

Multi-modal Interaction in Private Environments

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Deep Map

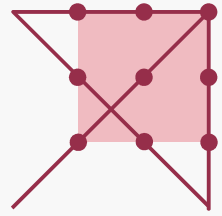
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First EML Project incorporating

- individual tour guidance
- mobile system
- multi-modal interface (NLP, pictures, text, ...)
- wireless online access to networks





The Tourist

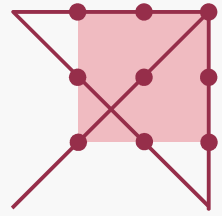
Dagstuhl

1.11.2001

- has mobile/wearable computer (Xybernaut MAIV, IBM ThinkPad)
- Has wireless network access
- Uses headset, microphone, and display



„give me a bird's-eye view of the castle“



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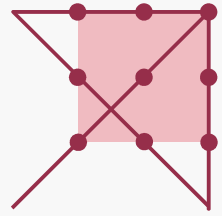


EML
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Deep

3D Castle





The Tourist

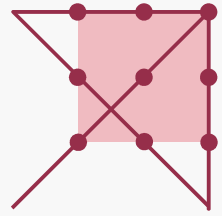
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„How do I get to the University“

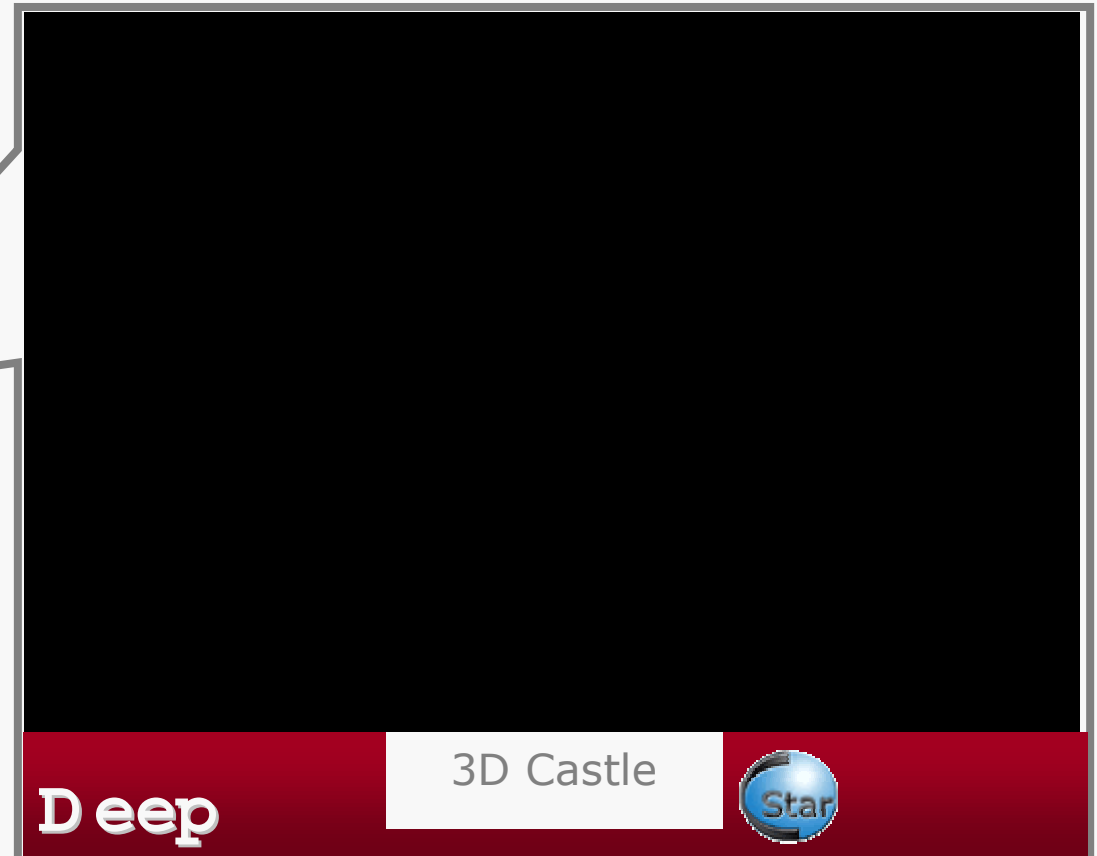


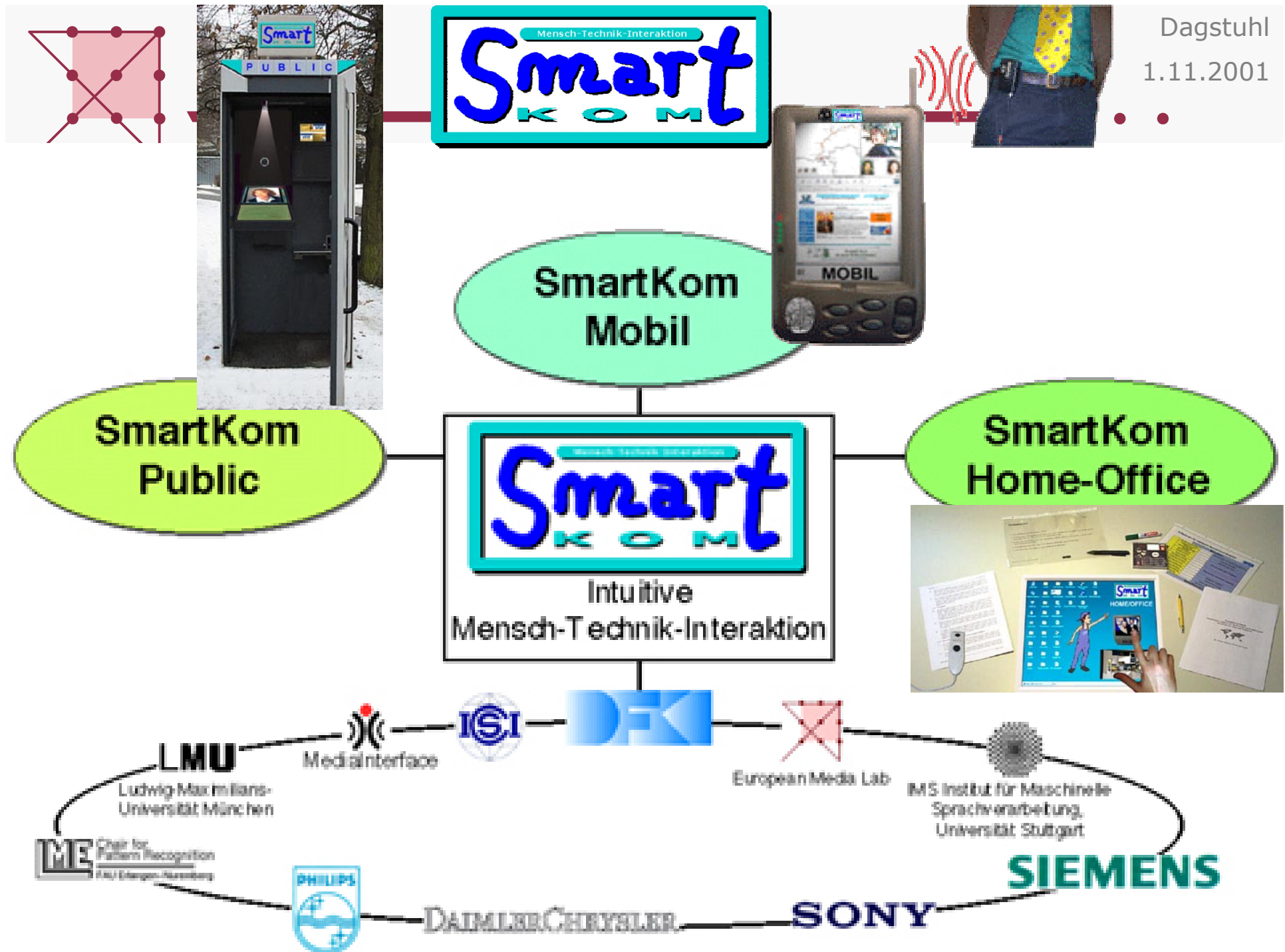
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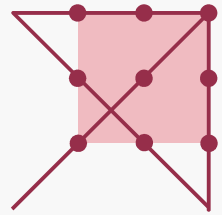
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EMBASSI

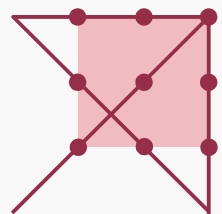
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LOEWE.	SIEMENS	 EML EUROPEAN MEDIA LABORATORY GMBH
BOSCH	 LMR Institut LABORATORY FOR MIXED REALITIES an der Kunsthochschule für Medien Köln	 FORWISS
 Fraunhofer Institut Graphische Datenverarbeitung	 Fraunhofer Institut Integrierte Schaltungen	 Zentrum für Graphische Datenverarbeitung e.V.
		BioID.
	 technik für menschen	Handy Tech  Elektronik GmbH
		

Assistance

- for using consumer electronic devices
- terminals
- in cars
- in mobile use





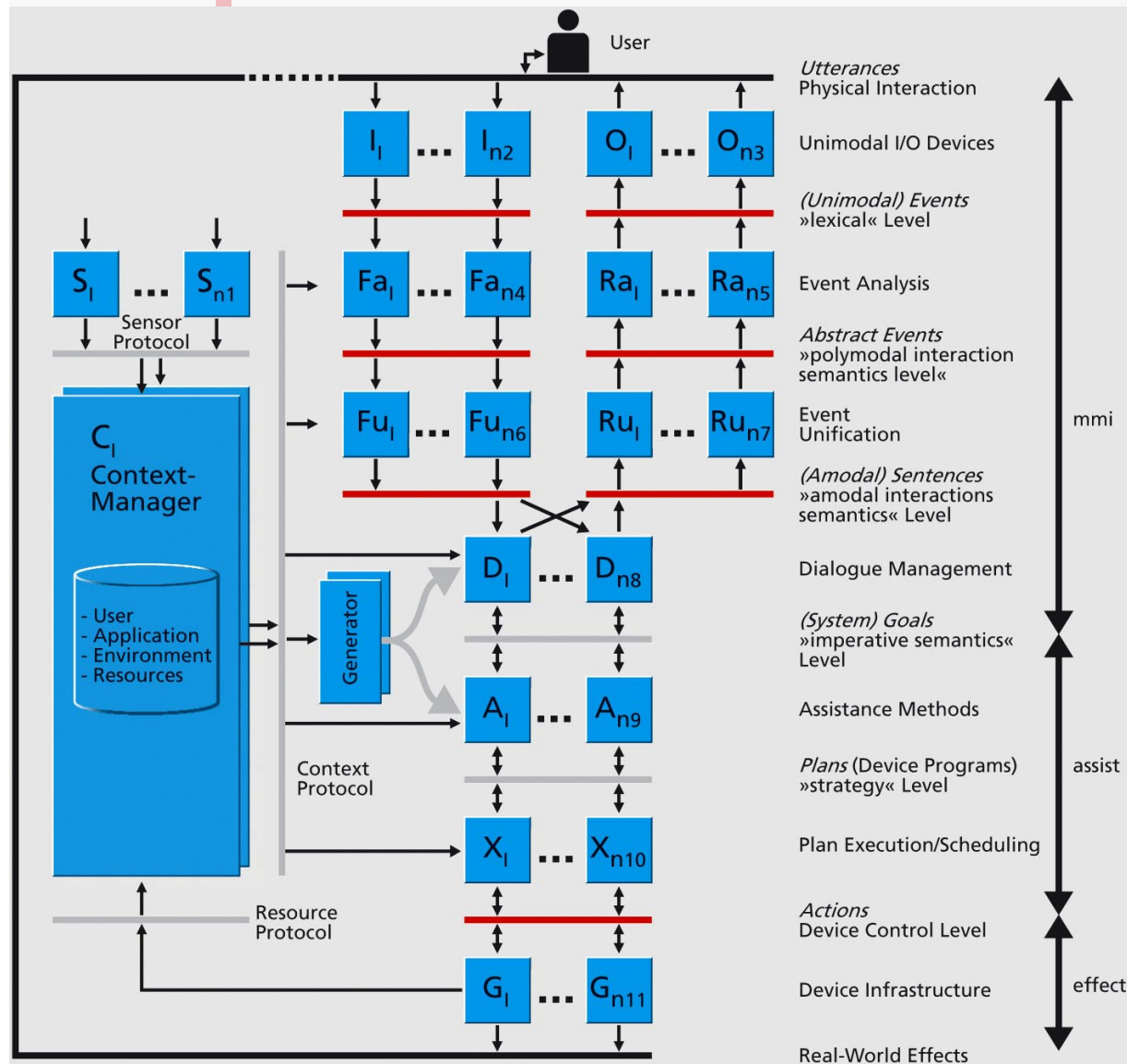
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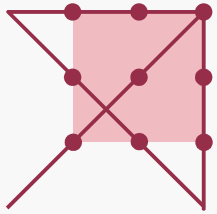


Results of EM BASS I Phase I



The generic architecture Key elements

- Uni-modal level
- Poly-modal level
- amodal level
- device level



EMBASSI: Living room scenario

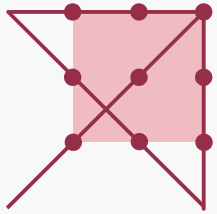
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“Record the mystery tonight!”





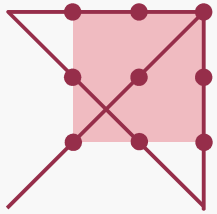
EMBASSI: Living room scenario

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“Turn this up, please!”





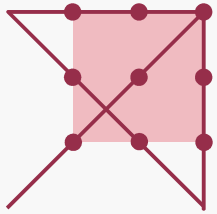
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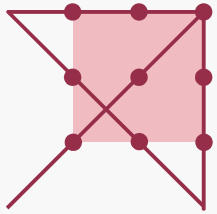
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“Brighter!”





EMBASSI: Living room scenario

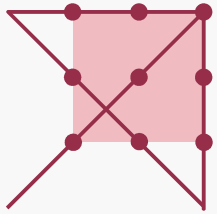
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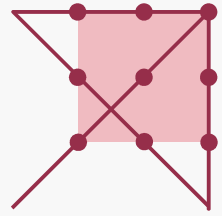
“Brighter!”





User Studies „Device-dependant Modality Selection“

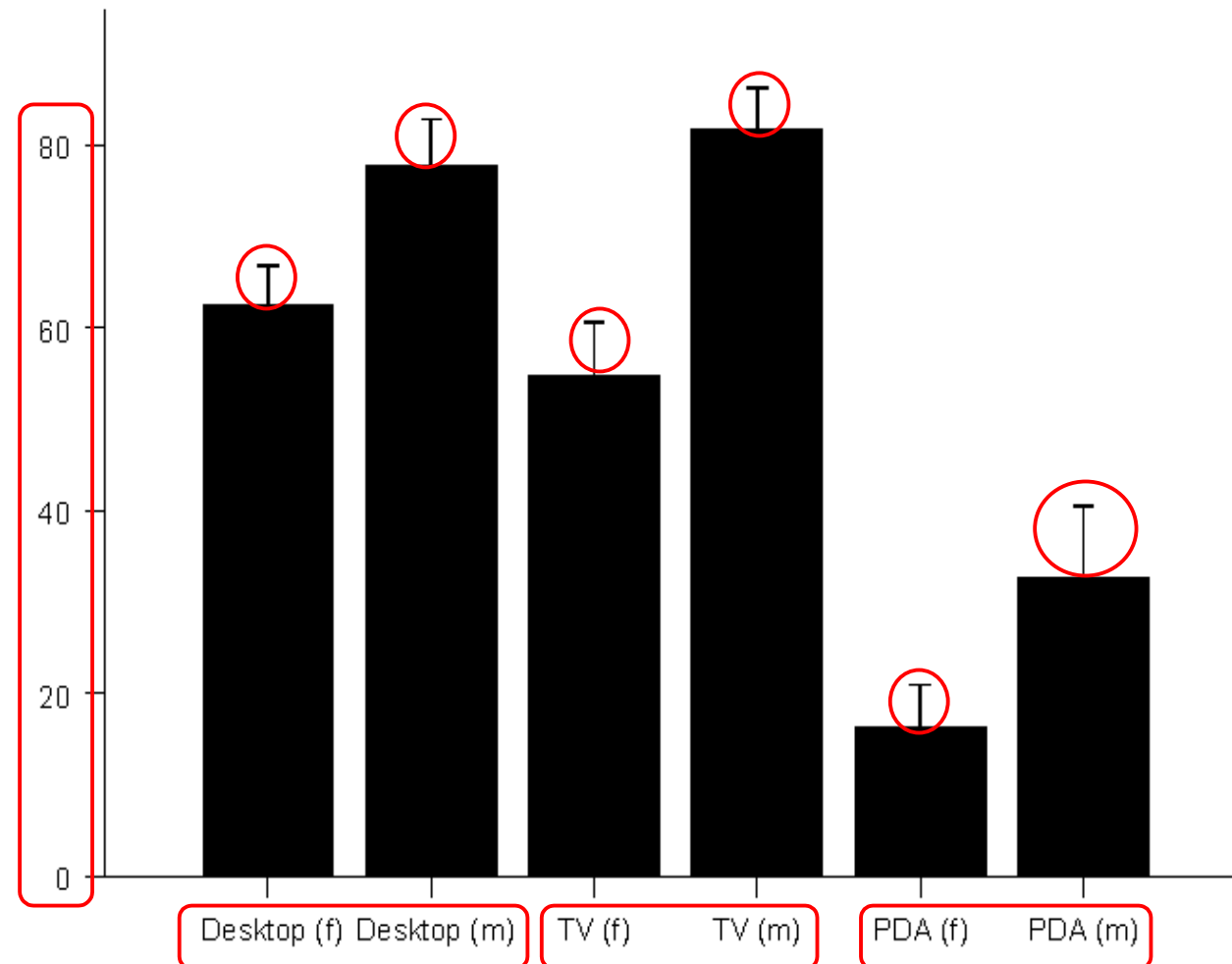


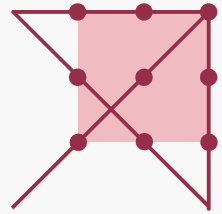


Results I: User Experience

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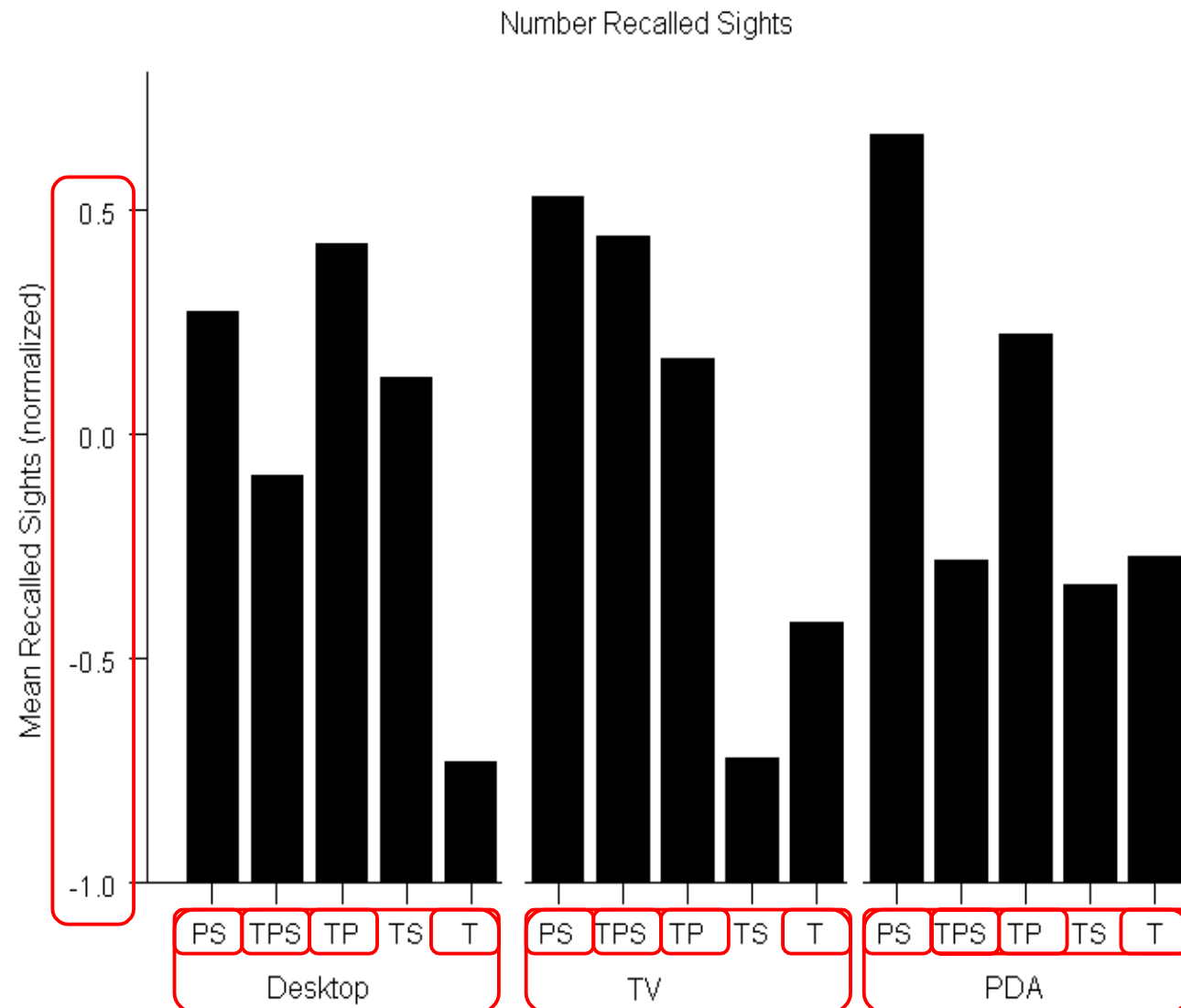


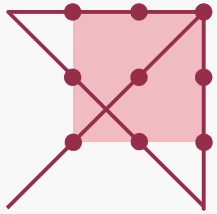


Results II: Effectiveness

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Results III: Acceptance

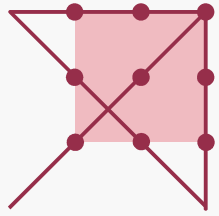
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**TPS is most appealing presentation mode
≠ most effective mode PS**

TPS was rated least overloaded mode

No device-specific differences

Criticism on speech synthesis



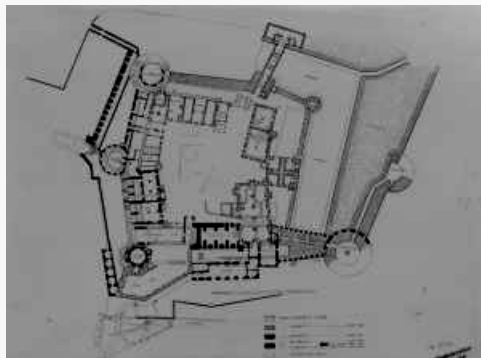
GEIST - From 3D to 4D

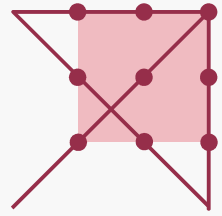
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- Edutainment, AR project
- 30 Years War: reasons, events, results
- how did the buildings look at that time (castle, sacral buildings, profane buildings)





Conclusion/Remarks

- Mobility needs multi-modality
- Real-world applications are important
- What can we do with multi-modality
 - Art: producing impressive artifacts
 - Engineering: solve problems according to specs
 - Science: invent and prove theories on the nature of interaction
- Most systems represent artifacts
- Some systems are basically engineering projects
- Few work is really scientific