



Web 3 is India's Leadership opportunity

Contributed by A Damodaran, adamodaran@icrier.res.in

Unlike 5G and the digital tech stack, where India has emerged as a world leader, there is widespread feeling that the third gen web movement will be led by Japan and France. This impression overlooks the fact that India has, since 2022, articulated its role in the evolution of the new web architecture. Earlier last year, the Union Minister of State for Skill Development, Entrepreneurship and Electronics flagged the new web to be one of the priority areas under the Prime Minister's 'Techade' initiative. Meanwhile a report which was presented at a recent entrepreneur Web 3 summit held at Bangalore, states that India's 'Web 3' market would hit a value of over \$1 billion by 2032.

The origin of the first version of the Web, popularly referred to as Web 1.0, goes back to the 1990s. Web 1.0 expected its users to 'read' content. Its successor, Web 2.0, which made its advent a decade later, was designed to get its users to both read and write.

Web 1.0's pages resembled archaic telephone directories, while Web 2.0's pages provided visually and aurally enriched content. Further, Web 2.0 emphasized user generated content that interfaced with social media platforms. It is no wonder that Facebook and Twitter are touted as the most renowned outcomes of the Web 2.0 era.

The third gen web is an extension of Web 2.0 as it seeks to get its users to 'read, write and own'. It has two variants, namely Web3 and Web 3.0. Web3 (which is expounded by experts like Gavin Wood), is driven by the principles of decentralization, privacy and smart contracts that are operationalized through blockchains. Web3 empowers its users to create

and own content by themselves. Further, under the Web3 scheme of things, content creators also have the freedom to exchange their creations for money, instead of forfeiting them to third party platforms run by tech behemoths, as has been the case in the Web 2.0 era. Web 3 also advocates decentralized data/content storage systems. The effort here is to reverse the Web 2.0 practice of centralized storage systems by tech majors. The defining character of Web 3 is its reliance on cryptographically protected digital currencies and tokens for establishing ownership over creative content as well as for conducting economic transactions. Value creation in Web3 involves minting of Non-Fungible Tokens (NFTs) or assets that protect unique content and distribution of fungible (or substitutable) tokens to remunerate agents who provide services for the upkeep of the Web. What is central to Web 3 is the concept of a 'non-custodial wallet', which not only stores crypto earnings but also functions as the wallet holder's digital identity.

'Web 3.0' or the semantic web, on the other hand, upholds the virtues of efficiency, elegance, and accuracy. This version of the third gen web is AI enabled. The real point about the semantic web is its special ability to 'read a customer's mind' and provide the requisite information. Thus, the browsers and search engines of the semantic web promise to be way above the query responding capabilities of Web 2.0 search engines like Google. The two by-products of the semantic web's architecture are its robust capabilities in data analytics and its visually arresting 3D data visualization systems. Further, file sharing systems like Free Net which are part of Web 3.0 system, can securely store high resolution digitized

images. Unlike Web3, Web 3.0 is neither crypto-oriented nor obsessed with the idea of decentralized data storage.

There are a few well known Web 3/Web 3.0 use cases of possible relevance to India. An oft-mentioned Web 3 project is that of 'Helium', a crypto-based, localised wireless network, that induces households to share their surplus data or bandwidth capacity to their needy neighbours, in return for incentive payments by way of crypto tokens.

There is considerable scope for trying similar experiments with decentralised communication and web networks in India's low tele-infra utilisation areas. Such experiments can stimulate local storage of data and enlist data analytics support for Government's rural development projects, notably Jal Jeevan Mission that is a trove of data on community water utilisation.

Regulatory concerns around the third gen web, are largely associated with Web3's linkages to crypto currencies and crypto-digital identity schemes like non-custodial wallets. Nevertheless, there will be less policy resistance in India to the central Web3 tenets of tokenization (of content and services) and decentralized storage infrastructure, given

the positive approach of our National Blockchains Strategy 2021 towards these ideas.

The World Wide Web Consortium (W3C) which has been the standards setting organization for the Web, is not an Inter- Governmental organization. It is a Consortium of web designers and developers spearheaded by doyens like Tim Berners- Lee. As far as Web3 is concerned, efforts in the direction of standards will be most likely to be led by Web3 Foundation. In future, there could be a meeting point between the two streams.

The previous versions of the Web were developed, based on best practice cases from the developed world. However, this time around, the scenario will change if India comes forward with insightful use cases.

India can come up with interesting Web 3 and Web 3.0 use cases in if we can get our large pool of Web3 and Web 3.0 enterprises to work on rural and urban development projects. Indeed, with its rich community data base and its formidable talent pool of data scientists and analysts, India is well poised to be the leading force in the evolution of the third gen Web.