

# "Affordable Virtual Reality Content as a Marketing Instrument in Small and Middle Enterprises"

by

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## Abstract

Classical marketing is gradually moving from the "real" pole of the RV (Reality-Virtuality) Continuum towards the middle of the RV spectrum. The augmentation of reality, driven by advances in computer technology, has turned out to be a powerful instrument for the commercial presentation and marketing of products, labels and companies themselves. The acceptance of this new ad extension is growing rapidly and, in the near future, it will probably be as important as traditional trade fairs or any other "real" commercial accessory advertising. True mixed-reality cannot yet (as of 2002) be fully realized on a large scale. This is because of the considerable cost both of implementation at the solution supplier's site and of the hardware required at the customer's site, and also because the approach itself has not yet been fully field-tested and is still subject to research. Furthermore, general world wide acceptance of Virtual Reality (VR) depends not only on how much it will cost the customer but also on how easily he can take advantage of it and how convenient and simple it is for him to use it.

Augmented virtuality seems to offer itself as the starting point in pursuing enhanced economic viability. Marketing strategies in small and middle sized enterprises ever more frequently include virtual reality in their ad concepts and budgets. It has been discovered that multipurpose, multidimensional environments are very effective. They are, in fact, the most involving and most easily distributable media objects ever. The decision to incorporate VR into a company's ad portfolio is made all the easier and wiser by the interactive power of today's internet: its potential is no longer futuristic, it creates high levels of user motivation, and its information is instantly "actionable".

## Acceptance of new technologies in small and middle sized enterprises

The acceptance of new technologies within companies is always hampered by internal uncertainty, bad experience with previous implementations, lack of honest, reliable partners / media consultants, inadequate hardware infrastructure and, of course, price. For these reasons, particularly in Europe, there is always a considerable delay before companies take "the decision" to make use of available technologies. It takes about 3 years to reach any next particular level in the state of the art. The main task is, in a sense, to "cut the coat to fit the cloth", which in this particular case means adapting (online) applications to the equipment and knowledge level of a "normal", technically untrained user who probably does not even possess an up-to-date internet browser. It is cost effectiveness and the overall benefit to a company which ultimately determine whether and how quickly new technology is utilised. The challenge over the next few years will be to deliver affordable, intuitive and easy to use sophisticated cyberspace applications, which do not require complicated installation procedures or hardware upgrades.

## Computer technology in marketing

The idea of using computers extensively for marketing purposes first originated with the development of multimedia technology, sometime around 1990. CD-ROMs [Fis95] and other interactive marketing techniques soon became part of the sales, promotional and marketing packages of many companies. CDs were used, at first, as a medium for providing technical information and as electronic catalogues, and they were distributed in the same manner as print media. Then they came to be employed more and more as tools for the sales forces, as attention grabbers or give-aways at conventions, trade fairs and the like. CD-ROMs have survived till now as a data medium but they are gradually being replaced by DVDs, and there are other alternative technologies in the development pipelines. The beginning of the era of the world wide web (1995) marks the division between what we call "offline"- and "online"-content, and it opened up a new way of delivering information on-demand. A new ethos of accessing information anytime and anywhere was born. Online marketing has in the meantime, become much more than just placing banner ads on Web pages. The real, extraordinary power which the internet can give to marketing campaigns is best released through media-rich advertising. Advances in Web technology and telecommunication have made it possible to create and publish anything and everything for instant access from anywhere around the world. Inclusion of sophisticated VR content on the world wide web is simply the next step.

## Human – technology interaction (eReality approach)

At one end of a Reality-Virtuality (RV) continuum are virtual environments which must be completely modelled in order to be rendered. At the opposite extreme, we have real, completely unmodelled environments as representations of a world or region. Mixing or combining virtual environments with the real lets us move towards the central area of the RV spectrum [Yui99]. As we venture away from the poles of the RV continuum, generating chat communities [ATM] and "bringing it all to life", we encounter the problem of distinguishing whether we are modifying a virtual environment or extending real life and making it eReality.

One of the features of a physical realm is the possibility of human interaction with it and also with other human beings within it. Another distinguishing mark is the perception of the world and of the physical entities through the human's senses. Implementations of modelled environments, defined as reproductions of real worlds or abstracts thereof (cyberspace), require synthetic interaction through tangible user interfaces. One can distinguish between simple graphical interfaces such as touch-screens, and more sophisticated, immersive systems which allow individual users to fully immerse themselves in the virtual environment through 3-D imagery involving sight and sound [EON] (special hardware, such as head-mounted displays and data gloves is required; the user can navigate in the environment by way of head movements and interact with objects using the data glove).

Augmented Reality is a new form of interaction between humans and technology in which the user is given supplementary visual information superimposed upon or mixed with the physical-world imagery, for example, via data-glasses. This supplementary information is, however, context dependent, i.e. drawn from and fitted to the real object being viewed [ARV].

## **VR modalities**

Sales efforts are still mostly confined (relegated) to the traditional, expensive and, these days, not very productive methods such as trade shows, phone calls, and distribution of print media or product samples. New products normally require a considerable "time to market". Virtual design can provide cost effective (relative to the result) interactive simulations, which allow customers to experience the product while it is still in the design stage and prior to construction of expensive prototypes. This product need not necessarily be placed in a virtual world, at least so long as it is the product itself which is to be explored, and not its coupling to any specific environment. One of the advantages is that the customer's feedback during the production stage may contribute considerably to the product quality. The customer is unknowingly involved in the product validation process and mirrors the market demands. We should however keep in mind, that there is a wide range of products which can be explored: starting with small devices and ending somewhere near jumbo-jet size and complexity. This is why the price for implementation of VR applications may vary from a few hundred to several million euros, depending also on the kind of equipment and media required. Another way of involving, and motivating viewers to explore VR applications and act within them, is to let them explore non-immersive virtual rooms and interact with objects in the manner familiar from the computer-game market. In most cases no special wearable hardware is required and the user interface is reduced to the computer mouse, the screen and sometimes also to some simple peripheral devices such as a joystick.

## **A synthetic human as a virtual assistant**

Most people have a passive nature and, as may be observed at fairs, the establishment of customer binding may be speeded up considerably by making it possible for customers to look at things on their own first of all, and by letting a restrained synthetic consultant in the form of an avatar do the job first, for example, in a virtual showroom. However, synthetic avatars, such as the renowned Robert T. Online from Germany, need a human character in order to be accepted as a company's virtual representative and to serve as an intelligent agent, giving help on-demand for a specific problem.

With a view to providing effective virtual communication, a cross-disciplinary responsive virtual human technology (RVHT) has been developed [RTI]. This research brings together cognitive psychology, computer science, art, software engineering and biomedicine, with the aim of realistically simulating human interaction. Virtual humans, here, not only have realistic bodies, clothing and movements, but they can also recognize and understand spoken words, and talk back via the latest technologies in computerized speech generation or pre-recorded speech. These virtual humans can even act and react on the basis of their emotional agitation and their cognitive and physiological states. These actions and reactions include facial expressions, body movements and other human-like features.

Even incommunicative, reserved customers require professional advice and want to communicate not only with a fully synthetic avatar but also with people behind the virtual curtain. Creating and "pre-programming" of avatars can run into problems if more sophisticated avatar intelligence and behaviour, the avatar's virtual assistance and technical advice are required, since cost effective, custom VR implementations need to run on non-proprietary industry standard hardware. As a result, virtual environments are most frequently designed to serve as additional cyberspace agencies, tele-existence platforms and modern communication interfaces between a client and the company or among customers themselves. Avatars in turn are constructed, in this case, as virtual representations of real people (human metaphors), enabling human-like communication with each other in a virtual space [CUR].

## **Virtual Reality as a marketing instrument**

The enchantment of using pure virtuality for ad purposes seems to be a thing of the past. All marketing efforts are now tending towards deployment of user friendly implementations of virtual worlds which are most beneficial, affordable and human. Information which is to be virtually modelled and presented needs to be spatially structured. This will certainly provide a challenge to content managers who provide and publish the information on the Web. Through careful planning and close monitoring of progress the implementation process can be accelerated, financial risks can be minimised and marketing skills enhanced. There is often also a problem with the software and with Web standards. The scepticism and inertia of decision makers, hand in hand with matters of cost effectiveness creates a situation in which it is not possible to make up one's mind and select a suitable, ready to use VR solution. This often slows down the implementation process considerably.

One of the most important things about including virtual reality in an organisation's offer of value to the customer is the exact definition of its position in the marketing mix as well as the goals targeted. The following aspects must also to be considered: the organization's image, personnel training, quality of content, add-on value arising from the use of VR technology, and the overall level of acceptance of the technology by the company.

Intranet aspects and logical links among the company's departments also have to be taken into consideration. By now, at the latest, it will have become evident that VR implementation on the internet can only be part of a global virtual organisation structure without being able to make any claim to an exclusive, separated area therein. For this reason, VR can simply be considered as a multidimensional information platform.

## Affordable Virtual Reality content – ready to take off

Within companies the current approach to VR is, basically rather traditional. Over the last decade, however, business experience with electronic catalogues and multimedia content at fairs, and the overall positive feedback from customers on the new media have generated a demand for a new style of presenting a company or a product, namely by means of easily available and cost effective virtual techniques. These stretch from panoramic image technology all the way to sophisticated, interactive applications which, for example, enable the virtual exploration of production sites or products.

The main goal still remains to serve the customers as best we can and to supply them with any information they may require. With each development in internet technology the demands increase. New horizons and new prospects for marketing open up and many ideas previously thought unrealistic can suddenly be realized.

Companies have already recognized the potential of VR in marketing strategy, and have set up virtual projects primarily in the area of virtual show-rooms and trade fairs [BEN], visualisation of work flows and manufacturing areas [FAP], virtual guided tours and collaborative mixed-reality based eLearning environments [Ker00], 3D shopping malls and virtual simulations. Extremely cost effective technologies such as Adobe Atmosphere [ATM, MXM] enable modelling of complex virtual worlds and virtually structured information levels. Adobe's virtual framework does not rely on photographs (excluding textures) but is a realistic, totally interactive, real-time 3D experience which enables total freedom of movements and exploration. The key benefits of Adobe's new technology are the integrated chat area, the incorporated savvy avatar technology, and the encapsulation of the best (Web) graphic technologies such as Viewpoint [VIE] and Havok Games Physics Engine [HAV] which enhance the web with realistic dynamics.

## Future use of VR in marketing

Future marketing-oriented VR will concentrate on providing virtual sales persons, consultants, coaches, and guides in cyberspace, as well as tele-teachers and other services, available 24 hours a day, which will help understand, manage and personalize information. Bringing the company into 3D virtual environments will require a lot of versatility and effort in all areas imaginable. The fun and visual appeal of the information-rich virtual content which enhances the comprehensibility of complex relationships on the one side will have to be balanced by seriousness and immediately recognizable user benefits on the other side. The effort is aimed at binding not only customers but the company's staff (VR trained personnel at first) and potential investors, too. Other aspects are advanced learning environments using constructive methods to achieve cost-effective training and education [Ker00], solutions which allow a choice from different alternatives and help in examining visual impression, functionality or ergonomics in the area of industrial or architectural design and user dependent interaction paradigms.

A realistic vision of a plausible, ubiquitous wireless network- and biometrics-enabled personalized marketing of the future was given in Steven Spielberg's futuristic thriller "*Minority Report*" [MIN]. Spielberg depicts an advertising-saturated society where billboards call out to passersby on a first-name basis, electronic newspapers deliver news instantly over a broadband wireless network, cereal boxes have talking, moving illustrations, virtual (holographic) hosts greet you at retail stores and biometric technologies (retina scans) monitor subway passengers and automatically collect their fare. The ability to identify and track will grow rapidly in coming decades. Information will be pervasive and customized.

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