Mastek™

Trust. Value. Velocity

G-Cloud 15

Release and Deployment Automation Service

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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:

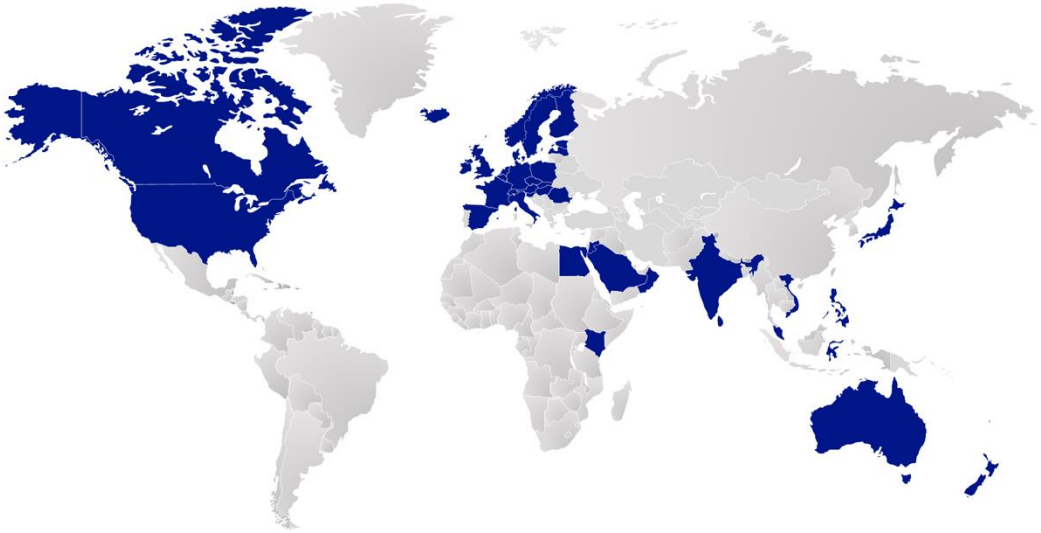
Working through a complex stakeholder landscape: We understand the importance of establishing effective communication channels, building trust and fostering a collaborative working environment that empowers stakeholders to contribute meaningfully to the project's success. Our approach is based on a deep 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



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Oman
Philippines
Poland
Romania
Singapore
Slovakia
Spain
Sri Lanka
Sweden
Switzerland
United Arab Emirates (UAE)
United Kingdom
USA

Mastek
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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 though 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.
- AI-driven test automation selected and executed the most relevant test cases based on code and infrastructure changes, reducing test cycle times while maintaining confidence in releases.

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:

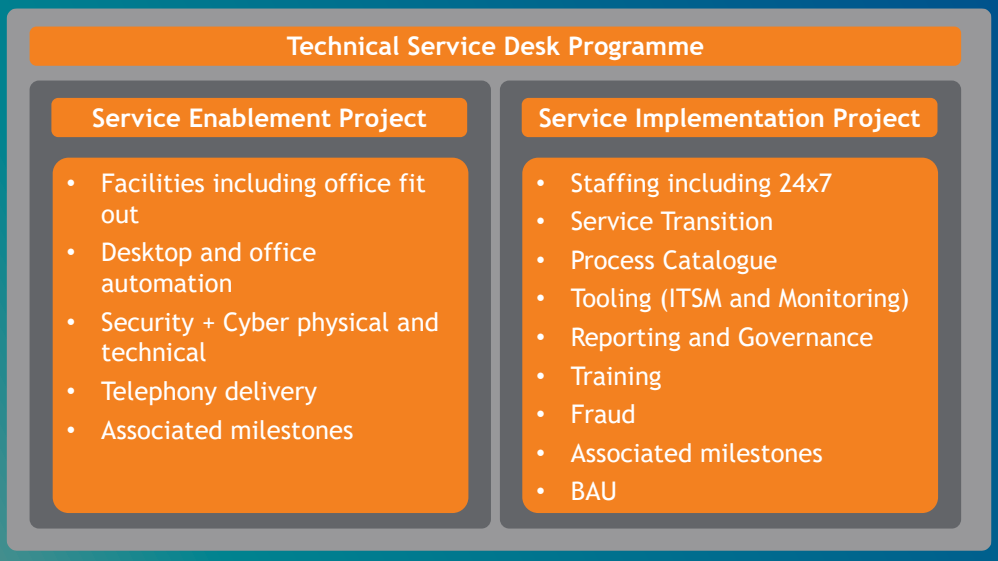
  - Service Management Vice President
  - Programme Director
  - Chief Technology Officer
  - Programme Management office lead.

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's **Release and Deployment Automation Service** is a component part of our overarching Agile Service Management (ASM) service, as illustrated in the following Figure:

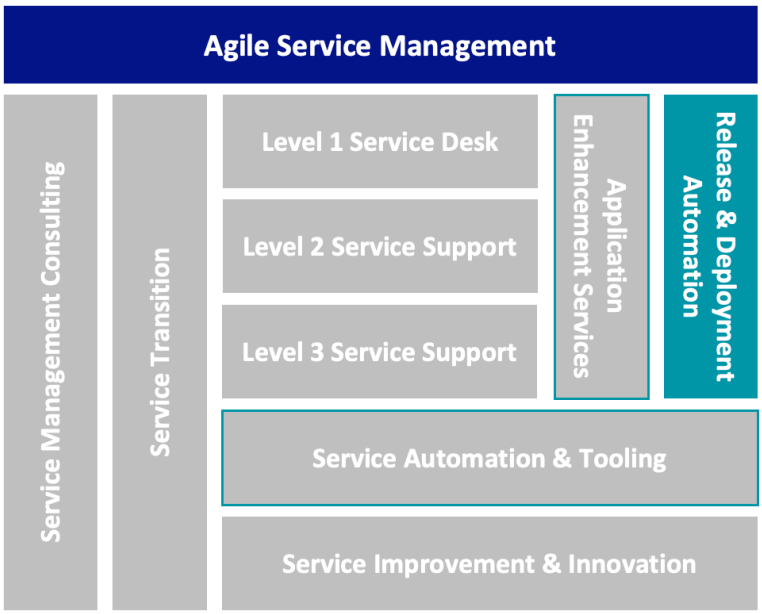


Figure 1: Agile Service Management (ASM) Service

The service can be delivered standalone or in conjunction with Application Enhancement Services, Service Automation and Tooling services.

The service provides end-to-end planning, coordination, and execution of releases, helping to build collaborative workflows between development and operations. It accelerates release cycles and boosts ROI. It helps build the right bridges between development and operations by establishing best practices to enable organisations to deploy code and applications and automate IT processes with greater efficiency and cost savings, thereby minimising failures and reducing manual dependency.

3. Masteks Service

The Release and Deployment Automation service is a highly customisable, lean, cost-effective and maintainable solution that can bring tangible benefits to an organisation by significantly reducing the time spent on manual deployments and issues arising from them.

Mastek's release and deployment automation framework begins by first building the development environment, triggering the code build, and then reviewing the code using automated code review tools.

It is followed by the execution of the unit test pack. If the unit testing exit criteria are passed, the code will be promoted to the test environment. If the criteria fail, defects will be logged in the defect tracking tool and the same process will be re-triggered after a code fix is provided. Once the code is promoted to the Formal Qualification Testing (FQT) environment, the deployment automation tool deploys the build packages. It executes the test automation tools, such as QTP/Selenium and others.

Reports are captured using the reporting feature within the tool. It can also be configured to trigger non-functional testing in parallel or sequentially, allowing performance testing to be performed with the help of tools such as J-Meter, LoadRunner and others. Once it satisfies the exit criteria of both FQT and non-functional testing, the code will be promoted to any user acceptance environment and subsequently to the live environment.

Below is a visual representation of the framework:

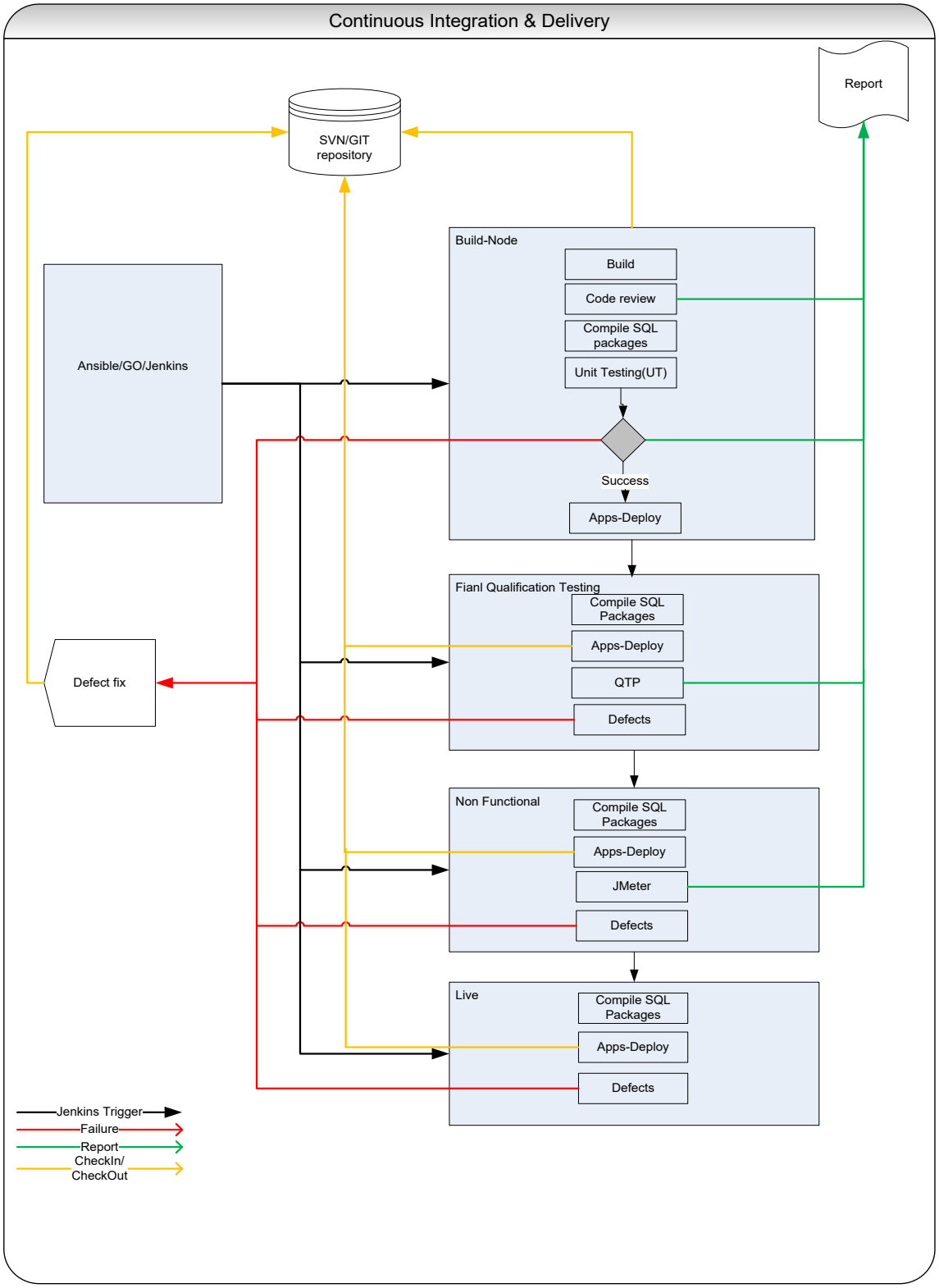


Figure 2: Visual Representation of the Framework

4. Our Approach

We take a collaborative approach to understand your specific needs and develop a customised Release and Deployment Automation solution. Our process includes:

- **Assessment**: We assess your current development and deployment processes to identify areas for improvement.
- **Tool selection**: We recommend the right tools and technologies based on your specific needs and infrastructure.
- **Implementation**: We configure and implement the chosen tools to automate your release and deployment pipeline.
- **Integration**: We integrate the pipeline with your existing development tools and processes.
- **Training**: We train your team on using the new automated deployment process.
- **Support**: We offer ongoing support to ensure your release and deployment automation solution runs smoothly.
- **AI-Driven CI/CD Automation:**
  - Machine learning enhanced Jenkins pipelines by analysing deployment patterns, predicting failures and recommending pipeline optimisations. This reduced manual intervention and improved deployment success rates across environments.
  - We use AI to design and generate secure, policy-compliant CI/CD pipelines for AKS and AWS deployments. AI accelerates pipeline creation, validates infrastructure and Kubernetes configurations, embeds automated security and compliance checks and optimises deployment strategies. This enables reliable multi-cloud releases, reduces operational risk and accelerates the delivery of business-critical services.

5. Key Features

- Full or customisable levels of automation.
- Technology independent.
- Choice of open-source tools/COTS products.
- Usable at both application and back-end layers.
- Ease of execution, with a self-service, push-button type setup.
- Scalable.
- Intuitive.

6. Business Benefits

- Increased release velocity
- Improved quality
- Reducing errors eliminates rework, wait times and the business impact of failures
- Embedded security
- Improved visibility and audibility
- Reduced risk of production outages
- Greater test environment availability
- Faster feedback through self-service.
- AI-Assisted Infrastructure as Code.
- AI generates and validates Terraform / Bicep for AKS and AWS infrastructure.
- AI helps to create Helm charts, Kubernetes manifests, Network, IAM and RBAC policies
- AI also flags misconfigurations before deployment.

7. Technologies, Tools, Methods and Standards

We support all major technologies, the latest toolsets, best practices and standards.

Mastek has significant experience delivering the following services in our G-Cloud clients' environments.

Build, deployment storage, code quality, source code repository: Ant; Apache Maven; Azure DevOps (previously Team Foundation Server (TFS)); Bash; Bitbucket; CLI; Cloudwatch; Cucumber; Docker; Dovecot/Postfix; EBS; EC2; ECS; EFS; Firehose; Git/GitHub; Gradle; Grafana; Helm; Jenkins; Junit; Kinesis; Kubernetes; Linux Administration; Maven; Mockito/PowerMock; Nexus; NIST Binary Aware; Packer; Prometheus; Puppet; RDS; S3; Selenium; Shell Scripting; SNS; SOCAT; SonarQube; SQS; Squid; Stash; SVN; TeamCity; Terraform; Vault; Virtuoso Listener; WireMock; Zabbix.

Environment and platform technologies: AWS; Azure; Hyper-V; UKCloud; UNIX; VMware; Windows; Secure IL0, IL2, IL3 environments; , Terraform, CloudFormation, ARM.

Other delivery tools: Ansible, Apache Maven, BMC Remedy, CheckStyle, Cherwell, Confluence, Docker, ELK (Elastic Search, Logstash and Kibana), FindBugs, Gatling, GIT, HP Openview, HP Quality Centre, HP Service Manager, HP Test Director, Jenkins, Jira, Jmeter, Junit, Landesk, Microsoft System Centre Operations Manager (SCOM), Mockito, Nagios, Piwik, PMD, QTP, Selenium, ServiceNow, Sonar, Splunk, Trello, Zabbix.

DevOps AI tools include Spacelift, Snyk, Amazon Q Developer, GitHub Copilot, Dynatrace, and Jenkins with AI plugins.

Methods and standards: Agile, BS 7799, DevOps, ISO 20000 Service Management, ISO27001 Information Security, ISO9001 Quality Management, ITIL, PMP, Prince2.

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