

# Learning in Hybrid Museums

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# Overview

- Physical/digital discontinuity
- Ubiquitous computing
- The museum experience
- MER: The Museum Experience Recorder
- Learning and learning about learners
- Discussion

# The physical/digital discontinuity

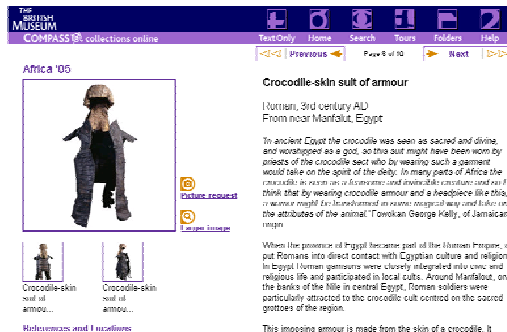
Physical



Physical (real) resources:

- People
- Objects
- Places

Digital



Digital resources:

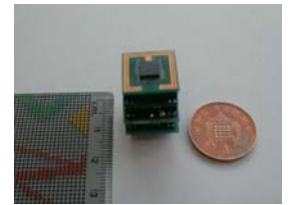
- Object info and location
- Maps
- Person info
- Activities

# Ubiquitous computing

- Ubiquitous computing:
  - activates the world,
  - is invisible, everywhere computing that does not live on a personal device of any sort, but is in the woodwork everywhere,
  - makes a computer so imbedded, so fitting, so natural, that we use it without even thinking about it.
- Also called: pervasive, 4G mobile or sentient computing, and ambient intelligence.

# Enabling Technologies

- Automatic identification
- Sensing and actuation
- Wireless communication
- Context awareness (physical, information, social)
- Small form factor devices
- Ambient displays
- Machine learning
- Inference
- Personalisation



# The museum experience

- Museum setting as a context for learning
- Embedding digital resources in the physical space
- Support learning during the visit
  - Free-choice of what to learn
  - Learning occurs via interaction with peers and others within the social context of the visit
  - Groups: families, peers, school groups
- Multimedia guides remove the social context
  - Interaction with group and space vs. screen
  - Content development is required (can't reuse existing resources)
- Ambient displays, personalised labels

# Learning about the museum experience

- Learning about learners
  - What they do
  - How they learn
  - Interactions with objects and group members
- Supporting reflection
  - Extending the experience beyond the spatial and temporal constraints of the visit
- Augmenting the experience record with digital resources
  - Making use of the “digital museum”
- Linking the physical experience into a digital representation

# The Museum Experience Recorder

- The ER creates an electronic record of a visit which can be enhanced via different information sources
- Core idea: Navigation
  - Through virtual spaces (e.g. the web).
  - Through physical spaces (e.g. museum).
- Personalisation – my experience can be different to yours.
- (Machine) Learning – The machine should adapt to the user and not vice-versa

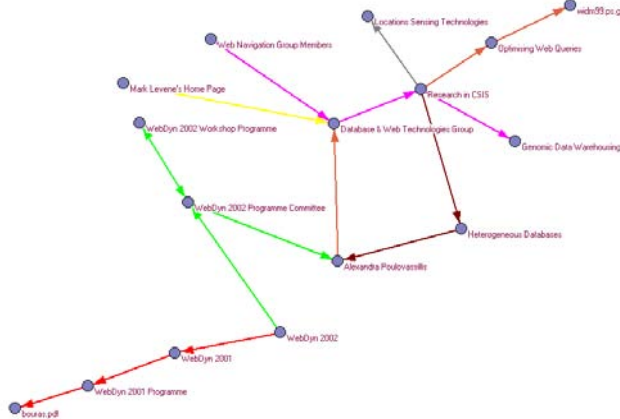


# The Museum Experience Recorder

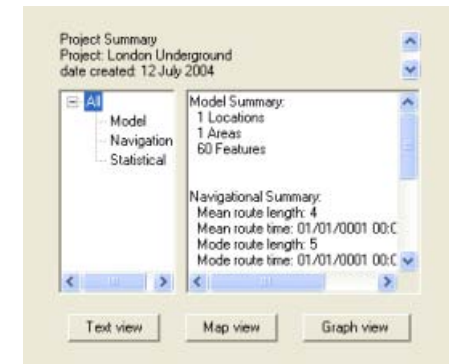
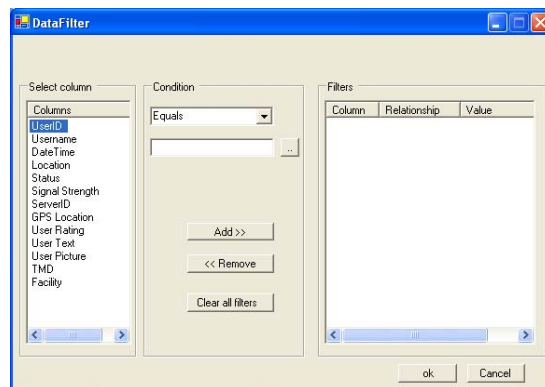
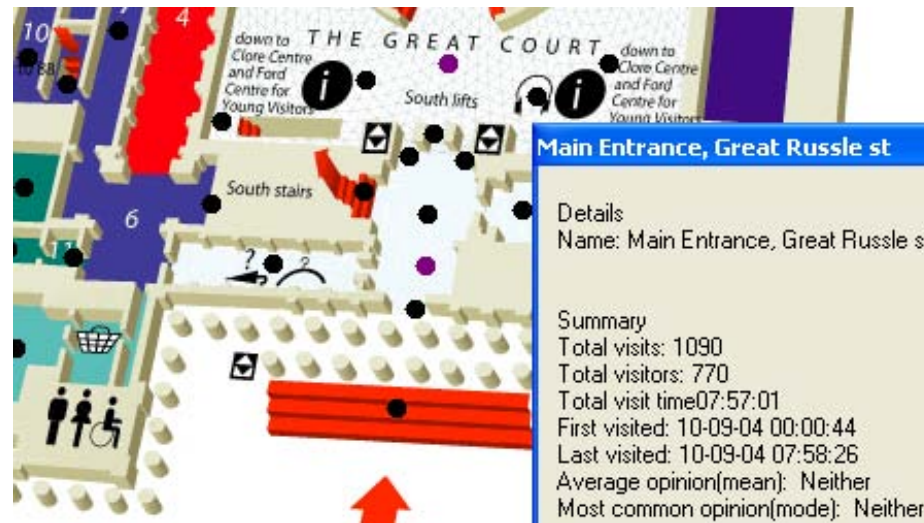
- The MER creates an electronic record of a visit which can be enhanced with different information resources
- Electronic annotation of **landmarks** (e.g. exhibition stands, museum exhibits)
- The MER **Badge**: A wearable pervasive device to record visitor experiences during a visit.
- MER Infrastructure:
  - Wireless infrastructure for easy, non-invasive deployment
  - Post-processing into a website

# Trail Records

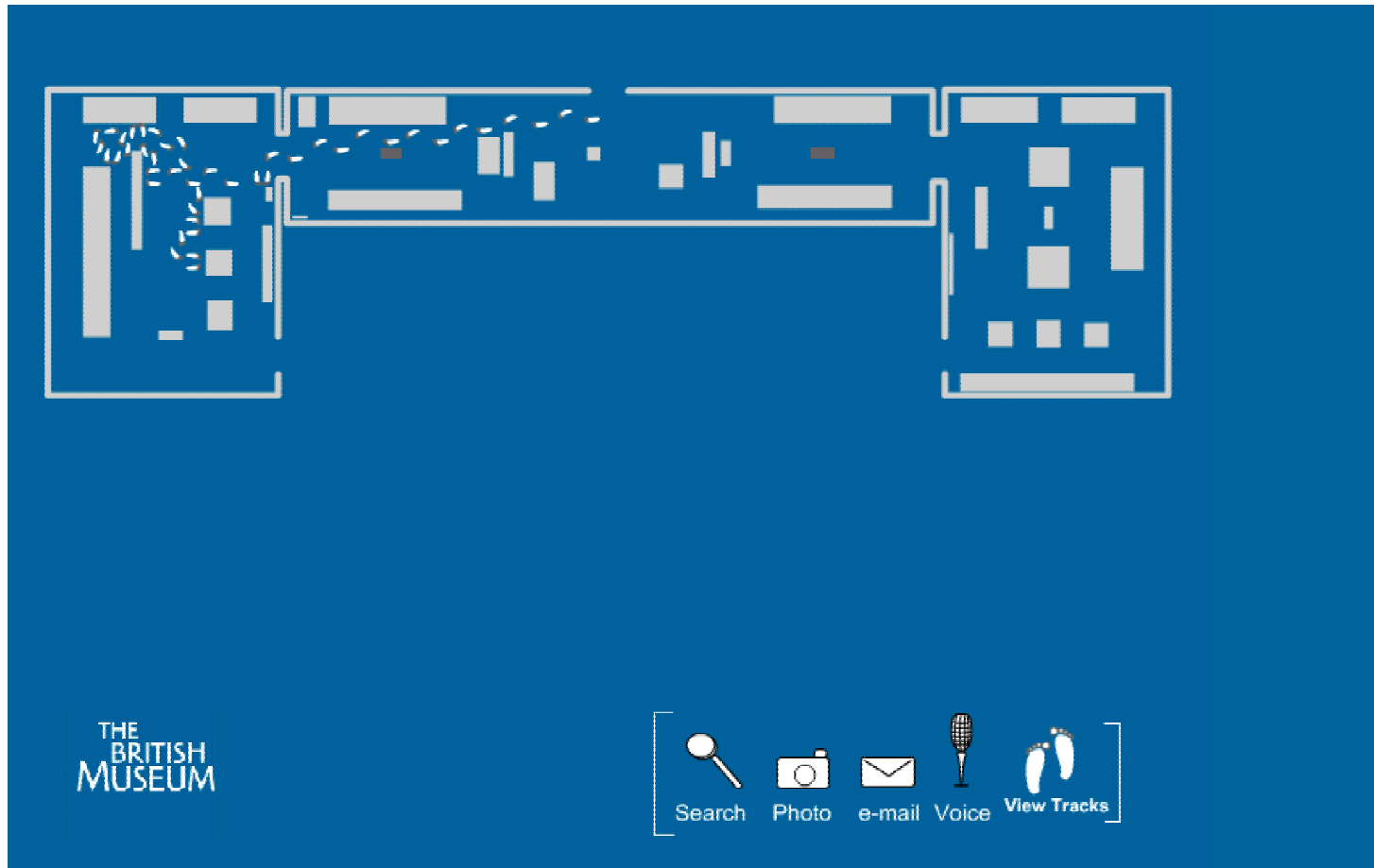
- Trail records are at the core of the ER system
- A *trail* is a sequence of landmarks (physical or information) that were visited by the user during a navigation session
- A *trail record* is a digital (hypertext) record which provides an account of a user navigation session i.e. a trail



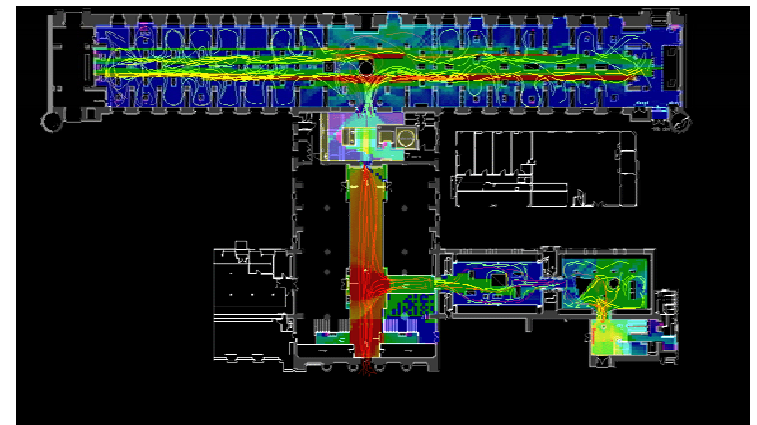
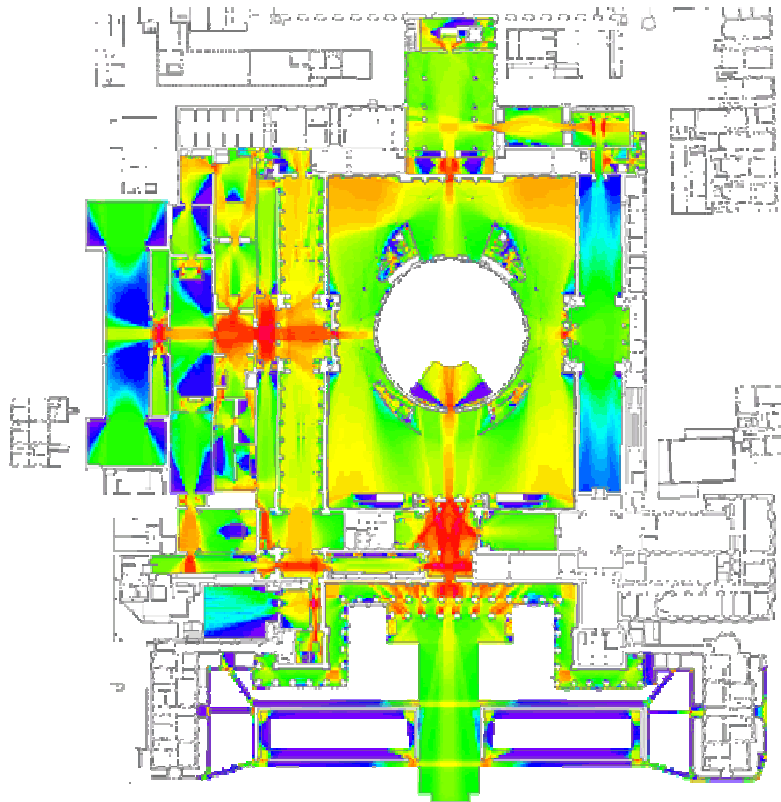
# Navigation: Trail Aggregation



# MER Website



# Visitor research



## Summary

- Glimpse of things to come
- Bridging the physical museum space and the museum digital resources
- Record the museum experience
  - Support reflection
  - Aide-de memoir
  - Does not disrupt social interaction
- Learn more about how visitors use the space
- The MER system