



HOW GUARDTIME VACCINEGUARD HELPS CITIZENS

VERIFY COVID-19 STATUS OF INDIVIDUALS.
MAINTAIN ACCURATE OVERVIEW OF
VACCINATION PROGRAM EFFECTIVENESS.

NOVEMBER 2020

Ain Aviksoo, MD MPH | Chief Medical Officer
ain.aviksoo@guardtime.com



DIGITAL COLLABORATION BETWEEN ESTONIA AND THE WORLD HEALTH ORGANISATION

In October 2020, Estonian Prime Minister Jüri Ratas and WHO Director-General Dr Tedros Adhanom Ghebreyesus signed a **Memorandum of Understanding to share the experience of Estonia** and its companies in healthcare digitization using distributed information architecture and interoperability with WHO and its member states.



<https://guardtime.com/blog/who-digital-covid-19-vaccination-infrastructure>



Estonian Prime Minister Jüri Ratas and World Health Organization Director Dr. Tedros Adhanom Ghebreyesus signing a memorandum of understanding at a video ceremony
Picture: Stenbock House, Tallinn, Estonia

DIGITAL COLLABORATION BETWEEN ESTONIA AND THE WORLD HEALTH ORGANISATION

- + The first pilot will be a **digitally verifiable international vaccination certificate („Smart Vaccination Certificate“)**, which could potentially support the effective implementation of the Covid-19 vaccination program.
- + **The technical leader of the project is Guardtime**, an Estonian-born cybersecurity company leveraging the EU eIDAS-accredited trust service KSI Blockchain in its solution for tamper-proof digital certificates.

THE WORLD HEALTH ORGANIZATION IS LOOKING FOR A SMART VACCINATION CERTIFICATE TO LINK ACROSS MULTIPLE SYSTEMS INTEGRAL TO VACCINATION DELIVERY

+

GETTING VACCINATED. GETTING CERTIFICATE

Harry receives a vaccination from Nurse Hermione and he receives a certification of that vaccination
It can be on paper with a scannable QR code or as an application on Harry's smart phone



PII SHARING Needed ✓

INTERNATIONAL TRAVEL

Fortunately, Harry is better, and he is ready to meet some friends overseas.
Harry presents his vaccination certificate at border patrol to prove that he has received the appropriate vaccination.
Border patrol scans the Smart Vaccination Certificate to validate



PII EXTERNAL SHARING NOT Needed ✗

PII =
Personally Identifiable Information

REPORTING ADVERSE EVENTS

Unfortunately, Harry feels ill after receiving the vaccination. He goes to the nearest hospital and provides Doctor Luna with his vaccine certificate.
She prepopulates the Adverse Event reporting form with data scanned from Harry's vaccination certificate



PII SHARING Needed ✓

PUBLIC HEALTH MONITORING

Once Hermione provides Harry with the vaccine, she logs that onto Harry's vaccination certificate.
That information can also be extracted and de-identified and automatically submitted for monitoring purposes at the Ministry of Health.



PII SHARING NOT Needed ✗

SUPPLY CHAIN INTERGRITY

The vaccination certificate Harry was issued also contains information that overlaps with supply chain data



PII SHARING NOT Needed ✗

VACCINEGUARD:

globally verifiable vaccination certificate platform
enabling effective management of vaccination
campaigns and distribution of vaccines

VACCINEGUARD: CERTIFICATE FOR TRAVEL

EFFECTIVENESS AND SAFETY UPDATES



Providing proof of Covid19 vaccination.



Providing independent verification of the certificates to 3rd parties.



Notifications on vaccine effectiveness. Warning about counterfeits.



Monitoring supply chain integrity and vaccine quality.

1

CERTIFICATE IS ISSUED BY HEALTHCARE PROVIDER AS PRINTOUT OR SENT VIA E-MAIL / MOBILE PHONE



Immunization Registration Portal Records Reports Log Search... Mary Curie

5 records [Add record...](#)

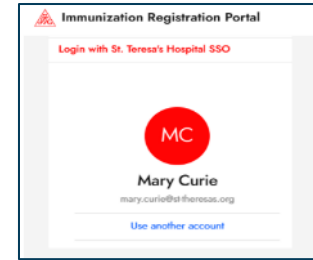
| PATIENT NAME | ID CARD | VACCINE | LOT | DATE SUBMITTED | SUBMITTED BY |
|-----------------|--------------|--------------|-------------|---------------------|--------------|
| John Doe | X264.554.097 | Covid | SH1-2BV1002 | 09/15/2020, 3:39 pm | Mary Curie |
| Julie Dupont | X562.986.209 | Covid | SH1-2BV1001 | 09/15/2020, 3:25 pm | Mary Curie |
| Pierre Muller | X749.349.097 | Yellow Fever | SH1-2BV1000 | 09/15/2020, 3:21 pm | Mary Curie |
| Marie Blanc | | | | | |
| Philippe Thevoz | | | | | |

Immunization Registration Portal Records Reports Log Search... Mary Curie

New records

| | | | | | |
|----------|--------------|--------------|-------|-------------|---------------------|
| John Doe | X264.554.097 | john@doe.com | Covid | SH1-2BV1002 | Add |
|----------|--------------|--------------|-------|-------------|---------------------|

[Cancel](#) [Issue](#)



Immunization Registration Portal Records Reports Log Search... Mary Curie

New records

| | | | | | |
|----------|--------------|--------------|-------|-------------|--|
| John Doe | X264.554.097 | john@doe.com | Covid | SH1-2BV1002 | |
|----------|--------------|--------------|-------|-------------|--|

[Cancel](#) [Issue](#)

Issuing certificates...



2

THE CERTIFICATE IS HELD AND TRANSPORTED BY PATIENT ONLY (NO DATABASE SHARING)



+

Outlook interface showing an email from St Theresa's Hospital. The email subject is "Your Vaccination Certificate". The sender is "St Theresa's Hospital <demosuser@guardtime.com>". The email contains three attachments: "certification.pdf" (134 KB), "certification.pkpass" (47 KB), and "certification.png" (3 KB). The Outlook ribbon shows "Home", "Send / Receive", "Folder", "View", "Help", "ADOBE PDF", and "Tell me".

Tue 15-Sep-20 3:20 PM
ST St Theresa's Hospital <demosuser@guardtime.com>
Your Vaccination Certificate
To: Thevoz, Philippe
If there are problems with how this message is displayed, click here to view it in a web browser.

certification.pdf 134 KB certification.pkpass 47 KB certification.png 3 KB

Saint Theresa's Hospital
Your Vaccination Certificate is attached

Please find enclosed your Vaccination Certificate, following your recent vaccination.

You can use it and store it in various formats (i.e. as a PDF file, as a "pkpass" or as a QR code picture (in png format). The PDF file can be also printed on paper. Different formats are all equivalent, since the relevant information is stored in the QR Code.

The attached documents are secured by Certus. [Please verify them here.](#)

INTERNATIONAL VACCINE CERTIFICATE

This is to certify that
Marie Blanc
National ID document
X542.135.555
Received Vaccine
Yellow Fever
Lot Number
SH1-2BV1003
On Date
15/09/2020
Administered by
St. Theresa's Hospital

Validate:
mobile browser, navigate
/www-preprod.certusdo
an, checking the details

Smartphone screen showing the vaccination certificate details and a QR code. The screen displays "Vaccine Certificate" and "Covid". The name "Julie Dupont" is visible. A "pkpass" label is overlaid on the screen.

3

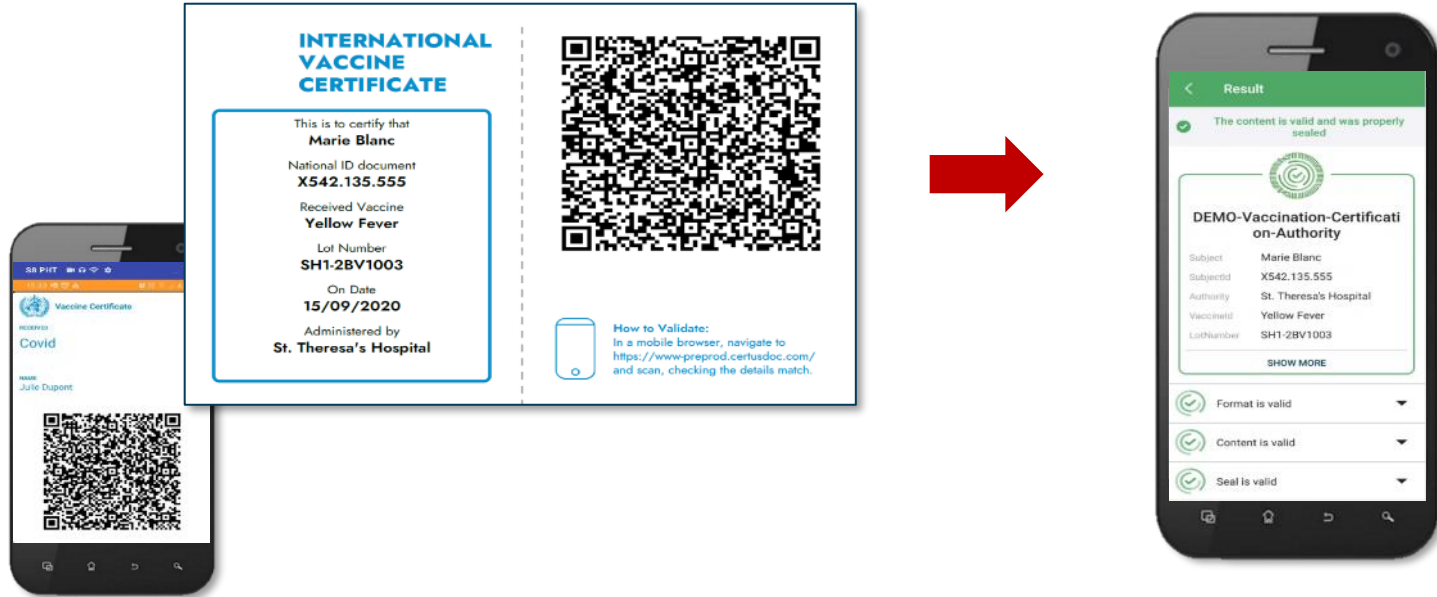
VERIFICATION COMPARES ONLY CRYPTOSEAL ONLY PATIENT HAS HEALTH AND PERSONAL DATA

+

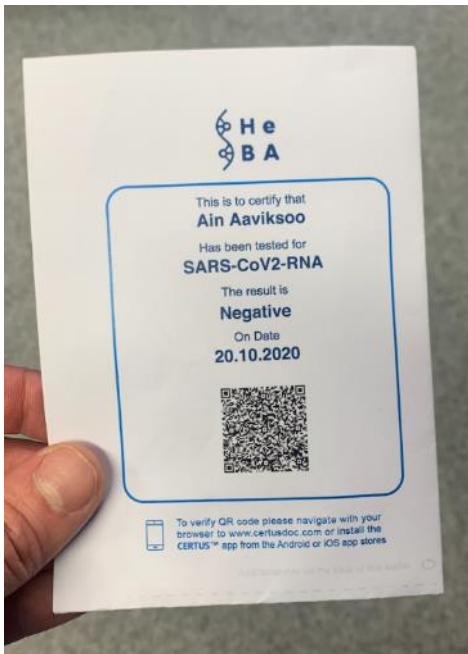
Patient



Verifier



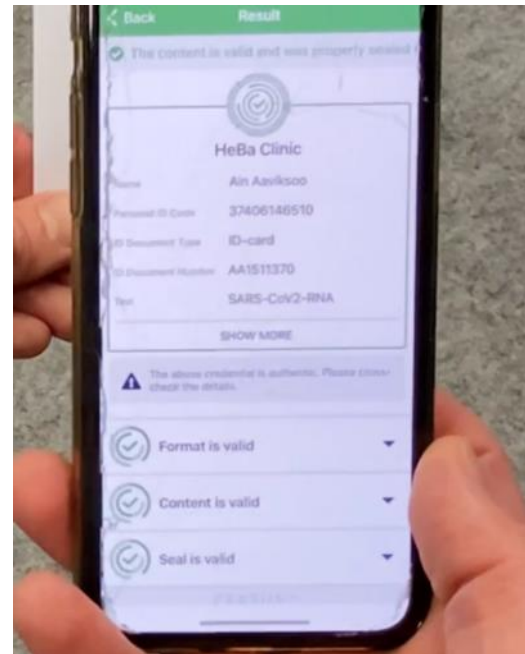
CERTIFICATE VERIFICATION TAKES 2 SECONDS



Certificate



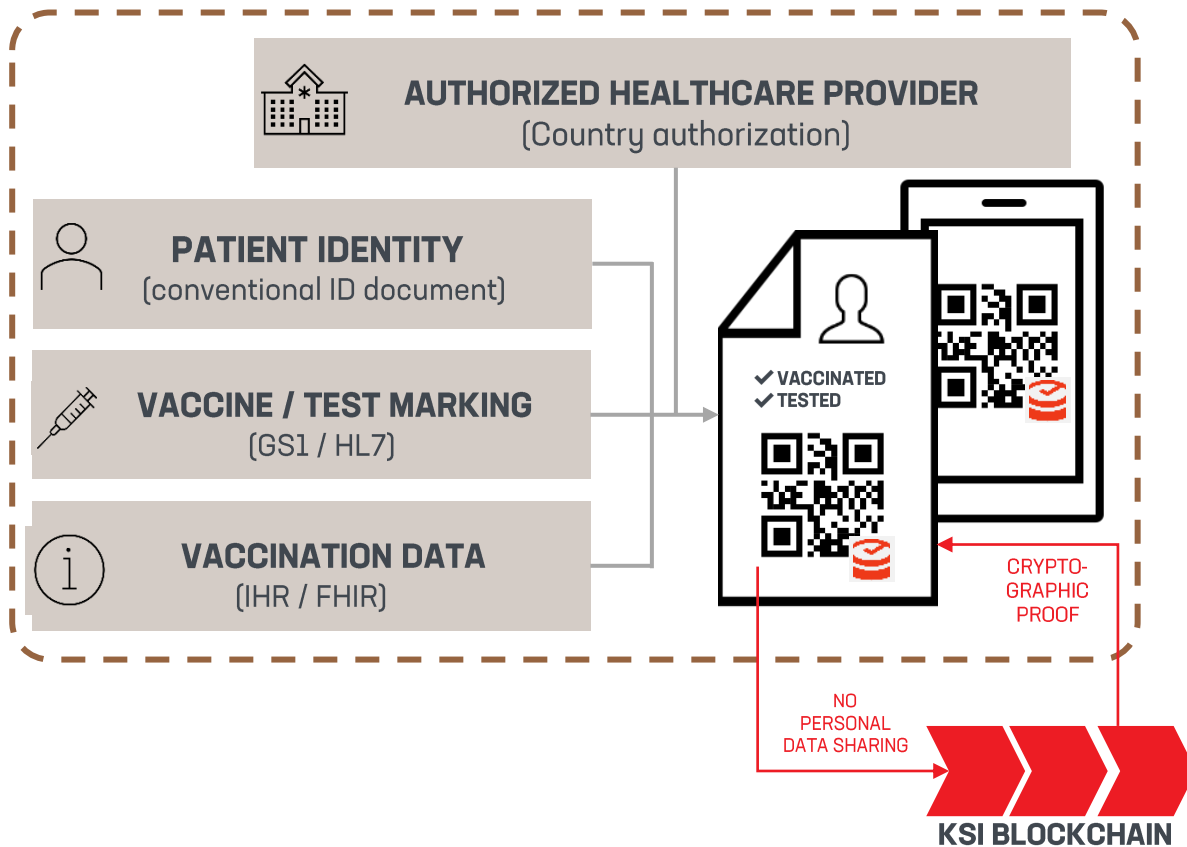
Verifier scans certificate



Verifier gets results

SIMPLE AND SECURE APPROACH TO SMART VACCINATION CERTIFICATE BY VACCINEGUARD

+



AUTHORIZED ISSUER guarantees:

- + patient authentication
- + data accuracy

KSI BLOCKCHAIN guarantees:

- + proof of content authenticity
- + process integrity
- + privacy protection

BENEFITS OF THE VACCINEGUARD SMART VACCINATION CERTIFICATE SOLUTION

FOR INDIVIDUALS:

- + Provides a **SOLUTION TO MANAGE AND VERIFY ADULT VACCINATIONS**
- + Enables **IMMEDIATE ACCESS TO INDIVIDUAL VACCINATION HISTORY** for a variety of purposes that can include return to work, return to school, international travel (within travel bubbles or bilateral travel agreements between countries in lieu of updated IHR (International Health Regulations) to include COVID-19)
- + Reduces need to manage multiple vaccination records
- + Can be used **ONLINE AND OFFLINE, ACROSS MULTIPLE SYSTEMS**

FOR IMMUNIZATION PROGRAM MANAGERS:

- + Allows access to quality and timely individual-level data for public health monitoring. **UNIFORMLY CAPTURES DATA** based on pre-defined terminology, value sets, and data formats - reducing data quality issues
- + **AUTOMATICALLY AGGREGATES DATA** for reporting
- + **EASILY SCALABLE SOLUTION**
- + **DUAL-USE**, able to provide an individual certification while also preparing systems for the case of international travel
- + **EASIER TO UPDATE** vaccination certificate template, if needed
- + Improved quality of care when healthcare providers have easy access to patient's vaccination history

THE COMPANY



THE LEADING TRUST TECHNOLOGY COMPANY

GUARDTIME

GUARDTIME: is a cryptographic engineering company founded in 2007 in Estonia, to solve the data integrity challenges first faced by the world's most advanced digital government. Our purpose is to make the world's information universally reliable and globally verifiable.

TECHNOLOGY: recognized technology leaders with a robust trust computing stack deployed globally at industrial scale since 2012

ACCREDITATION: technology has been accredited by US, EU and China regulators for deployment on to government networks

APPLICATIONS: core technology is 'horizontal' in nature, can be applied to large number of solutions and products at industrial scale across various sectors like government, telecommunications, healthcare and life sciences, logistics, financial.

GUARDTIME HEALTH PRODUCTS:

- + Real World Data Engine for Market Access
- + VaccineGuard
- + Drug Shortage Manager
- + Data Access and Governance Manager

AIN AAVIKSOO, MD MPH, CHIEF MEDICAL OFFICER



20 years of experience in digital technologies and health innovation.

In 2015-2018 Mr Aaviksoo was **Undersecretary for e-Service and Innovation** at the **Ministry of Social Affairs** overseeing the digital transformation and innovation of social security area in Estonia, including health, labour and social services.

Earlier work experience include physician, international level consultant on large system transformation and technology adoption in healthcare, CEO of public policy think-tank and health-tech entrepreneur. Dr Aaviksoo obtained MD from **University of Tartu** and MPH from **Harvard University**.

CONTACTS



Ain Aaviksoo, MD MPH
ain.aaviksoo@guardtime.com



REPUBLIC OF ESTONIA
MINISTRY OF FOREIGN AFFAIRS

Külli Kruusla
kulli.kruusla@mfa.ee