

Combating counterfeiting in Russia. Key challenges.

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## Agenda

- Counterfeiting issues in Russia.
- Requirements for identification systems.
- Analysis of existing approaches for identification.
- Future works.



# Combating counterfeiting is a challenge for Russia

- Illegal (non-certified) communication devices (about 15% of the market)
- Stolen phones
- Counterfeit medicines
- Luxury goods

Combating counterfeiting is vital for the economy and well-being of all citizens!



# Requirements for Identification Systems

- Resistance to duplication and cloning
- Traceability
- Applicable for Identification of goods and ICT devices
- Easy of use



## QR-code

#### **Advantages**



#### Disadvantages





### QR-code

- + Can be used for identification of goods
- + Can be scanned by mobile phones

- Easily can be changed
- Cannot be used for identification of mobile devices
- Can be erased (physically removed)



## NFC, RFID

- + Can be used for identification of goods
- + Can be scanned by mobile phones
- + It is possible to process many identifiers simultaneously located in the range of the reader
- Can be intercepted and cloned to the counterfeit goods
- Not appropriate for identification of mobile devices



## **Device Fingerprint**

- + Difficult to fake
- + Wide area of use (smartphones, laptops, PCs ...)
- + Works even when cookies can't be read or stored in the browser, or the client IP address is hidden

- Complicated and require a lot of computation resources
- Cannot be used for identification of goods
- User privacy issues



#### Identification based on IMEI

- + Already embedded in mobile phones (widely spread)
- + Easy to deploy
- IMEI can be changed easily
- Cannot be used for identification of goods

<sup>1</sup> the share of devices with "zero" or duplicated IMEI in "Rostelecom" network is about 10%. It is impossible to determine a type of device, which complicates the work with the solution of technical problems.

<sup>2</sup> British operators: IMEI can be easily changed: http://news.bbc.co.uk/2/hi/uk news/1749215.stm



## **Outcomes of Analysis**

 None of the approaches mentioned above satisfies all the requirements

 Using a set of unique properties as the ID for an object is more reliable than one

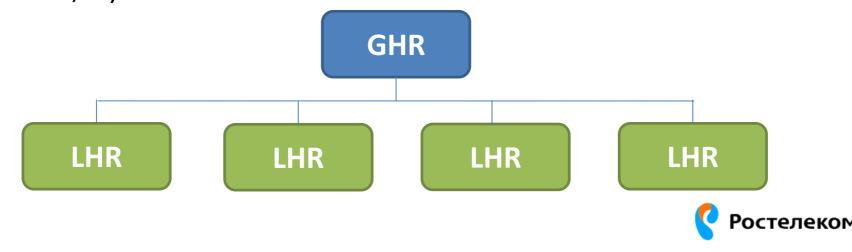
The solution: using symbiosis of these approaches!
 IMEI + Fingerprint + NFC + QR + DOA = The Solution



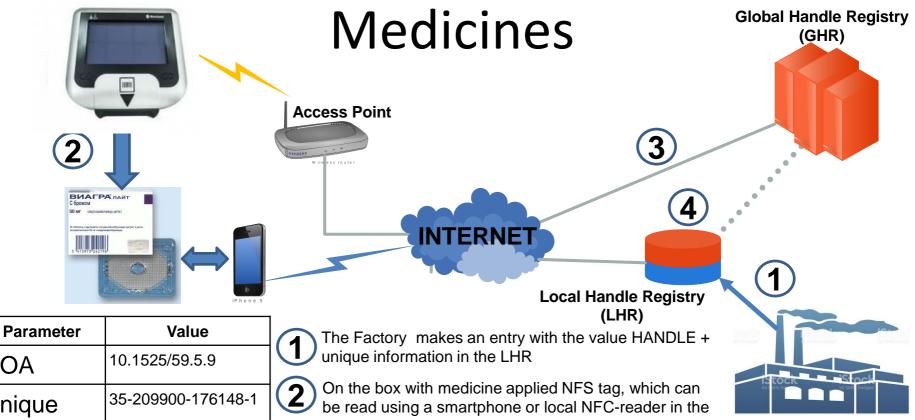
## Digital Object Architecture (DOA)

DOA is a general architecture for a distributed information storage, location, and retrieval system running over the Internet.

Identifiers/Handles - a set of identifiers, called Handles, for Digital Objects that are unique, persistent, and independent of the underlying physical or logical system. (IMEI, QR-code, RFID, IP, MAC, ...)



## Use Case: Combating Counterfeit



Unique 35-209900-176148-1 number

Picture of the original box

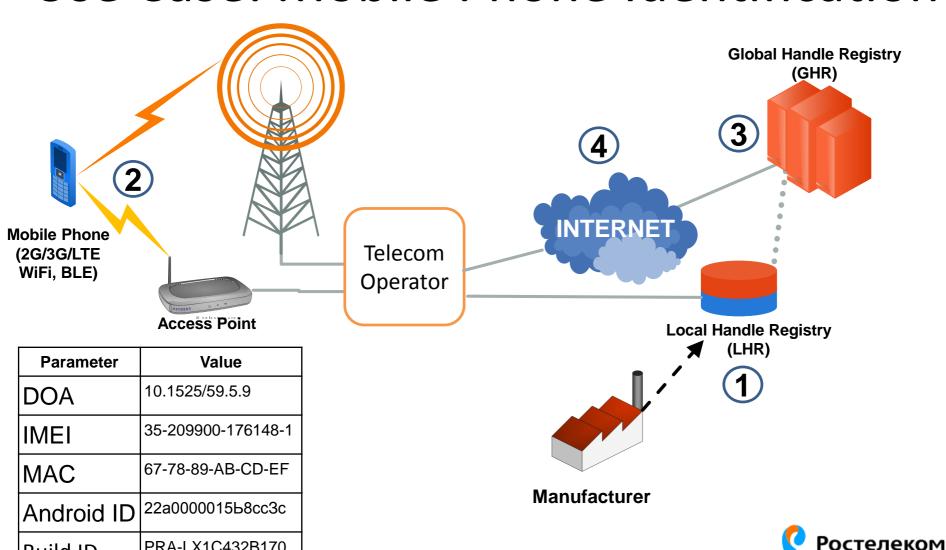
pharmacy To verify the authenticity of the medicine, a request is sent to the GHR. GHR forms a request to the LHR

After each step (sale, transportation, storage ...), the relevant entries are entered in the LHR database

Pharmaceutical Factory



### Use Case: Mobile Phone Identification



PRA-LX1C432B170

**Build ID** 

## **Existing Outcomes**

- Percentage of counterfeit medicines (made in Russia) is less than 0.01%
- Quality of medicines is growing (efficiency of medicines is evidently, counterfeiting is no longer an excuse)

## **Expected Results**

- Use of a counterfeit ICT device is impossible
- Identification and full traceability of all vital goods



## Key actions

- Blockchain-based approaches using DOA may increase the reliability of existing identifiers, including IMEI
- This approach may become a basic approach for the identification of any ICT and non-ICT objects worldwide
- International standardization of DOA may speed up the implementation of measures to combat counterfeiting
- International standardization should determine the DOA concept, its architecture, and define operating procedures for combating counterfeiting



## Thank you!

