Introduction

The core properties a "Proof of Vaccination" must fulfill include non-forgeability and protection of the certificate holder's privacy. Moreover, the verification procedure must be both easy and sound. In my thesis, I compare existing state level solutions, pointing out their strengths and weaknesses in the given context for the above mentioned properties.

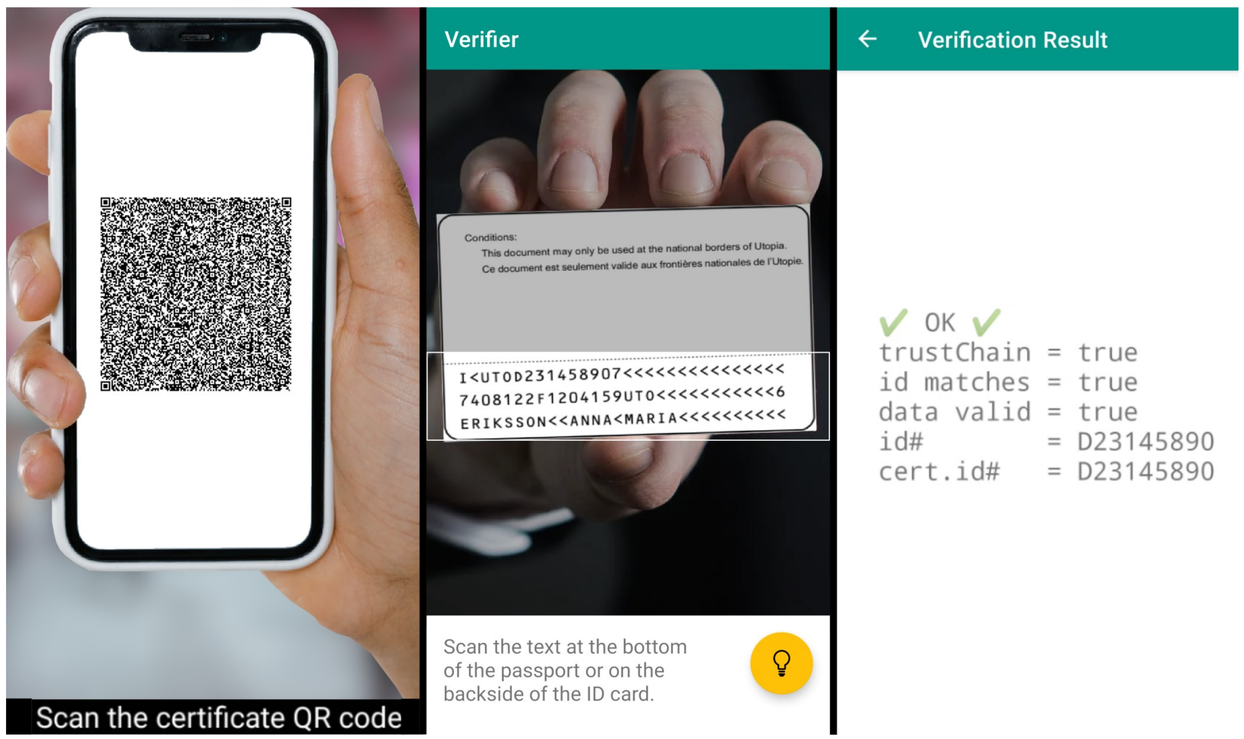
Objectives

The objectives when designing ARCTIC were clear: build a solution to the Proof of Vaccination problem that protects the privacy of the certificate holders at least as well as existing solutions, while also making the verification procedure easier, yet still sound, through automation.
A further goal was to analyze and compare existing solutions, especially the Swiss Covid Certificate, both because it is relevant to Switzerland, and because it is built on the European Union's Digital Green Certificate, making it relevant for the entire EU.

ARCTIC

ARCTIC is my proposed solution for a Proof of Vaccination. It is **A**utomatically **R**eadable by computers, which simplifies the verification procedure for human verifiers and enables automated gates based on the certificate. It is based on a **C**hain of **T**rust, meaning that, while there is a centralized authority, it does not issue certificates directly.

Thus the vaccination data is kept between the certificate holder and the person performing the vaccination. And it is an **I**mmunization **C**ertificate, in that it is based on FHIR (Fast Healthcare Interoperability Resources) Immunization records and cryptographically secured. ARCTIC has advantages in terms of availability, convenience, and soundness when compared to other solutions, and enables automated certificate verification.



1) Scan the ARCTIC QR Code 2) Scan the ID 3) Get the result

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Digital Vaccination Certificates

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