Driving Innovation

The Technology Strategy Board

Overview: Electronics, Sensors & Photonics

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Lead Technologist
Agenda

• Technology Strategy Board
• Snapshot of UK Electronics sector & opportunities
• Electronics, Sensors, Photonics
• Technology Strategy Board toolkit
• Opportunities for funding
Technology Strategy Board

Investing for the future

How we help
UK's innovation agency

Who we help
Business, research & policymakers

Where we invest
Commercialising new ideas
Our goal is to accelerate economic growth by stimulating and supporting business-led innovation.

220 people with over 2,000 years of business experience

Budget of c. £440m year
Thematic sectors

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Driving Innovation
Satisfy four questions

- Idea ready
- TSB considers
- UK do it
- Make a difference
- Market opportunity

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Driving Innovation
Technology Readiness Level

Source: The NASA-developed Technology Readiness Level model

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Driving Innovation
The Startup Curve

- TechCrunch of Initiation
- Wearing Off of Novelty
- Trough of Sorrow
- Releases of Improvements
- Crash of Ineptitude
- Wiggles of False Hope
- Acquisition of Liquidity
- The Promised Land!
- Upside of Buyer

Source: Paul Graham; avc.com
SNAPSHOT OF UK ELECTRONICS SECTOR & OPPORTUNITIES
Nuggets from the ESCO report

Electronic Systems at the heart of...

850,000 people working on Electronic Systems with 50% embedded in other industrial sectors

£80 Billion annual contribution to the economy

£120 Billion 7.1% of GDP

Ambitions for 2020

1,000,000

Figure 1: UK Sectors Employing Electrical and Electronic Engineering Graduates (HESA, 2013)
Disruptive technologies – economic impact 2025

- Mobile Internet: $3.7–10.8 trillion annually
- Automation of knowledge work: $5.2–6.7 trillion annually
- The Internet of Things: $2.7–6.2 trillion annually
- Cloud technology: $1.7–6.2 trillion annually
- Advanced robotics: $1.7–4.5 trillion annually
- Autonomous and near-autonomous vehicles: $0.2–1.9 trillion annually

Others: Next-generation genomics, Energy storage, 3D printing, Advanced materials, Advanced oil and gas exploration and recovery, Renewable energy

SOURCE: McKinsey Global Institute analysis
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ENABLING TECHNOLOGIES:
ELECTRONICS, SENSORS, PHOTONICS
Embedded systems

A combination of computer hardware and software designed for a particular application device

Smart meters
Energy

Set top box
Digital service

Biomedical analysers
Healthcare

Power management
Transport

Over 95% of chips produced are for embedded systems
Photonics

Photonics is the control, manipulation, transfer and storage of information using light

PV solar cells
Solid state lighting
Energy

Bio/medical photonics imaging
Telecoms & optical equipment
Healthcare

Lasers
Material processing
Advanced manufacturing
Sensor systems

Device that measures a physical quantity and converts it into actionable information

Driven by: mobile computing | sensors | data analysis
Power electronics

Applying solid-state electronics to efficiently handle and manage power

Milli-watts  Operating time  Healthcare

Practicality
Transport

Generation & distribution: variety sources
Energy

Contributing to the low carbon economy
Plastic (printed or organic) electronics

Technology that enables circuits to be printed onto a range of surfaces

Ultra-thin, efficient displays & lighting panels

Energy

Low-cost solar cells

Built environment

Intelligent packaging

Digital world

Enables products that silicon electronics can’t deliver
Enabling technologies
Strategy
2012-2015

Advanced materials
Biosciences
Electronics, sensors and photonics
Information and communication technology
The toolset

- Connect
- Feasibility Studies
- International Programmes
- Knowledge Transfer Network
- Innovation Vouchers
- Demonstrators
- Missions
- Smart
- Catapult
- Collaborative R&D
- SBRI

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Driving Innovation
Using the tools: Concept to commercialisation
Case studies: Recent Robotics competition
PLANNED FUNDING
Delivery Plan
Financial year 2013-14
Upcoming competitions

• Internet of sensors
• Technology inspired innovation
  – Collaborative R&D
  – Feasibility studies
• Industrial Lasers
• Robotics entrepreneurs mission
• Intelligent systems and embedded electronics
• Towards zero prototyping
Useful links

Delivery plan:

Open competitions:
• [https://www.innovateuk.org/funding-competitions](https://www.innovateuk.org/funding-competitions)

Find all funded projects at:
  – [https://connect.innovateuk.org/publicdata/?view=results&index=1](https://connect.innovateuk.org/publicdata/?view=results&index=1)
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THANK YOU
• A network of world-leading technology and innovation centres
• Helping business transform ideas into new products and services
• More than £1bn of investment over the next few years
• Online **business networking and open innovation portal**

• Home to **15 specialised Knowledge Transfer Networks**

• **A powerful innovation and collaboration opportunity**
• Encourages businesses and researchers to **work together on innovation**

• Co-funds **partnerships between businesses, and business and academia**

• Helps **create successful new products, processes and services**
• Uses the power of government procurement to drive innovation
• Lets companies engage with the public sector to solve problems
• 100% of the funding is provided through a contract not a grant
• Funding for small and medium-sized enterprises to engage in R&D
• Grants let you assess the commercial viability of a project
• Smart funding is available to single companies
• Access knowledge, technology and skills from our Knowledge Base

• KTPs let businesses work in partnership with academic institutions

• Gain access to experts to take your organisation forward
• Take new innovative companies to countries strong in innovation
• Open up overseas markets for dynamic UK companies
• Run in partnership with UKTI
• Projects to help you access European research and development
• Help companies make the most of international business opportunities
• Help business to have a global as opposed to local market
Network

• Connecting the UK's innovation communities
• Find out about new opportunities in key research sectors
• A single overarching national network in a specific field of technology
• Enables large-scale testing of new products and services in the real world
• Brings partners together to validate ideas and overcome barriers
• Helps move new products closer to wider application
• A single-company or collaborative R&D grant scheme
• Lets businesses investigate the technical feasibility of a new idea
• Winners showcase and share their ideas at Collaboration Nation events
• Helps to **concentrate business expertise within high-tech clusters**

• **Encourage knowledge transfer** between high-tech companies

• Act as a catalyst to **help companies behind projects attract more investment**
• Encourage businesses to look outside their network for **new knowledge**
• Available for **UK start-ups and small and medium-sized businesses**
• **£6m fund to help stimulate innovation** where few businesses invest