

Digital Technology Consulting

## Continuous Delivery Operating Model for Entertainment Video Providers: Building a Software “Value-Delivery Factory”

To compete with digital streaming natives, established entertainment video providers need to build a streamlined, waste-free pipeline for rapid software delivery. We recommend an integrated approach to the four types of change needed: culture, process, engineering practices and platforms.



# Executive Summary

Incumbent entertainment conglomerates are scrambling to deliver higher-value software, faster.<sup>1</sup> The World Economic Forum projects that 30% of total revenues will come from new digital models by 2020.<sup>2</sup>

To make the shift to digital, entertainment video providers need to create a “value-delivery factory” — a streamlined, waste-free pipeline for rapidly delivering software with demonstrable business value. In a 2018 study, DevOps Research and Assessment (DORA) reported that elite business performers outstripped laggards on the four software-delivery metrics generally accepted as mattering most to business success:<sup>3,4</sup>

- Code release frequency: 46 times more frequent
- Lead time to change 2,555 times faster
- Change failure rate: 7 times lower
- Mean time to recover: 2,604 times faster

Transitioning to a continuous delivery operating model is not simple. It's a major undertaking that requires modernizing the entire content delivery value chain — from the front-end system of engagement through the system of record. The complete development process, from concept to content, must revolve around what delivers value to the customer (targeted audience content, addressable advertising, or content distribution channels).

This white paper, intended for entertainment video provider CIOs and leaders within lines of business, presents an incremental approach to building a value-delivery factory. We explain why a successful transition requires modernizing along four dimensions in parallel: teams and culture, processes, engineering practices (including microservices and a modern data architecture) and cloud-native platforms. To illustrate what success looks like, we share the experiences of a digital-first streaming service that has set the industry standard for continuous delivery operating models.



## Why legacy IT has become a liability for entertainment content providers

Entertainment programmers rely on hundreds or thousands of applications for customer engagement, distribution management, content delivery, and more. Many of these applications were written decades ago, some in the 1970s. Unlike modern applications built from reusable microservices, most legacy applications are monolithic. Adding or changing a section of code — say, to introduce a new feature or connect with a new distribution partner — can have the unexpected consequences described in *The Phoenix Project*:<sup>5</sup>

- Downtime that affects customers, the workforce and partners.
- Impeded agility. Even small changes take a long time because of the need for regression testing.
- Quality issues.
- Lack of transparency. Business leaders have little insight into which software development efforts drive business value.
- High costs. Maintaining legacy applications and the infrastructure they run on squeezes IT budgets, inhibiting innovation.

## Imagining a continuous delivery operating model

**“Our highest priority is to satisfy the customer through the early and continuous delivery of valuable software.”**

— The Agile Manifesto<sup>6</sup>

Competing with digital streaming natives takes more than one-off projects to build a better product, interface or back-end system. Success requires a strategic approach: building a factory that can regularly produce software that delivers true business value as measured by sales, retention or cost reduction.

The journey from traditional operating models to continuous delivery is not simple, and the pathway is littered with face-plants (see below). In our engagements with entertainment video providers around the world, we’ve found that a successful transition to a continuous delivery model requires modernizing along four dimensions in parallel: teams and culture, process, engineering, and platforms, including the data architecture. Companies advance along each dimension incrementally, starting with the simplest improvements and adding on.



### Roadblocks to a continuous delivery operating model

- I “Bad Agile” – just the ceremonies (like Scrum meetings) without the rigor.
- I High speed at the risk of quality.
- I Abandonment of requirements because “We’re agile.”
- I Waiting until development is complete to deploy to a production-like environment.
- I Testing application code only, ignoring essential supporting services such as security and the code used to provision and de-provision environments.
- I Deploying software manually.
- I Creating organizational chaos by changing too much at once.



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## An incremental journey

Tackling the new process, organization and supporting technology in one go is a recipe for disaster because even small changes can have unexpected consequences. Therefore, make small changes iteratively and evaluate the impact at each step. Our recommendations:

- Start with a few carefully selected minimum viable products (MVPs) to build confidence, and then scale pragmatically from a base of demonstrated success.
- Aim to mature along all dimensions (teams and culture, process, practices and platforms) at roughly the same pace rather than going from zero to 60 on one dimension before tackling the next. For example, moving legacy applications to a modern cloud platform without also teaching teams to build a continuous delivery pipeline will deliver little if any business value.
- Frequently assess whether changes have improved deployment frequency, lead time to change, change failure rate and business value delivered. In a five-year study, DORA determined that organizations that perform well against these metrics are twice as likely to exceed profitability, market share and productivity goals.<sup>7</sup> If your changes don't improve these metrics, change tactics -- then measure again.

## Building and scaling the value-delivery factory

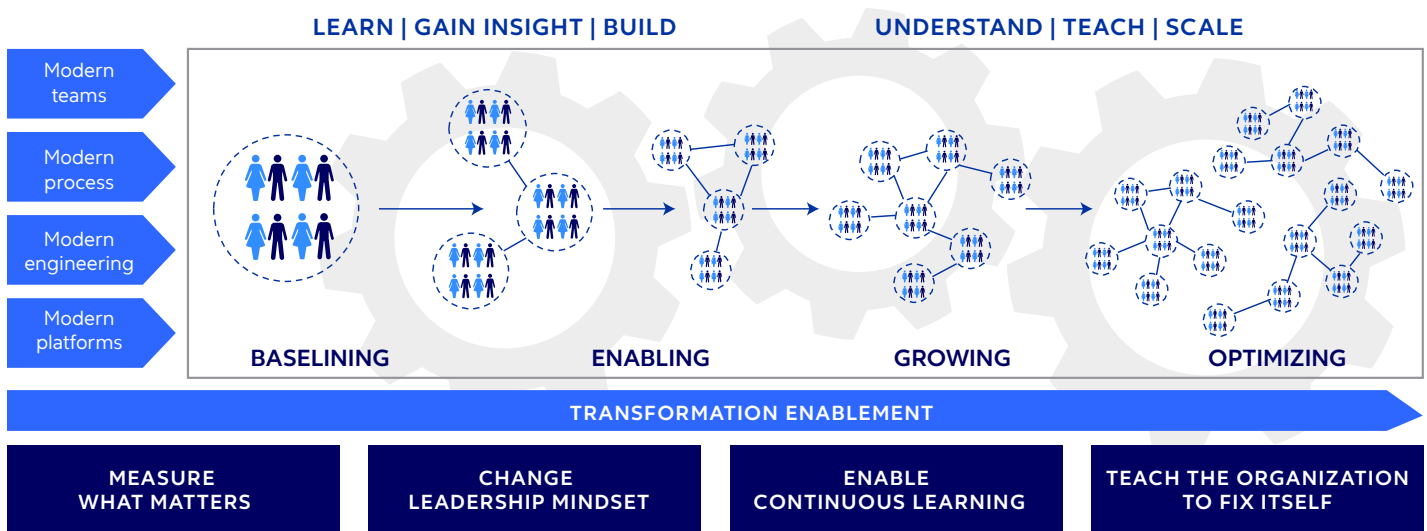


Figure 1



We recommend that entertainment video providers shift to a continuous delivery operating model in four steps: baselining, forming teams, building MVPs, and scaling and optimizing.

We recommend that entertainment video providers shift to a continuous delivery operating model in four steps: baselining, forming teams, building MVPs, and scaling and optimizing. Different teams in a company often progress along the journey at a different pace depending on the slice of the business value stream that they are transforming. For example, a team building a new direct-to-consumer streaming product might rapidly progress through all four steps, while a team that's evaluating an old administration system might decide after the first step (baselining) to extract the data and then retire the system.

## 1 Conduct a baseline assessment

Compare software delivery performance to industry benchmarks. After establishing the baseline, set targets for the future state. The target, for example, might be to accelerate deployment frequency from months to minutes. Next, identify the impediments to reaching the future state. Impediments to deploying in minutes, for example, can include lack of version control and work-in-progress limits, manual testing, a monolithic application architecture and poor job satisfaction.

## 2 Form the first continuous delivery pipeline teams

Start with one or two Agile pod teams with six to eight members who have end-to-end ownership of product delivery. Team members typically have expertise in product management, development, quality, the business domain and sometimes data.

Show the pod what “good” looks like in terms of team structure and culture, Lean/Agile process, engineering practices and platforms. Provide basic training on modern processes (Scrum, extreme programming and the Lean Startup methodology) and modern software engineering practices such as Build-Measure-Learn (BML), MVPs and an automated software development lifecycle.

Strive to build a culture of continual experimentation. We've seen good results from “gamifying” the learning process with contests and rewards.



### 3 Build MVPs

Identify the first MVPs to deliver. It isn't necessary to make an entire application cloud-native. Instead, ask which parts of the legacy application portfolio will provide the greatest business value if they're made cloud-native. Measure value in terms of subscriber growth and retention, cost reduction, traffic capacity, content delivery speed and so on. To tease out the value of existing software, we recommend using the Value Stream Mapping (VSM) methodology.<sup>8,9</sup>

Give priority to frequently modified applications, as microservices can be changed more quickly. Keep in mind that an application that costs more to migrate to the cloud, such as policy management, might also deliver the highest lift. Conversely, an application that costs less to migrate, such as compensation management, might deliver less lift.

### 4 Scale and optimize

To scale the continuous delivery operating model across the company:

Have the initial pipeline teams transfer knowledge to new teams by working side by side on an MVP. The new teams can then train others until the entire organization has learned Agile processes and culture, and modern engineering practices.

Work to continually improve along all four dimensions: culture and teams, process, engineering, and platforms.

Track the business value that the new software delivers. Measuring business value needs to become just as important a part of the product backlog as functional requirements. Writing code to capture business value metrics gives teams a solid basis to decide whether to pivot or persevere. By inserting a few lines of code, for example, the team can measure the effect of a new feature or interface on the number of people who click through to buy.

Measure value in terms of subscriber growth and retention, cost reduction, traffic capacity, content delivery speed and so on.

# Quick Take

## Media Services Provider Builds Successful Continuous Delivery Operating Model

### Overview

Netflix has set the industry standard for delivering online video at scale. Beyond an innovative business model, engaging content, and world-class customer experience, Netflix's robust engineering efforts in-house and continuous delivery operating model have changed the game. Other legacy entertainment video providers are now obligated to perform at Netflix's level to satisfy audience expectations.

### Approach

Netflix continually rethinks how data, engineering, and processes can be integrated to drive better business results. Key examples of this strategy include:

- I Development of a fully open source, multi-cloud, continuous delivery platform, Spinnaker, that has enabled development teams to release software changes quickly and confidently.<sup>10</sup>
- I Platform architecture designed to utilize hundreds of microservices rather than a monolithic application.<sup>11</sup>
- I Introduction of Chaos Monkey, the first in a series of tools collectively known as the Netflix Simian Army, incentivizing developers to build fault-tolerant systems.<sup>12</sup>
- I A DevOps culture permeating throughout the organization that uniquely provides guardrails, not gates, to developers.<sup>13</sup>

### Outcomes

- I Teams are empowered to take responsibility for their work and to make key decisions efficiently.
- I Platform has the resiliency to handle server issues and unforeseen service outages.
- I Market leadership through innovations like the pioneering of new interactive content for Bandersnatch.<sup>14</sup>
- I Industry influence via involvement in industry standardization and development efforts.



## Looking ahead

Many entertainment video providers will find it helpful to work with an experienced partner to develop a backlog and coach the first several pods.

We advise companies to:

- Start small.
- Change leadership mindset.
- Enable the team to continuously learn.
- Know what good looks like.
- Measure what matters.
- Make development decisions based on what delivers value to the customer.
- Create feedback loops, measured in minutes or hours.
- Build a community of engineering excellence.
- Continuously improve.

A successful transition to continuous delivery requires incremental modernization of teams and culture, process, engineering and platforms. Decide whether to pivot or persevere by continually monitoring the metrics that matter most to business success — release frequency, lead time to change, change failure rate and mean time to recover.

## Endnotes

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- <sup>2</sup> “How to Disrupt Yourself,” World Economic Forum, January 2016, <http://reports.weforum.org/digital-transformation/how-to-disrupt-yourself/>.
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- <sup>4</sup> Nicole Forsgren, Jez Humble, Gene Kim, *Accelerate: The Science of Lean Software and DevOps: Building and Scaling High Performing Technology Organizations*, 2018.
- <sup>5</sup> Gene Kim, Kevin Behr, James Spafford, *The Phoenix Project: A Novel About IT, DevOps, and Helping Your Business Win*, IT Revolution Press, 2013.
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- <sup>9</sup> Mark Schwartz, *The Art of Business Value*, IT Revolution Press, 2016.
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As the global market leader for Cognizant Digital Technology Consulting, her team focuses on helping clients transform digitally. They advise clients on improving their teams/culture, process, engineering practices and platforms to achieve improved quality, time to market, customer satisfaction, productivity and morale. Her team applies Lean principles to the value stream, enabling dynamic, learning organizations that continually reinforce high-trust cultural norms. The result is maximized business outcomes, developer productivity and value delivered to end customers.

Carol is known for connecting people and concepts to solve complex business problems. Prior to joining Cognizant, Carol was an IT Transformation Partner at Dell Technologies, and she currently serves on the board of directors of a banking and insurance company. She can be reached at [carol.houle@cognizant.com](mailto:carol.houle@cognizant.com) | [linkedin.com/in/carol-houle-60aa9110](https://www.linkedin.com/in/carol-houle-60aa9110).



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Allen leads Cognizant's Lean/Agile practice. He brings more than 20 years of experience in enterprise software development and more than 15 years as a thought leader and consultant in Lean/Agile methodologies. Before joining Cognizant, Allen served for 18 years at Intel, where he led one of the largest Agile transformations, building an organization of 500+ global teams using the Scaled Agile Framework (SAFe). During the process he coached thousands of Scrum teams and applied Lean/Agile to create a sustainable, self-organizing and learning organization. Over the course of his career, Allen has been a developer, architect, program manager, people

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## Digital Systems & Technology Consulting

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