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Early Days For The Metaverse In The Life Sciences, But Experimentation Is Happening

by David Wild

Hype around the metaverse has made it a sexy topic, but a recent Accenture report grounds the concept in a sober, yet still exciting, reality. The consulting firm looked at how the metaverse is being applied in the life sciences sector and concluded that while it is early days and the concept remains nebulous, executives would be remiss if they ignored the growing possibilities the metaverse has to offer.

The metaverse has become a buzzword over recent years, but for the life sciences, the hype contrasts with the reality of its limited applications to date. However, the fact that it is early days for the metaverse in pharma, biotech and medtech presents opportunities for those keen on being on the cutting edge.

A key question that needs to be addressed is what the metaverse is exactly, as the authors of a recent Accenture report found. When they asked 100 life sciences executives in eight countries about the state of the metaverse in their industry was that the concept itself is hazy.

Without a definition, there is no “framework by which to think about opportunities to create value, which is why we focused on it this year [in our annual report],” Kenneth Munie, managing director, Life Sciences Global Accenture strategy lead, and co-author of the report, told *In Vivo*.

Broadly, the metaverse is the convergence of interconnected technologies, enabled by faster connectivity, specifically 5G. These technologies include augmented reality (AR), virtual reality (VR), possibly blockchain as well as other interconnected devices. A defining feature is that data can be transferred between these digital sources and across the spectrum of stakeholders.

The gaming and social networking industries are perhaps farthest along in implementing

metaverse technologies, creating 3D spaces for players, social network users, and workers to congregate using AR and VR and facilitating commerce with digital currencies. Other industries have also been exploiting the power of digital connectivity, with manufacturers employing tools like digital twins – virtual replicas of physical objects – to help train workers and design products.

Encouragingly, where the metaverse has been applied in pharma, biotech and medtech and health care, companies have been peeling back physical barriers to communication and information-sharing between patients and physicians, companies and researchers, and other health care professionals.

“As it is rolled out in the life sciences sector, we’re seeing more virtual collaboration where it may or may not have existed in the physical world, and simplified visualization of processes, including for production and supply chain management,” Accenture’s Munie said.

The report parses applications of the metaverse into four broad areas:

- *WebMe and Web3*, in which the internet is now becoming a layer of human experience and person-specific data moves seamlessly between platforms.
- *The Programmable World*, in which technologies like AR and 3D printing are threaded throughout the physical environment, transforming it into a smart, customizable and programmable space.
- *The Unreal*, which in the life sciences consists primarily of synthetic data, such as digital twins.
- *Computing the Impossible*, in which quantum computing is used to tackle previously insurmountable challenges.

Strong Sentiment About The Value Of The Metaverse

While the metaverse is only beginning to manifest in the life sciences, respondents to the Accenture survey felt strongly that it would play an important role in their companies’ future. Specifically, 90% said synthetic data would be critical for optimizing their operations, expediting drug development and reducing the cost of bringing drugs to market. A similar percentage said that augmented reality and 5G would bring the industry closer to just-in-time production and limit waste, and that these tools would lead to faster, more reliable and more distributed communication between devices and individuals and would also create important virtual spaces.

Given the weight executives are giving to evolving metaverse applications, Accenture's Munie encouraged other companies to start experimenting within their business, taking a gradual

approach to implementation and capitalizing on what has already been tried.

“We already have individual use cases throughout R&D and the supply chain, and we know there are ways to apply the metaverse to help engage patients and physicians,” Munie said.

He noted that since a foundational principle of the metaverse is interoperability between platforms, businesses should have a partnership-oriented mindset and cultivate collaborations with technology companies, research and academic institutions, and patient advocacy groups, “to really set the foundation for the metaverse,” he added.

Here is a snapshot of some companies highlighted in the Accenture report that have been successfully experimenting with the metaverse:

Medable

Since its founding in 2012, Medable has been one of the most popular decentralized clinical trial (DCT) platforms. It is scalable, incorporates patient-centric services like home health nursing, and integrates data from remote trial sites and external sources, including interactive response technologies (IRT), electronic data capture (EDC) devices, clinical trial management software (CTMS), electronic medical records, laboratory reports, sensors and wearables. In an independent analysis, the platform was found to lead to a five-fold return on investment (Also see "[How Decentralized Clinical Trials Are Delivering Time And Cost Efficiencies](#)" - Pink Sheet, 20 Sep, 2022.)

"We are delivering DCT platforms and technologies across top biopharma portfolios, broadly changing the patient relationship with new medicine through community and retail pharmacies, optionality and self-service choices, and hybrid options to improve access."

Sanskriti Thakur, Medable's Chief Growth Officer

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Sanofi

Named 2020 Facility of the Year by the International Society for Pharmaceutical Engineering, *Sanofi*'s "Integrated Continuous Biomanufacturing Facility" in Framingham, Massachusetts, is run entirely using a suite of digital solutions and is managed through electronic boards that provide real-time visibility into performance metrics.

The digital suite includes process control systems (PCS), manufacturing execution systems (MES), Historian and enterprise resource planning (ERP) systems. Data transfer is automated and worker instructions are provided through pictures and videos. Batch records are fully electronic, all instrumentation is wireless and RFID-tagged, and suites, processes, and utilities share a single user interface and user experience.

Compared to the former version of the production process, the facility produces 80 times more product using 90% fewer chemicals and water, 80% less energy and averts 320 tons of waste that would otherwise be sent to landfills each year.

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Science37

Science37's digital trial platform captures data from monitoring and diagnostic devices and will draw data from additional wearables and medically regulated devices as they are brought into the metaverse.

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Q Bio

While other companies have developed digital twins for research purposes, Q Bio (q.bio) is designing a digital twin platform for use in the clinic. The platform, called Q Bio Gemini, builds digital twins for individual customers using findings from an initial whole-body MRI along with results from a baseline comprehensive medical exam. The platform is updated regularly to include changes in anatomical, biochemical, biometric results as well as additional genetic insights as they are gleaned. Patients can share data with their healthcare professionals through the company's web-based platform.

"As the first comprehensive, clinical digital twin, Gemini will empower individuals, physicians, and the biotech industry to better understand changes in the human body over time."

Clarissa Shen, COO, Q Bio

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Roche Diagnostics

Roche's AI-based image analysis algorithm, uPath, can help pathologists interpret assay results. It is integrated into the company's VENTANA DP 600 slide scanner and is also being shared through a partnership with Bristol Myers Squibb, which is using the uPath algorithm to develop two of its own digital pathology assays and to generate biomarker data from BMS clinical trial samples for breast cancer. As Thomas Schinecker, CEO of Roche Diagnostics, told *In Vivo*, the algorithm can help guide treatment decisions for patients and clinical trial participants and "also creates opportunities for better collaboration and remote diagnosis, which can be lifesaving in areas with limited access to pathologists."

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Image source: Medable, Sanofi, Science37, Q Bio, Roche Diagnostics