

NPU-FEIAP B&R Engineering Education Training Centre (NFTC)

NFTC Forum on Engineering Personnel Registration (2nd September 2021)



Registration and Development of Engineering Personnel via FEIAP & Africa, Asia and the Pacific Accord (AAP Accord)

FEIAP Secretary General

Ir. Dr. TAN Yean Chin

September 2nd, 2021



Contents

- 1** Introduction to FEIAP
- 2** FEIAP 2030 Proposal
- 3** Registration of Graduate Engineering Personnel
- 4** Development of Graduates' Professional Competency Profiles



Exploratory
meeting
between EIT &
UNESCO on 3
July 1978



The Federation of Engineering
Institutions of Southeast Asia and
the Pacific (FEISEAP)
was founded on 6 July 1978



Renamed as Federation of
Engineering Institutions of Asia
and the Pacific (FEIAP)
on 2 June 2008



2021

AAP Accord
on 16 April 2021



2018

FEIAP 40th birthday celebrated during
GA in Ipoh, Perak State of Malaysia
on 12 July 2018



FEIAP Member Economies: 23
Associate Members: 3





Office Bearers



President

Dr. Prof. Huang Wei (CAST)



Vice President

Dr. Charlie Than (MEngC)



Immediate Past President

Dr. John Chien-Chung Li
(CIE)



Secretary General

Ir. Dr. Tan Yean Chin (IEM)



Office Bearers



Exco Member

Engr. Kashim Abdul Ali (COREN)



Exco Member

Dr. Nasir (PEC)



Exco Member

Dr. Ir. Heru Dewanto (PII)



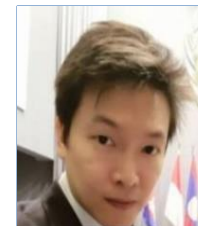
Exco Member

Prof. Douglas Hargreaves (EA)



Exco Member

Eng. John Kalamagye (IE Rwanda)



Exco Member

A/P Dr. Kitjapat Phuoravan (EIT)



Office Bearers – Standing Committees



Standing Committee on Engineering Education

Y.Bhg. Academician Tan Sri Dato' Ir.
Prof. Dr Chuah Hean Teik (IEM)



Standing Committee on Environment Engineering

Er. Chong Kee Sen (IES)



Standing Committee on Information and Communication Technology

Er Narendra Singh (IEI)



Standing Committee on Natural Disaster and Preparedness

Mr Sugk-Yong Yoon (KPEA)

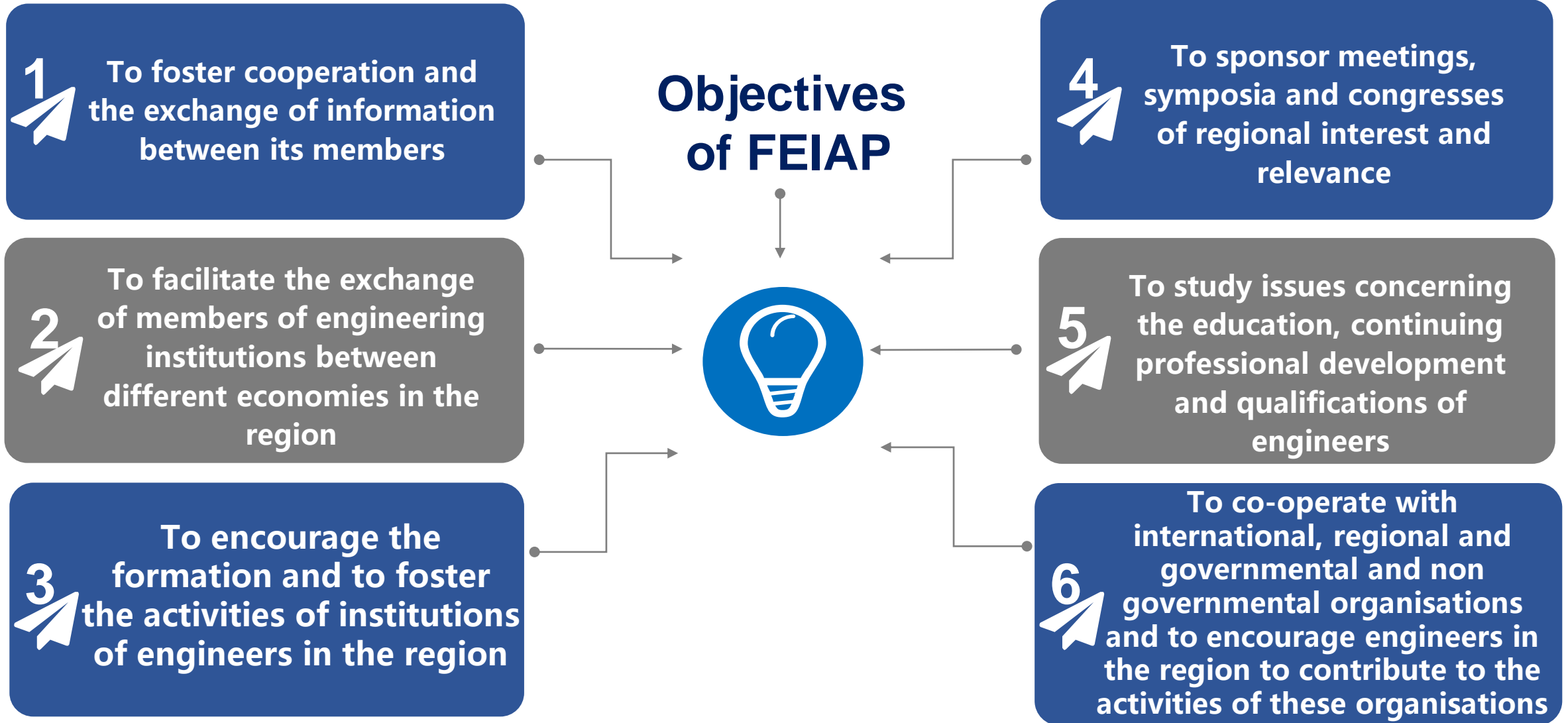


Youth Talent Development Working Group

Ir. Yeoh Su Hong (IEM)



Introduction to FEIAP: Objectives of FEIAP





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- 1 Introduction to FEIAP
- 2 FEIAP Projects**
- 3 Registration of Graduate Engineering Personnel
- 4 Development of Graduates' Professional Competency Profiles



Background: The Belt & Road Initiative





Background: The Belt & Road Initiative





NPU-FEIAP Belt and Road Engineering Education Training Centre (NFTC) *(Officially Formed 29 June 2019 @ Xian, China)*

Functions of the Centre

Offer mentorship training and reviewing of FEIAP Engineering Education Guidelines

Promote the mutual recognition of the Engineering Education Programs

Enhance the mobility of engineers, engineering technologists, and technicians

Make contribution to the regional prosperity

Goal of the Center

Train capable professors and engineers to guide and review the establishment of an Accreditation System

1 Main Activities at the NFTC



Main ACTIVITIES carried out since 2019

TRAINING for Professors and Deans of Engineering Departments from :

- 1) Universities in FEIAP Members Economies
- 2) Universities or Reps of B&R Region (e.g. Central Asia and ASEAN)
- 3) Members from FAEO (through MOU with FEIAP & AAP Accord signed)

Training on the mentoring and reviewing of “FEIAP Engineering Education Guidelines” that covers:

- 1) Graduate Engineers
- 2) Graduate Engineering Technologists
- 3) Graduate Engineering Technicians



FEIAP & AAP
= “Engineering Personnel”

Objective

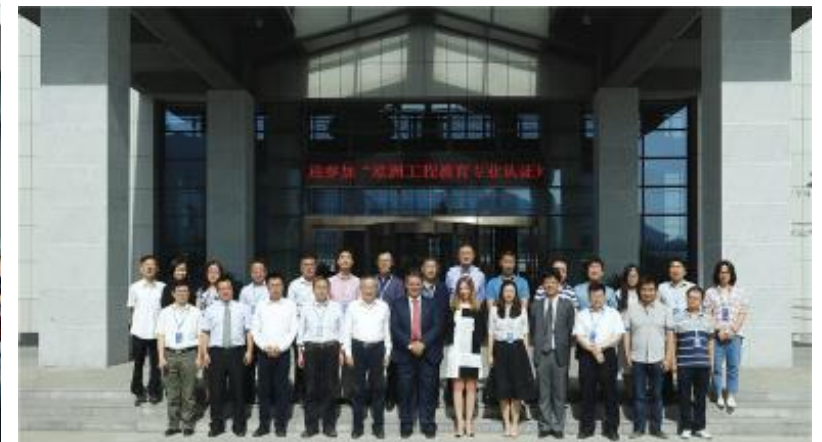
To train enough **Professors** and **Engineers** to help mentor and review process for the **Accreditation System** to be set up.



The “Belt and Road” Engineering Education Workshop (May, 2018)



FEIAP Engineering Education Accreditation Training (December, 2018)



EUR-ACE Engineering Education Accreditation Training (June, 2019)



Training on Engineering Education Assessment method (September, 2019)



Workshop for the Institution of Engineers Rwanda (February, 2020)



Engineering Education Online Training (May, 2020)



Africa, Asia and the Pacific Accord (AAP Accord)

Set up a unified and inclusive engineering education accord

- Promotes substantial equivalence

Enable the mobility of engineering workforce in the Africa Continent, Asia and the Pacific including Belt and Road Region

Rationalize the standards for engineering graduates who seek cross-economy employment

Promote the understanding of the civilizations in Belt and Road Economies

Functions of the Accord



Formation of the “Africa, Asia and the Pacific Accord”

Signed by FEIAP & FAEO
on 16 April 2021

“Africa, Asia and the Pacific Accord” (AAP Accord) is a platform for mutual recognition of engineering workforce through accreditation system. →

“FEIAP Engineering Education Guidelines” or Equivalent (e.g. FAEO Guidelines) that covers

1

Engineers

2

Engineering Technologists

3

Engineering Technicians



1

To have a unified & inclusive engineering education accord that promotes ***substantial equivalence*** of engineering education for engineers, engineering technologists and engineering technicians in Africa, Asia and the Pacific and economies in the Belt and Road Initiative region.

2

To facilitate the rationalization of the standards of engineering graduates for **cross-economy employment**, subject to other immigration and legal requirement of each member economy.

3

To enable **mobility of engineering workforce** in Africa, Asia and the Pacific.

4

To promote **understanding of civilization** in these regions via cultivation of cultural intelligence in engineering education

Note

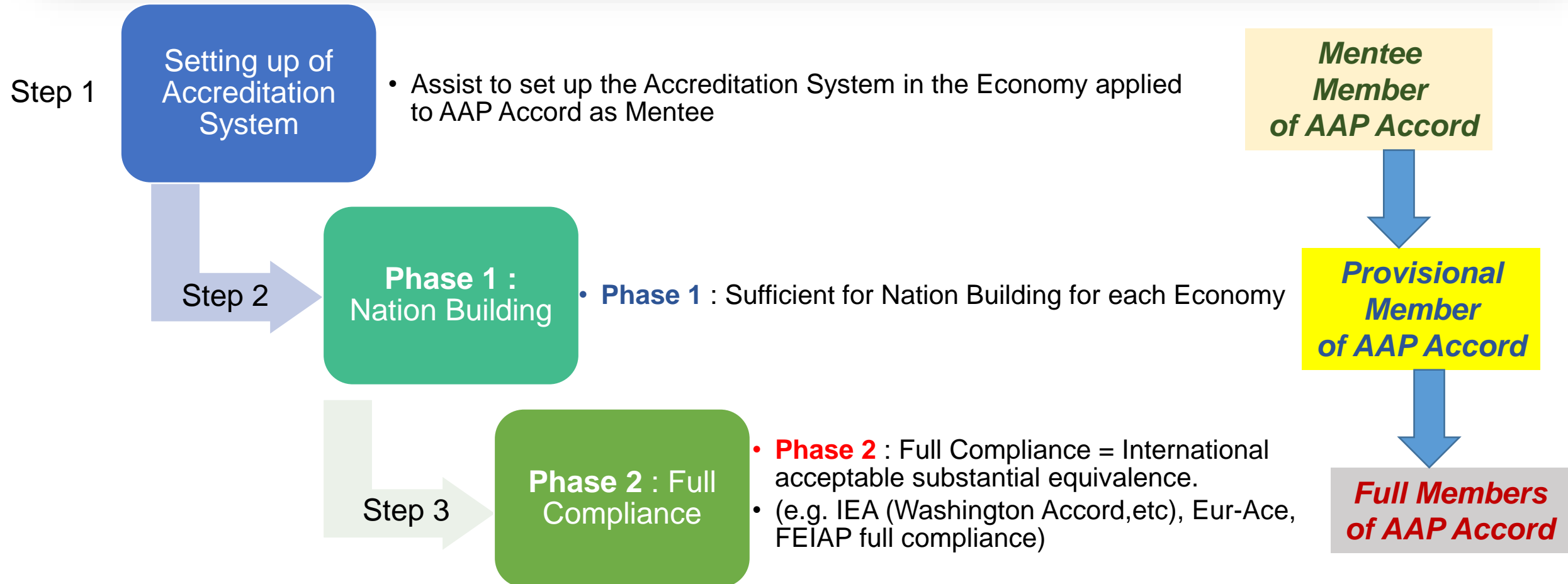
- 1) Not intended for Professional Engineer Independent Practice (e.g. NOT competing with APEC Engineers or IPEA International Engineers)
- 2) Meant only for MOBILITY of ENGINEERING PERSONNEL at GRADUATES level



The AAP Engineering Education Accord



AAP Accord Approach similar to FEIAP Approach





FEIAP ENGINEERING EDUCATION GUIDELINES	WASHINGTON ACCORD
Outcome Based Education (OBE)	Outcome Based Education (OBE)
FEIAP has comprehensive Mentoring and Guidance Programme for FEIAP Member Economy to start and set up accreditation system. <u>Important for Developing Economy which still does not have Accreditation System</u>	Not Specified
Two Phased Development Sequence: I. Graduate Capabilities appropriate to Nation Building II. Graduate Capabilities compliant with education requirement of APEC Engineer, bench-marked against <u>best international practices and standards as that of WA, EANEE etc</u>	From Provisional Member towards Full Member. <i>Note : FEIAP Phase II. (Full Compliance to the FEIAP Guidelines) = Standards Equal to WA Full Member</i>
Approval based on MAJORITY (Inclusive)	Previously Approval based on UNANIMOUS (Exclusive) Currently approval based on 2/3
Full compliance (Phase II) to FEIAP Guidelines = Accepted by APEC Engineer	Full Member = Accepted by APEC Engineer and IPEA Engineer.



Federation of Engineering Institutions
of Asia and the Pacific (FEIAP)



Link to Download
full AAP Accord
Document



https://drive.google.com/file/d/1G3TcVFf9P_Vf8bxmZA-xliMILLU6hr9E/view

**AFRICA, ASIA AND THE PACIFIC
ACCORD
(AAP ACCORD)**

BETWEEN



**The Federation of Engineering
Institutions of Asia and the Pacific
(FEIAP)**

AND



**The Federation of African
Engineering Organizations
(FAEO)**



Federation of Engineering Institutions
of Asia and the Pacific (FEIAP)

SIGNATURES

16 April 2021

For

Federation of African Engineering
Organizations
(FAEO)

Ing. (Mrs.) Carlien Bou-Chedid
President

Eng. Ovens Ehimatie
Executive Director



For

Federation of Engineering Institutions of
Asia and the Pacific
(FEIAP)

Prof. Dr. Huang Wei
President

Ir. Dr. Tan Yean Chin
Secretary General

ATTACHMENT

- **FEIAP Engineering Education and Accreditation Guidelines (For Engineers, Engineering Technologists and Engineering Technicians)**
- **FAEO-FEIAP MOU**

Africa, Asia and the Pacific Accord (AAP Accord)
Secretariat Address:

FEIAP c/o The Institution of Engineers, Malaysia, Bangunan Ingenieur, Lots 60 & 62, Jalan
52/4, 46720, Petaling Jaya, Selangor, Malaysia
Email: feiapofficial@gmail.com

Federation of African Engineering Organisations (FAEO),
Suite 205, NEC Building, National Engineering Centre, Off National Mosque
Labour House Road, Central Business District, Abuja, Nigeria.
Email: info@faeo.org



Signing Ceremony :
Africa, Asia and the Pacific Accord
(AAP Accord)

16th April 2021



FAEO President :
Ing. (Mrs.) Carlien Bou-Chedid



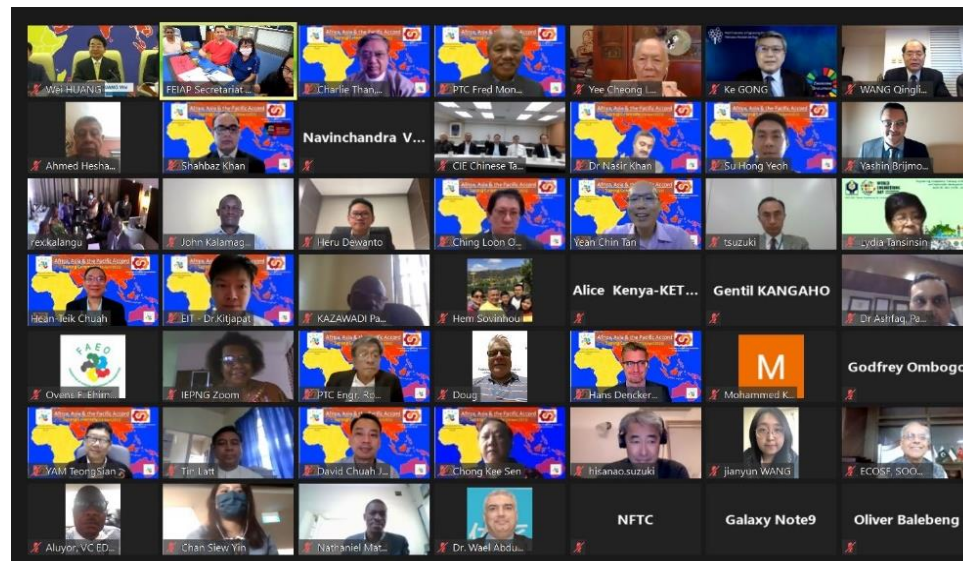
FEIAP President :
Prof. Dr. Huang Wei



Federation of African Engineering
Organisations (FAEO)



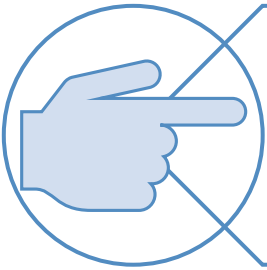
Federation of Engineering Institutions of
Asia and the Pacific (FEIAP)





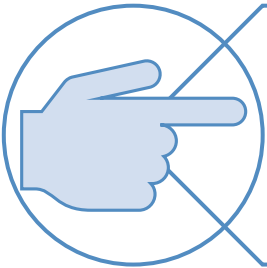
Project 3: FEIAP Engineering Personnel Registry

1



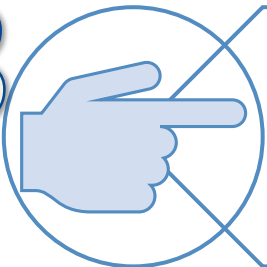
Mutual recognition of engineering workforce among FEIAP member economies

2



Promote the mobility of engineering workforce and the exchange of scientific innovations

3



Build the “community with a shared future for mankind”



Proposal 4: FEIAP Engineering Personnel Registry

- 1  Mutual ... among
- 2  ... and the
- 3  Build the “community with a shared future for mankind”

Coming soon !!
AAP Engineering Personnel
In Africa, Asia and the Pacific Region
Cover Graduates :-
AAP Graduate Engineers,
AAP Graduate Engineering Technologists,
AAP Graduate Engineering Technicians.



Summary of the FEIAP Projects



Africa, Asia and the Pacific Engineering Education Accord (AAP Accord; AAP协议)

Implement and Promote the AAP ACCORD
(for all members of FEIAP and FAEO)

Outcome-based Engineering Education Training

Provide training sessions to improve engineering education quality in relevant regions and facilitate the set up of assessment system

Engineering Personnel Professional Development Training

Promote the registration and development of engineering personnel for free mobility in regions concerned

Online Trainings
Online Seminars



Overseas
Conference &
Trainings
(Onsite)

Onsite
Trainings
Onsite
Seminars

NFTC



3 Long-term Projects – Continuation to 2030



01

Building NFTC as an International Platform

- Engineering Education training
- Engineering capacity building
- Cultural and scientific cooperation



02

Promoting Mutual Recognition of Engineering Education Programs



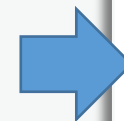
FEIAP Engineering Education Guidelines and AAP Accord



03

Achieving a Shared Future for the Engineering Community

- Free mobility of engineering forces
- Overall improvement and sustainable development for engineering personnel



FEIAP Engineering Personnel Registration & Development. Also for AAP Engineering Personnel

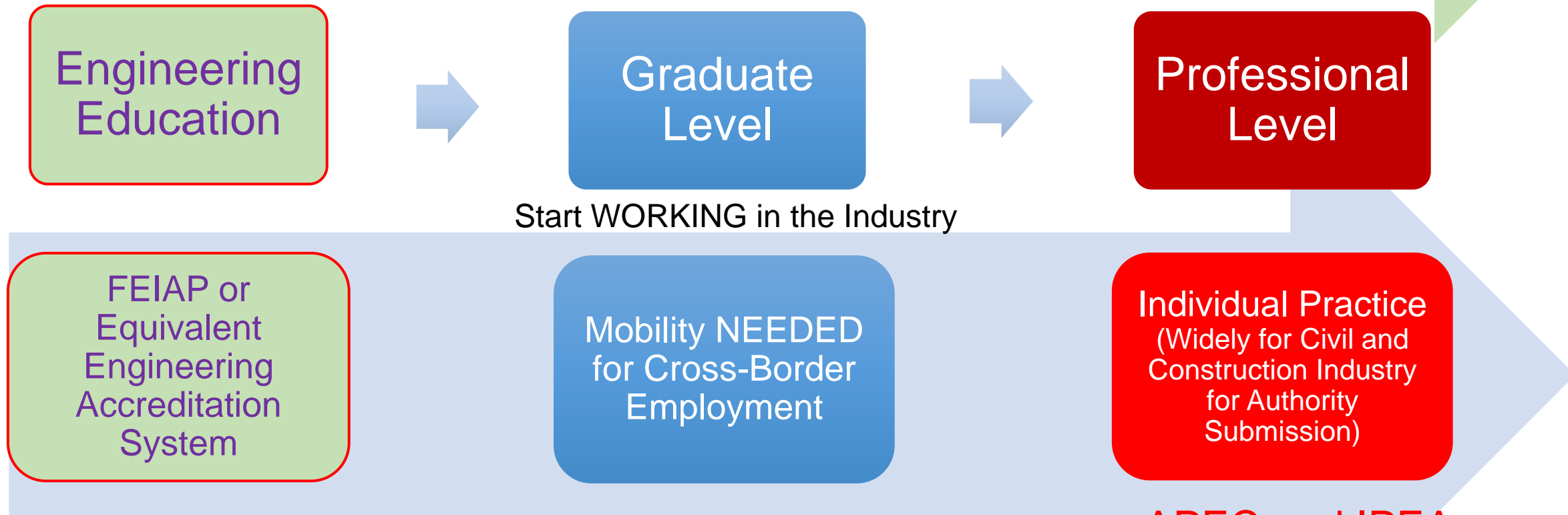


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Engineering Personnel Progression and Development



- FEIAP Engineering Guidelines (Stage 2 full compliance)
- AAP Accord, EUR-ACE & Washington/Sydney & Dublin Accord

APEC and IPEA
International
Engineers



Engineering Personnel Progression and Development

Engineering Education

FEIAP or
Equivalent
Engineering
Accreditation
System

Graduate Level

This category has the highest Numbers of Engineering Personnel so need systematic Local & International Registration, Development and Networking for Mobility

Mobility NEEDED for Cross Border Employment

Professional Level

Professional Level

Individual Practice
(Widely for Civil and
Construction Industry
for Authority
Submission)

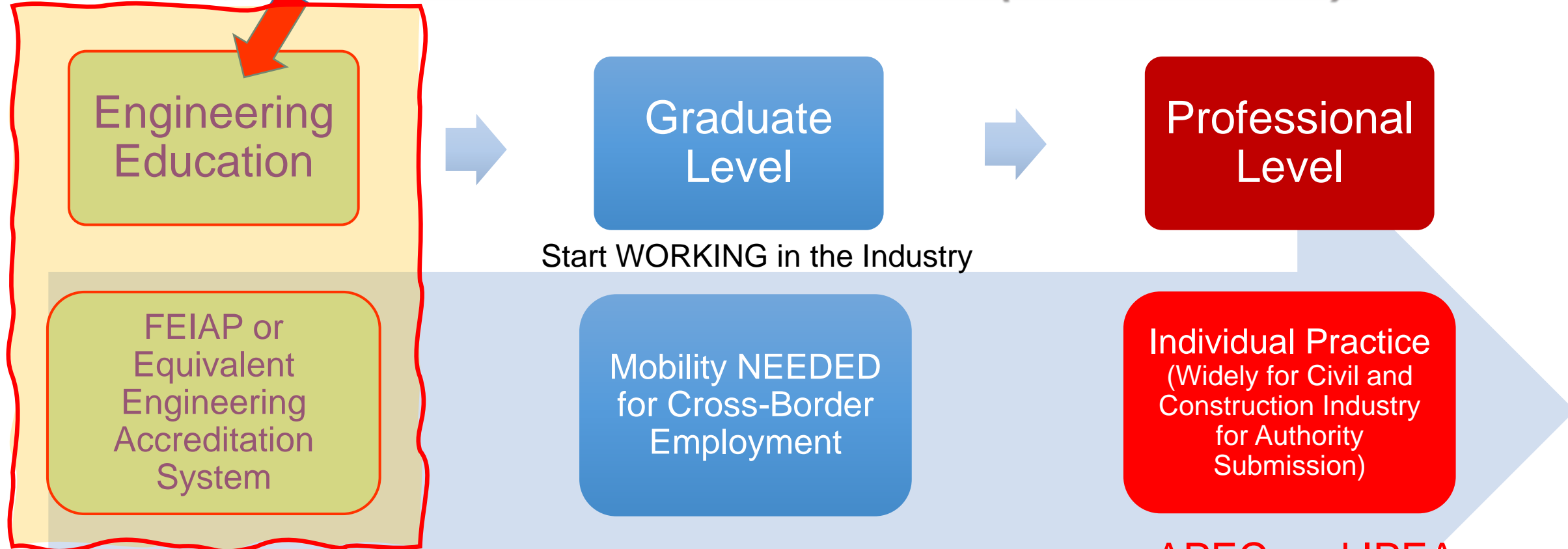
APEC and IPEA
International
Engineers

- FEIAP Engineering Guidelines (Stage 2 full compliance)
- AAP Accord, EUR-ACE & Washington/Sydney & Dublin Accord



FEIAP system +

Africa, Asia and the Pacific Accord (AAP Accord)



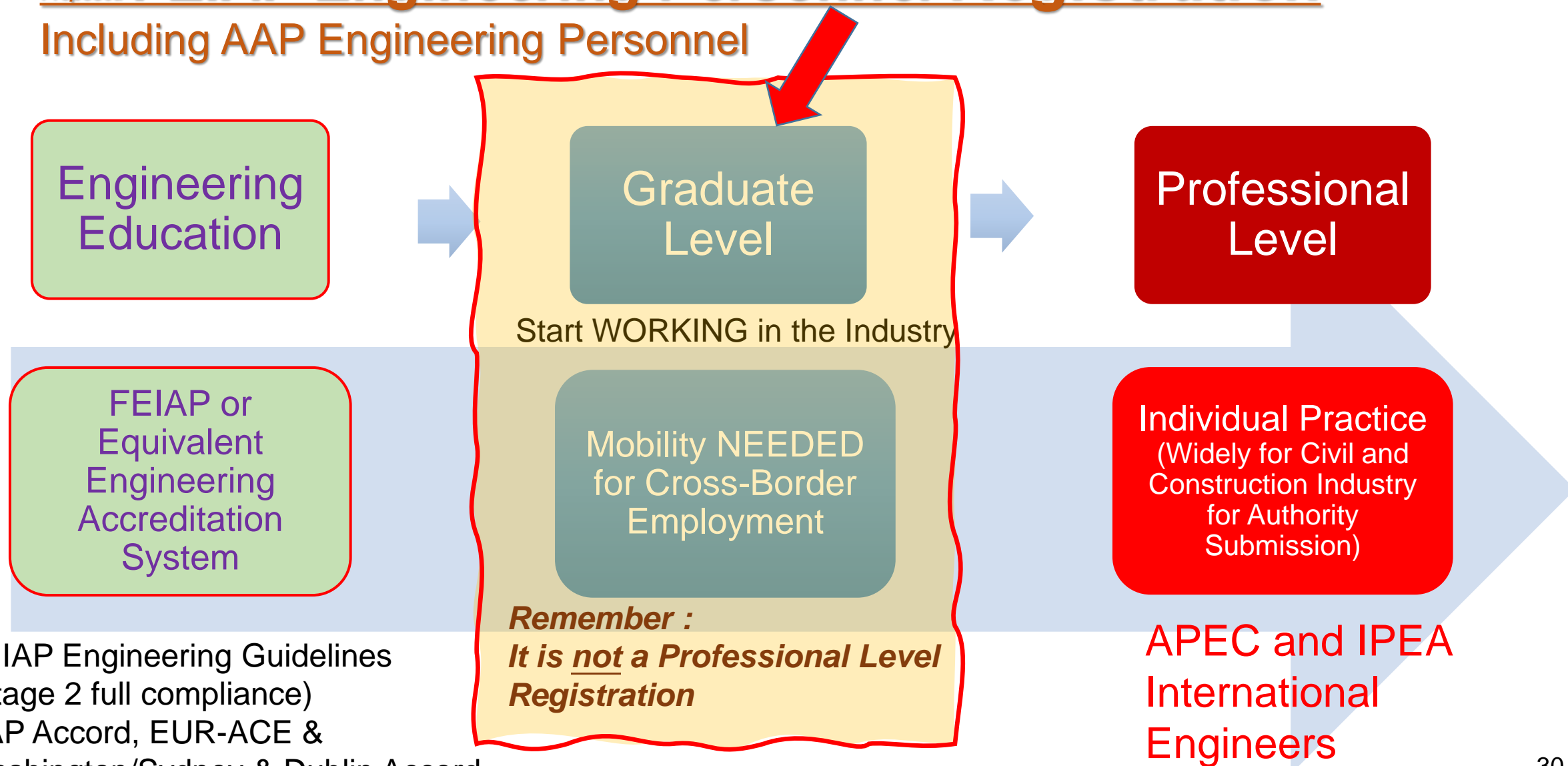
- FEIAP Engineering Guidelines (Stage 2 full compliance)
- AAP Accord, EUR-ACE & Washington/Sydney & Dublin Accord

**APEC and IPEA
International
Engineers**



Proposed **FEIAP Engineering Personnel Registration**

Including AAP Engineering Personnel



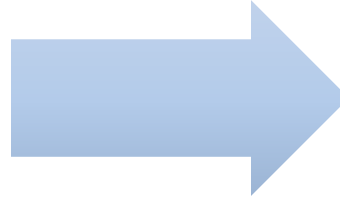
- FEIAP Engineering Guidelines (Stage 2 full compliance)
- AAP Accord, EUR-ACE & Washington/Sydney & Dublin Accord

FEIAP in the 29th General Assembly 15 July 2021 has approved for the Development the Framework for the Registration of the FEIAP Engineering Personnel.

A platform for mutual recognition of engineering workforce (Graduates) that covers :-

- **FEIAP Graduate Engineers,**
 - **FEIAP Graduate Engineering Technologists,**
 - **FEIAP Graduate Engineering Technician.**
1. Those who fulfilled the FEIAP Engineering Education Guidelines (Stage II Full Compliance) or Equivalent Standards
 2. Open to all Engineering Personnel who qualify.
→ Help in networking & Employment
 3. **NOT intended** for Professional Level (No duplication with APEC and IPEA)
 4. Free of Charge for all members of FEIAP Member Economies who qualify.
 5. Voluntary basis among Institutions/Organisations – for industry

**FEIAP Engineering
Education Guidelines**
**“Africa, Asia and the
Pacific Accord” (AAP
Accord)**



*** FEIAP Graduate Engineers,
* FEIAP Graduate Engineering
Technologists,
* FEIAP Graduate Technicians**

Fulfilled the
FEIAP Engineering Education
Guidelines (Stage 2 Full
Compliance)
or Equivalent Engineering
Accreditation System recognized by
FEIAP

- 1) Issued by the FEIAP Members that fulfilled the criteria for their own members.
- 2) Promote Engineering
- 3) Recognition of Engineering Education Standards
- 4) Mobility NEEDED for Cross-Border Employment

A platform for mutual recognition of engineering workforce (Graduates) that covers :-

- AAP Graduate Engineers,
- AAP Graduate Engineering Technologists,
- FEIAP Engineering Technician.



1. Those who fulfilled the Best Practices as stipulated by AAP Accord Engineering Education and Accreditation Guidelines”
[includes FEIAP Engineering Education Guidelines (Stage II Full Compliance)]
2. Open to all Engineering Personnel who qualify. → Help in networking
& Employment
3. NOT intended for Professional Level
4. Voluntary basis among Institutions/Organisations signing up to AAP Accord



AAP Engineering Personnel Register



Federation of Engineering Institutions
of Asia and the Pacific (FEIAP)



**AFRICA, ASIA AND THE PACIFIC
ACCORD
(AAP ACCORD)**

BETWEEN



**The Federation of Engineering
Institutions of Asia and the Pacific
(FEIAP)**

AND



**The Federation of African
Engineering Organizations
(FAEO)**

4.1

AAP Graduate Engineers

Recognition of equivalence of educational base for Engineers at the Graduate Level.

A person in the engineering profession who is competent by virtue of fundamental education and training to apply scientific method and outlook to the analysis solution in complex engineering problems and having an accredited engineering degree from an institution of higher learning in a particular branch of engineering in which he is trained, specialised and allowed to practice.

4.2

AAP Graduate Engineering Technologists

Recognition of equivalence of educational base for Engineering Technologists at the Graduate Level.

A person who is part of the technological field that requires the application of scientific and engineering knowledge and methods combined with technical skills in support of engineering activities, with combined occupational spectrum of engineering and craftsmanship. Possess an accredited engineering technology degree from an institution of higher learning in a particular branch of engineering in which he is trained, specialized and allowed to practice.

4.3

AAP Graduate Engineering Technicians

Recognition of equivalence of educational base for Engineering Technicians at the Graduate Level

A person who is a certified holder of a certificate or diploma course who has the skill in specific areas and is able to support the engineering profession as technical assistant or having attended a programme through which practitioners normally satisfy the academic requirements for the engineering roles with the different name scenarios in different member economies.

Africa, Asia and the Pacific Accord (AAP Accord)
Secretariat Address:

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52/4, 46720, Petaling Jaya, Selangor, Malaysia
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Federation of African Engineering Organisations (FAEO),
Suite 205, NEC Building, National Engineering Centre, Off National Mosque
Labour House Road, Central Business District, Abuja, Nigeria.
Email: info@faeo.org

CHAIRMAN



Tan Sri Academician Datuk Ir. Prof. Em
Dr. Chuah Hean Teik (IEM)
EESC Chairman FEIAP

CO- CHAIRMAN



Eng. Yashin Brijmohan
SAICE (S. Africa)
Chair of FAEO Engineering Education

MEMBERS

FEIAP



Prof. Em. Dr Douglas
Hargreaves (EA)



Engr. Dr KM Nasir
(PEC)



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(PII)



Engr. Dr Charlie Than
(MEngC)



Eng. Martin Manuhwa
(ECZ)



Engr. Prof. Adisa A. Bello
(COREN)

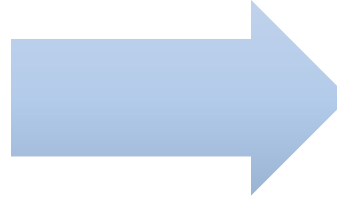


Eng John Kalamagye
(IER)



Ing. Dr. Lucy Agyepong
GhIE(Ghana)

**Full Member of
Africa, Asia and the Pacific
Accord (AAP Accord)**



- * AAP Graduate Engineers,
- * AAP Graduate Engineering Technologists,
- * AAP Graduate Technicians

Best practices as stipulated by AAP Accord *Engineering Education and Accreditation Guidelines* (which for a start *FEIAP Engineering Education and Accreditation Guidelines* have been adopted).

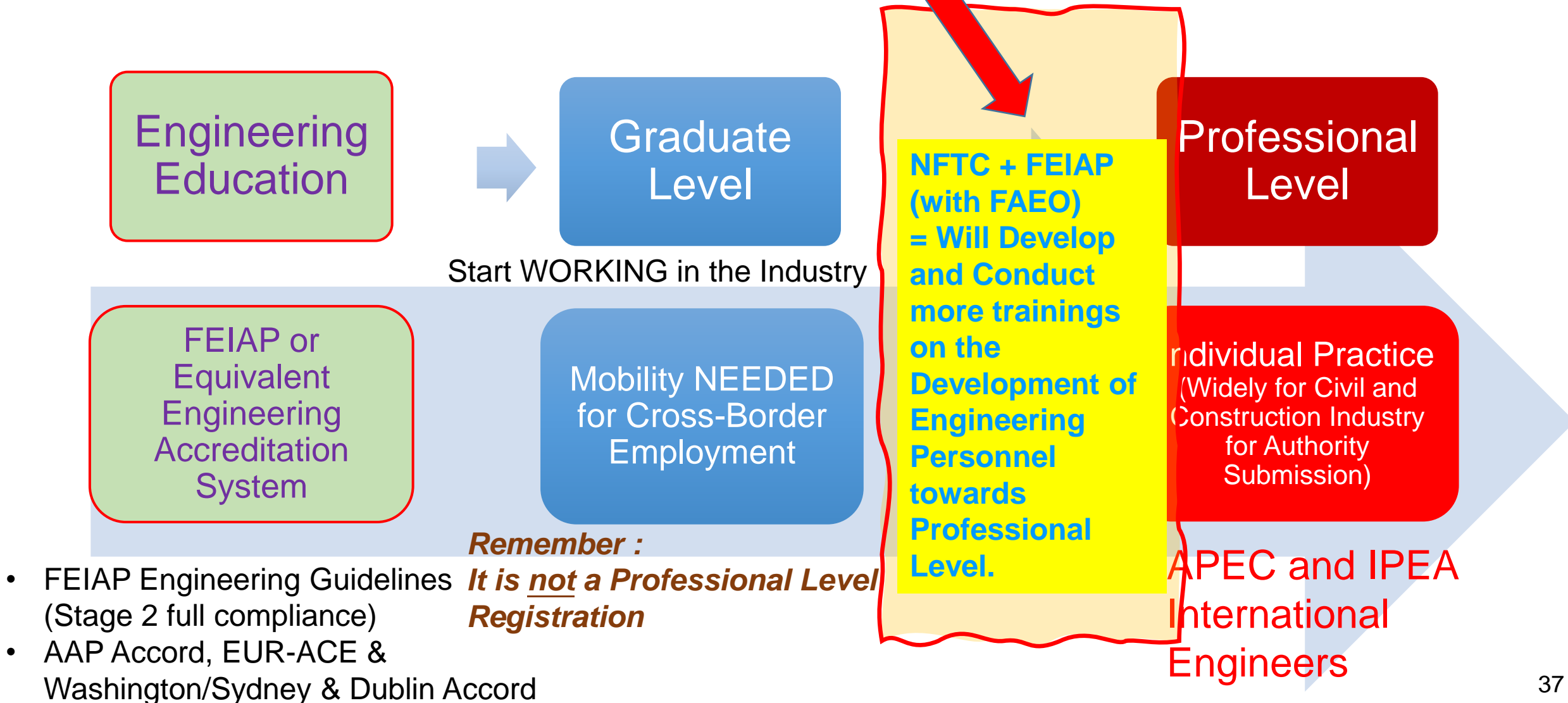
Suggestions :-

- 1) Issued by the AAP Members of respective Economy that fulfilled the
- 2) Promote Engineering
- 3) Recognition of Engineering Standards
- 4) Mobility NEEDED for Cross-Border Employment

AAP Engineering Education Council (AAP Council) will develop the Framework for the Registration of the AAP Graduate Engineering Personnel.



Engineering Personnel Development





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- 1** Introduction to FEIAP
- 2** FEIAP 2030 Proposal
- 3** Registration & Development of Engineering Personnel
- 4** Development of Graduates' Professional Competency Profiles

The Graduates need to be trained and to develop towards achieving Professional Competency Profile.

The professional competency profiles for each professional category record the elements of competency necessary for competent performance that the professional is expected to be able to demonstrate in a holistic way at the stage of attaining registration.

NEW Proposals

NFTC, FEIAP and FAEO plan to work together to carry out the following :-

- Step (1)** – Registration of FEIAP Graduate Engineering Personnel (FEIAP can start), & AAP Graduate Engineering Personnel (through AAP Accord of FEIAP and FAEO) → Mobility & Networking
- ↓
- Step (2)** – Together develop the framework and content for the training and development of the Graduate Engineering Personnel to achieve the requirements of Professional Competency.
- ↓
- Step (3)** – Through NFTC to conduct Virtual or Physical TRAINING/SEMINAR for the Graduate Engineering Personnel registered with FEIAP or AAP.

To include Economies within the Belt and Road Initiative region

Competence statements are therefore discipline-independent.

Competence statements accommodate different types of work, for example *design, research and development and engineering management* by using the broad phases in the cycle of engineering activity:

- problem analysis,
- synthesis,
- implementation,
- operation and evaluation,
- together the management attributes needed.

The competence statements include the personal attributes needed for competent performance irrespective of specific local requirements:

- communication,
- ethical practice,
- judgement,
- taking responsibility and
- the protection of society & environment

Each jurisdiction may define ***performance indicators***, that is actions on the part of the candidate that demonstrate competence. For example, a design competency may be evidenced by the following performances :-

- 1: Identify and analyse design/ planning requirement and draw up detailed requirements specification,***
- 2: Synthesise a range of potential solutions to problem or approaches to project execution***
- 3: Evaluate the potential approaches against requirements and impacts outside requirements***
- 4: Fully develop design of selected option***
- 5: Produce design documentation for implementation***

	Differentiating Characteristic	Professional Engineer	Engineering Technologist	Engineering Technician
1	Comprehend and apply universal knowledge: Breadth and depth of education and type of knowledge	EC1: Comprehend and apply advanced knowledge of the widely-applied principles underpinning good practice	TC1: Comprehend and apply the knowledge embodied in widely accepted and applied procedures, processes, systems or methodologies	NC1: Comprehend and apply knowledge embodied in standardised practices
2	Comprehend and apply local knowledge: Type of local knowledge	EC2: Comprehend and apply advanced knowledge of the widely-applied principles underpinning good practice specific to the jurisdiction in which he/she practices.	TC2: Comprehend and apply the knowledge embodied procedures, processes, systems or methodologies that is specific to the jurisdiction in which he/she practices.	NC2: Comprehend and apply knowledge embodied in standardised practices specific to the jurisdiction in which he/she practices.
3	Problem analysis: Complexity of analysis	EC3: Define, investigate and analyse complex problems	TC3: Identify, clarify, and analyse broadly-defined problems	NC3: Identify, state and analyse well-defined problems
4	Design and development of solutions: Nature of the problem and uniqueness of the solution	EC4: Design or develop solutions to complex problems	TC4: Design or develop solutions to broadly-defined problems	NC4: Design or develop solutions to well-defined problems
5	Evaluation: Type of activity	EC5: Evaluate the outcomes and impacts of complex activities	TC4: Evaluate the outcomes and impacts of broadly defined activities	NC5: Evaluate the outcomes and impacts of well-defined activities
6	Protection of society: Types of activity and responsibility to public	EC6: Recognise the reasonably foreseeable social, cultural and environmental effects of complex activities generally, and have regard to the need for sustainability; recognise that the protection of society is the highest priority	TC6: Recognise the reasonably foreseeable social, cultural and environmental effects of broadly-defined activities generally, and have regard to the need for sustainability; take responsibility in all these activities to avoid putting the public at risk.	NC6: Recognise the reasonably foreseeable social, cultural and environmental effects of well-defined activities generally, and have regard to the need for sustainability; use engineering technical expertise to prevent dangers to the public.

	Differentiating Characteristic	Professional Engineer	Engineering Technologist	Engineering Technician
7	Legal and regulatory: No differentiation in this characteristic	EC7: Meet all legal and regulatory requirements and protect public health and safety in the course of his or her activities	TC7: Meet all legal and regulatory requirements and protect public health and safety in the course of his or her activities	NC7: Meet all legal and regulatory requirements and protect public health and safety in the course of his or her activities
8	Ethics: No differentiation in this characteristic	EC8: Conduct his or her activities ethically	TC8: Conduct his or her activities ethically	NC8: Conduct his or her activities ethically
9	Manage engineering activities: Types of activity	EC9: Manage part or all of one or more complex activities	TC9: Manage part or all of one or more broadly-defined activities	NC9: Manage part or all of one or more well-defined activities
10	Communication: No differentiation in this characteristic	EC10: Communicate clearly with others in the course of his or her activities	TC10: Communicate clearly with others in the course of his or her activities	NC10: Communicate clearly with others in the course of his or her activities
11	Lifelong learning: Preparation for and depth of continuing learning.	EC11: Undertake CPD activities sufficient to maintain and extend his or her competence	TC11: Undertake CPD activities sufficient to maintain and extend his or her competence	NC11: Undertake CPD activities sufficient to maintain and extend his or her competence
12	Judgement: Level of developed knowledge, and ability and judgement in relation to type of activity	EC11: Recognize complexity and assess alternatives in light of competing requirements and incomplete knowledge. Exercise sound judgement in the course of his or her complex activities	TC12: Choose appropriate technologies to deal with broadly defined problems. Exercise sound judgement in the course of his or her broadly-defined activities	NC12: Choose and apply appropriate technical expertise. Exercise sound judgement in the course of his or her well-defined activities
13	Responsibility for decisions: Type of activity for which responsibility is taken	EC12: Be responsible for making decisions on part or all of complex activities	TC13: Be responsible for making decisions on part or all of one or more broadly defined activities	NC13: Be responsible for making decisions on part or all of all of one or more well-defined activities

Together we achieve more !!

“An arch consists of two weaknesses,
which, leaning on each other,
become a strength.”

-Leonardo da Vinci





NPU-FEIAP B&R Engineering Education Training Centre **(NFTC)**

NFTC Forum on Engineering Personnel Registration (2nd September 2021)



**THANK YOU
FOR YOUR ATTENTION**

Ir. Dr. Tan Yean Chin

FEIAP Secretary General

September 2nd, 2021