

3. Third-gen Web

Prelims Syllabus: Science & Technology

Mains Syllabus: GS-III Science & Technology - Awareness In The Fields Of It, Space, Computers, Robotics, Nano-Technology, Bio-Technology, Pharma Sector & Health Science



Why in News?

- Web 3.0 is the next evolution of the World Wide Web, also known as the “Semantic Web.”
- While Web 1.0 was focused on providing static web pages and Web 2.0 brought about user-generated content and interactive web experiences, Web 3.0 aims to provide a decentralised, peer-to-peer web that is more intelligent, secure, and private.

Web 3 v/s Web 3.0:

- Web 3 and Web 3.0 are often used interchangeably to refer to the next generation of the internet, but they do have slightly different meanings.
- “Web 3” generally refers to the evolution of the internet beyond the current Web 2.0, which is characterised by social media, mobile devices, and cloud computing.
- Web 3 aims to create a more decentralised, secure, and privacy-focused internet, powered by emerging technologies like blockchain, artificial intelligence, and the Internet of Things.
- On the other hand, “Web 3.0” specifically refers to the semantic web, which is an extension of the current web that aims to make information more easily discoverable and understandable by machines.
- The semantic web is built on top of the existing web, using technologies such as RDF (Resource Description Framework), OWL (Web Ontology Language), and SPARQL (SPARQL Protocol and RDF Query Language) to allow machines to understand the meaning of data on the web and make more intelligent decisions.

- Web3 seeks to transform the way data is generated, monetized, shared, and circulated. It advocates for decentralisation of data storage systems and aims to break the oligopolistic grip of technology behemoths over data.
- Web3 assigns a strategic role to non-custodial wallets, which function as digital passports for users to access blockchain-enabled transaction platforms. These wallets aid the creation of an ownership economy where creators control their content.
- Web3 seeks to replace micro-economic organisations with decentralised autonomous organisations (DAOs) and create a distributed economic system where native digital tokens and cryptocurrencies form the media of monetary circulation.
- Web3 platforms aim to raise the efficiency of peer-to-peer transactions.
- Web3 systems seek to generate fungible digital assets to reward local providers of data storage capacity for their services.
- Asset tokens that are native to the new-gen web can function as capital mobilisation tools for Web3 projects, and stakeholders of DAOs can utilise tokens to exercise their voting rights.
- In short, while “Web 3” is a broad term that encompasses a range of emerging technologies and trends, “Web 3.0” refers specifically to the semantic web and its associated technologies.

Potential of Web 3.0 for public good in India:

- The handicraft industry in India is well-known for its creative designs and innovative ideas, which unfortunately often lack protection under intellectual property laws.
- By utilising digital tokens generated through Web 3 platforms, our handicraft businesses would have the means to safeguard their unique innovations.
- Using Web 3-powered educational resources, grassroots innovations developed by master artisans can be quickly shared with other members, ultimately leading to a boost in the economic prosperity of craftsmen and artisan communities.
- India’s major digital public infrastructure push and the large-scale deployment of Internet of Things (IoT) in rural development projects offer major possibilities for deploying Web 3 in rural areas.
- The lack of data analysis capabilities at the community level has prevented the full utilisation of the Atal Bhujal Yojana. Web3’s decentralised analytics systems offer a solution to this limitation.

- Web 3.0 can also yield insights from large volumes of community data, generated by IoT-enabled development programmes such as the Jal Jeevan Mission.
- Web 3.0's natural advantage of facilitating 'analytics at the edge' provides considerable scope for mapping the water use habits of communities.
- The use of Web 3.0 technology will enhance early warning systems for floods, as it allows for data analysis capabilities to be implemented at the sub-basin level.
- India has a rapidly growing pool of talented individuals in data analytics and web design. By incentivizing decentralised analytics and implementing tokenization (as envisioned in Web 3), it is possible to leverage this talent pool to benefit rural communities.

