

# Finding the needle in the haystack of code

Carterra noticed that gradually rising technical debt was slowing their ability to deliver product innovations. To address this, Carterra's Lauren Swanson, lead software engineer, tackled the overarching problem by taking a long term view of code quality.

## Results

- Carterra improved code health by **25%** over a twelve-month period using CodeScene.
- The massive improvement in code quality resulted in a reduction in unplanned work by **82%** in that same period.

## About Carterra

Carterra, a biotech research company, is a leading provider of innovative technologies designed to accelerate the discovery of novel therapeutic candidates. A significant driver of their success is managing a healthy codebase for the software intrinsic to their research and innovative instruments.

[carterra-bio.com](http://carterra-bio.com)

# Innovation at pace without compromising code quality

Being innovative at heart means that Carterra's software development teams must deliver new features and keep technical debt to a minimum.



Where does one start improving a codebase under heavy development, when slowing down innovation is not an option?

Carterra turned to CodeScene because it is a world-leading code analysis tool. CodeScene quickly pinpointed the parts of the codebase that needed the most attention. Not only that, CodeScene prevented further degradation by analysing every pull request - before the code was merged into the main product. It fit Carterra's needs perfectly. Carterra can innovate at pace, working smarter and faster, while CodeScene provides the quality gate to prevent unintentional increase in technical debt.

## An all too familiar challenge

Carterra faced software delivery challenges that were daunting. Sadly, these challenges are more common than we want, and they are the part of the motivation for building CodeScene.

- Coding innovative new features became progressively harder and slower. Software delivery became an exercise in managing uncertainty instead of rapid, high-value delivery.

- Carterra knew they needed to bring technical debt under control, but how do you go about addressing technical debt and delivering new features at the same time?
- The codebase was substantial in size, and knowing where to start and identifying which parts should receive attention was daunting.
- Their software development team worked remotely and relied on pull requests to integrate their contributions into the main codebase.

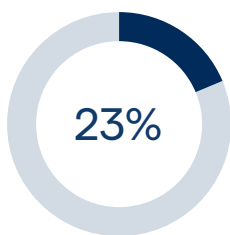
“We had to focus on code quality while we were still developing new features.”

Lauren Swanson, Carterra's lead software engineer summed it up perfectly when she explained the no-compromise approach: shift from unintended degradations in code quality that progressively slowed delivery, to a sustainable software delivery strategy.

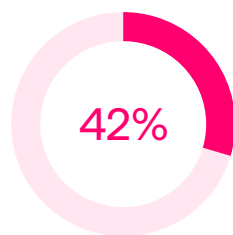
# Making software delivery sustainable in the face of innovation

Carterra's success is important because their innovations improve medical science and affect society. With that level of importance, the no-compromise statement of intent by Lauren Swanson framed the strategy.

As a leading biotech research company, Carterra has a lot of code and an ambitious backlog of innovative new features that they want to introduce to the market. The first challenge was which parts of the codebase must Carterra's software development team tackle first. The team used CodeScene to pinpoint the exact files that are under active development and their associated code health.



\*Average developers waste 23% of their time due to technical debt.



\*Developers spend 42% of work week dealing with technical debt.

Using CodeScene's map of the codebase, in conjunction, with the backlog of features, helped Lauren and her team prioritise where effort should be directed. The no-compromise on quality and delivery was honoured because the code to be improved was the code that needed to be changed for the next important feature under development.

CodeScene is unique in the market because it does, what we call, finding the needle in the haystack of code. With the very first analysis of the codebase, you will find the few files amongst thousands, that should be the highest priority for improvement. In fact, CodeScene drills down to the exact few lines in a file that are the highest contributors of technical debt. Then, CodeScene goes a few steps further and explains why the quality is poor and makes refactoring recommendations to improve the code.

## The gatekeeper of code quality

For Lauren, CodeScene's pull requests analyses have been a game-changer. Pull requests must pass CodeScene's code analysis quality gates before the code can be merged into the main branch. With this, developers can easily address the quality concerns before it goes to production. Over time, Carterra's developers became proactive in seeing the code analysis, knowing what it means and then improving the changed code before merging into production.

\* Scandinavian study (Besker, T., Martini, A., Bosch, J. (2019) "Software Developer Productivity Loss Due to Technical Debt"). ("The Developer Coefficient: Software engineering efficiency and its \$3 trillion impact on global GDP")." (Stripe, (2018),

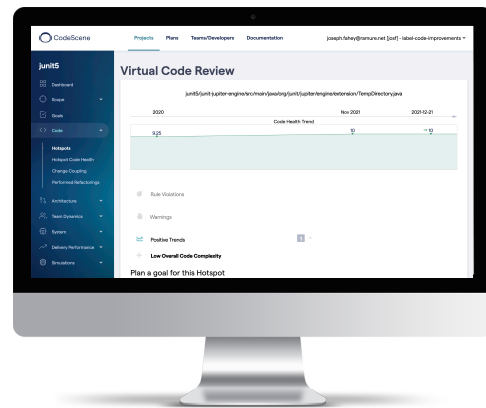
# What does CodeScene mean to Carterra?

Maintaining good code health is strategic to innovation at Carterra. This means that continuous analysis of the codebase is crucial – it helps focus on their long term strategy of committing to good code health and delivering new features.

CodeScene, being able to map an entire codebase and suggest prioritization of the changes that matter the most, is a precious tool, according to Lauren:

“Other similar tools don’t have the analysis of what files you are working with most and what code quality these files have. So, we can make sure that we are improving the files that we constantly need to update and that we don’t maybe need to update them as much in the future.”

Lauren continues: “I would recommend CodeScene, especially to someone who is coming into a really large application and has poor code health. It feels really daunting to try to fix everything at once”. Lauren summarises:

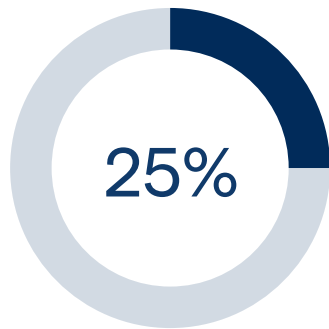


“CodeScene helps you prioritise what files to work on and which ones will have the most impact if you are to improve code quality.”

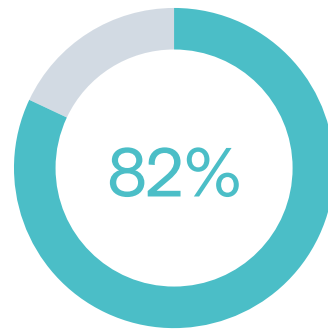
## **Making the impossible possible**

Carterra, with the help of CodeScene, has overcome what initially seemed to be an impossible ask of improving code quality and delivering new features rapidly. The code quality of Carterra codebases has improved dramatically and precisely where it was needed. Their software teams are better aligned to the codebase, and have shifted to a sustainable flow for software delivery.

# Improvements delivered by CodeScene



Carterra improved the code health by approximately 25% over 12 months by using CodeScene's code health analysis.



In that same period Carterra reduced nearly 82% of unplanned work by using CodeScene's Planned vs Unplanned work tracking.



# CodeScene

The intersection of code and people  
empowering great software