

IBM Consulting



G-Cloud 15

IBM – Quality Engineering - AAT Testing Services

Service Definition Document

Email: ukcat@uk.ibm.com

Contact: Anne-Marie Wheeler



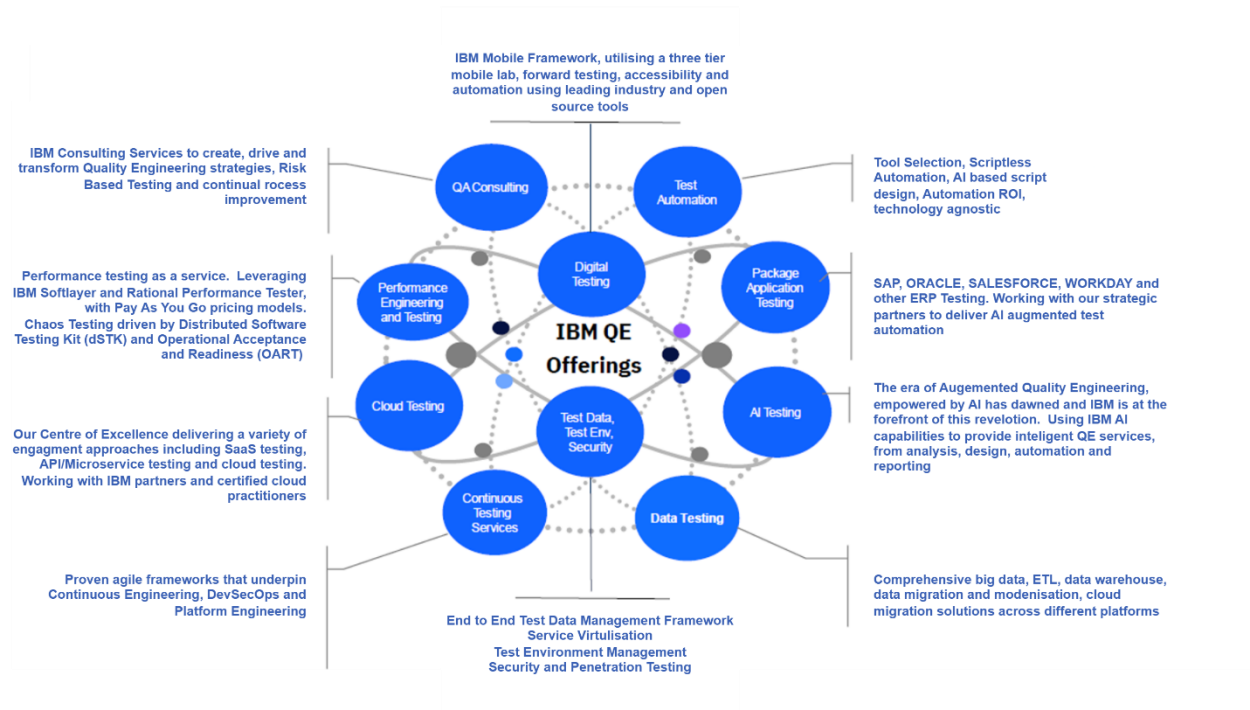
Contents

Our Offering Framework	3
Service Overview.....	4
Addressing Business Needs	6
Service Definition	7
IBM IGNITE Quality Platform	8
IBM Approach	9
About IBM	10

IBM - Quality Engineering - AAT Testing Services

Our Offering Framework

The API Automation Testing (AAT) service is part of the IBM QE (Quality Engineering) suite of offerings. IBM QE offerings cover the full breadth of testing needs.



The purpose of these services is to help you deliver quality government services at scale and to get increasingly complicated applications to market faster, with fewer defects and at a lower cost.

AAT, the Autonomous API Testing asset, is a cutting-edge solution included in the IBM Quality Engineering Service. Powered by Generative AI, the API testing process is revolutionised, delivering comprehensive test automation and actionable insights.

IBM - Quality Engineering - AAT Testing Services

Service Overview

Features

- Ingest swagger specifications and understand the endpoints, the operators, and the data parameters
- Extract relationships between the multiple APIs present in the specification
- Identify and map Producer / Consumer relationships
- Provide a visual representation of the APIs and endpoints
- Generate tests to cover all endpoints and flows
- Generate test data to execute the tests
- Elaborate coverage metrics
- Automate the test execution as well as generate BDD scripts to integrate with your test automation frameworks.

Benefits

- **Accelerated Testing:** Quicker testing through APIs delivers on go-to-market timelines and drives faster time-to-market for APIs
- **Comprehensive Test Coverage:** Ensure extensive test coverage. It encompasses test sequence management, test case generation, and the generation of synthetic yet realistic data
- **Enhanced Efficiency:** Reduce manual effort by automating test generation based on API specifications – freeing up valuable time for your team shift from test to quality
- **Early Defect Detection:** AAT's advanced reporting capabilities provide valuable insights into your API's performance.

Key Differentiators

- **AI-Powered Technology:** AAT harnesses the power of AI technology, including the Large Language Model (LLM) / Generative Pre-trained Transformer (GPT)
- Build with IBM Research technology

- **Integration with Swagger:** AAT seamlessly integrates with Swagger, a popular API documentation framework. It allows you to feed API specifications directly into AAT, enabling efficient test case review, data analysis, and ensuring consistency between requirements and tests
- **Shift towards Improved Quality:** AAT empowers users to shift their focus from just testing to building improved quality.

Real World Case Studies

- **US Telco** used AAT for API testing. 155 endpoints required 1.5 hours to create 3000 test cases. AAT reduced test creation time to 2.5 hours. AAT revealed 9 5xx errors and previously undetected null-point exceptions. Without AAT, testing would have taken 6 weeks (2 planning, 4 execution). AAT achieved an 85% reduction in planning and execution effort. Streamlined testing, critical error identification, and expedited timeline
- **UK financial institutions** faced API testing challenges. IBM automated test case generation with AAT and dependency management. For example, creating 5 test cases for a function with 9 endpoints took 30 minutes, and executing them took another 30 minutes. AAT detected 3 5xx errors and 1 4xx error, including a Severity 1 defect. Results: reduced testing time, improved accuracy, and early defect detection.

IBM - Quality Engineering - AAT Testing Services

Addressing Business Needs



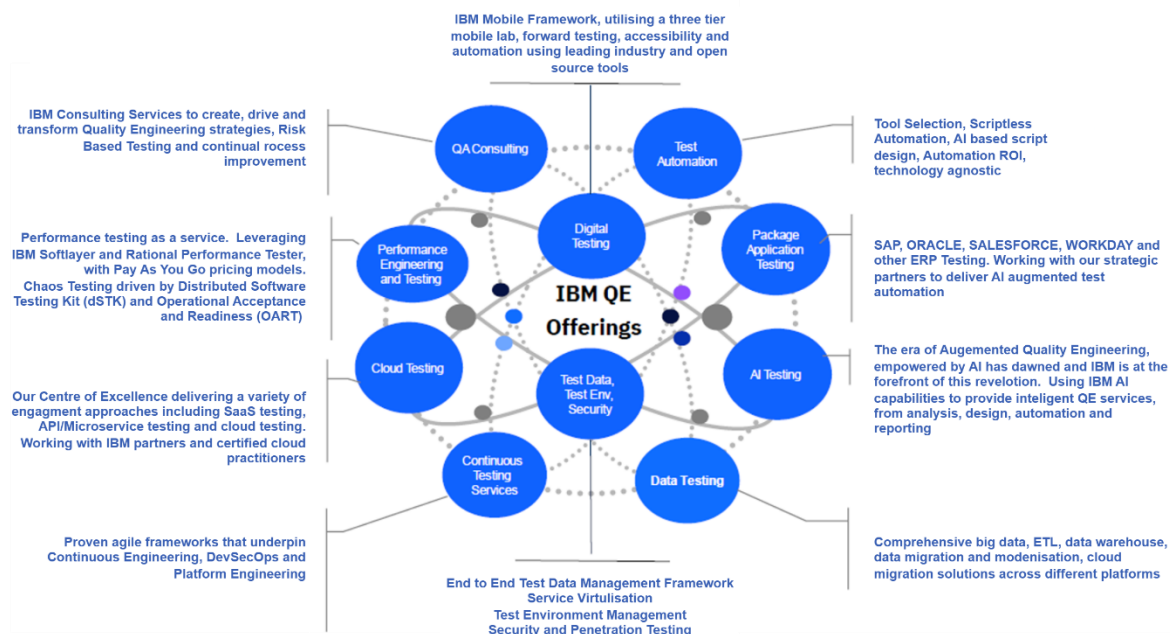
AAT enables developers and quality engineers alike to shift from traditional testing approaches to building quality and delivering APIs with confidence. Shift from automating to engineering for quality with AAT.

IBM can help you address your requirements for testing essential government digital services with rigour and depth. We can help you address your key business needs, including:

- **Automated Testing:** It can automatically generate and execute test cases, reducing the time and effort required for manual testing
- **Continuous Testing:** It supports continuous testing, allowing for the testing of APIs throughout the development lifecycle
- **AI-Powered:** It uses AI and machine learning to understand the behaviour of APIs, enabling it to identify and fix issues quickly
- **Integration:** It can be integrated with other IBM tools and platforms, providing a seamless testing experience
- **Scalability:** It can handle many APIs, making it suitable for use in large-scale projects.
- **Security:** It provides robust security features, ensuring the protection of sensitive data
- **Reporting:** It provides detailed reports and analytics, helping to improve the overall testing process.

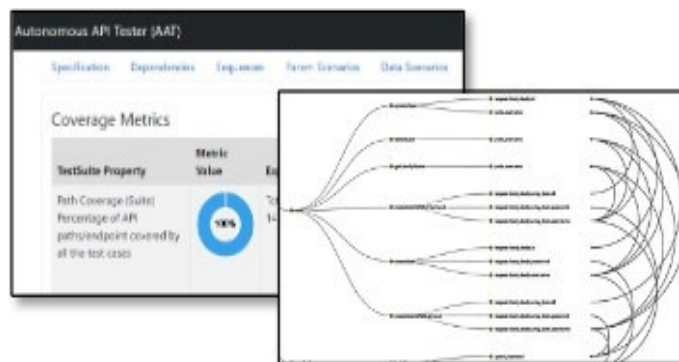
IBM - Quality Engineering - AAT Testing Services

Service Definition



AAT uses generative GPT/Transformer models to demystify API specifications, elaborate on producer-consumer relationships, and generate API tests and test dependencies from Swagger/OpenAPI specifications. The tool, built using advanced AI models and Program Dependence Graph technology, illustrates endpoints and their interdependencies graphically and generates the data needed to support them across control points.

The diagram above details all the IBM QE offerings. Those offerings highlighted in BLUE are in scope for this AAT Service.



IBM - Quality Engineering - AAT Testing Services

IBM IGNITE Quality Platform

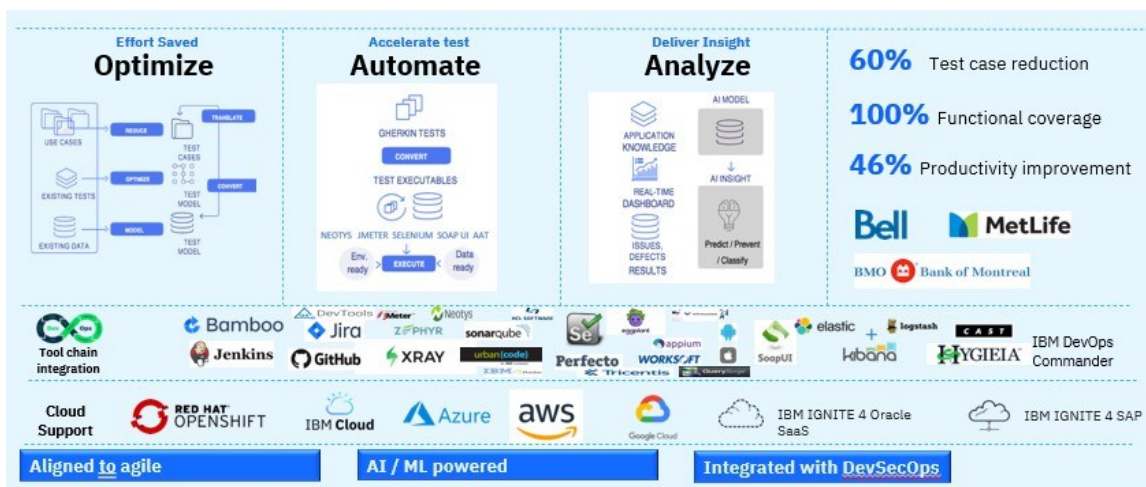
To support all our offerings, IBM also provides the **IGNITE Quality Platform**. This AI-enabled framework enables you to move from detection to prevention faster, with higher quality and lower cost.

The IBM IGNITE Quality Platform provides a set of loosely coupled tools within a toolchain to support industry-leading quality and testing services. Our services are built on real Quality and Testing experience with highly critical systems across government and other industries. We have made extensive investments in toolchains, automation, and robotics to deliver quality services that go beyond traditional testing.

We combine our industry-leading IBM Quality Platform with a blend of other commercial tools, such as Provar, Copado, ConformIQ, Tosca, eggplant, Virtuoso, SmartBear, UFT, HeadSpin, Jenkins, and Jira, to deliver AI-directed test automation, enabling clients to streamline testing processes, reduce costs, and achieve superior outcomes.

The three phases depicted below are:

- Optimise to save costs whilst ensuring coverage (through Combinatorial, Risk-Based or Model-based testing techniques)
- Automate to accelerate testing using AI-infused tools
- Analyse with AI-infused tools to identify trends and Root Cause Analysis to deliver actionable insights.



IBM is a recognised leader in Quality Engineering and Testing Services :

- Gartner: Magic Quadrant for API Management and Testing, October 2023,
- The Forrester Wave™: AI Decisioning Platforms, Q2 2023:
- Gartner: Market Guide for Application Testing Services, January 2022,
- The Forrester Wave™ : Continuous Automation and Testing Wave 2021,
- IDC 2018 : IBM Delivers Market –Leading Software Test Automation.

IBM - Quality Engineering - AAT Testing Services

IBM Approach

The most critical systems that support government organisations demand quality outcomes. To achieve this, we take an asset-driven approach to delivery and bring extensive expertise in Quality and Testing methods.

We categorise our approach into six areas, each of which has a set of specific activities:

Governance

- Environmental governance
- Data governance
- Quality governance
- Control functions

Stakeholders

- Strategy & Digital Testing
- Product ownership
- Communications approach
- Stakeholder engagement

Inception

- Onboarding
- Coaching
- Training
- Location management

Team

- Team sizing and structure
- Quality standards
- Tooling and automation
- Metrics

Process Integration

- Demand
- Branching and merging
- Testing approach
- Path to 'Live'

Ways of Working

- Methods
- Empowering Team
- Transparency
- Continuous Improvement



**We have a
“Test Less, Test Right”
mantra and we believe
in accelerating testing
using AI to improve root
cause identification
and achieve faster
resolutions.**

IBM - Quality Engineering - AAT Testing Services

About IBM

Supporting Government

The problems we solve for clients are complex and cannot be satisfied with technology alone. They require a partner who can also offer deep industry expertise and a trusted relationship.

IBM combines the portfolio, people and sense of purpose necessary to meet today's enterprise demands. Every day, we support and manage complex delivery for government clients, with the impact of delivery reaching far beyond citizens and national services.

We bring industry experience, insight, and technology capability to deliver and operate secure, scalable, optimised, and available services for government.

We support you by bringing:

- **Industry expertise** – Professionals who understand and are passionate about delivering quality public services and can bring industry insights and apply innovation to your business processes
- **Trust and security capabilities** – Protecting valuable data and insights and deploying innovations responsibly
- **Innovative technology** – Expertise in areas such as AI, blockchain, 5G, Automation, IoT, cybersecurity and quantum, delivered in a Hybrid Cloud environment
- **Experienced Services Professionals** - to support strategy, innovation and deliver transformation and change to processes, applications, and cloud infrastructure
- **Global alliances** – valuable partnerships with the world's leading vendors.

We help government organisations in the UK and worldwide deliver and transform essential public services – our teams are passionate and proud about helping you to make a real difference to people's lives.

Government Services Supported by IBM



Defence and Intelligence



Public Safety and Policing



Healthcare



Life Sciences



Tax and Revenue Management



National Infrastructure



Social Care



Education



Works and Pensions

This is IBM in the UK

We have worked together with organisations in the UK for over 100 years, with a rich history of joint innovation and achievements, built on trusted relationships.



Cloud

Together, IBM and Red Hat are working to deliver the world's only **next-generation hybrid multicloud platform**



Economy

IBM has been **integral to the UK economy for >100 years**, and is one of its largest tech employers



R&D

In the UK alone, IBM **invests £170 million in R&D** each year



Quantum

IBM Q, the world's most advanced quantum computing initiative for commercial use, is being used by CERN



Environment

IBM's **focus on sustainability** began in 1971 with our first environmental policy



Artificial Intelligence

IBM develops **watsonx based generative AI solution** for the Austrian federal armed forces **to provide fact-based evaluation and classification** for the ability to remain capable of acting in the light of risk scenarios.



Changing the world

IBM was awarded **World Changing Company of the Year 2019** by Fast Company



Royal recognition

29 UK IBMers received **honours from the Queen** for contributions to tech and society



Diversity

IBM won the **Global Diversity Award 2019** and the ENEI's **Gold Standard**



Graduates

IBM is committed to developing future talent – we are **Target Jobs' Graduate Employer of the Year 2019**



Volunteering

IBM dedicates **>20,000 volunteering hours every year** for a better society



Tech talent

IBM runs P-TECH schools in 18 countries, helping **>100,000 students build skills for careers of the future**



Inventors

IBM UK is home to many Master Inventors, with **>250 patents filed last year alone**

