
ERICSSON
THE IP IMPERATIVE

ERICSSON'S MEDIA VISION 2020 AND THE GAME CHANGERS

Ericsson has released its vision for media in 2020, painting a picture of how the current trends, potential influences and likely scenarios may play out. Globally, each region and specific countries have unique factors that define their progress towards this 2020 vision, both in terms of timing and approach. However, many common aspects exist within the industry and there are a number of common values from consumer behaviors. In order for industry players to understand the key aspects driving change and build strategies for their journey up to and beyond 2020, Ericsson has defined the six most influential factors as "Game Changers."

MEDIA VISION 2020 – GAME CHANGERS

The Forever Evolving Experience | **The IP Imperative** | Brand-Casting | Changing Consumption Models and Bundles | Cloud and Web Approach to TV | New Money, New Players

This paper will look in depth at the second Game Changer – The IP Imperative. Follow the series as they are released throughout 2014.

EXECUTIVE SUMMARY – THE IP IMPERATIVE

The invention and global deployment of the network transport protocol IP has defined a new era that has reshaped our planet, our lives, and global industries including TV and media. The recent years have seen the inflection point where broadband IP capacity was met with ever more IP-centric and connected devices. This global investment in IP technology, reach and capacity has enabled sufficiently high quality delivery of video to transform consumer behaviors and enable new disruptive industry players.

By 2020, we will see IP having:

- Enabled 50 billion connected devices, of which 15 billion are video capable
- Fueled a 10x traffic growth in mobile networks, dominated by video
- Transformed consumer expectations and behavior by redefining their video experiences and the accessibility of those experiences, and adding value to every connected device they own
- Driven collaboration between broadband providers, content owners, and new market entrants.

The path to 2020 and beyond is very clear – more speed, more demand, and more immediacy. IP is driving the transformation of delivery networks, spectrum allocation and, most crucially, business models in the industry.

The IP Imperative Game Changer highlights how IP networks must be an essential focus for all those in the media industry. Is your IP video strategy going to keep you on top in 2020?

GAME CHANGERS HAVE PROFOUND IMPACTS ACROSS CONSUMER, BUSINESS & TECHNOLOGY

Each Game Changer originates from one of the three primary areas of Consumer, Business and Technology and has a direct impact on the other two points of the Game Changer triangle. The influences are interconnected; shaping and re-shaping the overall impact the Game Changer has on the TV industry.

The IP Imperative originates with technology. It looks at the dramatic impact of broadband IP connectivity and services alongside the increasing growth of IP connected "smart" devices and new, emerging methods of video distribution and associated business impacts. The IP Imperative addresses the need to meet consumer demand for an ever-increasing amount of video and a previously unsurpassed quality of experience that will enable a path beyond the living room to 15 billion video-enabled, connected devices.

THE GAME CHANGER TRIANGLE

Consumers

Changing...
> Behaviors
> Demands
> Experiences

Business

Changing...
> Services
> Business Models
> Value Chains

Technology

Changing...
> Distribution
> Networks
> Devices


>90%
of the world's population
will be covered by mobile
broadband by 2020

TECHNOLOGY:

The IP Imperative

The impact of the internet on our daily lives is arguably the single biggest technological innovation of the last century. Its effect on entertainment has been equally dramatic. As the internet evolves, the previously linear nature of broadcast television has shifted to a new interactive and on-demand paradigm that has delivered a path beyond the living room to billions of connected devices across the globe. The growing demand for broadband internet protocol (IP) services and TV Anywhere experiences has accelerated the need for long-term IP transformation to support a unified user experience across all traditional in-home and new IP devices.

Early web, video over IP milestones

The origins of transmission control protocol/internet protocol (TCP/IP) stem from the data communication needs of the U.S. Department of Defense (DOD) in the 1960s.

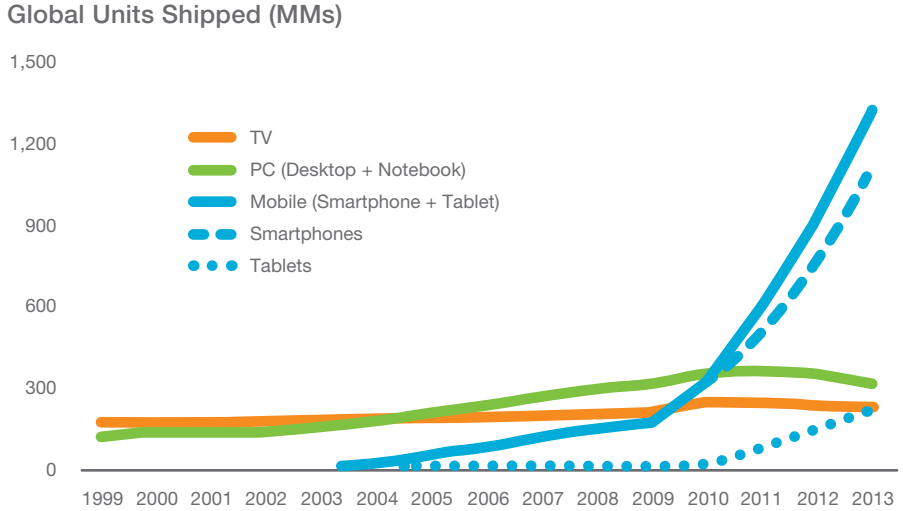
In 1982, TCP/IP became the standard networking protocol on the ARPANET and soon was met with a new generation of digital devices, of which the IBM PC was the most important. By the late 1980s, the first fledgling commercial internet service providers (ISPs) emerged.

The relatively low bandwidth on offer to home users meant that real-time video delivered via the internet was unfeasible. Compared to traditional TV approaches, such as over-the-air, satellite and cable, these IP networks proved inferior in almost every aspect as a media for delivering video content to a mass consumer market. The idea of IP-based TV (IPTV) was not even considered until the arrival of fledgling DSL-based broadband in the late 1990s. With first generation 512kb broadband over DSL connections, IPTV started to become a viable option and IP video-on-demand (VoD) services were launched. IPTV relied on a fully managed network to the home. As such, although pioneering, these initial IPTV services proved expensive, were unable to scale, and offered limited choice compared to the DVD.

IP comes of age: the inflection point of adoption

In later years, managed IPTV platforms became the fastest growing area within the pay TV service segment. Consumers embraced the need for high quality, reliable broadband, while telecommunications providers offered bundled TV services, largely emulating the capabilities provided by cable competitors. However, the greatest transformation was to come from the

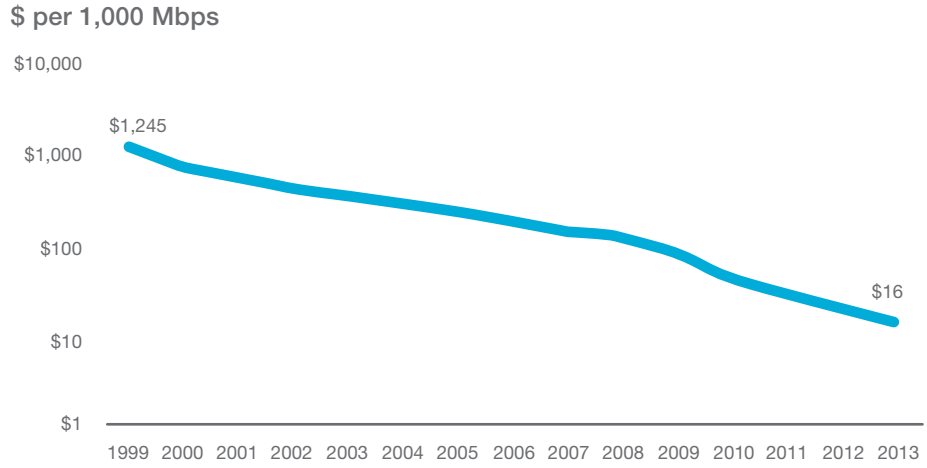
Global TV vs. PC (Desktop + Notebook) vs. Mobile (Smartphone + Tablet) Shipments, 1999 - 2013



Between 2000 and 2013, the number of IP connected devices that can view video has grown from 200 million (personal computers), to over 1.6 billion

SOURCE: KPCB Internet Trends 2014 - Code Conference

Global Broadband Cost Trends



SOURCE: KPCB Internet Trends 2014 - Code Conference

Declining cost/ performance of bandwidth enables faster collection and transfer of data to facilitate richer connections/ interactions

"unmanaged" internet delivery of video. The past decade has been a spectacular journey for internet video, starting with the arrival of YouTube in 2005 and then, a year later, with the launch of Netflix's flagship on-demand service. These services marked the rise of streaming over unmanaged networks. Alongside the rise of IP-based VoD services, we have seen significant growth in video-enabled IP devices, with computers now joined by smartphones, smart TVs, IP set-top boxes, tablets and gaming consoles. In fact, between 2000 and 2013, the number of IP connected devices that can view video has grown from 200 million (personal computers), to over 1.6 billion, according to research conducted by Business Insider.[1] Ericsson predicts this number will increase to 15 billion by 2020. IP is driving a revolution; altering the notion of content consumption from a push to a pull mechanism and transforming the way consumers experience TV in the process.

The dramatic increase in IP connected devices, especially within the mobile sphere, is driving radical change across the entire TV landscape. Ericsson's June 2014 Mobility Report found that global mobile broadband subscriptions had reached 2.3 billion in Q1 2014.[2] According to 2014 Statista research, global consumer IP traffic is expected to grow at a 21 percent compound annual growth rate from 40,905 petabytes in 2013 to 107,958 by 2018.[3] The IP revolution is also impacting the content creation and delivery process. On the production side, the fully digital capture, edit and workflow have been empowered by IP networks using file-based processes.

The use of IP in premium video delivery, whether using an internet "unmanaged" approach, or a managed "IPTV" approach, is already widespread. Many TV service providers already have well-established broadcast delivery platforms, mainly using MPEG-2 transport stream over a modulated RF carrier. These standardized approaches, including DVB-S2, DVB-T2, and ATSC, are further enhanced with IP, using hybrid delivery platforms unified in the consumer set-top box. This combines the scale and reach of broadcast with the essentially needed personalization and on-demand provision of content through IP. These hybrid platforms have been largely proprietary in design, with some standards-based initiatives such as HbbTV being deployed in Europe and Australia. In May 2014, the European Broadcast Union (EBU) stated that approximately 93% of the connected televisions for sale in Europe already support HbbTV.[4]

Connected devices and growing network capacity fuels explosive traffic growth

Like the spread of the telephone during the middle of the 20th century, internet access is becoming a ubiquitous requirement. Like any utility, increased supply and demand tends to drive down price, but bandwidth still has an intrinsic cost per capacity and video is a medium that consumes vast quantities of available bandwidth. There will always be a need to engineer networks specifically for video. Both to optimize and assure the quality of experience (QoE), and also to drive as much efficiency as possible, mitigating as much as possible the impact of so much consumer demand. This is where content delivery network (CDN) approaches and transparent internet caching has played a vital role in optimizing both quality and efficiency needs.

Today, nearly all video content delivered through the internet has been accelerated through global CDNs, with a trend of moving that technology deeper into the networks that are closest to the consumer. This is where telecommunications, cable and other internet service providers should be investing to provide the functionality to accelerate content in an assured way. This strategy can subsequently derive carriage revenues from content owners, broadcasters and other

players, such as new over-the-top (OTT) aggregators that seek to assure high quality consumer experiences.

Complementing caching, storage and acceleration, video compression technology and specific implementations can dramatically transform the bandwidth required for any given quality of video delivery. The majority of video on IP networks today is based on the standardized MPEG-4 AVC (H.264) codec. Its long-term successor is already ratified, demonstrating 50 percent bandwidth savings for the same quality. Called H.265, or high efficiency coding (HEVC), implementations are already available; yet mass deployment will rely on decode support within the billions of video devices.

All players in the media value chain need to understand how to leverage network video acceleration and assurance technologies in IP and also video coding standards, both to ensure maximum consumer quality of experience and also the lowest costs for all involved.

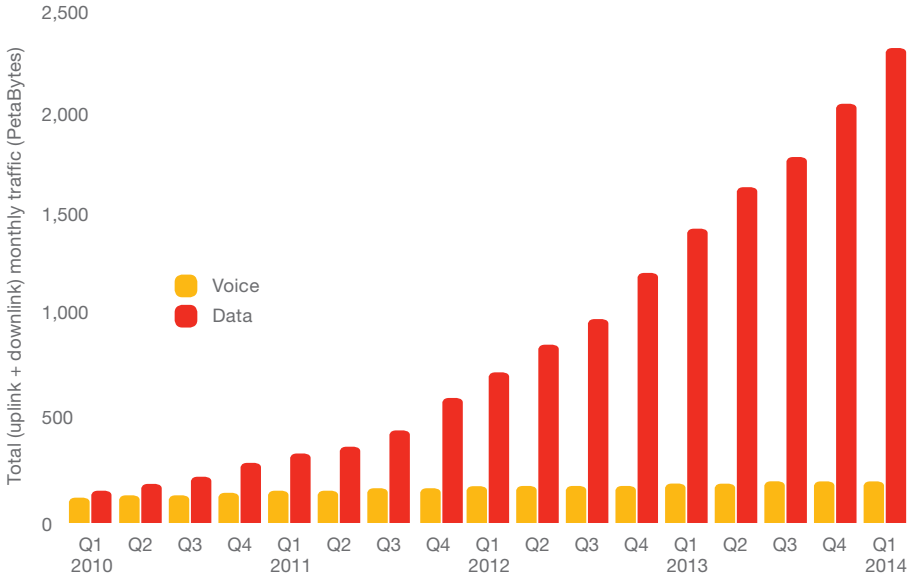
The nature of the IP networks will vary based on specific local situations and investments in infrastructure. The majority of IP-based video will be delivered to the home through fixed networks such as DSL/fiber and cable. Mobile/wireless networks will deliver all outdoor consumption. However in emerging markets with very little fixed infrastructure, the majority of all IP video delivery will be provided by 3G and LTE mobile broadband IP networks to mobile devices. In many markets, we will see the potential for mobile broadband to enhance the in-home TV experience through the hybrid platforms already highlighted. We already see that optimizing video delivery within mobile networks is specifically different to that within fixed networks.

Mobile data traffic is expected to grow the most dramatically of any IP platform. The June 2014 Ericsson Mobility Report found that mobile data traffic in Q1 2014 exceeded total mobile data traffic in 2011. Data traffic grew by 65 percent between Q1 2013 and Q1 2014. The report predicts a CAGR of around 25 percent between 2013-2019. This will result in an increase of around 10 times by the end of 2019. The rising number of smartphone subscriptions is the main driver for mobile data traffic growth, as users consume ever more data per subscription – mainly driven by video. Mobile video traffic is expected to grow by 13 times between 2013-2019.

Managing this explosive data growth while ensuring quality of experience is a feature within LTE networks called LTE Broadcast. Based on the eMBMS standard within 3GPP, LTE Broadcast brings the dynamic ability to broadcast content to enormous numbers of devices, often in dense urban situations where unicast of content would never scale sufficiently. LTE Broadcast will also open up all new experiences in stadiums and around live events, where use of mobile devices can augment the live experience. With many trials of the technology underway, it's certain this feature will be one of the critical enablers of mobile networks meeting the demands of an ever more connected and mobile consumer.

Irrespective of whether video flows over IP mobile or fixed networks, the intervening years to 2020 will see an increased realization that bandwidth is a valuable commodity and will place a greater focus on the consumption habits of video users. The notion of "net neutrality," that assumes all internet traffic should have equal importance across the public internet, will start to be challenged. The rewards, both in terms of quality

Global Traffic in Mobile Networks



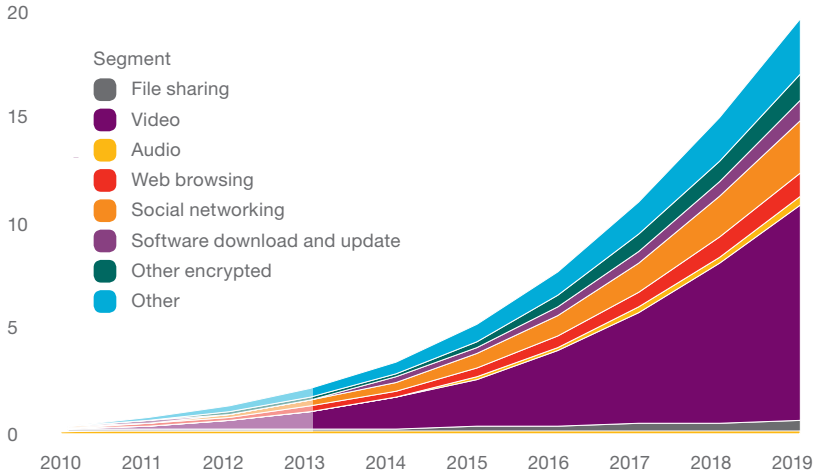
Mobile data traffic in Q1 2014 exceeded total mobile data traffic in 2011

65%

growth in **data traffic** between Q1 2013 and Q1 2014

SOURCE: Ericsson Mobility Report June 2014

Mobile Data Traffic by Application Type (Monthly ExaBytes)



SOURCE: Ericsson Mobility Report June 2014

13X

growth in **mobile video traffic** between 2013 and 2019

of experience and financial benefit, are evident. For example, in April 2014, the average connection speed of Netflix users on Comcast's broadband network was more than 80 percent higher than it was in January before an agreement between them to better interconnect Netflix content was reached.[5]

15 billion video-enabled devices connected to broadband IP transform the consumption experience of TV

The consumer expectation for high-speed internet access will be well established in most countries, and by 2020 it will be considered an essential utility. This is a time when the penetration of broadband will reach 1 billion home subscriptions, representing around 75 percent of digital TV homes. Ericsson's June 2014 Mobility Report highlights that global mobile broadband subscriptions will grow towards the 8 billion mark during this time and these consumers will all have access to connection speeds that support high quality video.

However, this accessibility will need to be greatly enhanced to simplify the available choice and the complexity of discovery. In 2020, IP will be fundamental in enabling multiple devices to be simultaneously used for solving the issues of content discovery through search and recommendation. On-demand consumption, irrespective of location, will offer a more personalized interaction with the content and socially between viewers. This in turn will place demands for far greater personalization of content and open up new opportunities for multiscreen targeted advertising.

The widespread availability of broadband IP for video, especially mobile, will also accelerate the shift in terms of consumption patterns. By 2020 in advanced markets, they will alter to such an extent that the time spent watching on-demand and time-shifted content will reach 50:50 parity with linear and live TV.

This shift is summed up by BBC executive board member, Howard Stringer: "The combination of the growth in mobile broadband and the growth in the young, aspiring global middle class dictates that the BBC must focus on serving the needs of that audience in whichever market it is operating in. Fundamentally, the BBC has to shift its focus from putting traditional broadcasting first to putting mobile first. By 2022, the BBC should be mobile first in every market outside the UK."[6]

The capability of IP networks for video delivery will have additional benefits beyond personalization, access, security and convenience. We will see strong motivation to either remove completely, or greatly reduce, both fixed and operational cost, including the home set-top box. A clear example of fixed cost reduction and service enhancement is the migration of the DVR (hard disc recording function) from the consumer's home, into the network with a cloud delivery approach. This will enable on-demand access to anything that the service provider "records" for the consumer, ushering in an era where everything can be recorded, including what we consider today to be linear or live TV.

The impact of IP technology and the networks that will serve ever more connected devices is the single greatest transformation element in TV since its inception. The early years have been slow, problematic and not yet ready for prime time. Today, IP is rapidly maturing and the networks are there, demand is there, and devices are there, too. However, it is the approaching years to 2020 that will see such a dramatic upshift in adoption and performance that, looking back, where we are now will be seen as the true inflection point of complete change.

Is your video strategy ready to meet this IP Imperative?

	Today	Tomorrow	2020*
Broadband Subscribers & Connected Devices	> Global mobile broadband subscriptions reached 2.3 billion in Q1 2014 > All new devices are IP enabled > The number of IP connected devices that can view video grew from 200 million (personal computers) to over 1.6 billion between 2000 and 2013	> Rapid increase in mobile broadband subs > Conversion of 3G mobile broadband to LTE fast mobile broadband subscribers and devices > Set-top boxes shrinking in cost and scope	> Over 8 billion connected mobile broadband subscribers > 90% of the world's population covered by mobile broadband > Fixed broadband penetration reaches 1 billion home subscriptions > 50 billion connected devices, of which 15 billion are video enabled > Home DVR shifted to cloud and network
Mobile Traffic	> Mobile data traffic in Q1 2014 exceeded total mobile data traffic in 2011 > 65% growth in data traffic between Q1 2013 and Q1 2014	> Rapid growth in data traffic in fixed and mobile networks > Mobile broadband traffic highest growth > Video is the primary driver of all traffic growth	> Data traffic will increase by about 10 times > Mobile broadband traffic will have reached almost 20 exabytes monthly > Video represents 50% of all mobile broadband traffic
Use of IP in Delivery	> Well established as a managed IPTV proposition with close to 100 million global IPTV subscribers > Well established in advanced markets – internet OTT delivery content > Use of global CDNs by content owners to accelerate OTT traffic > Hybrid terrestrial platforms defined and being adopted (YouView, HbbTV)	> Satellite and IP proprietary platforms will be deployed more widely > LTE unicast video enhanced with LTE Broadcast deployments > Most local telcos, cable operators and ISPs deploy operator CDNs for acceleration and monetization of video traffic	> IP is the dominant video delivery network technology > Global IPTV subscribers reach 200 million > Emerging markets rely on mobile broadband for IP transformation > OTT delivery model applicable to all industry players > All pay TV service providers have a core IP strategy for delivery to the consumer
Quality of Experience	> Consumers already used to good streaming experiences in-home > OTT disruptors and content owners establishing models for paying for/investing in assured end consumer quality of experience > Rapid video growth already straining networks	> Quality of experience/ bandwidth crunch looming unless networks invest in capacity and efficiency measures, and explore revenue generation opportunities > Net neutrality and traffic optimization discussions ongoing in all countries	> Video consumption via mobile networks is as good as fixed networks in many countries > Sufficient bandwidth and established revenue share to support viable OTT delivery model > Time spent watching on-demand and time-shifted content will reach 50:50 parity with linear and live TV

SOURCE: Ericsson 2014.

IP Imperative key trends *Advanced TV markets

BUSINESS:

The IP Imperative will drive collaboration between broadband providers, content owners, and new market entrants.

The IP Imperative will create huge disruption, but also significant opportunity for the entire media value chain. The shift will provide far greater consumer reach and depth of engagement and enable new consumer experiences, while maximizing the value of all consumer devices. For the most innovative service provider, IP can drive opportunistic churn from rivals by resolving the quickly increasing fragmentation of discovery and consumption across IP devices and apps.

Additionally, those players that have the asset of an IP delivery network specifically optimized for video will be generating additional revenues for carriage, optimization and personalization. The deeper the connection to the consumer, the greater the opportunity.

With industry revenues of $750 billion in 2020, up from $530 billion in 2013, it will be the all-IP video players that see the strongest growth.

Satellite and terrestrial players especially, but also cable players with non-IP based broadcast delivery platforms, will need to find ways to very quickly embrace the addition of broadband IP video delivery to the consumer, and potentially long term migration to pure IP video models. For cable players this is an objective already on the agenda by re-engineering their physical network core assets. What is clear is that the OTT disruption model of today, where new players, existing broadcasters and content owners leverage the internet for delivery, will evolve relatively quickly into an established model of collaborative, optimized video delivery through another player's broadband IP network for carriage fee. This "OTT delivery for all" model is especially interesting for satellite and terrestrial players as it provides another strategic option to become IP-enabled and embrace a hybrid IP-broadcast platform.

This trend is underway. In June 2014, BSkyB, a leading satellite player, said more than half of its TV customers (5.4 million of 10.6 million) had connected their Sky+HD box to broadband in order to gain access to its full range of on-demand services.

Telco players with specific fixed and mobile IP network assets will be in a very strong position to innovate their own TV services in the IP era. However, they can also play a significant role in providing quality-assured video delivery for the content and broadcast players, as well as potentially existing pay TV competitors and new aggregator entrants. This is a model they will need to explore if only for finding ways to fund the ever-increasing network investment for capacity as video dominates growth. Already, many of the IP-centric players have enabled the professional business side of the media value chain to embrace IP approaches for acquisition, exchange, and distribution of high quality video assets prior to delivery to the home.

IP-based video delivery will enable transformation and personalization of content as well as advertising. In our next Game Changer, Brand-casting, we will highlight how IP is providing the backbone for the potential transformation of how advertising is created, marketed, sold and consumed.

As the TV industry accelerates towards an IP-connected era of TV serving over 8 billion mobile broadband subscribers and 15 billion video-enabled connected devices, significant new growth opportunities and market disruption will increase. Those that define and lead the evolution of consumer expectation will derive the greatest success. It is the fundamental requirement of all those in the media value chain to understand how broadband IP will present the greatest opportunity and threat, and build an IP strategy to win in this new era of TV.

Those that define the evolution of consumer expectation will derive the greatest success

CONSUMERS:

The IP Imperative will transform consumer expectations and behavior by redefining their video experiences and the accessibility of those experiences, and adding value to every connected device they own.

Consumers are the drivers in the adoption of technological enhancements, as they increasingly demand higher quality and more relevant content across their wide range of connected devices. They already want to move away from choosing content based on a TV schedule on a single domestic device, to one where the source is chosen based on the availability and suitability of the given situation. Ericsson ConsumerLab's TV and media research indicates that TV is becoming a multiscreen and multitasking activity. Today, 75 percent of consumers multitask by using mobile devices while watching TV, and one in four watches multiple video sources at the same time.

In 2020, these expectations and behaviors will have defined who the most successful service providers are. The capability of particularly LTE broadband IP networks will level the playing field and "inequality" of experiences away from, and in, the home. The "streaming" mentality will become rapidly adopted as soon as consumers have confidence in the ability of mobile networks, replacing a largely pre-load/cache behavior. Instead, they will expect one simple, all-encompassing and convenient platform for TV content across every device.

The IP Imperative today provides more consumer choice, but also greater complexity and frustration as a myriad of connected devices and their supporting ecosystems offer different bits of content online. Discovery and consistency is getting worse, not better. However moving towards 2020, the IP Imperative will provide the crucial connectivity to all screens/devices, platforms and cloud services that will enable consumers to pick and mix what, how and when they watch content. The winning TV service providers will leverage this capability to delight the consumer with personalized recommendation and advanced search of a broader depth and breadth of content, and a consistent, logical and innovative way of consuming and engaging with it.

As Mike Hopkins, CEO, Hulu said in April 2014: "Across the TV industry, we're seeing greater access to all types of content, and more ways for you, our loyal TV fans, to forge deeper connections with your favorite shows. As the way viewers consume premium TV continues to rapidly evolve, we want to evolve to be able to offer more content on even more platforms."[7]

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>
> **Mike Hopkins, CEO**
> **Hulu**

This evolution is continually redefining the meaning of television and video among consumers, regardless of whether they are watching shorter video clips or accessing full-length TV shows and movies. Today, YouTube alone has over 100 hours of video content uploaded onto its servers every minute, while Netflix has grown to incorporate 44 million paying subscribers in just seven years. Based on current growth trajectories, Netflix will have 200 million subscribers by 2020 (60 million in the U.S. alone).[8] This trend will encourage even more frequent viewing among consumers and form a natural part of their basic habits. The ease of use of OTT platforms, the availability of the internet and the growing popularity of mobile-enabled devices means there are very few hurdles to consumers taking complete control of their viewing experience through the combination of apps and other media services.

IMPLICATIONS

Every player in the value chain of TV and media will have challenges and opportunities on the road to 2020 and beyond. Each player can have one or more roles, and even change the parts they play in commissioning, creating, acquiring, distributing, aggregating, advertising and providing discovery of content experiences to consumers and their devices.

The content owner

In 2020, the success of the IP Imperative will give content owners and aggregators better access to the consumer by enabling them to directly offer their content to the viewer via IP delivery. This has the potential to be extremely disruptive and lucrative for content owners as they become able to sidestep traditional routes of consumer engagement via the broadcasters and service providers. Whether this model becomes more lucrative than reselling through the dominant aggregation players will be a decision and strategy for each owner to explore, but likely, given the predominance of pay TV providers in 2020, that status quo will be largely intact.

The broadcaster

For traditional broadcasters, IP offers a way of expanding reach to consumers outside the entrenched ecosystem of operators fed by local and national content providers. With widespread IP device adoption, the 2020 consumers will want and will finally be able to watch broadcast TV on their second screen devices, although the business models and relationships must evolve. In the future, IP will allow a local TV station to broadcast a stream that is delivered both via air and across pay TV operators' network and mobile apps. The complexity of an all-connected world would suggest that broadcasters are best served aligning with global standards for IP-broadcast hybrid platforms, working with all pay aggregators in-market to potentially monetize a large content back-catalog and explore whether outsourcing much of these operational aspects makes sense.

The TV service provider

The rise of IP will have major impacts on both cable and satellite TV service providers as a method of finally delivering a true TV anywhere experience. For cable TV service providers, 2020 will see widespread adoption of the converged cable access platform (CCAP) initiative that will help put all the services into one logical control shelf across legacy RF QAM services, DOCSIS broadband IP services and VOIP services. The move will also see more adoption of a common access and aggregation device at the headend, which will make it easier for the TV service provider to manage, maintain, and support mixed IP services.

For satellite providers, the "OTT delivery model for all" approach offers a way to deliver on-demand content and value-add services such as cloud-based DVR that were not possible with a pure satellite delivery. 2020 will see more satellite-IP hybrid networks as telecommunications and satellite operators become closer through agreement or acquisitions, as in the recent DirecTV and AT&T announcement. Telco TV service providers, similar to cable, have a powerful core asset – the IP network. In most cases, telcos also have the additional strength of a mobile broadband proposition. With rapid growth to 2020 in IPTV subscribers and use of IP video, telcos will be in a strong position to grow from both TV subscriber expansion and also network-derived revenues. If existing TV service providers embrace the opportunities presented by the IP Imperative, they are in the strongest position to maintain their subscriber loyalty and drive growth. However this transformation in the consumer aggregation service will be highly fought over, and only the most advanced and most consumer intuitive will succeed.

The network owner/provider

For network operators, the road to 2020 is a positive one, with IP video a fundamental element of consumer broadband services that are as essential to consumers as other utilities. Yet rapid growth of traffic requires continual investment in capacity and specific video optimization to mitigate this traffic growth as much as possible. However, this traffic growth and the tools available within operator CDNs open up the opportunity to make deals with the content industry by providing the assurance of experience quality for carriage revenues. In many regions, mobile-specific broadband approaches will be essential to explore and here is often where the greatest growth in consumer wealth and smartphone adoption will come – fueling profitable opportunities to deliver content.

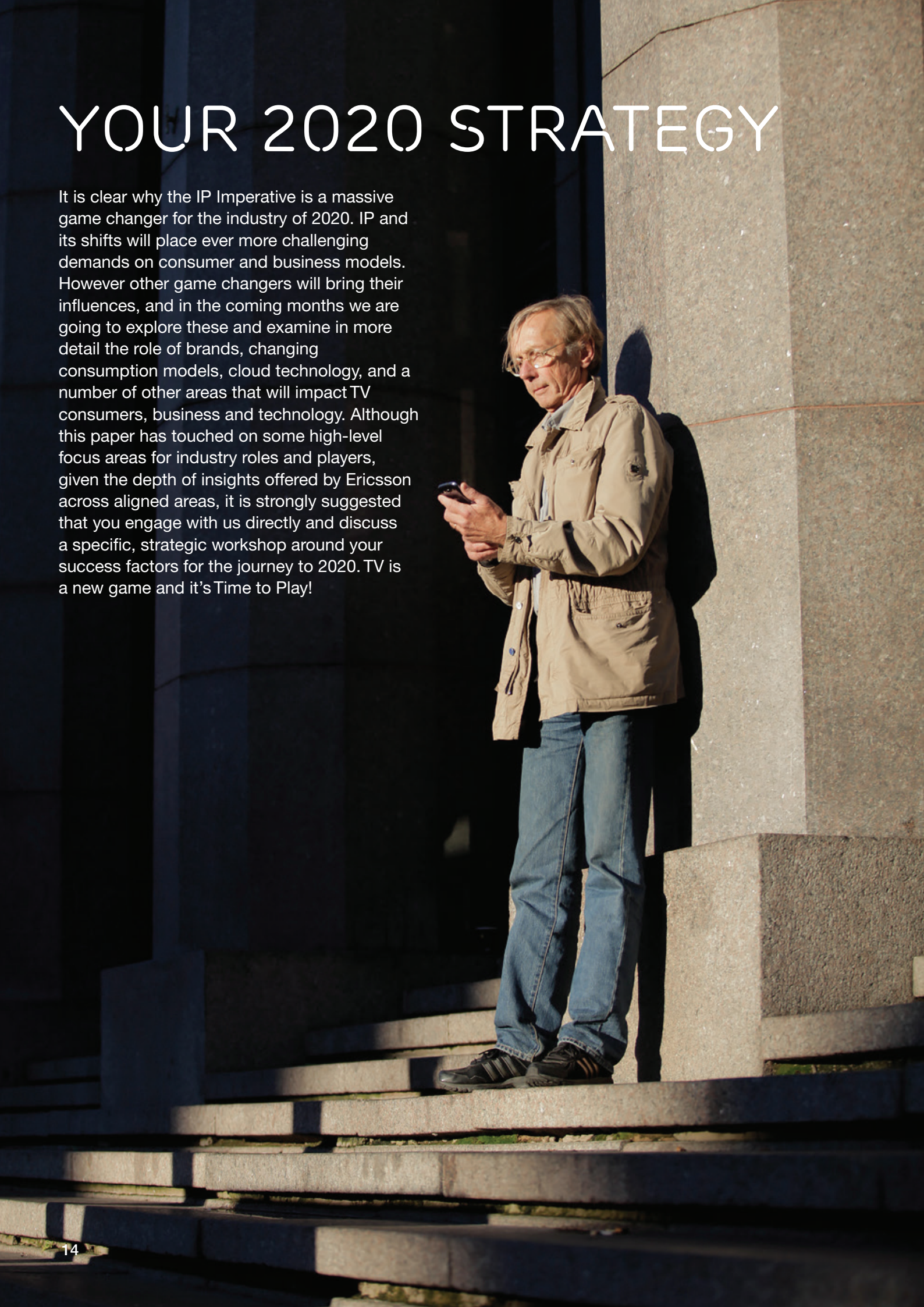
The advertiser

For advertisers, the IP Imperative opens the door to a much closer and more effective targeting of ads to audience. The engagement model in 2020 will still include traditional mass broadcast advertising, but the ability to target users based on IP (fixed, on-the-move and even down to the device) will open up highly targeted campaigns powered by increasingly sophisticated analytics. TV will become a more interactive experience, with customers interacting with ads through primary and second screen interactivity enabled exclusively via IP connectivity.

The notion of an end-to-end IP delivery path also opens up the realistic notion of highly personalized ad insertion. Pioneers will start around VoD and ultimately spread to live TV as the technology and, specifically, rights negotiations progress. The same level of granular marketing that search engines have developed for internet advertising will be an achievable option for larger advertisers and media agencies. The ability provided by IP to provide verifiable engagement will enable change both in advertising approaches and also consumer acceptance of ad relevance.

YOUR 2020 STRATEGY

It is clear why the IP Imperative is a massive game changer for the industry of 2020. IP and its shifts will place ever more challenging demands on consumer and business models. However other game changers will bring their influences, and in the coming months we are going to explore these and examine in more detail the role of brands, changing consumption models, cloud technology, and a number of other areas that will impact TV consumers, business and technology. Although this paper has touched on some high-level focus areas for industry roles and players, given the depth of insights offered by Ericsson across aligned areas, it is strongly suggested that you engage with us directly and discuss a specific, strategic workshop around your success factors for the journey to 2020. TV is a new game and it's Time to Play!



KEY BELIEFS AND OUTLOOK OF MEDIA VISION 2020

Media Vision 2020 is built on extensive research elements and unique insights that span the media value chain to the TV consumer. Key 2020 predictions include:

- **The Networked Society is realized** – Fifteen billion video-enabled devices are connected to broadband IP, transforming the consumption experience of TV. Mobile broadband is essential in all regions and fundamental in emerging regions.
- **Bundling of content and services remains the ultimate opportunity** – Consumers will value simplicity and perceive value in a single bill, however the essential need for broadband will enable separation of propositions from broadband access and content.
- **OTT delivery for all** – Delivery of content over-the-top becomes applicable to all TV service providers or content owners as a way of reaching consumers, and enhancing established broadcast delivery platforms.
- **On-demand has risen to parity with live/ linear** – IP will have accelerated the ongoing shift of consumers to embrace the convenience of on-demand access to content for 50 percent of their consumption.
- **New entrants bring new investment** – The acceleration of broadband capacity and penetration, along with ever more connected devices, potentially enables a powerful device or social ecosystem to become a premium TV aggregator.
- **Market revenues have grown to $750B** – Up from $530B in 2013. The distribution of revenues, however, shifts between content owners, broadcasters, TV service providers and network providers, especially as brands adapt their advertising focus.

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