

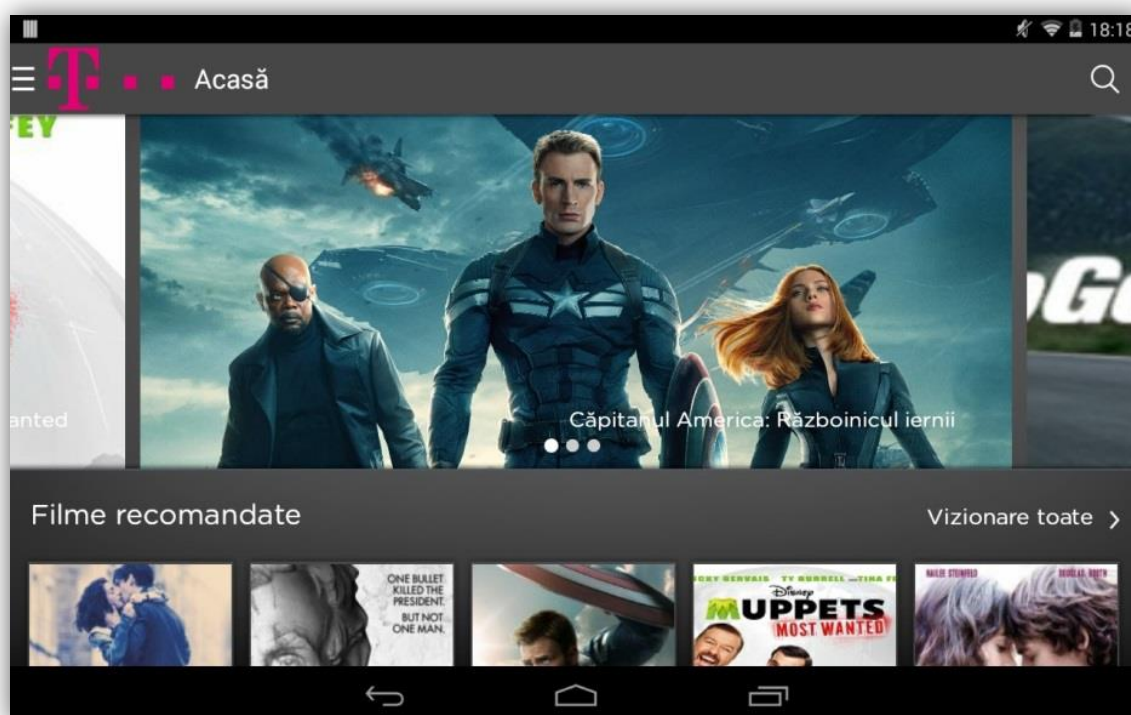


A Voyage to Success: Telekom Romania's Journey Into the OTT Multiscreen World Case Study

2015

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Introduction

“ Having a common target amongst technology partners was crucial toward helping Telekom Romania successfully launch its OTT multiscreen service ”

- Thomas Staneker, Head of TV Technical Service Center at Deutsche Telekom

About Telekom Romania

For more than 80 years, Telekom Romania Communications (formerly known as Romtelecom), an Hellenic Telecommunications Organization (OTE) subsidiary controlled by Deutsche Telekom, has been providing a reliable, innovative, and easy-to-use communications services including traditional fixed telephony, broadband Internet, and TV (e.g., satellite, IPTV, and cable) to the Romanian market.

Over the last five years in particular, Telekom Romania Communications has experienced significant growth in pay-TV subscriptions. According to recent research from OTE, the operator’s number of subscribers rose from just over 1 million in 2010 to 1.4 million in 2015.

In order to remain competitive, the telecommunications operator needed to expand into the OTT multiscreen world and address the growing consumer demand for a more personalized and interactive television experience on every screen. Recently, Telekom Romania embarked on a massive infrastructure upgrade to launch a new IPTV and OTT multiscreen service, including live, VOD, and nPVR content, called “Telekom TV.” This case study documents Telekom Romania’s groundbreaking journey into the OTT multiscreen world.

More details about the successful deployment can be found in the following [video](#):



Project Goals

When it came to launching an OTT multiscreen service, Telekom Romania had several clear-cut objectives. Most importantly, the operator wanted to secure the evolution of its legacy IPTV services while offering enhanced multiscreen features and a seamless and consistent customer experience. Telekom Romania also aimed to streamline operational processes, simplify specifications, remove operational constraints, and improve cost efficiency.

Additionally, as an integral part of Deutsche Telekom's activities in Europe, Telekom Romania was on a mission to align its new TV service with all other operations in the region. Deutsche Telekom's International TV Service Center was tasked with choosing an internationally viable platform from the best fitting vendors, who would not only support Telekom Romania but potentially sister companies in countries like Croatia, Hungary, and Greece. Facing stringent timing requirements, Telekom Romania was selected as the European lead country. A team consisting of the TV Service Center and Telekom Romania worked to define a common strategy for the fast introduction of a multiscreen product.

At the heart of the Telekom TV service offering would be a new service delivery platform. The service delivery platform provider that Telekom Romania chose would assume end-to-end responsibility of the delivery and integration of the TV solution with other ecosystem components, such as set-top boxes (STBs), STB clients, DRM systems, CAS, OSS/BSS, CDN, CMS and any other network components, while supporting all of the operator's STB clients for pure DVB, hybrid DVB, IPTV, and OTT services.

Another goal of Telekom Romania's was to find an end-to-end system that supports all kind of devices and a STB client with support for both OTT and legacy VOD, both on the client and platform side. The solution would need to provide support for all popular adaptive bitrate formats to enable OTT streaming.

Viaccess-Orca was brought in as the service delivery platform provider and lead technology integrator to help Telekom Romania achieve these goals. As the lead technology integrator, Viaccess-Orca was in charge of the end-to-end validation and testing, ensuring Telekom Romania launched its cutting-edge solution in a very short time to market. Telekom Romania chose Viaccess-Orca as the lead integrator based on the company's extensive IPTV and OTT multiscreen deployment experience, expertise in navigating the CAS and DRM complexities that are typically related to projects of this nature, and for its powerful service delivery platform.

Capgemini served as the OSS/BSS integrator and backend migration leader, helping to facilitate the integration of Viaccess-Orca's service delivery platform into the Telekom Romania network, amongst other crucial tasks.

Challenges

“ The biggest challenge we faced during the Telekom Romania deployment was that we only had five months from start to finish, the world’s shortest deployment time for such a complex system ”

- Thomas Staneker, Head of TV Technical Service Center at Deutsche Telekom

There were several challenges that Telekom Romania encountered in expanding into the OTT multiscreen world. The greatest challenge was launching the IPTV and OTT multiscreen offering in a very short timeframe. Telekom Romania needed to find a TV Everywhere solution and ecosystem partners that support a wide range of device types and business models without dramatically increasing capital and operational costs. The solution would need to ensure an extremely high quality of service (QoS) and quality of experience (QoE) for subscribers at all times.

Furthermore, Telekom Romania is in a complex market situation that requires additional cost optimization efforts. While the operator’s subscriber traffic has been increasing steadily over the years, revenue growth is increasing at a slower pace. This gap between revenue and traffic made Telekom Romania want to be more profitable. Any of the technology and solutions that Telekom Romania deployed during this project needed to be designed to decrease operational complexity, harmonize operations, and lower capital and operational expenditures (CAPEX and OPEX, respectively).

An additional challenge facing Telekom Romania was the fact that its existing workflow was based on a “black box” solution architecture, preventing Telekom Romania from operating with ease and transparency when it came to new developments and system evolutions, while also increasing CAPEX and OPEX.

Also challenging was that Telekom Romania wanted a best-of-breed solution, resulting in a complex ecosystem consisting of nine vendors with different technologies. This would require excellent system integration skills. Most vendors were geographically scattered, making the challenge even greater. Additionally, some of the vendors Telekom Romania chose to support the new service were competitors, which created the need for a high level of trust and transparency between project team members.

Solution Overview

To provide a superior multiscreen TV service to potentially millions of subscribers across Romania, Telekom Romania needed a comprehensive TV Everywhere solution that offers unparalleled levels of interactivity. Unifying the service delivery across different networks by using a single converged system was important in order to increase operational efficiencies.

Thanks to Viaccess-Orca's Voyage TV Everywhere solution and an ecosystem of partners— that supports all consumer device types (such as TVs, PCs, STBs, smartphones and tablets) and a wide range of business models (such as subscription and pay-per-view), Telekom Romania was able to deliver a premium TV service and open up new levels of interactivity for the subscribers of Telekom TV.

The Telekom TV deployment represents an evolution of Telekom Romania's legacy IPTV service into a next generation IPTV and OTT service. From design to launch, the total service deployment for Telekom TV took only five months, which set a **new world record** in terms of time of deployment for a complex OTT TV project of this kind. This short timeline was made possible thanks to Voyage, which offers easy integration with a variety of ecosystem solutions. For this project, Voyage has been integrated with a multiscreen video processing solution from Harmonic, Accedo VIA® Multi-Screen Solution, Broadpeak fast channel change solution, Friendly QoE Monitoring Pro quality assurance solution, Akamai content delivery solution, KAONMEDIA set-top boxes, and Zenterio OS. Capgemini served as the OSS/BSS integrator and backend migration leader.

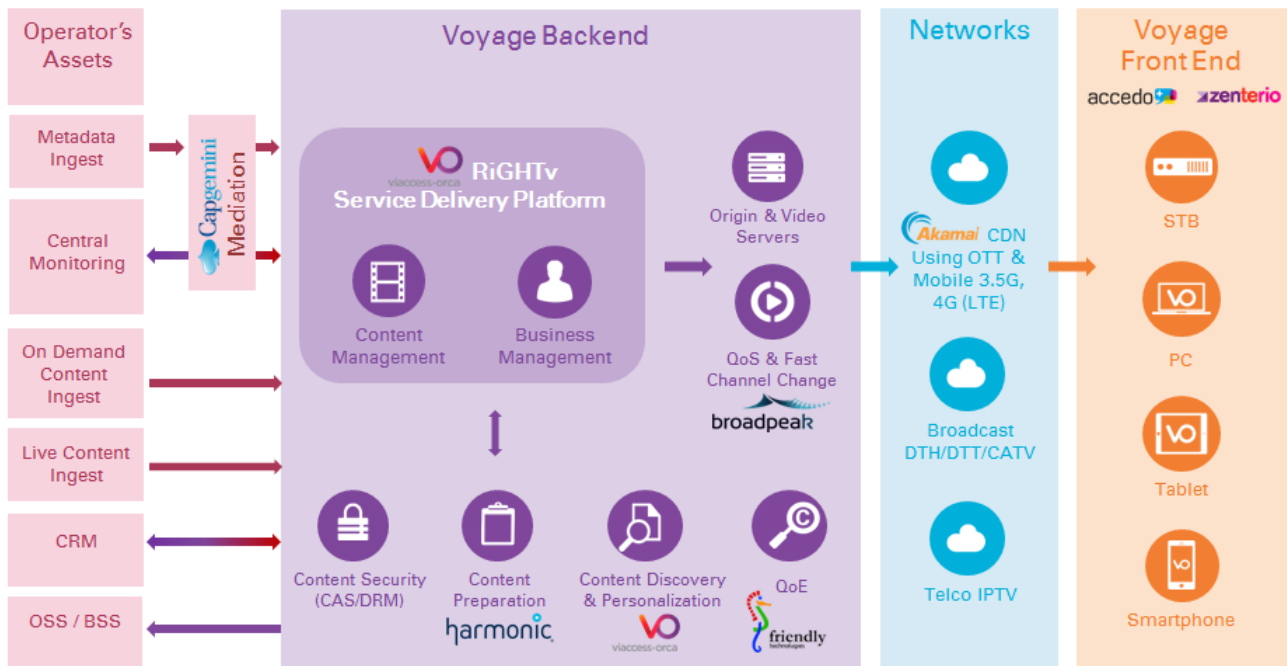


Figure 1. The end-to-end TV Everywhere solution at Telekom Romania

Solution Components

Viaccess-Orca



Using Viaccess-Orca's Voyage TV Everywhere solution, Telekom Romania can deliver a high-quality service, which includes live television, video on demand (VOD), nPVR, and catch-up TV to any screen. Voyage supports all types of TV and video delivery modes on all devices with any business model. This enables Telekom Romania to eliminate the technical and organizational hurdles typically involved with multiscreen service delivery while providing the ultimate user experience on every screen.

Prior to deploying Voyage, Telekom Romania used multiple infrastructure silos for its TV offerings, such as IPTV, OTT, DTH, and cable. With Voyage, Telekom Romania has eliminated those silos, unifying service delivery platforms into a single one. By unifying service delivery, Voyage enables Telekom Romania to support more device types and increase cost savings, operational efficiencies, and the rollout of additional services.

At the core of Voyage is [RiGHTv](#), Viaccess-Orca's service delivery platform, which is responsible for orchestrating the end-to-end solution. RiGHTv manages content throughout its entire lifecycle, from content preparation in a variety of formats to encryption, distribution, publishing, and finally playout on various devices. RiGHTv matches content (*i.e.*, VOD media file or live channel format) to end user devices, assuring that users are able to view content that best fits each device. In addition, content owner rights are managed carefully for each content asset.

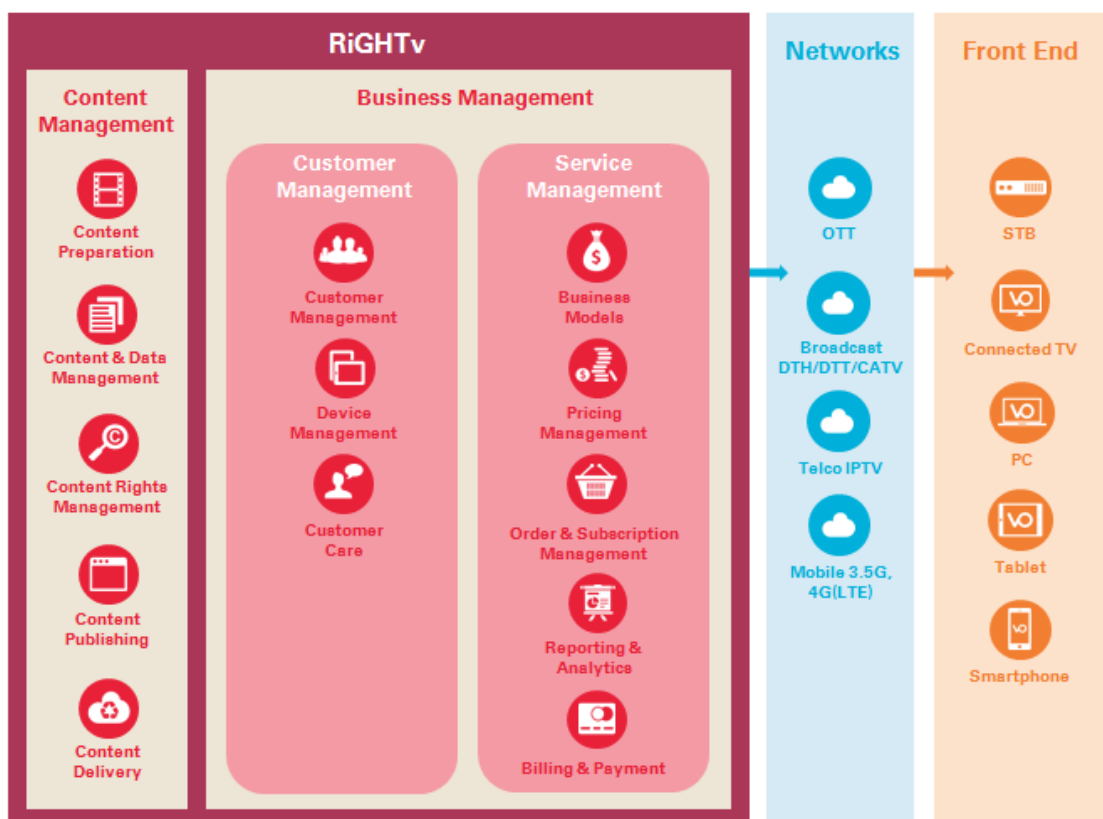


Figure 2. RiGHTv service delivery platform

One of the innovative capabilities of Telekom TV, enabled by Voyage, is its availability to deliver content beyond the Telekom Romania customer base via monthly subscriptions, which can increase the service's reach and revenue. By using RiGHTv, Telekom Romania is now able to make the most out of their content rights and exposes its content to any potential local customers, with no need for preliminary registration, using online payment methods via PCs and mobile devices like smartphones and tablets.

Telekom Romania is also using Voyage to enhance content discovery and content recommendations for every screen. Leveraging [COMPASS](#), a content discovery platform that uses advanced algorithms and search technology, Voyage enables Telekom Romania to recommend relevant content in an engaging way. COMPASS, with its content insights and recommendations, leverages customers' usage data and content metadata so that service providers like Telekom Romania can deliver the best possible recommendations to users.

“ Utilizing our Voyage TV Everywhere solution, Telekom Romania can provide subscribers with a television experience that flows seamlessly from one screen to another, regardless of device type. As Telekom Romania grows, our Voyage solution will enable the operator to further enrich its customers' journey into the content experience ”

- François Moreau de Saint Martin, Former CEO at Viaccess-Orca

Benefits Provided by Viaccess-Orca Technology

Consistent user experience: Through Voyage, Telekom Romania can offer a seamless pause-resume functionality, allowing users to start watching on one device and continue from another. Furthermore, recordings can be initiated from any device. Settings, favorites, wish lists, and user preferences are maintained on all devices. All of these features, powered by Voyage, ensure a consistent user experience for Telekom Romania subscribers on every screen.

Openness and decoupling: By choosing a best-of-breed solution, supplied from a variety of ecosystem partners vs. a single black box platform from one vendor, Telekom Romania has greater control over the Telekom TV features and service. RiGHTv features an open API and plug-in architecture that eliminates middleware vendor lock-in, giving Telekom Romania the freedom to choose the best vendor for each piece of technology. Not only does this keep CAPEX and OPEX down, an important goal for an operator like Telekom Romania, which has a low ARPU, it also opens up innovation and increases efficiency, enabling a more rapid service deployment.

Increased operational efficiencies and cost savings: With RiGHTv, Telekom Romania no longer needs multiple infrastructure silos for service delivery. RiGHTv, the unified service delivery platform, allows the service provider to prepare and manage content in various formats through every step of the delivery process, while meeting content owners' requirements. By unifying service delivery, RiGHTv allows Telekom Romania to support more device types, while increasing cost savings, operational efficiencies, and the rollout of additional services.

Expanded business models: With RiGHTv, Telekom Romania offers a variety of services to its customers. Whether live TV packages or à la carte, VOD subscription packages or single view, nPVR or catch-up TV, there is a wide range of services now available to Telekom TV subscribers. Post-paid and pre-paid options are also available as part of Telekom TV, with the pre-paid option used mainly by non-Telekom Romania subscribers, using various payment methods. With RiGHTv, Telekom Romania's customers can record their favorite program remotely and watch it anywhere, on any device. They can also choose between several nPVR storage offerings, with various quotas, to store their favorite recorded programs.

Customer engagement: RiGHTv also includes a TV messaging system called OMP (Online Messaging Platform), which allows Telekom Romania to keep customers informed about new deals, to promote events, and to deliver important messages to all customers, filtered groups, or individual viewers. Messages are sent across all devices, taking advantage of existing market protocols. On the client side, an inbox stores the messages, which can easily be managed by customers.

Analytics: Having a good analytics tool is crucial in terms of getting service usage feedback to improve the service and increase customer engagement. Viaccess-Orca has integrated the Google Analytics platform on top of the internal RiGHTv analytics module, enabling Telekom Romania to gain insight about customers' behavior, including a detailed graphical view of their usage over all devices. As a result, Telekom Romania can constantly improve the service to provide a superior customer experience.

The role of Capgemini during the Telekom Romania project was threefold: facilitating the ingestion of Telekom Romania live and VOD metadata into the RiGHTv service delivery platform, specifying and implementing the centralized monitoring solution, and providing on-site integration support alongside Viaccess-Orca.

The metadata ingest workflow at Telekom Romania is as follows: XMLTV and VOD files, including EPG information, are collected and converted into the appropriate format so that they can be ingested into the RiGHTv service delivery platform using an automatic EPG upload mechanism.

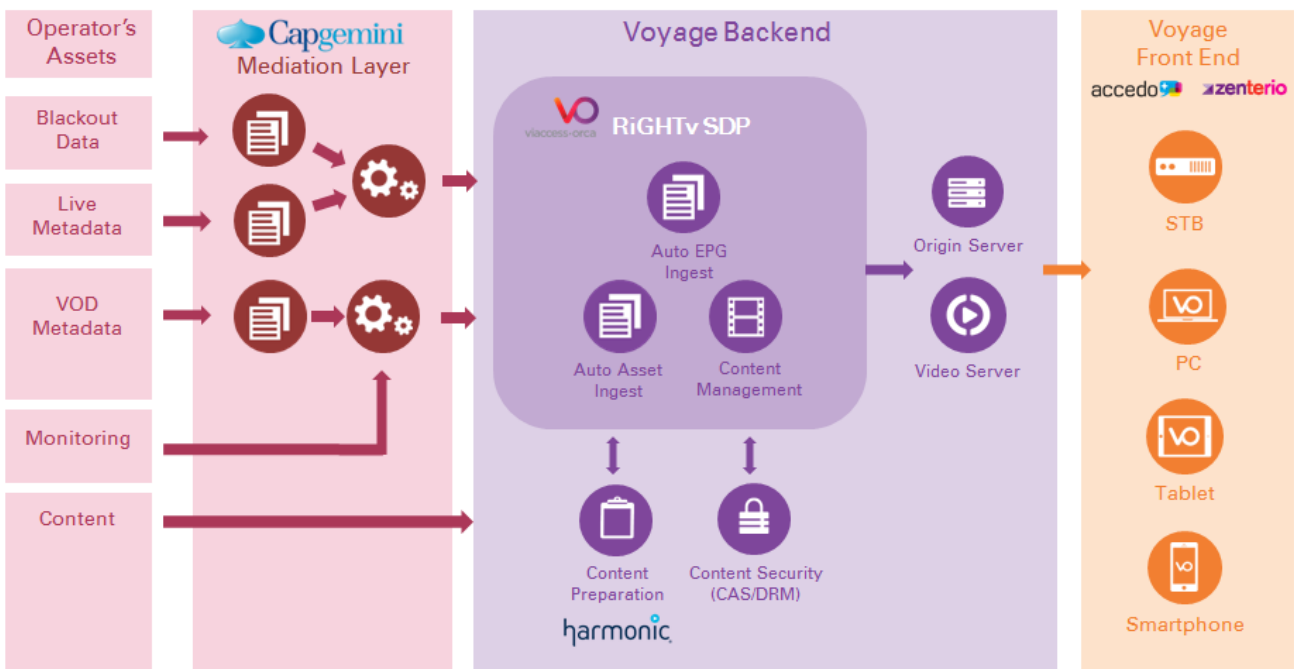


Figure 3. A global view of live and VOD metadata ingestion processes

The Capgemini team, which is experienced in facilitating EPG and asset integration, worked closely with Viaccess-Orca to make any necessary changes to the metadata ingest workflow. On-site support provided by Capgemini led to the successful integration of the general system.

The monitoring system, supplied by Nagios/Centreon, is designed to verify the behavior of all infrastructure components, including hardware and software, allowing Telekom Romania to quickly detect any issues. If a system error is detected, the monitoring system sends an alarm to the Telekom Romania operating team so they can quickly take action to solve the problem. The biggest challenge with the monitoring system was collecting information from multiple system vendors. Capgemini applied the relevant technical solution for each of the vendors' platforms (e.g. MIBs, SNMP traps, Nagios Remote Plugin). Capgemini's presence in Bucharest during the integration phase enabled a successful exchange of information amongst the technology partners, which led to the monitoring system being rolled out ahead of schedule.

Benefits Provided By Capgemini

By facilitating the ingest of EPG and VOD assets into RiGHTv service delivery platform, Capgemini has ensured that Telekom Romania can provide customers with detailed information about live and on-demand content. In handling the monitoring system integration, Capgemini allows Telekom Romania to detect any system errors and proactively resolve them in order to provide a higher quality of service to viewers.

Capgemini's on-site integration support played a huge factor in the success of Telekom Romania's new service. The company assisted Viaccess-Orca throughout the project by providing an extension of the local end-to-end testing and validation teams, resulting in a successful, on-time roll-out of the project.

“ We bring more than 30 years of experience working with telecom & media companies around the world as well as a strong delivery track record, especially when addressing complex integration projects ”

- Erwan Le Duff, CEO Telecom, Media Entertainment Europe at Capgemini

Telekom Romania is using Zenterio OS, an independent software platform, to increase viewer interactivity for its IPTV service. Zenterio OS is used on all new STBs deployed by Telekom Romania.

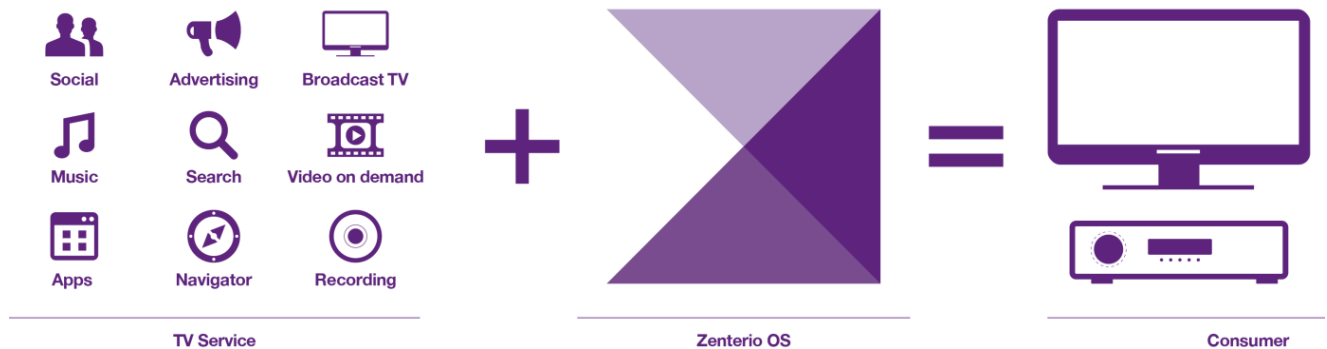


Figure 4. Zenterio’s independent software platform Zenterio OS

The implementation with Telekom Romania is the third Zenterio OS rollout within the Deutsche Telekom Group in a short time period. By selecting Zenterio’s independent solution, Telekom Romania joins Slovak Telekom and Magyar Telekom as the first operators within Deutsche Telekom’s nine TV markets to standardize their software platforms.

Benefits Provided by Zenterio Technology

Zenterio OS can be used on any new and existing hardware, enabling Telekom Romania to quickly and cost-effectively launch new interactive services and applications. In addition, the operating system harmonizes software environments, allowing Telekom Romania to run the same OS on all hardware. The end result is that Telekom Romania can launch better services faster while decreasing costs for operations, maintenance, and sourcing.

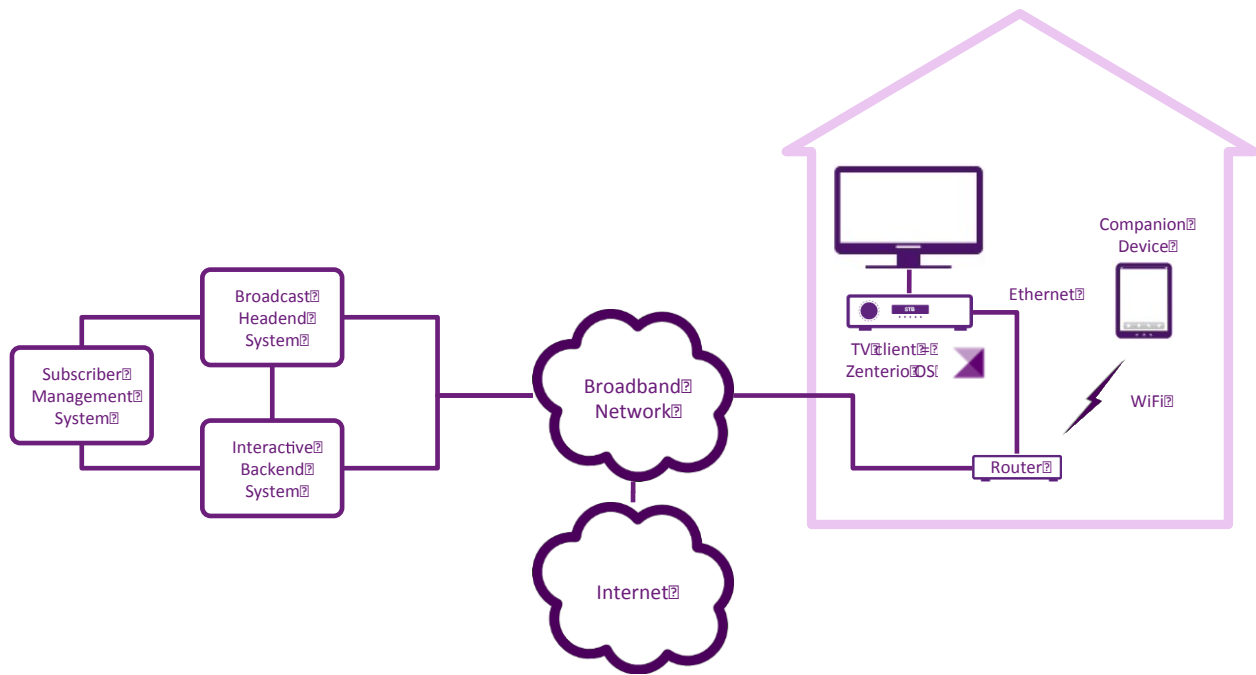


Figure 5. Zenterio OS implemented in an IPTV environment

“ The rollout of Zenterio OS at Telekom Romania is yet another confirmation that Zenterio provides the solution that large TV operators, such as Deutsche Telekom, need to deliver innovative TV experiences to their customers. Furthermore, this project is a clear example of how Zenterio’s strategic partnership with Viaccess-Orca has led to the joint development of a powerful interactive TV offering ”

- Robin Rutili, CEO at Zenterio

With the launch of Telekom TV, Telekom Romania wanted to provide a high QoS and QoE to subscribers of its IPTV service. Long zapping times, the delay between changing channels, would create customer dissatisfaction and risks of churn. Broadpeak's fast channel change technology was chosen by Telekom Romania to address this issue. Broadpeak's solution relies on an agent, inside of the customer STB, capable of detecting channel switching and interacting with a specific server, Broadpeak's BkE100, to accelerate the channel change. The BkE100 handles the user requests and sends live bursts in unicast, allowing the user to receive the first video frame much more quickly. This significantly decreases channel change delays for end-users. Simultaneously, the agent joins the standard multicast stream and fills the STB buffer for decoding and displaying the video content.

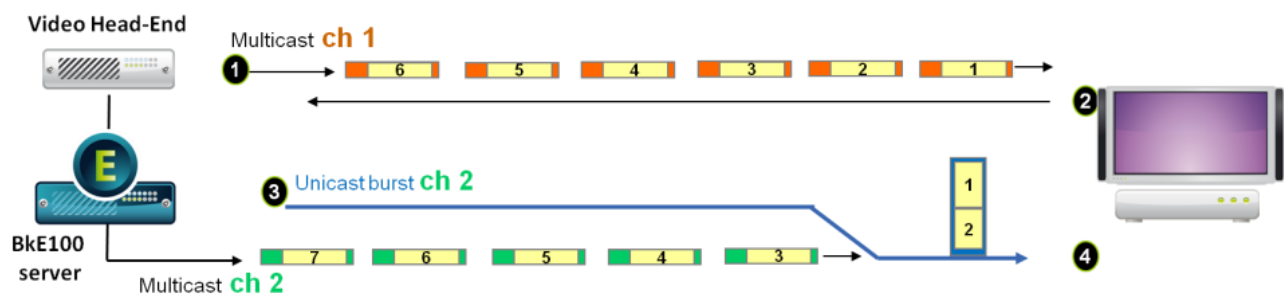


Figure 7. Broadpeak's fast channel change solution relies on a unicast burst and a smooth transition to the multicast stream to speed zapping time

Broadpeak's agent has been integrated with Zenterio's STB middleware, dramatically improving channel change times for the new IPTV service. In addition, Broadpeak's technology allows Telekom Romania to compile analytics on viewers' consumption habits. Using the data, the operator can determine what the most popular channels are, how long live content is watched, when the peak times are occurring, etc. This allows Telekom Romania to anticipate peaks in video consumption and adapt marketing campaigns.

Benefits Provided by Broadpeak Technology

Since installing the new technologies, Telekom Romania has noticed a huge improvement in zapping times. A test of the network showed that with Fast Channel Change (FCC) service enabled, channel switching times have diminished by a minimum of 60 percent, allowing viewers to change channels in less than 0,5 second in most cases.

Broadpeak's solution is fully scalable, enabling Telekom Romania to easily address future traffic growth. Based on an open architecture and with the support of flexible, operational teams, it offers seamless integration with middleware providers via the use of APIs, even in a pre-existing streaming environment. The Broadpeak solution also provides packet loss recovery services for an improved QoS. When packets are lost in the RTP network, the agent will detect the missing packets and send them again from the Broadpeak server.

“ Tight collaboration between the project management teams, combined with the operations team being able to meet under one roof, enabled us to meet Telekom Romania's short deadlines ”

- Jacques Le Mancq, CEO at Broadpeak

Friendly Technologies

Telekom Romania has deployed Friendly Technologies' FriendlyQoE Monitoring Pro to measure quality of service for its IPTV service from the subscriber's endpoint. Based on the unique QoE Proxy technology that facilitates monitoring millions of devices via TR-069 protocol, FriendlyQoE Monitoring Pro detects services' KPI degradation and generates alerts. By allowing Telekom Romania to take proactive measures and maintain higher QoE, Friendly Technologies helps decrease churn, increase subscriber satisfaction, and strengthen customer loyalty.

Despite the fact that Telekom Romania had been using a TR-069-based solution from Friendly Technologies to remotely manage millions of subscribers' devices since 2009, this project was challenging because it involved expanding the existing installation base with the advanced FriendlyQoE Monitoring Pro solution without system interruption. Given that there were multiple components involved with this project, it was difficult to complete the integration of all the solution's modules (provided by numerous technological partners) and to ensure the smooth workflow of one integrated system. Throughout the entire project, all technology partners worked as one team to analyze technical and operational issues. Action items were mutually decided on in order to find the best approach for successful problem resolution.

Thanks to integration leadership provided by Viaccess-Orca, Friendly Technologies was able to successfully introduce the new solution alongside the already operational TR-069 device management system.

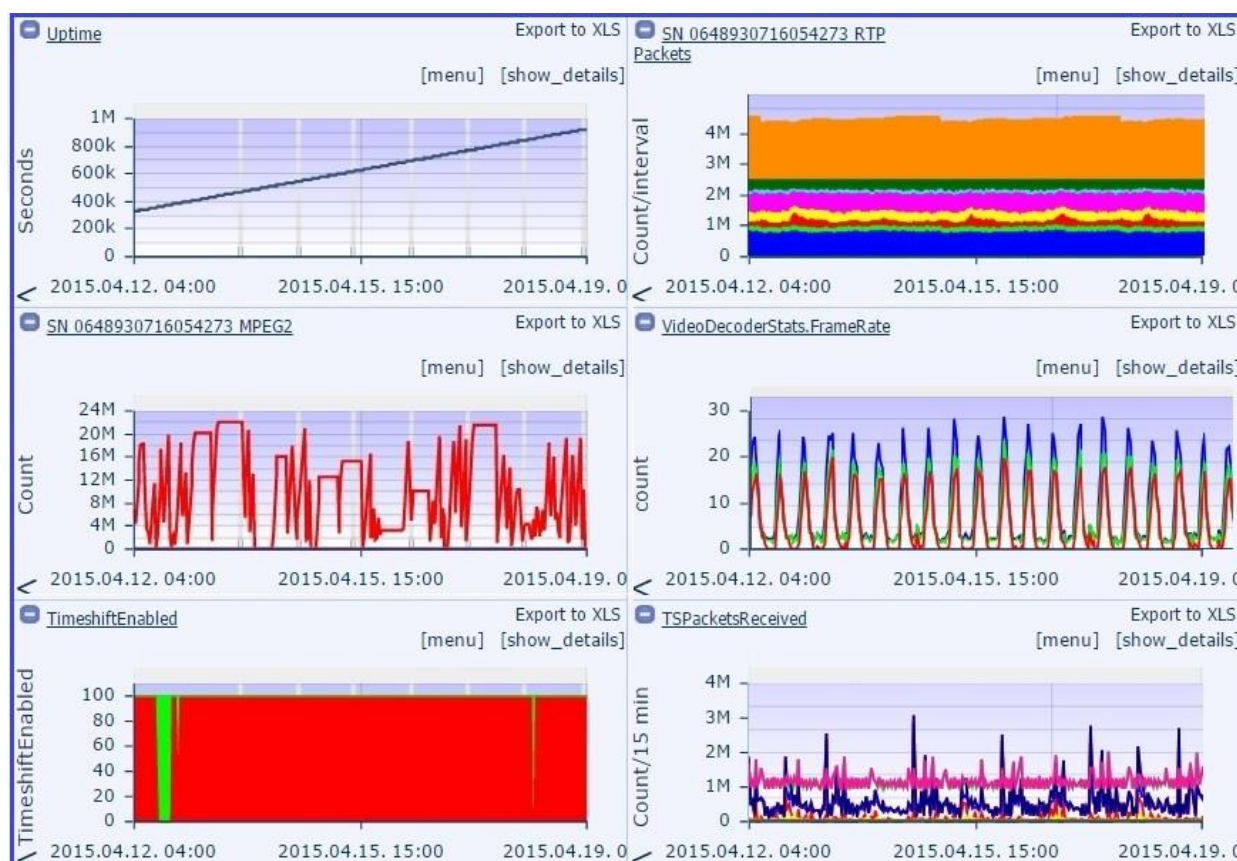


Figure 9. Example of FriendlyQoE Monitoring Pro, which measures QoS from the subscriber endpoint

Benefits Provided by Friendly Technologies

Customer QoE management and reduced churn: The most significant competitive advantage that separates one service provider from another is QoS. FriendlyQoE Monitoring Pro enables Telekom Romania to deliver and maintain a consistently high level of service to subscribers by constantly monitoring and collecting KPIs of Telekom Romania's IPTV service and proactively identifying problems such as bottlenecks and system degradation. Collected data is used to analyze device performance and verify that subscribers get the proper SLA.

The ability to identify possible problems before they occur: FriendlyQoE Monitoring Pro detects performance degradation and sends alerts to back-office systems, based on threshold breaches. Alerts are issued via SNMP traps, by e-mail, or through a Web service. After analyzing the problems, Telekom Romania can take proactive measures to prevent major system disruptions.

Smart formulas for precise QoE analytics: The smart processing of customer data allows precise and proactive measurements that ensure a high level of delivered services. FriendlyQoE Monitoring Pro uses smart formulas to monitor customer usage and perform pattern analysis based on geographical location, user group, or technology aggregators, in real time.

Easily generated graphs and reports: FriendlyQoE Monitoring Pro includes a powerful and easy-to-use graph and report generator that enables easy generation of performance reports using historical KPI measurement, pattern analysis, customer behavior, forecasting, and more.

Reduced costs: By identifying and solving problems before they are experienced by the customer, FriendlyQoE Monitoring Pro enables Telekom Romania to reduce the number of calls to the support center and cut operational costs.

“ Friendly Technologies is proud to be part of Viaccess-Orca's innovative IPTV and OTT multiscreen solution deployed by Telekom Romania. FriendlyQoE Monitoring Pro proactively monitors IPTV subscriber experience, enabling Telekom Romania to maintain higher levels of customer satisfaction, leading to increased loyalty and reduced churn ”

- Nir Ezer, Vice President of Sales and Marketing at Friendly Technologies

A key challenge that operators like Telekom Romania face when enhancing their broadcast offering with video delivery to every screen is to create a best-of-breed offering that allows consumers to share the same high-quality experience across all connected devices, despite varying network conditions. Another challenge is finding a complete and comprehensive video processing solution from one vendor. Harmonic’s solution was selected based on the company’s extensive experience in multiscreen deployments and open interfaces, as well as pre-integration with Viaccess-Orca’s Voyage solution, which allowed a fast time to market.

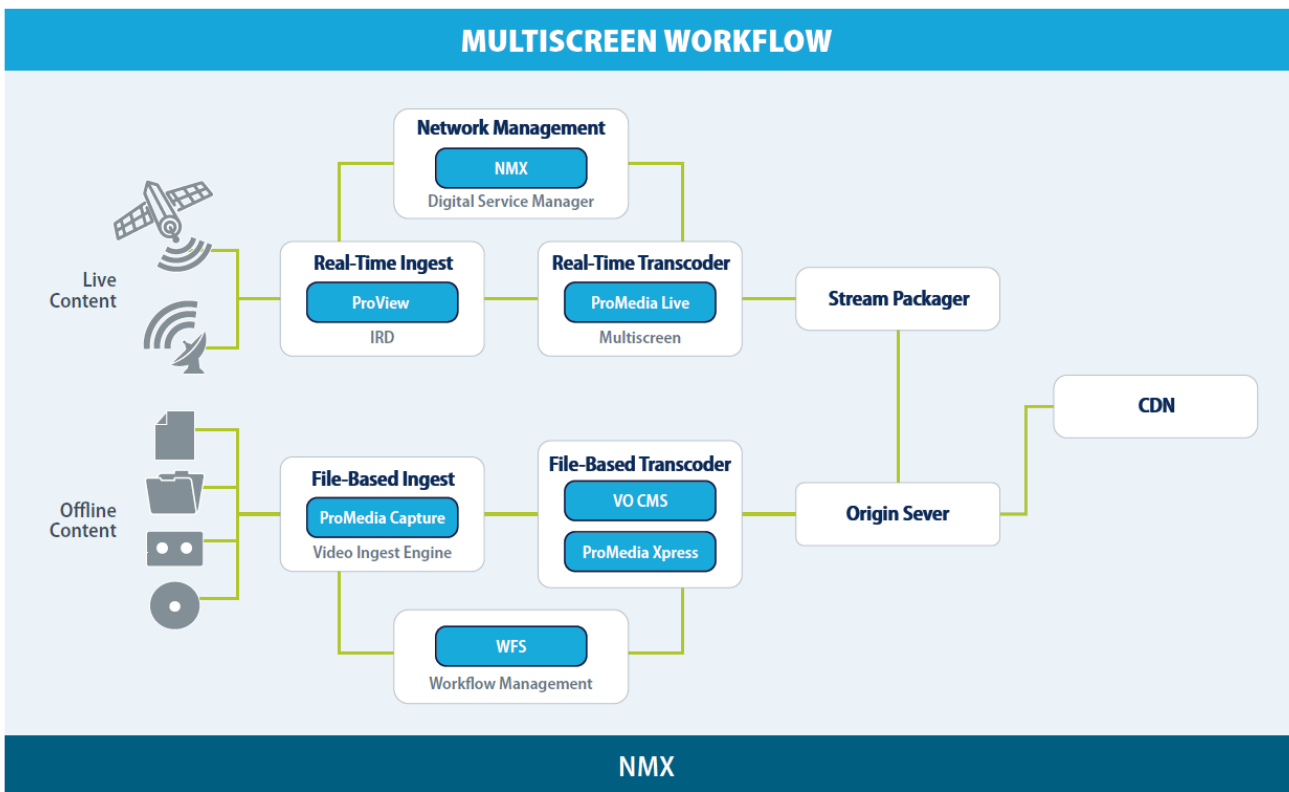


Figure 6. The Harmonic solution at Telekom Romania

The Harmonic solution at Telekom Romania consists of a content preparation suite for live and file-based transcoding and a file-based workflow engine. Harmonic’s solution is pre-integrated with Viaccess-Orca’s Voyage - TV Everywhere ecosystem, eliminating risks traditionally associated with introducing a new system, allowing for a quick delivery time. This allowed Telekom Romania to get its OTT multiscreen service up and running fast, while ensuring the highest possible user experience and video quality across all connected devices.

Using Harmonic's ProMedia® Live real-time transcoders, baseband SD and HD MPEG-2/MPEG-4 AVC (H.264) content is converted into multiple streams optimized for OTT multiscreen delivery. Harmonic's advanced video compression technologies provide premium HD video quality at the lowest possible bitrate, ensuring a superior quality of experience for Telekom Romania viewers on every screen,

including TVs, PCs, smartphones, and tablets. ProMedia Live simplifies processing by efficiently handling metadata information, such as language, captions, ad signaling, and insertion upon input and output.

Telekom Romania's VOD services are powered by Harmonic's ProMedia Xpress multiscreen transcoder. ProMedia Xpress performs faster-than-real-time transcoding of high-quality SD and HD video, all from a file-based architecture that can easily be scaled to meet the operator's growing needs. Using the high-performance solution, Telekom Romania can significantly increase the content hours delivered while adhering to strict processing timetables and video quality targets in a cost-effective and scalable way.

ProMedia Xpress employs Harmonic's MicroGrid™ parallel-computing technology to achieve a dramatic improvement in transcoding performance over stand-alone processing platforms. By splitting large transcoding jobs into thousands of tiny ones, each of which is completed concurrently, MicroGrid removes the bottlenecks associated with traditional transcoding architectures. The transcoding farms are controlled by Harmonic's WFS™ file-based workflow engine, which provides automated processing of high-volume transcoding tasks, such as failover support, job distribution management, job prioritization, load balancing, file transfer, status monitoring, and job notification, increasing Telekom Romania's operational efficiencies.

Telekom Romania is managing the ProMedia Live and ProMedia Xpress transcoders using Harmonic NMX™, a powerful set of tools for monitoring and managing compressed digital video and audio services, as well as the systems through which they flow. Through a simple and workflow driven user-friendly interface, NMX allows Telekom Romania to create and modify services as well as set detailed system parameters, whether encoding or rate-shaping, to ensure smooth operation, which is critical, especially as the volume of video being transcoded increases.

Benefits Provided by Harmonic Technology

Harmonic's multiscreen video processing solution meets all of Telekom Romania's requirements by transcoding live and VOD content at industry-leading video quality and delivering content in a vast array of formats and standards in a cost-effective and scalable manner. By providing a complete solution for OTT multiscreen delivery, Harmonic allows agile and easy integration with existing infrastructure components and third-party equipment.

Working closely with Viaccess-Orca and a variety of other vendors, Harmonic helped Telekom Romania launch its OTT multiscreen service much quicker than the timetable typically associated with a project this complex. As Telekom Romania's service grows, Harmonic's solutions will provide the scalability needed to add new channels while providing crystal-clear video quality.

“ Harmonic offers the most complete solutions approach for OTT and multiscreen services, including carrier-grade control and monitoring capabilities. This enables operators like Telekom Romania to stream high-quality live, VOD, time-shifted TV, and cloud DVR content to connected TVs, STBs, PCs, tablets, and smartphones at market-leading video quality, dynamically adjusting to any network conditions, and at a fraction of the bandwidth of other solutions on the market ”

- Ofer Aharon, Senior Product Line Manager, Multiscreen at Harmonic

Telekom Romania is using the Accedo VIA Multi-Screen Solution to provide a best-in-class user experience to new and existing viewers on multiple popular platforms ranging from Smart TVs and game consoles to tablets, smartphones, and PCs. The Accedo VIA Multi-Screen Solution, which includes app configuration and smart user interface control, user authentication and profile sharing, and a payment gateway for rental or premium content subscription, has been integrated with Viaccess-Orca's RiGHTv service delivery platform for video on demand and live TV.

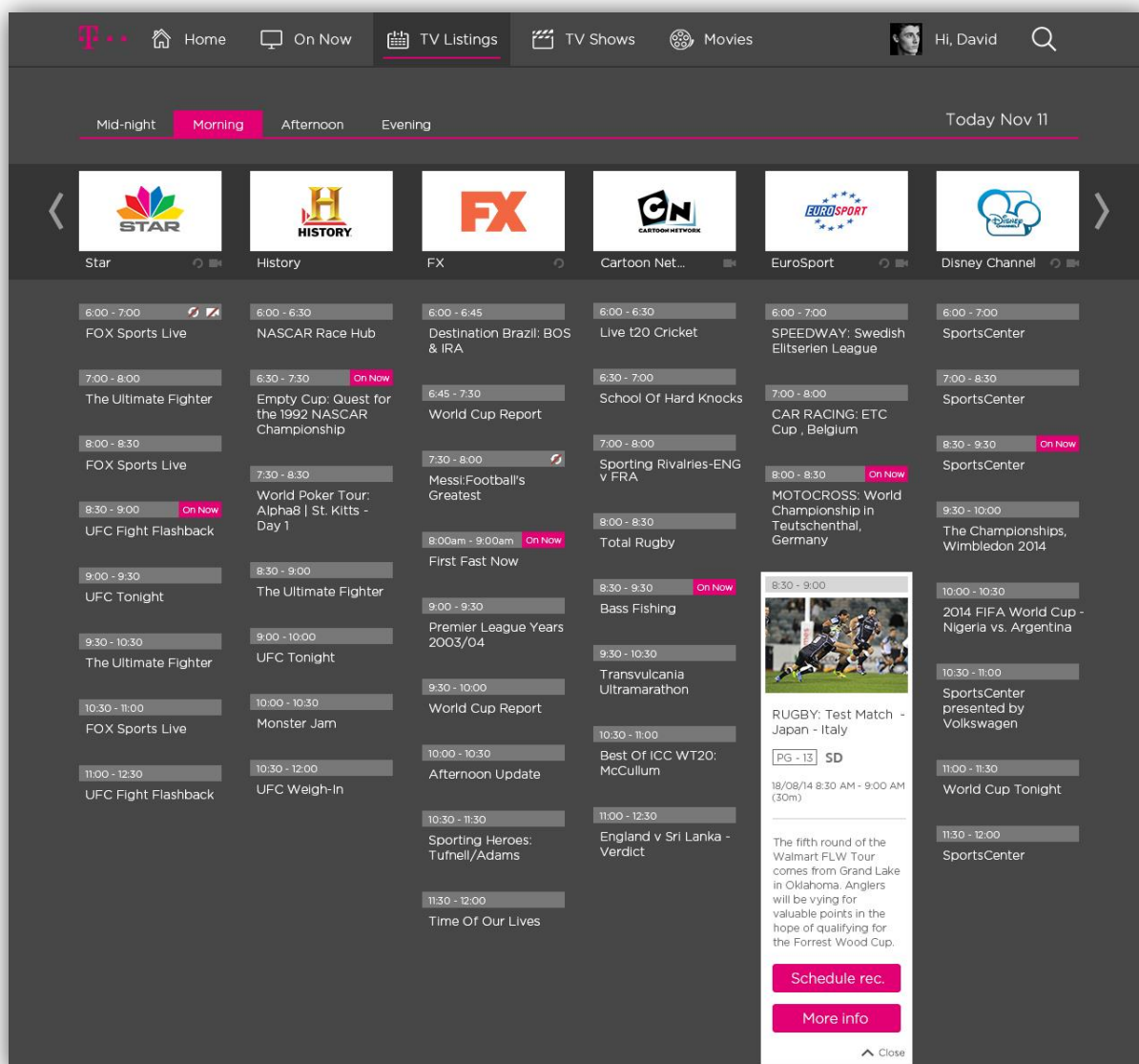


Figure 8. Telekom Romania PC portal powered by Accedo VIA Multi-Screen Solution

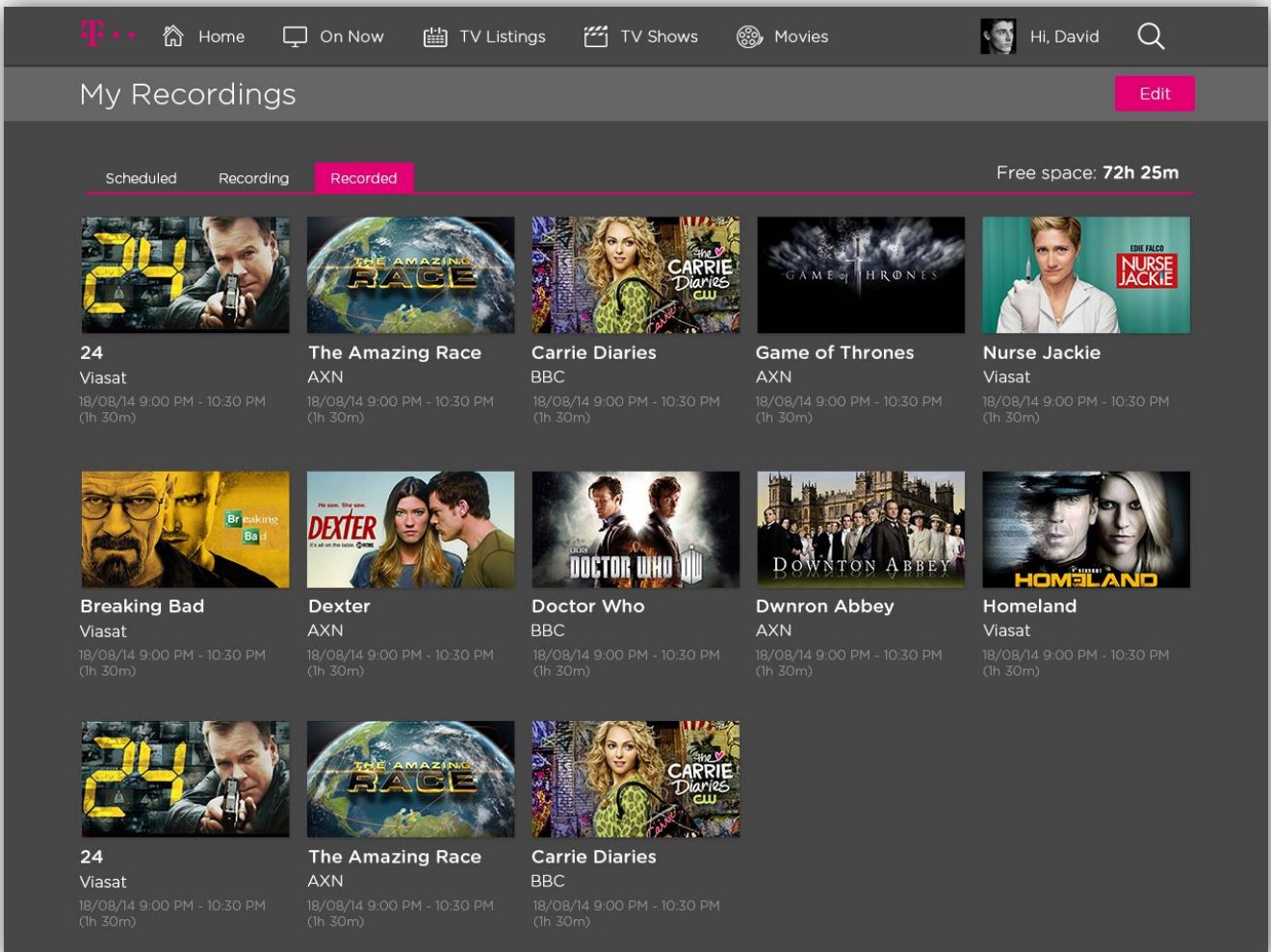
Making the payment platform live at Telekom Romania was difficult, since it was being developed remotely. Accedo worked directly with the local payment provider and Viaccess-Orca's integration team. Together, Accedo and Viaccess-Orca finished the integration successfully.

Benefits Provided by Accedo Technology

The Accedo VIA Multi-Screen Solution provides Telekom Romania customers with access to video-on-demand and live TV content on major connected devices while enabling the operator to quickly launch multiplatform applications with an unparalleled time to market. Featuring a flexible yet intuitive administration console for maintaining application configurations, VIA enables Telekom Romania to make continuous changes to applications throughout their entire lifecycle.

“ We are excited to work with Viaccess-Orca to deliver a state-of-the-art OTT offering for Telekom Romania, powered by the Accedo VIA Multi-Screen Solution. As consumers demand content anywhere on any device, services like Telekom TV are particularly compelling, offering a wide range of exclusive content across multiple platforms ”

- Michael Lantz, CEO at Accedo



Telekom Romania is using a media content delivery solution from Akamai to assure reliable distribution of high-performance HTTP-based live and on-demand streaming media. Akamai’s solution allows Telekom Romania to reach audiences reliably, scale rapidly, and provide a high-quality on-demand viewing experience on any device while offering media encryption for content security. In addition, it gives Telekom Romania the flexibility to extend its service offering beyond the Romanian target audience, if required.

As Telekom Romania’s content delivery provider, Akamai was entrusted to protect the operator’s valuable media assets from misuse or misappropriation and provide on-the-ground, ongoing support. Akamai’s local engagement teams worked closely with Viaccess-Orca to address the particular deployment requirements that would enable Telekom Romania to achieve its service vision — a superior multiscreen service to millions of subscribers that offered high levels of interactivity and personalization, enabling audiences to tap into live or streamed content on-demand.

Service versatility and availability were a must have, as was an optimized streaming experience that would address the multidevice challenge. Similarly, the ability to provide local advice and support to Telekom Romania post-deployment would help to smooth the journey by eliminating technical and operational hurdles.

Working collaboratively, the teams defined a solution that combined various Akamai services to support HTTP delivery of content. Starting with Akamai Adaptive Media Delivery to ensure the best possible consumer viewing experience, the solution also includes Akamai Media Services Live for reliable live content ingestion and Akamai Media Services On-Demand.

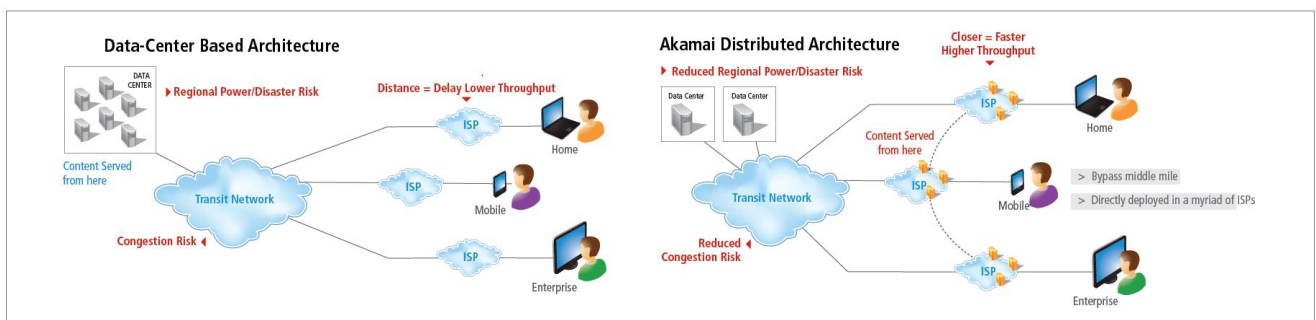


Figure 10. By bringing the content closer to the viewer, Akamai’s distributed architecture helps provide the fast, reliable, and high quality of experience that online audiences increasingly expect

Benefits Provided by Akamai Technology

Today's audiences expect instant, uninterrupted access to content and an engaging viewing experience on any device. With significant infrastructure located in Romania, Akamai was able to demonstrate it could address the realities of latency, congestion, and packet loss that can significantly limit online video quality.

By leveraging its distributed network of servers located close to users, Akamai has minimized the impact of network congestion to deliver a consistent viewing experience for Telekom Romania's subscribers. Akamai's solution also enables Telekom Romania to monitor streaming delivery quality by keeping track of traffic visitors for both on-demand and live media video content streaming.

By sending specialist teams to work locally with Viaccess-Orca and Telekom Romania, Akamai was able to seamlessly collaborate and support the platform deployment with an end-to-end solution that matches Telekom Romania's unique business model.

“ Addressing the needs of today's digital media & entertainment companies requires deep capabilities, a highly flexible approach to media delivery – combined with a deep understanding of their unique operational challenges, bringing everything together for this implementation meant working hand-in-glove with all parties involved – and insuring that post-deployment they had access to technical advisors to support any eventuality ”

- Soeren Lindkvist, VP Scandinavia, Benelux & EMEA East at Akamai Technologies

Summary & Results

Today's television viewers have an insatiable appetite for high-quality, interactive content on every screen, including TVs, PCs, smartphones, and tablets. Working together, the vendors involved with this project have helped Telekom Romania launch a compelling television experience anytime, anywhere, on any device. This project is innovative because it demonstrates how one of Europe's largest pay-TV operators was able to successfully launch a personalized and interactive television experience on every screen with "Telekom TV" in just five short months.

By choosing an open best-of-breed solution, supplied from a variety of ecosystem partners, vs. a single proprietary platform from one vendor, Telekom Romania has greater control over the Telekom TV features and service. Having the freedom to choose the best vendor for each piece of technology not only lowers CAPEX and OPEX, which is important for an operator like Telekom Romania with a low ARPU, it also opens up innovation and increases efficiency, enabling a more rapid service deployment.

Since deploying Voyage end-to-end TV Everywhere solution, Telekom Romania has dramatically expanded its pay-TV offering, successfully monetized multiscreen TV services through advanced business models, and been able to quickly respond to market demands, leading to increased revenue streams. The ability to deliver content beyond the Telekom Romania customer base via OTT monthly subscriptions also allows Telekom Romania to increase the services' reach resulting in revenue.

“ The Telekom Romania project was unique in several ways. Not only was it one of the fastest IPTV deployments in history, it was also characterized by tight team collaboration among the participating partners. We truly worked as a team with a common goal rather than being separate solution vendors ”

- Edward Rutgeron, Project Manager at Zenterio



Figure 10. Telekom TV video by Telekom Romania ([click](#) to watch the video)

About Us



About Telekom Romania

Telekom Romania is a new and dynamic telecommunication brand, offering complete, innovative, simplified and customized mobile and fixed communication services for a vast customers' community, using approximately 10 million services.

Through the two operators, Telekom Romania Communications and Telekom Romania Mobile Communications, Telekom Romania provides a complete range of telecommunication services, for a full and rewarding customer experience: 3G and 4G mobile voice and mobile data services, traditional fixed telephony, high speed internet and television on multiple technologies, including IPTV, as well as high quality content and exclusivities in order to complete the entertainment experience. For business customers, the new brand is the promise for delivering turn-key IT&C solutions which support companies becoming more competitive and agile.

Telekom Romania brand is present on the Romanian market since 2014, after the joint rebranding of Romtelecom and COSMOTE Romania.

Telekom Romania is a brand pertaining to Deutsche Telekom, one of the world's leading integrated telecommunications companies with around 151 million mobile customers, 30 million fixed-network lines and more than 17 million broadband lines (as of December 31, 2014). The Group provides fixed network, mobile communications, Internet and IPTV products and services for consumers and ICT solutions for business customers and corporate customers. Deutsche Telekom is present in more than 50 countries and has approximately 228,000 employees worldwide. The Group generated revenues of EUR 62.7 billion in the 2014 financial year – more than 60 percent of it outside Germany.

For more information, visit www.telekom.ro



About Viaccess-Orca

As a leading global provider of content protection, delivery, and discovery solutions, Viaccess-Orca is shaping the ultimate content experience. Through its integrated range of business-savvy products and solutions, Viaccess-Orca helps service providers in the cable, DTT, satellite, IPTV, and OTT industries gain a competitive edge in today's rapidly evolving multiscreen environment. By enabling service providers to securely deliver an engaging user experience on any device, Viaccess-Orca is reinventing the entertainment landscape. Viaccess-Orca is part of the Orange Group.

For more information, visit www.viaccess-orca.com | [Twitter](#) | [LinkedIn](#)

About Capgemini



With more than 125,000 people in 44 countries, Capgemini is one of the world's foremost providers of consulting, technology, and outsourcing services. The Group reported 2013 global revenues of EUR 10.1 billion.

Together with its clients, Capgemini creates and delivers business and technology solutions that fit their needs and drive the results they want. A deeply multicultural organization, Capgemini has developed its own way of working, the Collaborative Business Experience™, and draws on Rightshore®, its worldwide delivery model.

For more information, visit www.capgemini.com
Rightshore® is a trademark belonging to Capgemini

About Zenterio



Zenterio develops an independent software platform, Zenterio OS, for interactive TV that is positioned to become a global standard. Zenterio's software can be used on any new and existing hardware. With Zenterio OS, operators can quickly and cost-effectively provide new interactive services and applications. Zenterio partners with global system integrators, set-top box suppliers, CA/DRM providers, and chipset manufacturers. The company evolved from the former Nokia Home Communication, which Nokia divested in 2002. Zenterio has more than 200 employees that represent 25 different nationalities. Its headquarters are in Stockholm and its R&D center is in Linköping, Sweden. The company has sales offices in Prague and Milan. Zenterio is an unlisted company and is mainly owned by private investors and private equity firm Scope. The chairman of the board is former Nokia CEO Mr. Olli-Pekka Kallasvuo.

For more information, visit www.zenterio.com | [Blog](#) | [LinkedIn](#)

About Harmonic



Harmonic (NASDAQ: HLIT) is the worldwide leader in video delivery infrastructure for emerging television and video services. The company's production-ready innovation enables content and service providers to efficiently create, prepare, and deliver differentiated services for television and new media video platforms.

For more information, visit www.harmonicinc.com

About Broadpeak



Broadpeak designs and manufactures video delivery components for content providers and network service providers deploying IPTV, cable, OTT, and mobile services. Its portfolio of solutions and technologies powers the delivery of movies, television programming, and other video content over managed networks and the Internet for viewing on any type of device. The company's systems and services help operators increase market share and improve subscriber loyalty with superior quality of experience.

Broadpeak supports all of its customers worldwide, from simple installations to large delivery systems reaching capacities of several million of simultaneous streams. Broadpeak systems leverage the long legacy of Technicolor's excellence in broadcast and broadband content delivery from where the founders and technology originated. The company is headquartered in Rennes, France.

For more information, visit www.broadpeak.tv | [Twitter](#)

About Accedo



Accedo is the market-leading enabler of TV application solutions. Accedo provides applications, tools, and services to media companies, consumer electronics, and TV operators globally, to help them deliver the next-generation TV experience. Accedo's cloud-based platform solutions enable customers to cost-efficiently roll out and manage application offerings and stores for multiple devices and markets.

Accedo is headquartered in Stockholm, Sweden with branch offices in London, Madrid, New York, Palo Alto, Los Angeles, Hong Kong, Sydney, Santiago de Chile, Auckland, Budapest, and Cologne.

For more information, visit www.accedo.tv | [Twitter](#) | [Facebook](#)



About Friendly Technologies

Friendly Technologies' device management solutions improve subscribers' quality of experience and streamline the deployment and support of data, VoIP, IPTV, and IoT/M2M services. Based on the TR-69, OMA-DM, and SNMP standards, the solutions streamline and simplify the entire service life cycle of broadband, mobile, and IoT/M2M devices, from their deployment to their on-going management and support.

Friendly's solutions manage various devices: RG/iAd, xDSL Routers, Home Gateway, IPTV STBs (including OTT), ATA, VoIP Phones, WiFi, femtocells, dongles, storage devices, mobile hotspot devices, Smart Home devices, and more.

Friendly's solutions service xDSL, FTTH, cable, satellite, WiMax/LTE, as well as OTT.

For more information, visit www.friendly-tech.com | [LinkedIn](#) | [YouTube](#)



About Akamai

As the global leader in Content Delivery Network (CDN) services, Akamai makes the Internet fast, reliable and secure for its customers. The company's advanced web performance, mobile performance, cloud security and media delivery solutions are revolutionizing how businesses optimize consumer, enterprise and entertainment experiences for any device, anywhere. To learn how Akamai solutions and its team of Internet experts are helping businesses move faster forward, please visit www.akamai.com

[Blog](#) | [Twitter](#)

Appendix A – Acronyms

- ABR: Adaptive Bitrate
- API: Application Program Interface
- ARPU: Average Revenue Per User
- AVC: Advanced Video Coding
- CAPEX / OPEX: capital Expenditure / Operational Expenditure
- CAS: Conditional Access System
- CDN: Content Delivery Network
- CMS: Content Management System
- DRM: Digital Rights Management
- DTH: Direct to Home
- DVB: Digital Video Broadcasting
- DVR: Digital Video Recording
- EPG: Electronic Program Guide
- FCC: Fast Channel Change
- HTTP: Hypertext Transfer Protocol
- IPTV: Internet Protocol Television
- KPI: Key Performance Indicator
- MIB: Management Information Base
- NMX: Harmonic's Network Management Solution
- nPVR: Network Personal Video Recording
- OMP: Online Messaging Platform
- OS: Operating System
- OSS / BSS: Operational Support System / Business Support System
- OTT: Over the Top
- QoE: Quality of Experience
- QoS: Quality of Service
- RTP: Realtime Transport Protocol (used by STBs)
- SD / HD: Standard Definition / High Definition
- SNMP: Simple Network Management Protocol
- STB: Set Top Box
- VOD: Video on Demand
- XMLTV: XML based file format for describing TV listings

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