Triple Play
– A Strategy for the convergence of home electronics in the Swedish market

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Abstract

The convergence in video, audio and data mean traditional markets will soon be integrated into a new triple-play market. Industry actors must evaluate their current positions and strategies to reposition themselves to take full advantage of the new environment.

The utility of triple-play is initially simplicity and cost savings, presenting only slightly more value than stand alone services. The utility begins to increase exponentially once integration begins and content and services are added. Technological limitations such as bandwidth coverage and bit-rate limitations introduce barriers to when triple-play utility will take off.

The end goal of an industry actor's strategy should be to claim structural control in the new market through the implementation of a portal and by providing a portal-interface. This is the optimum method for leveraging financial gain from the most lucrative source; content. They will need to reshape their role as the conduit between customers, and providers of service and content. The customer should be leveraged to win over content- and service-providers to the actor's service.

A three phase strategy is proposed to navigate through the transforming market towards the goal:

- **Phase 1: Introduction –** Focus the offer on simplicity (3-in-1 bill) and cost-reduction (Take three, pay for two) and profit comes from cost synergies of providing all three services (Offer three, maintain, market, sell one).
- **Phase 2: Growth –** Technical barriers are removed and analogue broadcasting is cancelled, instigating the move of customers to digital-TV and the triple-play domain. Value adding services and content are launched through the introduction of the portal which adds brand value and strengthens customer loyalty. As the number of users grow dramatically in this phase income is dominated by sign-up fees and monthly fees, alternative rent streams however are introduced from commissions of services and content.
- **Phase 3: Virtual Services and Applications –** The early majority of consumers increasingly internalise the triple-play proposition and the value adding services. Services and applications are provided by the fully operational portal which now incorporates a majority of the triple-play income through commissions.

Through the phases the emphasis of value extraction is gradually transferred from being based on end-users fees, toward being based on commissions from content- and service-providers. This development is driven by the change in structural control from being defined by controlling infrastructure (such as telephone lines), to controlling content and services through contractual relations.

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1 Introduction

The traditional markets for TV, telephony and broadband services are changing. The keyword in this change is integration. New markets will emerge and existing ones' will be creatively destructed by upcoming innovations. This transition requires traditional actors in fixed-line telephony, broad-band services and cable-TV services to evaluate their current position and strategy. The future offers a range of new business opportunities, how should industry actors position themselves to take advantage of this new situation?

1.1 Goal

The aim is to provide a generic strategy on how current actors could leverage their current industry position to utilize the convergence in video, audio and data. The strategy should also provide a concrete plan of actions where it is described where and how an actor should be positioned in order to maximize their extraction of financial capital in this new setting.

1.2 Limitations

The end customer segment is discussed with regard to private users and makes reference to landlords and real estate companies. It is recommend that further research is conducted into the behavioural differences within these segments.

2 Background

With the future convergence of home electronics all traditional business actors will face a changing business environment. Companies that were previously providing separate services to different markets are now emerging into one and the same market. In order to develop a strategy for these new market opportunities it is important to first define the current situation. The background will start by outlining the technologies behind triple-play and its market. After that the traditional value-chain for cable-TV, broadband and telephony services will be analysed.

2.1 Definition of triple-play

Triple-play is often defined as the transportation of data, voice and video over an IP network. This definition is narrow and very technologically oriented, throughout the report triple-play is viewed as an integration of voice, video and data; integration for both the provider and the consumer.

2.2 Identified technologies, innovations and markets

This section aims to identify how the innovation triple-play links current technology performances with market utilities. Figure 1 below shows a simplification of how the linkage is done, and how triple-play links it together. The two technologies shown in the picture; cables and data protocol, will be analysed from its dependencies and performances. After that market needs and utilities will be defined, and finally look how the triple-play innovation can be used to serve the markets.
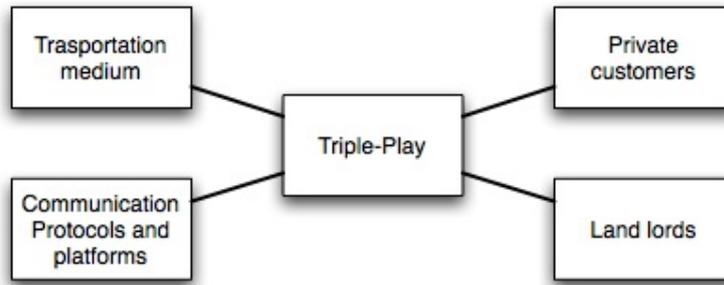
Figure 1. Linkage between technologies, innovation and markets

2.2.1 Technologies

For triple-play to achieve commercial success two technologies play a crucial role in the implementation; the **transportation medium** and the **communication protocol**. The medium that is used is cable; mainly fibre, cupper and coaxial. The fibre cable offers a higher bandwidth but is expensive, and has therefore mainly been used in backbones. Coaxial- and cupper cable are cheaper but have a lower bandwidth, and wireless technologies are increasingly posing as a probable complementary or substitute technology. The most commonly used protocol is the Internet Protocol (IP) for data communication and Dvb-c for cable-TV broadcasting.

Dependencies

The cable technology is the medium used to transport the data, and it is one of the physical technologies necessary for implementing triple-play. There are several other technologies linked to the cables such as switches, decoders and technical platforms. Communication protocols work on several different layers in a network and are therefore depending on how data is represented and authenticated. These developments are largely controlled on the international level by global organizations and standard bodies. A protocol's performance is on the contrary dependant on the format of the data that it transports. Improvements on data compression and representation can decrease the bandwidth necessary to transport it. For example, the new MPEG4 standard to compress video decreases the use of bandwidth with 50% compared to the old MPEG2 standard.

Performance

An analysis of the linkage between technology base and technology performance has discovered that some linkages are of more importance than other. These linkages are shown in Figure 2. The thicker line shows the more significant linkages. It can be seen that the bandwidth-performance is linked to platforms, cable type and protocol. Through the new technical platform docsis 3.0[1] triple-play actors using the cable-TV network will in be able to offer higher bandwidth over their existing cable. By comparing the three types of cables, the fibre cable offer among other things, a lower loss of signal and higher performance. This makes transmission over long distances possible. The data-carrying is also thousands of times

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[1] http://en.wikipedia.org/wiki/DOCSIS. DOCSIS is a standard developed by CableLabs which defines the communications and operation support interface requirements for a data over cable system. It permits the addition of high-speed data transfer to an existing cable TV system. DOCSIS 3.0 feature "channel bonding", which enables multiple downstream and upstream channels to be used together at the same time by a single subscriber.

greater[2]. Some disadvantages are high investment cost and a need for more expensive optical transmitters and receivers.

For transportation protocols a new standard, IPv6, has been created to solve the problem with IP-addresses among many things. By enabling unique identities to all equipment and appliances it opens up for new levels of integration. Some complications exist due to its scope. The problem is that all existing equipment needs to be upgraded and the implementation process will therefore take some time.

Other performance parameters provided by the technologies are; reliability so that sent data is not altered, tapped or lost; compatibility so that different technologies and services can interact; signal/noise ratio to ensure a good quality on broadcasting as well as telephony.
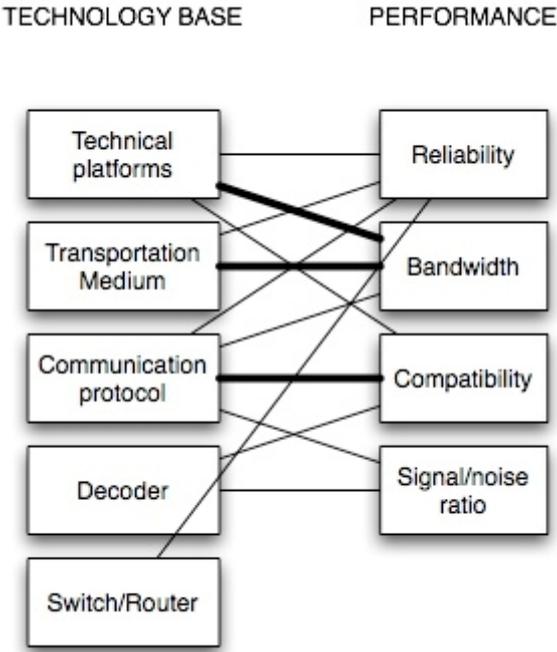

Figure 2. Linkage between Technology base and Performance

2.2.2 Market Analysis

The market for triple-play is a demanding, switching costs are low and competition fierce. Traditional actors such as TeliaSonera and Com Hem's advantages are that they already have an established presence among a large customer base and have a well-known brand. New and smaller actors' must utilize their opportunity to brand themselves as the "new and modern" or "small-and-cheap" alternative.

Utility demand
The market for triple-play can in this commencement be segmented into two markets; landlords and private customers. This segmentation is due to different characteristics between the two segments. The two markets different utilities are shown in Figure 3.

Required vs. order-winning utilities
In the current setting when there is a broad range of transfer speeds, a higher transfer speed can be an order-winner. Also for private household; simplicity, the number of services and

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[2] http://en.wikipedia.org/wiki/Fiber-optic_cable

integration, may be even more important than speed and quality. For landlords, who in many cases decide what the private households should be offered, value integration and cost (cost is not included in the figure but is a factor that is present). Both IP telephony and especially IP-TV are dependent on high transfer speeds and overall high quality broadband to function properly. Therefore high transfer speeds and quality will be seen as qualifiers in the future to provide the rudimentary services. Speed and quality need to meet a certain required level but improvements will not increase customer's value perception. They must be offered at similar levels to competitors but will not be decisive factors. Similarly service reliability will need to be at acceptable standards but will not be decisive in increasing customer value.

The concept of triple-play requires a fundamental level of integration and simplicity such as all-three-on-one-bill to start with. Yet after this point, increases in service integration and simplicity will add marked value to the offer and the integration of some services may be an order-winning utility. These services may include visualisation of email and voicemail on the TV, Video-on-Demand, gambling, dating and video conferencing, and so on.
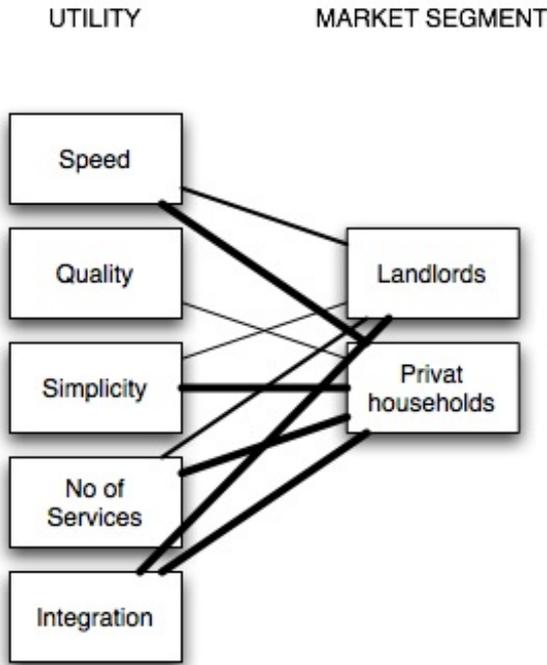

Figure 3. Linkage between utility and market segment.

2.2.3 Triple-Play

Triple-play, as defined in 2.1, is about integration. With technology performances and customer utility defined, triple-play will transform performances into utilities palatable for the market.

Dependencies

To offer triple-play most actors are dependent on increased bandwidth to achieve necessary integration. However to provide these three basic services in an integrated way there are further technologies required than the cable and communication protocols. These will include databases, web tools, and a common platform for launching and managing the integrated triple-play experience as well as technical platforms such as docsis. A platform that enables triple-play management is BEA which is a web service for the integration of bills and

services. Another possible platform is MHP[3] which is a technical platform for interactive services. Development of solutions like BEA and MHP are important for all current actors in the communications market in order to offer a full triple-play experience[4].

To deliver triple-play actors' also need complementary products to the services which come out from the cable. These may include digital boxes that support interactive services and DVRs[5] for recording programs.

Despite the technical and product dependencies, actors are also dependent on a broad spectrum of services and content. These can be acquired by in-house development or by external content providers as discussed in the market section.

Performance/Utility
The utility provided by triple-play can be linked to technology performance. As shown in Figure 4 we believe the most important links, the other still important, are the ones from bandwidth and compatibility to speed, simplicity, number of services and integration. It's not possible to say that the others who are not marked with bold lines are unimportant because they are indeed important, but for the innovation to develop they only need to meet a certain level, the others in contrary need to be continuously developed in order to stay competitive.
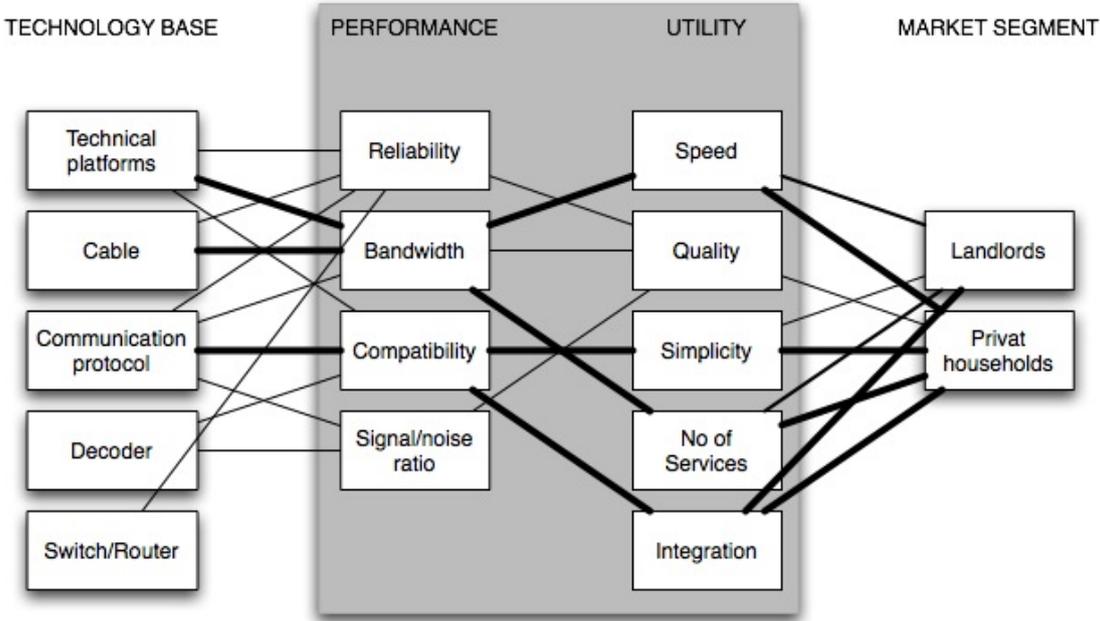

Figure 4. Linkage between Technology functions, performance, utility and market segments

2.3 Value Chain

In order to identify where the opportunities for competitive advantages can be found, and to support our line of reasoning on the current industry setting, a value chain illustrating the

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[3] Multimedia Home Platform
[4] The importance of efficient customer management is discussed extensively in Anne Robinson, "Succesful Billing in the Triple Play Network", http://www.convergedigest.com/blueprints/ttp03/z6portal4.asp?ID=55&ctgy=Services
[5] DVR = Digital Video Recorder

triple-play innovation is depicted in figure 5. The following text briefly discusses the partnerships, relations and assets which are the most relevant in the current context.
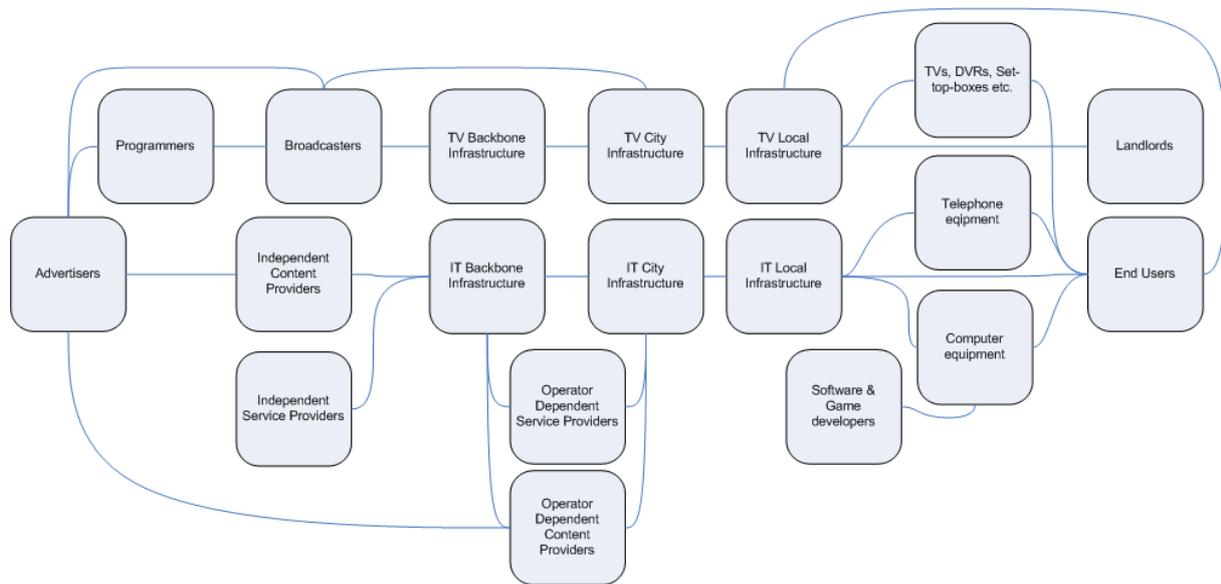

Figure 6. Value chain for triple-play services.

Business relations
- Most current actors act as the focal point of the complex network of relations that constitute the triple-play experience to the end user.
- Most traditional actors' positions are marked out mainly from their assets in cable infrastructure.
- Many actors have relationships with actors in the home-appliances industry.
- Actors with relationships with broadcasters are essential for the cable TV market, and make out a competitive advantage against those who don't have them.

Partnerships
- In the digitalization phase of television services the market for niche channels is becoming increasingly important.
- Many companies (primarily those from the cable-TV part of triple-play) ensures (and if possible, continuously should ensure) the expansion of their customer base by getting real estate firms such as Drott[6] to contractually agree to contract them on the initial construction of new buildings TV- and Internet-infrastructure, as well as to provide the continuous services of these
- All actors without their own national backbone need good relationships concerning infrastructure with Skanova, this gives them a reliable connection to Internet backbone services where they don't own it themselves, and increases the reliability of their services.

2.4 Competitive surrounding

Competitors in the triple-play market are likely to develop from two situations; big actors expanding their service portfolio and one-service-actors consolidating in joint triple-play ventures.

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[6] "Com Hem skriver avtal med Drott", PIR, 2004-06-08

TeliaSonera

TeliaSonera has a similar position to Com Hem in the value chain but uses the telephone network infrastructure and xDSL technology to provide triple-play to its customers. Their technological position is inferior to Com Hem's, however they control a larger share of the overall market. They have a 39% market share in broadband[7] services and a close to 100% share of the fixed-line telephone market[8] making TeliaSonera the largest actor entering the triple-play business. By having a customer base that is unmatched by any competitor they can use this in combination with a good initial offer to create a favourable position in the battle for triple-play customers. Their image is very much associated with the old monopoly and not necessarily very innovation-oriented which can be used against them in the very dynamic business of triple-play. Their organization was not built for a dynamic market such as triple-play, but for a steady-state market. The relationship oriented business of triple-play is not well suited for this kind of organization and the change might not be easy for TeliaSonera.

Com Hem

Com Hem is mainly characterized by their cable-tv services. They are the largest actor in this field with over one million customers. They are also the third largest broadband service provider. Com Hem was the first actor to introduce triple-play and are currently marketing this service under the Com-bo brand. Com Hem's biggest asset is their large customer base and deep knowledge in cable-tv technology. They are however completely new on the telephone market and could potentially experience problems in this market. Com Hem also owns their infrastructure. This infrastructure has the potential of high speeds and the implementation of the new docsis standard that will be finished in 2007 can give them a competitive advantage.

BBB

BBB is second largest provider of broadband (with a market share of 23%) and as the market leader in broadband telephony they aim to position themselves as the innovative and technology-superior provider. In collaborating with Viasat they have shortened the chasm in their triple-play knowledge. Their largest hurdle is there their small customer base relative to Com Hem and TeliaSonera. This means they must not only convince existing customers to upgrade to triple-play services, but also attract and win over new customers from competitors. Because of the importance of informational increasing returns, this initial inertia may be a big disadvantage and should be used by competitors who wish to get a head start.

2.5 Value extraction

Current revenue in the communications industry mainly comes from:
- services within digital-TV, broadband, telephony and pay-per-view,
- sale of consumer products,
- sign-up fees, and
- monthly fees

The current value proposition aims to extract value from the end users. The "raw material" is bought through contracts with content- and service-providers or "produced" in-house, packaged and distributed as products under the actor's brand and sold with monthly fees to end users.

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[7] "Bredband i Sverige 2005", PTS, 2005-06-30.
[8] "Svensk telemarknad första halvåret 2004", PTS-ER-2004:43, PTS, 2004-12-22.

3 Business Analysis

The business analysis uses the information presented in the background and develops trajectories for the technologies, innovations and markets associated with triple-play. These trajectories together with lessons learned from benchmarking NTT DoCoMo's i-mode innovation system indicate the future of triple-play. Knowledge from these areas are used and combined in a new value chain proposition. The results from the analysis are finally used in section 4 where a triple-play commercialisation strategy is developed.

3.1 Trends and shifts

3.1.1 Technologies

- Increased transfer speeds,
- Wireless broadband, and
- IP-TV

The development in connection speed has been exponential during the last 20 years. Figure 6 illustrates the kick in development from the mid-nineties, and it appears that the development will not slow in the foreseeable future. This development further indicates that the transportation of media related services will occur over the Internet through the IP-protocol.
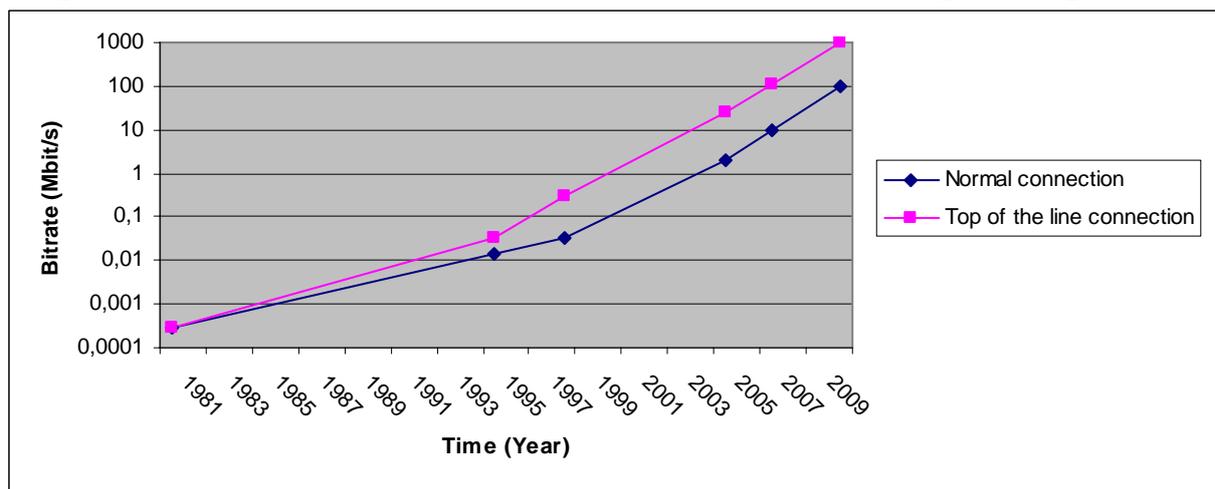

Figure 7. The bit rate development of end users available Internet connections[9]

When it comes to fibre alone, the development is even more impressive as can be seen in Figure 8.

In addition the trend of wireless technologies is increasingly influential. The leading technology in the field is WiMax[10]; it offers high-speed access in a radius of up to 50 km. It

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[9] Carl-Magnus Dumell, "ADSL är här - glöm ISDN",
 http://www.dumell.net/text/jt/jt990116.html
Nobuo IKEDA, "Beyond the Internet", http://www.telecomvisions.com/articles/beyondip/
"Powerbit först i Sverige med 56 kbit", Computer Sweden no. 19 1997
Graham   Miller,   "Getting   Started   On   The   Internet",
http://www.suncoast.com.au/Kenilworth/Voice/98-02-25/p11a.html
http://www.fedele.com/website/em/em100796.txt
[10] Developed by Intel, http://www.intel.com/netcomms/technologies/wimax/

may be utilised for remote housing as "last-mile broadband" rather than as a complete replacement for the fibre cable and for upgrading of existing infrastructure. WiMax will therefore still be dependent on a stable and high performing cable in the foreseeable future.

There is a clear shift to the transmission of Video via IP. There is the firm belief that current transmission protocol, Dvb-c[11], will be replaced by IP and by 2008 all video will be broadcasted through this medium. In line with this trend actors are already beginning to use the IP-protocol for all the triple-play services[12], enabling a higher level of integration and better use of the cable's bandwidth. Also, the docsis 3.0 platform and the like are increasingly being installed, providing a higher bandwidth and two-way communication over the cable TV network. Further developments in video compression standards[13] are taking place. They will enable Video transmission over less bandwidth.
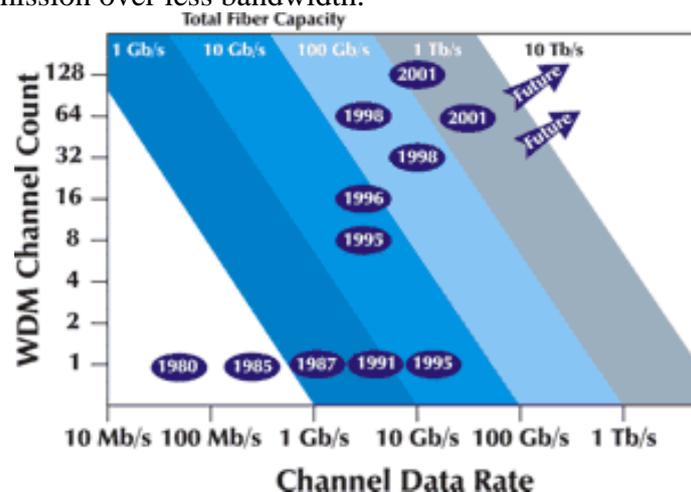

Figure 8. The Growth of Optical Fibre Transmission Capacity [14]

3.1.2 Innovation: Triple-play

- Digital-TV: The shut down of analogue TV and emergence of niche channels
- Integrated services (TV-on-Demand etc.)

By 2008, the entire Swedish network is expected have transferred to digital-TV. While the traditional cable TV operators customers' will continue have access to the analogue, the market shift will soon influence them to make the transformation as well. The digital switch and the triple-play experience will be mutually acceleratory; the advent of triple-play will encourage customers to purchase the digital service, and those who receive digital services will be more likely to acquire the triple.

The present market is developing rapidly but the trend is not yet revolutionary. Presently, there are not enough services offered to produce a radical shift in home entertainment. The current value of the triple-play is produced by the simplicity and convenience of the service, i.e. "buy three and pay for two"-offers and the like, and makes it slightly more valuable than the value of the three distinct services. This value is not sufficient to produce a radical shift to triple-play. However the expected increase of bandwidth in the near future and the shift to IP

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[11] Digital Video Broadcasting

[12] Martin Kull, chief technical officer at Com Hem, "Supersnabbt i kabelnäten", Computer Sweden, 2005-06-03.

[13] See 2.2.1. about the advantage of MPEG4.

[14] A brief history of fibre optic technology, http://www.fibre-optics.info/fibre-history.htm

overhaul will occasion the feasibility for more services offered through triple-play and the value of having all communication services through the same provider will noticeably increase. As customers begin to change to triple-play, the value of network services will grow and the triple-play growth will become exponential. This growth is illustrated in Figure 8.
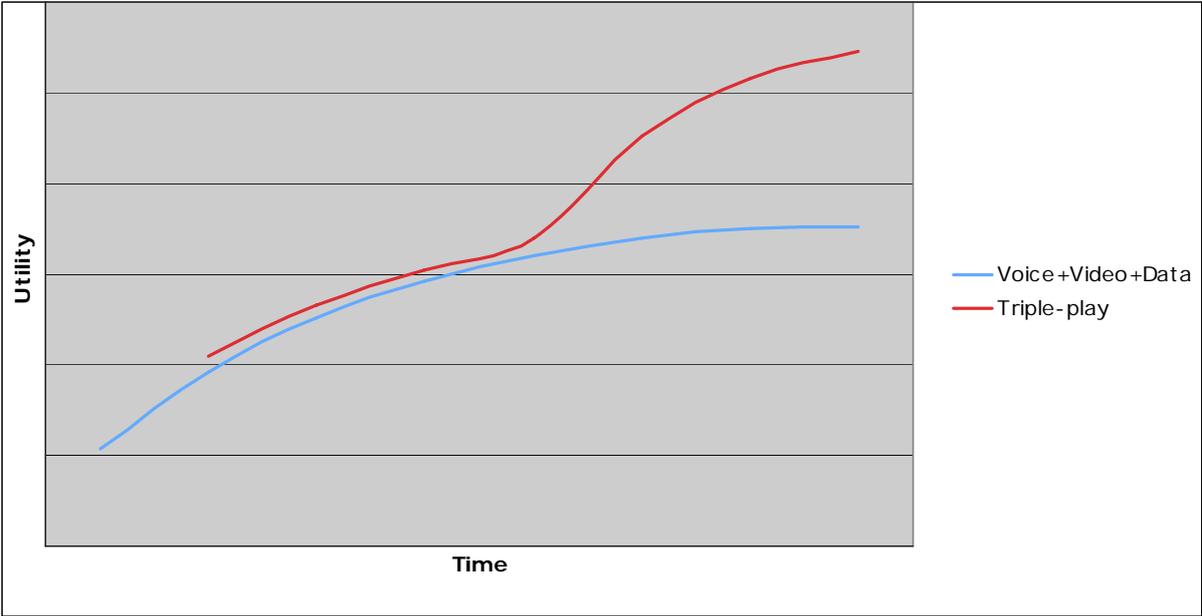

Figure 9. Utility for video+voice+data compared to triple-play

3.1.3 Markets

- Broadband coverage
- The cost for telephony
- How content will be bought in the future.

Increased broadband connections across Sweden will promote integration of services. At present 35 % of all house holds have a broadband Internet connection and this should increase to 60 % percent by 2010 if current growth pace is kept. There is a critical mass of customers required to trigger investments in radical integrated services. When 50% of households have broadband connection the beneficial effects of network services will take effect. From the evidence (see figure 9) this is estimated to occur around 2008.

Furthermore, IP-telephony will also trigger integration. IP-telephony grants providers with lowering costs and maintenance by incorporating data and telephony transmissions. More importantly, companies such as Skype, are creatively destructing the old telephony market. The new value proposition is likely to include a monthly fee for a service rather than call-based pricing leading to its assimilation into other offers.
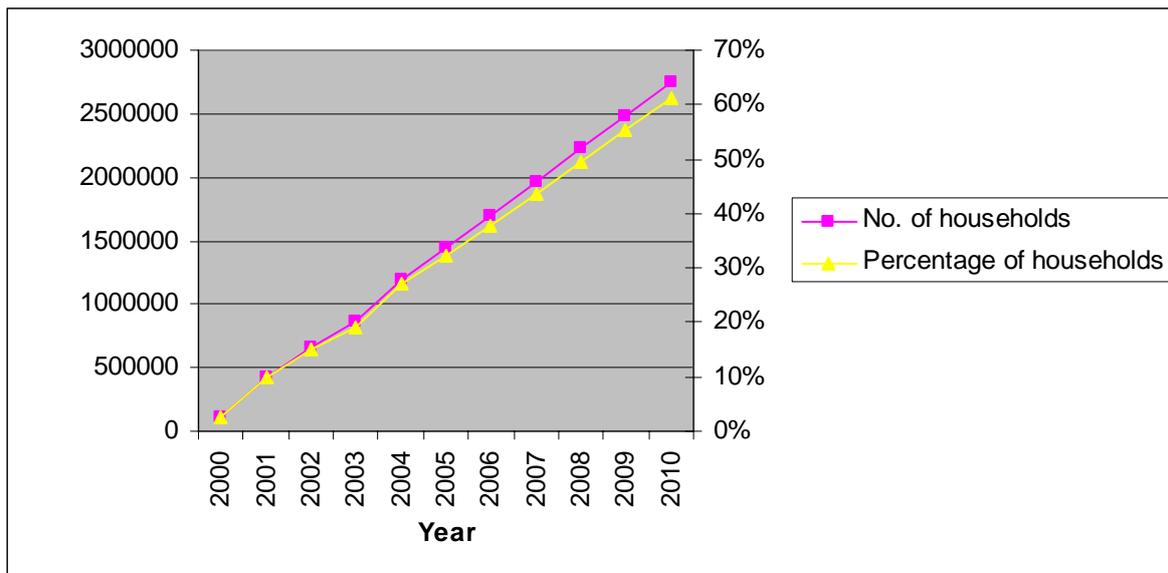
Figure 10. The development of broadband coverage in Sweden from year 2000 until 2010[15]

3.2 Benchmarking

One of the key concepts in the emerging triple-play market is to create an innovation system[16]. The key innovation consequently, is the contractual network that enables all the different actors to collaborate under win-win situations and not any single element in the system. One can look at NTT DoCoMo to learn some lessons in creating this system.

3.2.1 NTT DoCoMo

In 1999 the Japanese company NTT DoCoMo released its mobile Internet concept/service/platform i-mode. The innovation system is described in Figure 11 below. I-mode has proved to be a huge success: over half of Japans population subscribing to its services, and the new industry had a total turnover of 1 Billion €in 2002.

The key factors in DoCoMo's success, which Com Hem should consider were:
- Good incentive structure for content-providers. By keeping the commission fee at a 9% level NTT DoCoMo opened up a huge market for value adding content and services on the system. This created a positive circle: new customers signed up for the service because of the available content, and more content-providers adding value to the system because of the great potential provided by the large user base.
- Getting all the actors to work in the same direction. By striving for standardization of platforms and by communicating a common goal to the different actors in the industry the joint effort of all the actors made the market grow at fast pace.
- By allowing un-official content-providers to coexist with the official ones, the diversity of content and services grew and the value for the customers increased.

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[15] PTS-ER-2003:27, PTS-ER-2004:28, PTS-ER-2005:24

[16] By innovation system we mean a network of content- and service-providers interconnected with hardware and software from a variety of providers in a standardized platform.
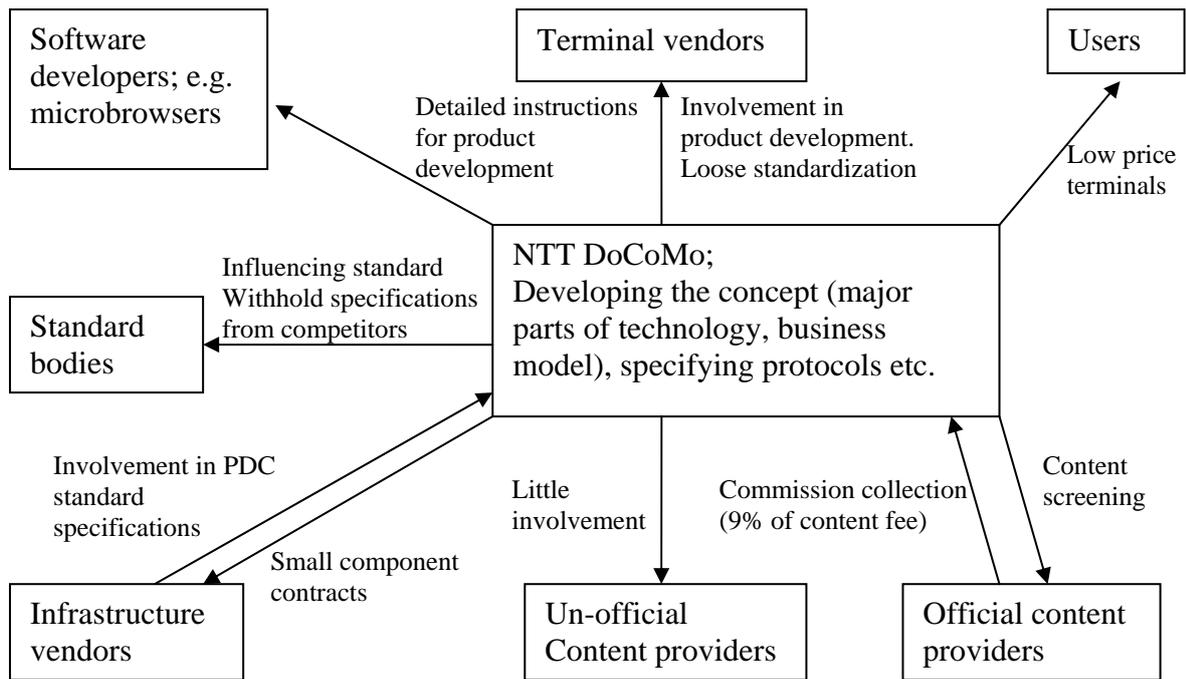
Figure 11. The i-mode innovation system[17]

3.3 Value chain proposition

The new value chain represents the integration of the three services into one transport medium. It also includes the new market in inter-communications equipment, made possible by the integration of services.
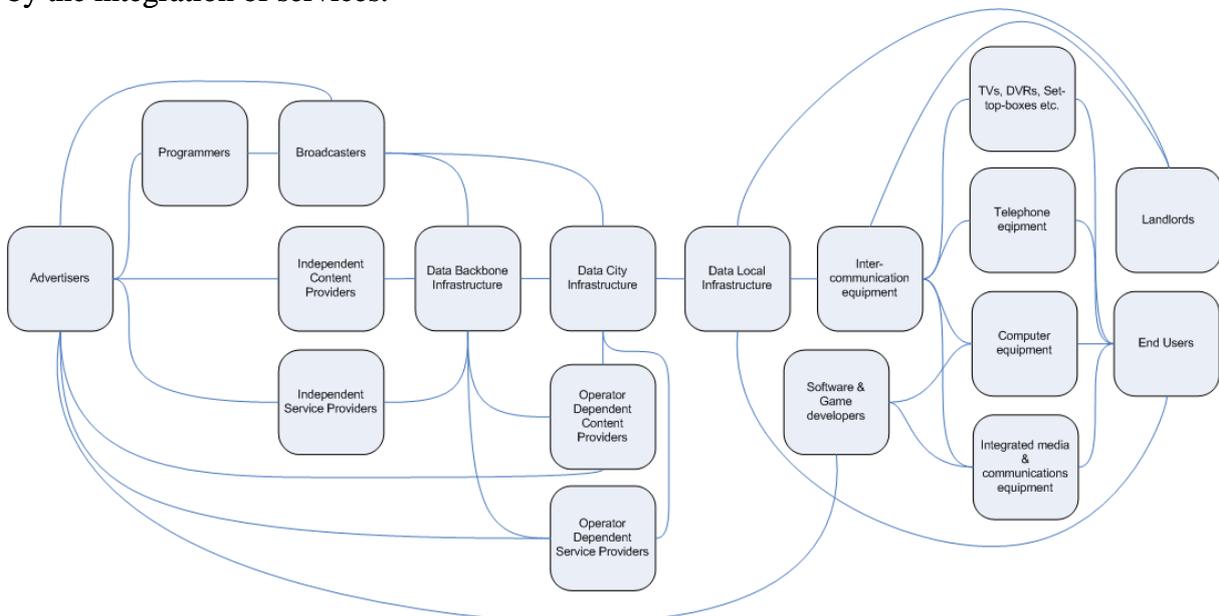

Figure 12. Value chain proposition for the triple-play innovation

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[17] Sven Lindmark, Techno-Economic Analysis (Part 1 in lecture series from the course *"Design of Technological innovations and markets"*), Management and Economics of Innovation at Chalmers University of Technology.

4 Strategy

Triple-play actors should claim structural control in the new market through the implementation of portals and by providing portal-interfaces. This is the optimum means for leveraging financial gain from the most lucrative source, content. They will need to reshape their role as the conduit between customers and service- and content-providers. The business transformation is structured in three phases; 'introduction', 'growth', and 'Virtual services and Application'. These phases can be seen in Figure 13.

4.1 Business transformation

- **Phase 1: Introduction –** Current actors on the communications market adds the services they lack to their existing offer and introduce triple-play. Due to technical limitations little extra utility is added and the offer is focused on simplicity (3-in-1 bill) and cost-reduction (Take three, pay for two).
- **Phase 2: Growth –** Technical barriers are removed with the introduction of new platforms and technological improvements and analogue broadcasting is cancelled instigating the move of customers to digital-TV and the triple-play domain.
- **Phase 3: Virtual Services and Applications –** The early majority of consumers increasingly "understand" the triple-play proposition and the value adding services. Services and applications are provided by the fully operational portals.

Value extraction

Through the phases the emphasis of value extraction is gradually transferred from being based on end-users fees toward being based on commissions from content- and service-providers. This development is driven by structural control being defined by controlling infrastructure to controlling content and services through contractual relations.
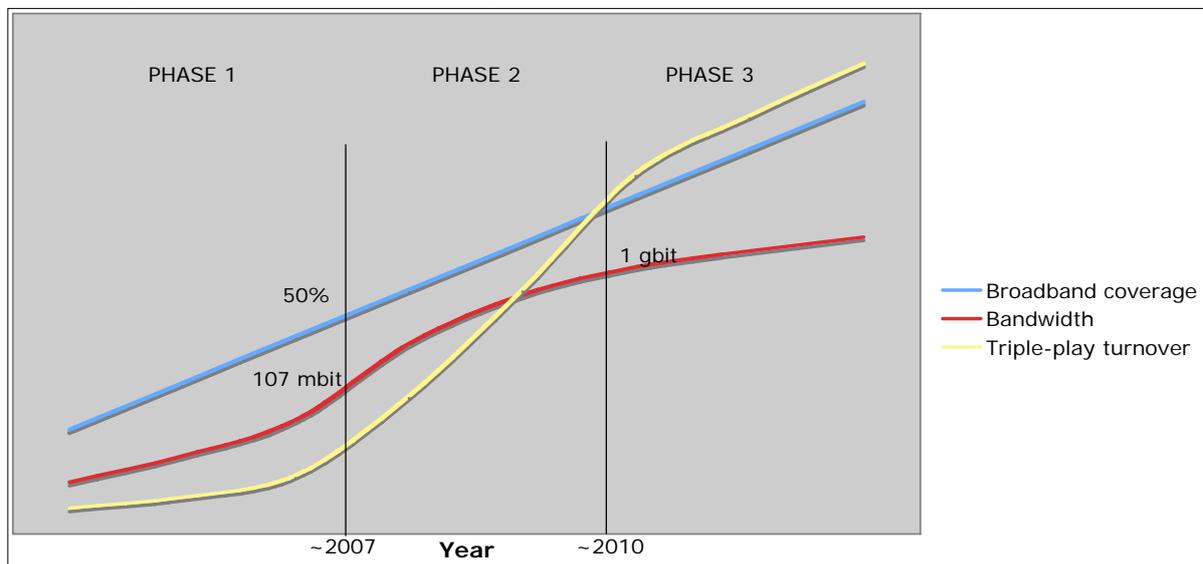

Figure 13. Phases in the triple-play evolution

4.2 Partnerships and Contracts

- **The Portal** - once structural control is defined by access to content, success is reliant on being able provide premium content and services through a portal.
- **The Interface** - investing early in a user-interface defining the "look-and-feel" of services and by offering this to content- and service-providers make users accustomed to the actor's own look and creates loyalty and a lock-in to said actor.

- **Customer Relations** – Ensuring good relations with providers requires leveraging the good relations the actor has with its customer base. The customer is now the partner in leveraging capital from service providers as much as the service providers are partners in drawing money from customers.

4.3 Competitive surrounding

During the introduction phase we can expect a very competitive market over the customers, and actors with control over infrastructure and large customer bases have an advantage in this phase. With the consolidation of the market the competition of the lead users will be fierce. Due to network externalities and economies of scale it is crucial to invest in growth capacity.

During the growth phase currently big actors have the opportunity to utilize its growth capacity and grow extensively within its own customer base, focusing on keeping competitors outside. The actors should encourage and provide incentives to content- and service providers in this phase to be able to offer order-winning utility to hesitant customers and to ensure a good position in these areas which will become the key to structurally controlling phase three.

Entering into the third phase it is possible to believe that infrastructural control of cable and the like will prove less competitive. At this stage the market actors will have had to position themselves in the content-part of the value chain in order to extract enough value.

4.4 Value proposition

- **Introduction Phase** – Actors should extract value from the end customers by offering triple-play services under a single brand. Integration produces more efficient maintenance, as well as synergies in sales and marketing, and resulting in lower costs and increases profitability. Moreover, as discussed in 2.2.1, BEA and similar systems offer lower overhead cost per customer through streamlining customer management and billing processes, further reducing overall costs. Through both lowered costs and increased simplicity customers are enticed to the actor's services. Revenue comes from sign-up fees and sale of consumer products such as digital boxes as consumers change to digital-TV. The formation of an appealing offer, extensive marketing and promotion of triple-play are all heavy costs required to establish a good position in the industry. For these reasons, profitability is low or null in this phase.

- **Growth Phase -** The early majority join the triple-play creating a large turnover from the large customer foundation. As the user base grows, revenue comes from the sign-up fees. The actors' triple-play portals are launched, and soon after the value-adding services and content on these portals begin to contribute to revenue. The changing behaviour in telephony compels actors to offer flat-rate services; the triple-play industry is more or less compelled to work out monthly fixed-price payment strategies for triple-play which permanently decrease the continuous income from end users.

- **Virtual Services and Applications** – Actors should now extract more value from commissions of services and content than from customer fees. Customers are no longer viewed as the primary resource of income but as partners in acquiring content services. The majority of both early and late adopters learn about and understand the convenience of triple-play, leading to traditional markets (e.g. movie rentals) to be creatively destructed. Triple-play replaces old services, assumes a market share of industries; such as online gaming and gambling, and new integrated services appear.

Together these account for multibillion SKr business opportunities. An individual actor's share of the value is maximised through commission fees from providers utilising their portal.

4.5 Challenges and risks

During the introduction phase the most prominent risk is "over-promising". An actor must make sure that their services do not under-perform compared to customers' expectations. Particularly for actors entering the fixed-line telephony market their performance may be inferior to existing actors, creating customer dissatisfaction. Inferior services in this phase will have long lasting consequences for the actor's reputation and brand value. This risk should be confronted by careful evaluation of services.

A challenge in the second phase for actors who own their own infrastructure is to keep customer loyalty through taking advantage of this structural control from their cable. Competing transportation mediums, such as wireless, will decrease this control of customers. This makes it critical for these actors to tie up a large portion of their customer base to triple-play during this phase. Another challenge is to persevere and continue to invest in content and services even though the initial response isn't indicating major success stories.

The success of the second phase is also dependent on crossing technical barriers and the creation of long-term relationships with content- and service-providers.

In the third phase it is important to continue the innovation process. The portal is not likely to be the final step of triple-play. A successful actor must continue to actively scan the surrounding markets for the next step in the innovation development.