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Multiscreen 2.0 for the Full Triple Play

Solving operator challenges and adapting to changing user expectations with the personalized, multi-screen, converged user experience

White Paper

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Introduction

The telecom and cable operator industry is undergoing rapid and accelerated change with significant impacts to business models, retention strategies, service offerings, and technology investment.

The driving forces behind these changes are:

- The proliferation and broad adoption of tablets, smartphones, smart TVs, and other mobile devices
- The consumer expectation of an elevated user experience, driven by apps that combine services in new and innovative ways
- The threat of over-the-top solutions that leverage IP networks to deliver services equivalent to operator core offerings across voice, video and messaging.

This whitepaper not only presents the issues operators face in this new business and customer landscape but also offers solutions, recommendations, and strategies to combat these issues by leveraging operator strengths and technologies in new and creative ways.

The white paper is concluded with a real-world case study of one operator's approach to solve these issues.

Operator Challenges

The changes that operators are facing are being intensified by the arrival of what was once called "convergence". Convergence is the end-game of the rollout of technologies such as PacketCable 2.0/IP Multimedia Subsystems (IMS), Web 2.0 Frameworks, VOIP, and IPTV. These new technologies unite heterogeneous services into flexible, interoperable, and dynamic IP-based telecommunications offerings.

Operators now compete in a more competitive and technologically open environment. Users now expect operators to deliver connectivity and to provide an arsenal of services and capabilities—capabilities that, when combined in new and exciting ways, transform and evolve their businesses and lead to higher levels of customer satisfaction and loyalty.

Business Model Changes and Increased Competition

The network remains critical, but it is less relevant to the underlying service

Consumers are finding it increasingly difficult to understand or care about how they connect to receive services on their screens and devices. The distinctions between landlines, cellphone networks, and WIFI are being blurred and are becoming less important to the end user. While the

need for speedy connectivity remains critical (and grows by the day), the type of connectivity matters less and less.

This separation of network from service is occurring for several reasons.

- Technology now seamlessly takes care of how the end user connects.
- IP services now run on one underlying organic network stitched together by any and all access technologies. In the past, operators delivered specific services in specific ways for each of these networks. This has significantly changed because the latest converged technologies enable any service to be delivered on any of the networks.
- IP technologies also empower competitors to deliver these services as well— directly competing with the cable and telecom operators.

Over-the-top (OTT) services result in a loss of customer ownership and revenue

Over-the-top (OTT) services are third-party services carried over operator networks, delivering value to customers without service provider involvement in the planning, selling, provisioning, or support of the services. Services characterized as OTT typically compete with network operator's traditional services, like video, voice, and messaging.

While OTT services drive network data revenue, operators have lost revenue opportunities related to product application subscriptions, content, and advertising.

A differentiating feature of OTT services is their strength in delivering a multiscreen experience. Unencumbered by device-centric infrastructure and non-IP based services, OTT providers are able to use any network and any device to reach their subscriber in a seamless, personalized, and multiscreen manner.

Silos slow operator's ability to launch multiscreen, integrated services

Operators have two challenges when delivering their own unified multiscreen services to combat the OTT threat.

First, operators have invested in device-centric service infrastructures. For example, live television and electronic program guides (EPG) use completely different hardware, software, and delivery methods for mobile devices and set-top-boxes. Features are frequently out of sync and the user experience is radically different for each of these screens.

Second, internal organizational structures have slowed the launch of integrated services. Established silos divide departments between video, voice, and data services. These departmental divides exist because these services have evolved at different times, in different ways, and with different methods of transmission. While many operators are moving to a more seamless, convergent

organizational structure, it is a huge undertaking and takes considerable time, expense, and effort to achieve. This hinders unification of services on multiple screens.

While only time and realignment can solve the organizational issue, technology can help drive the paradigm shift from device-centric to user-centric experiences. The market must drive the speed of organizational and technical realignment. These market dynamics, and the shift towards unified multiscreen solutions, are discussed in the next section.

Changing User Expectations

There is a growing trend among consumers to own multiple devices. Wireless Intelligence found that 32 percent of U.S. women had more than one connected device. Consumers in Canada and the U.S. had 1.3 cellular connections in the third quarter of 2009 and more than the 25 percent of American and Canadians used multiple handsets [1].

Smartphones are entering the mainstream. In late 2010, global smartphones sales outpaced PC sales for the first time. US smartphone penetration is quickly reaching beyond 35% to 45%. Worldwide mobile Internet usage is accelerating. In 3 years more US Internet users will access the Web through mobile devices than through PCs, according to IDC. Google has seen US mobile queries grow by four-fold in past year. In 2012 IDC expects 15%-30% of site traffic to be mobile.

Mobile technologies have further accelerated the pace of change through the introduction of powerful connected mobile devices running a variety of focused mobile apps. Many of these mobile apps blend services together in new ways. For example, over-the-top services like Hulu, Skype and WhatsApp take traditional operator services (video, voice, and messaging) and enhance them with mobile and social elements.

The proliferation and broad adoption of tablets, smartphones, smart TVs, and other mobile devices has fundamentally changed user expectations. These changing expectations are driven by the following factors:

- Users own and share multiple devices
- The web used to be where most online activity took place and now mobile users are the most active, and therefore the most valuable users
- Mobile users expect services and information to be available everywhere and on any device
- There are many mobile apps that fragment the mobile experience and users are beginning to see value in integrated experiences once again

	Global	Developed Nations	Developing Nations	Africa	Arab States	Asia & Pacific	CIS	Europe	The Americas
Mobile cellular subscriptions (millions)	5,981	1,461	4,520	433	349	2,897	399	741	969
Per 100 people	86.7%	117.8%	78.8%	53.0%	96.7%	73.9%	143.0%	119.5%	103.3%
Fixed telephone lines (millions)	1,159	494	665	12	35	511	74	242	268
Per 100 people	16.6%	39.8%	11.6%	1.4%	9.7%	13.0%	26.3%	39.1%	28.5%
Active mobile broadband subscriptions (millions)	1,186	701	484	31	48	421	42	336	286
Per 100 people	17.0%	56.5%	8.5%	3.8%	13.3%	10.7%	14.9%	54.1%	30.5%
Fixed broadband subscriptions (millions)	591	319	272	1	8	243	27	160	145
per 100	8.5%	25.7%	4.8%	0.2%	2.2%	6.2%	9.6%	25.8%	15.5%

people									
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Key Global Telecom Indicators for the World Telecommunication Service Sector in 2011(all figures are estimates)

Source: [International Telecommunication Union](#) (November 2011) [7]

Users expect a user-centric experience not a device-centric experience

Consumers expect to have access to the same content across all their devices. This design paradigm of “any content on any device” makes it easy and enjoyable to move from screen to screen and resume where they left off.

Users expect a user-centric experience not a device-centric experience. User-centric expectations can be understood through the following user wants:

- I want the ability to accomplish tasks in multiple ways depending what I am currently doing
- I have access to many devices and I don't want to think about which device I can use, I just want to use whatever device I choose
- I want a seamless experience
- I want simplicity
- I want a secure and personalized experience

Users expect their mobile experience to be fast

Mobile users expect a rich, engaging mobile website and app experiences. According to a recent consumer survey, 89% of US mobile web users expect a website to load on their mobile phone in 5 seconds or less. IDC independently confirmed that 75% of the top 80 US mobile websites did not meet the expected performance of the mobile end user [5]. This expectation extends to app performance.

Users expect their experience to work offline

Mobile connections frequently go on and offline. This is a reality of the mobile experience. Users are becoming frustrated with apps that lock them out of the user experience when their connection is unavailable. Many tasks are capable of being performed offline followed by smart synchronization once the device is back online. Users expect smart caching of content so they can interact with audio, video, and voicemail messages when their device is offline.

Users will install fewer apps and expect higher quality apps

ABI Research predicts that by 2013 mobile app downloads on smartphones will peak. Demand for downloadable applications is projected to eventually level off. Downloads of mobile applications from “app stores” will peak in 2012-2013 and will then begin a slow decline in numbers. Even at the end of 2015, however, some 1.2 billion apps will be downloaded [5]. The slowing in the app trends will lead to fewer installed apps and a maturing of the mobile app market.

Users expect an integrated experience

A mash-up is an application that uses and combines data, presentation or functionality from two or more sources to create new services. Mashed-up services are becoming a driver of innovation in mobile services across devices.

Social network functionality embedded inside apps is one of the most common service mash-ups. For example, users can tweet and post to Facebook relevant game information while they are engaging in a mobile game experience. Social networking has further accelerated this trend towards integrated services through apps that connect you to social networks while engaging in other mobile activities.

Users expect a personalized experience

Operators typically organize billing accounts into households without considering the individual members within the household. Users expect personalized experiences and the only way operators are able to deliver these services is through federating them to the appropriate individuals within the household.

This becomes even more important when extending operator services to mobile devices that require personalization to be enabled to ensure personal services (like cellular voice and messaging), and shared services (TV subscriptions, home phone, etc.).

Operator Strategies to Meet Changing Expectations in a Multiscreen World

Operators are under threat from competitors across all of their core services; voice, video, and messaging. The operator business models have significantly changed. These new business models require new operator solutions that are effective in this new business and technology landscape.

In 2006 IBM found that telecom CEOs differ from their peers in other industries in two key respects: they were putting too much emphasis on new product development and giving too little attention to business model innovation. IBM also found that there is a strong relationship between business model innovation and faster-than-average operating margin growth [6].

A key to operator success is finding new ways to do business through collaborating with innovative partners to capitalize on the business model disruption. Operators are in the process of adjusting their business models to maintain revenue growth.

The various business strategies currently being applied by operators to combat the changing user expectations and business models include:

- Creating customer loyalty through user-centric sticky services
 - Creating sticky services that retain customers through tight service integration
 - Giving customers what they want

- Delivering true value to customers with triple-play and quadruple-play services
- Building next-generation solutions that are simple and do not require significant technology changes to implement
 - Deploying flexible and tightly integrated services using flexible technology solutions that bring together the internal organizational siloes
- Being perceived as a market leader to fend off competition
 - Going to market with new and innovative technologies and services
 - Delivering competitive differentiated products and services before the competition does

Creating customer loyalty through user-centric sticky services

Providers are facing a highly competitive market where acquisition costs and retention costs are increasing as customers have more ways to receive the same services from competitors. Over-the-top service competition has further fueled the competition. Operators are looking to sticky services and better user experiences to entice new customers and keep them loyal.

The stickiness of the experience is created through integration, interoperability, and access independence. The user experience for sticky services is simpler, richer, and highly personalized. Sticky services are always user-centric, and the user can enjoy virtually any application from any location and on any device while benefiting from consistent personalization based on self-defined profiles.

Delivering true value to customers with triple-play and quadruple-play services

The future of the multi-play bundles rests on the operator's ability to extend every service to any device and to seamlessly integrate these services in a unified manner. The value of the bundle lies in how one service leverages the other in ways that are useful to the user (e.g. integrated messaging and video by delivering a social viewing experience) and is no longer about the "discounted" price for buying one or more services.

Value also lies in the number of screens that can be reached by each of the multi-play services. The consumer perceives more value when more screens are reached.

Building next-generation solutions that require no significant technology changes

Operators are plagued with entrenched organizational and technological siloes. Next-generation solutions must respect the reality of these silos and reduce complexity in order to be successful. Overly complex solutions that require too much internal change to implement are unlikely to ever be successful.

Partners must work collaboratively with operators to help them integrate their technological and business infrastructures to create next-generation networks and operations that are required to leverage existing legacy systems, rather replacing them.

Being perceived as a market leader to fend off competition

Innovative competitors have entered the operator space with over-the-top services that have eroded the perception that operators are delivering innovative products and services. Operators are faced with consumers that are dazzled by the latest innovative technologies and services. Competitors have used innovation as a way to attract new customers and gain valuable media attention.

The fact that operators have been slow to react to their competitors has further exaggerated this issue. Being perceived as a market leader has become a core element in user adoption and operators have to fight back with equally impressive innovation and market leadership.

Addressing Operator Challenges through Personalized Multiscreen Convergence

Operator challenges can be addressed by combining flexible platform technologies to deliver a personalized multiscreen converged experience. Each of the operator challenges will be discussed in the context of how personalized multiscreen convergence can be applied to systematically address these issues.

Embrace a User-Centric User Experience for All Services

The fundamental paradigm shift discussed in this paper is the move away from the device-network-centric experience towards the user-centric multi-play experience.

In order for operators to capitalize on new business models and adapt to changing user expectations, they must embrace a user-centric experience where their subscribers can access their services on any network and any device, at any time. The ways users authenticate and access their services must also be changed to enable cross-device and cross-network availability in a seamless, personalized manner.

Break down operator silos using flexible and smart technology solutions

Technology helps to solve the problem of bridging departmental siloes and network differences with smart integration technologies. Operators can reduce the time to market for the delivery of integrated services by providing a bridging technology between systems and technologies.

Technology is used to bridge the departmental siloes and network differences by applying smart integration technologies. Technology that is designed for rapid deployment with a flexible and adaptable architecture is crucial for addressing this challenge. A modular design with a flexible

abstraction layer is used to create systems that are easy to maintain and are adaptable across different back-end systems.

Compete with over-the-top services by doing it better

Over-the-top services have been used very effectively by competitors to generate incremental revenue. Operators should begin delivering over-the-top services that compete head-to-head with over-the-top entrants.

Personalized multiscreen convergence combines over-the-top services together in an arguably better user experience with greater stickiness than what the competitors are able to offer.

Operators are in the unique position to rapidly deploy services that out-perform competitive over-the-top services by leveraging their existing infrastructure to build even more tightly integrated multi-screen multi-user services. They can take full advantage of their networks, service infrastructure across voice, video, messaging, and their powerful back-office capabilities.

Operators are in the best position to deliver personalized multiscreen convergence, and this strategic advantage should be fully utilized to quell the over-the-top competitive threat. Sophisticated and integrated services make it possible for operators to rapidly and flexibly out-manuever and out-perform competitive over-the-top services.

Personalization, Multiscreen Enablement, and Convergence

Operator disruption and new operator opportunities can be summarized using three themes: (1) personalization, (2) multiscreen enablement and (3) convergence.

If these three barriers can be overcome, operators will be able to meet changing user expectations, complete successfully with over-the-top entrants and capitalize on new business models. Consider the following concerns that operators will need to address.

Barrier 1- Personalization:

- Can operators support a user-centric experience where individuals have access to their services on any device at any time?
- Can operators move away from decades-old paradigms of network-and-device centric experiences?

Barrier 2- Multiscreen Enablement:

- Can operators effectively tailor experiences for new screens, meeting user expectations?
- Can operators deliver tablet and smartphone support, an offline app experience (“appification” [6]), and a seamless multiscreen experience?

Barrier 3- Convergence:

- Can operators deliver unified services in a personalized multiscreen world by enabling mash-ups, giving consumers less apps and more integration, and extending the true value of their bundle?

Enabling Personalized Multiscreen Convergence with UXP Systems' MINT Platform

The UXP Multiscreen Interaction Platform (MINT) is the operator industry's first vendor-agnostic, multiscreen, multiservice enterprise system. The platform is designed to seamlessly deliver a multitude of personalized and unified operator services across tablets, browsers, smartphones and connected televisions.

The MINT Platform includes five modules that extend the operators' core service capabilities by delivering seamless, personalized, multiscreen experiences. Operators implementing the MINT platform will enjoy significant cost reductions, fast time to market, and reduced ongoing maintenance costs.

The MINT Platform sits at the core of the operator's infrastructure to orchestrate services for multiscreen experiences. The MINT Console supports the "appification" of services-- enabling a true end-to end next-generation user experience.

The aim of the MINT Platform is to provide a fit-gap foundation for operators wishing to extend their services to new devices/screens, and to transform their user experience from a device-driven experience to user-driven experience.

The MINT Platform is designed with the assumption that operators will not have to replace their existing legacy BSS/OSS systems. The platform is also designed to leverage a multi-vendor environment of underlying IP network services to enable a user-centric multiscreen experience.

The modules available in the MINT Platform extend the capabilities of the operator's network and IT infrastructure by providing key technologies to meet the needs of future user experience innovations.

The MINT Platform Core Modules:

- Profile and Subscription Management
 - A flexible user-profile and subscription system that maintains the seamlessness of a user's subscription, preferences, credentials and session data as they move from screen to screen.
- Service Orchestration
 - A workflow system that moves the orchestration of the user experience from the device to the cloud.

- Service orchestration abstracts the experience in a device-independent way and orchestrates an anywhere, anytime seamless experience.
- Operator Interface
 - An interface to back end operator services providing service-specific orchestration and personalization, across all services (EPG, video, messaging, calling, voicemail, etc.)
- Administration
 - An operator-grade system and API for managing users and their individual multiscreen profiles and preferences in a care and administrative setting.

The MINT Platform Console:

- A device-side implementation of a subset of the MINT Platform's core functionality to fully enable an offline user experience and service "appification".

The MINT Platform modules collectively deliver personalized multiscreen convergence to the operator allowing them to adjust to changing user expectations, build new business models, and systematically address operator challenges.

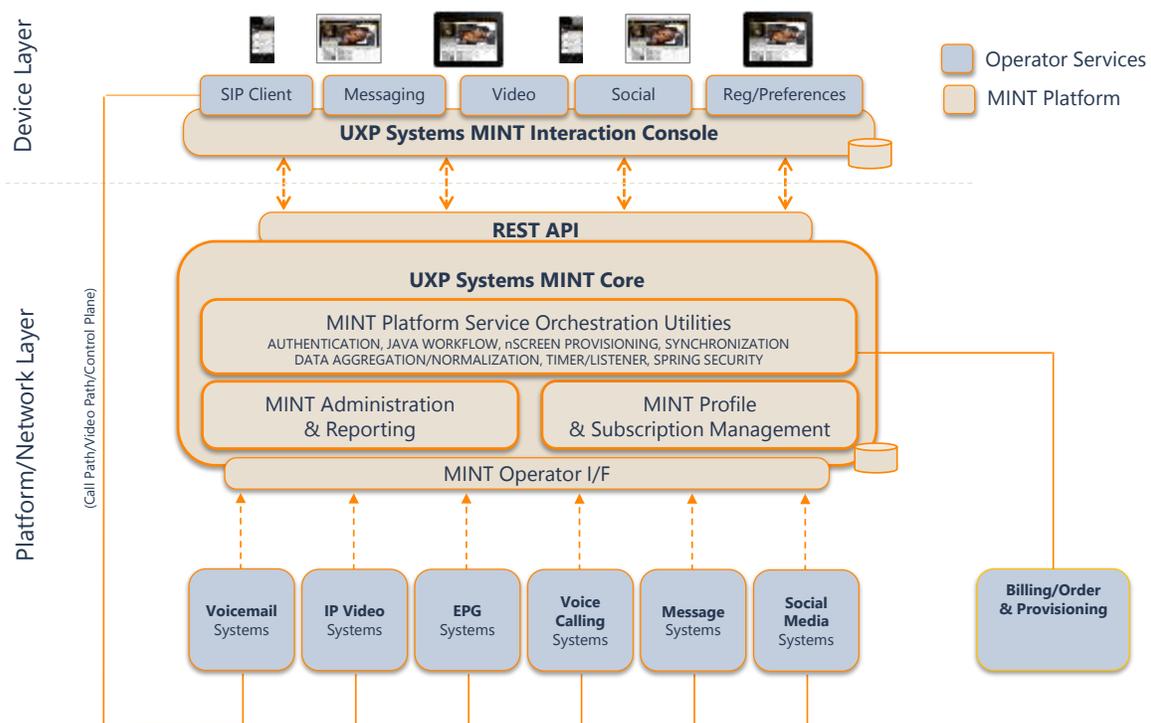


Figure 1- UXP Systems' MINT Platform in an Operator Environment

Case Study: Columbus Communications – The Flow-to-Go Solution

Columbus Communications is the largest cable operator in the pan-Caribbean region, serving over 400,000 households in Trinidad, Jamaica, Grenada and Curacao. They have become the market leader by differentiating via innovation in offering next-generation broadband, cable television, and home phone service to their subscriber base.

Excited by the opportunity to extend its services beyond the household, they deployed UXP Systems' Multiscreen Interaction (MINT) Platform to launch Flow-to-Go. This industry-first solution unifies voice, video and messaging into one user experience and extends Flow's services seamlessly to tablets, personal computers, and smartphones.

The Flow-to-Go solution adapts their services to changing user behaviors by delivering their services to an ever-growing number of screens. As a result, Flow-to-Go delivers a unique opportunity for Columbus Communications to capitalize on new business models.

Flow is now offering OTT phone and video services on local mobile phone operators' networks, which promotes the value of the full bundle and enhancing the Flow brand.

Columbus Communications has deployed the UXP MINT Platform to create personalized multiscreen convergence experiences for Flow (Columbus's Retail Brand) customers and enable them to access their services easily and securely across all of their devices, including personal computers, smartphones, tablets and televisions.

The UXP MINT Platform provides Columbus with a foundation for expanding their calling and communications (in-coming / out-going calling, call activity, voicemail retrieval, management) and entertainment (EPG, TV subscription, live TV, favorites) offerings across all screens, in an intuitive, seamless and personalized way.



Figure 2- The Flow-to-Go Solution, powered by UXP Systems' MINT Platform

By enabling Flow services across any device, from any location, Columbus has effectively revolutionized their fixed home-based offerings into true mobile and nomadic services available to their customers anywhere and at any time.

Deliver a personalized experience

Through the creation of individual identities within each household and the federation of services like parental controls, setting favorites, and tailoring service recommendations to individuals, each consumer of the multiscreen experience enjoys a more personalized service experience targeted to their individual preferences.

Columbus also benefits from this personalization through the capture of individual usage data and preferences, which can be leveraged for subscriber analytics and targeted marketing.

Deliver a unified and integrated experience

One of the key business drivers for Columbus was to provide a consistent user experience for all of Flow's services and to reduce the customer confusion that can result with the multitude of apps that are flooding the smartphone and tablet marketplace. The UXP MINT Platform provided their customers with a single unified and integrated user experience for all Flow services including calling and communications, EPG, favorites and identity / profile management functionality. In addition, the Platform provides Columbus with the framework to launch new services and

applications through a single multiscreen platform that is available seamlessly across multiple screens for their customers.

Deliver an experience that works well offline

Columbus recognized the importance of not only providing a compelling user experience while the customer is online, but also providing the same experience while the customer is offline. The UXP MINT Platform provides this capability through the MINT Console, which delivers a cohesive online to offline transition and seamlessly orchestrates the transition for the best possible user experience.

Powerful Marketing Capability

By enabling all of Flow's services across multiple screens, Columbus was able to capitalize on the strong marketing and sales opportunities through UXP's MINT Platform. Strong messaging to up-sell and cross-sell additional services to customers is dynamically and strategically utilized as the user navigates from service to service and function to function. This added ability to offer users immediate one-click ordering of additional services has enabled Columbus to realize increased penetration and ARPU.

Deliver software and services to work the first time with accurate quality of service feedback

The personalized multiscreen converged user experience includes a platform and client quality of service agent that keeps users informed about issues before they become problems.

Moreover, recommendations are provided to help users so they can manage slow Internet connections, service interruptions, and account issues. The user is made aware of quality of services issues and is given suggestions about how to adjust to these events. User feedback is essential to empowering the user to have the best user experience possible the first time they connect.

Conclusion

The personalized multiscreen converged user experience offers operators solutions to the major challenges they face with respect to changing business models and changing user expectations.

Users share many devices in a personal way and want to seamlessly continue this personalized experience as they move from device to device during their daily activities. The single-screen service is dying and users want access to their services and content seamlessly on all their devices.

The personalized multiscreen converged user experience gives multiple users the ability to share the same devices and access a personalized experience on each of them. The converged experience continues with a single app that consolidates many fragmented apps into one unified "appified" service experience. The result is a user experience that is simple, elegant, integrated, personal, and seamless.

Operators are faced with competitive threats from over-the-top services and must compete by combining their services in new and creative ways. Operators require flexible technology solutions that allow them to rapidly deploy new competitive integrated services.

Operators must meet the challenge of deploying services consistently across many screens (Android Smartphone, Android Tablet, iPad, iPhone, Web, Smart TV etc.) and rapidly launching multiple services on multiple devices.

Building new mashed-up services across multiple screens is fast and efficient with vendor-agnostic, multiscreen, multiservice enterprise systems such as UXP's Multiscreen Interaction Platform. A centralized platform drastically reduces the time to market and minimizes the maintenance costs of delivering multiscreen services.

A thin client connects to a smart back-end platform, significantly improving the speed to market of deploying stable, reliable, scalable, and robust integrated services.

The personalized multiscreen converged user experience federates the settings of the individual to deliver personalized services and experiences across screens in a seamless fashion. Operators can deliver new up-sell and cross-sell opportunities and enable value-added services that add stickiness.

Personalized multiscreen convergence increases retention, reduces acquisition costs, creates new operator business models, and delivers services that meet or exceed changing user expectations to give users what they want.

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