



Crown
Commercial
Service



AWS AI/GenAI, Machine Learning and Data Analytics

GCloud Service Description Document

Bringing Ingenuity to Life.
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AWS AI/GenAI, Machine Learning and Data Analytics

1.1 Short Service Description

We combine leading AI/ GenAI frameworks for Ethical & Intelligent AI, Machine Learning and MLOps capabilities, and Data Analytics and Data Pipeline tooling knowhow with platform delivery, business transformation and deep sector knowledge. Our experience spans AWS Glue, AWS Lambda, Amazon Kinesis and our early-adopter access to AWS' GenAI capabilities.

1.2 Key Service Features

1. Full Data Analytics and AI/GenAI service strategy, delivery and tuning
2. Traceable, ethical AI-driven decision-making and governance
3. GenAI-enabled cost efficiencies using Amazon Q, Amazon Bedrock
4. Automated data pipelines for workloads using CI/CD/CO and CALMR method
5. Big Data builds using scalable AWS Data Lakehouse/Data Lake
6. Automated and GenAI-enabled call centres using Amazon Connect
7. Big Query data warehouse for analytics, segmentation & prediction
8. Serverless architecture using AWS Lambda and scalable/resilient/secure containers
9. Natural Language Processing (NLP) & Sentiment Analysis
10. Pipeline Continuous Integration/Delivery/Orchestration (CI/CD/CO) tools

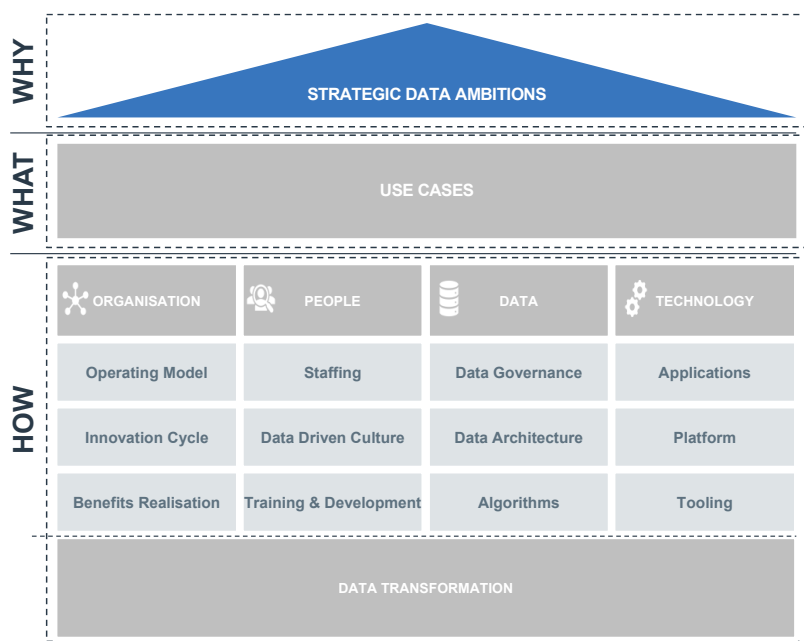
1.3 Key Service Benefits

1. Automation in processes helps provide public with targeted advice
2. Real-time reporting to enable quick decision-making and identify errors
3. Optimise business processes using AI/GenAI and Analytics
4. Apply ML/AI/GenAI to predict behaviour and provide lower cost-to-serve services
5. Scale your Cloud, Data and AI/GenAI resources automatically
6. Sentiment analysis to understand customer satisfaction and improve services
7. AI-enabled image detection, classification of objects, and risk analysis
8. Advice on ethics, regulations and governance regarding GenAI/AI use
9. Provide GDPR and Responsible AI compliant capabilities and offerings

1.4 Service Definition

We combine platform delivery, business transformation and deep Public Sector knowledge with data engineering and integration expertise to unlock the full potential of your data. Through our long-standing AWS Premier Partner relationship, we employ leading, innovative AWS services such as Amazon Bedrock, Amazon Connect, Amazon Redshift, Amazon DynamoDB, Amazon Athena, Elastic Search, Quick Sight, EMR and AWS Glue to enable successful Cloud-based analytics transformations for our clients and empower them to become data-driven.

Our approach to AI/GenAI, Machine Learning and Data Analytics starts with the business outcomes being specifically targeted and considers the operational factors necessary to retain strong Data Governance, regulation adherence and the leading data practices that enable organisations to gain insights from data that drive meaningful outcomes, business efficiencies and deliver tailored services to the end consumers. Our PA Data Framework enables us to evaluate each of these factors systematically, setting-up long-term sustainable Data Operations.



Examples where we have delivered sustainable data innovation, and setup ongoing Data Operations so organisations gain the value benefits and are able to continue to improve their data landscape are below.



MARKETING & SALES

- Dynamic pricing
- Acquisition, X-sell & Churn modeling
- Sales navigator



FINANCE

- Forecasting
- Actuarial modeling
- Fraud detection modeling



SERVICE

- Next best action recommendation
- Prevention suggestions
- Complaint handling



HR

- Flight risk model
- Vacancy matching
- Continuous listening analysis through NLP



OPERATIONS

- Predictive asset maintenance
- Network incident analysis
- Procurement analysis



AUDIT

- Audit modeling
- Credit risk selector
- Model Assurance



SUPPLY CHAIN & LOGISTICS

- Planning and Scheduling optimization
- Capture Entities from Paper Packing Slips
- Predictive Maintenance



RISK & COMPLIANCE

- Risk model innovation factory
- Compliancy breach indicator
- Conflicts of Interest monitor



IT

- Security management
- Data quality analysis
- Predicting Pending Maintenance Issues



FACILITIES

- Floor occupancy analysis
- Chair sensor
- Optimized Climate Management

Example: In a government department, PA Consulting led and built a new centralised logging platform on AWS as part of the scalable hosting platform. The centralised logging platform combined over 250 distributed microservices to enable efficient aggregation of data across these services. Using data engineering and integration patterns, we developed, implemented a hot-warm AWS Elasticsearch service, and leveraged several other AWS services such as Amazon Quick sight, Kafka, Amazon S3, EBS, Amazon CloudWatch, Elastic Load Balancing and autoscaling to build a cost-optimised, resilient, and scalable platform. The platform has enabled efficient and detailed transaction tracing across numerous products which have now been rolled out on the AWS hosting platform.

Example: At a Utility start-up, PA Consulting led the design and development of a de-centralised water treatment facility. We did this using AWS's analytics and IoT (Internet of Things) service suites to monitor and measure the key components of the water treatment unit. We developed data-driven intelligence to ensure that the quality of water meets the potability standards and managed the performance of the unit itself. Often based in remote & hostile environments, it was imperative that data was analysed in real-time so that the local communities were getting clean, safe, drinking water. Our IoT and Data engineers used IoT Core, RTOS (Real Time Operating Systems), Lambda, IOT Analytics, Amazon Quick Sight, Amazon S3 and Amazon DynamoDB to create the analytics platform that remotely monitored and ran the water treatment units.

All this work is backed by PA's 400+ trained & certified staff on AWS services. Part of our annual commitment to being in AWS's highest tier of partner status – AWS Premier Tier.

1.5 Why PA Consulting Group (PA)?

A trusted partner for cloud, AI, and digital technologies

PA Consulting Group (PA) is a leading technology and innovation consultancy and one of the UK government's most trusted advisors, combining strategy, delivery assurance and deep engineering to turn complex ambition into assured outcomes. We bring end-to-end capability across cloud architecture, data and AI, cyber, and advanced technology R&D, backed by a track record of scaling innovation in the public and private sectors.

Our UK work is anchored by secure, standards-led delivery. PA maintains ISO/IEC 27001 certification across global operations, demonstrating disciplined information security and operational control, and applies UK government good practice (GDS, NCSC CAF) across cloud and digital programmes.

We combine consultancy with real engineering. At our Global Innovation & Technology Centre (Cambridge), 300+ scientists, designers and engineers operate extensive labs and studios to prototype and industrialise solutions, bridging physical and digital from concept to production.

1.5.1 Why PA for cloud, data and AI

- **Hyperscaler alliances without vendor lock-in.** PA is Premier Tier with **Google Cloud** (13+ years; 150+ certifications; specialisations in infrastructure, data analytics, app dev and security) and holds deep **AWS** and **Microsoft** credentials, accelerating secure data foundations and generative AI at scale while keeping advice independent and outcome-led.
- **Responsible AI you can trust.** Our Responsible AI framework, governance toolkits, and risk policy make AI adoption transparent, auditable, and compliant, embedding lifecycle controls, model documentation, and human-in-the-loop safeguards aligned to evolving regulation.
- **Impact beyond pilots.** We help organisations become *intelligent enterprises*, using data and agentic AI to create and protect value, with pragmatic roadmaps from use-case selection to scaled operations.
- **Proof through delivery.** Our client stories span enterprise data platforms, IoT and analytics (e.g., Rentokil Initial), and product innovation at scale (e.g., Unilever) where PA has put data and AI at the heart of continuous, market-leading improvement.

1.5.2 Cloud capability (assess, design, build, assure, run)

PA applies an assured cloud delivery approach to complex government and regulated environments, blending client-side delivery assurance, multi-cloud architecture, and resilient operations:

- **Strategy & readiness.** Maturity assessments, target operating models for hybrid/multi-cloud, and cost/benefit modelling; proportionate GDS compliance and ISO 27001 controls embedded upfront.
- **Design & architecture.** Secure, well-architected patterns across Azure, AWS, and Google Cloud; data platforms, identity and access, and cross-domain solutions for sensitive estates.
- **Build & deploy.** Cloud-native engineering, DevSecOps (CALMR), CI/CD, infrastructure-as-code; automated testing and quality assurance to accelerate safe release.
- **Migration & modernisation.** Legacy transformation, platform reviews, and workload migration tuned to resilience and cost; pragmatic FinOps to keep spend predictable and efficient.
- **Operate & optimise.** Observability, incident management, performance tuning, backup/restore, and change management, maintaining business continuity and reducing total cost.
- **Client-side delivery assurance.** Forward-looking, risk-based assurance that keeps complex programmes on track, covering governance, architecture, testing, migration, service readiness and cutover. See our *IT Delivery Assurance* service.

1.5.3 AI, ML and data (from strategy to scale)

- **Strategy & governance.** AI blueprints, operating models, and policy; enterprise data governance; regulatory readiness; centre-of-excellence setup and change adoption.
- **Engineering & MLOps.** Data platforms on Azure/AWS/GCP, pipelines and feature stores; robust ML lifecycle with monitoring, drift detection and auditability.
- **Generative & agentic AI.** Secure integration of LLMs (including Copilot) into workflows for measurable productivity and quality gains, using guardrails, system cards and ROI framing.
- **Responsible AI.** Lifecycle controls and assurance tooling to manage bias, security and transparency.

1.5.3.1 Quantum and emerging technologies

PA's applied physics and quantum engineering teams help clients unlock near-term value, combining quantum techniques with classical systems for decision support, advanced sensing and secure communications:

- **Decision support & optimisation.** Hybrid quantum/classical algorithms to accelerate complex planning, routing and resource allocation where speed and quality of decisions matter.
- **Quantum sensing & RF.** Novel quantum radio and Rydberg-based sensing to enhance spectrum use, detection sensitivity and resilience in contested environments.
- **Commercialisation insight.** Advisory at the "whole-stack" level, hardware, supply chain, interfaces, and ethics, to move from lab to market within national strategies.

These capabilities are industrialised at our Cambridge centre, turning concepts into robust prototypes and pre-production systems across sectors like defence, energy and transport.

1.5.4 Cyber security and digital trust

Digital trust is central to PA's approach. We design security into architecture, operations and culture, aligning to NCSC CAF and GovAssure, and delivering testing, red-team, SOC design and OT/IoT security:

- **Transformation & architecture.** Secure-by-design patterns, cloud security, identity, and cross-domain data protection (including NCSC-approved Oakdoor data diode products).
- **Assurance & regulation.** CAF/GovAssure alignment and pragmatic remediation plans for government organisations.
- **Testing & resilience.** CREST-aligned penetration testing, red-teaming, incident readiness, and operational resilience.

1.5.5 What PA will bring

Ideation & Strategy

- Cloud strategy and advisory services
- Cloud readiness assessments
- Cost/benefit and ROI modelling
- Security and compliance by design.
- AI/ML and data strategy (blueprints, operating model, governance) with Responsible AI policy and guardrails.
- Quantum opportunity framing and whole-stack commercialisation roadmaps.

Design & Architecture

- Bespoke enterprise and cloud architectures
- Integration with existing IT infrastructures
- Hybrid/multi-cloud design
- Continuity and disaster recovery
- Data platforms and MLOps patterns
- Security, privacy and resilience embedded by design in technical designs
- User-centred-design
- Secure cross-domain solutions and high-side/low-side integration where required.

Development & Deployment

- Cloud-native engineering
- Containerisation, microservices and serverless
- DevSecOps (CALMR) with CI/CD and automated testing
- Generative AI and Copilot enablement with measurable productivity outcomes and run-controls.

Implementation & Migration

- Data migration and legacy modernisation
- Vendor selection and management
- Infrastructure-as-code with progressive, low-risk cutover.

Operations & Management

- Observability, incident management, SIEM/SOC design
- Performance optimisation and cost management (FinOps)
- Backup/restore
- User training and change adoption.

Innovation & Scaling

- Scalable cloud infrastructure to support growth
- AI/ML implementation and scaling
- IoT integration
- Ongoing innovation sprints and R&D, supported by our Cambridge engineering labs for rapid prototyping and pre-production.

1.5.6 PA is fully equipped to manage any challenges or requirements you may present

Across strategy, design, build and run, PA blends independent advice with hands-on engineering, operating to ISO 27001 and UK government standards, and backed by hyperscaler partnership depth. Whether the brief is modernising a sensitive cloud estate, industrialising AI responsibly, or de-risking a quantum-adjacent programme, we bring the multidisciplinary team to get from idea to reality, safely, quickly, and at scale.

1.6 A Genuine commitment to Social Value

At PA, we believe in the power of ingenuity to create a positive human future. Central to this ambition is our commitment to developing high-quality opportunities that enable individuals to acquire leading-edge skills, all within an environment that supports personal wellbeing and growth. We invest in our people through comprehensive training and development, ensuring they are fully prepared to tackle our clients' most complex challenges and advance their own careers.

We recognise that diversity drives innovation. Therefore, our recruitment practices are inclusive, welcoming individuals from all backgrounds. Every member of our team is empowered to reach their full potential through inclusive policies, processes, and a culture that is continuously improved using robust data.

We are passionate about creating genuine opportunities for those facing significant barriers to employment. Since 2023, our Digital Apprenticeship Programme has offered a Digital and Technology Solutions Degree through the University of Roehampton or Northumbria University. Our apprentices typically include first-generation professionals, college leavers, and individuals from ethnic minority backgrounds, many living in deprived areas. Additionally, we offer summer internships for undergraduates entering their final year, hosted at both our central London office and the Global Innovation and Technology Centre in Cambridge.

Economic responsibility is integral to our purpose. PA is accredited as a Living Wage employer, and where relevant, we ensure that our suppliers and subcontractors are paid at least the minimum living wage. We are also a signatory to the Prompt Payment Code, demonstrating our commitment to fair and responsible payments to suppliers.

Our carbon reduction targets have been validated by the Science Based Targets initiative (SBTi). We have a published carbon reduction plan and are committed to achieving carbon net zero by 2040, in alignment with PPN 06/21 criteria for UK public sector contracts exceeding £5 million. In 2024, we achieved a silver EcoVadis rating, reflecting our ongoing progress in sustainability.

We are dedicated to delivering targeted social value and will collaborate with you to determine the most effective approach for you, ensuring our efforts have the greatest possible impact.

1.7 Security Clearance

PA are fully compliant with industry best practices for information security, which includes compliance with the UK MOD Industry Personnel Security Assurance (IPSA) standard, against which we are independently audited every three years. PA also has multiple sites with FSC (previously List X) where our dedicated in-house Security Vetting team are based. This allows PA to achieve security vetting of its employees in a time effective manner ensuring the correct processes are always followed (In accordance with the Security Policy Framework/GS007). As a matter of standard process, PA puts all its eligible employees through the Baseline Personnel Security Standard (BPSS), set out by the Cabinet Office. Those employees working on, or planning to work on, government projects are automatically put forward for SC clearance which are processed via UK-SV (formally the Defence Business Services – National Security Vetting). PA also process DV vetting through the UK-SV and other agencies, these are generally client sponsored.

PA currently have a large pool of cleared individuals (80% of UK Staff). Should a resource be identified where clearance is needed, the PA Security Vetting team will then process the individual through the relevant clearance procedure. The team will also be able to validate all existing clearances held by PA employees when requested.

1.8 Next Steps

This service is intended to help customers develop and deliver successful outcomes regardless of the life cycle stage they are at. PA prides itself on working with clients and helping them to deliver outcomes whilst also providing them the ability to 'stand on their own' so that they can move their solutions forward without future involvement. Please contact us on GCloudFramework@paconsulting.com to discuss your needs further.



About PA.

We believe in the power of ingenuity to build a positive human future.

As strategies, technologies, and innovation collide, we create opportunity from complexity.

Our diverse teams of experts combine innovative thinking and breakthrough technologies to progress further, faster. Our clients adapt and transform, and together we achieve enduring results.

We are over 4,000 strategists, innovators, designers, consultants, digital experts, scientists, engineers, and technologists. And we have deep expertise in consumer and manufacturing, defence and security, energy and utilities, financial services, government and public services, health and life sciences, and transport.

Our teams operate globally from offices across the UK, Ireland, US, Nordics, and Netherlands.

PA. Bringing Ingenuity to Life.

Discover more at paconsulting.com and connect with PA on [LinkedIn](#) and [X](#).

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