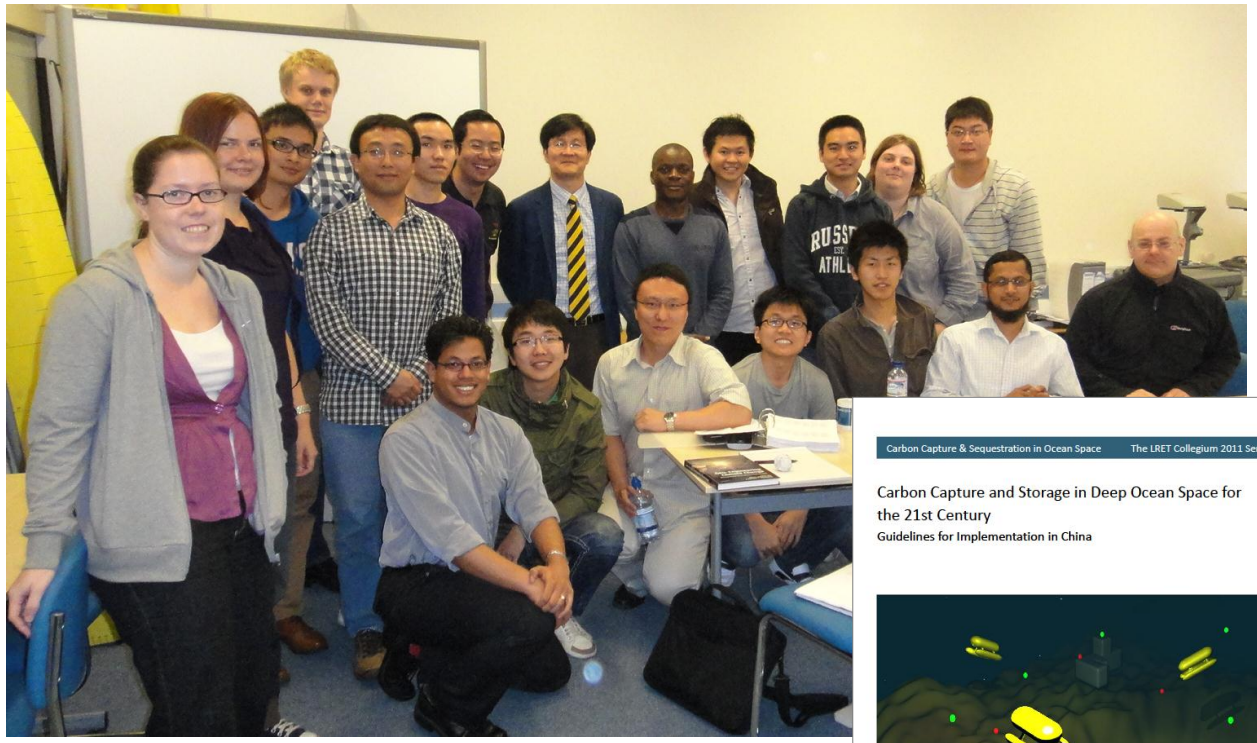
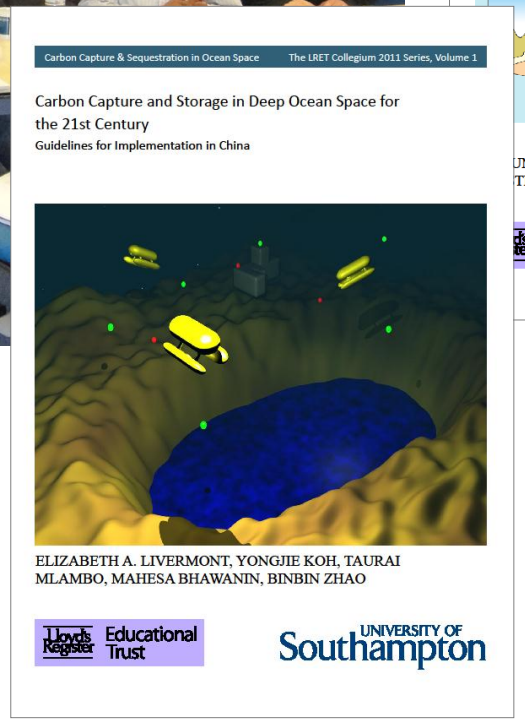
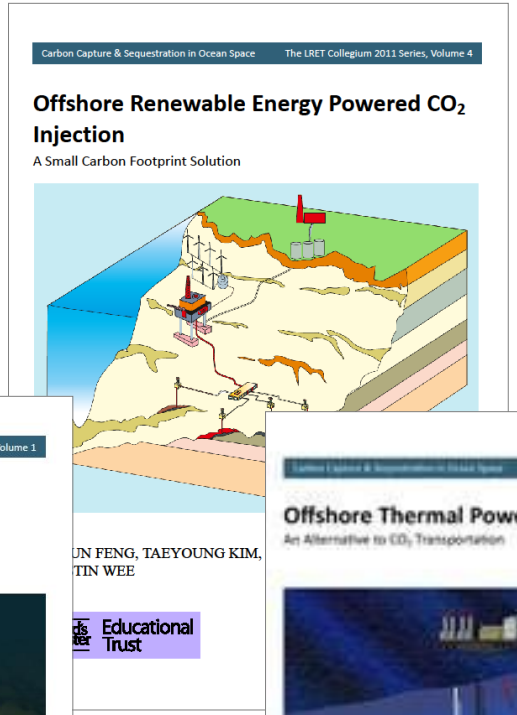
The LRET Research Collegium 2012







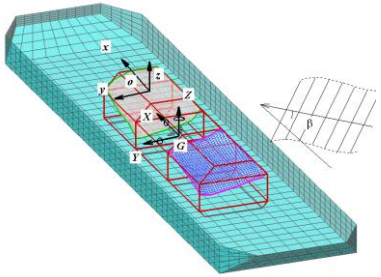
Lloyd's Register Educational Trust

What is The LRET?

The LRET carries out the charitable work of Lloyd's Register

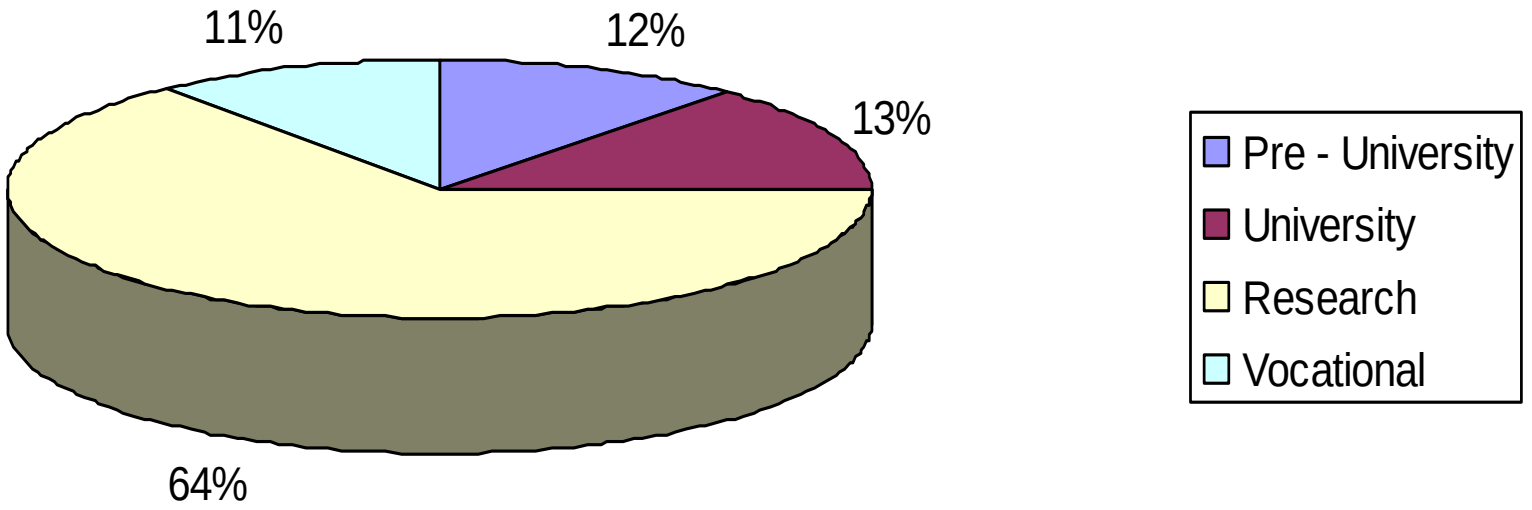
but it is:

- an independent charity, with
- a separate Board of Trustees, and
- a structured programme of support



The LRET funds education, training and research programmes in transportation, science, engineering, technology and the safety of life, worldwide **for the benefit of all**

Funding is split over four categories



We support people of all ages through education and careers in science, engineering and technology

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Pre-university education

Promoting careers in science, engineering and technology to young people, their parents and teachers

- Encouraging schoolchildren to take a keen interest
- Supporting organisations working with schools, not individual schools
- Supporting national or international, not regional or local, programmes

University education

- We provide funds to universities/colleges to administer scholarships and award schemes on our behalf
- We aim to identify exceptional students at both undergraduate and postgraduate (Masters) levels
- We aim to support all engineering and technological disciplines

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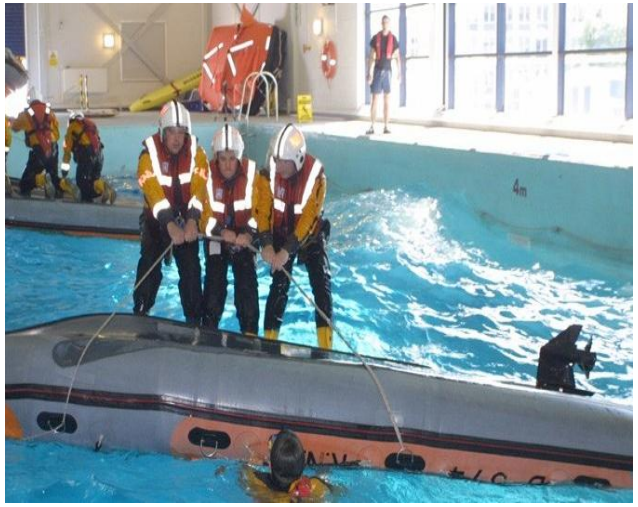
Vocational training and professional development

- Funding organisations that provide training and skills development opportunities for people in work
- In industry sectors that fit with our aims



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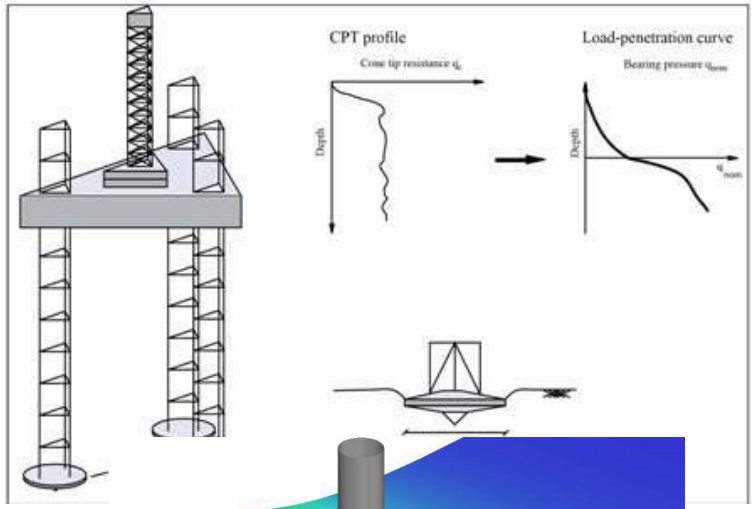
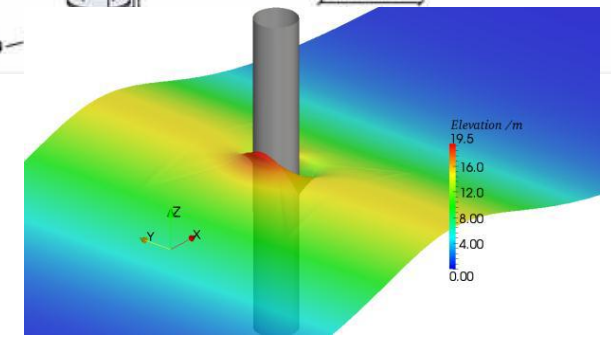
Research

- We fund existing or new centres of excellence at institutes and universities
- We encourage collaborative research
- We fund fundamental research programmes rather than short term projects
- Typically, support is for a 5-year period. There is no guarantee that this will be extended





$$\begin{bmatrix} M^{11}+A_{kj}^{11} & \cdots & A_{kj}^{1N} \\ \vdots & \cdots & \vdots \\ A_{kj}^{N1} & \cdots & M^{NN}+A_{kj}^{NN} \end{bmatrix} \begin{Bmatrix} \ddot{\eta}_j^1 \\ \vdots \\ \ddot{\eta}_j^N \end{Bmatrix} + \begin{bmatrix} \int_0^t K_{kj}^{11}(t-\tau)d\tau & \cdots & \int_0^t K_{kj}^{1N}(t-\tau)d\tau \\ \vdots & \cdots & \vdots \\ \int_0^t K_{kj}^{N1}(t-\tau)d\tau & \cdots & \int_0^t K_{kj}^{NN}(t-\tau)d\tau \end{bmatrix} \begin{Bmatrix} \dot{\eta}_j^1 \\ \vdots \\ \dot{\eta}_j^N \end{Bmatrix} +$$

$$\begin{bmatrix} C^{11} & \cdots & C^{1N} \\ \vdots & \cdots & \vdots \\ C^{N1} & \cdots & C^{NN} \end{bmatrix} \begin{Bmatrix} \eta_j^1 \\ \vdots \\ \eta_j^N \end{Bmatrix} = \begin{Bmatrix} F^1 \\ \vdots \\ F^N \end{Bmatrix} = f\left(\eta_j^1, \dot{\eta}_j^1, \cdots \eta_j^N, \dot{\eta}_j^N, t\right)$$

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Research Centres of Excellence

Cardiff University, UK

City University, UK (lead); Loughborough University, UK; Technical University of Delft, the Netherlands

Dalhousie University, Canada (lead); University of Melbourne, Australia; National Oceanography Centre, UK; University of Sao Paolo, Brazil

Imperial College London, UK

Lancaster University, UK

National Technical University of Athens, Greece

National University of Singapore

Open University (lead), with The Welding Institute, UK

Pusan National University, Korea

Seoul National University, Korea

Technical University of Madrid, Spain

University College London, UK

University College London, UK (lead); Harbin Engineering University and Shanghai Jiao Tong Technical University, China

University of Aberdeen, UK

University of Nottingham, UK

University of Southampton, UK (Research Collegium)

University of Southampton, UK

University of Twente (lead), Technical University of Delft, Technical University of Eindhoven, the Netherlands

University of Western Australia

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Research

A new approach for 2012/13

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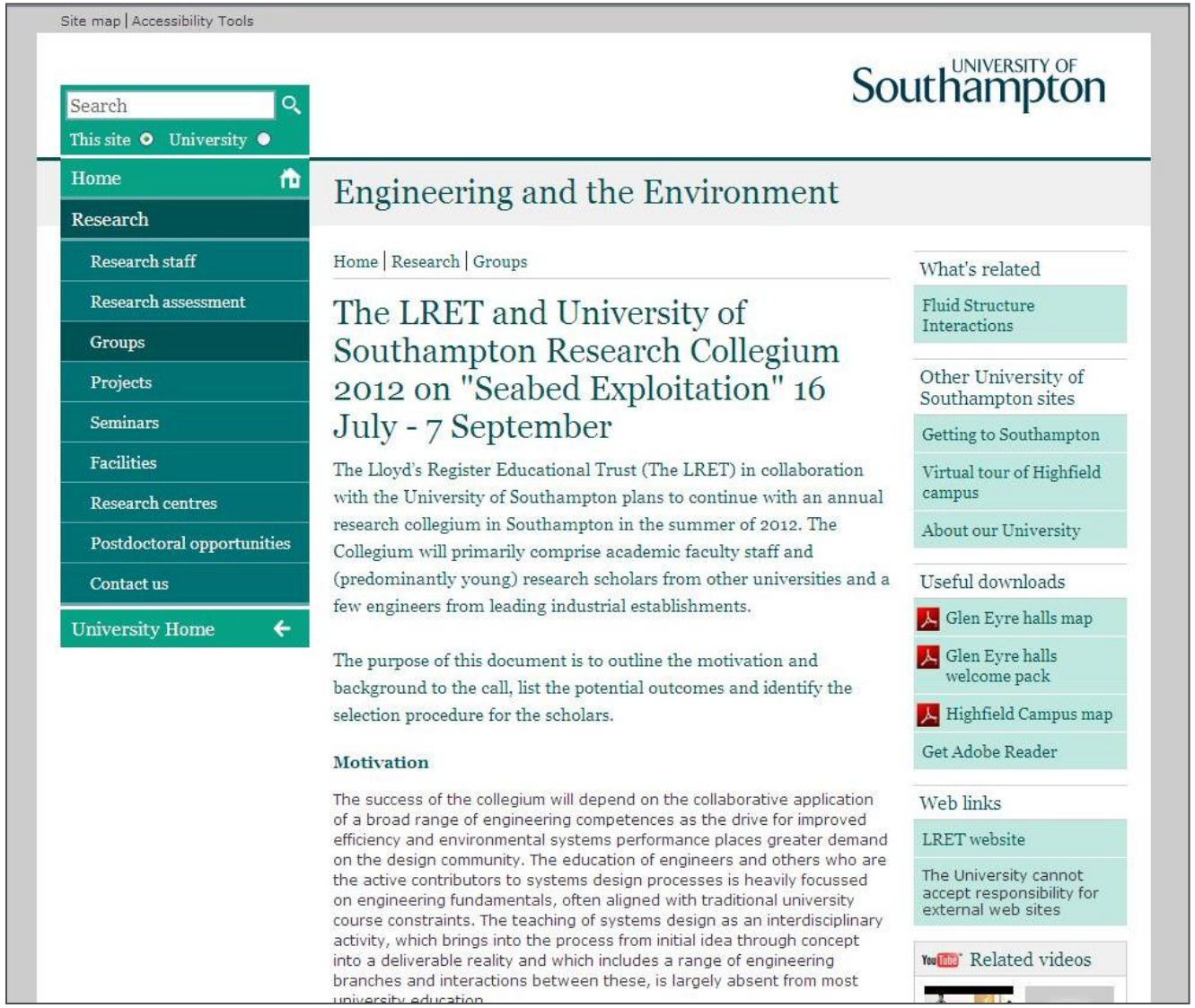
The LRET Research Collegium 2012

UNIVERSITY OF Southampton



- **25 Scholars**
- **11 countries**
- **23 universities, organisations**
- **15 nationalities**

One theme:

Sea-bed exploitation

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The LRET Research Collegium

University of Southampton

Not all hard work ..

Lloyd's Register Educational Trust

UNIVERSITY OF Southampton

Michael Franklin

16 July 2012