



Verity One™

Verity One™ | Data-Structure & Design Protocol for Country of Origin, Religious, Health, Organic, Efficacy, Supply Chain Verification and Management on a Bifurcated Blockchain Network.

Abstract

Verity, Inc. is the exclusive independent organization is the only company that successfully vetted by a US Federal Agency Investigation in 2014 validating the “**Made in the USA Certified®**” seal. Verity’s supply chain verification utilizes a proprietary token as the means to pay for the verification process executed by Verity, Inc. [Based on the SEC v. W.J. Howey this token passes the three elements set forth classifying it as a utility token and permissible for use in the USA.](#)



The Verity utility token, ‘VRTY’ (hereafter VRTY), is the core engine that powers the Verity One™ protocol that is required to generate the unique signatures and data within the system. Verity One™ comprises both the protocol and the API which allows users (i.e. manufacturers, brands, retailers, and producers) to assign unique trackable tags (i.e. UPC and PLU S/N) to a unique digital signature.

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Vision & Strategy



Motivation

Today we live in a world that often questions *“How do you truly know if what a product claims is true?”* According to a 2016 joint report by the Organization for Economic Co-operation and Development (OECD) and EU Intellectual Property Office (EUIPO), imports of counterfeit and pirated goods amount to approximately half a trillion dollars a year, or around 2.5% of global import. Verity, Inc. provides an auditing platform that offer a complete solution. The Verity One™ Blockchain uses a cryptographic token VRTY to mark and track the movement of each item of a product that was verified by Verity, Inc.

Overview

Verity, Inc.

Verity Inc provides a verification for all product and marketing claims regarding authentication and legitimacy by performing a supply chain audit. Once a product's information has been identified and then verified, a document repository for each marketing claim is put on the Veritychain™.

Verity One™

The Verity One™ System and VRTY Protocol is a blockchain based application to register track and store data of all products which get the Verity Inc seal of poof. Verity One™ Verity, Inc. then manages and categorizes all information gathered through the Verity One™ blockchain network by using IBM's Watson Artificial Intelligence (AI) which readily makes it available to any individual using the Verity One™ app, depending on viewing authorization. Verity One™ can track and trace any verified product in our database from origination to destination, farm-to-table, manufacturer-to-end user, all the while accurately recording every step and transaction along the way. For consumers and purchasing agents, a Verity One™ Seal earned through the VRTY Blockchain protocol ensures an

extensive authentication of any marketing claim that could lead to a smart purchase. For manufacturers, the Verity One™ Seal provides the ability to track all material and product information from origination to final purchase by their customers. Additionally, manufacturers are able to gather information about their consumers in real time as they scan their products on or offline. Verity One™ mobile app is available on Apple and Android.

VRTY Token

The Verity One™ token is the cryptocurrency or medium of exchange used to fuel any action or process on the Verity One™ system. The Verity One™ app will charge a VRTY payment for verification and certification of a product. Consumers using the app will require a wallet and some VRTY tokens to record transactions on the blockchain following the completion of certification.

The VRTY token is the means by which a product can be identified and traced after being verified by Verity Inc., thus each registered item (individually or as a bulk) will require a token attached to it throughout its commercial life cycle.

Scope

In this whitepaper, we describe the overall functionality of The Verity One™ System and VRTY Protocol. The Verity Protocol will abstract the complexities of interacting with and creating smart contracts by deploying pre-developed smart contracts verification applications that communicate and interact with each other through the Verity Protocol.

- Description of the Verity Inc API and how it will interact with the Verity One protocol.
- The decentralized Protocol Layer
- Verity Tool Box
- Decentralized Application Layer
- Verity One™ token (VRTY)

Verity Inc Market Segment

There are three key players that are affected by a lack of ability to authenticate products.

Manufacture | Producer | Brander Owner | Retailer (MPR)

The MPR (which may be the supplier, retailer, distributor, or otherwise) is a profit-making entity that relies upon the quality of produce sold and illegally capitalizes on the consumer preference for the counterfeited brand name. As the OECD states:

“The essential component that the commercial supply of counterfeit products relies on is ‘free riding’ on the economic value associated with a given intellectual property right”[1]

Counterfeits abuse the brand name and intellectual property of other legitimate sellers which hurts the overall reputation and profitability of a business. Furthermore, the damage to consumer confidence in one counterfeited brand affects the potential customer base of any business that could also be affected by counterfeit products.

Consumer | Purchaser

The Consumer | Purchaser is scammed into purchasing fake products, failing to maintain the same quality, value and/or may contain faulty or untested component. The consumer confidence online and retail space is damaged due to the inability to inspect and differentiate real and fake products, honest reviews versus dishonest, paid reviews, and reputable sellers versus mountebanks. The element of trust for a consumer is a significant factor when making a purchasing decision but is routinely exploited.

Law Enforcement and Government Agencies

Law enforcement seeks to seize and prevent counterfeit goods. The mediator is faced with exceedingly high costs of tracking and investigating the movement, procurement, and sale of counterfeit products, tax stamps, as well as product validation. With Verity, Inc.'s Verity One™ system, a registered UPC or PLU S/N can be tracked from the manufacturing facility or original producer all the way to the end consumer while tracking and recording every transaction along the chain of custody until the end consumer. This detailed record of documentation stored along Verity Inc.'s blockchain hyperledger provides instant authentication to a consumer, law enforcement, or government agency when the product is scanned.

Verity One™ System

VRTY Protocol, and API Ecosystem

The VRTY protocol is the autonomic layer of the verification process in which the proof provided by the Verity Inc regarding the authentication of a product can be attached directly to the product using the VRTY token.

The API Ecosystem provides all the required tools and links to facilitate the seamless connection between the information and the product to which this information refer to. The API ecosystems is the input/output door for all data that is reviewed and verified by Verity Inc regarding the validity and truth of the claims made by a brand.

Decentralized Protocol Layer

The protocol layer consists of 3 main data structures that interact via the Ethereum mapping method within the VerityRegistry.sol and the VerityTrust.sol contracts.

VerityRegistry.sol

The application layer specifies an address to register the application's unique identifier on the protocol alongside the application's name and fee account. This allows the application to collect fees from users of third party verification applications built on the protocol.

```
struct App {  
    address appAccount;  
    string appName;  
    address feeAccount;  
    bool active;  
}
```

Brands input their public key address to specify their corresponding brand name, and this is stored alongside the appAccount which will thereby be used to store the brand information and the products verified.

```
struct Brand {  
    address brandAccount;  
    address appAccount;  
    string brandName; bool  
    active;  
}
```

Products store the associated brand account as well as product information.

```
struct Product {  
    address productAccount;  
    address brandAccount;  
    string description; string  
    details;  
    uint year; string  
    origin; bool  
    active;  
}
```

This information is then hashed via the addressHash (address item) function and marked with the corresponding product public address,

which uses the hashed address as a reference for lookup. This is the individual identifier for each product stored on the blockchain, and allows lookup via the check (address item) method.

VerityTrust.sol

The Verity Trust contract allows Hyperledger private addresses to 'vouch' for other addresses. This allows multiple servers and write once read many devices to become trusted intermediaries.

Ethereum and Hyperledger addresses can revoke and apply vouches for brand and application keys via the approve (address brandKey) and revoke (address brandKey) public methods.

Verity Tool Box

Open source frameworks will be provided to developers to ensure the developer experience is user friendly. Developers can opt to use utilize these frameworks within their commercial verification applications to reduce the need to interact directly with the smart contracts.

Verity.js

Verity.js provides a npm packaged Javascript framework that is built on top of Web3.js and the protocol layer to create an abstracted, developer-friendly tool to build on the Verity protocol. Using this layer, developers can opt to interact with the blockchain through Javascript and build commercial verification applications without the need to interact directly with the protocol's smart contracts.

Verity keygenerator

A simple key generation tool to allow developers to generate public key addresses to append to the UPC | PLU codes for input into their enterprise software.

Decentralized Application Layer

Applications such as Salesforce, SAP, Oracle, IBM, U.S. Govt, and more will connect via the (API) protocol to form the application layer. This will enable commercial applications to build and charge for services whilst using the VRTY protocol.

Example: A salesforce customer will use the Verity One™ System to use the VRTY protocol via Apex or Visualforce to verify products on the blockchain. Using the VRTY protocol, developers will interact via the Verity.js and Apex framework or choose to directly develop via the smart contracts deployed on the blockchain.

VRTY Token

The VRTY token is the cryptocurrency that activate all functions in the verification process as true cost of accounting method The token then acts both as the system's electronic medium of exchange and as an identifier of a product.

- A VRTY token fee is charged to execute a verification process by Verity Inc. this means that Verty Inc is paid for the service in VRTY tokens only. The token is the method used to start the action or process on the Verity One™ system. Each payment is calculated by the amount of VRTY used and number of transactions performed during a certification, verification, or application process
- A VRTY token is used as an identifier for a verified product. This means that each product need a token (or a part of a token“attached” to it in order to be independently verified throughout its comercial life cycle (or until the expiration date) . The identifier token can be attached to a bulk or per unit of product.
- A VRTY token may also be used as a futures contract. An identifier which requires a multisig to execute the first transaction act as a futures contract for investors. The contract itself can be executed using VRTY tokens as the medium of exchange directly on the application layer.
- A VRTY token used in the process of brand tokenization. Much like the ERC20 , the VRTY protocol will enable the creation of tokens and the medium of exchange to buy these tokens. These brand tokens will carry the certification identification provided by Verity Inc. as a marker of the certification which the product claims.
- A VERT token creating a smart future contract. The tokenisation layer of Verty One will enable a fully automated future contract built into each token, thus will eliminate the need to a multisig to insure the execution of the contract.

VRTY Exchange and Off-Chain Transaction

In order to facilitate the application requirement of the token as a utility token, Verity Inc will use a third party (a regulated exchange) to act as an exchange to acquire the tokens and sell them on behalf of the user and without the user's need to interact directly with the exchange. This be done in compliance with all required regulation and with full transparency.

The alpha version in which the token run on the Ethereum network requires an extra setup in order to absorb the gas cost in ether and reduce the transaction fee to minimal. This will be achieved by an off-chain accounting service provided by Verty One on the app.) A “Lighting network” like service may apply to this section.)

'Verity's Exchange Service' (VES), acts as an exchange to allow users to send VRTY tokens without the required Ethereum as an ether gas cost. Users can contract with third-party services to process their transactions and shift the responsibility of gas cost from their behalf. In return, the user pays the service or exchange provider a percentage of VRTY tokens. This provides a practical means of using the Verity protocol without requiring retailers and other users to hold VRTY as well as other tokens.

VRTY Monetary Policy and Distribution Structure

A monetary policy renders the goals of the ecosystem supported by the currency, and set of rules by which a currency is governed, The distribution structure acts as the physical apparatus which execute the policy rules. The distribution structure is designed to incentivize the desired behavior of the different participants of the ecosystem in order to meet the goals rendered by the monetary policy. When this direct link is enforced by a program, the use of law enforcement is no longer necessary.

Monetary Policy

- **Coins Issue Policy** - Determines the conditions that triggers the issuance of more tokens.
- **Volatility Target** - Since a coin is exposed to the free market fluctuation, the issuer need to set a volatility target which meet the goals of the ecosystem which the coin supports. By doing that it is signaling the risk management agents (include speculator) the upper and lower limit of the risk taken.
- **Reserve Policy** - The reserve policy is influenced by both the coin issue policy and the volatility target yet it marginalized the risk that the issuer is taking regarding meeting his own goals. Usually as the ecosystem get more solid the reserve rate can go down. In a fully decentralized monetary system there is no reserve in existence. In a healthy and mature system we should get a stable volatility rate supported by minimum reserve rate.

Distribution Structure

- **ITO** - Initial token offering stands for the issuance of utility tokens. The tokens are an actual part of the mechanism that renders some service. The VRTY offering is held for a working application and stand against an existing record of the company that hold the sale and the value it represent. Investors can calculate. A ITO is a the method to distribute a new token which activates an advanced

technological infrastructure by employing the free market trading arbitrage.

- **QE Methodology** - In order to sustain a growing economy and to achieve the desired volatility rate, Verity Inc will distribute an additional 1% of total supply when the SKU growth reach 0.1 of existing number or when the token value reach a predetermined an upper limit. This new money supply will be distributed as follow : 10% for equity holders , 5% users incentives, 20% Verity Inc management 30% reserve, 30% interest free development loans for brands 5% charity.

Consumer Incentivizing Blockchain Using the Verity Token

For the consumer, The Verity One™ token is as an incentive and gamified method to provide compensation for the added data they add, remove, change, or update in the Verity One™ database. Users can obtain VRTY tokens in a variety of ways, such as: Scan credits, Upload credits, Product information updates, Data input, Social media posts, Reviews, Coupon use, Warranty upload, Recall sharing, etc.

Business Incentivizing Using VRTY token and Blockchain

- Recall Management: Instant recall push notification technology, limited liability for seller, Governmental proactive response, direct response to consumer, FAQ, and how to handle or exchange recalled product;
- Consumer Data;
- Brand Protection from false marketing claims: Country of Origin, Organic, GMO, Gluten Free, Kosher, Halal, etc;
- Insurance relief with extensive coverage options available;
- A | B testing;
- Instant coupon push notification following product scan to influence a consumer purchasing decision;
- Warranty registration and repository.

2 Use Cases

Product Verification

Use Case: The Verity One™ token is used to provide the Manufacture, brand, farm or owner with instant push notification capability for recall management. In the event a Salmonella, Listeria, or other equivalent scenario, a product recall event queries in the Verity One™ system. This query instantly sends a push notification to any consumer using the Verity One™ Mobile App that purchased the affected product. The event will trigger a VRTY token payment option to each recall recipient that returns or shares the product recall with a friend or other affected consumer.

The VRTY protocol enables e-commerce and retailers to verify the authenticity of any products or services they sell, or even the sellers themselves. Retailers can use their assigned unique ID along with their industry standard UPC and PLU S/N to provide a digital signature. These signatures are applied to each product and stored in the third-party Verity One™ application database. With the VRTY protocol, the retailer can provide a consumer scanning a unique ID with a one-time-use hash function that can be collated with the stored digital signature to verify the authenticity of a product. For e-commerce, a digital signature can be applied to a custom, live, virtual Verity One™ Seal that cross-references stored unique IDs and every product UPC or PLU S/N within the Verity One™ database to verify authenticity. These hotlinked Verity Seals use the Verity One™ API to change based on product legitimacy, displaying visible Check Marks Green, Yellow and Red representing the stage of compliance and a “X” mark over the Seal listed on a website or seller's page or scan result promoting diverted, non-certified or non-verified products and providing consumers instant product assurance.

Consumers that are still experiencing doubts simply have to log into Verity One™ and manually input or scan the unique ID, UPC, or PLU S/N code marked on the product in order to verify its authenticity. Depending on brand preference, consumers can gain access to a multitude of product information such as product origin, manufacturing date/time, plant location, farmer name, etc.

Blockchain has emerged and realized through the interaction of multiple data structures on a shared and distributed/decentralized hyperledger. In isolation, the components of the Blockchain technology ecosystem are well known and have existed for years.

The novelty of mysterious Bitcoin creator Satoshi Nakamoto was to combine these elements/components in a previously unimagined way. The success of Bitcoin as a cryptocurrency has generated mass-interest in the underlying design principles of the blockchain technology. This in turn has prompted some to critically assess traditional methods used to process information.

One of the architectural components of Bitcoin is a modified linked list known as a blockchain, demonstrated in Figure 1. At a fundamental level, the blockchain can be thought of as nothing more than a linear collection of data elements, i.e. nodes (N_1, \dots, N_m). Each node, N_i , is pointed to by the subsequent node, N_{i+1} , through a reference to its hash. Therefore N_{i+1} maintains a hash of N_i . One of the characteristics of this data representation format is that the integrity of the complete list can be easily verified with relatively low storage requirements by maintaining only a single hash at the head of the list. This construct called Linked Timestamping, introduced in 1990 by Haber & Stornetta [2], is integral to the creation of blockchain technology. Additionally, papers published by Schneier and Kelsey and Ross Anderson regarding secured logs on untrusted machines and a decentralized storage system respectfully laid the foundation for the creation of blockchain. A blockchain can be used for verifiably representing and persistently storing information related to supply chains in manufacturing.

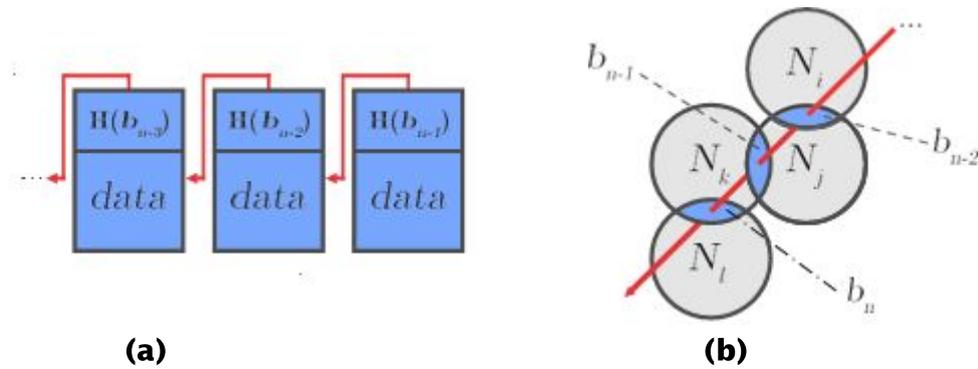


Fig. 1: (a) Diagrammatic depiction of a basic blockchain data structure. (b) Representation of a simple transaction flow. The chain proceeds from node N_i (top right) to node N_l (bottom left). Constituent blocks are indicated as b_i . – Blue indicates mutual agreement, sealed by proof-of-work (e.g. signature) and committed to the shared record. Nodes that are not directly connected expose no de-anonymizing information.

Noted: the innovation of Bitcoin is not due to any one element but rather to the interplay of many components. The subset of these components and a methodology for utilization in synchronization created an efficient method to record accurate information over a decentralized network.

3.2 Digital Signing

The Verity One™ System VRTY Protocol and the Verity One™ esign.bz digital signature system is being used to verify that all digital goods and services are issued from a verified source. A few examples include digital certificates from online courses, colleges or universities, software, or personal identification verification. A Verity certificate is assigned with a unique ID and hash function that can be verified via the Verity One™ application with the VRTY protocol. The recipient of a certificate or any authorized verifier that wants to check legitimacy can verify the certificate through the Verity One System.

3.3 Physical Signing

NFC and RFID chips, as well as UPC, PLU S/N, barcodes, QR codes, Biometrics, and Artificial Intelligence (AI) are compatible with the VRTY protocol. Unique ID signatures generated from the protocol can be stored into a physical marker and attached to a product. As the product moves along the chain of custody, or supply chain, each party that handles the product is recorded as a transaction and can verify its source via a simple lookup on the Verity One Protocol as well as update details (such as the location, product travel methods, shipping and delivery timing, and many other conditions). The consumer can scan the (IoT) hardware device to verify the movement of the product along the supply chain.

3 Roadmap

Q4 2017: Complete - Release of Verity Protocol A1 First of the VRTY protocol released. [Reg D filed with SEC](#)

Q1 2018: Verity One Mobile app
Launched 01.06.18

Q1 - 2018: Onboard partners and customers,
software with pre-existing and new partnerships.
FF Pre token sale 04-11-2018.

Q3 2018: Release v2.0a of the VRTY Protocol.
Beta 1.0 of API Platform release

Q4 2018: Full Platform Application and Mobile Release and Revenue and Growth Focused.

2019+ : Expand into more partnerships and assist with the development of verification applications for specific markets.

4 Token Sale

Verity, Inc. will be selling 100,000,000 VRTY tokens

10,000,000 Tokens @ 1.00 with hold period
10,000,000 Tokens @ 1.50 with hold period

20,000,000 Tokens @ \$2.50
20,000,000 Tokens @ \$3.50
20,000,000 Tokens @ \$4.50
20,000,000 Tokens @ \$5.50

100,000,000 Tokens Sold.

The pre-sale commences on the 11 of April.

5 Listed Exchanges:

- [RektEx | Decentralized Ethereum Token Exchange](#)
- [Digital Dial | Decentralized Ethereum Token Exchange](#)

Utility token payout via the Affinity | Affiliate system

1. Rule New user: Assigned or not points for each new user registered on the site.
2. Rule Establish Family Account:
3. Rule Add Family Members to Account:
4. Rule Invite: Assigned or not points when a user to ask someone else to register on the site (send email).
5. Rule Invite with success: Assigned or not points to the referral user when a user registers on the site following an invitation.
6. Rule Scan: When user scans a product
7. Rule Scan not found: when a user scans a product and it is not found they are prompted to add name of product, description and 3 pictures.
8. Rule Search the database.
9. Rule Manually Add Product to Database:
10. Rule View Product Description:
11. Rule Claim Product in Database:
12. Rule Subscribe to Recall notification:
13. Rule Scan of Car Recall Database:
14. Rule Accept Chat from Brand Manager:
15. Rule A | B comparison:
16. Rule Social Media Sync: Sync Data from, Linkedin, FB, Twitter
17. Rule Post Scan and Recommendation to Social Media
18. Rule Reader to author: Assigns points to the author when one of its articles were read by a user.
19. Rule Referral points: Referral users earn bonus points as a percentage on all points earned by their referees.
20. Rule Bonus points: Assigns bonus points to specific users.
21. Rule Change user level (1) : Specifies a number of points sufficient to authorize a registered user to change level and become author.
22. Rule Change user level (2): Specifies a number of points sufficient to authorize an author user to change level and become editor.
23. Rule Change user level (3): Specifies a number of points sufficient to authorize an editor user to change level and become publisher
24. Rule Winner notification: Sending a message to the user and administrator, when it reached the maximum number of points required.
25. Rule Coupon points codes: Allows users to enter a code in the module appropriate to get extra points.
26. Rule Raffle: This rule allows to enable a raffle system.
27. Rule Custom: Assigns or remove custom points to a specific user and set a reason
28. Rule Upload avatar : Assigns points when a user upload a picture or avatar in his profile with the internal avatar system.
29. Rule Profile complete : Assigns points when a user has 100% completed his / her profile. Must be used with the internal system avatar of User Points. Assigns 10%

complete on registration, assigns 50% with image or avatar, reach 100% with small description, birthday, gender and hometown (city). If the profile is down and becomes incomplete, points will be removed automatically.

30. Rule Profile View : Assigns points to the owner of the profile when the current user looks at a profile
31. Rule Combined activities: Allows administrator to combine the set of all actions in one activity from a specified date (perform database if you have huge activity). This rule is necessary to show the combined activity on the activities of users.

Utility token Commercial | Audit Payment in

32. Rule New Commercial Account:
33. Rule Order Audit | Verification of Claim:
34. Rule Each Claim subjected to cost accounting: Country of Origin, Religious, Health, Source Tracking, Efficacy, Buy American Act Compliance, NON-GMO, Organic
35. Rule Initial Documents:
36. Rule Activity on the supply chain and vendor response times:
37. Rule Shared Ledger:
38. Rule Firewall of Supply Chain: Private Ledger with 7 nodes: tracking and tracing with digital signatures using esign.bz

Utility token cost structure for IoT Internet of Things devices:

Appendix A

Fake | Pirate | Fraud

According to a 2016 joint report by the Organization for Economic Co-operation and Development (OECD) and EU Intellectual Property Office (EUIPO), imports of counterfeit and pirated goods amount to approximately half a trillion dollars a year, or around 2.5% of global imports[1].

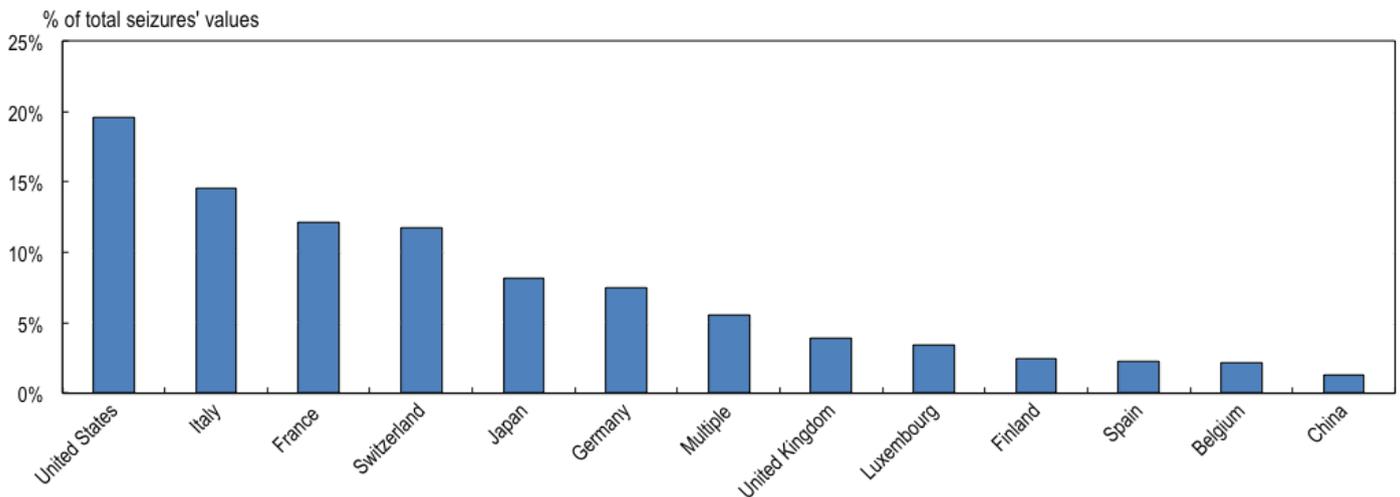


Figure 1- Data provided by the OECD.

These figures are steadily increasing each year, with the United States and Europe affected the most. The OECD Deputy Secretary-General, Doug Frantz, states:

“The findings of this new report contradict the image that counterfeiters only hurt big companies and luxury goods manufacturers. They take advantage of our trust in trademarks and brand names to undermine economies and endanger lives”[2]

Counterfeit products that have been seized range from luxury goods (such as handbags, perfumes, alcohols, and watches) to fake/subpar-quality products that have the capacity to endanger lives: toys that are coated or made with poisonous chemicals banned in the US; pharmaceuticals that do not contain the correct chemical compositions; baby formula that contains dangerous ingredients; faulty/cheap auto parts that fail; medical instruments that provide inaccurate data, and more. There are two primary causes for the growth of the counterfeit market:

- i. Tracking products that are processed and moved through complex and hostile trade routes where free trade zones exist or there is weak governance; and or enforcement.

Counterfeit products are designed to mislead and deceive, and as a result, consumers are unable to distinguish between real and fake products without any form or ability to verify authentication.

Mobile Links:

Android:

<https://play.google.com/store/apps/details?id=com.certified.verityscanningOne&hl=en>

Apple IOS

https://itunes.apple.com/us/app/verity-scanning/id1124462403?mt=8&dev_id=101