

How Autodesk's PlanGrid uses Cypress to ensure quality in over 2 million projects

Facilitating collaboration for over 90,000 active users in the building industry

PlanGrid provides ground-breaking construction productivity software which enables contractors and owners in commercial, heavy civil, and other industries to collaborate from anywhere. With over 2 million projects, the automation team has to ensure PlanGrid's mission-critical services are available worldwide. Here's how they use Cypress to make that happen.

Balancing quality with fast growth

PlanGrid's Automation Platform team of six engineers was formed in 2018. They supported automation frameworks and managed pipeline integrations across Android, iOS, Windows, the web app and the company's back end.

The team had 50 tests running in a Selenium-based framework. Tests were largely written, owned and maintained by QA — and were fairly disorganized. Developers often skipped tests if they were tricky to debug, because skipping tests meant they could progress with their work. With over 200K monthly active users, the Automation Platform team quickly realized the importance of quality across PlanGrid's entire system. A new testing culture was essential.

Finding a testing solution to accelerate velocity

PlanGrid's Automation Platform team writes the tools that allow all the development teams to write and run tests. Some tests existed, but they took a long time to run, and required a lot of set-up in the UI. They were cumbersome to maintain, and were slowly but steadily being skipped at an increasing rate.

The Automation Platform team needed a more efficient testing framework that would improve quality and reduce time spent on maintenance.

PlanGrid had 5 important objectives:

1. The chosen testing tool should be the obvious choice, and what developers feel is truly the best tool for the job — not something that they feel is being forced on them.
2. Old habits and culture had to change, with teams replacing existing tests with smarter, more efficient ones.
3. The new platform had to make it easy to fix broken functionality quickly, and make the fixes available to everyone. No more wasting time reinventing the wheel.
4. The maintenance burden had to be reduced, so that PlanGrid could unblock progress for further innovation and testing.
5. Anyone should be able to debug, monitor and own their tests. The people writing the code should be responsible for its quality.

Results & Impact



2,000+
tests run
daily



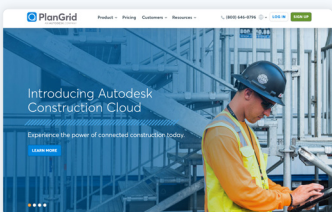
4 minute
average test run
duration (without
parallelization)



20+
repositories
reuse a shared
Cypress library

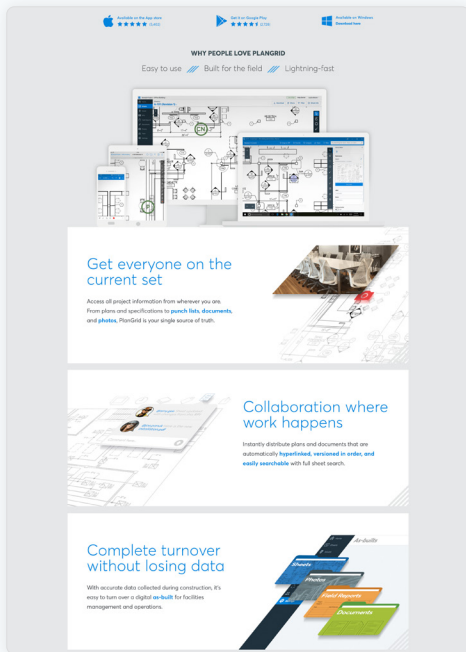


20+
custom
commands for
test efficiency



“Once people started seeing the DOM state snapshotting, tests running in real time, and easy debugging, that was a huge win. Writing tests in Cypress felt very familiar to front-end developers who are used to unit testing.”

Graeme Harvey
Engineering Manager, PlanGrid Automation Platform



Why PlanGrid chose Cypress

The Automation Platform team need a testing framework that was not only effective, but delightful to use:

- Tests needed to be in a JavaScript-based language
- Tests had to be easy to write and maintain
- Tests had to run quickly
- Tests had to be debuggable
- The new tool had to integrate well with CI

After reviewing 3 shortlisted tools, the Cypress Test Runner emerged as the clear winner.

“The Automation Platform team’s role is to enable testing speed and efficiency, without being responsible for writing the tests. Onboarding onto test tools and figuring out how to write good tests can be time consuming and we wanted to remove that barrier from the dev teams,” says Graeme Harvey, PlanGrid’s Automation Platform Engineering Manager.

Democratized testing delivers higher quality

Implementing Cypress has helped PlanGrid ensure quality, share best practices and maintenance across all the development teams.

Cypress tests make sure the app works while using multiple services – used in a microservice (App Shell) web front-end model, featuring integrations with Create-React-App, internal API clients and 3rd party services such as Launch Darkly and Datadog.

The Automation Platform team created an internal library for sharing custom Cypress commands and integrations. This has brought consistency to many development teams, using shared functions and CI integrations with minimal overhead. Cypress’s

simple debugging means that developers can fix their own tests easily, and the Automation Platform team has been freed up to add new functionality to the library, which benefits everyone.

Perhaps most importantly, developers’ mindsets have shifted from assuming tests failed due to flakiness, to examining what changes cause them to fail. Test code is now viewed on the same level as production code – resulting in a significant improvement in quality.

What’s next?

PlanGrid’s next step is to make test runs even faster by using test parallelization with the Cypress Dashboard, and utilizing mocking to mimic API responses. With Cypress, the team is confident that they can maintain quality and scale testing effectively as PlanGrid’s business continues to grow.

About Cypress

With millions of downloads and users in over 90 countries, Cypress is the leader in browser-based test automation for the modern web. Cypress enables developers and enterprises to easily, quickly and accurately test anything that runs in a browser – empowering developers to build web applications faster and better.

Using the Test Runner, developers can quickly create and run live end-to-end tests for complex user workflows and interactions, and complex scenarios in applications including e-commerce. The Dashboard service provides collaboration and sharing between teams and records screenshots, video, and test runs – while seamlessly integrating with existing tools and processes. For more information, visit cypress.io