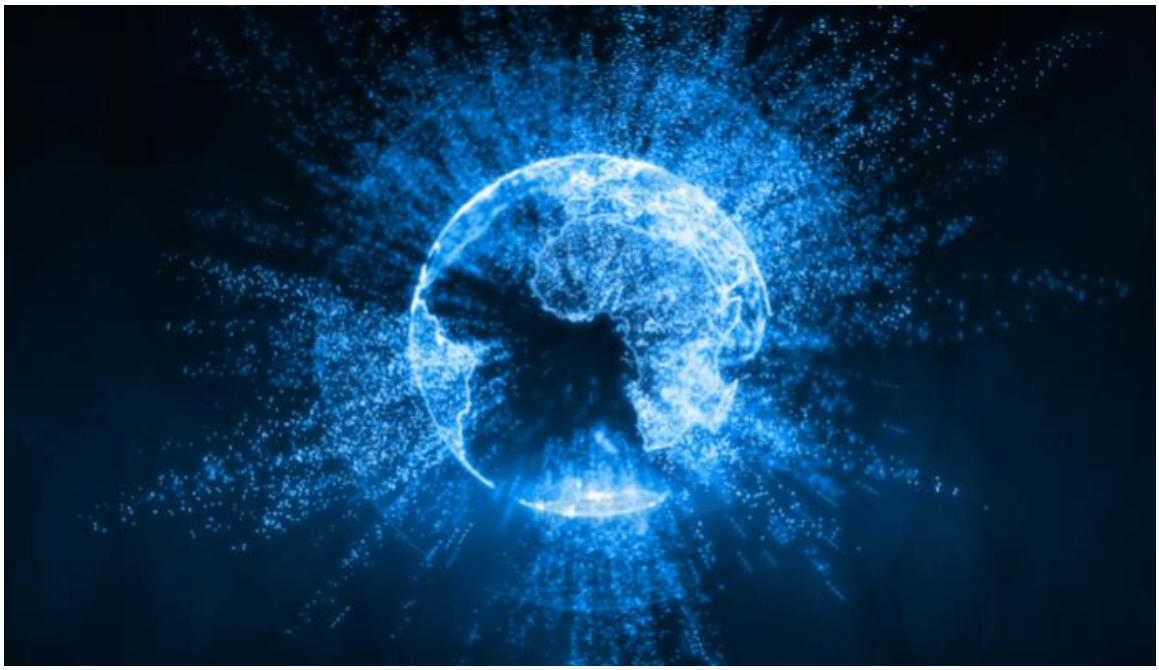

4TH INDUSTRIAL REVOLUTON

NAME: MUHAMMAD ALIF IRFAN BIN ROSLI

CLASS: 1/SCSP-02

DATE: 18 SEPTEMBER 2017

LECTURER NAME : DR. CHAN WENG HOWE

TABLE OF CONTENT

INTRODUCTION TO 4TH INDUSTRIAL REVOLUTION

"We stand on the brink of a technological revolution that will fundamentally alter the way we live, work, and relate to one another. In its scale, scope, and complexity, the transformation will be unlike anything humankind has experienced before. We do not yet know just how it will unfold, but one thing is clear: the response to it must be integrated and comprehensive, involving all stakeholders of the global polity, from the public and private sectors to academia and civil society." Professor Klaus Schwab.

Firstly, Professor Klaus Schwab is Founder and the Chairman of the World Economic Forum who explain to us that 4th Industrial Revolution has just begun and we need to be ready for the future innovation which starts a competition of technologies between countries. During 90s era, we live in 3rd Industrial Revolution which the technology based on the use of electronics and Information Technology to automate production.

There are some reasons that leads to beginning of 4th Industrial Revolution in a short period of time between 3rd Industrial Revolution, 2nd Industrial Revolution and 1st Industrial Revolution which is because current industries are multifaceted and we are always interconnected to the world. The technologies in this world are getting more advance which leads to begets of new and capable technologies. Besides, it involves the transformation of entire systems across countries, companies. Industries and society.

INDUSTRY 4.0

Industry 4.0 is the current vision of manufacturing. In high technology manufacturing, all the machines, raw materials and computers will communicate within Internet of things (IoT) which the connections are with Cyber-Physical System (CPS) where the data can be transferred and will cooperatively drive the production. Products find their way independently through the production process. The objective of this revolution is to create highly flexible, individualized and resource-friendly mass production.

Internet of Things (IoT) and Cyber-Physical System will always intercorrelated in 4th Industrial Revolution. The Internet of Things is based on connections between physical assets through which data can be transferred and this communication are based on normal internet protocols or dedicated protocols. Cyber-Physical System (CPS) are based on connectivity but run on complex analytics and the knowledge inferred from the data, control commands get sent to the physical asset. So, as it happens for 24 hours, the devices that we carry around and the cars that we drive also will be generating the data. For example, hybrid cars which is controlled by a computer inside it. Many of the products and services we have will be generating the data. So, the Internet of Things (IoT) will become an infrastructure for Cyber-Physical Systems possible.

Based on the research, the current innovation and manufacturing technologies will be limiting the job opportunity and it also will draw on new jobs.

THE COMPONENT OF INDUSTRY 4.0

INTERCONNECTED	INSTRUMENTED	INTELLIGENCE
Connectivity – All devices are connected through information network. The data are gathered and processed at the network or centrally.	**Data-** Any devices that have censors, actuators and software that generate data	**Decision Making-** Independent machines, data analytics and cognitive computing and move toward autonomy.

INDUSTRY 4.0 EMPOWER

DESIGN	MAKE	USE
PREDICT – Design new products based on utilisition of existing products and market reaction to concept	***Optimize*** - predictive maintenance of production lines optimizes uptime and maximises throughout	***Sensory*** - new ways for humans to interact digitally with machines through voice, sight, touch and movement
Integrate - use of existing products by equipping them with censors to bring them into the connected environment	***Fulfill*** - meet market demands by providing what is most utilised	***Satisfy*** - predictive maintenance of products assures optimal usability and availability.
Innovate - data form the censors can guide equipment usage and new product or service design based on customer use and use across a network	***Employ*** - new roles for product and experience designers, applications developers, data scientist, network production, implementation and support	

EDUCATION 4.0

A quick action is needed as “industry 4.0” has started to fulfill manufacturer’s job specification since machines and human will be working together. In a way “Digital Natives” will keep on changing as we are moving towards growing technology which is the 4th Industrial Revolution. There are some ways to follow the current 4th Industrial Revolution in Education that we practice

TRENDS IN EDUCATION 4.0

TRENDS	EXPLAINATION
Mentoring will become more important	In 20 years, students will incorporate so much independence in to their learning process, that mentoring will become fundamental to student success. Teachers will form a central point in the jungle of information that our students will be paving their way through. Though the future of education seems remote, the teacher and educational institution are vital to academic performance.
Data interpretation	Though mathematics is considered one of three literacies, it is without a doubt that the manual part of this literacy will become irrelevant in the near future. Computers will soon take care of every statistical analysis, and describe and analyse data and predict future trends. Therefore, the human interpretation of these data will become a much more important part of the future curricula. Applying the theoretical knowledge to numbers, and using human reasoning to infer logic and trends from these data will become a fundamental new aspect of this literacy
Field experience	Because technology can facilitate more efficiency in certain domains, curricula will make room for skills that solely require human knowledge and face-to-face interaction. Thus, experience in 'the field' will be emphasized within courses.Schools will provide more opportunitiesfor students to obtain real-world skillsthat are representative to their jobs. This means curricula will create more room for students to fulfill internships, mentoring projects and collaboration projects
Different time and place	Students will have more opportunities to learn at different times in different places. E-Learning tools facilitate opportunities for remote, self-paced learning. Classrooms will be flipped, which means the theoretical part is learned outside the classroom, whereas the practical part shall be taught face to face, interactively.

UTM 4TH INDUSTRIAL REVOLUTION JOURNEY