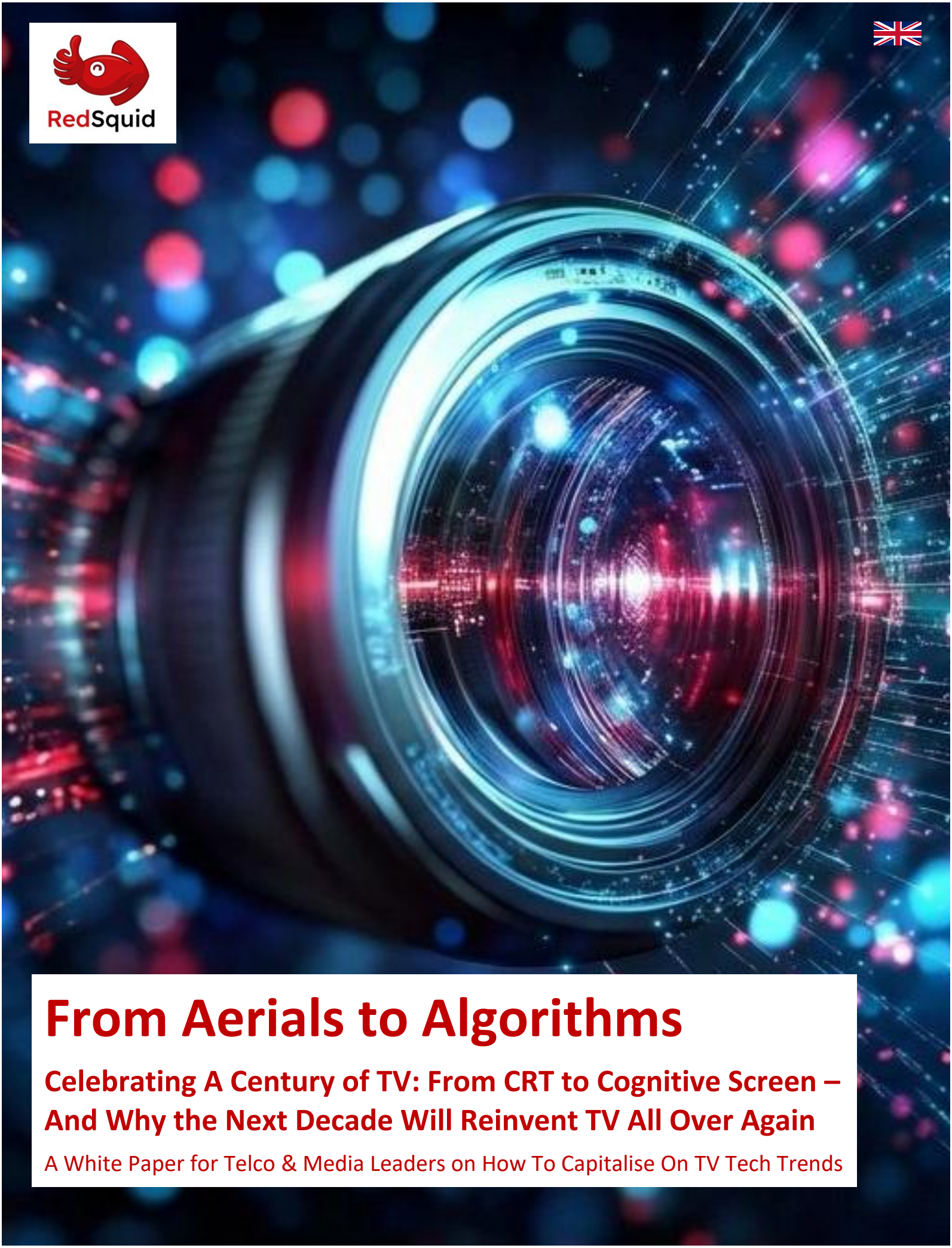


From Aerials to Algorithms

Celebrating A Century of TV: From CRT to Cognitive Screen – And Why the Next Decade Will Reinvent TV All Over Again

A White Paper for Telco & Media Leaders on How To Capitalise On TV Tech Trends

The famous Lafayette photograph is of Baird's business partner Oliver Hutchinson; it represents the closest approximation of the earliest human face pictures that were discussed in the Times article. This is the first photograph ever taken of a TV image.

THE "TELEVISOR"

SUCCESSFUL TEST OF NEW APPARATUS

Members of the Royal Institution and other visitors to a laboratory in an upper room in Frith-Street, Soho, on Tuesday [26 January] saw a demonstration of apparatus invented by Mr. J.L. Baird, who claims to have solved the problem of television. They were shown a transmitting machine, consisting of a large wooden revolving disc containing lenses, behind which was a revolving shutter and a light sensitive cell. It was explained that by means of the shutter and lens disc an image of articles or persons standing in front of the machine could be made to pass over the light sensitive cell at high speed. The current in the cell varies in proportion to the light falling on it, and this varying current is transmitted to a receiver where it controls a light behind an optical arrangement similar to that at the sending end. By this means a point of light is caused to traverse a ground glass screen. The light is dim at the shadows and bright at the high lights, and crosses the screen so rapidly that the whole image appears simultaneously to the eye.

For the purposes of the demonstration the head of a ventriloquist's doll was manipulated as the image to be transmitted, though the human face was also reproduced. First on a receiver in the same room as the transmitter and then on a portable receiver in another room, the visitors were shown recognizable reception of the movements of the dummy head and of a person speaking. The image as transmitted was faint and often blurred, but substantiated a claim that through the "Televisor" as Mr. Baird has named his apparatus, it is possible to transmit and reproduce instantly the details of movement, and such things as the play of expression on the face.

It has yet to be seen to what extent further developments will carry Mr. Baird's system towards practical use. He has overcome apparently earlier failures to construct light sensitive cells which would function at the high speed demanded, and he as is now assured of financial support in his work, he will be able to improve and elaborate his apparatus. Application has been made to the Postmaster-General for an experimental broadcasting licence and trials with the system may shortly be made from a building in St. Martin's Lane.

Source: From The Times (London),
Thursday 28th January 1926, p. 9 column C.

Contents

1. Context and Overview

1.1 Executive summary

The next decade is TV's "iPhone moment" …the lesson from Nokia's fall is stark. Knowing disruption was coming was not enough; failing to act was fatal.

Television has recently celebrated its centenary – one hundred years since John Logie Baird's first live TV demonstration in London in January 1926. From those flickering images to today's ultra-thin, networked screens, TV has evolved through broadcast, multichannel, digital and IP eras to become a global medium shaping culture, politics and daily life. Yet the transformation now underway promises greater disruption than the previous century combined.

RedSquid describes 2026-2036 as the age of cognitive television – where fast fibre broadband and in-device AI enable entirely new forms of home entertainment. Most current industry debates focus on using AI to do existing things faster and cheaper. But the real impact will come from enabling new experiences never imagined before.

A critical question is where the AI processing sits. While much attention is on generative AI in the cloud, the equally profound change will come from small AI models running directly inside the TV. Edge AI capabilities will make it possible to personalise storylines, enable cloud gaming, volumetric sports, mixed-reality watch parties and new ad formats — all running natively on the big screen. The TV will become the household's primary edge AI node, shifting value to whoever owns the intelligence layer between viewer and screen.

The industry now faces a similar juncture… do today's incumbents lead the transformation — or become its casualties.

As the modern television merges fully with the internet, control has begun to shift from broadcasters and Pay TV operators to smart TV platform owners. Losing this control would be catastrophic for Europe's media and telecoms industries, eroding telcos' differentiation in broadband. Yet two powerful trends — the rise of in-device AI and the move from aerial to broadband delivery — could return that power to Europe's broadcasters, telcos and content makers if they act fast.

This decade marks television's "iPhone moment." Just as smartphones redefined telephony through software and intelligence, cognitive TV will transform the screen into an adaptive, conversational environment connecting content, commerce, communication and the connected home. For telcos and media groups, this is both an existential threat and an extraordinary opportunity. By embracing and leading the cognitive television era, telcos can become the next generation of industry leaders. The lesson from Nokia's fall is clear: knowing disruption is coming is not enough — acting in time is what defines who leads next.

1.2 Foreword – A European Cultural & Creative Perspective

Anette Schaefer, CEO of EIT Culture & Creativity

As Europe marks a century since television's invention, this white paper arrives at a decisive moment for our creative and cultural industries. John Logie Baird's flickering images from a Soho workshop in 1926 launched a medium that transformed societies, economies, and culture.

Today, as cognitive television — powered by edge AI, broadband delivery, and interactive storytelling — redefines that medium, Europe faces both significant risk and remarkable opportunity.

Having worked in senior leadership roles across Europe's telecommunications and media sectors, I have seen many of the structural challenges this paper addresses. Fragmented value chains, weak coordination between infrastructure and creative ecosystems, and growing reliance on non-European platforms are eroding Europe's ability to scale innovation on its own terms.

Cultural and creative sectors already represent 5.3% of EU GDP and 8.7 million jobs, with forecasts nearing 10% of global GDP by 2030. Yet barriers—limited scale-up capital, scarce cross-border deployment, and loss of interface control—threaten both economic value and cultural sovereignty. For EIT Culture & Creativity, the challenge is clear: how can Europe turn technological capability into sustainable, values-driven growth? Cognitive television is more than a new media format; it is emerging as digital infrastructure that shapes how culture is discovered, monetized, trusted, and governed in the home.

What Europe needs now is coordinated, cross-sector collaboration among telecoms, public broadcasters, creative industries, technology developers, and policymakers. Open standards, interoperability, and European-led platforms will ensure that the next generation of television strengthens, rather than dilutes, our creative diversity. Three priorities stand out:

- **Digital and cultural sovereignty:** Future TV platforms must respect local governance, data protection, and cultural visibility, safeguarding creative IP and public interest objectives.
- **Creative scale and export potential:** Shared technical foundations can enable creators to reach large audiences with interactive, personalized experiences that strengthen both domestic and global presence.
- **Industrial renewal:** Europe's expertise in broadcasting, fibre networks, embedded software, and design can combine into new jobs, regional innovation clusters, and exportable standards aligned with EU industrial strategy.

Europe cannot afford to be a spectator in television's next chapter. Our broadcasters hold trusted content; our telecoms operators have invested billions in next-generation networks; our creative communities lead globally in storytelling. The opportunity now is to align these strengths through collaborative, open, European-led frameworks that make cognitive television a driver of innovation, inclusion, and long-term competitiveness. This white paper is not just a call to imagine that future, but to build it together.

1.3 A Strategic Partner Viewpoint

Witalis Korecki, CEO, Sharp Consumer Electronics Europe

As television marks its centenary – one hundred years since John Logie Baird's pioneering demonstration in Soho – Sharp is proud of its long-standing contribution to advancing the medium for viewers around the world. From launching the world's first 14-inch colour LCD TV in 1988 to introducing the world's first 8K TV almost a decade ago, Sharp has consistently focused on innovation that moves television forward in meaningful, human-centric ways.

Today, television is again at a moment of transformation. The convergence of broadband delivery, powerful on-device processors and emerging AI capabilities is transforming the TV from a passive display into an intelligent hub for the home – a place where entertainment, information, communication and services come together in a more integrated experience. Modern Sharp TVs already have market-leading hardware and we see that accelerating even further as new TV features appear. To take best advantage of these opportunities the relationship between screen manufacturers, telecom operators and content providers becomes more important than ever.

This is why Sharp Europe is pleased to support RedSquid and to endorse the operator TV model outlined in this white paper. RedSquid's approach – combining an operator-focused TV operating system with edge AI capabilities – offers a clear pathway for telecom operators to deliver differentiated, branded TV experiences while drawing on the strengths of established television manufacturers. It aligns well with Sharp's own commitment to open collaboration, high-quality hardware and long-term reliability.

By working together around an operator TV model, manufacturers like Sharp can provide advanced screens optimised for these new software platforms, while operators can make full use of their broadband networks, customer relationships and service capabilities. Viewers benefit from a consistent, intuitive experience that reflects local markets, supports trusted broadcasters and enables new interactive formats as technology evolves.

Looking ahead, Sharp sees great potential in televisions that can adapt to households over time – learning preferences, supporting a wider range of services, and integrating more naturally with other connected devices. These possibilities are best realised when hardware and software roadmaps are developed in close partnership with operators and content partners, so that the end-to-end experience feels coherent rather than fragmented. In that spirit, Sharp Europe welcomes the collaborative vision set out in this paper and is committed to playing an active role in turning it into reality across key European markets.

The next decade will see the television continue its evolution from a single-purpose device to an intelligent, connected surface in the heart of the home. Sharp Europe looks forward to partnering with RedSquid and with forward-looking operators across the region to help shape this next chapter – building on a century of innovation, while keeping the focus firmly on quality, trust and value for viewers.

SHARP

1.4 A Partner Perspective

Andrew Cole, Executive Chairman, Glow Financial Services & CEO of DAD

For more than two decades, I have watched the global telecoms and media industry wrestle with the same structural dilemma: operators and broadcasters carry the capital burden of networks and content, while value and customer intimacy quietly migrate to the software platforms that sit in front of the screen. The centenary of television is a fitting moment to acknowledge that this model has run its course. The next decade will not be decided in ducts and data centres, but on the glass in the living room – and on who owns the intelligence, identity and economics that sit on top of it.

This white paper sets out a compelling, and in my view urgent, vision for how Europe can respond. It argues that television is entering its "iPhone moment": the shift from passive, app-based smart TVs to cognitive screens powered by Edge-AI, capable of orchestrating entertainment, commerce and connectivity in deeply personal ways. Left to market drift, that layer will be captured by West Coast hyperscalers whose incentives and governance sit far from European consumers and regulators. The alternative – and the one this paper champions – is a European coalition of telcos, PSBs, OEMs and advertisers rallying around an open, customisable TV platform that embeds privacy, transparency and user control by design.

From Glow's vantage point, working with leading operators and OEMs on device financing, insurance and upgrade programmes across multiple continents, the direction of travel is clear. As devices become more capable and more expensive, the ability to spread cost over time – with sophisticated risk management, securitisation and vertical AI – is no longer a "nice to have;" it is the economic engine that makes large-scale platform transitions feasible. Telcos that pair a differentiated, operator-centric TV OS with creative, capital-efficient ownership models will be in a far stronger position than those who simply subsidise commodity hardware running somebody else's software.

At Digital Audience Data (DAD), we see a complementary shift underway in how audience intelligence itself is gathered and applied. DAD's mission is to give broadcasters and brands privacy-safe, real-time insight into viewing behaviour, built around transparent value attribution and consent-led data exchange. When combined with Glow's financial infrastructure and RedSquid's open, Edge-AI-ready smart-TV platform, a unique opportunity emerges: to reinvent the economic and data foundations of television from the inside out. RedSquid's edge-based Virtual Product Placement (eVPP) technology exemplifies this future – enabling dynamic, on-screen brand integration that is both hyper-personalised and privacy-first, processed entirely at the edge rather than in the cloud. Together, DAD, Glow and RedSquid are enabling a model in which television can become more relevant, measurable and economically self-sustaining, while protecting user trust and agency at every step. That is the vision this white paper articulates – and the one we are proud to help make real.

Glow

1.5 A Personal Vision for the Future Home Screen

Trevor Neal, Founder and CEO of RedSquid TV

Television has been a major part of my professional life – from the launch of DVB-T in the late 1990s (For which our joint project with the BBC received the Queen's Award for Enterprise) to the launch of smart TV that we drove worldwide as MStar Semiconductor. I've watched the medium evolve from fixed channel grids and proprietary set-tops to app-driven streaming, cloud platforms, and global operating systems. Each wave felt transformational at the time, but in hindsight they were stepping stones toward something more fundamental: the shift from television as a product to television as an intelligent experience layer in people's lives.

Our small team oversaw the seismic transition from CRT to digital flat-panel televisions – and Analogue to Digital transmission. Those two inflection points happening at the same time created an opportunity for us as a new entrant to come in and take over the market. Today I see two new inflection points coming quickly. The transition away from TV aerials to TV supplied over broadband, and the move to personalised edge AI TV, from streamed content.

This time, the change is going to be even more fundamental. Once again, there is an opportunity for the new TV industry leaders to emerge. Managed correctly, the control or the TV can move into the hands of broadband providers – and even the PSBs. But to take advantage of these two inflection points, ISPs must respond quickly, with the right partnerships and strategies.

Looking ahead, it may not even make sense to call it "television." By 2036, what sits at the centre of the living room – your home – will be far more than a "TV set" or "flat panel." It will act as the primary home hub for entertainment, communication, ambient information, and control – where the old notion of "channels" gives way to orchestrated sessions that follow people across rooms and devices.

"Today, I see two new inflection points coming quickly. The transition away from TV aerials to TV supplied over broadband, and the move to personalised edge AI TV…"

A Burning Platform for the Traditional Pay TV Industry

Today, I describe TV as a burning platform – for telcos/Pay TV providers, public service broadcasters (PSBs), TV manufacturers, and advertisers alike. For telcos, the challenge is stark: almost everything they once differentiated through their set-top box-based Pay TV service is now available directly on the home screen of their customers' smart TVs.

Why would a customer exit that environment and switch to the operator's own interface on a set-top box? What is the value? Is the experience noticeably better? Is the content materially different? Exclusive sports rights have provided temporary insulation, but as those become harder to sustain, many operators will find themselves questioning their role in the living-room stack. In 2019, Samsung was already claiming that 85% of streaming is done directly through its smart TV's built-in functionality. All the insight suggests that this has only grown over the last five years[i].

Yet, TV is key for the broadband provider to be able to differentiate their service. Without TV, broadband risks being commoditised further; it just becomes a race to the bottom on price. Telcos have already made the big investments in digging up the roads to lay fibre broadband. Literally billions of dollars spent. Yet today, the telcos are enabling others to leverage that investment. It's like building a bridge and then not installing a toll booth. This paper sets out to show how the telco can properly capitalise on those investments.

"Telcos have already made the major investments in digging up the roads to lay fibre broadband… spending billions of dollars in the process. Yet, today, telcos are enabling others to leverage that investment. This paper sets out to show how telcos can properly capitalise on those investments… it's like building a huge bridge over a river and then not installing a toll booth!"

PSBs face an even worse existential crisis. The rise of smart TV platforms and global streaming ecosystems has diluted linear content discovery, weakening traditional scheduling and brand visibility. Meanwhile, device OEMs and OS providers compete to control the home screen – where viewer attention, data, and monetization opportunities concentrate. Advertisers, in turn, must navigate fragmented inventories, opaque measurement, and the growing dominance of proprietary TV operating systems.

The PSB still have huge value in content creation, advertising relationships, news channels and content partnerships. But all of this is in decline as the interface to the customer is controlled by the PSB competitor.

The PSBs have the creativity and content that the telcos do not have! The telco controls the pipe into the home and usually also the home Wi-Fi and the devices within the home. Together, they could create a cross-European cooperation that would bring massive growth for telcos and a friendlier environment for the PSBs.

The only part missing is ownership of the customer platform inside the home to take advantage of all those big investments. Some PSB have gone some way towards this, creating quite sophisticated Apps and User Interfaces (UI). But generally, they still rely on hyperscaler TV platforms to bring these products to the high street. Our proposal is to go further and lead the next wave of 'cognitive screens' by controlling the whole platform.

Together, we can create Europe's TV hyperscaler!

The Viewer Deserves A Better TV Service

The viewer is also suffering from being targeted continually by smart TV monetisation. TVs purchased in retail are becoming increasingly difficult to use, and the level of monetisation is becoming irritating for many users.

TVs supplied by operators could have a much cleaner UI. The TV supplied by an operator could be integrated into the broadband bundle, the operator making their money on the broadband, and a financed TV acting primarily to increase customer retention and ensure a better QoS, by working seamlessly on the operator's managed broadband ((i.e. leveraging multicast). Of course, the operator can also monetise the TV, by adding revenue earning new applications, such as fitness or games, limited Home page advertising, or subtle eVPP product promotion. But monetisation will not be the focus, as it is for retail TV. The monetisation of 'Operator TV' can be much lighter and focussed around adding value and features the user wants, rather than pushing advertising and content that just gets in the way. The result is an easier to use TV, more tailored to the user's requirements.

Operator-supplied TVs will deliver a more seamless and enhanced QoE, supported by full LAN-to-WAN visibility that enables network optimisation (i.e. multicast) and consistent UI performance.

In-Device AI Creates The Opportunity For New Leadership

Most conversations about AI are talking about processes that happen inside massive data centres. But **distributed AI, small AI engines dedicated to one task running unobtrusively inside the TV can have a much more profound impact.** When you combine that level of personalisation with technologies, such as cloud gaming then a whole new genre of entertainment begins to emerge.

In-device AI will begin to blur the boundary between watching and playing. Imagine a long-running soap opera like BBC's *EastEnders*: today, millions tune in to see what happens after last night's cliff-hanger; tomorrow, viewers might shape the turning point themselves – defining character choices, emotional beats, or alternative branches, then watching the consequences unfold, as if it were just another episode in the schedule. In that world, television becomes a continuously regenerating story space, rather than a fixed, producer-defined feed.

The Next Leap

This transformation is powered by a generational leap in local and processing. GPUs, NPUs, and dedicated media accelerators inside the TV set will make high-fidelity visuals and real-time personalization routine, while cloud and edge infrastructure render complex scenes on demand.

…in-device AI will begin to blur the boundary between watching and playing."

The result is an easier to use TV more tailored to the user's requirements.

Operator-supplied TVs will deliver a more seamless and enhanced QoE, supported by full LAN-to-WAN visibility that enables network optimisation (i.e. multicast) and consistent UI performance.

By the mid-2030s, the home's central screen will be more like an AI-powered home hub: a cluster of displays and sensors orchestrating video, gaming, social presence…, and commerce"

Cloud gaming will stand beside video as a first-class citizen, and immersive formats will become mainstream. The traditional "lean back" experience will coexist with new forms of interaction that are conversational, adaptive, and participatory. By the mid-2030s, the central screen in the home will behave more like an AI-powered home hub: a cluster of displays and sensors orchestrating video, gaming, social presence, ambient information, fitness, commerce and even home security. The word "TV" will persist, just as "phone" did – but the experience behind it will be a living, learning platform, not a passive appliance.

A Call to Action

Our aim in authoring this paper is to highlight the threat and opportunities facing operators today. Having control of the broadband pipe into the home is a huge asset. That asset can be leveraged by embracing the move towards new entertainment formats delivered over managed broadband to a managed device in the home. This is best achieved by working in partnership with both traditional suppliers of home entertainment and emerging suppliers of new applications and new entertainment formats.

The operator can control this space by being both the default supplier of the display devices in the home and the manager of the home entertainment platform that runs in the home.

I hope you find this paper helpful. We have spent the last year writing it, and when my CCO, Jon, mentioned it was John Logie Baird's centenary, it became clear that it was now the moment to finally publish it!

1.6 An Outside-In Viewpoint From The Telco Industry

Jon Carter, CCO of RedSquid TV

For the past 25 years, I've worked at the "bleeding edge" of consumer innovation in the home telecoms market – from R&D to strategy, to product and proposition, through tech scouting and partnerships. In that time, I've helped two of Europe's largest telcos pursue growth in the connected home, whilst watching hyperscalers repeatedly outpace us in speed, scale and ambition.

At the turn of the century, I led an R&D initiative at Orange to build a real-world "future connected home" and test next-generation services with real families. We wired up more than 100 devices around a real house, all connected and controllable – a serious attempt to bring the Jetsons' vision to life. Yet after thousands of visitors and many families staying in the house over long weekends, the number one thing everyone wanted turned out to be amazingly simple: more entertainment and bigger and better TV screens.

A decade later, I joined Deutsche Telekom determined to realise that connected-home vision and to bring other telcos together around a shared platform that could genuinely compete with the hyperscalers. However, there was no burning platform, and we struggled to build the momentum needed – but I learned a hard lesson about how unforgiving the market is when you move too slowly. From 2020-25, I led UK startup scouting for Deutsche Telekom; and whilst working with some truly inspiring founders, I finally saw a way to deliver meaningful innovation for telcos (and others) at speed, using a model any operator could adopt, without giving up competitive advantage.

Today, I'm convinced the real burning platform is pay TV. If Europe follows the path of the States – with Pay TV players losing around half their subscribers over a decade and potentially shrinking to a third of that base by 2035 because of "cord cutting" – then European telcos / Pay TV providers have every reason to be worried. Right now, they still serve almost 200M subscribers and generate tens of billions of dollars in annual revenue, but as multiplexes are decommissioned and video shifts fully to IP, pay TV risks flipping from revenue engine to pure cost. At the same time, in a kind of pincer movement, ultra lean challengers – such as Digi, Lyse, Iliad & Community Fibre (and in the future LEO satellite providers) – are capturing serious growth with low-cost, highly efficient models. The question I'm focused on is simple: where do incumbents go next, and how do they unlock meaningful new growth in TV, before that window closes?

"At the turn of the century, I drove an R&D initiative in Orange to build a "smart home"… only to discover consumers really just wanted bigger TV screens…"

"With ~200M European pay-TV subs, and $BNs under threat from cord-cutting and low-cost challengers, telcos face an existential question: where do they go next?"

1.7 About RedSquid

RedSquid provides an open and customisable smart TV OS platform, leveraging innovative software for connected TVs, controlled by telco operators. The background of the founding team is wholly in the technology industry for Pay TV set-top boxes (STB) and smart TV chipsets, as well as the development of in-device software that powers those products. Collectively, they have all the capabilities to create the complex low-level software, in-device AI algorithms, and crucially bring the ecosystem knowledge. The RedSquid product enables the operator to use their own UI (usually derived from their existing STB UI or retail TV App), meaning they gain full control of the TV with minimal effort.

RedSquid was officially founded in 2025, and is headquartered in Bristol, England. The RedSquid TV platform has been built over the last two years – in bootstrapped, stealth mode – using well proven IP blocks, and further developed to add innovative edge AI technology. The platform is already in mass production in the MENA region, validating the robustness of the platform. It has also been demonstrated at an IBC 2025 suite, with partnerships from both retail TV and Pay TV industries.

The move to telecommunications operators supplying their own managed TVs is the first step. As TV pivots from one-way aerial to broadband delivery, the world opens for new services on the TV that can use this high bandwidth two-way pipe. This creates the opportunity to put the control of future home entertainment back into the hands of the operator. The key to this is to supply the TV itself to eliminate competitors from the living room. Plus, as processing power requirements grow, then these new services will be increasingly uneconomical to implement on a set-top box.

To make this happen, the RedSquid team is working with a number of partners from across the industry, bringing together technologies, such as eVPP AdTech, wireless sensing, gesture control, cameras, interactive advertising, automatic content recognition, UIs, recommendation engines, manufacturing, logistics, financing, advertising and monetisation to enable the operator to have a market leading product quickly, without significant development. The aim to give telcos the control they need to manage the home entertainment pipe.

Our Partners

RedSquid has partnered with Ocean Blue Software (OBS). OBS was founded in 2005 and are a key vendor of software and services to STB and TV, where they enjoy a significant market share. OBS employ around fifty software engineers across the UK/EU, Middle East and South Africa. It has grown to become a trusted partner for some of the world's biggest names in smart TV, set top boxes, and semiconductors. Today, OBS supports partners who deliver millions of smart TV devices worldwide.

RedSquid has a strong relationship with Sharp Consumer Europe, which is part of Foxconn (who hold a 57% share in SHARP Corporation), the world's largest consumer electronics group, with unmatched global scale and manufacturing expertise. Sharp has provided most of the RedSquid TV hardware platforms to date.

RedSquid also works with a few other TV OEMs, who are lined up to produce volume operator displays across different regions, bringing volume, a wide range of models and supply diversity. A key consideration of an operator's move into supplying TV, is that they may not want to get involved with logistics. Therefore, RedSquid TV has partnered with logistics' operations that can offload supply chain management, warranties and delivery logistics. The RedSquid team can also bring TV finance, through its partnership with Glow Financial Services. In summary, the telco operator never need see the TV and can be absolved from handling the physical TV, its financing, logistics and warrantee.

1.8 Who Should Read This

This paper is written for senior decision-makers in telcos, and media organisations – as well as TV manufacturers and advertisers – who are responsible for shaping the next decade of video and home-screen strategy. It is particularly relevant to group CEOs, strategy leaders, chief product and technology officers, and heads of advertising and data who must now decide how far they want to move up the value chain from connectivity and content licensing into taking direct control of the living room, and becoming the default supplier for the home's entertainment platform.

The central argument is that TV's 2nd century will be defined… by who controls the intelligence that sits between people and the screen.

The central argument is that TV's second century will be defined not by more pixels or more apps, but by who controls the intelligence that sits between people and the screen. In this environment, "maintaining a watching brief" is itself a strategic choice: defaulting to third-party platforms may be easy in the short-term, but it hard-wires long-term dependence, data leakage, loss of control, decline in subscribers and margin erosion. Today, executives face a cluster of interlocking decisions:

- **Experience Control:** Whether to compete for the primary home screen and assistant layer or continue to focus on content and infrastructure roles inside someone else's ecosystem.
- **Device Strategy:** There are three paths, none of which are mutually exclusive:
  1. ***Continue with a STB strategy***: but accept it has a limited lifetime.
  2. ***Partner with a third-party OEM/TV OS***: but accept almost no control over the home screen UI, or access to the data, or customer monetization from Ad sales, etc. – and that it provides no mid/long term strategic advantage.
  3. ***Pivot towards operator-branded TV and smart-screen bundle:*** take full control of the customer home entertainment future opportunities.
- **AI and Data:** How much of the discovery, personalisation, and Ad stack to build or own, how much to federate via third-party partners, and where to draw the boundaries for data sovereignty, privacy, and AI governance.
- **Monetisation model:** How to balance viewer experience, subscription revenues, advertising, shoppable and interactive formats, and emerging commerce layers when the TV becomes a real-time, transactional surface for brands and services.
- **Partnership stance:** Which alliances with App providers, cloud platforms, content owners, and regulators are essential to avoid being squeezed between global tech platforms and local content economics.

This paper does not attempt to predict a single future. Instead, it sets out the structural forces reshaping television, the plausible roles telcos and media companies can play, and a set of concrete moves that can be taken in the next 12 months to avoid a Nokia-style loss of relevance. The intent is to serve as a working document for strategy offsites and board discussions, not a one-off thought piece.

2. A Century of Television

2.1 Television's First Century: Four Eras

TV's first century divides into four eras...

Television's first century divides neatly into four eras that each changed who controlled the medium, how value was created, and what "watching TV" meant. For senior telco and media executives, each era also foreshadows the strategic choices now facing the industry.

Invention (1926 – 1945)

Strategically, this was a phase of technical proof and standards formation more than of commercial scale.

This era begins with John Logie Baird's first public demonstration of live television in London in January 1926, when moving images were shown to members of the Royal Institution and the press. Television was a fragile, experimental technology, moving from mechanical scanning systems to early electronic approaches, and lived mostly in laboratories, exhibitions, and small pilot broadcasts rather than mass-market homes.

Strategically, this was a phase of technical proof and standards formation more than of commercial scale. The key players were inventors, early equipment manufacturers, and public institutions exploring whether TV could become a viable new medium at all. For today's executives, this era underlines how foundational technologies are often underestimated until standards solidify and industrial-scale investment follows.

One of the first CRT Television sets in the 1930s

Early Mass Market (late 1940s – late 1970s)

After WWII, television shifted rapidly from experiment to mass adoption, driven by affordable electronic sets, national broadcast networks, and iconic public and commercial channels in markets such as the US and Europe. Families gathered around a single screen, and live events, news, and entertainment shows created shared national moments and a powerful new advertising medium.

Control and value in this era sat with broadcasters and regulators: spectrum allocations, public-service mandates, and national network licences defined who could reach audiences at scale. For telco and media leaders, this period is the template for what happens when distribution is scarce: whoever owns the channel and the tower owns the customer relationship, the schedule, and the bulk of the economics.

…This period is the template for what happens when distribution is scarce: whoever owns channel and tower owns the customer, schedule, and the economics

Family watching their new colour TV in late 1960s

Mass Linear TV (1980s – 2000s)

The lesson for today: as capacity expands, value shifts to those who organise complexity for customers and control subscriptions, not just content originators.

From the 1980s, satellite, cable, and later digital terrestrial systems broke the scarcity of channels, bringing hundreds of services, niche genres, and premium pay TV packages into the home. Technologies such as remote controls, VCRs, DVRs, the first most basic video games and electronic programme guides gave viewers more choice and control, while digitisation and compression supported efficient distribution of ever-richer video.

Strategically, this era marked the rise of pay TV platforms and, increasingly, telecom operators as major TV gatekeepers. Aggregation, tiered bundles, premium sports and movies, and carriage negotiations became core levers of ARPU and churn management. The lesson for today: when capacity expands, value shifts toward those who can organise complexity for customers and control subscription relationships, not just those who originate content.

TV from the early 1980s – the first TV gaming experience!

Smart TV Emerge (2010s – 2026)

Over the past 15-20 years, broadband, IP video, and smart TVs have transformed television into an app-driven, on-demand, multi-device experience. Global streamers, native IP platforms, and connected TV operating systems now sit alongside – and often ahead of – traditional broadcasters and pay TV operators in shaping viewing behaviour. The living-room screen has become a general-purpose, software-defined device that can host video, gaming, fitness, communication, and commerce.

Power in this era has shifted toward those who own the platform – i.e. the TV software platform inside the TV set – and the data: OS providers, global streamers, and large telcos that can combine connectivity, content, and advertising into integrated propositions. Linear channels and classic EPGs still matter, but discovery, recommendations, and app placement increasingly decide what gets watched.

All this sets the stage for 2026 – 2036, when the shift will accelerate again: from connected screens as endpoints to AI-orchestrated, immersive environments, making the disruption facing today's incumbents more intense than any transition seen in the first hundred years.

…sets stage for 2026-2036, as shift accelerates from connected screens to AI-orchestrated immersive environments, driving disruption for incumbents beyond anything in past century.

A good TV remains a desirable product (today, a 65" TV is the most popular size);
enabling subscribers to upgrade is an attractive proposition, a STB on the other hand has no real consumer value.

2.2 TV Advertising Over the Past Century

For most of the past 100 years, television advertising has been defined by scale rather than insight. Broadcasters sold access to mass audiences, with advertisers relying on broad demographic proxies, panel-based measurement, and estimated reach. Beyond age, gender and programme genre, brands typically knew little about who saw their ads, how often, or whether the message resonated. Waste was accepted as the price of reach.

Inefficiency in TV and video advertising is now clearly visible in the data, particularly when looking at how well campaigns hit their target demographics. Industry estimates have long suggested that up to 50% of advertising budgets are effectively wasted, and recent figures for programmatic and CTV suggest this problem is growing, with global waste now put at around $26.8 billion and 'MarTech' issues alone accounting for about 12% of ad budgets[iiiii]. Effectiveness studies, such as those from Kellogg, have found low elasticity in some TV campaigns (around a 1% sales lift for a 100% increase in spend)[iv], which points to poor returns for a significant proportion of investment. Audience-skew data reinforce this picture: UK viewership analysis from Samba TV shows that 94% of linear TV advertising is delivered to just half of households, with the bottom 45–50% seeing only 7-8 ads per day while the top 50–55% are heavily over-exposed with 70 or more ads daily.[v]

Addressable TV initiatives, such as Sky AdSmart™, have marked a major step forward, enabling household-level targeting and more relevant creative. This improved efficiency for some advertisers, particularly local and mid-market brands. However, fundamental limitations persist. Fragmentation across linear and streaming environments, inconsistent frequency management and siloed data mean many high-value or niche audiences remain under-served, while others are repeatedly exposed to the same messages.

At the same time, the economic foundations of traditional TV advertising are shifting. UK public service broadcasters' linear advertising revenues have fallen by more than £600m in real terms since 2019, to around £3.1bn in 2023[vi]. While PSBs still command the majority of TV advertising revenue today (c.75%), streaming platforms are capturing a growing share. By 2030, streaming is forecast to account for more than half of total TV ad spend, with revenues growing by 20% in 2025 alone[vii]. Over the next decade, PSBs' share is likely to fall to around 30-40%, despite continued growth in VoD[viii].

…up to 50% of advertising budgets are effectively wasted, and recent figures for programmatic and CTV suggest this problem is growing… UK viewership analysis shows 94% of linear TV advertising is delivered to just half of households.

The current live debate about moving the BBC to an ad-funded model comes at a paradoxical moment: traditional advertising revenues are under pressure as global digital platforms like YouTube, Netflix, and TikTok capture a growing share of ad spend. The implications on current commercial broadcasters appear stark.

2.3 Lessons for Today's Leaders

Looking further ahead, UK connected TV ad spend (including hyperscalers) is set to surpass £3bn by 2028, nearly doubling from 2023 – 40-50% of total TV – driven by hyper-personalisation, interactivity, and data-led optimisation at the edge[ix]. Multiple analyses indicate commercial PSBs risk missing hyperscaler/CTV ad opportunities due to linear declines and slower digital pivots[x]. The same applies to PSBs in every market across Europe/the EU. As this transition accelerates, advertisers will increasingly prioritise outcomes over outputs – especially as an increasing share of the value chain is owned by those same digital platforms – favouring targeted, measurable, and interactive formats that deliver demonstrable impact, rather than simply buying reach at scale. And at the same time, those digital platforms go far deeper along the value chain.

Television's first century unfolded through four great technological waves, each reshaping who controlled the medium. Mechanical scanning gave way to electronic cathode ray tubes in the 1930s, unlocking live broadcasting and mass production. Colour compatibility standards like NTSC, PAL, and SECAM in the 1950s–60s broadened content appeal and globalised the market. The digital revolution of the 1990s–2000s compressed years of progress into a few cycles, with MPEG compression, HD resolution, and IP delivery paving the way for streaming. Finally, the smart era fused television with computing through System-On-Chip (SoC) platforms, operating systems, and cloud connectivity – migrating value from hardware margins to software ecosystems and data driven personalisation.

"Winners seized control of standards, software platforms, and user interfaces – turning components into ecosystems that locked in customers and partners."

Beneath these shifts lay enduring strategic patterns. Winners seized control of standards, software platforms, and user interfaces – turning components into ecosystems that locked in customers and partners. They treated the interface as the primary battlefield, understanding that discovery, recommendation, and identity mattered more than transmission towers or catalogues. Losers, by contrast, defended legacy infrastructure, moved too slowly on alliances, and underestimated how quickly each "feature" – from colour and pause-live to on-demand and apps – became the new baseline.

Strategies of the Winners

Semiconductor innovators like MStar evolved from chip suppliers into full stack vendors, integrating connectivity and certified apps, giving OEMs turnkey routes to market.

The most successful players backed standards early and worked to entrench them globally. RCA's leadership in electronic television and NTSC colour defined US broadcasting economics for decades. Semiconductor innovators like MStar – which then merged with MediaTek – evolved from chip suppliers into full stack vendors, integrating connectivity and certified apps, giving TV OEMs turnkey routes to market.

Each advance in user experience – remote controls, programme guides, DVRs, apps – simplified behaviour while teaching audiences new rituals. Later, data mastery amplified loyalty: streamers like Netflix and YouTube embedded algorithmic suggestion into the core experience, deepening engagement and raising switching costs. Partnerships proved similarly decisive. Cable and satellite operators in the multichannel era used alliances to scale capacity and customer support; today, telcos and broadcasters codevelop edge AI capabilities with hyperscalers to enable, for example, low latency cloud gaming and advanced analytics.

Failures of the Losers

…. those who lagged often chose protection over reinvention

Those who lagged often chose protection over reinvention. Broadcasters that delayed the move to colour or HD surrendered premium audiences; pay TV firms that treated streaming as a low priority add-on lost relevance to nimbler OTT players. Many TV manufacturers mis-read the software transition, outsourcing to the likes of Roku or Titan – or indeed the hyperscalers – thereby ceding customer relationships and data. The pattern repeated across industries: those who valued infrastructure over intelligence found their roles commoditised, while poor UX and inconsistent updates drove users to rivals.

The Technological and Strategic Crossroads

Looking across these eras reveals three accelerating truths:

- Each major shift in television has been about control, not just technology – from state broadcasters to commercial networks, from channel owners to aggregators, and now to OS and app-store providers.
- Value always migrates to whoever owns the discovery layer and the direct relationship with the viewer.
- Consumer expectations reset faster than ever; what begins as novelty becomes necessity in just a few cycles.

The decade from 2026 to 2036 will compress all these dynamics – and layer on new ones. Technology will evolve at unprecedented velocity, driven by global platforms, significantly increased local compute, advanced edge-AI models, and developer ecosystems that transcend national regulation. Content shown on a TV screen in one living room in London or Seoul quickly appears on screens in São Paulo or Johannesburg too. Global experiences will dominate by design, rather than emerging locally over time.

The Next Living Room Platform

For a century, television's core use case was stable: people watched programmes, channels, and later, apps. The next decade fractures and deepens that experience into something far more immersive. Cloud gaming – or rather hybrid gaming, leveraging on-device edge AI – will run natively on smart TVs, lowering barriers to entry and drawing millions beyond the console market. Cameras will become standard on screens, enabling telepresence, fitness, gesture control, and creative and immersive applications.

As the screen becomes rich in sensors and computation, television evolves from a passive window into a bi-directional, interactive surface, the primary digital canvas of the home. The winners of this next era will not just supply hardware but orchestrate ecosystems of creation, communication, play, and commerce.

Advertising Through the Eras

Television's story is also one of advertising innovation. Each technological leap – from broadcast to cable, from digital to connected – reshaped how audiences were reached and value was monetised. Early sponsorships and spot breaks in the 1940s and 1950s established TV as the dominant brand medium. Colour, multichannel cable, and PVRs extended reach but introduced fragmentation and ad-skipping, prompting creative evolution through sponsorships and product placement.

IP delivery and connected TV infrastructure unlocked addressable and programmatic advertising, allowing different households to see different spots within the same break. OTT and CTV platforms fused digital precision with broadcast scale, while server-side ad insertion and decisioning introduced real-time optimisation across live and on demand contexts.

Cloud gaming – or rather hybrid gaming, leveraging on-device edge AI – will run natively on smart TVs, lowering barriers to entry and drawing millions beyond the console market.

As the screen becomes rich in sensors and computation, television evolves from a passive window into a bidirectional, interactive surface—the primary digital canvas of the home

Advertising Winners and Losers

Leaders invested early in creative capability, data infrastructure, and privacy compliant identity – seeing relevance as intrinsic to product design. They balanced personalisation with curation, maintaining the brand safety and attention quality that distinguished television from the open web.

Lagging players, in contrast, simply transplanted spot break models into streaming, overloading AVOD services and driving audiences toward ad-free tiers. Those lacking first party data or unified measurement failed to demonstrate return on investment, leaving precision video and interactive advertising leadership to digital first platforms.

Edge intelligence and virtual product placement work only with clear consent, trusted identity, and quality creative.

European Creative Industry needs its own platform

Today, content produced by European creatives must go through a hyperscaler platform to get seen, further fuelling hyperscaler growth. Europe must have sovereignty over its own TV platform.

Europe must have sovereignty over its own TV platform.

Lessons for the Decade Ahead

To thrive in the coming cycle – shaped by edge AI, 240 Hz displays, volumetric video, etc. – industry leaders must treat technology, advertising, and user experience as a single integrated system. Edge intelligence and personalised virtual product placement will deliver durable advantage only when grounded in transparent consent, strong identity, and high-quality creative that earns viewer trust. However, at the same time, hyperscaler will no doubt increase subsidised sales with marketing funds and 'free' software stacks.

Telcos, PSBs and OEMs have an opportunity to reclaim control by treating advanced advertising, OS ownership, and data stewardship as strategic levers rather than auxiliary functions. Multisided partnerships can pool data, compliance, and distribution strengths, mirroring past alliances that defined whole eras of control.

Television's century long lesson is clear: power accrues to those who orchestrate standards, platforms, and experiences – not those who merely own transmission or hardware.

Television's century-long lesson is clear: power accrues to those who orchestrate standards, platforms, and experiences – not those who merely own transmission or hardware. As boundaries between watching, gaming, and creating dissolve, the screen in the living room will once again redefine what it means to "tune in" – only this time, the viewer will be part of the broadcast itself. Opening the door to new opportunities for telco broadband supplier to manage the supply of that experience.

3. Television at a Crossroads

3.1 The state of TV and Pay TV in 2026

As television celebrates the centenary of Baird's first demonstration, the medium has already absorbed one digital revolution and is halfway through another. In most developed markets, streaming has overtaken linear as the dominant way long-form video is consumed, while connected TV operating systems (OS) and app platforms have become the main gatekeepers to the living room and its primary home screens.

...traditional suppliers of TV entertainment have mostly not realized the potential that is on the horizon...

Today, the TV industry is fragmented with multiple TV platforms all competing for the same business, alongside a multitude of small Pay TV operators. However, it is very notable that the traditional suppliers of TV entertainment have mostly not realized the potential that is on the horizon, and – as a result – are at risk of being left behind in the new wave of revenue-earning opportunities TV is bringing.

Four structural features define the 2026 landscape:

TV manufacturers' business models increasingly depend on advertising, data, and commerce deals surfaced through the home screen, rather than device margins alone

A. **Streaming normalised, but not yet mature.** Subscription video-on-demand has reached saturation in many households, with churn, password-sharing restrictions, and price rises pushing viewers toward ad-supported and hybrid tiers. Linear audiences continue to decline, but live sport, news, and event programming retain outsize cultural and commercial importance.
B. **OS and device ascendancy**. A handful of global TV operating systems, alongside vertically integrated platforms from device makers and retailers, now control the majority of new smart TV shipments. Their business models increasingly depend on advertising, data, and commerce deals surfaced through the home screen, rather than device margins alone.
C. **Telcos as partial aggregators.** Telcos and Pay TV operators still bundle video into converged offers and, in some markets, operate their own UIs and set-top ecosystems. However, their leverage is under pressure as more viewing shifts to retail-bought smart TVs, dongles, and consoles where third-party OS providers control the first impression and can sideline operator-branded experiences.
D. **CTV advertising as growth engine.** Connected TV has become the most dynamic segment of TV advertising, attracting budgets from both traditional brand campaigns and performance-oriented marketers. Yet measurement, frequency management, and cross-platform planning remain fragmented, limiting the full potential of the format.

… BB providers & Pay TV ought to be in control of their TV service in 2026, but they've so far failed to take advantage of their position.

For all the progress, three gaps are striking.

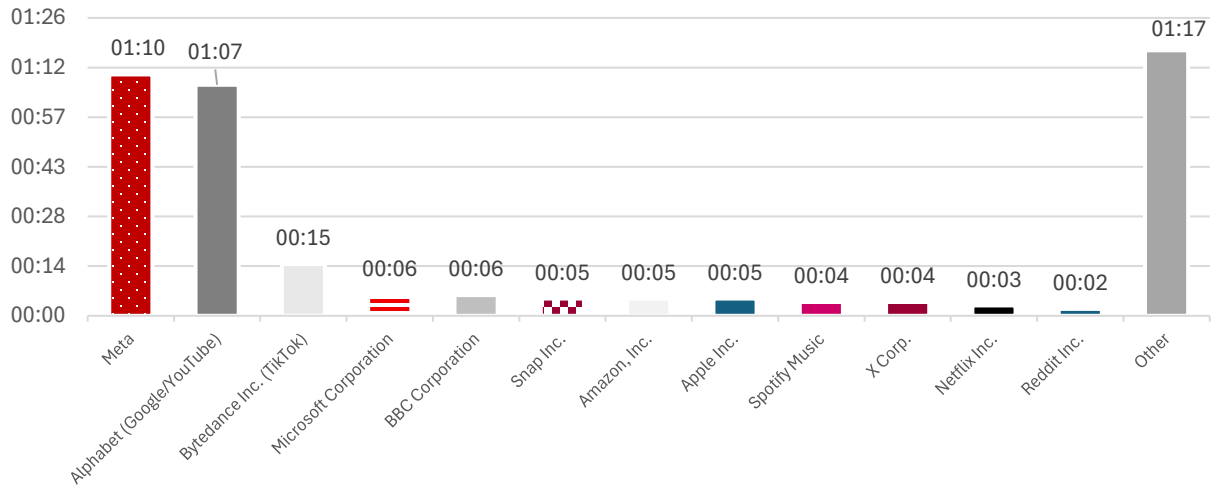
1. Discovery remains tile-based, with recommendation carousels and search fields masking the fact that viewers must still translate moods and social dynamics into specific title choices.
2. The intelligence that does exist is entirely cloud-centric, relying on data aggregation and server-side algorithms rather than on-device understanding of the household, its spaces, and its rhythms.
3. Broadband providers and Pay TV platforms ought to be in control of their TV service in 2026, but they have failed to take advantage of their position

This is the moment at which many telco executives are tempted to declare victory: the transition to IP is "done," streaming is entrenched, and the task ahead looks like optimisation. However, to suggest that this would be a profound misreading of the trajectory; even in 2026, the real battle is shifting to control over the home screen and UI, and the most disruptive phase lies not behind, but ahead!

…the most disruptive phase lies not behind, but ahead!

The latest UK Ofcom Online Nation report reveals that platforms owned by the hyperscalers now account for more than half of all time UK adults spend online — a shift that is fundamentally reshaping how people access, share, and consume information. All this is unfolding against a backdrop of declining trust in the internet. Only about a third of adults now believe it benefits society, while concerns over online harm, misinformation, and scams are growing — particularly among women and more vulnerable users. If this is replicated at a TV platform level, with such a dominant concentration amongst a few key players and a growing trend for AI-driven information, there is a serious implications for regulators and policymakers.

Ofcom Online Nation Report (hours:mins)



Source: Ofcom 2025.

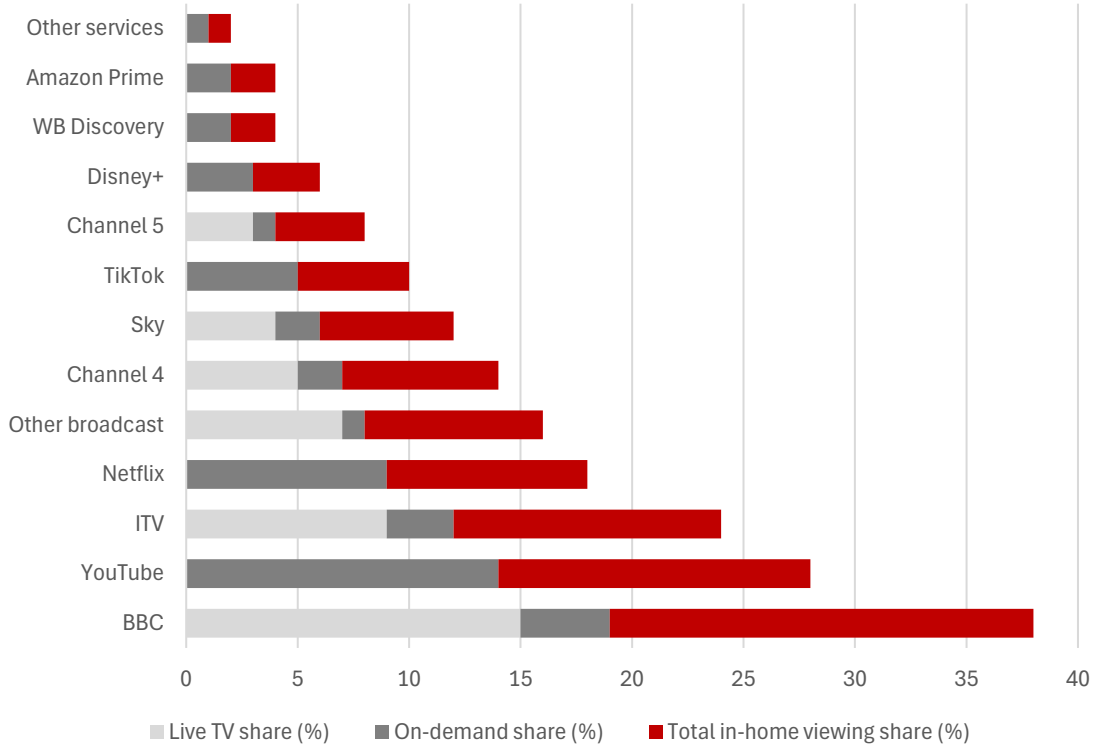
3.2 TV in Crisis: Consumers Have Had Enough

Once upon a time, TV was simple. In the UK, you opened the *'Radio Times,'* circled a few highlights, and gathered round one set, one schedule, one shared experience. Today, the promise of infinite choice has collapsed into confusion. Between the BBC's iPlayer, Netflix, Disney+, Amazon, Sky, Apple TV+, ITVX and a dozen others, viewers are paying more than ever for content they can't find. Modern "family time" too often means half an hour of scrolling through menus[xi].

The golden age of abundance has turned into content overload... "

The golden age of abundance has turned into content overload. Original Research from the University at Buffalo from over a decade ago calls it, "rewatch culture" – exhausted brains retreating to familiar formats rather than deciding what to tackle next[xii]. Curiously, this conservatism feeds into algorithms, which biases them toward more of the same and erodes creativity. Even prestige showrunners admit that the system now favours reboots over risk[xiii].

UK total in-home TV viewing by service (%, 2024)



Based on Ofcom/Barb dataset

AI can become the invisible showrunner of home screens – transforming chaos into clarity, abundance into intimacy.

Paradoxically, in this dazzling ocean of choice, today's hits feel hauntingly nostalgic. From *Stranger Things* to *The Night Manager*, much of what is celebrated is a remix of the past. It begs the question: was the limited landscape of the 1980s so bad? Back then, scarcity forced curation, and the nation shared one conversation. Now, audiences are fragmented into millions of micro-groups, separated by algorithmic silos.

The genie, however, is not going back in the bottle. Linear TV is shrinking fast; within a decade, every household will stream. Yet this evolution still hasn't solved the biggest problem: discovery. Endless interfaces, siloed apps, and disconnected profiles turn television into hard labour. As Catherine Johnson at the University of Huddersfield[xiv] noted (now Professor at Leeds), viewers want ease of use. But current algorithms, driven by engagement metrics rather than emotional resonance, fail to deliver it[xiv].

…it's waiting to be reborn by AI that finally understands its audience.

That is where the next revolution lies – not in more content, but in truly personalised TV. Imagine an AI that knows what you are in the mood for before you do; one that understands family dynamics, adapts to changing preferences, and curates not just what is "popular," but what is meaningful. This is not about replacing taste – it is about refining it.

The coming decade will see a battle between global streamers and local champions to control this personalised gateway. Channel 4 is already positioning itself as a public-service streamer[xv]; the BBC is reinventing its genres to compete with giants[xvi]. But even as consolidation swallows smaller players, the winners will be those who offer emotional intelligence, not just data intelligence.

Once the UI is mostly decoupled from the monetisation of the service then the door is open for a much cleaner easier user experience.

There is no need to go back to three channels; there is a need to move forward to one cohesive experience. AI can become the invisible showrunner of home screens – transforming chaos into clarity, abundance into intimacy. Viewers will not just watch more; they will watch better. Once the UI is mostly decoupled from the monetisation of the service, then the door is open for a much cleaner easier user experience – another reason why the TV service is better supplied by the broadband operator, as part of the monthly subscription.

It is Christmas 2035. The living room glows once again as families gather – not to scroll, but to be surprised. "TV" is not dead. It is waiting to be reborn by AI that finally understands its audience.

3.3 Squeezed from Every Side: Telcos' Decisive Decade

Incumbent telcos are entering a decade where their traditional advantages are eroding from above and below – at the same time. Global OTT streamers and hyperscaler platforms are pulling value out of the connectivity base, whilst low-cost fibre challengers and altnets are reshaping access economics in key markets.

On the top side, OTT and hyperscaler platforms are growing revenues at up to 15% CAGR[xvii], far above the low single-digit growth that most mature telcos can realistically expect from core connectivity. By 2035, global OTT streaming video alone is projected to more than double or even triple in size, creating a gravitational pull of ARPU and attention towards global platforms that sit on top of telco networks rather than inside telco bundles[xviii]. In any plausible scenario where that growth gap persists, OTTs and hyperscalers will capture the majority of consumer video and application value by the mid-2030s, leaving incumbents supplying the bandwidth, but not directing the spend.

…global OTT streaming alone is projected to double or triple in size, creating a gravitational pull of ARPU and attention towards global platforms that sit on top of telco networks rather than inside telco bundles

At the same time, low-cost fibre altnets and independent full-fibre operators are changing the shape of access competition. In markets like the UK, independent fibre players have grown coverage at double-digit rates and now pass tens of millions of premises, keeping pace with or even out-building incumbents in some regions. Many of the largest altnets are now approaching EBITDA-positive operation, even if cashflow remains under pressure, and are positioning themselves for consolidation or wholesale-led scale. The net effect is persistent price pressure, faster build-out of gigabit infrastructure, and a customer narrative built around "more speed for less money" that undermines incumbents' ability to sustain premium ARPU on access alone.

This twin dynamic creates an existential squeeze. From one side, hyperscalers, device OEMs and OTT brands increasingly own discovery, identity, payments and advertising, which are the real drivers of value and margin in a digital household. From the other side, leaner fibre challengers demonstrate that access can be delivered with lower cost bases and simpler product sets, conditioning consumers to regard connectivity as a cheap, interchangeable utility rather than a differentiated service. Incumbents risk being left in the middle: carrying the capex burden for national infrastructure without owning the experiences that capture growth.

…carrying the capex burden for infrastructure without owning the experiences that capture growth.

And on the horizon, one could suggest a third dynamic threatens telcos, particularly incumbent ones, high speed broadband internet via LEO satellites. The risk of commoditisation does not subside, it only increases!

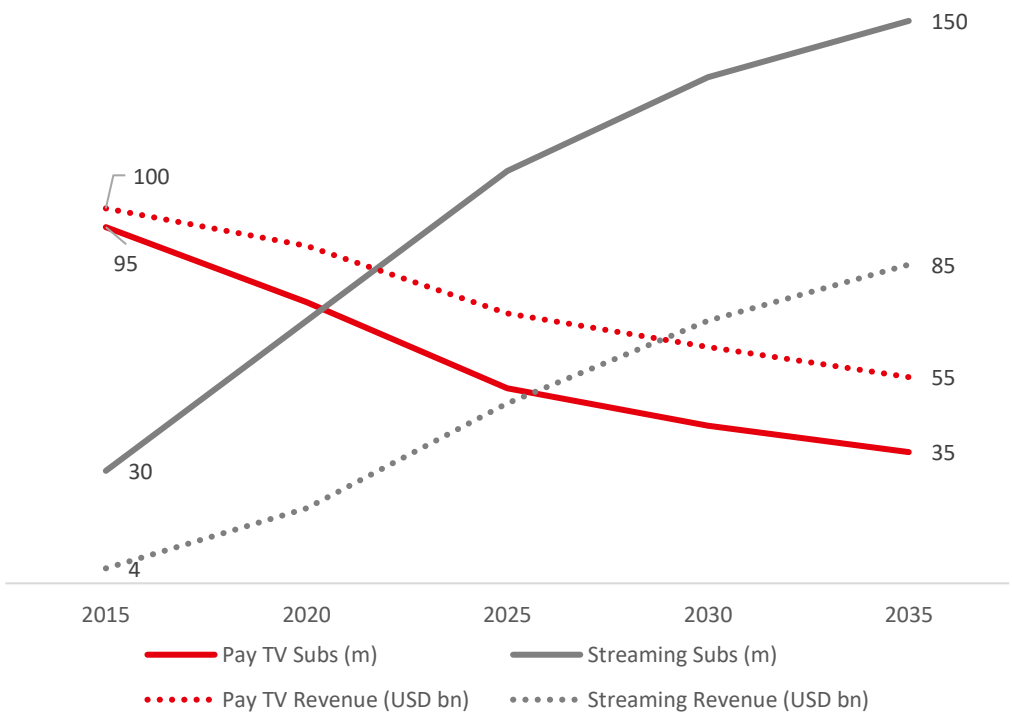
The risk of commoditisation does not subside, it only increases!

In that context, the idea that 'doing nothing' preserves today's position is an illusion

In that context, the idea that "doing nothing" preserves today's position is an illusion. If incumbents simply continue to sell generic triple- and quad-play bundles, whilst outsourcing the home screen to global OS and app platforms, the value line will keep drifting upwards to OTTs and hyperscalers, while the cost line remains with the telco. Analysts already highlight a structural divergence: OTT and broader digital content markets compounding near or above 15% growth annually, versus a few percentage points at best for traditional telecoms. Extending that curve another decade effectively formalises a world in which ~80% of household "TV and digital service" spend accrues to non-telco platforms, even as telcos shoulder the investment in fibre and 5G[xix].

When one looks at developments over the last decade in the States, with the exponential growth of the OTT streamers and the collapse of Pay TV, it's clear that the threat facing Europe's Pay TV providers is very real.

US Cord-Cutting – Now Being Replicated Worldwide



Sources: Statista; Omdia & Analysys Mason

3.4 The PSB Challenge in an OTT World

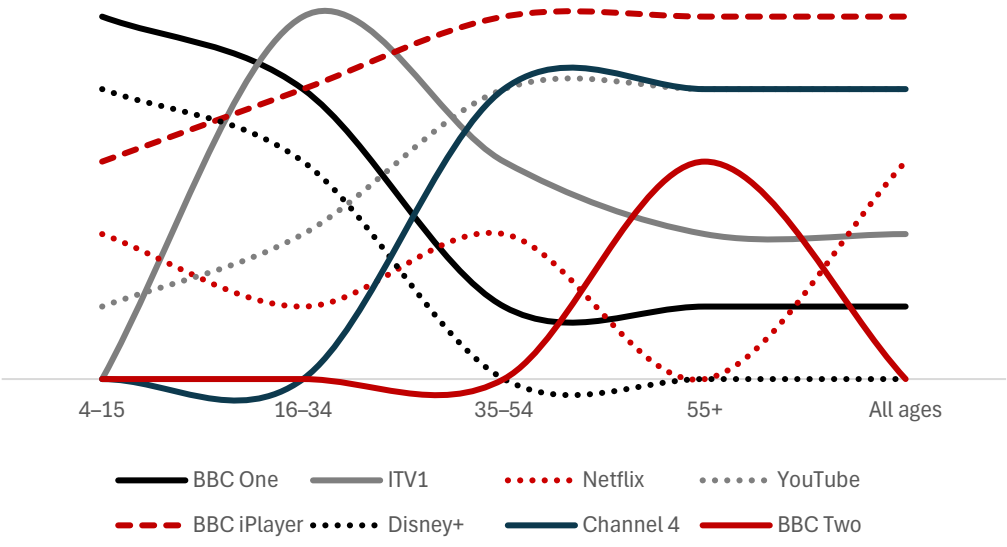
Public service broadcasters and commercial terrestrial channels across Europe face an existential challenge, such as viewing, advertising, and cultural power shift inexorably to global OTT and social video platforms, even as expectations around universality, impartiality, news integrity, and cultural representation remain high. The economic foundation of traditional broadcasters is crumbling, while the market opportunity for streaming platforms continues to expand.

PSBs across Europe face an existential challenge as viewing, advertising and cultural power shift inexorably to global OTT and social video platforms...

Revenue Collapse and Audience Erosion

For UK PSBs, the financial pressure is acute. The BBC's real-terms income has fallen by approximately 30 per cent over the last 15 years[xx], licence fee revenues are facing downward pressure from a squeezed consumer, and commercial PSB advertising income has dropped almost 40 per cent since 2014[xxi]. Across Europe – in France, Germany, Italy, Spain and the Netherlands – national broadcasters face similar dynamics: erosion of linear reach, advertising revenue migration, and growing competition for subscriber attention.

UK Viewing Habits: Boomers turn to PSBs first, but Gen Z have switched off



Source: Ofcom/TRP TV Viewer Journeys, Nov. 2024

In January 2026, BARB confirmed that YouTube had overtaken the BBC for the first time in the final quarter of 2025, signalling the end of the corporation's near century of dominance of entertainment in Britain. YouTube now attracts a larger audience than all the BBC's channels combined, with almost 52 million people watching YouTube on their TVs, smartphones or laptops in December 2025, compared with the 50.8 million Britons who tuned into the BBC. The figures are a watershed moment for the BBC, which has dominated Britain's airwaves since it launched TV programming 90 years ago[xxii]. Some of this change may be directly due to the way people discover content. The YouTube button is often on the remote control. Press it, the TV switches on, and all the content you need is right in front of you. With traditional smart TV, the user tends to choose the streamer App they want first, then select content from within that App. The 2035 Voice and Gesture focused controller will more likely take your request and choose which streamers to supply your request from – we have already seen such demonstrations today!

Younger viewers increasingly treat scheduled TV not just as dated, but as irrelevant. Children as young as four spend more time on YouTube than on all PSB services combined. Those aged 13-15 now spend half their in-home viewing time on YouTube and TikTok[xxiii]. In many European markets, similar patterns are visible: Netflix and Amazon Prime capture premium viewing time, while TikTok and YouTube dominate younger demographics. In 2015, the BBC commanded more than a third of adults' claimed media time in the UK; by 2024, this had shrunk to close to a fifth[xxiv]. This is not a cyclical downturn; it reflects a structural shift in how audiences consume video.

The new media types created by the transition to 2030s AI TV could attract younger audiences back to TV viewing, as the full experience will not be available on smartphone

The Strategic Implications: Culture, Cohesion, Soft Power

PSBs underpin far more than schedules and ratings; they shape national stories, support entire creative industries, and provide trusted news in increasingly fragmented and polarised societies. In the UK, hits like "*Mr Bates vs The Post Office*," "*Fleabag*," and "*I May Destroy You*" demonstrate how PSB commissioning can back distinctive, risky projects that might not clear purely commercial hurdles. Similar examples exist at ARD/ZDF in Germany, France Télévisions, RAI in Italy, RTVE in Spain, and NPO in the Netherlands.

Executives and regulators warn that as audiences drift to global platforms, citizens are less likely to see content that reflects the whole of their society or gain exposure to their national creative talent – and they risk being locked into an algorithm. They are less likely to encounter trusted, regulated news and less likely to consume a breadth of genres. The soft-power value of British, French, German, Spanish, Italian and Dutch storytelling is also at risk. If PSBs are marginalized in distribution and visibility, training pipelines for creative talent dry up, and production hubs that have taken decades to build, begin to decline.

…as audiences drift to global platforms, citizens are less likely to see content that reflects whole of society... and become locked in an algorithm"

… the risk is that PSBs become mere content suppliers to closed platforms they do not control.

Why Scale Matters: Consolidation and Strategic Options

A central theme in recent policy debates is scale. PSBs that remain small, fragmented and platform-dependent will struggle to compete with "global tech behemoths" for content investment, data and attention. This dynamic has triggered a series of strategic moves:

1. **Consolidation paths:** In the UK, proposed ITV – Sky consolidation would create a larger commercial competitor with stronger content capabilities. More radical proposals include deeper BBC – Channel 4 collaboration or even merger, positioning public funding and commercial revenue behind a single, scaled entity. Such consolidation mirrors broader European developments: ARD and ZDF are tightening cooperation on joint technical platforms; France has explored integrating public media entities into a single structure.
2. **Strategic partnerships with streamers:** Rather than fighting Netflix and Amazon directly, some PSBs are experimenting with integrated distribution partnerships. ARD and ZDF content appears on Amazon Prime. France Télévisions has partnered with Netflix and local streamers. TF1 in France works with Netflix on distribution. These partnerships extend reach, but carry the risk that PSBs become mere content suppliers to closed platforms they do not control.
3. **Regulatory and funding renewal:** Across Europe, governments are recognizing that traditional PSB rules – written for an era of scarcity and broadcast dominance – are inadequate for a world of abundance and algorithmic discovery. The UK government has opened discussion of BBC funding reform, including advertising, subscription tiers, or hybrid models. Germany is debating the licence fee. Spain and Italy are reviewing public media mandates.

All these approaches share a common insight: PSBs cannot survive by defending the linear model; they must compete for audience attention wherever audiences go.

Meeting Audiences Where They Are: Multi-Platform Distribution

Regulators and PSB leaders increasingly agree that fragmentation is both a threat and an opportunity. PSBs must "put the content wherever their audiences are," rather than treating the traditional broadcast slot as the primary destination. This is already visible in practice:

- Many PSBs distribute full-length shows, news clips, and long-form content on YouTube and TikTok.
- European broadcasters experiment with dedicated streaming apps and presence across multiple platforms.

However, this creates a tension: PSBs gain incremental reach via global platforms but risk becoming just another tile in a hyperscaler UI with minimal control over recommendation algorithms, contextual prominence, or data access.

To manage this tension, PSBs in Europe are pursuing:

- Shared data and measurement infrastructure: BARB in the UK now includes YouTube and streaming viewing, providing unified campaign currency.
- Joint streaming and ad-tech platforms: Coordinated efforts to reduce duplication and share costs for streaming infrastructure.
- Clear editorial red lines: Guarantees that public-service genres (news, current affairs, regional and local content) remain independent of algorithmic ranking, protected by regulation if necessary.

The Critical Role of Device Control and AI-TV

The emergence of AI-TV and edge AI on the TV creates a decisive new strategic front. If smart TVs and operator-supplied devices become the primary way audiences encounter video – increasingly likely as linear viewing continues to decline – then how AI engines prioritize content, recommend programming, personalize advertising, and build profiles will directly determine whether PSB content remains findable, trusted, and monetised.

For European PSBs and operators, this points to three urgent priorities:

1. Participate in defining open AI-TV standards that ensure AI-enabled devices respect editorial boundaries, cultural quotas, accessibility requirements, and preserve PSB visibility even in personalized, algorithmic environments.
2. Forge strategic alliances with device manufacturers and operators to ensure that national and regional PSB apps are deeply integrated into AI-TV home screens, voice interfaces, and recommendation engines, rather than buried below Netflix, Amazon and YouTube.
3. Develop governance frameworks for AI-driven personalization that protect user privacy, uphold editorial independence and impartiality, and preserve the possibility of shared national moments rather than fragmenting audiences into perfectly targeted micro-segments that see no common content.

Without control of the device-side AI layer, PSBs will not take part in the future.

Without control of the device-side AI layer, PSBs risk becoming purely content suppliers – replaceable, commoditized, and unable to invest in the future. With it – via open standards and strategic partnerships with telcos – they can reclaim agency over discovery, personalization, and the relationship with audiences.

To date, it is very notable that the PSBs have mostly not realized the potential that AI-TV will bring them, and as a result have got left behind in the new wave of revenue-earning opportunities it's bringing.

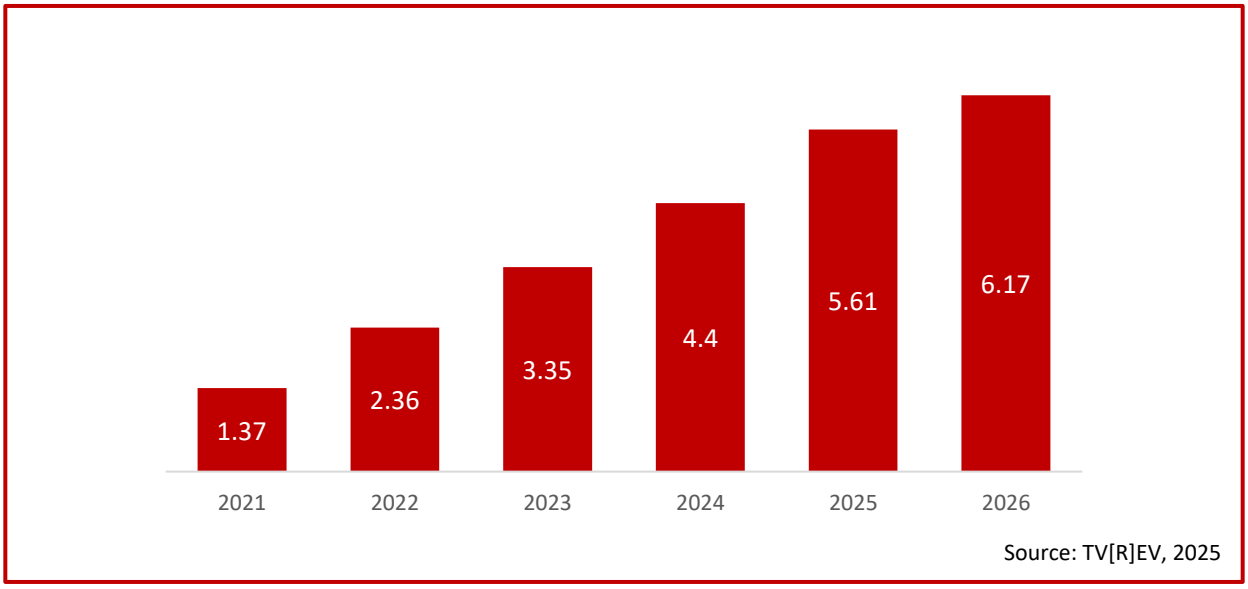
3.5 TV Manufacturers in a Squeezed Middle

In 2026, smart TV manufacturers that do not own their own TV platform sit in an increasingly uncomfortable position between global OS platforms on one side and content and connectivity providers on the other. The device is still manufactured, branded, warranted, and supported by the TV OEM, but much of the economic gravity has shifted into the software layer that turns that device on and decides what appears on the home screen. OS control grants providers privileged access to rich behavioural data – viewing patterns, cross-device signals, and promotional interactions — creating a moat that sidelines OEMs from audience insights and ad revenue. This leaves manufacturers dependent on licensing deals, with limited leverage over UI prominence or data sharing. RedSquid's platform model has gained staunch support from independents, precisely because it offers a neutral middleware path to regain UI control, data transparency, and diversified monetisation – reducing reliance on dominant software ecosystems while fostering open partnerships with telcos and PSBs.

Screen Control and Monetisation

Many TV OS platforms do not share meaningful control of the UI with third parties. The launch surface, main rails, featured tiles, promotional banners, and search entry points are all controlled by the OS owner, who influences which partners get prominence, on what commercial terms, and with what level of data access. Regulatory control can try to address the PSB prominence problem but can never solve it completely and does nothing for the loss of monetisation and valuable platform data. Retail smart TV platforms like Roku often sell or manage advertising inventory on their home screens and key navigation surfaces, positioning these as high-impact "launch" or "discovery" units for brands and streaming services – with Roku's Q3 2025 platform revenue hitting $1.065B (17% YoY growth), largely from home screen ad innovations like personalised rows and marquee video ads. Similarly, Samsung, LG, and Vizio together generated $6.17BN in global combined TV ad revenue in 2025, underscoring how manufacturer-led OS ecosystems capture outsized monetisation from UI real estate.

Samsung, LG & Vizio – Global Combined TV Ad Revenue ($BN)



Source: TV[R]EV, 2025

Revenue flows to the OS business, not to the broadcaster, telco, or even necessarily the TV OEM brand on the bezel. For many platforms, first-party data and ad-tech integrations around that home screen inventory are now central to their growth strategies – with Roku exemplifying how neutral OS models capture significant ad share while offering partners tiered visibility.

Complementary analytics from firms like Looper Insights use observational scanning across CTV devices (including STBs via partnerships with telcos) to track content placement with MPV™ metrics for visibility, compliance, and merchandising optimisation – aiding streamers, but limited for telcos unless they can share STB telemetry or gain access to hyperscaler OS data, which remains the core access barrier. Platform owners already actively monetise their home screens.

Data Ownership and Exclusion of Others

Control of the OS means control of the data. Smart TV platforms may collect extensive information on app launches, viewing patterns, interactions with promotions, and in some cases panel usage and device-graph signals that connect the TV to other household devices – mapping and linking multiple devices (like smartphones, tablets, laptops, and smart TVs) owned or used by the same individual or household. These data assets are typically held and processed within the OS owner's ecosystem and used to power targeting, measurement, and optimisation for their own ad products and partner campaigns. Telcos, PSBs, and advertisers may get reporting and campaign metrics, but they do not own the underlying behavioural data streams generated at the OS layer. In practice, this means that even when a telco app is prominent on a smart TV, the most valuable data about who opened it, what they saw before and after, and how that relates to other services in the household sits with the OS provider rather than the operator. TV manufacturers that license third-party OS platforms are often in a similar position, with limited direct access to granular, cross-service data even though the hardware is sold under their brand. Tracking ad campaigns through to completion is key.

This data concentration creates structural dependency for telcos and PSBs, who rely on aggregated reports rather than raw insights. OS operators thus dictate measurement standards and ad rules, widening competitive gaps. Regulators are increasingly scrutinising interoperability and fair data access to prevent innovation being stifled by vertically integrated platforms.

Control of the OS means control of the data.

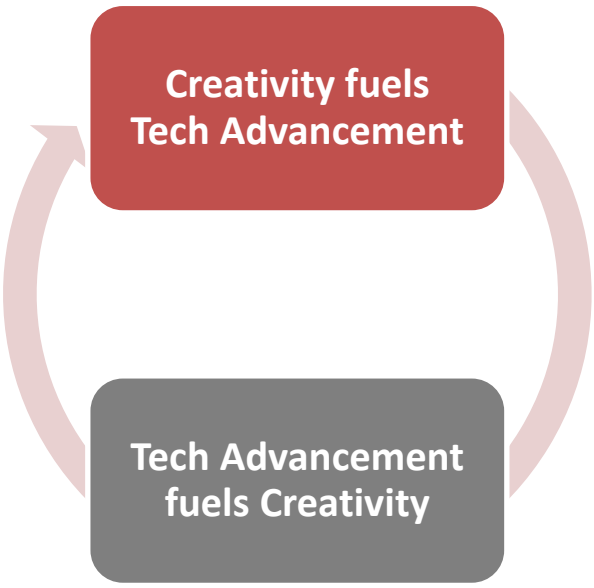
Retail TV are undergoing the same transformation – shifting from independent devices to mere hardware endpoints in OS-driven ecosystems

Echoes Of The Smartphone Playbook

In 2026, the smart TV market mirrors the smartphone industry's evolution: a handful of dominant global operating systems now control most consumer attention, data flows, and revenue streams, forcing hardware makers and service providers to compete for visibility within these walled gardens. Just as smartphone manufacturers learned that app stores, default search engines, and home screen real estate dictate where value concentrates, TV brands are undergoing the same transformation—shifting from independent devices to mere hardware endpoints in OS-driven ecosystems

'CreaTech' Flywheel

The Edge VPP demonstrations we organised at CES 2026 were designed as a catalyst to give content creators ideas of what they might ask for, kick starting the 'CreaTech' cycle.



Tech enables Applications, which in turn demand more Tech to grow to the next step. Once this Application / Tech wheel starts spinning then it becomes self-sustaining.

In this current environment, telcos, PSBs, and advertisers must work through the gatekeepers that own the TV OS, and many TV brands find that the most valuable parts of "their" product – the interface, the data, and the home-screen real estate – are effectively rented from someone else.

4. Shaping Television's Next Decade

4.1 The Next Decade: The Age of Cognitive Television

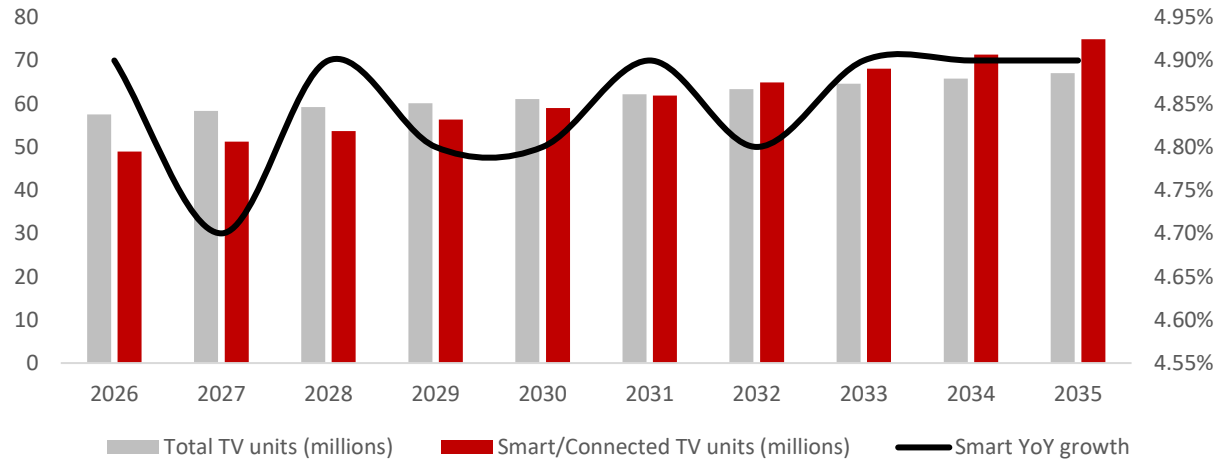
TV is entering its most transformative decade since the advent of colour. By 2036, the TV will evolve from a screen into an intelligent, adaptive environment that unites video, interaction, and commerce across physical and virtual spaces. For telcos and media providers, the question is no longer how to distribute channels and apps, but how to orchestrate an entire cognitive ecosystem – one that senses, understands, and responds.

The TV As The Home's Edge AI Core

By the early 2030s, the TV will surpass the smartphone as the home's primary edge AI device. NPU performance roadmaps already point to multi-hundred TOPS capabilities within mid-range TV SoCs, enabling sustained on-device inference for video manipulation, video understanding, gesture recognition, and multimodal interaction. Freed from the constraints of batteries and thermal envelopes, TVs can host powerful, always-on AI engines without compromising cost targets, since most of the bill of materials remains dominated by the panel. This positions the TV as the default orchestrator for media, gaming, ambient intelligence, and home control. In parallel, the standalone set-top box will fade from relevance, its functions absorbed directly into the display or virtualised in the cloud.

The long design cycle – spanning silicon co-development, algorithm optimisation, software integration, industrial design, and manufacturing – means edge AI hardware of 2030 is already being architected now.

Europe TV Sales Forecast (#Ms)



Source: Statista & Grand View Research, June 2025

Smart/Connected TV unit sales are forecasted to surpass 50M units shipped annually by 2035 in premium/expanding segments, with Europe leading due to broadband infrastructure (4.5% CAGR).

Higher Refresh Rates

High refresh rate innovations will propel TVs beyond 120Hz over the next decade, enabling smoother motion and new interactive applications. As of 2026, native 144-165Hz panels have become standard in premium OLED and dual-mode LCD TVs. This is forecast to scale to 240-360Hz by the early 2030s via oxide backplanes, tandem OLED structures, and microLED pixel technology. AI motion interpolation and variable refresh rates (1-360Hz+) will eliminate blur in fast-action content, while 480Hz prototypes emerge for 8K volumetric displays by 2036.

These rates will support fluid cloud gaming at console-grade frame rates, immersive XR sports replays with 360-degree navigation, and real-time AR overlays on live events. Interactive fitness will track body movements without lag, multi-viewer experiences will render avatars seamlessly, and generative content will deliver branching narratives with precise gesture response.

These rates will support fluid cloud gaming at console-grade frame rates, immersive XR sports replays with 360-degree navigation, and real-time AR overlays on live events.

Intelligent Display Ecosystems

Display innovation will shift from incremental improvements in pixel density to holistic, environmental intelligence. Efficiencies in microLED, high-brightness OLED, and laser-projection will make modular wall-scale systems affordable. Advanced sensors will adapt brightness, tone, and acoustics dynamically to space, activity, and ambient noise.

Crucially, the TV will function as one node in a pervasive display fabric linking smart displays, mobiles, wearables, and XR devices. Media sessions will migrate seamlessly between contexts – starting on the living-room screen, morphing to AR overlays during commutes, then resuming on bedroom displays with preserved context. For device makers and operators, the "TV" will become less a product category and more the anchor node in a contextual household network. Financing, trade-in, and upgrade programmes will be central to retaining loyalty.

Software-Defined Screens

Television's intelligence will reside increasingly in software layers powered by local NPUs and GPUs. NPUs will run vision and language models locally – handling personalisation, accessibility, summarisation, and predictive control in real time. GPUs will turn the display into a real-time rendering engine for dynamic UIs, multi-window interfaces, volumetric sports, or interactive advertising.

Software-driven architectures will decouple innovation from hardware refresh cycles: new abilities will deploy via OS updates and model downloads rather than new panels. Competitive power will shift to those owning the OS stack, AI runtime, and data layer. Success will hinge on optimising for heterogeneous compute – balancing on-device processing with AI model offloading to edge clouds – underpinned by privacy-preserving design.

AI-Driven Discovery and Interaction

Discovery will evolve from lists of tiles to multimodal conversation. Viewers will state intent – "show something to unwind with before dinner" – and receive contextually optimised programming across live, on-demand, and social video sources.

AI assistants will combine household profiles, viewing history, environmental data, and external signals (schedule, mood, time) to construct content sessions rather than individual assets. Over time, generative summarisation and autonomous highlight editing will shorten or recontextualise content on demand.

Rapid progress in multimodal AI and generative video technologies is already reshaping how consumers interact with the TV interface. Conversational search layers are evolving into visual, context-aware companions that can interpret natural-language prompts and respond with "show me" -style video snippets instead of static lists or text-based responses. For example, a user might ask for a "feel-good movie under two hours set in the 1980s" and instantly receive a short, AI-generated "vibe trailer" capturing that tone, era, and mood – alongside curated content suggestions. This shift from search to generative presentation sets new expectations for discovery on the big screen and deepens user engagement with the platform.

At the same time, generative video and image workflows will enable scalable, personalised content promotion and creative automation, as well as greater video manipulation. The prototype demos of edge AI being used for eVPP at CES 2026 showed just a glimpse of what is to come. This was demonstrated running on a mass-market, low-cost mainstream TV device.

...demos of edge AI being used for eVPP at CES 2026 showed just a glimpse of what is to come.

Media platforms are starting to produce micro-recaps, individualised trailers, and localised promo variants on demand, using AI models that automatically assemble, stylise, and watermark short clips. These same engines also drive "ambient mode" experiences – dynamic artwork, seasonal visuals, or user-customised scenes that personalise the TV's idle moments and elevate its role as a smart home hub. The underlying capability extends beyond entertainment: it fuels creator ecosystems and opens pathways for lean-back creation, where users can view, remix, and share short-form content directly from their television environment. Whoever controls this AI "front door" will influence viewing choices, advertising allocation, and content economics. Telcos and broadcasters must decide whether to own the assistant layer, federate with global AI ecosystems, or adopt hybrid sovereign models that protect their data while preserving user experience continuity.

Adaptive And Generative Content

Generative media will blur the boundary between production and playback. Content will become meta-structured: templates that can be rendered differently per viewer, blending pre-produced video with locally or cloud-generated assets. Sports feeds may deliver bespoke highlight compilations; children's shows and educational content might branch dynamically; ads will version themselves by audience, region, and context.

Many of the patterns first seen at the interface layer – AI-generated "vibe trailers," personalised micro-recaps, and synthetic ambient sequences – will migrate inside the content itself. Episodes will ship with embedded "promo grammars" that allow platforms to render different recaps, cold-opens, or interstitials per household, while long-form assets fragment into reusable, machine-addressable scenes.

Soon, you will request the team player interview you want to see, rather than the one they show you. In entertainment, real-time rendering pipelines built on tools like Unreal Engine will extend filming into

perpetual, adaptive environments, enabling worlds that can respond continuously to viewer input and profile-level preferences.

Rights frameworks will need to evolve from single-asset licensing to usage-based or template-based royalties, while content integrity and brand safety will require AI verification pipelines to certify modifications. Lean-back creation will normalise viewers, who will be able to spin up short-form edits, personalised highlight reels, or thematic "mood cuts" of their favourite shows directly from the TV, sharing them within controlled ecosystems that respect creative rights and commercial rules.

Immersive And Spatial Experiences

Television will increasingly intersect with spatial computing. Volumetric, multi-angle and depth-enhanced content will become accessible through hybrid screens – TVs, tablets, and lightweight AR glasses. Multi-device orchestration will enable layered experiences: a sports broadcast on the main screen, tactical AR data on a tablet, and a social viewing layer rendering friends' avatar nearby.

These experiences depend on ultra-low-latency delivery, synchronised timecode streams, and high-performance edge computing – all natural adjacencies for telcos. In entertainment, persistent companion worlds linked to popular franchises will extend audience engagement between episodes, turning viewers into participants.

These experiences depend on ultra-low-latency delivery, synchronised timecode streams, and high-performance edge computing – all natural adjacencies for telcos…

Creating the opportunity for telcos to lead!

"In response to a shrinking Pay TV market, operators have made a great job of staking out a unique role as principal aggregators of major streaming services. Instead of Pay TV services, telcos now sell popular streaming services like Netflix, Disney, and HBO Max in bundles together with broadband and mobile services. However, it's not enough for operators to align their future TV & Video strategy to the bundling major third-party SVOD streaming services. Come 2030, Omdia forecasts just ¼ of streaming will come from telco bundling. To ensure a key role in the future of TV and video, the telco industry must look beyond simply bundling major streaming services."

Tony Gunnarsson, Principal Analyst, Media and Entertainment

Omdia by informa techtarget

Edge-First Rendering and personalisation

By the 2030s, broadcast infrastructure will have become cloud infrastructure. Content will assemble dynamically from modular assets and metadata; ad pods and language tracks will localise in real time. Edge rendering will manage local in-TV personalisation, interactive scenes and cloud gaming sessions, streaming rich experiences to thin-client, operator-controlled TVs with local processing. Operators will shift capital from set-top deployments to managing cloud dependencies, content delivery, and multi-cloud orchestration. Those who master interconnection economics, caching at the edge, and AI-based QoS optimisation will gain a decisive edge in both experience quality and margin control.

Providing the home entertainment service of the 2030s is the natural role for operators and the true lever to monetise those telco fibre investments.

Premium Displays and Sustainable Design

MicroLED and next-generation OLED will anchor the premium segment with 8K and extreme HDR capabilities enhanced by AI-driven upscaling and dynamic tone mapping. However, sustainability will become a fundamental differentiator: modular panel replacement, recyclable materials, and low-power standby AI operation will be mandated by regulation and consumer preference alike.

Designing for longevity and software-driven upgrades will extend product cycles and reduce e-waste – aligning with environmental policy momentum across Europe and Asia.

Operators can off-load the TV management and the upgrade path to qualified TV manufacturing partners; enabling the operator to remain at the forefront of product offering, without the overheads of having to design and manage the products themselves.

Sharp's latest 75" 4K Ultra HD 144Hz QLED, running RedSquid TV

Gaming And Interactive Entertainment

Cloud gaming will normalise console-grade experiences without a standalone games console, enabled by sub-20-ms latency networks, predictive streaming, and GPU virtualisation at the edge. The same infrastructure will support interactive storytelling, virtual concerts, and shoppable XR media, lowering friction for consumers while shifting platform economics toward recurring service models and network prioritisation revenues. That said, although cloud will no doubt grow, the strong sense is that much of the future will be based on Edge based optimisation using CPU in the home.

Without question, the merger between gaming and lean back content will be one of the many significant developments to take place over the next decade. Already, we see Netflix and others investing in gaming – soon even making shows using cloud gaming as the background. Already we see shows such as: "*The Last Of Us*" and "*Fallout*" being adapted from games. Its small step from here to the point where we can choose different outcomes or paths through movies.

This in turn leads to opportunities and threats for traditional content makers. Moving quickly to embrace the latest trends is vital. The tidal wave of new entertainment types is coming: better to start building your boat today, rather than trying to hitch a ride on your competitor's boat when your feet are already getting wet tomorrow.

For telcos, new monetization opportunity might come in the form of bundling different content through "performance tiers" and differentiated latency classes, offering guaranteed responsiveness for premium subscribers and gaming households.

Cloud gaming will normalise console-grade experiences without consoles, and as edge-based optimisation matures, the real long-term opportunity for telcos lies in packaging performance tiers and latency classes..."

Advanced Advertising and Commerce

Advertising will evolve into a closed feedback loop of perception, engagement, and conversion – executed primarily in the device, on the edge. NPUs will detect attention, sentiment, and scene context locally, dynamically rendering brand objects, signage, or graphical overlays suited to each household. Real-time product placement will replace static ad inventory, operating in privacy-compliant, federated learning environments. Ad loads will adapt intelligently on the edge to viewer tolerance; shoppable layers will allow instant purchase or follow-up via companion apps. The same generative engines that power trailers, recaps, and ambient modes will also synthesise and version, the creative in-stream, moving the frontier from programmatic buying to scene-based optimisation and expanding the monetisable universe inside the content itself.

Integrated Cameras and Multimodal Interaction

Integrated cameras and sensors will reintroduce presence and embodiment into TV interfaces. Combined with on-device AI, they will enable natural input – facial recognition for profiles, parental controls, gesture-based control, authentication, and adaptive framing for multi-user video calls. Today, cameras are a default feature in all smartphones, tablets and laptops. By 2036, we expect they will be a default feature in every new TV screen as well.

Beyond video calling and Watch Party-type use cases (where celebrities, influencers, creators, etc., watch and react to OTT content, interacting live with the users and creating a shared viewing experiences; enabled by the likes of Sceenic); cameras will be utilised for a broad range of interactive services. From fun, joining with family and friends to play immersive games (as enabled by the likes of NEX), or karaoke (as enabled by the likes of ROXi.tv) to fitness, doing live workouts (such as enabled by mvmnt.com), to health, and wellbeing services will benefit from real-time body tracking, posture correction, and spatial feedback. With the rise of 'hospital at home' – virtual wards (such as enabled by Doccla and HUMA) – the ability to speak directly to your consultant or doctor and share results on the same screen will become common place. Two-way interaction with edge-based processing will make children's programmes into educational experiences. Entertainment and AR games – and even virtual try-on shopping experiences – will also leverage body tracking to provide truly immersive experiences. Ambient awareness will expand into safety and home monitoring functions. Privacy-preserving edge inference will keep sensitive data local, enabling trust and regulatory compliance.

In the same way that smartphone cameras have evolved from capture devices into real-time perception systems – enabling creation, communication, trust, understanding, and commerce – so too will cameras integrated into TV screens.

From Lean-Back to AI-TV

The culmination of these shifts is AI-TV – television that does not just show content, but collaborates with it. Early hybrids like Sky Live, Fire TV Omni, and Echo Show already hint at this fusion of sensors, vision models, and conversational agents. In the next decade, participation will become integral: viewers' avatars or likenesses seamlessly composited into pre-tagged scenes, products virtually retextured in real time, or fans joining interactive live narratives.

These features will redefine engagement and open new monetisation layers linking identity, participation, and brand integration. The creative vocabulary of games, film, and social media will converge inside the same runtime environment, with generative discovery surfaces, recap grammars, and ambient modes acting as continuous touchpoints in the relationship between users, creators, and brands.

Voice AI

Voice AI is crossing the tipping point, and CES 2026 made it unmistakable: the remote control is living on borrowed time. Advances in natural language, context awareness and always-on listening mean voice is no longer about issuing commands, but delegating intent. The TV becomes a proactive hub, not a passive endpoint. Crucially, interaction is conversational and ambient, removing friction rather than adding novelty. As accuracy improves and privacy moves on-device, reaching for a remote will feel as archaic as dialling a rotary phone. The screen listens, understands, acts — and then gets out of the way.

All IP…

Broadcast TV is not going away immediately, but the shift toward 100% internet-delivered TV is on the horizon. In the UK, Freeview and other digital terrestrial services are expected to remain at least until 2034, when key multiplex licences expire. Other countries have similar plans.

Managed correctly, the supplier of the IP pipe into the home can leverage this change to their advantage.

4.2 Avoiding the "Nokia Moment" Ahead

Television's first century was defined by a succession of technological waves in which incumbents could often adapt gradually: from black and white to colour, from analogue to digital, from linear to basic on demand. The coming decade will not afford that luxury. AI driven interfaces, cloud native distribution, and immersive experiences are converging quickly, and the structures of the TV and video value chain are fragmenting in ways that favour software and data centric players over traditional distributors. For telcos and media companies, the risk is not a slow decline, but a defining Nokia-like loss of relevance if they cling too long to legacy models or treat platform shifts as incremental feature updates – and, in particular, if they assume that control of the set top box is still enough to secure their place in the value chain once the primary device and display are controlled by others.

Nokia's downfall was not caused by a single bad bet, but by a pattern: underestimating how fast a new paradigm (touch smartphones, app ecosystems, integrated software, and services) could make a dominant hardware-led model irrelevant. Nokia still shipped huge volumes of devices, but the centre of gravity had moved to operating systems and app ecosystems that it did not truly own, and by the time that shift was acknowledged, the consumer relationship had already migrated to new platforms. The same pattern now threatens PSB and Pay TV. When discovery, navigation, identity, and commerce move into vertically integrated software stacks and AI assistants, incumbents that continue to optimise legacy products – or treat the screen and its OS as someone else's problem – risk waking up to find that the consumer relationship has migrated to whoever owns the actual display and user environment, even if their subscriber metrics looked stable only a few years earlier.

Stephen Elop, Nokia's CEO, later reflected on the company's dramatic fall: "We had moments in the past year and a half when we could have done some things differently had we known that the industry was changing so rapidly." His words capture Nokia's fatal hesitation amid the iPhone's rise—a failure not of foresight, but of bold action despite clear disruption signals. This "Nokia moment" now looms for television's telcos and media leaders

The "Nokia moment" is the point at which scale, brand, and distribution stop compensating for a missed platform transition, and decline becomes irreversible. Knowing change is coming is insufficient.

"We had moments in the past year and a half when we could have done some things differently had we known that the industry was changing so rapidly."

Stephen Elop, Nokia's CEO on its failure to foresee rapid industry change including rise of iPhone

Knowing change is coming is insufficient

Telcos that persist in treating the TV screen as an interchangeable commodity, while focusing only on a set top box plugged into their competitors' screen, risk repeating Nokia's error.

…a regulatory defensive posture will not be enough. We need to compete not complain.

Value in TV has shifted from hardware and channel bundles to operating systems, discovery layers, and AI assistants that control content access and personalisation. Over the next decade, static offerings will give way to dynamic, household level experiences, adaptive profiles, and continuous data interactions that learn from every viewing session, device, and room. In this world, the entity that owns the decisioning layer – what to surface, in what context, under which business rule – owns the economics of attention, advertising, and upsell. But that decisioning layer sits in the display itself, not in a separate box: if the operator does not provide the primary display device, then their competitor (The retail smart TV) will set the rules of engagement.

Middling positions – hosting apps without data, identity, or frontend control – offer no sustainable path and provide a guarantee of disintermediation. Being "just another tile" in someone else's UI means accepting a slow death.

As this paper aims to show, the loss is not just about losing the business the operator has today; it is also the opportunity loss of not taking full advantage of the emerging TV technologies to properly monetise their broadband or content investments. **The strategies that defined success in 2010 won't define it in 2030—now's the time to lead the next chapter.**

It is no longer viable to be attempting to own the home screen while lacking the OS and AI capabilities to shape it, or aspiring to be a content destination while outsourcing all discovery and data.

Crucially, this also means deciding whether to provide customers with the primary display screen – through operator branded TVs, tightly integrated device partnerships, or "TV with operator inside" propositions – or to let global device and OS vendors occupy that space. Telcos that persist in treating the TV screen as an interchangeable commodity, while focusing only on a set top box plugged into a competitor's screen, risk repeating Nokia's error: believing they still controlled the device long after control had passed to the software and platform layer.

From a government and regulator point of view a regulatory defensive posture will not be enough. We need to compete not complain. The UK has all it needs to lead, but we have to react now.

4.3 Strategic Fault Lines

As television becomes software-defined and AI-mediated, the industry's traditional fault lines – free-to-air vs pay, broadcast vs cable vs satellite, national vs international – are being replaced by new ones. The most important divide is no longer about how video reaches the home, but about who controls the operating system and assistant layers that turn a mass of content into a shaped experience. Increasingly, these layers are where AI discovery, personalization, and creative automation occur – and therefore where long-term user relationships and data value are determined.

The most important divide in television is no longer broadcast vs cable vs OTT, but who controls the OS and assistant layers where AI discovery, personalisation and creative automation happen – because that is where long-term user relationships and data value are set.

Three interlocking shifts are creating this new map:

1. From distribution to decisioning. In an app-driven world, the scarce resource is not capacity but attention. The entity that decides which apps are pre-installed and promoted, how rows are ordered, which titles appear in universal search, and which recommendations are surfaced at the top of the screen effectively controls the economics of viewing.
2. From hardware to software stacks. Set-top boxes, smart TVs, streaming sticks, and consoles increasingly run similar silicon, but the value lies in the OS, the AI runtime, and the data platform that sit above it. Owning these layers allows a player to evolve faster than hardware cycles and to capture advertising and commerce upside without bearing full device subsidy costs.
3. From single-screen to ambient presence. As cameras, microphones, and sensors proliferate across TVs, speakers, routers, and wearables, the "TV experience" becomes an ambient, multi-device environment rather than a single panel on the wall. In that world, assistants, identities, and profiles must span devices – and the battle shifts to who orchestrates that continuity.

For telcos and Pay TV operators, this creates an uncomfortable reality check. Many current strategies are optimised for a world where controlling the set-top box UI was sufficient to own the household relationship. As more viewing migrates to third-party smart TVs and streaming OSs, these operators find themselves demoted from primary gatekeeper to app provider – one tile among many. This demotion extends beyond interface control: platform vendors that dominate the AI discovery and creative layers now exert influence over user behaviour, ad inventory, and data flows, potentially confining operators to roles of mere connectivity and billing.

However, these same developments also create openings. If the operator supplies the in-home entertainment platform, then the operator can strengthen direct consumer engagement within their own ecosystems.

The same logic applies to broadcasters and local streamers. Being the most-watched channel on a legacy EPG is less meaningful when the first impression a viewer sees is a global platform's home screen curated by an assistant that may or may not prioritise local content. Without access to the decisioning layer – and without the means to assert data ownership within AI ecosystems – even strong brands become dependent on commercial placement deals, algorithmic goodwill, and default settings they do not control.

This is the point at which the Nokia analogy becomes more than a metaphor. The question is not whether telcos and media companies will continue to exist – they will – but whether they will own any of the layers that set the rules for everyone else, including AI frameworks, identity systems, and data strategies that define future value.

Will they leverage their position as the management of the data pipe into the home to optimise their network and maximise income? Or will they let someone else take the increasing recurring revenue from the smart home?

This is where the Nokia analogy stops being a metaphor: telcos and media companies must decide whether they will own any of the layers that set the rules – AI frameworks, identity, data strategies – or simply manage the pipe while someone else harvests the recurring smart home revenue.

"TV remains a central part of the broadband value proposition for many households, even as viewing habits evolve. As broadband markets become more competitive and contract terms shorten, operators need new ways to encourage customer loyalty and reduce churn. Device financing and rental, already proven in a number of markets, offers a practical route to lock in broadband customers, and the TV set is a logical focal point for such strategies. By bundling TV hardware and services, operators can differentiate their offers, strengthen customer relationships, and maintain relevance in a rapidly changing market."

Martin Scott,
Research Director

4.4 Understanding the Value Chain

The television value chain has undergone a fundamental shift, with profound implications for traditional pay TV operators and public service broadcasters. Understanding where value sits – and where it does not – is critical to understanding why telcos risk becoming mere commodity network providers unless they control the TV OS and the associated data and advertising layers.

The Telco and PSB Dilemma

Telcos and pay TV operators have traditionally competed in the distribution and devices layers, earning only 3-5% of the total profit pool from carrying video traffic. They own the broadband pipe and the router. Yet without control of the aggregation layer – the TV OS, home screen, and first-party data – they cannot capture the 45% of profit that sits in platform economics[xxv].

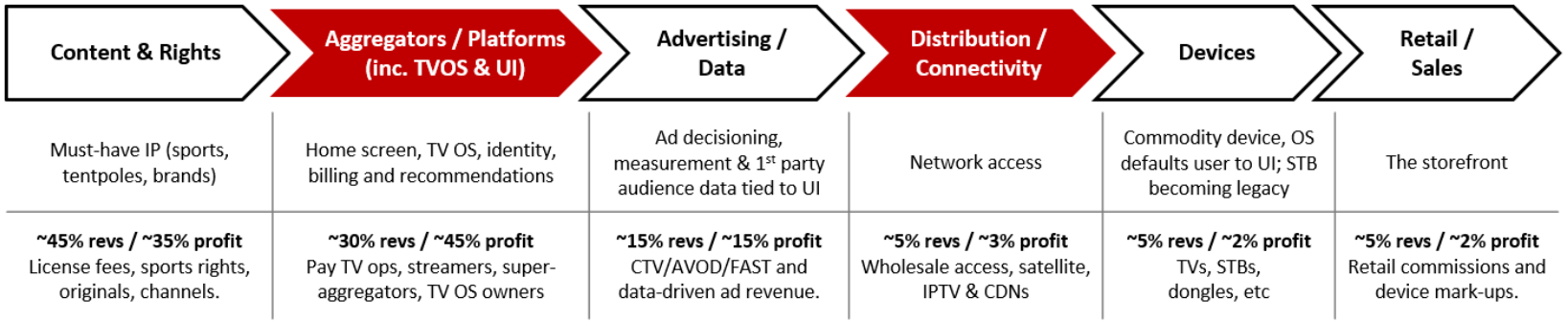
This creates three strategic risks:

1. **Network as commodity:** If telcos merely carry the broadband traffic to deliver Netflix, Disney+, or other OTT services, they face declining ARPU and margin pressure. The viewer has no reason to stay loyal to the telco's service; they are paying for content accessed via global platforms, not for the network.
2. **Data blindness:** Traditional operators cannot build a first-party audience profile because their customers are watching content inside third-party apps (Netflix, Disney+, Prime). The operator sees network traffic and device metadata but not what is being watched or by whom. This makes it impossible to compete in the advertising layer or to personalize service.
3. **Hyperscaler vertical integration:** The hyperscalers own or control both content and platform layers. They can price aggressively, invest heavily in original content and technology, and extract the lion's share of consumer spending. Telco operators are left with only distribution, and have no leverage whatsoever.

Understanding where value sits – and where it does not – is critical to understanding why telcos risk being commoditised unless they control the TV OS & associated data and Ad layers.

Without control of the aggregation – the OS, home screen and first-party data – they have no access to the platform economics.

Outline TV Value Chain



The new **front line of pay TV profits** and **main control point for future value**, deciding which services win visibility, how bundles are shaped, which ads run, and who owns first-party customer data

As video continues to shift fully to streaming, **telcos without direct control will** carry all TV traffic – **bear all the costs** – but **see no revenues – and** see **low single digits of the overall profit pool**, unless they own TV OS and control the network and manage the customer experience, data, advertising, etc., they will become a pure commodity

4.5 Understanding TV Chipsets

Timeline of Silicon-led Products

The economics of TV chipsets are amplified by the timelines required to bring each new generation of TV or set-top hardware to market. A full SoC cycle – architecting, designing, validating and taping out a new TV-class processor – typically runs to around 18 months before mass production chips are ready. Over the same 18-month horizon, low-level software teams are building and optimising the algorithms that run directly on that silicon, from video pipelines to security and AI inference.

Once the SoC is ready, OEM industrial design and platform engineering teams need almost six months to a year to integrate that SoC into a finished TV, including the OS and middleware stack.

High-level software – the UX layer, applications, discovery experiences and operator-specific features – then rides its own cadence, often taking about up to a year to stabilise on a new hardware platform and OS baseline. Once designs are frozen, manufacturing still takes time to ramp from first articles through certification, pilot runs and into reliable volume, particularly when new components or tooling are involved.

Taken together, this means that a given "generation" of TV or STB economics is effectively locked in three to four years before it appears in a customer's living room. **This means that hyperscalers' 2030 AI-TV models will already be in planning mode today; they may even be in the design phase.** Telcos need to react quickly to plan their own competing home entertainment product launches that cement their advantages of owning the broadband. A decision to delay the move to control the screen and continue to focus on a STB only solution will miss the opportunity. The transition to owning the screen won't happen overnight, but the move to take control of the screen needs to start today. Embrace and lead the future or watch as it overtakes.

Economics of Silicon

This strategic fork is reinforced by the hard economics of silicon. In Pay TV, the economics of silicon are inverted between the TV and the set-top box. In a modern television, next-generation electronics – CPU, GPU, NPU, memory and mainboard – typically account for under 20% of the total bill of materials; the panel dominates the cost, so operators and OEMs can step up SoC and memory performance with modest impact on overall ASP. In a set-top box, the opposite is true: the electronics account for more than 80% of the BOM, so any increase in processor or DDR pricing flows directly into box cost and subsidy requirements.

The recent escalation in DRAM and DDR pricing, driven in part by surging AI demand and constrained supply, is already pushing memory costs up by double-digit percentages and, in some cases, close to 100% over a 12-month period[xxvi]. For Pay TV providers who continue to rely on the STB as their primary delivery device, this creates a structural squeeze: every generation of "smarter" box with more RAM and compute lands entirely on the operator's P&L in the form of higher subsidies, slower payback, or reduced specs.

By contrast, TV-centric strategies gain more headroom to add Edge-AI-class silicon – NPUs for on-device inference, richer graphics, more memory for local caching – without blowing up unit economics, because that silicon sits on top of a panel-driven cost base.

In effect, the **TV is the device form factor that is best suited to the next wave – AI-first discovery, computer-vision-enabled interactivity – it's also the one where the cost of adding compute is structurally easiest to absorb**. Persisting with an STB-centric worldview is therefore not just a UX mistake; it is a bet on the wrong side of a long-term cost curve. This is television's version of Nokia insisting that its existing OS and hardware architecture could be stretched a bit further while the real game moved to a different kind of device and software stack.

Within a few years we expect TV to overtake smartphone in edge AI capability as TVs are not constrained by the need to run on a battery.

Silicon Roadmaps Show TV Overtaking Smart Phone for Edge AI

Silicon roadmaps are now amplifying this divergence instead of narrowing it. Flagship TV SoCs on the roadmap for 2027 onwards are targeting edge AI performance that compete with today's high end smartphones. Smartphone silicon will continue to advance at the high end, but it is tightly constrained by power, thermals, and mid-tier price points, while TV silicon can grow NPU and memory footprints more aggressively.

Demonstrations at CES already show the emergence of edge AI for video manipulation in existing mainstream chipsets.

Within a few years, we expect TVs to overtake smartphone in edge AI capability, as TVs are not constrained by the need to run on a battery. TVs are mains-powered devices, whose value story is shifting toward AI-first discovery, edge AI controlled sensors and in TV video manipulation features. The result is that the TV is set to overtake the phone, as the primary edge AI surface in the living room. Opening new content opportunities that have not even been thought of yet. The 'CreaTech' wheel is already spinning. (See page 36.)

...as new AI features emerge operator supplied TV will become the norm.

As TV supplied by operators will not have a high street retailer margin then there is more money to spend on tech. **Operator-supplied TVs will quickly overtake retail supplied TVs in processing power, as the retail models will always be more tightly cost constrained**, making the telco the default place to go to buy your home entertainment tech in future.

4.6 The New Economics of the 'Cognitive Screen'

The cognitive screen will follow the smartphone's growth path.

The '*cognitive screen*' will emulate the trajectory of the smartphone – a premium computing device whose cost is justified by its integration within a larger service ecosystem. Higher computational budgets and AI-capable silicon will lift baseline BOMs, but financed business models will absorb this, positioning telcos to re-enter the value chain through device-as-a-service models. Cognitive TV will become aspirational products in the same way that smartphones have.

Operator managed TV are financed purchases by the customer rather than dumped into Operators STB capex…

As TVs evolve into edge AI hubs with substantial local compute, their bill of materials will include NPUs, upgraded GPUs, more memory, better microphones and cameras, and higher-refresh panels. This will add some cost, but the electronics is still a small proportion of the overall TV cost. (The panel will remain the biggest cost item by far). Yet the total system value they unlock – in churn reduction, advertising yield, and new services – far exceeds the incremental hardware spend.

At the same time, the supply model of TV is that, the customer buys TVs, whereas a STB is an operator CAPEX item. The TV will be a "aspirational" high tech product with the latest AI features, operator managed Wi-Fi QoS, and still costing less than an inferior product purchased through retail.

Operator managed TV will become aspirational high-tech products.

Three business-model shifts underpin this logic:

- **From one-off sales to device-as-a-service.** Instead of subsidising set-top boxes that generate no direct revenue and rapidly become obsolete, operators can finance AI-TVs over multi-year contracts tied to broadband, mobile, and content bundles. This spreads capex, raises perceived value, and creates natural upgrade cycles aligned with silicon/processing, picture and sound improvements.
- **From channel ARPU to household lifetime value.** Intelligent displays make it easier to attach additional services – cloud gaming tiers, fitness and wellbeing subscriptions, smart-home security, educational content – all discoverable via the same assistant. Rather than focusing on TV ARPU alone, operators can manage total household value across multiple verticals.
- **From spot-based ads to attention and intent monetisation.** AI-TV enables context-aware product placement, shoppable overlays, and scene-based optimisation that do not resemble traditional ad breaks. Brands pay not just for reach but for verified engagement and conversion events, with on-device measurement providing privacy-preserving signals.

Financed, upgrade-eligible TVs can become core retention anchors – bundled with cloud subscriptions, health services, and entertainment tiers – transforming average revenue per user (ARPU) while deepening customer attachment. Financial models will differ by market, but a common pattern will be that the devices will break even, or better, over their life, through a combination of monthly fees, reduced churn, and incremental media and commerce revenues. In that world, the decision not to invest in AI-capable displays becomes harder to justify, particularly when set-top subsidies are climbing due to memory inflation.

In the age of '*cognitive screen,'* the TV becomes the home's intelligent surface – a sensory, social, and commercial interface between humans and digital worlds. Mastering this transformation requires orchestration across silicon, software, and networks. Having the TV supplied and managed by the broadband operator makes complete sense in this situation. The players who control these junctions – those who make the TV not just smart, but self-aware – will define the next decade of media.

In the age of the cognitive screen, the TV becomes the home's intelligent surface, and the broadband provider that supplies and manages that surface – orchestrating device, software and network – will be the one that defines TV's next decade

"Telcos are under intense pressure to find new growth, and history shows the strongest, most sustainable returns come from markets adjacent to the core network. The TV sits right in that sweet spot: it is deeply integrated with broadband, central to the household relationship, and still commands meaningful spend. By 2030, 65% of telco consumer non-communication revenue is expected to come from TV and video. Ceding this ground would be a strategic own goal at precisely the moment operators need to reinforce, not dilute, their position in the home."

Pal Karlsen, Senior Analyst,
Telco Consumer Services

Omdia by informa techtarget

4.7 Hyperscaler Strategies in TV Platforms

Hyperscalers and the Living-Room Platform Race

Across the global TV ecosystem, hyperscalers now command a substantial share of connected-TV operating systems, collectively shaping how viewers discover, navigate, and monetise entertainment in the living room. Their strategies fuse hardware, software, AI, and commerce — each leveraging scale in data, cloud infrastructure, and consumer ecosystems to anchor engagement and advertising on the largest screen in the home.

Hyperscaler-led TV platforms increasingly serve as aggregation hubs, blending voice and AI-driven recommendations with personalised live guides, search interfaces, and content discovery layers tightly coupled to their broader device portfolios. Proprietary AI and generative-video tools are now being embedded directly into TV operating systems: powering conversational search, dynamic promo creation, ambient experiences, and personalised advertising — effectively transforming the TV into both a creative surface and a data feedback engine.

These models strengthen hyperscalers' control across discovery, engagement, and monetisation, often reducing operator propositions to connectivity and app aggregation. Yet, through open APIs and AI-driven creative workflows, opportunities remain for operators and partners to co-innovate — provided they can move quickly and maintain clear guardrails around cost, rights management, and brand safety. The AI-video layer represents the next battleground for control of user attention and living-room ecosystems.

Hardware expansion continues apace, as hyperscalers deepen vertical integration through branded televisions and OEM alliances. Their devices embed voice interfaces and virtual assistants as defaults, using data from in-home interactions to refine targeting, surface first-party content, and drive personalised advertising. Strategies centre on combining mass-market hardware penetration with premium service bundling, ad-supported tiers, and AI-enhanced picture processing, ensuring that control of the interface equals control of the audience.

Through this convergence of software, commerce, and intelligent hardware, hyperscalers are quietly redefining what the living room represents — not merely a screen for viewing content, but a surface for personalised storytelling, interactive experiences, and monetised engagement at global scale.

The solution to overcome this threat is in the hands of the broadband suppliers. As new sophisticated features become available on TV that rely on or work better on a managed network then the broadband operator can take control, but only if the broadband operator also controls the TV screen. **The alternative is the broadband operator may be forced to over-provision their network to make sure the user can use all the services they want from elsewhere, reinforcing the "more broadband for less money" decline.**

Through this convergence of software, commerce, and intelligent hardware, hyperscalers are quietly redefining what the living room represents – not merely a screen for viewing content, but a surface for personalised storytelling, interactive experiences, and monetised engagement at global scale.

Risks to TV PSBs from Hyperscaler Gatekeeping

PSBs face an existential risk if the hyperscalers end up dominating TV platforms via smart TVs, streaming sticks, and voice assistants. These gatekeepers could exploit exclusive access to viewing data – demographics, search queries, and channel switches – to prioritize proprietary services over PSB linear channels, eroding universal reach essential for public service remits. Without mandated data reciprocity or neutral discoverability, PSBs risk losing competitive insights, which will stifle content innovation and will relegate them to algorithmic obscurity, much like linear radio's vulnerability to smart speaker defaults. As new home entertainment formats appear, then PSB could be forced to use hyperscaler provided tools to make new cognitive content to run on hyperscaler platforms. If this happened, it would add cost to the PSB and add income to the hyperscaler.

Risks to TV Advertisers

Advertisers face severe lock-in and revenue fragmentation as hyperscalers' TV platforms capture ad dollars through superior data-driven targeting unavailable to PSBs. The solution lies in ad companies cooperating with PSBs and telcos to monetise managed home entertainment platforms supplied by broadband operators.

Edge Technology Enables Ad-Tech Personalisation

Edge-based virtual product placement (eVPP) proves live TV programme modification is feasible — the second major edge AI application is for in-TV AdTech (alongside automatic content recognition). WPP research reveals that 71% of industry experts expect AI to produce most creative content by 2030; RedSquid anticipates this will extend beyond execution to the full pipeline — ideation, production, and edge delivery of dynamic overlays directly on the TV.

Imagine watching your favourite show where ads simply belong, instead of jarring ad breaks, the TV's on-device AI blends advertising creative naturally into scenes — a coffee cup on the kitchen table, a poster in a stadium, a car on the street, feeling part of the story. Inside the TV, AI analyses every frame in real-time, then fuses this with privacy-safe insights like viewing patterns, preferred genres, and time of day to orchestrate the blending of new ad objects unique to that viewer/moment. Because the new video is rendered entirely at the edge, data transport and data centre costs are avoided — even with one living room playing out a version with a sports drink, another coffee, a third a travel ad on the same background billboard.

Viewers gain seamless flow: fewer interruptions, context-fit relevance, visually consistent ads are harder to ignore since they're embedded in the content. Advertisers unlock premium, “unskippable” in-content inventory, targeted by context, audience, and moment, optimised on-the-fly without re-editing – the same scene serving distinct brands across markets, times, or segments using one master video. A typical home viewing session could offer 100x or 1000x the number of advertising instances vs traditional ad breaks. Telcos and platforms turn first-party data and device control into durable advantage, offering addressable impact free of third-party cookies or opaque systems, layering new revenue atop pods, sponsorships, and shoppable formats.

Collaborative Path Forward

PSBs, telcos, and advertisers can form alliances to deploy eVPP across managed STBs and neutral platforms like RedSquid, pooling content, data, and creative expertise for interoperable edge AI standards. This counters hyperscaler dominance with privacy-first innovation, sharing revenue from in-content ads while preserving European creative control. Regulators could incentivise partnerships via standards, prominence rules and data portability. There is an opportunity for the industry to set the standards for AI-TV and cognitive content and make this standard open and accessible to all. In the UK, the Digital Television Group (DTG) could have a key role in this. Other countries have similar bodies that might take a Europe wide view.

4.8 Edge AI: New Possibilities

Current AI drives efficiency, but edge AI unlocks disruptive interactions impossible from cloud alone. Smartphones demonstrate this via on-device NPUs handling computational photography, real-time translation, predictive text, biometric security, and health monitoring — processing raw sensor data locally to deliver proactive features without cloud dependency. TVs can mirror this evolution, becoming cognitive hubs that fuse AV processing with household intelligence. Beyond eVPP, edge AI enables conversational search understanding natural language queries across live, on-demand and voice commands; ambient profile detection that adapts content based on detected viewer demographics via subtle cues like voice timbre or posture; and dynamic content enhancement where AI adjusts audio for room acoustics , enhances dialogue or picture colour/contrast in real time, enhancing accessibility.

For advertising, edge opens micro-interactions: gesture-based car configurators revealing interior options mid-scene, AR furniture overlays matching room dimensions captured via front-facing cameras, or pet food spots featuring uploaded pet photos swapped into the narrative. Gaming convergence emerges too — AI generating procedural levels or NPC dialogues tailored to viewer mood detected from biometric feedback.

Environmentally, edge slashes data transit carbon footprints – local NPUs consume milliwatts and are distributed country wide, versus megawatt data centres, scaling to billions of devices without grid strain. Regulatory tailwinds favour this shift: GDPR and emerging edge mandates reward privacy-by-design over surveillance capitalism.

Miniaturised models accelerate adoption; by 2027, ~1B parameter LLMs will run fluently on TV silicon, blending vision, language, and reasoning for holistic experiences. Telcos gain deepest leverage here, bundling edge AI as managed services atop gigabit pipes – Wi-Fi 7 and 8 orchestration ensuring seamless model updates and federated learning across subscriber bases. This distributed intelligence redefines TVs from passive displays to proactive ecosystems, where computation gravity permanently shifts homeward. Hyperscalers may dominate cloud training, but edge execution democratises control, handing telcos, PSBs, and OEMs the runtime keys to the living room. Collaborative standards now become urgent: open edge frameworks prevent proprietary lock-in, ensuring innovation flows to users rather than gatekeepers. The second century of television begins not in silicon valleys, but in living rooms worldwide.

This distributed intelligence redefines TVs from passive displays to proactive ecosystems, where gravity pull permanently shifts homeward.

4.9 Operating models, partnerships & regulation

The transition to full AI-TV will not happen overnight. What is important is for operators the claim this space as theirs right now! The first step is to begin the customers' education that buying a TV through the operator is the right thing to do as they get a better product for less money that is guaranteed to work on the operators' network, with features like MESH networking and low latency cloud gaming integration.

In the background, the operator can then begin to build a roadmap towards full dominance of home entertainment delivery from server to 'eyeballs.' Over a few years the operator moves from being a cost-focused utility to an aspirational necessity.

The cost of making this step is tiny compared to the investment already spent installing the fibre broadband infrastructure. However, the revenue potential and customer retention impacts are massive.

The transition to full AI-TV won't happen overnight… what's key is for telcos to claim this space as theirs now.

The cost of making this step is tiny compared to the investment already spent installing the fibre

Owning or influencing the AI-TV layer is not only a question of technology. It demands shifts in organisational design, partner strategy, and regulatory engagement that are as significant as any past platform transition.

Three operating-model implications stand out:

- **From project to product to platform thinking.** Traditional Pay TV organisations are optimised for launches – new channels, new boxes, new bundles – delivered via large projects. AI-TV requires continuous product management and platform stewardship: weekly model updates, iterative UX experiments, and long-term roadmaps driving silicon and OS partners.
- **Data and AI governance as first-order disciplines.** Edge AI engines on TVs, routers, and set-tops will generate high-fidelity behavioural data – but only if consumers trust how that data is handled. Operators will need robust governance around consent, anonymisation, model transparency, and bias mitigation, integrating legal, security, data science, and UX teams.
- **Hardware becomes easier. TV manufacturers are making these products anyway. All the telco has to do is choose one and make it their own.** As NPUs, GPUs and sensors become central to the experience, telco product teams need to turn to industry experts, and outsource such specialisms, notably to TV manufacturers. **Telcos no longer need to understand silicon roadmaps and pay to design specific hardware.**

Partnerships are now far more strategic and more critical. All the ingredients for AI TV already exist, within smaller specialist players each focused on a specific part of the stack. RedSquid pulls these specialist modules together into one platform controlled by the telco.

RedSquid's aim is to connect those capabilities into a single, operator-centric platform, controlled by the operators and to provide a clear migration path so telcos can move from today's fragmented solutions to tomorrow's unified AI-TV experience over time. That requires telco backing not just as customers, but as co-sponsors of a common platform that can scale across markets. Rapid scale can come from partnerships. Operators can make deliberate choices about where to ally on shared infrastructure, data, and standards, and where to differentiate in UX, brand, and commercial models:

- **UI and UX partners.** Defining the roadmap of features that will be offered to the customer by collaborating with specialist developers who supply the same technology to different operators and hence dramatically reduce costs.
- **Broadcasters, studios and rights-holders.** Generative and adaptive content requires new licensing structures and trust frameworks. Partners must agree on how templates, metadata, and usage-based royalties will work in an AI-TV environment, and on how to safeguard editorial integrity.

Regulation is often seen as a brake on innovation; in AI-TV, it can be a differentiator. European-style emphasis on privacy, data minimisation, and explainability aligns naturally with edge AI architectures that keep sensitive profiles on-device. Operators who lean into this – positioning AI-TV as both smarter and safer than purely cloud-based alternatives – can build trust with regulators and consumers alike.

…the common competitors to advertisers, PSBs and telcos are the global hyperscalers.

To compete, telco operators need a common solution!

5. The RedSquid approach

5.1 An Open AI-TV Standard

In the current fragmented TV ecosystem, there is a need for a universal standard for AI-TV. Neither broadcasters nor operators can afford to master a dozen proprietary paths to "intelligent video." The opportunity for the industry is to define a "Dolby-like" model for AI-TV: a neutral, device-level standard that cleanly separates how content is tagged from how each platform chooses to render or monetise it.

An Industry Standard for AI-TV

What is missing today is a "***device-level***" AI-TV standard that treats intelligence as infrastructure rather than as a siloed feature of one OS or walled garden. In the same way that existing TV technologies like Dolby Atmos uses embedded metadata to describe how audio objects should be rendered on different speaker setups, AI-TV needs a common language for how scenes, objects and ad slots can adapt, regardless of app or platform. **The PSB are well placed to take on this role.** Global OS providers can and will push their own proprietary stacks, but this only deepens fragmentation and raises costs for content owners, advertisers and operators who must otherwise support many incompatible toolchains. In such a model, the TV (or in future the router) becomes a trusted execution environment for AI-driven adaptation, while content simply carries standardised instructions about what can change and under what constraints. This decouples creative production from device capabilities, and allows innovation at the silicon, OS, and UI layers without breaking compatibility.

Three Pillars of an Open AI-TV Standard

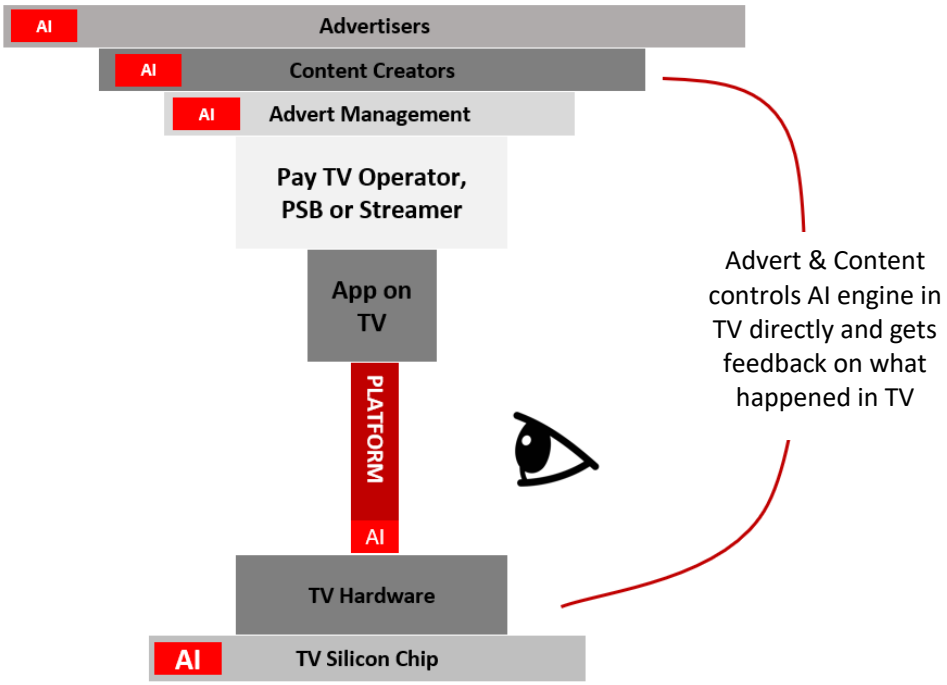
An open AI-TV standard can be thought of as having three interlocking columns, all of which must be defined in a neutral, consortium-driven way.

1. **A Compact Metadata and Instruction Layer:**
   Content and adverts carry lightweight data blocks describing which elements in a scene can be adapted – faces, objects, signage, graphics layers – along with hard constraints set by rights-holders and creatives. These instructions are authored once during production or versioning and travel with the asset across all platforms, much like today's embedded audio metadata.
2. **A Local AI Engine in TVs (and in future routers?):**
   A lightweight edge AI runtime, tuned to available CPU/GPU/NPU resources, interprets these instructions in real time, using on-device household profiles and contextual signals to decide which safe adaptations to apply. This can include swapping product pack-shots, adjusting language or cultural references, or compositing viewer avatars into pre-approved scenes, all without sending raw video off the device.
3. **A Governance and Ecosystem Layer:**
   A standards body or consortium defines certification criteria, privacy rules, and commercial models so that rights-holders, advertisers and platforms can trust that adaptations are authorised, reversible and correctly accounted for. This layer also defines how value is shared across the chain, so that no single OS gatekeeper can unilaterally capture all the upside.

Tier-1 platforms driven by the hyperscalers have the resources to build powerful AI-TV capabilities but face weak incentives to open them up or align on neutral standards that benefit broadcasters, operators and independent content owners. Tier-2 TV OS providers, in turn, often lack the low-level silicon expertise and end-to-end control needed to implement robust in-device AI on their own, while content creators do not want to maintain 10–15 separate AI-enablement workflows. **The result is a clear gap – and a strategic opening – for a neutral, industry specification.** Essentially, an embedded intelligence layer that sits inside the TV stack, much like Dolby Vision or Dolby Atmos sit inside the audiovisual pipeline today. It provides a standard, licensed capability that TV makers and operators can switch on across many devices, but which remains invisible to viewers except in the form of a consistently better, more personalised experience.

Controlling The Edge Upends the Entire Model

The hourglass shape represents the choke point controlled by the TV platform. The proposed edge AI standard helps overcome that choke point



Today, all content must pass through the TV platform to be discovered, with broadcaster apps just one of many icons on the home screen where those that pay the most are promoted to the top, giving the platform owner control over access to all content and services.

Controlling the edge device and its operating system upends the traditional TV value chain by giving the content and AdTech industry greater control over distribution and monetisation. Younger users especially may gravitate to platforms that enable new interactive and personalised features. Platform owners will have to work closely with the content industry to unlock and deploy these new capabilities.

5.2 TV OS Foundation

RedSquid has already built a complete TV platform broadly equivalent to a mainstream TV operating system of the hyperscalers, with full control of the middleware stack on the TV while allowing Pay TV operators or partners to supply their own UI. This lets operators move from set-top boxes plugged into competitor-monetised TVs to operator-branded televisions sold or financed directly to consumers and start to establish their presence firmly as the first choice in the living room. This core platform is in production.

TVs shipped with the RedSquid TV OS can be designed for superior QoS, premium industrial design and audio, and – over time – differentiated AI-TV capabilities, tightly integrated with the operator's core Pay TV services. As TVs evolve into an edge AI hub, delivering perhaps over 100TOPS of NPU performance – exceeding typical smartphone capabilities – they will also enable far richer in-home intelligence.

A version of the RedSquid platform from Ocean Blue Software is already in mass production, proving that the big investment to develop the platform has already been done. RedSquid positions this platform as perhaps the only independent TV OS solution available to operators seeking to escape big-tech control of the TV screen.

RedSquid's commercial model is flexible. Larger Pay TV operators can reuse and adapt their existing STB UIs or existing TV App to become the default UI on the TV, while smaller operators can use RedSquid's ecosystem of UI and monetisation partners for a more turnkey offer. The net effect is to give a wide range of operators complete control of the TV screen using a common platform, so they all benefit from volume of scale whist giving each individual operator complete control.

End to End Network Control: From Display to the Peering Point

Owning the TV platform is not just about UI control; it is increasingly about managing the economics of next-generation traffic such as cloud gaming. For telcos, cloud gaming will mean sustained, high-bitrate, low-latency traffic patterns that make simple over-provisioning unsustainable. By controlling the smart TV, operators can decode and render 4K streams locally, minimise round-trip processing, and combine this with multicast, "low latency by design" network engineering and advanced Wi-Fi 7 to maintain gameplay responsiveness while containing edge compute and Opex. End-to-end control from network core through router to TV will become critical to delivering acceptable quality of experience and optimised network utilisation in this new era.

RedSquid's TV platform gives telcos precisely this end-to-end lever. TVs integrated with an operator's router can coordinate video pipeline behaviour with network conditions, pre-emptively manage contention and apply AI-driven optimisation in-home, in ways that are impossible when the TV OS belongs to a third-party hyperscaler. **This combination of network ownership and device-level intelligence creates a differentiated position versus global retail TV brands that typically do not own the broadband pipe.**

5.3 In-Device AI For All TVs

On this foundation, RedSquid is developing a task-specific in-device AI engine that runs on TV, (and in future router) processors rather than in the cloud. Unlike general-purpose generative AI services such as large-scale language models, this edge AI layer is focused on two core jobs:

- Modifying the video being watched based on who the viewer is and what they are interested in, including face-replacement, product replacement and interactive advertising.
- Building and maintaining local viewer profiles inside the TV, based on everything watched across all apps, to inform personalisation and commerce opportunities without depending on any single streaming service's data.

Small control data blocks embedded in content and adverts during production tell the TVs embedded AI engine what options are available and how to apply them. Because the AI logic sits in the "engine room" of the TV OS, it can operate across apps and inputs and can construct meaningful viewing profiles even if users never consent to data leaving the device. If users do choose to share data, operators and partners can access richer analytics and advanced targeting; if not, local-only profiles still enable relevant product placement and ad experiences with strong privacy guarantees.

Because AI logic sits in the 'engine room' of the TV OS, it can operate across apps and inputs, and can construct meaningful viewing profiles even if users never consent to data leaving the device…

For Pay TV operators, these capabilities will be fully integrated into the Operators own TV platform, allowing them to surpass retail TV feature sets and unlock new AI-driven monetisation streams. For retail TV, the same in-device AI can be delivered as a plug-in module to existing software platforms, targeting high-volume manufacturers that lack low-level silicon control or the neutrality required to build an open ecosystem with advertisers and premium content owners. Feedback from initial discussions has been strongly positive.

RedSquid aim is to work with partners to produce an industry standard that can be used across Europe. Its semiconductor and smart TV heritage, coupled with close collaboration with advertisers, content makers, Pay TV operators and PSBs, gives it a realistic route to define this layer, license it across multiple platforms, and ensure that early adopters secure a durable commercial advantage.

5.4 Benefits for the UK and EU, TV and Creative Industries

Key benefits for Telcos, PSBs, Advertisers, OEMs, Viewers and Governments of the RedSquid TV platform:

For Telcos

- Turn sunk fibre Capex into growth by owning the home screen and decisioning layer, not just the pipe, avoiding a race to the bottom on commodity broadband.
- Replace costly, short-lived STBs with operator-branded TVs on the RedSquid OS, eliminating third party smart TV gatekeepers from the living room.
- Operator-supplied TVs will deliver a more seamless and enhanced QoE, supported by full LAN-to-WAN visibility that enables network optimisation (i.e. multicast) and consistent UI performance.
- With full end-to-end control from network core to glass, telcos can also optimise QoS for cloud gaming, streaming and future AI workloads.
- Unlock new ARPU via converged bundles (broadband + TV + gaming + smart home) with financed, upgradable TVs as the anchor device.
- Access a growing ecosystem of AdTech, ACR, recommendation, UI, and monetisation partners pre-integrated into the platform, reducing time to market and integration cost.
- Maintain data sovereignty with edge AI that builds household profiles on device, aligning naturally with European privacy expectations and regulation.
- The opportunity to collaborate with other European telcos on a shared, independent TV OS, achieving hyperscaler level scale without surrendering control.

For PSBs

- Regain visibility and prominence on the main screen by integrating directly into an operator-controlled home UI, instead of being just another app tile on a global OS.
- Protect editorial integrity and public service obligations by participating in an open AI-TV standard, rather than relying on opaque platform algorithms.
- Reach younger audiences with new interactive, personalised formats (branching stories, AI driven recaps, immersive experiences) that use RedSquid's edge AI runtime but keep creative control with the broadcaster.
- Secure fairer access to data and measurement, via an operator centric platform that can share insight on viewing and engagement without exporting raw user data to hyperscalers.
- Strengthen long term funding and ad revenues by plugging PSB inventory into a more efficient, addressable, AI-TV ready environment that out-competes cost focused TV sold in retail.
- Build deeper, more strategic partnerships with telcos and OEMs around a common platform, rather than negotiating piecemeal carriage and app deals with multiple proprietary OS vendors.
- In the UK, initiatives like Freely, have been a great first step. But, Freely still relies on running on top of a competitor TV platform. The monetisation and technology roadmap remains in the hands of a foreign company. Our proposal would give Freely total control of the TV today, and full control of the roadmap towards Edge-Ai adaptive content as cognitive TV emerges. Putting UK in a real leadership position. RedSquid has already worked with YouView in the past and showed RedSquid based YouView TV at IBC.

For Advertisers

- Vertically integrated hyperscalers are a possible threat to traditional Advertising industry. Telco managed TV would enable a more traditional partnership with telco and PSB who do not directly compete with the Advertiser. Each company managing their own specialist areas.
- Activate new creative formats – interactive ads, shoppable moments, dynamic product placement – that blend TV and digital, powered by a common AI-TV metadata layer across broadcasters and operators.

For OEMs (TV Manufacturers)

- Move out of the "squeezed middle" by becoming a strategic platform partner to telcos, rather than just a panel running someone else's OS and ad stack.
- Scale efficiently across regions by using a common RedSquid platform for multiple non-competing operators, while still differentiating models, branding and UX per operator and retail partner.

For Creatives

- Have a European controlled outlet for the latest content and creativity that is aligned with European goals and under control of the creative industry. Drive and own new content types, rather than follow and pay.

For Viewers

- An easier to use TV. For example, a button on the remote control could take the viewer directly to National broadcaster content, replicating the use of the "1" "2" "3" "4" buttons of the past.
- Find something to watch faster, as unobtrusive edge AI uses all your viewing (across apps and inputs) to surface a small, relevant set of choices instead of endless scrolling.
- Enjoy a visibly better experience because the TV is built for your operator's managed broadband and Wi-Fi, delivering higher, more consistent quality of service for streaming, gaming, and apps.
- See the content you actually want front and centre – PSB, Pay TV, streamers, or apps – rather than what a third-party platform wants to monetise or cross-promote.
- Get new kinds of experiences on the big screen: conversational interfaces, interactive dramas, cloud gaming, fitness, ambient info, and smart-home control integrated into one coherent hub.
- Benefit from more relevant, less repetitive advertising and shoppable moments, guided by on-device intelligence rather than blunt demographic targeting.
- Pay for TV in a more open and honest way, with the cost of a high-quality, AI-ready set wrapped transparently into the broadband subscription (often on interest-free credit), rather than "paying" through hidden device influence and aggressive advertising.
- Buy a TV that is guaranteed to work properly on their home network – configured, updated, and supported by the broadband provider – typically at a lower effective price than an equivalent retail set.
- Keep more control over privacy, because the most sensitive viewing data and AI profiles sit on the TV in the home, with clear controls over what, if anything, is shared back to networks and services.

For Governments

- Support a strategic UK (and European) alternative to global platform dominance in TV and video, improving digital sovereignty over critical media, data, and AI infrastructure.
- Strengthen the public service broadcasting system by embedding PSB prominence, discoverability and trusted news into next-generation home screens and voice interfaces, in line with Ofcom's calls for urgent action.
- Advance the UK's Modern Industrial Strategy (and similar strategies for the creative industries inside the EU) by anchoring high-value jobs and exportable IP at the intersection of AI, creative industries, and advanced manufacturing (TV hardware and silicon-grade software).
- Enable more regionally balanced growth, building AI-TV and content innovation clusters in places like Bristol, and opening the door to rebuilding the TV industry in South Wales.
- Improve consumer protection and transparency in TV platforms, with edge AI governance (consent, explainability, bias controls) designed to UK and EU standards rather than imported as a fait accompli from global ecosystems.
- Enhance resilience and security by reducing over-reliance on a small number of non-UK / European vendors for critical discovery, identity, and communications layers in the living room.

Key takeaways

The RedSquid TV platform represents **a pivotal opportunity for the UK and Europe to reclaim leadership across the converging telecoms, media, and creative sectors**.

By aligning telcos, PSBs, advertisers, OEMs, creatives, and government interests around a **shared, open, and sovereign TV ecosystem, it transforms fragmented markets into a coordinated engine for innovation and value creation.** Households gain simpler, smarter, more transparent television experiences; telcos turn connectivity investments into sustainable growth; broadcasters and advertisers regain prominence and data confidence; and manufacturers and creatives unlock new revenue and storytelling models.

For governments, RedSquid TV embodies industrial strategy in action – **anchoring jobs, intellectual property, and digital sovereignty firmly within Europe's borders while advancing a trusted, human-centred alternative to global platform dominance**.

The UK is uniquely positioned to take the lead in Europe to reclaim control of Europe's TV screens. The UK has the tech companies (of which RedSquid is a key part), Content Creation and Advertising leaders. Plus, a strong history of standard leadership in bodies like BBC research and DTG.

But we need action. **The UK TV ship is sinking. Time is running out.** This opportunity needs to be grabbed today, not debated for a year. The hyperscalers are on their way with AI focussed content and new entertainment formats. **A regulatory defensive posture will not be enough. We need to compete not complain.** The UK has all it needs to lead, but we have to react now.

6. Conclusion

Reflections on a Century of Vision

As the centenary of John Logie Baird's first public demonstration passes, TV stands on the verge of a qualitatively different transformation. The next decade will not simply bring sharper pictures, more pixels, or more apps; it will see TV evolve into an intelligent, adaptive environment that blends video, interaction, communication, and commerce across devices and spaces. AI-driven interfaces will shape what people see and how they navigate; edge-first architectures will blur the line between broadcast, streaming, and real-time rendering; and immersive, spatial experiences will stretch the very definition of a "screen."

For telco and media leaders, this is both a moment of reckoning and of opportunity. The structures and habits built over the first hundred years will not disappear overnight, but they will no longer be sufficient to sustain relevance and growth. The strategic choices outlined in this paper – about where to play in the ecosystem, how to own or influence discovery, how to use data responsibly, and how to collaborate with technology partners and regulators – will determine which organisations help define the new era of television, and which are defined by it.

Avoid the Nokia trap – do not let hyperscalers dictate discovery and data while you manage commoditized pipes; …reclaim UI sovereignty and optimize QoS

PSBs cannot afford algorithmic obscurity: demand seats at the AI-TV standards table…

Key Imperatives for Action

Telcos must seize control of the home screen now: pivot from subsidizing short-lived set-top boxes to financing operator-branded TVs with edge AI capabilities, turning fibre investments into recurring revenue through bundles that include gaming, fitness, and smart home services. Avoid the Nokia trap—do not let hyperscalers dictate discovery and data while you manage commoditized pipes; instead, deploy platforms like RedSquid's open TV OS to reclaim UI sovereignty and optimize end-to-end QoS from peering point to display. Launch pilot programs in 2026: partner with OEMs like Sharp for premium, upgradable screens; integrate PSB content for mandated prominence; and test eVPP ads to prove 20-30% uplift in engagement over traditional spots.

Public Service Broadcasters cannot afford algorithmic obscurity: demand seats at the AI-TV standards table to embed metadata for adaptive content—branching narratives, volumetric sports, personalized recaps—ensuring cultural quotas and editorial safeguards persist in voice-first interfaces. Collaborate with telcos on joint platforms that prioritize local creators over global tiles, reversing YouTube's audience grab and restoring shared national moments. By 2028, prototype interactive episodes from primetime soaps, where viewers shape outcomes via gestures, monetized through privacy-first edge AI that keeps profiles local.

Economic and Creative Opportunities

Advertisers unlock the cognitive screen's full potential: invest in edge-based virtual product placement and shoppable overlays that blend seamlessly into live scenes, delivering relevance without cloud dependency or cookie decay. Telcos and PSBs gain from shared revenue pools – expect connected TV ad spend to double by 2030 – while viewers enjoy lighter, context-fit monetization decoupled from intrusive home-screen banners. For creatives, this 'CreaTech' flywheel accelerates: AI tools for vibe trailers and ambient modes lower barriers, fuelling exportable European IP that hyperscalers cannot gatekeep.

OEMs escape the squeezed middle by aligning with operator-led ecosystems – build modular microLED panels with NPUs exceeding 100 TOPS, financed over 36 months to hit mass adoption.

Regulators need to mandate open standards for interoperability, data portability, and PSB discoverability, turning GDPR into a competitive moat for sovereign platforms.

Over the next decade, commit to three strategic decisions…

The Decade's Decisive Bets

The question is not whether television has a future, but what kind it will be – and who shapes it. From 2026-2036, commit to three strategic decisions:

1. **Own The Edge**: in-device AI over cloud reliance.
2. **Federate Ecosystems:** telcos, PSBs, OEMs should work together and avoid building silos.
3. **Prioritize Viewer Trust:** ensure transparent consent fuelling personalisation, not surveillance

Our recommendation is that industry leaders now take three concrete, coordinated steps: **pilot financed AI-TVs in Q2 2026; standardise eVPP metadata by IBC; and form EU-wide consortia for TV OS scale**. Financed AI-TV pilots give operators, manufacturers and broadcasters a low-risk path to test cognitive television in real households, proving out new use cases, economics and regulatory guardrails. Standardising eVPP metadata extends Europe's existing work on common technical and data standards into the commercial layer, enabling interoperable discovery, measurement and brand integration across broadcasters, streamers and platforms. EU-wide TV OS consortia, meanwhile, provide the scale, bargaining power and governance needed to sustain a European operator-centric TV platform in the face of global OS competition. Taken together, these moves set the direction for TV's second century: **a medium that is more personalised, immersive and commercially sophisticated, yet remains inclusive, transparent and aligned with European societal and regulatory values.**

A hundred years hence, this moment will mark when leaders reinvented television for intelligence, interactivity, and shared global experience, not extended the old model into irrelevance. Act now: the living room's intelligence layer awaits its architects.

Act decisively in 2026, or you will repeat Nokia's strategic mistakes; and act now – the living room's intelligence layer awaits its architects.

7. Appendices

7.1Glossary

- **AI-TV** – Television experiences where AI systems shape discovery, presentation, interactivity and monetisation in real time at device and cloud levels.
- **AR** – Augmented reality is a technology that overlays digital content – such as images, text or 3D objects – on top of the real world, usually viewed through devices like smartphones, tablets or smart glasses.
- **'Cognitive screen'** – A TV environment that can sense, interpret and respond to users and context, orchestrating content, interaction, and commerce across devices.
- **Decisioning layer** – The software and AI stack that decides what to show, in which order, to whom, under which business rules (promotion, advertising, recommendations).
- **Edge AI** – AI processing performed on local devices (TVs, routers) rather than exclusively in remote data centres, enabling low-latency, privacy-preserving intelligence. Edge referring to Edge of the Network.
- **eVPP** – Virtual Product Placement processed entirely at the Edge, inside the TV.
- **Experience Specialist** – A provider that dominates a specific content or service vertical with deep engagement, often embedded inside multiple platforms.
- **Full LAN-to-WAN** – Complete visibility and management spanning the local area network (LAN) to wide area network (WAN), enabling end-to-end performance optimization.
- **Infrastructure Enabler** – A player that focuses on connectivity, edge/cloud, data and ad-tech rails, monetising reach, QoS and measurement rather than UI control.
- **Multicast** – Efficient network transmission method delivering single data stream from source to multiple recipients simultaneously, ideal for live video and IPTV.
- **Network QoE** – Measure of end-user satisfaction with network-delivered services like video streaming, factoring in latency, buffering, and overall perceived quality.
- **NPU (Neural Processing Unit)** – Dedicated processor block optimised for running neural-network inference; in TVs, NPUs support tasks such as vision, speech, and personalisation.
- **Peering Point** – is a physical location where multiple ISPs and networks connect to exchange traffic. It acts as a central hub, facilitating efficient data exchange and enhancing Internet connectivity.
- **Super Aggregator Platform** – An operator that owns the primary TV UI, assistant and payment rails, aggregating all apps and services in the household.
- **TOPS (Tera Operations Per Second)** – A measure of AI compute performance; mid-range TV SoCs are expected to reach multi-hundred TOPS by the early 2030s.
- **Virtual Product Placement** – dynamically swaps on-screen brands. Increasingly, with the development of in-device AI, this will be undertaken locally, at the edge, using device-resident AI, referred to as eVPP.
- **Volumetric video** – Video that captures 3D information, allowing viewers to change viewpoint and perspective in real time rather than watching a fixed camera angle.

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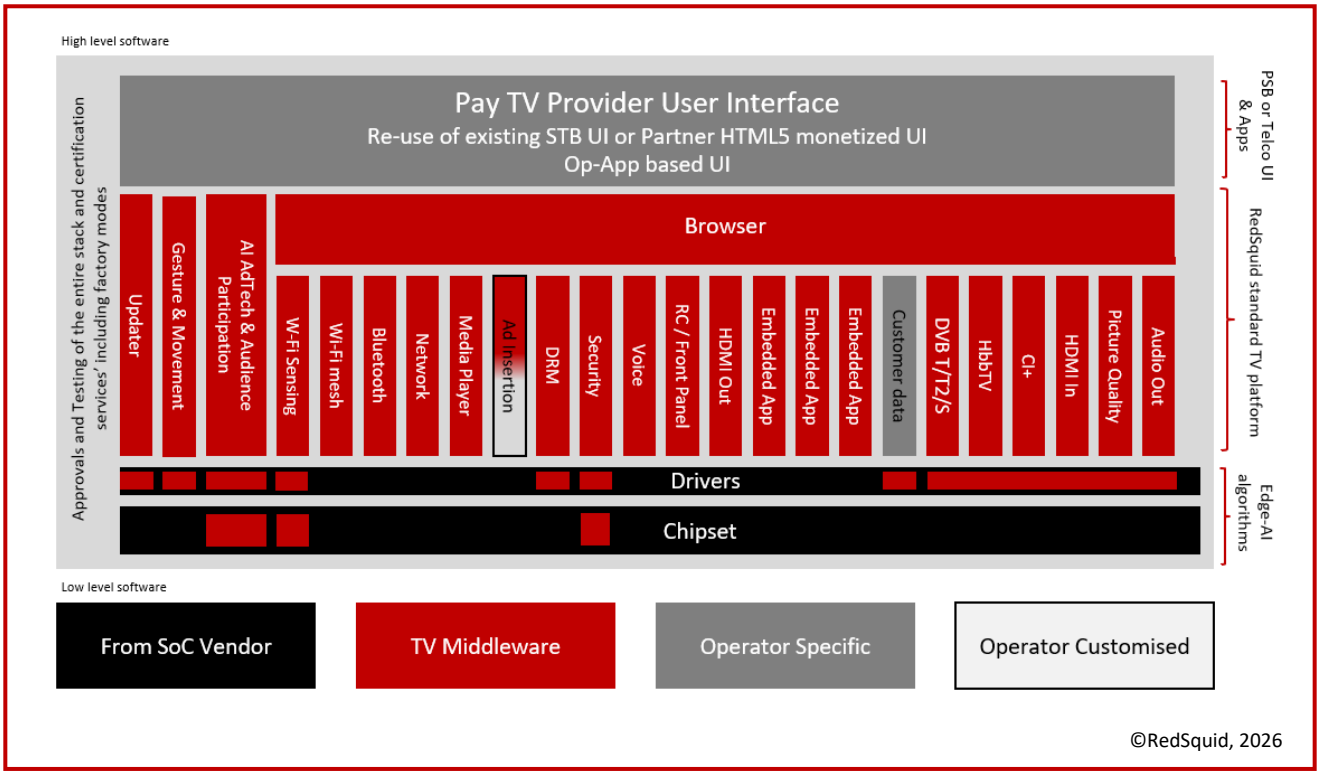
7.3 Understanding what makes a TV Platform in 2026

Terms like “OS” “App” and “Platform” get used often and it can be unclear where each partner sits and what you need for control of the complete system. A TV set software platform is today a very complex software stack often built up with many legacy layers. Without a real knowledge of what is needed it is easy to overlook the level of control your competitors are building up quietly underneath you.

Today many smart TV are really a traditional Dumb TV with a pretty UI and some Apps glued on top. That is about to change, as we move into the ‘*cognitive TV*’ era the TV platform will become IP first with legacy TV handled as an add on module. Over time the legacy TV functions will then get deleted. Expertise in old technologies such as DVB-T will become less important, expertise in innovative technologies, such as network management and NPU algorithms will rise in demand. This reflect the changes we saw back in early 2000s, as TV moved from Analogue tuner to Digital Tuner, and CRT to flat panel, new engineering skills were needed, and new market leaders emerged.

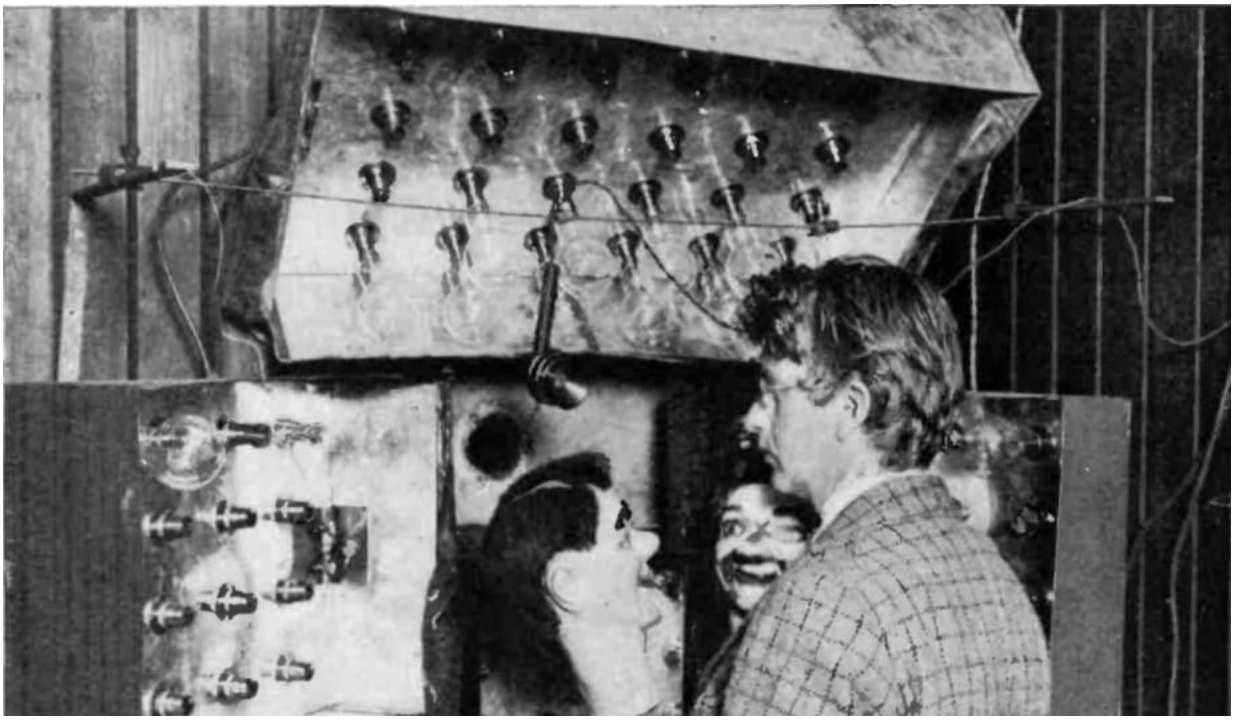
The software stack RedSquid has built is designed for this next generation of IP led TV. With legacy systems like DVB-T supported as plug in modules. There is no reliance on third party software stacks, and minimal input needed from a silicon vendor SoC board support package.



This diagram is clearly an extremely simplistic representation of the whole solution. There is no space in this white paper for the full technical details. But the key point is the full stack can be under your control.

Hyperscalers usually have this same level of full stack control. Some of the smaller TV “Operating Systems” rely on software stacks provided by the silicon vendor or other third partes and so have much less ability to control the whole stack and therefore make the transition to real cognitive TV.

John Logie Baird in his workshop, 1926. Source: Public Domain



Baird with two ventriloquist's dummy heads – 'Stooky Bill' to the right and 'James' to the left – that he used in an early demonstration of his television system, 25 March 1926, at London's Selfridges. Source: Public Domain

A Century of TV. Now Is the Time to Decide Its Future.

Television is 100 years old this year. Over the next decade, AI-powered cognitive screens will decide who owns the living room: telcos, PSBs, device makers… or global platforms. Individually and collectively, they are staring at their "iPhone moment" unless they act quickly, the future of the TV industry will be offshored.

This white paper argues that value is shifting from channels, boxes and panels to the decisioning layer – the TV OS, assistant and data stack that sits between people and the screen. It sets out why set-top economics are breaking, how edge AI TVs will become the home's intelligent surface, and what telcos, broadcasters, OEMs, advertisers and regulators must do in the next 12–18 months to avoid their own "Nokia moment".

From Aerials to Algorithms is a working document for C-suites and boards – a roadmap for turning the biggest screen in customers' home from a risk into the most powerful growth engine in their business.

Written and published by RedSquid TV
RedSquid TV is a specialist in open, customisable smart-TV platforms. It also provides edge AI experiences and monetisation strategies for telecommunications and Pay TV providers, broadcasters and TV manufacturers.

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