



Trust. Value. Velocity

G-Cloud 15

Cloud Application Architecture Service

Contents

1.	About Mastek	3
	Mastek's global presence	4
	Mastek and Technology in the Public Sector	12
2.	Summary	13
3.	Masteks Service	14
3.1	Envisage	14
3.2	Valuate	15
3.3	Operating Model	15
3.4	Launch	15
3.5	Verify	15
3.6	Enhance	15
4.	Key Features	16
4.1	Application architecture discovery and Cloud readiness assessment	16
4.2	Architecture capability assessment and Setup of cloud operating model	16
4.3	Architect and design of cloud-native applications	16
4.4	Architect and design of cloud-native applications deployment lifecycle	16
4.5	AI-Driven Architecture Blueprinting	16
4.6	Autonomous Cloud Optimisation Service	16
4.7	Cognitive Compliance and Governance	16
4.8	Predictive Resilience and Disaster Recovery	16
4.9	AI-Augmented DevSecOps Pipeline	17
4.10	Intelligent Multi-Cloud Orchestration	17
4.11	Cloud governance, risk management and compliance	17
4.12	Cloud architecture rationalisation and cost optimisation	17
4.13	Cloud Information Security Architecture Review	17
5.	Business Benefits	18
6.	Technologies and Vendor Support	19

Table of Figures

Figure 1: Evolve - A holistic framework for cloud application architecture development	14
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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 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	• AI-based 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 provides the skills/experience needed to deliver Architecture and Design services, migrating and managing existing workloads and building cloud-native applications on industry-leading public, private, hybrid and multi-cloud platforms.

These disciplines are supported by our enterprise repository, which is rich in frameworks, methods and reference architectures, providing best practices, standards and guidelines for running an architecture function within an organisation.

3. Masteks Service

Mastek has over a decade of experience providing Architecture and Design services to our customers, from architecting and designing to building and supporting cloud-native applications.

Mastek has successfully supported customers in the way they compete, create and capture value on their digital modernisation journey by designing robust, elastic and resilient solutions on the cloud using modern architecture patterns, such as microservices, Mesh Applications and Service Architecture (MASA), event-driven, MVC and Serverless, among others.

Our cloud application architecture services include:

- Application architecture discovery and cloud readiness assessment.
- Architecture capability assessment and setup of cloud operating model.
- Architect, design and plan cloud-native applications.
- Architect and design of cloud-native applications deployment lifecycle.
- Cloud governance, risk management and compliance.
- Cloud architecture rationalisation and cost optimisation.
- Cloud information security architecture review.
- Identification of operational, security, reliability, performance, cost and sustainability improvements.

Below is our proven framework for cloud application architecture development:

Mastek's "EVOLVE" Framework for Cloud Application Architecture development simplifies and accelerates your cloud journey. We take a customer-centric, incremental value delivery approach to drive innovations and work collaboratively using flexible commercial models, ensuring the highest delivery performance, quality improvements and productivity. Mastek's expertise and structured processes help you build a modern, secure, scalable, robust IT landscape that realises your current and future business objectives.

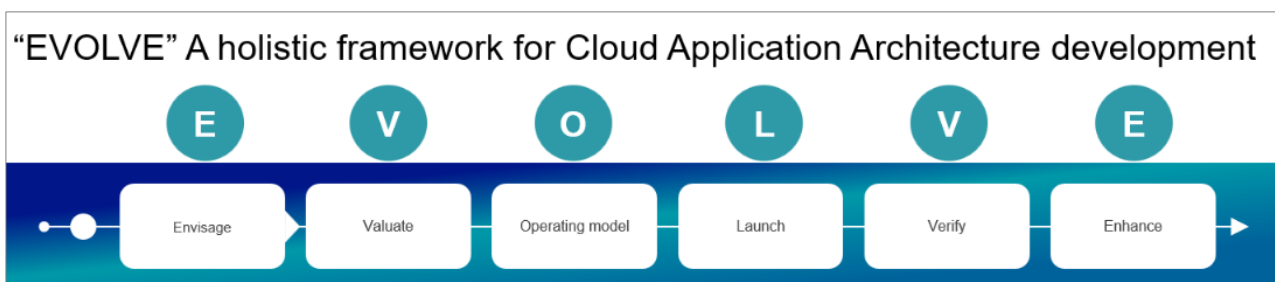


Figure 1: Evolve - A holistic framework for cloud application architecture development

3.1 Envisage

- Envisage the architecture vision aligned with the business vision and objectives.
- Create the statement of architecture work and communication plan. Set the architectural principles.
- Create the business case.

3.2 Valuate

- Valuate the current landscape regarding people, processes and technology.
- Review the organisational context and assess the architecture capability.
- Create baseline architecture for business, data, applications and technology.

3.3 Operating Model

- Roll out the next generation operating model consisting of organisation structure, processes, culture, governance model and KPIs.
- Build long-term and strategic partner ecosystems to support the public, private and hybrid cloud setup.

3.4 Launch

- Launch the cloud application architecture development program.
- Create target architecture for business, data, application and technology. Perform gap analysis. Identify opportunities and solutions.
- Select tools and technologies. Draw exit strategies. Select IaaS, PaaS and SaaS services. Select cloud providers.
- Create a modernisation roadmap to traverse from the baseline to the target landscape through transition architectures.

3.5 Verify

- Measure the value delivered and verify against the pre-defined KPIs and architecture vision.
- Loop through the architecture development and improve the cloud application architecture.

3.6 Enhance

- Build a workplace that fosters an innovation culture.
- Enhance continuous improvement through innovation and Technology refresh.

4. Key Features

Key features of our services:

4.1 Application architecture discovery and Cloud readiness assessment

Discover the application portfolio, infrastructure and data using various tools and assess the readiness to be migrated from on-premise to cloud or cloud to cloud. Create a business case that aligns with the business vision and objectives.

4.2 Architecture capability assessment and Setup of cloud operating model

Assess the architecture capability of an organisation using the Cloud Capability Assessment framework and set up the cloud operating model to support public, private and hybrid cloud setups.

4.3 Architect and design of cloud-native applications

Create an architectural vision that aligns with the business goals and objectives. Discover baseline architecture, define target architecture and establish transition architectures to transition from baseline to target architectures across various domains, including business, data, application and technology. Create a roadmap and migration strategy.

4.4 Architect and design of cloud-native applications deployment lifecycle

Architect and design people, processes, tools and technology for the deployment lifecycle of cloud-native applications such as

- People: Collaboration, skills and expertise, training and upskilling.
- Processes: CI/CD, immutable infrastructure, deployment strategies.
- Tools and technology: Containerisation (e.g., Docker), Orchestration (e.g., Kubernetes), Service Mesh (e.g., Istio), monitoring and logging (e.g., Grafana), Secrets Management (e.g., Vault), IaC (e.g., Terraform), Security Scanning (e.g., Snyk).

4.5 AI-Driven Architecture Blueprinting

Use AI tools like AWS Well-Architected Tool, Azure Advisor and Google Cloud Architecture Framework combined with ML-based design assistants to auto-generate optimal architecture blueprints.

4.6 Autonomous Cloud Optimisation Service

- Implement AWS Compute Optimiser, Azure Cost Management + AI Insights and Google Cloud.
- Recommender for predictive resource tuning and cost-performance optimisation.

4.7 Cognitive Compliance and Governance

- Leverage AWS Config with AI-driven rules and Azure Policy Insights to automatically enforce compliance and interpret regulatory changes.

4.8 Predictive Resilience and Disaster Recovery

- Use AWS Fault Injection Simulator, Azure Chaos Studio and AI-powered monitoring tools like Dynatrace or Datadog with ML anomaly detection for proactive failure prediction and automated failover.

4.9 AI-Augmented DevSecOps Pipeline

- Integrate GitHub Advanced Security with AI, SonarQube with ML plugins and AWS CodeGuru Reviewer for automated vulnerability detection and intelligent release management.

4.10 Intelligent Multi-Cloud Orchestration

- Deploy HashiCorp Terraform with AI-driven orchestration, Google Anthos and Azure Arc, combined with ML-based workload placement algorithms for dynamic multi-cloud optimisation.

4.11 Cloud governance, risk management and compliance

- Set up and operate an architecture board for cloud governance, risk management and compliance with regulations and organisation policies.

4.12 Cloud architecture rationalisation and cost optimisation

- Review and assess the cloud architecture (business, data, application and technology) and rationalisation of the same for optimum performance and cost.

4.13 Cloud Information Security Architecture Review

- Review and assess the cloud information security architecture against the various security standards, such as ISO/IEC 27001 or AWS Well-Architected Framework.

5. Business Benefits

- Cloud native applications with continuous delivery of business value.
- Faster release pace; quickly conceive, build and ship more value to your customers.
- Holistic approach for architecture development with complete alignment to the Government Digital Strategy or industry/government compliance.
- Highly scalable, reliable and secured architecture to reduce digital debt.
- Improve quality and increase productivity through hyper-automation.
- Increased ROI through continuous observability and improvements.
- Reduced risk through multi-cloud platforms and a well-defined exit strategy.
- Seamless integration with an on-premise system of records in a hybrid landscape.
- Accelerates design time while ensuring optimal, scalable and compliant architecture.
- Reduces operational costs through continuous AI-driven resource and performance tuning.
- Minimises compliance risk by automating policy enforcement and regulatory interpretation.
- Prevents downtime with AI-powered failure prediction and automated recovery strategies.
- Enhances security and code quality through intelligent vulnerability detection and fixes.
- Maximises agility by dynamically selecting best-fit cloud environments for workloads.

6. Technologies and Vendor Support

#	Technologies	Vendor support
1	• Discovery and assessment tools • Cloud Migration tools IaaS • PaaS • Serverless • DevOps • Containers • Compute services • Database services • Network services • Manage/monitor services • Machine learning services.	• AWS • Microsoft Azure • Salesforce • Oracle.

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