



WHITE PAPER

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Abstract

1trueid starts from the will of enhancing high-value products, which better represent the Made in Italy. The aim is to bring out products' quality and authenticity, mainly of fashion and luxury industries, highlighting the supply chain, its phases and its players.

1trueid is a technologic solution that allows the management of:

- Track & Trace of the product, from the design, to production, logistics, distribution and end-user.
- Anti counterfeiting, easy tool to verify product's authenticity (*)

1trueid is the technology which can create and allocate a PDI - Product Digital Identity to the items (CREATE IT). This technology is available for the producers (Maker) in cloud directly in office and, for end-users (User) through an app for smartphones. With a smartphone (**) the User can recognize the PDI of an item as a check (Anti counterfeiting, traceability and storytelling) (READ IT) and possibly to acquire product's ownership (OWN IT).

Thanks to 1trueid, the owner of an item could easily manage its lifecycle (e.g. warranty, assistance), share its different status of use, up to an easy management of its sell or transfer (second life – RE-OWN IT).

(*)Counterfeit phenomenon which, according to OCSE-EUIPO¹, in 2008 represented the 1,99% of the global trade for a value of 200 billion dollars and which in 2013 increased of 2,5% for a value of 338 billion dollars. These data represent a huge volume of goods, divided in different types of products, from luxury to industrial and groceries.

(**)For a global population of 7,4 billion people, internet users (without distinctions between desktop-mobile) are 3,4 billions, for a total infiltration of 46%. Globally 23 billion people use social media (infiltration of 31%) and 3,8 billion people use **mobile device** (infiltration of 51%). If in 2010 only 2,9% users browsed from a mobile device, **now 40% users browse from mobile devices**, with an absolutely unquestionable trend.

¹ <http://www.iccitalia.org/contraffazione-in-aumento.htm>

Context

1trueid aim is to technologically solve problems related to warranty and defense of consumers in a global market every day more extended and difficult to control. Issues as brand protection, customer knowledge and shared consumption base their requirements on two main pillars of 1trueid project:

- Track & Trace
- Anti counterfeiting

TRACK & TRACE

Tracking is the process which follows the product from the beginning to the end of the supply chain: it leaves a proper trace (information) for every phase through which the item passes. Traceability is the opposite process, whose aim is to collect all information left. In the first case, the main goal is to define which agents and information should leave traces, in the second one what technical tool should be used to go back and find these traces².

Traceability is based on operators and items identification in every step of the supply chain and on collection and record of information that describe the process of creation and distribution of the item. The key factor of traceability are:

1. **Identification**, assigning of a unique identifier to every group of products and following its course up to the end-user;
2. **Record**, collecting and selecting of the information which describe the creation and transformation process;
3. **Data Connection**, recoding of the connection between batches and logistic units and giving guarantee of connection with all supply chain operations;
4. **Communication**, representing the heart of supply chain traceability, guarantees functionalities across the whole system³.

Tracking and tracing will provide for the need to control production processes, follow the item throughout all the working steps, identify the flows, manage quality and eventually establish a relationship with the end-user.

² Fondamenti dei sistemi di tracciabilità nell'agroalimentare, GS1 Italy

³ Fondamenti dei sistemi di tracciabilità nell'agroalimentare, GS1 Italy

ANTI COUNTERFEITING

Counterfeit market is influenced, as the other markets, by factors related to demand and offer. From one hand the consumer, its attitude towards the purchase of counterfeit goods and the legislative context in which purchase takes place; from the other hand, the producer of counterfeit goods, the risks of illegal production, the market's opportunities and, again, legislation in use. Producers of counterfeit items are targeted to enter goods business processes, causing huge damages to legal firms. Low-quality products are sold with the same warranty of authentic products, causing important inconveniences in terms of safety (e.g. toys, tools and pharmaceutical) and brand awareness.

In Europe counterfeit is related mainly to luxury industry, as shown in the chart below.

Table 1.1. Top 15 industries likely to suffer from counterfeit EU imports, GTRIC-p, average 2011-2013

Harmonised System (category code) GTRIC-p	GTRIC-p
Watches (91)	1.000
Articles of leather (42)	0.999
Footwear (64)	0.958
Tobacco (24)	0.927
Perfumery and cosmetics (33)	0.919
Headgear (65)	0.893
Clothing apparel, knitted or crocheted (61)	0.882
Toys (95)	0.877
Miscellaneous manufactured articles (96)	0.718
Clothing apparel, not knitted or crocheted (62)	0.536
Jewellery (71)	0.479
Optical, photographic, medical instruments (90)	0.426
Electrical machinery, equipment and parts (85)	0.395
Other textile articles (63)	0.383
Tools of base metal (82)	0.379

Most of counterfeit goods comes from Hong Kong and China in general. Hong Kong's record stands for the presence in the city of big counterfeit industries and for its strategic geographical and business position as international harbor.

Table 1.2. Top 15 provenance economies of counterfeit goods entering the EU, GTRICe, average 2011-2013

Provenance economy	GTRIC-e
Hong Kong (China)	0.9999
China (People's Republic of)	0.8788
United Arab Emirates	0.9414
Turkey	0.9127
Greece	0.8806
Syrian Arab Republic	0.8657
Suriname	0.8461
Lebanon	0.8295
Singapore	0.7601
Senegal	0.7201
Panama	0.7051
Tokelau	0.6930
Afghanistan	0.6632
Pakistan	0.6361
Thailand	0.6335
Morocco	0.6293
Tunisia	0.5873
Latvia	0.5260
India	0.5039
Togo	0.4770

Total value of counterfeit goods imported in European Union in 2013 is 116 billion dollars. This means that 5,1% of imported goods in Europe in 2013 is counterfeit.

Players

The players involved in the interaction process with objects can be divided in two main groups:

- USER: it is the final consumer of 1trueid solution. Throughout a registration online on web portal or application, the consumer is enabled to 1trueid functionalities, becoming part of 1trueid community;
- MAKER: it is the producer of the items identified thanks to 1trueid code and it has access to statistical information related to users and objects. 1trueid records all makers, in order to guarantee safety and reliability of contents and enable them to the allowed functionalities, possibly with automatic processes as API or SDK to develop.

Elements

1trueid is the solution to the issues described, including the best available technology in terms of:

- Cryptography: every serial ID is created and encrypted with public/private key 128 bit, the microchips of transponders used to tag the items are protected with password, the data saved in the database are coded and the online transactions occur through protocol https (HyperText Transfer Protocol over Secure Socket Layer).
- Blockchain: the microchip of the transponders allows the memorization in blocks of the different phases of the production process, so that the entire supply chain of the item is registered.
- RFID: items identification occurs through the use of RFID transponder both NFC (Near Field Communication) and RAIN (UHF) so that interaction readings from different distance are enabled.
- 1trueid QRCode
- IoT: code, identifier and device realize the metaphor of Internet of Things.

System is made of three main parts:

- media: support with item's DNA
- WEB portal: tool for account registration and social activities
- App: mobile devices tool to start the interaction user-item.

1trueid project features can be described with three main steps:

- A 1trueid serial ID is assigned to every item, represented as a QRCode or saved in a microchip of a RFID tag;
- These information are encrypted with SSL key 128 bit;
- An application or a WEB service, through a smartphone, reads the content of the tag/QRCode, decrypts the data, shows information about item's authenticity and adds functionalities which allow interaction item-user.

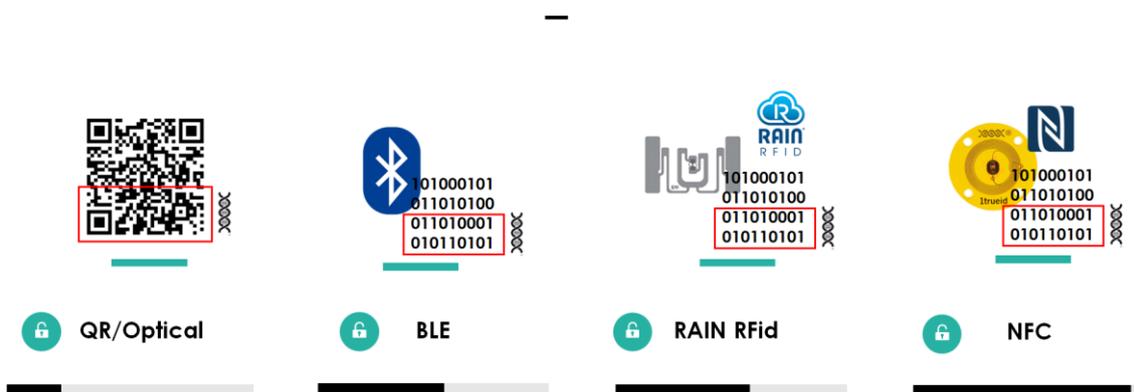
HARDWARE - OBJECTS

There are two types of RfId transponders, characterized by different interaction processes:

- NFC: Near Field Communication, HF (13,65MHz), with chip NTAG216
- RAIN: UHF (860MHz) with chip NZP Ucode G2Im.

In both NFC and RAIN transponders can be realized in different shapes, depending on their application and context of use (adhesive, washable, on metal).

The 1trueid QRCode label, a QRCode with a high-level of security and with the same encrypted data of RfId tags, is the easiest and cheapest hardware support to identify 1trueid items.



WEB

1trueid online is made up of a WEB portal, with the main features of the system described in the public side of the website.

The working functionalities are accessible in the backoffice of the website after registration. Here the user will find:

- A timeline, with all data about interaction item-user that users decide to publish;
- Its ownership declarations;
- The list of its items with the possibility to release their ownerships in order to sell or leave them (Internet Book of Things);
- An e-commerce to buy 1trueid elements;
- Data analysis section.

The requests for 1trueid codes generation and changes in status used by Makers during massive or organized production also occur online. Both features are part of API (Application Program Interface), available for systems integration.

APP

Interaction item-user happens thanks to mobile device such as smartphones. 1trueid app is available both for iOS and Android and ensures the following features:

- Logging process, links user to device;
- If Android, reading NFC tag applied on items (soon available also for new iOS smartphones);
- Reading QRCode, through both Android and iOS smartphone camera;
- NFC tag or QRCode reading starts the 1trueid decrypt process through private/public key;
- At first, system shows authenticity warranty (or not, if counterfeit item) and collects timestamp and geographic data;
- Then, system shows item's storytelling (media content);
- Depending on item's status, possibility to declare the ownership of the product, in this case system collects beyond timestamp and geographic data also the item-user link.

SDK (Software Development Kit) are available also for the app, so that a custom application based on 1trueid technology, can be developed.

Features

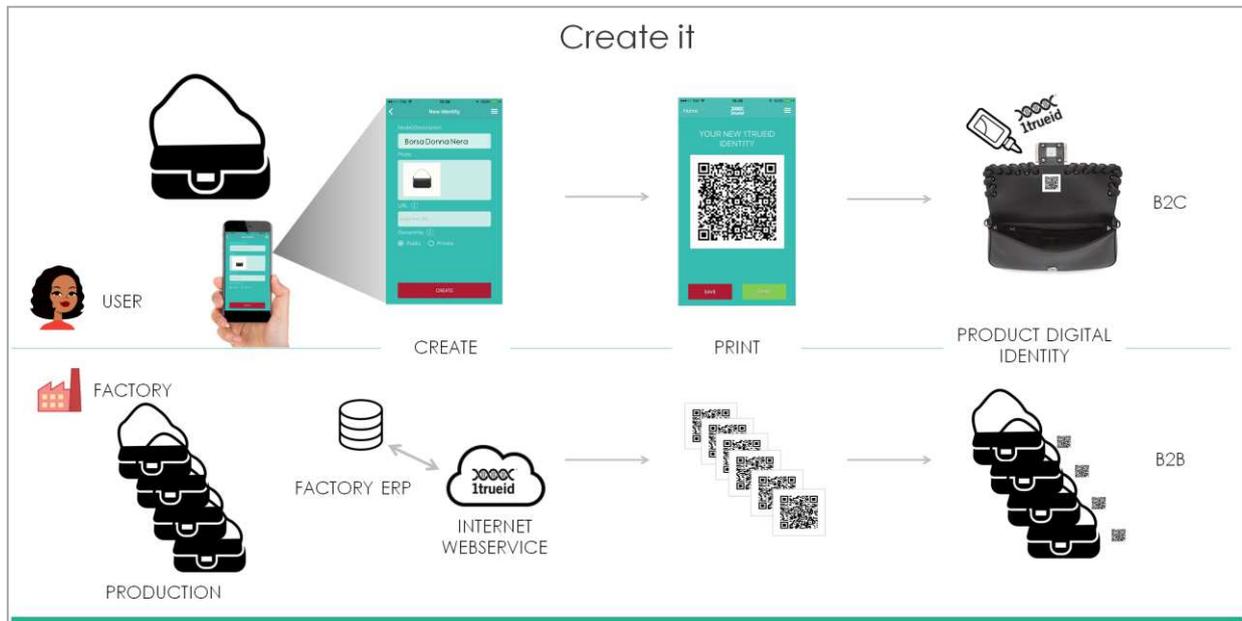
The heart of 1trueid system is made of features realized on WEB technology and that allow User and Maker to enjoy item-user interaction in a Internet of Things environment.

CREATE IT

The first feature realized, is CREATE IT, which is also the most important. It creates the 1trueid code which will identify a defined item for the rest of its life, and it allows the management of the product's data along the whole supply chain.

Depending on the players, the feature works differently:

- Maker: it creates the codes through integration between 1trueid and producer's ERP, using API and producing codes and decrypting keys massively. In this way Maker can apply a QRCode or a transponder encoded following 1trueid procedure to its entire production.
- User: it uses 1trueid app to classify its product, with a picture of the object, inserting a description and asking the system to create a 1trueid code and related QRCode. User will print and apply the QRCode to the item.



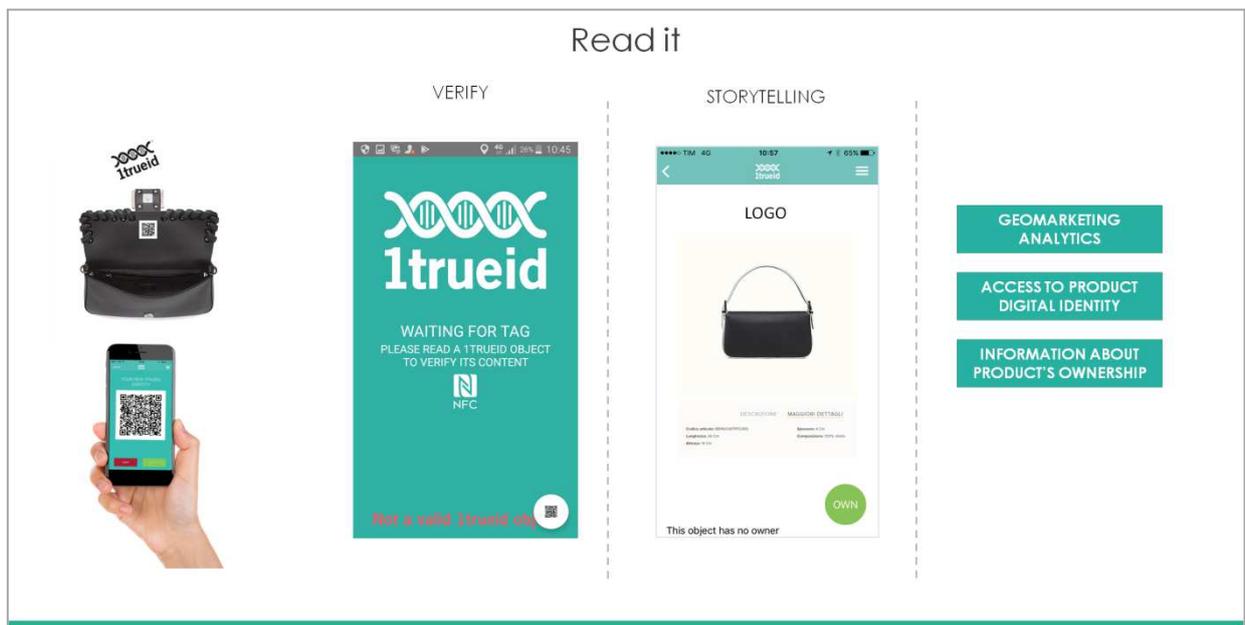
READ IT

The physical interaction item-user occurs thanks to READ IT feature. This operation starts when the app through NFC reader or Camera reads a 1trueid code. First, reading the code the system decrypts it through the key and shows product's data (storytelling)

Depending on the players, the feature works differently:

- Maker: information related to production process, supply chain and grey market can be enabled;
- User: the storytelling is aimed to marketing, brand awareness or customer experience.

Both Maker and User activities collect data when READ IT is processed.

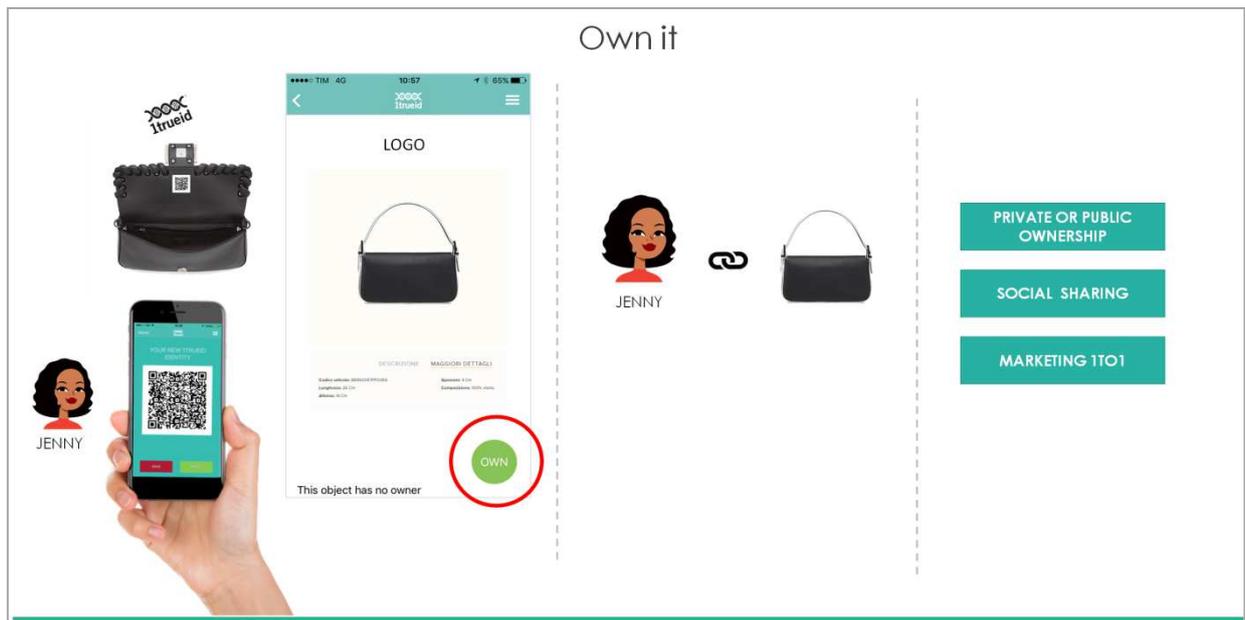


OWN IT

The key feature of the project, under copyright is OWN IT. It applies the unique association item-user, creating the idea of precise property and increasing the creation of the Internet Book of Things made of unique items and their owners.

Depending on the players, OWN IT can:

- Maker: integrate add-on features as the warranty management, quality management or distribution channels control;
- User: property declaration and control in case of theft, loss,...

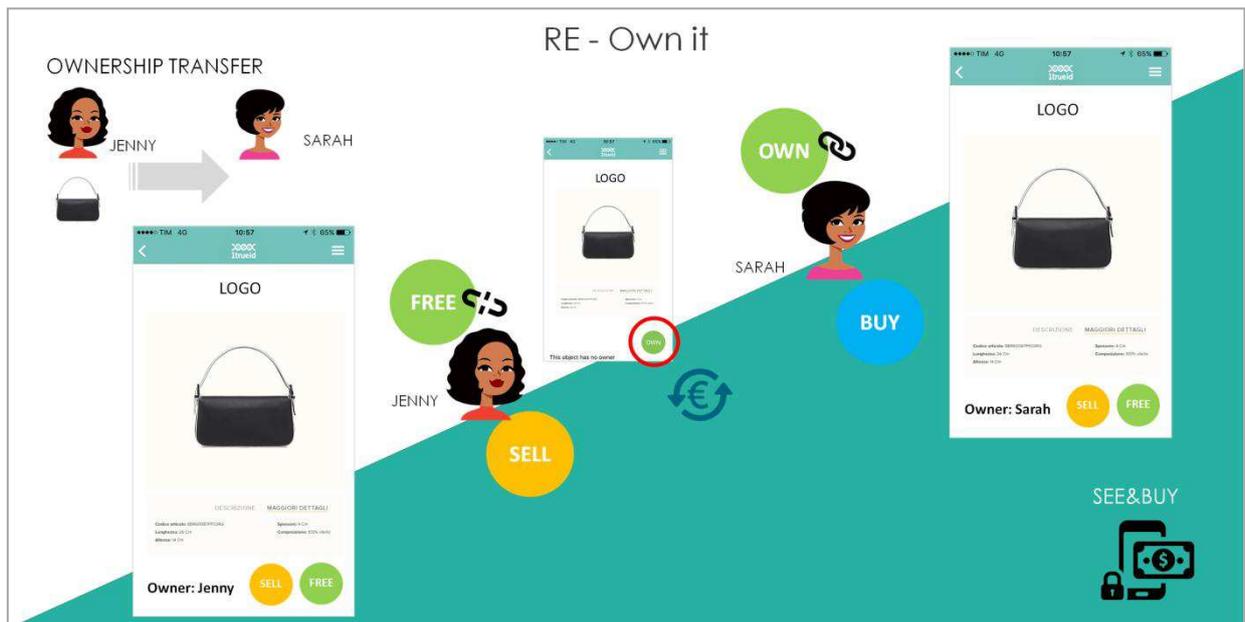


RE-OWN IT

Thanks to OWN IT, more features are available in order to manage item's life-cycle. In fact, the owner can release the ownership of a product so that another user can declare a new ownership.

Depending on players these are the different features:

- Maker: possibility to manage change in status, so that supply chain, track & trace and production phases are controlled;
- User: possibility to manage goods exchange, possibly with currency transfer as in case of privately sales.



Profits

Following the recent Insight report of the World Economic Forum in collaboration with Accenture the disruptive technologies driving the future of retail can be summarized as follows⁴:

RETAIL AND CPG INDUSTRIES VALUE CHAIN				
TECHNOLOGY	MANUFACTURE / PLAN AND BUY	DISTRIBUTE / MOVE	SELL	AFTER SALES
INTERNET OF THINGS (IOT)	Automated reordering via sensors; connected clothing	In-transit visibility	Automated ordering; connected devices	
	<ul style="list-style-type: none"> Enhanced customer experience via personalized service offerings that adapt to individual needs Device data can provide a 360-degree view of the customer Revenue-generating opportunities by selling data as a third-party vendor through partnerships with companies that desire a rich and deep understanding of customers Enabling new purchasing channels by automating product purchase via subscription refill and/or providing new channels to discover, research and purchase products directly 			
AUTONOMOUS VEHICLES / DRONES		Self-driving trucks	Last-mile delivery: self-driving trucks / drones	
	<ul style="list-style-type: none"> Reduced operating costs in transporting people and goods Enhanced productivity from continuous operations Increased fuel efficiency and use of alternate energy sources, specifically for autonomous vehicles 			
ARTIFICIAL INTELLIGENCE / MACHINE LEARNING	Trend and volume forecasting	Predictive staging	Predictive recommendations; predictive deliveries	After-sales service
	<ul style="list-style-type: none"> Foundational technology for disruptive trends (e.g. autonomous vehicles) Removes need for human involvement in routine and predictable tasks Greater precision, accuracy and speed when conducting tasks 			
ROBOTICS	Robotic manufacturing	Robotic picking	Robotic picking; automated sales assistants	Automated customer support
	<ul style="list-style-type: none"> Reduced operating costs through the automation and optimization of commoditized tasks Increased utilization by operating up to 24 hours a day, seven days a week Enhanced customer-service experience by allowing store staff to focus on customers Speed in performing simple and structurally repetitive tasks at faster rates via software bots 			
DIGITAL TRACEABILITY	Product source tracking; inventory replenishment	Supply-chain product traceability	Merchandise tracking; product authenticity mapping	Product usage and warranty
	<ul style="list-style-type: none"> Increased accountability on supplier quality, as all product elements are traced back to suppliers Quicker responses to food-safety situations, drastically reducing the risk of consumer backlash Real-time analytics enables timed offers and circumstantial pricing, which can lead to revenue uplift 			
3D PRINTING	Prototyping		In-store product printing; real-time manufacturing	
	<ul style="list-style-type: none"> Moves production closer to the end consumer, minimizing movement of commonly available raw materials and increasing product customization Reduces response time to shifting consumer preferences by enabling on-demand production Creates new retail and at-home business models based on capability to manufacture flexibly at a small scale Enables product customization, from appearance and packaging to flavour and nutritional content 			
AUGMENTED REALITY / VIRTUAL REALITY	Planogramming; product design		Virtual retail locations; VR demos	AR / VR engagement
	<ul style="list-style-type: none"> Alternative purchase channels provide a new way for customers to discover and evaluate products Ease of access for customers via on-demand shopping, helping them avoid physical-store trips Limitless access for experiencing products through 'endless aisles' 			
BLOCKCHAIN	Authenticity verification	Supply-chain verification	Online wallet	Transaction verification
	<ul style="list-style-type: none"> Secure, decentralized digitization of assets and transactions Complete audit trail for purchased products and/or materials Process digitization/automation, e.g. instantaneous settlement Risk mitigation in settlements, counterparties, operations and points of failure 			

⁴ Source: Accenture/World Economic Forum analysis

1 trueid match the main three and in particular:

1. IOT
 - a. Enhanced customer experience via personalized service offerings that adapt to individual needs
 - b. Device data can provide a 360 degree view of the customer
 - c. Revenue-generating opportunities
 - d. Enabling new purchasing channels
 - e. Marketing one to one

2. DIGITAL TRACEABILITY
 - a. T&T Track and Trace
 - b. Increased accountability on supplier quality
 - c. Quicker responses to food-safety situation
 - d. Real time analytics enables timed offers and circumstantial pricing, which can lead to revenue uplift
 - e. Inventory Finance

3. BLOCKCHAIN
 - a. Complete audit trail for purchased products
 - b. Process digitalization/automation, e.g. instantaneous settlement
 - c. Risk Mitigation
 - d. P2P ownership
 - e. Smart contracts activation

Therefore differently from others who developed custom made applications, our solutions integrate in the same solution and environment an exceptional range of features, like one to one marketing, anti-counterfeit tags and codes, see & buy and smartphone payments and many others, this is why our motto is "we build roads not trucks"®

From IBM Security Intelligence, November 15, 2016 | By Denis Kennelly:

<<The Next Wave of Identity Management Must Meet the Goal of One True Identity.

The dawn of the third wave of the internet demands a new approach to identity management that recognizes the dramatic ways in which our use of the web has evolved and the importance of identity as both an asset and a risk.

MAKING WAVES

During the first wave (1995–2005), identity management was basically done at the account level. People recreated profiles on each website they accessed and had little control over how that information was used. Each site typically required a different authentication process. The site owners held all the cards.

In the second wave (2005–2015), the arrival of social networks and software-as-a-service (SaaS) applications gave service providers ways to build much richer digital identities by aggregating information from multiple sources. However, this process was often clunky and opaque. Users didn't know what information was collected about them or how it was used. Concerns about privacy violations sparked suspicion and even legislation.

The third wave of identity management must be built upon a set of three new assumptions: hyperconnectivity, data-driven business platforms and contextually driven interactions.

According to the Accenture report “Digital disruption: The growth multiplier,” about one-third of the U.S. economy is now digital, and other developed nations are close behind. Even greater opportunity exists in extending digital identities to the estimated 1.5 billion people worldwide who do not currently have one. Secure, flexible identity management is essential to unlocking this potential, and we want and are the first to be ready to scale this potential.

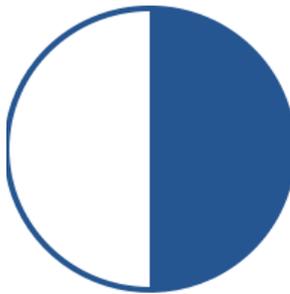
Our customer actually are well known large corporate and SME mainly in the Fashion and Food Industry, soon expanding to Banks, P2P Insurances (Fintech), and Large Retail.

BENCHMARK READINESS LEVELS OF DISRUPTIVE TECHNOLOGIES AND KEY ENABLERS

Always from the Insight report of the World Economic Forum in collaboration with Accenture, we compared readiness levels and 1trueid key enablers, thus reflecting the promptness of the market but also competitors respect to us

NOTES:

1. White portion of Harvey ball indicates market readiness

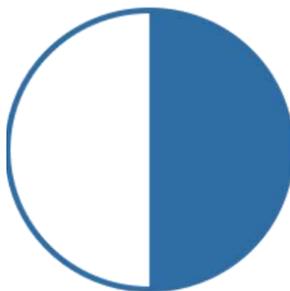
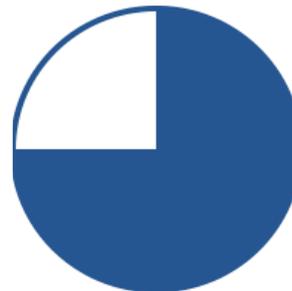


IOT

- TIME TO FULL READINESS
 - 2-5 years
- 1Trueid KEY ENABLERS
 - Advanced capability to synthesize data, identify insights and act on them on an ongoing basis across the organization
 - Global Standards for data collection
 - Advances in data security to ensure protection of consumer information

DIGITAL TRACEABILITY

- TIME TO FULL READINESS
 - 2-5 years
- 1Trueid KEY ENABLERS
 - Advanced capability around predictive analytics
 - Common digital language for supply chain traceability within industry



BLOCKCHAIN

- TIME TO FULL READINESS
 - 6-10 years
- 1Trueid KEY ENABLERS
 - Ability to perform high volume transactions in a secure way
 - Regulatory frameworks for payment applications

If Wikipedia has changed the way we perceive knowledge, 1trueid is bound to bring the same innovative force in commerce.

References

Many customers has integrated 1trueid technology in their products with different goals, but everyone with the main aim to guarantee item's authenticity and check track & trace in every phase of the supply chain, post sale included.

Some of the customers follow:

BOSS
HUGO BOSS


**ALESSANDRO
GHERARDI**

VALENTINO

ALZEJA[®]
The Goggle


Ca'del Bosco

MEKTRAX  CYCLING

CHRISTOPHER BATES
MADE IN ITALY

superlativa[™]

Glossary

STORYTELLING

In a context in which web sharing has become a social phenomenon, the story of the product and brand through social network, website and applications become everyday more important. The focus is on quality, brand awareness increases thanks to new marketing campaign, where technology is the protagonist.

Thanks to smartphones we can have real time information about every item and furthermore the same products do communicate with us. Current technology allows the involvement of the consumer starting from the data that the item has collected during its production. Makers have the possibility to use transponders or QRCode to tell the information that give the item authenticity and uniqueness.

CUSTOMER ENGAGEMENT

Retail has changed considerably these years and with it "purchase experience" too. Thanks to internet and e-commerce customer engagement is more and more difficult and requires a bigger effort from the producer and reseller. The aim is to increase brand awareness, as synonymous of quality and reliability and the tools to reach this goals are different. With marketing campaigns, social activities and loyalty campaigns for example great results in terms of customer satisfaction and brand perception can be achieved.

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