



Modernizing 25 million lines of code without disruption



Department for Work and Pensions (DWP) is the UK's largest public service department, responsible for administering the state pension and a range of working age, disability, and ill health benefits to 20 million citizens. Supported by 15 agencies and public bodies, DWP employs over 100,000 staff located across 900 sites. DWP Digital, DWP's technical provider, supports a set of benefit paying systems that are critical to paying out USD 202 billion each year.

At a Glance

Industry: Government.

Location: United Kingdom.

Challenge: Introduce development flexibility to improve release deployments and reduce batch processing and system maintenance efforts.

Challenge

The existing DWP benefit system consisted of a suite of ICL mainframe-based solutions that were stable and heavily integrated, but the COBOL code originally developed in the 1980s was starting to show signs of age. Mark Bell, Virtual Machine Environment — Replacement (VME-R) Program Deputy Director for DWP, explains:

“The solutions all ran an overnight batch processing service. As numbers steadily grew, our batch processing time increased, which limited our flexibility. For instance, we could not extend our service opening hours as we needed the downtime for fix deployment, maintenance, and batch processing.

“We also were not very responsive to new business requirements or changes in legislation. The amount of work involved meant we could only manage two major releases each year. As a result, there was a growing backlog of development work and change requests.”

For Bell, business continuity was paramount – the experience for operational users and citizens should not be affected. “Although VME-R is rebuilding the house from the foundations to the attic, our success would be measured by people not noticing any change. We could see new opportunities for expanding functionality through modernization but intended to explore those in the future.”

The Challenge

DWP needed to introduce development flexibility to improve release deployments and reduce batch processing and system maintenance efforts.

“Leveraging Visual COBOL, we created a CI/CD and container pipeline approach in AWS to give us rapid deployment capability. Instead of two major releases each year, over the last 12 months we have deployed 800 times.”

MARK BELL

Virtual Machine Environment—Replacement Program Deputy Director
Department for Work and Pensions

Solution

After a series of Proof of Concepts, the team selected a re-platforming approach utilizing Rocket® Visual COBOL®* and Rocket® COBOL Server*, leveraging Amazon Web Services® (AWS®) to host the development environment. In addition, application code conversion specialist Advanced was engaged to work closely with DWP Digital. With 25 million application Lines of Code (LOC) and nearly 11 billion data rows to convert, a phased implementation approach enabled them to learn from tackling each system in turn and applying that experience to the next system.

Using Visual COBOL, existing COBOL code was converted to the updated Rocket® COBOL version. The first solution to be moved over was the relatively small Housing Benefit application, paying out USD 2 billion per month. “Thanks to all the preparation, the move to the new environment went seamlessly. We were delighted to discover that the nightly batch processing was reduced from 90 minutes to less than 15 minutes,” says Bell.

Results

The Job Seekers Allowance Payment System (JSAPS) was the largest service with integration to 54 separate database instances and 6.4 billion rows of data. Coinciding with the start of the COVID-19 crisis and the urgent need to prioritize implementation to support an anticipated influx of new users, it took just 24 hours to extract and convert all SAPS data to the new Oracle® database instance, allowing the data to be exploited more easily. Final go-live in the new environment was achieved in three days — a day ahead of schedule — and with no disruption to citizens or DWP users, to Bell’s great relief. “Since then, the service has been incredibly efficient, with batch run improvements of 60 percent.”

Additional payment solutions soon followed in the modernization project, and within a two-year timeframe all critical DWP solutions were converted by leveraging Visual COBOL. The ability to deploy changes into the solutions accelerated by at least 75 percent with an automated build

The team continued to streamline its processes, introducing automated testing and scripted business scenarios to each payment solution. This enabled comprehensive comparative testing on transitional activities between old and new systems to assure that the financial output and the number of transactions were 100 percent accurate. Because the individual benefit systems integrate closely, every change needed to be tested and retested, supporting cross platform testing between the different systems.

The Solution

The new platform enabled increased DevOps maturity and embraced ‘SCALED’ agile delivery using rapid deployment and Continuous Integration/Continuous Delivery capabilities.

and deployment framework. Bell explains: “Leveraging Visual COBOL, we created a CI/CD and container pipeline approach in AWS to give us rapid deployment capability. Instead of two major releases each year, over the last 12 months we have deployed 800 times. Code changes that would have taken us many weeks in the past are now completed and deployed within a couple of days.”

For Bell, he is pleased to see the original system replacement request continue to expand and exceed expectations: “Modernizing our back-end infrastructure, re-engineering our batch processing, and converting our code to modern Rocket COBOL offer significantly greater stability and give us business and technical opportunities that we look forward to exploiting further.” He concludes by sharing: “The effort has been recognized with industry awards and very favorable audit results. We have delivered a new and agile way of working with a continuous improvement approach.”

Impact

Improved processing

Increased batch processing speeds up to 60 percent, allowing for fast deployment of patches, fixes, and changes, with intervention rates down by 96.75 percent.

Increased capabilities

A modernized infrastructure offers significant stability with increased deployment capabilities, resulting in over 800 releases in the first 12 months.

Increased savings

Using Visual COBOL and working with Advanced helped achieve nearly USD 200 million Net Present Value (NPV) in the business case.

* Formerly Micro Focus® products

About Rocket Software

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