

# Instrumented Environments

Andreas Butz, [butz@ifi.lmu.de](mailto:butz@ifi.lmu.de), [www.mimuc.de](http://www.mimuc.de)

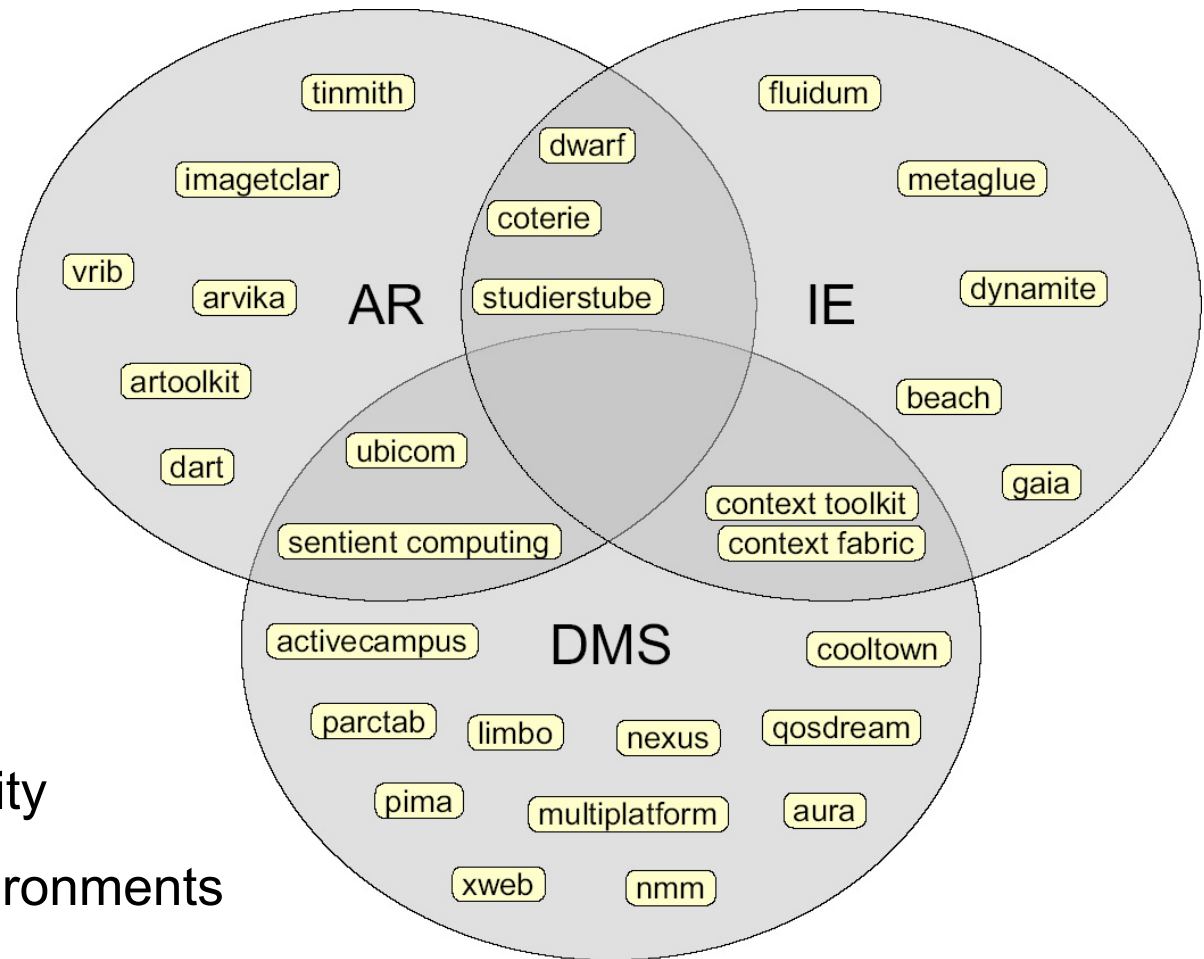
Mon, 10-12 Uhr, Theresienstr. 39, Room E 46



# Topics today

- A few words on SW infrastructures for IE
- If you took an exam about this lecture, what would I ask?
- If you did a Projektarbeit or Diplomarbeit with me, who could be your advisor?

# Thematic map of SW infrastructures



AR = Augmented Reality

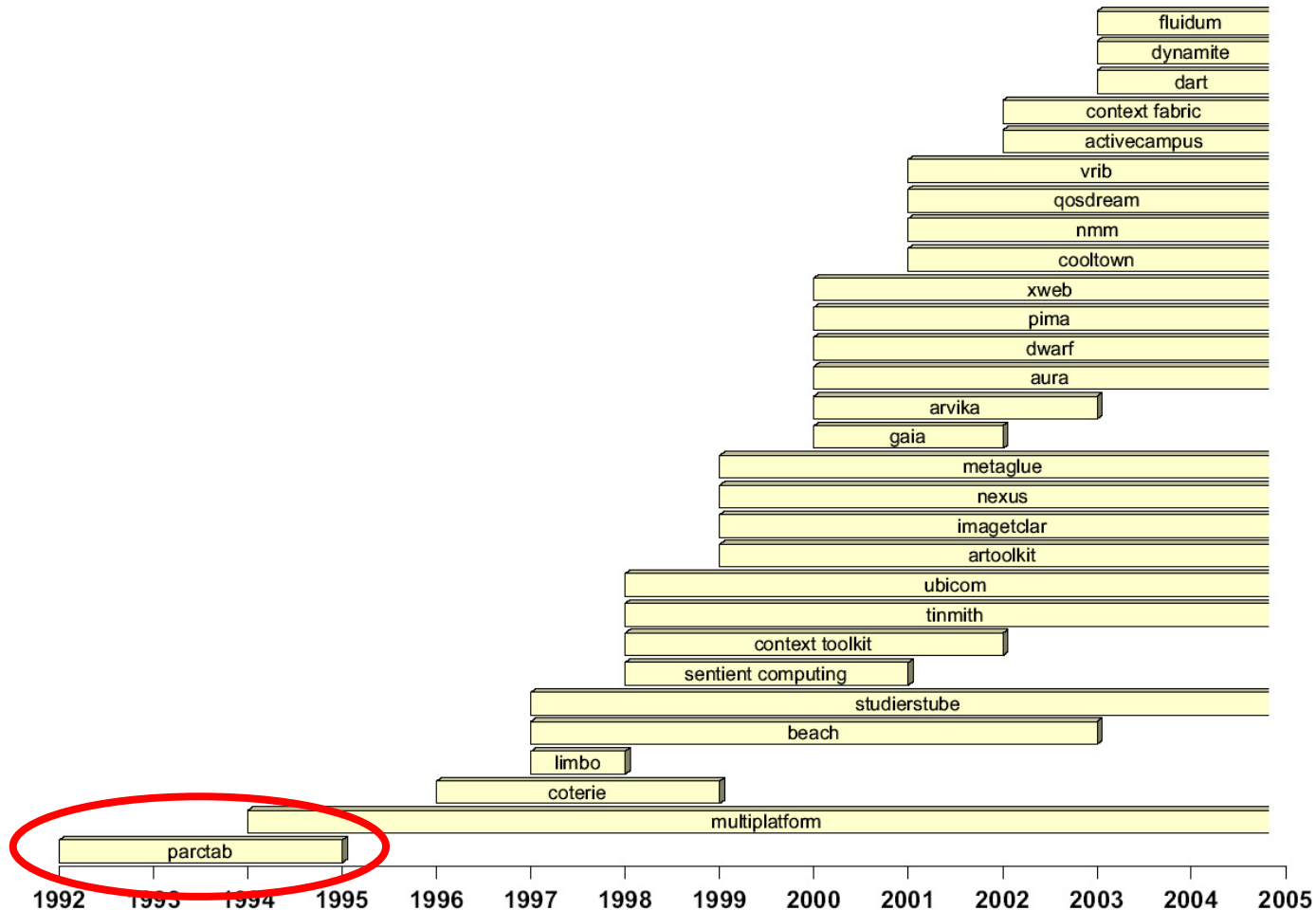
IE = Instrumented Environments

DMS = Distributed Multimedia Systems

# World map of SW infrastructures



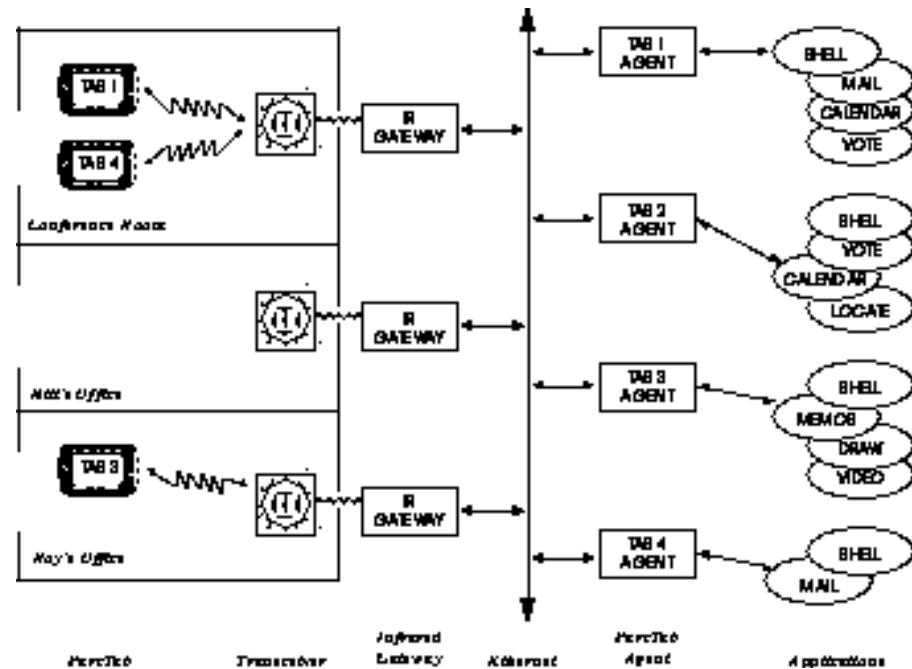
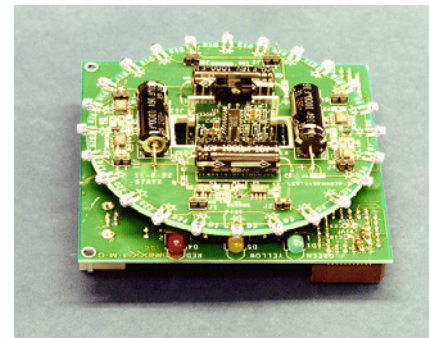
# Timeline of SW infrastructures



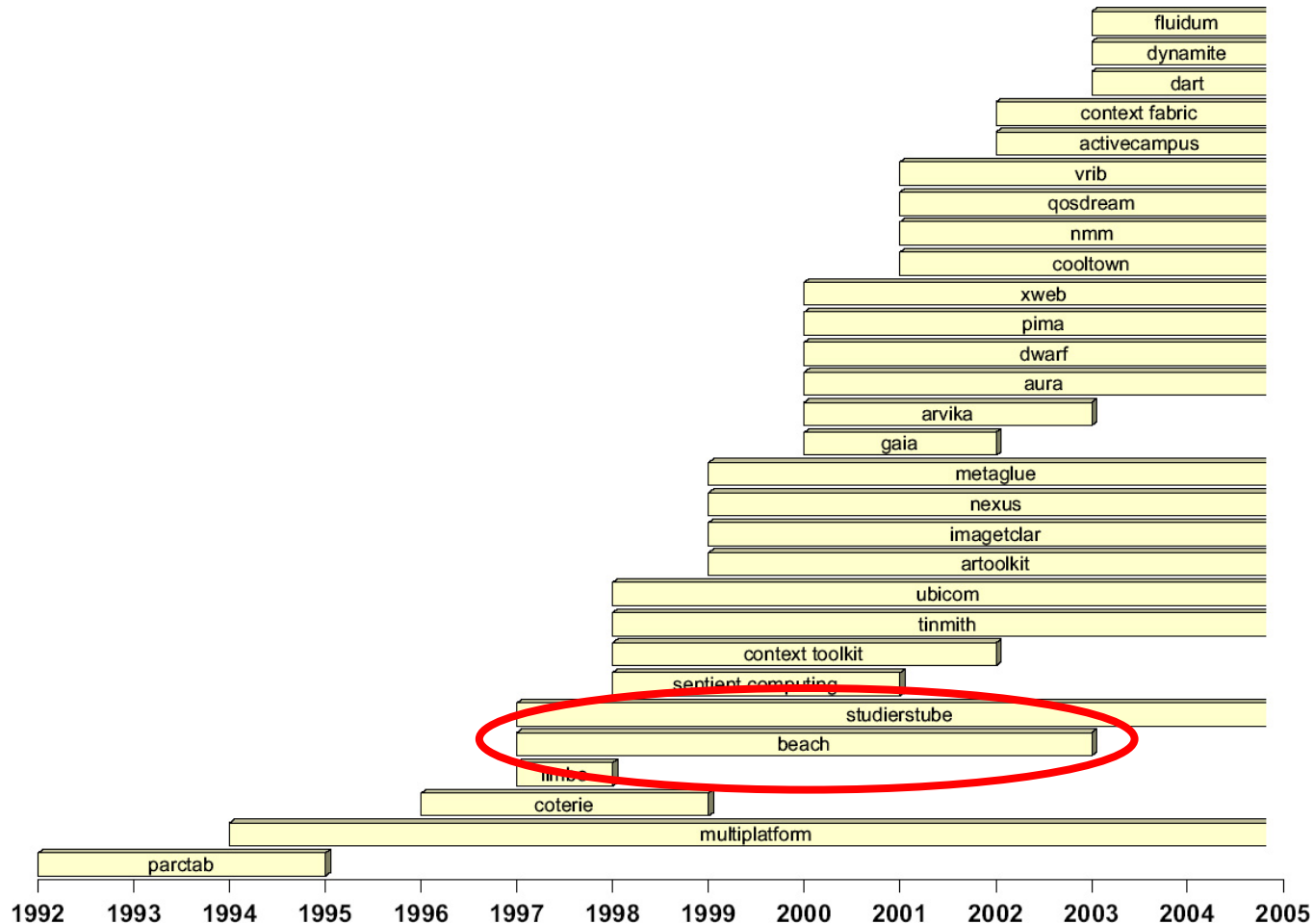
# Xerox ParcTab

<http://sandbox.parc.xerox.com/parctab/>

- Infrared network
  - Base stations in the ceiling
- Each base station was controlled by a IR gateway
- Each tab represented by a SW agent (tab agent)
- Applications written in
  - modula-3
  - Tcl/Tk
  - Using MacTabit (~VNC)

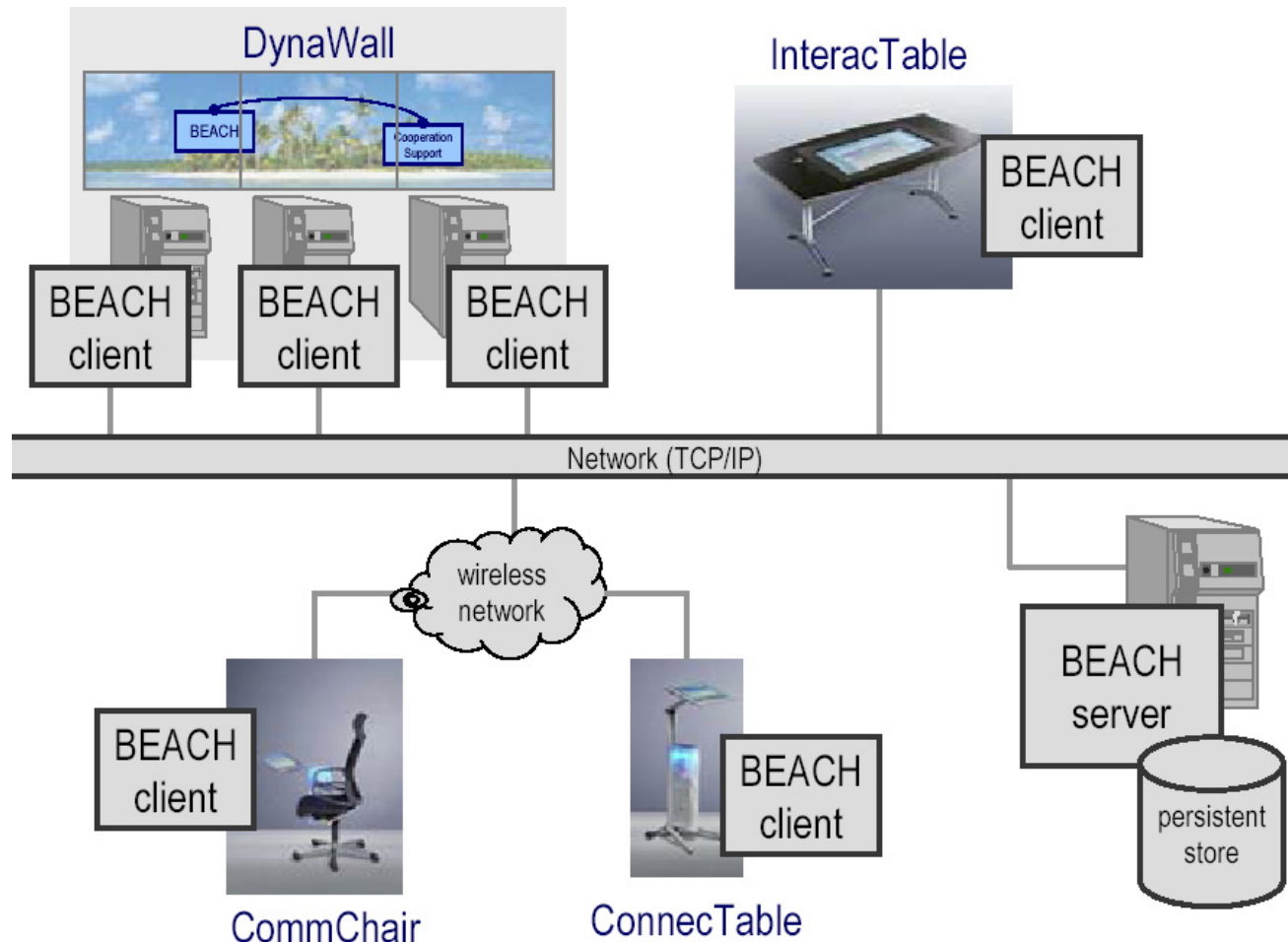


# Timeline of SW infrastructures

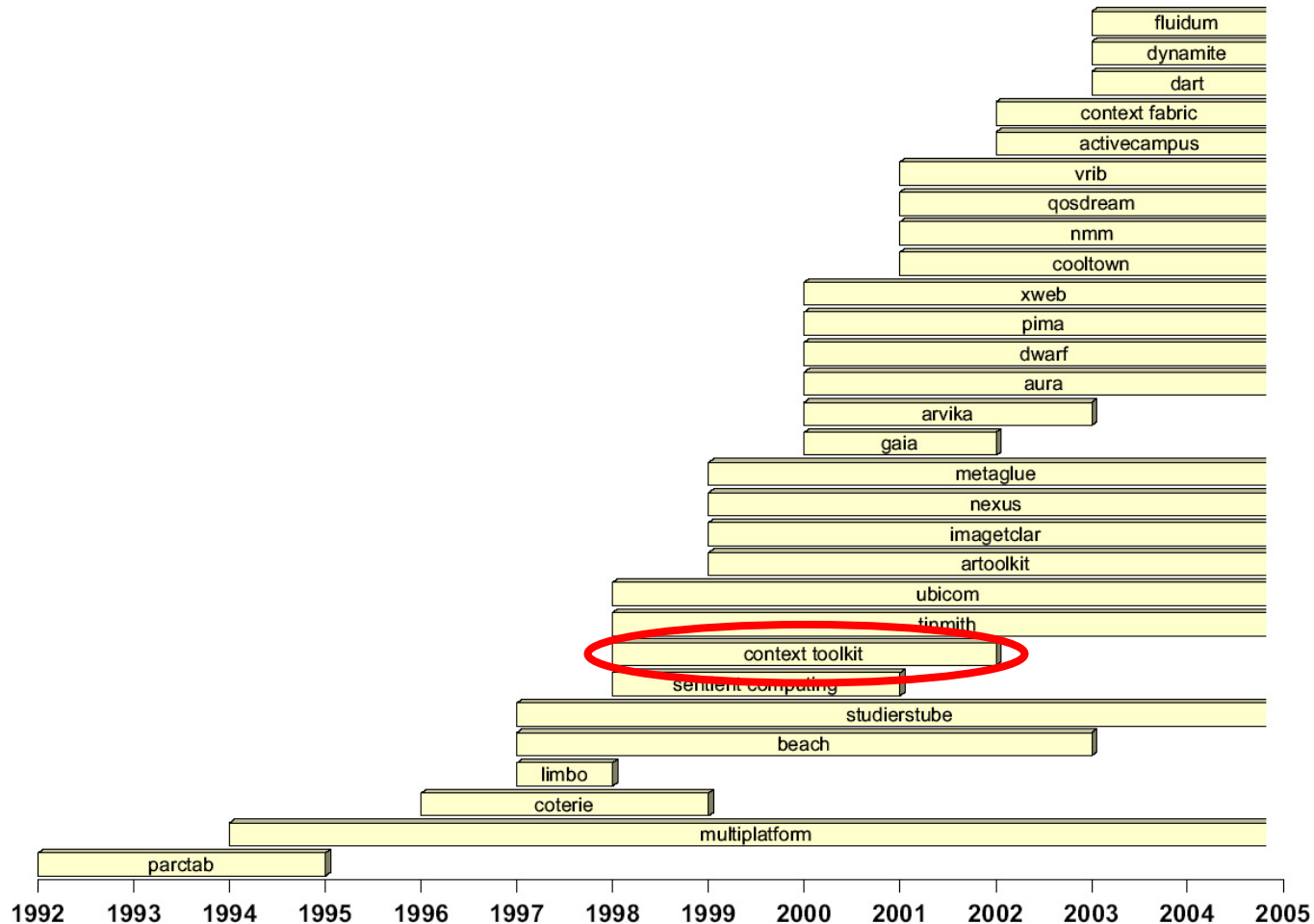


# BEACH (FhG IPSI Ambiente)

<http://www.ipsi.fraunhofer.de/ambiente/>

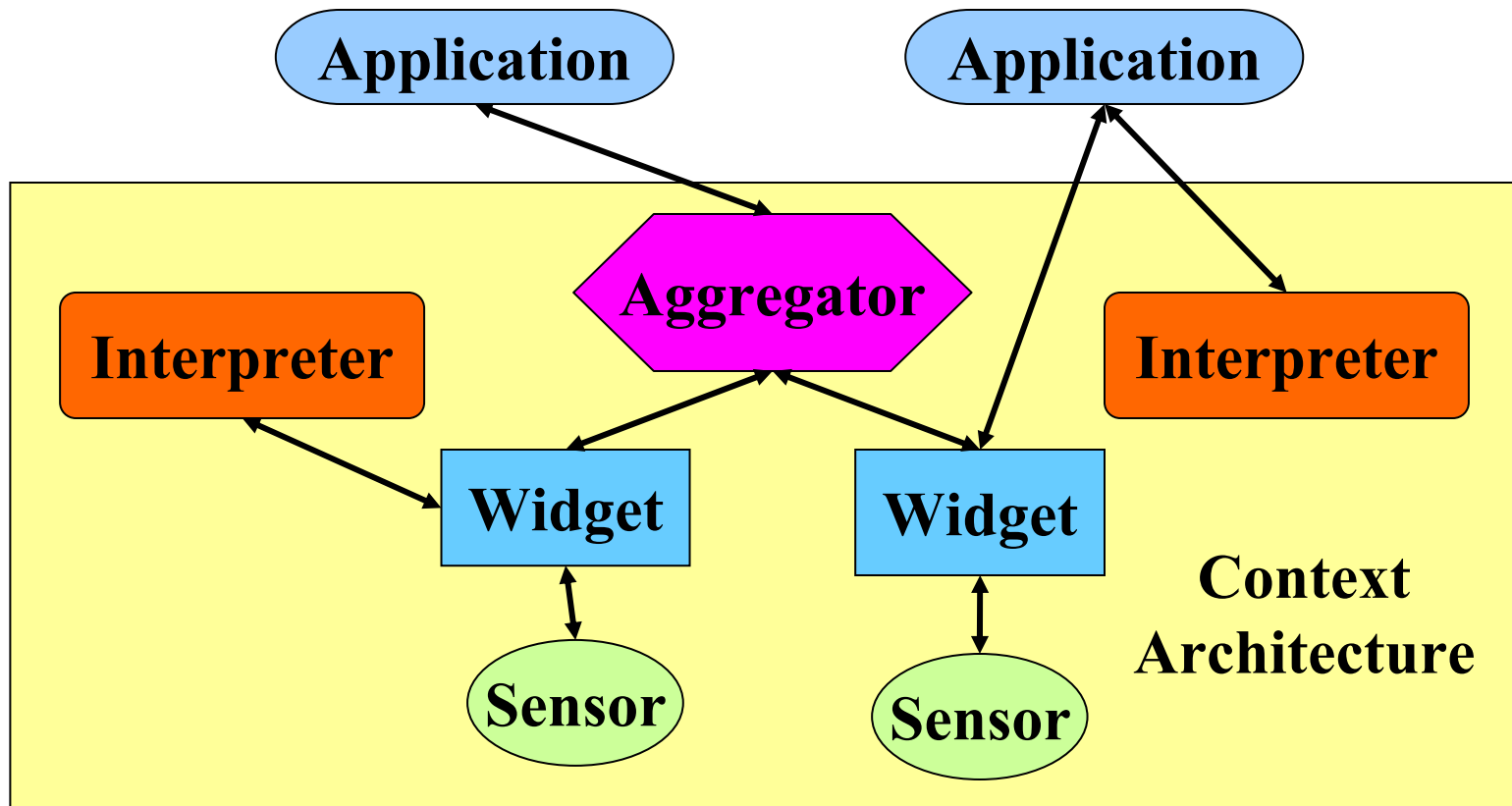


# Timeline of SW infrastructures

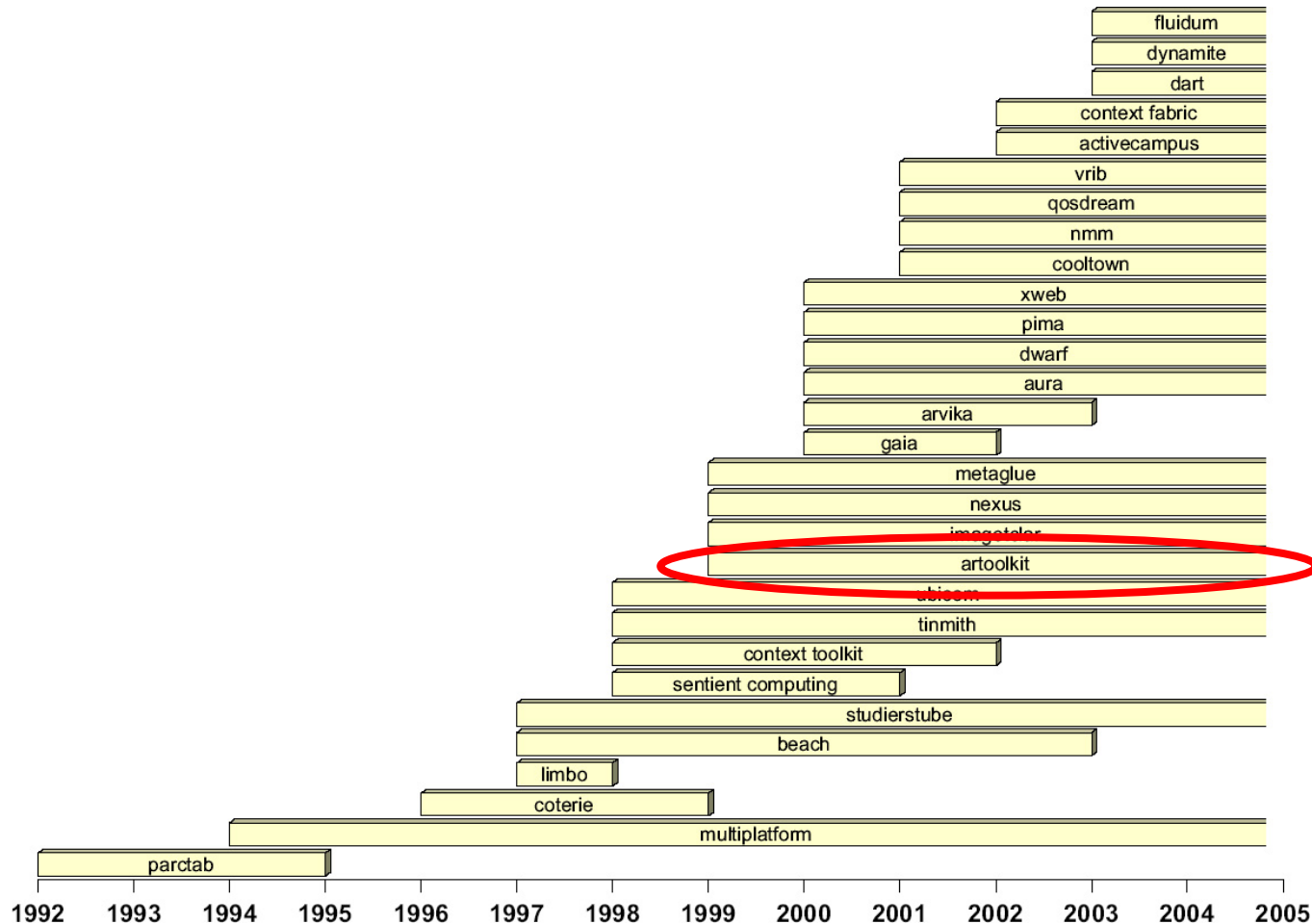


# Context Toolkit Framework

- Supports real-world model/methodology and provides library (distributed: XML/HTTP, input-focused)
- Component model: facilitates building of applications in Java

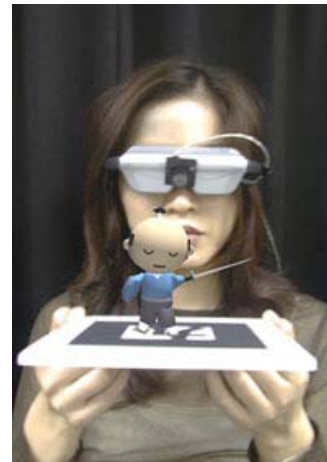


# Timeline of SW infrastructures

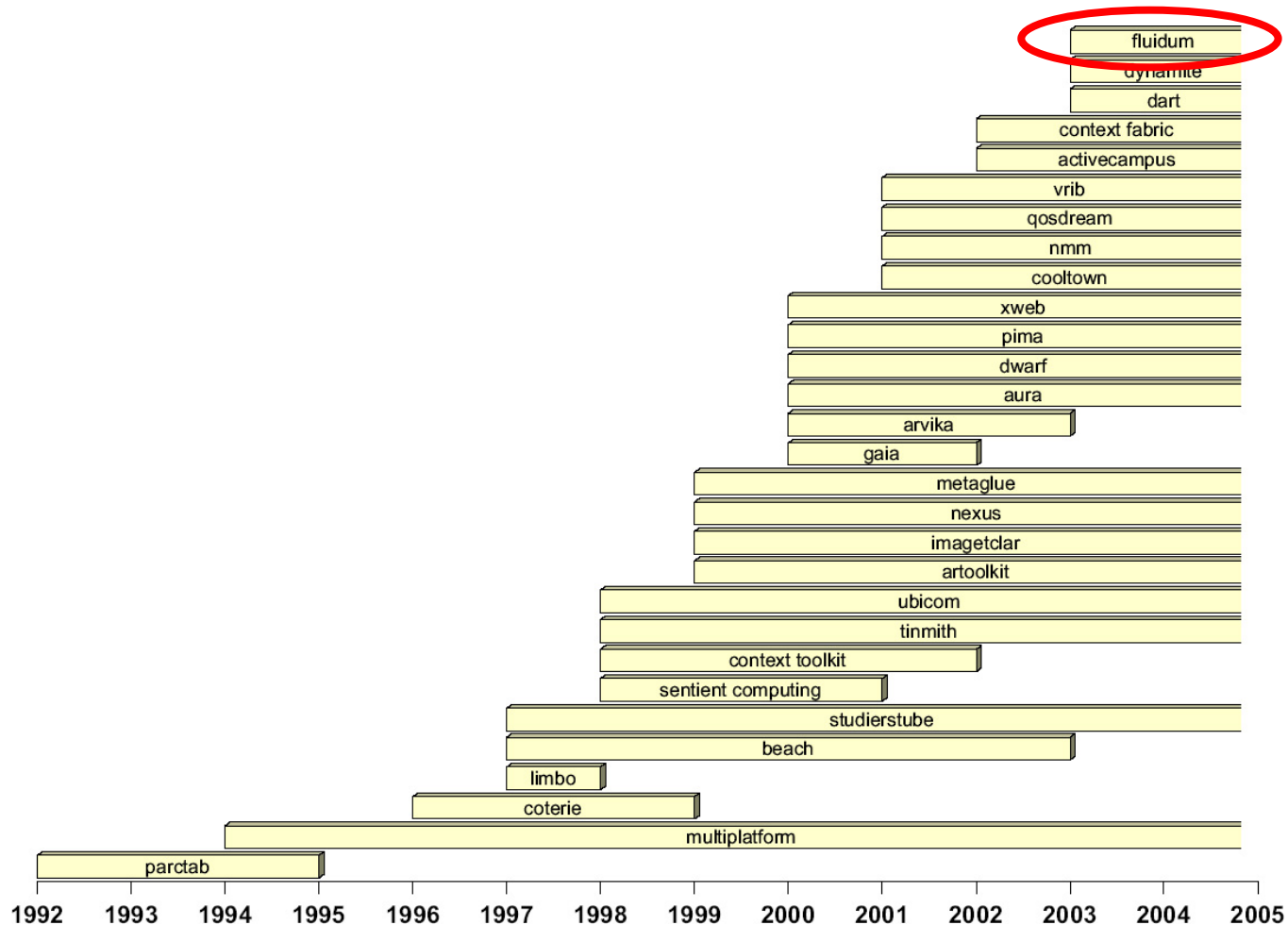


# AR Toolkit

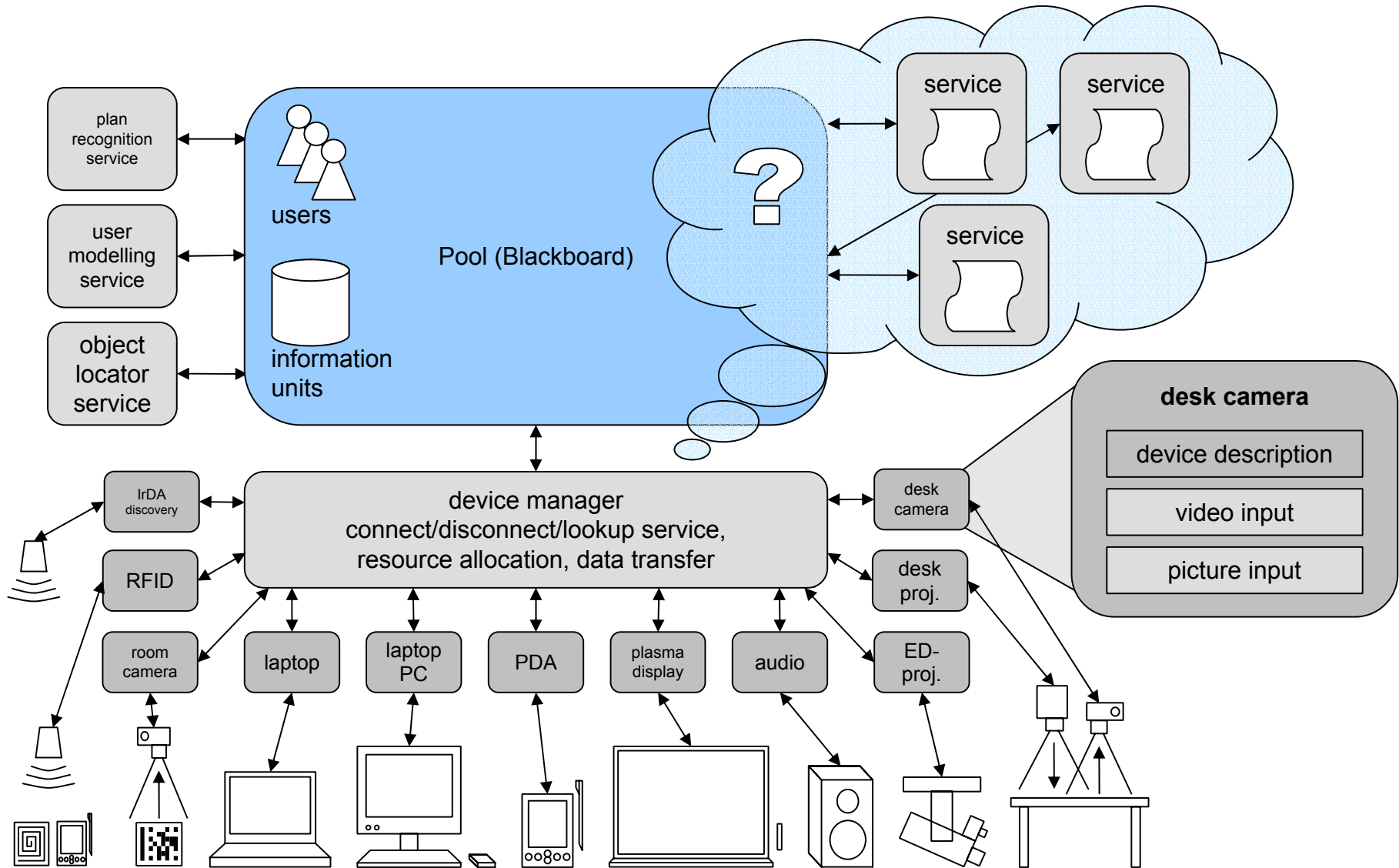
- Library for Marker recognition
- Can be used for camera-based tracking
  - With head-mounted displays
  - With other screens
- C library
- Java wrapper available
- Works on
  - Windows
  - Linux
  - PDAs (WinCE)



# Timeline of SW infrastructures



# Fluidum SW infrastructure



# Lecture summary

# Important Topics

- Idea of ubiquitous computing
  - Early concepts, Example projects
- Display technologies
  - Working principles, properties
- Network technologies
  - Principles, properties, problems
- Localization technologies
  - Working principles, classes, properties
- Tracking Technologies
  - Working principles, example projects

# Important Topics (2)

- Wearable computing
  - Input, output, example applications
- Tangible User Interfaces
  - Classical examples, how they work, what they do
- Ambient User Interfaces
  - Core idea, example TUIs, and how they work
- Context awareness
  - Definitions, formalisms, applications, context toolkit
- Marc Böhlen's guest lecture (bonus material ;-)
  - Core ideas, key findings

# Important Topics (3)

- Knowledge representation
  - Different types of KR, representations of time
- Reasoning, planning
  - STRIPS, hierarchical planning
- Multimodal interaction
  - Example projects (Saarland Univ., Sony CSL, Microsoft Research)
  - Criteria for media distribution
  - Cross-media references
- Software infrastructures
  - Only classical examples

These would be your advisors in Fluidum



# LMU instrumented room

- In the basement of Amalienstrasse 17
- 12-15m<sup>2</sup>
- Steerable projector
- Augmented desk
- Back projection wall display
- Conventional displays
- Mobile devices
- Cameras
- Microphones
- RFID/IrDA/BT sensing
- Setup will begin Feb
- Topics for
  - Projektarbeiten
  - Diplomarbeiten
- Ideas for a cool name?
  - SUPIE: Saarland University Pervasive IE
  - Now: MUPIE ??? No!

