



Smart Packaging // End-to-End technology

The safety of pharmaceutical products and medicines is paramount to protect consumers, producers and brands within global distribution structures and to identify and remove counterfeits that have entered circulation as quickly as possible. One way to ensure complete and unambiguous traceability is through innovative and intelligent end-to-end technology.

The end-to-end framework or brand protection technology is based on traditional blockchain technology optimised with special customisable tags, transponders as well as geo-locators and environmental sensors. The interaction of the individual components lends maximum transparency, trust and temperament security in the process.

Furthermore, a specific physical-digital seal is required. This is based on Near-Field Communication (NFC) technology and supports the creation of individualised user-defined tags with the associated encrypted information that guarantees the protection of the respective products. However, the seal is not an ordinary QR code or barcode, but differs from them significantly through special encryption that resists cloning. Another security aspect is that the seal cannot be removed and automatically becomes unusable if it is removed in any way.

In addition to the seal, each product receives a digital twin in the virtual world. This is a dynamic digital representation of the secured physical product through which information and condition can be easily verified using a smartphone. The digital identities continuously evolve and follow the life cycle of the physical product. In this way, information on security features, instructions, product details and expiry dates, etc. can be easily retrieved.

The last component is based on the blockchain process, as mentioned above, and uses special smart contracts to help control, manage, store and track physical products and digital twins worldwide. In the process, each individual smart contract has the task of collecting evidence for the individual interactions between the physical and digital worlds and keeping verifiable documentation of what happens to the secured products. This information provided primarily relates to criteria such as product condition, consumption, interactions and geolocations.

INNOVATIVE PROCEDURES

- ◇ **Company:**
Athena AG
- ◇ **Technological base:**
Blockchain technology, tags, transponder, geo-locators & environmental sensors
- ◇ **Area of application:**
smart packaging
- ◇ **Advantages:**
Traceability of medicines & pharmaceutical products

Transparency & authentication

Protection of consumers, producers and brands

Avoidance of counterfeiting
- ◇ **Special features:**
Clone proof seal

No private blockchain consortia or networks necessary
- ◇ **Website**
<https://athena.io/>

Top 5 advantages of smart packaging

- ◇ Product protection against counterfeiting
- ◇ Possibility of advanced serialisation
- ◇ Automatic traceability of the supply chain and product flow
- ◇ Storage of information and marketing content in the packaging
- ◇ Storage of the contents of the instruction leaflet in the form of an audio file possible

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