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Plenary Session 4
“Mutual Recognition and Standards”

**Sharing Common Concept and Understanding
- A Condition for Mutual Recognition -**

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Triggers of Globalization

- 1991 **Termination of Cold War Regime**
triggered a chain reaction of Globalization!
- 1995/1 **WTO founded, policy target shifted**
from ensuring free trade of goods to promoting
mobility of human resources especially of specialists
- /11 **APEC Summit Meeting in Osaka**
adopted a resolution to accelerate the mobility of
registered engineers within the region

These triggers forced to adjust domestic systems
to cope with the changing external world.

Around 1995 we received an inquiry from an overseas organization.

“How many engineers are working in Japan?”

This inquiry was the start of our effort to compare Japanese engineers with their counterparts in the world and to recognize the existing gap in the **concept and understanding** of engineers.

What are engineers?

Engineers
in western world

技術者 –Gijutsusha-
of Japan

Past
days

Ambiguous!
Plumbers, repairmen, skilled craftsmen and operators,
foremen, draftsmen, designers, researchers, etc.
Every practitioner in technology is called engineer.

Present

Well defined and
categorized

Still ambiguous
in spite of
JABEE's effort

- The Washington Accord is a framework for the mutual recognition of the substantial equivalence of **engineering education** carried out in different countries and economies.
- The signatories should share the same definition of **engineering education**.
- ABET, Accreditation Board for Engineering and Technology of USA, distinguishes **engineering and technology education**. What is the difference?
- Before establishing JABEE, we needed to compare our **engineering education** with others and to redefine to make it compatible with global standard.
- Now, let's have a common understanding of **science, technology and engineering!**

Science, technology and engineering

- 5000 years,
Begin of
Civilization

Science > knowledge

Technology > artifacts

- 300 years,
Dawn of
modern
science

Human creation based on the
past experience, traditional
knowledge and trained skills
backed by strong desire and
ardor

Oracles

Pseudo science

Indigenous
knowledge

Verifiable
knowledge

Present

Science?,
Technology?
or
Science and Technology?

Japanese view

- 5000 years,
Begin of
Civilization

Science > knowledge

Technology > artifacts

- 300 years,
Dawn of
modern
science

Oracles

Pseudo science

Indigenous
knowledge

Verifiable
knowledge

Human creation based on the
past experience, traditional
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ardor

Where are engineers
技術者?

Science for
Technology

Scientist

工学

Technologist

Technology Science

Present

Engineering is a science.

JABEE

Western view

- 5000 years,
Begin of
Civilization

Science > knowledge

Technology > artifacts

Oracles

Pseudo science

Indigenous
knowledge

Verifiable
knowledge

Human creation based on the
past experience, traditional
knowledge and trained skills
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- 300 years,
Dawn of
modern
science

Technology is created
by a variety of human
vocational activities.

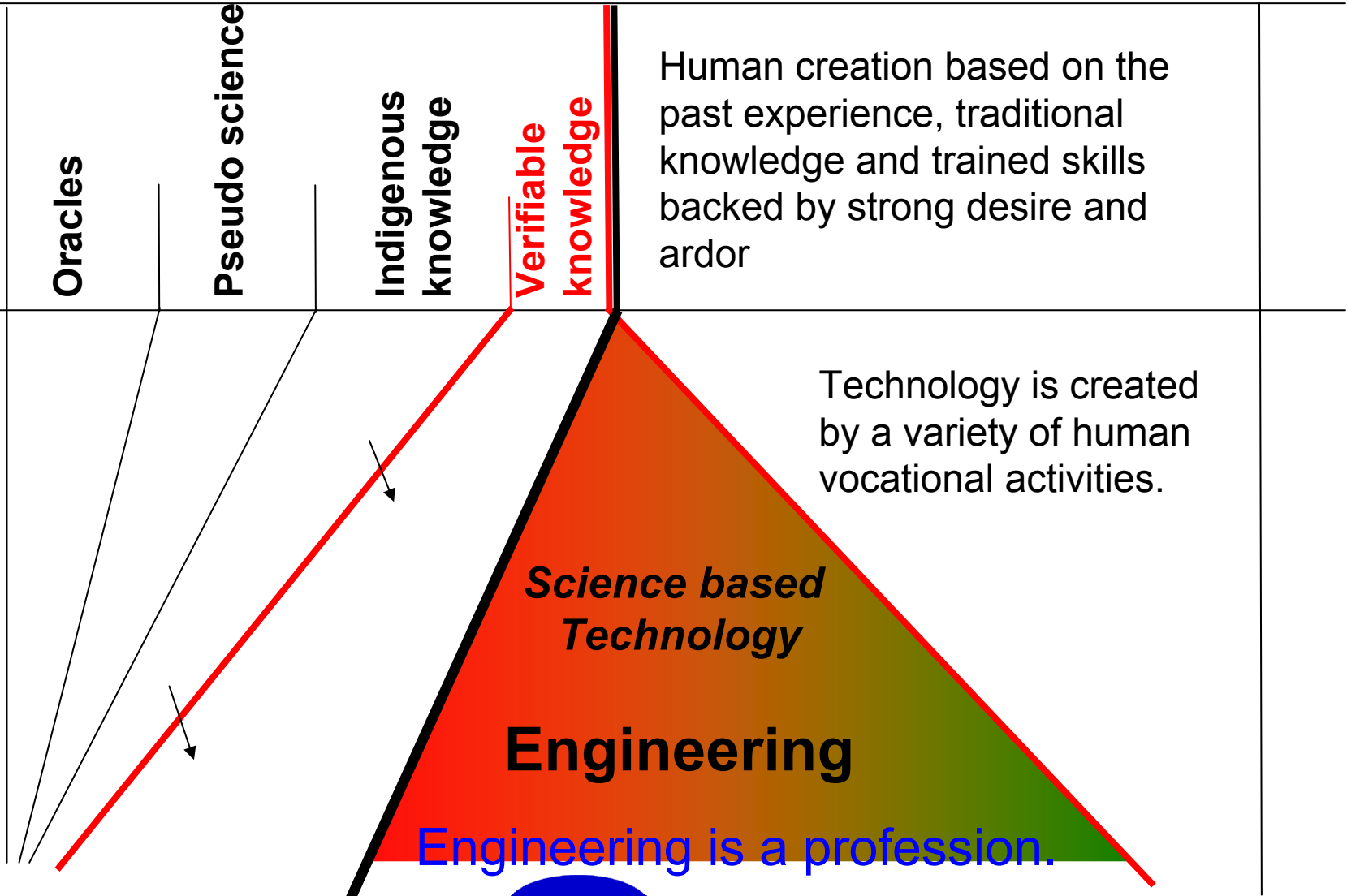
*Science based
Technology*

Engineering

Present

Engineering is a profession.

JABEE



Engineering practitioners

Science > knowledge

Technology > artifacts

Framework for
prof. qualification

Professional
Engineer

Engineering
Technologist

Engineering
Technician

Framework for equiv.
of education

Washington
Accord

Sydney
Accord

Dublin
Accord

Criteria & standards
for education

Engineering
Education

Technology
Education

Skills
Education

Engineer Technologist Technician
Engineering Practitioner

JABEE


Categorizing Engineering Practitioners 1

Based on the Rules and Procedures of the Washington Accord

	Engineering Practitioner		
Title	Engineer	Technologist	Technician

Attributes

Problems to cope with	Complex	Broadly-defined	Well-defined
Core competence	Application of Knowledge, Creation of new concept		Skills gained by training and experience



Categorizing Engineering Practitioners 2

Title	Engineer	Technologist	Technician
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Education and Professional Qualification

Required tertiary education	Accredited program, 4 years or more	Accredited program, 3 years or more	Accredited program, 2 years or more
Framework for mutual recognition of education	Washington Accord	Sydney Accord	Dublin Accord
Professional qualification	Professional Engineer, PE	Engineering Technologist	Engineering Technician

Sharing common concept and understanding

- Urgently needed for the mutual recognition of professional/program accreditation that finally assures the **quality of professionals** worldwide.
- Institutional accreditation is principally to assure the **academic quality** within a nation/economy, however,
- In order to promote global mobility, it is vital to maintain the equivalence of academic degrees, **bachelor, master** as well as **doctor**, across national borders.
- In this sense, institutional accreditation is also a **highly global issue**.

Mobility of human power stocked in students, academics as well as professionals, is an important prerequisite for global co-prosperity!

The End