



**Medical  
University of Graz**

**Executive department  
learning with media**

# MEDICAL UNIVERSITY OF GRAZ





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# *SUPPLYING LARGE GROUPS OF STUDENTS WITH LEARNING CONTENT IN MIXED CLASSROOM/DISTANCE SCENARIOS*

Herwig Rehatschek

OEB 2021, Berlin, Germany



# Contents

- ▶ The challenges
- ▶ Three hybrid teaching scenarios
- ▶ Technical implementation
- ▶ Experiences & Conclusions

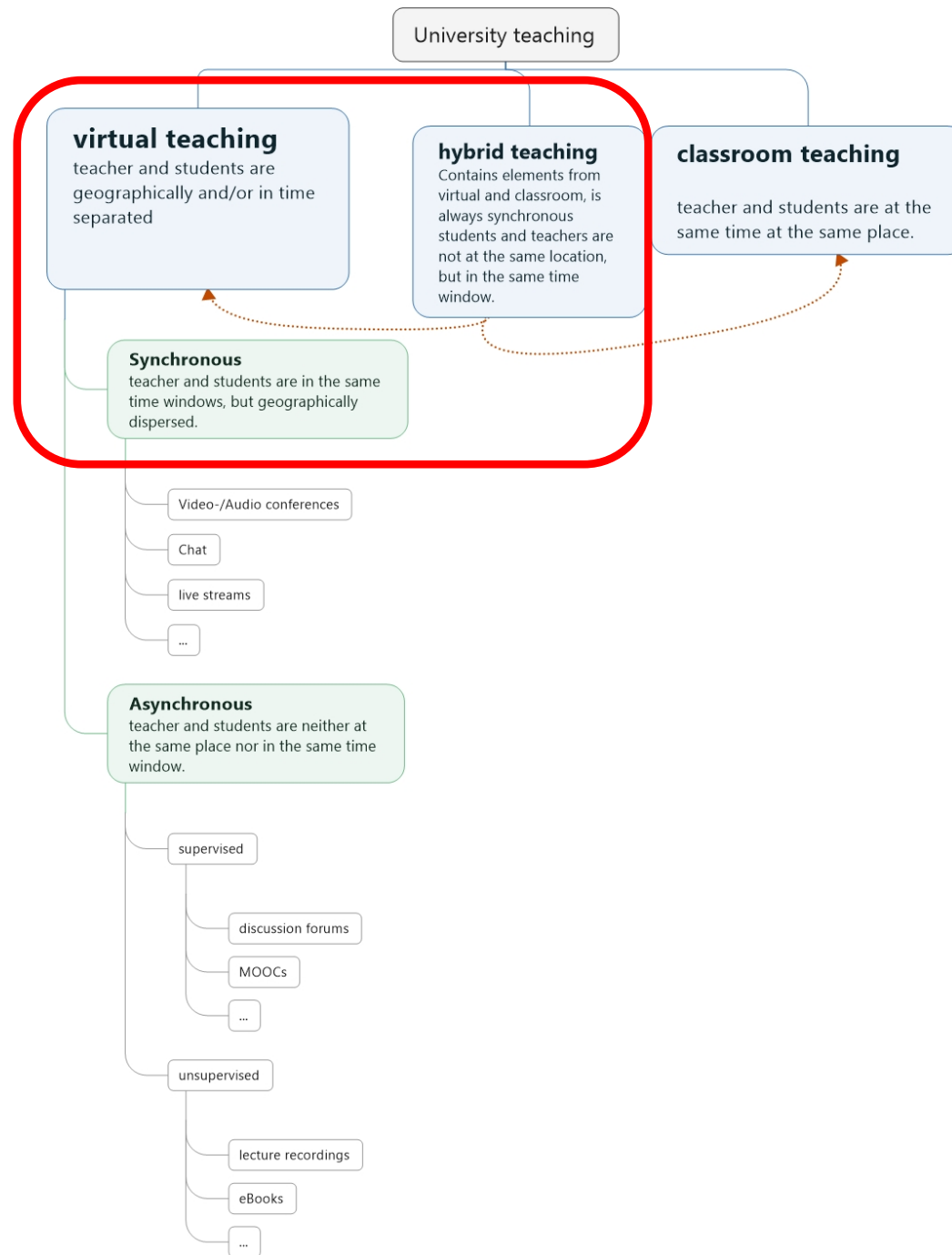


# The Challenges

- ▶ Student number increase and size of classrooms to small
- ▶ Classrooms may not be used with full capacity due to COVID restrictions

How to solve these issues without increasing personnel costs or to extend room capacities?





# Scenario #1:

## Extension of room capacity by bidirectional transmission between two lecture rooms

### Advantages

- ▶ Students do not need technical equipment to participate
- ▶ Easily handling by teachers

### Disadvantages

- ▶ Discrimination of students
- ▶ Extra organizational efforts
- ▶ Students must come to campus without benefits
- ▶ Twice as much rooms needed
- ▶ Very expensive technical infrastructure



# Scenario #2:

## Bidirectional lecture streaming using an existing external video conferencing system

### Advantages

- ▶ Students are location independent
- ▶ No local streaming infrastructure needed
- ▶ Low technical barriers for students
- ▶ Back channel included
- ▶ Seamless integration in local classroom infrastructure possible

### Disadvantages

- ▶ Additional set up efforts for teachers
- ▶ Licensing costs for VC SW
- ▶ Only content from the PC can be shared
- ▶ Teachers must be trained on VC SW



# Scenario #3:

## Provision of lecture streaming with chat backchannel by expanding open source lecture recording system

### Advantages

- ▶ Students are location independent and have maximum video quality
- ▶ Easy operation by teachers
- ▶ No additional efforts for teachers
- ▶ No license costs
- ▶ Local infrastructure - fast reaction
- ▶ Can be also used to stream in other rooms

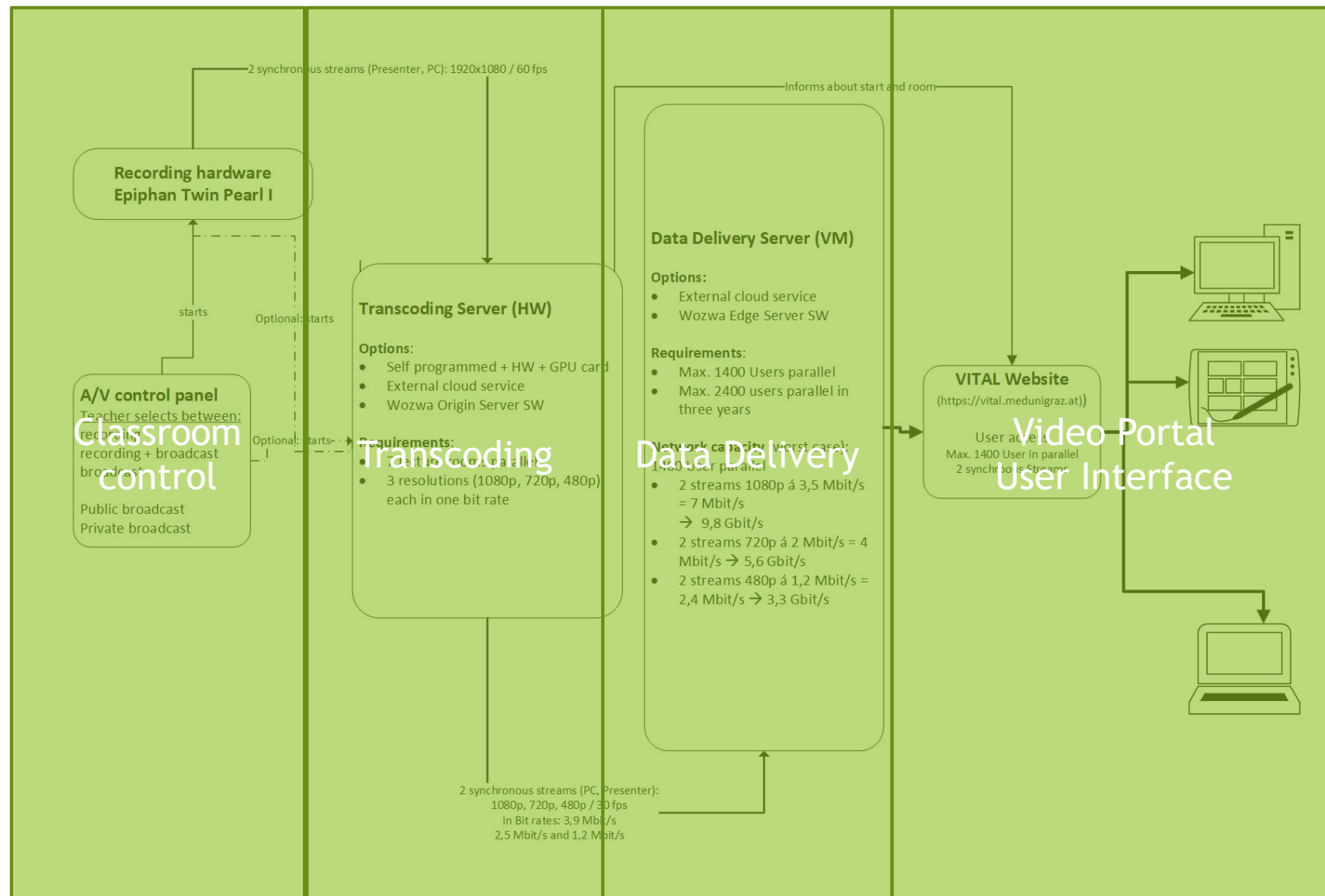
### Disadvantages

- ▶ Infrastructure must be bought, set up and maintained
- ▶ Back channel has to be implemented separately
- ▶ Costs for transcoding and/or data delivery in case it is outsourced





# Technical workflow streaming solution



# Key parameters / decisions to be taken

- ▶ Number of resolutions and bandwidth qualities to be offered to students
- ▶ Maximum number of parallel streaming rooms
- ▶ Maximum number of students watching in parallel
- ▶ Delay of live stream to classroom



# Experiences

- ▶ Define the key parameters in advance with the decision makers of the university
- ▶ Make a decision whether your local network infrastructure can handle maximum number of students
- ▶ In case data delivery is outsourced compare the offers!
- ▶ Transcoding and data delivery can be also be done without commercial streaming servers like Wozwa (<https://github.com/medunigraz/>)



# Conclusions

- ▶ None of the described scenarios is out of the box - consider significant technical set up efforts
- ▶ None of the three scenarios is the one and only solution - each has its pro's and con's
- ▶ Scenario #1 / bidirectional submission between local rooms suffers from our experience heavily by teachers acceptance
- ▶ Scenario #3 / extension of already existing open source lecture recording system - turned out to be the best solution for us



# Livecast of Med Uni Graz full in action 😊

Medizinische Universität Graz

Suche

o\_rehats DE EN

Startseite  
Kurse  
Aufzeichnungen  
Livestreams

Live Video

Welcome to the chat!

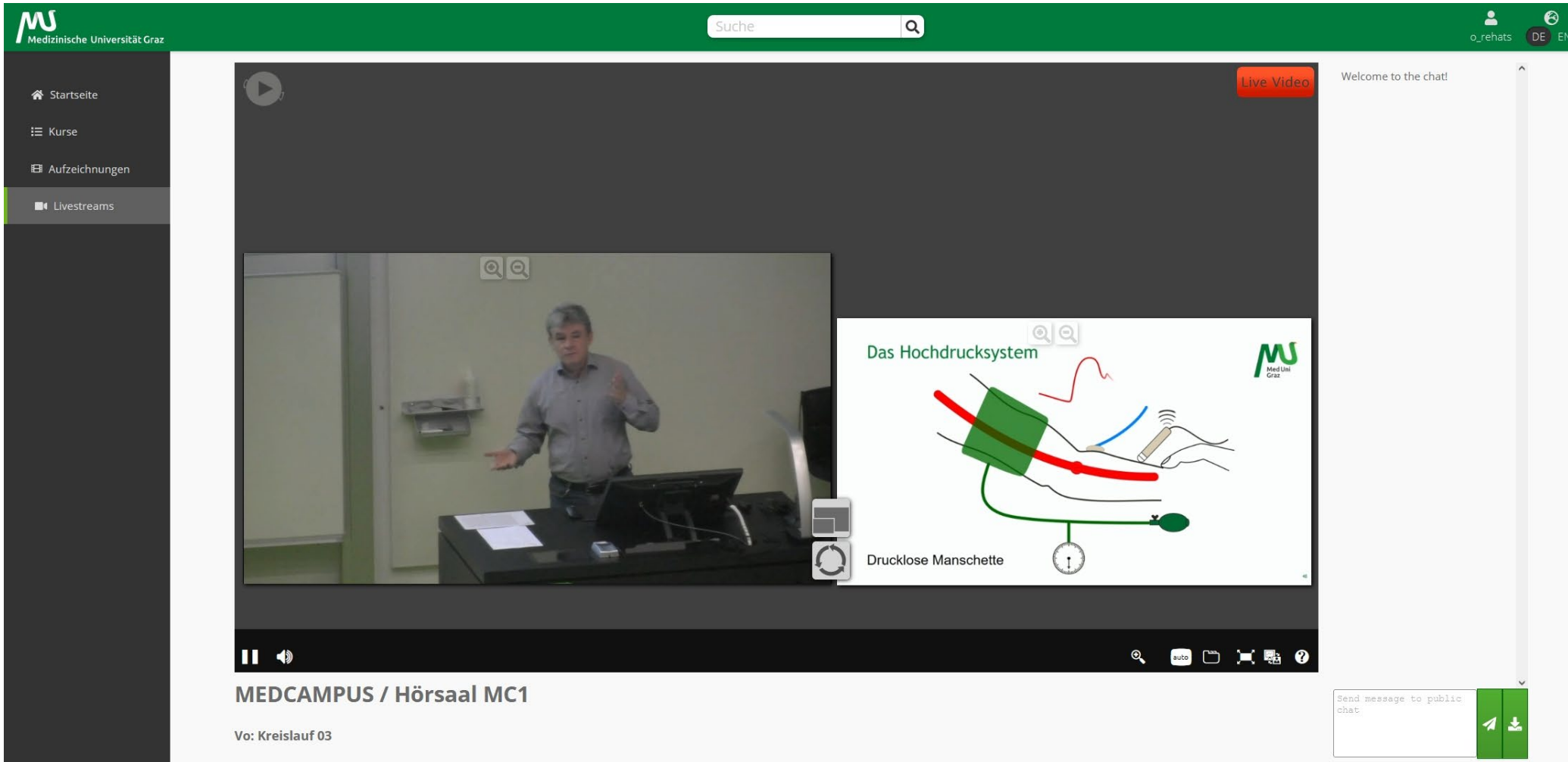
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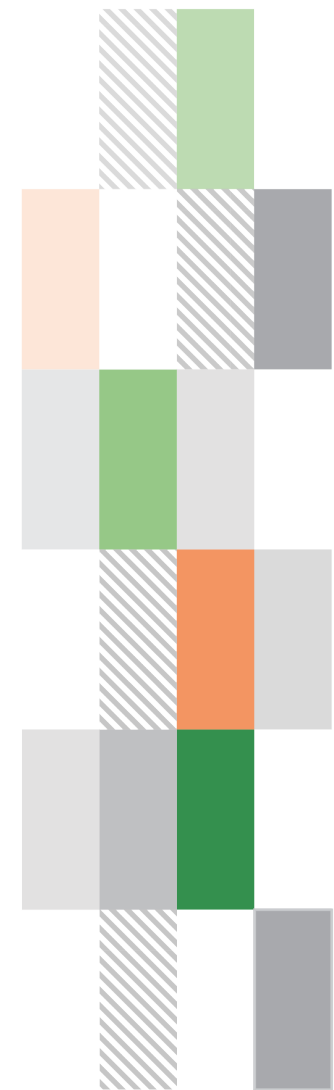
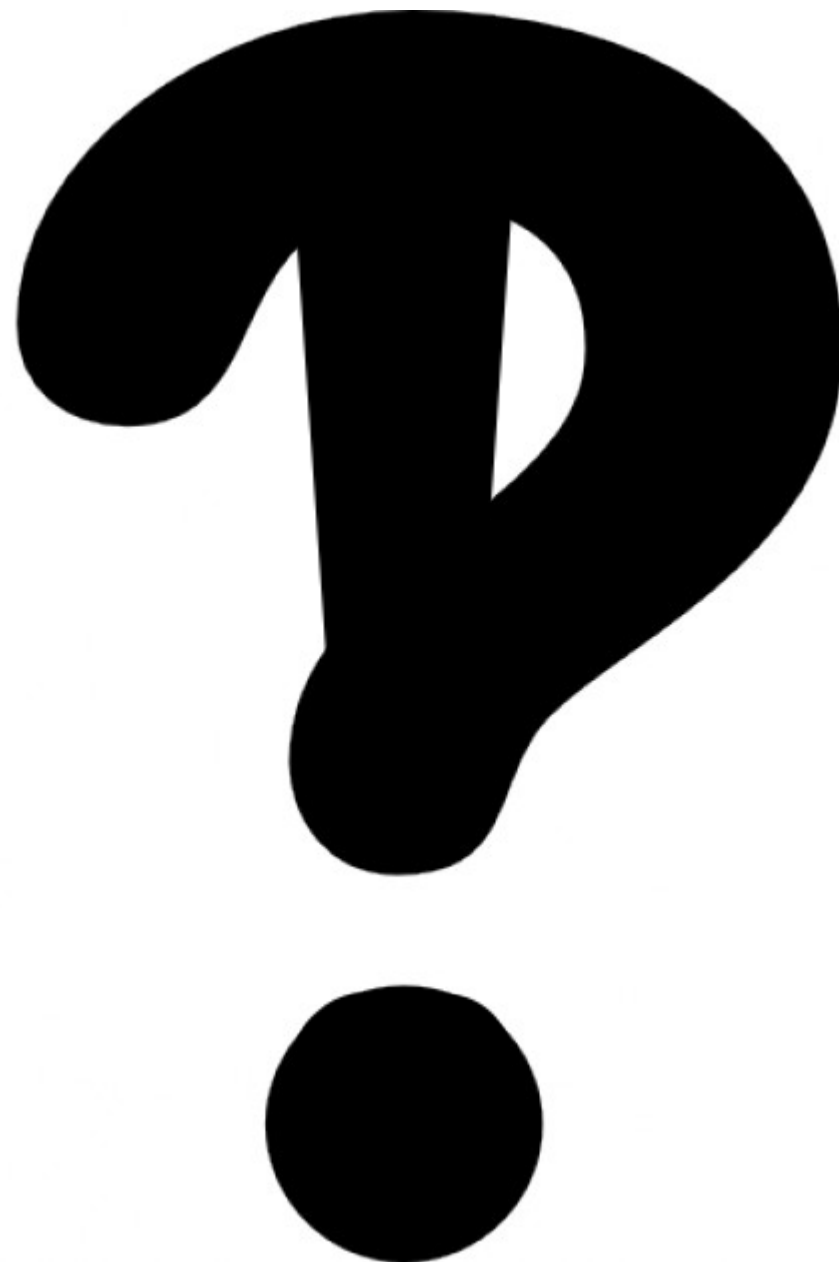
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# Facts & Figures

- ▶ Around 4,320 students
- ▶ Around 2,500 staff members
  - ▶ Around 1,500 academic staff members
  - ▶ Around 1,000 non-academic staff members
- ▶ Four preclinical institutes unaffiliated with research centers
- ▶ Nineteen university clinics
- ▶ One clinical institute
- ▶ Global budget incl. additional hospital expenditure around EUR 207 million
- ▶ Third-party funding around EUR 49.4 million

