Implementation of Digital Credentials at University of Lille - France

Co-funded by

BCdiploma blockchain digital credentials

November 2023

Université de Lille
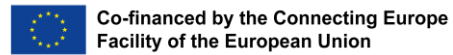
What makes this new form of blockchain-based digital certificates, called Blockchain Digital Credentials, so interesting?

As demonstrated by the Dem-Attest project, a blockchain project for digital transformation within a university can:

- Offer 100% digital, multilingual, tamper-proof diploma certificates to students, which are recognized worldwide;

- Automate the process of producing and verifying academic credentials, increase their reliability, and reduce their costs;

- By providing employers with tamper-proof documents, employers will have more confidence in institutions and the documents they issue.

By the end of 2023, over 56,000 blockchain digital credentials have been issued to the university's graduates, confirming the successful completion of the first phase of the project and the launch of the second phase: the independent use of the Dem-Attest application by all academic services within the University's departments.

Does it respect personal data and the environment, and is it easy to use?

Yes, that's the simple answer. Throughout this White Paper, you will find many testimonies and all the documentation concerning the Dem-Attest project.

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Key figures

1

A single data model was used to automate the issuance process for all of the University's diplomas.

2

Credentials are available in two languages: French and English, thanks to the translation work of the University's course offerings.

56 000

More than 56,000 blockchain credentials have been issued to the University's students.

132 000

The credentials have been viewed and verified online more than 132,000 times...

140

... from over 140 countries across all 5 continents.

The objectives of Dem-Attest

Perrine de Coëtlogon

University of Lille, Chairman of the Board of Open Education Global, Representative of France in the European Blockchain Partnership, European Blockchain Service Infrastructure - EBSI

Dem-Attest project manager

The University of Lille had the opportunity to address the issue of the digital transformation of diplomas to reinvent this "parchment," echoing the [Digital Credentials Consortium's White Paper](). The Dem-Attest project aims to digitize the issuance process for the "certificate of completion of diploma", previously issued in PDF format via the Student Information System "APOGEE", with the following objectives:

To deliver to the student, in the shortest possible time, a verifiable digital credential, meaning in a 100% digital format, tamper-proof, containing all the necessary evidence of authenticity.

Combatting fraud with a sovereign solution.

Modernize the academic services:
✓ Reduce the time for issuing and/or verifying diplomas and certificates, as well as potential revocation-reissuance delay.
✓ Implement a quality process in data production.
✓ Translate diploma titles into English.
✓ Reduce costs, especially compared to paper-based processes.

Facilitate student mobility and access to employment, in connection with "Mon Compte Formation," Europass, and GAIA-X for skills (using data with individuals' consent to create job and training offers).

Work at the European and international levels on the interoperability of these "verifiable credentials" with the European blockchain infrastructure EBSI.

Make the "diploma" more beautiful, accessible, and shareable with just a click.

Utilize the advantages of blockchain technology:
✓ Credentials remain on the blockchain even if the technical partner disappears.
✓ Student data is encrypted and distributed (GDPR compliant).

A digital transformation project of the Registrar

Imane Chaabi

Deputy Director of the Registrar at the University of Lille

For several years, the University of Lille has been progressively digitizing all processes related to academic affairs, with the aim of modernizing the services offered to students, increasing their impact, and optimizing the working conditions of the staff responsible for deploying these services. As of 2021, 100% of applications and 90% of registrations were entirely done online... and the last major issue to address was diploma issuance!

The Dem-Attest project aims to streamline the graduation process through innovation by involving all the stakeholders involved in results management. This project has generated strong internal support because it combines organizational, technical, and regulatory dimensions. It emphasizes the establishment of high-quality services for students, enabling them to quickly obtain evidence of their qualifications while reducing the workload of the teams involved.
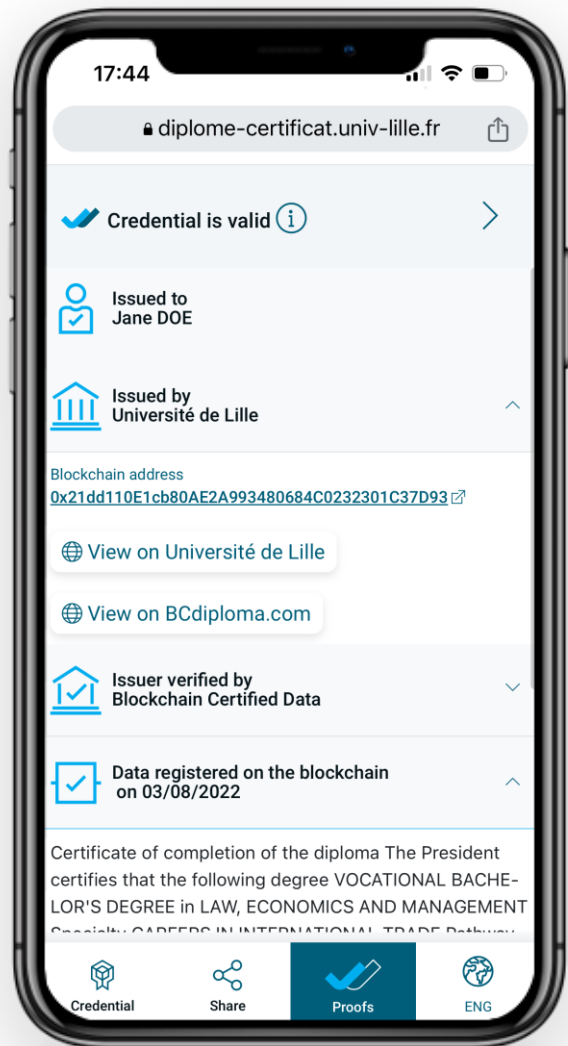
By the end of 2023, the Dem-Attest application and its blockchain technology have been tested and validated, with over 56,000 issuances. The current objective is to promote the project both internally and externally to ensure its daily use by academic affairs managers and thus deliver digital diploma success certificates to students in a timely manner.

Regarding our students, the blockchain certificate has opened up new possibilities by providing a "beyond the walls" service available worldwide and without a time limit. The project has also enhanced the international reputation of the University.

This project can be replicated by other institutions because it is based entirely on the traditional diploma processes.

Furthermore, in France, regulations recognize the value of these digital certificates from 2023 (Circular of May 7, 2023, from the MESR), thus strengthening the relevance of such a project for institutions.

Blockchain Digital Credential sample

République Française / Université de Lille

18:12 — 🔒 diplome-certificat.univ-lille.fr

RÉPUBLIQUE FRANÇAISE
Liberté
Égalité
Fraternité

Université de Lille

Certificate of completion of the diploma

The President certifies that the following degree

VOCATIONAL BACHELOR'S DEGREE IN LAW, ECONOMICS AND MANAGEMENT
Specialty **CAREERS IN INTERNATIONAL TRADE**
Pathway **INTERNATIONAL TRADE CAREERS IN SMES**

was awarded to

JANE DOE
Date of birth: October 24, 1977

| Credential | Share | Proofs | ENG |

17:44 — 🔒 diplome-certificat.univ-lille.fr

✔️ **Credential is valid** ⓘ >

Issued to
Jane DOE

Issued by
Université de Lille

Blockchain address
0x21dd110E1cb80AE2A993480684C0232301C37D93 ⧉

🌐 View on Université de Lille

🌐 View on BCdiploma.com

Issuer verified by
Blockchain Certified Data

Data registered on the blockchain on 03/08/2022

Certificate of completion of the diploma The President certifies that the following degree VOCATIONAL BACHELOR'S DEGREE in LAW, ECONOMICS AND MANAGEMENT Specialty CAREERS IN INTERNATIONAL TRADE Pathway

| Credential | Share | Proofs | ENG |

Scan or click here to view the online certificate

Dem-Attest-ULille

Why blockchain technology?

Pierre Boulet

Vice President for Digital Infrastructure, University of Lille

October 22, 2021
The digital transformation of the University of Lille's registrar's office webinar

Pierre Boulet answers the question "Why use blockchain technology for diploma dematerialization projects within the University?"

"Regarding the technology to be used, we started investigating and observing the market in 2018. It turns out that blockchain technologies fully meet our needs, particularly in terms of security, non-forgery of diplomas, and their durability over time.

There was also the question of whether diploma validity could be verified by anyone.

Decentralized technologies make it easy to validate these diplomas issued by a large number of stakeholders, in standard formats. Therefore, the European Blockchain Partnership identified this as the first use case to be implemented. Our diplomas will be published tomorrow on the EBSI European blockchain, which is not yet in production. We are working on it, within the framework of the EBSI-VECTOR project.

Using BCdiploma technology, we have been issuing our credentials on the Avalanche blockchain since 2021, and students appreciated the sharing method."

Refer to the chapter "A French and European vision of blockchain" of the White Paper "Blockchain technologies for the public sector" published by the University of Lille to get a more general perspective on the blockchain.

For more general considerations on the use of blockchain in the context of academic certificates, please refer to the article by Vincent Langard, CTO of BCdiploma: "Digital Credentials: why blockchain is the new standard".

What about energy consumption?

Compliance with the highest standards in terms of energy footprint is one of the prerequisites of the Dem-Attest-ULille project. The solution used for the issuance of digital certificates, namely BCdiploma, can work with several blockchains... the question was which one?

An overview of the framework can be found in Pierre Boulet's article, [Energy consumption of blockchain technologies (fr)](#):

Some public blockchain technologies, such as Bitcoin and Ethereum PoW (proof of work) historical version, consume excessive amounts of energy. This energy consumption is due to the consensus algorithm used: proof of work (PoW).

New consensus algorithms have appeared, offering a different compromise between security, decentralization, and energy consumption. Ethereum's planned migration to proof-of-stake (PoS) will be an important step towards less energy-intensive blockchain technologies.

This migration was successful in 2022, with energy gains of over 99%.

Lille University has chosen to deploy its diploma certificates on the Avalanche blockchain, which operates on a proof-of-stake (PoS) protocol.

We can estimate, based on [the latest work](#) on the consumption of public PoS blockchains, that the carbon footprint of the emission of a certificate by the University of Lille is about 0.025g of CO_2... compared with an average of 4g for an email without attachment.

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Digital Credentials design

Bilingual certificates

To provide immediate added value to students wishing to work abroad, the working group decided very early on to issue the digital certificates in a bilingual French and English version.

This resulted in a comprehensive translation of the University's entire training program, which is presented in appendix.

Texts, titles, and visuals of the certificates

In conjunction with the University's departments, the working group has validated all the wording and terms of the certificates. The communication service of the university was involved in designing the new "visual" for the digital diploma certificates.

Below is the final work:

Co-financed by the Connecting Europe Facility of the European Union

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Sending Digital Credentials to students

This mailing is done automatically after the digital certificates are issued. Here is the message and documentation sent to students:

LLL Université de Lille

Hello,

I'm pleased to send you
your digital certificate of successful completion of the 2020/2021 diploma.

It is tamper-proof, can be viewed online, and can be sent to a recruiter or integrated into your profile on your professional social network.

```
https://diplome-certificat.univ-lille.fr/index.html?key=FD586F8653AF1C95B49D8572D80DC3
423AD0A5254DCB124B3ACF6BF06C2C98C8L3ptVmpMQU4xMytIODI4Zm15Rnc3WXZQdWNzcEVpanhEREV3dVpD
RUNCNXBhQThB
```

This certificate is personal, so please keep your URL link securely.
To learn how you can use your certificate, please follow this link.

in Add to my profile*

Don't forget to activate your account on www.lilagora.fr, the University of Lille's professional network: 35,000 members and 20,000 job offers.

Enhance my Lilagora profile

I renew my congratulations to you for your success in obtaining this diploma!

Régis BORDET
President of the University of Lille

*By using this link, you are leaving the University of Lille's environment and taking responsibility for using services provided by LinkedIn. We invite you to review their terms of use.

This certificate has been issued in compliance with the General Data Protection Regulation. If you have any questions on this matter, visit this page.

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Documentation for students

The University of Lille has launched a "Diploma Information" page online for students, which includes the following information:

Digital certificate

Since 2020, the University has issued a secure digital certificate of success for each graduate (excluding doctoral and INSPÉ).

How does it work? ▶

What does the attestation look like? ▶

How do I use and share my certificate? ▶

How do I find my link to my attestation? ▶

I have a question about the protection of my certificate. ▶

Documentation for students

How does it work? ▼

Let us follow Jane's career, who has recently graduated from the University of Lille:

1. The university transmits the data to prepare the attestation via the BCdiploma blockchain protocol.

2. The data are encrypted and recorded within a blockchain on the blockchain. They are secure, tamper-proof and unalterable.

3. 3. Jane receives an email with a link giving access to her certificate.

4. Jane shares her QRcode link on Lilagora, LinkedIn, on her CV, etc.

5. A recruiter, verification body or higher education institution shall use the link to verify the authenticity of the certificate and its issuer.

What does the attestation look like? ▼
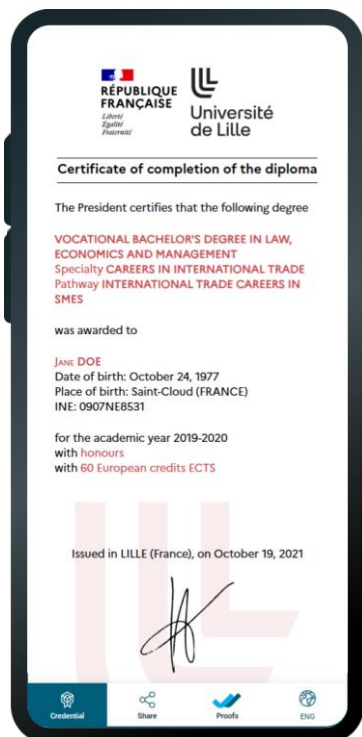
How do I use and share my certificate? ▼

On the "Share" tab, you will find all the sharing and printing options.
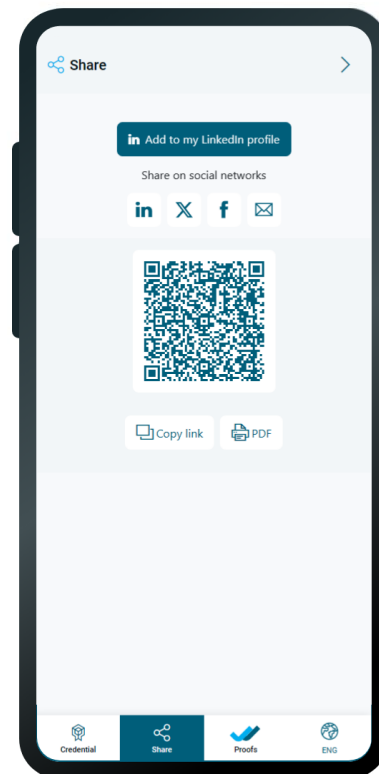
How do I find my link to my attestation? ▼

Contact us on our support form. We'll send you your link.

About the protection of my certificate. ▼

Find all the information on this page.

Documentation for recruiters 1/2

The University of Lille has created a "Diploma Verification page" online for recruiters, which includes the following information:

I need to check the authenticity of a diploma

Are you a recruiter, a verification body or a higher education institution?

Since 2020, and in accordance with Article 6 of the circular of 7 May 2023 of the MESR, the University has issued a secure digital certificate of success for each graduate (excluding doctoral and INSPÉ). Find out why it is tamper-proof and probative.

Why is the digital attestation authentic? ▶

Does the digital attestation have a probative value? ▶

How to verify the authenticity of an old diploma? ▶

Useful resources

- Understanding the blockchain technology used
- Project White Paper
- Lilagora, the professional network of the University of Lille
- BCdiploma our partner in the certification of dematerialised documents on blockchain

Key figures

56 633
Blockchain certificates issued

149
countries from which they have been consulted

Co-financed by the Connecting Europe Facility of the European Union

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Why is the digital credential authentic? ▼

The University of Lille, anxious to extend the services offered to its graduates and to secure the verification of its diplomas, has decided to issue tamper-proof digital certificates. The University of Lille has chosen blockchain technology to secure data and ensure a framework of trust for the various actors in users of the system.

The University of Lille provides its learners with online certificates accessible from a personalised and unique URL link:

- starting with: "https://diplome-certificat.univ-lille.fr/"
- issued from the official University of Lille blockchain address: 0x21dd110E1cb80AE2A993480684C0232301C37D93. This address is inviolable and entered in the blockchain register of institutions authorized to issue data on the BCdiploma platform. This register can be consulted directly by following this link.

Here is an example of a certificate.

Does the digital attestation have a probative value? ▼

When you consult this certificate online, you are guaranteed to consult data certified and issued by the University of Lille. If you consult a printed or PDF version of the attestation, the QR Code will allow you to consult the original blockchain certificate online.

This information can be used in any reference or procedure for verifying a certificate or diploma.

How to verify the authenticity of an old diploma? ▼

If you do not have the digital certificate, and only in this case, you can contact the Schooling Directorate: scolarite-direction-univ-lille.fr

Feedback: Deployment of Dem-Attest by the Law Department

Tony Delettrez

Faculty of Legal, Political and Social Sciences

Assistant Director of Support Services

The Faculty of Law, Political Science, and Social Sciences comprises approximately 8,500 students: 3 Bachelor's degree programs, 12 Master's degree programs, and 40 different tracks within the Faculty. The academic affairs office of the Faculty has played the role of a pilot department by being involved in all project Dem-Attest working groups since 2021.

It is within this department that all deployments were tested and validated before being extended to the entire University in 2023.

Therefore, since September 2023, our academic affairs office has been sending digital diploma success certificates to its students 10 days after the deliberations, which was difficult to achieve with paper certificates.

Initially, I was skeptical about whether the academic affairs teams would embrace the software… and the opposite happened: they took the opportunity and now issue certificates independently and in a timely manner. The time saved amounts to nearly half a day for a cohort of 400 graduates, as a single click in the application is all it takes.

The most important thing is that the benefit for the student is significant, as they can use their certificate as soon as the jury has made a decision regarding their situation.

With the support of the circular of May 7, 2023, from the MESR recognizing the use of these digital certificates, we now believe we can save significant time by redirecting all external diploma verification requests to the official University page explaining the evidential value of our certificates.

To conclude, let's highlight the ecological benefit provided by the Dem-Attest project, which avoids printing and postal deliveries while also improving the service provided to students in their job searches.

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Data law and GDPR compliance
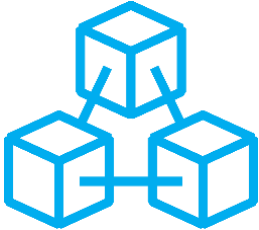
With the first release of blockchain credentials in 2019, the project group conducted an in-depth study of the impacts of using blockchain and BCdiploma technology with the University of Lille's Data Protection Officer (DPO) team.

A very positive review of the service was given by the University's DPO team, which highlighted the benefits provided by the overall architecture of BCdiploma.

The service is provided without storing any historical data on BCdiploma's servers.

The result of this work is twofold:

- A subcontracting agreement has been signed for the processing of personal data. In the appendix, we have attached this agreement.

- The following information page has been published for students receiving the digital certificates: https://www.univ-lille.fr/donnees-personnelles/etudiants/diplome-et-certificat

Please refer to the following articles for general information regarding blockchain and GDPR:

- Blockchain certificates, probative value and GDPR

- Is blockchain compliant with the GDPR?

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Integration and data flow

The following is an overview of the data flow:

1. The data of the certificates is ready to be issued and exported from APOGEE (University SIS) and stored in a dedicated database of the university, which also hosts the business application available in the E.N.T. (University Digital Workspace).

This procedure is described in the appendix.

2. When the registrar manager sets it in their E.N.T. business interface, they are sent via API to BCdiploma, which:

- Encrypt the data;
- Deposit them on the blockchain;
- Generate a unique link for each certificate;
- Returns the generated certificates via API.

This processing is done overnight.

3. When the return flow is received, the University automatically sends an email to each student, and keeps a record of the issues for the registrar's office.

In addition, the university has the ability to retrieve the entire issuance history and permanently deleting it from BCdiploma servers:

this history is not required for the proper functioning of the digital certificates, since they read the data directly from the blockchain.

Click here to learn more about BCdiploma's blockchain solution.

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Dem-Attest and EBSI-VECTOR

Perrine de Coëtlogon

University of Lille, Chairman of the Board of Open Education Global, Representative of France in the European Blockchain Partnership, European Blockchain Service Infrastructure - EBSI

Dem-Attest project manager

The University of Lille, BCdiploma, and Visions are members of the European project EBSI-VECTOR. The Dem-Attest project aligns with this European dimension, which will enable the sharing of diplomas, qualifications, or open badges within a European "e-wallet."

The EBSI-VECTOR project (EBSI enabled VErifiable Credentials and Trusted Organisations Registries) places self-sovereign identity and its "digital wallets" at the heart of the paradigm shift in information technology for public education (and social security) services, with the involvement of 56 partners from 20 EU member states. The coordinator is CIMEA, the public organization responsible for recognizing foreign diplomas in Italy (ENIC-NARIC network). VECTOR will enable digital interaction for citizens studying and working in Europe by simplifying their verification processes for individuals, administrations, and legal entities.

The consortium aims to consolidate the capabilities of the EBSI (European Blockchain Service Infrastructure) by testing the issuance and revocation of digital diploma success certificates and social security numbers. Furthermore, other French partners are involved in projects supporting the European Digital Decade, such as EXAION, EDF's subsidiary that hosts EBSI nodes.

The consortium also aims to define and implement the EBSI scalability strategy and the adoption of IT standards in different privacy-respecting countries. It provides the essential elements and tools for citizens and organizations while actively collaborating with various related European projects and initiatives like ESSPASS, EHIC, and EUROPASS. EBSI-VECTOR aligns with building blocks like EUeID or SDG to offer citizens and organizations the best-integrated data management system.

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Co-financed by the Connecting Europe
Facility of the European Union

The Working Groups (WG) of the Dem-Attest project

In total, since January 2021, more than 25 individuals from 5 different departments of the university have been involved in this cross-functional project. In the rest of the White Paper, you will find the results and deliverables of the various working groups.

Project management

Perrine de Coëtlogon, University of Lille

Luc Jarry-Lacombe, Co-founder and CEO of BCdiploma | 3videnZ

With the support of Pierre Boulet, Vice President of Digital Infrastructure at the University of Lille

IT developments

Teddy Bourgois, Head of FTLV Office - research Integration and operation department General Management of the Digital Department

"Process and Quality" Working Group

Bénédicte Gautier, Director of the Registrar's Office until mid-2023

Imane Chaabi, Deputy Director of the Registrar's Office

Julien Watteeuw, Quality, Communication & Career Development Officer, Registrar's Office Department

Tony Delettrez, Faculty of Law, Political Science, and Social Sciences, Deputy Director of Support Services

"Models & Data" Working Group

The members of the previous "Process and Quality" group, and:

Eric Fouré, Deputy to the Data Protection Officer, Personal Data and Archiving Department

Niniane Beauchamp, Project Manager - Apogee Functional Correspondent of the Registrar's Office Department

"Business Interface within the University of Lille" Working Group

The members of the "Process and Quality" working group and the IT team of David Darras, Head of the Digital Applications Development Office, Information System Studies and Development Department of the Digital Department: Philippe Laporte and Sophie Quenton.

Results of the "Process and quality" WG
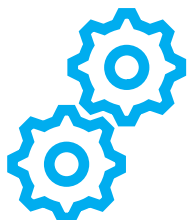
The objective of this working group is to think globally about the introduction of a new process for issuing certificates of completion within the University, and to ensure the quality of the service provided to students as well as the improvements made to the registrar's office.

The work began with the drafting of an inventory of the current process for managing certificates of completion within the APOGEE software, and then defined a target process to be implemented with the new blockchain technology used.

Particular attention was paid to quality, for issues of:

• Data law and GDPR compliance,

• "Design" of the certificates,

• Quality of service and communication with students,

• Internal and external communication,

• Change management within the University of Lille.

State of play: how the PDF certificates of completion were issued since APOGEE (university's management software) 1/2

The central registrar's office is responsible for framing the procedure. Implementation is the responsibility of each registrar's office in each deparment.

A manager of the registrar's office (from a department registrar's office) carries out the following actions once the jury's grades and results are known and recorded in APOGEE (at the latest on the "jury closing date" - a date communicated in the University's general calendar, approved by the CFVU):

1. The manager launches the "Issue calculation" (verification of external administrative conditions) for a given set of graduates (defined by a diploma code/version). Note: there are exceptions, in fact, within the PONT de BOIS campus, the launching of the issue calculation and the completion of the decisions are ensured by the registrar's office (and not by the department).

2. Then the decision is "completed" (A > T, E > T), for a given set of graduates (defined by a session, a diploma code/version of diploma - see "APOGEE Training" document (IP Training results VER 4-4.pdf).

3. The deparment informs the students of their results and grades in view of a possible dispute. The file is provided by APOGEE (searchable and cancellable extraction) and transmitted to the student mainly via the E.N.T. (digital workspace) - See document "Publication of results on E.N.T. based on an Apogée extraction" (publication_ENT_V7_official.pdf). The posting dates are set on the ENT (there is a global regulatory deadline including the jury's answers).

4. The manager sometimes has to add data or make corrections: to do this, he repeats steps 1. and 2. after having "declassified the decisions" (T > A) and modified/added results. These modifications are not currently traced in the information system, and can lead to modifications in the admissions.

Dem-Attest-ULille

State of play: how the PDF certificates of completion were issued since APOGEE (university's management software) 2/2

5. The manager is then able to edit the "certificates of completion" in APOGEE and send them to the students. This action is not currently traced in the information system.

6. In exceptional cases, the manager may have to make new corrections, and will then repeat steps 4 and 5 for the affected certificates.

Compliance with the legal requirement to send certificates of completion 3 weeks after the exam board meeting is not measurable: these dates are not in APOGEE and the issuing of certificates is not tracked.

The actors in the process can be described as follows: A. Central registrar's office; B. Registrar's office of the deparments, including a head of the registrar's office, assistants, an administration office editing the minutes of the decisions validated by the exam board, and managers of the registrar's office. They are responsible for one or more years of study or one or more diplomas.

Today, the manager of the registrar's office publishes and sends the certificates of completion, under the responsibility of the person in charge of the registrar's office in the department.

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"Process and Quality" WG

Target process for managing digital credentials

The working group agreed on a set of business rules for the new paperless process:

The process will allow the academic services manager of a department to initiate the issue and automatic sending of certificates of completion (for each stage and diploma version) and, if necessary, to proceed to the revocation of these certificates.

The process will allow the central registrar's office to monitor all the actions of the departments, and, if necessary, to be able to launch actions directly.

A digital certificate of completion can be issued when a set of parameters are verified in APOGEE. Here are the main ones:

• The student has passed and there is no administrative hold on their situation;
• The decision is made;
• The parameters of the titles, mentions and details of the diploma are well set up in APOGEE;
• The mention "average" being treated inconsistently within the University (sometimes present, sometimes hidden on the certificates), it will not be displayed on the digital certificates.

To give you access to all the parameters, the extraction request from APOGEE is published in the appendix.

The course of the issue will be as follows:

1. A manager sets that the issuance of certificates for a diploma and stage version can begin.

2. Every night, diploma certificates are automatically issued in digital format and sent by email to students.

All of the issues are tracked and made available to the managers and the central registrar's office. The latter may, if necessary, proceed with the temporary or permanent revocation of the digital certificate.

Results of the "Models and Data" WG

The goal of this workgroup is to complete the definition of the digital credential and its data model, and to implement it in the BCdiploma blockchain environment.

The work began with a census of all the models of certificates of completion issued by the various departments from APOGEE, with the objective of achieving unified management of the data model.

Here is an example of a PDF document edited from APOGEE:

Dem-Attest-ULille
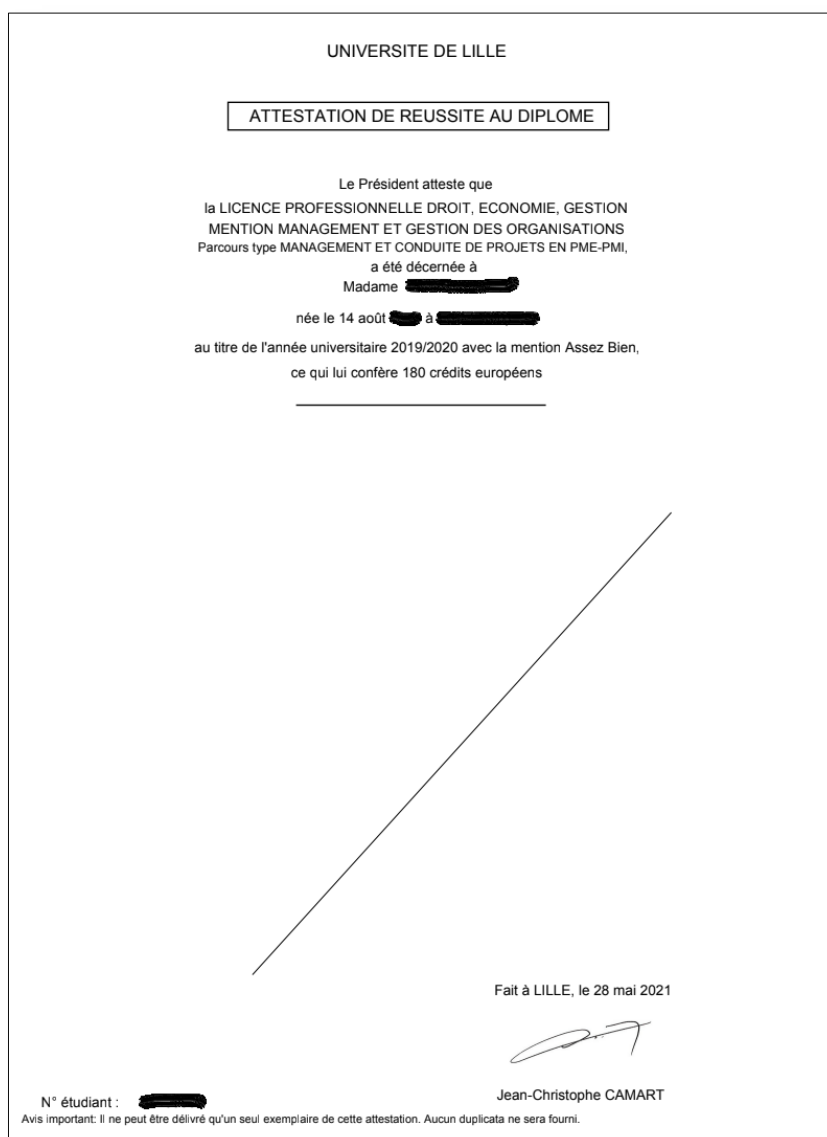
The unified data model

The following is the data model selected by the working group to cover all of the University's graduation certificates, regardless of the degree under consideration. Two attribute types are identified:

- **Technical**: This is the metadata of the certificate allowing the proper functioning of the management rules and APIs.
- **Certified on the blockchain**: These are certified data and displayed on the digital certificate. They are stored on the blockchain.

Attribute	Type	Content
ID	technical	Unique identifier of the certificate
Email	technical	Email Univ. Lille
Email_contact	technical	Contact email
COD_CMP	technical	Department Code
LIB_CMP	technical	Department title
COD_DIP	technical	Diploma code
COD_VRS_VDI	technical	Diploma version code
COD_ETP	technical	Diploma Stage Code
COD_VRS_VET	technical	Diploma Stage version code
CODE_INT	technical	Type of degree (Bachelor, Master...)
COD_SIS_VDI	technical	Sise code
TEM_SANTE	technical	Control to identify the "health" careers
COD_ETU	technical	Student's APOGEE number
NUM_EUR_ETU	technical	Student's European ESI number
INTITULE_DIP	certified on the blockchain	Title of the degree
DOMAINE_DIP	certified on the blockchain	Field of the degree
MENTION_DIP	certified on the blockchain	Mention in the diploma
PARCOURS_DIP	certified on the blockchain	Course of the degree
FIRSTNAME	certified on the blockchain	First name
LASTNAME	certified on the blockchain	Last name
BIRTHDATE	certified on the blockchain	Date of birth
BIRTHPLACE	certified on the blockchain	City of birth
ZONE	certified on the blockchain	Country of birth
INE	certified on the blockchain	INE number
ACADEMICYEAR	certified on the blockchain	Academic year
BEGINDATE	certified on the blockchain	Start date of validity
MENTIONSTUDENT	certified on the blockchain	Honors of the degree
CREDITSSTUDENT	certified on the blockchain	European credits obtained
CERTIFDATE	certified on the blockchain	Date of issue of certificate number

Dem-Attest-ULille

The certificate models 1/3

A reference model and variants

Based on the unified data model, the working group defined 5 digital certificate models or matrices to cover all of the University's degrees.

Reference model

This model is used to issue the vast majority of certificates, such as Bachelor's degrees, Master's degrees, University degrees, etc.

Here is the modeling of it, including the variable data, for example, the student's name ^LASTNAME¤ :

Certificate of completion of the diploma

The President certifies that the following degree

^INTITULE_DIP¤ ^DOMAINE_DIP¤
(MENTION_DIP==?|Specialty) ^MENTION_DIP¤
(PARCOURS_DIP==?|Pathway) ^PARCOURS_DIP¤

was awarded to

^FIRSTNAME¤ ^LASTNAME¤
Date of birth: ^BIRTHDATE¤
Place of birth: ^BIRTHPLACE¤ (^ZONE¤)
INE: ^INE¤

for the academic year ^ACADEMICYEAR¤
(MENTIONSTUDENT==?|with) ^MENTIONSTUDENT¤
(CREDITSSTUDENT==?|with) ^CREDITSSTUDENT¤ (CREDITSSTUDENT==?|European credits ECTS)

Issued in LILLE (France), on ^CERTIFDATE¤

Régis BORDET
President of the University of Lille - France

Certificate translated by the University of Lille. Official version issued in French.

The certificate models 2/3

Secondary models

For some specific degrees, variants allow to display :
• Option or Specialty instead of Honors ;
• Option instead of Course.

Specific model for the CLES (HIGHER EDUCATION LANGUAGE SKILLS CERTIFICATION)

For this diploma, we have worked specifically to allow direct consultation of the Common European Framework of Reference for Languages (CEFR) from the online certificate:

RÉPUBLIQUE FRANÇAISE
*Liberté
Égalité
Fraternité*

Université de Lille

Certificate of completion of the diploma

The President certifies that the following degree

^INTITULE_DIP¤ ^DOMAINE_DIP¤
(MENTION_DIP==?|Specialty) ^MENTION_DIP¤
(PARCOURS_DIP==?|Pathway) ^PARCOURS_DIP¤

was awarded to

^FIRSTNAME¤ ^LASTNAME¤
Date of birth: ^BIRTHDATE¤
Place of birth: ^BIRTHPLACE¤ (^ZONE¤)
INE: ^INE¤

for the academic year ^ACADEMICYEAR¤
(MENTIONSTUDENT==?|with) ^MENTIONSTUDENT¤
(CREDITSSTUDENT==?|with) ^CREDITSSTUDENT¤ (CREDITSSTUDENT==?|European credits ECTS)

Issued in LILLE (France), on ^CERTIFDATE¤

Régis BORDET
President of the University of Lille - France

Certificate translated by the University of Lille. Official version issued in French.

| Common European Framework of Reference for Languages (CEFR)		
PROFICIENT USER	C2	Can understand with ease virtually everything heard or read. Can summarise information from different spoken and written sources, reconstructing arguments and accounts in a coherent presentation. Can express him/herself spontaneously, very fluently and precisely, differentiating finer shades of meaning even in more complex situations.
	C1	Can understand a wide range of demanding, longer texts, and recognise implicit meaning. Can express him/herself fluently and spontaneously without much obvious searching for expressions. Can use language flexibly and effectively for social, academic and professional purposes. Can produce clear, well-structured, detailed text on complex subjects, showing controlled use of organisational patterns, connectors and cohesive devices.
INDEPENDENT USER	B2	Can understand the main ideas of complex text on both concrete and abstract topics, including technical discussions in his/her field of specialisation. Can interact with a degree of fluency and spontaneity that makes regular interaction with native speakers quite possible without strain for either party. Can produce clear, detailed text on a wide range of subjects and explain a viewpoint on a topical issue giving the advantages and disadvantages of various options.
	B1	Can understand the main points of clear standard input on familiar matters regularly encountered in work, school, leisure, etc. Can deal with most situations likely to arise whilst travelling in an area where the language is spoken. Can produce simple connected text on topics which are familiar or of personal interest. Can describe experiences and events, dreams, hopes & ambitions and briefly give reasons and explanations for opinions and plans.
BASIC USER	A2	Can understand sentences and frequently used expressions related to areas of most immediate relevance (e.g. very basic personal and family information, shopping, local geography, employment). Can communicate in simple and routine tasks requiring a simple and direct exchange of information on familiar and routine matters. Can describe in simple terms aspects of his/her background, immediate environment and matters in areas of immediate need.
	A1	Can understand and use familiar everyday expressions and very basic phrases aimed at the satisfaction of needs of a concrete type. Can introduce him/herself and others and can ask and answer questions about personal details such as where he/she lives, people he/she knows and things he/she has. Can interact in a simple way provided the other person talks slowly and clearly and is prepared

Dem-Attest-ULille

The certificate models 3/3

A lookup table is run by the University to allow for referral to the correct certificate model upon issuance, managed by API.

Here is an excerpt:

Type of degree	Certificate model identifier
A.U.E.C	0X03 - Primary model
C.C.O.P.	0X03 - Primary model
C.C.O.T.	0X03 - Primary model
C.E.S.C.D.	0X03 - Primary model
CERTIFICAT2	0X03 - Primary model
D.E.D.C.D	0X03 - Primary model
D.U.E.C	0X03 - Primary model
D.U.F.L.	0X03 - Primary model
D.S.N.	0X03 - Primary model
D.U.	0X03 - Primary model
D.U.E.C	0X03 - Primary model
LICENCE	0X03 - Primary model
LICENCE-PRO	0X03 - Primary model
MASTER	0X03 - Primary model
C2I	0X03 - Primary model
CAPACITE	0X03 - Primary model
D.E.U.S.T.	0X03 - Primary model
LICENCE-PRO	0X03 - Primary model
D.E.D.P.	0X04 - Variant of the primary model
D.E.S.	0X04 - Variant of the primary model
D.E.S.F.	0X04 - Variant of the primary model
D.F.A.S.M	0X04 - Variant of the primary model
D.F.A.S.P	0X04 - Variant of the primary model
D.F.G.S.M	0X04 - Variant of the primary model
D.F.G.S.P	0X04 - Variant of the primary model
TITRE_ING_CMP	0X05 - Variant of the primary model
D.U.T.	0X05 - Variant of the primary model
D.A.E.U.	0X06 - Variant of the primary model
CLES	0X07 - Specific model for the CLES

Dem-Attest-ULille

Results of the WG "Business interface within of the digital workspace of the University"
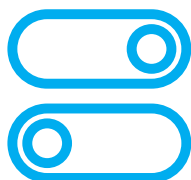
The objective of this working group is to carry out the development of a business interface in the E.N.T of the University (Digital Workspace), in order to delegate the task of issuing digital certificates of completion to each department according to the exam board schedule.

This interface completes the back-office provided by BCdiploma by allowing the integration of all the rules of the registrar's office, and to ensure internal traceability of the actions of the various departments. It is worth remembering that the University of Lille has more than 80,000 students.

This interface also allows the consultation of issued certificates and their revocation.

A University IT team specialized in the development of internal applications participates in this group and carries out the developments.

This application will be deployed in production for the University's Law department in the first half of 2022, and then extended to all departments.

The source code of this application, as well as the tables and treatments implemented by the University of Lille, will be published on the University's GitHub with an open-source license, thus allowing its reuse by other universities.

Dem-Attest-ULille

Student satisfaction survey

Please find the complete survey of the first students to receive a degree certificate in the appendices.

We will note at the end of this survey that the students are extremely satisfied with the final digital certificate. As a matter of fact, 76% of them anticipate using this digital certificate in the future.

Digital certificates have been designed with several features available to students. Following is a list of these features:

- Presentation on smartphones: certificates are designed to fit the screen of the phone and are easily readable.

- Sharing on social networks: certificates can be shared on social networks such as LinkedIn, Twitter and others.

- Sharing a link: it is possible to share certificates quickly by sending a link, whether through email, an application platform, or other means.

- Proof of authenticity: the certificate has a native proof of authentication via its link, which is verified using blockchain technology.

- PDF with QR Code: the certificate has a QR Code directly integrated in the PDF version that allows the verification of its authenticity by scanning or clicking on it.

- Multilingual certificate: the certificate has a directly integrated French or English-language diploma presentation feature.

Favorite features for students are, in order:

1. Multilingual certification
2. Proof of authenticity
3. PDF with a QR Code
4. Presentation on Smartphone
5. Sharing a link
6. Sharing on social networks

Dem-Attest-ULille

Dem-Attest and the European project EBSI 1/2

Let's recall that the University of Lille has been leading the French project fr.EBSI and is now the French coordinator of VECTOR, aiming to issue diplomas within the EBSI blockchain ecosystem - European Blockchain Service Infrastructure, and that Blockchain Certified Data - BCdiploma is the technical operator for it.

The work presented above is a preliminary step to the large-scale deployment of University of Lille diplomas on the EBSI blockchain. More broadly, it lays the foundation for a generic solution for issuing digital certificates in compliance with the new European standards known as "Verifiable Credentials," incorporating decentralized student identifiers.

Within Fr.EBSI, BCdiploma has deployed interfaces to record the certificates produced on the EBSI blockchain, with support for decentralized identities of students and the University of Lille.

You can find the complete report of the fr.EBSI project 2021/2022 here: "Verifiable Certificates on the EBSI Blockchain: Understanding the fr.EBSI Project." These efforts continue within EBSI-VECTOR in 2023/2024.
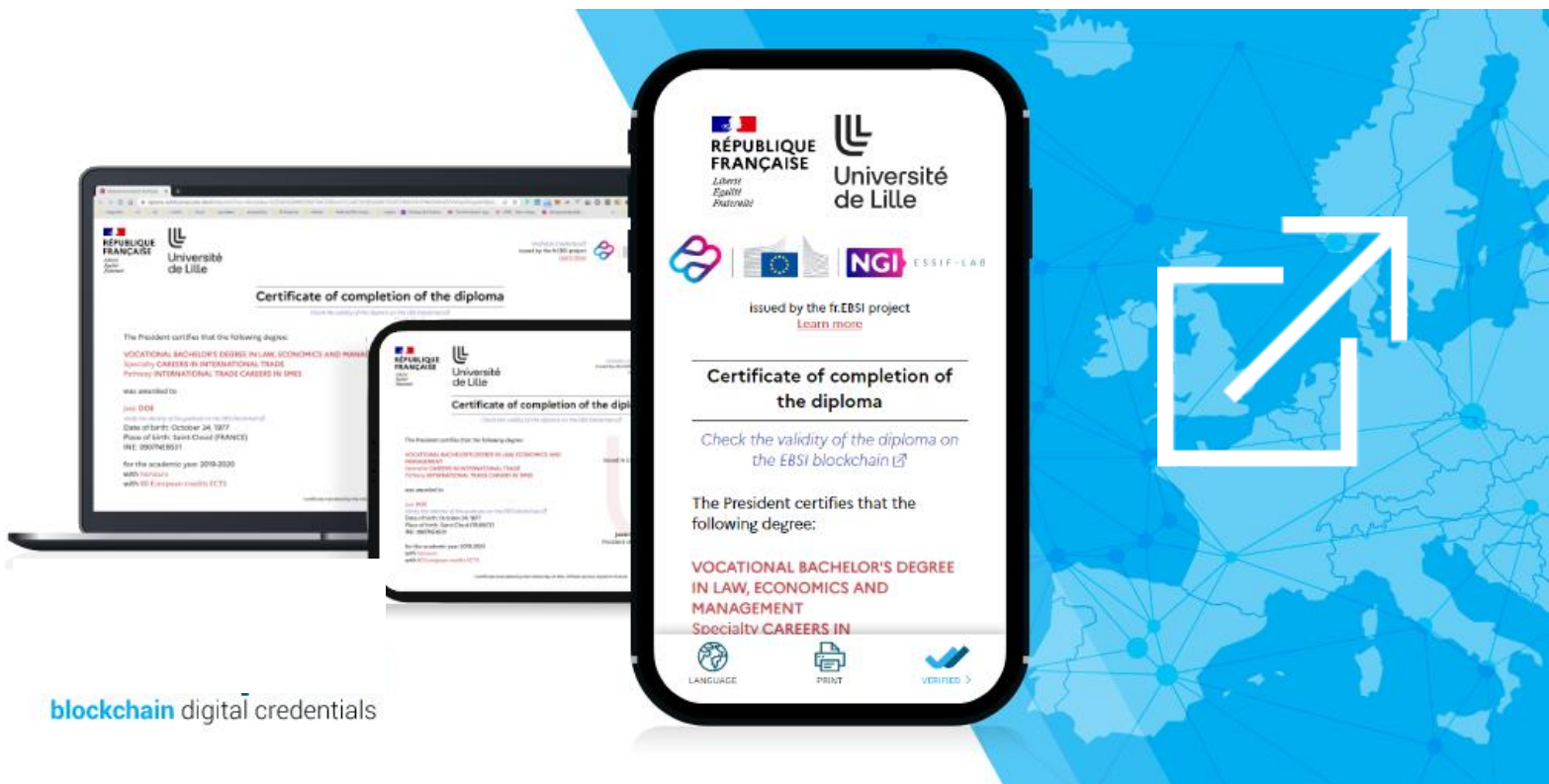
Dem-Attest and the European project EBSI

This online verification service will check whether a certificate complies with the expected format and whether all signatures are valid concerning the European Commission's trust registries (EBSI blockchain).

The second deliverable, produced by Blockchain Certified Data - BCdiploma and co-funded by NGI-ESSIF Lab and the i-Nov program, will be a student wallet of self-sovereign identity allowing to keep and present the obtained diplomas. This wallet will be deployed at the University of Lille. It paves the way for many projects focused on student identity.

Here you will find a description of the NGI program deliverable, the student wallet.

Web wallet
(can be exported on any other wallet)

Claim credential from any EBSI issuer

2FA access with any email or smartphone

Ensure validity with the included verification service

Share EBSI Verifiable Presentation

Dem-Attest-ULille

The Genesis of the Project 1/2

Université de Lille

The Dem-Attest-ULille project, launched by the University of Lille in early 2021, is part of a triple dynamic:

• The work initiated by the GTNum 8 Blockchain Education France (fr) Working Group, funded by the Ministry of National Education, Youth and Sports, Directorate of Digital Education;

• The digital transformation projects of the University of Lille's registrar's office;

• The French government project Fr.EBSI, funded by the European Blockchain Partnership & EBSI - European Blockchain Service Infrastructure. This project aims to deploy digital diplomas according to the new standards set by W3C "Verifiable Credentials," based on the trusted blockchain architecture deployed by the European Commission.

During its work, the Blockchain Education France working group identified that the most supported international project concerns the work on digital certificates or credentials (Digital Credentials), which reinvent the way (i) institutions issue learning achievements (degrees and other certificates), (ii) students and then citizens retrieve them, and (iii) employers and other training organizations verify them throughout their lives.

Blockchain Education France then launched a pilot project in 2019, in collaboration with Blockchain Certified Data, the publisher of the BCdiploma solution. The project aimed to experiment with these "blockchain digital credentials" for a small population of students.

Dem-Attest-ULille

The Genesis of the Project

Université de Lille

Within the University of Lille, the CLES (Certificat de compétences en Langues de l'Enseignement Supérieur) team, supported by the academic affairs services of the University, successfully issued an initial batch of 248 blockchain certificates in just a few months.

The feedback from students, recruiters, and business teams is promising: they all recognize a high-value service, both in terms of the service provided and the potential for digital transformation of administrative processes.

The project to extend this to all of the University's diplomas takes shape and is approved by the management committee in September 2020, followed by an innovative public contract signed in January 2021 with Blockchain Certified Data - BCdiploma.

Dem-Attest-ULille

Project Timeline

Université de Lille

2019/2020 : The pilot project was funded by Blockchain Education France - Working Group GTNum 8 Blockchain Education France, resulting in the issuance of 248 digital certificates for the CLES - CERTIFICAT DE COMPÉTENCES EN LANGUES DE L'ENSEIGNEMENT SUPÉRIEUR diploma from the University of Lille.

2021 : Launch of the Dem-Attest project in January.

2022 : The first half of 2022 is dedicated to the operational deployment of the business interface, allowing the academic affairs services of the University to be self-sufficient in managing the issuance of certificates.

2023 : Deployment to all academic affairs services of the University via a Student Information System application.

2023 & 2024 : Participation in the European VECTOR project on the EBSI blockchain for the deployment of Decentralized Identity features.

Université de Lille

February 10, 2022,

20 000 digital diploma certificates issued by the University of Lille.

More than three-quarter of the diplomas and certificates issued by the university in 2020 were issued as digital certificates with «probative value».

As announced in May 2021, the University of Lille is the first to achieve a real digital transformation of its academic department on this scale by issuing its students a digital certificate of completion of their degree or certificate anchored in a low-energy blockchain.

The student receives a permanent link to a tamper-proof and verifiable web document, translated into English, which they can present to an employer, an association or for further study, in France and abroad, allowing the authenticity of the diploma to be verified.

Carried out in collaboration with BCdiploma and the GIP Renater, this digital transformation project was implemented as part of the European Blockchain Partnership (EBP). The objective is to allow all national and European higher education institutions to issue these certificates by relying in particular on the experience acquired by the University of Lille as part of the European government project fr.EBSI.

Since January 2022, before the implementation in all the university's components, the Faculty of Legal, Political and Social Sciences is the pilot for the launch of digital certificates « on the spot », as the juries deliberate.

Find the approach followed and the results in the white paper.

WHITE PAPER ON BLOCKCHAIN TECHNOLOGIES FOR THE PUBLIC SECTOR :

https://blockchain.univ-lille.fr/

MAY 2021 PRESS RELEASE :

Digital certificates for all graduates of the University of Lille

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Additional Links

1. Student satisfaction survey

2. Outline of the PERSONAL DATA PROCESSING SUBCONTRACT AGREEMENT signed between the University of Lille and BCdiploma

3. APOGEE data extraction request

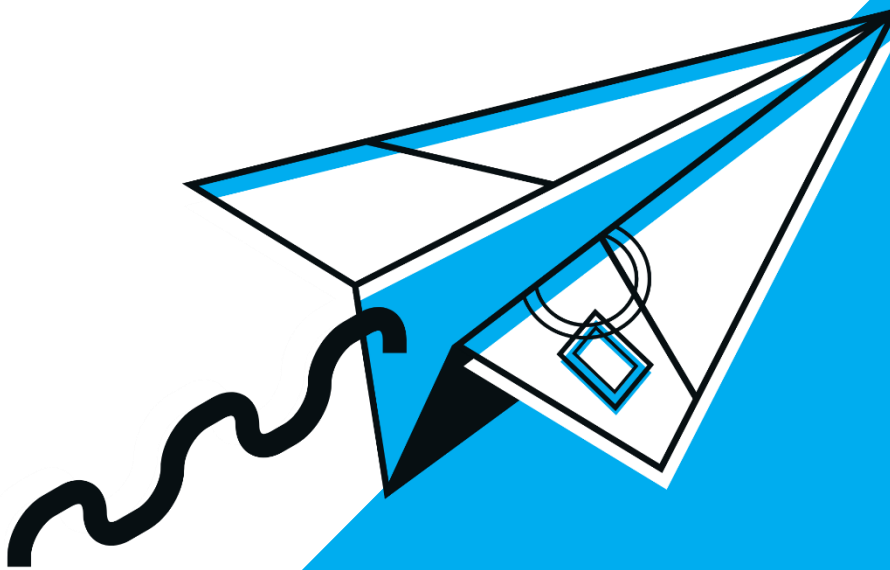4. Table of translations of the training offer (excerpt)

Dem-Attest-ULille

About BCdiploma

BCdiploma is a blockchain application for issuing 100% digital and tamper-proof certificates and is already used by more than +170 institutions in +22 countries.
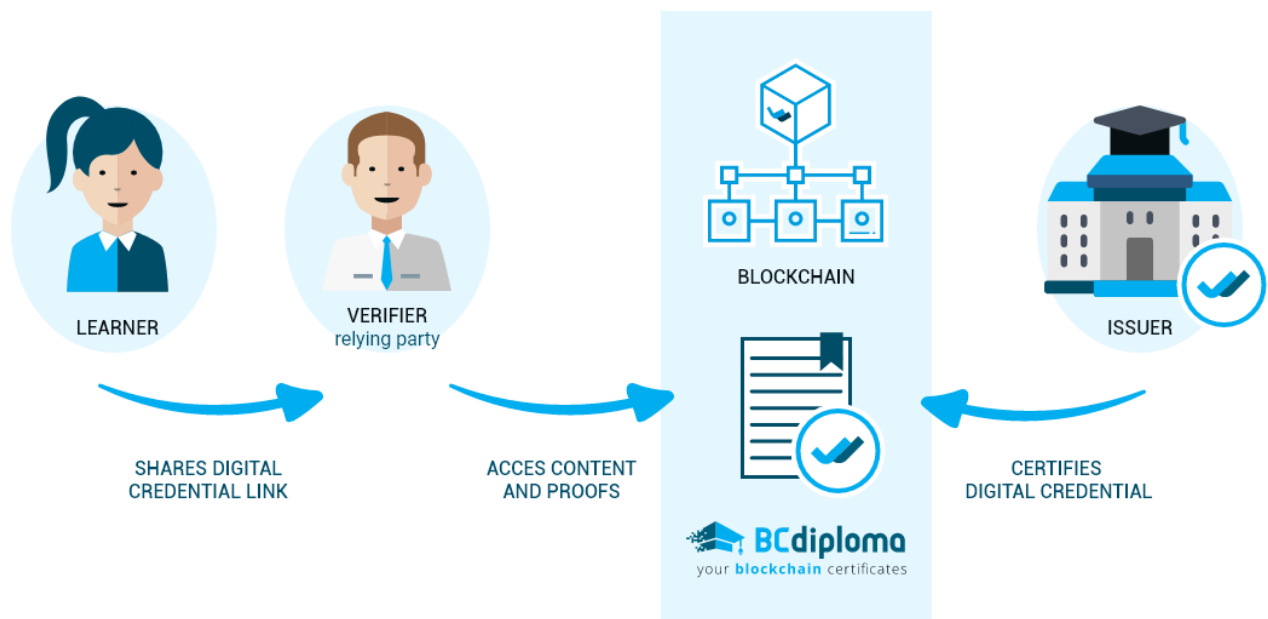
Learn more about BCdiploma

Dem-Attest-ULille

Dem-Attest