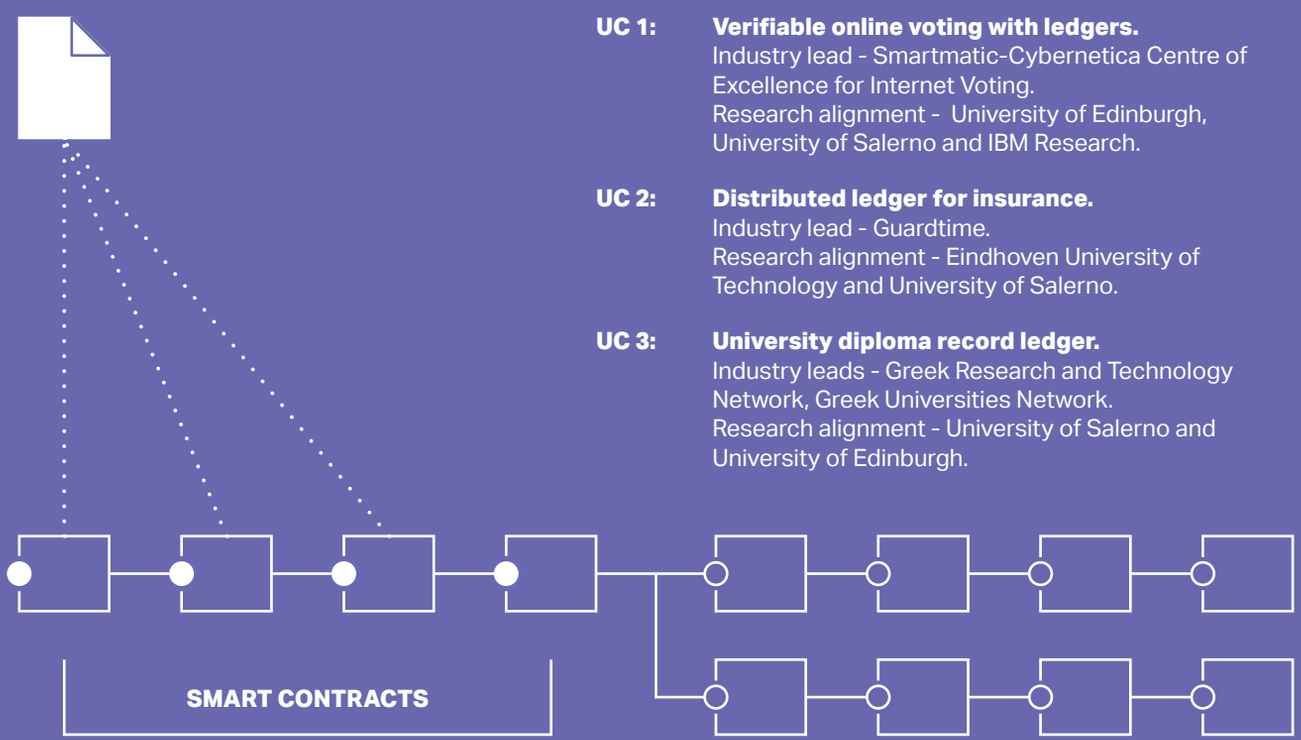
PRIVILEDGE

USE CASE 3:

"EDIPLOMA" UNIVERSITY DIPLOMA RECORD LEDGER

PRIVACY ENHANCING CRYPTOGRAPHY IN DISTRIBUTED LEDGERS

PRIViLEDGE has the ambitious goal to increase the trustworthiness of European ICT services and products and the competitiveness of the European cryptography industry. PRIViLEDGE focuses on enhancing strong cryptographic solutions for privacy in distributed ledgers. To demonstrate its wide scope of applications, PRIViLEDGE works with four different use cases to develop and showcase cryptographic schemes and protocols for privacy and security.



UC 1: **Verifiable online voting with ledgers.**
Industry lead - Smartmatic-Cybernetica Centre of Excellence for Internet Voting.
Research alignment - University of Edinburgh, University of Salerno and IBM Research.

UC 2: **Distributed ledger for insurance.**
Industry lead - Guardtime.
Research alignment - Eindhoven University of Technology and University of Salerno.

UC 3: **University diploma record ledger.**
Industry leads - Greek Research and Technology Network, Greek Universities Network.
Research alignment - University of Salerno and University of Edinburgh.

UC 4: **Update mechanism for Cardano stake-based ledgers.**
Industry lead - Input Output Research.
Research alignment - University of Edinburgh and IBM Research.

* Use cases 1–3 use the immutability of DLT for storing data. Use case 4 enhances DLT with mechanisms for consistent updates.

THE STORY

The printed-paper certificate system has repeatedly been a cause of concern for *security* and *reliability*, because it allows fraudsters to forge certificates. Also, there is no definite mechanism to easily verify and check the authenticity of a certificate.

Current approaches designed to overcome the disadvantages of paper-based academic certificates has not addressed issues like the validation of claimed certificates yet. In addition, it is based on centralised solutions that can be targeted by malicious users.

THE DARE

Currently there is no standardised, automated method to certify university diplomas in Greece. The degree holder typically obtains a hardcopy of the original diploma from the academic registrar. Then, whenever it is necessary to provide evidence of a degree, the degree holder must obtain a certified copy of the diploma. The copy is usually a normal photocopy that is verified as being genuine by a police officer or an appointed civil servant.

The system is anachronistic and creates costs for all involved: degree holders, civil servants as well as the academic registrars that are responsible for maintaining full and accurate archives, and delivering hard copies when those originally provided to degree holders are lost. Also, the system is inherently insecure. It is not difficult to provide fake degrees; the only way to determine that they are not genuine is by checking them directly with the archives held at each university.

THE DO

PRIViLEDGE will create a distributed, secure ledger of higher education degrees in Greece. The ledger will contain transactions certifying that a student has obtained a degree from a given institution. Each institution will run a node of the distributed ledger, so that false records will not be inserted unless 50%+1 of the participating institutions are compromised. The risks from losing original data will be minimised, as all institutions will contain copies of all degrees.

PRIViLEDGE **has developed and deployed a first version of digital certification scheme called eDiplomas** (https://ediplomas.gr/). The system allows the transfer of certificates between public sector entities and universities. Currently it has been adopted by the Aristotle University of Thessaloniki, the National and Kapodistrian University of Athens, the University of the Aegean, and soon by the University of Ioannina. These will encompass more than 300,000 issued diplomas.

INTERESTED IN LEARNING MORE ABOUT "HEALTH INSURANCE" USE CASE ?

- Your primary contact is Dimitris Mitropoulos from GRNet, e-mail: **dimitro@grnet.gr**.
  For any questions or proposals you might have, he's happy to listen.

Follow PRIViLEDGE homepage and Twitter for news and updates.

- **priviledge-project.eu**
- **twitter.com/PRIViLEDGE_EU**

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