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Guest Editorial

Trends in Online Exhibitions

Online exhibition is an event which can be viewed on computers and mobile phones using internet anywhere, any place and any time. It is one of the best ways of disseminating digital information on any area including exhibiting culture and heritage, archives, library information, marketing, trade shows, conference exhibits and educating visitors 365 days in a year. Online exhibitions provide a practical and cost-effective solution and overcome the limitations of physical exhibitions and also provide very good interactivity to users. Nowadays, archivists and museums professional are exploiting the advantages of online exhibitions for education and instructional purposes. Virtual exhibition is the collection of digital replicas of real events or objects developed with the help of multimedia and virtual reality tools which produce a simulated environment in a computer, and delivered through web so that users will get the same satisfaction as they are seeing or using the physical objects in real life. The difference between online and virtual exhibition is marginal. All virtual exhibitions are online exhibitions but not vice versa. Normally all virtual exhibitions will provide a simulated real environment which is a bit more difficult, expensive, and time consuming to develop than a simple online exhibition.

Technologies and online exhibitions go hand in hand. In fact, the technologies made these online exhibitions possible in the first place. Here, some of the latest ongoing trends in online/virtual exhibitions are discussed. Nowadays, most sophisticated virtual/digital exhibitions are making complete use of the conceptual, instrumental, and linguistic tools provided by several new technologies, and using the full extent of their potential. Some of the popular systems used for developing online/virtual exhibitions including 'ViEx System', the 'Norfolk System', 'XMP-CMS' and 'ARCO'. All these systems have a common feature: they facilitate developing multiple versions of the same exhibition in different contexts by separating content and presentation. Similarly, museum curators collections management systems including The 'Museum System', 'KE EMu', 'MultiMimsy', and for smaller museums, 'PastPerfect' are available in the market. Recently, open source systems came into the field such as 'CollectionSpace' for museums, 'Pachyderm' for people with little experience in authoring online exhibits, 'Omeka' is for building community collections and exhibits with Web 2.0 features, 'OpenCollection' is to handle large digital collections and exhibits in museums, archives and libraries, 'MOVIO' for cultural and tourist information users, '3D (Discovery and Delivery of Digital collections)' is an exhibition tool for libraries, 'Viewshare' is for generating interactive maps, timelines, facets, and tag clouds in libraries, The eXtensible Text Framework (XTF) is for providing access to digital content, 'Blacklight' provides different information displays for different types of objects, Exhibit 3.0' is a publishing framework for large-scale data-rich interactive web exhibits, and finally 'Open Cobalt' is for constructing, accessing, and sharing virtual worlds both on LAN or internet. Google has opened a Lab in Paris and experimenting with 3D scanners, super high-resolution cameras and interactive screens to see how those technologies might be useful in museum exhibits, and how they can help in improving the online presentations of cultural artifacts. Now Google is coming out with 'Open Gallery tool' which is far more advanced than the existing systems for designing online exhibits.

The recent developments in online art and galleries come up with tools for artists, galleries and collections. Kunstmatrix.com based in Berlin, offers a series of 3D virtual exhibition rooms which users can customise and fill with their artworks. A number of curatorial options are provided such as selection of wall colours and room arrangements, and the service is free of charge. Viewers can navigate through different exhibitions easily and effectively and information is posted to lead users and potential buyers to the artists and collectives may be highlighted.

Virtual Reality (VR) is the digital virtual environment similar to the real world but generated by computer. VR technology has real life applications in medicine, education and cultural heritage. The basic unit for virtual reality is a 3D image and 3D animation is more sophisticated form of the same and commonly used to show virtual objects and environment in an interactive mode on a PC. The VR can be divided into two types: (i) the simulation of a real environment for training and education; and (ii) the development of an imagined environment for a game or interactive story. Popular products for creating VR applications on PCs include Bryce, Extreme 3D, Ray Dream Studio, trueSpace, 3D Studio MAX, and VR. The Virtual Reality Modelling Language (VRML) allows the creator to specify images and the rules for their display and interaction using textual language statements. Nowadays, these tools are being used in developing virtual exhibitions in libraries, museums, archives, all types of industrial shows and virtual exhibitions for marketing, education, research, etc.

Recently, significant research has been done in the area of augmented reality (AR).The AR extends VR systems with the support for blending real and virtual elements into seamless composite scenes. By combining VR with video processing and computer vision techniques, AR systems offer a natural view of real scenes enriched with virtual objects. Virtual and AR are promising technologies that can have big impact on many domains including cultural heritage. So, many museums are building virtual exhibitions with Immersive Environments. Achieving the same virtual-space effect in a room requires apparatuses such as large video screens to envelope direct and peripheral vision, and 3D sound. The room itself may comprise the environment; the illusion of existing within another space may be achieved through holography. Likewise, objects in the room may respond with augmented mannerisms, such as a book with hyperlinks, allowing the user to navigate in a non-linear mode, following a chosen thread of information. Both body-mounted VR devices and immersive environments belong to the same general category of interfaces known as cyberspace systems.

The AR is an integration of digital information with live video or the user's environment in real time. Basically, AR takes an existing picture and blends new information into it. One of the first commercial applications of AR technology is the football games. AR programs are written in special 3D AR programs such as D'Fusion, Unifye Viewer or FLARToolKit. Recently, Universal Studios during its centenary celebrations released 15 AR titles in UK including 'Jurassic Park', and another example is BBC's 'Top Gear'. 'Project Paperclip', an exhibition currently taking place in Portugal, and partially online, brings the world of augmented reality to photography. With the use of an iPhone app, photographer Nuno Serrão has created an all encompassing experience for anyone who wants to view his photography in a way it was intended.

The AR adds graphics, sounds, haptic feedback and smell to the natural world as it exists. Both video games and cell phones are driving the development of augmented reality. The AR is changing the way we view the world. These enhancements will be refreshed continually to reflect the movements of our head. Similar devices and applications already exist, particularly on smartphones like the iPhone. Magma is using AR to build games, extend print and media campaigns with interactive 3D content, and create educational applications that bridge the digital and real worlds. With mobile AR technologies and applications, museums can extend their resources access to visitors beyond physical boundaries to engage them further in discovery-based learning.

Mixed reality (MR), refers to the merging of real and virtual worlds to produce new environments and visualisations where physical and digital objects co-exist and interact in real time. The MR environments are those in which real world and virtual world objects are presented together on a single display. Single user MR interfaces have been developed for computer-aided instruction, manufacturing and medical visualisation and now applying to virtual exhibitions. These applications have shown that MR interfaces can enable a person to interact with the real world in ways never before possible. Although MR techniques have proven valuable in single user applications, there has been less research on collaborative applications.

The MR is developed on the VR technology, produces the virtual object which does not exist in the realistic environment through the visualisation technology and computer graph technology and by the sensing

technology the virtual objects are placed into the true environment accurately, the virtual object and the true environment are merged into one whole with the help of the graphic display device and present a real sensory effects to the new environment. The real environment and the virtual object in real-time are superimposed onto the same screen, the mix reality is integrated development of real reality, VR, AR and interactive media. Not only it provides new projects of theoretical study with modern technology but also creates a new world for the development of modern products. Mixed realities are used in Huret & Spector Gallery (Boston), Turbulence.org, and Ars Virtua (Second Life, which is virtual, 3D environment through which people can interact in real-time by means of a virtual self or avatar).

Today several tools and technologies are available to help all levels of professionals in developing online exhibitions because of their easy to learn and use. Professionals from libraries, museums and heritage organisations must come out and use these tools extensively to disseminate valuable information they have in their repositories. Surprisingly, in America, the school students are encouraged to develop online exhibitions for National History Day and other annual contests on their chosen historical topic however, many museums and other cultural institutions are lagging much behind. 'Electrifying America',' Polio Pioneer', and 'Out of the Box', 'Into the Oven' are some of the examples of that category.

According to 2013 International Exhibiting Survey, online exhibitions are helping US companies to cross and increase sales, generate brand awareness, and cultivate relationships with foreign collaborations. So, virtual exhibitions are helping many sectors including cultural institutions so their usage and influence is increasing day-by-day. It is one of the promising technologies to be explored by all sectors for various applications to the optimum level.

This special issue covers four invited papers written by experts dealing with trends in virtual exhibitions and come from Spain, Slovenia, Singapore, and India.

Cèsar Carreras & Federica Mancini's paper discussed about the practices of virtual exhibitions covering topics that were not considered a decade ago. It was found that online exhibition would help in saving the time, costs and human resources that are scarce in memory institutions. The authors compared their past and present versions of online/virtual Exhibitions and presented their results here. This paper also reviewed research and results of empirical data collected during last decade with regarding to the developing and analysing of virtual exhibitions.

Chee Khoon and Ramaiah's paper discussed about the basic issues related to the design and development of web-based online exhibitions. They gave a good review of all the tools and technologies available in the market and how they can help in developing sophisticated exhibitions and also enhance their quality to mmet present generation of users. This article also provides an overview of trends in the design and development of online exhibitions in the world. Along with users requirements analysis needed to any systems design and the key technologies involved for developing an online exhibition were discussed.

Jesvin Yeo's paper discussed about the development of online exhibition for typography research and education people using weblogs. This article reviewed the major hosted weblog sites such as Blogger, LiveJournal, Pitas, Xanga, and WordPress and their use for design and development of exhibitions for various purposes. A wide range of their applications and ongoing trends in typography research and education were also explored.

Franc Solina's paper discussed about new media art projects, application of advanced tools such VR, AR, MR, etc., to panoramic images and live video presented in the Slovenian Virtual Gallery on internet from 1995 onwards. His experiences with several open source tools in the development of such virtual galleries were also presented. He has come up with a novel user interface using panoramic images of the location where the internet camera is located. The concept of the virtual gallery and later became interactive art installations in which people had good interaction and facilities to provide feedback were discussed.

I would like to congratulate DESIDOC to bring out three special issues of *DESIDOC Journal of Library & Information Technology* (*DJLIT*) on this subject: first issue on Online Exhibitions in July 2008, second issue on Applications of Online Exhibitions in May 2013 and third and present issue on Trends in Online

Exhibitions in March 2014. Since it is one of the latest areas of research, all these articles would have immense value to international community working in this area. I am fortunate to bring out all these issues under my Guest Editorship so I would like thank Director, DESIDOC to give me an opportunity to do this editorial work. All the papers contributed to all these three special issues come from developed countries ranging from USA, Italy, Spain, to Singapore.

Finally, I would like to thank Shri Suresh Kumar Jindal, Director, DESIDOC and Chairman of the Editorial Board, *DJLIT*, and Shri Ashok Kumar, Associate Director, who invited me to act as Guest Editor for this special issue. I am really grateful to all the authors who had contributed not only to this issue but also previous two issues. My special thanks go to Prof. Chandra Krishnamurthy, VC of the Pondicherry University for her encouragement and support in doing this kind of professional and research work.

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Dr Chennupati K. Ramaiah is Professor, Department of Library & Information Science at Pondicherry University, Puducherry. Prior to that he worked as Professor & Head, Department of LIS, Pondicherry University (2010-2013) and Professor & Head, Department of LIS and University Librarian, Dravidian University, Kuppam (2008-2010). Before that he worked as Professor & Librarian at Muffakham Jah College of Engineering & Technology, Hyderabad. He also worked as the Director, Centre for Information Science, Mahatma Gandhi National Institute of Research and Social Action, Hyderabad for two years. He worked as an Assistant Professor for 6 years with Nanyang Technological University, Singapore during 1999-2005. Prior to that he was Deputy Director at DESIDOC, DRDO, Delhi and worked for 14 years as Scientist, in various areas including conducting research, heading Research & Development Facilities Division, Multimedia Lab, A-V Division, and Defence Science Library. He was a Commonwealth Scholar for doing PhD in UK in the field of Information Science during 1989-1993. Soon after obtaining his PhD, he came back to India and set up a multimedia lab and worked several years in designing multimedia applications, presentation and training materials. His formal education includes Masters degrees in Chemistry and Library and Information Science. He is Fellow of Society of Information Science, and member of many international professional bodies/societies such as the CILIP, ASIST, ACM, IFLA, ALISE, etc. He has published about 100 papers and four books. His research interests include: Multimedia & hypertext technologies, human-computer interaction, user interfaces, designing e-books, e-publishing, e-learning, archival informatics, and bibliometrics.