware manufacturing and launch)
  - **midstream** (data acquisition and management)
  - **downstream** (data processing: applications).
- Applications (Space IGS, 2010)
  - Earth Observation,
  - (GIS) Navigation,
  - Telecommunications and Broadcasting



bright  
ascension

# Scottish New Space Industry



POSSIBLE UK ROCKET LAUNCH SITES



Dundee Satellite  
Receiving Station

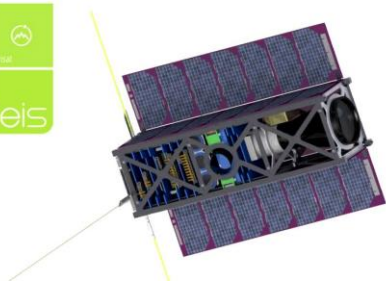
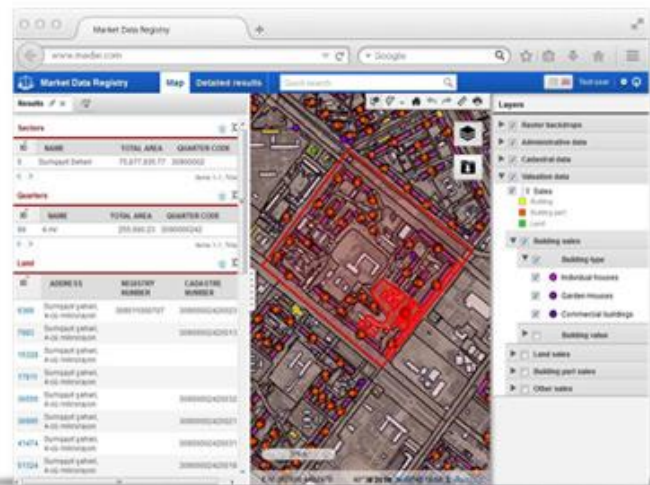




skylabs



SINERGISE

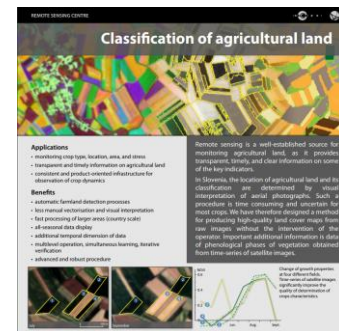


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CENTRE OF EXCELLENCE  
FOR SPACE SCIENCES AND TECHNOLOGIES



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# Slovenian New Space Industry



SPACE LINK



STN  
Satellite Telecommunications Network



## Slovenian Centre of Excellence for Space Sciences and Technologies Space-SI

The Slovenian Centre of Excellence for Space Sciences and Technologies SPACE-SI has been established in 2010 by a consortium of academic institutions, high-tech SMEs and large industrial and insurance companies in order to benefit from the advantages of small satellite technologies and applications in Earth observation, meteorology and astrophysics.

The RTD activities of SPACE-SI are focused on high resolution interactive remote sensing and formation flying missions. These goals are supported by the development of an advanced microsatellite for Earth observation and RTD infrastructure that includes ground control infrastructure, satellite integration facilities as well as a multidisciplinary laboratory for testing of satellite systems and components in simulated space environments.

The data sources from small satellite missions have been combined with the data from large space programs such as Copernicus to enable frequent and cost-effective remote sensing applications in ecology, agriculture, forestry, land cover mapping, urbanism and maritime, as well as for monitoring climate changes, natural disasters and use of natural resources.

SEARCH

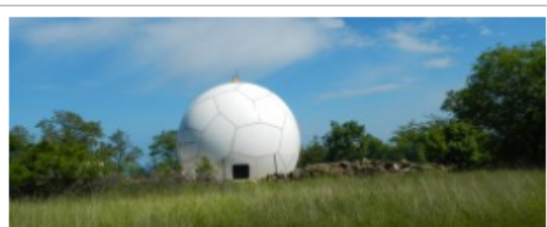
astrophysics computation formation  
flying GIS high-tech  
companies hybrid antennas  
international missions laboratory  
micro satellites nano satellites ogc radar  
technologies remote  
sensing satellite imagery  
satellite observations satellites small  
satellites space space research spatial  
data technologies telescopes terrestrial  
applications terrestrial telescopes wms

### NEWS

#### [Slovenian scientists involved in potential ESA space mission](#)

**14. 5. 2018** - The European Space Agency (ESA) has picked three candidates for its next middle class space mission, including Theseus, an early universe surveyor mission that includes Slovenian scientists from the Nova Gorica University and the Vesolje-SI centre of excellence. If picked, the mission is scheduled for launch in 2032. Theseus, an acronym for Transient High Energy [...]

[Space-SI at the International](#)



#### [Ground Control Infrastructure](#)

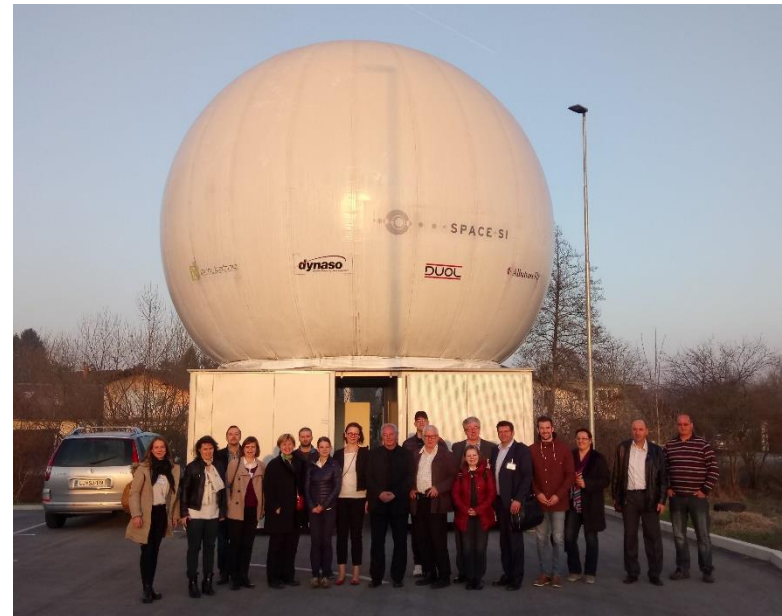
Ground stations are surface-based facilities which are designed to provide real-time communication with



#### [NEMO-HD - High-Resolution Microsatellite for Earth Monitoring and Observation](#)

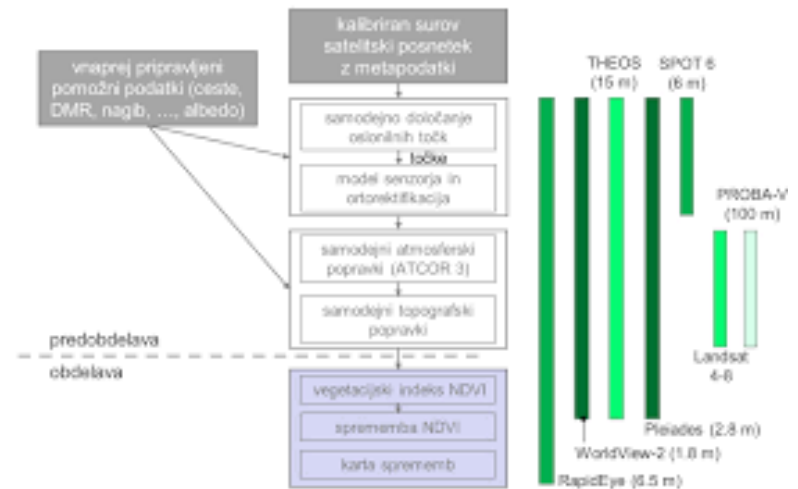
# 2010-2014

- 46 researchers and engineers
- five research institutions:
  - Faculty of Natural Sciences and Engineering, University of Ljubljana
  - Faculty of Electrical Engineering, University of Ljubljana,
  - Faculty of Mathematics and Physics, University of Ljubljana,
  - Scientific Research Centre of the Slovenian Academy of Sciences and Arts,
  - The Jožef Stefan Institute;
- five high-tech companies:
  - DEWESoft,
  - Sinergise,
  - TIC – LENS,
  - Impol,
  - Iskra TELA;
- and the final user:
  - Maribor Insurance Company.



# 2014-

- Laboratory – development and testing suite
- Satellite: NEMO-HD
- Mobile ground station
- Data handling and applications (with ZRC SAZU + Sinergise)





Support for start-ups

Collaborating with businesses

Educational opportunities for ambitious PhD students



## Higgs Centre for Innovation

The Science and Technology Facilities Council and the University of Edinburgh have long and proven histories of not only developing revolutionary science and technology but also commercialising it and creating viable businesses. This extensive knowledge and expertise is now made available to ambitious businesses in Scotland thanks to the development of a purpose built facility at the prestigious Royal Observatory Edinburgh.

The Higgs Centre for Innovation brings together world-class research in astronomy and particle physics and the instrumentation expertise that underpins it, with business incubation facilities and laboratories suitable for commercial use. Scientists, engineers and students interact and collaborate to improve our understanding of the Universe and will engage with companies both big and small to drive technological advancement forward.

### Tweets by @STFC\_B2B



Last chance to register for the Access to Funding Forum @HarwellCampus tomorrow – don't miss:

- ✓ Funding opportunities; from early-stage to scale-up
- ✓ Q&A with influential funding providers
- ✓ Networking and discussionsocsi.in/JhdeB#funding #enterprise #network

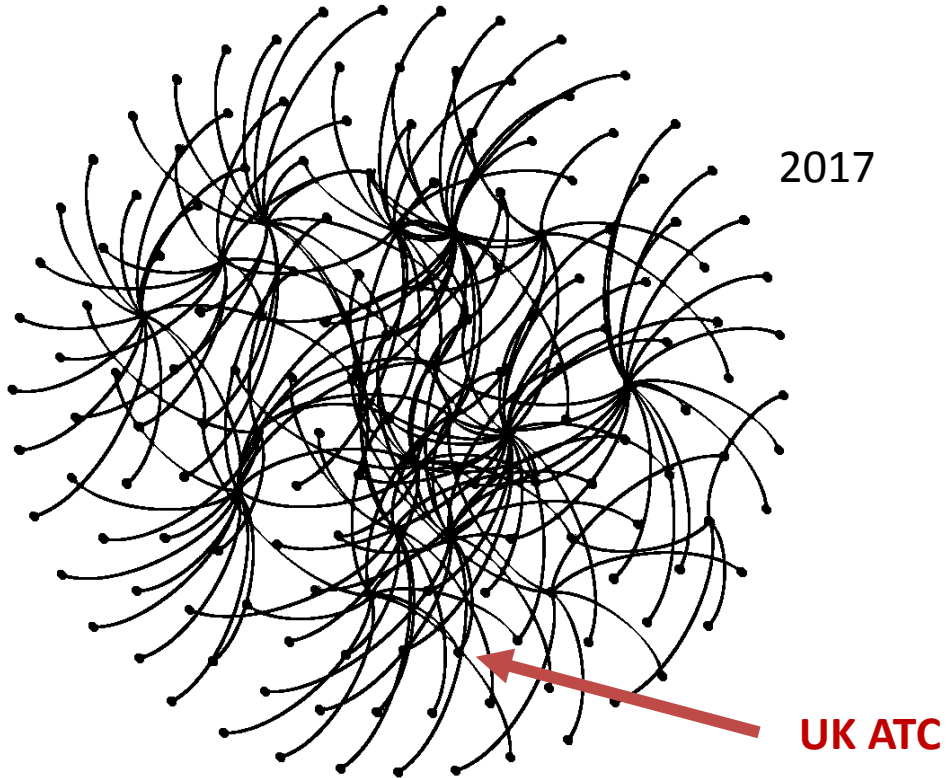
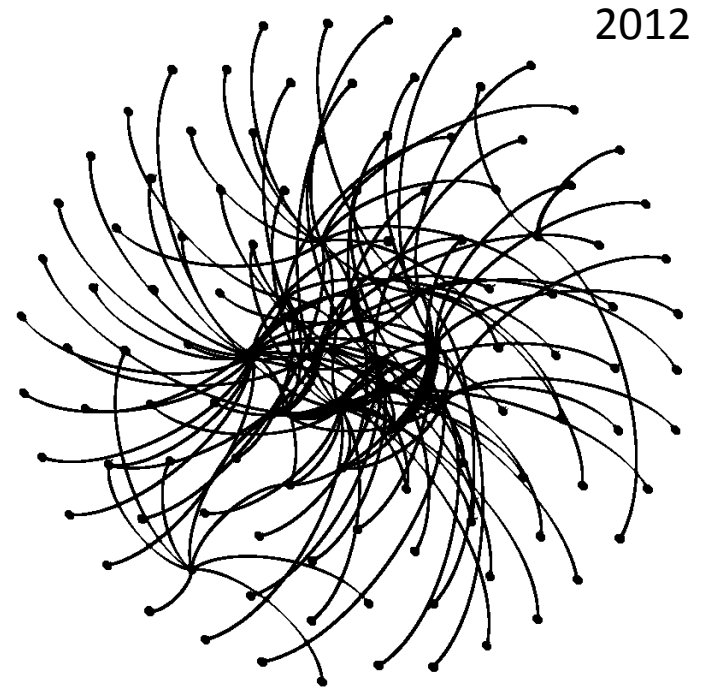
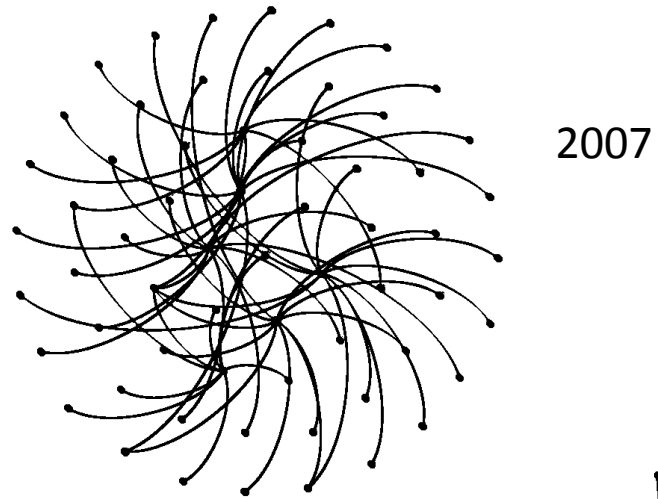
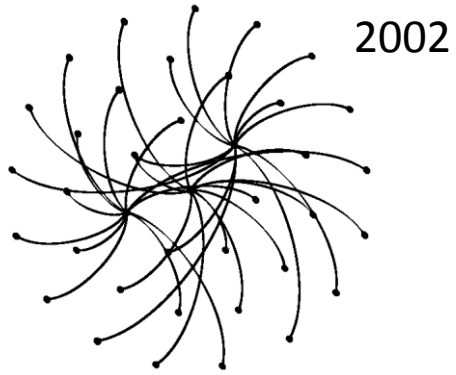


Access To Funding Event  
The Access to Funding For...  
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3h



Discover how previous STFC







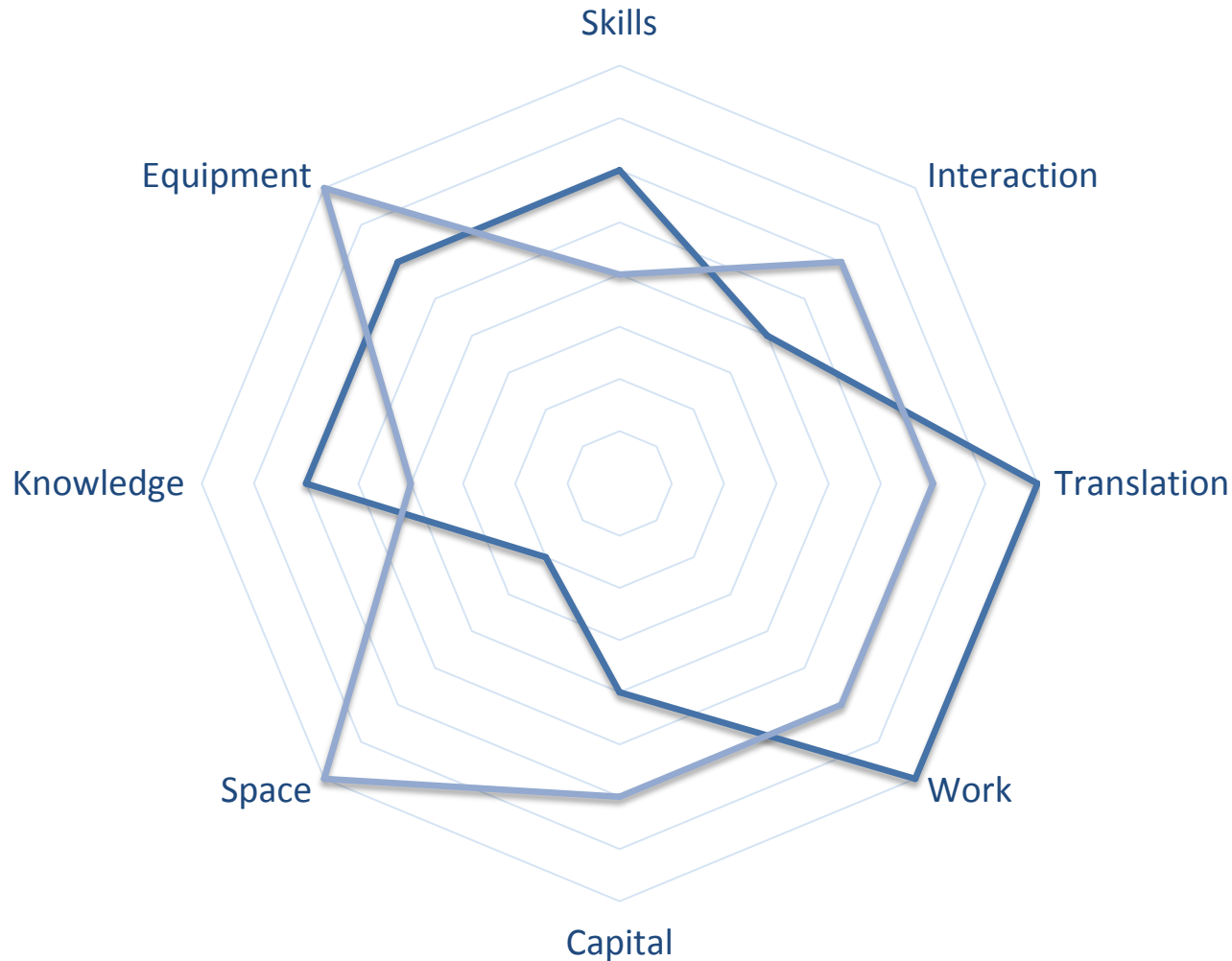
# 2018-

- Incubation Programme (12 SME capacity), operating ESA, UK Space Agency, STFC and CERN labels
- Nano-sat test facilities
- Data visualisation suite with links to other University and STFC assets (Archer/Hector & Hartree)
- Residence programme... (students, visitors, etc.)
- Hosting events (social, professional, etc.)



# Innovation Intermediaries Interventions' Mechanisms Analysis for

—Space.SI —Higgs Centre for Innovation



# How Innovation Intermediaries Support Smart Specialisation?

## Applied Research vs Business Development

- SLO: applied research & product/service R&D
- SCOT: business development & support for R&D
- WHY?
  - Emergent vs consolidated state of sectoral development
  - Social/political attitudes towards role of public sector (including intermediaries) in the economy
    - Space.Si – open call for CoE / closed R&D programme
    - Higgs – closed programme / open call for firms
  - Pull towards users: Who is the intervention for?

# BUT

- ... you kind of need both!
- Emerging new investment programmes for applied research to be hosted at Higgs Centre for Innovation...
- Business models being developed at Space.Si...

# THANK YOU & QUESTIONS?



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