



1996-11-01

Virtual Reality Applications in the Hospitality / Tourism Industry

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Recommended Citation

Horan, P., "Virtual Reality Applications in the Hospitality / Tourism Industry." Hospitality Information Technology Association – Electronic Journal, November 1996.

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“The World is What You Make It” - An Application of Virtual Reality to the Tourism Industry.

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1.1. Introduction.

In this paper the possible applications of VR to the Tourism Industry are discussed. In order to develop an application for any industry one must first get a clear understanding of that industry. Once this is achieved the next step is to develop an application to suit the needs of the Industry. The Industry in question here is the Tourism Industry and this paper begins by discussing the Tourism Industry and more specifically the relationship between Tourism and technology. This is absolutely essential in order to understand how the use of VR will impact on the Tourism Industry in the future.

1.2. The Tourism Industry.

The Tourism Industry is comprised of many sectors, groups and organisations, and to date there is no internationally accepted definition. However, the United Nations Conference on International Travel and Tourism defined Tourism as:

the consumption, production and distribution of services for travellers who dwell in some place other than their domiciles or workplace for at least twenty four hours. Shorter sojourns are regarded as mere excursions¹.

The Tourism Industry is gaining increasing attention as a major growth sector with great potential. As the largest contributor to the global economy, Tourism employs 255 million people world-wide which accounts for 11% of the global workforce². It is estimated that Tourism will sustain a 5% growth rate over the next decade resulting in an estimated 385 million jobs by the year 2006³. The Tourism Industry produces 10.7% of the world's gross national product (GNP) which is estimated to increase to 11.5% by the year 2006⁴. In 1995, international Tourism receipts rose by 7.2% to almost US\$372 billion⁵. This increase follows a relatively constant trend established since 1985. Despite the recession in other industries the Tourism Industry is still growing at a faster rate than international economic growth⁶. Between 1970 and 1990 Tourism grew by nearly 300% and it is expected to grow by half as much again by the end of the century. With such economic growth predicted, Tourism is set to enjoy a further increase and the future long-term growth of the Tourism Industry, from a demand point of view, looks promising.

Despite the importance of the Tourism Industry to the global economy it is still very dispersed in its structure, comprising of many dispersed groups and services. In fact, Tourism is probably the ultimately dispersed industry⁷, Tourism's relatively low degree of integration, further reinforcing the fragmented nature of the Tourism Industry⁸. Furthermore, there are several changes in the Tourism demand which are causing the Tourism product to become increasingly difficult to control and manage. Firstly, potential customers are becoming more discerning when choosing their Tourism destination. They require better value for money from Tourism providers. Secondly, customers are travelling more frequently and to far greater distances throughout the world, largely due to the advances in airline and communication technologies. Thirdly, Tourists are becoming more knowledgeable and adventurous in their choice of Tourism destination⁹. As such, customers are becoming more global, which means they travel on a world-wide basis beyond normal travel patterns¹⁰. And finally, customers are demanding a more individualised service and not those packaged by travel agents or tour operators¹¹.

The development of new transport technologies has allowed us to travel further, faster. Each new technological breakthrough has allowed us to make another leap forward in our travel patterns¹². However, it is already clear that the world's Tourism infrastructure is being increasingly stretched and overloaded. The scale of growth in Tourism will place great pressure on the facilities and amenities required by Tourists¹³. It is clear that future infrastructure projects will be developed at a slower rate than in the past. It will also not be at a pace that will keep up with the projected growth of Tourism. Therefore, looking into the future, the growth of the Tourism Industry is likely to face more constraints from the supply side than the demand side¹⁴.

1.3. Information Technology in the Tourism Industry.

Tourism is a very information intensive activity. In few other areas of activity are the generation, gathering, processing, application and communication of information as important for day-to-day operations as they are for the Tourism Industry¹⁵. Unlike durable and industrial goods, the intangible Tourism product cannot be displayed or inspected at the point of sale before it is purchased. Furthermore, the Tourism product is normally bought long before the time of use and away from the place of consumption. Information is the way the product is presented to the potential Tourist. Consequently, Tourists require a wide variety of specific information on the area, accessibility, facilities, attractions, and activities at the destinations as the provision of timely and accurate information relevant to the potential Tourist's needs is often the key to successful satisfaction of the Tourism demand¹⁶.

Therefore, largely due to the amount of information necessary the Tourism Industry has been significantly influenced by advances in Information Technology (IT)¹⁷. The original Tourism applications were designed to make improvements in clerical and administrative efficiency, and as Gamble¹⁸ noted, 'the only difference being that computers work at electronic speeds'. Despite the technology playing an essentially passive role, operators gained substantial improvements in efficiency and in many cases this resulted in competitive advantage over other Tourism providers. A new generation of systems has evolved, which are now playing a more active role in operations and management of the Tourism Industry. Broadly, current applications of computer technology in the Tourism Industry can be grouped into three main areas, operational, guest services and management information¹⁹. IT is permeating all

sectors of the Tourism Industry to varying degrees. The Tourism product is becoming more dependent on IT, and it is predicted to be more so in the future. More cross-sector alliances, direct links between the provider and the Tourist and the drive towards efficiency will require access to, processing of, and the communication of, large amounts of information. This information will need to be processed faster, more reliably and in more executive format to enable prompt decision-making.

The Tourism product has many interrelated but separate components: the market demand; travel to and from the destination; destination services, attractions and facilities; and the marketing of the product²⁰. To these components a fifth could be added, the management of the Tourism product, since the interrelationship between the four traditional components are becoming increasingly complex and IT is playing a more executive role in their management.

1.3.1. Tourism Market Demand.

The key to successfully satisfying Tourism demand is the provision of information to the customer. This information must be timely, accurate and relevant to the customer's needs. In Tourism, the product is largely intangible, perishable, heterogeneous and volatile, and as such, it is the information provided to the potential Tourist which is recognised as being the product²¹. Potential Tourist, therefore, rely on a wealth of information before making a decision.

In providing this information, there is a series of interdependencies evident. The travel agent is often the key link between the Tourism provider and the potential Tourist, since the potential Tourist relies on the travel agent to provide the broad range of information at the point of sale, and the Tourism provider relies on the travel agent to provide the desired information to the Tourist. The travel agent must, therefore, have instant access to the information required if he wishes to satisfy Tourist's demands. In order to provide this information travel agents are installing central reservation system (CRS) terminals of the airlines who have realised the potential of the powerful travel agency network for distributing its product through CRS. Although originally developed to control reservations inventory and efficiently manage airline scheduling, the CRS industry is now much more complex with links to other sectors of the Tourism Industry, such as hotels, car hire companies and Tourist organisations.

1.3.2. Travelling To and From a Destination.

Travelling to and from the destination is the second element of the Tourism product and is often the largest proportion of the expenditure in the purchase of the whole Tourism product²². IT investment has been significant in terms of organisation and scheduling of the trip, but minimal in terms of improving the travel experience in its own right.

1.3.3. The Tourism Destination.

The third component in the Tourism product is the Tourism destination. The Tourism destination uses IT to plan, manage and service its Tourism product at the destination. The future success of the destination is dependent on the utilisation of IT. The main focus of IT in this area has been in the improvement of the tangible facilities offered.

1.3.4. Marketing of the Tourism Product.

The fourth component of the Tourism product has received the most attention in terms of investment and research. In the Tourism Industry, potential Tourists are unable to sample the product prior to purchase and must, therefore, learn about the product through the information provided. The better the quality of this information the more likely the potential Tourist will formulate a more realistic impression. In an increasingly global market, both Tourism providers and potential Tourists are dependent on the information provided. Therefore, the effective marketing of Tourism is becoming increasingly dependent on IT. Marketing distribution channels which exist now and in the future can not survive without investment in IT.

1.3.5. Management of the Tourism Product.

With many different sectors and cross-sector alliances forming, a very tight control of the Tourism product is required. Computers and other communication technologies are assisting management to coordinate and control the many inter-dependent sectors of the Tourism product. Management and coordination of the Tourism product through increased investment in IT is improving the efficiency in many sectors of the Tourism Industry.

1.4. Applications of Virtual Reality in the Tourism Industry.

The Tourism Industry has benefited tremendously from the implementation of IT. IT systems govern many aspects of the Tourism product from airline and hotel reservations to multimedia packages designed to market Tourism destinations. It would not be surprising to add VR to the ways that IT affects the Tourism product. This may be due to the fact that the features of the Tourism Industry lend themselves readily to VR²³ or because VR employs a vastly different approach to the representation of information. With VR the participants find themselves in the same dimension as, and are immersed within, the information. The Virtual Environment is augmented by various sensory simulations such as sight, sound, and even touch, together with their respective feedback. Therefore, becoming an excellent way to access, conceptualise, and manipulate Tourism information.

The relationship between Tourism and technology has been rapidly evolving. The use of computers within the Tourism Industry has evolved, in a very short period of time, from a simple back-office system to playing an indispensable role in management, marketing and financial analysis. But through VR this relationship has moved one step further to being a tool capable of helping both management and customers to make well-informed decisions. In the field of Tourism, images have been used to promote destinations for a considerable time, either in the form of video films²⁴ or more recently electronic brochures²⁵. Coates²⁶ imagines travel agents taking their customers on VR tours to any part of the world, exploring in depth the experience before the real trip and reviewing it afterwards. VR has been identified as one of the most exciting technological developments of the future, where different experiences can be created through the use of computer-mediated imaging and graphical environments. Potentially, there is an infinite number of Tourism experiences which VR can simulate. The benefits engendered by VR applications at present manifest themselves in two distinct levels:

1. Macro Level - concerning Tourism policy and planning.
2. Micro Level - concerning the provision of information and the marketing of the Tourism product.

1.4.1. Tourism Policy and Planning.

The process of developing a Tourist destination is a long and tedious one. Tourism master plans encompass numerous detailed physical layouts of the destination together with the proposed Tourism infrastructure such as roads, hotels, restaurants, and other service facilities. These amenities are often depicted on paper as 2D representations that do not facilitate the Tourism planners' conceptualisation of the destination²⁷. Although digitised representations of the proposed site can be subjected to numerous operations, such as image rotation and enlargement, by CAD programs to achieve conceptual versatility, they are still perceived as 2D²⁸.

When planning a proposed Tourism destination, a 3D representation is necessary in order to obtain a correct perspective of the site. Undesirable elements of the destination's design may not be obvious from 2D representations and, therefore, may be overlooked in the design of such a location. These limitations and drawbacks can be alleviated with the use of VR. All relevant information with regards to the proposed Tourism destination can be incorporated into the computer system. Utilising information such as the geographical layout of the site, the infrastructure and Tourist activities, a designer can generate a Virtual Tourist destination which Tourism planners can enter and, more importantly, interact with in real-time. With these tools planners can analyse the layout of the proposed infrastructure. Each destination can, therefore, be changed or adapted in order to determine the most appropriate layout for the proposed destination. With this approach to Tourism destination development previously unforeseen discrepancies can now be discovered prior to any real expenditure. Therefore, VR has the potential to serve as an invaluable tool in the formulation of Tourism policy and in the Tourism planning process.

1.4.2. Information Provision and Marketing of the Tourism Product.

Traditional methods of Tourist information could be enhanced by VR. VR can serve as an invaluable method of providing necessary information to potential Tourists and, therefore, act as a marketing tool for the Tourism Industry. VR systems have the ability to provide potential Tourists with the opportunity to experience destinations and their respective attractions and facilities. Traditional sources of Tourism information only provide potential Tourists with short and often rather limited glimpses of Tourism destinations which may be inadequate to enable them to make informed decisions. The underlying significance of VR is its ability to 'bring the experience to the customer' and this virtual experience of the destination will further increase the customer's desire to actually visit the location²⁹. The traditional methods of Tourism information possess no involvement on the part of the potential Tourist. This, to an extent, limits their effectiveness as a means of encouraging a potential Tourist to a particular destination.

Most of the exciting developments in destination and product presentation, such as multimedia and VR, are mostly relevant at the information stage, within the search process for a suitable holiday destination as described in Goodall³⁰ as 'pull' factors³¹. It is in the area of the provision of information and the marketing of the Tourism destination that VR is most useful at present. Therefore, the proposed

application of VR in this dissertation is as a Tourism Information System (TIS) which will include the traditional types of Tourism Information, images, text, sound, animation and video, but will also incorporate a Virtual Environment which will allow the potential Tourist the opportunity to walkthrough the Tourism destination at their own leisure as well as interact with their surroundings. This Virtual Environment will help the Tourist generate realistic impressions and expectations of what to expect at such a destination and, thus, provide them with extra information to make an informed decision on their Tourism destination.

1.5. Summary.

In this paper the importance of Tourism to the global economy, its growth rate, and its dependence on information have been discussed. The Tourism Industry has many interrelated but separate components and these components which becoming increasingly complex have to be managed effectively³². IT is playing an ever increasing role in this management.

Tourists are dependent on accurate, relevant and timely information in order to aid them in their travel decisions. In addition, the Tourism product is largely intangible, perishable, heterogeneous and volatile, and it is, therefore, the information provided to the potential Tourist which is recognised as being the product. The provision of some tangible elements, such as video clips, animation and virtual walkthroughs of Tourism destinations, hotels attractions and local environment can reduce some of the intangibility of the Tourism product, especially for destination-naïve Tourists. For this reason, VR technology is likely to have a major impact on the future of the Tourism Industry. Finally, the uses of VR in the Tourism Industry were discussed.

References

- ¹ Schmid, B., **“Electronic Markets in Tourism.”** In Proceedings of the International Conference in Innsbruck, Austria, Springer Verlag, 1994.
- ² Anon., **“1996/7 WTTC Travel and Tourism Report.”** World Travel and Tourism Council, 1996.
- ³ Anon., **“1996/7 WTTC Travel and Tourism Report.”** World Travel and Tourism Council, 1996.
- ⁴ Anon., **“1996/7 WTTC Travel and Tourism Report.”** World Travel and Tourism Council, 1996.
- ⁵ Anon., **“1996/7 WTTC Travel and Tourism Report.”** World Travel and Tourism Council, 1996.
- ⁶ Anon., **“International Tourism Overview.”** World Tourism Organisation, 1993.
- ⁷ Archdale, G., **“Computer Reservation Systems and Public Tourist Offices.”** Tourism Management, 14 (1), 1993.
- ⁸ Go, F., **“The Role of Computerised Reservation Systems in the Hospitality Industry.”** Tourism Management, 13 (1), 1992.
- ⁹ Collier, D., **“Expansion and Development of CRS.”** Tourism Management, 10 (2), 1989, pp. 86-88.
- ¹⁰ Gamble, P.R., **“Connectivity and Pan-European Marketing.”** International Journal of Contemporary International Management 3 (4), 1991, pp. 37-41.
- ¹¹ Collier, D., **“Expansion and Development of CRS.”** Tourism Management, 10 (2), 1989, pp. 86-88.
- ¹² Hobson, J., and M. Usyal, **“Infrastructure: The Silent Crisis Facing the Future of the Tourism Industry.”** Hospitality Research Journal, 17 (1), 1993.
- ¹³ Cleverdon, R., **“Global Tourism Trends: Influences and Determinants.”** In World Travel and Tourism Review, Volume 2, Ritchie, J.R., and D. Hawkins (Eds.), CAB International, Wallingford, Oxford: 1992.
- ¹⁴ Williams, A.P., and J.S.P. Hobson, **“Tourism: The next generation. VR and Surrogate Travel, is it the Future of the Tourism Industry?”** In Seaton A.V. et al. (Eds.), Tourism: The State of the Art, Chichester, London, 1994.
- ¹⁵ Buhalis, D., **“Information and Telecommunication Technologies as a Strategic Tool for Small and Medium Tourism Enterprises in the Contemporary Business Environment.”** In Seaton A.V. et al. (Eds.), Tourism: The State of the Art, Chichester, London, 1994.
- ¹⁶ Williams, A.P., **“Information Technology and Tourism: A Dependent Factor for Future Survival.”** In World Travel and Tourism Review, Vol. 3, Ritchie, J.R., and D. Hawkins (Eds.), CAB International, Wallingford, Oxford, 1993.
- ¹⁷ Bennett, M and M. Radburn, **“Information Technology in Tourism; The Impact on the Industry and Supply of Holidays.”** In Sinclair, M.T and M.J. Stabler, (Eds.), The Tourism Industry; An International Analysis, Oxford: CAB International. 1991.
- ¹⁸ Gamble, P.R., **“Small Computers and Hospitality Management.”** Hutchinson, London, 1984.
- ¹⁹ Kasavana, M., and J. Cahill, **“Managing Computer Systems in the Hospitality Industry.”** CBI, New York, 1987.
- ²⁰ Mill, R.C. and A.M. Morrison, **“The Tourism System: An Introductory Text.”** Hertfordshire: Prentice-Hall, 1985.
- ²¹ Bennett, M and M. Radburn, **“Information Technology in Tourism; The Impact on the Industry and Supply of Holidays.”** In Sinclair, M.T and M.J. Stabler, (Eds.), The Tourism Industry; An International Analysis, Oxford: CAB International. 1991.
- ²² Hitchins, F., **“The Influence of Technology on U.K. Travel Agents.”** Travel and Tourism Analyst, (3), 1991, pp. 88 -105.
- ²³ Cheong, R., **“The Virtual Threat to Travel and Tourism.”** Tourism Management, Vol. 16, (6), 1995, pp. 417-422.
- ²⁴ Hanefors, M., and L. Larson, **“Video Strategies used by Tour Operators.”** Tourism Management, 14 (1), 1993.
- ²⁵ Archdale, G., **“Computer Reservation Systems and Public Tourist Offices.”** Tourism Management, 14 (1), 1993.
- ²⁶ Coates, J., **“The Future of Tourism: The Effects of Science and Technology.”** Vital Speeches of the Day, October, 1992.
- ²⁷ Cheong, R., **“The Virtual Threat to Travel and Tourism.”** Tourism Management, Vol. 16, (6), 1995, pp. 417-422.

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- ²⁸ Cheong, R., **“The Virtual Threat to Travel and Tourism.”** *Tourism Management*, Vol. 16, (6), 1995, pp. 417-422.
- ²⁹ Coates, J., **“The Future of Tourism: The Effects of Science and Technology.”** *Vital Speeches of the Day*, October, 1992.
- ³⁰ Goodall, B., **“How Tourists Choose their Holidays: An Analytical Framework.”** In Goodall, B., and G. Ashworth (Eds.), *Marketing in the Tourism Industry - The Promotion of Destination Regions*, Routledge, London, 1990.
- ³¹ Riley, R., and C.S. Van Doren, **“Movies as Tourism Promotion - A “Pull” Factor in a “Push” Location.”** *Tourism Management*, 13 (3), 1992.
- ³² Williams, A.P., **“Information Technology and Tourism: A Dependent Factor for Future Survival.”** In *World Travel and Tourism Review*, Vol. 3, Ritchie, J.R., and D. Hawkins (Eds.), CAB International, Wallingford, Oxford, 1993.