

Digital Transformation in University Alliances

UNINOVIS Conference

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Málaga
Spain

January 26, 2026



uninovis
DATA FOR L.I.F.E.
EUROPEAN UNIVERSITY



UNIVERSIDAD DE MÁLAGA

Why





Co-financed by the European Union

Connecting Europe Facility



Erasmus+



Morning Star Mosses, elder, Eastern Shoshone) Carol M. Highsmith - Library of Congress <https://hdl.loc.gov/loc.pnp/highsm.34014>



Camp Fire - painting by Winslow Homer CC0 <https://www.metmuseum.org/art/collection/search/11112>

Those who do not know their past
are condemned to repeat it

George Santayana

Those who do not know their past
cannot understand their present

Those who do not know their past
will reinvent the wheel

Join me on a story through time
about
Infrastructure
Identity
and
Trust

Seven meanings in English Wiktionary.org

Noun

identity (countable and uncountable, plural identities)

2. The difference or character that marks off an individual or collective from the rest of the same kind; selfhood; the sense of who something or someone or oneself is, or the recurring characteristics that enable the recognition of such an individual or group by others or themselves.



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DATA FOR L.I.F.E.
EUROPEAN UNIVERSITY

UNIVERSITÉ
**SORBONNE
PARIS NORD**



UNIVERSIDAD
DE MÁLAGA

KAUNO
KOLEGIJA

 **thws**
Technical University
of Applied Sciences
Würzburg-Schweinfurt

V: Università
degli Studi
della Campania
Luigi Vanvitelli



UNIVERSITY
OF TIRANA

 **Tampere University
of Applied Sciences**

THE HAGUE
UNIVERSITY OF
APPLIED SCIENCES

Identity is slippery in a digital world

"on the Internet nobody knows you are a dog"



©Peter Steiner. The New Yorker, July 5th, 1993

'80s & '90s



'80s & '90s

you are your email address

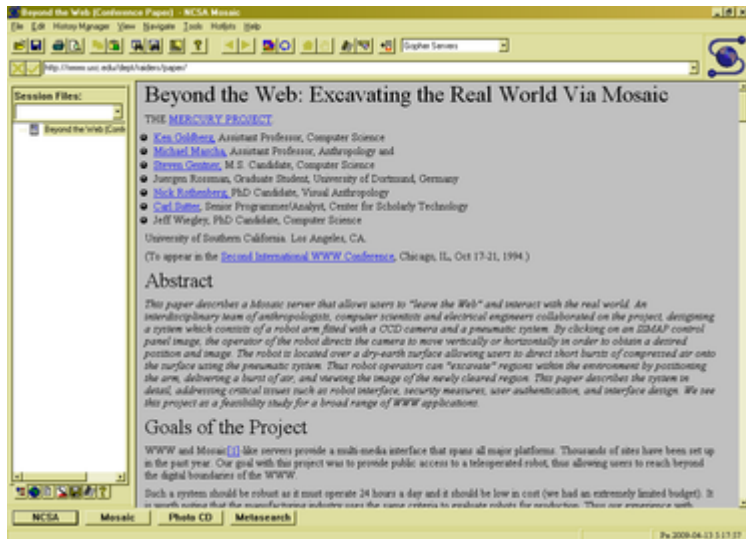
CCUMA::VICTORIANO

G=Victoriano;S=Giralt;O=UMA;C=es

victoriano@ccuma.uma.es

vic@uida0.uida.es

'90s



'90s

front line ones have a web address

<http://uida1.uida.es/>

<http://vgg.sci.uma.es/>

<http://www.uma.es/>

Early 2000s device linked identity



Early 2000s
device linked identity

6703X2X2X

5F:DA:99:DD:F0:22

192.168.1.1

2001:720:c20:cc05::40:17

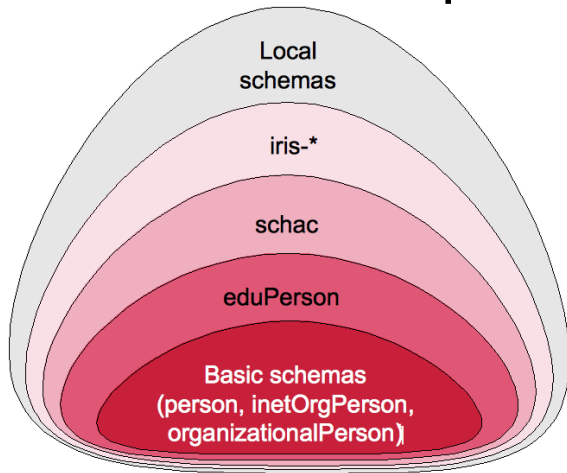
Directories as identity stores

X.500 leftovers

late '90s

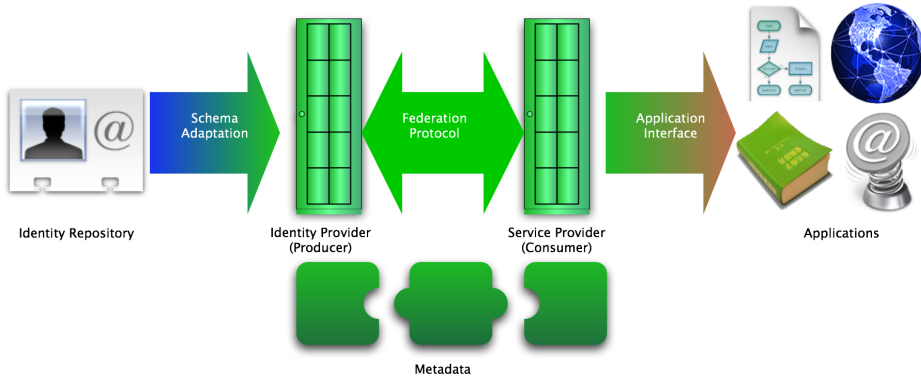


standards for interoperability



MACE-dir TF-EMC²

Authentication & Authorisation Infrastructure AAI



Athens

again Greeks at start of civilization



all started in ancient Greece

Athens

again Greeks at start of civilization



not quite

Athens

again Greeks at start of civilization



it was really JISC in the UK that started this
in November 1998

Athens

Development of a JISC Authentication Service

JISC's Committee for Electronic Information gave the go-ahead last week to develop a JISC Authentication Service, based on the successful ATHENS access management system.

it was really JISC in the UK that started this
in November 1998

Norman Wiseman
Thu, 19 Nov 1998 16:30:45 +0000
ATHENS@JISCMAIL.AC.UK

<https://www.jiscmail.ac.uk/cgi-bin/webadmin?A2=athens;e01bbb21.98>

Athens



access to library resources,
the problem for the solution

PAPI, A-Select

Spanish and Dutch follow pretty close



- ▶ January 1st, 2001

A PAPI Guide for Beginners hits the web

<http://papi.rediris.es/perl/pod/PAPI-gb.html>

- ▶ January 1st, 2002

In 2002 Alfa & Ariss has been awarded with a development contract by SURFnet for the developments of A-Select. . .

<https://www.surfgroepen.nl/sites/surf-idm/a-select/Lists/ASelect%20history/DispForm.aspx?ID=1>

WebISO and Shibboleth

Americans were not standing still

- ▶ August 2nd, 2002
oldest dated information on Internet2 WebISO site

<http://middleware.internet2.edu/webiso/>

- ▶ June 1st, 2003 
Shibboleth 1.0 released after 3 years work

<http://shibboleth.internet2.edu/project.html>

2005



October 2006

I SCHAC based federated Student Registration System an application with Bologna inside

A really draft implementation possibility

- IdM based student registries
- A federated hierarchy of MetaDirectories for routing the information
- Transient registers with minimal data for local tracking of students
- Query the home organisation for infrequently needed information



October 2006

SCHAC based federated Student Registration System

an application with Bologna inside

A really draft implementation possibility

- IdM based student registries
- A federated hierarchy of MetaDirectories for routing the information
- Transient registers with minimal data for local tracking of students
- Query the home organisation for infrequently needed information
- Sending credits instead of storing them locally







2007



Mobility @



December 2008



is born as

the Mobility project

March 2010

1
Confía demo
a federation in a laptop

A quick overview of confía innards

confía

Confía had gone live February 1st

March 2010

Questions

will all this be useful for us

How can FIAM help the Mobility project?

- what should we do technically to start using FIAM
- can we attach our applications to eduGAIN
- what attributes we need to authorize users and/or web services
- what should we do from the organizational point of view

March 2010

Answers

what we need to start using FIAM

Attribute sources or attribute consumers?

- Both
- Sending university service
 - consumes identity attributes for authorisation
 - produces attributes with mobility data
- Receiving university service
 - consumes identity attributes for authorisation
 - consumes attributes with mobility data

March 2010

I Answers

eduGAIN and friends

- eduGAIN is still a pilot
 - First federations connecting this month
 - Mobility
 - + common service
 - + participants in several federations
 - = an eduGAIN use case
 - I have contacted Josh Howlet and Valter Nordh
- GEMBus (GEANT3)
Mobility SOAP service is a perfect use case
- GN3 is working on
SAML tokens for authorising web services,
and even have code (Java, Perl and PHP)

April 2011



becomes an operational service

2012



becomes intercontinental
Canada and Brazil joined

April 2012



the Groningen Declaration
presented to the world

September 2017



holds project final conference

Digitalisation *is* a must

but

Digital change \Rightarrow culture change

Changing cultures take some time :-)

Erasmus for the XXI century?

Erasmus for the XXI century?
go digital from day one

Erasmus for the XXI century?

make it simple

Erasmus for the XXI century?

Formal academia
In-job training
Self training
Life training



Studying
Working
Living
Playing

make it person centric

2019



2019

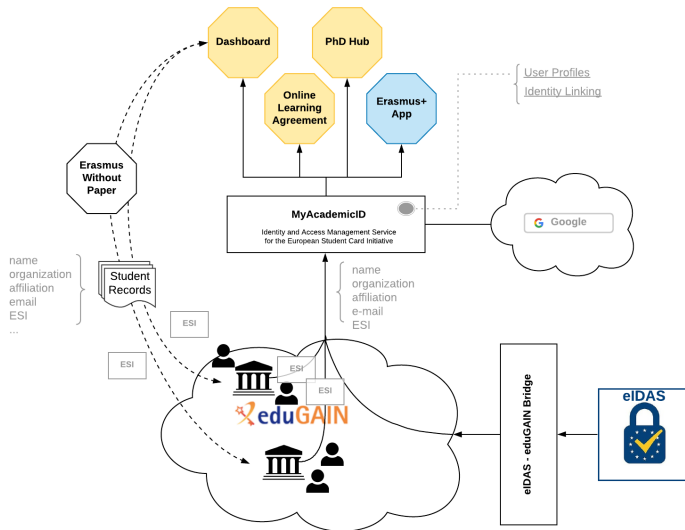


SEAL

2021



2021



All you need is trust

All you need is trust

Trust is all you need

Behavioral trust

- ▶ person to person
- ▶ institution to institution
- ▶ person to institution
- ▶ reputation based
- ▶ supported by *feelings*

Technical trust

- ▶ institution to institution
- ▶ institution to *network*
- ▶ system to system
- ▶ procedure based
- ▶ supported by technology

Trust: cryptography's three laws

- ▶ Confidentiality
- ▶ Integrity
- ▶ Non repudiation



this ribbon was added before train images for a minute of remembrance of victims of 18-1-2026 train crash in Adamuz, Córdoba, Spain



Let's talk digital transformation



are we digitising?

By User Alex Needham (own photography) on en.wikipedia - Originally from en.wikipedia; description page is (was) here, Public Domain, <https://commons.wikimedia.org/w/index.php?curid=1005964>

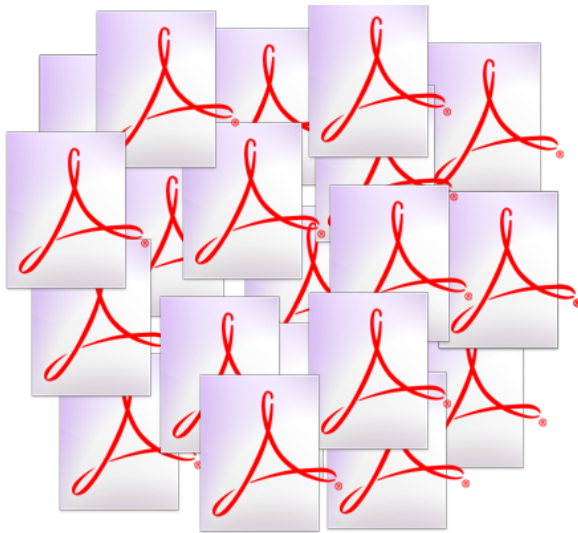


or just electrifying?

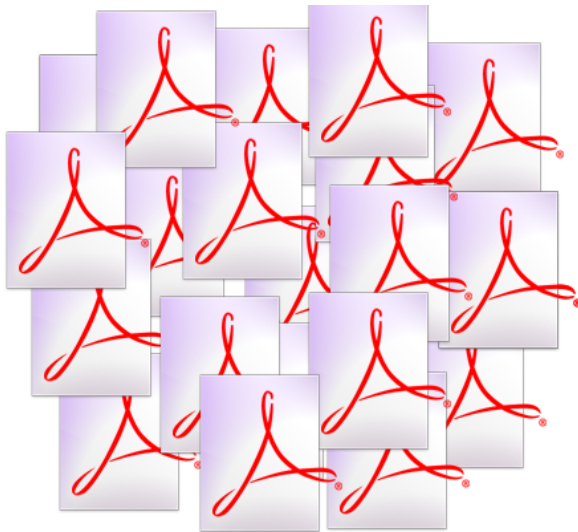


are we moving from this?

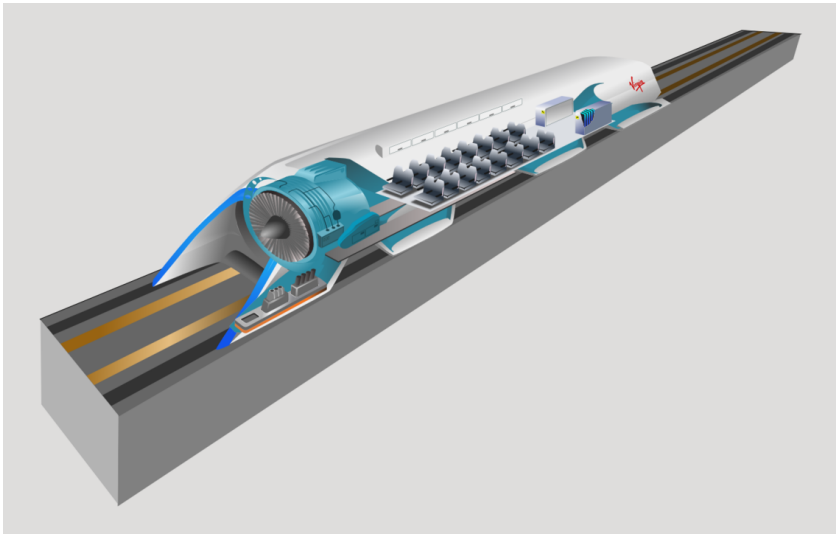
By Attributed to Meliacin Master - This file has been provided by the British Library from its digital collections. Catalogue entry: Burney 275, Public Domain, <https://commons.wikimedia.org/w/index.php?curid=468726>



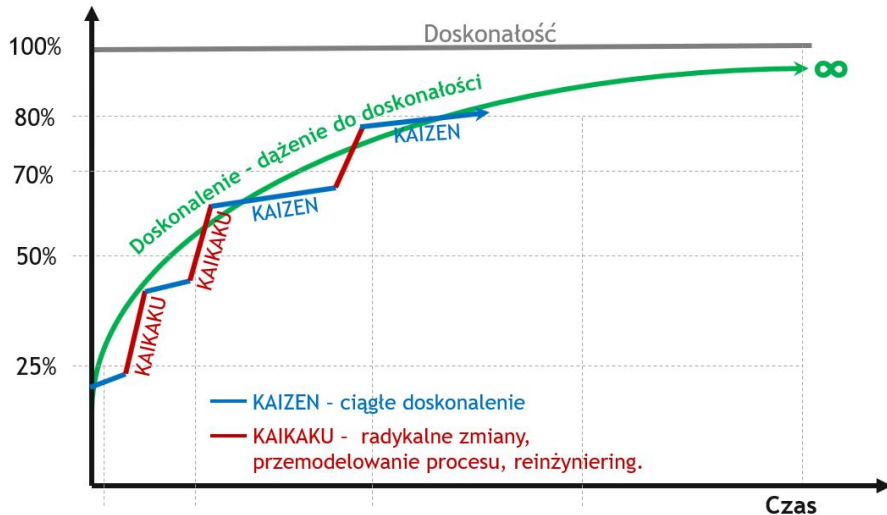
to this?



atoms for pixels?



or are we innovators

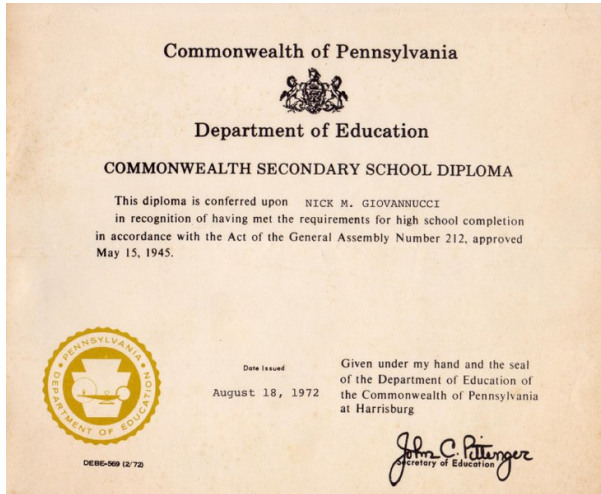


process reengineering



EDS advertisement. <https://www.youtube.com/watch?v=L2zqTYgcpfg>

Man discovers paper . . .



Man invents stamped paper . . .

MEC - Universidade Federal Fluminense

Diploma Registrado sob o n.º 01/87

Livro E-2211-123 em 14/01/87

DDC/DAE 14/01/87

[Signature]
DIRETOR DA ESCOLA

VISTO: *[Signature]*
DIRETOR DE DEPARTAMENTO DE ADMINISTRAÇÃO ESCOLAR

Curso de Arquitetura e Urbanismo

Reconhecimento pelo Decreto n.º 79429
17/01/87 D.O. 18/01/87

Este diploma foi registrado no
CREA-RJ em 2/02/87
[Signature]
Ana Cecy Rebello Carvalho
Assist. Técnica

12º Ofício de Niterói, R. da Conceição 137 SL, 101-4, Centro
William Felisberto Fagundes - Titular, Reconheço, por semelhança,
a firma de OLYMPIA VAREZ DE NEVES
Niterói, 26/10/2006. Data e port.
(020511) Reconhecimento de firma
Luiz Rodrigues - Escriv. Niterói

ERERIO CONSULAR

MINISTÉRIO DAS RELAÇÕES EXTERIORES
ESCRITÓRIO DE REPRESENTAÇÃO NO RIO DE JANEIRO
SEÇÃO CONSULAR

Reconheço verdadeira, por semelhança, a assinatura
assinalada com o selo CONSULAR - ERERIO.
A presente autenticação não implica aprovação do
teor do documento.

31 OUT 2006
[Signature]
R. de Araújo Castro Neto
Oficial de Consular

CONULAT-GENERAAL der NEDERLANDEN
4486 ORIENTAL

RIJEN AAN HET CONSULAT-GENERAAL
DER NEDERLANDEN TE RIO DE JANEIRO
VOOR LEGALISATIE
VAN DE HANDTEKENING VAN
R. de Araújo Castro Neto
26 oktober 2006

Post: 105503

Mw. M. A. Storm
Consul

009753

From Herman de Leeuw's personal archive

some help from the web

REPUBLICA DE COLOMBIA
MINISTERIO DE RELACIONES EXTERIORES
APOSTILLE
(Convention de la Haye du 5 octobre 1961)

País: República de Colombia
(Country: - Pays:)

El presente documento público
(This public document - Le présent acte public)

Ha sido firmado por: VOLANDA CRUZ ALEA
(Has been signed by: - A été signé par:)

Actuando en calidad de: PROFESIONAL UNIVERSITARIO
(Acting in the capacity of: - Agissant en qualité de:)

Lleva el sello / estampilla del MINISTERIO DE EDUCACION NACIONAL
(Bears the seal / Stamp of: - Est revêtu du sceau de / Timbre de:)

Certificado
(Certified - Attesté)

En: Bogotá D.C.
(At: - A:)

El: MARTES, 9 DE OCTUBRE DE 2007
(The: - Le:)

Por: Legalizaciones del Ministerio de Relaciones Exteriores
(By: The Ministry of Foreign Affairs - Par: Légalisations du Ministère des Affaires Étrangères)


Bajo el No: 5892963
(Seal / Stamp: - Sceau / Timbre:)

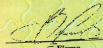
VERMAAS ERIC
Nombre del titular del documento:
(Name of the holder of document: - Nom du titulaire du document:)

Tipo de documento apostillado: CERTIFICADO DE CALIFICACIONES
(Type of document: - Type de document:)

Número de hojas apostilladas: 3
(Number of pages: - Nombre de pages:)

AR777761


www.minrext.gov.co/apostilla

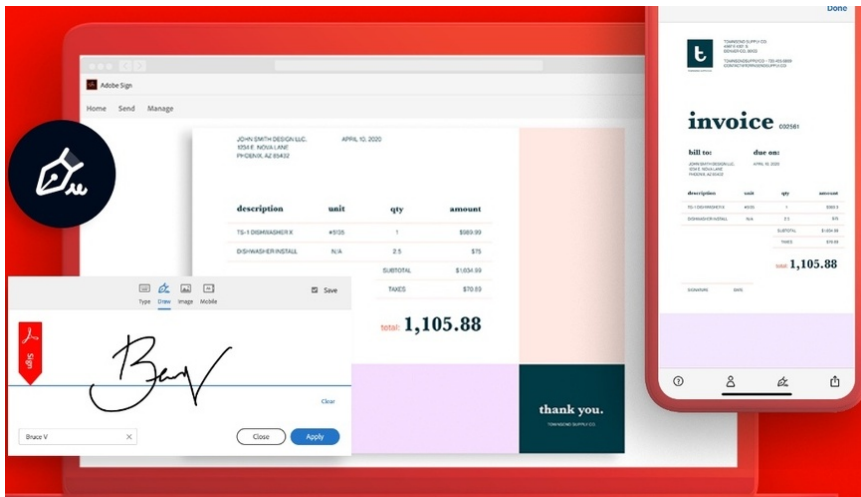

Firma
(Signature - Signature)

From Herman de Leeuw's personal archive

Trust: cryptography's three laws

- ▶ Confidentiality
- ▶ Integrity
- ▶ Non repudiation

PDF signed with *Adobe sign®*



<https://acrobat.adobe.com/es/es/sign.html?promoid=3NQZB9QT&mv=other>

PDF signed with *Adobe sign®*



Unión Europea


El [Reglamento relativo a la identificación electrónica y los servicios de confianza \(eIDAS\)](#) convierte en legal y aplicable cualquier tipo de firma electrónica.

Sin embargo, solo un tipo específico de firma electrónica, conocido como [firma digital](#), tiene el mismo valor que una firma manuscrita.

[Más información sobre eIDAS >](#)

[Ver el seminario web sobre eIDAS >](#)

PDF firmado X.509



Firmas

- ✓ Rev. 1: Firmado por SELLADO DE DOCUMENTOS ELECTR...
 - La firma es criptográficamente válida.
 - Hora de la firma: jueves, 7 de noviembre de 2019 7:45:0...
 - Motivo: VICTORIANO GIRALT GARCIA, DIRECTOR TIC
 - Campo: Signature1 en la página 1
- ✓ Rev. 1: Firmado por GIRALT GARCIA VICTORIANO - 2488...
 - La firma es criptográficamente válida.
 - Hora de la firma: jueves, 7 de noviembre de 2019 7:49:2...
 - Motivo: No disponible
 - Campo: Signature2 en la página 4


Este documento está firmado digitalmente.

Mostrar el panel de firmas

Erasmus code (if applicable)	EMALAGA01 https://www.uma.es/media/files/factoh_ingles_1920_.pdf	Faculty/Department	DIRECCIÓN DE LAS TECNOLOGÍAS DE LA INFORMACIÓN Y LAS COMUNICACIONES
Address	Ryda, Cervantes, 2. 29071 MÁLAGA	Country/ Country code	Spain
Contact person, name and position	Victoriano Giralt, Director TIC (CIO)	Contact person e-mail / phone	+34952131415, victoriano@uma.es
		Size of enterprise (if applicable)	<input type="checkbox"/> <250 employees <input checked="" type="checkbox"/> >250 employees

For guidelines, please look at the end notes on page 3.

1




FIRMADO POR LA UNIVERSIDAD DE MÁLAGA

Y en su nombre: **VICTORIANO GIRALT GARCIA, DIRECTOR TIC**

07/11/2019 07:45 Puede verificar su validez en <https://www.uma.es/validador>

CSV: C9A9DA5EBD6F3B5C



Document signed by Victoriano Giralt and Universidad de Málaga


PDF with embedded XML



specimen obtained from Thomas Black in 2018, then Stanford's registrar

PDF with embedded XML

Este documento contiene archivos empotrados. [Pulse aquí para verlos](#) o vaya a «Archivo -> Archivos empotrados».



CeCertificate: How it works

Independent Validation

To ensure the Certificate information is still valid, we highly recommend you visit the School's official website to perform an additional validation.

Please visit <https://cecredential.stanford.edu> to validate the CeCertificate.

Stanford University

Stanford Registrar's Office
Student Affairs


Credential Validation

Enter your CeID (and your name): 1458-ADD2-J1E2

Enter the three last digits of the page that it appears on the certificate: 28

Submit

The CeCertificate symbol and CeID are located on the certificate.




Example Only


Digital Signature Explanation

Each CeCertificate will be certified by CeCredential Trust and should read as such.

A blue ribbon signifies that the document has not been tampered with.




Valid and certified
Authenticity and integrity are verified
TRUST



Not to Mac and Linux users: To view a CeCertificate, you must use Adobe Reader or Adobe Acrobat 7.0 or higher.

The digital signature may not display on Tablets or Mobile Phones and cannot be properly viewed with other PDF viewers.




Error!

The author cannot be verified

DO NOT TRUST

CHECK INTERNET CONNECTIVITY



Error!

The document has been modified since it was signed

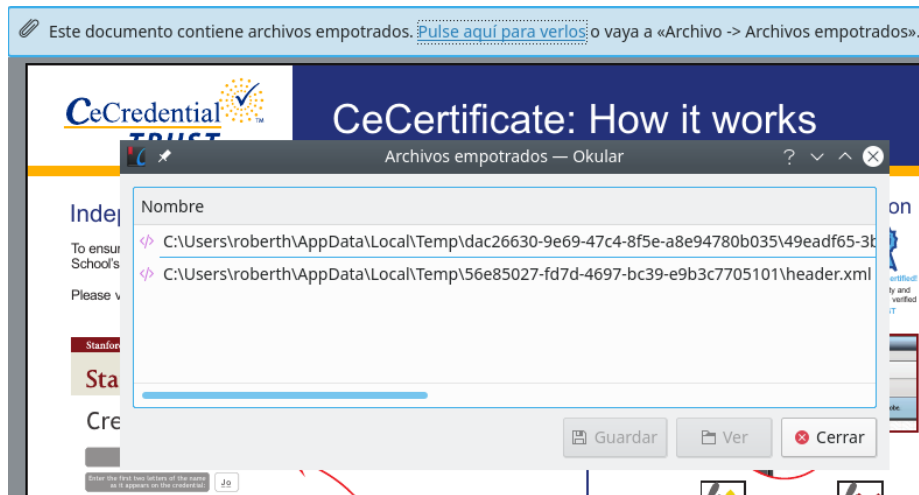
DO NOT TRUST

Apostille

An Apostille is neither required nor necessary. The CeCertificate has legal standing, is non-repudiating, and can be validated through the University website to provide absolute confidence in the credential's authenticity. Questions should be directed to apostille@lists.stanford.edu.

specimen obtained from Thomas Black in 2018, then Stanford's registrar

PDF with embedded XML



specimen obtained from Thomas Black in 2018, then Stanford's registrar

PDF with embedded XML

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specimen obtained from Thomas Black in 2018, then Stanford's registrar

PDF with embedded XML

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  --<Name>
    <MiddleName/>
    <CompositeName>John Doe</CompositeName>
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specimen obtained from Thomas Black in 2018, then Stanford's registrar

Learning information XXI century

Formal academia
In-job training
Self training
Life training



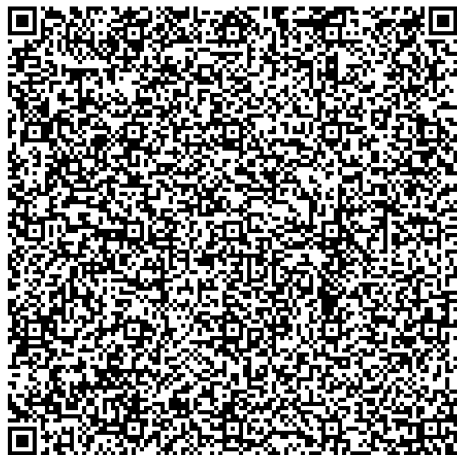
Studying
Working
Living
Playing

make it person centric

2014: eduCoin?



2024: DID based credential





ebsi
European Blockchain

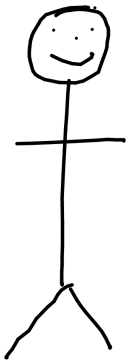
[https://ec.europa.eu/digital-building-blocks/sites/display/EBSI/
What+is+ebsi](https://ec.europa.eu/digital-building-blocks/sites/display/EBSI/What+is+ebsi)
<https://hub.ebsi.eu/>



DIGITAL CREDENTIALS 4 EUROPE
DC4EU

<https://www.dc4eu.eu/>

Self Sovereign Identity



You need an / to spell Identity

Self Sovereign Identity

Credential producer



Entities that generate credentials about persons

Person /
Citizen



Persons that manage and voluntarily share credentials from their "identity wallet"

Service provider / Credential receiver



Any entity that can ask for and process shared data with previous person consent

You need an / to spell Identity

Self sovereign identity . . .

Must come directly from a human being

References each individual human being as original source of identity

Ten principles of self-sovereign identity

Existence as independent persons

Control of one's own identity

Access to one's own data

Transparency in systems and algorithms

Persistence of one's own identity over time

Portability of information and identity services

Interoperability of identity and services

Consent to de use of one's own identity

Minimalization of shared information

Protection of person's rights

SSI basic concepts

Claim The person makes an assertion about him or herself
My name is Victoriano and I hold an M.D.

Proof The person has a document that provides evidence for the claim
I show you my M.D. diploma

Attestation A trusted third party verifies that, according to their data, the claim is true and the proof is authentic
The diploma register or the university verifies claim and proof

Advantages

- ▶ Personal control of claims
- ▶ Proofs (as we know them) will not be needed
- ▶ Minimised information credentials
- ▶ *Live* information

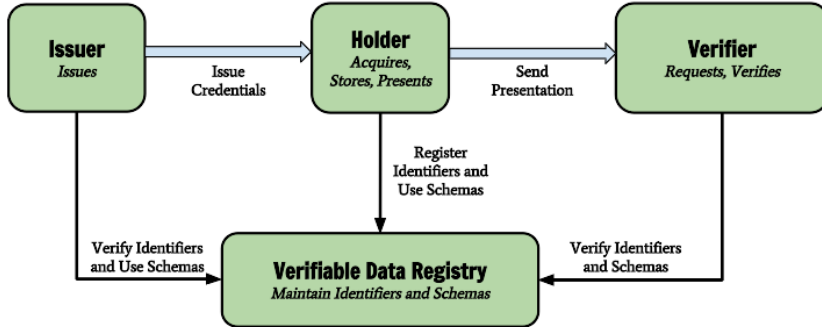
planetary alignment

VC *Verifiable Credentials* W3C

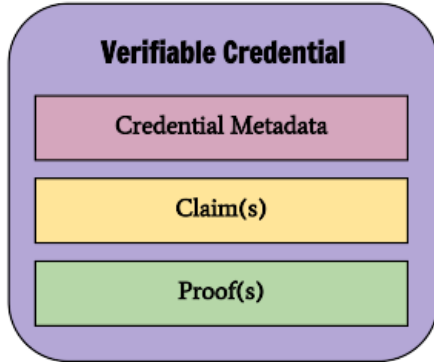
DID *Decentralized IDentifier* W3C

DLT *Distributed Ledger Technology*

Verifiable Credentials ecosystem



a credential



Why a DLT (a.k.a. *blockchain*)



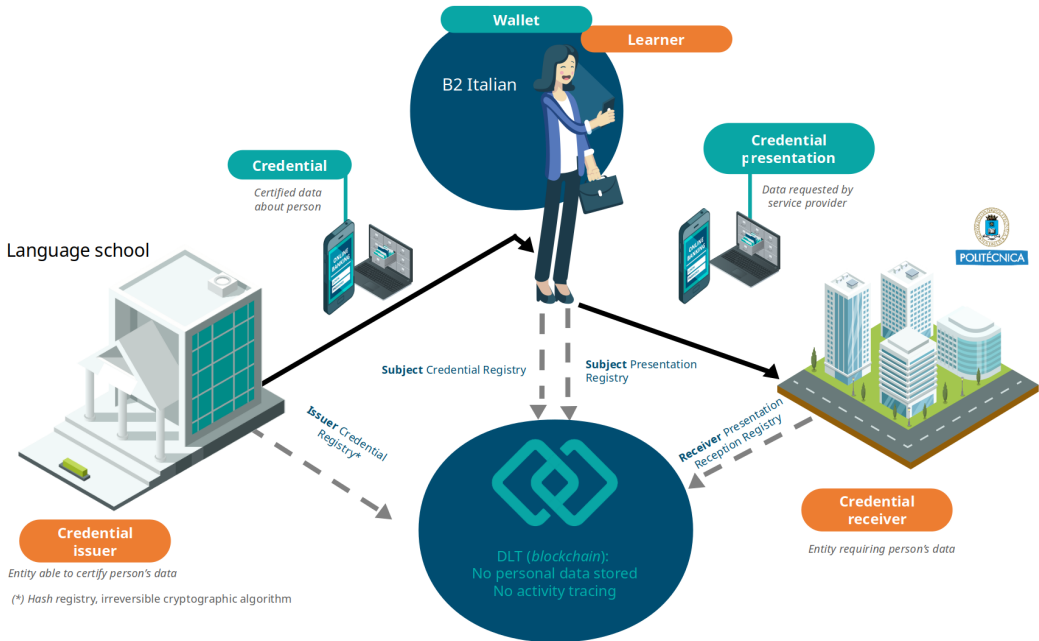
Transparency



Immutability



Decentralisation



closing the circle device linked identity



closing the circle device supported identity



a disaster might destroy the Internet



J. M. W. Turner / Public domain

would our bits be so well preserved?



http://cdli.ox.ac.uk/wiki/doku.php?id=the_sumerian_king_list_skl

Thanks!

?

?

?

?

Thanks!

Questions?

answers not assured

?

?

?

?

Memento

It's impossible to add here the names of all that have worked in making all what I have narrated here without forgetting many of them.

So, the next slide will be a moment of remembrance to those that are no longer with us to harvest the fruits of they hard work, fortunately they are few, but very much missed by most of us that were lucky to work with them.



Memento

RL “Bob” Morgan

Milan Sova

Miroslav Milinovic

Torbjörn Wiberg

Andrew Cormak

Riss Smith

Jürgen Rauschenbach

