

The IEA, a Collaborative International Effort in Engineering Education Accreditation and Professional Mobility

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CIQG Annual Meeting

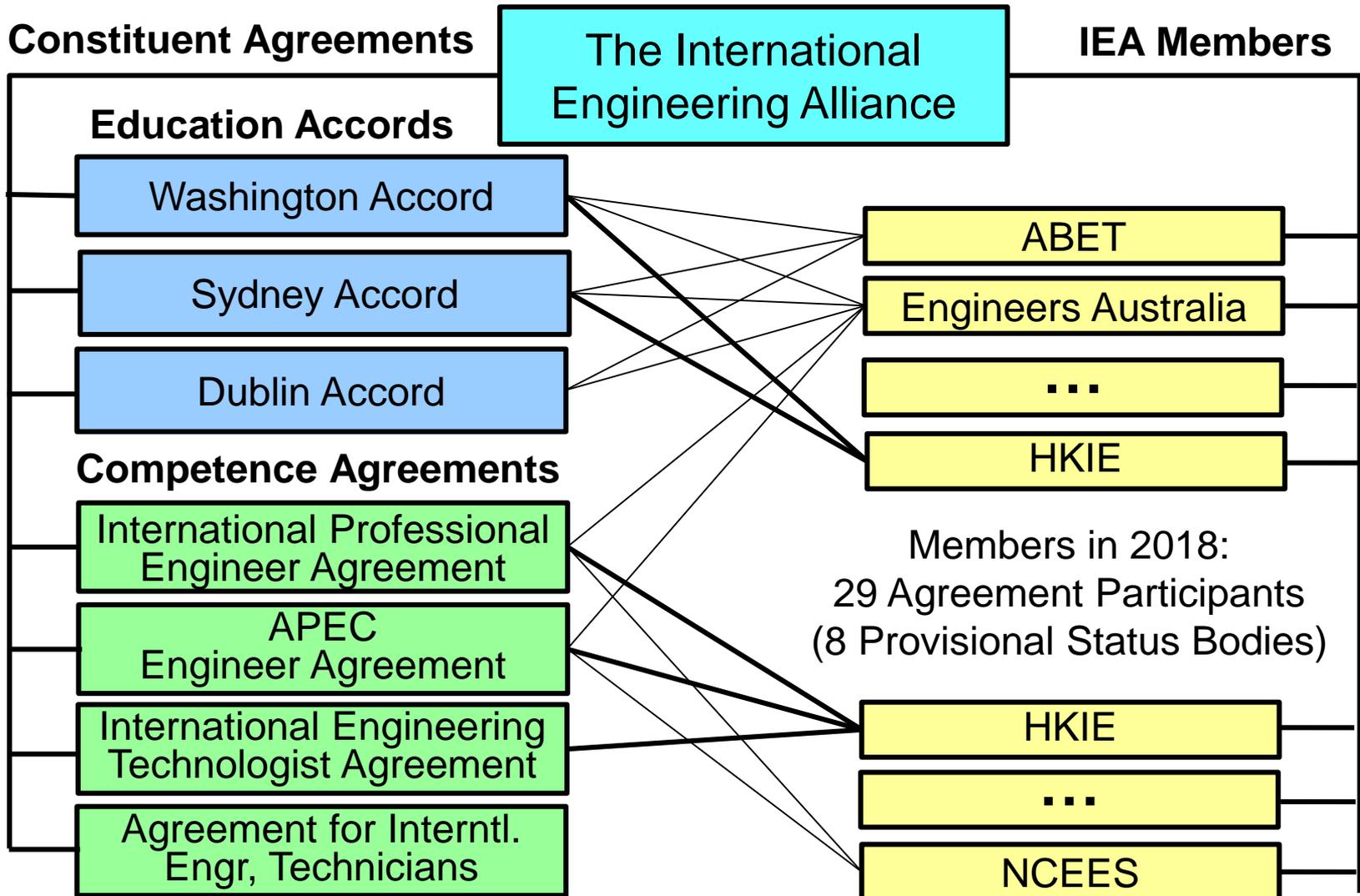
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Washington, DC, USA

The International Engineering Alliance

- The ***International Engineering Alliance*** (IEA) seeks to improve engineering education and professional competence globally, and to enhance global professional mobility, through the development of consensus regarding graduate attributes, best practices in accreditation, and professional competency standards for licensure
- IEA provides the Secretariat for its seven ***constituent agreements***
- IEA manages joint activities of interest to multiple agreements
- Constituent agreements are autonomous in decision making within their scope of activity: for example on admission of members
- ***Members of the IEA*** are the signatories and provisionals of the education accords and professional competence agreements
- There are currently 37 members of the IEA

IEA Structure: 2018



Accord Signatories

- Signatories are Accrediting Bodies (ABET, HKIE, etc.)
- Washington Accord (1989) – Professional Engineering Accreditation
 - 19 Signatories; 5 Provisional Status
- Sydney Accord (2001) – Engineering Technologist
 - 10 Signatories; 3 Provisional Status
 - All Countries are also Washington Accord
- Dublin Accord (2002) – Engineering Technician
 - 8 Signatories; 1 Provisional Status
 - All Countries also Washington and Sydney Accords

The Washington Accord

- The Washington Accord (WA) is an agreement among signatory accrediting agencies that:
 - criteria, policies and procedures for accrediting engineering academic programs are verified to be comparable
 - accreditation decisions made by one signatory are acceptable to the othersfor academic programs providing the educational foundation for the practice of engineering at the professional level
- At January 2018 the Washington Accord:
 - Has 19 Signatories
 - Has 5 Provisional Status bodies
 - Mutual recognition for ~8,000 engineering programmes

Development of the Washington Accord



Competence Agreement Signatories

- Signatories are Licensure/Registration Bodies (HKIE, NCEES)
- International Professional Engineers Agreement (IPEA)
 - Professional Engineer Licensure
 - 15 Members; 4 Provisional Status
- Asia Pacific Economic Cooperation (APEC)
 - Professional Engineer Licensure
 - 14 Members; 1 Provisional Status
 - 10 are also IPEA
- International Engineering Technologist Agreement (IETA)
 - Engineering Technologist Registration/Licensure
 - 6 Members; 1 Provisional Status
- Agreement for International Engineering Technicians (AIET)
 - Engineering Technician Registration/Licensure
 - 6 Founding Members - 2015

Diverse Signatories and Contexts

- Multiple Approaches to Accreditation and Professional Licensure
 - Accreditation and Licensure by the same Body
 - Accreditation and Licensure by Different Bodies
 - Different Bodies for Engineers; Technologists/Technicians
 - Legal Status of Graduates and Licensed Professionals
- Multiple Approaches to Secondary and Tertiary Education
 - Highly Selective Systems
 - High Access Systems
- Cultural and Regulatory Environment
- International Engagement Beyond IEA
 - International Accreditation
 - Other MRA/MOU/MOA
 - System Mentoring and Development

Enablers and Benefits of Mutual Recognition

- Mutual recognition flows from confidence of the parties in the definition and achievement of :
 - Substantially equivalent graduate outcome standards,
 - Substantially equivalent accreditation processes
- Mutual recognition benefits a number of parties:
 - The Graduates : mobility
 - Universities : marketing programs
 - Employers : confidence when hiring graduates
 - Professional bodies : avoids additional evaluation of applicants
 - Accrediting bodies : quality mark for standards and processes
- The IEA supports mutual recognition by confirming that individual agencies standards and processes are ***substantially equivalent***

Principle of Substantial Equivalence

- The objective of using ***substantial equivalence*** is to avoid prescriptive standards requiring detailed compliance

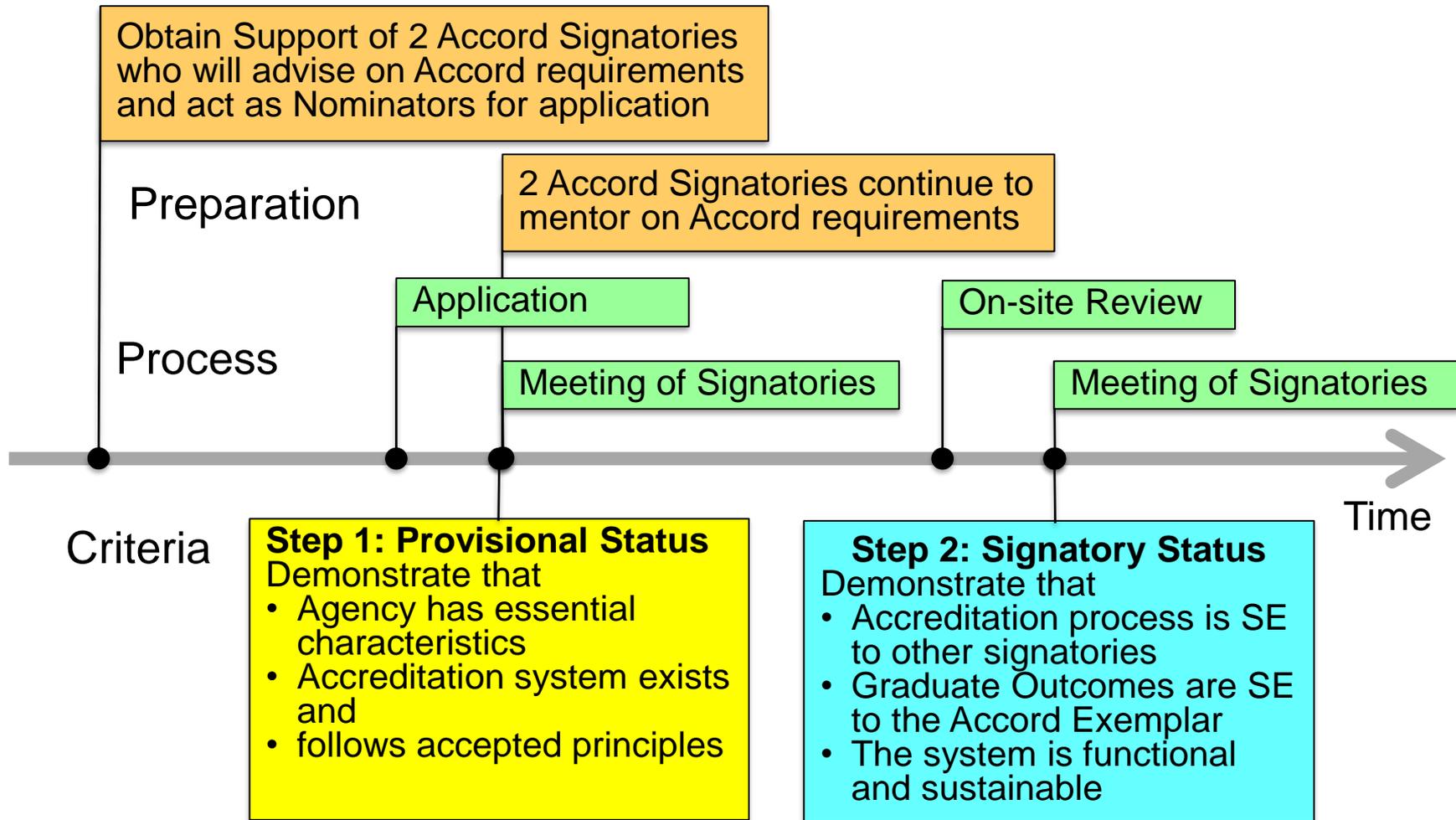
- IEA Definition:

Substantial equivalence at the educational level: Achieving outcomes that whilst not individually identical to those of the standard ... taken cumulatively achieve the same overall outcome

Equivalent outcomes achieved via differing educational systems and processes – adequate preparation for successful career entry

- Substantial equivalence is also applied at the professional level:
... overall outcomes are effectively to the same standard, even if achieved or assessed by different means

Joining an IEA Accord



SE = Substantially Equivalent

Criteria: Admission to Provisional Status

Characteristics of the agency: The agency is:

- non-governmental
- representative of the engineering community
- a statutory or professionally recognised authority to accredit programs satisfying academic requirements for admission to practicing status (e.g. licensing, registration) in a jurisdiction
- independent of the educational providers delivering accredited programmes within their jurisdiction

and

- has an accreditation system with documented procedures and practices conforming to ***generally accepted principles***

Criteria: Generally Accepted Principles

1. The system accredits programmes – not the institution
2. Program evaluators are academic and industry peer reviewers
3. Evaluation requires a self-evaluation and site visit.
4. Periodic re-evaluation is required to maintain accreditation
5. The evaluation process is transparent and consistent
6. Individual program evaluation is conducted in confidence
7. All involved have knowledge and competence in engineering accreditation, engineering education and engineering practice
8. High standards of professionalism, ethics and objectivity
9. ...

Criteria: Key Accreditation Criteria

9. The criteria for accreditation include requirements for:
 - a suitable environment to deliver the programme;
 - adequate leadership for the programme;
 - suitably qualified engineering practitioners teaching in the programme;
 - an engineering curriculum providing a broad basis for engineering practice;
 - appropriate entry and progression standards;
 - adequate human, physical and financial resources to support the programme.

Criteria for Admission As Signatory

1. The accreditation ***system and processes*** are substantially equivalent to those of other signatories of the Accord
 - As indicated by *best practice in accreditation* indicators
2. The ***graduate outcomes standard*** applied for accreditation is substantially equivalent to that of the Accord
 - A documented accreditation outcome standard publicly available
 - Accord *Graduate Attributes Exemplar* is the point of reference
3. The organisation and its accreditation system are sufficiently well established and managed that it makes and will continue making consistent accreditation decisions
 - As indicated by *best practice accreditation* indicators

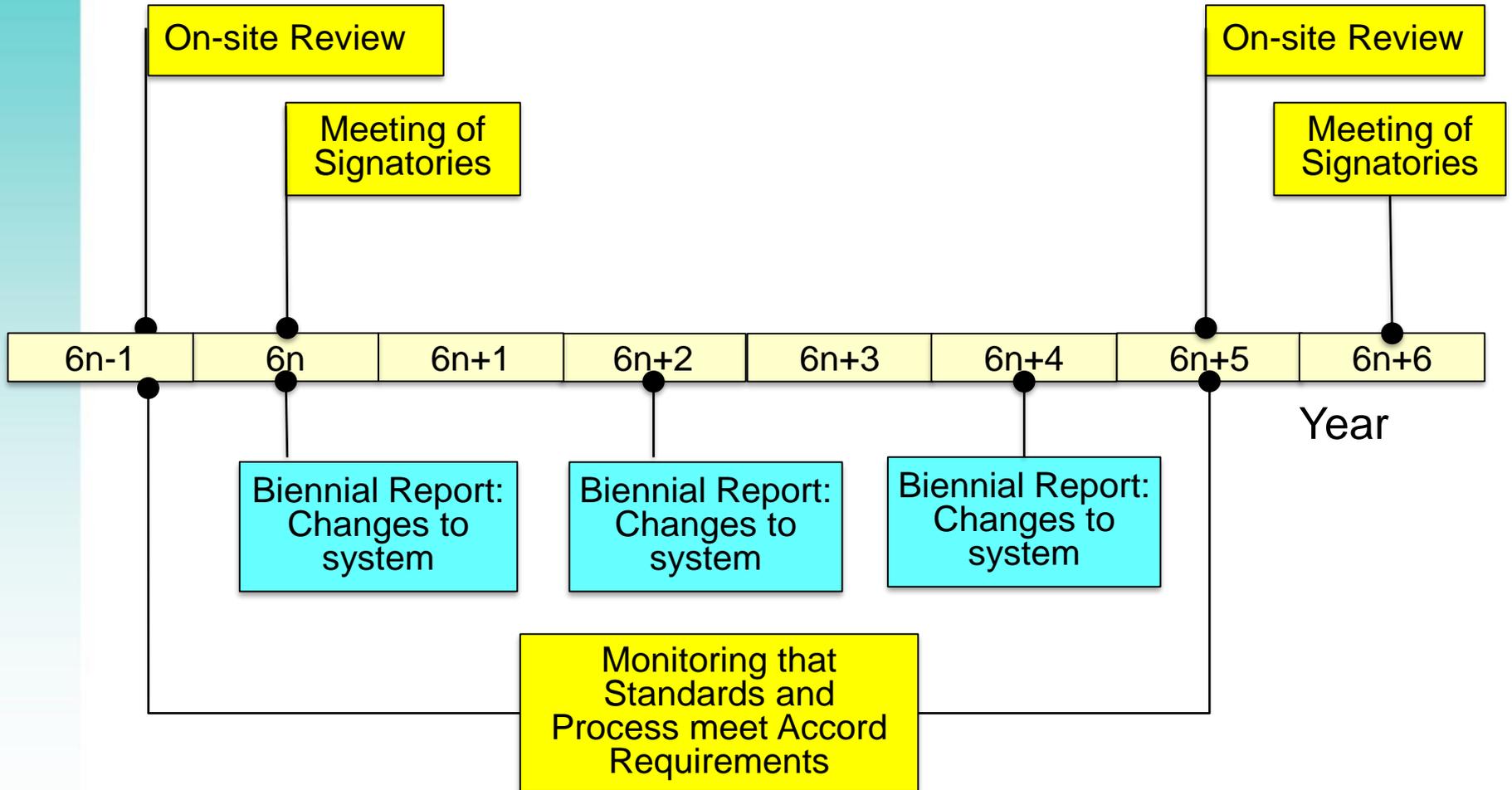
Graduate Attributes Defined

- *Graduate Attributes* form a set of individually assessable outcomes that indicate the graduate's potential to acquire competence to practise at the appropriate level.
- The Graduate Attributes are exemplars of the attributes expected of graduate from an accredited programme.
- Graduate Attributes are clear, succinct statements of the expected capability, qualified if necessary by a range indication appropriate to the type of programme.

Best Practice in Accreditation

- The IEA Educational Accords commit signatories to exchange and follow best practice in the accreditation process
- Best practice: a methodology that reliably leads to a desired result, superior to those achieved by other means
- IEA Best Practice in Accreditation Discussion Document:
 - Constitution and governance of accreditation agency
 - Scope and activity of accreditation agency
 - Criteria for accreditation
 - The accreditation process: method and means
 - Adequate training processes for volunteers/staff
 - The agency's capacity to conduct accreditation activities

Maintaining Signatory Status: Periodic Review



Development of Accreditation Systems: IEA and WFEO (World Federation of Engineering Organizations)

- IEA has signed an MoU with WFEO to work together to:
 - raise awareness
 - build political and financial commitment and
 - build capacity

of national engineering accreditation and competence assessment bodies to a point where:

- they can be mentored by IEA to develop their systems
- can join the IEA accords and agreements as provisional and eventually full members

Collaborative Activities of Washington Accord

- Europe
 - EUR ACE: an agreement among accreditation bodies in Europe to award EUR ACE Labels in addition to national accreditation
 - Comparison of Washington/Sydney Accord Graduate Attributes with EUR ACE Framework Standards in progress
 - ENAEE: European Network for Accreditation of Engineering Education
 - 17 Full Members; 4 Associate Members
- Developing Systems, assisted by a Signatory
 - IPENZ: South Pacific
 - ECSA: Namibia, Botswana
 - JABEE: Indonesia

IEA Resources

- Educational Accord Foundation Documents:
 - Agreements, Rules and Procedures, Guidelines
- Competence Agreement Constitutions:
 - Agreements, General Rules and Procedures, Guidelines
- Graduate Attributes and Professional Competencies
- Best Practice in Accreditation: an exemplar
 - discussion document
- IEA Glossary of terms
- Self-assessment (gap analysis) templates:
 - Graduate Attributes and Best Practice in Accreditation
- Website: www.ieagrements.org

Conclusions

- The IEA has become an authority on educational and professional engineering standards
- The IEA promotes global standards and participation in its educational accords and competence agreements
- The IEA Education Accords have implemented Graduate Attribute Exemplars and best practice for the accreditation process
- IEA education standards are co-ordinated with professional competency standards
- The IEA is involved in collaborative projects with:
 - WFEO
 - ENAEE
 - Seoul Accord
- The IEA is a possible model for international collaboration in professional accreditation and mobility