



LANDSENSE

**A Citizen Observatory and Innovation
Marketplace for Land Use and Land Cover
Monitoring**

**Authentication as a Service –
A LandSense contribution to improve the
FAIR principle in Citizen Science**

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GmbH**

Motivation for AaaS...

- Valuable Citizen Science data exist in silos at many different operators, portals, platforms, etc.
 - => Relatively **easy to contribute** once you have created **yet another user account**
 - => **Difficult to (re-)use** in workflows with non-open access or with licensing other than CC0
- Citizen Science data is **often refused** in decision making due to lack of trust into the data
 - => Contributing users have only local reputation profile
- AaaS provides **seamless user identity** to applications and services to **construct workflows** and **create (quasi anonymous) reputation profiles** across different operators

FAIR...

- *"The FAIR Guiding Principles for scientific data management and stewardship"* by Mark D. Wilkinson et.al. [1]
- *"... may act as a guideline for those wishing to enhance the reusability of their data holdings"* [*]
- To be Findable
- To be Accessible
- To be Interoperable
- To be Reusable

*: <https://www.nature.com/articles/sdata201618>

Box 2: The FAIR Guiding Principles

To be Findable:

F1. (meta)data are assigned a globally unique and persistent identifier

F2. data are described with rich metadata (defined by R1 below)

F3. metadata clearly and explicitly include the identifier of the data it describes

F4. (meta)data are registered or indexed in a searchable resource

To be Accessible:

A1. (meta)data are retrievable by their identifier using a standardized communications protocol

A1.1 the protocol is open, free, and universally implementable

A1.2 the protocol allows for an authentication and authorization procedure, where necessary

A2. metadata are accessible, even when the data are no longer available

To be Interoperable:

I1. (meta)data use a formal, accessible, shared, and broadly applicable language for knowledge representation.

I2. (meta)data use vocabularies that follow FAIR principles

I3. (meta)data include qualified references to other (meta)data

To be Reusable:

R1. meta(data) are richly described with a plurality of accurate and relevant attributes

R1.1. (meta)data are released with a clear and accessible data usage license

R1.2. (meta)data are associated with detailed provenance

R1.3. (meta)data meet domain-relevant community standards

Show less ^

AaaS and FAIR...



Accessible (A1.2)

... is not only about open access.

= > Authentication and Authorization is "in scope"



Reusable (R1.1)

... licensing of the data must be considered

= > Citizen Scientists may label their contributions with an Attribution License (.e.g. CC-BY)

FAIR, the EC and the EOSC...

- The European Commission Expert Group on FAIR data published the action plan "Turning FAIR into Reality" [*]

=> Important to consider FAIR principles when building data infrastructures such as the European Open Science Cloud (EOSC)

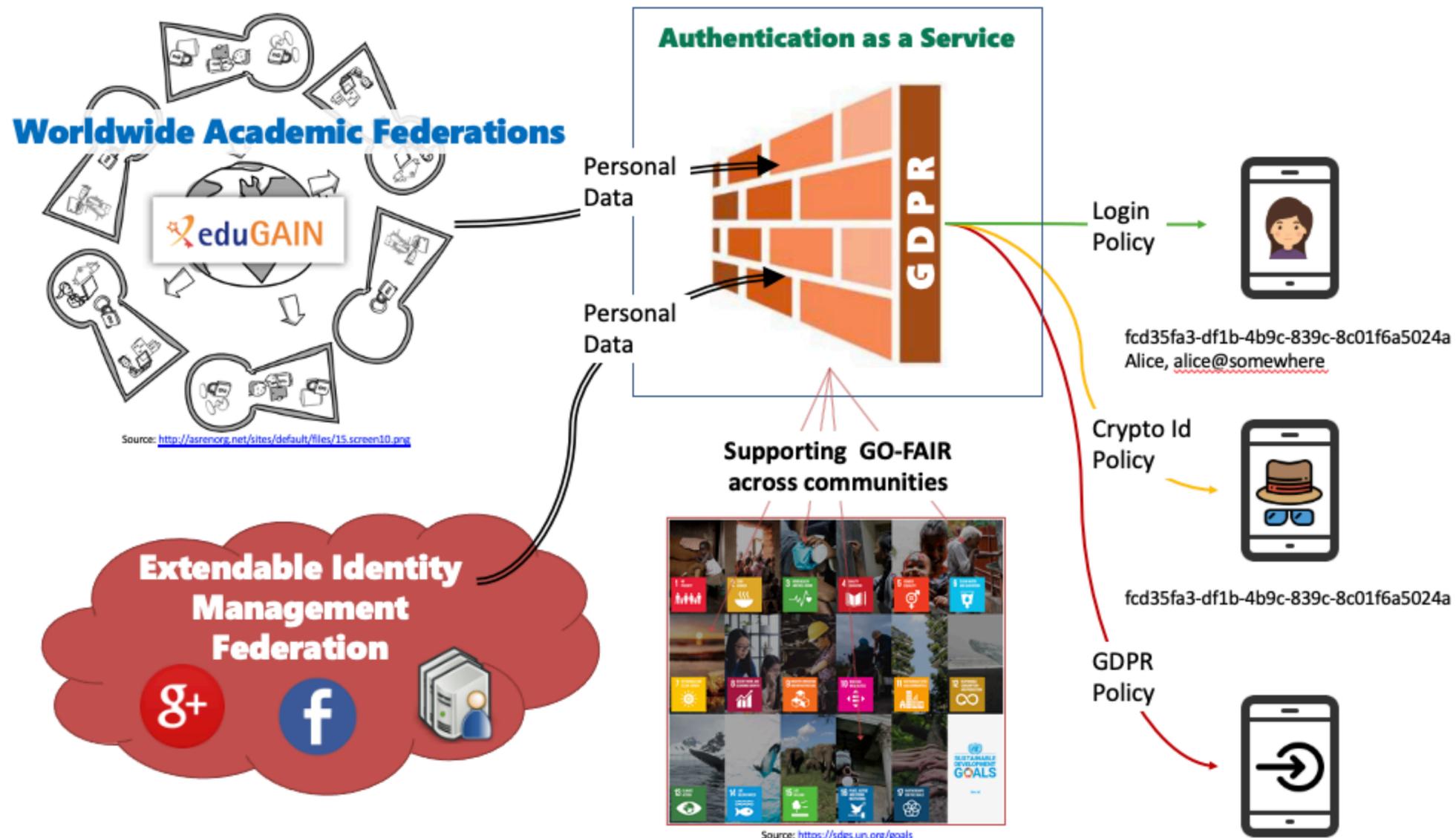
- The European Open Science Cloud is becoming a Research Infrastructure and Market Place for Data and registered Services

=> EOSC requirements must be considered for registration of services

[*]: https://ec.europa.eu/info/sites/info/files/turning_fair_into_reality_0.pdf

Authentication as a Service...

➤ ... a broker of personal data to registered applications and services with respect to GDPR

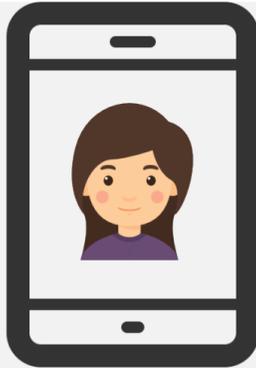


➤ Extendable Identity Management Federation

=> More login providers can be added

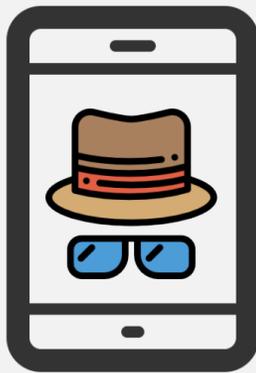
AaaS and GDPR...

GDPR
Policy



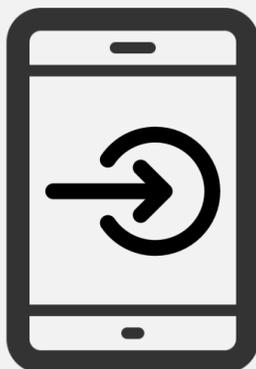
fcd35fa3-df1b-4b9c-839c-8c01f6a5024a
Alice, alice@somewhere

Crypto Id
Policy



fcd35fa3-df1b-4b9c-839c-8c01f6a5024a

Login
Policy



GDPR Policy

... *user is fully identified: Unique Id, name, display-name, nick-name, email, etc.*

=> User has given consent that application receives personal data



Crypto Id Policy

... *user is uniquely identified: Unique Id*

=> *No personal information*

=> Application and services must not be GDPR compliant



Login Policy

... *user must login*

=> *No user related information*

AaaS supporting FAIR...

① Accessibility: Application <- User -> Service

=> Registered application obtains access token for logged in user (plus approved personal information)

=> Application sends access token to **community services**

=> Community services act upon access token

=> Users can (re-)use one login for applications and services of other communities – **Ease of use**

② Reusability: Licensing conditions may require to exchange personal information across different operators

=> AaaS enables and controls the flow of personal information across operators

=> Workflows can be constructed including licensed data

LandSense use of AaaS...

- Applications and Services of the LandSense Engagement Platform leverage AaaS
 - => User must not create yet another account – login with existing provider gives access to data and services
 - => Applications and services must not maintain a user database - so not store personal information
 - => Example application: <https://natura-alert.net>
- Applications and Services can choose the (required) amount a personal information to be brokered
 - => Application or service can operator without personal data – no need to comply with GDPR
 - => Application or service can request personal data

Sustainability...

➤ What are the **technological** key objectives?

=> GDPR compliance

=> HA & cloud-readiness

=> Standards-based API

=> High TRL

➤ What is **the paramount** key objective?

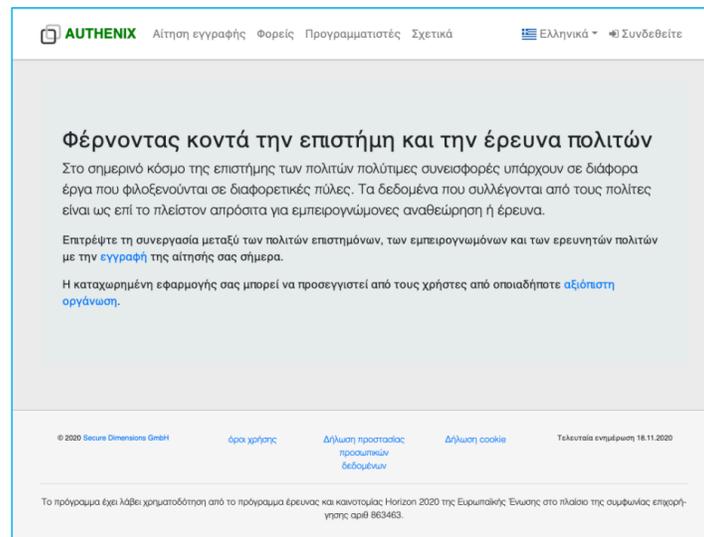
=> External funding or pricing model

➤ The **LandSense AaaS** continues to live

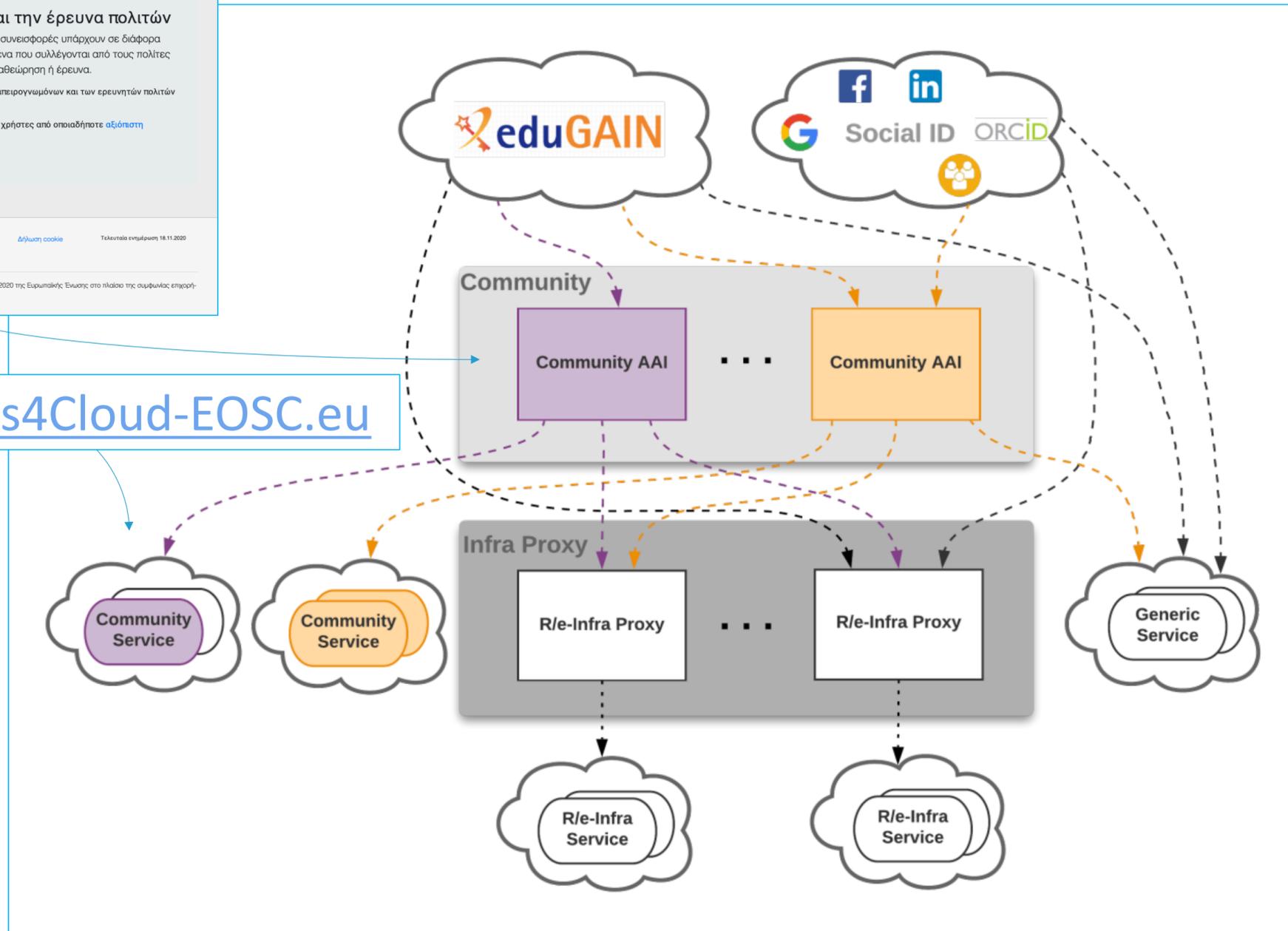
=> Transition into H2020 Cos4Cloud towards EOOSC

=> <https://as.landsense.eu> => <https://www.authenix.eu>

AaaS meets EOSC (not yet)...



<https://Cos4Cloud-EOSC.eu>



Source: <https://wiki.eosc-hub.eu/download/attachments/73760913/EOSC%20Technical%20Specification-AAI.pdf?version=1&modificationDate=1595512434720&api=v2>

- AaaS implements the Community AAI Interface
=> Registration with EOSC-Hub as "AAI Service" required



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European
Commission

Horizon 2020
European Union funding
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