

## Industry 4.0

Commonly referred to as **the fourth industrial revolution**, it is a name given to the current **trend of automation, interconnectivity and data exchange in manufacturing technologies** to increase productivity.

Industry 4.0 is a **complex Cyber-Physical Systems** which synergizes production with digital technologies, the Internet of Things, Artificial Intelligence, Big Data & Analytics, Machine Learning and Cloud Computing.

### **Background:**

There are **four distinct industrial revolutions** that the world either has experienced or continues to experience today.

1. **First Industrial Revolution:** Happened between the late 1700s and early 1800s. During this period of time, manufacturing evolved from focusing on manual labor performed by people and aided by work animals to a more optimized form of labor performed by people through the use of water and steam-powered engines and other types of machine tools.
2. **Second Industrial Revolution:** In the early part of the 20th century, the world entered a second industrial revolution with the introduction of steel and use of electricity in factories. The introduction of electricity enabled manufacturers to increase efficiency and helped make factory machinery more mobile. It was during this phase that mass production concepts like the assembly line were introduced as a way to boost productivity.
3. **Third Industrial Revolution:** Starting in the late 1950s, it slowly began to emerge, as manufacturers began incorporating more electronic—and eventually computer—technology into their factories. During this period, manufacturers began experiencing a shift that put less emphasis on analog and mechanical technology and more on digital technology and automation software.

### **Benefits and outcomes:**

Full transition to the digital factory using 'Industry 4.0' across entire value chain from design to production will help enhance productivity hugely by providing insight into production process to take the decisions in real time basis, minimizing human errors by effective monitoring to ensure that resources are put to the best utilization measured by, what is called the **Overall Equipment Effectiveness (OEE)**.

**Context:** The Ministry of Railways and Department of Science & Technology have joined hands in partnership with IIT Kanpur for taking up a unique project on '**Industry 4.0**' by launching a Pilot Project for implementation at Modern Coach Factory, Raebareli.

### **Industrial Revolution 4.0 can help in transforming India by:**

1. Alleviating poverty.
2. Better and low-cost healthcare.
3. Enhancing farmer's income.
4. Providing new technology and equipment to farmers.
5. Strengthening infrastructure, improving connectivity.
6. Improve ease of living and ease of doing business.