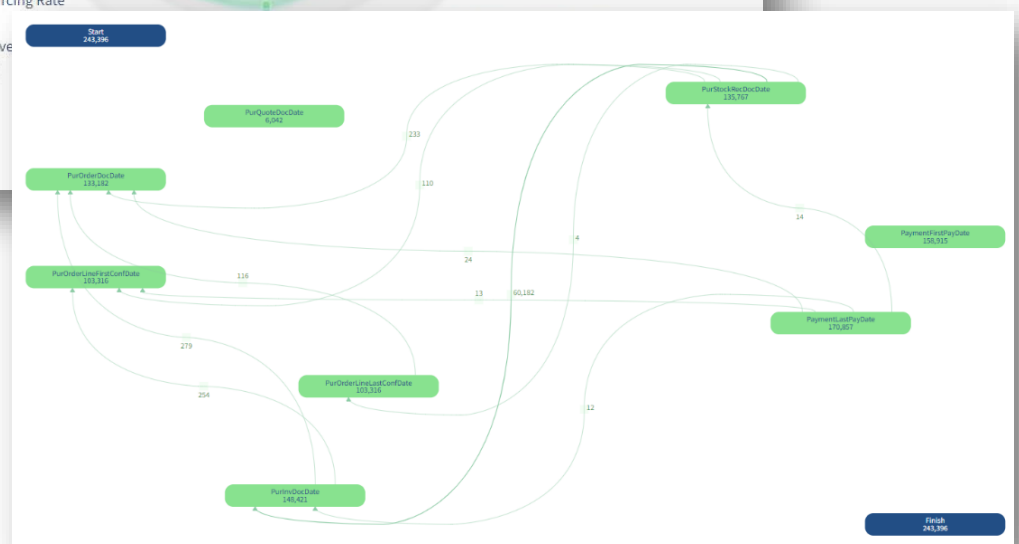


# NEMO Release Letter

Version 2023-02-03



# Content

Summary.....	1
Application Signature Features .....	2
Natural Performance Index (NPI) .....	2
Natural Leverage Index (NLI) .....	2
Unsupervised Learning.....	2
Meta-data Driven .....	3
Hyper-Dashboard.....	3
Process Mining .....	4
All Details.....	5
Dynamic Dashboards.....	6
Instantly Live.....	6
Technology Signature Features.....	7
Push rather than Pull Data Copying.....	7
Flat Data Structure .....	7
Process Chains.....	7
Dynamic Calculations.....	7
Metrics Driven.....	8
In-memory Columnar Data Management.....	8
Upside-down Visualization.....	8
New and Changed Capabilities .....	9
Complexity Mining (NEW) .....	9
Production Metrics (NEW) .....	14
Production Metrics (IMPROVED).....	15
Newly Exported Columns.....	16
Compatibility.....	17
Functional Limitations .....	17
Component Status .....	17
Known Issues.....	17
Documentation .....	17
Availability.....	17

## Summary

As of February 3, 2023, proALPHA has released NEMO version 2023-02-03.

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).

NEMO 2023-02-03 introduces Complexity Mining.

Fighting complexity and subsequent complexity costs is one of the hardest undertakings in business. Because in most cases this complexity has grown over many years. With this new capability we are providing complexity visibility and complexity ranking with a newly introduced complexity score. Also, we are weighing complexity in working capital numbers to evaluate the benefit of potential action. Don't hesitate to provide us feedback to round out our offering.

Furthermore, we got already feedback from customers and hence delivered new production metrics.

Also, we applied Kaizen all over the board again. Among others we improved the prediction accuracy in order to make it more consistent with the other statistical numbers. In addition, we made the naming of metrics easier to comprehend. And a lot of reports have been improved as well:

- (SAMPLE) Part ABC Classification
- (SAMPLE) Belated Customer Invoices
- (SAMPLE) Slow Moving Parts
- (SAMPLE) Supplier ABC Classification
- (SAMPLE) Operating Cash Flow
- (SAMPLE) Replenishment Time Analysis
- (SAMPLE) Premature Supplier Payments
- (SAMPLE) Operating Margin
- (SAMPLE) Most Profitable Parts
- (SAMPLE) Stock Controlled Parts
- (SAMPLE) Safety Stock Check
- (SAMPLE) ABC/XYZ Analysis
- (SAMPLE) Part Consumption
- (SAMPLE) Sales Price Analysis
- (SAMPLE) Purchasing Price Analysis
- (SAMPLE) Change In Material Price
- (SAMPLE) Churn
- (SAMPLE) Customer ABC Classification
- (SAMPLE) Most Profitable Customers

In addition, NEMO 2023-02-03 features various error corrections and performance improvements. Also, various housekeeping improvements have been implemented.

# Application Signature Features

## Natural Performance Index (NPI)

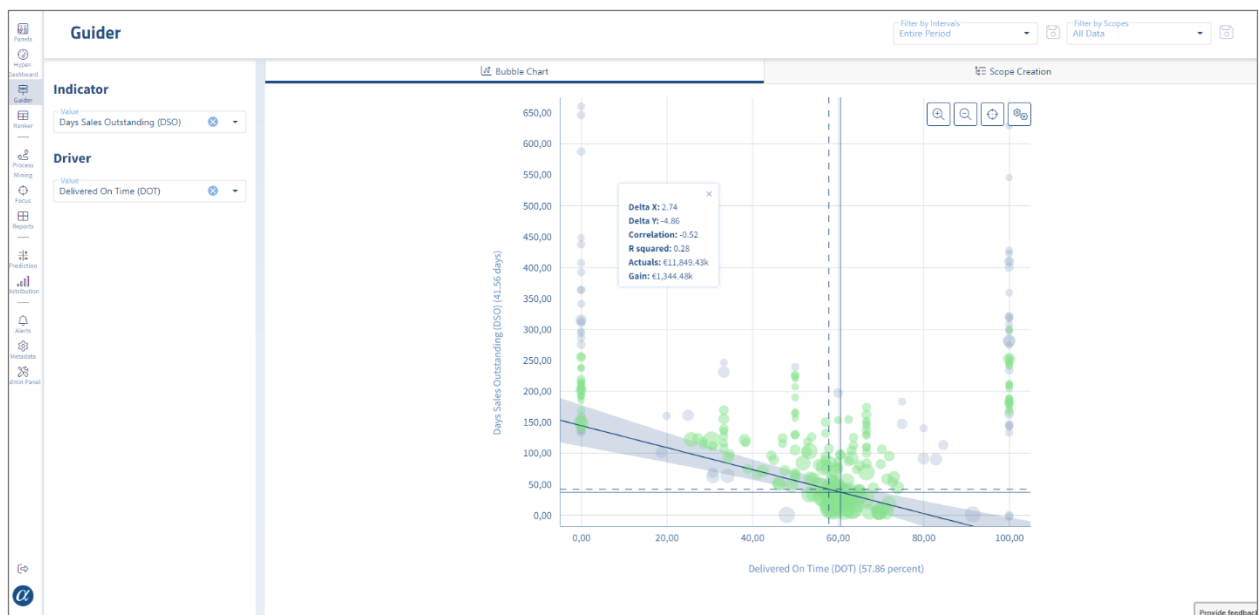
The NPI measures and ranks the fitness of a business. High NPIs indicate a significant improvement potential which is likely to be achieved. They help the user find and decide between the available optimization opportunities and are key to the daily decision support provided by NEMO.

## 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.



## 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.

The screenshot shows the 'Metadata' configuration page for 'Days Inventory Outstanding (DIO)'. On the left is a navigation menu with categories like Alert Conditions, Attribute Groups, Exported Columns, Defined Columns, Defined new Column, Derived Columns, Metrics, and Annual Churn. The 'Days Inventory Outstanding (DIO)' metric is selected. The main area shows configuration options: Conflict State (NoConflict), Display Name (Days Inventory Outstanding (DIO)), Internal Name (d\_i\_o), and a detailed description. It also includes a 'Tags: #make' field, a 'Unit' dropdown set to 'days', and an 'Optimization Orientation' dropdown set to 'Min'. Below this is a 'Column definition and first aggregation' table:

Column	Aggregation
d_i_o_days	Aggregation maximum
d_i_o_days_weighted	Aggregation maximum
mvmt_average_costs_total_corp_cur	Aggregation maximum
part_i_d	Aggregation maximum

There is also an option to 'Add aggregation for column' and a 'Second aggregation' section at the bottom.

## Hyper-Dashboard

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

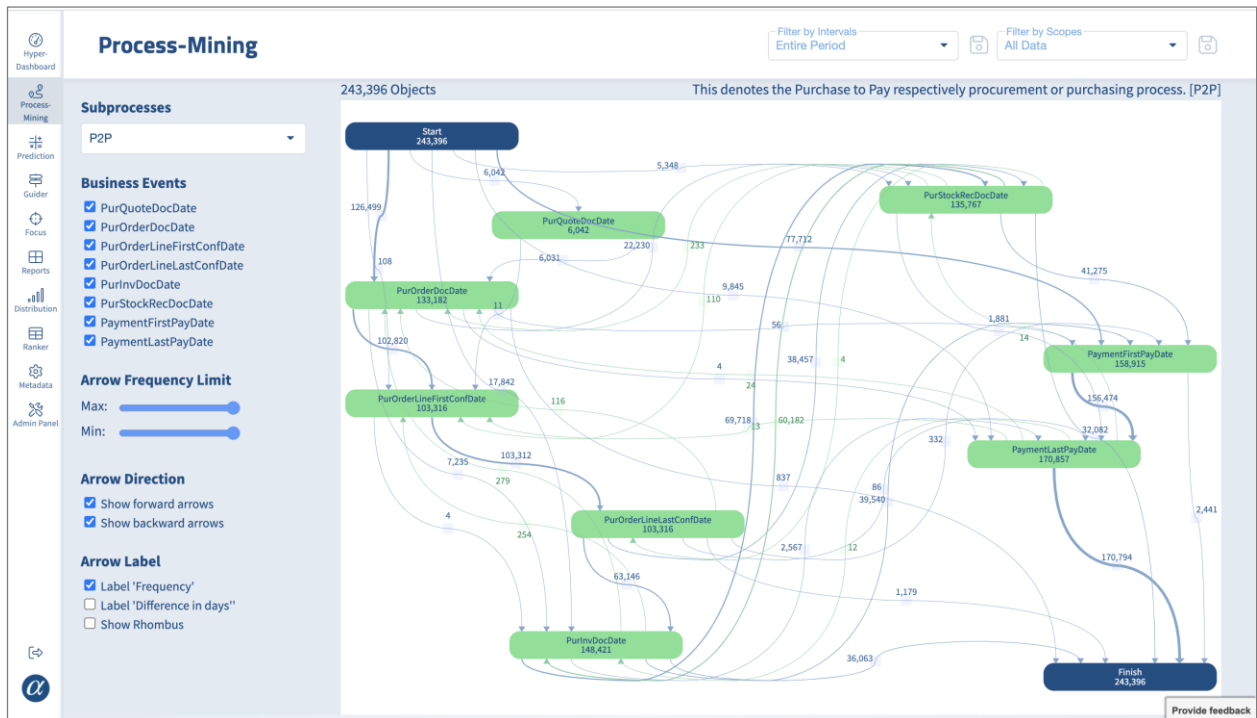
The screenshot shows the 'Hyper-Dashboard' interface. On the left, there are sections for 'Indicators' (Days Sales Outstanding (DSO)) and 'Drivers' (Delivered On Time (DOT)). The main area is titled 'Best Opportunities to optimize indicators (by improving drivers)' and features a radar chart. The chart compares 'Average' (light blue) and 'Target' (green) values across several dimensions. The dimensions and their values are:

- [[mvmt\_m\_c\_p\_area\_target: ["Produktion"]]]: Average 56,80, Target 51,65
- [[mvmt\_m\_f\_p\_category: ["kommissionsgesteuert"]]]: Average 46,50, Target 41,36
- End products: Average 36,21, Target 31,06
- [[customer\_a\_b\_c\_classification: "A"]]]: Average 31,06, Target 26,90
- [[part\_type: 61]]: Average 26,90, Target 21,75
- [[part\_product\_line: "1381"]]]: Average 21,75, Target 16,60
- [[part\_i\_d: "10190"]]]: Average 16,60, Target 11,45
- [[mvmt\_m\_r\_p\_category: ["bedarfsgesteuert"]]]: Average 11,45, Target 6,30

The chart shows that 'Produktion' is the largest area for optimization, followed by 'kommissionsgesteuert' and 'End products'.

## 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.



## 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.

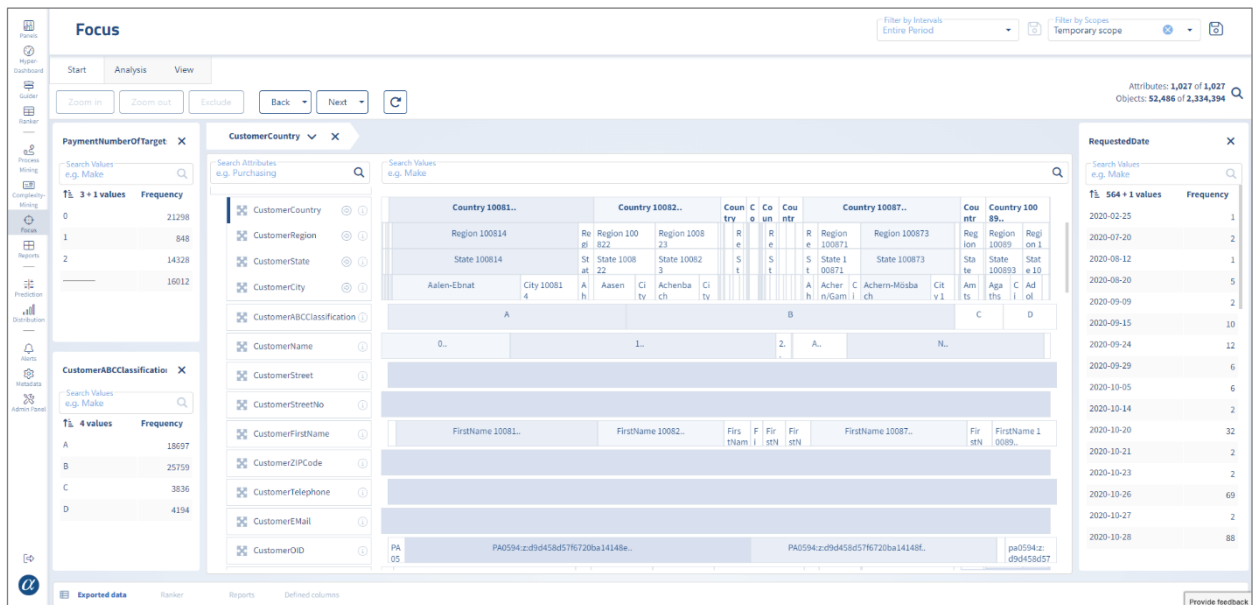
Here an example for the Payment Method Invoice. The Hyper-Dashboard provides an overview of the top measures for process improvements.



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

NPI	NLI	Driver	Driver Value	Indicator	Indicator Value	R Squared	Correlation	Actuals	Gain	Scope
1,228,230	150	Delivered On Tim...	49.38%	Days Sales Outst...	46.39 (days)	0.49	-0.70	€8,190.30k	€2,523.89k	[[mivmt_m_r_p_ar...
1,045,971	140	Delivered On Tim...	47.95%	Days Sales Outst...	48.06 (days)	0.46	-0.68	€7,476.48k	€2,252.74k	[[mivmt_m_r_p_ca...
951,839	133	Delivered On Tim...	47.78%	Days Sales Outst...	48.00 (days)	0.46	-0.68	€7,176.66k	€2,084.53k	End products
891,949	143	Delivered On Tim...	57.14%	Days Sales Outst...	46.28 (days)	0.43	-0.66	€6,245.62k	€2,053.92k	[[customer_a_b_c...
626,635	146	Delivered On Tim...	49.19%	Days Sales Outst...	56.78 (days)	0.53	-0.73	€4,280.45k	€1,174.27k	[[part_type["61"]]]
626,153	146	Delivered On Tim...	49.19%	Days Sales Outst...	56.80 (days)	0.53	-0.73	€4,280.45k	€1,173.68k	[[part_product_li...
561,369	165	Delivered On Tim...	49.76%	Days Sales Outst...	53.35 (days)	0.68	-0.82	€3,405.99k	€827.81k	[[part_i_d["10190...]]
554,675	167	Delivered On Tim...	44.88%	Days Sales Outst...	53.40 (days)	0.49	-0.70	€3,318.21k	€1,139.90k	[[mivmt_m_r_p_ca...
544,680	178	Delivered On Tim...	49.32%	Days Sales Outst...	58.99 (days)	0.39	-0.62	€3,057.86k	€1,410.07k	[[part_product_li...
528,335	63	Delivered On Tim...	53.52%	Days Sales Outst...	46.12 (days)	0.30	-0.55	€8,361.60k	€1,748.98k	Storage Area 100...
503,446	148	Delivered On Tim...	57.14%	Days Sales Outst...	58.93 (days)	0.41	-0.64	€3,407.57k	€1,231.54k	[[supplier_indust...
439,326	197	Delivered On Tim...	39.77%	Days Sales Outst...	72.99 (days)	0.42	-0.65	€2,227.58k	€1,043.02k	[[part_i_d["11177...]]
389,940	130	Delivered On Tim...	47.73%	Days Sales Outst...	61.67 (days)	0.41	-0.64	€2,991.62k	€955.06k	[[part_product_li...
388,081	157	Delivered On Tim...	38.06%	Days Sales Outst...	66.90 (days)	0.32	-0.57	€2,478.03k	€1,214.12k	[[part_product_li...
386,742	149	Delivered On Tim...	45.28%	Days Sales Outst...	51.06 (days)	0.46	-0.68	€2,587.24k	€841.74k	[[part_type["5"]]]
320,720	204	Delivered On Tim...	36.56%	Days Sales Outst...	74.43 (days)	0.52	-0.72	€1,575.23k	€614.98k	[[part_a_b_c_class...
265,822	22	Delivered On Tim...	57.74%	Days Sales Outst...	46.25 (days)	0.13	-0.36	€11,849.21k	€2,030.06k	[[part_a_b_c_class...
244,851	165	Delivered On Tim...	37.20%	Days Sales Outst...	65.49 (days)	0.32	-0.57	€1,485.17k	€755.03k	[[part_i_d["11177...]]
231,143	320	Delivered On Tim...	52.03%	Days Sales Outst...	50.89 (days)	0.58	-0.76	€722.04k	€398.64k	[[part_a_b_c_class...

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.



# 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.

## 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.

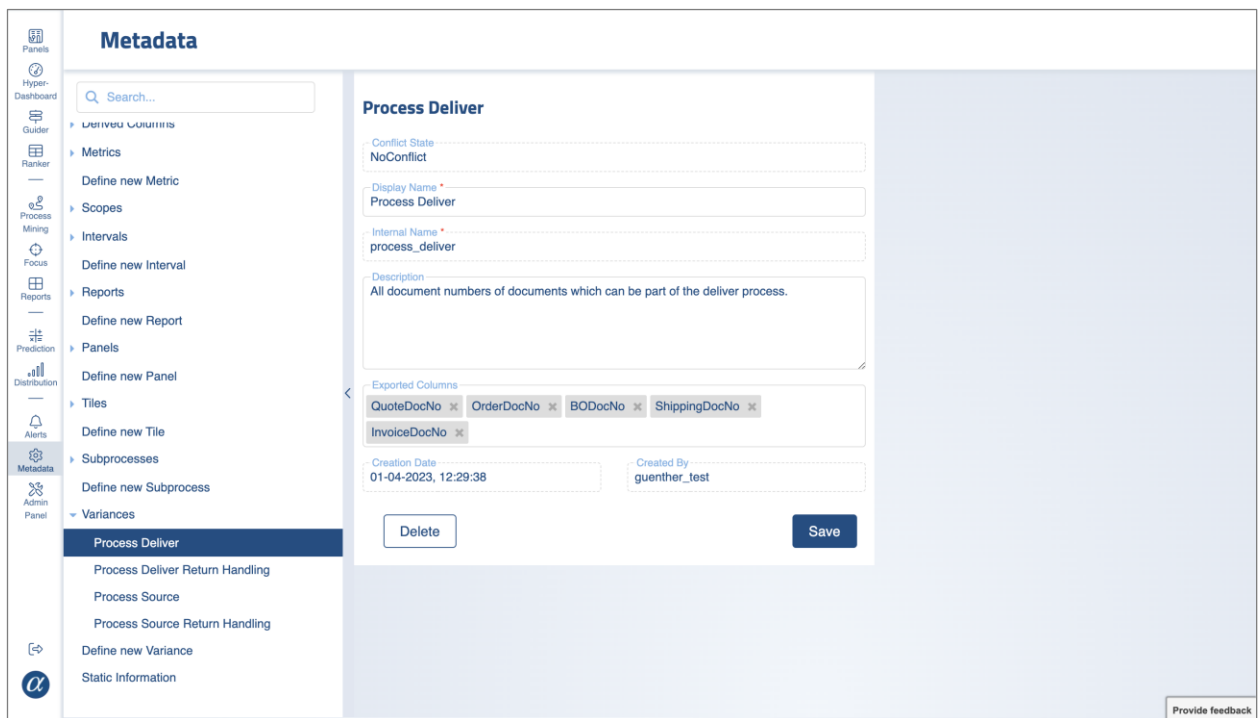
This makes patterns (e.g., populations of columns) easier to spot.

# New and Changed Capabilities

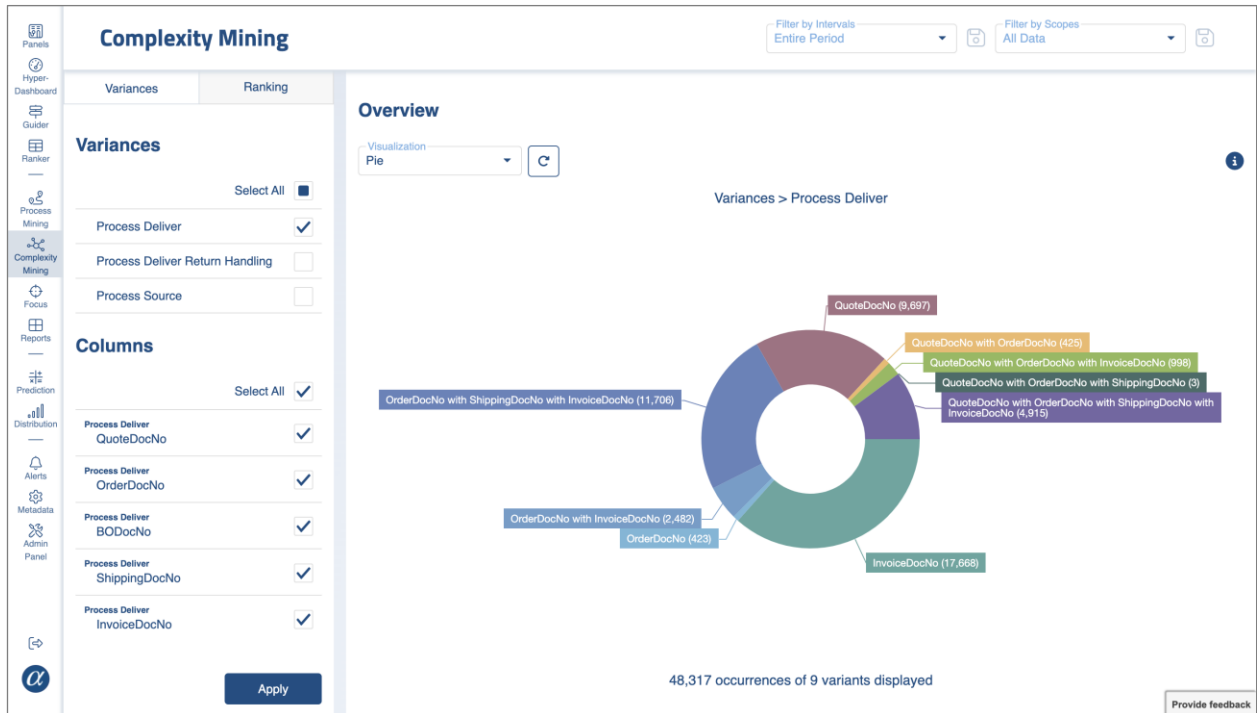
## Complexity Mining (NEW)

In the NEMO context complexity is defined as the number of business process variants required to execute the business, i.e., as more variants as higher the complexity.

The to be analyzed business process variants are specified in so-called business process variances.

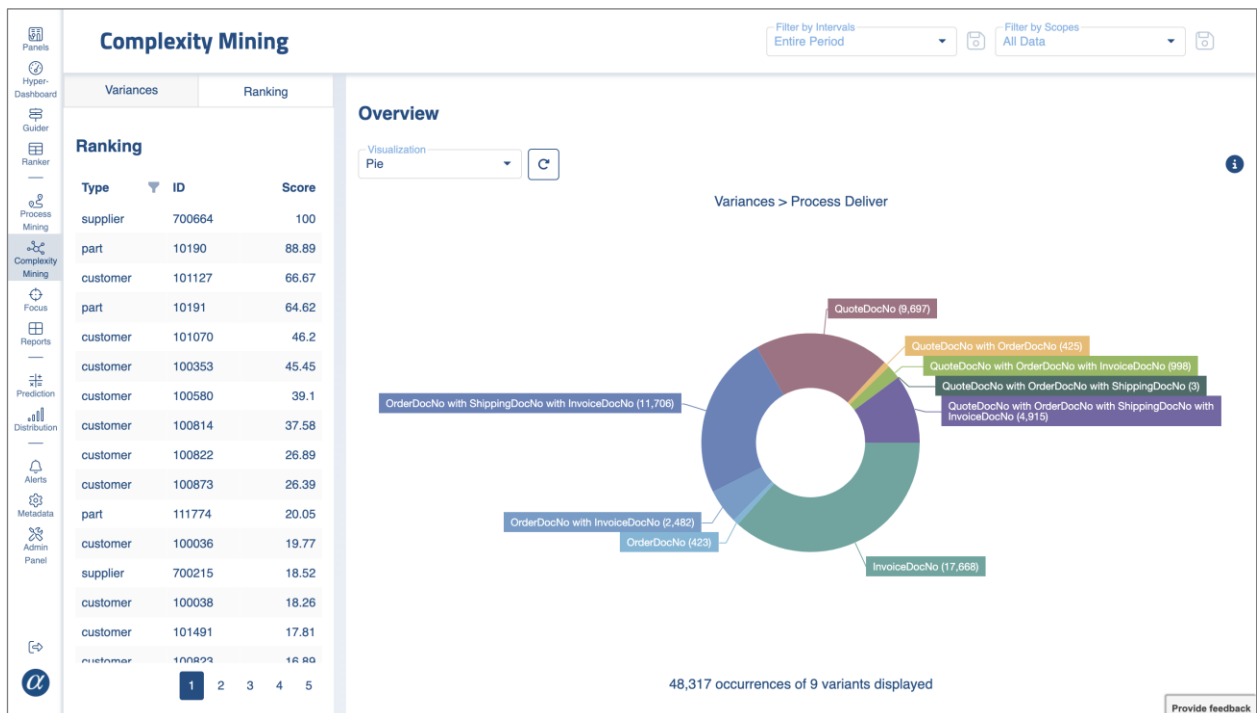


In this case the basic order-to-invoice process should be evaluated for its variants.

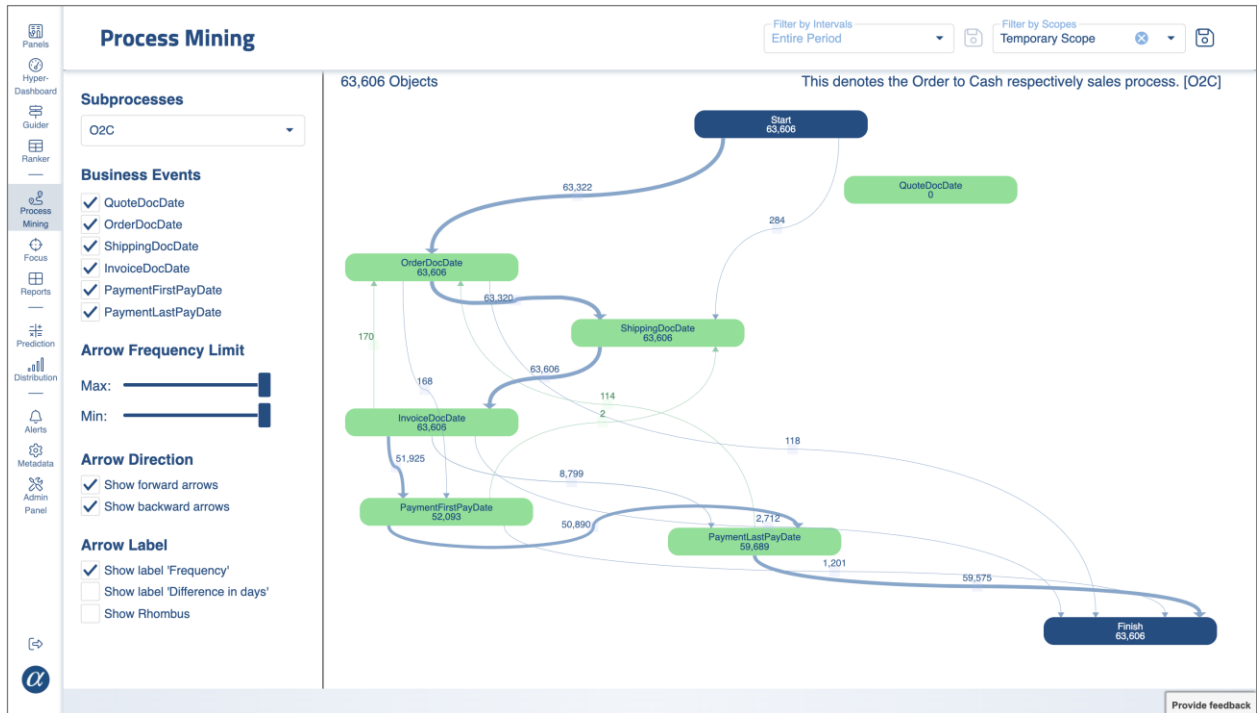


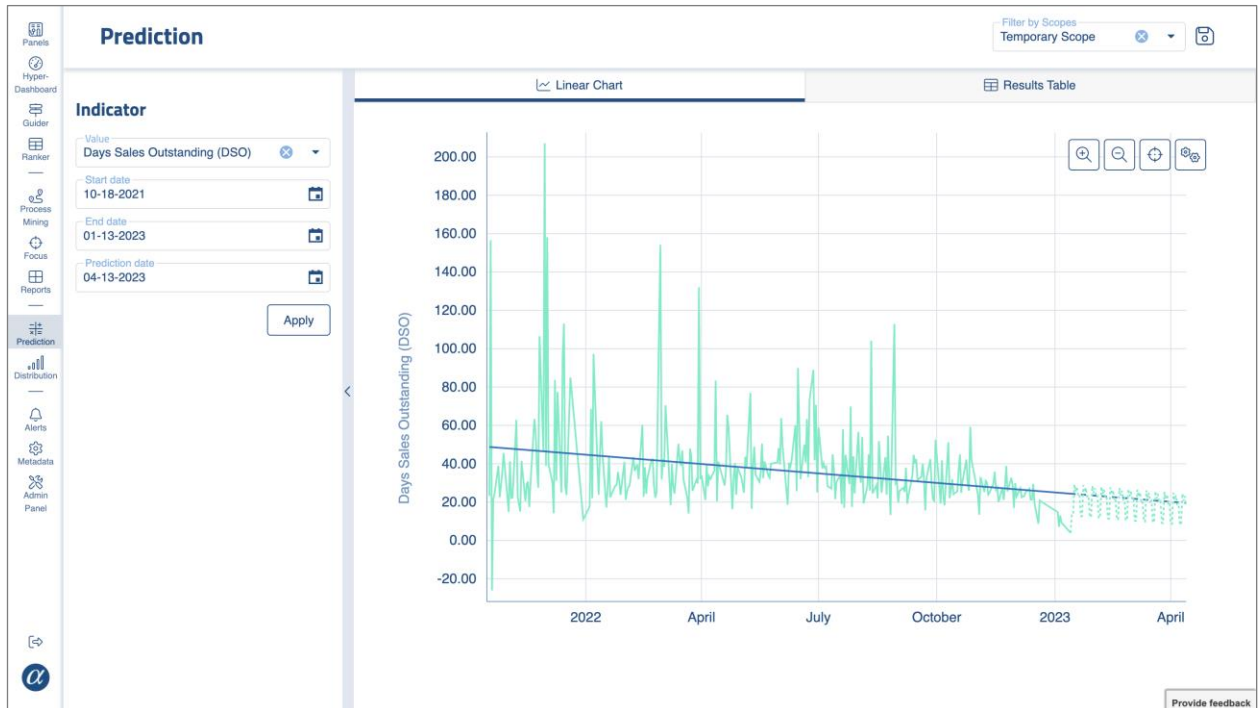
There are 48,317 business process occurrences in nine (9) business process variants.

These nine variants yield following complexity ranking along the resources supplier, part, and customer.

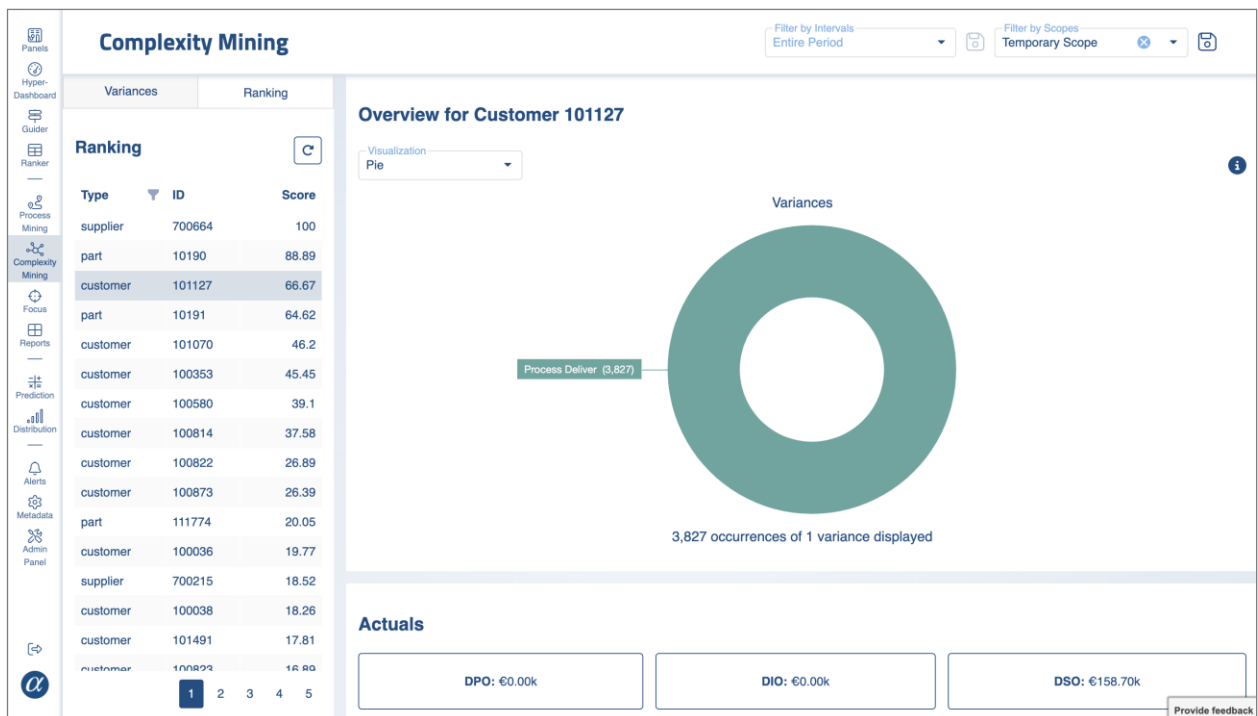


Selected variants can be further analyzed with other NEMO mini-apps.



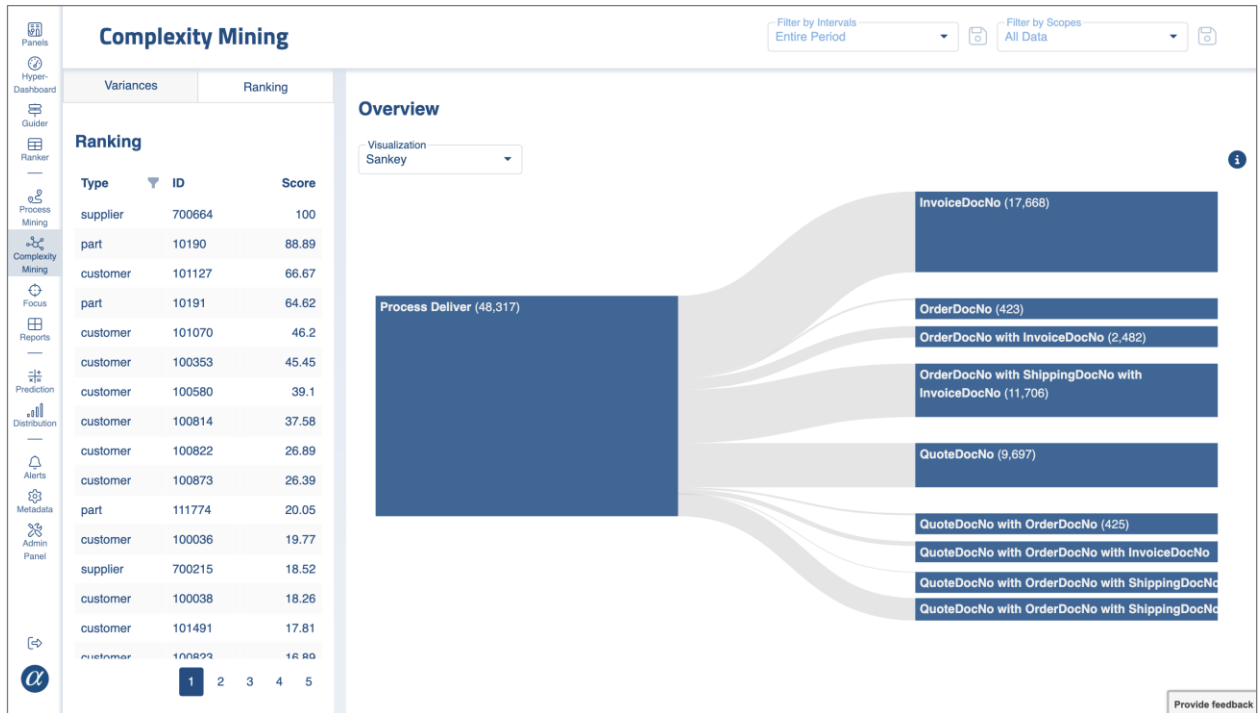


Furthermore, the ranking of the business variants could be analyzed further.



Among others the currently tied up respectively retained working capital is depicted as well.

Last but not there is a choice of various other graphical representations of the complexity information.



## Production Metrics (NEW)

Various production metrics have emerged out of early customer feedback.

**Average Number Of Manual Planning Tasks**

Conflict State: NoConflict

Display Name: Average Number Of Manual Planning Tasks

Internal Name: average\_number\_of\_manual\_planning\_tasks

Description: Average number of manual planning tasks per production order  
- Only production activity log with origin 'Einzelterminierung' was taken into account.

Tags: #make

**Average Number Of Planning Tasks**

Conflict State: NoConflict

Display Name: Average Number Of Planning Tasks

Internal Name: average\_number\_of\_planning\_tasks

Description: Average number of planning tasks per production order  
- Only production activity logs with origins 'Komplettoptimierung', 'Einzelterminierung', 'Grobterminierung', 'Feinplanung' were taken into account.

Tags: #make

**Production Reliability Days**

Conflict State: NoConflict

Display Name: Production Reliability Days

Internal Name: production\_reliability\_days

Description: Variance of start dates - data entry for last planning



## Production Metrics (IMPROVED)

The production metric "Late Production Rate" has been slightly improved.

### Late Production Rate

**Conflict State**  
NoConflict

**Display Name**  
Late Production Rate

**Internal Name**  
late\_production\_rate

**Description**  
This metric shows the percentage of production orders that were late in their completion date. This can show how much potential capital is lost due to late completion. The completion date and the end date of production are taken into account in the calculation.

**Tags:** #make

### Ranker

Filter by Scopes  
 All Data

	NPI	NLI	Driver	Driver Value	Indicator	Indicator Value	R Squared	Correlation	Actuals	Gain	Scope
	=	=	=	=	=	=	=	=	=	=	=
▶	46,088	15	Late Production Rate	20.79%	Days Sales Outstanding (D...	47.45 (days)	0.1	0.31	€3,178,130.24	€480,007.22	[[mvm_t_r
▶	21,649	2	Late Production Rate	9.4%	Days Sales Outstanding (D...	44.81 (days)	0.04	0.2	€9,832,945.22	€547,381.11	[[part_a_j
▶	13,149	2	Late Production Rate	9.21%	Days Sales Outstanding (D...	46.45 (days)	0.03	0.18	€6,468,135.51	€427,179.45	[[mvm_t_r
▶	9,055	2	Late Production Rate	6.21%	Days Sales Outstanding (D...	48.1 (days)	0.03	-0.19	€5,929,555.82	€262,552.48	[[mvm_t_r
▶	8,151	4	Late Production Rate	4.77%	Days Sales Outstanding (D...	43.37 (days)	0.09	0.29	€1,910,527.03	€95,307.45	[[custome
▶	5,137	2	Late Production Rate	3.73%	Replenishment Deviation	10.43 (days)	0.06	0.25	€2,646,560.37	€83,250.14	[[custome
▶	4,611	0	Late Production Rate	5.61%	Replenishment Deviation	8.04 (days)	0.02	0.12	€9,832,945.22	€305,742.23	[[part_a_j
▶	4,194	4	Late Production Rate	8.55%	Days Sales Outstanding (D...	32.3 (days)	0.05	0.23	€999,288.01	€81,760.18	[[custome
▶	3,132	4	Late Production Rate	42.91%	Days Sales Outstanding (D...	118.17 (days)	0.12	0.35	€860,866.13	€25,227.17	[[custome
▶	2,275	14	Late Production Rate	20.69%	Days Sales Outstanding (D...	19.03 (days)	0.1	0.31	€160,521.61	€23,669.62	[[custome
▶	1,473	0	Late Production Rate	10.47%	Replenishment Deviation	11.63 (days)	0.02	0.13	€3,178,130.24	€92,660.08	[[mvm_t_r
▶	1,383	48	Late Production Rate	12.69%	Days Sales Outstanding (D...	33.9 (days)	0.6	0.77	€28,723.70	€2,324.36	[[custome
▶	1,148	3	Late Production Rate	8.81%	Replenishment Deviation	8.59 (days)	0.03	0.16	€355,682.19	€43,646.80	[[custome
▶	1,019	222	Late Production Rate	26%	Days Sales Outstanding (D...	15.65 (days)	0.63	0.79	€4,593.74	€1,615.49	[[custome
▶	1,012	5	Late Production Rate	35.93%	Days Sales Outstanding (D...	32.17 (days)	0.04	0.21	€187,578.59	€23,654.07	[[part_prc
▶	806	0	Late Production Rate	3.4%	Replenishment Deviation	11.06 (days)	0.01	0.12	€1,910,527.03	€54,020.82	[[custome

10 25 **50** 100

1 2 3 4 5 ... 17

[Provide feedback](#)

## 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
<b>ProdOrderActMileStoneDate</b>	Milestone date of production activity #ERP-Origin: MB_Aktivitaet.MeilensteinDatum

## Compatibility

NEMO is compatible with all ERP releases from 6.1 onwards.

### 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

- N.A.

### Known Issues

- None

## Documentation

Apart from this Release Letter, the following documentation is available.

- NEMO Glossary 2023-02-03 (updated)
- NEMO Data Structure 2023-01-20 (no update)
- NEMO Formula Syntax 2022-07-22 (no update)

## Availability

All production environments have been updated already.