New Developments at the International Engineering Alliance and within Asia

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Outline

• The International Engineering Alliance (IEA)
• The graduate attributes and professional competency
• Recent development in membership status, particularly in Asia
• Challenges ahead
• Issues under development in IEA
• Concluding Remarks
IEA Vision

To develop and maintain authoritative, independent international standards for engineering education and competence and promote their wider recognition and adoption
Brief History of the IEA

1989  Washington Accord founded (6 economies)
2001  Sydney Accord founded (7 economies)
2002  Dublin Accord founded (4 economies)
2004  Development of exemplar attributes and competencies commenced by the accords and agreements
2007  Common secretariat, MPA and governing group, rules and procedures, IEA name adopted
2013  24 nations, common standard framework and processes.
IEA Constituents

Constituents of IEA predominately consists:

1. national organizations solely responsible for accreditation of engineering programs in their economies, and

2. national licensure bodies responsible for safe-guarding professional competence.
IEA Core Values

• Uphold, assess and improve engineering educational standards and professional competence
• Best of engineering accreditation bodies from world economies
• Driven by the engineering profession
• Non governmental
# International Engineering Alliance

**Educational Accords**
- Washington Accord
- Sydney Accord
- Dublin Accord

**Competence Recognition/Mobility Agreements**
- International Professional Engineers Agreement
- APEC Engineers Agreement
- International Engineering Technologists Agreement
- Future possibility

**Professional Engineers**
- Engineering Technologists
- Engineering Technicians
- Professional Engineers
- Professional Engineers (regional agreement)
- Engineering Technologists

[http://www.ieagreements.com](http://www.ieagreements.com)
## Graduate Attributes

<table>
<thead>
<tr>
<th></th>
<th>WA Graduate (Professional)</th>
<th>SA Graduate (Technologist)</th>
<th>DA Graduate (Technician)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Engineering Knowledge</td>
<td>Complex</td>
<td>Broadly defined</td>
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<tr>
<td>2.</td>
<td>Problem Analysis</td>
<td>Complex</td>
<td>Broadly defined</td>
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<td>3.</td>
<td>Design/development of solutions</td>
<td>Complex</td>
<td>Broadly defined</td>
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<td>4.</td>
<td>Investigation</td>
<td>Complex</td>
<td>Broadly defined</td>
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<td>5.</td>
<td>Modern Tool Usage</td>
<td>Complex</td>
<td>Broadly defined</td>
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<td>6.</td>
<td>The Engineer and Society</td>
<td>Complex</td>
<td>Broadly defined</td>
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<tr>
<td>7.</td>
<td>Environment and Sustainability</td>
<td>Complex</td>
<td>Broadly defined</td>
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<td>8.</td>
<td>Ethics</td>
<td></td>
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<td>9.</td>
<td>Individual and Team work</td>
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<td>10.</td>
<td>Communication</td>
<td>Complex</td>
<td>Broadly defined</td>
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<tr>
<td>11.</td>
<td>Project Management and Finance</td>
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<td>12.</td>
<td>Life long learning</td>
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http://www.ieagreements.com/GradProfiles.cfm
Professional Competency

• An agreed educational base - an Accord recognised degree, or equivalent, and

• Experience after graduation to develop both professional and personal maturity. For the IEA a minimum of seven years including two years responsible experience, and

• Meeting an agreed competence typically measured by evaluation against 13 elements

http://www.ieagreements.com
Washington Accord Signatories (15) and Provisional Signatories (6)

- USA
- Canada
- UK
- Ireland
- Turkey
- Russia
- Pakistan
- India
- China
- Bangladesh
- Sri Lanka
- Malaysia
- Singapore
- HK
- S. Africa
- Aus.
- Korea
- Japan
- Chinese Taipei (Taiwan)
- Philippines

original signatories 1989 (6)

- 1990-1999 (2)
- 2000-2009 (5)
- 2010-2013 (2)

provisional signatories (6)

- India
- Pakistan
- Bangladesh
- China
- Sri Lanka
- Philippines

Washington Accord Signatories (15) and Provisional Signatories (6)
Sydney Accord Signatories (9) and Provisional Signatories (1)

Original Signatories 2001 (7)

2002-2011

2012-2013

Provisional Signatory

Canada
USA
UK
Ireland
Korea
HK
China
Taipei (Taiwan)
S. Africa
NZ
Dublin Accord Signatories (8)

- Canada
- USA
- UK
- Ireland
- Korea
- Aus.
- S. Africa
- NZ

Original Signatories 2002 (4)

2003-2013
India

- 2007 - Accepted as Washington Accord provisional signatory
- Two tier system: Tier 1 (IIT and national universities) and Tier 2
- ~1.5 million engineering students graduate per year, likely more than China and US combined.

NA Presentation in IEAM, 2013 & NBA Website
China

- 1994 - Pilot Accreditation
- 2013 - Accepted as Washington Accord provisional signatory
- 4.52 million total of 4-year engineering students
- 1.2 million engineering students graduate per year
- 31 engineering disciplines.

CAST Presentation in IEAM, 2013
Philippines

- Long history of local accreditation (since 1957)
- 2013 - Accepted as Washington Accord provisional signatory
- 583 HEIs offering engineering programs
- 1600+ engineering programs
- 35,000+ engineering graduates in 2011.
Challenges Ahead

• Uphold the standards of the educational accords
  – in large economies seeking to become signatories
  – with cultural understanding

• Implement combine on-site reviews to cut cost, for example:
  – Washington Accord with IPEA
  – Washington Accord with Sydney Accord
  – Sydney Accord with Dublin Accord
Issues under Development at IEA

- Revisit IEA vision, purpose, relationship with outside organizations, governance
- Facilitating the development and ongoing refinement of a cohesive framework of good practice exemplars of engineering education and competence standards
- ENAEE / IEA collaboration
- Accord-wide recognition of accredited trans-national programs
- The future engineer …
Concluding Remarks

- The IEA has contributed to improve outcomes-based engineering education
- Has assisted development of national educational and accreditation systems
- Is being embraced by various economies around the world
- Many challenges ahead still...
- Looking forward to working closely with our ENAEE colleagues.
Acknowledgement

• Basil Wakelin, IEA Chair
• Hu Hanrahan, Washington Accord Chair
• The IEA family collectively