

## SCALING UP THE OPEN BADGE EXPERIMENT IN DUTCH HE

Capturing the lessons learned when  
building a pilot for an open badge  
infrastructure.

ePIC 2018, Paris  
Alexander Blanc  
Frans Ward  
SURFnet

SURF

# WHO IS TALKING?



About SURF

eduBadges Development

eduBadges Proof of Concept

Metadata

Lessons learned

Signing

eduBadges Pilot

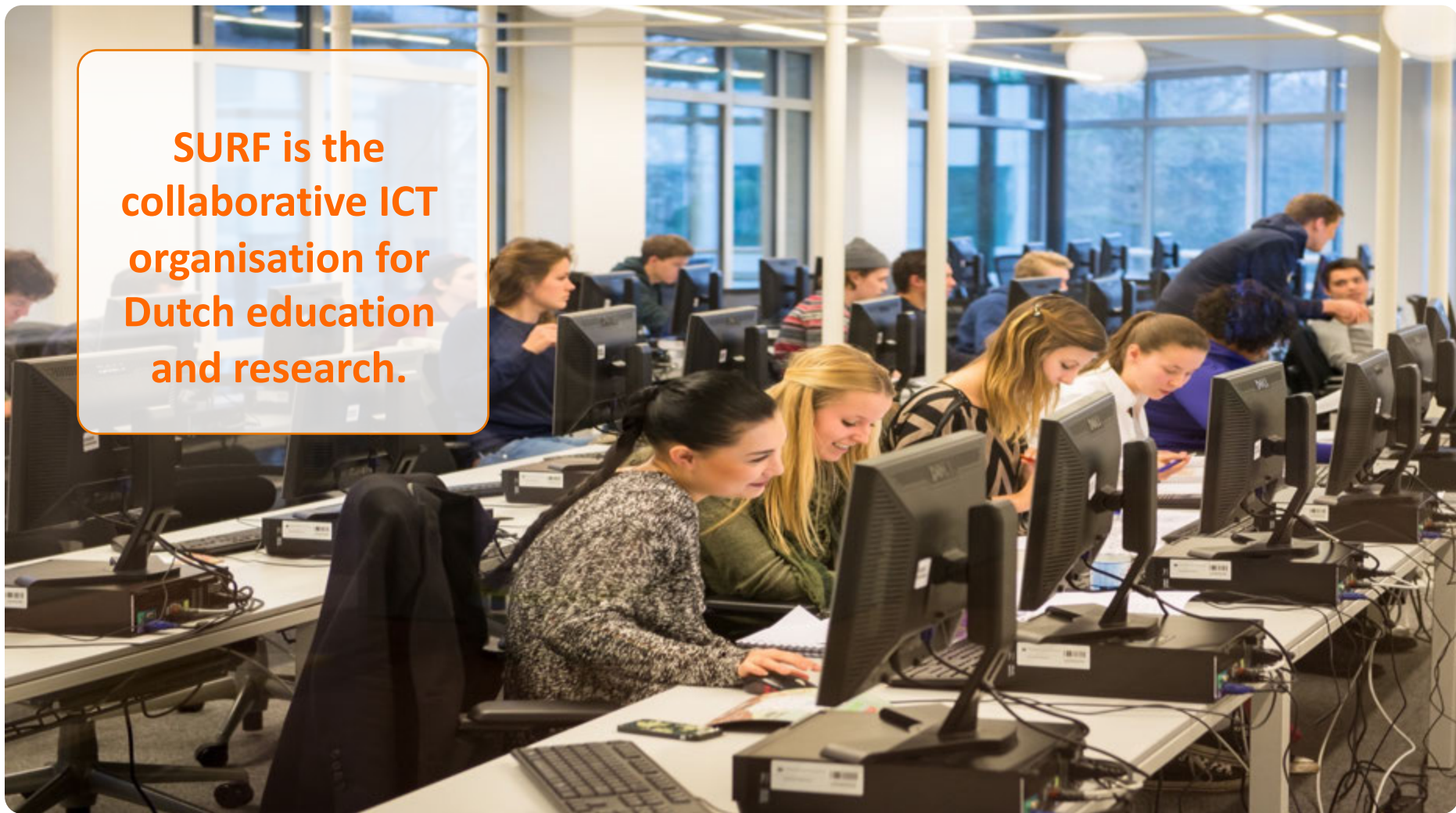
Endorsements

eduID

# AGENDA



**SURF is the  
collaborative ICT  
organisation for  
Dutch education  
and research.**



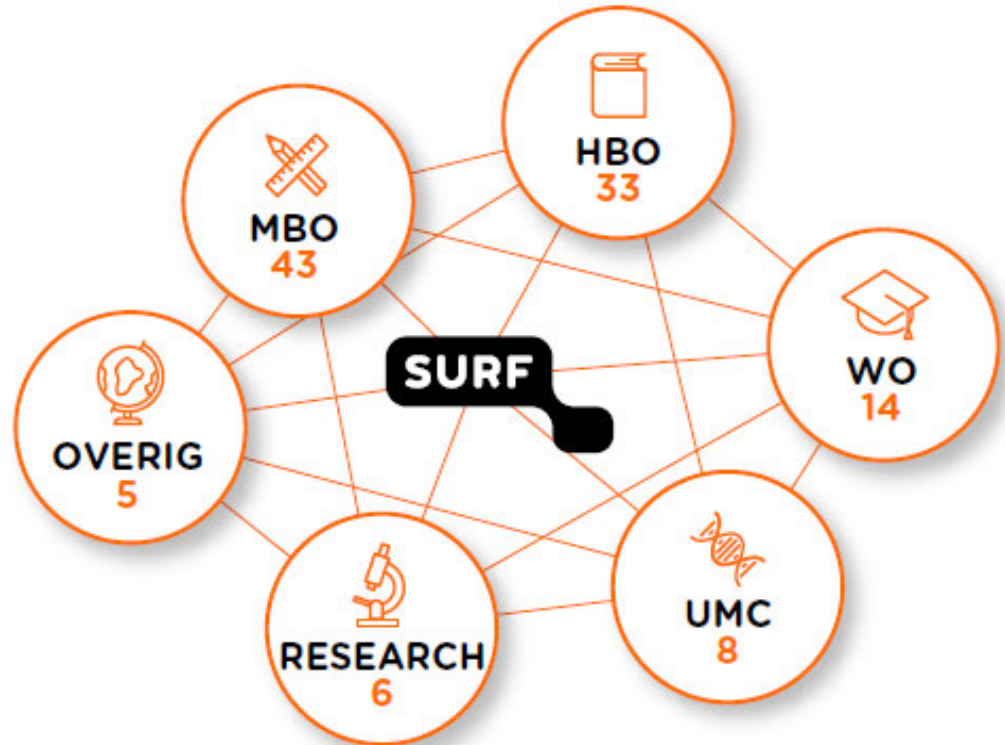
# SURF

## Our mission

SURF ensures that students, lecturers, researchers and employees in education and research have access to the best possible ICT resources on favorable terms for the purpose of top-level research and talent development, including in national and international collaborative efforts.



Serving over 1 million users





# SURF & Open Badges

## 2016

- Pressure cook session with stakeholders
- Whitepaper published
- Experiment with Mozilla open badge framework

## 2017 - 2018

- Proof of Concept

## 2018 - 2019

- Pilot eduBadges

## 2020

- eduBadges service offering for Dutch HE?



A man wearing a light blue baseball cap with a floral pattern on the brim, a light blue button-down shirt, and green denim overalls is performing a flaming balloon trick. He is holding a pair of blue-handled pliers that are igniting a yellow balloon, which is now on fire. He is looking down at the balloon with a focused expression. The background is a bar with a brick wall, a mirror, and shelves of bottles. A checkered floor is visible in the foreground. An orange banner with white text is overlaid across the middle of the image.

# EDUBADGES PROOF of CONCEPT

Photo by [Nick Karvounis](#) on [Unsplash](#)



# Aim Proof of Concept

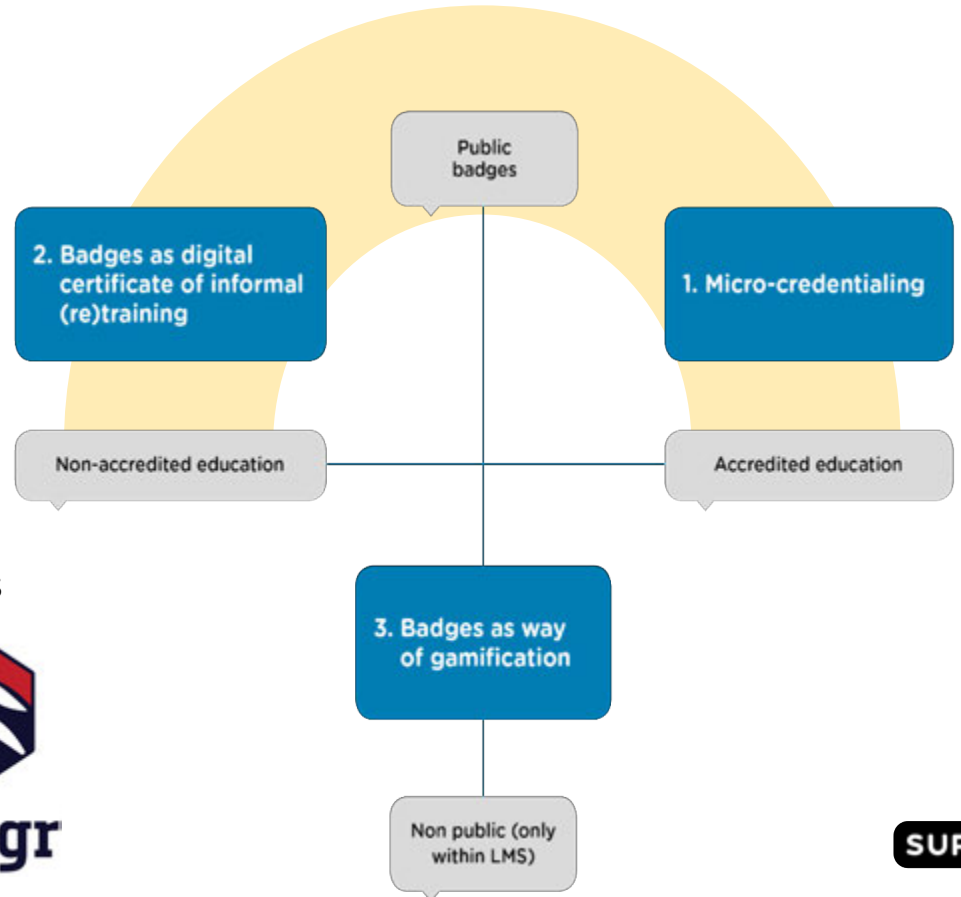
- Prove the use case for Open Badges in HE.
- Show how Badges could enable microcredentialing.
- Show how this process could work and what's needed to make it work.



Photo by [Nick Karvounis](#) on [Unsplash](#)

# Badges in Higher Education: Requirements for the PoC

- Support 2 scenarios from whitepaper
- Support overall process
- Support the 2.0 specification
- Open Source
- Using our own infrastructure
- Support integration with education systems



# PoC: Two types of Open Badge Scenarios

Badges for:

## 1. Micro-credentialing

## 2. Badges as digital certificate of informal (re)training

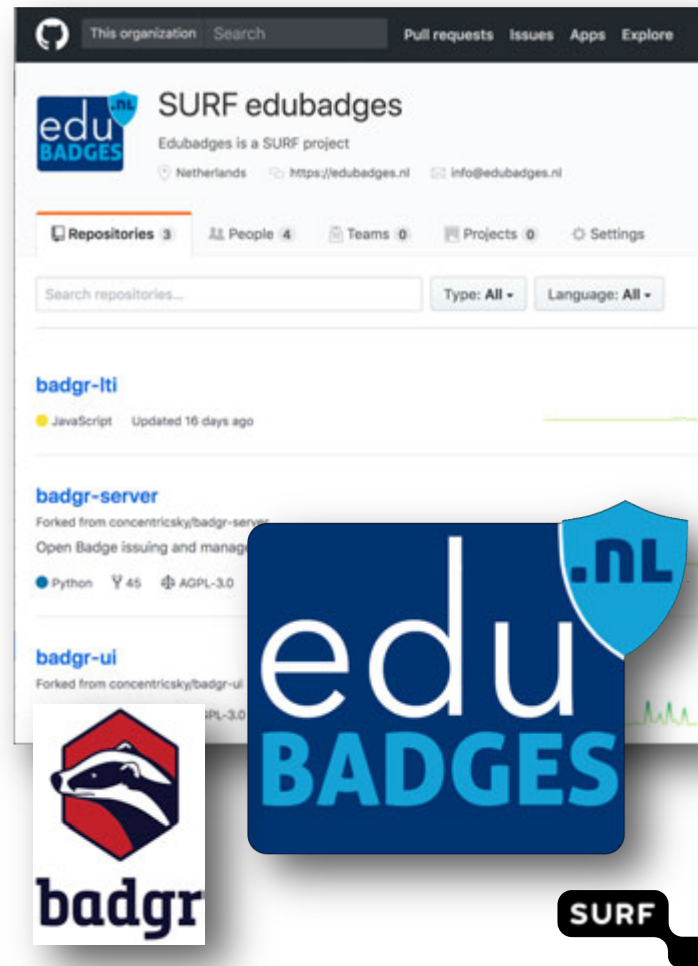
- Part time AD and bachelor (HR)
- Online accredited courses (UU) combining badges with SIS and LMS
- Proof of skills achieved in accredited European Law courses (Maastricht University)
- Executive education (RSM/EUR)
- Course completion within part time education (Windesheim)
- A MOOC across different universities (UvA KU Leuven Erasmus IBIS+)
- Course planning (determining optimal pathway through education) (Fontys)
- Institution Honours programme (Windesheim)
- Exceptional skills (e.g. Honours) (RSM/EUR)
- Pre-University activities (Fontys)
- Soft skills (TU/e, Fontys)
- Completing on the job training, with feedback into personnel system (VU)
- Attending workshops (SURFacademy)



# About the eduBadges PoC

## 2017 - 2018

- Open Badge Infrastructure based on Open Source Badgr
- Collaboration with Concentric Sky on joint development
- Development on Badgr on Github (<https://github.com/edubadges>)
  - SSO SURFconext – openID Connect
  - LTI integration component
- Working on European metadata extensions
- Experiment researching blockchain technology for endorsements
- Code audit





# LESSONS LEARNED

# Learned lessons Edubadges Proof of Concept



## **BADGE ISSUER** (EDUCATIONAL INSTITUTION)

### **Lessons learned**

- Badge strategy; determine the status that the badge has within the education system and how it relates to other badges.
- Badge governance; who may issue badges, when may they be issued, and to whom?
- Badges for micro-credentials require a vision on flexible education.



## **BADGE CONSUMER** (EMPLOYER OR OTHER EDUCATIONAL INSTITUTION)

### **Lessons learned**

- No experience acquired through the PoC (to be discussed in the future).



## **BADGE EARNER** (STUDENT)

### **Lessons learned**

- Possibilities offered by badges not yet known.
- Uploading badges to social media takes time and effort, and they are not displayed prominently.
- Managing badges is still an issue to be resolved.



## **INFRASTRUCTURE**

### **Lessons learned**

- Important focus is storage of edubadges.
- Standardisation: alignment required on subject-specific metadata and value system.
- Integration of the edubadge features in the digital learning environment and student information systems (SIS) is imperative.
- Important focus is on guaranteeing the authenticity of the badge's content, the awarding party and the badge earner.
- A persistent ID to manage the badges is a prerequisite (e-mail address is not sufficient).



# Publication available

- <https://www.surf.nl/en/knowledge-base/2018/lessons-learned-from-the-edubadges-proof-of-concept.html>





# EDUBADGES PILOT

# eduBadges Pilot 2018 - 2019

- Fresh install eduBadges infrastructure
  - Roles and permissions model extended
  - Frontend Theming options
- GDPR compliant
  - New enrolment workflow
- More participating institutions
- Increasing effort on policy support for enabling microcredentialing within Dutch HE
- Preparing business model for service delivery by SURF to Dutch HE
- Continuous development





NEED MORE DEVELOPMENT

European  
Metadata  
Extension

Need a  
persistent  
identity!

Only  
Signed  
Badges?

Interna-  
tional  
alignment

Pathways  
in badge-  
metadata?

Endorse-  
ments! On  
Blockchain?

Accredited  
vs non-  
accredited

Federated  
Badge  
search

....and  
much more!

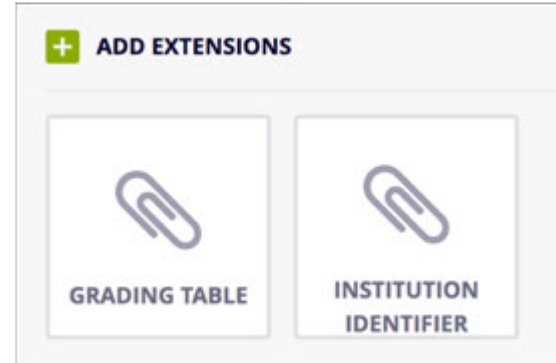


# NEED METADATA EXTENSIONS

# Metadata Extensions

## ISSUER

- institutionIdentifierExtension
- gradingTableExtension



## BADGECLASS

- LanguageExtension
- ECTSExtension
- NiveauExtension
- LearningOutcomeExtension
- EducationProgramIdentifierExtension





A person is shown from the chest up, wearing a black t-shirt and a highly reflective, metallic mask that covers their entire face. The mask acts as a perfect mirror, reflecting the surrounding environment. In the background, there is a large, active fountain with multiple vertical jets of water spraying upwards. The scene is set at night, with city lights and building silhouettes visible in the reflection on the mask and in the background. The overall mood is mysterious and futuristic.

# NEED PERSISTENT IDENTITY

Photo by [Alex Iby](#) on [Unsplash](#)

# Introducing eduID



- An eduID is a natural person, so anyone can create their own eduID.
- An eduID starts out as a (self created) base-identity that can get elevated trust and can be enriched by authorized sources.
- A user can only have ONE (high grade) verified eduID.
- A user has control over and insight into the use of the eduID, thus providing an overview of which identities and attributes are being released.
- An eduID can be used as part of life long learning in the domain of Dutch education and research.
- An eduID can be used for authentication and authorisation.
- To enable cross domain and cross border use of an eduID, a relation can be created with other (inter)national eduID's.

# eduID, a persistent identity



## Inloggen bij eduID

Gebruiker\*

frans.ward@surfnet.nl



Wachtwoord\*

.....



Inloggen

[Wachtwoord vergeten?](#)

[Registreren](#)

[Ik heb nog geen eduID](#)

[Wat is eduID?](#)

## Gebruik een ander account

Inloggen bij eduID met een andere account is mogelijk indien je dit hebt ingesteld.



Gebruik onderwijsinstelling



Gebruik Google account

# Contract

NEED SIGNED BADGES



# Signed Open Badges

- How to employ digital signatures to permit validation of open badges without a need to access an assertion database?
- Desired longevity for such Signed Open Badges is about 50 years. (Life Long Learning).
  - need long-lived signatures
- All currently used algorithms will be broken in 10 to 15 years by quantum computers (expectation).
  - need for (automatic) re-signing badges
  - need for multiple signatures (JWS in JSON serialization)
  - need validation based on alternative signature schemes.
- Privacy of Certified Content
  - need salted hash
- Key Splitting
  - minimum 2-out-of-3

*Full report that reviews  
cryptographic practices  
for Signed Open Badges:*

<https://wiki.surfnet.nl/display/OB/Signing+Open+Badges>

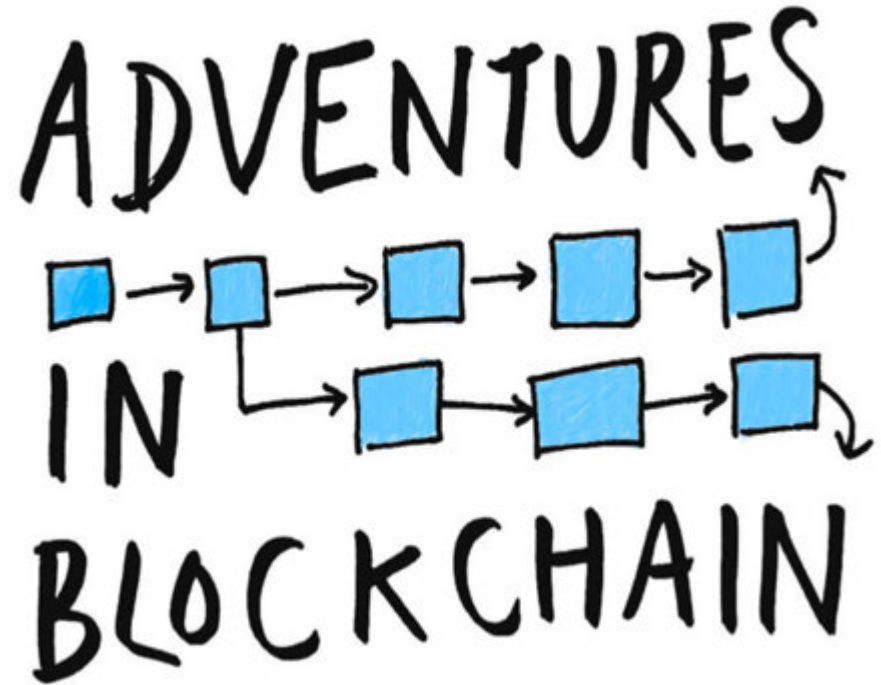


A woman with brown hair tied back, wearing a tan leather jacket over a light pink dress, is smiling and giving two thumbs up. She is standing on a balcony or terrace with a railing. In the background, there is a sunset over a body of water with hills in the distance. To the left, there are some buildings on a hillside. The overall mood is positive and enthusiastic.

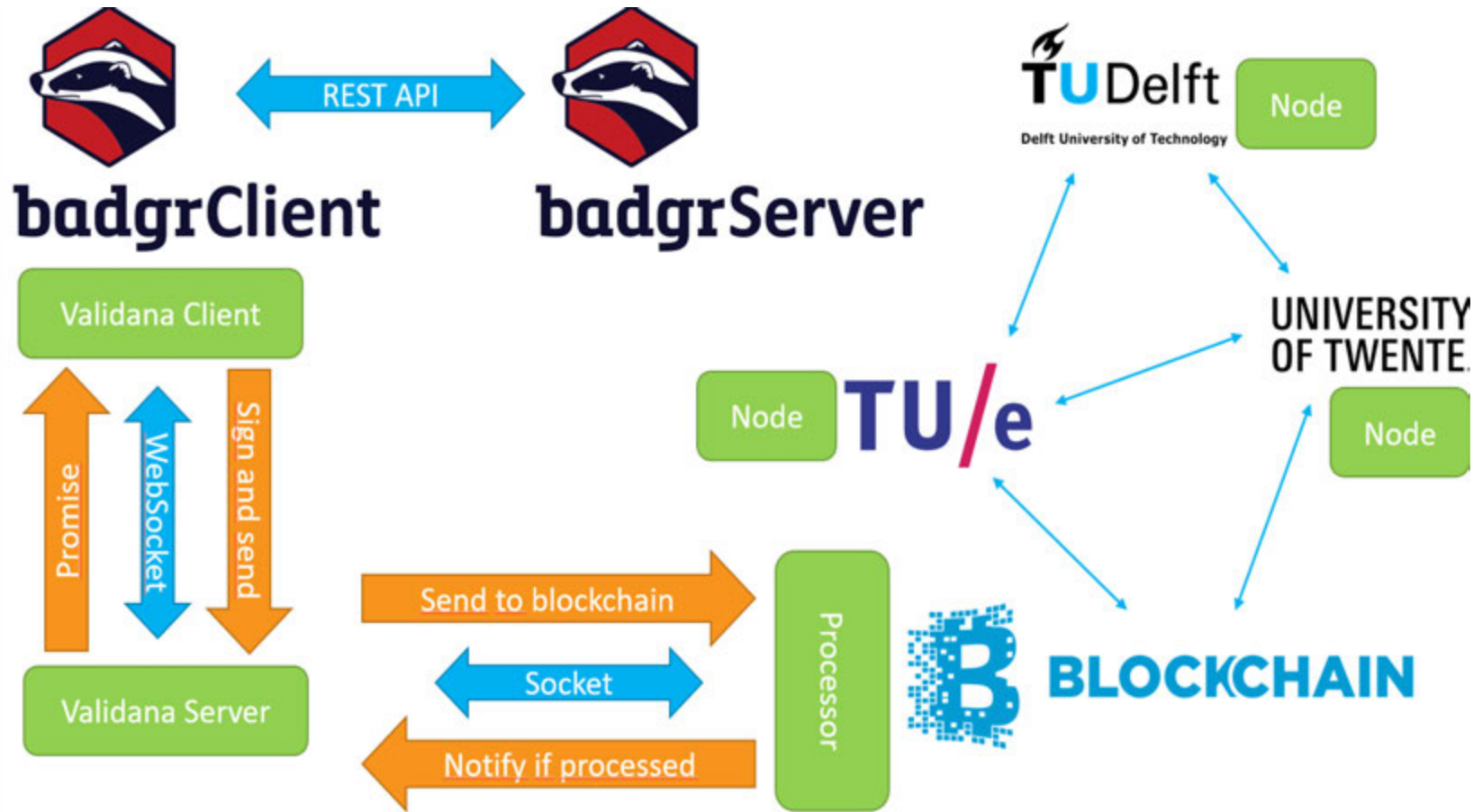
# NEED ENDORSEMENTS

# eduBadges blockchain experiment

- Is there additional value in using blockchain technology in an open badge infrastructure?
- ✓ Never store personal data on a blockchain!
- ✓ Blockchain technology can make access to **endorsements** and **badge classes** more transparent and verifiable.
- ✓ Still in progress.....



Properties of Open Badges by @bryanMMathers is licensed under CC-BY-ND





A white DeLorean sports car is parked in the foreground, angled towards the left. Behind it is a large blue truck. The side of the truck features a large movie poster for 'Back to the Future' showing a man in a blue shirt ( Marty McFly ) standing next to a car. The text 'FUTURE PLANS' is overlaid in white on an orange banner across the middle of the image.

# FUTURE PLANS

<https://www.flickr.com/photos/gsfcr/22150617080/>

# Activities we are planning for the future

- Publish pilot findings
- Work on the eduBadges Service offering
- Develop badge signing
- Improve LTI integration to improve LMS – badge system communication
- Research on open badge and SIS integration
- Investigate interest and possibilities for a pan-European badge infrastructure
- Alignment with European exchange and description frameworks
- National backpack service
- Design a cool eduBadges T-shirt
- & many things more...



ONE MORE THING

Photo by [Eddy Lackmann](#) on [Unsplash](#)

I always wondered....

Why isn't there an .OBI  
filename extension?







Photo on Flickr by IMF Staff Photograph/Stephen Jaffe



## Projectteam Open Badges

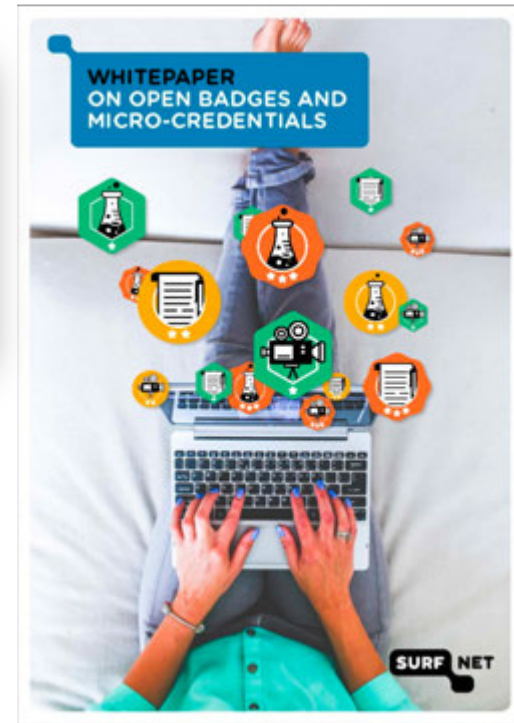
[info@edubadges.nl](mailto:info@edubadges.nl)



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**SURF**



*Full report that reviews cryptographic practices for Signed Open Badges :*  
<https://wiki.surfnet.nl/display/OB/Signing+Open+Badges>