

# **Internet Value Chain and Potential Market Models**

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## 1. Introduction

### **The aim and scope of the report**

The Internet is increasingly becoming part of both private and business life. Attention should be drawn to the fact that the growth in importance of the Internet, without which our day-to-day existence would be difficult to imagine today, is inherently related with an ever-increasing number of data in its structures, which in turn entails growing infrastructural requirements. At the same time, due to the specific nature of the Internet market and the manner in which it develops, no balanced business model based plans for its development are available that would be optimized enough to meet future growth of the basic information exchange platform that the Internet is slowly becoming.

This report focuses on the Internet's current value chain, describing in a synthetic manner issues which are vital to start a debate on:

- providing the necessary funding for investment in infrastructure, which will enable growth at a pace that meets the growing demand;
- maintaining the Internet's attractiveness as a platform for growth of new and innovative businesses;
- ensuring that the Internet's market model complies with rules on free competition;
- selection of an appropriate model of financing investment

Each of the above aims will be discussed in the light of the present situation and in the context of the worldwide Web development trends.

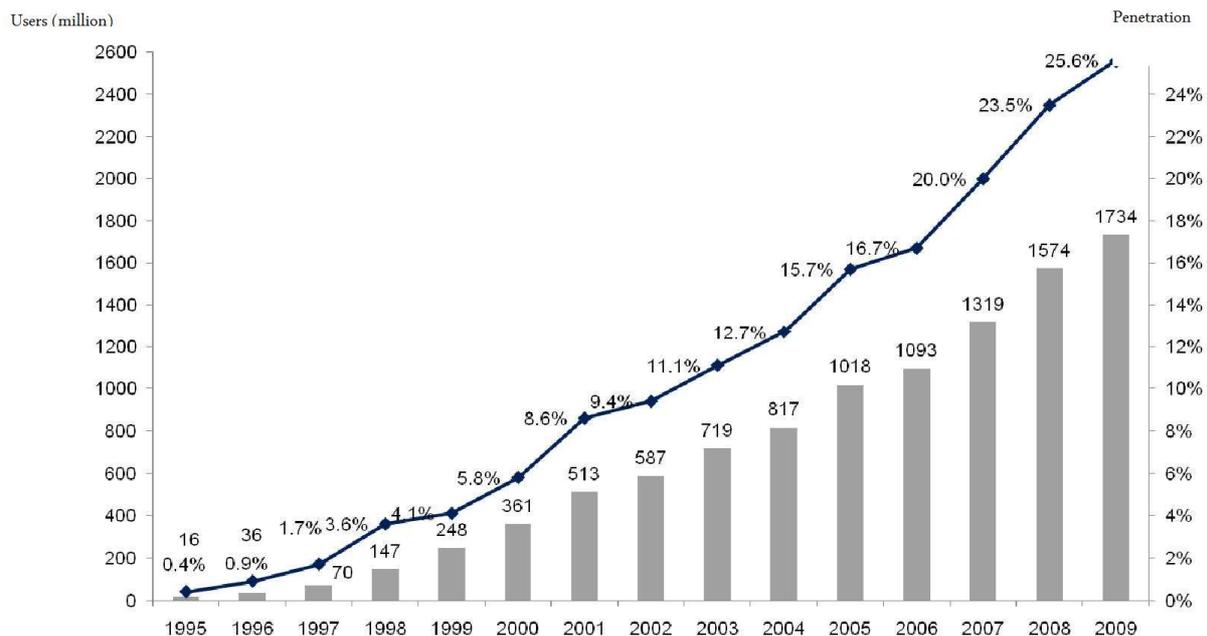
## 2. Internet growth

### Internet worldwide

The number of worldwide Internet users has significantly increased in the last 15 years (figure 1). It was only 16 million in 1995 (which corresponds to 0.4% of the world population). By 2009, this number increased to 1.7 billion users, which was more than 25% of the total world population. In most Western European and North American markets, internet penetration exceeds 75%.

In the recent years, the strongest growth has been noted in the developing markets. The percentage of Chinese Internet users increased from 2% (2000) to 27% (end of 2009). With 360 million “online” users, China has more Internet users than the whole of Western Europe and 60% more than the USA. Brazil may boast the number of users which is larger than that of any European country, whereas in the Middle East it increased in 2000-2009 from 3 to 57 million users.

**Figure 1: Internet usage penetration (%) and number of users (million) - globally**



Most users access Internet using broadband connection. Ensured by different technologies, but mainly by DSL connections using telephone cables, broadband connection transformed the telecommunications market in most countries. As time went by, traditional connections proved to be insufficient to provide services of appropriate quality, based on ever-increasing data transfers. The solution would be to use optical fibre cables to ensure much higher bandwidth.

The telecommunications industry faces the prospect of considerable necessary investment in the decade to come. The debate on the regulatory future and business model to finance this investment has already started.

Mobile devices have in the recent years become an important way to access the Internet. This shift is due to the increasing availability of various mobile devices and the prices. For instance, it is expected that the smartphones' total sales volume will increase from 54 million (2005) to 289 million in 2013.

The amount of user online time is also increasing at the expense, to some extent, of traditional media. For instance, a recent survey in Germany has revealed that the Internet's 4% share in the media market in 2000 will increase to 24% in 2015. However, this is not totally at the expense of traditional media. In 2000-2009, total media consumption in Germany increased nearly by 50% to reach the average of 10.3 hours a day. In addition, a tendency to use multiple media simultaneously has been noted, e.g. browsing the Internet while watching television. The same survey reveals that with increased time spent using all the media, there is an increase in the Internet's share in total consumers' and advertisers' spending – from 5% in 2000 to the expected 42% in 2015, which is potentially twice as much Television and Radio jointly. This trend is expected to repeat on other European markets.

The Internet offers an increasingly broader range of everyday services. In 2009, in the USA, 56% of people bought a product online. In contrast, this percentage stood at 27% in 2000. 42% use online banking services, compared to 10% in 2000. Large growth was also noted for social networking sites, whose number of users in the USA, for instance, rose from 5% of total population in 2000 to 28% in 2009.

The Internet usage model evolves rapidly which is illustrated by the set of websites preferred by the consumers. In a list of 15 top internet services, which was created in the USA in 1999, only 4 players were listed throughout the whole decade (see: Figure 2). The majority of the remaining 11 in the current list were set up relatively recently and include such services as Google, Facebook, eBay or Apple iTunes.

**Figure 2: Top 15 online services – 1999 vs. 2009**

USA Top 15 websites- 1999			USA Top 15 websites- 2009			
Website	users (m)	website type	Website	users (m)	website type	
1. AOL Sites	46	Portal	1. Google Sites	164	Wyszukiwarka	
2. Microsoft Sites	32	Portal	2. Yahoo Sites	158	Portal	
3. Yahoo Sites	31	Portal	3. Microsoft Sites	133	Portal	
4. Lycos	X	29	Search engine	4. AOL Sites	99	Portal
5. Go Network	X	21	Portal	5. Facebook	97	Social network
6. GeoCities	X	19	Hosting	6. Ask Network	88	Search engine
7. The Excite Network		17	Portal	7. Fox Interactive Media	83	Media/social network
8. Time Warner Online		13	Media	8. Amazon	70	E-Commerce
9. Blue Mountains Arts		12	E-cards	9. Wikimedia Foundation	69	Reference
10. AltaVista	X	11	Search engine	10. eBay	67	E-Commerce
11. Amazon		10	E-Commerce	11. Turner Network	63	Media
12. Xoom	X	9	Hosting	12. CBS Interactive	59	Media
13. Snap		9	Search engine	13. Apple Inc	58	Music
14. Real Networks		8	Media player	14. Glam Media	56	Lifestyle
15. CNET	X	8	Media	15. Answers.com	55	Reference

X = No longer operates    X = No longer operates as an independent entity

1

The example of search engines and social networking sites illustrates that market leader types and their functioning have changed rapidly. In 1999, Google's share in global income from search engines was only 4%. Today it has 2/3 of the market, whereas Yahoo, the leader of 1999, observed a significant drop from 29% to 7%. The situation of social networking sites is even more extreme. Facebook, for instance, did not exist in 2003 and 5 years later it had 23% of the market, whereas Xanga, the leader of 2003 is no longer among the five key players in the list.

<sup>1</sup> Based on "Internet Value Chain Economics", see: references

### 3. Internet Value Chain

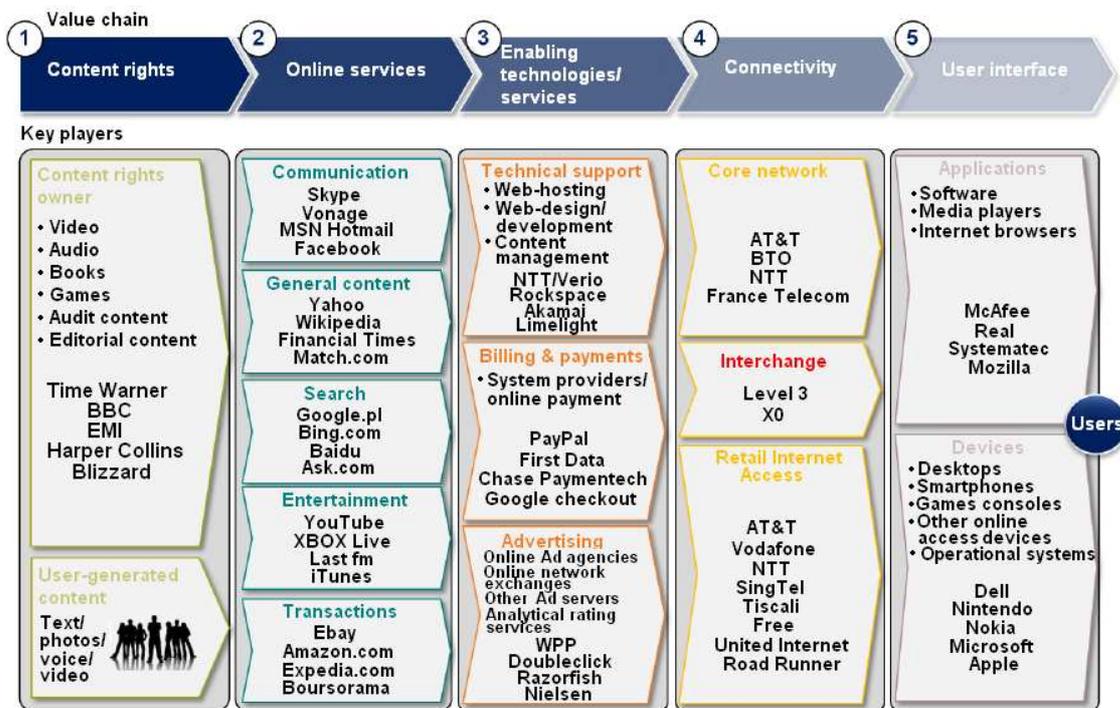
#### Value Chain Chart

The Internet “ecosystem” is complex and involves multiple players and activities. In this report, we break down the value chain into five key markets:

- content rights
- online services
- enabling technologies and services
- connectivity
- user interface (including both applications and devices)

Figure 3 shows the main strategic segments within each market, broken down into different service categories, also including the main players.

**Figure 3 Internet value chain**



2

Some industry players operate in two or more segments. This may be beneficial in terms of more control over the quality of services for the end user, but also can be used to take the full advantage of assets such as technology, brands and customer relationships.

<sup>2</sup> Based on “Internet Value Chain Economics”, see: references

## Description of the key markets in the value chain

### 1. Content rights

A substantial part of Internet content is generated by the users themselves (for instance an individual's profile on a social networking site; or a tweet message on Twitter). As a result, copyright is not usually assigned to content creators, although they may well retain copyright or some degree of privacy protection (by means of defining who may see/access the information). The content rights market mentioned here corresponds to provisioning of content in the Internet for money on a commercial basis. Examples of such content include: music, television programmes, games, news or books and magazines. .

Content rights owners are typically media companies, providing their content for a share of their revenue and/or license fees. They usually retain 50 % to 70% of the revenues generated by the service provider that makes the content accessible online. For instance, iTunes shares about 70% of the revenues earned on music purchase with copyright owners. In some cases, content owners create their own services such as the BBC iPlayer.

### 2. Online services

The nature of online services varies considerably. For simplification, five main groups have been identified:

- **Communications:** includes all possible online communication forms such as voice communication (VoIP<sup>3</sup>), social networking sites, e-mail and instant messaging. The leading players include Skype (part of eBay), Facebook or Hotmail (owned by Microsoft). Except for VoIP, these services are usually provided free of charge and financed by advertising.
- **Information distribution:** this group includes general content websites (Yahoo!) and targeted services (e.g: dating websites) or special content websites (the so-called portals) and websites strictly focusing on news (e.g. CNN). The revenues are generated through advertising, although some websites charge for access to their websites (e.g. most dating websites, [FT.com](http://FT.com) ).
- **Search:** this group consists mainly of web search engines, such as Google or Bing, as well as local/national engines, such as Yell in the United Kingdom and Pages Jaunes in France. For this group, revenues are usually generated from advertising using sophisticated algorithms such as auctioned key word references (where preferences are identified based on key words) or pay-per-click systems (i.e. revenues generated from advertising depend on the number of times it was clicked on).
- **Entertainment:** this group includes websites focused on audio-visual media, such as iTunes, enabling downloads of digital content, audio/video streaming or online radios (YouTube, last.fm), IP television, games services (Xbox Live), gambling (PartyPoker)

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<sup>3</sup> Voice over Internet Protocol

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or adult content. Almost 100% of revenues are generated from advertising and end user payments.

- **e-Commerce.** Many websites sell material goods. The largest categories include e-Shops (Amazon), e-Travel (Expedia) and online brokerage ([Boursorama.com](http://Boursorama.com)). There are both bricks-and-mortar shops and virtual businesses which exist online only. The e-Commerce site operator retains a profit margin and passes on the remainder of his revenues to the manufacturer or service provider. Online business costs are usually much lower than for traditional business, which most often, but not always, means that the prices are lower. This has caused substantial growth and displacement of volumes from traditional shops to online purchasing – for items such as books.

As can be seen, the revenues generated from online services currently focus on a combination of advertising, paid-for access and transaction fees.

### **3. Enabling technologies and services**

Enabling technologies and services are typically invisible to the end user but they are essential for technical delivery of web content and revenue generation. The market is highly fragmented. Three relatively broad group can be identified: Support Technologies, Online Payments and Advertising Services.

- **Support Technologies** correspond to a group of technical services provided to online services providers. This group includes: website design, development and maintenance, hosting and technical service platforms (such as content management systems, online shop platforms). For example, Akamai provides content management services through its network of servers which have a reputation for reliability of the connection and high speed.
- **Online Payments** – these services comprise all payment platforms used to process online payments. In addition to platforms made directly available by banks and payment processors (such as First Data), there are also service providers specialising exclusively in online services (such as PayPal).
- **Advertising Services** – the providers of those services are fundamental to generating revenues for most online services providers. This group comprises four categories of companies:
  - **Advertising agencies**, providing a set of services including campaign planning, inventory acquisition and creative services
  - **Dedicated online advertising networks** (such as Google's Doubleclick) – that provide technical and financial infrastructure for online advertising space. They acquire and sell advertising space.
  - **Third-party, direct ad serving providers**, that host and distribute online advertising.
  - **Analytics service providers**, measuring online traffic.

In other words, advertisers have a choice between acquiring advertising space through advertising networks, regular advertising services or directly from the owners.

#### **4. Connectivity**

Connectivity refers to Internet access services, provided by telecommunications networks operators, both fixed and wireless. Telecommunications markets vary in structure and this is due to regulations and competition levels. Many users access the Internet via multimedia operators (mainly cable television companies), which is attractive in terms of connection speed and pricing.

Connectivity services are generally provided based on monthly fees, which in some cases is a package including a fixed-line subscription fee. Usage volumes grow rapidly, which sparked a debate on the future revenue model. Options include connection volume-based pricing (which is beneficial for occasional users) or a model where the service provider pays for the customer's connection to ensure a particular level of the services. For more on potential business models, see: Chapter 7.

Core network operators are also involved in providing connectivity and procure wholesale broadband data transfer.

#### **5. User interface**

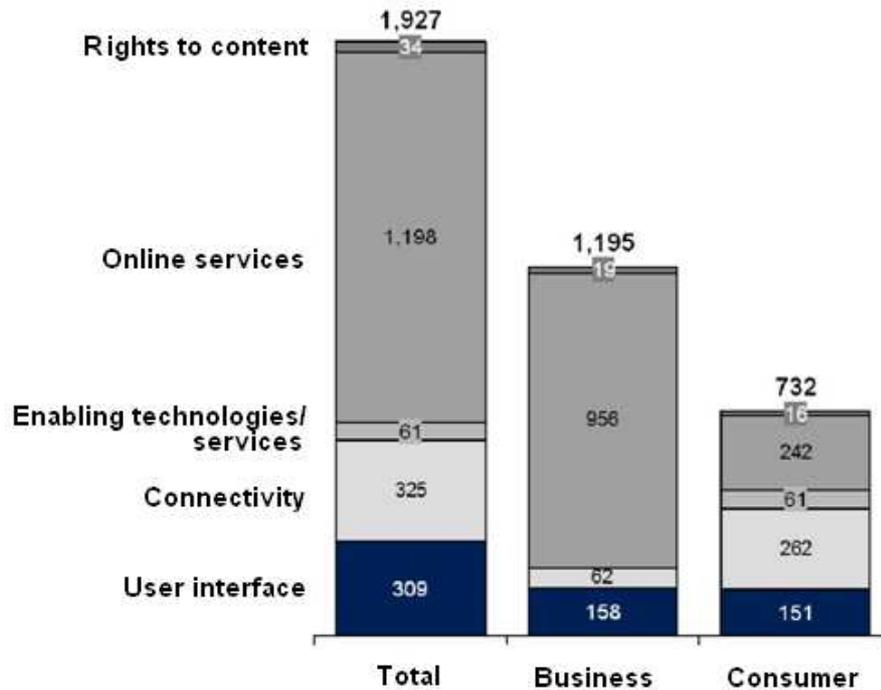
The user interface is an essential element of the Internet Value Chain, involving both devices (PCs, game consoles and telephones) and relevant software (operational systems, Internet browsers, media players).

Revenues generated from the user interface mainly come from fees for the device/software utilised by end users. In some cases, a subscription system is used. In addition, mobile networks frequently subsidise access devices.

#### 4. Internet market

The revenues generated in the Internet value chain amounted in total to 1,930 billion dollars, based on the estimates for 2008 (see: Figure 4). Revenues generated from the consumer services segment amounted to 732 billion dollars.

**Figure 4: Revenues generated online (billion USD) (2008) - globally**



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Revenues generated from business services were much higher amounting to 1,195 billion dollars. 80% is generated from online services and the largest category is B2B e-commerce which accounts for 86% online services revenues. The Internet has brought considerable efficiency gains for B2B interaction, e.g. through electronic data interchange which offers speed as well as transparency that is impossible to achieve for online transactions. As a result, traditional services were rapidly replaced by web-based ones (in 2007 approximately 50% of e-Commerce transactions between businesses were web-based).

Revenues generated by non-institutional consumers (the B2C segment) focus on connectivity (262 billion dollars), the User Interface (151 billion dollars) and e-Commerce

<sup>4</sup> Based on "Internet Value Chain Economics", see: references

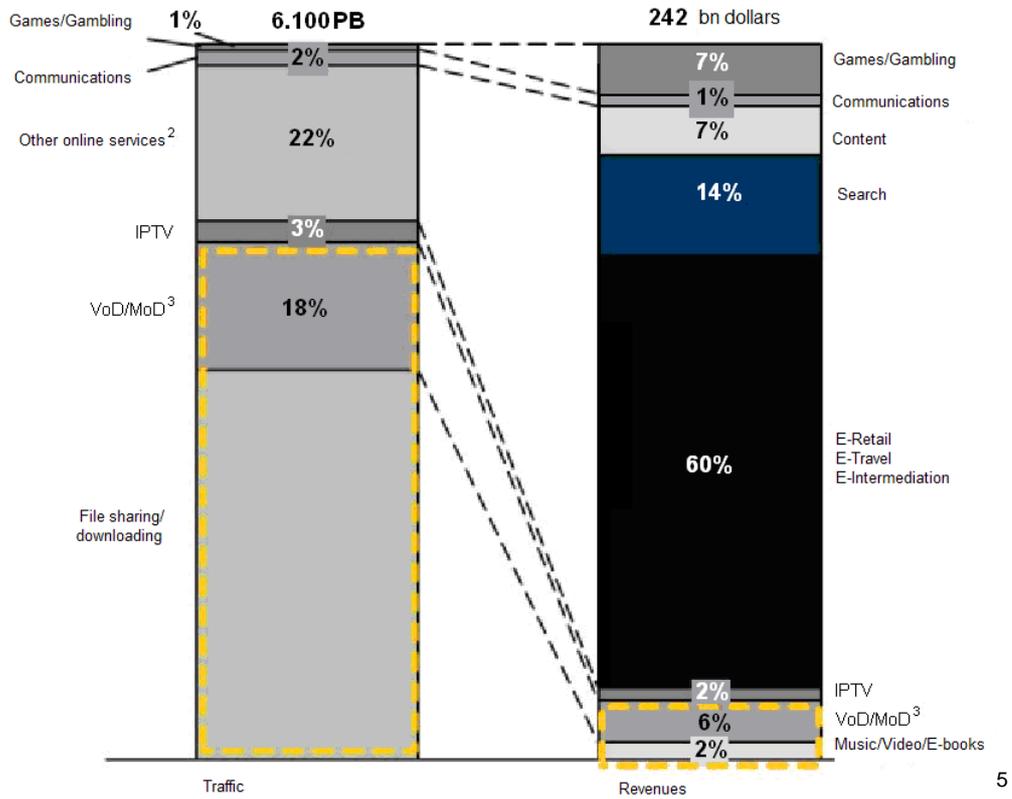
(146 billion dollars; e-Commerce includes: online shops, e-Travel and e-Brokerage services). In other words, a typical business spends most of its "Internet budget" on the access device (i.e. a PC with software) and the connection (e.g. broadband access subscription) and margins on e-Commerce purchases.

Online services represent the most visible part of the Internet industry. Out of 242 billion dollars in revenues of this segment most derive from e-Commerce, whereas the search and entertainment segments generate about 76 billion dollars, i.e. 10% of the total chain revenues. Even the leading players such as Skype, Facebook or Youtube, generate revenues of less than 0.5 billion dollars and that despite a huge user volume. More than 75% of the revenues from online advertising and user- paid content and services derives from the search segment and the main entertainment categories such as gambling, online games and adult content.

Advertising (mainly in the Search segment) generates over 58 billion dollars, i.e. 60% of total revenues, while the remaining 40% is generated from Internet users' fees. The ratio of revenues from advertising to revenues generated from payments by users is similar to the ratio in traditional media.

A comparison between data transfer volume (as measured in petabytes – 1PB = 1,000,000 GB) and the revenues structure would suggest a significant disproportion (see Figure 8). File sharing (both legally and illegally) generates 54% of total Internet traffic, but only 2% of total revenues. Video and music on demand services generate only 18% of total traffic, but only 65 of total revenues. This might explain the concerns voiced by many internet services providers (operating in the consumer services market segment) as traffic transportation costs account for 40% of their costs, which according to the above analysis and current pricing model do not translate into revenues

**Figure 5: Data transfer volume (PB) (monthly) vs revenues (billion USD) (annually) generated by online services (2008)**



<sup>5</sup> Based on "Internet Value Chain Economics", see: references

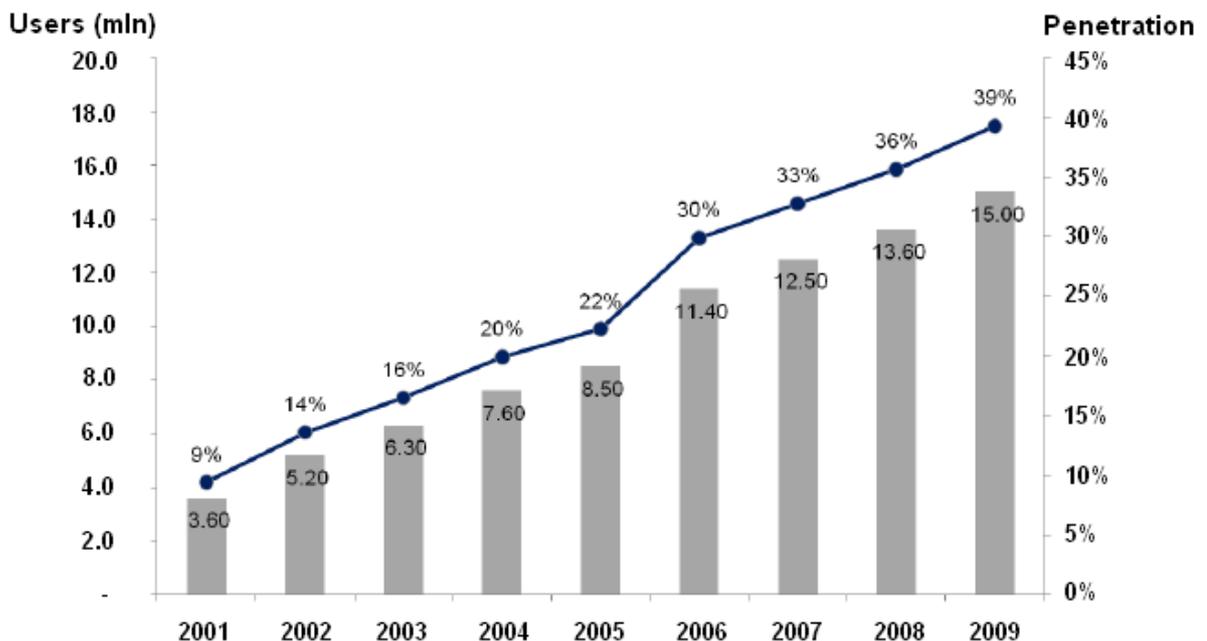
## 5 Internet in Poland

### Growth

According to Net Track data (Millward Brown SMG/KRC) for the end of 2009, the number of Internet users in Poland reached 15 million (representing 49.5% of the population). The analysis shows that the Internet is more popular with young people. Approximately 30% of total number of Internet users are aged 15-24. Another two large groups are 25-34 year-olds and 35-44 year-old - with 24% each. Compared to 2006, the number of Internet users aged 55 and more increased by 2%. Internet usage penetration currently stands at 52.8%.

These data would also suggest that Internet usage also depends on education. University graduates represent about 88% of total Internet users, while secondary school graduates account for 66% of total Internet usage. One in five online users has primary school education and one in three has basic vocational education. The data would also suggest that most Internet users use it at home (93.97%) or at work (27.1%).

**Figure 6: Internet usage penetration (%) and number of users (million) - Poland**



According to PBI/Gemius data for the end of 2009, an average Polish Internet user spent more than 50 hours surfing online monthly. Compared to 2008, it is more by 4 hours. Total usage of Polish leading websites also increased. Google.pl was ranked first with 16 million online users. With 12 million users, Onet.pl were ranked second in terms

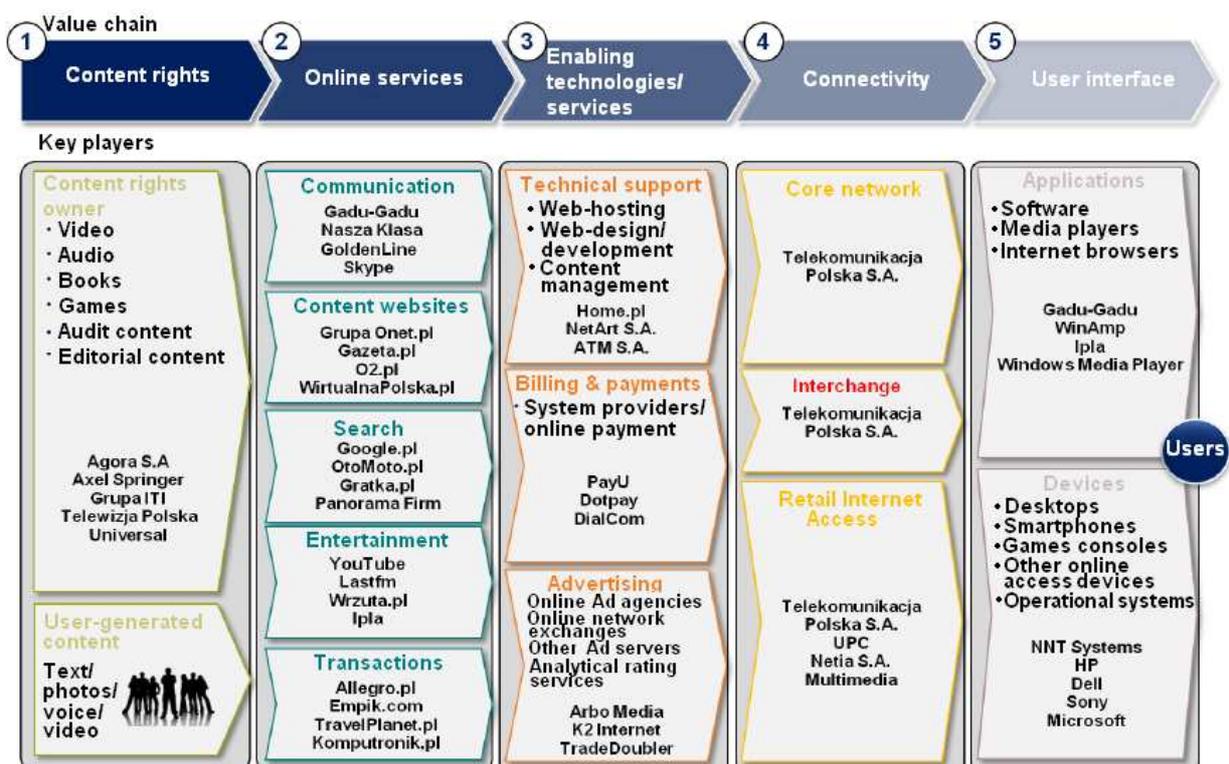
## Internet Value Chain and Potential Market Models

of popularity. Allegro.pl is next in the row (with a 3 million increase in the number of Internet users and 11 million visitors in December). The next position in the ranking belongs to Naszaklasa.pl - a social networking website, still a leader in this category in Poland with 11 million users. The analyses show that total value of Polish online services is approximately PLN 2.5 billion, which is about 7.5% of the revenues generated by Polish companies providing online services directly. This figure is not inclusive of Google.pl's revenues in Poland. According to official data, Google's revenues generated in 2009 amounted to PLN 41 million only. In 2008, IAB and PwC estimated Google's Polish revenues at approximately PLN 200-300 million and PLN 270-300 million in 2009. An article by Gazeta Wyborcza from March this year, quotes figures which are different from the official ones. Gazeta Wyborcza mentions informants "close to the company", who claimed that the Internet giant generated revenues of USD 105-115 million last year.

## Market

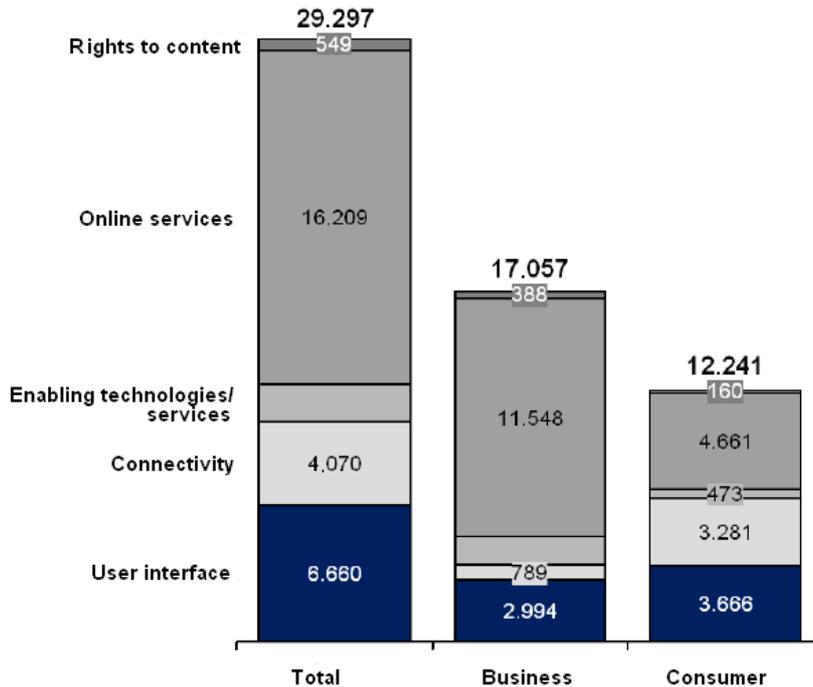
Key players are presented by sector below.

**Figure 7: Key players in the Polish value chain**



The revenues generated in Poland in 2009 by market players in the above chain value amounted to PLN 29.2 billion, of which 12 billion was generated by B2C.

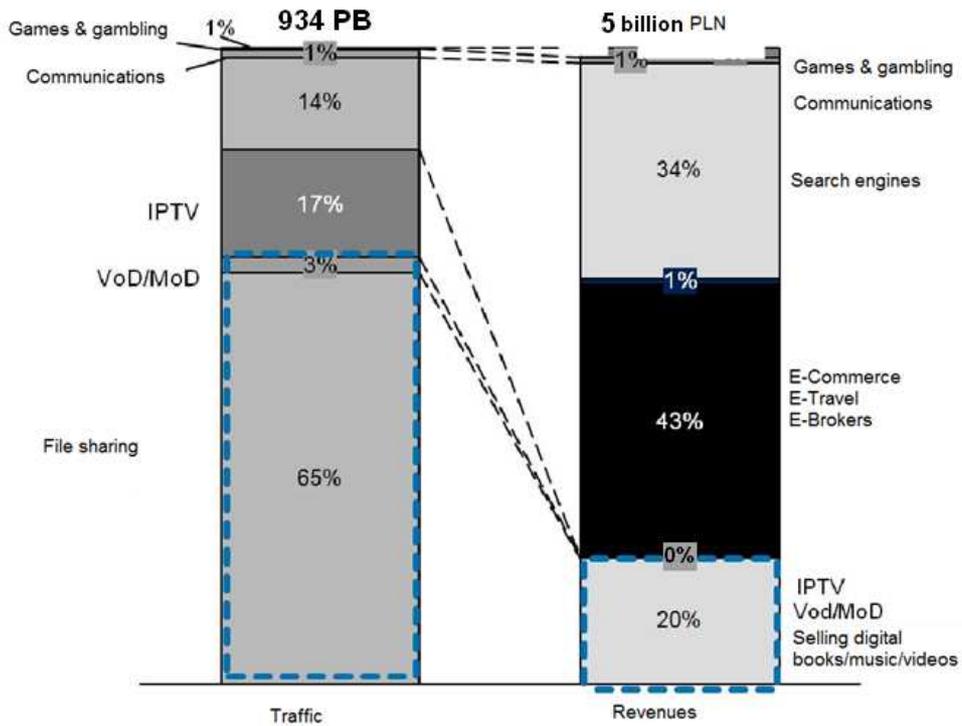
**Figure 8: Revenues generated online (billion USD) (2009) - Poland**



Interestingly, this proportion differs from the global structure as the consumer services market is much smaller than the business one. Close observation of Internet growth in Poland may lead one to expect that this structure will aim to achieve the proportions present globally (cf. Figure 4).

An analysis of the revenues to transfer used ratio (similarly to the comparison of global data - figure 5) shows a structure comparable to the global one.

**Figure 9: Data transfer volume (PB) (monthly) vs revenues (billion PLN) (annually) generated by online services (2009)**



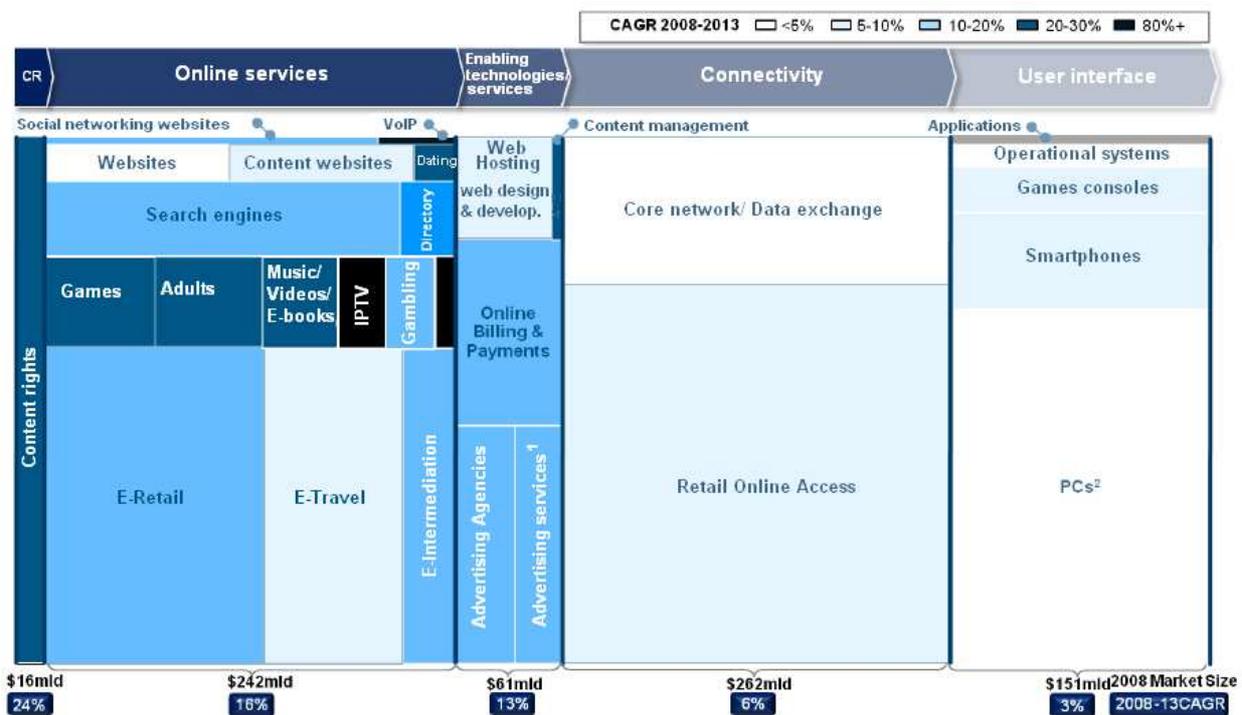
In other words, as is the case globally, the segments generating the majority of revenues use only a small proportion of traffic, whereas activities/services using 65% of the transfer generate only a small proportion of the revenues.

## 6. Internet market growth perspectives

Analyses of markets, segments and categories of Internet chain value services are only based on rough estimates. Long-term forecasts are a challenge in this case. It is expected that within the next three years Internet revenues will grow at 10% annually – with substantial differences across the value chain.

Figure 10 shows growth estimates – the chart’s dark-shaded areas illustrate the strongest growth trajectory. Online services are one of the most dynamic markets in the value chain, with an average growth rate of 16% annually – driven by migration of advertising spend to online formats at the expense of the traditional ones. In addition, there is increased success in charging end-users for audio-visual content access as opposed to illegal downloads. Growth of connectivity services is estimated at moderate level (about 6% p.a.), which is due to considerable growth in developing markets and mobile technologies, but at the same time due to a slowdown of broadband access growth in developing countries and intense pricing pressure.

**Figure 10: Online consumer market growth perspectives (% CAGR) (2008-2013)**



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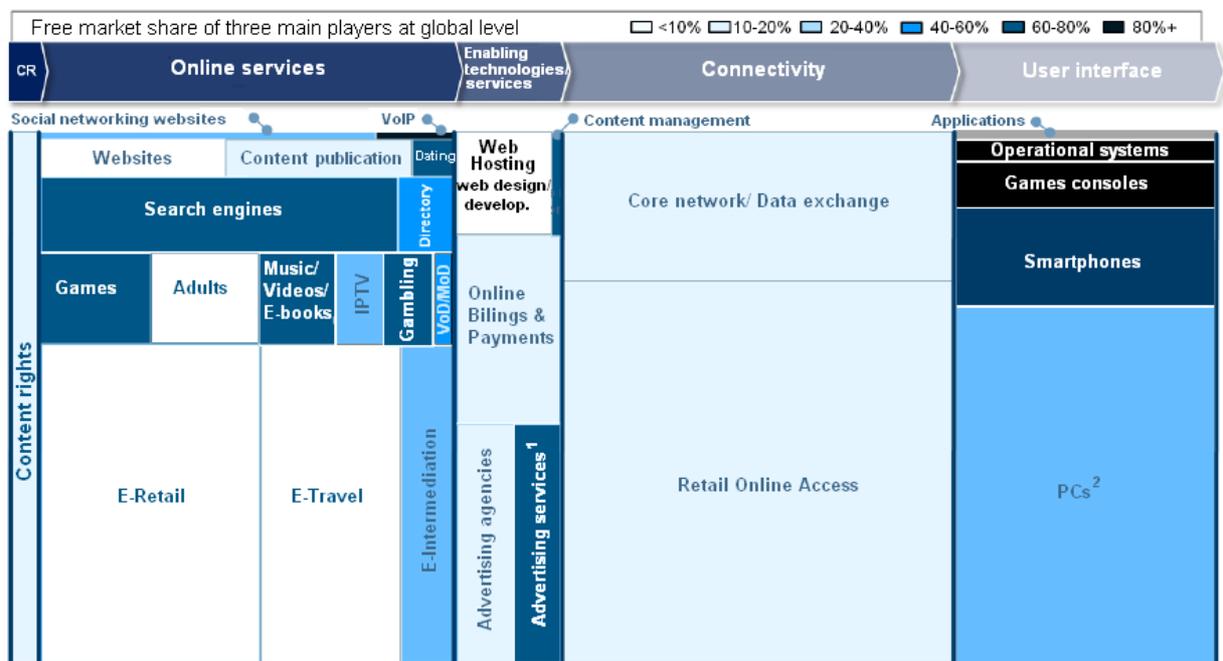
Also worth noting are the next two figures (11 and 12) illustrating the degree of

<sup>6</sup> Based on “Internet Value Chain Economics”, see: references

concentration and average return rates in market segments, which help us better understand the actual situation.

Figure 11 is a graphic illustration of market segment concentration. It can be noted that almost all of the connectivity market has a similar concentration level. Between 10 – 20% of the market share belongs to three main players with the highest concentration in operational systems and games consoles.

**Figure 11: Concentration (%) of Internet market segments**

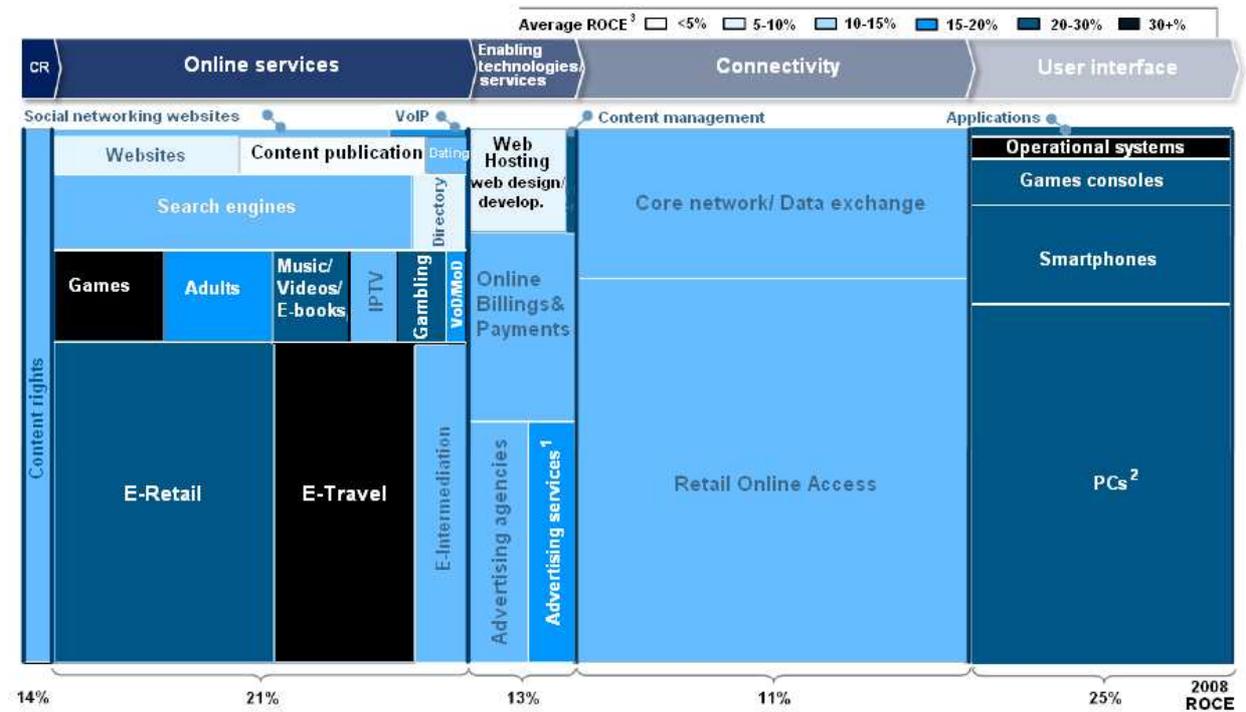


7

Figure 12 represents the return on capital employed - ROCE. The most noteworthy observation is that the connectivity segment has the lowest average ROCE, this segment's average being at 11%.

<sup>7</sup> Based on "Internet Value Chain Economics", see: references

**Figure 12: ROCE (%) in the Internet market segments**



8

Attention should be drawn to the connectivity segments, the sector which has so far been mainly responsible for infrastructure growth. Both the ROCE as well as growth perspectives are low and very low, compared to other segments. With concentration at 15% and given the current market model there is a risk of investment slowdown, which stems from little incentive to invest. From the point of view of players in this segment, the market is increasingly less attractive.

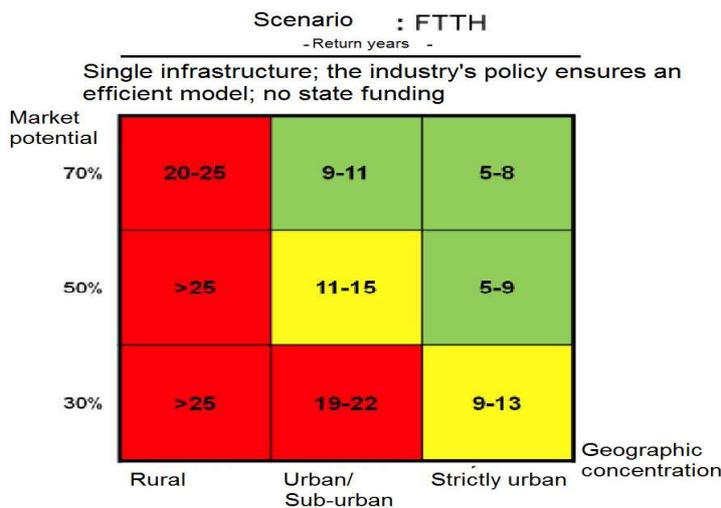
<sup>8</sup> Based on "Internet Value Chain Economics", see: references

### 7. Internet business models

A closer look at development trends and the latest technologies would suggest that the Internet will only increase in importance. What follows is that data transfer volume will increase continuously. It is natural to expect at least the same service quality as has been the case to date, and we may expect that consumers will require an even higher level of service (naturally associated with technical progress). All this may lead to an expectation that an all-round network of a new type will be developed, able to provide seamless, high quality reception and transmission of packet data (data, video, voice).

Infrastructure growth is critical for the industry as its attractiveness relies on it. However, the conclusions drawn in the previous chapter (Figures 11, 12) prove that infrastructure investment is not encouraged by its “guardians” to any significant extent. This is illustrated by Figure 13 showing example periods of return on investment into FTTH<sup>9</sup> in the current growth model:.

**Figure 13: Return years - FTTH**



10

It can be noticed that these are long periods, which even on strictly urban developed

<sup>9</sup> Fiber To The Home

<sup>10</sup> Based on 'Internet Chain Value Economics' – see: references

markets do not exceed 5 years. The main consequence is high investment risk and little attractiveness for business. It should be borne in mind that these calculations are based on the current revenue model - i.e. with the Client (service user) alone paying for the capacity.

Moreover, the differences discussed in the previous chapters between the data volume (amount of data) and the revenue volume within the Internet value chain would suggest that other future potential growth paths should be considered for online business models. Attention should be drawn to the fact that in the current structure, the major part of the revenues will be generated from services which do not burden the infrastructure to a very significant extent. To ensure sustainable Internet growth, bandwidth availability should be, at the same time, encouraged to achieve such levels as to create a platform for future technologies on the one hand, ensuring that services as they are provided today are of desirable quality on the other. **This leads to a conclusion that the current business model is likely not to be maintained due to its unsustainability.**

To ensure that investment and infrastructure growth are sustainable, we need to rethink the distribution of values between the key stakeholders. The main question that arises is how the costs of infrastructure growth should be distributed to ensure that growth and the concept of a new generation network are sustainable.

Three groups of stakeholders may be identified:

- Service users,
- Service providers,
- Internet (network) providers,

where the third group is one that benefits directly from selling capacity and is least interested in subsidising it. We are therefore left with service providers and service users. The first group is very much interested in ensuring connection of appropriate quality as this results in customer satisfaction and customer flow. The customers are interested in the right connection to maximise the usefulness of the service.

Three financing models for investment in Internet infrastructure should be given consideration:

1. **Traditional model** - used now, where the customer – user pays for higher capacity
2. **Service providers based model** - a model where Internet service providers cover the cost of improving the connection
3. **Hybrid model** – based on the Customer (user) and Internet service providers sharing the cost

Model 3 would appear interesting as it assumes that infrastructure development is a shared responsibility of the higher capacity's key beneficiaries. Of the models discussed above, it offers the highest ARPU generated from the connection (up to twice as much as the other options), which allows us to believe that it is the fastest track to modernizing infrastructure and the most efficient way to build a platform for further growth of the

Internet market. In contrast, the traditional model offers slightly lower ARPU than is the case of the service providers-based model.

Another advantage of the hybrid model is its "fairness", which obviously need not be the most important factor in opting for this model. Under this model, when the end user requires a higher capacity, the payment for it is shared between them and the Internet service provider. To put it another way, underlying this concept is the principle that the higher the volume of uploaded (downloaded) data, the more the service provider and the end user need to pay - appropriate tariffs, rates etc, are set of course.

Both the hybrid model which seems to be a serious option, as well as four detailed models presented later in this document have been discussed in more detail in one of the publications that this document is based on.<sup>11</sup>

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<sup>11</sup> See "Viable Future model for the Internet", references list

## 8. Market growth scenarios – regulatory implications

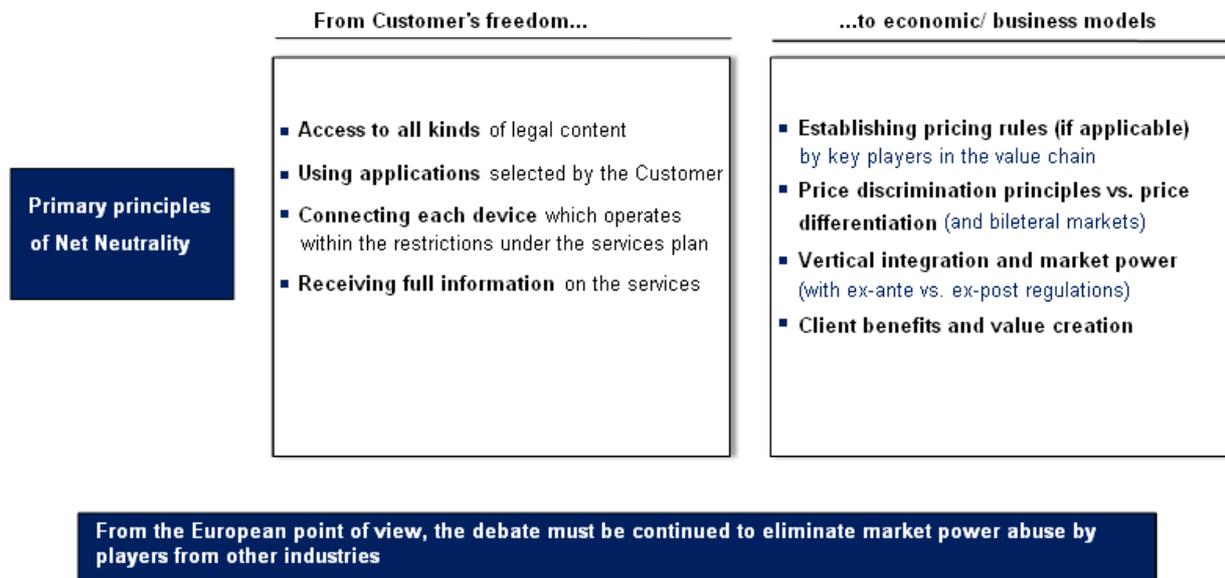
Let us remind the key challenges facing the development of a new generation network:

1. How to maximise user benefits by migrating to new solutions?
2. What would be the role of individual links in the value chain?
3. Will the current model and regulations allow us to achieve our goals? How can the neutrality principles be used to maximize benefits?

It should be borne in mind that these are questions on the specifics of regulations that would ensure that the changes in the industry follow the desired direction. The spontaneous growth of the Internet, however logical and justified it may have seen in its early days, needs to be regulated due to its inevitable commercialisation (which has actually already happened).

There is on-going worldwide debate on the scope of regulations that a new generation Internet might be subject to. **The American debate shifted its focus from the relationship between user and Internet access providers and that between the providers and other links in the value chain.** The figure below presents the scope of principles that define Net Neutrality, which, to a large extent, makes it attractive.

**Figure 14: Principles of Net Neutrality**



12

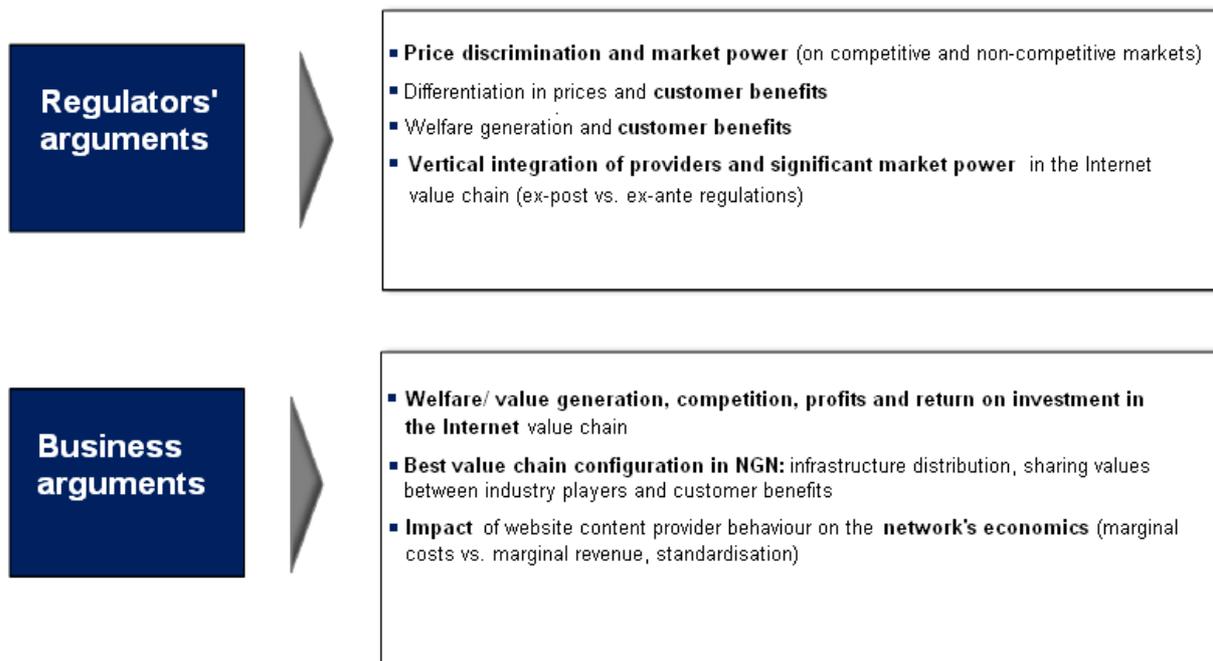
<sup>12</sup> Bilateral markets – markets on which both the providers and users gain business benefits. An example of such a market is the credit card market where the users want their card to be accepted in as many shops as possible and the shop owners would like to process cards with the largest numbers of users

As can be seen, these issues focus on two principle themes:

- Ensuring that the user's rights to freedom are not anyhow violated, which is ensured by regulations on traditional markets.
- Ensuring that the designed business model is based on business relevance and profitability.

In Europe, the public debate was actually started by the European Commission through public consultation on Net Neutrality. This took place in 2010 and resulted in a middle-of-the-road approach which makes sense in the current context and in the near future. However, to reach a final consensus and the best long-term solution, we will need to take the regulators' and business entities' stakes into account. The figure below presents the main aims of both groups:

**Figure 15: Future debate at European level**



An ideal regulatory model must be a compromise between both sets of arguments.

A debate on Net Neutrality in Europe started in fact at the end of 2009 when the European Commission adopted a declaration on monitoring the impact of market and technology growth on the Internet's freedom (which was not legally binding). The Commission's work was based on public consultation (in which 318 organisations participated, including the operators, government offices and consumer organisations), whose aim was to develop detailed recommendations on introducing additional regulations by 2010 (expected to enter into force in May 2011). The organisations'

approach to regulations is relatively lenient, which is due to a liberal stance by the European Commissioner for Digital Agenda (Nellie Kroes) and BEREC, an advisory body which claims that the work on neutrality is still in its infancy and it is too early to have any informed opinions. However, the very same organisation identifies three most likely future problems:

1. Breaching the rules on free competition through technological, economic discrimination as well as monopolies.
2. Uncontrolled and unsolicited growth of the Internet (innovation, freedom of speech)
3. Damage and difficulties for consumers due to absence of transparency and low quality of the services

The consultation ended in June and was summarised by the EC in early November 2010. It was concluded that at present no legislative measures need to be taken. However, it was also stressed that the regulations might prove necessary in the future. One of the most important outcomes was the decision to treat the Telecommunications Package, adopted in 2009 as a regulatory basis for fundamental neutrality issues. Therefore any subsequent measures should be postponed until it is implemented at national level. In addition, concerns have been raised over new business models, both as a threat to Net Neutrality and a factor that might change the present market structure. Organisation members participating in the consultation tended to voice opinions that revolved around establishing some rules on transparency but they were no clear signals that acceptable levels of the quality of the services should be set.

The debate was continued until 11 November 2010 at the Net Neutrality Summit in Brussels, during which the stance presented in the consultation's conclusions was reiterated. Neelie Kroes spoke mainly of "healthy and transparent competition", implying that the players should perhaps be allowed to test new business models that might increase the Net usage efficiency.

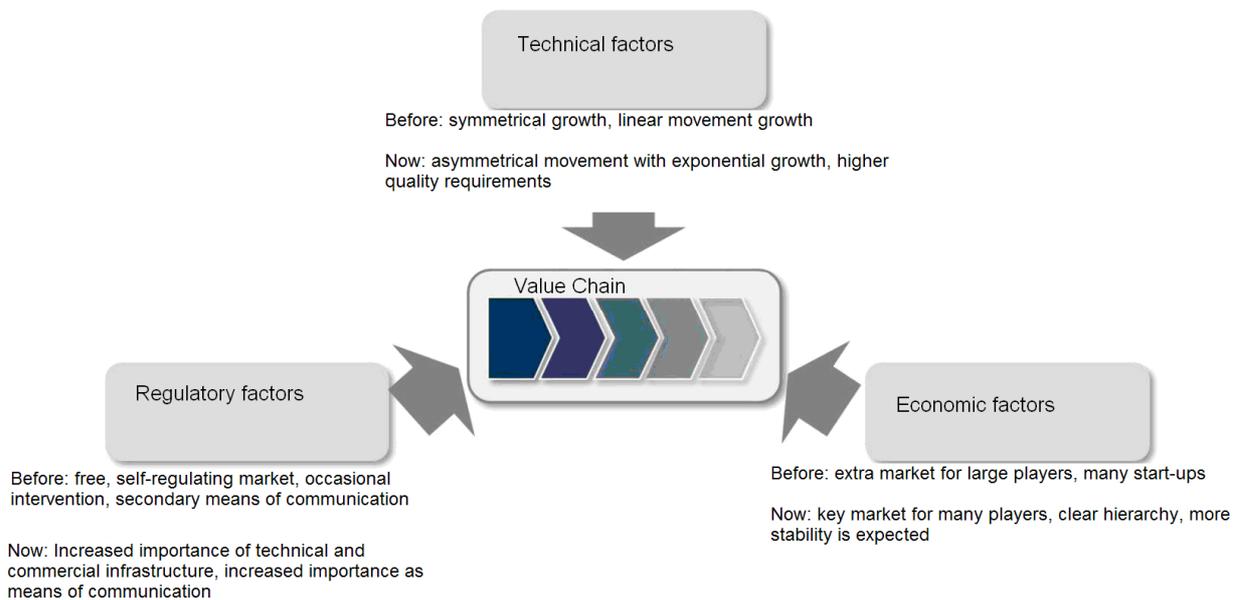
To summarise the European authorities' position it should be said that no regulatory needs have at present been identified. It is, however, expected that they will be essential in the future due to natural growth of the Internet or controlled tests of new market models. It should, however, be noted that the stress is currently placed more on complying with the rules on competition, the problem of business models being left aside to be solved in near future. Over the next year, BEREC intends to, in the light of main identified issues, analyse in detail the aspects that are key to the Internet neutrality (quality of the services, transparency, economic discrimination) which may result in information that will help us better understand the situation and verify the current position.

It should, however, be emphasised that at present no safeguards against monopolist practices are available. In the online economic reality, these are relatively easy to engage in for an appropriate size player and when such practices occur, they will be judged individually without any clear guidance.

### International regulations and business models

Taking into account the information analysed above, we may structure the factors that presently impact on the Internet value chain and potentially shape its growth. They have been presented below:

**Figure 16: Factors influencing Internet value chain**



The figure shows three sides that the best regulation model should balance:

- To ensure economics capable of covering the costs of necessary infrastructure growth to meet the increasing technical requirements
- To ensure security and legality of business and information flow
- To maintain the Internet’s attractiveness as a business platform

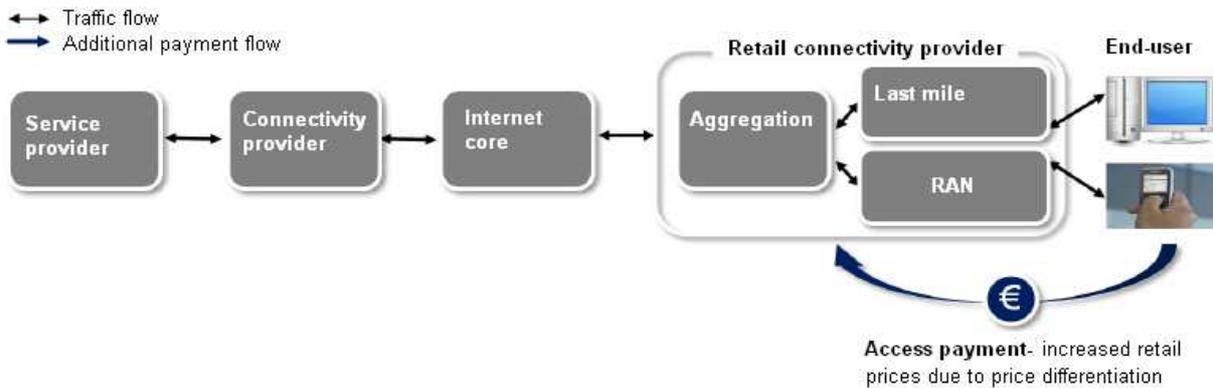
Different concepts of regulation models based on the above factors are available. Four key options of different scope have been analysed:

**Figure 17: Regulation model options**



## 1. Current model with anticipated price increase for users

**Figure 18: Model 1 – traffic transport and additional revenues**

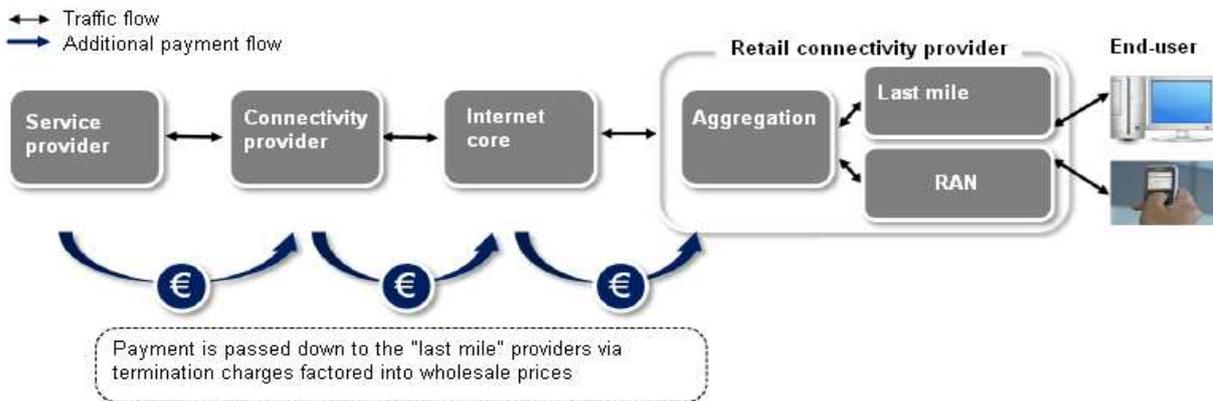


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In this option, connectivity providers increase their revenues by raising average retail prices, for instance by imposing tariff plans (based on time zones, packages, etc).

## 2. Payment for traffic

**Figure 19 Model 2 traffic transport and additional revenues**  
**Payment for traffic**



14

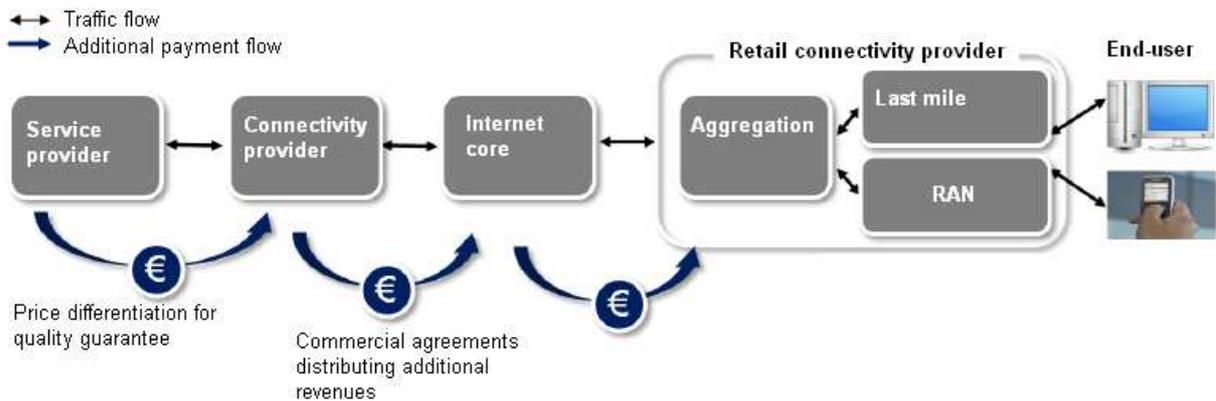
<sup>13</sup> See "Viable Future model for the Internet", references list

<sup>14</sup> See "Viable Future model for the Internet", references list

A model where service providers pay a “termination fee”, i.e a payment for traffic they provide in addition to the basic payment covering connectivity costs. The payments are subsequently distributed between all participating connectivity providers.

### 3. Differentiation in prices with the guaranteed QoS<sup>15</sup>

**Figure 20: Model 3 – traffic transport and additional revenues**



16

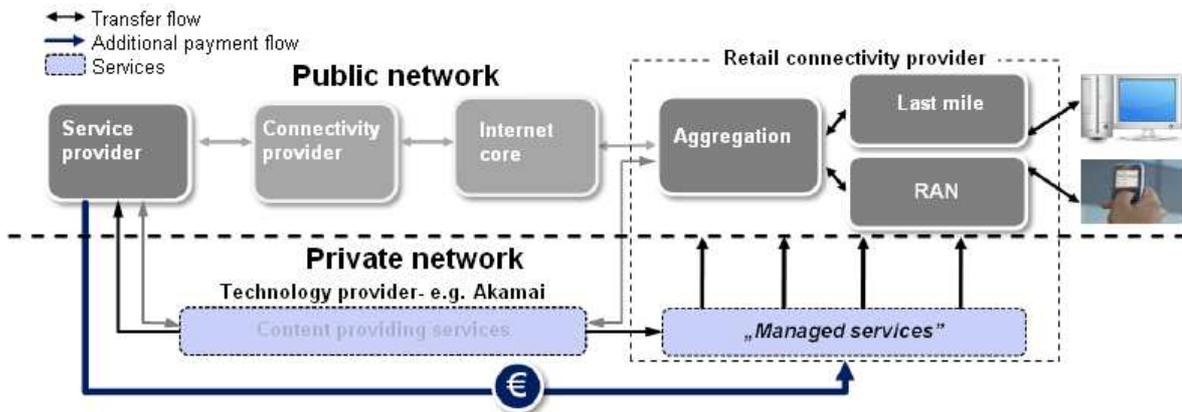
Service providers may purchase premium services for an additional payment - e.g. guaranteed priority of traffic flow. Connectivity providers share additional revenues according to agreements between them. Standard services remain a basic option.

<sup>15</sup> Quality of Service

<sup>16</sup> See “Viable Future model for the Internet” , references list

#### 4. Specialist services in enabling networks

**Figure 21: Model 4 – traffic transport and additional revenues**



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The option refers to connectivity providers offering different “managed services” in which they fully managed direct connections to the end-user that do not go through public infrastructure. The payments are based on bilateral agreements between connectivity providers and services providers.

It should be stressed that these are **theoretical target models** presented as a target market situation following transformations. However, it is extremely important to analyse them as likely to occur in order to be aware of their real impact and the inevitable debate on regulations.

To estimate the impact of the present and potential models on market growth in Poland (and abroad), we need to initiate a broad debate on potential solutions and analyse in depth all the scenarios of the Internet value chain’s further development as well as the regulator’s role, what would be the scope of regulations and how it will be regulated. In other words, we need to find a way to ensure sustainable Net growth, cost-efficient investments and safeguard the interests of competition and consumers.

In addition, due to the theoretical character of those models, they should evolve together with the industrial debate which will allow us to contrast arguments of all the market stakeholders. The outcome of this will be a model that will balance tendencies to neutrality and freedom of the Net and preserve the attractiveness of the market as the fundamental stimulus for its growth.

<sup>17</sup> “Viable Future model for the Internet”, see: references

## Internet Value Chain and Potential Market Models

By reviewing different aspects in each of the models, we have an additional opportunity for comparative analysis, which in the final stages of the industrial debate will prove invaluable while opting for the regulation or non-regulation model.

## 9. Conclusion

The information presented in this report may be grouped into three main points, all of which are true for the global Internet market as well as the Polish one:

1. With its ever-increasing resource intensiveness, the Internet is experiencing dynamic growth requiring more capacity and infrastructure flexibility.
2. The ratio of infrastructure usage to generated revenues shows that those in charge of its development have no economically sound reasons for further investment.
3. A solution to maintain desirable growth is developing a market model that will ensure the Internet's stable growth.

It should be borne in mind that one way to develop a model should be to initiate an open market debate, which is still in fact non-existent in Poland. It is important to stimulate the debate now as a decline in the market's economic attractiveness for the operators (in particular accompanied by its growing attractiveness for other players) may shortly hinder its growth or lead to unstructured and not always beneficial investment solutions (such as financing partial growth by selected stakeholder groups). One more argument to initiate a debate is that modern infrastructure (optical fibre networks) is still in its infancy in Poland, compared to other European countries.

It still remains unclear what the regulator's role in the debate should be. It would seem that they should play the role of an arbitrator or "catalyst". This is due to the fact that the number of debate participants will be large and it should be borne in mind that most players in the value chain are not subject to regulations (neither on the basis of their position within the telecom market nor their position outside this market). If we add the fact that the situation of the whole market depends on some groups, it would seem vital to have an entity with the right expertise, able to lead a debate in a way to balance the interests of key market players on the one hand and to ensure stable growth of the Internet on the other.

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