FASHION'S SWISS ARMY KNIFE: MAKING YOUR DIGITAL ASSETS WORK HARDER

IF FASHION IS COMMITTED TO REALISING THE EXTENDED POTENTIAL OF DIGITAL ASSETS, THE INDUSTRY NEEDS A CLEARER MAP OF WHERE THAT POTENTIAL LIVES, AND A BETTER TAXONOMY FOR HOW TO TALK ABOUT IT.

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Market size predictions for Digital Fashion (DF) and Digital Product Creation (DPC) by 2030 range considerably: from the conservative - $4.8 billion (Allied Research 2023) to the ridiculous (?!) - $50 billion (Business of Fashion 2021; Kumar 2023).

There's a lot packed into both extremes of the valuation spectrum, from 3D design and simulation software, to digital assets as standalone value items.

However you parse them, though, these figures clearly signal a market belief. But beyond the analysts' predictions, people on the ground will tell you that DF and DPC are currently in a strange space. Neither is totally niche, but they are not yet mainstream either - although it's certainly the case that DPC is more widely adopted and more clearly-understood than digital fashion.

There are a few reasons for this. Post-pandemic necessity-based adoption has slowed, Tech/marketing/innovation budgets are consistently challenged due to environmental conditions, and don't get us started on the leadership and mindset requirements for digital transformation. But as fashion asks itself some big questions about what it wants to accomplish with digital workflows and 3D assets, we see two clear things the industry would benefit from:

- Clarifying the relationship between DF and DPC terminology
- Illustrating, categorising, and communicating the range of roles that DF assets can play

The terms DF and DPC are often (incorrectly) used interchangeably, and they also differ considerably between academic and industry publications. We know the team at The Interline has its own ways of demarcating these fields, but as two people who've spent a huge amount of time working in them, we think it could be time to introduce another acronym, Digital Product Management (DPM), as an overarching umbrella term.

<table>
<tr><th colspan="3">Digital Product Management (DPM)</th></tr>
<tr><td>Digital Product Creation (DPC) encompassing 3D design</td><td>Digital Asset Management (DAM)</td><td>Digital Fashion as an End Product (DF)</td></tr>
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Diagram 1. Categories of Digital Product Management

Historically definitions of "3D" have focused on just the DPC aspect - honing in on it as a process and on the specific technologies involved to improve garment design and production processes for retailers and brands that sell physical goods.

But as wide as the DPC umbrella spreads - covering core 3D tools as well as the extended ecosystem built around them - it's becoming progressively clearer that 3D pipelines and the digital items they create are not just tools, but also end products. People are keen to dismiss this part as being a quirk of the fashion NFT boom of 2020, but behind that over simplistic categorisation lies the reality that digital objects - and particularly digital shoes and clothing - are being sold by some of the biggest brands in the world today.

So we see a need to unify several discrete things: the proven use cases for digital product creation in design and development; the emerging use cases for digital assets in marketing, virtual photography, and virtual production (necessitating a more inclusive approach to Digital Asset Management); and the shifting space that is digital-only fashion.

And we believe the right mindset to bring those things together is to conceive of the combination of those things as being the realm of Digital Product Management.

But where does the Swiss Army Knife analogy come in, we hear you ask? Well, from our experience and research within fashion, DF, DAM, and DPC are still too often seen and treated as isolated activities, 'belonging' only to singular teams like design or marketing. Not only that, but despite the fact that digital assets offer multiple value-adding roles and functions they are often only really 'used' for one function, by one team, on one occasion.

This is two things: a wasted opportunity and a primary contributor to the looming idea that companies who have wrung a lot of value out of their "3D" strategies in design and development have reached the limits of the return on that investment in technology and talent. The ideal situation is completely the opposite: to realise their true value, any digital product file must have multiple lives both within the business and beyond. This makes the best commercial, environmental and experiential sense, even if it does beckon some difficult questions around interoperability, integration, and the incentives of the different fashion stakeholders.

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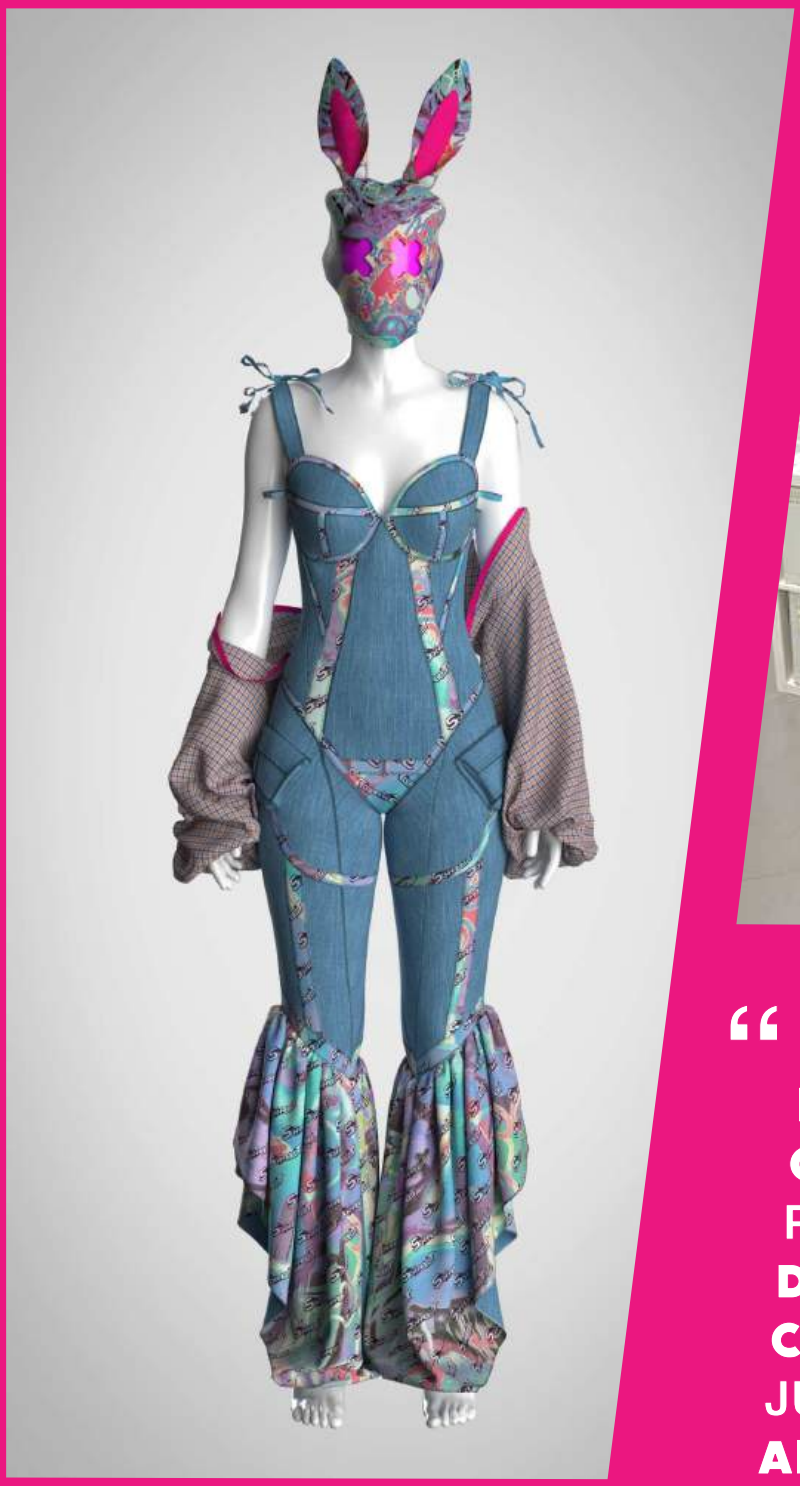
In order to demonstrate this potential, we created a DPM matrix with 15 distinct roles that a digital asset can play, supporting an array of different job functions within fashion. This has emerged from secondary research, personal experience and has also been sense-checked with more than a dozen experts from within the sector. It is not intended to be an exhaustive list of what a digital fashion asset can do, but rather a current snapshot of just how far the value potential of digital assets can be stretched without also needing to stretch the toolset used to create them too far beyond its current limits.

The horizontal axis of the grouping below highlights its role as a tool versus as an end product. This was determined by whether it could have a revenue stream assigned to it and therefore a potential discrete vertical. The vertical axis illustrates where in the value chain it adds value, i.e. in the supply chain or in the demand chain.

	Tool	End Product
Supply Chain Function	**1.** **DIGITAL PRODUCT CREATION (DPC)** **MADE-TO-ORDER (MTO) / ON DEMAND MANUFACTURING (ODM)**	**2.** **MASS CUSTOMISATION** **DIGITAL PRODUCT PASSPORT (DPP) CONTENT**
Demand Chain Function	**3.** **VIRTUAL TRY ON (VTO)** **WARDROBE OPTIMISATION SOFTWARE (WOS)** **B2B SHOWROOMS** **AR FILTERS** **MARKETING CONTENT** **XR EXPERIENCES** **MINI-GAME CONTENT**	**4.** **GAMING COSMETICS/SKINS** **PHYGITALS** **NFTS** **AI DRESSING**

Diagram 2. Digital Product Management (DPM) Matrix



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SEGMENT 1: TOOL / SUPPLY CHAIN FUNCTION

This segment includes Digital Product Creation (DPC) and Made to Order/On Demand Manufacturing (MTO/ODM). DPC is undoubtedly one of the most significant types of DPM in terms of both usage and adoption. Primarily because it holds many functions within it from CAD/3D design, to virtual patterns, prototyping and sampling and is also considered to be the most well established; existing since the 1980's (Sayem 2022; Navneet 2024).

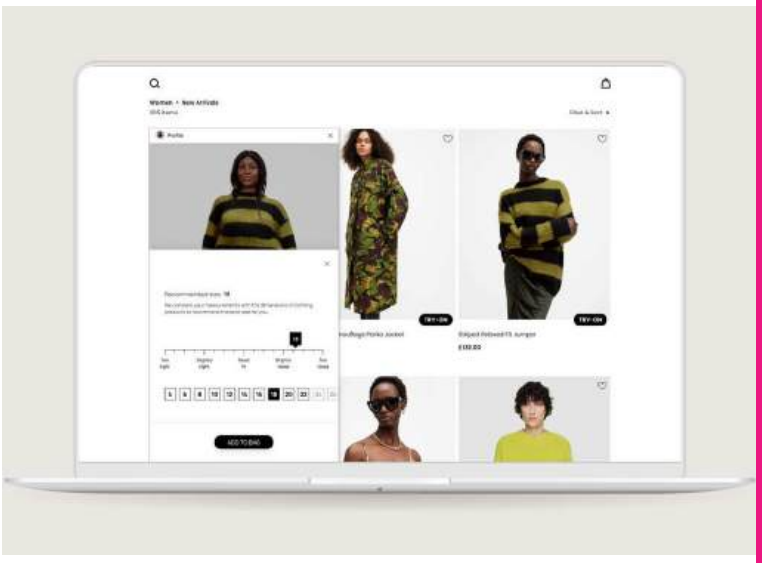
MTO/ODM is increasingly becoming more desirable (and achievable at scale) as the problems of overproduction continue to plague the industry and the planet. Here, DF assets can be used to underwrite demand before being physically produced, moving from a push to a pull approach. This means that lead times and fabric commitment decisions are made more efficiently and closer to market, which is financially critical for directional or trend led businesses.

SEGMENT 2: END PRODUCT / SUPPLY CHAIN FUNCTION

Mass customisation refers to using a DF asset on an ecommerce page or instore hardware unit and allowing it to be personalised or customised in some manner. This can range from classic monogramming to more complex product configurators. The output of the personalisation is visualised to the end customer in real time as a 3D fashion asset which aids decision making and can improve the customer experience. This can have a premium price attached to it or it can be complimentary but generally can be considered as an end product.

Digital Product Passport Content (DPP) is very new and is commanding much attention because of the EU's policy that by 2027 all European manufactured garments must include a DPP documenting its provenance and material composition (Spicher et al. 2024). The directive has been introduced to improve the possibilities for an easier circular economy for fashion garments (Lawler 2024). Experts suggest that this will take the form of a Near Field Communication (NFC) or QR code which will contain the metadata (key information) of the item, meaning that attaching images or files and a 3D version of the item as an identifier is possible (Boston Consulting Group 2023). At the luxury market level there is considerable opportunity to go beyond the regulatory requirements to story-tell the provenance of the item in an immersive way.

DPP BY OPEN.MODE INNOVATIONS LTD



VTO BY ZYLER

SEGMENT 3: TOOL / DEMAND CHAIN FUNCTION

This segment contains the DPM roles which involve the end customer. With Virtual Try Ons (VTO) DF assets can be used within AR try on experiences and/or can be composited on a photograph of a consumer using machine learning/artificial intelligence (AI) software. Wardrobe Optimisation Software (WOS) is a relatively new application of DF assets involving the creation of a digital twin (usually via scanning) of the items in a consumer's wardrobe so they can be catalogued and learned by AI software to record usage, recommend repairs and future outfits. See Whering, Save my Wardrobe and Indyx as examples. Business-to-Business (B2B) Showrooms refers to the use of DF assets on brand websites or virtual wholesale environments; this is mostly adopted by larger scale retail brands to streamline the selling process for its wholesale buyers.

The next four types of DPM are linked to the marketing functions: Augmented Reality (AR) filters, Marketing content, Extended reality (XR) experiences and Mini game content, involve the use of DF assets as part of a brand's engagement strategy, to convey its brand identity and promote new collection or products. Each offers diverse, experiential and emotional ways for a consumer to interact with a brand touchpoint. AR filters enable try-on experiences, portal style experiences or 3D product versions. Marketing content can range from CGI (Computer Generated Imagery) social media content to anamorphic billboards and hologram window displays. XR experiences encompass immersive digital experiences designed for new hardware like the Apple Vision Pro, to more simplistic experiences like PR activations or product placement inside video games.

SEGMENT 4: END PRODUCT / DEMAND CHAIN FUNCTION

The final segment are all verticals that attract their own revenue stream potential. These include Gaming cosmetic/skins, arguably the other most established use case for DF assets, given virtual items have been available for purchase inside games and virtual worlds since the 2000's. Games and their players have long since understood the value of intangible items. The estimated market value for virtual fashion goods in-game ranges from $40bn to $50bn (Tashjian 2021). The scale of demand is increasing year on year, for example in Roblox alone, 1.6 billion virtual fashion items were purchased in 2023 (Roblox 2024). Phygitals refers to products which are composed of both a digital and and physical version aka a twin and were catapulted to mainstream attention by RTFKT in 2021 with their $7 million dollar sneaker collaboration with Fewocious (Nowill 2021).

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Non-Fungible Tokens (NFTs) could also be considered as having a supply chain function because much like the goal of the DPP, a NFT is aligned to a blockchain system which transparently records the metadata about the item, which is a utilitarian function. The final category is AI dressing which refers to when a DF asset is composited onto a static or moving image of an end customer. DF Marketplace DressX uses this as the primary reason to ask customers to buy DF and the dressing experience is either included in the price of the garment purchase or also there is a free service offered via their AI platform.

That is, we admit, a lot of labels. But it's this precise multi-functional nature of digital tools, digital assets, and the workflows and communities built around them that make it all worthy of the Swiss Army Knife designation!

As educators and entrepreneurs, we certainly love a good acronym, but we also see that shared understandings have the best chance of furthering the adoption of this innovative technology for the greater good - and we see just how far-ranging that good has the potential to be, wherever you stand on the DF, DPC, or DPM continuum.

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