How to Get Started and Deploy Bimodal Capabilities in CSPs

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Confronted by the need to innovate, create efficiencies and become more agile, CSPs are moving to become digital. However, they have to do this in combination with running legacy, mission-critical, steady-state operations. We advise CSP CIOs on how to get started and deploy bimodal capabilities.

Key Challenges

- Organizational inertia is prevalent in CSPs where sequential development (Mode 1) is used to enable incremental changes. Leadership trained in traditional methods and project governance grounded on predefined deliverables often considers the disruptive nonlinear development (Mode 2) too risky to use.

- Complex stakeholder management issues and the perceived risk of operational instability make Mode 2 difficult to use in an industrialized way to enable digital business.

- In an effort to clean up complex legacy applications that are embedded with spaghetti-like integration, CSP transformation efforts are often primarily focused on technology modernization. Not enough effort is put toward addressing the foundational barriers to change, such as amending governance, funding, acquiring adequate skills and enacting cultural change.

Recommendations

The following three steps can be taken to get started and deploy a bimodal capability:

- Start small. Apply Mode 2 to one project or a small number of projects, leveraging existing expertise in iterative software development capabilities (such as agile), or collaborative joint innovation projects with vendors as demonstrative catalysts for enterprisewide change.

- Establish clear and transparent governance principles, and create the filters that will be applied to decide what project goes into which mode and why.

- Realize that success will be built on culture change. In this situation, strong leadership is a must. Start with culture transformation in small steps by adopting an iterative approach to establishing and developing a bimodal capability, and keep the momentum going.
Introduction

Communications service provider (CSP) IT leaders have become increasingly aware that they have no choice but to transform to become digital organizations. IT leaders witness barriers to transformation, such as:

- Organizational inertia stemming from established processes about predefined investment deliverables and a demand for perfection (five 9s reliability).
- Nonavailability of individuals and managers with the right skills, such as agile, lean, DevOps, open APIs, ecosystem partnerships and digital product know-how.
- Business processes dependent upon legacy applications that are embedded into complex workflows with spaghetti-like integration. This makes modernization efforts difficult to complete quickly.

These are certainly not the only barriers, but they illustrate how challenging the transformational journey is. Legacy-based CSP IT was built and organized primarily to provide support for traditional voice and connectivity services, rather than enable new digital solutions. Inherently it is too rigid to drive digital business, which calls for agility, flexibility and the ability to manage uncertainty and risk.

Thus, to be successful, CSPs need to change their methods. They need to adopt more-appropriate governance and planning mechanisms, as well as create a capability and a culture that allow them to experiment more, fail fast, fail small and fail visibly. They need to manage this capability in
combination with running the more-predictable, mission-critical steady state. This requires a bimodal capability (see "CSPs' Digital Business Requires a Bimodal IT Transformation Strategy"): 

- **Mode 1** is a linear approach to change, emphasizing predictability, accuracy, reliability and stability.
- **Mode 2** is a nonlinear approach that involves learning through iteration, emphasizing agility and speed and, above all, the ability to manage uncertainty.

To be industrialized and enable repeatable and flexible digital business in an efficient manner, this transformation must include not just modernization of technology stacks, but also the wider aspects of the IT organization including its structure, skill sets, methodologies and governance to enable a CSP to participate effectively in the broader digital ecosystem.

But where does a CSP IT leader pragmatically start on such a journey?

As shown in Figure 1, the journey starts with transforming the methodologies/processes and the tools and technology pillars at small scale to produce the small DevOps teams (Step 1). To ensure continuity, industrialization and predictable outcomes based on CSPs' business strategies, the small DevOps teams are further empowered by introducing just the right level of governance and decision framework, and the required resources (Step 2). However, the successes of the small teams and their venturing into uncharted waters of bimodality to enable digital business will be short-lived without the foundational enablers, led with a proactive approach to culture change, through the lenses of funding, skills and talent acquisition, and leadership change (Step 3). These three steps are not necessarily to be executed in sequence; rather, CSPs must start implementing elements of each step in concert with each other.
In the following sections, we explain the three steps to overcome common transformational barriers and start implementing an industrialized bimodal capability.

**Analysis**

**Step 1 — Start Small; Show Practical Results Rather Than Tell**

Establishing an organizationwide change to a bimodal approach takes time. It's important to ensure the benefits are clearly explained and proven via a number of small startuplike projects that can serve as proof of concept with immediate benefits.

Experience from CSPs that have begun the journey, such as Telefónica Germany and Telstra, shows that a pragmatic approach is to begin with small and simple software systems that are less integrated into the larger environment. In this way, delivery can be tested and improved in a "closed" environment. As the delivery of value becomes recognized by the business, then Mode 2 can be applied to larger and more-complex projects (see "Getting Started With Lean Startup").

Other successful examples show that the small self-contained DevOps teams are staffed with visionary leaders and IT practitioners who recognize that offering digital solutions requires breaking
from the past. The skills required span from very tactical (DevOps) to digital business capabilities, such as the ability to identify digital business opportunities and build new monetization models and delivery capabilities. The small teams are project-centric, business-unit-centric, dev-team-centric or digital-service-centric. What these examples have in common is their collaborative small teams and visionary leadership that have found a way to fund the innovative work on a small scale, often outside of the CIO organization.

In a few examples, these successful teams have been built and implemented within CSPs’ chief marketing officer (CMO) or IT services organizations, where the respective leaders have taken charge to introduce innovative solutions and services. They could not rely on the CIO organization to deliver innovative IT capabilities, mainly because the CIO organization in many instances is still perceived and operates as a cost center and to support IT.

With respect to acquiring the skills and the talent for the new digital projects, CSPs have taken these approaches:

- Where it makes business sense, CSPs have bought companies for their digital offerings, as well as for the talent. Examples of these are Verizon’s acquisitions of Hughes Telematics and Terremark.
- They hire from Internet companies.
- They hire digital natives — recent college graduates who have no idea what waterfall methodology means.
- They establish collaboration with educational institutions and push the education institution to be transformative. An example of this is AT&T’s collaboration with Georgia Institute of Technology in Atlanta. AT&T, together with Udacity, an online education company, are collaborating to enable cost-effective high-quality degrees in disciplines and topics that are required for the new digital economy.

**Recommendations:**

- Start by building small agile teams and introducing a mixture of technology-centric capabilities (DevOps), as well as business acumen.
- Focus on small, simple projects to demonstrate the value of agile and DevOps approaches. Use the successes as proof of concept (POC) to the business stakeholders.
- Ensure the proper funding for your DevOps teams. Often this may mean using some of the IT "support money" for these new initiatives, and it does not come without risks. Often, you will need to work with the CMO leaders, because many DevOps initiatives are started within the CMO organizations.
- Proactively think about the education of your DevOps teams and their cultural composition with respect to openness and risk taking. You build a team that understands that openness is a key and that risk taking is a way to learn from mistakes and improve in small iterations.
To set a sound foundation for successful DevOps implementations and ensure continuity for a longer period, start with the following DevOps principles and practices. DevOps must be: (a) iterative, (b) continuous, (c) collaborative, (d) systemic and (e) automated. For more details, see "Principles and Practices of DevOps."

For practical and tactical guidance on how to implement a DevOps initiative, focus on the following steps: (1) Define DevOps for you, (2) Pick the app, (3) Pick the team, (4) Pick a methodology (or two or three), (5) Change the metrics, (6) Automate as much as possible, and (7) Consider a tool chain. For more details, see "Seven Steps to Start Your DevOps Initiative."

Step 2 — Establish Clear Decision Frameworks and Governance

CSPs are presented with a continuum of opportunities with respect to digital transformation. Traditional solutions are implemented and run in Mode 1, but increasingly the customer-facing parts of the traditional solutions can be transformed using Mode 2, enabling their participation in the digital ecosystem (see Figure 2).

Figure 2. Implications of Mode 1 and Mode 2 in the Continuum of IT Projects

Digital projects on the right are delivered mostly in Mode 2, either in the newly constructed digital environment or in the traditional environment (self-service, multichannel). However, CSPs' digital solutions can be empowered and bring additional value to the CSPs if the existing network and existing IT layers' capabilities are exposed as open APIs via open platforms in a way that they don’t create dependencies for the digital offerings (see "Innovation Insight: Open APIs Are Catalysts for Telecom Providers' Business-Led Innovations" and "The Importance of Open Platform Strategies for CSPs Joining Emerging Digital Ecosystems").
With respect to funding for the new digital solutions, it requires that CMOs and the rest of the business leadership adopt new ROI and business development models around the design, implementation and delivery of modular components, developed in rather short development cycles.

Establishing a framework to enable IT management to "filter" projects — or decide what goes into which mode and why — will provide an effective mechanism for managing demand and supply. This will also establish some context within which a governance framework can operate, and allow the business and IT to provide the overall direction and goals, while reflecting the use of a bimodal approach to achieve those outcomes.

There are two common situations where this decision framework will need to be employed:

- When the digital project requires minimal or no integration with the traditional environment
- When the digital project requires substantial capabilities from the traditional environment

**Digital Project With No/Minimal Legacy Integration**

In this situation, the creation of an environment for digital solutions is primarily about enabling Mode 2. The use of DevOps in CSPs is rather disruptive and cannot be applied across the transformation of the existing infrastructure. However, as we show in Figure 3, DevOps (as an enabler of Mode 2) is required for the construction of the digital environments.
A recent report about CSPs' transformation of their network and IT infrastructure in order to be able to offer Internet of Things (IoT) solutions (as an example of digital capability) shows that CSPs are recognizing the limitation of the traditional infrastructure that was designed, implemented and optimized for voice-centric and traditional connectivity services. Thus, in the process of offering IoT solutions, CSPs are building core network elements and IT capabilities as an overlay to the traditional infrastructures with clean delineation. Capabilities from the old infrastructure are consumed via open APIs (see "CSPs Must Implement Overlay Core Network and IT Capabilities to Enable a Broad Range of IoT Initiatives").

The construction of the new digital environment is based on the principles of open APIs and open platforms, modularity and reusability of components, and agile and flexible approaches, including lean, lean startup and minimum viable product (MVP) (see "Choose Agile, Lean and Lean Startup to Radically Improve CSP Speed to Market"). This is Mode 2, and the IT tactical aspect of how to go about implementing such an environment is exemplified in the DevOps practices.

**Recommendations:**

- Recognize the degree to which the digital solutions will require integration with the traditional network and IT environment. Use Mode 2 to design and implement the digital solutions.
Identify what IT capabilities are required for digital projects. To do so, you can use Figure 4 in "Transforming Telecom IT for Digital Business," where we have identified a common set of IT capabilities in six domains that CSPs are implementing.

Engage finance and corporate governance bodies proactively to seek engagement on the measures of success for Mode 2.

**Digital Project With Substantial Integration With Legacy**

The transformation of the existing infrastructure to enable CSPs to extract value from existing network, IT and informational assets, and thus integrate into and enable CSPs' digital solutions, is twofold:

- Use Mode 2 for the side facing digital ecosystems and digital solutions.
- Use Mode 1 for the side facing the back end. *(This is not the focus of this report.)*

Deciding which parts of the existing infrastructure need to be transformed and made agile is rather challenging for CSPs.

When it comes to flexibility and agility, CSPs are prioritizing the systems and interfaces that are closer to the user, such as the self-service and self-provisioning systems, namely the service delivery platform (SDP) and business support system (BSS) components and capabilities that face the customer (see “Marketing Essentials: The Choices CSP CIOs Are Making About SOA and Why Marketing Should Care”). This aligns well with Gartner’s guidance for a pace-layered approach.

Gartner’s pace-layered approach can help you decide which elements of the bimodal IT strategy need to be the most flexible, and which do not need the full flexibility — based on how often and how quickly they are expected to change. For example, the systems of records (back-end network and IT systems) do not need frequent changes and must provide stability while reducing cost and risk, whereas the systems of innovation (customer-facing) require maximum flexibility to support new ideas and experimentation (see “Concepts of Pace Layering in System Design” and “SOA Enables a Pace-Layered Approach to Applications”).

**Recommendations:**

- Employ Gartner’s pace-layered development strategy to help you decide how to approach your bimodal IT strategy. Roughly speaking, the IT systems that are closest to CSPs’ customers — and that are expected to change the most — should be prioritized to develop IT infrastructure based on service-oriented architecture (SOA) principles, and designed for flexibility and changeability.
  - Use Mode 2 for the side facing digital ecosystems and digital solutions.
  - Use Mode 1 for the side facing the back-end systems.
  - Open up the traditional network, IT and information capabilities via open APIs for consumption by the digital ecosystems, internal and external.
Step 3 — Transform the Foundational Enablers by Formalizing Your Approach to Culture Change

Culture can be described in this context as the propensity to shift from an internal-only support, risk-averse mindset to a customer-centric, risk-tolerant environment of change.

Culture is a term abused in popular media and ignored by most IT leaders. IT leaders typically see it as either something that just happens — and therefore is resistant to management — or takes far too long and is far too hard to change so isn’t worth making a priority. This is unfortunate, as culture is one of the most significant barriers facing CSP IT leaders hoping to transform their in-house IT organizations.

In general terms, there are two broad approaches being used by leading CSPs. The first is to set up a separate Mode 2 team that is just far enough away from the in-house IT organization to be able to innovate, but not so far away as to go completely feral.

The second way of shifting culture is to do it from within, by focusing on the existing talent. In general, this takes longer and is more challenging. In principle, it can be achieved by teams being motivated and trained to adopt “outside-in innovative thinking,” where all aspects of the value chain, from initial needs identification to delivery and measurement, focus on the customer. There are three broad approaches to this — leveraging and making better use of the individuals already in IT who “get it”; using development and training to raise the general level of new required behaviors in the whole IT organization; and bringing individuals from commercial roles, consultancies and so on with the desired cultural norms (see "Knowing What to Change Is the Hard Part of Culture Change").

For more in-depth analysis and guidance of what it means for a CIO to lead a culture change, focus on the following milestones in the context of your agile teams, as well as the broader goals of becoming a digital business, such as becoming a leader, creating the vision, designing the culture, and setting up the teams (see "Driving Business Transformation by Changing the Culture").

As we have mentioned in the first two steps, explicit or implicit funding for IT is a critical element to ensure the development of the DevOps team. The successful deployment of bimodal is thus contingent on developing the DevOps teams, the governance framework for the DevOps teams' operation in Mode 2 and Mode 1, and the proactive skill set development planning required as part of the culture change initiative.

**Recommendations:**

- As an IT leader, adopt a vision that IT can drive revenue in the new digital economy.
- Do not underestimate the cultural change requirement.
- Observe the operations of the small Mode 2 teams, and learn from the successes.
- Foster a philosophy that risk taking and failure are an opportunity to learn.
Gartner Recommended Reading

Some documents may not be available as part of your current Gartner subscription.

"Architect for Uncertainty to Drive Continuous Innovation"

"Bimodal IT and Adaptive Sourcing Are Critical to Digital Business Success"

"Kick-Start Bimodal IT by Launching Mode 2"

"CSPs' Digital Business Requires a Bimodal IT Transformation Strategy"

"Seven Organizational Implications for CSPs Embarking on Digital Service Transformation"

"Apply Gartner Research for a DevOps Perspective When Implementing a Bimodal Strategy"

"Principles and Practices of DevOps"

"Seven Steps to Start Your DevOps Initiative"

"How to Scale DevOps Beyond the Pilot Stage"

"Driving Business Transformation by Changing the Culture"

Evidence

This research is based on conversations that Gartner’s CSP analysts have had with CSPs from across the globe in the past 12 months on how they go about implementing initiatives to offer digital solutions. The insight and analysis from these conversations is supplemented with meta-analysis of existing Gartner research on DevOps, bimodal and digital business.
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