Deloitte.

SAS Analytics and Business Intelligence
G-Cloud 14 Service Definition Document
May 2024

MAKING AN
IMPACT THAT
MATTERS
since 1845

Contents

1   Deloitte Overview

As a leader in professional services, Deloitte LLP is committed to making an impact to our clients, our people and for society. We have over 25,000 staff based across the UK providing audit, risk advisory, tax, consulting, financial advisory and legal services to public and private clients across multiple industries. We work together to build trust, support inclusive growth, and build capability, enabled by our **breadth and depth of expertise across advisory, delivery, engineering and managed services.**

Our **public sector practice** serves Central Government, Government Agencies, Local & Regional Government, Defence, Security and Justice, Health and Social Care, Transport, Education and Housing. We also provide services to the Northern Ireland Office, Scottish Government, Welsh Government and Crown Dependencies.

Our Cloud Capability

At Deloitte, we help our clients **Imagine, Deliver** and **Run** the businesses of the future through the power of **Cloud**. We have deep Cloud architecture, engineering, operational, commercial, and business transformation expertise delivered by a team of more than 26,000 Cloud Practitioners globally. We have delivered over 2,000 cloud implementations over the past 5 years and have 60+ cloud centres of excellence supporting the delivery of cloud services to our clients.

In the UK, we have a growing team of OCI specialists, over 100 Cloud managed service specialists plus the following certifications across AWS, Microsoft Azure and Google Cloud:

We help our clients with all aspects of their journey-to-cloud and optimisation of their cloud and cloud-services investments. Our Cloud practice can support you to optimise your client investments, and to navigate your organisations cloud journey, providing specialist cloud architecture, engineering, and operational skills at all stages, with a large proportion of our team holding the clearances required to meet your specific security requirements.

Our alliances & ecosystems

To bring full value to our clients, Deloitte is a premier consulting partner with all the leading hyper-scale cloud vendors in the market including AWS, Google, Microsoft[1], Google and SAP. A selection of our partners and alliances are presented below:

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[1] As Microsoft's Independent Auditor, Deloitte cannot have a direct or material indirect business relationship with Microsoft, such as having an alliance or being a registered partner. Nonetheless, Deloitte can provide Microsoft-related technology services and invests heavily across its global business building technical skills and capabilities to develop world-class consulting and solution delivery capabilities.

What the analysts say

Don't just take our word for it. Deloitte is recognised by the analyst community as being **leaders in cloud transformation services.** This reflects the wealth of experience we have in delivering cloud services across the public sector and wider private sector combined with our out-of-the-box templates, tools and assets.
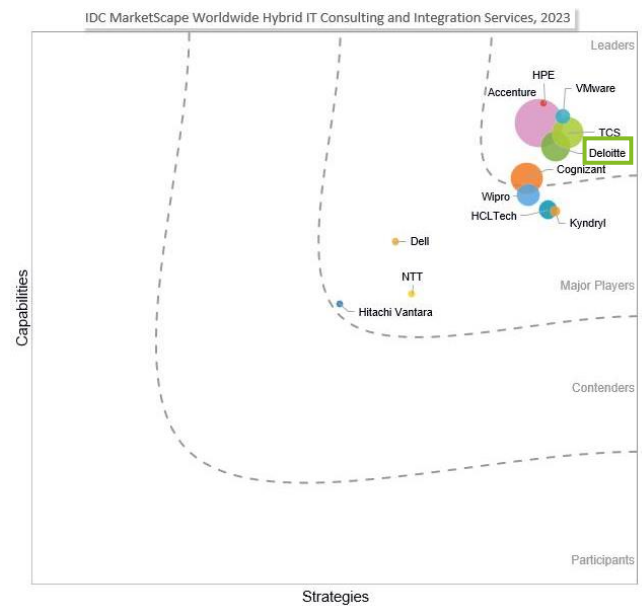
Gartner

Originating in 2021, Deloitte has been recognised as a Leader in this category for three years in a row. Deloitte was also positioned as a Leader in the **Gartner Magic Quadrant for Public Cloud Infrastructure Professional and Managed Services, worldwide** in 2021, 2020 and 2019.

Gartner: Magic Quadrant for Public Cloud IT Transformation Services. **© Gartner inc. 2023**

IDC

Deloitte has been awarded Leader status in the **IDC MarketScape: Worldwide Hybrid IT Consulting and Integration Services 2023** Vendor Assessment. In 2023, we were also recognised as Leaders in **Hybrid IT Consulting & Integration Services** and **Software Engineering Services**.

IDC MarketScape: Worldwide Hybrid IT Consulting and Integration Services 2023 Vendor Assessment **© IDC inc. 2023**

Deloitte scored highest in 4 of 5 Use Cases in **Gartner® Critical Capabilities for Public Cloud IT Transformation Services 2023** report:

"Deloitte approaches all aspects of cloud adoption, including migration, with transformation as an objective."

Cloud Transformation

Transform Faster, Transform Smarter

Deloitte's Cloud Transformation can fast-forward your journey to the Cloud, unlocking innovation, efficiency, and growth.

Find out more here

2   Service Overview

Overview

Deloitte offers a comprehensive portfolio of SAS analytics and business solutions including modernisation of SAS estates from on-premise to Cloud including design to implementation. Our expertise covers requirements analysis, data integration, data storage, data management, warehousing, advanced modelling and reporting, so that we can enable you to turn your data into a valuable asset. Our accredited capability in building complex and effective hybrid architectures spanning on premise and cloud data architectures means that we are able to deliver leading edge analytics solutions.

Key features

In order to provide full coverage of the data analytics process this service comprises of the following features;

- Deep-dive interactive sessions with stakeholders to generate comprehensive listing of requirements

- Ability to build solutions using multiple tool-stacks by utilising SAS Viya REST APIs to create and access SAS resources using any client technology

- Scalable delivery approach including agile and other project management methodologies.

- Experienced SAS certified consultants with deep understanding of end-end analytics lifecycle.

- Cutting-edge application development using technology across SAS Viya 3.5/4.0 and SAS 9.4

- Administration and Security model implementation using Management Console, Environment Manager, Command Line Interface and CAS Server Monitor.

- Data Management using SAS Enterprise Guide, SAS DI Studio, SAS Studio Engineer, SAS Studio, SAS Data Loader for Hadoop, SAS Event Stream Processing Engine, SAS VA Data Preparation and VIYA technologies SAS Data Explorer, SAS Data Studio and SAS Job Monitor, DataFlux Data Management Studio and Federation Server.

- Innovative advanced analytics using SAS Visual Text Analytics (utilising Natural Language Processing NLP), SAS Visual Forecasting, SAS Visual Statistics, SAS Model Studio, SAS Optimization SAS Model Manager SAS Visual Data Mining and Machine Learning (VDMML) and R/Python integration for machine learning.

- Open-source and SAS integration using Viya.

- Compliance, Fraud Detection and Investigation capabilities using Real Time Entity Network Generation (RTENG), SAS Visual Investigator, SAS Visual Data Mining and SAS Intelligent Decisioning

- Custom Visualisation and dashboards using SAS Visual Analytics, Visual Statistics and Visual Text Analytics.

- Current State Assessment using our bespoke tool to analyse logs to understand SAS landscape and granular usage patterns.

- Top down and bottom up approach to migration planning ensuring data driven approach to migration including prioritisation of use cases and rationalisation recommendations

- Ability to architect, design and deliver cloud based platforms on Amazon Web Services (AWS) and Azure

- Usage of SAS planning tools including Enterprise Session Manager (ESM) and Content Assessment

- Bespoke and transferable Risk, Change and Quality management processes.

- Support to develop business cases across total cost of ownership of modernisation

Key benefits

Key benefits of using the services listed above in order to design and implement data analytics solutions include;

- Requirements gathering minimises risk of goals and deliverable being misaligned

- Prioritisation of migration effort ensures continuous value being released during migration process avoiding a big bang approach

- Understanding of existing SAS usage is key to understanding prioritisation of use case

- Use of analysis tools enables evidence based decisions to inform migration roadmap.

- Distinct delivery approach minimizes impact to in-flight delivery streams.

- Expert support using trusted methods and industry-defined best practices.

- Leading technology applications to support business processes and drive decision-making.

- Keep your platform secure and improve productivity through enhanced metadata visibility and maintenance.

- Transparency of data sources, data lineage and transformations.

- Deploy actionable intelligence real-time decision-making into production processes

- Integrate predictive insights and establish structured, repeatable processes

- Open source (R, Python) and SAS integration efficiencies.

- Systematic detection of suspicious activity using scoring engine that utilises social networking, predictive and descriptive analytics and facilitates investigative reviews using configurable workflow.

- Rapid access, identification and easy comprehension of latest data trends.

- High performance and scalable to future analytical requirements

- Mitigate/resolve business-critical faults and maintain controlled change and assurance.

3 Detailed Service Description

Our approach

Our approach is designed to be flexible so that we can meet your particular requirements. Through the provision of skills and accreditations which span multiple technologies and disciplines Deloitte are uniquely positioned to use the Cloud analytics technology stack to ensure that you meet your technical and business requirements at each stage of the data analytics process. Deloitte's holistic approach to data analytics ensures that we are able to develop best of class solutions for cross governmental sector and domain data analytics challenges that we have identified through numerous public sector projects.

Please see below for our general approach. Depending on the context and the nature of the existing architecture not all activities may be necessary;

- Deloitte typically engage in a discovery exercise, we will work with the client to agree requirements and run innovation workshops so that we might also identify and plan to meet future requirements. We agree acceptable timelines for discovery with you and plan in advance so as to minimally impact your business area. We use tools which we have developed over the course of many data analytics projects to identify the operational readiness of your organisation and tailor our recommendations accordingly.

- Deloitte uses a top down and bottom up approach to Discovery – bottom up leveraging SAS logs to enable evidence based decision making, whilst Top down focuses on usage of traditional user research including interviews, surveys and workshops.

- Deloitte offers an automated approach to documenting existing code leveraging LLM's to document existing processes.

- Deloitte use proven agile methodologies harnessing workflow tools such as Jira or Confluence to deliver your solution on time and within budget.

- Deloitte engage with your technical design authority bodies to design and implement the cloud based architecture which meets your business and technical needs. We have a proven track record in designing and delivering more complicated architectures such as hybrid architectures which including on premise and cloud based components and multi-cloud architectures.

- Deloitte ensure that security needs are met by leveraging Unix command line and SAS technologies such as Management Console and Viya Administration in order to keep permissions and credentials secure for users and for managed identities.

- Deloitte advise and manage the implementation of data governance structures and processes, we have experience advising in master data management and data governance for data architectures utilising the SAS technology stack for several public sector clients. We are able to advise you on access control for information asset owners (IAOs) with SAS Viya Administration. We will leverage technologies such as SAS DI Studio and Management Console in order to meet your bespoke requirements.

- Deloitte design and deliver comprehensive data integration through experienced practitioners using SAS DI Studio to integrate data from disparate sources, including external APIs, on premise storage and cloud based storage. We are also able to design and implement integration solutions using cutting edge SAS Viya technology integrating open source programming languages such as Python and R. We have experience implementing more complicated data architectures by using cloud components such as data streaming architectures and those requiring storage in SQL, Oracle or Postgres databases.

- Deloitte design and implement Extract, Transform, Load (ETL) solutions, we have experience harnessing traditional SAS technologies such as DI Studio in conjunction with the cutting edge SAS Viya platform. With a wealth of expertise in the SAS programming language we are able to meet more complicated ETL requirements through the use of bespoke solutions and functions. For the ETL of big data we can leverage certified big data specialists with experience in utilising specific SAS data loader for Hadoop technology.

- Deloitte work with your development teams to architect data warehouse solutions to meet your requirements. Depending on the scope and complexity, tools utilised would typically include SAS Data Loader for Hadoop, SAS DI Studio, SAS Viya to utilise data from a range of database types including Oracle, Postgres designed to facilitate data modelling and query optimisation.

- Our business analysts will gather intelligence about the nature of your data and our developers will design, implement and explore optimal data models on the SAS Viya platform utilising tools such as Visual Investigator and Visual Analytics. We have experience in modelling complicated and disparate data so as to facilitate analysis in the application layer and to optimise query speeds.

- Deloitte work with you to wireframe, design and implement reporting and dashboarding tools to meet your data visualisation needs. We have experience providing actionable insight and compelling data storyboards using SAS tools such as Visual Analytics, Visual Statistics, Visual Text Analytics.

- Deloitte work closely with your business to deliver advanced analytics and machine learning solutions, we have experience in providing actionable insights through SAS solutions such as Intelligent Decisioning deployed as part of a SAS Viya distribution.

Inputs

We have assumed that you will be in a position to provide certain inputs to the service, which we have listed here. If you are not in a position to provide all of these inputs then we can discuss options, as it is likely we can reach agreement to alter our approach to accommodate your situation.

- Access to datasets (including transfer of data if appropriate) and data owners;

- Information about the existing technology architecture;

- How data is currently being used and any particular challenges;

- Expected changes to the data landscape or types of data collected.

Contributions

Our services are designed to be delivered with you rather than to you. We have assumed that you will be able to make the following contribution to the work. If you are not in a position to take on these responsibilities then please get in touch to discuss options, as it is likely we can reach agreement to alter our approach to accommodate your situation.

- Making available the time of senior stakeholders and decision-makers to attend workshops and meetings.

- Engage with our Insight team and to provide assurance that any data modelling or analytics is in line with your business challenges.

Outputs and deliverables

Please find a list of typical outputs below, please bear in mind that the list is high level and not exhaustive. If the deliverable you require is not listed, please get in touch to discuss options, it is possible that we will still be able to help. In the application layer outputs will typically include the following;

- Business insights dashboards – these will typically be interactive reports on SAS tools such as Visual Analytics, Visual Investigator, they will enable the users to make strategic decisions regarding business processes.
- Cutting edge analytics utilising SAS tools such as Visual Investigator and Visual Statistics to drive intelligent decision making.
- Machine learning models – these will typically answer specific business questions / problems and are developed, optimised and deployed through SAS Viya.

Our personnel

- Deloitte's global analytics practice has over 1,000 practitioners, with a blend of business analysts, data architects and data scientists.

- In the UK the corresponding numbers are over 500 practitioners.

- Increasing the numbers of SAS Viya certified practitioners is a strategic priority.

- Deloitte are a Global Platinum partner with SAS.

- Developers with experience creating advanced solutions with SAS Viya and/or the following SAS 9.4 applications;
    - Data Integration utilising DI Studio
    - Data Quality utilising DataFlux
    - Data Exploitation utilising SAS Enterprise Guide
    - Data Visualisation through Visual Analytics, Visual Text Analytics
    - Reduce fraud losses, increase revenue, enhance operational efficiency with SAS Fraud Detection and Investigation
    - Data Model Optimisation within SAS Viya
    - Drive real-time interactions and automate operational decisions at scale with SAS Intelligent Decisioning

Case studies

SAS stack – example 1 – advanced analytics:

- Situation: The public sector client struggled to assess drivers of personnel sentiment and associated retention challenges.

- Action: Deloitte developed a Natural Language Processing capability using traditional data science techniques (taxonomy-based-categorisation) alongside advanced Machine Learning capability (sentiment analysis using BERT embeddings/Tensorflow) to analyse the free-text responses from surveys. Comments were tagged with themes/topics and sentiment scores and visualised through interactive dashboards utilising SAS Visual Analytics.

- Result: The capability is currently used by internal programmes to analyse >11k comments not previously analysed due to capacity constraints. The tool is flexible and can be tailored to other free text data.

SAS stack – example 2 – data integration and visualisation:

- Situation: A Deloitte team of Data Scientists and SMEs operated within a blended team of business analysts, performance analysts, data architects and data scientists to deliver the clients requirements while liasing with contractors maintaining the data warehouse.

- Action: We supported the client in developing a scalable data product that integrated/separated big data sources. SAS Enterprise Guide was used to map, produce, transform and test data which was loaded into SAS Visual Analytics coupled with model optimisation conducted through SAS OR.

- Result: A fully functioning SAS Minimum Viable Product was developed, capable of navigating multiple data sources and providing insights on resource readiness.

SAS stack – example 3 – security and platform administration:

Deloitte/SAS bring years of experience in Level 1-4 SAS 9.4 Platform Administration across Microsoft Windows and Linux servers by utilising Platform Administration-certified resources.

- Situation: From October 2018, Deloitte have been responsible for a large public sector clients Analytics Platform Administration across Microsoft Windows and Linux servers and service support from 1st to 4th line.

- Action: Working closely with internal teams, Deloitte technical-teams operate the analytics-application Help Desk to manage user access rights, monitor capacity/storage usage (CPU) in memory and data security of the analytics platform.

- Result: Administration of a secure SAS 9.4 environment, which supports multi-domain, multi-team reporting, enables client teams to focus on delivery of powerful analytics used to drive key decision-making.

Exclusions

For the avoidance of doubt, we have listed below any activities that (in our experience) are sometimes expected to be in our scope but which are not included within this service.

- Hosting and managed service facilities for the service are available and we would be happy to discuss your requirements with you, but is not included in this price.

4   Contact Details

Please send your requirement to publicsectorbidteam@deloitte.co.uk. Alternatively, if you wish to discuss your requirements in more detail, please send us the following information and we will be happy to contact you:

- Your organisation name

- The name of this service

- Your name and contact details

- A brief description of your business situation

- Your preferred timescales for starting the work.

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