Strengthening Event-Model Data Quality in DHIS2:
Lessons Learned for Public Health Programs

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Objectives

- **Support efforts** to control and eliminate Neglected Tropical Diseases (NTDs).
- **Improve data quality** of public health data for decision-making in NTD programs.
- **Understand changes in system data**, which data need revision to strengthen data quality, and assess the overall data quality of the system.

Event Data Quality Requirements

- **To provide data review functionality of event-level data** for a multi-country DHIS2 with more than 700,000 events (May, 2024); of which ~35,000 are updated monthly.
- **To improve overall confidence** in, and trustworthiness of, system data.
- **To visualize the changes made to event domain data** (additions, updates and deletions) to understand impact on previous decisions and reported information.
- **To flag common or especially problematic event domain data quality issues** for review, both within and across programs.
- **To seamlessly link data review and data update processes**.

Solutions

Event Data Review Application (EDRA)

- DHIS2 custom web app in English and French
- Combines event audit and current information to give a value history for each data element
- Enables a user to run and download a report across selected org units, review periods and program
- Presents a table, 1 row per event, showing which data values have changed, been added or deleted (Image 1)
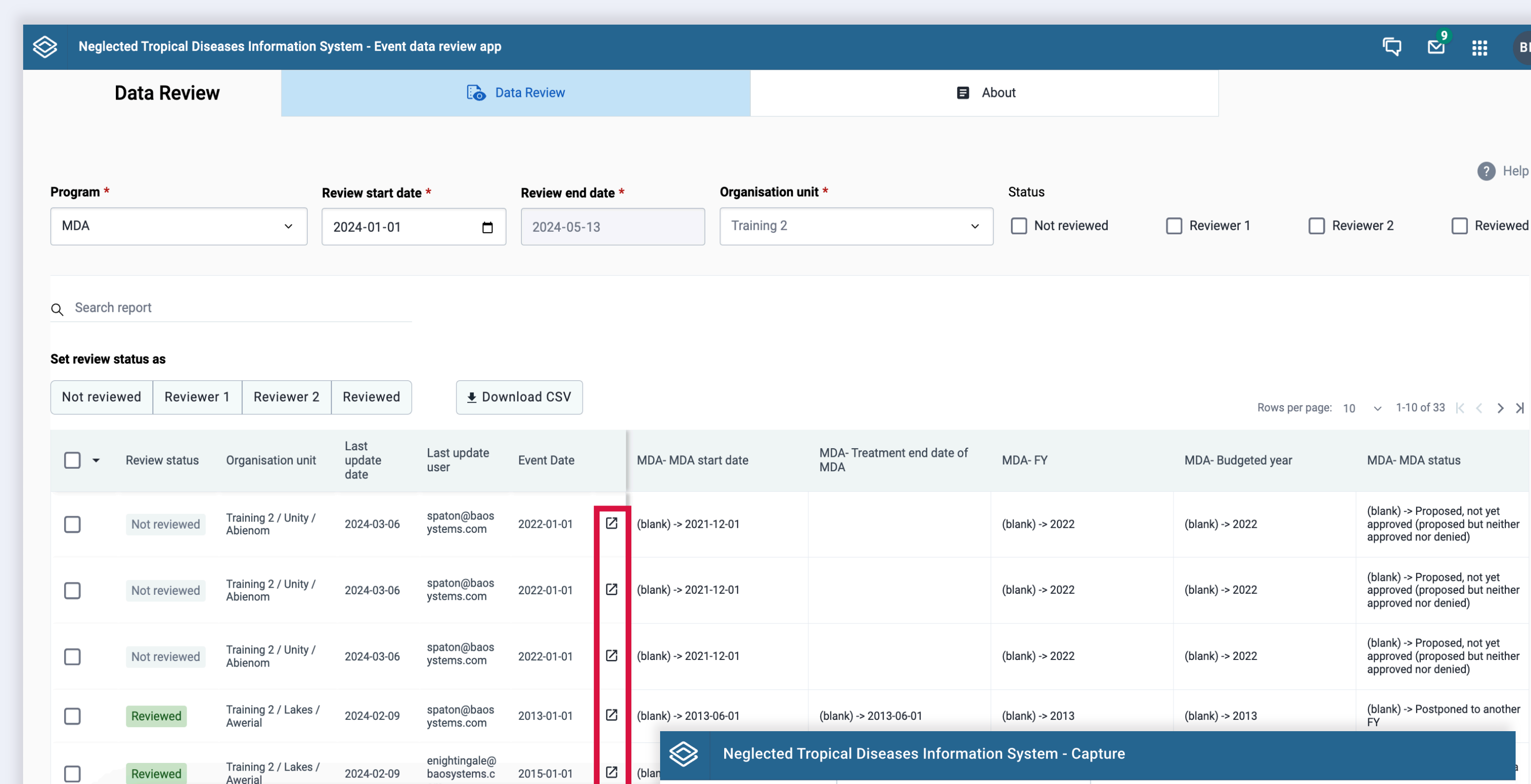- Links back to the original event in the capture app for data updates (Image 2)
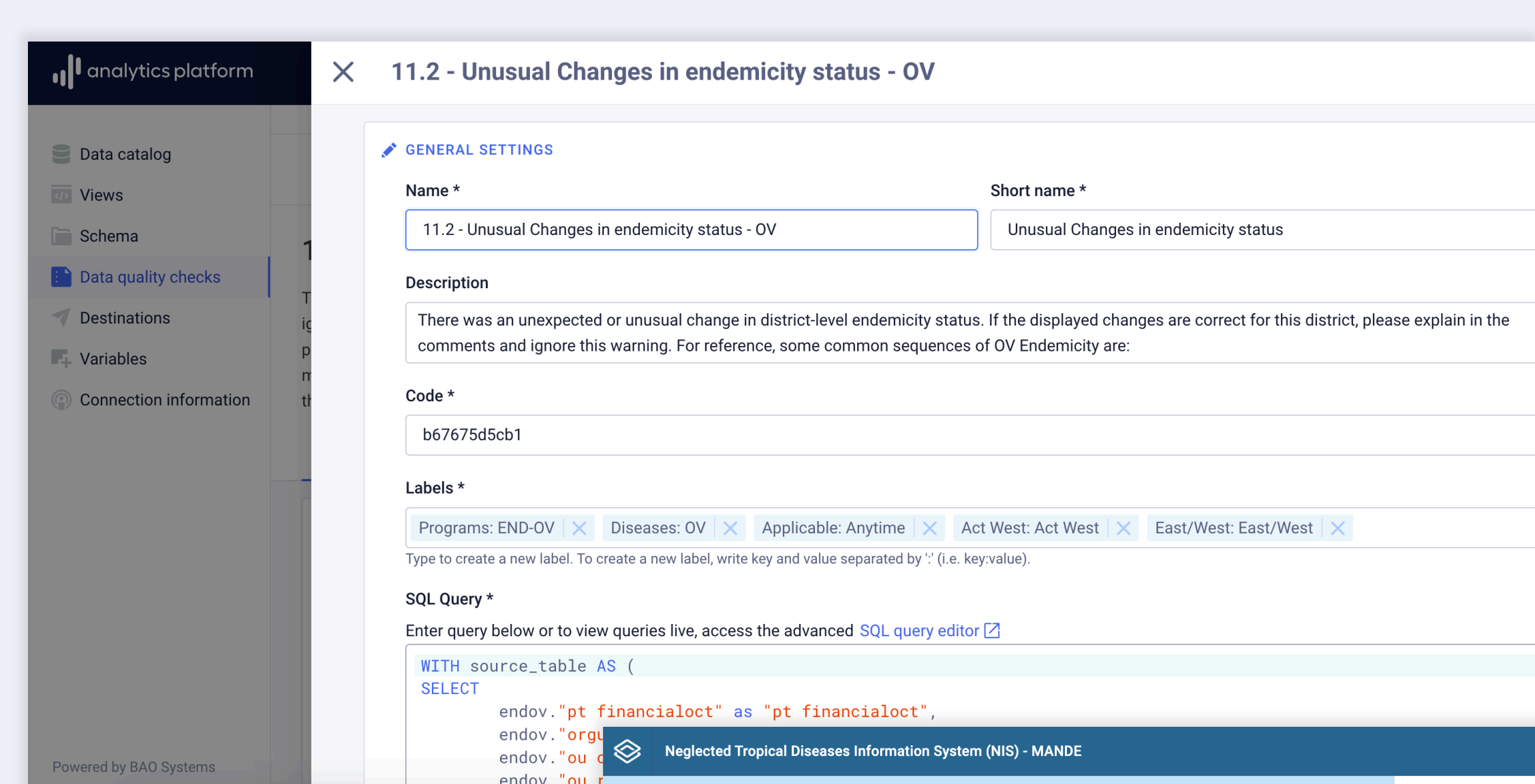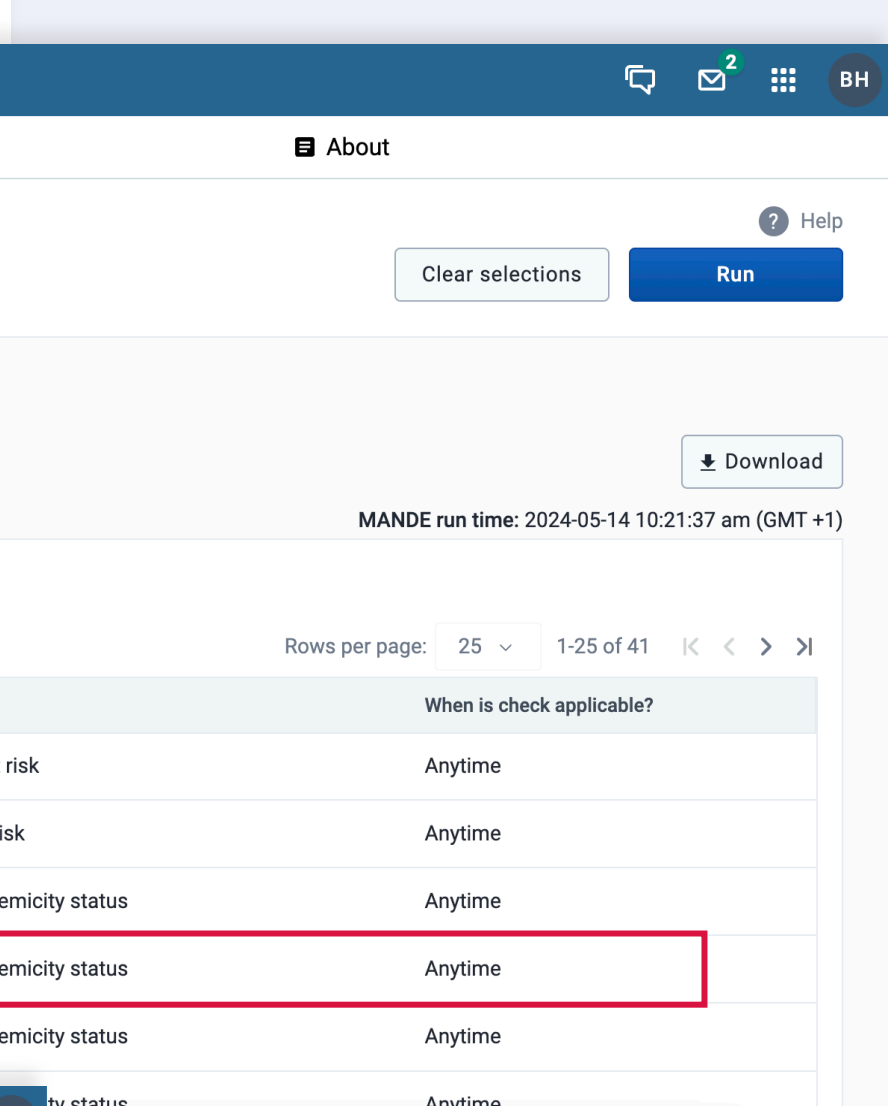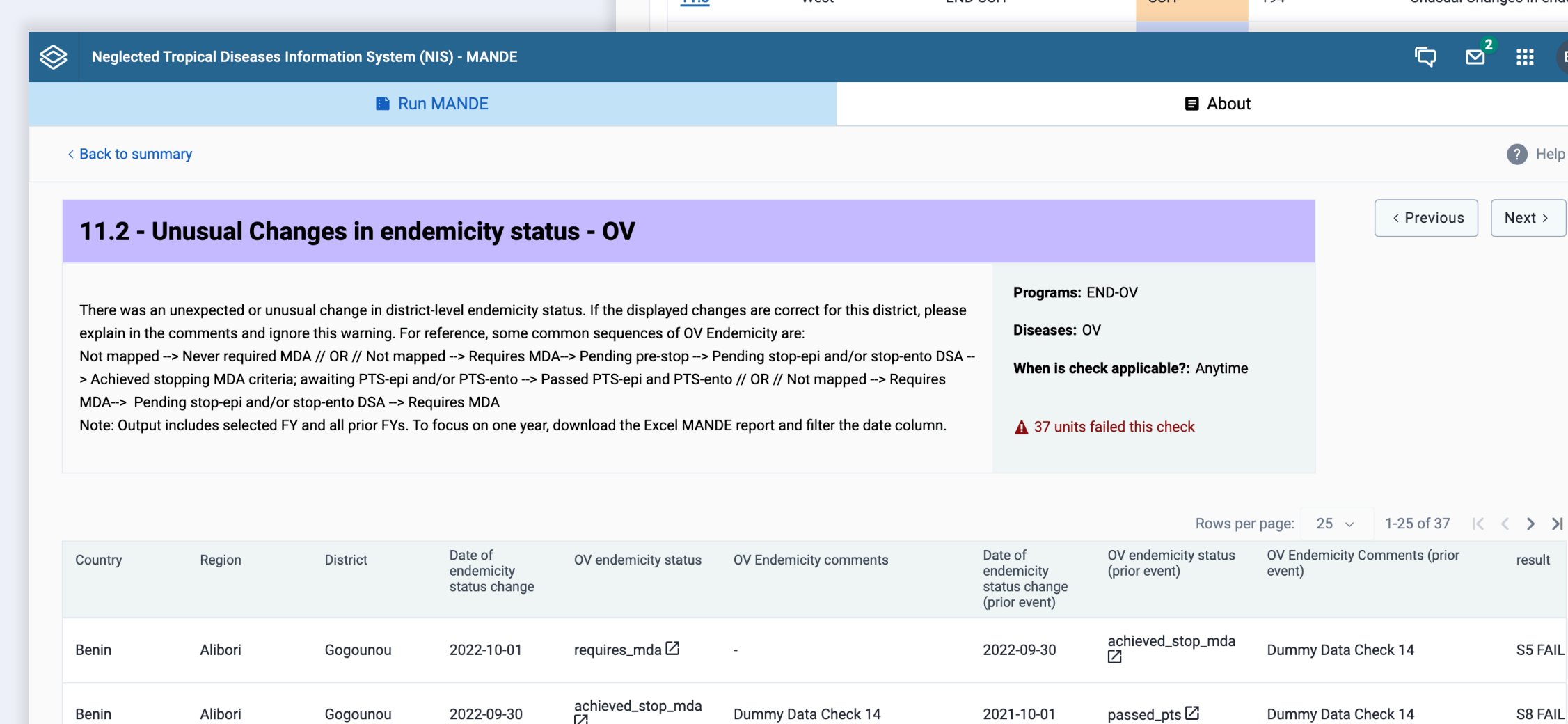

Image 1

Image 2

Image 3

Data Quality Check Tool (MANDE app - **M**onitoring **and E**valuation)

- DHIS2 custom web app (English & French) + Backend: Microservice & BAO Analytics Platform
- BAO Analytics Platform and microservice handle user authentication, data warehousing, definition of SQL-based data quality checks and execution of data quality checks (Image 3)
- Web-app allows users to select org unit(s) and period over which the checks are executed within DHIS2, and presents the report back to users
- Presents a summary report of data quality flags and specific event-by-event details for each data quality check with violations (Images 4 and 5)
- Links users directly to the events in the Capture app for making changes
- Report is downloadable

Image 4

Image 5

Future & Impact

Contribution to DHIS2 Global Community

- Addition of new features to DHIS2 core (e.g. trackedEntityDataValue audit)
- Supporting core software improvement through collaboration with UiO devs on bug reporting (e.g. improving event data deletion auditing)
- Showing event data quality can be achieved within DHIS2

Solution Impact

- Allows active, real time review of data quality across user levels to confirm data changes.
- Enables users to assess quality of event domain data
- Answers key data quality questions including, "What data changed and what from?", "How many events have potentially poor data quality?" and "Which data values should be reviewed and revised to strengthen data quality?"
- Provides confidence in data to make informed, evidence-based decisions

Looking Forward - Possibilities for Future Development

- Make EDRA generic and publish to DHIS2 app hub
- Extend EDRA to be compatible with tracker programs
- Increase coverage of key data quality issues with additional data quality checks in MANDE
- Contribute use-case to improving user-defined DHIS2 data integrity checks (YAML-defined)

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