Impact of information technology on the military

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IMPACT OF INFORMATION TECHNOLOGY IN THE ROYAL ARMOUR CORPS

IT, stands for " Information Technology," and is pronounced " I. T." It refers to anything related to computing technology, such as networking, hardware, software, the Internet, or the people that work with these technologies. Many companies now have IT departments for managing the computers, networks, and other technical areas of their businesses. IT jobs include computer programming, network administration, computer engineering, Web development, technical support, and many other related occupations. Since we live in the " information age," information technology has become a part of our everyday lives. That means the term " IT," already highly overused, is here to stay.

What is information? This is processed data with a meaning or an organized, meaningful and useful interpretation of data. And what is technology? Technology is humans using objects (tools, machines, systems, and materials) to change the natural and human-made environment.

Technology has always been an important part of war. Today, with information technology situated as the defining technology of our age it should be no surprise that IT (information technology) is a central part of war making. In fact, the US military has officially determined that information is the main " force multiplier" in battle, more important than numerical superiority or force of fire, the old standards. This is because, in the US military's view, we now have the information technologies that cannot just make a crucial difference in battle, in terms of precision weapons,

intelligence, and command and control, but that these technologies might actually allow the " fog" (uncertainly) of war to be dispelled so that total, almost painless victories, might be won against many opponents.

The aim of this paper is to explain the impact of information technology to the Royal Armour Corps and does it giving any advantages to the corps.

Before we go any further on this topic, we need to know the history of this information technology. Information technology has been around from a long, long time ago. Basically as long as people have been around, information technology has been around because there were always a lot of ways to communicate through technology available at that point in time. There are four main ages that divided up the history of information technology. Only the latest age (electronic) and some of electromechanical age really affects us today, but it is important for us to learn about how we got to the point we are at with today technologies.

There are four stages revolution on the information technology:

a. Premechanical

b. Mechanical

c. Electromechanical

d. Electronic

The premechanical age is the earliest age of information technology development. It can be defined as time in between 3000 B. C. and 1450 A. D. We are talking about a long, long time ago. Humans first started

communicating between each other using language or simple picture drawings known as petroglyphs which were usually carved on the rock. Early alphabets were developed such as the Phoenician alphabet.

As alphabets became more popular and more people were writing information down, pens and paper began to be developed by humans. In the early, it started off as just marks in wet clay, but later on paper was created out of the papyrus plant. The most popular kind of paper produced is probably made by the Chinese who made it out of rags.

Now that people were writing a lot of information down, they needed ways to keep it in a permanent storage. This is when the first books and libraries are developed between those times. You have probably heard about the Egyptian scrolls which were popular ways to write down information to save. Some groups of people actually binding all the paper together into a book-like form.

The first numbering system used is during this period of times. Around 100 A. D. was when the first 1 to 9 system was created by people from the India. However, it was not until 875 A. D. (775 years later) that the number 0 was invented. And now that numbers were created, people wanted stuff to do with them so they created the calculators. A calculator was the very first sign of an information processor known. The popular model of calculator during that time was the abacus.

The mechanical age is when we first start to relate the connections between our current technology and its ancestors. The mechanical age can be defined as the time between 1450 A. D. and 1840 A. D. A lot of new technologies are

developed as there is a large explosion in interest with this area. Technologies like the slide rule (an analog computer used for multiplying and dividing numbers) were created. Blaise Pascal has invented the Pascaline which was a very popular mechanical computer during that time. Charles Babbage has developed the difference engine which can tabulate polynomial equations using the method of finite differences.

There were lots of different machines created during that period of times and while we have not yet gotten to a machine that can do more than one type of calculation in one, like our modern-day calculators, we are still learning on about how all of our all-in-one machines started from the beginning. Also, if you look at the size of the machines invented during that era compared to the power behind them it seems (to us) that it is absolutely ridiculous to understand why anybody would want to use them, but to all the people living in that time, ALL of these inventions were HUGE.

Now we are finally getting close to some technologies that resemble our modern-day technology nowadays. The electromechanical age can be defined as the time between 1840 A. D. and 1940 A. D. These are the beginnings of the telecommunication. The telegraph system was created in the early 1800s. Morse code was created by Samuel Morse in the 1835. The telephone (one of the most popular forms of communication ever made) was created by Alexander Graham Bell in the 1876. The first ever radio were developed by Guglielmo Marconi in 1894. All of these were extremely crucial emerging technologies that have led us to a big advance in the information technology field.

The first large-scale automatic digital computer ever in the United States was the Mark 1 computer created by Harvard University around 1940. This computer was 8ft high, 50ft long, 2ft wide, and weighed 5 tons; it is totally HUGE and heavy. It was programmed by using punch cards. How does your PC today match up to this hunk of metal? It was from these huge machines that people began to look at downsizing all of the parts available to first make them usable by businesses and eventually in your own home.

The electronic age is what we currently live in nowadays. It can be defined as the time between the 1940 until now. The ENIAC was the first high-speed, digital computer that capable to be reprogrammed to solve a full range of computing problems. This computer was designed to be used by the U. S. Army for the artillery firing tables. This machine was even bigger than the Mark 1 taking around 680 square feet and weighing 30 tons. It mainly used the vacuum tubes to do its calculations.

There are 4 main sections on digital computing. The first was the era of using vacuum tubes and punch cards like the ENIAC and Mark 1. Rotating magnetic drums were used for the internal storage. The second generation replaced the vacuum tubes with transistors, punch cards were replaced with the magnetic tape, and rotating magnetic drums were replaced by magnetic cores for internal storage of the computers. Also during this time, a high-level programming language was created such as FORTRAN and COBOL. The third generation replaced the transistors with integrated circuits, magnetic tape was still used throughout all computers, and the magnetic core turned into metal oxide semiconductors. An actual operating system was showed up during this time along with the BASIC advanced programming language. The

fourth and latest generation has brought in the CPUs (central processing units) which contained memory, logic, and the control circuits all on a single chip. The personal computer was developed then (Apple II). The graphical user interface (GUI) was also developed. There is a lot more happened to all of these generations and ages but all we need to know is a just a rough overview on this. There are several characteristic of good information and technology. The following are all the characteristics.

Good information:

- It has to be accurate

- Must be relevant to basic purposes

- Complete in respect to the key elements of the problem

- It has to be Timely (should be communicated in time to be used)

- It has to be consistent and reliable

- It has to be Up-to-date

- Easy to understand

- It has to be tailored to the needs of managers and end users.

Technology:

- Technology is human knowledge

- Technology uses tools, materials and systems.

- Its application will result into artifacts (human-made things)

- Technology is developed by people to modify their environment.

Information technology is important in the military operation including the Royal Armour Corps. These technologies convenience are connecting the commander and their subordinates. The connection is very important since

both of them needs to communicate between each other to locate the position of the enemy, their own location, a place to make a hide and other information that they need to know and acknowledge.

For the improvements that Malaysian Army had done for the Royal Armour Corps is the new installments of the SOTAS. It stands for Signal On Board Two Wire Audio System. This radio advantages is that it have a crystal clear communications, the size, weight and power that can be produced by this radio, the interoperability of the radio and many other feature that can gives us a boost for using it. SOTAS consists of a family of modular components that can be assembled and called to create perfectly fitting configurations for all vehicle types and missions. A light vehicles intercom only requires a single SOTAS unit. Larger and more complex systems are created by adding User Stations, Network Nodes, software packages and hardware option modules.

Other than the SOTAS unit, Malaysian Army have made an upgrades for the PT-91M (Pendekar) tank by equipping it with a Battlefield Managements System. The key features of this new system is that it provides automatized reporting and graphical orders dissemination, integrated to secure data communications, IP interfaces for other communications media, peripheral interface for sensor displays. The capabilities for Reconnaissance, Surveillance and Target Acquisition are also the main key features that made Malaysia to buy the systems. The main characteristics of this systems is the integrated vehicular station for sharing situational awareness, can adapt and customize functionalities to roles and missions, scalable from battalion to dismounted soldier and mission preparation package with relevant

cartography tools. The growth improvements of these information technologies have lead us to a new stage of warfare which is the information warfare.

Most modern political and military C2 systems are based on high speed communications and computers. It follows that this information infrastructure, also known as an " infosphere", will be the arena in which information warfare is waged. Any system or person who participates in the C2 process will be a potential target in an IW campaign. All of the countries have improved their information technology systems just to compete with other armed forces to secure their communications and prevents others from sabotaging it. Information warfare, simply put, is an orchestrated effort to achieve victory by subverting or neutralizing an enemy command and control (C2) system, while protecting use of C2 systems to coordinate the actions of friendly forces. A successful IW campaign seizes initiative from an enemy commander; the IW campaign allows allied forces to operate at a much higher tempo than an enemy can react to.

The threat that already being posed by other countries is significantly high, since they have a far more advanced technology such as the ability to jam the communication by using aircraft as for the EA-6B Prowler. The aircraft is the primary tactical jamming aircraft of the US Navy, US Air Force and the US Marine Corps. So we need a prevention action from this kind of jamming method so that our information is not cut out and can be secured. Information is very important for the military since it can immobilize the entire forces down. Without the importance of information technology awareness, we will always take it for granted and not looking this as a major

threat. While other countries have taken a big steps in improving their information and communications security. They have seen this problem as a major threat that can jeopardize their operations if they make it vulnerable to others and to let others take advantages of it.

Information Warfare has significant implications for modern military theory. Under Information Warfare, the enemy soldier no longer constitutes a major target. It will focus on preventing the enemy soldier from talking to his commander. Without coordinated action, an enemy force becomes an unwieldy mob, and a battle devolves to a crowd-control issue. In the not too distant future, computer weapon systems will conduct " software strikes" against the enemy infosphere to disrupt command and control. Targets will be chosen for military, political or economic significance. IW opens new doors throughout the spectrum of conflict to achieve tactical, operational and strategic objectives. Malaysian Army needs to make their information security is at a high level just to prevent the enemy from taking an advantages from our communications problems.

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