Evaluation of the Virtual Turkish Chess Player Installation at TMW

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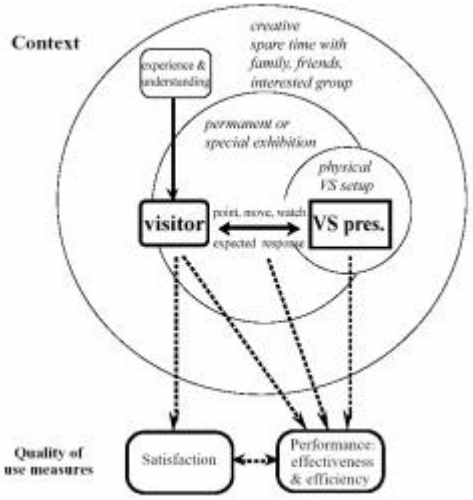
Evaluation Design

Evaluation Context (1/2)

- context of museum multimedia: usability and visitor orientation
  - quality of use of applications by end-users
    International Organisation for Standardisation (ed.) (1999): Human-centred design processes for interactive systems. (ISO 13407:1999)
  - educational role of the museum, knowledge provision
    ICOM Code of Ethics for Museums (2001)

Evaluation Context (2/2)



Sketch based on Bevan, Nigel (1995): Usability is Quality of Use

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Sources for Evaluation Methods

- ISO (ed.) (1996/98): Ergonomic requirements for office work with visual display terminals (VDTs)
  - Part 10: Dialogue principles (ISO 9241-10: 1995).
  - Part 11: Usability principles (ISO 9241-10: 1998).
- Jelitto, M. (2004a): Ausstellungsmedium Computer. (on-line) - http://www.ausstellungsmediumcomputer.de
- Jelitto, M. (2004b): Evaluation im Bereich digitaler Medien. (on-line) -http://www.evaluieren.de/
- CIDOC Multimedia Working Group (ed.) (1997): Multimedia Evaluation Criteria.
  (on-line) - http://www.archimuse.com/cidoc/mm-eval.rtf

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„Standardized“ Evaluation Criteria

- effectiveness
  - degree of interaction success
- efficiency
  - time it takes to perform interaction
- subjective acceptance
  - user satisfaction

→ ISO-standardized criteria, but not directly measureable for VS.

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Areas for Quality Assessment

- general information
- previous experience
- visual representation quality
- degree of immersion
- interaction quality
- (degree of) control of chess game
- quality of historical texts
- visitor acceptance

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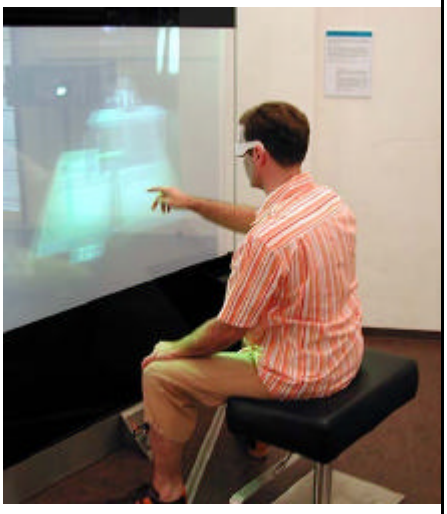
Methods applied

- visitor observation →
- semi-structured, guided interviews
(hand-out)



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Evaluation setup

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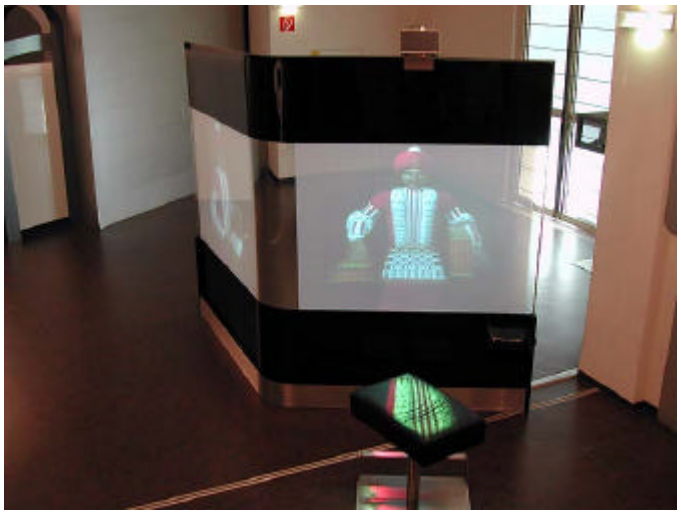
Chess Player Setup (1/2)



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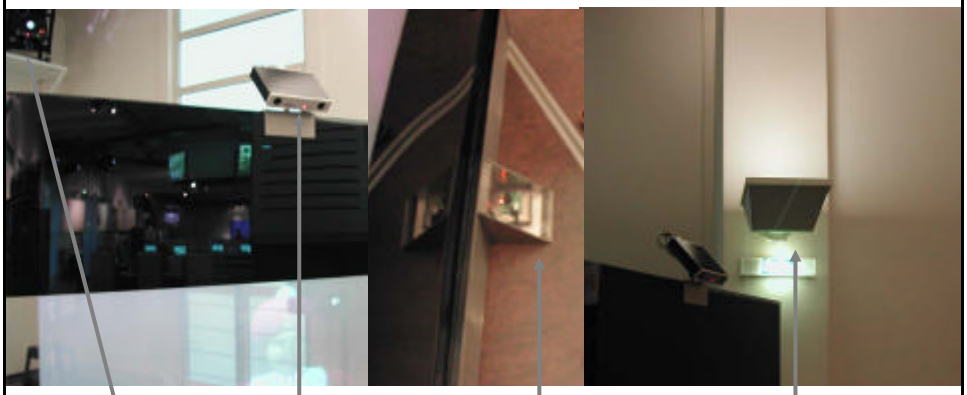
Chess Player Setup (2/2)



projection source

head tracker

hand tracker

ceiling light:
contrast enhancement
for hand tracker

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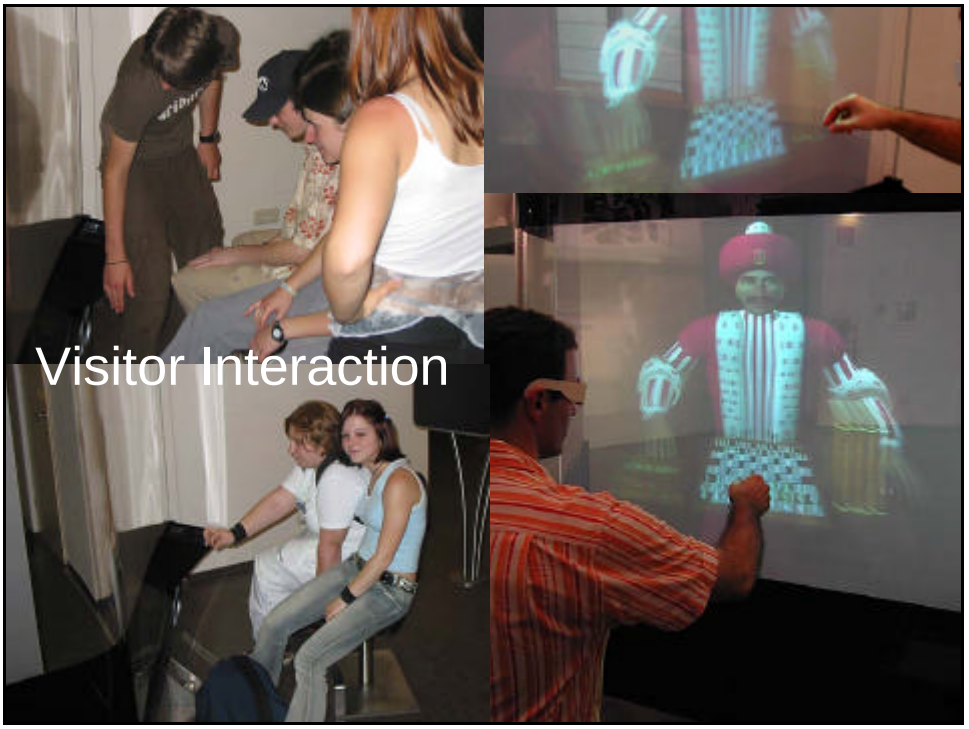

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Evaluation Results

gained from 30 qualitative interviews

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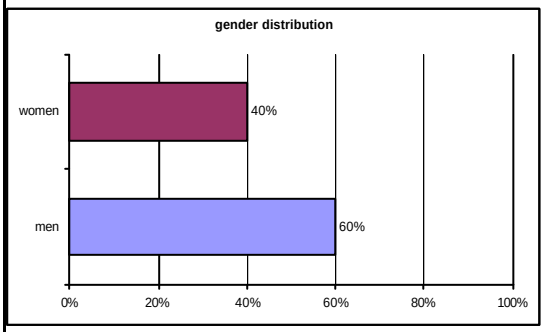
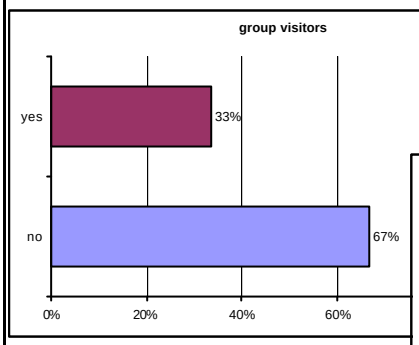
General Information (1/3)



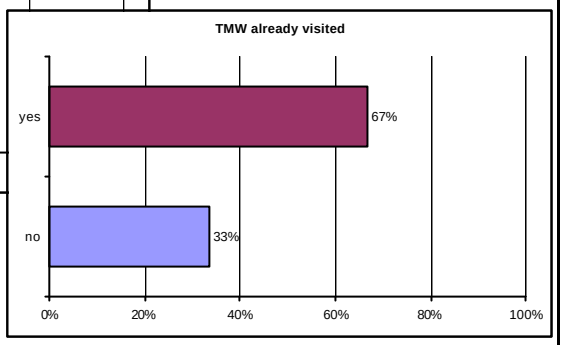
average age:
approx. **33 years.**

duration of interaction:
avg. **15 mins.**

General Information (2/3)



group visitors: 10 out of 30



prior TMW visit: 20 out of 30

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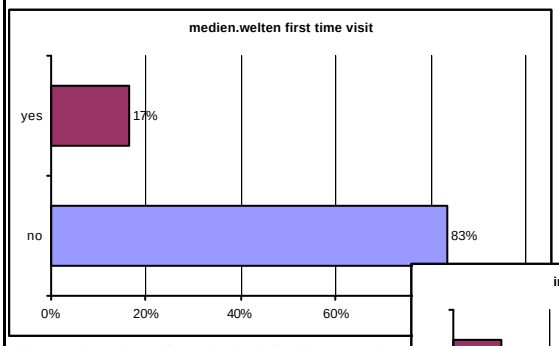
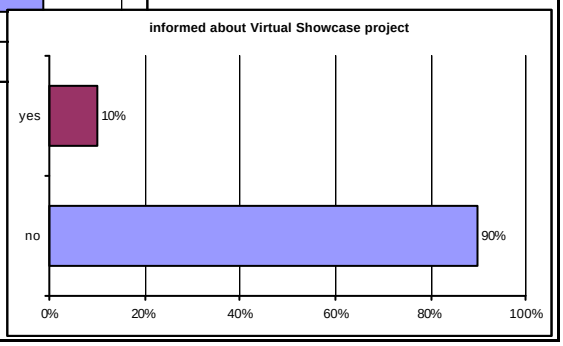
General Information (3/3)

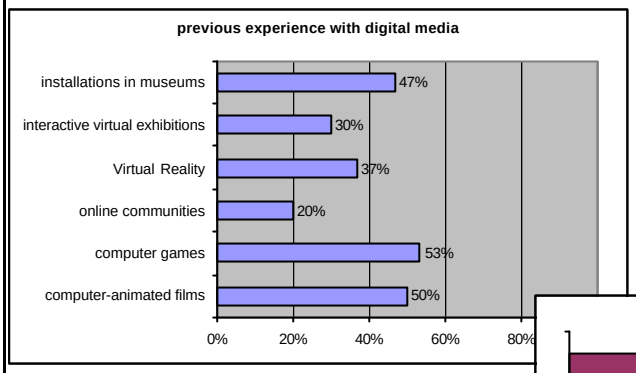


visitors coming to the medien.welten for the first time: 25 out of 30

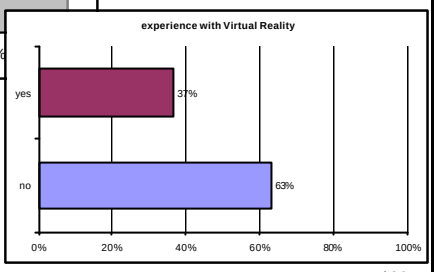


persons already informed about VS project 3 out of 30

Previous Experience (1/2)



visitors' familiarity of digital media types



experience with VR technology 11 out of 30

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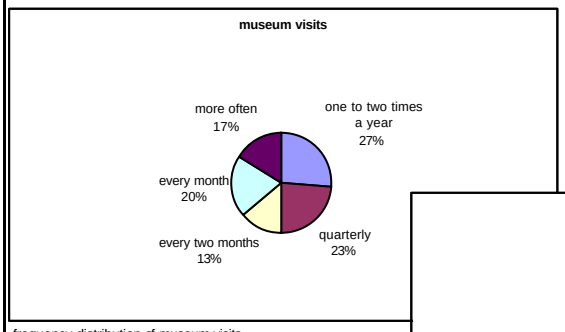
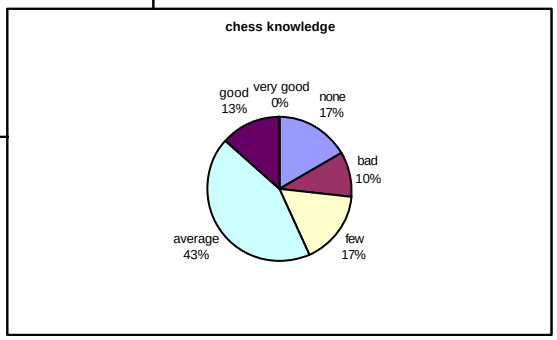
Previous Experience (2/2)



frequency distribution of museum visits



amount of chess knowledge

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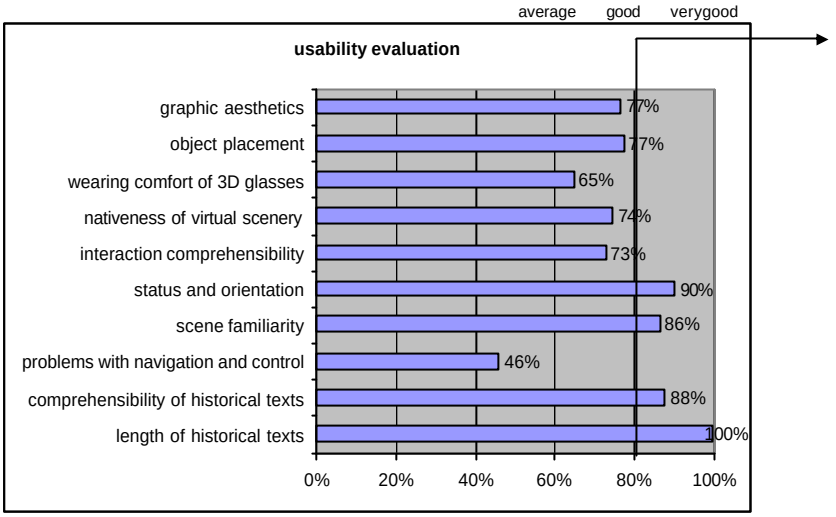
Usability Evaluation Results (1/3)



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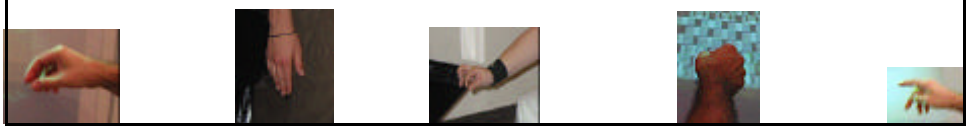
Usability Evaluation Results (2/3)

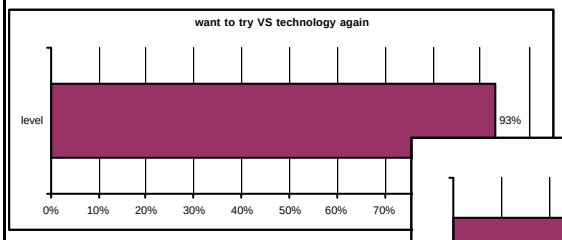
- graphic aesthetics: judged generally as good
- polarization glasses: wearing comfort, problems of sight
- nativeness and immediateness of the virtual scenery: quite good
- mode of interaction: not comprehensible instantly for all test persons
- visitors did not feel lost during the interaction at any time

Usability Evaluation Results (3/3)

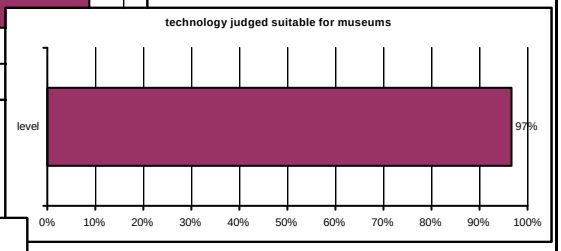
- ‘ideal’ hand gesture difficult for visitors to achieve immediately:
  - hand-tracking: critical point in VS setup
    - 2-dimensional optical tracking, therefore optimal for **one** single hand gesture
  - further explanation needed



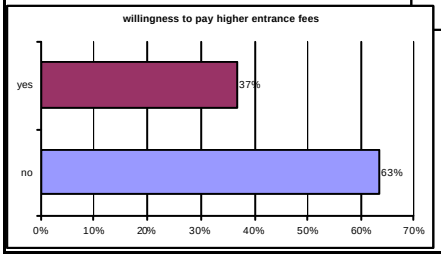
Visitor Acceptance (1/2)



Level of visitor eagerness to try VS technology again



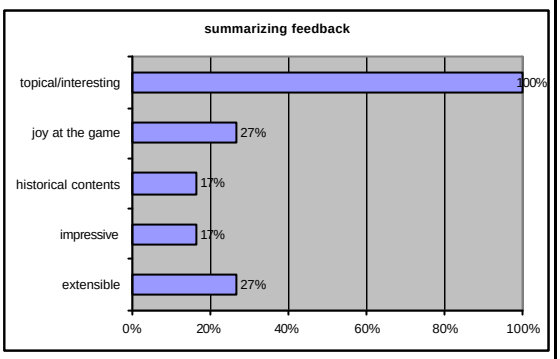
Level of visitor suitability judgement for VS technology



Visitor Acceptance (2/2)

Visitor Feedback

- "The installation is very remarkable regarding its technological novelty."
- "A unique experience for visitors."
- „Exciting, entertaining, funny!"



Expected Maintenance

- exchange of projection lamps
- renewal of polarization glasses
- in case of hardware defect:
  - repair by IT company w/ support contract
- no content update needed

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VS in practice

- Tips for further euqally successful implementations of virtual or hybrid showcases:
  - unique installation that conveys a clear PUS message
  - functional division between physical and virtual presentation media and layer
  - sufficient content (neither too few nor too much)
  - attractive design for all user groups
  - clear and simple mode of interaction
  - cost-effective presentation design

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Thank you for your attention!

Any questions or further remarks?