



# eDiplomas

Authenticity validation of diplomas issued by the Greek Higher Education Institutes (HEIs)

**OXI1: OPENX & INTEROPERABILITY**

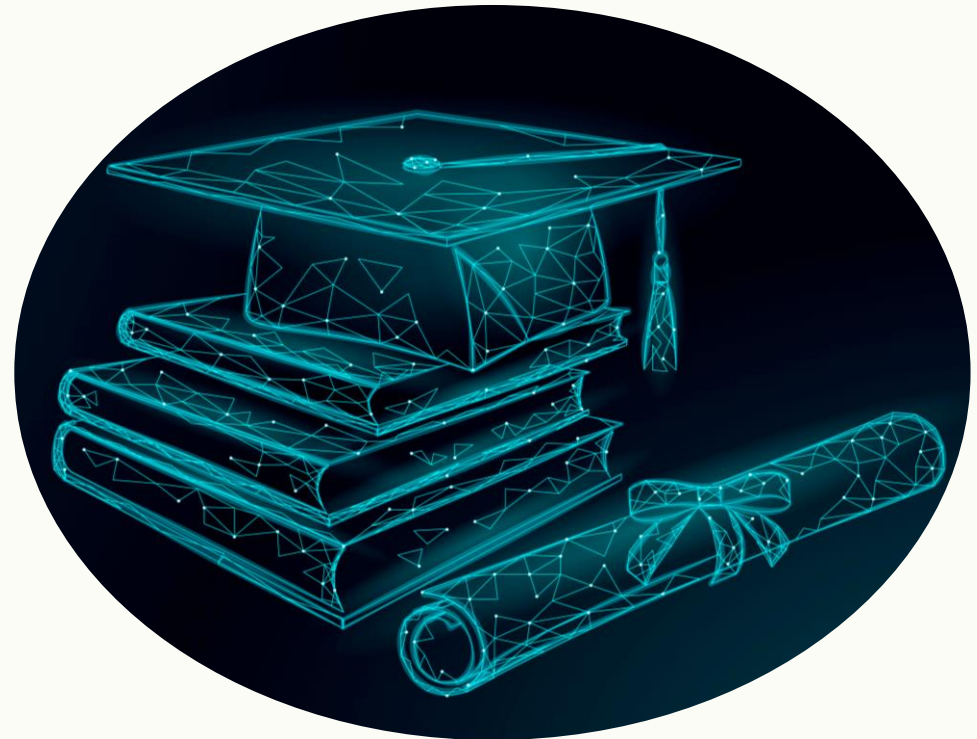
Nikos Voutsinas

## eDIPLOMAS AT A GLANCE

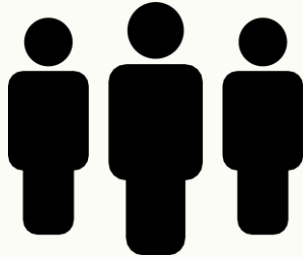
eDiplomas is an online platform that implements a mediator between the diplomas holder, the issuing institution and the authenticity validator (public or private entity)

### Key Traits:

- ✓ It holds **no diplomas data**
- ✓ It incorporates signing and encryption mechanisms to offer **enhanced privacy**
- ✓ It follows a **data centric design** versus a document centric design



# KEY STAKEHOLDERS



## THE CITIZEN

Diploma holder and  
resource owner



## THE HEI

Awarding legal entity  
and primary  
authoritative source

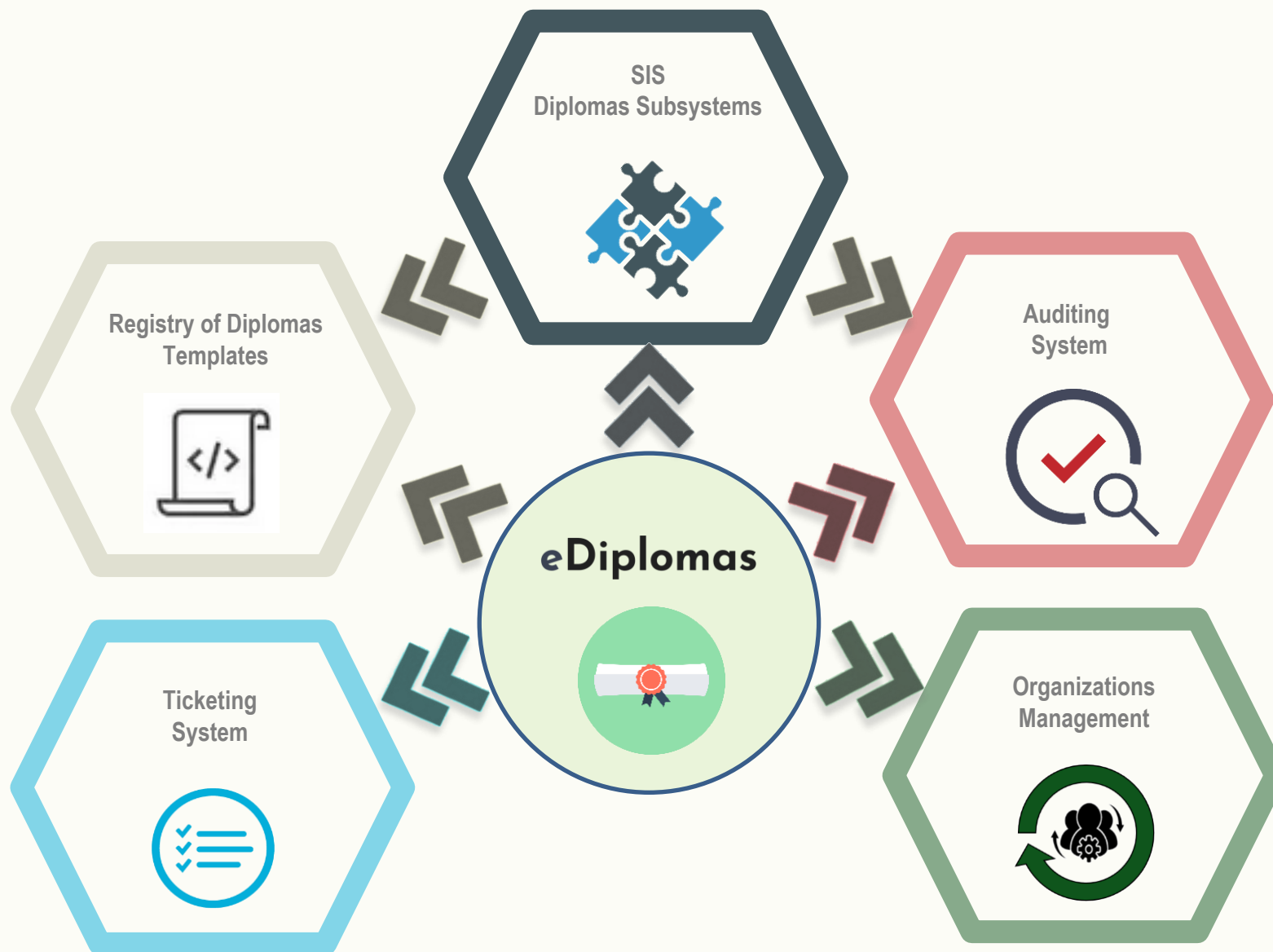


## THE ORGANIZATION

Registered organizations  
that are entitled to act as  
validator upon approval

# THE ECOSYSTEM

It's not just eDiplomas



# eDIPLOMAS GOALS (2020)

*In product lifecycle terms eDiplomas has passed the phase of introduction and is now in growth phase*

- Expand the deployment across all 25 Greek HEIs, and go beyond by supporting all educational levels
- Complete the development of the peripheral subsystems (Registry of Diplomas Templates, Auditing, Organizations Management)
- Synergize with corresponding initiatives across Europe (EBSI, EMREX, etc.)
- Release the platform as Open Source Software



# DESIGN CONSIDERATIONS

1.



AuthN

2.



AuthZ

3.



Privacy

4.



Data Schemas

# 1.

## AUTHENTICATION



Leverages the national authentication service via a corresponding plugin

1.

Does not depend on alumni institutional accounts

2.

Requires a linkage identifier between the National Authn Provider and the HEIs

3.

Uses institutional authentication only for the helpdesk subsystem

## 2.

# AUTHORIZATION



eDiplomas provides flexible ways to authorize access to the different subsets of the diploma information.

Typically access requires prior holder's consent.

1.

### Access Control

Access is accomplished via OAUTH2 Authorization Code Grant method and JWT tokens

2.

### Diploma Scopes

Diplomas are made up of several scopes (subsets of information)

Access is granted to specific scopes

3.

### Revocation

Access is granted for a limited lifetime

Holder can revoke access at any time



# 3.

## PRIVACY (1/2)



The request to HEI:

1.

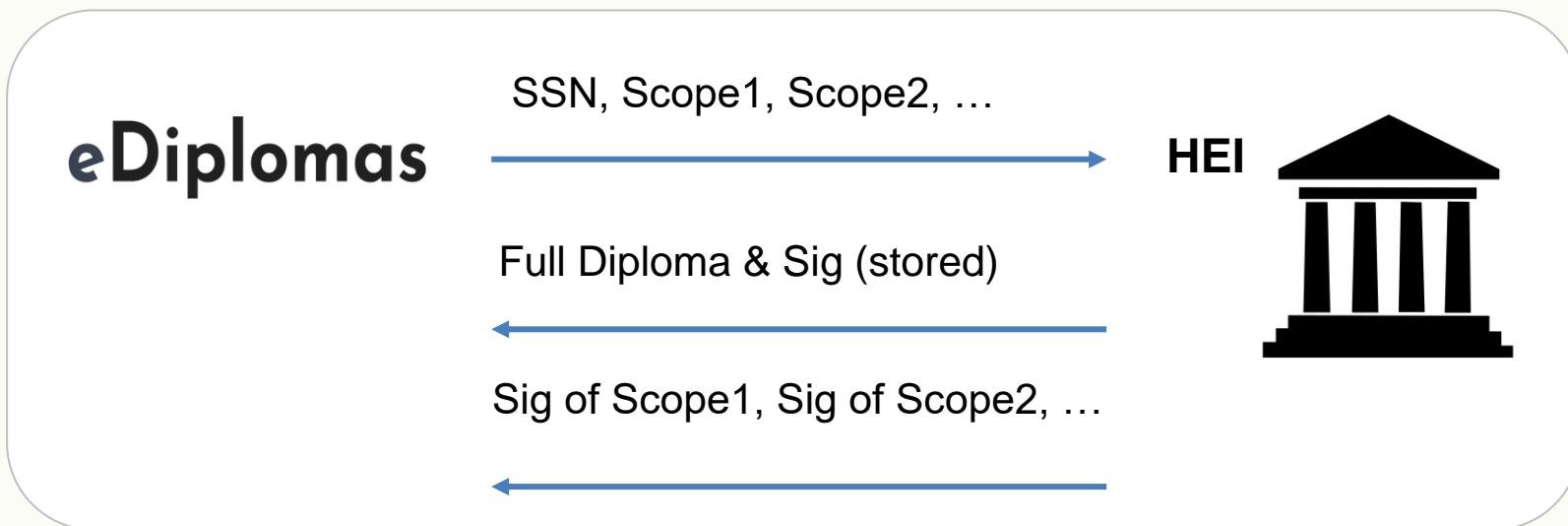
eDiplomas requests specific fields for the diplomas mapped to a specific SSN

2.

HEIs respond with the matching diplomas, their signatures and the signature for each requested scope

3.

eDiplomas verifies the persistent signature of the diploma



# 3.

## PRIVACY (2/2)



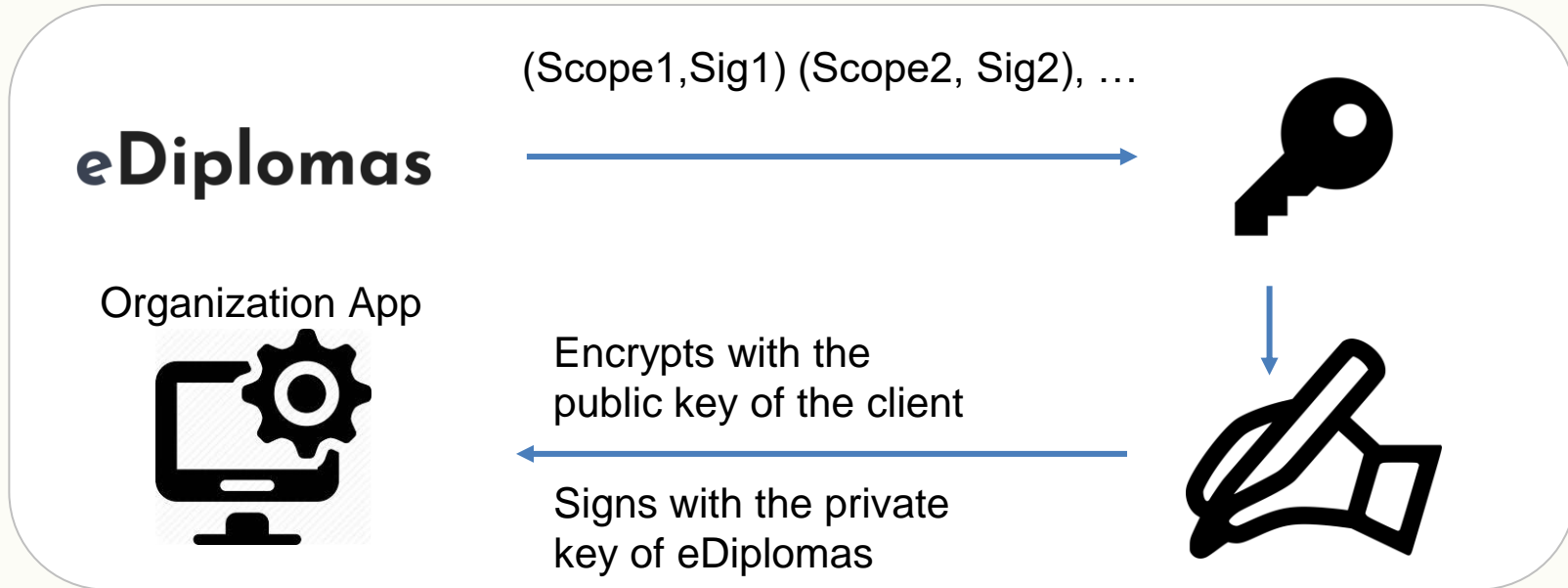
The response to the Organization:

4.

eDiplomas verifies the signature of each scope requested

5.

eDiplomas encrypts and signs the requested scopes and send the response to the client



# 4.

## DATA SCHEMAS (1/2)



Participating HEIs need to comply with certain data schemas in order for the consuming parties to be able to interpret the data accurately

1.

Diploma templates are decoupled from holder's specific data

Diploma templates are made available as Open Data on a public registry

2.

Extensive use of Reference Data and Registries

Extends the digital diploma with the ISCED codes for educational fields and levels

3.

eDiplomas follows a data centric approach.

The artistic layout of the paper based diploma is out of scope

## 4.

## DATA SCHEMAS (2/2)



## eDiplomas

## Issuer scope

Issuer Institution	University of Athens
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Issuer Department	Department of Informatics
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Level	Level scope	Bachelor or equivalent
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Fields of Education	Fields scope	Field1, Field2
---------------------	--------------	----------------

Title	Title scope	Diploma in Computer Science
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## PII scope

Lastname	Doe
----------	-----

Firstname	John
-----------	------

## Grade scope

Grade (Text)	Very Good
--------------	-----------

Grade (Value)	7.89
---------------	------

## Date scope

Date Issued	17/12/2003
-------------	------------

Valid From	11/10/2003
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Template Registry



HEI Data Sources

## THREE MODES OF OPERATION (1/3)

### **THE CLIENT SIDE IS PROVIDED BY THE ORGANIZATION**

*Registered organizations implement their own OAUTH2 Client to interface with eDiplomas and retrieve diploma information*

#### FLOW:

1. The flow starts from the organization's web page. Organization requests access to citizen's diploma and for that reason redirects the user to the eDiplomas authorization server.
2. Upon user consent the organization receives a token that allows the retrieval of the authorized diploma information

*Note! User experience and handling of data depend on the organization's implementation*

# THE CLIENT SIDE IS PROVIDED BY THE ORGANIZATION

## Authorization

Client **Organisation 1** wishes to gain access to information regarding your degrees.

By continuing, you grant the client **Organisation 1** access to the following:

-  **Dates** Dates regarding the university degree
-  **Grade** Grade of the university degree
-  **Issuer** The Department/Institution that issues the university degree
-  **Level** Level of the university degree
-  **Subject** Title of the university degree
-  **Owner** Information regarding the name and the date of birth of the degree's owner

In order to see your registered degrees, enter your Social Security Number (SSN) below:

SSN

SUBMIT

Your degrees for which access can be granted are the following:

Level	Institution	Department	Title
6	Narional and Kapodistrian University of Athens	Department of Informatics and Telecommunications	Informatics and Telecommunications

In case a degree you own does not appear in the search results, you should contact the Institution that issued it in order for the corresponding data to be corrected/filled.

Information about the Institutions and the degrees available in eDiplomas can be found in the link [www.ediplomas.gr/institutions](http://www.ediplomas.gr/institutions).

The authorization will be valid for **2 hours** ⌚

To revoke the access of any client use the [revocation page](#).

AUTHORIZATION

If you do not wish to authorize the client Organisation 1, exit this page

## THREE MODES OF OPERATION (2/3)

### **THE CLIENT SIDE IS PROVIDED BY eDiplomas**

*Registered organizations without the ability to implement their own OATH2 Clients , use instead the eDiplomas Interface for Organizations*

#### FLOW:

1. The flow starts at the eDiplomas Citizens Interface. Users select the organization they want to grant access to and receive a unique hash key for the specific case
2. Authorized personnel of the organization, via the eDiplomas Organizations interface gets access to user's diploma by using the hash key

# THE CLIENT SIDE IS PROVIDED BY eDiplomas

Your degrees for which access can be granted are the following:

Level	Institution	Department	Title
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The authorization will be valid for **2 hours** ⌚

To revoke the access of any client use the [revocation page](#).

AUTHORIZ

If you do not wish to authorize the client Organisation 1, ex

## Graduate

Step 1 Organization Selection ✓  
Step 2 Entity Authorization ✓  
Step 3 Authorization Code ✓

### Authorization Code

The code you will have to send to the organization you just authorized, in order for them to receive your degree's information is given below.

Code QR Code



Show

### Duration

This code is valid for: ⌚ 1h 59m 47s

#### Forgot to log out of TAXISNet

To log out follow the following link:

[Log out of TAXISNet](#)

- For your security, log out of TAXISNet if you have completed your work on this workstation.
- It is possible that you will remain logged in other applications that use login through TAXISNet service.



## THREE MODES OF OPERATION (3/3)

### EX OFFICIO DIPLOMAS AUTHENTICITY CHECKS

*Authoritative state bodies, need to verify the authenticity of already submitted to them diplomas*

#### FLOW:

1. Entitled organizations, via authorized personnel, use the eDiplomas Organizations Interface to access Ex Officio authenticity checks
2. By filling in a combination of data found in the hard copy diploma they verify the authenticity of the diploma

*Note! Ex-Officio authenticity check also requires HEI's consent on organization basis*

# EX OFFICIO DIPLOMAS AUTHENTICITY CHECKS

## Ex-Officio Degree Check

By using the ex-officio degree check service, you will be able to verify the validity of degree copies you have in your possession, if you are authorized by the Institution in charge.

By filling the **Institution**, the **Social Security Number (SSN)**, as well as various data regarding the degree, you can search for it in the platform and receive the **signed, digital** version issued by *eDiplomas*.

Institution: National and Kapodistrian University of Athens [Edit](#)

### — Degree/Graduate Data

Department Department of Informatics and Telecommunications

Level Bachelor Master Doctorate

Social Security Number (SSN) 0111111111

First Name JOHN

Last Name DOE

Date 13 / 07 / 2014

I am aware that any search operation is subject to legal oversight according to the General Data Protection Regulation (EU) 2016/679. In this case, each search must be documented by title information deposited to the organization

Search

Search Results

Institution: National and Kapodistrian University of Athens [Edit](#)

Department: Department of Informatics and Telecommunications [Edit](#)  
Level: Bachelor or equivalent  
Social Security Number (SSN): 0111111111  
Fullname: JOHN DOE  
Date: 13/07/2014

### —Search Results

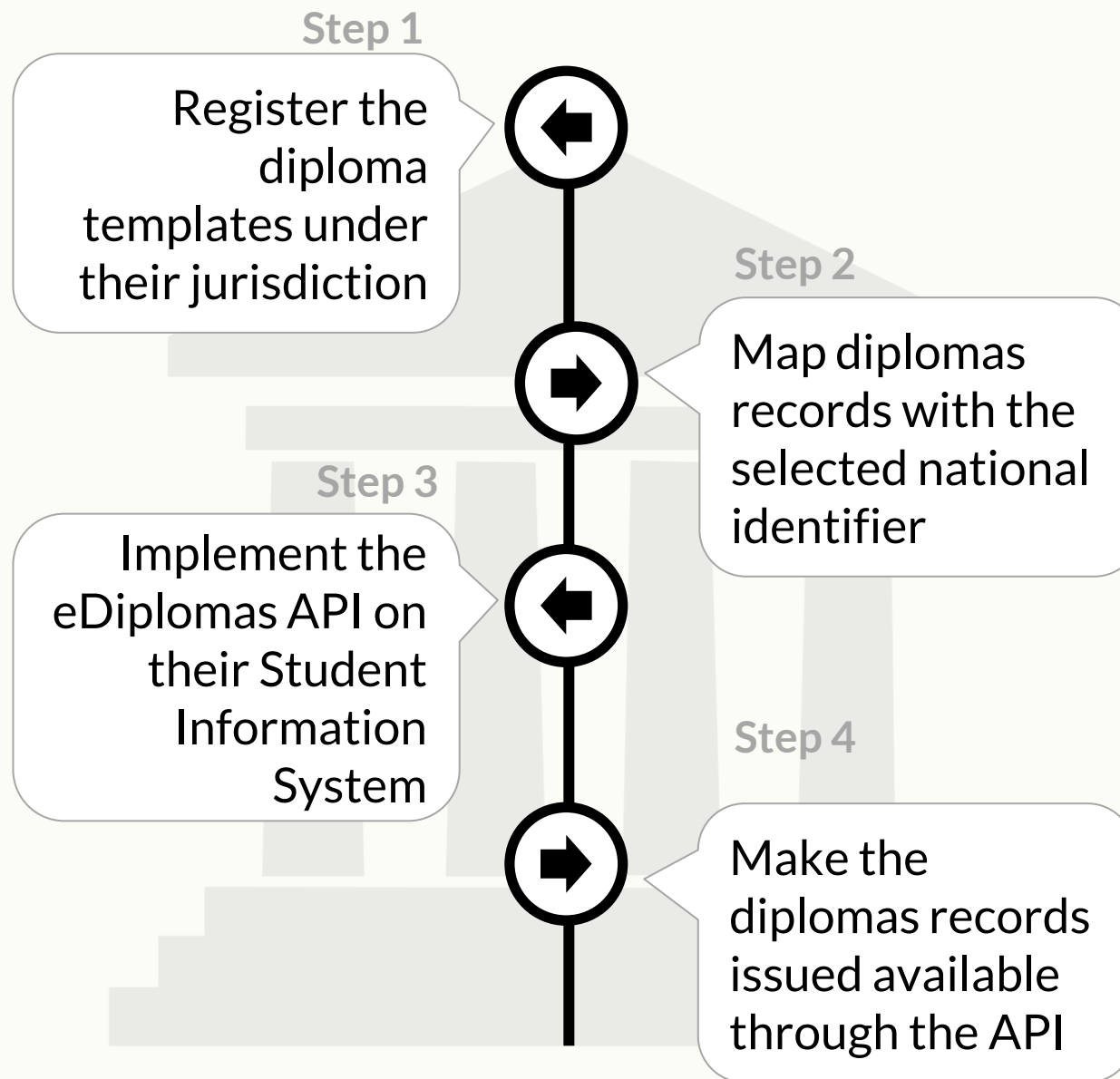


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Issuing Institution	National and Kapodistrian University of Athens
Issuing Unit	Department of Informatics and Telecommunications
Level of Education	Bachelor or equivalent
Last Name	Doe
First Name	John
Date of Birth	29/01/1990
Date of Graduation	13/07/2014
Date of Completion	07/06/2014
Signed for	Organisation 1 (organisation1)
Timestamp	13/09/19 12:17:11 (UTC)
Signature	afaa64e2f7c1bc7662... <a href="#">Copy</a>

# HEIs: STEPS TO JOIN EDIPLOMAS



## HEIs: HOW TO REGISTER DIPLOMAS

There are two paths that HEIs can follow to make diplomas available to the platform:

- **Online or Batch Mode**

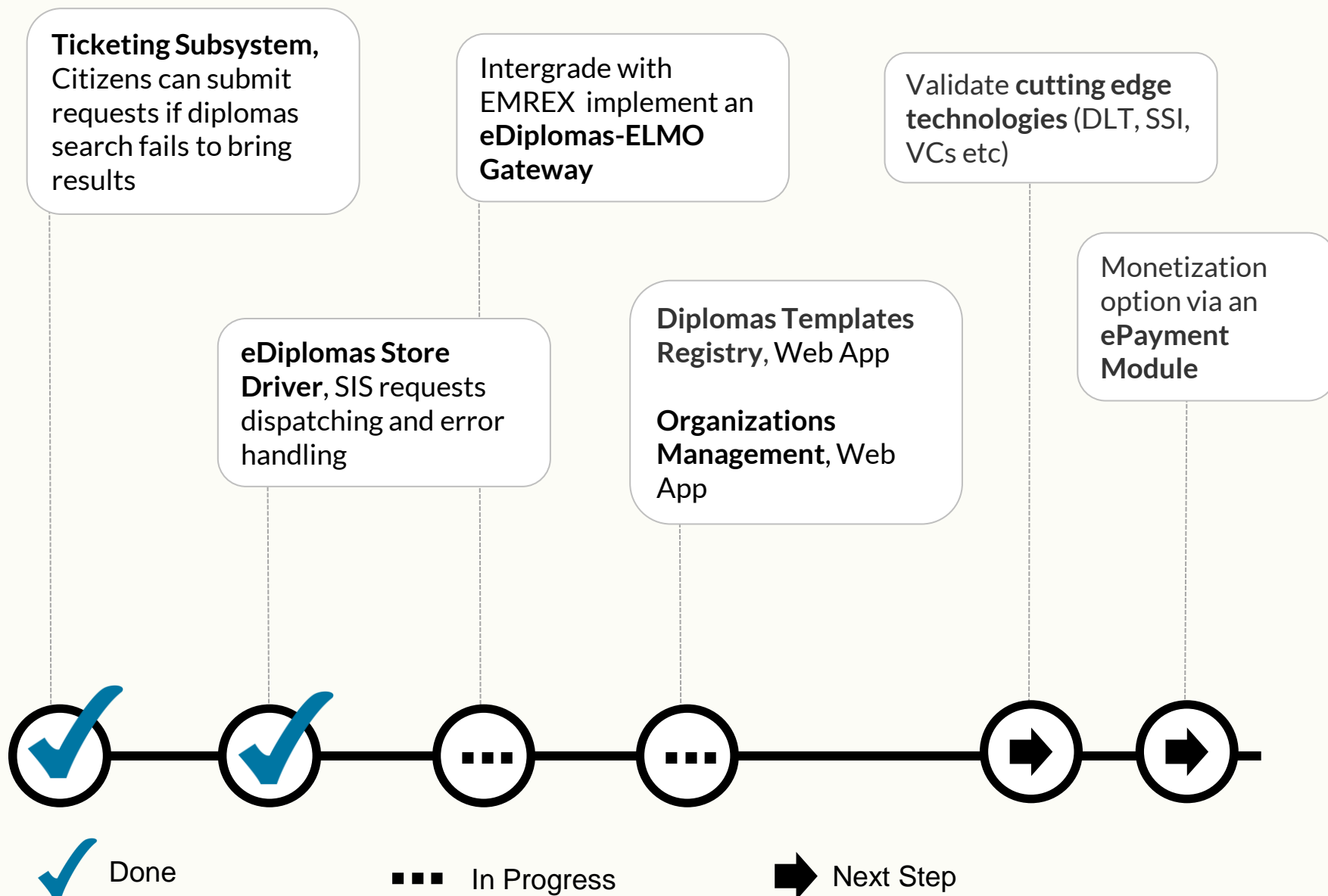
HEIs make available diplomas on per department or per program basis via a batch process, periodically or online whenever a diploma is issued at the SIS level.

- **Upon Citizen's Request**

The citizen can submit a ticket via the eDiplomas interface in order to notify the institution about a missing diplomas or about an error. The request is handled by the institution staff through the eDiplomas Ticketing System.

*Note! The option for citizens to submit requests is enabled per institution*

# THE ROADMAP



# TECHNOLOGIES



**JOSE: JSON object signing and encryption**

**JWT: JSON Web Tokens**

# Thank you!

**Contact :**  
nvoutsin@gunet.gr

**For more info:**  
<https://ediplomas.gr>