

An 8-Step Process for Creating Compelling Enhanced Television

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Abstract

Creating compelling enhanced television is very challenging. Research indicates that only certain genres of programming and interactive content are suitable for these types of applications. This paper presents an 8-step process which was developed based on multiple research projects done at Microsoft over the past 5 years. While it is recognized there are many ways to produce enhanced television programs, the overall goal of the process outlined in this paper is to emphasize that critical information about the user, the television program, and the interactive content should be taken into account during the development process.

Keywords

Interactive television, enhanced television, usability, design process

Introduction

Enhanced television is one type of interactive television application. Interactivity added to a television program can be an exciting addition to the television viewing experience if it is done right. Creating compelling enhanced television programs is very challenging because research indicates that only certain genres and types of interactive content are appropriate for these types of applications [Ali & Lamont, 2000]. Thus designers must experiment and create user experiences which engage viewers in the interactivity but at the same time do not interfere with the viewing experience. This paper presents an 8-Step Process for assisting in the creation of compelling enhanced television experiences.

The 8-Step Process

The "8-Step Process for Developing Enhanced Television Programs" [adapted from Ali and Lamont, 2000] is a consolidation of the data that was gathered over a 5 year period of internal research at Microsoft (and WebTV Networks which was acquired by Microsoft in 1997) on enhanced television. The 8-Step Process attempts to provide designers with a starting point for creating these types of programs. At each step, the designer is asked to consider different variables with each step building from the previous one. The goal of these steps is to encourage designers

to think about the reasons why people tend to watch certain programs so this information can be used to help drive the interactivity for the enhanced television programs. These steps also emphasize that it is important to consider the cognitive impact that the overall layout has on the viewer's ability to watch television. Although the process in this paper outlines 8 steps to think about in a sequential manner, many of the steps are interconnected. As a result, designers may need to go back and revisit a previous step or end up doing some of the steps simultaneously rather than in an absolute linear sequence.

Step 1-Choose the television program

Choose the television program that you want to use as a platform to create an interactive experience. While it is possible to add interactivity to any television program, critically think about the program you choose because certain genres are more compelling for interactivity than others.

Step 2-Classify the television program

Once you have chosen a specific television program to add interactivity to, identify which genre best describes this television program. Genres might include sitcom, drama, sports, talk show, game show, educational/documentary, news, reality and late-night entertainment.

During this step it is very important to think about why people watch certain genres over others. What does each genre offer the viewer? For example dramas offer a form of escapism from reality, while sporting events offer a sense of competition and emotional attachment to the team [Lee & Lee, 1995]. Will users want to interact with content if these are the things the program offers?

Step 3-Know your user

When creating user interfaces, it is helpful to be able to understand who the target user is for the application. This can be done in different capacities which might range from creating formal personas, or user archetypes of the interface [Cooper, 1999 and Grudin & Pruitt, 2002] to just a simple summary of the primary and secondary research that is already known about the target user. When creating a specific enhanced television program, the team should aim to be able to describe the following for the specific program:

- Demographic profile of viewer (age, sex, socio-economic status)
- Viewing patterns for (e.g., social viewing, routines)
- Technology experience which includes computer, set-top box and enhanced television experience

Although it is good practice to generally understand who your target users are, this information will also help decision making in the subsequent steps of this 8-step process. The research and information that has been compiled in step 3 should be used to help make decisions in step 4, 5, 7 and 8.

Step 4-Identify reasons why people watch the television program

It is important to understand why people tend to watch a specific television program in the first place. By thinking about these reasons it will help ensure that the interactivity of a given show enhances the viewing experience, and does not detract from it. To make progress towards achieving this, brainstorm with the team and create a list of reasons why people watch the specific program (without interactivity). Additionally, the information about the end user that has been identified in step 3 can help the team during the brainstorming session in this step to come up with plausible reasons for why people

watch a specific television show. For example, reasons people watch a broadcast of a hockey game might include:

- Viewers love the hockey team, their logos, and everything about them.
- Viewers turn the game into a social setting by inviting friends and family over to watch
- Viewers love to watch the actual game play to see the speed, skills and playing technique
- Viewers want to see if the team beats the rival team – there is a sense of competition between the other teams and who their friends are cheering for
- Viewers love a particular player and follow their every move

Step 5-Identify the interactive content

Use the ideas in Step 4 to help drive the development of the interactive content. Most people want to watch their television program and do not want to be taken away from the actual program, so ensure that the interactivity that is chosen for the enhanced program is appropriate. This will help ensure that the content is directly related to the essence of the program – interactivity that users want to engage in. Table 1 outlines why people might watch a sport broadcast and how these reasons are translated into potential interactive features.

Table 1: Reasons people watch television translated in interactive content

Sports Broadcast (hockey)	
Reason People Watch TV	Interactive Content
- Viewers love the hockey team, their logos, and everything about them. They want to see more	- Provide extra stats about the sporting league, and/or each team playing.
- Viewers turn the game into a social setting by inviting friends and family over to watch.	- Provide extra score updates for other teams playing in the league, or show current standings
- Viewers love to watch the actual game play to see the speed, skills and playing technique	- Provide camera angle switching to watch the game in different views
Viewers want to see if the team beats the rival team - there is a sense of competition between the other teams and who their friends are cheering for	- Provide a pre-game chat so that fans and rivals of the two teams playing can express their emotion to each other
- Viewers love a particular player and follow their every move	- Have biographical information on athletes - Provide scoring statistics for the top scorers on each team

Step 6-Choose a layout

Once you have identified the interactive content consider the layout for the enhanced television program. Should the video always display in full-screen mode so that the interactive content is placed over top of the screen (i.e. overlay design) or should the video area be reduced so that content can be placed around the periphery (i.e. embedded design)? For example, an overlay design may cover up some of the visual elements of the television program which might be important for some types of programs. However

an embedded design might reduce the size of the video so small that it makes viewing less enjoyable. Both designs impact the viewer's cognitive load differently [Lamont, 2001]. Table 2 below compares the trade-offs of each layout to the experience for which you are designing.

Table 2: Advantages and Disadvantages to Using the Overlay and Embedded Designs

Step 7-Conduct discount usability evaluations

Once storyboards or mock-ups of the initial design have been created for the enhanced television program, conduct an "expert" usability evaluation using heuristics and walkthroughs. The benefit to conducting these types of usability evaluations is that they can be conducted very early in the design process, be done on low-fidelity prototypes, and do not require a lot of money and time for them to be completed. Two discount methodologies which are easy to use are the heuristic evaluation [Nielsen, 1994] and the streamlined cognitive walkthrough [Spencer, 2000].

Heuristic Evaluation

In addition to Nielsen's heuristics, use new heuristics specifically created for evaluating enhanced television programs [Ali & Lamont, 2000]. These include:

- Interference - the degree to which the interactive content obscures the content of the TV program
- Intrusiveness - the ability to interact with the interactive content while still being fully engaged in the TV program
- Applicability - the degree to which the interactive content is related to the content of

Design	Advantages	Disadvantages
Overlay	<ul style="list-style-type: none"> ▪ Size of TV window is the same as regular TV ▪ Content feels more integrated into show ▪ Close proximity of TV and content may facilitate divided attention ▪ Close proximity of TV and content may enhance memory for show 	<ul style="list-style-type: none"> ▪ Distracting because content on top of TV ▪ Users try to look through content to see TV ▪ Close proximity of TV and content may inhibit focused attention
Embedded	<ul style="list-style-type: none"> ▪ Easy to separate TV and content when viewing ▪ Easy to focus on content or watch show ▪ Separation of content and TV may facilitate memory ▪ Separation of content from TV may facilitate divided attention 	<ul style="list-style-type: none"> ▪ Size of TV window reduced ▪ Viewer can more easily multi-task and direct attention in 2 locations ▪ Importance may be given to content when not necessary ▪ Separated elements make focussed attention difficult

the TV program

Streamlined Cognitive Walkthrough

Walk through the prototype from the perspective of the user and ask yourself two questions at each step along the way to completing the overall task.

- Will the user know what to do at this step?
- If the user does know what to do at this step, will they feel they are making progress towards their overall goal?

Record the responses to these questions in the walkthrough to find out where usability issues exist with the experience.

By using one or both of these techniques, many usability issues will be discovered at this step and can be fed back into the design to iterate on the prototypes. This will help to ensure that the usability testing sessions that involve actual users are more effective and worthwhile.

Step 8-Initiate formal rounds of usability evaluation

The final step in the process is to gather feedback from real viewers interacting with the enhanced program and using the interactive content. Information that was obtained or summarized in step 3 can be used to ensure that representative users are recruited for the more formal lab studies. While conducting the actual lab study, it would be ideal to have users in a simulated living room environment - alone or with others so that the scenario is more like the environment that viewers will be using the enhanced program. Once all the data is collected it should be used to iterate on the design. In fact, it is possible that the team may need to revisit certain steps in the process because more information has been obtained through the usability study to more clearly refine specific steps. It is recommended that at least one usability study be conducted; however, numerous studies should be completed if time and budget permits.

Conclusions

The 8-step process presented in this paper is the first phase to help guide designers to think

critically about what they are creating in hopes of positively influencing the end result. While it is recognized there are many ways to produce enhanced television programs, the overall goal of the process outlined in this paper was to emphasize that critical information about the user, the television program, and the interactive content needs to be taken into account. The next phase is to refine this 8-step process for creating compelling enhanced television based on feedback from real world practitioners and designers. As this realm of television grows, usability professionals need to continue to explore new methodologies to help drive the design and future of interactive television.

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