T2 2023: ICT710 IT Governance and Emerging Technologies

Tutorial 1

Name:
Student ID:

1. Research and identify two companies that are using an IT Governance framework. What IT Governance framework are they using?

Ans: The two companies that uses IT governance framework are described below:

IBM: IBM is known for using the COBIT (Control Objectives for information and Related Technologies) framework for IT governance. COBIT was developed by Information Systems Audit and Control Association (ISACA).

Microsoft Azure: Microsoft Azure is a platform developed by Microsoft which is designed to manage applications across multiple clouds, on-premises, and at the edge, with the tools and framework. IT Governance framework used by Microsoft Azure is Microsoft Operations Framework (MOF). It provides guidance on how to plan, deliver, operate, and support IT services in a consistent and efficient manner.

2. What do you understand by IT Governance, Data Governance, and Information Governance?

Ans**:** **IT Governance:** It is a formal framework that provides a structure for organizations to ensure that IT investments support business objectives.

Data governance: It is the execution and enforcement of authority over the definition, production and usage of data.

Information governance: It is how an organization maintains security, complies with regulations and laws, and meets ethical standards when managing information.

3. What is your understanding of an emerging Technology? List 5 emerging technologies and brief each of them in 100 words.

Ans: The term 'Emerging technology' describes a new technology, but it may also refer to the continuing development of an existing technology. Usually it indicates a technology that has huge market demand or has the potential for greater market demand. Five emerging technologies are:

Agricultural robotics: An agricultural robot is a robot deployed for agricultural purposes. The main area of application of robots in agriculture today is at the harvesting stage. Emerging applications of robots or drones in agriculture include weed control, cloud seeding, planting seeds, harvesting, environmental monitoring and soil analysis. According to Verified Market Research, the agricultural robot's market is expected to reach $11.58 billion by 2025.

Fruit picking robots, driverless tractor / sprayers, and sheep shearing robots are designed to replace human labour. In most cases, a lot of factors have to be considered (e.g., the size and colour of the fruit to be picked) before the commencement of a task. Robots can be used for other horticultural tasks such as pruning,

Arcology:

Arcology, a portmanteau of "architecture" and "ecology", is a field of creating architectural design principles for very densely populated and ecologically low-impact human habitats. The term was coined in 1969 by architect Paolo Soleri, who believed that a completed arcology would provide space for a variety of residential, commercial, and agricultural facilities while minimizing individual human environmental impact. These structures have been largely hypothetical, as no arcology, even one envisioned by Soleri himself, has yet been built.

The concept has been popularized by various science fiction writers. Larry Niven and Jerry Pournelle provided a detailed description of an arcology in their 1981 novel Oath of Fealty. William Gibson mainstreamed the term in his seminal 1984 cyberpunk novel Neuromancer, where each corporation has its own self-contained city known as arcologies. More recently, authors such as Peter Hamilton in Neutronium Alchemist and Paolo Bacigalupi in The Water Knife explicitly used arcologies as part of their scenarios. They are often portrayed as self-contained or economically self-sufficient.

Li-Fi:

Li-Fi (also written as Li-Fi) is a wireless communication technology which utilizes light to transmit data and position between devices. The term was first introduced by Harald Haas during a 2011 TEDGlobal talk in Edinburgh.

Li-Fi is a light communication system that is capable of transmitting data at high speeds over the visible light, ultraviolet, and infrared spectrums. In its present state, only LED lamps can be used for the transmission of data in visible light.

In terms of its end user, the technology is similar to Wi-Fi — the key technical difference being that Wi-Fi uses radio frequency to induce a voltage in an antenna to transmit data, whereas Li-Fi uses the modulation of light intensity to transmit data. Li-Fi is able to function in areas otherwise susceptible to electromagnetic interference (e.g. aircraft cabins, hospitals, or the military).

Laser Video display:

Laser colour television (laser TV), or laser colour video display, is a type of television that utilizes two or more individually modulated optical (laser) rays of different colours to produce a combined spot that is scanned and projected across the image plane by a polygon-mirror system or less effectively by optoelectronic means to produce a colour-television display. The systems work either by scanning the entire picture a dot at a time and modulating the laser directly at high frequency, much like the electron beams in a cathode ray tube, or by optically spreading and then modulating the laser and scanning a line at a time, the line itself being modulated in much the same way as with digital light processing (DLP).

The special case of one ray reduces the system to a monochrome display as, for example, in black and white television. This principle applies to a direct view display as well as to a (front or rear) laser projector system.

Laser TV technology began to appear in the 1990s. In the 21st century, the rapid development and maturity of semiconductor lasers and other technologies gave it new advantages.

4D Printing:

4-dimensional printing (4D printing; also known as 4D bioprinting, active origami, or shape-morphing systems) uses the same techniques of 3D printing through computer-programmed deposition of material in successive layers to create a three-dimensional object. However, in 4D printing, the resulting 3D shape is able to morph into different forms in response to environmental stimulus, with the 4th dimension being the time-dependent shape change after the printing. It is therefore a type of programmable

matter, wherein after the fabrication process, the printed product reacts with parameters within the environment (humidity, temperature, voltage, etc.) and changes its form accordingly.

Reference: Subject Coordinator's self-developed.