

NEC 2025 BEM NATIONAL ENGINEERING CONVENTION

Future of Programme Accreditation in Malaysia: Exploring AI-Infused Principle-Based Assessment for Engineering Programmes

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SPEAKER

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VUCA in Higher Education Sector

VUCA

Volatile

The environment demands you react quickly to ongoing changes that are unpredictable and out of your control

Uncertain

The environment requires you to take action without certainty

Complex

The environment is dynamic, with many interdependencies

Ambiguous

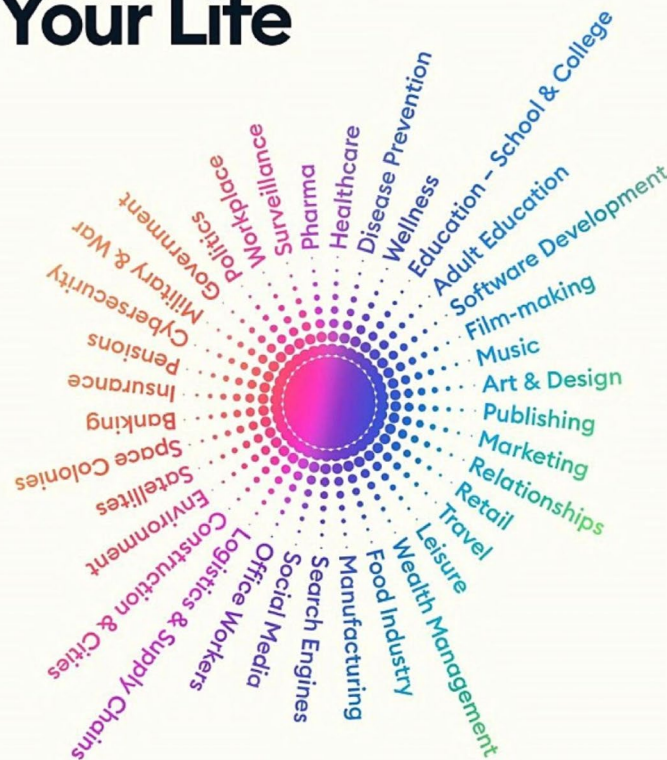
The environment is unfamiliar, outside of your expertise

<https://www.advuca.com/>

How AI will change our lives?

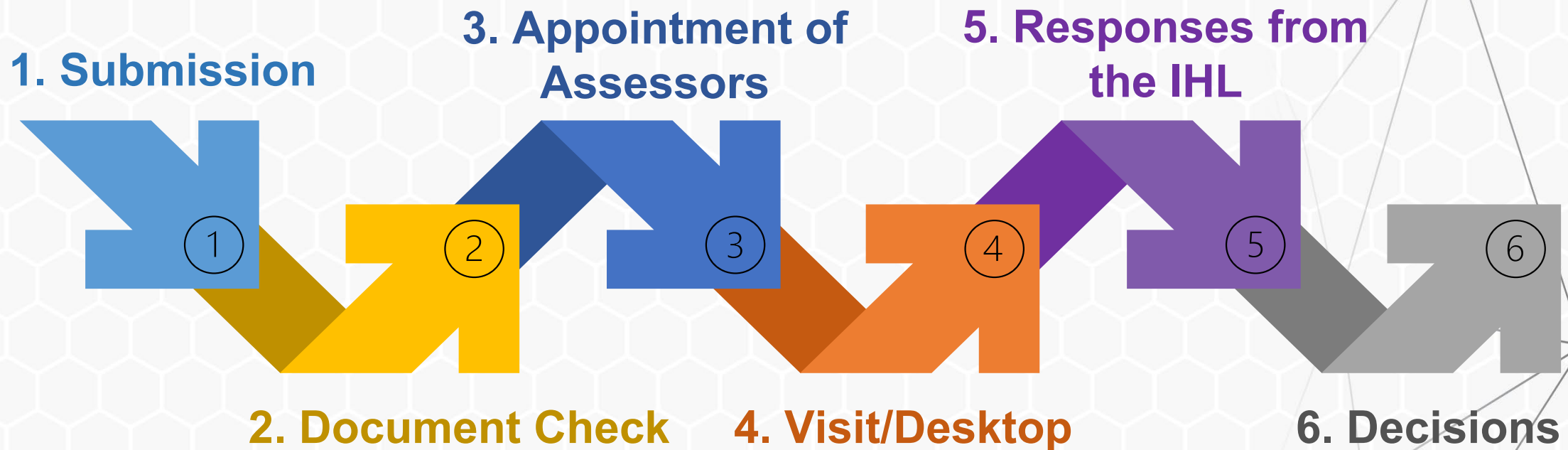
How AI Will Change Your Life

Patrick
Dixon



A Futurist's Guide to a Super-Smart World

Programme Accreditation Flow



Potential Use of AI in Accreditation



Pre-Submission Methods

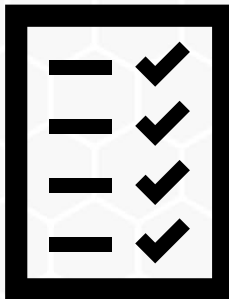
- Higher Education Providers (HEP) can utilize any Generative AI model like ChatGPT
- Data can be extracted either from online data, or data in the possession of the HEP
- AI can be trained using the Standards (available in the website)



ChatGPT

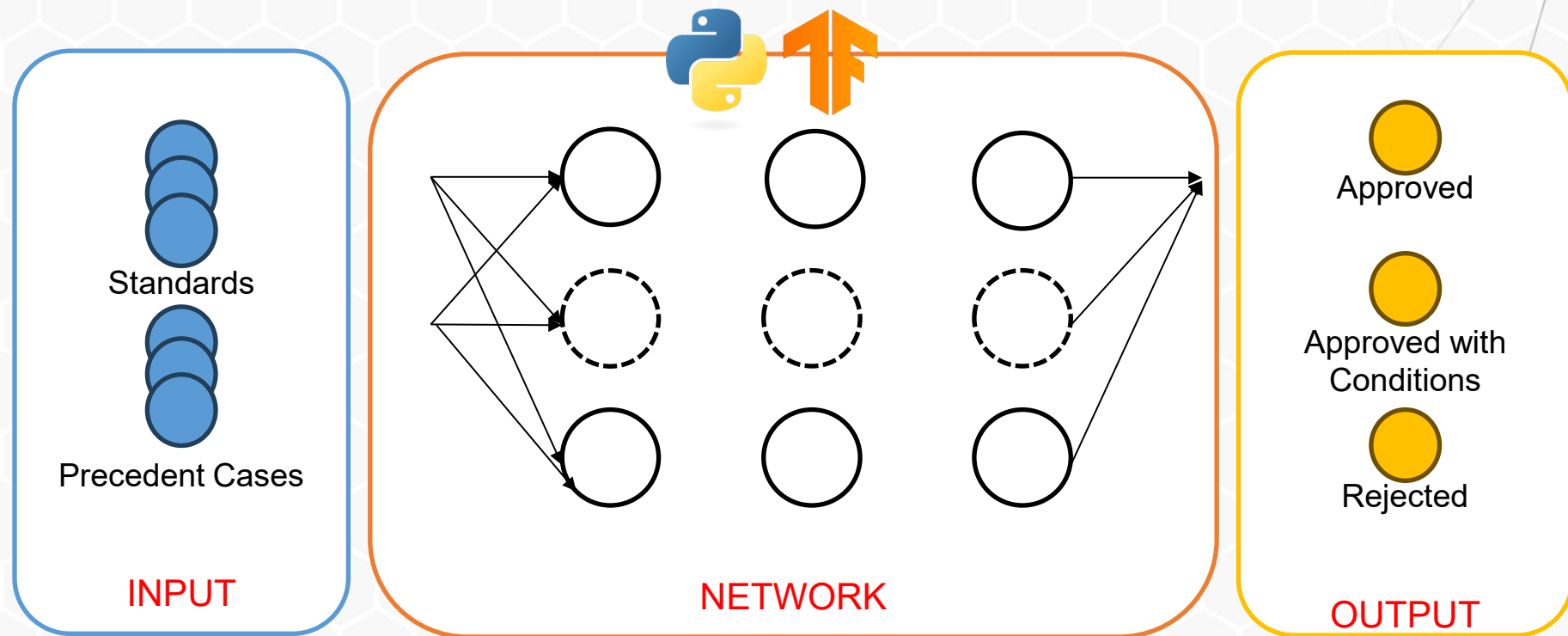
Gemini

Pre-Submission Advantages



Assessment Methods

- Utilizing both Generative AI as well as Local Machine Learning Model – deep learning approach



Training - Testing

Assessment Advantages



Example of AI-Infused Recommendation

Example 1: Standard 6.2.2 The programme leader must have appropriate qualification, knowledge and experiences related to the programme he/she is responsible for.

Profile:

https://scholar.google.com/citations?user=DEILx_UAAAAAJ&hl=en

Programme: Masters in Biomedical Engineering

AI : Strong candidates

Example 2 : Civil Engineering

Criterion

Qualification

Knowledge

Experience

Evaluation for Civil Engineering

He holds a PhD and is a Professor — but in **Computer/Electrical Engineering, not Civil Engineering.**

His expertise is in **medical imaging, image processing, embedded systems** — all unrelated to **core Civil Engineering areas** like structures, geotechnics, hydraulics, or construction.

No evidence of involvement in civil engineering research, teaching, or industry.

AI : Not suitable

Disadvantages of AI



Highly Dependence on AI

HEP as well as panel of assessors may be relying too much on AI

AI Requires Training

Building a resilient and consistent AI model require a huge set of data for training

Lack of Wisdom

Wisdom requires years of experience, and the X-factor of empathy, i.e. IQ and EQ

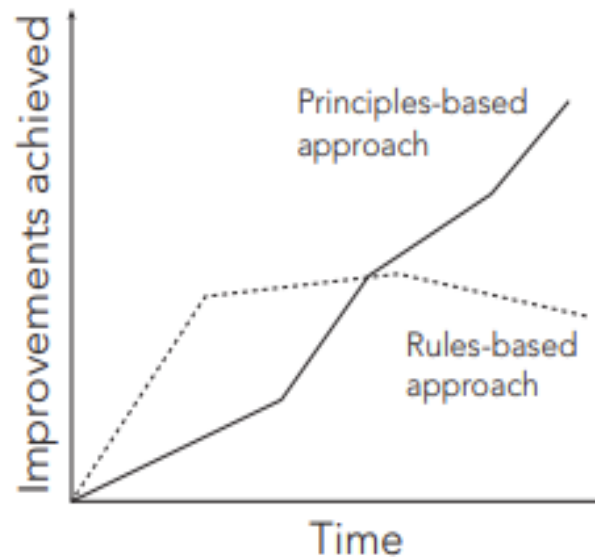
Transformation towards AI-Assisted Assessment

1. Inputs for AI – come in many forms:
 - Standards and all quality-related documents
 - Digital information online
 - Local information offline
2. The whole process is supporting towards Principle-based Assessment
 - Promoting sustainable CQI after a period of compliance phase
 - Sustainable through a strong Internal Quality Assurance (IQA)

Integrating with Principles-Based Approach

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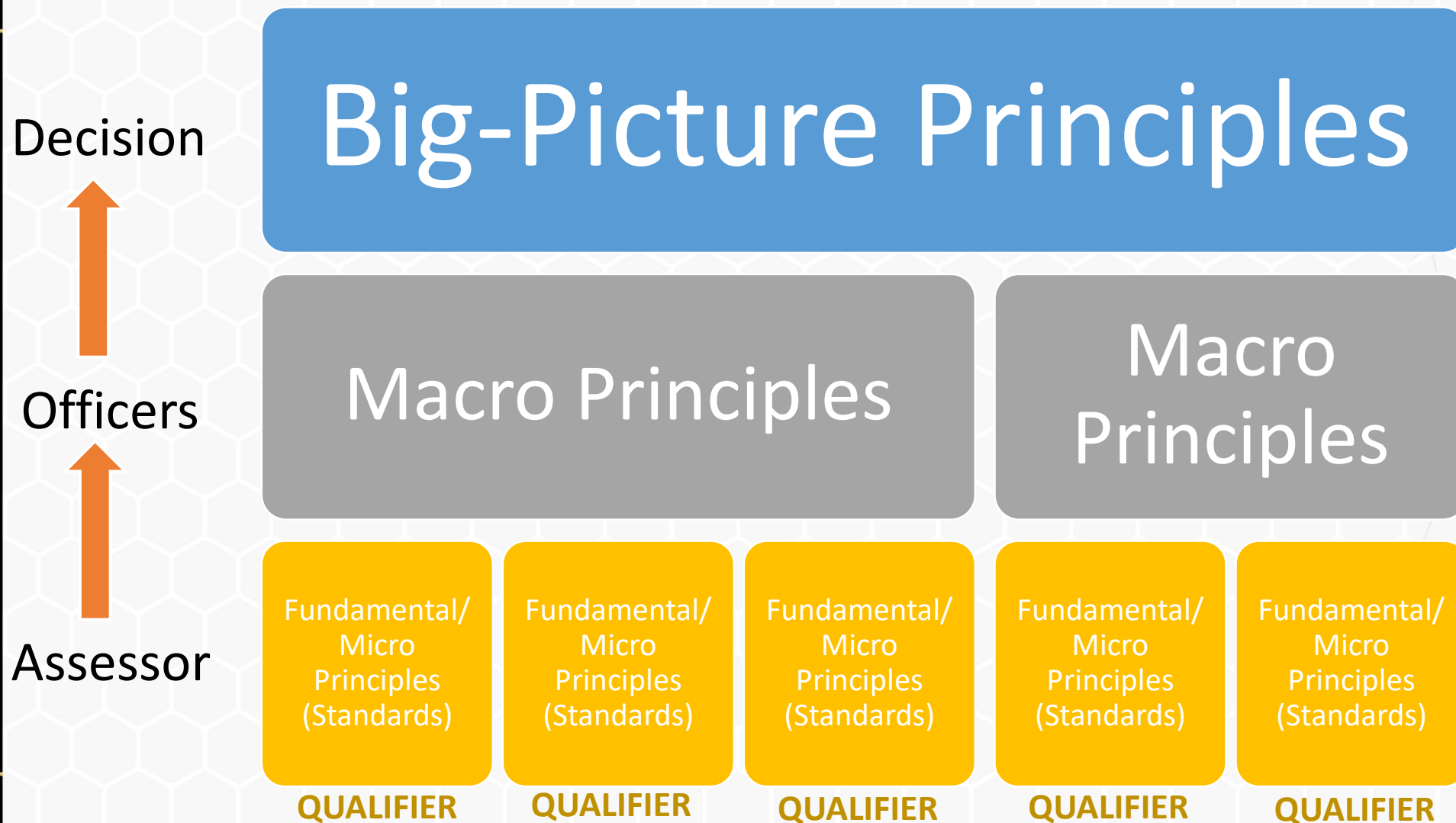
2 Rates of quality improvement with principles-based versus rules-based approaches



Schematic representation of the slower onset but potentially more enduring gains in quality improvement arising from principles-based approaches, compared with the more rapid but plateauing (or even declining) gains from rules-based approaches.

Lindsay H Heywood, Principles-based accreditation: the way forward? The Medical Journal of Australia, Vol 186 (S7), April 2007
<https://doi.org/10.5694/j.1326-5377.2007.tb00964.x>

Principles-Based Structure



Way Forward

1. AI is here to stay – use it wisely
2. Use AI ethically – transparency and accountability
3. AI is a tool for an ecosystem

Q&A



Thank You

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