NEMO Version 2023-05-26

Contents

Stand: 2023-05-26 – Subject to change
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1. Summary

As of May 26, 2023, proALPHA has released NEMO version 2023-05-26.

NEMO – standing for Natural Enterprise Management Optimizer – is a new breed of AaaS – Analytics-as-a-Service – offering from proALPHA. NEMO analyzes all sorts of event data. In particular NEMO analyzes business processes as performed with proALPHA ERP. The objective of NEMO is to enable better daily decisions by relating operational activities (input factors) with financial results (output factors).

Over the last couple of months, we hardened our forecasting capabilities finally coming to fruition with this release. NEMO Forecasting is complementing NEMO Prediction to improve accuracy and precision. Whereas NEMO gives an instant overview of future developments and trends NEMO Forecasting trains its algorithms group-by value by group-by value and as such takes considerably more time thus running in batch only. A prominent example is the forecasting of part consumption (sort of demand forecasting) where the algorithm is refined part by part on the fly.

With the new NEMO HOME we are starting the journey of a closer integration with the controlled operational subsystems. With this release we commence with ERP. Have a look and tell us what you think.

Managing multiple data sources can now be done with the help of NEMO Projects. After introducing individual data upload from csv files in Focus NEMO Projects are the next step towards leveraging the power of NEMO to arbitrary process data.

With the help of the Deficiency Mining App, users can continuously monitor and assess their data quality as well as deviations in processes. To achieve this, rules are defined in advance. An overarching Data Quality Index (DQI) provides information about the degree of compliance or violations of the rules.

If the analysis of rule violations reveals interesting insights, these can be analyzed in more detail with Focus.

In addition, NEMO version 2023-05-26 features various error corrections and performance improvements. Also, various housekeeping improvements have been implemented.

Exported Columns (NEW)
- 25 newly added exported columns

Reports (IMPROVED)
- (SAMPLE) Replenishment Time Analysis Produced Parts
- (SAMPLE) Replenishment Time Analysis Purchased Parts
- (STOOP) Stock Optimizer

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2. Application Signature Features

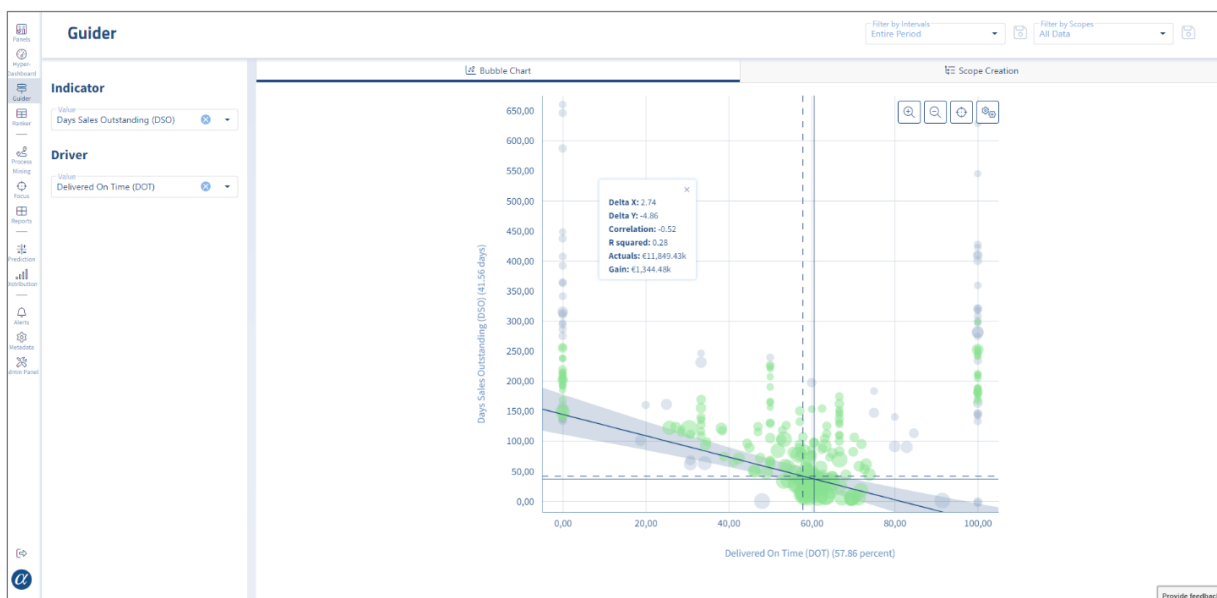### Natural Performance Index (NPI)

The NPI measures and ranks the fitness of a business. High NPIs indicate a significant improvement potential which is likely to be achieved. They help the user find and decide between the available optimization opportunities and are key to the daily decision support provided by NEMO.

Natural Leverage Index (NLI)

The NLI measures and ranks the degree of efficiency ("Wirkungsgrad") of a certain operational measure. High NLIs indicate a significant leverage which is likely to be achieved. They help the user find and decide between the available opportunities and as such facilitate the daily decision support provided by NEMO.

Unsupervised Learning

Since there is no optimum for business process optimization typical machine learning approaches don't apply. Hence NEMO leverages robust advanced statistics out of the so-called space of unsupervised learning algorithms.

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Meta-data Driven

NEMO is not only data- but also metadata-driven. This means that virtually all metrics and scopes can be formed – either manually or automatically.
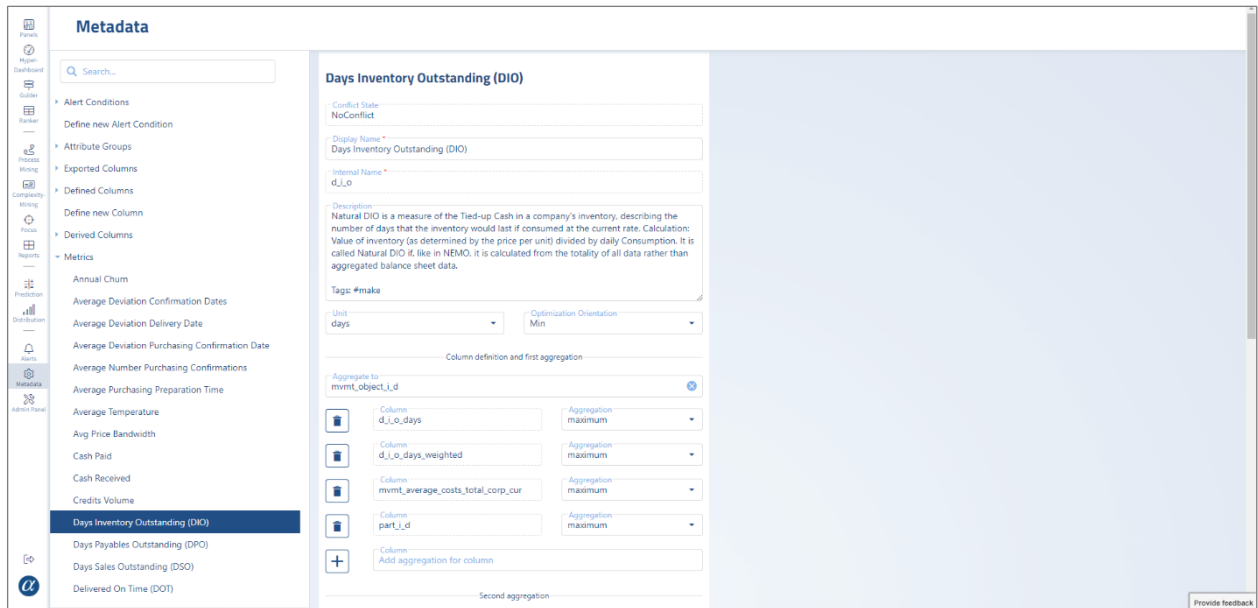
Hyper-Dashboard

NEMO continuously ranks all business process correlations. This enables dynamic dashboards which are complementing classical dashboards.
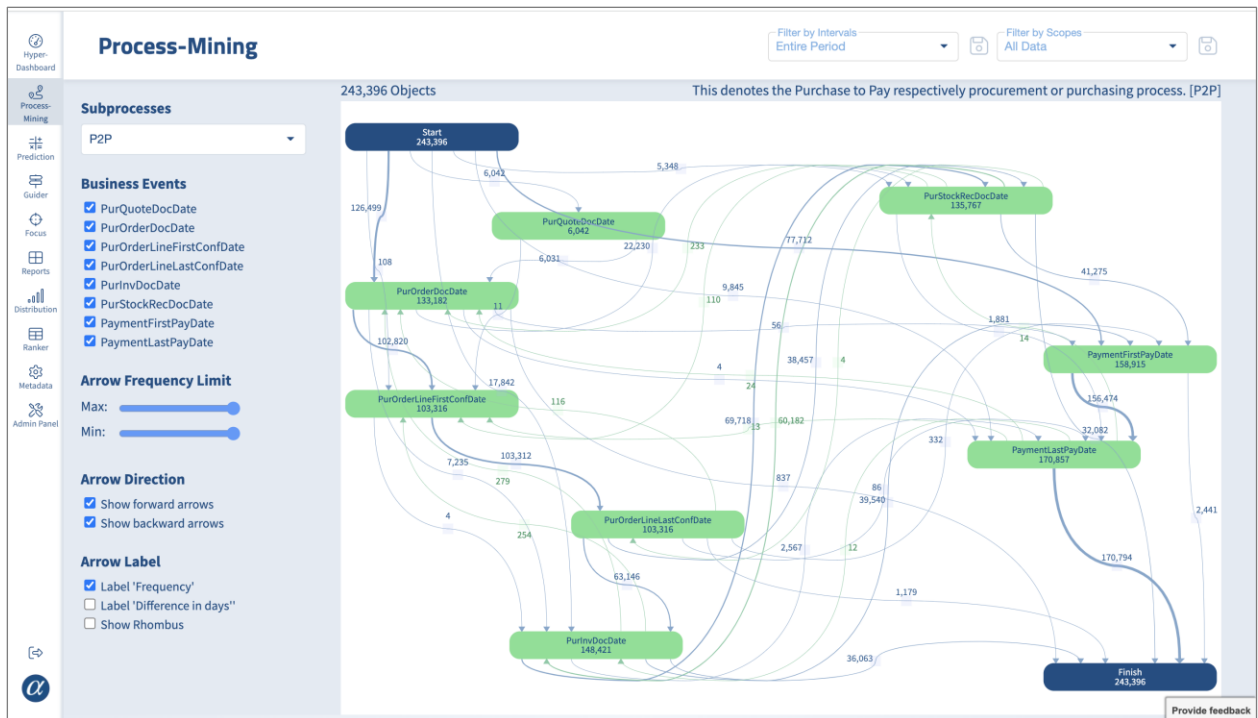

Process Mining

Inherently NEMO discovers all executed business processes. Process Mining visualizes these as so-called process maps. The edges (lines, links) represent business process variants. They can be captured in scopes for further analysis (e.g. Focus and Guider). The nodes (vertices, points) represent the business events which, chained up, represent the executed business activities.

Complexity Mining

Similarly, NEMO detects automatically all executed business process variants. Each and every variant increases the complexity of the respective business.

Increasing complexity increases complexity costs. This phenomenon can be analyzed as well.

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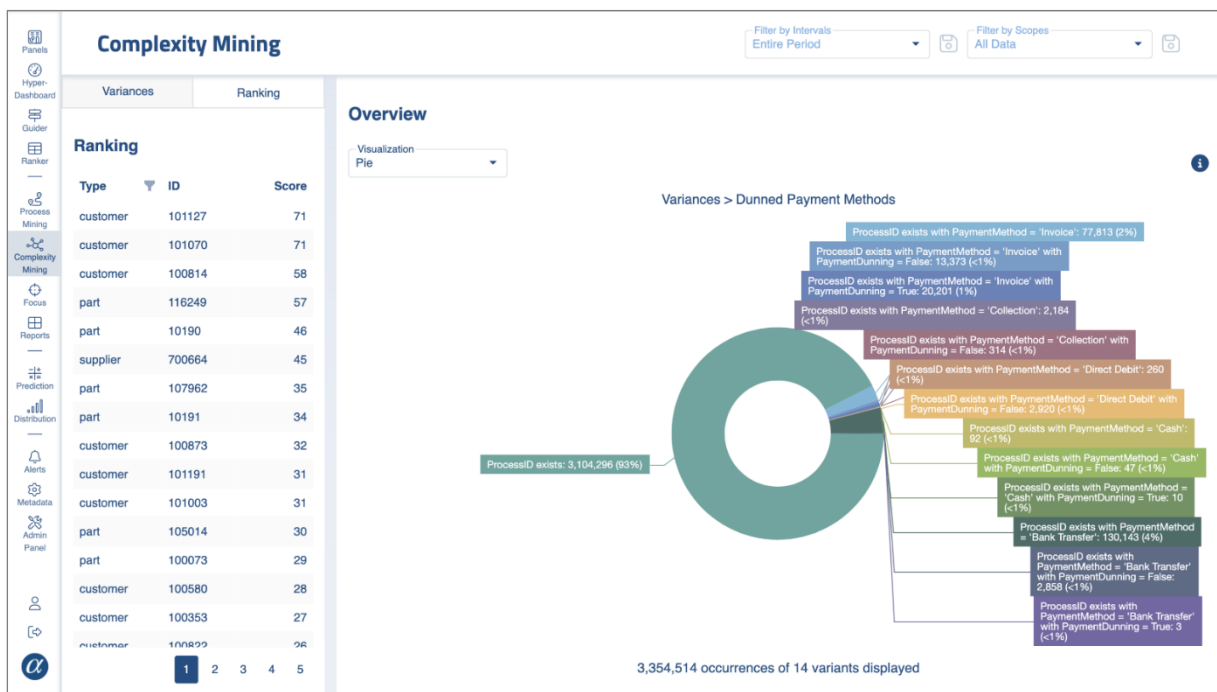
All Details

NEMO works always on details. There is no need to do any pre-aggregations at all. This means that the user can drill down to the detailed business documents at any point in time and instantaneously.

Here an example for the Payment Method Invoice. The Hyper-Dashboard provides an overview of the top measures for process improvements.
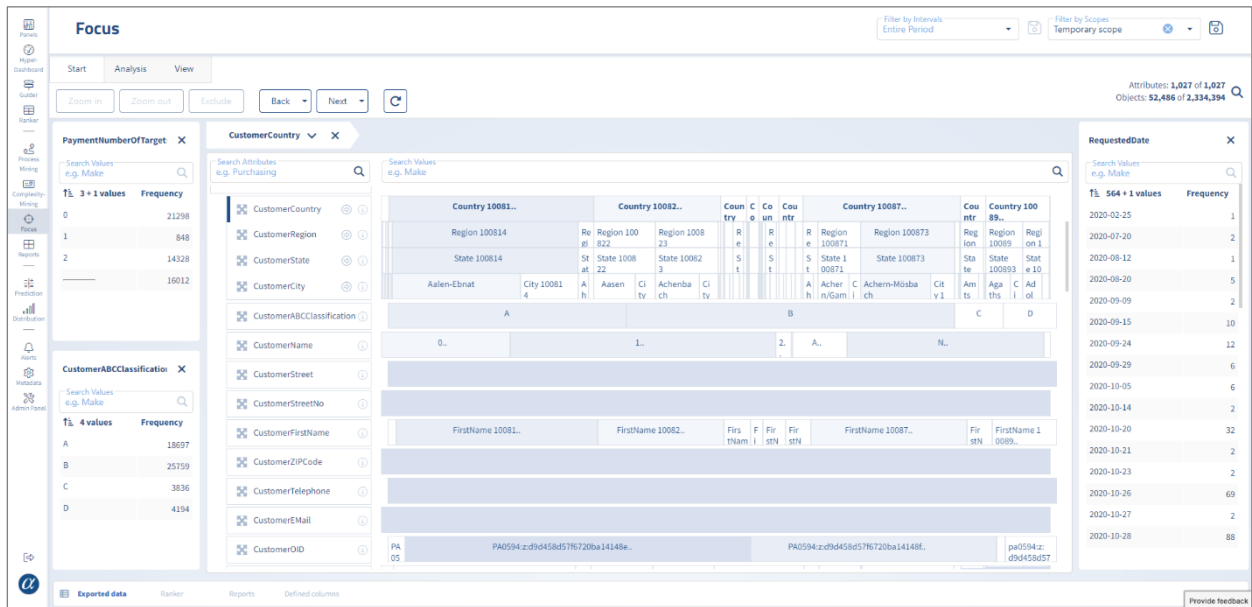

The Ranker table gives the details behind the Hyper-Dashboard.

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And the Focus view gives the details behind the Ranker table. And all within seconds.

Dynamic Dashboards

From all details arbitrary dashboards can be derived as well.

Since these so-called Panels are automatically built-in conjunction with Scopes they are correct by nature.

Especially there is no dispute about the calculation of metrics and key figures anymore since those are isolated from the Panels.

Instantly Live

NEMO doesn't need any customization. Even chart-of-account or financial calendar are not needed for NEMO to function.

3. Technology Signature Features

The NEMO technology is characterized by

- Integration
  - All applications leverage and maintain the same data
- Speed
  - Response times should be as fast as possible
  - Development times – customers or us – should be as short as possible

These objectives are achieved by leveraging following unique approaches.

Push rather than Pull Data Copying

All data are regularly pushed from the source system to NEMO.

For our ERP we push all essential order types now:

- Purchase Order
- Production Order
- Sales Order

This means following supply chain processes are covered now:

- Source
  - Purchasing, Procurement
- Make
  - Inventory
  - Production
- Deliver
  - Sales
- Return Handling
  - Sales
  - Purchasing
- Finance
  - Accounting Journal

Flat Data Structure

There is only one table in NEMO.

There are no aggregations (cubes) nor indices.

There are no Joins at all.

Process Chains

All data are organized along the performed business processes.

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Dynamic Calculations

All calculations are performed in real-time.

There are no data preparation runs.

Metrics Driven

All control data (metadata) are available to all applications rather than being specific to a single application.

All control data are dynamically changeable – by the user or by us.

Metrics are maintained as separate entity rather than specific to each application.

In-memory Columnar Data Management

Our data are particularly suited to this mode of data management.

The resulting compression rates (easily 1:10) are very beneficial to the overall performance.

Upside-down Visualization

Rows and columns are inverted compared to MS Excel.

This makes patterns (e.g. populations of columns) easier to spot.

4. New and Changed Capabilities

Forecasting (NEW)

The forecasting runs are started from the Admin Panel:

Under the tab "Batch Forecasting" you have to select what you want to perform.

As Metric you can select what you want. Column and value can be selected from the categorial type exported columns. For example, this way can restrict the forecast run to specified companies (Mandanten). For grouping you have the choice of supplier, part, and customer.

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For run type you can choose between "future forecast" and "historic validation". Please don't forget that for the initial run you have to tick "clear all previous predictions".

The vanilla reports "Batch Forecasting Results" and "Batch Forecasting Validation" query the vanilla forecasting table.
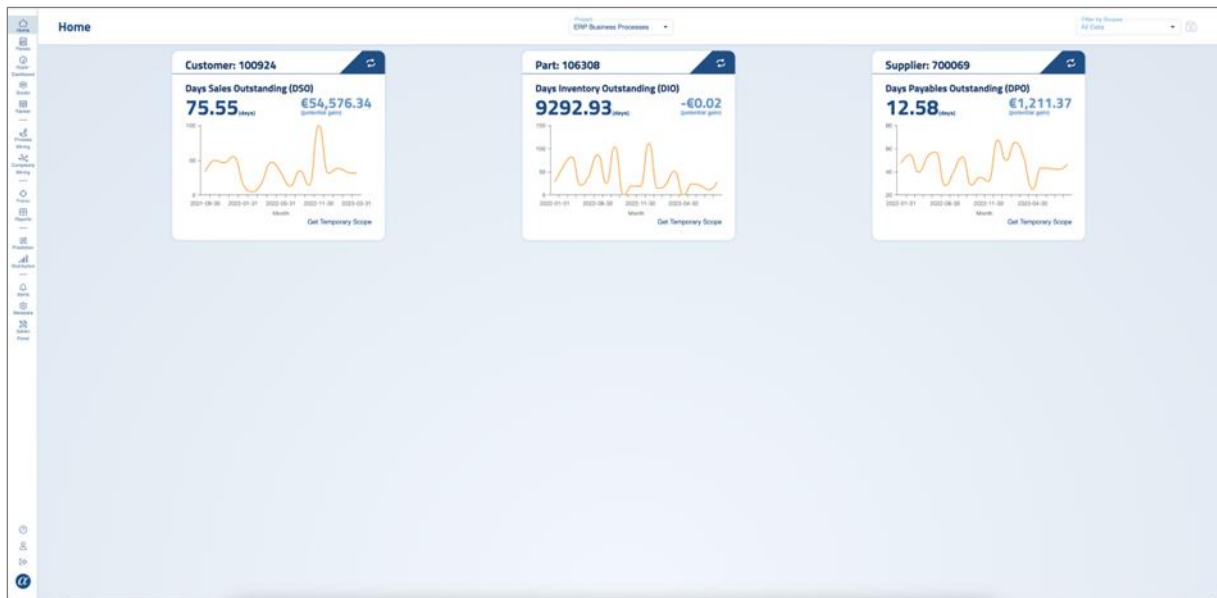
Typically, these forecast data are combined with some other data like for example in the "Stock Optimizer" report.

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Home (NEW)

On the HOME page you can depict select master data.


In this example you see customer, part, and supplier information.

For customer 100924, part 106308 and supplier 700069 you see a specified driver and indicator correlation in numbers and as trend.
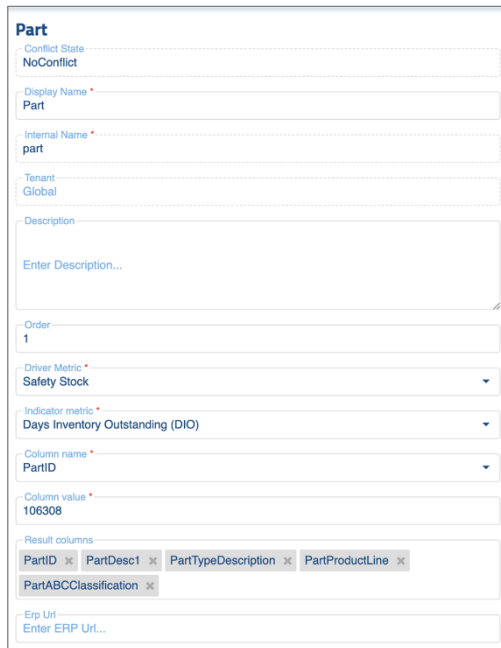
Clicking on the upper right corner of the chosen plate brings up the specified information from the ERP system.

As usual in NEMO the composition is highly flexible and controlled via metadata.

For this we introduced a new metadata category called Home Plates.
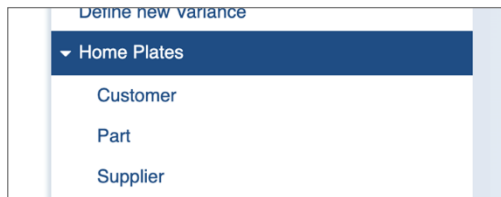
Here you see a list of sample plates delivered by us.
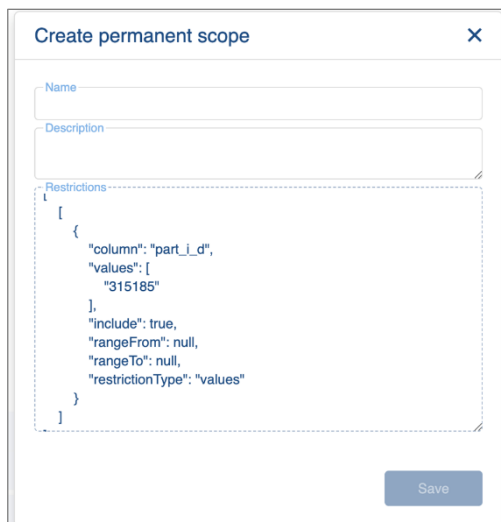
This is the way how you specify plates. Most should be self-explanatory.

One specialty is how you determine which master data record should be fetched. For this you must select as "Column name" the unique key column of the respective master data. In addition, you can select a specific unique key value which would serve as default for the dynamic composition of the Home page.

The integration with the normal functionality of NEMO works via scopes. On the one hand you can create a temporary scope from the plate, i.e., a scope with column name = column value. On the other hand, you can pass the unique key value via a scope, temporary or permanent, to Home.

This the via Focus created temp scope.
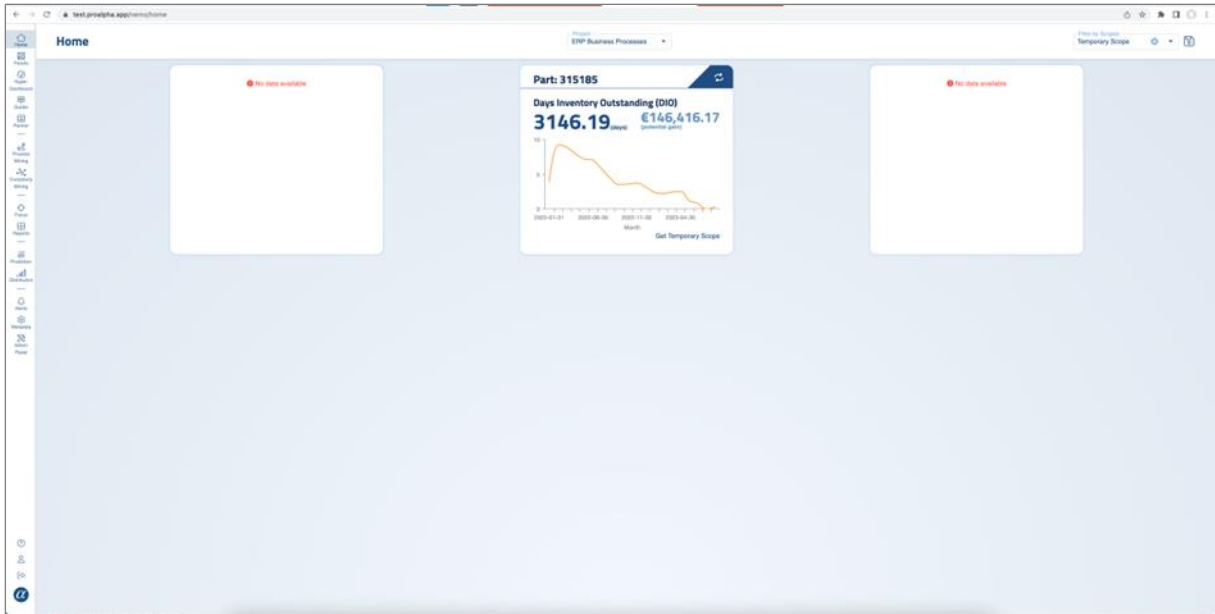
This is the Home page with the PartId from the temp scope.
Voilà.

Deficiency Mining (NEW)

The main view of the Deficiency Mining App is the Deficiency Mining Dashboard, which consists of three subsections: Data Quality Index, Historic Trend of Selection, and Rules Overview.

Depending on the selected rules the data quality index and the historic trend are being calculated giving insights into how clean or healthy the data is.
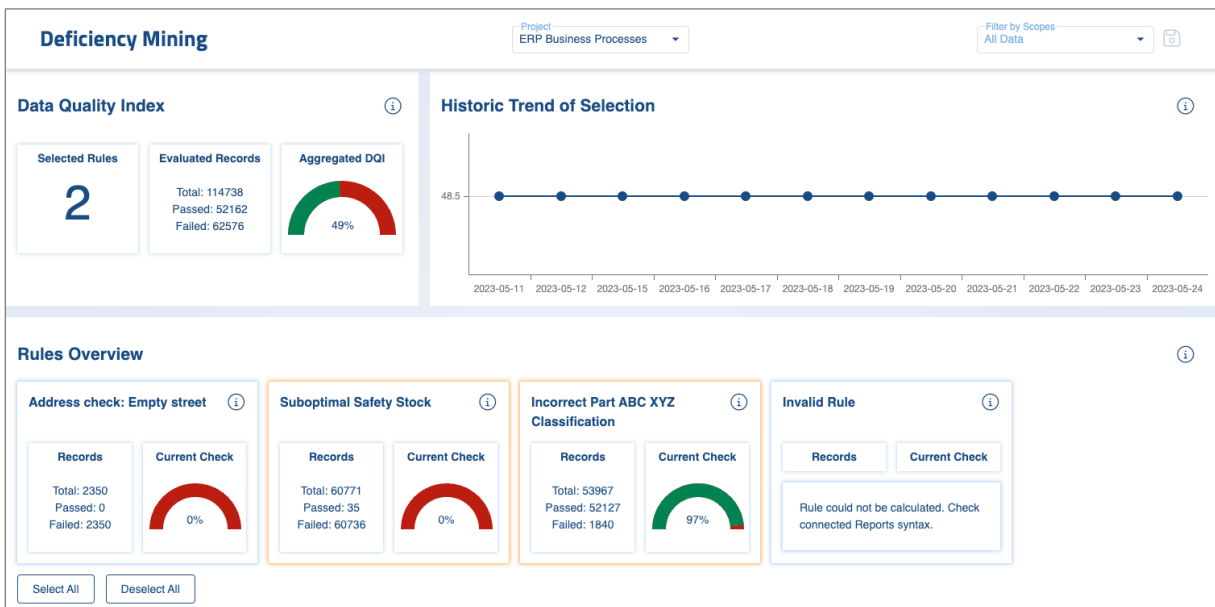
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Very similar to other NEMO apps the Deficiency Mining App is based on special reports defining the logic of a rule.

Thus, every rule must be connected to a so-called Deficiencies Report. For the deficiency reports, a Status column with the values CHECK and OK is required.

```
SELECT Max(company),
       Max(credit_doc_no),
       Max(credit_doc_date),

Max(credit_doc_total_net_corp_cur),
       CASE
           WHEN (
Max(credit_doc_total_net_corp_cur)
> 10000 ) THEN 'CHECK'
           ELSE 'OK'
       END AS STATUS
FROM $schema.$table
GROUP BY credit_doc_i_d
```

This is an example of a simple report for Deficiency Mining with the mandatory STATUS column.

Further investigation on violations of any rule can be made with help of Focus.

NEMO Projects (NEW)

Since uploading individual data from csv files has been available for a while now, we introduce NEMO Projects as a next step. This way managing different datasets becomes easier and more intuitive.

Also, with respect to the idea of making NEMO generally available to arbitrary process data.
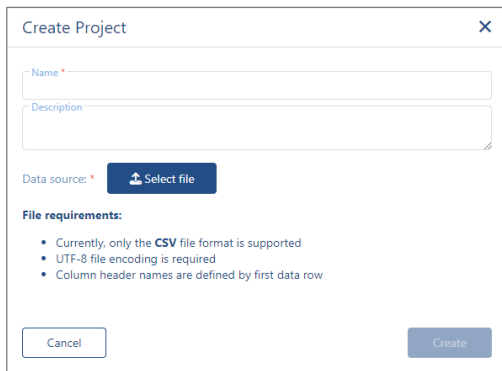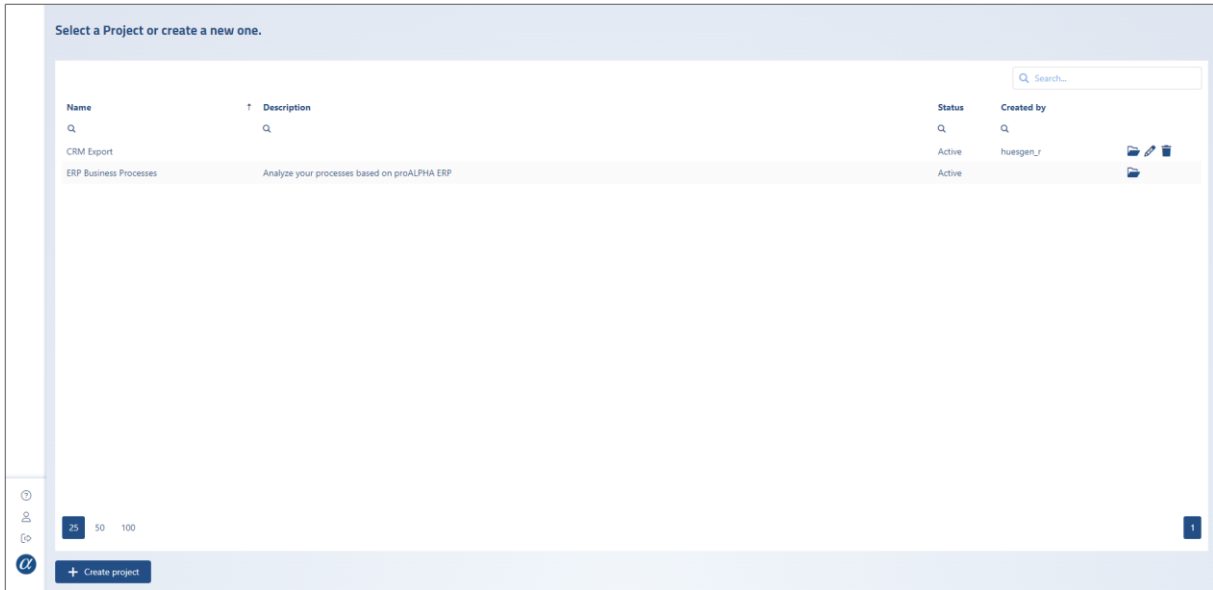
Creating a project is a quite easy task. A name and a data source must be specified. A description can be added optionally. Currently only csv files are supported as data sources. After the data has been uploaded and imported the project is ready to be used.

Switching from one project to another one is also really simple. Recently used projects can be selected from the Projects drop down list. The "Show All Projects" button will take you to the NEMO Projects start page.

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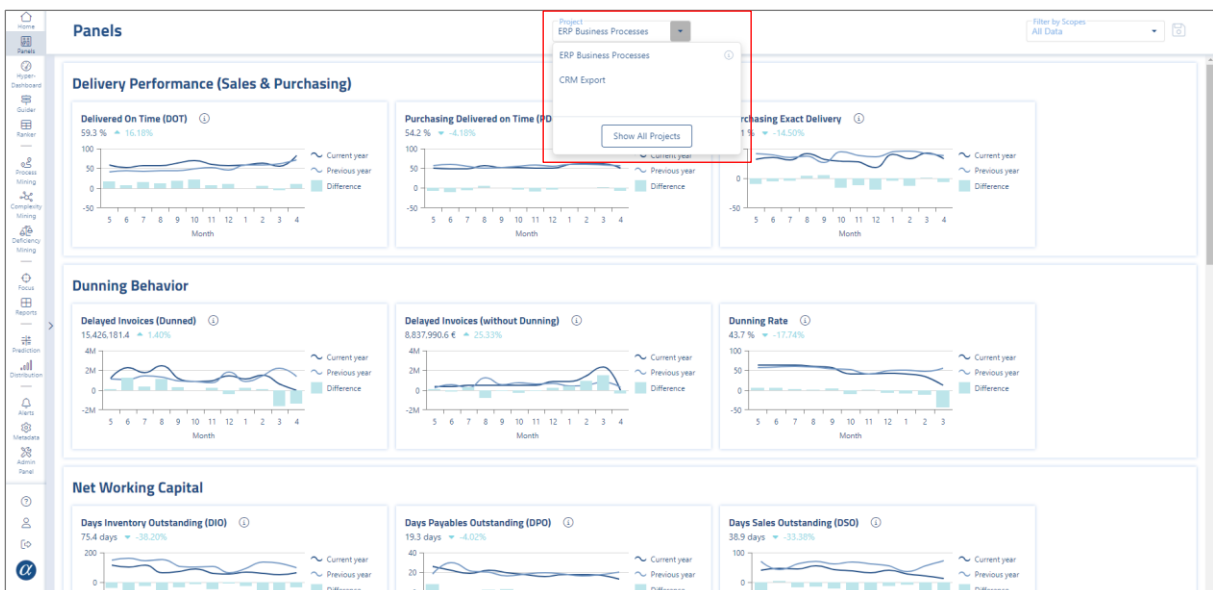
5. Newly Exported Columns

Most of the added columns have been requested by our customers. They will become available as soon as new data exports and loads have been performed. Based on these data refreshes we will research the feasibility of new default metrics. Those would become available with the next release provided they deem valuable.

Display Name	Description
BODocFirstLogDate	Output date (blanket order) #ERP-Origin: V_Belegausgang.Ausgabedatum
CallOrderDocFirstLogDate	Output date (call order) #ERP-Origin: V_Belegausgang.Ausgabedatum
CreditDocFirstLogDate	Output date (credit) #ERP-Origin: V_Belegausgang.Ausgabedatum
FAMainPostAccountTypeDesc	Account Type (description) in the Main Posting #ERP-Origin: ACM SB_AccountCategories_desc
FAOffEntryAccountTypeDesc	Account Type (description) in the Offsetting Entry #ERP-Origin: ACM SB_AccountCategories_desc
InvoiceDocFirstLogDate	Output date (invoice) #ERP-Origin: V_Belegausgang.Ausgabedatum
MRPArea	MRP Area of mpr planning data #ERP-Origin: ML_Lagergruppe.Lagergruppe
MRPAreaDesc	MRP Area (description) of mpr planning data #ERP-Origin: ML_LagergruppeSpr.Bezeichnung
MRPCategory	MRP category (description) of mpr planning data #ERP-Origin: ACM SB_MRPCategories_desc
MRPCoverageQty	Coverage quantity of mpr planning data #ERP-Origin: MMT_MRPAccount.CoverageQty
MRPDate	MRP planning date #ERP-Origin: MMT_MRPAccount.MRPDate
MRPDemandQty	Demand quantity of mpr planning data #ERP-Origin: MMT_MRPAccount.DemandQty
MRPDocType	MRP planning doc type #ERP-Origin: MMT_MRPAccount.MRPDocType
MRPDocTypeDesc	MRP planning doc type (description) #ERP-Origin: S_BelegartSpr.Bezeichnung
MRPOriginOID	Reference Object-ID of mpr planning data #ERP-Origin: MMT_MRPAccount.Origin_Obj
MRPPlanDemandQty	Shows production demand quantity of mpr planning data #ERP-Origin: MMT_MRPAccount.DemandQty
MRPWeek	Week of mrp planning date #ERP-Origin: MMT_MRPAccount.MRPDate
OrderDocFirstLogDate	Output date (order) #ERP-Origin: V_Belegausgang.Ausgabedatum

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OrderDocLineAcceptedDelivery-Date	Initial: AcceptedDeliveryDate #ERP-Origin: V_BelegPos.AcceptedDeliveryDate
PartBOMFirstReleaseDate	Part BOM first release date #ERP-Origin: P_StkKopf.Freigabedatum
PartBOMLastReleaseDate	Part BOM last release date #ERP-Origin: P_StkKopf.Freigabedatum
ProcessSubInfo	export fact sub type of row #ERP-Origin: - Deliver: Invoice/ SalesShipping/ SalesOrder/ SalesQuote/ SalesCredit - Source: PurchasingInvoice/ PurchasingReturn/ Purchasing-Stock/ PurchasingOrder/ PurchasingCallOrder/ Purchas-ingBlankedOrder/ PurchasingReturn/ PurchasingCallOrder - Make: Movement - Finance: Mainbooking - Project: ProjectCosts/ Milestone - Resource: ResourceCapacityProduction/ ResourceCapaci-tyProject - Production: ProductionOrder/ ProductionActivity/ Produc-tionBOMLine/ ProductionResource
ProdOrderActDateFirstDataEntry	First creation date of reported production operation #ERP-Origin: PP_RueckAkt.AnlageDatum
QuoteDocFirstLogDate	Output date (quote) #ERP-Origin: V_Belegausgang.Ausgabedatum
ShippingDocFirstLogDate	Output date (shipping) #ERP-Origin: V_Belegausgang.Ausgabedatum

6. Compatibility

NEMO is compatible with all ERP releases from 6.1 onwards.

NEMO is optimized for Chromium based web browsers e.g., Google Chrome or Microsoft Edge.

Functional Limitations

Following functionality is restricted as of now:

- Calculations of Driver and Indicators are not based on Intervals yet.
- Stock movements for material withdrawals are not yet exported in Production.
- Warehouse movements for material storage are not yet exported in Production.

Component Status

- The initial batch forecasting run (either "Future forecast" or "Historic validation") needs to be started with the option "Clear all previous predictions" switched on.

Known Issues

- Very large temporary scopes created with Process Mining might fail in other apps.

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7. Documentation

Apart from this Release Letter, further documentation is available on [NEMO Help Portal](#).

8. Availability

All production environments have been updated already.

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