

The ultimate guide  
for retail and luxury

# 3D & AI for business transformation

# 04

WHITE  
PAPER

2025



**SIA**

institut  
FRANÇAIS  
de la  
MODE

**POWER**<sup>xyz</sup>

Edito .....	3
Executive Summary .....	3
Acknowledgements .....	4
<b>Part 1. Back to basics: Introduction to 3D .....</b>	<b>5</b>
1 / 3D Definition .....	5
2 / The importance of 3D for business purposes .....	7
3 / The Evolution of 3D .....	9
4 / Various ways to render 3D .....	10
<b>Part 2. Applications of 3D &amp; AI in a business environment .....</b>	<b>13</b>
1 / 3D & genAI for design & prototyping .....	13
2 / 3D & genAI for content creation and marketing .....	14
3/ 3D & genAI for e-commerce & customer experience .....	16
4/ Scaling 3D deployment over digital product lifecycle .....	18
<b>Part 3. Set up the right transformation plan .....</b>	<b>22</b>
1/ Business process analysis .....	22
2/ Execution and roll out .....	24
3/ How to Manage a 3D Pipeline in the right way .....	27
4/ 3D & AI solutions infrastructure .....	30
<b>Part 4. Trends &amp; perspectives .....</b>	<b>34</b>
1/ New technologies: genAI powering 3D in retail & luxury .....	34
2/ Sustainability ethics & regulations .....	36
3/ Structuring 3D & AI adoption across industries .....	37
<b>About Us .....</b>	<b>38</b>
<b>Contacts .....</b>	<b>40</b>

## 3D & AI: A Leadership Imperative for the Next Decade

Across boardrooms and creative studios, one question has become inescapable: **how will 3D and AI reshape the very core of business?** For leaders in luxury, fashion, and retail, this is no longer a technological curiosity, it is a leadership imperative. The shifts ahead will redefine how products are imagined, produced, marketed, and sold. Those who act now will lead. Those who hesitate will fade.

3D and AI mark a structural leap, not an incremental one. They introduce a new language for conceiving and experiencing products. A single 3D asset can now serve as design prototype, marketing hero, e-commerce model, and even a basis for sustainability reporting. **This isn't about adding tools, it's about reimagining how value is created.**

For CEOs, success will depend on breaking silos and aligning design, supply chain, marketing, and IT within a 3D-driven ecosystem. For CMOs, it means turning storytelling into interaction: from showing to immersing, from audience to participant. **The result: global yet personalized campaigns, seamless omnichannel experiences, and unprecedented intimacy at scale.**

The impact is also tangible: lower prototyping costs, faster time-to-market, reduced waste. In a world where performance and purpose must coexist, 3D delivers both.

**But the true revolution lies in the fusion of 3D and AI.** Artificial intelligence now amplifies the creative and operational power of 3D, enriching digital twins with lifelike materials, automating content creation across platforms, and personalizing storytelling at scale. AI doesn't replace craftsmanship; it extends it, making beauty more responsive, inclusive, and intelligent.

We are entering a decisive decade. 3D and AI are not optional experiments but strategic engines for growth, sustainability, and cultural relevance. **The leaders who embrace them will not just transform their companies, they will redefine how humanity experiences creativity, desire, and commerce.**



Yves Hanania is the founder of Lighthouse, a consulting firm specializing in strategy and brand development for leading luxury and fashion houses. He holds an MBA from Kellogg School of Management (Northwestern University), where he co-created course on luxury marketing, and has also taught at ISB (India) and ESSEC-IMHI.

He is the author of two books on the future of luxury published by Dunod (Hachette Group): *Le luxe demain* (2019) and *Le luxe contre-attaque* (2022), translated into English as *The Luxury Empire* and more recently into Japanese.

**He recently joined Sia as an Operating Partner, bringing his expertise at the crossroads of strategy, data, and AI.**

*Yves Hanania*  
Sia - Operating partner

In luxury and retail, creativity has always been defined by craftsmanship, vision, and emotion but also by time, cost, and physical constraints. **Today, 3D technology and Generative AI dissolve those limits. Together, they are not simply tools; they form a new creative and operational fabric** where imagination becomes instantly tangible, and where products can be conceived, tested, and experienced without boundaries.

Individually, 3D and GenAI have proven their value. Combined, they transform the entire digital product lifecycle, from the first sketch to in-store or immersive customer experiences. This fusion enables brands to accelerate design and prototyping, scale content creation with consistent quality, personalize marketing at unprecedented speed, and reinvent e-commerce with richer, more interactive experiences.

This transformation demands more than experimentation. **It requires embedding these technologies deeply across an organization: rethinking processes, reshaping culture, and building robust infrastructures capable of handling creative scale.** The payoff is substantial: reduced time-to-market, significant cost efficiencies, new revenue opportunities, and a stronger emotional connection with consumers.

Last year, we released the first edition of this white paper, exploring the rise of 3D technologies in the luxury and retail sectors. Back then, AI applications to 3D challenges were already a strong focus.

The combination of AI and 3D has accelerated since then, fueled by innovations spanning the entire digital product lifecycle.

**Specialized solutions are now moving into proof-of-concept and pre-industrialization phases with brands, while hyperscalers continue to roll out increasingly advanced offerings.**

To sustain this acceleration, organizations must evolve in their governance. The emergence of 3D factories: cross-functional teams dedicated to scaling immersive and generative use cases, marks a new phase of maturity. These structures bridge creative, technical, and data capabilities, ensuring efficiency, consistency, and ROI across business units. The companies that succeed will be those that move from isolated pilots to strategic transformation programs.

# Executive Summary

This new white paper equips retail and luxury leaders with the insights, frameworks, and tools to navigate this journey. It details how to:

- Apply 3D and GenAI across every stage of the product lifecycle,
- Select the right technology stack, from models to cloud infrastructure,
- Address critical governance issues including data protection and intellectual property,
- Measure success through clear KPIs on quality, scalability, and cost.

Beyond technological enablement, this transformation redefines competitive advantage. 3D and AI are becoming strategic assets: drivers of differentiation, sustainability, and creativity. By mastering these technologies, brands can reconcile efficiency with emotion and scalability with craftsmanship, ensuring that innovation serves both business and artistic excellence.

This white paper was made possible thanks to the contribution of numerous 3D and GenAI professionals, who shared their expertise, perspectives, and operational feedback across multiple industries.

It also draws on real-world use cases led with forward-thinking brands such as AMI Paris, Decathlon, La Maison du Convertible, and Fleuron Paris. Each illustrates how 3D and GenAI can unlock new creative workflows, streamline product development, and transform the customer experience, from prototype design to immersive commerce.

**We are entering a new era where physical and digital blend seamlessly, a phygital couture age. For brands ready to lead, mastering the synergy between 3D and Generative AI will not just be an advantage; it will define their future.**

# Acknowledgements

To create this whitepaper, we wanted to hear from individuals working in companies where the use of 3D has already impacted their business, as well as from experts in 3D technologies in the fashion and luxury sectors. On this occasion, we warmly thank those who enriched our vision with their feedback on concrete use cases.

## List of Interviewees:

Victor Aumaitre  
E-commerce Manager  
*Maison Sarah Lavoine*

Christophe Cadic  
Chief Digital Officer  
*IKEA France*

Marine Chang  
Co-founder  
*Fleuron*

Thierry Chang  
Co-Founder  
*Fleuron*

Emi Custodio  
E-commerce manager  
*Decathlon*

Baptiste Dajon  
Apple Account Manager & Technology Evangelist  
*Decathlon*

Hugo Dubs  
Head of Innovations  
*Ami Paris*

Marie Gervais-Fabre  
Digital Innovation Manager  
*Maje*

Simon Hube  
Image Director  
*Ami Paris*

Sikaar Keita  
Innovation Program Manager  
*Chanel*

Réuel Mizrah  
Deputy CEO  
*La Maison Convertible*

Flore Pilzer  
Chief Growth Officer in charge of Innovation  
*Monnier Paris*

Morgan Prêleur  
CEO  
*Envelope*

Stefano Rosso  
CEO of Marni / CEO of BVX (OTB Group)  
*Chairman of Maison Margiela*

Mirjam Schuele  
Senior Vice President Marketing  
*Karl Lagerfeld*

Kenny Tran  
Digital Innovation & Planning Strategic Manager  
*Parfums Christian Dior*

Jacopo Trivellin  
Project Manager  
*BVX (OTB Group)*

Yann Rivoallan  
Chairman  
*Fédération du Prêt-à-Porter Féminin*

# Back to basics: Introduction to 3D

## 3D definition

### Applications and impacts of 3D Technologies

Humans perceive the world in 3D thanks to depth perception. Each eye captures a 2D image, which is then processed by the visual cortex. However, our stereoscopic vision where each eye views a slightly different image allows the brain to discern depth by comparing these images, thereby perceiving all dimensions simultaneously.

In the digital age, **3D imaging technology has revolutionized various sectors**. This technology, often seen in computer-generated graphics, mimics the depth and substance of real-world objects. It plays a pivotal role in **enhancing user experience** across various platforms such as movies, video games, and virtual environments like the metaverse. Beyond entertainment, 3D technology serves critical functions in industries including real estate, architecture, healthcare, automotive, aeronautics, research, and retail.

The use of **Computer-Aided Design (CAD)** and **Computer-Generated Imagery (CGI)** is fundamental to the implementation of 3D technology in luxury and retail. **CAD enables** designers to create **detailed 3D models of products**, facilitating the exploration of intricate details without the need for physical prototypes. This is particularly valuable in luxury, where attention to detail is paramount. Meanwhile, **CGI enhances visual merchandising** and marketing efforts by producing photorealistic renderings of products in various settings, elevating the overall brand image and storytelling.

**The process of creating** a 3D image involves meticulous steps tailored to meet the demands of luxury and retail industries:

- **Modeling:** Designers utilize CAD software to create precise 3D models of products, capturing every nuance and detail. These digital blueprints serve as the foundation for the subsequent stages of the design process, ensuring accuracy and consistency until making real pieces and the final assembly of a product. CAD allows for the modeling of precise vector shapes that can be zoomed infinitely without loss of detail, but it does not provide material rendering.
- **Rendering:** Once the models are created, CGI techniques are employed to render lifelike images that replicate the appearance of the final product. Polygonal modeling, while less precise because curves are interpreted as segments or triangles, allows for the creation of ultra-realistic materials and lighting. It is used to optimize surfaces, like Origami, enabling the creation of complex 3D forms with a minimal number of polygons. Lighting, shadows, textures, and materials are meticulously applied to enhance realism and create compelling visual experiences for customers.



© Ami Paris created by POWER.xyz

# Introduction to 3D Technology in Retail & Luxury

In the realm of luxury and retail, three-dimensional technology marks a groundbreaking advancement in **reshaping the landscape of consumer experience and product design**. Encompassing the spatial dimensions of width, height, and depth, 3D technology not only **mirrors the physical world** but also opens a plethora of **innovative applications**.

Across luxury and retail sectors, 3D technology is becoming increasingly essential. It is transforming the way products are conceptualized, designed, and showcased, ultimately **enhancing customer engagement and driving sales**.

“

*In just a few years, 3D has transformed fashion and luxury from a creative tool for design to a strategic lever for design, manufacturing, customer experience and content creation.”*

**Yann Rivoallan,**  
President at Fédération Française  
du Prêt à Porter Féminin

**3D technology is driving innovation and transformation in the luxury and retail sectors**, offering unparalleled opportunities for creativity, efficiency, and customer engagement. As advancements in CAD, CGI, and 3D printing continue to evolve, **the future of luxury and retail promises a seamless integration of virtual and physical experiences**, enriching the consumer journey and redefining the concept of luxury.

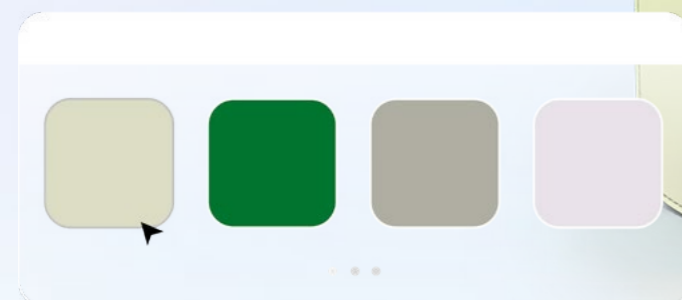
**Several types of 3D technologies can be used in retail and luxury:**

**3D modeling software:** These tools are used to create 3D digital representations of physical objects or spaces. Examples include Autodesk Maya, Blender, Cinema 4D, and SketchUp.

**Rendering engines:** These software components that generate realistic images from 3D models by simulating lighting, shadows, textures, and materials. Popular rendering engines include V-Ray, Corona Renderer, Arnold, and Unreal Engine, but also Web 3D engines such as ThreeJS and WebGL.

**Augmented Reality (AR) and Virtual Reality (VR) platforms:** These technologies enable immersive experiences by overlaying digital content onto the real world (AR) or creating entirely virtual environments (VR). Platforms such as Unity, Unreal Engine, ARKit, and ARCore provide tools for developing AR and VR applications.

**Interactive 3D configurators:** These tools allow users to customize and interact with 3D models in real-time, enabling product customization and personalization. Various web-based configurator platforms and custom development solutions are available for implementing interactive 3D configurators.



© Fleuron Paris created by POWER.xyz



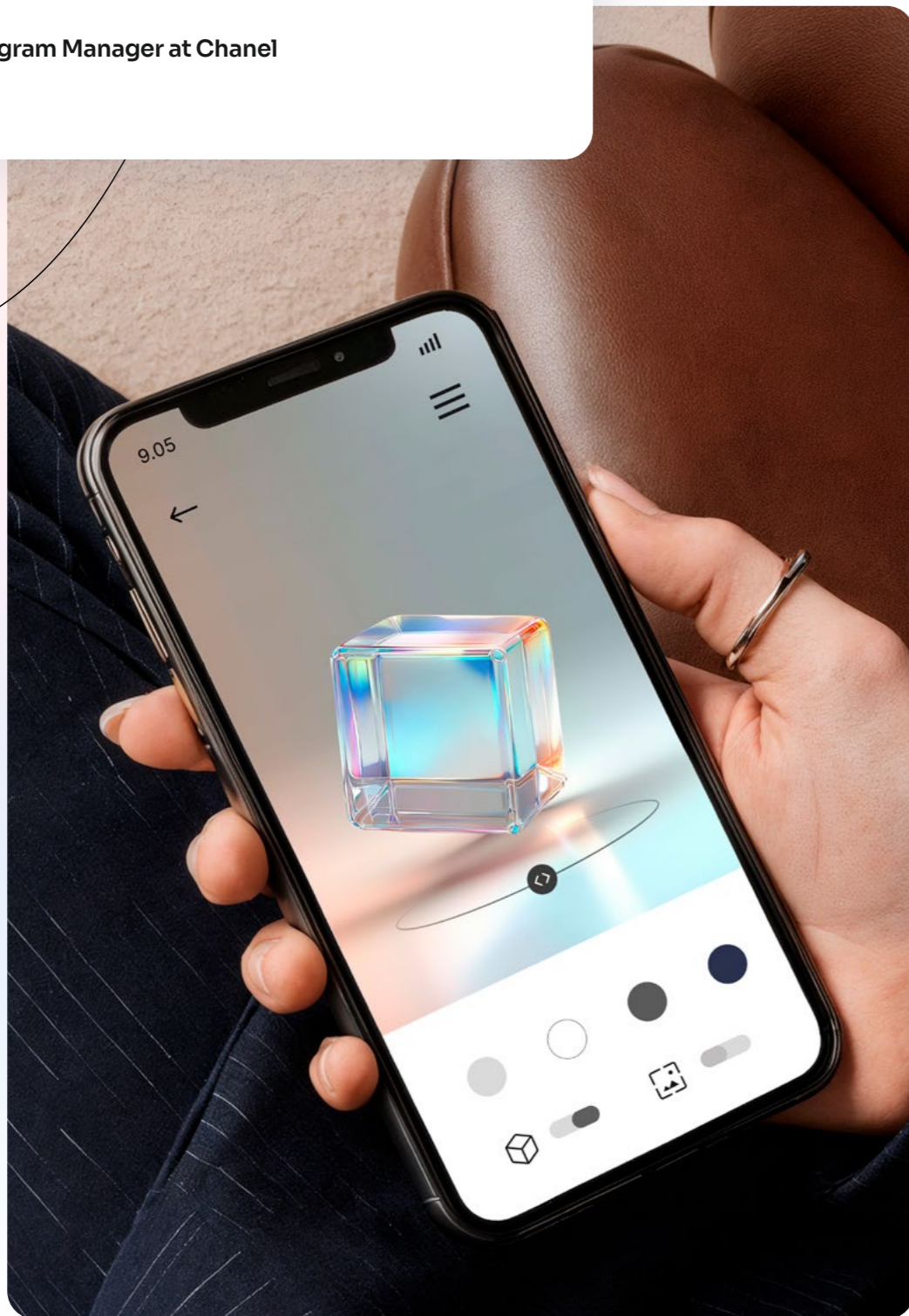
## Use cases in the retail and luxury industry are exhaustive and impact a company's overall value chain:

- **Product design and development:** mock products, virtual testing of textures and colors before prototyping, virtual photo shoots.
- **Supply chain:** visualization of the entire supply chain, from raw materials sourcing to distribution and retail. Brands can create digital models of production facilities, warehouses, transportation networks, and retail locations to visualize the flow of materials and products throughout the supply chain. This visibility allows brands to identify bottlenecks, optimize transportation routes, and improve overall supply chain efficiency.
- **Customer experience:** virtual showrooms and stores, virtual try-on, customization and personalization through configurators.
- **Marketing and branding:** 3D renderings, holograms, 3D events, fake out of home (FOOH), AI generated content through 3D models.

“

*In luxury, it's not about immediate differentiation through 3D but about storytelling. We sell products of incredible quality, and 3D should be used to enhance the user experience, not just mimic reality."*

**Sikaar Keita,**  
Innovation Program Manager at Chanel



## The importance of 3D for business purposes

In today's evolving digital world, retail and luxury businesses are embracing 3D technology to boost their performance. Integrating 3D solutions offers numerous advantages, such as **optimizing operations and transforming the customer journey**, leading to increased sales and stronger brand loyalty.

One of the significant advantages of 3D technology in retail and luxury is its capacity for unparalleled **product visualization**. Unlike traditional 2D images and flat displays, which often fail to convey the intricacies and nuances of complex products such as haute couture clothing or intricate jewelry pieces, **3D rendering and modeling excel in presenting products with precise detail**. This enables customers to **explore products from all perspectives**, zoom in on specific details, and even visualize them in different environments. Providing a **realistic, 360-degree view of products** transforms how customers interact with brands, allowing them **to better understand features, texture, size, and functionality**. Such realism not only fosters **greater consumer confidence** but also **facilitates more informed purchasing decisions**, contributing to the future of eCommerce by **digitally replicating the in-store shopping experience**. A Harris Poll survey conducted on behalf of Threekit indicates that **60% of US adults surveyed, who shop online, are more likely to buy products presented in 3D or augmented reality**.

“

*3D has the advantage for accessories of allowing the product to be viewed from all angles, not just from the brand's perspective with the provided e-commerce visuals. Here, the customer is in control, able to decide exactly what they want to see of the product. They can zoom in on certain details and have a true 360° view."*

**Marie Gervais-Fabre,**  
Digital Innovation Manager at Maje

The integration of 3D technology has revolutionized brand-customer interactions, offering **immersive and interactive experiences**. Leveraging 3D configurators and virtual try-on tools, retailers enable customers to **personalize products according to their preferences and instantly visualize their appearance or fit**. This capability aligns with the desires of new generations of consumers who are looking for **co-creation opportunities with brands** and involvement in the creative process, as it **facilitates customization and manufacturing on demand**. Brands, recognizing the potential of 3D visuals, have embraced techniques such as **3D animation and augmented reality to immerse customers in their creative universe**. Through "story-telling" experiences, brands craft narratives that not only showcase their products but also convey their unique stories and heritage, further **enhancing the connection between consumers and brands**.

“

*It is a real advantage for us to be able to offer 3D to our customers. This allows them to see the products in their own home environment with very qualitative results of 3D modeling from POWER.xyz.”*

**Emie Custodio,**  
E-commerce Manager at Decathlon

In addition to its impact on customer-facing operations, 3D technology offers significant **cost and time benefits** throughout the product development and marketing journey. Traditional methods like prototyping and photography can be resource-intensive and time-consuming, requiring physical samples and extensive photoshoots. In contrast, 3D modeling and rendering enable rapid prototyping, iterative design processes, and the creation of lifelike visuals without the need for physical prototypes or elaborate sets. This not only **accelerates time-to-market but also reduces production costs and minimizes waste**, making it an attractive proposition for businesses looking to optimize their operations.

“

*Traditional manufacturing processes can be time-consuming and costly, especially when it comes to prototyping and sample-making. 3D modeling allows brands to streamline the design and development process, reducing lead times and minimizing waste associated with physical prototyping.”*

**Stefano Rosso,**  
CEO of Marni, Chairman of Maison Margiela,  
CEO of BVX (OTB Group)

In an era where consumers expect seamless experiences online and offline, 3D technology plays a pivotal role in **enabling omnichannel integration**, bridging the gap between physical and digital retail environments. By embedding interactive 3D models on e-commerce platforms, setting up virtual showrooms in physical stores, or using augmented reality (AR) for immersive shopping, businesses can deliver cohesive brand experiences that go beyond traditional boundaries. The potential of 3D technology in an omnichannel strategy extends beyond the point of purchase. There are opportunities in areas such as consumer education, visual asset optimization, and elevating brick-and-mortar experiences. This cohesive approach not only drives engagement but also strengthens brand identity and fosters customer loyalty across all touchpoints.

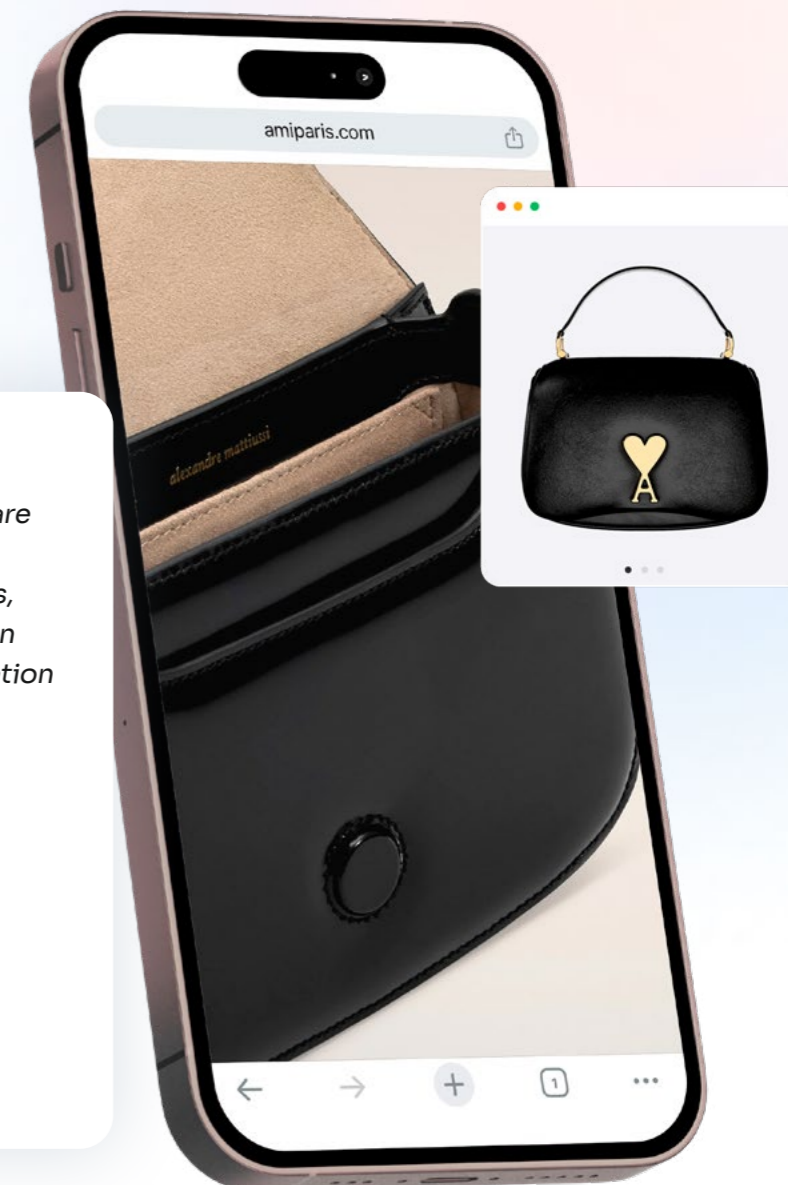
“

*The commercial and operational benefits are concrete. One master 3D asset now feeds e-commerce, AR experiences, social filters, OOH and avatar scenes, cutting production time and cost for complex shoots. Localization and campaign variations can be produced faster, enabling more relevant storytelling by market. And creatively, the team gains permission to imagine scenes and formats that surprise audiences and deepen brand identity.”*

**Hugo Dubs,**  
Head of Innovations at Ami Paris

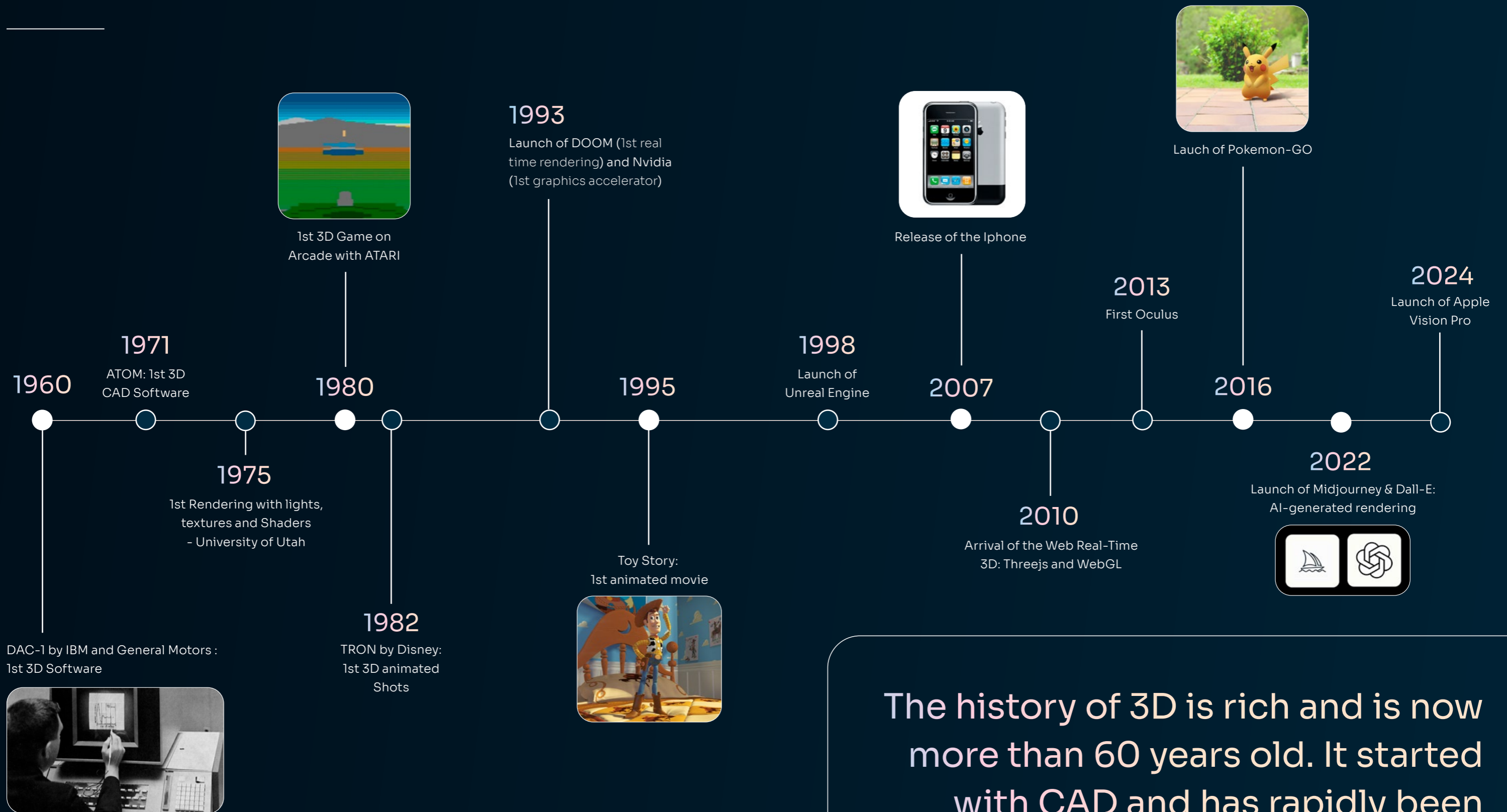
As technology continues to evolve at a rapid pace, embracing 3D innovation is not just about staying competitive in the present, but also **future-proofing business strategies** for the long term. By investing in 3D infrastructure and talent, businesses can establish themselves as pioneers of innovation, ensuring they retain agility and adaptability in an ever-evolving marketplace. Furthermore, as consumer preferences and shopping behaviors evolve, the flexibility of 3D technology **empowers businesses to pivot rapidly and experiment with new concepts**, thus maintaining **a lead in innovation** and continuously addressing the changing needs of their audience.

The significance of 3D technology for businesses in the retail and luxury sectors cannot be emphasized enough. From enriching product visualization and facilitating personalized experiences, 3D technology presents a multitude of advantages that empower businesses to excel in today's digital era. By embracing 3D innovation, **businesses can unlock new opportunities for growth, creativity, and customer engagement**, setting themselves apart as leaders in their respective industries.



© Ami Paris by POWER.xyz

# The Evolution of 3D



The history of 3D is rich and is now more than 60 years old. It started with CAD and has rapidly been developed thanks to video games.

# Various ways to render 3D

## Understand the differences between Real-time 3D, pre-rendered 3D & Pixel Streaming

The field of 3D encompasses a **variety of techniques and approaches** for representing three-dimensional objects in a digital space. Among the main types of 3D are real-time 3D, pre-rendered 3D and Pixel Streaming.

**Pre-rendered 3D involves rendering static or animated images** in advance using complex modeling and rendering techniques. This type of 3D is often used in animated films, cinematic special effects, and architectural visualizations, where visual quality takes precedence over real-time responsiveness. Unlike real-time 3D, where calculations are performed in real-time, pre-rendered 3D often requires significant computation time to produce high-quality results. However, once pre-rendered images are generated, they can be manipulated and integrated into projects with great flexibility. This approach is used to create complex scenes with numerous details and sophisticated visual effects, such as fluid simulations, complex lighting, and realistic textures.

**Real-time 3D** is a widely used technique in video games, interactive simulations, and virtual reality. **It is characterized by its ability to generate images in real-time**, thus offering users an immersive and dynamic experience. In this type of 3D, the calculations necessary for rendering the images are performed live by the computer or console's graphics processor, allowing for real-time interaction with the virtual environment. Applications of real-time 3D range from creating complex virtual worlds for entertainment or educational purposes, to simulating physical phenomena for professional training, or even designing prototypes in engineering.

Technically, there are two ways to render real-time 3D:

- On-Device or Local Rendering:** This approach generates graphics directly on a user's device using its local hardware resources, such as the CPU and GPU. This method provides low latency and high responsiveness since the rendering occurs locally without requiring network data transfer. On-device rendering is commonly used in video games, augmented reality (AR), and virtual reality (VR) applications, where real-time interactions and immersion are essential. While this capability is typically available on any web browser and device (mobile, tablet, desktop), older devices may lack the necessary power to support larger, high-fidelity experiences on-device.
- Pixel Streaming:** This is a technology developed by Epic Games that enables high-quality, interactive 3D applications to run on a server while being streamed in real-time to clients' devices over the internet. The 3D application is rendered on the server, and only the visual output (as a video stream) is sent to the client. The client's inputs (like mouse movements, keyboard inputs, or touch gestures) are captured and sent back to the server to interact with the application. This allows users to experience complex 3D applications without needing powerful hardware, as the heavy lifting is done by the server. It's commonly used for cloud gaming, interactive 3D applications, and virtual desktop infrastructures.

“

*I emphasize greatly on the importance of real-time 3D, which is a significant shift often overlooked by many. In the fashion industry, where clothing is the primary product, fabric drapes are crucial. It's preferable to opt for dynamic 3D. In this case, the focus is on real-time 3D or pre-rendered videos derived from 3D to capture fabric movement effectively."*

**Sikaar Keita,**  
Innovation Program Manager at Chanel

Each of these approaches has its own advantages and constraints, and the choice depends on the specific needs of the project and the available resources. While real-time 3D offers immediate interactivity and flexibility for applications where responsiveness is crucial, pre-rendered 3D allows for producing high-quality renders for projects requiring a high level of realism and detail, even if it involves longer production times.

Type of 3D / Feature	Pre-rendered 3D	Pixel streamed Real time 3D	On device or local Real time 3D
<b>Polygons</b>	High or Low Poly	High or Low Poly	Low Poly
<b>Graphic Effect &amp; rendering</b>	No limitation	No limitation	Few limitations with webgpu
<b>Computing power &amp; energy consumption</b>	High	High	Low
<b>Interactivity</b>		✓	✓
<b>Easy to integrate</b>	✓		✓

## WebGL vs WebGPU

WebGL and WebGPU are two technologies that let your web browser use the power of your computer's graphics card. **They both make it possible to display 3D graphics and animations directly on a website**, but they belong to two different generations.

**WebGL**, launched in 2011, was the first big step. It allowed developers to create 3D scenes in the browser without needing extra software. Thanks to WebGL, interactive 3D but also interactive maps, online games, and data visualizations became possible on almost any device.

**WebGPU**, released in 2023, is the new standard. It is designed for today's more powerful computers and is inspired by modern graphics systems like those used in video games. Unlike WebGL, WebGPU is not just for visuals. It can also use the graphics card for other heavy tasks, such as artificial intelligence,

WebGL



“

*WebGPU represents the future of real-time 3D: it unlocks more power, speed, and realism directly in the browser, making immersive experiences accessible to everyone without compromise.”*

**Jérémie Salvucci,**  
CTO at POWER.xyz



WebGPU

© 3D Modeling for GAS Bijoux created by POWER.xyz



## Maje 3D for customer experience

“*The main advantage of 3D is overcoming the lack of physical interaction in e-commerce, allowing customers to explore products in detail with a 360° view*”  
**Marie Gervais-Fabre,**  
Innovation Manager at Maje

### Overview

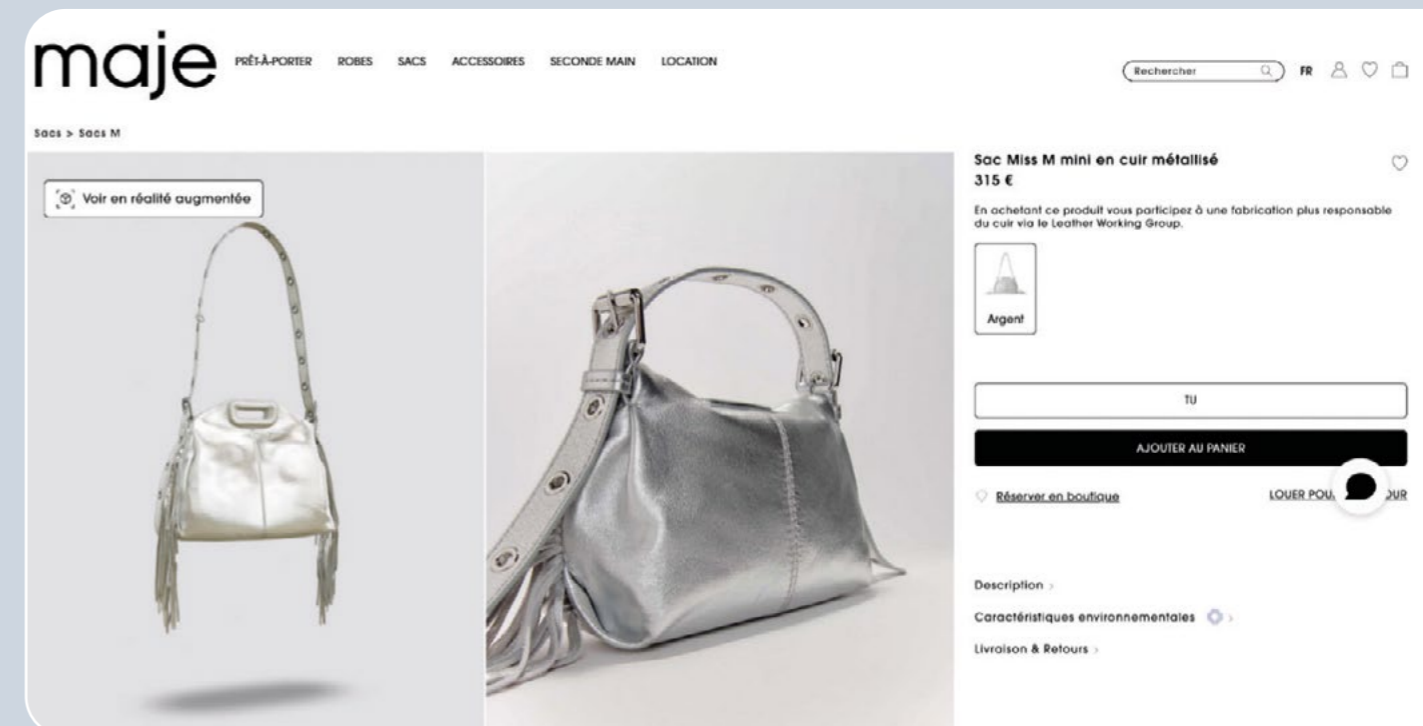
Marie Gervais-Fabre, Innovation Manager for Maje explains that the brand's interest in 3D technology was sparked by its growing presence in e-commerce and was solidified through partnerships at digital forums in 2023, particularly for launching their tech-savvy Miss M bag line.

The biggest challenge was ensuring 3D images accurately reflected the textures and colors of their materials, which was achieved through close collaboration with POWER.xyz.

Implementing 3D has significantly increased time spent on product pages and improved conversion rates, leading Maje to expand 3D to their best-selling items and shoes in 2025. Maje also reused the 3D assets for Social Media Filters and a FOOH campaign.

Looking ahead, Maje is exploring 3D applications in ready-to-wear fashion and virtual try-ons. **Marie Gervais-Fabre firmly believes that 3D technology is a must-have for e-commerce in 2025.**

Maje also partnered with Vyking specialized in Virtual Try-on to test the sneakers directly from the website, after having viewed them on the website.



© Maje experience managed by POWER.xyz

# Decathlon Expanding the Field: How Immersive Tech Brings Everyone into the Game

*At Decathlon, our mission is to make sport accessible to the many. Emerging technologies like Augmented Reality, Virtual Reality and Mixed Reality are opening new ways to deliver on that promise, by enhancing both the customer journey and our internal processes.*

On the customer side, AR has become a powerful tool to help customers better understand and project our products in their environment. For example, tents and camping equipment can be visualized at home in full scale before purchase on our mobile shopping app, reducing uncertainty, making decision-making easier and giving customers the ability to explore details and functionalities interactively rather than relying only on photos or text descriptions.

“*For us, innovation is meaningful only when it serves our purpose. AR, VR, XR and even AI bring value when they reduce friction, improve confidence, and spark inspiration for our users.*”

**Baptiste Dajon, Apple Account Manager & Technology Evangelist at Decathlon Digital**

Apple Vision Pro is allowing us to go a step further by reimagining the shopping experience. In pilot projects, we’ve explored the “Visio Store” concept where customers and advisors meet in a video conference, combining the expertise of our teammates with the convenience of sharing the immersive experience our advisor lives through the video conference. Apple Vision Pro also enables inspirational experiences such as “Build Your Camp” in store experiences where customers can virtually assemble their camping setup and see how products work together. These approaches merge commerce and discovery in new, engaging ways.

Internally, those technologies also serve as powerful training and operational tools. We experiment with immersive onboarding for teammates, new product training, and even digital twins of our stores or warehouses. These solutions accelerate learning, improve efficiency, and foster collaboration across international teams.

For Decathlon, immersive technologies are not gimmicks. They are pragmatic enablers that support our purpose of sustainably making the pleasures and benefits of sport accessible to everyone. By embedding immersive technologies into both customer and teammate experiences, we open new paths for exploration, learning, and to move people through the wonders of Sport.



© Decathlon

## 3D & genAI for design & prototyping

# Applications of 3D & AI all along digital product lifecycle

Product design and prototyping are undergoing a profound transformation, driven by the **combined rise of 3D technology and generative artificial intelligence**. These innovations no longer simply enhance existing tools; they are fundamentally reshaping creative practices. Design teams now operate within connected, fluid, and collaborative environments that allow them to conceptualize, model, and iterate with unprecedented freedom and speed.

Over the last decade, many brands have adapted the way they use 3D for design and manufacturing. This is called **Computer-Aided Design (CAD)**. While traditional software remains powerful, the retail and luxury sectors have seen the emergence of lighter, more intuitive 3D tools that enable photorealistic modeling by simulating material behavior, such as fabric drape, gloss, or elasticity. Virtual prototyping significantly reduces the need for physical samples, while accelerating testing and validation phases.

“

*At Dior Beauty, 3D modeling is a cornerstone of our packaging and bottle design process. It goes far beyond simple visualization and enables fast, precise iterations. This approach allows us to validate industrial feasibility and anticipate production constraints from the earliest stages.”*

**Kenny Tran,**  
Digital Innovation & Planning  
Strategic Manager at Parfums Christian Dior

Generative AI further enhances this momentum upstream in the creative process. Producing a series of **visual concepts, which once took days or even weeks, can now be done in just a few hours with simple briefs**. For example, an automotive manufacturer generated 25 dashboard variants in just two hours, complete with detailed renderings of interfaces, materials, and finishes. This timesaving enables more creativity within shorter cycles and facilitates faster decision-making and stakeholder alignment.

By combining 3D and GenAI, raw ideas can be transformed into immersive, ultra-realistic models from the earliest design phases. This not only improves internal understanding of concepts but also enables quicker consumer testing. In fashion, for instance, **Hugo Boss reduced its product development cycle by 85% through virtual experimentation** with various fabric, pattern, and color combinations.

At the same time, this convergence is transforming how teams collaborate. Today, multidisciplinary teams, often spread across multiple locations, can co-create, comment on, and refine 3D models in real time. **3D and generative AI are no longer niche tools reserved for technical departments.** They are becoming a shared language across design, marketing, production, and product leadership. **LVMH offers a compelling illustration of this evolution. At the group level, generative AI is seen as a creative augmentation tool, enhancing the designer's capabilities without diluting each brand's unique aesthetic.** For the 2024 Innovation Awards at Christian Dior Couture, Luca Albergo, Creative Director of Visual Merchandising, partnered closely with technical teams to fuse algorithmic inspiration with artisanal craftsmanship. The result was a series of unique pieces, testaments to the powerful synergy between human creativity and technological prowess. LVMH thus positions AI not as a replacement, but as a catalyst that reinforces the creative DNA of each Maison.



© Jules X IMKI

“

*In product design, it might be a mix — like, we designed this watch in 3D, but for the more complex mechanism, we used AI to generate it [...] We're reaching a point where the two will really start to blend, and AI is going to fundamentally change the way we approach 3D design.”*

**Sikaar Keita,**  
Innovation Program Manager at Chanel

Beyond image generation, generative AI also plays a strategic role in guiding product direction. By analyzing market data, customer preferences, and consumer feedback, it helps identify innovation opportunities and assess the relevance of concepts before they even enter development. This approach was embraced by French fashion brand Jules in 2024 through a collaboration with IMKI, a startup specializing in AI for textile creation. Together, they developed **a capsule collection entirely generated by AI, reimagining the brand's early-2000s aesthetic** (vintage logos, bold color blocks, and retro typography) while integrating contemporary trends. Offered at accessible price points and released as a limited edition, the collection demonstrated that creative heritage and algorithmic innovation can successfully merge to create culturally resonant products.

**This technological shift is also reshaping how designers are trained. To address these emerging needs, institutions like the Institut Français de la Mode (IFM) have incorporated 3D-focused modules into their programs, equipping students with skills in using tools such as CLO3D and Marvelous Designer. A new generation of creators is thus being trained in digital practices that merge technological innovation with artistic expression.**

# 3D & genAI for content creation and Marketing

3D content creation and generative AI are transforming how brands captivate audiences and elevate their digital presence. **From intricately detailed virtual campaigns to adaptive visual storytelling, this combined technology empowers retail and luxury houses to deliver innovative narratives with both speed and sophistication.**

**One of the greatest advantages of this approach lies in its ability to bring concepts to life with breathtaking realism. Whether it is simulating fabric textures or visualizing product details with hyper-realistic precision, 3D assets enhanced by AI open new creative possibilities while**

“

*At Dior Beauty, our current exploration of AI combined with 3D is focused on content creation[...]. Our goal is to leverage AI to generate a rich diversity of 3D moodboards, enabling the exploration of new aesthetics and pushing the boundaries of our creativity.”*

**Kenny Tran,**  
Digital Innovation  
& Planning Strategic  
Manager at Parfums  
Christian Dior

**preserving the standards of craftsmanship and quality.** Unlike traditional workflows, these assets are not static. They evolve, adapt, and scale. Using prompt-based scene generation, brands can now generate lifestyle visuals, product-focused compositions, or editorial-style imagery on demand.

This shift enables entirely new production models. Campaign-ready videos and visuals can be built directly from 3D assets without the need for physical sets. Beyond efficiency, this evolution represents **a deeper strategic shift: reducing physical constraints while maintaining high creative standards.**

“

*We have adopted a strategy centered on 3D modeling for the creation of immersive digital content. Each product is meticulously digitized in 3D, capturing the subtlety of textures, the play of light, and the finishing details that define the Dior universe. These 3D models serve as the foundation for the generation of ultra-realistic computer-generated imagery (CGI), used in our social media campaigns and the development of interactive filters.”*

**Kenny Tran,**  
Digital Innovation & Planning Strategic Manager  
at Parfums Christian Dior

“

*Envelope empowers fashion houses to create photorealistic digital models, indistinguishable from real shoots. Their proprietary CGI + ML + GenAI pipeline delivers precise visuals and bespoke casting adaptable to every market.”*

**Morgan Preleur,**  
Founder at Envelope

“

*We are experimenting with Generative AI across different types of content, from showcasing our expertise to producing marketing materials.”*

**Christophe Cadic,**  
CDO at IKEA France

Generative AI also enables contextual storytelling, automatically adapting content based on personas, campaign timing, or digital channel. This approach allows for personalized storytelling at scale, going beyond visual customization to tailor the tone, messaging, and setting of each asset. By integrating behavioral data and predictive analytics, retail and luxury brands can adapt their content to each audience segment, enhancing emotional engagement while remaining consistent with

brand identity. In 2025, **Chanel leverages AI-driven predictive algorithms to deliver hyper-targeted campaigns based on customer behavior.**

For its latest fragrance launch, the brand personalized content across channels (immersive videos, tailored storytelling, and product suggestions). This example highlights how combining 3D-generated assets with predictive personalization and generative AI storytelling unlocks new levels of marketing effectiveness.

AI-generated virtual models and influencers are also reshaping creative strategy. **Brands are integrating AI glam bots in campaigns to reduce production timelines while maintaining visual consistency and appeal.** Others, like Prada, have embraced virtual influencers such as Lil Miquela to promote collections, offering full control over image and messaging, and continuous presence across global digital channels. These digital figures reflect a broader trend: enabling brands to shape evolving narratives without the unpredictability of human influencers, while ensuring alignment with aesthetic codes and values.

**THE INTEGRATION OF GENERATIVE AI AND 3D CONTENT DELIVERS MEASURABLE BUSINESS BENEFITS.**

By minimizing physical production and accelerating creative cycles, **brands reduce costs and time-to-market, often from weeks to just a few days.**

**Immersive visuals, dynamic A/B testing, and real-time adaptation allow for performance-driven marketing across all channels.** Additionally, metrics specific to generative AI and 3D include time saved in content creation up to 60% (source: FancyTech Innovation Report, 2024), increased personalization accuracy, and enhanced virtual try-on engagement rates.

**Yet limits remain. The luxury sector’s emphasis on artisanal value and authenticity can clash with synthetic visuals if not carefully curated.** Textural realism remains a challenge in some generative outputs. And overdependence on algorithmically generated content risks creative homogenization, blurring differentiation in a category where uniqueness is key.

**Still, the convergence of 3D and generative AI is not just a technical evolution, it marks a cultural shift in how brands express identity, build emotion, and connect with new generations of consumers across a rapidly changing digital ecosystem.**

“

*Until recently, AI produced cheap-looking images. But within just a few weeks, we’ve reached a stage where we can create highly realistic environments from a single 3D asset.”*

**Réuel Mizrah,**  
Deputy CEO at La Maison Convertible



“

*I think we’ll still need a bit more photoshoot [...] we shouldn’t forget about craftsmanship. Even today, there are brands still working with film photography. That is where the challenge lies: which companies have craftsmanship as their core expertise? If that’s not the case, then they need to scale.”*

**Sikaar Keita,**  
Innovation Program Manager at Chanel

# 3D & genAI for e-commerce and customer experience

03 /

## 1. Immersive Product Visualization for a better customer engagement

Generative AI is revolutionizing 3D modeling by enabling faster, more personalized, and immersive customer experiences. Previously constrained by rendering times and costly photo production, **brands can now generate photorealistic 3D visuals or environments from simple prompts or sketches.**

**This 3D process allows them to view items from different angles, zoom on details, and visualize how they would look or fit in real-life settings. Such detailed visualization helps alleviate the uncertainty that comes with not being able to physically see or touch products before making a purchase. A study from Shopify shows that product purchases in which customers interacted with 3D as part of the buying process resulted in a “40% decrease in returns” (2021).**

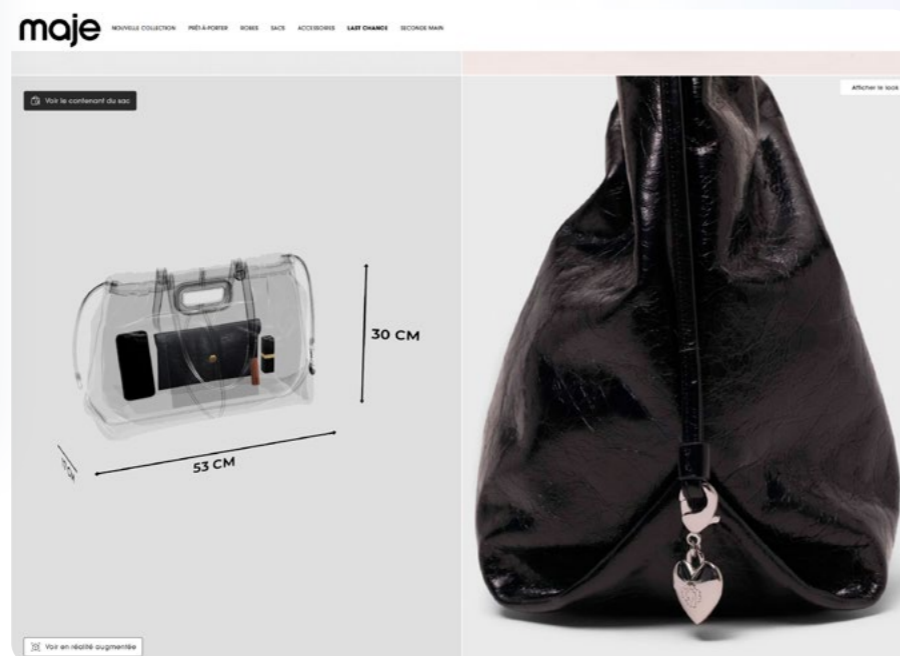
In 2025, Guerlain integrated scents using an olfactory device usually reserved for VR to enhance the immersive 3D olfactory experience. **Using generative AI, 3D modeling, and olfactory diffusion, visitors explore dreamlike landscapes** inspired by perfumer Delphine Jelk’s scent compositions. A fragrance diffuser built into a VR headset releases scents such as Rose Barbare and Neroli Plein Sud, synchronizing smell with the AI-designed environment.

“

*3D is a way for us to help our customers envision their future home, with tailored solutions created by our experts. 3D makes understanding easier and supports better decision-making.”*

**Christophe Cadic,**  
CDO at IKEA France

Customers can now interact with AI-generated models, such as online watch or handbag configurators, which offer interactive rendering and smart recommendations based on user profiles.



© Maje experience managed by POWER.xyz

“

*We have been impressed and convinced by the quality of execution of the 3D models that offer a completely immersive experience.”*

**Marie Gervais-Fabre,**  
Digital Innovation Manager at Maje

Creative technologists developed a **custom AI model that interprets the perfumer’s words to generate 3D landscapes** through iterative animation and generative design tools, merging storytelling, scent, and immersive visuals into a unique brand experience.

“

*3D-powered configurators allow our customers to truly project themselves and design the exact combination they want. It has become a genuine sales tool for our stores, bridging inspiration with purchase.”*

**Réuel Mizrah,**  
Deputy CEO at La Maison Convertible



© La Maison Convertible

**3D enables the customization of products to meet individual preferences. This level of personalization can lead to a stronger emotional connection with the brand, increasing customer loyalty, and driving repeat business.** Implementing 3D technology also sets e-commerce platforms apart from competitors by offering a more innovative and immersive shopping experience. This differentiation can attract new customers and retain existing ones who are drawn to the unique features and capabilities offered by the platform. In a crowded market, these technologies provide a significant competitive advantage, positioning the brand as a leader in customer experience.

By integrating generative AI with 3D, brands are pushing the boundaries of product visualization. These technologies create **rich, personalized, and multisensory experiences that strengthen customer relationships and elevate digital interactions.** This approach not only enhances customer satisfaction but also builds a loyal customer base and drives long-term growth.

“

*We are developing use cases that combine 3D and GenAI, for instance to pre-generate kitchen layouts based on customer preferences. This allows the expert to then add their value.”*

**Christophe Cadic,**  
CDO at IKEA France

“

*The virtualization of products through 3D directly contributes to the training of our employees, we need them to know the products, to mention them to the final customer, to understand the manufacturing process.”*

**Sikaar Keita,**  
Innovation Program Manager at Chanel

## 2. Reinventing e-commerce journey using 3D & AI

The new frontier of e-commerce is to bring the emotion and refinement of physical spaces online, **maintain a sense of exclusivity while enhancing digital reach, and reduce friction in purchasing through deeper engagement.** Generative AI, combined with 3D, is accelerating this transformation.



© Ami Paris

“

*POWER.xyz has elevated our customer experience and boosted both engagement and conversion on amiparis.com. Their 3D models seamlessly power multiple use cases - 3D, AR and content creation - driving creative efficiency while reducing production costs.”*

**Hugo Dubs,**  
Head of Innovations at Ami Paris

Brands now offer **immersive 3D environments, such as virtual showrooms or artistic pop-ups,** where users can explore, interact with products, and receive AI-guided assistance. Generative AI personalizes the ambiance (music, lighting, decor) based on user profiles. For example, Bulgari and Dior use virtual spaces to present jewelry and leather goods collections.

“

*3D has become a real game changer for us: it enriches the customer experience, helps our clients visualize products in their own space, and ultimately drives higher conversion.”*

**Victor Aumaitre,**  
E-commerce Manager at Maison Sarah Lavoine

Flat product photos are being replaced by **AI-generated 3D pack shots, real-time, 360°, high-definition visuals with photorealistic textures and animations.** Solutions from innovative startups are already used by high-end brands to deliver customizable and engaging visuals that are afterwards serving their e-commerce purposes.

Virtual fitting, powered by 3D and AI, enables clients to try products via camera or avatars, with real-time size and style suggestions. This technology is currently being tested by Farfetch and Gucci. **By providing more accurate representations, these technologies reduce the likelihood of returns due to mismatched expectations and build trust with customers.**

Generative AI also enables real-time product customization. Clients can personalize items and instantly view ultra-realistic 3D renderings. Louis Vuitton, for instance, offers online customization with dynamic previews. **The interactive and immersive nature of 3D can significantly boost user engagement. Customers are more likely to spend time exploring products when they can manipulate them in a virtual space. This increased interaction not only enhances the shopping experience but also leads to higher levels of satisfaction and potentially higher conversion rates.**

A groundbreaking start-up in the virtual try-on, Doji, allows creating a photorealistic 3D avatar, faithful to its morphology from a few selfies. The user can virtually try on branded or imported garments, in an immersive

digital fitting room. The AI recommends personalized looks according to stylistic preferences and silhouette. The experience is social, with sharing options and community feedback and it will soon be possible to make in-app purchases directly from the application, after trying on the avatar.

**The combination of generative AI and 3D enables the creation of personalized, immersive, and emotionally engaging digital experiences.** This constructive collaboration enhances the online journey while retaining the distinctive qualities of the physical experience.

“

*We develop augmented reality experiences both in-store and through digital channels, allowing our customers to virtually try out different shades and textures or visualize our exceptional fragrances. These experiences aim to create a strong emotional connection with the brand and strengthen attachment to our products.”*

**Kenny Tran,**  
Digital Innovation & Planning Strategic Manager at Parfums Christian Dior



© Maison Sarah Lavoine by POWER.xyz

# Scaling 3D deployment over digital product lifecycle

04 /

In a 3D pipeline for a retailer, the **upstream phase** covers all activities related to prototyping, asset creation, and preparation. This includes 3D modeling, material and texture definition, photorealistic rendering setup, and the organization of assets in a way that ensures consistency with brand guidelines. Upstream, the key challenge is **scalability**: creating and maintaining high-quality 3D models across large product catalogs while controlling costs and production timelines.

The **downstream phase** focuses on leveraging these assets across multiple touchpoints: e-commerce platforms, product configurators, content creation (pack shots, marketing campaigns...), AR/VR experiences, and even in-store digital tools. Here, the challenge lies in **distribution and reuse**: integrating 3D assets seamlessly into diverse channels, ensuring performance and compatibility across devices, and delivering an engaging, consistent experience to customers.

The main stakes for retailers are therefore twofold: upstream, building a sustainable and efficient production pipeline that can adapt to new technologies such as Generative AI; downstream, maximizing the return on investment by **deploying assets across the entire customer journey** to drive

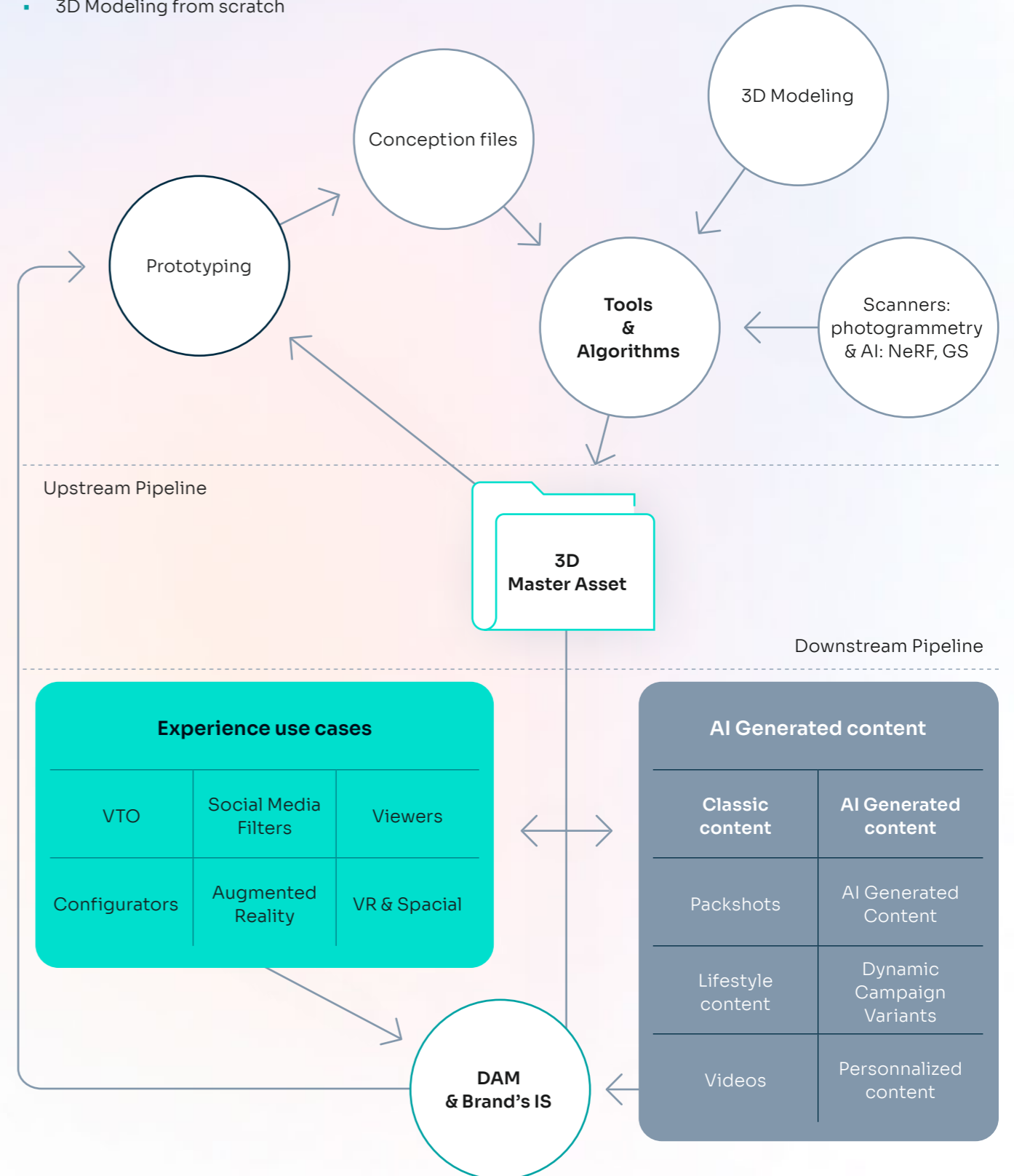
conversion, reduce content production costs, and enhance brand storytelling.

To simplify this upstream/downstream complexity and make 3D deployment scalable across multiple use cases, **POWER.xyz** acts as a unifying platform. By centralizing asset management and integrating GenAI, it enables brands to create a single master 3D model and reuse it seamlessly across commerce and content channels - whether in 3D viewers, AR experiences, configurators, or automated content production such as pack shots and lifestyle visuals. With dedicated modules for creation, commerce activation, and content generation, POWER.xyz helps retailers transform 3D pipelines from fragmented workflows into an **end-to-end system**, reducing costs, accelerating time-to-market, and unlocking infinite creative possibilities from one asset.

## Using 3D master assets to scale 3D strategy

In order to get this master asset, different options can be considered:

- Rework from the conception file
- Photogrammetry = creation of the asset from a set of photographs
- 3D Modeling from scratch



# 3D & AI Layers & Infrastructure

## USE CASES

Experience and content



**Content:**  
Packshots, videos, ...  
**Enriched experiences:**  
viewer, product configurator  
**Prototyping**

## APPLICATION

Scene & rendering Management



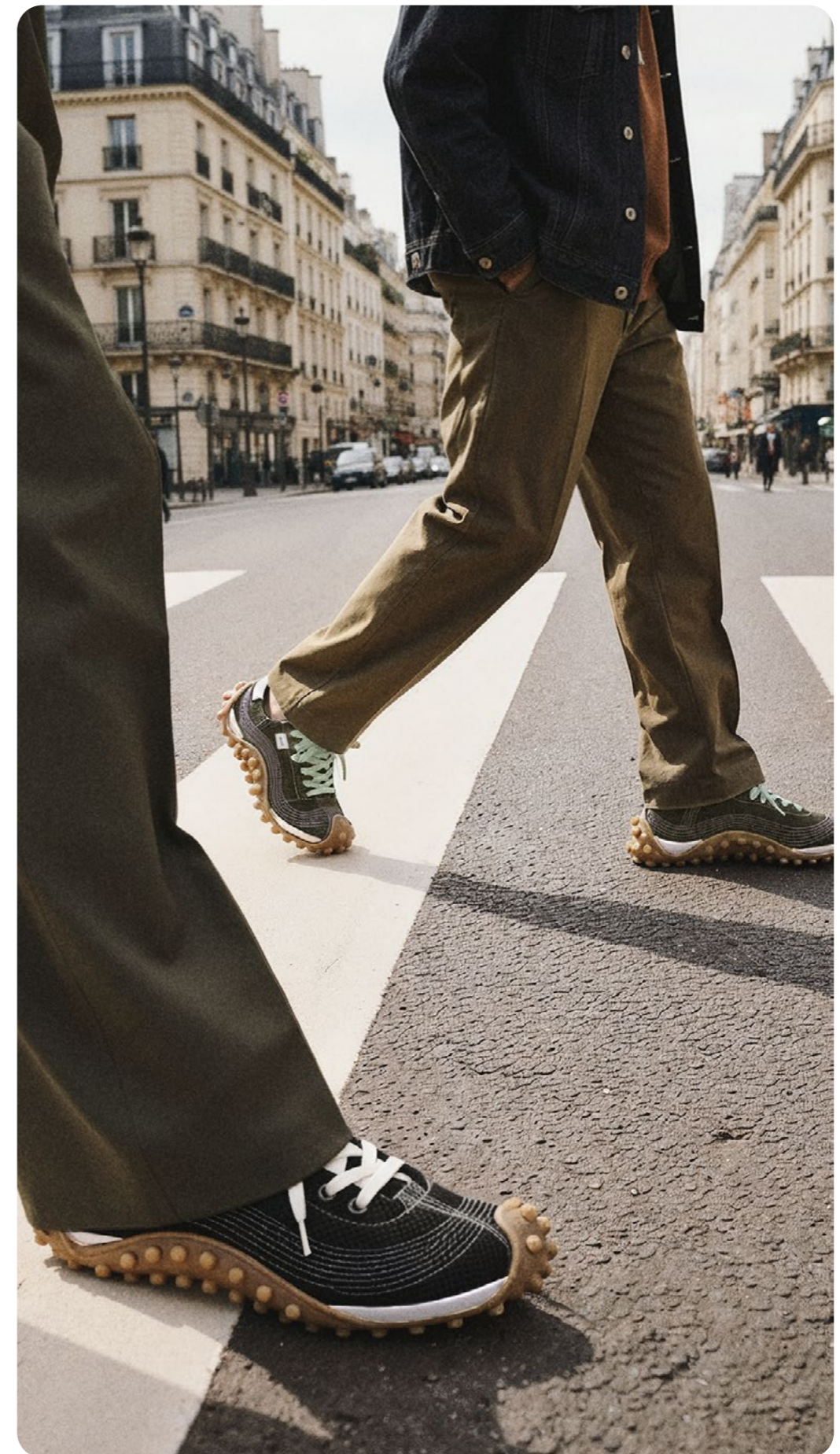
**3D Rendering**  
Materials management,  
Rules management

## INFRASTRUCTURE

Asset Management & Infrastructure



**3D Assets**  
3D Database,  
servers



© Ami Paris by POWER.xyz and Envelope

# Ami Paris Curiosity, Design and Code: An A(m)i Exploration

## Overview

Ami Paris has set out to explore how 3D and AI could become new creative languages that can sit alongside photography, film, and live shows to surprise and delight their audiences. By partnering with POWER.xyz to produce high-fidelity 3D scans of pieces from their collections and collaborating with creative studios such as envelope.app and thenewface.io, Ami Paris was able to connect with new forms of artistry and develop playful and immersive stories around their products.

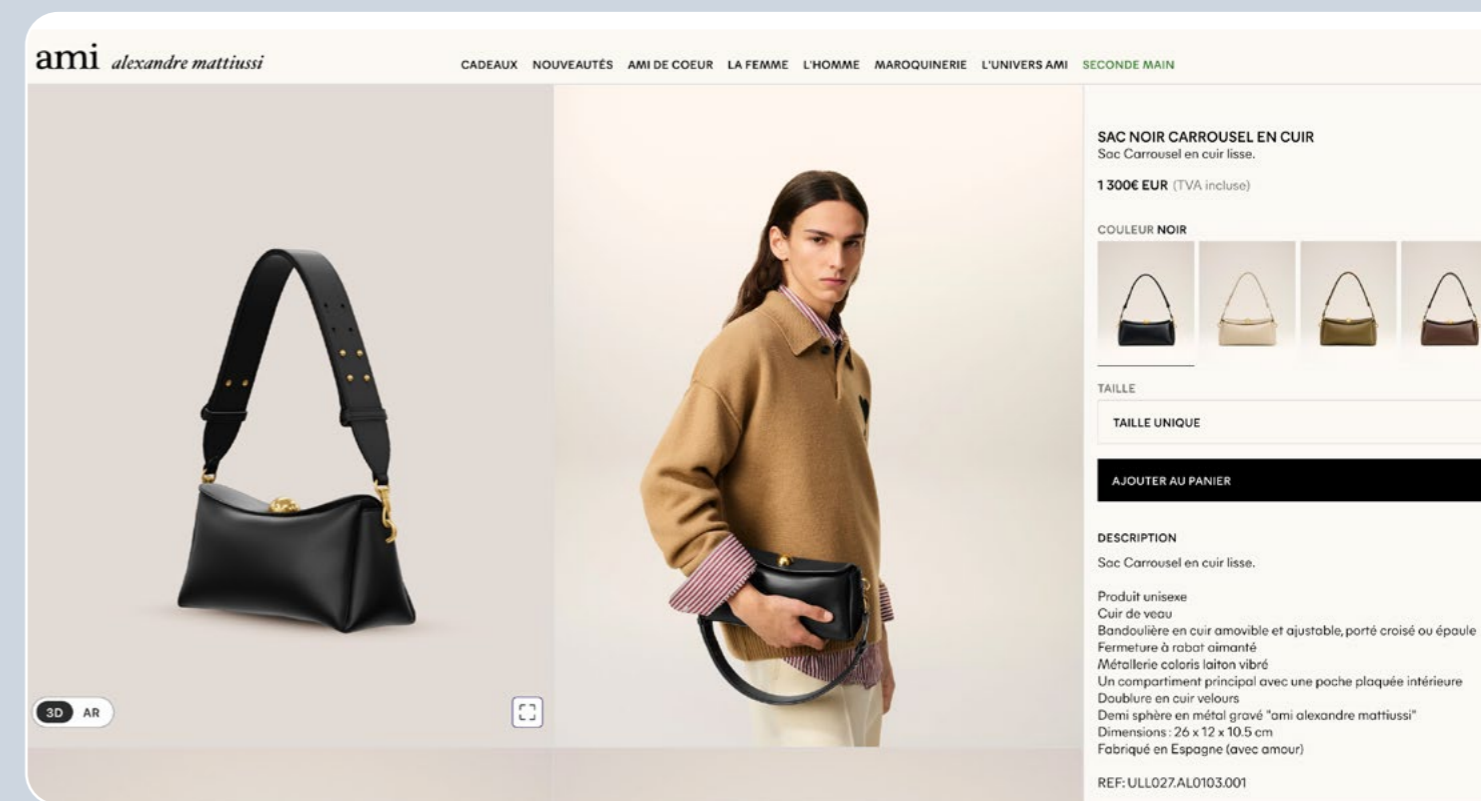
“Who would have thought that scanning our products to propose 3D turntables on amiparis.com would become the cornerstone of a series of innovative in-house explorations designed to enhance the customer experience, support our branding efforts and improve operational efficiency?”  
**Hugo Dubs,**  
 Ami Paris Head of Innovations.

## Ami's journey around 3D usages:

**Product Evaluation:** Ami Paris started experimenting with 3D by enhancing product discovery on amiparis.com thanks to High-quality 3D interactive viewers that allow customers rotate, zoom and inspect details. Besides improving engagement and increasing interactions, such experience narrows the gap between online browsing and in-store discovery, improving confidence in the purchase and reducing return rates.

**Playful Reach on Social Media:** Using the same exact 3D assets, Ami Paris launched playful Augmented Reality try-ons, most notably on Snapchat, where tens of millions of users virtually tried one the House's iconic handbags and shared the moment with friends, turning inspiration into intent but also generating a significant brand uplift among strategic audiences in the search for new ways to engage with products.

**Content Creation:** From there, the House went a step further and collaborated with creative studio The New Face to use its 3D assets to produce whimsical shorts stories in which a new Paris Paris baguette-shaped handbag appeared to be crafted straight out from a Parisian bakery. Flour dust, morning light, the rhythm of a baker's hands, the kind of imaginative vignettes that traditional shoots would struggle to capture within reasonable cost and timeframe.



© Ami Paris



© Ami Paris reusing 3D Assets from POWER.xyz



### Gen-AI, a new frontier?

Ami Paris keeps on exploring how 3D can support the House in reaching new frontiers. By collaborating with luxury & fashion AI studio Envelope, the House explored how Generative Artificial Intelligence can assist in producing localized, photorealistic campaigns, in different cities, with various lighting moods or cultural cues. A test drive successfully executed around a new product the House just launched within its Fall-Winter 2025 collection: the **Mirage** sneakers. A hybrid approach enabling fast, cost-efficient content declination without diluting product integrity or brand identity.

“This is going incredibly fast and I have no doubt that in the coming 5 years this will be something of the past, but for now 3D is the key to maintaining product conformity when using Gen-AI to produce content around a product.”

H.D

### Modern tools, human ethos

Generative AI is used for background creation, scene variations and localization; every output is curated and adjusted by the Ami Paris Image Department to preserve brand intent. 3D and AI artists are perceived as collaborators that illuminate new direction while preserving the emotional core and craft knowledge of the people designing the story behind every visual.

“What matters is authorship,” notes Simon Hube, Ami Paris Image Director. « We could use AI to enhance our creativity, never to replace the human touch that brings our work to life. When we collaborate with people from POWER or Envelope, we don't discuss code; we challenge compositions, framing, styling, and lighting. It's a human collaboration to produce the best possible visuals, just as we would on a real set.”

Ami Paris' stance is human-first: technology is a creative instrument rather than an author. The teams emphasize clear governance (who owns the asset, who validates outputs), human-in-the-loop controls for AI, and strict IP and model provenance for scanned pieces. As the Head of Innovation puts it, “AI is a remarkable assistant: it scales imagination, but it is people who bring emotion and judgment.”

### Vision for the future

The commercial and operational benefits are concrete. One master 3D asset now feeds e-commerce, AR experiences, social filters, OOH and media campaigns, cutting production time and costs for complex shoots. Localization and campaign variations can be produced faster, enabling more relevant storytelling for different markets. And creatively, the team gains permission to imagine scenes and formats that surprise audiences and deepen the brand's identity.

Ami Paris intends to continue working closely with artists, photographers and stylists by using 3D and AI to extend their reach, not to replace them. The ambition is twofold: build a scalable, protected 3D production backbone that preserves product fidelity and IP, and to keep exploring atypical visual territories that reflect Ami Paris' values, emotion and authenticity.

“We'll keep collaborating with the creatives who make Ami Paris what it is,” concludes the Image Director. “3D and AI artists help us realize visions that were once impractical. They do it as collaborators.”

### Short takeaway

Ami Paris demonstrates a balanced, human-centered adoption of 3D and AI: high-quality scanning and canonical 3D assets underpin commerce and creativity, generative tools accelerate and localize content, and editorial judgment ensures authenticity and brand integrity.



© Ami Paris by POWER.xyz and Envelope

# Set up the right transformation plan

## Business process analysis

Embracing the integration of 3D models in combination with artificial intelligence (AI) within a strategy implies a **transformative journey** that goes beyond enhancing visual appeal, aiming to revolutionize the entire business. At the core of this transformation lies the pivotal practice of business process analysis, which involves a meticulous **examination of existing processes, customer behaviors, and market trends**.

A 3D transformation journey within the retail and luxury sectors requires a well-crafted strategy that aligns with business objectives. Therefore, conducting an internal analysis of business processes is essential to provide insights into **how both 3D modeling and AI-driven features can be embedded and what changes might be necessary**. This groundwork is essential for minimizing risks and maximizing the potential for success in the subsequent phases of the project.

**PRODUCT ASSESSMENT**  
Portfolio analysis to identify items that benefit the most from 3D and/or AI representation

**PROCESS ANALYSIS**  
Identification of existing business processes to gain insights into inefficiencies and opportunities

**SELECTION**  
Assessment of available 3D and AI technologies on the market regarding their capabilities, scalability and compatibility

1

2

3

4

5

6

**OBJECTIVES DEFINITION**  
Definition of the objectives to be achieved with the 3D x AI strategy (ex: increase customer engagement, automate content creation)

**EVALUATION**  
Evaluation of available resources, technologies and tools required for the 3D x AI project

**PROCESS DEFINITION**  
Definition of new business processes for 3D x AI implementation

“

*Integrating 3D at a strategic level goes far beyond product creation. It's part of a broader, cohesive digital transformation within the House.”*

**Kenny Tran,**  
Digital Innovation & Planning Strategic Manager  
at Parfums Christian Dior

## 1. Assessment of the product range

To initiate the process, it is essential to **evaluate the product portfolio to identify items that can benefit most from 3D representation**. High-end and intricate products, such as jewelry, watches, or designer apparel, often stand to gain significantly from detailed 3D models. Focusing on items that have the potential to create a visual impact and enhance customers' appreciation of craftsmanship and quality is crucial.

In addition, it is important to assess **where AI can complement this enhancement, for instance, by enabling product customization, smart recommendations, or dynamic visual rendering at scale**.

## 2. Definition of objectives and KPIs

It is necessary to clearly define the **objectives to be achieved with the 3D x AI strategy**. Whether it's enhancing the online shopping experience, increasing customer engagement, or improving operational efficiency, establishing clear goals will guide the implementation and measurement efforts. In this context, KPIs should **capture both the immersive and visual benefits brought by 3D technologies and the specific value added by AI**, such as personalization accuracy, recommendation relevance, content generation speed, or automation-driven time savings, scalability, production cost efficiency, and overall content quality.

“

*We identified several KPIs at the outset of the project that are essential for business and for measuring the effectiveness of 3D on our products.”*

**Marie Gervais-Fabre,**  
Digital Innovation Manager at Maje

## 3. Identification of existing business processes

A fundamental starting point in the journey towards 3D x AI transformation within the retail and luxury sectors is **the comprehensive examination of existing business processes**. Through meticulous **process mapping and analysis**, stakeholders gain invaluable insights into inefficiencies, bottlenecks, and opportunities for optimization within the current operational framework. This analysis should include identifying **which internal functions — such as content creation, product launches, or e-commerce experiences — could benefit from either 3D visualization, AI-powered generation, or a combination of both**. This foundational understanding serves as the bedrock to drive transformative change and align technological advancements with the elevated standards of the retail and luxury domains.

## 4. Evaluation of available resources, technologies and tools required for the 3D x AI project

Before embarking on a 3D modeling project, it is essential to **assess available resources, such as images, videos, sketches, plans, or real-world objects relevant to your model**. It is also important to conduct thorough research to inform and inspire the creative process and contribute to the accuracy and quality of the modeling. This involves gathering references, studying trends and consumer preferences, and analyzing competitors' strategies to **identify opportunities for differentiation and innovation**. Additionally, **evaluating resources in terms of budget, time, and talent** ensures that projects are

executed with precision befitting the brands they represent. When the project involves both 3D and AI, this evaluation must also cover **the availability of AI-related skills** (e.g., prompt engineering, data curation, or creative AI tools) and the **compatibility between AI platforms and 3D tools**. For example, **ensuring interoperability between generative AI tools and your 3D production pipeline is key**.

Collaborating with external partners such as suppliers, agencies, or technology providers can be essential for leveraging expertise and resources while accelerating the delivery.

In the ever-evolving landscape of retail and luxury 3D modeling technologies, the evaluation of available tools and technologies is paramount. This phase offers insights into the myriad options, facilitating informed decision-making regarding the selection of software, hardware, and other requisite tools. Careful consideration must be given to factors such as aesthetics, precision, and scalability to ensure that the chosen technologies align seamlessly with the brand's vision and values.

“

*Two years ago, we launched a transformation program to explain what GenAI is to our 12,000 employees in France: its uses, its limits, its risks, and its opportunities.”*

**Christophe Cadic,**  
CDO at IKEA France



## 5. Selecting the right technology to suit company's needs

To meet the company's needs within the framework of the 3D strategy, a careful selection of 3D tools must be carried out. By exploring the range of 3D technologies available on the market, it will be possible to **assess their capabilities, scalability, and compatibility with existing systems before making investment decisions.**

To meet these objectives and **ensure the success of a hybrid 3D and AI project**, technologies can:

- **Create high-quality 3D models:** Invest in creating accurate and detailed 3D models of products. Ensure that these models accurately represent the size, shape, color, and texture of products to provide customers with a realistic shopping experience.
- **Enhance product visualization:** Use 3D models to provide immersive product visualizations. For example, allow customers to see how furniture will look in their homes using augmented reality (AR) technology or visualize how clothing fits on virtual mannequins.
- **Personalize the shopping experience:** Leverage 3D modeling to offer personalized product recommendations and customization options. Allow customers to customize products in real-time using interactive 3D configurators.
- **Improve operational efficiency:** Utilize 3D models for inventory management, space planning, and store layout optimization. Visualize product placement and store design changes before implementation to maximize efficiency and customer flow.
- **Generate new creative assets via Generative AI:** Use generative AI to produce textures, patterns, or immersive environments that enrich 3D scenes and accelerate creative workflows. Particular attention should be given to the kind of GenAI models used regarding your data protection policies (see page??)
- **Options to offer virtual try-on or fitting tools:** If applicable to the products (e.g., apparel, eyewear, cosmetics), implement virtual try-on or fitting tools using 3D modeling technology. This allows customers to visualize how products will look on themselves before making a purchase.

## 6. Definition of new business processes for 3D and AI integration

Based on the understanding gained from analyzing current processes, stakeholders work together to **establish new business procedures that effectively incorporate 3D modeling functionalities and AI-driven capabilities**, tailored to the retail and luxury environment, matching with the brand's vision and values. This stage underscores the importance of **aligning technological progress with the high standards of craftsmanship and customer experience** inherent in these industries, thereby **fostering synergy across organizational functions and driving innovation.**



*While 3D modeling can enhance the online shopping experience and create a differentiating experience in store, the process must start from coordination between the 3D modeling creation process and the online catalogue management. The 3D modeling available must be fully integrated into the catalogue, just as photos and description of products. Today this catalogue management by brands often remains archaic and this undermines the opportunity for brands to use existing assets that drove creativity such as 3D modeling.”*

**Flore Pilzer,**  
**Chief Growth Officer in charge of innovation at Monnier Paris**

# Execution and roll-out

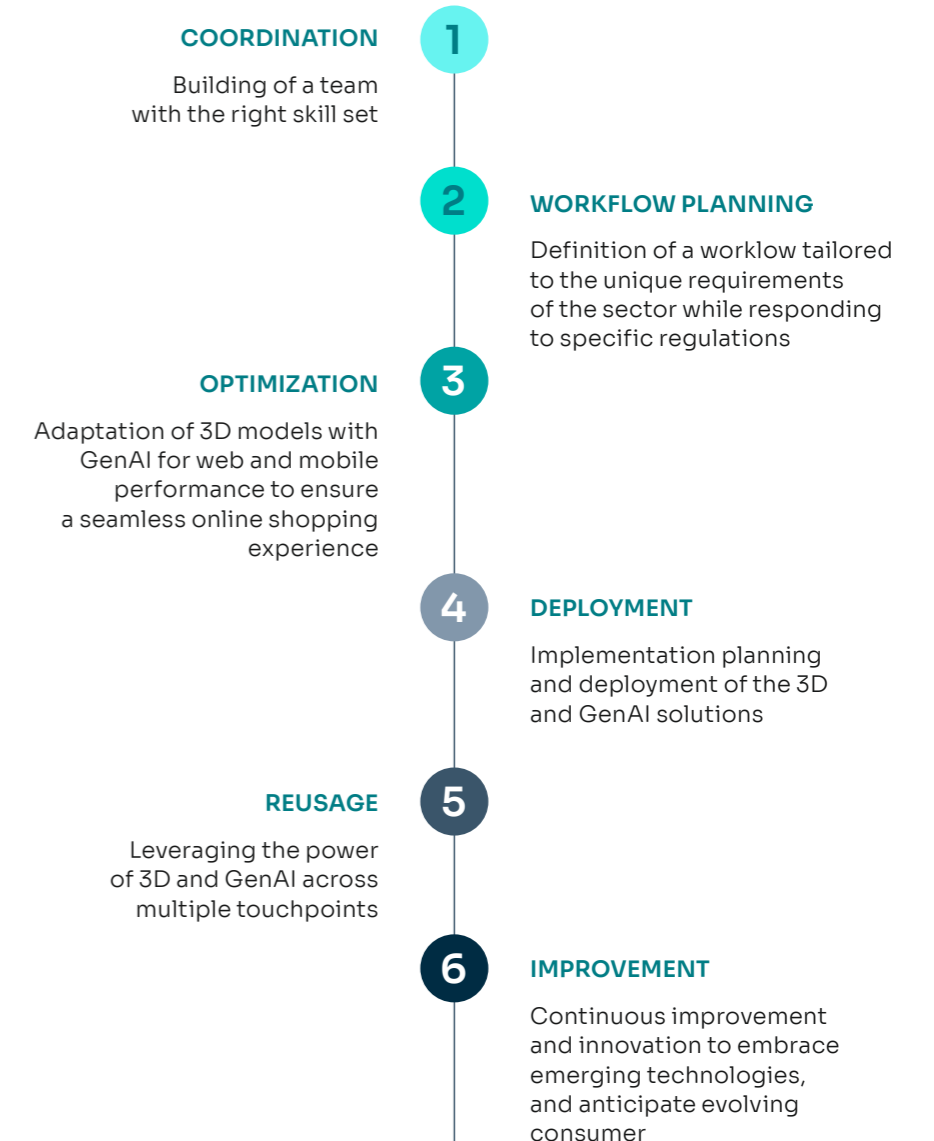
Once the planning and preparation phase is complete, the focus shifts to the execution and roll-out of the 3D and GenAI solutions. This second phase is dedicated to bringing the plans to life **by embedding advanced technologies into the company's operational workflows. A key priority at this stage is also ensuring the seamless integration of 3D modeling with Generative AI capabilities.**

**Facilitating collaboration between various departments within an organization remains a crucial aspect of successful 3D and GenAI strategy implementation.** The synergy between Marketing, Sales, IT, Artistic Direction, and other teams **becomes even more critical when introducing AI into creative pipelines.** Breaking down organizational silos and fostering open communication ensures a unified and cohesive approach to business transformation. This holistic approach positions a brand for sustained success in the dynamic and ever-evolving landscape of luxury and retail.



*Foster collaboration and communication between stakeholders involved in the project, including designers, developers, marketing team, and end-users. Establish clear channels of communication and feedback to ensure constant alignment.”*

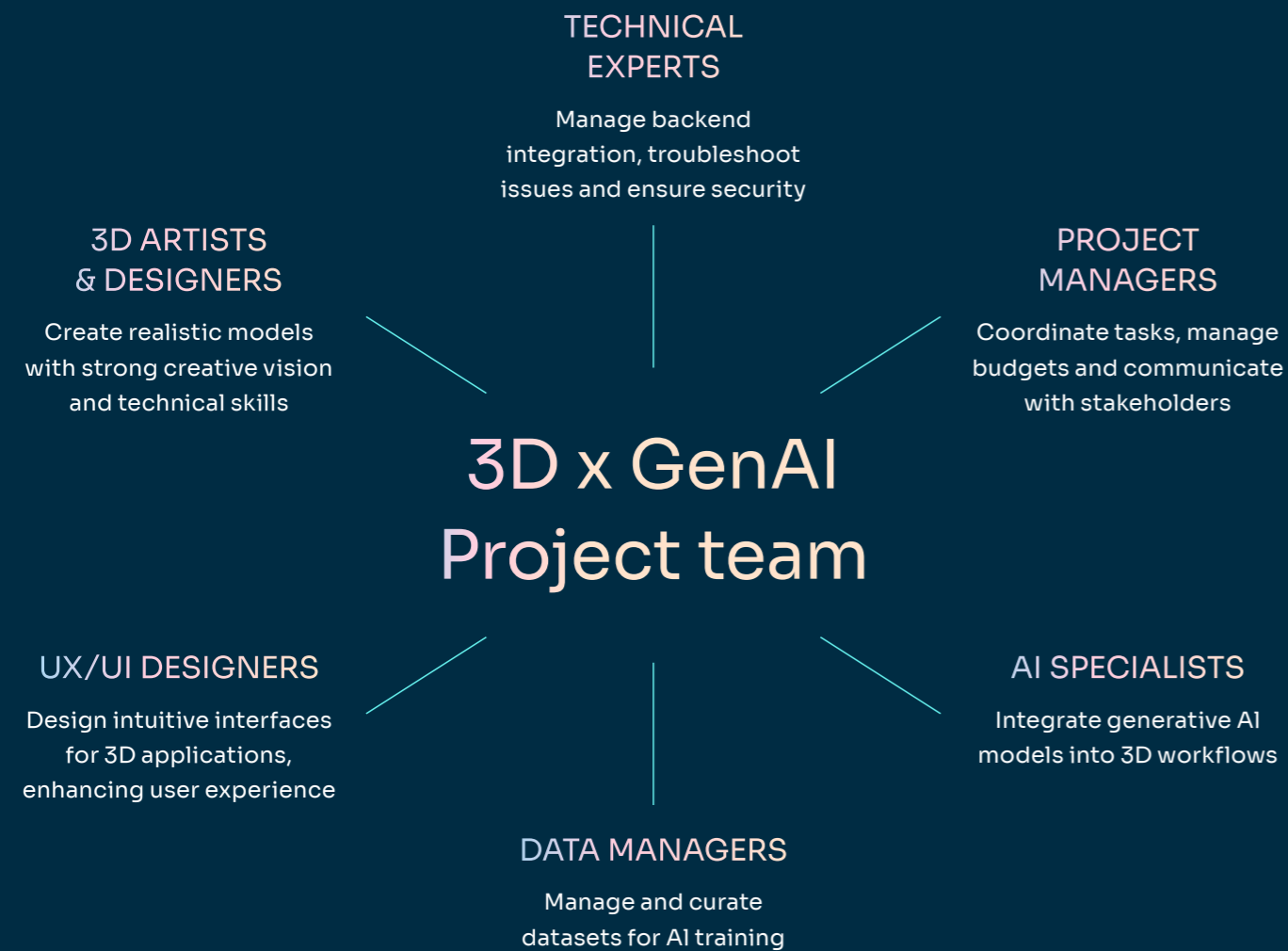
**Jacopo Trivellin,**  
**Project Manager at BVX (OTB Group)**



# 1. Developing a skilled team

Building a team with the right skill set is crucial for the successful implementation of 3D technology, especially as generative AI becomes an integral part of the creative and production pipeline. **Teams now**

**need to combine traditional 3D modeling expertise with AI literacy, including prompt engineering, model supervision, and an understanding of data workflows** to fully unlock the value of these new tools.



*Allocate sufficient resources, including budget, time, and personnel, to execute the 3D modeling project effectively.*

**Jacopo Trivellin,**  
Project Manager at BVX (OTB Group)

# 2. Workflow planning for 3D integration

A well-defined workflow tailored to the unique requirements of the retail and luxury sectors is essential for navigating 3D modeling projects with finesse and precision. This entails planning a sequence of steps and methods that prioritize **craftsmanship, attention to detail, and customer-centricity. From conceptualization to rendering, each stage of the workflow must reflect the brand's commitment to excellence and luxury, ensuring that the final product resonates with the clientele.**

With the rise of generative AI, these workflows must now evolve to **incorporate new stages**, such as prompt crafting, AI-generated asset review, and iterative refinement, while maintaining brand integrity and creative control. **Integrating AI can significantly speed up early design phases, automate repetitive tasks, and enhance prototyping, but it also requires defining new checkpoints to validate aesthetic consistency and compliance.**



*With 3D models, all our packshots and content can now be created digitally. This shift is transforming our internal processes, bringing greater efficiency, consistency, and creative freedom.*

**Thierry Chang,**  
Co-founder at Fleuron

This also involves adhering to **specific regulations regarding product representation, intellectual property, and consumer data protection laws.** Failure to comply with these regulations can lead to legal ramifications and damage to the brand's reputation. Moreover, when leveraging generative AI, brands must **ensure responsible use of data and transparency in how AI-generated content is created and deployed**, especially in markets where authenticity and heritage are central to brand value.

# 3. Optimizing 3D models with GenAI for performance

Optimizing 3D models with generative AI is essential to deliver seamless digital experiences across web, mobile, and immersive platforms. Large file sizes can slow down rendering or loading times, creating friction for users. **The challenge is to strike the right balance between visual quality and performance.** For example, utilizing polygonal 3D models can significantly reduce file sizes while maintaining realistic materials and rendering, thus enhancing performance without compromising on quality.

Generative AI can now support this optimization phase by automatically suggesting or generating low-poly versions of high-fidelity models, simplifying textures, or even adjusting lighting and materials based on device constraints or target platforms. This **intelligent automation** not only **reduces manual effort** but also **speeds up the production pipeline while preserving visual coherence.**

Additionally, establishing effective communication and validation processes is vital for accuracy and quality. Providing high-quality references, such as 3D files or physical products, is necessary to capture details accurately and minimize the need for revisions.

**Clear specification of all requirements**, including precise Pantone or RGB color codes, is essential to achieve color accuracy. Recognizing the limitations of 3D technology, such as challenges in replicating exact lighting or modeling highly reflective objects, is also important.

**Generative AI can also aid in predicting where quality issues may arise**, such as texture distortions, inaccurate reflections, or lighting inconsistencies, allowing teams to preemptively correct potential problems. Moreover, AI-powered validation tools can **automatically flag anomalies or mismatches in model specs versus the original brief**.

Implementing a structured validation process, including shape approval, material refinement, and lighting adjustments, ensures efficiency and quality control. **Consistently adhering to these protocols results in high-quality 3D models that enhance the overall customer experience.**

“

*By combining 3D and AI, we are completely reinventing our internal processes — from content creation to the customer experience. With AI, modeling our entire product catalog becomes essential, enabling us to generate content at lower cost and with remarkable precision.”*

**Réuel Mizrah,**  
Deputy CEO  
at La Maison Convertible

Implementing an effective 3D and gen AI strategy in the retail and luxury sectors can **revolutionize the customer experience and enhance operational efficiency**. By investing in advanced technologies and building a skilled team,

companies can provide immersive visualizations, personalization options, and virtual simulation tools that meet the demands of modern consumers. Additionally, **continuous optimization of 3D models and clear communication ensure the accuracy and quality of digital representations.**

## 4. Implementation planning and deployment of multiple 3D and genAI solutions

With the groundwork laid and strategies defined, stakeholders proceed to **craft a comprehensive implementation plan, carefully allocating resources, and conducting pilot phases to fine-tune strategies based on real-world feedback**. Concurrently, training programs are established to empower employees with the requisite skills to effectively utilize these technologies.

When generative AI is part of the technological stack, planning must also account for **new workflows**, such as model generation through prompts, human-in-the-loop validation, and data governance related to AI outputs.

The culmination of successful deployment, coupled with rigorous training and piloting efforts, is imperative for unlocking the full transformative potential, thereby elevating brand perception and fostering enduring loyalty. **Integrating generative AI into this phase accelerates content creation, enables hyper-personalization at scale, and reinforces the brand's position as an innovation leader in the luxury and retail landscape.**

“

*Implement quality assurance processes to ensure the accuracy, reliability, and consistency of 3D models and assets. Conduct thorough testing across different devices, platforms, and environments to identify and address any issues or discrepancies before launch.”*

**Jacopo Trivellin,**  
Project Manager at BVX (OTB Group)

## 5. Leveraging the power of 3D and GenAI across multiple touchpoints

To maximize the benefits of 3D, it is crucial to develop a coherent strategy that allows for the same 3D assets to be used across multiple touchpoints. This can be achieved by **creating high-fidelity 3D models for products that can be used in various contexts** such as websites, mobile apps, advertisements, and retail stores. Ensuring that the assets are of sufficient quality allows them to be utilized in both immersive experiences (VR/AR) and more traditional contexts (2D images for e-commerce). **By reusing existing models, brands can limit expenses related to content creation.** Additionally, centralizing the management of 3D assets improves coordination between marketing, design, and development teams. This facilitates updates and modifications to 3D models across all touchpoints, ensuring **visual consistency and rapid execution. Generative AI enhances this approach by automating asset adaptation across channels.** It can **generate multiple derivatives from a single 3D model, reducing the manual workload and accelerating delivery timelines.** AI can also adjust lighting, background, or composition to match each channel's needs, without altering the core 3D asset.

**Centralized asset management**, through tools like a Digital Asset Management (DAM) system, allows marketing, design, and development teams to collaborate more efficiently. Updates and adaptations can be made once and applied across all platforms, ensuring visual consistency and agility.

For customers, this approach offers a more engaging experience, with interactive views, customizable options, and augmented reality previews that enhance decision-making. The integration of generative AI further enriches this by enabling **dynamic content tailored to user preferences, contexts, or regions, while maintaining brand coherence.**

“

*Once at scale, it will drastically reduce costs and time to market. It also offers the possibility to instantly share products with a broad audience, with the added bonus that 3D models can be easily adjusted and refined.”*

**Mirjam Schuele,**  
Senior Vice President Marketing  
at Karl Lagerfeld



## 6. Continuous improvement and innovation for 3D and GenAI in retail & luxury

In the fast-paced world of retail and luxury, the journey towards 3D modeling transformation is an ongoing pursuit of excellence and innovation. It is imperative for brands to continually evaluate their strategies, embrace emerging technologies, and **anticipate evolving consumer preferences to maintain their competitive edge. Generative AI accelerates this innovation cycle, offering new ways to iterate faster and generate creative alternatives that may not have emerged through traditional design workflows.**

“

*We use AI to generate rich and diverse 3D moodboards, pushing the limits of our creativity while ensuring that human vision and craftsmanship guide the process.”*

**Kenny Tran,**  
Digital Innovation & Planning Strategic  
Manager at Pafums Christian Dior

Building a culture of experimentation and craftsmanship, while integrating tools like generative AI into everyday workflows, helps brands push creative boundaries without losing their identity. **AI doesn't replace human creativity, it enhances it, offering new possibilities in design, personalization, and storytelling.**

By aligning these innovations with brand values and customer expectations, luxury and retail players can elevate their experiences and remain culturally and creatively relevant.

“

*In this swiftly evolving field, reassessing assumptions every six months becomes imperative as we continuously push boundaries and unearth new opportunities.”*

**Sikaar Keita,**  
Innovation Program Manager at Chanel

## How to Manage a 3D Pipeline in the right way?

03 /

Managing a 3D asset pipe is becoming something strategic for most of the brands selling physical goods. It's not only about putting your products in 3D on an ecommerce website.

From different interviews and exchanges with brands, we've identified that most of the brands are currently either using 3D for design & manufacturing or for experience (filters, 3D for e-commerce...).

**POWER.xyz and Sia are supporting multiple groups and brands to launch their transformational program by re-using 3D Assets from multiple stages.**

A right pipe management is an opportunity to save costs, increase operational efficiency and enhance the customer experience. With an optimized pipe, brands can reuse their 3D assets from one stage to another.

**Master asset creation is the key point of an optimized pipe to reuse it in multiple touchpoints.**

AI now plays a key role in optimizing this process by accelerating asset generation, automating repetitive tasks, and enhancing the consistency of outputs across multiple touchpoints. For instance, **AI-driven platforms can auto-generate product variants** (textures, colors, lighting) or **detect modeling errors in real time, which significantly shortens iteration cycles.**

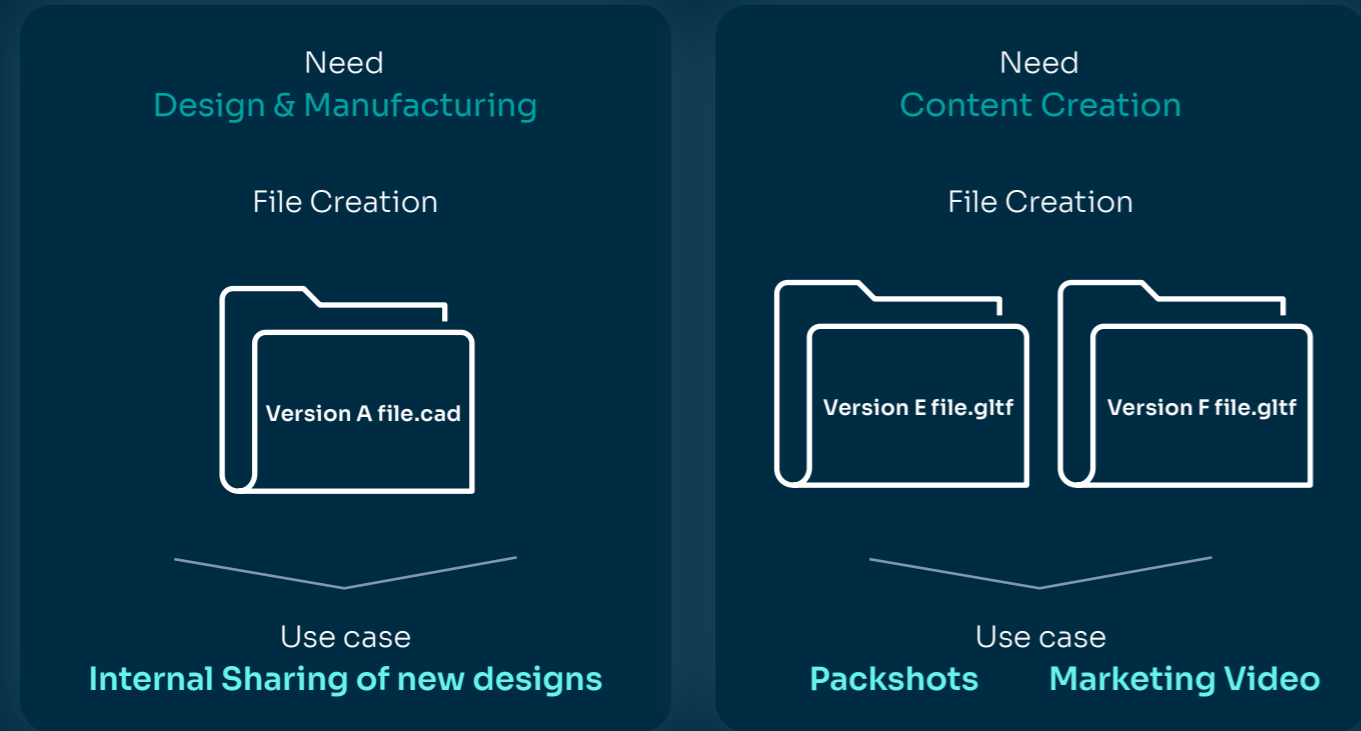
“

*Centralizing 3D model production isn't just technical consolidation. It's about creating a unified, standardized reference that can be activated across teams.”*

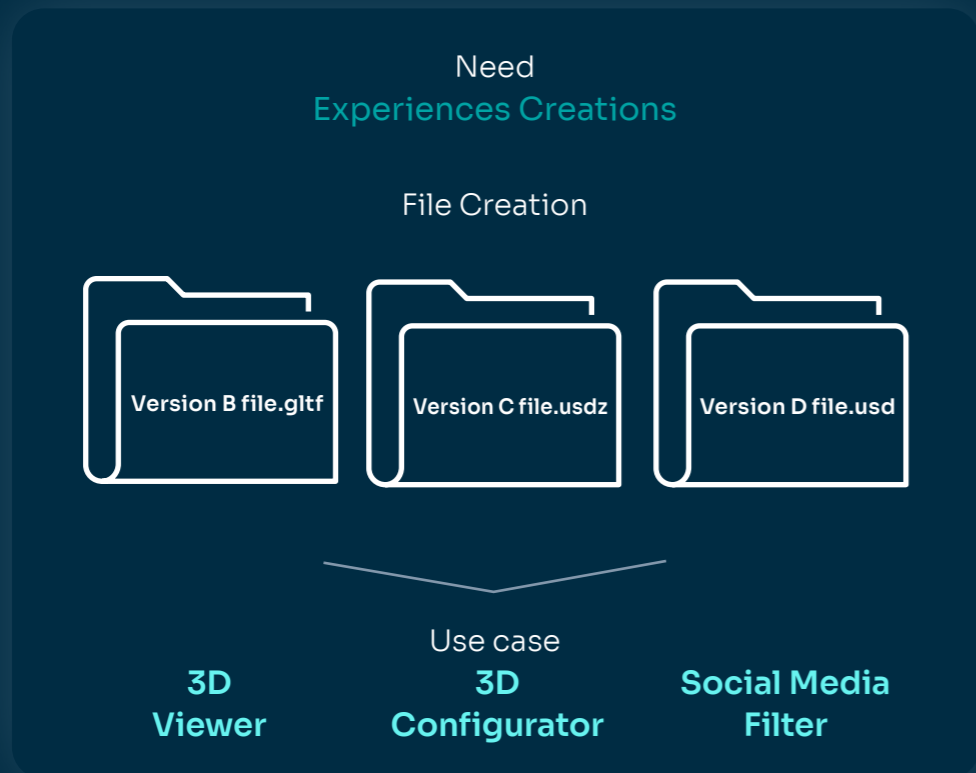
**Kenny Tran,**  
Digital Innovation & Planning Strategic  
Manager at Parfums Christian Dior



# Process with no global 3D strategy / One asset by use case



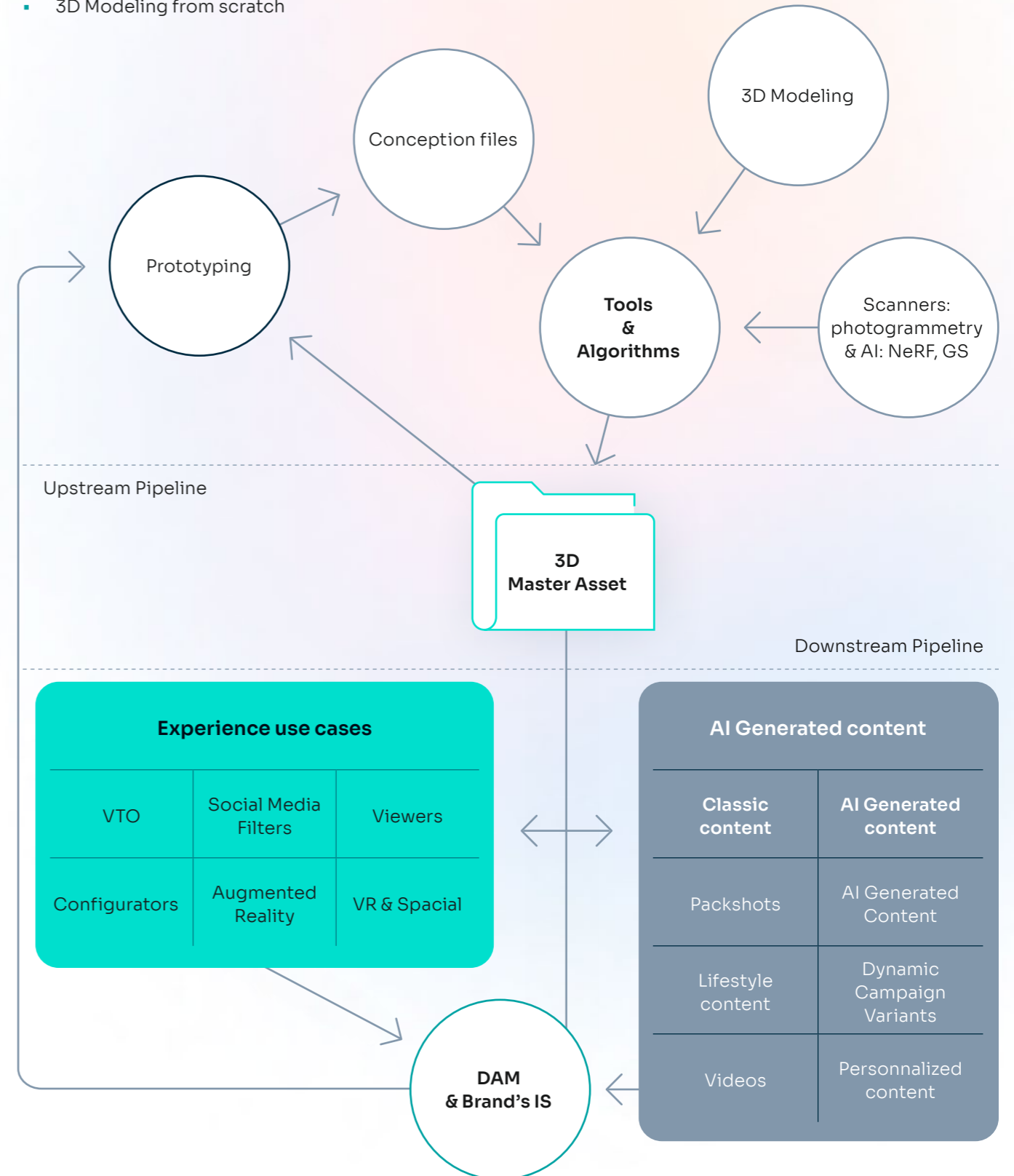
**NO SYNERGY**

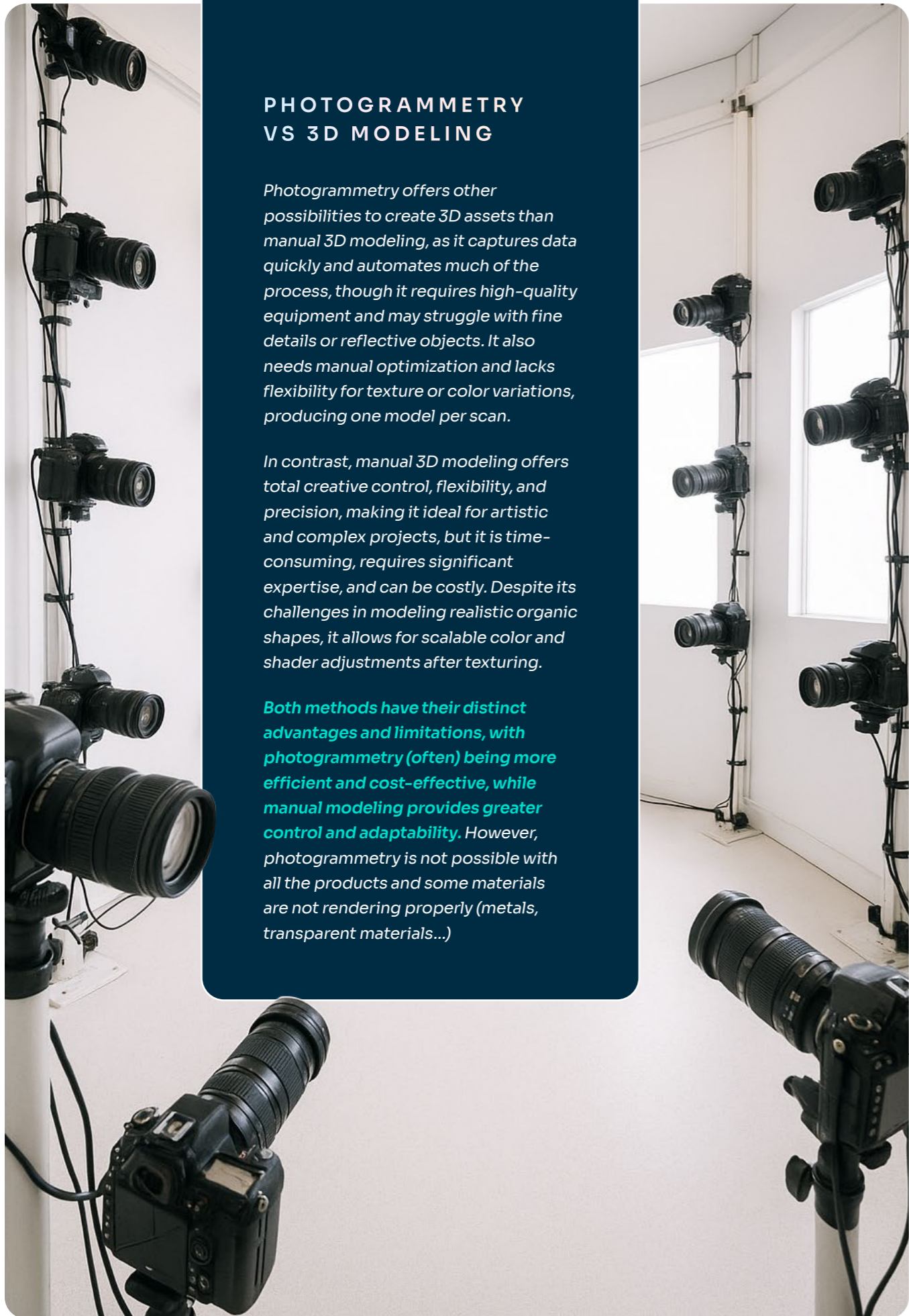


# Process with master 3D assets / One master asset for all use cases

In order to get this master asset, different options can be considered:

- Rework from the conception file
- Photogrammetry = creation of the asset from a set of photographs
- 3D Modeling from scratch





## PHOTOGRAMMETRY VS 3D MODELING

Photogrammetry offers other possibilities to create 3D assets than manual 3D modeling, as it captures data quickly and automates much of the process, though it requires high-quality equipment and may struggle with fine details or reflective objects. It also needs manual optimization and lacks flexibility for texture or color variations, producing one model per scan.

In contrast, manual 3D modeling offers total creative control, flexibility, and precision, making it ideal for artistic and complex projects, but it is time-consuming, requires significant expertise, and can be costly. Despite its challenges in modeling realistic organic shapes, it allows for scalable color and shader adjustments after texturing.

Both methods have their distinct advantages and limitations, with photogrammetry (often) being more efficient and cost-effective, while manual modeling provides greater control and adaptability. However, photogrammetry is not possible with all the products and some materials are not rendering properly (metals, transparent materials...)

This is where AI-enhanced 3D pipelines bring added value: **recent advances in AI enable the combination of both methods. AI can upscale low-quality photogrammetry scans, infer missing geometry, or even synthesize full 3D meshes from a limited number of photos or sketches.** Generative AI models can also produce detailed textures and materials that are difficult to reproduce manually or through scanning, including challenging surfaces like metallic or translucent finishes.

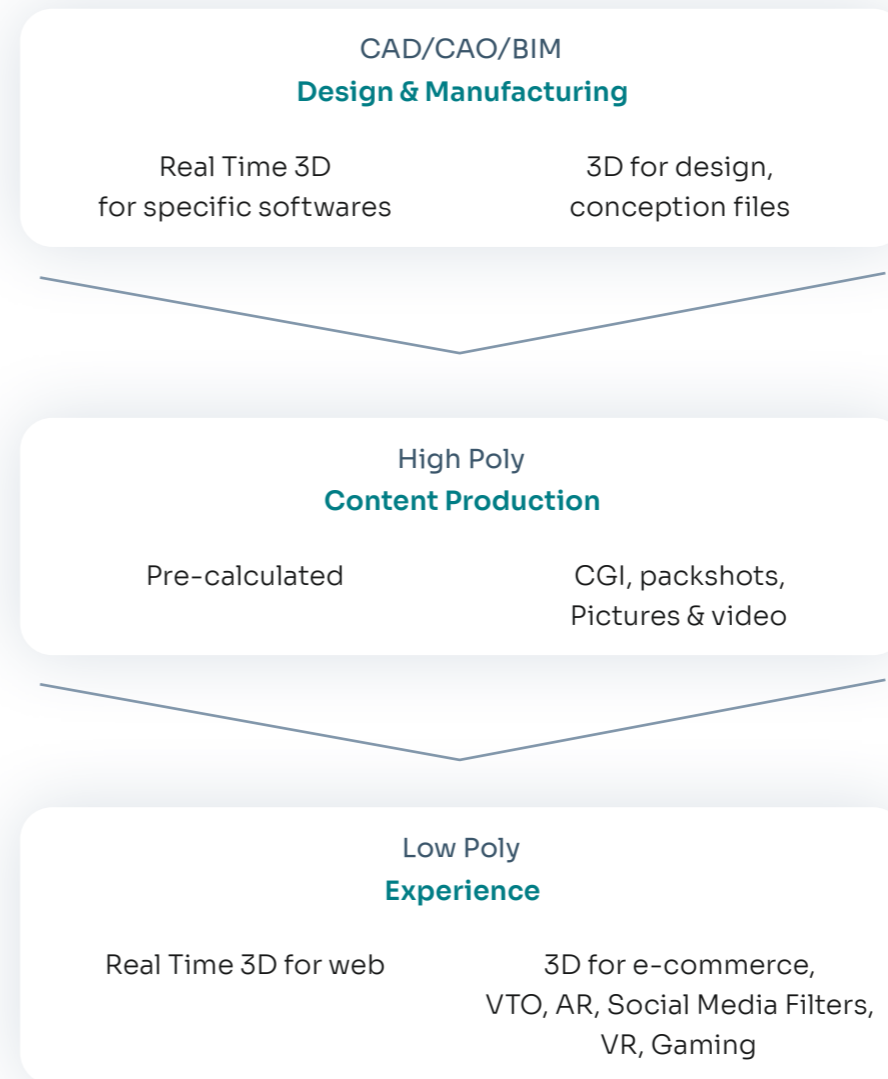
## FROM A HIGH-POLY ASSET TO A LOW POLY ASSET

Switching from a Master High-Poly, mainly used for content creation in pre-calculated 3D, to a Low-Poly Asset, mainly used for real-time 3D, isn't something easy.

It requires significantly decreasing the number of polygons to make it accessible for real-time rendering - for example in web-browsers. To do so and to avoid a long loading time and poor real-time rendering performances (lags), the recommendation to use 3D files of 500Ko to up to 10Mo while High Poly Assets can sometimes reach multiple Gigabytes.

More and more brands are now using Master Low-Poly assets also for content creation in order to easily be able to reuse the Asset in multiple touchpoints. **While AI-based mesh simplification tools show strong potential to automate the decimation process with high fidelity, their results today still require careful validation.** Emerging machine learning models can help preserve silhouette integrity or assist in UV mapping optimization, but they are not yet fully reliable without human oversight. These approaches nevertheless point toward **faster time-to-market and smoother omnichannel deployment**, particularly for AR try-on, virtual boutiques, or real-time configurators, as the technology continues to mature.

The following blueprint details the different steps to move from a high-poly asset to a low-poly asset:





**HIGH DETAIL MODEL**

Very detailed 3D asset  
 We want **as much geometry as needed**  
**No performance optimization yet**  
 Heavy (100+ MB)  
 Can be created multiple ways:

- High poly modeling
- Photogrammetry
- Sculpting
- Converted BIM/CAD

AI-driven photogrammetry improves detail capture and reduces manual retouching during 3D reconstruction.



**LOW DETAIL MODEL**

Highly optimized, small size  
**Keep only silhouette and product-defining edges**  
 Small details (bolts, cracked, bevels...) are removed  
 Surfaces are unfolded in a 2D pattern called UV (like a clothing pattern) to be able to apply 2D textures  
 The geometry here is final, everything further is about texturing

Machine learning algorithms automate mesh simplification while preserving brand-defining silhouettes.



**BAKING**

By "Baking" the high detail model into the low detail model, **we retrieved all the details we lost**, but in a 2D texture (more performant)  
 We also compute areas where light should have trouble to reach (cracks, cavities, narrow spaces...) into a 2D file  
 Small details are stored in a **Normal Map** texture  
 Shadows/cavities/dark area are stored in an **Ambient Occlusion** texture

AI predicts normal and occlusion maps directly from images, streamlining the texturing process without the need for high-poly inputs.



**PAINTING**

Defining material by their physical properties, paint some extra surface details (logos, leather pattern...)  
 Creates **2D textures files**:

- for the overall color
- for the material properties (Shiny? Matte? Metallic?...)
- for transparency
- etc.

AI generates PBR textures from product photos or prompts, accurately reproducing materials and finishes.



**RENDERING**

Defining how light behaves around the product  
 We simulate a complex lit environment with a single 360° panorama image called an HDRI

Neural rendering techniques reduce production time while delivering photorealistic results under various lighting conditions.

# 3D & AI solutions, infrastructure (Cloud, GPU...): How to face AI challenges?

**CHOOSING THE RIGHT GENERATION MODEL**

**Challenge:** With so many models available, it can be difficult to choose the right one — especially when balancing quality, performance, cost, and privacy based on your specific use case.



**Solution**

Match your model choice to your priorities:

- Privacy and Data Control:
  - › Use **open-source models** like *Stable Diffusion, Kandinsky, or Flux* on local machines or private infrastructure. These models support **fine-tuning** and allow you to keep sensitive data fully in-house.
- Speed & Accessibility:
  - › Opt for **lightweight models** (e.g. *Stable Diffusion 1.5* or distilled variants) for fast, local generation or low-latency API deployment — ideal for prototyping and real-time applications.
  - › Use **hosted models** with accelerated inference (e.g. via *Replicate, Hugging Face Inference Endpoints*, etc.) to simplify integration and reduce setup time.
- Visual Quality & Photorealism:
  - Choose **premium proprietary models** like *DALL-E 3, Firefly, or Midjourney*, or advanced open-source models such as *SDXL* or *Playground V2*. These offer high visual fidelity, though typically at the cost of higher latency or usage fees.
- Hybrid workflows
  - › **Combine multiple models across different stages of the pipeline.** For example, start with open-source generation for control and cost-efficiency, then apply post-processing using specialized or hosted models. **This hybrid strategy helps balance cost, quality, performance, and data privacy** — especially when working with sensitive assets like 3D objects or proprietary designs



## PRECISE CONTROL OF STYLE, CONTENT, AND 3D CONSISTENCY

**Challenge:** It is difficult to precisely control image generation so that the outputs fit naturally into a 3D environment while maintaining visual coherence (depth, perspective, lighting, etc.). On top of this, the results need to align with a brand's unique visual identity (visual guidelines, mood, artistic style). Yet, this level of control is essential to create consistent and immersive visuals in a 3D universe.

### Solution

- Use **Image-to-Image models**: These models generate new images based on an existing reference image, making it possible to guide the output to match a desired aesthetic or style
- Leverage **guiding models** (ControlNet, T2I-Adapter, Guided Diffusion, etc.): Also known as adaptive wrappers, these models help enforce constraints such as correct depth, object orientation, or lighting, using information provided either in the prompt or through control maps
- Specialize the model through **fine-tuning**: By retraining the generation model on a dataset specific to the brand, it becomes possible to refine its understanding of the brand's visual world and ensure that the generated visuals more accurately reflect its identity.

## ENSURING SUFFICIENT COMPUTE POWER FOR IMAGE GENERATION

**Challenge:** AI image generation requires substantial computing power, which can be difficult — and costly — to manage locally.

### Solution

- GPU memory needs vary significantly by model. For example, Stable Diffusion typically requires at least 24 GB of VRAM, while more advanced models like **Flux may need 48 GB** or more to run efficiently.
- Combining models (e.g., for image conditioning, style transfer, or post-processing) often means stacking their memory requirements. **It's best to keep everything on the same GPU to avoid slow and inefficient GPU-CPU data transfers.**

To handle these demands, you have two main options:

- Use a **dedicated local machine** (e.g. workstation or on-premise server) for full control and consistent performance.
- Leverage **cloud platforms** like AWS, GCP, Hugging Face, or RunPod to scale compute power on demand, selecting high-end GPUs (e.g. A100, H100) only when needed.

## EFFECT OF PROMPTING ON OUTPUT QUALITY

**Challenge:** The quality of AI-generated images heavily depends on how the prompt is formulated.

### Solution

- **Control the prompt and its length:**
  - › Image generation models are highly sensitive to both the length and semantic richness of the prompt, typically measured in tokens. A prompt that's too short may lead to vague or generic results, while an overly long prompt can exceed the model's input limits or dilute key instructions. Therefore, it is crucial to optimize the token count striking a balance between clarity, visual detail, and contextual relevance.

## SCALING ACCESS TO GENERATIVE AI

**Challenge:** Making the image generation tool accessible to end users.

### Solution

- **Web and Cloud Deployment:**
  - › Deploy the application online using cloud infrastructure (e.g., REST APIs, web interfaces, or mobile apps). This ensures availability, accessibility, and scalability. Frameworks such as Streamlit, Gradio, or FastAPI simplify the rapid deployment of GenAI services with minimal development overhead.
- **Resource Optimization:**
  - › Keeping a server running continuously consumes energy. To better manage operational costs, it's crucial to implement asynchronous mechanisms. This includes on-demand triggering (activating the model only when a request is made) or scheduled usage windows (e.g., overnight batches or off-peak processing).

- **Enhance prompts with a Large Language Model:**

- › Use LLMs such as GPT or Mixtral to generate or rewrite prompts in a way that is more descriptive, coherent, and aligned with specific stylistic or 3D rendering requirements. Tools like Promptist or PromptExtend can further automate and improve this process by refining the wording and structure of prompts for better image generation outcomes.

## OCCURRENCE OF ARTIFACTS OR DEFECTS IN GENERATED IMAGES

**Challenge:** Artificial intelligence models can sometimes produce what are known as hallucinations — visual errors or inconsistencies. In practice, this can manifest as distortions of the main subject, imperfections in the background, or blurred and less harmonious areas. These flaws reduce the quality and credibility of the generated visuals.

### Solution

- **Inpainting models:**
  - › These models can recreate or correct specific areas of an image while preserving the existing background and perspective. This helps seamlessly integrate the regenerated part into the overall scene.
- **Super-resolution models:**
  - › These models artificially increase an image's resolution, enhancing sharpness and revealing more detail for a higher-quality final result.
- **Removal models:**
  - › These are used to remove unwanted elements or flawed parts of an image while maintaining visual consistency in the remaining areas.

By combining these techniques, it becomes possible to refine the final output without having to regenerate the entire image from scratch, ensuring a high level of visual quality and coherence.

# Fleuron Paris Elevating Quiet Luxury Bags Through 3D

*Fleuron Paris is a young luxury handbag brand with an international reach: over 80% of its sales are generated abroad, while its physical presence is limited to a single boutique in Paris. This created a key challenge: how to provide global customers with the ability to evaluate the brand's craftsmanship and functionality online, without direct in-store contact.*

Customer feedback clearly highlighted this need. Shoppers frequently asked for detailed views of interiors, finishes, and bag capacity, aspects difficult to capture with traditional photography. These recurring requests also placed pressure on customer service, slowing the buying journey and creating friction.

“*One of the strongest requests from our customers was not only to see the inside of the bag, but also to discover all the details that reflect our craftsmanship. Our creations may appear simple at first glance, yet they embody a true complexity, a form of ‘simplicity’ that is very difficult to capture with traditional photography. With 3D, we can finally deliver this experience online and reveal every subtlety of our designs.*”

**Marine Chang,**  
**Founder at Fleuron**

To address this, Fleuron partnered with POWER.xyz to implement 3D technology on its e-commerce platform. By digitizing both the exterior and interior of its bags, the brand is now able to deliver photorealistic, interactive experiences that allow customers to explore every detail of the product.

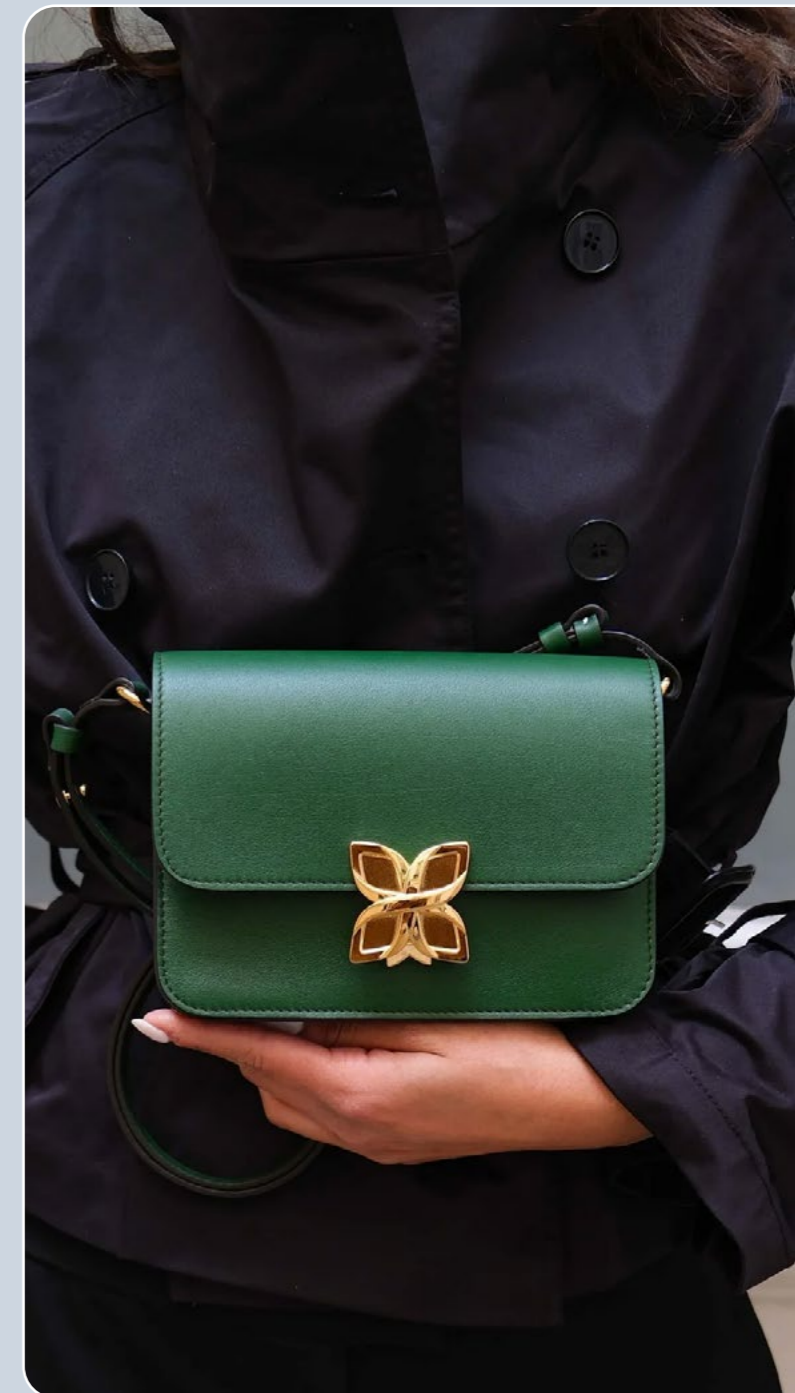
The benefits are significant. Customers gain a more precise understanding of the product, enabling them to make confident purchase decisions from abroad. At the same time, brand perception is enhanced, as Fleuron positions itself as a forward-looking luxury house that blends traditional craftsmanship with digital innovation.

“*With today's technology, the level of realism achieved through 3D is striking. It allows us to present our bags with a precision that reveals both the purity of their lines and the discreet complexity of their design, a quality that would have been unimaginable just a few years ago.*”

**M.C**

Beyond sales performance, 3D is also expected to reduce customer service workload and improve conversion rates. Looking ahead, Fleuron anticipates expanding the use of 3D across its entire catalog, opening new opportunities for digital content, campaigns, and even product prototyping.

This case illustrates how POWER's 3D technology can directly address business challenges, improving customer experience online while strengthening brand credibility in highly competitive luxury markets.



© Fleuron Paris



# La Maison Convertible Scaling Emotion with 3D and Generative AI

La Maison Convertible, a leading French furniture retailer specializing in sofa beds, has always faced a key challenge in online commerce: how to convey the comfort, quality, and versatility of its products through digital visuals.

To address this, the company has progressively embraced 3D technologies, augmented reality (AR), and now generative AI, transforming the way it engages customers and manages content creation.

## The Challenge: Selling Emotion Online

Furniture is a category where customers want to see and feel the product. But online, these tactile cues disappear.

“A €2,000 sofa can easily look like a €300 sofa in a photo. In-store, you immediately feel the quality, but online we needed a way to elevate our products and 3D provided that solution.”

**Réuel Mizrah,**  
Deputy CEO at La Maison Convertible

This challenge is amplified by customization: a single sofa bed can exist in three formats and 500 colors. Traditional photography could not keep up with this level of variation, creating both cost and logistical inefficiencies.

## Early Steps with 3D and AR

Around ten years ago, La Maison Convertible began exploring 3D. At the time, the technology was expensive and not yet convincing in terms of realism, so photography remained the core solution. Progress came with augmented reality. Six years ago, the brand launched an AR app allowing customers to project sofas in their homes at scale and in the color of their choice.

“We offered customers a new way to imagine our products in their homes. It wasn’t a gimmick; it was a real tool to help them make decisions.”

**R.M**

While the rendering quality was imperfect, the AR app marked the beginning of a 3D-first mindset.

## Maturing into a 3D-First Approach

In recent years, La Maison Convertible has invested heavily in building a 3D catalog. Working with specialists and designers, the company now creates photorealistic assets that power both online and in-store experiences.

“Our products come in 3 dimensions and 500 colors. 3D allows us to manage these variations infinitely, with a very high standard for texture and lighting accuracy. We are now building all these combinations for infinite content creation.”

**R.M**

In stores, interactive configurators allow sales teams to showcase every possible variation, turning 3D into a sales enablement tool. Online, 3D assets support lifestyle visuals, product pages, and immersive environments.

## The Generative AI Breakthrough

If 3D brought efficiency, generative AI is unlocking a new level of creativity. Until recently, La Maison Convertible avoided AI because of quality concerns. But the latest generation of tools has changed the game.

“Until recently, AI produced cheap-looking images. But within just a few weeks, we’ve reached a stage where we can create highly realistic environments from a single 3D asset.”

**R.M**

This shift is visible across the market. Competitors who once resisted AI are now adopting it rapidly, publishing AI-generated visuals directly on product pages.

## Results and Impact

The potential economic impact is huge. Furniture photography involves trucks, manpower, studios, and often products that cannot be resold. By contrast, 3D and AI slash costs and multiply possibilities.

“I estimate that within a year, we will have reduced the cost of creating a visual by ten. The only limit will be imagination.”

**R.M**

Once products are modeled in 3D, the company can endlessly generate new content across channels, from e-commerce to in-store displays.

Today, the brand is taking the next step by collaborating with POWER.xyz to further expand its 3D ecosystem. This partnership will allow La Maison Convertible to scale content creation, explore new customer experiences, and continue leading innovation in the furniture industry.



© La Maison Convertible

# Trends & perspectives

## New technologies: generative AI powering 3D in retail & luxury

01 /

GenAI is transforming traditional 3D creation. The promise is to **let brands produce ultra-realistic objects, scenes and textures from simple text prompts, unlocking fast, flexible and cost-effective ways to imagine, design and showcase products**. However the technology is not yet mature: current outputs fall short of true photorealism and are best used for exploration, helping creative teams sketch ideas, define directions or prepare briefs, rather than producing final market-ready assets.

### Accelerating creation while preserving aesthetic standards

Previously confined to specialized studios and lengthy cycles, **3D is now accessible to creative, marketing, and product teams**. No more waiting weeks for a virtual prototype or high-quality visual, GenAI slashes timelines, unleashing creativity and enhancing brand responsiveness to trends and consumer expectations.

#### ESSENTIAL TECHNOLOGIES TO KNOW

To fully capture the benefits of AI-driven 3D, **it is critical to have a clear view of today's core technologies, their applications, and their limits**:

##### 1. NeRF (Neural Radiance Fields)

Based on neural networks, **NeRF reconstructs a complete 3D scene from a set of 2D images by precisely modeling light and geometry**.

In retail and luxury, it is ideal for digitizing real environments like showrooms, flagship stores, or exclusive events, **offering customers immersive virtual visits that strengthen emotional engagement**.

However, NeRF is less suitable for real-time interaction or dynamic personalization, as once created, the scene is hard to modify.

##### 2. Gaussian Splatting

Gaussian Splatting is an **emerging technique for representing 3D scenes through dynamically managed, blurred point projections**. Unlike traditional polygon-based modeling, it enables **lightweight, real-time rendering** with minimal computational overhead, making it particularly **well-suited to web, mobile, and AR/VR applications**.

In luxury and retail, traditional use cases for Gaussian Splatting include:

- **Interactive 3D product viewers** on e-commerce platforms, where customers can freely rotate, zoom, and explore items with no latency.
- **Virtual try-on experiences**, such as jewelry or eyewear, provide smooth interaction and quick rendering on smartphones.
- **Lookbooks or digital showrooms**, allowing real-time navigation through seasonal collections or curated brand spaces.
- **Retail staff training**, where product features or packaging details can be visualized instantly from any angle.

Its key advantages such as **speed, interactivity**, and **low data weight** make it ideal for scenarios where user engagement and seamless UX are critical, even if the visual fidelity is slightly reduced compared to more resource-intensive methods like NeRF.

As Sikaar Keita, **Innovation Program Manager at Chanel**, illustrates, Gaussian Splatting also plays a strategic role beyond visualization in hybrid 3D-AI workflows:

“

*I take photos or a video of my product, then use techniques like Gaussian Splatting or NeRF to turn them into a 3D model. This model is then used to train another AI, for instance, to recognize similar products.”*

In this pipeline, **quick photogrammetry scans** are turned into accurate 3D point-cloud representations, which can be used to **generate thousands of synthetic images** for training computer vision algorithms. These models, in turn, power use cases such as:

- **Automatic counterfeit detection**, by learning to identify design nuances of authentic products.
- **Similarity search engines**, capable of detecting close imitations of iconic pieces.
- **Real-time product tagging** and classification in inventory or archival systems.

By combining fast 3D reconstruction with AI training, **Gaussian Splatting becomes a strategic enabler for scalable content creation, but also of brand protection and digital authentication.**

“

*It is now possible to generate the 10,000 images needed to train a model in just twenty minutes — which is crucial given the constant release of new products.”*

**Sikaar Keita,**  
Innovation Program Manager at Chanel

### 3. 3D Diffusion Models (e.g. DreamFusion, Point-E, 3DGen)

New-generation models now apply image-generation approaches (like DALL-E, Gemini or Midjourney) to the 3D world. These tools generate **3D objects directly from text prompts**, using **probabilistic diffusion algorithms** trained on vast datasets of 3D models, images, and descriptions.

For design teams, this means:

- **Rapid prototyping** of new ideas, forms, and silhouettes without requiring manual modeling skills.
- **Creative exploration** from a simple sentence (“a sculptural gold ring inspired by waves”).
- **Personalization at scale**, making it easier to design bespoke or limited-edition products.

In the luxury sector, these capabilities support a new kind of agile design, **mixing generative intuition with heritage craftsmanship**. However, generated 3D objects often require **post-processing** to meet the standards of commercial, technical, or production use, for example: mesh cleanup, material refinement, or compliance with printing/CAD formats.

While some tools remain domain-specific (e.g., fashion-oriented 3D generators, jewelry-specific CAD AIs), there's a growing probability that **generalist AI models**, developed by players like **OpenAI** or leading **Chinese tech firms**, will **enhance 3D generation models**.

- These models benefit from **massive cross-domain training datasets**, enabling them to generalize well across categories.
- They often integrate seamlessly with other AI modalities (text, image, video), offering a **unified design-to-content pipeline**.
- **Continuous updates** and fine-tuning make them more flexible than narrow-purpose tools.

In years to come, **specialized 3D generation tools may gradually be combined** or even surpassed by these **large-scale, multi-modal AIs**, much like what has happened in other creative domains (e.g., music, text-to-image, code generation).

For luxury and high-end sectors, the key will be **custom fine-tuning** and **brand-specific guardrails**, ensuring that these powerful tools generate results aligned with identity, values, and quality standards, but also in relation to the critical issue of data protection.

### WHICH TECH FOR WHICH NEED?

Objective	Recommended Technology	Why It Fits
Digitize a real environment (store, showroom)	NeRF	Delivers photorealism and immersive experience
Create interactive, fluid product experiences	Gaussian Splatting	Offers real-time, lightweight, fast interaction
Generate rapid concept prototypes	3D Diffusion Models	Provides creative flexibility and quick iteration

## Concrete impacts for Retail & Luxury Brands

### 1. Faster Production Timelines

Brands achieve speed and agility by generating 3D assets in hours instead of days which is ideal for quick launches and market adaptation.

### 2. Cost Reduction

Decreased reliance on manual modeling or physical photoshoots optimizes marketing and R&D budgets.

### 3. Accessibility for Non-Technical Teams

These tools democratize 3D creation, enabling marketing, product, and design teams to produce and customize content without deep technical expertise.

### 4. Scalable Personalization

Visuals can be dynamically adapted to target demographics, languages, or channels, boosting campaign relevance and impact.

### 5. Enhanced Customer Experiences

Customers enjoy immersive interactions like product visualization, customization, brand storytelling, across online and in-store environments.

**Generative AI for 3D doesn't replace human creativity, it amplifies it.** Brands in retail and luxury that choose the right tools can both accelerate their workflows and deliver novel, engaging visual experiences.

“

*The question is no longer whether a campaign was generated with AI, but rather when AI was integrated into the creation pipeline.”*

**Sikaar Keita,**  
Innovation Program Manager at Chanel

**Success hinges on integrating this technology sensibly into a structured production pipeline that aligns with business goals.**

# Sustainability, ethics & regulation: governance of 3D innovation

While AI-powered 3D creation is a powerful innovation driver, it raises critical issues around **environmental impact, legal compliance, and responsible usage**. For luxury and retail brands, adopting these technologies must go hand in hand with **responsible, sustainable, and compliant integration**.

## Sustainability: shifting or reducing environmental impact?

A paradox emerges: while generative 3D can cut down on prototypes, photoshoots, and shipping, it relies heavily on **GPU-intensive computation, energy-hungry data centers, and heavy cloud storage**. Responsible usage means:

- Measuring actual carbon savings versus physical production
- Prioritizing high-impact use cases
- Selecting eco-conscious providers and technologies
- Embedding these practices in a broader digital sustainability strategy

## Ethics, intellectual property & data protection

**Generative AI is reshaping traditional frameworks around ownership, ethics, and consumer rights.** Three main challenges emerge for luxury and retail brands:

### 1. Intellectual property: securing creation in the age of Generative AI

3D models, avatars, or product designs generated by AI often rely on databases of images, drawings, or patterns, many of which are **protected by copyright, trademarks, or design rights**. This creates several risks:

- Infringement of third-party rights:** Using protected content to train AI without authorization exposes brands to litigation (e.g. Getty Images vs Stability AI, lawsuits against Meta).
- Unintentional reproduction risk:** AI may generate outputs resembling logos, stylistic signatures, or celebrity likenesses, creating exposure to IP or image rights violations.
- Uncertain status of AI creations:** Under French and EU law, purely AI-generated works may not be copyrightable, which can weaken the value and exclusivity of assets.



*The shift from traditional 3D to AI-generated 3D raises a fundamental question: who truly owns the content produced? As some creations closely resemble existing works, the risk of legal disputes becomes very real.*

**Sikaar Keita,**  
Innovation Program Manager at Chanel

### 2. Data protection: ensuring trust and compliance

Advanced personalization and immersive experiences (virtual try-ons, 3D avatars, tailored recommendations) rely on sensitive data: body measurements, photos, 3D scans, and biometrics. This entails:

- GDPR and image rights compliance:** Explicit consent and enhanced security are mandatory, with heavy penalties for violations (up to 4% of global turnover). The LVMH case in the US illustrates the risks of unauthorized facial scans.
- Transparency and governance:** The EU AI Act will impose traceability and labeling obligations, requiring proof of training data provenance and consumer rights protection.
- Preserving customer trust:** Beyond legal risk, mishandling data undermines consumer loyalty, a critical differentiator in luxury.

## Regulatory Framework: the EU AI Act

**The 2024 EU AI Act establishes a stringent foundation for AI**, including 3D content generation:

- Transparency:** All AI-generated assets (2D, 3D, audio, text) must be explicitly labeled.
- Risk assessment:** High-risk applications (e.g. deepfakes, biometric avatars) require documented assessments and built-in safeguards.
- User protection:** Users gain rights to algorithmic transparency, training data provenance, and explicit consent for sensitive uses like personalized ads.

Brands must integrate these obligations into their GenAI-based 3D production processes from day one.

By embedding these practices, brands not only **ensure compliance and risk mitigation**, but also **strengthen long-term trust with customers, partners, and stakeholders** while **unlocking the full creative and operational potential of 3D and GenAI**.

Area	Key Recommendations
<b>Intellectual Property</b>	Use legitimate and controlled datasets; check AI tool licenses; include indemnification clauses; conduct legal review of outputs; respect image and personality rights.
<b>Data Protection</b>	Collect minimal data; ensure explicit consent; secure and encrypt sensitive data; prefer European hosting; perform regular audits and DPIAs.
<b>Governance</b>	Establish an internal AI policy; train teams; appoint an AI data lead; ensure content traceability; monitor regulations continuously.
<b>Sustainability</b>	Track carbon footprint of AI training and rendering; favor eco-conscious providers; embed green-by-design practices.

# Structuring 3D & AI adoption across industries 03 /

This matrix illustrates the different stages of maturity that organizations typically experience when integrating 3D and AI into their operations. It highlights how governance and strategic alignment play a crucial role in moving from scattered experiments to large-scale, omnichannel transformation.

In the lower-left quadrant, companies are in the **Exploration phase**. These organizations conduct a few Proofs of Concept (POCs) led independently by different departments, often without a unified vision or governance structure. While this stage fosters creativity and experimentation, it rarely delivers measurable business value due to fragmented efforts and lack of alignment.

Moving upward, some organizations show **low maturity but strong potential**. They have initiated exploratory projects and demonstrated internal interest but still lack clear governance or cross-functional coordination. Establishing a central 3D & AI Factory with defined leadership and processes becomes essential at this stage to scale efforts efficiently.

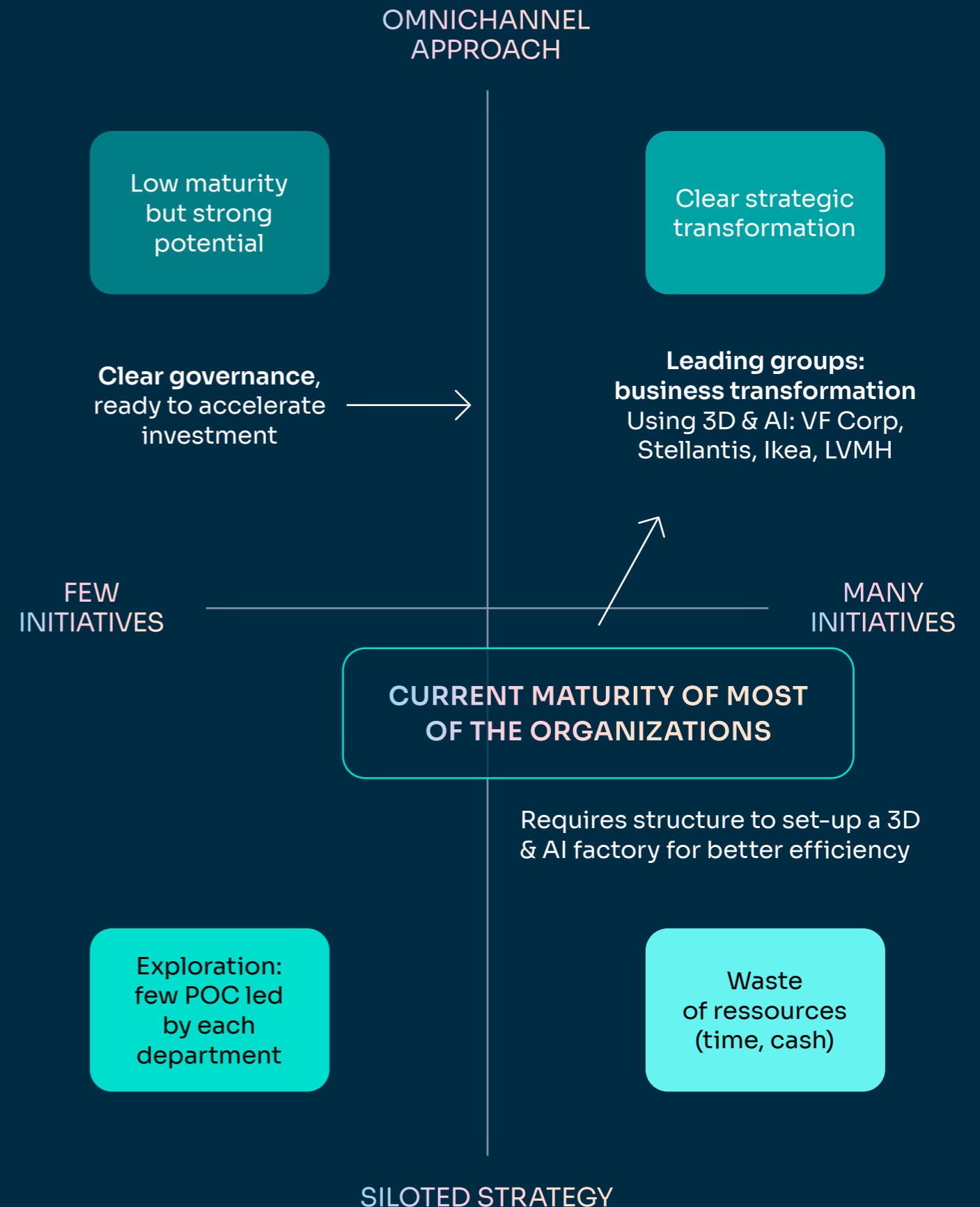
The bottom-right quadrant represents **siloed strategies with many initiatives**. Here, companies invest heavily in multiple 3D or AI projects without coordination, resulting in duplicated efforts, wasted resources, and inconsistent results. This stage highlights the importance of governance frameworks and shared tools to ensure that investments generate sustainable value.

**The upper-right quadrant is the ultimate goal: a clear strategy enabling omnichannel transformation.**

Leading organizations such as VF Corp, Stellantis, Ikea, L'Oréal or LVMH are achieving this level by embedding 3D and AI within their business DNA. Their initiatives are guided by well-defined governance, consistent data models, and cross-department collaboration, allowing them to accelerate innovation and deliver cohesive brand experiences across all channels.

Most companies today fall into the center of the matrix, demonstrating interest and initiative but lacking the organizational structure to support true transformation. To progress, they must clarify ownership, centralize expertise, and establish robust data pipelines and governance models. A dedicated 3D & AI Factory provides precisely this framework—enabling organizations to move from experimentation to execution and, ultimately, to strategic leadership.

## 3D & AI factory: Governance & Organization



## 3D & AI maturity matrix by industry

	Design	Manufacturing	Customer experience	Content creation	Global
FMCG	2	2	1	2	2
Fashion & accessories	2	2	3	3	3
Watches & jewelry	3	4	2	3	3
Beauty	3	3	1	3	3
Furniture & design	4	2	3	3	3
Automotive	4	4	4	3	4



This matrix highlights the maturity level of different industries in adopting 3D and Artificial Intelligence technologies, across four key dimensions of digital product lifecycle: **design, manufacturing, customer experience, and content creation.**

The insights presented here are the result of our **knowledge of the ecosystem** and **continuous exchanges with key stakeholders**, including brands, industrial players, technology partners, and institutions, across multiple sectors. These discussions have allowed us to identify the specific dynamics, enablers, and remaining challenges that shape each industry's 3D and AI adoption journey.

This cross-industry perspective reveals the most advanced sectors, such as **automotive** and **furniture & design**, as well as those still in an exploratory phase, such as **FMCG** and **beauty**, particularly when it comes to customer experience.

However, **recent advances in AI applied to customer experience and content creation are likely to reshape these industries**, unlocking new opportunities for personalization, engagement, and creative efficiency.

Sia is a next-generation, global management consulting group. Founded in 1999, we were born digital. Today our strategy and management capabilities are augmented by data science, enhanced by creativity and driven by responsibility.

We're optimists for change and we help clients initiate, navigate and benefit from transformation. We believe optimism is a force multiplier, helping clients to mitigate downside and maximize opportunity.

With expertise across a broad range of sectors and services, our 3,000 consultants serve clients worldwide from 48 locations in 19 countries. Our expertise delivers results.

Our optimism transforms outcomes.

# About

POWER.xyz is a 3D Asset Platform for Visual Commerce and Unlimited Content Creation. Powered by GenAI

One Master 3D Asset = 10+ Use cases : 3D Viewer, Augmented Reality, Product Configurator, Content creation (packshots, photos, videos...)

- 3 modules for infinite possibilities:
- 3D Creation Manager: create your product catalog in 3D with our streamlined workflows
  - Visual Commerce: Launch 3D experiences easily: 3D Viewer, Configurator, AR...
  - Virtual Studio: Create content at scale: packshots, videos, lifestyle visuals powered by Gen AI

Working with Major agencies & brands worldwide including Saint Laurent, Renault, Michelin, Decathlon, Ami Paris, Maje, Polène, Zadig & Voltaire, Stellantis...

Accelerated by Farfetch, LVMH & Richemont.



power.xyz

# About

The Grande Ecole of fashion: Institut Français de la Mode trains the world's talents in the fields of design, management and craftsmanship in the heart of Paris.

Institut Français de la Mode is a higher education institution, a training center for apprentices, a provider of executive education, as well as a center of expertise for the textiles, fashion and luxury industries.

Located in Paris, it provides educational programs from vocational training to doctoral level, by cross-fertilizing design, management and know-how.



ifm.paris.fr

# Contacts

**Charles Lonjaret**

Senior manager – Marketing & customer strategy

[Sia](#)

charles.lonjaret@sia-partners.com

**Clément Foucher**

Co-Founder POWER.xyz

[Power.xyz](#)

clement@power.xyz

**Giovanna Graziosi Casimiro**

Professor & Researcher in Digital Technologies For Fashion & Luxury

[IFM](#)

gcasimiro@ifmparis.com

## In Collaboration with

**Simon Foucher**

Co-Founder

[POWER.xyz](#)

**Jérémy Salvucci**

Co-founder – CTO

[POWER.xyz](#)

**Alexandre Terzian**

Associate manager

[Sia](#)

**Laura Serrure**

Senior consultant

[Sia](#)

**Ines Ait Lhadj**

Senior Consultant

[Sia](#)

**Joanna Caron**

Senior Consultant

[Sia](#)

**Emilien Schnur**

Consultant

[Sia](#)

**Lauriane Grobon**

Marketing & Communication Manager

[Sia](#)

**Valentine Cameleyre**

Creative Graphic Design

[Sia](#)

**Fabrice Riquet**

Senior Creative, UX & Visual Design

[Sia](#)

**Ines Colas**

Graphic design intern

[Sia](#)

# 04

W H I T E  
P A P E R

## 3D & AI for business transformation

The ultimate guide  
for retail and luxury

2025

**SIA**

institut  
FRANÇAIS  
de la  
MODE

**POWER<sup>xyz</sup>**