Government Gazette
Staatskoerant

REPUBLIC OF SOUTH AFRICA
REPUBLIEK VAN SUID-AFRIKA

Vol. 536 Pretoria, 16 February / Februarie 2010 No. 32961

CONTENTS • INHOUD

GENERAL NOTICE

NOTICE 142 OF 2010

INDEPENDENT COMMUNICATIONS AUTHORITY OF SOUTH AFRICA

Pinmill Farm, 164 Katherine Street, Sandton

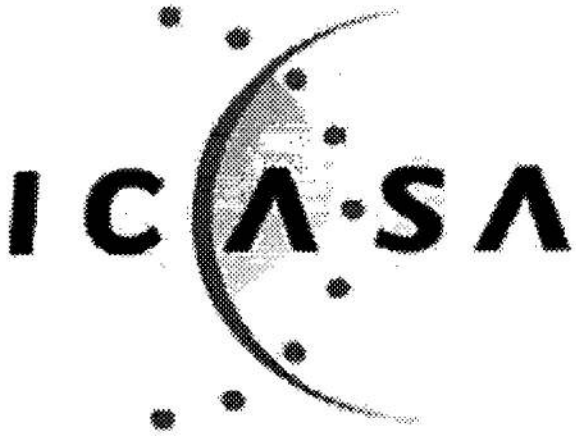
Private Bag X10002, Sandton, 2146

DISCUSSION DOCUMENT ON THE REGULATION OF INTERNET PROTOCOL TELEVISION (IPTV)

The Independent Communications Authority of South Africa ("the Authority") hereby gives notice of its intentions to develop a framework for IPTV.

The Authority invites written submissions on issues and questions raised in the discussion document from all interested parties. The closing date for submissions is **26 March 2009** by no later than 16h00 (there will be no extensions), by post, hand delivery, facsimile transmission or electronically (Microsoft Word or Adobe PDF file) for the attention of and should be directed to:

Contact Person	**Ms Nozipho Maluleke**
Physical Address	ICASA HEAD OFFICE Pinmill Farm Block D 164 Katherine Street Sandton 2146
Postal Address	ICASA Private Bag X10002 Sandton 2146
Facsimile	011 556 3250



DISCUSSION DOCUMENT ON INTERNET PROTOCOL TELEVISION (IPTV) AND VIDEO ON DEMAND (VOD)

FEBRUARY 2010

CONTENTS

LIST OF ABBREVIATIONS IN THE TEXT

ARCEP... Autorité de Régulation des Communications Électroniques et des Postes

ASA..... Advertising Standards Authority

ATVOD..... Association for Television Video on Demand

AVMS.....Audio Visual Media Services

BMI..... Business Monitor International

CNTS..... Cellular Mobile Telephony Service

CSA .....Conseil Superieur del'Audiovisuel

DoC.....Department of Communications

DTH.....Direct to Home

DTT.....Digital Terrestrial Television

DTAS..... Digital Television Additional Services

DTPS..... Digital Television Programme Services

DVB.....Digital Video Broadcasting

ECA..... Electronic Communications Act

ECS..... Electronic Communications Services

EU..... European Union

FCC.....Federal Communications Commission

FTC.....Federal Trade Commission

HD..... High Definition

ICT.....Information Communications Technology

IP.....Internet Protocol

ISP..... Internet Service Provider

ITU.....International Telecommunications Union

IPTV.....Inter Protocol Television

KBC ..... **Korea Broadcasting Commission**

LLU ..... **Local Loop Unbundling**

MIC ..... **Ministry of Information and Communication**

NRA ..... **National Regulatory Authority**

NVOD ..... **Near Video on Demand**

Ofcom ..... **Office of Communications**

PC ..... **Personal Computer**

PVR ..... **Personal Video Recorder**

QoS ..... **Quality of Service**

SBS ..... **Subscription Broadcasting Service**

STB ..... **Set-Top-Box**

TVOD ..... **True video on Demand**

TLCS ..... **Television Licensable Content Services.**

TRAI ..... **Telecommunications Regulatory Authority of India**

TVWF ..... **Television Without Frontiers**

UK ..... **United Kingdom**

USA ..... **United States of America**

VOD ..... **Video-on-Demand**

VOIP ..... **Voice over Internet Protocol**

WTO ..... **World Trade Organisation**

Where possible, written representations should also be e-mailed to: Nmaluleke@icasa.org.za or Ipholosi@icasa.org.za

Any written representations submitted to ICASA pursuant to this notice will be made available for inspection by interested persons at the ICASA Library and copies of such representations will be obtainable upon payment of the prescribed fee.

The Authority may publish all or any part of the written submissions on its website; www.icasa.org.za. The Authority will consider stakeholders to have consented to the publishing by making a submission, unless it is clearly specified otherwise in a submission.

Stakeholders are kindly advised to indicate any objection to the release of information contained in a submission, which is considered as confidential. Motivations in this regard shall include reason(s) for such information not to be made public. The Authority will take into account all such objections when responding to requests for copies and information on submissions to this document.

Public hearings will be convened on the 8th and 9th April 2010. Persons submitting written representations are further invited to indicate, as part of their submissions, whether they require an opportunity to make oral representations and the estimated duration thereof, which duration shall not exceed one hour.

The Authority will review and analyze all submissions received from stakeholders in response to this discussion document. Findings emanating from this consultation exercise will form a foundation in the development of the framework for the regulation of IPTV.

PARIS MASHILE

CHAIRPERSON

1. INTRODUCTION AND PURPOSE OF THE DISCUSSION DOCUMENT

Internet Protocol Television (IPTV) has emerged as one of the key drivers of technological convergence combining elements of broadcasting and telecoms. This brings a new viewing experience to consumers. IPTV is already proving to be a success in a number of countries across the world. International experience shows that the success of IPTV services depends on National Regulatory Authorities (NRAs) creating a conducive regulatory environment by encouraging innovation and competition.

IPTV services have not taken off in South Africa although there is considerable interest from a range of stakeholders, including current holders of broadcasting and electronic communications licences. It is an attempt to address interest shown by stakeholders that the Authority seeks to conduct an Inquiry into the regulation of IPTV, with particular emphasis on non-linear services or Video on Demand. This process is undertaken in accordance with Section 4B and 4C of the ICASA Act and seeks to meet the goals of Section 2(a) of the Electronic Communications Act (ECA) of 2005.

To facilitate public discussion, the Authority has conducted an international benchmarking exercise, looking at how different regulators in Europe, America, and Asia have approached the regulation of IPTV. As stated more emphasis will be placed on the regulation of non-linear services. These jurisdictions vary in their approach to regulating these new services. Regulatory models adopted in different jurisdictions include self regulation, co-regulation to explicit government regulation mainly determined by the governing statutes in those countries.

The Authority invites stakeholders to contribute to this process which will potentially culminate in new regulatory environment and or amendment to the legislative framework. Where necessary, stakeholders are encouraged to make submissions on any related matters.

2. BACKGROUND

Technological convergence and the advent of new electronic communications have necessitated a rethink of current regulatory practices. National Regulatory Authorities (NRAs) throughout the world are faced with a challenge to re-define their approach to regulating the communications sector. The prevailing lack of clarity in most parts of the world has created policy and regulatory uncertainty about the future of the sector, particularly with regard to the uptake of new services.

Traditional regulatory approaches were more concerned with asymmetric regulation across services in terms of specific technologies used[1]. The rational for regulating broadcasting has been to protect, Inform, entertain and educate the public. Telecoms regulation traditionally has been more concerned with competition, choice and affordability through price regulation. The convergence of broadcasting and telecoms through the introduction of services such as Internet Protocol Television (IPTV) and Mobile TV broadcasting blurs the distinction between boundaries and platforms, thus posing a challenge for regulators.

While many NRAs are beginning to accept the unprecedented impact of convergence, there is still no consensus on the regulation of services such as IPTV and Video on Demand (VOD). Some stakeholders advocate for non regulation to light touch regulation, arguing that any form of regulation will hamper the growth of the sector.

On the other hand, there are those who argue that new services should continue to be regulated to meet certain national and sectoral goals. It is in light of these contestations that approaches to this issue are predominantly underpinned by country specific social, economic and political realities. In a number of cases, the classifications adopted by NRAs depend on the existing laws in a particular country.

Canada has classified IPTV and VOD as broadcasting services, therefore IPTV and VOD providers fall within the category of broadcasting distribution companies and are issued a broadcasting license. This means that both linear and non-linear services are provided exclusively by broadcasting entities. In various European jurisdictions the classification of IPTV and VOD is based on the degree of

interactivity permitted by the service. Countries using this approach differentiate between the transmission of linear and non-linear services. In this case, linear programming is subject to broadcasting and content regulation, while non-linear is subjected to light touch regulation[1].

In South Africa there is currently no specific regulation governing the provision of IPTV services although some industry players have expressed interest to launch new services. In particular, there is a need for clarity regarding the regulation of non linear services, whether they are broadcasting services or electronic communications services.

While the Electronic Communications Act seeks to facilitate convergence, there are still some legislative constraints as the ECA still maintains distinct frameworks for Electronic Communications and Broadcasting services. Depending on the choices made, this discussion may speed up the need for a fully converged legislative environment. Such a clear legislative environment is needed to speed up the uptake of innovative services. To enable this, it becomes necessary that the ongoing discussions are not constrained by the current legislative environment, but should seek to make futuristic determinations, even if it includes amending the laws, where necessary. The Authority should act within its legislative mandate to advice the Minister of Communications should it be necessary to amend the law to enable new services.

3. CONCEPTUAL ISSUES

3.1. INTERNET TELEVISION

IPTV is generally confused with internet television, while in reality they are two distinct services, with different characteristics. There is therefore a need to create a clear distinction between these services for the purposes of enhancing regulatory

[1] ICT Regulatory Toolkit, www.ictregulationtoolkit.org accessed 07/08/2009

clarity as well as to avoid regulations services such as the Internet which is not supposed to be regulated by the communications law.

Internet TV covers a wide range of services and applications that use a variety of content. This includes video embedded on social networking sites, user-generated content, videos on sites such as YouTube and news clips[2]. It basically entails television services provided over the open internet. Its' reach is worldwide with no distinct managed subscriber base. This means that users are not authenticated. With internet TV, content is disseminated via a Personal Computer (PC) rather than a TV set, and the content is often unprotected.

There are no specific restrictions or license conditions for internet TV, it is perceived to be more of a website than television[3]. It is therefore subjected to the same regulations as other internet services which include the general provisions on copyright, protection of children, hate speech and the non-specific provisions such as civil code, antitrust and criminal law apply in addition to country specific regulations.

3.2. IPTV SERVICES

There are many definitions of IPTV with that provided by the ITU emerging as the most preferable in various jurisdictions. The ITU defines IPTV services as follows:

"An IPTV service (or technology) is the new convergence service (or technology) of the telecoms and broadcasting through Quality of service (QoS) controlled Broadband Convergence IP Network including wire and wireless for the managed, controlled and secured delivery of a considerable number of multimedia contents such as video, audio, data and applications processed by platform to a customer via

[2] The IPTV and Video Market in Australia, ACMA, April 2008

[3] Dr. Thomas Hart , Policy and Regulatory Challenges of convergence: Mobile, Digital, IP, EU-China Information Society Project.

television, cellular, and mobile TV terminal with Set-Top-Box (STB) module or similar device"[4].

Simply put, IPTV is television content that is delivered through computer networks using the Internet Protocol (IP). IPTV is offered over closed content distribution networks where the network operator controls the technical parameters of the transmission. It uses broadband connection to the Internet for the delivery of video services and delivers it in a form of packets data. The data is then stored in a server to be transmitted to either television with a special set-top-box or computer. Subscribers are thus managed and known to the operator who is able to offer onsite installation and customer support[5].

3.3 VOD SERVICES

VOD is an umbrella term for a wide range of technologies that enable consumers to select what to watch and when to watch it. VOD encompass two types of services being Video on Demand in "Pull Mode" and Video on Demand in "Push Mode".

- VOD in 'Pull' Mode is distributed through a viewer's request sent to a video server where the content is pushed onto a local storage device. The service offers the user immediate access to their programme requests from the service provider; it has features such as fast forward, rewind, pause, camera control and other relevant control features. These services are commonly referred to as 'True' Video on Demand (TVOD) services because of the level of interactivity they provide. TVOD is classified as non-linear services[6].

- VOD in 'Push' Mode", also known as 'Near' Video on Demand (NVOD), refers to programmes which have previously been downloaded by the operator onto a storage device in either a PC or the customer's personal video recorder (PVR). NVOD does not have a two way channel capacity like TVOD. These services are often provided by satellite multi channel broadcasters with huge

[4] www.itu.org.com accessed 01April 2009
[5] *Driving the future of IPTV, ITU-T IPTV Global Technical Workshop, Seoul, 12-13 October 2006*
[6] The Development of Video on Demand in Europe,NPA Council, May 2006

channel capacity ranging from 40 channels capacity[7]. It is therefore classified as a linear service.

Box- 1

Internet TV

Internet TV is regulated differently from other communications media, including terrestrial DTT and satellite distribution networks. Given the cross-border nature of this medium and the technology underpinning it, it is often difficult for governments to regulate internet in the same way as other communications media. In most cases it follows a self regulatory model outside the ambit of ICT regulation. There are generally no intentions from regulators across the world to include Internet TV services in the regulation of broadcasting.

The European Union Audiovisual Media Services Directive, notes in this regard that there are certain services that would be excluded from the scope of the regulations and these include *"services which are primarily non-economic and not in competition with television broadcasting; services allowing users to share generated content; private correspondence and e-mails, services where the audiovisual content is incidental to the main purpose of the service, gaming and gambling services, on-line games, search engines, and electronic versions of newspapers and magazines[8]"*.

There are fixed IPTV services offering standard channels where the services are similar to those of a satellite broadcaster with no interactivity capacity. This type of service is classified as a linear service because it does not offer anything different from what traditional broadcasting is currently offering. It is therefore regulated in the same way as subscription broadcasters. However, when IPTV services are introduced in the market they are often bundled with other services like Video on Demand (VOD), voice over IP (VOIP) or digital phone, and Web access, collectively

[7] Ibid

[8] Proposals for the regulation of Video on Demand Services consultation, Ofcom, 14 September 2009

referred to as Triple Play. This poses a challenge for NRAs because these multiple service offerings are regulated differently from linear services.

In South Africa Multichoice currently provide NVOD services to subscribers with PVR decoders. NVOD does not have a two way channel capacity like TVOD; it is therefore classified as a linear service. In the South African legislative context this means that a broadcasting service licensee is able to offer these services without any further authorisation. This discussion document places more emphasis on TVOD services. In the following sections, VOD refers to TVOD, which is classified as a non-linear service in terms of the Electronic Communications Act (ECA). This is the case since TVOD allows for a point to point communications, which is in line with the definition of electronic communications services in the ECA. The ECA defines broadcasting as a point to multipoint distribution systems, thus confining it to NVOD or linear services.

4. IPTV MODELS

Traditional fixed line telecommunications service providers have emerged as the main providers of IPTV services. This is attributed to the fact that in many jurisdictions telecoms operators are already facing decreasing subscriber revenues from their traditional voice and broadband service offerings. In an effort to increase their revenues they are entering into the content packaging domain by offering IPTV services as part of their triple play package options to consumers. They offer these services over their existing copper ADSL or fibre access networks.

IP-based platforms provide added advantage, making it distinct from satellite and terrestrial platforms. It has the ability to integrate television with other IP-based services like high speed internet access and VOIP. With satellite and terrestrial networks using broadcast video technology, all the content constantly flows

downstream to each customer, and the customer switches the content at the set-top-box. A switched IP network works differently, it allows for the delivery of significantly more content and functionality because content remains in the network, and only the content the customer selects is sent into the customers home. With an IP-based network the viewers may be able to look up a player's stats while watching a sports game, they can be able to access photos or music from their PC on their television, use wireless phone to schedule a recording of their favourite show, change the camera angle while watching a programme, the operator may also include an interactive program guide that allows viewers to search for content by title or actors name[9].

To a certain extent, these services can be offered using digital terrestrial and satellite networks with a set-top-box, but for interaction to take place between the receiver and the transmitter a feedback channel is needed. Due to this, terrestrial, satellite and cable networks for television do not allow interactivity. However, interaction with these networks is possible in a hybrid model which uses a combination of different networks such as the internet or mobile communications networks.

IP networks have their own challenges. One particular limitation is the inability of services to reach bigger audiences compared to satellite and cable networks. This is generally due to limited penetration of broadband. Broadband networks in several countries are not able to provide a sizeable proportion of the population with an IPTV service that matches even existing terrestrial or satellite digital TV distribution because of the stringent minimum connection speed requirements. For a competitive multi-channel IPTV service, a connection speed of 20 Mbit/s is required[10]. High definition which is rather popular with audiences requires double the data of Standard Definition video which further limits IPTV's service quality and connection.

On the other hand satellite is capable of delivering in excess of 100Gbit/s via multi-spot beam technologies making broadcasters potential contenders in the IPTV market[11]. To increase performance and reliability of the services some providers

[9] www.wikipedia.org/wiki/IPTV accessed 09/09/2009
[10] Ibid
[11] Ibid

prefer the hybrid model which combines IP and satellite TV distribution technologies. This can be achieved by using an IPTV-DTH architecture, where a hybrid DVB/broadband set-top-boxes in the subscriber homes combines' satellite and IP reception to give a near infinite bandwidth with return channel capabilities[12]. With this combination the user would use broadband to receive VOD content and satellite to view other content, such as live channels.

Box- 2

The availability and take-up of high-speed broadband connections in many parts of Europe has facilitated the increase in VOD services. The IPTV market is thriving in those countries where there is mass-market penetration of high speed broadband internet access at affordable prices. Another factor that has contributed to the high take up and success of the IPTV services is the local Loop Unbundling (LLU). With the implementation of LLU in the market the telecoms operators are able to offer their own VOD service by positioning the server close to the end users[13]. In France the most successful IPTV operator has benefitted from using unbundled lines from the incumbent operator France Telecom[14].

A report by Business Monitor International (BMI) shows that internet penetration is estimated at 14.8% in South Africa, while broadband penetration is estimated at 2%. The report further indicates that high prices have significantly contributed to the slow take up of broadband services[15]. This effectively means that it would be a challenge for telecoms providers who want to offer a competitive multichannel IPTV package over their copper ADSL or fibre access networks.

International precedence shows that in addition to developing forward looking broadband policies, regulators have also intervened in the broadband market by regulating the rates at which broadband internet access services are provided. In Canada the success of the broadband Internet access networks is attributed to the decision by the independent regulator Canadian Radio Television Commission

[12] Ibid
[13] The Development of Video on Demand in Europe,NPA Council, May 2006
[14] Ibid
[15] South Africa Telecommunications Report Q4, 2008, Business Monitor International LTD.

(CRTC) to approve the rates and the terms under which incumbent cables as well as telephone companies provide higher speed access to their telecommunications facilities to ISPs[16].

In America the American Recovery and Reinvestment Act of 2009 (Recovery Act) authorises the FCC to create the National Broadband Plan that will ensure that all the citizens have access to broadband services[17]. The Federal Trade Commission (FTC) has jurisdiction over broadband services provided and oversees unfair competition by service providers that can affect the commerce. In terms of pricing the Commission concluded that "all attachments used for broadband Internet access under which incumbent cables as well as telephone companies provide higher speed services should be subject to a single rate, regardless of the platform over which those services are provided"[18].

In the draft broadband policy[19]published by the Department of Communications (DoC) it is clear that government is making a considerable effort to ensure that all citizens have access to affordable broadband infrastructure in the process increasing affordability and uptake of broadband services. The Authority is committed to creating a stable regulatory environment for operators who face major investment requirements in upgrading their networks for the delivery of new services and the new entrants who want to exploit the market of these services.

5. POLICY AND REGULATORY ISSUES

5.1 LICENSING FRAMEWORK

[16] Regulatory trends in service convergence, The World Bank, Washington D.C, 29 June 2007
[17] www.fcc.gov
[18] IBID
[19] Notice of intention to make South African Broadband strategy: invitation to furnish written submissions, published 18 September 2009

Convergence is increasingly making it difficult to license an operator based on the type of service offered or technology used because of the overlap that occurs when broadcasters offer telecom services and telecom operators' offering broadcasting services.

There are different approaches to licensing IPTV in Europe countries follow a technology neutral approach. This means that the approach to licensing is based on the service being offered rather than the particular platform used to offer the service This approach considers any television service provided on any platform (*cable, satellite internet, ADSL, or mobile network*) to be a broadcasting service. VOD is the only exception as it is not classified as a television service[20].

In the case of Ofcom Television services are licensed differently depending on whether they are carried on a digital terrestrial multiplex or made available by means of an electronic communications service (ECS) over an electronic communications network (ECN). Services carried on a digital terrestrial multiplex are licensed as a Digital Television Programme or Additional Services (DTPS or DTAS). Services carried over an ECN are licensed as Television Licensable Content Services (TLCS).

There are three types of services which can be provided under a TLCS license. The nature of service can either be editorial, teleshopping or self-promotional. The Communications Act sets out that a service is licensable as a TLCS if it consists of television programmes, is available for reception by members of the public and it is distributed by means of an ECN. VOD services are not licensable because they are not available for reception by members of the public.

In other countries such as India, they have adopted a unified and technology neutral licensing regime, where a single license covers a wide range of services[21]. According to the Telecommunications Regulatory Authority of India (TRAI), operators with a Unified Access Service or cellular Mobile Telephony Service (CNTS) license are permitted to offer IPTV services without any further approval. This also applies to

[20] Ibid

[21] Organisation for Economic Co-operation and Development, Working Party on Communication Infrastructure and Service Policy, 19 December 2007

cable television operators who want to offer IPTV services; they can do so under their current authorisation. ISPs with a net worth of more than a billion Rupees have to first obtain permission from the regulator before they offer IPTV services.

Another approach to licensing IPTV is the development of a separate license for IPTV service providers. In the case of Pakistan an IPTV service provider must first have a fixed Local Loop License prior to obtaining a Channel Distribution Service license from the Electronic Media Regulatory Authority in order to provide an IPTV service over a particular region[22]. This approach is similar to the Republic of Korea where an IPTV service provider is required to have an Internet Multimedia Broadcasting license issued by the Minister of information and Communications prior to providing an IPTV service.

There are jurisdictions such as Hong Kong and China which have opted to regulate IPTV providers in the same way as subscription television providers, requiring them to obtain a subscription television programme license.

5.2 CONTENT

Traditionally broadcasting is known and understood to be a one-to-many transmission (linear) where a mass audience receive the same content simultaneously. With this type of transmission the broadcaster determines the type of content and the time of transmission, therefore the viewer has little control over the content received. On the contrary, given the new technological developments in broadcasting there is a movement towards a one-to-one transmission (non-linear) where the control of content, how it is delivered, how it is accessed and how it is chosen, is being placed in the hands of the audience[23].

The rational for regulating broadcasting content is mainly to protect the public and consumers from harm. Content regulation ranges from basic rules which ensure that certain audience groups, especially minors are protected from material that may be

[22] Guidelines for submission of qualifications for IPTV Channel Distribution Service License, Parkistan Electronic Media Regulatory Authority,

[23] New Zealand on the issues facing content regulations

considered inappropriate or harmful, other protective rules which include journalistic accuracy and fairness, right of reply, privacy rights of those featured in programmes, controls around television violence and the implementation of public policy objectives of promoting culture and locally produced content[24].

The relevance of content regulation based on traditional models of broadcasting is being challenged by the technological changes in the broadcasting environment. There is mounting pressure to review the current content regulatory mechanisms inherent from analogue broadcasting platforms to make way for the new services. The major Issue with content regulation for the new services is the relevance, the extent and the likely consequences of imposing such regulations to a new market.

In several cases where IPTV is classified as a linear service the operators are subjected to the same content regulations as terrestrial or subscription broadcasters. One such country is Singapore where the IPTV service providers are subjected to the programming code imposed on subscription television broadcasters'[25]. In India telecommunications providers offering IPTV services are not subjected to content regulation for content obtained from broadcasters (unaltered), because the responsibility to ensure that content is in accordance with the relevant statutory requirements vests with the broadcaster. However, in an event that the telecommunications IPTV service provider obtains its own broadcasting content, internet related content, VOD or movie related content the programming and advertisement code apply.

Jurisdictions which have divided IPTV services into linear and non-linear services respond differently to content regulation for non-linear services. In the case of New Zealand, non-linear content that is paid for, falls outside the scope of broadcast content regulation. The justification is that content is requested by an identified individual rather than made available to a mass audience and there are access control systems (e.g. Pin Codes) available for the various platforms.

In response to content regulation for non-linear services the EU through the Audio Visual Media Services (AVMS) Directive has recommended basic content standards

[24]Ibid

[25] ICT Regulatory Toolkit, www.ictregulationtoolkit.org accessed 07/08/2009

for VOD services in order to protect the consumers and the citizen's interests. The directive has recommended that VOD editorial content be regulated directly by the National Regulatory Authority (NRA) or through a co-regulatory[26] system. According to the Directive VOD editorial content has to comply with certain minimum standards. The requirements are that VOD editorial content:

a) Should not contain any incitement to hatred based on race, sex, religion or nationality;
b) which might seriously impair the physical, mental, or moral development of minors is only made available in such a way that ensures that minors will not normally hear or see such content;
c) should fulfil the rules on sponsorship laid down in the AVMS Directive; and
d) may contain product placement, but only subject to conditions laid down in the AVMS Directive.

The NRA's are also required to ensure that VOD service providers promote the production of European works, make their services accessible to certain people with disabilities, and adhere to standards concerning the promotion of food or beverages.

Another key concept that has been enshrined in the AVMS Directive is the issue of editorial control. The Directive recommends that there must be a person with editorial control for VOD services that fall within the ambit of the AVMS Directive. Therefore, the person who has such control will be responsible for ensuring compliance with the requirements of the legislation.

In the process of implementing the AVMS Directive Ofcom has issued a consultation document to the industry for comments prior to making a final determination on the regulation of VOD services. In the document it is clear that the government of UK is in favour of a co-regulatory model for the regulation of VOD editorial content.

"*The Ministerial Statement announced that Ofcom would be given powers to regulate UK VOD services so that it could then designate, and delegate powers to, an industry-led co-regulatory body to regulate programme content in these services.*

[26] Co-regulation is defined as schemes that involve elements of self-and statutory regulation, with public authorities and industry collectively administering a solution to an identified issue. The split of responsibilities may vary, but typically government or regulators have legal backstop powers to secure their objectives.

It was felt that this would allow the UK VOD industry to take the lead in setting and enforcing standards for the content of its services".

In the consultation it is proposed that the designated co-regulatory body will be given powers to regulate programme content in addition the body will adjudicate on complaints, referring cases in which statutory sanctions may be necessary to Ofcom, furthermore the body will be responsible for informing service providers about notification requirements and will assess whether or not a service falls within the scope of the statutory criteria. However, Ofcom would still retain its powers to deal with serious or repeated breaches of the standards and to intervene in the event of systemic failure.

5.3 ADVERTISING

The main objective of the European Union's AVMS Directive is to create a level-playing field between traditional linear broadcast television services and emerging on-demand audiovisual media services. The Directive, and the Regulations, is therefore intended to cover on-demand and broadcast television audiovisual media services which compete for the same audiences, sharing the same key characteristics.

The AVMS Directive recommends a set of minimum standards that VOD advertising has to comply with. The requirements are that:

a) advertisements should be readily recognisable. Misleading forms of advertising, such as the use of hidden messaging, are prohibited;
b) advertisements should not prejudice respect for human dignity, or promote unfair discrimination based on sex, racial or ethnic origin, religion or belief, disability, age or sexual orientation;
c) advertisements should not encourage behaviour that is prejudicial to the health or safety of people, or grossly prejudicial to the protection of the environment;
d) advertisements for tobacco products, prescription-only medicines or medical

treatment are prohibited;

e) advertisements for alcohol products may not be aimed at minors or encourage immoderate consumption; and

f) advertisements must not cause physical or moral detriment to minors or exploit their inexperience.

In the consultation document Ofcom is proposing a co-regulatory system for the regulation of VOD advertising. They propose that Advertising Standards Authority (ASA) should be the designated body responsible for the day to day regulation of VOD advertising including the investigation of complaints. However Ofcom would still retain its powers to take immediate action in the event that there is a serious breach of the regulations. The ASA is also expected to refer repeated or serious matters to Ofcom for further action.

Currently IPTV is not perceived to be a treat or even a close substitute to existing terrestrial and subscription broadcasters. Most regulators have not progressed to a stage where they develop a comprehensive set of regulations for IPTV providers. It is still at a point where it's being tested in the market, therefore regulators are cautious in the way they regulate these services as they are more concerned about the growth and development of these new services. Therefore, these countries usually enforce the subscription advertising code for IPTV services.

Box- 3

The general principle applied in Section 7 of the ECA is that "no person may provide any service without a license". Section 5 of the ECA makes provision for four licensable activities within the communications sector. The licensable activities are:

* Electronic Communication Network Services;

* Electronic Communication Services;

* Broadcasting Services; and

* Radio Frequency Spectrum License

An operator issued with an Electronic Communications Network Service is able to offer any electronic network services in line with the ECA. An ECS licensee may

provide any electronic communications services as authorised in the license while a broadcasting service licensee may provide broadcasting services as authorised in the license and this can be public, commercial or community broadcasting services which can be provided free-to-air or on a subscription bases. Prior to determining an approach to licensing IPTV services there is a need to first classify IPTV within the context of the ECA.

The ECA defines "broadcasting" as *any form of unidirectional electronic communications intended for reception by the:-*

(a) Public;

(b) Sections of the public; or

(c) Subscribers to any broadcasting service, whether conveyed by means of radio frequency spectrum or any electronic communications network or any combination thereof, and "broadcast" is construed accordingly.

According to the ECA, a fixed IPTV service falls within the ambit of broadcasting. The definition of broadcasting is not platform specific, it allows for broadcasting to be transmitted on any platform including an IP network. Given the fact that IPTV is classified as a broadcasting service the logical approach to follow is to licence it as a subscription broadcasting service (SBS) taking into account the definition of SBS in the ECA. In that case the subscription regulations and license conditions will apply.

The challenge in the definition of broadcasting is the word "*unidirectional*". It means that there can only be movement in one direction, without any return path or interactivity. Therefore VOD falls outside the definition of broadcasting because of its two-way interactivity functions.

Given the fact that VOD does not fall within the scope of broadcasting, a more rational approach is to define it as an ECS service. The ECA defines an ECS service as "any *service provided to the public, the state, or the subscribers to such service, which consists wholly or mainly of the conveyance by any means of electronic communications network, but excludes broadcasting services*".

VOD falls well within this ambit, as the definition of ECS is explicit about the exclusion of broadcasting. This in effect means that an ECS licensee providing VOD is not subjected to the same regulations or licensing conditions imposed on broadcasters. However, it is important to note that VOD has certain broadcasting characteristics which are regulated in other jurisdictions. These include editorial content and advertising.

Broadcasters have an option to offer these services through a hybrid model as explained earlier in the document, this approach would require the parties to notify the Authority of their intentions prior to concluding such an agreement, or alternatively a broadcaster can apply for an ECS licence to be able to offer VOD services.

An ECS licensee can opt to compete in the VOD market by independently providing these services using their existing networks generating revenue from anyone of the three models, pay-per-play, subscription or an advertising supported model. The challenge with this approach is that currently broadcasters have to comply with the code of conduct which addresses content issues and is aimed at protecting viewers especially minors from harmful content. The protection of viewers cannot be overlooked; there is therefore a need to develop a code of conduct for VOD providers.

6. INTERNATIONAL BENCHMARKING

6.1 EUROPEAN UNION (EU)

In the EU the AVMS Directive covers all audiovisual media services including on-demand services in the digital age. It amends and renames the Television Without Frontiers ("TVWF") Directive (EC Directive 89/552/EEC)[27]. The EU defines television broadcasting as a linear audiovisual media service where a media service provider decides upon the moment in time when a specific programme is transmitted and establishes the programme schedule. Non-linear services are considered different from linear services with regard to choice and control the user can exercise and also with regard to the impact that they might have on society. Therefore the Directive recommends a much lighter regulation for on-demand audiovisual media services. The Directive further encourages a co-regulation model for on-demand-services. The AVMS only regulates the on-demand services within the European Union boundaries and exclude Internet services from outside in order to encourage freedom of expression[28].

6.2 UNITED KINGDOM (UK)

In the UK Ofcom as the regulator has judiciary mandate to oversee content over the licensees under Communication Act 2003 ("the Act") and the Broadcasting Act 1999("the Act") as amended and to develop codes for television and radio broadcasters to cover standards in programmes, privacy sponsorship and fairness.

In the UK the delivery technology is not a determining factor when deciding whether a TV service is licensable or not. The onus is on the provider of a service (such as a TV channel) to determine whether that service requires licensing or not. Once licensed, the television service must comply with all the rules relating to the content and scheduling of programmes and advertising[29]. The Communications Act allows

[27]

[28] Ibid

[29] Organisation for Economic Co-operation and Development, Working Party on Communication Infrastructure and Service Policy, 19 December 2007

Ofcom to distinguish, for the purpose of licensing and regulating TV content, between TV content which is "more like' conventional TV (requires licensing) and TV content which is "more like' web content (does not require licensing), and leaves Ofcom some room to interpret where to draw the line. The Act also contains a clause which allows Ofcom to distinguish between content on the Internet and conventional television channels and to exclude the Internet services from Ofcom's regulatory powers.

With regard to the regulation of VOD there are currently two independent self regulatory bodies that oversee complaints from users and members (Association for Television on Demand-ATVOD and the Independent Mobile Classification Body IMCB) of VOD services. ATVOD operates under the code of practice adopted in 2004 and is binding to all members. The ATVOD Code is aimed at protecting vulnerable consumers against exposure to harmful content[30]. The Code does not focus specifically on the content itself, but rather, is primarily concerned with the tools used to manage the content by viewers and the context in which is presented, However, these bodies are voluntary and not all services providers are members. The UK government is in the process of amending the Communications Act of 2003 to give effect to a number of requirements in the AVMS Directive, including setting up a regulatory framework for the regulation of VOD services. The regulation will consist of a range of minimum standards for VOD content and advertising.

6.3 FRANCE

[30] Ofcom 's Submission to the Byron Review: Annexure 3: Content Regulation and Child Protection" Policy Practice and User Tools. 2007

There are currently over 10.3 million IPTV subscribers in Western Europe. France accounts for over half of subscribers in the region[31]. The high take up of IPTV services in France is attributed to the business model where a subscriber may not be paying for additional content, but is able to receive free-to-air channels with the basic triple play packages.

In France two different regulators regulate the communications landscape. The Autorité de Régulation des Communications Électroniques et des Postes (ARCEP) is responsible for telecommunications. Its key areas of responsibility include the provision and funding of key infrastructure and frequency components making up the public telecommunications sector, reinforcing transparency of regulation in a competitive environment, and overseeing convergence and other emerging issues. The (Conseil Superieur del'Audiovisuel) CSA is responsible for linear services (whatever the platform including IPTV) but not for non-linear services.

The Broadcasting Law defines a television service as "*services destined to be received simultaneously by the public and whose main programming is composed of an organised series of programmes with images and sounds*".

According to the CSA, video-on-demand service is not a television service due to its two-way interactivity, and thus falls outside the authority of CSA. Video clips are not a television service because they are not an organised series of programmes. An Internet video service, if it streams television services one-way from an Internet website to a subscriber's PC over the public Internet, is regarded as a television service because the legal definition of television service has no relation to the type of underlying transmission networks or TV signal receiving devices.

France regulates IPTV as an audio media service in line with the AVMS Directive. Under the Broadcasting Law, television service channel providers need to sign an agreement with or make a simple declaration to CSA regardless of the underlying transmission infrastructure (cable networks, satellite, Internet, *ADSL*, mobile telephony networks, etc.). Television service channels with an annual budget for TV

[31] ICT Regulatory Toolkit, www.ictregulationtoolkit.org accessed 07/08/2009

programmes lower than EUR 150 000 are exempt from signing an agreement and fall within the simple declaration system.

Operators of electronic communications networks including cable TV and xDSL who deliver television services to users are bound to make a declaration to the CSA. The network operators also have to declare to ARCEP when they set up networks.

6.4 UNITED STATES OF AMERICA (USA)

The Federal Communications Commission (FCC) was established in terms of the Communications Act to "regulate interstate and foreign commerce in communication by wire and radio so as to make available, so far as possible, to all the people of the United States, without discrimination on the basis of race, color, religion, national origin, or sex, a rapid, efficient, Nation-wide, and world-wide wire and radio communications services (In this context, the word "radio" covers both broadcast radio and television.)"[32].

The Communications Act authorizes the FCC to "make such regulations not inconsistent with law as it may deem necessary to prevent interference between stations and to carry out the provisions of [the] Act."[33]. The Commission through the Act should ensure that the licensees provide services that serve and meet the public interests. The FCC is mandated to ensure fair portrayal of women, children and the minorities in the broadcasting sector, however, exempt the Web media services. USA is also a signatory to International legal treaties which protect women, children, minorities against degradation and discrimination etc.

In the USA, IPTV is offered concurrently with VOD with high speed broadband and other related services by telecoms, subscription broadcaster's licensees and other communications companies. Some companies only offer services separately and

[32] www.ffc.gov/The Public and Broadcasting

[33] IBID

other related services. AT&T and Verizon control the market share with their major deployment of the services.

The USA with its advancement in the entertainment industry is a leading country offering the Internet Video services. The country with its advanced technology and development dominate the global supply chain from content production to distribution, with various conglomerates like NBC, ABC Disney and CBC offering VOD services on their websites.

There is intense competition between the IPTV/VOD and subscription television (ComCast and Time Warner) market as they rival for the same viewers and advertising revenues. The service providers are fighting to retain their subscription base by providing high quality level of service through differentiation of their services.

There is currently no regulatory framework for these new media services, thus, content is exempted. The "FCC has no intent to regulate national content, diversity, etc. on web consistent with its historic approach to traditional broadcasting"[34]. With regard to licensing, the Commission has not yet classified IPTV but is in the process of consultation with relevant stakeholders before the final decision.

To address different challenges faced by the IPTV industry, the Alliance for Telecommunications Industry Solutions (ATIS) through Interoperability Forum (IIF) responds to Internet-based content, Quality of Standards and "developing the industry's end-to-end solution for IPTV – a suite of globally acceptable standards and specifications that drive delivery of IPTV from the core of the network, to the end user device[35]. The forum consists of more than 25 companies in the IPTV industry and other aspects of the sector.

6.5 CANADA

[34] CRTC 2007 Report on 'Research on The New Media Sector: International New media Regulations Environment Scan'

[35] www.atis.com

The Canadian Radio and Television Commission (CRTC) has regulatory mandate over broadcasting sector including Canadian content, diversity and programming genres but does not have jurisdiction to regulate the Internet. However, it is "subject to Competition Act and Telecoms Act provisions requiring equitable users"[36].

Internet penetration is considerably high in Canada, in 2006 81% homes were connected and 19% used dial-up services. Bell Alliant was one of the first service providers to be licensed to provide IPTV services in 2006 and was successful in rolling out HD channels reaching approximately 93% home in Winnipeg area. However, less than 10% of population utilizes the Internet to download movies and television programmes and few watch Internet Videos. The unregulated Internet sector is generating more interest to users than ever before and is well functioning without regulatory intervention. "Most of the content on the websites of Canadian majors is generated internally"[37]. Contrary to that, the Independent production sector is relatively small and mainly dependent on the US content.

In the Canada the Broadcasting Act defines Broadcasting as *"any transmission of programs, whether or not encrypted, by radio waves or other means of telecommunication for reception by the public by means of broadcasting receiving apparatus, but does not include any such programmes that is made solely for performance or display in a public place".*

Program" is also defined as *—sounds or visual images, or a combination of sounds and visual images, that are intended to inform, enlighten or entertain, but does not include visual images, whether or not combined with sounds, that consist predominantly of alphanumeric text."*

Based on this legal definition CRTC concluded that services available on the Internet which consist predominantly of alphanumeric text do not fall within the scope of the Broadcasting Act and are thus outside the CRTC's jurisdiction, and that the services

[36] IBID
[37] IBID

where end-users have an individual, or one-on-one experience and where they create their own uniquely tailored content also do not fall within the scope of the definition of broadcasting[38].

CRTC considers IPTV as one of the broadcast distribution technologies available for television programming, therefore services offered over this platform, including VOD are classified as broadcasting services. Any television service including VOD, provided over a managed IP network requires a "Broadcast Distribution Undertakings" license[39].

6.6 SOUTH KOREA

The introduction of IPTV has been delayed as the ministry and local broadcaster's argued over how to regulate the new service. The ministry wanted IPTV to be regarded as a new medium, while local broadcasters said it should be regulated by existing broadcasting law. However the number of subscribers is growing at a faster pace than its peers in Hong Kong[40].

In Korea the regulatory institution for broadcasting and telecommunication is separated. The Korean Broadcasting Commission administers the regulations related to the broadcasting industry, and the Ministry of Information and Communication is involved in the regulations of telecommunication industry. In order to operate a terrestrial broadcasting business or satellite broadcasting business, one needs to obtain a license from the Ministry of Information and Communication for a broadcasting station, as prescribed by the Radio Waves Act.

[38] Organisation for Economic Co-operation and Development, Working Party on Communication Infrastructure and Service Policy, 19 December 2007

[39] ICT Regulatory Toolkit, www.ictregulationtoolkit.org accessed 07/08/2009

[40] IPTV international, regional round ups www.advanced-television.com accessed 22/08/2009

The Broadcasting Act defines Broadcasting as a "transmission of the broadcast programs which are planned, produced and scheduled to the public by means of telecommunication facilities via cable, satellite as well as terrestrial radio wave".

While the Telecommunications Basic Act defines telecommunications as a "transmission or reception of code, words, sound or image through wired, wireless, optic, and other electro-magnetic devices". It is therefore difficult to categorize the IPTV, convergence service, in the present law because broadcasting means that a specific sender transmits the scheduled information to the public at large, while the telecommunication means that information is transmitted and received in both directions by the electronic method .

There are different views from the Korean Broadcasting Commission and the Minister of Information and Communication as to how IPTV should be regulated. The Korean Broadcasting Commission has contemplated introducing a concept of "special category broadcasting service" into Broadcasting Act and regulating a convergence service provider as a broadcasting company. The Commission insists that the convergence services should become a concept of "broadcasting," based on the "opening telecommunication market" and "competition of the IPTV and cable television." Since Korea allowed the foreigner to investment in the telecommunication service except broadcasting and basic telecommunication service through the WTO, if the IPTV is included in the concept of "value added network service," the Korea government cannot help but accept the demand for the opening markets from foreign countries. The Korean Broadcasting Commission points out that if a telecommunication company enters into the broadcasting market that offers the IPTV services, there will be a possibility of causing collapse of the cable TV industry.

There has also been a strong objection coming from the cable TV broadcasters, this is because they are restricted by the Cable Television Act from various regulations

on channel organization, ownership restriction, and investment. The Korean Cable TV Association is of the view that the Korea Broadcasting Law should be applied to the telecommunication companies that wish to start the IPTV service.

In order to deal with the conflicting ideologies relating to convergence in Korea the Broadcasting and Telecommunication Convergence Promotion Committee was established under the Office for Government Policy Coordination in June 2007, in order to streamline the regulatory framework for converged communications services. The Committee provides opinions on major issues such as IPTV and reorganisation of regulatory institutions including integration of the Ministry of Information and Communication (MIC) and Korea Broadcasting Commission (KBC). An Ad-Hoc Broadcasting and Communication Committee were also formed in the National Assembly in January 2007, and have been discussing how to integrate the two organisations and to draft a law regarding IPTV.

6.7 INDIA

In India the IPTV market is still small; the primary reason for minimal IPTV uptake is the low broadband penetration. In 2006, the size of the consumer broadband market in India stood was at 1.6m lines. The Indian government has set aggressive targets for increasing broadband coverage to 6.4m by 2011, however the analysts are still sceptical and recommend that operators should consider moving into DTH satellite to help secure customers who can later be converted to IPTV or offer interactive services through a hybrid DTH-IP broadband STB. Operators are sceptical about the ability of IPTV to bring in returns. Therefore they have adopted a new model that brings in third-party capital and ideas to run IPTV operations under a franchise style operation. Under this model, operators hold the IPTV licence and the Broadband access infrastructure, while third-party investors buy the equipment, source content, and run operations[41].

[41] IPTV international, regional round ups www.advanced-television.com accessed 22/08/2009

The Ministry of Information and Broadcasting has developed guidelines for the provision of IPTV services. In India an IPTV service is neutral of access network. It can be provided by the telecom operators using telecom network as well as cable operators using cable network. The carriage of IPTV, if it is carried and delivered by a telecom service provider, then it is regulated under the appropriate telecom license and if it is carried by a cable TV operator, it is regulated under cable television network (regulation) Act of 1995. Telecommunications service providers holding a "unified Access Service" or "Cellular Mobile Telephony Service" license are allowed to provide IPTV services under their licenses without any further approval. Internet Service Providers (ISPs) with a net worth of more than a billion Rupees are allowed to offer IPTV services after obtaining permission from the regulator[42].

Telecom Licensees providing TV channels through IPTV are only allowed to transmit broadcast satellite television channels in exactly the same form (unaltered) which are registered or permitted by the Ministry of Information and Broadcasting. The responsibility to ensure that content is in accordance with the extant laws, rules, regulations vests with the broadcaster, and the telecom licensee is not held responsible. The telecom IPTV service provider is also required to comply with the Programme code and Advertising code as provided in the Cable Television Network (regulation) Act of 1995[43].

Both the IPTV telecom service provider and the cable operator are required to provide commercial interoperability, so that if a subscriber decides to switch over to another provider or platform is able to do so with relative ease and at low cost.

The cable operators IPTV service is covered under the ambit of Cable Television Network (regulation) Act of 1995 where a maximum FDI/Equity CAP permitted for cable operators is up to 49%.

7. CONCLUSIONS

[42] ICT Regulatory Toolkit, www.ictregulationtoolkit.org accessed 07/08/2009

[43] Guidelines for provisioning of Internet Protocol Television (IPTV) Services, New Delhi, 08 September 2008

The market for IPTV is still relatively small compared to satellite and terrestrial markets. However there is a growing demand for these new services. IPTV is bringing a new dimension and experience to the viewers. These services have invariably shifted the regulatory approaches due to the convergence of broadcasting, IT and telecommunications infrastructure and services..

IPTV is proving to be a success in those countries with high take up of broadband services. The delay of IPTV services in developing countries is usually due to the minimal uptake of broadband services, limiting the entry into the market by telecoms providers. There are however few regulators who have taken huge strides to ensure that broadband services are offered to consumers at affordable prices to encourage the uptake and growth of new services.

IPTV regulation, especially in regard to the status of VOD or non-linear services, varies from country to country depending on their definition of broadcasting. There are those that have defined IPTV as a broadcasting service, therefore the IPTV providers are subjected to the same regulations and license conditions as subscription broadcasters.

Content regulation has also emerged as one of the key challenges facing the advent of innovations like IPTV. Content plays a role in the social, cultural and economic development of people and nations. The EU has, as a result, recommended a set of minimum standards that the non-linear service providers have to adhere to. The regulations have not been implemented yet, the NRA's are currently in the process of consultation with stakeholders. The implementation of the AVMS Directive has also meant that certain countries such as the UK have to review their current legislation.

IPTV services have not taken off yet in South Africa but there is considerable interest from various stakeholders. The Authority has therefore taken this opportunity to conduct research and get a general overview of how other countries have addressed the various challenges posed by these new services. The regulations main focus will revolve around the issue of content..

8. POLICY AND REGULATORY QUESTIONS

8.1 What parameters should be put in place to create the necessary separation between IPTV and Internet broadcasting which is not susceptible to regulation?

8.2 What licensing framework should be put in place to license IPTV without regulating Internet broadcasting services?

8.3 Is there social and economic value in the current separation of non-linear services as electronic communications and linear services as broadcasting services?

8.4 How does the current separation between linear and non-linear services in terms of the ECA inhibits the growth or the sector?

8.5 Should the ECA be amended to allow a unified licensing regime to allow convergence between broadcasting and electronic communications?

8.6 Should the Authority opt for a separation between linear and non-linear services, will it be necessary or feasible to regulate the content provided by non-linear services?

8.7 In the case of separation between linear and non-linear services; should the regulation of non-linear services be left to the domain of the Film and Publications Act and the Advertising Standard Authority?

8.8 Will it be necessary or possible to impose local content quotas on the providers on non-linear services?

8.9 Which specific sections of the ECA will require amendment or addition to enable the rollout of your proposed approach to IPTV and VOD?

8.10 Should there be a link between the rollout of IPTV and the review of the Digital Dividend to enhance broadband connectivity?

9. REFERENCES

1. CRTC 2007 Report on 'Research on The New Media Sector: International New media Regulations Environment Scan.

2. Dr. Thomas Hart, Policy and Regulatory Challenges of convergence: Mobile, Digital, IP, EU-China Information Society Project.

3. The Development of Video on Demand in Europe, NPA Council, May 2006.

4. Driving the future of IPTV, ITU-T IPTV Global Technical Workshop, Seoul, 12-13 October 2006.

5. Guidelines for submission of qualifications for IPTV Channel Distribution Service License, Parkistan Electronic Media Regulatory Authority.

6. Guidelines for provisioning of Internet Protocol Television (IPTV) Services, New Delhi, 08 September 2008.

7. The IPTV and Video Market in Australia, ACMA, April 2008.

8. Organisation for Economic Co-operation and Development, Working Party on Communication Infrastructure and Service Policy, 19 December 2007.

9. Proposals for the regulation of Video on Demand Services consultation, Ofcom, 14 September 2009.

10. New Zealand on the issues facing content regulations

11. Regulatory trends in service convergence, The World Bank, Washington D.C, 29 June 2007.

12. South Africa Telecommunications Report Q4, 2008, Business Monitor International LTD.

13. Organisation for Economic Co-operation and Development, Working Party on Communication Infrastructure and Service Policy, 19 December 2007.

14. ICT Regulatory Toolkit, www.ictregulationtoolkit.org accessed 07/08/2009.

15. www.itu.org.com accessed 01April 2009.

16. IPTV international, regional round ups www.advanced-television.com accessed 22/08/2009.