

Modernization of NSO through digitalization

–Maldives experience

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Maldives Statistics Act 2021

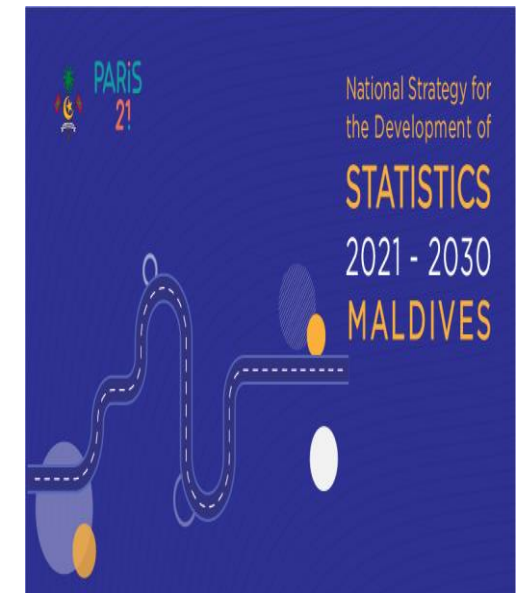
- Maintaining the quality of the information
- 44. (d) The use of new technology and other resources, the use of data collected by universities, private sector and civil society, to strengthen official statistics and the national statistical system, should be in accordance with statistical principles.



<https://statisticsmaldives.gov.mv/nbs/wp-content/uploads/2023/02/MaldivesStatisticsAct-EnglishTranslation.pdf>

NSDS Strategic Objective 2: On Innovation and Modernization

- Results statement 2: With requisite financing and investments, the MSS has an integrated national data system, uses new technologies and a wider range of data sources to close existing data gaps and cater to new and emerging data demands
- Strategic Initiatives:
 - 2-2 Facilitate data integration and automation of data exchange across the different stages of the statistical production process
 - 2-3 Facilitate the application of new technologies and new data sources into mainstream statistical activities
 - 2-3-1 CAPI, CATI and CAWI are utilized in census and surveys



<https://statisticsmaldives.gov.mv/nsds-maldives/>

Use of CAPI,CATI,CAWI for data collection

- Invest in tablets and used CAPI in HIES 2019
- Used CATI and CAWI in rapid assessments during COVID-19 epidemic, when face-to-face survey was not possible
- Invested in more tablets to enable the transition to electronic data collection in census 2022
- Staff capacity developed in MBS to develop questionnaires using survey solutions software
- Establish mechanisms for hosting and secure data storage platforms during major statistical operations such as census and surveys
- Testing use of CAPI for CPI data collection

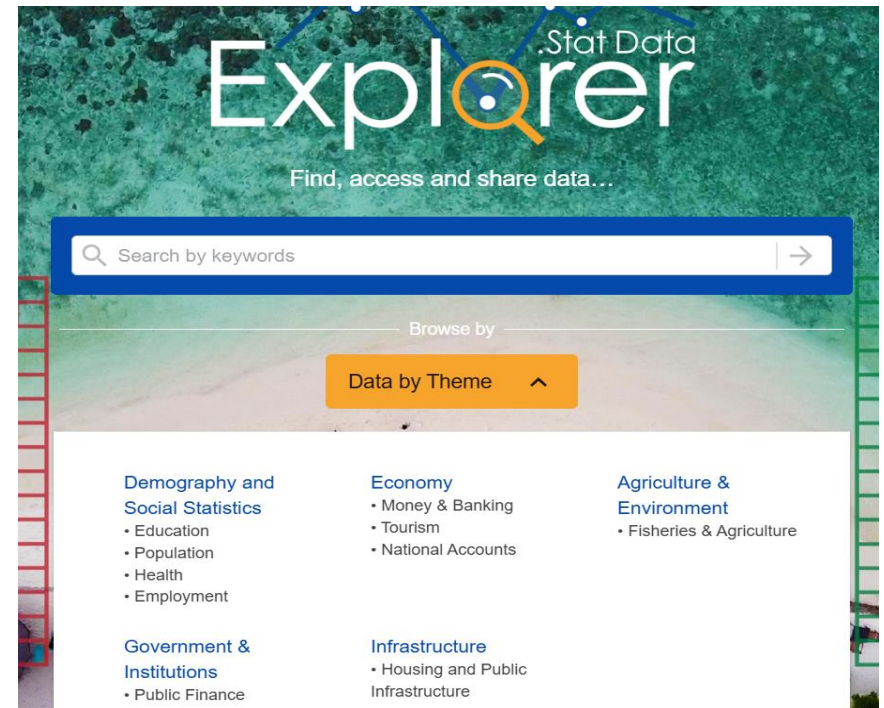
NSDS Strategic Objective 4: On Dissemination and Use

- Results statement 4: High quality, disaggregated, gender-responsive and inclusive data are available and easily accessible through integrated national platforms and open data formats.
- Strategic Initiative 4-3 : Invest in technological infrastructure and develop innovative strategies to ensure proper and better dissemination and use of official statistics
 - 4-3-2 e-Platforms using latest technology for data dissemination of official statistics are available with content that effectively communicate statistics, facilitate access to statistical products and support data analysis and user-generated outputs

Data Dissemination System: modernization

- MBS has established a data dissemination system using Stat-Suite which is SDMX driven and now national statistical yearbook is being published on MBS website in this platform.
- Stat Suite uses international standards for official statistics, specifically the SDMX format, ensuring consistency, comparability and standardized metadata.

<https://data.statisticsmaldives.gov.mv/>



Data infrastructure

- Strengthen MBS systems to allow the secure data sharing and data management within the related admin data holders
- Establish secure data protocols/infrastructures within MBS
- Local consult supported MBS advance the IT infrastructure work

Building a modern storage system to integrate administrative data at MBS

➤ Approach

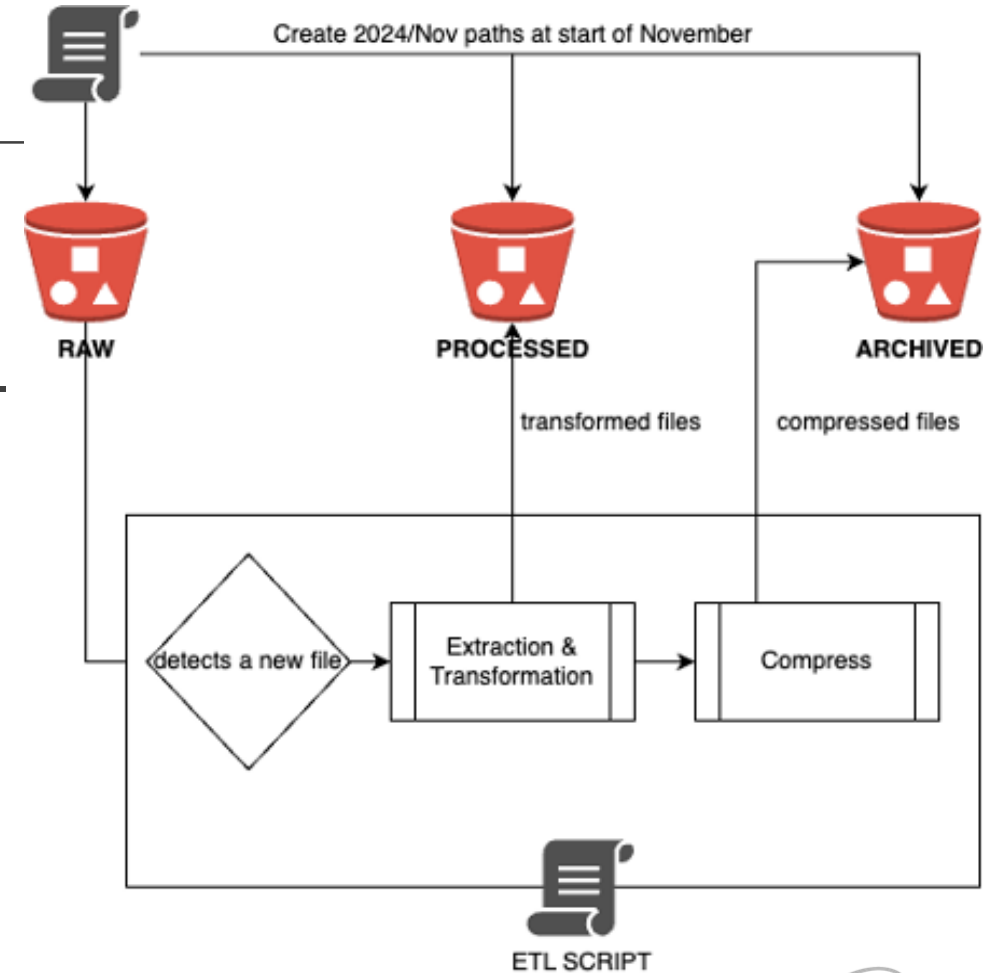
- A Data-Lake Storage Solution using MinIO was implemented
- MinIO was selected for its scalability, high performance, and secure data transfer capabilities.
- It provides a secure push-based data collection where data owners can directly upload datasets

➤ Methodology

- Infrastructure Preparation
- Deploying MinIO in a Single-Node Single-Drive (SNSD) configuration
- Security Implementation using Access Control Mechanism

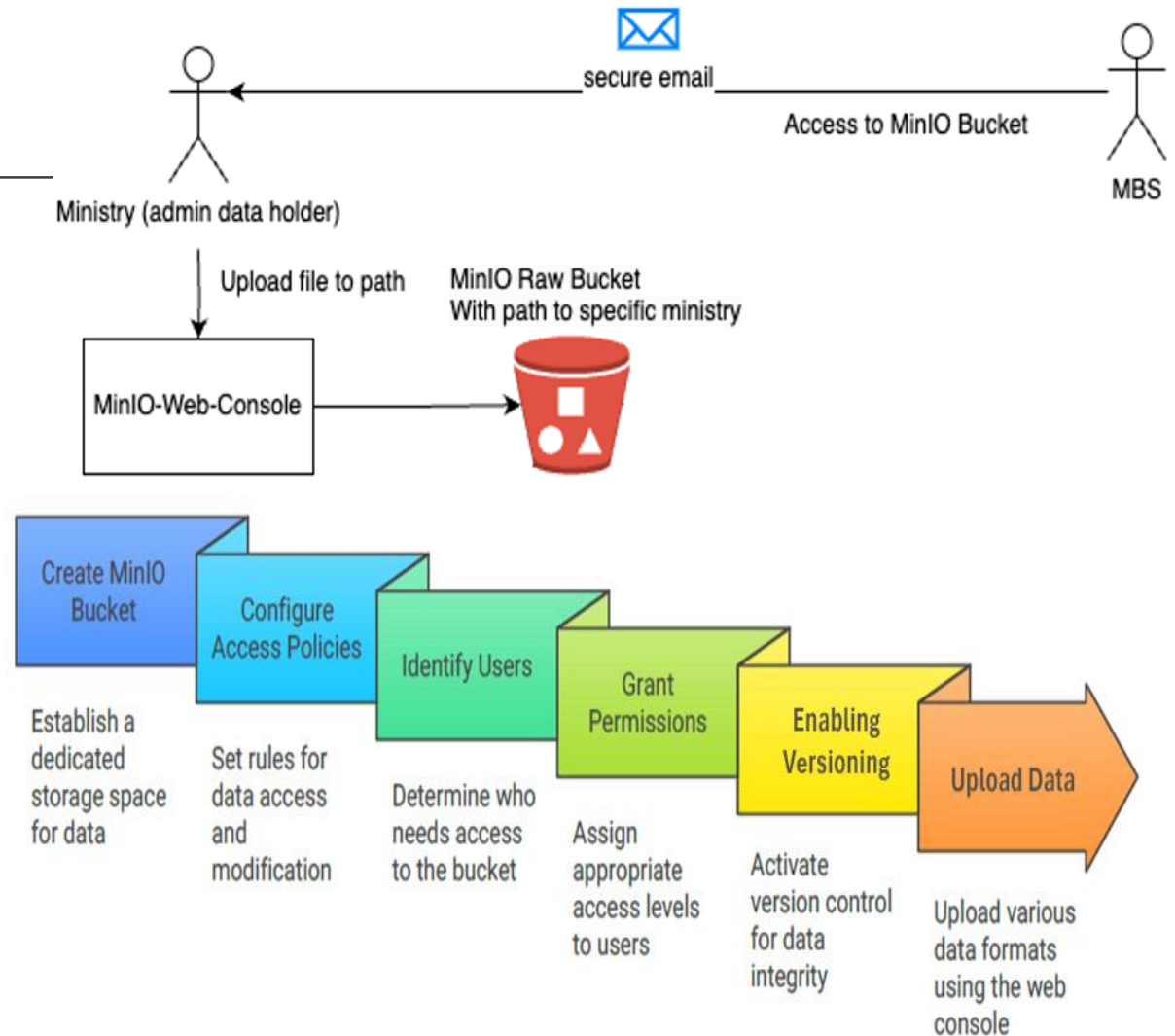
Data Lake setup

- A three-tier bucket structure was implemented in MinIO
- **Raw Bucket:** Stores unmodified data for traceability. Preserves data integrity and simplifies management
- **Processed Bucket:** Holds transformed structured data ready for analysis. ETL (Extract, Transform, Load) scripts operate on the raw data to generate usable information stored here
- **Archive Bucket:** Retains compressed versions of original files for long-term storage



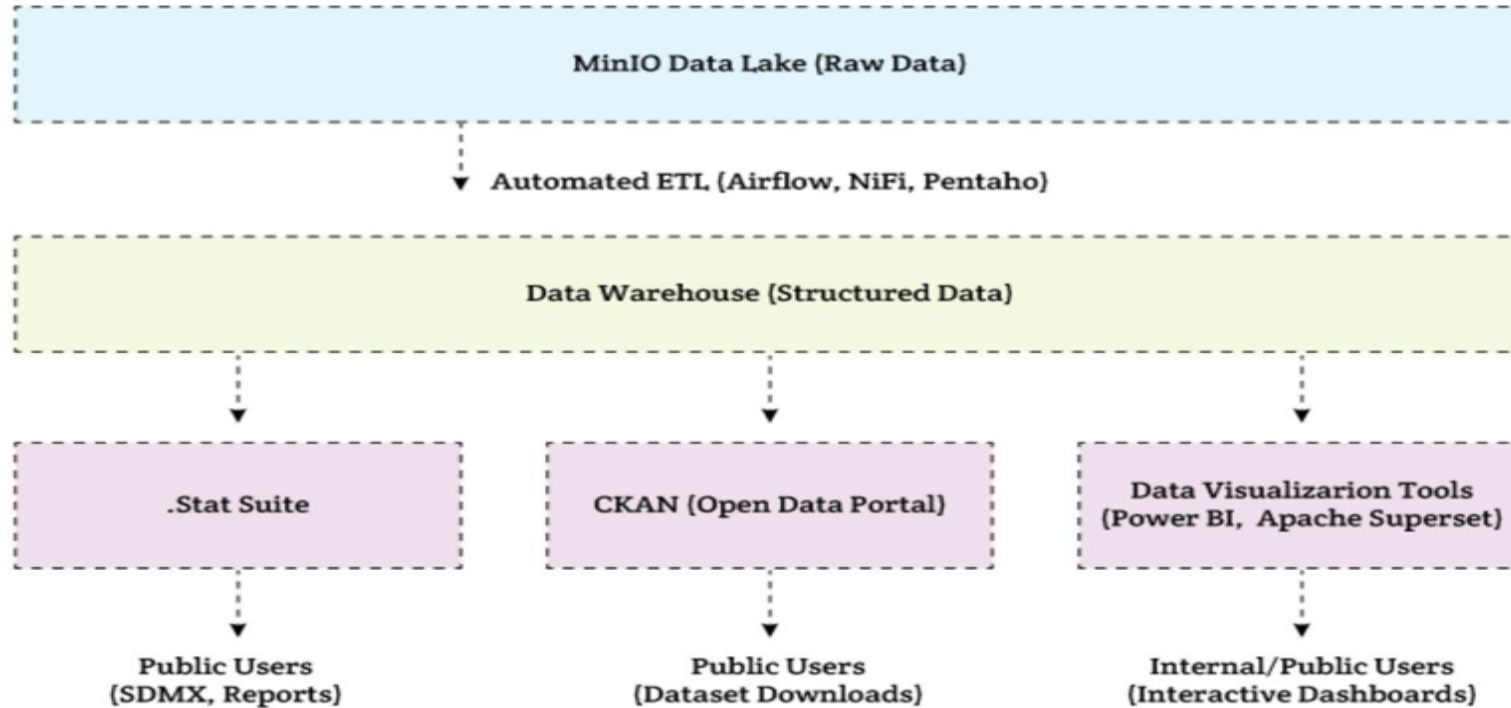
Using MinIO web console

- The MinIO web console provides a user-friendly interface for managing and configuring object storage, allowing users to easily view buckets, upload and download files
- The data flow from Admin Data Holder leverages the three-tier bucket structure together with Python ETL processes to enhance security, automate workflows, and ensure compliance.
- Eg: Agencies of MSS uploads raw PDF files containing their administrative data to the designated Raw Bucket in MinIO.
- This secure upload ensures that critical data is ingested into the system without compromising data integrity



National Statistical Information System - Plan

NSIS Overall Automated Workflow



Use of Alternative data sources

- Investing in improving quality of Administrative data for producing official statistics
- National Statistical Capacity Development and Research Centre registered at MBS
- National Statistical Research agenda for SDGs announced and partnerships are being sought
- Pilot projects on use of big data implemented (mobile phone data for population estimation, earth observation data for land account) and
- Work is underway for possible scaling up to start producing experimental statistics

MBS is thankful to our development partners for the technical support in our modernization process

World Bank

UNFPA

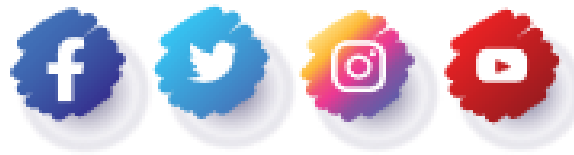
ADB

UNSD

ESCAP

PARIS21

Thank you for listening



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<http://statisticsmaldives.gov.mv>