

# Academic Accreditation of Engineering Programs and The Institution of Engineering and Technology (IET) - An International Perspective

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Amman 2 April 2013



# Who, What, Why, How

I am Andy Watson, a Teaching Fellow of Queen Mary, University of London.  
I teach in Beijing on the Joint Programs between QMUL and Beijing University of Posts and Telecommunication (BUPT).

For the IET and its predecessors, I have been an Academic Accreditor for about 17 years, have chaired accreditation events; and amongst other volunteer roles am an international professional registration advisor, interviewer, registration assessor, fellowship assessor.

Purpose of this presentation is to talk about engineering standards (educational and professional), their benefits, professional accreditation, the international dimension and the IETs role in this.....

.....I hope I am successful..... 😊

# Professional Registration

In the UK, Professional Registration is possible with one of four qualifications:

CEng Chartered Engineer

IEng Incorporated Engineer

EngTech Engineering Technician

ICTech Information and Communications Technology Technician.

These qualifications are awarded to individuals

- whose educational standard is equivalent to that of a relevant accredited programme
- who have relevant experience in applying engineering knowledge to the solution of problems

# CEng - Academic Level

The academic level underpinning the professional qualification of Chartered Engineer is Masters level.

This could be:

- An accredited integrated MEng programme
- An accredited MSc programme and relevant underpinning Bachelor degree
- Evidence of having obtained the above level by other means, for example workplace experience.

# Professional Standards

These registration qualifications are awarded via one of the Professional Engineering Institutions (PEIs) (“Licensed Members”)

One of these PEIs is the Institution of Engineering and Technology (IET), the largest such Institution in Europe.

The standards required for the award of these qualifications are specified in “Standards for Professional Engineering Competence” (UK-SPEC)

Adherence to the standards is delegated by the Engineering Council United Kingdom (ECUK) to the PEIs

# Engineering Council, UK

The Engineering Council is the UK regulatory body for the engineering profession.

Its Royal Charter requires it: “In conjunction or collaboration with Licensed Members, to act as the representative body of the United Kingdom in relation to the international recognition of registrants and of qualifications in engineering and related subjects and disciplines.”

Aim: To achieve enhanced mobility of engineers and technicians across the world.

Note:

25% of engineers registered with ECUK work outside the UK and 10-15% of registrants are non-UK citizens (43,000 overseas registrants)

# Professional Qualifications

The expression “Qualifications” can refer to two different things:

1. Educational (tertiary level) qualifications underpinning engineering knowledge and understanding.

Accreditation of these is based on evidence of graduates overtaking defined programme outcomes through the study of relevant subject areas

2. Compliance with relevant professional standards (competence).

In the UK the competences are specified in “Standard for Professional Engineering Competence” UK-SPEC), and cover the application of engineering knowledge, problem-solving, leadership, communication skills and ethical issues.

# 1. Educational Qualifications – World-Wide

**Educational (tertiary level) qualifications underpinning engineering knowledge and understanding.**

There are three agreements covering mutual recognition of these:

- Washington Accord. Recognises substantial equivalence in the accreditation of qualifications underpinning professional engineer (CEng level in UK)
- Sydney Accord. Recognises substantial equivalence in the accreditation of qualifications underpinning engineering technology (IEng level in UK)
- Dublin Accord. Recognises substantial equivalence in the accreditation of qualifications underpinning technician engineering (EngTech in UK)



# 1. Washington Accord Signatories

Full signatories are: Australia, Canada, Chinese Taipei, Hong Kong China, Ireland, Japan, Korea, Malaysia, New Zealand, Russia, Singapore, South Africa, Turkey, UK, USA.

Provisional status is held by: Bangladesh, Germany, India, Pakistan, Sri Lanka.

Provisional status requires the development of the relevant criteria, policies and procedures for “substantial equivalence”. The provisional member requires to have an accreditation process.

# 1. Washington Accord

- The criteria for “substantial equivalence” are centred around Learning Outcomes
- The process for “substantial equivalence” is centred around visits.

Academic accreditation events in one signatory country are observed by a panel of representatives from three other signatories to ensure compliance with criteria, policies and procedures.

# 1. Educational Qualifications – within Europe

European Network for Accreditation of Engineering Education (ENAE).  
(ENAE has 17 full and 2 associate member organisations. It administers the EUR-ACE quality label.)

Awards the EUR-ACE label to an engineering degree program that has reached the educational standards adopted for the HE area by the Bologna ministers in 2005.

If an HEI wishes to apply for a EUR-ACE label it must apply to one of seven authorised agencies, including ECUK.

There are about 1000 relevant engineering degree programs and about 170 HEIs in about 15 countries both within and outside Europe.

# 1. The IET and International Accredited Programs

The IET currently accredits programs in:

India

China (Joint Programs between QMUL and BUPT)

Malaysia

United Arab Emirates

Oman

Bulgaria

Egypt

West Indies

Germany

Slovakia

## 2. Professional Standards

### **Compliance with relevant professional standards (competence).**

There is a connection between accredited educational programs and the award of professional titles – accredited programs are deemed to fully provide the underpinning knowledge and understanding.

There are agreements covering the recognition of individual practising engineers. That is, an engineer who is deemed to meet the agreed standard of competence in one country should be only minimally assessed prior to registering in another country party to the agreement.

The UK, through the Engineering Council, is engaged with a number of these:

## 2. International Agreements – Professional Qualifications

Within Europe:

- European Federation of National Engineering Associations (FEANI).  
(FEANI covers 31 countries, representing 3.5 million engineers).  
Awards the EUR ING (“European Engineer”) qualification .

Outside Europe:

- International Register of Professional Engineers (IntPE)
- International Register of Engineering Technologists (IntET)
- Asia Pacific Economic Cooperation (APEC) Engineering Agreement

## 2. Register member Countries

IntPE: Australia, Canada, Chinese Taipei, Hong Kong, Malaysia, India, New Zealand, Ireland, Singapore, Japan, South Africa, Korea, Sri Lanka, UK, USA.

IntET: Canada, Hong Kong, Ireland, New Zealand, South Africa, UK.

APEC: Australia, Canada, Chinese Taipei, Hong Kong, Indonesia, Japan, Korea, Malaysia, New Zealand, Philippines, Singapore, Thailand, USA.

## 2. International Engineering Alliance

The International Engineering Alliance (IEA) has agreed sets of professional competence statements and it comprises:

- Washington Accord
- Sydney Accord
- Dublin Accord
- IntPE Register
- IntET Register
- APEC Engineer Register.

Note: there are only a few thousand IntPE and IntET.  
There are several bilateral agreements.



# Benefits of joining an Accredited Program

“IET Accreditation is an internationally respected benchmark awarded to high quality programmes that provide an ideal preparation for aspiring professional engineers.”

There are benefits for both students and HEIs.....

Accreditation of academic programs can help to:

- attract the best students;
- provide students with a good foundation for professional registration;
- meet the needs of industry;
- benchmark programmes against other institutions in the UK and internationally;
- allow HEIs to become an Academic Partner and access a range of further benefits

# How Academic Accreditation helps Professional Recognition

Professional registered status (internationally recognised) requires two things:

- Appropriate underpinning knowledge and understanding.....an accredited program guarantees this.
- Relevant experience and competence gained through solving practical problems in the workplace.....these problems to be solved by applying the knowledge and understanding gained through the appropriate study .

If the program studied is not accredited, then the engineer seeking professional registration must provide evidence that all the requirements for a satisfactory education have been met.....this is tedious, and may require further study to make up a shortfall.

# Benefits of IET Membership (1)

## Knowledge:

- Publications
- Library resources
- IET.tv
- Global themes and activities
- Events.

# Benefits of IET Membership (2)

## IET Communities:

- Local Networks
- Online Networks
- Professional Sectors

# Why make the IET your Professional Home for Life?

- Over 150,000 members worldwide
- Market leaders - only institution to offer all four categories of professional registration
- Comprehensive range of products and services
- Dedication to high professional standards
- Committed to membership services

# Making the IET your Professional Home for Life

- Constant throughout career
- Support along your journey
- Providing development tools
- Professional recognition
- Community network
- Opportunities to shape the future
- Opportunities to help support the next generation of engineers.

# IET Accreditation Process

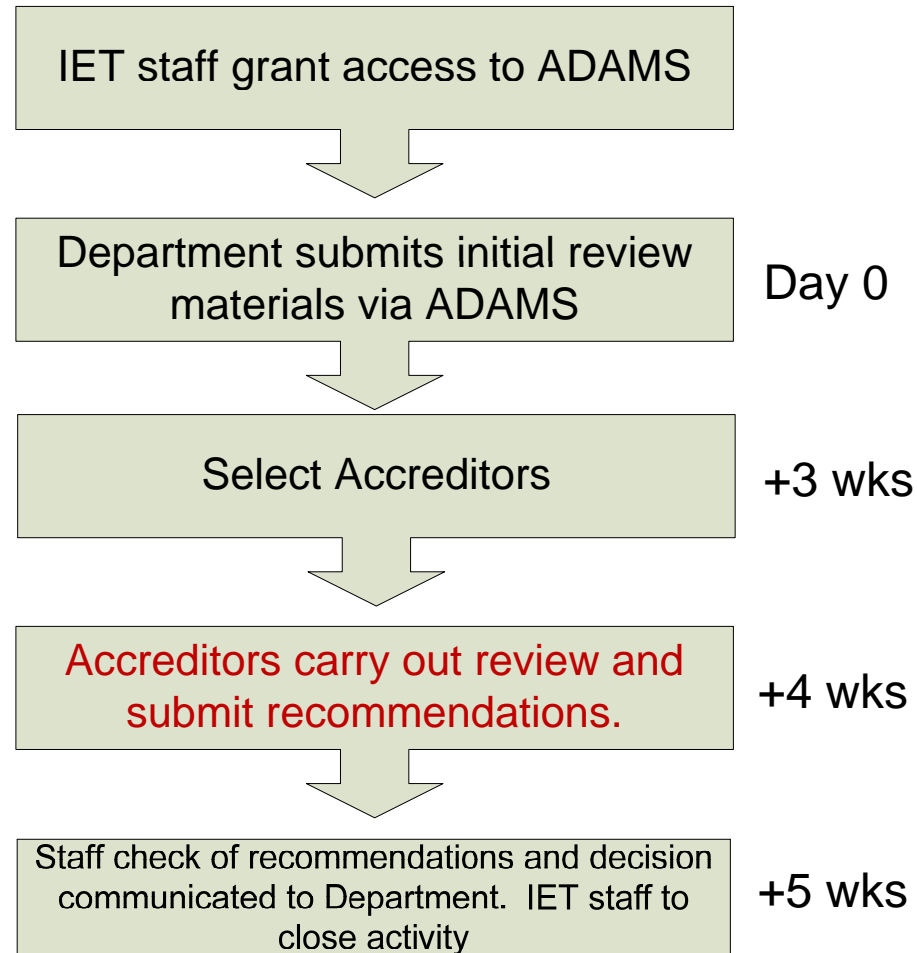
# Accreditation Procedures

Note:

- The IET has recently introduced, and is phasing in initially in the UK, an on-line system for accreditation called ADAMS
- All new HEIs undergo an Initial Review and Advisory visit procedure (these have already started in the case of the current development of the Master of Engineering in Telecommunication programs at Yarmouk University)



# Initial Review



# Initial review submission

- Name of programmes
- Number of students on each programme
- Programme start date. Date of first (or expected) first graduate output
- List of campuses where each programme is delivered and for which accreditation is being sought
- Aims and objectives of the programmes
- Outline structure including a list of module/unit titles

# Initial review outcomes

For IET staff:

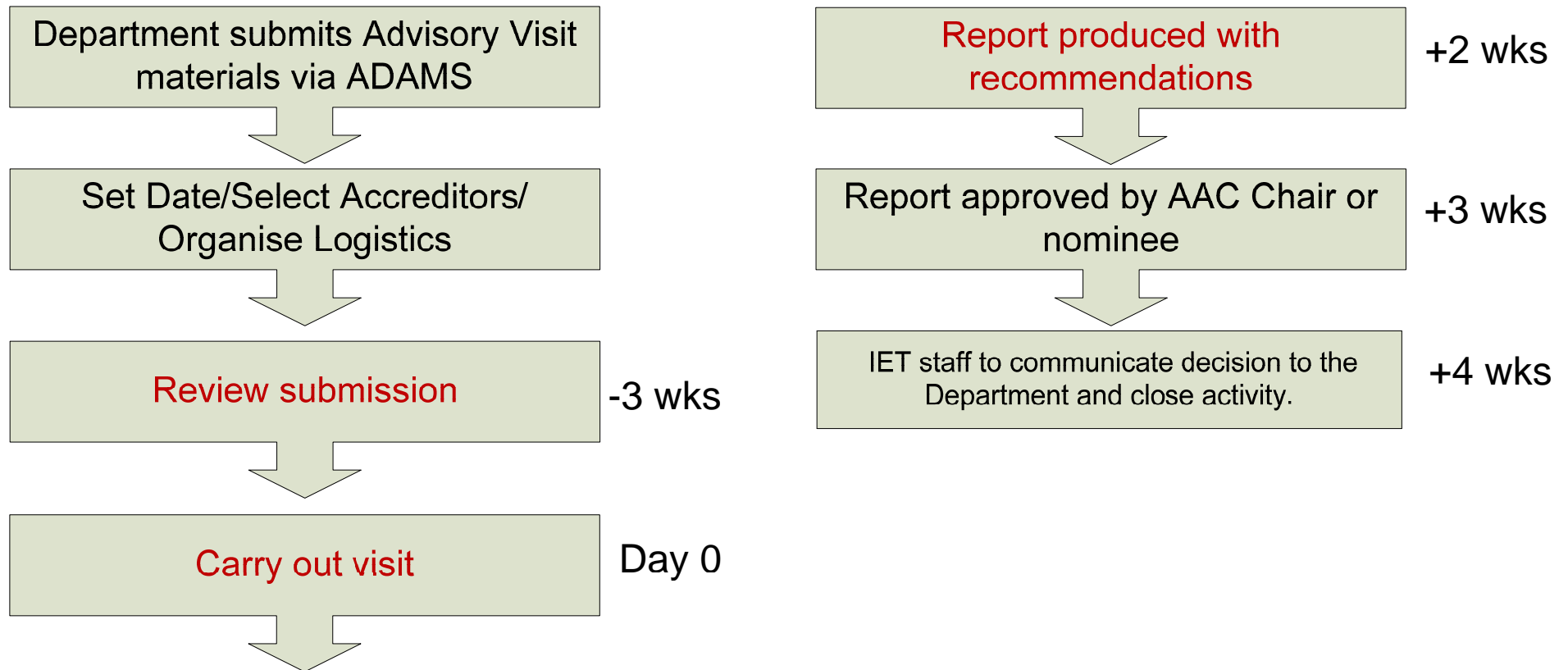
- Does the IET have the resources to deliver this visit?
- Priorities include:
  - Provision linked to a UK HEI
  - HEIs in strategically important areas (e.g. India or China)

For Accreditors:

- Are the programmes within the IET's remit?
- Do the programmes appear to contain sufficient engineering content?
- Are the programme aims and objectives consistent with IET accreditation?
- Has the programme produced at least one output?

If yes to all the above, proceed to the advisory visit stage.

# Advisory visit



# Advisory visit submission

For example:

- Module/Unit Descriptors
- Coursework assignments from the final year
- Projects
- External Examiners reports (if available)
- Examination papers / coursework assignments
- Samples of student work
- QA Manual and minutes of relevant committees

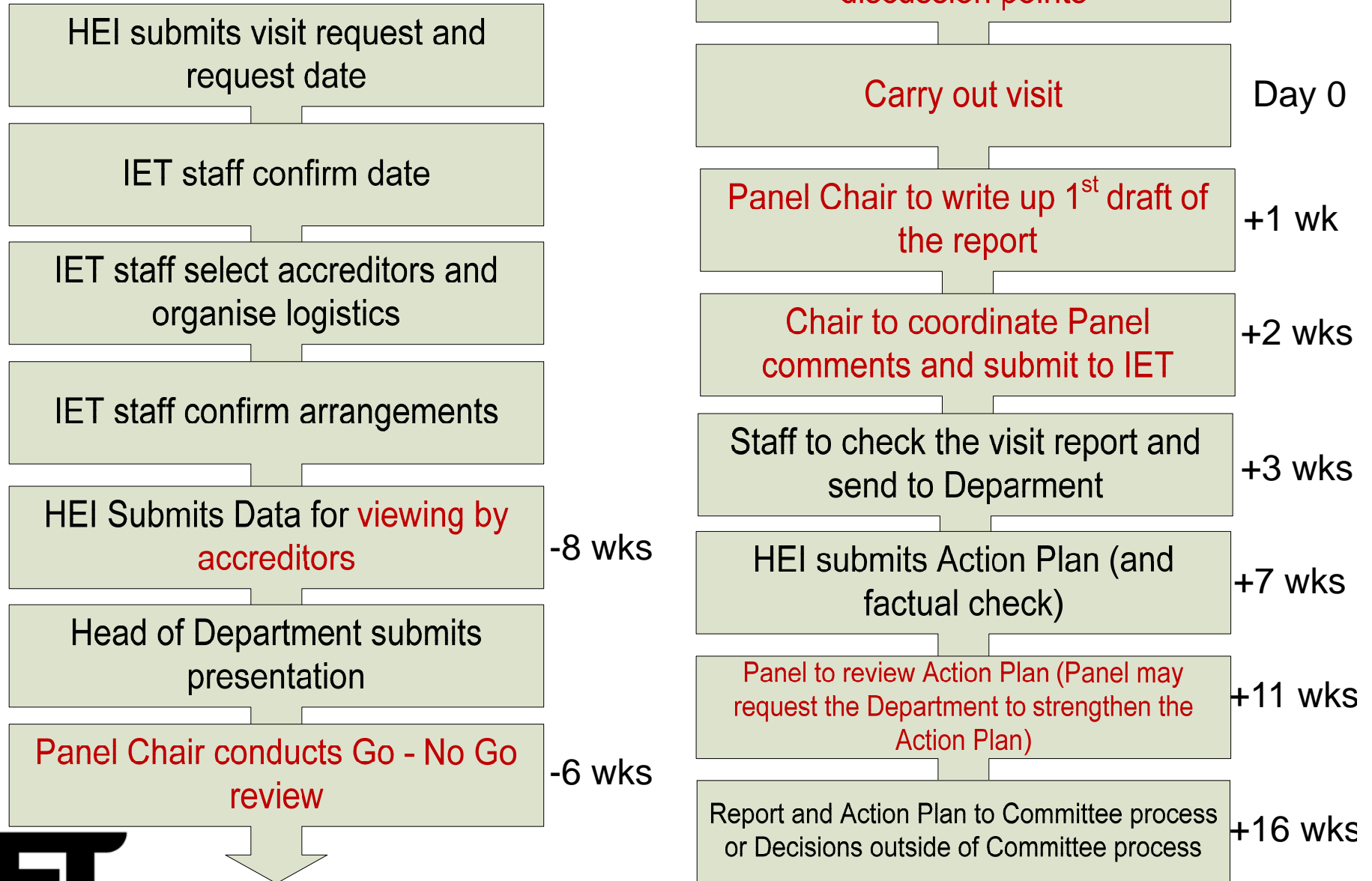
# Advisory visit outcomes

- Are there any obvious 'show stoppers' from the evidence presented?
- Are there weaknesses in the evidence presented that might usefully be addressed before the visit?
- Do the facilities and laboratories look reasonable?
- Does the HEI understand the accreditation criteria and process?

A report highlighting the above is produced by the Panel. The HEI and IET agree whether a visit should proceed.

- Do the programmes have a reasonable chance of being accredited?

# Visit Process



# The IET led Accreditation Visit

## Day 1

- Panel meeting
- Lab and library tour
- Informal reception
- Meet Industrial Advisory Panel or equivalent

## Day 2

- Head of Department presentation
- Meet students
- Panel and department discussions
- Private panel meeting to complete the Accreditors Report form
- Accreditation Recommendations made



# Questions?

I hope I have been successful..... 😊

## Thank You