# DIGITAL TRANSFORMATION IN THE
OSS/BSS SPACE
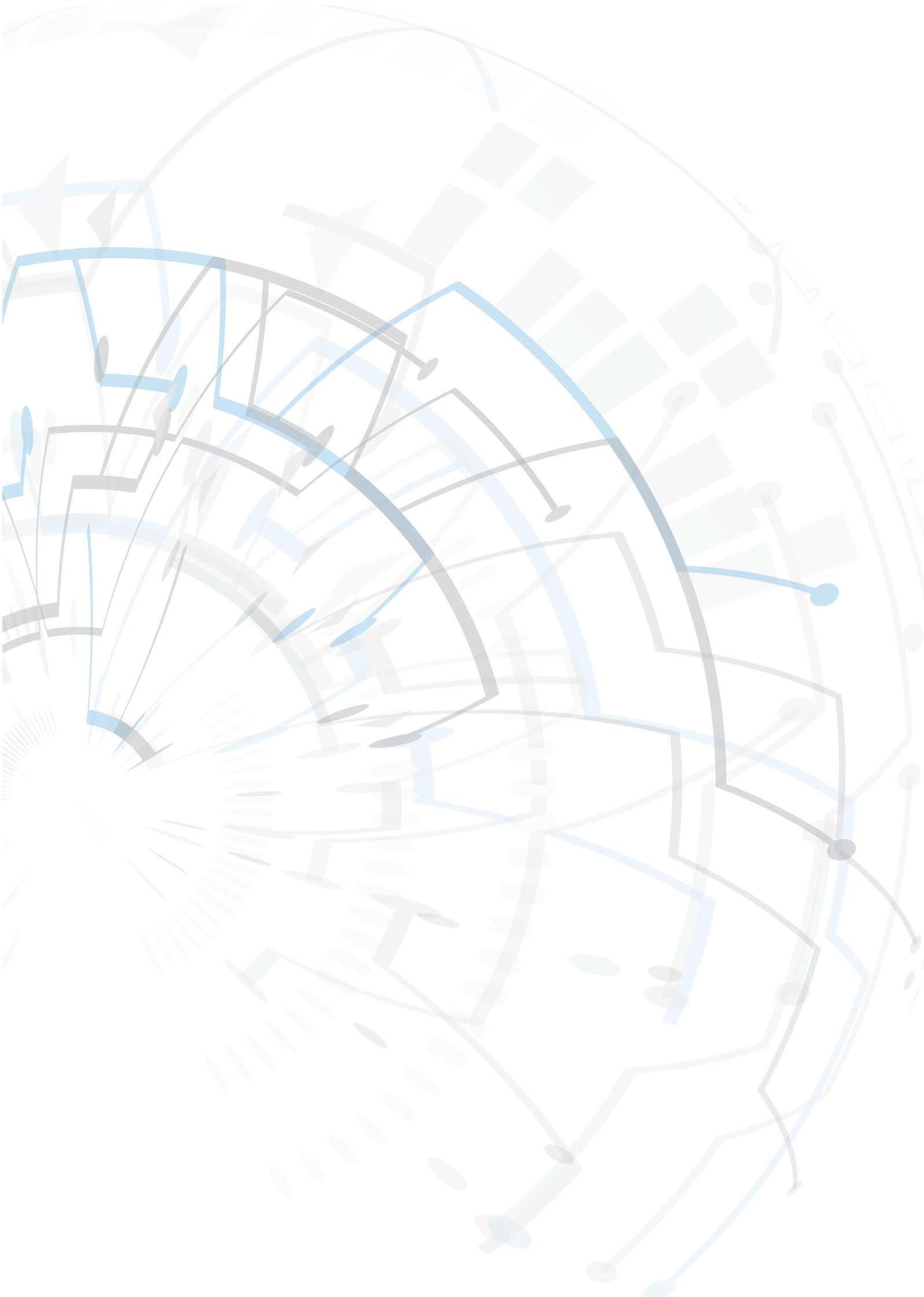
INTRODUCTION

For today's operators, the buck doesn't stop at merely ensuring profitability and retaining customers. The advent of over-the-top players, rapidly shrinking average revenues per user, et all, have changed long-standing priority lists. Now, the order of the day is to tread the path from communications service providers to digitally-driven entities.

However, here's the tricky part-this process isn't confined to building up future-ready networks. A rather vital part is to ensure existing operations and business support systems (OSS/BSS) are equally up to speed. Any why not? These systems manage information pertaining to customers and products, not to mention, collecting revenue.

The bottom-line is this-operators ought to gear up for the digital telecom space of tomorrow. An important part of this process is investing in digital OSS/BSS stacks that are efficient, scalable, flexible and collaborative. However, operators would do well to remember that digitally transforming existing systems and infrastructure isn't an overnight process. A piecemeal, gradual approach is best suited to ensure maximum success.

OPERATIONS SUPPORT SYSTEMS/BUSINESS SUPPORT SYSTEMS (OSS/BSS)

The current era of digital transformation has forced telecom operators to reexamine their business. Of course, this isn't merely confined to chalking out competitive strategies and keeping pace with technology trends. It entails investing in next generation technologies, such as 5G, the Internet of Things (IoT), network functions virtualization (NFV), et all, to build smarter networks.

Simply put, in an industry characterized by intense competition and wafer thin margins, operators need to stay relevant. The basic, underlying idea is to shift from a systems-centric approach to an end-to-end service-centric one. Operators ought to revise their strategies to deliver smarter services, which:

DELIVERING NEXT GENERATION SERVICES

1 Facilitate personalized and real-time communication

2 Include the larger industry ecosystem, aimed at catering to new customer segments and markets

3 Are market tested, adaptable, agile and scalable
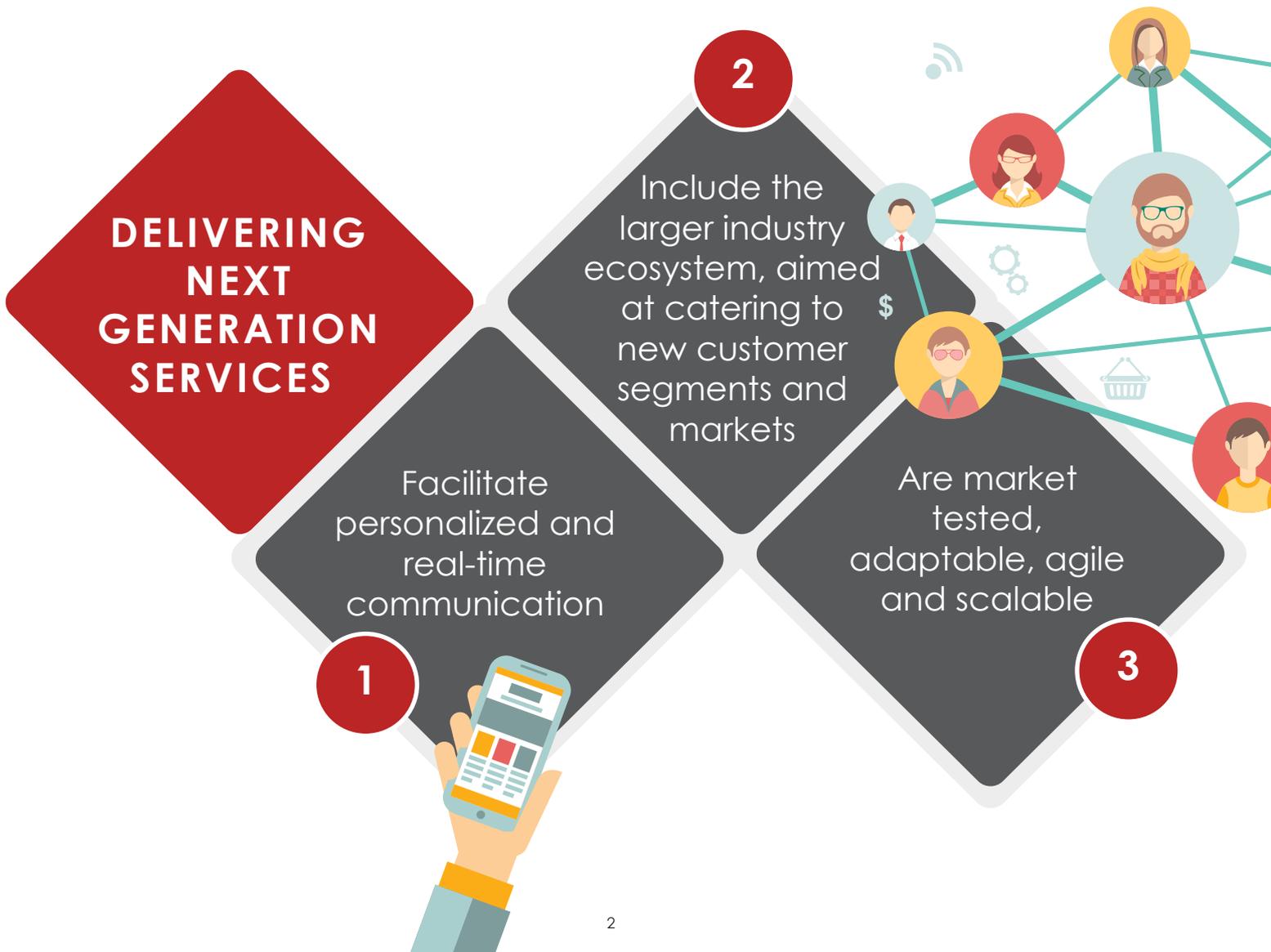
It has thus become necessary for these players to reinvent themselves as digital service providers. In fact, most have begun the journey towards digital transformation by consolidating and enhancing all existing systems and processes. Therein lays the catch, though. Investment in digital-ready systems and infrastructure ideally ought to include operations and business support systems (OSS/BSS) as well. After all, these are central to delivering next generation services that are crucial to an operator's strategy today.

WHAT AILS OSS/BSS

As per industry analysts, today's OSS/BSS stacks have miles to go, before being able to support any plans pertaining to digital transformation. Here's why-these stacks have been around since operators were setting up their networks. In fact, over the years, these players have added a complex maze of legacy systems and processes. Needless to say, all entailed extremely limited functionality, which, of course, compounded the challenge.

Adding to the chaos is the fact that the sector itself is undergoing such turbulent times. As per Ovum, to maintain a competitive edge, operators are now thinking and planning beyond traditional key performance indicators such as revenue, profit margins, et all. Instead, criteria such as customer experience, efficiency, seamless product delivery, quicker time-to-market and agility have come to the fore. However, given the extent of legacy systems and processes, operators are unable to meet these parameters effectively. In fact, this is expected have a trickle-down impact on their other lines of business as well. For instance, managing scattered systems usually results in duplication of information, which in turn adversely impacts the time-to-market of several products. In a nutshell, revenue leakage, inaccurate billing and absence of an omni-channel customer experience are just a few of the challenges an operator will face with legacy systems.

OSS/BSS

DIGITAL TRANSFORMATION AND OSS/BSS STACKS

Doubtlessly, digital transformation presents an ideal opportunity for operators to rebuild lost (or crumbling) market positions, innovate and prepare for the future. However, this is easier said than done. Merely planning to monetize next generation technologies isn't enough. Operators ought to have a plan to leverage these to best suit all aspects of their business-including OSS/BSS.

For example, as per Ovum, artificial intelligence (AI) will enable an operator to improve customer experience and enhance the efficiency of various business processes. However, in order to leverage this to the fullest, these players ought to invest in making the IT systems within the OSS/BSS domain lean and agile. This can be achieved by consolidating systems and automating multiple processes throughout the revenue and customer management stacks.

ENABLERS OF DIGITAL TRANSFORMATION IN OSS/BSS

By modernizing OSS/BSS systems, four key aspects of digital transformation come to the fore:

Enhanced Customer Experience via chatbots and self-care portals and applications. Customers are assured of an omni-channel experience.

Operational Agility can be ensured by migrating existing applications to the cloud.

Innovation is the key. Operators ought to focus on DevOps to ensure agility and flexibility in operations.

Increased focus on **Platform Play**, to transform operators into service aggregators for third parties. Operators can thus leverage the opportunity provided by The Internet of Things (IoT) as well.

Source: Heavy Reading

OSS/BSS MODELS TO DRIVE CHANGE

Defining a successful model to drive digital transformation is, needless to say, atop every operator's priority list today. However, the idea isn't to execute large scale programs to enhance existing OSS/BSS stacks. Instead, these players ought to follow a piecemeal approach, focused on the various functional and architectural aspects of existing stacks.

MODELS LIKELY TO DRIVE TRANSFORMATION

Architecture-Driven
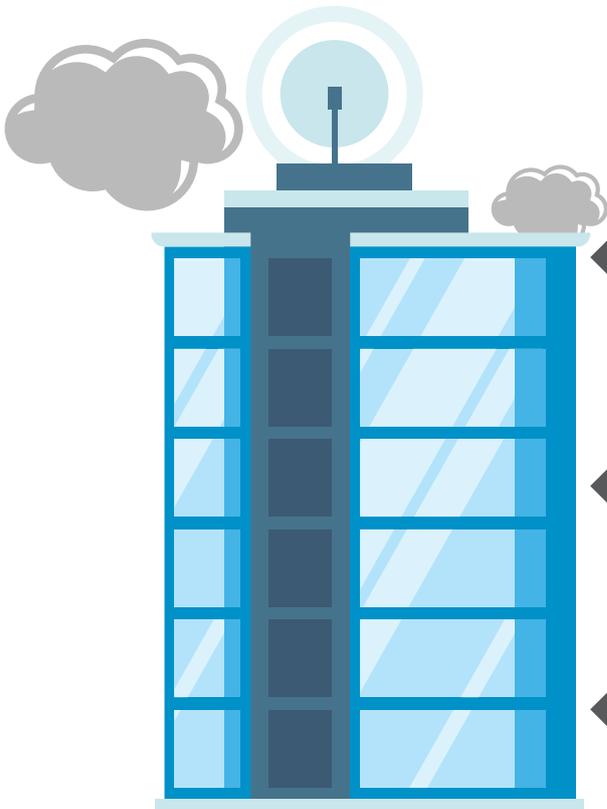
To drive customer experience, operators ought to focus on:

The Cloud

A cloud-based architecture ought to be coupled with various software components that evolve to micro-services.

Ensuring Real-Time Communication

All information and applications ought to be available and updated in real-time. This may include real-time analytics closed loop actions, real-time charging and policy, real-time service orchestration, and real-time user experience.

Creating a Layered Architecture

This entails separating applications from data, eliminating data duplication based on a common information model, and using common software components with open APIs between layers (infrastructure, services, customers).

Source: Ericsson

Functionality-driven

An OSS/BSS solution for the digital age ought to offer:

- A centralised product catalogue
- Assured monetisation through digital services
- Engaging customer experiences, by offering a 360 degree view
- Support for omnichannel services
- A convergent billing-centric approach
- Adoption of the cloud delivery model

The Operational Approach

To streamline operations and usher in digital transformation, operators ought to:

Overhaul traditional commercial models	Adopt new delivery models	Draw on open technologies, promoted by through the use of open APIs

Source: Openet

OPERATORS AND DIGITAL TRANSFORMATION IN OSS/BSS:
THE JOURNEY SO FAR

Simply put, operators have realized that digital transformation of existing OSS/BSS stacks cannot be achieved overnight. Consequently, these players have chalked out a roadmap that permits a gradual transition to digital OSS/BSS.

To elaborate, as per industry analysts, a majority of operators have considered **"cloud-readiness"** as a key driver for transformation. Analysts have stated that over 25 percent of deployments have taken place on the cloud over the past year. This has been across functionalities such as **revenue management, product catalogue, order management and customer management.**

In addition, the parameters to choose such offerings have changed. Operators are now collaborating with integrated revenue and channel management players who focus on **cost, architecture (cloud) and functionality**. In fact, **cloud-based architecture** has come to the fore, as it facilitates an **omnichannel customer experience**. This also fits in with the operator's focus on enterprise customers. The need of the hour, therefore, is a **flexible and micro-services**-driven architecture. IoT and enterprise network connectivity are other key drivers.

In a nutshell, operators are prioritizing "**cloud-ifying**" existing BSS stacks to drive revenue from enterprise customers.

A LIKELY FUTURE ROADMAP AND TRENDS

Going forward, telecom operators and vendors alike will continue to scramble to compete in an increasingly digital world. As a result, the former's expenditure on IT and the latter's overall revenues are likely to see an upward trend. To illustrate, as per Ovum's most recent ICT Enterprise Insights survey, over 70 per cent of operators plan to increase IT spend over the next year, with 30 per cent planning to increase spends by 6 per cent or more.

This, in turn, is expected to have a cascading effect on the revenue generated by the global OSS/BSS domain. More specifically, the research firm has predicted that annual revenues for the global OSS/BSS market will grow from $17 billion in 2017 to $22.5 billion in 2022, a CAGR of 5.8 per cent. Drilling down further, overall growth in the market will be driven by the uptake of more vendor services, which will grow at a CAGR of 6.8 per cent, to $17.1 billion in 2022. Within the services domain, the need for managed services and accelerated growth within SaaS will drive revenue growth for both OSS and BSS.

TRENDS EXPECTED TO DRIVE THE UPTAKE OF OSS/BSS

An increased emphasis on a **personalized and digital customer experience.** This, in turn, is expected to drive investment in **analytics, machine learning and AI.**

Software-as-a-Service (SaaS)-based stacks will come to the fore. To keep competition at bay, operators are likely to seek out stacks that are cost efficient, support digital services and can be rapidly deployed.

TRENDS

Revenue from analytics-based tools will increase significantly. This will be driven by the maturation of machine learning and AI-based use cases over the coming years.

COMVIVA AND THE ADVENT OF NEXT GENERATION OSS/BSS STACKS

Perhaps the biggest challenge for operators today is juggling multiple priorities. More specifically, this entails striking a balance between launching digital services in the present context and executing long-term transformational projects in the foreground.

Equally important, of course, is ensuring an omnichannel experience for customers. After all, the usage patterns of today's customers have undergone a sea change. The bottom-line today is to shift from passive to active brand engagement, owing to the increasing number of customer touchpoints.

Here's Comviva's OSS/BSS suite steps in. The solution offers an agile, flexible and future-ready alternative to meet the requirements (and challenges) of today's digital era.

It is a fully integrated converged solution, with capabilities in unified customer relationship management, convergent billing and provisioning, business intelligence-driven reports and inventory management.
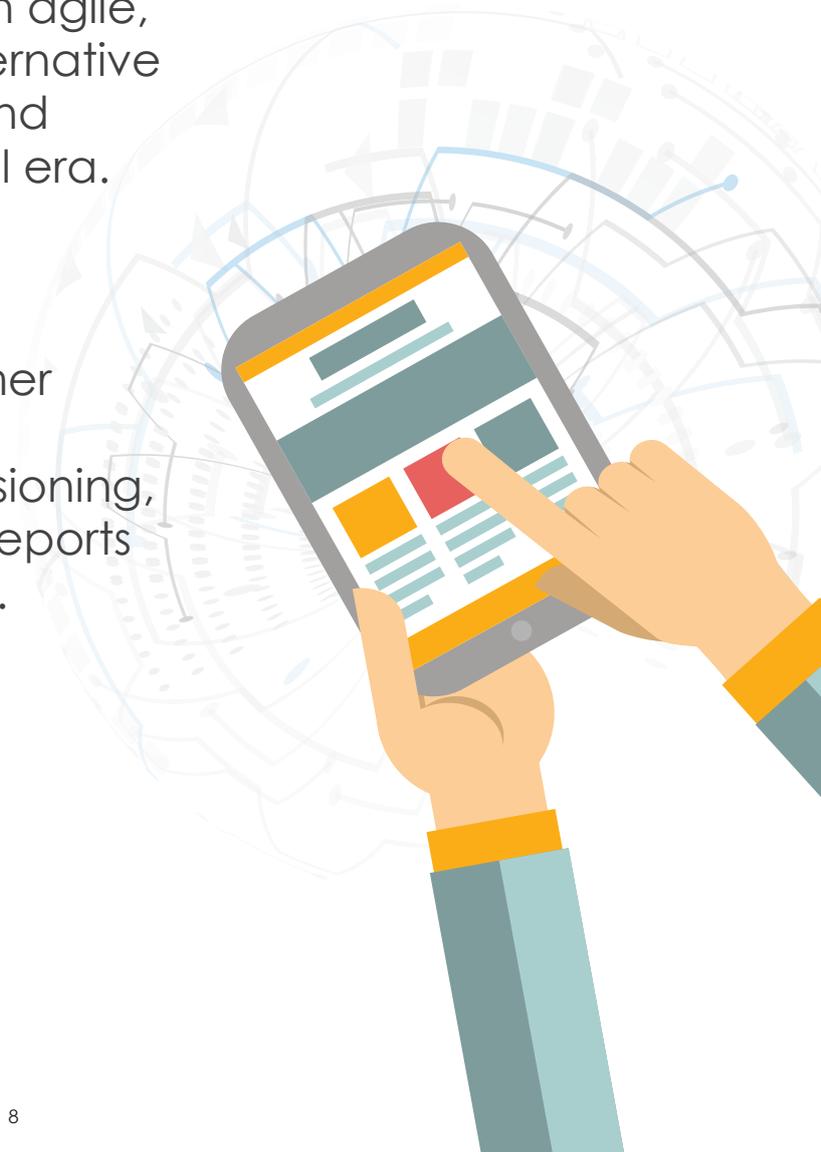
HOW THE SOLUTION IS TRANSFORMING LEGACY OSS/BSS STACKS

Comviva's OSS/BSS solution is designed to seamlessly adapt to the fast-changing digital-only telecom space. It ensures operators stay clear of likely bottlenecks (both current and in the future), thus paving the way for the player to transition into a digital services provider.

The solution entails future-ready features and architecture, including:

Compatibility with Open APIs

A next generation OSS/BSS solution, it has been enhanced with multiple APIs. This, in turn, simplifies the integration process with OCS for catalogues, payments and other allied processes.

Generation of Actionable Customer Insights

To stand apart from the clutter, the OSS/BSS solution ensures operators gain actionable and detailed customer insights. These, in turn provide useful in estimating the customer's credit limit, so that the customer doesn't have to experience undue and frequent service downgrades.

Deployment of New Age Technologies

The offering houses technologies such as HTML 5, J Query and JSON APIs, which are compatible with public and private cloud infrastructure.

Business and Revenue Models

The business model is focused on capex and software-as-a-service business for software licenses and services.

Future Readiness

This next generation OSS/BSS solution has been enhanced with JSON APIs, to ensure compliance with the latest technologies. These APIs help in faster rollout of integration, as well as faster testing and iterations.

Customer Retention

The offering houses a significant amount of data, pertaining to a customer's service usage, call types, average call duration, and service usage patterns. This data can be used to develop a customer's social network analysis chart, to determine if the customer is an influencer or a follower. This information, in turn, is useful to design multiple usage and retention plans for the customer.

SCALABILITY AND ADAPTABILITY:
A TECHNICAL OVERVIEW

The next generation OSS/BSS solution can be **scaled** both vertically and horizontally for **on premise-deployments**. When scaling a system vertically, more power is usually added to an existing infrastructure. This can mean more memory (RAM), faster storage such as solid state drives (SSDs), or more powerful processors. On the other hand, horizontal scaling is slightly more complex. When scaling such systems horizontally, more servers are added to spread the load across multiple machines.
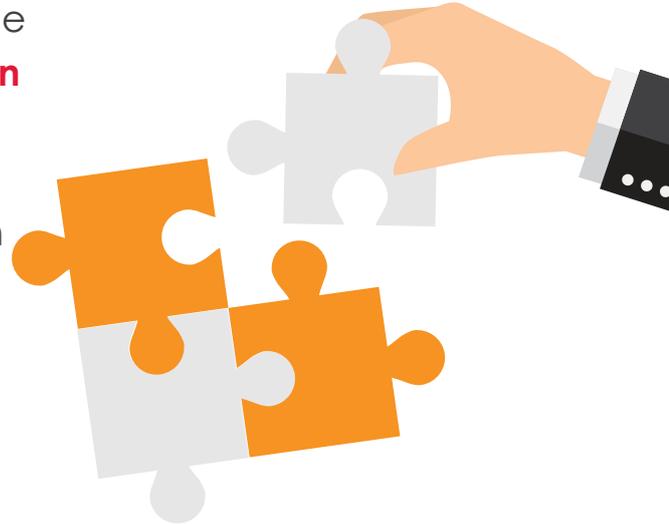
Interestingly, **quick and easy allocation of resources** is greatly simplified, in case of cloud-based deployments. Here's why-**cloud computing** permits this process to be executed in a monitored environment, where overloading is never a challenge, as long as the system is managed properly.

SCALABILITY AND DATABASES

It wouldn't be an understatement to say that databases are, understandably, allocated the most attention while scaling up these systems. Here's why-these are often the first component to fold under high pressure in an application heavy environment. To avoid this, the solution deploys the following methods:

- **Sharding**
- **Partitioning**

Sharding

To shard a database for scalability is to split up the data into separate database servers. The data requests are shared across multiple servers instead of the same database server each time. Less data on each shard reduces index sizes which improves data seek time.

Partitioning

Database partitioning separates the data into distinct parts. Certain partitioning methods include:

- Splitting data by range (alphabetically or numerically)
- By row (horizontal partitioning)
- Column-wise (vertical partitioning)
- Application-Level Database Optimization

This can be achieved by:

- Using database indexes
- Table partitioning
- Caching database queries
- De-normalization
- Running large queries and/or batch queries offline
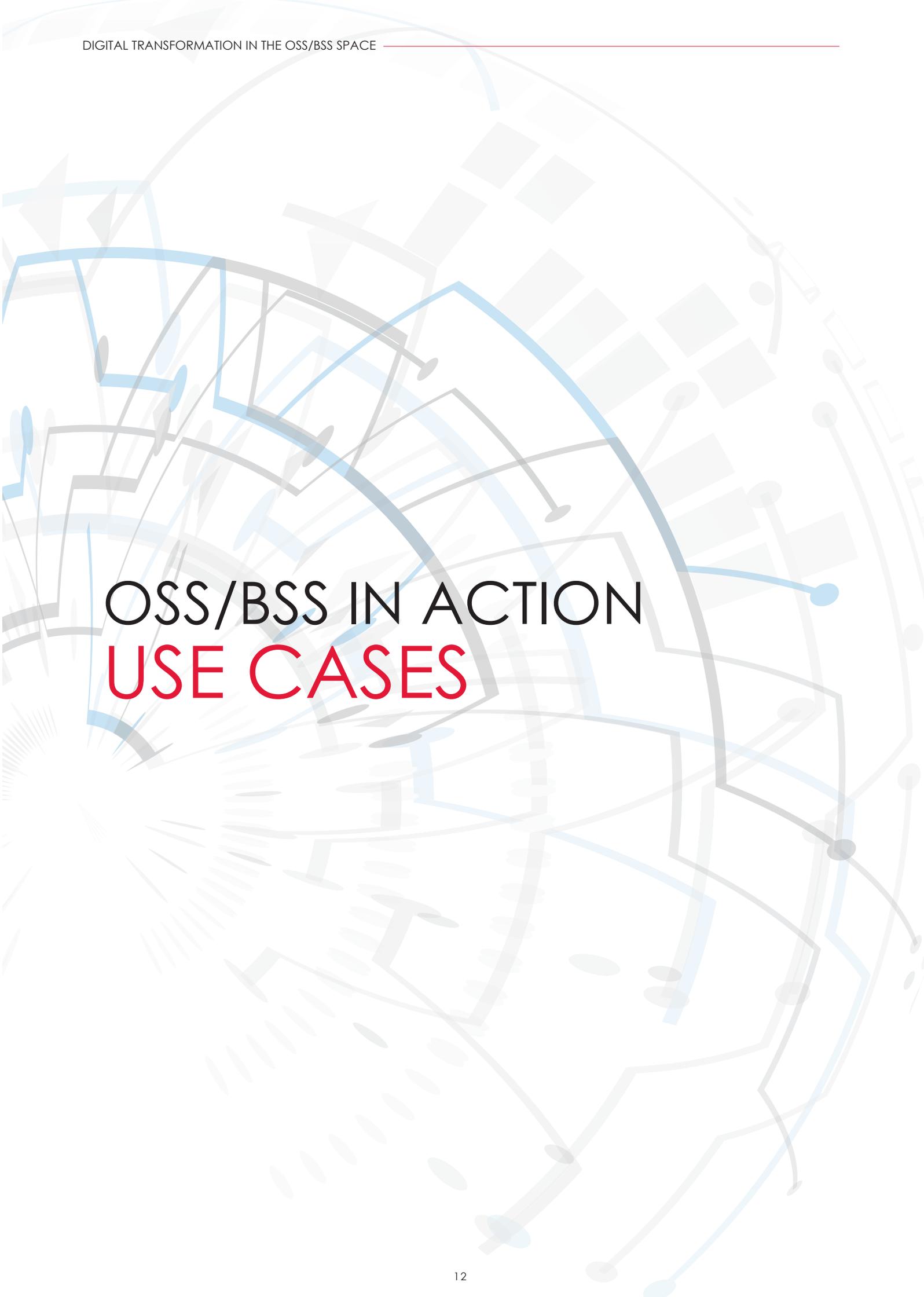
OSS/BSS IN ACTION
USE CASES

USE CASE I: **BANKING**

The rules of banking have, without a doubt, undergone a sea-change. For one, the space is no longer limited to incumbents alone. Non-banking or fintech players are providing stiff competition to these players.

Not just that but retaining customers is becoming more challenging. Customers are no longer drawn in by players with the most number of branches or the widest portfolio. What matters is being able to provide a differentiated digital experience across segments.

This, in turn, presents banks with a fresh set of challenges, which largely include:
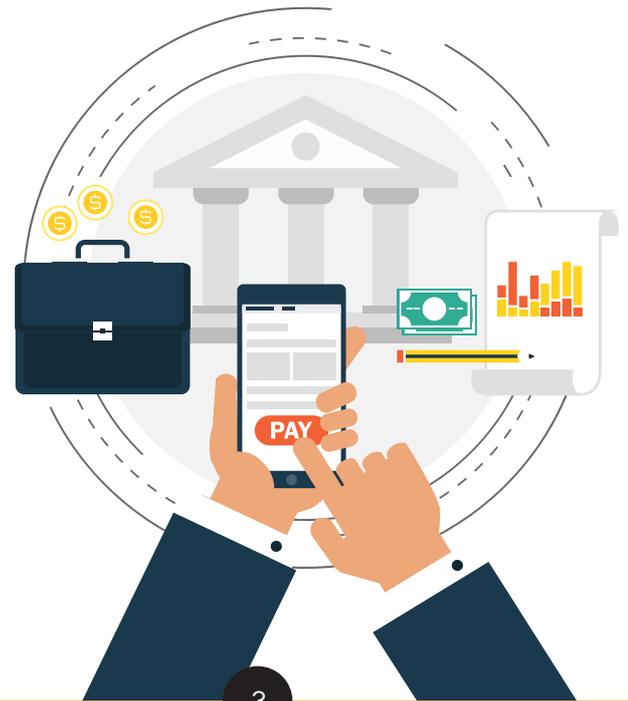
1
The lead collection process is outsourced for multiple products, such as loans, credit cards, etc to third parties. This is done as the core banking platform cannot be extended, to maintain security.

4
Banks face restrictions pertaining to users and licenses on the core banking platform for various non-core activities.

2
Third party systems cannot be integrated directly with the core banking platform. This is because doing so will increase product roll out time.

5
These players also face challenges pertaining to trouble ticketing and streamlining workflow, aimed at modifying profiles. These, too, fall under the purview of the core banking systems, before reflecting in the core banking system.

3
In cases where banks are handling product sales through outbound calling, an easy to train system for the sales force is urgently required. This system is expected to simplify the process of collecting leads and facilitating conversion and customer acquisition, both of which fall outside the purview of the core banking CRM.

In this context, Comviva's uCRM offering is a viable solution. For the banking segment, the offering accrues the following benefits:

Why the uCRM is a Viable Solution

The offering is positioned to handle the processes pertaining to lead collection and existing pipelines for outbound callers. This facilitates and simplifies the follow-up process, until all customer acquisitions can be handled outside the system.

The offering facilitates lead collections from third party systems for further follow ups.

It also simplifies the process of handling tickets pertaining to customer complaints.

Focus on the **Banking, Financial Services and Insurance Segment**

Comviva has defined a multi-fold strategy for this segment. Broadly, the company caters to the following functionalities:

Lead Management
The iPACS uCRM offering is used to create leads for different products, such as credit cards, loans, and various saving schemes. By deploying the uCRM offering, all customer-centric communications can be logged in. This, in turn, enables the bank to pitch products and services tailored to a customer's requirements. In a nutshell, this solution streamlines the process of handling third party leads.

Cross Sell and Upsell
The offering supports a core banking system or a campaign system. This creates offerings based on the customer's credit rating. Offers can be displayed and sold via the uCRM product. The uCRM offering provides a 360 degree view of the customer, the services they have opted for, their usage patterns and pending and completed invoices.

Troubleshooting
Customer complaints can be created on invoices and the team functioning at the backend can rectify the error in the core banking system.

All in all, the uCRM offering clearly goes a long way in improving the client's bottom-lines and enhancing customer engagement and conversion rates.

USE CASE II: **RETAIL**

Addressing business activities like sales and channel management, inventory management, and commissions are still a significant challenge for operators. A key factor for these players is to ensure complete transparency in the entire sales and distribution ecosystem until the last mile. Operators are likely to face a cash crunch if an end-to-end view of the sales and distribution channel is absent.

Moreover, the challenge is compounded by the sheer number of high value transactions being executed on credit sales. Payouts, too, are taking place on commissions which, are bound by complex sales targets and customer retention rules. Also, unrealized inventory with fast expiring supplier warranties, too, poses an issue.

In short, operators need a solution that enables transparency and provides predictable distribution and commission numbers.

Defining a Successful Strategy for Channel, Sales, Partner and Commission Management

Blurring of Channel Boundaries

Non-direct channels will play a dual role. This entails performing defined functions and catering to new demands.

Shrinking of partner hierarchies

A product-specific relationship between suppliers, resellers and retailers will be established. The idea is to ensure that any distributor can supply a specific product to any retailer.

Management of Territory and Sales Key Performance Indicators

Sales and distribution systems will have to define new logical territorial boundaries that overlay physical territories for digital distribution separately.

Products and Services

The number of resellers focusing on one category of telecom products will reduce significantly. This will impact the method of framing eligibility rules pertaining to product availability for various partners.

To ensure operators are able to define and balance all key ecosystem players, Comviva's BSS solution offers/facilitates:

A Point of Sale (POS) system

showcase the various products and offers, targeted at appropriate customer segments. The POS enables enterprise to configure price lists, modes of payment and restrict payment modes for different channels.

Backend Logistics

The solution executes end-to-end management of logistics at the backend, ranging from the warehouse to the retailer. The product mix at various retail stores is also maintained, as is optimizing inventory and store capacity.

Managing the Partner Ecosystem

The product enables retailers to monitor stock levels, generate purchase orders and schedule delivery to central or distribution warehouses.

Managing Invoices and settlements

Enterprises are able to track invoices and cash flow.
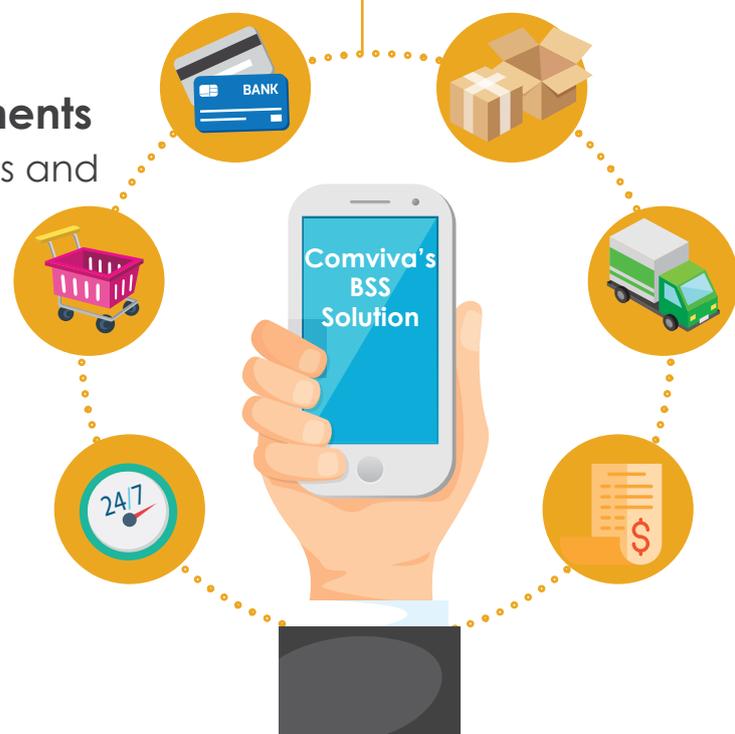
USE CASE III:
ENHANCING CUSTOMERS' DATA USAGE PATTERNS

With smartphone penetration reaching unprecedented levels globally, data consumption patterns, too, have changed. Customers today demand bandwidth heavy applications, thereby effectively pushing out traditional services like messaging and vanilla voice services. The bottom-line today is to provide an enhanced customer experience and operators are clearly pulling out all the stops to achieve this.

Comviva's Strategy

Comviva's BSS offering has been able to tap this trend, with the advent of the intelligent product catalogue feature. This is aimed at enabling operators to create intelligent offerings, thereby coupling traditional communication services with next generation offerings. The solution enables customers to avail of data services that offer a better customer experience at optimal prices. Data is offered through the direct carrier billing facility that supports services like games on demand, personalized content, mobile television, et all.

Individual services can be defined at flexible price points

Services such as games, video streaming, movies, et all, can be bundled

Individual services and in-application purchases can be clearly defined. For example, operators can bundle together multiple games or services and enable subscribers to switch between each without any additional charge.

What Comviva Brings to the Table

Service Bundling

Service Switching

Pause/Resume

Gifting Service

Try and Buy

Partial Charging and Fallback

Subscribers can avail premium applications, such as online television or videos. The user can request to pause or resume the same, as per their convenience, for which a nominal charge is levied.

Operators can enable "gifting" of certain or all services between multiple customers.

This feature can be leveraged to promote new services or content partners. Operators can define services such as online television, Netflix, etc, under this category.

Operators can define offers for specific time periods, with a "fall-back" option entailed. This is typically activated in case the subscriber has low available balance, but wishes to avail a particular service.

SUCCESS STORIES
CASE STUDIES

CASE STUDY I: **LATIN AMERICA**

Deploying Comviva's Sales and Distribution (SnD) solution helped in simplifying the complex distribution business of a leading telecom operator in Latin America. This was achieved by streamlining operations and facilitating growth and business agility.

The Challenges

A fast grower market

A highly competitive mobile market, shared almost equally between three mobile operators

Existing legacy systems hindering business agility and market growth

The Solution

The SnD solution facilitates end–to–end sales and distribution strategy by streamlining legacy systems and enhancing revenue generation through better marketing intelligence and competitor mapping. The web modules enabled the operator in streamlining inventory, onboarding channels and partners and managing sales. The Fleet on Street application streamlined sales, while the Survey application was used for gathering market intelligence.

The Result

Increased Agility

- An **83 per cent** increase in retail reach over 12 months from June 2017 to May 2018
- A **37 per cent** quarter-on-quarter increase in market surveys
- Inventory flow to retailer increased by **70 per cent** quarter-on-quarter over six months, from December 2017 to May 2018
- Inventory flow to Fleet on Street increased by **47 per cent** quarter-on-quarter over six months from December 2017 to May 2018
- Supported **33 million** electronic recharge transactions and **1.5 million** physical recharge transactions over nine months from September 2017 to May 2018

Bird's eye view of inventory

Distributor and operator can check end to end status of inventory with web based GUI Inventory search using barcoding technology

Smarter FOS

Improved visibility at retailer level allows FOS to push sales according to the ability of the retailer

Better Marketing Intelligence

Survey provided market intelligence and competitor analysis allowing the operator to launch relevant products in the market.

Offline Updating of Database

With vast sections of the country out of network coverage area the system supported offline mode in FOS and Survey Application for automatic updating of master-database in better network coverage area.

CASE STUDY II: **INDIA**

Deploying Comviva's OSS/BSS solution enabled a leading telecom operator in India to enhance the scale and reach of its value added services portfolio. The basic, underlying idea was to leverage and monetize new-age data-based offerings, while tapping new customer segments.

The Challenges

Enhancing customer experience and retention

Offer a variety of services at flexible price points

Improve plan flexibility and availability

The Solution

The operator deployed select modules of the OSS/BSS solution. These included; customer relationship management, inventory management, provisioning and mediation.

The solution enabled the operator to obtain an end-to-end view of the business. This, in turn, facilitates more efficient resource management, streamlining operational activities and delivering real-time support to subscribers. Deploying the solution's unified interface simplified the process of managing the customer's lifecycle. In addition, the solution enhanced the process of prioritizing subscriber demands and addressing them in a personalized manner.

The Result

- An average of **1.3 billion** call data records were accommodated per day

- The operator was able to maintain **99.99 per cent** network uptime

- An average of **3.2 million** calls pertaining to customer care were executed per day

- **2.8 million** requests pertaining to provisioning were addressed daily

CASE STUDY III: **AFRICA**

Comviva's sales and distribution offering was deployed by a greenfield 4G LTE operator in Africa. The idea was to make the existing network more efficient. The operator was thus able to leverage data-driven insights to drive customer loyalty, whilst ensuring shorter product and plan innovation lifecycles.

The Challenges

Develop an efficient and competitive sales and distribution Channel

Enable complex sales and usage-based KPIs

Attain a competitive edge through push sales

Enable a real-time view of the last mile sales network

The Solution

Comviva offered a **four-pronged solution** to address these challenges:

- Channel-centric:
  This offered a holistic view of sales targets, return on investments, invoices and collection and commission management
- Inventory Management:
  The operator was able to monitor stock levels, payments and dues, etc
- Sales KPI Management:
  The operator was able to track and view the quality of sales, etc
- Support for Promotions:
  The solution simplified fleet-on-street management, promotional campaigns, etc.

The solution was deployed by 1,000 dealers, spanning both branded and open market stores.

The Result

- An average of **five new deals** per retailer

- Adequate stock availability, which generated revenue of **$180,000** per quarter.

- A **22 per cent** increase in penetration of 4G services

Mahindra
COMVIVA

THE BUSINESS OF TOMORROWS

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