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The role of Engineering Institutions in achieving economic growth

[The slides follow the text of the speech – scroll down or print]

Crucial role of engineering

The public understanding and perception of engineering and engineers is rising. It is clear that the engineering sector has a crucial role to play in delivering growth for the UK, in building our capacity to compete in a rapidly growing global market and in shaping our ability to cope with mounting pressure on the world's resources. The building blocks are there and the signs are positive.

Engineering contributes £481Bn to the UK economy, employs 5.4 million people across half a million engineering companies and is key to the commercialisation of research and development leading to new products and services, new industries and new jobs. However we still need to attract a greater talent pool into engineering, with joined-up action to ensure we seize the opportunities at a national and international level (we need 1.25 million science, engineering and technology professionals and technicians by 2020).

Driving growth through innovation

Growth in the economy requires innovation and wealth creation in companies big and small. At one level this is a very competitive environment. At another level these units need to be on the same side to form and evolve business strategies.

A recent PWC Innovation Survey of over 1,500 c-level interviews with companies (including 201 companies in the UK) shows a direct link between companies that focus on innovation, and those which successfully grow faster. The UK's most innovative companies grew on average 50% faster than the least innovative over the last three years.

Acting as an enabler for business

Any professional organisation, and the IET in particular, makes a very important contribution in providing a neutral ground where business discussions and strategies can form in a way that complements those generated on a direct company-company basis. Keeping up with technology developments is part of this.

This is particularly important for the medium size businesses. At the UK level it is growth in the medium size businesses that will make the big difference to employment (because the vast majority of people are employed in such businesses).

In a nutshell, business is all about people, and the IET facilitates professional interactions with businesses of all kinds of size, from established blue-chips to dynamic SMEs.

Inspiring, informing and influencing

- The IET originally formed as the Society of Telegraph Engineers and established the international telegraph network (the communications industry is now worth billions worldwide).
- The IET has been publishing engineering journals since 1872, the longest of any UK academic publisher, and is Europe's largest engineering membership organisation, with more than 150,000 members in 127 countries globally.
- The IET is at the forefront in promoting electrical safety. The 1st Edition of the IEE Wiring Regulations was published in 1882. Since then the Regulations have been regularly updated to reflect technical developments and changes in best practice. In July 2011 the IET published the first amendment to 17th Edition of the IET Wiring Regulations (BS 7671).
- Our long-term 5-19 Education and Faraday programmes, encourage children to consider a career in engineering while our Diamond Scholarship scheme encourages the best students to study accredited degrees in engineering and technology - £2m funding to date.

- The IET provides guidance and support to enable members to undertake planned and structured Initial Professional Development (IPD) and Continuing Professional Development (CPD).
- It delivers premium content across a broad range of subjects, while IET events deliver insight and debate into the hot topics affecting engineers and technicians across the globe.
- In summary, the IET leads the development of an international engineering and technology community, sharing and advancing knowledge to enhance people's lives.

Developing skills throughout professional life
Demands on the modern engineering community have changed, and professionals in engineering roles have a very different job from 20 years ago.

Modern challenges require engineers and technicians to work more collaboratively across sectors, disciplines and continents. Therefore, professionals need fast and easy access to information and other resources. The IET's membership value proposition centres on providing engineers with a parallel 'professional life' that enriches their career as well as ensuring that young people are attracted to engineering in order to readdress the balance within the economy and meet the identified skills gap.

The role of the IET in supporting Corporate and Academic partners is also important – providing professional registration, CPD and accredited courses – all designed to ensure that graduates are 'job ready' and that they continue to develop their skill sets throughout their career, critical in this ever-changing, inter-disciplinary world in which we live.

Championing the interests of the engineering community
The IET's chosen Sectors – Transport, Energy, the Built Environment, Information & Communication and Design & Production – provide a vital link between the IET and the outside world, specifically with industry and the world's major engineering and technology projects. They are designed to map knowledge, people and activities on to industry sectors to meet their needs (and, thereby, to facilitate growth).

IET Sectors champion the interests of the international engineering community through encouraging interaction between industry, academia and government, developing partnerships and creating thought leadership content. Currently the IET works with a wide range of organisations and achieves a considerable amount, in particular around its work with the TSB and the Knowledge Transfer Networks (KTN). It is also much appreciated by BIS, UKTI and TSB who regard the IET as a true Partner.

Example initiatives include: Power Networks – Joint Vision Expert Group instigated by the IET who brought together key representatives from DECC, OFGEM, Academia, Transmission and Distribution Organisations as well as some relevant Consultancies to look at the challenges facing the 'Whole' electricity grid for today and beyond 2030.
Networks and Combined Heat and Power – A joint IET Energy and Built Environment sector initiative looking at the future of Heat in the UK is a new innovation looking at the important topic of reducing CO2.

Meeting the challenges of the 21st Century
The IET runs a number of Policy Panels which provide strategic, expert advice to government on key policy topics including: Energy, Transport, Communications, Emerging Technologies and IT. The IET provides expert advice to the UK's Parliament, Government and other agencies and each year it makes around 30 submissions to the UK Government and the EU on engineering related policy issues. The IET is also regularly in the mainstream and specialist media explaining the impacts of engineering and technology on society e.g. HS2.

Providing trusted decision support
The IET provides Essential Engineering Intelligence for trusted decision support via a wealth of Knowledge products and services from Inspec, a world-leading science, engineering and technology database containing 13 million abstracts and IET.tv, the world's largest repository of technical engineering videos, to its acclaimed research journals including its new Open Access journal, The Journal of Engineering, which provides the opportunity to identify hot research topics in inter-disciplinary areas.

All these products and services are designed to offer actionable intelligence that can help stimulate innovation and economic growth.

Catalysing technical opportunities for business

Examples include:

Electric lighting: The IET published a paper by J W Swan (IEE President 1898) on 'The subdivision of the electric light' – looking at the possibilities of a new technology, the incandescent lamp (precursor of the modern light bulb). Swan would go on to develop one of the first incandescent lamps and would join with Thomas Edison to form the Ediswan lamp company. Fast forward to modern times and the IET is set to publish an LED Lighting Code of Practice in early 2014.

Wiring standards: In 1882, The Society of Telegraph Engineers and of Electricians issued the first wiring regulations which laid the foundations for subsequent generations of electrical designers and installers. Now, the publication – essential in the construction and manufacturing sector – has been adopted by UK government as the route to compliance with Building regulations and allows the IET to develop industry leading guidance.

Communications: The IET was used as a forum for presenting new communications technology. For example, Sir William Preece (IEE President 1880 and 1893) gave two papers in 1876 and 1878 on the telephone and the phonograph: the latter including a practical demonstration (JSTE: 'The Telephone' (1876) and 'The Phonograph' (1878).)

- Marconi (an Honorary IET Fellow) also gave a paper to the IET in 1899 on 'Wireless Telegraphy' – he chose the IET as the most suitable forum for explaining his work and ideas (Journal of the IEE, 1899).
- Charles Kao (Faraday Medallist) and G A Hockham: 'Dielectric fibre surface waveguides for optical frequencies', Proc. IEE, 1966 (pioneering paper on fibre-optic technology)

Publishing industry standards in emerging technology areas

The IET has been instrumental in bringing together industry and Government to develop the Code of Practice for Electric Vehicle Charging Equipment Installation which will drive commercialisation of the low emission vehicle sector. Transport Minister Norman Baker launched the `Driving the Future Today – A strategy for ultra-low emission vehicles in the UK' on 20th Sept 2013 which ties up with the Government investing £500m of capital up to 2020 in this sector.

The potential for LED lighting is huge – going from 7% market penetration of the general lighting market in 2011 to an expected 60-70% penetration by 2020 – a $94 billion market. For this potential to be achieved, electricians and other stakeholders need practical guidance on installation. In early 2014 the IET will publish a Code of Practice which will facilitate this.

New ways of linking businesses and professional communities

The IET is as much about expert communities as it is about high quality content – together they underpin the IET's 'Essential Engineering Intelligence' value proposition – these communities spanning the globe can meet on a local or technical level – even more so since the creation of MyCommunity, the IET's online professional network and collaboration platform, that allows like-minded engineers from different parts of the world to connect, interact and exchange knowledge with their peers, leading to new insights and commercial opportunities.

In 2012 these communities held over 1,500 physical events all around the world involving nearly 100,000 individuals from the international engineering community, including many active IET volunteers.

Looking to the future…

The turnover of UK engineering enterprises remains substantial, at £1.06 trillion in the year ending March 2011: that's 23.9% of the turnover of all UK enterprises and over three times the size of the retail sector.

Whilst the expected post-recession upturn has not yet materialised to any significant level, either within the UK or the EU, the future trend paints a very different and more optimistic picture. Reports project that annual global output will more than double in two decades, from $78 trillion to $176 trillion. Three-fifths

of that extra output will come from emerging or developing economies. The force behind this growth is the growing purchasing power of the middle classes, particularly in Brazil, Russia, India and China (the BRIC countries) and other emerging economies. Today, India and China account for a mere 5% of global middle class consumption, while Japan, the United States and the European Union account for 60%.

By 2025, those numbers are expected to equalise. By 2050, they will have flipped. Supporting economic prosperity is not the only crucial role the engineering sector has to play in our future. Global population reached seven billion during 2011 and the United Nations predicts it could be as high as 11 billion by 2050. In the richest parts of the world, per capita material consumption is far above the level sustainable for a population of seven billion or more. The equable, sustainable provision of energy, water, health and accommodation is a central challenge to future, multi-disciplinary engineering.

The role of Engineering Institutions in achieving economic growth

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Crucial role of engineering



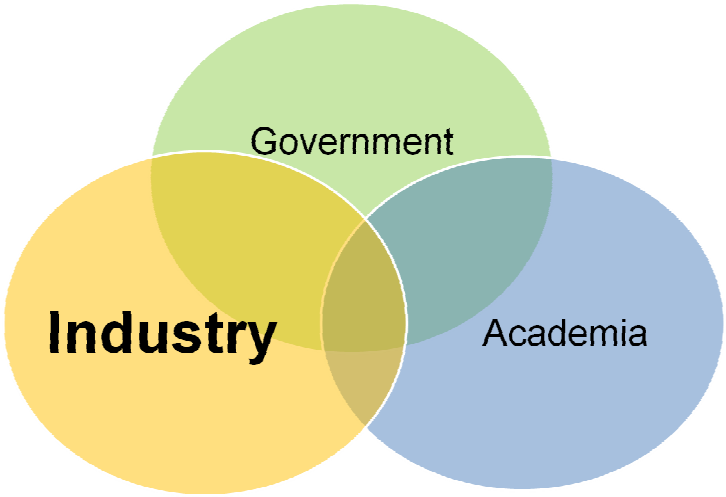



Driving growth through innovation

The Institution of Engineering and Technology

Essential Engineering Intelligence

Acting as an enabler for business



The Institution of Engineering and Technology

Essential Engineering Intelligence

Facilitating professional interactions

"The knowledge and intelligence that we have had access to through the **IET's engineering resources and contacts** have been **invaluable** in a variety of projects that GE Digital Energy has and is continuing to develop."

Digital Energy

"We are in a unique place to set our sights on international markets. The IET will act as a **great support system** in our attempt to do so, by arming us with the tools and a hub to **share knowledge** and success stories with **other companies** in the sector."

AshWoods
THE HYBRID PEOPLE

Inspiring, informing and influencing

- Started as a 'professional club'
- Evolved through standards and best practice
- Vehicle for developing young engineers
- Continuing professional development
- Source of essential engineering intelligence
- Conferences and public communication
- Policy and thought leadership
- Truly international with 153,000 members in 127 countries – *the lifeblood of the IET*

Developing skills throughout professional life

- The need – a changing landscape of engineering
- Cross-disciplinary challenges – innovation emerging at the boundaries
- The Professional Home for Life for Engineers and Technicians

Championing the interests of the engineering community

Mapping knowledge, people and activities onto the IET's Sectors - *Transport, Energy, Built Environment, Information & Communication and Design & Production* - to encourage interaction and facilitate growth

Developing and facilitating content across the IET in key topics with international relevance

Partnering with industry and government bodies to champion the interests of the international engineering community and drive innovation

ena energynetworks association
CATAPULT High Value Manufacturing
Technology Strategy Board Driving Innovation
bre
Olympic Delivery Authority

Meeting the challenges of the 21st Century

Energy Security	Future Transport	Connected Health	Cyber Security
Sustainable manufacturing	Carbon neutral neighbourhoods	Autonomous & low carbon vehicles	
Renewables	Independent living	Sustainable skills	
City-wide & district systems	Data centres & cloud computing	Network infrastructure	
Smart Meters	Safety & security	Cyber Security	
Lighting systems	Energy efficiency	Heat	
Future Power Networks	Infrastructure resilience	Future intelligent cities	

Providing trusted decision support

- Leading authority on engineering & technology
- Indispensable knowledge, products & services
- Providing relevant & actionable intelligence
- Enabling better informed decisions
- Saving time & money
- Gaining competitive advantage
- Stimulating innovation
- Delivering economic growth

THE JOURNAL OF ENGINEERING
IET Open Access Research

IET.tv

Catalysing technical opportunities for business

Electric lighting

Wiring standards

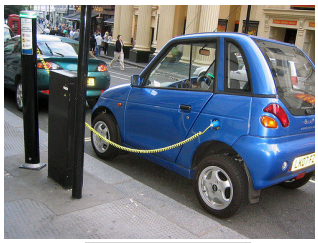
Communications

The Institution of Engineering and Technology

Essential Engineering Intelligence

Publishing industry standards in emerging technology areas

- Government mid-range forecast: 1 million EV/ PHEV cars by 2020
- Authoritative guide for electrical installers of EV charging points
- First time that industry and Government had come together to agree comprehensive guidance



"The Code of Practice highlights the electrical industries commitment to move with the times."

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Essential Engineering Intelligence

New ways of linking businesses and professional communities

- Knowledge management and delivery for the engineering community
- Enabling communities to connect, interact and exchange knowledge
- 120+ local & technical communities
- 350+ communities online globally

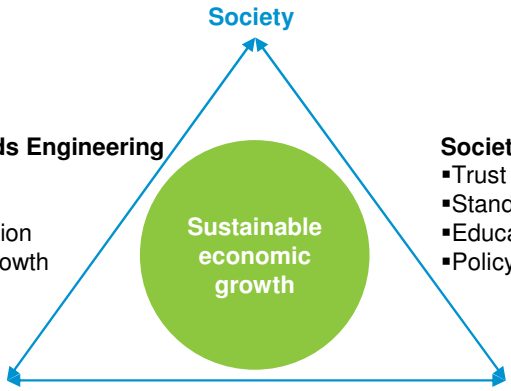
MyCommunity

Connecting Engineers, Forming Communities

The Institution of Engineering and Technology

Essential Engineering Intelligence

Crucial role of engineering institutions



Society needs Engineering
- Solutions
- Innovation
- Wealth creation
- Economic growth

Society needs the IET
- Trust
- Standards
- Education
- Policy

Engineering needs the IET
- Support
- Professionalism
- Knowledge

The Institution of Engineering and Technology

Essential Engineering Intelligence

Looking to the future…