Interactive TV Essay, Research Paper

Abstract

The Web and the Internet are the latest technologies to

be harnessed by companies trying to develop interactive

television. This paper reviews the efforts of technology

companies and broadcasters to combine television and

the Web in their products and activities, and how users

are already using them both at home. It reviews some

research on the way that TV and the PC/Internet are used

at home, and suggests some way that the Web could be

integrated with television use. Unlike earlier interactive

television projects, where the innovation was largely

conducted behind closed doors and among consortia of

companies, the innovation environment in which

Web-based interactive television is being developed

includes a huge number of existing users, technology

and content suppliers who play an active role the

innovation process. The concept of social learning is

suggested as a area of development of tools for

understand the process of technical, social and cultural

change around innovation of this sort. In particular the

idea of poles of attraction is introduced to understand

why a huge numbers of supply side players and users are

orienting towards the Internet as a possible solution to

interactive television.

1. Introduction

Of all the visions of the future of television (note 1), interactive

television (i-TV) is perhaps the most radical and powerful. In

this vision the ubiquitous television set will change from being a

device to watch television shows or films into a home terminal

for access to and interaction with networked interactive

technology, programmes and services. The possibilities and

benefits of the technology seem self-evident, if only they can

be made to work effectively and at a modest price. Many times

we have been told to expect interactive television any day now.

(note 2)

However, after millions of dollars spent, and many pilots and

service closures, most of us are still no closer to having

interactive television than a few hundred searchable teletext

pages, and some phone-in TV shows.

In the efforts to create i-TV, numerous applications and

technologies have been tried, with companies attracted by the

possibilities of each new generation of technology, and

responding to the continuous pressure to develop new

products, be they technologies, services or programmes in

order to maintain their share of consumer spending. The

explosion of the Internet and Web is a new pole of attraction for

interactive television developers that seems to solve many of

the problems and uncertainties of earlier systems: all of a

sudden the technologies, content, users and uses of interactive

services are there and proving very successful, all that needs to

be done it integrate them into television.

For the analyst of new innovations in television, three issues

arise as companies are attracted to the Internet and the Web

as a solution to interactive television.

1. Instead of being controlled by a small number of corporate

players, the technology and service of the Web and Internet are

in the public domain, and changing fast. The innovation

environment is diverse, heterogeneous, and involves a multitude

of companies and most importantly users in shaping the

technology and services, which makes management of

innovation more complex and give the market a much stronger

voice.

2. There is major uncertainty over the relevance of Web-style

interactivity to the use of television. Many commentators

believe that content and services on the Internet or designed for

the PC terminal may not be relevant for many users of the

television, while others bet on the explosion of e-commerce

through TV Web terminals.

3. The television is no longer the only window for interactive

services to the home. The PC is an increasingly common

alternative, and is a more flexible and open platform or

interactive services. The cheap web set-top box may restrict

innovation and fix service and uses in a way that is frustrating

to end users and service providers alike.

What is more, there is an emerging paradigm in the technology

industry of multiple ‘low profile’ terminals for interactive

services. This could turn investment and attention away from

both the PC and the television.

What links these issues is the importance of the end users as

active players in the innovation-diffusion process. It was end-

and intermediate-users adopting the Internet and Web that

attracted interactive television developers, and it is these users

who are now directly involved in the innovation process.

This paper uses social learning (S?rensen 1996) as an analytic

framework of socio-technical change that includes an

integration of end users in the innovation and diffusion process.

Social learning goes beyond the development and diffusion of

technology and content to include the creation of new

knowledge, regulations, expectations, institutions and cultural

norms. In particular it focuses on the role of users in innovation,

including the development of user knowledge and practices,

and the interaction between users and producers. In this

process different actors (users and producers) orient to poles of

attraction, including utopian visions, projects and trials,

technologies, regulations, user groups, markets, uses, or

emerging cultural norms, all of which may crystallise into real

products and institutions or disappear to be replaced by a new

ones. The process of creation, diffusion and use of new

technology and content is not controlled by those innovating

the products. Users and producers of technology and content

related to television and new media slowly appropriate and

shape each other’s products and patterns of use, learning from

each other over a protracted period of time. Previous examples

that provide useful parallels to interactive television are the

telephone and videotext. Both are network systems which

changed as people began to use them, and found how they

could be useful in ways that the developers had originally not

considered as important.

In interactive TV, the Television has always been the dominant

pole of attraction for both the producers and users, but only

industry was interested in interactive technologies. Industry

therefore drove innovation independently of any need or desire

of potential users. Now the Internet has emerged, and it is pole

of attraction shared by users and producers: the innovation

process now is shaped strongly by the market. One outcome

is a slow change from early models of technology and content

based around individual use of media to one that integrates the

existing collective use of media and the social practices that

surround media products and technologies in everyday use. At

the same time, users are altering their everyday practices of

media and technology use with the new systems that are

currently available, changing the possible market for new

products almost before they have a chance to come to that

market.

This can be illustrated this by looking at evidence of the first

few years of the co-existence and evolution of TV and the Web,

covering attempts to integrate them technically, and find

synergies between them, from the perspective of technology

companies, broadcasters and end users.

Looking to the future, this article reviews qualitative research on

how people actually watch and use television, and some

experiences from current use of the interactive material on

computers. Combined with reports of interactive television

trials, it is possible to illustrate the rich use of both traditional

and newer interactive media in the home. We can then more

critically approach the uncertainly over the relationship between

the Web and television. Fortunately for the optimists, the Web

is not static – developments of services and content that reflect

the way television is used at home for could make the Web

and TV marriage a success. However in the long run through a

slow process of social learning we can see interactive

television developing into a richer medium that either the Web

or TV offers today, but one that is far from the homogeneous

television system of today.

1.1 The Wild World Web – innovation in a open

environment

Most of the previous attempts to make interactive services for

the home have had to start nearly from scratch, and

concentrate on creating large-scale technical systems. The

television has seemed the most obvious terminal to use as the

display. In general, developers worked with technologies and

services that, prior to roll-out, were not available to users. They

tried to create ready-made systems that could be delivered

fully functioning to the public. In general they were able to

develop the systems without involving the end users, or at least

without them being any more active in the innovation process

than as subjects of research or controlled trials. Intermediate

users, such as service providers (retailers, information

providers, banks, and publishers) who could be persuaded to

share in the technology based vision were generally involved in

a partnership and exclusive manner.

However there is a problem facing developers of these network

systems such as interactive television. While the technology

can be made to work in the lab, these systems depend on

building a critical mass of users (e.g. Rogers 1995 p. 313,

Schneider 1991) among many others), and on the content and

uses of the system. These non-technical elements are much

more difficult and expensive to develop from scratch, and to a

large extent out of the control of developers, especially when

user participation is voluntary.(Note 3)

One way to get round this, is to appropriate or modify an

existing and established set of content, technologies and uses

and users, and try and dominate the market, or improve that

service or technology or extend its use to new users. The idea

behind interactive television can be seen as an attempt to

appropriate the mass market of television users and the

existing infrastructure of television sets in homes. With the rise

of the Internet and the Web as mass market interactive

technologies and systems, it would seem an obvious choice for

i-TV developers to try and use this as a resource for creating

i-TV. In many ways it reduces uncertainty and costs

associated with designing a system from scratch.

However, following this path this completely changes the

innovation environment and process. Previous projects were

dominated, if not completely controlled, by a small smaller of

industrial and government players. The innovation process

could be analysed as the interaction between corporate actors,

and the individuals working in them. However, the Internet and

the Web have evolved and continue to develop in a very different

manner. End users and a multitude of intermediate user firms

and technology firms have been responsible their development.

Many different uses have been established and a huge variety

of content exists. There is incredible dynamism in the

innovation process, with competition between many technology

companies and network service providers. This alternative

innovation environment needs a different approach to managing

innovation, and the marketing of interactive television. It also

requires an analytic approach that can account for the large

numbers of actors, especially the end users in shaping the

technology, content and its uses.

1.2 The Web and Television ? an uncertain

marriage

There is no guarantee that a marriage of television and the

Internet would be a happy and prosperous one. There is major

uncertainty over the relevance of Web-style interactivity to the

use of television. Most simply it is the following: the television

is a collectively consumed medium, viewed ‘passively’ and from

a distance, sitting in a comfortable chair. In contrast, the Web

and computer-based interactive products demand a high level

of engagement and interaction with the content, and are used

by individuals sitting close to a computer screen. These are

thus incompatible uses, technologies and content. While there

are strong arguments for this position, it would be naive to

accept it without further investigation, especially in the light of

existing early-adopter uptake of Web on TV products, and

other trials of interactive television.

Another factor has also complicated the vision of interactive

television. There is now an alternative to the TV as the terminal

to the home, the PC. I-TV developers may get a free user

network and content, but with it comes competition from the

PC, the expectations of existing users, and uses and content

developed around the PC not the TV. Many people have both

television and computers at home. Does it make sense to

develop the television as an interactive terminal, even if there is

still a huge number of PC non-owners or users who might use

it.

These uncertainties, and the on-going process of innovation

that accompanies the working out of the answer between the

market or users, and the various players of the supply

industries, is an important example of complex socio-technical

change that needs addressed.

2 The Struggle To Make Television

Interactive

Interactive television should not be defined as a particular

technical or information system : it is a term that has been

appropriated and rejected by many of the players trying to

change television, and could be applied to many widely

different systems. I define interactive television as bringing

possibilities of interactive multimedia technology to Television.

It is therefore crucial to understand Television to understand

what interactive television might be. Television is not just a

technical system or a series of programmes. It must be

considered as a major business, and placed it in a wider

technical and social context. Television is also a mass market

and cross-society phenomenon, almost everyone watches TV,

and it is the sheer reach of the medium that makes the

integration of new technology into Television a major issue.

Television is central to most people’s domestic life, and to our

cultural, social, political and consumer awareness. In other

words, ‘television is everyday life’ (Silverstone 1994). Most

people in the developed world, and increasingly in developing

countries, rely on television as a primary source of global

news, of entertainment, of political awareness, product and

cultural knowledge, and a resource to construct and reflect

self-identity. It is also embedded in the cultural and political

(Williams 1990 (first pub. 1975)): national and now global

culture would be very different and may not exist without

television in its current form. Television is also an important

industry, a huge money earner, and a controversial business

that challenges political and cultural norms as is becomes

more commercial and international.

Interactive television may involve changing television in one or

all its aspects. Changes in technology that are worth their

investment will certainly run in parallel with changes in the

industry, use, content and regulation. The social shaping

approach indicates that attempts to create interactive television

systems are the result of the interaction of these factors,

including commercial interests, competing products,

regulation, developing user needs etc (MacKenzie and

Wajcman 1985; Williams and Edge 1996), as well as the

invention of new technology. Successful i-TV projects will be

the ones that take advantage of the embedded nature of

technology, however much the most technically sophisticated

or creatively daring ones may inspire us.

2.1 A brief history of i-TV

Many attempts have been made to develop ‘interactive’

television (Carey 1996). These have been undertaken around

particular poles of attraction that provided the motivation for

experimentation and change ? sometimes the technology has

been the attraction, sometimes the content, and sometimes

the users and consumers. These poles of attraction have

generally only been of concern for small groups of technology

and infrastructure companies and, on occasion governments

wanting to develop industry or infrastructure.

The earliest TV systems were two-way communications

devices; after the broadcasting model was established,

systems such as QUBE in the 1970s used cable systems to

provide interactive services involving home audiences, but failed

to offer sufficient return on investment (Carey, 1996 #184). The

1980s saw the development of videotext, either broadcast or via

a telephone modem, around a model of information searching

and browsing. In the 1990s many expensive proprietary

interactive television projects were set up, or at least

publicised, by technology and network companies anxious to

realise long standing science fiction dreams, bolster share

prices and generate new revenue streams. Although many of

these projects may have ‘failed’, they gave birth to huge

numbers of spin-off sons and daughters: media and technology

products and formats, business opportunities, engineering and

business knowledge and experienced personnel. In addition,

much was learned from these trials and services, not least that

the services, content and the audience/users are the key

factors and these need more that just vast amounts of cash to

develop.

In the last years of the 1990s, the Internet, and more

particularly, World Wide Web content, have emerged to offer a

way of providing many i-TV services more easily and cheaply

than some of the more technology heavy and commercially

integrated systems. In the same way as earlier technologies

were grasped upon to provide interactive television, the Web

and Internet became one of the poles of attraction for system

and business development. Unlike previous systems, the

Internet and the Web are attractive because there is a huge

amount of readily available content and millions of existing

users, the development costs are being shared between many

companies, and business use is covering much of the