# Interactive Television Evolution

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## INTRODUCTION

Television was a brilliant invention because it is capable of transporting us anywhere (Perera, 2002). Since its first production, in 1928, it never stopped spreading. In fact, while the Internet European penetration rate rounds 40-60% the TV penetration rate rounds 95-99% (Bates, 2003), which means that almost every home has, at least, one TV set. However, the TV paradigm which has traditionally occupied the largest share of consumer leisure time is now changing. In fact, and as a result of the so-called "digital revolution," TV is now undergoing a process of technological evolution. The traditional TV sets and programs (which are typically passive programs) are being replaced by digital TV sets, which allow a long list of new interactive services and programs, concretely, interactive television (iTV). There is no doubt that iTV, which can be defined as a TV system that allows the viewer to interact with an application that is simultaneously delivered, via a digital network, in addition with the traditional TV signal (Perera, 2002) will replace the traditional TV viewing habits.

In spite of being a recent phenomenon in terms of use, in the last 20 years, many research groups have worked in iTV development. Their progress over time is going to be addressed in the next section. However, due to the enormous quantity of telecommunications or cable trials launched it was impossible to present them all. Thus, only the more significant are referred.

## ITV EVOLUTION

The first iTV program was broadcasted in the United States by CBS and was first transmitted on Saturday, October 10th, 1953. It was a black and white first program of a children's series called *Winky Dink and You*, in which a cartoon character named Winky Dink went on dangerous adventures (Lu, 2005). During the show, children would place a sheet of plastic over the TV screen and draw a bridge or a rope in order to save Winky Dink from danger. At the end of the show, children would also be able to trace letters at the bottom of the screen in order to read the secret messages broadcasted. It was a success that lasted 4 years (Jaaskelainen, 2000; Lu, 2005).

In 1957, the first wireless remote control, proposed by Dr. Robert Adler, from Zenith, and known as "Zenith Space Command," started being commercialized (Lu, 2005; Zenith, 2006).

From the 1960s milestones of interactivity, the following three are the most important. First, the AT&T Company's demonstration of a picture telephone at the New York World Fair in 1964 (Jaaskelainen, 2000; Rowe, 2004). Second, the "interactive movie," Lanterna Magica, which was produced in Czechoslovakia and shown to the public in the Czech Pavilion at the 1967 World Expo in Montreal, Canada (Jaaskelainen, 2000; Laurel, 1991). Third, the realization, by Marshall McLuhan, that television was a "cool participant medium" and thus interactivity should be pursuit (McLuhan, 1964). In the late sixties, Lester Wunderman launched a television advertisement which included a free telephone number. It was the first time that telephone was used as a return channel for iTV (Jaaskelainen, 2000).

In 1972, Cable Television expanded with all its potential providing more than 75 channels, allowing the use of set-top boxes (STB), and making the remote control viewers' best friend (Lu, 2005). Three years later, with the launch of Home Box Office (HBO), a premium cable television network, the satellite distribution became viable. On December 13, 1975, HBO became the first TV network to broadcast its signals via satellite when it showed the boxing match "Thrilla in Manila" (HBO, 2006).

In 1977, Warner Amex Company launched its cable iTV service via a famous trial/system called QUBE (Jaaskelainen, 2000). However, because the benefits were not enough to justify the enormous equipment cost, the system was dropped (Laurel, 1991; Lu, 2005).

Other iTV systems experimented in the 1970s were the videotex systems. A videotex system (which may also be referred to as viewdata, videotex, videotext, or interactive videotext system) is an interactive information system where a user used a hand-held keypad and a television display screen in order to obtain screens of content/information from a centralized database. These screens of content/information were transmitted to the user through the traditional telephone lines or two-way cable (Kyrish, 1996). The more important videotex systems were the Canadian Telidon, the British Prestel, launched in 1979, and the French Minitel, launched in 1982.

The mentioned videotex systems have encouraged and inspired American media corporations to launch their own trials (Jaaskelainen, 2000). Another reason which highly contributed to the beginning of a bigger investment in iTV trials was the fact that, around 1984, deregulation had accelerated the cable penetration and, by the end of the decade cable homes had increased to over 50 million homes (Lu, 2005). Thus, in the 1980s, the best known American trials were the Viewtron, Gateway, and Prodigy. The Viewtron system was launched in October 1983, in three South Florida counties (Kyrish, 1996), by the Knight-Ridder Corporation (Case, 1994; Nisenholtz, 1994), in association with the American Telephone and Telegraph Company. They have promised their consumers a new way of getting news, current events information, electronic shopping, bank, and communicating online. However, because subscribers were too sporadic, in 1986, the company gave up the project (Finberg, 2003; Kyrish, 1996). It was the right idea with the wrong technology in the wrong decade. The Gateway videotex service was launched in 1984, in Southern California, by the Times Mirror's Video Services (Case, 1994; Nisenholtz, 1994), a division of the Times-Mirror Publishing Company. The service was launched as a 9-month test among 350 homes in Los Angeles and Orange County. By 1986, the subscriber base could not support the costs and thus, Gateway ended in March 1986, 10 days before Viewtron (Finberg, 2003; Kyrish, 1996). The Prodigy service was launched in 1984, by the CBS Inc., IBM, and Sears (Case, 1994; Nisenholtz, 1994) and it was a huge investment (Kyrish, 1996). At the beginning, system features were similar to today's Internet portals. In November 1999, due to financial reasons, the service was discontinued. Concluding, in spite of everyone's expectations and best intentions about videotex, consumers, sooner or later, definitely rejected all the early videotex providers offers (Nisenholtz, 1994). And while a few videotext services remained for a few more years, most were gone by the late 1980s (Finberg, 2003).

In the nineties, Interactive TV finally becomes a buzz-word (Laurel, 1991) and numerous trials were launched all around the world. Some of the best known trials and other important milestones are presented next. The Bell Atlantic Corporations Stargazer project was a public, interactive multimedia service accessible via a TV STB and remote control (Ellison, 1995). The Interaxx Television Network Inc., a Florida corporation formed in 1990, was involved in the research and development of a full service, interactive, on-demand multimedia television network (European Comission Report, 1997). In Denver, a Viewer-Controlled Cable Television trial tested both video-on-demand (VOD) and pay-per-view services with 300 viewers from a suburb of Denver. In November 7, 1991, the *GTE Telephone Operations* was the first US telephone company offering interactive video services via the launch of a specific project named "Cerritos Project" in California. It was the world's first widespread test of interactive video technology and services (TEC, 2006). In 1992, Your Choice TV (YCTV)—the world's first commercial VOD digital cable service—was launched by John Hendricks from Discovery Communications. It was defined as the "killer application" for interactive TV. In 1998, Hendricks suspended business operations of YCTV as a near video-on-demand (N-VOD) service (Ramkumar, 2006; Schley, 2000). In 1993, Viacom and the ATT major telephone carrier formed a joint venture in order to trial interactive television in Castro Valley, California. A month after a 6-month free trial of the service, more than 90% of the participants purchased a subscription (HFN, 1995). In 1993 and 1994, Ameritech (Michigan Bell) sponsored a project named ThinkLink in Sterling Heights, Michigan. The project was a VOD project for 150 selected fifth-graders, their families, and their teachers (Blanchard, 1997). On December 14, 1994, the full service network (FSN) was launched by Time Warner in Orlando, Florida. The publicity and news around it was enormous since the Time Warner chairman, Gerald Levin, was announcing that the system was going to revolutionize television and interpersonal communications. However, because it was not commercially viable, it closed in April 1997 (HKISPA, 1997).