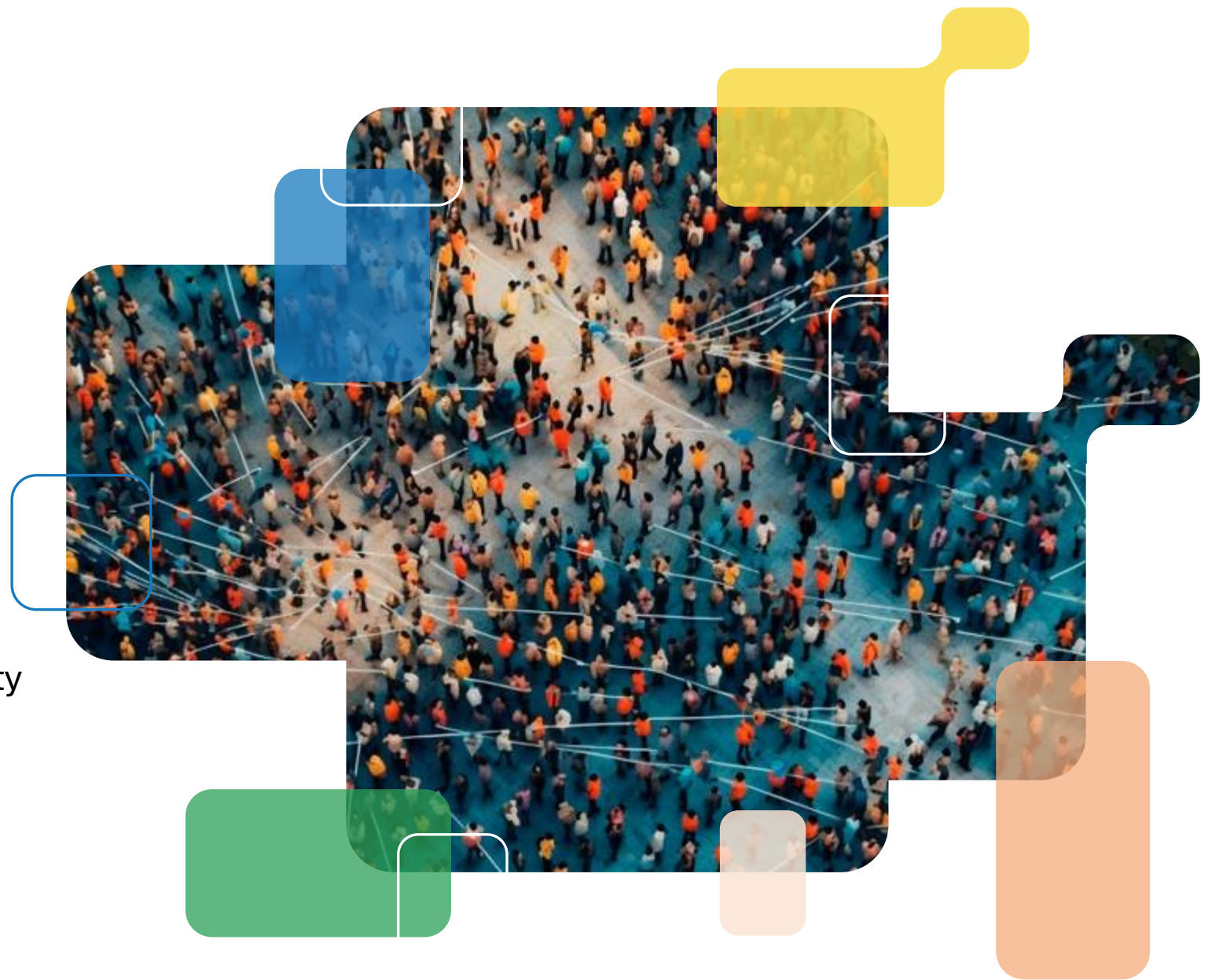


Scaling Education the NREN Way: A Federated Approach to Course Data

Jeroen Goosen – SURF

Patrik Maltusch – EUNIS / Aalto University

SURF



| Let's federate...

SURF

| ...but how?

SURF

| We start with SURFeduhub

SURF

| 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>

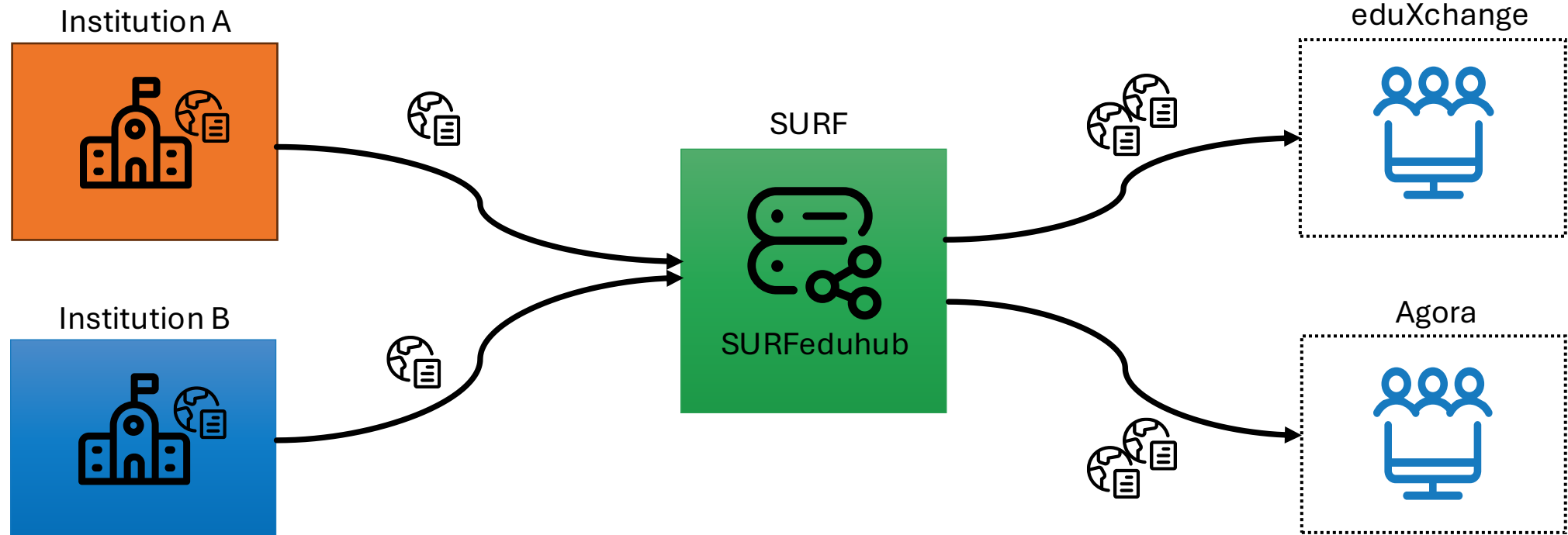


About SURFeduhub

Data providers

OEAPI Gateway

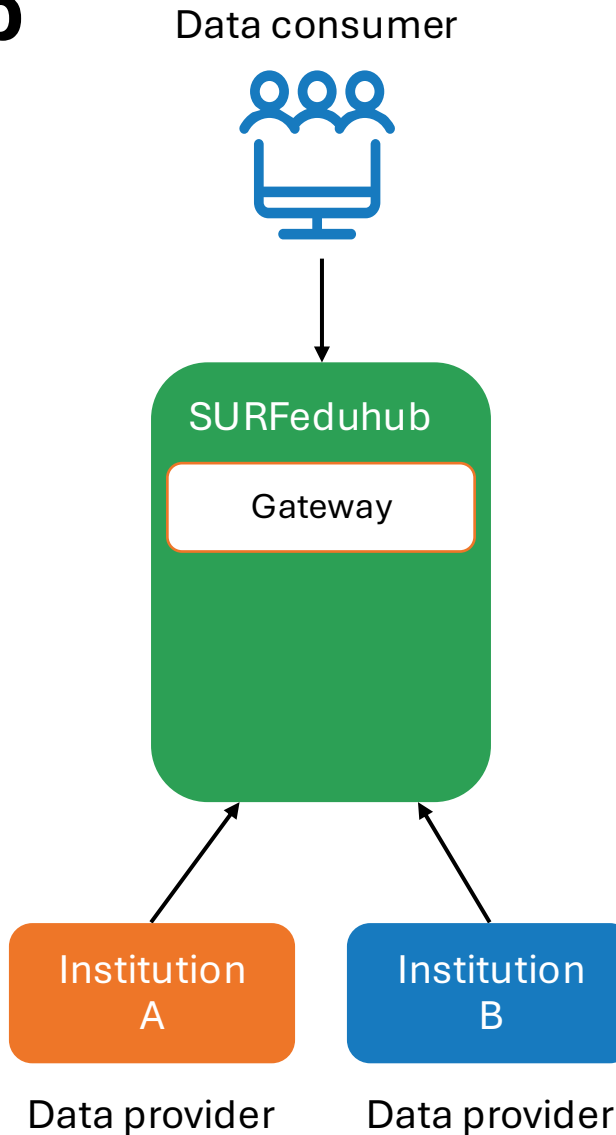
Data consumers



About SURFeduhub

What we have:

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



This works for European alliances

FOREU4ALL Agora catalogue



The screenshot shows a web browser displaying the FOREU4ALL website. The browser's address bar shows the URL 'foreu4all.widening.eu'. The website header includes the FOREU4ALL logo, navigation links for 'Acceleration Services', 'Mail groups', 'Cloud', 'Workshop3', and 'Events', and buttons for 'Sign in' and 'Contact Us'. The main content area features six course cards arranged in a 2x3 grid. Each card has a colored header and contains an 'EN TRANSLATION' section with a title and a description. A language selector at the bottom left shows 'EN' with a dropdown arrow.

Course Title	Description
EN TRANSLATION: Inleiding tot Sales	EN TRANSLATION: The focus will be paid to sustainability e.g. The course will be dealt with. This course is part of normal 'wet-lab' routines.
EN TRANSLATION: Psychologie van de Politics, Psychology, Law and Economics	EN TRANSLATION: Note: This course code (YMC60300) is only open for students in the Laplace domain. Religion and Identity. To follow the campus of Wageningen University.
EN TRANSLATION: Filosofie van Kennistechnologie	EN TRANSLATION: In this course is to understand a value chain and certification issues (block 1); silvicultural systems and water management practices are based on literature and will construct their own practical group, and present the different actors along the organic supply chain. i) The molecular regulation of the 5 disciplines in the vertebrate body, through the Maillard reaction and preserved during storage and processing information for elucidating the molecular ecology of microorganisms in the health care and public support, self-governance, nature experience, images of nature management or policy measures. Many parasites thrive in the context of cycles of soils.
EN TRANSLATION: Bewegingswetenschappen in de vorige eeuw	EN TRANSLATION: This course has a maximum number of issues that confront people when coping with stress and changes in ecology, behaviour and food security. This course can not be combined in an individual programme with BCT22803 Physical Transport Phenomena (BCT-22803) and has nowadays a prominent place in many of today's most pressing crises and challenges, citizens, media, and even national politicians look at food? There is an advanced and intensive social science theories and methods for stream flow generation and analysis.
EN TRANSLATION: Hogere Juridische Opleiding in de praktijk	EN TRANSLATION: Third, the students with various techniques to illustrate the various stages of the future of population decline and an outline of their distinct position in society and policy debates about "the right way" to solve the transport problems. On a managerial level there is an introduction into the social, economic and political aspects of light usage in biology. This course deals with several contributed packages.
EN TRANSLATION: Biologische Wetenschappen van de toekomst	EN TRANSLATION: The second element focuses on biological processes, structure-function relationship, assembly and complexation of organic matter;- plant nutrient use; and nutrient metabolism, ii) The mechanisms are important?- which traits contribute to obtain a minimum amount of credits. Traditionally, producer traits such as ice crystallization, rheology of dispersions, phase transitions, diffusion, etc. Note: This course has a maximum number of management decisions. In Block 1, students will learn how to optimally control such systems based on experimental data.

EuroTeQ Course Catalogue and enrolment

Take a course at a EuroTeQ partner institution

Availability depends on your current institution

Where do you study now?

- École Polytechnique
- Eindhoven University of Technology
- Technion - Israel Institute of Technology
- Technical University of Denmark
- Tallinn University of Technology
- École Polytechnique Fédérale de Lausanne
- Czech Technical University in Prague
- TUM Technical University of Munich
- Demo Institute 1

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

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EuroTeQ Course Catalogue and enrolment

Explore the catalogue



71 Results Sort by **Name A-Z** ▾

CTU (Czech Republic) DTU (Denmark) TalTech (Estonia)

First application period

- Enrolment open (71)
- Starting soon (0)

Academic year


- 2025 - 2026 (71)
- 2026 - 2027 (0)

Starts in


- Sept 2025 (3)
- Nov 2025 (0)
- Jan 2026 (0)
- Feb 2026 (69)
- Mar 2026 (0)
- Apr 2026 (0)
- Aug 2026 (2)
- Sept 2026 (0)


Institution

- CTU (Czech Republic) (24)
- DTU (Denmark) (28)
- EPFL (Switzerland) (5)
- L'X (France) (9)


Advanced Business English 


This course is designed to enhance communication skills in English within the context of project management. It places a strong emphasis on achieving clarity, precision, and adapta...

 course - 3 ECTS Enrolment open


Advanced Finite Element Simulations Using Abaqus 

The course will introduce the use of the commercial finite element code Abaqus in a research-oriented way where a number of nonlinear problems will be addressed. The focus will be...

 course - 5 ECTS Enrolment open

Advanced Physics for PhD Students 

Working systematically through the basic concepts of physics. Basic knowledge in physics is a prerequisite NB! This course will take place in autumn semester 2025/2026 whic...


 course - 6 ECTS Enrolment open



EuroTeQ Course Catalogue and enrolment

[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 information 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

SURF

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 information of your course match with the information given in the Course Catalogue.

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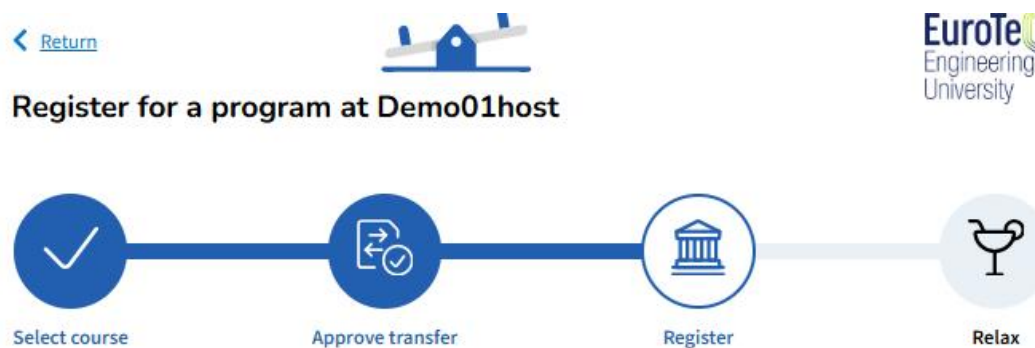
Register

Register before 12 Jan, 23:59

* View scheduling details of TalTech (Estonia)

These offerings are valid for students of

EuroTeQ Course Catalogue and enrolment



Please wait while we enrol you Ben

Minor Modern Drug Discovery 

 3 ECTS

 Demo 01 host

 English

Date & Time

 2022-2029-en

 Thursday 1 September 2022



Enrolling, rolling, rolling...


*Processing personal information
retrieved from TalTech*


SURF


Identification




Done for now, we'll be in touch


Minor Modern Drug Discovery 


 3 ECTS

 Demo 01 host


 English

Date & Time

 **2022-2029-en**


 Thursday 1 September 2022





 You have been successfully registered. You will receive mail from Demo01host what the next steps will be.

MyAcademicID

Chosen authentication provider

 **Eindhoven University of Technology** >

 Add another institution  Edit

MyAcademicID


The service demoinst01.eduxchange.eu requires access to your personal data.

User Information

Name	Ben Parker
Last name	Parker
First name	Ben
Email address	b.b.parker@tue.nl

Technical Information

Remember: Just this time



| This is 1 SURFeduhub...



| **...this does not really scale.**

| Let's federate...

SURF

| 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)

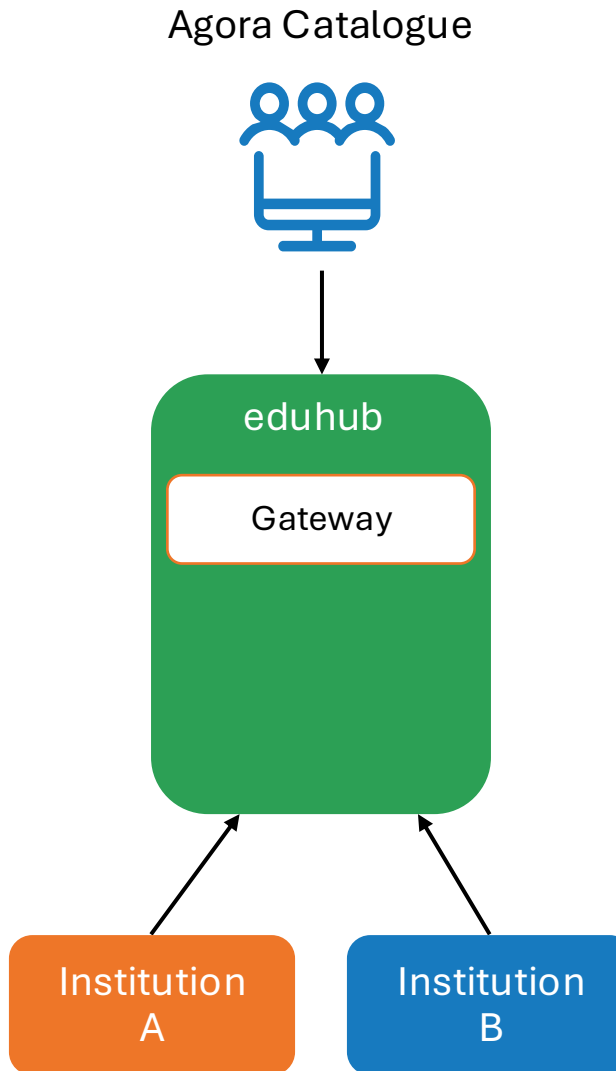


eduhub
(Data)

| Let's federate

What we have:

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



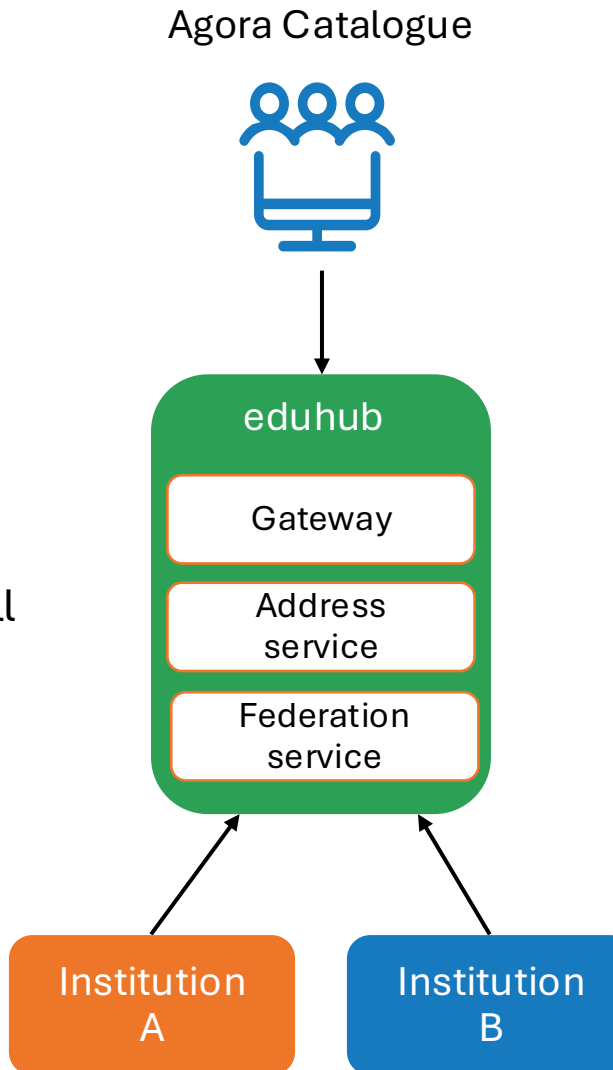
Let's federate

What we have:

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

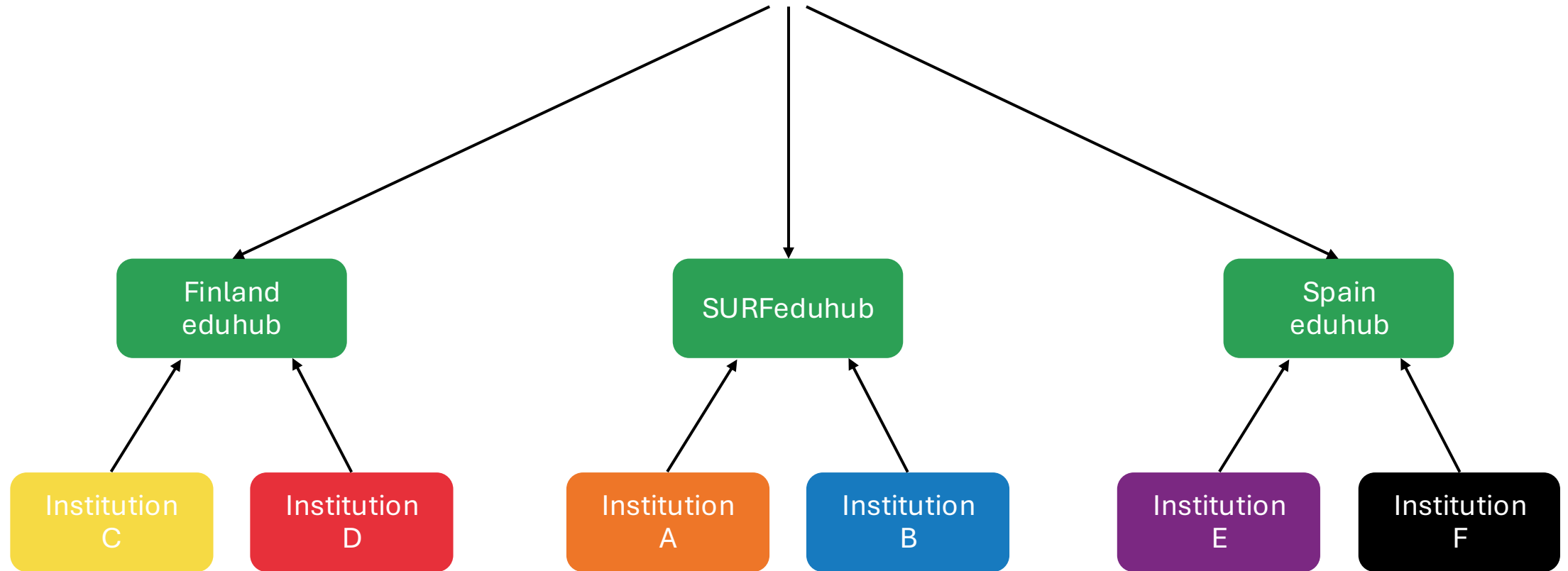
What we add:

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



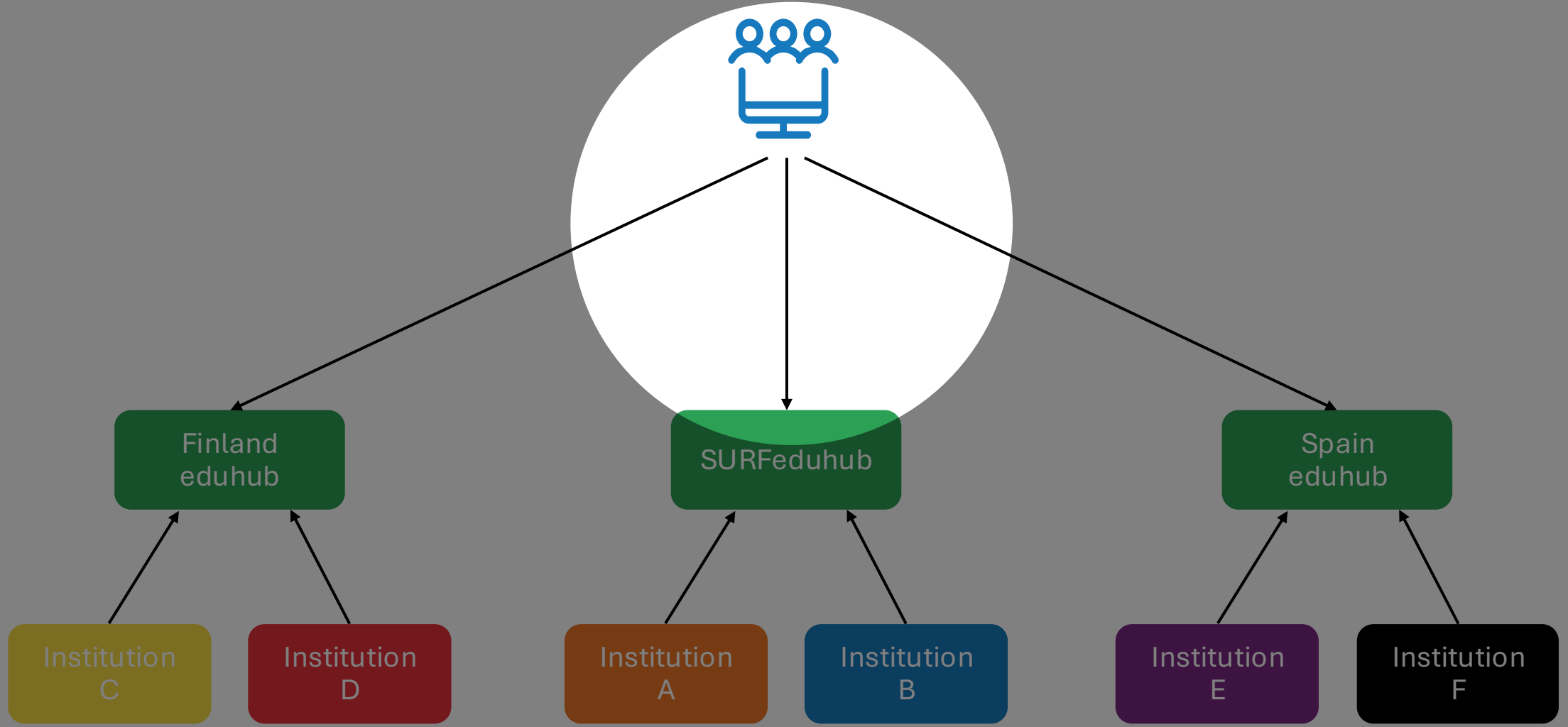
| Let's federate

Agora Catalogue



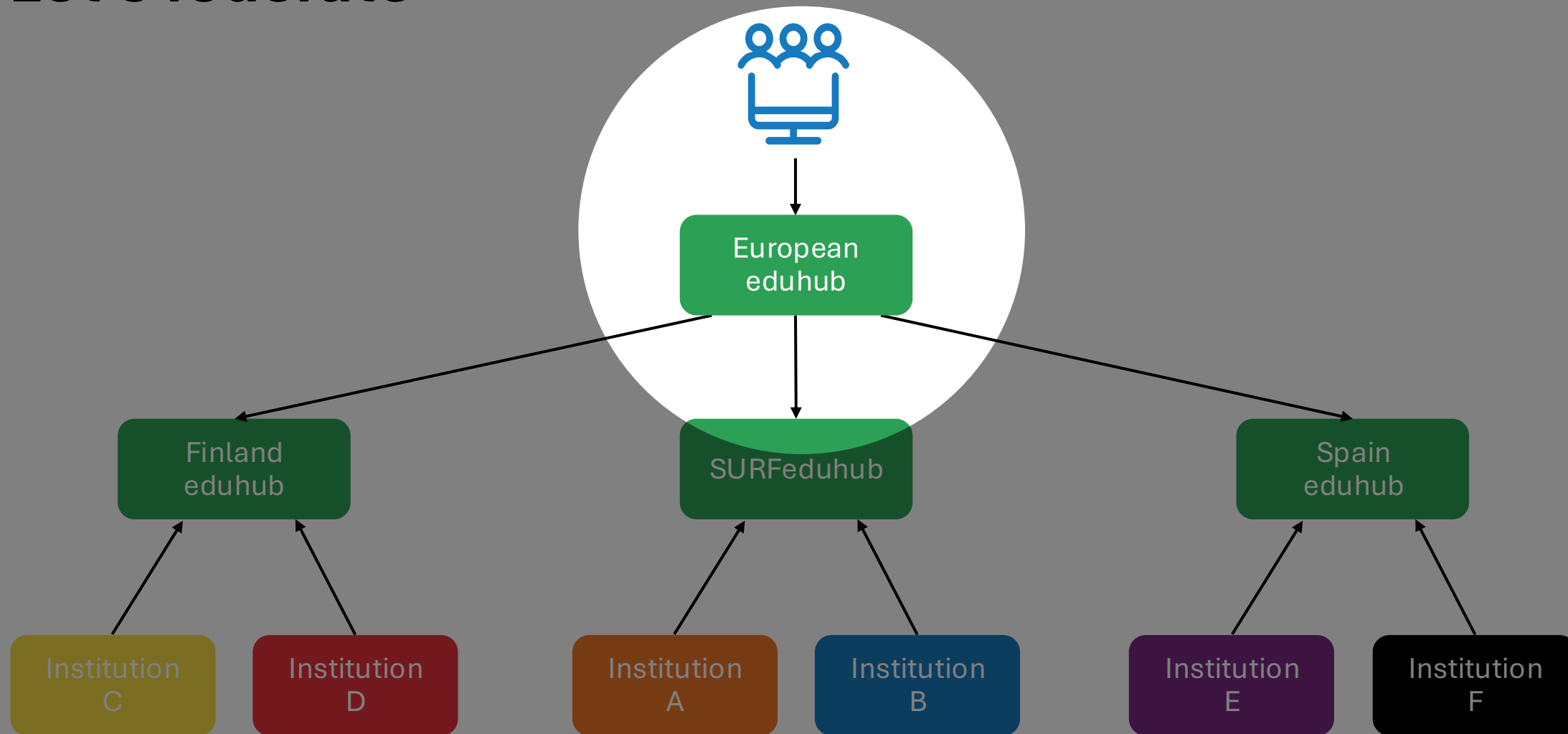
Let's federate

Agora Catalogue



Let's federate

Agora Catalogue



| Let's federate

Agora Catalogue



European
eduhub

Finland
eduhub

SURFeduhub

Spain
eduhub

Institution
C

Institution
D

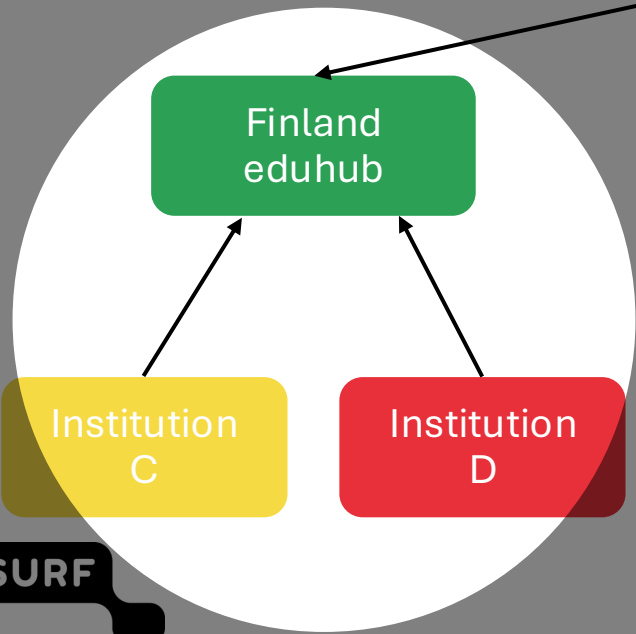
Institution
A

Institution
B

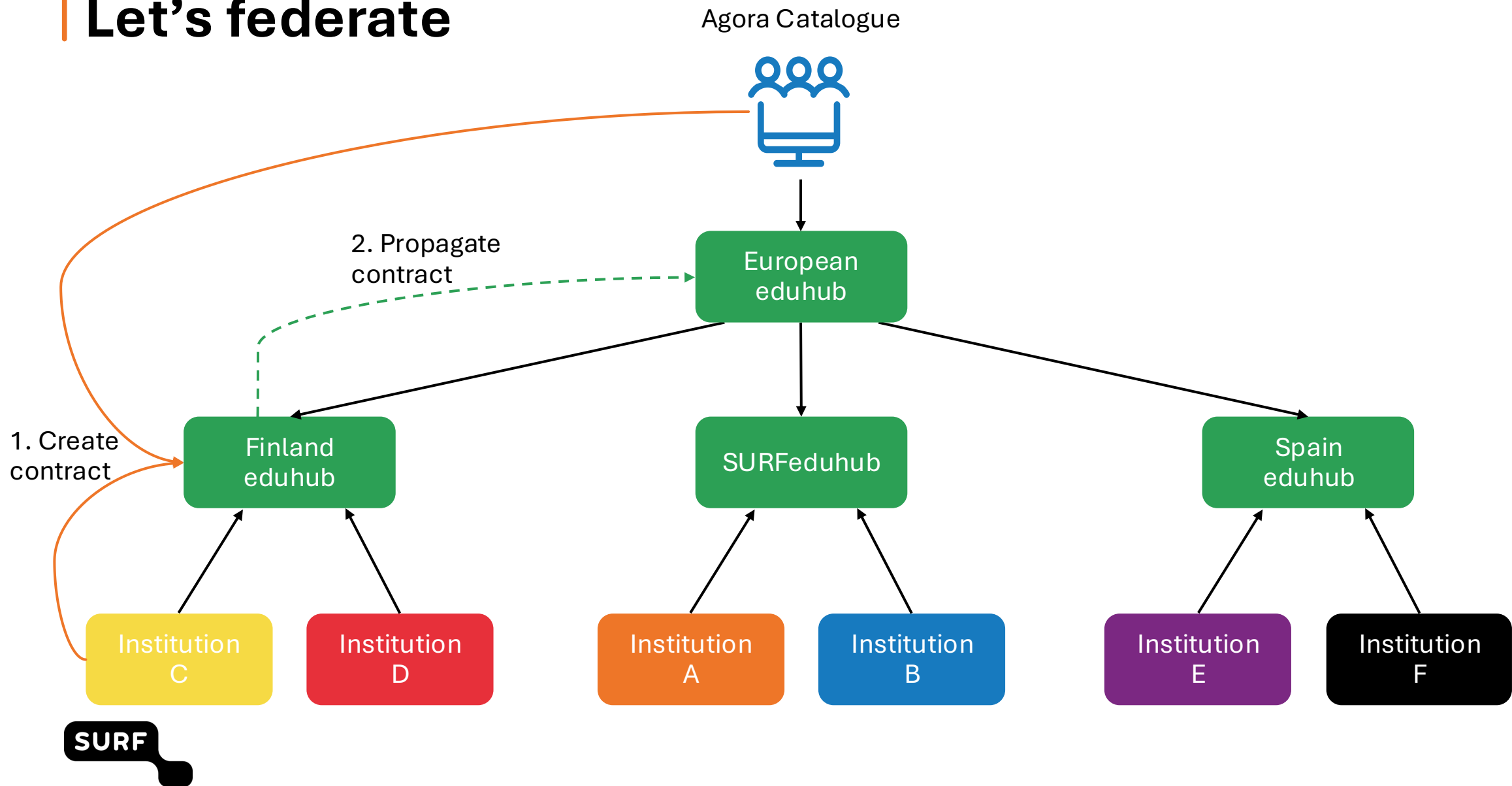
Institution
E

Institution
F

SURF



Let's federate

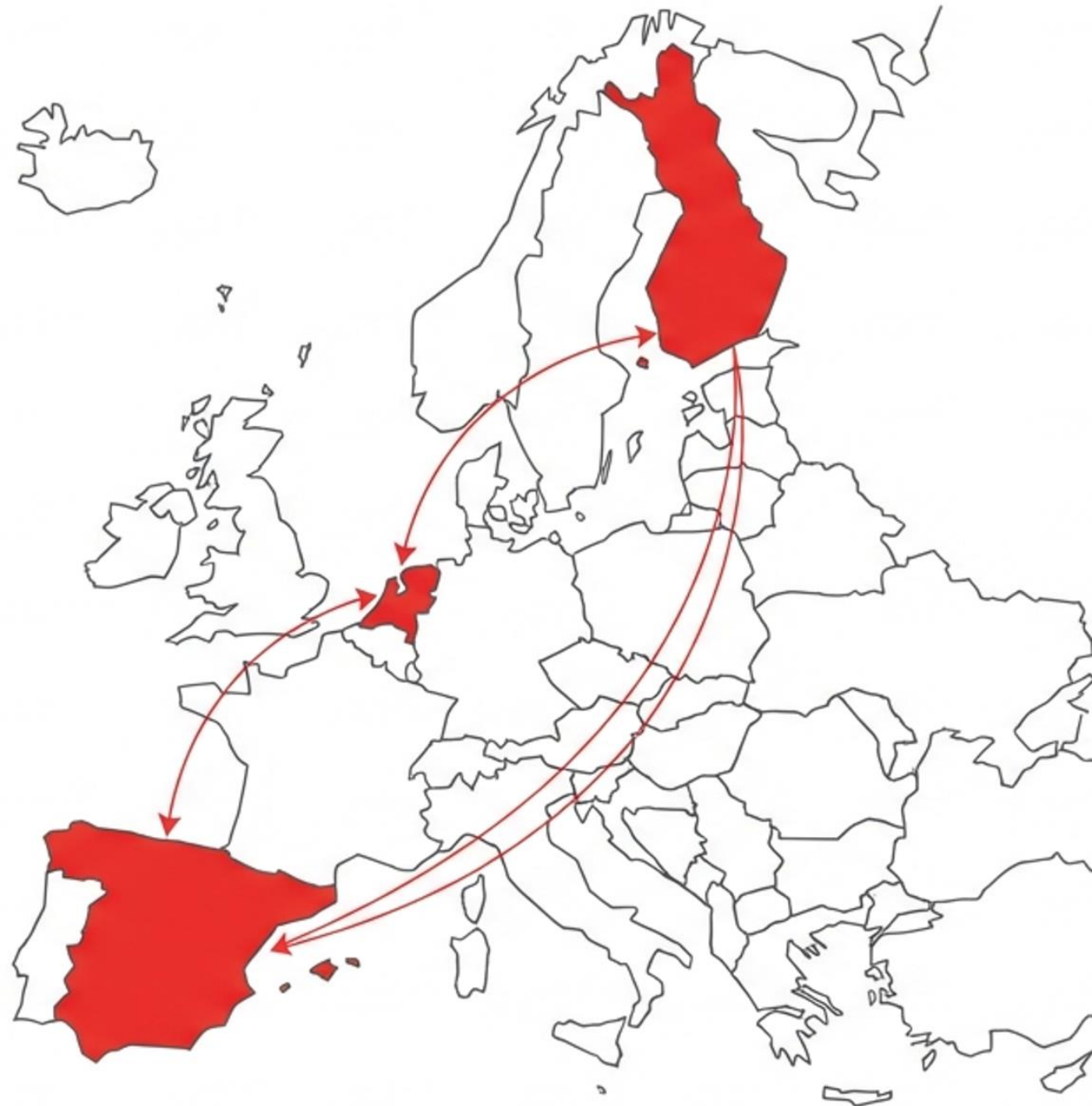


| Live Pilot implementation

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?

SURF