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Enhancing Data Quality:

A DataOps approach with R and GitLab

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Summary

1. Motivation
2. Data Pipelines in International Trade Data Collection
3. GitLab as a DataOps board
4. Improving data quality with R packages
5. Conclusions

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Motivation

International Trade Data Collection Unit (ITDCU)

- INTRA: imports/exports with EU members
- EXTRA: imports/exports with non-EU members

Daily Routine

- Data is updated twice a day
- May contain records from up to a year ago

Score Model

- Implementation of the Swedish Foreign Trade Statistics (SFTS) *(Norberg & Jader, 2005)*
- Considers not only the suspicious error but also the potencial impact of the record

Microdata Analysis

- ITDCU perform daily analysis
- Suspicious get ranked and distributed to colleagues

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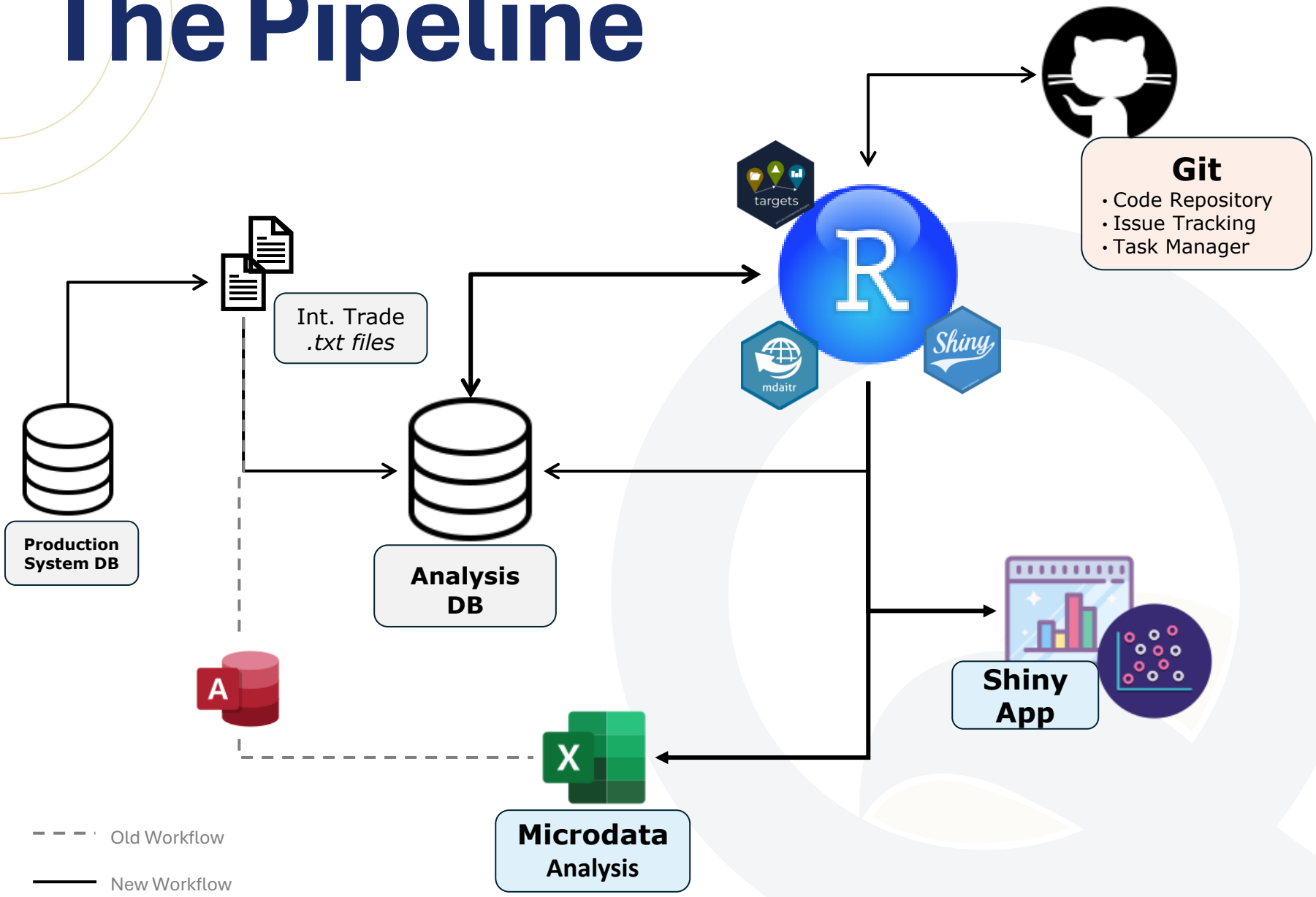
The Pipeline



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DataOps

CI/CD approach

- High quality, automated, reproducible processes
- Culture of continuous improvement in data processing
- Speed and collaboration

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GitLab

DataOps Board

- Define, assign and track tasks or objectives
- At-a-glance view of project progress
- Issue Tracking and notifications
- Version Control

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DataOps Board

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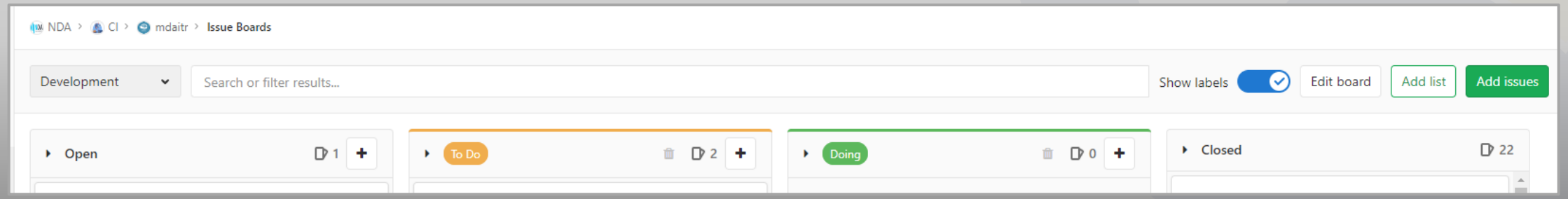

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R

ETL Workflow

Load data from RDBMS databases

Calculate the *score value*

Export to .xlsx

Update Shiny App

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R

ETL Workflow

Load data from RDBMS databases

Calculate the *score value*

- Calculate quantiles for each Combined Nomenclature
- Calculate Suspicious Error
- Calculate Potential Impact
- Calculate *score()*

Export to .xlsx

Update Shiny App

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R

{mdaitR}

- Adapted from an implementation of the Swedish Foreign Trade Statistics (SFTS) *(Norberg & Jader, 2005)*
- Developed under the Functional Programming paradigm
- Creates tested and documented functions
- Can be applied to other data domains

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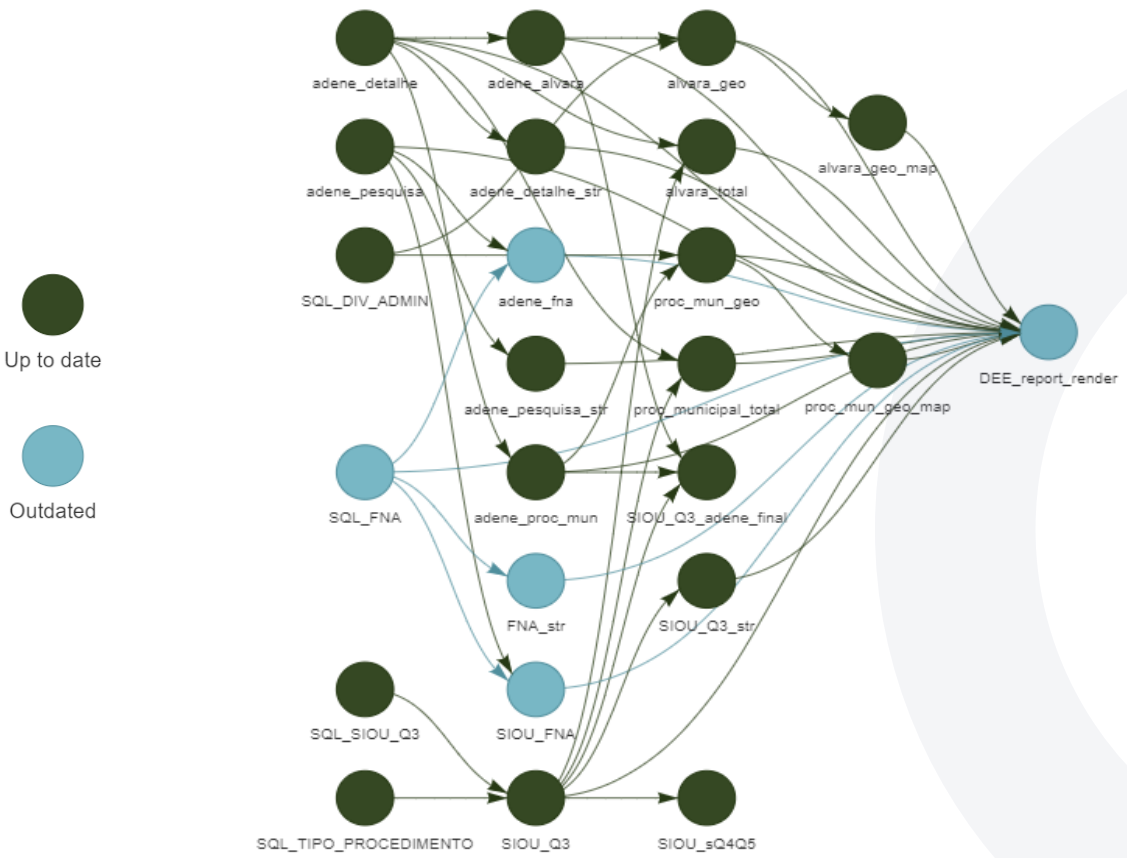
R

{targets}



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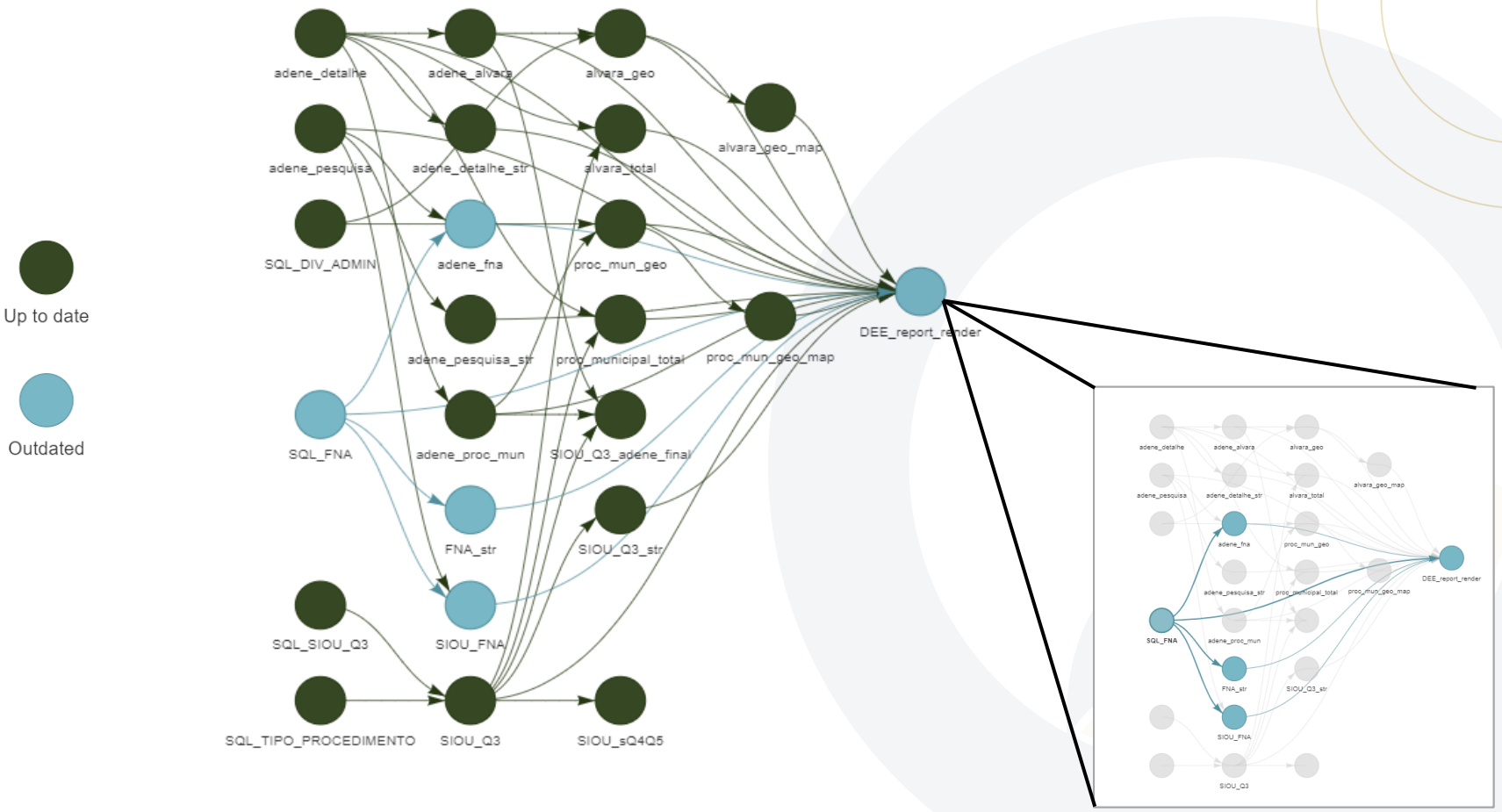
R

{targets}



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Conclusions

- RAPs are based on best practices with the aim of ensuring data pipelines that are reproducible, auditable, efficient and of high quality
- Anything that can be automated should be automated!

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Thank You!

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