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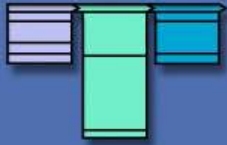
FORESIGHT

Strategic futures planning Suggestions for success

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March 2005

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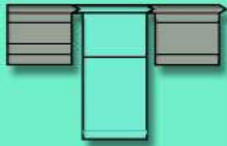
Strategic Futures Planning

Suggestions for Success

Author: Andrew Jackson, Deputy Director Foresight

Foresight and the OST Horizon Scanning Centre are run by the Office of Science and Technology in the Department of Trade and Industry. Project findings are independent of Government and do not constitute Government policy.

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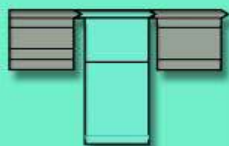
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OST Horizon Scanning Centre (HSC)

Different people use the term 'horizon scanning' in different ways. The OST has adopted the following definition:

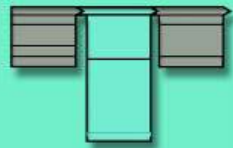
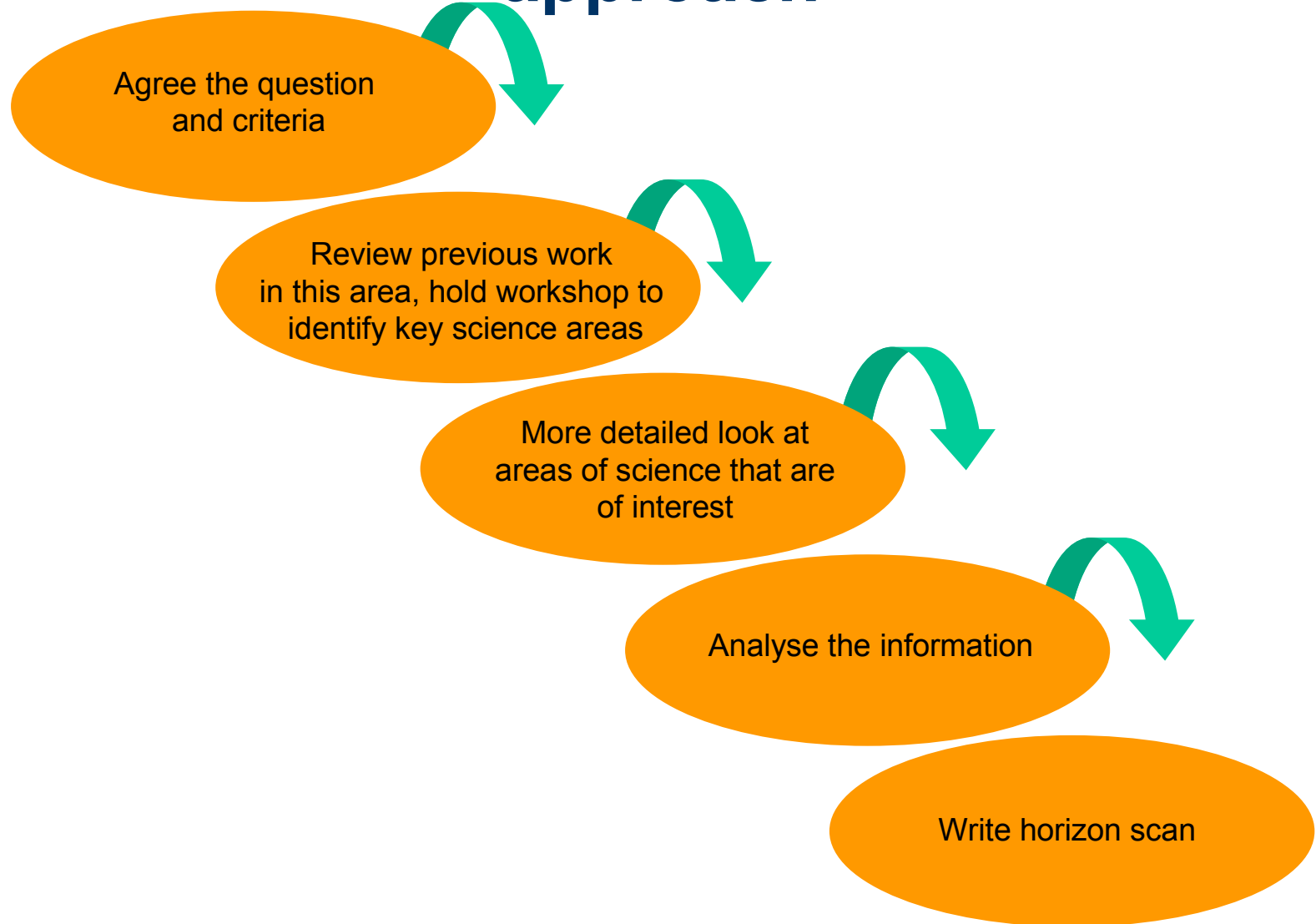
'... the systematic definition of potential threats, opportunities and likely future developments, including (but not restricted to) those at the margins of current thinking and planning. Horizon scanning may explore novel and unexpected issues as well as persistent problems or trends.'

The HSC has been established to carry out horizon scans, and to support others in Government in carrying out their own horizon scanning activity.

The process described in 'suggestions for success' is an example of horizon scanning focused on emerging areas of science and technology. Broader horizon scanning follows similar principles.

If you would like more information about the HSC, please contact rupert.lewis@dti.gsi.gov.uk

Horizon scanning: the broad approach



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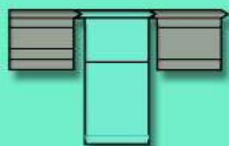
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Horizon scanning: key steps

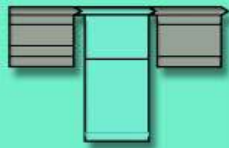
Step 1: Agree the key question the project will answer. It is important to ask at the start of the process how you will use this information and so what question or questions you would like the process to help to answer. The horizon is very big and usually you will either need to look at part of it or do a very broad and light scan before deciding where to look in more detail

Step 2: Agree criteria. Decide what types of things you are looking for on the horizon, how you will assess their importance and analyse their interactions, and where the horizon lies

Step 3: Collect information. Always start by doing a review of previous futures studies in this area. A workshop at the start with experts can help you to decide key areas to look at and also help you to pick areas for state-of-the-science reviews if you use those as part of the scan process

Step 4: Analyse the information. In addition to short accessible descriptions of issues identified it is useful to have an assessment of future capabilities, likelihood and potential applications. As you do this, it is important to look for convergences and gaps

Step 5: Capture key challenges and opportunities in the horizon scan. Clear articulation so that the reader both understands the origins of the thought and its importance is key to the success of the work



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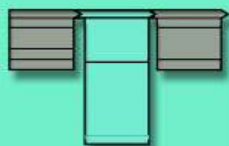
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Horizon scanning: suggestions for success

- **Agree the selection criteria at the start.** You will need to think about what is important to your organisation
- **Be open to include new areas of science.** It is unlikely that you will work out all areas that could be important at the start of the project. It is only as you explore the subject in more detail that you will start to pick up the fuller range of areas of importance
- **Start by scanning existing reports in the area for information.** There is a lot of futures work already out there, look at others' futures work, science journals, even sci-fi writers' work
- **To be credible, the process needs to be rigorous** so a systematic approach with peer review is essential
- **Horizon scanning should seek to identify or pick up issues** which either have not been articulated or are not yet recognised as important. If you are scanning emerging areas of S&T, it is essential to know how you will take account of all potential implications, including economic, social, ethical, regulatory and safety
- **You should agree at the outset** the process and selection criteria with key stakeholders
- **Decide what the horizon scan will inform** so the output is in the most useful form
- **When reporting horizon scan findings,** show the root of ideas and evidence, and use analogies from the present so people can place the idea in their current understanding of the world



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Horizon scanning: case study – Foresight Electromagnetic Spectrum (EEMS) project

Objectives

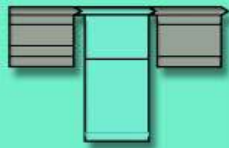
The aim of the project was to identify areas of commercial opportunity for the UK from developments in the science of the electromagnetic spectrum, from radio waves through to laser and X-rays. And then to develop a plan to invest in those areas

Outputs

This was the first stage in the project. The output was an assessment of 20 possible areas against selection criteria, with more detailed analysis and technology roadmaps for the four areas of highest priority

Approach

- Step 1** – Agreed selection criteria
- Step 2** – Brought together leading scientists from across whole range of EEMS
- Step 3** – Produced one-pagers of area they considered most exciting
- Step 4** – Circulated to wider science community to check
- Step 5** – Held second workshop for users and scientists to consider how advances might be used and whether significant potential social or economic issues needed to be explored at an early stage
- Step 6** – Filled gaps in information with desk research
- Step 7** – Used agreed criteria to select areas for further work (further action included consideration of economic, regulatory, social and ethical issues)



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Horizon scanning: case study (EEMS)

Science workshop involving 14 leading scientists highlighted 20 areas of exciting science including:

- optical switches
- metamaterials
- antennae
- optical tweezers
- terahertz

User workshop of 50 people identified key future demands and social contexts for technology of this type in areas such as:

- defence
- healthcare
- communication
- manufacturing

Information on science and use were combined to produce a short list of 9 key areas which were assessed against the criteria:

- 20 years on
- major economic potential
- UK ability to exploit (including social and ethical issues)
- balanced portfolio of areas

We used a **visual approach** to compare areas

The **areas selected** were:

- all optical data handling
- photonics at molecular level
- em in the near field
- non-intrusive imaging