



Building Tomorrow's Engineers

– Designing the Responsive Curriculum

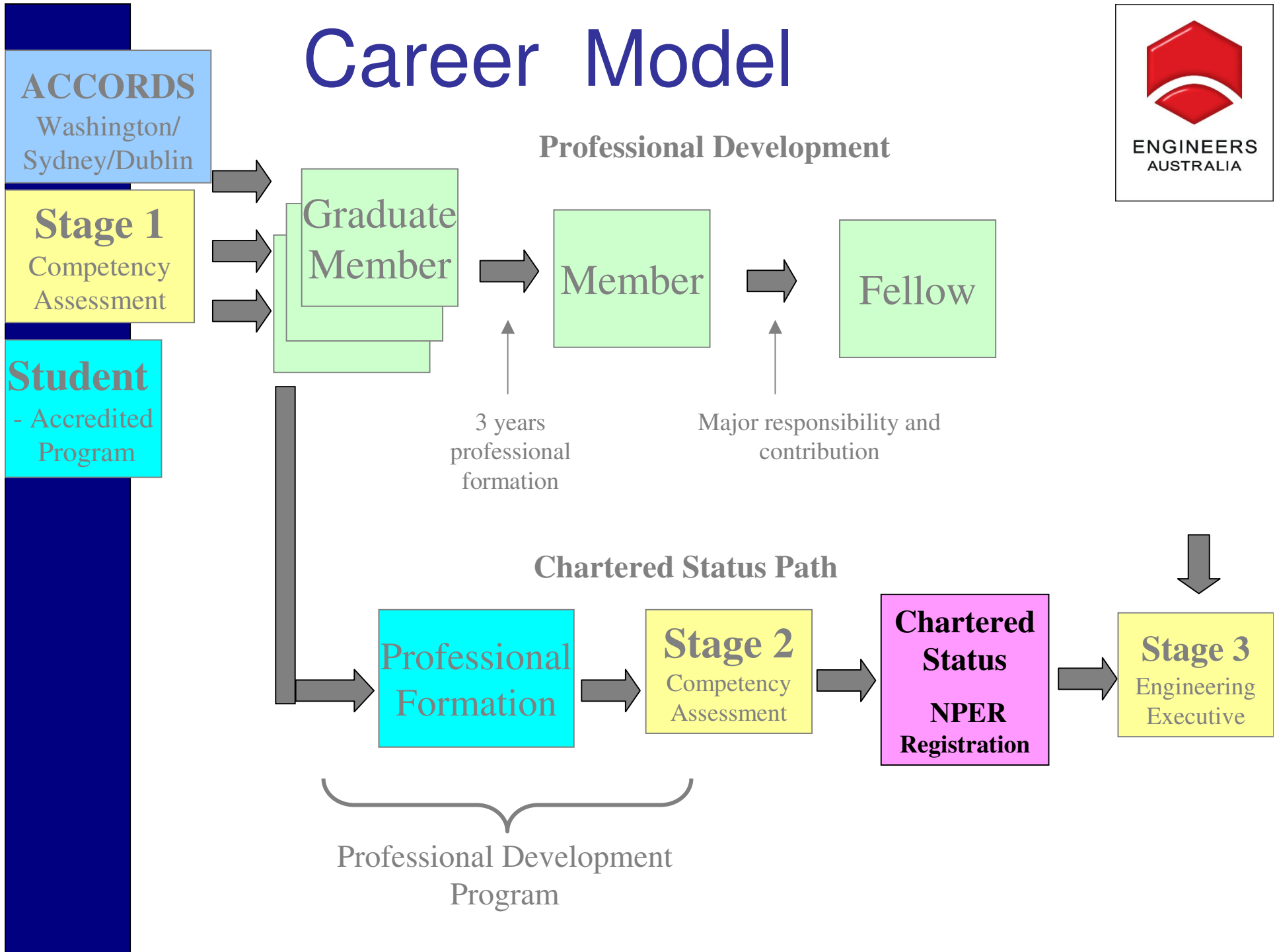
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Content



- The Engineering Career Model
- Engineering Education Reviews
- Our Accreditation Role
- Future Challenges to Engineering Education

Career Model



Changing the Culture: 1996



- Academy of Technological Sciences and Engineering
- Engineers Australia
- Australian Council of Engineering Deans
- DEETYA

Conclusions



- Emphasis on Engineering Science
 - Excellent technical capability
 - Limited appreciation of the broader role of engineering professionals
 - Engineering must become more outward looking
 - Attuned to community concerns

Recommendations



- Engineering Education must promote
 - Environmental, economic and global awareness
 - Problem solving
 - Application of information technology
 - Self directed and lifelong learning
 - Management and teamwork skills
 - Communication
- Mathematical and Engineering Skills

Collaboration with Industry



- Research
- Liaison Committees
 - Advice on course direction and content
- Internships
- Engineering Experience to academic staff
- Student experience of professional working environment

Communication



- Goal of a more Effective Societal Role
- Not Only Explain Technical solutions
- But Also
 - Politically and Socially aware
 - Sound technical decision-making
 - Clearly communicated
 - Sensitivity across cultural boundaries



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Carrick Institute Discipline Project

Rethinking Engineering Education

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Approaches to Accreditation



Fully Prescriptive

- Program structure
- Program content
- Assessment
- Operating environment
- Quality process

Outcomes Assessed

Direct measurement of graduate capabilities as per Stage 1 competency assessment



Engineers Australia Approach

- Defined generic outcome requirements
- Defined accreditation criteria
- Guidelines and expectations

International Reference Framework



- **WASHINGTON ACCORD 1989**
 - Agreed comparability of accreditation criteria, policies and practices. Mutual recognition of accreditation decisions. Mutual monitoring and information exchange, encouragement of best practice.
 - **CURRENT SIGNATORIES:**

| | | |
|--------------------------|---------------------|-----------|
| United States of America | Republic of Ireland | Korea |
| United Kingdom | New Zealand | Taiwan |
| South Africa | Hong Kong (SAR) | Japan |
| Australia | Canada | Singapore |
 - **PROVISIONAL**

| | | |
|----------|-----------|--------|
| Malaysia | India | Russia |
| Germany | Sri Lanka | |
- **SYDNEY ACCORD 2001** - for Engineering Technology programs

Challenges to Engineering Education



- Engineering is changing
 - From an occupation that supplied employers and clients with competent and economical technological advice
 - To a profession that seeks to serve the community in a socially and environmentally responsible manner

Employment Trends in Engineering



- Job security by ability and experience
 - Not single employer
 - More consultants
 - More money for engineers
 - Faster promotion
 - Seduction to management
 - Wider horizons
 - Globalisation, more travel
 - Greater personal fulfillment

Trends in the Engineering Environment



- Failure of traditional disciplines
- Teams
- New roles for engineering institutions
- Leaders of society
- To manage our complex technology
- To maintain social and ethical values

Other Trends in Engineering

- Closer design, lower cost
- Less maintenance, more replacement
 - **Life cycle design**
- Quantitative, white collar profession
- More women
- Increased standard of graduates
- Engineering team leaders
- Opportunity overload





Thank you

Questions?