

## **A Study on Fourth Industrial Revolution of India to “Envision 2030”**

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### **Abstract:**

India is a young country expecting to be the third biggest with 10 trillion-dollar economy by 2030 and yet has no alternative to be the leader in the Fourth Industrial Revolution. The idea of ‘Industry 4.0’ or fourth industrial revolution is going to renovate Indian manufactures, designs and will refurbish the products. Incredible India is computed to have entered in industry revolution 4.0 from industry revolution 1.0 in 1784. Development in the last 5 years it signifies that we have stepped into the world of advanced robotics and smart sensors which will further reshape beyond imagination in the next 10 years. One imagination of 2030 takes us to the world which envisage our clothes connected with the internet, car with 3D printing, roads without traffic light, 1 trillion connections with sensor, block-chain that help government in tax collection and may be just 3 robots effectively replacing 10,000s' of hands.

**Key words:** Industry 4.0, Smart Sensor, Block Chain

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### **Introduction:**

Forth Industry resolution is relied upon to change fabricating in India by carrying operational efficiencies to assembling ventures like car, electrical and hardware. India has a one of a kind chance to inventively clear its own street to Smart Manufacturing. It can skirt a few stages that different nations received in their advancement from an agrarian culture to their present phase of improvement. There will never be a way out from acclimatizing standards of Industry 4.0 with the "Make in India" activity, if Indian Manufacturing needs to win against worldwide challenge. German government reported "Industry 4.0" while governments in China and India have their very own engaged projects, "Made in China 2025" and "Make in India" individually. Thought is to energize worldwide, just as national organizations to fabricate their items in India. With a plenty of devastating guidelines and immature framework, the Government is concentrating more on empowering arrangements and improving foundation for certain key divisions. As per IBEF, the Government of India has set

a driven focus of expanding the commitment of assembling yield to 25 percent of Gross Domestic Product (GDP) by 2025, from 16 percent right now.

Industry 4.0 has profoundly keen associated frameworks that make a completely computerized esteem chain. It especially depends on digital physical creation frameworks that coordinate correspondences, IT, information and physical components and wherein these frameworks change the conventional plants into brilliant processing plants. Here the objective is that the machines talk to other machines and products and information is processed and distributed in real time resulting in profound changes to the entire industrial ecosystem. Every single conspicuous country is setting out on significant activities to advance assembling by receiving the progressions in Internet and Information Technology fields.

### **Journey of Industrial Revolution**

Industry 1.0 - Industrial revolution started in India with beginning of 18<sup>th</sup> century. Here mechanization, steam and water power and weaving loom created to help specialists. As creation capacities expanded, business likewise developed and changed over from individual cabin to production line and proprietors dealing with their very own and their neighbors where to be sorted out with proprietors, chiefs and workers serving clients. This revolution named as Industry 1.0.

Industry 2.0 - By the end of the 19<sup>th</sup> century, the era named as Industry 2.0 where electricity became the primary source of power. It was at ease to use than water and steam and enabled businesses to concentrate power sources to individual machines. Mass production of goods using assembly lines became conventional. In the long run power sources machines were designed which were more portable. This period additionally observed the advancement of a digit of the executives' programs that made it conceivable to build the proficiency and adequacy of generation offices. American mechanical designer Frederick Taylor acquainted methodologies of considering occupations with advance laborer and working environment strategies. At last, just-in-time(JIT) and lean manufacturing doctrines added to polished the way in which production companies could improve their quality and output.

Industry 3.0 - 1969 was the era of first computer when Industrial revolution 3.0 began and increases the involvement of hardware and IT (Information Technology) to advance computerization underway. The discovery and assembly of electronic devices, such as the transistor, integrated circuit chips, made it possible to more fully automatic individual machines to supplement or replace operators and transform it into robots.

Assembling and robotization progressed extensively because of Internet access, availability and sustainable power source. Incorporated frameworks, for example, material requirements planning, were supplanted by big business assets arranging devices that empowered people to plan, timetable and track item courses through the manufacturing plant. This period likewise brought forth the advancement of programming frameworks to profit by the electronic equipment. Strain to diminish expenses made numerous makers move segment and get together activities to comfort nations. The all-inclusive geographic scattering brought about the formalization of the idea of inventory network the board.

Industry 4.0 – The present time is of the Fourth Industrial Revolution, this is the time of shrewd machines, stockpiling frameworks and creation offices that can autonomously trade data trigger activities and control each other without human mediation. This trade of data is made conceivable with the Industrial Internet of things (IIoT) as we probably am aware it today.



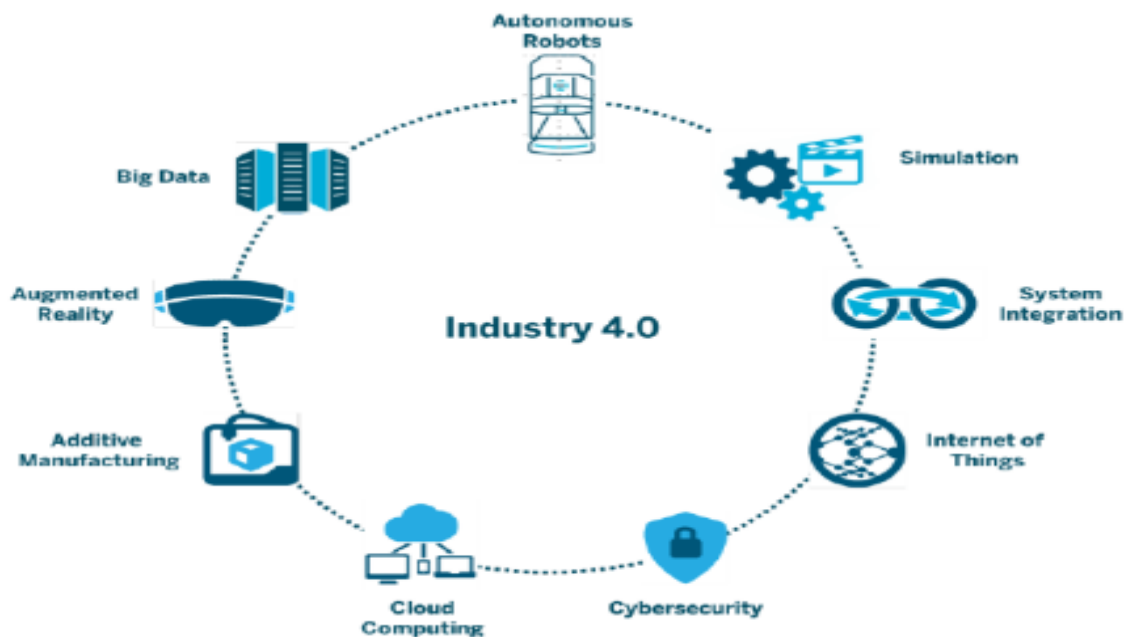
With quick advancement in the fields of data innovation where Indian Institute of Science (IISc) is building India's first savvy production line in Bengaluru with a seed financing from the Boeing Company. Bosch, a German auto part producer will start usage of keen assembling at its 15 focuses in India by 2018. General Electric has put USD 200 million in the office in its just multi-modular industrial facility in India where carefully interlinked supply chains, circulation systems, and adjusting units structure some portion of this astute environment.

A developing number of old economy organizations are utilizing innovations, for example, web of-things (IoT) and computerized reasoning (AI) to extend their advanced presence, taking on IT majors and global diversified conglomerates which are also aggressively muscling into this space. Leading domestic industrial and engineering companies such as Larsen & Toubro, Reliance

Industries and the Tata group, as well as multinational firms including General Electric, Siemens and ABB all are trying to capture a share of the pie and the timing seems just right.

In this era of technology, the development of fourth industrial revolution is unbeatable and unstoppable the world is going to observe a fourth mechanical upheaval. The idea of 'Industry 4.0' has change the manner in which India makes plans and renovates the items. Driven by the intensity of huge information, high figuring limit, man-made reasoning and examination, Industry 4.0 intends to totally digitize the assembling division.

For instance, L&T has built a digital platform in-house, which seamlessly connects diverse operations, improves efficiencies and cuts decision time. In its Mumbai office, CEO SN Subramanian just walks across to a “control room” for real-time data from 400 company sites operating miles away. The smallest of data, such as the amount of electricity consumed by machines or the weight hauled by a crane at a construction site, are put together and analyzed, helping L&T take big decisions to improve performance.

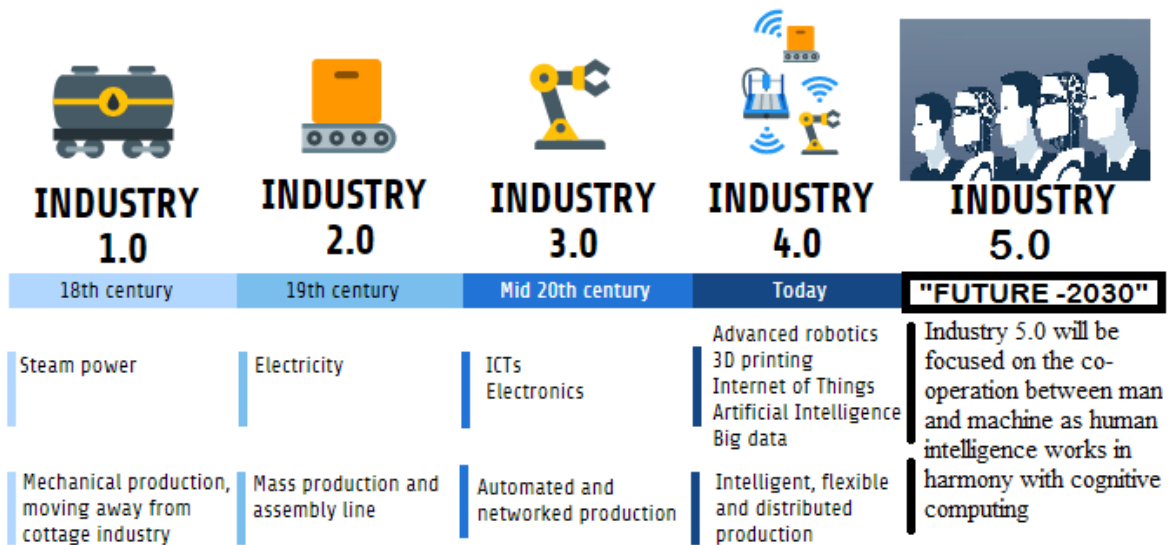


### **Key Components of Industry 4.0**

- Cloud computing
- Cognitive computing
- Autonomous driving, connected cars, car sharing
- Better Digital Customer Interface
- Big Data and IoT

*“Envisioning 2030” Where Imagining Fifth Industrial Revolution*

The unprecedented and synchronized development in artificial intelligence (AI), machine learning (ML), robotics, Internet of Things (IoT), autonomous vehicles and self-driving cars, Uber, Tesla, 3D printing, virtual and augmented reality, wearable, additive manufacturing, nanotechnology, biotechnology, energy storage and quantum computing are obscuring customary limits and making new plans of action, Alibaba, Google are the small number of multi-billion Dollar businesses created in the last 12 years.



The Fifth Industrial Revolution is future, however officially infiltrating pattern, of progress procedures coordinating towards nearer collaboration among man and machine, and methodical anticipation of waste and squandering including modern up cycling.

INDUSTRY 5.0 priorities is to use proficiently workforce of machines and individuals, in collaboration condition. It returns from virtual condition to genuine one.

Whether we like it or not, we should prepare ourselves for Industry 5.0. The term alludes to individuals working nearby robots and brilliant machines. On the off chance that that definition inferred the picture of Will Smith doing combating underhanded robots in the motion picture "I, Robot," here are a couple of things we have to think about Industry 5.0.

Industry 5.0 is about robots making people work upgraded and speedier. It alludes to the essential communication among individuals and machines. In the assembling scene, robots more often than not perform repetitive work, for example, welding and painting in vehicle production lines and stacking and emptying substantial materials in distribution centers.

**Sensor and Controller Network**

Sensors act as the gateway of the machine as it senses its surrounding physical environment. Yet they pass wrong and off base readings to basic leadership calculations due to its degradation or failure, which leads to the incorrect outputs. India also lags in promoting a strong digital culture, operational disruption from cyber security breaches and clear digital operation vision from leadership. Currently, India (27%) drops behind the global average (33%) and Asia-Pacific (36%) in terms of level of digitization.

By analyzing the current technology and its limitation and the problems associated with them some of the industries have come forward and adopted industry 4.0 technologies in order to be a strong competitor in the global market. Industry 4.0 is the one which can take the India to its next level in its development. India should benefit from it.



### **Impact of Industry 5.0**

INDUSTRY 5.0 propositions confirm affect to many areas, most notably:

- Services and business models
- Profitability of business
- Reliability and continuous increase of efficient productivity
- IT security
- Machine and Human safety
- Product lifecycles increase
- Industry value chain environmental impact decrease
- Workers’ education, skills and involvement increase
- Socio-economic factors improvement

### **Advantages in Fifth Industrial Revolution**

- Further innovation
- Effective globalization
- Resource optimization
- Efficient real time tracking
- Efficient energy utilization
- Autonomous control
- More flexibility
- Real time end to end product transparency
- Secure and reliable backup using cloud

### **Challenges**

- Challenges which have been recognized and must be illuminated for INDUSTRY 5.0 advancement
- Maturing society with low and abnormal state "Status" "Juniority" rating
- Overproduction
- Lack of straight forwardness executed in numerous procedures and enterprises
- Application of "wrong apparatuses" imagining great, doing insidious
- Dependency on IT and power
- General hesitance to change by partners

## **Conclusion**

Development of Industry 5.0 could prove to be the full realization of what the draftspersons of Industry 4.0 had only imagined of at the dawn of the 2010s. As artificial intelligence improves and factory robots assume more human-like capabilities, the interaction between computers, robots and human workers will ultimately become more meaningful and mutually enlightening.

However, India has to modify the way it has traditionally dealt with issues; the world around it is changing. As we discussed earlier fourth industrial revolution is on its way to occupy the world and likely provides large opportunities. Through Industry 4.0 it is feasible to create prolonged ecosystem with qualified employees and to bear on India’s edge in manufacturing and can orchestrate to large scale customization. Although it is very tough to manage the process centrally, if players in the system apply right levers there will be reinforced effects. Thus it is imperative to communicate the ideas that players in government and corporate sector will profit most, if an initiative of Industry 4.0 goes together.

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