

### **Problem Statement Area:**

The United Nations (UN) has formulated sustainable development goals (SDGs) for achieving social, economic, and environmental sustainability. The integration of Industry 4.0 enables to achieve of the SDGs sustainably. Industry 4.0 alludes to the fourth industrial revolution, which combines fast-expanding technologies such as the Industrial Internet of things (IIoT), artificial intelligence (AI), robotics, and advanced computing to drastically alter the manufacturing environment. Industry 4.0 is represented by the four primary technologies such as i) data, connectivity, computational power, ii) Intelligent Analytics, iii) Automation and iv) advanced manufacturing technologies.

The following are broad problem areas -

### **JH 1: Villages 4.0**

#### **Description:**

The United Nations (UN) 2030 Agenda makes it clear that growth and sustainable management are not limited to urban areas, but also apply to rural and village dwellers. Furthermore, villages are the beating heart of every country; they not only support and maintain the geological environment but also have a significant impact on the economic and social ecosystems. In villages, IIoT, AI/ML, Robotics/Drones, Big Data, Blockchain, Digital Twins, AR, VR/XR, Cloud Computing, and Edge/fog computing can be used for dairy and cattle management, agriculture, governance, education, health, minor forest produce (MFP), skill development, forest monitoring & management, and more.

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## **JH 2: Cities 4.0**

### **Description:**

A city is a location where a large number of people live nearby. Cities often have governments and systems in place to maintain and provide basic services to their residents. In cities, IoT/IIoT, AI/ML, Robotics/Drones, Big Data, Blockchain, Digital Twins, AR, VR/XR, Cloud Computing, and Edge/fog computing can be utilized for water quality and supply management, waste management, air quality monitoring, streetlights, education, mobility, and other applications.

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## **JH 3: Tele-Medicines**

### **Description:**

The research, development, marketing, and supply chain of medications are all major operations in the pharmacy field. In pharmacy, IoT/IIoT, AI/ML, Robotics/Drones, Big Data, Blockchain, Digital Twins, AR, VR/XR, Cloud Computing, and Edge/fog computing can be used for quality monitoring, pharmacy analytics, smart electronic medical records, supply chain anomaly detection, electronic prescription, real-time delivery system, personalized medicine, and so on.

#### **References:**

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#### **JH 4: Highways 4.0**

##### **Description:**

The highway road transportation system is one of the modes of transportation that allows products and people to move from one place to another. In highways, the integration of IoT/IIoT, AI/ML, Robotics/Drones, Big Data, Blockchain, Digital Twins, AR, VR/XR, Cloud Computing, and Edge/fog computing can be used for smart highway lighting, smart traffic, and emergency management systems, renewable energy sources on highways, smart display, and smart reflectors, among other things.

##### **References:**

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## **JH 5: Energy Management 4.0**

### **Description:**

Renewable energy integration and energy efficiency are essential factors for achieving long-term energy sustainability and mitigating climate change. In Energy management, the integration of IoT/IIoT, AI/ML, Robotics/Drones, Big Data, Blockchain, Digital Twins, AR, VR/XR, Cloud Computing, and Edge/fog computing can be used for smart grid, smart microgrids, fault detection and diagnosis, energy trading, energy storage, energy supply chain, smart meter, smart transformer, and more.

### **References:**

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## **JH 6: Hospitality 4.0**

### **Description:**

Hospitality management is a broad term that refers to the day-to-day administration, operational, and commercial activities of hospitality organisations such as hotels, restaurants, and caterers. In the hospitality industry, the integration of IoT/IIoT, AI/ML, Robotics/Drones, Big Data, Blockchain, Digital Twins, AR, VR/XR, Cloud Computing, and Edge/fog computing can be used for speedy and accurate customer service, quality check, automation of check-in and check-out, regular monitoring of employee health and welfare, cleanliness, health and customer safety systems, and so on.

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## **JH 7: Infrastructure, Mobility & Safety 4.0**

### **Description:**

On both a local and global scale, mobility plays an essential part in everyday life. Mobility modernization would allow for the creation of a sustainable, digitally connected, and well-informed society. Integration of IoT/IIoT, AI/ML, Robotics/Drones, Big Data, Blockchain, Digital Twins, AR, VR/XR, Cloud Computing, and Edge/fog computing in Mobility can be used to improve the road environment, reduce driver distraction, promote the adoption of electric vehicles, and integrate low-power computing units into vehicular networks, among other things.

### **References:**

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## **JH 8: Arts & Humanities 4.0**

### **Description:**

The humanities and arts are disciplines that explore how the human intellect is represented. Language, music, art, literature, theatre, and poetry are all examples of these types of expressions. In Arts & Humanities, the combination of IoT/IIoT, AI/ML, Robotics/Drones, Big Data, Blockchain, Digital Twins, AR, VR/XR, Cloud Computing, and Edge/fog computing can be used for Creative and Critical thinking, Speeches, Debates, Public Discussions, Life-Skills, and so on. It develops and establishes a standard for orators and newsreaders, with a focus on personal development and presentation skills.

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## **JH 9: Industry 6.0**

### **Description:**

It is predicted that by 2050, technology will have advanced to the point of complete autonomy. The conceptual notion of Industry 6.0 incorporates innovations and developments in almost every domain. Advanced robotics, Medical healthcare and bioengineering technologies, multidimensional printing, robo-medics, assistive home-robotics, cumulative-alternative energy, and deep dive EEG are the few areas of Industry 6.0

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## **JH 10: Legal Practices 4.0**

### **Description:**

A job done primarily to provide legal advice or representation is defined as legal practice. In legal practice, the integration of IoT/IIoT, AI/ML, Robotics/Drones, Big Data, Blockchain, Digital Twins, AR, VR/XR, Cloud Computing, and Edge/fog computing can be used for digital documentation, e-hearing, legal Analytics, virtual legal assistants, virtual legal training and practices, automating creative processes, performing due diligence and research, and more.

### **References:**

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## **JH 11: Manufacturing 4.0**

### **Description:**

Manufacturing is the procedure of creating products using equipment, machines, labor, and tools. The inclination towards Industry 4.0 is realized with the integration of digitalized technologies like IoT/IIoT, AI/ML, Robotics/Drone, Big Data, Blockchain, Digital Twins, AR, VR/XR, Cloud Computing, and Edge/fog computing. The integration of these technologies can be utilized in manufacturing for predictive maintenance, real-time supply chain monitoring, quality monitoring, intelligent machinery analytics, etc.

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