# SVILVER

# Simplifying Progress



SIMCA<sup>®</sup>-online 16.1



# 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 adding more flexibility
  - 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

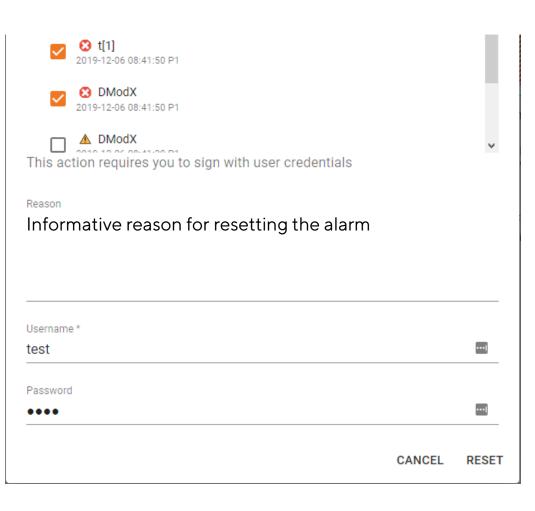
#### Benefits

- 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

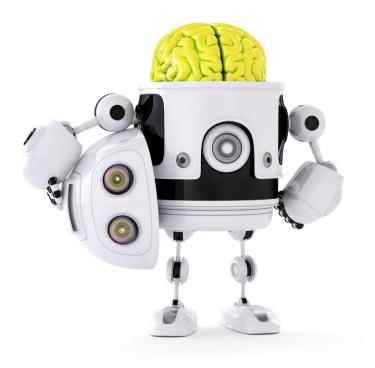
•  • p2[2] for a480_2019-12-10 09:25:20 2019-12-10 09:34:30 PhaseIterations_Alarms_NormalizedMaturity	^
▲ t[1] 2019-12-10 09:35:40	×
2019-12-10 09:35:40	Ň



# 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



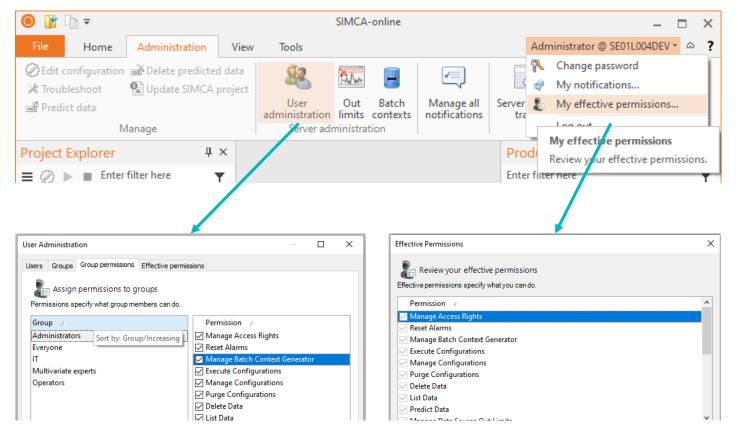






# Permissions granted to groups replaces previous use of roles which adds more flexibility

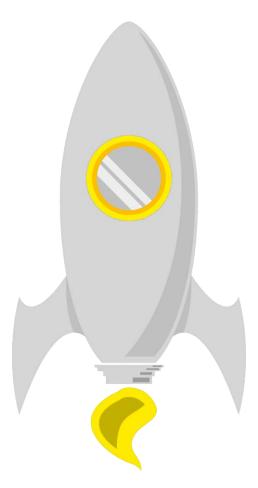
- Benefits
  - Easy management of users and permissions
- Applies to
  - Server user authorization
- Change
  - Permissions are granted to groups
  - Roles have been removed, and will migrate to groups when upgrading the system
  - Final permissions is the union of all the permissions for all groups 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

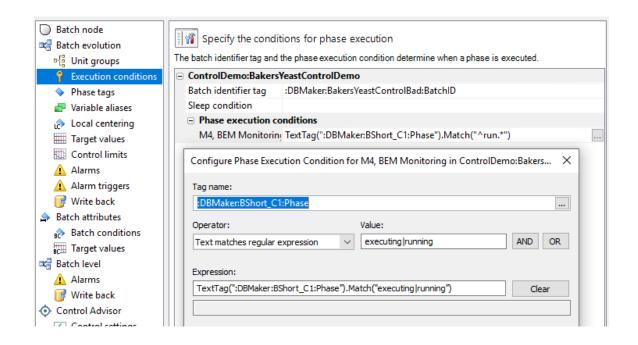
#### Benefits

 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 <u>regular</u> <u>expression</u> matching using the Match function

 Tip: if you want to test regular expressions a great tool is <u>https://regex101.com/</u>





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# Simplifying Progress



# SIMCA<sup>®</sup>-online 16

Version info

# SIMCA®-online 16

- Server
  - SIMCA® 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<sup>®</sup>-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

	Configure - BakersYeastDemo		– 🗆 X
	Batch node	Specify time ranges for project execut	ion and client recent batches
	• Unit groups	Catch-up of missed batches	
Production Overview 4	x Phase tags	Catch-up time range     Catch-up time range	7 days
Enter filter here	Phase tags     Phase tags	Catch-up polling interval	Not configured
ACTIVE (2)	Variable aliases	Late entry data	Not configured
	Local centering	<ul> <li>Eace entry data</li> <li>Keep batch active for late entry data</li> </ul>	1 days
▲ ● PS2_2019-04-10 12:09:20 Start: 2019-04-10 12:09:20	Target values	Batch condition update interval	1 hours
Stop: active	Control limits	Client settings	Thous
P1	Alarms	Recent batch time range	30 days
P2 P3	Alarm triggers		
M4, P1	📑 📝 Write back		
M5, P2 M6, P3	Batch attributes		
M7	Batch conditions		
M8 BC	Target values		
PS1 2019-04-10 11:55:30	Batch level		
Start: 2019-04-10 11:55:30	Alarms		
Stop: 2019-04-10 12:09:10 (kept active)	📝 Write back		
P1 P2	Control Advisor		
P2 P3	Control settings		
M4, P1	🔜 📝 Write back	Keep batch active for late entry data	
M5, P2 M6, P3	Time ranges	This setting keeps a batch active after it has a st	top time in the batch node, scanning for late entry data.
M7 M8	Metadata		
BC	Export configuration		
RECENT (1)			
PS2_2019-04-10 11:17:30			OK Cancel Help



# 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 workaround; see relevant KB article for more information)
- New functionality
  - Makes it possible to view variables that are imported to the SIMCA<sup>®</sup> project, but excluded from the model

¤∰ Model ② Time ranges ♦ Tags		J	e SIMCA model variables with correspond es will be treated as missing values.
🚽 Variable aliases		1	2
Target values	1	Primary ID	Tag
Alarms	2	Ag ppm	:DBMaker:Process_Cuprum_Good:Ag ppm
	3	Ni ppm	:DBMaker:Process_Cuprum_Good:Ni ppm
🦸 Write back	4	Pb ppm	:DBMaker:Process_Cuprum_Good:Pb ppm
Control Advisor	5	Bi ppm	
Control settings	6	Sb ppm	:DBMaker:Process_Cuprum_Good:Sb ppm
📝 Write back	7	Se ppm	:DBMaker:Process_Cuprum_Good:Se ppm
Metadata	8	(Time)	
	9	(As ppm)	:DBMaker:Process_Cuprum_Good:As ppm
Export configuration	10	(Te ppm)	



# Python pretreatment

#### Benefits

Combine your own mathematics in Python with your multivariate models

#### Applies to

- All project files created in SIMCA<sup>®</sup>
- New functionality
  - Python scripts added to SIMCA<sup>®</sup> project files as pretreatment step will also be utilized by SIMCA<sup>®</sup>-online

#### Disclaimer

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

MyPlugin Select the variables and observation	ns to transform.		
ariables: 9, included: 8, selected: 0		included: 1660, selected: 0	
Variable ID State	Observation ID	State	^
/ Ethanol Incl.	√1	Ind.	
Temp Incl.	√2	Ind.	
/ Molasses Incl.	√3	Ind.	
/ NH3 Ind.	√4	Ind.	
Air Incl.	√5	Ind.	
Level Incl.	√6	Ind.	
pH Incl.	√7	Ind.	
\$Time Excl.	√8 √9	Incl.	
/ pH+10 Incl.	√ 9 √ 10	Ind.	
	✓ 10 ✓ 11	Incl. Incl.	
	√ 12	Ind.	
	√ 12	Ind.	
	√ 14	Ind.	
	√ 15	Ind.	
	√ 16	Ind.	
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	✓ 18	Ind.	
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ables Observations General Phases Bi AyPlugin.MyPlugin rom filterabc import FilterABC see FilterABC for more optional func lass MyPlugin(FilterABC) : def_init_(self): #The name of the transform.	tions		fimming





# 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<sup>®</sup>online 16

My Notifications Summary Details		up subscriptions to organ is with subscriptions are listed		to delete.
	Group by <pre><ruster bea<="" column="" pre=""></ruster></pre>	by> v		elete Edit <u>s</u> ubscriptions
	Recipient	Event	Source /	Project Path
	DianaPrince	Batch discarded	BakersYeast2019	Europe\New
	DianaPrince	Execution aborted	BakersYeast2019	Europe\New
	DianaPrince	Batch started	BakersYeast2019	Europe\New
	DianaPrince	Alarm reset	BakersYeast2019	Europe\New
	DianaPrince	Batch deleted	BakersYeast2019 (2)	Europe\New

Configuration event types for 2 con	figurations	
Configuration edited		
Execution started		
Execution stopped		
Execution resumed		
Execution aborted (1)		
Batch started	<b>(2)</b>	
Batch finished		
Batch deleted		
Batch discarded		
Note updated		
Alarm triggered		
Alarm reset		
Server event types		
Server started		
Server stopped		
Unexpected server shutdown		

# Panes and filters

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

Project Explorer 4	×
$\equiv$ $\bigcirc$ $\blacktriangleright$ $\blacksquare$ Enter filter text here	
OPEN CONFIGURATIONS	
Tembecs_Online	×
Bakers Yeast	×
SERVER	
🔺 🜗 another folder	:
<ul> <li>My workspace</li> <li>Bakers Yeast Basic v15.0.0.4410</li> <li>Bakers Yeast Basic v15.0.0.441</li> <li>Bakers Yeast Basic v15.0.0.441</li> <li>Tembecs_Online</li> <li>Tembecs_Online</li> </ul>	10
4 📔 folder	
<ul> <li>▲ ▲</li> <li>▲ B</li> <li>⇒ Another workspace</li> <li>⇒ Workspace A</li> </ul>	
<ul> <li>Workspace A</li> <li>Bakers Yeast</li> <li>Bakers Yeast</li> </ul>	

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

Fil	e Home Administration	View	
W	eb Unit Project Production ent overview explorer overview		elling's DModX 🖉 Y predi Batch evolution plots
Proj	Unit Overview	₽×	🕑 BakersYeaDemo (
Project Explorer	Critical	× T	
(plor	Displaying 7/42 units		Critical alarms
P	BakersYeastBatchDemo     Executing in 1/2 configuration	ıs	Warning alarms Any type of alarm In control
	→ U1     Executing in 3/10 configuration	ins	Active Inactive
	→ Unit Executing in 10/27 configurati	ons	2.5-

- 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

Properties	μ×
Score	▼ Ξ
▲ Y-axis	<b></b>
t[1] to[1] to[2] to[3] to[4]	
⊿ Layout	
Units Phases	
∡ Color by	
Batch ID Metadata Value	
▲ Size by	
+ (New)	
▲ Options	
Control limits:	
+3 std. dev.; Average; -3 std. dev.	•
Show alarm limits	
Show annotations	
Show subheader	
Show active batches	
Show recent batches	_



# Panes and filters



Unit

overview

#### 0 🖹 🖿 🔻 BioProcess Monitoring - SIMCA-online - [Score] – 8 × Administrator @ SE01L004DEV - 🗠 📍 Administration View Tools Web Unit Project Production Client overview explorer overview Scores Hotelling's DModX Y predicted . DOR Variable Select . ÷ A Z Y predicted 🖳 Zoom in 🝷 Му Scores Hotelling's DModX All Y predicted Zoom out Clamp axis Sort ranges notifications ranges Batch evolution plots Batch level plots Plot tools Project Explorer ųх BioProcess Monitoring 롣 Score ♦ ► Production Overview ųх 😑 🧭 🕨 🔳 Enter filter here t[1] - BioProcess Monitoring Enter filter here Colored according to values of T2Range[1-2] GLOBAL PLOT PROPERTIES Sized according to values of DModX OPEN CONFIGURATIONS M4, BEM Monitoring BioProcess Monitoring ACTIVE (1) 🔺 🗌 🌑 Batch\_003\_2019-11-13 10:22:16 SERVER 2019-11-13 10:22:16 - ... 🔺 📗 Demo Projects M4, BEM Monit... BakersYeastControlDemo2 Batch level BakersYeastControlDemo M5, Final Titer a... ⟨►⟩ BakersYeastForecastDemo BakersYeastMonitorDemo FINISHED (4) BioProcess Batch\_002\_2019-11-13 10:21:20 BioProcess Forcast Batch\_001\_2019-11-13 10:20:24 BioProcess Monitoring [open] Batch 004 2019-11-13 10:19:32 A Short ąх ąх Unit Overview **Properties** Enter filter here Score - E Displaying 1/1 units in open configurations ▲ Y-axis - Bioreactor 101 t[1] to[1] Executing in 1/1 configurations ▲ Color by Batch ID Metadata Value Batch attribute × T2Range T2Range[1-2] ▲ Size by × DModX DModX ó 5 6 9 10 11 8 12 🔑 More properties... Time (days)

### Production overview

#### Properties

Ready

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# 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

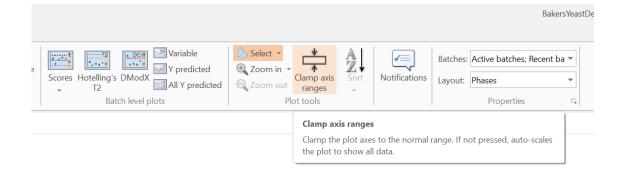
Enter filter here		
Tags (9 of 9)	Data	
Batch ID	<click to="" view=""></click>	
Batch Age (h)	<click to="" view=""></click>	
Ethanol	<click to="" view=""></click>	
Temp	<click to="" view=""></click>	
Molasses	<click to="" view=""></click>	
NH3	<click to="" view=""></click>	
Air	<click to="" view=""></click>	
Level	<click to="" view=""></click>	
pН	<click to="" view=""></click>	

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

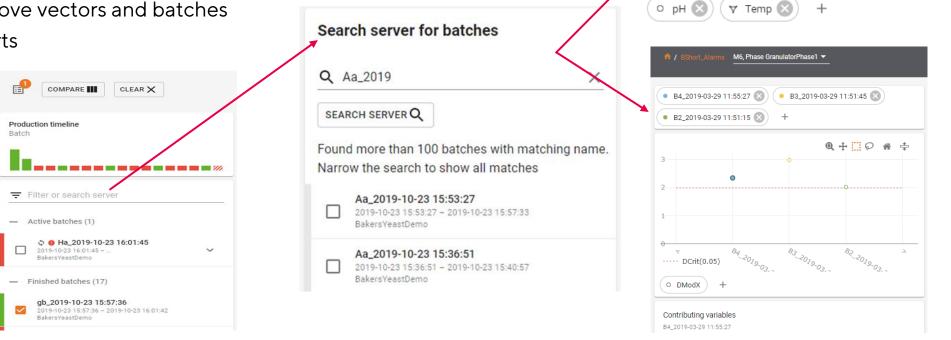






## Compare batches and production

- 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



2

5.6

5.4

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4.8

TL

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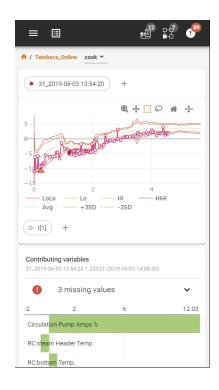
29

Multiple Y-axe

2

# **Responsive layout**

### View adopts to screen size



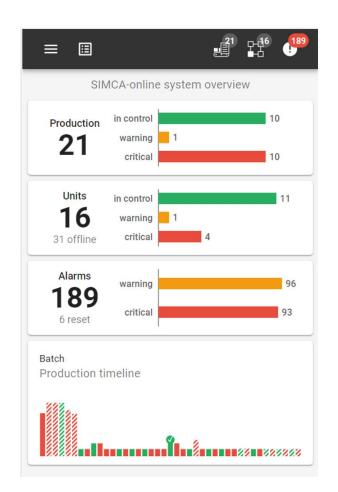


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# System overview and Batch timeline

#### 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