**Information Technology Solutions Plan**

Anjyla Morrison

IT 515- Innovation in Info Technology

January 29th, 2022

 **Information Technology Solutions Plan**

**Background**

**Needs and challenges**

COVID-19 has made most businesses reassess how they conduct their businesses. More than ever before, businesses now appreciate the need for shifting their businesses to the online space to shield them from any interactions that may be occasioned by external factors limiting access to their physical stores. During the pandemic, the government-imposed restrictions forced businesses to transition to the online space to maintain their clientele and safeguard their relevance.

Online shopping spaces, unlike physical outlets, do not accord their clientele the privilege of walking in and physically examining the merchandise. Shoppers can only see the product on sale but cannot touch or examine the item more closely, particularly in 3D. Online marketplaces enable viewers to review items from a 2D perspective (Wodehouse and Abba, 2016). While 2D is adequate where the viewer is only interested in obtaining a simplistic view of an item, 3D exposes more pertinent details of the product. According to Billewar et al. (2021), online shoppers face the challenge of examining items using written descriptions and 2D images because the available formats do not allow them to leverage their senses in evaluating products. In-depth interaction between shoppers and products should mimic the in-store experience, which has been successful for decades.

HYPERVSN is faced with the challenge of replicating the interactive, 3D shopping experience that shoppers previously enjoyed in-store purchases. Although the company has developed an advanced 3D system that allows customers to view products in the air, thereby mimicking an in-store experience, the system does not offer a comparable sensory experience. Although the shopper can see the 3D image of the product, they cannot have a sensory interaction that would allow them to feel the product as they would during a store visit.

The company has outsourced the development of the holographic suite to facilitate a high-level interaction with products, besides the 3D view, to Euclidean, Australia. Some of the requirements for the final solution are that it should be 200 square feet in area with six holographic walls, which should allow the viewer to not only step into the image. The image must be highly responsive and adaptable to the customer's movement verbal and touch commands. The budget for developing the holographic suite is $2.5 million, with a delivery timeline of five years. Both HYPERVSN and Euclideon Holographics have vast experience creating interactive holograms but have no meaningful immersive technology, necessitating a third partner. The final solution should allow customers to see the image n 3D and feel its fabric, thereby replicating an in-store experience.

**The potential ways to address that need or challenge**

HYPERVSN could find another partner with extensive experience in creating truly immersive technology. The third partner would be responsible for developing immersive technology and integrating it into the interactive hologram developed by HYPERVSN in partnership with Euclidean. The final product must also meet the initial budget and technical requirements stipulated by the company. Reliability is a crucial consideration for the project. Although globalization has facilitated remote working, the location of the third partner is essential to facilitate collaboration. Besides, while the priority is to deliver an immersive holographic solution, the cost is also a factor. The third partner should deliver the second component of this program within the budget or a reasonable margin. Maintaining the production cost at the minimum would be beneficial to HYPERVSN because it would compete favorably with other products in the market.

Alternatively, HYPERVSN could develop an in-house team to develop the immersive technology component. HYPERVSN already has the infrastructure and resources that could be repurposed to create immersive technology. However, the company would have to free up these resources from any previous engagements to guarantee their uninterrupted availability. Restructuring resource allocation would minimize the costs and guarantee reliability since HYPERVSN would have absolute control. The company would also hire a team with the requisite competence to actualize the project. An in-house team would also be more adaptable and responsive to the company's needs compared to a third partner.

**Research and critique**

1. **Augmented reality, mixed reality, and haptics**

**Augmented reality (AR)**

Augmented reality (AR) is the first immersive technology that could be applied to this use case. HYPERVSN wants to create an immersive technology that does not require wearable devices, making AR a primary contender. AR involves superimposing a computer-generated image onto a real environment (Dieck and Jung, 2019). Unlike other immersive technologies where the user is 'isolated' from the real environment, hindering a full assessment of how an item might appear or blend with others, AR allows the user to view the product as it would in their real setting. Computer-generated images interact with the real world, facilitating an assessment of a product, which is even better than the in-store experience (Marr, 2021). AR supports 3D images and audio to generate the much-needed illusion users engage with at a deeper level.

**Mixed reality (MR)**

Mixed reality (MR) combines virtual reality and augmented reality, creating a hybrid reality (Marr, 2021). According to Marr (2021), MR facilitates the interaction of digital and real-life items; this means the user can walk into the item and move around to fully assess its suitability to their need, taste, and preference. HYPERVSN needs to requireimmersive technology that allows users to interact with the product using both touch and audio commands, making MR a feasible choice.

**Haptics**

Haptics is all about a 3D touch. Also known as kinesthetic communication, 3D touch gives the user tactile feedback on touching a surface or item, enabling them to feel its texture. HYPERVSN needs immersive technology that allows the users to examine the texture of an item using their sense of touch to create a simulated in-store experience, making this technology a worthy contender.

1. **Assessment**

**AR**

AR overlays computer-generated items in real spaces and products, creating an immersive experience within the real world. The simulated image interacts with the real image, which is critical in allowing the user to fully assess how the item would appear and interact with the other items in the real world. AR is relatively easy to implement and use, which guarantees minimum adverse effect on users' attitudes (Jiang et al., 2021). While the rise in popularity of AR has reduced the development cost, numerous variables could inflate the prices. The hourly market rates of AR development range from $50-$150 (Golosovskaya, 2021). The total final cost depends on the intricate details of the solution; the more sophisticated, the higher the cost. An hourly rate of about $80, working for five days a week for five years, would total about $832,000. AR provides a wide range of capabilities, including support for audio and touch commands, critical for this application.

**MR**

The primary benefit of MR is that the item presents as a hologram. Since HYPERVSN has extensive experience in developing interactive holograms, this feature is an opportunity to refine the interactive potential of the solution to match its envisioned application. According to Williams et al. (2018), MR enhances communication, essential in HYPERVSN's use case. The users can use MR to gather information about the product, creating a more immersive experience. The costs of implementing MR are comparable to those of AR. MR Application is also feasible because it supports audio input and involves sensing technology that can be optimized to give users sensory feedback. Reliability is HYPERVSN's key consideration. MR is highly efficient, which translates to low maintenance costs and sophisticated navigation (Flavian et al., 2019). Users are guaranteed a smooth and immersive shopping experience.

**Haptics**

Haptic technology is more common, therefore, less costly to develop and implement. Unlike the other two, haptics technology is the most effective in giving sensory feedback to the user, which is essential in assessing the material or surface of an item. The technology is less complicated than both VR and MR, which provides users with a flawless shopping experience. The downside of Haptics is that it does not provide the full immersive experience required in online shopping because the user's experience is contingent on their manual dexterity and tactile sensitivity, hindering the full immersion (Grewal, 2020).

1. **Selection**

I would recommend mixed reality for HYPERVSN's needs. MR offers a full immersive experience that integrates both audio and touch commands. Technology gives an experience that closely rivals that of an in-store experience. Although the initial cost of developing the technology may be substantial, at or slightly above the budget, HYPERVSN will deliver an extensive immersive experience and therefore, still profit from the solution.

**References**

Billewar, S. R., Jadhav, K., Sriram, V., Arun, A., Mohd Abdul, S., Gulati, K., & Bhasin, D. N. (2021). The rise of 3D e-Commerce: The online shopping gets real with virtual reality and augmented reality during COVID-19. World Journal of Engineering, 1-11. https://doi.org/10.1108/wje-06-2021-0338

Dieck, M. C., & Jung, T. (2019). Augmented reality and virtual reality: The power of AR and VR for business. Springer.

Flavián, C., Ibáñez-Sánchez, S., & Orús, C. (2019). The impact of virtual, augmented and mixed reality technologies on the customer experience. Journal of Business Research, 100, 547-560. https://doi.org/10.1016/j.jbusres.2018.10.050

Golosovskaya, A. (2021, March 28). Estimating augmented reality costs in 2021 - Invisible toys. Augmented Reality Toys. https://invisible.toys/create-augmented-reality-apps/augmented-reality-app-development-cost/

Grewal, D., Kroschke, M., Mende, M., Roggeveen, A. L., & Scott, M. L. (2020). Frontline cyborgs at your service: How human enhancement technologies affect customer experiences in retail, sales, and service settings. Journal of Interactive Marketing, 51, 9-25. https://doi.org/10.1016/j.intmar.2020.03.001

Jiang, Y., Wang, X., & Yuen, K. F. (2021). Augmented reality shopping application usage: The influence of attitude, value, and characteristics of innovation. Journal of Retailing and Consumer Services, 63, 102720. https://doi.org/10.1016/j.jretconser.2021.102720

Marr, B. (2021). Extended reality in practice: 100+ amazing ways virtual, augmented and mixed reality are changing business and society. John Wiley & Sons.

Williams, T., Tran, N., Rands, J., & Dantam, N. T. (2018). Augmented, Mixed, and Virtual Reality Enabling of Robot Deixis. In Virtual, Augmented and Mixed Reality (pp. 257-275). Springer.

Wodehouse, A., & Abba, M. (2016). 3D visualisation for online retail: Factors in consumer behaviour. International Journal of Market Research, 58(3), 451-472. https://doi.org/10.2501/ijmr-2016-027