



Trust. Value. Velocity

G-Cloud 15

Cloud Testing Strategy and Support Service

Contents

1.	About Mastek	3
2.	Summary	13
2.1	Discovery	13
2.2	Alpha	13
2.3	Beta	13
2.4	Live	13
2.5	Retirement	13
2.6	GDS Testing Techniques	13
3.	Masteks Service	15
4.	Key Features	16
5.	Business Benefits	17
6.	Technologies, Languages, Tools, methods and Vendor Support	18

1. About Mastek

Mastek has been delivering Critical National Infrastructure programmes in the UK Public Sector for over a decade now. We are trusted with multiple contracts for the UK Government across Central Government, Health, Local Government, Policing, Public Protection and Defence. The majority of our national services are delivered in contexts of high uncertainty and complexity, while collaborating across multi-supplier environments.

While working for these large and complex public sector organisations, we have continuously refined our management, delivery and underlying processes to reflect key learnings from the sector:

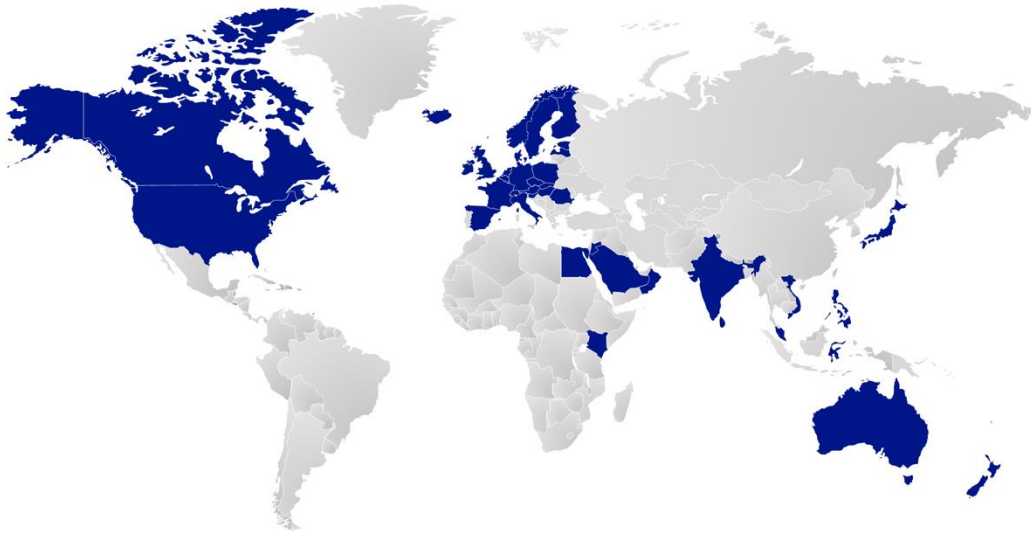
Working through a complex stakeholder landscape: We understand the importance of establishing effective communication channels, building trust and fostering a collaborative working environment that empowers stakeholders to contribute meaningfully to the project's success. Our approach is based on a deep understanding of stakeholder needs and requirements. We leverage our experience and expertise to design governance structures that promote transparency and accountability and use data-driven reporting mechanisms to ensure stakeholders have real-time visibility into project status and progress. At the Home Office, GDS, the Ministry of Defence and the NHS, we have a proven track record of working seamlessly with large stakeholder groups, including civil servants.

Standards, compliance: We comply with >20 policies and standards, including Government Digital Standards and the Government CDDO Service Toolkit, covering service standards, service manuals, TCoP and API technical and data standards. Our stringent governance, methods, playbooks and processes (manual and automated) span across service delivery phases, ensuring continuous compliance.

Policy-driven: Policies and procedures largely drive Public Sector organisations. We need to be Agile and flexible to meet demands for policy/regulatory changes, geopolitical events and ministerial commitments.

Culture: We adhere to the Civil Service core values of integrity, honesty, objectivity and impartiality. Key behaviours we promote stem from a combination of Civil Service and Mastek values. These include being passionate, accountable, sustaining predictable and repeatable outcomes, not transferring risk, transparent, leading to enable, acting with transparency, practising a no-blame culture and being flexible.

Mastek's global presence



Australia

Austria

Bahrain

Belgium

Brunei

Canada

Denmark

Egypt

Estonia

Finland

France

Germany

Hungary

Iceland

India

Indonesia

Ireland

Italy

Japan

Jordan

Kenya

Kingdom of Saudi Arabia
(KSA)

Kuwait

Latvia

Luxembourg

Malaysia

Netherlands

New Zealand

Norway

Oman

Philippines

Poland

Romania

Singapore

Slovakia

Spain

Sri Lanka

Sweden

Switzerland

United Arab Emirates (UAE)

United Kingdom

USA

Did you know?

75%

Around three quarters of Local Authorities in the UK who run Oracle have worked with Mastek on their digital transformation journey.

300,000 Users

Supported managing up to 750,000 logins per month to MOD through Identity and Access Management

Crime reduction

We designed, built and manage the UK's Strategic National DNA Database that helps Forensics and Law Enforcement Authorities investigate and stop crime

90% faster

We enabled the National Health Service (NHS) to drive 90% faster response times with a billion pharmacy prescriptions a year.

Technical Service Desk

We provide level 2 and ITSM support for the One Login service at Government Digital Service

22k

Our systems enable 22,000 schools to function efficiently every day of the year.

Healthcare and manufacturing

We delivered Finance, HCM and Supply Chain transformations for clients across health and manufacturing globally powered by Oracle Cloud

Transformation of trade

Transforming UK's trade with the EU and rest of the World by supporting Customs Declarations Services and its trade users.

99.99% Availability

We support the Home Office Biometrics (HOB) Platform, Having migrated it to an AWS platform.

Our digital and cloud services portfolio

Powered by Glide 4.0 and value-based delivery

Industry-aligned approach with business outcomes

Digital engineering and experience	• Cloud engineering and migration • Legacy modernisation • Low code / no code App Dev • DevSecOps • Enterprise integration	• MACH • Digital commerce • UX and CX • Platform engineering • Gen AI software development.
Oracle Cloud and enterprise apps	• Oracle Cloud applications • Oracle consulting • Oracle Cloud infrastructure	• Value-based delivery • Glide 4.0.
Data, automation and AI	• Cloud data modernisation • Business Intelligence and Analytics	• Data management • Intelligent automation • Data Governance.
Salesforce	• Sales Cloud • Service Cloud • Marketing Cloud • Industry Cloud	• Experience Cloud • Mulesoft.
Innovation labs and platforms	• Enterprise workforce scheduler • Connected enterprise • icx-Pro – intelligent part assistant	• iLeaseFinPro.
Cloud enhancement managed services	• Oracle managed services • Digital managed services • Commerce managed services	• Salesforce managed services.

Home Office Biometrics (HOB)

Public sector platform modelled 24x7 with 99.99% availability

Problem

- Transition business-critical Platform services from incumbent supplier with minimal risk
- Migration from private cloud to AWS Cloud.

Solution

- Migrated the infrastructure from private cloud to AWS
- Embedding Kubernetes Containerisation
- Introduced Docker and fully-baked AMIs
- Supporting the platform's self-service functionality using Jenkins Jobs
- Applying security updates to the OS base images through pipelines
- Instituting automated patching and testing for infrastructure images
- Support of configuration, test and releasable artefacts through the pipeline.

Outcome

- **Zero impact** on live service
- **80% automation** of SIT
- Environment Provision **2 days to 1 hour**
- **5x scalability** in handling student BRPs
- Cost saving the authority circa **£9.5m/year.**
- Won the '**Best Use of Cloud Services**' award
- **35%** Incident Volume Reduction.



Government Digital Service

Problem

GDS initiated the One Login programme to create a single front door for identity verification and authentication, which could be adopted and scaled across all government departments. This would improve the user experience by providing the public with a single identification and verification service for the government, reduce costs as each department no longer required its own identity service and reduce identity fraud and identity-enabled crime.

GDS released a tender in June 2023 to provide a Technical Service Desk (TSD) managed service for the One Login service. This service would provide a single point of contact for level 1 and 2 service support as part of the wider support ecosystem. It would be provided in the UK and replace the incumbent's scaled-down non-ITIL-aligned break-fix service.

Solution

In September 2023, Mastek were successfully awarded the TSD contract to deliver TSD on behalf of GDS. GDS had an extremely aggressive programme driven by the onboarding of HMRC as a user, which was a major milestone planned for February 2024, migrating new and existing HMRC users to the One Login platform. The TSD service was expected to go live in November 2023. This was an extremely complex programme which, within this timescale, would deliver:

- The contact centre provider for level 0 directly facing the public
- The TSD supplier in place directly facing all government departments
- The TSD supplier in place providing L1 and L2 engineering support and monitoring
- Continued delivery on the One Login backlog of features
- Continued migration of smaller government departments to the platform.
- Delivery of a new ITSM toolset to be configured for use by GDS and the One Login programme, integrating level 0 to level 3 support
- Working as one team, Mastek quickly integrated into the programme, appointing the leadership team early in the engagement. We collaborated with GDS from the outset, ensuring we tailored the service to their expectations rather than delivering what was written in the contract.

Our leadership team consisted of:

- Service Management Vice President
- Programme Director
- Chief Technology Officer
- Programme Management office lead.

Outcome

At its height, the programme team was circa 15 strong, covering programme/project delivery, PMO, architecture, fraud, security, support, omni-channel and quality assurance. The service team is currently in place providing circa 21 resources now covering end-to-end service management, service delivery and L1 and 2 engineering roles.

As the One Login migrations continue, Mastek is supporting Government departments onboarding to the platform as they transition into the new service and provide One Login a secure Technical Service Desk managed service with:

- Omni channel access for other government departments via telephony, email and web form
- Provision of L1 and L2 engineering support
- 24x7, 365 days a week cover
- 24x7x365 eyes on monitoring service
- Fraud detection and security, GDPR compliant
- End-to-end (L0-3) incident and problem management
- End-to-end 24x7 Major incident management (MIM)
- On-call/call-out engineering support, incident and MI management
- Adherence to stringent SLAs on incident response, call handling and fix times
- End-to-end monthly service reporting alongside TSD KPI and SLA reporting.
- A shift left culture and mindset, reducing the impact of service on product teams (L3)
- Support with service maturity in the programme, preparing GDS to run critical national infrastructure.



Internet-facing platform and applications for Army Digital Services

Developed mobile app and web app with 24*7 high availability

Problem

- New Defence Gateway Portal
- Combine all internet-facing applications into one
- Easy to use
- Enable easier access to the MySeries portfolio of products.

Solution

Designed and developed the following easy-use Progressive Web Apps:

- Defence Gateway Landing Page
- My Leave App
- My Expenses App
- My Health App
- My Details App
- My Appraisal App
- My Admin App
- COVID-19 Reporting Tool
- Commanders' COVID-19 Tool.

Outcome

- Delivered 20+ successful projects
- Deployment Automation
- £7.5m in savings annually
- Zero Downtime
- Environment creation in hours.



Delivered a platform for the Department for Health and Social Care

Delivered capability supporting 200k+ tests in a day,
traced millions of COVID-19 infections

Problem

- Leveraging DevOps platform based on reusable GitHub, AWS and Azure DevOps Pipelines
- Introduce more flexible, scalable and reusable IaC capabilities
- Implement CI/CD pipelines.

Solution

- Uplifted from Cloud Formation into Terraform (IaC)
- Pre-built the AMIs using Packer, with automated security checks
- Immutable infrastructure, thus eliminating the risks of partial upgrades and patches
- Continual Cost Optimisation processes and other service functions, such as Change and Risk management
- Migrated into an organisation-wide collaboration toolset. This included Jira, Confluence, Trello, Miro, Teams, SharePoint, O365, Slack, etc.

Outcome

- 75% reduction in lead time due to pre-built AMIs
- Zero Downtime Deployments
- Delivered a Platform - Secured, multi-tenanted hosted on Azure and AWS in 5 weeks
- Cost reduction achieved through close monitoring of resource utilisation.



Mastek and Technology in the Public Sector

Technical Capabilities	Relevant Technology Capability	Mastek Scale
Software Development Continuous Integration, Platform - Other Products, Cloud Collaboration Tools		Software Engineering 2354 FTE
QA and Test ; API, Automated Functional and Compatibility, Accessibility & Performance		QA and Testing 774 FTE
Cloud Platforms Amazon Web Services AWS Microsoft Azure		Cloud Platforms 1046 FTE
Data BI/MI Components, Integration		BI and Visualisation 725 FTE
User-Centered Design		UCD 25 FTE
Office Automation Tools		Collaboration 4565 FTE

2. Summary

Mastek leads the market with our approach to testing cloud solutions. Cloud-based systems and services using Agile delivery techniques have specific quality requirements that can challenge even experienced development and test teams still utilising legacy testing strategies. Additionally, automated regression testing and other testing disciplines will require a technical infrastructure to operate and establishing this without the appropriate experience can be a significant challenge.

Cloud systems that follow the Government Service Design Manual and the GDS Digital by Default Standard should employ techniques such as guerrilla testing, accessibility testing, lab-based user testing, remote usability/summative testing (quantitative), same-day user testing (online qualitative), load and performance testing and vulnerability and penetration testing.

We use Agile techniques and concepts from our **Adapt 2.0 Framework**, including solution value mapping, incremental strategy, uncertainty management and emergent design. This work package aims to align testing resources with Agile development processes and support the creation of the technical and operational infrastructure that will serve as the foundation for testing.

The Government Service Design Manual details the Discovery, Alpha, Beta, Live and Retire project lifecycle with the requirement for specialist testing strategies:

2.1 Discovery

Fast feedback during iterative development, including the establishment of enhanced user research and show-and-tells.

2.2 Alpha

Testing prototypes with a small group of users and gathering early feedback on the service's design.

2.3 Beta

Testing against the demands of a live environment, understanding how to build and scale while meeting user needs.

2.4 Live

Iteratively improving your service, reacting to new needs and demands and meeting targets set during its development.

2.5 Retirement

Preparing to remove the service with no negative impact

2.6 GDS Testing Techniques

The Government Service Design Manual outlines a range of testing techniques suitable for cloud-based systems. These include:

- a) **Guerrilla Testing:** Guerrilla user testing is a low-cost method of user testing. 'Guerrilla' refers to its 'out in the wild' style. It can be conducted anywhere with significant foot traffic, such as a café, library, or train station.

- b) **Accessibility Testing:** Accessibility testing is similar to usability testing in that it ensures a product or service is easy for its intended audience to use. That audience includes users who access the service via a range of assistive technologies, like:
- Lab-based user testing: User testing is a ‘qualitative’ research method used to gauge how easy and intuitive a product, service, or website is to use and whether it supports the needs of its intended audience.
 - Remote usability/summative testing (quantitative): Remote usability testing takes place outside the lab. Users participate in their own homes, using their own computers and without a third-party moderator present.
 - Same-day user testing (online qualitative): Like standard remote usability testing, same-day user testing also occurs outside the lab. Users participate in their own homes, using their own computers and with no third-party moderator present.
 - Load and performance testing: This includes capacity-planning work at the beginning of a project and specific load and performance testing during the lifecycle.

3. Masteks Service

Service	Outputs/Benefits
Align testing resources and responsibilities to Agile development practices.	Testing needs to be aligned to support Agile work practices. This requires testers and developers to work in ways that differ from their usual approach and it necessitates effective coaching. This will focus on the entire delivery team working cross-functionally.
Establish engineering practices, Test-Driven Development (TDD), to support automated testing.	Test Driven Development (TDD) provides an integrated investment in software quality that also reduces the overall cost of ownership.
Establish automated functional testing.	Automated functional testing can also be implemented to support effective regression testing and reduce the overall cost of ownership.
Develop the technical infrastructure to support continuous integration.	Establish a technical environment to support continuous integration and its associated reporting. Continuous integration establishes the ability to regularly run automated test packs and confirm the software is deployable with minimal risk.
Support the development of a story-based approach to testing.	Developing stories is the principal mechanism for developing cloud-based systems. Effective testing will also require testers to establish how stories will be certified and how other testing classes, such as NFT, will be incorporated into such a regime. Testing will be traceable to user needs and acceptance criteria and can be extended to utilise Behaviour-Driven Development (BDD).
Establish automated deployment facilities.	Automated release facilities will accelerate the incremental process used with cloud-based systems and reduce the effort required to deploy releasable code versions.
Configuration management.	Establishing facilities for configuration and system (both software and test) management to support the cloud environment.
Cloud Data Testing Strategy Framework	Perform Functional validation to ensure ETL pipelines, APIs and data transformations work as expected. Test workloads under varying traffic and data volumes, validate encryption, access controls and adherence to GDPR/HIPAA regulations. Confirm interoperability across hybrid/multi-cloud systems.

4. Key Features

- Delivery of testing strategy for cloud deliveries.
- Simulate peak data load, latency, Penetration testing, vulnerability scans, role-based access validation and Backup/restore, failover and resilience checks.
- Use of the **test orchestration frameworks** (Selenium, JUnit, PyTest) for consistency.
- Provision of specialist testing capability for delivery of testing services:
 - Test management and leadership
 - Automation testers
 - Manual testers
 - Performance testers
 - Non-functional testers.
 -

5. Business Benefits

- Accelerated delivery with Faster release cycles and quicker time to market.
- Lower costs from faster feedback and reduced rework.
- Increase benefits realisation - delivering higher value services to users.
- Automate regression and smoke tests for every deployment.
- Generate dashboards for stakeholders with actionable insights.

6. Technologies, Languages, Tools, methods and Vendor Support

#	Technologies	Languages/Tools	Methods	Vendor support
1	Agile delivery	SAFe,	Agile, Scrum, Kanban	Adapt 2.0 Framework
2	Continuous integration, Continuous delivery (CICD).	Jenkins, Code Management, Cucumber.	TDD, BDD, DevSecOps.	Application Lifecycle Management.

--- End of Document ---

Mastek UK Ltd.
100 Brook Drive, Green Park,
Reading, Berkshire
RG2 6UJ
+44 (0)118 903 5700
Email: g-cloud@mastek.com

