2022: the year in review – Legitim-ID

All hope after the COVID pandemic was restored in January 2022. Although there have been signs that global supply chains will affect our research and development efforts, mainly in the implementation of disaster recovery infrastructure, we remain optimistic given the demands of our partners regarding the implementation of European student identities, ensuring legality in the processes carried out remotely, the integration of people with disabilities, the use of single digital identity (SSO) in web authentication through modern OpenID Connect and OAuth 2.0 protocols, etc.

Finally, the year was marked by the Russian invasion of Ukraine and created an unprecedented global crisis that affected the economy, society and people's lives. Business has been hit by international trade issues after years of pandemic restrictions. As a result, the final stage for the Legitim-ID project, August 2022, has been postponed to 2023. Despite all the shortcomings, the team continues to deliver results.

This report is a review of significant achievements for Legitim-ID project, with details on Research and Development, Product Management and Marketing.

Research and Development

LegitimId® product infrastructure consists of three disaster recovery system based on three communication nodes (Buzău, Brașov and Bucharest):

Geographical distribution of the LegitimId® infrastructure

LegitimId® product infrastructure ensures that customers are continuously served despite occasionally faults in any subsystem: communications, storage, energy, proceeding power etc.

This year revealed **LegitimId®** Near Field Communication (NFC), WiFi-enabled reader based on Internet of Things (IoT) and Cloud-computing technologies. The **LegitimId®** NFC reader enabled **LegitimId®** service to use NTag 424 DNA crypto-chip in cards, rings, implants or bracelets which caries secured links to **LegitimId®** digital identities. **LegitimId®** digital identities are now compliant with the highest level of trust, namely level **AA3** defined in **NIST SP 800-63B.**

LegitimId® NFC reader

LegitimId® NFC tokens are compliant with NFC Data Exchange Format (NDEF), a standardized data format specification by the NFC Forum implemented by default in all modern smartphones and tablets. An NFC enabled smartphone with no additional application is able to read **LegitimId®** NFC tokens and send crypto-data to **LegitimId® Internet** service. Thus, a **LegitimId®** digital identity is identified and selected for authentication process providing the highest level of security and commodity.

LegitimId® NFC readers and digital identities associated with **LegitimId®** NFC crypto-cards were used and tested with more than 500 students from Bucharest University of Economic Studies, Faculty of Cybernetics, Statistics and Informatics. Collected usage data, educators and student feedback provided resources for elaborate and publish research papers and entire **LegitimId®** service refinement.

Based on the students' reaction, our researchers noticed that the students want the single sign-on (SSO) and authentication system to be extended to other university services such as libraries, accommodation, transport, etc. More than 55% of responding students want the university to offer additional studies in digital identity, authentication and safe use of personal data. More students' feedback: this link.

Bucharest University of Economic Studies (ASE) for the 2023-2024 educational time-frame provides more than 10.000 European students cards that are associated with **LegitimId®** digital identities. Thus, a European student card provided by ASE may be used for students' authentication in more applications (web and physical access) like resource planning web applications, laboratory and other facilities access, libraries etc. The same student identity card is recognized by all European entities affiliated with European Student Card (ESC) system.

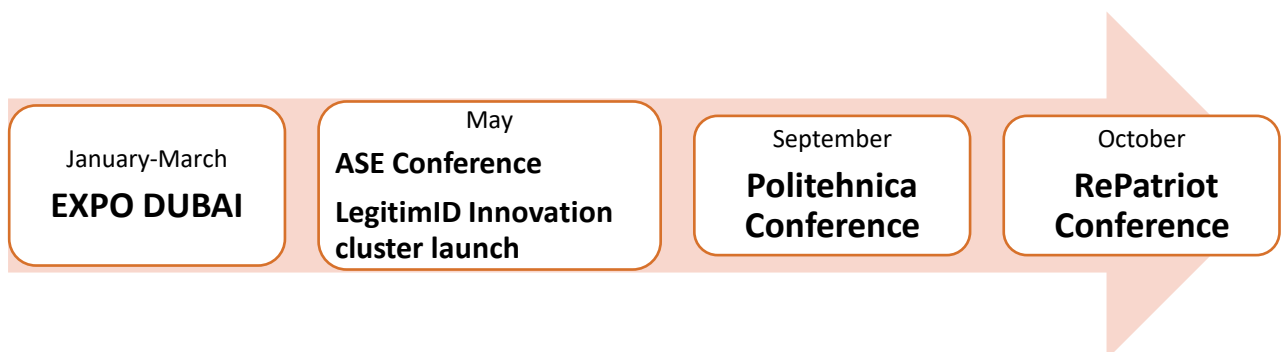*Prototype ASE European Student Card (front and back)*

LegitimId® Product roadmap

Testing Phase CSIE / Academy of Economic Studies Bucharest	Trim I	Trim II	Trim III	Trim IV
Communication Node set up - Buzău Datacenter				
Communication Node set up – Brașov Datacenter				

Legitim-ID strategic research and development project progress was near 80% in December 2022. Most delays were counted in implementation of datacenters derived from that fact that hardware equipment (CISCO firewalls, high performance switches, virtualization and clustering servers, storage and backup units, power conditioning etc.) were subject of three to six months delay.

Product Management and Marketing

2022 Events Timeline

January-March **EXPO DUBAI**	May **ASE Conference** **LegitimID Innovation cluster launch**	September **Politehnica Conference**	October **RePatriot Conference**

LegitimId® in the Romanian Pavilion at Expo Dubai 2020

Internet service to combat fraud, protect originals, trademarks, implement anti-counterfeiting measures

Visitors to the Romanian Pavilion at Expo Dubai 2020 had the opportunity to test the LegitimId® technology for combating fraud, protecting originals, trademarks and preventing counterfeiting. The Internet application, accessible in the pavilion, showed how to protect the originals of works of art. Two paintings were displayed, original and copy, and users determined live and immediately, by using their mobile phone and LegitimId® service, the authenticity of the paintings.

The LegitimId® Internet Service for preventing counterfeiting is one of the first results of the Strategic European research and development project, **SMIS 129617,** carried out through the financing contract between the Authority for the Digitization of Romania as an Intermediate Body for the Promotion of the Information Society (OIPSI) and the Legitim-ID consortium of companies (Online Services - leader, Widecom Systems and Next Planet), during 2020-2023, with a value of RON 9,399,133.18.

With this demo, we have shown one of the objectives of Legitim-ID strategic project: research of current standards, rules on the protection of personal data and critical infrastructure, design and implementation of Internet services on **digital identity** with the focus of the person, the protection of the individual, the usefulness and value brought to the organization(s), the design and development of Internet services to combat fraud, protection of originals, trademarks, implementation of anti-counterfeiting measures;

Thanks to ATIC (Romanian Association for IT and Communication) we had the opportunity to connect with Romanian Pavilion managers and organize the show remotely, with an extensive process of shipping and duty clearance for the artwork provided by Dorin Apreutesei.

The demo paintings, copy and original, displayed at the Romanian Pavilion Expo Dubai.

The **LegitimId®** https://legitimid.com/xf service ensures real-time web certification using NFC technology available in mobile phones (smart), uses crypto chips incorporated in the original (documents, diplomas, parts or subassemblies, packaging, seals, works of art, etc.) and validated in real time through the Internet. Security is ensured through encrypted communication channels (TSL encrypted) using dynamically updated digital certificates. Its own redundant and fault-tolerant infrastructure is used.

Conference: Partnership for research and development, converged technologies, innovation clusters

Predeal, Brașov, May 14, 2022

The conference has been organized by Academy of Economic Studies in Bucharest (ASE), Faculty of Cybernetics, Statistics and Economic Informatics (CSIE) and the Legitim-ID consortium of companies managing the Legitim-ID research and development European strategic project in digital identity. The objective of this conference was to review the results of the partnership with the academic organization in the Research and Development activity and the launching of **LegitimID**® Innovation Cluster.

The conference was hosted by the ASE Training Center in Predeal, Brașov which has been named in honor of Professor Ion Gheorghe Roșca.

The panel of conference included professors from CSIE, Romanian government representatives and Romanian Cluster Association.

Conference participants had the opportunity to test the LegitimId® counterfeiting service, the same setting demoed in Dubai World Expo.

Ensuring a high level of quality of educational activity and obtaining excellence in scientific research are the basis of the partnership agreement between the Academy of Economic Studies of Bucharest, through CSIE, and **LegitimId®** based on the common objectives of the strategic project with European co-financing in the field of digital identity. The conference was an important milestone in the development of the project. The agenda included the project roadmap, the results obtained, the next steps and the call for the formation of the **LegitimID®** innovation cluster.

The audience included researchers, entrepreneurs, finance, agriculture, IT, communication and other business verticals, Romanian Cluster Association leaders, local government representatives. The **LegitimID®** Advisory Board members attended the conference emphasizing the support in disseminating the results and the plans for the future.

The **LegitimID®** Innovation Cluster has been announced, the website launched https://legitimid.eu and the invitation to become a member was sent to audience.

Expo: Romania Viitorului

Legitim-ID – strategic research and development project
Universitatea Politehnica Bucharest September 6, 2022

The event organized by the Ministry of Research, Innovation and Digitalization included an exhibition presenting the results of the research, development and innovation activity, as well as a panel session and discussions in the area of research and entrepreneurship. Within the exhibition, 38 research institutes, 2 universities, 22 start-ups from RubikHub and 8 companies with activity in the fields of research and innovation were represented and had stands, thus achieving an exchange of knowledge, experience and practices in order to boost the interaction at the level of Romanian innovation ecosystems.

LegitimId® *booth at România Viitorului expo*

LegitimId® was part of the exhibition, with the demo of Internet Service application to prevent counterfeiting, the same demo we displayed in Dubai World expo.

There were many visitors interested in the application, from agriculture to geology.

Many business cards were exchanged as the expo has been visited by the Romanian Prime Minister, Ministers of Education, Economy, Investment and European Projects, as well as representatives of the European Commission, the World Bank and the North-East Regional Development Agency.

International Conference: RePatriot

Top 100 Români de Pretutindeni

Viorel Lupu awarded in Top 10 Science category
October 6-9, Iași - Chișinău

The RePatriot Summit (www.repatriot.ro) took place in Romania, Iași and Moldavia, Chișinău, had an agenda structured on working groups with topics of major importance for the economy. Of interest for our project was the Strategic Group of Artificial Intelligence and Technology, which proposes to accelerate the efforts to digitize the public administration, in order to facilitate an efficient interaction of the private environment with the state institutions.

The businessmen who attended rented their own train to take them from Iași to Chișinău to give a strong signal of connection and immediate action. The entrepreneurs who arrived in Chișinău were united with over 100 local entrepreneurs to share their experience and to engage in future collaboration projects.

At the event were awarded 100 Romanians from all over the world who do good things all over the world. Their selection is done following a process of nomination and support from key personalities in the business world. Another 100 Romanians from the Diaspora who have excelled in 10 key areas, who consistently choose to get involved with confidence and dedication in the economic, cultural and social development of Romania. The scientific director of Legitim-ID project, Viorel Lupu, was awarded in the Science category.

re▶patriot

Cunoaşte-ne ⌄   Poveşti de succes ⌄   Oportunităţi ⌄   Proiecte RePatriot ⌄   Noutăţi

Implică-te ⌄   RePatriot Summit   Top 100   RePatriot App

Viorel Lupu

Inginer, absolvent al Facultăţii de Electronică şi Telecomunicaţii, 1985.
Doctor în Cibernetică şi Statistică Economică, Academia de Studii Economice Bucureşti, 2007
Antreprenor, fondator al companiei Online Services, din 1994.

De peste 35 de ani lucrează în domeniul tehnologiei informaţiei şi comunicaţiilor, este
pasionat de electronică, hardware, software şi comunicaţii. Conduce consorţiul de firme
Legitim-ID şi construieşte clusterul inovativ european LegitimID pentru soluţii de identitate digitală.

Este coordonatorul ştiinţific al proiectului strategic european de cercetare-dezvoltare, SMIS 129617.

"Am urmărit în activitatea profesională să parcurg toate etapele cercetării aplicate, de la concept la produs şi serviciu de calitate. Cred că educaţia este primul pas în construirea unei cariere profesionale de succes. Inovaţia, cercetarea-dezvoltarea sunt motorul creşterii economice. Prin lucrările ştiinţifice publicate, prin brevetele de invenţie şi mărcile înregistrate am pus bazele dezvoltării unor produse şi servicii inovative, cu impact economic şi social".
Lucrările care au sintetizat activitatea de cercetare în domeniile cloud computing, energie, Internet of Things, securitate, protecţie şi identitate digitală, au fost aprobate şi apreciate de publicaţii prestigioase.
"Am beneficiat de îndrumarea prof.univ.dr. Ricardo Jardim-Gonçalves, NOVA University of Lisbon, acesta fiind şi unul dintre motivele pentru care acum cinci ani m-am mutat în Spania. Am continuat să colaborez cu Academia de Studii Economice Bucureşti, colectivul Facultăţii de Cibernetică, Statistică şi Informatică Economică pentru testarea şi implementarea serviciului LegitimID."
Din 1994, compania Online Services utilizează tehnologii software, hardware şi telecomunicaţii de ultimă generaţie pentru a proiecta, dezvolta şi opera sisteme Internet avansate care integrează în siguranţă componentele Internet of Things (IoT) cu Cloud. "Am pus accentul pe dezvoltarea software şi pe certificarea oamenilor din echipă pentru a aplica cele mai avansate tehnologii. Am fost Regional Director pentru Microsoft în România şi furnizor de soluţii software pentru clienţi din verticale de business precum manufactură, educaţie, construcţii, sănătate, juridic, financiar, telecomunicaţii.

Screen capture (web browser)

The RePatriot document which contains published papers and patents is attached for reference.

About LEGITIM-ID project https://legitimid.ro

European registered number is SMIS 129617: Competitiveness Operational Program; Priority Axis 2 – Information and Communications Technology (ICT) for a competitive digital economy; Investment priority 2b - Development of ICT products and services, e-commerce and ICT demand; Specific Objective OS 2.2 - Increasing the ICT sector's contribution to economic competitiveness; Action 2.2.1 - Support the increase of added value generated by the ICT sector and innovation in the field through the development of clusters.

LEGITIM-ID, a European strategic research project carried out on the basis of the financing contract concluded between the Authority for the Digitization of Romania as the Intermediate Body for the Promotion of the Information Society (OIPSI) and the consortium of companies (*Online Services* - leader, *Widecom Systems* and *Next Planet*). LEGITIM-ID is implemented in the period August 4, 2020 – August 4, 2022 (extended to 2023) with monitoring until 2025. The value of the contract is 9,399,133.18 lei (approximately 2 million Euros) and includes activities of scientific documentation, industrial and experimental research, protection intellectual property, equipment purchases, licenses, the creation of infrastructure, products and services. Another important component of the project is the development of the innovative LegitimID® cluster for digital identity.

About LegitimID® Innovation cluster https://legitimid.eu

The objectives of Legitim-ID consortium are to build the innovation cluster for digital trust and identity, foster innovation by continuing the research, supporting education and transfer the results in development and production. The value co-creation cycle will feature contribution of all members of the cluster, based on their competences. Creating a healthy ecosystem with all members, from entrepreneurship to education, from local to central Government, from small businesses to research institutions, from lab to market will be a shared goal, a plan for growth, a mission to contribute to a better society for all.

About LegitimId®

The LegitimId® Internet service has been designed to meet the requirements of digital trust and digital identity standards, incorporates state-of-the-art technologies, uses **advanced security** mechanisms, presents a user-friendly, innovative interface, creates a reliable and secure experience. LegitimId® is a registered trade mark of Online Services and implements the *"Constructive assembly and method for granting authorized access to an Internet service platform", PCT/RO2017/000002 Patent, 2016* and other patents and standards.

LegitimId® Internet service is based on an original, patented, innovative and secure authentication procedures maintaining the same high level of assurance every time the user logs in. LegitimId® implementations are independent of software / hardware platform taking care of sensitive personal data protection by design.

LegitimId® Internet infrastructure is geographically distributed providing disaster recovery services, fault tolerant and redundant high disponible Internet service.

LegitimId® Internet service provides Single Sign-On (SSO) authentication services using the latest OpenID Connect and OAuth standards. **LegitimId®** Internet service implements NDEF protocol with latest crypto-NFC standards that provide high assurance and secure user authentication. People with disabilities inclusion, usage in harsh environments, Internet of Things compatibility, user protection, options and comfort are key goals. Based on NFC crypto technologies **LegitimId®** Internet service provides anti-counterfeit/certification services.

LegitimId® Internet service provides crypto-NFC hardware (cards, rings, bracelets and readers).