Design Guidelines for B2C E-Commerce in Virtual Worlds

Minh Quang Tran
Department of Computing
The Open University, UK
Milton Keynes, MK7 6AA
m.tran@open.ac.uk

Shailey Minocha
Department of Computing
The Open University, UK
Milton Keynes, MK7 6AA
s.minocha@open.ac.uk

Dave Roberts
Department of Computing
The Open University, UK
Milton Keynes, MK7 6AA
d.roberts@open.ac.uk

Angus Laing
School of Business and Economics
Loughborough University, UK
Leicestershire, LE11 3TU
a.w.laing@lboro.ac.uk

Darren Langdridge
Department of Psychology
The Open University, UK
Milton Keynes, MK7 6AA
d.langdridge@open.ac.uk

Virtual worlds are three-dimensional (3D) persistent multi-user online environments in which users interact through avatars. Virtual worlds support many kinds of activities, including education, socialising, gaming and e-commerce. Our research focuses on how virtual worlds can be used to facilitate business-to-consumer (B2C) e-commerce involving real items. Examples of affordances of virtual worlds for e-commerce include 3D simulations, multi-user environments and avatar-based interactions. We have conducted empirical research to gather data about consumers' experiences in virtual worlds to understand ways to utilise their affordances for B2C e-commerce. Based on our empirical research and a literature review, we have derived design guidelines for the design and evaluation of B2C e-commerce environments involving virtual worlds. This poster presents a summary of the research project and a subset of the guidelines.

Consumer experience, design guidelines, e-commerce, design heuristics, interaction design, service design, service encounter, user experience design, virtual worlds

1. BACKGROUND

Virtual worlds are three-dimensional (3D) persistent multi-user online environments in which users interact through avatars. Virtual worlds can support many kinds of activities, including education, socialising, gaming and e-commerce. Our research focuses on how virtual worlds can be utilised to facilitate business-to-consumer (B2C) e-commerce involving virtual and real products and services.

Virtual worlds have several affordances that can potentially be utilised to enhance the B2C e-commerce experience, such as 3D simulations of products, multi-user and avatar-based real-time interactions (Kaplan and Haenlein, 2009; Hemp, 2006). Businesses can provide 3D simulations of products to allow consumers to learn about products in a way that is more engaging than 2D images. Interactions in a 3D environment can facilitate feelings of presence in the retail environment, which results in a more engaging experience. Businesses can also use avatars to interact with consumers in real-time to enhance trust. Yet despite the potential, there are only a few real world businesses using virtual worlds effectively for B2C e-commerce.

2. OUR RESEARCH

We are conducting empirical research with consumers and designers who have experience in virtual worlds. In the last one and a half years, we have carried out three qualitative studies. The first study was to understand consumers' experiences of the consumption process in virtual worlds. The second study investigated the affordances of virtual worlds for e-commerce. The third study was to understand consumers' perceptions of virtual world's affordances for e-commerce. We are now conducting another study with designers to elicit design guidelines that they currently use to design e-commerce environments in virtual worlds.

The results from our empirical research have been synthesised to derive a set of design guidelines for B2C e-commerce in virtual worlds. The design guidelines are targeted for designers and usability practitioners who are designing or evaluating e-commerce environments in virtual worlds.

3. GUIDELINES FOR B2C E-COMMERCE IN VIRTUAL WORLDS

Our design guidelines are derived mainly from our empirical research. However, they are informed and supported by the academic literature, books on usability and tutorials for designing virtual world environments (e.g. http://www.nci-sl.info/blog/ and http://wiki.secondlife.com/wiki/Video_Tutorials).

We organised the guidelines using the service encounter model. The service encounter model divides the consumption process into three stages: the pre-purchase, the purchase and the post-purchase stage (Bitner and Booms, 1990). Our guidelines are also divided into these three stages.

Different design goals are emphasised in different stages of the service encounter. The emphasis in the pre-purchase stage is on attracting consumers' attention and setting the consumers' expectations. The emphasis in the purchase stage is on facilitating the B2C interactions and meeting the expectations of consumers which were set in the pre-purchase stage. In the post-purchase stage, the emphasis is on resolving consumers' queries and resolving any remaining expectations.

Table 1. Guidelines for B2C e-commerce in virtual worlds

Pre-Purchase Stage Guidelines	**Example**	**Support from literature**
Facilitate product discovery and exploration with consumers	*Organise events for socialising or gaming where products are visible*	*Innovativeness (Zeithhaml et al., 2002)*
Clearly identify real world status of the business	*Use branding and signage that is consistent with the real world business*	*Enhance trust (Petre et al., 2006)*
Make products searchable	*List products on in-world and website search engines*	*Search effectiveness (Petre et al., 2006)*
Purchase Stage Guidelines	**Example**	**Support from literature**
Make in-store navigation intuitive	*Clearly mark and map out the store layout*	*Navigation support (Sutcliffe and Gault, 2004)*
Design for changing camera angles	*Do not add walls or ceilings that may obstruct view of products*	*Unoccluded camera views (Shneiderman, 2003)*
Make information about products readily available and abundant	*Embed textual information about products in objects*	*Help and documentation (Nielsen, 2005)*
Facilitate the feeling of social presence	*Interact using avatars that resemble people*	*Natural engagement (Sutcliffe and Gault, 2004)*
Provide high-fidelity product simulations	*Model products in 3D*	*Virtual experience (Li et al., 2001)*
Post-Purchase Stage Guidelines	**Example**	**Support from literature**
Support appropriation and customisation of products	*Provide instructions on customisation*	*Responsiveness (Zeithaml et al, 2002)*
Facilitate re-contact between consumer and business	*Embed company information in products*	*Contact methods (Zeithaml, 2002)*
Encourage discussion about products	*Support social networks and dialogue between consumers*	*Brand community (McAlexander, et al., 2002)*

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