**AI-Enabled Observability for Mainframe Systems**

Name:

Student ID:

Subject:

Submission Date:

**Acknowledgement**

First of all, I want to give my deepest, thank you to Ms. Ruth Bonser, the mainframe systems expert who worked closely with me from the interview sessions. It has been immensely helpful to write this document around her clear articulation of the project’s challenges and opportunities. I would like to take the opportunity to sincerely thank her for her contribution, which has been vital not only to the accuracy but also to the relevance of the project artefacts.

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# Introduction

This document describes the key project management artefacts we must follow to execute the AI-enabled observability project in the banking mainframe operations critical system. My major objective is to incorporate AI into current log analysis processes and automate the creation of real-time insights to improve system observability while easing the load of the manual workload currently being accomplished by specialized experts.

We go ahead and present the necessary elements of the project including project scope, key deliverables, the structure of the team, the strategies for stakeholders’ engagement, risks we've identified, and how it's going to be mitigated. All artefacts were created based on industry standards however, they aimed at the balance of technical and operational demands of the bank with the stakeholder's needs.

The resulting program artefacts, developed in conjunction with Ms. Ruth Bonser and other key project stakeholders, offer a complete project scope. An important innovation is using AI in this context, which will allow non-expert teams to make data-driven decisions and velocity incident management.

# Vision Statement: AI-Enabled Observability for Mainframe Systems

The bank's AI-enabled observability project seeks to transform the bank's critical mainframe systems' monitoring and management using artificial intelligence integration into its existing log analysis process. With this project, we will power technical and non-technical teams across the organization and help free up technical teams from relying fully on expert specialists to pick out critical insights in the complex system logs, leading to faster, more accurate resolution of issues.

The project seeks to

* Provides real-time AI-driven monitoring for system performance and enhances operational efficiency.
* Democratize access to log data to enable non-expert mainframe knowledge, so risk and compliance teams can interpret relevant insights.
* This improves decision-making and incident management by decreasing false alters and providing actionable, useful data across the whole organization.
* This is support for the bank's goal of system reliability and uptime improvement leading to the anticipation of issues before emergence and thereby making a better customer experience.

By using similar AI to analyse complex data sets and proactively recognize trends, this project will allow the system to prevent potential system disruptive incidents, optimize resource use and reduce the manual effort from experts, particularly at crucial off-hour incidents. Integrating AI into bank’s observability pipeline is one of the bank’s strategic focus on technology driven innovation and continued improvement.

# Project Charter: AI-Enabled Observability for Mainframe Systems

## Project Overview

The project is an AI powered observability project, which helps the bank keep an eye on its most critical mainframe systems. In this project artificial intelligence will be integrated in the log analysis processes to provide real time actionable insights for the technical as well non-technical teams separately on log analysis. While we hope to decrease reliance on specialist experts, speed detection and response to incidents, and, ultimately, increase system reliability, we want to improve the user experience.

## 2.2 Project Purpose and Vision

The objective of this project is to apply the use of AI to make observations of traditional bank mainframe systems more observable. This new AI-based solution will be able to map out a sense of complex system logs, deep insights about a potential issue, and make quicker judgments in system events. What we intend to do is enable other teams, like compliance and risk, with greater ease and accuracy to interpret the system data using the system data and a more efficient, responsive system management process.

## 2.3 Project Scope

### 2.3.1 In-Scope

* + to replace existing manual and Splunk-based observability with an AI-enabled backend.
  + Testing AI insights driven on all mainframe logs (operating system, transaction, security & database logs).
  + Assuring a level of security and privacy compliance and involving key team members in the process through expert validation.
  + Training stakeholders on how to read AI-generated insights led system.

### Out-of-Scope

* + Renting an AI to a non-mainframe system.
  + Nothing that is related to payment processing functionalities (or any other direct customer-facing feature).

## Key Deliverables

### 2.4.1 Proof of Concept (PoC)

Demonstrate that by December 2024, the AI-driven system can consistently analyse mainframe logs and provide valuable insights out of it.

### Full AI Integration

Complete deployment of the AI system for real-time monitoring with handover to Business as Usual (BAU) teams by June 2025.

### Training and Documentation

Tools and processes to provide easy-to-follow training materials for technical and non-technical teams that they can use to understand and act on AI-generated insights.

## 2.5 Success Criteria

* A Proof-of-Concept completion by the end of 2024 demonstrates that AI can extract valuable actionable insights from mainframe logs.
* In terms of a Go/No-Go decision by December 2024, depending on whether the AI enhances system observability and lowers the need for expert intervention.
* To be fully deployed and bring about operational handover by June 2025.
* Increased operational efficiency, reduced false positive alerts, and more knowledgeable decisions made by less expert users.

## 2.6 Project Timeline

* **Start Date**

October 1, 2024 (Proof of Concept begins).

* **Key Milestone**

Go/No-Go decision by December 2024.

* **Final Implementation**

Full AI deployment and handover to BAU teams by June 2025.

## 2.7 Stakeholders

* **Project Sponsor**

Ruth, Manager of the Mainframe Team.

* **Project Manager**

Yet to be assigned.

* **Key Stakeholders**
  + Ruth’s Mainframe team (approximately 100 people).
  + Risk and Compliance departments (non-technical users).
  + IBM (product vendor and AI technology support).
  + Operations centre and executive management (users of the insights generated by the AI system).

## 2.8 Risks

### 2.8.1 AI Model Accuracy

* The danger AI may not detect hidden anomalies or give wrong insights.

### 2.8.2 Limited Expert Availability

* Difficulty in getting sufficient time from mainframe experts for AI validation, especially due to their high demand.

### 2.8.3 Data Privacy Concerns

* One of the things we want is to make sure that you don’t accidentally feed your sensitive information into the logs, and have the AI expose that information; so that is part of the task we have...

### 2.8.4 Potential Technology Obsolescence

* Technological debt in the shape of the risk of using AI technology may soon become obsolete or unsupported, meaning the technology is dated.

## 2.9 Budget Estimate

* Approximately $60,000, over three months, will be needed for the Proof-of-Concept phase to implement the AI system and validate then.
* It will allocate additional funding to help bring on board the full implementation and training phases (but the exact amount will depend on PoC results).

## 2.10 Approval

* **Approved By**

Mainframe Team Leadership (Sponsor): IBM Vendor, Ruth Bonser (Executive Management).

# Schedule, Deliverables, and Life Cycle

## 3.1 Project Life Cycle

The project would follow hybrid project management, i.e. traditional predictive project management and iterative testing for AI validation. On one hand, such a hybrid approach enables clean planning and execution guided by milestones, while giving the flexibility of feedback iterations in the AI development and test phases.

* **Predictive Elements**

Particularly for the initial stages (Proof of Concept) through to the full AI integration, key deliverables and timelines as well as roles will be predefined.

* **Iterative Elements**

The Proof-of-Concept stage will enable an iterative AI model testing to allow the model to be continuously refined based on expert feedback following the Proof-of-Concept stage. This iterative phase makes the AI system ready for the world using real demands with the possibility of adjustment before full implementation.

First, AI will be validated for its capability to improve observability on the mainframe system in the PoC phase. On successful PoC, the project moves into the full implementation stage, where the AI system is deployed for real-time log analysis and monitoring.

## 3.2 Schedule

The following is the project schedule, broken down into major milestones and phases.

|  |  |  |  |
| --- | --- | --- | --- |
| Phase | Start Date | End Date | Key Activities |
| Proof of Concept (PoC) | October 1, 2024 | December 31, 2024 | - Mainframe log analysis using AI model setup.  - How well does AI process and provide actionable insights from system logs?  - Iterative feedback, and expert validation. |
| Go/No-Go Decision | December 31, 2024 | December 31, 2024 | - Action taken based on PoC results, deciding if the AI observability system should be moved on to full implementation. |
| Full Implementation | January 1, 2025 | June 30, 2025 | - The integration of an AI-driven observability system into the live environment.  - Preparation of training materials.  - Testing of the entire system and training for the user. |
| Handover to BAU Teams | June 30, 2025 | June 30, 2025 | - Handover of AI system management to Business as Usual (BAU) teams.  - Completion of user training and documentation complete. |

## 3.3 Deliverables

Key Deliverables based on the life cycle phases of the project are

### 3.3.1 Proof of Concept (PoC) Results

**Objective:** Check if the AI can process and interpret mainframe logs and get actionable insights for improving observability.

**Details:** PoC will focus on integrating AI into the existing system and automating log analysis with measures in alert accuracy and reduction of false positives.

**Timeline:** October 2024 – December 2024.

**Outcome**: The system's ability to detect problems and relieve mainframe experts of some of their work is assessed in a formal report.

### Go/No-Go Decision

**Objective**: Where AI systems decide whether or not to implement completely.

**Details**: PoC success will be the basis of this, i.e., based on technical performance and user feedback and the cost-benefit analysis.

**Timeline**: December 31, 2024.

**Outcome**: The decision documentation for executive stakeholders, presenting key findings of the PoC and recommending whether to do or not to do.

### AI System Full Integration

**Objective**: Fully integrate the mainframe systems with the AI-driven observability solution.

**Details**: Once the Go/No-Go decision lands, AI will be fully embedded into monitoring real-time system logs and notify technical and nontechnical teams with alerts and insights.

**Timeline**: January 2025 – June 2025.

**Outcome**: An end-to-end, fully functioning AI-enabled ASR (active service realization) observability platform with real-time data processing, that can reduce the level of manual workload and improve incident response times.

### 3.3.4 Training Materials and Documentation

**Objective**: Create comprehensive training materials (both technical and non-technical) to use the new AI system according to its design.

**Details**: It includes manuals, user guides, and live training to facilitate teams can understand and take action on AI-generated insights, without expert help.

**Timeline**: May 2025 – June 2025.

**Outcome**: Training delivery, supply of training session manuals, and provision of support material for all stakeholders necessary for a smooth handover to BAU teams.

### 3.3.5 Handover to BAU Teams:

**Objective**: Move the management of the AI observability system from the project team to the BAU teams officially.

**Details**: Make sure that BAU teams can quickly and easily maintain, monitor and troubleshoot the AI system itself.

**Timeline**: June 30, 2025.

**Outcome**: Completed knowledge transfer to BAU teams, handover documentation and full BAU team ownership of the system.

## 3.4 Explanation

As this hybrid life cycle can comfortably fit structured planning and scheduling for the overall project while allowing flexibility for the AI integration, this life cycle is best suited to this project. As tends to be the case with AI models, they need to be iteratively tested and validated, so we use agile principles in the PoC phase where changes need to be made often based on feedback. Using milestones like the Go/No-Go decision makes sure that the project can pivot on the learning from the PoC or take aim at something new if a given focus isn't working before embarking on full-scale implementation.

All stakeholders (both technical and non), have clear priorities regarding what the deliverables will achieve at any given stage, and when.

# Scope of Work

## 4.1 Project Overview

The main goal of this project is to intelligently implement artificial intelligence (AI) into the bank's mainframe log observability system. The project will leverage the power of AI to help the bank monitor undesirable mainframe systems more efficiently, reduce the proliferation of manual work, and allow non-specialists to more easily understand system logs. The project includes PoC, AI implementation, training and handover to Business as Usual (BAU) teams.

## 4.2 Key Objectives

**` AI Integration**: Achieve AI-driven analysis of mainframe logs, replacing existing manual and Splunk-based approaches.

**Testing and Validation**: Proof of concept to see if AI can give accurate and actionable insight.

**Training and Documentation**: Create comprehensive training for both technical and non-technical users to interpret AI-driven insights.

**Operational Handover**: By 2025 hand over the AI observability system to BAU teams.

## 4.3 In-Scope

* Integrating AI along with log observability into the bank’s existing mainframe.
* Using testing to evaluate the degree to which AI enables false positives reduction and insight into system events.
* Making sure that the AI-driven insights are accessible to both mainframe technical (experts) & non-mainframe technical (risk, compliance).
* Training users on how to use and interpret the insights yielded by AI, as well as supporting documentation for how specific AI may be used and interpreted.

## 4.4 Out-of-Scope

* Airbus expands AI to systems beyond the mainframe environment.
* Development or integration of such payment processing features.
* Scalability of the AI solution into other departments or use cases beyond observability.

## Priorities

**Improve Observability**: With the help of AI, monitoring of mainframe systems in real-time will be possible, giving you a heads-up on problems before they escalate.

**Reduce Manual Workload**: It seeks to deplete the experts in a mainframe and minimize the need for manual log analysis at the experts’ level.

**Ensure Accurate AI Insights**: Validating the AI's ability to create actionable insights without overwhelming users with false positives, inaccurate alerts, and OKR churn.

**Enable Non-Technical Users**: Ensuring that non-expert teams have the tools and training required to understand system performance data and make an informed decision.

# Team Charter

## 5.1 Team Responsibilities

Integration of AI into the bank’s mainframe systems and the successful completion of the PoC and full implementation will be under the management of the project team. They include building, testing and validating the AI solution, training the user, and documentation. It will also handle communication with the stakeholders and keep the bank's data privacy and security policies.

## 5.2 Team Members

|  |  |  |
| --- | --- | --- |
| Name | Role | Responsibilities |
| John Davis | Project Manager | Responsible for project delivery in terms of schedules, risks and then stakeholder communication. |
| Sarah Lee | AI Specialist | AI model design and implementation, accuracy of log analysis, iteration management. |
| Ruth Miller | Mainframe Expert/Team Lead | They validate AI results, are an open window into mainframe insights and provide guidance towards technical decisions. |
| Michael Johnson | Technical Writer/Training Lead | Develop training materials and documentation for users. |
| Linda Carter | Risk/Compliance Analyst | Make sure what AI does adheres to the laws of data privacy and regulatory adequacy. |
| IBM AI Expert | Vendor Support (IBM AI Products) | Should help you to configure the AI tool and it should be fit for the project's needs. |

## 5.3 Ways of Working

**Daily Stand-ups**: During the day, daily stand-ups where people check in every 15 minutes and stew up the progress made, block for the day, and then our goal for that day.

**Weekly Review Meetings**: Friday Get Together with key stakeholders (Ruth’s team, IBM) to review progress, challenges and milestones going forward.

**Decision-Making Protocols**: In weekly meetings, we work collaboratively, and they decide on timings and delivery, but the project will make the final decision.

**Communication Tools**: Using Microsoft Teams, the team will communicate and share files in real-time, and make quick decisions, with key things emailed via email.

## 5.4 Team Norms

**Accountability**: Each team member is responsible for his assigned tasks and should inform the team about the progress he has made and the hurdles he met.

**Transparency**: It encourages open and honest communication about delays, risks or uncertainties included because the team is kept aligned.

**Feedback Culture**: During weekly meetings, regular feedback will be given to make sure the AI system evolves along with team expertise and user needs.

# Stakeholder Register

## 6.1 Stakeholder Analysis (RACI Model)

|  |  |  |
| --- | --- | --- |
| Stakeholder | Role | RACI Classification |
| Ruth Bonser | Project Sponsor, Mainframe Expert | Responsible (R), Accountable (A) |
| John Davis | Project Manager | Responsible (R) |
| IBM AI Expert | Vendor AI Support | Consulted (C) |
| Risk/Compliance Teams | Ensure compliance with regulations | Consulted (C), Informed (I) |
| Mainframe Team | The technical team managing observability | Responsible (R), Consulted (C) |
| Operations Center | Monitors system alerts and incidents | Informed (I) |
| Executive Management | Oversees project funding and decision-making | Accountable (A), Informed (I) |

## 6.2 Communication Strategies

* **Weekly Team Meetings**: Key stakeholders such as the project sponsor, project manager, mainframe experts, and AI vendors will meet weekly to review progress and discuss any issues.
* **Monthly Executive Updates**: A monthly email or brief report will be provided to executive management outlining major milestones, risks, and progress, ensuring they are kept in the loop.
* **Ad-hoc Consultations**: The project manager will reach out to Risk/Compliance and IBM support as needed during critical stages of the PoC and AI integration.

# Risk Register

## 7.2 Risks Identified

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Risk | Impact | Likelihood | Risk Level | Description |
| AI Producing False Positives | High | Medium | High | The alerts generated by AI can contain noise and change response times. |
| Limited Expert Availability | Medium | High | High | The workload on mainframe experts may not leave them with sufficient time to validate the results of AI. |
| Data Privacy and Security Compliance | High | Medium | High | For example, AI may wind up accidentally processing sensitive data and you’ll have to strictly adhere to data privacy laws. |
| Technological Obsolescence | Medium | Low | Medium | At risk of your AI technology becoming obsolete, and thus needing maintenance or replacement costs. |
| Delays in Training Delivery | Medium | Medium | Medium | The handover to BAU teams will be delayed if training materials are not ready when they are required. |

## 7.2 Risk Mitigation Strategies

|  |  |
| --- | --- |
| Risk | Mitigation Strategy |
| AI Producing False Positives | Continue to involve mainframe experts to validate continuously AI outputs and fine-tune the model throughout the PoC. |
| Limited Expert Availability | In planning, make sure to get expert time in the project schedule and have extra resources for validation if needed. |
| Data Privacy and Security Compliance | So it’s important that when working with AI like ML or deep learning, data masking techniques must be implemented strictly. |
| Technological Obsolescence | Make sure to review AI technology trends regularly, and just as important to review that the AI product chosen (IBM AIOps) is current and supported. |
| Delays in Training Delivery | Schedule the training early in the project, and put the training material completion ahead of the full implementation of the system. |

# Conclusion

Banks said the bank mainframe system operations observability project using AI is aiming for relatively significant increases in level. The project can be thought of as automating a difficult log analysis process with AI and reduce manual intervention, enhance operational efficiency, and learn about the system from a technical and a non technical perspective.

The client interviews with Ms. Ruth Bonser in the clear and concise direction have been instrumental in guiding the development of this project. Her technical challenges and operational requirements insight have ensured that the project artefacts including the project charter, risk register, stakeholder register, and team charter have been aligned with those of the bank.

Finally, this project not only solves the near-term operational challenges but also paves the way to go to the next level of innovation in system observability and AI integration within the organization. This project has a solid foundation in place to be successful and help the bank be able to proactively manage its crucial systems and provide for much smoother operation in the coming years.

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# Appendix

## 1 Work Breakdown Structure

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Figure Work Breakdown Structure Completed Diagram

**A black text on a white background

Description automatically generated**

Figure Work Breakdown Structure 1

**A black and white image of a plane

Description automatically generated**

Figure Work Breakdown Structure 2

**A black and white image of a plane

Description automatically generated**

Figure Work Breakdown Structure 3

**A close up of a face

Description automatically generated**

Figure Work Breakdown Structure 4

## 2 Gantt Chart

**A close-up of a grid

Description automatically generated**

Figure Gantt Chart