



AWS Enterprise and Solution Architecture

GCloud Service Description Document

Bringing Ingenuity to Life.
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1 AWS Enterprise and Solution Architecture

1.1 Short Service Description

PA combines platform delivery, business transformation and deep sector knowledge with leading AWS Enterprise and Solution Architecture frameworks, techniques and practices to enable our customers to shape, plan and deliver integrated architectures and solutions.

1.2 Key Service Features

1. Deliver Enterprise Architectures to reduce technical debt
2. Apply 'Agile Architecture' frameworks for rapid architecture design
3. Reduce architecture review cycles with standard design patterns
4. Build architecture practices ready to use new AWS services
5. Design and integrate hybrid AWS Cloud and Data Architectures
6. Design for multi-platform landscapes across IaaS, SaaS and PaaS
7. Design and deliver industry-recognised resilience ensuring robust services
8. Delivering Cloud solutions that meet government data standards
9. Delivering innovative/responsive operational strategies to maximise value
10. Upskill teams to use DevSecOps and CI/CD/CO architecture practices

1.3 Key Service Benefits

1. Deliver world-class AWS Cloud, Data and AI/GenAI solutions
2. Architect solutions focused on outcomes to maximise business value
3. Reduce technical debt and cost of operations using AWS
4. Integrate leading-edge AWS capabilities with existing legacy IT solutions
5. Transition from legacy solutions to resilient, modular and scalable architectures
6. Reduce Carbon Footprint through AWS services powered by renewables
7. Create Open Architectures to improve information flow and collaboration
8. Reduce regulatory burden of preserving compliant technology
9. Create leading architecture teams using modern design patterns and practices

1.4 Service Definition

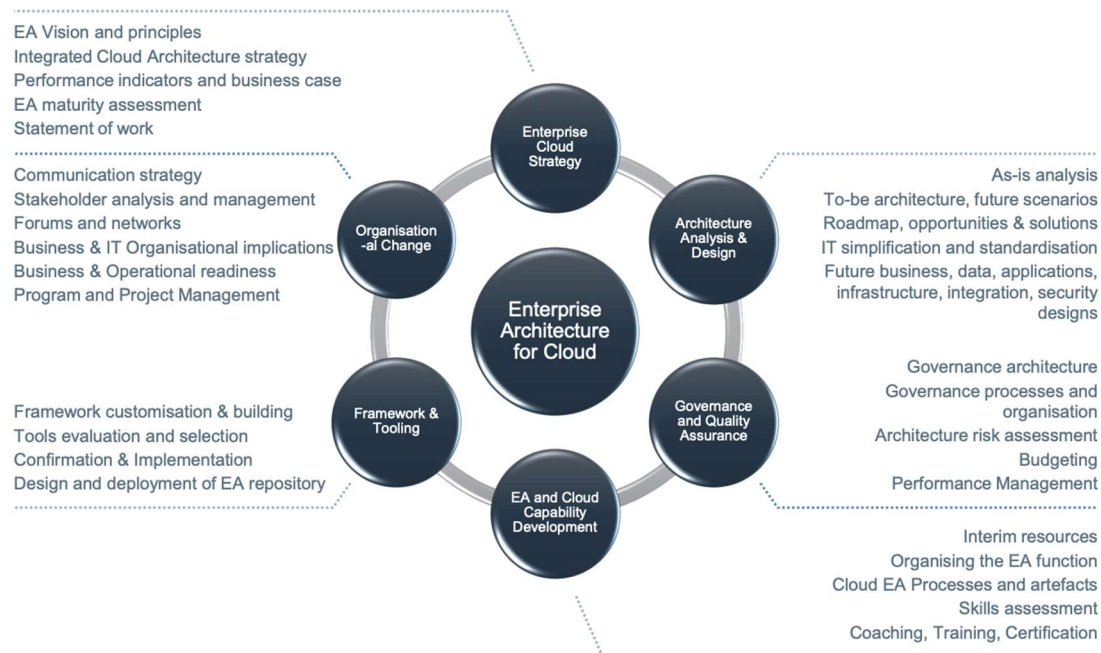
We bring PA's world-leading architecture frameworks – such as our Agile Architecture and DevSecOps frameworks and capabilities – to help create architectures to: (1) leverage AWS Cloud, Data and AI/GenAI capabilities using scalable, resilient and integrated approaches, (2) create and deliver integration with AWS Cloud environments, and (3) transition fully to AWS Cloud whilst reducing Operating Costs and technical debt/legacy IT, and produce sustainable, low-carbon Cloud services using AWS' renewable energy-backed services. Our AWS Premier Partnership means we bring leading AWS architecture practices, enabling teams to accelerate their upskilling.

Our Enterprise Architecture for Cloud service enables our customers to have a coherent AWS Cloud Strategy that is practical, deliverable and works in an environment of complex and legacy IT architectures. PA both advises on the approaches to solve AWS Cloud architecture design challenges, manage 3rd party vendors by evaluating and assuring proposed solutions from vendors, partners and IT functions, and bring insight to both integrate with and reduce-down the dependency of older architectures. This enables more rapid adoption of leading Cloud, Data and AI/GenAI capabilities. We take a holistic yet innovative approach to the Enterprise Architecture challenges faced, ensuring they are identified early on and do not block the adoption of AWS Cloud services in the business.

Our Enterprise Architects have practical experience across public, hybrid or private clouds, having implemented solutions across many clients and industries in the public and private sector. We leverage broad architecture perspectives, industry knowledge, technical depth and extensive product experience in finalising the strategy. By utilising our Agile Architecture framework and DevSecOps frameworks e.g. CALMR, we drive the shaping and implementation of a practical technologies and solutions using modern design patterns so – going forward – customers are better equipped to introduce new technologies e.g. GenAI, optimise value from existing platforms and solutions, and create plug-in/out architectures so new, innovative solutions are piloted, evaluated & adopted.

Being practical architects, our focus is creating resilient, scalable and secure AWS Cloud platforms, whilst recognising the need to integrate with on-premise, other Cloud and 3rd party solutions and finding the appropriate architecture design patterns, practices and techniques to leverage AWS solutions – and maintain a wider non-AWS-specific architecture. PA have the established tools, methods and processes to formulate the appropriate an Enterprise and Solution Architecture approached aligned to the business direction and capabilities required. We have the implementation experience required to provide the aligned application, information and business capability architectures and roadmaps. We will guide you through the wider cultural change, technical challenges, including any cyber and information security concerns, and work to upskill & educate in-house architecture teams.

Developing your AWS Cloud, Data and AI/GenAI Strategy and achieving the seamless integration desired, as captured in the Enterprise Architecture solution, requires that all aspects of the change are considered and addressed. Each of the six categories in our Enterprise Architecture for Cloud Framework (see below) emphasises the critical perspectives contributing to the strategy formulation and execution. PA's catalogue of EA services allows our clients to select those needed to complement and enhance any existing EA capability. The graphic below provides a summary of the range of Enterprise Architecture for AWS Cloud, Data and AI/GenI solutions.



Our Enterprise Architecture for AWS Cloud approach delivers value by clarifying and defining the most appropriate Cloud Strategy, reinforced by aligned application, information and business capability architectures and roadmaps. It ensures strategic alignment, realisation of market potential, reduced risk of change, predictable outcomes and a positive return on investment. The chart below expands on some of the main benefits our clients have realised.



Definition and execution of the AWS Cloud Strategy ensures that key business drivers are considered. Strategic alignment, realisation of market potential and reduced risk of change are encompassed within PA's Enterprise Architecture for Cloud Services Catalogue outlined below. The holistic approach taken ensures that the key business drivers are constantly reviewed, delivering predictable outcomes and ongoing improvements.

The table explores each of the key business drivers from an architecture perspective.

Business drivers	Architecture requirements	What good looks like for the EA tool?
Risk management	Be able to manage risks associated with IT run and change operations in the cloud	Provides a mechanism to visualise and report impact of run and change on various IT components that support the processes Proactively identify the current and future bottlenecks in IT architecture
Cost management	Be able to understand, manage and optimise costs associated with the IT that supports the capabilities that are moving to the cloud	Ability to view all elements of the IT that make-up a service or a capability with a top-down view and associate costs to it Ability to do “what-if” analysis on various components of architecture for scenarios such as replace / substitute / consolidate / etc.
Process improvement	Be able to understand, implement, change and govern the Cloud processes	Provides a conceptual view of process flows supported by the IT estate with an ability to do scenario testing and / or governance review Be able to identify current and future bottlenecks in the systems that support the processes
Create innovation	Provides opportunity to use IT as an innovation advantage using the Cloud	Ability to test theory and hypothetical scenarios – “What-If” Institutive in enabling process of discovery and presentation
Improve predictability	Helps improve the predictability of the systems, processes, infrastructure and change for Cloud based IT operations	Can identify bottlenecks proactively Enforces good architecture principles in design
Improve trust and perception	Helps the IT to provide transparency of operations and change running off the Cloud	Proactive problem reporting Re-active analysis of required changes Accuracy of impact and estimation of size of problem/opportunity

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 [Twitter](#).

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