

# SARTORIUS

## Simplifying Progress

### News

SIMCA®-online 17



# SIMCA®-online 17

## News

- Batch Aggregation nodes in Batch Context Generator
- User defined Python libraries for preprocessing
- Manage data source connections on the fly
- Performance optimizations
- Active directory improvements
- Model update automation

## Minor updates

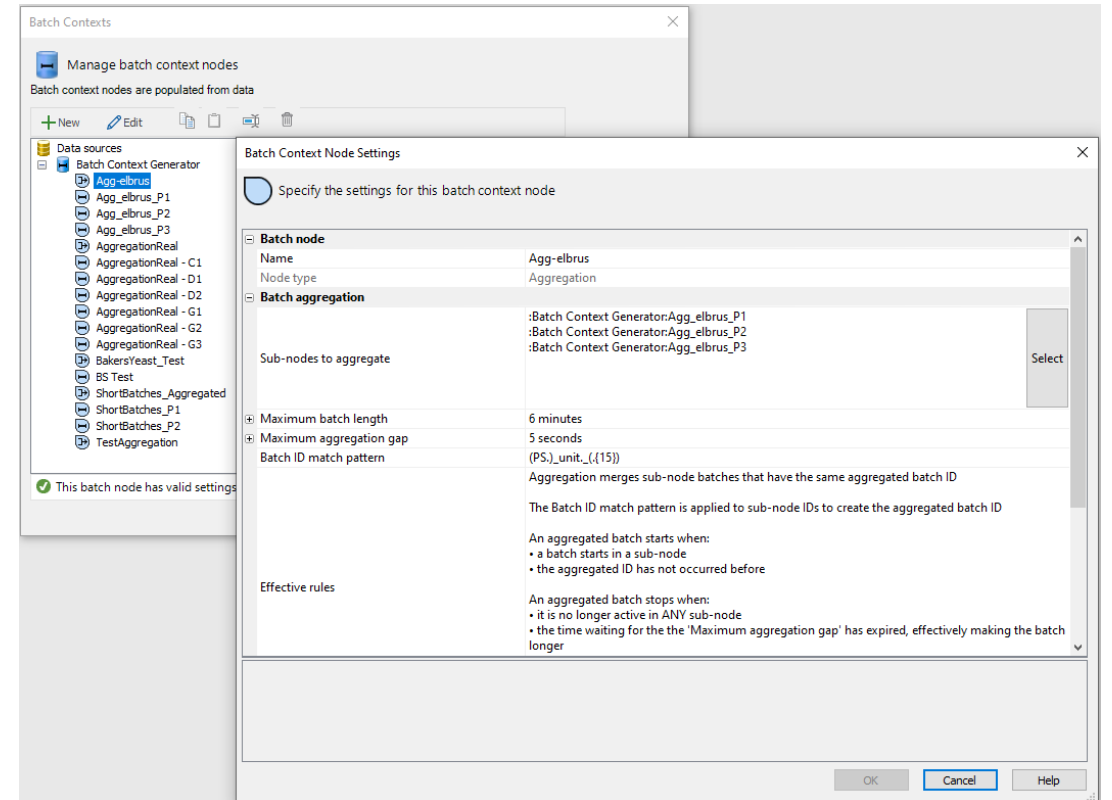
- UX improvements in desktop client
- Baseline Filters to combine IPC and process data
- Suppress alarm notifications during predict of past batches

## Bug fixes

- Server crash when alarm notification is sent at the same time as the configuration it belongs to is deleted (system)
- Deleting multiple projects and configurations when the tree is collapsed does not always count the number of items correctly (desktop client)
- Reset button on login page only works once (web client)

# Batch Aggregation Nodes in Batch Context Generator

- Benefits
  - Detect and correct deviations in multi-unit processes with improved access to process data
- Apply to
  - Server | desktop client | web client
- Change
  - Added aggregation nodes, which is a new type of node in Batch Context Generator
  - Data can be combined and monitored at the batch level since all units are executed in the same project
  - Batch ID match pattern in batch context node settings, batches with similar, but not identical, IDs can also be aggregated
  - Improved Batch Context generator work-flow



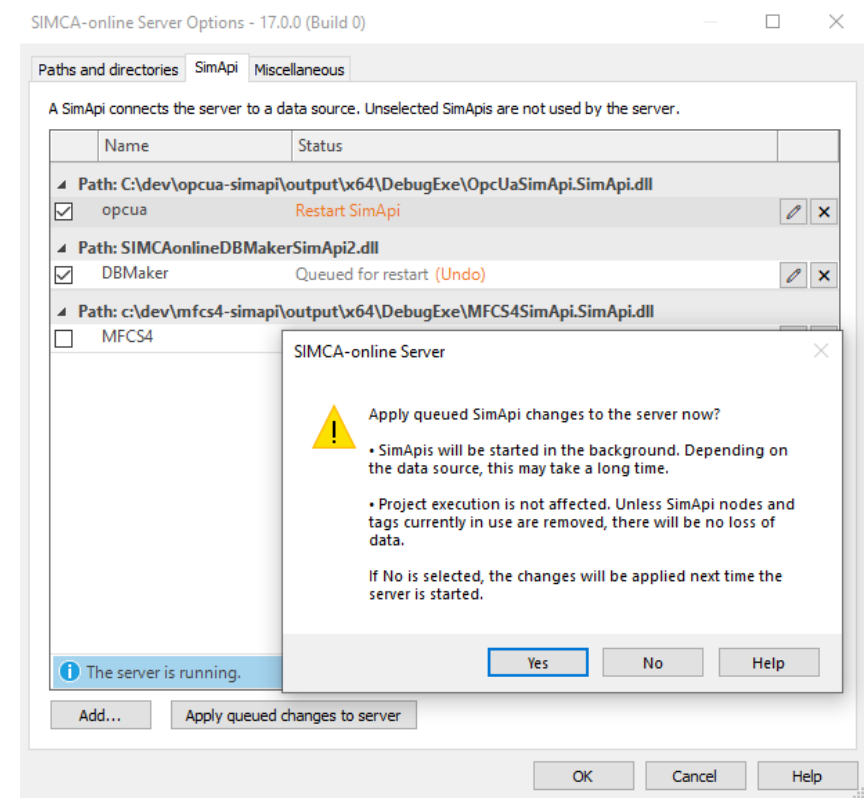
# User Defined Python Libraries for Preprocessing

- Benefits
  - Customer free to use any analytics within Python realm
  - Use flexible scripting to further enhance SIMCA®-online functionality
- Apply to
  - Server
- Change
  - Match python package versions with SIMCA® 17
    - Python version 3.7.9
    - **NumPy** (1.19.5), **SciPy** (1.6.0) and **Pandas** (1.2.0) bundled
  - Script added for installing Python packages that are compatible with main version and have no graphical UI
  - User free to add any python package



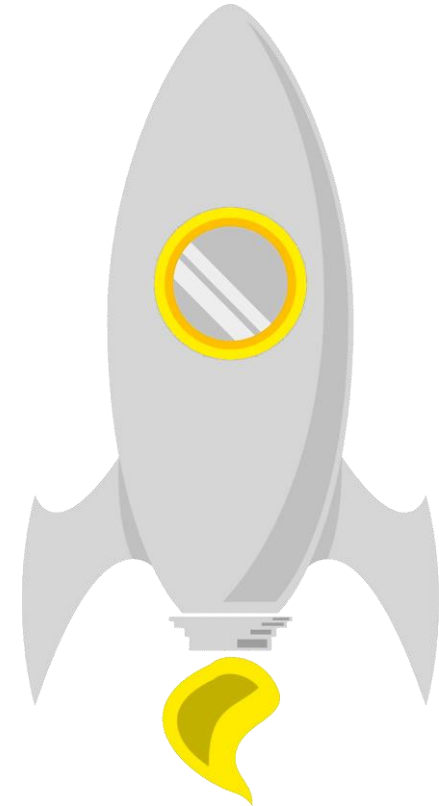
# Manage Data Source Connections on the Fly

- Benefits
  - Data source connections can be updated at any time without interrupting users or live monitoring of the process
  - Down-time reduced to zero
- Apply to
  - Server
- Change
  - Administrators can manage SimApis on a running server, without affecting project execution
    - add a new SimApi
    - restart individual SimApis or include new data source tags
    - disable or remove SimApis from the server
  - Solution for backup with e.g. windows volume shadow copy service



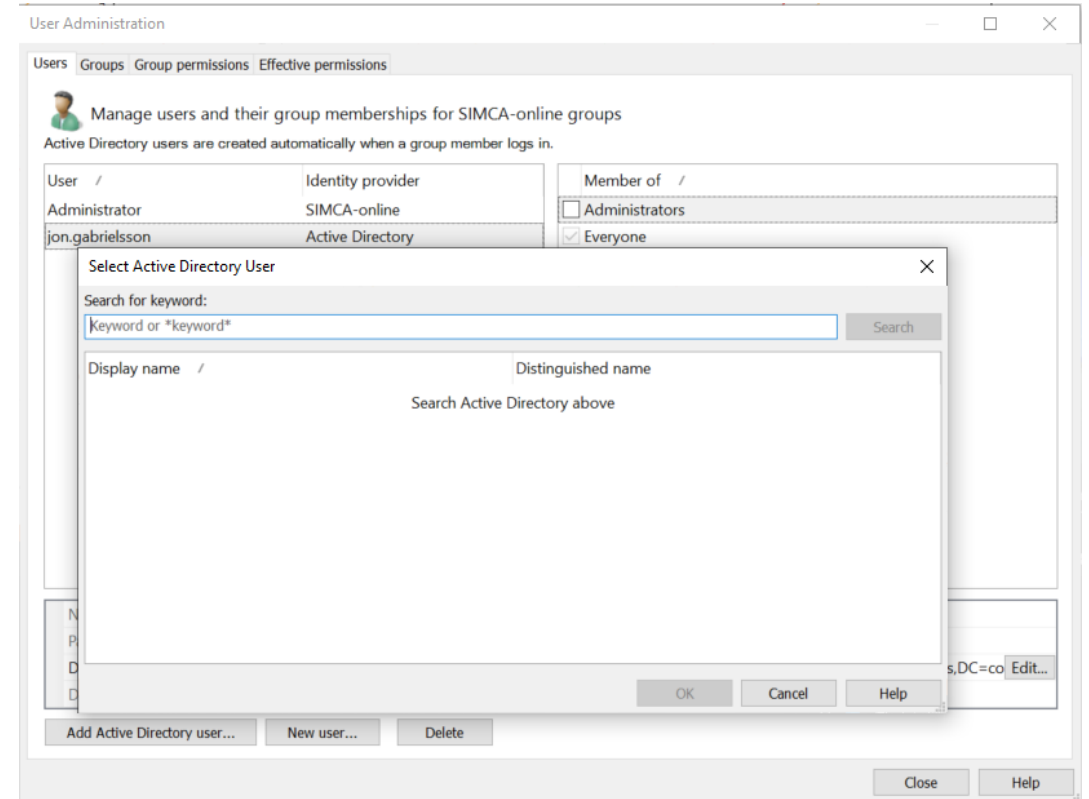
# Performance Optimizations

- **Benefits**
  - For a single project configuration reads are reduced by 50 to 67%. When many projects execute at the same time, the number of reads are reduced even more
  - Plot update time decreased
  - Add data for project update (up to 4 times faster)
- **Applies to**
  - SIMCA®-online system
- **Change**
  - Grouping many data reads into single reads from a data source
  - Can keep up with executions of more configurations
  - Less traffic between SIMCA-online and the data source, and thus less load on the data source itself and the network
  - The server is less sensitive to slow data sources and high latency in the network to the data source
  - Updated plot library
  - Improved method adding data on server for project update



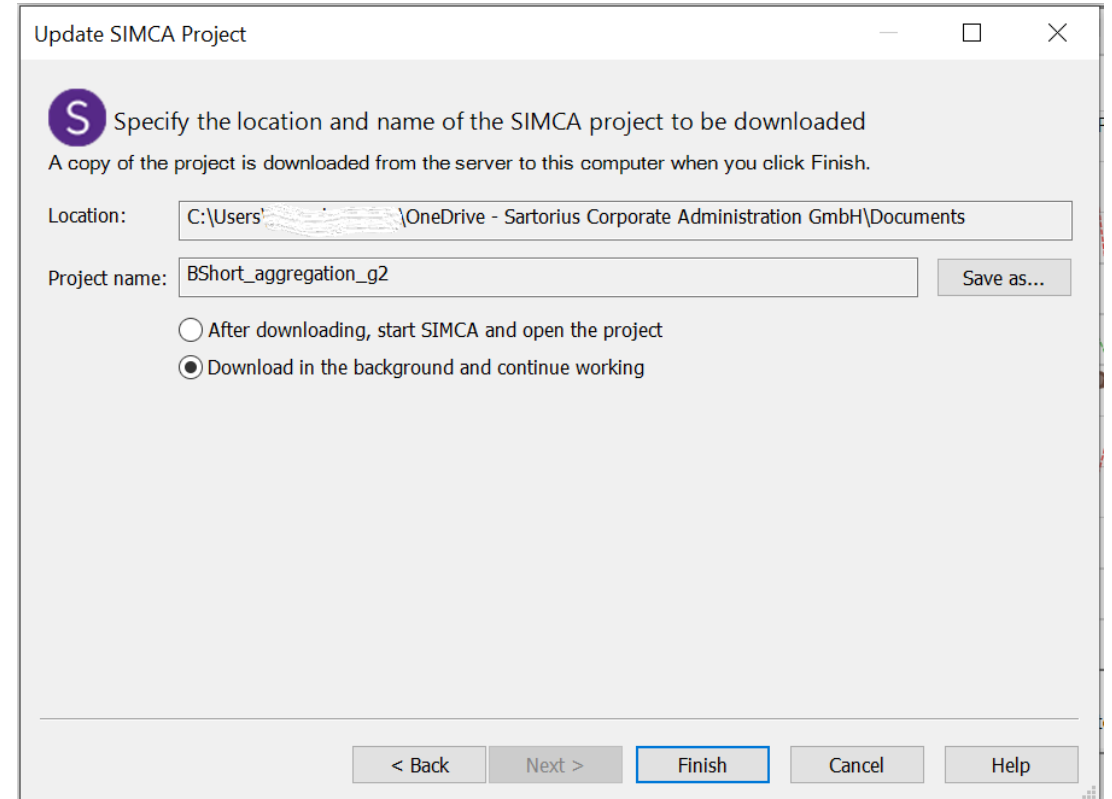
# Active Directory Improvements

- **Benefits**
  - Reduced need for manual user management, while keeping full control of which users are allowed to log in.
- **Applies to**
  - SIMCA®-online system
- **Changes**
  - Search for AD groups and users by name or email (wildcard and substring search supported).
  - Names of users and groups from AD are used in SIMCA®-online which makes it easy to identify groups and users.
  - Display name for Active Directory users is used to annotate user actions in alarms, notes and other places.
  - Changed how Active Directory is set up and tested in SIMCA®-online Server Options. The entire domain can be searched for groups and users (also when migrating from an earlier version).



# Model Update Automation

- **Benefits**
  - Save time by automating the model update procedure
  - Minimize likelihood of false positive | negative results in process deviations are identified
- **Applies to**
  - Desktop client and server
- **Changes**
  - Batch download of SIMCA® projects, download in the background
  - Update project considerably faster compared to previous versions thanks to improved write speed when adding data
  - Customer can script the model update for a fully automatic model update (only need to sign when uploading updated project to SIMCA®-online)
  - Script example available upon request for triggering update of SIMCA® project





# UX Improvements in Desktop Client

- Benefits
  - Improved Production Overview with overall alarm status and separate desktop contents
  - Simplified Project explorer focused on admin management of projects
- Apply to
  - Desktop client
- Change
  - Production Overview
    - Configuration status
  - Project Explorer
    - Removed configuration tabs
  - Tabs
    - Removed, navigate configurations in panes

The screenshot displays the SIMCA Desktop Client interface with two main panes: Project Explorer on the left and Production Overview on the right. Annotations highlight several UX improvements:

- Project Explorer:**
  - Context dependent toolbar:** A toolbar at the top of the pane with icons for search, refresh, and other actions.
  - Search for projects and configurations by name/status:** A search bar at the top of the pane.
  - Currently active configuration:** A tooltip showing details for the selected configuration: "Name: BShort\_bcg\_aggregation (2)", "ID: 4f7876bd-1abc-4a3b-aa7b-4f5e463f642a", "Execution: On", "Created: 2022-01-27 15:35", and "Modified: 2022-01-27 15:38".
  - Open configurations marked in bold, single click to activate:** The selected configuration is bolded in the tree view.
- Production Overview:**
  - Search for batches:** A search bar at the top of the pane.
  - Link to Workset batches for easy multi-select:** A link labeled "Workset batches..." is present in the "WORKSET (4)" section.
  - Overview of alarms status of all open configurations, can be minimized:** A list of open configurations at the bottom, each with a colored bar indicating its alarm status (e.g., green for active, red for alarm).

# Baseline Filters to Combine IPC and Process Data

- Benefits
  - It is possible to combine less frequently sampled IPC\* data with process data with baseline filters.
- Applies to
  - SIMCA®-online system
- Change
  - IPC data can be treated as continuous data using baseline filters.
  - Values for variables in the beginning of the phase are sampled but are now set to missing by SIMCA®-online.
  - The assumption is that when the values change, they belong to the phase.

Project configuration - BakersYeastMonitorDemo

Specify execution interval (in seconds) for each phase  
The execution interval is how often process data tags are read. These settings cannot be changed once saved.

	1	2	3	4	5
1	Phase	Execution interval (s)	Duration	Data retrieval	Baseline filters
2	M4, BEM Monitoring	3	00:04:09	Continuous	Temp_SP; Air_SP; ▾
3	Entire batch	---	00:04:09	---	Edit...

Select baseline filter variables

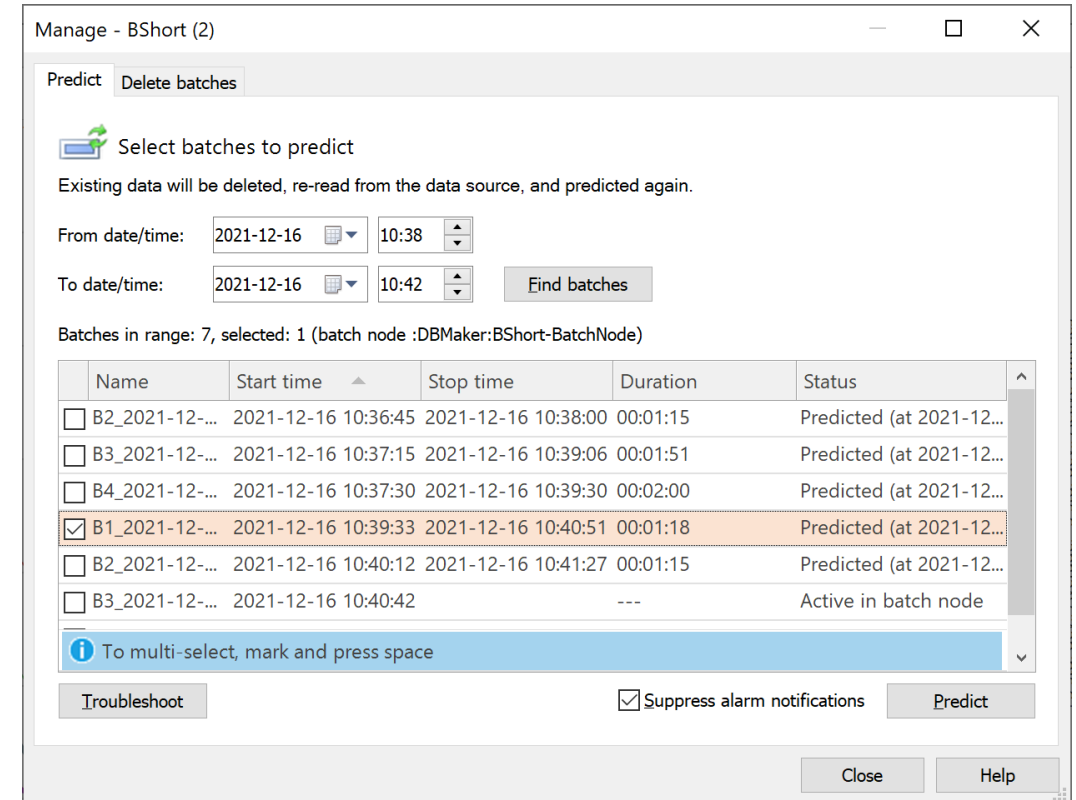
Variable

- Ethanol
- Temp
- Molasses
- NH3
- Air
- Level
- pH
- Temp\_SP
- Air\_SP
- Time (Hrs)

OK Cancel

# Suppress Alarm Notifications During Predict of Past Batches

- Benefits
  - Situation based notifications
- Applies to
  - SIMCA®-online system
- Change
  - Default in SIMCA®-online 17 is to not send notifications during re-predict, with an option to turn them on.
  - In previous versions of SIMCA®-online, notifications were always sent for triggered alarms when predicting past batches.
  - Alarm notifications are not sent out during re-predict, when they are determined to be of limited value.



# Bug fixes and details

## ▪ Server | System

- SIMCA® 17 compatibility
- Licensing now uses the new LEM system
- Server crash when alarm notification is sent at the same time as the configuration it belongs to is deleted (bug 32673)
- Excessive, incorrect server logging for Batch Context Generator (bug 31674)

## ▪ Desktop client

- Improved Batch Context Generator work-flow
- Configuration activation with maximized plot shows everything blank (bug 26038)
- Client crashes when format plot dialog is open on Styles (bug 28988)
- Deleting collapsed projects refused as one configuration is not discovered (bug 30805)
- Marking only works at symbol center in plots (regardless of symbol size) (bug 30900)

## ▪ Web client

- Batch condition alarms not shown in chart and alarms list on chart page (bug 26587)
- Number formats of small numbers in tooltips in charts (bug 21031)
- Reset button on login page only works once (bug 30810)
- Removed unnecessary console logging

# SARTORIUS

## Simplifying Progress



## SIMCA<sup>®</sup>-online 16.1

Version info

# SIMCA<sup>®</sup>-online 16.1

## News

- Reset alarms in the Web Client
- Troubleshooting for continuous project configurations
- External libraries for Python pre-processing
- Permissions granted to groups (replaces previous use of roles)
  - Adds more flexibility to permissions
  - More granular permissions of what users can do
- Faster load time of client workspaces
- Regular expression matching in phase execution conditions

## Smaller fixes

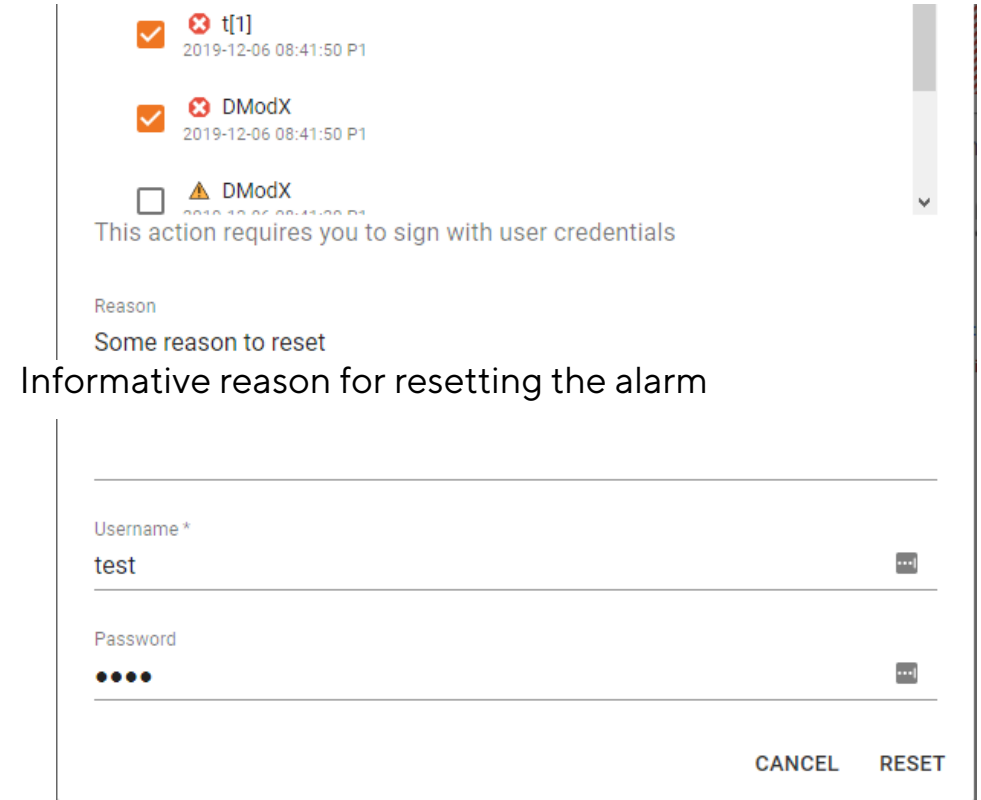
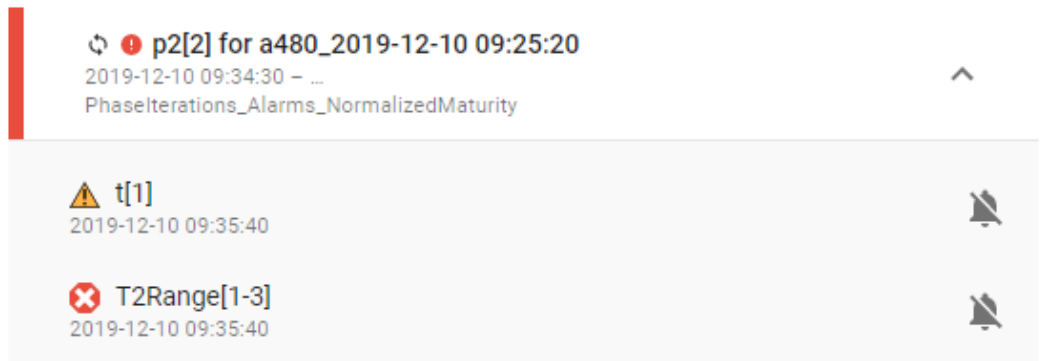
- Maximize button in all client panes
- All active directory users can now be listed and imported where previously a subset was used

## Bug fixes

- Batch plots that use color by is now colored correctly when opened from a workspace
- File | Share Workspace by email attachment works even if the option for session workspaces is turned off

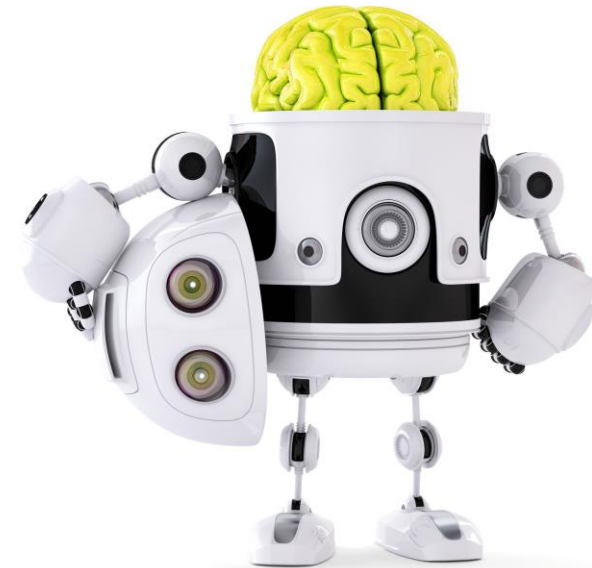
# Reset alarms in Web Client

- Benefits
  - Web client can be used as a daily work tool to be compliant with 21 CFR part 11 (Electronic Signatures)
- Applies to
  - Web Client
- Change
  - Reset alarms with electronic signatures from several different locations in the web client



# Troubleshooting improvement for continuous project configurations

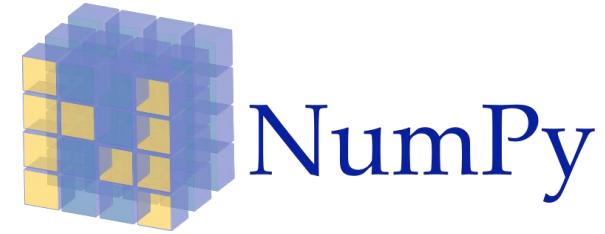
- Benefit
  - Troubleshooting is easier to do and lets users find answers themselves instead of the need to contact the online support
- Applies to
  - Continuous projects/processes
  - (Same functionality for batch projects was released with SIMCA-online 16.0)
- New functionality
  - Administrators can use the built-in troubleshooter on the Administration tab
  - Verifies configuration and tag validity





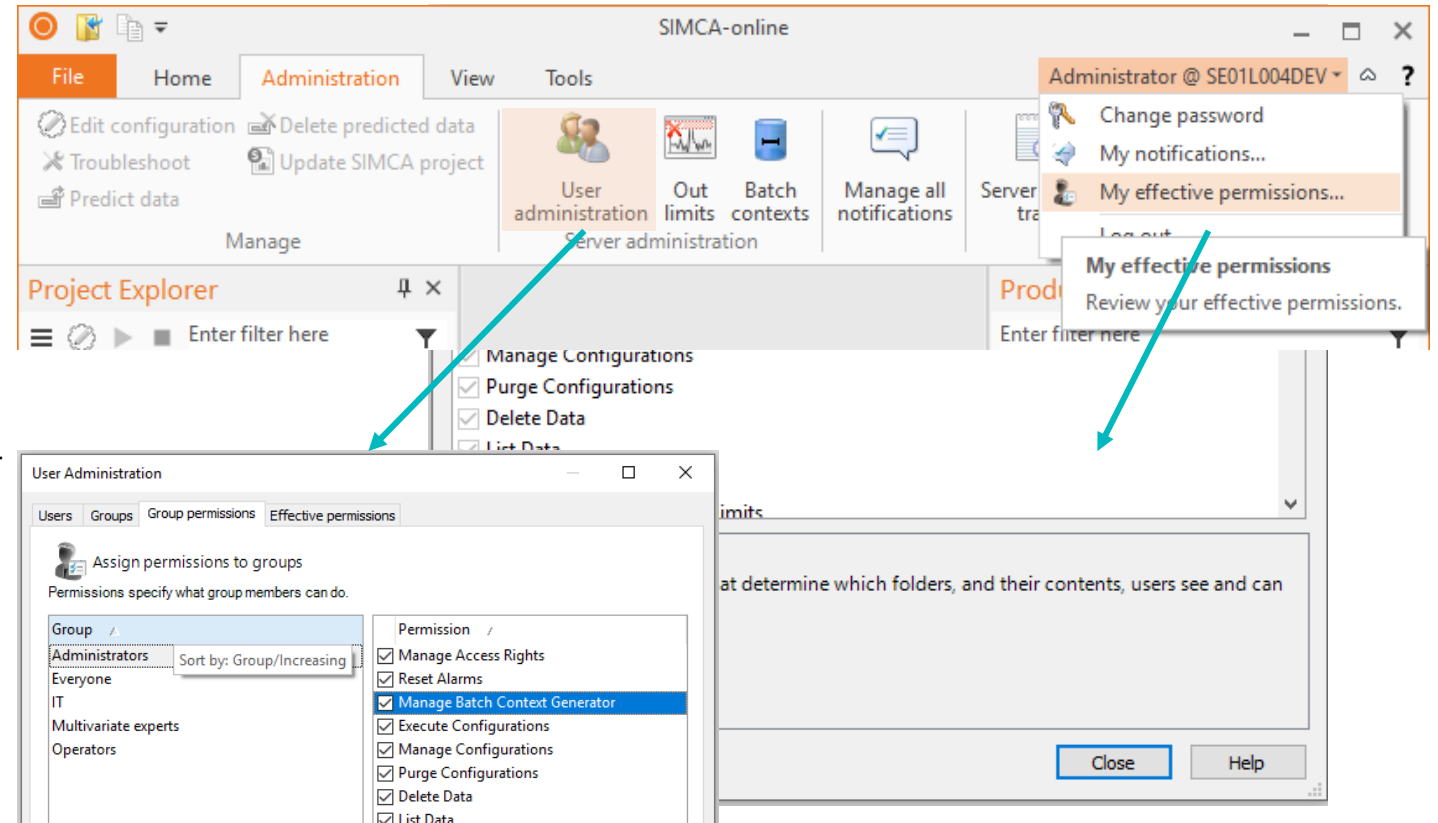
# External libraries for Python pre-processing

- Benefit
  - Scripts running math calculations run faster than without the SciPy or NumPy libraries
- Applies to
  - USP files with Python pre-processing
- Change
  - Preprocessing scripts now support code dependent on the Python libraries **NumPy** (1.15.4) and **SciPy** (1.1.0)
  - These are standard packages for doing math on multidimensional data



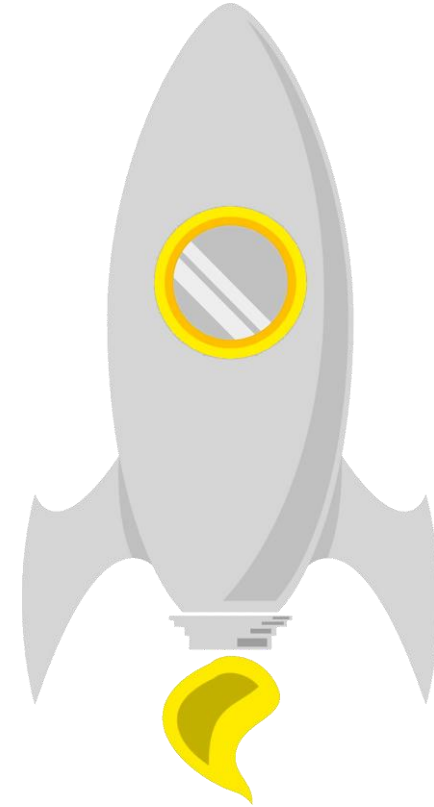
# Permissions granted to groups (replaces previous use of roles)

- Benefits
  - Easy management of users and permissions
- Applies to
  - Server user authorization
- Change
  - Permissions are granted to groups
  - Roles have been removed, and will migrate to groups when upgrading the system
  - Final permissions is the union of all the permissions for all groups that the user is a member of
  - Each user can see their own effective permissions
  - Administrators can see effective permissions for any user
  - The “Everyone” group will affect all users
  - Permissions are more granular



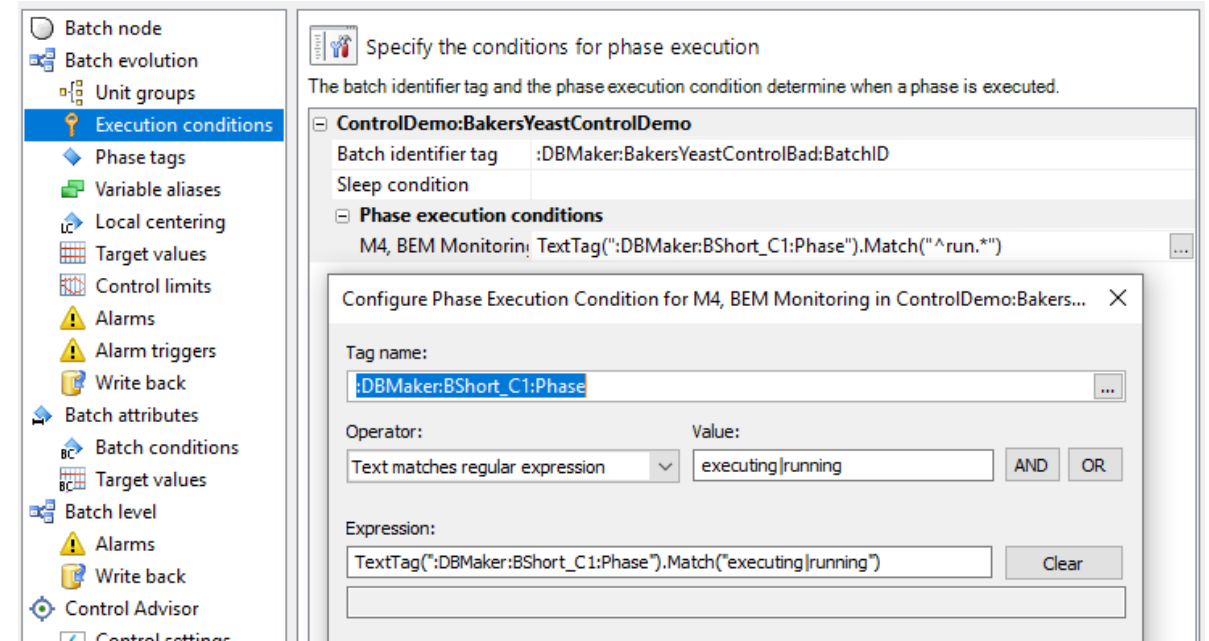
# Faster load time of client workspaces

- Benefits
  - Start-up of clients is about 30% faster
  - Loading a server workspace is about 30% faster
- Applies to
  - Desktop client workspace
- Change
  - Performance of workspaces have improved



# Regular expression matching in phase execution conditions

- Benefits
  - Allows execution of phases with a regular expression instead of plain text comparisons
- Applies to
  - Batch configurations
- Change
  - Phase execution conditions has now support for regular expression matching using the Match function
- Tip: if you want to test regular expressions a great tool is <https://regex101.com/>



# SARTORIUS

## Simplifying Progress



## SIMCA<sup>®</sup>-online 16

Version info

# SIMCA<sup>®</sup>-online 16

## ▪ Server

- SIMCA<sup>®</sup> 16
- Late entry data
- Monitor excluded variables
- Python script pretreatment
- Administrable notifications
- Bug fix: Server unresponsive when batch contexts were used in combination with notifications and other subsystems
- Bug fix: Server shutdown was not correctly performed

## ▪ Desktop client

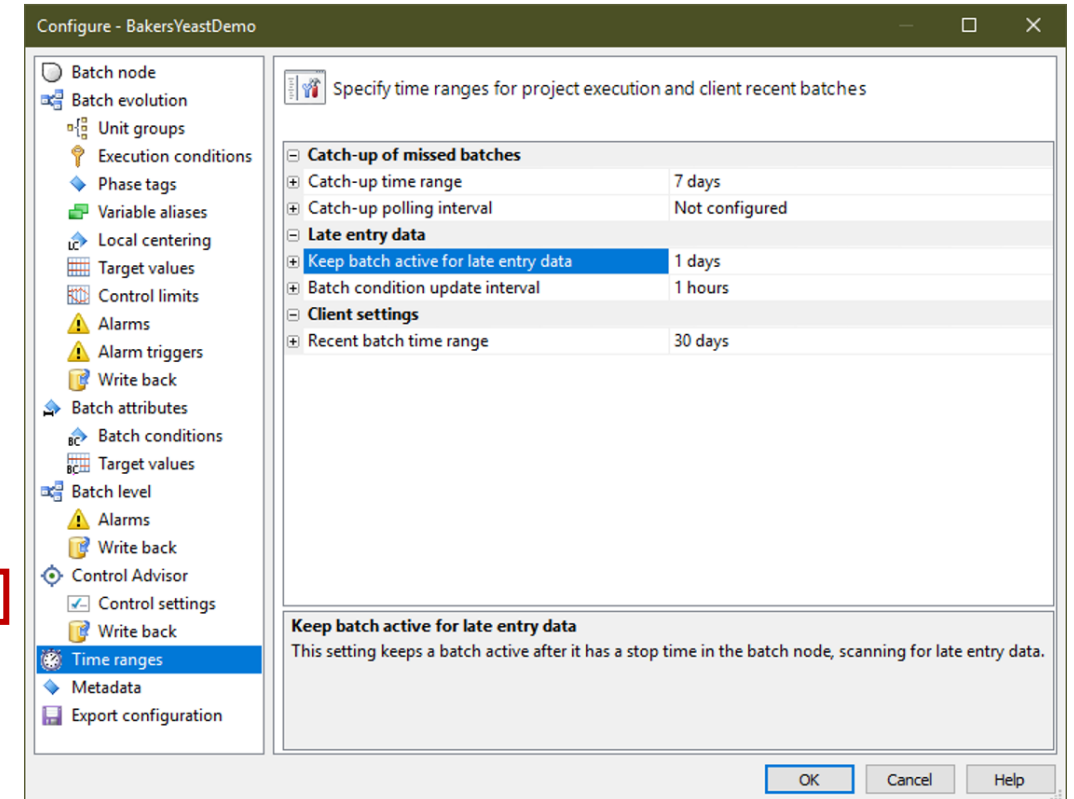
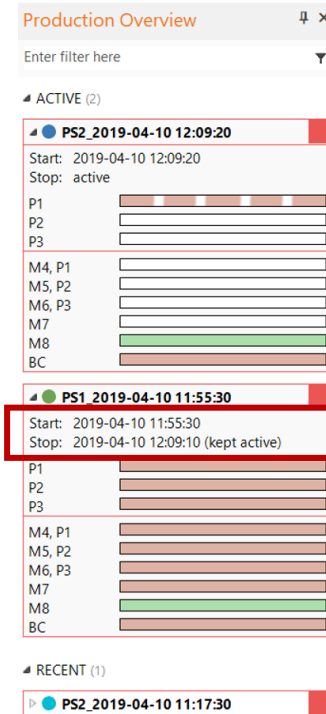
- Panes and Filters
  - Project explorer pane
    - Improved usability
    - Smart filters
    - Multiselect
  - Unit overview pane
    - View and open projects that are currently executing
    - Smart filters
    - Performance improvement
  - Production overview pane
    - Global batch selection
    - Batch colors
    - Find and retain historical batches
    - Include workset batches
    - Smart filters
  - Properties pane
    - Plot properties for active plot
- Peek value of tags in configuration
- Clamping

## ▪ Web client

- Comparison between production
  - Search server for historical batches
  - Multiple data vectors
  - Easy add/remove vectors and batches
  - Multiple Y-axes
- System overview and Batch timeline
- Batch level charts with alarms
- Alarm view
- Clamping

# Late entry data

- Benefits
  - Enables SIMCA®-online to be used as CPV tool together with Active Dashboard
- Applies to
  - At-line/IPC/discrete data
  - CQA/batch condition data
- New functionality
  - Wait for and read data that exists after batches have finished producing
  - Look for data at a configurable time interval
- Feedback by the system to the user
  - Information about an ended batch that is kept alive in the production overview



# Monitor excluded variables

- Benefits
  - Visualizing variables that are not and should not impact the model is now a lot easier
- Applies to
  - Continuous projects/processes
  - (Same behavior for batch projects exists as a work-around; see relevant KB article for more information)
- New functionality
  - Makes it possible to view variables that are imported to the SIMCA® project, but excluded from the model

Connect the SIMCA model variables with corresponding data source tags  
Unconnected variables will be treated as missing values.

	1	2
1	<b>Primary ID</b>	<b>Tag</b>
2	Ag ppm	:DBMaker:Process_Cuprum_Good:Ag ppm
3	Ni ppm	:DBMaker:Process_Cuprum_Good:Ni ppm
4	Pb ppm	:DBMaker:Process_Cuprum_Good:Pb ppm
5	Bi ppm	
6	Sb ppm	:DBMaker:Process_Cuprum_Good:Sb ppm
7	Se ppm	:DBMaker:Process_Cuprum_Good:Se ppm
8	(Time)	
9	(As ppm)	:DBMaker:Process_Cuprum_Good:As ppm
10	(Te ppm)	

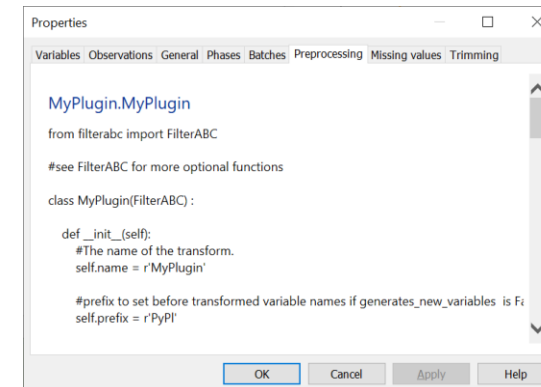
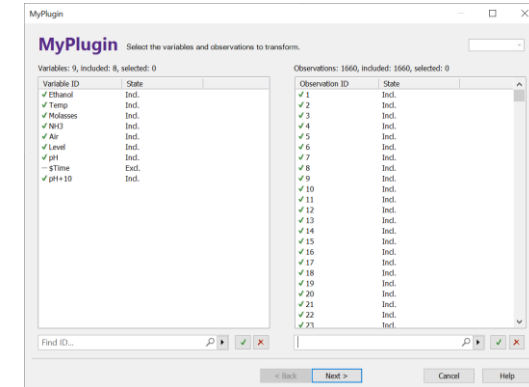


# Python pretreatment

- Benefits
  - Combine your own mathematics in Python with your multivariate models
- Applies to
  - All project files created in SIMCA®
- New functionality
  - Python scripts added to SIMCA® project files as pretreatment step will also be utilized by SIMCA®-online

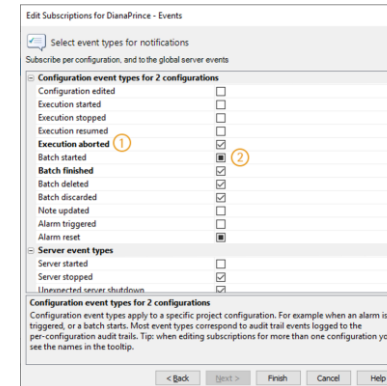
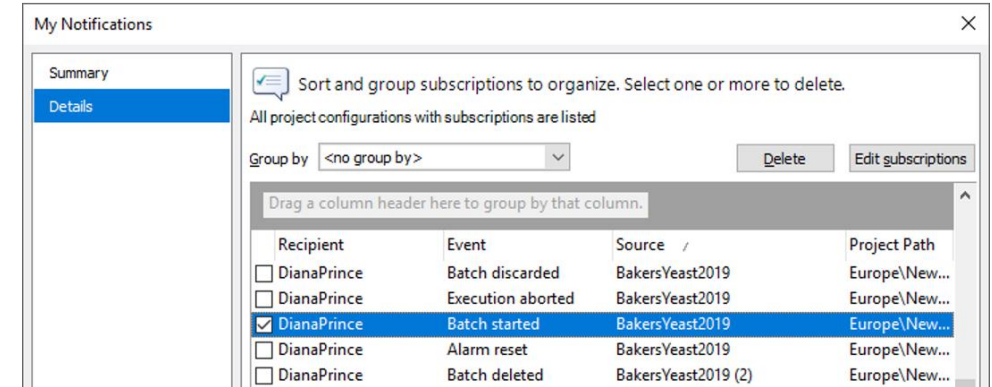
## Disclaimer

- First version is not thread safe
  - Recommended to run only one python script per server



# Administrable notifications

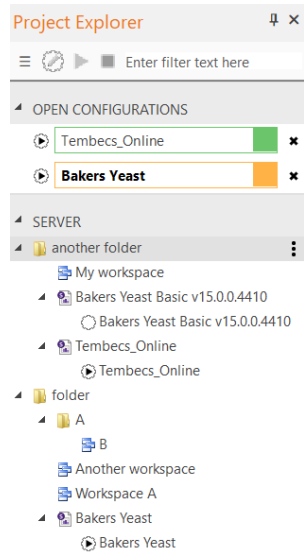
- Benefits
  - Versatile usage of the notification system
- Applies to
  - Desktop client
- New functionality
  - Active Directory not required
  - Email addresses can be edited
  - View logged in user's notification in My notifications
  - View all notifications in Manage all notifications
    - Admin tab
  - Updated and grouped subscription dialog
  - Requires users to reconfigure notifications for SIMCA®-online  
16



# Panes and filters

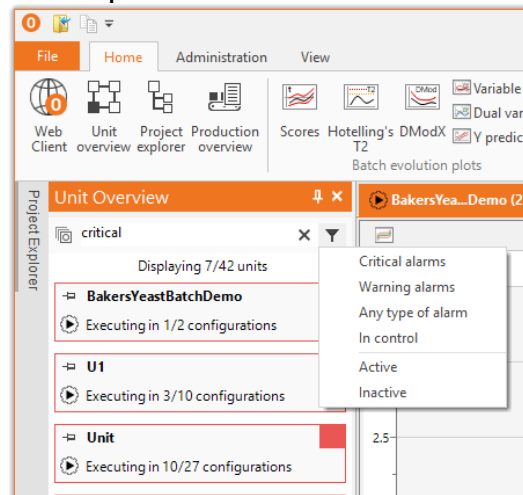
- Project explorer pane

- Less clicks to get to desired view
- Smart filters
- Multi-select



- Unit overview pane

- View and open projects that are currently executing
- Smart filters
- Unit overview



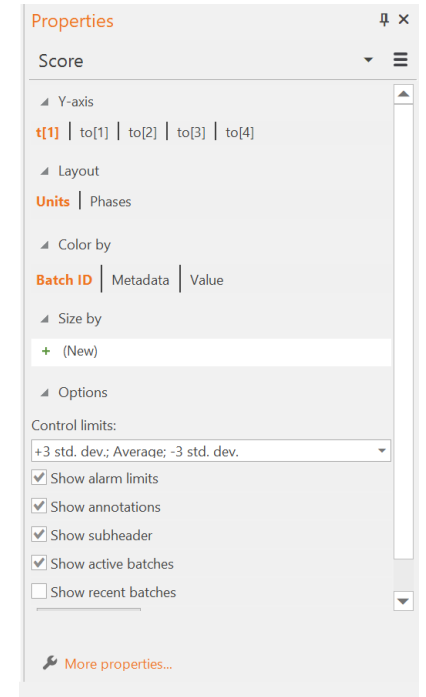
- Production overview pane

- Global chart interaction
- Batch colors
- Find batches, retained if selected
- Workset batches
- Color by batch attribute data interaction



- Properties pane

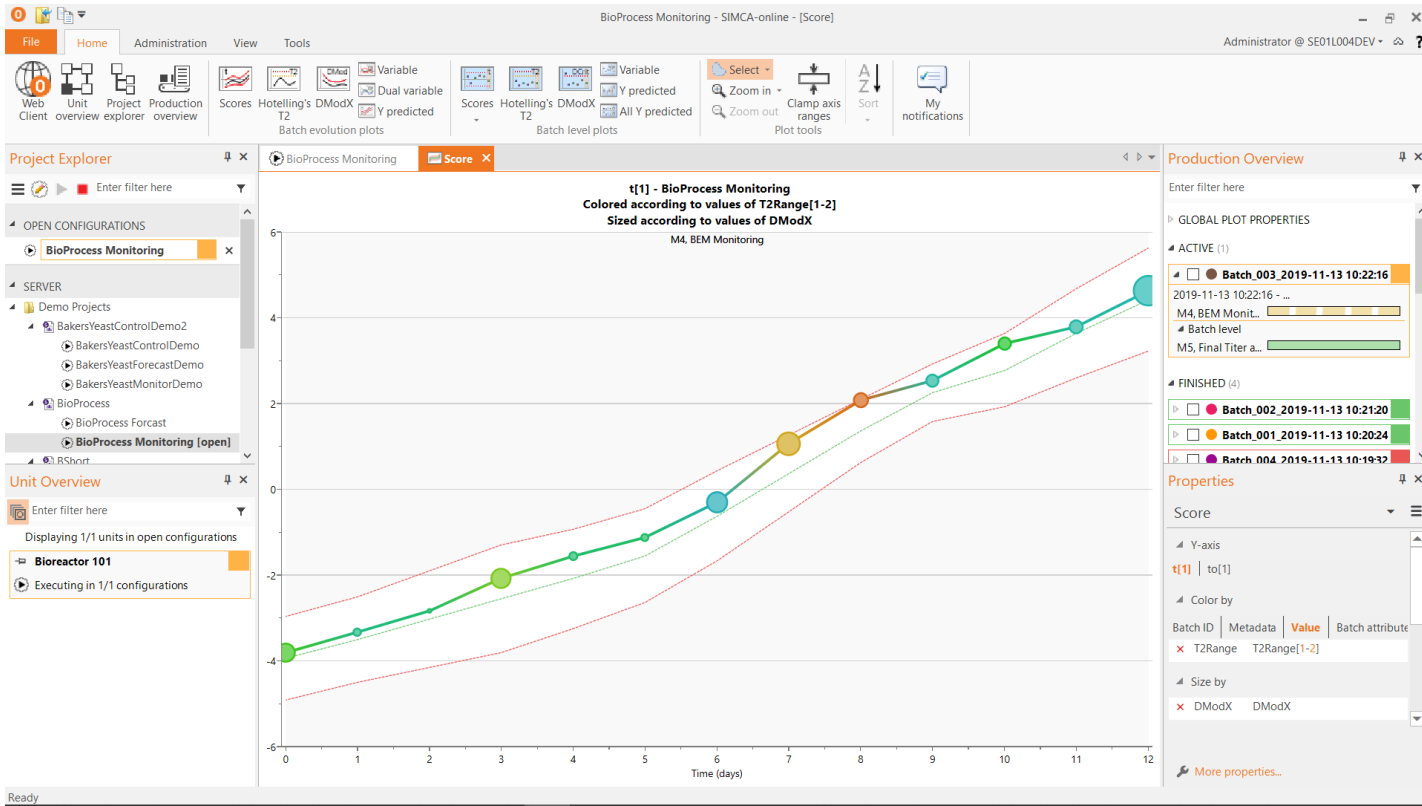
- Plot properties for active plot moved to pane



# Panes and filters

Project explorer

Unit overview



Production overview

Properties

# View most current data per variable

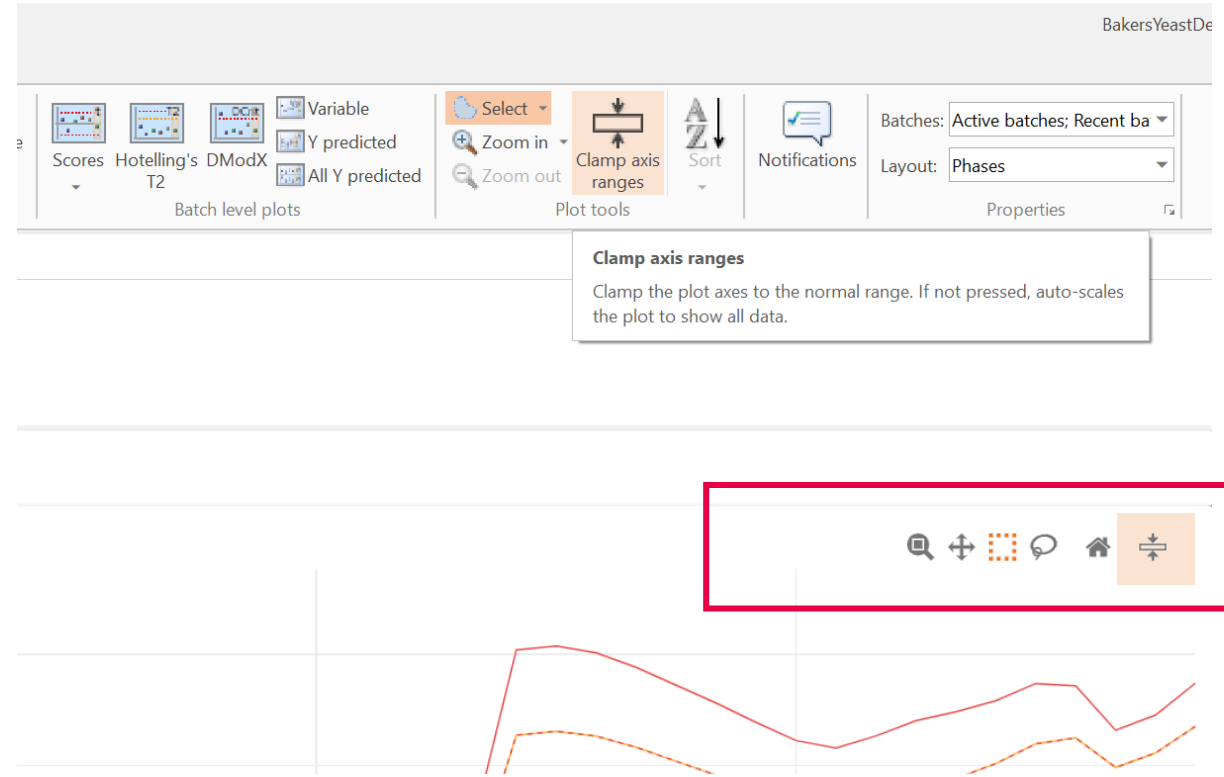
- Benefits
  - When specifying execution conditions
  - When specifying batch identifier tags
  - When connecting the right tags to model variables
- Applies to
  - Project configuration
- New functionality
  - Peek data for any data source tag

Enter filter here	
Tags (9 of 9)	Data
Batch ID	<Click to view>
Batch Age (h)	<Click to view>
Ethanol	<Click to view>
Temp	<Click to view>
Molasses	<Click to view>
NH3	<Click to view>
Air	<Click to view>
Level	<Click to view>
pH	<Click to view>

Enter filter here	
Tags (9 of 9)	Data
<b>Batch ID</b>	<b>Ha (5cdd4e18) [text]</b>
Batch Age (h)	10,8333
Ethanol	0,04458
Temp	32,2146
Molasses	2669,1
NH3	66,2627
Air	6310,62
Level	54,9422
pH	5,14757

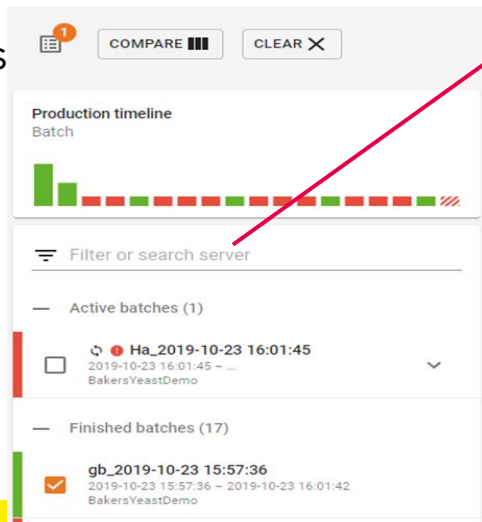
# Clamping

- Benefits
  - Spikes in the data will no longer resize the y-axis thus hiding the normal varying data
- Applies to
  - All charts
  - Both clients
- New functionality
  - Normalize the Y axis in the charts by forcing the range to be normal



# Compare batches and production

- Helps engineers with daily tasks
  - Comparison between batches
    - Multiple Y-axes
    - Search server for historical batches
    - Multiple data vectors
    - Easy add/remove vectors and batches
  - Batch level charts



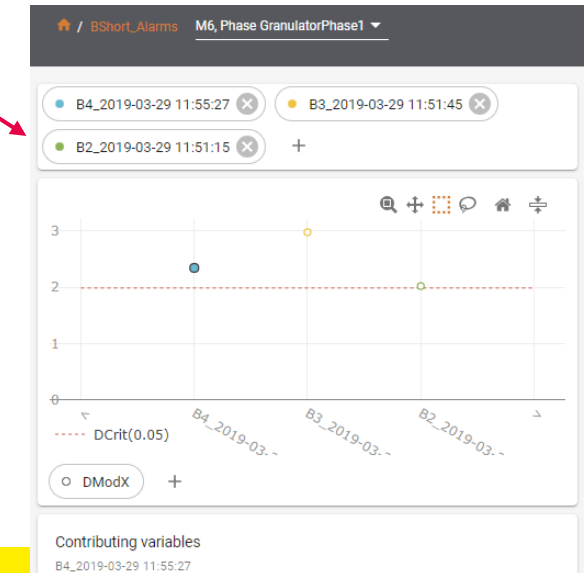
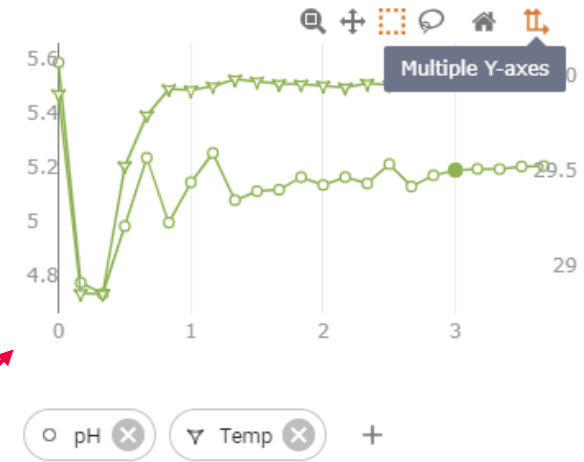
### Search server for batches

Aa\_2019

SEARCH SERVER [icon]

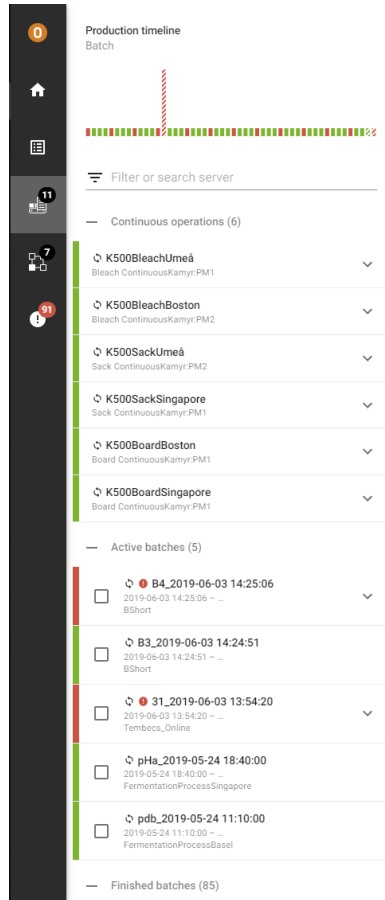
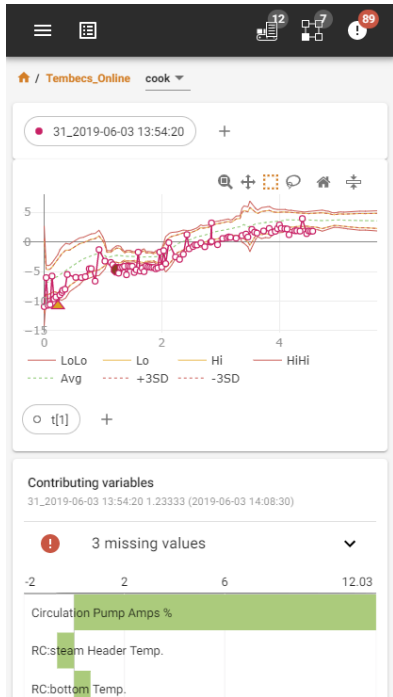
Found more than 100 batches with matching name.  
Narrow the search to show all matches

- Aa\_2019-10-23 15:53:27  
2019-10-23 15:53:27 - 2019-10-23 15:57:33  
BakersYeastDemo
- Aa\_2019-10-23 15:36:51  
2019-10-23 15:36:51 - 2019-10-23 15:40:57  
BakersYeastDemo



# Responsive layout

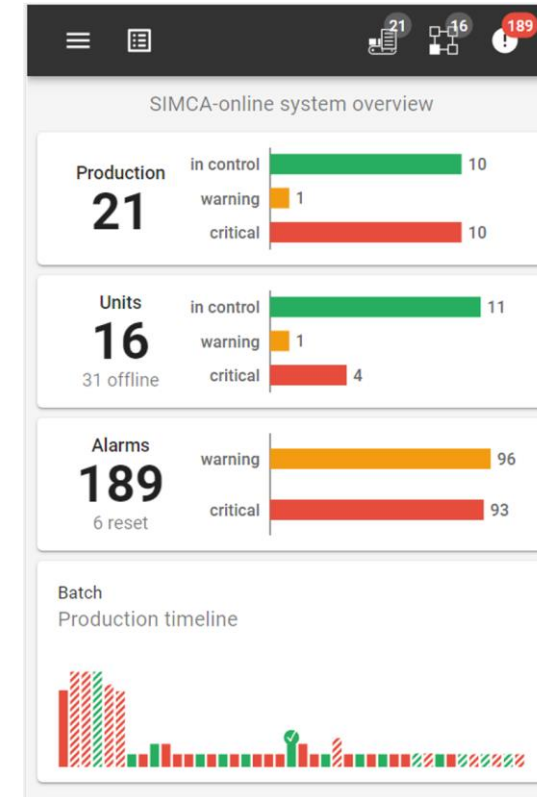
View adopts to screen size





# System overview and Batch timeline

- Benefits
  - Starting point for engineers to know where to start investigate process deviations and optimize the process
- Applies to
  - Web client batch production
- New functionality
  - Overview summary for production, units and alarms
  - Batch timeline which shows alarms and production time



# Minor news

- Server
  - Audit trail audits workspace changes
  - New BioPharma demo project
  - Batch conditions are now optionally read more frequently
  - Performance improvement by reducing the data source communication, and retrieving larger pieces of data when possible
  - Project configuration is automatically checked for validity
  - Bug fix: Dynamic lags sometimes gave missing value
- Desktop client
  - Modernized tab control
    - Additions; Icons, short text, single row, one tab/plot
    - Removals; server tab for extracted lists and audit trails, alarm state colors
  - Project explorer
    - Simplified toolbar
    - Open configurations/Server
      - Alphabetical order
      - Bold configuration means it is active
    - Double click opens the config
      - To update configuration - Right click
    - Right click to get context menu
      - Multiselect enabled
      - New properties item
  - Home tab
    - Shortcuts to panes
    - Removed properties from batch mode
  - Configuration
    - Time ranges moved and redesigned
  - Smaller default plot symbols
- Web client
  - Progress bar when loading data
  - New toolbar
  - System overview is the new home/start page after log-in
  - Plot improvements
    - Batch selection list to quickly find what to plot
    - Go from evolution to batch details in one click
    - Change trend vectors with chips
  - All batches are kept per session
  - Responsive layout
  - Bug fix: New data (“ticks”) reset zoom, and hidden limits