The role of new technologies in facilitating international trade:

the case of electronic certificates

Dr. Lucian Cernat

Head of Global Regulatory Cooperation and International Procurement Negotiations

DG TRADE, European Commission

Staying ahead of the curve:
Five challenges for conformity assessment in the 21st century

- How to operate in a world where **products are increasingly digital,** relying on embedded software for smart functionalities?#
- How can we **embrace new digital technologies** to enhance conformity assessment processes?
- How to meet the ever increasing **demand for quality, safety and traceability** from global consumers ?
- How to move us towards a more **circular economy**, by driving more sustainable production and responsible consumption?
- How to adapt to a **post-covid reality** that accelerated the adoption of disruptive technologies?

Conformity assessment gets “smarter”

Smart Labs:

- using digital images in a semi-automated process to reduce mistakes and take away the uncertainty of conformity assessments in industrial testing

Big Data:

- to help the management and analysis of the increasing qualities and types of data available for testing and inspecting products.

Cloud computing:

- to share data instantly, report issuing and automate certification.

Blockchain Technology:

- transparent, secure and decentralized verification of certificates – especially as they are becoming increasingly digital. This is particularly important for data safety and reliability of services in e-commerce.

Sensors:

- applying smart measuring sensors, 3D scanning, and mobile-tools for real-time calibration and measurement

Real-time information:

- Management systems can be improved by remote access to information in real-time. Auditing conformity to management system standards such as ISO 9001 (Quality), ISO 14001 (Environmental) and ISO 50001 (Energy)

The importance of digital technologies for conformity assessment procedures:
The EU example

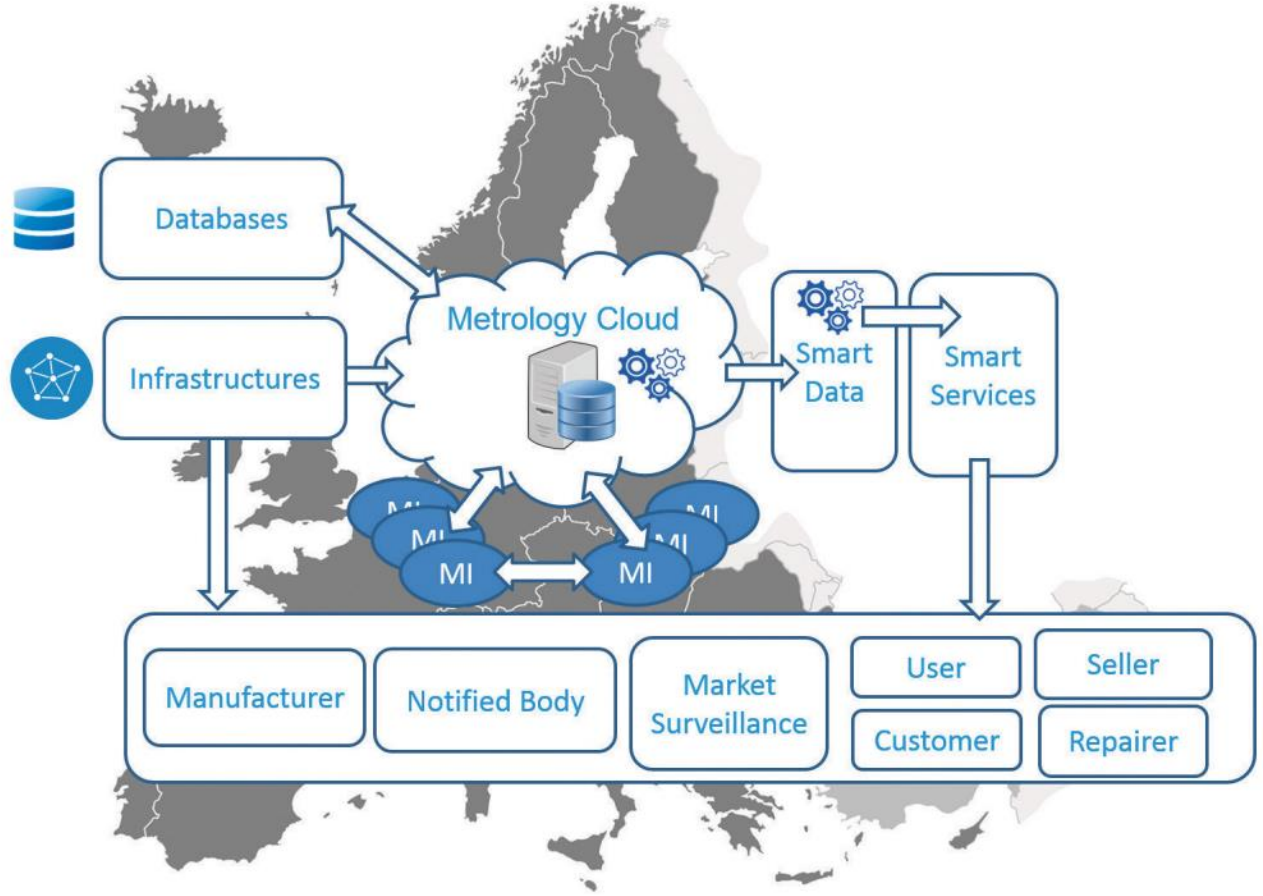
- The role of digital networks has been recognized globally, providing **three key benefits:**
  - (i) Economic development,(ii) Social inclusion and (iii) Environmental protection

- The European Commission Digital Single Market Strategy:
  - **cloud computing, big data, Internet of Things, artificial intelligence**, etc.

- The New Approach[COM2016/C272] sets up a “quality infrastructure” where **measuring instruments and legal requirements** are mutually reinforcing:
  - standardization, metrology, accreditation and conformity assessment services necessary to provide evidence that products and services meet defined requirements

- Modern **measuring instruments contain sensors,** often fully developed within the scope of the required/legal measurement accuracy

A digital quality infrastructure:
the EU example



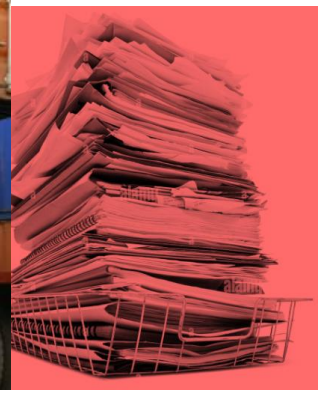
- it is estimated that there are **850 million measuring instruments** in the EU market under the New Approach
- Many of these devices involve **"intelligent" or "smart" metering**
- Around **3000 notified bodies** listed in the EU NANDO database
- Market surveillance involves around **5 million verifications per year**
- Legally relevant measurements are responsible for **4-6 % of the EU GDP**

Source: F. Thiel (2018) Digital transformation of legal metrology – The European Metrology Cloud, OIML Bulletin.

Digitalisation of old-fashioned trade procedures: why and how?

- In spite of decades of efforts to digitalize trade, it remains paper-intensive. And hence inefficient.

- Shipping a container from Mombasa to Rotterdam (or vice versa) generates a pile of paper 25 cm tall!

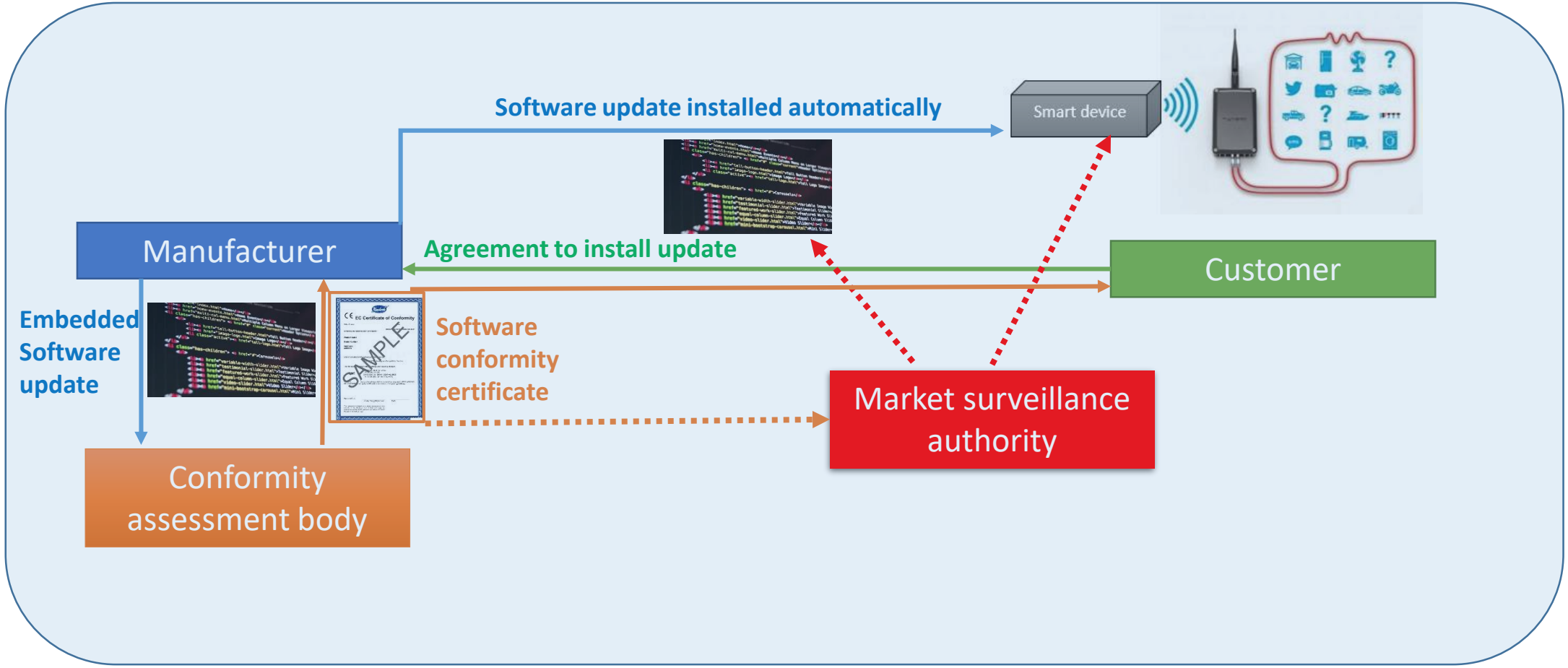


There is still a lot of red tape!

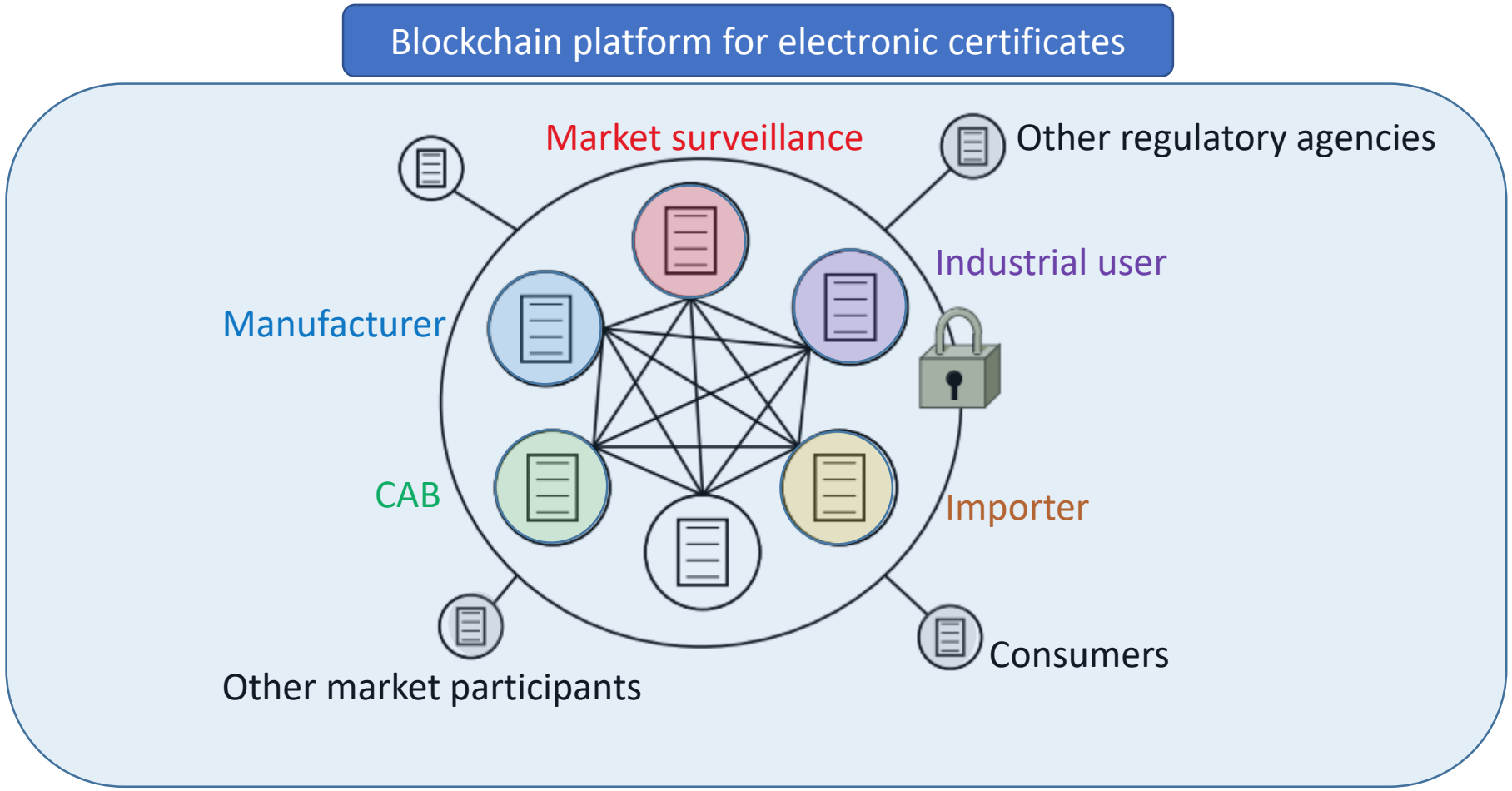
- Around 30 private/public entities involved. Paperwork is send back and forth between them around 200 times…
- One piece of paper in the pile might be the certificate of conformity!

Source: Ganne, Emmanuelle (2021): Blockchain for Trade: When Code Needs Law, Cambridge University Press.

New areas for conformity assessment:
embedded (aka mode 5) software in a smart device

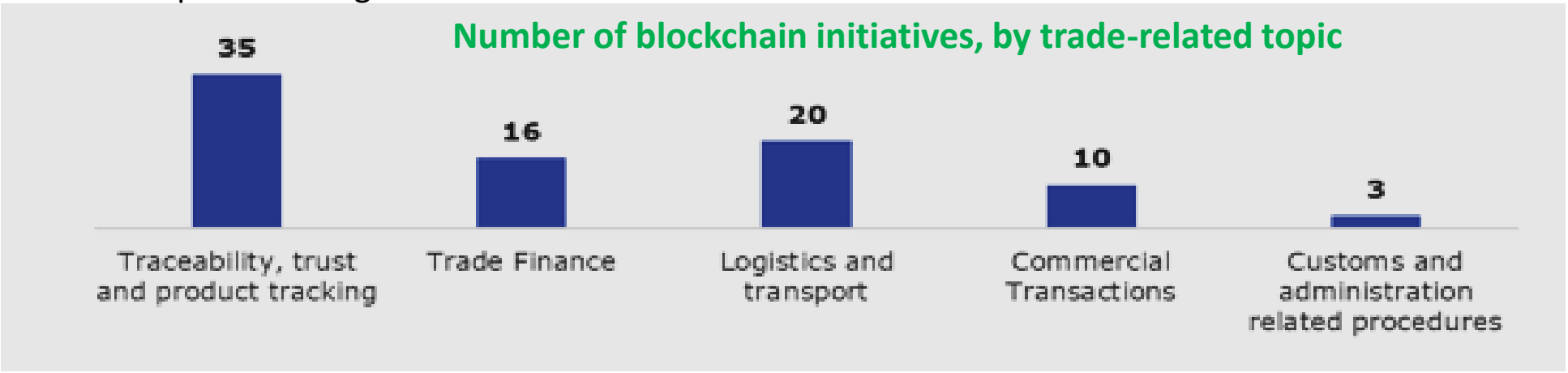


Conformity assessment and digital certificates: a blockchain illustration



Blockchain-based digital certification: some trade examples

- **Lots of examples of digital solutions using blockchain:**
  - A recent DG TRADE mapping identified several hundreds around the world
- **Traceability, trust and product tracking**
  - Tracking and traceability for agrifood products
  - Mineral production processes (conflict minerals)
  - Certification and verification of conformity of product and consumer safety along supply chain processes
- **Customs formalities**
  - Acceptance of digital certificates of origin/conformity
  - Exchange of information of product safety/counterfeit with other regulatory agencies
  - Acceptance of digital G2G and B2G documentations



Source: Everis (2021) Blockchain solutions for international trade - Final report