

unite!

University Network for Innovation,  
Technology and Engineering

# The Development of “Teaching Management Patterns” from the Perspective of IT Infrastructure as a Tool for Consulting and Further Development in a European University Alliance

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# Agenda

- Background: European University Alliance Unite!
- Research Approach
- Results
  - Teaching Pattern
  - Decision Tree
- Discussion

# Slides

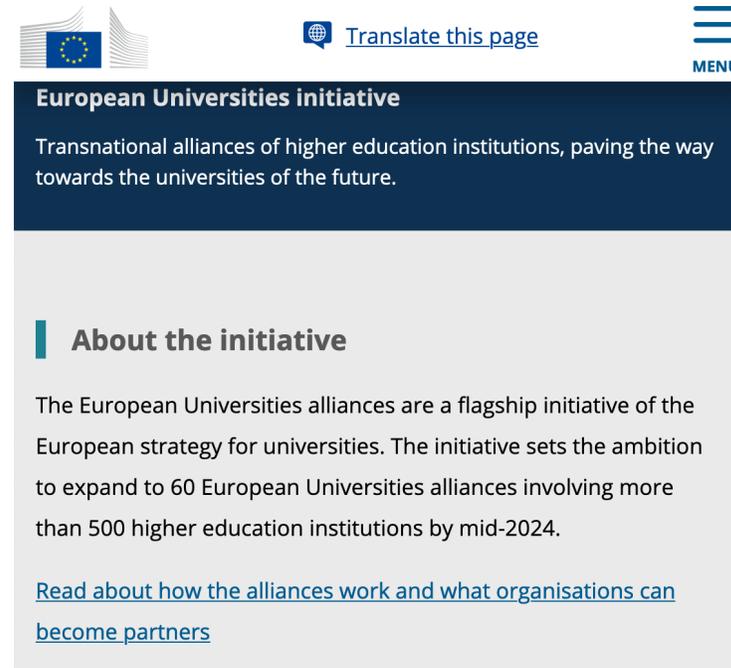
The slides are available online at:

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<https://doi.org/10.3217/mqpnc-zff39>



# European University Initiative

- Over 40 European university alliances promoting academic exchange and innovation
- Goals: enhance academic exchange, research cooperation, educational innovation



The screenshot shows the top part of a webpage. At the top left is the European Union flag. To its right is a 'Translate this page' button with a globe icon. Further right is a 'MENU' button with three horizontal lines. Below these is a dark blue header with the text 'European Universities initiative' and a sub-header 'Transnational alliances of higher education institutions, paving the way towards the universities of the future.' Below the header is a section titled 'About the initiative' with a vertical bar to its left. The text in this section describes the initiative as a flagship of the European strategy for universities, aiming to expand to 60 alliances involving more than 500 institutions by mid-2024. At the bottom of the section is a blue link: 'Read about how the alliances work and what organisations can become partners'.

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<https://education.ec.europa.eu/education-levels/higher-education/european-universities-initiative>

Background: Unite!

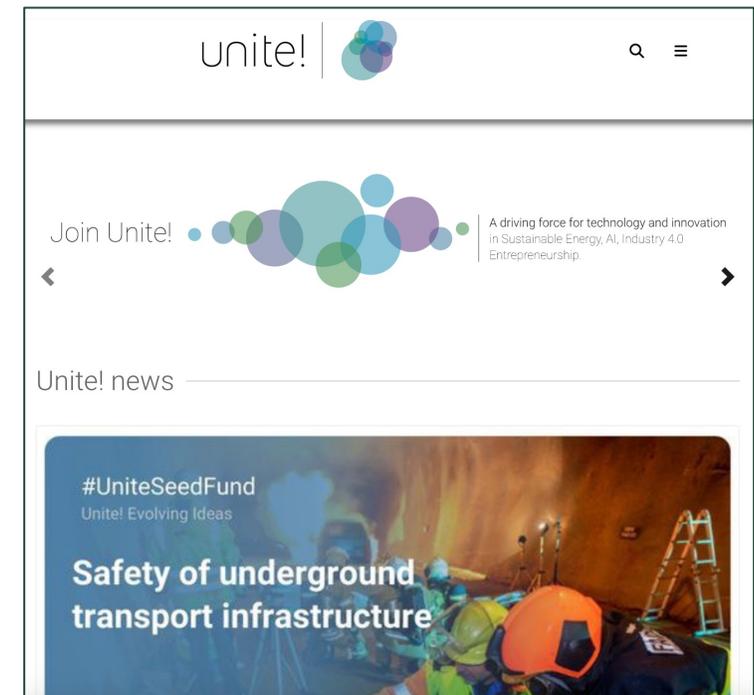


# Case Study: Unite! Alliance

- <https://www.unite-university.eu/>
- Nine member universities

## From Unite! Mission Statement 2030:

“Unite! creates the hybrid (virtual, physical and blended) and multilingual Unite! trans-European Campus with easily accessible joint educational offerings, shared and pooled resources, efficient services and green mobility”



© Unite! alliance, <https://www.unite-university.eu/>

# Community 2 „Digital Campus“



- Responsible („only“) for digital infrastructure for teaching and learning
- Challenges in digital collaboration and infrastructure integration

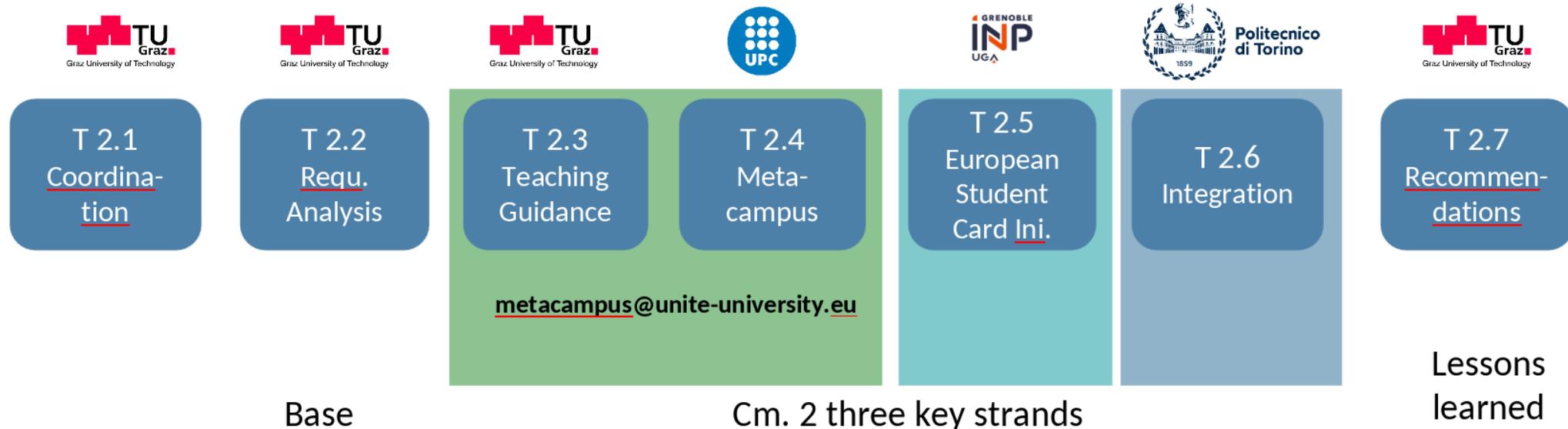
# That's us!



(taken at our last project meeting,  
03/2024 at TU Graz)  
(c) Unite! Cm.2 | TU Graz



# Organised in seven tasks



# Unite!'s Digital Campus Infrastructure

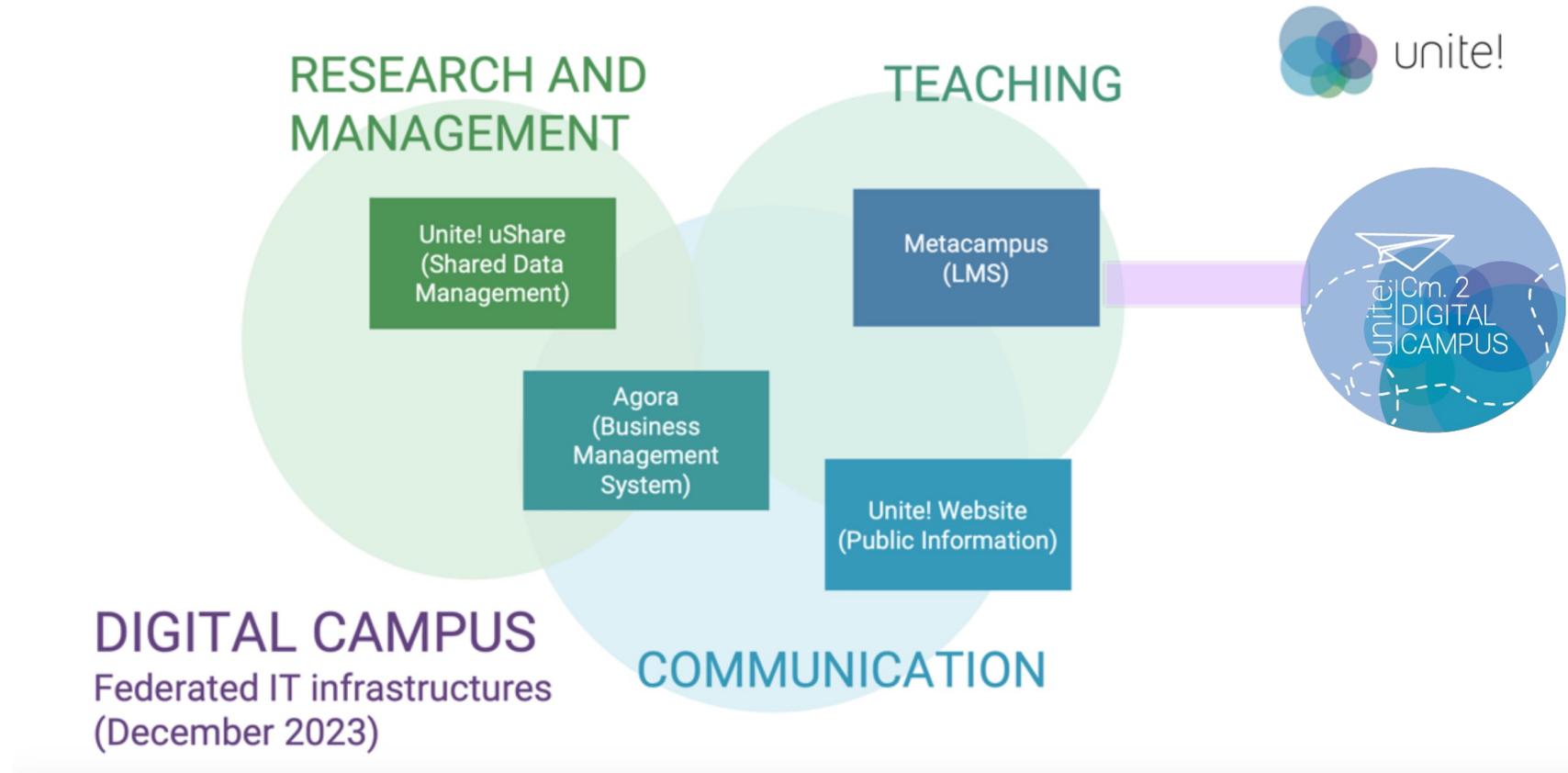
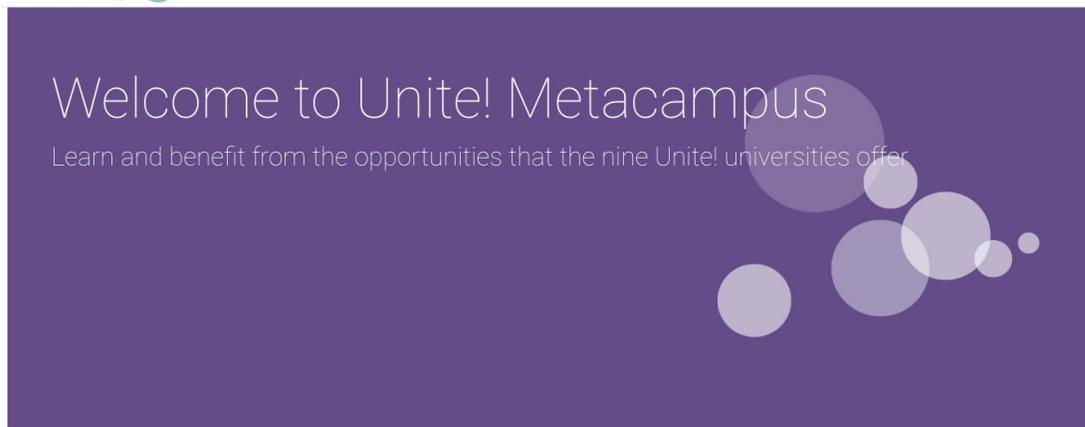


Figure 1: Overview of the Unite! Digital Campus Infrastructure Key Platforms and their key applications

# Metacampus Platform



- Federated Learning Management System (LMS) based on Moodle (Open Source)
- <https://metacampus.unite-e-university.eu/>
- Features: interaction, multilingual support, eduGAIN authentication



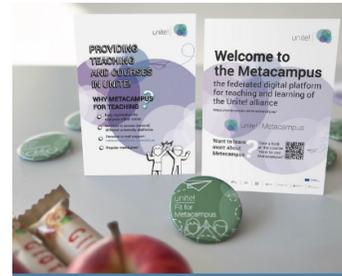
**Open Educational Resources (OER) in Higher Education**

Apply by 26 April 2024



**Unite! Language Tandems**

A peer-to-peer experience to improve your language skills



**How to use Metacampus?**

The course contains basic information on what the Metacampus is, what its possibilities are and how to use it

# Metacampus Platform

Purpose	Interaction among users in Unite! (teachers, students, staff)
Technology	LMS (learning management system)
Platform	Moodle
License	Open source
Developer/Maintainer	UPCnet
Responsibility	E+ (Cm.2)
Examples	Educational activities (courses), non-educational activities (video contest, student festival, student fair, language tandems)
Authentication	eduGAIN
Status	Pilots in use
Languages	English + 9 partners' languages

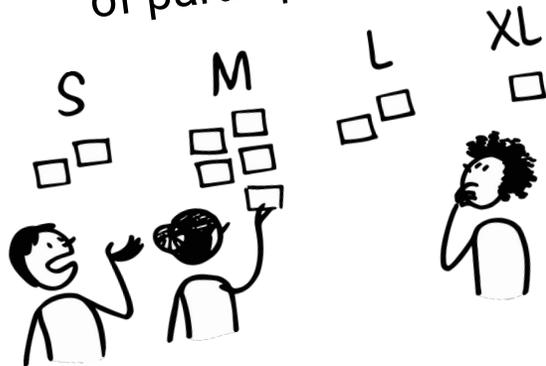
Features of the Unite! Metacampus as federated platform in a European Alliance. Source: Ebner et al., 2023.

The image features a solid blue background. On the left side, there are several overlapping, semi-transparent circles in various shades of blue, creating a layered, abstract graphic. The word "Challenge" is centered in the middle of the slide in a white, sans-serif font.

Challenge

# A lot of different (potential) use cases for the Metacampus

The alliance-wide working group on quality assurance in research would like to offer continuing education for junior staff at all partner universities. It must take place online, with alternating joint Webinars and self-learning phases. Participants should receive a certificate of participation upon completion.



One teacher would like to open-up a small series of contributions on a current research topic to other alliance members and would like to post impulse videos online and discuss them with colleagues and students. She would like participants to receive a certificate of attendance for this joint activity in the field.



Three lecturers from different Unite! universities have developed a joint lecture which they would like to offer with common grading procedures to students across partner universities. Upon completion each student will receive a certificate from her/his university. They would also like to admit other students from the alliance as participants and issue them a certificate of participation.



# Our challenge

- need of a good overview and consulting support
- for the support teams at all 9 partner universities,
- which should support teachers and staff of the universities to decide if the Metacampus should be used for each specific learning activity, program or course.



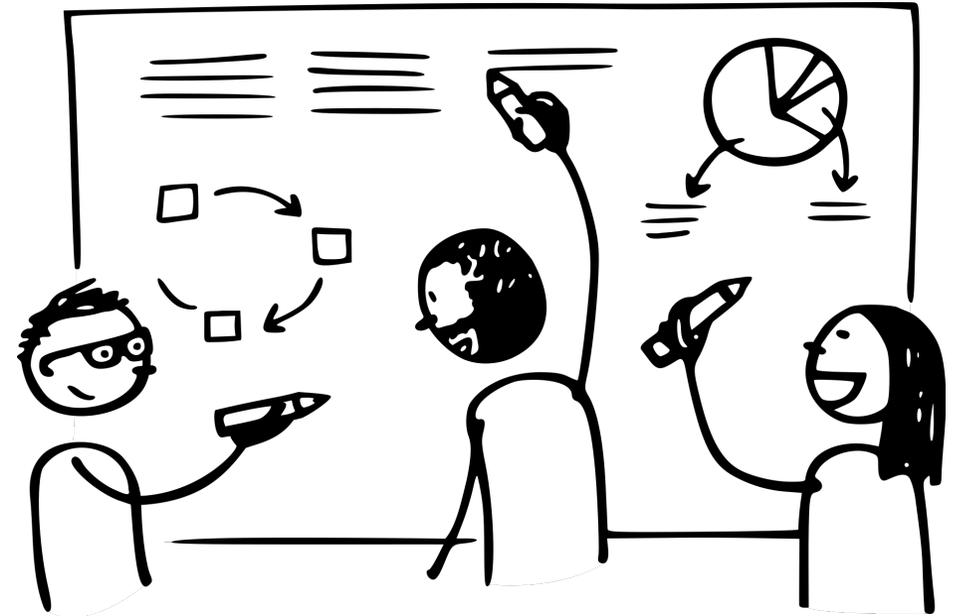
# Our questions

- How can different teaching formats and settings in a university alliance be described in such a way that they can be well described as “teaching management patterns” for implementation of suitable digital tools - especially when the development is dynamic and open?
- What does counsel for e-learning support teams for all Unite! universities should look like?



# Our approach

- We looked for existing „pattern approaches“
- We developed teaching patterns for Unite!





# Teaching Pattern Approaches & Understanding

# Existing work on this

- Xu & Liu (2016) outline in their paper how computer and web technology should support the management of teaching in Chinese schools in the future.
- Tahalli & Prasojo (2021) use the term to refer to typical patterns they observed in the design of online teaching during the Covid-19 pandemic.
- Zhou (2020) outlines a “unified automatic management service platform” which will be used to improve the “learning management pattern” in higher vocational education in China.
- Alexander (1977) understands pattern as an entity that describes a problem “which occurs over and over again in our environment, and then describes the core of the solution to that problem, in such a way you can use this solution in a million times over, without ever doing in the same way twice” (p. X), Alexander has used this approach in the field of urban development and transportation planning)
- Others have adapted Alexanders idea for teaching as well: Rohse & Anderson (2006), for example, used the idea of “design pattern” as support to design complex learning settings. Bauer & Baumgartner (2012) also refer to Alexander when they introduce a “pattern language for working with electronic portfolios in higher education”.

# Teaching Management Pattern (our understanding)

- “Teaching Management Patterns” (TMS) are understood as a set of abstract descriptions for many or all conceivable scenarios in an educational setting.
- These patterns are characterized by relevant factors or conditions. Which factors are relevant generally depends on the educational sector as well as the specific organizational, technical, legal, and instructional aspects.
- The objective of the development of the “Teaching Management Pattern” is to provide a comprehensive regular or intelligible form of a very large number of variants or cases. The level at which these “patterns” are located - for example, micro didactics, macro didactics, or more organizational aspects - can vary.



How we did it

# How we did it

- Collected cases
- Discussed all cases concerning which factors are relevant to favour/recommend the Metacampus or another solution
- We developed illustrations for these „pattern“
- All possible patterns were then ordered in different groups:
  - Fitting well for Metacampus
  - Fitting, but with effort
  - Metacampus compatible, but local infrastructure might be better
  - Metacampus compatible, if local infrastructure allows no open badges
  - Metacampus incompatible
  - Legally impossible pattern
- Of course, everything was iterative and we now present the final version

# Identified relevant factors

- The university of origin of the teacher(s)
- The university of origin of the learner(s)
- Is a university certificate desired and/or an Open Badge?
- Where are the materials for the course to be used (e.g., on the LMS of a university)?

# Using illustrations

The pattern address:



Teachers (trainers, lecturers)



Participants (students, staff)



Open Badges as special variant  
for participation recognition



University Certificate  
An official certificate (ECTS)

And indicates if it is



From/for people from  
one Unite! university



From/for more as well people  
from other Unite! universities



From/for as well people  
from external universities

# One exemplary pattern



„A lecturer from one partner university wants to open a course to participants at other universities. No certificates or open badges wished.“



# Sorted patterns

# GROUP A. WELL-FITTING FOR METACAMPUS



PATTERN A



PATTERN B



PATTERN C



PATTERN D



PATTERN E

# GROUP B. FITTING FOR METACAMPUS BUT WITH EFFORT



PATTERN A

PATTERN B

# GROUP C. METACAMPUS COMPATIBLE BUT LOCAL INFRASTRUCTURE MIGHT BE BETTER



PATTERN A

PATTERN B

PATTERN C

PATTERN D

These pattern can be supported at Metacampus.

Nevertheless, own local infrastructures might be better fitting, as they are already in use and known.

# GROUP D. METACAMPUS COMPATIBLE IF LOCAL LMS DOES NOT PROVIDE OPEN BADGES



PATTERN A



PATTERN B



PATTERN C



PATTERN D

# GROUP E. METACAMPUS INCOMPATIBLE



ALL PATTERNS WITH ADDITIONAL EXTERNAL  
LECTURERS AND/OR LEARNERS

# GROUP F. LEGALLY IMPOSSIBLE PATTERNS



PATTERN A

PATTERN B

PATTERN C

PATTERN D



# How to use pattern in counseling

# What's your pattern?



**YOUR PATTERN**

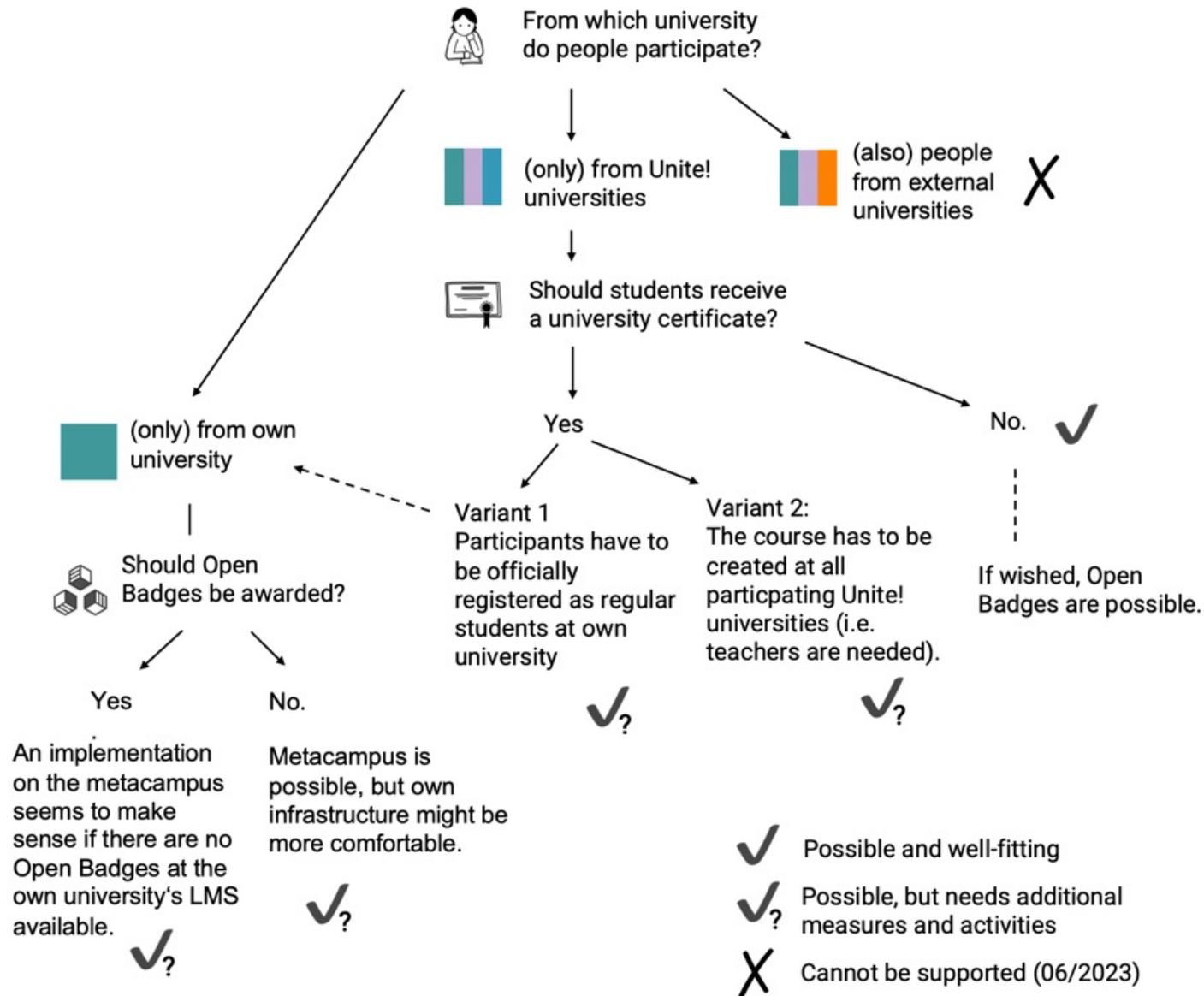
1. How would you visualise your case using the pattern structure?
2. Please compare your pattern with the collected and described patterns for a quick feedback.

# Need for a (even) simpler way

- Need for a simpler way of presenting the different information
- Particularly in medicine, decision trees are frequently used to help physicians arrive at accurate diagnoses as quickly and with as few questions as possible

# DECISION TREE FOR TEACHERS AND SUPPORT TEAMS

Does the Unite! digital Campus team provide a fitting solution for your teaching management pattern?



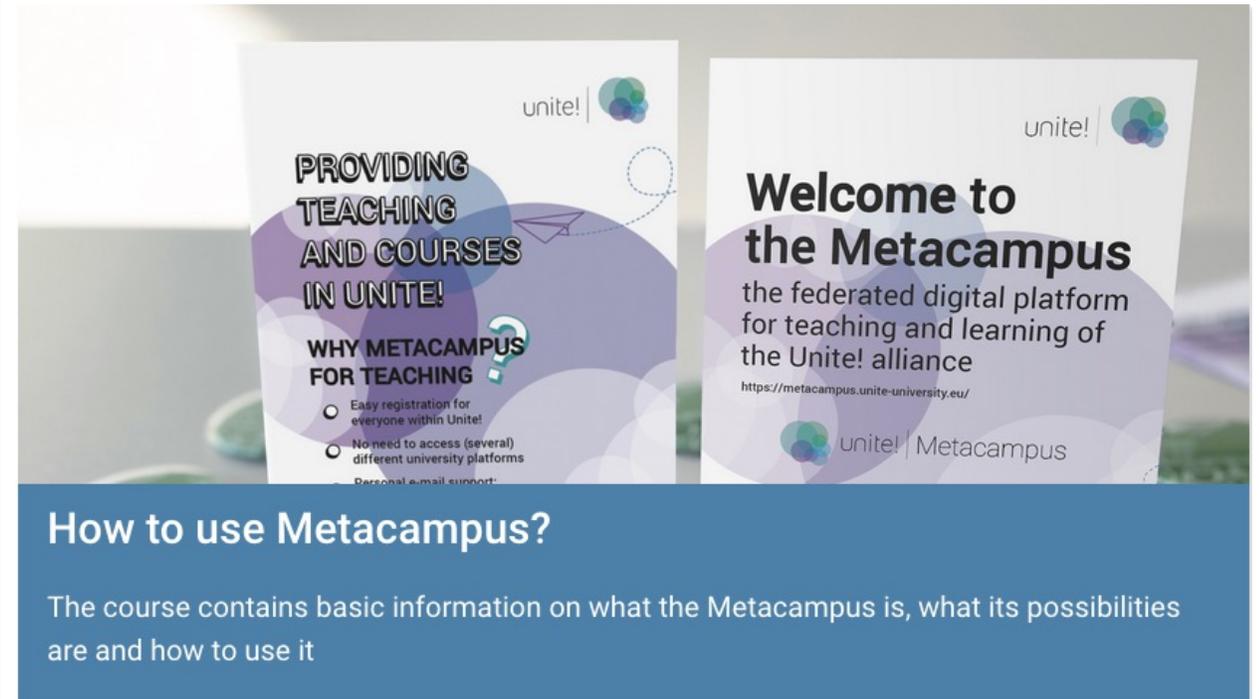
# Quick quiz-style decision support



Is Metacampus suitable for my teaching?

This short interactive consultation can help you find out if Metacampus is suitable for your teaching and learning scenario.

You can also find a print version of this consultation (the "Metacampus decision tree") below for download.

A screenshot of a web-based interactive consultation. It features a dark background with a white pop-up box containing a question and three radio button options. The question is "From which university do people participate?". The options are: "(only) from own university", "(only) from Unite! universities", and "(also) people from external universities". Each option has a right-pointing arrow next to it. Above the question is a speech bubble icon with a list symbol inside. In the background, there are three arrows pointing in different directions.

- Integrated in our Metacampus course „How to use Metacampus“



# Discussion

# Discussion

- Result – esp. the decision tree – looks very simple
- This result was NOT anticipated (even now, everyone ask this simple questions ...)
- The whole process supported our work to get such a clearness
- We currently discuss if the Metacampus will be opened to external people – this will influence the pattern + decision tree + related counseling



More about our work  
in Cm. Digital Campus in Unite!

# Acknowledgements

- Contributions of e-learning and IT experts from partner universities
- Gratitude to all collaborators
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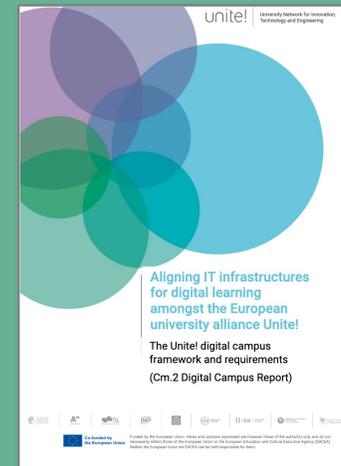
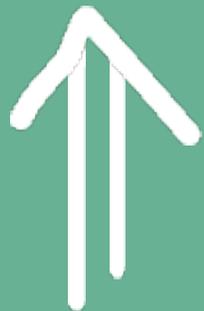


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Ebner, M., Schön, S., Alcober, J., Bertolasco, R., Bonani, F., Cruz, L., Espadas, C., Filgueira Xavier, V., Franco, M., Gasplmayr, K., Giralt, J., Hoppe, C., Koschutnig-Ebner, M., Langevin, E., Laurent, R., Leitner, P., Martikainen, J., Matias, J., Muchitsch, M., Oller, M., Pereira, A.B., Petersson, J., Santiano, G., Schmidt, A. da Silva, F.M., Steitz, K., Taraghi, B., Torchiano, M., Villas, S., Würz, A. (2024). **Aligning IT infrastructures for digital learning amongst the European university alliance Unite! - The Unite! digital campus framework and requirements (1.0). Unite! Community 2 Digital Campus, Graz University of Technology.**



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