

Distributed Storytelling for Narrative in Spacious Areas

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Abstract. This article presents an idea of a narrative system for presenting and navigating visitors in exhibitions in spacious areas. Aspects concerning "existing infrastructure" and "user comfort" are considered. The information communicated to visitors should always be presented as appealing as possible. One way to achieve this is to assimilate the information in the plot of a narrative. This increases the suspense, and also intelligibility. If the narrative is prepared well enough, it can furthermore be a good tool for navigating visitors through spacious areas. It holds the visitor's interest and guides him through the information. It will also guide him spatially through the exhibit. The financial budget is too small for many exhibiting facilities to constitute new systems. The existing infrastructure, such as information kiosks, can be integrated into new narrative systems, while still remaining affordable.

1 Introduction

Exhibitions in spacious areas are often confusing for the visitors. To facilitate them the exhibitors tries to help them with diverse guidance and/or control systems. The most traditional form is the human guide. Generally the guide leads the visitors through a prearranged path and simultaneously gives information on the exhibit's objects. The guide often enriches the facts by narrations and novellas about the objects or artists. If the visitors desire to walk through the exhibit on their own, but still desire information about the exhibit's objects, then they find the information in portable catalogues or on fixed installed text boards. These usually offer information about the exhibit's objects in a more minimal and factual form. In the ideal case, catalogues or boards also make suggestion to subject-related objects and therefore, indirectly offer navigation instructions. The visitor is still free to go in another direction than is recommended.

There has been progressive development in presentation technologies used to realise narrative concepts. These offer different possibilities to fulfil the visitors' desire for greatest possible freedom of movement while simultaneously guiding the visitors through the exhibit site. Moreover, the factual information about the exhibit'

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objects can be embedded in a narration and be presented in a user friendly and attractive way.

2 State of the Art: From Points-of-Information to Nomadic systems

The Point-of-Information (POI) system is well-known and has been in use for a long time. Currently it is installed almost everywhere as multimedia-kiosk-systems for visitors/audiences seeking information. These multimedia-kiosk-systems include information about the visitor's present position, information about the exhibit, and a search function for other events.

The POI can not distinguish each individual visitor: they are not labelled with patches. The POI has no information about which parts of the exhibition the visitor has already visited. Since the POI lacks this information, it is not able to recognize which main focus of interest the visitor has. Each time a visitor uses the POI, they are given the same presentation. It is often boring for the visitors if they cannot skip the introduction or they feel bothered if they are always given the identical information in the same sequence.

In addition, each POI has only limited knowledge referring to the objects in its vicinity. In the ideal case, the POI not only stores information about exhibit's objects in its direct neighbourhood, but also information about other subject-related objects somewhere else in the exhibit, and, it gives navigation instructions on how they are to find these objects.

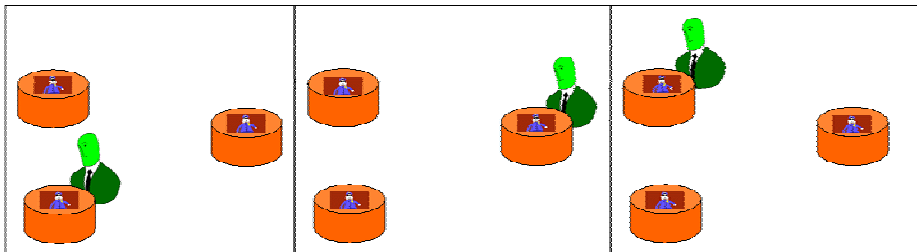


Fig. 1. A path in an exhibition supported by POI. The audience is totally free to find the own way. The presentation on each POI is independent from each other.

Many research projects have the goal to develop new information storage and presentation systems. Generally this goal consists of nomadic information systems, where visitors always have a virtual companion at their side. These presentation systems often bases on the visitors moving on a kind of a grid and their positions being tracked. The finer the grid, the finer the tracking, and thus the better it is to locate the visitor's position in the presentation material. Multimedia-kiosks or the like are not needed any longer for such nomadic information systems. The visitors are equipped with a PDA (personal digital assistant) or a portable PC, which they carry throughout the whole exhibition. This equipment is bulky and uncomfortable if the presentation needs some kinds of HMD (head-mounted displays) for virtual reality and augmented reality techniques (VR and AR).

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Because the visitor always carries a device, it is easy to register the path they have chosen. Information about the visitor's path, the objects of interest, and general focus can be extracted: for instance, if they stay a longer time in front of certain objects. Contrary, it is also possible to extract information about the visitor's "negative" interests.

Such system installations require an initial large financial investment. The quantity of new devices acquired must be estimated to serve the largest number of expected visitors.

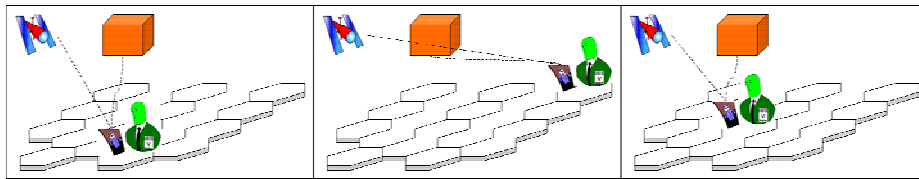


Fig. 2. A path in an exhibition supported by nomadic information systems. The presentation takes place on a device carried by the visitor.

3 Integration of existing infrastructure: the Net-of-Information

There exists a gap between exhibition facilities possessing customary POI systems and research projects with the goal of integrating nomadic information systems. The plausibility of extending existing POI to create a Net-of-Information (NOI) is often overlooked. The NOI implements a network of POIs which identifies the visitors and creates individual presentations. If such a "user comfortable" system is used, the visitors have the advantage that they are not required to carry heavy, bulky and damageable equipment. POIs are not as fragile as devices like PDA, HMD, and so on. Furthermore, it is more economical to continue to use in the future already existing multimedia-kiosks systems (in museums, exhibitions, etc.).

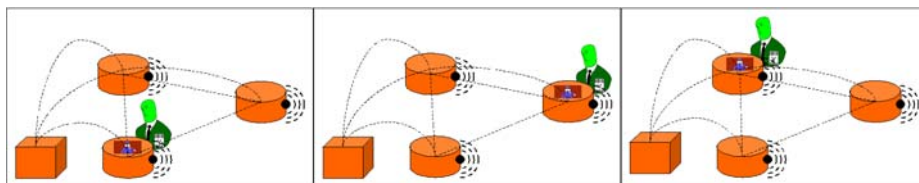


Fig. 3. A path in an exhibition supported by NOI (Net-of-Information). The presentation takes place on POI. The systems tracks and stores the visitor's path.

In order to implement an effective NOI system, it is necessary for the individual POI to register each visitor's identity. This can be done by using patches. The visitors

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receive such a patch with their ticket or the patch is part of the ticket itself. Installed sensors at the POI register the patch and thus the identity the visitor.

The registration is conveyed to a main server, which has the task of analysing the movement and the (inter-) actions of the visitor. It considers the time they stop at each object and in the exhibit's sub-areas. The main server analyses the visitor's interests and preferences. It then determines which information to give for the next presentation and makes navigation suggestions to other subject-related objects.

Interconnecting existing POI infrastructures has the advantage that existing devices can be further used. Only the software has to be changed or updated and, in some cases, the POIs have to be networked. The POI itself, with all its presentation and interaction devices, must not be changed. The visitors go to various POIs for their presentations, which are personalized to meet their needs and preferences.

4 The Concept for a Possible Realisation, Jeherazade

The following is a concept for a narrative system, Jeherazade, which supports the POI-to-NOI system mentioned in the previous section. Jeherazade navigates the visitor on the basis of a narrative story through an exhibit. The narration is told and presented at different locations (the single POI) in the exhibit area.

The narration is presented to the visitors by avatars in different forms. The visitor gets the feeling that "her" or "his" avatar tells her or him a story. The story is continually being created: taking into consideration the position and interests of the single visitor. The visitor is free to follow the suggestions from her/ his avatar or to move freely through the exhibit. During the presentation tour it is also possible for the visitor to meet other avatars at different locations. They give relevant information from another point of view.

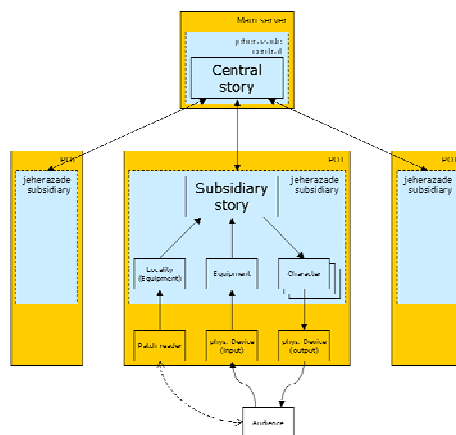


Fig. 4. Concept of the distributed narrative system Jeherazade

Jeherazade offers the information on the exhibit in the form of a coherent story. In this "central story" all information is available at all POIs. The information

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concerning the division of respective exhibit objects, the position of each POI, and input data from the POI's peripheral equipment is stored on a main server.

The visitors can choose their personal character (avatar) from all the possible avatars to be their guide, the first time they log into a POI. The Jeherazade narrative system divides the central story into "subsidiary stories": depending on the exhibit objects neighbouring the POI which is currently being used by the visitor. The plot of each "subsidiary story" only takes place at a specific POI.

There are two possible idle modes in the Jeherazade narrative system:

- * The idle mode of the entire Jeherazade system
- * The idle mode of a single POI

The first idle mode is reached when there is no activity at any of the POIs. In this special case, the central story sends the avatars on a journey to the different POIs. They "take a look" to see if they can catch the interest of a potential visitor and start an introductory presentation.

The Jeherazade system is not completely in idle if at least one POI is active. The POIs which are not actively being used, try to attract the visitors' curiosity, e.g. by playing special videos or soundtracks.

The main server keeps track of the location of the visitors, stores the momentary status of the visitor's story, and manages the story development.

5 Conclusion

Point-of-Information (POI) systems are well-known and can be transformed into Net-of-Information (NOI) systems economically and without extensive hardware or software changes. It is possible to create a user friendly narrative system which considers the position and interests of the single visitor. The information is presented in a story plot determined by the path the visitor is taking. The style of the story is influenced by the avatar guide the visitor chooses at the beginning. The system navigates the visitors through the exhibit either in the traditional topographical path or in a path of subject-related objects.

Literatur

1. Sparacino, Flavia: The Museum Wearable: real-time sensor-driven understanding of visitors' interests for personalized visually-augmented museum experiences. In: Proceedings of: Museums and the Web (MW2002), Boston, (2002)
2. Dean David: Museum Exhibition: Theory and Practice. Routledge, London (1996)
3. Hooper-Greenhill, Eileen: Museums and their visitors. Routledge, London (1994)
4. Spierling, Ulrike, Behr, Johannes: Conversational Integration of Multimedia and Multimodal Interaction. In: Computer Graphik topics 4/99, Darmstadt, 8 - 10
5. Jany, R., Leiner, R.: Ein mobiles AR-Informationssystem zum Erleben historischer Zusammenhänge im urbanen Umfeld - das Projekt GEIST. In: HGG-Journal. Heft 16 (Journal der Heidelberger Geographischen Gesellschaft), Heidelberg (2001). 262 - 265
6. Spierling, Ulrike, Schnaider, Michael: Info zum Anfassen - der digitale Messestand. In: ZGGDV Jahresbericht 2001, Darmstadt (2001). 57 - 58