

Service 3: Software & AI Engineering Development Services

Service Definition Document

G-Cloud15 Procurement Submission

1. SERVICE OVERVIEW

TestFyra provides end-to-end software and AI engineering services including custom application development, AI/ML model development, cloud-native solutions, API integrations, and modernisation of legacy systems. We deliver secure, scalable, and maintainable software solutions tailored to public sector requirements.

What We Do: We design, develop, test, and deploy custom software solutions and AI applications. Our services range from building new applications from scratch to enhancing existing systems, integrating AI capabilities, and migrating legacy applications to modern platforms.

Who It's For: Government departments, NHS trusts, educational institutions, local authorities, emergency services, research organisations, and any public sector body requiring custom software development or AI/ML capabilities.

Key Deliverables:

- Custom web and mobile applications
- AI/ML models and intelligent systems
- API integrations and microservices
- Cloud-native applications (AWS, Azure, GCP)
- Legacy system modernisation
- Source code, documentation, and deployment pipelines

2. KEY FEATURES

2.1 Full-Stack Development

- Frontend: React, Angular, Vue.js, responsive web design, progressive web apps
- Backend: Node.js, Python, Java, .NET Core, microservices architecture
- Mobile: Native (Swift, Kotlin) and cross-platform (React Native, Flutter)
- Databases: PostgreSQL, MySQL, MongoDB, SQL Server, Redis
- Cloud: AWS, Azure, Google Cloud Platform deployment and management

2.2 AI & Machine Learning

- Natural Language Processing: Chatbots, document classification, sentiment analysis, entity extraction
- Computer Vision: Image classification, object detection, OCR, facial recognition
- Predictive Analytics: Forecasting, anomaly detection, recommendation engines
- Generative AI: RAG (Retrieval-Augmented Generation) systems, LLM integration
- MLOps: Model training pipelines, A/B testing, monitoring, retraining automation

2. KEY FEATURES

2.3 API Development & Integration

- RESTful APIs: Design, development, and documentation (OpenAPI/Swagger)
- GraphQL: Flexible data querying and efficient API design
- Third-Party Integration: Payment gateways, CRM systems, GDS services, authentication providers
- Middleware: Event-driven architecture, message queues, service buses
- API Security: OAuth 2.0, JWT, API key management, rate limiting

2.4 Cloud-Native Solutions

- Containerisation: Docker, Kubernetes orchestration
- Serverless: AWS Lambda, Azure Functions, event-driven architecture
- Infrastructure as Code: Terraform, CloudFormation, Ansible
- CI/CD Pipelines: Jenkins, GitLab CI, GitHub Actions, Azure DevOps
- Scalability: Auto-scaling, load balancing, caching strategies

2. KEY FEATURES

2.5 Legacy Modernisation

- Assessment: Technical debt analysis, modernization roadmap
- Re-platforming: Cloud migration, containerization
- Re-architecting: Microservices conversion, API-first design
- Re-engineering: Code refactoring, technology stack upgrades
- Data Migration: Database modernisation, data transformation

2.6 Quality & Security

- Testing: Unit, integration, E2E, performance, security testing
- Code Quality: Automated code reviews, static analysis, linting
- Security: OWASP Top 10 mitigation, penetration testing, vulnerability scanning
- Compliance: GDPR, accessibility (WCAG 2.1 AA), GDS Service Standard
- Documentation: Technical architecture, API docs, user guides, runbooks

3. KEY BENEFITS

Accelerate Digital Transformation

Custom solutions tailored to your specific processes deliver 3-5x better user adoption than off-the-shelf software.

Reduce Operational Costs

Automation and intelligent systems reduce manual effort by 40-70%, freeing staff for higher-value work

Improve Service Delivery

Modern user interfaces and AI-powered features enhance citizen experience and satisfaction scores by 30-50%.

Own Your IP

You retain full ownership of source code, allowing you to maintain and evolve solutions without vendor lock-in.

Ensure Compliance

Built-in GDPR compliance, accessibility standards, and security best practices from day one.

3. KEY BENEFITS

Scale with Confidence

Cloud-native architecture enables elasticity, handling usage spikes without performance degradation.

Future-Proof Technology

Modern tech stacks ensure compatibility with emerging standards and ease of integration with new services.

Evidence-Based Decision Making

AI-powered analytics and dashboards turn data into actionable insights for strategic planning.

4. HOW THE SERVICE WORKS

Phase 1: Discovery & Requirements (2-4 weeks)

- Workshop with stakeholders to understand needs
- Document functional and non-functional requirements
- Create user stories, personas, and journey maps
- Define technical architecture and technology stack
- Estimate effort and create project roadmap
- Deliverable: Requirements Specification & Architecture Design

Phase 2: Design & Prototyping (2-3 weeks)

- Create UX/UI designs and interactive prototypes
- Define API contracts and data models
- Design system architecture diagrams
- Review designs with stakeholders
- Refine based on feedback
- Deliverable: Design Documentation & Clickable Prototype

4. HOW THE SERVICE WORKS

Phase 3: Development (8-20 weeks, iterative)

- Agile development in 2-week sprints
- Continuous integration and automated testing
- Regular sprint demos and stakeholder feedback
- Code reviews and quality assurance
- Security scanning and vulnerability remediation
- Deliverable: Working Software (incremental releases)

Phase 4: Testing & QA (2-4 weeks, parallel)

- Functional, performance, and security testing
- User acceptance testing (UAT) support
- Accessibility testing (WCAG 2.1 AA)
- Bug fixing and regression testing
- Performance optimisation
- Deliverable: Tested Software Ready for Production

4. HOW THE SERVICE WORKS

Phase 5: Deployment & Handover (1-2 weeks)

- Production deployment and smoke testing
- Knowledge transfer to your team
- Documentation handover (technical and user)
- Post-deployment support (30-90 days)
- Hypercare period with enhanced monitoring
- Deliverable: Production System + Documentation

Ongoing: Support & Enhancement (Optional)

- Bug fixes and minor enhancements
- Performance monitoring and optimisation
- Security patches and dependency updates
- Feature development and roadmap execution
- Deliverable: Maintained and Evolving System

5. SERVICE LEVELS & SUPPORT

Development Service Levels

- Sprint Cycle: 2-week sprints with end-of-sprint demos
- Communication: Daily standups, weekly stakeholder updates
- Velocity: Typical team delivers 40-60 story points per sprint
- Deployment Frequency: Weekly to production (during development), on-demand thereafter

Quality Commitments

- Code Coverage: Minimum 80% unit test coverage
- Performance: Page load <3 seconds, API response <500ms (95th percentile)
- Security: No critical vulnerabilities at deployment
- Accessibility: WCAG 2.1 Level AA compliance

Reporting

- Sprint Reports: Burndown charts, velocity tracking, completed stories
- Monthly: Progress against roadmap, KPI dashboards, budget tracking
- Quarterly: Strategic review, feature planning, technical debt assessment

6. TECHNICAL REQUIREMENTS

Customer Requirements

Project Inputs:

- Business requirements or problem statement
- User research or target user descriptions
- Existing systems for integration (if applicable)
- Brand guidelines and design assets (if applicable)
- Hosting environment access (if customer-hosted)

During Development:

- Stakeholder availability for sprint demos (2 hours every 2 weeks)
- Subject matter expert access for requirements clarification
- UAT testers (typically 3-5 users)
- Timely feedback on deliverables (48-72 hours)

For Production:

- Hosting environment (or TestFyra can provide)
- Domain names and SSL certificates
- Access to production systems for deployment
- Monitoring and logging infrastructure (or TestFyra can provide)

6. TECHNICAL REQUIREMENTS

TestFyra Capabilities

Technology Stack:

- Frontend: React 18+, Next.js, TypeScript, Tailwind CSS
- Backend: Node.js, Python (FastAPI, Django), Java Spring Boot
- Mobile: React Native, Flutter, Swift, Kotlin
- AI/ML: PyTorch, TensorFlow, scikit-learn, Hugging Face Transformers
- Databases: PostgreSQL, MySQL, MongoDB, Redis, Elasticsearch
- Cloud: AWS, Azure, GCP (certified architects available)
- DevOps: Docker, Kubernetes, Terraform, GitHub Actions, Jenkins

Development Practices:

- Agile/Scrum methodology
- Test-driven development (TDD)
- Continuous integration/continuous deployment (CI/CD)
- Code reviews (every pull request)
- Pair programming (for complex features)
- Documentation as code

Quality Assurance:

- Automated testing (unit, integration, E2E)
- Manual testing (exploratory, usability)
- Security testing (OWASP, penetration testing)
- Performance testing (load, stress, scalability)
- Accessibility testing (automated and manual)

Hosting Options:

- Customer-Hosted: Deploy to your cloud or on-premises infrastructure
- TestFyra-Hosted: We manage hosting on AWS/Azure (additional cost)
- Hybrid: Critical components on-premises, others in cloud

7. SECURITY, COMPLIANCE & CONSTRAINTS

Security Measures

- Secure Development: OWASP Top 10 mitigation, security code reviews
- Authentication: Multi-factor authentication, SSO integration, OAuth 2.0
- Encryption: TLS , AES-256 at rest
- Secrets Management: HashiCorp Vault, AWS Secrets Manager, Azure Key Vault
- Vulnerability Management: Automated scanning, dependency updates, penetration testing
- Audit Logging: Comprehensive logging of all user actions and system events

Compliance

- GDPR: Privacy by design, data minimization, right to erasure
- Accessibility: WCAG 2.1 Level AA (or AAA on request)
- GDS Service Standard: Alignment with UK Government Digital Service standards
- ISO 27001: Information security management (in progress, expected Q2 2026)
- Cyber Essentials : Certified for baseline cybersecurity

Data & Backup

- Data Residency: UK data centres (unless specified otherwise)
- Backup Frequency: Daily automated backups with 30-day retention
- Disaster Recovery: RTO 4 hours, RPO 24 hours
- Data Portability: Standard formats (JSON, CSV, SQL) for data export

7. SECURITY, COMPLIANCE & CONSTRAINTS

Service Constraints

Dependencies:

- Quality requirements depend on clear, stable requirements
- Third-party API integrations depend on provider availability and documentation
- AI model accuracy depends on quality and quantity of training data
- Timeline estimates assume timely stakeholder feedback

Limitations:

- Cannot develop on proprietary platforms without licenses
- Cannot guarantee third-party API behavior or availability
- AI models require 3-6 months of production data for optimal accuracy
- Cannot provide industry-specific regulatory compliance advice (e.g., financial services)

Out of Scope (Unless Explicitly Agreed):

- Content creation (text, images, videos)
- User training and change management
- Business process redesign
- Ongoing hosting infrastructure management (unless opted into managed service)

Lead Times:

- Discovery phase: 2-3 weeks from contract signature
- Simple projects: Start within 2 weeks
- Complex projects requiring specialised skills: 4-6 weeks
- Emergency/urgent projects: 1 week notice (subject to 20% premium)

7. SECURITY, COMPLIANCE & CONSTRAINTS

Onboarding & Offboarding

Onboarding (2-3 weeks):

- Project kickoff meeting
- Requirements gathering workshops
- Technical environment setup
- Access provisioning (repositories, project management tools)
- Team introductions and communication protocols

Offboarding (2-3 weeks):

- Knowledge transfer sessions (minimum 4 hours)
- Complete source code handover via Git repository
- Technical documentation (architecture, deployment, runbooks)
- User documentation (admin guides, end-user manuals)
- 30-day warranty period for bug fixes
- Optional ongoing support agreement

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This Service Definition Document should be read in conjunction with TestFyra's Terms & Conditions, SFIA Rate Card, and Pricing Document for complete service details.

Version Control: Version 1.0 - December 2025 - Initial G-Cloud 15 submission

END OF SERVICE DEFINITION