Exalogic Consulting

DEPARTMENT OF HEALTH (DOH)

Techno Commercial Proposal for Design and Implement of Data management tools

دائـــــرة الـــصـــحـــة
DEPARTMENT OF HEALTH
Data Management Tool
Department of Health

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Content

1. Executive Summary

Exalogic Consulting is proposing an Analytics platform on SAP for DOH integrating various advanced tools from SAP for handling Data Management Practices.

Key features of the proposed Solution:

Exalogic Consulting understand DOH's strategic framework and wants to emphasize on a Digital First vision and consequently it wants to serve its customer both now and in the future.
Through a collaborative partnership and the delivery of a robust implementation plan, we will provide the assurance that Exalogic's domain expertise, technical capability and industry leading tools deliver success aligned to your strategy and vision.

The overall objective that will be delivered from the implementation of the solution will be to provide an information visualization platform to the senior management.
Exalogic's proposed solution ingests, integrates, and organizes all of DOH's data – from SAP and Non-SAP Data source across multiple regions – into the powerful Enterprise SAP Data Intelligence and SAP BTP Cloud Platform, built on the tested and proven Enterprise Data Model. The integration with SAP SAC will empower business users to create, share, export, and drill down on information, liberating the data to enable root cause analysis and reveal opportunities for growth, differentiation, efficiencies, and customer experience...

Implementation Plan and Governance model

Successful delivery of the project depends on a robust implementation plan, oversight, and governance model in place. Exalogic Consulting with its years of experience in delivering similar projects for other large global clients is well equipped in delivering the project. The total timeline for the implementation is 12 Weeks, the project will be implemented in Agile model which will be divided into Requirement Gathering, Build, Testing and Hypercare phases. The governance model will evolve during these stages of the engagement, key elements being:
Exalogic Consulting will have a Project Manager to monitor, coordinate & implement the planned activities.
Team of subject matter experts (SME) from Exalogic Consulting will be aligned to the project to ensure a seamless delivery.
Understanding of the Existing Landscape will be undertaken by high skilled resources on service
Effective governance of a relationship of this nature needs more than just formal processes, accountabilities, and roles, however, essential though these are. Success of an outsourcing relationship of this nature is critical both to achieving the Client's strategic goals and in protecting its market position, reputation and standing. Exalogic Consulting is very open to creating specific entities to 'house' relationships of this nature and scale and to establishing a governance Board, chaired by the Client, which oversees the operation.

2. Proposal Context Scope Understanding

Our goal is to execute this engagement with functional and technical excellence, provide thought leadership and reliability – and thus establishing the basis of a long-term, multi-faceted relationship that provides mutual sustained value.

This proposal is structured and penned with the rich experience of having delivered high user adaptability projects for our end users of our Data Warehousing Highlight of our work is mentioned in the section Case Studies of this document.

Exalogic Consulting has carefully gone through the Scope of work shared by DOH in the RFP document and following is the high-level scope and proposes an SAP landscape for extracting data from various source systems ingesting and doing the required cleaning and transformation and then storing it in Hana Cloud Data lake(DL) for maintaining various Data staging purpose.

Exalogic Consulting will connect SAP DWC and Hana Cloud DL with SAC which can be used for creating dashboards by DOH Teams.

1. Setup SAP BTP, SAP Data Intelligence (DI), SAP Data Services (DS), SAP Power Designer and SAP Analytics Cloud (SAC).
2. Exalogic Consulting proposes to connect to SAP and Non-SAP data sources to fetch below structured and Non-structured data
3. Exalogic Consulting plans to provide DOH with the below set of Business Objectives, upon completion of this project.

i. Integrated Data Lake on Cloud for all SAP and Non-SAP systems for data Storage and Data Tiering options
ii. Self Service for Business Users to create data models and visualizations
iii. Data Governance
iv. Scalability to accommodate future business needs on a cloud platform that serves on demand business data needs

2.1.1 In-Scope Activities

1. Setup SAP BTP, SAP Data Intelligence (DI), SAP Data Services (DS), SAP Power Designer and SAP Analytics Cloud (SAC).
2. Exalogic Consulting proposes to design and develop 10 to 15 dashboards for their healthcare LOB
3. Ability to scale up infra based on the business needs with a capacity of scaling data to 30% year on year growth
4. Connect to structured or Un-structured data sources for developing models for SAC dashboards
5. Ingest data from additionally required tables & build models/views
6. Setting up the File server system which has a capability of maintaining Version Maintenance and Audit about document access and it should support multiple formats not limited to PDF, JPG,DOC,DOCX,PPT,XLS..etc.
7. Design and develop dashboard for other LoBs for both internal and external users
8. Setup the Analytics sandbox for DOH Data Analytics, Artificial Intelligence and Machine Learning requirements
9. Setting up the Git Repository for maintaining the version management and code hosting/storing environment for testing and deployment of AI/ML models in SAP Data Intelligence

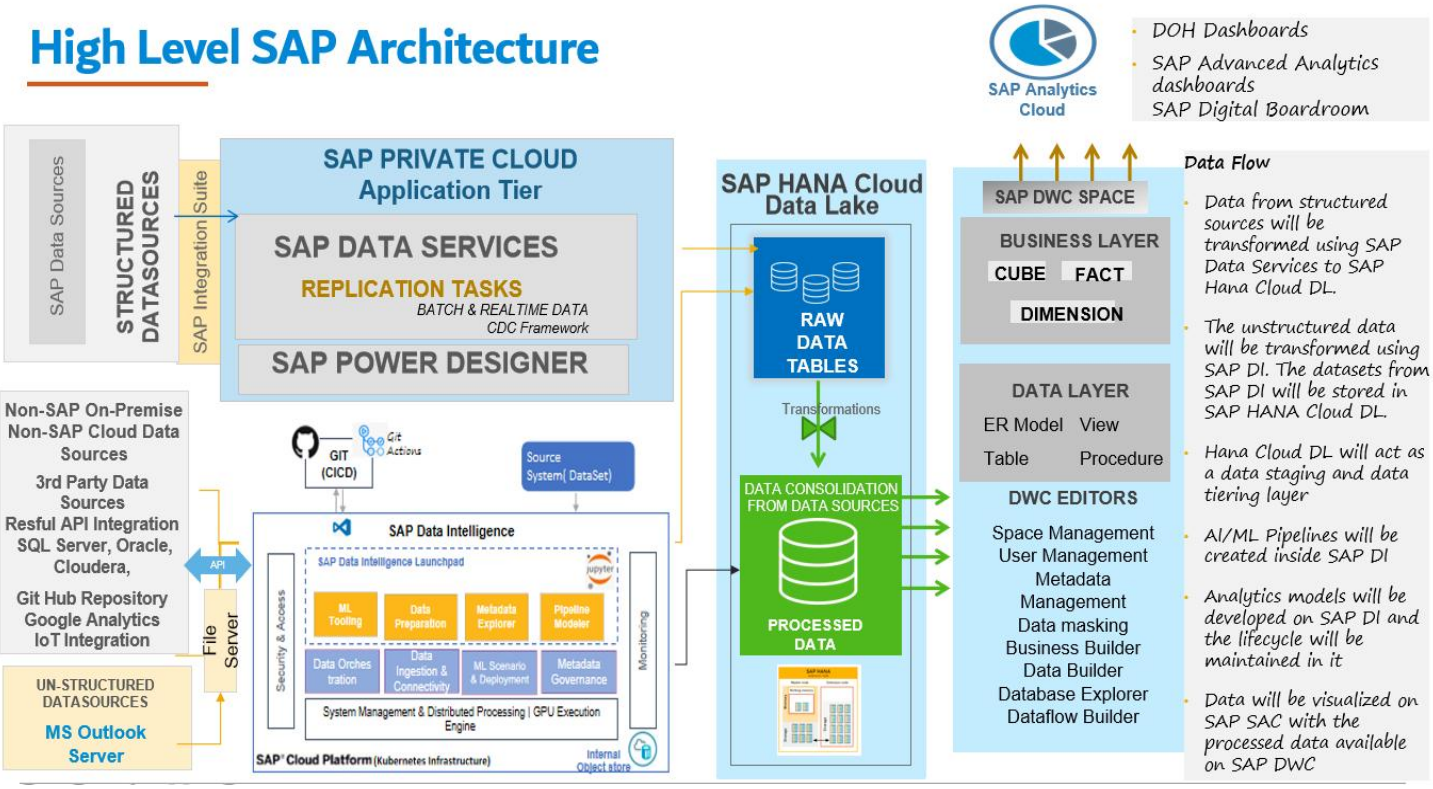
Out of Scope Activities

10. WANs, Telecommunications, Systems networking support and Infrastructure.
11. Installation of any hardware and software
12. Application Support for any systems
13. Anything that is not mentioned in the in-scope section of the document

3. Solution

Technical Architecture

Below is the proposed Future-proof Technical Architecture for DOH Data Ingestion, Transformation and Visualization Solution.



3.1.1 SAP Bill of Materials & Sizing

Product Code	Product Name
On-Premise Solution	
7020288	SAP Data Intelligence
Cloud Solutions	
8009014	SAP Data Services Enterprise, private cloud edition (32 cores)
8011637	SAP PowerDesigner EnterpriseArchitect, private cloud edition
8004741	SAP Integration Suite, Enterprise Edition
8004102	SAP Analytics Cloud for BI, private option (user)
8003354	SAP Analytics Cloud test tenant 256GB Private Edition
8004797	SAP Digital Boardroom, Private Edition

3.1 Solution Approach Data Flow

We will ensure a high-quality data goes to the Analytics tool by performing the below tasks:

- **Data Integration**
  - The Data replication process will start once the Data replication task has been created on the SAP Data Services for establishing a continues flow of data CDC (Change Data Capture) framework will be leveraged.
  - The Data source will be defined in the replication task window and the process will be initiated.
  - Once all the checks are done the data is replicated onto SAP Data Lake.

- **Data Cleaning & Validation**
  - **Data Cleaning** - Data should be always cleansed at source (in the source system) and before migrating/converting to SAP Data Lake to avoid the typical "garbage in – garbage out" phenomena. This is by far the easiest and cheapest way to ensure data quality rather than implementing a huge and expensive cleansing logic in the data migration tools.

  - **Data Validation** - Data should be correctly mapped from source to target data models in SAP Data Lake. This may sound like a simple field mapping exercise, but here we find a common source of future data quality issues. This process is not just purely "technical" exercise and is often not just a simple 1:1 field mapping. Instead, a certain level of derivation logic is required and thus the business users should always be involved here to ensure accuracy and consistency.

- **Data Modeling**
  - **Business Layer** - The business layer provides natural language phrases to allow everyone to instantly understand data. You can define relationships between each element in your data model and enrich your data fields with business information and tags for quick discovery. Share all this between different Spaces to collaborate between departments.
  - **Self-Service Modeling** - Empower business users to easily model and explore data. At the same time, free up resources within the IT department. Use drag and drop, tables, SQL, Cube Builder, and flat files to get insights from data. Visually build your model with Graphical View to simplify data modeling tasks or use readily available data models created by peers. Test your model instantly to discover insights.

- **Data Security and Privacy**
  - Line of Business Data Protection Guidelines - The basis for our Data Protection Management System is a set of company-wide data protection guidelines, function-specific work instructions, and a worldwide network of data protection representatives.
  - Internal Data Protection - SAP regularly trains all employees and verifies a high level of data protection awareness with regular audits in more than 100 locations worldwide every year.

- Policy framework - SAP places a high priority on securing our fundamentals while taking a service-driven, agile, and cloud-centric approach to securing an Intelligent Enterprise.

- **Reporting & Analytics**
  - Once the Data models are created on SAP DWC, it can be imported on SAP SAC.
  - Based on Data models SAP SAC would be creating Visualization and analytical reports as per the defined KPI's.
  - Automatically analyze data, revealing key influencers and support what-if scenarios and simulations.
  - More effective use of analytics with extensibility across devices and applications.

3.1.1 Platform Components

Solution Overview On-Premise Solution

SAP Data Intelligence

SAP Data Intelligence is a comprehensive solution that delivers data-driven innovation and intelligence across the enterprise, helping you create powerful data pipelines to leverage your data projects and orchestrate data processing. By eliminating disconnects between development and implementation teams, DOH can improve developer, IT, and data scientist productivity and collaboration. You can harness advanced machine learning content to accelerate, scale, and automate your data science projects. You can also manage metadata across a diverse data landscape and create a data catalog that maximizes the value of your data.

SAP Data Intelligence is uniquely differentiated on the market:

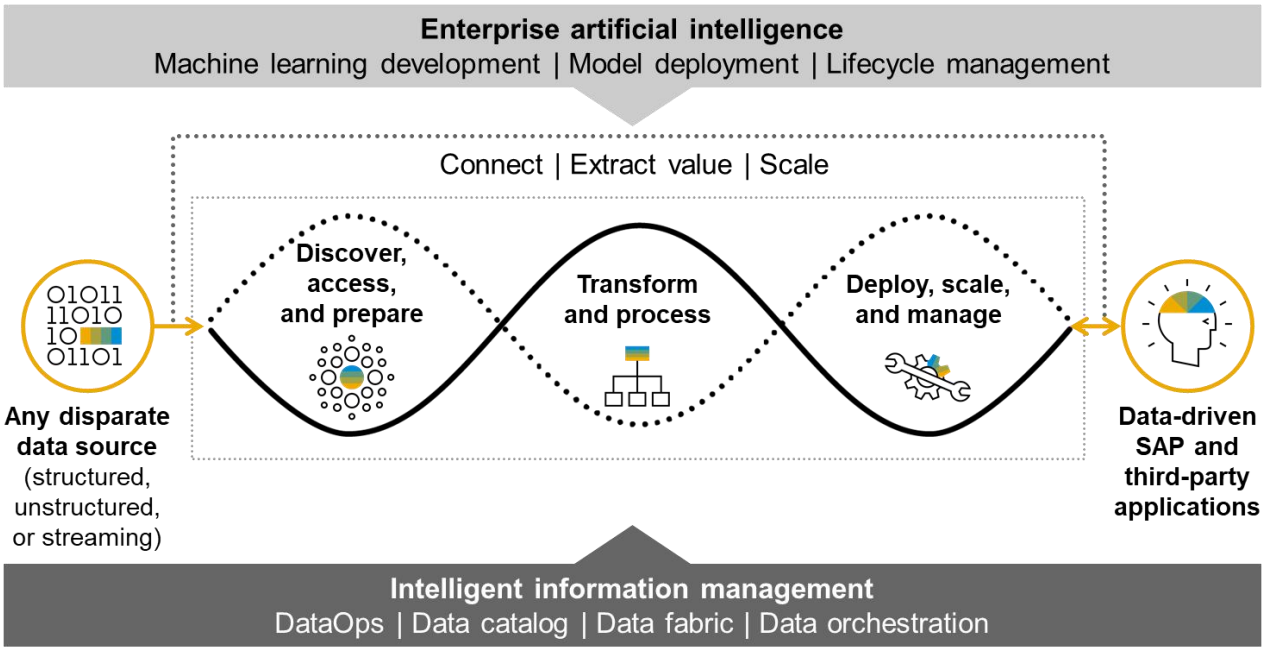
- It is an integrated, open and agnostic solution with a single UX to manage data integration, orchestration and machine learning processes in an end-to-end application.
- It supports the needs of both enterprise IT teams and data scientists with data management tools for data architects and engineers, JupyterLab environments for Data Science teams, and clear visibility for IT Operations teams.
- It includes business content with prebuilt feature engineered datasets for key SAP data sources like SAP S/4HANA, reusable pipelines for key use cases, and a marketplace of sharable content from SAP and SAP partners.

SAP Data Intelligence is available for cloud, on-premise and BYOL1 deployments. Several editions are available to suit your use cases and requirements.

[1] BYOL = Bring Your Own License

SAP Data Intelligence

SAP Data Intelligence is a data operations management solution that enables data orchestration, pipelining, and governance as well as agile sharing of all data across a connected data landscape. It provides transparency across data-centric roles including data architects, developers, integrators, stewards, and scientists.



3.1.1.1 *Business Challenges*

Information management and artificial intelligence (AI) are more closely connected than ever before. While AI promises to deliver a wealth of new, meaningful business insights, the data requirements and complexity involved in deploying and operating AI is daunting. With today's data sprawl and complex changes in the variety, volumes, and types of data, most companies need a dizzying array of disparate tools to extract value from increasing volumes of multifaceted data. To harness the power of data, they need to rethink information management. SAP Data Intelligence can help DOH address these challenges:

Learn to maximize the value of complex data and help ensure all data is fit for use

Counteract data siloing and tool sprawl that impede the speedy delivery of business insight

Gain the skills – and confidence – to deploy machine learning effectively.

Business Benefits

SAP Data Intelligence is a comprehensive solution for scaling AI, extracting value from distributed data, and embracing the best of open technology. It offers DOH the ability to:

Eliminate disconnects between development and implementation teams

Ensure trustworthy data and verifiable results

Reduce overall costs to create and deploy AI-enriched processes

Keep data trusted and compliant with an enterprise data strategy

Drive DataOps initiatives with collaborative tools

3.1.1.2 *Key Features*

SAP Data Intelligence provides distributed data orchestration capabilities to help you transform structured, unstructured, and streaming data into business insights. Features include:

Unified view of data across the enterprise – Streamline data integration, orchestration, and processing of all kinds of enterprise data across fragmented landscapes.

Flexible, reusable data pipelines – Design powerful data pipelines that use open-source and machine learning frameworks with over 200 operators.

Centralized management of distributed data – Get visibility into all data sources and pipelines across your landscape with centralized management features.

SAP Data Intelligence provides automated machine learning (AutoML) capabilities at the click of a button. Features include:

Pipeline generation – Automate the creation of complex machine learning pipelines with intuitive tools for configuring machine learning artifacts.

Comprehensive workflow automation – Enable automation across machine learning workflows, from data preparation to model selection, validation, and deployment.

Preconfigured functionality – Use preconfigured features to deploy machine learning technology without specialist data science expertise.

SAP Data Intelligence also provides data catalog, metadata management, and governance capabilities to help you know your data and ensure it is fit for use with next-generation data management features. Features include:

Data catalog – Use metadata crawlers to explore, classify, and label data assets across your connected landscape.

Data lineage features – Review transformation history and metadata to quickly understand how, where, and why data has been altered.

Data profiling – Understand your data prior to performing data transformations or machine learning.

SAP Data Intelligence offers developers flexibility and containerized execution to get intelligent processes up and running quickly with straightforward and flexible tools. Features include:

Support for open technologies and developer tools – Use a wide range of open-source and SAP technologies, including SAP HANA, Python, Apache Spark, and TensorFlow.

Simple data preparation and exploration – Prepare data using an intuitive user interface, without any technical scripting requirements.

Cloud-based architecture – Establish a flexible and modular architecture in the cloud, based on leading open-source technologies.

Bring-your-own-model capabilities – Deploy and reuse existing machine learning models and orchestrate data flows to and from them.

SAP Data Intelligence provides AI Operations and Lifecycle Management capabilities to automate and scale AI projects, from creation to production. Features include:

Access to open-source data science tools – Harness open-source technology such as JupyterLab that data scientists are familiar with and help IT understand what is built.

AI labs as a service – Access lab environments supporting SAP and open-source languages and libraries, reducing time spent on infrastructure tasks.

Insights into model performance – Track all elements of the machine learning process to understand model performance and help ensure trustworthy results.

Automation of low-value tasks – Manage model performance and lifecycles automatically, so IT teams and data scientists can focus on tasks that matter.

Cloud Solutions

SAP Data Services Enterprise, private cloud edition (32 cores)

This is a bundle of software products that includes rights to the following data management solutions from SAP:

SAP Data Services

SAP Information Steward

When customers license this enterprise edition, they can deploy any or all of the included solutions up to their total licensed cores across all solutions (sum of cores across all solutions equals total licensed cores) . Customers may reallocate cores across solutions as needed to best meet their ongoing data management needs.

SAP Data Services software helps customers establish and maintain a centralized foundation for their enterprise information management strategy, providing the underlying data management infrastructure essential to deliver timely and trusted information in support of all data-driven initiatives. SAP Data Services provides a single, enterprise-class solution to move, improve, govern, and unlock value from data that is otherwise hidden in disparate and siloed systems.

SAP Information Steward software is designed to provide a single environment to discover, define, monitor, and remediate enterprise data assets. It brings IT and business users together with a common purpose to maintain and improve data quality though data governance. Within a single application, SAP has incorporated the ability to manage metadata, profile data at its source,

apply validation rules to assess its quality, and continuously monitor its quality over time. This gives both IT and business users instant visibility into the origins of their data, the quality of the data, and the ability to determine what applications or reports are affected by it.

3.1.1.3 *Key Capabilities:*

- Broad application and system support – ability to access and integrate SAP and non-SAP sources and targets, from Hadoop through SAP Business Suite software to SAP HANA and SAP BusinessObjects business intelligence solutions
- Single solution (interface, architecture, and engine) with an intuitive business user interface for extract, transform, and load and data quality – breakthrough ease of use, allowing rapid development of data integration and quality projects
- Native text data extraction and processing – ability to unlock meaning from unstructured text data for increased business insights, from support calls, services agreements, Microsoft PowerPoint documents, PDFs, and forums to content collected from Twitter, and so on
- High performance and scalability – ability to meet high-volume needs through parallel processing, grid computing, and bulk data–loading support
- Maximized productivity and simplified maintenance – ability to transform and cleanse all types of data, regardless of industry or data domain, and leverage a centralized business rule repository and object reuse
- Continuous monitoring of data quality over time
- Reduced risk of propagating bad data by identifying it early
- Provision of tangible evidence that data governance investments are paying off

12.1.1. SAP PowerDesigner Enterprise Architect

SAP PowerDesigner software for enterprise architects is a desktop enterprise architecture and planning tool. It provides the ability to create a visual representation of the enterprise across both business and IT to understand today, tomorrow, and the future. The tool supports the daily tasks typically performed by business analysts and architects, data analysts and architects, system analysts and architects, application analysts and architects, and enterprise architects in process, data, systems, and technology design and planning in a cross-functional team.

Enterprises can define all aspects of their architecture in one collaborative framework; understand the links between business processes, information, applications, and technology; and improve business agility by empowering all stakeholders to more easily respond to change by visualizing the impact of change from any perspective.

3.1.1.4 *Key Capabilities:*

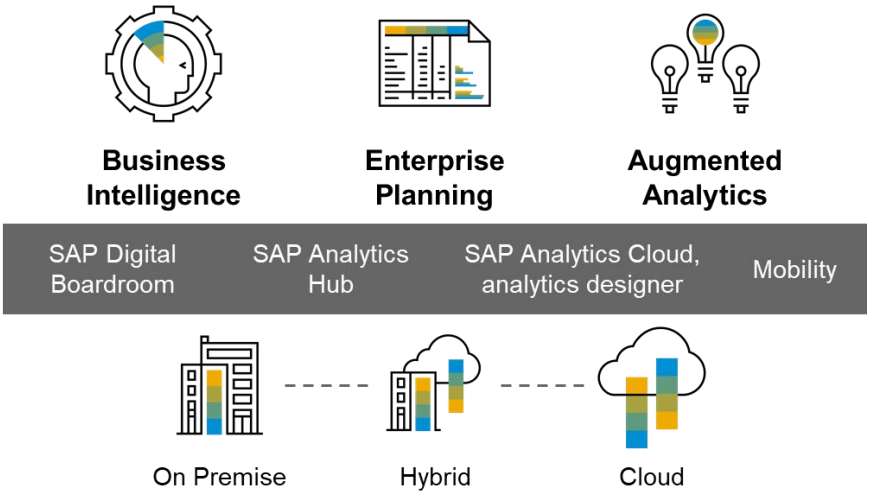
- Create and edit goals, strategy, road map, and topology models
- Create and edit business capability, process, and business process models and notation models
- Create and edit conceptual, logical, and physical data architecture models
- Create and edit data movement (extract, transform, and load, replication, and services) architecture models
- Create and edit XML models
- Create and edit solution, application, and service architecture models
- Create new and/or update customer database schemas from a physical data model
- Document existing customer database schemas through DDL, ODBC, and/or JDBC
- Hetergenous database support for more than 50 database platforms (details: SAP Note 2390663)
- Create and edit requirements
- Manage models in an enterprise repository to support a team environment
- Produce reports and/or share models with the enterprise
- Govern the quality of, provide collaboration for, and manage the workflow approval of the models
- Derive impact analysis within and across models of the same or different types

SAP Analytics Cloud

SAP Analytics Cloud is a cloud-based solution that combines business intelligence, enterprise planning, and augmented analytics in a single solution. Built on SAP Business Technology Platform, it helps you eliminate point solutions and break down data silos with a secure, cloud-based approach. Rather than relying on standalone spreadsheets, or separate, disconnected reporting and planning tools, users have everything they need, embedded where they work, to make fast, confident decisions together.

SAP Analytics Cloud

SAP Analytics Cloud offers all analytics for all users on one platform, in one user experience. In the boardroom, at the office, or with a customer, DOH can discover, analyze, plan, predict, and collaborate to make complete, contextual, and confident decisions and become a more agile, intelligent enterprise.



3.1.1.5 *Business Challenges*

Intelligent decisions are part of a continuous process. All organizations must plan, discovery, analyze, predict, and take action. There is significant advantage to doing this together and all in one place enabled by technology. The reality in many enterprises is that these activities are disconnected. Data engineers are tasked with data tracking, data analysts and data scientists are tasked with analyzing the data, and the results of the analysis are delivered to another group of decision makers, whose decisions are then passed along to employees who act based on the decisions. It is rare for one software package to support two or more of these activities. Without visibility across the whole process it is difficult for an enterprise to learn. Missing functionality across this process often results in a lack of evaluating alternatives, understanding risk and constraints, and prescribing next best actions.

Business Benefits

SAP Analytics Cloud can help all types of decision makers at DOH:

- Make end-to-end decisions with all analytics capabilities in one place
- Gain enterprise-ready insight and take action within your business processes
- Make smart decisions with AI-driven insights delivered to you naturally

3.1.1.6 *Features and Functions*

With SAP Analytics Cloud, DOH can take advantage of:

- Complete, comprehensive, in-memory data management and analytics
- Contextual delivery of smart insights through natural-language processing
- Confident decision-making faster, without expert intervention
- Affordability, availability, and scalability

Detailed features are described below.

Augmented Analytics

Reveal relevant, accurate, and actionable insights faster with artificial intelligence and machine learning technologies.

- **Data science for all** – Focus on higher-value activities with machine intelligence embedded in business intelligence and planning workflows.
- **Conversational analytics** – Get answers instantly by creating visualizations and explanations with natural language querying and generation.
- **Automated machine learning** – Discover key influencers and relationships in your data to boost performance, detect anomalies, and take remedial actions.
- **Intelligent predictions** – Predict potential outcomes and forecasts you can trust with the push of a button and no data science skills required.

Business Intelligence

Explore data across the organization and deliver insights at the point of decision with intuitive self-service analytics.

- **Data exploration and visualization** – Inspire audiences with interactive visualizations and stories by filtering and drilling into data, regardless of volume size.
- **Efficient modeling and preparation** – Automate data cleansing to alert errors and categorize measures and dimensions to enhance your data and gain deeper insights

Enterprise Planning

Link and create financial and operational plans seamlessly in one solution to drive better decisions with integrated plans.

- **Collaborative enterprise planning** – Plan across all lines of business to turn real-time insight into action, ensure strategic alignment, and decide confidently.
- **Intelligent planning** – Understand your business today and tomorrow with predictive forecasting and machine learning tools.
- **Integrated financial planning** – Act in the moment and spend more time on strategy by combining transactions, analytics, and planning with SAP S/4HANA.
- **Company-wide advanced analytics** – Create and modify versions of a planning model for data-driven budgeting, forecasting, and analysis from one cloud interface.

Design of Analytics Applications

Create centrally governable analytic content – from guided analytics to sophisticated planning and smart applications

- **Custom interactions** – Unite business intelligence, planning, and predictive capabilities by developing state-of-the-art analytics applications.
- **Rapid prototyping** – Customize, integrate, and extend existing content, templates, or user stories with existing data models and widgets.
- **Standardized analytics content** – Foster a consistent and continuous user experience with reusable user interface elements and adjustable widget behaviors.
- **Custom widgets** – Enable custom, reusable functionalities with tailored widgets, centrally managed composites, and data-science capabilities.

4. Project Plan

Exalogic Consulting proposes the following 10 weeks Go live Project plan and a 2-week Hypercare Support for the development & Implementation of Enterprise Data Lake for DOH.

Project Phases	W1	W2	W3	W4	W5	W6	W7	W8	W9	W10	W11	W12
Preparation												
Requirement gathering & Design												
System Set up & Config												
Data Integration												
Data Modelling												
Report Development												
SIT												
User Training												
UAT												
Cutover & Go-Live												
Hypercare												

Process description

1. 3 Weeks of Requirement Gathering and Design to Understand DOH existing landscape
2. 2 Week of systems setup and configurations
3. 4 Weeks of Data Integration and Data Modelling run as sprint cycles
4. 2 Weeks of SIT for each sprint, followed by 1 Week of User Training and UAT
5. The Exact deliverable of each Sprint will be finalized during Blueprint Sign-Off
6. 5 Days of Cut over and Go Live activities
7. 2 Week of Hyper Care Support post Go-live

4.1 Assumptions on Project Schedule

1. As part of a fixed price, fixed scope and fixed timeline engagement, any deviations from this timeline due to lack of Customer user's availability, hardware issues, data issues, provision of test and cutover data, extended decision-making processes, lack of business readiness or any other pre-requisite on the part of the Customer will result in a change request being submitted to Customer. The timeline will change if there is any addition in the scope at the end of requirement gathering and design phase
2. 2-week lead time is required for Exalogic Consultingto onboard the project team
3. Any change in above detailed project scope for Data Sources/ Tables/ DWC/ SAC implementation, will lead to revision of efforts which will be considered as change request (CR's)
4. Customer and Exalogic Consultingunderstand that the timely completion of schedules and the meeting of all deadlines set forth are important to the successful completion of the Project.
5. Exalogic Consultingwill not be held responsible for delays in the Project due to factors not attributed solely toExalogic. Any delays will be evaluated to identify if Exalogic Consultingwas solely responsible. If such delays are not attributed solely toExalogic, such delays shall be subject to the Change Request Procedure
6. The Project will be completely delivered from Exalogic Consulting Offshore location.

5. Implementation Approach

Agile is standard methodology of delivering projects for our clients. Our A-team selected for this project is well-versed in Agile implementation methodology for the projects we have delivered for our large enterprise clients. Scrum Master will be responsible for project-level governance of ‘s scrum teams.

To tackle an opportunity, Consulting as an organization form and empowers small teams, usually three to nine people, assigned full-time. The team is cross-functional by nature of the project and includes all skills necessary to deliver a working solution. The team manages itself and is strictly accountable for every aspect of the work.

Project Owner will be responsible for delivering value to customers - including internal stakeholders, future end users and to the business. Project Owner represents business functions and divides their time between working with the team and coordinating with key stakeholders: customers, senior executives, and business managers. The initiative owner organizes design thinking workshop to build a comprehensive “portfolio backlog” of all promising opportunities. The Project Owner continually and objectively rank-deliverables that list according to the latest estimates of value-adds to internal or external customers and to the company.

The team proactively creates a simple road map and plans in detail the activities that directly addresses the short-term deliverable. Its members break the highest-ranked tasks into smaller modules, decide the amount of work the team will take on and methods to accomplish it, develop a clear definition of “done,” and start building working versions of the product in short cycles (Ideally 2 Weeks) known as sprints. A process facilitator (scrum master) guides the end-to-end process, assists the team focus on the current goals and put its collective intelligence to work.

The process is transparent to every stakeholder involved at all points. Team members hold brief daily "stand-up" meetings to review progress, identify roadblocks and resolve disagreements through experimentation and feedback rather than endless debates or appeals to authority. They test small working prototypes of sections or the complete offering with a few customers at the end of each sprint. Depending on the customer feedback, the team brainstorms ways to improve future cycles and prepares to deliver the next top priority. Below diagram depicts an end-to-end managed services framework we follow.

5.1 Project Phases

Preparation (Sprint 0)

Performed at the start of every release, sprint 0 is common to both Application and Technical architecture work stream

Activities in Sprint 0

- Conduct workshops and analyze the requirements
- Team formation
- Product Owner prioritizes the product backlog along with the chief product owner.
- Story Point estimation of Product Backlog Items (PBI) is finalized with the chief product owner.
- Product Owner re-prioritizes PBIs based on estimation
- Create Design Framework
- Create Release plan (based on team's velocity)
- A minimal environment for writing code is setup and a small piece of code is written and tested
- Establish a test approach
- Process for change management, cutover, transports, etc. are defined and agreed upon.

5.1.1 Requirements Gathering and Solution Design using collaborative tools

Ideally, discovery and the design workshops of a project are conducted on-premises. While we are hopeful that this would be plausible when DOH projects kicks off early, Exalogic Consulting has evolved to conduct blueprint and requirement gathering process completely online along with user interviews and identification of pain points

The platform that we leverage for online collaboration is Miro, which is a design thinking tools with online white boards, templates & post-its, which enables all the engaged audience to go through all the phases of design thinking such as empathy, define, ideate, and prototype. This enables us to have all requirements collated in a collaborative manner. Usage of Miro has enabled us to arrive at complete design requirements, very much akin to the on-premises design thinking workshops.

Based on the outputs from the requirements workshops, detailed design of the overall solution, the visual designs, and the functional specifications of the objects to be delivered for each sprint are created. The following are the key outcomes of this phase.

- Create unified function specification documents (FSD) or user requirement documents detailing every aspect of the technical solution.
- Functional specifications need to be signed off by the customer before any technical development can begin.

5.1.2 Build & Unit Testing

A major component of each sprint is the Build Phase where the implementation and coding per the Functional Specification Document of the scope is executed. Build phase involves detailed engagement by the Project manager, Development/configuration team, Technical Lead and Test Lead. Activities include:

- Detailed solution design (Technical Specification)
- Unit Testing
- Code review
- Release to SIT

5.1.3 System Integration Testing (SIT) and User Acceptance Testing (UAT)

Exalogic Consultingteam will be responsible for handling SIT phase. We will ensure readiness by moving the technical objects to Quality environment, perform connectivity test with Source and Target System. As a pre-requisite to perform end-to-end SIT, it is important to have the readiness from all the stakeholders (Source and Target Systems) involved.

For User Acceptance Testing (UAT), business users/functional team from Customer will be responsible for the Test Planning & Test Execution activities. Exalogic Consultingteam will collaborate in this phase and will be responsible for providing bug fixes (if any)

5.1.4 Cutover and Go-Live

This phase would be executed as a part of the cutover plan. Some key considerations for this phase are as below.

- All technical objects which have been UAT passed, would be moved to the production box.
- All technical configurations would also be moved to the same environment.
- A sanity test would be run by the Exalogic Consultingdevelopment team to ensure a smooth Go-Live.

5.1.5 Hyper Care [Support & Stabilization Phase]

This phase would be used achieve stability in business usage and operations. Post hyper care, support would be provided by support organization.

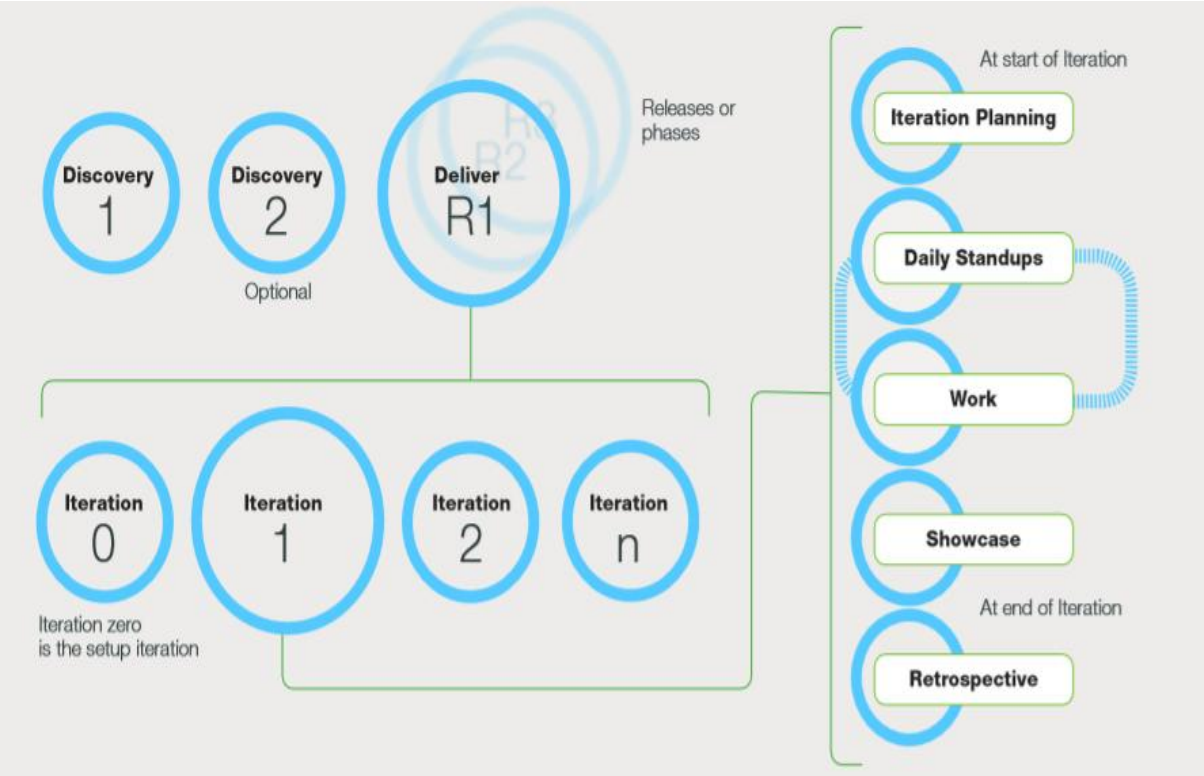
- Hypercare would be provided for a period of 1 week post go-live
- The development team will be resolving any bugs/issues reported by the users
- Transition activities to the support services team will end with the end of Hyper care

5.2 Release Plan

Exalogic Consultinghas a well-defined release plan forDOH some of the key points for the release are as follows:

- Start with **discovery calls** along with key stakeholders to understand high level scope
- The project scope is described as a **ranked & weighted list of product features (Roadmap) based on business value.**
- **Releases** are carved out & each release consists of several iterations.
- Each iteration will have Standard meetings as follows:-
    - **Sprint Planning**
    - **Daily Stand-up**
    - **Sprint Review**
    - **Sprint Retrospective**
- All lessons learned (Sprint retrospective) are incorporated in sprint planning & executions as a **Continuous Improvement (CI).**

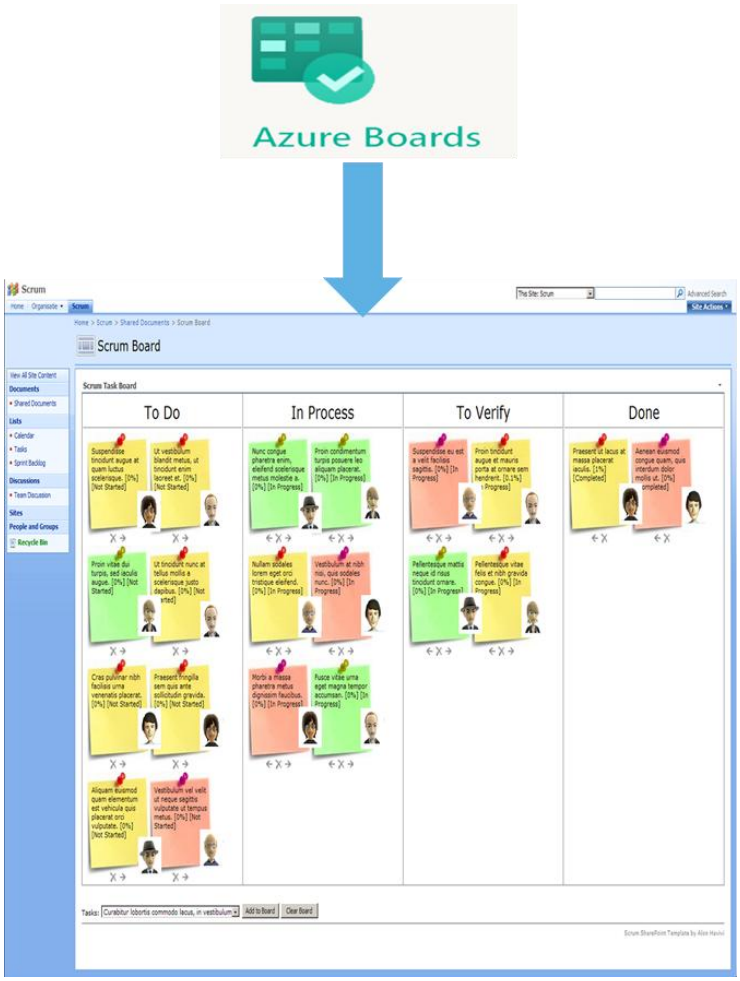
Following diagram depicts the release plan for the project:



5.3 Agile project Governance

1. As part of project preparation, Exalogic Consulting and DOH to jointly identify key stakeholders for BRD & UAT sign-off and a Client Product Owner.
2. All Stakeholders must be equally committed for timely resolution of impediments & overall project success.
3. Use SAP Dashboard (ADO) for better governance. It has the following advantages:

- Effective Sprint Planning -Every sprint team pulls the items from the Project/Product backlog & commits to it based on feasibility & capacity. These items are created as tasks/PBIs on dashboard which gives better visibility & transparency to all.
- Clear Sprint Goal - A clear sprint goal is defined by Product owner with mutual consent from all the team members against which team will be measured. This leaves no room for assumption and avoid surprises on outcomes towards the sprint end.
- Non-Ambiguous Acceptance Criteria - A clear & jointly agreed acceptance criteria for each backlog items are defined during sprint planning against which outcomes are measured.
- UAT Sign-off in ADO tool- Scrum Team demos deliverables at the end of each sprint to all identified key stakeholders and request for their sign-off in ADO tool for better tracking.
- Descoping of a PBI - If team is unable to deliver a particular PBI due to dependencies not being met then such PBIs can be de-committed from Sprint (mutual consent) & can be included again once the dependencies are sorted.



4. **Mid-Sprint Review** – Ensures that Application development is in line with requirements. Deviations (if any) can be corrected early on based on feedback.

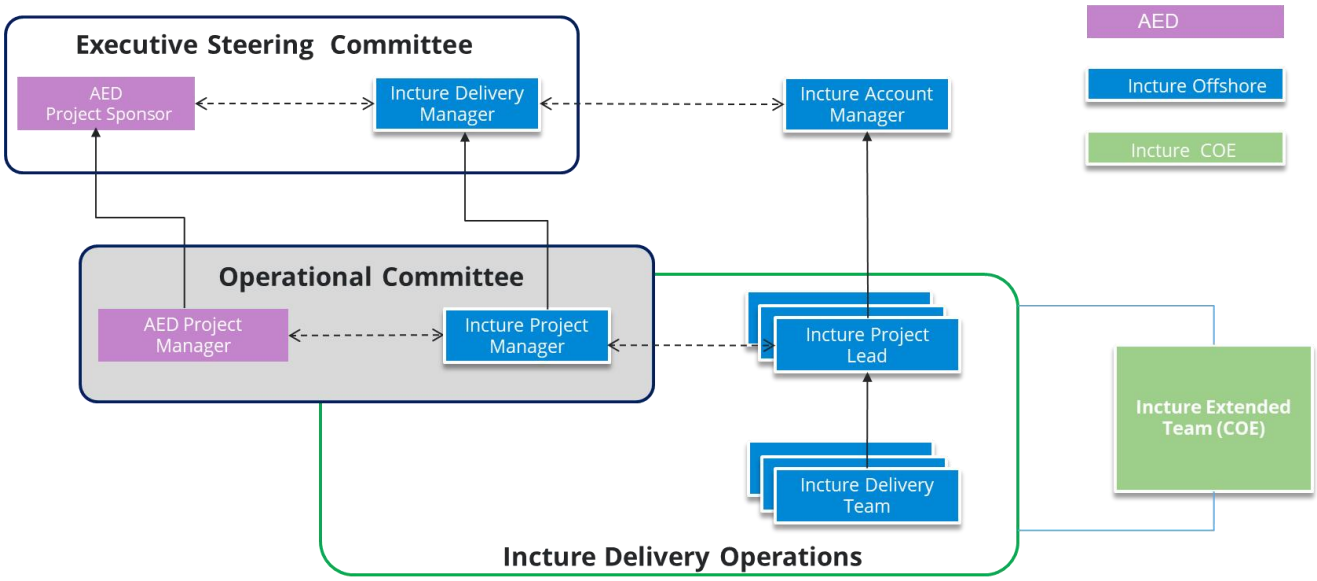
Some of the tools that would be used to track project status are as follows.

- **Product Backlog**: Evolving prioritized list of requirements or features.
- **Release Backlog**: Subset of product requirements that will be delivered in each release.
- **Sprint Backlog**: Subset of the highest priority work items taken from the product backlog that the team selects and commits to delivering during a given sprint.
- The **Burn-down chart**: Based on the daily view of the sprint, this chart expresses the work left vs. time left.
- The **Burn-up chart**: Based on the daily view of the sprint backlog, this chart highlights the cumulative customer value (story points) being accrued over the duration of a sprint.
- **The Impediment Log**: A variant of the risks and issues tracker

6. Team structure and Governance

- Exalogic Consultingwill use a combination of a **Core & a Flex team** for this project.
  - **Core team – Key resources and will be part of each sprint**
  - **Flex Team – Can be on-boarded need based**

Exalogic Consultingsuggestion is a 2-tier approach for governance of this engagement for building a long-term relationship. The governance forum is represented pictorially below:



The purpose of having the Exalogic Consultingdefined Governance for the Engagement is to.

1. **Establish and maintain** the formal and informal processes for managing the relationship betweenDOH and Exalogic Consultingincluding the outputs from other Schedules to this Agreement.
   - The key stake holders in the delivery team would be mapped to theDOH project team members.
   - A RACI would cover all the roles deployed and their involvement in the project delivery cycle, so everyone is clear towards their responsibilities and deliverables.
   - Exalogic ConsultingPM would be responsible for setting up touch points at various levels, so all the involved parties are up to speed with the progress of events relevant to them.
   - Weekly reports would be published to give a written account of the project progress.
   - Pre-scheduled meetings would be called to discuss outstanding issues and risks of different priorities, which may have an impact of cost, quality or timelines and mitigation/contingency plans would be discussed and put into action.

- Regular reviews would be conducted by the Quality Assurance Teams to measure the progress and the quality aspect with the pace of the project. Status of such reports would also be published toDOH PM on a regular basis.

2. Set out the procedure for escalating disagreements
    - **RACI matrix** for different roles deployed in the teams will highlight the escalation matrix as well.
    - **Various escalation points** and the delays (number of days) post which they should be reached out to, will be well defined and agreed upon between both PMs.
    - **Steering committee meetings** would be setup between the leadership teams on both sides to sync up at a program level to make sure transparency is maintained at the highest levels, all the parties are aware of the progress of work. They are cognizant of the risks if any and understand how the risks are planned to be mitigated/contingency plans in place in case risks are unavoidable. Any budgetary changes will also be discussed in these calls.
3. Progress would be measured based on well-defined deliverables and outcomes. They in turn would also be a part of exit criteria of all the phases and sign off from the appropriate parties will determine the closure of every phase.
4. Some of the phases will offer go-no decisions which will decide if the project is ready to move ahead. If not, the respective teams will make sure the exit criteria are met before a call can be taken.
5. Defect cycles would be made completely transparent to ensure a complete visibility of quality of deliverables and the exact status of exit criteria, so an informed decision can be taken.
6. We believe success of this engagement will be built on a foundation of strong communication and well-defined responsibilities. A formalized communication plan and cadence with well-identified target audience enables a better appreciation and measurement of progress, control, and allows for mitigating problematic situations early and before they have detrimental impact.

Described below is the proposed cadence of reviews:

Committee	AED Members	Exalogic ConsultingMember	Responsibilities	Meeting Schedule
Executive Steering Committee	Program Sponsor,DOH	Delivery Manager, Account Manager	• Review monthly performance, authorize work orders • Overall contract administration and ensuring terms of service are adhered to	Monthly

Committee	AED Members	Exalogic ConsultingMember	Responsibilities	Meeting Schedule
			• Managing escalations and facilitating decision making to resolve issues • Resolve issues and information requests that need interaction and collaboration from other 3rd party providers	
Project Mgmt. Committee	Project Manager	Project Manager, Technical Lead	• Review of work, issues, attempt resolution and if necessary, escalate to the Delivery Manager • Assist & facilitate is providing clarifications and research to issues • Summarize performance and report out to the PM at defined frequency. • Review and recommend work requests to the PM.	Weekly

6.1 Project Team Structure

We believe success of this engagement will be built on a foundation of strong communication and well-defined responsibilities. A formalized communication plan and cadence with well-identified target audience enables a better appreciation and measurement of progress, control, and allows for mitigating problematic situations early and before they have detrimental impact.

The project team* would be comprised of the following members with specific skillsets to successfully complete the project.

Role	Technology
Project Manager	Delivery
Architect	Data (SAP)
Lead	Data (SAP)
Senior Consultant	Data Engineer, Data Modeller, Basis
Consultant	Data Engineer

6.2 Escalation Management

ForExalogic		For Customer	
Issue Unresolved for	**Escalation To**	**Issue unresolved for**	**Escalated To**
> 2 days	Project Manager	> 4 days	Process Owner
> 4 days	Delivery Manager	> 8 days	Program Sponsor

6.3 Deliverables & RACI matrix

#	Project Phase	Exit Criteria	Deliverables	Incture	Customer
0	Sprint 0		• Kick-off, workshop materials • Setup of scrum teams • Setup infra and test environment	R	C
1	Program backlog creation and grooming	• Signed-off User story document	• Setup a Joint Application Design workshop – A design thinking workshop to provide a human centered approach to innovation • User stories to be prepared • Dependencies between user stories to be mapped • Visual design document to be prepared and mapped to the user stories. • Behavior driven development requires test cases to be prepared ahead of development. BDD test cases to be prepared	R	R,C
2	Design, Development and Testing	• Signed-off story points • BDD test cases are executed.	• Technical Specifications • Configured and Tested user stories	R	I,C

		• Reviewed and signed off by product owner • Release as input to hardening sprint	• BDD executed for user stories of sprint. • Demo of user stories in the sprint to business team.		
3	Hardening sprint for Increments	• Signed-off user stories for input sprints • Release to preproduction environment for User Acceptance testing	• Demo of signed off user stories to product owner and customer.	R	I
4	User Acceptance Testing (UAT)	• Go Decision by Steering Committee	• UAT results • UAT Defect Log • Finalized Cutover/Release Management plan	C	R
5	Cutover and Go-Live	• All technical objects moved to production system with the corresponding technical configurations	• Cutover plan • System Go-Live	R	R,I,C
6	Training & Knowledge Transfer	• End user training • Knowledge transfer to customer IT team	• Documentation as appropriate.	R	I,C
7	Support & Stabilization Phase	• Zero open Severity 1 or 2 defects	• Transition of support from Exalogic Consultingdelivery team to theDOH's support team.	R	I,C

6.4 Change Management Approach

A Change Control Board (CCB) will be constituted comprising members fromDOH andExalogic. All change requests will be evaluated and approved prior to work being undertaken.

6.5 Risk Assessment and Mitigation Plans

Risks	Mitigation
Availability of Pre-requisites	• Post SoW sign-off, Exalogic ConsultingandDOH teams to work on securing the pre-requisites prior to the kickoff of the project.
Non-availability of Infrastructure as per schedule	• Early planning and execution for timely sourcing of all required hardware, devices, and necessary licenses
Non availability of Key personnel from Customer	• Clear identification of Process Owner for each topic / area and Committed capacity of their bandwidth • Process Owners should be empowered to take key decisions on processes and reporting for the whole Group.
Lack of comprehensive documentation on existing functionalities to be carried over	• Customer team to help Exalogic Consultingwith complete understanding of these functionalities through Workshops / meetings / Documentation
Inability / Delay to define 'To-Be' processes	• Exalogic Consultingto propose Standard Best Practice solutions wherever possible. • In case best practices are not available, Exalogic Consultingwill propose possible solutions
High requirement of customization	• Customer Management should enforce adoption of Standard Processes to the extent possible • Greater Involvement of Customer management on critical topics to bring faster decision and timely closure of the project
Scope Creep resulting in project delays	• Any deviation from agreed scope is to be handled as Change Requests with a clear evaluation of the criticality of the requirement
Project delay due to product issue	• Customer will coordinate with OEM for fixing issues related to product