



Trust. Value. Velocity

G-Cloud 15

**Architectural Innovation and Modernisation
Diagnostics, Assessment and Remediation**

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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:

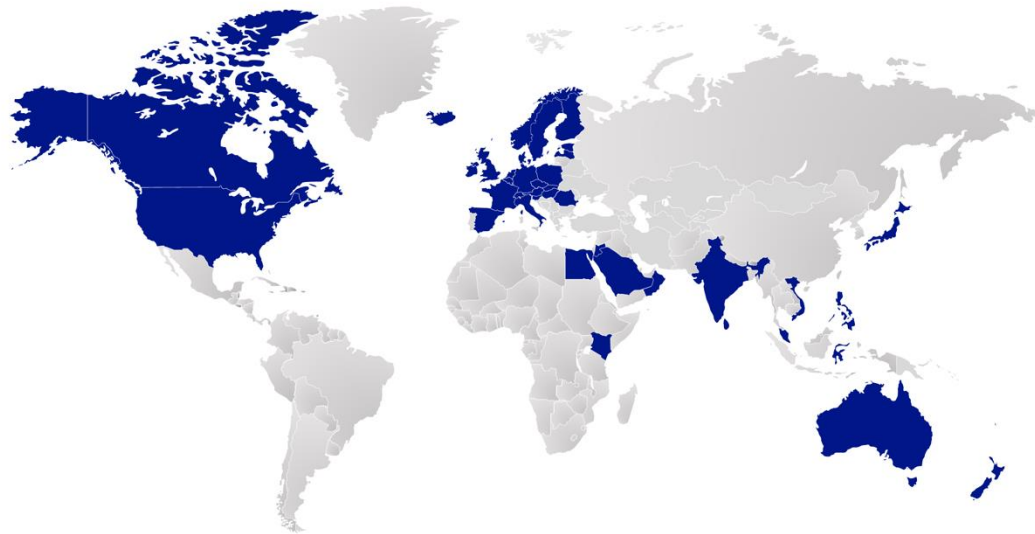
Working through a complex stakeholder landscape: We understand the importance of establishing effective communication channels, building trust and fostering a collaborative working environment that empowers stakeholders to contribute meaningfully to the project's success. Our approach is based on a deep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

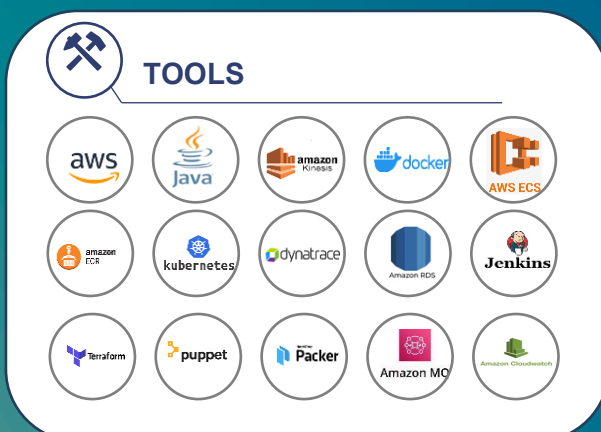
- Transition business-critical Platform services from incumbent supplier with minimal risk
- Migration from private cloud to AWS Cloud.

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:

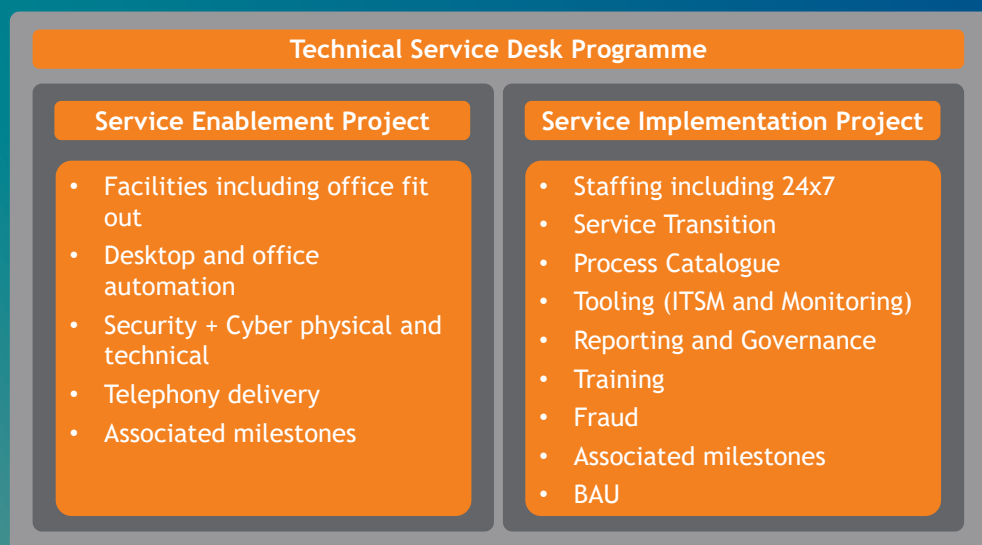
- Service Management Vice President
- Programme Director
- Chief Technology Officer
- Programme Management office lead.

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.

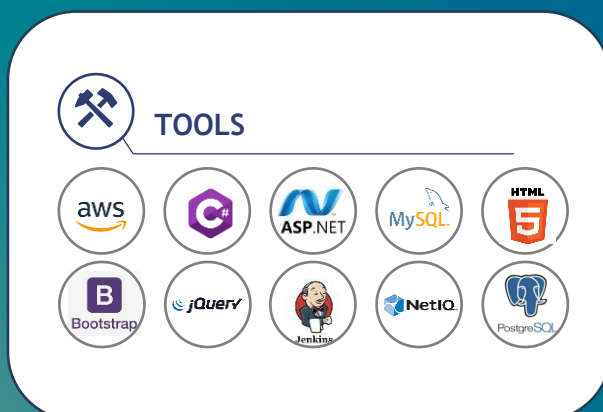
Solution

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

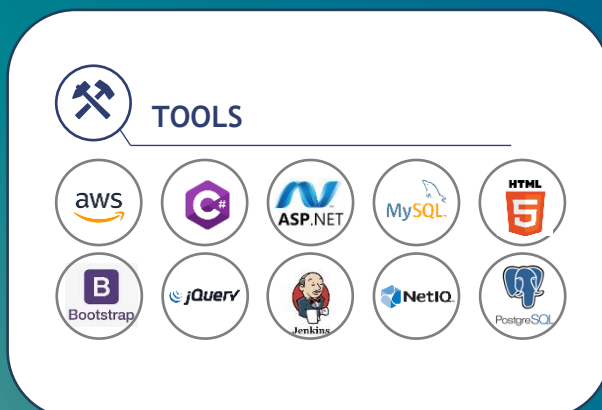
- Leveraging DevOps platform based on reusable GitHub, AWS and Azure DevOps Pipelines
- Introduce more flexible, scalable and reusable IaC capabilities
- Implement CI/CD pipelines.

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

Rapidly surface architectural issues, design the target state and execute a risk-controlled remediation plan that reduces technical debt, improves resilience and performance and prepares the estate for cloud-native, data-driven, AI-enabled delivery, **with measurable outcomes and audit-ready evidence**.

This service provides an **end-to-end, outcome-based pathway** from architectural truth-finding to modernization execution. We start by **diagnosing** the current estate, patterns, integrations, data flows, non-functionals and governance. We then **assess** modernisation readiness and design a **target architecture** (API-first, event-driven, secure-by-design, observability-enabled).

A **sequenced roadmap** converts strategy into action and a **remediation backlog** drives hands-on fixes across performance, resilience, security, data and integration. Governance is built-in fitness functions and CI/CD gates prevent the re-accumulation of debt, while role-based dashboards, decision logs (ADRs) and quarterly reviews ensure **executive confidence**.

The result is a **future-ready platform** with lower total cost of ownership, higher change velocity, stronger reliability and clear line-of-sight from architectural decisions to business outcomes.

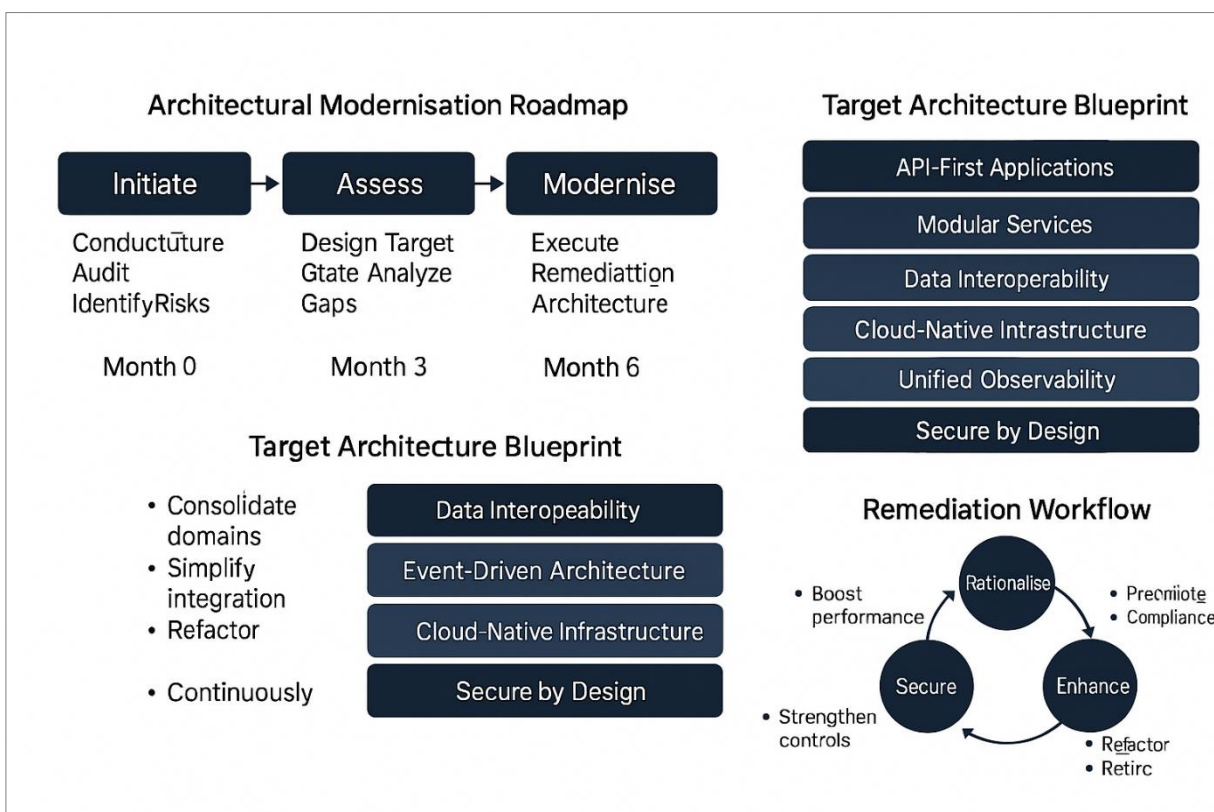


Figure 1: Architectural Modernisation Roadmap, Target Architecture Blueprint and Remediation Workflow

3. Masteks Service

3.1 Diagnostics - Architecture, Health and Truth-Finding

- Architecture audit across domains: Business, data, application, technology and integration topologies; non-functional baselines (availability, performance, security, operability).
- Risk and debt surfacing: Identify anti-patterns (tight coupling, chatty integrations), redundancy, misaligned data gravity and cost/performance hotspots.
- Traceability check: Validate tagging, ownership, environment segregation and presence of ADRs/decision logs and risk registers.
- Outputs: Architecture Health Report, risk/debt heatmaps, initial hypotheses for remediation and a catalogue of quick-wins vs foundational gaps.
Assessment - Target State and Gap Closure Design
- Target architecture blueprint: API-first, event-driven and secure-by-design patterns; clear data contracts, lineage, catalogues; unified observability (logs/traces/metrics).
- Fitness functions and quality gates: Measurable guardrails (latency, error-budget burn, RTO/RPO, cost per transaction, carbon proxies) applied at design-time and run-time.
- Modernisation pathways: Per workload decisioning, rehost / replatform / refactor / re-architect / replace, with criteria (risk, value, effort, sustainability).
- Outputs: Gap Analysis mapped to the blueprint; transition architectures and migration playbooks with risk controls and rollback strategies.

3.2 Roadmap - Sequenced, Value-Tracked Delivery Plan

- Initiative slicing: Platform uplift, integration rationalisation, data modernisation, security posture improvement, FinOps/GreenOps alignment.
- Wave planning: Quick-wins vs enablers; dependency-aware sequencing aligned to funding cadence and team capacity.
- KPI framework: Business and technical KPIs (agility lead time, change failure rate, SLO attainment, unit economics, ESG deltas).
- Outputs: 12–24-month roadmap with milestones, governance checkpoints, reporting cadence and attestation templates.

3.3 Remediation - Hands-On Fix and Uplift

- Rationalise and standardise: Retire redundant applications, consolidate overlapping capabilities and standardise integration (gateways, messaging backbones).
- Performance and resilience: Tune autoscaling, apply caching and asynchronous patterns, implement backpressure; strengthen DR/backup (RPO/RTO).
- Security and compliance: Zero-trust controls, key/secret hygiene, encryption, policy-as-code; remediate high-risk issues from reviews.
- Data modernisation: Stabilise ingestion, improve quality/governance, establish catalogues and lineage; adopt fit-for-purpose storage/services.
- Outputs: Remediation backlog burn-down with before/after metrics; signed ADRs; evidence packs ready for audit and governance.

3.4 Governance and Operating Model

- RACI and cadence: Clear roles across Architecture, Platform/SRE, Security, Data, Product and Finance; monthly dashboards and quarterly reviews.
- Quality gates in pipelines: Design/security/performance/cost checks; fitness functions enforced in CI/CD; policy-as-code compliance.
- Evidence and reporting: Decision logs, ADR repository, KPI trendlines and board-ready narratives that link changes to outcomes.

3.5 Knowledge Transfer and Change Enablement

- Playbooks and patterns: Curated reference architectures, design/runbooks and checklists aligned to the target platform.
- Skills uplift: Focused coaching in API-first design, event-driven architecture, cloud resilience, data contracts, observability and cost-aware engineering.
- Outcome: Teams self-govern architecture quality; improvements persist beyond the engagement.

4. Key Features

- Comprehensive architecture health audit across domains, integrations, non-functionals and governance artefacts.
- Risk and debt heatmapping with root-cause hypotheses and prioritised quick-wins.
- Target architecture blueprints (API-first, microservices/event-driven, serverless where appropriate).
- Transition architectures and migration playbooks per workload with rollback paths.
- Security-by-design uplift (identity, secrets, encryption, threat modelling, policy-as-code).
- Data modernisation (catalogue, lineage, quality, governance, fit-for-purpose storage/services).
- Performance and resilience improvements (autoscaling, caching, asynchronous flows, DR strategy).
- Unified observability enablement (SLOs, error budgets, logs/traces/metrics, run-time fitness checks).
- Remediation backlog management with ADRs, decision logs and before/after KPIs.
- Delivery governance and RACI with monthly dashboards and quarterly reviews.
- CI/CD quality gates (design/security/perf/cost) and pipeline-enforced fitness functions.
- FinOps and GreenOps alignment (unit economics, commitment coverage, carbon-aware choices).
- Executive-ready evidence packs and attestation templates (audit-ready).
- Playbooks, patterns and coaching to embed capabilities and avoid regression.

5. Business Benefits

- Reduced technical debt and risk: Systematic retirement of redundancy and anti-patterns; uplift of security/compliance, documented in ADRs.
- Higher delivery velocity: Modular patterns and pipeline gates reduce lead time and change failure rate; faster path from concept to production.
- Improved reliability and performance: Tuned autoscaling and resilient integration raise SLO attainment and user experience.
- Lower TCO with traceability: Rationalisation and rightsizing cut run-rate costs; cost per transaction traced to architectural changes.
- Future-ready platforms: Cloud-native, API-first, event-driven foundations unlock AI and data-driven capabilities safely.
- Governed, transparent progress: Role-based dashboards and quarterly reviews provide a defensible executive narrative of value.
- Sustainable change: Embedded patterns, fitness functions and policy-as-code prevent debt from re-accumulating.
- Better stakeholder alignment: Clear RACI, decision logs and attestation build trust across Finance, Product and Technology.
- Enhanced resilience posture: Robust DR, backup and observability reduce incident impact and recovery time.
- Regulatory confidence: Evidence packs and auditable change logs support compliance and assurance expectations.

6. Technologies, Languages, Methodologies and Vendor Support

#	Technologies	Languages	Methodologies	Vendor Support
1	Architecture Modelling and Repository Tools (Sparx EA, LeanIX, Orbus, ArchiMate)	UML, ArchiMate, BPMN	Architecture Health Assessment, Target State Design, Blueprinting	Sparx, LeanIX, Orbus
2	AI/ML Analytics and Diagnostics (Python, R, Custom ML Pipelines)	Python, R	AI-Assisted Diagnostics, Pattern Recognition, Technical Debt Analysis	Open Source, Custom
3	Cloud Platforms and Native Services (AWS, Azure, GCP)	YAML, JSON	Cloud-Native Modernisation, Well-Architected Reviews, Migration Playbooks	AWS, Microsoft, Google
4	CI/CD and Policy-as-Code (Jenkins, GitHub Actions, Azure DevOps, OPA, HashiCorp Sentinel)	Bash, PowerShell, HCL	Quality Gates, Policy Enforcement, Automated Remediation	Open Source, GitHub, HashiCorp
5	Observability and Monitoring (Prometheus, Grafana, ELK Stack, DataDog)	SQL, PromQL, Kibana Query	SLO Management, Error Budgets, Real-Time Monitoring	Open Source, DataDog
6	Dashboarding and Analytics (Power BI, Tableau, Qlik)	DAX, SQL, Qlik Script	KPI Tracking, Executive Reporting, Evidence Packs	Microsoft, Tableau, Qlik

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