

GROUP_1

**Presented by SandTech
Group**

Our Team



Percy Mmutle



Ndivhuho



Lesego



Boitumelo



Victoria



Ntsako



Tonia



Aphiwe



Lesego

Content

- 1. Problem**
- 2. Why Solve the Problem**
- 3. Root cause of the problem**
- 4. Current Solutions**
- 5. Proposed Solution**
- 6. Technical Implementation**
- 7. Project Flow**
- 8. Calendar Timeline**
- 9. Project Progress**
- 10. Retrospective**



Lesego

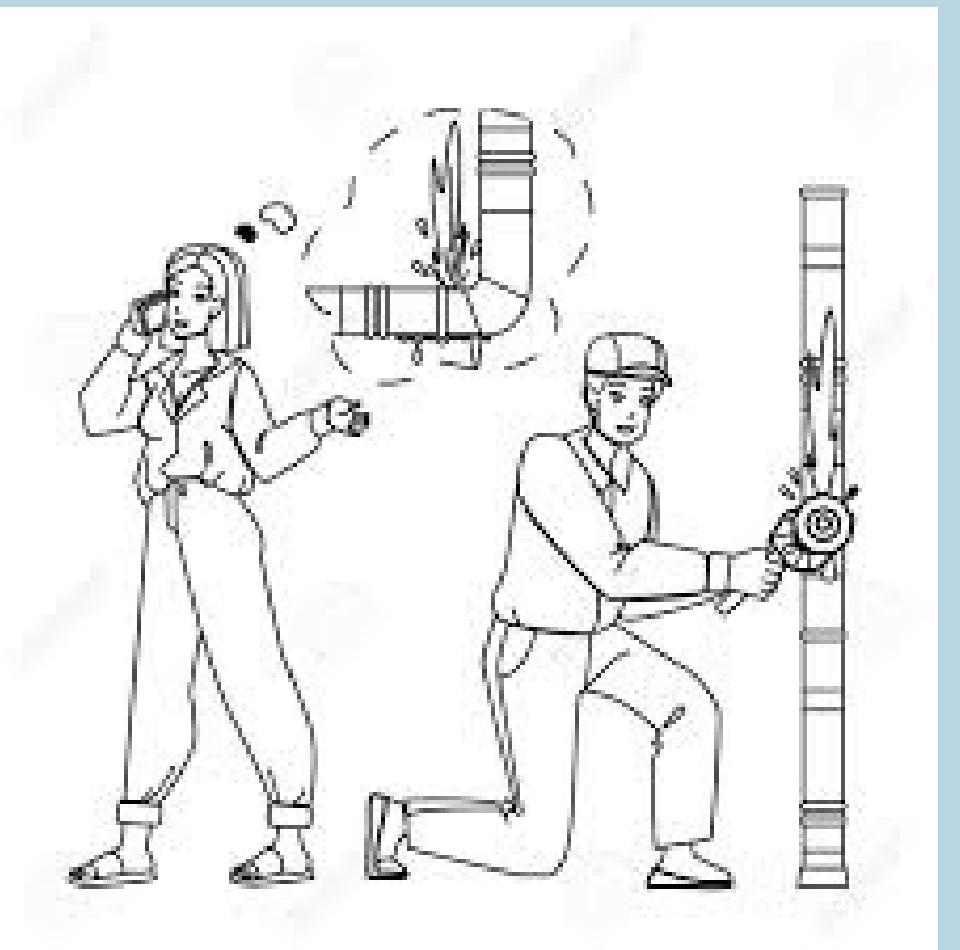
Problem



Locating



**Leaking Water
pipes**



Repair



Boitumelo

Why Solve this problem

Impact



Damaged Infrastructure



Waste of clean water



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Why Solve this problem

Impact



Increased Cost



Clean water contamination



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Root Cause of the Problem

Causes



Cracks on concrete pipes



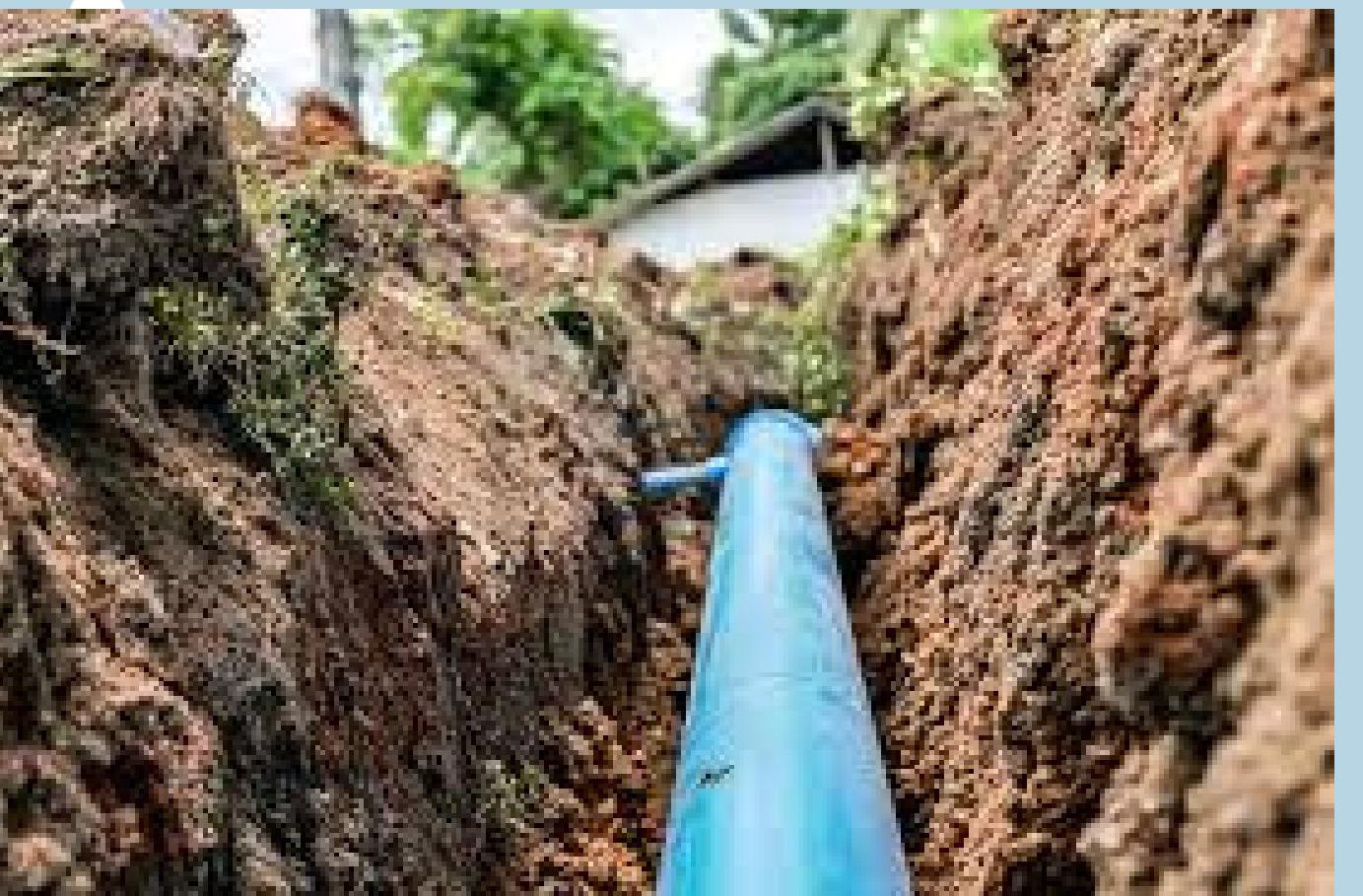
Corrosion on metal pipes



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Root Cause of the Problem

Causes



Ground Conditions



Pressure



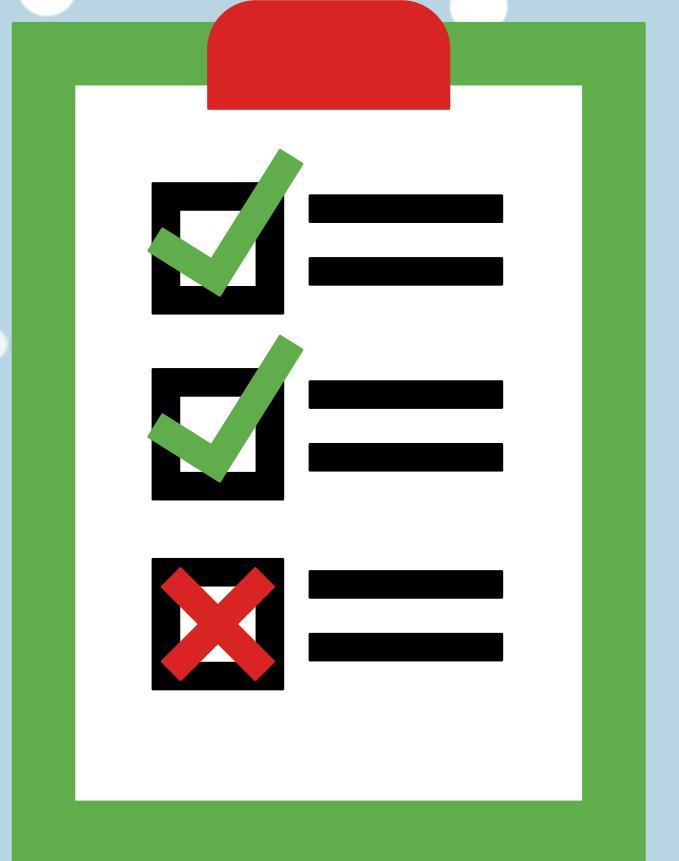
Current approaches with Inherent limitations

Current Solutions

Ntsako



Manual Inspection



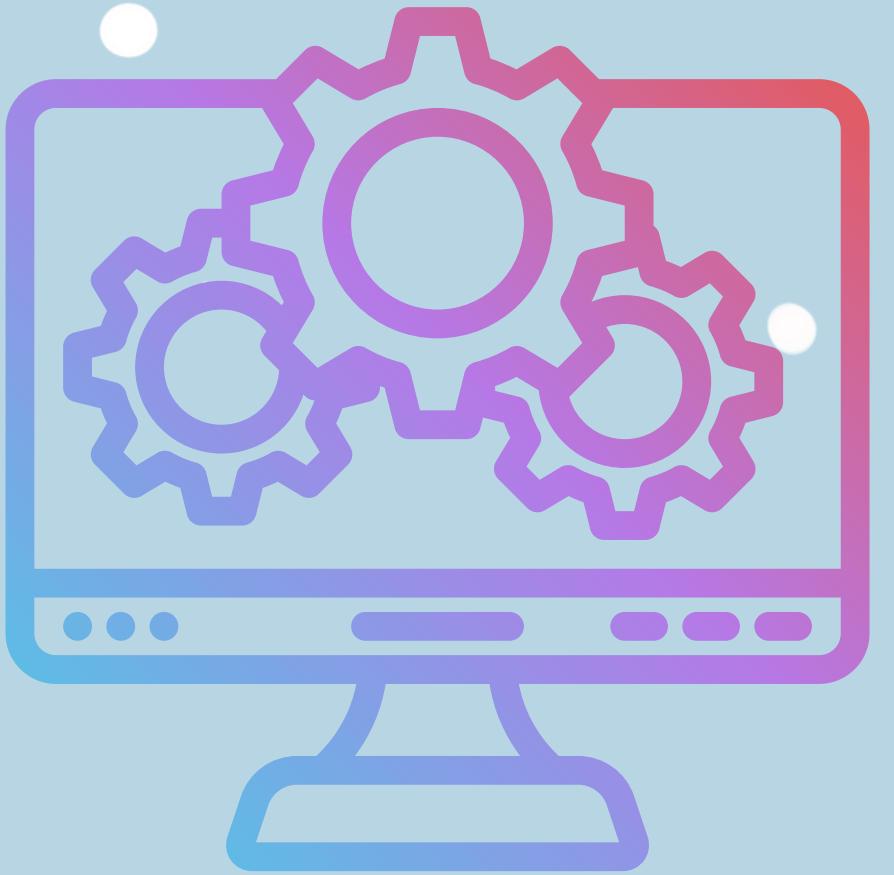
Periodic Assessments



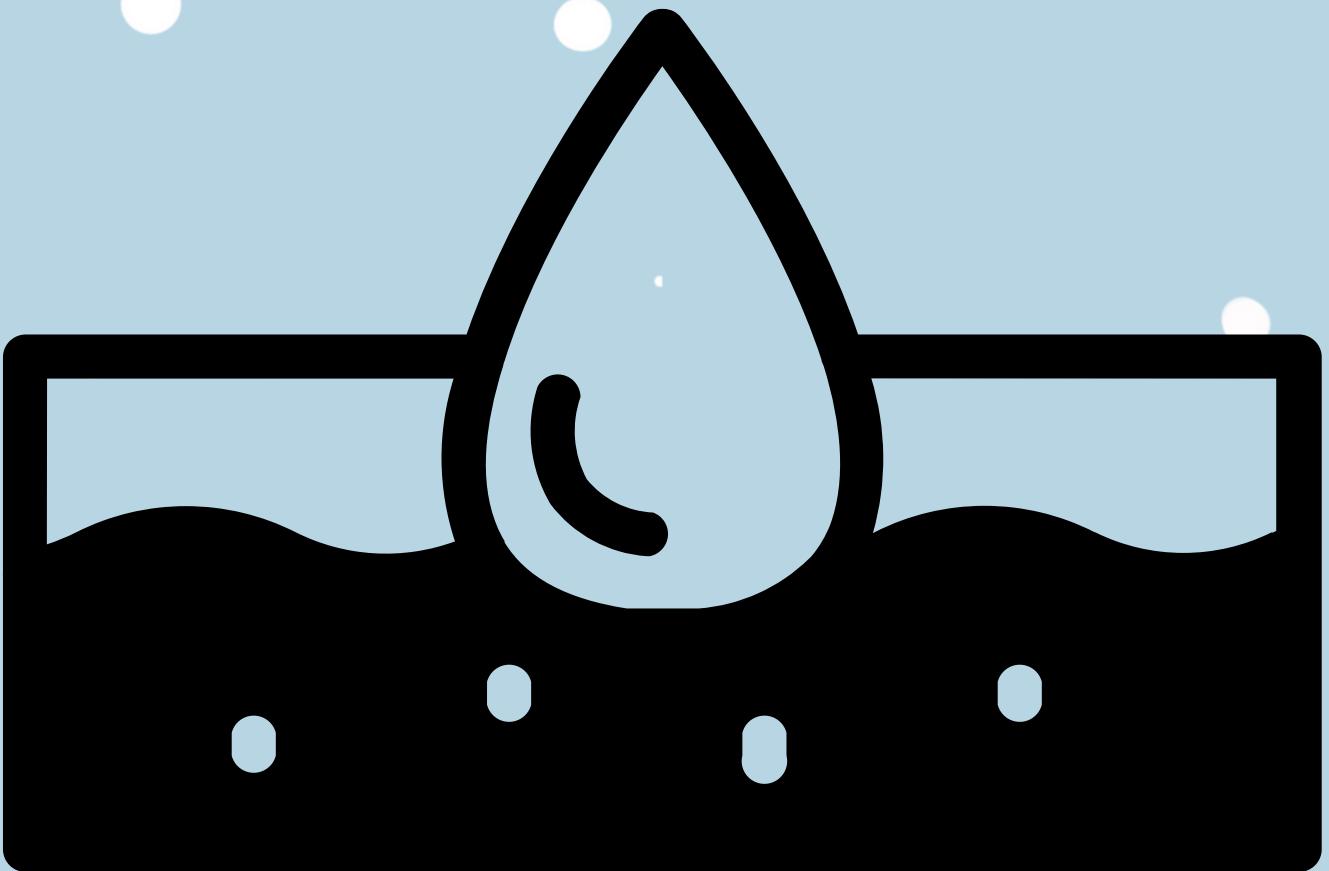
Current approaches with Inherent limitations

Current Solutions

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**Mechanical and Ultrasound-
Based Systems**



Moisture-Sensing Detectors



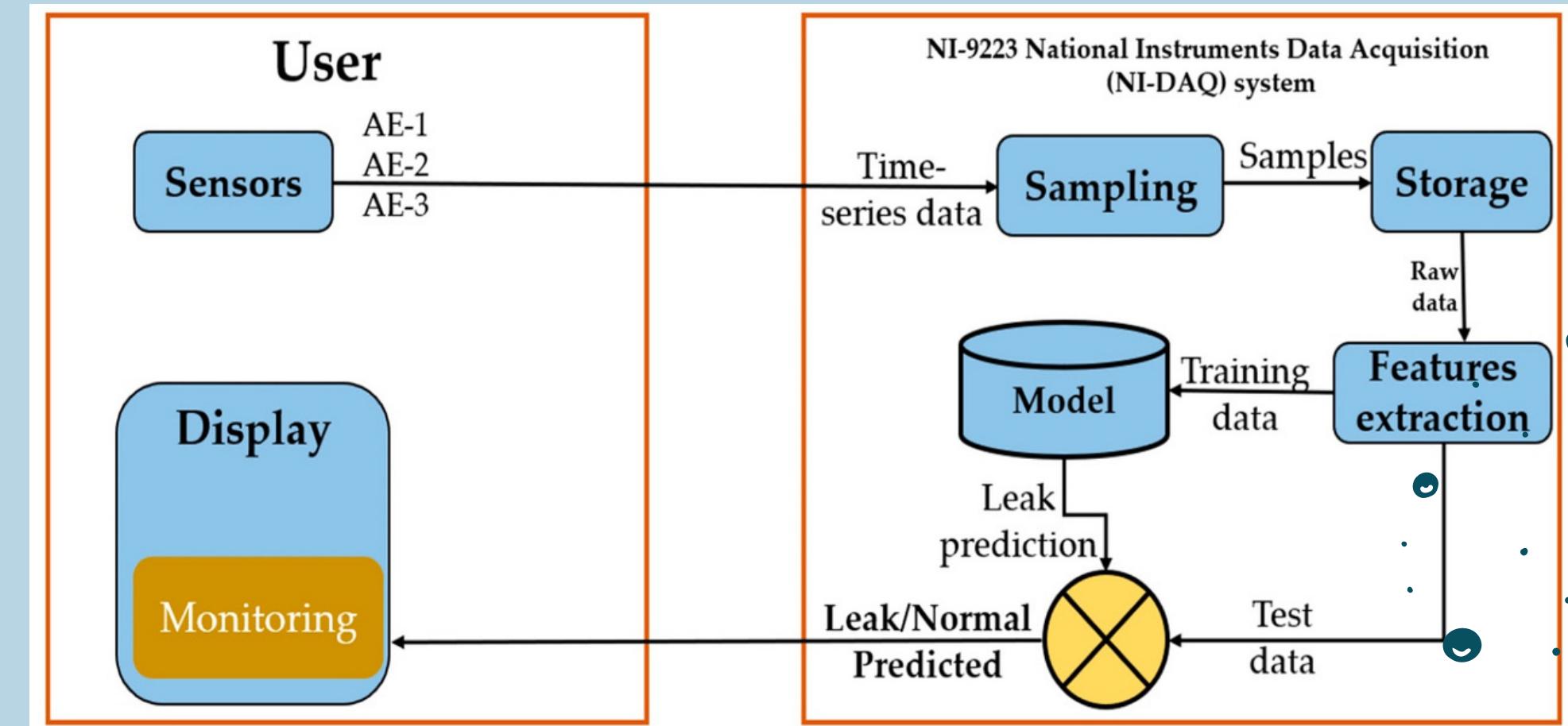
Implemented measures to address the issue at hand

Proposed Solutions

Victoria



Acoustic Leak Detection



Machine Learning Integration



Victoria

Technical Implementation

Deployment of Acoustic Loggers in Water Distribution Networks

Data Collection and Processing: Acoustic Signal Analysis

Machine Learning Model Development: Feature Extraction, Training, and Evaluation



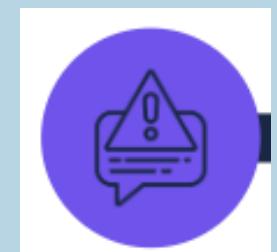
Tonia

Planning

Project Flow

1. Problem Identification

- Project Introduction
- Defining problem statement



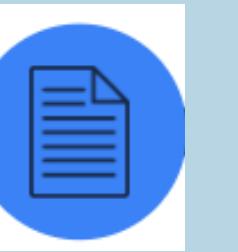
4. EDA

- Loading Data
- Building Dashboards



2. Planning

- Landscape
- Project planning



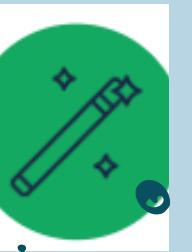
5. Modeling and Eval

- Data Modeling
- Model Evaluation



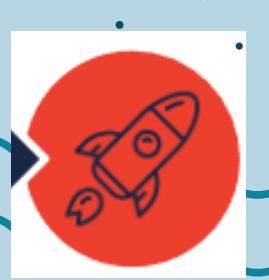
3. Data Cleaning and Processing

- Data Sourcing
- Data Cleaning
- Feature Engineering
- Version Control



6. Deploy and Retrospect

- Retrospective and review
- Solution communication





Tonia

Planning

Calender Timeline

1. Problem Identification

Two weeks

DONE

2. Planning

Two weeks

DONE

3. Data Cleaning and Processing

Two weeks

IN PROGRESS

4. Exploratory Analysis

Two weeks

NOT STARTED

5. Modeling and Evaluation

One week

NOT STARTED

6. Deployment and Retrospective

One week

NOT STARTED



Percy Mmutle

Project Progress

Completed Task



- Files Downloaded
- Audio data
- Meta data



- Data Lake
- Amazon S3 bucket
- Data and Documents Storage

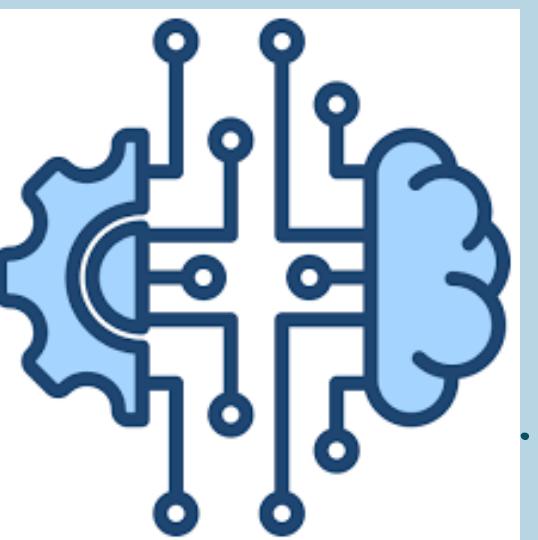




Project Progress

Next Phase

Phase 2



- Cleaning & Processing

- Dashboards

- Modeling

Phase 1



Project Progress

Percy Mmutle

Final Phase



- Launch
 - Test (Recordings)
- 20/05 - 24/05



- Presentation
20/05 - 31/05



Ndivhuho

Retrospective

Team Accomplishments



Strong team work



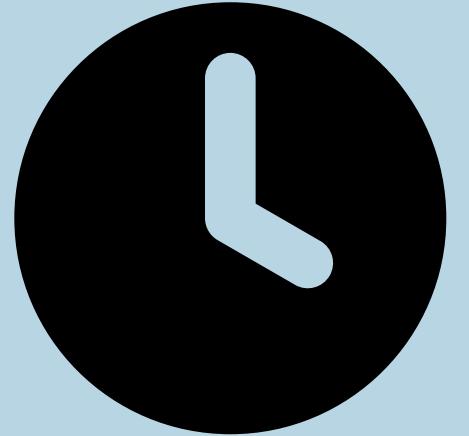
Data extraction



Ndivhuho

Retrospective

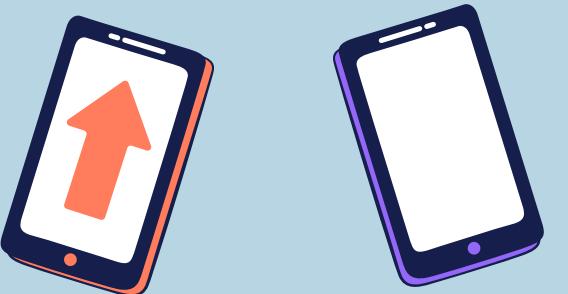
Team Challenges & Project Risks



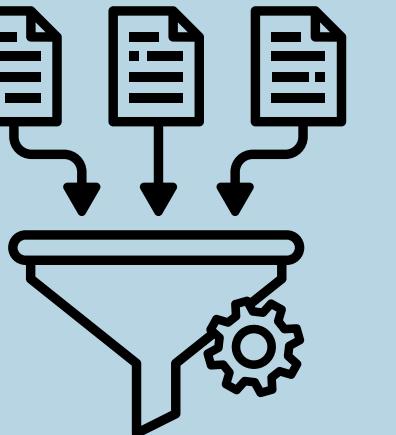
Coordination difficulties



Data quality risks



Data acquisition and
transfer hurdles



Data cleaning challenges

THANK
YOU!



Any Question?