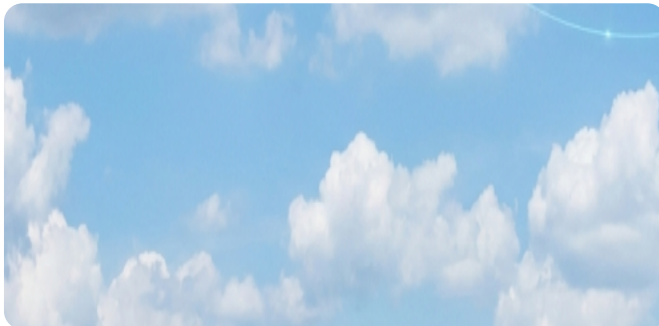




Google Cloud Enterprise Architecture

GCloud Service Description Document

Bringing Ingenuity to Life.
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Google Cloud Enterprise Architecture

1.1 Short Service Description

PA's service focuses on defining standardised and resilient cloud services that simplify complex legacy architecture. We apply industry leading experience of Agile at scale to both assimilate complex Enterprise Architecture and deliver incremental value at pace. PA ensure development of business capabilities that deliver sustained exploitation of Cloud services.

1.2 Key Service Features

1. Use best practice frameworks for design of transformational services
2. Delivering services that are reusable across agencies/services
3. Implementing cloud strategies; including integration with complex legacy systems
4. Strong innovative record blending hybrid IaaS, PaaS and SaaS
5. Industry recognised resilience and business continuity ensuring robust services
6. Delivering Cloud solutions that meet government data standards
7. World leading experts in Agile architecture; enabling value realisation
8. Experienced architects spanning multiple domains and government organisations
9. Established supplier partnerships: Google, AWS, Microsoft
10. Delivering innovative/responsive operational strategies to maximise value

1.3 Key Service Benefits

1. Deliver world-class cloud solutions to transform ways Government operate
2. Focused on outcomes for stakeholders to maximise business value
3. Open Architecture to improve information flow and collaboration
4. Reduced regulatory burden of preserving compliant technology
5. Cloud technologies that deliver shared platforms and accelerate transformation
6. Provide better ways of working to improve stakeholder productivity
7. EA that drives adoption of disruptive technology and innovation
8. Maximise opportunities to leverage Government services
9. Modular approach to extending Cloud services and reducing OPEX

1.4 Service Definition

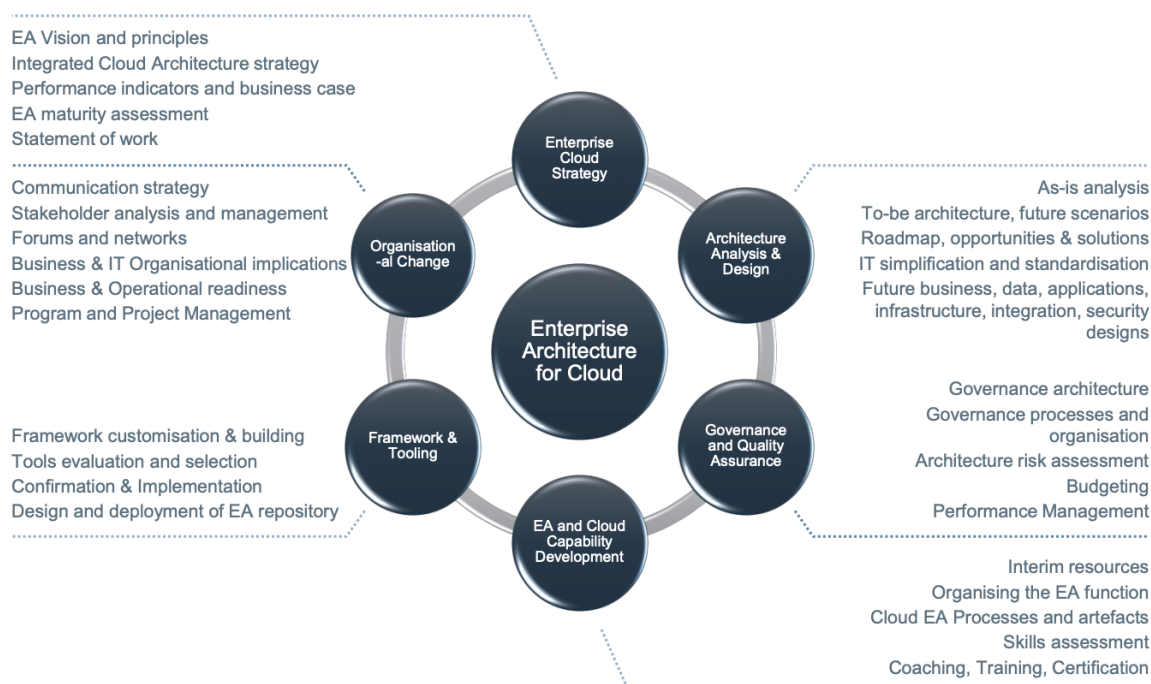
The focus of PA's Enterprise Architecture for Cloud service is to ensure clients have a coherent cloud strategy. Initiatives may lie on the spectrum ranging from augmenting existing IT services to the cloud to the creation of a new fully cloud-based offering. Whatever the desired end goal, the outcomes must maximise the value gained from the cloud-based investments by delivering fully integrated business capabilities.

PA can advise on the pitfalls and the essential questions to ask vendors, partners and IT functions alike. 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 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 expertise in architecture frameworks, the team can also support and drive the implementation of a blend of new service provision opportunities. This can be through a mix of public, private or hybrid cloud offerings of IaaS, PaaS or SaaS, ensuring seamless integration with existing IT solutions. PA have the established tools, methods and processes to formulate the appropriate holistic enterprise architecture strategy in response to the business direction and capabilities required. Additionally, we have the implementation experience required to provide the aligned application, information and business capability architectures and roadmaps. During this, we will guide you through the wider cultural change, technical challenges, including any cyber and information security concerns that need addressing.

1.4.1 PA's Services

Developing the Cloud 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 captured emphasises the critical perspectives contributing to the strategy formulation and execution. PA's own 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 Cloud services offered.



The enterprise view underpins organised, structured and well executed business transformation initiatives and consequently the full-service catalogue is supplemented by PA related services.

1.4.2 PA's EA for Cloud strategy delivers positive returns

Our EA for 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 through our services:



1.4.3 PA Architecture is comprehensively aligned to business drivers

Definition and execution of the 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 across the six catalogue categories. In doing so, predictable outcomes and improved outcomes are achievable.

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

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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