

Centre for Fourth Industrial Revolution (C4IR)

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Economy

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Hyderabad witnessed the inauguration of the World Economic Forum's (WEF) Centre for Fourth Industrial Revolution (C4IR) during the concluding day of BioAsia 2024.



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About Centre for Fourth Industrial Revolution (C4IR):

- The C4IR is a **global platform for cooperation and dialogue** between **multiple stakeholders**.
- The C4IR's goal is to use **technological progress** to transform societies, economies, and industries in a **human-centered and equitable way**.
- **The C4IR's initiatives includes:** AI and machine learning, Bioeconomy, Autonomous systems, Climate and agri-tech, Data economy and policy, Digital inclusion, Digital safety and trustworthy technology.
- C4IR India: It is a collaboration between the World Economic Forum and the Government of Maharashtra, coordinated by the **National Institute for Transforming India (NITI)**.

C4IR Hyderabad:

- The **C4IR in Hyderabad** is the **world's first thematic centre** focusing on **healthcare and life sciences**.
- The C4IR's focus is on the **interplay between technology and life sciences** in the region and globally.
- It will accelerate the **development and adoption of newer technologies**, including personalized medicine, genomics, and healthcare manufacturing.
- The C4IR will also work with partners to design and scale solutions to address challenges.
- C4IR Hyderabad is the 18th centre to join the **Forum's Fourth Industrial Revolution Network**, which **spans four continents**.
 - The C4IR network began operation in **2017 in San Francisco** and also has centers in **China and Japan**.

Key Objectives and Vision

- **Job Creation and Startups:**
 - Aims to create over 10,000 **job opportunities in healthtech**.

- Seeks to **foster 20-25 emerging companies and startups.**
- **Ideation and Innovation:**
 - Aims to generate **10-25 novel ideas through its registry.**
 - Emphasizes the importance of creating a **conducive environment for innovation in healthcare.**
- **Skill Development:**
 - Vision includes **skilling nearly 50,000 local graduates over the next five to six years.**
 - The launch of a **high-throughput skilling program**, starting with medicinal chemistry and analytical chemistry.

Focus Areas of C4IR

- **Real-World Evidence:**
 - Concentrates on gathering real-world evidence to enhance decision-making in healthcare.
- **Healthcare Analytics and Informatics:**
 - Utilizes advanced analytics and informatics to derive valuable insights in the healthcare domain.
- **Software as a Medical Device:**
 - Exploration of software-based solutions for medical purposes.

Initiatives and Programs

- **Clinical Registry:**
 - Currently undergoing a pilot phase in three hospitals before **statewide implementation.**
 - Aims to **improve healthcare outcomes** and **facilitate better resource allocation.**
- **Clinical Innovation Sandbox:**
 - Under development to **foster startups and innovations.**
 - Partnerships established with 15 clinical sites to **expedite the validation of innovative products and devices.**
 - **Allows prototypes** and **products to undergo testing** in clinical settings.
- **Data Analytics Lab:**
 - Establishment to **drive innovation in clinical and wearable devices.**

About Fourth Industrial Revolution (4IR):

- Industry 4.0, also known as the **Fourth Industrial Revolution or 4IR**, signifies the upcoming stage in the **digitization of the manufacturing sector.**
- This evolution is **propelled by disruptive trends** such as the **increasing prominence of data and connectivity**, advancements in analytics, **human-machine interaction**, and **improvements in robotics.**
- **Steam** propelled the **original Industrial Revolution**, **electricity** powered the **second**, preliminary **automation and machinery** engineered the **third** and **cyber-physical systems, or intelligent computers** are **shaping the Fourth Industrial Revolution.**
- The **4IR builds upon the inventions of the Third Industrial Revolution**, also known as the digital revolution, which spanned from the 1950s to the early 2000s and introduced computers, various electronic devices, the Internet, and more.

Applications of 4IR:

- **Connectivity, data, and computational power:** Cloud technology, the Internet, blockchain, and sensors.
- **Analytics and intelligence:** Advanced analytics, machine learning, and artificial intelligence.
- **Human-machine interaction:** Virtual reality (VR) and augmented reality (AR), robotics and automation, and autonomous guided vehicles.
- **Advanced engineering:** Additive manufacturing (such as 3-D printing), renewable energy, and nanoparticles.

Applications of 4IR in Healthcare are Life sciences

- 4IR is transforming healthcare and medicine through advances in data science, AI, genetic engineering, nanotechnology, synthetic biology, and genomics.
- **Artificial intelligence:** AI involves developing algorithms and computer programs that can perform tasks that would normally require human intelligence, such as **speech recognition and visual perception**.
- **Advanced robotics:** Using advanced robotics in healthcare makes patients experience quick recovery and seamless treatment.
- **Big data:** 4IR uses vast amounts of data to train AI models, create machine learning algorithms, and automate analytics.
 - Implementing **evidence-based care** through health profiling and clinical registries.
- **High-end IoT devices:** Utilizing wearable devices for monitoring, recording, visualizing, and sharing symptoms.

Challenges:

- **Cybersecurity:** Healthcare organizations are often targets for cybercriminals because of the nature of patient information they collect and store.
- **Complex medical data:** Medical data can be complex and difficult to express in a standardized manner, making automation particularly challenging.
- **Inconsistent standards:** The rapid innovation rate in medicine can lead to inconsistencies in the application of standards, exacerbated by significant merger and acquisition activity.