Telecom Regulatory Authority of India

Consultation Paper

on

Issues relating to
Convergence and Competition
in
Broadcasting and Telecommunications

New Delhi

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January 2nd 2006

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PREFACE

This Consultation Paper, being issued with a view to making recommendations to the Government under section 11(1)(a)(iv) of the TRAI Act, focuses on the need to bring about convergence in all aspects of regulation of the telecommunications and broadcasting industries. Convergence is a powerful force in bringing about greater competition. A well-designed scheme of regulation that helps convergence can vastly increase the competitiveness and hence the efficiency of the Indian economy. This is all the more important in an era of growing importance of information and communications.

2. The Consultation Paper draws upon the work earlier done by the Authority on various issues. It also includes the suggestions made by a committee that had been set-up by TRAI to examine the issues in helping the cable industry to provide services based on broadband.

3. The Paper begins with an introduction to the issues of convergence and competition.

Section-1 introduces the idea of convergence and alternative definitions of convergence as well as approaches to convergence.

Section-2 looks at the impact that convergence has on markets and regulations as well as the impact on consumers.

Section-3 brings out the developments that are taking place in the rest of the world on bringing about convergence in regulation.

Section-4 deals with the kinds of problems that are being faced in India today as a result of lack of converged regulation. In this Section the gist of the recommendations of the Committee on Cable and Broadband Services are also briefly indicated.

In the end, Section-5 brings out the issues for consultation which essentially are:-

- need for a comprehensive legal framework.
- approach to unified licensing.
- spectrum related issues.
- issues on which suggestions have been made by the Committee on Cable and Broadband Services.

4. Written comments on the issues raised may please be furnished to Secretary, TRAI by 30th January, 2006. For any further clarification on the matter Secretary TRAI may be contacted on rstrai@gmail.com (Telephone No.011-26167448) or Advisor (B&CS) on rkacker@trai.gov.in (Telephone No.011-26713291). The Fax number of TRAI is 011-26713442.

[Pradip Baijal]
Chairman

New Delhi
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INTRODUCTION: CONVERGENCE AND COMPETITION

Convergence has been defined and interpreted in many ways. Primarily it is seen to be a convergence of technologies, which has resulted in a convergence of businesses. From a regulatory standpoint the important issues are the implications of such convergence on competition and the nature of regulation in future. TRAI has in several of its recommendations provided some measures to deal with the rapidly growing convergence. This consultation paper is an exercise aimed at eventually making recommendations which knit together these threads in a complete conceptual framework. Secondly there have been some developments, which have not been specifically addressed – notably the lack of comprehensive legislation to deal with the rapidly converging telecommunication/broadcasting carriage issues - these gaps have been filled in this paper. Finally TRAI had constituted a Committee to look into the issues relating to Broadband and Telephony over Cable TV networks: the suggestions of this committee (report placed at **Annexure I**) have been addressed in this paper. Many of the ideas in this paper have come out of previous consultations and some have come out of prior consultation with the industry. However, the consultation process for making recommendations on all the issues relating to convergence and competition is being taken up for the first time.

Convergence is happening in a big way. Efficient utilization of resources, increased level of competition, more innovative user applications and technological developments are the main drivers of convergence. The growth of convergence at ground level has in turn resulted in convergence of regulation in different parts of the world.

In telecom this happens on account of maintaining one single network for voice and data and leveraging the Internet cloud to handle ever-increasing voice traffic leading to cheaper per-minute charges. Usage of IP technology is increasing day-by-day.

As on 19th December 2005, there have been more than 221.34 Million downloads of Skype VoIP software (which allows free peer to peer VoIP calls as well as calls to and from PSTN at rates significantly less than traditional phone companies). This number is more than the subscriber-base of the world's largest mobile network operator Vodaphone (171 Million subscribers as on September 2005 as per Wikipedia). Yahoo Messenger and Google Talk have also started offering free PC to PC calls. The incumbent UK telecom operator, the BT group has also announced plans to bundle broadband with VoIP.

In cable industry, the offering of additional services of telephony and broadband on the cable network has been primarily responsible for increased ARPU for the operators, cheaper services and single billing for subscribers and increased competition for telecom companies.

Verizon wireless has announced plans to start sending clips of popular CBS shows to mobile phones. Many TV networks are tying up with Apple Computer Inc. to have their shows or clips run on its video iPod device. Thus convergence is happening and giving rise to new services and new platforms and leading to increased competition to existing service providers.

Thus it is seen that large scale changes in the telecom and cable industries are taking place due to convergence and without a converged regulatory framework any attempts to regulate the communications/ broadcasting sectors in coming times may result in the following problems:-

a) Bottlenecks:- A regulatory regime which discriminates between service providers on account of technology used or services offered will result in bottlenecks in growth of industry. For example, the telecom companies in the USA are unable to roll out their IPTV services on account of the fact that provision of cable TV services requires approval/ license/ franchise at municipal level. Thus even though their high speed broadband infrastructure is in place, the telecom companies can not move ahead with their IPTV services.

b) Imperfect Competition:- Different regulation for different sectors of industry leads to imperfect competition and gives rise to level playing field issues. In the absence of any obligations/ regulations which are imposed on the Circuit switched telephone service providers, the per-minute call charges being offered by the VoIP service providers are significantly less than those being charged by the circuit switched telephone networks. Regulatory issues should not be a hurdle in technological developments but at the same time any technology should not take advantages of regulatory loopholes such that if affects the level playing field.

Different FDI limits in different industries also give unfair advantage to certain technologies/ service providers over others even though the end service being provided to the consumer may be same. For example Cable industry and IPTV services have different FDI limits even though the end service is the same.

c) Disputes/ opportunities for arbitrage:- Divergent regulation gives an opportunity to some market players to exploit this divergence and engage in arbitrage by zeroing in on high profit niche market that have been created by regulation. The arbitrage gives rise to various disputes and leads to avoidable litigation.

Convergence is not limited to technological convergence only and market related convergence is also happening around the world. This trend is giving rise to competition between different sectors of telecom and broadcasting industries. This consultation paper gives a roundup of the emerging technological, market and regulatory developments around the world and the possible way forward for India.

Convergence is a very general term and it means different things to different people. Convergence covers provision of different services through same technology as well as provision of same service through different technologies and platforms. There is convergence of technologies in telecom and broadcasting on account of digitalization and increasing use of IP technology. At the same time there is market related convergence in Information, Communication and Entertainment markets. Section – I of the paper gives a brief introduction to convergence.

Convergence is touching everyday lives of people around the world. From downloading of ringtones in mobile phones by individuals to large scale call-centres and BPO services, convergence is present in one form or the other all around us. Convergence has had a profound impact on markets, economy and consumers. Section– II of the paper tries to understand the impact of convergence.

Convergence is a worldwide phenomenon and different countries are trying to deal with convergence in different ways. Each country tries to solve the problems thrown up by convergence in its own unique way. A study of the regulatory approach adopted by different countries gives clues about possible solutions to these problems. Section – III of the paper sketches the evolving regulatory structure in different parts of the world.

The first move to harness the benefits of the converged technologies to meet the growing social and commercial needs in India was made when The Communication Convergence Bill, 2001 was introduced in Lok Sabha on 31st August 2001. The Bill proposed to combine and bring under the purview of the Commission the licensing and registration powers and the regulatory mechanisms for the telecom, information technology and broadcasting sectors.

However, the bill could not get through the Parliament and in the absence of a statutory converged regulatory framework, the TRAI recommended introduction of Unified Licensing Regime in India to keep pace with technological and market developments. Section – IV of this paper concludes with the trends in India and the major challenges that lie ahead. It also briefly lists the suggestions of the Committee on Broadband and Telephony over Cable TV networks (hereinafter referred to as the Committee).

Section – V of the paper outlines the main issues related to convergence and competition for consultation on which response from all stakeholders is invited.

For ease of reference the basic features of the Communications Convergence Bill, 2001 are attached as **Annexure-II** and the salient features of TRAI's Recommendations on Unified Licensing Regime dated 13th January, 2005 are attached as **Annexure-III.**

SECTION I : INTRODUCTION TO CONVERGENCE

1.1 Convergence is defined in different ways by different persons. A comprehensive definition of Convergence has been given in the ITU publication *"Trends in Telecommunications Reform - 2004-05: Ch 5: licensing approaches in an era of convergence" (ITU; 2004).*

1.2 In the above mentioned ITU document, it has been pointed out that convergence can either be:

i) Integration of customer end terminal equipment/access devices such as the telephone, television and personal computer.

ii) Provision of various communication services like text, data, image, multimedia and video over the existing infrastructure or over a single transmission medium.

iii) Capability of the same technology to offer various services.

iv) Different services under converged licensing regime.

v) Fixed – mobile substitution/convergence.

1.3 In Hong Kong and U.S., commercial power-lines including building wiring for power supply have been used to provide telecommunication and internet services. The development work on the use of these power lines is progressing rapidly and it is expected that soon these lines will become an alternate media for providing information services taking convergence to a new direction.

1.4 In common parlance triple play is also used to define the end result of convergence. In telecommunication, a triple play service is the term used for a combination of the three following services: Internet, Television and telephone.

1.5 The major technological changes that have facilitated the convergence processes are digitalisation and computerization. Digitalisation enables new possibilities for development and creation of services within and beyond the framework of traditional communication sectors. The developments in hardware and software have empowered digital signal processing to such an extent that with use of IP technology in information transmission, the networks and customer premises equipment have got empowered to introduce hitherto not known applications and services. Computerization has made available data processing capabilities, which can be applied for storage/ manipulation/ transmission and distribution of Television content/ Voice Communications (Phone calls). This is leading to death of distance and fundamental changes in the business plans of existing telecom and video services providers.

1.6 Further while convergence may have got its initial impetus from technological change, business synergies have also taken over. Thus triple play is now fast giving way to the concept of quadruple play in which voice has been broken up into separate fixed and mobile components. Thus quadruple play involves the provision of both mobile and fixed telephony as well as video and internet. The distinction between fixed and mobile telephone is itself getting rapidly blurred. In India, this along with the possible use of cable TV media for carrying telecom services has already been recognized by introducing convergence in access technologies through Unified Access Service Licensing.

1.7 Further in India, it may be noted that while technological convergence is taking place, business convergence is also growing. Thus provision of internet through a separate ethernet route by cable operators is widespread. Correspondingly one telco is providing video, data and telephone through separate pipes. Some other telecom operators are experimenting by using telephone cables for triple play.

1.8 Irrespective of the definition of Convergence that one adopts, a study of Convergence is essentially the study of challenges and opportunities thrown up by combining either equipment (at home, for transmission and at origination) or businesses to provide multiple telecommunication, broadcasting and internet based services by a single operator. How this trend needs to be tackled from a regulatory stand point in order to enhance competition is the purpose of this consultation process. Meeting the regulatory challenges of new issues arising out of technological and business convergence is very important. This is so because a regulatory framework that is out of sync with the convergent technologies/ marketplace will throttle the opportunities of making available new/ cheaper products and services offered by new and alternative technologies.

SECTION II : IMPACT OF CONVERGENCE

2.1 Impact on Markets & Regulation

2.1.1 Historically, telecommunications, information technology (IT) and broadcasting operated independently. The technologies, content/ information transmitted and networks employed by them were distinct and separate. Television, radio, telephones and computers were used for specific different purposes. Even these sectors were further divided in terms of services provided/ technology used and there were differences in licensing procedures and interconnection rules for fixed telecom networks, mobile networks and ISPs and also between satellite, cable and terrestrial broadcast networks. These services were regulated by different regulators under separate laws. There was little coherence between these separate laws and regulators.

2.1.2 However, technological developments particularly related to IP technology and increasing use of packet switched digital communications have made cross-license services possible. The telecom networks can provide access to internet and broadcast content in addition to telecommunication services and similarly cable TV networks can also provide internet access as well as telephone services. This has rendered the traditional approach of licensing the telecom industry by partitioning it and regulating individual segments redundant.

2.1.3 Accordingly, there is a general shift in the rules and procedures in many countries towards an equal treatment (convergence) of different information and communication infrastructures. The issues in regulation of carriage of information as voice, video and data by telecom companies and cable TV companies which are able to provide services previously provided only by the other, are increasingly becoming common.

2.1.4 Convergence is occurring not only between telecommunications, broadcasting, cable television, and the Internet, but also within segments of the telecommunications market. For example, cellular mobile telephony

is now a substitute for conventional local telephone service for many customers (the total number of Mobile Subscribers in India as on 31st October 2005 was 67.95 million as against 48.17 million fixed line subscribers : source TRAI); the distinction between local and long-distance calling (more and more tariff plans for calls within the network of same operator are distance neutral) or, with the global mobile satellite phone service, where there is no distinction between domestic and international service as the tariff for Iridium satellite phone service is same for the entire PSTN (although the commercial impact of this is not yet very significant).

2.1.5 Market related convergence also occurs due to consumer expectation of one-stop service availability, bundling of services and right price packages. Today most of the telecom companies are providing internet services (broadband as well as dial up connections) in addition to voice communication services already being offered by them. With convergence of voice and data through VoIP, there is an emerging trend for tariff plans to be based on the volume of data transferred and thus to have common billing for interchangeable use of voice calls and/or data services. In other words for a fixed amount a consumer can have the choice of using the entire amount for voice or for data or for a combination of the two that equals this financial limit. Similarly many cable TV operators are also providing internet services. Internet, News and entertainment videos are being made available by many mobile operators on mobile phones. Many telecom companies in India are also offering interactive broadcast content services such as news, cricket information, astrology, contests, film star interviews etc. through voice portals. IPTV is being eyed by many telecom operators as a way to boost the take-up of broadband. MTNL has already announced the launch of a 3-in-1 service offering voice, broadband data services and IPTV on a single telephone line in near future.

2.1.6 Technological developments have led to Market related convergence and this is evident in several countries. Typical examples of such convergence are the business tie-up between the Telecom Operators and

DTH operators in the USA. Verizon and BellSouth have a tie-up with DirecTV and SBC has a tie-up with the EchoStar Satellite L.L.C. (Dish Network) to offer digital satellite television service for their customers. The alliances illustrate a defensive move by the regional phone giants to combat the cable industry's success in selling packages of video, voice and broadband Internet service.

A group of cable TV operators in the USA namely Comcast, Time Warner, Cox Communications and Advance/Newhouse Communications have recently announced that they are forming a joint venture with Sprint Nextel to offer customers wireless telephone service. It is the technological convergence in the coming time, which by analyzing the convergence of such companies which would help in development of new products and services.

Thus the fixed and mobile services could be integrated in such a way that a subscriber would have a single phone number. Whenever the subscriber is at home the calls would be routed to the fixed line and whenever the subscriber is outdoors the calls will be available on his mobile. Efficient utilization of scarce resources shall lead to further tariff reductions which in turn would promote growth in the sector. Overall this would mean a more efficient economy.

2.1.7 Convergence has resulted in increased competition in the markets. Telecom Companies face more competition on account of telephone services being offered by Cable Companies as the figures show (in the table on the next page): -

Q2 2005 Telephone Subscribers by MSO

(Source: MPA, Hong Kong)

MSO	Country	Subscribers (in Millions)
Cox	USA	1.5
Comcast	USA	1.2
Time Warner	USA	0.6
Charter	USA	0.07
J:Com	Japan	0.9
i-Cable	Hong Kong	0.07
Star Hub	Singapore	0.02

On the other hand in Hong Kong, broadband IPTV pioneers PCCW and City Telecom have acquired 34% share of the video market. PCCW's NOW broadband TV service had signed up approximately 4,20,000 subscribers at the end of 2004 as against 700,000 subscribers of Broadband Cable TV incumbent i-Cable at the end of 2004. In Taiwan the broadband giant Chunghwa Telecom (CHT) had acquired about 26,000 IPTV subscribers by end of 2004.

2.1.8 Convergence is happening across Information, Communication and Entertainment markets and their segments is amply evident from the facts and figures given in para 2.1.4, 2.1.6 & 2.1.7. But the more important point is that Convergence is leading to increased competition in the telecommunications and broadcasting sectors taken as a whole.

2.2 Impact on Consumers

2.2.1 Convergence leads to increased competition in markets where the same service is delivered through different infrastructure. For example, in the USA the telecom companies are seeing cable companies take away some of their subscribers/ revenues with their VoIP services. In India the telecom operators are planning to offer video services in order to increase uptake of their broadband services as well as to improve ARPUs. This in turn would lead to enhanced competition in the video market.

2.2.2 India still has a very low tele-density. Convergence of customers premise equipment, convergence of transmission and Access media and the convergence of service providers reduces the cost of delivery of service and it also increases the level of competition. Taking the right decisions on various policy and regulatory issues related to convergence at this time would help us in achieving the growth of telecom services in the country.

2.2.3 The number of Broadband subscribers, as reported by ISPs, was 7.50 Lakhs at the end of 30th November, 2005 as compared to 0.49 Lakhs of 31st December, 2004, thus registering a growth of more than 14 times in less than a year. This has been possible because the broadband services are being made available along with Cable TV services or Fixed line telephones. The growth also appears large because of a very small initial subscriber base. However, the numbers are far short of the targets set by the Government and in absolute terms the numbers compare quite unfavorably in comparison to countries with similar purchasing power.

2.2.4 DTH Services in the country have a reported subscriber base of more than 3 million. The DTH service has been predominantly popular in non-urban and remote areas. Thus, the alternative platform has increased the penetration of TV services in remote areas and the increase in competition to cable TV is yet to come. As of now, it is DTH which offers the most potent threat of competition to cable in the video market.

SECTION – III : INTERNATIONAL REGULATORY DEVELOPMENTS

3.1 Different nations and institutions are adapting their policies, regulations, and institutional frameworks to address issues in an increasingly converging communications sector, both within and between countries. One clear trend is to merge the responsibilities for regulation of carriage of telecommunications and broadcasting in a single regulatory body. Some authors have confused this trend with the concept of Multi sector regulators. (*Telecommunications Regulation Handbook, Module1, section 1.2.2.4 : infoDev : www.infodev.org/content/library/detail/842 and Designing Next Generation Telecom Regulation : A Henten, R Samarjiva, W.H.Melody : pgs vi and viii :regulateonline.org*). The case for a multi sector regulator rests on the premise that all regulatory problems are similar and can be equally well addressed by a common pool of resources: economic, legal etc. The correctness or otherwise of this approach is not the issue here. What is clear is that convergence in telecommunication and broadcasting regulation is being driven by technological convergence. That is why this convergence has stopped short of spreading to other sectors and markets like energy and finance. The markets and service providers of telecommunication and broadcasting services are converging and will in all likelihood merge at an even faster pace as triple and quad play becomes the order of the day. Separate regulators for the carriage of telecommunications and broadcasting can only make regulation more difficult and impede the natural growth of these merging markets. The status of convergence in regulation in different countries is briefly given below.

USA: The Federal Communications Commission (FCC) is an independent United States government agency, directly responsible to Congress. The FCC was established by the Communications Act of 1934 and is charged with regulating interstate and international communications by radio, television, wire, satellite and cable. Content Regulation is also done by the FCC.

However, provision of cable TV services requires approval/ license/ franchise at municipal level. The Telecom Companies wishing to provide IPTV services on their broadband networks have been demanding that the laws must be amended to provide for national level franchise to enable them to roll out their services. The cable industry has been opposing this demand in view of the fact that the cable industry had to undergo the time consuming and expensive process to secure city-by-city franchise over the last three decades.

Recently, the Texas state legislature has passed a bill on deregulation of telecom markets making it the first state allowing telephone companies to receive a statewide franchise in order to provide new video services that compete with cable.

European Union: Directive 2002/21/EC of 7 March 2002 of The European Parliament and of The Council lays down a common regulatory framework for electronic communications networks and services. The regulatory framework consists of this Directive and four specific Directives on related matters. The Directive, inter alia , recognizes the following:

(a) The convergence of the telecommunication media and the information technology sectors means all transmission networks and services should be covered by a single regulatory framework.

(b) It is necessary to separate the regulation of transmission from the regulation of content.

Accordingly the scope and aim of the directive is stated to be the establishment of a harmonized framework for the regulation of electronic communications services, electronic communications networks, associated facilities and associated services.

In pursuance of this directive Twenty Member States out of a total of Twenty Five Member States had completed the adoption of primary legislation and notified the Commission thereof by December 2004.

UK: Ofcom is the regulator for the UK communications industries, with responsibilities across television, radio, telecommunications and wireless communications services. OFCOM was created in 2002 combining the

regulatory functions of the Broadcasting Standards Commission, Independent Television Commission, Office of Telecommunications, Radio Authority and the Radiocommunications Authority. Content regulation is also assigned to OFCOM

Australia: On 1 July 2005, the Australian Broadcasting Authority and the Australian Communications Authority merged to become the Australian Communications and Media Authority (ACMA).

Canada: The Canadian Radio-television and Telecommunications Commission (CRTC) was established by Parliament in 1968. It is an independent public authority and reports to Parliament through the Minister of Canadian Heritage. The CRTC is vested with the authority to regulate and supervise all aspects of the Canadian broadcasting system, as well as to regulate telecommunications common carriers and service providers that fall under federal jurisdiction.

South Africa: The Independent Communications Authority of South Africa (ICASA) is the regulator of telecommunications and the broadcasting sectors. It was established in July 2000. It took over the functions of two previous regulators, the South African Telecommunications Regulatory Authority (SATRA) and the Independent Broadcasting Authority (IBA). The two bodies were merged into ICASA to facilitate effective and seamless regulation of telecommunications and broadcasting and to accommodate the convergence of technologies.

A number of other countries also like Malaysia, Tanzania, Botswana, Papua New Guinea, Hong Kong, Bhutan and Brazil have converged regulators – i.e. a regulator whose responsibilities cover both – telecommunications and broadcasting. However as in the case of some of the examples listed above content regulation is not always with the same regulator. The Royal Government of Bhutan has also recently introduced a Convergence Bill, viz. Bhutan Information, Communications and Media Act 2005 (A Bill) in their Parliament which is likely to be approved in the 1st quarter of 2006.

SECTION- IV : THE WAY FORWARD: REGULATORY CHALLENGES FOR INDIA

4.1.1 The New Telecom Policy 1999 (NTP'99) recognized that convergence of markets and technologies is a reality that is forcing realignment of the industry.

4.1.2 The Communication Convergence Bill, 2001 was introduced in Lok Sabha on 31st August 2001. The Bill was stated to be an enabling legislation, designed to fully harness the benefits of the converged technologies and the emerging converging technologies of the future to meet the growing social and commercial needs. It intended to set up a single Regulator - Communications Commission of India with powers to deal with the carriage & content. The Bill proposed to combine and bring under the purview of the Commission the licensing / registration powers and the regulatory mechanisms for the telecom, information technology and broadcasting sectors.

4.1.3 In line with NTP'99 and to keep pace with technological and market developments, TRAI recommended that Unified Licensing Regime should be introduced in India. TRAI in its Unified Licensing recommendations dated 27th October 2003 had envisaged a two-stage process to introduce a Unified Licensing Regime in the country. The first phase that entails a Unified Access Service License (UASL) at circle level has already been implemented. TRAI gave its recommendations for implementation of second phase of Unified Licensing Regime on 13th January 2005.

Four categories of licenses, namely Unified License, Class License, Licensing through Authorization and Standalone Broadcasting & Cable TV Licenses were recommended (with Unified License at the highest hierarchical level). Such a licensing regime would have enabled a licensee to provide any or all telecom services by acquiring a single license.

4.1.4 The prevalent international practices (as outlined in the previous section) indicate a move towards simplified Authorization/Converged licenses. Such licensing regimes enable provision of various services, both existing and new, by the service providers without the need for separate additional licenses, with the same media being used for different services which build economies of scale and scope. As a result, better services are made available to the consumers at cheaper price. . In fact a country like Afghanistan which is in the process of developing its telecom infrastructure has already established Unified Licensing Regime which covers all types of Telecom services.

4.1.5 After issue of Unified Licensing Recommendations on 13th January, 2005, Government has already taken steps to lower entry fee and annual license for NLD and ILD services. This will enable easier implementation of Unified Licensing Regime. The development in international telecom and broadcasting markets and technological developments are indicators that a country like India with a huge market for telecom services should introduce a converged regulatory regime. This will eliminate the possibility of litigation on the account that service providers are offering services which are not covered in their licensing regime. Any regulatory hindrance in deployment of such technologies would result in not taking full advantage of technological developments which is not desirable. This is specially so for a fast growing economy like India which presently has low levels of subscriber base for all services and therefore a huge potential of growth for triple play (and more) services.

4.1.6 There is a broad convergence of opinion that the best way to ensure that regulation does not become a hindrance is to make regulation technology neutral. The other theme is for regulation to converge across applications, services, technologies, transmission media, and alternative consumer appliances i.e. make licensing service neutral. With technology converging there is in fact no option but for regulation to converge. This is discussed in the following paragraphs specifically with respect to three areas:

A. Spectrum Allocation

B. Interconnection Regulations

C. Foreign Direct Investment.

A. *Spectrum Allocation*

i) At present spectrum is being allocated in a well defined specific manner by which the spectrum is allocated for a very specific use or application. Thus spectrum is separately allocated for fixed and mobile telephony. It is also separately allocated for each of the broadcasting application. In case the same spectrum is to be used with a new technology for the same service or a different service, the operator would have to go back to the Government and take specific approvals. The Unified Licensing System that has been proposed by TRAI does get over some of these problems by ensuring that for purely licensing purposes only a single approval is required. However, if spectrum is still allocated for specific purposes, then the full strength of a Unified License cannot be utilized. Moreover, even within the unified licensing system there is space for stand alone broadcasting licenses.

ii) Theoretically if an operator finds a telecom service to be not profitable and wishes to provide broadcasting services which he finds more profitable, the existing Spectrum allocation rules will stand in his/her way. The way out is to either club potential services at the time of bidding or to generally permit change of use of spectrum. This would mean that there has to be convergence on spectrum use charges for different applications as well as a system for generalized or more flexible use of spectrum. Another approach could be to permit a new entrant to use the spectrum of an existing operator, provided he is able to compensate the operator. This would be the starting point of a market for spectrum i.e. spectrum trading. The Spectrum Policy Task force of the Federal Communications Commission of the USA had in its Report of November, 2002 recommended the permission of broad highly flexible use within the technical parameters of the allocation and to permit traditionally narrow services to lease excess capacity to

other services *(FCC:2002: Report of the Spectrum Policy Task Force).* Spectrum trading is already permitted in several countries such as Australia, US, UK, etc.

iii) Such flexibility in the use of spectrum is necessary to ensure that this scarce resource is always put to the best use. With the possibilities of convergence, the same spectrum could be used for alternative applications depending on developments in technology and in the market. This calls for a complete shift in the manner of allocating spectrum and its planning. International efforts are already on to make modifications in the Radio Regulations to enable more flexible use of spectrum.

iv) TRAI in its recommendations on spectrum related issues dated May 13, 2005 has recognised that already the concept of service specific allocation of spectrum is not an accurate reflector of usage. The same equipment using the same spectrum can offer different types of services. This is already happening in the market. Mobile operators using the spectrum which were meant for offering telecom services, are offering broadcasting services. Similarly, broadcasters using same spectrum could offer broadband Internet and telephony services.

Authority is aware of the fact that Government is in the process of formulation of new spectrum policy. Authority considers that stakeholders should deliberate on the issue of flexibility of spectrum management specially in a convergence driven market

B. *Interconnection Regulations*

At present there are a number of regulations on interconnections both for Telecommunications and Broadcasting. Over time as services and technology merge the existence of divergent regulations will only mean confusion as well as opportunities for arbitrage. Operators will try and see which set of regulations are more favourable and try and categorise their service/technology as one which gives them the most benefit. There is therefore a clear need for merging regulations over a period of time –

whether these regulations cover simple access to networks or cover the commercial aspects like interconnection usage charge etc.

C. *Foreign Direct Investment.*

The rules regarding Foreign Direct Investment are today highly divergent across sectors, applications and technologies. Thus delivery of television signals through satellite based technology (DTH) has a FDI cap of 20%. The same product when delivered through cables attracts a FDI cap of 49%. No cap has been specified for IPTV which can be delivered on telecom infrastructure. However, the FDI cap for telecom companies who will offer IPTV is 74% . While there could be a case for restricting FDI on certain technologies, it is not clear if the full implications of these variations have been understood and acknowledged. Here again unintended distortions could take place in the market unless there is a well thought out scheme which requires such divergences on account of other factors. In this context it must be noted that broadcasting is a highly regulated sector all over the world and even today in most countries the restrictions on broadcasting and media are more severe than on telecommunications.

4.1.7 From the above it may be seen that when the same enterprise can offer different services with different technologies either through the use of the same infrastructure or through a combination of business models, a divergent regulatory framework will throw up opportunities for exploiting these divergences or can thwart the introduction of new and better technologies/services. It is difficult to define the ideal regulatory model. The broad direction is however clear. Wherever possible regulation must converge to allow the new convergent technologies the full freedom to exploit market opportunities. This is not only fair but would also help in improving overall efficiency and the competitiveness of the economy.

4.2 The need for a convergent regulatory framework has been brought out in the foregoing discussion. The objective of this consultation paper is to get inputs on various issues related with such a convergent regulatory

framework. The Authority has so far tried to meet the challenges of convergence by making recommendations on a unified licensing regime, spectrum related issues and interconnection regulations. The Authority has been making efforts to deal with new issues arising out of convergence. World wide cable TV companies are offering broadband Internet and telephony services using IP technology. Towards this end a committee was also constituted by TRAI to look into the issues relating to Broadband and Telephony over Cable TV networks. The committee had representatives from the cable TV industry. The committee mainly deliberated on various issues which if addressed could stimulate the growth of broadband Internet services and telephony services on cable TV network. The report of the committee has also been examined and the major suggestions of the committee are set out below.

i) **Rationalisation of Differential Custom Duty Regime**

A number of items pertaining to the cable TV Industry, which have the same functional use as that of similar items on the telecom side are not coming under the same classification leading to differential rates of custom duty. Thus there is a need to ensure a level playing field. A list of items required for delivering broadband over Cable TV network along with present duty structure is given at Annexure 3. The items included in Annexure 3 are those, which have a similar functional purpose as those of used by Telcos for providing similar services. Accordingly classification should be changed and the duty structures be made identical. One way of doing this is to reclassify them under 8517 definition and list all the items under the same with nil basic duty.

ii) **Restriction on use of Protocols**

Currently there is a restriction in usage of protocols and only SIP/H.323 protocols are permitted. For cable TV another protocol like MGCP could be more useful. Keeping this in view, committee considers that call termination should be permitted

on Customer Premise Equipments (CPEs) using any protocol recommended by ITU/IETF.

iii) **License fee**

It is suggested that a separate class be created in the unified licensing regime to cover small operators wanting to provide basic fixed telephony over a small area such as LDCA at a reasonable level of entry fee, similar to the niche operator concept of Rural Service Provider (RSP)

iv) **Institutional funding**

With the advent of new technologies and competition from alternative platforms the cable TV industry would require large amounts of finance for upgrading the network and installation of new equipment. TRAI should therefore take up the matter with the Government who in turn may suitably inform the banks and financial institutions to provide funds to this industry wherever this found commercially feasible.

v) **FDI Limits**

The FDI limit for ISPs is already at 100% and for telcos it has been hiked to 74%. In view of convergence and future broadband and telephony business it is suggested that the cable industry should also be allowed parity with telecom. It may be noted that Cable TV network is only a carriage for delivering voice, data and TV just like copper or fibre being used by Telcos for providing these services.

vi) **Right of Way**

It is suggested that TRAI may request Ministry of I &B to write letters to State Govts and Ministry of Surface Transport for providing Right of Way to Cable operators providing digital services pending such amendment in the Cable Act.

vii) **Other issues**

On issues such as High Price of Bandwith, problems of interconnection as all ISPs must connect (peer) with NIXI and operate as per NIXI policy announcing all local routes to NIXI, issues relating to VPN, Set offs for payment of service tax, TRAI should separately examine these and take further action wherever necessary.

SECTION V : ISSUES FOR CONSULTATION

As international experience shows, regulation in the fields of telecom and broadcasting is evolving towards convergence. The issues, which need consideration in the light of increasingly converged technologies, services and markets as well as international experience are given below in this section.

5.1 Comprehensive Legal Framework

Keeping in view the various convergence related issues discussed in the Consultation paper and as a measure to facilitate competition and promote efficiency in operation of telecom services so as to facilitate growth in such services.

a) Whether there is a need for having a comprehensive legal framework to deal with various issues arising out of convergence of technologies and services? If so
b) Whether, the legal framework must be developed around the Communication Convergence Bill, 2001? If so.
c) Whether changes may be required in the Bill especially taking into account TRAI's unified licensing recommendations dated 13th January, 2005.
d) Whether regulation of carriage and content should be separated, as the skill sets required for the two are grossly different?

5.2 Unified Licensing

To ensure the compatibility of comprehensive legal frame work and the Unified Licensing Regime as recommended by the TRAI vide its recommendations dated 13th January 2005 and also after taking into account the subsequent developments should there be changes required in Unified Licensing ?

5.3 Spectrum related issues

Whether there should be flexibility in spectrum allocation to take full advantage of new services and new technologies for existing services that may evolve with time?

Issues on which suggestions have been made by the Committee

5.4 Rationalisation of Differential Custom Duty Regime

Whether changes should be made in customs duties as proposed by the Committee to promote effective competition amongst telecom and cable operators?

5.5 Restriction on use of Protocols

Whether call termination should be permitted on Customer Premise Equipments (CPEs) using any protocol recommended by ITU/IETF?

5.6 Institutional funding

Whether the Government should intercede with the banks and financial institutions to emphasize the importance of these projects in building up the country's communication infrastructure and to provide funds to the cable industry wherever found commercially feasible?

5.7 FDI Limits

Whether there is a need to undertake a complete review of the FDI policy for the various sub sectors in telecommunications and broadcasting so that there is consistency in policy and a level playing field between competing technologies?

5.8 Right of Way

Right of Way to Cable operators providing digital services has already been recommended in TRAI recommendations dated 14th September 2005 on Digitalisation of Cable Television. Pending these amendments whether further action should be taken as proposed by the Committee?

Annexure-I

Report of the TRAI's Committee on Broadband and Telephony over Cable TV Network

Background

1.1 Government has targeted a penetration of 9 million Broadband subscribers by the end of 2007 through the use of various technologies. By the end of October 2005, there were only 6.9 lakhs Broadband subscribers in the country against the target of 3 million for the end of 2005. Thus it is clear that all out efforts are necessary to promote broadband through every platform and technology.

1.2 The Broadband Policy of the Government of India dated October, 2004 also identified Cable TV Networks as one of the mediums for providing Broadband access. TRAI had jointly with CII organized a one-day National Seminar on Broadband over Cable TV Networks in Mumbai on 12th September' 2005. During the Mumbai Seminar a number of issues were raised concerning the use of Cable TV Networks to provide additional services like voice and Data.

1.3 TRAI therefore constituted a Committee including experts from the Industry to identify the problems faced by the Cable TV Industry in the fast penetration of broadband and telephony over Cable TV networks and to make recommendations to the Authority. The terms of reference of the committee are available as **Annexure – 1**. The Committee carried out its deliberations through meetings. The 1st meeting was held in Delhi on 7th October' 2005 and the 2nd and final meeting was held in Mumbai on 21st October' 2005.

2. Introduction

2.1 For the last few years, in some of the developed economies, Telcos and Cable operators are competing in the field of Triple Play (Voice, data and Video). Telcos who have already laid Copper infrastructure are attempting to woo the Cable TV customers by providing all the three services from a single pipe using DSL and IPTV technologies. Similarly, Cable operators with the use of already laid Hybrid Fiber Coaxial (HFC) cable network are ready to deliver Voice, Broadband and TV from the single Cable entering into the subscriber's home.

2.2 International status of Triple Play service as provided by Cable Operators is summarized in the following Table:

Table 1

Penetration of Cable Operators in Broadband and Telephony		
Cable Operator /country	No. of Broadband Subscribers	No. of Telephone subscribers on Cable
Comcast, USA	7,410,000	1,230,000
Time Warner, USA	3,913,000	220,000
Cablevision, USA	1,316,403	272,688
Charter, USA	1,884,000	45,400
Cox, USA	2,571,246	1,305,365
NTL, UK	1,245,300	2,559,300
Telewest, UK	696,236	1,660,341
J-Com, Japan	777,200	811,900
ITSCOM, Japan	90,000	1337
Singtel Optus, Australia	204,000	497,000
icable, Hongkong	291,000	29,000
EMC, Taiwan	80,000	3,500
Star Hub Cable Vision, Singapore	215,000	10,000

Source: MPA, Hong Kong

2.3 In India, the successful penetration of Cable TV services with more than 61 million cable homes (as per 2005 NRS survey), offers a good opportunity for spread of broadband and telephony. Major MSOs cum ISPs like Hathway, In2Cable, Ortel, Siti Cable etc have already started providing Broadband through CMTS (Cable Modem Termination System) based Cable TV infrastructure in some large cities as per following details:

Table 2

MSO	**Cities**
Hathway	Delhi, Mumbai, Chennai, Pune, Bangalore, Hyderabad, Noida
In2Cable	Delhi, Mumbai, Bangalore, Hyderabad, Vadodara, Belgaun, Indore, Ahmedabad.
Ortel Communication Limited	Bhubhaneshwar, Cuttack, Rourkela
Siti Cable	Bangalore

Apart from this many operators are also providing internet services by laying a separate ethernet plant as indicated in para 3.3 below. Although this number is very large there are no authentic figures available on the number of service providers/number of consumers using this alternative.

3. Cable Modem Technology

3.1 A simplistic block diagram of the Cable TV Network capable of delivering triple Play is given at **Annexure-2.** At the MSOs Network Operation Centre (NOC), Cable Modem Termination System (CMTS) is deployed. At the subscriber end, a Cable Modem (CM) /Embedded Multi Terminal Adapter (EMTA) is used. All the three services are delivered through a single HFC Cable to the subscriber. The distribution network has to be essentially bidirectional

3.2 In India MSOs are providing Broadband over their HFC Networks using Data Over Cable Service Interface Specification {DOCSIS} protocol which is the de-facto international standard developed by the Cable Lab, USA. ITU has also accepted DOCSIS as the ITU J-112 standard. Using DOCSIS and QAM modulation in the forward path (downstream), one carrier of 6 MHZ can carry more than 30 Mbps data. Forward path can be through any of the carrier lying roughly between 54 MHz and 860 MHz spectrum. The return path (up stream) which normally uses QPSK/QAM modulation uses bandwidth such as .8 MHz, 1.6 MHz or 3.2 MHz

roughly between 5 and 47 MHz spectrum delivering more than 10mbps data.

3.3 In India many MSOs and Cable Operators are using WAN/Ethernet technology to deliver broadband to subscriber over CAT-5 twisted pair cable. In this method a separate Ethernet plant is laid in addition to the existing Co-axial /cable TV RF plant.

(4) Impediments in Penetration of Triple Play over cable TV Network

The Committee discussed, identified and deliberated upon the bottlenecks faced by the Cable TV industry in the fast roll out of broadband and telephony our Cable TV Network. These are discussed below:

4.1 Differential Customs Duty Regimes in Telecom and Cable TV Network

It was noted by the Committee that there are different Custom Duty Regimes in Telecom and Cable TV network providing broadband services. The equipment used for providing broadband over cable TV Network attract much higher custom duties as compared to the equipment used in Telecom network such as DSL/Fibre/Ethernet/WAN etc though performing similar functions. Consequently ISPs providing broadband over cable TV network are at a disadvantage in comparison to their counterparts who are using other than Cable TV infrastructure. A number of items pertaining to the cable TV Industry which have the same functional use as that of similar items on the telecom side are not coming under the same classification leading to differential rates of duty. Thus there is a need to ensure a level playing field. A list of items required for delivering broadband over Cable TV network along with present duty structure is given at Annexure 3. The items included in Annexure 3 are those which have a similar functional purpose as those of used by Telcos for providing similar services. Accordingly classification should be changed and the duty structures be made identical. One way of doing

this is to reclassify them under HS No. 8517 definition and list all the items under the same with “nil” basic duty.

4.2 Restriction on the use of protocols other than SIP/H323

Another bottleneck identified is the restriction on the use of some Internet Telephony Access Devices Protocols like MGCP, which are understood to be more suitable in Cable TV network environment. Presently only SIP and H.323 access protocols for restricted Internet Telephony have been permitted as per license. The question of using other access devices had been examined by TRAI earlier and it had been suggested to DOT that action should be taken to enable the adoption of these devices.. Accordingly, it is recommended that all efforts should be made so that call termination in VOIP could be permitted on Customer Premise Equipments (CPEs) using any protocol recommended by ITU/IETF.

4.3 High License fee

The third bottleneck discussed was high entry and annual licensee fee for telephony. It was pointed out that a reduction of the same is linked to the issue of level playing field as the TELCOs have paid higher entry fee and annual license fee in the past. Taking a holistic view, TRAI has already recommended gradual reduction of License Fee from Rs.107 crore to Rs. 30 lakhs over a period of five years in its Recommendations on Unified Licensing of January 2005. Moreover there is a provision that existing provisions of issuance of Basic Service Licenses would continue for two years even after the unified licensing regime comes into being. It is recommended that a separate class be created in the unified licensing regime to cover small operators wanting to provide basic fixed telephony over a small area such as LDCA at a reasonable level of entry fee, similar to the niche operator concept of Rural Service Provider (RSP)

4.4 Lack of institutional funding

It has been noted that the Cable TV industry has found it difficult to get finance from banks and financial institutions. With the advent of new technologies and competition from alternative platforms the industry would require large amounts of finance for upgrading the network and installation of new equipment. TRAI should therefore take up the matter with the Government who in turn may suitably inform the banks and financial institutions to provide funds to this industry wherever this found commercially feasible.

4.5 Differential FDI limits in Telecom and Cable TV Network

The telecom sector has been one of the fastest growing sectors in the Indian economy in the last 2 years. It has witnessed strong and healthy competition that has brought down tariffs. Further participation of various private telecom players have added growth drastically.

In the past when FDI limit was raised to 49%, it increased the attractiveness of the sector for foreign telecom majors and consequently, there were large flow of capital into the sector. This went a long way in improving the growth prospects of this sector particularly mobile services. However, the land line business has not grown as much larger investments are required for laying of cables etc.

To augment growth in telecom sector as a whole, cable TV networks will definitely play a pivotal role. Presently, over 61 million homes are connected to cable TV. In addition to Cable TV, broadband and telephony services can be provided by suitable augmentation to the Cable TV network which will go a long way in improving landline teledensity and shall provide enhanced competitive choices to the consumers. Similarly the telephone companies will also have the opportunity to offer video services. This will also turn out to be the next big opportunity for telecom companies. Hence for this sector's growth huge investments are required. In India the banks and financial institutions are skeptical in funding the

cable industry particularly because the broadband and telephony over cable TV networks is not widely deployed in India. This also reduces the scope of domestic funding.

In USA, Canada and many other developed markets, Broadband services are dominated by Cable Industry. More than 60% of the Broadband market in the US is with Cable TV operators and this has been taken to be a viable option there. The US Cable industry has billions of dollar investment including investments from Banks and FIs. Hence, the foreign Investors particularly from USA will appreciate the merit in investing in Cable Industry. This is true for both existing as well as green field projects. In view of this, it is important that the FDI limit for cable industry is enhanced so that the industry can take advantage of the buoyant mood of the foreign investors towards Cable business.

The FDI limit for ISPs is already at 100% and for telcos it has been hiked to 74%. In view of convergence and future broadband and telephony business it is suggested that the cable industry should also be allowed parity with telecom. It may be noted that Cable TV network is only a carriage for delivering voice, data and TV just like copper or fibre being used by Telcos for providing these services.

4.6 **No Right of way for Cable TV operators**

Another bottleneck identified relates to no Right of Way for cable TV. TRAI has already on the suggestions of stakeholders recommended to the Government in the recommendation on Digitalisation of Cable TV that the Cable Act be amended to incorporate provisions for Right of Way on the lines of provisions contained in the Convergence Bill. The Recommendations are available in TRAI's website www.trai.gov.in. It is recommended that TRAI may request Ministry of I &B to write letters to State Govts and Ministry of Surface Transport for providing Right of Way to Cable operators providing digital services pending such amendment in the Cable Act.

4.7 Apart from these issues the Committee also identified the following obstacles:

(i) High Price of Bandwith

(ii) Problems of interconnection as all ISPs must connect (peer) with NIXI and operate as per NIXI policy announcing all local routes to NIXI..

(iii) Issues relating to VPN

(iv) Set offs for payment of service tax

TRAI should separately examine these issues and take further action wherever necessary.

(5) **Summary of Recommendations of the Committee**

5.1 **Rationalisation of Differential Custom Duty Regime**

A number of items pertaining to the cable TV Industry which have the same functional use as that of similar items on the telecom side are not coming under the same classification leading to differential rates of custom duty. Thus there is a need to ensure a level playing field. A list of items required for delivering broadband over Cable TV network along with present duty structure is given at Annexure 3. The items included in Annexure 3 are those which have a similar functional purpose as those of used by Telcos for providing similar services. Accordingly classification should be changed and the duty structures be made identical. One way of doing this is to reclassify them under 8517 definition and list all the items under the same with nil basic duty.

5.2 **Restriction on use of Protocols**

It is recommended that call termination should be permitted on Customer Premise Equipments (CPEs) using any protocol recommended by ITU/IETF.

5.3 **License fee**

It is recommended that a separate class be created in the unified licensing regime to cover small operators wanting to provide basic fixed telephony over a small area such as LDCA at a reasonable level of entry fee, similar to the niche operator concept of Rural Service Provider (RSP)

5.4 **Institutional funding**

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5.7 **Other issues**

On issues such as High Price of Bandwith, problems of interconnection as all ISPs must connect (peer) with NIXI and operate as per NIXI policy announcing all local routes to NIXI. Issues relating to VPN, Set offs for payment of service tax, TRAI should separately examine these and take further action wherever necessary.

Annexure-1

F.No 3-2/2004 B&CS
Telecom Regulatory Authority of India
[B&CS Section]

September 27, 2005

ORDER

Subject: Broadband and Telephony over Cable TV Network – Constitution of Committee for

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Telecom Regulatory Authority of India (TRAI), New Delhi, has decided to constitute a Committee to make recommendations on Broadband and Telephony through Cable TV Network. The Committee will have the following terms and conditions :-

Composition of Committee

2. The Committee will consist of the following Members.

1. S/Shri Rajendra Singh, Secretary, TRAI	Chairman
2. Rakesh Kacker, Advisor (B&CS), TRAI	Members
3. A.K. Bhatnagar, Advisor-Spl (B&CS), TRAI	
4. S.N. Gupta, Advisor(CN), TRAI	
5. Ravi Mansukhani, CEO, InCable	
6. B.P. Rath, Vice President, Ortel Communications	
7. Deepak Maheswari, Secretary, ISPAI	
8. K.Jayaraman, MD&CEO, Hathway	
9. Jawahar Goyal, SitiCable	
10. Col (Retd) V.C. Khare, Reliance Infocom	
11. Vikky Chowdhary, Cable Operator, New Delhi	
12. John Win, Cable Operator, Mumbai.	

The Committee may co-opt experts in the field as may be considered necessary from time to time to obtain advice/inputs.

Terms of Reference

3. The Committee will have the following terms of reference:

i) To identify the problems/bottlenecks faced by the Cable TV Industry in providing Broadband and Telephony through Cable TV Network.

ii) To make recommendations to the Authority with a view to address the impediments faced by the Industry in the fast penetration of Broadband and Telephony in the country through Cable TV Network.

4. The Members of the Committee would participate and contribute on a voluntary basis and no Travel / Daily Allowance or other incidental expenses would be payable by TRAI.

Time Frame

5. The Committee will submit its report latest by **31st October, 2005.**

This issues with the approval of the Authority.

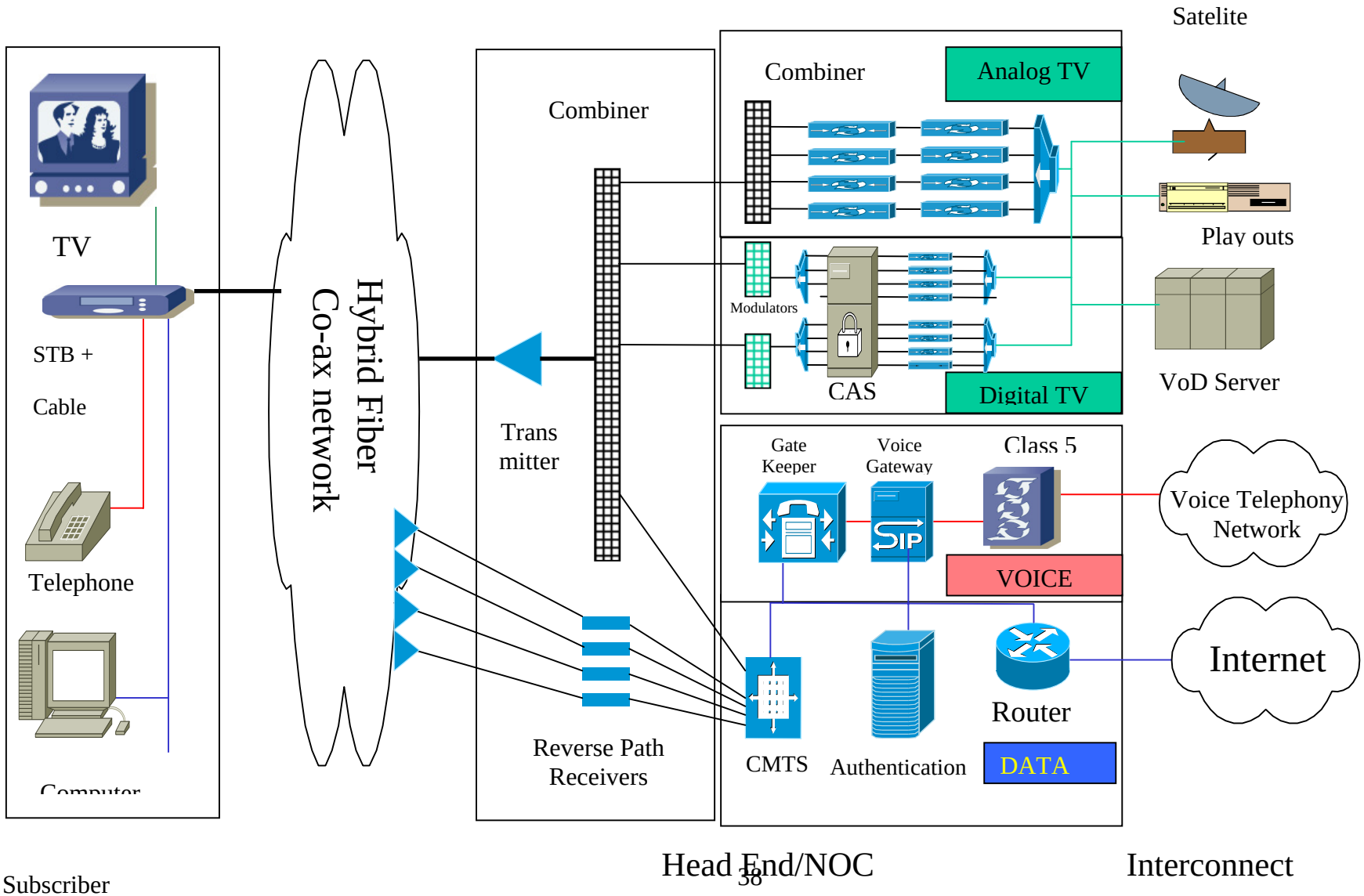
(Rakesh Kacker)
Advisor (B&CS)

To:

All Members of the Committee

Annexure 2

SCHEMATIC DIAGRAM OF TRIPLE PLAY OVER CABLE TV NETWORK



Annexure 3

Sr. No.	List of items required for delivering broadband over cable TV Network alongwith present custom duty structure Item	Chapter Heading	Basic Duty	CVD	Edu. Cess	Custom Cess	SAD	Effective Duty
		85						
1	Coaxial Cable 500/550 Series RG 6 RG11	8544 20 10	15%	16%	2%	2%	0%	34.44%
2	High Pass Filter	8529 90 90	15%	16%	2%	2%	0%	34.44%
3	Taps and splitters	8543 89 99	15%	16%	2%	2%	0%	34.44%
4	VIDEO/AUDIO/ASI ROUTERS & Switches	8525 10 30	15%	16%	2%	2%	0%	34.44%
5	Video scrambler/ descramblers/decrypters	8525 10 30	15%	16%	2%	2%	0%	34.44%
6	CAM for video descramblers/decrypters	8525 10 30	15%	16%	2%	2%	0%	34.44%
7	ENCODERS	8525 10 30	15%	16%	2%	2%	0%	34.44%
8	STATISTICAL/XT/VIDEO MULTIPLEXERS	8525 10 30	15%	16%	2%	2%	0%	34.44%
9	Transis Rate Compressor	8525 10 30	15%	16%	2%	2%	0%	34.44%
10	RF QAM Modulator	8525 10 30	15%	16%	2%	2%	0%	34.44%
11	Equipment RACKS with Power supply and accessories	8525 10 30	15%	16%	2%	2%	0%	34.44%
12	RF COMBINER	8525 10 30	15%	16%	2%	2%	0%	34.44%
13	LM860 RS 485 Line Monitor for QAM RF	8525 10 30	15%	16%	2%	2%	0%	34.44%
14	L- band Fiber Optic links	85.43	15%	16%	2%	2%	0%	34.44%
15	Standard Decoder (ASI & RF Inputs)	85.43	15%	16%	2%	2%	0%	34.44%
16	Optical Transmitter 1310/1550 nm	8525 10 20	15%	16%	2%	2%	0%	34.44%
17	RF Amplifier 5MHz to 1GHz	8543 89 91	15%	16%	2%	2%	0%	34.44%
18	Optical Return Receiver	8525 10 30	15%	16%	2%	2%	0%	34.44%
19	Optical Transreceiver	8525 10 30	15%	16%	2%	2%	0%	34.44%
20	Encoder / Decoder	8543 89 94	15%	16%	2%	2%	0%	34.44%
21	EDFA Optical Amplifier	8543 89 91	15%	16%	2%	2%	0%	34.44%
22	Audio Video Encoders	8543 89 94	15%	16%	2%	2%	0%	34.44%
23	QAM Modulator	8525 10 30	15%	16%	2%	2%	0%	34.44%
24	PAL B/G Modulator	8525 10 30	15%	16%	2%	2%	0%	34.44%
25	Spectrum Analyser (1Hz-2GHz)	9030 39 20	15%	16%	2%	2%	0%	34.44%
26	Network Analyser (1Hz-2GHz)	9030 39 20	15%	16%	2%	2%	0%	34.44%
27	MPEG Analyser	85.28	15%	16%	2%	2%	0%	34.44%
28	Coax Cable Coaring Tool	8544 20 90	15%	16%	2%	2%	0%	34.44%
29	Coax Cable Preparation Tool	8544 20 90	15%	16%	2%	2%	0%	34.44%
30	Crimping Tool	8544 20 90	15%	16%	2%	2%	0%	34.44%
31	Optical Power meter	9015 80 90	15%	16%	2%	2%	0%	34.44%
32	Optical Time Domain Reflectometer	9015 80 90	15%	16%	2%	2%	0%	34.44%

Annexure II

Basic Features of the Communication Convergence Bill, 2001

1.1 The Communication Convergence Bill, 2001 was introduced in Lok Sabha on 31 August, 2001 to promote, facilitate and develop in an orderly manner the carriage and content of communications (including broadcasting, telecommunications and multimedia), for the establishment of an autonomous Commission to regulate carriage of all forms of communications, and for establishment of an Appellate Tribunal and to provide for matters connected therewith or incidental thereto.

1.2 The proposed bill was introduced to:

(*i*) to facilitate development of a national infrastructure for an information based society, and to enable access thereto;

(*ii*) to provide a choice of services to the people with a view to promoting plurality of news, views and information;

(*iii*) to establish a regulatory framework for carriage and content of communications in the scenario of convergence of telecommunications, broadcasting, data-communication, multimedia and other related technologies and services; and

(*iv*) to provide for the powers, procedures and functions of a single regulatory and licensing authority and of the Appellate Tribunal.

The Bill proposes to set up a Communication Commission of India with wide ranging powers to deal with the carriage and content. The head office of the Commission shall be located at Delhi with regional offices at Kolkata, Chennai and Mumbai.

The Commission shall consist of the following Members, namely:—

(*a*) a Chairperson;

(*b*) not more than ten persons to be appointed as Members; and

(*c*) the Spectrum Manager as an *ex officio* Member.

The Chairperson and not less than six Members other than the *ex officio* Member, shall be whole-time Members and the remaining shall be part-time Members

Objectives of the Commission

The Commission, while exercising its functions, shall strive to achieve the following objectives and guiding principles governing the administration of this Act, namely:—

(*i*) that the communication sector is developed in a competitive environment and in consumer interest;

(*ii*) that communication services are made available at affordable cost to all, especially uncovered areas including the rural, remote, hilly and tribal areas;

(*iii*) that there is increasing access to information for greater empowerment of citizens and towards economic development;

(*iv*) that quality, plurality, diversity and choice of services are promoted;

(*v*) that a modern and effective communication infrastructure is established taking into account the convergence of information technology, media, telecommunication and consumer electronics;

(*vi*) that defence and security interests of the country are fully protected;

(*vii*) that introduction of new technologies, investment in services and infrastructure and maximisation of communication facilities and services (including telephone density) are encouraged;

(*viii*) that equitable, non-discriminatory interconnection across various networks are promoted;

(*ix*) that licensing and registration criteria are transparent and made known to the public;

(*x*) that an open licensing policy allowing any number of new entrants (except in specific cases constrained by limited resources such as the spectrum) is promoted; and

(*xi*) that the principle of a level playing field for all operators, including existing operators on the date of commencement of this Act, is promoted, so as to serve consumer interest.

Powers, duties and functions of the Commission

It shall be the duty of the Commission to facilitate and regulate all matters relating to carriage and content of communications. The Commission shall—

(*i*) carry out management, planning and monitoring of the spectrum for non-strategic or commercial usages subject to the provisions of section 24;

(*ii*) grant license or registration for purposes of this Act, and determine and enforce license or registration conditions and determine fees, including fees for usage of spectrum, wherever required;

(*iii*) determine appropriate tariffs and rates for services, wherever considered necessary and keeping in view the objectives and guiding principles in this Act;

(*iv*) ensure that the grant of license or registration shall not result in eliminating competition or in one or more service providers becoming dominant to the detriment of other service providers or consumers;

(*v*) promote competition and efficiency in the operation of communication services and network infrastructure facilities;

(*vi*) formulate and determine conditions for fair, equitable and non-discriminatory access to a network infrastructure facility or networking service and such other matters as may be prescribed;

(*vii*) take such measures as may be prescribed to protect consumer interests and to promote and enforce Universal Service Obligations;

(*viii*) formulate and lay down programme and advertising codes in respect of content application services;

(*ix*) formulate and lay down commercial codes in respect of communication services and network infrastructure facilities;

(*x*) take steps to regulate or curtail the harmful and illegal content on the internet and other communication services;

(*xi*) formulate and lay down codes and technical standards and norms to ensure, in a technology neutral manner, the quality and interoperability of services and network infrastructure facilities, including equipment;

(*xii*) carry out any study and publish findings on matters of importance to the consumers, service providers and the communications industry;

(*xiii*) institutionalise appropriate mechanisms and interact on a continual basis with all sectors of industry and consumers, so as to facilitate and promote the objectives and guiding principles of this Act to encourage self regulatory codes and standards;

xiv) report and make recommendations either *suo motu* or on such matters as may be referred to it by the Central Government; and

(*xv*) perform all or any functions in furtherance of the objectives and guiding principles of this Act, or such other matters as may be prescribed.

1.3 The Commission may grant license to any person—

(*a*) to provide or own network infrastructure facilities.

Explanation.—For the purposes of this clause, network infrastructure facilities shall include earth stations, cable infrastructure, wireless equipments, towers, posts, ducts and pits used in conjunction with other communication infrastructure, and distribution facilities including facilities for broadcasting distribution;

(*b*) to provide networking services.

Explanation.—For the purposes of this clause, networking services shall include band-width services, fixed links and mobile links;

(*c*) to provide network application services.

Explanation.—For the purposes of this clause, network application services shall include public switched telephony, public cellular telephony, global mobile personal communication by satellite, internet protocol telephony, radio paging services, public mobile radio trunking services, public switched data services and broadcasting (radio or television service excluding continued);

(*d*) to provide content application services.

Explanation.—For the purposes of this clause, content application services shall include satellite broadcasting, subscription broadcasting, terrestrial free to air television broadcasting and terrestrial radio broadcasting;

(*e*) to provide value added network application services such as internet services and unified messaging services.

Explanation.—For the removal of doubts, it is hereby declared that information technology enabled services such as call centres, electronic-commerce, tele-banking, tele-education, tele-trading, tele-medicine, videotex and video conferencing shall not be licensed under this Act.

The Commission may, while granting a license for any of the abovementioned categories, confine or limit the scope of the facility or service to be provided by the licensee in each category of license, and also specify the conditions for providing that facility or service.

In the proposed Convergence Bill it is also mentioned that the Commission may, grant licenses either singly or jointly for one or more of the categories of facilities or services specified therein.

1.4 The Bill proposes to set up a Communications Appellate Tribunal to hear appeals against any decision or order of the Commission. The Appellate Tribunal shall consist of a chairperson and not more than six members to be appointed, by notification, by the Central Government.

1.5 The Bill proposes to repeal the following Acts:

- The Indian Telegraph Act, 1885
- The Indian Wireless Telegraphy Act, 1933
- The Telegraph Wires (Unlawful Possession) Act, 1950
- The Telecom Regulatory Authority of India Act, 1997
- The Cable Television Networks (Regulation) Act, 1995.

Annexure III

Salient features of TRAI's recommendations on Unified Licensing Regime dated 13th January 2005

1.1. The New Telecom Policy 1999 (NTP'99) recognised that convergence of markets and technologies is a reality that is forcing realignment of the industry. At one level, telephone and broadcasting industries are entering each other's markets, while at another level, technology is blurring the difference between different conduit systems such as wireline and wireless. In line with NTP'99 and to keep pace with technological and market developments, the Authority considers that Unified Licensing Regime should be introduced in India. This would build economies of scale and scope and enhance competition. As a result, better services would be made available to the consumers at cheaper price.

1.2 The key objective of the Unified Licensing Regime is to encourage free growth of new applications and services leveraging on the technological developments in the Information and Communication Technology (ICT) area. Other main objectives of the Unified Licensing Regime are to simplify the procedure of licensing in the telecom sector, ensure flexibility and efficient utilisation of resources keeping in mind the technological developments, encourage efficient small operators to cover niche areas in particular rural, remote and telecommunication-facilities-wise less developed areas and to ensure easy entry, level playing field and 'no- worse off' situation for existing operators.

1.3 It may be recalled that Telecom Regulatory Authority of India (TRAI) had issued draft recommendations on 'Unified Licensing Regime' on 06.08.2004 with the aim to gather the comments of stakeholders, if any, for implementation of Unified Licensing Regime for all telecom services.

1.4 It may also be recalled that TRAI in its Unified Licensing recommendations dated 27th October 2003 had envisaged a two-stage process to introduce a Unified Licensing Regime in the country. The first phase that entails a Unified Access Service License (UASL) at circle level has already been implemented. Once the broad framework was decided and put in place, the TRAI began consultation on the implementation of second phase of Unified Licensing Regime. A preliminary consultation paper, final

consultation paper and subsequently draft recommendations on 'Unified Licensing Regime' were issued to obtain comprehensive inputs from all the stakeholders. Open House Discussions were also held in this regard. Based on the comments received in the consultation process and its own analysis TRAI has finalised its recommendations of Unified Licensing Regime in India.

1.5 Salient features of TRAI's recommendations are as follows:

i) Framework of Unified Licence**:**

a) There shall be four categories of licenses:

 Unified License - All Public networks including switched networks irrespective of media and technology capable of offering voice and/or non-voice (data services) including Internet Telephony, Cable Television (TV), Direct To Home (DTH), TV & Radio Broadcasting shall be covered under this category. Unified License implies that a customer can get all types of telecom services, from a Unified License Operator. The operator can use wireline or wireless media.

 Class License - All services including satellite services, which do not have both way connectivity with Public Network, shall be covered under Class license. This category excludes Radio Paging and Public Mobile Radio Trunking Systems (PMRTS) Services and includes Niche Operators.

 Licensing through Authorisation - This category will cover the services for provision of passive infrastructure and bandwidth services to service provider(s), Radio Paging, PMRTS, Voice Mail, Audiotex, Video Conferencing, Videotex, E-mail service, Unified Messaging Services, Tele-banking, Tele-medicine, Tele-education, Tele-trading, E-commerce, Other Service Providers, as mentioned in NTP'99 and Internet Services including existing restricted Internet Telephony (Personal Computers (PC) to PC; within or outside India, PC in India to Telephone outside India, IP based H.323/SIP Terminals connected directly to ISP nodes to similar Terminals; within or outside India), but not Internet Telephony in general.

 Standalone Broadcasting and Cable TV licence – This category shall cover those service providers who wish to offer only broadcasting and/or cable services.

b) This licensing framework except stand-alone Broadcasting & cable TV services shall be hierarchical in nature with Unified Licence being at the highest hierarchical level. Such a licensing regime would enable a licensee to provide any or all telecom services by acquiring a single license.

c) In the New Licensing Regime there shall be no restriction on usage of Internet Telephony or other IP enabled services provided they are offered by operators with Unified License who have duly paid the prescribed registration charges and who will be subjected to license fees. With this India will join a group of more than 80 countries where Internet Telephony is permitted. In the interest of security, suitable monitoring equipment as may be prescribed will be provided by the licensee for monitoring as and when required by the licensor.

d) Stand alone licenses for Broadcasting Services would continue to be issued. The prevailing process of issuing of such a license by I&B Ministry (including allocation of spectrum in consultation with WPC) would also continue. If a unified licensee wants to offer 'Broadcasting Service', the licensee will have to apply to the I&B Ministry in case such clearance is required and fulfill other requirements as prescribed. The content in any case, would be regulated by I&B Ministry.

The Authority noted that broadcasting services have an existing regime with terms & conditions different from those encompassed in the general framework of Unified Licensing. Moreover, it was noted that there are some Broadcasting Recommendations of the Authority already under consideration by the Government. Therefore, the preferred change to the overall framework of the Unified License, in the case of Broadcasting, would require further adjustments. The Authority expects the Government to take account of the framework which has been specified here, in its consideration of the Recommendations which have earlier been provided on Broadcasting. The decision of the Government in that context will give the basis for further assessment by the Authority to develop a transition towards a comprehensive License regime with Broadcasting being treated under the broad framework of Unified Licensing itself, consistent with the principles applied for other services under this framework. Therefore, Authority considered that at this stage it will be appropriate as a transition arrangement to keep this service as a separate category under

unified licensing regime for ease of implementation and administration of the recommended unified licensing regime.

e) Niche Operators - To increase penetration of telecom services in rural / remote / backward areas from telecom point of view, Authority recommends that SDCAs where fixed rural tele density is below 1% shall be area of operation for Niche Operators. Niche Operators shall be permitted to offer fixed telecom services including multimedia, Internet telephony and other IP enabled services only in these SDCAs. These operators shall however, be permitted to use wireline/fixed wireless networks. This definition of niche operators shall be reviewed depending upon market conditions and development of various technologies and various applications.

ii) **Service Area:** Depending upon the choice of service provider it could be national level or circle level (same as in UAS regime). For niche operators it would be at SDCA level.

iii) **Rollout Obligations:** For access services UASL rollout obligations shall continue under Unified Licensing Regime. For National Long Distance services, it is recommended that the licensee shall make an arrangement to pick up/handover long distance traffic of his subscribers in all service areas. In the absence of carrier preselection or call-by-call selection, it shall be the responsibility of the Unified Licensee/access service provider at originating end to ensure completion of calls to all destinations in the country. Once carrier pre-selection (CPS) is implemented, it will be the responsibility of the unified licensee/NLD operator(s) to complete all the calls of subscriber(s) who has/have pre-selected this licensee as a carrier of their choice. Inter-service area traffic could be handed over/picked up at the choice of Unified Licensee/NLDO either at a central location or LDCA. The traffic could also be handed over/picked up at SDCA level with the mutual consent of interconnecting service providers. For ILD services existing roll-out obligations would continue. This level of handover/takeover of inter service area traffic is mentioned here only to the extent that it affects the roll-out obligations for NLD services, however, detailed regulation on Interconnection which includes level of traffic handover between various operators, shall be brought out by TRAI separately from time to time as required.

iv Bank Guarantees:

Performance Bank Guarantee (PBG) for Unified License will be as per UASL. There shall be no PBG for Class License and 'Licensing through Authorisation'. For NLD/ILD operators and UASLs who do not migrate to Unified Licensing Regime, the existing PBG shall continue.

v) **Spectrum**: Spectrum related issues including spectrum pricing and its allocation are already being dealt with separately and depending upon the comments received during consultation process and TRAI's own analysis the spectrum recommendations will be finalized. In the interim period till spectrum guidelines are issued by the Government of India, the existing spectrum pricing and allocation procedures will continue.

vi) **License Fee**:

a. For Unified License, Class License and Niche operators the License fee shall be (contribution to USF (5%) + Administrative cost (1%)) i.e. 6% of Adjusted Gross Revenue (AGR). The administrative cost is required for managing, licensing and regulating the sector. It is recommended that with technological developments, flexibility in the licensing regime, deployment of more and more wireless technologies and the growth of telecom services even in backward areas from telecom point of view, the Government may consider reviewing the level of USO levy and Administrative fee. Services licensed through Authorisations shall not be required to pay any License fee.

b. AGR shall include only the revenue accrued out of telecom services and shall not include sale of capital goods, sale of handsets, dividend and interest earned on various deposits. To ensure that bundling of handsets with tariff schemes is not misused, the existing provision of tariff schemes with bundling to be made available to subscribers even without bundling, shall continue.

c. All the licensees shall maintain separate accounts for every service and product/network service for each of the licensed areas as per TRAI's Regulations from time to time.

vii) **Registration Charges**:

a. For Class license, niche operators and services licensed through Authorisations, there shall be no Registration Charge.

b. For Unified License the Registration charge shall have two components, besides initial spectrum charge.

 Registration Charges based on entry fee paid by NLD and ILD operators: Basis shall be entry fee paid by long distance operators

(NLD plus ILD) which will be discounted on pro rata basis for the period for which license has been used. Based on above, the entry fee for long distance component shall be Rs. 107 crores.

 Registration Charges based on entry fee paid by new Basic Service Operators (entered in/after 2001): This component shall depend upon the Service area(s)/Circle(s) where the Unified Licensee wishes to offer access services. Basis shall be entry fee paid by new BSO (entered in/after 2001) multiplied by the ratio of all India fixed subscribers (both wireline and WLL (F) subscribers included) to the total (fixed plus mobile) subscriber base of these Pvt. operators. Subscriber base of private BSO entered in/after 2001 shall be considered for this purpose.

Registration Charges for a circle

= Entry fee paid by BSOs (entered in/after 2001) of the circle X

Total (all India) fixed subscribers (wireline + WLL(F))

Total (all India) subscribers (fixed and mobile) of the New BSOs entered in/after 2001

To calculate this component of registration charges the data of number of subscribers of previous quarter from the date of acceptance of TRAI's recommendations could be taken as a basis. WLL (M) subscribers will be treated as mobile for this purpose.

c) Spectrum charges, including initial spectrum charge for entry, wherever applicable, would be extra.

d) Registration charges for Unified license should be gradually reduced from the recommended level to Rs. 30 lakhs after 5 yrs (starting from the date of implementation of ULR). This decrease would be non-linear with lesser reduction in the initial years.

viii) **Reselling**: The Authority recommends that reselling should not be permitted at this stage. However, franchise and sharing of infrastructure among service providers should continue to be implemented.

ix) **Migration: Optional or Compulsory:** It is recommended that migration of the existing service providers to the ULR may be optional. However, after a period of 5 years it shall be mandatory for all telecom operators to migrate to Unified Licensing Regime.

x) Till Unified Licensing Regime comes into effect the operator is free to take UASL in any circle and this situation should continue till two year of implementation of Unified Licensing Regime.

xi) This period of two years would also be available for all other existing services. After this period of two years no new service specific license including Unified Access License, as in the existing licensing regime, shall be issued and all new Service Providers shall be licensed under new Unified Licensing Regime.

xii) It shall be mandatory for the Unified licensee to provide interconnection to all eligible Telecom Service Providers (eligibility shall be determined as per the service provider's license agreement and TRAI's determination/orders/regulations issued from time to time) as well as Unified Licensees to ensure that the calls are completed to all destinations and when carrier preselection is

introduced the subscribers could have a free choice to make inter-circle/international long distance calls through other operators. Principles of non-discrimination shall be followed in the matter of interconnection.

xiii) The Authority has also noted that there is adequate competition in all service areas, which is expected to ensure completion of calls in all services areas. All service areas including North East, Assam and J&K have at least 3 licensed access (both fixed and mobile) service providers.

xiv) The Authority, while deciding the recommendations on Unified Licensing regime, have kept in mind the issues of level playing field and 'no worse off' situation for existing NLD operators since a unified licensee will be free to offer any telecom service including long distance services which cover inter-service area connectivity also. By fixing Registration fee of unified licensee equal to discounted fee of long distance operator plus a component based on entry fee paid by new Basic Service Operators (entered in/after 2001), the level playing field between existing NLD operators and the unified licensee is maintained. Regarding the effect on the business case of existing NLD operators, it is pertinent to note that right from the time of opening of long distance services for private sector participation, open competition with unlimited number of players is permitted. Regarding the already rolled out network by existing NLD operators, it is pertinent to note that existing NLD operators still have to rollout around 60% of their network and any relaxation in rollout obligations (as recommended in ULR) at this stage is substantially advantageous to them also. Secondly, transmission system installed by them is not exclusively for NLD services, and most of the existing NLD operators are integrated operators and their transmission system is shared for different services being offered by them under different licenses. In addition, the license fee for long distance service (both NLD and ILD) is reduced from the existing level of 15% to 6% (contribution to USF(5%) + Administrative cost (1%)).

In Authority's opinion this should address the issue of level playing field between existing long distance operators and other service providers.

xv) Salient features of the Unified Licensing Regime are shown in the table1 below.

Table 1 Unified Licensing Regime at a Glance

Licensing Category	**Types of service**	*Registration Charge (Entry Fee)*	**License Fee**	**Bank Guarantees**	**Service Area**	**Roll-out obligations**
Unified License	All telecom services including Basic, Cellular, Unified Access Service, NLD, ILD, GMPCS, Cable TV, DTH, TV and Broadcasting Services, Internet Telephony, etc. and all services covered under class license, 'Licensing through Authorisation' and standalone Broadcasting & Cable licences.	Registration charge[#] shall be Rs. 107 crores plus a function of BSO's (entered in/after 2001) entry fee depending on the Service area(s)/Circle(s) where the Unified Licensee wishes to offer access services. Rs. 107 crores is the discounted value of NLD +ILD entry fee. The total registration charge shall be gradually reduced from the recommended level to Rs. 30 lakhs after 5 yrs.	6% of Adjusted Gross revenue (AGR) i.e. Contribution to USF (5%) + Administrative cost (1%). As the sector revenues grows, the Government may consider reviewing the level of USO levy and Administrative fee	Performance Bank Guarantee (PBG) for Unified License will be as per UASL. For NLD/ILD operators and UALs who do not migrate to Unified Licensing Regime, the existing PBG shall continue.	National level or circle level (same as in UAS regime).	For access services: UASL rollout obligations For National long distance services, the licensee shall make an arrangement to pick up/handover long distance traffic of his subscribers in all service areas. Inter-service area traffic could be handed over/picked up at the choice of Unified Licensee/NLDO either at a central location or LDCA. The traffic could also be handed over/picked up at SDCA level with the mutual consent of interconnecting service providers. For ILD services existing roll-out obligations would continue.
Class License	Services covered under 'Licensing through Authorisation', VSAT Services and Niche operators*****	Nil	6% of Adjusted Gross revenue (AGR) i.e. Contribution to USF (5%) + Administrative cost (1%). As the sector revenues grows, the Government may consider reviewing the level of USO levy and Administrative fee.	Nil	National level or circle level (same as in UAS regime). For niche operators service area would be at SDCA level.	Nil
Licensing through Authorisation	IP-I, IP-II, Radio Paging, PMRTS Services and Internet services (along with existing restricted internet telephony)	Nil	Nil	Nil	National level or circle level (same as in UAS regime).	Nil
Standalone Broadcasting and Cable Licenses	As at Present					

* Niche operators would be allowed in SDCAs where fixed rural teledensity is below 1%. Niche operators shall be permitted to offer fixed telecom services including multimedia, Internet telepnoney & IP enabled services only in these SDCAs. These operators, shall however, be permitted to use wireline/fixed wireless networks.

Integrated operators will not pay any registration charge (entry fee) for migration to Unified License.