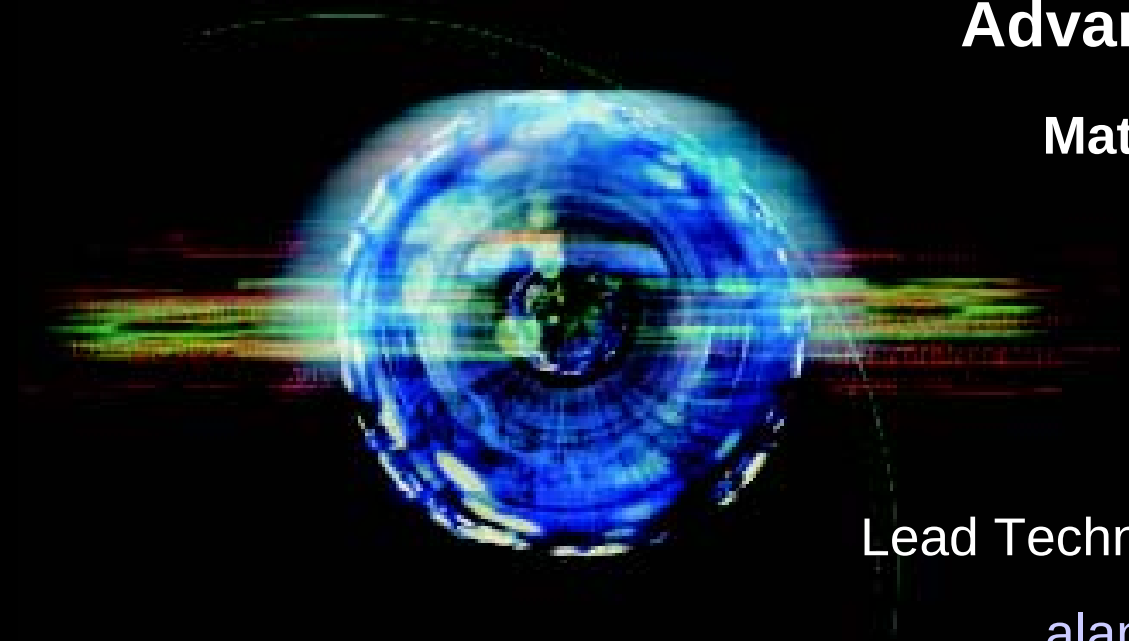
Technology Strategy Board



Advanced Materials Strategy

Materials KTN Annual Event
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Key Areas

Underpinning Technologies

- **Advanced Materials**
- High Value Manufacturing
- Bioscience
- Electronics, Photonics & Electrical Technologies
- Information and Communication Technologies

Applications

- Environmental Sustainability
- Energy Generation and Supply
- Medicine & Healthcare
- Transport
- Creative Industries
- High Value Services

… areas where UK has capacity to develop and exploit the technology and there is global market potential

Scope

Advanced Materials are defined here as materials, and their associated process technologies, with the potential to be exploited in high value products, and are considered within four broad major categories:

- Structural materials
- Functional materials
- Multi-functional materials
- Biomaterials

together with important cross-cutting areas including:

- Nanomaterials [also included within TSB Nanotechnology Strategy]
- Modelling
- Design
- Metrology & Standards
- Manufacturing

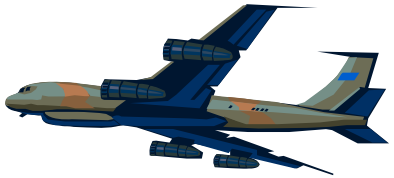
Where are we now

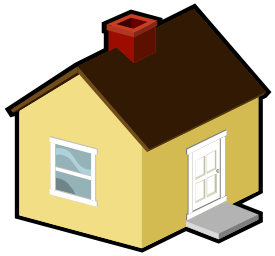
An Important and Broadly-based Sector

Businesses in the UK that produce and process materials have an annual turnover of around £200 billion. They make a major direct contribution to the economy, at 15% of the country's GDP, whilst also underpinning all areas of economic activity.

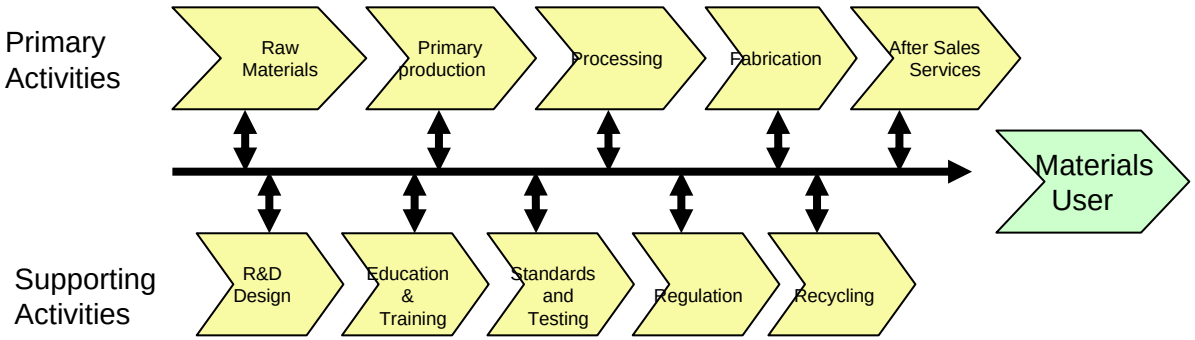
Key market sectors which rely on, or are strongly underpinned by, advanced materials technology include :

- Energy
- Aerospace
- Transport
- Healthcare
- Packaging
- Textiles
- Construction
- Defence & Security





A Strong Community



The **Materials KTN** and MatUK play an important role in maintaining a strong UK materials 'community' which:

- encompasses all material types across their full life-cycle
- has a large number of industrial, government and academic stakeholders
- is underpinned by a world-class S&T base
- has a good track record of collaboration and technology transfer

Challenges & Opportunities

The continuing background of concerns about the environment, resource and energy pressures, and increasing global competitiveness, provides both difficult challenges and important opportunities for the materials community.

Where do we want to be ?

Technology Strategy Board Vision

- The UK's leading sectors and businesses maintain their position in the face of global competition
- Those sectors and businesses with the capacity to be among the best in the world fulfil their potential
- The emerging technologies of today become the growth sectors of tomorrow
- The UK becomes a centre for investment by world-leading companies

Wealth Creation

The creation of wealth in the UK, via the exploitation of advanced materials technologies to sustain high value manufacturing and methods of construction and to foster the development of a range of new, sustainable, high performance value-added products and processes.

Community Requirements

- Continuity of funding – longer time horizons
- Focused market-led R&D in 'key' areas – e.g. Energy, Sustainability, Health
- Better [faster] exploitation
- More innovation
- Evolutionary, as well as revolutionary
- Support for established markets e.g. aerospace
- Support for new markets e.g. creative industries
- Support for proof of concept demonstrators
- Continued support for underpinning generic materials R&D
- Nuturing 'emerging' technologies
- **Balanced portfolio**

How do we get there ?

Underlying Strategy

To challenge the materials community to 'make a difference' - by helping to develop innovative solutions to important societal problems and supporting UK economic growth and competitiveness.

Prioritise based on:

- Previous strategies
- Analysis of sector [societal and economic] drivers, barriers etc…
- Community feedback
- Government policy [e.g. Sainsbury Report]
- Technology Strategy Board strategy and investment criteria

Criteria for Investment

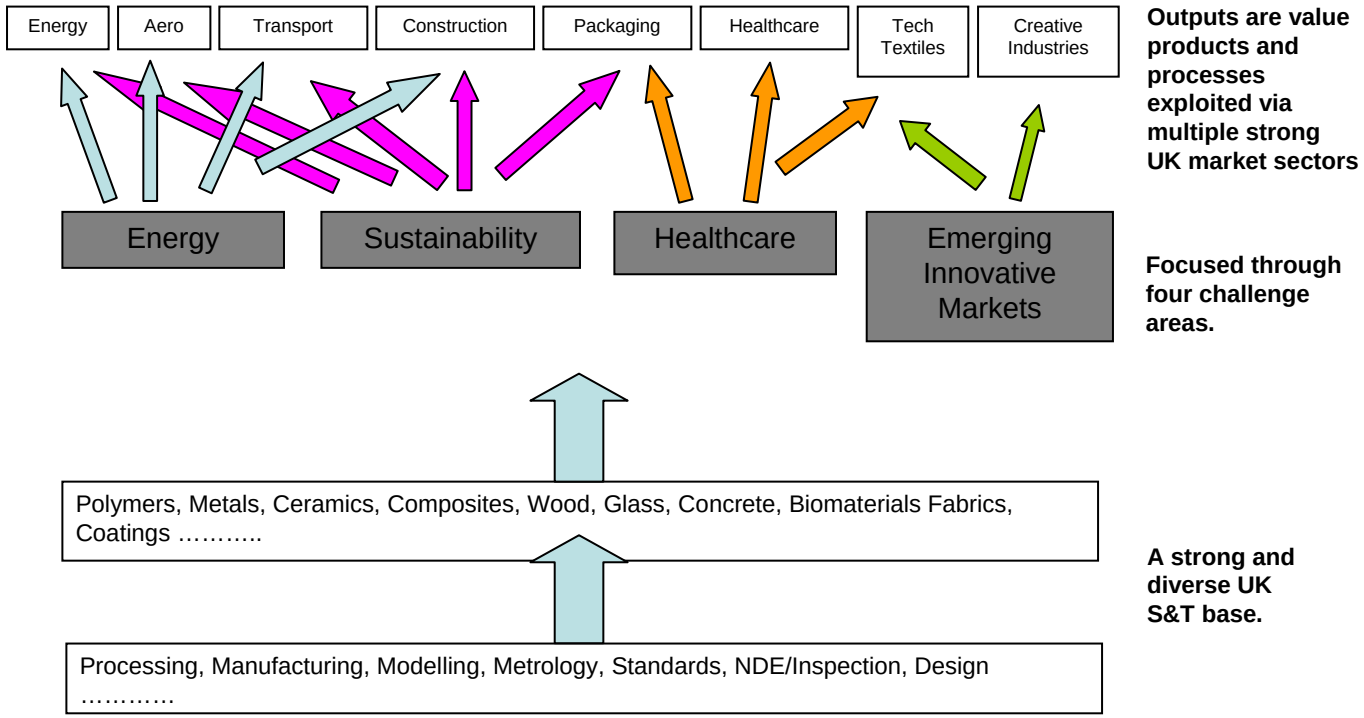
- **Can we do it?**
  - Does the UK have the capacity to develop and exploit the technology?
- **Is the idea “ripe”?**
  - Is the science developed enough to underpin the technology and its implementation in the market, and can the competitive activity be overcome?
- **Will it sell enough?**
  - What is the size of the global market opportunity?
- **Can we make a difference?**
  - Is there a clear Technology Strategy Board role?

Priorities for 2008-2011

- **Energy**
  - secure, clean and affordable energy supply
- **Sustainability**
  - focused on transport, construction and the ‘reduce, reuse and recycle’ agenda, including packaging
- **Healthcare**
- **Emerging Innovative Markets**
  - focused on technologies for the Creative Industries

Approach

Support for all market or technology sector-oriented activities will be focused around key generic drivers and challenges and opportunities sought for cross-sector collaborations and transfer of technology and knowledge.

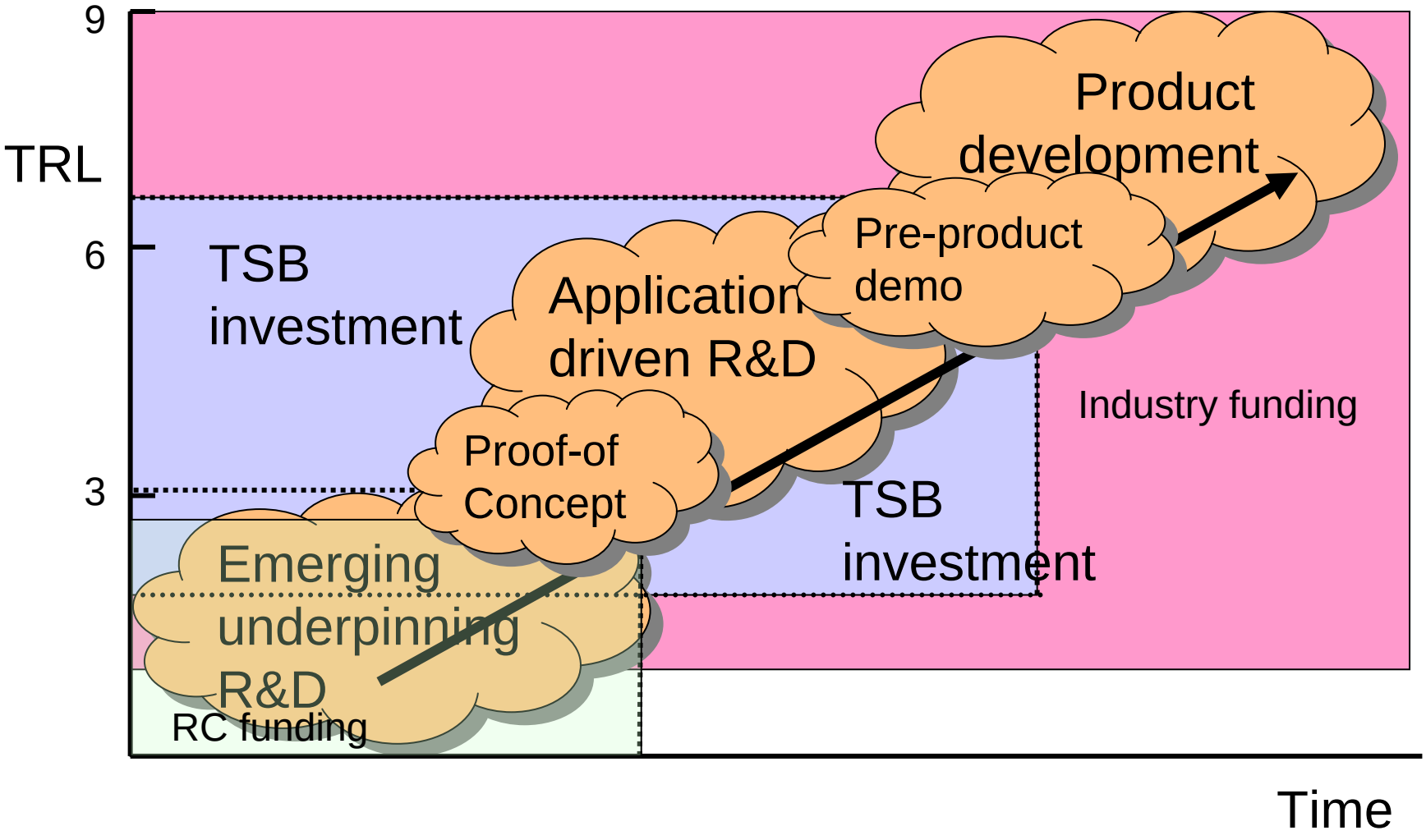


Outputs are value products and processes exploited via multiple strong UK market sectors

Focused through four challenge areas.

A strong and diverse UK S&T base.

Process


9
TRL
6
3
TSB investment
Product development
Pre-product demo
Application driven R&D
Proof-of Concept
Emerging underpinning R&D
RC funding
Industry funding
TSB investment
Time

The Way Forward

In order to facilitate the desired outcomes from the Advanced Materials strategy, it is proposed that, in the period 2008-2011, the Technology Strategy Board will:

- invest in materials technologies which address the key challenges of energy and the environment, and promote a focus on sustainability - 'reduce, reuse and recycle',
- continue to invest in materials for healthcare applications; from antimicrobial surfaces to tissue regeneration scaffolds,
- explore opportunities for the development and exploitation of materials technologies in the creative industries sector,
- work with other government and industry stakeholders to identify opportunities for joint or aligned activities; including generic underpinning R&D and proof-of-concept studies,
- work with other stakeholders in respect of metrology and standards development,
- support an innovation culture via, e.g. a Materials Knowledge Transfer Network [KTN], and joint activity with other relevant KTNs, and
- seek, with other stakeholders, to identify European and other international strategic alignment and financial gearing opportunities in support of improved UK competitiveness and inward investment.

In Summary……..

The strategy presents a holistic, challenge-based, approach for innovative advanced materials development and application, which aims to provide continuity and long-term commitment in key areas and to support the UK as a provider of high value products, processes and services.