

Emerging Technology

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Contents

1	Technology Management	1
1.1	Implications	1
1.2	Technology Manager	2
2	Emerging Technology	2
2.1	Emerging Technology Management	3
2.2	Learning Emerging Technology	3

1 Technology Management

Technology management is a management process covering (1) the management of the usage of technologies with access right granted for work, (2) the management of the development of a new technology and (3) the management of the access right of the new technology.

By the same principle, the definition of management could be stated in the following. *Management* is a management process covering (1) the management of the usage of resources with access right granted for work, (2) the management of the development of a new resource and (3) the management of the access right of the new resource.

1.1 Implications

Thus, technology management is a problem dependent managing process. The set of technologies to be acquired depends on the problem to be solved. If the professional who handles this management process is called the technology manager, a technology manager would need to be capable to understand the scope of a problem to be solved and then decide which technologies have to be used.

A technology manager would need to bargain for the accessibility of such technologies. If a technology to be used has not yet been developed or the technology is not accessible, the technology manager would need to determine its specification for the development team to make it. Once the new technology has been developed, the technology manager would have to understand how difference it is as compared with other similar technologies in the market and the new technology should be filed in patent. Once the new technology has been patented, licensing on the use of the new technology should be managed by an independent professional team in the firm.

1.2 Technology Manager

Under such circumstances, a technology manager should be knowledgeable in a number of areas, namely (1) the technical details of the technologies potentially for use in solving problems; (2) the managing the process of technology development; (3) technology development; (4) the design of the licensing policy for each new technology being developed; (5) the recruitment of the professionals to assist the technology manager to complete all those tasks. Furthermore, a technology manager should also be knowledgeable in (6) marketing and (7) making strategic decision on the future technology development and the usage of technologies. Last but not the least, a technology manager should be (8) able to design the operations for all these tasks. To equipped with such knowledge and skills, what courses a pre-technology-manager should acquire?

2 Emerging Technology

Emerging technology refer to the set of technologies that are available in nowadays or in near future. Emerging technology also embraces a collection of thousands of technologies. Today, 5G, WiFi, ChatGPT and Google Bard are emerging technologies. In four hundred years ago, they were not.

In the seventeenth century, there was no electricity (respectively, computer). Can you imagine how people managed accounting information in that period of time? What technologies had been used for managing accounting information? Can you imagine how people made a shirt in that period of time? What technologies had been used for making a shirt? Obviously, all these works had to be done by people manually aided with various different tools. The tools included human workers, paper notebooks, abacuses, metal locks, pigeons, horses and the imperial post offices. Thus, these tools were the emerging technologies at that period of time.

Today, Siri and Google Assistant are emerging technologies. They could be used as voice recognizers for the users to command a computer-based information system to perform data analysis and reporting. Google Translate is an emerging technology for online translation. The AI model embedded in the Google Translate is yet another emerging technology. Auto-Drive vehicle is an emerging technology. The real-time video processing system in the auto-drive

vehicle is an emerging technology. The real-time image understanding system in the vehicle is also an emerging technology. Blockchain is an emerging technology. It could be applied to develop other emerging technologies for use in financial sector and health care sector.

2.1 Emerging Technology Management

As emerging technology is simply a subset of ‘technology’, emerging technology management could simply be defined in the same way as technology management, by replacing technology to emerging technology.

Emerging technology management is a management process covering (1) the management of the usage of emerging technologies with access right granted for work, (2) the management of the development of a new technology and (3) the management of the access right of the new technology.

2.2 Learning Emerging Technology

To understand a technology, it could be accomplished from two approaches. First, one could start from its (technical) working principle and then infer the potential applications of such technology. This approach is a tough approach as the learners need to have sufficient mathematical knowledge to understand the technical background of those ‘technologies’. The second approach is a bit easier, one could start from an application and then learn from the application what technologies have been applied. The learners have only to learn from the applications why those technologies are applied and thus to learn the application scopes of each of these technologies.

From the perspective of the second approach – starting from an application to learn the technologies being used for supporting such an application, one should be clear that applications are developed for different group of users and different industries.

1. Technologies for personal applications.
2. Technologies for business administration.
3. Technologies for business operations.
4. Technologies for industrial applications.
5. Technologies for car manufacturing.
6. Technologies for health care.
7. Technologies for information and communication.
8. Technologies for logistics and transportation.
9. Technologies for education.
10. Technologies for aerospace industry.

11. Technologies for financial industry.
12. Technologies for smart home.
13. Technologies for smart cities.
14. Technologies for homeland security.
15. Technologies for research.

For each of the above categories of technologies, how many technologies in them you can name of? How many technologies in them you know how to use? How many of them you really understand their working principles?