Knowledge Transfer Network

Electronics, Sensors Photonics

Industry issues
How the Knowledge Transfer Networks have a role to play

3rd European Target Fabrication Workshop

29th September - 1st October 2010

Lady Margaret Hall, Oxford

Antony Hurden

Knowledge Transfer Networks
Accelerating business innovation;
A Technology Strategy Board programme

Knowledge Transfer Networks

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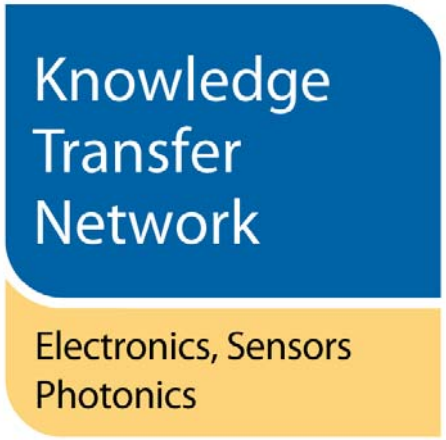
- Introduction to the KTN
- The role of the KTN in projects like HiPER



ESP KTN … Joining Up the Thinking

Knowledge Transfer Networks

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- National networks in a field of technology or business application, with international perspective
- Bringing together business, research bodies and the finance community …
- … to **stimulate innovation** through exchange of knowledge and expertise.

- *Total KTN members: over 57,000*

Electronics, Sensors, Photonics KTN

- Electronics, Sensors and Photonics & Plastic Electronics KTN's are the new Knowledge Centres which merged into ESP KTN on 1st July 2010
- A single outward looking face for, and point of access to, the Electronics, Sensors and Photonics community of industries, academia and entrepreneurs
- A strong, recognised and influential voice of the community into central & regional Government, Technology Strategy Board and Research Councils.
- Nationally driven, regionally supported, globally aware & connected

What is the ESP KTN?

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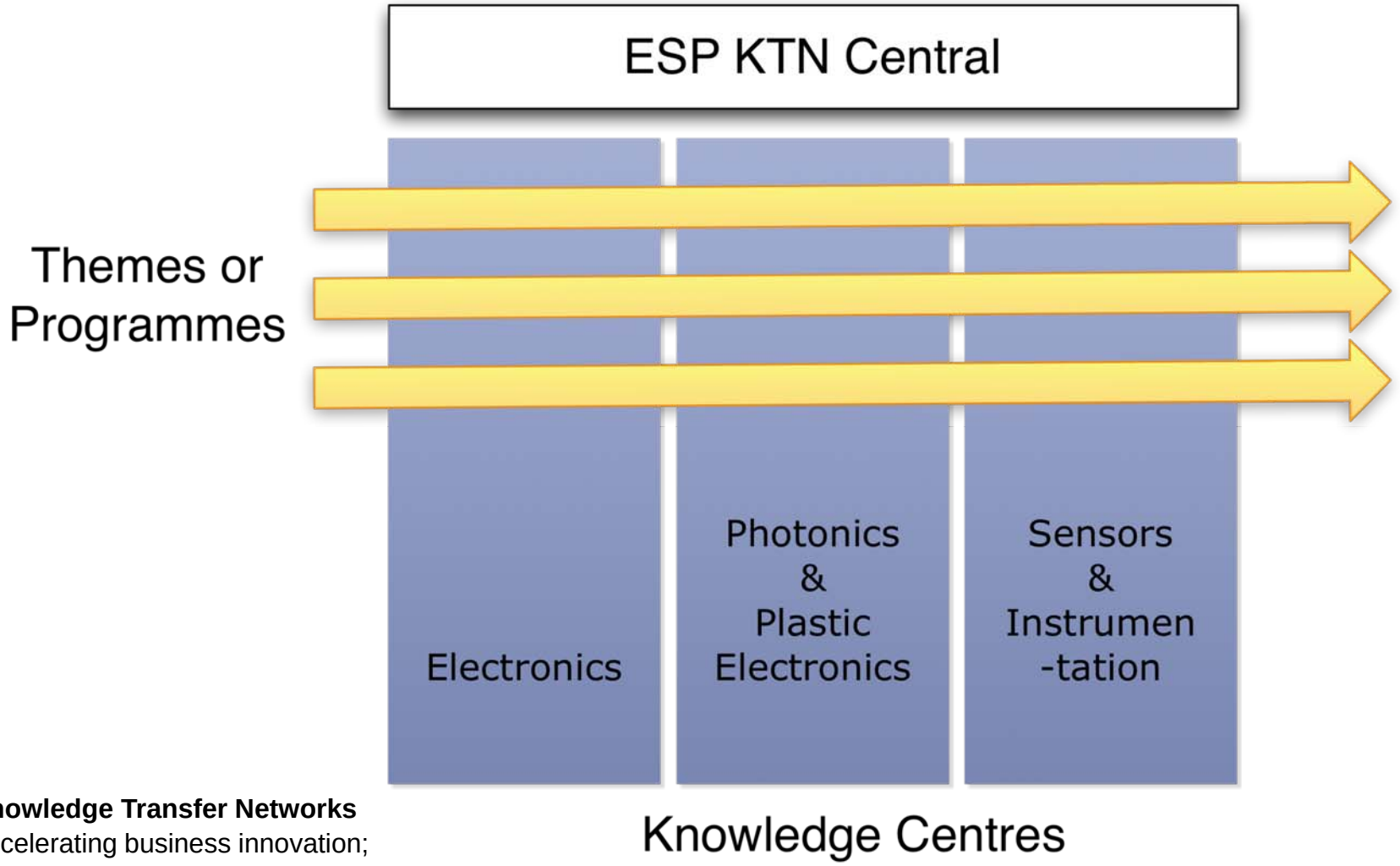

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ESP KTN Future Challenges & Solutions

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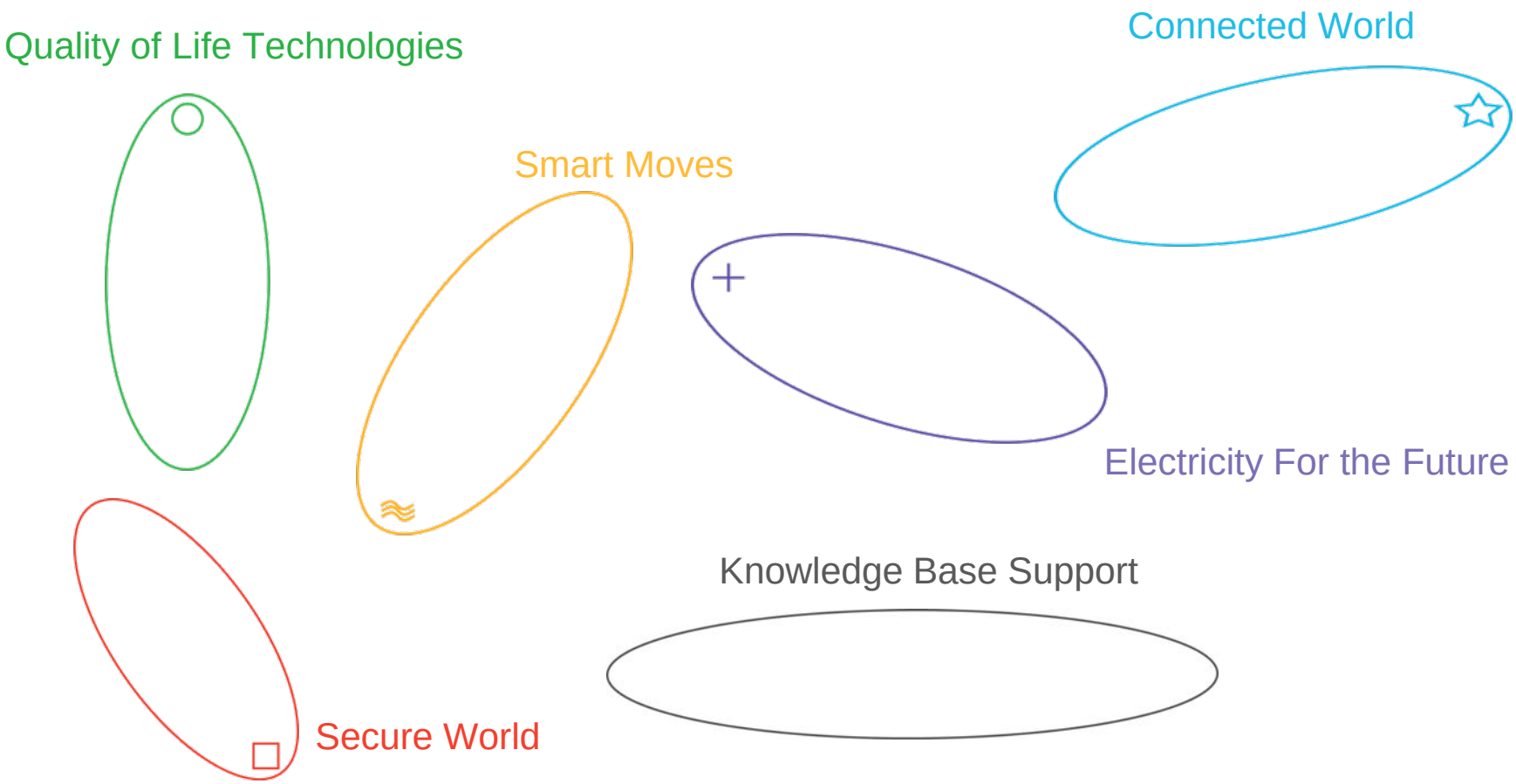

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Electricity for the Future

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- To meet UK renewables targets the UK will have to generate more electricity from cleaner sources
  - Renewables
  - Nuclear
  - Fossil fuel plants with carbon capture
- Will need an electricity grid with larger capacity able to manage greater fluctuations
  - Smart grids
  - Smart metering
  - Domestic feed in
- Will electricity generation remain centralised in near future?

ESP KTN Networking
The key to it all

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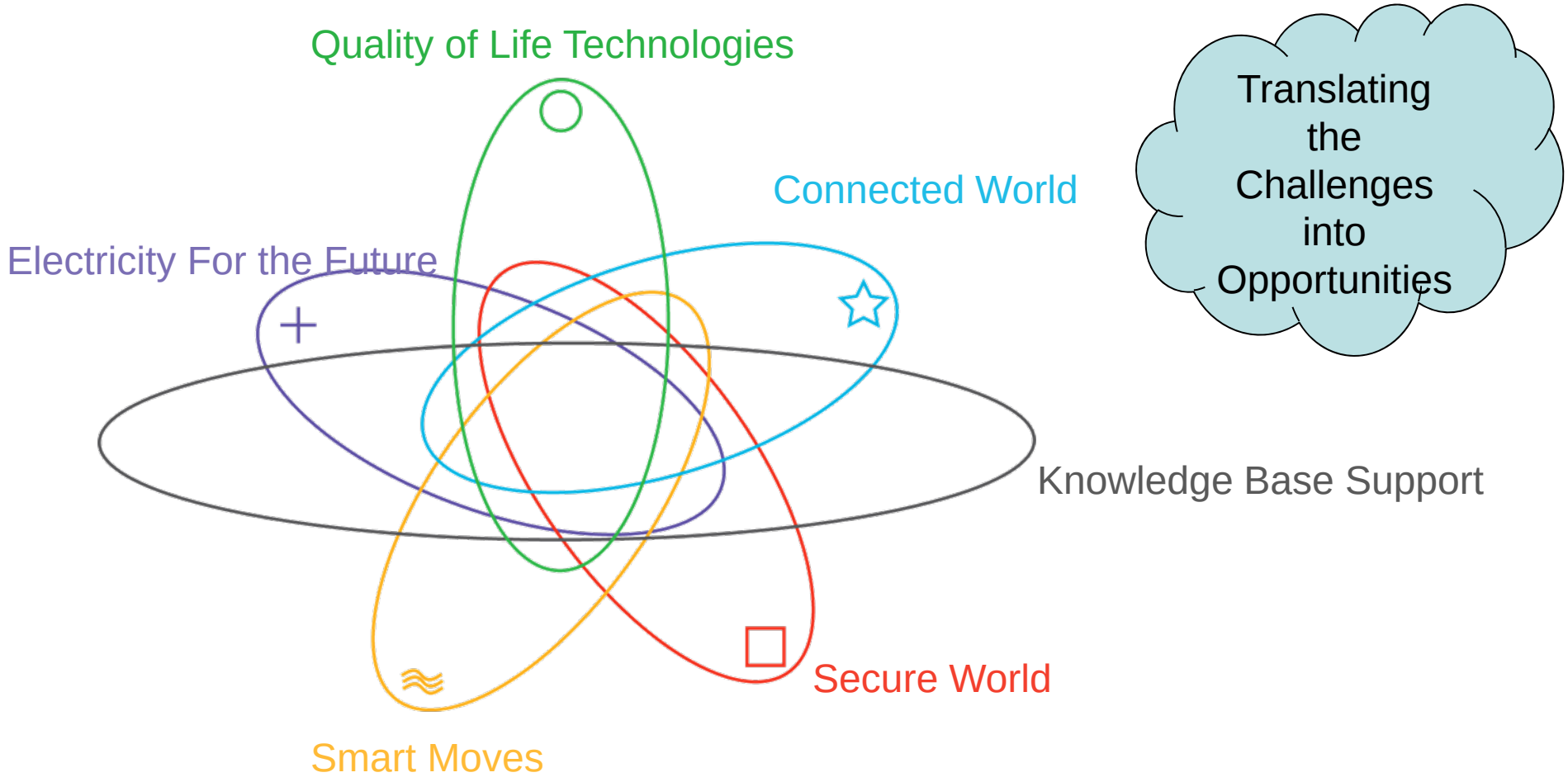

Translating the Challenges into Opportunities

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Join ESP KTN

- Use the web site _connect to keep in touch
- Joining ESP KTN network is free
- Complete your individual profile
  - The more information on your organisation you add, the better your networking connections

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www.innovateuk.org/espktn

Industry issues

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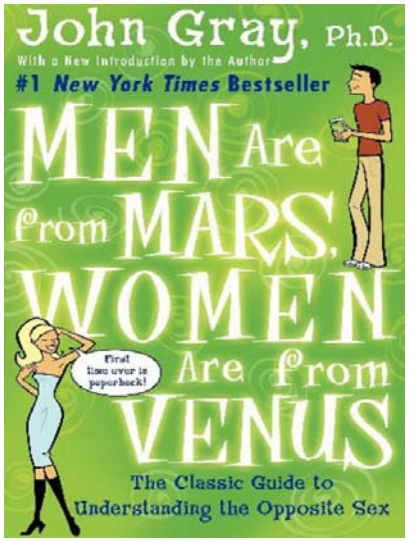
- Target fabrication and projects like HiPER propose challenges that are unachievable today
- Those challenges have to be made relevant to potential suppliers – companies that are currently not making anything similar to what will be needed
- Such suppliers need to be convinced of the economic benefit of being involved
- My intention is to explain and illustrate how industry might be involved in projects like HiPER and to show how the KTN has a role to play.
- Since the ‘world’ of HiPER and its objectives are unfamiliar to industry, one role of the KTN is to ease communication and avoid any gap as illustrated by Men (Mars) and Women (Venus).

HiPER



How do we make a link between today's industry and the vision of HiPER?

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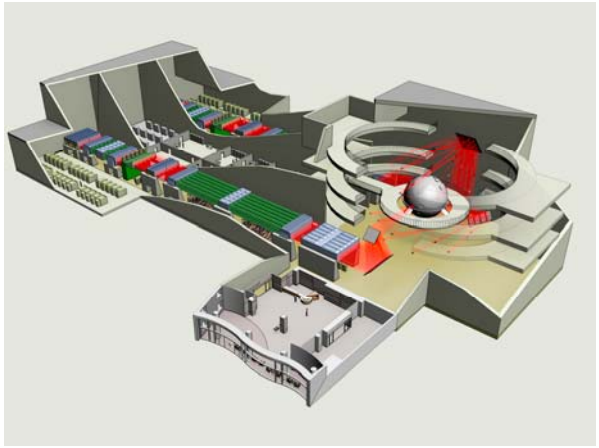
Technical capacity



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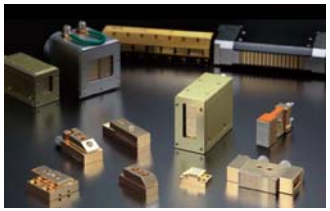

Time (decades)

Images: Palomar Technologies; Hamamatsu; HiPER

Evolution over similar timescale

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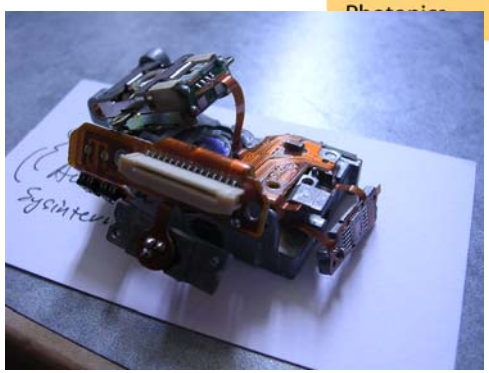
Technical capacity



What use is this?

Time (decades)

1970's

2010

The link to industry

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- The HiPER team has a ‘sense’ of the future and is identifying development goals to achieve this. Target fabrication is one specific task in the project.
- To link to industry, we have to work backwards. We have a clear objective which can only be achieved if it is possible to buy the components, systems, and technology needed, at the time we need them and at a price that is realistic.
- We have to work backwards, creatively, to identify how to obtain the components that we will need, and to find ways to enable the necessary action
- In the defence sector, technology is evaluated in terms of its ‘maturity’ or its readiness to be deployed in the field. Technology Readiness Levels run from 1 (idea on back of envelope) to 9 (technology fully operational)
- We can work both forwards (what technology do we now have) and backwards (what do we need and when) to produce a plan for development.
- The KTN is part of this process (as well as with the SKA)

What motivates industry?

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- Industry seeks to make a profit out of its endeavours – they make decisions based on “perceived potential”.
- Therefore, if a company is to be in a position to supply HiPER, then it must be confident that the investment necessary will be rewarded.
- Ideally, they should be able to supply a range of other customers.
- Target fabrication is, by its nature, a ‘very niche product’.
- We have to look for ways to pick out elements that will enable target fabrication, and see if we can spot other ways for companies to make money elsewhere
- Need to break down the science requirements down to engineering specifications – present manageable chunks to industry. Hence the TRL approach.

Some industry comments from the Square Kilometre Array project

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- In general, companies invest heavily in product possibility, according to its perceived potential
- Companies are not interested in underwriting high levels of technical risk
- They are not interested in initial technology development with eventual benefit only to accrue to other parties, especially outside of UK *juste retour*
    - The principle of '*juste retour*': the principle that the proportion of contracts under a particular programme awarded to firms from a given country is in proportion to the funding that country has contributed to the programme.

What will interest industry?

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- What is the opportunity and the perceived potential?
- What will it look like?
- What level of investment is required?
- What is the ROI?
- What is the time-frame?
- How will we make it?
- Can we make it profitably?
- When will the opportunity emerge?
- Is this a one-off opportunity or are there either many markets or an evolving market?
- Who are the customers?
- Is the commercial market different from the needs of HiPER?
- Why will they buy?
- What will they pay?
- How many are there?
- Are they one-off purchases or repeat?
- Will they buy from **us**?
- Is there - or will there be - any competition?
- What is the position on **IP**?

Arousing industry interest

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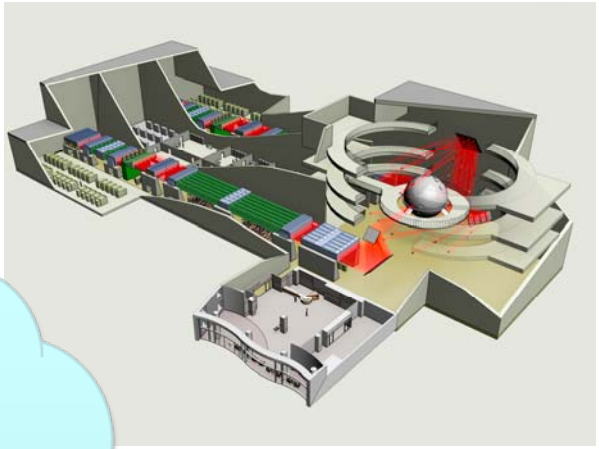
Technical capacity



Time (decades)

Images:; HiPER

Arousing industry interest

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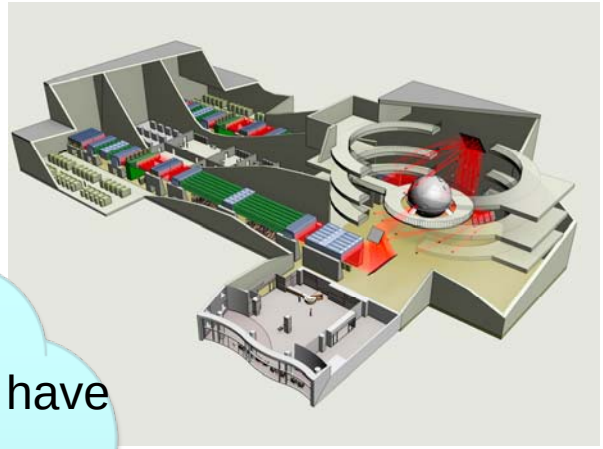

What possible industry might have similar technical needs?
Cryo-neuro surgery?
How does the UK develop the skills needed for this new industry?
Explore with EPSRC, TSB
etc. …

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Time (decades)

Images: HiPER

Discussion

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- This simple illustration was chosen as an example of engaging with industry to meet the needs of programmes like HiPER.
- This approach to engage with industry is an example of the work of the Knowledge Transfer Network, in this instance the ESP KTN.
- The KTN database will be one route to making links with interested industrial partners as well as being a route for forming consortia that may be necessary
- KTN can simplify process for helping SMEs engage with major projects
- If you know about the KTN, and the KTN knows about you … (ESP does not mean Extra-Sensory Perception)

www.innovateuk.org/espktn