QUALITEST®

Service Definition Document

G-Cloud 15

COMMERCIAL IN CONFIDENCE

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- Who are we?
- What do we do?
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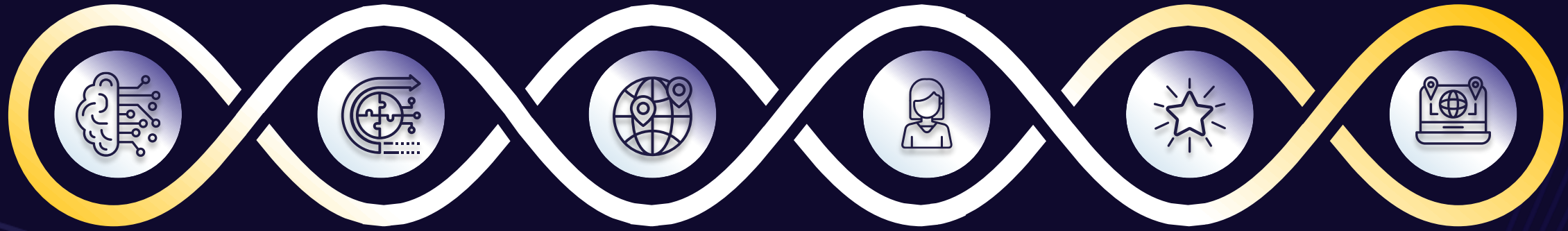
WE ARE

The world's leading AI-Powered Quality and Digital Engineering company

with ~7000 engineers worldwide. We deliver projects both directly at client locations and remotely from Qualitest-owned locations across the globe

For over 27 years, we've been helping clients deliver high quality products, enabling businesses to reduce the risk, time, and costs of implementing vital IT solutions by Engineering Quality from inception. Through our capability driven acquisitions, we are pioneering in building modern Digital Engineering services focusing on transformative capabilities, and specialist Quality Engineering, Quality Assurance and Testing services focusing on delivering assured quality rapidly while reducing and controlling costs.



World's leading AI Powered QE and DE company

Next-Gen Industry-aligned solutions

70 Nationalities, 11 Countries, 5 Continents

~40% Women

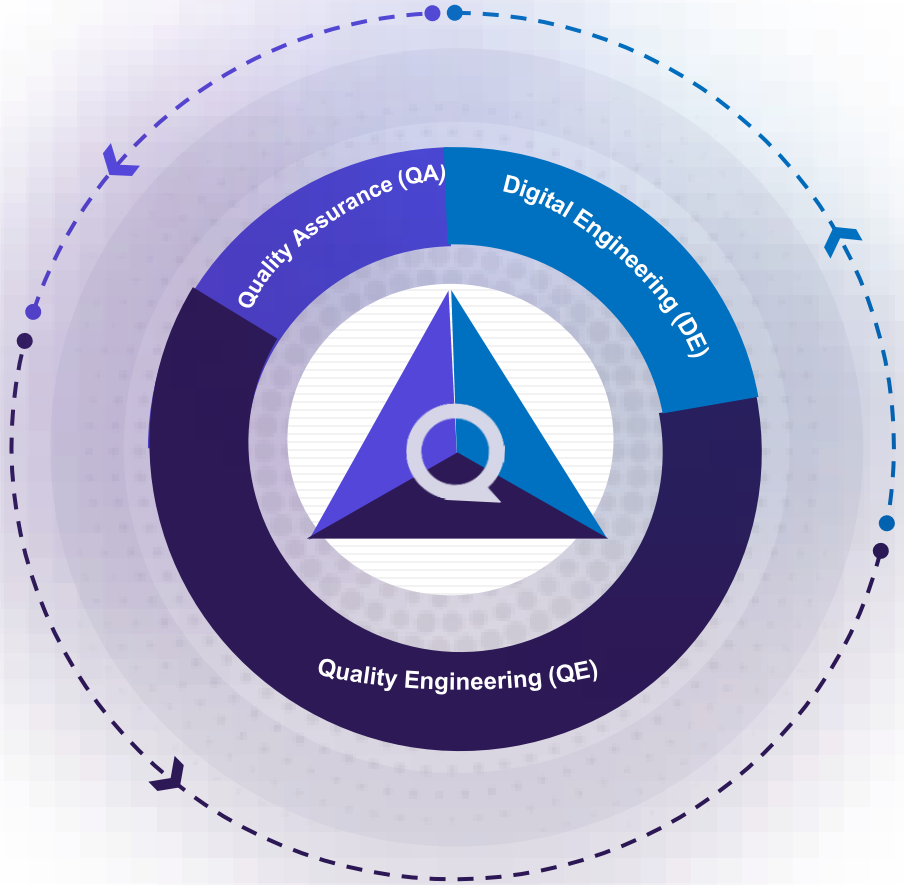
Business & Brand Assurance

Global Service Delivery (20 DC's)

Customer base	**568 active customers**

Global Workforce	**~7000+**

What do we do?



Quality Assurance (QA)

Ensure your products and services are what you want them to be and what your customers expect. Our AI-led QA services, based on our extensive QA and NextGen testing services experience and expertise, guarantee your quality, efficiency and peace of mind.

Quality Engineering (QE)

Achieve business assurance and embrace the culture of quality orchestration across your organisation, technologies and operations from Cloud & Data Assurance, Enterprise (ERP) Assurance, Advisory, IoT and more.

Digital Engineering (DE)

Offering our customers outstanding experiences with expert digital engineering solutions, including DevOps, product engineering, AI & data analytics, digital transformation and more.

Service Catalogue

Functional

Functional, Domain specific, Automation (Mobile, Web, API, UI, Package, SOA & Middleware) Regression, QMO, Localization

On Demand Services

Application crowd, Bounty based security testing, Seasonal readiness

Digital Experience

Performance, Benchmarking, Cyber security, Accessibility, Usability, Pen testing, Reliability engg

Cloud & Data

Cloud native & migration, Data Governance, Data Quality, Data Assurance, Test data, Service Virtualization

ERP

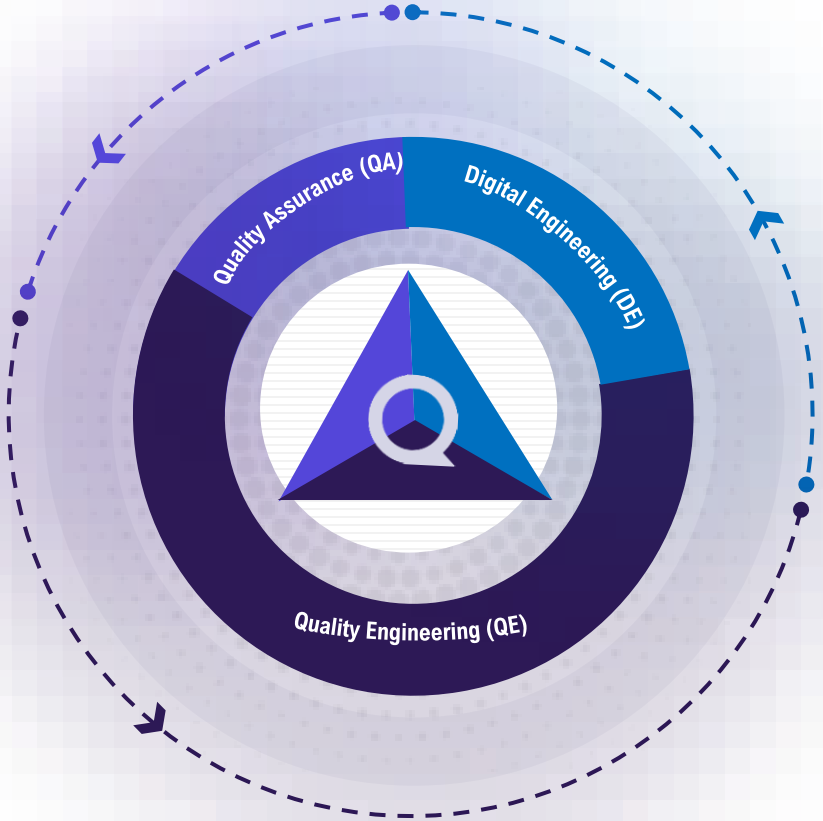
SAP, Oracle, Salesforce, Workday, MS Dynamics, Manhattan, etc.

Advisory

AI led quality assessment, QA to QE to DE transformation, Lean QA, Cloud governance, DevOps/ Data/ Automation/ DX Maturity

Blockchain Assurance

Digital Assets, DeFi (Decentralized Finance), NFT (Non-Fungible Tokens), Digital Identity, Track & Trace



AI, Data Science

AI Rollout, Modeling Optimization & Model Operations

App Development & Product Engg

App Dev, Remediation, App & Infra support, NOC, New/ Custom Product Dev/ Support, Pre-Silicon (VLSI), Product SME/TPO/TPM, Technical Audits

Agile & DevOps

DevOps, DevSecOps, Application Release Management, Continuous testing

AI data services

Ground Truth Data for CV, Synthetic Data, Data Curation, Annotation & Labeling, NLP and AI Content Validation

QE for AI and AI for QE

AI Models testing, Data Scientist in Test (DSiT), AI in Testing Lifecycle, Gen AI Testing

AR/VR & Phygital Assurance

XR Device & XR Experience assurance, AI Device assurance, IoT, Connected Vehicles & Drones Testing

Deep Domain Expertise in the Public Sector

AI In Public Sector

- Understand the ethical, fairness and bias risk of AI-enabled technology and have the processes in place to guard against them being introduced to their software landscape
- Comprehensive approach to AI software delivery, addressing defects in data, modeling, and deployment
- Provide a detailed analysis of defect introduction, manifestation, and mitigation strategies
- Embed Data Scientists in collaboration with clients to improve AI delivery and testing

- Provide updated strategic materials based on industry best practices and extensive research
- Deliver documentation outlining ML lifecycle with strategic & tactical quality checkpoints for each stage
- Align to *CRISP-DM* (Cross-industry standard process for data mining) industry standard lifecycle for rollout of intelligent systems to simplify process adaptation

QA and advisory
Assuring quality of third-party supplier's deliverables to specified accredited standards, working within GDS

AI-enabled solutions to reliably assure these technologies in the safety-critical context of public sector.

Our Approach to delivering the Services

With our approach, we give our clients deep insights and control of their Quality and Digital Engineering needs, providing confidence in quality at great speed. We emphasise our approach to build partnership with a solid foundation based on trust and collaboration. We commit to go beyond the transactional relationship to support you to always achieve your transformational goals with innovative ideas and deep domain experience and Quality Engineering expertise. We commit to the building blocks of a successful partnership of Transparency, Trust, Mutual Benefit and Shared Vision.

To deliver this award-winning service we:

- Start with an optimised **transition** using our proven and documented transition process tailored with you to be specific to our clients. We know the typical challenges faced and risks in any transition, but are driven by a need to ensure innovation, optimisation, and the development of a world-class service.
- Collaborate with you to understand your **strategic objectives**, quality requirements and existing processes to define and implement a **best-in-class governance** model across the service. We operate as the Transformation Bridge across the service to drive the cultural change required to enable our client's to be successful in their transformation journey.
- Establish a mutual understanding and measurable **goals** which align with your strategy across all parties, creating one unified service – one unified team. With this goal in mind, we will measure our success using a comprehensive set of collaborative KPIs with a focus on demonstrating transformational outcomes for your business.
- Provide you with teams that align with the Digital and Data Profession Capability Framework
- Help you achieve your goals in the most efficient manner with a strong quality focused governance, clear communication, flexibility and agility insights – primary with a **data driven approach** to drive continuous improvement.
- Deliver a service led by **our industry experts**, with 27+ years of experience as pioneers in Quality & Digital engineering, PLUS the absolute best and brightest from our international **Centres of Excellence (CoEs)** to assess and implement innovative techniques.
- Optimise testing: Embed AI to address challenges around over-testing, to find the fastest path to finding defects, and reducing test maintenance and execution effort by identifying inefficient or redundant testing.

Centres of Excellence

Investment in advanced Capabilities to drive acceleration and enhance Customer Experience through continuous & comprehensive Next Gen Solutions

400+ Experienced CoE Team

Global Leverage – across **6** Geographies

Sector Focused Offerings

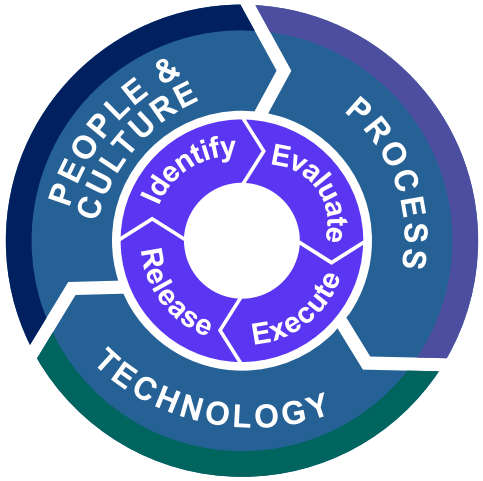
Next Gen R&D – Specialist capabilities providing leadership, business support & training

Thought Leadership through Industry Renowned CoE Leaders

Automation End to End Automation, Consulting , Proven Framework, Tools & Innovation	**Performance** Performance testing, consulting, and Engineering solutions.	**Security** Security Assurance Solutions, Cyber Consultancy, Vulnerability testing & assessments, Security Engineering	**Accessibility & UX** Accessibility, UX, Localisation & Crowd Testing	**Data** Test data management utilising gold copies, real-time data search and/or test data creation
Digital Engineering Digital Channels, Domain Services, DevOps, Remediation & Support Services	**Cloud** Cloud Native Assurance & Migration, Cloud Infra Assurance, Component & Contract test and Microservice Automation	**AI/ML** NLP Assurance, Machine Learning, Vision Assurance	**Phygital** Interoperability, Phygital Automation, Firmware upgrade & H/W testing, API, AI ML validation	**Qualitest Products** Accelerators enabling Digital Transformation - Qualiview, Qualisense, Qualiframe, Qualihub, Qualicoach, Qualidex

Innovation Approach

Innovation is the engine of modernisation: the deeper the innovation, the faster and safer your transformation. We turn ideas into measurable outcomes through a disciplined, customer-led approach—mobilising the right people, embedding repeatable processes, and scaling with fit-for-purpose technology across your change journey.



People & Culture

Qualitest provides dedicated teams to our customers across dedicated divisions to ensure we always deliver Innovation to our accounts

- Sectors
- Delivery Excellence
- Technology

Process

Our processes to identify and action innovation initiatives is uniquely set up to deliver to our customers

- Collaborative R&D
- Innovation Council
- KIA (Knowledge & Innovation Assessment)
- Delivery Transformation

Technology

We have a library of technology assets and capabilities available ready to leverage for our clients

- AI
- Automation
- Data Visualisation
- + More …

How do we deliver the service?

1 PEOPLE

We provide dedicated teams to our customers to ensure right-fit for delivery.

- Domain experienced
- Technology/ Tool certified
- Resource on-boarding
- Demand management
- Capacity planning
- Resource off-boarding
- Resource knowledge management
- Training
- Continuous upskilling
- Core-flex delivery
- Shadow resourcing

2 PROCESS

Our processes to identify and action innovation initiatives is something uniquely deliver to our customers.

- Risk-free Transition
- AI driven diagnostics assessment
- Governance
- Account Management
- Reporting – Weekly, Monthly, Quarterly
- Delivery Transformation
- Continuous Process improvements
- Operational Excellence
- Communication Mechanism
- Escalation Mechanism
- Compliance: GDS, TCoP, DDaT, ITIL, ISO, Cyber Essentials, SOC2, HIPAA
- Process Innovation

3 TECHNOLOGY

We have a catalogue of technology capabilities, together with our tools and solution accelerators that can be readily leveraged.

- AI
- Automation
- Data
- Cloud
- Enterprise
- Blockchain
- NextGen
- CoEs
- Solution accelerators
- Reusable Test cases
- Frameworks
- Tools Partnerships
- Proprietary tools – Qualitools

How do we engage?

Project Based

- Resource augmentation in T&M model based on specific project needs
- Lead time-based resource ramp-up

Core-Flex

- Core team of resources, in Fixed bid model, supporting specific applications or business units, retaining knowledge
- Flex team of resources, in T&M model, to supply demand fluctuations and specialised skillsets and services
- Monthly capacity review

Managed Service

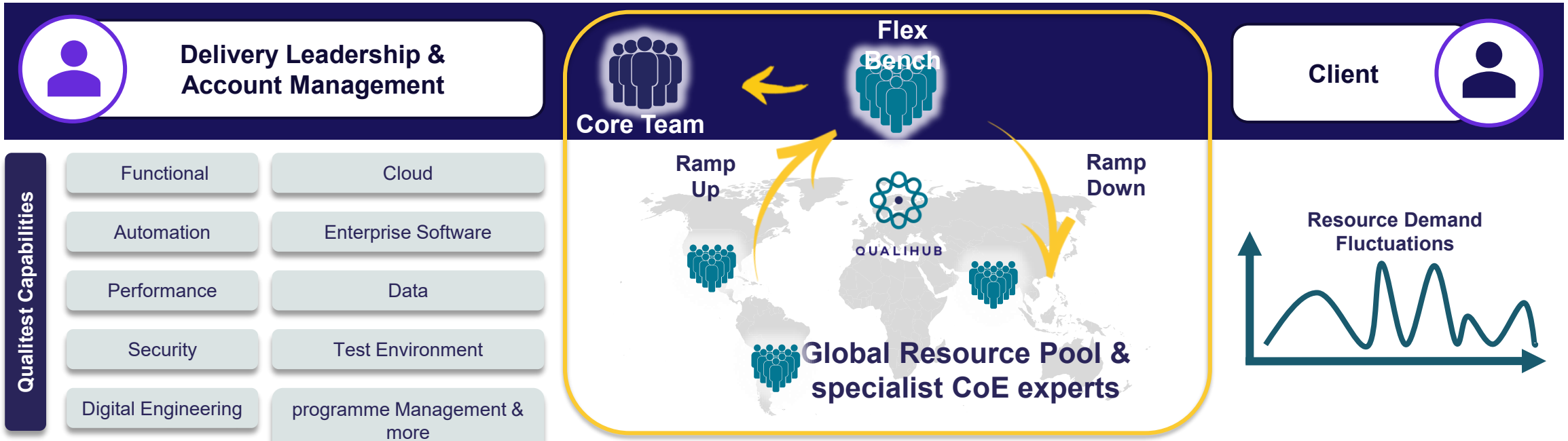
- Accountability and ownership of service delivery by Qualitest
- SLA based delivery – outcome based
- Focus on innovation & continuous improvement
- Workforce enablement and resource continuity
- Periodic service review

Delivery-as-a-Service

- Delivery based on defined and agreed packages of work
- Discrete services under individual contracts – service on demand

Our Managed Service model allows us to take accountability for delivery, leaving you to focus on your business

Staff augmentation and expert resource supply



Qualitest Capabilities

Functional	Cloud
Automation	Enterprise Software
Performance	Data
Security	Test Environment
Digital Engineering	programme Management & more

Core team retains the hands-on knowledge & **owns** content maintenance

Flex Bench, available immediately, provides rapid ramp-up with no delays

Additional global pool, available on lead time, when needed from delivery & CoEs

QUALIHUB

Central record of universal understanding for **rapid onboarding** & **approach standardisation**

~300*
Overall Bench strength

** As on March 2024, may fluctuate depending on demand/ supply of resourcing*

Flex bench & **Virtual bench** (leveraging our partnership with consultants) to support immediate demand

2-3 weeks
Lead time **

*** For additional global pool up to 5% of the operating capacity, as on date of request*

Onboarding

Onboarding Process

Client Technology training course designed by our technology & training SMEs.

Reviewing knowledge documents on centralised document management repositories.

Resource Pool training sessions modules

- Client Introduction & Cultural Alignment
- Stakeholder Map, Client Introduction & Overview
- Role Expectations, Ways of Working & Core Behaviours
- Governance & Reporting & Communication Approach
- Delivery Approach

On project deployment:

- Client Induction (Required courses provided by Client)
- Project Team Introductions
- Set Objectives and Performance Goals

Offboarding

Offboarding Process

Knowledge retention focused on business continuity and minimising disruption.

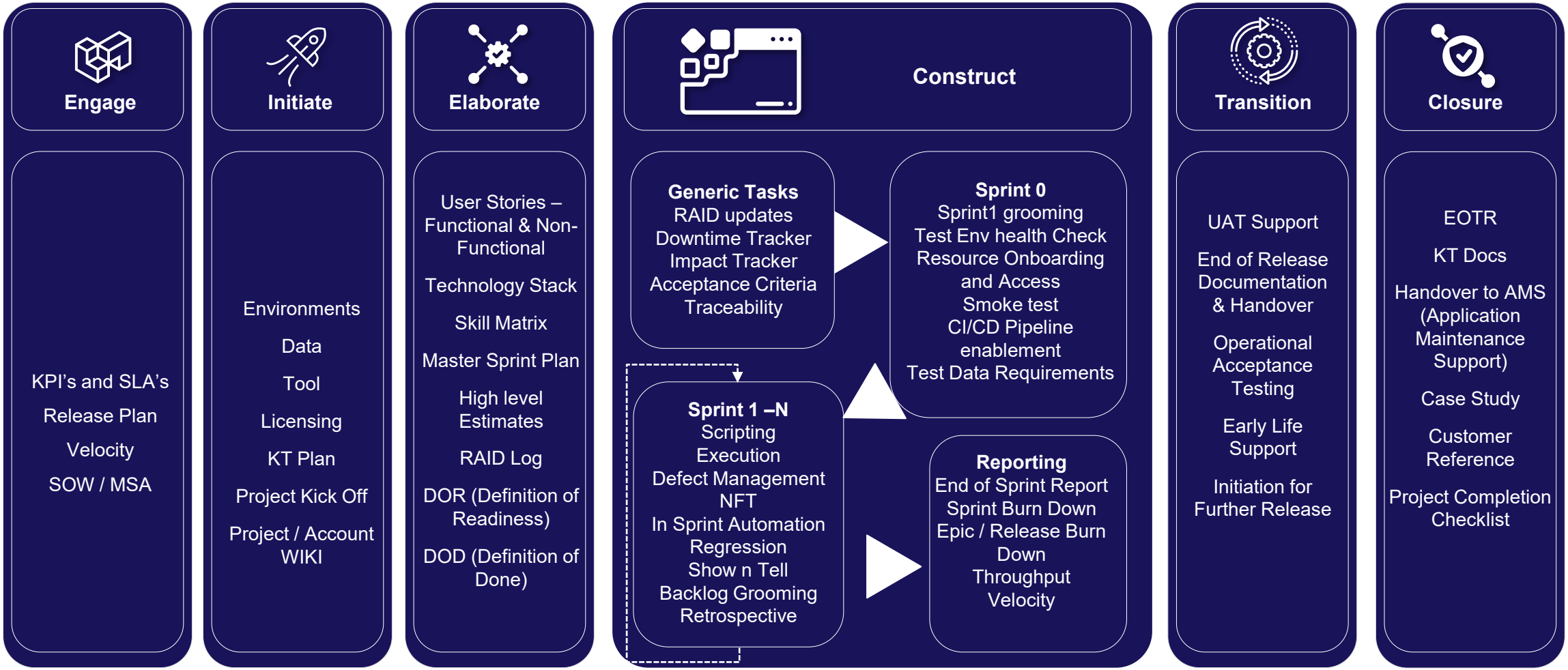
Smooth transition and handover, return of assets and proactive security control governance.

Key offboarding activities:

- Update existing knowledge artefacts
- Create new knowledge artefacts as required
- Hand over inflight activities including testing, defects and open items
- Migrate all key documents and artefacts to centralised repositories
- Return of all assets, including IT equipment
- Process offboarding requirements including access control
- Reverse hand over checklist completion and validation

Methodologies supported

Qualitest provides a fully-GDS compliant service. If, however, you need another approach, we can provide our **Qualitest Operating System (QTOS)**, an internal standardised methodology incorporating best practices. We have waterfall, Agile and hybrid methodologies to suit your organization. Below is our **Agile methodology QTOS**:



Public Sector partner of choice

Fostering Dedicated Public Sector Skills

400+ Experts | **>60%** Certified | **20+** Successful Client Engagements

Dedicated Sector Leadership

Extended Partner Network

Investing in Transforming our workforce

Investing in SMEs & Social Value

Reusable frameworks

Partnering with external **Expert consulting agencies** who specialise in Government Digital Standards and the Testing Codes of Practice

Dedicated Internal Training programme specialised for Public Sector Domain

Expertise in Government Standards & Policies - Government Digital Standards, GDPR, DCB0129: Clinical Risk Management, DCB0160: Clinical Risk Management, Government Security Classifications Policy, IS0 27001, GovS 005: Digital

Investing in SMEs & Startups

Tech UK Relationship

Delivering to Public Sector Standards

GDS | Technology Code of Practice | Accessibility and data standards | Cyber Essentials plus | ISO 27001
DDaT | ISO 9001 ESG Policy | Modern Slavery Policy

Case Study - QA practices with AI for NHS England

QA practices

Qualitest partnered with the NHS who wanted to ensure that as AI-enabled solutions arrive in their landscape, they have the existing collateral, processes, quality enablers and accelerators ready to ensure they can reliably assure these technologies in the safety-critical context of healthcare.

Business Need

The client wanted to:

- Understand the current state of industry's awareness and readiness for the assurance of AI & ML powered technology.
- Identify the new approaches and refinements to existing approaches required to enable us to assure the quality of AI software vs. traditional software.
- Understand the ethical, fairness and bias risk of AI-enabled medical technology and have the processes in place to guard against them being introduced to their software landscape.

Qualitest Solution

- Qualitest provided a comprehensive approach to assure the end-to-end processes of delivering a successful software as defects in AI-infused software can arise from data, modeling, and deployment.
- Deployed Data Scientists in Test who worked closely with the client to understand delivery of software and enhance existing test and assurance efforts for AI-enabled technology.
- Our consultants provided the client with updated strategic materials based on industry best practices and extensive research.
- Delivered documentation outlining the Machine Learning system lifecycle with details of strategic and tactical quality considerations that must be met in each stage of that lifecycle.
- Aligned to CRISP-DM industry standard lifecycle to simplify process adaptation for the client.
- We gave a detailed picture of where defects could be introduced, what they might exhibit as, and the quality processes required for defect prevention and testing.

Provided a tool kit to improve quality practices and earlier defect detection

Detailed documentation to enable the creation of robust QA Practices

Proactive steps to prepare their quality approaches

Strategies to **maximise speed-to-market**

Case Study - Automation for Ministry of Justice

UAT
E2E
regression

The Crime programme is an IT enabled business change programme, providing user-focused digital services and products. Qualitest partnered with the client in providing effective UAT and end to end regression.

Business Need

- It aims to unify and transform the Criminal Justice System (CJS); and enhance the Criminal Justice experience for all users.
- As the digital enabler for the transformation of the UK Justice System, the CPP is creating an end -to-end case management for Crime, the police, Crown Prosecution Service (CPS), defence organisations and HMCTS.
- This will improve the experience for victims and witnesses, result in more efficient criminal justice processes, leading to lower costs for the taxpayer, and bring our courts into the digital era.

Qualitest Solution

- Creating an effective UAT end to end regression suite (90% automated and 10% manual) by close co-ordination with business product owners who in turn liaised with end users (Judge, prosecutor, advocates, defence users).
- The UAT regression suite is risk based upon business severity and technical complexity having optimum coverage of 70%.
- The UAT Regression pack is run mainly by the business owners but is coordinated by the UAT lead whereby few of the test cases are also run by the end –to-end testing team.
- The UAT scenarios are end user specific with judges, advocates, defence users.
- Reduction in technical and operational debt by 50%
- 100% compliance of User stories to 'INVEST' standards
- 600 users with 350 hearings per hour

250+ User stories spread across 12+ releases deployed in Live with **no Severity 1 or Severity 2 defects**

Increased automation coverage to **90%**

WCAG compliance of **99%**

5+ critical security vulnerabilities identified

1.5 Million API calls handled on a peak day

Case Study – Data Migration Testing for MoJ

E2E
Performance
UAT
Rollback

The Ministry of Justice (MOJ) undertook a data migration project across all their facilities, Qualitest provided support across all aspects of the migration and conducted an extensive data analysis and supported data clean-up of redundant data objects and processes.

Business Need

- The Client migrated the data to their new “future-proof” servers and built a new instance of their CRM solution over the top with all the apps that were needed to support their operations.
- Assurance was needed on the migrating data that would be migrated fully, integrated effectively, and work seamlessly in the new applications to maintain Business As Usual (BAU).

Qualitest Solution

- Qualitest provided support across all aspects of the migration, deploying a small team led by a senior experienced data migration and data warehousing testing specialist. With no data mapping or system diagrams available, it was down to Qualitest to engineer the quality rather than simply “quality assure”.
- We worked very closely with the programme designers and developers, the Database Administrators (DBA) and the Data Owners, the Business Analysts and the Business SMEs (Subject Matter Experts) to determine the scale and scope of the migration.
- The holistic granular test strategy started with detailed data assurance and incorporated robust end-to-end testing to support the complexity introduced by the sweeping scale of the changes, and the criticality of Operations to the success of the Client organisation.
- Implemented end-to-end testing with the following coverage : Regression Baseline Testing, Redundancy Testing, Extract Testing, Transformation Testing, Data Migration (Load) Testing, Performance Testing, Technical Application Regression, UAT, Rollback Testing, Application Testing & Field testing.
- We developed a sophisticated automated dashboard, which provided reporting across all the projects to all the individual timelines and quality markers. This ensured that data was available daily to empower critical programme decision making.
- Production validation found a total of 13 errors, all non-critical, which were resolved by the war room over the weekend and before operations recommenced on the Monday morning, assuring production stability and zero impact to operations.

Cost-optimised with early bottleneck fixes

On time delivery within budget

Right-first-time migration with no errors in the data records and no application failures

Reduced anticipated **production downtime** by 20% less than planned

No priority production defects and No dropped records

Case Study - NFT Process Improvement for MoJ

NFT

The Ministry of Justice (MOJ) is a ministerial department of the Government of the United Kingdom. Qualitest partnered with the client to improve the process of Non-Functional Testing on their platform to achieve desired performance.

Business Need

- Their platform is expected to support 6k concurrent users, but with the current design and infrastructure it's supporting only 1000 users.
- Two of the key services 'Notepad Parsing' & 'Share Results' of Hearing creations are failing to respond within timeout limit while executing with more than 1k users and other services are responding slow.

Qualitest Solution

- Derive and validate critical Non-Functional Requirements for the entire project.
- Designed transaction workload models based on real world customer behaviour
- Utilised Dynatrace, Kibana, Zabbix, Azure portal for monitoring and analysing server-side stats.
- Realtime Dynatrace dashboards implementation in NFT environment.
- As the project proposed the approach to migrate IAAS to PAAS and services migration to AKS to achieve desired performance, Validated the AKS cluster and components are sized appropriately to support both current and forecasted volumes.
- Involved in planning and orchestrating of Resilience tests
- Identify potential bottlenecks in the new application that may impact the future peak trading.
    - Monitored and analysed few problem areas (Private and Public topics) extensively and identified hotspots that are resulting in high response times and suggested the resolutions. As a result, application started supporting 1k users from 300 in the past.
    - Identified timeout issues related to 'Notepad Parsing' & 'Share Results' calls during the load tests executing with more than 1k users.
    - Identified and fixed the Redis cache issues where the data hasn't been properly added for Cache mechanism
    - Spotted deadlocks related to file services during large file process

Automated Test Data Preparation: Reduced the time needed from 2 hours to 15 minutes

Increased test efficiency by allowing multiple tests to be run throughout the day

Realtime Dynatrace dashboards for performance Monitoring

Enhanced Test Script Accuracy: Identified & fixed inaccurate response times within existing test scripts

Case Study - UI Automation Process Improvement for MoJ

The Ministry of Justice (MOJ) is a ministerial department of the Government of the United Kingdom. Qualitest partnered with the client to improve the process of UI automation to improve execution timelines and accelerate release testing.

Business Need

- Requirement to automate entire Regression Pack which is part of every week release testing.
- Existing automation framework was designed on unit test Javascript framework which was not feasible for UI Automation across different browsers. Also, this framework doesn't support connectivity to DB due to which 40% of regression pack was unable to Automate.

Qualitest Solution

- Identified all the UI requirements as part of release regression pack.
- Identified a solution and developed new framework using Serenity Java framework.
- With this UI automation framework we were able to connect to UI/API and DB.
- We now automated 95% of regression coverage using the newly developed framework.
- As the project proposed the approach to migrate IAAS to PAAS and services migration to AKS. This proposed automation framework will help in connecting both IaaS and PaaS connectivity.

Improved execution timelines from **2 days to 5 hours**

Consistency in the execution results for every release

Defects were **identified earlier** in every release with this framework

Case Study – Test Automation Framework for MoJ

Test Automation

The Ministry of Justice (MOJ) is a ministerial department of the Government of the United Kingdom. Qualitest partnered with the client to introduce improved test automation framework with coverage into the API and database layers well beyond the previous UI layer and to automate regression test cases to further improve QAT efficiency.

Business Need

- There was a need to improve the quality of deliverables on the programmeme in line with stakeholder expectations and to introduce innovation and best practices.
- The client wanted a detailed situation assessment and consultation with their stakeholders and third parties to introduce a new test framework to raise standards.
- Also, enhancements required in their legacy test cases with poor traceability to cut root cause analysis effort, eliminate inconsistencies in execution across lower environments and further increase efficiencies in day-to-day operations.

Qualitest Solution

- Introduced improved automation framework reducing UI regression runtime by >70%
- Revamped a failing partially-automated approach to data creation and enhanced it to provide fully automated test data aligned across all databases, reducing data generation time by more than 85% while increasing reliability, allowing multiple NFT test runs within a single day for the first time.
- Our critical analysis of legacy test scripts deployed by the previous incumbent allowed us to identify and eliminate false positives, which led directly to a reduction in the developer workload, allowing them to optimise their time.
- Our framework pushed automated coverage into the API and database layers well beyond the previous UI layer. This allowed 95% of all regression test cases to be fully automated, further improving QAT efficiency.
- Application of best practice: Collaborative input into sprint planning rationalised sprint targets enabling the development team to deliver consistently on time and at the required level of quality.
- Our input into overall programmeme planning and strategy allowed for more accurate estimates of effort and time that have led to programmeme revisions with more informed and attainable timelines.

Regression coverage increased from **40% to 100%**

95% regression automation

Root cause analysis time **reduced to >50%**

0% Production leakage

Case Study – Test Automation for Post Office

Test Automation

Qualitest responded to an urgent need at The Post Office to help evolve the test function into an envisioned CI/CD model for the delivery of features to production. They also required Qualitest to help deliver a flawless user experience in addition to implementing a modern test engineering approach, Qualitest helped to increase user traffic capacity from 1M to a 5M surge.

Business Need

- There was a need to work collaboratively with the client and multiple third-party suppliers to lead significant change while supporting them through training and upskilling to realise their goal of a CI/CD model for delivery of features to production.
- They also wanted to enhance skills through assessment and training, improving the performance of 13 teams of diverse capabilities, to demonstrate scalability, improve testing efficiency and framework robustness, achieving cost savings and gain control over data analysis and enabling faster feedback.

Qualitest Solution

Implemented an iterative process model, with two clear, well-defined phases and provided a precise performance testing strategy

- Built a 50-member community through team building, mentoring, and upskilling of third-party suppliers.
- Created Proof of Concepts (POCs) for uniform solutions across the scrum teams and rolling out once evaluated for ROI.
- Increased code commits, emphasising automation-first delivery. This enabled the code to move to the next stage when previously stuck.
- Introduced reusable test pipelines and process documents. Enabled the loading of the packs into the cloud to be automatically run and save 75% of effort on smoke testing, and the use of a common solution and collaboration across teams onboarding their 26 test automation packs
- Designed a scalable cloud-based testing pipeline adopted by 13 teams.
- Improved the automation framework, introducing an open-source E2E test framework. Common adoption, increased the response time for changes to the code base, very fast to write the test and therefore the verification of new features is accelerated. Previously Sprint +1 (10+ days), now it can be done in-sprint on the same day (2 days).

Increased test automation metric from 11% to 31%

75% saving on the smoke testing which is run on demand from cloud

Increased the capability of the testing team from 9 members to 50 members

AI powered Test Assessment for market-leading Capital Markets Software Solutions provider

Qualitest provided an **independent quality assessment on the test automation suite** by combining data driven AI insights and quality expertise, to analyse the testing conducted for the Treasury Foundations project

Business Need

- The Client was looking to understand the effectiveness of their current testing approach and requested an independent review of their test design process
- The Client was also in need of advice on how to achieve optimal E2E functional test coverage of its software modules along with best practices for metrics measurement of test processes

Qualitest Solution

- Qualitest performed an independent assessment of the Client's test automation suite using our in-house AI & ML platform, **Qualisense**. Data provided by the Client served as base for predictive modelling
- Qualisense's capabilities were leveraged to perform a wide variety of classification, multiclassification, clustering, and NLP operations
- A detailed gap analysis was performed against Quality best practice. Qualitest provided an Executive Summary of the assessment findings along with **continuous improvement recommendations**

AI powered Test Assessment for market-leading Capital Markets Software Solutions provider

Inferences & Recommendations

11-month period analysis showed **23.3%** failures out of 18K test execution results

High failure density of Bond automated processing failures at a step level (20.5% vs 10.5% average) **Conduct a code & test quality review**

NLP analysis of error messages showed clusters of similar errors that suggested coverage gaps or underlying issues

Test Design and **Test Data** improvements identified with adoption of product-based matrices to promote coverage and re-use

Need for improved defect management and traceability as **defect linkage** in the data set was low **and defect response time was slow**

Test failure prediction model identified 96% of the failures happening in 77% of the tests, with defects increasing towards the end of sprints. **Prioritise and breakdown sprint contents** into smaller tasks to enable testing progress throughout a sprint

Very high failure density detected on **high use environments** (39.6% vs 23.3% average). **Conduct an environmental bottleneck review**

Retail Customer- AI driven QA Assessment & Implementation

Retail & Consumer Goods

Case Study

Qualitest partnered with the client who is one of the largest and most well-known fashion lifestyle conglomerates in the world to enable new strategies to boost productivity, improve processes and increase automation by providing deliverables that would be an in-depth, objective assessment of their current state of quality maturity, as well as recommendations for future initiatives

Business Need

- The Client approached Qualitest to improve overall quality as well as leverage automation for greater efficiency, speed, lower costs and improved UX.
- They also planned to streamline and mature their quality assurance practices under a new Center of Excellence

Solution

- Qualitest began with qualitative research. Under a tight timeframe, we created and sent out **surveys**, conducted **QA health checks** and completed more than **60 interviews** with key Client stakeholders.
- Addressed Client's disparate test data using our proprietary automated AI testing technology, Qualisense. **Qualisense** performed a data ingestion, aggregating more than **70,000 development and test data** points from diverse SDLC systems into one single storage medium—a single source of truth—and removing duplications along the way.
- We delivered a **detailed quality maturity assessment** of our findings, along with recommendations for the future. Our recommendations included focus areas to test and ways to improve processes, boost productivity and increase the use of automation.
- After we completed the initial deliverables, the Client brought us **on board to help with implementation**, supporting or assuming full responsibility for delivery of our recommended initiatives. Less than three months after implementation, we were able to see tangible results and benefits

Outcomes:

40% reduction in test spend from initiatives delivered

New strategies for automated nonfunctional testing

30% reduction in excess testing

Recommendations for Improved UX

Streamlined & accessible data repository providing reliable metrics and quantified data insight

Retail Customer- AI driven QA Assessment & Implementation

For a leading retailer brand in the US

Identified **through AI** that for 30,000 automated Ecommerce test cases being run by another vendor, only 4% were identifying defects

Risk-based testing approach to provided a 50% reduction in test cases whilst maintaining coverage

Overall **TCOE velocity increased by 100%** post assessment

QA practices with AI

Healthcare, Life Science & Medical Devices Case Study

Qualitest partnered with publicly funded healthcare system in England who wanted to ensure that as AI-enabled solutions arrive in their landscape, they have the existing collateral, processes, quality enablers and accelerators ready to ensure they can reliably assure these technologies in the safety-critical context of healthcare.

Business Need

The client wanted to:

- Understand the current state of industry's awareness and readiness for the assurance of AI & ML powered technology.
- Identify the new approaches and refinements to existing approaches required to enable us to assure the quality of AI software vs. traditional software.
- Understand the ethical, fairness and bias risk of AI-enabled medical technology and have the processes in place to guard against them being introduced to their software landscape.

Solution

- Qualitest provided a comprehensive approach to assure the end-to-end processes of delivering a successful software as defects in AI-infused software can arise from data, modeling, and deployment.
- Deployed Data Scientists in Test who worked closely with the client to understand delivery of software and enhance existing test and assurance efforts for AI-enabled technology.
- Our consultants provided the client with updated strategic materials based on industry best practices and extensive research.
- Delivered documentation outlining the Machine Learning system lifecycle with details of strategic and tactical quality considerations that must be met in each stage of that lifecycle.
- Aligned to CRISP-DM industry standard lifecycle to simplify process adaptation for the client.
- We gave a detailed picture of where defects could be introduced, what they might exhibit as, and the quality processes required for defect prevention and testing.

Outcomes:

- **Detailed documentation** to enable the creation of robust QA Practices
- **Increased adoption** of AI & ML technology in the healthcare landscape
- **Proactive steps** to prepare their quality approaches
- Strategies to **maximise speed-to-market**
- **Customised approaches and strategies** to simplify the uptake, rollout and monitoring

Non-Functional Testing For Vaccination programme Compliance

Healthcare

Case Study

Customer in the UK provides better health outcomes for the population of England by enabling timely interventions throughout a person's life. It allows them to identify, invite, book, and deliver vaccination services safely and efficiently to the general public to avoid preventable illnesses.

Business Need

- Multiple workstreams with different release timelines, making coordination complex.
- Need for additional QA expertise to manage BAU and non-standard cases.
- Integration testing and risk assessment across suppliers (not owned by individual vendors).
- Continuous improvement and automation of testing processes.
- Late changes introduced into the programme requiring rapid adaptation.
- Ensuring accurate and timely staff payments across varied care settings.

Solution

Partnered with Qualitest to provide:

- **End-to-End Testing & Assurance:**
  - Manual testing of full release scope.
  - Regression testing updated regularly.
  - Defect tracking and closure.
  - Assurance statements for each sprint.
- **Test Automation:**
  - Built automated regression packs for happy-path scenarios.
  - Expanded coverage to include negative tests and data issues.
  - Regular review and update of automated test suite.
- Facilitated roadmap sessions with third-party suppliers for upcoming changes.
- Suggested and implemented improvements for testing and assurance processes.
- Introduced automation where valuable to reduce manual effort.

Business Outcomes

- **75% improvement** in programme efficiency.
- **60% cost savings** by identifying and fixing issues earlier.
- **Enabled continuous delivery** to accommodate late changes.
- NHS could **focus on strategic projects and internal merger impacts.**
- **80%-time savings** on key deliverables.
- **Improved accuracy and consistency** in service delivery and data capture.

Test Automation - AWS Cloud Migration

Fintech Case Study

The Client is a mobile payments specialist that partners with over 200 telecom carriers and 300 merchants globally. It enables secure, seamless mobile commerce at scale in compliance with local and international regulations.

Digital brands such as Netflix, Amazon and Google rely on our Client's platform and carrier-bundling services to drive their acquisition of new subscribers, especially in emerging markets. This is achieved using our Client's pioneering API and payments settlement facility, which enables alternative payment methods such as carrier billing and e-wallets.

Business Need

The Client chose Qualitest, as it wanted a QA partner that would:

- Understand its industry and business rationale.
- Understand the challenges of testing automation.
- Upskill its in-house QA team so that the handover of each product was seamless and transparent.
- Achieve an optimal level of automation that the in-house QA team could maintain.
- Recommend and put in place automation testing tools that provide performance metrics.

Solution

- **Adopted Agile methodologies** (Scrum, Kanban) and a **continuous-testing mindset**.
- **Automated 95% of testing**, covering functional, end-to-end, smoke, sanity, regression, and UI tests.
- **Two-phase iterative automation approach**:
- **Phase 1: Transition & Strategy**
  - Assessed existing environments and business test flows.
  - Delivered automation strategy and implementation plan.
  - Conducted POCs to finalise solution: end-to-end regression, smoke, and DevOps integration tests.
- **Phase 2: Project Support**
  - Validated automation against Client criteria.
  - Closed gaps for successful migration.
  - Activities included test planning, environment setup, scripting, execution, analysis, re-execution, and reporting.

Business Outcomes

- **Met client goals on time with a fully proven architecture.**
- **Prevented a critical performance issue during AWS migration.**
- **Achieved 95% test automation coverage, enabling continuous testing.**
- **Cut testing time per sprint from 3 days to 20 minutes (98.6% reduction).**
- **Reduced costs, downtime by 20%, and accelerated time-to-market.**

Radiology Testing for Medical device Manufacturer

HealthCare
Case Study

The client is a diversified technology company with primary divisions focused in the areas of healthcare, consumer lifestyle and lighting. It is one of the largest electronics companies in the world and employs over 100,000 people across more than 60 countries.

Business Need

- The client needed to resolve a memory-management issue in their viewer, requiring large volumes of real DICOM images to be loaded into a vendor PACS system.
- Test data had to match specific modality, size, and slice-count requirements to accurately replicate real-world scenarios.
- Updating and processing DICOM images was highly time-consuming, taking days to properly modify one terabyte of images across multiple studies and patients.
- Each file required precise header updates and corresponding HL7 edits, increasing complexity and risk of errors.
- Datasets needed to be ingested into the PACS via C-STORE and correctly consolidated with associated orders, adding further operational and workflow challenges.

Solution

- Proposed the use of Qualitest's Virtual Radiology Environment (VRE), a multi-modality, multi-vendor simulation platform designed to accelerate and simplify radiology V&V testing.
- Demonstrated VRE's value through a free Proof of Concept, showcasing its capability to address the client's challenges effectively.
- Automated image updates and processing using VRE's proprietary rules engine, enabling header updates without loading full DICOM files into memory—significantly reducing time and resource usage.
- Simulated a realistic radiology environment, allowing accurate, high-volume test scenarios without operational delays.
- Enabled full reproducibility of the client's issue after converting data into VRE's proprietary format, helping the vendor diagnose and replicate the problem internally.
- Accelerated issue resolution, allowing the vendor to deliver a patch to the affected customer faster than previously possible.

Business Outcomes

VRE reduced testing time by 33%

VRE reduced personnel needs by 90%

The paperwork and coordination for executing such a task were greatly simplified

A substantial **Return on Investment (ROI)** was realised, without sacrificing accuracy or reproducibility

QUALITEST®

Thank You