



UNIVERSITÉ
DE GENÈVE

Bloxberg: The potential of an academic blockchain to provide trust in academic research results and diplomas



Dr. Jörn Erbguth

blo**x**berg

THE ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE AND BLOCKCHAIN

Hub

Bloxberg

- Proof of Authority Blockchain
- Compatible to Ethereum
- Initiated by Max Planck Society
- Established 2019
- Founders:



MAX-PLANCK-GESELLSCHAFT



UNIVERSITY OF BELGRADE
FACULTY OF ORGANIZATIONAL SCIENCES



UNIVERSITY of
NICOSIA

Carnegie Mellon
Tepper
SCHOOL OF BUSINESS

**Georgia
Tech**



UNI KASSEL
VERSITÄT



UNIVERSITY
OF
JOHANNESBURG

UCL

UNIVERSITY OF SARAJEVO
School of Economics
and Business

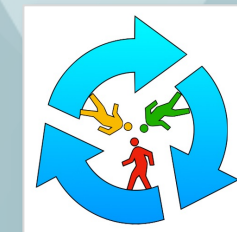
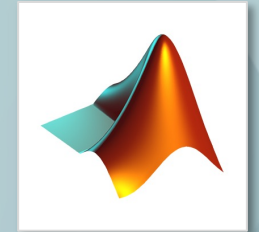
Bloxberg Association

- Munich based association under German law
- Supports the bloxberg blockchain
- Established in 2022 on Cyprus
- Members:



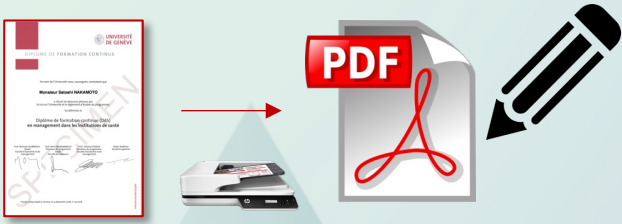
Use-cases

- KnowLeger
- INPTDAT - The Data Platform For Plasma Technology
- The BISE Student Platform
- BarterMachine
- MatLab Integration
- Peer View Aggregation
- Seafile Integration
- SAIRA
- Student Voting System
- Keeper
- ECERT



GDPR-Compliant Long-Term Verification of Academic Titles using Blockchain

Academic Titles are Easy to Forge



Scanned certificates can be edited

Ferdinand Marcos Jr urged to stop pretending he has an Oxford degree

University has said Philippines leader was awarded 'special diploma in social studies' in 1978, not a BA



➡ Marcos Jr, nicknamed 'Bongbong', has claimed in interviews that Oxford issued him with a bachelor's degree. Photograph: Neil Jerome Morales/Reuters



Show caption

Florida House candidate Melissa Howard admits to lying about degree, using fake diploma, but says she won't quit race

Zac Anderson | zac.anderson@heraldtribune.com

Fake degree claims dog prominent Spanish politicians

Two Popular party leaders said to have gained Madrid university master's without doing work



➡ Cristina Cifuentes is accused of having a faked master's degree certificate. Photograph: Aitor Alcalde Colomer/Getty Images

ofriNews EN NEWS

Nigeria's president challenged over alleged diploma forgery



BBC

Home News Sport Business Innovation Culture Travel Earth Video Live

Bola Tinubu diploma: No evidence Nigeria's president forged college record

11 October 2023
By Chigozie Nwomem & Fauziyya Tukur & Oloronke Aio, BBC Disinformation Team



However, the documents have conflicting information about Bola Tinubu's date of birth

THE EPOCH TIMES

Chinese Website Sells Its Services in Forging University Diplomas

BY IRIS TAO
July 16, 2019 Updated July 16, 2019

A mainland Chinese website is selling forged college diplomas for profit.

Named "The Diploma Factory," the website claims that it can reproduce degree certifications and graduation diplomas from major universities in China and around the world.

According to HKO1, a newspaper in Hong Kong, the website claims that it is only selling the fake diplomas as "novelty products" and that they do not "deceive, force, or rob any of their clients." However, when a HKO1 reporter posed as an interested buyer, the website administrator boasted that past buyers have used the forged certifications to deceive employers and successfully get hired.

The website has different price ranges, with the more realistic-looking diplomas costing more. One costing 4,800 yuan (about \$718) has an imitation watermark and visible fibers in the paper, while the cheaper one priced at 1,800 yuan (about \$269) is simply printed with an ink-jet printer, the website administrator told the HKO1 reporter.

"The one priced at 4,800 yuan is comparable to the real thing," she says. "If the workmanship is too poor, and the paper looks entirely different [from the real diploma], it would definitely raise suspicions."

Requirements



Credential needs to be verifiable

Requirements



Credential needs to be revocable

Requirements



Credential needs to remain verifiable,
when the institution no longer exists

Requirements

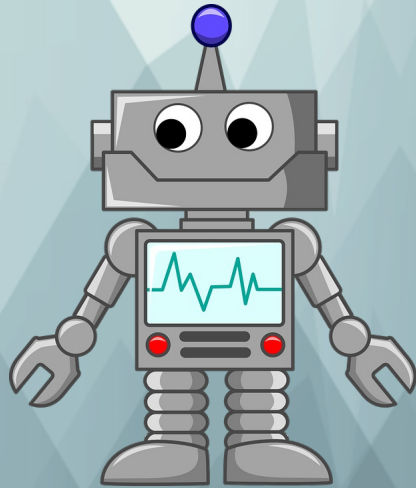


Revocation needs to remain visible,
when the institution no longer exists

Trust



Credential issuing institution



*Autonomous
automation*



No trust in
the claim

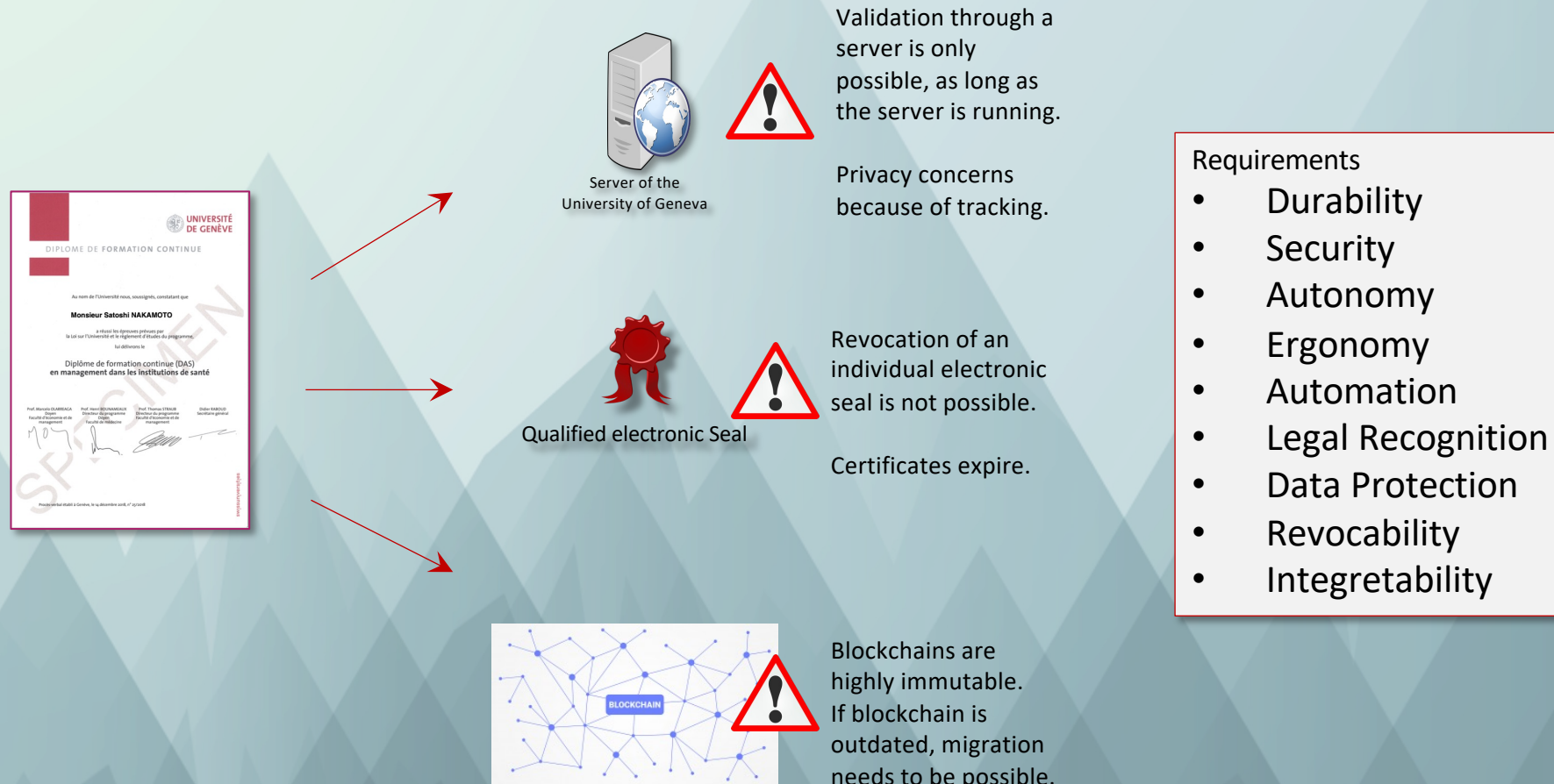


Credential verifier

Trust in the confirmation of the institution

Is there a justification
to provide that information?

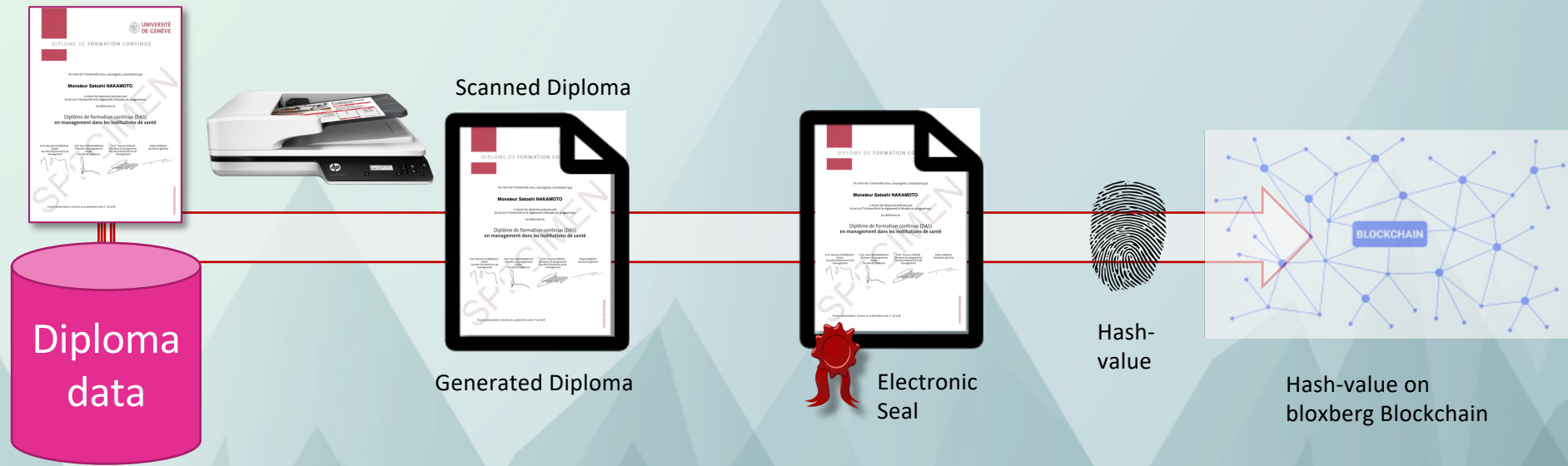
How to Secure a University Degree?



Requirements

- Durability
- Security
- Autonomy
- Ergonomy
- Automation
- Legal Recognition
- Data Protection
- Revocability
- Integretability

Combination of 3 Verification Techniques



Verification through a server of the University of Geneva, which also double-checks against the Blockchain



Verification of electronic seal



Direct verification against the blockchain

Why this combination?

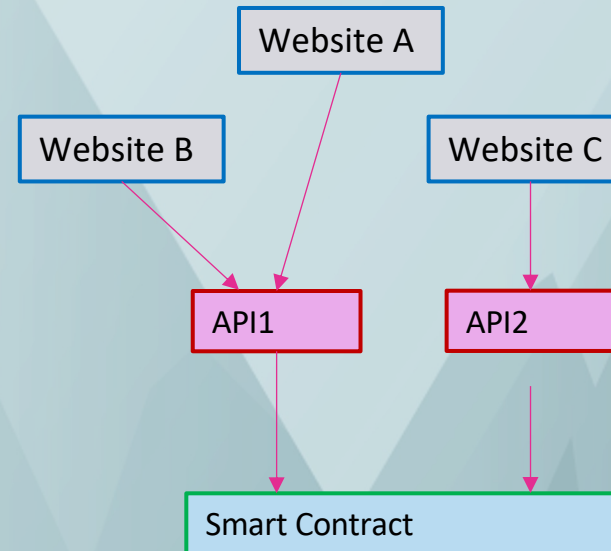
Why not Self-Sovereign Identity (SSI) wallets?

- Blockchain alone does not prove authenticity
- Qualified electronic seal is not revocable and needs constant time stamping
- No wallet requirement for students
- Optimized for privacy
 - Reduced risk of tracking
 - Can only be verified with a copy of the diploma

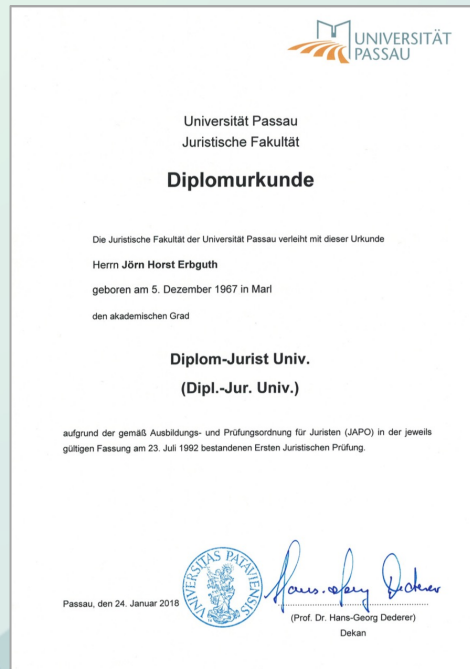
Sharing of One Smart Contract

Synergies

- Cross-verification
- Common migration development
- Common governance



Shouldn't the revocation be stored off-chain?



Revocation list

...

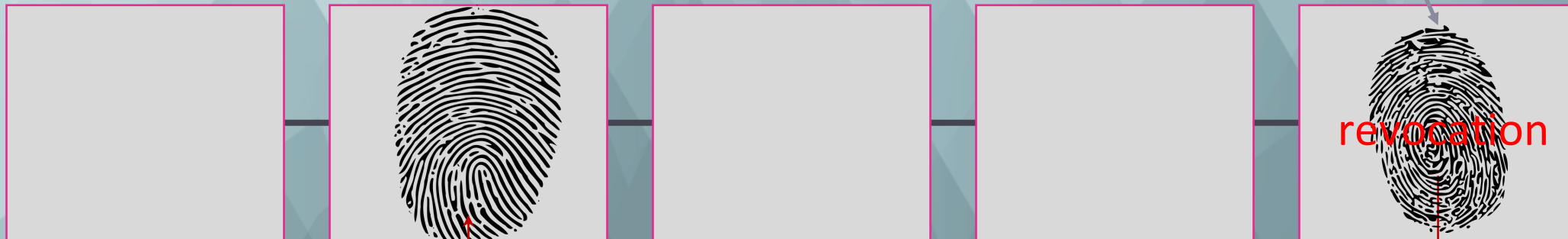
....

...

Revocation

...

...



Verification possibilities

UNIGE ECERT

The Proof of Concept offers 5 different ways to verify a diploma

ONLINE VERIFICATION OF DIPLOMAS UNIVERSITY OF GENEVA

Forged diplomas are a sad reality. When presented with a PDF-copy of diploma, it is often not possible to tell whether the diploma is real.

In a pilot project the University of Geneva offers five ways to verify a diploma:

- Verify the diploma online through the id of the diploma (can be deactivated for privacy reasons)
- Verify the diploma online through the data on the diploma
- Verify the original pdf file of the diploma online

[Verify diploma online](#)

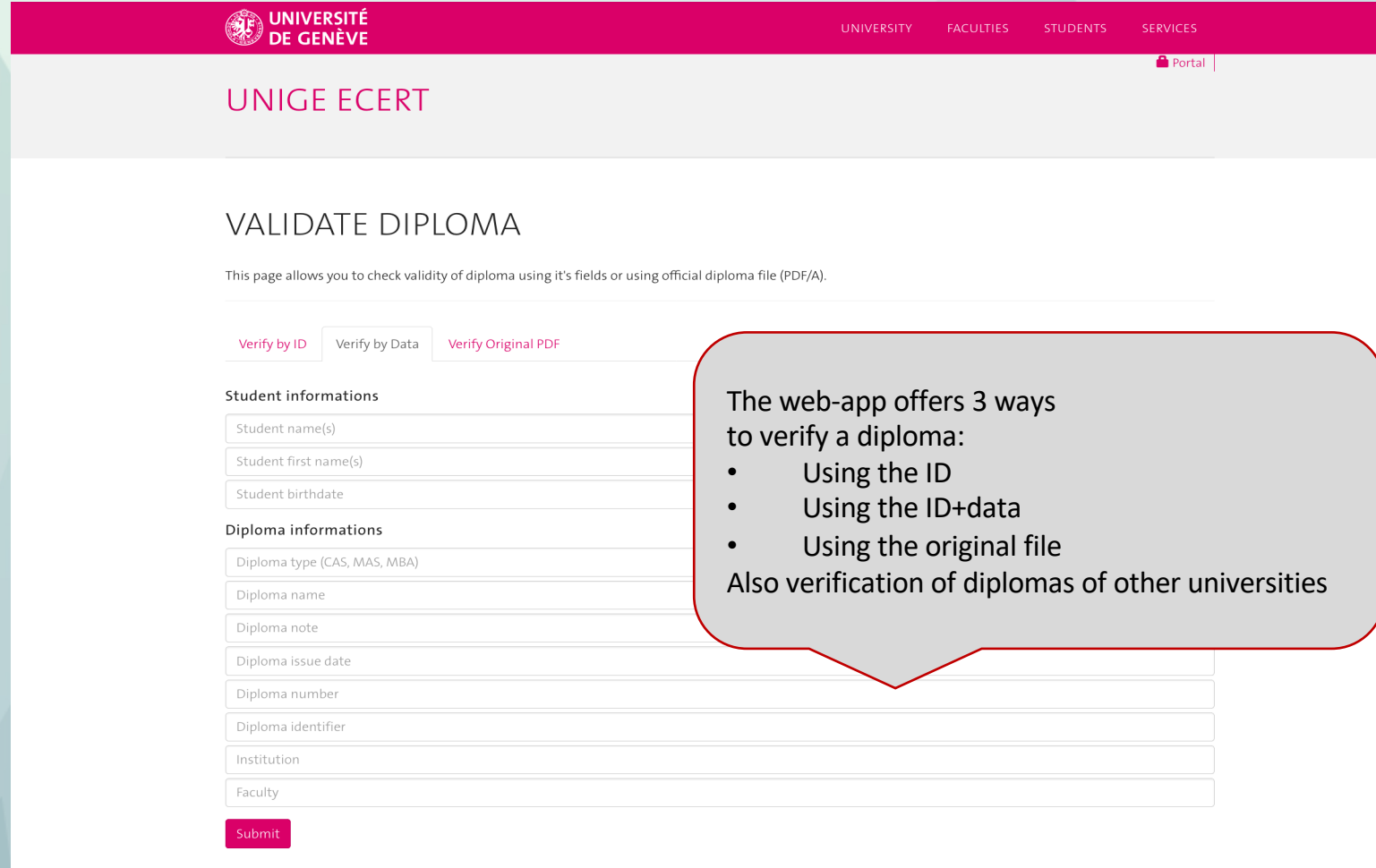
- Verify the electronic seal off-line in Acrobat Reader

[See here how the verification in Acrobat Reader works](#)

- Verify the diploma directly against the Blockchain Ethereum

[See here how you can directly verify a diploma against the Blockchain Ethereum](#)

Web-based verification



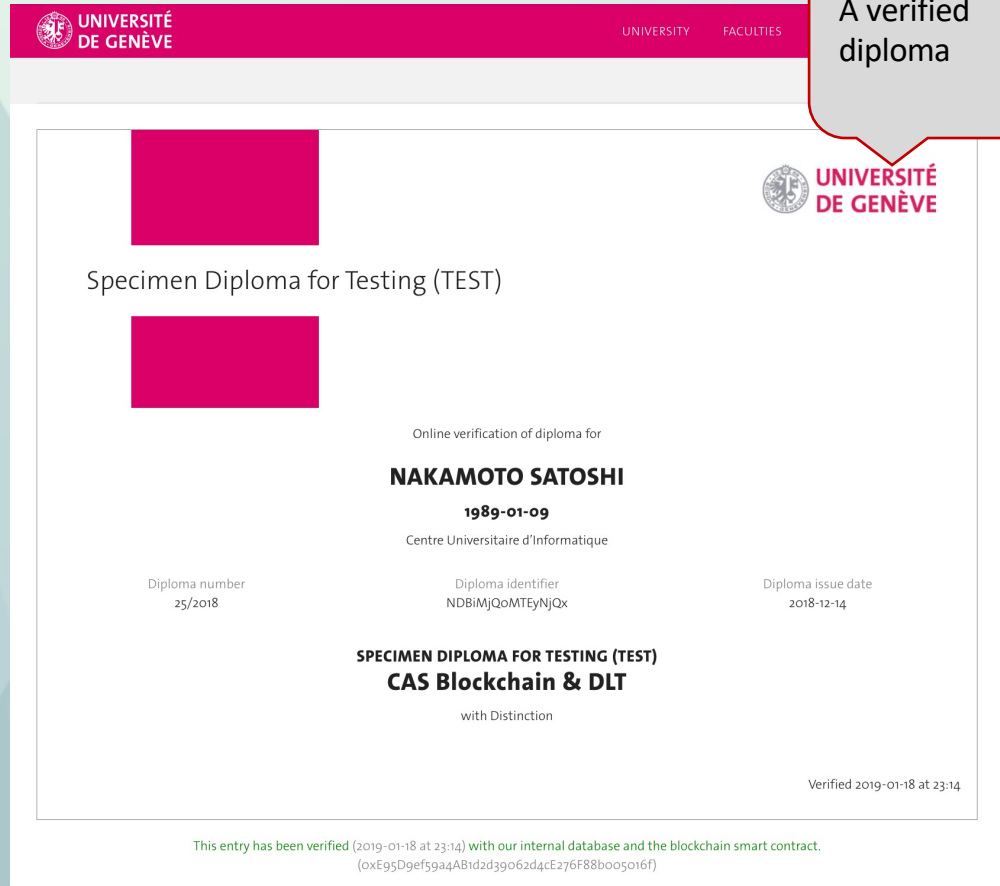
The screenshot shows the 'UNIGE ECERT' website with a navigation bar containing 'UNIVERSITÉ DE GENÈVE', 'UNIVERSITY', 'FACULTIES', 'STUDENTS', 'SERVICES', and a 'Portal' icon. The main heading is 'VALIDATE DIPLOMA'. Below it, a text line states: 'This page allows you to check validity of diploma using it's fields or using official diploma file (PDF/A)'. There are three tabs: 'Verify by ID' (selected), 'Verify by Data', and 'Verify Original PDF'. The form is divided into two sections: 'Student informations' and 'Diploma informations'. The 'Student informations' section includes input fields for 'Student name(s)', 'Student first name(s)', and 'Student birthdate'. The 'Diploma informations' section includes input fields for 'Diploma type (CAS, MAS, MBA)', 'Diploma name', 'Diploma note', 'Diploma issue date', 'Diploma number', 'Diploma identifier', 'Institution', and 'Faculty'. A red 'Submit' button is located at the bottom left of the form.

The web-app offers 3 ways
to verify a diploma:

- Using the ID
- Using the ID+data
- Using the original file

Also verification of diplomas of other universities

Verification result



UNIVERSITÉ DE GENÈVE UNIVERSITY FACULTIES

UNIVERSITÉ DE GENÈVE

Specimen Diploma for Testing (TEST)

Online verification of diploma for

NAKAMOTO SATOSHI
1989-01-09
Centre Universitaire d'Informatique

Diploma number 25/2018 Diploma identifier NDBiMjQoMTEyNjQx Diploma issue date 2018-12-14

SPECIMEN DIPLOMA FOR TESTING (TEST)
CAS Blockchain & DLT
with Distinction

Verified 2019-01-18 at 23:14

This entry has been verified (2019-01-18 at 23:14) with our internal database and the blockchain smart contract. (0xE95D9ef59a4AB1d2d39062d4CE276F88b005016f)

A verified diploma

Verifications of diplomas from other universities do not show the details of the diploma!

Thank you for your attention! Question?



Evolving Crypto Regulatory Landscape in Europe

Monday, 13 May 6pm-7:30pm Geneva time (4pm UTC)

The FATF Recommendations, the EU Markets in Crypto Assets Regulation MiCAR, the planned revision of the ALMR and the AMLD6 are tightening the regulation of the crypto ecosystem within and outside the EU.

What are the implications for fundamental rights such as privacy and data protection, for innovation and for the existing crypto industry?

Register here: <https://unige.zoom.us/meeting/register/u5clc-GgqzoqHNRtjPveexcNd1t2w0C0eQBc>

bloXberg Hub
THE ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE AND BLOCKCHAIN



UNIVERSITÉ DE GENÈVE



Dr. Nina-Luisa Siedler

Lawyer at the intersection of finance, high-tech & governance, Non Executive Director/Board Member thinkBLOCKtank



Simon Lelieveldt

Director, Financial History of Amsterdam, Regulatory and Compliance Consultant, [more](#)



Ismael Arribas

Collective Entrepreneur/ Convenor for ISO TC307 WG 3 Smart Contracts and their applications



Olga Stepanova, LL.M. (Berkeley)

Lawyer focused on Data Protection, IT Security and New Technologies, Partner at [Bytelaw](#)



Dr. Jörn Erbguth

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Prof. Jean-Henry Morin

Associate Professor of Information Systems, University of Geneva, Commission consultative en matière de protection des données, de transparence & d'archives publiques, BloXberg Hub