CoUnSiL

Videoconferencing Environment for Remote Interpreting of Sign Language in Higher Education

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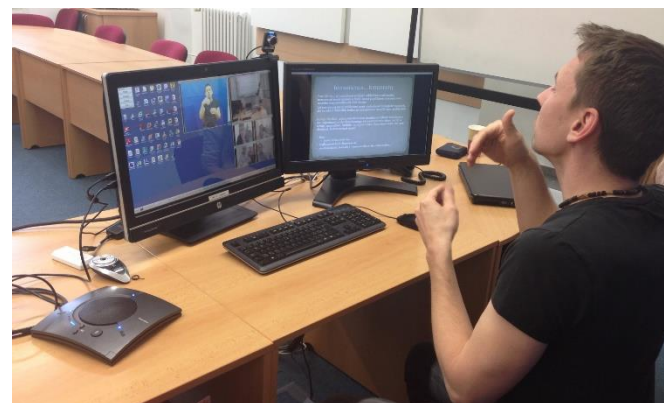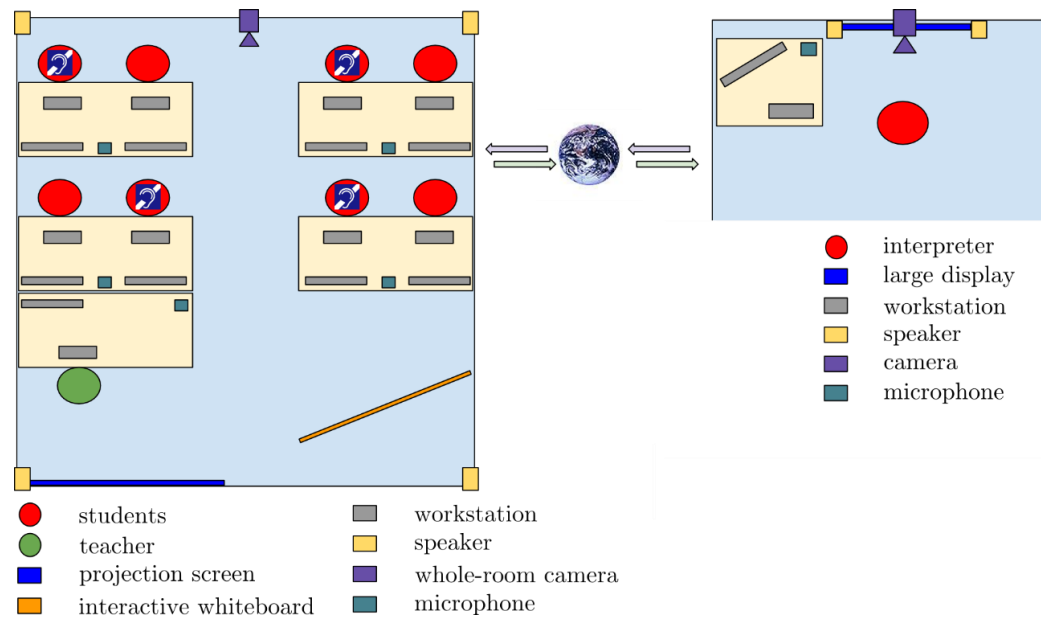∴ Teiresiás | Support Centre for Students with Special Needs

SITOLA
The Laboratory of Advanced Network Technologies

Introduction

"There is the lack of qualified interpreters capable of interpreting highly specialized courses at universities.''

- Existing tools are insufficient
  - Video quality fluctuates (Google Hangout, Skype, …)
  - Expensive (H.323/SIP)
  - Missing special features such as *raising hand* or *user roles*
- Timeline
  - Since 2013: cooperation between Teiresiás and SITOLA laboratory at FI MU
  - 2014: Student's project at FI MU – prototype implementation
  - 2015–2016: CESNET Development Fund

Classroom topology

students — red circle
teacher — green circle
projection screen — blue rectangle
interactive whiteboard — orange rectangle
workstation — gray rectangle
speaker — yellow rectangle
whole-room camera — purple rectangle
microphone — teal rectangle

interpreter — red circle
large display — blue rectangle
workstation — gray rectangle
speaker — yellow rectangle
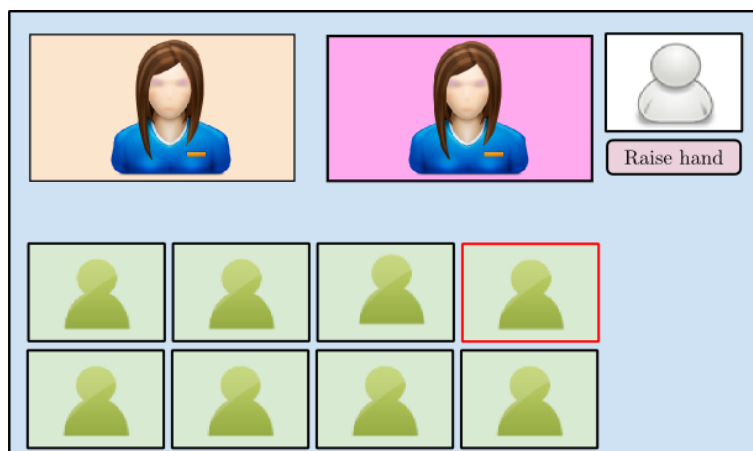camera — purple rectangle
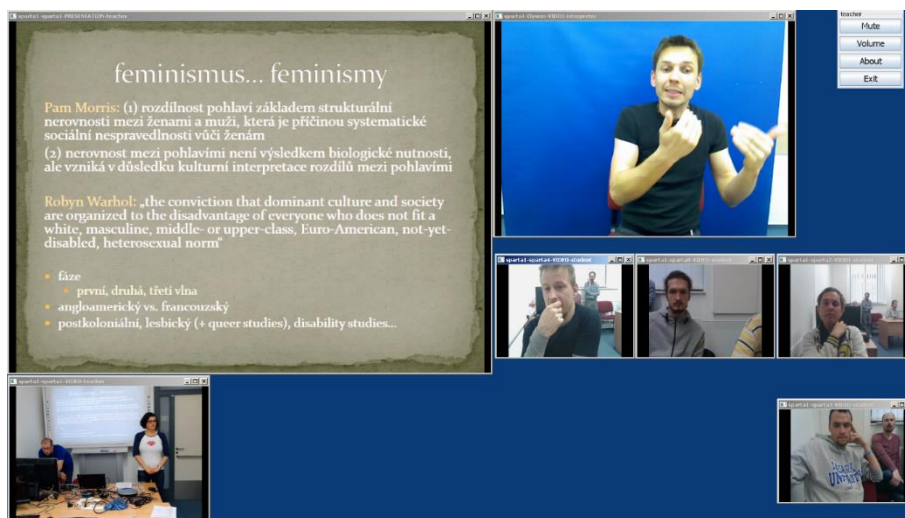microphone — teal rectangle

Features

- Client-server architecture
- Roles: teacher, interpreter, student
- Up to 10 participants
- Multiple video streams (all-to-all), selective audio
  - Video resolution from 240×180 up to 640×480 pixels
  - Sustainable framerate (min. 25 frames per second)
  - Low latency (up to 200 ms)
- Presentation or other content from computer
- Based on commodity HW and existing SW tools
  - Web cameras, USB speakerphones
  - Windows, Linux, OS X
  - UltraGrid & CoUniverse

CoUnSiL Client(s)

- Role-specific layout
- User-defined layouts

- *Raise hand* and *giving floor*
- Self-view

User testing

- Simulated lecture scenario
- Held at Teiresiás seminar rooms
- Half-dozen of trials
- 20–40 minutes long
- 2–5 "students'' + teacher + "remote" interpreter
- User feedback after the session
  - Suggestions for improvements
  - Advice for future work
  - Task prioritization

Limitations

- Requires high-speed networks
  - Sorry, no WiFi ☹
- Public IP address
- Up-to-date hardware
  - the more participants, the more powerful PC
  - Tailored to FullHD resolution (1920×1080 pixels)

Conclusion

- CoUnSiL = videoconferencing system for sign-language interpretation
    - Low latency & high video quality & sustainable framerate
    - Up to 10 participants
- Use cases: lectures (primarily), seminars and discussions
- User-driven development (simulated lectures)
- Stable final version on July 2016
    - Open source software

Thank you for your attention.

http://sitola.cz/counsil

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