Kari Jääskeläinen

Strategic Questions in the Development of Interactive Television Programs

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Dissertation

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Kari Jääskeläinen
Espoo Enterprises
Tekniikantie 21
02150 Espoo
Finland
tel: + 358 40 501 7627
e-mail: kari.jaaskelainen@espoo.com
Internet: www.espoo.com

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Summary

The aim of this research was to identify questions that a person developing interactive television programs could ask himself. The topic was chosen because it is currently an emerging issue in many of the countries launching digital television.

The previous research in this field was reviewed including academic research, field trials in Finland, selected field trials abroad, consumer attitude surveys and expert panels. As it turned out, not much academic work had been done in the subject. The most promising work had been done in the fields of distance education and interactive narration.

Five other fields were surveyed as potential sources for suitable ITV development strategies. These fields were linear drama, infomercials and home-shopping, multimedia production, www-production and virtual communities. A group of potential strategies were identified from these fields.

Several methodological choices were considered. Among them were predicative methods, scenario analysis, case study method, action research, knowledge brokering and Zetterberg's method. Finally a combination of knowledge brokering and the Zetterberg's method was found most suitable for this research.

The initial strategies were picked by the researcher from the above mentioned fields. They were then tested with a survey form that was presented to persons involved with the ITV industry. The respondents were identified from various sources and also the snowball method was applied to gather more respondents. Altogether 103 responses were received from persons in significant posts in key companies and institutions of the field. The research can be considered valid and reliable.

The main conclusion of this study is that it pays in ITV-development to use the questions that have been found useful in developing film and TV scripts, www-applications, multimedia productions, virtual communities or home-shopping advertisements. Different sets of questions are useful for different ITV-genres. A useful set of questions could be identified for six different ITV genres. These genres were ITV advertising, computer game type of ITV applications, News on Demand applications, Electronic Program Guide (EPG), distance learning applications and background information for TV programs.

Other results were also discovered. The following three questions were found important for all genres: 1) How can we make the program aesthetically appealing as possible? 2) How can we make the program visually compelling? 3) What type of an interface should the program have? Another result was that the follow-

ing two questions that are central in film industry were not considered important for any of the ITV genres: 1) How can we have a three act structure in the program? 2) How can we arrange a happy ending for the program? The identified sets of questions will provide a good starting point for a person developing a program in the respective genre.

Keywords: **Interactive television, interactive movies, ITV, digital television, advertising, computer games, news on demand, EPG, electronic program guide, distance learning**

Table of Contents

LIST OF TABLES

LIST OF FIGURES

Acknowledgments

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1 Introduction

1.1 Background to the research

The main goal of my dissertation is to develop a set of strategic questions that can help the thinking process for a person who is developing an interactive television program. A similar set of questions is already well developed in e.g. the field of scriptwriting for film. These questions include such issues as who is the protagonist, what is his goal, who is his opposition and what types of conflicts arise in between the protagonist and his opposition? In fact, I will try to use some of these questions as a starting point in my research. But clearly additional questions are required, since these questions don't take into account e.g. the required interactivity of ITV.

Attempts to make television interactive are almost as old as television itself. In chapter 2, I describe events from as early as 1920. Therefore it is surprising to find out that actually very little academic work has been done in order to create a model of the process of developing ITV concepts.

Several dissertations are concerned with compression algorithms, transport protocols and other technical issues. In addition to these, most of the academic research of interactive television has dealt with instructional television, which usually refers to an educational application of interactive television. Terry Dean Goro has identified and analyzed the factors perceived as important to the success of interactive distance education. He has developed a list of strategies or skills that could be applied in the distance education environment to help ensure the success of teaching.[1] Gary Brown Jackson has studied ways to develop instructional television programs. Jackson developed a three-part model to provide agricultural faculties, extension educators and other professionals with the necessary components, process, and products required for successfully planning and delivering an education course or program.[2] These two dissertations are the ones that come closest to a model for developing an ITV program.

In addition, a few instructional books have been written close to the topic. These include Joseph Sinclair's Developing Web Pages with TV-HTML[3], Winston Hodge's Interactive television[4], Bohdan Szuprowicz'es Multimedia Networking[5] and my own book Interaktiivisen television sisällöntuotanto[6] [Content production for Interactive Television]. None of these books go very deeply into the questions that e.g. a producer or a script-writer of an interactive television program could address himself.

So a useful set of questions for this purpose does not yet exist. On the other hand, there are several sources, from where one could start developing such questions. As already mentioned, the film industry has developed these issues considerably. Further on, some very interesting concepts are being developed in near-by fields such as multimedia and www-development, computer programming, virtual communities and even home shopping. All these possible sources for strategies in ITV development are examined closer in chapter three.

In my view, Brian Blum presents the most promising model for designing a media production. It is actually designed for a multimedia production process, but my prediction is, that many parts of it could also be used in ITV production. Following is Blum's model as presented in Tay Vaughan's book[7]:

In conclusion, the aim of my dissertation work is to develop a set of questions that can be used in the development of interactive television programs.

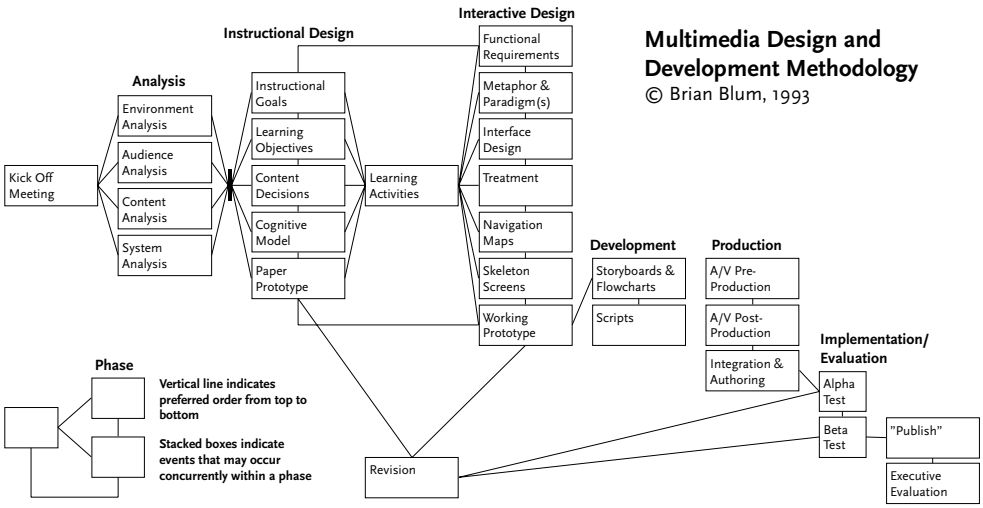


Figure 1: Multimedia Design and Development Methodology[8]

1.2 Research problem

The main research problem of my dissertation is the following:

What type of strategic questions must a person developing an interactive television program ask himself?

More precisely, what strategies or questions can one adapt from film and television script writing? Especially what issues can be used from the well-developed techniques of story-, character- and structure development? Furthermore, what strategies could one adapt from the theories (or at least principles) of multimedia and www-development? In addition, what could the techniques of building virtual communities have to offer? Finally, what could be learned from the fields of home shopping industry?

1.3 Justification for the research

My choice for the research problem is in my opinion well justified. According to Chad Perry[9], a Ph.D., research in management or a related field should ideally fascinate the candidate, build on his previous studies, be in a warm research area and be in the mainstream of a discipline. The research project should also be manageable and have accessible sources of data. Finally, it should open up a program of research projects after the Ph.D. is completed.

Interactive television has been a close interest of mine since 1993 when I began doing my Master's thesis about ITV for the University of Art and Design in Helsinki.

Interactive television could well be described as a warm research area. Because of the digitalization of cable, satellite and terrestrial networks under way in most countries, it is a topical issue. Since it is so new, it can hardly be called a cold and already overworked area. On the other hand, quite a little academic about ITV seems to be under way, so there seems to be little risk of it extinguishing soon.

Because this study is concerned with the field of multimedia, this work is almost bound to be multi-disciplinary. Furthermore, as a result of my methodology, I am combining issues from traditional drama, www-design and virtual communities.

I think I have chosen quite a manageable task in terms of the workload of this research and the results it can produce. I admit that I have had to leave out some of the fields where one would logically look in order to find ideas for ITV program development process. One such field is the theory of product develop-

ment in general. I feel that one could find many interesting approaches there, but I will leave this subject to other researchers to explore.

The sources of data for this research topic have become more and more accessible after so many people have begun to participate in building the digital television networks and designing its content all around the world. This research also leaves lots of room for deepening it towards the core of each discipline it has touched. After the ITV-formats have evolved in the future, there will be many new and interesting opportunities to explore this field further.

Perry has some additional conditions for a good topic: "A good research problem should be important on several theoretical and practical grounds." One ground would be the importance of the topic itself. In the case of ITV research, its importance is growing every day, because new digital television networks are being built all the time in many countries. The parties in these ventures strongly believe in the possibilities of interactivity, but not many people have a clear plan how to design and implement these new interactive programs.

The relative neglect of this research problem by previous researchers is also considered a good reason for pursuing the research. I have demonstrated this in the second chapter by addressing the previous research related to ITV and revealing that almost none of it is concerned with the questions one should ask himself when designing an interactive television program. This neglect takes on a new magnitude when it is compared e.g. to the amount of books that describe the methods of screenwriting for film.

The usefulness of the potential applications of the research findings are an important ground for this work. This is probably the most important single reason for myself to undertake this study. Being educated as a film and television producer, I am certainly interested in the aesthetic-, entertainment- and business opportunities that a well made ITV production could generate.

The new opportunities in this field are numerous and I will only mention two: In marketing, (e.g. advertising a new car model), it is vital for the manufacturer to know, which households were interested in a TV advertisement. Up to date, the marketers knew that a certain percentage of the households were interested, but they had no way of identifying or targeting them. Now with interactive television, one single bit that is sent up to the return path can identify the interested household. As a result, the marketers can send better-targeted material to the interested household and leave the others undisturbed. This one bit from the household could be a request for additional information, a booking of a test drive or an entry to a competition.

The second opportunity is probably many times more important. Namely, I

believe that interactive television and its access to the Internet is the tool that will bring "the other half" of the people to the information society. There is a great deal of people who will not consciously buy an access to the Internet, but they are likely to get it as a by-product the same way many people have got their text television.

1.4 Methodology

The main hypothesis of this dissertation is that one could identify a set of questions a person developing interactive television programs should ask himself. The method used to identify these questions was the following process.

First I analyzed the existing previous research and identified suitable strategies (hypotheses) from there. Then I examined a group of related fields and the techniques used there and adapted possible strategies from these fields. From this group of possible strategies I selected the most promising ones. (The selected strategies have been marked with a number that corresponds to their position in the survey form. Those that don't have a number were not included in the survey form.) I then designed a survey form in which the respondents were asked to evaluate the suitability of each strategy in relation to their own experiences. Finally with the help of these responses, I selected those strategies that were most useful in ITV production. Those strategies are presented in chapter 6.

The respondents of the survey form were selected from eight different sources. In addition I used a sampling system called a snowball method. In the snowball method, one respondent identifies one or two others and each of these in turn identify two additional etc. This method was selected because it was not possible to obtain a representative list of persons familiar with ITV program design. This means, of course, that it cannot be argued that the results of this study represent the entire community of persons familiar with ITV production. Nevertheless, since these responses represent the views of 98 persons from distinguished corporations and institutions, they can be considered quite a valuable source of information.

The survey methodology was chosen from a variety of alternative methods. One could have used e.g. action research, the case study method or even predicative methods. The survey instrument was chosen, because this way a largest possible pool of early experiences from pioneers of the field could be tapped.

1.5 Outline of this report

The most common structure for a dissertation is probably the five-chapter structure, which this dissertation also follows with one exception. In the five-chapter structure the first chapter is reserved for introducing the core research problem. Then the research itself is described in chapters 2 to 5 as follows: In chapter 2 one presents the research problem and hypotheses arising from the body of knowledge developed during previous research. The methods used in this research to collect data about the hypotheses are presented in chapter 3. The results of applying those methods in the research are presented in chapter 4. Finally, the conclusions about the hypotheses are presented in chapter five.[10]

This approach is recommended in the Course of Scientific Writing of our school, The University of Art and Design Helsinki UIAH.[11] This structure is also consistent with the international standard ISO 5966 that deals with the structure of research reports. According to the standard, the structure of the report should be following[12]:

1) Introduction, 2) Description of previous research, 3) Methodology, 4) Research results, 5) Reliability and validity, 6) Conclusions, 7) Recommendations and 8) Summary.

The main exception in the structure of my study is that I have combined some of the chapters. So the structure of this dissertation is as follows:

1. Introduction
2. Review of the ITV related research
3. Sources of possible strategies for ITV product development
4. Methodology
5. Analysis of data
6. Conclusions and implications

1.6 Definitions

The goal of this study is to identify a set of questions a person developing interactive television programs, formats or genres should ask himself, in order to arrive at a successful result.

Interactive television, or ITV has different meanings for different people. Some people see the choice from 30 different channels already as interactivity. Some others would require the whole selection of a local video store to be avail-

able in real time, on-demand, through a broadband connection, before calling the concept interactive.

My definition is closer to the first one because of several reasons. First of all, the amount of choice is hardly a measure for interactivity. Earlier research actually shows, that around 60% of the demand of an entire video store can be satisfied with the ten most popular titles at a time and actually there is not so much need for a wide selection.

The connection does not need to be broadband either. If memory sizes continue to grow at the present rate, at some point in the future all films ever made could be stored in the television at the factory and no connection would be needed at all. Furthermore, many commercial applications, (such as direct response advertising) need to get only one bit of information from a household in order to conclude that this address is a hot prospect. So a sufficient return path could be provided with a 2400 baud modem. Therefore one cannot really define interactivity as a function of the bandwidth or return path.

So for the purpose of this study I define an interactive television program as follows:

> **An interactive television program is a program or a service in which the content itself, or the presentation manner of the content or even the presentation order of the content can be affected by the viewer.**

Thus this includes many applications that have been around for a while (e.g. text television or pay-TV). Actually in my definition any feature that the viewer has control over is interactivity, should it mean only adjusting the sound level.

> **By program I mean any type of content or service, should it be an advertisement, a movie, a quiz show, teletext page, e-mail message or even any kind of sound.**

By format I refer to the following definition by Dan Steinbock. Format is a class or type of a television program that is a result of product development process. Loosely the word format means the premise according to which each new episode is designed. The format is defined solely by 1) the program or series itself and by the characters and their actions in it. The development of a format is affected also by the 2) viewing time, 3) the production and presentation technology 4) and the context of the target audience.[13]

By the person who should ask these questions I mean anyone dealing with the development or production of interactive television programs. Most typically he or she would be a scriptwriter, director or a producer, but he might also be a

programmer, visual designer, sound engineer or anyone else of at least 30 different job descriptions that could be associated with interactive television production.

1.7 Delimitations of scope and key assumptions

In my research I have tried to identify some high level strategies adapted from various fields that one could use when developing an ITV program. Obviously this has meant leaving out some other promising fields, from where strategies could have been adapted. An obvious one is e.g. the video game industry.

On the other hand, I have also been forced to use only the very high level strategies developed in each field. Otherwise the amount of the strategies and the length of the survey questionnaire would have been unbearable. For example in the book – 500 Ways to beat the Hollywood Script Reader – alone there are, as the name suggests, 500 strategies which one might also have tried to apply in ITV development.

So I don't claim to have taken into account all the possible fields one might look to for sources of ideas. Nor do I claim to have adapted all or even the best ideas that one could find from the selected fields. Furthermore, my results represent the views of the respondents of this study and there are probably other experts with different opinions from whom one could learn a lot. Nevertheless, in this dissertation a great deal of suitable literature has been examined in order to identify suitable strategies and a great deal of competent experts have evaluated these strategies in the light of their vast experience. Therefore it can be said that the resulting sets of questions do give a solid foundation for any person beginning to develop his or her ITV program.

1.8 Conclusion

This chapter lays the foundation for my dissertation. In the beginning I introduced the research problem dealing with the questions related to ITV production. Furthermore, research questions and hypotheses were developed from a set of sources for possible strategies in ITV development. After this, the research was justified by the criteria for which a Ph.D. work is considered ideal. The definitions were presented and the methodology was briefly described and justified. Finally, the outline of the dissertation was demonstrated and the limitations of the research were given. From these foundations this dissertation will proceed in the following chapters with a detailed description of the research.

2 Review of the ITV related research

In this chapter I aim to provide a review of the research done in the field of interactive television. Further on I aim to demonstrate a research gap in the field of designing interactive TV programs. Along the research review I have begun to develop the hypotheses of my study. The hypotheses I have developed are printed in bold. The ones that were examined more closely and were selected for the survey form are marked with a number that indicates their position in the survey form.

When identifying research related to ITV, I have gone through some of the predictions well-known authorities have made, the academic research done in the field and the interactive television field trials in Finland and selected trials elsewhere in the world. Furthermore, I have looked at the available surveys of consumer attitudes, expert panels and interviews. Finally, I have also looked at the available commercial and proprietary research, to how-to-books and to the recommendations of standard bodies.

Information about the academic research has been collected in seven major ways: through UMI Dissertation Abstracts and the LINDA database, from EBSCOhost – Academic Search Elite, from ACM and IEEE databases, from the WWW and from the literature references of relevant publications. I have researched the UMI dissertation abstracts databases both on-line and on cd-rom format. UMI dissertation abstracts is probably the most comprehensive dissertation abstract database including 1,5 million entries from 1861 to the present, covering over 1000 North American graduate schools and European universities. Every year about 47.000 new dissertations are added to the database.[14]

When searching the WWW, I have screened for academic works among other useful resources. Naturally, always when coming across a new interesting publication, I have gone through its literary references.

Interactive television field trials have been located mainly by using press information and www. Proprietary research has been located mainly through www. These proprietary reports to which I have gained access have been evaluated.

2.1 History of ITV development

Interactive television is actually not a new idea. We are currently living in a time of hype where it seems evident that most of the ordinary household appliances will soon be connected to the Internet. Many forms of interactivity will

be brought to television already this way alone. The previous big hype around interactive television was in the first half of 90s, but there seems to have been some kinds of activity towards interaction in almost every decade.

John Carey reports that even in the 1920s scientists conducted interactive television trials where e.g. one-way video and two-way audio was one of the test formats.[15]

Interactivity has also been tried on theater stages. Espen Aarseth in his book about ergodic literature mentions a play from the thirties, Night of January 16th by Ayn Rand (1936). In the play there is a trial going on and the members of the jury are picked from the audience. The play then has two different endings based on the verdict of the jury of the respective showing.[16]

Theater has also been quite innovative in using other modalities in creating interactivity. Brenda Laurel in her book Computers as theater describes "Tina's and Tony's Wedding", a play from the 1980s. There the audience is invited to follow the actors around from room to room and to touch the props and sit on the furniture.[17]

John Carey describes an innovative children's program from the 1950s, the CBS children's series "Winky Dink and You" (1953-1957). "The interaction was created through the use of a special plastic sheet that children could purchase at local stores and then attach to the TV screen. In the program, Winky Dink, a cartoon character, encountered many problems, such as being chased by a tiger to the edge of a cliff. Children were then asked to help Winky Dink escape from the tiger by drawing a bridge on the plastic screen."[18] According to Carey, one obvious problem with this format was that some children did not purchase the special plastic sheet and simply drew with crayons directly on the glass of the TV screen.

Milestones of interactivity in the 1960s are the AT&T demonstration of a picture telephone at the New York World Fair in 1964[19] and an interactive movie shown in the Czech Pavilion of the 1967 World Expo in Montreal.[20] In the 1960s Marshall McLuhan also noticed televisions quest for audience participation although he did not develop his ideas up to an interactive television. McLuhan concluded that "television is a cool, participant medium". According to McLuhan this is demonstrated e.g. in comparison with radio: "Radio will serve as a background-sound or as noise-level control, as when the ingenious teenager employs it as a means of privacy. TV will not work as background. It engages you. You have to be with it."[21]

The telephone's usefulness as a return path for interactive television was also discovered early. According to Robert Agee from Cowles/Simba Information, a

marketing enthusiast Lester Wunderman is a likely candidate for being the first one to put a toll-free telephone number on a television advertisement in the late 1960s.[22]

In the 1970s, The National Science Foundation of USA sponsored large interactive television trials utilizing interactive cable television for education, community services and worker training.[23]

In the late 1970s, Warner Amex Company did a famous trial called QUBE in Columbus, Ohio. The project architecture was made of a two-way cable television system that was offered to thousands of homes. The system included addressable set top boxes, interactive services, pay-per-view and subscription offerings. Other interactive television systems tried in the 1970s were so called videotext systems e.g. Telidon in Canada and Prestel in Britain.[24] The French Minitel concept has also been one type of a predecessor of interactive television.

The examples of Minitel, Telidon and Prestel encouraged American media corporations to launch their respective trials in the 1980s. The two best known were Viewtron from Knight-Ridder Corporation and Times-Mirror's system that was based on Telidon.[25] A well-known on-line service Prodigy was also born as a Trintex named videotext venture between CBS, IBM and Sears. It was named Prodigy after CBS withdrew from the consortia.[26]

In the first half of 1990s, numerous trials were launched. Among the best known were e.g. Bell Atlantic's Stargazer project and Time Warner's Full Service Network. Other trials in the 1990s were[27]:

- Your Choice TV
- In Touch TV in several parts of USA
- Interaxx trial in Coral Springs
- GTE Cerritos project in California
- Interactive Channel in Denton Texas
- Think Link in Sterling Heights
- Viewer Controlled Cable Television in Denver
- Viacom's and ATT's Castro Valley Trial
- Rochester Telephone company's Video-On-Demand test in New York.

Many trials were also made in Europe. Among those have been e.g. an On-demand Regional Television over the Internet trial conducted by the Norwegian Broadcasting Corporation (NRK)[28].

History provides us with some lessons about the development of interactive television programs. From Winky Dink we can learn that you don't always need

a high bandwidth network with supercomputers in order to make compelling interactivity. Another lesson is, that one should not be overly optimistic. The launch of a wide scale interactive television might fail again at this time.

2.2 Scenarios and predictions by authorities

Many authorities have given thoughts to the way interactive television's natural content will evolve. Although these opinions are not necessarily based on scientific research, coming from persons in key-positions of the industry and research, they provide useful points of views.

First of all we learn that one should not expect too much too soon. On the other hand, we have yet discovered only a small portion of the potential uses of interactive television. MIT Medialab's director Nicholas Negroponte notes, that from a historical perspective, the incubation period of a new medium can be quite long. "It took many years for people to think of moving a movie camera, versus just letting the actors move in front of it. It took thirty-two years to think of adding sound. Sooner or later, dozens of new ideas emerged to give a totally new vocabulary to film and video. The same will happen in multimedia."[29]

Microsoft founder Bill Gates emphasizes the same point: "Imagination will be a key element for all new applications. It isn't enough just to re-create the real world. Great movies are a lot more than just graphic depictions on film of real events. It took a decade or so for such innovators as D.W.Griffith and Sergei Eisenstein to take the Vitascope and the Lumière's Cinématographe and figure out that motion pictures could do more than record real life or even a play."[30]

As someone noted in his seminar speech a while ago, a good product is one that is easy to use in a wrong way (= an unintended way). He took the famous birth of www as an example of this. WWW was actually developed for physicists to exchange scientific information, but it was however so easy to use, that various people adapted it and started to use it for their own purposes. It would thus be wise to leave room for the unexpected use also.

Bill Gates counts also on the imagination of the users: "The really interesting highway applications will grow out of the participation of tens or hundreds of millions of people, who will not just consume entertainment and other information, but will create it, too. Until millions of people are communicating with each other, exploring subjects of common interest and making all sorts of multimedia contributions, including high-quality video, there won't be an information highway."[31]

Negroponte also raises another interesting dimension to the development of

ITV content: information about information, or metadata. "... a new kind of bit is born – a bit that tells you about the other bits. These new bits are typically "headers", which are well known to newspaper reporters who file "slugs" (which we never see) to identify a story."[32] Negroponte predicts this phenomenon will thoroughly change the media landscape. He also offers an interesting and believable example to support this view: "The fact that TV Guide has been known to make larger profits than all four networks combined, suggests that the value of information about information is can be greater than the value of the information itself... .....With a thousand channels, if you surf from station to station, dwelling only three seconds per channel, it will take almost an hour to scan them all. A program would be over long before you could decide whether it is the most interesting."[33]

The third interesting issue Negroponte presents is the paradigm shift in broadcasting. "Key to future of television is to stop thinking about television as television. TV benefits most from thinking of it in terms of bits." By this Negroponte means, that we should begin to think of applications and uses of the television programs, when they are downloaded to a computer instead of a real time broadcast. "Once in the machine, there is no need to view them in the order they were sent. All of a sudden TV becomes a random access medium, more like a book or newspaper, browsable and changeable, no longer dependent on the time or day, or the time required for delivery. Once we stop thinking of TV's future as only high definition and begin to build it in its most general form, bit radiation, TV becomes a totally different medium. We will then start to witness many creative and engaging new applications on the information superhighway."[34]

One should also take into account the importance of communication between people that becomes possible through interactive television. This is well illustrated in a book by John Hagel and Arthur Armstrong, when they talk about the role of connections and communications between people in the growth of the Internet. "This is a lesson that Alexander Graham Bell, whose invention grew into the biggest and best known of today's communication networks, long resisted. Bell was convinced that the primary value of his new device would be to deliver news reports and symphonies to the people. It wasn't until after he was presented with undeniable evidence that he conceded the primary use of the telephone was for people to communicate with each other."[35]

A couple of concrete scenarios for ITV program genres are introduced also in Ilkka Hannula's and Risto Linturi's book Sata ilmiötä 2000 – 2020 (Hundred phenomena 2000 – 2020). The authors predict that Formula 1 types of races

could be broadcast on the Internet in such a way that the viewers could choose to follow whatever driver they wish. Several camera angels would also be available. In another scenario, the authors propose that all the episodes of TV soaps will eventually be sold in one package, stored in a memory cube. The viewers could also participate in the stories of these soaps by taking over one of the roles with the help of a virtual character.[36]

MIT professor Michael Dertouzos predicts in his 1997 published book, that voice recognition will be a common way to control TV within a decade. "Besides e-mailing movies and songs, automation middleware will be used to execute your standing instructions about how you want to be entertained. Speech-understanding modules will let you hold a dialog about what you want to see and hear."[37]

The most valuable lessons from the publications of authorities thus suggest at least two things: The development of the new uses will take time and room should be left for unexpected events and unexpected uses of the new medium.

2.3 Academic research

Out of the dissertations that have been made in the University of Art and Design, the closest ones to my topic are those of Päivi Hovi, Merja Salo, Veli-Pekka Räty, Eeva Kurki and Turkka Keinonen. Päivi Hovi has studied the evolution of Finnish advertising image from the 1890s to the 1930s[38]. Merja Salo studied and compared the pictures used in cigarette advertising and antismoking propaganda in Finland[39]. Veli-Pekka Räty studied computer games and their use in the rehabilitation of multiple disabled children.[40] Eeva Kurki in turn has studied the films of Jean-Pierre Melville.[41] Finally Turkka Keinonen has studied usability and its influence on consumers product preference.[42]

None of these dissertations deals in depth with those ITV-related issues that I am confronting in my study, but all of them have served as valuable benchmarks in the doctoral tradition of our field. In addition to these dissertations, some very interesting ITV research projects are currently under away in the University of Art and Design. The results of them however have not been published to date.

In comparison to the hype that interactive television has generated in newspapers and other media, there has surprisingly been little academic research anywhere in the world. A few main research streams exist. The first one is concerned with the compression algorithms, transport protocols and other technical issues of delivering video-on-demand. The Ph.D. dissertations of Gary Chan, Michael Smith, Javier Zamora, Siu Wah Liu and Jimmy To are among these[43].

The other dominant field inside ITV has been made in the field of instructional television. Instructional television usually refers to an educational application of interactive television, where a portion of the students sit in e.g. a remote classroom following the lecture via two-way video and audio.

2.3.1 Instructional Television

Much of the research done in relation to instructional television is concerned in the comparison of effectiveness in the learning of the students in class and students in remote sites. Among these dissertations are the works of Carol H. Rahstrom, Barbara Siegel and Shirley Jean Peterson[44]. Only two of the dissertations that were found through UMI dissertation abstracts suggest direct hints on how the interactive television programs should be developed. These were Terry Goro's and Gary Jackson's dissertations.

2.3.2 Goro's strategies for interactive distance education

Terry Dean Goro has identified and analyzed the factors perceived as important to the success of interactive distance education.[45] The purpose of his study was to provide distance education instructors, who teach over a two-way audio and two-way video interactive system, a list of strategies or skills that could be applied in the distance education environment to help ensure success. He managed to identify 99 strategies that were placed in five categories: (a) preparing the participant for system use, (b) organizational aspects of the course, (c) teacher or instructor skills, (d) visualizing course content and (e) human interaction.

The most relevant of Goro's findings in relation to my study were the following: The course requirements should be clearly stated and communicated. The instructor should be aware that the distance learning environment is unique and requires the instructor to think visually. Creativity should be a necessary quality of the instructor. The instructor should emphasize the need for interaction with participants at the remote sites to ensure their participation. There should be a considerable amount of interaction between student and instructor. The instruction should also be designed to maximize student interaction through class discussion.

This need of emphasizing the necessity of interaction is also supported by Racine and Dilworth: "One of the first things instructors must learn is that spontaneous interaction via ITV is relatively unlikely. Due to the perceptions about

commercial television that students bring into classroom, interaction over ITV will not naturally occur: it must be designed into the class meeting."[46]

From these factors I have developed the following hypothesis:

The ITV host or instructor must encourage the interaction among the viewers of the program. (2.1)

(The strategies (hypotheses) that were selected for the survey form have been marked with a number that corresponds to their position in the survey form. Those that don't have a number were not included in the form. Thus the question above was selected for the form.)

2.3.3 Jackson's model for developing instructional television programs

Gary Brown Jackson has studied ways to develop instructional television programs in his dissertation A Conceptual Model for Effectively Planning and Delivering Distance Education Courses and Programs in Agriculture. Based on the findings of his study Jackson has developed a three-part model to provide agricultural faculty, extension educators and other professionals with the necessary components, process, and product required for successfully planning and delivering an education course or program. The components of Jackson's model are:

1. incentives that will encourage agricultural faculty
2. planning behaviors required for effectively preparing, organizing and coordinating the program to be provided and,
3. delivery behaviors required for successful implementation of the course or program.

According to Jackson's model, agricultural distance educators require certain incentives that are crucial to effectively planning and delivering courses and programs. Among the incentives are actual inputs and anticipated outcomes. The actual inputs are those incentives that are necessary to begin the course or program planning process, which should be supplied by educational institutions and public demand. The anticipated outcomes are those incentives that are rewards from effectively planning and delivering a course or program. The individual incentives are identified in the following figure 2.
The second and third components of Jackson's model consist of those important planning and delivery behaviors that were identified in his study.

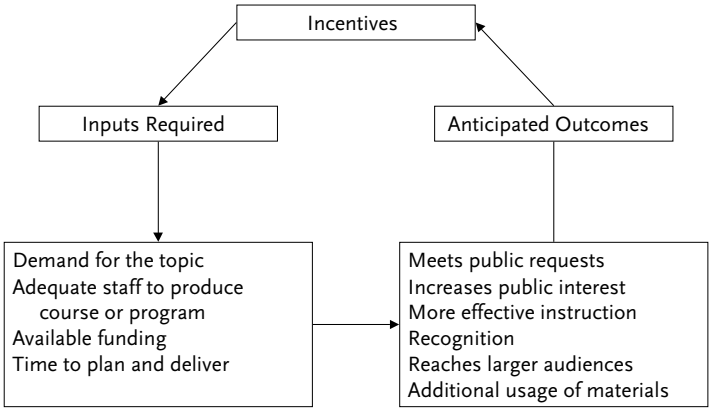


FIGURE 2: A Flow Chart of the Incentives that will encourage Agricultural Faculty, Extension Educators, and other Professionals to plan and deliver Distance Education Courses or Programs.[47]

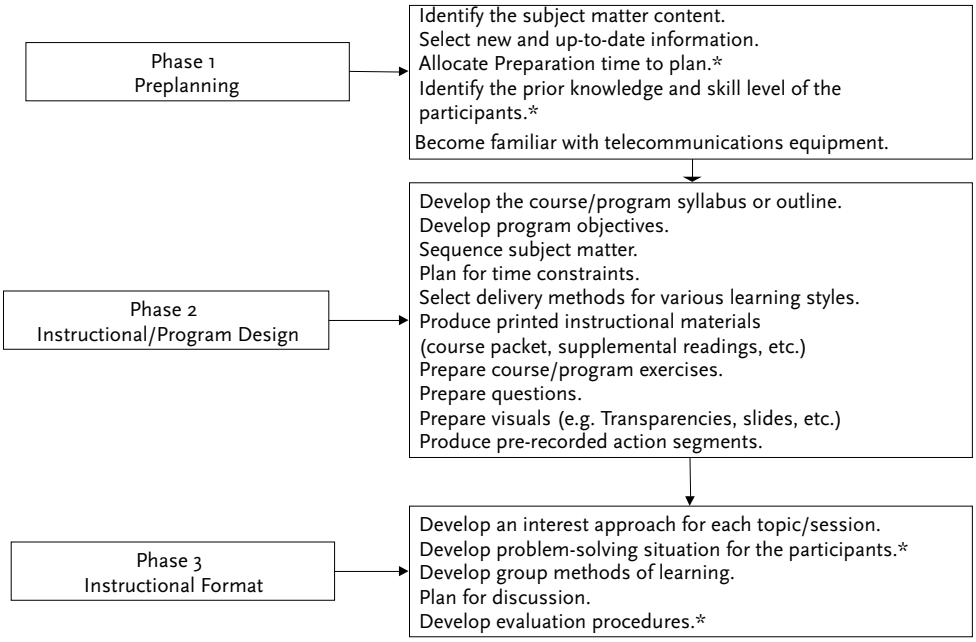


FIGURE 3: Phases of the planning process of a distance education program[48]

The figure 3 identifies the process phases and important behaviors involved in effectively planning an agricultural distance education course or program. The tasks marked with an asterisk are the ones that require special emphasis.

Regarding the delivery behaviors, Jackson identified the process phases and important behaviors involved in effectively delivering an agricultural distance education course or program. They are listed in the following figure. The ones marked with an asterisk were again the ones that require special emphasis.

In Jackson's complete model, the product follows the development phases for effectively planning and delivering agricultural distance education courses and programs. The product is comprised of effective delivery of instruction and dissemination of information, opportunity of reaching larger audiences, recognition and increasing the public's interest in a particular topic.[50] Jackson's com-

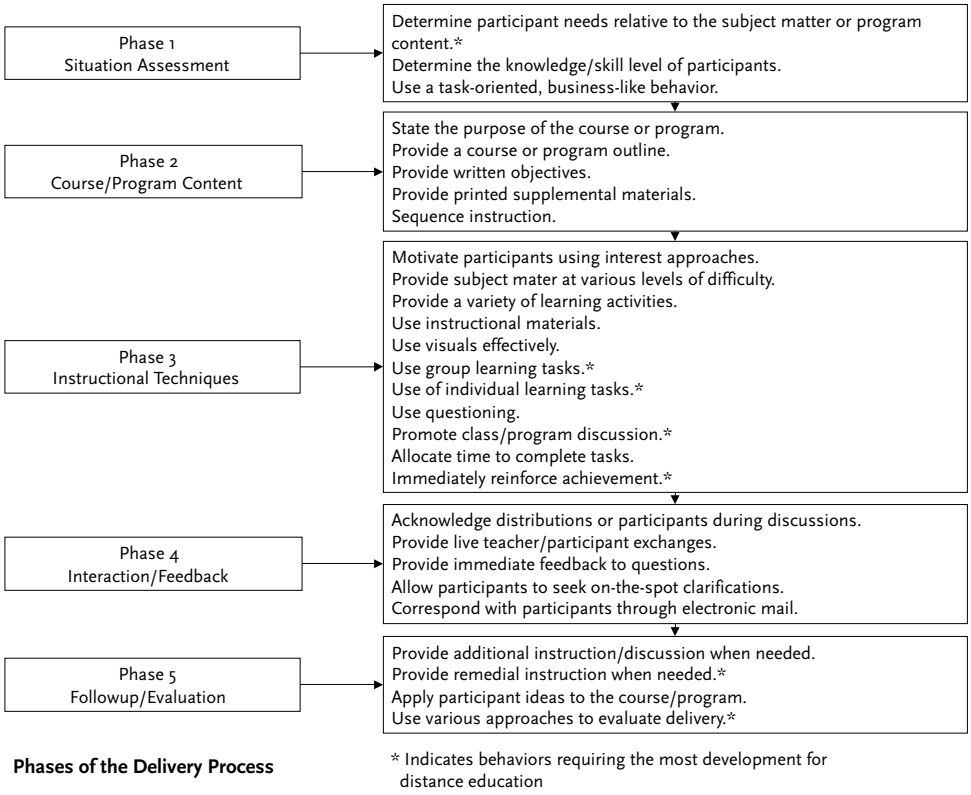


FIGURE 4: Phases of the delivery of a distance education program[49]

plete model and its components, process and product are represented in the following figure.

According to Jackson, agricultural faculty, extension educators and other professionals who utilize this model would be more competent in planning and delivering effective distance education programs and courses. They would also have a clear understanding and perspective of the role of an agricultural distance educator, the values that define effective planning and delivery of distance education programming, and the way to more efficiently address the needs of contemporary society.[52]

From these factors I have developed the following hypotheses:

One must determine the viewer needs relative to the subject matter of program content.
One must provide both group and individual tasks to the viewers.
One must provide live host / viewer exchanges.
One must apply viewer ideas to the program content. (2.21)

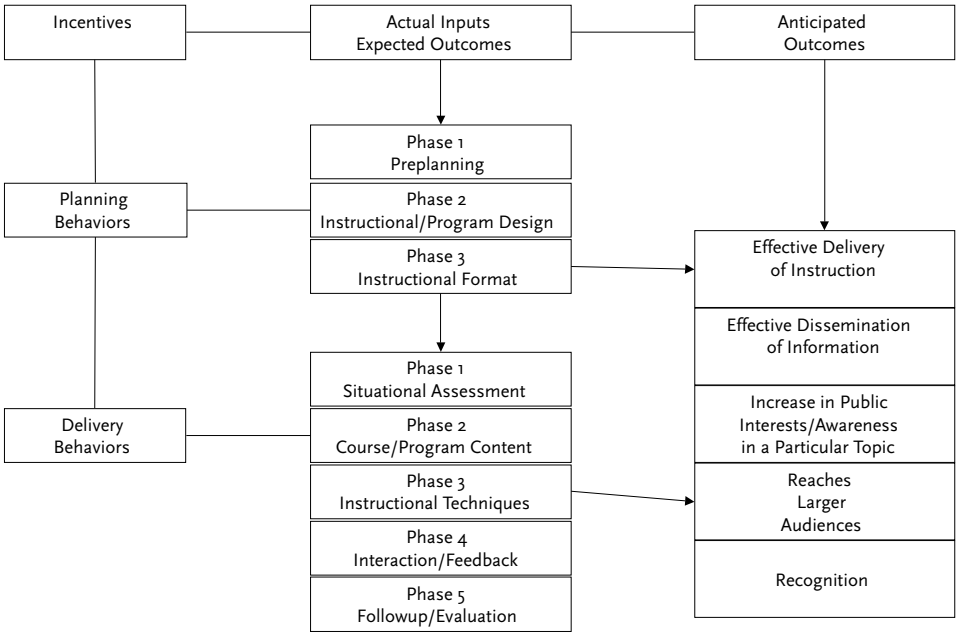


FIGURE 5: A Conceptual Model for Effectively Planning and Delivering Distance Education Courses and Programs in Agriculture[51]

Karen Thomas has discussed the design of a course taught via interactive television. According to her, using this medium requires a systematic approach to course design, materials design and development, equipment, delivery, remote site organizations, computer interaction with ITV, and computer-delivered presentations. Her paper concentrates mainly on the visual issues in giving a classroom presentation over video to a remote location. According to Thomas, one should put emphasis on the visuals of the presentation (e.g. use of simple color visuals, using photographs when possible, keeping letter style simple and using keywords and phrases). In addition to visual issues she has guidelines for using transparencies, copy stands and PowerPoint presentations. The issues of interactivity are not so much considered in this paper.[53]

Thomas's ideas have been developed further by Forrest Parkay, Merrill Oaks and Donald Peters in their article Promoting Group Investigation in a Graduate level ITV Classroom. According to the authors, the instructors face the following four challenges in providing instruction via ITV: The teaching environment is inflexible. It is difficult to create a classroom community and group cohesiveness. It is difficult to encourage student involvement and thoughtfulness. The technical difficulties also present a challenge. The solutions of the authors include instructions in relation to the classroom size, furniture, microphone placement, acoustics, HVAC, lightning and monitors. Strategies for designing the ITV-content itself are not presented in the paper.[54]

Mukasa E. Ssemakula has addressed some further issues in transforming a traditional course into a long distance course. According to Ssemakula, a successful distance learning course should not be like a commercial television broadcast, but rather a multimedia presentation including a mix of the following characteristics[55]:

- Active involvement by students
- A variety of presentation media with planned change elements to help retain student interest
- Planned silences to allow students to think
- Animations and simulations where appropriate
- Actual physical models of reasonable size if possible
- Examples of practical applications

2.3.4 *UI research in ITV environment*

Digital Media Institute of Tampere University of Technology, Hypermedia laboratory of University of Tampere and the communications and multimedia laboratory of Helsinki University of Technology are working on a joint project called Future TV. The industry partners of this consortia are Nokia, YLE , Alma Media (MTV3), Helsinki Media, Sonera, Helsinki Telephone, Sansibar and Veikkaus. Among the researchers of this group have been Chengyuan Peng and Petri Vuorimaa, who have published a paper in designing and implementing a user interface for interactive television. The following figure 6 illustrates the basic structure of a Java user interface for ITV developed in the project.

According to the authors, one of the results of this project has been a successfully developed demonstration of user interface for interactive television.[57] User interfaces for Video-on-demand applications have also been studied by e.g. Ivan Bretan and Per Kroon from Telia Research[58].

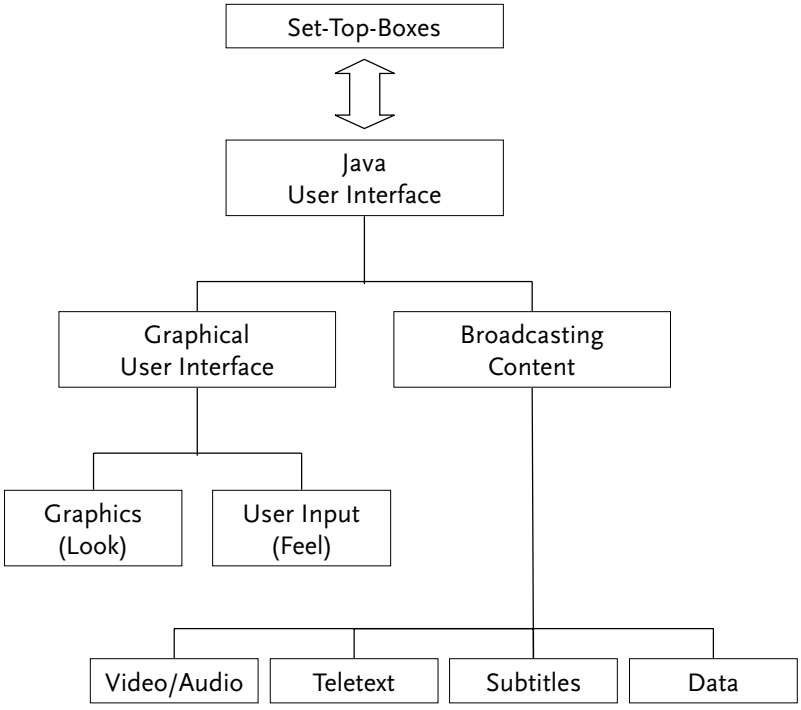


FIGURE 6: Basic Structure of the User Interface in Digital TV[56]

2.3.5 *Movie recommendation*

Several studies have been made about the systems of recommending viewers Movies for their video-on-demand viewing. Joshua Alspector, Aleksander Kolcz and Nachimutru Karunanithi have evaluated the use of feature-based approaches to user modeling with the purpose of creating a filtering agent for video-on-demand application[59]. Sumit Ghosh, Manisha Mundhe, Karina Hernandez and Sandip Sen have presented the architecture and implementation of an agent-based movie recommender system[60].

Will Hill, Larry Stead, Mark Rosenstein and George Furnas have studied the possibility of drawing movie recommendations from virtual communities. In addition to the actual recommendation system, the authors have proposed some interesting approaches for developing a suitable interface for this type of virtual community. One interesting notion is e.g. that the recommendations should ease and encourage rather than replace social process[61].

2.3.6 *Value chain development of interactive information network*

Markus Kajanto has studied in his dissertation the value chain development of the interactive information network industry. He has concentrated to identify

1. what external factors might influence the industry and its value chain,
2. how the value chain is unfolding and
3. what are the possible strategic outcomes for the industry.

In his analysis about the external factors affecting the interactive information networks industry value chain development, he names content regulation, service de-regulation and economic growth to be important. Economic growth and service de-regulation will have a positive effect in the penetration of the networks. Social and political acceptance can have very negative effects on the development of the industries, if e.g. the citizens become worried about undesirable content.[62]

Regarding the value chain development, Kajanto concludes that customer ownership will be a key resource and a dominant competitive driver for the interactive information networks industry in the foreseeable future.[63]

From these factors I have developed the following hypotheses:

One must strive for the customer ownership when developing an ITV program. (5.9)

One must secure access to a content base as large as possible e.g. by joining forces with a media company. (6.10)

Kajanto names the availability of content an overall driver that extends across all strategic outcomes for the interactive information networks industry. "The content has to be available both in quantity and quality."[64]

In summary, the academic research done so far in relation to interactive television and its program development does not go very deep into establishing how one could develop successful programs. From this standpoint there is clearly a need for a study in this topic.

2.3.7 Selected other academic research projects

Ryohei Nakatsu, Naoko Tosa, and Takeshi Ochi have conducted research on interactive movie production by applying interaction technology to conventional movie making techniques. The researchers have developed for this purpose a prototype system that consists of a script manager, scene manager, interaction manager, speech recognition handler, gesture recognition handler, image handler and a sound handler. The gesture recognition software detects several characteristic points of a human figure based on an image captured by a camera. As a result of the project the research had identified the following areas for further research: One should find ways to take into account different numbers of interactive users (e.g. one or more simultaneous users). Secondly, one will have to consider whether to give the users an avatar or not. Thirdly, one will have to consider the frequency of the interaction possibilities provided and the fourth, one will have to consider which modalities to choose for the viewers to give their input.[65]

2.4 Field trials in Finland

Interactive television has been researched in several major efforts in Finland. The broadcasters and tele-operators have carried out their tests and pilots from mid 90s. Most of these tests were done under the umbrella of KAMU (The Finnish Multimedia Program). KAMU was a joint research venture of the largest media companies, equipment manufacturers and tele-operators in Finland.

It consisted of 27 projects and around 300 persons were directly involved with it. I will describe seven of those 27 projects that are relevant to this study. These were: Galilei and the Lost Toys, Interactive TV-programs, Broadband Village, MediaNet, Helsinki Arena 2000, IMOD Omavisio and Broadband Services in CATV-network. The projects are not fully independent from each other, but instead somewhat overlapping e.g. so that one project might have been content for another.[66]

Private corporations (in addition to the State Technology Fund Tekes) financed a major share of the research and thus not nearly all of the results have been published. The Final Report of KAMU though describes some parts of the aims and the results.

2.4.1 Galilei and the lost Toys

Galilei and The Lost Toys was a concept where an animated dog talked in real time with the children calling to the station from their homes. The basic concept was that the dog would get into trouble and the child had to advise the dog how to proceed.

The KAMU report does not reveal a great deal about the results of this project. Only the difficulties in interviewing children are explained. "It is very hard to study the motives and the background attitudes of children. One gets easily yes or no answers, but why questions are difficult."[67]

Having personally participated in the selling of the Galilei concept in foreign markets, I can tell that one important finding was, that it is extremely difficult to sell to broadcasters a television format that requires a substantial investment in the hardware needed to produce it. In many cases the buyers would have been interested in buying the program had it not required buying a sophisticated Silicon Graphics workstation to produce the real-time animation.[68]

From these factors I have developed the following hypothesis:

One must develop the program to a platform that is already widely in use among broadcasters.

2.4.2 Interactive TV-programs

Nokia and the Finnish Broadcasting Corporation Yle produced an interactive television program around the TOP-40 music program, where the viewer was given a choice between e.g. an interview of an artist or a video. The concept was

more a NVOD than VOD type, because all of the options were broadcast and the viewer simply chose which one to watch.[69] (NVOD is a concept where one sends several pieces of content at the same time to numerous households, and the viewer chooses one of them. This is opposed to Video-on-demand, where the selected video is sent only to the individual household that ordered it.)

According to the KAMU report, the main result from the trial was that the poor picture quality really upset the viewers. This disturbance aside, the format was considered to be interesting and well functioning and it gathered attention in several tradeshows abroad.[70]

2.4.3 Broadband Village

Broadband village was a project in the Ylöjärvi apartment fair run by Nokia research center, Tampere Telephone, Omnitele and ICL. Fiber, ATM, Cable TV, ISND and wireless networks (GSM and DECT) connected the houses in the area. In the beginning, a computer was used as the end-terminal. Later a set-top box replaced it. The services that were available to the participants were telecommuting, distance learning, home shopping, communal services and networked games.[71]

The most important published findings from this trial are that the households utilized the network on average 2-2,5 hours in a day. Most popular services were banking, entertainment and information rich www-pages, internal services of the village, networked games and communication services. Although the emphasis of the utilization of the network was on leisure time, the participants considered the basic service to be important. Finally it was found out that it is extremely important to make the network as easy to use as possible. E.g. even the simplest software installations were in many cases overwhelming for the participants to perform.[72]

From these factors I have developed the following hypothesis:

One must make the participation as easy as possible (so that it does not require e.g. any software installations).

2.4.4 MediaNet

The largest tele-operator in Finland, Sonera (at the time called Tele), began a trial in 1995 called MediaNet. The trial connected users via ATM backbone and provided them audio and video. Types of available content services included educa-

tion, news from MTV3 and business information. The goal of the project was to find out what kind of services would Internet users find useful.

The trial proved to be quite successful, since during the first six weeks, more that 200,000 users downloaded the software needed to participate in the trial.[73] By the beginning of 1997, over 2 million people had used the MediaNet Pilot service. Among the most important findings (that have been revealed about the trial) are that e.g. Sonera and its customers found valuable such features as easy uploading of the material for content providers. Another important feature is the feedback from customer usage of content to the providers. Third important aspect is that the technology should be hidden from the end-user, e.g. so that the user does not actually see, what services come from Sonera's facilities and what comes from the content providers site.[74]

From these factors I have developed the following hypothesis:

One must incorporate a system for collecting feedback from viewer usage of the ITV program. (2.20)

2.4.5 Helsinki Arena 2000

The Helsinki Arena 2000 project began as the ATM/IP-multimedia trial. The goal of this trial was to design, test and construct a broadband network based on ATM and Internet protocols.

In addition to the technical pilot, a content pilot was also conducted under the name of broadband service trial. Its goals included to test the use of broadband networks, evaluate the technical requirements a network will face, test the business model and evaluate the usability of applications and services.

No specific results have been published, but the report states that these trials have had a significant impact in the development of Helsinki Arena 2000 -project.[75]

The Arena 2000 project has been going on after the conclusion of KAMU. The current objective of Arena 2000 is to build the virtual Helsinki into networks by year 2000. The Helsinki Arena 2000 will offer the inhabitants in the Helsinki area a user-friendly, advantageous and efficient access to digital services and connections.

Helsinki Telephone Corporation has received international acclaim for Helsinki Arena 2000. The project was one of the four nominees selected from 50 applicants in the category "The Most Innovative Broadband Development Strategy" in the Financial Times Global Telecoms Awards competition.

2.4.6 IMOD – Omavisio

The goal of IMOD (Interactive Media-on-demand) project was to develop a broadband environment and a development platform for interactive television. IMOD allowed users to choose various digital services via a set-top-box. A special feature in IMOD was the possibility to select a user interface according to ones own preferences.

The most important published products from this trial include Cabinet – a cable data service, Internet ++, a real time broadcast quality live picture transfer system and Hotel Internet, an Internet system for Hotels.[76]

2.4.7 Broadband Services in CATV-network

This trial was done in connection with the digitalization of Helsinki Television's cable network in Pasila. The goal of the project was to test and develop mainly the infrastructure and hardware required in the provision of digital services via cable television network.

The trial offered various services also including news-on-demand, weather and sport. Furthermore, local services like data on the businesses in the district were offered. No actual results from this trial either are published in the KAMU report[77]. In seminar presentations the representatives from Helsinki Television have revealed that by far the most popular service has been the high speed Internet connection to overseas IP-addresses.[78] Interestingly, the convergence of the Internet and interactive television (or Set-top-boxes) has been brought up in several recent academic articles, e.g. by Takeshi Shirai et al[79] and by David Shrimpton, Chris Dobbyn and Thomas Casey. The latter authors argue that Internet and www will play a part in interactive television because the requirements of a browser and a set-top-box are similar and developments in each of these areas often follow near parallel lines[80].

2.4.8 Helsinki Telephone Company test in Pitäjänmäki

In addition to the KAMU tests, Helsinki Telephone tested a video on demand system in Helsinki Pitäjänmäki during the mid 90s. The main results of these tests were that at that time the access network technology was far too expensive and the financiers were reluctant to carry the risks of the required investment. Thus the scenarios of service providers had been too optimistic.[81] Another problem Helsinki Telephone had reportedly encountered was the reluctance of the

Hollywood IPR (Intellectual Property Rights) owners to sell their content to small scale tests.

2.4.9 Conclusions of the trial results in Finland

Even thought a great deal of tests have been conducted in Finland, they offer little knowledge to the public about how one should approach the task of developing interactive television programs. There is thus clearly room for a study on this perspective.

2.5 Selected other field trials

As stated in chapter 2.1 interactive television was also tested abroad in numerous trials in the early part of the 1990s. In the following, I will present the most interesting results among those that have been publicly available.

2.5.1 TCI's Viewer-controlled Cable Television trial in Colorado

A test called VCTV (Viewer-controlled Cable Television) test in Littleton Colorado by Tele-Communications Inc. (TCI) was truly made with a common sense approach. The test was set up decidedly low-tech. In the service creation it used humans instead of high priced servers. Its only purpose was to find out what viewers want and what they are willing to pay for it, when the interactive television is ready. Evan I. Schwartz describes the test arrangements in his article in Wired in a rather amusing way: "... Fran is the video-on-demand gopher for the sleepy burb of Littleton, Colorado, entrusted with keeping her eye on a big computer monitor hanging from the ceiling. When an order for, say, Coneheads, comes in, she rushes to the giant videotape library on the far wall, retrieves the correct title, and hurries to insert it into the appropriate place in a gleaming bank of VCRs."[82]

This test that began in July 1993 included 300 households. According to Schwarz, the main result from it was, that people would order two and a half videos per month. At that time it was about twelve times more that the most equivalent option at the time (video in pay-per view). Interestingly, despite these quite high figures, the reporter Schwarz argued in his article, that there would be no demand for video-on-demand. He based his view on the fact that VCTV had to do quite a lot of marketing to find the 300 participants. Sales reps were

sent to make door to door sales calls and a direct marketing campaign had to be run.[83]

2.5.2 Bell Atlantic Stargazer -project

Bell Atlantic did a consumer acceptance test called Stargazer in Fairfax County, VA. This test has probably generated some of the most favorable results from consumers ever.

The Bell Atlantic test actually includes two different phases. The first one was a 300 household technical test lasting from April 1993 to March 1995.[84] The second part is the more widely published Stargazer test that included 1000 homes and concentrated in consumer acceptance and preferences. This test started in the beginning of 1995 and lasted to the end of 1996.[85] Kiernan Taylor describes the Bell Atlantic tests in Communicationsweek "being considered successful by many accounts."[86]

The Bell Atlantic test started two years later than TCI 's test in Littleton. This time there were no difficulties in marketing the service. Bell Atlantic sent out 16,000 direct mail brochures and it got over 1,100 responses, which means a response rate of 7% in a field where 2-3% is usually considered excellent.

The test offered more than 655 on demand program choices each month with features like pause, rewind and fast forward. The product mix included about 200 new, recent and classic movies. It had more than 120 episodes of television sitcoms, dramas and talk shows and news specials and 45 sports, comedy and music performances. In addition, it included 170 special interest programs (history, culture, sports, fitness, home and family) and approximately 120 children's programs.[87]

The Stargazer concept was realized with ADSL technology that uses an ordinary telephone line (copper pair) to deliver the television signal. The participants received a monthly Stargazer Magazine that listed the program selections, program descriptions, lengths and ratings as well as other information about the shows and the use of the Stargazer terminal.[88]

The test was proprietary and not all of the results are published, but one of the managers of the test gave some information about it in a speech at Davic Developers Conference convention in San Jose. According to Marco Rustici, the participating households were very happy with the service and this was demonstrated in a variety of ways. The families often showed the system to visitors in their houses and the churn rate was very low and in most cases a result of moving to another district.[89]

Bell Atlantic reported many interesting results also by themselves in a press release they had labeled Mid-term Results for BA's VOD Trial.[90] One of the most important results was surprisingly similar to TCI's results: The video-on-demand service had a buy rate of 12 times compared to traditional pay-per-view. Bell Atlantic concluded that the result even suggests that video-on-demand has the potential to challenge video rental as the top revenue generator for Hollywood studios.

Other significant results reported in the mid term card were e.g. that new release movies were the most popular content selection, followed by children's programming and library movies. On average, 73 percent of the subscribers purchased at least something in each month. The buy rate for a top movie title was 30 %, which is considerably more than in e.g. pay-per-view systems. On the other hand the buy rate for all videos was only slightly higher (3.3 videos in month) compared with the average video rental in a household with VCR (3.2 videos per month).[91]

Despite the success of the trial Bell Atlantic announced only a few months after the promising mid-term report that it will shut down the Stargazer trial. The company announced that "it had reached the point of diminishing returns in terms of what we can learn from a VOD field test using copper wires."[92]

2.5.3 Time Warner's Full Service Network

Perhaps one of the most hyped interactive television trials ever made, was the Time Warner's Full Service Network (FSN) trial in Orlando. The project generated a lot of publicity and hype but it was also in deep trouble for most of the time that it existed.

Some results are published in a case analysis written by the former Director-News of FSN Peter M. Zollman. Mr. Zollman had a non-disclosure agreement with the Time Warner Company and he has honored this agreement when writing his case, so the most interesting results are not made public in this report. Some very interesting things do come up however.

The trial was indeed a very difficult one. "Prospective subscribers were skeptical at first. They could not believe that Time Warner would put the newfangled "television of the future" in their homes at no extra charge, other than for transactions like ordering a pizza, shopping or watching a movie." The technical difficulties were also a surprise. The set-top-box was an estimated $5000 Silicon Graphics Indigo computer with extra software, chips, memory and a Scientific Atlanta cable converter. "Six months after the launch of the trial FSN was in

fewer than three dozen homes. It took a massive installation blitz at the end of 1995 with installation crews up to eight "cable guys" at each home and dozens of marketing representatives and FSN executives pinching in as customer trainers before the company announced the completion of 4000 installations."[93]

Despite the difficulties, useful information was also collected. The FSN offered ten different areas of interest to the viewers. The venues were: movies, news, sports, "controls" (= a channel lock, VCR setup, personal favorites settings, etc.), games, services (= a restaurant guide, classified ads, etc.), shopping, smart Living (videos on health and education), custom TV (on-demand reruns of soap operas, etc.) and music videos.[94]

The two most popular FSN services were Video-on-demand and a news service called The News Exchange. According to Zollman, the News Exchange was very popular among the viewers. The News Exchange was a video-on-demand type of news service, where the viewers had a choice of more than 100 newscasts, news clips, headline packages and long term programs.[95]

Zollman quotes the FSN executives proclaiming that when they began charging for the News Exchange in some FSN homes in late 1996, it was the first time in the history of broadcasting that people were paying specifically for TV news on a subscription basis. The fees were $1.95 per month in some homes, $3.95 in others and some received it for free as a part of the FSN control group. Zollman quotes FSN content vice president Hal Wolf telling that The News Exchange buy rate exceeded 10 percent, which would have been an outstanding number for a niche premium cable service.[96]

According to Zollman, movies on demand were by far the most popular service on the Time Warner's Full Service Network trial in Orlando. The viewers had a choice of 80 to 120 movies at any given time. The movies could be fast-forwarded, re-wound or stopped. The price range was from $4 to $5.95. Zollman tells that the viewers "bought with passion".[97] Some homes had bills of more that $100 per month just for movies. Based on these results, Zollman predicts that sooner or later video-on-demand will put movie rentals out of business.

Time Warner claimed that the Full Service Network trial was successful but the industry has not been convinced about the results. The ACTS Bulletin[98] estimates the total cost of the trial having been up to $100 M. The test encountered many technical problems, which resulted e.g. in a slow penetration of the terminals in the test site households. In addition the ACTS Bulletin states it to be common knowledge that the key problem with interactive services such as video-on-demand is an economic one. The bulletin expects customers' willingness to pay for on-line movies to be way below a level that would make the con-

struction of a broadband network economically viable. Time Warner announced in April 1997 that it would close its trial by the end of the year.

2.5.4 YORB

The NYU Interactive Telecommunications Program and NYNEX have developed an interesting combination of television and on-line chat in New York. The Yorb is a graphic presentation of New York neighborhood in the local cable television. The viewers can call in to the show and all the other viewers can hear everything they say over the phone. One person at a time can act as a pilot of the program and he can direct the location of the show by wandering around the neighborhood.[99] Later, a chat bar was added to the screen. As a result, even more persons could participate in the communication by typing their comments via the Internet.

2.5.5 Characters and dialogue in interactive television demonstrations

In addition to the much-hyped large-scale tests individual artists have made some interesting experiments. Canadian video artist Luc Courchesne has designed an interactive video program called Landscape one[100]. In the production filmed on Betacam, the user finds himself in a park where he meets various people. When the user confronts any of the persons in the production, he is given two to three choices for a line of dialogue. The characters then respond in relation to the viewers choice. The dialogue usually has meanings on at least two different levels. At the upper level it is normal small talk and at the deeper level it is often a seducing invitation to a relationship with the character.

This artwork is surprisingly immersive from the point of view of the user. This immersiveness has been gained with relatively simple technical solutions. Instead, the artist had planned the characters and dialogue very skillfully. This is in my mind one project that clearly demonstrates the power of traditional storytelling tools in an interactive environment. A similar project with the exception that the player can select from various points of views has been reported by Guy Vardi and Roni Shaliv.[101]

Another example of developing the dialogue and the character is demonstrated in a project called Bouncy.[102] Bouncy is a real time animated ball that has the character of a dog. The user gives his input via a microphone and a dataglove. If the user e.g. calls for the dog, the ball is seen approaching the viewer bouncing happily on the screen. The dog is programmed to classify the input

sound in shouting and in normal voice. The hand movements are classified depending whether the user raises his finger or not. These classifications form a matrix from where the dog can interpret whether the user is appraising him (normal voice / hand flat like in padding) or is angry with him (finger raised / shouting voice). This demonstration clearly gives hints on how emotions can be programmed and interpreted via dialogue in ITV programs.

2.5.6 Conclusions of the field trials in the USA

One of the most convincing results of the field trials is the popularity of video-on-demand. Video-on-demand has in fact been the killer application (an application that will generate the revenues for the businesses) in many interactive television plans. As noted earlier, its popularity has been tested in numerous tests. The results from at least three tests that have been published (TCI's VCTV test in Littleton, Bell Atlantic's Stargazer in Virginia and Time Warner's Full Service Network in Orlando) support the prediction that VOD will indeed be popular.

The published results of interactive television field trials however, do not give many hints on how one should develop the programs and content for interactive television.

2.6 Surveys of consumer attitudes

In addition to the earlier described seven projects of KAMU, a lot of research was done in KAMU's Consumer Research Project in order to research the user perception and attitudes.

The Consumer Research Project has published three reports of its findings:

1 Consumers and Multimedia Services
2 New Media through the eyes of Consumers and
3 Internet in the everyday lives of Finns.

The first report, Consumers and Multimedia Services, reports the KAMU studies on the consumer's use of network services, on consumer's perception of media and services and on the needs and motives of consumer's usage of the networked multimedia. Further on, it reports studies of the usability of the equipment and services. It also reports studies of the consumer's willingness to pay for the services. Studies on the effect of consumers' attitudes in penetration

of the networked media are also reported. Finally the problems or obstacles in the use of networked media and studies of the effect that the new multimedia has in interpersonal communication are reported.[103]

The research was done in Ylöjärvi apartment fair area near Tampere mainly in 1996 and in the early parts of 1997. The research methodology was qualitative and it consisted of eight rounds of interviews covering five different cases of networked multimedia; Broadband Village, Verkko-Aamulehti, Media-On-Demand, Galilei and the Lost Toys and Mobile Multimedia Services. Altogether 156 persons were interviewed.

Most of the research findings are concerned with the consumer's attitudes and views about the services and thus do not offer a great deal of ideas on how to develop interactive television programs. The research shows however, that the interviewees had a positive attitude towards moving pictures and video in networked multimedia. They also perceived video-on-demand as an interesting service. The interviewees also related television with leisure time in comparison to a computer that is related more to a working environment.[104]

The structured interviews made in the Consumer research project reveal that video-on-demand was perceived as a popular application among the Finnish interviewees. The interviewees named, as biggest advantages, the possibility to watch the film whenever it suits oneself and the fact that one does not have to travel to get the film.[105]

The second report, New Media in the Eyes of Consumer's, reports studies in consumer acceptance of Internet browsing, e-mail and their relation to television. The report states that the use of e-mail in television can be quite a social experience. It names, as an example, a situation where the family altogether sends e-mail greetings to far away relatives.[106] The research also concluded that the Internet connection does not change the viewing habits. The consumers continued to view their favorite series and news as before.

There seems to be a small contradiction with the previous studies and the third report, Internet in the everyday lives of Finns. The third report states that "The respondents agreed least to the statement that Internet would be used more often together if it was used through television. Thus the Internet connection in television does not appear to change the experience to a more social one even though it has been suggested in some studies."[107] The difference in the results of these two studies is probably explained by the different methodology. The method in the third survey included a telephone survey and a www-survey, which both gave similar answers to the use of e-mail through television. It is however, yet difficult to conclude which one of the studies is right.

Aside from the Finnish research, numerous studies of consumer acceptance of interactive television have been done abroad. During the hype in the beginning of 1990s, numerous surveys of consumer acceptance of interactive television were made. These include e.g. the ones done by New York Times and CBS[108], by Interactive Television Report[109], by Broadcast and Cable, by Jeffres and Atkin[110] and by Advertising Age[111].

The weaknesses of using a survey method in testing consumer acceptance are well known. Chris Forrester points out some of them in his study about Digital Television. The first weakness is that consumers – when asked about television viewing preferences – often tend to give answers that they think the interviewer wants to hear or what they think they ought to give. Forrester mentions, as an example, that consumers will rank educational and cultural programming highly in any list of program genre preferences. In practice however, automatic audience measurement systems show that this type of programming has a very low popularity.[112]

The second problem brought up by Forrester, is the that way questions are formulated severely affects the way people answer. According to Forrester, this comes up e.g. in the Pace Report (a well-known consumer study about interactive television). The study revealed, that in fact just over a third of the respondents knew what digital television was.[113] Or as Ken Van Meter, a director of Bell Atlantic Interactive put it in a multimedia fair in 1994: "This can be compared to a situation, where one had asked people, what types of features would they like to have in their copy machine before the copier was invented."[114] The argument is that respondents can not really comprehend a concept they have not been introduced to and thus cannot provide useful answers. Lately the argument has lost some of its power due to the fact that nowadays at least the people who are using www and the Internet could easily imagine the interactive television experience. However, even though these tests would prove to be reliable, they do not offer a great deal of insight into how to design and produce the interactive television programs.

2.7 Expert panels and interviews

Several corporations specialize in producing interactive television related research by amalgamating expert opinions.

A research corporation, Cowles / Simba Information, published a study entitled Interactive Entertainment 1998 by Jennifer Doyle.[115] The report is based on interviews and examining the revenues generated by leading software publish-

ers and online game services. The report includes also forecasts for the future demand of the services.

The report states that gauging consumer market demand is the primary problem for the interactive television developers and content producers. It is unsure how long it will take for users to become comfortable using the new medium. On the other hand the researchers believed that the forthcoming generation of Internet devices hold a great deal of potential.[116]

The Internet television's advantage over its predecessors is the depth of the content available. Internet television content comes from tens of thousands of servers attached to the Internet in the form of text, sound, still pictures, animation and even movies. At the same time, the pitfall of this content is that it is difficult to find and its geared for PCs that have high resolution monitors and keyboards. The TV viewers are also accustomed with nonstop, full motion video and sound but the Internet television resembles more the waiting times, crashed machines and new navigation languages that are familiar from the PC environment.[117]

The issue about customer ownership (that was brought up already at Markus Kajanto's dissertation) is also named as one of the most important assets of cable-TV-corporations in Tom Rhinelander's study for Forrester Research. "In a competitive market where operators stitch together bundles with partners, the customer database becomes the MSO's (Multiple Service Operator) most valuable asset. Enhanced billing systems from Kenan Systems/Lucent and CableData will keep track of customer preferences, bills and usage patterns." Rhinelader points out that e.g. AT&T is creating a 48 billion dollar merger with no 2 U.S. cable operator Tele-Communications Inc. to connect itself to the end-customers.[118]

2.7.1 Demand for local content, new advertising paradigms

Josh Bernoff and his colloquies predict in their report HDTV Dreams, SDTV Realities for Forrester Research, that Digital television will create a market for local programming. Local stations will partner with newspapers, radio and Internet sites to fill multiple-choice broadcasts. "SDTV's wide screen and surrounding sound and MPEG-ready digital picture are ideal for couch-based gamers."[119]

Since the amount of channels is increasing, the audiences are splintering. Bernoff suggest that some advertisers will begin to seek frequency instead of audiences and will buy thousands of spots in bulk from automated ad servers

in the same way that Double Click is now operating on the Internet. Bernoff even suggests that computerized production would allow targeted product placement so that Frazier's dad would drink Pepsi for L.A. viewers and Coke for New Yorkers.[120]

2.7.2 Does MP3 set the pattern for Video-on-demand on the Internet?

Michael Putnam predicts in an analysis he has done for Forrester Research, that the on-line music format MP3 is setting the pattern on how video-on-demand could be realized over the Internet. Putnam and his colloquies did the research by interviewing 50 companies selling text, images, music and software on the Internet. The researchers argue that the penetration of the Internet, the growth of the bandwidth and the new devices and platforms will in fact force the content owners to adapt the Internet distribution mechanism, because if they do not, software pirates will distribute their content. Their predictions for the year 2003 include that the number of on-line households will increase from 33 million to 60 million and the number of households with broadband access will increase from 0.7 million to 27 million. These developments included with new innovations like Diamond Multimedia's Rio portable MP3 player will force the media companies and content owners to adopt new strategies.[121]

The researchers predict that video accommodation will happen after 2002. Even though today cable operators restrict streaming to 10-minute segments, they will be forced to abandon this policy. "Competition with DSL providers will push cable companies to allow streaming movies and large file downloads." Furthermore, the researchers predict that studios like Disney and Paramount will offer streaming video-rentals concurrent with DVD-releases. So in fact by 2003 all types of media will be available for downloads.[122]

The researchers advice to the content owners is to adapt this new delivery mechanism fast. Number one concern is to make the products easy to use. Piracy should be dealt with common sense by keeping honest people honest. "Don't waste time trying to build bombproof protection. A well-funded professional pirate can break any scheme. Instead, use relatively simple encryption wrappers to limit abuse to determined attackers."[123]

2.7.3 Revenues from advertising, subscriptions and transaction fees

The Internet revenue model is expected to change in the next few years and this may set a pattern for the ITV revenue model as well. Chris Charron has studied

the revenue models of 50 Internet content sites to determine how their revenue sources will change. The main finding is that the share of revenues from advertising will fall from 68% today to 47% in 2002. The combined share of revenues from direct selling, revenue sharing and slotting fees will rise from 16% to 36% at the same time.[124]

According to Charron, the Internet business model rests on a simple proposition. "Consumers will have to pay for content in one of two ways: 1) by buying the product or 2) by paying for the content itself. The former creates two revenue streams -- commerce sales and advertising."[125]

Based on his scenario, Charron gives several recommendations to television businesses and also broadcasters. According to Charron, vertical media companies like Viacom should buy or at least invest in Internet retailers, catalog companies and web-hungry traditional retailers. On the other hand, media companies should go beyond investing in portals. "They should develop stronger verticals around entertainment, travel and sports -- as CBS has done with CBS Sportsline."[126] This research is about the Internet business model, but it can be assumed to give hints about the future of the revenue models in interactive television.

Other research companies share this optimism for revenues generated from interactive services. Claire Quintin and Emma Janson conclude in their study for Ovum, that interactive services will yield a significant proportion of revenue for digital broadcasters. The other main important opportunities they see arising are the possibilities for new alliances, revenues especially from transactions and new branding opportunities.[127]

Ovum has introduced a new term to describe a special source of revenues called walled garden. "A walled garden is a means of ensuring that all the revenue from advertising and transactions relating to interactive service will pass through the broadcaster." This way the broadcaster can control, what its customers can get from the open Internet and in fact make sure its own content looks more favorable. Ovum predicts that the broadcasters who do not introduce walled gardens could end up earning little or no money from interactive services.[128]

From these factors I have developed the following hypotheses:

One must use advertising (5.2) or sponsorship (5.3) as revenue sources for the ITV program production.

One must use direct selling (home shopping) as a revenue source for the ITV program production. (5.5)

2.7.4 *Many sources of revenues*

Forrester[129] points out that broadcasters have two strong assets – their programming and their regular audiences. Forrester explains how both of these assets can be used to generate revenues. The first thing to do is to make sure that one has the resources and commercial alliances needed for the market entry and presence. Secondly, broadcasters have to consider how they can collect the earnings from multiple sources. According to Forrester, the following possibilities[130] exist:

- Subscription revenue from owned channels
- A portion of subscription revenues from other channels
- Advertising and sponsorship revenue
- Revenue from subscription management services
- Revenue from the licensing of the encryption services
- Program sales revenue
- Revenue from transactional services
- Revenue from marketing database exploration

The change might indeed be slow again. Consultants John Moroney and Thomas Blonz note in their study that the entertainment industry is slow to change and consumers are conservative in their tastes. "The balance between the market's desire for new content and its reluctance to change will determine the rate of development in the industry."[131]

Moroney and Blonz predict that the three forms of content that will be most affected by digital television will be 1) entertainment and information, 2) advertising and transactions and 3) software. There will be a market for niche products and on the other hand a demand for interactive content for mass markets.[132]

From these factors I have developed the following hypotheses:

One must use subscription fees as a revenue source for the ITV program production. (5.4)

One must use program sales income as a revenue source for the ITV program production. (5.1)

One must use transaction fees as a revenue source for the ITV program production. (5.7)

One must use database exploitation as a revenue source for the ITV program production. (5.8)

2.7.5 *Economies of scale*

An interesting case of the economies of scale in interactive television can be found in the Chinese applications of instructional television described in John S. Daniel's[133] book Mega-Universities and Knowledge Media, where he quotes an article written by Hawkridge and Chen. The article describes the China TV University System that admitted annually 300,000 students and had an enrollment of 850,000 in 1993. Furthermore it tells about CTVU having an even larger non-degree associate Liaoyuan TV School, which courses were followed by 20 million Chinese farmers. These numbers demonstrate the amounts of people ITV applications are bound to reach. (Even if the applications are not so interactive: As in this case the article reported that television served mainly to transmit "talking blackboards" and not even "talking heads".)

2.8 Handbooks on ITV development

Again in comparison to the hype surrounding interactive television, a surprisingly small number of books have been written on the topic. Some of the books are heavily oriented towards the technical solutions and architecture of interactive television. Winston William Hodge's Book Interactive Television is concerned e.g. with convergence, architecture, systems, networks, compression, system requirements, switching, modulation etc.[134] Dohdan Szuprowichz's book Multimedia networking deals with a very broad category of issues including multimedia communications basics, multimedia conferencing, bandwidth requirements, sales and marketing, compression, standards etc.[135]

I myself have published a book about interactive television production in 1997. The starting point of that book in 1996 was the fact that at that time it seemed as if the so often tried interactive television might be realized quite unintentionally. The television production and broadcasting process was becoming digitized for economic reasons. On the other hand, the set-top manufacturers were beginning to include www-browsers in their products. This development started to break the chicken-and-the-egg circle where no one would buy the set-tops because no programming existed and no one wanted to make any programming, because the audience did not have the set-top boxes.[136] It stared to seem that there would be available all the (admittedly not functioning so well in the television) www-content for the interactive television audience. An even more interesting prospect came into sight when it was realized that through TV-HTML the interactive television might evolve into a similar "open for all"

environment as the Internet is now. Anyone would be able to put out his Net-TV pages and start to compete with the large media corporations.

In my book I concentrated on presenting the possible near term developments of interactive television. The book covers the basic technical concepts in interactive television architectures and the best known content applications. A more detailed look is given to home shopping, the financing sources of interactive television concepts and finally to some technical aspects as the www-tags supported by the Nokia Mediamaster set-top-box. My book also provides some ideas and starting points on how to start thinking about the development process of ITV-programs, but it does not go very deep into any of them. The most concrete and useful part of the book is the list of various ITV-concepts that one might think of. The concepts that were included[137] are:

- Video-on-demand
- Near Video on Demand
- Opinion polls and votes
- Retrieval of background information
- Interactive advertising
- Increase the commitment of the consumer to the product
- Product placement
- Coupon advertising
- Generating sales leads
- Consumer need analysis
- Feedback and targeting
- Interactive drama
- Quiz shows
- Customer loyalty to the program or channel
- Distance education
- Video- or computer games
- Tailored news

For each type of content from the book, approximately one page of advice suggests how to approach the task. No general framework on the issues common to various formats nor for individual formats was developed.

Probably closest to a production guide comes a book entitled Developing Web Pages with TV-HTML by Joseph T. Sinclair. This book deals with the concepts that are realized when Web pages are viewed through TV. The book takes a deep technical look into the requirements of hardware, software and cable TV

systems. Furthermore, it deals with issues like video systems, typography and graphic design for a TV-screen and avoiding pitfalls in these issues. An overview of the markups are given as well as a look at the competing platforms (WebTV, NetChannel, NCI, Sun CTG and Spyglass).[138]

The most useful parts of Sinclair's book are the ones that deal with content and interface and also the one that deals with the economic opportunities in the interactive television business.

Sinclair has defined Web Television's content with the following six features:

- Ease-of-use
- Convenience
- Density
- Creativity
- Technical panache
- Aesthetic appeal

As an example of the easiness of use Sinclair describes the difference of the concept browsing it the TV and PC environments: "There is a seamless continuity between the browser and the Web site. Only a PC user senses what part is the browser and what part is the Web site, and only after careful analysis. Consumers of TV know only that the Net-TV starts up, and they have a world of information at their fingertips. "Browser? What Browser?" That is the genius and raison d'être of the TVSPs (TV Service Provider as opposed to Internet Service Provider). The TVSPs make thing simple for consumers. ... Can you imagine trying to sell a set-top to a consumer and telling that person to buy a web browser, install it, find an ISP, and set up an Internet account."[139]

The second factor, the ease-of-use convenience, means making content easy for net-TV viewers to reach. This means aggregating various types of content into the easy reach of the viewers by establishing joint ventures with other content providers and grouping the offering in logical units. The third factor, density, comes from the way of using the Web to enhance television viewing. This could mean e.g. providing statistical background about a player's performance during a basketball game. The fourth factor, creativity, is needed because, as in the other cases after the birth of new media, it takes a long time before the most compelling uses of it have been discovered. For the same reason, also the fifth element, technical panache, comes up: "It is the beginning of a new industry, and experimentation with new digital ways of delivering information easily and

conveniently is the rule rather than exception. TVSP's cannot afford to stay still in this area."[140]

Finally, there is the need for the sixth element, aesthetic appeal. According to Sinclair most of the Web's popularity is based on its capability to display graphics well and in fact aesthetic appeal has become a necessity to most successful Web enterprises. Thus, according to Sinclair, an important role for the TVSP's is to make their interfaces, information and gateway Web sites aesthetically pleasing.[141]

From these factors I have developed the following hypotheses:

One must aggregate content from other publishers to an interactive television program. (This hypothesis is actually the same as that was developed in chapter 2.3.4.)

One must design the programs as aesthetically appealing as possible. (4.1)

Sinclair also discusses in his book the economic opportunities of developing Web pages for TV-HTML. His discussion is aimed at the smaller (indie type of) Web developer and thus the recommendations are of limited value for other parties. Many of them are still valuable. Sinclair suggests that a web designer should base his TV-HTML Web site on an existing TV-show. He should try to associate with the producers of this show and attempt to have his URL broadcast regularly on the show. He should also try to get the Web site listed on the TVSP's gateway Web site. Also one should aim to license useful intellectual property owned by the show to be used on the Web site. Sinclair even suggests that later the Web site might even outgrow the original TV-show in popularity.[142]

In addition to just piggybacking the existing TV-show, Sinclair suggests that the Web designer would go as far as possible in integrating the two forms of media. One way to achieve this is e.g. dedicating a web site for a TV-program.

Some other strategies proposed by Sinclair would include providing local content for a national TVSP, designing advertisements for Net-TV's or designing education and training realized through Net-TV's.

From here I have gathered the following hypotheses:

One must look for an existing TV-program that one could use as a springboard in getting recognition for the interactive parts. (1.5)

One must ask, what the interactivity could do for the existing TV-show. (1.6)

In conclusion, the whole issue of interactive television is handled in very few handbooks and the actual development of interactive television programs has

been written in even fewer words. Thereby it is justified to study the ways one could approach the task of developing interactive television programs.

2.9 Applications suggested in Standards

Various standards have been introduced in the fields of digital TV and interactive television. The most well-known are DVB – Digital Video Broadcasting standard (which is actually maintained by ETSI -The European Telecommunications and Standards Institute), Davic – Digital Audio and Video Council's standard and MPEG – Moving Pictures Expert Group Standard. In Finland two additional standards will be in use, NorDig – Digital Integrated Receiver Decoder Specification and the recommendations by the Digi-TV Forum of Finland[143].

DVB Standards are mainly concerned with issues like transmission, return channels, interactive protocols, bit streams, framing structures, channel coding and modulation[144] and thus offer little hints on what the content of ITV programs could be or how it should be designed.

NorDig – standard (Nordic IRD I) is established with the aim that IRDs (Integrated Receiver and Decoders) in the Nordic market satisfy a common set of minimum requirements, independent of operator/service provider and transmission media.[145] This is required to make sure that a customer who buys his set-top-box from one operator, can also use it to watch services from other operators. Nordig I defines such issues as the front end of the set-top-box, the MPEG-2 demultiplexer and video decoder, MPEG-2 Audio Decoder, controllers, memory, graphics processing and interfaces and signal levels. Just as the DVB standard, the Nordig also offers little hints on how to develop ITV programs.

The Digi TV forum of Finland has issued two recommendations. The first recommendation calls for the parties involved to develop common approaches for the interface, text-television and conditional access systems.[146] The second recommendation suggests that all parties should follow the DVB and NorDig standards in the set-top-boxes that they market and in the programs they develop.[147] These two recommendations also give little advice on developing the content itself.

Davic – Digital Audio and Video Council DAVIC was an association that represented various sectors of the audio-visual industry. Its goal was to create the industry standard for end-to-end interoperability of broadcast and interactive digital audio-visual information, and of multimedia communication[148]. Davic's specifications list the following examples of applications for digital TV:

- Movies on Demand
- Teleshopping
- Broadcast
- Near Video on Demand
- Delayed Broadcast
- Games
- Telework
- Karaoke on Demand
- News on Demand
- TV listings
- Distance learning
- Videotelephony
- Home banking
- Telemedicine
- Content production
- Transaction services
- Videoconferencing
- Internet Access
- Virtual CD-ROM

A working paper, Review of Developments in Advanced Communications Markets in Europe by ACTS-FAIR, also lists many of the previous applications and suggests the following others[149]:

- Videogames
- Gambling and erotica
- Music on demand
- E-mail
- Electronic forum
- On-line multimedia publishing
- On-line information retrieval
- Collaborative working
- Telemarketing and advertising
- Telealarm/telesecurity
- Central and local governmental services
- Fiscal services
- Social security services

In addition to the standards, some applications are identified in a survey conducted by Peter Bates. He identified some possible scenarios for the Interactive TV learning Services[150] and came up with the following eight scenarios:

- Video-clip Archive Scenario
- Life Long Learning by combining open and closed user groups
- Interactive information services scenario
- The virtual car driving school using interactivity and simulations
- Impulse learning scenario
- Utilization of high definition TV (HDTV) and interactivity
- Educational campaigns with interactive edutainment
- Pan-European Professional Learning Channel

The various standards thus list a number of possible ITV formats. However, they give little advice on how the actual content of these programs should be designed in terms of structure, users and interaction etc. On the other hand, it seems that the human imagination has already brought up a great variety of possible formats for ITV programs. Only time will show which of these will become the killer application. One should also keep in mind the previously presented idea, that one should try to develop applications that are easy to misuse. By this was referred to the sudden popularity of www, which was not at all meant for entertainment, homepages or electronic commerce. WWW was originally meant for scientists to exchange academic information, but it was so easy to adopt for other purposes that all sorts of unexpected groups started to "misuse" it for their own purposes.

3 Sources of possible strategies for ITV program development

As stated in the previous chapter there exists no clear strategy for developing an interactive TV program. So when one starts to plan and design a process like this, an obvious starting point is the traditional linear TV and film. In addition, some other approaches come to mind. Multimedia and www certainly offer something to think about. Virtual communities of Internet and home shopping theories from the analogue TV might also offer something to think about. These are the fields I have selected to look into for relevant ideas for ITV-development. No doubt there are many other fields, like video games, e-commerce, product development theory and usability engineering which would have a lot to offer. I have simply had to limit the scope and select the ones I have found most interesting.

In this chapter I will evaluate some of the concepts drawn from the mentioned fields that are most likely to prove useful in ITV development. I will also present some examples of how these strategies have been implemented in interactive media.

3.1 Strategies from linear drama

The theory of linear drama has been developed since Aristotle's times. Theater has been used as a source for strategy for interactive presentations for some time even though there seems to be a contradiction[151] between "interactive" and "narrative". Brenda Laurel has presented many such approaches including e.g. using dramatic characters as a structure model[152] and using narrative action in virtual environments[153]. Andrew Stern, Adam Frank and Ben Resner have presented strategies for creating autonomous virtual pets by drawing experiences from cartoons, improvisational drama and video games[154]. Joan M. Mazur has argued, that since distance education systems and electronic meeting systems employ variations of two-way compressed or digital video, they are essentially filmic media. As such the users of these distributed visual environments can capitalize on insights from the rich theoretic base of film theory and cinematic technique to engage meaningful interaction and support responsive communication.[155] Tammy L. Bennington and Geri Gay in turn argue that surrealistic and phenomenological film theory can provide insights into the perceptual and communica-

tive dimensions of the film/video experience, complementing current semiotic explorations of hypertext[156].

Joseph Bates has been developing technology for high quality interactive fiction and virtual realities in a project called Oz at the CMU School of Computer Science. The aim of his project was the development of a computational theory of drama for planning and partially controlling the overall events in the virtual worlds.[157]

Three concepts from drama arise above others that are worth looking at. These are the strategies for selecting the story itself, strategies for developing the structure of the story and strategies for developing the characters in the story.

The most significant input can probably be gained from theories of scriptwriting. Theories of cinematography, editing, lightning and sound engineering could also provide valuable insights, but I have limited them out of the scope of this study.

3.1.1 Story

When planning an interactive television a logical starting point is the content of guides of making traditional TV programs. In the following sections I will evaluate what concepts from the film and TV scriptwriting theories could provide guidelines in ITV production.

One of the simplest and yet most effective ways of defining a story is stated by Bill Idelson in his book; Writing for Dough, Adventures of a TV Comedy Writer. According to Idelson: **"A story is a struggle. Of the hero, against the opposition, to reach his goal."**[158] In this definition, Idelson has compressed the four necessary elements of a compelling story for any medium. First there must be a hero. Idelson notes that he might as well be called a protagonist or the main character and that he might not be heroic at all. "He still is the hero of the story." Secondly, like all human beings, the hero wants something. "Hopefully he wants something pretty bad, because the more he wants it, the stronger the story."[159] Thirdly there must be opposition to what the hero wants. According to Idelson there can be four types of oppositions; Man against man, man against nature, man against animals and man against himself. Whatever form it takes, the opposition must be so strong that you are never quite sure who's going to prevail. The fourth and final element of the story is the struggle between the hero and his opposition.

There is a difference between the story and the dramatic construction. Eugene Vale defines this difference as follows: "The story is the actual happening. The dramatic construction is the way in which this happening is told. The

story is varied and rich as life and the world. The dramatic construction consists of a limited number of rules, which are applied in order to get certain effects. The story springs from the imagination of the author. The dramatic construction results from his technique. The story is the creation; the dramatic construction is the form into which this creation must be poured."[160]

According to Vale both elements, the story and the dramatic construction are equally important. "A clever construction without a good story is like an empty cell. The story without dramatic construction is chaotic.[161]

From these factors I have developed the following hypotheses:

One must decide who does he want to watch this program. (Who is the person that will interact with the program or who is the main character?)(1.1)
One must decide how can he give the viewer a task to complete or a goal to reach. (2.5)
One must decide who or what is the opposition of the viewer. (2.7)
One must decide what types of conflicts arise between the viewer and his opposition. (2.8)

3.1.1.1 Screenplay

The story in a film or TV program is expressed in a screenplay or a script. Veteran screenwriting theorist Syd Field defines a screenplay in the following way; "A screenplay is a story told with pictures. It's like a noun: That is, a screenplay is about a person, or persons, in a place, or places, doing his or her thing."[162] This is indeed one of the key principles of thinking for any audiovisual product. Looking at it as a visual medium. Grant Eustace[163] expresses the same in his book Writing for Corporate Video by saying; "Letting pictures do all they can, means giving preference to the visual whenever it is possible." So even the writer should think in visual terms.

The "person" in Syd Field's definition is the main character and doing his/her "thing" which in turn is the action of the film. "When we talk about the subject of a screenplay, we are talking about action and character."[164] The action can be of two kinds – physical action and emotional action. In Field's examples, physical action is holding up a bank. Emotional action is what happens inside your characters during the story. According to Field, emotional action is the center of the drama in films like e.g. Love Story and Alice Doesn't Live Here Anymore.[165]

3.1.1.2 Conflict

As Idelson noted, a story is about someone wanting something very bad and at the same time someone or something else preventing him reaching this goal. Conflict is the material that keeps drama going on. If the main character were to reach his goal in the beginning, it would not be heroic and there would be no story to tell. Or as Stuart M. Kaminsky puts it, writing drama involves the creation and resolution of problems for the characters. Often there are indeed several problems: One for the central figure and secondary problems for the secondary characters.[166]

This applies to comedy as well. Comedy writer Sol Saks tells "As a writer I would rather say that all humor has conflict. Check this out. You will find that anything humorous, if not hostile, is, without fail, based on conflict."[167]

A successful story can be traced to be built from certain other elements as well. According to script consultant Dr. Linda Seger the following elements in the story will help make a production successful; 1) marketability, 2) creativity and 3) script structure.[168] "If any of these is missing, there is a good chance that the script won't sell."

3.1.1.3 Creativity

Linda Seger addresses creativity with questions like the following: Is the story fresh? Is it original? Is it different? Is it unique? Does it have a hook? Is it compelling? Am I grabbed by the premise? Many of the most successful commercial films are based on original premise. According to Seger, there were no precedents for such films as Ghostbusters, WarGames, and E.T.[169]

It would indeed be nice to come up with a totally new type of story in every interactive television production. On the other hand, that would be very difficult and unlikely. Another veteran scriptwriter Milt Josefsberg, deals with this problem in his book in the following way, "There is nothing more discouraging to the ambitious beginning scriptwriter than the four words, *It's been done before*. It's not only true about subjects that everything goes – everything has already went." Despite that practically all stories, routines, characters, formats and series have been done, there is room for new creators. One's job is to do it better, with a different twist, so that it is salable and enjoyable."[170] John Harding supports this view in his book about TV copywriting and he actually states that "one of the best ways to start yourself thinking of ideas is to look at the ways in which other people have executed their ideas"[171].

From these factors I have developed the following hypothesis:

One must make the ITV program to appear new and fresh. (4.6)

Creativity also comes with quantity in the film and TV industry. According to Syd Field in 1988, more than 40.000 screenplays were registered at the Writers Guild of America alone (and there are other bodies to register screenplays). About 750 of them are put in development and only less than 120 films were made.[172] This is probably one reason why the American film industry is so strong. The best ideas are carefully selected from a large mass. This also suggests that in the entertainment business one should actively try to come up with as many story ideas as possible before going any further. The same conclusion can be drawn from the memoirs of Michael Eisner[173], chairman and CEO of Disney. Eisner describes his arrival to head the Paramount studios (a post he had before joining Disney): "The problem when I arrived was that we had only a handful of scripts in development. After my second or third day on the job, I called an early morning meeting of all of our production heads – perhaps a dozen people. We are going to come up with twenty good ideas today, even if we have to stay here till midnight." This was the way Eisner had worked in his earlier career at television. "Why wait for writers to come to us with ideas? Only later did I realize that this notion bordered on the revolutionary."

Although the concept of generating as many ideas as possible to start with was maybe not familiar within the film industry, it has been widely accepted in the manufacturing business. Philip Kottler describes 3M's approach to innovation in his book Marketing Management. 3M is the maker of more than 60,000 products including sandpaper, contact lenses and post-it notes. Each year the company launches more than 200 new products. "3M knows that it must try thousands of new-product ideas to hit one big jackpot." Kottler quotes a well-worn slogan of 3M: "You have to kiss a lot of frogs to find a prince." Another enlightening example by Kottler is Toyota, which claims that its employees alone submit two million ideas annually for product improvements.[174]

Thus creativity is clearly a key to a successful ITV product.

3.1.1.4 Believing and understanding

In order for the members of the audience to view the film or program to the end, three things must happen. The audience must understand the story, they must hold it probable and they must be able to identify with it. "The spectator cannot believe in a story, he cannot experience fear or hope, terror or joy, he cannot feel sympathy or aversion, and he cannot be moved to relief or anguish unless he

understands the story."[175] Or as the teacher in the graduate film school, professor Ywe Jalander once put it: "I constantly see films, where the pieces first come together only after I have read an interview of the director and learned what he wanted to say or express. Only then the pieces start fitting together."[176]

The next demand after understanding is that the story must be probable. If the story isn't probable, the viewer will be reluctant to go along and even if he does, he will have a feeling of being fooled and will resent the story. On the other hand stories very often rise from false premises, but are thereafter absolutely true to life. Vice versa truth indeed is stranger than fiction. Events of that kind may not be useful story material, because although possible, they are improbable.[177]

From these factors I have developed the following hypothesis:

One must make the ITV program believable. (4.9)

3.1.1.5 Marketability

Marketability or salability is a combination of elements that help the selling of the project throughout different stages. The story is in fact sold many times before it is turned from a script to a film, to aTV show or in our case to an interactive television production. First the scriptwriter sells his idea to the producer, who in turn sells it to a studio or other financiers and naturally to the stars and the director. When the film gets made it will be sold to the distributors and then to theaters and finally to the audience. The same applies for a TV and interactive TV production as well. Often a European co-production has to be sold to up to ten different buyers and financiers before the total production financing has been raised.

There are certain elements that help this selling process. The following principles are actually taken from the feature film industry, but I believe they give valuable hints on what could work when developing interactive television concepts. A film-marketing specialist John Durie names five key elements in the marketing of a film. They are; the stars, the director, the genre, the awards that the film has won and its box office results. Naturally not all these elements can be in every interactive television production, but it probably helps trying to get as many as possible.

Once one has collected enough ideas he can start evaluating them in terms of selling and financing his production. For this purpose Jurgen Wolff and Kerry Cox have created an entire checklist.

Table 1: Check-list for the salability of a film or TV program idea[178]

- Does the idea have a strong hook? (Can you state it in a sentence or two?)
- Is the idea topical? (if so, how?)
- Is the idea fresh?
- If the idea is similar in major ways to pictures produced recently, can you give it a twist that will make it different enough? (if so, how? Possibilities include changing the protagonist's gender, the setting, the time period, and the basic motivation of the protagonist.)
- Does the story have a basic theme or moral? What is it?
- Does the protagonist have a strong goal? What is it?
- Who or what is opposing the protagonist? Why, and is the conflict strong enough that it cannot be easily be settled?
- Are the protagonist and the antagonist evenly matched? If the protagonist is an underdog, what are the forces that help him match up to the opponent?
- Is there a clear resolution to the story? A happy ending?
- Are there one or two starring roles for which you can think of several appropriate actors? (If not, would it make sense to combine some of the smaller roles?)
- What are the visual values of the story?
- Will the audience be able to identify with the protagonist on some level?
- Have you avoided the use of offensive stereotypes?
- Can you state what it is about your story that makes you believe it is worth telling and that will make people pay to see it?

Some additional questions can be drawn from a film production handbook Rick Schmidt has written. In his Feature Filmmaking at Used Car Prices he suggests that the aspiring filmmaker should ask himself e.g. about the following issues.

Table 2: Schmidt's criteria for selecting a topic for a film[179]

- Feasibility; Is your concept possible to produce given budget limitations?
- Drama; Does your story have the possibility of human drama that will touch the audiences' hearts?
- Responsibility; Does your film concept add meaning or understanding, in a personal or universal way to our lives?
- Personal choice; Is this the kind of film you would go to see in a theater?
- Notoriety; Is this the kind of film for which you'd like to be known?
- Richness and Complexity; Is this a film that can be viewed more than once – that becomes more, not less, when seen again?
- Timeliness; Will your film concept quickly become outdated?
- Critical Response; What is the best – and worst – review your film could receive?

From these factors I have developed the following hypotheses:

The ITV program must have a strong hook: i.e. it is easy to describe it in a sentence or two in a compelling way. (1.7)
The ITV program must have a clear resolution.
The ITV program must have a happy ending. (3.6)
The ITV program must have one or two starring roles for which one can cast known actors or personalities. (4.8)
The ITV program must have strong visual values. (4.2)
Personal choice: One must develop the ITV program so that the developer himself would watch it on television. (1.11)
Notoriety: The ITV program must be such that the developer himself would like to be known for making it. (1.10)
Timeliness: The concept must not become quickly outdated. (4.7)
One must think about the critical response (the best and worse review) the program could receive. (1.9)
The program must have richness and complexity; Is this a program that can be viewed more than once – that becomes more, not less, when seen again? (1.12)

3.1.2 Character

Also characters have been identified as a valuable source of ideas in interactivity. For example Ryohei Nakatsu, Joy Nicholson and Naoko Tosa have developed an emotion recognition algorithm (based on a neural network) that can be applied to a computer agent that play a character role in an interactive movie system[180]. In their trials the researchers have found out e.g. that there are generally two types of interactions for the computer characters: narrative based interactions and spontaneous interactions[181]. This division of "interactive architectures" is even further developed in an article by Flavia Sparacino, Glorianna Davenport and Alex Pentland: Media Actors Character in search of Author. According to the authors, interactive media architectures can be categorized as scripted, responsive, learning or behavioral[182].

Another interesting approach has been provided by Guy Vardi and Roni Shaliv in their production Point of view – An Experiment in Linear Hypervideo. The user's actions here affect the cinematic aspect of the interactive movie, not the development of the plot. The film has been filmed simultaneously from sev-

eral points of view with cameras located on top of the actor's heads. The user can then choose the angle at which he or she would like to watch the video.[183]

In addition to the story and the structure the character building can offer valuable hints in developing ITV-concepts.

Milt Josefberg notes that identifiable characters are one of the most important ingredients of successful drama. "If one examines the biggest hits over the years, he'll find that they always had clear-cut, sharply defined, recognizable characters." Josefsberg mentions as examples e.g. Mary Tyler Moore, All in the Family and Lucy Show etc. On the other hand "many of today's programs are peopled with players who inherited part of their personalities from those who have graced the airwaves in previous years."[184] The Wife-less Father or Husband-less Mother are often used characters. So is the servant that is always much more knowledgeable than their bosses. The list goes on with schoolteachers, politics, hospital staff and legal professions. So choosing a familiar character as a central point is not necessarily a handicap, because it has been done before. It can instead be a source of identification for the audience.

Putting the effort in developing multidimensional characters seems to pay off well. As scriptwriter Stuart M. Kaminsky puts it, occasionally a script will sell because the story is so unusual and so good that it can't be ignored. "More often, far more often, it will sell because the characters are so vivid and the dialogue so sharp that the producer or actor who reads it can easily imagine it coming to life."[185]

Randy Glasbergen reveals in his book How to be a Successful Cartoonist, how some of the most famous animation characters have been created. According to Glasbergen, famous characters are rather discovered than created. Woody Woodpecker was discovered when a pesky woodpecker was intruding upon the honeymoon bliss of animator Walter Lantz and his new bride. The character Dennis the Menace was discovered when Hank Ketcham's real life son Dennis was proclaimed to be a "menace" by Ketcham's first wife. Hagar the Horrible was an affectionate nickname given to creator Dick Browne by his sons. "In fact Browne and Hagar could have been mistaken for identical twins." The Simpsons television series was created after Matt Groening discovered the comic possibilities of his own family. Like Bart Simpson, Groening has admitted to having been a troublesome and challenging child. Coincidentally, Groening's parents and siblings in real life are named Maggie, Lisa, Homer and Margaret.[186]

Glasbergen explains a few techniques for creating new characters. One should take a fresh, new look at the people, who are a part of your life. Do you know anyone whose personality might inspire an interesting new cartoon char-

acter. Just for practice, turn your friends, neighbors, coworkers and family into cartoon characters.[187]

Many authorities in scriptwriting emphasize the importance of knowing your character thoroughly before writing about it. "Character is the essential foundation of your screenplay. It is the heart and soul and nervous system of your story. Before you put a word on paper, you must know your character."[188] Wolff and Cox say the same thing as follows: "Your goal as a scriptwriter is to leave your audience feeling that they know your central characters almost as well as they know their friends. They won't necessarily always like your people, and in certain types of stories you don't even want them to like them. For your audience to know your characters well, you have to know your characters well, and often scriptwriters don't. They know only enough to make the characters to serve the needs of the plot. That makes the screen characters seem flat."[189]

It can be difficult though to create believable characters into an interactive media. Perlin and Goldberg have addressed the difficulties of building believable characters that respond to users and each other in real time, with consistent personalities, properly changing moods and without mechanical repetition, while always maintaining the author's goals and intentions.[190]

How should one develop real life multidimensional characters for an interactive television show? Both Field and Wolff & Cox provide a useful checklist type of approach to creating and knowing ones character. Field starts from separating the components of the character's life into two basic categories; interior and exterior. The interior life takes place from the birth until the moment the film begins. It is the process that has formed the character. The exterior life of your character takes place from the beginning of the film to the end of the story. "It is a process that reveals the character." In a visual medium, such as film, one must reveal the conflicts visually.[191]

So basically Field suggests that a writer should develop an entire character biography just for his own use. In this biography one should state at least the sex, age, place of living (occupancy), childhood experiences etc. Wolff and Cox, based on work of Lajos Egri's publication The Art of Dramatic Writing, develop the following similar, but more detailed, list of character qualities.

Table 3: Character Analysis Questionnaire[192]

1. Name:
2. Sex:
3. Age:
4. Physical appearance:
5. How does this character feel about the way he or she looks?

6. Describe the characters childhood in terms of
   - relationship to parents
   - relationship to siblings
   - relationship to other key people in his or her youth
   - lifestyle while growing up
   - education
   - childhood activities (hobbies, interests)
   - location(s) where he grew up
7. Describe the character's education during and after high school, as well as military service.
8. Describe the characters current relationship to:
   - parents
   - siblings
   - other key people from his or her youth
9. Describe the character's romantic life (married?, involved?) and any relevant background (e.g., previous marriage, affairs).
10. Describe the character's sex life and moral beliefs.
11. Does the character have kids? If so, describe his relationship with them. If not, describe his attitude toward children.
12. What is the characters religious background and current religious belief?
13. What is the character's occupation?
14. Describe the character's relationship to his or her boss and coworkers.
15. How does the character feel about his job?
16. What are the character's hobbies or non-work activities?
17. Describe the character's philosophy of life.
18. Describe the character's political views.
19. Sum up the main aspects of the character's personality.
20. What is the character proud of?
21. What is the character ashamed of?
22. Describe the character's state of health.
23. How intelligent is the character?
24. Summarize the character's relationship to the other major characters in the screenplay.
25. What is the character's goal in the screenplay?
26. Why does he want to achieve this goal?
27. Who or what is trying to stop this character from reaching the goal? Why?
28. What strengths of the character will help him in the effort to reach the goal? What weaknesses will hold him back?
29. How articulate is the character?
30. Does the character have an accent or dialect? Describe it.
31. Does the character use slang or professional jargon? Describe it.

Some additional questions that help building up a character are stated in Louis Catron's Elements of Playwriting. He advises to think about e.g. the following types of questions: What was the characters largest success in High School? Who was his first love? What did he do in love and how did he handle the loss of this love?[193]

The advantage of this question based approach compared to Field's character

biography is that it is much easier to locate a specific detail in the Wolff & Cox list than it is in the lengthy biography.

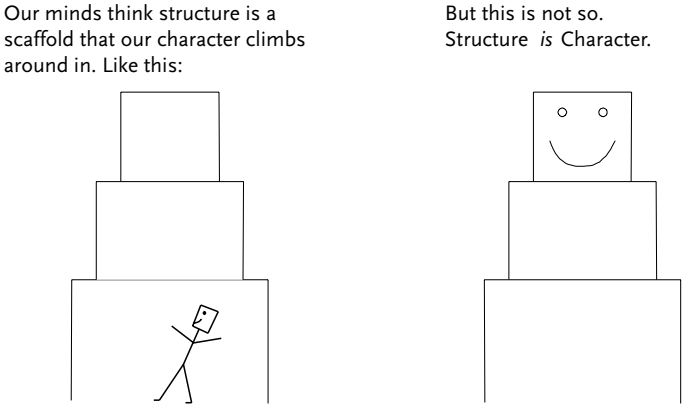
From these guidelines I developed the following hypotheses:

The ITV program must have identifiable characters.
The writer of an ITV program must get to know the characters of the story thoroughly e.g. by drafting a character bible.
The ITV program must reveal the nature of its characters through their actions instead of through dialogue.

3.1.2.1 Character, action and revelation

When writing a screenplay, one is tempted to reveal the nature or actions of a character through his dialogue. It is like making the villain say, "I am bad". This obviously does not work. Instead it works here the same as in real life. We don't discover the true nature of a person from the way he talks or dresses, but what he does. By the way he acts. "By the way he acts instinctively and spontaneously in a crisis."[194] Syd Field emphasized this same principle throughout his famous book, by repeating in caps; "ACTION IS CHARACTER."[195] This principle is illustrated well the following figure 7 from Vicki King about the relation of character and the plot.

FIGURE 7: The relation of the structure and the character according to King[196]



So according to King, your character is your story. The action happens as a result of the character's nature. The events of the movie are the external manifestations of what is going on inside the character.[197]

3.1.3 Structure

The third essential dramatic element of any media production is the structure. The most commonly adapted structure for any type of a story is the three-act structure. This can be seen in use from sentience jokes to full-length feature films. The use of the three act structure in interactive drama has also been studied for several years now. The difficulties in automatic generation of narrative plot has been expressed e.g. by Clarck Elliot, Jacek Brzezinski, Sanjay Steth and Robert Salvatoriello. "Guaranteeing a consistent, plausible, plot can easily degenerate into the classic AI search problem."[198]

Nikitas Sgouros, George Papakonstantinou and Panagiotis Tsanacas have even developed a method for dynamically dramatizing narrative presentations. The method accepts as input the original story material and a description of its plot written in special purpose language. It then analyzes the plot and identifies interesting dramatic situations in the story. The whole presentation is then enriched with appropriate multimedia effects.[199]

A British media artist and researcher Chris Hales, has demonstrated an intelligent way to use and incorporate the traditional three act structure in interactive film. In his project[200] the user is presented a screen, where there is only a picture of a beach. There are no clear push buttons or any other hints for the user. If the user starts exploring the picture randomly, sooner or later he hits a spot in the down right corner of the screen. An image appears in the sand, but it disappears very soon and there is no chance to get a real grasp of what it was. After repeating the action several times, the user succeeds to generate another similar image next to the first one. Now the user understands that these are footprints that you can make and keep visible, if you manage to hit the next one fast enough. So eventually you will find a line of the footprints which then will reveal a very short story. (A person has been walking in the beach and fallen over at a certain point.)

Here I will concentrate on the structure of a feature film as an example, since it is maybe a most common and well-developed format. The feature film structure can be applied to shorter forms of stories with slight modifications.

Three-act structure has basically the beginning, middle and the end, separated by two plotpoints. In the beginning (=act one) the main character is living

his ordinary life. Then something happens, which changes his life or at least forces him to react (=plotpoint one). In the second act the hero is fighting against whatever caused the turn in his life at plotpoint one. Then comes plotpoint two that speeds up the struggle. Finally in act three, the character solves his problems.

From these guidelines I developed the following hypothesis:

The ITV program must have a three-act structure. (3.2)

Since the standard screenplay is approximately 120 pages long, one page of a screenplay represents one minute in the finished movie or a TV show. In a film the first act takes about 30 pages. The first act is often referred to as the setup, because these 30 pages actually set up the story. In the first act one has about 10 pages time to let the reader know who the main character is, what the premise of the story is and what the situation is. In the end of the first act, somewhere between pages 25 and 30, belongs plotpoint one.[201]

According to Vicki King the first page of a screenplay should establish the place and mood of the movie. By page three the reader should know who it is about and what it is about. By page ten is known also what the main character wants, what is stopping him from getting it and can I, as the audience, relate to the main character.[202]

Also Syd Field advises one to choose his opening well: The writer has ten pages to grab the reader, or audience. "If you open with an action sequence as in Rocky, keep it under eight pages and then set up your story.[203] According to Seger, in most good films, the set-up begins with an image. "We see visualization that gives us a strong sense of place, mood, texture, and sometimes the theme. This first image could be a space battle (Star Wars), street gangs in New York (West Side Story), a woman singing in the mountains (The Sound of Music), or statues of lions that ominously guard a haunted library (Ghostbusters).[204] So this image should probably be as strong as possible and it should aim to grab the audience's attention immediately.

From these guidelines I developed the following hypothesis:

The ITV program must have a strong opening scene. (3.1)

3.1.3.1 Plot points and other points in structure

According to Field's definition, a plotpoint is an incident, or event, that hooks into the story and spins it around in another direction. Linda Seger has a more precise definition.[205] Plotpoint accomplishes a variety of functions:

- It turns the action around in a new direction.
- It raises the central question again, and makes us wonder about the answer.
- It is often a moment of decision or commitment on the part of the main character.
- It raises the stakes.
- It pushes the story into the next act.
- It takes us into a new arena and gives us a sense of a different focus for the action.

From these guidelines I developed the following hypothesis:

One must use plotpoints to separate the acts of the ITV program.

King provides a good summary of the elements of structure in her clothesline example. "Picture this. You are going to hang a ten-foot tablecloth on a clothesline to dry. If you put a clothespin at one corner and a clothespin at the other corner, you'd have this sagging mass of 120 inches in-between. Now imagine this immense tablecloth is wet and unwieldy and the wind is blowing. That feeling is a little of how you might be feeling as a screenwriter, when you look down the line of 120 minutes to fill from the start of your movie to the end. So the thing you need to do is to use more clothespins. And you'll want to put them at strategic places along the clothesline to hold up the tablecloth evenly end to end."[206]

According to King, altogether nine pins should be used, and they should be placed on pages 1 – 3 – 10 – 30 – 45 – 60 – 75 – 90 and 120. "On page 1 you start the story, giving mood and tone and place. By page 3, we need to know the central question that you'll be exploring throughout the movie. By page 10, you'll need to tell us what the story is. Keep setting up more and more information so that we know what the hero wants. On page 30 an event will occur that moves the hero into new territory. Now, what he wants is challenged, and he has to react to the event. Act II is from page 30 to page 90. This is where the hero meets with the obstacles to what he wants. On page 45 we see the initial growth of your character. We're told where we'll be going from this point on. By page 60, the middle of act II, your hero is in big trouble, and he reaffirms and makes a deeper commitment to what he wants. By page 75 it looks as if all is lost, and there is even a scene where the hero is just about to give up. Then something happens and changes everything – an event that gives him a chance at a goal he didn't

even know he had, something he needed all along, while until now he has been going after something else. With act III, from page 90 on, the resolution of the problem starts and by page 120 the audience is satisfied that you gave them the story you promised on page 10."[207]

3.1.3.2 Catalyst

I would like to add a few clothespins from Seger to the first and second act. One clothespin from Seger would be the catalyst. "After the initial image begins the story, we need to be introduced to any important characters who will be part of the plot. We need information about the situation: Where are we? What's going on here? Something, some event, needs to start the story. I call this particular event the catalyst. The catalyst begins the action of the story. Something happens – an explosion, a murder, a letter arrives, perhaps Aunt Mary appears on the doorstep – and from that moment on, the story is defined. We now know what the story is about – what the spine of the story will be." According to Seger, the strongest catalysts are actions that begin the story. Sometimes a catalyst can be expressed through dialogue. Or perhaps it is situational, or it can be a series of incidents that add up over a period of time to orient the viewer.[208]

In the second act Seger uses other elements to keep the tablecloth straight. "Act two can be interminable. For writers it means keeping the story moving for forty-five to sixty pages. For movie goers, an unworkable second act is a time to snooze, to buy popcorn, and to vow never to see a film by that filmmaker again." According to Seger, most Act Two problems come from insufficient momentum and lack of focus. "The movie doesn't move. We're unsure what's happening and why.[209]

A good thing to keep in mind, when designing the different acts is the advice from Syd Field: "What is the best way to open your screenplay? It is to know your ending. The ending is the first thing you must know before you begin writing."[210] This applies not only to the screenplay as a whole but also to each act and scene. Even each scene should end with some hook that will be resolved in the coming sequences.

3.1.3.3 Plot

According to E.M. Forster (the author of A Passage to India and A Room with a View sited in Alfred Brenner's book) the plot is defined in the following way: "A story is a narrative of events arranged in their time sequence. A plot is also a narrative of events, the emphasis falling on causality. For example*: The king died*

and then the queen died is a story but *The king died and then the queen died of grief* is a plot."[211]

Eugene Vale's definition of dramatic construction goes even one step further from the concept of plot. "It adapts the facts of the story to the form in which they have to be expressed, arranging them in such a manner as to achieve the best possible effect upon the mind of the spectator. Thus dramatic construction is actually dependent upon and conditioned by three factors: the form, the happenings of the story and the peculiarities of the spectators mind."[212] Vale makes here a notion that each form of art has different physical characteristics and that specific dramatic construction is necessitated for every form of storytelling. This is also a clear hint that one cannot apply the dramatic construction of film or TV without certain adjustments when creating interactive television programs.

3.1.3.4 Beat

Each act must also consist of so called beats, which are actions that establish the pace and tempo of the story. Stuart M. Kaminsky defines beats in the following way; "Beats are the tempo of a script, the pulse, emphasis, action moments." He gives as an example an episode of a detective series. One might begin with the arrival of a plane, young woman getting of it, looking for her father, lost, and then there is the beat, a shot of a pair of menacing-looking men watching her. Later as the story moves forward, the beats and the action moments come more frequently building towards a climax.[213]

3.1.3.5 Momentum

Seger defines momentum as the phenomena when one scene leads to the next scene, and that scene leads to the next scene. When scenes are connected in a cause effect relationship, every scene advances the action, bringing us closer to the climax.[214] To maintain momentum, Seger suggests the use of four different elements of structure, called; action point, barrier, complication and reversal.

From these guidelines I developed the following hypothesis:

The ITV program must have momentum so that the different parts of the ITV program have a logical connection so that one scene leads to another. (3.3)

3.1.4 Structure in various formats

The three-act structure also works for formats other than feature films. Jurgen Wolff and Kerry Cox explain in their book Successful Scriptwriting how the

same structure can be applied to movies-of-the-week, hour-long series, situation comedies and daytime serials. Wolff and Cox note that a feature film can be from 85 to 135 minutes long, where as a movie made for television has to fit exactly into a two-hour slot. This means that it must be exactly 94 minutes long (since the remaining minutes are used for commercials and promotional announcements).[215]

According to Wolff and Cox, the structure of a television film is identical to that of a feature film in story terms. "That is, to build your story you can use the three act structure. However the technical structure will be different, since allowances have to be made for commercial interruptions." A TV film script must be thus broken into seven acts, each one approximately 14 minutes long. "The acts though can actually vary by as much as 5 or 6 minutes as long as the total is 94 minutes."[216]

Wolff and Cox point out that the writer should take the commercial breaks into account in some other ways too. First one should try to avoid having an act end exactly on the half-hour or hour, since at those times programs will be starting on other channels and the viewers could be tempted to switch over. Secondly since each act will be followed by a commercial, the networks like to have a cliffhanger (a climax) at the end of the act, something that will motivate the viewers to stick around while the commercials play so that they can see what will happen next.[217]

From these guidelines I developed the following hypothesis:

One must design the structure of the ITV program so that it takes the commercial breaks into account. (3.4)

According to Wolff and Cox, hour-long shows are preferred for prime-time television programming, because a good hour-long show retains a large viewing audience for twice the period of time as a good sitcom. "There is less tendency to channel-switch in the middle of an "L.A.Law" episode than at the end of a "Cheers"." Wolff and Cox advise, that the hour-long show's script should be roughly sixty pages long and it will consist of four acts, each one roughly fifteen pages long.[218]

In act one any guest characters should be established and a few hints to their personalities should be given. Act II starts by resolving the cliffhanger the story posed at the end of the first act. In the third act things go wrong and "tough decisions have to be made". The writer should complicate the plot even further. "All of the care and hard work the writer has put into structuring your first three acts of conflict should pay off nicely in a fourth act that practically writes itself.

The ending of the story is never obvious, but always inevitable. It's unpredictable, but, given the carefully drawn blueprint, inescapable." In the fourth act one should resume the action. (By this Wolff and Cox mean finding a logical and believable way to get the hero back on his feet from the mess he was left in at the end of act three.)

On the other hand, one does not necessarily need to follow the three-act structure and often TV programs indeed don't. As Shamus Culhane notes in his animation guidebook another used structure is "such as in the Road Runner, which are merely strings of gags.[219]"

3.1.5 Studies of Structure in Interactive Environment

Researchers and producers have long been aware of the structural problems in interactive productions. As Carol Strohecker notes in her paper of Interactive Narrative Design, a typical strategy is to develop a story with several possible endings and ask audience members to choose one. "Both audiences and producers have found this approach dissatisfying. Directors find costs associated with the complex production to be prohibitive, and CD-ROM users and theatergoers often feel they are missing something if they can't see all the possible endings."[220]

With the above mentioned problem in mind Kevin M. Brooks has developed an idea of cinematic story construction through the use of a computer based storytelling system. The goal of his project called Agent Stories, is to provide a story design and presentation environment for nonlinear, multiple point-of-view stories. The approach is to combine the structure of the narrative, the collection of story pieces with some representation of their meaning and a navigational strategy that makes the end result a product of deliberate decisions and not random choices. The results presented in his paper are mainly the theoretical foundations of Agent Stories and its usefulness is difficult to evaluate.[221]

Another system for generating structurally complete stories, called the Graphic StoryWriter (GWS) has been developed by Karl E. Steiner and Thomas G Moher. The StoryWriter is aimed at early readers to learn about story structures, to experience relationship between pictures and text, and to experiment with causal effects.

The StoryWriter produces text that presents the main character, establishes the main conflict and sets the physical location of the story. A user of GSW can participate in making these decisions. By choosing the opening scene the user establishes the place. The first character he selects becomes the main character.

The central conflict is a function of the description selected for the main character. If the description "shy" is chosen, the character's goal is to make a friend.

An episode produced with the GSW is a sequence that has at least the following parts: an initial event, an attempt and the consequence. "A structurally complete story, for our purposes, is one in which the central conflict which was established in the setting is resolved by one of the consequences in an episode." Steiner's and Moher's GSW study also supports the view that story, character, and structure are important parts of an interactive work.

Aston provides another example of how the value of combining art and design traditions into more humanities-based traditions of media education has been recognized in the field of education. By combining interactivity, time-based framework, narrative and the craft of storytelling in one course, her course has managed to find a new way to focus on the relationship between established broadcast media and new digital technologies.[222]

Claudio Pinhanez, Kenji Mase and Aaron Bobick have proposed an Interval Script Paradigm as a step towards more general tools and paradigms for interactive script writing. The researchers developed a system to manage human interaction in immersive environments. The prototype was then used in an immersive, story-based interactive environment called SingSong where a user or a performer tries to conduct four computer character singers in spite of the hostility of one of them. Among their findings were that it is very difficult to describe and visualize multiple and unrelated activities. They also made the notion that in a story-based environment one must take the past interactions into account e.g. by changing the gestures and actions as the action progresses.[223]

3.2 Infomercials and home shopping

When developing strategies for designing interactive television programs for the coming digital age, it is certainly useful to look at the most interactive form of the traditional analogue programming, namely infomercials.

The built-in interactivity of infomercials is well demonstrated in Timothy Hawthorne's definition between infomercials and traditional television advertising: "Thirty-second spot advertising is usually intended to affect the consumer thinking, awareness, and attitude about a product or service. What direct marketers try to do – and what infomercials do so effectively – is lead viewers to the next stage, which is to take action."

Timothy Hawthorne has participated in managing over 150 infomercial cam-

paigns and from that pool of experience he has summarized the following strategies for designing effective infomercials.

For the genre of the infomercial many formats have been invented. Hawthorne identifies the following variations:

- talk show
- demo show
- lecture format
- mass rally
- live auction
- game show
- sitcommercial
- documercial
- video magazine
- storymercial
- brandmercial
- featuremercial

Most of the names are self-explanatory. Mass rally is a format that Herbalife used by bringing thousands of distributors "in a gigantic auditorium with glitzy glamour, and hyperbole". Documercials are up to 60 minute documentary-like programs that respond to the customers ever-growing need for more real product information. Storymercials are built according to the rules of drama. Featuremercial uses the behind-the-scenes footage of the making of a TV show or a feature film to boost box office sales and television ratings.[224]

Three variations of the actual goal of the infomercial exist. One can aim for the actual sale right away, by luring the consumer to call in a toll free number and order the product. This is called the one step approach. If the product is complicated or has a high price, one might not try to get the sale right away, but instead try to get the customer to call the sales representative. This is called the two-step offer or lead generator. Then the third approach is more like the traditional advertisement. Since one knows beforehand that 99% of the viewers don't buy the product during the infomercial (because the average response rate is between 0.1-1.0%), one can aim to attract the non-purchasing to conduct the buying when next visiting a store.[225]

The structure of an infomercial is constructed in a way that maximizes the odds that the customer takes the action and makes the purchase. Al Eicoff, a producer of over 400 infomercials since 1950, argues that the most effective

structure of an infomercial presentation is the way that the ancient pitchmen and travelling medicine men attracted crowds and held their attention to make their sales.

Interestingly Mika Tuomola, a graduate from UIAH Media Lab and visiting producer at the Interactive Institute of Sweden, is studying the Commedia dell'Arte, in order to find out how interactive drama could benefit from the structures stemming there. Travelling salesmen in middle-age developed plays called Commedia dell'Arte to gain customer attention in fairs and market places. As it turned out their plays were more successful than the medicine and other products they were selling and eventually they started making their living from the performances.[226]

According to Eicoff, the presentation of the pitchman included a **holder** or a promise of something sensational to come, ranging from free prizes to a never-before-seen miracle. Next the presenter stated the **problem**, which could be a difficult chore or a substandard product performance. The problem followed a **solution**, with a visual **demonstration** or a verbal description. Then came the **turn**, which asks the customers to reach for their money. The turn is reinforced with a money back **guarantee**. The anatomy of this sales presentation is presented in the following figure8.

Eicoff argues that the presentations of the pitchmen are so effective because they were born of evolution. "He watched and listened to the responses of the

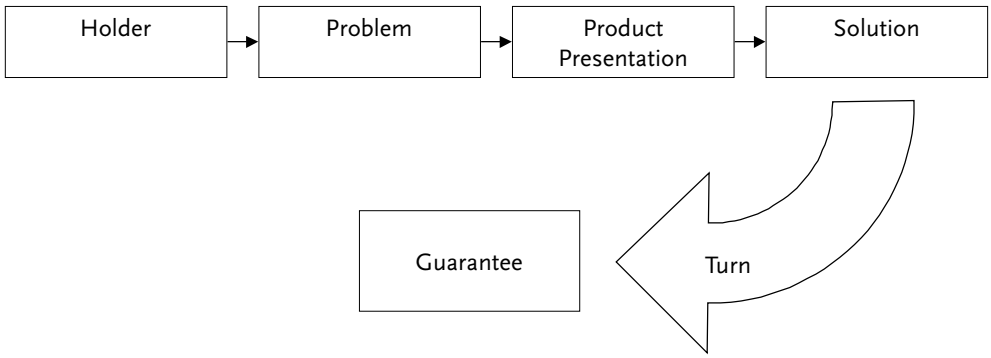


FIGURE 8: The Anatomy of a Home-shopping Sales Presentation[227]

audience and was able to counter their negative reactions. He saw what made them pull out their wallet and what made them walk away."[228]

Hawthorne suggests that the script should be written according to the well-known marketing and sales principle A.I.D.A., where the initials come from the following words: capture their Attention; create Interest; instill Desire and motivate them to Action.[229] The structures are actually quite similar to Eicoff's holder being the grabbing of Attention, problem being the creation of Interest, Product presentation and solution awakening the Desire and Turn and Guarantee being the calls for action.

From these guidelines I developed the following hypothesis:

One must design the content of an ITV program according to the AIDA principle. (3.5) (Meaning that you first capture the attention, then create interest, then desire and finally call or motivate for action.)

The infomercial designers seem to believe in repetition. Eicoff describes that the pitchman used "the tell'em, tell'em again, and tell'em what you told-technique". Hawthorne in turn emphasizes throughout his presentations that "The more you tell, the more you sell".

Hawthorne argues that the same story should be told in three 8-10-minute segments during a 30-minute infomercial. In the first segment one should tell the entire story about the product and then give people a chance to order it. Then the same story should be told again in a different fashion.

This segmentation is recommended because Americans are anyhow accustomed to 8–10-minute slots before commercial interruptions. Secondly, virtually any product can be presented in this amount of time. Thirdly, Hawthorne states research indicating that about half of infomercial viewers watch 20 minutes or more and the other half watches 20 minutes or less. So by dividing the time in these short slots one gives both halves a change to buy and in addition provides the whole information to the channel surfers who tuned in later. Hawthorne also argues that about 2 to 5 percent of the viewers are motivated to order after watching just the first segment. Another 2 to 5 percent order after the second segment or ordering opportunity but the majority of viewers will wait to order until after the third segment.

Probably the most useful lessons from the infomercial industry in regard to creating interactivity is the Infomercial Creative To Do List written by Timothy Hawthorne

Table 4: Infomercial Creative To Do List[230]:

1. Create a sense of urgency to buy.
2. Establish presentation and product credibility.
3. Use a true believer as the commercial spokesperson.
4. Product is king.
5. Showcase an irresistible offer.
6. Emphasize information/content over entertainment.
7. Pacing is everything.
8. Create a high perceived value for the product.
9. Mention the product name whenever possible – at least three times a minute.
10. Complete a full sales cycle before doing your call to action.
11. Call to action (CTA). The CTA closes the AIDA cycle and the sale.
12. Capture and maintain the audience's interest.
13. Make it easy to understand.
14. Choose excellent talent.
15. Craft a script that emphasizes benefits and answers objections.
16. Sell the benefits; close with emotion.
17. Be powerful and real.
18. Use quality product shots.
19. Create graphics and montage that make sense.
20. Employ affecting music.
21. Present gripping and real testimonials.
22. Generate high emotional appeal.
23. Emphasize the "magical transformation".
24. Ask for the order.
25. Remember to sell all the time.

From these guidelines I developed the following hypotheses:

The ITV program must have parts that call to action. (2.13)
The ITV program must complete a full sales (or instruction) cycle before calling the audience to action.
The parts of the ITV program that call to action must be repeated sufficiently.

3.3 Multimedia production

When searching for models on developing interactive television programs one logical source would appear to be the principles of developing other interactive media, such as WWW and multimedia. Indeed several multimedia production books offer promising approaches to this task. Multimedia production has been addressed in several books of which here I will evaluate three by Elaine England & Andy Finney, Jussi Luukkonen, and Tay Vaughan.

England and Finney have written their book, Managing Multimedia – Project

management for Interactive Media, having CD-ROMs and Web pages especially in mind. The authors add that the concepts also have relevance to other interactive media such as interactive TV and on-demand services. The books cover a wide area of topics ranging from proposing the project to a prospective client and through the actual productions phase up to archiving the project.

The book is aimed at people being in charge of multimedia projects and thus it seems to be most useful for the producer in the ITV development team. Probably the most useful concept introduced in the book is the multimedia production framework introduced right at the beginning of it.

The most important issues are included in the two boxes of the figure 9 on the next page, 1) scoping the project and 2) interface and interactive design. In scoping the project phase,[232] included are the following issues:

- Clients previous multimedia experience
- Clients initial statement of what they want
- Delivery medium of the project (www, CD-ROM, hybrid, Intranet, Extranet)
- Target market sector (Commercial, Government, Educational)
- Project bias (=goal for the project: e.g. information gathering, information dissemination, retail, marketing, redesign)
- Benefits/achievements the client wants from the project
- Media mix that the client expects the work to contain (percentage of the content in text, graphics, animation, video, audio)
- What existing content assets does the client organization have (text, graphics, animation, video, audio)
- Estimated number of users
- Timetable
- Budget

The second important box contained the issues of interactivity and interface design. England and Finney define interface as the infrastructure that links the component parts together so that users understand what is contained in them, how the information is organized, and what they need to do to activate the separate pieces.[233]

According to England and Finney the interface and interactivity design involve such matters as e.g. taking the audience into account by getting to know it, planning the interface for it and testing the interface. The planning stage involves e.g. the use of icons, the use of sound and the use of color.[234]

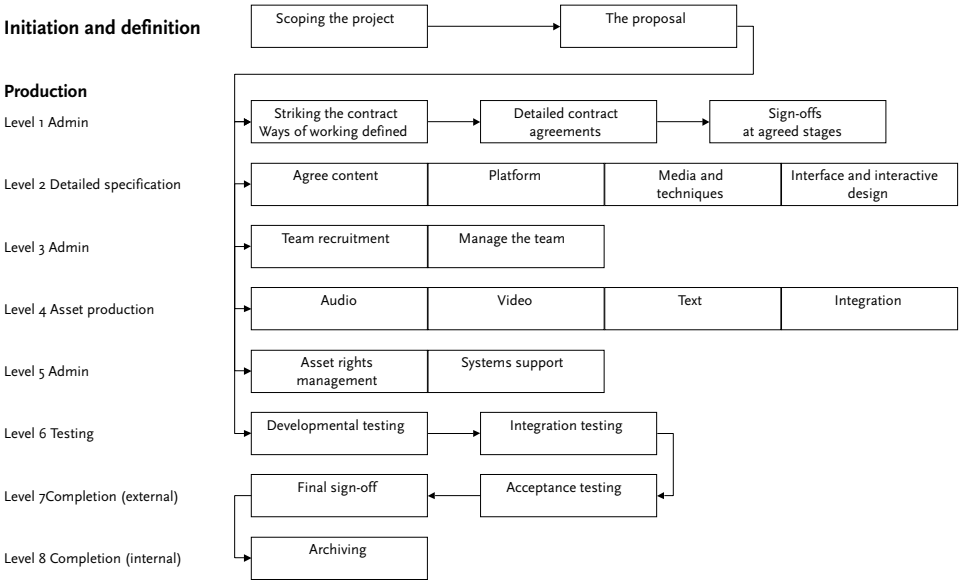


FIGURE 9: The Client Centered Multimedia Project Cycle[231]

The second approach to the multimedia production process is developed in Jussi Luukkonen's book *Viestinnäntekijä multimediaopas* (Multimedia guide for corporate communications professionals). The approach here is also presented from the point of view of the negotiations between a client and a multimedia producer. The process is presented in the following picture 10.

Luukkonen divides the process in three major parts: pre-production, production and postproduction. The pre-production process is concerned with e.g. the important issue of getting the client and the producer to agree on a written script and when this has been accomplished the production process can begin. In the production process one designs the actual product and also produces it by combining various forms of media and computer code. In the post production phase one calls for a sign off meeting, delivers the product and provides the support if such is needed. Form the standpoint of developing interactive television programs the most useful parts of Luukkonen's process are first of all the scripting part and secondly the part where one designs the user interface, media integration and programming.[236]

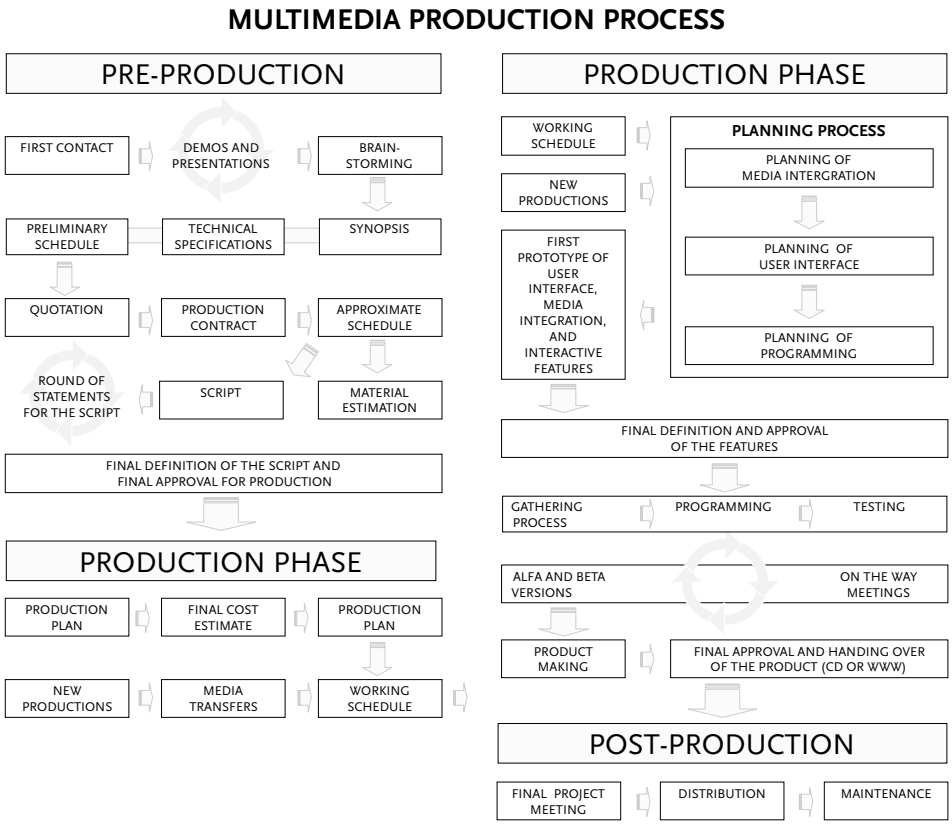


FIGURE 10: Multimedia production process according to Luukkonen[235]

According to Luukkonen, the writing for a client multimedia actually begins with two different tasks. One wants to write the factual content and one should also search for the relevant material that is available.

Regarding the script writing process, Luukkonen brings up several issues. The process begins with structuring the script. One gets familiar with the material that is concerned and starts to group the issues in it. After structuring one starts cutting of the topics that do not fit the purpose making sure the product will be neither too wide nor too deep. Finally when this phase is complete the writer will then start combining the found media elements and the agreed factual content in such a way that the agreed content is presented at least in some form of media (as a text, voice, picture or video). After the first draft of the script

is completed it should be sent out for comments and required revisions should be made.[237]

The second stage in Luukkonen's process (that is relevant to ITV production) is the part where one designs the user interface, the integration of media elements and the required programming. Luukkonen defines the designing of user interface as designing the functional attributes of the work. The integration of media elements includes the decisions on principles of visual approach, decisions on principles of sound engineering approach, and decisions on principles of still-, video- and animation approach.[238]

The third part is the designing and planning of the program components of the product. Luukkonen emphasizes that it is important to carry the programming process all along with the other parts of the design.[239]

From these guidelines I developed the following hypothesis:

The interface of the ITV program must be designed for a chosen audience.

Tay Vaughan has presented a third alternative approach to a multimedia production[240]. The process-model itself is originally developed by Brian Blum, a multimedia producer and the president of International Interactive Communications Society. This approach, which is presented in the following figure 11, appears to be the most promising one in regard to ITV production.

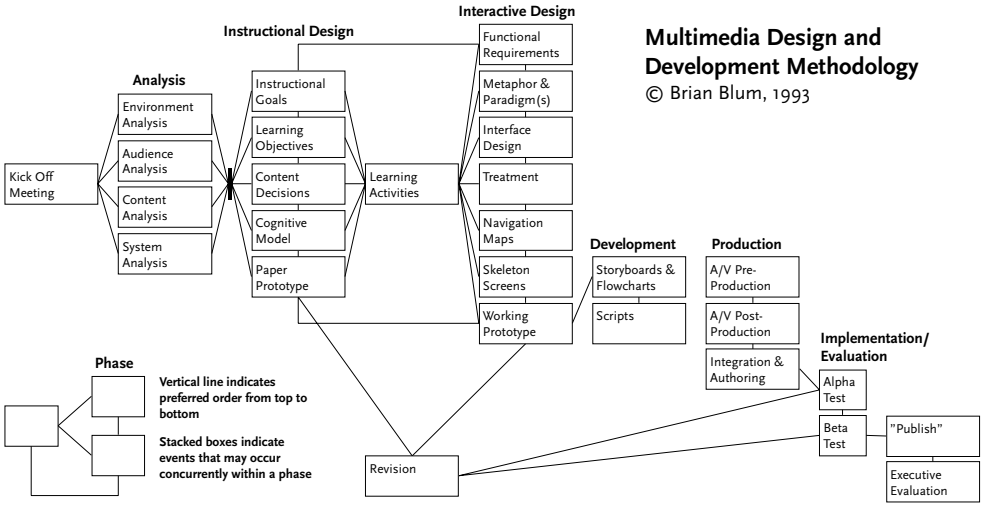


FIGURE 11: Multimedia Design and Development Methodology according to Blum[241]

The process model is divided into several phases which each hold several tasks. After the initiation of the project one has to perform four types of analysis: audience analysis, environment analysis, content analysis and system analysis. Then follows the instructional design phase, which consists of designing the instructional goals, learning objectives, content decisions, decision of cognitive model and designing the paper prototype. All these result in a list of learning activities, which in turn influences the interactive design phase. The interactive design contains the planning of functional requirements, decision of metaphors and paradigms, interface design, writing the treatment, planning of the navigation maps and skeleton screens and finally constructing a working prototype. With the prototype one then enters the development process, where the storyboards, flowcharts and scripts are fully completed. With these in hand begins the actual production process that includes audio-visual pre-production and post production as well as the media integration and multimedia authoring. When these are through, the process moves to its final stage, implementation and evaluation, that are done in alpha and beta tests. The phases of paper prototype, working prototype, alpha and beta tests contain a loop back to a revision stage. After all the necessary adjustments have been made, one then publishes his production and concludes the project in a summation or evaluation meeting.

Blum's process model seems in many ways to be a suitable starting point for developing a model for the design of interactive television programs. It not only seems to contain many of the necessary tasks, but it also presents them in logical groupings. Blum's model is obviously developed to be used in the design of instructional or educational multimedia and thus in applications of other fields one might want to put less weight in the instructional design phase (e.g. learning objectives and cognitive model).

From this model I have adapted the following hypotheses:

When designing an ITV program
- **one must analyze the audience of it**
- **one must analyze the environment in which it is going to be viewed**
- **one must carefully design the metaphors & paradigms (4.5)**
- **one must carefully design the user interface (4.4)**

3.4 WWW-production

The similarities and differences of Internet and interactive television have been discussed as early as in 1993 by e.g. Larry Press. At that time the Internet was

not as developed as it is today and Press found the cultures of the two media to be quite different.[242]

One of the most noted authorities in www-design is David Siegel. He has written about the subject under his own topic: Creating Killer Web Sites – The Art of Third-Generation Site Design. Siegel defines a third generation site as follows: "A third generation site is wrought by design not technological competence. Third generation sites give visitors a complete experience, from entry to exit. Design makes the difference."[243]

A great part of Siegel's book deals with visual matters as color depth and rendering typefaces and these issues are not directly applicable to the TV-screen. However, his discussions about www-site structures may have a great deal to offer for ITV developers as well. Siegel starts with a notion that one does not want to reach all of the millions of people who surf the web, but a select group. Then one tries to turn this group from window shoppers into customers who will take some type of action that benefits both the buyer and the seller.[244]

Siegel has formulated a well-defined structure for third generation sites: "Most third-generation sites have an entry, a center area with a core page of exploration and a well defined exit."[245] Interestingly this structure is surprisingly comparable with the structure of drama (which has a beginning, a middle and an end).

According to Siegel's definition a good entry to a site tells people where they are without serving them a whole smorgasbord of delights at once. "A good front door should be hard to walk away from. Present an image that grabs your audience and pulls them in."[246] As examples of these attractions (which Siegel calls fish food) that grab people's attention he mentions anything that gets peoples attention: games, live video, stunts, votes and free stuff.

According to Siegel the goal of most web sites is to create a community. "A good site pays off when people return again and again to purchase or participate. Core pages make this process enjoyable. Core pages direct and guide the visitor by providing links to relevant pages and satellite pages."

From this I have developed the following hypothesis:

The ITV program must have a specific core content or central theme that holds the program together by giving the viewers a place to return when they wander around following various links. (1.8)

According to Siegel a well-marked exit paradoxically entices visitors to stay. "Announcing the exit builds a sense of expectation like announcing the names of the guests on the talk show at the beginning." Furthermore Siegel states that

the exit is a good place to ask something from the visitors. Ask them to fill in a form, call a 800 number or send comments or feedback.[247]

From this I have developed the following hypothesis:

The ITV program must have a specific exit in order to collect e.g. contact information or feedback. (3.7)

In his second book, Secrets of Successful web sites, Siegel introduces a checklist[248] used in a company called Worker Bees. They recommend knowing the answers to these questions before beginning work on a web site. The list includes e.g. the following questions:

- What are the primary goals of the site?
- Who are the primary and secondary audiences?
- What is the number one take-away (key message)?

Kari Hintikka and Samu Mielonen have written about the usability of www-sites. They have identified the following additional questions to consider[249]:

- What is the basic idea of the site?
- What the site intends to accomplish for its owner?
- What is the nature of the hits: once or repeatedly?

Another well-known book about www-design from the point of interactivity is Don Sellers book Getting Hits – The Definitive Guide to Promoting Your Website. This guide deals with ways of attracting visitors to a specific web site. Among the various approaches that are covered include e.g. search engines, links, newsgroups & mailing lists, on-line and off-line media, advertising and the design of the respective site it self.[250]

Sellers explains thoroughly how to get ones www-site listed in so called search engines (such as Altavista) and to general directories (such as Yahoo). From this approach I gather that:

The ITV program must be mentioned in search engines or general (www-) directories. (6.5)

The ITV program must be mentioned in the Electronic Program Guide (EPG) of the Set-Top-Box the viewers use. (6.6)

Sellers suggests that the webmaster should also promote his site simply by asking the owners of other related sites to add a link to their site that points

to our site.[251] Other useful sites to ask for links include so called award sites, what's new sites or web media (like E-Zines and HotWired). From this approach I gather that:

The ITV-program must have links pointing to it from other related ITV-programs (6.2) or related www-sites (6.1).

Sellers also suggests that one should market his site in appropriate newsgroups and mailing lists. Although he cautions one to choose the target lists and groups very carefully in order to avoid hostile feedback. From this I gather that:

The ITV program must be advertised in relevant newsgroups and mailing lists.

Don Sellers guides the webmasters to also generate publicity in other media with the help of press releases. Another source of publicity can come from books and www-guides. A third source for additional publicity is the company's own material directed to clients or the general public.[252] From this approach I gather that:

The ITV program must be promoted with press releases or other forms of printed publicity. (6.3)

Finally Sellers suggests the use of paid advertising in the form of banners. This might also work for ITV programs.[253]

3.5 Experience from web communities and learning environments

The experiences that are gathered from forming web communities and learning environments suggest some hints in how to increase the interactivity in interactive television. Chris Greenhalgh, John Bowers, Graham Walker and John Wyver have worked with the idea of "Inhabited Television" which combines multi-user virtual environments with television, so that the on-line audience-members can participate in TV shows staged in a virtual world[254].

Cliff Figallo in turn has written about Hosting Web Communities, Building Relationships, Increasing Customer Loyalty, and maintaining a Competitive Edge. He suggests e.g. the following strategies to increase interaction among the customer group; One should establish a chat room or mailing list with archiving to promote interaction.[255] Furthermore the hosts of these medium should use creative means to introduce the members of the community of these forums to

each other to increase interaction.[256]

These strategies are developed even further in Rena M. Palloff's and Keith Pratt's book Building Learning Communities in Cyperspace – Effective Strategies for the Online Classroom. The authors suggest that in order to tighten the community, one should help it to develop shared goals among the members.[257] (In this case the goals should relate to the learning process.) This can be further achieved by creating teams for the purpose of small-group discussions, completion of group assignments, and engagement in small-group activities and simulations.[258] Finally the authors also suggest one further way to ensure active participation is to share the responsibility for the facilitation with participants. This means e.g. assigning students responsibility for leading a portion of the discussion.[259]

From these strategies I developed the following strategies for increasing interactivity in ITV-programs:

One must establish a chat room to increase the interactivity among the viewers of an ITV program. (2.17)
One must establish a mailing list (with archive pages) to increase the interactivity among the viewers of an ITV program. (2.16)
One must use a news group server to increase the interactivity among the viewers of an ITV program. (2.18)
The host of the ITV-program must introduce the (remote) Viewers to each other to increase the interactivity among the viewers of an ITV program.
The host of the ITV-program must develop shared goals among the viewers of the program. (2.9)
The host of the ITV-program must assign the viewers with the responsibility of maintaining interaction and communication among the audience. (2.4)

3.6 Virtual Communities and user generated content

It seems that on the Internet one may occasionally be lucky enough to start a so-called positive feedback spiral that works in his favor. Bill Gates has explained the positive feedback spiral in the light of success of some companies: "New companies, such as Apple, Compaq, Lotus, Oracle, Sun, and Microsoft, appeared to go from nothing to a billion dollars of revenue in a flash. These successes were driven, in part, by what I call the "positive spiral". When you have a hot product, investors pay attention to you and are willing to put their money into your company. Smart kids think, hey, everybody is talking about this company.

I'd like to work there. When one smart person comes into a company, soon another does, because talented people like to work with each other. This creates a sense of excitement. Potential partners and customers pay more attention, and the spiral continues, making the next success easier."[260]

On the Internet, the positive feedback can however lead to an even more favorable situation, where the users of a specific site generate content for it, which attracts more users, who generate new content, which again attracts new users and this goes on like a growing snowball. Perhaps the best known example of this is the birth of Yahoo. The founders of Yahoo, Jerry Yang and David Filo, tell about the start of their company: "We jumped on Mosaic at the beginning of 1994. We really didn't think much of it at first. Nobody did. ... I kept bugging Dave to show me the sites he had found. So he made his hot list, and I made my hot list, and he wrote some software to combine both our lists. ... It started out as a collection of computer-related sites that we were interested in. ... I think the inspiration to start listing other sites came from David one day. Maybe he was bored with his thesis. Initially we collected some of the friskier, weirder sites on the web, and it took off by word of mouth. ... and then we were just sitting back to watch the access logs go up."[261]

The growth of Yahoo is based a great deal on the positive feedback spiral. Because it got to be a good place to search web-addresses, people started to ask the founders to list his or her address also. This made Yahoo an even more complete directory and attracted even more users, who in turn wanted their sites to be listed. The result is a snowball like effect, where customers bring content (their web addresses) and the content brings customers and so forth. The financial reports of Yahoo demonstrate the power of the spiral. Started as a graduate student project, Yahoo is today a corporation with over 900 employees and a market capitalization and 35 billion dollars. Instead of being a plain directory it has added online commerce, shopping, auctions, real estate, classifieds and employment to its offerings.[262] Furthermore, it has diversified into completely separate areas as wireless messaging and information services and web-hosting of over 1,100 stores.[263]

A principal at the world's perhaps best-known management consultancy, McKinsey & Company, John Hagel has developed a process that one can follow in order to build this type of customer loyalty and feedback spiral. He already noticed in his 1994 published article the significance of a portal although not called by that name then: "It could become no more than an interesting packaged software business or a loss leader to generate traffic on a communications network. But it could equally well become a critical distribution bottleneck

through which content providers must pass to reach their audience."[264]

In their article Hagel and Lansing suggest that the company who "owns" the relationship to the customers will become the strongest position in the marketplace. The authors propose three different scenarios how the customer ownership might evolve:

- Old content wins
- Mega-gateways win
- New – and some old – content wins

According to the first scenario, unique and engaging content (intriguing interactive games, distinctive editorial content, exciting interactive games, hot musicians, major league sports franchises) will capture significant value. This might happen because the amount of bandwidth and access options is growing and the transport system could not be the bottleneck. In this type of an environment one should concentrate on producing unique and engaging content.[265]

In the second scenario the assumption is that some early entrants like Yahoo above will evolve into a highly-bundled gateway service from where the customers become so used to getting one-stop services that they might even pay a premium for it. If this scenario wins, the key to success is to be among the first entrants and to try to develop ways how customers can personalize these services for themselves. The argument here goes that after the customers have invested personal time in tailoring the software to be suitable for their personal purposes, they do not want to change it anymore. The authors give as an example of this the case when Microsoft bought a personal finance software company Inuit for 1.5 billion dollars even thought its revenues were only 200 million dollars. It was the loyalty base of 6 million users Microsoft wanted to buy, the authors argue.[266]

From this stand-point I developed the hypothesis that

The ITV program must focus on building as large as possible customer base. (5.10)

In the third scenario the authors argue, that the content owners and service providers would put their offerings available widely on the Internet. The power would shift from mega-gateways to partnerships, where all the pieces that make the use of the Internet ever easier are in place. This would especially favor those whose tools and user interface technologies get adopted as de facto standards, those who establish a leadership position in providing certain kinds of support

services (billing and transaction) and finally those content and service providers that dynamically build communities of interest.[267] This third scenario is the beginning of the development of Hagel's theory on how to build virtual communities.

From this stand-point I developed the hypothesis that

The ITV program must focus on developing a community of users in interactive television.

Hagel and Armstrong have developed the theory of a virtual community for the first time in full in their article Real Profits from Virtual Communities published in McKinsey quarterly in 1995. The idea of how a virtual community starts to grow like a snowball through the positive feedback cycle is presented in the following figure 12.

Hagel and Armstrong argue, that communities will integrate communication (chat, bulletin boards, e-mail), information (directories, advertising), entertainment (books, magazines, games) and transactions. The goal of an enterprise is to build a critical mass of customers. Furthermore, since marketing is a major expense and communities suffer from high churn rates, the development of loyal members is in their strategic interest.[269]

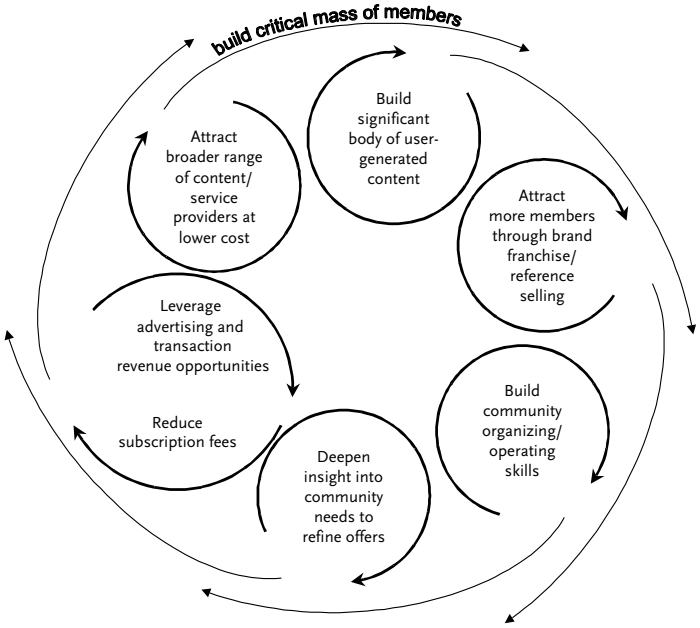


FIGURE 12: Increasing Returns for first Movers[268]

From this stand-point I developed the hypothesis that

The ITV program must focus on building the loyalty of the viewers. (2.22)

According to Hagel and Armstrong the companies that especially manage to merge communications, content and transactions in their respective topic area will enjoy a competitive advantage. Transaction and advertising revenues will help them improve content and reduce user fees, and they will capture data on users' behavior, which will give them a stronger understanding of consumers' needs.

Hagel and Armstrong have identified four types of social needs among online users and defined four types of communities based on these needs. The community types are: communities of relationship, communities of fantasy, communities of transaction and communities of interest. Community of relationship is formed of people, who interact regularly, cover many different topics, and are aware of one other's electronic identities and build a history together. A second type of group that also interacts regularly but are not aware of others' identities, are communities of fantasy. They will create new environments, personalities and storylines relating in a purely fictional setting. MUDs are typical examples of these kinds of communities. The third group, communities of transactions are not forming communities in the traditional sense, but are instead connected by the interaction from buying and selling. Finally, the fourth group consists of people who interact intensively with each other, but only on limited topics, (like parenting, certain hobbies, or e.g. antiques).

From this standpoint I have taken he following four hypotheses related to a successful development of an interactive television program.

The developers of the ITV program must build a community of relationship around the program.
The developers of the ITV program must build a community of fantasy around the program.
The developers of the ITV program must build a community of transaction around the program.
The developers of the ITV program must build a community of interest around the program.
These four hypotheses are combined into one in the following: The developers of the ITV program must decide, what is the task that the audience will want to perform with this program? (1.4)

In the same article the authors propose four ways for creating value. An access

based model creates value via time based usage fees. A content-based model depends on fees for accessing specific content. A commerce-based model draws on transactions and advertising for revenues. Finally a synergistic model takes advantage of synergies with other businesses. This means that e.g. Microsoft saves money on physical distribution by putting the products available in a community and Federal Express saves money on customer service by putting a package tracing system on-line.[270]

From these standpoints I have taken the following two hypotheses related to developing the ways to create value out of interactive television programs.

One must charge the viewers for time spent with the program.
One must generate revenues from synergies the program might provide for other businesses.

Hagel, Bergsma and Dheer have developed the business model of a virtual community further in an article Placing your bets on electronic networks, published in 1996.[271] They suggest that the community builder should consider his business model from the networks user's point of view. According to Hagel et al the value for users will derive from three kinds of aggregation:

- Aggregating users
- Bundling for convenience and cost
- Bundling for quality

According to Hagel et al, early evidence suggests that the users value a network's ability to aggregate users, rather than content. They give as an example Prodigy's entry to on-line services business. Prodigy's management then assumed that consumers would be most interested in various kinds of published content. It turned out though that subscribers were much more interested in communicating with one another.[272]

Sally J. McMillan has presented similar type of issues. In her article, Who pays for Content, she presents four models of funding for Computer-Mediated communication. The four funding sources are from sales and promotions, from sponsorship, from public information and from communities[273]. Hagel et al note that it is logical to bundle other resources such as content and transaction services in the communities in order to provide the users with greater convenience and lower prices. Some of these resources will probably form natural cluster: for instance, healthcare, travel and financial services all involve the need to access information and buy or sell products and services. Hagel et al conclude

that for most users having a full range of resources bundled together in one accessible format with a consistent look and feel and integrated billing will be much more convenient than surfing the net to assemble an equivalent set of resources.[274]

On the other hand, users might value a network's ability to provide quality information. Hagel et al note that typically, when one requests information on French wine, he will get hundreds of citations of which only a few offer quality information. Thus mass-market customers may prefer to rely on an aggregator that seems to understand their needs and is able to provide them with a selection of useful resources.[275]

Hagel et al note that aggregating resources makes it possible to integrate network usage data and construct rich profiles of users' transactions and interests. These profiles then become an asset that can be employed to generate and target advertising campaigns and transaction services, giving the aggregator a greater flexibility in managing three major revenue streams: user fees, transaction fees, and advertising.[276]

I conclude that these concepts of aggregating users, convenience, cost and quality might be useful in developing ITV programs and I propose the following hypotheses:

The ITV program must bundle convenience and low costs for the audience of the program. (2.12)

The ITV program must increase the value the viewers of programs get from watching it. (2.11)

In relation to the problem of providing customers with trustworthy information (as stated above) Hagel has developed the idea of information brokering even further in his article The New Infomediaries with Jeffrey Rayport. According to Hagel and Rayport an Infomediary is a business whose whole source of revenue derives from capturing consumer information and developing detailed profiles of individual customers for use by selected third-party vendors.[277]

According to the authors the infomediaries can operate with different business models. First they can act as audience brokers and capture information about users across multiple web sites in the way DoubleClick operates. The second type are the lead generators that translate data about customers and then direct customers to vendors whose offering meets the demand. Examples of this are Auto-by-Tel and 1-800-PCFlowers which connect respective customers to their local dealers. In addition to these vendor-oriented approaches there exist also customer based infomediaries like agents, proxies and filters. Agents help

customers to find products according to their previous buying profiles. Proxies represent customers interests in negotiation with vendors and filters screen commercial messages from vendors to make sure they are relevant to the respective customer.[278]

In their 1997 published book Net Gain, Real Profits from Virtual Communities, Hagel and Armstrong propose certain strategies for building a virtual community and starting the snowball like positive feedback cycle. Probably the most central message of their book is that one should try to be among the first ones who build these communities. "The advantages of being among the first make the most compelling argument for beginning to plan a virtual community now: Once the market really begins to take off, it will become increasingly difficult and expensive to catch up with market leaders."[279]

Hagel and Armstrong argue that virtual communities will eventually have a central role in "orchestrating the information and transaction capabilities that will allow customers to extract even more value from the vendors they interact with. "Virtual communities will become agents for their members and help them to get better information about products and services and also lower prices for them. The authors have identified five defining elements of virtual communities that will help communities to develop in this position. These elements are[280]:

- Distinctive focus
- Capacity to integrate content and communication
- Appreciation of member generated content
- Access to competing publishers and vendors
- Commercial orientation

The distinctive focus will help customers and members to understand what kind of resources they are likely to find from the community. The capacity to integrate content and communication will serve as a tool for the audience. They can access the info that is published by the editors, vendors and advertisers and add their own understanding of it by communicating with each other, asking questions about the content and even criticizing it. The third element means that the community provides environments for their audiences to publish their views. This serves the audience by often offering a competing source of information. It also serves the organizer of the community by generating amounts of content that other users read and consume. Typical examples of this kind of content are the customer book reviews in Amazon.com. The fourth element means that a

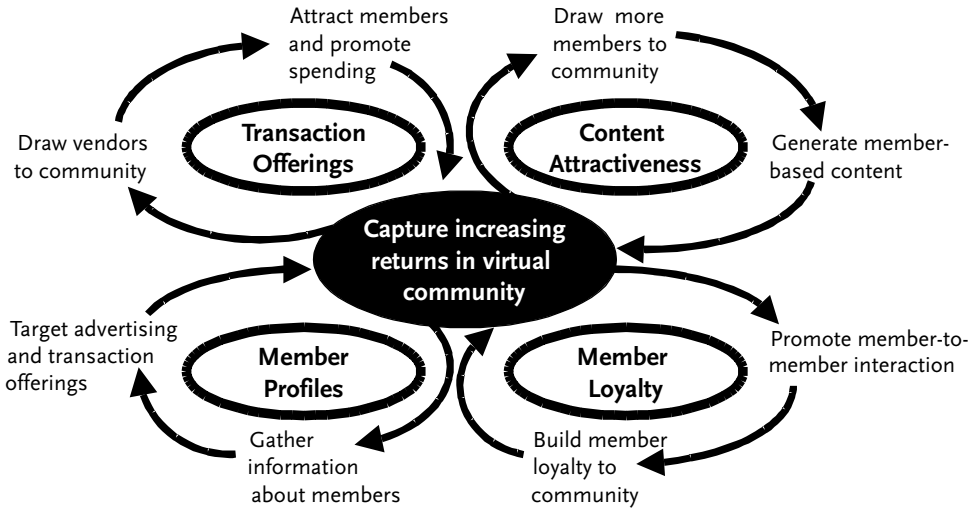


FIGURE 13: Dynamics of Increasing returns[282]

successful virtual community must seek to provide the best possible information to their audience and thus offer information from the broadest possible range of high-quality sources. The fifth element suggests that the community should be organized as a commercial enterprise with the objective of earning financial return from the valuable information and services provided to customers. Finally the authors compress these elements into two sides of the rolling snowball: Aggregate members and aggregate resources relevant to members.[281]

The above mentioned five elements seem suitable guidelines also for developing an interactive television series, so I develop the following hypotheses from here:

The ITV program must integrate content and communication. (1.13)

The notion of integrating content and communication is also supported in Marko Turpeinen's dissertation, where he argues that communities benefit from customized news services. This is because news services are tailored to help community members to increase the level of dialogue and social learning through discussions that relate to events that are valuable to communities[283].

Hagel and Armstrong have also proposed some guidelines on how to choose the topic for the community. The authors note, that most community organizers have fallen into their topic through personal interests. They also suggest that a wiser approach might be to systematically scan all the possibilities, segment the

market and focus on a specific area because of its economic advantages. Hagel and Armstrong have also identified several factors that they argue can be used in predicting a community's value. The factors that Hagel and Armstrong have identified are:

1. Size of the potential community
2. Relative value of being on-line
3. Value of being in a community
4. Likely intensity of commerce
5. Fractal depth of the community

According to the authors one should estimate the potential size of the community e.g. with the help of demographic statistics. As in their example for parenting community one would look to the number of parents. The second issue is the relative value that the members get from being on-line. This depends first on the cost of getting on-line if not already there. Secondly it depends on the on-line alternatives value compared to the value of an off-line alternative e.g. magazine. The member to member interaction is the key here to the value that other mediums cannot offer so efficiently. The third factor relates to the intensity that a member would visit the community. As an example the authors give a business community, where products are complex and hard to evaluate. This type of a community might be enormously valuable for members who want to compare experiences with other purchasers. The fourth factor is the likely intensity of commerce in a certain type of community. This would be evaluated from the volume of transactions conducted by the target community group, average size of each transaction and the amount of advertising that has been done in order to generate this. The fifth and final element is the fractal depth of the community. This means the degree it can be segmented. The authors argue that one of the most important ingredients of an on-line community is the spirit that it has. This spirit tends to be greater in smaller groups. Thus it is better the more ways a community can be divided into subgroups.[284]

It would sound reasonable to think about these issues also when designing an interactive television show. Therefore I have developed the following five hypotheses:

When choosing the topic or subject matter for an interactive television show or program:
one must consider the size of the potential community that can

develop around it, and
one must consider the relative value the audience can get from receiving this content in an on-line form, and
one must consider the intensity the audience can be on-line, and (1.3)
one must consider the likely intensity of commerce this community can generate, and
one must consider how the community can be divided in as many as possible sub-communities.

3.7 Additional potential strategies

In addition to the strategies that I have so far derived from other media I developed the following potential strategies along the way of my research:

The developers of the ITV program must consider the special (psychological, physical, and economical) characteristics of this viewer group (1.2)
The ITV program must be interactive for one single viewer (2.2)
The ITV program must be enjoyable for a viewer that has no return path (can't be interactive) (2.3)
The ITV program must motivate the viewer to strive for the goal (2.6)
The ITV program must make the viewers want to meet each other by watching the show next time (2.10)
The developers of the ITV program must consider with what kinds of devices can the audience interact (2.14)
The developers of the ITV program must consider how can the viewers interact through mobile devices (e.g. mobile phone or Palm Pilot) (2.15)
The developers of the ITV program must monitor viewer usage of the program (2.19)
The ITV program must include compelling sound elements and music (4.3)
Home shopping must be combined into the program (5.5)
Product placement must be incorporated in the program (5.6)
The ITV program must generate transaction fees (5.7)
The ITV program must launch a snowball effect so that viewers contribute content (e.g. write book reviews) that attract new viewers who in turn leave new content etc... (5.11)
The developers of the ITV program must generate hype around the program (6.4)

The ITV program must get the viewers to generate new content for the program (e.g. writing reviews etc.) (6.7)
The ITV program must get viewers to attract new viewers (6.8)
The ITV program must take advantage from an existing media brand (6.9)

3.8 Conclusions about the potential strategies

In this and in the previous chapter I have developed a group of potential questions or strategies (hypotheses) that one might want to use, when developing an interactive television program. I have tested some of these with the method I will describe in the following chapter.

4 Methodology

A dissertation in the University of Art and Design in Helsinki can be either a traditional scientific dissertation or it can be an art production. It can also be a product development project[285]. The dissertation can be a single larger research project or it can consist of several separate research efforts that are in some way related to each other. Dissertation artwork (Väitösteos) in turn can be an art production, several art productions or product development project. Also these latter forms of dissertations include a written report complimenting the artifacts they are based on.

The Ph.D. students have liberty to choose from any of these forms. Being a pragmatic person, I am mostly interested in learning from the experiences of other professionals and therefore I chose to conduct a traditional empirical study, based on the views of the professional community. My hope was and still is to find better ways to think and develop the applications and format of this new medium.

4.1 Justification of the methodology

The field of my study – interactive television programs – is just beginning to evolve and it is not even sure that a breakthrough will happen. Therefore, there does not exist a large pool of ready-made ITV programs that one could study (in contrast to e.g. film, where hundreds of thousands of examples exist.) My aim is to identify a set of questions that a person developing an ITV-program should ask himself. If I had the same aim regarding e.g. a screenplay, I could simply pick a sample of successful films (according to the critiques they have received or according to their ticket sales) and classify them and start to identify some common elements in the successful screenplays. However, such a pool for completed and broadcast ITV programs does not yet exist and this classification is not possible.

Nevertheless, when one is studying a field that is only developing, he could choose his instrument from a variety of methods. He could work in the field and conduct an action research type of a study. Or he could collect information about a certain amount of cases done by other professionals and analyze these findings. If he wanted to focus on the markets that have not yet developed, he could try a variety of predictive methods. He can also combine information developed in other, resembling fields.

4.1.1 Predictive methods

In his book Predicting the Future, Nicholas Rescher introduces the following approaches for predicting future outcomes: judgmental estimation, trend projection, curve fitting, circumstantial analogy, indicator coordinating, law derivation and phenomenological modeling.[286]

The individual judgmental predictions depend on the informal, intuitive judgement of individual expert predictors. Further on, they are often combined with other expert opinions to avoid peculiarities and biases. This amalgamation can be done non-interactively by mechanically combining the results or interactively in order to form a consensus.[287]

Probably the best know technique of this is the Delphi method. In it a panel of experts is interrogated about a number of future issues within their areas of expertise. Usually it is done so that the respondents, who are kept anonymous to each other, are mailed e.g. three rounds of questionnaires. After each round the results are reported to the panel and the next round is conducted.[288] In the end of the third round the respondents have come closer to each other in their responses and they have identified the results they believe to be most significant.

The Delphi method has an extension to it, called the Futures Wheel. "Once the most likely and most important trends have been identified through delphi questionnaire, the next stage is to draw out the consequences of those trends in richer detail. "[289] The futures wheel is then created from these trends with a method that is basically the opposite of brainstorming: "Any individual in the group may propose a consequence to the original item, but all other members of the group have a veto power. If any member thinks that the proposed consequence will not occur, it is eliminated and another consequence is proposed.

In relation to Delphi and the Futures Wheel it is important to note that the unanimity among the respondents may have no relationship with the reality: "Our respondents could all agree and all be very wrong."[290]

The main reason why I decided not to use the Delphi method or the Futures Wheel is that I wanted to tap a larger pool of experience and a survey felt more suitable for this.

One might also have tried predictive methods like trend extrapolation or pattern fitting in order to try to find out how the future producers and scriptwriters should work. Trend extrapolation and pattern fitting do however have little use except in forecasting the penetration of interactive set-top-boxes to households.

It is in fact used in this context quite often, when the penetration is estimated by projecting an S-curve in the future.

Circumstantial analogy on the other hand is a much more useful tool. Rescher actually even names the production of motion picture sequels as one of the most obvious uses of analogy forecasting: "If Blunderbuss I does well, then Blunderbuss II, which offers more of the same, is also bound to do well." According to Rescher, product dissemination is another source of examples where analogies have been used successfully. Circumstantial analogy has in a way been a basis for developing my hypotheses. My hypotheses are build on the assumption, that one might use in ITV production similar strategies that are now used in e.g. www- or multimedia production, in drama or in building virtual communities. I am however trying to verify the hypotheses by conducting a survey.

4.1.2 Scenario analysis

Had I chosen to study the future interactive television applications, another approach might have been the scenario planning. Gill Ringland defines scenario planning in his book Scenario Planning – Managing for the Future it in the following way: "The part of strategic planning which relates to the tools and technologies for managing the uncertainties of the future." In his book he also quotes Michael Porter's definition for scenario planning: "An internally consistent view of what the future might turn out to be – not a forecast, but one possible outcome."[291]

According to Thomas F Mandel (in Ringland's book) there are at least three different major approaches to scenario analysis. The first of them is the Expert's scenario, where outside consultants provide structured information to a corporation about e.g. the future macro-environment. In the second approach, morphological approach, the decision-maker is provided with a larger number of different scenarios based on different plausible states for the key driving forces. The third one, cross impact analysis, is even more complicated. There, a large number of potential events and conditions are identified and they have probabilities assigned to them, and a large computer is used to sort through different combinations of probabilities and cross-impacts.[292]

An example of a scenario related to interactive television can be found in a forecast made of Ford Motor Company's futures. In one scenario the company is seen as a pioneer of the rapid assembly of customized transport and selling

most of its vehicles by means of interactive television, which allows customers to take vehicles on interactive test drives.[293]

Scenario planning's strengths are perhaps not in normative issues, e.g. in describing how one should develop interactive television programs. Instead, as Ringland states, "the evidence is that organizations have mostly used scenario planning to help in anticipating specific threats, for instance from environmental pressures, political changes, of industry structure changes. E.g. a US-based scenario expert has developed four different scenarios for the Internet in order to stimulate business people's thoughts about it and to facilitate strategy building.[294] Therefore, scenario analysis might be more useful in the strategic level thinking of a major broadcaster than in the craftsmanship level thinking of a scriptwriter (which this study is closer to).

4.1.3 The Case Study Method

The case study method could well have been applied to this research project. Probably the most quoted text-book teaching the case study method is Case Study Research, Design and Methods by Robert K. Yin. Case study is defined by Yin as follows: "A case study is an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident." Yin has later added a second part in this definition. "The case study inquiry copes with the technically distinctive situation in which there will be many more variables of interest than data points, and as one result relies on multiple sources of evidence, with data needing to converge in a triangulating fashion, and as another result benefits from the prior development of theoretical propositions to guide data collection and analysis."[295]

According to Yin, evidence for case studies may come from six sources: documents, archival records, interviews, direct observation, participant-observation, and physical artifacts. No single source has a complete advantage over all the others. In fact, the various sources are highly complementary, and a good case study will therefore want to use as many sources as possible.[296] Most of these types of evidence could certainly be accessed of several existing ITV-programs and therefore a case study would serve as a good method for this research.

A case study can be conducted as a single-case design or as a multiple case design. A single case can be used, when the case represents an extreme or unique case[297]. One might argue that an almost perfect film script could exist, but this is hardly the case for the evolving ITV- genre.

In multiple case design one selects each case carefully so that it either predicts similar results or produces contrasting results but for predicted reasons. It would have been relatively easy to locate at least 10 different cases of ITV projects from Finland alone and additional 50 to 100 from abroad. On the other hand, most of these prototypes would have been incomplete and probably made for demo purposes only. (When they have been made, very few well functioning interactive networks existed and they had a very small subscriber base.) Thus they would hardly have provided results that one could have predicted or compared. Furthermore, they would probably have been several years old and reflected a situation where e.g. the opportunities derived from the advancement of the Internet would not have been visible. So basically the evidence might have been based on old technology.

Thus the main reason for abandoning the case study method was my wish to look forward and incorporate views of the interviewees about what they would do in their future projects.

4.1.4 Action research

Action research would in some circumstances be also very well suited for improving the process of developing ITV-programs. Leena Syrjälä quotes Kemmins's definition of action research as follows: With the help of action research one tries to improve his social or educational practices and to understand them and the circumstances more deeply.[298]

One tries to solve various practical problems in e.g. schools, hospitals and corporations. The researcher works himself in the profession or position that he is studying. The aim of the research is to improve the target action or situation.

In order to use action research as a method, I would have to have access to persons who regularly develop ITV-concepts and follow their work closely. The access part is easier to achieve but the constant following of this work in a proprietary environment would be difficult to gain and also time consuming.

4.1.5 Knowledge brokering

An approach that sounds particular suitable to the domain of the University of Art and Design is presented in Andrew Hargadon's study; Knowledge Brokers, A field study of organizational learning and innovation. Hargadon has identified three types of organizations that appear to routinely create new combinations of existing ideas. These organizations, that Hargadon calls knowledge

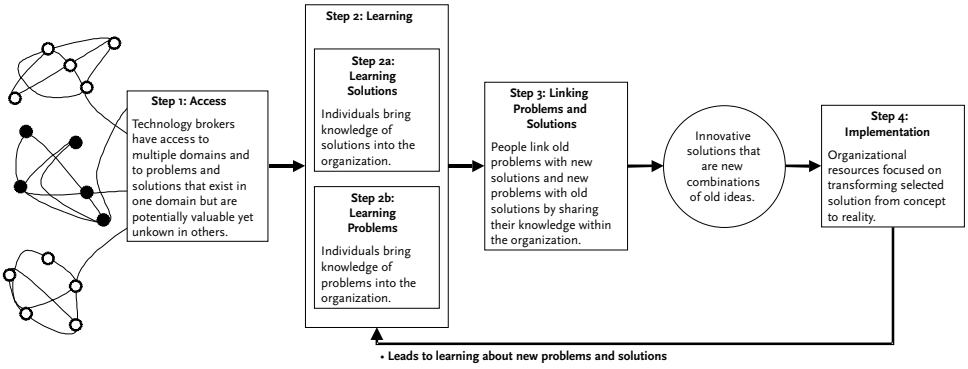
brokers, include product design consulting firms, management consulting firms and large manufacturing firms that operate divisions in multiple industries. According to Hargadon, these knowledge brokers routinely innovate by introducing in one domain ideas that they have seen elsewhere, creating new combinations of existing ideas that few people, if any, have seen before.[299]

Hargadon studied two companies from each field. IDEO Product Development and Design Continuum represented the product development consulting firms, McKinsey and Andersen Consulting represented the management consulting industry and Hewlett-Packard and Boeing represented the manufacturing firms.

According to Hargadon's findings, knowledge brokering involves transferring ideas from where they are known to where there is little or no previous knowledge of them. "Yet for these efforts to be successful, knowledge brokering also involves transforming, sometimes radically, those existing ideas to fit new environments. To adapt to new settings, new users, and new uses, existing ideas often must combine with others to form innovative solutions that represent new combinations of existing ideas."[300]

According to Hargadon, the knowledge brokering follows a four-step model, that is described in the following figure14.

FIGURE 14: A Process Model of innovation through Knowledge Brokering[301]



A prerequisite for this model to work is that the knowledge broker has such a network position in a larger social and technological context, that gives it access (step 1) to multiple domains and to their problems and solutions that are potentially valuable on other domains. The next step is learning, where the individual members of the knowledge brokering organizations bring knowledge from a

particular domain into the organization. Then follow the phases of linking new solutions to new problems and implementing the selected approach. Having personally worked at a film production company and in a multimedia and www-company I felt that I at least to some degree have an above mentioned network position. Yet I still did not want to rely solely on the Knowledge brokering -method.

4.1.6 Zetterberg's method

Similar to the Knowledge-brokering method is the Scholarly Consultation -process introduced by Hans-Lennart Zetterberg in his book Social Theory and Social Practice. This method is especially interesting, because it has been used successfully in Nailul Mohdnor's dissertation in order to develop a programming model for distance education programs in higher education institutions.

According to Zetterberg, the scholarly consultation is a complex event, but the following elements seem to be present in any substantive consultation:

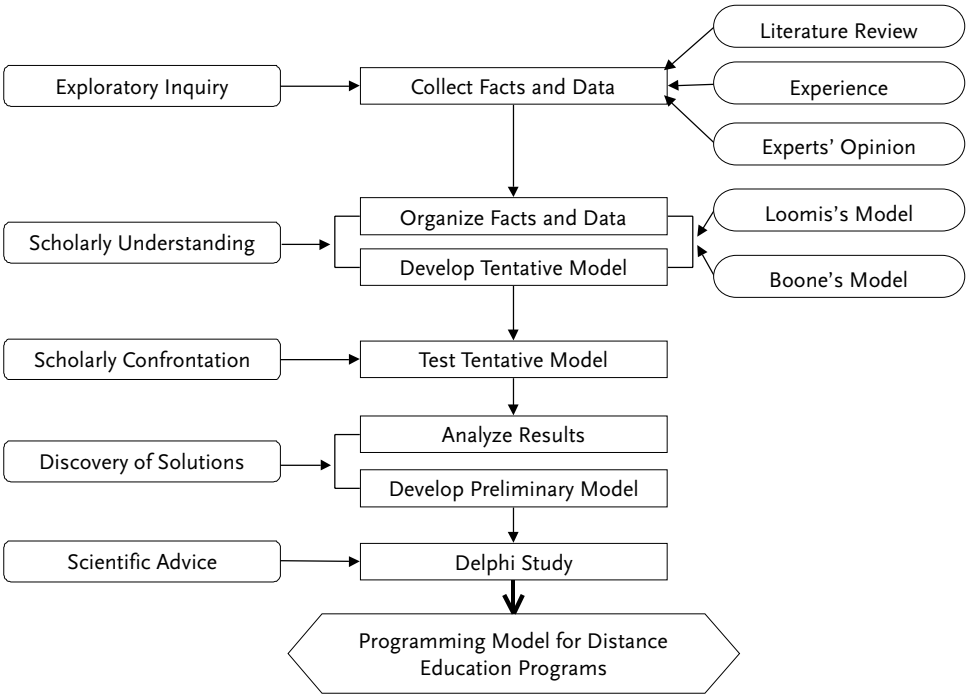
1. Exploratory inquiry
2. Scholarly understanding
3. Scholarly confrontation
4. Discovery of solutions
5. Scientific advice

In the *Exploratory inquiry* phase the consultant finds out details of the problem. "This is usually done simply by talking to the people involved and observing the problem situation at hand." Next, in the *Scholarly understanding* phase, the client's problem is translated into scientific terms, and the corresponding theoretical problems are formulated. "Also, descriptive information of a general kind about the variables entering in to the problems are assembled from the consultant's memory, library, or research files." The client is then given a perspective on his problem by being told in general language how the scientific discipline views his problem, and he is given a descriptive orientation about some variables entering into his problem. This is called the *Scholarly confrontation* phase. Next in the *Discovery of solutions* -phase, the consultant takes the laws of his own discipline to calculate the solution (or alternative solutions) to the theoretical problems for which such a solution exists. "Thus he obtains what we may call theoretical solutions." Finally the client is presented with a translation of the theoretical solutions into the client's language and with references to his specific

situation. "In short, he is told what to do." The client is also given some idea of the complications or unintended consequences that might occur should he adopt the solutions proposed.[302]

Mohdnor has illustrated the use of Zetterberg's Scholarly Consultation process in the context of his own dissertation work. Mohdnor used an international Delphi study in the Scientific Advice phase.

FIGURE 15: The steps in developing the Programming model for Distance Education Program[303]



4.1.7 The method chosen for this study

The method of this study could be described as a combination of knowledge brokering and Zetterberg's Scholarly Consultation.

In the *exploratory inquiry* phase I identified the problem, in my case the lack of a model for developing interactive television programs. This happened as a result of my experience and earlier research work in the field (knowledge broker-

ing) and also of course as a result of the literature review (Zeterberg's method) described in chapter 2 of this dissertation.

The second phase, *Scholarly understanding*, is mostly done in the work described in chapter 3, where the sources of possible strategies for ITV product development are analyzed. Both knowledge brokering and Zetterberg's method were applied to identify the possible strategies.

Also the third phase, the *Scholarly confrontation* is mainly described in chapter 3 of my dissertation, where the strategies adopted from other fields are formulated into strategies that might be useful in ITV-program development. These strategies were written into a survey form that was sent to the experts of ITV-programs to fill.

The fourth phase, *Discovery of solutions* is done in analyzing the responses to the survey.

The fifth phase is the final "results" chapter of my dissertation. The outcome is a model for developing interactive television programs.

4.2 Sampling

An attempt to find a suitable database for identifying the respondents was made by contacting commercial newsletters that deal with ITV-related issues. Their response was that the subscriber list is their most valuable asset in competition and they could not risk it by renting it even for a fee. So a ready-made representative list could not be obtained.

Therefore, I decided to use a sampling method called the snowball method. Cooper and Schindler describe the method as follows: "In snowball method first some relevant individuals are discovered. This group is then used to locate others who possess similar characteristics and who in turn identify others. Similar to a reverse search for bibliographic sources the snowball gathers the subjects as it rolls along."[304] Snowball method is used in research areas where respondents are difficult to identify and best located through referral networks.

Before launching the snowball one naturally needs a group of initial respondents. The initial group of relevant companies and individuals was picked from the following sources:

- Members of DigiTV-forum of Finland
- Speakers of various international ITV-related conferences (DTT-seminars by IRS and Broadcast@Internet seminar by IBC)
- Persons being interviewed in Peter J. Bates' study Development of

Satellite and Terrestrial Digital Broadcasting Systems and Services and Implications for Education and Training
- Those participants of the Milia 2000 fair who had indicated their company is active in interactive television
- Who is Who in Digital, Cable and Satellite -directory
- Persons who had posted a message to WebTV developers forum
- My own list of persons I knew were active in this field
- Membership organizations in DVB and SCE

In many of these sources only a general e-mail address of a specific company was given. For example in Who is Who in Digital, Cable & Satellite, the contact information of CNN International does not suggest an actual person who might be able to tell about their interactive efforts. Instead the directory gives only a general e-mail address cnni@cnn.com.

A request to this type of general addresses was sent where I asked the respondent of the message to forward it to a person, who deals with ITV issues in that organization. I assume that in reality not so many of these messages were actually forwarded and most of them were instead treated as junk mail.

Once the snowball was pushed moving and respondents started to identify further respondents the new candidates were contacted via e-mail and asked to participate in the survey. They were also told by whom they had been recommended. In theory, this way the amount of potential respondents would double in every round of sent inquiries and thus grow exponentially. In reality the respondents provided suggestions for new respondents at the following rate:

7/103 suggested more than 2 new respondents
41/103 suggested 2 new respondents
10/103 suggested only one new respondent
45/103 did not suggest any new respondents

Therefore this snowball did not began to grow, but instead tired out. A decision was made to settle for the 98 useful responses that were gathered.

4.3 Computer programs used in the research

In order to collect the responses from the respondents I used a web-based survey tool called Infopoll. Infopoll is a software that offers solutions to various aspects of survey research including e.g. designing questionnaires, storing the

results and analyzing the results all through the help of the Internet. The respondents can fill the forms via their web-browsers anywhere in the world and the researcher has instant access to the results from anywhere in the world.

The Infopoll program consists of four components: Infopoll Designer, Infopoll Simulator, Infopoll Server and Infopoll Analyzer.

With Infopoll Designer, one can design his questionnaire form so that the result is a www-page written in HTML-code. It is then ready to be published on the Internet.

I used the Infopoll Simulator to simulate the potential survey results before publishing or distributing the form by giving random entries to the questions on the form. This feature proved to be handy in e.g. having a peak preview of the style how the program presented the results.

The www-survey form and the database where the results are stored are kept in a server, that one can either buy for his own computer or license at Infopoll's server. In my study I licensed the server from Infopoll and the survey form was located at the server at the address:

http://www.infopoll.net/Live/surveys/s7419.htm.

With one function of Infopoll Analyzer the researcher can obtain even real time analysis report after each new respondent has submitted his form. The Infopoll Analyzer has e.g. the following instruments available in it: Standard analysis, frequency of answers, grouping of several questions, cross tables, two dimensional ranking tables and graphs, statistical analysis, different means, variance analysis, table correlation, standard deviation, multiple regression, frequency distribution, etc. In addition to these tools, one can export his data to an Excel sheet to carry out further analysis there.

4.4 Selection of the strategies to the survey

In chapters 2 and 3, I identified a group of strategies (hypotheses) that might be helpful in developing ITV applications. From these hypotheses I picked the most promising ones to be tested by the professional community. The selection was made based on my personal judgement. Some promising strategies had to be omitted, because they were too complicated to be explained in a survey form. Thus the fact that a strategy is developed in chapter 2 or 3 and it is not mentioned in the conclusions does not necessarily mean this strategy is considered not working. The conclusions work only one way (meaning that the strategies that are presented in chapter 6 are likely to be good ones).

4.5 The survey form

The survey form was divided into seven different sections. In section one the respondents were asked about their background information and experience in the field. In addition they were given the opportunity to provide contact information of other potential respondents. The second part of the form included questions related to choosing the subject of an ITV program. The third part dealt with audience interaction and the fourth section with the structure of an ITV program. The fifth section was concerned with aesthetic and design issues and the sixth with the business model of the ITV program. Finally the seventh set of questions dealt with marketing of the ITV program. The complete survey form is presented in Appendix 2.

4.6 Testing of the survey form

The survey form was tested for the first time in the summer of 1999 when it was shown to the following three persons with experience of ITV -production; Jaakko Visuri, Raimo Lång and Pasi Hytönen. In addition it was shown to Ilpo Koskinen who is familiar with the methods of sociological research. Each of them gave valuable comments and the form was significantly restructured and shortened.

In the second test done in the beginning of 2000. The new version of the form was tested in the Tilastokeskuksen [Statistics Finland] Survey Laboratory to Minna Nurminen, Mia Marttiini and Markku Mastomäki, all familiar with ITV issues. In addition it was shown to Kimmo Kohtamäki an experienced statistician. Finally the form was also evaluated by professionals in the survey laboratory. At this round the form already functioned well, but there was still a need to shorten it significantly which was also done.

4.7 Judging the Quality of the Research Design

Yin has given a clear and useful framework on how one can judge the quality of a research design. He has developed the approach having the common complaint about case studies in mind: It is difficult to generalize from one case to another. Yin notes that four test have been commonly used to establish the quality of any empirical social research. These tests are construct validity, internal validity, external validity and reliability. Yin quotes Kidder & Judd, 1986 in explaining the function of each test.

4.7.1 Construct validity

With construct validity we mean establishing correct operational measures for the concepts being studied[305]. In this type of survey this basically means finding the correct questions in relation to the strategies being evaluated.

When designing my survey form I considered the following variations for the question structure:

For example if I wanted to know should an ITV developer consider using a mailing list in the program I could have asked it in the following ways:

Alternative 1:
The developer should ask himself whether he can use a mailing list in the ITV program.
1 2 3 4 5
(Not important 1 – very important 5)

Alternative 2:
The developer should ask himself whether he can use a mailing list in the ITV program.
1 2 3 4 5 6 7
(Not important 1 – very important 7)

Alternative 3:
The developer should ask himself whether he can use a mailing list in the ITV program.
1 2 3
(Not important 1 – very important 3)

Alternative 4:
The developer should ask himself whether he can use a mailing list in the ITV program.
Yes – No

Alternative 5:
The developer should ask himself whether he can use a mailing list in the ITV program.
Disagree completely – disagree partly – no opinion – agree partly – fully agree.

I decided to use alternative 3 because I wanted to have the possibility to calculate averages. On the other hand the tests with the form revealed that the longer scales in the alternatives 1 and 2 did not bring much additional value to the responses so for simplicity sake I decided to keep the choices as short as possible.

I feel the selected way of asking these issues is the best way to conduct the study and therefore the study has a strong construct validity.

4.7.2 Internal validity

Internal validity is used for explanatory or causal studies only, not for descriptive or exploratory studies. This means establishing a causal relationship, whereby certain conditions are shown to lead to other conditions, as distinguished from spurious relationships[306]. Since my study is exploratory, there is no need to justify the internal validity.

4.7.3 External validity

By external validity we mean establishing the domain to which the study's findings can be generalized.[307] As I have pointed out, I could not identify a unified community of ITV developers. Therefore the survey was sent to a number of various general contact addresses of companies and it was asked to be forwarded to a suitable person. This leads to the fact that I cannot argue that these findings represent e.g. all the members of the interactive television industry. I can only claim that the results represent the views of almost one hundred well-informed professionals. Therefore the support of the respondent group to a hypothesis does mean that the respective strategy is indeed valuable for an ITV developer considering a new program.

The facts that the respondents are not randomly distributed and that the respondent group is relatively small leads to a situation where one cannot perform statistical significance tests to the results. This does not lead to a big problem, because I am not trying to generalize the results to any broader group of potential respondents. I am not e.g. claiming that the results would represent the views of all the members of the ITV community. Instead, I am using the results to support the findings I have made based on my own experience and based on reviews of other fields.

Yin has explained this rationale (for case studies) in the following way: "A common complaint about case studies is that it is difficult to generalize from one case to another. Thus analysts fall into the trap of trying to select a representative case or a set of cases. Yet no set of cases, no matter how large, is likely to deal satisfactorily with this complaint. The problem lies in the very notion of generalizing to other case studies. Instead, an analyst should try to generalize findings to theory analogous to the way a scientist generalizes from experimental results to theory."[308]

4.7.4 Reliability

By reliability we mean demonstrating that the operations of a study – such as the data collection procedures, can be repeated with the same results.[309] This research could be repeated and it would produce the same group of respondents and their responses would be the same. Therefore the results can be considered reliable.

5 Analysis of data

This chapter presents the patterns of results. I will first provide information about the respondents, their background and the entities they are working for. Then I will provide information about responses related to the six more closely analyzed genres, information about questions that were rated important for all genres, information about questions that received exceptionally high scores within one genre and information about questions that were not important for any of the genres.

Further on in this chapter I will address the questions that received controversial scores between various genres. I will also address the usefulness of the questions among various genres. Finally I will demonstrate the relative importance of various question types to each genre. I will end this chapter with a conclusion about the presentation of the data. The actual research findings and conclusions will then be presented in chapter six.

5.1 The respondents

Altogether 103 respondents filled in the survey. Of these 5 responses could not be used. The respondents came from various functions in the industry and from companies with various activities. Those respondents that could be included in the analysis had the following job titles:

- account manager
- business controller
- CEO
- company president
- copy
- creative director
- development manager
- digital TV project manager
- director of convergence technologies
- director of product development
- director
- eBusiness Strategist
- engineering manager
- executive producer
- growth director

- head of new media
- ITV consultant
- ITV developer
- lead design specialist
- managing director
- market analyst manager
- marketing communication manager
- marketing manager
- mobile concepts manager
- producer
- production manager
- R&D manager
- solutions engineer
- strategic analyst
- strategic skills manager
- system analysts
- system architect
- system engineer
- technical development director
- technical producer
- technical supervisor
- technologist

The respondents were from the following types of companies and entities: Broadcasters, software manufacturers, equipment vendors, new media companies, tele-operators, news organizations, content providers, universities and associations. Broadcasters included such entities as YLE, MTV, Nelonen and Moon TV from Finland and Sveriges Television, Norwegian TV2, BBC and Eurosport from abroad. Other companies included Oracle Finland, Thomson Multimedia, Elisa Communications, Reuters, Warner Brothers, AlmaMedia, Radiolinja, ICL Finland, Cisco Systems, OKO Bank, Broadband Data Communications, PHS Interactive, Tampereen Tietoverkko, Echostar Communications, The Fantastic Corporation, Satama Interactive and AT&T Broadband. In the associations were included respondents from ATVEF, Mainostoimistojen Liitto MTL and the Finnish Association of the Deaf.

Responses came from 13 countries including: Finland, Sweden, UK, USA, France, Germany, Republic of Korea, Spain, Poland, Italy, Netherlands, Switzerland and South Africa. The method used for the sampling of the respond-

ents was a snowball method with various lists as a starting point.

The respondents were asked to choose an ITV format or genre they would feel most competent to answer. The six most popular genres among the respondents got the following number of responses:

GENRE	NUMBER OF RESPONSES
Background information for TV programs	15
ITV advertising	12
Distance learning	12
Computer games	11
News on demand	11
EPG	9

I have concentrated on the answers of the respondents in these above mentioned genres. They represent 71% of all the qualified responses. The remaining 28 responses were divided among various genres in the following manner:

An application for generating sales leads	1
An application for targeted marketing	5
An application for collecting feedback from viewers or buyers	5
Quiz show	5
Interactive drama	2
Opinion polls and voting applications	1
Genre was not indicated	9

The amounts of responses in these latter genres were considered too small to be analyzed.

The respondents were then asked how many years of experience they had in interactive television. The experience ranged from 0 years to 15 years. The mean of the respondents was 3.26 years.

The respondents were asked to rate the importance of each of the questions with the following scale: Not important at all = 1, Somewhat important = 2, Very important = 3. If they had no opinion, they were asked to leave the question unanswered. Thus the maximum average a question could receive is 3.00 and the minimum is 1.00.

5.2 Responses related to ITV advertising

The respondents for ITV-advertisement genre included persons working in posts of business controller, company president, director of creative technologies, ITV-developer, partner, producer, senior vice president and system engineer.

The organizations where the respondents came from included ATVEF, Liberate Technologies, Digital Planet, MTV Oy, Abel & Baker, Alma Media, Echostar Communications, AT&T Broadband, NDS Ltd and 4th Dimension Interactive. The respondents were from Finland, Sweden, USA and UK.

Those questions that received at least 2.5-response average from the respondents dealing with the ITV-advertising applications are considered important in developing this genre. They are presented in the table 5 on the next page.

For ITV-advertising the most important were the questions related to the business model of the program and questions related to the marketing of the program. Also important were the questions concerned with the topic of the program and aesthetics of the program. The issues with the audience interaction and the structure of the program were less important.

The following ratio of the proposed questions turned out to be important for this genre.

Choosing the subject of the ITV-program	(5/13)
Increasing the audience interaction in the ITV-program	(7/22)
The structure of the ITV-program	(1/7)
The aesthetic and design of the ITV-program	(4/9)
The business model of the ITV-program	(7/11)
Marketing of the ITV-program	(6/10)

A quite high number (30 out of 72) of the potential questions proved to be important in developing the interactive advertisements. The relative importance of the various question types can be seen in the radar chart of figure 16.

FIGURE 16: Importance of various question types in developing ITV advertising

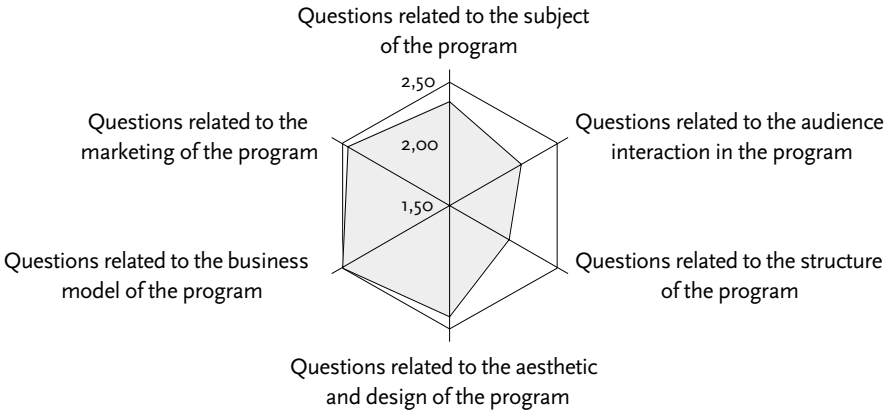


Table 5: Important questions for developing an ITV-advertisement

	A QUESTION THAT A PERSON DEVELOPING AN INTERACTIVE TELEVISION ADVERTISEMENT COULD ASK HIMSELF.	HOW USEFUL IT WAS RATED
1.1	Who do we want to watch this program?	2.83
1.2	What are the special (psychological, physical, and economical) characteristics of this viewer group?	2.67
1.4	What is the task that the audience will want to perform with this program (retrieve information, conduct transactions, become entertained)?	3.00
1.7	What is the hook of the program (The interesting thing in it that will draw the audience)?	2.50
1.13	How can we integrate content and communication?	2.67
2.2	How can we make the program more interactive for one single viewer?	2.50
2.6	How can we motivate the viewer to strive for the goal?	2.75
2.11	How can we increase the value that the audience gets from viewing the program?	2.50
2.13	How can we call the viewer to interaction?	2.50
2.14	With what kinds of devices can we have the audience to interact?	2.64
2.19	How should we monitor viewer usage of the program?	2.50
2.20	How should we collect feedback from users?	2.75
3.5	How can we apply the AIDA principle = capture the audience Attention, create Interest, instill Desire and motivate Action?	2.58
4.1	How can we make the program aesthetically appealing as possible?	2.50
4.2	How can we make the program visually compelling?	2.92
4.3	How can we include compelling sound elements and music in it?	2.58
4.4	What type of an interface should the program have?	2.92
5.1	How can the program generate higher sales income (e.g. from broadcasters)?	2.73
5.2	How can the program generate advertising revenues?	2.64
5.3	How can the program generate sponsorship revenues?	2.64
5.5	How can home shopping be combined in to the program?	2.67
5.7	How can the program generate transaction fees?	2.64
5.9	How can we achieve customer ownership (e.g. so that this set of the viewers can not be reached by other media)?	2.58
5.10	How can we get our customer base as large as possible?	2.58
6.1	How can we attract viewers with the help of www?	2.58
6.2	How can we attract viewers with the help of other ITV programs?	2.58
6.3	How can we attract viewers with the help of other media?	2.75
6.4	How can we generate hype around the program?	2.50
6.9	How can we take advantage from an existing media brand?	2.75
6.10	How can we benefit from joining forces with a media company owning a large content library?	2.50

Table 6: Important questions for developing a computer game type of an ITV-application

	A QUESTION THAT A PERSON DEVELOPING A COMPUTER GAME TYPE OF AN ITV APPLICATION COULD ASK HIMSELF.	HOW USEFUL IT WAS RATED
1.1	Who do we want to watch this program?	2.91
1.2	What are the special (psychological, physical, and economical) characteristics of this viewer group?	2.90
1.3	How intensively will the audience of this topic interact with other viewers?	2.70
1.6	What can interactivity do for a specific TV-show?	2.50
1.7	What is the hook of the program (The interesting thing in it that will draw the audience)?	2.82
1.12	Richness and complexity – How can we make an episode so that it can be viewed more than once and it becomes more and not less, when seen again?	2.50
1.13	How can we integrate content and communication?	2.60
2.1	How can we increase the interaction between separate viewers?	2.55
2.2	How can we make the program more interactive for one single viewer?	2.82
2.7	What kind of an opposition can we give to the viewer?	2.55
2.8	What kind of conflicts can we create between the viewer and his opposition?	2.50
2.9	How can we generate shared goals among the viewers?	2.55
2.12	How can we bundle convenience and low cost of the services for the users of the program?	2.64
2.13	How can we call the viewer to interaction?	2.70
2.14	With what kinds of devices can we have the audience to interact?	2.73
2.20	How should we collect feedback from users?	2.73
2.21	How can we apply the viewers' ideas to the program?	2.50
2.22	How can we increase the viewers' loyalty to the program?	2.70
3.1	How can we get a strong opening scene in the program?	2.70
3.3	How can we add momentum in the program (so that one action of the viewer leads to another conflict, and action here leads again in to another conflict)?	2.50
3.5	How can we apply the AIDA principle = capture the audience Attention, create Interest, instill Desire and motivate Action?	2.70
3.7	How should we design the exit from the program so that it encourages the viewers to return?	2.60
4.1	How can we make the program aesthetically appealing as possible?	2.60
4.2	How can we make the program visually compelling?	2.70
4.3	How can we include compelling sound elements and music in it?	2.70
4.4	What type of an interface should the program have?	3.00
4.6	How can we make the program appear new and fresh?	2.70
4.7	Timeliness - How can we make sure the program does not become quickly outdated?	2.50
5.1	How can the program generate higher sales income (e.g. from broadcasters)?	2.82
5.3	How can the program generate sponsorship revenues?	2.70
5.4	How can the program generate subscription revenues?	2.73
5.10	How can we get our customer base as large as possible?	2.78
6.1	How can we attract viewers with the help of www?	2.70
6.2	How can we attract viewers with the help of other ITV programs?	2.60
6.3	How can we attract viewers with the help of other media?	2.50
6.4	How can we generate hype around the program?	2.50
6.6	How can we become more visible in the Electronic Program Guide?	2.50

5.3 Responses related to computer game type of interactive television programs

The respondents for computer game type of ITV-genre included persons working in posts like creative director, consultant, researcher, system analyst, producer, CEO, lead design specialist, business consultant, copy, director of product development and senior system architect. The organizations where the respondents came from included Elisa Communications, Stonebridge Technologies, WebtvPlus, Altair 4 Multimedia, Broadband Data Communications, NOB New Media, PHS Interactive and Wizbang Productions. The respondents were from Finland, Italy, USA and Netherlands.

Those questions that received at least 2.5-response average from the respondents dealing with the computer game type of applications are considered to be important in developing this genre. They are presented in the table 6 on the previous page.

In the computer game type of ITV-application the most important issues were the aesthetic and design related questions. Also the questions dealing with the subject of the program and with the business and marketing issues were considered quite important. Questions related to the structure of the program were a little less important.

The following ratio of the proposed questions turned out to be important for this genre.

Choosing the subject of the ITV-program	(7/13)
Increasing the audience interaction in the ITV-program	(11/22)
The structure of the ITV-program	(4/7)
The aesthetic and design of the ITV-program	(6/9)
The business model of the ITV-program	(4/11)
Marketing of the ITV-program	(5/10)

Computer game type of ITV-applications was the group that seemed to benefit most out of the provided questions. Totally 37 out of the 72 alternative questions received an average at least of 2.5 and were thus considered important in developing these types of ITV-applications. The relative importance of the question types can be seen in the following radar chart.

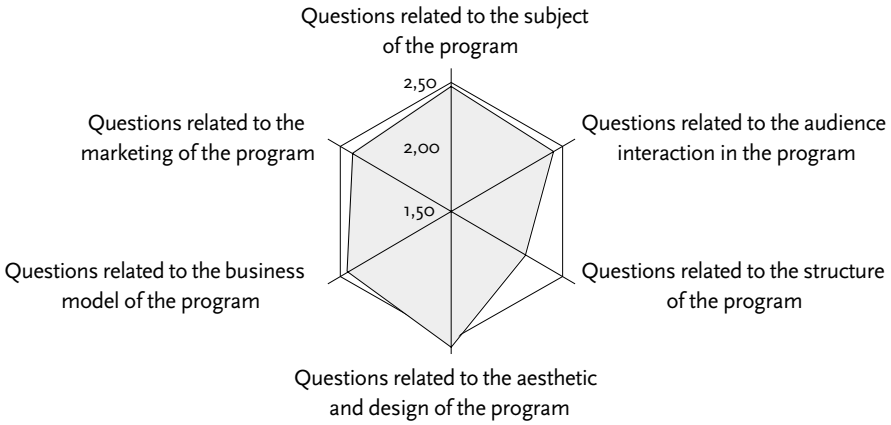


FIGURE 17: Importance of various question types in developing computer game type of applications

5.4 Responses related to news on demand applications

The respondents for this genre included persons working in posts like managing director, head of communications department, marketing manager, technical supervisor, technology director, growth director, on-line editor, head of interactive video and developer. The organizations where the respondents came from included Reuters, Warner Brothers, MTV3, TV2 Interactive (Norway), Hedcom Oy, FinnSat Oy, Finnish Association of Deaf, Adelphia, Radiolinja, Satama Interactive and Simian Software Solutions. The respondents were from Finland, Norway, Germany, USA and South Africa.

Those questions that received at least 2.5-response average from the respondents dealing with the news on demand applications are considered important in developing this genre. They are presented in the following table7.

The provided set of questions was generally considered important for this group. It rated 35 out of the 72 questions important. A little bit surprisingly, these respondents (working with news on demand applications) were the ones that gave the highest remarks to the marketing issues out of all respondent groups. The other important question group for these respondents was the issues of aesthetics and design. The questions related to the audience interaction and to the program structure were clearly less significant.

Table 7: Important questions for developing a news on demand application

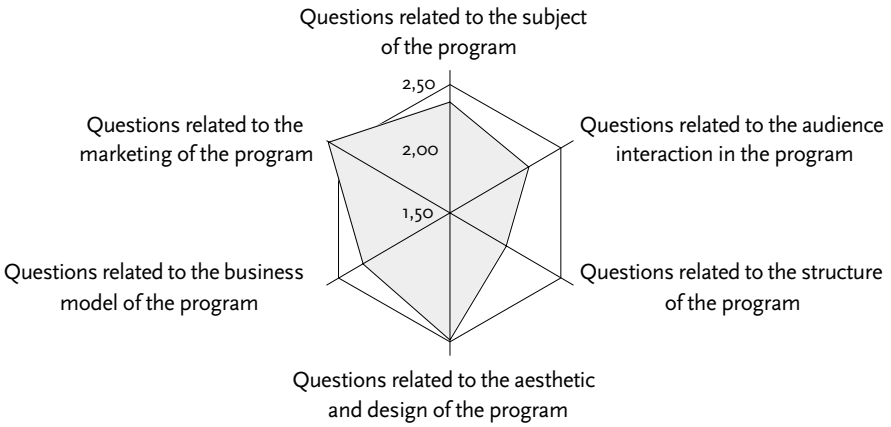
	A QUESTION THAT A PERSON DEVELOPING A NEWS ON DEMAND APPLICATION FOR INTERACTIVE TELEVISION COULD ASK HIMSELF.	HOW USEFUL IT WAS RATED
1.1	Who do we want to watch this program?	2.73
1.4	What is the task that the audience will want to perform with this program (retrieve information, conduct transactions, become entertained)?	2.64
1.7	What is the hook of the program (The interesting thing in it that will draw the audience)?	2.55
1.8	What should be the central theme or core content that holds the program together by giving the viewers a place to return when they wander around following links etc.?	2.60
1.13	How can we integrate content and communication?	2.64
2.2	How can we make the program more interactive for one single viewer?	2.64
2.11	How can we increase the value that the audience gets from viewing the program?	2.55
2.12	How can we bundle convenience and low cost of the services for the users of the program?	2.50
2.13	How can we call the viewer to interaction?	2.80
2.14	With what kinds of devices can we have the audience to interact?	2.50
2.18	How can we use news server in the program?	2.55
2.20	How should we collect feedback from users?	2.90
2.21	How can we apply the viewers' ideas to the program?	2.64
2.22	How can we increase the viewers' loyalty to the program?	2.55
3.7	How should we design the exit from the program so that it encourages the viewers to return?	2.82
4.1	How can we make the program aesthetically appealing as possible?	2.50
4.2	How can we make the program visually compelling?	2.82
4.4	What type of an interface should the program have?	2.60
4.6	How can we make the program appear new and fresh?	2.80
4.7	Timeliness - How can we make sure the program does not become quickly outdated?	2.82
4.9	How can we make the program believable?	2.64
5.1	How can the program generate higher sales income (e.g. from broadcasters)?	2.70
5.2	How can the program generate advertising revenues?	2.80
5.3	How can the program generate sponsorship revenues?	2.50
5.4	How can the program generate subscription revenues?	2.80
5.10	How can we get our customer base as large as possible?	2.60
5.11	How can we launch a snowball effect so that viewers contribute content (e.g. write book reviews) that attract new viewers who in turn leave new content etc...?	2.50
6.1	How can we attract viewers with the help of www?	2.90
6.2	How can we attract viewers with the help of other ITV programs?	2.80
6.3	How can we attract viewers with the help of other media?	2.60
6.4	How can we generate hype around the program?	2.50
6.6	How can we become more visible in the Electronic Program Guide?	2.70
6.8	How can we get viewers to attract new viewers?	2.60
6.9	How can we take advantage from an existing media brand?	2.50
6.10	How can we benefit from joining forces with a media company owning a large content library?	2.63

The following ratio of the proposed questions turned out to be important for news on demand genre.

Choosing the subject of the ITV-program	(5/13)
Increasing the audience interaction in the ITV-program	(9/22)
The structure of the ITV-program	(1/7)
The aesthetic and design of the ITV-program	(6/9)
The business model of the ITV-program	(6/11)
Marketing of the ITV-program	(8/10)

The relative importance of each question type is provided in the following chart 18.

FIGURE 18: Importance of various question types in developing News on demand applications



5.5 Responses related to EPG

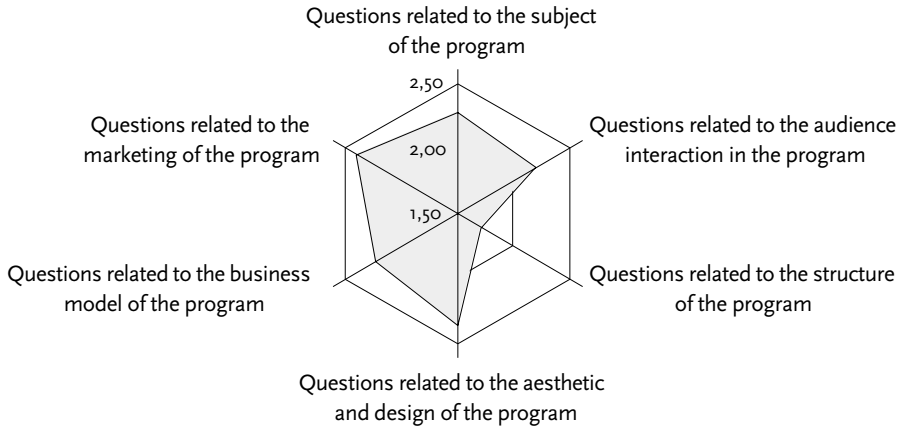
The respondents for this genre included persons working in posts like digital TV project manager, engineering manager, system architect, marketing manager, research assistant and senior development producer. The organizations where the respondents came from included Thomson multimedia, Via Digital, Yleisradio, The Bulldog Group, Elisa Communications, Tampereen Tietoverkko, PBS of USA and BBC. The respondents were from Finland, Germany, France, Spain and USA.

Those questions that received at least 2.5-response average from the respondents dealing with the EPG applications are considered important in developing this genre. They are presented in the following table 8.

Table 8: Important questions for developing an EPG

	A QUESTION THAT A PERSON DEVELOPING AN EPG FOR INTERACTIVE TELEVISION COULD ASK HIMSELF.	HOW USEFUL IT WAS RATED
1.1	Who do we want to watch this program?	2.67
1.6	What can interactivity do for a specific TV-show?	2.88
1.11	Personal choice - Is this the kind of program I would watch my self?	2.56
2.3	How can we make the program more enjoyable for a viewer that has no return path (can't be interactive)?	2.67
2.6	How can we motivate the viewer to strive for the goal?	2.56
2.14	With what kinds of devices can we have the audience to interact?	2.56
2.20	How should we collect feedback from users?	2.56
2.22	How can we increase the viewers' loyalty to the program?	2.56
4.1	How can we make the program aesthetically appealing as possible?	2.56
4.2	How can we make the program visually compelling?	2.78
4.4	What type of an interface should the program have?	2.67
5.10	How can we get our customer base as large as possible?	2.50
6.1	How can we attract viewers with the help of www?	2.56
6.2	How can we attract viewers with the help of other ITV programs?	2.56
6.6	How can we become more visible in the Electronic Program Guide?	2.67

FIGURE 19: Importance of various question types in developing EPG applications for ITV



A little surprise was that the most important questions for the EPG developers were the ones that dealt with the marketing issues. Then followed the aesthetic and design issues and in third place were the subject issues. The questions dealing with the structure of the program were clearly least important and as a matter of fact these respondents gave the lowest average to the structure issues out of all respondents.

The proposed questions were significantly less useful in developing EPG than in developing the three previous genres. Only 15 of the 72 proposed questions scored an average of at least 2.5 (and thus were rated important). None of the structure questions were important in EPG development.

The following ratio of the proposed questions turned out to be important for this genre.

Choosing the subject of the ITV-program	(3/13)
Increasing the audience interaction in the ITV-program	(5/22)
The structure of the ITV-program	(0/7)
The aesthetic and design of the ITV-program	(3/9)
The business model of the ITV-program	(1/11)
Marketing of the ITV-program	(3/10)

In this genre there is the greatest variation among the usefulness of different types of questions. The relative importance of the questions can be seen from the radar chart 19 on the previous page.

5.6 Responses related to distance learning applications

The respondents for this genre included persons working in posts like producer, R&D manager, engineer, vice president of visionary projects, director of international department, solutions engineer, market analyst manager, mobile concepts manager, multimedia consultant, professor and marketing intelligence analyst. The organizations where the respondents came from included The Fantastic Corporation, University of Industrial Arts Helsinki, Sunmoon University Korea, Sinclair & Associates, Comprend, Museums On Line, Popsystems Oy, Cisco Systems, John Crotty Associates and Black & Veatch Telecomm. The respondents were from Finland, USA, Switzerland, France and South Korea.

Those questions that received at least 2.5-response average from the respondents dealing with the distance learning applications are considered important in developing this genre. They are presented in the table 9 on the next page.

FIGURE 20: Importance of various question types in developing distance learning type of ITV-applications

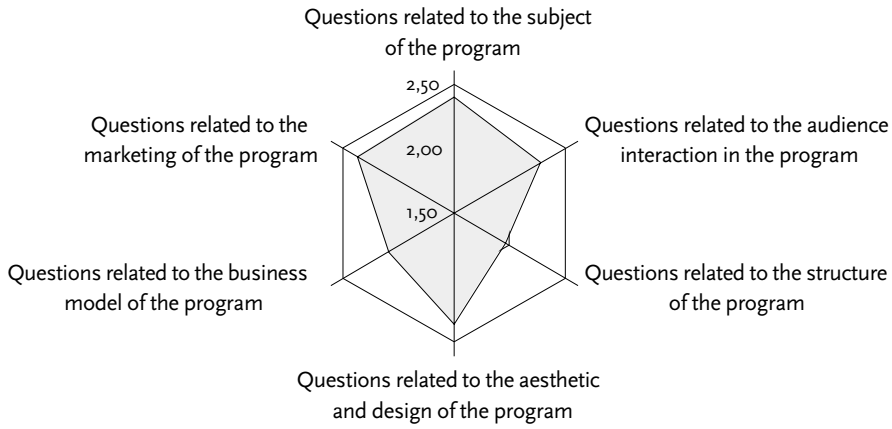


Table 9: Important questions for developing a distance learning application

A QUESTION THAT A PERSON DEVELOPING A DISTANCE LEARNING ITV APPLICATION COULD ASK HIMSELF.		HOW USEFUL IT WAS RATED
1.1	Who do we want to watch this program?	3.00
1.4	What is the task that the audience will want to perform with this program (retrieve information, conduct transactions, become entertained)?	2.83
1.7	What is the hook of the program (The interesting thing in it that will draw the audience)?	2.50
1.8	What should be the central theme or core content that holds the program together by giving the viewers a place to return when they wander around following links etc.?	2.58
1.13	How can we integrate content and communication?	2.83
2.2	How can we make the program more interactive for one single viewer?	2.67
2.5	How can we give the viewer a task to complete or a goal to reach in the program?	2.58
2.6	How can we motivate the viewer to strive for the goal?	2.58
2.11	How can we increase the value that the audience gets from viewing the program?	2.73
2.14	With what kinds of devices can we have the audience to interact?	2.50
2.20	How should we collect feedback from users?	2.58
2.21	How can we apply the viewers' ideas to the program?	2.64
4.1	How can we make the program aesthetically appealing as possible?	2.58
4.2	How can we make the program visually compelling?	2.75
4.4	What type of an interface should the program have?	2.75
4.6	How can we make the program appear new and fresh?	2.50
4.7	Timeliness – How can we make sure the program does not become quickly outdated?	2.50
5.4	How can the program generate subscription revenues?	2.50
6.1	How can we attract viewers with the help of www?	2.83

6.10 How can we benefit from joining forces with a media company owning a large content library? 2.50

The developers of distance learning applications did not find the questions much more useful than the developers of the previous group. Only 20 of the 72 questions scored important. Again none of the structure questions were considered important and only one of the business issue questions was important. The questions related to the subject of the program were most important. Closely followed the questions related to the marketing of the program, questions dealing with the aesthetic and design issues and questions dealing with the audience interaction.

The following ratio of the proposed questions turned out to be important for this genre.

Choosing the subject of the ITV-program (5/13)
Increasing the audience interaction in the ITV-program (7/22)
The structure of the ITV-program (0/7)
The aesthetic and design of the ITV-program (5/9)
The business model of the ITV-program (1/11)
Marketing of the ITV-program (2/10)

The relative importance of various question types is presented in the radar chart 20 on the previous page.

5.7 Responses related to background information applications

With backgroud information I mean e.g. additional articles to a news story or personal information about actors in a film.

The respondents for this genre included persons working in posts like strategic analyst, production manager, director of convergence technologies, producer, technologist, head of new media, executive producer, project manager and strategic skills manager. The organizations where the respondents came from included Sveriges Television, HSR-TV, SF Interactive, Moon TV, The News Hour with Jim Lehrer, Tefen Eurosport, NOB interactive, Itelco, Nelonen and BBC. The respondents were from Finland, Sweden, France, Netherlands, Italy, UK and USA.

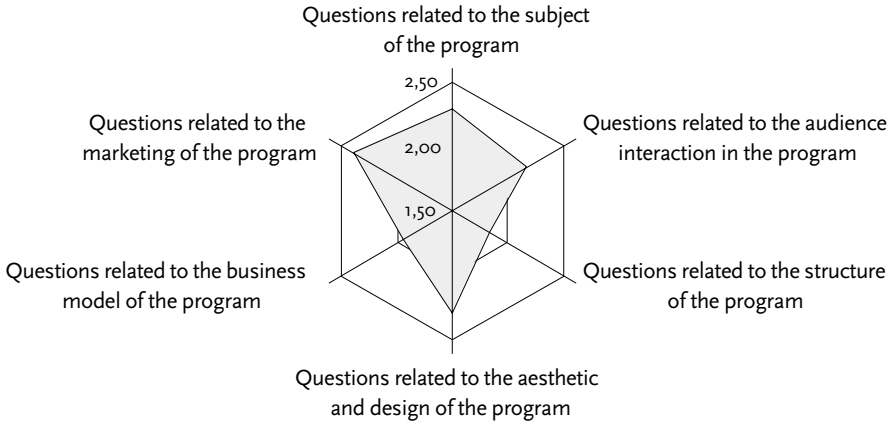
Those questions that received at least 2.5-response average from the respondents dealing with the background information application are considered important in developing this genre. They are presented in the table 10 on the next page.

Background information for other TV programs is the ITV application type that least benefited from the proposed questions. Only 12 out of the 72 questions

Table 10: Important questions for developing a background information application

	A QUESTION THAT A PERSON DEVELOPING A BACKGROUND INFORMATION OF TV PROGRAMS TYPE OF AN ITV APPLICATION COULD ASK HIMSELF.	HOW USEFUL IT WAS RATED
1.4	What is the task that the audience will want to perform with this program (retrieve information, conduct transactions, become entertained)?	2.80
1.6	What can interactivity do for a specific TV-show?	2.73
1.13	How can we integrate content and communication?	2.60
2.11	How can we increase the value that the audience gets from viewing the program?	2.86
2.13	How can we call the viewer to interaction?	2.60
2.22	How can we increase the viewers' loyalty to the program?	2.53
3.5	How can we apply the AIDA principle = capture the audience Attention, create Interest, instill Desire and motivate Action?	2.54
4.1	How can we make the program aesthetically appealing as possible?	2.50
4.2	How can we make the program visually compelling?	2.79
4.4	What type of an interface should the program have?	2.79
6.1	How can we attract viewers with the help of www?	2.87
6.3	How can we attract viewers with the help of other media?	2.50

FIGURE 21: Importance of various question types in developing background information type of TV applications



received an average of at least 2.5 and were considered important. For the background information application developers the most important source of questions were the questions dealing with the marketing issues of the application. The least important question groups were the ones dealing with the business model and with the structure of the program.

The following ratio of the proposed questions turned out to be important for this genre.

Choosing the subject of the ITV-program (3/13)
Increasing the audience interaction in the ITV-program (3/22)
The structure of the ITV-program (1/7)
The aesthetic and design of the ITV-program (3/9)
The business model of the ITV-program (0/11)
Marketing of the ITV-program (2/10)

The variation of importance among the different question groups can be seen in the radar chart 21 on the previous page.

5.8 Questions that were rated important for all genres

When I designed the study I had the fear that all of the questions would be self-evident and receive high scores from all of the respondents. Interestingly this turned out not to be the case. Only four questions received high ratings in all of the six analyzed genres. These questions were:

How can we make the program aesthetically appealing as possible?
How can we make the program visually compelling?
What type of an interface should the program have?
How can we attract viewers with the help of www?

The question **"Who do we want to watch this program?"** was also important for all of the genres except for the background information genre.

The question **"How can we integrate content and communication?"** was important for all genres except for the EPG.

The question **"What kind of devices can we have the audience to interact?"** was important for all genres but for the background information. The same applies for the question **"How should we collect feedback from users?"**

5.9 Questions that received exceptionally high scores within one genre

A surprisingly low number of questions received the highest possible rating (meaning all respondents of a genre rated it very important). The following three questions scored the maximum average of 3.0:

The distance learning professionals gave a full 3.0 to the question: **"Who do we want to watch this program?"**

The ITV advertising professionals gave a full 3.0 to the question: **"What is the task the audience will want to perform with this program?"**

The computer game developers gave a full 3.0 to the following question: **"What type of an interface should the program have?"**

The following three questions scored at least 2.90:

The ITV advertising professionals gave an average of 2.92 to the question: **"How can we make the program visually compelling?"**

The ITV advertising professionals gave an average of 2.92 to the question: **"What type of an interface should the program have?"**

The News on Demand professionals gave an average of 2.90 to the question: **"How can we attract viewers with the help of www?"**

5.10 Questions that were not important – what is ITV not

I set an average of 2.0 as a limit for the questions that would not be useful for a genre. Only two questions received an average less than 2.0 in all genres:

Those were:

How can we have a three-act structure in the program?

and

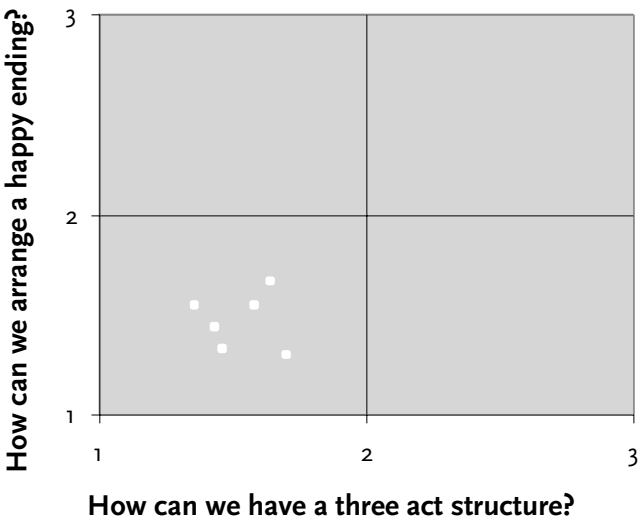
How should we arrange a happy ending for the program?

The following figure 22 shows that all six genres were very similar in respect to these two questions.

These are quite interesting results since these rules are considered to be very important for the film industry. With these results one can argue that not all success ingredients adapted from Hollywood will make the ITV programs work.

When we look at the questions that where not considered important in any of the genres (= questions that did not get the average rating of at least 2.5 for

FIGURE 22: The positioning of various genres in respect to three-act-structure and happy ending



more than one genre) the group of not useful questions becomes much larger. In the following paragraphs I present such questions from each group.

5.10.1 Film and TV issues that did not work for ITV

The following questions adapted from film and TV-industry were not important for any genre. (Or if it was important for only one genre, then there is a note after it.)

- What existing TV-programs can we use as a springboard in launching the program?
- Critique – What is the best and the worst possible critical response the program can receive?
- Notoriety – Is this the kind of program I would like to be known for?
- Personal choice – Is this the program I would like to be known for? (Important for 1 genre only)
- Richness and complexity – How can we make an episode so that it can be viewed more than once and it becomes more and not less, when seen again? (Important for 1 genre only)

- How can we include roles in the program in which we can cast well known actors or celebrities?
- How can we make the program believable?

5.10.2 Many of the virtual community strategies were not important

Surprisingly many of the strategies adopted from virtual communities were not considered important. The following questions originating from virtual communities were not important for any or to a maximum of 1 of the genres.

- How can we increase interaction between separate viewers?
- How intensively will the audience of this topic interact with other viewers? (Important for 1 genre only)
- How can we get the viewers to want to meet each other by watching the show next time?
- How can we use a mailing list in the program?
- How can we use a chat room in the program?
- How can we use a news server in the program? (Important for 1 genre only)
- How should we monitor viewer usage of the program? (Important for 1 genre only)
- How can we launch a snowball effect so that viewers contribute content (e.g. write book reviews) that attract new viewers who in turn leave new content etc....?
- How can we get viewers to generate new content for the program (e.g. writing reviews etc)?
- How can we get viewers to attract new viewers?

5.10.3 Film structure is not so useful either

The traditional film structure does not help much in ITV production. The following questions that are considered important for film and TV-drama were not considered important in these ITV-genres:

- How can we get a strong opening scene in the program? (Important for 1 genre only)
- How can we have a three-act structure in the program?
- How can we add momentum in the program (so that one action of the

viewer leads to another conflict, and action here leads again to another conflict)? (Important for 1 genre only)
- How can we design the program structure so that commercial breaks can be inserted in it?
- How can we arrange a happy ending to the program?

5.10.4 Goals and conflicts were not among the most useful questions

Many of the questions emerging from script writing theory that deal with the goals and conflicts of the characters were not considered very important either. Among the not important questions are:

- How can we give the viewer a task to complete or goal to reach in the program? (Important for 1 genre only)
- What kind of an opposition can we give to the viewer?
- What kind of conflicts can we create between the viewer and his opposition? (Important for 1 genre only)
- How can we generate shared goals among the viewers?

5.10.5 Multimedia and www-issues that did not help

The following multimedia development guidelines did not prove to be important either:

- What type of metaphors should we use in the program?
- How can we get the viewer to interact through mobile devices (e.g. mobile phone or Palm Pilot)
- How can we improve our listing in a search engine?

5.10.6 Business model issues that were not important

Surprisingly many of the business opportunities were not considered important in ITV production. The following business oriented issues were not considered important for more than one genre:

- How can home shopping be combined into the program?
- How can product placement be incorporated in the program?
- How can the program generate transaction fees?

- How can we use the viewer database to generate income (e.g. renting it as a direct marketing database?)
- How can we achieve customer ownership (e.g. so that this set of the viewers can not be reached by any other media)?

5.11 Questions that received exceptionally low scores within one genre

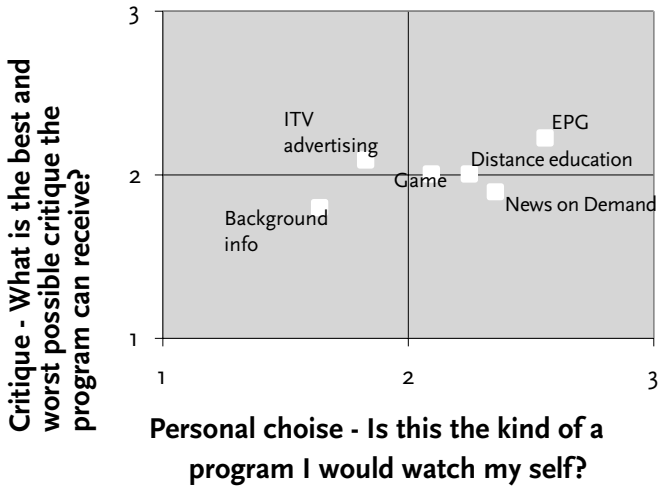
Six questions received very low scores within one genre.

The question **"What kind of conflicts can we generate between the viewer and his opposition?"** received an average of 1.27 and 1.36 respectively in the genres Distance learning and Background information for a TV show.

The question **"How can we use a three act structure in the program?"** got an average of 1.36 from the News on Demand professionals.

"How can we arrange a happy ending for the program?" received an average

FIGURE 23: The positioning of various genres in respect to personal and outside critique



of 1.30 from the computer game developers and from the group that was concerned with the background information for TV programs. The latter group rated very low also the question **"How can we design the program structure so that commercial breaks can be inserted in it?"**

5.12 Questions that received controversial scores between various genres

Many of the questions proved to be useful for one genre and not very useful to another. All together 18 questions received an average of 2.5 from one group of professionals and on the other hand less than 2.0 from another group. Following are some of the most interesting controversies.

The question: **"How intensively will the audience of this topic interact with other viewers?"** got a high average from computer game developers but a low rating from ITV advertising developers.

The question related to personal choice: **"Is this the kind of program I would watch myself?"** received a high rating from the developers of an EPG but a low rating from e.g. the developers of ITV advertising. In the matter of fact the six genres were all quite different in regards to the effects of personal and outside critique, as can be seen from the figure 23 on the previous page.

The question: **"How can we increase interaction between separate viewers?"** was important only for the computer game developers. Most of the other groups rated this below 2.0.

The following three questions were again important for the computer game type of applications, but not important for most of the other types of applications:

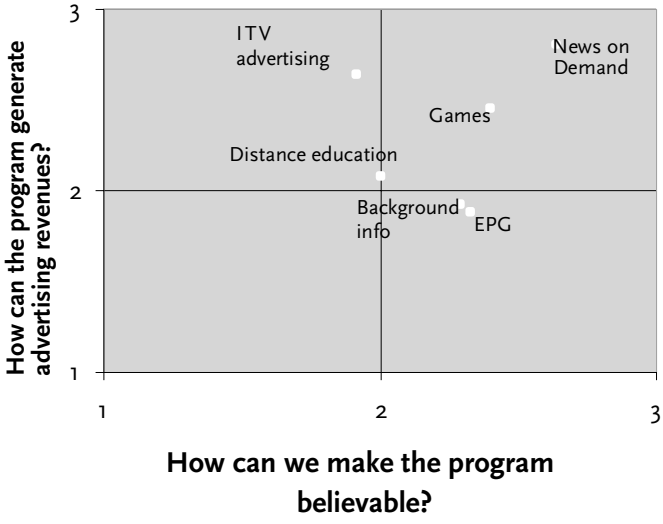
"What kind of an opposition can we give to the viewer?"
"What kind of conflicts can we create between the viewer and his opposition?"
"How can we generate shared goals among the viewers?"

"How can we apply viewers ideas to the program?" was important for all of the other groups except for the developers of ITV advertising.

"How can we get a strong opening scene in the program?" was important for computer came developers and not important for the developers of EPG.

"How can we make this program believable?" was important for the News on demand professionals and it was not important for the ITV advertising professionals.

FIGURE 24: The positioning of various genres in respect to believability and advertising revenues



"How can we generate advertising revenues?" was important for ITV advertisers and News on demand professionals but it was not a concern of EPG developers. The six genres have a very different relationship to these two questions.

"How can on-line shopping be combined to the program?" was very important to the ITV advertisers and it was not important to the News on demand professionals. The same applied to the question: **"How can we generate transaction fees?"**

The ITV advertisers also rated important the question: **"How can we achieve customer ownership?"** This was not important for the respondents in the distance learning and background information for TV program genres.

The question: **"How can we generate hype around the program?"** was important for most of the genres. Only the distance learning developers did not see it as important.

Finally the question: **"How can we benefit from joining forces with a media company owning a large content laboratory?"** divided views. It was considered important by the ITV advertisers, News on demand developers and distance learning respondents. It was not important for the computer game developers and for the background information for TV application developers.

5.13 The usefulness of the questions among various genres

It seems that the usefulness of the questions varies a great deal depending on what type of application is being developed. The developers of computer games found 37 out of the proposed 72 questions to be useful in their work (= the question received at least an average of 2.5). On the other hand the developers of background information applications found only 12 questions to be useful.

The amount of questions rated useful in each genre:

Computer game type of an application	37
News on demand	35
ITV advertising	30
Distance learning	19
EPG	16
Background information	12

This probably results from the selection of the sources for the questions. Most of the questions were developed from the theories of film and television script writing, the theories of multimedia and www-development, the theories related to virtual communities and from the lessons learned in the home shopping industry.

5.14 The relative importance of various question types to each genre

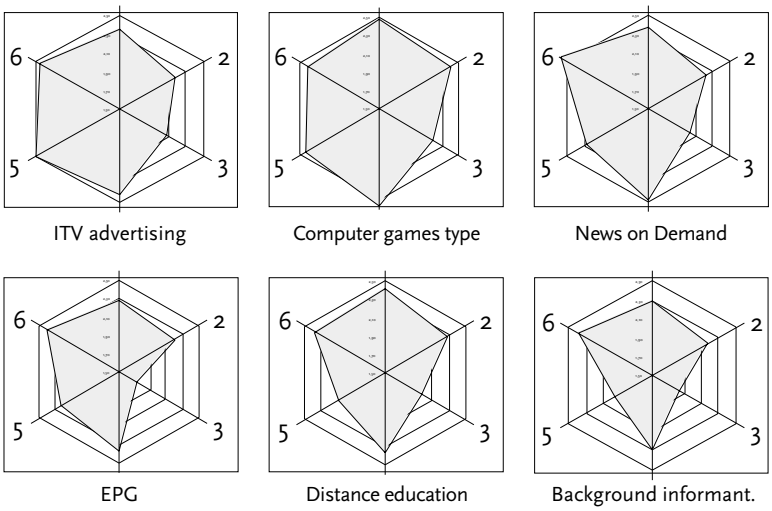
The questions in the survey form were divided into 6 different categories that were:

Choosing the subject of the ITV-program (1)
Increasing the audience interaction in the ITV-program (2)
The structure of the ITV-program (3)
The aesthetic and design of the ITV-program (4)
The business model of the ITV-program (5)
Marketing of the ITV-program (6)

As can be seen from the figures on the next page, the basic shapes of the radar charts are similar to all of the genres. The axis 1 (subject), 4 (aesthetics and design) and 6 (marketing) get in each case a relatively high score. In most of the cases also axis 2 (interaction) has received a high score.

The largest variations between genres are in axis 3 (structure) and 5 (business model). The questions relating to the business model are very important for the advertising and computer game type of applications. On the other hand,

in the distance education and in the background information genres they do not



The axis of the radar chart are: 1 = Questions related to the subject of the program, Questions related to the audience interaction of the program, 3 = Questions related the structure of the program , 4 = Questions related to the aesthetic and design of program, 5 = Questions related to the business model of the program, 6 = , Questions related to the marketing of the program

FIGURE 25: Comparison of the importance of different question types for different questions

have such significance. Questions related to the structure are clearly the least important ones for all of the genres.

The importance of the source of the questions varies quite a lot when moving from one genre to another. The questions related to the subject of the program are most important for the computer game (average 2.47) and distance learning (average 2.40) type of applications. For the developers of EPG (average 2.28) and background information (average 2.29) applications they are less important.

The questions related to the audience interaction were again most important for the developers of computer game type of applications. They had less value for the developers of all the other genres.

The questions related to the structure of the program were the ones where there was the greatest variation among different genres. These questions were most important again for the computer game type of ITV-application developers (average 2.17) and least valuable for the developers of EPG (average 1.71) and the background information (average 1.82) applications.

The questions that dealt with the aesthetic and design issues were considered quite equally important among the different genres. They received highest scores again in games (average 2.55) and the lowest in the background information genre (average 2.29).

The business model questions had quite a lot of variation in their importance among various genres. They were most important for the ITV-advertising genre (average 2.50) and the game genre (average 2.42) and least important for the background information (average 1.94) and distance learning (average 2.08) applications.

The marketing issues were considered important for all of the genres and there was quite little variation among the averages. The highest ratings were given by the news on demand respondents (average 2.58) and the lowest average (average 2.36) came from the distance learning genre.

ITV advertisements, computer game types of applications and news on demand seem to be similar genres to develop. The shapes of the radar charts are similar, the averages for each question type are high and the number of questions passed the 2.5 average limit is high. (For ITV-advertising 30 questions were ranked important, for game applications 37, and for news on demand applications 35 questions were ranked important.)

Distance education, EPG and background information form then another group of genres that have similar characteristics. The shapes of the radar charts are similar although with a larger variation than in the first group. Another similarity is that a significantly lower number of questions passed the 2.5 average. (For EPG 16 questions were ranked important, for distance learning 20, and for background information applications 12 questions were ranked important.)

Almost all of the questions that were rated important for the latter group, are included in the most of the former groups. There were only three questions that are important for developing EPG or distance learning applications but were not rated important for ITV-advertising, news on demand or game types of applications. The following two questions are important for EPG, but were actually not important for any of the other genres:

1.11 Personal choice – Is this the kind of a program I would watch myself?
2.3 How can we make the program more enjoyable for a viewer that has no return path?

The following question was important for distance learning applications but not for any of the other genres:

2.5 How can we give the viewer a task to complete or a goal to reach in the program?

In conclusion one can safely assume that by applying the questions found important for the advertising, games or news, he covers quite well the questions for EPG, distance learning and background information applications. Although this way many not-so-useful questions will also become included in the process.

5.15 Conclusion about the presentation of the data

In this chapter I have presented the relevant background information of the respondents and most evident and interesting patterns in the data. In the next chapter I will present my conclusions from this research.

6 Conclusions and implications

6.1 Introduction

In this chapter I will present the conclusions I have drawn and their contribution to knowledge, theory and practice. I will first demonstrate that it is useful in ITV –development to use these questions identified from other fields of media. I will then note that not all questions are necessarily important and that for different ITV-genres different questions are important. Then I will present the individual sets of important questions for each of the genres, which are ITV advertising, computer game type of ITV applications News on demand type of applications, EPG, distance learning applications and applications of background information for TV programs.

Further on in this chapter I will evaluate the implications of this research for the ITV theory and for the practice of developing ITV applications. I will also evaluate the implications of this research for further research. Finally I will also evaluate the limitations that apply for the results of this study.

6.2 Conclusions about the usefulness of adopting strategies from other media for ITV development

Here are the general conclusions regarding all the ITV-genres. I will then later present the genre specific conclusions.

Some of the questions were ranked very useful at least in one of the genres. There were three questions that received a full 3.0 average within one genre. This means that every single one of the respondents in that genre rated the question very important. Further on another three questions received an average of at least 2.90, which means that all but one respondent in the respective genre rated the question very important. From this I draw my conclusion number 1:

CONCLUSION 1: Some of the strategies that were originally developed for other types of media are very important in the development of ITV-genres.

On the other hand, among the proposed 72 questions there were 9 questions that did not reach the 2.5 average in any of the genres. In addition there were further 26 questions that reached the 2.5 average in only one genre. Thus almost half (35/72) of the proposed genres were not considered important in more than one genre at a time. From this I draw my conclusion number 2:

CONCLUSION 2: Not all of the strategies that work for other media work well in an ITV environment.

The fact that a question is considered important for one genre does not guarantee it is useful for another genre. Out of the 72 proposed questions 18 received controversial ratings so that its importance received a high ranking (average of at least 2.5) in one genre and a very low ranking (average less than 2.0) in another genre. From here I draw conclusion number 3:

CONCLUSION 3: There is great variation in the importance of a certain question among the different ITV-genres. A question that is very important in the development of a certain ITV-genre may not have any relevance in another genre.

There were 4 questions that received an average of 2.5 importance in all of the genres and three additional questions that received an average of 2.5 in five out of the six genres. From these results I conclude that:

CONCLUSION 4: The following questions are important in developing most of the genres discussed here.

- Who do we want to watch this program?
- How can we make the program aesthetically appealing as possible?
- How can we make the program visually compelling?
- What type of an interface should the program have?
- How can we integrate content and communication?
- With what kind of devices can we have the audience to interact?
- How can we attract viewers with the help of the www?

There is quite a big variation in the usefulness of the proposed questions in various genres. Only 4 questions were important for each of the 6 genres. On the other hand, 26 of the proposed questions were important for one genre only and not important for the others. Also the amount of useful questions varies greatly among the genres. For computer game type of applications there were found 37 important questions whereas for the background information type of an ITV application there were only 12 important questions. From these results I draw conclusion number 5:

CONCLUSION 5: For each ITV-genre there exists a different set of important questions.

The individual sets of questions for each genre are presented in the following conclusions. It is important to note that the following figures (Figures 26 – 31) and the questions in them do not represent the whole production process. Instead they are intended to be used as guidelines in the thinking stage before the actual script writing of the respective ITV-genre begins.

6.3 Conclusions about ITV advertising

I conclude that developers of ITV advertising will benefit by asking the following strategic questions presented next page in figure 26 when planning their production. These conclusions are based on the responses for this genre that came from persons working in posts like business controller, company president, director of creative technologies, ITV-developer, partner, producer, senior vice president and system engineer. The organizations where the respondents came from included ATVEF, Liberate Technologies, Digital Planet, MTV Oy, Abel & Baker, Alma Media, Echostar Communications, AT&T Broadband, NDS Ltd and 4th Dimension Interactive. The conclusions are further supported by my own judgement and by the fact that the questions have been found useful in the development of other types of media.

After I had drawn these conclusions, senior vice president Jorma Miettinen from Alma Media was asked to evaluate this figure in the light of designing ITV advertisements. He agreed on the content of the following boxes: The boxes concerning the audience, the content, the structure, the aesthetic and design issues and the marketing issues. According to Miettinen, the main issue of this genre is in the box concerned with the interaction related questions although the questions now deal with two different levels. The two issues (the advertisement interactivity and the ways to attract the viewer for interaction) could be presented as different parts. Finally Mr Miettinen noted that many of the questions could be stated in different ways and that the importance of each question varies from case to case. In addition there probably exist a great deal of other questions one should address.[310]

6.4 Conclusions related to computer game type of interactive television programs

I conclude that developers of computer- (or video) game type of ITV applications will benefit by asking the following strategic questions presented on the next page in figure 27 when planning their production. These conclusions are

FIGURE 26: Strategic questions for developing ITV-advertising applications

FIGURE 27: Strategic questions for developing computer game type of ITV applications

supported by the respondents for this genre who included persons working in posts like Creative Director, Consultant, Researcher, System analyst, Producer, CEO, Lead Design Specialist, Business Consultant, Copy, Director of Product Development and senior system architect. The organizations where the respondents came from included Elisa Communications, Stonebridge Technologies, WebtvPlus, Altair 4 Multimedia, Broadband Data Communications, NOB New Media, PHS Interactive and Wizbang Productions. The conclusions are further supported by my own judgement and by the fact that the questions have been found useful in the development of other types of media.

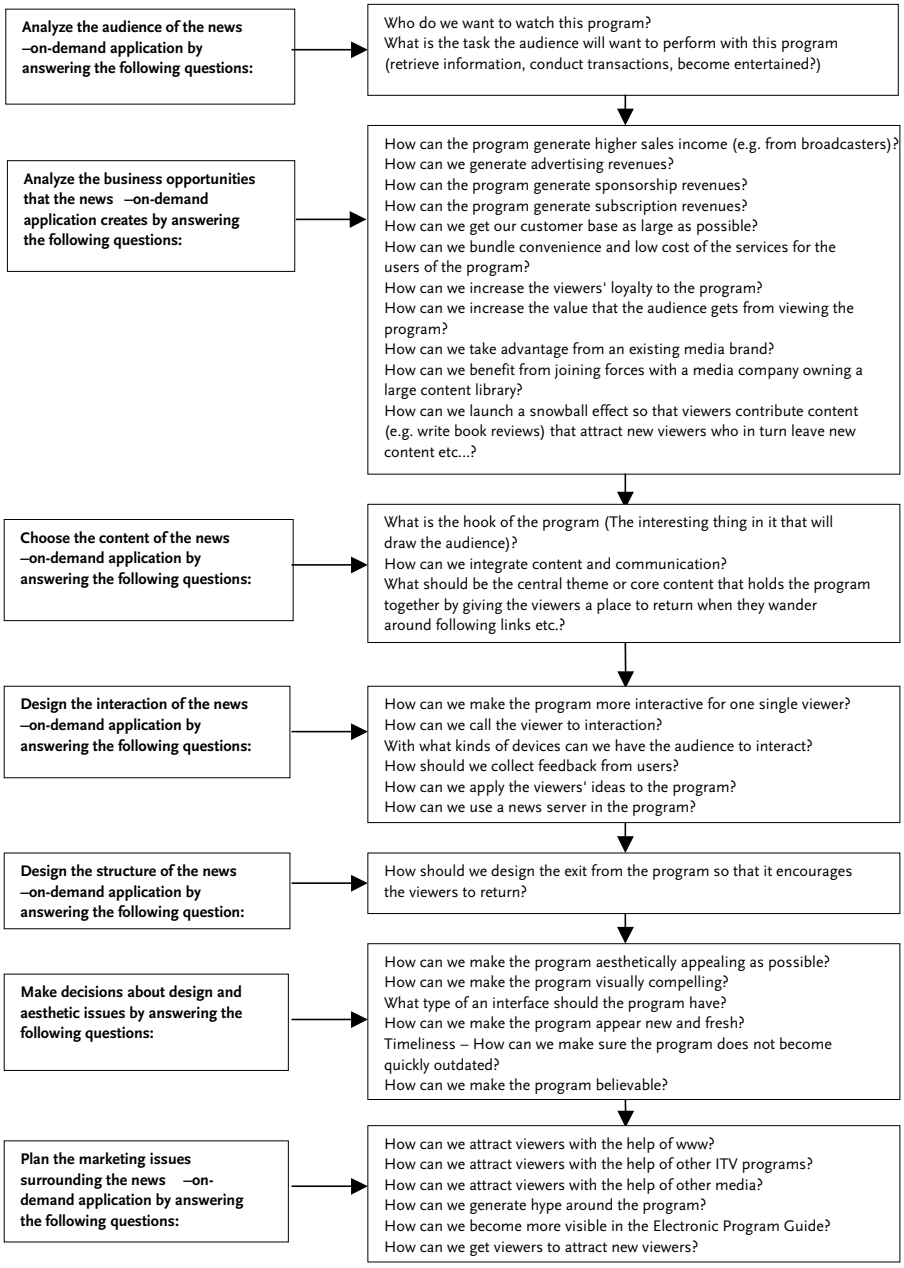
Creative director Pasi Hytönen from Wizbang Productions was asked to evaluate this computer game model after it had been completed. According to Hytönen, all the boxes and the questions in them seem to be relevant to a computer game type of application. The only additional issue one should bring up, is the possibility that the program is designed so that the whole experience is presented in different media at the same time. As an example Mr. Hytönen gives the possibility where some parts of the game are presented in ITV environment and other parts e.g. in the print media and the viewer has to watch them both in order to get the whole picture. Mr. Hytönen formulates this additional question in the following way: "Is this concept also part of other media than ITV?" Finally Mr. Hytönen noted that additional relevant questions do probably exist, but its difficult to argue that they were necessarily more important.[311]

6.5 Conclusions about the News on Demand applications for interactive television

I conclude that developers of News on Demand -type of ITV applications will benefit by asking the following strategic questions presented in figure 28 when planning their production. These conclusions are supported by respondents for this genre, who included persons working in posts like Managing director, Head of communications department, marketing manager, technical supervisor, technology director, growth director, on-line editor, head of interactive video and developer. The organizations where the respondents came from included Reuters, Warner Brothers, MTV3, TV2 Interactive (Norway), Hedcom Oy, FinnSat Oy, Finnish Association of Deaf, Adelphia, Radiolinja, Satama Interactive and Simian Software Solutions. The conclusions are further supported by my own judgement and by the fact that the questions have been found useful in the development of other types of media.

Producer and director Pedro Viljanen was asked to comment on the figure.

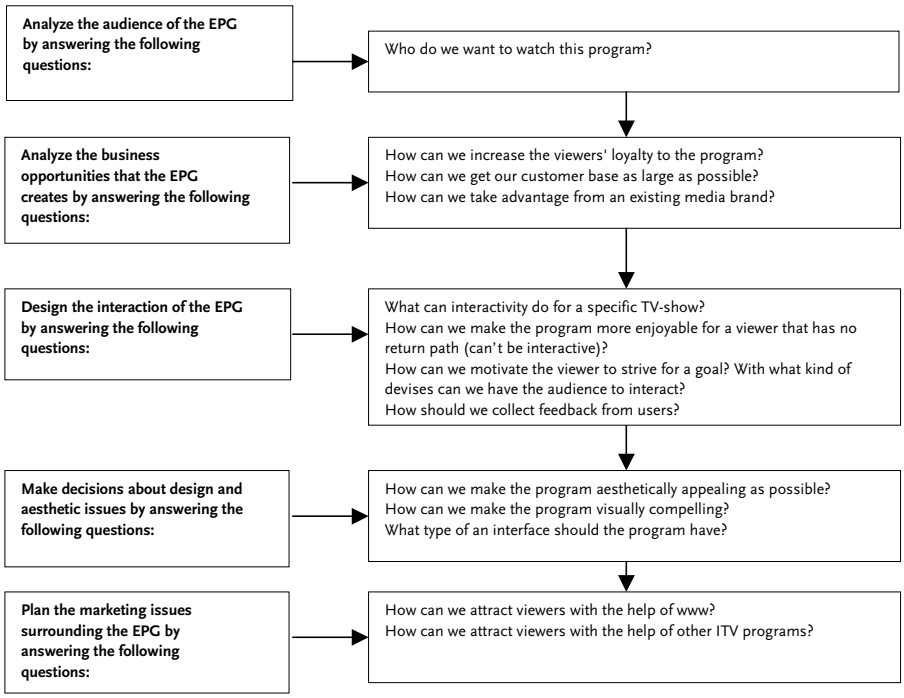
FIGURE 28: Strategic questions for developing news on demand applications



According to Viljanen the figure is rightfully constructed and it proved to be useful when he developed his own ideas for ITV-programs with the help of it. One of the issues he wanted to comment on is that the business model questions may not work so well in Finland, since we don't have a tradition of paying subscription fees in a TV environment. "The financing of these types of productions might be a problem in the short term, because we are not used to pay per view. The younger generations will learn to pay with their phones but before they become our customers we will have some type of a chicken-and-an-egg problem. We must educate the audience for this somehow."[312]

Pedro Viljanen also noted that many of the questions seem to provide the same answers. On the other hand one would be tempted to suggest further questions but they might not be so well suited for a wider spectrum of genres. Finally he noted that one should also take into account the need to guide the viewer towards a desired outcome.[313]

FIGURE 29: Strategic questions for developing an EPG



6.6 Conclusions about the development of Electronic Program Guides

I conclude that developers of Electronic Program Guides (EPG) will benefit by asking the following strategic questions presented in figure 29 on the previous page when planning their production. These conclusions are supported by the responses for this genre that came from persons working in posts like Digital TV project manager, Engineering manager, System Architect, Marketing manager, Research assistant and Senior development producer. The organizations where the respondents came from included Thomson multimedia, Via Digital, Yleisradio, The Bulldog Group, Elisa Communications, Tampereen Tietoverkko, PBS of USA and BBC. The conclusions are further supported by my own judgement and by the fact that the questions have been found useful in the development of other types of media.

Digital television project manager Tommi Riikonen from Yleisradio was asked to comment on the questions related to the EPG development. Mr. Riikonen pointed out that e.g. in Finland there have been set common guidelines for the EPG design. These national guidelines will probably limit some of the choices the developer could make in regard to these questions. "Otherwise especially in a situation where such common guidelines have not been set this model seems to be fine and the questions seem to be reasonable."[314]

6.7 Conclusions about Distance learning applications

I conclude that developers of distance learning applications for ITV will benefit by asking the following strategic questions presented in the figure 30 on the next page when planning their production. These conclusions are supported by responses for this genre that came from persons working in posts like producer, R&D manager, engineer, vice president of visionary projects, director of international department, solutions engineer, market analyst manager, mobile concepts manager, multimedia consultant, professor and marketing intelligence analyst. The organizations where the respondents came from included The Fantastic Corporation, University of Industrial Arts Helsinki, Sunmoon University Korea, Sinclair & Associates, Comprend, Museums On Line, Popsystems Oy, Cisco Systems, John Crotty Associates and Black & Veatch Telecomm. The conclusions are further supported by my own judgement and by the fact that the questions have been found useful in the development of other types of media.

R&D manager Rauno Pekkala from Länsilinkki was asked to comment on

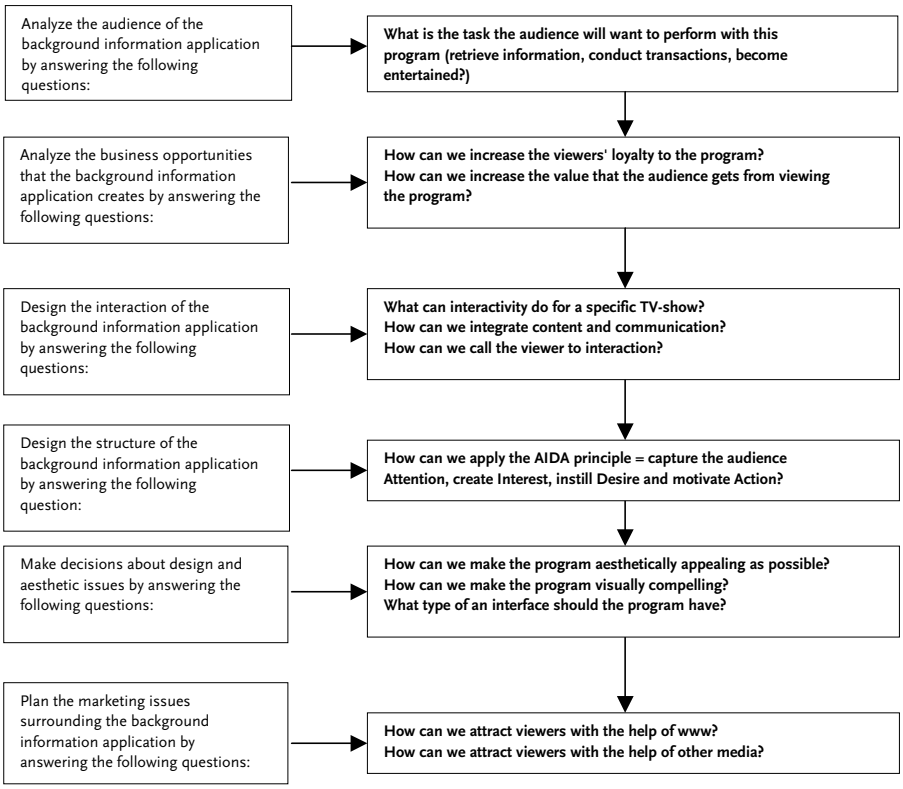
FIGURE 30: Strategic questions for developing distance learning applications for ITV environment

the final conclusions related to the distance learning applications. He found the figure to be correct. He introduced the following additions to be considered: One should evaluate the offerings that are available in market. Also one should focus on the volumes of demand there might be for this application. Also the viewing context and the viewer profile should be addressed. In the business model questions one should also try to evaluate the applications role in the general value chain. Copyright issues should also be carefully considered. "Otherwise the issues presented in the figure seem to be central and correct."[315]

6.8 Conclusions of background information for TV-programs

I conclude that developers of background information type of ITV applications will benefit by asking the following strategic questions presented in figure 31 when planning their production. These conclusions are supported by responses for this genre that came from persons working in posts like strategic analyst, production manager, director of convergence technologies, producer, technologist, Head of New Media, executive producer, project manager and strategic skills manager. The organizations where these supporting respondents came from included Sveriges Television, HSR-TV, SF Interactive, Moon TV, The News Hour with Jim Lehrer, Tefen Eurosport, NOB interactive, Itelco, Nelonen and BBC. The conclusions are further supported by my own judgement and by the fact that the questions have been found useful in the development of other types of media.

FIGURE 31: Strategic questions for developing background information type of ITV applications



Executive producer Markus von Reiche from Nelonen commented on the completed figure. According to von Reiche the figure itself is fine. He wanted to emphasize that the starting point should always be the TV-program (or the content) itself and not the "interactivity". "One should define what is the beef in the project. It should be based on the pull of the content and not on technology push."[316]

6.9 Comparison of the findings to other recent research

Some interesting research has been published at the time of finalizing my dissertation and here I will present the most important results from them and their relation to my findings.

Pace Micro Technology published a major consumer survey in February 2000. The most important finding in that survey was that there has been a remarkable change in the British public's understanding and perceptions of digital TV. "In a very short time the public has moved from where two out of three people did not know what digital TV was, to almost half the country now believing they will move to digital within the next three years."[317] The impressive growth in Britain's installed base is presented by e.g. Peter Marshall (in Blomberg). By the end on July there was a set-top-box in nearly 5 million British homes[318]. Pace Micro Technology also predicts that by 2003 there will be an installed base of 141 million digital boxes in western Europe and US and that 63% of these will be interactive.[319] These figures demonstrate without a doubt that the launch of interactive television that has failed in so many decades before will now succeed.

The power of interactive advertising is being demonstrated and conclusions about it are also being drawn in these studies. Pace Micro Technology presents as an example of this an advertisement for Renault on French satellite channel TPS. The advertisement sold 4,500 cars in a six-month period – to just half a million subscribers.[320] Pace also predicts that television shopping will evolve even further thanks to certain technological advances that make it possible to establish a wireless home network using connecting devices. Pace is now developing a handheld device called Shopping mate. The device (which has a small screen and barcode reader) allows viewers to conduct home shopping and writing shopping lists via the television without interrupting the main-screen television viewing. Thus according to Pace e-commerce is already proving to be one of the most popular interactive television services.[321]

An interesting study of the usability of different British EPGs has recently

been made by Owen Daly-Jones and Rachel Carey. Its key findings revealed that some of the EPGs that are in use by SKY, BBC, Teletext and Ondigital have some serious usability problems in them. For example, the users could not navigate the EPGs backwards properly and as a result sometimes ended up even navigating to a "rival" EPG service.[322] The researchers suggest that in relation to EPGs, further research needs to be carried out on e.g. the following issues: How people plan their viewing? How much information do they need? How do they compare options? What would people want to do most of the time?

Professor Petri Vuorimaa has published a paper on the service architecture for the organization of the ITV-genres (or services as named in the article). According to Vuorimaa the services could be divided into three categories: Navigator, Text TV and Interactive programs. Professor Vuorimaa also proposes that the information content should be coded using XML so that the same content could also be used in standard www-browsers.[323]

In conclusion the current research indicates that these issues are becoming even more important than before. Therefore my study and its results remain timely and probably quite useful in the near future.

6.10 Implications for theory

This dissertation also offers evidence that the above-presented strategic questions for developing successful ITV applications do exist. These questions are similar to e.g. the ones that exist for writing good drama, developing multimedia and www-sites, building virtual communities or developing successful home shopping advertisements.

The results of this research are also likely to encourage other researchers to pursue finding a coherent theory for developing ITV applications. This work will become easier, when "good" ITV applications will be more readily available in the future.

6.11 Implications for practice

The implications for the practice are probably the biggest contribution of this research. The set of strategic questions identified in this chapter for each corresponding genre will provide a starting point for a professional developing his ITV application.

On the other hand, ITV production is very likely to evolve over a long period of time in a similar way as the motion picture evolution was described in the

second chapter. During this evolution new insights and solutions will emerge and some of the questions will become obsolete. Nevertheless, keeping this in mind and asking the questions as long as they are relevant I believe one gets a head start in designing his application.

6.12 Limitations

Because of the difficulties in gathering a complete list of potential respondents for this type of research, certain limitations do apply to the results of this study. The statistical results of the survey must be addressed with caution. One can e.g. not argue, that all of the ITV professionals in the world think this way. One can only claim that these 98 quite well positioned industry professionals see things this way. It is then up to the user of these results to decide, if this group is trustworthy enough for him to base his processes on these questions.

Secondly the pool of experience of each individual is still relatively small compared to e.g. the professionals in the film industry. Undoubtedly the results are bound to become more precise, when the members of the industry will have more insights into this new media.

Nor do I argue that one question is in all cases more useful than another. Instead I have simply chosen to point out those questions that with great likelihood are at least somewhat useful in developing the corresponding applications. When someday a comprehensive source for "all" the ITV professionals in the world can be obtained, it will be interesting to send a similar survey to all of them.

In addition, these are not the only questions one should ask himself when developing an ITV application. Some of the questions that now did not score high may well later turn out to be most useful. I am also very confident, that a number of questions that were not at all discussed here will turn out to be useful. Some interesting genres were also not addressed at all.

6.13 Implications for further research

Four evident research topics for the future did emerge. First of all, it will be interesting to repeat this research, when ITV applications are more common and their developers have a longer working history. Secondly, it will also be interesting to repeat this study, when the whole ITV developer community can somehow be reached. Thirdly, someday there will be a way to identify "good" ITV programs (e.g. based on critiques, ratings or advertising income). It will be inter-

esting to analyze these programs and to compare what do they have in common. Finally, many potential ITV genres were now not researched. One should someday look at them also.

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Appendix 1: Complete survey results

1.1. Complete responses related to ITV advertising

Response averages on questions related to choosing a subject for the program

	A QUESTION THAT A PERSON DEVELOPING AN INTERACTIVE TELEVISION ADVERTISEMENT COULD ASK HIMSELF.	HOW USEFUL IT WAS RATED
1.1	Who do we want to watch this program?	2.83
1.2	What are the special (psychological, physical, and economical) characteristics of this viewer group?	2.67
1.3	How intensively will the audience of this topic interact with other viewers?	1.73
1.4	What is the task that the audience will want to perform with this program (retrieve information, conduct transactions, become entertained)?	3.00
1.5	What existing TV-programs can we use as a springboard in launching the program?	2.36
1.6	What can interactivity do for a specific TV-show?	2.42
1.7	What is the hook of the program (The interesting thing in it that will draw the audience)?	2.50
1.8	What should be the central theme or core content that holds the program together by giving the viewers a place to return when they wander around following links etc.?	2.25
1.9	Critique – What is the best and worst possible critical response the program can receive?	2.08
1.10	Notoriety – Is this the kind of program I would like to be known of?	1.92
1.11	Personal choice – Is this the kind of program I would watch my self?	1.83
1.12	Richness and complexity – How can we make an episode so that it can be viewed more than once and it becomes more and not less, when seen again?	2.09
1.13	How can we integrate content and communication?	2.67

Response averages on questions related to increasing the audience interaction

	A QUESTION THAT A PERSON DEVELOPING AN INTERACTIVE TELEVISION ADVERTISEMENT COULD ASK HIMSELF.	HOW USEFUL IT WAS RATED
2.1	How can we increase the interaction between separate viewers?	1.58
2.2	How can we make the program more interactive for one single viewer?	2.50
2.3	How can we make the program more enjoyable for a viewer that has no return path (can't be interactive)?	2.08
2.4	How can we assign the viewers with the responsibility of maintaining the interaction among the audience?	1.80
2.5	How can we give the viewer a task to complete or a goal to reach in the program?	2.42
2.6	How can we motivate the viewer to strive for the goal?	2.75
2.7	What kind of an opposition can we give to the viewer?	2.00
2.8	What kind of conflicts can we create between the viewer and his opposition?	1.91
2.9	How can we generate shared goals among the viewers?	1.67
2.10	How can we get the viewers want to meet each other by watching the show next time?	1.75
2.11	How can we increase the value that the audience gets from viewing the program?	2.50
2.12	How can we bundle convenience and low cost of the services for the users of the program?	2.33

2.13	How can we call the viewer to interaction?	2.50
2.14	With what kinds of devices can we have the audience to interact?	2.64
2.15	How can we make the viewer interact through mobile devices (e.g. mobile phone or Palm Pilot)?	2.25
2.16	How can we use a mailing list in the program?	2.33
2.17	How can we use a chat room in the program?	1.58
2.18	How can we use news server in the program?	1.42
2.19	How should we monitor viewer usage of the program?	2.50
2.20	How should we collect feedback from users?	2.75
2.21	How can we apply the viewers' ideas to the program?	1.92
2.22	How can we increase the viewers' loyalty to the program?	2.25

Response averages on questions related to the structure of the program

A QUESTION THAT A PERSON DEVELOPING AN INTERACTIVE TELEVISION ADVERTISEMENT COULD ASK HIMSELF.		HOW USEFUL IT WAS RATED
3.1	How can we get a strong opening scene in the program?	2.18
3.2	How can we have a three-act structure in the program?	1.64
3.3	How can we add momentum in the program (so that one action of the viewer leads to another conflict, and action here leads again in to another conflict)?	1.82
3.4	How can we design the program structure so that commercial break can be inserted in it?	2.00
3.5	How can we apply the AIDA principle = capture the audience Attention, create Interest, instill Desire and motivate Action?	2.58
3.6	How can we arrange a happy ending to the program?	1.67
3.7	How should we design the exit from the program so that it encourages the viewers to return?	2.42

Response averages on questions related to aesthetics and design

A QUESTION THAT A PERSON DEVELOPING AN INTERACTIVE TELEVISION ADVERTISEMENT COULD ASK HIMSELF.		HOW USEFUL IT WAS RATED
4.1	How can we make the program aesthetically appealing as possible?	2.50
4.2	How can we make the program visually compelling?	2.92
4.3	How can we include compelling sound elements and music in it?	2.58
4.4	What type of an interface should the program have?	2.92
4.5	What type of metaphors should we use in the program?	2.42
4.6	How can we make the program appear new and fresh?	2.42
4.7	Timeliness – How can we make sure the program does not become quickly outdated?	2.17
4.8	How can we include roles in the program in which we can cast known actors or celebrities?	1.75
4.9	How can we make the program believable?	1.92

Response averages on questions related to the business model of the ITV-program

A QUESTION THAT A PERSON DEVELOPING AN INTERACTIVE TELEVISION ADVERTISEMENT COULD ASK HIMSELF.		HOW USEFUL IT WAS RATED
5.1	How can the program generate higher sales income (e.g. from broadcasters)?	2.73
5.2	How can the program generate advertising revenues?	2.64

5.3	How can the program generate sponsorship revenues?	2.64
5.4	How can the program generate subscription revenues?	2.00
5.5	How can home shopping be combined in to the program?	2.67
5.6	How can product placement be incorporated in the program?	2.25
5.7	How can the program generate transaction fees?	2.64
5.8	How can we use the viewer database to generate income (e.g. renting it as a direct marketing database)?	2.42
5.9	How can we achieve customer ownership (e.g. so that this set of the viewers can not be reached by other media)?	2.58
5.10	How can we get our customer base as large as possible?	2.58
5.11	How can we launch a snowball effect so that viewers contribute content (e.g. write book reviews) that attract new viewers who in turn leave new content etc...?	2.42

Response averages on questions related to the marketing of the program

A QUESTION THAT A PERSON DEVELOPING AN INTERACTIVE TELEVISION ADVERTISEMENT COULD ASK HIMSELF.		HOW USEFUL IT WAS RATED
6.1	How can we attract viewers with the help of www?	2.58
6.2	How can we attract viewers with the help of other ITV programs?	2.58
6.3	How can we attract viewers with the help of other media?	2.75
6.4	How can we generate hype around the program?	2.50
6.5	How can we improve our listings in search engine?	2.18
6.6	How can we become more visible in the Electronic Program Guide?	2.17
6.7	How can we get viewers to generate new content for the program (e.g. writing reviews etc.)?	2.00
6.8	How can we get viewers to attract new viewers?	2.42
6.9	How can we take advantage from an existing media brand?	2.75
6.10	How can we benefit from joining forces with a media company owning a large content library?	2.50

1.2. Responses related to computer game type of interactive television programs

Response averages on questions related to choosing a subject for the program

A QUESTION THAT A PERSON DEVELOPING A COMPUTER GAME TYPE OF AN ITV APPLICATION COULD ASK HIMSELF.		HOW USEFUL IT WAS RATED
1.1	Who do we want to watch this program?	2.91
1.2	What are the special (psychological, physical, and economical) characteristics of this viewer group?	2.90
1.3	How intensively will the audience of this topic interact with other viewers?	2.70
1.4	What is the task that the audience will want to perform with this program (retrieve information, conduct transactions, become entertained)?	2.45
1.5	What existing TV-programs can we use as a springboard in launching the program?	2.00
1.6	What can interactivity do for a specific TV-show?	2.50

1.7	What is the hook of the program (The interesting thing in it that will draw the audience)?	2.82
1.8	What should be the central theme or core content that holds the program together by giving the viewers a place to return when they wander around following links etc.?	2.44
1.9	Critique – What is the best and worst possible critical response the program can receive?	2.00
1.10	Notoriety – Is this the kind of program I would like to be known of?	2.10
1.11	Personal choice – Is this the kind of program I would watch my self?	2.10
1.12	Richness and complexity – How can we make an episode so that it can be viewed more than once and it becomes more and not less, when seen again?	2.50
1.13	How can we integrate content and communication?	2.60

Response averages on questions related to increasing the audience interaction

A QUESTION THAT A PERSON DEVELOPING A COMPUTER GAME TYPE OF AN ITV APPLICATION COULD ASK HIMSELF.		HOW USEFUL IT WAS RATED
2.1	How can we increase the interaction between separate viewers?	2.55
2.2	How can we make the program more interactive for one single viewer?	2.82
2.3	How can we make the program more enjoyable for a viewer that has no return path (can't be interactive)?	2.18
2.4	How can we assign the viewers with the responsibility of maintaining the interaction among the audience?	2.10
2.5	How can we give the viewer a task to complete or a goal to reach in the program?	2.10
2.6	How can we motivate the viewer to strive for the goal?	2.30
2.7	What kind of an opposition can we give to the viewer?	2.55
2.8	What kind of conflicts can we create between the viewer and his opposition?	2.50
2.9	How can we generate shared goals among the viewers?	2.55
2.10	How can we get the viewers want to meet each other by watching the show next time?	2.10
2.11	How can we increase the value that the audience gets from viewing the program?	2.36
2.12	How can we bundle convenience and low cost of the services for the users of the program?	2.64
2.13	How can we call the viewer to interaction?	2.70
2.14	With what kinds of devices can we have the audience to interact?	2.73
2.15	How can we make the viewer interact through mobile devices (e.g. mobile phone or Palm Pilot)?	2.36
2.16	How can we use a mailing list in the program?	1.91
2.17	How can we use a chat room in the program?	2.27
2.18	How can we use news server in the program?	2.00
2.19	How should we monitor viewer usage of the program?	2.45
2.20	How should we collect feedback from users?	2.73
2.21	How can we apply the viewers' ideas to the program?	2.50
2.22	How can we increase the viewers' loyalty to the program?	2.70

Response averages on questions related to the structure of the program

A QUESTION THAT A PERSON DEVELOPING A COMPUTER GAME TYPE OF AN ITV APPLICATION COULD ASK HIMSELF.		HOW USEFUL IT WAS RATED
3.1	How can we get a strong opening scene in the program?	2.70
3.2	How can we have a three-act structure in the program?	1.70

3.3	How can we add momentum in the program (so that one action of the viewer leads to another conflict, and action here leads again in to another conflict)?	2.50
3.4	How can we design the program structure so that commercial break can be inserted in it?	1.73
3.5	How can we apply the AIDA principle = capture the audience Attention, create Interest, instill Desire and motivate Action?	2.70
3.6	How can we arrange a happy ending to the program?	1.30
3.7	How should we design the exit from the program so that it encourages the viewers to return?	2.60

Response averages on questions related to aesthetics and design

	A QUESTION THAT A PERSON DEVELOPING A COMPUTER GAME TYPE OF AN ITV APPLICATION COULD ASK HIMSELF.	HOW USEFUL IT WAS RATED
4.1	How can we make the program aesthetically appealing as possible?	2.60
4.2	How can we make the program visually compelling?	2.70
4.3	How can we include compelling sound elements and music in it?	2.70
4.4	What type of an interface should the program have?	3.00
4.5	What type of metaphors should we use in the program?	2.30
4.6	How can we make the program appear new and fresh?	2.70
4.7	Timeliness – How can we make sure the program does not become quickly outdated?	2.50
4.8	How can we include roles in the program in which we can cast known actors or celebrities?	2.00
4.9	How can we make the program believable?	2.40

Response averages on questions related to the business model of the ITV-program

	A QUESTION THAT A PERSON DEVELOPING A COMPUTER GAME TYPE OF AN ITV APPLICATION COULD ASK HIMSELF.	HOW USEFUL IT WAS RATED
5.1	How can the program generate higher sales income (e.g. from broadcasters)?	2.82
5.2	How can the program generate advertising revenues?	2.45
5.3	How can the program generate sponsorship revenues?	2.70
5.4	How can the program generate subscription revenues?	2.73
5.5	How can home shopping be combined in to the program?	2.09
5.6	How can product placement be incorporated in the program?	2.36
5.7	How can the program generate transaction fees?	2.45
5.8	How can we use the viewer database to generate income (e.g. renting it as a direct marketing database)?	1.82
5.9	How can we achieve customer ownership (e.g. so that this set of the viewers can not be reached by other media)?	2.10
5.10	How can we get our customer base as large as possible?	2.78
5.11	How can we launch a snowball effect so that viewers contribute content (e.g. write book reviews) that attract new viewers who in turn leave new content etc...?	2.40

Response averages on questions related to the marketing of the program

	A QUESTION THAT A PERSON DEVELOPING A COMPUTER GAME TYPE OF AN ITV APPLICATION COULD ASK HIMSELF.	HOW USEFUL IT WAS RATED
6.1	How can we attract viewers with the help of www?	2.70
6.2	How can we attract viewers with the help of other ITV programs?	2.60
6.3	How can we attract viewers with the help of other media?	2.50

6.4	How can we generate hype around the program?	2.50
6.5	How can we improve our listings in search engine?	2.40
6.6	How can we become more visible in the Electronic Program Guide?	2.50
6.7	How can we get viewers to generate new content for the program (e.g. writing reviews etc.)?	2.30
6.8	How can we get viewers to attract new viewers?	2.40
6.9	How can we take advantage from an existing media brand?	2.10
6.10	How can we benefit from joining forces with a media company owning a large content library?	1.80

1.3. Responses related to news on demand applications

Response averages on questions related to choosing a subject for the program

	A QUESTION THAT A PERSON DEVELOPING A NEWS ON DEMAND APPLICATION FOR INTERACTIVE TELEVISION COULD ASK HIMSELF.	HOW USEFUL IT WAS RATED
1.1	Who do we want to watch this program?	2.73
1.2	What are the special (psychological, physical, and economical) characteristics of this viewer group?	2.20
1.3	How intensively will the audience of this topic interact with other viewers?	1.64
1.4	What is the task that the audience will want to perform with this program (retrieve information, conduct transactions, become entertained)?	2.64
1.5	What existing TV-programs can we use as a springboard in launching the program?	2.45
1.6	What can interactivity do for a specific TV-show?	2.45
1.7	What is the hook of the program (The interesting thing in it that will draw the audience)?	2.55
1.8	What should be the central theme or core content that holds the program together by giving the viewers a place to return when they wander around following links etc.?	2.60
1.9	Critique – What is the best and worst possible critical response the program can receive?	1.89
1.10	Notoriety – Is this the kind of program I would like to be known of?	2.36
1.11	Personal choice – Is this the kind of program I would watch my self?	2.36
1.12	Richness and complexity – How can we make an episode so that it can be viewed more than once and it becomes more and not less, when seen again?	2.00
1.13	How can we integrate content and communication?	2.64

Response averages on questions related to increasing the audience interaction

	A QUESTION THAT A PERSON DEVELOPING A NEWS ON DEMAND APPLICATION FOR INTERACTIVE TELEVISION COULD ASK HIMSELF.	HOW USEFUL IT WAS RATED
2.1	How can we increase the interaction between separate viewers?	1.82
2.2	How can we make the program more interactive for one single viewer?	2.64
2.3	How can we make the program more enjoyable for a viewer that has no return path (can't be interactive)?	2.27
2.4	How can we assign the viewers with the responsibility of maintaining the interaction among the audience?	1.89
2.5	How can we give the viewer a task to complete or a goal to reach in the program?	2.09
2.6	How can we motivate the viewer to strive for the goal?	2.00
2.7	What kind of an opposition can we give to the viewer?	1.70
2.8	What kind of conflicts can we create between the viewer and his opposition?	1.60

2.9	How can we generate shared goals among the viewers?	1.91
2.10	How can we get the viewers want to meet each other by watching the show next time?	1.70
2.11	How can we increase the value that the audience gets from viewing the program?	2.55
2.12	How can we bundle convenience and low cost of the services for the users of the program?	2.50
2.13	How can we call the viewer to interaction?	2.80
2.14	With what kinds of devices can we have the audience to interact?	2.50
2.15	How can we make the viewer interact through mobile devices (e.g. mobile phone or Palm Pilot)?	2.09
2.16	How can we use a mailing list in the program?	1.82
2.17	How can we use a chat room in the program?	1.55
2.18	How can we use news server in the program?	2.55
2.19	How should we monitor viewer usage of the program?	2.36
2.20	How should we collect feedback from users?	2.90
2.21	How can we apply the viewers' ideas to the program?	2.64
2.22	How can we increase the viewers' loyalty to the program?	2.55

Response averages on questions related to the structure of the program

A QUESTION THAT A PERSON DEVELOPING A NEWS ON DEMAND APPLICATION FOR INTERACTIVE TELEVISION COULD ASK HIMSELF.		HOW USEFUL IT WAS RATED
3.1	How can we get a strong opening scene in the program?	2.18
3.2	How can we have a three-act structure in the program?	1.36
3.3	How can we add momentum in the program (so that one action of the viewer leads to another conflict, and action here leads again in to another conflict)?	1.55
3.4	How can we design the program structure so that commercial break can be inserted in it?	2.27
3.5	How can we apply the AIDA principle = capture the audience Attention, create Interest, instill Desire and motivate Action?	2.27
3.6	How can we arrange a happy ending to the program?	1.55
3.7	How should we design the exit from the program so that it encourages the viewers to return?	2.82

Response averages on questions related to aesthetics and design

A QUESTION THAT A PERSON DEVELOPING A NEWS ON DEMAND APPLICATION FOR INTERACTIVE TELEVISION COULD ASK HIMSELF.		HOW USEFUL IT WAS RATED
4.1	How can we make the program aesthetically appealing as possible?	2.50
4.2	How can we make the program visually compelling?	2.82
4.3	How can we include compelling sound elements and music in it?	2.45
4.4	What type of an interface should the program have?	2.60
4.5	What type of metaphors should we use in the program?	2.00
4.6	How can we make the program appear new and fresh?	2.80
4.7	Timeliness – How can we make sure the program does not become quickly outdated?	2.82
4.8	How can we include roles in the program in which we can cast known actors or celebrities?	1.44
4.9	How can we make the program believable?	2.64

Response averages on questions related to the business model of the ITV-program

A QUESTION THAT A PERSON DEVELOPING A NEWS ON DEMAND APPLICATION FOR INTERACTIVE TELEVISION COULD ASK HIMSELF.		HOW USEFUL IT WAS RATED
5.1	How can the program generate higher sales income (e.g. from broadcasters)?	2.70
5.2	How can the program generate advertising revenues?	2.80

5.3	How can the program generate sponsorship revenues?	2.50
5.4	How can the program generate subscription revenues?	2.80
5.5	How can home shopping be combined in to the program?	1.60
5.6	How can product placement be incorporated in the program?	1.70
5.7	How can the program generate transaction fees?	1.90
5.8	How can we use the viewer database to generate income (e.g. renting it as a direct marketing database)?	1.78
5.9	How can we achieve customer ownership (e.g. so that this set of the viewers can not be reached by other media)?	2.00
5.10	How can we get our customer base as large as possible?	2.60
5.11	How can we launch a snowball effect so that viewers contribute content (e.g. write book reviews) that attract new viewers who in turn leave new content etc...?	2.50

Response averages on questions related to the marketing of the program

A QUESTION THAT A PERSON DEVELOPING A NEWS ON DEMAND APPLICATION FOR INTERACTIVE TELEVISION COULD ASK HIMSELF.		HOW USEFUL IT WAS RATED
6.1	How can we attract viewers with the help of www?	2.90
6.2	How can we attract viewers with the help of other ITV programs?	2.80
6.3	How can we attract viewers with the help of other media?	2.60
6.4	How can we generate hype around the program?	2.50
6.5	How can we improve our listings in search engine?	2.20
6.6	How can we become more visible in the Electronic Program Guide?	2.70
6.7	How can we get viewers to generate new content for the program (e.g. writing reviews etc.)?	2.40
6.8	How can we get viewers to attract new viewers?	2.60
6.9	How can we take advantage from an existing media brand?	2.50
6.10	How can we benefit from joining forces with a media company owning a large content library?	2.63

1.4. Responses related to EPG

Response averages on questions related to choosing a subject for the program

A QUESTION THAT A PERSON DEVELOPING AN EPG FOR INTERACTIVE TELEVISION COULD ASK HIMSELF.		HOW USEFUL IT WAS RATED
1.1	Who do we want to watch this program?	2.67
1.2	What are the special (psychological, physical, and economical) characteristics of this viewer group?	2.22
1.3	How intensively will the audience of this topic interact with other viewers?	1.78
1.4	What is the task that the audience will want to perform with this program (retrieve information, conduct transactions, become entertained)?	2.22
1.5	What existing TV-programs can we use as a springboard in launching the program?	2.38
1.6	What can interactivity do for a specific TV-show?	2.88
1.7	What is the hook of the program (The interesting thing in it that will draw the audience)?	2.22
1.8	What should be the central theme or core content that holds the program together by giving the viewers a place to return when they wander around following links etc.?	2.00
1.9	Critique – What is the best and worst possible critical response the program can receive?	2.22

1.10	Notoriety – Is this the kind of program I would like to be known of?	2.22
1.11	Personal choice – Is this the kind of program I would watch my self?	2.56
1.12	Richness and complexity – How can we make an episode so that it can be viewed more than once and it becomes more and not less, when seen again?	2.13
1.13	How can we integrate content and communication?	2.44

Response averages on questions related to increasing the audience interaction

A QUESTION THAT A PERSON DEVELOPING AN EPG FOR INTERACTIVE TELEVISION COULD ASK HIMSELF.		HOW USEFUL IT WAS RATED
2.1	How can we increase the interaction between separate viewers?	1.89
2.2	How can we make the program more interactive for one single viewer?	2.44
2.3	How can we make the program more enjoyable for a viewer that has no return path (can't be interactive)?	2.67
2.4	How can we assign the viewers with the responsibility of maintaining the interaction among the audience?	1.89
2.5	How can we give the viewer a task to complete or a goal to reach in the program?	2.22
2.6	How can we motivate the viewer to strive for the goal?	2.56
2.7	What kind of an opposition can we give to the viewer?	2.13
2.8	What kind of conflicts can we create between the viewer and his opposition?	2.13
2.9	How can we generate shared goals among the viewers?	2.11
2.10	How can we get the viewers want to meet each other by watching the show next time?	1.78
2.11	How can we increase the value that the audience gets from viewing the program?	2.38
2.12	How can we bundle convenience and low cost of the services for the users of the program?	2.13
2.13	How can we call the viewer to interaction?	2.44
2.14	With what kinds of devices can we have the audience to interact?	2.56
2.15	How can we make the viewer interact through mobile devices (e.g. mobile phone or Palm Pilot)?	1.75
2.16	How can we use a mailing list in the program?	1.67
2.17	How can we use a chat room in the program?	1.67
2.18	How can we use news server in the program?	1.56
2.19	How should we monitor viewer usage of the program?	2.44
2.20	How should we collect feedback from users?	2.56
2.21	How can we apply the viewers' ideas to the program?	2.33
2.22	How can we increase the viewers' loyalty to the program?	2.56

Response averages on questions related to the structure of the program

A QUESTION THAT A PERSON DEVELOPING AN EPG FOR INTERACTIVE TELEVISION COULD ASK HIMSELF.		HOW USEFUL IT WAS RATED
3.1	How can we get a strong opening scene in the program?	1.88
3.2	How can we have a three-act structure in the program?	1.43
3.3	How can we add momentum in the program (so that one action of the viewer leads to another conflict, and action here leads again in to another conflict)?	1.75
3.4	How can we design the program structure so that commercial break can be inserted in it?	1.50
3.5	How can we apply the AIDA principle = capture the audience Attention, create Interest, instill Desire and motivate Action?	2.11
3.6	How can we arrange a happy ending to the program?	1.44
3.7	How should we design the exit from the program so that it encourages the viewers to return?	2.13

Response averages on questions related to aesthetics and design

	A QUESTION THAT A PERSON DEVELOPING AN EPG FOR INTERACTIVE TELEVISION COULD ASK HIMSELF.	HOW USEFUL IT WAS RATED
4.1	How can we make the program aesthetically appealing as possible?	2.56
4.2	How can we make the program visually compelling?	2.78
4.3	How can we include compelling sound elements and music in it?	2.11
4.4	What type of an interface should the program have?	2.67
4.5	What type of metaphors should we use in the program?	2.25
4.6	How can we make the program appear new and fresh?	2.44
4.7	Timeliness – How can we make sure the program does not become quickly outdated?	2.44
4.8	How can we include roles in the program in which we can cast known actors or celebrities?	1.50
4.9	How can we make the program believable?	2.33

Response averages on questions related to the business model of the ITV-program

	A QUESTION THAT A PERSON DEVELOPING AN EPG FOR INTERACTIVE TELEVISION COULD ASK HIMSELF.	HOW USEFUL IT WAS RATED
5.1	How can the program generate higher sales income (e.g. from broadcasters)?	2.25
5.2	How can the program generate advertising revenues?	1.88
5.3	How can the program generate sponsorship revenues?	2.00
5.4	How can the program generate subscription revenues?	2.13
5.5	How can home shopping be combined in to the program?	2.13
5.6	How can product placement be incorporated in the program?	2.00
5.7	How can the program generate transaction fees?	2.13
5.8	How can we use the viewer database to generate income (e.g. renting it as a direct marketing database)?	2.43
5.9	How can we achieve customer ownership (e.g. so that this set of the viewers can not be reached by other media)?	2.13
5.10	How can we get our customer base as large as possible?	2.50
5.11	How can we launch a snowball effect so that viewers contribute content (e.g. write book reviews) that attract new viewers who in turn leave new content etc...?	2.25

Response averages on questions related to the marketing of the program

	A QUESTION THAT A PERSON DEVELOPING AN EPG FOR INTERACTIVE TELEVISION COULD ASK HIMSELF.	HOW USEFUL IT WAS RATED
6.1	How can we attract viewers with the help of www?	2.56
6.2	How can we attract viewers with the help of other ITV programs?	2.56
6.3	How can we attract viewers with the help of other media?	2.33
6.4	How can we generate hype around the program?	2.38
6.5	How can we improve our listings in search engine?	2.25
6.6	How can we become more visible in the Electronic Program Guide?	2.67
6.7	How can we get viewers to generate new content for the program (e.g. writing reviews etc.)?	2.38
6.8	How can we get viewers to attract new viewers?	2.11
6.9	How can we take advantage from an existing media brand?	2.56
6.10	How can we benefit from joining forces with a media company owning a large content library?	2.11

1.5. Responses related to distance learning applications

Response averages on questions related to choosing a subject for the program

	A QUESTION THAT A PERSON DEVELOPING A DISTANCE LEARNING ITV APPLICATION COULD ASK HIMSELF.	HOW USEFUL IT WAS RATED
1.1	Who do we want to watch this program?	3.00
1.2	What are the special (psychological, physical, and economical) characteristics of this viewer group?	2.42
1.3	How intensively will the audience of this topic interact with other viewers?	2.27
1.4	What is the task that the audience will want to perform with this program (retrieve information, conduct transactions, become entertained)?	2.83
1.5	What existing TV-programs can we use as a springboard in launching the program?	1.83
1.6	What can interactivity do for a specific TV-show?	2.42
1.7	What is the hook of the program (The interesting thing in it that will draw the audience)?	2.50
1.8	What should be the central theme or core content that holds the program together by giving the viewers a place to return when they wander around following links etc.?	2.58
1.9	Critique – What is the best and worst possible critical response the program can receive?	2.00
1.10	Notoriety – Is this the kind of program I would like to be known of?	1.82
1.11	Personal choice – Is this the kind of program I would watch my self?	2.25
1.12	Richness and complexity – How can we make an episode so that it can be viewed more than once and it becomes more and not less, when seen again?	2.36
1.13	How can we integrate content and communication?	2.83

Response averages on questions related to increasing the audience interaction

	A QUESTION THAT A PERSON DEVELOPING A DISTANCE LEARNING ITV APPLICATION COULD ASK HIMSELF.	HOW USEFUL IT WAS RATED
2.1	How can we increase the interaction between separate viewers?	2.25
2.2	How can we make the program more interactive for one single viewer?	2.67
2.3	How can we make the program more enjoyable for a viewer that has no return path (can't be interactive)?	2.25
2.4	How can we assign the viewers with the responsibility of maintaining the interaction among the audience?	2.18
2.5	How can we give the viewer a task to complete or a goal to reach in the program?	2.58
2.6	How can we motivate the viewer to strive for the goal?	2.58
2.7	What kind of an opposition can we give to the viewer?	1.55
2.8	What kind of conflicts can we create between the viewer and his opposition?	1.27
2.9	How can we generate shared goals among the viewers?	2.33
2.10	How can we get the viewers want to meet each other by watching the show next time?	1.64
2.11	How can we increase the value that the audience gets from viewing the program?	2.73
2.12	How can we bundle convenience and low cost of the services for the users of the program?	2.25
2.13	How can we call the viewer to interaction?	2.45
2.14	With what kinds of devices can we have the audience to interact?	2.50
2.15	How can we make the viewer interact through mobile devices (e.g. mobile phone or Palm Pilot)?	2.08
2.16	How can we use a mailing list in the program?	2.17
2.17	How can we use a chat room in the program?	2.33

2.18	How can we use news server in the program?	2.33
2.19	How should we monitor viewer usage of the program?	2.36
2.20	How should we collect feedback from users?	2.58
2.21	How can we apply the viewers' ideas to the program?	2.64
2.22	How can we increase the viewers' loyalty to the program?	2.25

Response averages on questions related to the structure of the program

A QUESTION THAT A PERSON DEVELOPING A DISTANCE LEARNING ITV APPLICATION COULD ASK HIMSELF.		HOW USEFUL IT WAS RATED
3.1	How can we get a strong opening scene in the program?	2.08
3.2	How can we have a three-act structure in the program?	1.58
3.3	How can we add momentum in the program (so that one action of the viewer leads to another conflict, and action here leads again in to another conflict)?	2.00
3.4	How can we design the program structure so that commercial break can be inserted in it?	1.64
3.5	How can we apply the AIDA principle = capture the audience Attention, create Interest, instill Desire and motivate Action?	2.42
3.6	How can we arrange a happy ending to the program?	1.55
3.7	How should we design the exit from the program so that it encourages the viewers to return?	2.42

Response averages on questions related to aesthetics and design

A QUESTION THAT A PERSON DEVELOPING A DISTANCE LEARNING ITV APPLICATION COULD ASK HIMSELF.		HOW USEFUL IT WAS RATED
4.1	How can we make the program aesthetically appealing as possible?	2.58
4.2	How can we make the program visually compelling?	2.75
4.3	How can we include compelling sound elements and music in it?	2.33
4.4	What type of an interface should the program have?	2.75
4.5	What type of metaphors should we use in the program?	2.17
4.6	How can we make the program appear new and fresh?	2.50
4.7	Timeliness – How can we make sure the program does not become quickly outdated?	2.50
4.8	How can we include roles in the program in which we can cast known actors or celebrities?	1.55
4.9	How can we make the program believable?	2.00

Response averages on questions related to the business model of the ITV-program

A QUESTION THAT A PERSON DEVELOPING A DISTANCE LEARNING ITV APPLICATION COULD ASK HIMSELF.		HOW USEFUL IT WAS RATED
5.1	How can the program generate higher sales income (e.g. from broadcasters)?	2.25
5.2	How can the program generate advertising revenues?	2.08
5.3	How can the program generate sponsorship revenues?	2.42
5.4	How can the program generate subscription revenues?	2.50
5.5	How can home shopping be combined in to the program?	2.08
5.6	How can product placement be incorporated in the program?	1.83
5.7	How can the program generate transaction fees?	2.00
5.8	How can we use the viewer database to generate income (e.g. renting it as a direct marketing database)?	1.75
5.9	How can we achieve customer ownership (e.g. so that this set of the viewers can not be reached by other media)?	1.58
5.10	How can we get our customer base as large as possible?	2.25

5.11	How can we launch a snowball effect so that viewers contribute content (e.g. write book reviews) that attract new viewers who in turn leave new content etc...?	2.08

Response averages on questions related to the marketing of the program

A QUESTION THAT A PERSON DEVELOPING A DISTANCE LEARNING ITV APPLICATION COULD ASK HIMSELF.		HOW USEFUL IT WAS RATED
6.1	How can we attract viewers with the help of www?	2.83
6.2	How can we attract viewers with the help of other ITV programs?	2.25
6.3	How can we attract viewers with the help of other media?	2.33
6.4	How can we generate hype around the program?	1.82
6.5	How can we improve our listings in search engine?	2.42
6.6	How can we become more visible in the Electronic Program Guide?	2.33
6.7	How can we get viewers to generate new content for the program (e.g. writing reviews etc.)?	2.42
6.8	How can we get viewers to attract new viewers?	2.42
6.9	How can we take advantage from an existing media brand?	2.17
6.10	How can we benefit from joining forces with a media company owning a large content library?	2.50

1.6. Responses related to background information of TV program applications

Response averages on questions related to choosing a subject for the program

A QUESTION THAT A PERSON DEVELOPING A BACKGROUND INFORMATION OF TV PROGRAMS TYPE OF AN ITV APPLICATION COULD ASK HIMSELF.		HOW USEFUL IT WAS RATED
1.1	Who do we want to watch this program?	2.40
1.2	What are the special (psychological, physical, and economical) characteristics of this viewer group?	2.43
1.3	How intensively will the audience of this topic interact with other viewers?	1.77
1.4	What is the task that the audience will want to perform with this program (retrieve information, conduct transactions, become entertained)?	2.80
1.5	What existing TV-programs can we use as a springboard in launching the program?	2.33
1.6	What can interactivity do for a specific TV-show?	2.73
1.7	What is the hook of the program (The interesting thing in it that will draw the audience)?	2.40
1.8	What should be the central theme or core content that holds the program together by giving the viewers a place to return when they wander around following links etc.?	2.21
1.9	Critique – What is the best and worst possible critical response the program can receive?	1.79
1.10	Notoriety – Is this the kind of program I would like to be known of?	2.08
1.11	Personal choice – Is this the kind of program I would watch my self?	1.64
1.12	Richness and complexity – How can we make an episode so that it can be viewed more than once and it becomes more and not less, when seen again?	2.07
1.13	How can we integrate content and communication?	2.60

Response averages on questions related to increasing the audience interaction

A QUESTION THAT A PERSON DEVELOPING A BACKGROUND INFORMATION OF TV PROGRAMS TYPE OF AN ITV APPLICATION COULD ASK HIMSELF.		HOW USEFUL IT WAS RATED
2.1	How can we increase the interaction between separate viewers?	1.87
2.2	How can we make the program more interactive for one single viewer?	2.07
2.3	How can we make the program more enjoyable for a viewer that has no return path (can't be interactive)?	2.27
2.4	How can we assign the viewers with the responsibility of maintaining the interaction among the audience?	1.73
2.5	How can we give the viewer a task to complete or a goal to reach in the program?	2.13
2.6	How can we motivate the viewer to strive for the goal?	2.08
2.7	What kind of an opposition can we give to the viewer?	1.67
2.8	What kind of conflicts can we create between the viewer and his opposition?	1.36
2.9	How can we generate shared goals among the viewers?	1.80
2.10	How can we get the viewers want to meet each other by watching the show next time?	1.73
2.11	How can we increase the value that the audience gets from viewing the program?	2.86
2.12	How can we bundle convenience and low cost of the services for the users of the program?	2.07
2.13	How can we call the viewer to interaction?	2.60
2.14	With what kinds of devices can we have the audience to interact?	2.27
2.15	How can we make the viewer interact through mobile devices (e.g. mobile phone or Palm Pilot)?	2.00
2.16	How can we use a mailing list in the program?	1.79
2.17	How can we use a chat room in the program?	2.13
2.18	How can we use news server in the program?	1.87
2.19	How should we monitor viewer usage of the program?	2.20
2.20	How should we collect feedback from users?	2.27
2.21	How can we apply the viewers' ideas to the program?	2.47
2.22	How can we increase the viewers' loyalty to the program?	2.53

Response averages on questions related to the structure of the program

A QUESTION THAT A PERSON DEVELOPING A BACKGROUND INFORMATION OF TV PROGRAMS TYPE OF AN ITV APPLICATION COULD ASK HIMSELF.		HOW USEFUL IT WAS RATED
3.1	How can we get a strong opening scene in the program?	2.08
3.2	How can we have a three-act structure in the program?	1.46
3.3	How can we add momentum in the program (so that one action of the viewer leads to another conflict, and action here leads again in to another conflict)?	1.62
3.4	How can we design the program structure so that commercial break can be inserted in it?	1.31
3.5	How can we apply the AIDA principle = capture the audience Attention, create Interest, instill Desire and motivate Action?	2.54
3.6	How can we arrange a happy ending to the program?	1.33
3.7	How should we design the exit from the program so that it encourages the viewers to return?	2.17

Response averages on questions related to aesthetics and design

A QUESTION THAT A PERSON DEVELOPING A BACKGROUND INFORMATION OF TV PROGRAMS TYPE OF AN ITV APPLICATION COULD ASK HIMSELF.		HOW USEFUL IT WAS RATED
4.1	How can we make the program aesthetically appealing as possible?	2.50

4.2	How can we make the program visually compelling?	2.79
4.3	How can we include compelling sound elements and music in it?	2.21
4.4	What type of an interface should the program have?	2.79
4.5	What type of metaphors should we use in the program?	1.86
4.6	How can we make the program appear new and fresh?	2.29
4.7	Timeliness – How can we make sure the program does not become quickly outdated?	2.29
4.8	How can we include roles in the program in which we can cast known actors or celebrities?	1.57
4.9	How can we make the program believable?	2.29

Response averages on questions related to the business model of the ITV-program

A QUESTION THAT A PERSON DEVELOPING A BACKGROUND INFORMATION OF TV PROGRAMS TYPE OF AN ITV APPLICATION COULD ASK HIMSELF.		HOW USEFUL IT WAS RATED
5.1	How can the program generate higher sales income (e.g. from broadcasters)?	2.07
5.2	How can the program generate advertising revenues?	1.92
5.3	How can the program generate sponsorship revenues?	2.08
5.4	How can the program generate subscription revenues?	1.79
5.5	How can home shopping be combined in to the program?	1.79
5.6	How can product placement be incorporated in the program?	1.57
5.7	How can the program generate transaction fees?	1.71
5.8	How can we use the viewer database to generate income (e.g. renting it as a direct marketing database)?	1.86
5.9	How can we achieve customer ownership (e.g. so that this set of the viewers can not be reached by other media)?	1.92
5.10	How can we get our customer base as large as possible?	2.14
5.11	How can we launch a snowball effect so that viewers contribute content (e.g. write book reviews) that attract new viewers who in turn leave new content etc...?	2.23

Response averages on questions related to the marketing of the program

A QUESTION THAT A PERSON DEVELOPING A BACKGROUND INFORMATION OF TV PROGRAMS TYPE OF AN ITV APPLICATION COULD ASK HIMSELF.		HOW USEFUL IT WAS RATED
6.1	How can we attract viewers with the help of www?	2.87
6.2	How can we attract viewers with the help of other ITV programs?	2.20
6.3	How can we attract viewers with the help of other media?	2.50
6.4	How can we generate hype around the program?	2.47
6.5	How can we improve our listings in search engine?	2.00
6.6	How can we become more visible in the Electronic Program Guide?	2.47
6.7	How can we get viewers to generate new content for the program (e.g. writing reviews etc.)?	2.07
6.8	How can we get viewers to attract new viewers?	2.33
6.9	How can we take advantage from an existing media brand?	2.47
6.10	How can we benefit from joining forces with a media company owning a large content library?	1.93

APPENDIX 2: The Survey Form

ITV Product Development Survey

Kari Jääskeläinen

My aim is to identify a set of questions that one can ask him self when developing interactive television programs and formats. The result of this attempt will be my Ph.D. dissertation in the Media Laboratory of the University of Art and Design UIAH Helsinki.

To do this successfully means going to someone such as yourself who has thought about these issues. Your help with the following questions will only take about 15 minutes and it will make a real contribution to the accuracy and success of this study. Your reply will be treated in strict confidence and will be available only to me. My publication will contain only statistical totals and occasionally few anonymous quotes from the replies.

In the beginning of the survey you are asked to provide some information about your general background. Thereafter you are asked to choose the ITV-format you feel most competent with. You should answer all of the questions considering only that ITV -format.

Each respondent who completes the entire questionnaire will receive a pdf version of my dissertation once it has been published around year 2001.

Respondents background information

1.1 Please provide your contact information

Your Name:
Title:
Organization:
Country:
E-mail:

Top | Next

1.2 Kindly suggest at least two additional potential respondents

The sample of this study will be collected with a so called snowball technique, which means that each respondent identifies a couple of other potential respondents who in turn suggest new respondents etc. Thus the success of this study depends on the amount and quality of respondents. It would be most helpful, if you can suggest two additional persons whom I could ask to fill this questionnaire. Please provide the name and email address of suggestion number one.

Name:
Email:

Top | Next | Back

1.3 Please provide the name and email address of suggestion number two.

Name:
Email:

Top | Next | Back

1.4 If you wish to suggest additional respondents, please provide their names and e-mail addresses here.

Top | Next | Back

1.5 I feel most competent to answer questions about the following ITV format (genre).

Choose one of the following formats. Then answer the rest of the survey thinking only the type of ITV program you indicated here.

- ○ Interactive advertising
- ○ Home Shopping
- ○ Product placement application
- ○ Coupon advertising application
- ○ An application for generating sales leads
- ○ An application for conducting consumer needs analysis
- ○ An application for targeted marketing
- ○ An application for collecting feedback from viewers or buyers
- ○ Quiz show
- ○ Interactive drama
- ○ Computer- or video games
- ○ Opinion polls and voting applications
- ○ News on demand
- ○ Electronic program guide
- ○ Distance learning
- ○ Background information for specific TV program

Top | Next | Back

- Interactive drama
- Computer- or video games
- Opinion polls and voting applications
- News on demand
- Electronic program guide
- Distance learning
- Background information for specific TV program

Top | Next | Back

1.6 How many years of experience to you have with interactive television.

Indicate the number of years you have been involved with ITV development at least on part time basis.

Top | Next | Back

1.7 What is your main role in ITV productions?

Choose the role that best describes you. (Chooce only one.)

- Director
- Producer
- Scriptwriter
- Programmer
- Multimedia author
- Cameraman
- Visual Designer
- Video Editor
- Sound engineer
- Other

Top | Next | Back

QUESTIONS RELATED TO CHOOSING A SUBJECT FOR THE PROGRAM

2.1 Evaluate how useful it is to ask yourself the following questions when you are developing the type of an ITV program you indicated 1.5

1 = not useful at all, 2 = somewhat useful, 3 = very useful. Leave the question unanswered, if you don't know.

	1	2	3
Who do we want to watch this program?	○	○	○
What are the special (psychological, physical, and economical) characteristics of this viewer group?	○	○	○
How intensively will the audience of this topic interact with other viewers?	○	○	○
What is the task that the audience will want to perform with this program (retrieve information, conduct transactions, become entertained)?	○	○	○
What existing TV-programs can we use as a springboard in launching the program?	○	○	○
What can interactivity do for a specific TV-show?	○	○	○
What is the hook of the program (The interesting thing in it that will draw the audience)?	○	○	○
What should be the central theme or core content that holds the program together by giving the viewers a place to return when they wander around following links etc.?	○	○	○
Critique - What is the best and worst possible critical response the program can receive?	○	○	○
Notoriety - Is this the kind of program I would like to be known of?	○	○	○
Personal choice - Is this the kind of program I would watch my self?	○	○	○
Richness and complexity - How can we make an episode so that it can be viewed more than once and it becomes more and not less, when seen again?	○	○	○
How can we integrate content and communication?	○	○	○

Top | Next | Back

QUESTIONS RELATED TO INCREASING THE AUDIENCE INTERACTION

3.1 Evaluate how useful it is to ask yourself the following questions when you are developing the type of an ITV program you indicated 1.5

1 = not useful at all, 2 = somewhat useful, 3 = very useful. Leave the question unanswered, if you don't know.

	1	2	3
How can we increase the interaction between separate viewers?	○	○	○
How can we make the program more interactive for one single viewer?	○	○	○
How can we make the program more enjoyable for a viewer that has no return path (can't be interactive)?	○	○	○
How can we assign the viewers with the responsibility of maintaining the interaction among the audience?	○	○	○
How can we give the viewer a task to complete or a goal to reach in the program?	○	○	○
How can we motivate the viewer to strive for the goal?	○	○	○
What kind of an opposition can we give to the viewer?	○	○	○
What kind of conflicts can we create between the viewer and his opposition?	○	○	○
How can we generate shared goals among the viewers?	○	○	○
How can we get the viewers want to meet each other by watching the show next time?	○	○	○
How can we increase the value that the audience gets from viewing the program?	○	○	○
How can we bundle convenience and low cost of the services for the users of the program?	○	○	○
How can we call the viewer to interaction?	○	○	○
With what kinds of devices can we have the audience to interact?	○	○	○
How can we make the viewer interact through mobile devices (e.g. mobile phone or Palm Pilot)?	○	○	○
How can we use a mailing list in the program?	○	○	○
How can we use a chat room in the program?	○	○	○
How can we use news server in the program?	○	○	○
How should we monitor viewer usage of the program?	○	○	○
How should we collect feedback from users?	○	○	○
How can we apply the viewers' ideas to the program?	○	○	○
How can we increase the viewers' loyalty to the program?	○	○	○

Top | Next | Back

QUESTIONS RELATED TO THE STRUCTURE OF THE PROGRAM

4.1 Evaluate how useful it is to ask yourself the following questions when you are developing the type of an ITV program you indicated 1.5

1 = not useful at all, 2 = somewhat useful, 3 = very useful. Leave the question unanswered, if you don't know.

	1	2	3
How can we get a strong opening scene in the program?	○	○	○
How can we have a three-act structure in the program?	○	○	○
How can we add momentum in the program (so that one action of the viewer leads to another conflict, and action here leads again in to another conflict)?	○	○	○
How can we design the program structure so that commercial break can be inserted in it?	○	○	○
How can we apply the AIDA principle = capture the audience Attention, create Interest, instill Desire and motivate Action?	○	○	○
How can we arrange a happy ending to the program?	○	○	○
How should we design the exit from the program so that it encourages the viewers to return?	○	○	○

Top | Next | Back

QUESTIONS RELATED TO AESTHETICS AND DESIGN

5.1 Evaluate how useful it is to ask yourself the following questions when you are developing the type of an ITV program you indicated 1.5

1 = not useful at all, 2 = somewhat useful, 3 = very useful. Leave the question unanswered, if you don't know.

	1	2	3
How can we make the program aesthetically appealing as possible?	○	○	○
How can we make the program visually compelling?	○	○	○
How can we include compelling sound elements and music in it?	○	○	○
What type of an interface should the program have?	○	○	○
What type of metaphors should we use in the program?	○	○	○
How can we make the program appear new and fresh?	○	○	○
Timeliness - How can we make sure the program does not become quickly outdated?	○	○	○
How can we include roles in the program in which we can cast known actors or celebrities?	○	○	○
How can we make the program believable?	○	○	○

Top | Next | Back

QUESTIONS RELATED TO THE BUSINESS MODEL OF THE ITV-PROGRAM

6.1 Evaluate how useful it is to ask yourself the following questions when you are developing the type of an ITV program you indicated 1.5

1 = not useful at all, 2 = somewhat useful, 3 = very useful. Leave the question unanswered, if you don't know.

	1	2	3
How can the program generate higher sales income (e.g. from broadcasters)?	○	○	○
How can the program generate advertising revenues?	○	○	○
How can the program generate sponsorship revenues?	○	○	○
How can the program generate subscription revenues?	○	○	○
How can home shopping be combined in to the program?	○	○	○
How can product placement be incorporated in the program?	○	○	○
How can the program generate transaction fees?	○	○	○
How can we use the viewer database to generate income (e.g. renting it as a direct marketing database)?	○	○	○
How can we achieve customer ownership (e.g. so that this set of the viewers can not be reached by other media)?	○	○	○
How can we get our customer base as large as possible?	○	○	○
How can we launch a snowball effect so that viewers contribute content (e.g. write book reviews) that attract new viewers who in turn leave new content etc…?	○	○	○

Top | Next | Back

6.2 What other revenue sources should one consider?

Top | Next | Back

QUESTIONS RELATED TO THE MARKETING OF THE PROGRAM

7.1 Evaluate how useful it is to ask yourself the following questions when you are developing the type of an ITV program you indicated 1.5

1 = not useful at all, 2 = somewhat useful, 3 = very useful. Leave the question unanswered, if you don't know.

	1	2	3
How can we attract viewers with the help of www?	○	○	○
How can we attract viewers with the help of other ITV programs?	○	○	○
How can we attract viewers with the help of other media?	○	○	○
How can we generate hype around the program?	○	○	○
How can we improve our listings in search engine?	○	○	○
How can we become more visible in the Electronic Program Guide?	○	○	○
How can we get viewers to generate new content for the program (e.g. writing reviews etc.)?	○	○	○
How can we get viewers to attract new viewers?	○	○	○
How can we take advantage from an existing media brand?	○	○	○
How can we benefit from joining forces with a media company owning a large content library?	○	○	○

Top | Next | Back

7.2 What other questions should one ask him self?

You can suggest here additional questions that you ask yourself when developing the type of an ITV program or format you indicated in 1.5.

Top | Back

Thank You for your help! (DON'T FORGET TO PRESS THE SUBMIT BUTTON NEXT!)

Submit Form | Start Over

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Footnotes

1 Goro
2 Jackson, p. 63
3 Sinclair
4 Hodge
5 Szuprowicz
6 Jääskeläinen 1997
7 Vaughan
8 Blum in Vaughan
9 Perry
10 Perry
11 Eskelinen-Leppänen
12 Kauranen, Ropponen, Aaltonen
13 Steinbock
14 ProQuest Digital Dissertations. wwwlib.umi.com/dissertations/about_da
15 Carey
16 Aarseth, p. 10
17 Laurel
18 Carey
19 Carey
20 Laurel
21 McLuhan, p. 311
22 Agee, p. 8
23 Carey
24 Agee, p. 8
25 Jääskeläinen 1997, p. 22
26 Agee, p. 9
27 Jääskeläinen 1996, p. 150-163
28 Bryhni & Lovett & Maartmann-Moe
29 Negroponte, p. 64
30 Gates p. 133
31 Gates p. 215
32 Negroponte p.18
33 Negroponte p. 155
34 Negroponte p. 50
35 Hagel & Armstrong 1997
36 Hannula & Linturi
37 Dertouzos, p. 140
38 Hovi
39 Salo
40 Räty
41 Kurki
42 Keinonen
43– Dissertation Abstracts 1999
44– Dissertation Abstracts 1999
45 Goro
46 Racine & Dilworth
47 Jackson, p. 63
48 Jackson
49 Jackson
50 Jackson, p. 67
51 Jackson
52 Jackson, p. 67
53 Thomas
54 Parkay, Oaks, Peters
55 Ssemakula
56 Peng and Vuorimaa, 1999
57 Peng and Vuorimaa, 1999
58 Bretan & Kroon
59 Alspector & Kolcz & Karunanithi
60 Ghosh & Mundhe & Hernandez & Sen
61 Hill & Stead & Rosenstein & Furnas
62 Kajanto, p. 40-60
63 Kajanto, p. 90
64 Kajanto, p. 93
65 Nakatsu, Tosa and Ochi, p. 2-5
66 Kansallinen multimediaohjelma 1995-1997
67 Kuluttajat ja multimediapalvelut 1997, p. 36
68 Kuluttajat ja multimediapalvelut 1997, p. 35
69 Kansallinen multimediaohjelma 1995-1997, p. 41
70 Kansallinen multimediaohjelma 1995-1997, p. 41
71 Kuluttajat ja multimediapalvelut 1997, p. 33
72 Kansallinen multimediaohjelma, p. 12
73 Emmerson
74 Helin
75 Kansallinen multimediaohjelma, p. 30
76 Kansallinen multimediaohjelma, p. 24
77 Kansallinen multimediaohjelma, p. 17
78 Hänninen
79 Shirai et al
80 Shrimpton & Dobbyn & Casey
81 Kuluttajat ja multimediapalvelut 1997, p. 50
82 Schwartz
83 Schwartz
84 Taylor
85 Zollman
86 Taylor
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88 Bell Atlantic 1995
89 Rustici
90 Bell Atlantic 1996
91 Bell Atlantic 1996
92 Zollman
93 Zollman
94 Zollman
95 Zollman
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97 Zollman
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100 Courchesne
101 Vardi & Shaliv
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106 Pihlajamäki, p.159
107 Kuuva, p. 97
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111 Jääskeläinen 1996
112 Forrester, p. 187
113 Forrester, p. 187
114 Van Meter

115 Boyle, p. 70
116 Boyle, p. 70
117 Boyle, p. 77
118 Rhinelander
119 Bernoff
120 Bernoff
121 Putnam
122 Putnam
123 Putnam
124 Charron
125 Charron
126 Charron
127 Quintin
128 Ovum
129 Forrester, p. 90
130 Forrester, p. 91
131 Moroney
132 Moroney
133 Daniel, p. 167
134 Hodge
135 Szuprowicz
136 Jääskeläinen, 1997, p. 51
137 Jääskeläinen, p. 51-64
138 Sinclair
139 Sinclair, p. 60
140 Sinclair, p. 61-66
141 Sinclair, p. 66
142 Sinclair, p. 321-329
143 Digi-TV forum of Finland 1999a
144 DVB Standard
145 NorDig 1
146 Digi TV Forum of Finland 1999b
147 Digi TV Forum of Finland 1999c
148 DAVIC
149 In Kajanto, p. 38
150 Bates, p. 117-120
151 Pearce
152 Laurel (1989)
153 Laurel (1994)
154 Stern, Frank & Resner
155 Mazur
156 Bennington & Gay
157 Bates
158 Idelson, p. 48
159 Idelson, p. 47
160 Vale, p. 96
161 Vale, p. 97
162 Field, p. 3
163 Eustace, p. 110
164 Field, p. 14
165 Field, p. 19
166 Kaminsky, p. 18
167 Saks, p.14
168 Seger, p. 79
169 Seger, p. 79
170 Josefsberg, p. 111
171 Harding, p. 26
172 Field 2, p. 5, 117
173 Eisner, p. 79
174 Kottler, p. 322
175 Vale, p. 229
176 Jalander
177 Vale, p. 238
178 Wolff and Cox, p. 17
179 Schmidt, p. 10
180 Nakatsu & Nicholson & Tosa 1999 a
181 Nakatsu & Nicholson & Tosa 1999 b
182 Sparacino & Davenport & Pentland
183 Vardi
184 Josefsberg, p. 112
185 Kaminsky, p. 82
186 Glasbergen, p. 58
187 Glasbergen, p. 58
188 Field, p. 22
189 Wolff & Cox, p. 47
190 Perlin & Goldberg
191 Field
192 Wolff & Cox, p. 48
193 Catron, p. 70
194 Brenner, p. 72
195 Field, p. 28, 37, 239
196 King
197 King, p. 42
198 Elliot, Brzezinski, Steth and Salvatoriello
199 Sgouros, Papakonstantinou and Tsanakas
200 Hales
201 Field, p. 8-9
202 King, p. 34
203 Field, p. 65
204 Seger, p. 6
205 Seger, p. 17
206 King, p. 39
207 King, p. 41
208 Seger, p. 12
209 Seger, p. 46
210 Field, p. 56
211 Brenner, p. 59
212 Vale, p. 97
213 Kaminsky, p. 37
214 Seger, p. 47
215 Wolff and Cox, p. 128
216 Wolff and Cox, p. 128
217 Wolff and Cox, p. 128
218 Wolff and Cox, p. 146
219 Culhane, p. 47
220 Strohecker, Carol, p. 377
221 Brooks, Kevin M.., p. 321
222 Aston
223 Pinhandez & Mase & Bobick, p. 287
224 Hawthorne 1997, p. 40-45
225 Hawthorne 1997, p.45-46
226 Tuomola
227 Eicoff
228 Eicoff, p. 67
229 Hawthorne 1997, p.64
230 Hawthorne, 1997 p. 65-74
231 England and Finney
232 England and Finney

233 England and Finney
234 England and Finney, p. 173-187
235 Luukkonen, p. 90
236 Luukkonen
237 Luukkonen, p. 124-143
238 Luukkonen
239 Luukkonen
240 Vaughan
241 Vaughan
242 Press
243 Siegel, p. 29
244 Siegel, p. 29
245 Siegel, p. 29
246 Siegel, p. 29
247 Siegel, p. 33
248 Siegel 1997, p. 26
249 Hintikka et al
250 Sellers, p. 3
251 Sellers, p. 46
252 Sellers, p. 96
253 Sellers, p. 106
254 Greenhalgh & Bowers & Walker & Wyver
255 Figallo, p. 191
256 Figallo, p. 315
257 Palloff, p. 110
258 Palloff, p. 115
259 Palloff, p. 120
260 Gates, p. 36
261 Found you on Yahoo
262 Yahoo! annual report
263 Yahoo! Reports Profitable First Quarter
264 Hagel & Lansing, 1994, p. 63
265 Hagel & Lansing, 1994, p. 65
266 Hagel & Lansing, 1994, p. 67
267 Hagel & Lansing p. 70
268 Hagel & Armstrong 1995
269 Hagel & Armstrong 1995
270 Hagel & Armstrong
271 Hagel & Bergsma & Dheer
272 Hagel & Bergsma & Dheer
273 McMillan
274 Hagel & Bergsma & Dheer
275 Hagel & Bergsma & Dheer
276 Hagel & Bergsma & Dheer
277 Hagel & Rayport
278 Hagel & Rayport
279 Hagel & Armstrong 1997
280 Hagel & Armstrong 1997
281 Hagel & Armstrong 1997
282 Hagel & Armstrong 1997
283 Turpeinen
284 Hagel & Armstrong 1997
285 Taideteollinen korkeakoulu
286 Rescher, p. 88
287 Rescher, p. 91
288 Morrison et al, p. 62
289 Morrison et al. p. 44
290 Morrison et al, p. 42-43
291 Ringland, p. 2
292 Ringland, p. 22
293 Baldock
294 Ringland, p. 29
295 Yin, p. 13
296 Yin, p. 80
297 Yin, p. 44
298 Syrjälä, p. 30
299 Hargadon, p. 8
300 Hargadon, p. 15
301 Hargadon
302 Zetterberg, p. 136
303 Mohdnor
304 Cooper, p. 247
305 Kidder & Judd in Yin, p. 33
306 Kidder & Judd in Yin, p. 33
307 Kidder & Judd in Yin, p. 33
308 Yin, p. 37
309 Kidder & Judd in Yin, p. 33
310 Miettinen
311 Hytönen
312 Viljanen
313 Viljanen
314 Riikonen
315 Pekkala
316 von Reiche
317 Pace Micro Technology 2000
318 Blomberg
319 Pace Micro Technology 2000 b
320 Pace Micro Technology 2000 b
321 Pace Micro Technology 2000 c
322 Daly-Jones & Carey
323 Vuorimaa