

# SARTORIUS

## Simplifying Progress

News

### SIMCA<sup>®</sup>-online 18

Released 2024-06-26



# SIMCA®-online 18

## News

- Adaptive Process Mode
  - Combine batch and continuous models in a single project
- Alerting extensions
  - Alarm regions and multiple alarms per data vector for batch evolution
  - Trigger-based alarms for all variables
- Visualization enhancements
  - Scale phases evolution chart by duration
  - Updated default settings for contribution
- Performance improvements
  - Improved server responsiveness and memory usage
- Server security improvements

## News Continued

- Web Client
  - Multiple alarm regions
  - Add note
  - Time-consuming data load awareness

## Other updates

- Notification improvements and new events
- Control Advisor improvements for batch projects
- Batch ID in writeback for Alarm URL
- User experience improvements and Web-based Help format

## SIMCA® 18 Compatibility

- Use projects with reordered phases
- Use variables generated from qualitative
- Calibration transfer
- Update of bundled Python versions

# Combine Batch and Continuous Models in a Single Project

## Benefits

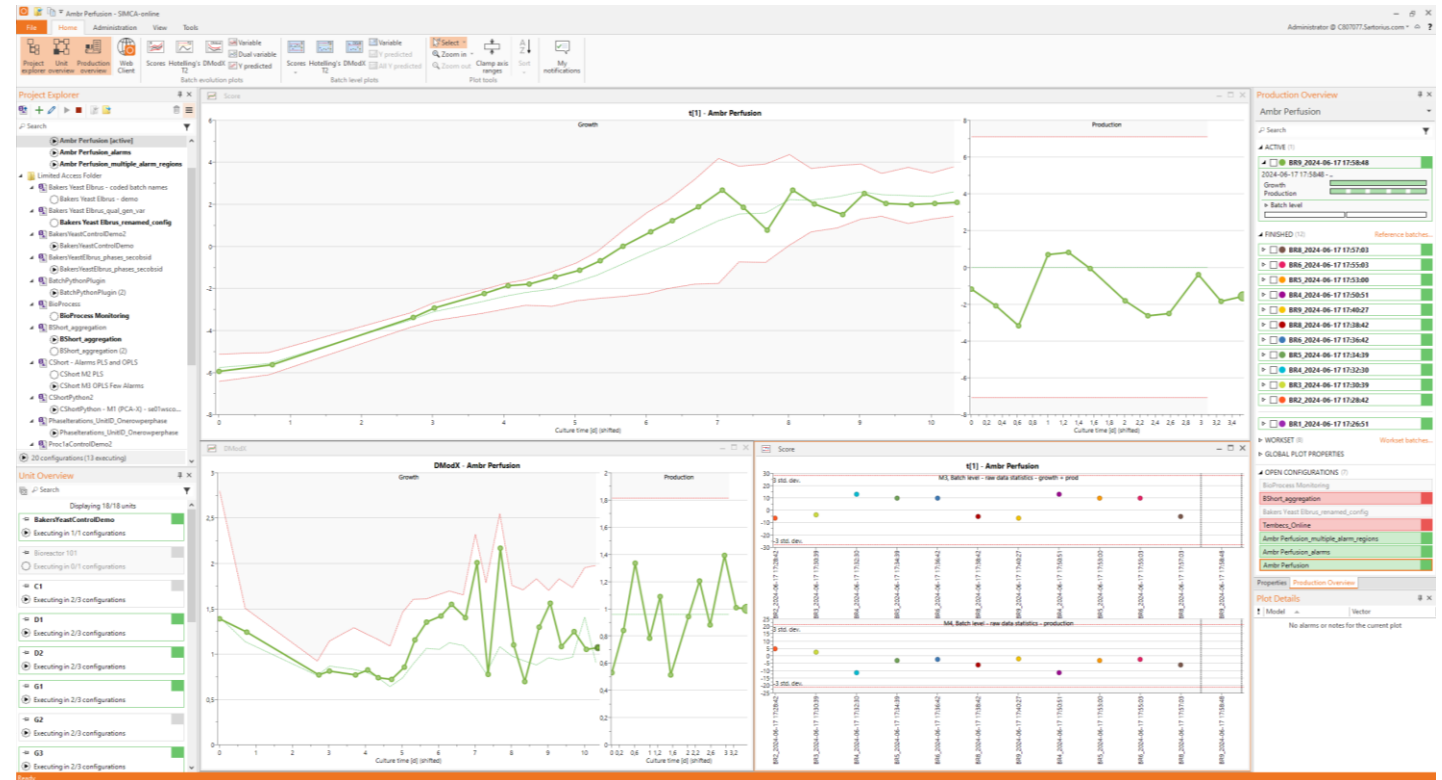
- Enhanced process control with Adaptive Process Mode
- Gain comprehensive process understanding by covering dynamic and steady-state phases
- Combine dynamic and steady state phases in single project or configuration
- Predictions of Critical Quality Attributes possible for all phases

## Applies to

- Server | desktop client | web client

## Changes

- Support for PCA in batch projects



# Alarm Regions and Multiple Alarms

## Per Data Vector for Batch Evolution

### Benefits

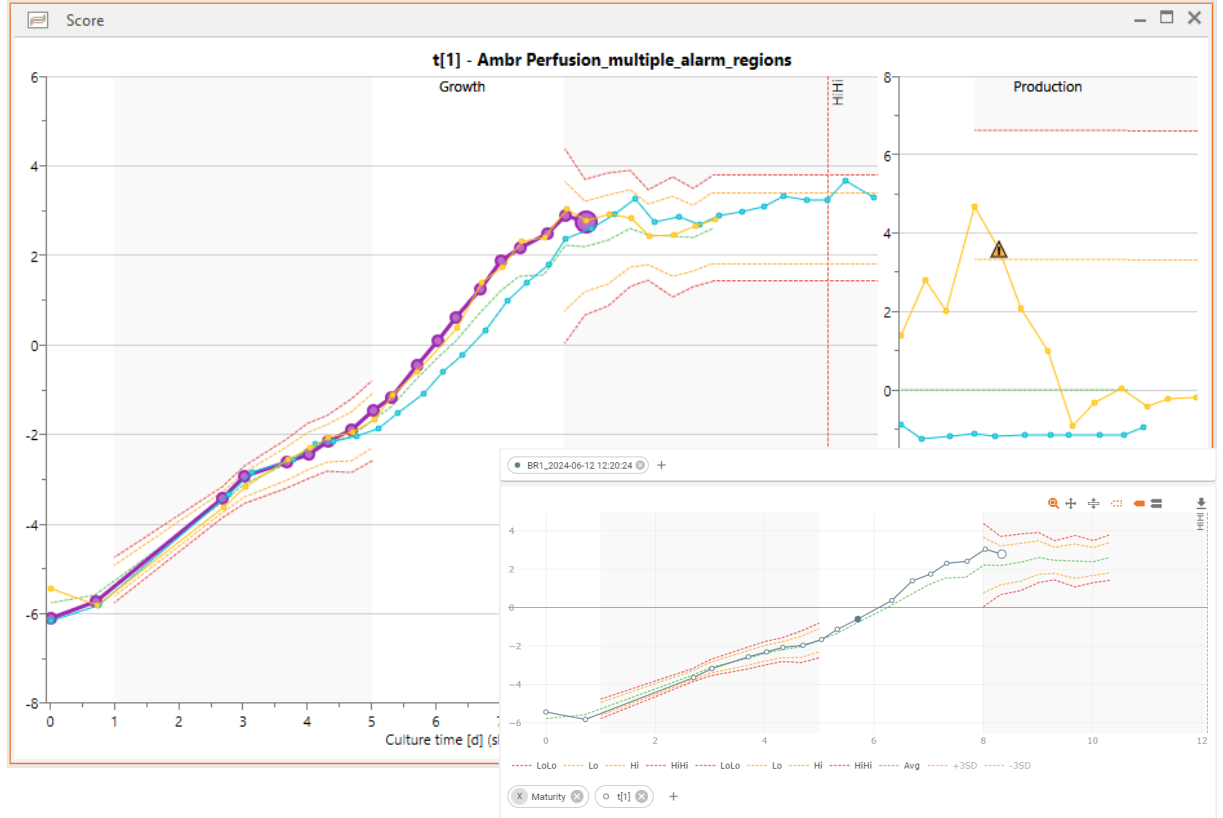
- Enable highly specific alarms with regions for batch evolution
- Allows for tighter alarms for critical parts of the process
- Allows for different rules for Warning and Critical alarms
- Avoid spurious alarms for parts of process known to be noisy

### Applies to

- Server | desktop client | web client

### Changes

- Added multiple alarm groups that each have triggers, region and vectors
- Option to add Start and/or Stop Maturity for Alarms triggers that defines region where alarms are evaluated
- Outside the region an alarm is not evaluated and cannot be triggered



# Trigger Based Alarms

## For All Variables

### Benefits

- Flexible alarm configuration for all variables in batch evolution
- Set alarm when process starts early | runs for too long

### Applies to

- Server | desktop client | web client

### Changes

- Added support for XVar, including generated and preprocessing variables
- Added support for YVar | Ypred | Maturity
- New limit type: Average  $\pm$  value

Project configuration - Ambr Perfusion\_multiple\_alarm\_regions [Revision 1]

Specify model-based alarms and limits

Alarms are triggered when values are outside given limits, following the alarm trigger rules.

Vector	Limit type	LoLo	Lo	Hi	HiHi
<b>Phase: Growth</b>					
Alarm group 1 — Consecutive: 2, Total: 4, Start maturity: 1, Stop maturity: 5					
× t[1]	Avg. $\pm$ std. dev.	-3	-2	+2	+3
× YPred(Culture time [d])	Avg. $\pm$ std. dev.			+3	
× XVar(NH4+ [mM])	Constant value	1,8			
× XVar(Glutamine [mM])	Avg. $\pm$ value	-1	-0,5	+0,5	+1
× XVar(pH)	Avg. $\pm$ std. dev.	-2,5	-1,5	+1,5	+2,5
× T2Range[1-2]	Constant value			12,0009	25,4911
+ (New)					
Alarm group 2 — Consecutive: 3, Total: 5, Start maturity: 8, Stop maturity: Not set					
× t[1]	Avg. $\pm$ std. dev.	-3	-2	+2	+3
× YPred(Culture time [d])	Avg. $\pm$ std. dev.		-2	+2	
× XVar(NH4+ [mM])	Constant value	2,4			
× XVar(Glutamine [mM])	Avg. $\pm$ value	-1	-0,5	+0,5	+1
× XVar(pH)	Avg. $\pm$ std. dev.	-3	-1,5	+1,5	+3
× Maturity(Culture time [d])	Constant value				12,1
× XVar(IF(Mode == 1, Aver. V...	Avg. $\pm$ std. dev.	-3	-2	+2	+3
× T2Range[1-2]	Constant value			12,0009	25,4911
+ (New)					
<b>Phase: Production</b>					
Alarm group 1 — Consecutive: 2, Total: 6, Start maturity: 1, Stop maturity: Not set					
× XVar(IF(Mode == 1, Aver. V...	Avg. $\pm$ std. dev.	-3	-2	+2	+3
× XVar(pref_Glutamine [mM])	Avg. $\pm$ value	-1,1	-0,57	+0,57	+1,1
× t[1]	Avg. $\pm$ std. dev.	-2,8	-1,4	+1,4	+2,8
+ (New)					

OK Cancel Help

# Improved Notifications

## Benefits

- Easier to provide relevant information to stakeholders
- Admins can be notified of system performance
- Users can be informed of specific events

## Applies to

- Server

## Changes

- Template for editing subject of notification
  - Short human readable intro in notification emails and application event log entries
- `serverExecutionFallingBehind` is a new event, can be used by admins to get notifications when the server is too busy
- `phaseStarted` and `phaseFinished` events added
- `alarmTriggered` extended for easy differentiation between target value and multivariate alarms, also includes phase information

Sender email address	SIMCA-online@example.com
Sender name	SIMCA-online server myserver.example.com <b>Default</b>
Subject	Alarm triggered, phase Production, batch BR2_2024-06-12 08:59:42, configuration C003817.Sartorius.com

**Message Headers Body Sections Raw**

**Alarm triggered**  
An alarm was triggered.

Event time: 2024-06-12 09:01:09 (local server time zone)

View this alarm in [SIMCA-online Web Client](#).  
[Open Project Configuration in Desktop Client](#)

[Open Web Client](#) [Open Desktop Client](#)

This email was sent from SIMCA-online version 18.0.0.215 running on C003817.Sartorius.com.

**Details**

serverName	C003817.Sartorius.com
serverRpcPort	2372
serverVersion	18.0.0.215
server	http://C003817.Sartorius.com:9002
eventId	2544208
eventTime	2024-06-12T07:01:09
eventTimeUtc	2024-06-12T07:01:09Z
eventType	alarmTriggered
eventName	Alarm triggered
eventDescription	An alarm was triggered.
configurationId	18249d2b-889b-4e3c-9fa0-6b88ca62d759
configurationName	Ambr Perfusion_alarms
projectId	79c707f1-20b5-4b1c-be87-5d62c8952339
productName	Ambr Perfusion
productType	batch
productName	
geographicalLocation	
alarmId	391
configurationRevision	1
alarmGroupId	alarmGroup1
batchId	301
batchName	BR2_2024-06-12 08:59:42
dataType	["type":"","term":"","M1554"]
dataTypeName	XVar[perf_Glutamine [mM]]
variableAlias	perf_Glutamine [mM]
alarmSeverity	warning
triggerTime	2024-06-12 09:01:09
triggerTimeUtc	2024-06-12T07:01:09Z
isReset	false
modelNumber	2
phaseIteration	1
phaseName	Production
phaseNumber	1
phaseStartTime	2024-06-12 09:00:57
phaseStartTimeUtc	2024-06-12T07:00:57Z
phaseLastDataTime	2024-06-12 09:01:09
phaseLastDataTimeUtc	2024-06-12T07:01:09Z
unitName	Unit
unitGroupName	Unit group
alarmSource	batchEvolution
alarmType	modelBased
subscriptionId	59

# Scale Phases by Duration

## Benefits

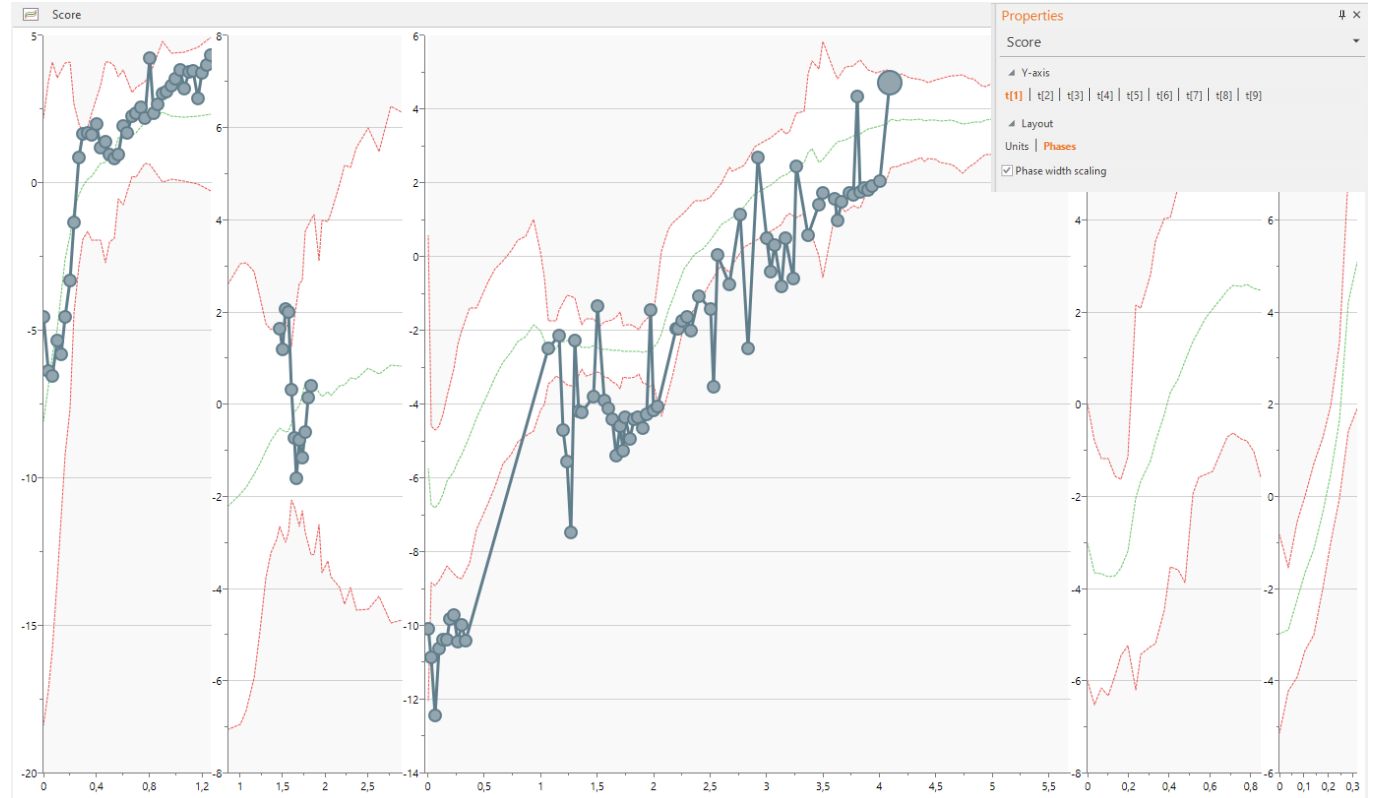
- Intuitive indication of phase length makes is easier to interpret
- Easier to identify single observations for further analysis

## Applies to

- Desktop client

## Changes

- Added option to use Phase width scaling in evolution plots



# Improved Drill Down

New Default and Added Group Comparison Button

## Benefits

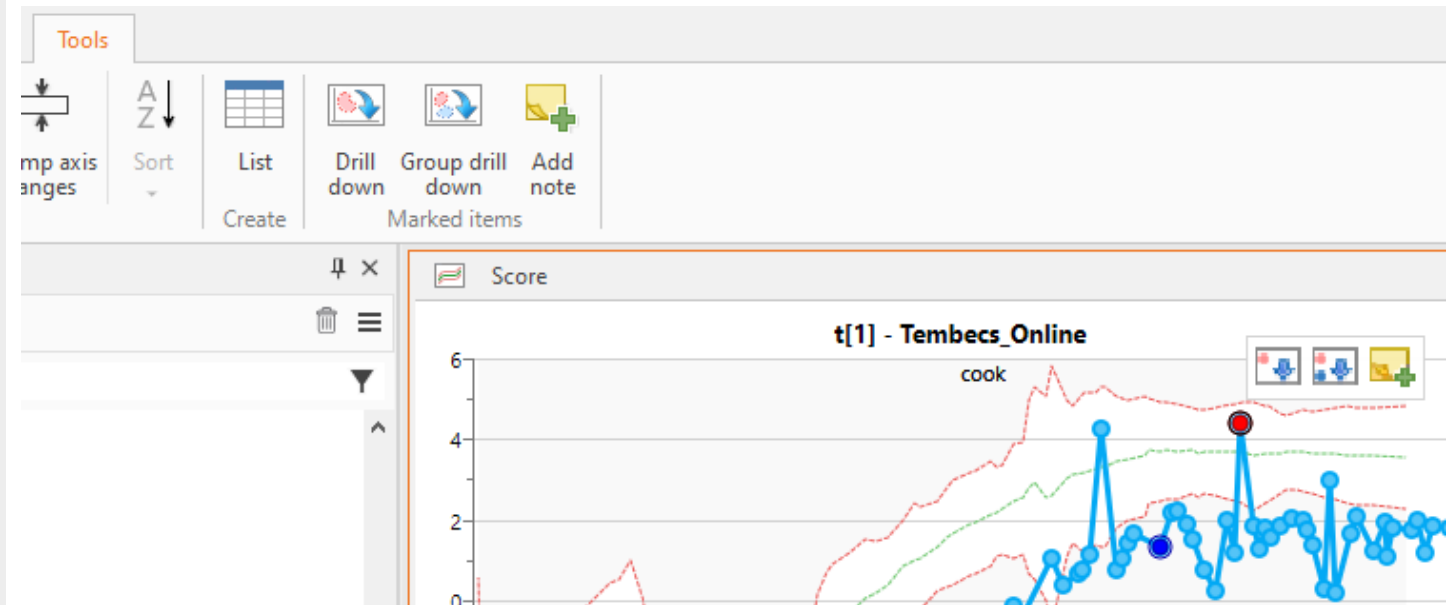
- Consistent behavior on double click makes it easier to create intended drill down plot

## Applies to

- Desktop client

## Changes

- Double click on observation always opens point to average contribution
- Added button for group-to-group drill down





# Improved Server Responsiveness and Memory Usage

## Benefits

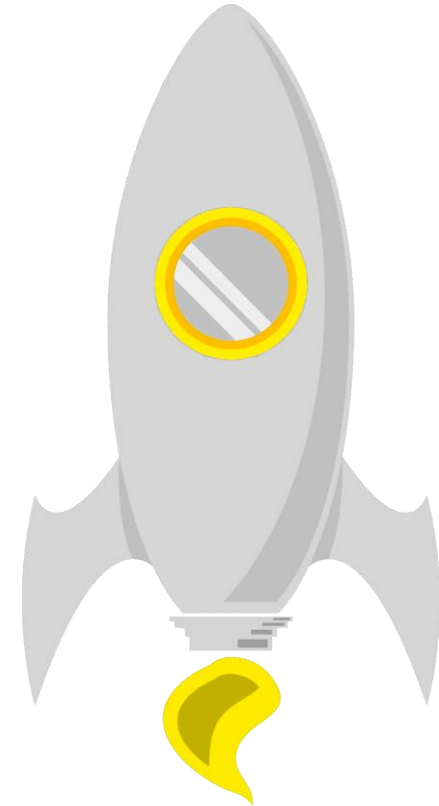
- Faster server startup and shutdown
- Improved performance for all data sources
- Sustainable memory consumption

## Applies to

- Server

## Changes

- Server startup loads SIMCA projects in parallel
- Server shutdown stops configurations in parallel
- Server flag for turning off grouped reading from data source
- Server can be configured for concurrent SimApi access to data sources
- Server logging improvements



# Improved Server Security

## Benefits

- Encrypted and authenticated SMTP for email notifications for wider support of email servers
- Prevent brute force attacks and high-jacking user session
- Password requirements increases minimum security

## Applies to

- Server

## Changes

- Enable use of STARTTLS, TLS/SSL in general, for communication between SIMCA-online server and email server
- SMTP user and password added for authentication – Test button to verify changes without server restart
- Stronger hash for password
- Added back-off algorithm to prevent brute force attacks
- Web Server cookie entropy has been increased to 256 bit
- Password Policy for users outside Active Directory

Notifications <span style="float: right;">Test</span>	
SMTP server	mail-intern.example.com
Port number	587
SMTP user name	
SMTP password	
Sender email address	SIMCA-online@example.com
Sender name	SIMCA-online Server <span style="float: right;">Default</span>

User name:

Old password:

Password:

Confirm password:

**i** The password must be at least 12 characters long and consist of upper- and lower case letters, digits and special characters

# Updates in Web Client

## Benefits

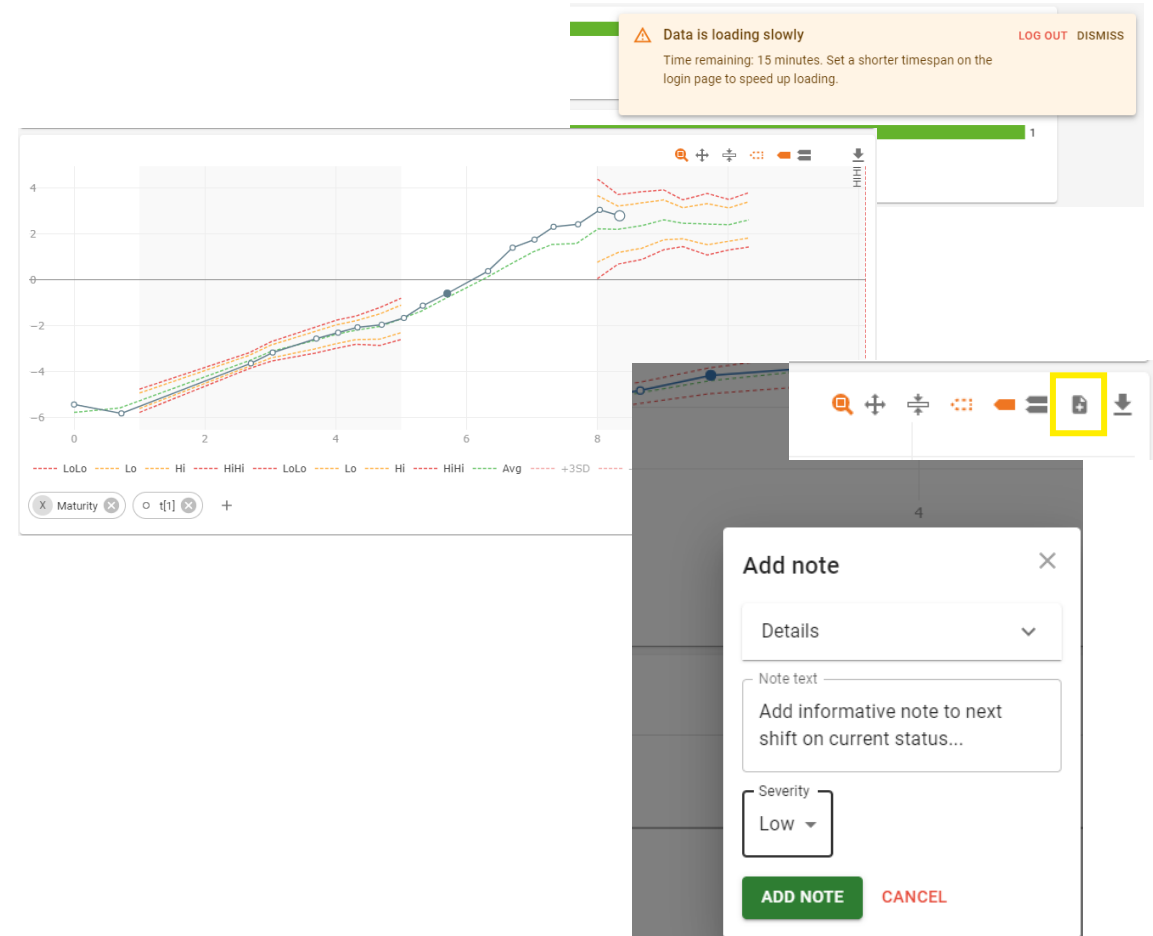
- Advanced alarms visualization available for all users
- Add note to improve traceability and communication across user groups and clients
- Avoid unnecessary waiting and server impact by cancelling Web Client loading of data

## Applies to

- Web client

## Changes

- Alarm regions are visualized in charts highlighted with other background and hidden limit lines outside regions
- Add note enabled
- Added warning when data is low to load
- Tech stack updates
  - Third-party libraries with the latest updates
  - Future proofing use of modern development tooling and infrastructure



# Project Explorer, Plots, and Lists

## Improved Desktop User Experience

### Benefits

- Improved Project Explorer with filter information and summary of configurations on server
- Easily copy information to other software and editors
- Improved visibility of Zoom subplot icon

### Applies to

- Desktop client

### Changes

- Project Explorer
  - Shows total number of configurations and number of executing configurations
  - Filter result information displayed
- Improved Copy to Clipboard added to the Batches Found dialog, Audit trail, Report etc, including column headers
- Zoom subplot mini toolbar could initially appear in wrong position|outside the plot

The screenshot shows the 'Project Explorer' window on the left and the 'Batches Found' dialog on the right. The Project Explorer displays a tree view for 'Ambr' with folders for 'All Access Folder' and 'Limited Access Folder'. Under 'Limited Access Folder', there is a table of configurations with columns for Batch name, Start time, Stop time, and Duration. The Batches Found dialog shows a summary: 'There were 24 batches between 2024-04-08 09:28:00 and 2024-04-16 09:28:22.' Below this is a table with the same columns as the Project Explorer. The dialog also includes options for 'Header Row', 'First Column', 'Total Row', 'Last Column', 'Banded Rows', and 'Banded Columns', along with 'Table Style Options'.

Batch name	Start time	Stop time	Duration
6.5415301	2024-04-09 14:10:00	2024-04-09 14:10:00	00:00:00
21.081301	2024-04-09 14:11:00	2024-04-09 14:11:00	00:00:00
39.4711	2024-04-09 14:14:00	2024-04-09 14:14:00	00:00:00
39.4692	2024-04-09 14:15:00	2024-04-09 14:15:00	00:00:00
6.7149601	2024-04-09 14:17:00	2024-04-09 14:17:00	00:00:00
26.212	2024-04-09 14:20:00	2024-04-09 14:20:00	00:00:00
6.5248799	2024-04-09 14:21:00	2024-04-09 14:21:00	00:00:00
39.4809	2024-04-09 14:22:00	2024-04-09 14:22:00	00:00:00
19.9041	2024-04-09 14:25:00	2024-04-09 14:25:00	00:00:00
6.6480799	2024-04-09 14:28:00	2024-04-09 14:28:00	00:00:00
7.6313996	2024-04-09 14:29:00	2024-04-09 14:29:00	00:00:00
6.3516267	2024-04-09 14:35:00	2024-04-09 14:35:00	00:00:00

# Predict and Extract, New Help File Format

## Improved Desktop User Experience

### Benefits

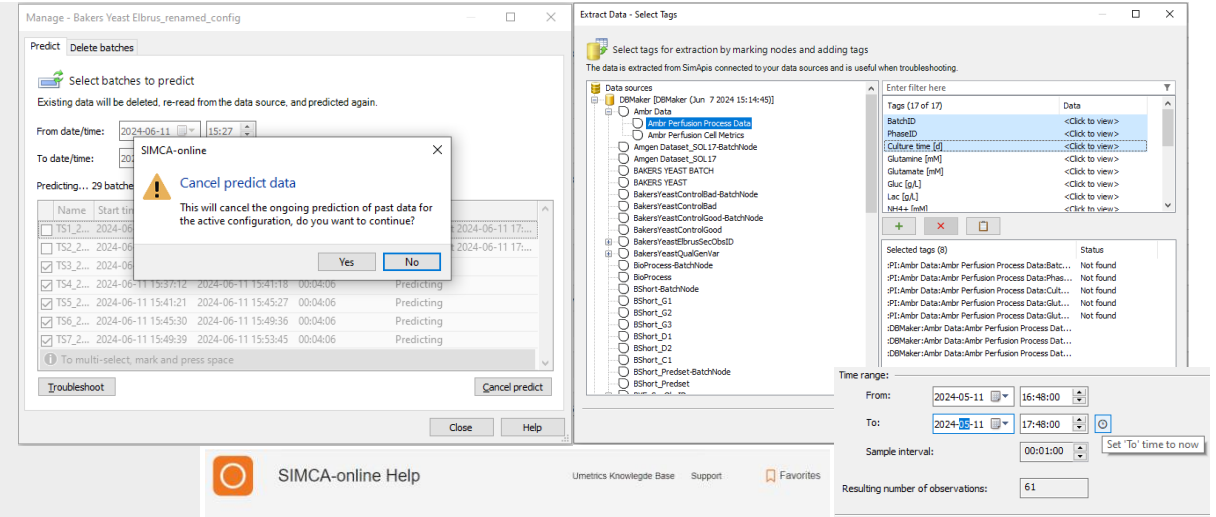
- Possibility to avoid server load and time-consuming prediction operations
- Easier to use File > Extract including paste list of tags, status message and select time | batches dialogs
- Easier to use Select Time and Select Batches dialogs
- Improved Help search result presentation and high-resolution screen visibility

### Applies to

- Desktop client

### Changes

- Cancelling predict of historical data
- Cancelling is more direct for File | Extract and View | Data List
- Changed dialog and added paste functionality
- Select time informs instead of changing values when From | To are not aligned and has 'Now' button
- Web based Help file format



# Improved SIMCA® 18 Compatibility and System Updates

## Compatibility with SIMCA® 18

- Support for projects with reordered phases
- Calibration transfer for continuous processes
- Generated variables of qualitative variables
- Python 3.10.2 for numerical preprocessing scripts with pandas, numpy, scipy built in as SIMCA 18. Packages can be updated and added

## Server | System

- Write-back of numeric batch number for alarm URL, for use in external systems to create links that open the SIMCA-online Web Client to show a specific batch.
- Control Advisor improvements for batch projects: support for phases with generated variables, Python preprocessing variables, qualitative variables, out-of-order and incomplete forecast models
- The data source node/tag hierarchy can handle child nodes with the same names as tags, common in OPC UA

# Bug Fixes with Details

## Server | System

- Fixed: Maturity generated with function IndexByPhase
  - In previous versions of SIMCA-online phase iterations failed to start at 0 when maturity generated with function IndexByPhase was used. With the fix the visualization of phase iteration projects with this maturity will be correct.

## Desktop Client

- Fixed: Contributions wrong for Control Advisor series ([KB article](#))
- Fixed: Workset batches dialog opened from Production Overview should remember previously selected batches
- Fixed: Cannot delete one's own notifications from the My Notifications Details page without holding the manage\_notification permission

## Other

- Fixed: Outlimits not applied after SimApi restart

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## Simplifying Progress

### News SIMCA<sup>®</sup>-online 17

Released 2022-03-03





# 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

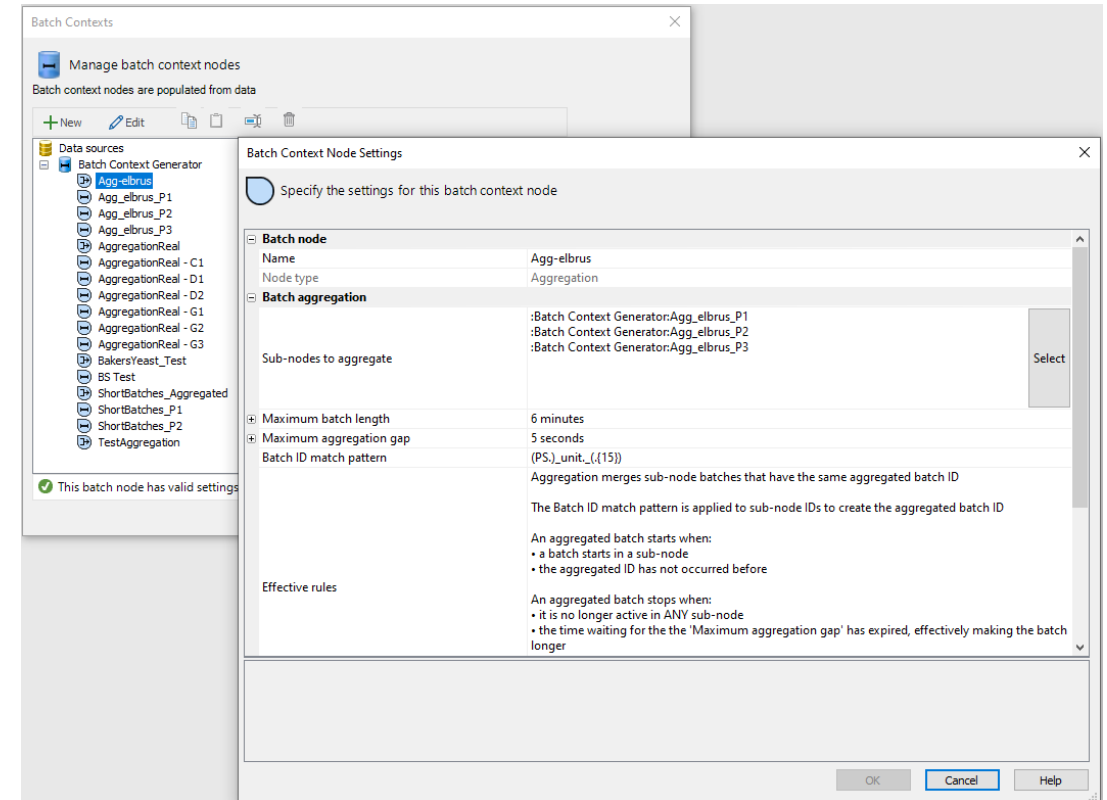
- UX improvements in desktop client
- Baseline Filters to combine IPC and process data
- Suppress alarm notifications during predict of past batches

## 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)

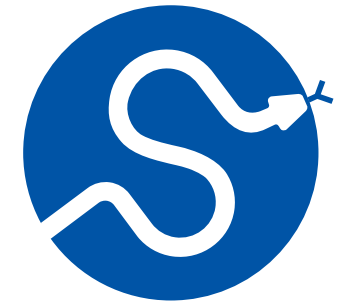
# Batch Aggregation Nodes in Batch Context Generator

- 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



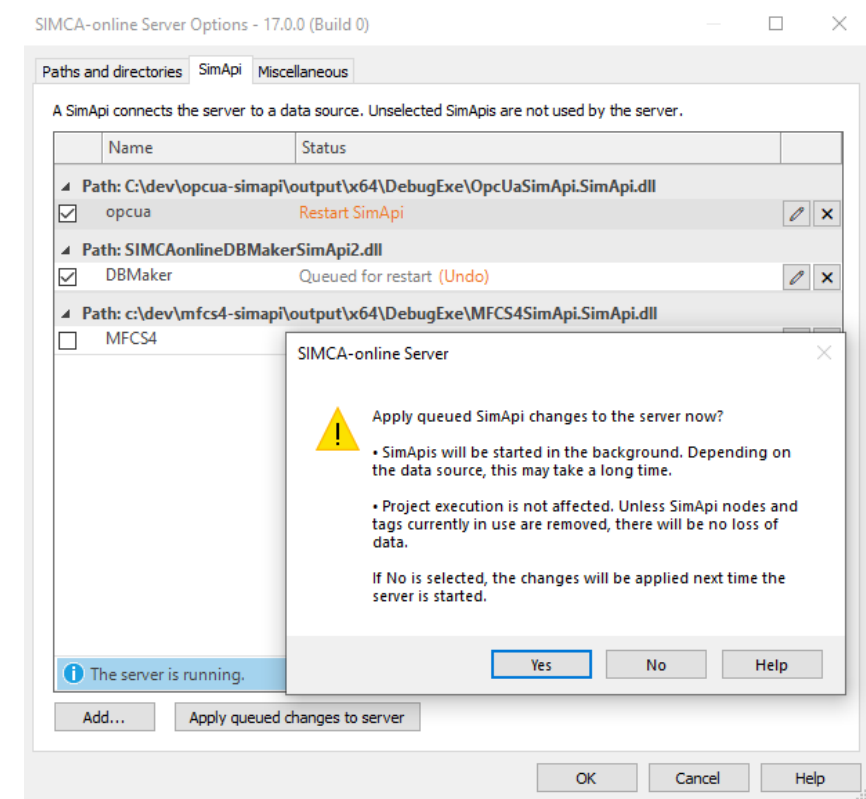
# User Defined Python Libraries for Preprocessing

- 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



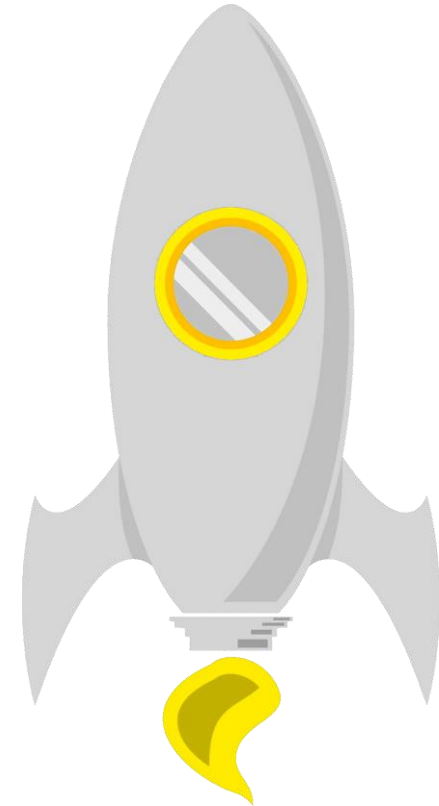
# Manage Data Source Connections on the Fly

- 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



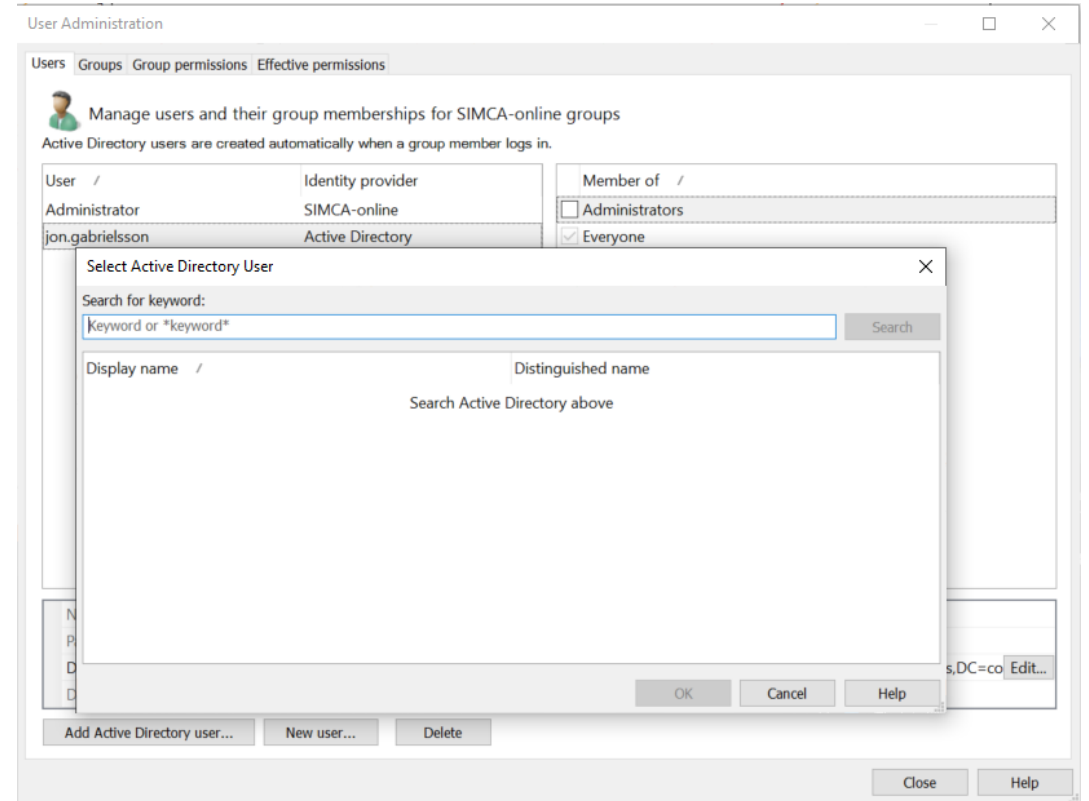
# Performance Optimizations

- 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



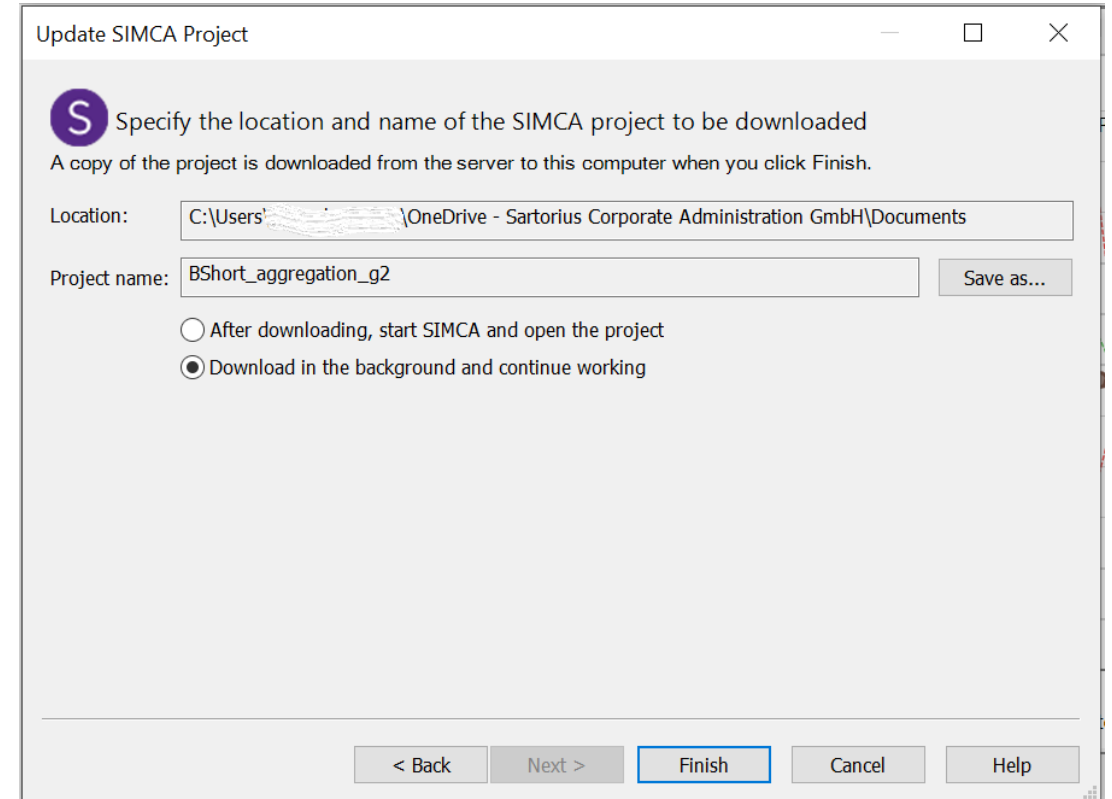
# Active Directory Improvements

- 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 several key components and annotations:

- Project Explorer:** A tree view on the left showing project hierarchies. A tooltip for the selected configuration shows details: Name: BShort\_bcg\_aggregation (2), ID: 4f7876bd-1abc-4a3b-aa7b-4f5e463f642a, Execution: On, Created: 2022-01-27 15:35, Modified: 2022-01-27 15:38.
- Context dependent toolbar:** A toolbar above the Project Explorer with icons for search, refresh, and other actions.
- Name of active configuration:** A dropdown menu at the top right showing the currently active configuration: BShort\_bcg\_aggregation (2).
- Search for projects and configurations by name/status:** A search bar in the Project Explorer.
- Search for batches:** A search bar in the Production Overview pane.
- Currently active configuration:** A tooltip indicating the active configuration is BShort\_bcg\_aggregation (2).
- Open configurations marked in bold, single click to activate:** A note pointing to the bolded configuration name in the Project Explorer.
- Production Overview:** A pane showing a list of batches with their status (ACTIVE, FINISHED, WORKSET) and a detailed view of the active batch (B4\_2022-02-11 09:03:39) with phase progress bars.
- Link to Workset batches for easy multi-select:** A note pointing to the 'Workset batches...' link in the Production Overview pane.
- Overview of alarms status of all open configurations, can be minimized:** A note pointing to the Configuration Overview pane at the bottom, which shows a list of configurations with their alarm status (green for OK, 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	<b>Phase</b>	<b>Execution interval (s)</b>	<b>Duration</b>	<b>Data retrieval</b>	<b>Baseline filters</b>
2	M4, BEM Monitoring	3	00:04:09	Continuous	Temp_SP; Air_SP; ▾
3	Entire batch	---	00:04:09	---	Edit...

Select baseline filter variables

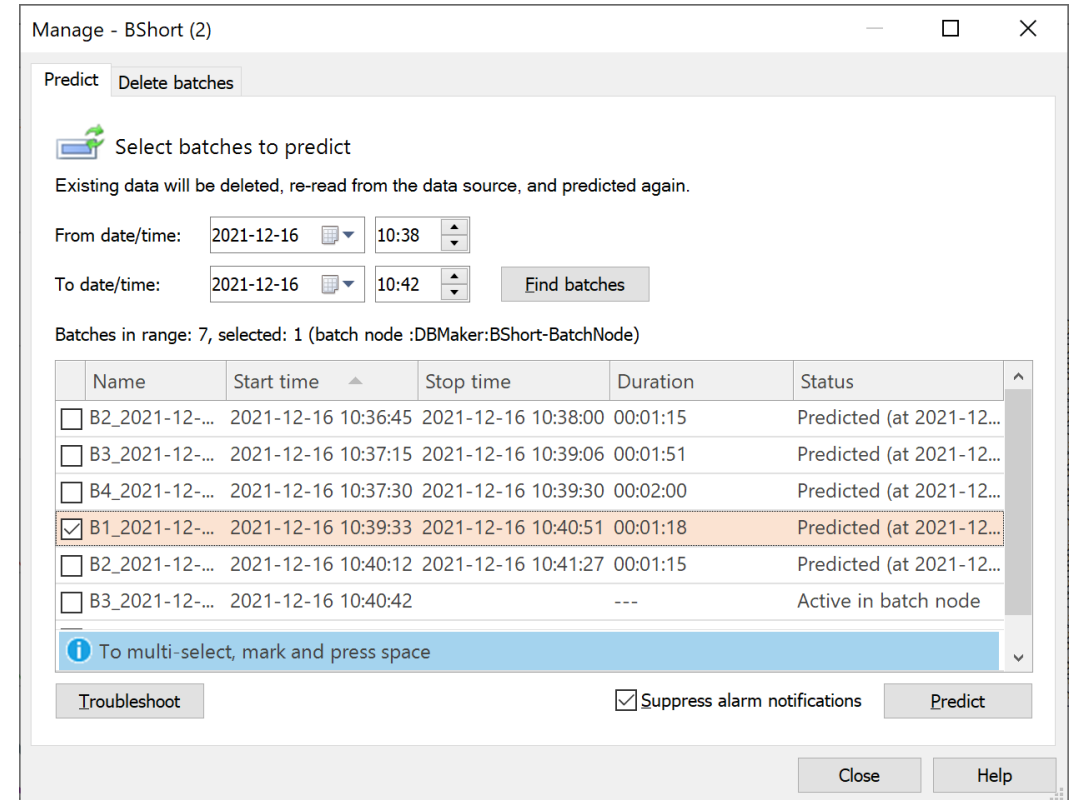
Variable

- 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

### News SIMCA<sup>®</sup>-online 16.1

Released 2020-03-31



# 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

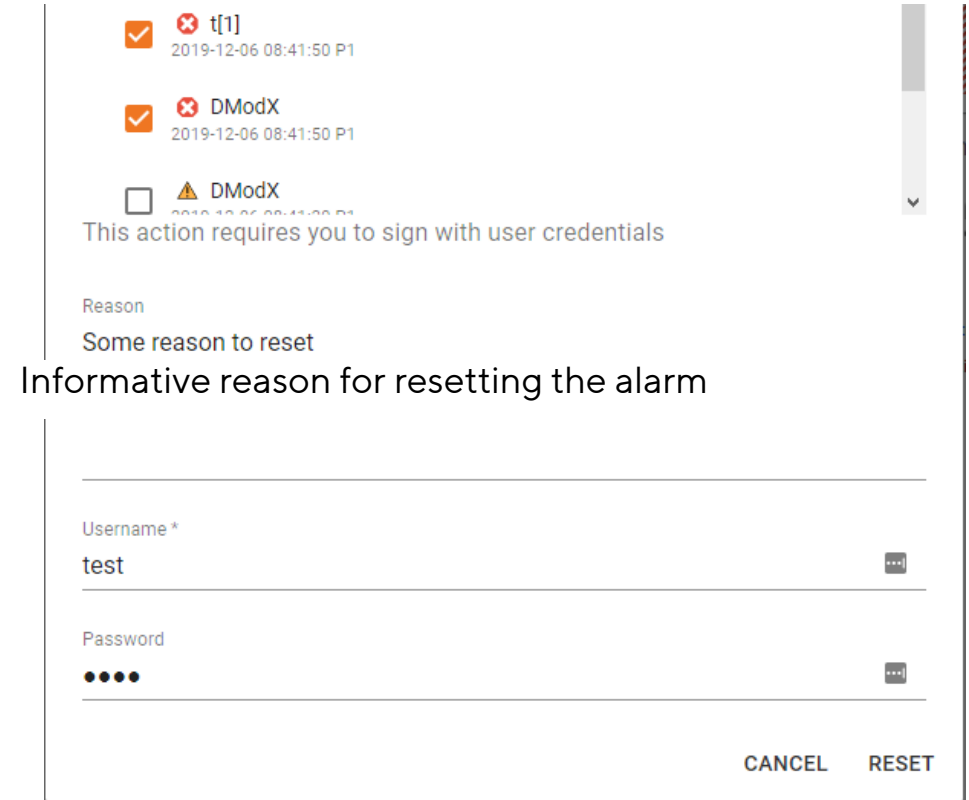
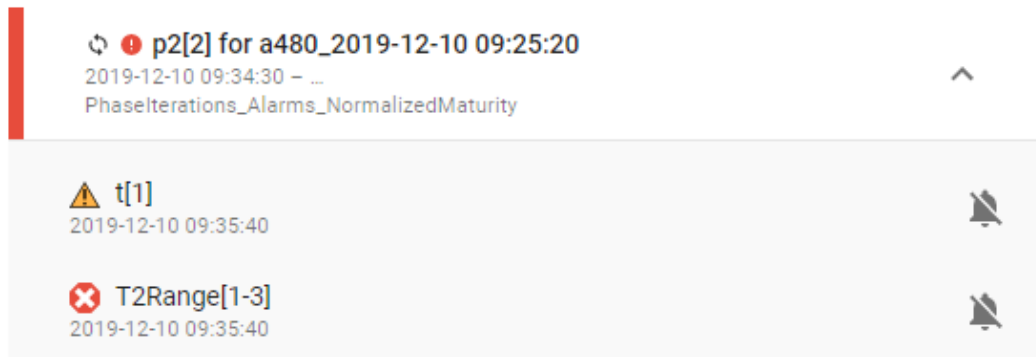
- Maximize button in all client panes
- All active directory users can now be listed and imported where previously a subset was used

## 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

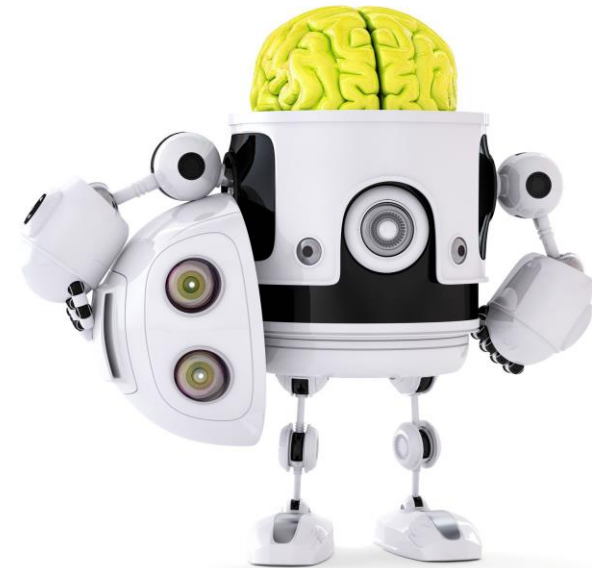
# Reset alarms in Web Client

- 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



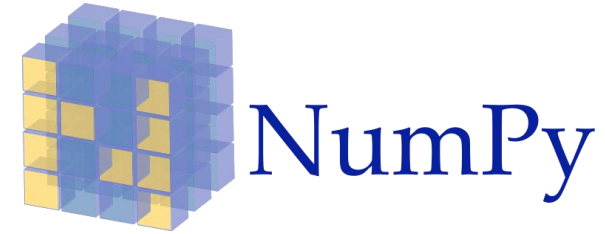
# Troubleshooting improvement for continuous project configurations

- 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

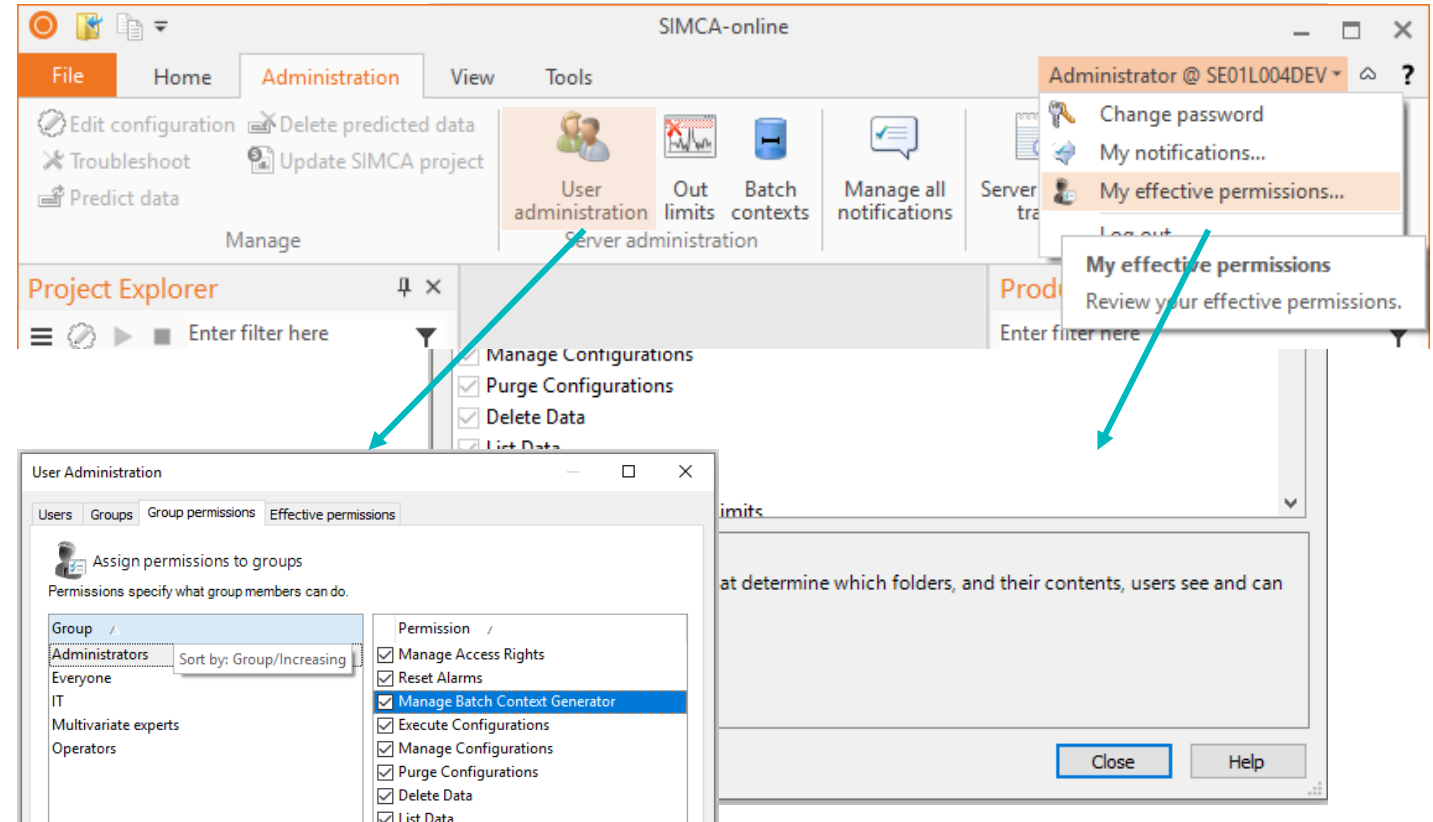
- Benefit
  - Scripts running math calculations run faster than without the SciPy or NumPy libraries
- Applies to
  - USP files with Python pre-processing
- Change
  - Preprocessing scripts now support code dependent on the Python libraries **NumPy** (1.15.4) and **SciPy** (1.1.0)
    - These are standard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





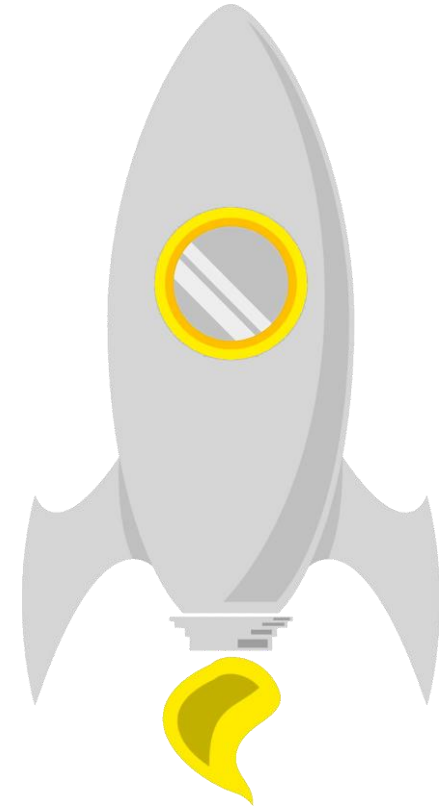
# Permissions granted to groups (replaces previous use of roles)

- 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



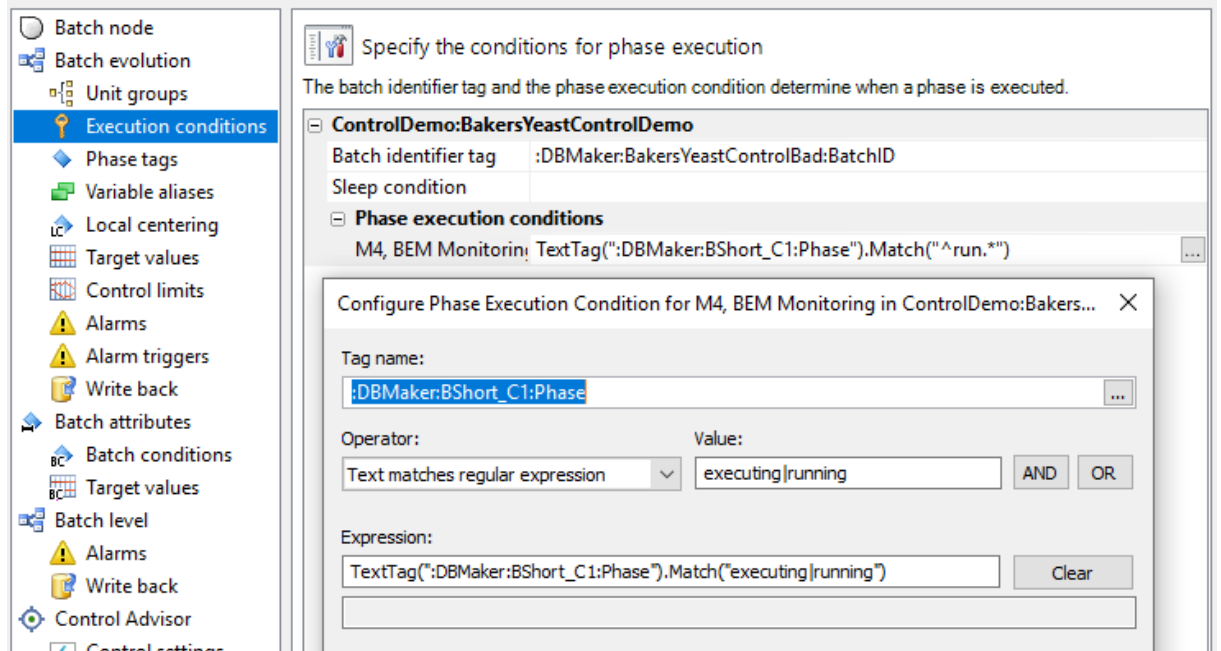
# Faster load time of client workspaces

- 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

### News SIMCA<sup>®</sup>-online 16

Released 2019-11-26

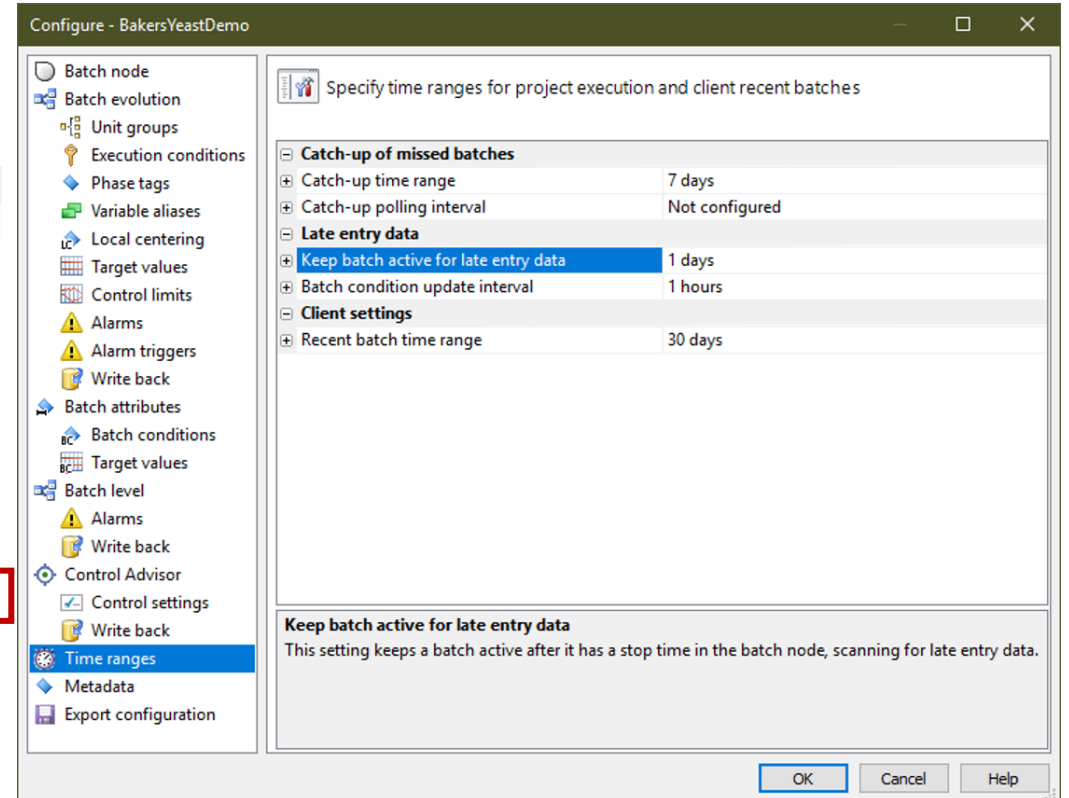
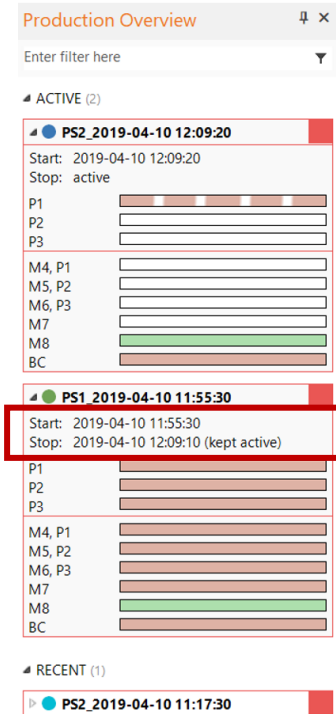


# SIMCA<sup>®</sup>-online 16

- 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.

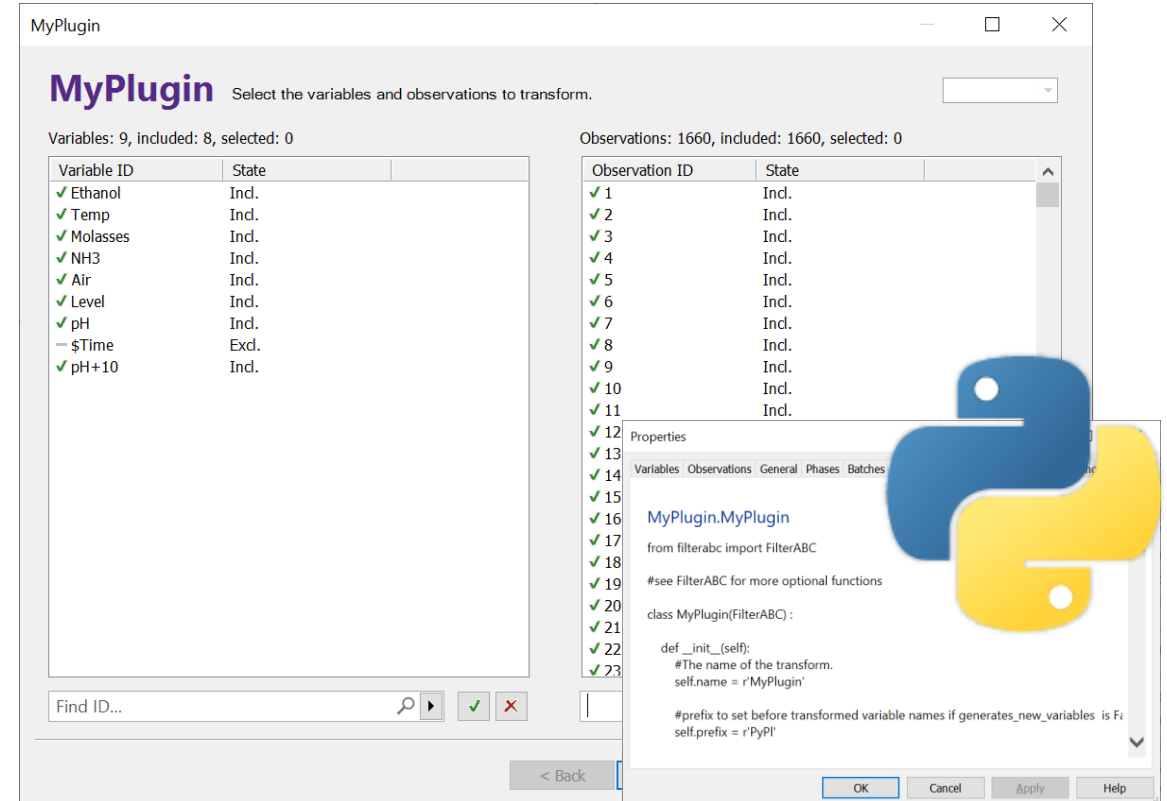
	1	2
1	Primary ID	Tag
2	Ag ppm	:DBMaker:Process_Cuprum_Good:Ag ppm
3	Ni ppm	:DBMaker:Process_Cuprum_Good:Ni ppm
4	Pb ppm	:DBMaker:Process_Cuprum_Good:Pb ppm
5	Bi ppm	
6	Sb ppm	:DBMaker:Process_Cuprum_Good:Sb ppm
7	Se ppm	:DBMaker:Process_Cuprum_Good:Se ppm
8	(Time)	
9	(As ppm)	:DBMaker:Process_Cuprum_Good:As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



MyPlugin

**MyPlugin** Select the variables and observations to transform.

Variables: 9, included: 8, selected: 0

Variable ID	State
✓ Ethanol	Incl.
✓ Temp	Incl.
✓ Molasses	Incl.
✓ NH3	Incl.
✓ Air	Incl.
✓ Level	Incl.
✓ pH	Incl.
— \$Time	Excl.
✓ pH+10	Incl.

Observations: 1660, included: 1660, selected: 0

Observation ID	State
✓ 1	Incl.
✓ 2	Incl.
✓ 3	Incl.
✓ 4	Incl.
✓ 5	Incl.
✓ 6	Incl.
✓ 7	Incl.
✓ 8	Incl.
✓ 9	Incl.
✓ 10	Incl.
✓ 11	Incl.
✓ 12	Incl.
✓ 13	Incl.
✓ 14	Incl.
✓ 15	Incl.
✓ 16	Incl.
✓ 17	Incl.
✓ 18	Incl.
✓ 19	Incl.
✓ 20	Incl.
✓ 21	Incl.
✓ 22	Incl.
✓ 23	Incl.

Properties

Variables Observations General Phases Batches

**MyPlugin.MyPlugin**

```
from filterabc import FilterABC

#see FilterABC for more optional functions

class MyPlugin(FilterABC):

    def __init__(self):
        #The name of the transform.
        self.name = 'MyPlugin'

        #prefix to set before transformed variable names if generates_new_variables is Fi
        self.prefix = 'PyPI'
```

Find ID...



# 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

The screenshot shows the 'My Notifications' window. On the left, there are tabs for 'Summary' and 'Details'. The main area displays a list of notifications with columns for Recipient, Event, Source, and Project Path. A 'Group by' dropdown is set to '<no group by>'. There are 'Delete' and 'Edit subscriptions' buttons. An 'Edit Subscriptions for DianaPrince - Events' dialog box is open, showing a list of event types with checkboxes for selection. The dialog box has a title bar and a close button. Below the list, there is a note about configuration event types and a footer with navigation buttons: '< Back', 'Next >', 'Finish', 'Cancel', and 'Help'.

Recipient	Event	Source	Project Path
<input type="checkbox"/> DianaPrince	Batch discarded	BakersYeast2019	Europe\New...
<input type="checkbox"/> DianaPrince	Execution aborted	BakersYeast2019	Europe\New...
<input checked="" type="checkbox"/> DianaPrince	Batch started	BakersYeast2019	Europe\New...
<input type="checkbox"/> DianaPrince	Alarm reset	Bakers	
<input type="checkbox"/> DianaPrince	Batch deleted	Bakers	

**Edit Subscriptions for DianaPrince - Events**

Select event types for notifications  
Subscribe per configuration, and to the global server events

**Configuration event types for 2 configurations**

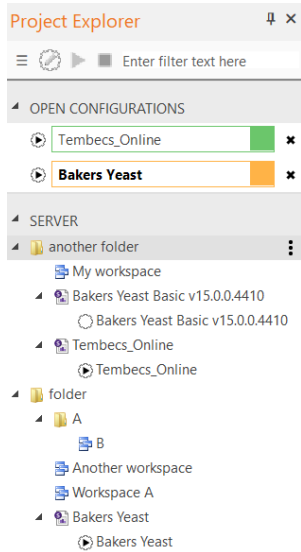
- Configuration edited
- Execution started
- Execution stopped
- Execution resumed
- Execution aborted  ①
- Batch started  ②
- Batch finished
- Batch deleted
- Batch discarded
- Note updated
- Alarm triggered
- Alarm reset
- Server event types**
- Server started
- Server stopped
- Disconnected server shutdown

Configuration event types apply to a specific project configuration. For example when an alarm is triggered, or a batch starts. Most event types correspond to audit trail events logged to the per-configuration audit trails. Tip: when editing subscriptions for more than one configuration you see the names in the tooltip.

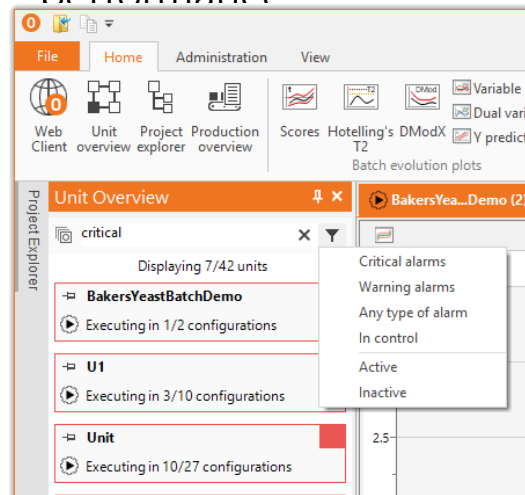
< Back   Next >   Finish   Cancel   Help

# Panes and filters

- Project explorer pane
  - Less clicks to get to desired view
  - Smart filters
  - Multi-select



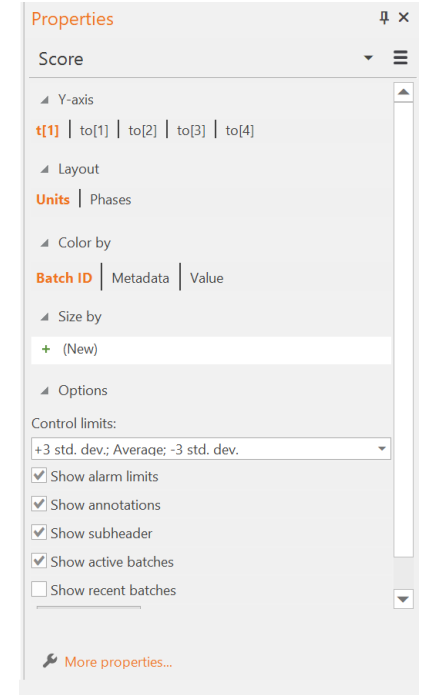
- Unit overview pane
  - View and open projects that are currently executing
  - Smart filters
  - Unit overview performance



- Production overview pane
  - Global chart interaction
  - Batch colors
  - Find batches, retained if selected
  - Workset batches
  - Color by batch attribute data for classification



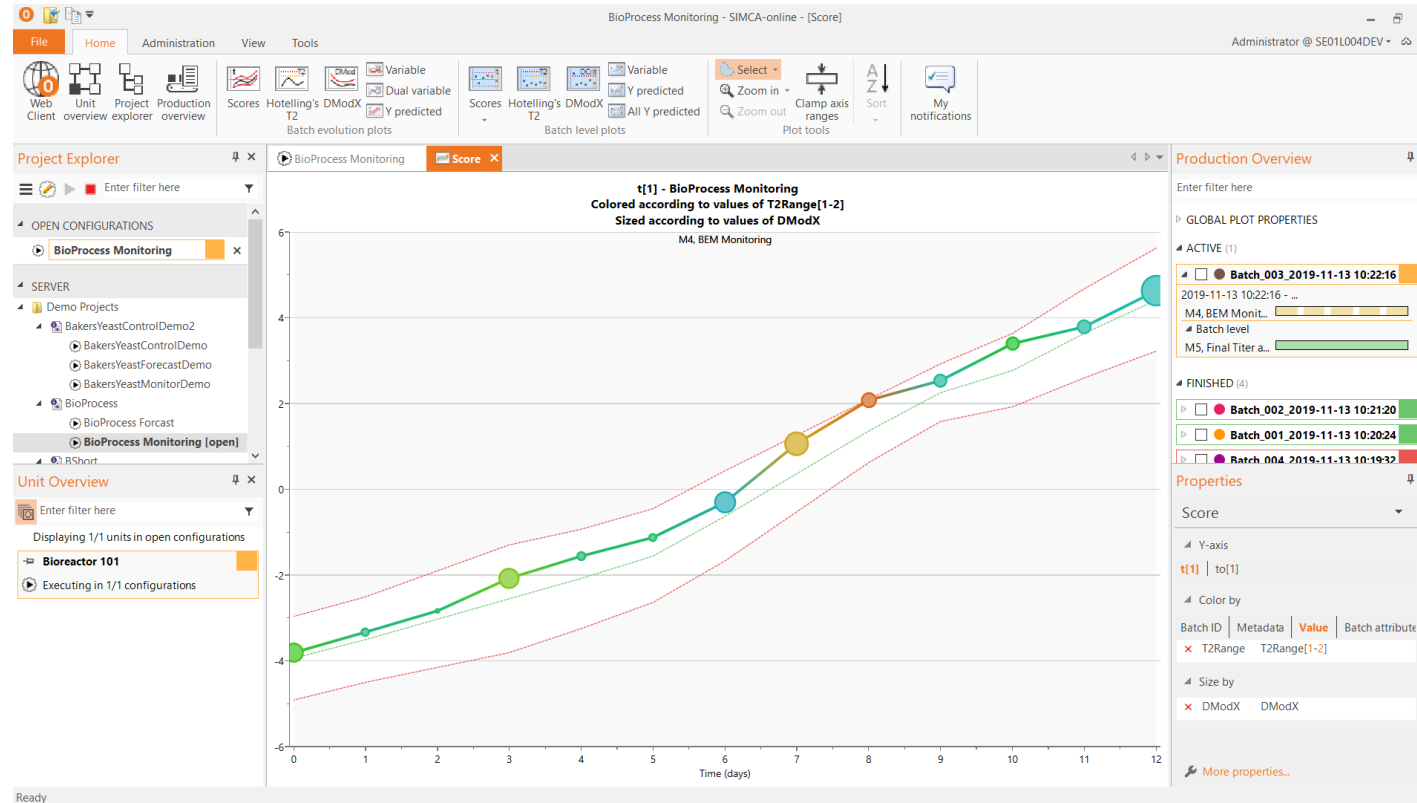
- Properties pane
  - Plot properties for active plot moved to pane



# 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

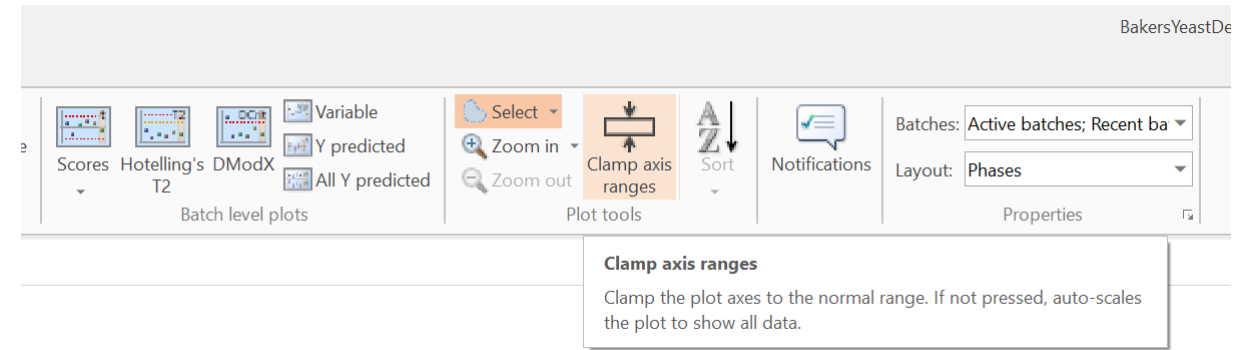
Tags (9 of 9)	Data
Batch ID	<Click to view>
Batch Age (h)	<Click to view>
Ethanol	<Click to view>
Temp	<Click to view>
Molasses	<Click to view>
NH3	<Click to view>
Air	<Click to view>
Level	<Click to view>
pH	<Click to view>

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

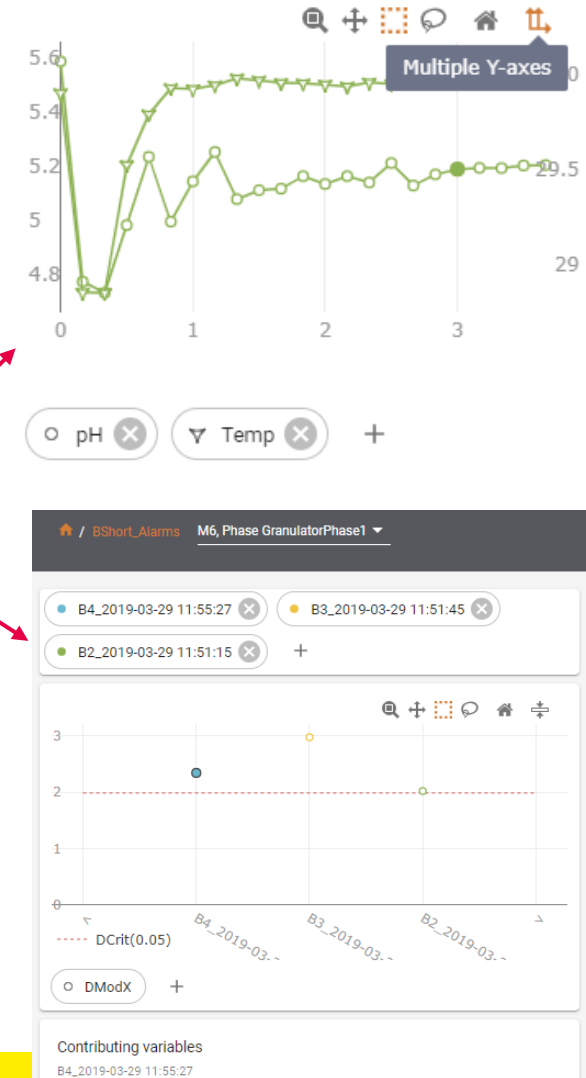
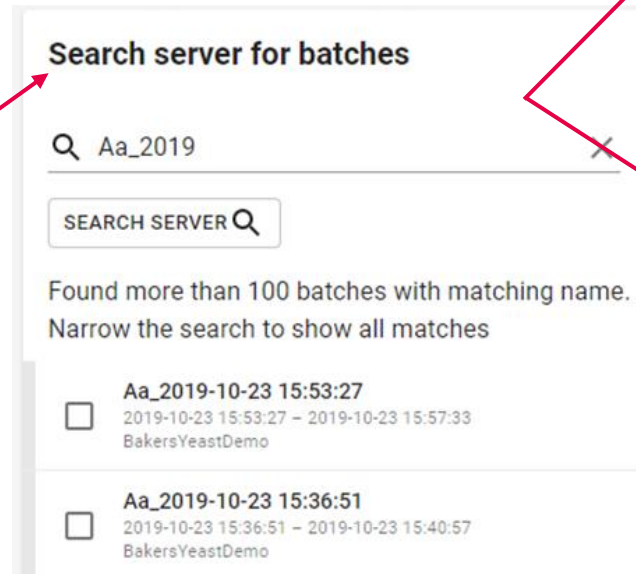
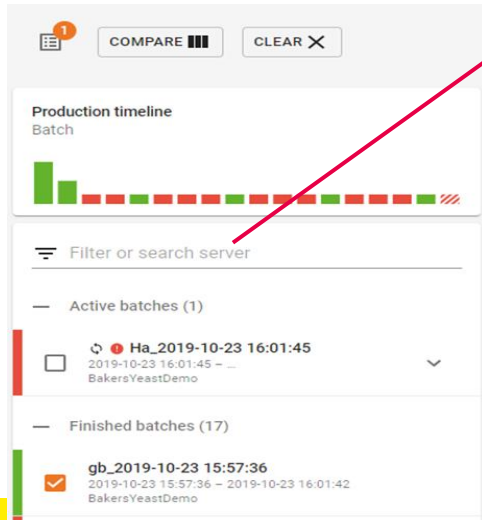
# Clamping

- 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



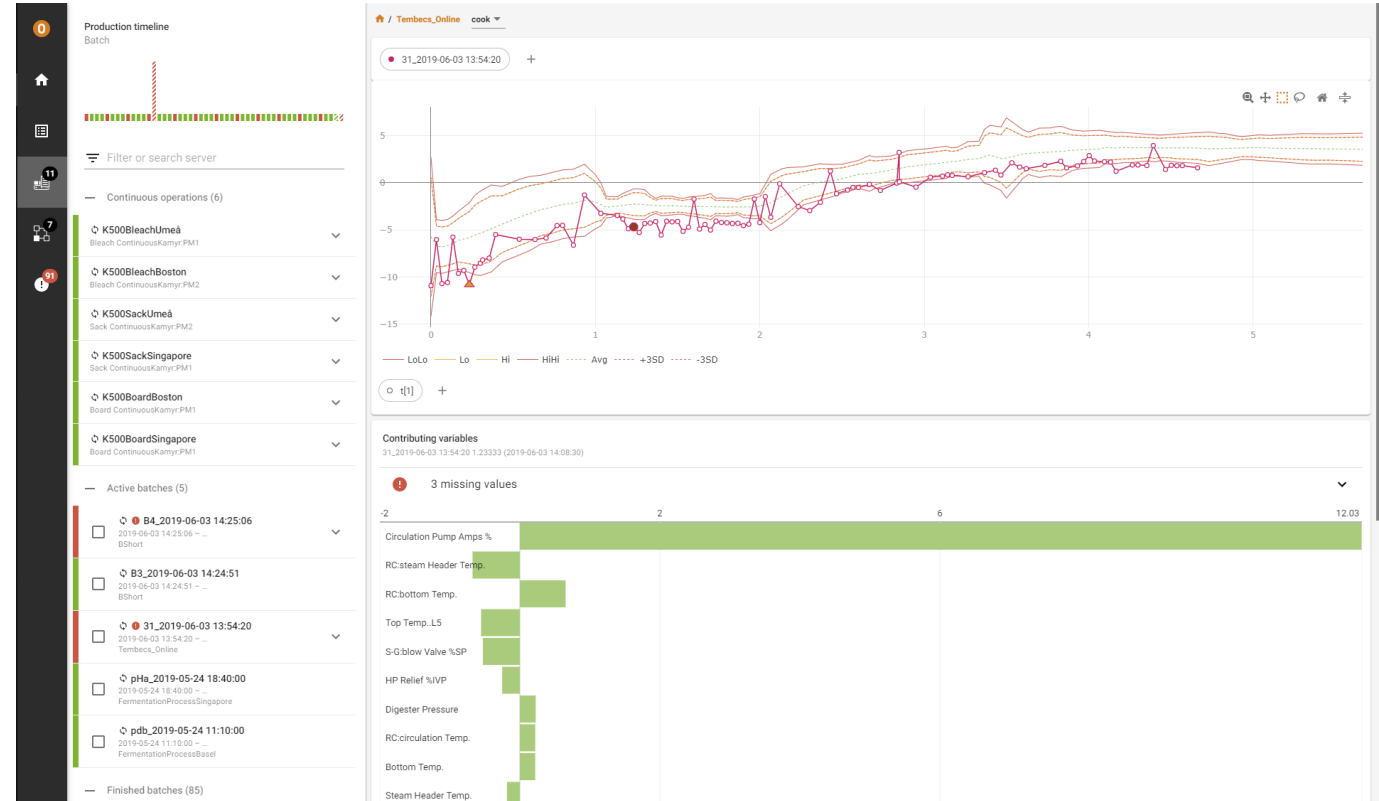
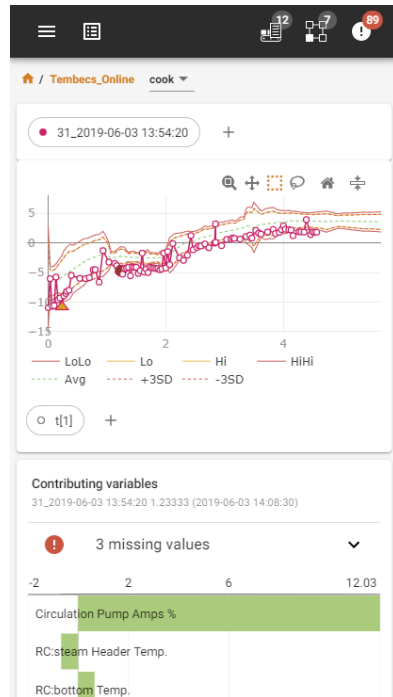
# Compare batches and production

- 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



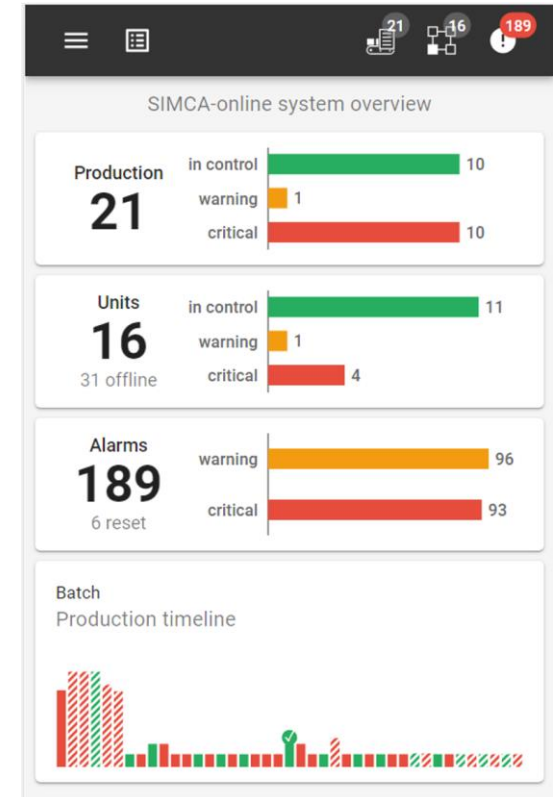
# Responsive layout

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