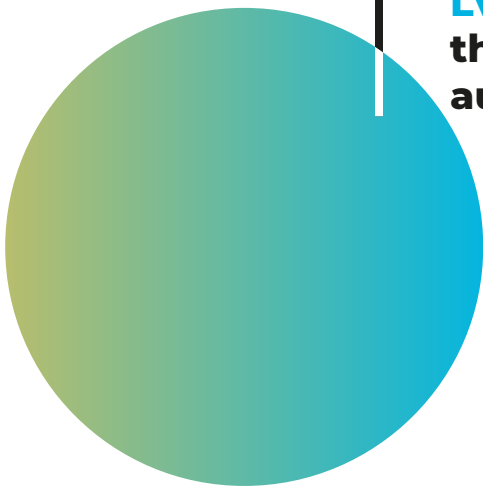


Making Blockchain Real

LVMH and
the future of
authentic luxury



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What happened?

A March 26 report from Coindesk revealed that luxury brand conglomerate LVMH, owner of Louis Vuitton, was preparing to launch a blockchain platform, code-named AURA, that would prove the authenticity of luxury goods.

The project will reportedly go live in May or June and track products from Louis Vuitton and another brand owned by LVMH, Parfums Christian Dior. It will then be extended to other LVMH brands, and eventually to access by competitors.

The news would make LVMH the first world-class player in fashion and luxury to adopt blockchain technology for product authentication at scale. This document was prepared to comment on the LVMH initiative and add perspective on the steps necessary to leverage blockchain's unique attributes in a comprehensive strategy for product authentication by consumers.

Neither LVMH nor its reported partners, Microsoft Azure and ethereum design studio ConsenSys, would comment on the AURA project ahead of its official launch.

Source: Louis Vuitton Owner LVMH is Launching a Blockchain to Track Luxury Goods.

Why is it important?

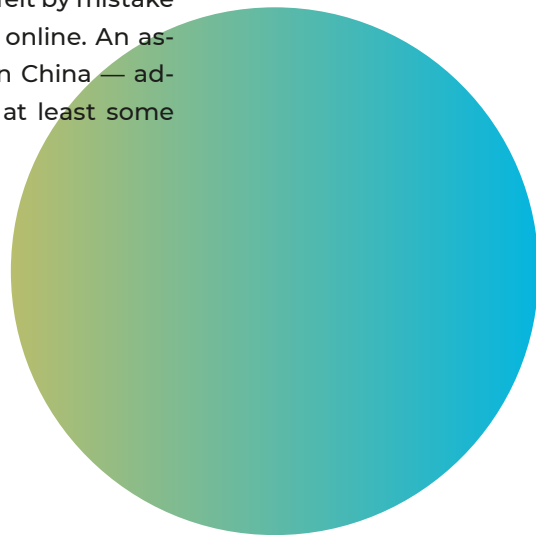
Investing in blockchain is an acknowledgement from LVMH that **proof of authenticity** is a critical component of brand and product value in the competitive marketplace for luxury goods.

Indeed, a dramatic increase in the quality of counterfeit goods has made it difficult for consumers to be certain that products with famous labels are truly authentic, particularly during resale.

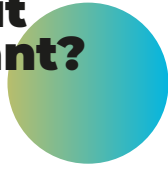
We asked 1,500 consumers in Europe, America and China to tell us if they worried about purchasing a counterfeit by mistake while shopping in stores or online. An astonishing 83% — and 95% in China — admitted to having concerns at least some of the time.

Blockchain proposes to eliminate these doubts by identifying authentic products in a transparent and immutable online ledger using a 'digital twin', a virtual representation of a physical product that cannot be duplicated or modified.

Because a digital twin cannot be assigned to more than one physical product, and cannot be forged, the diffusion of blockchain protocols is expected to vastly improve supply chain and product transparency.



Why is it important?



Question

Have you ever been concerned that a brand-name product that you purchased, or were about to purchase, might be a counterfeit?

Answers



Global

83% YES
17% NO



France

76% YES
24% NO



Italy

81% YES
19% NO



Uk

81% YES
19% NO



Us

84% YES
16% NO



China

95% YES
5% NO

Source: January 2019 survey of 1500 respondents in Italy, France, UK, US, and China, commissioned by Certilogo. Complete results available from press@certilogo.com

What does it mean for brands?

If the Coindesk article is correct, the LVMH investment in AURA should help the entire industry to understand blockchain's value for supply chain tracking and product authentication.

It is not clear yet what information AURA will collect and share, and on what terms. Nor is it clear if brands outside the LVMH family will find it more attractive to purchase access to AURA for their own suppliers, products and consumers, or to ma-

nage these sensitive competitive data in a setting that they, alone, can control.

This much is clear: Doing nothing will no longer be an option for brands aspiring to provide a luxury consumer experience. With leadership by LVMH and its flagship label, Louis Vuitton, the ability to verify quickly and easily that a product is authentic and manufactured to brand standards will move from perk to necessity for any brand with a luxury or premium positioning.



What does it mean for consumers?

Products from Louis Vuitton and other LVMH brands will be registered on the blockchain with a digital twin — a cryptographic token that stands in for a physical product in virtual records and transactions.

Linking a digital twin to the physical product it represents — for instance, by tagging the product with a digital ‘smart’ tag — makes it possible to provide consumers or other users with a vast array of verified data about that product, including an immediate and reliable confirmation that the product is authentic.

The specific data or services provided will depend, first, on the type of data a brand owner elects to collect and record with digital twins on the blockchain and, second, on how much of the available data it chooses to share with consumers or product owners.

Potential options include supply chain records that verify the origin of product materials, for example, or a digital certificate of authenticity and product ownership that can be shared to obtain insurance or enhance trust with potential buyers during resale.

The Coindesk article did not reveal the specific services that Louis Vuitton and Parfums Christian Dior would provide using AURA.



How can blockchain track & authenticate products?

Product gets a digital twin



- A virtual identity**
- One per product**
- Requires additional technology for a secure physical-digital connection***

Product receives a unique identification that is registered on a blockchain token and associated with product details or transactions. Once registered, this digital twin cannot be duplicated or changed in secret, an innovation that builds stakeholder trust.

* The Coindesk article did not share how Louis Vuitton or Parfums Christian Dior would connect a physical product with its virtual identity.

Product data recorded



- Product materials**
- Date of manufacture**
- Place of manufacture**
- etc.**

Details from brand suppliers, manufacturers, distributors etc. can be added to blockchain records for a product's digital twin. Because registered records cannot be altered, true supply chain transparency becomes possible.

How can blockchain track & authenticate products?

Consumer verifies authenticity



- Interacts with physical product*
- Accesses records for digital twin
- Confirms digital twin is authentic

Brand employees, potential buyers or product owners use a digital device to launch a verification process that retrieves data from the digital twin.

* What a consumer does and sees to verify authenticity will depend on the process and platform a brand chooses, not on the blockchain itself.

Brand offers additional services



- Ownership registration
- Insurance
- Appraisals
- Transfer of ownership
- etc.*

The same process that verifies a digital twin can be used to access brand services for the product, all in real or near-time. Services that impact the status or ownership of the physical product are time-stamped and linked to the digital twin with cryptographic techniques, creating an unbroken, chronological chain of events.

* LVMH has not revealed details about the services it will offer.

Need more?

Coindesk offers an excellent primer on blockchain technology [here](#).



Can blockchain eliminate counterfeits?

Faked Out

69%

of deceived consumers were surprised to discover their product was fake

63%

of deceived consumers thought they were shopping at an authorised retailer

59%

of deceived consumers go on to buy an authentic product

Source: In-app survey of Certilogo users who authenticate a product and discover it's a counterfeit

Blockchain on its own will not cure the epidemic of counterfeit products in luxury, but it can be a useful building block in a comprehensive brand strategy to fight counterfeits.

Arguably the greatest power is empowering millions of luxury consumers to quickly and easily verify for themselves that a product is authentic. The reach and anonymity of online shopping have transformed the replicas industry from side-alley embarrassment to pervasive global menace. The greatest damage happens when fakes are sold as branded originals to shoppers who want authentic and who may have no idea they're being conned.

Allowing product authentication on a blockchain ledger has the power to eliminate fraudulent sales by ensuring that every authentic product has a unique and uncopyable certificate of authenticity — its digital twin — that can be verified online in real time by anyone with access to the service. But this power can only be realised when a brand also adopts a secure and accessible technology to link a digital twin with the physical product it represents in the virtual world.

It remains to be seen how LVMH brands and others who embrace blockchain to combat counterfeits will negotiate this delicate step in the authentication process.

Can blockchain make supply chains transparent?

In theory, yes. Because blockchain is a distributed ledger, individual records cannot be altered without agreement from the network as a whole. Once registered on the blockchain, records are also immutable, so they cannot be edited or changed to hide fraud.

In practice, transactions on a blockchain will be mediated. Decisions about what to collect, and what to share with retailers or

end consumers, are decided by the brand owner. As first to market in luxury fashion, LVMH will set the bar.

Data quality is another factor. Supply chain networks can span the globe, touching dozens or even hundreds of suppliers and distributors on the path from field to factory to point of sale and beyond. A platform can register data to the blockchain, but it cannot guarantee that the data is accurate.



What happens next?

A functioning ledger is only one of multiple building blocks that brands would need to engage consumers, ensure product authenticity, disrupt counterfeits and deliver supply chain transparency at scale on a blockchain.

We need to wait for LVMH's official announcement to fully understand the scope and ambition of AURA.

But depending on a brand's objectives, joining AURA or another blockchain initiative could also require processes to:

- **collect supply chain data from suppliers**
- **verify supply chain data**
- **link physical products with a digital twin (e.g. using a smart tag)**
- **personalise UX by user and objective (e.g. authentication, registration, supply chain transparency)**
- **detect counterfeit identity tags**
- **manage customer care**
- **manage user data in compliance with GDPR and all applicable privacy regulations (local, national, regional)**
- **analyse authentication data for actionable insights**

Developments to watch

Will competitor brands join a platform built by LVMH?

Possibly. The Coindesk article said that LVMH intends to offer access to AURA in a white label format for competitor brands that want to leverage the advantages of blockchain tracking without investing in a proprietary solution.

It remains to be seen if brands outside the conglomerate will feel more comfortable in an environment that is controlled to some degree by LVMH, or in an environment where they can fully control access

to sensitive competitive information about brand products and processes.

Coindesk quoted anonymous sources who suggested that LVMH was exploring the option of assigning its Intellectual Property rights to an industry consortium that would share ownership and access rights to AURA, a solution that could overcome concerns for brands that worry LVMH would exert too much control.

Who will control and have access to data tracked on AURA?

We don't know yet. Coindesk reports that AURA will run on Quorum, a permissioned version of the ethereum blockchain developed by JP Morgan, with an initial structure dictated by LVMH. These are roles that typically have access to all data stored in areas of the blockchain that are public.

Brands evaluating whether to join AURA will no doubt be watching where the platform proposes to store sensitive competitive information — in areas that are public, or in areas that are private — and which members will have access rights to view public data.

Will AURA offer a **plug-and-play solution** for product authentication?

It's not clear yet whether AURA will be offered as a fully functioning application, or as a backend-only solution that runs behind the scenes. In either case, brands interested in offering product authentication services through AURA would likely require a range of additional investments — for example, protocols to generate unique product identities, tag products at ma-

nufacturing, and associate product tags with their digital twins on the blockchain. Brands could also require new consumer services to support the service, including assistance for individuals who encounter problems with an authentication or product registration, or who verify a product that they believed to be authentic and discover it is a counterfeit.

How accurate is **supply chain data** stored on a blockchain?

Once a transaction is registered on the blockchain, cryptographic technology can guarantee the highest standard of security, including the identity of the individual who added or updated a product record. It cannot guarantee the quality or reliabi-

lity of the data stored in that transaction, however. Is product-related data reliable or a sham? It depends on who it came from. Is the product in hand the same product tracked on the blockchain? It depends on the brand's protocols for tag security.

How will brands link physical products to their digital twin on AURA?

Delivering a secure and immediate authentication directly to consumers requires a product tag that links a product to its digital twin, ideally in a format that is easy to find and accessible for use by anyone with a smartphone or digital device. Popular options include NFC Codes, QR Codes, serial numbers and photo-based 'fingerprint' technologies.

That said, neither LVMH nor its partners have announced how AURA data and services will be shared with consumers. A tag or fingerprint technology that consumers can use to view and update product records directly is one option. Another is sharing a confirmation of authenticity and related services through a brand's designated intermediary, such as store personnel.

What happens if counterfeiters copy the product tags that link to a digital twin on the blockchain?

Tag security is the weak link in any product authentication solution that is accessible for use by consumers. Absent protocols to detect when a product identity tag is

copied or altered, a brand would have no way to guarantee that the information a consumer retrieves from the blockchain is actually about the product in hand.

How can a product tag that is copied or altered be detected during authentication?

It depends on the tag technology. Every stand-alone tagging hardware, including NFC technology, has weaknesses that can be exploited by a counterfeiter. The key is

to understand those weaknesses, identify the affected codes, and intercept them for additional analysis before returning an authentication result.

Glossary of key terms

Aura

Code name reportedly assigned to a new, blockchain-based tracking platform for luxury goods developed in secret by lvmh, microsoft azure and consensys. First details were revealed march 26 by [Coindesk](#).

Authentication

A verification process that proves a physical product is an original and legitimate product of the brand on its labels, instead of a counterfeit.

Blockchain

A time-stamped series of data records managed by a distributed cluster of computers and not owned or controlled by any single entity. Each record is immutable and bound to related records using cryptographic principles.

Digital twin

A digital replica of a physical product.

Distributed ledger

A shorthand description of a blockchain.

Ethereum

The blockchain protocol selected for aura because of its unique capability to generate 'smart contracts' suitable for product authentication. Tracks the origin and history of a unique physical object by registering records about its digital twin on the blockchain.

Immutable

Something that cannot be altered, replaced or removed.

Product identity

The unique identity assigned to a single unit of product and its digital twin, typically expressed as a unique number, code, url or image.

Product tag

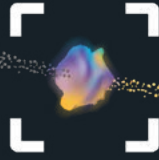
An analog, digital or material identifier that links a product identity with a single unit of product. Familiar options are serial codes, qr codes, nfc codes and digital fingerprints.

Tag security

Overt and covert features embedded in a product tag that, when subjected to a verification process, reveal if the tag is authentic or a counterfeit.

White label

A service or platform offered in an unbranded format. Requires brands to customise the look and user experience of the interface to meet their needs.



About Us

180 Countries
10 Languages
Any digital device

Certilogo is the global leader in digital product authentication and consumer engagement for the fashion and luxury industries, trusted by 1 user every 10 seconds in more than 180 countries.

Products tagged with unique identifiers in RFID, NFC, QR and alphanumeric formats are verified quickly and reliably using advanced artificial intelligence from Certilogo, the connected products platform providing 'anywhere, anytime' authentication

to consumers and leading brands in 10 languages, using any digital device.

Authenticating a product engages consumers with a best-in-class digital experience before and after purchase, connecting them directly with the brands they love. The same real-time results unmask clones and replicas of brand labels, safeguarding loyal customers and ensuring data integrity for products tracked in private databases and distributed Blockchain ledgers.



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sales@certilogo.com



Via Enrico Tazzoli, 6

20154 Milan - Italy

sales@certilogo.com

www.certilogo.com