BSS transformations:
Five ways to drive success

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Communication service providers (CSPs) worldwide are replacing their ageing business support systems by migrating to state-of-the-art platforms. The goal: to create ways to save on costs, improve their customers' experience and enhance their ability to roll out new products quickly in response to customer demand. But mirroring those benefits are equally significant risks for those who get it wrong. With a CSP's very survival potentially at stake, managing risk effectively is vital.

With BSS at the heart of a business, transforming them means both big opportunities and major risks for any operator.

The global communication services industry – including fixed, mobile, broadband, cable and satellite service providers – is experiencing a wave of core systems transformations. The reason is that communication service providers (CSPs) keep deciding to replace their legacy business support systems (BSS). That isn't a step to take lightly because, once achieved, it can transform a CSP's ability to control costs, increase revenues, serve customers and support new services. In recent years, those benefits have accompanied the major role that successful BSS transformations have played in improving the performance of CSPs.

The size of the impact on the business reflects the central role BSS plays for any CSP. These environments encompass the important information-technology systems, processes and tools CSPs use to manage and deliver business-critical processes, such as product catalogues, ordering, billing and customer care. As a result, virtually everything a CSP does is affected by these systems. Platforms for BSS also can play an important role in emerging services that draw insights from 'big data'.

In the past two decades, digital technologies have become dominant and CSPs have rolled out an ever-expanding array of services. And their efficiency in developing and operating BSS platforms also has become a decisive factor in CSPs' ability to compete in the industry's new, agile environment.

With BSS at the heart of a business, transforming them means both big opportunities and major risks for any operator. On the downside, poorly implemented transformations have negatively affected what customers experience – including unexpected changes in products or bills and disrupted service – and have led to substantial customer churn. In extreme examples, some CSPs have been forced to seek financial restructuring and/ or bankruptcy protection after poorly executing the conversion of billing and ordering systems. Yet for those that get it right, the upside is equally dramatic.

Objectives and demands: what's behind transforming business support systems

A number of factors generally trigger the decision to transform business support systems. Three factors are on the operator side of the billing and service relationship, and three are on the customer side. On the operator side, three important objectives usually fuel the replacing of these systems:

1. **Cost.** By transforming its BSS, a CSP can achieve a permanent downward step change in information-technology fixed costs (and better align variable costs to either growing or declining revenues). Moving from the legacy systems to a lower-cost target platform typically leads to fewer applications and lower maintenance costs.

2. **Efficiency.** Migrating to a new, consolidated platform creates opportunities to streamline systems and processes across the BSS, which leads to substantial operational efficiencies in both front-office and back-office functions. With fewer systems and increased mechanisation, CSPs can, for example, reduce manual processing, improve flow through, shorten the time for handling customers' calls, more easily support growing transaction volumes and systematically reduce revenue leakage and fraud.

3. **Agility.** CSPs need a more agile and adaptive operating environment if they're to grow and meet their customers' quickly evolving needs and demands. Demand is rising for new digital services and experiences like machine-to-machine technologies, digital life, connected cars, mobile advertising, sponsored data, giving of content and sharing content within family units – to name a few.

These factors on the operator side are mirrored by three main factors on the customer side – and all reflect changes in how customers behave and what they demand and expect of the communication services they use and buy. Customers are now looking for:

1. **New digital services.** Customers require instant access to emerging and innovative services that meet their needs at a competitive cost.

2. **New channels.** Using alternative forms of media and a wider range of channels – increasingly, digitally enabled – customers want to engage with other users and with their service providers anytime, anywhere.

3. **Seamless experiences.** Customers expect to have a simplified, seamless, consistent experience in every interaction, across all channels and from every service.

Transforming BSS can help an operator fulfil both sets of objectives simultaneously. Put simply, by meeting the three imperatives on the operator side, the company can position itself to meet the three requirements on the customer side. The result: enhanced experiences for customers leading to loyalty and revenues – and blended with a tighter rein on costs.

Problem areas that typically endanger a transformation programme

Once the decision has been made to undertake a BSS transformation, careful planning and execution are vital. Without them, the programme risks encountering a range of problems that could cause it to fall short of the targeted outcomes, overshoot budgets and/or timelines or fail altogether. An operator could be stuck with its legacy BSS. Problems typically occur in one or more of three areas.

Business. In the business domain, issues can arise around 'scope creep' in functional requirements. Or when time and costs can be added by overly extensive or complex product set and price plans, complex customer account hierarchies or failing to make sure business requirements and use cases are complete before embarking on the transformation. Further problems can occur when existing processes need to be re-engineered, and when service-level agreements and performance metrics need to be aligned to suit the new BSS. Solid buy-in and participation from business stakeholders are also critical. And when their participation is inconsistent or incomplete, the project's success can be seriously affected. When one or more of these problems arise on the business side, the impacts on customers can be significant.

Technical. Meanwhile, on the technical front, inadequate planning and execution may lead to scope creep in the technical requirements. Delays and extra costs may result from incomplete test cases and poor or rushed test planning. Failing to start the implementation with a complete, detailed, end-to-end architecture plan can lead to more development and reworking. Further common technical pitfalls include incompletely identifying required interfaces, issues about data quality and a lack of institutional knowledge of applications and data stores. Finally, failing to maintain code at a high quality will both affect the transformation and create problems for future maintenance and enhancement.

Execution. The third area where problems tend to arise is in execution. Here, issues can occur because of failing to make sure the planned project timelines are practical and achievable within budgets and resources, or failing to maintain strong governance and oversight, including the attendance and engagement of important stakeholders. Poorly integrating the solution among stakeholder groups or lacking alignment within the organisation also can undermine progress. Further common problems in execution include work plan inconsistencies, communication gaps and insufficiently managed risks and issues. Any or all of these pitfalls can lead to budget overruns, which can in turn compound the problems as people lose faith and cut corners to save on costs.

Five priorities for managing risk during a BSS transformation

Because a BSS transformation is critical to an operator's future success, and because a wide range of problems can arise, managing risk closely throughout the project is vital. Drawing on our experience in helping communication service providers achieve smooth and successful migrations to new BSS platforms, we've identified five priorities CSPs can focus on to increase the likelihood of achieving what they planned.

1. Implement the right governance structure or operating model

Implementing an appropriate and robust governance structure or operating model is a top risk-management priority of any BSS transformation programme. The right structure will incorporate a strong partnership between the business and IT to make a successful conversion most likely. A common pitfall is that one organisation – either IT or the business – is viewed as the sole project owner. But experience shows a true partnership between business and IT to be critical.

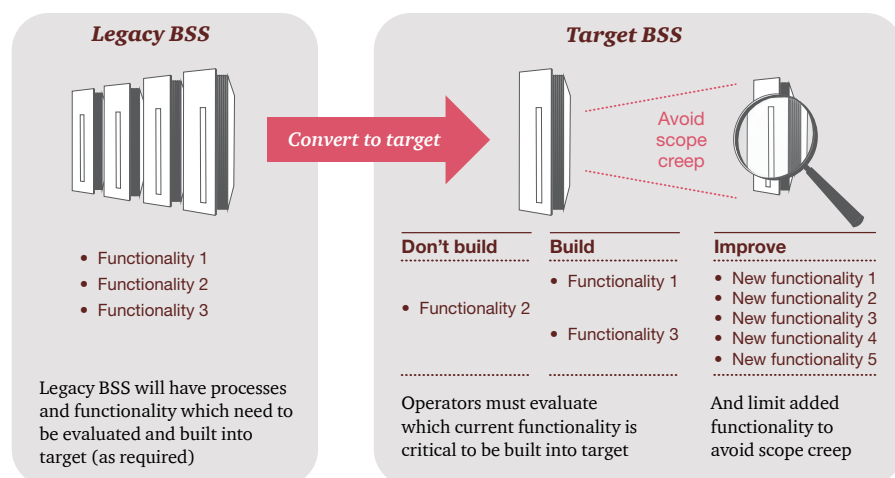By definition, BSS transformations require CSPs to move from a legacy to a target platform that very likely has different functionality, features, options, processes and so on. This transition may be achieved in several ways:

- IT pushes for the lowest-cost effort resulting in significant impact to the business and/or customers.

- The business pushes to build all legacy functionality into the target platform (i.e. parity between systems) or even to make improvements to the target 'while we're at it'.

- The business and IT work together to focus on building legacy-to-target functionality for critical items only and agree on any out-of-scope improvements.

We recommend the last scenario: The business and IT work together to focus the scope of the transformation jointly *(see Figure 1)*. Typically, what influences the formalising of the target platform's functionality is a formal business requirements work stream that employs either 'waterfall' or 'agile development' techniques. Transformations of this size are likely to generate multi-year, multi-million-dollar projects. If IT and the business don't work together closely, CSPs will end up with neither side satisfied with the change, business benefits not realised or the transformation never completed due to budget and timeline overruns.

Figure 1: Typical process structure for transforming business support systems

Legacy BSS

Convert to target

Target BSS

Avoid scope creep

- Functionality 1
- Functionality 2
- Functionality 3

Legacy BSS will have processes and functionality which need to be evaluated and built into target (as required)

Don't build

- Functionality 2

Operators must evaluate which current functionality is critical to be built into target

Build

- Functionality 1

- Functionality 3

Improve

- New functionality 1
- New functionality 2
- New functionality 3
- New functionality 4
- New functionality 5

And limit added functionality to avoid scope creep

To help coordinate IT and the business, CSPs should consider instituting the following components and processes:

- **Formal stakeholders.** Appropriate owners (from executives to the working team) should be established early on from multiple areas of the business (such as Marketing, Product Management, Customer Care, Billing Operations, Finance) as well as IT.

- **Established governance.** Stakeholders of IT and the business must meet regularly to jointly determine and manage scope, progress, risks and execution plans.

- **Development approach.** IT and the business must agree on the fundamental process methods to use (agile versus waterfall development). Each method requires differing involvement from all levels of the organisation and must be agreed-upon and planned for early on.

- **Change management.** A transformation of this magnitude will affect most areas of a CSP's organisation. This transition will require focus to acknowledge, identify, plan and execute change.

- **Hands-on PMO.** The programme management office (PMO) must be able to work with all functions and levels of the operator and must know how to work through organisational barriers. That office must be very aggressive about complying with the timeline, identifying issues early, managing cross-functional dependency and identifying and mitigating risk.

- **Third-party coordination.** Large transformations may include large numbers of stakeholders and multiple vendors. All of them must work in a coordinated way to minimise duplicative effort and jointly make the project a success.

- **Targeted communication.** Communicating about progress, status and issues with stakeholders at all levels must be maintained, and the feedback loop must be completed by providing channels for the business to communicate with IT.

- **Issue resolution.** Stakeholders of IT and the business must establish the mechanisms and channels that are best for quickly gathering, researching, escalating and settling transformation issues that arise from all parties.

2. Choose appropriate transformation strategies

An operator approaching a BSS transformation programme can choose from a range of strategies to move customers and products from legacy systems to target systems. Since each approach brings its own pros and cons, a CSP should evaluate the various strategies and select the right one – or the right hybrid combination – to meet its own specific needs. To make the best choice, they should take into account factors such as their customer base, their product and service portfolio and the complexity of those products and services, as well as the characteristics of their operating model and organisational structure.

CSPs must first decide the overall strategy for moving customers to target platforms. They may migrate individual or relatively small groups of customers, convert customers as an IT effort or some combination of the two.

Some CSPs elect to 'drain the swamp'. That approach migrates customers from the legacy platforms to the target platforms individually, usually because of a trigger event like a customer moving to a product already billed on target systems. Typically, the migration is completed through business-as-usual processes and occasionally IT supports it with scripting. Other CSPs choose an IT conversion or a cut-over process to move customers, generally over one or more quiet periods like a weekend or a holiday. A common practice is to combine the two approaches, by reducing the customer base in legacy systems before a conversion – allowing the legacy systems to be retired earlier.

Selecting the most appropriate conversion strategy is a critical decision that will affect all other aspects of the conversion plan. Broadly speaking, there are four distinct strategies for converting to a target BSS platform, and choosing among them will depend largely on how the business plans to operate in the future. The main strategies focus on:

- **Geography.** The conversion is planned, managed and performed on a region-by-region basis.

- **Customers.** The conversion is performed on the basis of customer segmentation, such as small/medium-sized businesses, large enterprise accounts and consumers.

- **Products.** The conversion is performed by product types, with specific classes of products being converted successively to the target BSS platform based on the cadence of the conversion.

- **Systems.** The conversion is performed either on the basis of specific-source BSS (in the case of 'many-to-one' conversions, like transitioning from legacy billers accumulated through acquisitions to a single platform), or target BSS (in the case of 'many-to-many' conversions, like moving from multiple regional billers to significantly fewer target billers based on line of business).

Many CSPs opt for a hybrid strategy, combining elements of one or more of the approaches above in a specially tailored way that best serves the business's unique needs.

3. Simplify the product set

In 1909, the automotive industry pioneer Henry Ford was asked about customers' paintwork options for the Model T, the world's first mass-produced car. He famously replied: "Any customer can have a car painted any colour that he wants, so long as it's black." Even though today, no company – CSPs included – could get away with

Case study: a US-based operator simplifies its products

A communications operator based in the US that was planning a BSS transformation had approximately one thousand product plans active in its legacy systems. Only 15% of those plans were producing the vast majority of its total revenue. The operator also had disparate data sources with no centralised view of all products, programmes and plans by domain. The operator developed a simplification plan and a road map for exiting more than one-third of its legacy plans in year one, with an achievable target of reducing the number of plans by more than three-quarters after two years. After one year, the operator achieved (and sometimes beat) its simplification targets – successfully streamlining its product offering.

such a restrictive approach to customer choice, Ford's point still holds true. Simplifying the range of products yields the benefits of reducing complexity and costs.
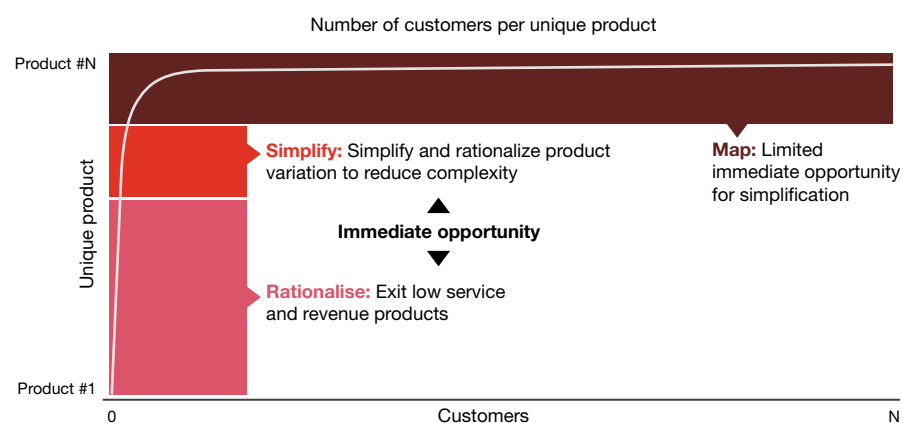
But simplifying the product set isn't a straightforward task. That's because it demands a well-coordinated and closely aligned effort among several business units – including marketing, finance, regulatory compliance, operations and call centres – in order to mitigate any unwanted effects on customers and control the risk of churn.

Product simplification helps create the context for transforming BSS and helps lower the risk of problems during the project by significantly reducing – typically between 30% and 70% – variations in an operator's overall products. Simplifying helps make the transformation possible by reducing the effort required in:

- **Development,** by managing complexity within the target platform as well as the conversion extract, transform and load processes.

- **Reference tables,** by creating price plans and features and by mapping products to new services.

- **Testing/bill reconciliation,** by validating functionality, reconciling mock conversions and detecting and addressing any defects.

- **Implementation,** by performing gap analysis and identifying conversion defects.

By making all those activities quicker and easier, product simplification can reduce risks, shorten timelines, reduce errors and lower costs. It also facilitates a modular approach to the transformation and makes a narrower mapping of products to the target architecture possible.

Figure 2: Process for assessing opportunities to simplify products

Number of customers per unique product

Simplify: Simplify and rationalize product variation to reduce complexity

Map: Limited immediate opportunity for simplification

Immediate opportunity

Rationalise: Exit low service and revenue products

While simplifying a product set, it's important to remember that the changes will affect customers directly, requiring some to be migrated away from products that are being discontinued.

There are two ways to approach and plan a product simplification effort – from the top down and from the bottom up. A top-down approach typically starts at the product level and determines whole products to eliminate due to obsolescence. A bottom-up approach begins by assessing the number of unique product codes in its portfolio against the number of customers per unique product (see Figure 2).

Products that a high number of customers use aren't easy to simplify immediately. But products used by smaller numbers of customers offer opportunities both for rationalisation (by decommissioning low-service, low-revenue products) and for simplification (through simplifying and rationalising product variations to reduce complexity). Regardless of the

approach, decisions at both the product and the product-code level must be accounted for across the entire portfolio.

While simplifying a product set, it's important to remember that the changes will affect customers directly, requiring some to be migrated away from products that are being discontinued. That will result in savings from operational enhancements at the business-unit level, yet there's a risk of the benefits coming at the cost of a higher, unanticipated customer-attrition rate. To mitigate this risk, special efforts need to be made to handle correctly the effects on customers of simplifying products. Steps to take include analysing in detail to identify possible areas of high churn and coordinating communication to explain the changes and sell the benefits to customers.

4. Plan and undertake robust testing processes

Vigorous testing is an absolute prerequisite for a successful BSS transformation. Any operator that fails to focus on testing as a priority is putting at risk not only its goals in transforming its BSS, but also potentially its own future as a business. The diagram in Figure 3 illustrates the life cycle for a leading-practice approach for testing a BSS platform. The approach should integrate a series of processes – test analysis and reporting; defect management; test strategy and planning; test design and requirements tracking; test procedure and scripting; and test execution and logging – in a continuous, cyclical workflow.

Figure 3: The main processes and life cycle of an effective BSS transformation testing approach
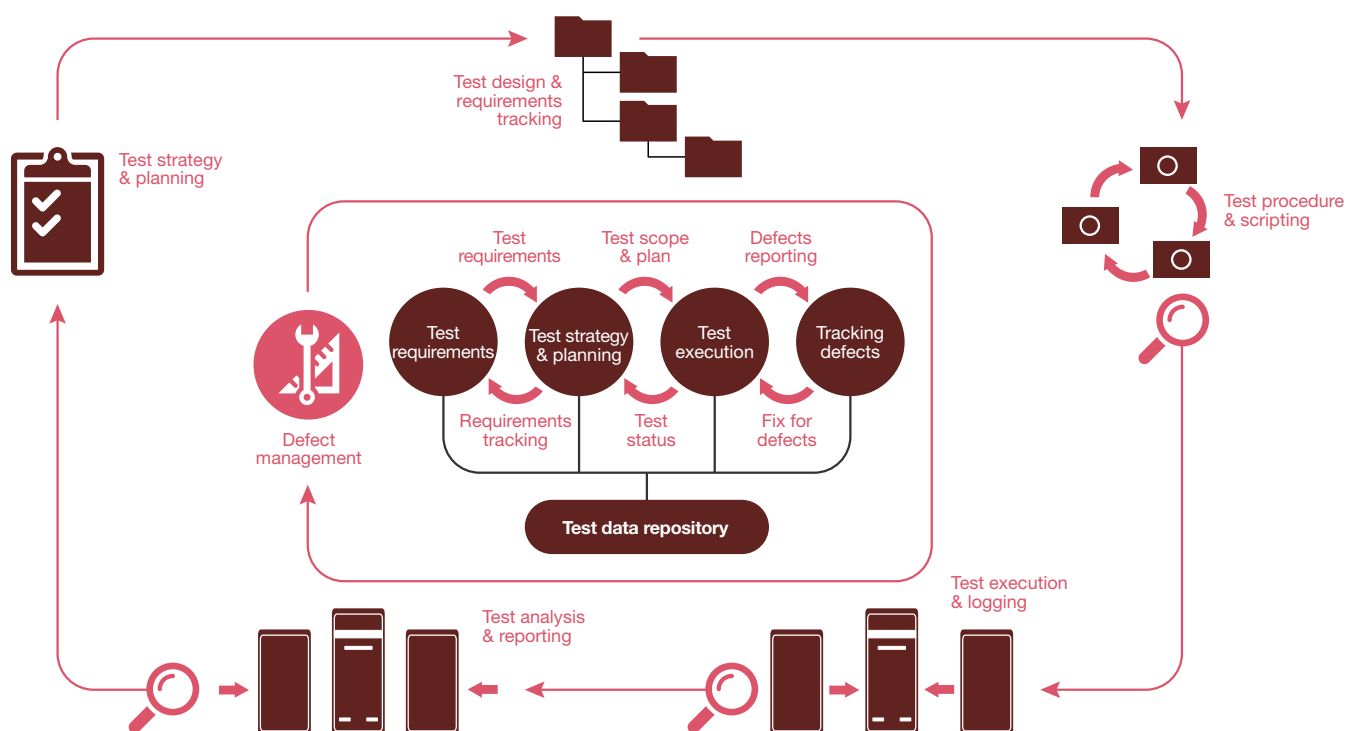
Migrating to a new, consolidated platform can result in a downward step change in IT fixed costs, operational efficiencies in front- and back-office functions and a more agile and adaptive operating environment for CSPs.

PwC's experience with BSS transformation programmes shows that the testing methodology and approach should aim to achieve these main goals:

- **Identify and remediate defects as early as possible in the transformation programme.** Identify the root causes of defects to keep from repeating them, particularly in mock conversion/bill-to-bill testing. The diagram in Figure 4 illustrates the importance of identifying defects early since the cost of remediation increases over the time the conversion progresses.

- **Incorporate timely and transparent reporting and metrics.** Timely, transparent information helps keep unpleasant surprises about quality levels with the new BSS platform from emerging shortly before the deployment or conversion. These same metrics can then be used in making go/no-go cut-over decisions.

- **Automate testing as much as possible.** That will increase the speed, efficiency and coverage of the testing processes.

When a chosen testing approach is implemented, factors critical to its success include that the tester running the process – the testing organisation, testing vendor, etc. – has to be objective and impartial and not overly influenced by particular sectional interests. The strong involvement and buy-in of the business are vital also, for example in its participation in user-acceptance testing and agreeing to thresholds of quality.

With the right approach, processes and participants in place, a number of components of the testing are especially pivotal to success. One is bill-to-bill comparison testing, when billing is run in the legacy system and in the target system (after a mock conversion), and the bills generated by the two systems

are compared. Another is end-to-end testing of the order-to-cash life cycle. And in another – financial/controls testing – various scenarios with differing financial impacts are reviewed to be sure revenue recognition and reporting are appropriate under the new BSS platform.
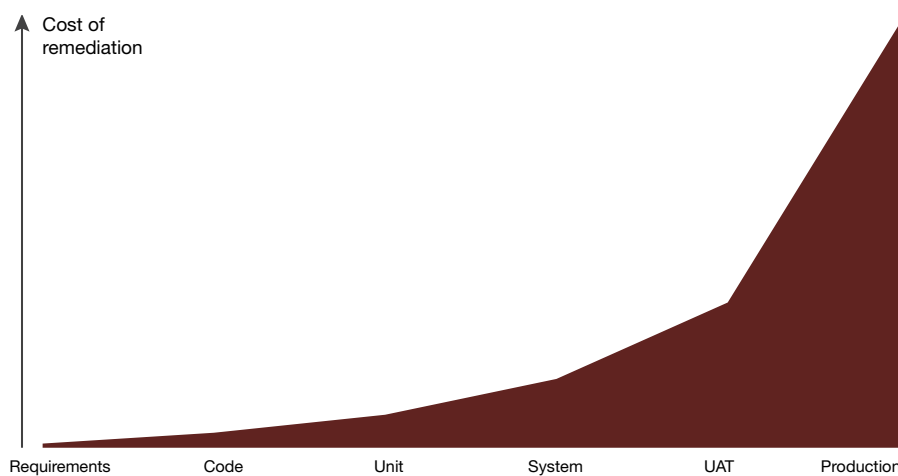
More generally, other traditional forms of testing are also vital. Included are unit, system, integration, functional, performance, load and user-acceptance testing.

5. *Map business process changes to effects on customers and operations – and develop mitigation strategies accordingly*
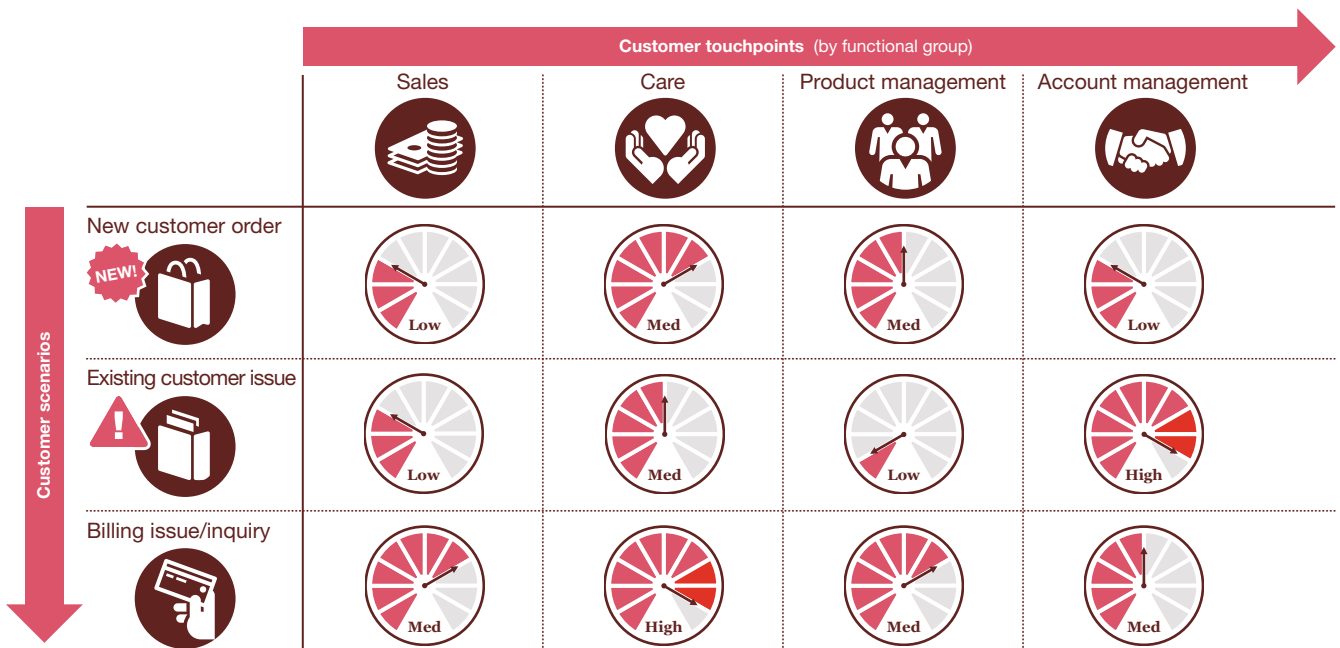
The changes in processes that a BSS transformation requires can affect what the customer experiences – anywhere from the bill format to chatting with a service representative when enquiring about a bill or an issue. At the same time, any changes to processes may also have unplanned effects on other aspects of the business and operations. When planning the transformation, an operator can reduce the risks of dissatisfied customers and higher churn – and also of unintentionally disrupting operations – by mapping all business process impacts directly to contact with customers and operations.

This mapping lets an operator see clearly where the customer, the business or both will experience a change – whether positive or negative – and take steps to address or minimise potentially negative effects before they happen. A useful tool for achieving that is a customer-experience framework (see Figure 5), which uses a scenario-based approach to map where customers will be affected in various points of contact and in various functional areas of the business.

Figure 4: The rising cost of identifying and addressing defects during a BSS conversion

Figure 5: A customer-experience framework – where business processes and customers interact

Customer touchpoints (by functional group)

	Sales	Care	Product management	Account management
New customer order	Low	Med	Med	Low
Existing customer issue	Low	Med	Low	High
Billing issue/inquiry	Med	High	Med	Med

Customer scenarios

The first step towards a comprehensive customer-experience focus is to review the current business processes and identify the areas the transformation is expected to affect. The process changes can then be mapped to specific outcomes.

Knowing the business areas where customers are likely to be affected can be used to generate a 'heat map' of customer experience. By anticipating the extent and frequency of the impacts on customers as well as the functional process areas where they originate, an operator can mitigate the impacts. As Figure 5 shows, such a map identifies situations, or scenarios, where customers may be affected and tracks each scenario against points of contact with customers to reveal the impact on interactions throughout the customer life cycle. Importantly, the heat map highlights the 'hot spots' where multiple impacts intersect and high risk can be expected.

Creating the heat map gives an operator a starting point for developing mitigation strategies and setting priorities. It's important to understand not only that changes to business processes clearly are a consideration

for any customer's experience, but also how many times a customer will be affected by changes such as new product codes, bill format changes, billing cycle date changes, etc. An example that PwC encountered during a recent client engagement is described in the accompanying case study of a global CSP.

Certain innovations now help operators quantify and track their customers' experience – which has been virtually impossible until now. Through social listening, companies can listen to what consumers are saying in their posts on social media and uncover themes and overall insights. Doing so lets an operator track how often a particular product, geography or channel is mentioned and identify when the number of mentions spikes. Then, with the help of social-listening professionals, CSPs can perform root-cause analysis to determine what 'pain points' customers experience during a product-simplification process, a BSS transformation or product migration. This input can be used to adjust communication techniques and possibly even conversion strategies, particularly for subsequent conversions.

Case study: a global CSP addresses how a platform conversion affects customers

A global CSP was planning to convert millions of customers from its legacy BSS platforms to its target platform. An assessment of the conversion process, comparing existing and target processes, identified more than 100 specific impacts on customers. Those impacts were mapped by functional areas and customer scenarios to identify the areas at risk. The operator developed detailed plans for communicating with customers and notifying them of upcoming changes, and provided instructions on where to find more information. Consequently, the operator minimised the effects on customers and carefully managed expectations.

Conclusion: getting fit for the future

As CSPs face continuing, profound change in all their services, their customers' behaviour and their business models, they're finding that BSS platforms designed for the old world often are no longer fit for current purposes. In many cases, an affordable programme to transform their BSS is the only viable option. But alongside the opportunities lie risks.

By focusing rigorously on the five risk priorities we've highlighted, CSPs can establish a strong foundation to help their BSS transformation stay on track. They'll successfully navigate a migration that will make their business agile and fit both to compete and to win in the digitally enabled communication services market of the future.

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