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3D in Fashion Retail – Possibilities and Success Factors

State of Fashion 2022 report (1) indicates, that by 2030, Fashion Retailers will invest 2x Percentage more revenue in Technology as compared to 2022. This focus is likely to accelerate investments in digital technology to US$ 50 bn by 2030. The driver for this is industry's need to address the challenges listed below:

McKinsey (2) identifies this as a seismic shift, where products are now "pulled" into the market, rather than being "pushed". In this scenario, the key to success lies in minimizing turnaround time (time it takes from concept to customer) & cost and maximizing customer attention (duration that the consumer is interested in the product). This needs to be understood in the context of the nature of the fashion industry, which unlike manufacturing, relies heavily on developing new styles and multiple variations thereof (in terms of material, color etc.) on a periodic basis (sometimes as short as 4-6 weeks). So, the need to generate offerings faster is paramount. Therefore, this transition from physical – digital to drive the change, is not a question of "if", but "when" and "how".

The use of 3D is turning out to be a key component of this digital shift. As per Interline (3), around $40 million is spent on 3D and DPC tools alone in the US in 2022. The primary reason for this is the ease with which 3D can connect across all the stages of the process that brings the style to the customer. 3D is providing - better creative platform, new communication channel across stakeholders and allowing fashion brands to create new customer experiences. In doing so, it can help to enforce the "Digital Thread", effectively making the process more "virtual" than "physical". Below is an illustration of the digital thread getting enforced as the initial digital asset (a 3D design) matures from Design – Development – Production - Sale (e-commerce site)

Figure-1

The above approach has 4 key advantages

- **Minimum Re-work:** Style Visualizations during the development stage are easy to review and make changes to. This greatly enhances the ability of the fashion retailer to experiment with options during the development process and have a greater leverage around adjusting to changes in demands/trends through the journey. This, as we indicated earlier, is a key element of the fashion industry's development process given the need for variations and the impact of customer preferences on the final product.

- **Faster Approvals:** Often, the key stakeholders – Designers, Product Developers, Merchandizers are not co-located. Having a photo-realistic digital rendition of the actual Style eliminates the need for co-location in the evaluation process and fast tracks decisions. Brands have seen a 28 percent reduction in time to approval by using 3D visualization (4).

- **Sustainable Developments:** Minimizing waste and incorporating sustainable practices in the style offerings is a buzz word within the customer base. Using 3D significantly contributes to this cause by making the process less physical and more virtual. Effectively reducing waste across the various stages especially those related to material development and sampling. A recent survey by 3DInsider (5) says that companies were able to save millions, with an average of 10-15% reduction in sample making cost and 50% reduction in physical samples.

- **Enhanced Customer Experience:** Surveys show that consumers are more likely to buy a product that they can view. With growth in e-commerce, this means visibility to virtual styles. 3D makes that experience much more realistic thereby enhancing customer experience. This not only builds brand loyalty but also reduces purchase returns. According to a Deloitte report (6) 71% of shoppers say that they would likely shop more frequently when using strong visual cues. Similarly, a survey commissioned by Snap and Publicis Media (7) shows that two-thirds of consumers are less likely to return a product if they are able to try it out virtually.

From the above, it is clear that 3D potentially impacts the entire value chain within the fashion industry. For this discussion, we will limit ourselves to the Design and Development phases.

So how does a 3D enabled design and development process look like? Below is an illustration that touches upon the main steps of the process and how these get re-reinforced by the use of 3D.

Figure-2

We wish to highlight 2 key points from the above:

- **Visualization:** : All the key stakeholders in the fashion design and development process are visual people. There is a paramount need for the virtual renderings to be as close as possible to the physical product. The ability of 3D to render photo realistic visuals for – material as well as finished product (garment) is a key driver.

- **Process Handovers:** During the process, there are multiple stages gates – Design (an initial outline of the concept), Technical Design (measurements, sizes, patterns), Sample (Fitting across different sizes), Options (multiple color variations – single as well as mixed). Some of these are 3Dimensional (e.g.: garment) while others are 2-dimensional (e.g.: patterns in which the fabric will be cut). Ability of 3D platforms to provide a seamless, to-and-fro transition between the 3Dimensional and 2-dimensional stages makes it very easy to use and speeds up the overall process by reducing time and effort required in a set up that involves physical handovers.

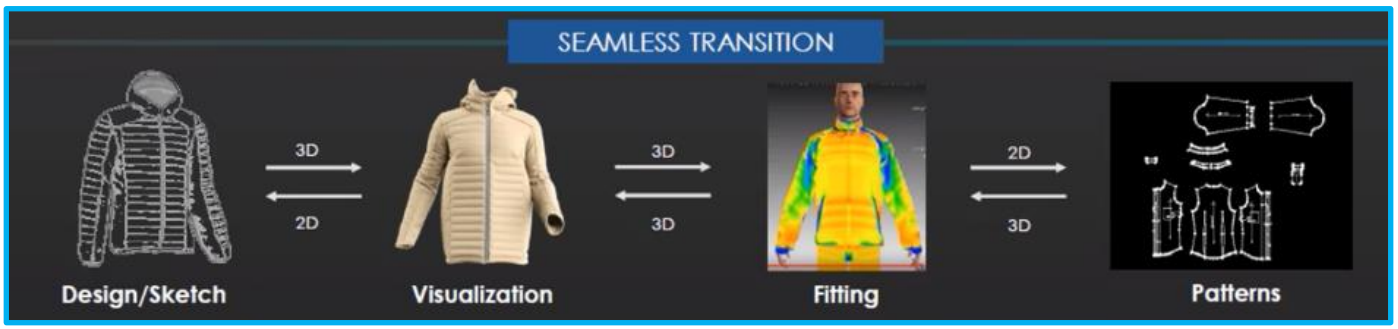

Figure-3

Add to the above, the ease with which digital assets maturing through the development cycle can be repurposed in the customer facing platforms (e.g.: e-commerce sites, apps etc.), and it is a win-win.

While 3D assets offer significant advantage over the physical counterpart, it must be understood that it is not expected to eliminate physical assets altogether. After all, the actual style needs to be rendered in physical form to be of any use for the customer. As a result, use of 3D needs to safeguard against the following:

- **Feasibility:** While evaluating 3D designs, stakeholders need to be aware of the feasibility of the concept in actual production. It is one thing to create a digital idea, it is another thing to be able to produce a physical twin at scale. e.g.: While creating digital material swatches, the material developers should validate the feasibility of achieving the same parameters in physical form. Similar considerations need to be kept in mind while creating a 3D garment.

- **Need for Physical Review:** 3D assets are extremely helpful during initial evaluation and generating the required feedback to take the process forward. However, it cannot altogether replace the process of physical evaluation. So, business processes will continue to use physical samples albeit with less frequency. The physical samples will most likely come towards the final rounds of the evaluation process after majority of the initial direction/changes have been incorporated using the digital twin.

While 3D offers significant advantages, the question that arises is how Fashion Retailers can incorporate 3D within their existing IT landscape. We feel there are 4 main areas to consider:

Integration: There is not one tool that is likely to meet the end-end development process needs of any fashion retailer. Therefore, it is important that the 3D touchpoints within the business process are clearly defined and required integrations are built. From a product design and development point of view, 3D tool is expected to be used for:

- *3D Visualizations:* Create the initial design ideas; multiple color and material options to be reviewed as part of the design process
- *Sample Reviews: Review the virtual samples using the selected materials and colors. Check for fittings, drape of the material used in the garment, conduct fitting sessions (adjust across different measurement parameters (POMs)*
- *Creating the Initial Design BOM: As the different Material and Color options are added to the 3D visualizations, it is possible to render the Design BOM*

The integrations should be designed in a manner that leverages the key capabilities across the tools involved. To illustrate the point, let us consider a scenario where 3D is sought to be introduced in a set-up that already has PLM. This is a reasonable assumption since fashion retailers have been investing in PLM tools for >15yrs now, while 3D is a relatively new addition. The main point here is that there are quite a few areas where PLM and 3D capabilities overlap - managing color and materials, style meta data, suppliers, line plans, visual assets, sampling, and tech pack (specification) being key ones.

Given that PLM is already an established tool in the product development landscape with retailers, our suggestion is to use 3D in a way where it qualifies the process by complementing the PLM tools. The first step towards this is to clearly differentiate the area of operation between PLM and 3D. Below is an illustration:

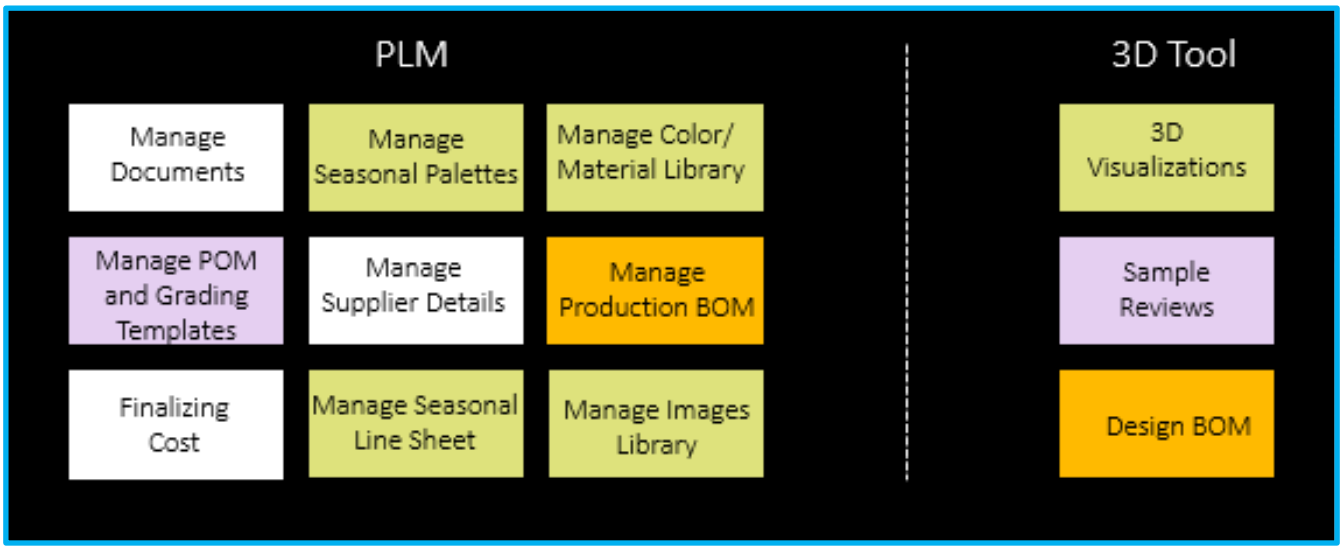

Figure-4

Once the above is achieved, the integration design needs to complement the above. Thus, while 3D can be used to support the activities related to virtual renderings, PLM on the other hand can be leveraged to provide the necessary inputs (materials, colors, product meta-data etc.) and also as a repository for the relevant 3D assets (material files, style renderings etc.). Below is an illustration:

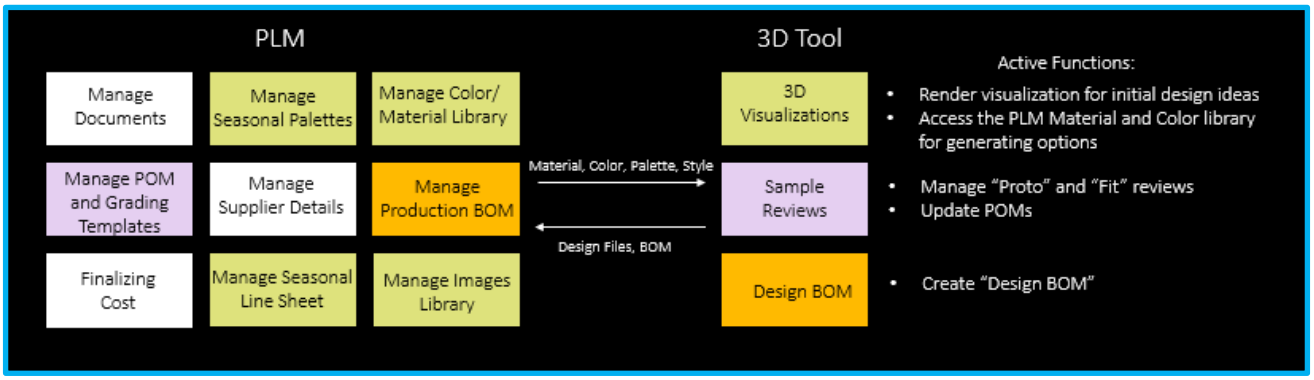

Figure - 5

Comprehensive Usage: True benefits of 3D are realized only if all the stakeholders – Designer, Product Developers, Merchants, and Vendors Partners are enabled. Leaving out one or more stakeholders will add more bottlenecks to the process and significantly off-set benefits from 3D. e.g.: Presuming Designers are able to create designs in 3D, the review process should also be 3D based. Accordingly, all partners, including Vendors should be 3D enabled.

Enforcing the Digital Thread: Any 3D enabled process needs to enforce the digital thread by activating the 3D assets across the entire value chain. While enabling end-end in one go may not be feasible (neither is it recommended), the suggestion is to enable within a specific area of the Design-Development process that covers a set of activities end-end. e.g.: 3D can be used from the "Initial Concept – Design Review" OR "Initial Concept – Proto Sample". This approach will reduce handovers and eliminate physical assets at least within the relevant loop and ensure maximization of the benefits within the given set of activities.

Like any other software tool, adopting 3D within the business process is also a journey rather than a one-time activity. Usage is expected to evolve gradually, and learnings needs to be incorporated over time to build mature processes. There is no "one size-fits all" option. Therefore, it is important to understand the pre-requisites before we start on the 3D journey. Below is an illustration:

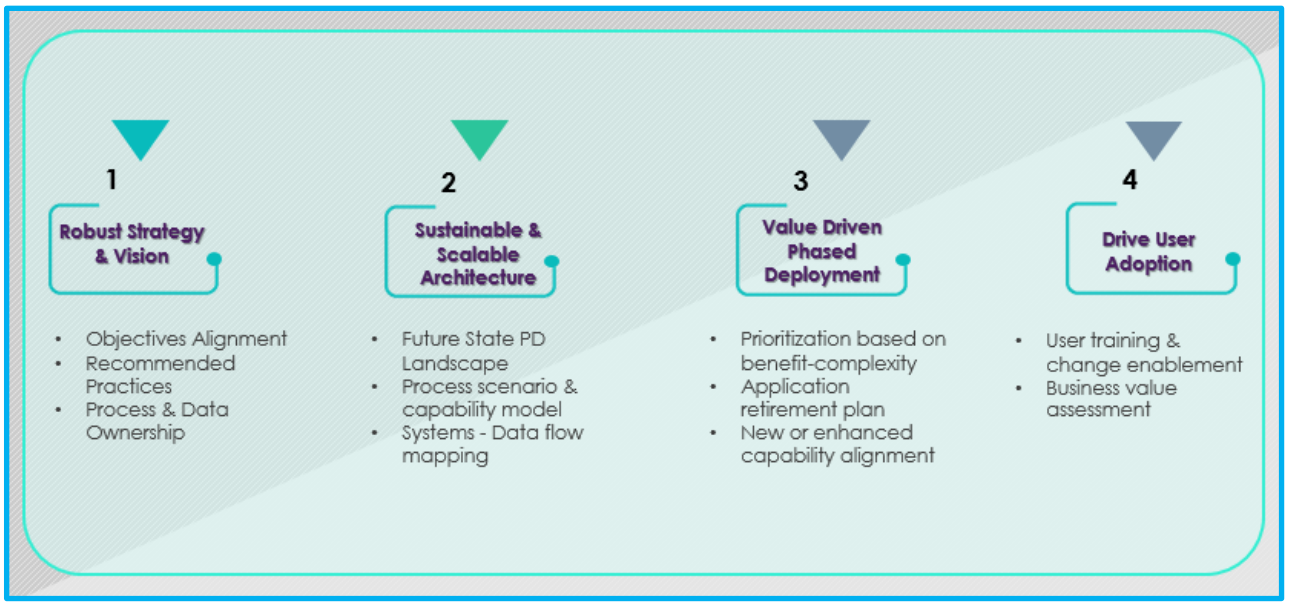

Figure - 6

- **Robust Strategy and Vision:** It is important to be clear on the objectives (present and future) that are sought to be addressed through 3D (e.g.: Short Term-Reduce Sampling; Long Term-Repurpose assets in e-commerce). In addition, it is important to incorporate the recommended best practices around the use of 3D (e.g.: building a strong material library that has all the 3D digital fabrics used by business). Lastly, clear definition of the roles that will own the process steps and the systems that will own the data within a 3D enabled process is an absolute must (e.g.: 3D will be used to create style visualizations, PLM will be used to manage suppliers and assignment thereof across styles).

- **Sustainable and Scalable Architecture:** Business Processes need to respond to the changes that are primarily external. Therefore, it is important to account for the possibility of changes to the initial set-up. Scalable architecture that can accommodate the future needs is a must. So having at least a high-level process flow with the likely future 3D touch points will go a long way to make the set up scalable. It will also be helpful to understand the 3D tool roadmap and make provision for the future updates in advance.

- **Value Driven Phased Deployment:** It is always useful to scale the scope over time. Thus, the focus needs to be around addressing the business process areas that provide the optimum balance in terms of - value in using 3D vis-à-vis complexity in making the transition. e.g.: Even though transition to 3D for the biggest product category within a business may give the maximum value, it may not be the best way forward owing to inherent complexity in terms of business process changes, training etc. Another important factor is sun-set timelines of related tools. e.g.: If 3D is expected to replace existing software, then the license expiration timelines of the software can be a key consideration while working out the transition to avoid overlapping license fees. Finally, one needs to consider the future capability enhancements within the 3D tool and how it fits into the overall business process landscape.

- **Drive User Adoption:** Success of any change is measured in terms of – end user adoption and business value rendered (ROI). 3D is no exception to this rule. Once implemented, there needs to be continuous efforts to ensure users are adopting the tool and following the desired business processes. In addition, it is important to evaluate the planned vs actual gains from the change. Any delta needs to be addressed through training or process changes.

In light of the above, what is an optimum transition plan that we recommend? We believe that any transition to 3D needs to have the following elements:

- Stepwise Approach that ensures “Value Realization” through “Process Driven System Enablement”. What it means is that the 3D implementation and adoption should be driven by a business process that unlocks the system functionalities and features to maximize value in terms of ROI.

- We believe, there are 3 key steps to achieve the above – Enabling the Tool, Extending the Tool, and Maximizing Value

- Each step under bullet#2 identifies – Activities to be Performed, Desired Business Process Results and ROI

Below is an illustration for a business case where the use of 3D is enabled across 3 stages – 1. Reducing Proto Samples 2. Reducing Fit Samples 3. Reducing Development Time.

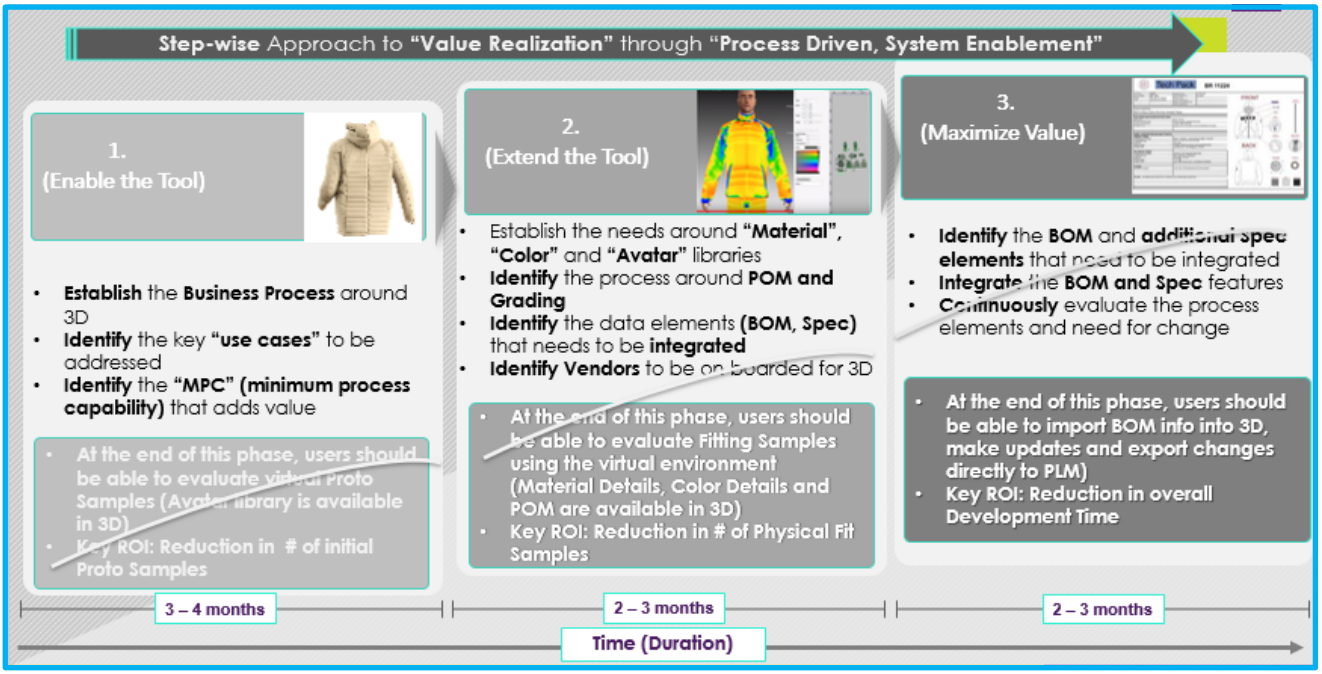

Figure - 7

While the duration and activities within each stage will differ from case-case, the overall approach should remain the same.

To Conclude, 3D has **Moved** from being a **"Should Have"** to a **"Must Have"** for all Fashion Retailers. It's potential usage covers the entire fashion value chain. One of the main areas being Design and Development. Key to using 3D successfully lies in understanding the individual business needs and co-relating to the tool capabilities. The best option will be to have a clear vision and robust road-map. Recommendation is to implement in stages using an optimum process vs ROI matrix. Given the nature of the industry, there is no one formula for success. ITC Infotech with its deep domain (business and technology) understanding can help retailers on this journey.

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DxP Services is an ITC Infotech specialized business unit focused on the implementation and adoption of PTC's industry-leading Windchill®, Product Lifecycle Management (PLM) software, as well as Cloud and Windchill+® SaaS offerings. Created through the acquisition of PTC's PLM implementation services division, DxP Services is the largest global PTC PLM ecosystem. The combination of PTC Heritage and ITC Infotech Power means that DxP Services is uniquely positioned to help accelerate customers' digital transformation initiatives.

Our portfolio of services augments value at every step of Modern Industrial Evolution; covering Consulting, Implementation, Deployment, and Migration. DxP Services' team of PLM Professionals are trusted advisors to our Customers during their Digital Transformation.

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