UNIVERSITY OF LEEDS

Designing the Future - The Engineering Education Colloquium Series

PHEE
A forum for Academic Leaders in
Electrical Engineering and Allied Technologies

**Professors & Heads of
Mechanical &
Manufacturing Engineering**

Academic Partners
The Institution of
Engineering and Technology

UNIVERSITY OF LEEDS

Designing the Future Engineering Education Colloquia Series

- Enhanced Engineering capability in the UK through the proposal of a clear and realistic agenda for Engineering Education;
- Representatives from relevant professional bodies and institutions, employers and engineering disciplines;
- Meaningful dialogue and support for action; and

PHEE
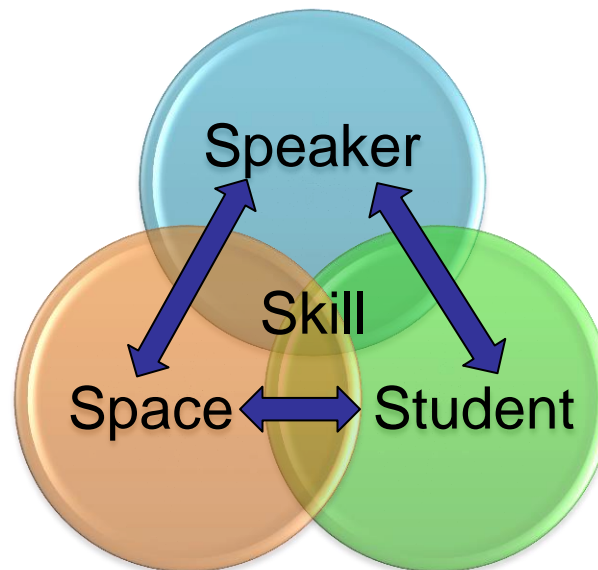A forum for Academic Leaders in
Electrical Engineering and Allied Technologies

**Professors & Heads of
Mechanical &
Manufacturing Engineering**

IET **Academic Partners**
The Institution of
Engineering and Technology

UNIVERSITY OF LEEDS

- 4 colloquia based on a 4S Education Model for delivering programmes of study (subject, staffing, student-employer perspective and space) and publication guidance in these key areas.

PHEE
A forum for Academic Leaders in
Electrical Engineering and Allied Technologies

Professors & Heads of
Mechanical &
Manufacturing Engineering

Academic Partners
The Institution of
Engineering and Technology

Colloquium 1 – The Subject of Engineering

Colloquium 2 – Staffing for Improving Engineering Education

Colloquium 3 – Synthesising the Employer-Student Perspective

Colloquium 4 – Engineering Space

PHEE
A forum for Academic Leaders in
Electrical Engineering and Allied Technologies

Professors & Heads of Mechanical & Manufacturing Engineering

IET Academic Partners
The Institution of Engineering and Technology

UNIVERSITY OF LEEDS

Colloquium 1 – The Subject of Engineering

- Changing role of engineering in society
- Sufficiency of supply of graduates
- Need to consider - portfolio of programmes, how they should be delivered, how engage industry?
- UK SPEC - threshold statements not detailed requirements

PHEE
A forum for Academic Leaders in
Electrical Engineering and Allied Technologies

**Professors & Heads of
Mechanical &
Manufacturing Engineering**

IET Academic Partners
The Institution of
Engineering and Technology

UNIVERSITY OF LEEDS

- Future fit graduates? With the right knowledge, attributes and experience

- Need a clear foundation that supports priority skills through programmes with content that reflects the needs of students and industry.

Activity outputs were captured in a 'road map' to 2020 that may serve as an action plan for the short and long-term and help to inform future UK SPEC benchmark statement review

PHEE
A forum for Academic Leaders in
Electrical Engineering and Allied Technologies

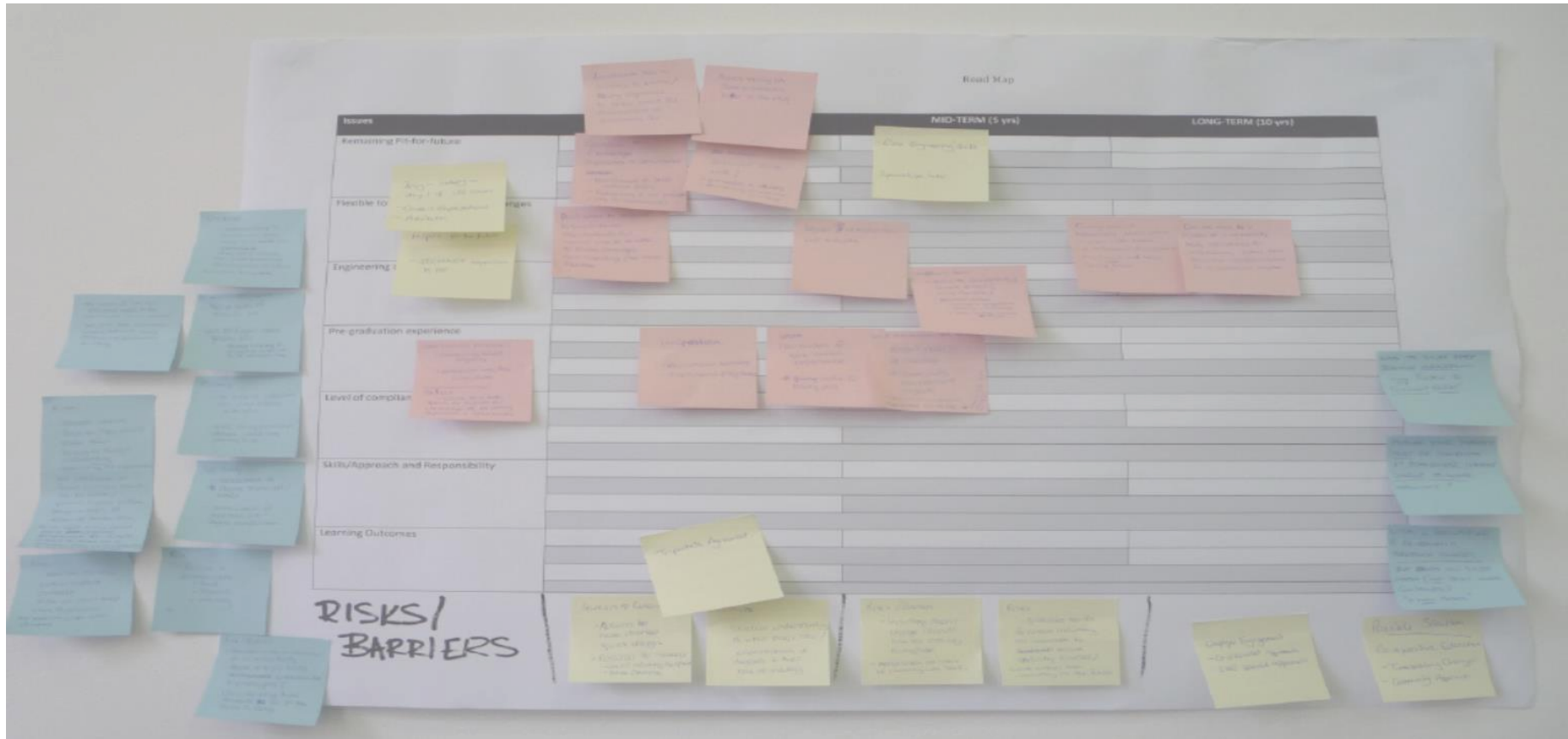**Professors & Heads of
Mechanical &
Manufacturing Engineering**

IET **Academic** Partners
The Institution of
Engineering and Technology

Driver	Action	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Owner/Lead
			Short-term			Mid-term			Long-term			
Remain fit for future	Development of doc (using IGT 2050 as model) -include guidance on balancing review with stability	Environment scan for future related initiatives and reviews										
Improved engagement with SMEs, local employers and higher apprenticeships	Formation of a HE/FE/SSC Engineering Advisory Group											
	Employer benefit communication programme											
	Raise awareness of other options (IEng)											
	Case study development (i.e. bringing industry in from day 1)				Modern sandwich course toolkit							
	Formation of regional partnering clusters - focus on placing students, vulnerability to corporate change and employer visibility											
	SWOT analysis of the impact of funding changes											
	Mapping of industry needs											
Challenging the System - Need for different staffing models and tailored CPD	Investigation into the appropriateness of current recruitment models including staff w/o PhD's, CEng/IEng as a requirement, industrial experience											

PHEE
A forum for Academic Leaders in
Electrical Engineering and Allied Technologies

Professors & Heads of Mechanical & Manufacturing Engineering

Academic Partners
The Institution of Engineering and Technology

Colloquium 2 – Staffing for Improving Engineering Education

- All roles require academic leadership;
- Quality is enhanced through research-led teaching;
- Teaching must be seen as central and therefore time must be allocated for the development of innovative teaching practice; and

- Academic staff should have prior industrial experience or opportunities to gain industry insight.

PHEE
A forum for Academic Leaders in
Electrical Engineering and Allied Technologies

Professors & Heads of
Mechanical &
Manufacturing Engineering

IET Academic Partners
The Institution of
Engineering and Technology

UK PSF was under consultation at the time of the Colloquium, we discussed:

- Is proposed expansion adequate?;
- Will it address potential gaps in the current (old) framework in terms of experience requirements;
- Recruiting and retention related issues – research profile requirements; and
- The need for a continuing professional development tool to aid with career development.

UNIVERSITY OF LEEDS

•Outputs will be synthesised into guidance for tailoring for Engineering Academics

The Engineering Academic Perspective
Balancing recruiting and development tensions surrounding research-led and industrial experience requirements concerning relevant industry awareness and getting reality into the classroom.

The UK Professional Standards Framework

for teaching and supporting learning

in higher education

2011

PHEE
A forum for Academic Leaders in
Electrical Engineering and Allied Technologies

**Professors & Heads of
Mechanical &
Manufacturing Engineering**

IET **Academic** Partners
The Institution of
Engineering and Technology

UNIVERSITY OF LEEDS

- **Colloquium 3 –** Synthesising the Employer-Student Perspective

- Helping students consider how their programme of study will impact employability;
- Incorporation of industry practice in education;
- Better communication of labour market requirements;
- Life-long learning;
- Attractiveness of engineering as a career;
- Attractiveness of graduates to industry.

PHEE
A forum for Academic Leaders in
Electrical Engineering and Allied Technologies

Professors & Heads of
Mechanical &
Manufacturing Engineering

IET Academic Partners
The Institution of
Engineering and Technology

•Outputs identified good practice for helping students decide, plan and compete within the employability agenda by bringing the outside in and taking the inside out …

PHEE
A forum for Academic Leaders in
Electrical Engineering and Allied Technologies

Professors & Heads of Mechanical & Manufacturing Engineering

Academic Partners
The Institution of Engineering and Technology

Colloquium 3 – Outputs

UNIVERSITY OF LEEDS

Outside-in		
Decide	**Plan**	**Compete**
• Early awareness – when STEM • Teachers/children • Build on current push for real engineers – political agenda • Role models • Preparation for anything – doorway of possibility • Contact	• Compulsory element to work placements • Structured timetable to incorporate outside-in • Build in time for outside-in • Placements/contact staff	
• Self-awareness • Context- talks, stars • Get professionals involved	• Challenge – learning opportunity, repeat, fail personal skills • Self-awareness • Lives outside degree • Ownership of learning	• 'What can I do for you?' • Need for flexible approach and application • Get alumni involved
• Decision tree software • Exposure to new graduates • Simulation or preparation for HE/Industry in school	• Placement followed by self-reflection/competency assessment – communicate how this is tied to learning outcomes • Communicating all the requirements of being a 'professional' • Challenging beyond/alongside the technical to identify related skills • Exposure to new graduates	• Nurture 'can do'/positive attitude • Provide business awareness of specific organisations and industries • Evidencing targeted behaviours
Inside-out		
Decide	**Plan**	**Compete**
• Promote right attitude • Think and position • Information on companies – EQ requirements and functional skills of organisations • Awareness • Show exemplar competencies	• Promote right attitude • See opportunities • Gather evidence and develop • Convey role and management positions • Build into curriculum	• Promote right attitude • Commercial awareness (avoid disembodied qualities)

UNIVERSITY OF LEEDS

Colloquium 4 – Engineering Space

- Consideration of the learning environment as part of the building, campus and community;
- Effective communication pathways between estates and academics; and
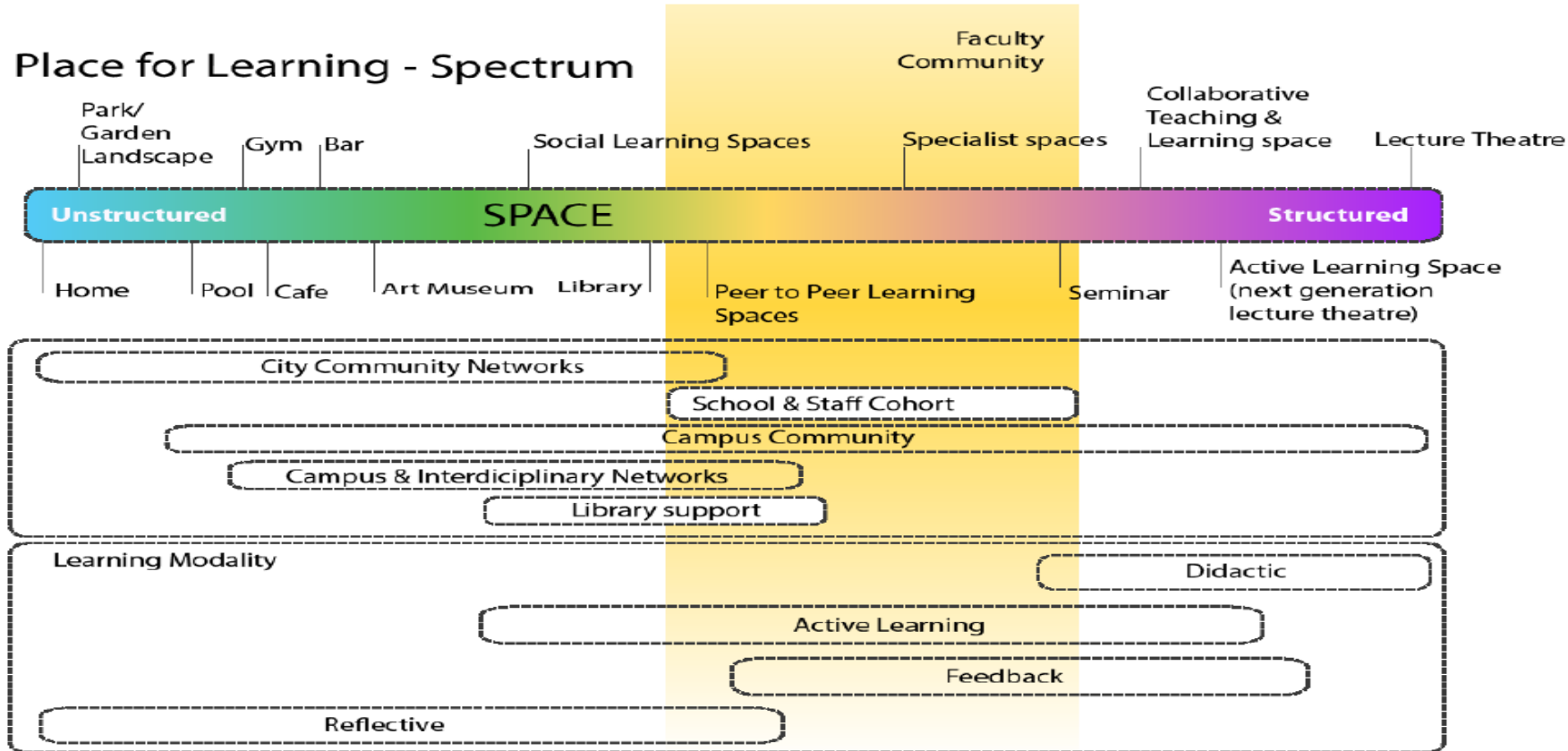- Evidence-based guidance, support models and metrics.

Speaker

Skill

Space Student
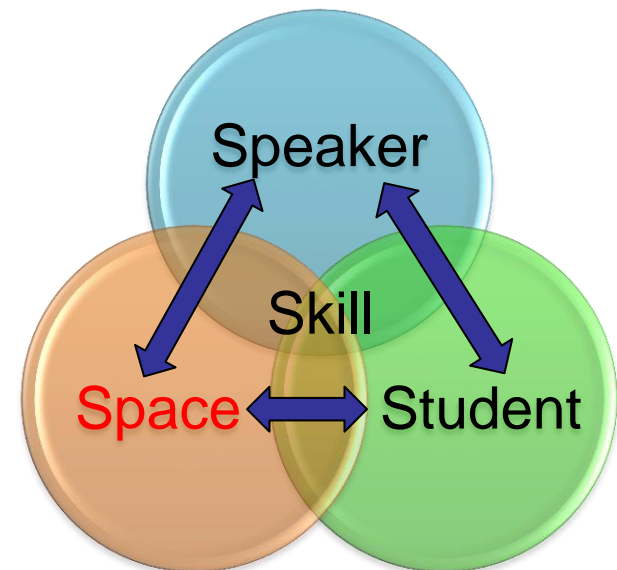
4S Learning Environment Model

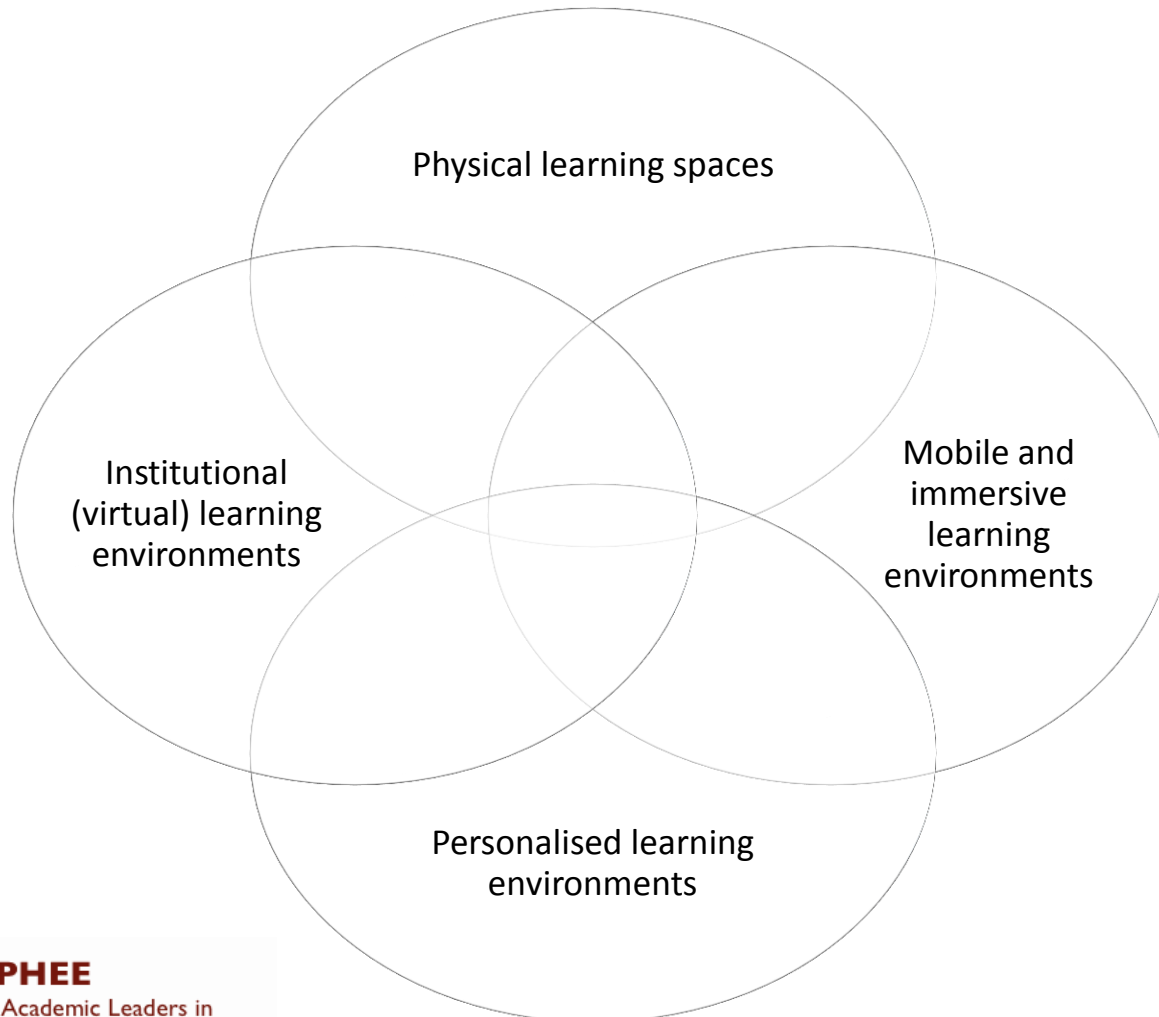**PHEE**
A forum for Academic Leaders in Electrical Engineering and Allied Technologies

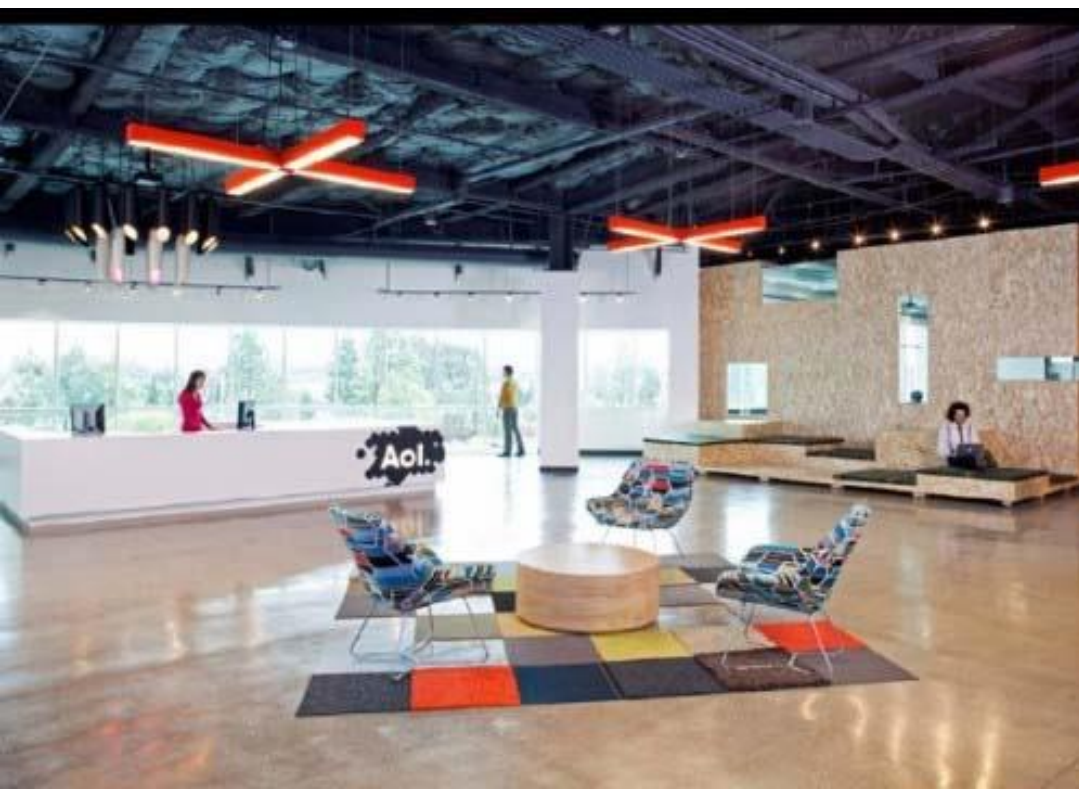**Professors & Heads of Mechanical & Manufacturing Engineering**

IET Academic Partners
The Institution of Engineering and Technology

http://www.uq.edu.au/nextgenerationlearningspace/

UNIVERSITY OF LEEDS

Physical learning spaces

Institutional (virtual) learning environments

Mobile and immersive learning environments

Personalised learning environments

PHEE
A forum for Academic Leaders in
Electrical Engineering and Allied Technologies

UNIVERSITY OF LEEDS

•Commentary on the ideal combination of speaker, mode and subject (and when to say no!)

•Identification of sources of good practice for:

1. Translating Engineering requirements into fit for purpose environments
2. Evidence based approaches to learning environment design and evaluation
3. Know when to dig your heels in – VE or VM

PHEE
A forum for Academic Leaders in
Electrical Engineering and Allied Technologies

Professors & Heads of
Mechanical &
Manufacturing Engineering

IET Academic Partners
The Institution of
Engineering and Technology

UNIVERSITY OF LEEDS

- Case study and guidance dissemination

- For more information please contact

> Professor Denise Bower
> Engineering Project Academy
> University of Leeds
> D.A.Bower@leeds.ac.uk

PHEE
A forum for Academic Leaders in
Electrical Engineering and Allied Technologies

Professors & Heads of
Mechanical &
Manufacturing Engineering

IET Academic Partners
The Institution of
Engineering and Technology