Digital Engineering: Top 5 Imperatives for Communications, Media and Technology Companies

Many companies share similar digital objectives. Here are our recommendations for realizing five common digital goals, and a look at a few companies that have succeeded with meeting them.
EXECUTIVE SUMMARY

Digital initiatives are on the radar for most communications, media and technology companies. At the highest level, the goal is to deliver more valuable software, more quickly. But for too many companies, the specifics of pursuing digital are hazy. What real-world business problems does the digital pursuit solve? How do people, process and technology need to come together to solve those problems? Where is the best place to start?

In our conversations with clients about digital transformation, the same five business imperatives continuously surface: Increasing the pace of getting new products in users’ hands. Aligning the business and IT strategy. Breaking down organizational silos. Developing a world-class user experience. Ensuring cost-effectiveness.

This white paper describes each of these goals, our recommendations for achieving them, and a real-life example of how we’ve helped companies meet each objective.
GOAL 1 INCREASE THE PACE AND VELOCITY OF PRODUCT DEVELOPMENT

Scenarios like this one play out every day: A product manager comes to the IT organization with a request to move quickly on a high-priority project. The IT team answers, “We could do this, but we don’t have the resources.” If the project is critical enough, the business might offer to fund it, in which case IT pulls resources from other projects. IT finds itself consistently in reaction mode, responding to requests by building costly, one-off systems and custom code.

Recommendation

Standardize on a cloud-native application development platform and adopt modern software engineering practices such as continuous integration/continuous delivery (CI/CD) and build-measure-learn. Such a development platform eliminates impediments to pace and velocity, such as:

- Variations in cycle time.
- Inconsistent feedback loops.
- Lack of integration between release and test cycles.
- No common code repository.
- Inability to build 12-factor compliant, cloud-native apps despite having some full-stack automation and test data management.

Real-World Engagement

A communications service provider came to its IT team with an urgent request to customize its ERP application to comply with new customer-billing legislation. When IT said the project would take six months, the business unit offered to fund the project to get priority.

We recommended that the CSP instead invest that money in a cloud-native application development platform and standardized development practices. The cost of the platform is spread across all projects, including the original red-button project. The outcomes:

- The platform has become a catalyst for alignment between the business and IT. It’s where the business and IT come together to prioritize the backlog and decide on what and how to develop.
- IT understands what’s coming down the pipeline and can assign priority to new feature suggestions in collaboration with the business organization. No more surprises.
- The transition to cloud-native applications helps developers become more agile and continuously improve software products.
Adjust the organizational structure so that the teams responsible for keeping the business running, innovating and reimagining the user experience don’t have to compete for resources.

**GOAL 2**

**ALIGN THE IT STRATEGY WITH THE BUSINESS**

Misalignment between business imperatives and IT strategy is the most common problem we see within communications, media and tech companies. One symptom of misalignment is that the business prioritizes spending for “keeping the lights on” over spending for transformation. IT isn’t aware of business priorities, and therefore can’t align its efforts with those priorities.

**Recommendation**

Adjust the organizational structure so that the teams responsible for keeping the business running, innovating and reimagining the user experience don’t have to compete for resources. Some companies do this by creating a transformation office, while others embed a business owner in IT. Still others embed an IT product owner in the business organization.

**Real-World Engagement**

Facing the reality that hardware is increasingly becoming commoditized, a biomedical research hardware manufacturer is differentiating itself through its software solutions. However, the IT organization had its hands full keeping the lights on by managing a growing portfolio of custom, commercial-off-the-shelf and software as a service (SaaS) applications. The IT group had the expertise to develop software that worked - but not the elegant user experience that would result in a competitive advantage.

We worked with the manufacturer to provide a modern application development platform and to coach the development team on how to apply product engineering principles to software development. We introduced key tenets of modern software engineering such as build-measure-learn, CI/CD, a microservices architecture, paired programming and balanced teams centered around full-stack developers.
Connect Organizational IT Siloes Together

At some enterprises, different departments and business units have their own IT teams that work in isolation. One of our clients, a semiconductor company, had different IT teams, platforms and data architectures for fabrication, product development, marketing and sales. The problem: The teams couldn’t leverage each others’ work, slowing down new product development and impeding agility.

**Recommendation**

Standardize on a single data architecture and cloud-native development platform for all departments. The various business functions can still maintain separate IT teams, but the teams gain synergies by sharing the same development platform, data architecture and code repositories.

**Real-World Engagement**

Over time, the semiconductor manufacturer had worked with multiple vendors on IT projects for different parts of the organization. Code and processes developed in one area could not be applied to others. We introduced a standardized data architecture and platform for all departments, as well as a digital engineering approach: build-measure-learn with minimum viable products. The outcomes:

- Lower costs, achieved through reduced cycle times, continuous releases and less redundant code construction for ERP application customization and custom code development.
- Increased agility and faster velocity for new feature introduction, speeding up new product development cycles by more than 30%.
GOAL 4

DESIGN A WORLD-CLASS USER EXPERIENCE

Today’s workforce and marketplace expect a curated digital experience. Software that works isn’t enough; users also expect an efficient and elegant user experience. But internal teams often have to make do with a bare-bones interface.

Recommendation

Place the user at the center of software design. The goal is to delight the user — both through the features and the experience.

With monolithic applications, developers can’t change the user interface without also touching the business logic and database. Adding a new feature often takes so long that the user doesn’t need it once it finally arrives.

Microservices architectures make it easier to focus on the user throughout the development process and to evolve as quickly as user needs are identified. The basic idea is to build the application from discrete microservices that connect via open application programming interfaces (APIs). If a user wants something new, IT can modify a set of microservices without touching and re-testing the others.

Real-World Engagement

For a communications service provider, unidentified Wi-Fi dead spots were leading to lower customer satisfaction and high technical support costs. The CSP wanted to develop two versions of a readiness app — one for field technicians and another for customers.

We took a cloud-native development approach, using microservices to enable the CSP to continuously improve its apps based on user feedback. The service technician’s version of the app uses augmented reality to test for dead spots, sharing data with the service-ticketing and dispatch organizations. Customers are offered a self-service version of the same app. The microservices architecture enables the CSP to very quickly add new features. Outcomes include:

- Almost 50% less code rework time.
- Increased customer satisfaction.
- Reduced ticketing costs.
Microservices architectures make it easier to focus on the user throughout the development process and to evolve as quickly as user needs are identified.
DRIVE COST EFFICIENCY THROUGH APPLICATION TRANSFORMATION

Many communications, media and technology companies want to develop cloud-native apps. The twin barriers are lack of a platform and scarcity of talent.

Recommendation
Start by rationalizing the application portfolio. Rank applications based on their business value, cloud-native readiness and your organization’s IT capabilities.

Real-World Engagement
With a large and disparate array of applications from custom code, SaaS and commercial off-the-shelf applications, our client, a mobile operator, did not know where to start on the journey to application modernization. Competing demands from infrastructure teams, finance and the business forced the IT team into a reactive posture to app transformation.

Value stream is a consultative, learn-by-doing approach that enables organizations to strengthen the application transformation journey through application portfolio assessments and prioritization of effort through the lens of economic relevance, business impact and technical feasibility. The result is a robust, prioritized backlog roadmap.

The mobile operator was able to not only quickly identify the quick wins needed to pursue cloud-native apps, but also prioritize a backlog based on multiple variables and stick to the plan. The outcomes:

- A standardized view of a balanced, portfolio-level cloud migration effort.
- Cost efficiencies from platform standardization and code re-use.
- A widely publicized and agreed upon roadmap for prioritization efforts.
LOOKING FORWARD

Your company may be seeking to accomplish one, two or all of the goals described in this white paper. Based on experiences gleaned from more than 100 client engagements, we recommend the following path forward:

• **Develop a strategy and execution plan to move to cloud-native applications**, enabling software development at pace and velocity:
  » Embrace application deconstruction and build microservices.
  » Upskill practitioners and look for full-stack developers.
  » Look for a partner to teach paired programming.

• **Create alignment between the IT organization and your business strategy** by creating ownership constructs between the two organizations:
  » Consider a dedicated transformation office.
  » Implement combined performance metrics.
  » Don't underestimate the importance of cultural change.

• **Focus on users**, making their needs the center of every stage of the software development lifecycle.
  » Include UI/UX expertise in every developer pod.
  » Release continuously and evolve your backlog to consider real-time feedback.
  » Take a vertical slice through the application to generate a code backlog based on user feedback, not service layers.
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