Control System
Study DiplomADA

Proof of Concept

The statement about the need for thorough testing of an application, especially in the context of a blockchain network, highlights the importance of ensuring that software meets user requirements and expectations. In the development of applications, especially those operating in critical environments such as blockchain, quality and reliability are critical. Thorough testing not only helps identify errors and bugs, but also ensures that the application works correctly under various conditions and usage scenarios.
First, it is essential to understand that testing should cover a wide range of situations. This includes not only the most common use cases, but also extreme scenarios that might not be evident in a first analysis. For example, in a blockchain application, it is crucial to test how the application behaves under high load conditions, such as a large number of simultaneous transactions, or in failure situations, such as loss of network connection. These tests help identify bottlenecks and ensure that the application can handle unforeseen situations without compromising its functionality.

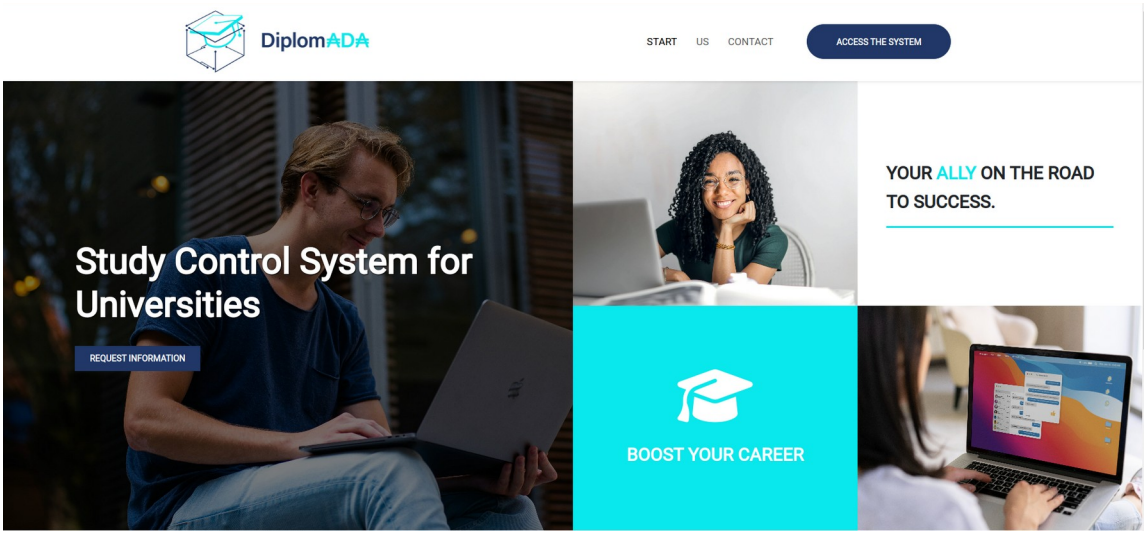
Deploying the application on a testnet is a critical step in this process. A testnet allows developers to simulate a real environment without the risks associated with using a mainnet. In this testnet, developers can perform experiments, test new features and fix bugs without affecting end users. This is especially important in the blockchain context, where errors can result in significant financial losses or data corruption. By using a testnet, developers can get a clearer picture of the application's performance and its ability to interact with other components of the blockchain ecosystem.
In addition, integration testing is critical to ensure that all components of the application work together in a consistent manner. In the context of a blockchain network, this involves verifying that smart contracts, user interfaces and network interactions integrate smoothly. Integration testing helps identify issues that may arise when different parts of the application interact with each other, which is crucial to ensure a smooth and error-free user experience.

In conclusion, the statement about the need for thorough testing in an application, especially in the blockchain domain, underscores the importance of a methodical and rigorous approach to software development. By deploying the application to a testnet and performing integration testing, developers can ensure that the application not only meets functional requirements, but also provides a satisfactory and secure user experience. This process not only protects users, but also strengthens the reputation of the product and trust in blockchain technology in general.

For this, we will show the process integrating with the updated functionalities in lucid that allow interacting with the Cardano blockchain network, performing tokenization transactions and creating NFTs.

For such reason, we must enter the main page of diplomada, this provides us with information about the system, the foundation that promotes and dictates the academic content (FUNINTEC) and the allies that work together with the foundation to carry out this project.

Image No. 1



By pressing the "Access the system" button we will enter an interface where we can access the application through an authentication process, in case we are not registered, we can enter as applicants in the "Register Here" section to enter your data and register in the system.

Image No. 2

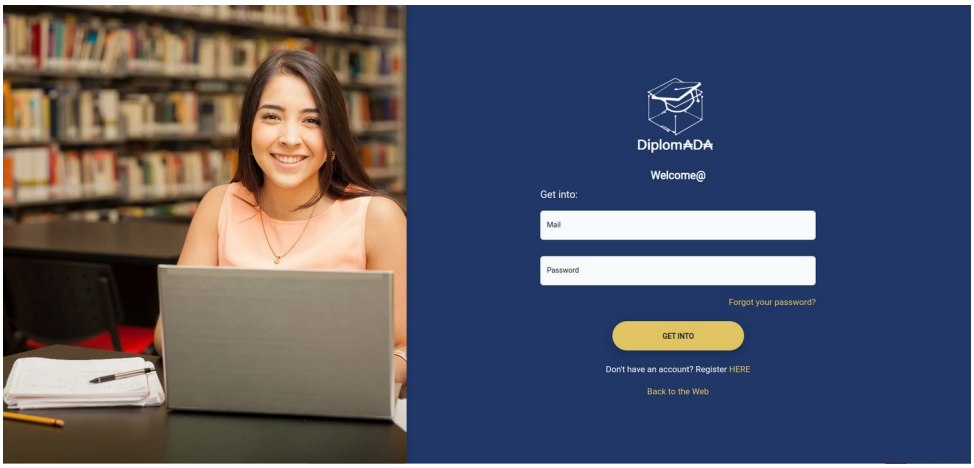
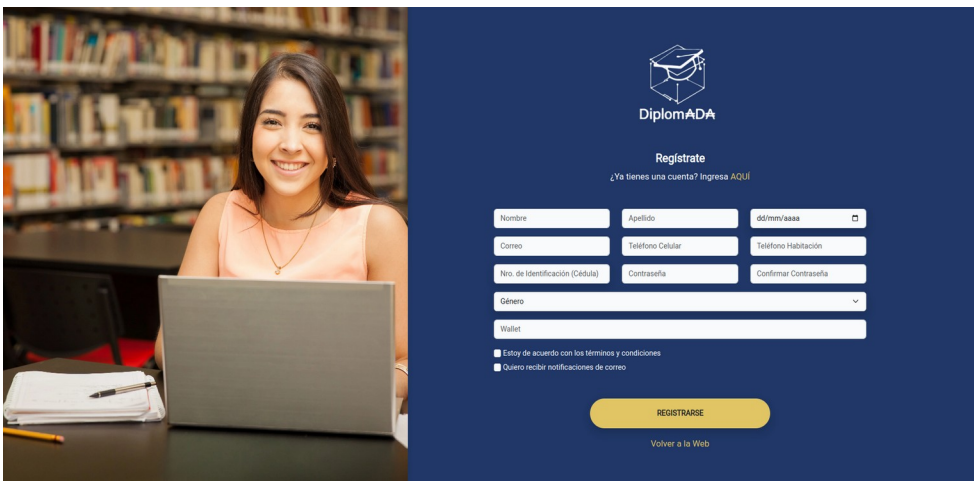


Image No. 3

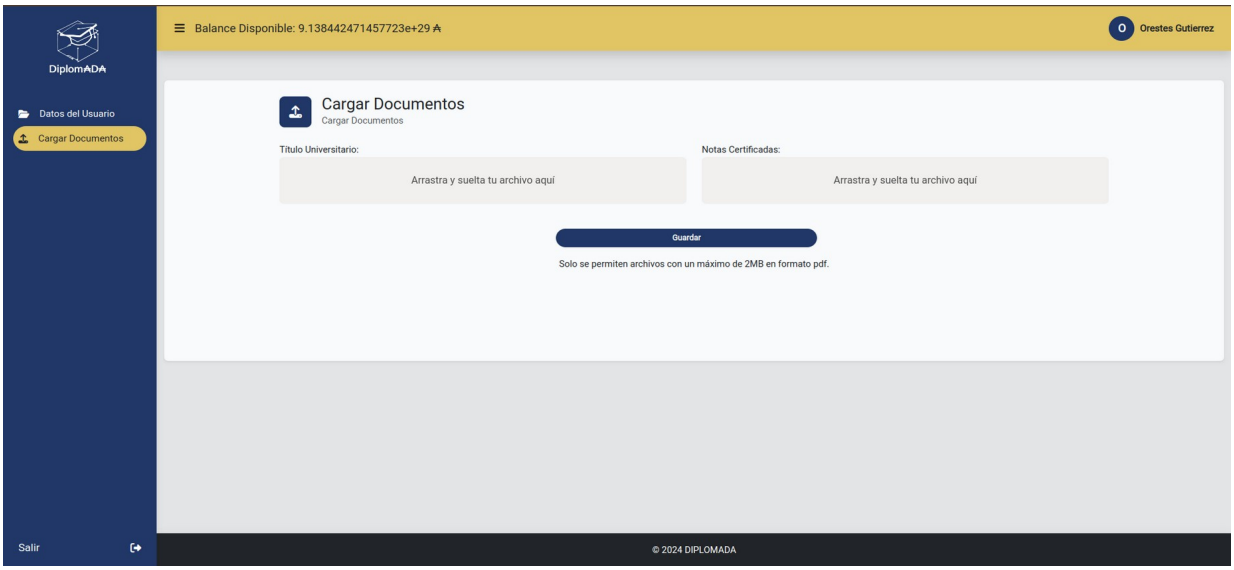


Control System
Study DiplomADA

When we register in the system, we enter with the applicant profile, to choose to enroll in one of the courses or diploma courses offered by the foundation in its academic training plans.

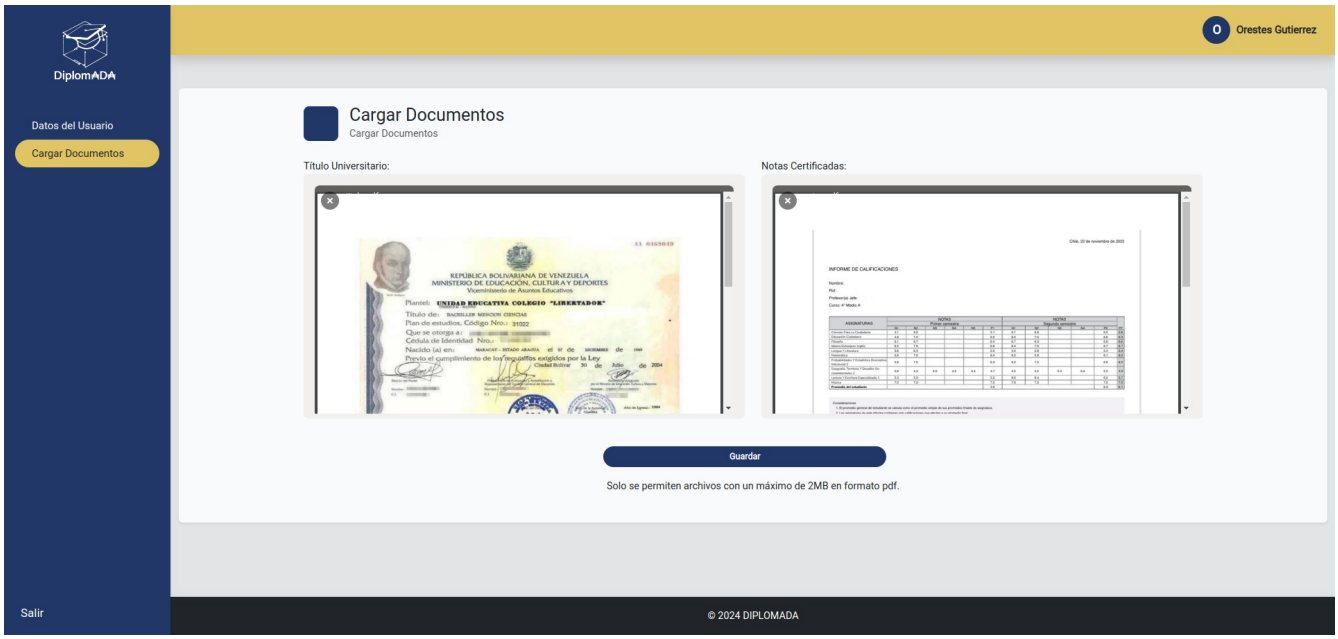
Once authenticated in the system, the first process to perform is to complete the registration and proceed to create the NFTs of the degree and the certified grades (a process that is mandatory to enroll in a diploma course). This process can be seen in the “Upload Documents” option.

Image No. 4



At this point, applicants upload the documents corresponding to their degrees and certified grades.

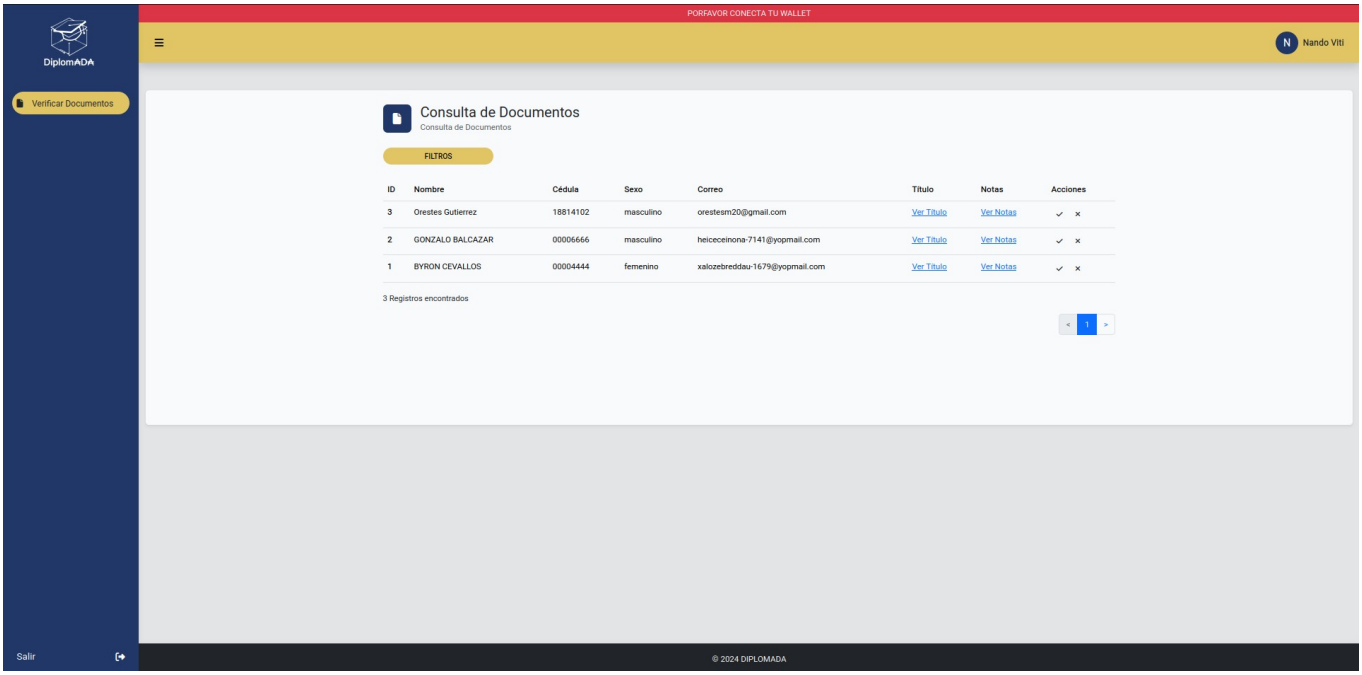
Image No. 5



At this point the files are uploaded to the system for verification, this process is performed by an analyst within the system, the verification is a mandatory process to determine the authenticity of the files before creating the NFTs and making the registration in the blockchain.

At the time of uploading the files, the analyst must log into the system so that he/she can perform the analysis and approve or reject the documents.

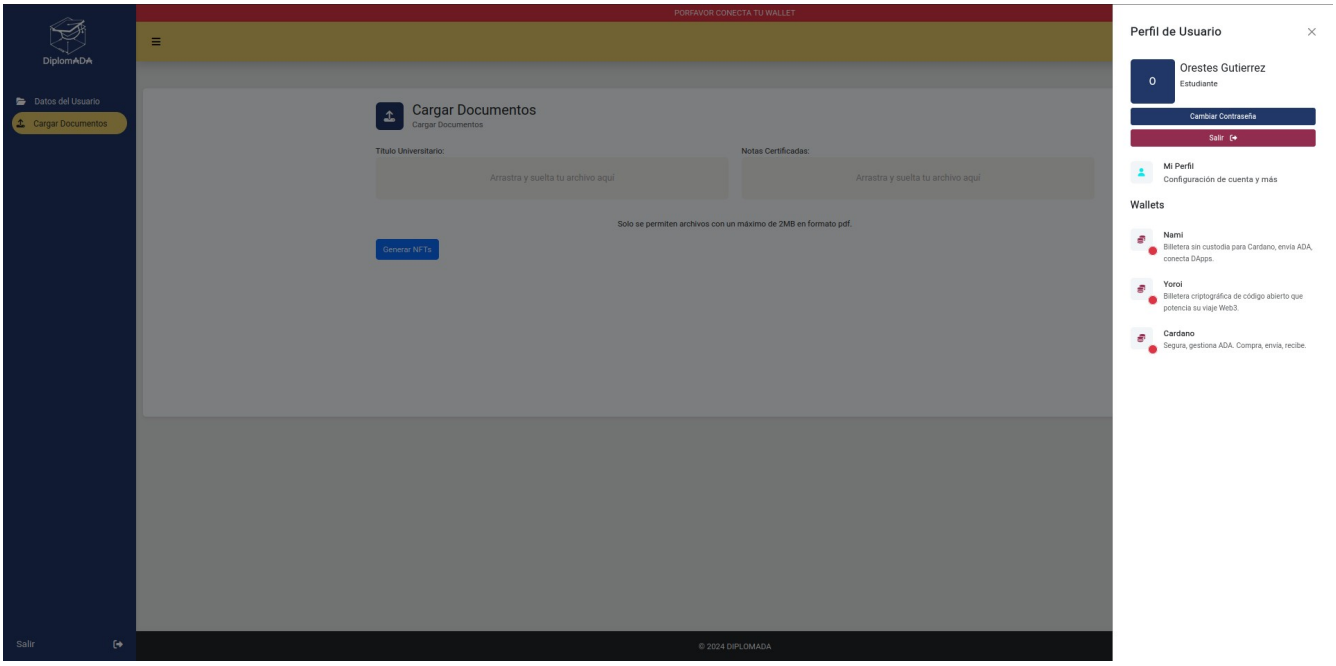
Image No. 6



At this point the analyst verifies the documents by clicking on the links shown in the list. Subsequently, the analyst indicates if the documents are legitimate by clicking on the check button, otherwise, they click on the “X” to reject the documents.

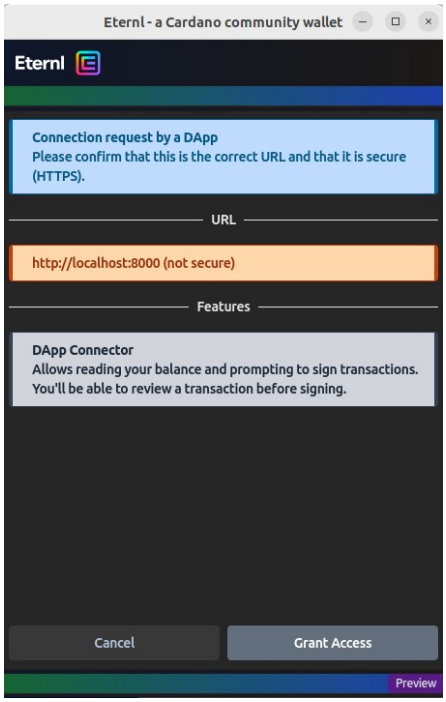
Once the documents have been verified and approved, the student can enter the system to create the NFTs of the degrees and grades, for this purpose he/she must connect the wallet with the application.

Image No. 7



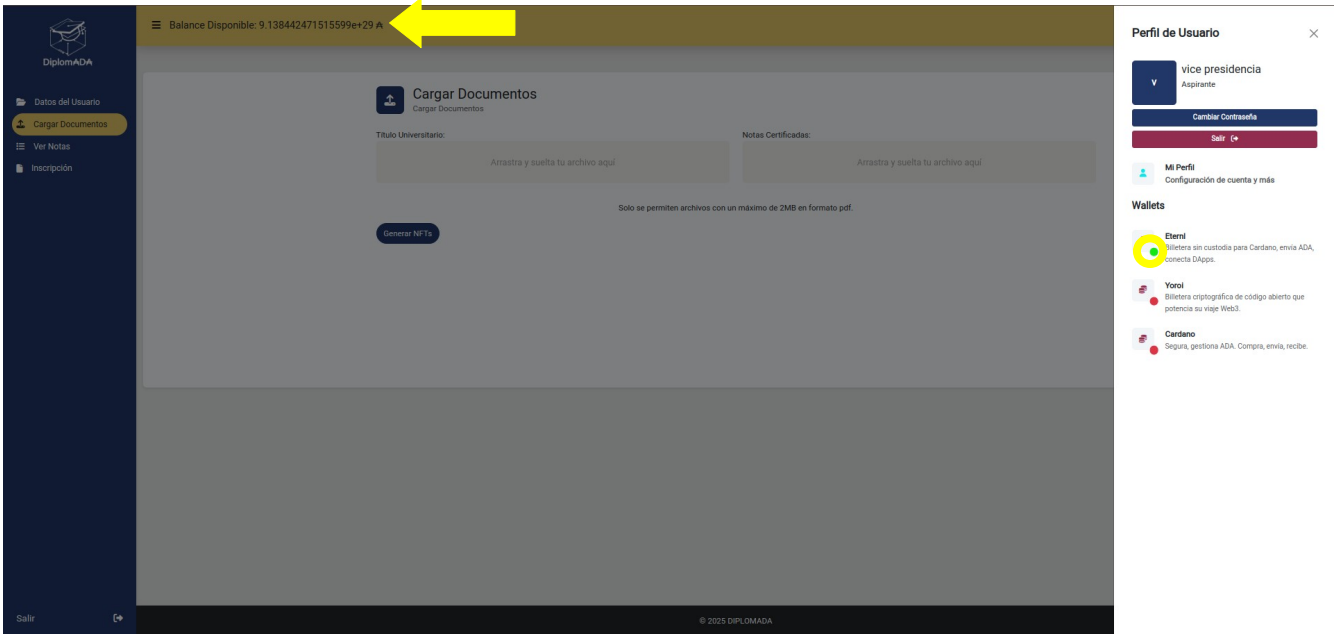
To do so, we deploy the menu on the right side of the screen and click on the “Eternl” option, this will link the web application with the wallet to be able to make transactions.

Image No. 8



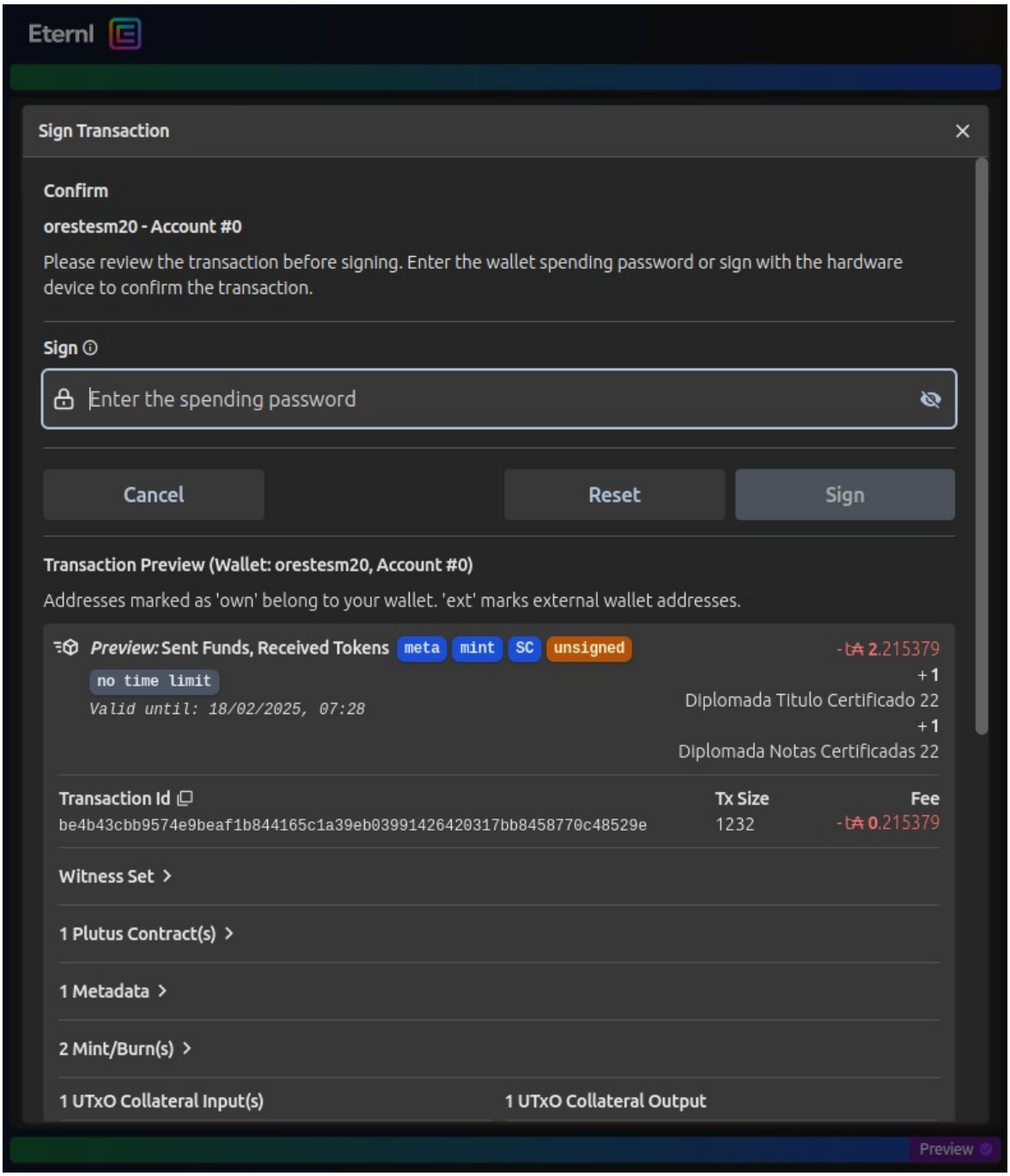
In this image we can see the request by the web application to connect to the wallet, this request must be accepted by the user who has previously authenticated with his username and password in the wallet through the browser plugin.

Image No. 9



By pressing this button, the application connects to the lucid API to make a request, in this case requesting the signature of a transaction, we can see this when the plugin displays the transaction request.

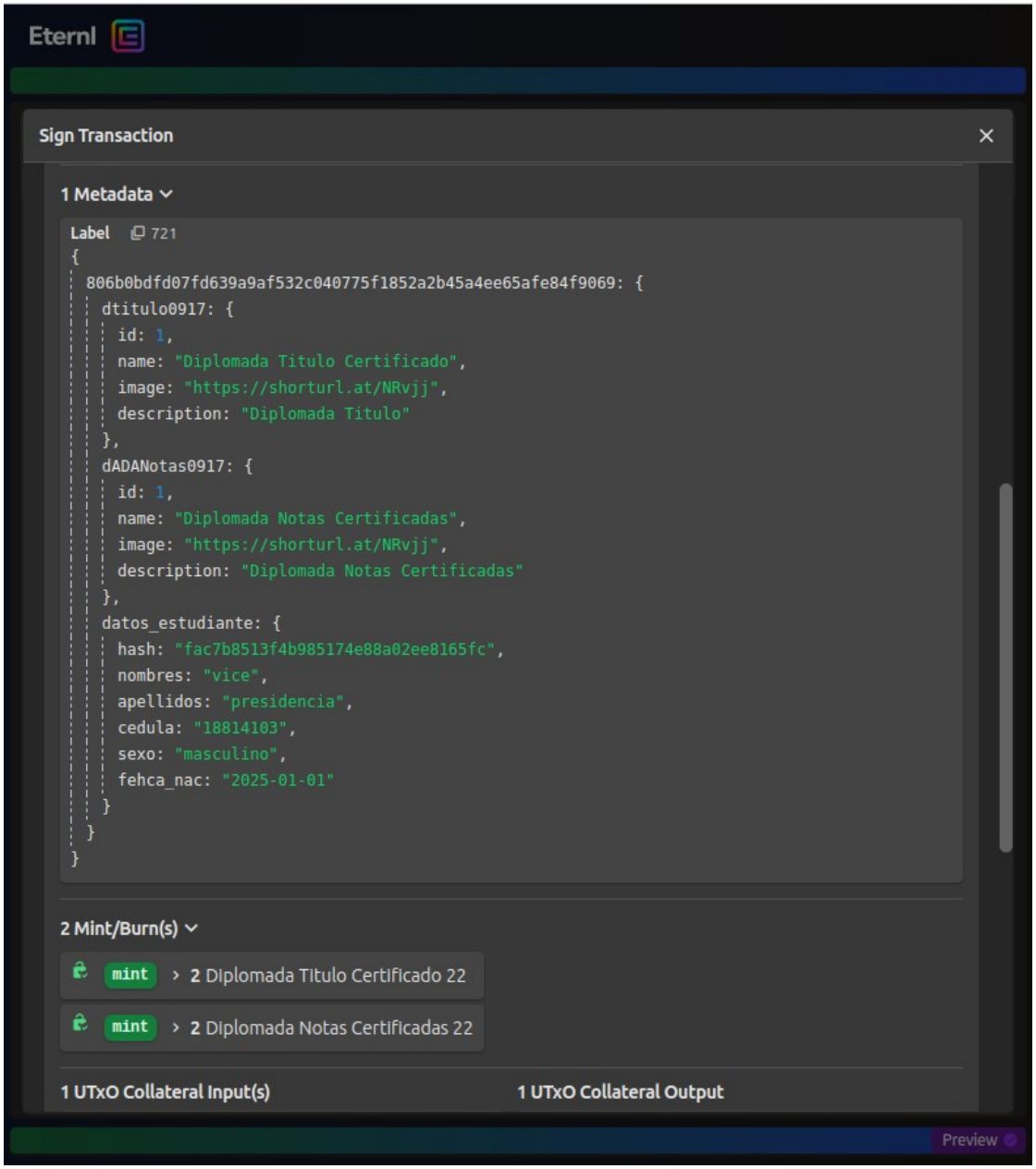
Image No. 10



At this point, the wallet requests the signature of the transaction, this is done by entering the password of the wallet user, to confirm that the transaction is legitimate and that it is being requested by the original owner of the wallet.

When confirming, we can see the process trace indicated by the plugins that shows us the transaction, we can see the NFTs created and the transaction performed with its respective hash.

Image No. 11



We can verify the transaction made by means of the block explorer that we will access by clicking on the link “Transation ID”, we leave the transaction id for verification: https://preview.cardanoscan.io/transaction/886661df5d0000be69db091e45a71c32b784fd11df623c7566cc9f6b14add923

Thanks to the block explorer we can verify the transaction made, this information is obtained by entering the metadata section, there we will have the available information of the NFTs created.

Image No. 12

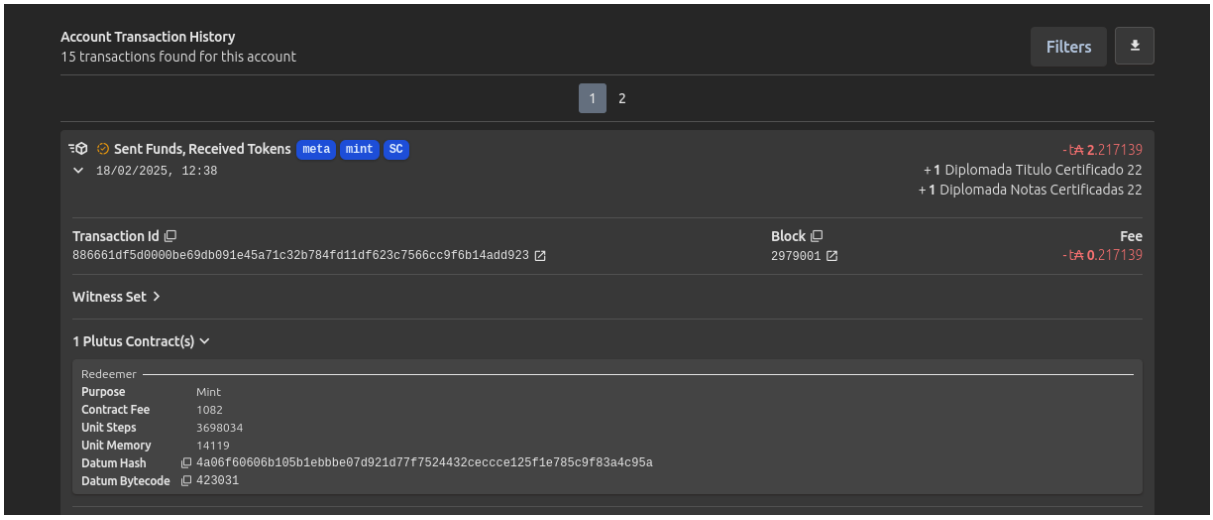


Image No. 13

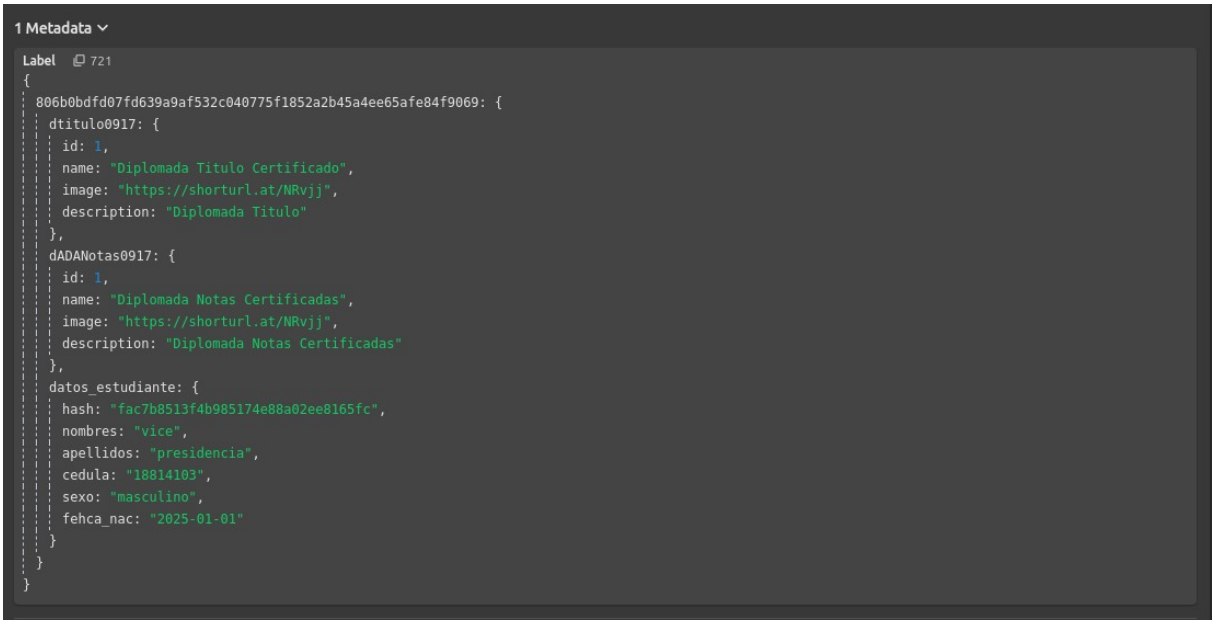
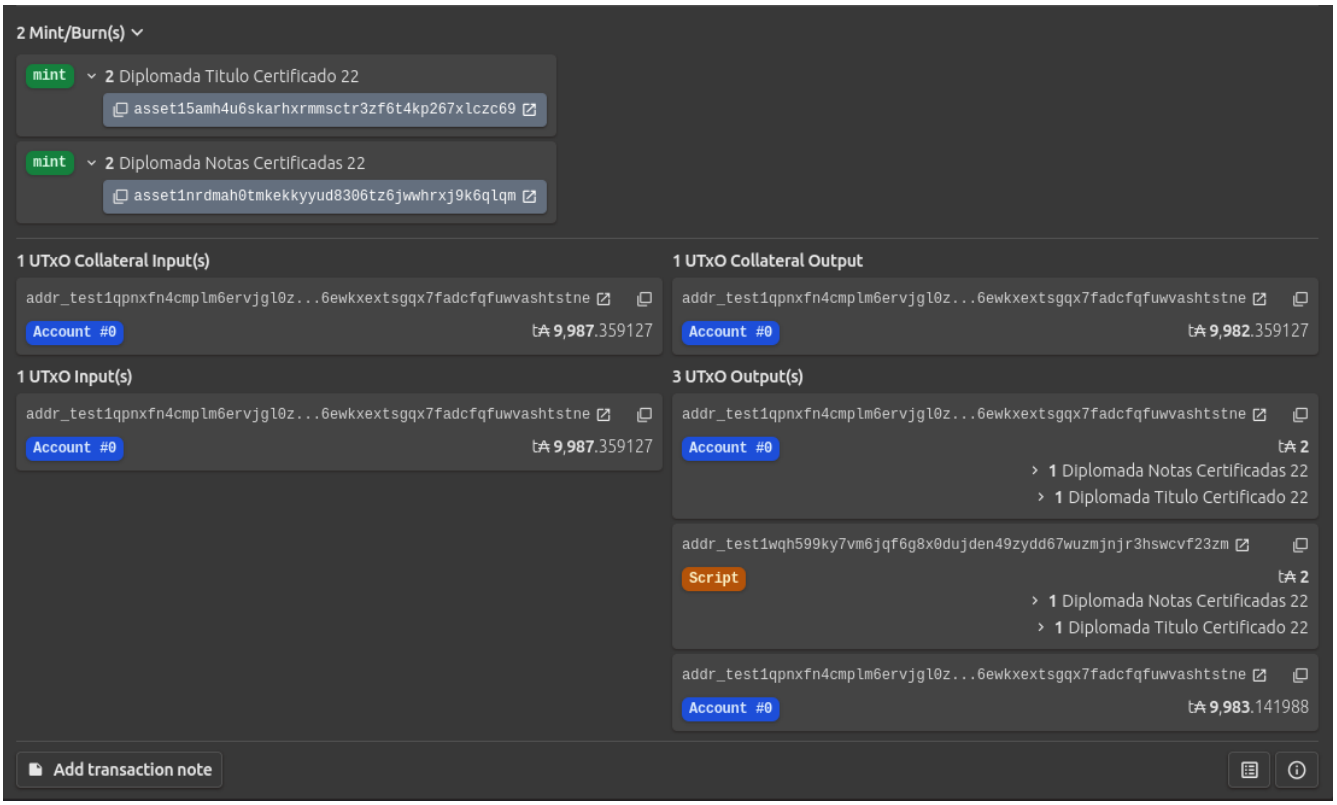
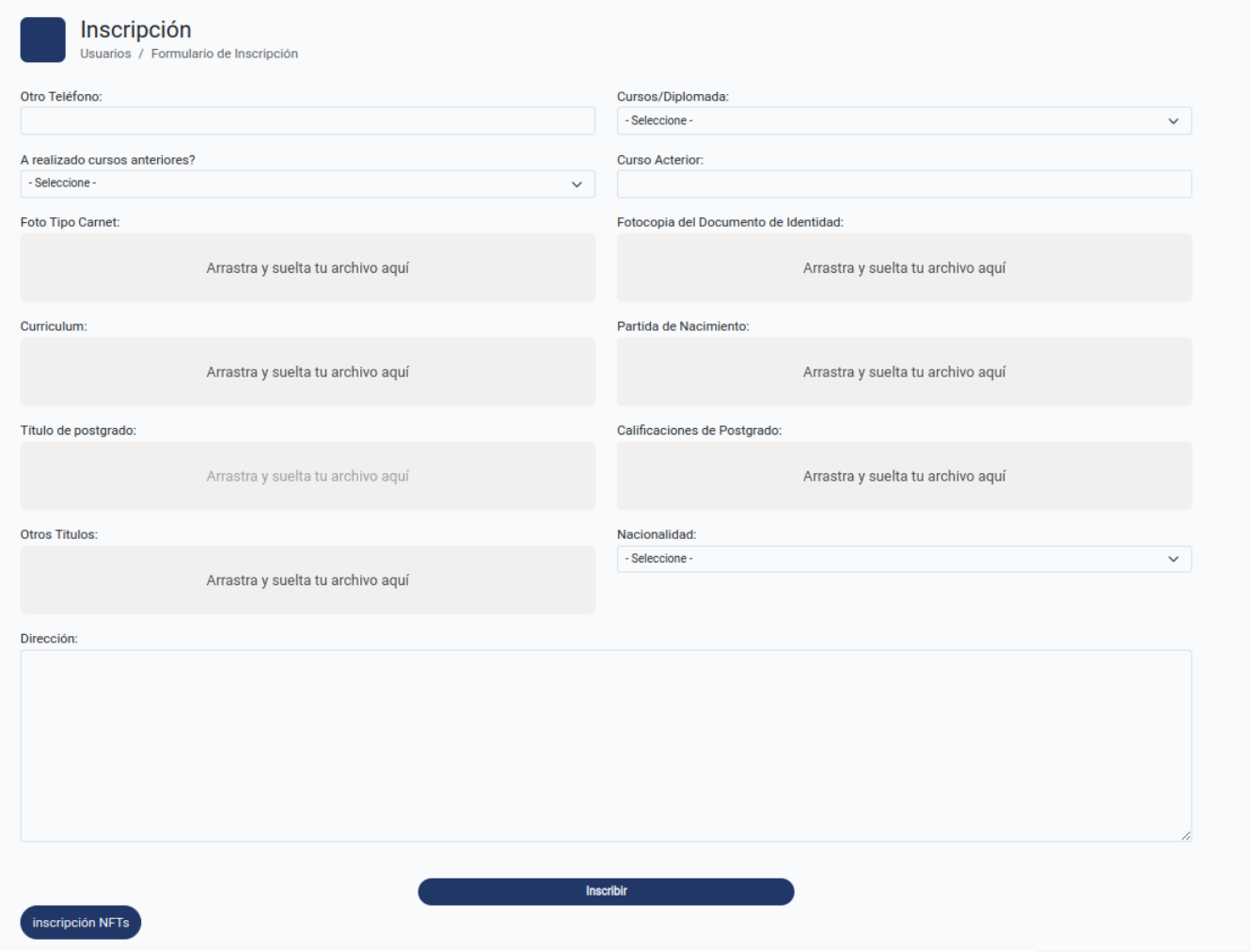


Image No. 14


2 Mint/Burn(s)
mint
2 Diplomada Titulo Certificado 22
asset15amh4u6skarhxrmmsctr3zf6t4kp267xlczc69
mint
2 Diplomada Notas Certificadas 22
asset1nrdmah0tmkekkyyud8306tz6jwwhrxj9k6qlqm
1 UTxO Collateral Input(s)
addr_test1qpnxfn4cmplm6ervjgl0z...6ewkxextsgqx7fadcfqfuwvashtstne
Account #0
₳ 9,987.359127
1 UTxO Input(s)
addr_test1qpnxfn4cmplm6ervjgl0z...6ewkxextsgqx7fadcfqfuwvashtstne
Account #0
₳ 9,987.359127
1 UTxO Collateral Output
addr_test1qpnxfn4cmplm6ervjgl0z...6ewkxextsgqx7fadcfqfuwvashtstne
Account #0
₳ 9,982.359127
3 UTxO Output(s)
addr_test1qpnxfn4cmplm6ervjgl0z...6ewkxextsgqx7fadcfqfuwvashtstne
Account #0
₳ 2
1 Diplomada Notas Certificadas 22
1 Diplomada Titulo Certificado 22
addr_test1wqh599ky7vm6jqf6g8x0dujden49zydd67wuzmjnjr3hswcvf23zm
Script
₳ 2
1 Diplomada Notas Certificadas 22
1 Diplomada Titulo Certificado 22
addr_test1qpnxfn4cmplm6ervjgl0z...6ewkxextsgqx7fadcfqfuwvashtstne
Account #0
₳ 9,983.141988
Add transaction note

To continue with the process, at this point the applicant can complete the registration process by entering the “Registration” function.

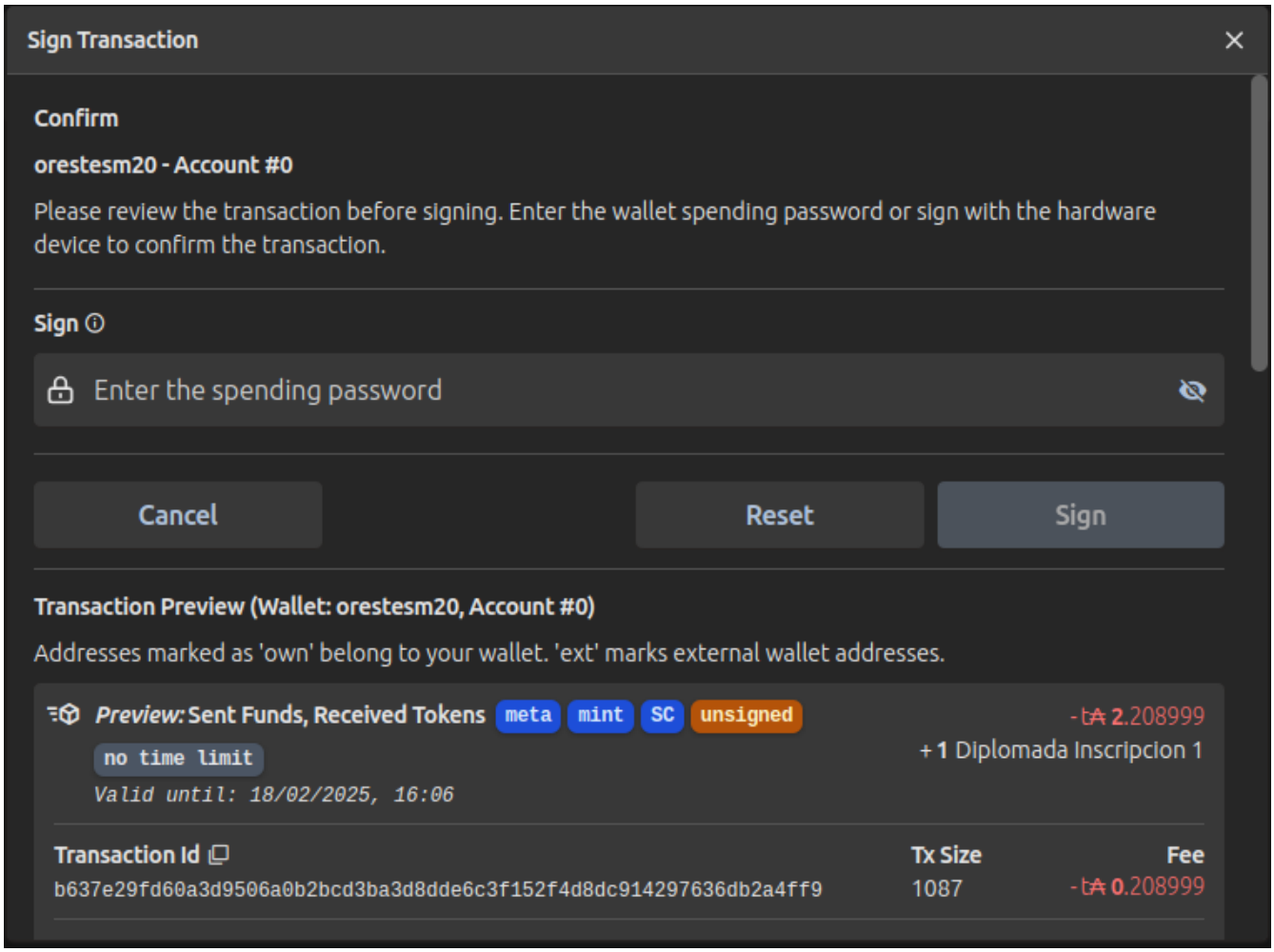
Image N°15



This is the form that allows the applicant to enroll in the study control system, to formalize their enrollment they must fill in each of these fields and then register their enrollment on the blockchain.

After registering the enrollment, the process is performed in a second step, the “NFT Enrollment” button performs the transaction request to register the enrollment on the blockchain.

Image N°16



In the block explorer we will be able to verify the metadata of the transaction made for the registration process.

Image N°17

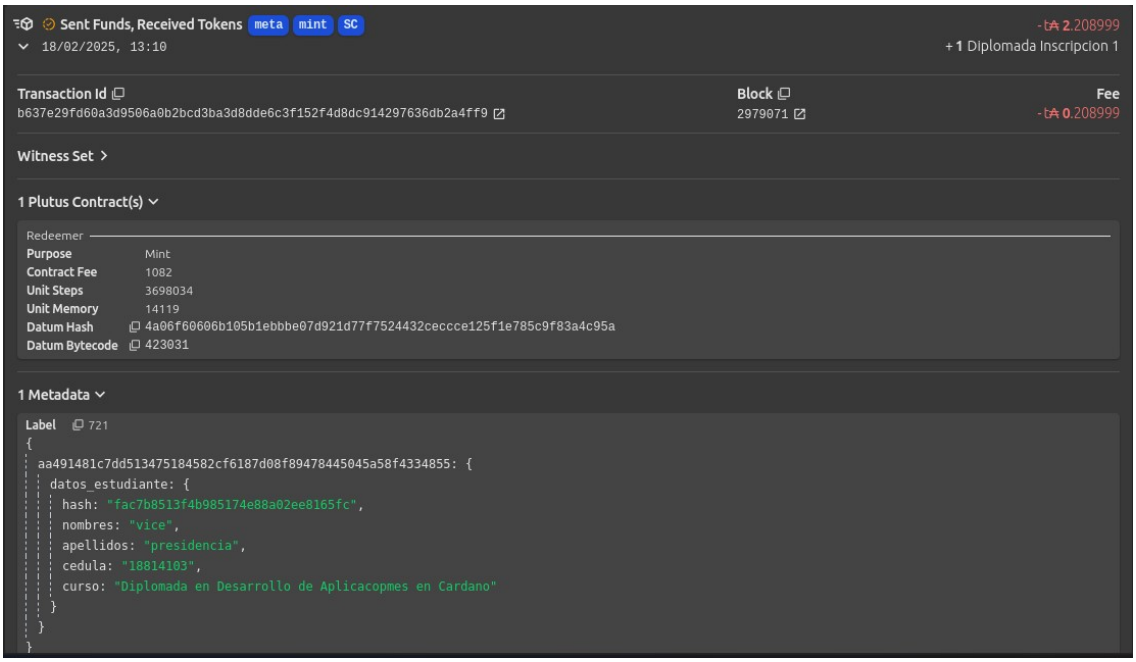
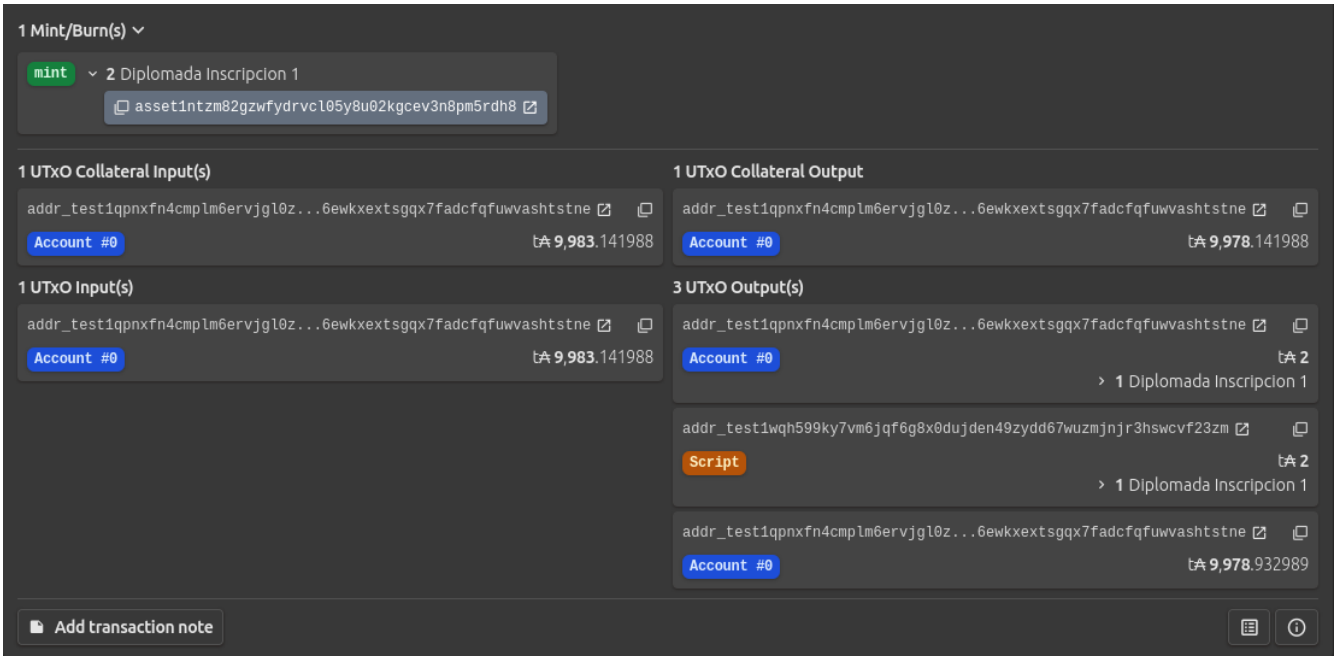
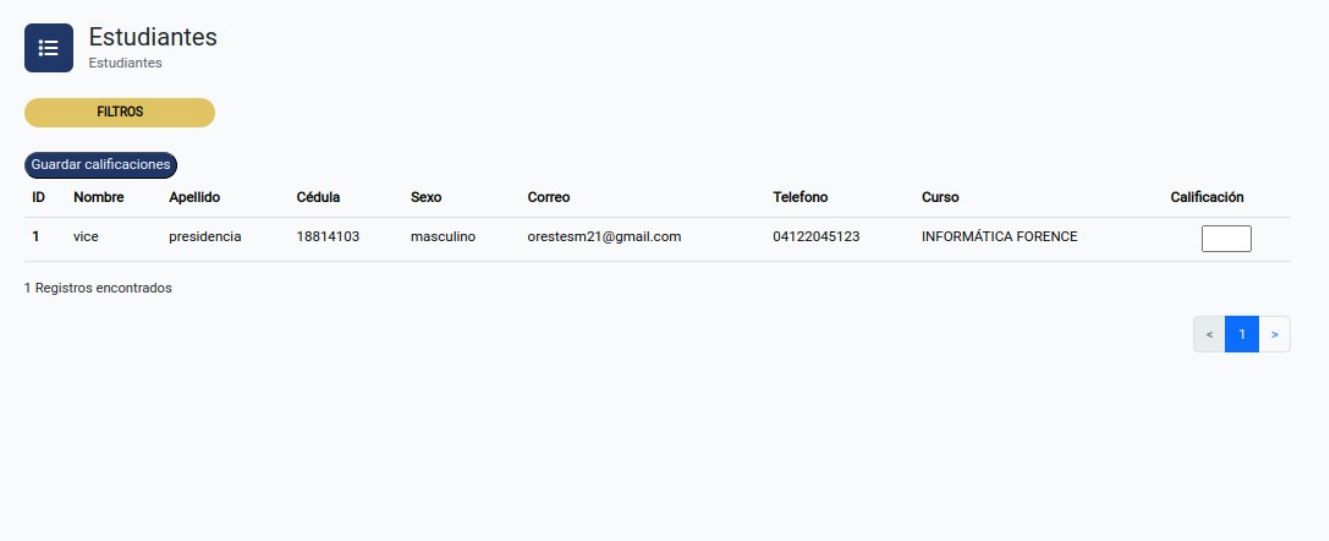


Image N°18



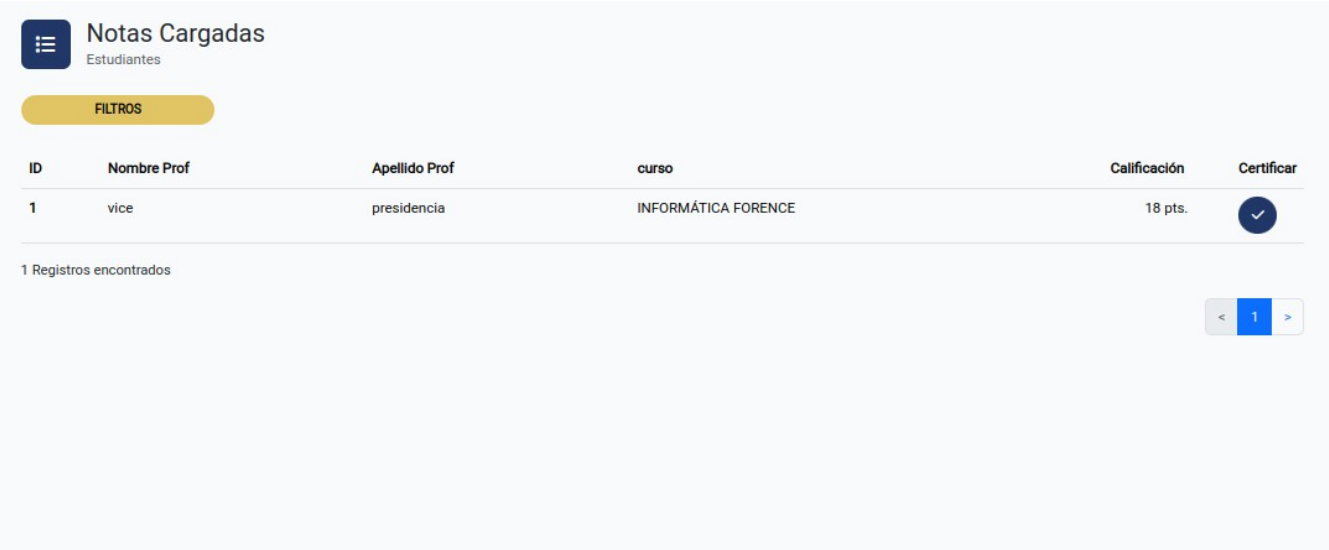
Once the enrollment process is completed, the last step of the system is the uploading of grades, at this point the professor assigns the final grade in the system, this procedure is done once the student has completed the entire academic and administrative process.

Image N°19



At this point the student's grade is uploaded, upon registration the student has the option to certify his grades to make the record in the blockchain. This can be seen in the following interface.

Image N°20



Pressing the blue button with the “Qualify” check activates the registration request on the blockchain, prompting the user to sign the transaction.

Image N°21

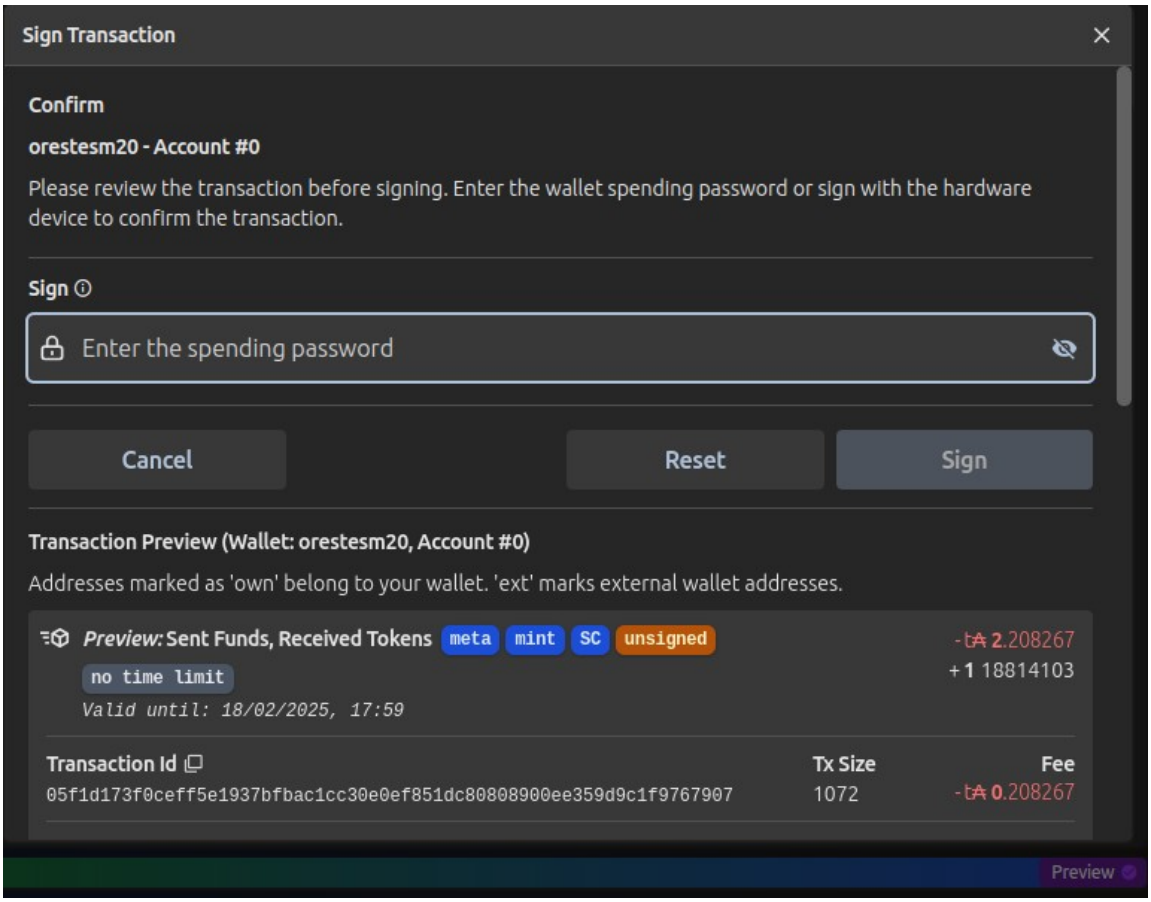


Image N°22

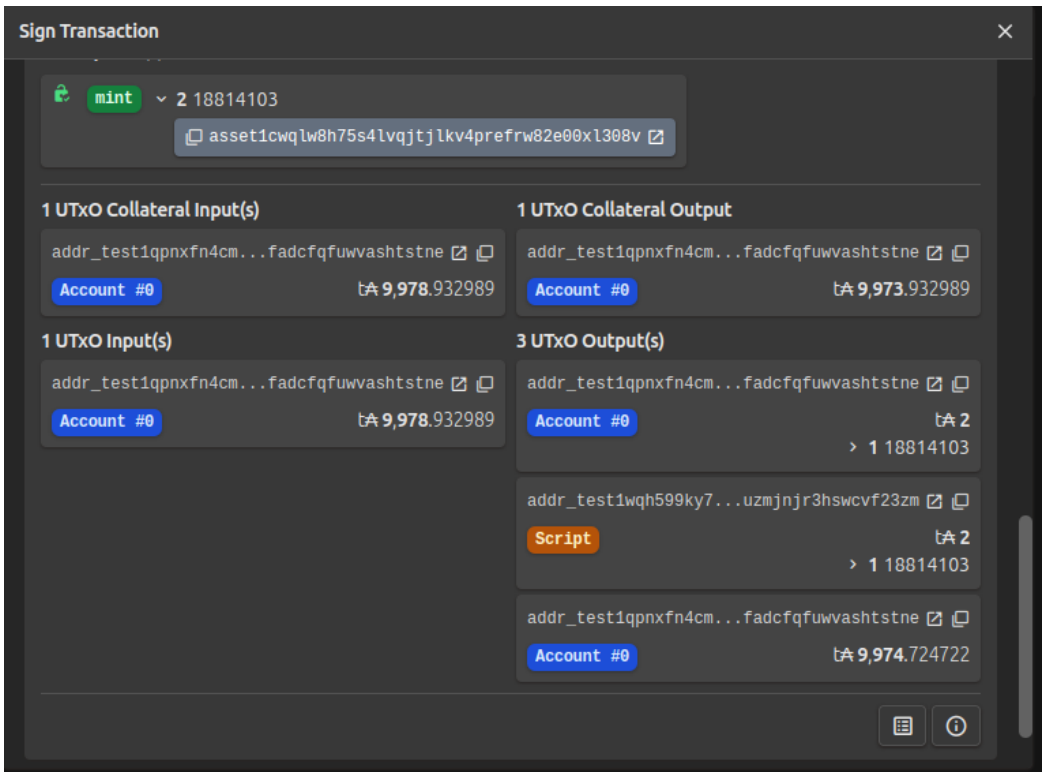
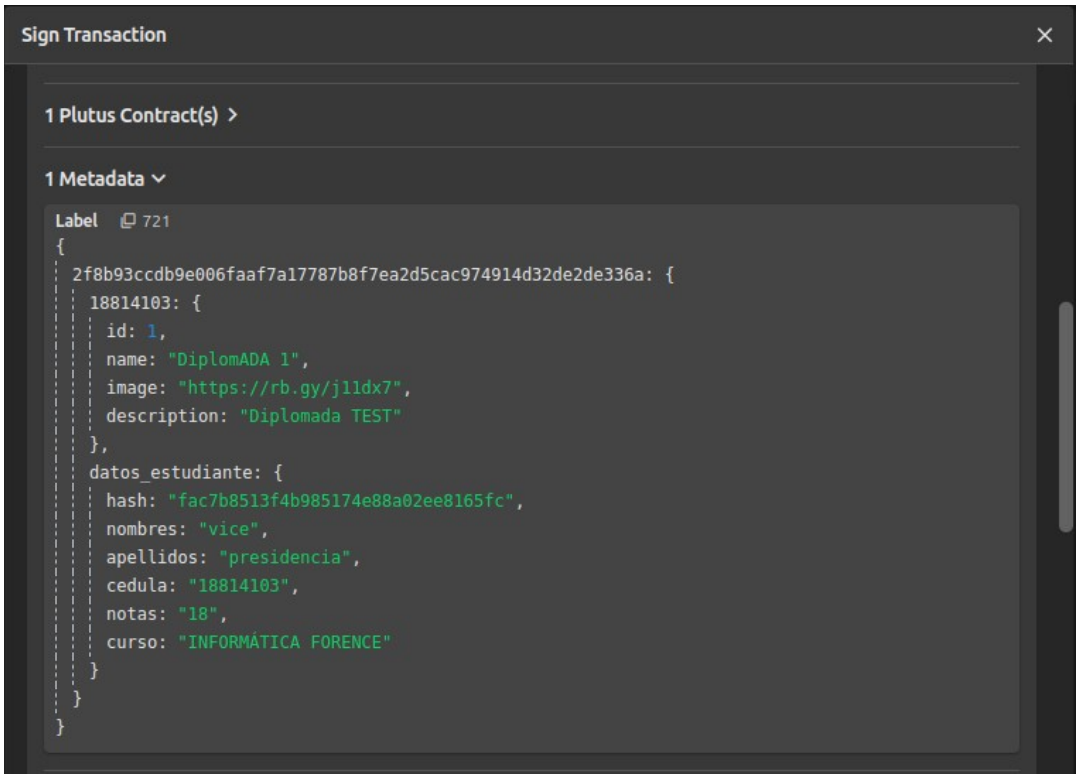


Image N°23



When the transaction is completed, you can verify in the block explorer the transaction made by the student, this certifies and closes the process completely completing the cycle of the student enrollment and continuation process. This can be verified in the Etrnal explorer.

Imagen N°24

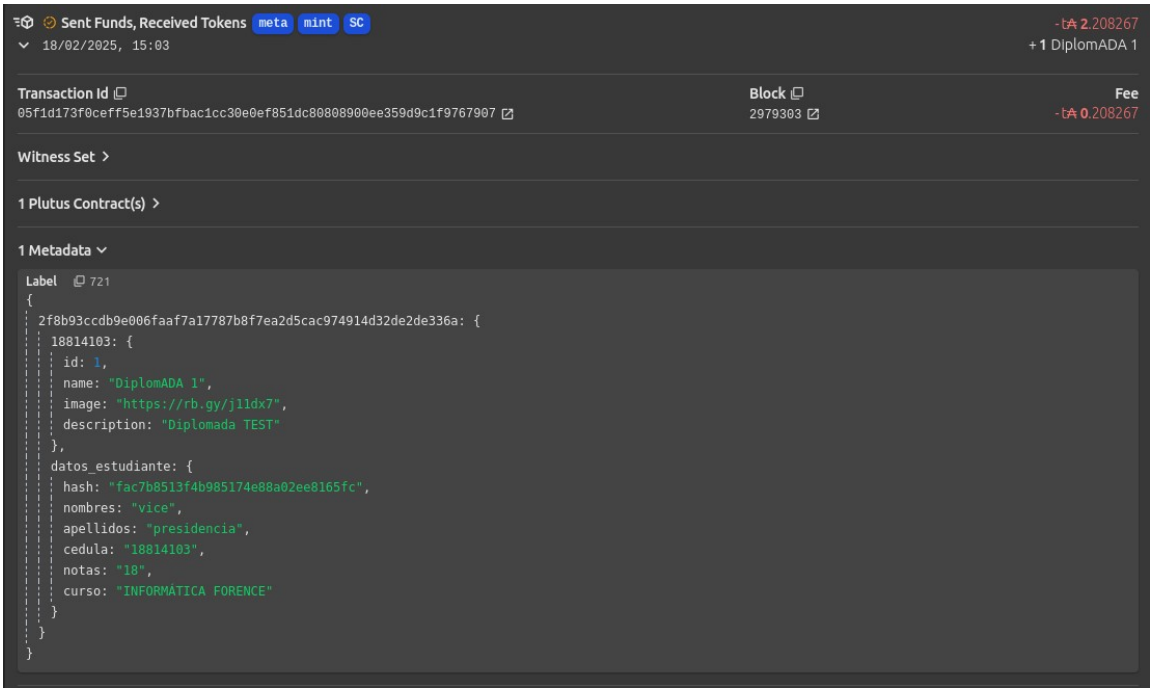
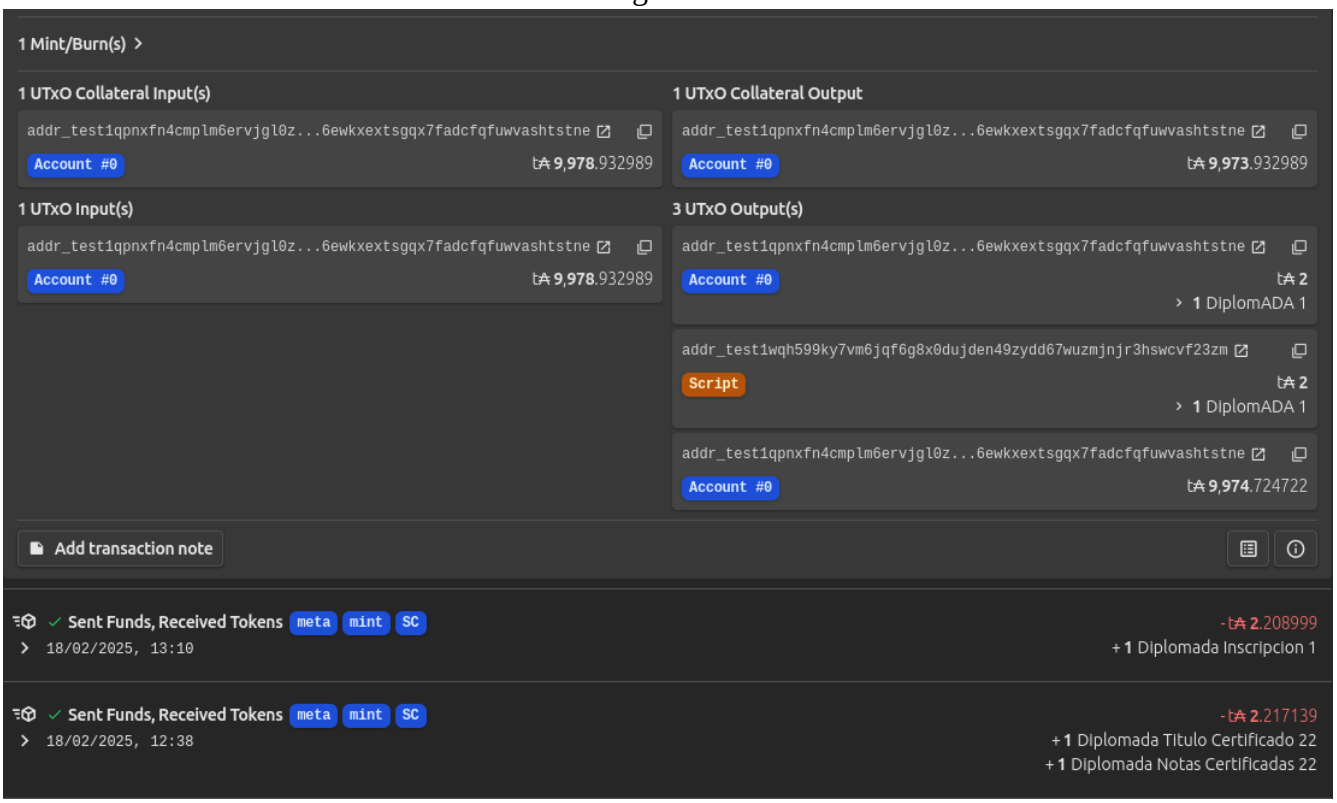


Imagen N°25



With this we can conclude that the process of interaction between the study control system DiplomAda and the blockchain on the Cardano platform is not only possible, but it is a tool that solves an administrative and often bureaucratic problem that is the certification and validation of academic information.

We have effectively proven that structured applications with conventional use cases can be decentralized to provide greater fidelity and confidence in maintaining data integrity.