**GIS and Nanotechnology in Defense**

**What is nano technology**

It is the technology which revolves around us but for its microscopic subjects is not mainstream.

It is used in various computing circuits especially Defense.

How Nanotechnology Works

There's an unprecedented multidisciplinary convergence of scientists dedicated to the study of a world so small, we can't see it -- even with a light microscope. That world is the field of nanotechnology, the realm of atoms and nanostructures. Nanotechnology i­s so new, no one is really sure what will come of it. Even so, predictions range from the ability to reproduce things like diamonds and food to the world being devoured by self-replicating nanorobots.

Nanotechnology is helping to considerably improve, even revolutionize, many technology and industry sectors: information technology, energy, environmental science, medicine, homeland security, food safety, and transportation, among many others. Described below is a sampling of the rapidly growing list of benefits and applications of nanotechnology.

Most benefits of nanotechnology depend on the fact that it is possible to tailor the essential structures of materials at the nanoscale to achieve specific properties, thus greatly extending the well-used toolkits of materials science. Using nanotechnology, materials can effectively be made to be stronger, lighter, more durable, more reactive, more sieve-like, or better electrical conductors.

***I.T. USE IN FORCES***

**ARMY :**

India armed forces the Indian army is developing high tech. PC based was games to train the officers to tackle real bottle-like solutions. The software is jointly developed by Indian army and defense research and development againstion.

**NAVY :**

The Indian Navy recently set up an information war face squadram. Recently the Indian navy organised a lecture ‘I.T.’ for a 21st century navy in Mumbai. According to the then chief of navel staff admiral Vishu Bhagwat the navy has accorded high priority to I.T. in its budget and acknowledge that the advent of such latest technologies many field to corresponding change in its command and contrast structure.

To counter the perceived threats, Indian Defence Forces must be in possession of diverse range of weapons including various class of missiles, an excellent networked ISTAR system, a strong Air Force with flying assets well supported by Early warning systems, a strong army supported by ground based weaponry with a powerful logistics support and definitely a strong naval fleet to protect the littoral waters and carry out deep sea offensive operations. The last but not the least is to develop very strong training mechanisms to ensure all-time preparedness as well as to reduce the cost of training using live platforms.

compelled India to source technology from outside. India is one of the largest defence equipment importers, accounting for more than 14 per cent of global arms imports during 2009-13, Stockholm International Peace Research Institute (SIPRI). True indigenization starts with developing home-grown technology which is commercially viable and easily deployable.

GIS(Geographic Information System)

During operations in East Timor in 1999, soldiers were reportedly unable to locate parts and supplies that had been shipped in to support them.

There are many uses computers in Defence such as:

1) Controlling UAV or unmanned air-crafts an example is Predator. If you have cable I would recommend watching the shows “Future Weapons" and “Modern Marvels". The show future weapon gives an entire hour to the predator.

2) They are also used on Intercontinental Ballistic Missiles (ICBMs) that uses GPS and Computers to help the missile get to the target.

3) Computers are used to track incoming missiles and help slew weapons systems onto the incoming target to destroy them.

4) Computers are used in helping the military find out where all their assets are (Situational Awareness) and in Communications/Battle Management Systems.

5) Computers are used in the logistic and ordering functions of getting equipments to and around the battlefield.

6) Computers are used in tanks and planes and ships to target enemy forces, help run the platform and more recently to help diagnose any problems with the platforms.

7) Computers help design and test new systems.

The silicon transistors in your computer may be replaced in ten years by transistors based on carbon nanotubes. This is what scientists at the University of Gothenburg are hoping -- they have developed a method to control the nanotubes during production.

Faster and smaller

The amazing development in computer power that has taken place after the invention of the integrated circuit in the 1950s has been made possible by the transistor, which is the most important component of all processors, becoming ever-faster.

Increase the speed

The most common semiconductor material in transistors is silicon, since it is cheap and easy to process. But silicon has its limitations. As the size of the transistors is reduced in order to increase their speed, problems arise that lead to, among other things, increased energy consumption and large variation in the transistor properties.

Electric guidance

"Carbon nanotubes grow randomly and it is not possible to control either their position or direction. Therefore I have applied an electrical field to guide the tubes as they grow," says Johannes Svensson.

Nanotech in Robotics

It is an important factor in the development of robots and which is inturn finding its place with everyday advancements in the field of defence.

Defense of a country is ought to be the strongest as it a back-up for the whole country. Its computing systems needs to meet the demands of the high tech data usage and also be able to cope with multiple hypothetical commands and situations at the same pace. The defense circuits ought to be far better than the country’s computing circuit open to public to maintain the security status.

To keep up with these technological advancements a wise usage of money is most prospective.

In conclusion: ENDLESS POSSIBILITIES THAT NEED TO BE HARNESSED AND ARE MADE INTO USE FOR THE BETTERMENT AND PROTECTION OF OUR SOLDIERS IN BATTLE FIELDS. BECAUSE “ THIS NATION WILL REMAIN THE LAND OF FREE ONLY ,SO LONG AS IT IS HOME OF THE BRAVE”