Alternative Views of ICT & TIME: An Application of Scenario Analysis and Platform Theory

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Alternative Views of ICT & Time: An Application of Scenario Analysis and Platform Theory

Completed Research Paper

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Abstract

Innovations such as smartphones, laptops, tablets, and different forms of wireless Internet are transforming the nature of e-Commerce. Traditional industries are being thrust into the Internet age as consumers force firms to adapt to their anywhere, anytime, any device (AWATAD) lifestyle. This shift increasingly relies on digital platforms to act the intermediaries that enable businesses to reach their customers. The current changes are dynamic and discontinuous as players from outside the traditional industry boundaries are changing the competitive landscape. This paper analyzes data from executives in the telecommunications, information, media and entertainment (TIME) industries, a sector undergoing substantial change. Using platform theory as an analytical lens, this paper applies Scenario Analysis to turn key uncertainties into illustrative futures that can guide managerial action. This paper provides practical guidance to TIME executives and demonstrates how the Scenario Analysis method enables researchers to communicate theory-based insights to practitioners in a relevant way.

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Introduction

Changing technological paradigms are altering customer preferences. Consumers have embraced smartphones, laptops, tablets, and different forms of wireless Internet. In turn, they are adopting an anywhere, anytime, any device (AWATAD) lifestyle and increasingly demand this access from all of their service providers. Advances in one type of consumer technology create the expectation that other offerings will provide comparable experiences, which translates into the demand for all types of firms to offer easy-to-use, mobile solutions (Zeadally et al. 2011). The telecommunications, information, media and entertainment (TIME) industries face significant changes as innovations in information and communication technology bring new electronic commerce-based business models. Firms can now bypass steps in the value chain formerly controlled by traditional gatekeepers. Physical delivery infrastructures are decoupling from content services, allowing firms to deliver content and services "over-the-top" (OTT) using the open Internet. This ICT shift empowers firms to use infrastructure owners' own networks to compete against them without remuneration (Ahmad and Begen 2009).

These ICT-based business challenges have been addressed in practitioner literature (e.g. (Bieler 2011; Gimpel et al. 2012; PricewaterhouseCoopers 2010); however, with notable exceptions (Blasco-Arcas et al.

2013; Lian 2011), there is little theoretically-based analysis of the problem within IS research beyond IP piracy research (e.g. (Smith and Telang 2009)).

Platforms that provide connectivity by matching different types of users are playing a more pronounced role in the video ecosystem, especially as it moves toward e-commerce models such as Internet streaming and digital downloads. Many industry platforms used to be limited in scope, such as movie theatres which match film studio content with audience members, or TV networks that match video programming, advertisements, and viewers. But today, the most prominent platforms have significant scope, covering books, music, games, video, and software applications. New players are becoming powerful forces and dominating other firms through these new platform-based business models. E-commerce platforms such as Amazon, iTunes, and Google Play increasingly define the ecosystem.

Many TIME firms compete against each other or benefit from information asymmetries when collaborating, so there is limited information sharing among decisions makers from different firms. Certain divisions of companies will work closely with competitors (e.g. to develop technical standards) while other parts of the companies aggressively compete for the same customers or to reach exclusive deals with suppliers. This causes important information to be siloed within organizations. Other companies, such as movie studios, face anti-competitive sanctions if they collaborate too closely. Therefore, while executives collectively hold substantial knowledge and insight key to understanding the evolution of the video sector, many are faced with a limited data when making decisions. Because of the close ties among the different sectors in the industry, we interview major organizational stakeholders throughout the video value network in order to get beyond the information silos and to synthesize meaningful conclusions that help make sense of industry changes.

Scholars continually call for new methodological approaches for ICT research (Davison and Martinsons 2011; Mingers 2001; Orlikowski and Baroudi 1991) and for research that, while maintaining scholarly rigor and theoretical bases can be directly useful to practitioners (Benbasat and Zmud 1999; Recker et al. 2009). To answer this call, this paper employs Scenario Analysis, using information economics and platform theory to synthesize potential futures that can be used to guide managerial strategies. To create scenarios, this study focuses on the television and home video sector, which spans the TIME industries.

This paper is structured as follows: the next section provides background into the TV and video sector. The third section offers an overview of platform theory. The fourth section explains the Scenario Analysis technique and details the data collection and analysis methodology. Sections five through seven detail the future scenarios and discuss their theoretical bases. The final section concludes the paper with a summary of the winners and losers in each scenario, a discussion of limitations and avenues for further research.

Industry Background

The video industry ecosystem consists of many players, such as the studios who produce the videos, the channels that aggregate various programs, the advertisers who pay to reach viewers, and the telecommunications firms that transmit the video into consumers' homes. Video content is released using 'windows," or times during which content is made available to different media. For example, big budget feature films appear in theatres, then after a period of months go on sale in home video formats (e.g. DVD or iTunes downloads), then appear on pay television networks like HBO, followed by advertising-supported television.

In the 1980s, pay TV subscriptions and home video became key ways consumers watched video and became the profit centers for producers. In the 2000s, digital technology allowed for an expansion of channels available on cable TV. Content producers found new profits by selling already-aired TV shows on DVD. As the 2000s came to a close, the monopolistic pay TV market became competitive, as viewers could subscribe to a satellite TV service and watch video via the Internet.

Historically, television was either government-sponsored or advertising-supported. Commercial TV networks price advertising according the number of viewers and rough demographics, as estimated by ratings companies like Nielsen. Ad agencies keep 7-15% of all the money they spend on advertising as a

commission, which is their largest source of revenue. While advertising is still a main revenue stream for television broadcasters, pay TV companies pay "retransmission fees" to broadcast and to cable TV networks for use of their content. These licensing fees now represent a substantial portion of network revenue and are more stable than advertising because they are negotiated every few years and are less influenced by short-term economic swings and the constantly-changing popularity of individual shows.

Video is a scale business. Advertising rates are based on the number of viewers and retransmission fees are derived from the number of households served by a pay TV company, Additionally, content licensing fees depend on scale. A large pay TV provider can get a cheaper cost-per-viewer rate than a smaller provider because they have more negotiating power. Also, more subscribers means more subscription revenue that can be spent on content, allowing larger companies to negotiate exclusive deals that keeps content from their competitor's services.

The wires and physical infrastructure that delivers television signals to peoples' homes can also deliver high-speed internet service. Consequently, cable TV companies offer broadband. Increasingly in larger markets, telephone companies compete head-on with cable TV companies by updating their networks to offer fast internet and pay TV subscriptions. These companies that delivers both pay TV and broadband are referred to as "MSOs," short "multi-system operators," a term coined during a period of industry consolidation in the 1980s and 1990s. Because of the high capital costs, MSOs tend to be either monopolies or oligopolies that face limited competition. Although wireless carriers offer data services, their technology is slower than many wire-based delivery systems and their bandwidth capacity is insufficient to substitute for wire-based data transmission. Satellite TV services compete on video content, but generally do not own the landline infrastructure required to deliver high-speed broadband.

New technology is altering the nature of the video business. Recent advances allow for high-definition video to be streamed using Internet Protocol (IP). This allows companies to go "over-the-top" (OTT) and transmit video over the open Internet rather than through traditional pay TV services. This enables OTT companies to develop their own billing relationship with the customer and freely use MSOs' own infrastructure to compete against them. While most pay TV companies deliver video using quadrature amplitude modulation (QAM) over a connection with a dedicated bandwidth allocation to deliver video, OTT firms like Netflix and Hulu are proving successful despite relying on inferior IP technology and sharing available bandwidth with all other Internet traffic. In fact, it is the IP-based over-the-top services that are able to meet consumers' demands for anytime, anywhere, any device access to video content.

The ability to reach TV viewers over the internet, as well as the ability to track users online activity and mobile device use to place precision-targeted ads, is causing advertisers only to want to pay for "targeted impressions" that reach very specific customer types. This is a significant change to the ad agency model, as many of the companies that place these highly targeted ads exist outside the traditional TV sector (e.g. Google, Facebook, etc.)

While OTT video is disruptive to the established pay TV business model, it differs from classical disruption (Christensen 1997) because pay TV firms provide the physical broadband delivery infrastructure that OTT firms require to reach their customers. Therefore, while OTT video firms threaten the MSOs' pay TV business, they increase demand for Internet services, allowing MSOs to charge higher rates for their data services (Gimpel 2015).

Platform Theory

Platform theory is a recent extension of information economics (network economics). It moves beyond the study of networks as a whole to focus on digital intermediaries. These intermediaries pull together the resources and capabilities of the various members within a network (Pagani 2013). According to the theory, a platform is a foundational technology or service that is used beyond a single firm and is subject to network effects (Cusumano 2011; Eisenmann et al. 2011b), which means that the value of the network is based on the number of users within the network (Artle and Averous 1973; Katz and Shapiro 1994; Rohlfs 1974; Shapiro and Varian 1999b). This can translate into increasing returns to scale, in which the more users are part of the network, the more demand there is to join the network (Katz and Shapiro 1994;

Shapiro and Varian 1999b). Because users want to be able to transact with as many other users as possible, network effects can cause users to select the most popular networks. Because many markets can be served by just a few intermediaries (Cusumano 2011; Eisenmann 2007), markets can tip to a single platform or an oligopoly of dominant networks (Eisenmann et al. 2006; Lee and O'Connor 2003; Shapiro and Varian 1999b). Three characteristics define markets that are subject to tipping to winner-take-all scenarios, or more commonly markets where a few winners-take-most. These are strong network effects, low demand for differentiation, and high multi-homing costs (Eisenmann 2008; Eisenmann et al. 2008; Shapiro and Varian 1999a). Many platform-based businesses try to grow their networks quickly to gain traction as the dominant platform; however, unless all the characteristics are present, it is unlikely the market will tip to just one or two players (Cennamo and Santalo 2013).

A platform provides a set of components and rules that mediate the transactions among users (Boudreau and Hagiu 2009). Platforms have a triangular structure in which users transact with each other at the same time they transact across the platform (Eisenmann et al. 2011b). For example, iTunes enables consumers and movie studios to transact business with one another. The iTunes platform provides a search engine and file transfer system that makes it possible for the consumer to buy movies sold by the studios. (See Figure 1a.)

Platforms provide four principal functions: providing connectivity, expanding variety, matching different users with each other, and price setting (Eisenmann and Hagiu 2007). Platforms are the mechanism by which different players in the market transact business, such as the iTunes example above. Platforms provide variety, such as the way Sky TV aggregates different types of content for its television viewers. Ad-supported television networks match viewers with content from television studios and also match those consumers with advertisers. And finally, platforms play an important pricing role, as iTunes has done with its standardized prices for buying TV episodes.

Platforms are often layered on top of one another (Eisenmann et al. 2011b). For example, video platforms such as Netflix require computer operating systems in order to offer their service. Those operating systems in turn require an Internet connection from an Internet Service Provider, whose infrastructure is layered on top of the open, global Internet platform. (See Figure 1b.)

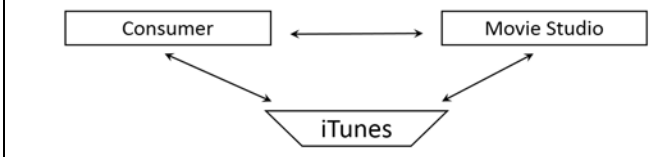

Figure 1a. Illustration of platform structure

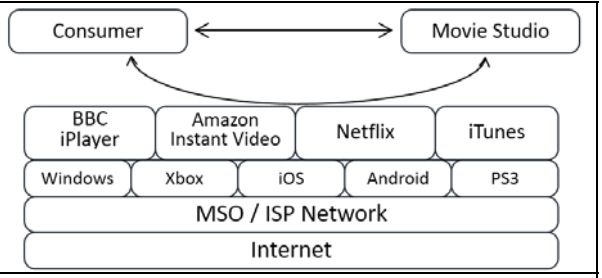

Figure 1b. Example of layered platforms

Because platforms can bring together a variety of different types of users, firms within a platform ecosystem become subject to threats from a wide range of players (Bauer 2014). Different firms in platform-based markets often collaborate or complement each other in aspects of their business while concurrently competing against each other in other aspects of their business (Gawer and Cusumano 2014). For example, Internet video services like Hulu complement telecommunications companies by driving demand for Internet service, but at the same time they compete for viewers against the telco's pay TV service. This type of "frienemy" relationship makes the layered nature of digital platforms strategically important. A platform can become a bottleneck through which other players in the industry must pass (Boudreau and Hagiu 2009; Rochet and Tirole 2003). Gateway platforms can expand their offering to compete in another layer, a process known as "envelopment." They can use then use their position in one layer to choke off competition in another layer. Microsoft famously choked competition in the Internet browser application layer by embedding Internet Explorer on all personal computers running Windows (Eisenmann et al. 2011b). More recently, Amazon has moved from the video retail layer into the

operating system layer with its Kindle Fire so that it could close off its customers from shopping Google Play and other competing online retail platforms.

Unlike traditional vertical industry structures, the triangular structure of platform markets changes the logic of value creation and value capture, potentially opening an industry to a cross-boundary industry disruption (Pagani 2013). Apple Computer demonstrated this shift in value logic when it opened the iTunes store to increase sales of its music players and quickly became the dominant retailer in the music industry and powerful a player in the TV, film, and gaming sectors.

Study Design

Because the TV and video sector is undergoing existential shifts to its value chains and business models, this paper synthesizes study data into theoretically informed scenarios that illustrate principles of platform theory and inform decision-making. This section details the study design, including an introduction to the scenario planning method, exploratory interviews and data analysis, and the creation of the future scenarios discussed in the study.

Scenario Analysis

Scenario Analysis is ideal for fast-changing industries such as media and entertainment, which faces great uncertainty and unprecedented changes caused by digitization (Rosenberg 2012). It highlights key uncertainties that are impacting the strategic decisions of managers (Postma and Liebl 2005). Creating different future scenarios illustrates how various elements might interact under certain conditions (Schoemaker 1995). It focuses on cause and effect relationships using an external rather than internal view (Huss and Honton 1987). Scenario Analysis focuses managers' attention of different descriptions of the future rather than a singular view. These scenarios are all viable but Scenario Analysis does not attempt to determine which is more or less likely to occur (Bunn and Salo 1993).

Traditional forecasting methods often are not suitable for companies in business environments undergoing truly disruptive changes (Clemons 1995). A primary reason firms create failed strategies is that their visions of the future are based on incorrect assumptions (Rosenberg 2012; Schnaars 1987). Too often, tacit assumptions are based on the belief that the future "will fundamentally be a continuation of the present" (p. 65); however, major disruptions often render meaningless the current bases for strategy (Clemons 1995). Scenario Analysis makes tacit assumptions explicit, which can open the mind set of executives so they are better prepared to strategize for an uncertain, potentially discontinuous future (Tenaglia and Noonan 1992). Scenarios identify the greatest uncertainties that will have the most impact on the company and focuses provides a systematic procedure for Scenario Analysis. It includes five building blocks in 4 sequential steps: 1) identify the drivers of change, 2) identify basic trends and key uncertainties, 3) establish logical rules of interaction for the Scenario Analysis, and 4) create multiple scenarios. The actual scenarios are identified by combining key uncertainties, such as by using a 2 by 2 matrix (Schoemaker 1995). The scenarios are then played out to a logical conclusion, even if they appear extreme (Becker 1983). Figure 2 summarizes the Scenario Analysis method.

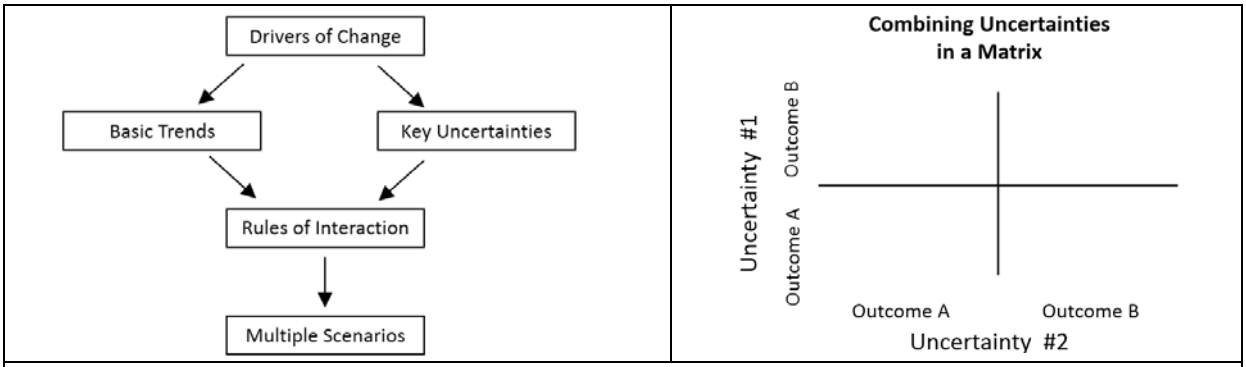

Figure 2. Schoemaker (1995) Scenario Building Process

Interviews and Analysis

We have limited the scope of this study to the television and home video industry. To avoid the limitations caused when executives within a company create scenarios limited by their firm's specific points-of-view and biases (Postma and Liebl 2005), and because of the close ties among the different sectors in the industry, we include major organizational stakeholders throughout the entire video value chain (see Figure 3). In order to understand the changes to the industry, we use a 7-year time horizon. A longer time period was deemed impractical because substantial changes to other TIME industries occurred within 7 years (i.e. the introduction of Napster to iTunes supplanting music retailers and the height of newspaper ad revenue to the mass closures of established papers.)

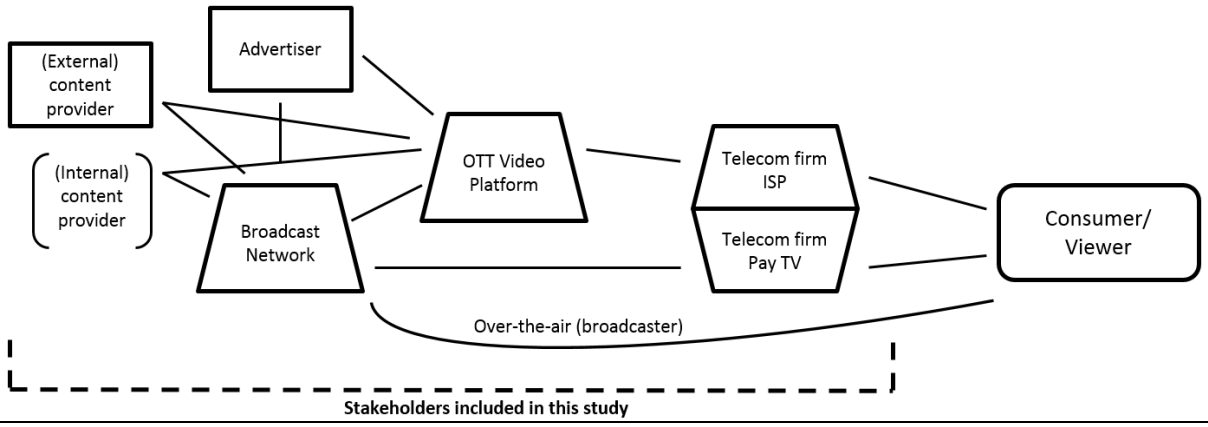

Figure 3. Video industry ecosystem analysed in this study

Because this study investigates how new information and communication technologies are reshaping the video industry, this study adopts an explorative, qualitative approach to data collection and analysis. Interview data were collected through hour-long, semi-structured telephone interviews with 22 executives at different positions in the video value chain. Table 1 summarizes the study participants.

Chief Executive Officer, Global Advertising Agency	VP, Strategic Initiatives, Television Network
Chief Operating Officer, Independent Movie Studio	VP, Global Development Director, Global Advertising Agency
Chief Financial Officer, Major Movie Studio	VP, Application Development, Pay TV Provider
Chief Digital Officer, Major Media Company	Vice President, Pay TV Provider / MSO
Chief Technical Officer, Major Movie Studio	Vice President, Advertising Insertion Platform
President, Major Movie Studio	Former VP, Direct to Consumer, Major Movie Studio
Principal, Executive Creative Director, Advertising Agency	Associate Vice President, OTT Video Platform
EVP, Strategy & Business Development, Major Movie Studio	Senior Director, Technology Policy & Products, Major Movie Studio
SVP, Home Entertainment, Major Movie Studio	Director, Consumer Platforms, Pay TV Provider/ MSO
SVP Business Development, OTT Video Platform	Director, Digital Video Platform, Leading Consumer Device Maker
Former SVP, Digital, Major Movie Studio	
Senior Vice President, Pay TV Provider / MSO	

Table 1. Study Participants

Interviews were transcribed and coded using Atlas.ti. We used simultaneous data collection and analysis, in which our analysis of new information from primary and secondary sources would shape our future data collection and help focus our interpretation of the data (Charmaz 2005). We started our investigation with broad questions that became more specific as the study progressed. Using theoretical sampling (Corbin and Strauss 2008), the concepts derived from our data analysis were turned into questions and posed during subsequent interviews. Given that different study participants working in different parts of the video ecosystem have different understandings of the industry, and no one has a complete picture of the complex ecosystem, we employ a hermeneutic approach to analysing the data (Chalmers 2004; Myers 1995). This allows us to reach a consistent and coherent understanding of the research context and problem under investigation. We identified key trends, shared expectations about the future, and critical success factors. We also identified key uncertainties common among the participants. The uncertainties are used to generate the scenarios and the trends and mutual expectations are used to elaborate on the scenario narratives.

Constructing Future Scenarios

According to interviewees, key drivers of change are wireless technologies, advances in Internet delivery technology (fibre optics, cellular LTE, and data compression algorithms), access to consumer data and the capability to analyse big data in real time, and the relationships among firms in their respective value networks. Participants highlight key trends in the industry. These include: increasing viewership of television and video content; decreasing per view advertising rates, increasing demand for the ability to video anywhere, anytime, on any device (AWATAD); consumer reluctance to pay for large programming bundles, and a shift in power from traditional advertisers to those who can manage real-time ad placements.

Participants express concern about how demand for bandwidth has been growing exponentially. Wireless networks historically have been overwhelmed by consumers' insatiable appetite for bandwidth. Even with the roll out of new LTE networks, WiFi hotspots, and small cells, wireless systems may have trouble keeping pace with demand for streaming video. Bandwidth concerns are not limited to wireless services. European and American participants predict problems meeting wireline bandwidth demand. Study participants raise their concerns with comments such as the following:

> "I am trying to understand a world in which a lot of people have mobile devices, and a lot of mobile devices can stream video. But where's all the bandwidth coming from?" (VP, Global Development Director, Global Advertising Agency)
>
> "The big challenge I think for this - the answer to this question - is whether or not OTT can be distributed in real time, linearly, in a massive scale. And the answer today is no." (Chief Digital Officer, Major Media Company)
>
> "Eighty meg, although it sounds fantastic, is not great for a multi-screen, multi-iPad, multi-whole home experience." (Director, Consumer Platforms, Pay TV Provider / MSO)
>
> "..the only thing that we can bank on this company is that the demand on our network is going up exponentially." (VP, Application Development, Pay TV Provider / MSO)
>
> "I think we haven't seen the internet connections really opening up in a lot of the territories. And I think that will eventually be a bottleneck." (Director, Digital Video Platform, Leading Consumer Device Maker)
>
> "I think when it comes to overall delivery of how people want it; ultimately digital would be the way to go since it's just very, very convenient once everyone has connected devices. But the real question is the networks. Can they handle all that happening?" (Principle, Executive Creative Director, Advertising Agency)

Who controls the primary customer relationship is also a recurring theme in the interviews as illustrated by statement such as:

> "There's a real shift occurring and no one really knows where customers are going to land." (AVP, OTT Video Platform)
>
> "There's a disproportionate value given to the people who have access to the customer, who own the customer relationship, who the customer trusts as a front door to other experiences." [...] "What I really want to understand is, in the end, who will win out with this content creation production versus distribution, or [customer] access game." (Chief Digital Officer, Major Media Company)
>
> "...the more recent history is a struggle between the content owners and the distributors as to who has the consumer relationship." (VP, Advertising Insertion Platform)
>
> "What do consumers want? How many stores do they need? Do they have allegiance to a Vudu, whereas if Vudu is not on a PlayStation, will they will buy an Xbox? Or are they more willing to be a little fickle with brands?" (SVP, Business Development, OTT Video Platform)
>
> "We have a number of direct to consumer offerings. Where our business was almost wholly managed by or through aggregator partnerships, that's changed. That's now a big part of our business and continues to grow. It's strategic and important to us in the digital domain." (CTO, Major Movie Studio)
>
> "One of the interesting things that we're having to deal with – most people don't realize – is that nobody blames their iPad whenever they can't view video on it. You know, it is never Apple's fault." (VP, Application Development, Pay TV Provider / MSO)

Controlling the customer relationship affects who can take commissions for processing payments, customer loyalty, and who will act as the tollbooth through which value chain members must pass to reach the consumer.

These two key uncertainties are determinative because bandwidth capacity will shape the performance and therefore the relative attractiveness of different service types: dedicated pay TV, streaming video, content downloads. The owner of the customer relationship will have the power to influence customer decisions and shape consumer preferences. We draw on platform theory to identify the primary relationship, using the theory's classification of *platform provider*, which is the primary point of contact, determined by who a customer contacts first if they have a problem (Eisenmann et al. 2011a).

Placing the dimensions on two axes creates four potential scenarios; however, in a bandwidth-constrained world, the MSO, which is the company providing pay TV and Internet service infrastructure, will control the customer relationship because it is the final link in the value chain (closest to consumer). Therefore, if there are salient bandwidth constraints, the MSO will own the primary customer relationship, whether it is positive or contentious. With this consideration, we present three potential future scenarios as depicted in Figure 5.

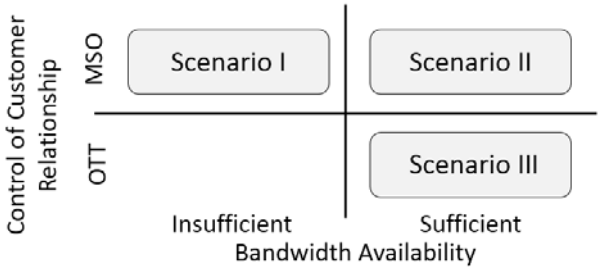

Figure 5. Future Scenarios

Future Scenario I

The first scenario, "No One Stands Alone," is characterized by insufficient bandwidth to accommodate demand for OTT services, with the MSO as the primary customer touch point. In this future, Internet bottlenecks & bandwidth caps favor linear programming and traditional pay TV service, while video sell-thru shrinks. Over-the-top services tied to operating systems and MSOs displace stand-alone services. The name "No One Stands Alone" comes from the lack on stand-alone OTT firms, such as Netflix.

Scenario Narrative

Increasing consumer demand for video outstrips the build-out of requisite infrastructure, leading to congestion in the last mile of broadband delivery. It looks much like today's video market, albeit less reliant on physical media like DVDs. ISPs enforce bandwidth caps, which allow reasonable OTT video consumption, but take away the perception of zero marginal cost Internet delivery. Physical media sales continue to decline as people want to watch content on various devices; however, the inconsistent quality of streaming weakens the value proposition of buying cloud-based streaming licenses like those offered with the Ultraviolet standard. Downloadable rentals and sales of downloads grow stronger, but not fast enough to offset the decline of the disc.

Consumption of over-the-top streaming services continues to grow, but quality concerns and bandwidth caps keep consumers subscribing to pay TV services that can guarantee service quality. On-demand HD video from Pay TV operators increases, as instant gratification differentiates the offering from rentals that must be downloaded before viewing. Pay TV systems offer streaming services for TV anywhere consumers, but also offer extensive video-on-demand (VoD) capabilities into the home through their dedicated pay TV bandwidth allocation. OTT viewing is common, but often on small screen devices (laptops, tablets, etc.) where lower resolution is less pronounced, whereas the living room TV remains the beachhead for traditional pay TV service. The reliability and quality of linear program delivery keeps it popular.

Video platforms are fragmented – optimized for specific device designs or platform ecosystems (e.g. iTunes). As such, the app-based ecosystem prevails over HTML5 or other open standards. Consequently, the platforms controlling the app markets continue to collect rents from companies reliant on apps. The platforms tied to large ecosystems (e.g. iTunes, Xbox, Amazon), however, increasingly grow in size and influence relative to non-vertically integrated content providers. While small, niche players offering specialized content exist within the marketplace, stand-alone OTT players like Netflix do not command a strong position in the ecosystem.

The Pay TV providers own the primary customer relationship and over-the-top providers own secondary relationships. Although multiplay firms that can offer TV, broadband, and wireless bundles have a marketing advantage, single-play firms such as satellite TV providers still operate in the market and team with other firms to offer multi-play packages. The advertising side of the market looks much like it does today.

Future I Discussion

Future Scenario I is a story of layered platforms and platform envelopment, in which one platform expands its role in the value chain, thereby displacing another platform.

In Scenario I, consumers have relationships with multiple video platforms, but the MSO that provides pay TV service and Internet service is a visceral bottleneck in the consumer mind. Regardless of the other platforms, the MSO is the last-mile connection to the consumer, and the consumer is reminded of the relationship through concerns about bandwidth overage charges and insufficient bandwidth. Consequently, the MSO has the primary relationship with the consumer.

Layered on top of the delivery network are intermediary gatekeepers, such as operating systems, through which pure play video services (e.g. Netflix) can reach their customers. To optimize delivery in a bandwidth-constrained environment, video platforms use apps that interact through specific operating systems.

Because people are interacting with a pure play OTT platform through an intermediary platform (iTunes, Xbox, etc.), consumers also have a relationship with the intermediary platform. As such, it is possible and strategically advantageous for the intermediary platform to expand its offering to include a service similar to the pure play video services. Large intermediary platforms, like Xbox, are in a position to displace the pure play service through their own video service offering. Similarly, it is possible for the MSO to launch its own over-the-top video service to compete with other OTT services. This makes the pure play platforms like Netflix vulnerable to displacement, which is why Future Scenario I does not feature pure play OTT video providers.

A platform can also pre-empt a potential rival's envelopment strategy by entering into a strategic partnership with the would-be competitor. For example, a streaming video service may become part of a cable TV bundle. While this may prevent an underlying platform from enveloping a smaller or more focused platform, such a move puts further distance between the OTT video service and the consumer and further cements the MSO as owner of the customer relationship.

It is also possible for a video platform to combat others' envelopment strategies by expanding its own place in the value chain. For example, Amazon's primary retail role matches consumers with DVDs and digital downloads. To increase competitiveness, it adopted a three-part envelopment strategy: 1) create its own Kindle device-operating system ecosystem; 2) expand from retailing video to providing a low-cost unlimited streaming service; 3) expand into producing original content.

In this future, demand for AWATAD grows, and bandwidth caps, while serving to help preserve the status quo, primarily are introduced to discourage heavy users of streaming video so that the experience of the average user will be better. Consistent full HD-quality streaming remains elusive, especially on mobile devices, which encourages the purchase and rental of downloadable content that can be watched on mobile devices. A certain customer segment will remain willing to pay for content in the first release window, but the promise for streaming on any device at any time remains inhibited by bandwidth constraints, weakening the value proposition of purchasing cloud-based content. The value of the ownership model is further weakened as leading retailers of downloadable content (e.g. Amazon) also provide all-you-can-watch streaming subscriptions.

Future I Executive Guidelines

To provide guidelines for executives, we organize the video industry into three key categories of players. While some firms may fall into multiple categories, we provide guidelines for 1) content producers, 2) content aggregators (TV networks, retailers, OTT platforms, etc.) and advertising firms, and 3) infrastructure providers (i.e. MSOs).

Good content is king and will drive the video industry in this future. Producers continue to receive a reliable revenue stream in the form of MSO retransmission fees. Except for a further, but slower decline in the sell-thru and rental market, it is business as usual for content producers in this future. Producers in this future need to promote home video releases more aggressively and work closely with the organizations delivering the digital content files in order to improve compression algorithms.

OTT firms threatened by MSOs' expanding role in matching people with content can head off displacement by improving content search capabilities and expanding into production. With thousands of titles, critical success factors will be ease-of-use and effective matching of viewers with content. OTT platforms can defend themselves against a rival's displacement strategy by developing superior search capabilities. Exclusive marquee content also differentiates one platform versus another. Because people will subscribe to a platform if it is the only venue for their favorite content, video platforms should expand into the production role. A production role will be essential, as most TV and film studios prefer agnostic

approaches to licensing content. (Due to consumer demand for a large selection of new content, expanding into a new production role will not displace the major content producers.)

MSOs should improve the search capabilities with their dedicated VoD services, which offer quality OTT platforms cannot match. At the same time, MSOs should expand their content discovery role by offering their own OTT VoD service to leverage the superior search capabilities of the internet. This expansion would stem cord cutting and mitigate the "57 channels and nothing on" complaint. By bundling the service with a basic cable package and subsidizing it with a small overall rate increase, MSOs would reposition competing OTT platforms as an unnecessary, redundant expense.

Scenario II

The second scenario, "Rise of the Titans," is characterized by sufficient bandwidth and MSOs who own the customer relationship. In this future, vertically integrated TV-Internet-wireless MSOs consolidate, take over media buying from ad agencies, and move premium OTT services behind authenticated paywalls. The "Titans" in the title refers to the rise of a giant extremely powerful service providers.

Scenario Narrative

Boosted by significant improvements to last-mile broadband capacity, there is a dramatic rise in OTT and TV anywhere. Pay TV providers have the primary relationship with the consumers. The pay TV and ISP landscape consolidates into three providers with North American footprints and four with pan-European reach[1]. They all offer TV, broadband, and cellular service. The MSOs bundle triple/quad-play at rates comparable to landline broadband and wireless data service. This bundling preserves the current MSO-TV network structure in which the MSOs pay fees to cable TV networks.

Pay TV bundles remain strong, although they are more focused and entry-level packages have smaller price tags. The smaller price tags free up money for consumer content purchases, but many consumers use that surplus to upgrade to more expensive subscription bundles. At the same time, however, the structure of the advertising market changes. With only a few systems controlling delivery in Europe and North America, the MSOs collect substantial data on individual user behavior that they leverage to efficiently place advertisements within linear, video-on-demand, and over-the-top services. They displace much of the TV media buying activity that traditionally belongs to advertising firms, putting pressure for the decoupling of media buying from creative account management at advertising firms.

Premium "authenticated OTT services," which require a pay TV subscription in order to receive over-the-top video streams, continue to require a pay TV subscription. Major media production companies acquire leading YouTube channels and move them to authenticated OTT sites in order to protect the Pay TV subscription model and accompanying licensing fees paid to their legacy networks. Services currently available without a pay TV subscription like Hulu Plus and those streaming live sporting events move to an authentication model.

Applications are HTML-5 based, decoupling applications from ecosystem platforms and device makers. With a strong oligopoly of powerful players in the telecommunications sector, the entire ecosystem becomes less fragmented. For example, the MSOs use their muscle to reduce device incompatibility by pushing standardized video codecs and selling only selected form factors (like a few specific screen sizes) at their stores. The reduced variability in delivering video allows them to provide higher delivery service quality and make it easier for content creators to provide device-appropriate content.

[1] Participants commonly suggested these quantities for the number firms they expected if oligopolistic markets consolidate.

Future II Discussion

Future Scenario II exemplifies demand-side economies of scale, or network effects, within a multi-sided market. In the video industry, firms act as platforms through which different types of users transact business. Video producers supply content to viewers who consume it. Advertisers send their commercials through the platform to reach consumers, who are attracted by the content. These markets experience increasing returns to scale, in which growth in the number of users transacting across the platform increases the value of the network to the user, often creating a virtuous cycle of growth and positive reinforcement.

In this scenario, the market tips to four European and three North American MSOs, marking a substantial change from the traditional regional fragmentation of pay TV systems. Video is a scale business. The more viewers a TV platform has, the lower price it pays per user to license content. This gives larger firms a competitive advantage when setting the price of its service. Increasingly important in the digital age, data analytics play a growing part in operations such as network capacity management and demand forecasting. Consequently, the firms with the most customers will have richer data and therefore will be able to manage their networks better, gaining operational advantages over the competition. More importantly, as advertising is increasingly micro-segmented, firms with the best access to "big data" will have a key strategic advantage. Therefore, the size of a company's customer base will become determinative of their ability to offer superior advertising service, both in reaching more customers with traditional CPM (cost per thousand viewers) and being able to charge premium rates for reaching specific customer types (microsegmentation).

Economies of scope also cause the market to tip to a few players with continent-wide reach. As part of multi-sided networks, video platform firms can gain competitive advantage by cross subsidizing their offerings or by subsidizing one type of user with profits from another. MSOs use pay TV profits to subsidize offering other services, such as offering broadband Internet at a lower margin than they would offer it as a stand-alone product. Additionally, the data diversity that comes from offering TV service, wireline broadband, and wireless data services can bring invaluable customer insights: what people watch both via TV and over-the-top services, plus details about consumers' other online activity. Having access to cross-media data gives quad-play firms unparalleled data to target advertising. This gives them an advantage over single-play firms, such as cellular-only or satellite TV companies that do not offer broadband. These economies of scope, coupled with the size-based scale returns drive the merger of cable TV firms with mobile service providers.

Mindful of content-based economies of scope, large media companies will purchase the most popular YouTube channels and shift them to an authentication business model as a way to protect the licensing fees for all the TV channels they own. This will benefit not only the media company, but also the MSO, which relies on monthly TV subscriptions that could disappear if too much premium content becomes available over-the-top without a pay TV subscription.

The generic nature of MSO offerings also contributes to industry consolidation. Markets are prone to tipping to one or a few major firms when there is low demand for differentiated products. MSOs offer essentially the same TV channels, similar broadband speeds, and price their services similarly. This is unlikely to change in any future scenario. High multi-homing costs also encourage markets to consolidate. Because MSOs offering both TV and data can take lower margins on each service but increase overall profit by bundling TV, data, and OTT services together, it would be expensive for consumers to subscribe to video from one provider and Internet from another. Therefore, in the video space, multihoming costs for core services can be high.

The consolidation of pay TV and Internet providers will not result in a winner-take-all market. The content producers will do everything in their power to ensure that there is still some fragmentation in the market so that they retain negotiating power. MSOs will use their dominant positions to standardize many aspects of the industry. They will push the market to open systems like HTML5 as a way take power from the Apple-Microsoft-Google app ecosystem oligopoly. Advertisers, content producers, and MSOs will

benefit from the lower costs of greater standardization, including form factors, such as screen size. Consumers may find less choice, but they will experience more consistent quality across their devices.

Future II Executive Guidelines

To protect the retransmission fee business model, large production companies should acquire leading YouTube channels and move them behind an authentication wall. This increases the value of basic pay TV subscriptions and reduces free marquee programming, both of which strengthen the MSO-producer business model. Television networks should protect their retransmission fees by requiring pay TV subscriptions in order to access their affiliated OTT services.

MSOs must develop deep data capture and analytics capabilities and enact more aggressive data collection policies similar to those of internet firms. OTT firms should encrypt their video signals to obscure the customers' viewing behavior from the MSOs. To compete for the position as media buyer, global ad agencies should stress their world-wide reach and international insights to differentiate themselves against the MSOs' geography-specific capabilities.

To enter the ad-insertion market on a large scale, quad-play MSOs should continue to cross subsidize their TV prices to take customers away from satellite and cable TV services. Satellite firms should differentiate their services by licensing unique content (like Direct TV's NFL Sunday Ticket) as a temporary measure, but armed with advertising commissions, quad-play MSOs ultimately will be able to outbid them for the content.

To complete with quad-play firms like AT&T and Verizon, large cable TV firms must merge with stand-alone wireless companies. This will be a strategic imperative for both the cable and cellular firms. The combined cable-wireless firm will need to develop big data collection and analytics capabilities.

Scenario III

The third scenario, "Divided We Stand" is characterized by sufficient bandwidth and OTT platforms owning the primary customer relationship. In this future, OTT video platforms break free of app ecosystems and the sell-thru market rebounds as consumers cord-cut en masse. YouTube emerges as direct competitor to traditional MSOs. Real-time bidding exchanges exert strong downward pressure on TV ad rates. The scenario name reflects a market in which a wide variety of firms play different roles, characterized by horizontal fragmentation rather than vertical integration.

Scenario Narrative

Investments in broadband capacity lead to a rise in OTT service and TV anywhere. The firms providing their service over-the-top of the communications infrastructure own the relationship with the consumer, while those providing the delivery infrastructure are viewed as commodity utilities. Non-vertically integrated communications firms form alliances to offer TV-broadband-mobile multi-play packages, which furthers the perception that they are commodity service providers, as consumers know that in many cases they are paying for a system that has been cobbled together from many firms. MSOs retain their current, limited regional footprints. Advertising agency and third party exchanges manage real-time, highly targeted ad insertions.

The over-the-top market tips to a handful of large players that operate through open platforms like HTML5. YouTube becomes a virtual pay TV firm, offering both free and paid subscription programming packages. The dominant players prevent a single firm (such as YouTube) from capturing the market by differentiating themselves by offering exclusive access to marquee content during early release windows. This encourages multi-homing, as no platform offers a comprehensive content package.

The pay TV industry experiences substantial cord cutting under pressure from over-the-top offerings and YouTube's footprint as a global pay TV firm. Streaming channels originating under an authentication

model begin to bill customers directly. Despite the utility firm perception, communications firms are able to increase the price of their unlimited data delivery services to offset the decline in pay TV. Satellite TV providers bid up licensing fees for sports and other live events as a way to stay viable in an increasingly OTT world. Many niche channels that are cut from the MSO programming bundles move to YouTube channels, but only a fraction survive, as ad revenue sharing cannot mitigate the loss of retransmission fees.

As people stop subscribing to Pay TV service, they spend part of the money saved to rent and to purchase content. Also, people are likely to rent or purchase content that is unavailable through their chosen set of subscription services. Together, these lead to a resurgence in the ownership model. Content producers rely more on the rental and sell-thru model than ever, as the audience for traditional television windows (both premium and ad-supported) shrinks. The new OTT platforms offer extra release windows, but they are not as lucrative as the former pay TV-based and over-the-air networks because the drop in MSO retransmission fees translates to fewer resources for licensing content.

Future III Discussion

In Future Scenario III, network effects drive consolidation in a different sector of the market than in the other scenarios. The market tips to a few major OTT players, but the market is not a winner-take-all situation. The firms with superior search capabilities that facilitate matching viewers with suitable content quickly rise to the top of the market while the others fall into irrelevance. In a bid to keep the market fragmented and to prevent a single platform from gaining the power to dictate licensing prices, video producers license content during early release windows on a semi-exclusive basis. Therefore, different platforms offer the marquee content from different big media companies, creating “differentiation through fragmentation” that encourages multihoming, or subscribing to multiple over-the-top video services. OTT platforms also benefit from the fragmentation, as their exclusive content deals and self-produced content defend them against envelopment by larger, more diversified firms like the tech companies or MSOs.

Because consumers can design their own bundles of different OTT services, they can optimize their entertainment spending. While monthly broadband fees will increase to offset the MSO’s decreases in pay TV revenue, people use Internet service in so many ways that they will not mentally categorize all of the cost increase as an entertainment expense. Therefore, consumers will perceive a drop in video expenditures, freeing up money to rent and purchase content during the earlier pre-subscription release windows. Also, while consumers will likely subscribe to multiple OTT services, very few will subscribe to enough services to have streaming access to the content from all the major media companies. Therefore, consumers will subscribe to the platforms that provide their favorite content and will make one-off purchases (or rentals) of the content that is not available through their subscription platforms. Thus, more customized subscription bundles and content-based fragmentation will drive digital rentals and purchases.

Because infrastructure providers are viewed as commodities and concerns about connectivity are few, the traditional pay TV and broadband companies become relatively transparent to consumers. As such, viewers identify more with other firms: the brand-name content aggregation platforms. Because the aggregators own the relationship with their viewers, it no longer makes strategic sense for them to pay a commission to a pay TV service for delivering a signal to the end customer. Premium channels begin offering stand-alone OTT service, enveloping the billing role by disintermediating the MSO as a financial partner.

YouTube, which already has a global footprint and neither needs to invest billions in infrastructure rollout nor spend years navigating regulatory hurdles, benefits from “rich-get-richer” positive network effects. It becomes a transnational pay TV firm, offering free ad-supported user-generated and off-network

catalogue content while also offering premium content channels to paying subscribers[2]. Different marquee content offerings enable the co-existence of YouTube and the other OTT firms.

Without nation-wide footprints, the MSOs lack access to broad enough data to control the media placement market. Instead, ad agencies still control media buying campaigns, although they subcontract much of the insertion decisions to analytics firms that manage networks of websites in order to track user data. The wider footprint of these data firms gives them a data advantage over MSOs. Due to network effects, several large ad platforms dominate this space. At the same time, the market stays fragmented enough – based partly on platforms' access to different data and by the large ad agencies efforts to keep the media placement market from tipping – so that ad agencies can still collect fees for placing ads through the various platforms.

Future III Executive Guidelines

Producers should license content during early release windows on an exclusive or semi-exclusive basis to create a fragmented market in which different studios license their new content to different platforms. These licenses should be relatively short term so that producers do not cede their pricing power. Leveraging content to fragment the market also increases the likelihood of one-off sales to consumers outside the core fan base who do not subscribe to the OTT platform that carries a studio's content in the early-run release window.

OTT firms must develop superior content search capabilities. Those that best help consumers discover suitable content will rise to the top while others will disappear. OTT firms must also get exclusive or semi-exclusive marquee content. OTT firms should not try to get content from all major studios, as content-based fragmentation will encourage consumers to subscribe to multiple platforms. The deliberate fragmentation will prevent the destructive winner-takes-all competition that occurs among undifferentiated firms. Premium aggregators that begin with an authentication model should follow the recent example set by HBO and go direct-to-consumer over-the-top.

Advertising agencies must embrace real-time ad insertions or risk losing the market to other firms. Developing or acquiring real-time analytics capabilities as separate but affiliated companies will enable agencies to collect their media commissions plus the real-time insertion fees they otherwise would pay to third parties. Insertion platforms will benefit from the scale of their data, so the large global ad agencies should take advantage of their size and international scope.

Multi-play MSOs should focus investments not on TV delivery but on data delivery, even if the new capabilities exceed customer needs. The increased bandwidth will provide justification to raise subscription prices and keep moving up the performance (and price) curve while discontinuing lower speed, lower priced service plans. Satellite firms must offer marquee content, particular time-sensitive programming like sporting events, because they cannot offset cord cutting with broadband revenue.

Conclusion

This paper uses platform theory as a theoretical lens to analyse interview data collected from senior executives throughout the television and video value chain. It identifies two key uncertainties among the executives: whether there will be broadband shortages and who will control the customer relationship. These uncertainties are combined in order to create three future scenarios, which detail how network effects and positive returns to scale would drive the industry based on who controls the relationship and whether broadband capacity satisfies demand. The scenarios highlight opportunities to "envelop" other

[2] Many participants called attention to YouTube as a sleeping giant or "800 pound gorilla" with the capacity to quickly become a major, worldwide competitor to traditional pay TV providers.

platforms and identify threats from platforms in other layers of the video ecosystem. Table 2 summarizes the winners and losers in each scenario.

Scenario I	Scenario II	Scenario III
Winners	**Winners**	**Winners**
MSOs Operating system (app ecosystem) firms	Quad-play MSOs Premium OTT firms	Premium OTT platforms MSOs with broadband infrastructure Virtual pay-tv firms (YouTube) Producers reliant on sell-thru revenue Sell-thru content retailers
Losers	**Losers**	**Losers**
Stand-alone OTT video services Producers reliant on sell-thru revenue Sell-thru content retailers	Advertising agencies Satellite TV MSOs Cable TV MSOs Cellular-only firms Operating system (app ecosystem) firms	Small / niche cable TV networks Ad-supported TV networks OTT firms without unique content
Table 2. Scenario I Outcomes		

The scenario analyses are an application of platform theory to a contemporary business issue. By synthesizing interviews from executives from different sectors of the TIME value network, the scenarios allow us to share insights that would normally be contained in different siloes within the various companies and would be limited to specific industry sectors. The narrative descriptions of the futures are illustrative and can easily communicate theoretical analysis in a concrete, rather than esoteric manner to executives. The method can open decision-makers' minds to multiple potential outcomes rather than a singular vision of the future. Scenarios make explicit the tacit assumptions underlying their strategies and call attention to discontinuities that may render present strategies misguided or irrelevant. While uncommon in e-commerce research, the Scenario Analysis method enables researchers to provide theoretical analysis in a way that is relevant to practice.

This study has several limitations that should be noted. While it includes interview participants from around the world, North America is overrepresented in the sample. Future research can include a more geographically representative sample. Second, the scenarios play to their logical conclusion of network effects and other principles of platform theory. In reality, regulatory agencies would likely step in to prevent these markets from reaching the extremes presented in the study. Future studies can incorporate regulatory policy and other non-market forces into the scenarios. Despite the limitations, the scenarios can help focus executives and scholars on potential ways an industry undergoing substantial changes may develop.

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