

Performance Engineering & Testing: Load, Stress, Chaos & Resilience

SERVICE DEFINITION DOCUMENT - VERSION 1.0

Contents

1. Detailed Service Description	3
1.1 Overview	3
1.2 Scope of the Service	3
1.3 Delivery Approach	4
1.4 Tools, Methods & Standards	4
1.5 Deliverables	4
1.6 Dependencies & Constraints	5
1.7 Customer Responsibilities	5
1.8 Quality Assurance & Governance	5
1.9 Security, Data Protection & Compliance	6
2. Onboarding & Offboarding	7
2.1 Onboarding	7
2.2 Offboarding	7
3. Pricing & Commercials	8
4. Case Studies	9
5. About GlobalLogic & Why We're the Right Partner	10
5.1 About GlobalLogic	10
5.2 Why GlobalLogic	10
5.3 Social Value & Ethical Impact	11
6. Contact Details	12

1. Detailed Service Description

1.1 Overview

GlobalLogic's **Performance Engineering & Testing** service ensures that public sector digital services are scalable, reliable, and resilient. Moving beyond traditional "record and playback" load testing, we apply a holistic **Performance Engineering** mindset. This involves "Shift-Left" practices—analysing architecture and code for performance early in the lifecycle—and "Shift-Right" practices, such as synthetic monitoring and Chaos Engineering in production-like environments.

Our dedicated Performance Engineering Centre of Excellence (CoE) utilises industry-leading tools (JMeter, K6, LoadRunner) and APM solutions (Datadog, Dynatrace) to validate that critical systems can withstand peak traffic events, recover from failures, and deliver a seamless citizen experience.

1.2 Scope of the Service

This service covers the full non-functional testing lifecycle:

- **Core Performance Testing:** Load, Stress, Endurance (Soak), Spike, and Volume testing.
 - **Resilience & Chaos Engineering:** Fault injection to test system recovery, failover, and disaster recovery (DR) mechanisms.
 - **Performance Advisory:** Architecture review, capacity planning, and NFR (Non-Functional Requirement) definition.
 - **Continuous Performance:** Integrating automated performance checks into CI/CD pipelines (Jenkins, Azure DevOps).
 - **Deep-Dive Diagnostics:** Code profiling, database query tuning, and memory leak detection.
 - **Mobile & API Performance:** Specialised testing for mobile apps (network throttling) and microservices APIs.
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1.3 Delivery Approach

We utilise a proven five-stage Performance Engineering Framework:

1. **Analyse:** Define NFRs, analyse architecture, identify risks, and determine Workload Models.
 2. **Design:** Develop the Performance Test Strategy, design test scenarios, and plan capacity.
 3. **Build:** Develop robust test scripts (e.g., JMeter, K6), prepare test data, and configure monitoring.
 4. **Test & Tune:** Execute baseline and targeted tests, analyse results in real-time, and provide tuning recommendations.
 5. **Deploy & Run:** Integrate tests into pipelines for continuous regression and handover monitoring dashboards.
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1.4 Tools, Methods & Standards

We remain tool-agnostic, recommending the best fit for the client's technology stack:

- **Protocols & Tools:** JMeter, K6, LoadRunner, Gatling, BlazeMeter, Locust.
 - **APM & Monitoring:** Datadog, Dynatrace, New Relic, AppDynamics, Prometheus, Grafana, ELK Stack.
 - **Resilience:** Chaos Mesh, Gremlin, AWS Fault Injection Simulator.
 - **Methodologies:** Agile, DevOps, CI/CD integration, ISTQB Advanced Level Performance Testing standards.
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1.5 Deliverables

- **Performance Test Strategy:** Detailed approach, scope, tools, and NFRs.
 - **Test Assets:** Reusable test scripts, data generators, and pipeline configurations.
 - **Test Reports:** Executive summaries and technical deep-dives (response times, throughput, error rates, resource utilisation).
 - **Tuning Recommendations:** Specific code, database, or infrastructure configuration changes to resolve bottlenecks.
 - **Capacity Plan:** Assessment of infrastructure requirements for projected growth.
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1.6 Dependencies & Constraints

- **Environment:** Access to a stable test environment that mirrors production sizing and configuration is critical for accurate results.
 - **Data:** Anonymised or synthetic test data is required (GDPR compliant).
 - **Access:** Permissions to install load generators and monitoring agents.
 - **Stakeholders:** Availability of technical SMEs (architects, developers) to assist with triage.
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1.7 Customer Responsibilities

- Defining and approving Non-Functional Requirements (NFRs) and SLAs.
 - Providing architectural diagrams and system documentation.
 - Approving the Test Strategy and Plan.
 - Providing access to environments, repositories, and monitoring tools.
 - Participating in defect triage and tuning sessions.
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1.8 Quality Assurance & Governance

- **Performance CoE Oversight:** All engagements are overseen by our Performance Engineering CoE to ensure best practices.
 - **Dashboards:** Real-time visibility via tools like Grafana or Datadog during test execution.
 - **Defect Management:** Rigorous tracking of performance defects (e.g., Jira) with "Steps to Reproduce" and logs.
 - **Exit Criteria:** Formal sign-off against agreed NFRs before Go-Live.
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1.9 Security, Data Protection & Compliance

- **ISO 27001 & 9001 Certified:** Delivery centers and processes are fully certified.
 - **Security Clearance:** Staff available with BPSS as standard, with SC clearance available for sensitive projects.
 - **Data Handling:** Strict adherence to GDPR; we prioritise the use of synthetic or anonymised data where required.
 - **Secure Testing:** Test scripts and load generators are secured to prevent unauthorised access or denial-of-service risks.
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2. Onboarding & Offboarding

2.1 Onboarding

- **Kick-off Workshop:** Confirm scope, NFRs, timelines, and stakeholders.
- **Access Setup:** Configuring VPNs, cloud access, and repository permissions.
- **Tooling Setup:** Installation of load injectors and monitoring agents.
- **Knowledge Transfer:** Ingesting architectural documentation and system context.

2.2 Offboarding

- **Asset Handover:** Transfer of all scripts, scenarios, and data to the buyer's repository.
 - **Knowledge Transfer:** Walkthroughs with the buyer's team on how to execute and maintain the test suite.
 - **Final Reporting:** Delivery of the final Test Completion Report and Capacity Plan.
 - **Environment Cleanup:** Removal of test data and temporary agents.
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3. Pricing & Commercials

- **Pricing Model:** Time & Materials (T&M) based on the GCloud Rate Card or Fixed Price based on defined scope.
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4. Case Studies

4.1 Case Study: Telecoms Vendor – Resiliency & Orchestrator Testing

- **Challenge:** Manual testing cycles for a complex orchestrator product took 6+ weeks, with insufficient coverage for High Availability (HA) and robustness.
- **Solution:** GlobalLogic designed an automated test framework using **Python** and **PyTest** covering resiliency, security, and integration testing. We implemented weekly security verifications and chaos scenarios (service restarts, outages).
- **Outcome:** Reduced the non-functional testing cycle from **6 weeks to 1 week**. Achieved full automated coverage for HA and robustness, significantly improving product stability and release velocity.

4.2 Case Study: A leading global provider of Insurance

- **Challenge:** A leading insurance provider needed performance assurance for a Flex-based underwriting workstation to ensure it could handle multi-user concurrency without degradation.
 - **Solution:** Executed iterative performance testing including Single User Regression, Multi-User Load, and Endurance (Soak) tests. We utilised **WebLOAD**, **Nmon**, and **JProfiler** to identify memory leaks and optimise JVM settings.
 - **Outcome:** Validated system stability for **60 hours** of continuous operation. Identified and resolved critical memory leaks and response time degradations, ensuring the system met strict SLAs (< 3 sec response time).
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5. About GlobalLogic & Why We're the Right Partner

5.1 About GlobalLogic

GlobalLogic, a Hitachi Group Company, is a leader in digital product engineering. We helped create some of the most innovative and widely used digital products and experiences. We integrate experience design, complex engineering and AI & data expertise to help public sector organisations and commercial enterprises accelerate their transition into digital-first businesses.

Unlike traditional systems integrators that focus on maintaining legacy IT, we focus on **building the new**. We combine a "chip-to-cloud" software engineering mindset with user-centric design to create digital products that citizens and employees want to use.

- **Global Scale, Local Delivery:** We employ over 32,000 professionals across 23 countries. In the UK & Ireland, we operate major engineering and design hubs in London, Manchester, Edinburgh, and Newry.
- **The Hitachi Advantage:** Acquired by Hitachi in 2021, we bring the agility of a Silicon Valley digital native backed by the financial stability, R&D depth and 110-year heritage of a global industrial giant.
- **Core Capabilities:** Our services span the full digital lifecycle, including Digital Advisory, Experience Design (via our Method design arm), Software Engineering, Data & AI, and Cloud Platform development.

5.2 Why GlobalLogic

We bridge the gap between strategic intent and technical execution. For public sector buyers, we offer a distinct alternative to incumbent providers by focusing on **delivery velocity** and **engineering rigour**.

- **We Build, We Don't Just Advise:** Our roots are in product engineering. We apply the same rigorous standards used to build life-critical medical devices and global banking platforms to public sector challenges. We deliver working software, not just slide decks delivering >2000 product releases per annum.
- **Velocity AI – Accelerating Impact:** We do not just build AI; we engineer ecosystems where intelligence is orchestrated across the business. Using our Velocity AI strategy, we typically **achieve a 30% increase in productivity and a 25% reduction in time-to-market** for new digital services.

- **User-Centric, Security-First:** We align with GDS (Government Digital Service) standards by default, ensuring services are accessible and intuitive. Crucially, we embed security into the engineering lifecycle (Secure-by-Design), aligning with NCSC principles to manage data and risk effectively.
- **Proven in Regulated Environments:** We have two decades of experience delivering in highly regulated sectors, including Life Sciences, Healthcare, and Financial Services. We understand how to navigate complex compliance landscapes without sacrificing the pace of innovation and hold (amongst others) **ISO 13485 certification** and follow **IEC 62304 compliant** software development lifecycles.

5.3 Social Value & Ethical Impact

We believe that social innovation is as critical as technical innovation. GlobalLogic, as part of the Hitachi Group, operates with a deep commitment to creating positive impact for people and the planet. Our approach is grounded in measurable outcomes and global ethical standards.

- **World-Class Ethical Leadership:** In 2025, Hitachi was named one of the **World's Most Ethical Companies** by Ethisphere. This recognition reflects our commitment to integrity, compliance and high standards of governance in every public sector engagement.
 - **Commitment to Diversity and Inclusion:** We are a signatory of the **CEO Action for Diversity and Inclusion**. We achieved the Hitachi Group 2030 goal of having **30% women in our workforce** in 2023, seven years ahead of schedule.
 - **Sustainable Operations:** GlobalLogic holds an **EcoVadis Silver Rating**, placing us in the **top 15%** of companies assessed for sustainability in our sector. We report our own Scope I, II and III emissions and are fully aligned with Hitachi's target to achieve carbon neutrality at all business sites by 2030.
 - **Proven Supply Chain Integrity:** Our **NQC Supplier Assurance** score exceeds the industry average by **25%**. This ensures that our delivery models are as responsible as they are resilient.
 - **Talent Development and Wellbeing:** GlobalLogic is recognized as a global leader in talent development, receiving the **ATD Best Award in 2025**. This ensures our public sector teams are continuously upskilled in the latest technologies, including responsible AI and secure engineering practices.
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6. Contact Details

Email: public.sector@globallogic.com

Website: www.globallogic.com/uki