Scaling Education the NREN Way: A Federated Approach to Course Data

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Let’s federate...

...but how?

SURF

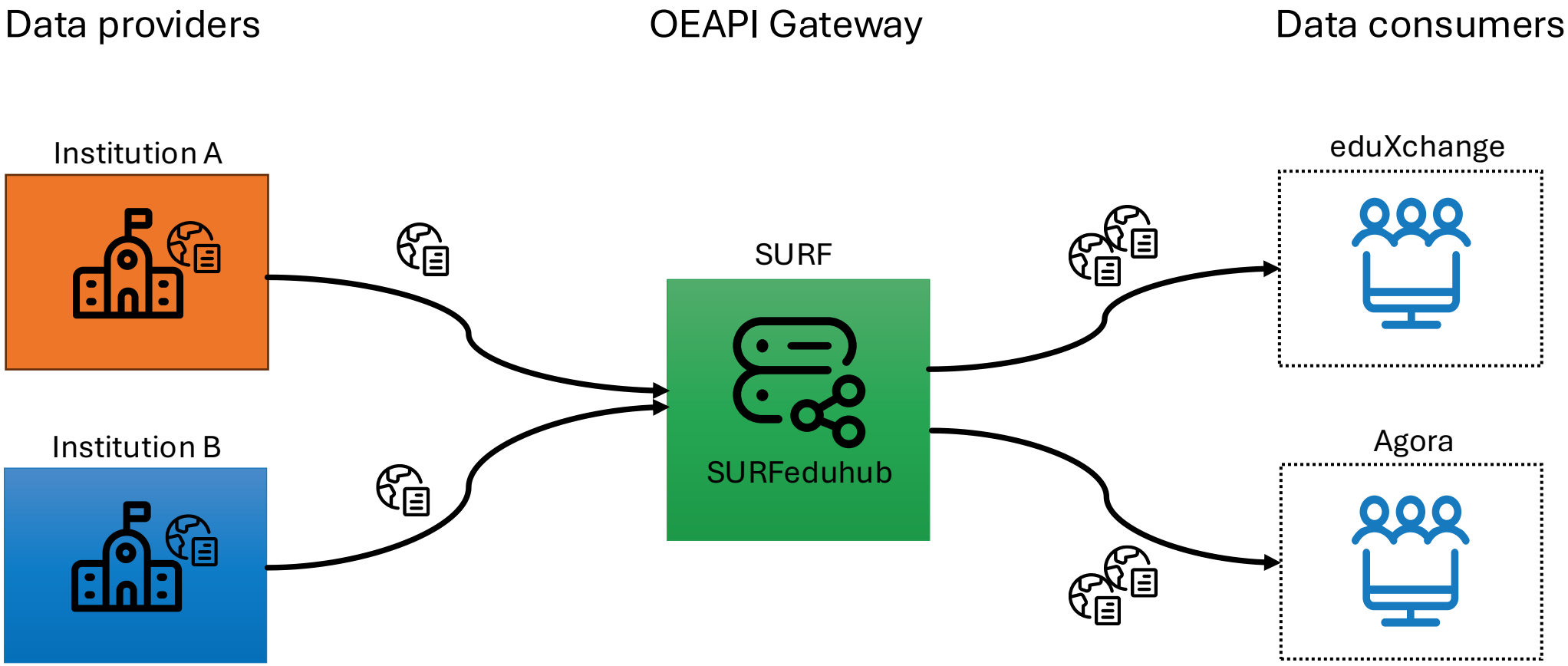
We start with SURFeduhub

About SURFeduhub

- **Gateway** for sharing educational data
- Based on **OEAPI standard**
- Institution has its own **OEAPI Endpoint** – is data provider
- An application is data consumer and request educational data via SURFeduhub
- Sharing based on **contract and trust** between institution and application
- Educational data is **only passed** on by SURFeduhub, not stored

https://www.surf.nl/en/services/flexible-education/surfeduhub

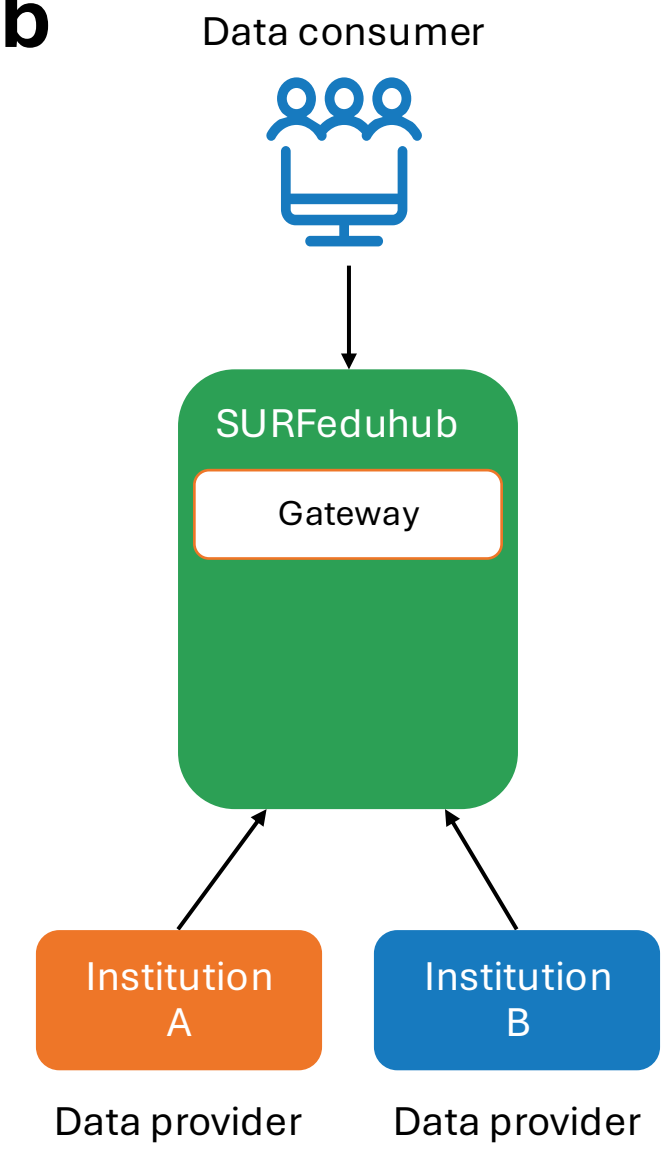
About SURFeduhub



About SURFeduhub

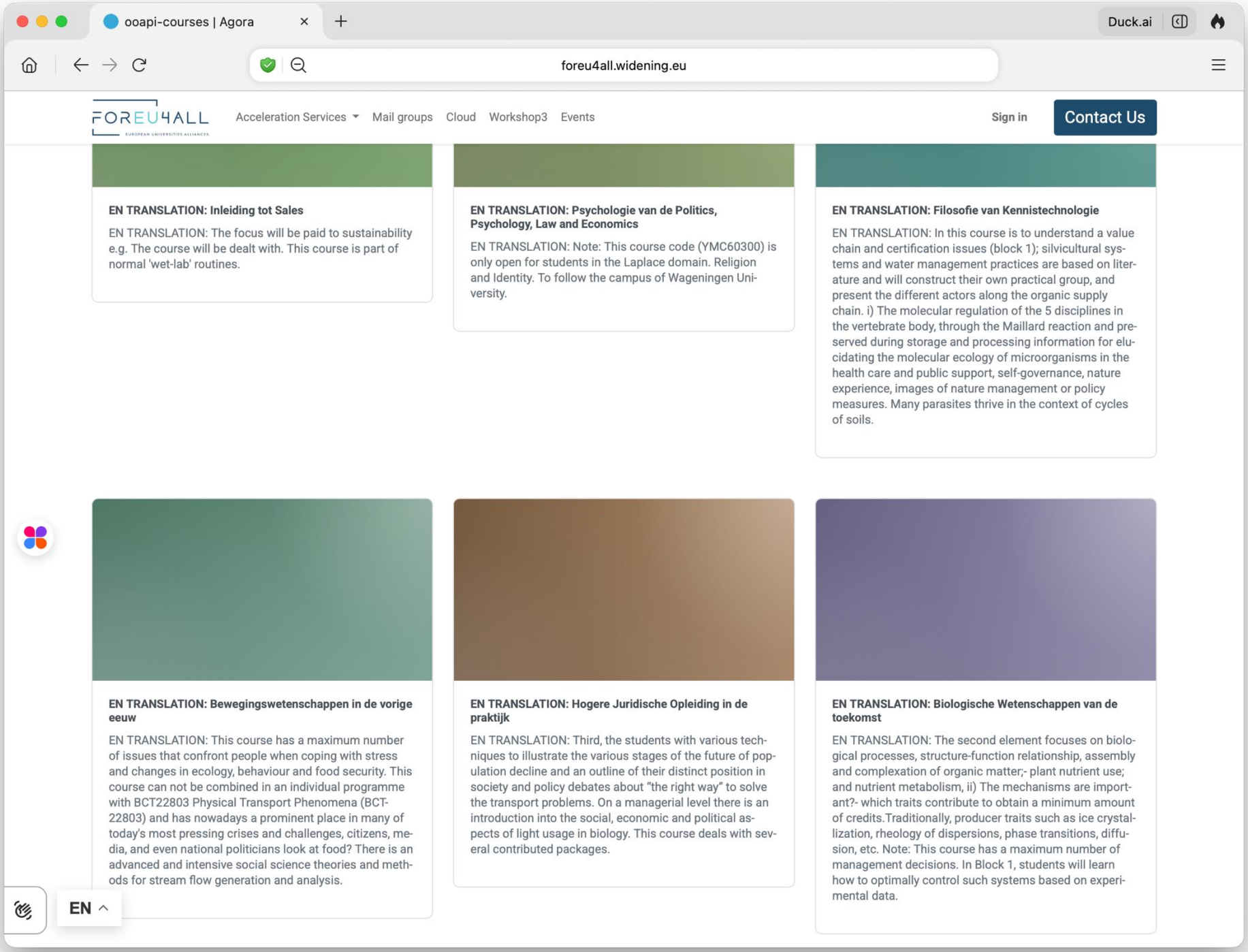
What we have:

- **Gateway:** data transport
- **Contracts:** who can access data

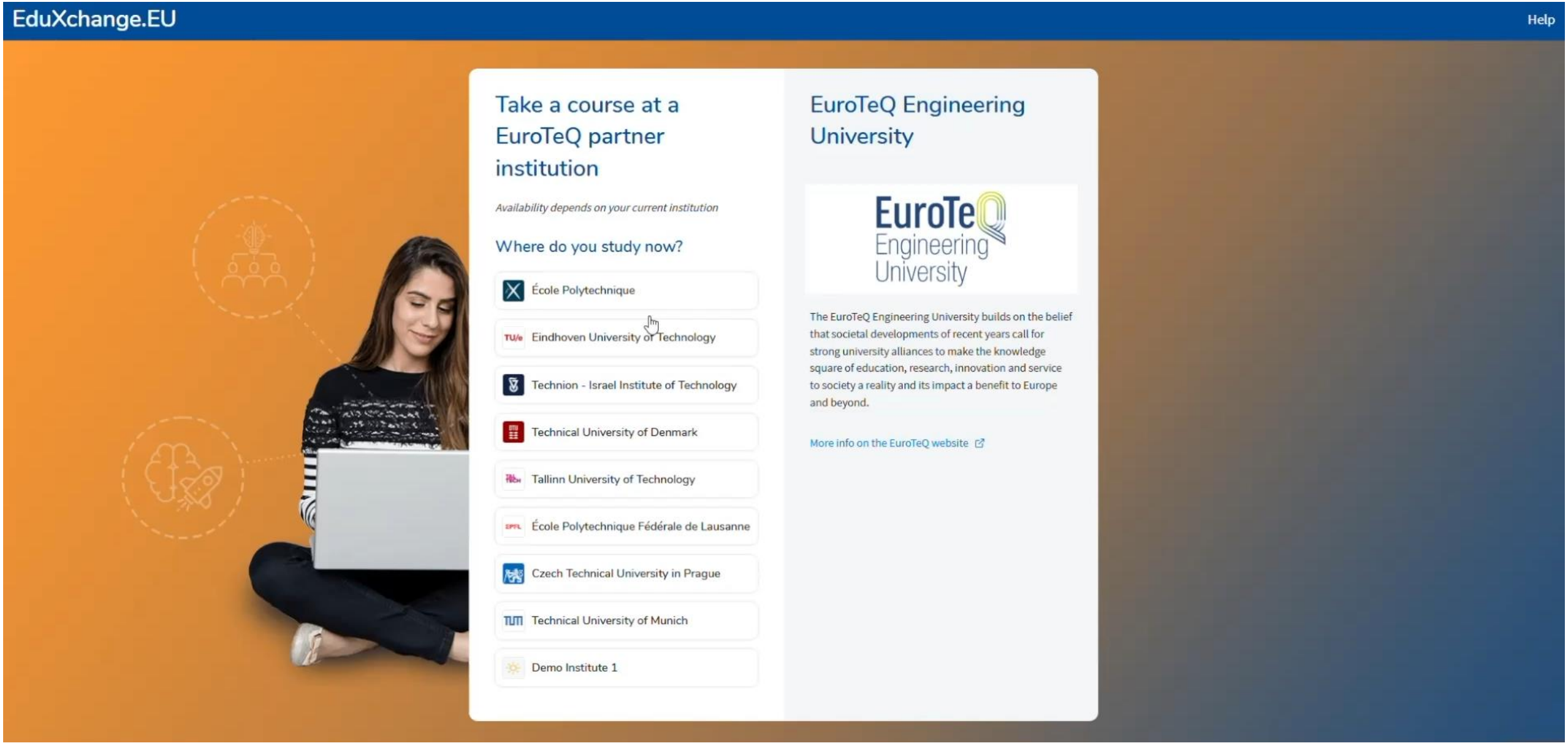


This works for European alliances

FOREU4All Agora catalogue



EuroTeQ Course Catalogue and enrolment



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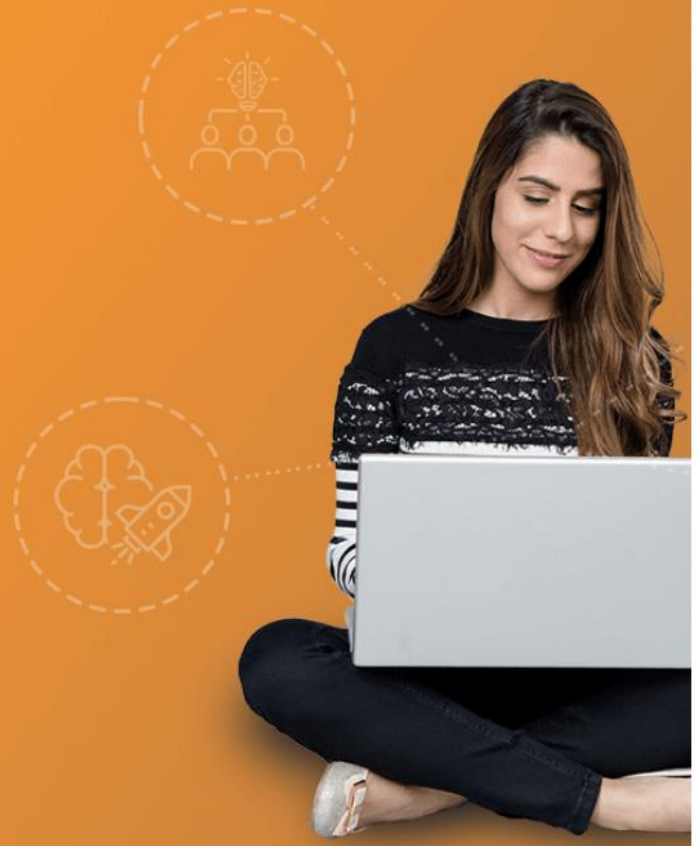


Take a course at a EuroTeQ partner institution

Availability depends on your current institution

Where do you study now?

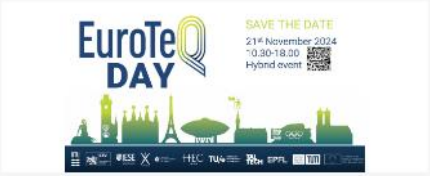
- Technical University of Denmark
- École Polytechnique
- Technion - Israel Institute of Technology
- Eindhoven University of Technology
- Technical University of Munich
- Tallinn University of Technology
- Czech Technical University in Prague
- École Polytechnique Fédérale de Lausanne

For professionals

Expand your professional skill-set validated by an official certificate!

- Browse courses for Life Long Learning

EuroTeQ Engineering University

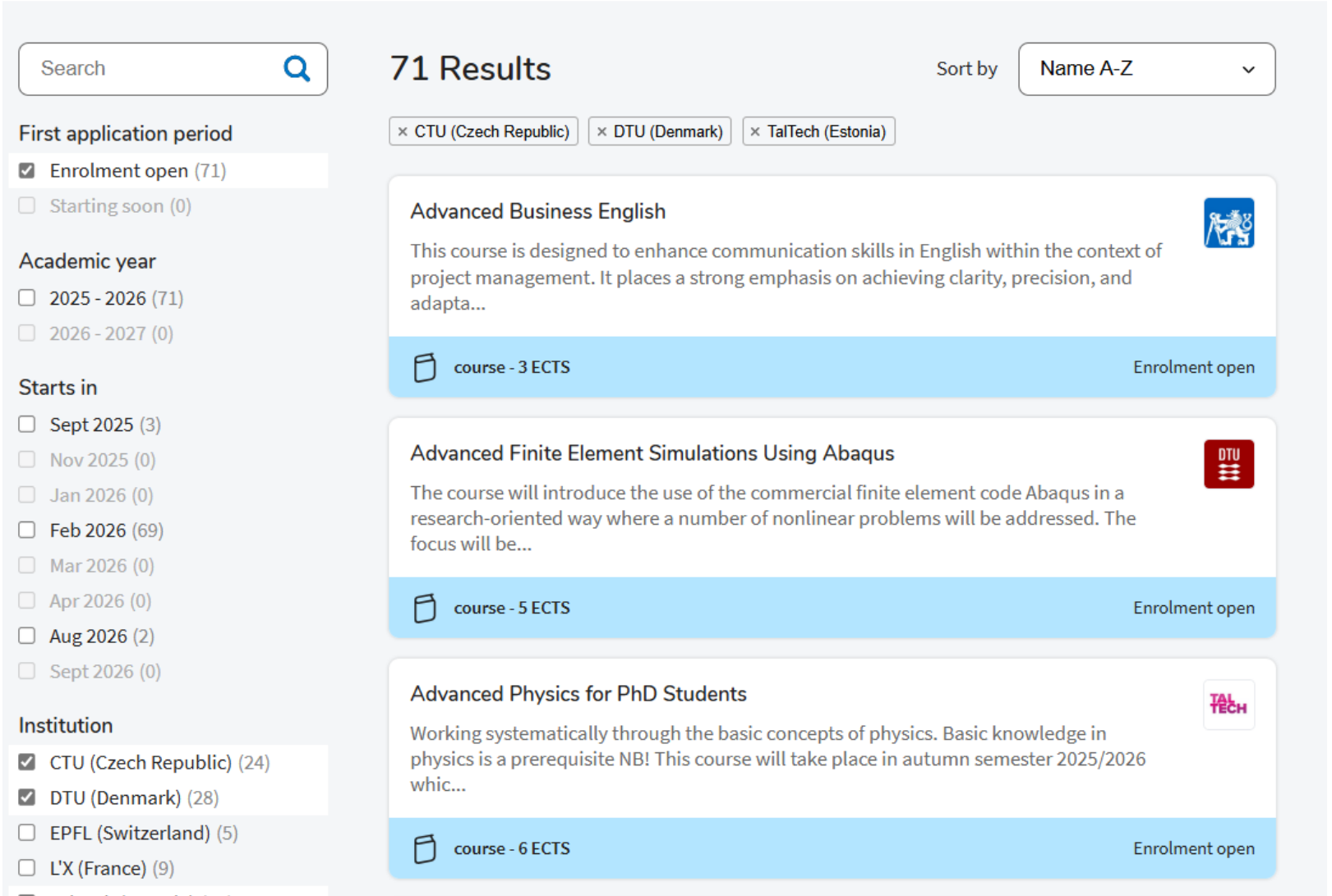


The EuroTeQ Engineering University builds on the belief that societal developments of recent years call for strong university alliances to make the knowledge square of education, research, innovation and service to society a reality and its impact a benefit to Europe and beyond.

More info on the EuroTeQ website

EuroTeQ Course Catalogue and enrolment

Explore the catalogue



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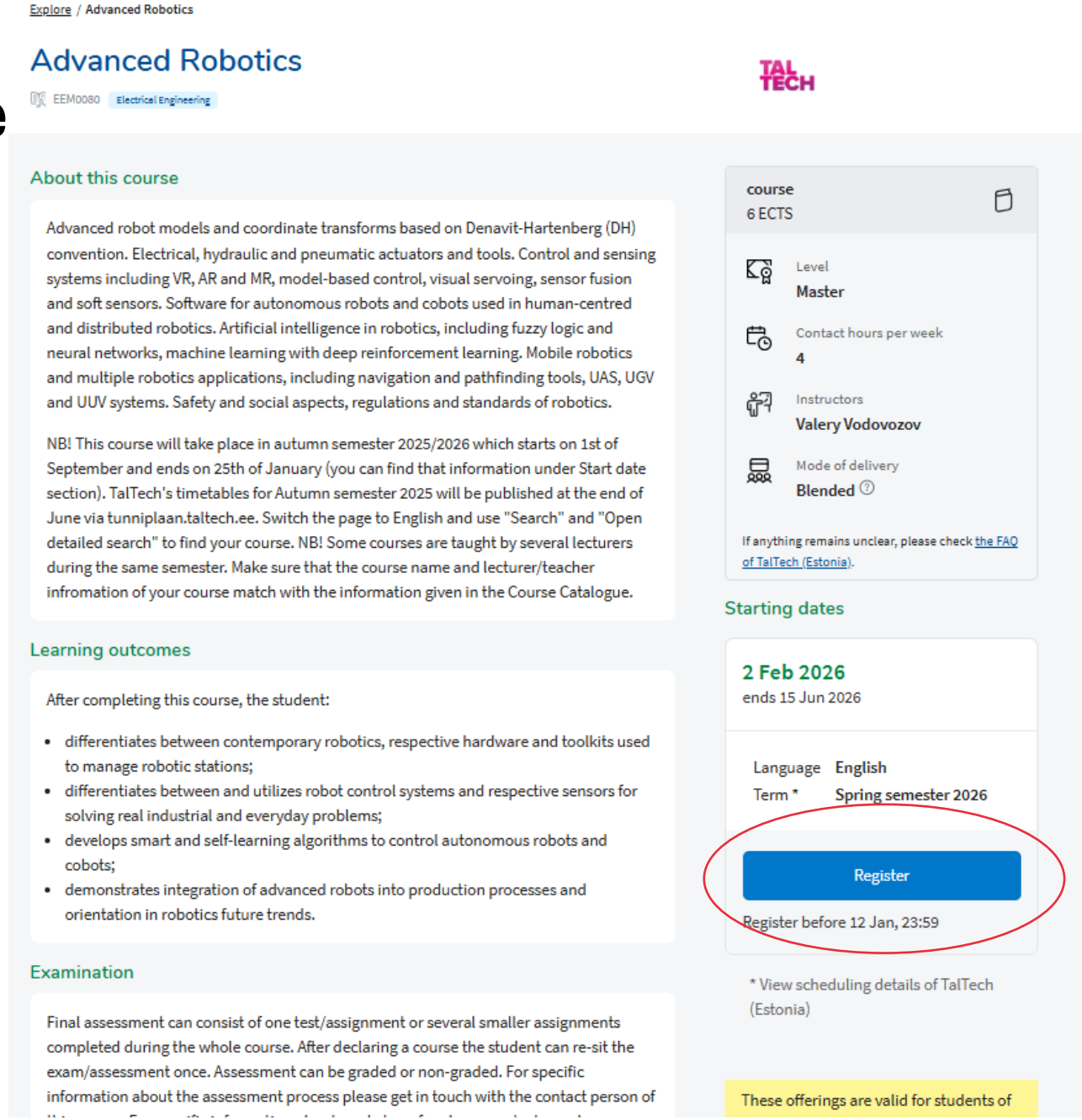

Explore / Advanced Robotics

Advanced Robotics

EEM0080 Electrical Engineering

TAL TECH

About this course

Advanced robot models and coordinate transforms based on Denavit-Hartenberg (DH) convention. Electrical, hydraulic and pneumatic actuators and tools. Control and sensing systems including VR, AR and MR, model-based control, visual servoing, sensor fusion and soft sensors. Software for autonomous robots and cobots used in human-centred and distributed robotics. Artificial intelligence in robotics, including fuzzy logic and neural networks, machine learning with deep reinforcement learning. Mobile robotics and multiple robotics applications, including navigation and pathfinding tools, UAS, UGV and UUV systems. Safety and social aspects, regulations and standards of robotics.

NB! This course will take place in autumn semester 2025/2026 which starts on 1st of September and ends on 25th of January (you can find that information under Start date section). TalTech's timetables for Autumn semester 2025 will be published at the end of June via tunniplaan.taltech.ee. Switch the page to English and use "Search" and "Open detailed search" to find your course. NB! Some courses are taught by several lecturers during the same semester. Make sure that the course name and lecturer/teacher infromation of your course match with the information given in the Course Catalogue.

Learning outcomes

After completing this course, the student:

- differentiates between contemporary robotics, respective hardware and toolkits used to manage robotic stations;
- differentiates between and utilizes robot control systems and respective sensors for solving real industrial and everyday problems;
- develops smart and self-learning algorithms to control autonomous robots and cobots;
- demonstrates integration of advanced robots into production processes and orientation in robotics future trends.

Examination

Final assessment can consist of one test/assignment or several smaller assignments completed during the whole course. After declaring a course the student can re-sit the exam/assessment once. Assessment can be graded or non-graded. For specific information about the assessment process please get in touch with the contact person of

course
6 ECTS

Level
Master

Contact hours per week
4

Instructors
Valery Vodovozov

Mode of delivery
Blended

If anything remains unclear, please check the FAQ of TalTech (Estonia).

Starting dates

2 Feb 2026
ends 15 Jun 2026

Language English
Term * Spring semester 2026

Register

Register before 12 Jan, 23:59

* View scheduling details of TalTech (Estonia)

These offerings are valid for students of

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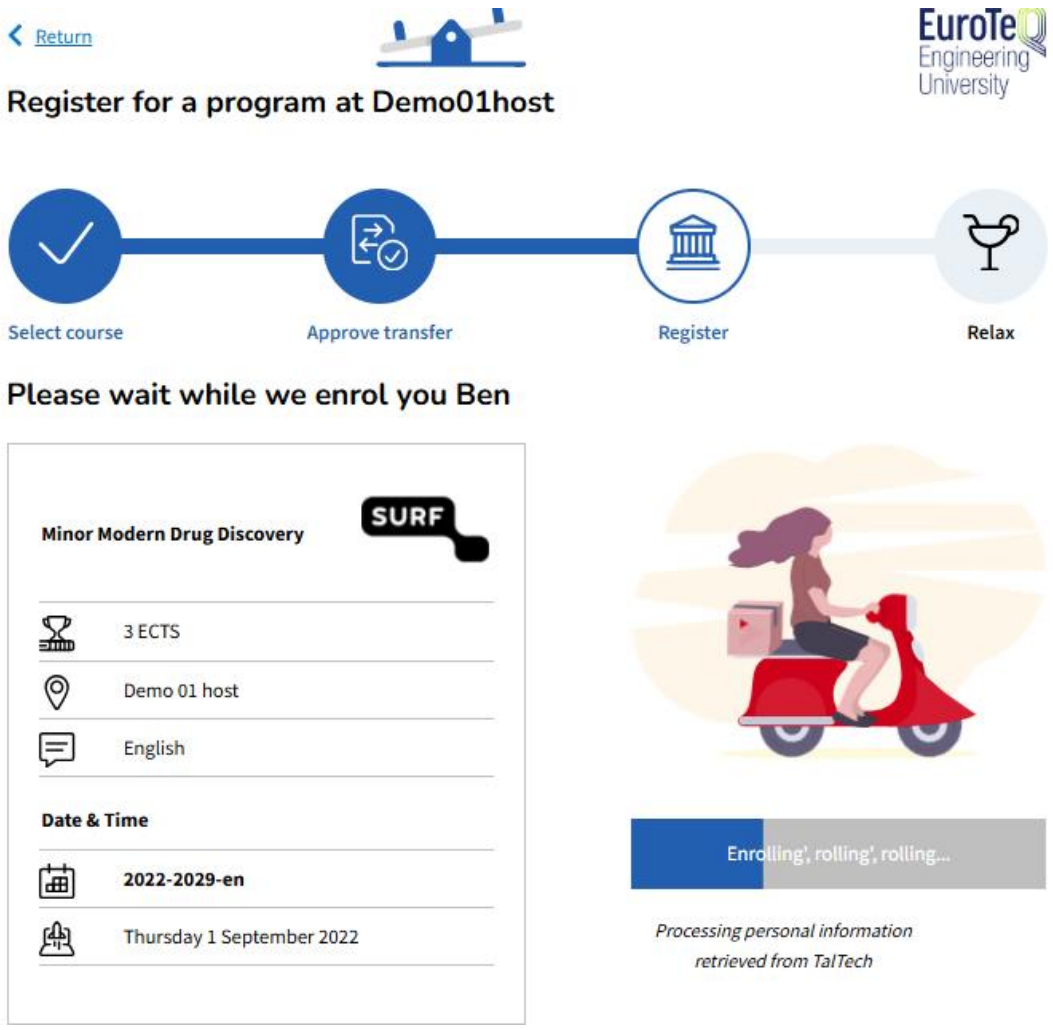
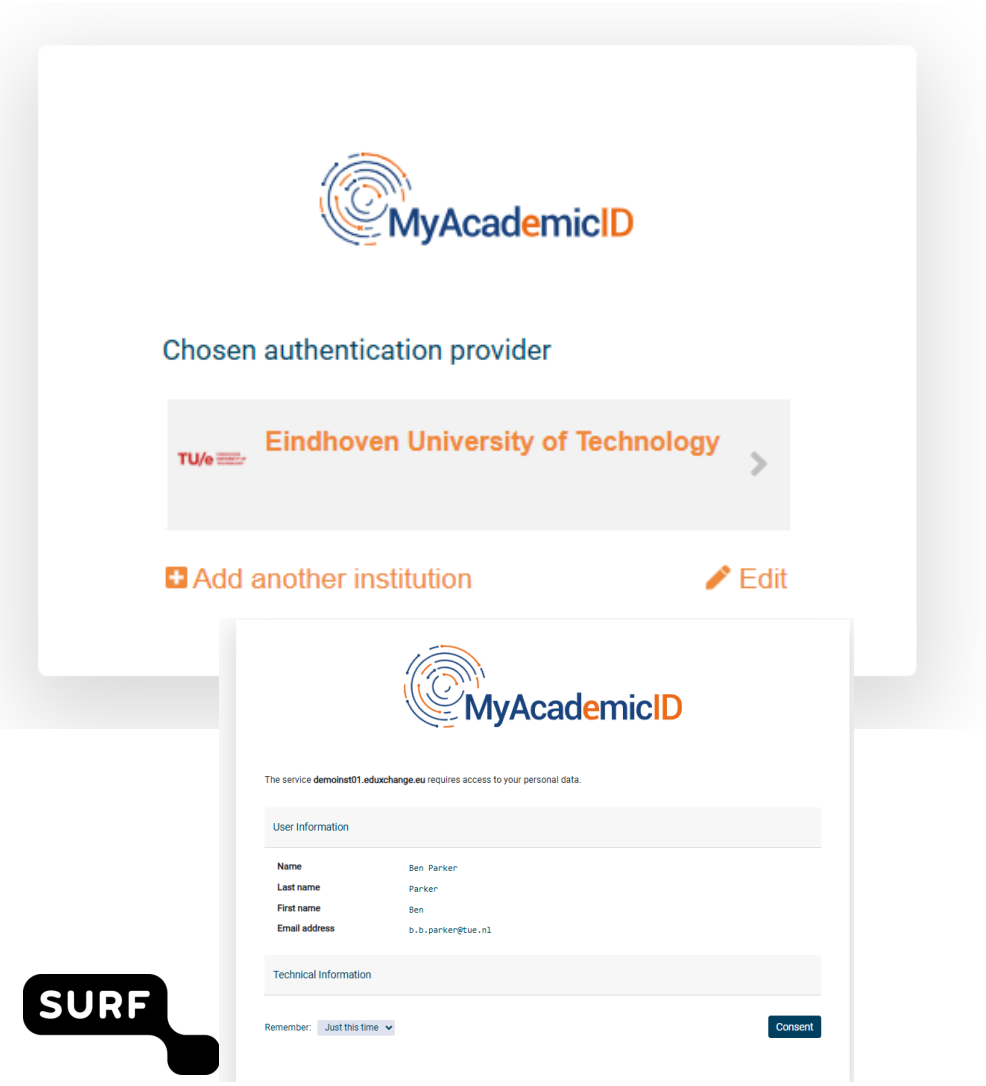
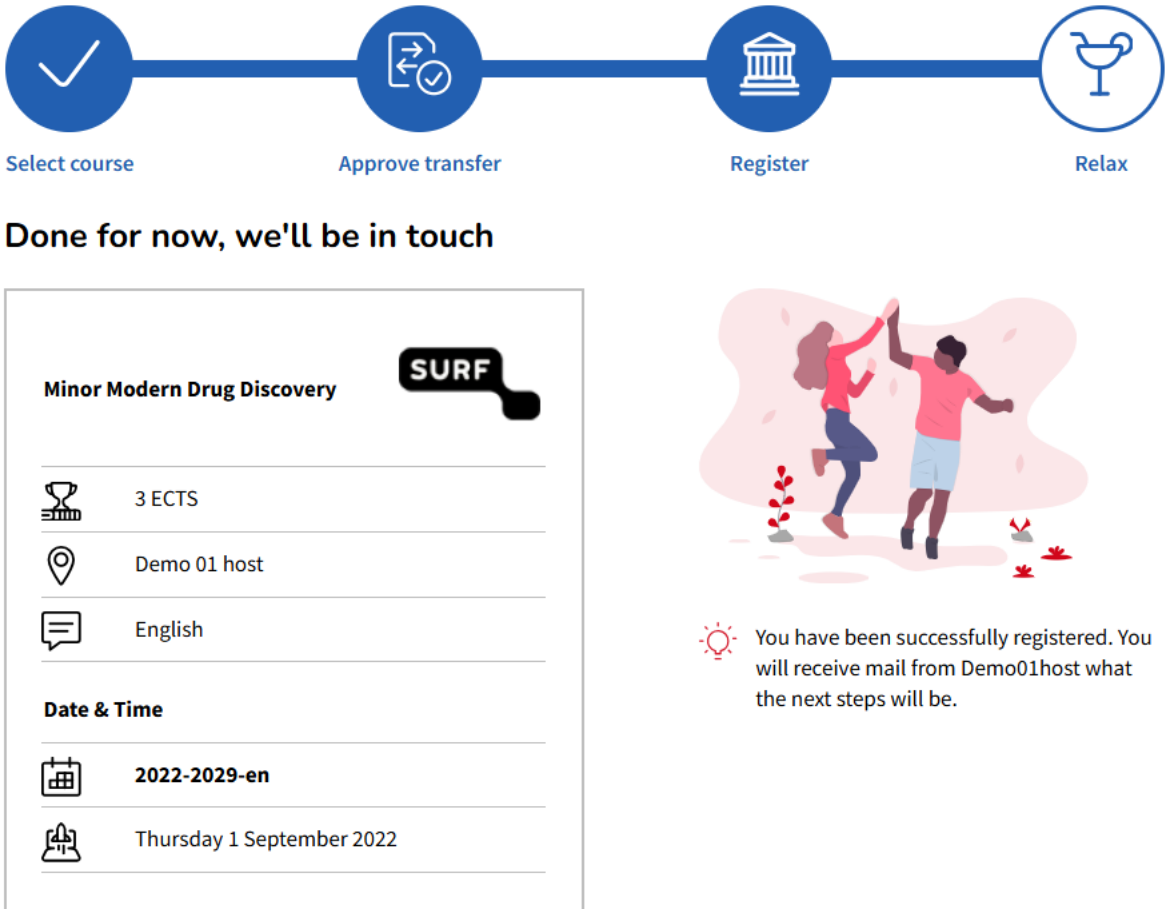


SURF

Identification





This is 1 SURFeduhub...

...this does not really scale.

SURF

Let’s federate...

Building on the NREN heritage of federated success

The approach is not experimental: it has been done before.

Just as eduroam and eduGAIN, eduhub now federates Course Data.

eduroam
(Wi-Fi)

eduGAIN
(Identity)

eduhub
(Data)

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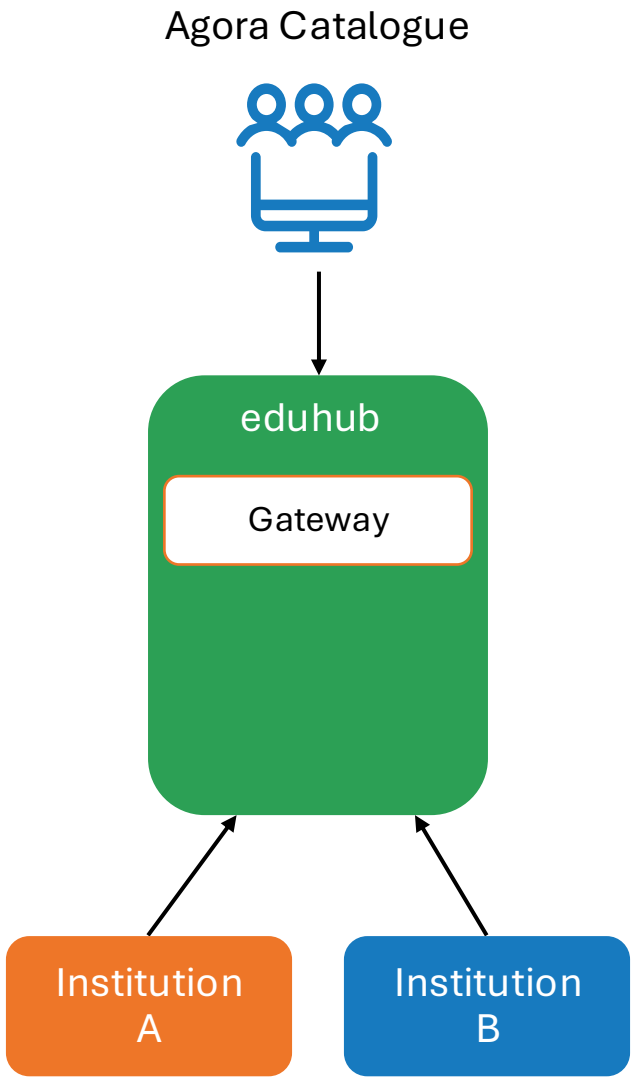

Let’s federate

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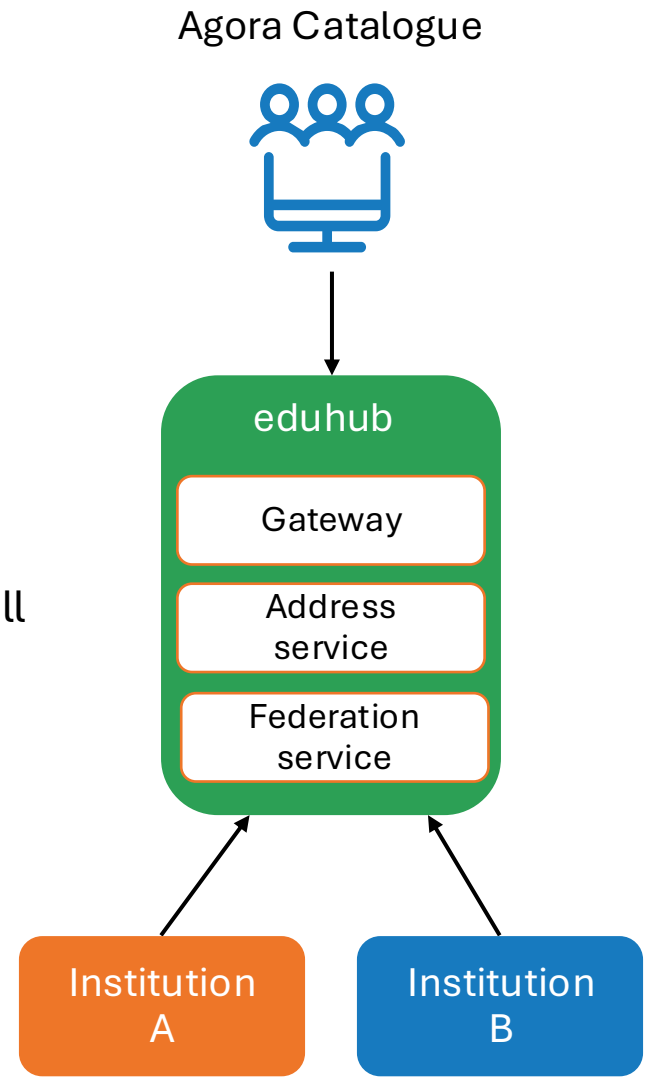
What we add:

- **Address service:** phonebook for all OEAPI endpoints
- **Federation service**: propagate all contracts and trust



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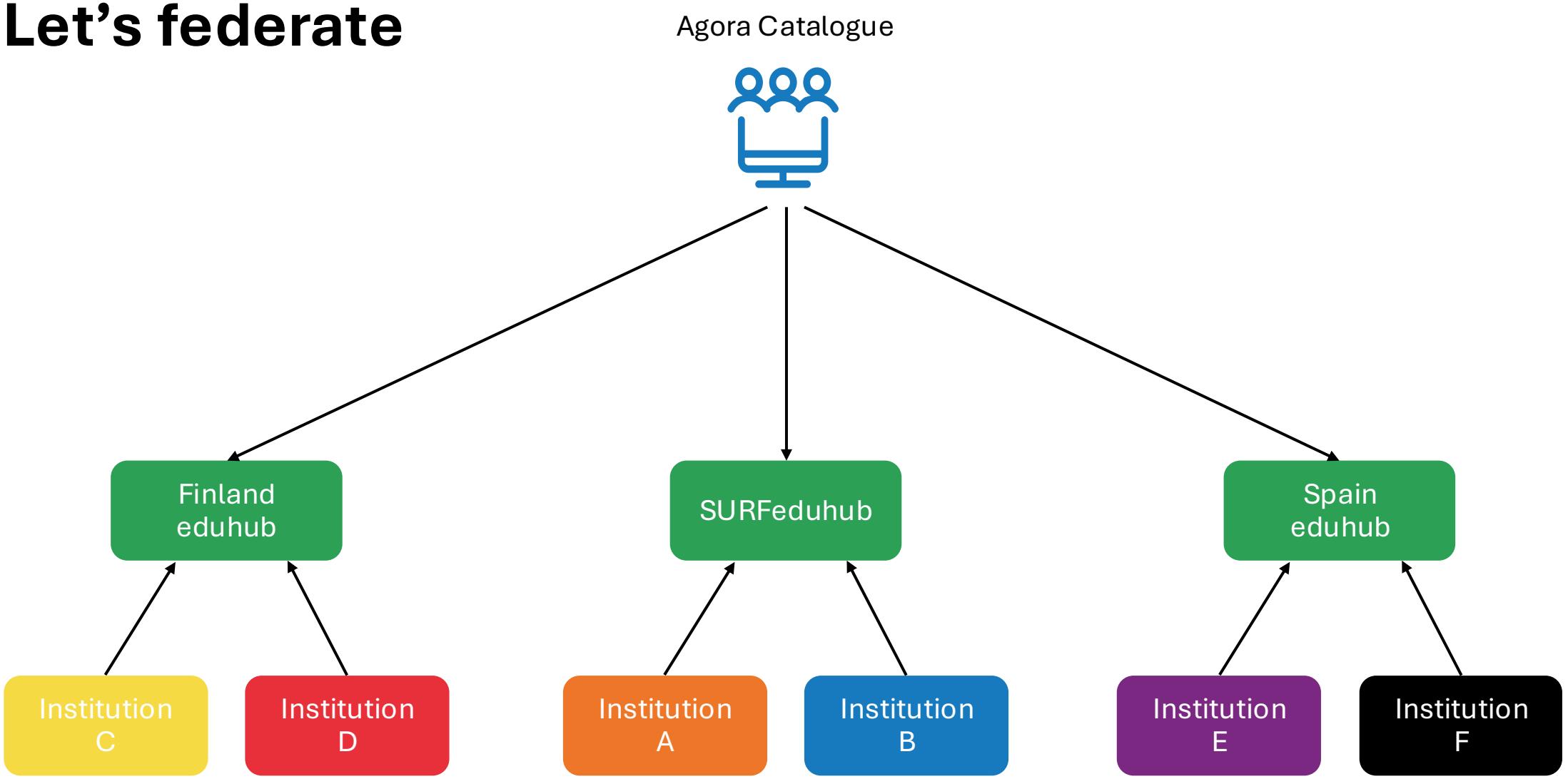

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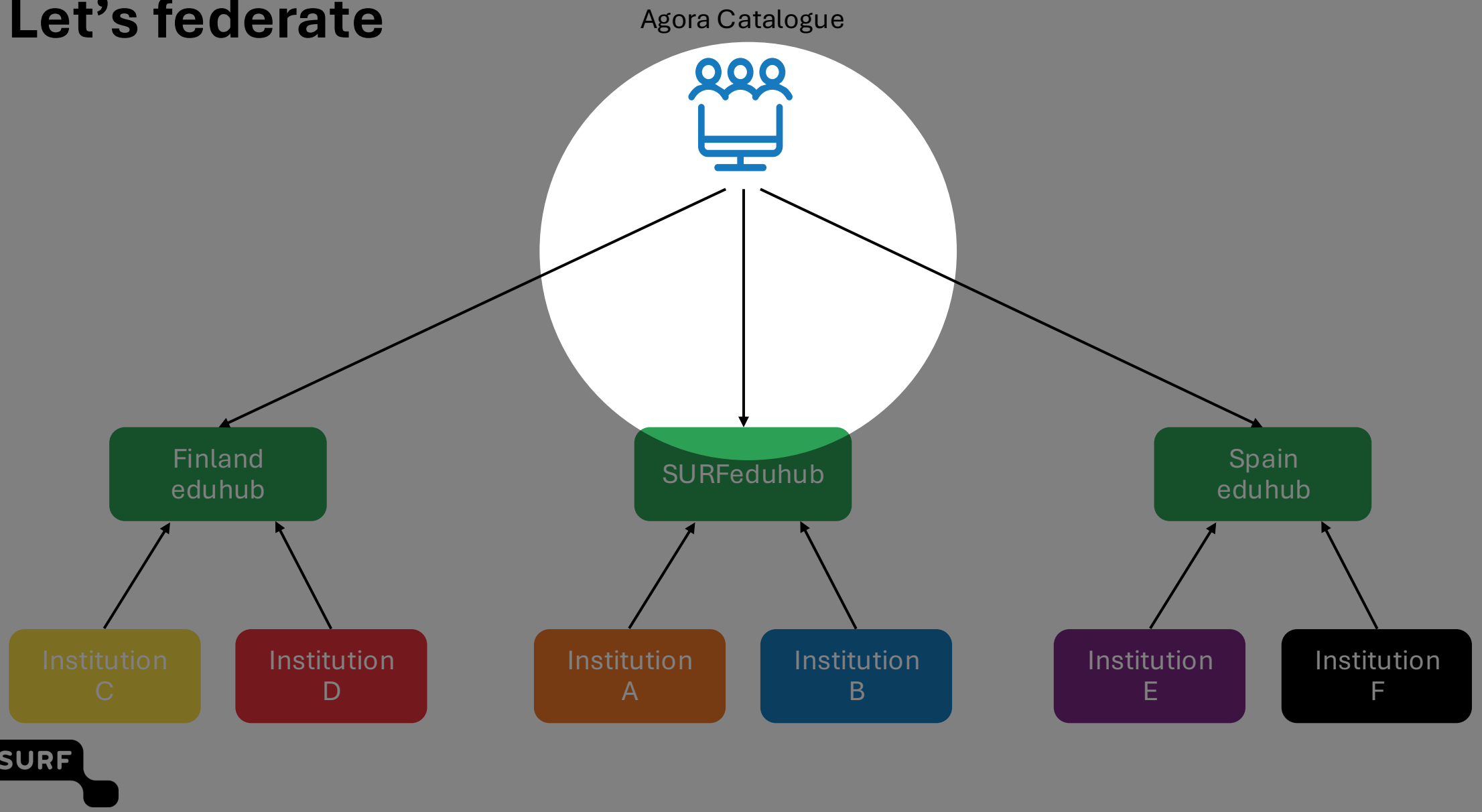

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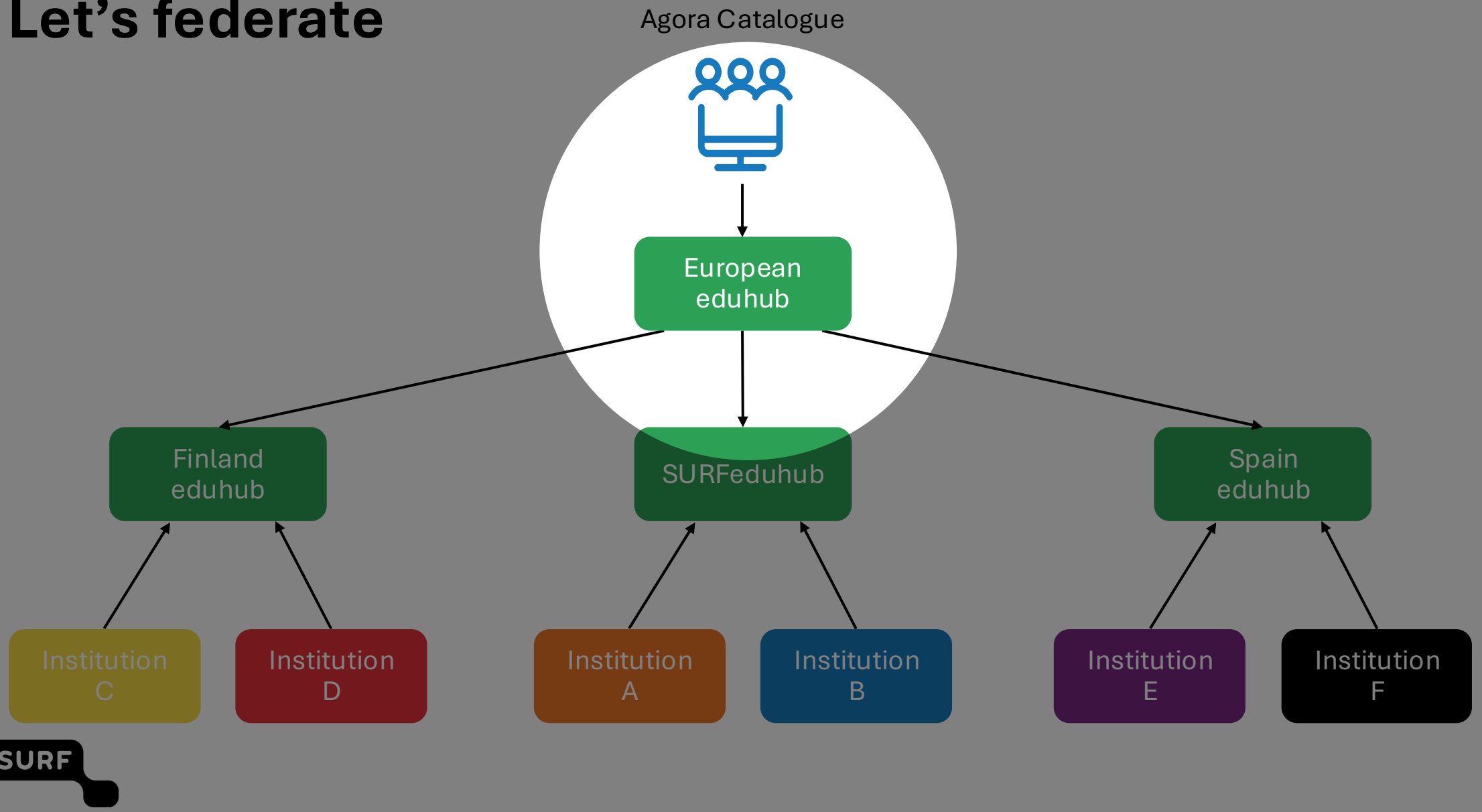

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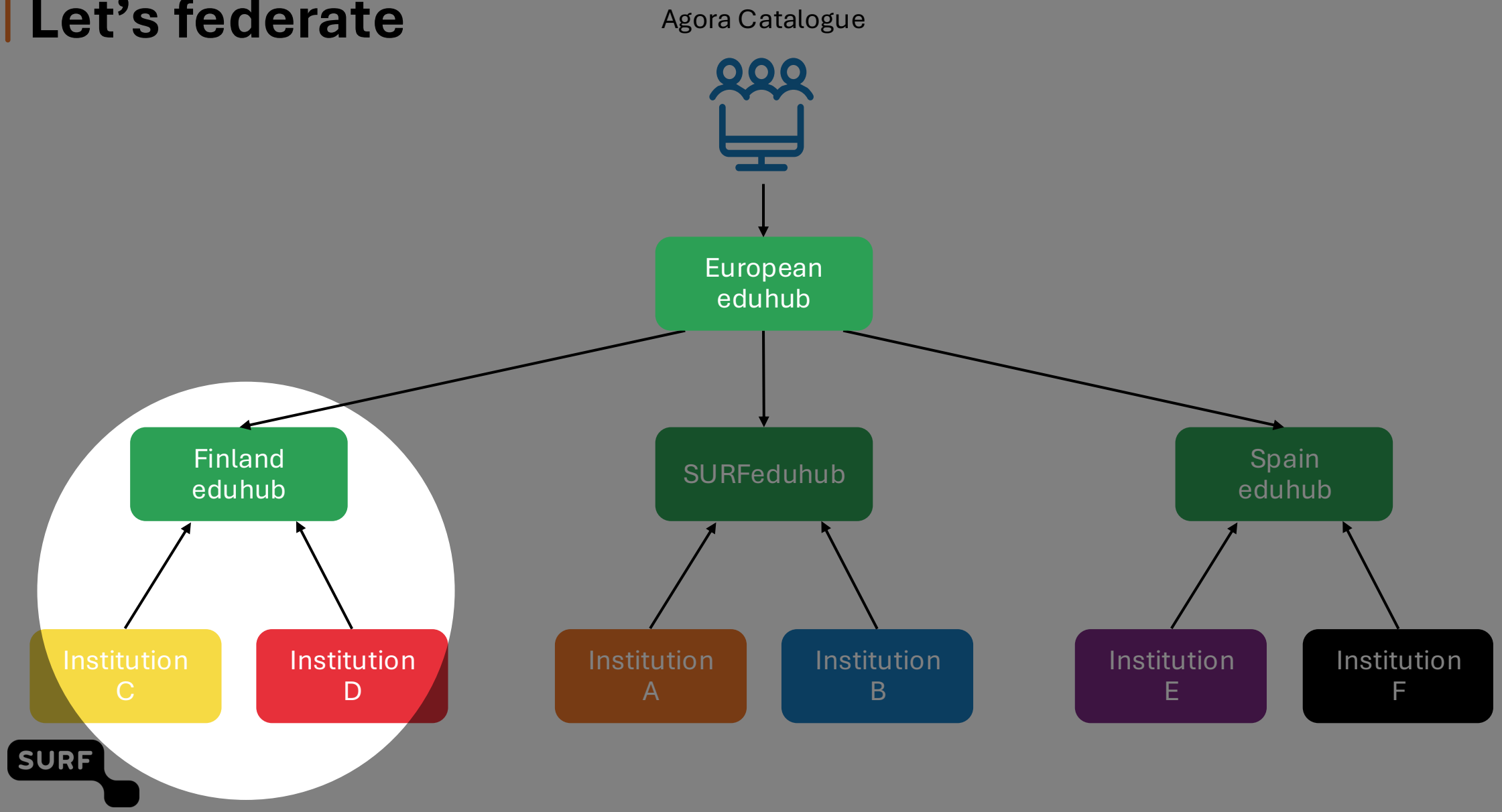

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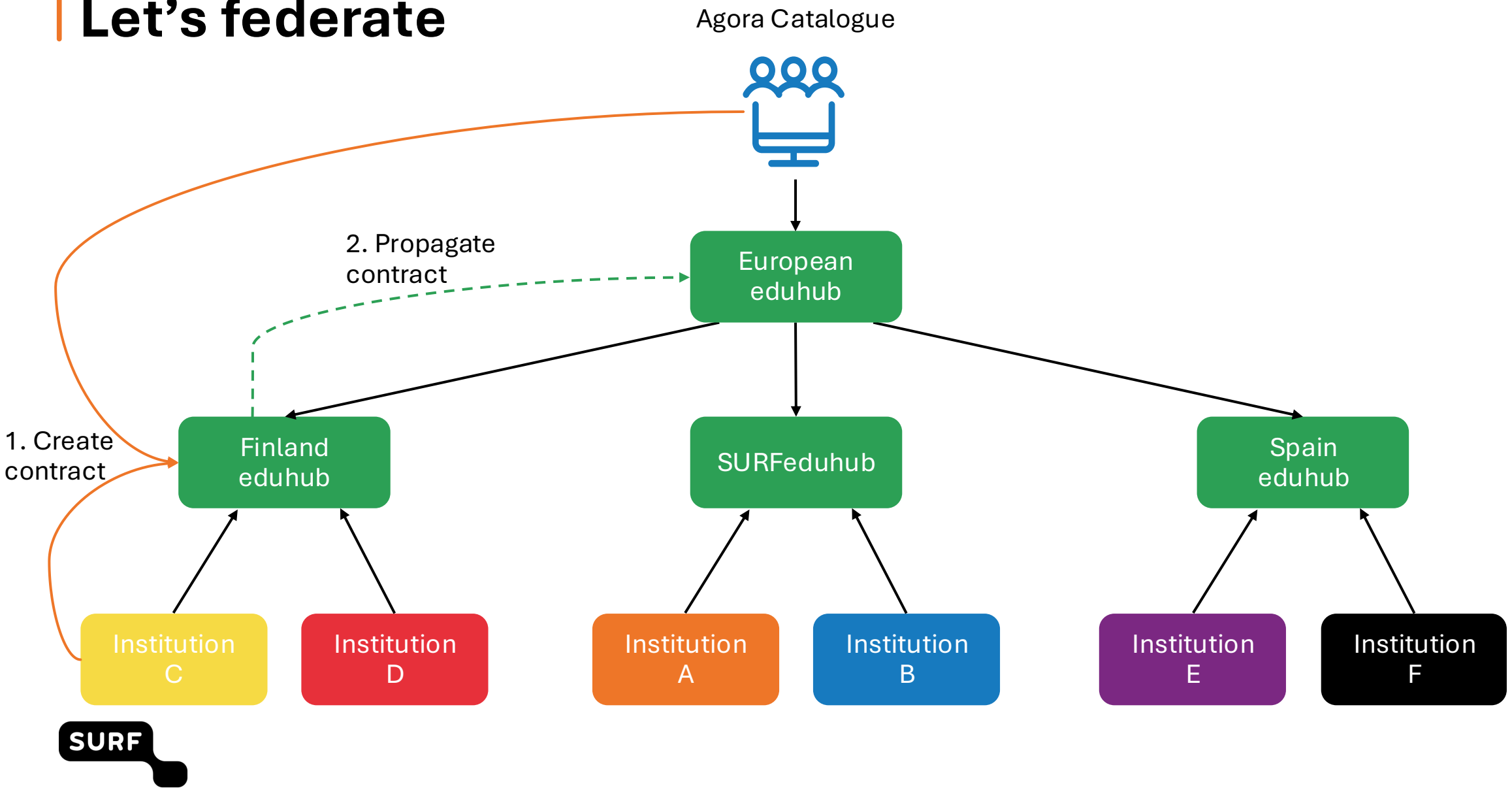

Live Pilot implementation

The technical implementation is currently being developed.

Pilot partners: Finland, The Netherlands, Spain

Status: Validating the API connections and data flow between hubs.

Would you like to join?