

White Paper



TV finally gets smart

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Executive Summary

With interactive features like On-Demand programming, Chatting, Telemedicine, Education and more. Internet Protocol Television (IPTV) will change the way television is perceived. This whitepaper discusses the social and economic impacts of IPTV, how it transforms the TV viewing experience of a user and how it empowers them.

Introduction

Television has become an integral part of people’s lives across the world by disseminating news, entertainment and information at the press of a remote-key. Over the years, there have been improvements in picture quality (Standard Definition to High Definition), in shapes & size, in the number of channels, and the user-experience. Although, the shift from analog to digital television brought about a quantum leap in the number of channels and the quality of experience, television remained a broadcast medium with one-way communication from the service provider to the end-user.

Recent developments in technology combining the best of network technology and content compression techniques have made a new way of TV possible: Internet Protocol Television or the IPTV. IPTV is delivered to homes via DSL running on copper wires and relies on advanced compression techniques such as H.264 to provide an extremely clear picture. IP technology also provides the all important capability of interactivity to the TV, whereby the user can interact with the service in real-time.

IPTV opens up a whole new frontier that revolutionizes the way we watch TV, the way we network, the way we conduct business, in short it has the potential to change the way we lead our lives. It opens the door to a host of Internet applications such as instant messenger, interactive gaming, mashup applications, video, photo sharing, social networking and a whole lot more, to be available at the click of a remote control button.

In terms of reach, some analyst firms predict that by 2011, the IPTV subscriber base is expected to grow to 59.69 Million, with Europe having the largest share followed by Asia (see Figure 1),

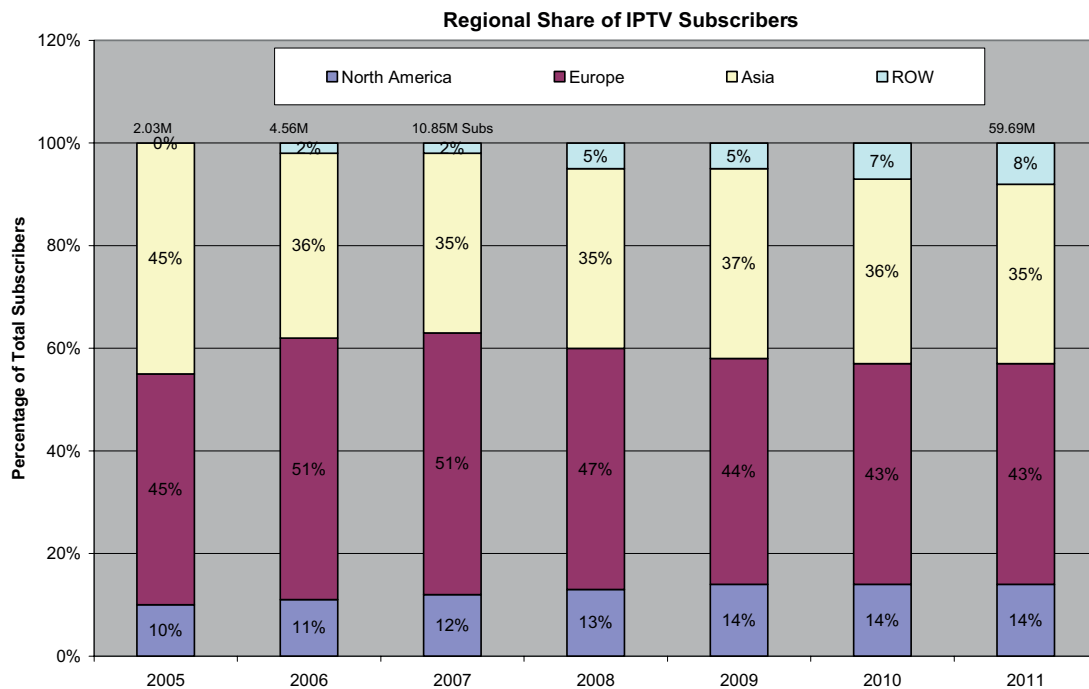


Figure 1 – Regional Share of IPTV Subscribers, 2007 (Source: IPTV: From Quadruple Play to Multiplay, 2007, Parks Associates¹)

A Technical Primer

IPTV, as defined by the Alliance for Telecommunications Industry Standards’ (ATIS) IPTV Exploratory Group (IEG), is the secure and reliable delivery to subscribers of entertainment video and related services, such as live TV, video on demand (VoD) and interactive TV (iTV). These services are delivered across an access-agnostic, packet-switched network that employs IP protocol to transport audio, video, and control signals. In contrast to video over the public Internet, content copyrights, network security and performance in IPTV deployments are tightly managed to ensure a superior entertainment experience and remuneration from users. This results in a compelling business environment for content providers, advertisers and customers alike.

¹ A market research and consulting firm focused on all product and service segments that are “digital” or provide connectivity within the home. Visit www.parksassociates.com

In order to deliver IPTV, a Service Provider needs to have:

- Basic infrastructure for delivering high speed broadband (≥ 2 Mbps) along with a Set-Top-Box (STB) at customer premises. The STB connects to the broadband line and is responsible for reassembling the packets into a coherent video stream and then decoding the contents into a standard television signal
- Content Management Systems for scheduling and encoding the content.
- Conditional Access Systems (CAS) for Content Security and Digital Rights Management (DRM).
- Middleware and network infrastructure for transporting the content from servers to distribution nodes.
- Subscriber Management System for managing Customer and Service data. These systems are tightly coupled with service providers' existing provisioning and billing systems to provide a seamless service.
- Network and Platform monitoring tools for advanced diagnostics and support.

The diagram below demonstrates a simplistic view of "How IPTV Works".

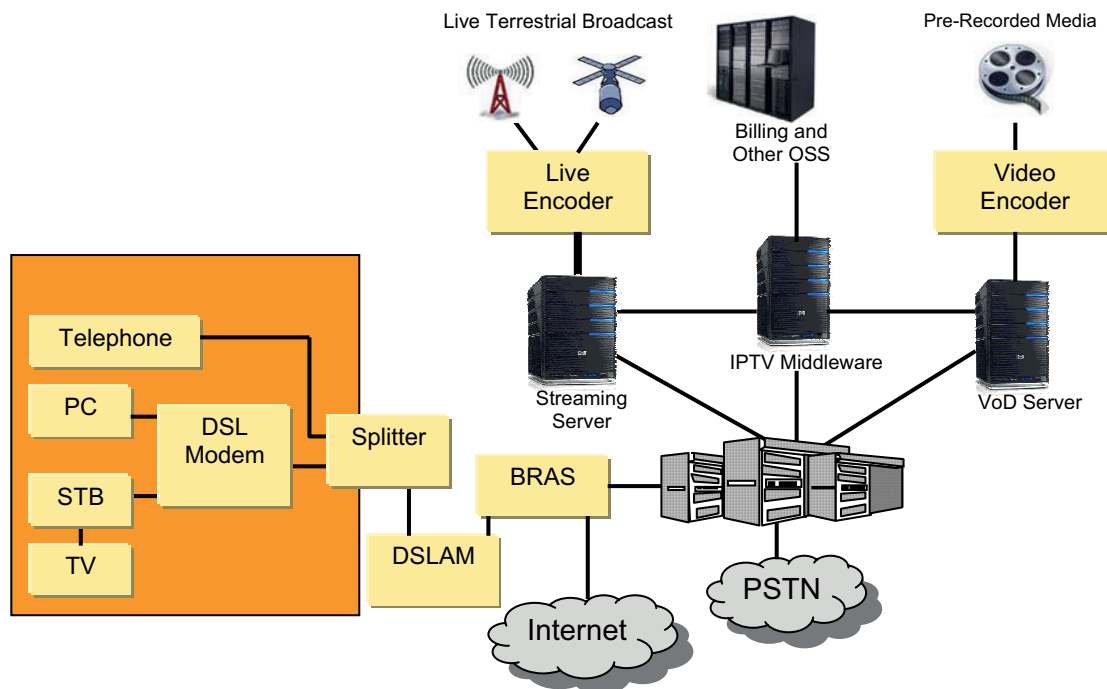


Figure 2 – "How IPTV Works"

In order to receive IPTV, a consumer must have three elements -- a broadband connection from either a telecom, cable or satellite service provider; a set-top box programmed with software to manage that consumer's requests for various media and a television.

Benefits and Impact of IPTV

A successful mass technology is one which is both cheap and user-friendly - IPTV technology has all the trappings of being one. We could probably draw similarities from mobile technology that has revolutionized the way we communicate, interact and do business. IPTV seems to be a similar disruptive technology.

Increase in IPTV usage will bring substantial benefits to a large section of society. People who cannot afford to buy a computer or do not know how to use it will benefit from IPTV as well. The potential benefits of IPTV are many:

1. **Social Networking:** Internet and Web2.0 have created and grown the concept of online Social Networking. IPTV has the potential to extend this to a wider community. For example, instant messaging applications can be made available to IPTV customers. It will now be possible watch your favorite game or program while chatting about it with someone at the same time. IPTV can not only make this possible, but also one can talk, share photos, videos, music and even play network games using a modified TV remote control.

2. Community Services:

- **Education:** Education for everyone is still a distant dream in some developing countries. Although there have been many attempts to use regular TV as a medium of education, but these are unidirectional. IPTV can be a vehicle for effective, interactive, long-distance, education programs relayed over the TV, having the property of bi-directional communication, enabling students -sitting remotely to communicate with their teachers.
- **Local updates:** Real time information relating to local weather, community functions, developmental projects, announcements, local traffic and more can be provided to a subscriber at the click of a button on their TV remote control.

3. Healthcare:

- **Telemedicine²:** Frequent visits to doctors by elderly people or people from remote areas for treatment and checkups can be challenging. This can be solved by monitoring and treatment of and support for patients by means of IPTV. Patients can be monitored without them having to visit a health clinic or hospital - the monitoring being undertaken simply by viewing the patient on their sitting-room sofa using the TV remote control. Regular remote consulting sessions with specialized doctors can be pre-arranged.

4. Financial Services & Management:

- **Stock Market and Investments:** The bidirectional capabilities of IPTV can have a huge impact on the way people trade in stocks, and commodities. Today, for any individual to directly participate in any of these financial instruments from the comfort of their living room, he/she has to be computer literate. This is a deterrent for the computer-illiterate population of the world. IPTV can enable masses to participate in these instruments by simply using the TV remote control. Decisions to buy and sell can be communicated to the broker. Business news, expert opinions and government policies are broadcast to viewers keeping them abreast of relevant news and information. IPTV could potentially be a big enabler to bring wealth to the majority in both developed and developing countries.
 - **Television Banking:** Just as Internet banking has made life easy for the computer-literate population, television banking would enable the masses to have banking services at their finger tips. Interactive browser applications for IPTV - with Security and Privacy features, can make it easy for people to manage their accounts, transfer money using the remote control. In fact, banks can advertise for loans and viewers can apply for them instantly!
 - **Filing of Tax Returns:** Governments can benefit enormously by developing easy-to-fill tax-return forms facilitated by IPTV. Not only will it widen the net for tax collections but it will also enable people to file their returns from the comfort of their homes using the TV remote control.
5. **Instant Feedback Capability:** IPTV interactivity can change the way surveys and opinion Polls are conducted, questions asked in Q&A shows and so on. In fact, with appropriate security and privacy options, it can be an effective tool in people exercising their voting rights and electing governments. People will be able to play an important and more instant role in selecting the good and rejecting the bad – across entertainment shows, reality shows, and candidates running for offices. It will bring in more transparency.
6. **Travel & Tourism:** Love the new deal being doled out by your national airline or the discount prices at the exotic vacation spot; book it right away as you see it on the TV. IPTV can be a boon to the travel & tourism industry as they can reap instant benefits of a new marketing blitz. They don't need to have a wide network of agents and promotions as long as they have applications to enable user bookings on IPTV!
7. **T-Commerce:** Targeted advertisements appearing along side programs (like a pizza advertisement when a movie is playing, look-alike merchandize advertisement of a popular sports personality at the time of a match) can be extremely effective. With IPTV, we can integrate an ordering workflow and facilitate ordering pizza or merchandize using TV-remote control with minimal disturbance to the viewer. This is termed as TV- commerce and will be next wave to hit the market.

² Telemedicine is a rapidly developing application of clinical medicine where medical information is transferred via telephone, the Internet or other networks for the purpose of consulting and sometimes remote medical procedures or examinations. Visit www.wikipedia.com

The figure below is based on a survey done by Parks Associates, to gauge interest in “networked” features like pulling digital photos from a computer and displaying them on a TV, surfing the Web or sending text messages or e-mail via TV.

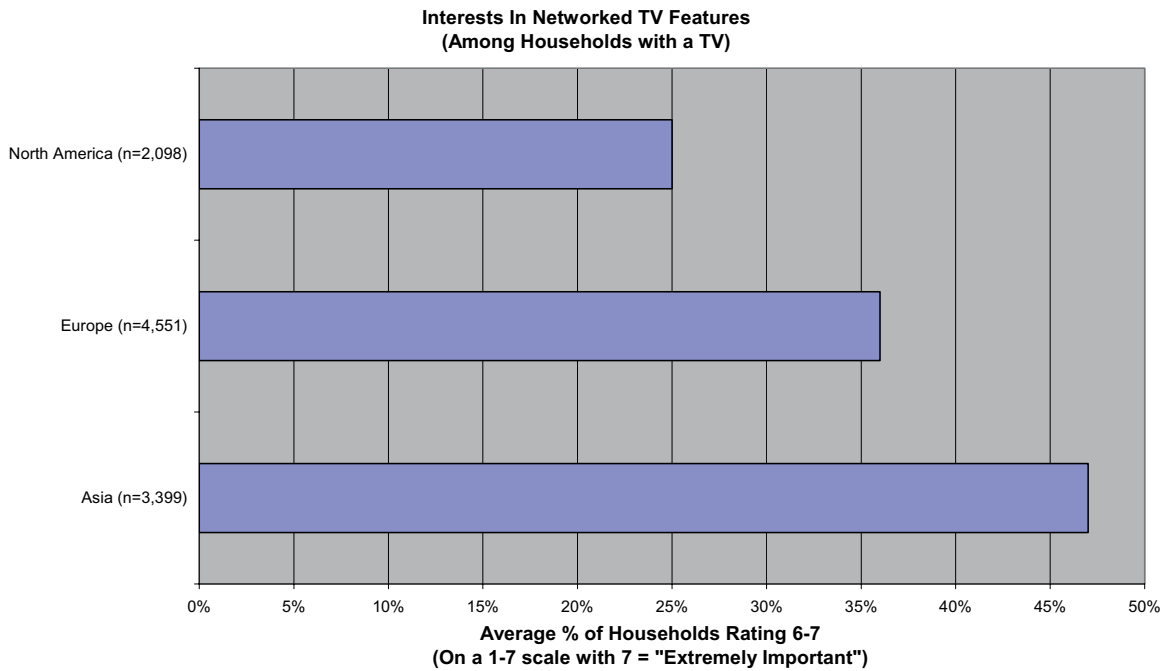


Figure 3 – Interests in Networked IPTV Features (Source: Global Digital Living, 2006 Parks Associates)

Conclusion

IPTV and IPTV based applications can bring in enormous benefits to consumers at large. IPTV has the potential to change the way we communicate, shop, entertain, run our businesses and create a completely new television viewing experience. It integrates well with today’s one-stop shop type lifestyle in which things like “Laz-e-Boy” chairs take center stage.

About the Authors

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