Department for Work and Pensions

Supporting citizens in need with OpenText and Advanced: 'like for like' digital transformation exceeds expectations and instead delivers 'like for much better'

Who is Department for Work and Pensions?

Department for Work and Pensions (DWP) is the UK's largest public service department. Supported by 15 agencies and public bodies, it administers the state pension and a range of working age, disability, and ill health benefits to 20 million citizens. It has over 100,000 staff members located across some 900 sites.

The strategic goals of DWP Digital, the technical provider for DWP, are to make it easier for citizens to get the help they need and simpler for DWP staff to support those citizens. DWP Digital supports a set of benefit paying systems

which are fundamental in paying out more than £150 billion each year. The platform is part of the UK's National Critical Infrastructure.

Ageing Platform Restricts Flexibility and Innovation

DWP's benefit system consisted of a suite of ICL mainframe-based solutions, many of them developed in the 1980s using COBOL code. The platform was stable and heavily integrated, but it was starting to show signs of its 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."

A Technology Debt review looked at these services and recommended a design modernization to create a stable and secure system to take DWP into the future. The initial remit was a 'like for like' replacement with no change in

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> Virtual Machine Environment—
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DWP Digital

At a Glance

- **Industry**
  Government

- **Location**
  United Kingdom

- **Challenge**
  Introduce development flexibility to improve release deployments and reduce batch processing and system maintenance efforts

- **Products and Services**
  Visual COBOL
  COBOL Server

- **Critical Success Factors**
  + 11 National Critical Infrastructure benefit application services re-platformed
  + Up to 60% batch processing improvement
  + 25 million application LOC and 10.8 billion data rows converted to Oracle Virtualized Machine
  + Increased deployment capability with over 800 releases in first 12 months through modern development practices
  + £147 million business case Net Present Value
  + All program implementation 100% successful, with no service or user disruption

functionality for its operational users or citizens. Bell stresses that business continuity was paramount: "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."

Converting 25 Million LOC and 11 Billion Database Records

Following a series of Proof of Concepts, the team selected a re-platforming approach utilizing OpenText Visual COBOL and COBOL Server. Amazon Web Services (AWS) was leveraged to host the development environment. 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, DWP decided on a phased implementation which enabled them to learn from

tackling each system in turn and apply that experience to the next system. This was not just a technical undertaking. The new platform would enable increased DevOps maturity and embrace 'SCALED' agile delivery using rapid deployment and Continuous Integration/Continuous Delivery (CI/CD) capabilities. This was a significant culture shift for the development and support teams and required cross planning and training alongside the modernization effort.

Using Visual COBOL, the business applications' old COBOL code was converted to the more modern OpenText COBOL version. The first solution to be moved over was the relatively small Housing Benefit application, paying out £1.5 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.

Moving through the solutions, including War Pensions, Industrial Injuries, and Social Fund, the team streamlined its processes by introducing automated testing and scripted business scenarios. 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, i.e. an award of one benefit might impact another, every change needed to be tested and retested, supporting cross platform testing between the different systems.

Flexibility in Time to Respond to COVID-19 Crisis

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. "The timing to move the Job Seekers Allowance system coincided with the start of the COVID-19 pandemic," says Bell. "We had planned a 4-day implementation period over Easter 2020 when we would do this. With our teams now all working remotely, we worried about the feasibility of our plan. However, COVID-19 also gave us a compelling reason to prioritize this effort. We feared that this service would need to support a lot of additional users, as DWP increased its response to support its UK citizens because of the pandemic, and had concerns over the old platform's ability to manage this."

60% Faster Batch Processing and Nearly £150 Million Cost Savings

Streamlining batch processing has changed the way in which the service operates, and the team works. Batch processing used to take an entire night with staff on hand to manage at least 3,000 intervention alerts each month. Batch processing is now much more robust and up to 60 percent faster, allowing for patches, fixes, and small changes to deploy during the same window of opportunity. On JSAPS alone, the batch intervention rate has dropped by 96.75 percent to just 100 intervention alerts each month, which is expected to decrease further. "Modernizing our back end infrastructure, re-engineering our batch processing, and converting our code to modern Micro Focus (now part of OpenText) COBOL offer significantly greater stability and give us business and technical opportunities that we look forward to exploiting further," comments Bell.

"This re-platforming project with Micro Focus (now part of OpenText) and Advanced was always about creating a stable and secure system. Of course, achieving nearly £150 million Net Present Value (NPV) in the business case is very welcome," according to Bell. "The use of AWS gives us a modern development environment with fast and efficient release management. Having such a modern infrastructure to support these key UK services gives us the opportunity to offer apprenticeships which will attract new talent into our organization to support our 'Digital with Purpose' transformation agenda."

It took just 24 hours to extract and convert all JSAPS data to the new Oracle database instance, allowing the data to be exploited more easily as part of the digital agenda. 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. Thanks to the flexible and agile new environment we could quickly make government-mandated policy changes to allow for COVID-19, such as increasing our capacity for additional users, and supporting quicker benefit processing changes. In February 2021, the program won the Civil Service Award for Project Delivery Excellence for the JSAPS delivery.

Disability Living Allowance, Income Support, and Pension Service 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 has accelerated by at least 75 percent with an automated build and deployment framework. Bell explains what this means in practice: "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 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. Thanks to this flexibility, we can do mid-week changes, rather than booking out entire weekends for system maintenance. This means we can respond to citizen requests for extended opening hours. And in some instances we have also managed to completely clear our backlog of change requests."

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He concludes: "The size and scale of this project made it technically complex and very challenging to achieve. The success and incredible results are thanks to exceptional collaboration between DWP Digital's Service Planning & Change Delivery team, our partner Advanced, and Micro Focus (now part of OpenText). 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. Our initial 'like for like' mandate has turned into a 'like for much better' result and we couldn't be more pleased."

Integrated 3rd party technologies
- GitLab
- Oracle DB
- Tuxedo
- Java
- Red Hat
- Puppet

COBOL environment
- 25 million lines-of-code (LOC)
- 10.8 billion data rows

Deployment environment
- Linux/Red Hat
- Oracle OVM Virtualization
- Amazon Web Services
- Docker containers