"INDUSTRY 4.0 : THE FUTURE OF THE WORK"

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The Fourth Industrial Revolution (4IR or Industry 4.0) is the ongoing automation of traditional manufacturing and industrial practices, using modern smart technology. Large-scale machine-to-machine communication (M2M) and the internet of things (IoT) are integrated for increased automation, improved communication and self-monitoring, and production of smart machines that can analyze and diagnose issues without the need for human intervention.

- From Steam Power to the Internet of Things – Industry 4.0

The 1st industrial revolution brought mechanization, the 2nd led to development of the assembly line and mass production, the 3rd encompassed digitization, and now the networking of real and virtual worlds is gradually becoming the Internet of Things ("IoT"). The 4th industrial revolution or Industry 4.0 will decisively transform manufacturing processes and business models.

- Internet of Things as the Foundation of Industry 4.0

The IoT also interconnects machines and products in our daily lives – providing a form of constant communication among machines that serves as the foundation of the fourth industrial revolution.

- Interfaces Between Digital and Real Worlds

Cyber-physical systems (CPS) define the technological basis for combining IT (informatics, software components) and the physical world (mechanical and electronic elements). Through the IoT, CPS enables data and processes to be fully captured, analysed, and optimized in real time.

- The Smart Factory – Intelligent and Decentralized

Plants are developing into smart factories though the use of networked, intelligent machines, robots, products, and materials. Interoperable machines and subsystems apply

appropriate data analysis to self-direct manufacturing processes.

- A smart Factory has numerous Advantages

Flexibility and customization: A smart factory comprises intelligent value chains that enable faster and focused integration of specific customer requirements or market developments into each life phase of a product – i.e. from development to manufacturing, utilization, maintenance, and recycling.

Predictive maintenance: A smart factory recognizes wear and tear and identifies problems with machines before they lead to downtime. Relevant systems thus initiate just-in-time maintenance or repairs and assist in taking appropriate actions, before the problem becomes acute.

Lower manufacturing costs: networking your enterprise empowers you to not just optimize specific production steps, but the entire value chain. Real time access to information allows you to control manufacturing processes outside of your enterprise, while conserving energy and resources.

- Challenges of Industry 4.0 – Opportunities and Risks

Industry 4.0 encompasses a multiplicity of facets that play a critical role and require action. These include R&D, standards/norms, and security. Increasing digitization and industrial networking are giving rise to ever more interfaces between relevant actors - with a growing need for common standards/norms among diverse industrial sectors. Beyond standardization, data privacy and the security of your enterprise's in-house networks (security by design) embrace the biggest challenges in implementing Industry 4.0 strategies, because fully networked manufacturing has to be secured against cyber attacks. From a data privacy perspective, the key question is the sensitivity of your data.

Thus we should study and imbibe knowledge od emerging technologies such Industrial Internet of things (IIOT), Artificial Intelligence (AI), Machine Learning (ML), Cyber security, Data science etc. as they are the Foundation Pillars of Industry 4.0 which is the Future Of The Work.