

MANAGEMENT OF TECHNOLOGY

Introduction of Technology Management

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Chapter Outline

- Definition of Technology
- Technology Components
- Salient Features of Technology
- Classification of Technology
- Concept of Technology Management
- Nature of Technology Management
- Drivers of MOT
- Responding to Technology Challenge



Lesson Outcome

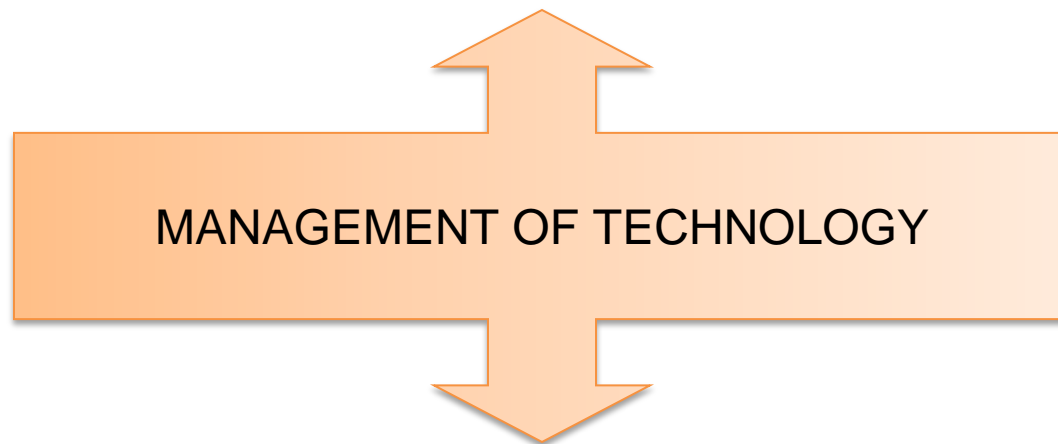
- Define technology and understand different technology types
- Explain the concept and significance of technology management
- Understand the challenges of technology changes and the way organization can respond to it



Introduction

ORGANIZATION

Sustainable competitive advantage
and long-term profitability



Academic Institutions

A new discipline

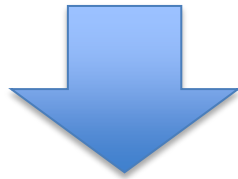


Introduction

Accumulation of information



Practical implementation of knowledge



Technology



Introduction

TECHNOLOGY

Creating goods or providing services using knowledge, processes, methods and systems



Components

Hardware

- Tangible - Example: Equipment / machinery

Software

- Intangible – Example : AUTOCAD, SPSS

Brainware

- Examine the technology's functionality



Salient Features

Change

Widespread Effects

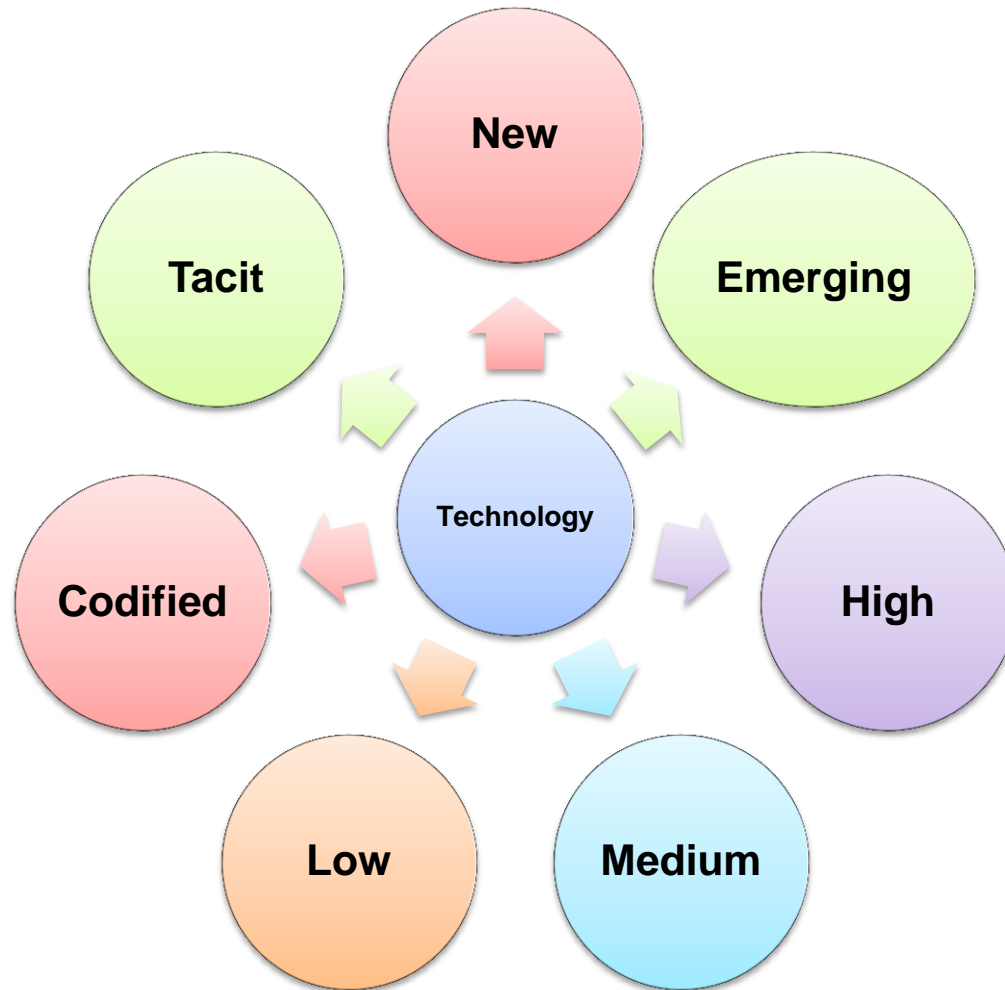
Self-reinforcing

Complex

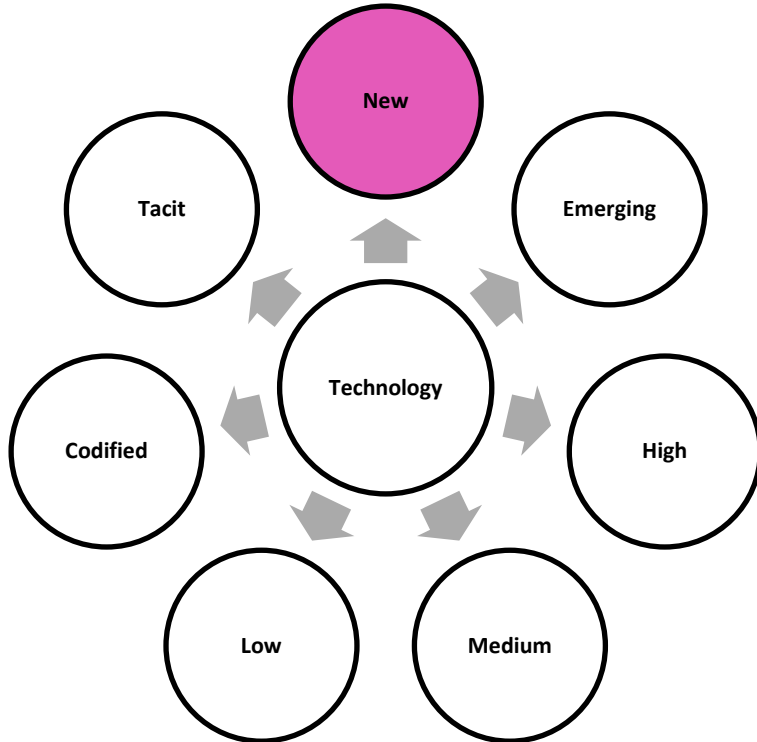
Amoral



Classification of Technology



New Technology



Introduced by the organization as new technology

Must be able to improve :

- Competitive advantage
- productivity

Example :

Computer software that is new to the company to aid engineering drawing

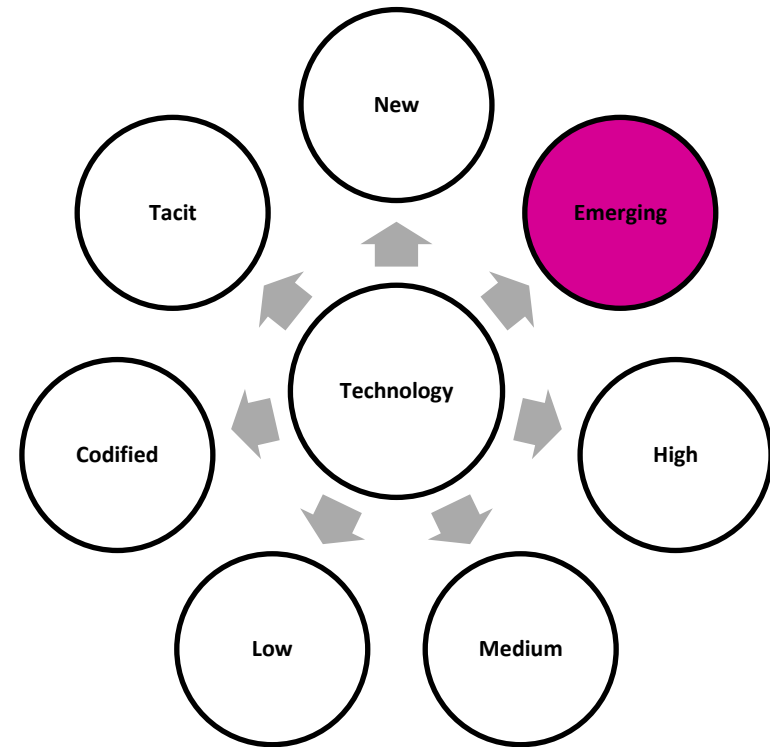


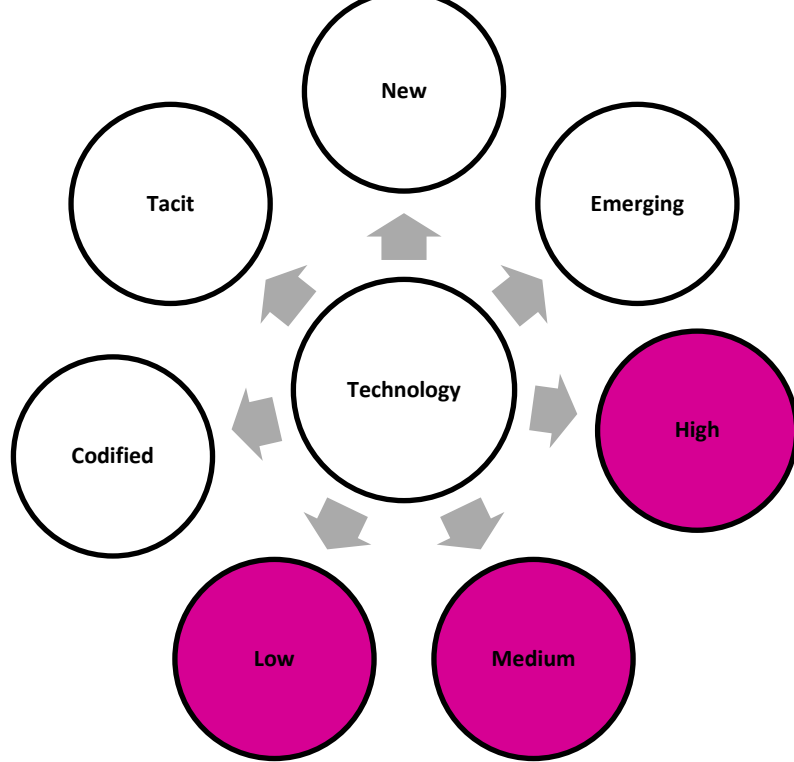
Emerging Technology

1. In pre-commercialization
2. Will significant evolve in 5 years time
3. Destructing current industries
4. Transforms the society

Example :

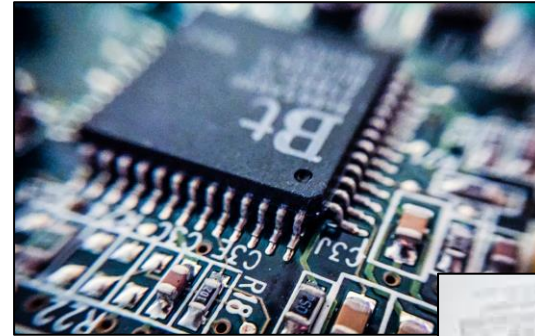
<https://www.weforum.org/agenda/2017/06/these-are-the-top-10-emerging-technologies-of-2017/>





High

Refers to advanced or sophisticated technologies



Medium

Between advanced and low technology

Example: consumer products industry

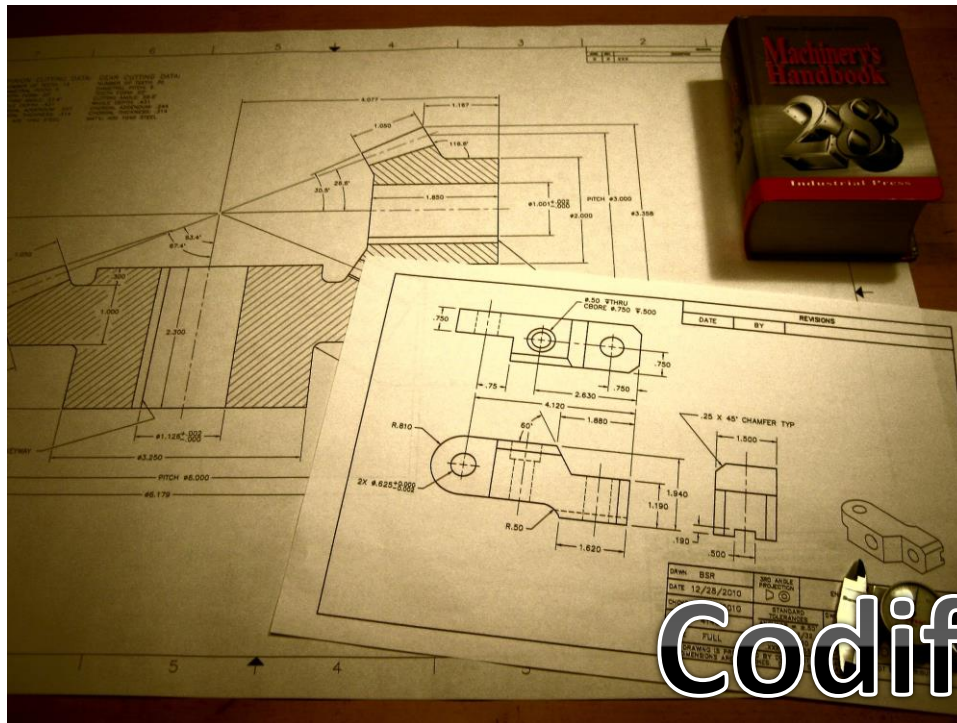
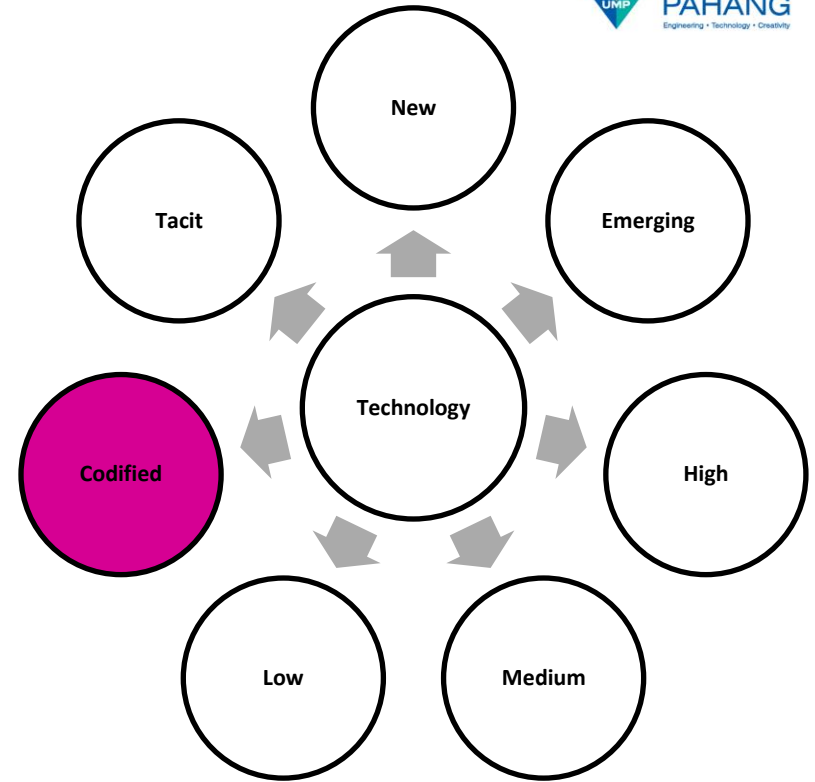


Workers – low expertise
Operations – manual/semi-auto
R&D – low levels
Changes – incremental
Products – fulfill basic needs

LOW



- Transferred in codings
- Enable to show how it works
- Precise, faster transferred than tacit technology



Codified Technology

Example :

Engineering drawing that shows dimension, and shape of product



Concept of MOT

Management of Technology

“An interdisciplinary field concerned with the planning, development and implementation of technological capabilities to shape and accomplish the operational and strategic objectives of an organization”

National Research Council Report (1987)



Concept of MOT

Technological Capabilities

- Firm's technological asset
- Significance in their firm's strategy
- Assets are nurtured through practices and processes that include:
 - Technology diffusion;
 - Technical skills are improved
 - Organizational work is improved
 - Customers- suppliers-other companies-build better relationships



Nature of MOT

✓ It is a **Process**

- ⇒ Planning
- ⇒ Development
- ⇒ Implementation / Commercialization

✓ It is **Goal Oriented**

- ⇒ Satisfying human needs
- ⇒ Improving the competitive advantage and profitability of enterprise

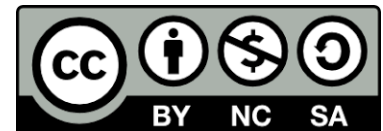
✓ It is an **Interdisciplinary Mix**

- ⇒ Involves combined knowledge from Science, engineering and business administration



Nature of MOT

- ✓ It is a **System**
 - ⇒ Integrated with sub-systems within the organization and external environment
- ✓ It **Involves Risk**
 - ⇒ Technology and technology innovation
 - ⇒ Innovation is risky
- ✓ It is **Socially Beneficial**
- ✓ It is **Evolutionary**
 - ⇒ IoT, Business Analytics, Driverless Car



Drivers of MOT

Change in
Technology

Change in Scope

Change in
Competition

Change in Asset
Valuation

Change in Focus for
National
Competitiveness

Change in Emphasis
on Knowledge
Management



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The rapid pace of
technological
change :

- ✓ Shortened product life cycles
- ✓ Shortened product development times
- ✓ Decreasing payback period to a new role of managing change



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Intensifying today!
Compete on innovation and technological
excellence



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Changes in tech →
changes in
consumer demand
→ changes in tech

Example : History of Henry Ford

-Father of mass production

-Customer demand changes → Ford is no more popular



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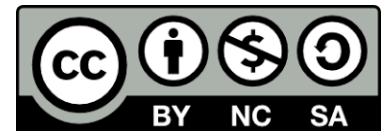
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In the past, company assets were assessed by -
capital – land – equipment – building - inventory
Now?

- Intellectual property



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What are technology companies?

Focus on dev & manufacturing of tech. Example: *Apple, IBM, Lenovo, Huawei, Microsoft*

What is tech industry?

An accumulation of tech companies



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Who are the supercompetitors?

Big Five = Google, Amazon, Apple, FB, Microsoft

What are they dominant of?

High-end devices, online search, social media, productivity software, cloud services

What will shape the tech industry?

Consumer trends & innovation



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Who is the next 20? (all based in the US)

Adobe, Analog Devices, Applied Materials, Broadcom, Cisco Systems, Dell Technologies, Hewlett Packard Enterprise, HP Inc., IBM, Intel, Intuit, Micron, Nvidia, Oracle, Qualcomm, Salesforce.com, Symantec, Texas Instruments, VMware, and Western Digital.



Who are the other 5 companies following behind?

Alibaba, Baidu, Huawei, JD.com and Tencent (The Chinese Challengers)

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Knowledge management has become the driver for creativity and technological innovations in modern organizations



Credit to:
Tarek M.Khalil
Ahmad Nazif Kamar