Spirit Airlines Case Study

Shifting quality assurance culture for better software maturity through automated testing

The Spirit Airlines mobile app allows users to travel lighter than ever before—with self-serve capabilities including booking and managing flights, accessing digital boarding passes, checking in and staying up to date on flight statuses all from a mobile device.

spirit

COMPANY

Spirit Airlines Inc. is a major American ultra-low-cost carrier, operating scheduled flights throughout the United States and in the Caribbean and Latin America.

Challenge

Although Spirit Airlines had a fully-functioning mobile app on both iOS and Android, new features were taking long cycles to enter the market. Their engineers were using Waterfall methodology in their software development process, resulting in nearly 2 month gaps between deployments, or longer with ever-changing project priorities. Spirit also knew that their code base needed improvement, but didn't know where to start.

We identified three key challenges:

- Lacking Agile mindset in their development, delivery, and QA processes
- A slow feedback loop between discovering software defects and fixes, exacerbated by zero test coverage
- No testing or deployment automation in place, preventing faster deployments

KEY RESULTS

Transformed the cultural mindset around automated testing

Increased number of unit tests in the codebase

Reduced time-to-market for new features

Solution

Familiar with our Transformation services, Spirit Airlines recruited TribalScale to improve both their app architecture and development process moving forward. For 6 months, a team of TribalScale engineers were embedded within the Spirit Airlines Mobile App team. They assessed the existing code base, and produced an itemized list of pain points for each platform. From there, the team was able to organize efforts to mitigate those issues – reporting weekly to Spirit's technical leadership team.

+ **QA and DEVELOPMENT:** Arguably the largest transformation TribalScale sparked, was the implementation of automated testing by developers. Prior to our partnership, the only testing with the Spirit Airlines Mobile App team involved manually performing smoke-test, exploratory, and regression tests. While this satisfied minimum standards of software reliability, any software defects took a significant amount of time to cycle back to the developer team.

   We shifted the culture and mindset towards testing – our embedded engineers demonstrated the value of automated unit tests and test-driven-development (TDD). Having provided training and awareness of best practices around developer-side automated testing, software errors were detected and fixed much earlier than previously possible. This resulted in reduced time-to-market for new features.

+ MVVM Architecture

+ Kotlin

Outcome

As a result of our partnership with Spirit Airlines, we enabled the detection of software errors early in their development cycle through the unit tests that were established in their codebase – in combination with a continuous integration and continuous deployment (CI/CD) build process that can be executed automatically each time code is submitted. Their team also experienced reduced time-to-market for new features, through early detection of regression errors from automated testing.

Our team's learnings from the project led us to formalize code assessment as a key TribalScale service offering. Our engineers created a software maturity model, to reflect the various stages towards reliable, repeatable software success. We use this software maturity model when evaluating other organizations' existing software codebases and software development processes.

> "When I joined the Spirit Mobile App development team, I noted the lack of training around standardized unit-testing and architecture.
> Part of this was due to the team's multi-shoring nature – which had made it difficult to standardize skills, other than participating in day-to-day code reviews. We introduced initiatives and workshops to upskill the development team in these two critical areas."

ALVIN FONG
Sr. Engineering Manager @ TribalScale

Software Maturity Model

Chaos

1

The software process is characterized as inconsistent, and occasionally even chaotic. Defined processes and standard practices that exist are abandoned during a crisis.

Success of the organization majorly depends on an individual effort, talent, and heroics. The heroes eventually move on to other organizations taking their wealth of knowledge or lessons learnt with them.
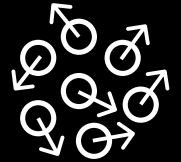
Vision / Plan

2

The software process for both management and engineering activities are documented, standardized, and integrated into a standard software process for the entire organization.

All projects across the organization use an approved, tailored version of the organization's standard software process for developing, testing and maintaining the application.
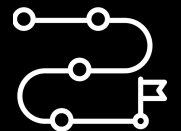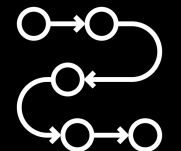
Processes in place

3

This level of Software Development Organization has a basic and consistent project management processes to track cost, schedule, and functionality.

The process is in place to repeat the earlier successes on projects with similar applications. Program management is a key characteristic of a level two organization.

Measurable Metrics

4

Management can effectively control the software development effort using precise measurements. At this level, organization set a quantitative quality goal for both software process and software maintenance.

At this maturity level, the performance of processes is controlled using statistical and other quantitative techniques, and is quantitatively predictable.

Continual Improvement

5

The Key characteristic of this level is focusing on continually improving process performance through both incremental and innovative technological improvements.

At this level, changes to the process are to improve the process performance and at the same time maintaining statistical probability to achieve the established quantitative process-improvement objectives.
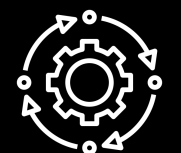
TRIBAL SCALE

TribalScale is a global innovation firm that helps enterprises adapt and thrive in the digital era. We have years of experience in digital strategy, design, and multi-platform engineering and through agile practices, we transform teams, build best-in-class digital products, and create disruptive startups.

Whether we're righting the ship for another company or creating a fresh end-to-end solution, we innovate for a better tomorrow.

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