New Social Connect:
Engaging With The Virtual And Augmented World

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Problem of practice:

Till 2021 most of us would have associated the term 'metaverse' with the world of superheroes or just another name for Facebook. Not anymore. The new normal of remote and hybrid workplaces is here to stay and so are immersive technologies, such as Virtual Reality and Augmented Reality (VR and AR) that drive these workplaces forward. Such technologies, when used in tandem, are called Hybrid Virtual and Augmented Reality or HVAR, and are finding widespread usage – not just in remote workspaces. So, for all Chief Information Officers (CIO) and Chief Marketing Officers (CMOs) who want to engage with digital-first users in immersive and interactive ways, the need of the hour is to make smart HVAR investments. Research by Yue Li, Eugene Ch'ng, and Sue Cobb identifies two vital elements in deploying effective Hybrid Virtual and Augmented Reality (HVAR) environments.[1] First, the study identifies new design strategies that enhance user engagement and encourage interaction within HVAR environments. Second, the research uncovers a new way to track user engagement – through wearable technology. This last insight enables CIOs and CMOs to make more precise investments for continuous improvement to user engagement

[1.] Featured in the September 2023 issue of the *ACM Transactions on Computer-Human Interaction;* authors Yue Li, Eugene Ch'ng, and Sue Cobb identified the drivers of engagement in the design of hybrid Virtual and Augmented Reality systems, in their article: "Factors Influencing Engagement in Hybrid Virtual and Augmented Reality"

Virtual Gets Real

The term metaverse refers to a shared digital space, or virtual world, which can be accessed by online users using virtual and augmented reality tools.[2] According to Statista, the worldwide revenue for metaverse products in 2022 was $44 billion, and is projected to rise to $485 billion by 2030.[3] Currently the use cases for such technologies are concentrated in 10 sectors, including education, entertainment, advertising, digital media, AR & VR hardware, digital assets, health and fitness, gaming, e-commerce, and workplace technologies. The use cases are growing rapidly, but many companies are challenged to identify which HVAR areas would result in the best investment. According to the research, these are following key areas to focus on: The quality of user experience, perceived presence and thereby engagement that can be enhanced through object interactivity, user generated content (UGC), and the social space between avatars. The research tested these areas by creating a HVAR environment with high, medium and low interactivity levels along with avatars of the users who engaged with the virtual artefacts.

In order to get the maximum feedback, the research employed not only subjective surveys, but also objective measures through wearable devices which captured user arousal and relevance in real time. For assessing any HVAR environment, the research suggests using such devices to monitor levels of (dis)comfort through the duration of interaction. This integration of objective and subjective measures can help executives make data-driven decisions when designing and evaluating hybrid reality experiences.

The research found that the more interactive the objects in the virtual environment, the more engaged the users are likely to be. Also, the more users generated their own content (say, in the form of comments) within the virtual environment, the more it increased engagement for all users. Finally if users' virtual avatars were within an optimal distance – one to four meters (similar to norms in the physical world) – the higher the level of engagement.

Better Reach & Insight

Beyond deeper user engagement, the best practices for HVAR technology can also be used to reduce the risk of investing in capital-intensive, physical world innovations. For instance, a radical new service or product may not be suited for surveys or focus groups, as these traditional tools fail to assess user engagement or enthusiasm for the new product or service. Take the example of Celebrity Cruises, which launched a virtual version of their cruise liners in the metaverse, that allowed potential customers to explore the facilities and interact with AI-powered avatars of some of the crew before deciding on purchase of cruise tickets.[4]

By incorporating VR and AR elements, businesses can:

- Reduce the risk of depending on a single technology
- Get the flexibility to adapt to changing market demands
- Create new revenue streams from immersive technologies
- Attract more visitors and sponsors
- Fostering a positive brand image

By incorporating both VR and AR elements, businesses can also reduce the risk of depending on a single technology and get the flexibility to adapt to changing market demands. This, in turn, will create new revenue streams from immersive technologies, attracting more visitors and sponsors, and fostering a positive brand image like Fiat did. The Italian automobile manufacturer created a virtual showroom, which allowed customers to check out and personalize their virtual cars before purchasing them.[5] Brands like Hyundai [6] and Chipotle[7] are also tying up with metaverse companies like Roblox, that already have millions of users, to offer customers interactive experiences of inspecting vehicles or tossing up burritos of their preference.

Finally, the use of objective measures can enable businesses to address potential health-related risks, such as disorientation, tiredness, eyestrain, and nausea, by monitoring user physiological responses and ensuring optimal user experiences.

Expanding Horizons

By integrating both VR and AR elements, businesses can offer innovative and sustainable solutions. The research was based in a museum and showed how museums can attract more visitors, promote cultural heritage and education by creating engaging cultural experiences in HVAR environments. Clearly, these findings can be extended to a diverse set of markets where virtual and augmented reality technologies are prevalent.

The entertainment and gaming industries are leading the way, using a wide range of HVAR applications and investments that could run into trillions. Metaverse companies like Sandbox, Roblox or Decentraland are

building exciting HVAR environments.[8] Here the user is not just a player but a builder, member, content creator and, at times, even an owner of a slice of the digital pie.[9] HVAR also has the potential to revolutionize training and skills development through interactive and gamified learning experiences. Platforms like NextMeet and PixelMax are already creating immersive workplace solutions to better the challenges of remote work and realtime collaboration.[10]

> However, the use of HVAR is not a one-size-fits-all solution. It is influenced by various factors such as the complexity of the product or service offered, the resources available, and the target audience

The scope and applications of the HVAR platforms are endless: Companies can offer virtual tours of properties, provide augmented reality overlays at live events and digital simulations for product testing.[11] Using virtual interaction and data in real time, visitors can stroll through the retail and fashion world and even try out and select outfits in virtual fitting rooms or place furniture in their own homes based on size and suitability. They can even 'talk' to each other from different locations in virtual classrooms or remote workplace.[12] HVAR is also helpful for healthcare organisations as they can use HVAR for patient care including treating psychological conditions, pain or stress management along with medical training.[13] Even government agencies can use these technologies for public services.

For all of the above contexts, the research insights specific to customer engagement in the HVAR environment can boost customer engagement, while reducing risk.

HVAR Implementation

If your company has already deployed HVAR environments, then the cost to implement the best practices from the highlighted research boils down to software enhancements that a) improve the interactivity of virtual assets, b) constrain the virtual distance for digital avatars to between 1 and 4 metres and c) enabling user generated content for the virtual assets. These costs can be part of the regular IT development budget, and can be in the thousands of dollars. In addition, tracking the physiological responses of users, which helps in continuous improvement, can be enabled through specialised headbands from Muse, UrgoNight, or Emotiv, which range in cost from $199 to $999.[14] These headbands enable tracking of brain activity, through electroencephalogram technology.

If your organisation has not yet implemented an HVAR environment, the good news is that the cost of required hardware and software continues to fall. But it can vary significantly depending on the complexity of the application: From a few thousand dollars for a straightforward app or a few millions of dollars for a feature-rich, custom solution. Companies also have to take note also that HVAR deployment is not a one-size-fits-all solution. It is influenced by various factors such as the complexity of the product or service offered, the resources available, and the target audience.

Apart from the cost of hardware and software, if your organisation wants to set up a HVAR system from scratch, it also needs to consider users' technical and infrastructure limitations, test-use cases and hire or train for skill gaps in development and content creation teams.

For instance, the current configuration of consumer electronics — like mobile or workstation—may not be able to provide a full-fledged VR/AR experience, as the hardware technology may not have the required upgrades. There might be a lack of necessary hardware and software skills within the organisation to implement and maintain such upgrades. However, despite the barriers, with the ongoing advancements in VR/AR technologies, along with emerging companies providing metaverse consultancy and support, it will become easier to implement such solutions.[15] Overall, organisations need to adopt a test-and-learn approach and explore how their HVAR can align with long-term goals.

Challenges for firms

- New elements to consider such as weaving in elements of surprise and wonder
- Creating new partnerships — with celebrities, artists, digital characters and brands
- Choosing the right time and place and following the data trail to gain insights into consumer behaviour and engagement levels

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Forging Ahead

When the HVAR approach is implemented effectively, it enables persistent, immersive, 3D virtual experiences that draw in users, consumers and prospective buyers. Even the governments are trying to keep up with the race to stay relevant. The Seoul Metropolitan Government (SMG)

launched a pilot virtual version of Seoul's mayor's office in May 2022 where the citizens can 'interact with the city and use various services like asking questions on various tax-related topics and receive detailed answers'.[16] Not to be left behind, cities like Santa Monica and Dubai are exploring the metaverse for better engagement with the public through events, announcements and even observation for effective administration and garnering new businesses.[17] Similarly, brands like Nike or Gucci have already set up metaverse stores and installations for their target audience.[18] Companies like Meta are developing technologies like computer-generated holography and haptic gloves to enhance the immersive experience.[19]

For organisations that are looking to advance HVAR – remember that engagement and interactivity can arise by weaving in elements of surprise and wonder; creating new partnerships with celebrities, artists, digital characters and brands; choosing the right time and place to launch new elements; and following the data trail to gain insights into consumer behaviour and engagement levels. While effective HVAR deployment will depend on compute and engineering capabilities, brands need to embrace creativity and storytelling to harness the platforms' ability to emulate the emotional cues, body language, serendipity, and diversity that occur in real social spaces.

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