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# Extended Reality (XR) Program

*This article covers "Daily current events" and the topic is about the 'Extended reality program which is in news, it covers "Science and Technology" In GS-3, and the following content have relevance for UPSC.*

**For Prelims: About Extended reality**

**For Mains: GS-3, Applications of extended reality**

**Why in news:**

The 120 businesses selected for the Extended Reality (XR) Startup Program have been unveiled by Meta and the Ministry of Electronics and Information Technology (MeitY).

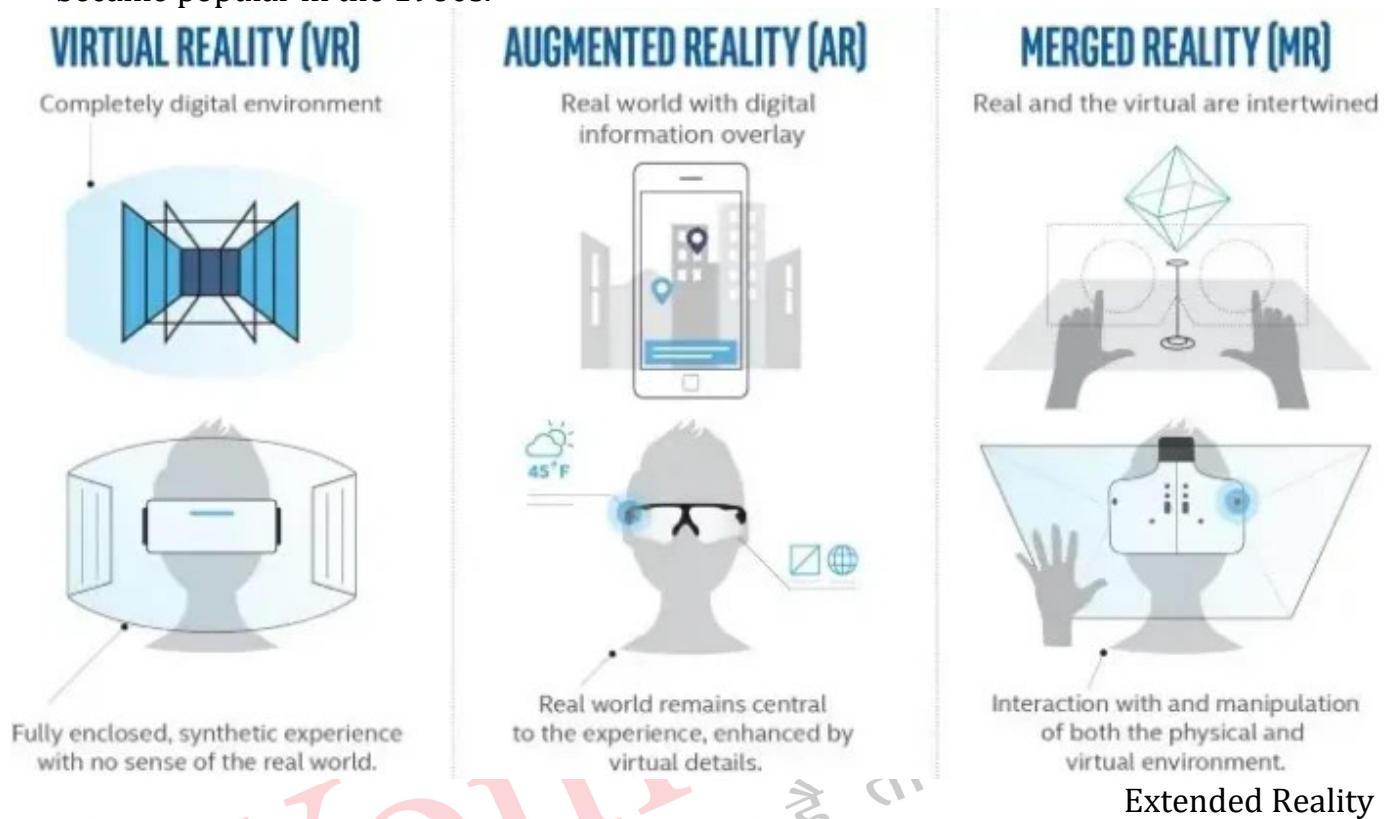
**About MeitY Startup Hub**

- The MeitY Startup Hub, which was established in 2019, is a nationwide platform aimed at supporting start-ups, intellectual property production, and technological innovation.
- MeitY Startup Hub (MSH) seeks to act as an integrative platform for incubators and businesses.
- More than 3,000 businesses have reportedly received backing from the government.

**ABOUT EXTENDED REALITY (XR)**

- Any technology that modifies reality by incorporating digital aspects into the physical or real-world environment is referred to as extended reality (XR).
- Virtual reality (VR), augmented reality (AR), and mixed reality (MR), as well as all upcoming immersive technologies that permit an extension of reality while fusing virtual graphics with real-world aspects, are all considered to be a part of extended reality.
- Human-machine interactions produced through wearables and computer technology are also referred to by this term. It comprises exemplary forms including augmented reality, mixed reality, and virtual reality as well as the regions interpolated between them.

- When Charles Wyckoff submitted a patent for his silver-halide “XR” film, designed for recording extraordinarily intense light events like nuclear explosions, the phrase first became popular in the 1960s.



## AUGMENTED REALITY

- With the use of a device like a cell phone or tablet, augmented reality (AR) overlays digital images over the real world rather than creating a new reality.
- Examples include Snapchat’s lenses and Instagram’s filters.

## VIRTUAL REALITY

- A 3D, the digital environment created entirely by computers is called virtual reality (VR).
- With the aid of specialized headgear that can produce lifelike visuals and sounds, users of VR can become totally submerged in simulated environments.
- VR experiences produced by devices like the Oculus Rift and Samsung Gear VR are a few examples.

## MIXED REALITY

- Mixed reality (MR) combines augmented reality and virtual reality. Using this technology, complex landscapes with real-time interaction between physical and digital components are created by fusing the actual and virtual worlds.

- A scene from the Iron Man movie where Tony Stark discovers a new element might serve as an illustration of MR.

## **APPLICATION OF EXTENDED REALITY**

Working remotely is made possible by XR, which gives users the impression that they are in the same room while connecting to their offices or other professionals anywhere in the world.

### **Education & Training:**

The use of XR can benefit students by enabling them to take classes from anywhere in the world from their current location. Using XR, workers and employees can be trained remotely.

### **Games and entertainment**

Although XR for entertainment and games may seem unimportant, this business category presently holds the top spot, with the XR gaming market expected to reach \$18 billion by 2023.

### **Healthcare :**

The sector may profit from VR technology in a number of ways, according to experts, including mental health, physiotherapy, drug development, and professional and patient education. Additionally, the technology encourages collaboration, especially between different locations. XR was frequently used by doctors to provide remote care throughout the pandemic.

### **Defense:**

With the use of XR technologies, military personnel can practice for potential battle situations, locate friendly soldiers or known threats, and even overlay virtual foes and obstacles as necessary for better planning. Military soldiers can navigate more readily across any terrain by superimposing virtual data over a view of the real environment.

### **e-Commerce and retail:**

Online and offline shopping are influenced by retail augmented reality and e-commerce. Customers may quickly and easily discover everything about things on display in stores. For instance, simply pointing your camera at an AR-enabled object, you may instantly get reviews and recommendations.

XR can inspire brand-new developments that let people experience products before they buy. People can test timepieces on their own wrists using Rolex augmented reality software.

## Challenges

**AVGC Task Force:** The task force recommended that the “National AVGC-XR Mission” concentrate on content production and was directed by the Secretary of the Ministry of I & B. The XR Startup Program: In order to help and accelerate XR technology startups, Meta and MeitY Startup Hub (MSH) have teamed up.

**Cost:** The greatest obstacle for businesses creating XR is cost. The XR gadgets are incredibly expensive. Because so much hardware and technology are integrated to make these gadgets, they are highly expensive to construct. If the price was greater, consumers might not be able to utilize the product, and companies producing it might not be able to increase their sales, which would discourage investors from investing in XR.

Businesses in this sector have challenges with the development of XR gadget hardware. Making hardware is a difficult task because there are so many technologies, software programs, and components involved. The equipment should not only be durable but also small and able to process a large amount of data fast and efficiently, and on top of that, the hardware should be less expensive.

**Privacy:** Users and businesses will both confront difficulties with privacy. Since XR devices must build environments depending on user requirements, many private facts may be required to build a user-rich environment. The expense of storing such data on the company’s end can be high, and consumer concerns about privacy can arise.

**Sales & Marketing:** Businesses can use XR to market their products and give customers a behind-the-scenes peek at their goods or services. Businesses might benefit from this since they wouldn’t have to spend as much on advertising and could instead offer their customers hands-on product experience.

**Housing and Real Estate:** Using XR, finding the ideal housing is simple. Since there is no requirement for a personal visit, owners may also locate potential buyers from a number of other areas. The functions of brokers would be abolished in such a scenario.

**Education and training:** XR use in this industry may be advantageous. Anywhere in the world, students can look up and select the best colleges and study locations. Anyone could learn anywhere around the world using this technology. Additionally, employing XR, workers and employees can receive remote training.

**Work from Home for Remote Areas:** Staff members can virtually experience their office or workplace, attend meetings from their homes, and even train others on how to work from their homes. XR can be utilized to enable work from home, particularly in rural or challenging locations.

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