



Trust. Value. Velocity

G-Cloud 15

AI Led Test Automation



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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 a context of high uncertainty and complexity while collaborating in 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:

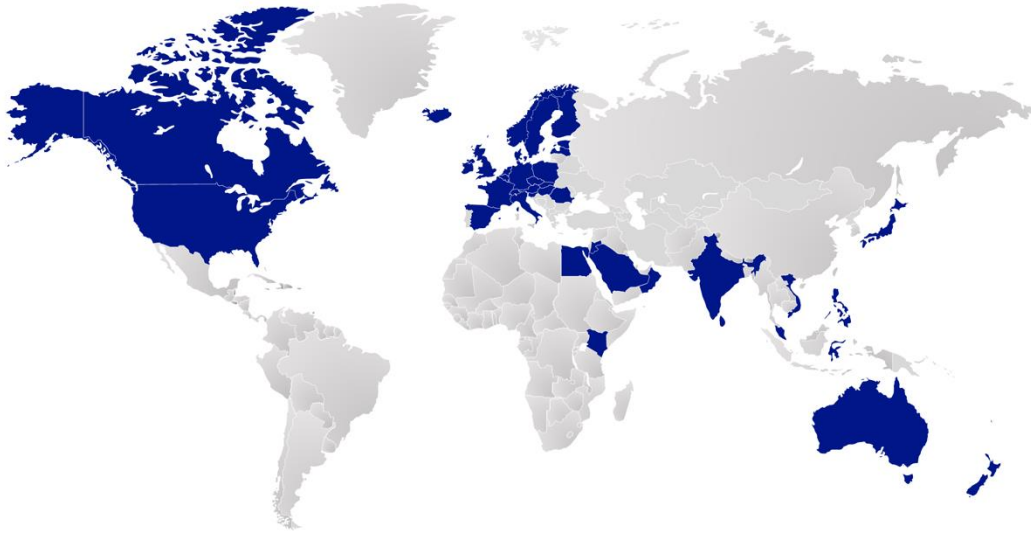
Working through a complex stakeholder landscape: We understand the importance of establishing effective communication channels, building trust, and fostering a collaborative working environment that empowers stakeholders to contribute meaningfully to the project's success. Our approach is based on a 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, Ministry of Defence and NHS, we have a proven track record of working seamlessly with large stakeholder groups, including civil servants.

Standards, compliances: We comply with >20 policies and standards, including Government Digital Standards and Government CDDO Service Toolkit covering service standards, service manuals, TCoP, 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 & 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 & 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 & migration • Legacy modernisation • Low code / no code App Dev • DevSecOps • Enterprise integration	• MACH • Digital commerce • UX & 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 & 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 & applications for Army Digital Services

Developed mobile app & 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's AI-Led Test Automation Service is purpose-built to deliver next-generation quality assurance through advanced AI agents, GenAI-powered test generation, and NLP-based intelligent automation. The service focuses exclusively on AI-led test automation, enabling rapid, reliable, and scalable test coverage for modern digital platforms. By leveraging proprietary AI assets and NLP-driven automation, Mastek helps organisations accelerate releases, reduce manual effort, and achieve measurable efficiency gains of up to 50%.

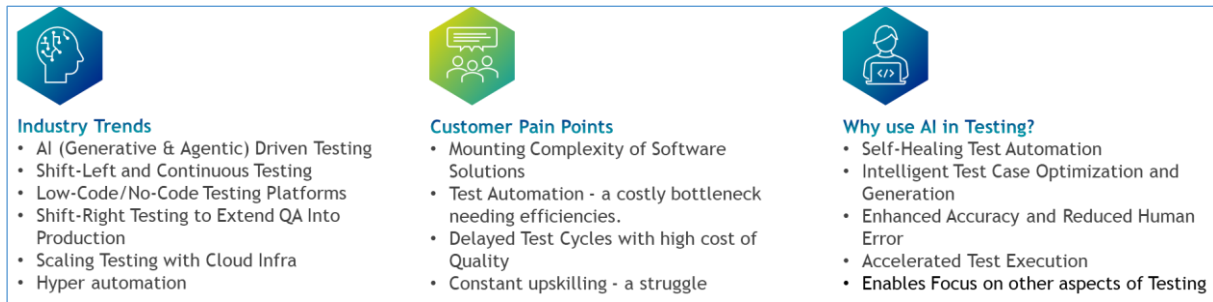


Figure 1: How AI in Testing is a 'Game Changer'

3. Mastek's Service

Mastek's service is dedicated to AI-led test automation, covering the full lifecycle from assessment and strategy to implementation and continuous optimisation. Key elements include:

- GenAI-powered test case and script generation.
- Self-healing automation for resilient, low-maintenance scripts.
- NLP-based test design for business-user-driven automation.
- Automated test data generation (synthetic, privacy-compliant).
- Seamless integration with CI/CD and DevOps pipelines.
- Migration from legacy automation to AI-enabled frameworks.

Our approach is focused on maximising automation coverage, minimising manual intervention, and delivering rapid, reliable results for web, mobile, ERP, and cloud platforms.

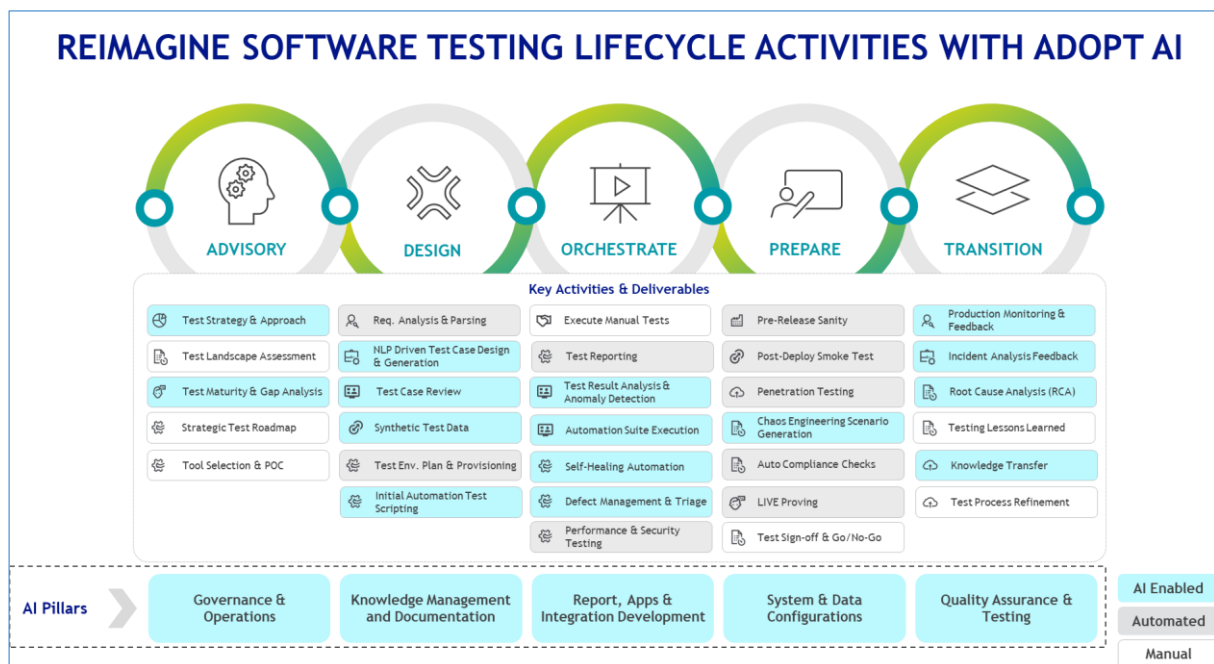


Figure 2: Reimagine Software Testing Lifecycle Activities with Adopt AI

4. Key Features

Mastek offers a comprehensive range of features to ensure successful and efficient functional testing services:

- **GenAI Test Generation:** Automated creation of test cases, scripts, and data using generative AI and NLP, reducing manual effort and accelerating onboarding.
- **Self-Healing Automation:** AI-driven scripts adapt to UI changes, minimising maintenance and reducing script flakiness.
- **NLP-Based Test Design:** Natural language processing enables business users to generate and maintain tests, lowering skill barriers and improving collaboration.
- **Automated Test Data Generation:** Synthetic, privacy-compliant test data supports GDPR and regulatory needs, enabling safe, realistic testing.
- **Smart Orchestration:** Efficient parallel execution, robust reporting, and minimal manual intervention for scalable automation.
- **Seamless CI/CD Integration:** Automated test execution within DevOps workflows for continuous testing and faster releases.
- **Reusable AI Assets:** Proprietary accelerators such as AI & MCP-Based Solution, Test Case Generation Agent, Automation Starter Script Generation Agent, and Synthetic Test Data Generator Agent deliver measurable efficiency gains.
- **Legacy Automation Migration:** Smooth transition from legacy frameworks to modern, AI-enabled automation with minimal disruption.



Criteria	Manual Testing	Automation	AI-Enabled Automation
Flexibility	High	Low	High - NLP-based test generation
Setup Time	Low	High	Medium - lower with low-code tooling
Reusability	Low	Moderate	High - reusable, auto-adaptive
Maintenance	Easy	Tedious	Low - self-healing test scripts
Cost Over Time	High	Medium	Low - long-term ROI with reduced failures
Exploratory Capability	Excellent	Minimal	Growing - AI learns behavior patterns
UX/UI Testing	Best	Rarely addressed	Improved - Visual diffing + AI image testing
Regression Coverage	Low	High	Very High
Skill Requirement	Moderate	High	Low to Medium - thanks to NLP tools

Figure 3: Shift in Testing - Shift Left, Scaling Fast – Automation First

5. Business Benefits

By partnering with us for AI-led test Automation Services, you unlock a multitude of benefits that drive quality, efficiency, and user satisfaction for your software projects:

- **40–50% QA Efficiency Boost:** Human–AI collaboration delivers up to 50% faster time-to-market and significant cost reduction.
- **Reduced Maintenance Overhead:** Self-healing scripts and AI-driven updates minimise manual intervention and lower total cost of ownership.
- **Improved Test Reliability & Accuracy:** Enhanced coverage, intelligent test case optimisation, and reduced human error ensure higher quality outcomes.
- **Effort Savings:** Up to 40% reduction in manual effort via intelligent script and data generation, freeing teams for higher-value activities.
- **Enhanced Compliance:** Synthetic test data and automated audit trails support GDPR and regulatory requirements, reducing compliance risk.
- **Scalable Automation:** Rapid onboarding, migration from legacy frameworks, and support for both bespoke and COTS platforms enable enterprise-wide adoption.
- **Business Agility:** Faster releases and continuous feedback loops empower organisations to respond quickly to market and regulatory changes.
- **Consistent Quality:** Standardised, AI-driven processes ensure repeatable, reliable results across projects and teams.
- **Risk Mitigation:** Early defect detection and risk-based prioritisation reduce production incidents and post-release issues.
- **Cost Optimisation:** Early defect identification, automation of repetitive tasks, and reduced regression cycles drive down overall QA costs.
- **Future-Ready Capability:** Continuous improvement and adoption of emerging AI technologies keep testing practices ahead of industry trends.

6. Technologies, Languages and Methods

#	Technologies	Languages	Methods
1	AI-Driven Test Automation Frameworks: Playwright, Opkey, TestIM, Copado.	Java, JavaScript, TypeScript, C#.	Model-based, NLP-driven, Agile, Shift-left.
2	AI Assets: Playwright MCP, Test Case Generation Agent, Automation Starter Script Agent, Synthetic Data Generator.	JavaScript, Typescript.	GenAI, Self-healing.

7. Case Studies

7.1 Morrisons (Retail, UK)

- **Challenge:** Manual, inconsistent, and slow test creation for large-scale code migration.
- **Solution:**
 - Cucumber and BDD-based automation script creation using Gen AI.
 - Leveraged Synthetic Test Data Generator Agent for GDPR-compliant data sets across multiple environments.
 - Integrated automation into CI/CD pipelines for continuous validation during migration phases.
- **Outcome:** 35-40% effort savings, faster releases, improved coverage and quality.

7.2 ParentPay (EdTech, UK)

- **Challenge:** Legacy technology, fragmented manual testing, high cost of ownership.
- **Solution:**
 - Adopted an AI-driven automation framework for Salesforce and custom modules using Playwright.
 - Generated unit tests and regression packs through Test Case Generation Agent, reducing manual scripting.
- **Outcome:** 61% reduction in manual effort and operations cost, accelerated delivery.

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