# VC Pattern Spanish issuer - Usage guidelines

# Introduction

As part of the Studying Abroad Use Case 3 and its interaction pattern through Verifiable Credentials, the Spanish Data Owner has been adapted to play the role of Issuer within the interaction pattern.

This guide briefly shows how to navigate through the different screens, and it also describes the data flow among the citizen log in, the agent connection establishment, and the evidence exchange.

# Glossary

Issuer: Data Provider (DO) who provides data in the form of Verifiable Presentation (VP).

**Agent**: Entity who enables trusted communication and data exchange based on interoperable distributed ledger technologies (DLTs) and peer-to-peer (P2P) interactions.

**Verifiable presentation (VP)**: Tamper-evident presentation encoded in such a way that authorship of the data can be trusted after a process of cryptographic verification.

**Verifiable credentials (VC)**: Tamper-evident credential that has authorship that can be cryptographically verified.

# Authentication

The Spanish Data Owner is available on <u>https://pre-as4gw-dt-de4a.redsara.es/de4a-pid-owner/vc</u>, where you can directly access to the VC issuer. Before starting the process, a citizen authentication is needed, so, after the first access the user will be redirected to the national authentication platform, where it is possible to select an authentication method via eIDAS node:



Figure 1: Identification method selection

Select the country and log in to the system. If a foreign country is selected the platform will redirect the user to his national eIDAS node.

		🖉 Español 💌
Ident	ificación europea co	n elD extranjero
Un proveedor de servicios español	ha solicitado que se identifique usando un eID de otro país f	uera de España.
Por favor, seleccione el país desde	donde se emitió su eID.	
	Portugal	•
	Login	
	Cancelar	
No encuentro el país de mi elE	)	
Si el país que emitió su elD no est	à disponible puede que todavía no haya sido notificado. Si	n embargo, ésto no significa que no esté disponible en el futuro.
consult mas information sobre las	nomeaciones bajo el Regiamento eluxo.	

Figure 2: Country selection

Once the authentication is successful the user will be redirected to the main page of the VC pattern:



Figure 3: Main page

# Connection

Once the citizen is authenticated, the next step would be establishing a connection between the issuer (DO) and the student agent (e.g., mobile app). To do so, some actions must be performed:

- 1. Generate the invitation (issuer)
- 2. Scan the invitation (mobile app)
- 3. Accept the invitation (mobile app)
- 4. Check the connection (issuer)

## Generate invitation

Click on the corresponding button [image below: 'Generate new invitation']:



Figure 4: Generate invitation button

Then a new QR code will be generated from the invitation:

×

Figure 5: New invitation generated

# Scan de invitation

To establish the connection between agents, the student must scan the QR code with the SSI mobile application.



Figure 6: QR code scanning

The app will recognize the QR code and register the new invitation showing it at the connections tab:



Figure 7: Invitation registered

# Accept the invitation

The invitation acceptation will trigger the corresponding notification and messages between the agents to complete the connection process. The student must tap on the new connection element and then accept the invitation:

Connection Details	Connections
SGAD-AGENT	SGAD-AGENT 23/12/2021 13:18 er756aa-d566-t776 ed59-713361 e556a1
My DID Their DID	SGAD-AGENT 23/12/2021 13:18 45404029 2eelf 4463 493ba eel6512495035
3/12/2021 13:18	SGAD-AGENT 23/12/2021 12:31 07ettc15-5296-4620 u4ic-4 0905237 auto-60
	MIZSSIovenia 21/12/2021 14:14 1dext373 ddxe-4ed octri 57.21639ar
	MIZSSIovenia 21/12/2021 14:13 alc54tcb 5attle 47b1 1853d 6etbl2cotuaate
VIEW DETAILS ACCEPT INVITATION	MIZSSIovenia 21/12/2021 13:44 aSidenbu 1309-4753-8804-7850664embre
Sonnections	Connections
Figure 9: Accept invitation	Figure 8: Connection establis

### Check the connection

At this point, the connection has been established. The user can check it by clicking "Verify connection" at the issuer side:

	Generate again Cancel
Opon receiving the invitation in your agent, ac	cept it and click on the following button to check the status of the connection and accept it again" Verify connection

Figure 10: Verify connection

If everything went well, the user would see the following screen with connection successfully established:

CONNECTED! ConnectionID: 61a32481-e7fd-4c80-b8b	o7-c9a9e56ca9e5
The connection has been su	ccessfully established. You can now start requesting evidence
Select the evidence type to be exchang	sent to the connected agent. Then, click on "Send offer" to send an ge offer to the agent (e.g. your mobile phone)
	Select one 🗸
	Send offer
<ul> <li>Click on pending action</li> </ul>	ns to check if you have any request or incoming notification pending to process ending actions Restart connection

Figure 11: Connected screen

# Evidence exchange

Once the connection is established, the user is able to retrieve evidence (Education Diploma) from the data provider. As part of the verifiable presentation, the process requires some actions:

- 1. Send offer (issuer)
- 2. Accept offer (mobile app)
- 3. Accept credential request (issuer)
- 4. Register evidence (mobile app)

### Send offer

In the very beginning of the verifiable credentials exchange is the offer sending. But before that the user must select the evidence to be exchanged.

CONNECTED! ConnectionID: c8e1fa60-76b0-4892-a3f8-3a009b09fa55
<b>The connection has been successfully established. You can now start requesting evidence</b> Select the evidence type to be sent to the connected agent. Then, click on "Send offer" to send an exchange offer to the agent (e.g. your mobile phone)
Higher Education Diploma           Jaume I University
HIGHER EDUCATION DIPLOMA
Degree in Computer Science Engineering (2001 Programme of Study)
Send offer
<ul> <li>Click on pending actions to check if you have any request or incoming notification pending to process</li> <li>Pending actions</li> <li>Restart connection</li> </ul>

Figure 12: Evidence selection

After selecting the evidence, the user can start the VC exchange process by clicking the "Send offer" button. Then, an information message will be shown:

Success     VC Offer sent		×
CONNECTED! ConnectionID: 09a501f8-6e92-4200-a9	04-0edeab5a556c	
<b>The connection has been so</b> Select the evidence type to be exchan	uccessfully established. You can now start requesting evidence esent to the connected agent. Then, click on "Send offer" to send an ge offer to the agent (e.g. your mobile phone)	
	Select one	
	Figure 13: Offer sent	

# Accept offer

The student must accept the VC offer at the mobile app. Then the actions to be performed will look as the images below:



Figure 14: Offer acceptance

## Accept credential request

Once the offer has been accepted, a notification based on the DID credentials is internally unleashed. At this point the user must check the pending actions at the issuer side:



Figure 15: Issuer pending actions

CONNECTED! ConnectionID: c8e1fa60-76	00-4892-a3f8-3a009b09fa55	
The connection ha	s been successfully established. You c	an now start requesting evidence
Select the evidence t	ype to be sent to the connected agent. T exchange offer to the agent (e.g. your i	Then, click on "Send offer" to send an mobile phone)
	Confirmation	×
	Are you sure you want to accept the evider	nce exchange?
	Cancel Ok	A
✔ Click on p	bending actions to check if you have any request or incor Pending actions Restart cor	nin notification pending to process
Pending actions		
#	ТҮРЕ	
1	request-credential	Accept 🕄

Figure 16: Accept the evidence Exchange

The previous action will effectively send the evidence to make it available to the student agent (mobile app).

# Register credential (evidence)

The credential is already issued. This means that it will be available at the notification tab:



Figure 17: Credential issued notification

As any other notification, the user must accept it. To do so, the user must tap this item:



Figure 18: Accept credential

### **Register credential**

At this point the credential exchange is completed. The student can register the credential (evidence) on his "wallet" where it will be stored for future reference. To do so the user can enter the Credentials tab and see each registered diploma.



Figure 19: Register credential