

Application of digital/AI technology for WaCT

Objective

Designing an AI-Powered Waste Image Categorization System



Design & Build

Design, develop, pilot, and deploy an AI-powered image categorization system tailored to the Lesotho context



Accessible & Inclusive

Ensure the system is practical for low-resource settings, accessible to informal waste workers and households with limited digital literacy



WMIS Integration

Build full interoperability with Lesotho's Waste Management Information System (WMIS) for seamless national data flow

Scope

Five integrated workstreams for end-to-end system delivery

1

Needs Assessment & System Design

- Technical needs assessment with Maseru City Council & WMIS team
- Map existing waste categorization frameworks in Lesotho
- User-friendly mobile/web interface in Sesotho & English
- System architecture plan & API specifications for WMIS

2

AI Model Development & Training

- Image recognition model: organic, plastic, metal, hazardous, e-waste
- Training dataset from Lesotho's urban & peri-urban contexts
- Iterative validation with local stakeholders & waste workers
- Optimized for variable quality (low-end phones, poor lighting)

3

System Deployment & WMIS Integration

- Mobile-optimized web app and/or Android app, no high-end hardware
- API-based integration with Lesotho's national WMIS
- End-to-end testing with WMIS technical staff
- Data governance & privacy protocols per UNEP regulations

4

Capacity Building & Training

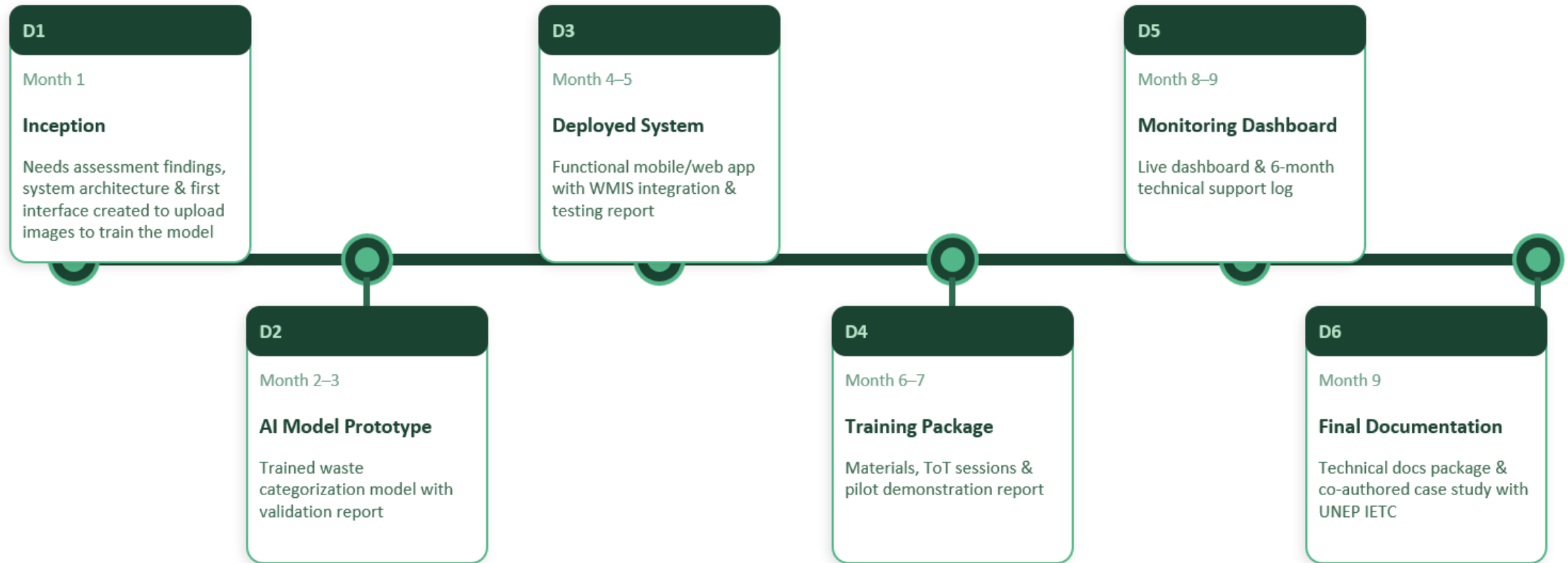
- User manuals, quick-guides & video tutorials in English & Sesotho
- Training-of-trainers for UNEP staff, Maseru Council & waste workers
- At least 2 field pilot demonstrations in Maseru communities

5

Monitoring, Evaluation & Knowledge Transfer

- Dashboard: usage stats, accuracy rates & WMIS submission volumes
- 6-month post-deployment technical support & bug-fixing
- Technical documentation for national maintenance & scale-up
- Co-authored knowledge product / case study with UNEP IETC

Timeline



Thank you!

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