Combined Interactive Presentation of Patient Cases and Linear Contents: An Application in Oral and Maxillofacial Surgery

Martin Boeker[a], Jörg Tchorz[b], Alexander Streicher[a], Rüdiger Klar[a], Ralf Gutwald[b], Rainer Schmelzeisen[b]

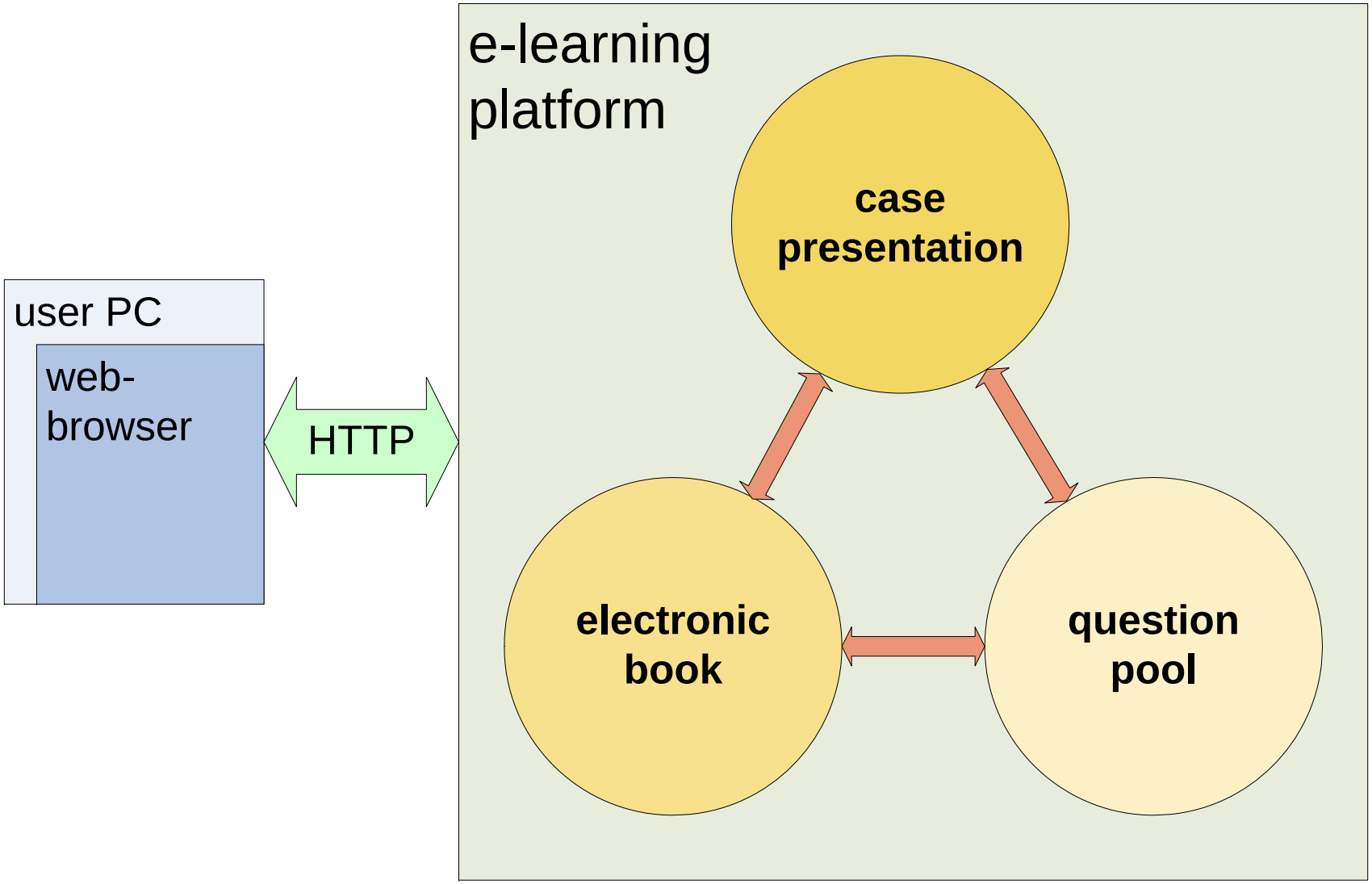
[a] *Department of Medical Informatics, University Hospital Freiburg, Germany*
[b] *Division of Oral and Maxillofacial Surgery, University Hospital Freiburg, Germany*

UNIVERSITÄTS KLINIKUM FREIBURG

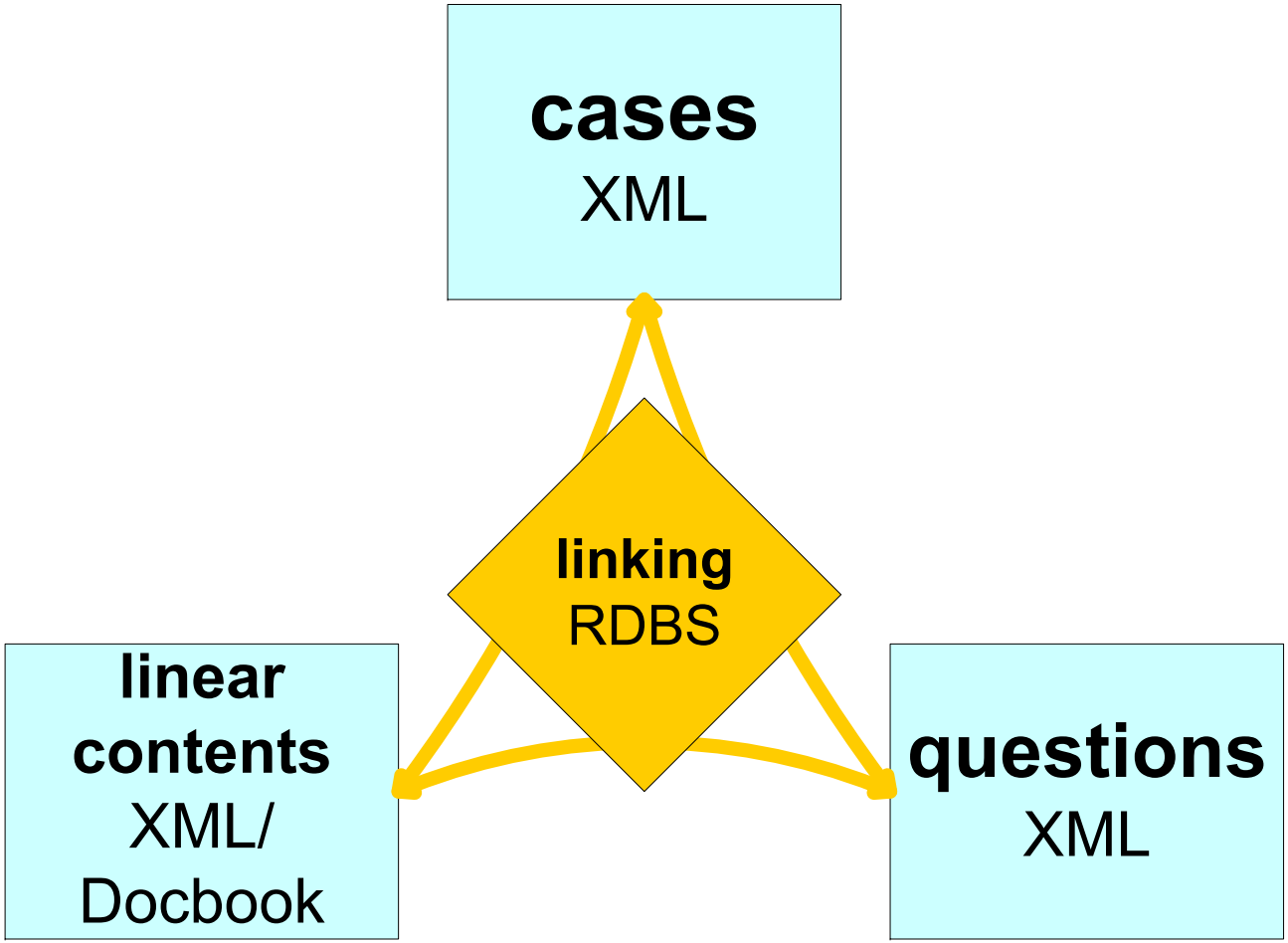
objectives

- Framework for the web-based presentation of
  - Patient cases
  - Linear contents
  - Questions
  - Linking of contents
- Implementation in Oral- & Maxillofacial Surgery
- Evaluation

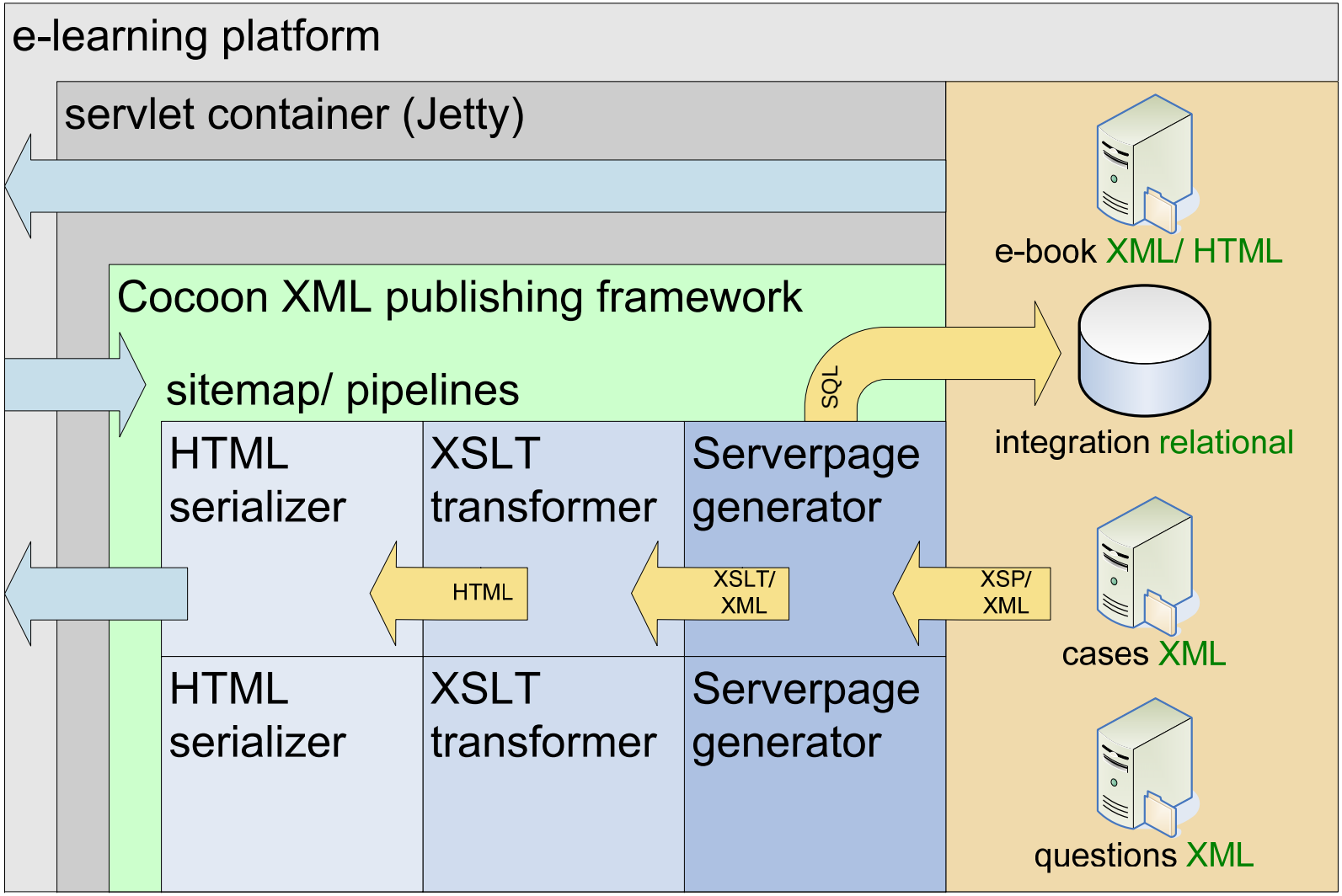
conceptual view



components


cases
XML
linking
RDBS
linear
contents
XML/
Docbook
questions
XML

architecture



graphical user interface

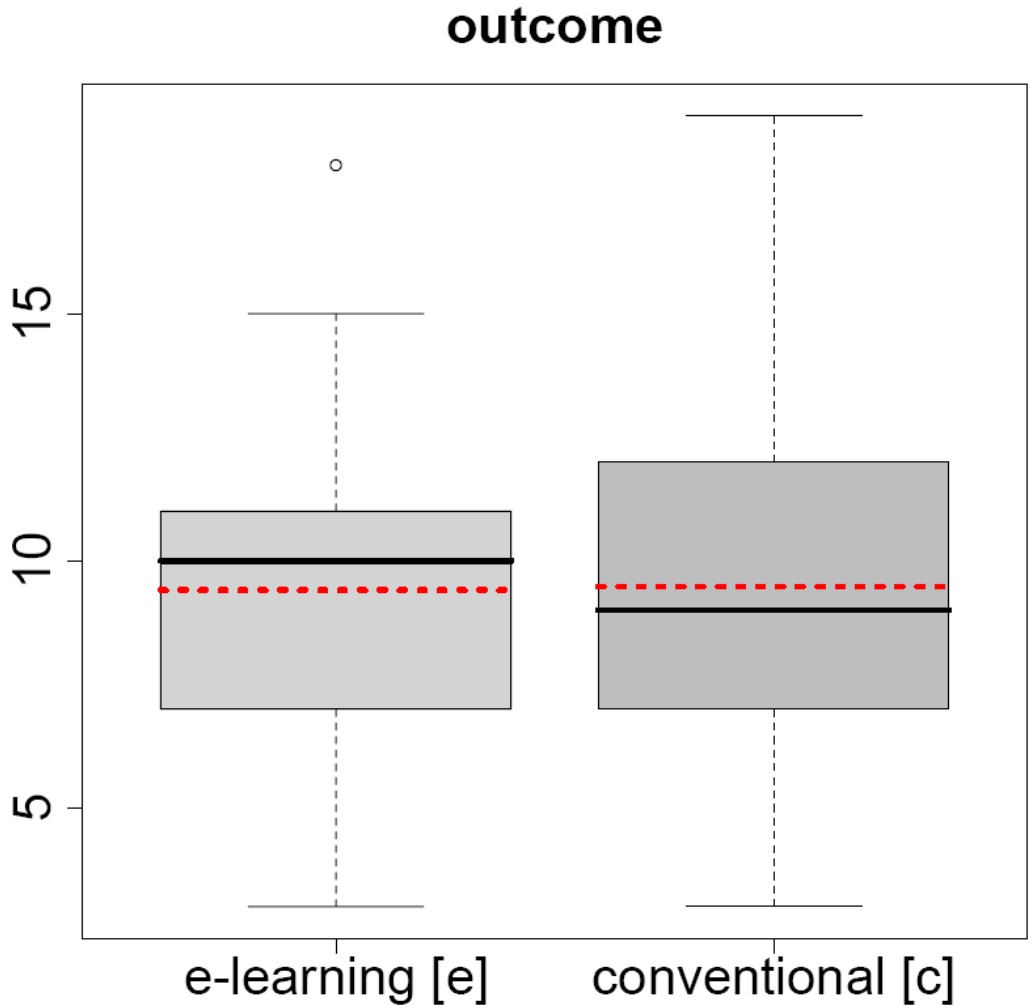
evaluation design

e-learning	conventional	Learning method	
common		5 min introduction	
group 1	group 2	15 min learning	phase 1
group 1	group 2	5 min outcome questionaire	
		change	
group 2	group 1	15 min learning	phase 2
group 2	group 1	5 min outcome questionaire	
group 2	group 1	5 min assessment	

time

evaluation results I

- n=42
- max. 20 points
- n.s.



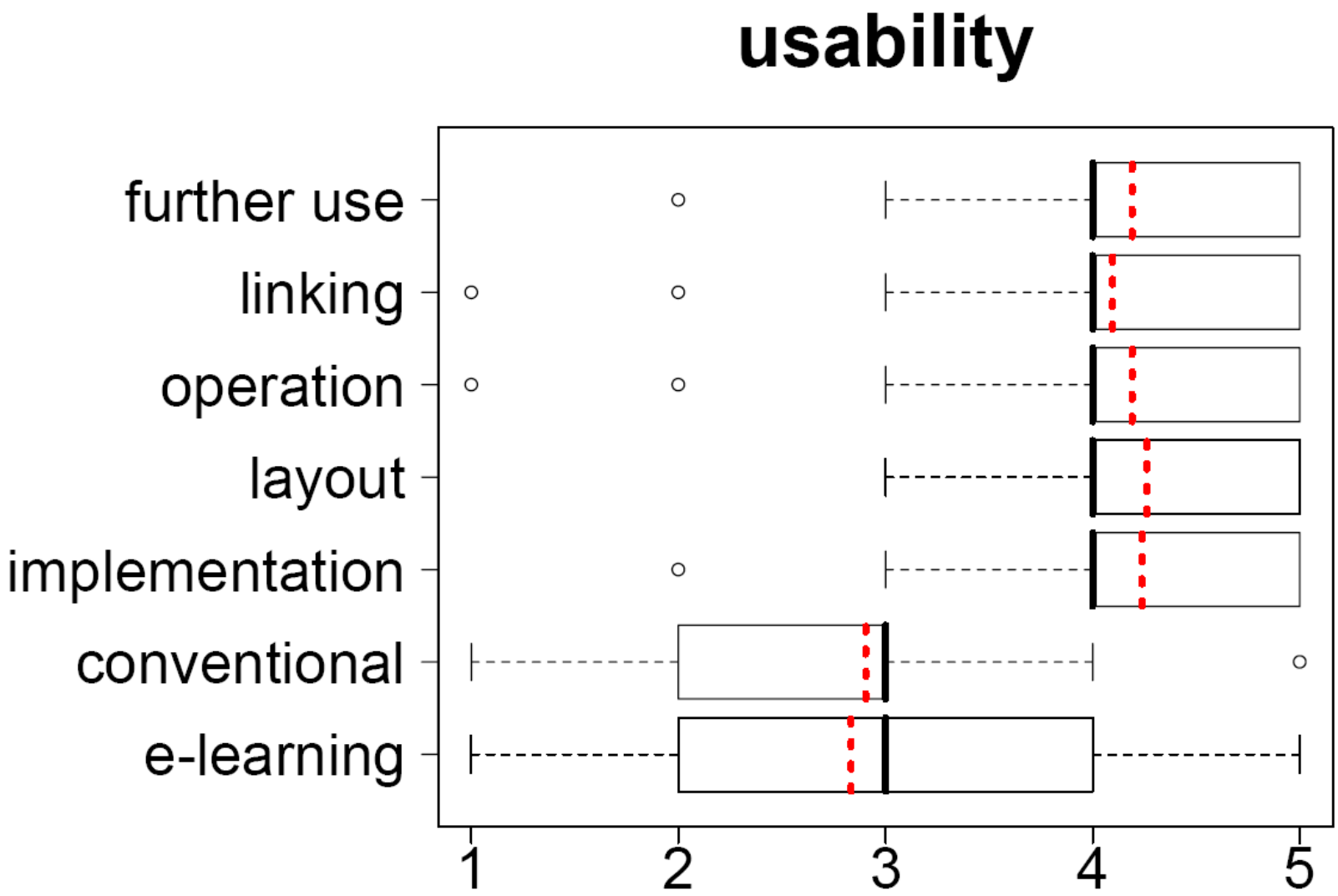
evaluation results II

	outcome	**benefit**	**relevance**	**fun**
scale	*[0,20]*	*[1,5]*	*[1,5]*	*[1,5]*
e-learning	9,4	4,2	3,9	4,1
conventional	9,5	3,6	3,8	3,2
significance	n.s.	0,005	n.s.	0,0001

comparison of learning methods (mean, n=42)

- outcome
- benefit in medical education
- relevance for the later profession
- Fun-factor while learning

evaluation results III



summary

- Successful development of an e-learning presentation framework based on open-source tools
- Implementation of an e-learning application in Oral- & Maxillofacial Surgery
  - 41 patient cases and 2 electronic books
- Evaluation in crossover design (n=42)
  - Similar outcomes of e-learning vs. conventional learing
  - Significant higher assessment of benefit for medical education of e-learning vs. conventional learning
  - Significant more fun during case processing in e-learning vs. conventional learning
  - Good overall usability
- Further development
  - Enhancement of presentation features
  - Extension to other medical subjects

references and contact

(1) Fischer MR. Caseport. Portal for Case Based Learning in Medicine. 2004. Available from http://www.caseport.de. Accessed 2007 Feb 14

(2) Walsh N, Muellner L. DocBook: The Definitive Guide, 1. Auflage. Cambridge: O'Reilly: 1999

(3) Gutwald R, Gellrich N-G, Schmelzeisen R. Einführung in die zahnärztliche Chirurgie, 1. Auflage. München: Urban & Fischer Verlag: 2003

(4) Howaldt H-P, Schmelzeisen R. Einführung in die Mund-, Kiefer- und Gesichtschirurgie, 1. Auflage. München: Urban & Fischer Verlag: 2002

Dr. med. Martin Boeker
Department of Medical Informatics
University Hospital Freiburg
Stefan-Meier-Str. 26; D-79104 Freiburg i. Br.
martin.boeker@uniklinik-freiburg.de