Functional Release Notes

Version 5.11.27

Release Information

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Content

1 General

FORCAM provides companies with all the information they need to control and optimize their production. The modular IIoT solution FORCAM FORCE IIOT is as flexible as the needs of customers. With a variety of production apps, FORCAM helps companies to make their processes more transparent and improve their workflows. In this way, companies create the basis for optimization measures and sustainable success, thereby ensuring their competitiveness.

FORCAM is always endeavored to optimize the solution FORCAM FORCE IIOT further, to enrich it with functions, offering customers consistent growth and greatest possible use. For this purpose, several releases are published throughout the year.

This document lists functions that have been added or changed during the **5.11.27** release. It serves as an overview of the most important features to use FORCAM FORCE IIOT in the best possible way.

Detailed descriptions of the individual functions can be found in the respective product documentation.

⚠ Update on critical Log4j vulnerabilities:
Immediately after the critical vulnerability in Log4J became known, which was classified as a very high IT threat level by the BSI, FORCAM provided a workaround for all customers.
With version 5.11.27 (and 5.10.35 respectively) of FORCAM FORCE IIOT, we closed the vulnerability by updating the affected libraries. With this we fix the following vulnerabilities:
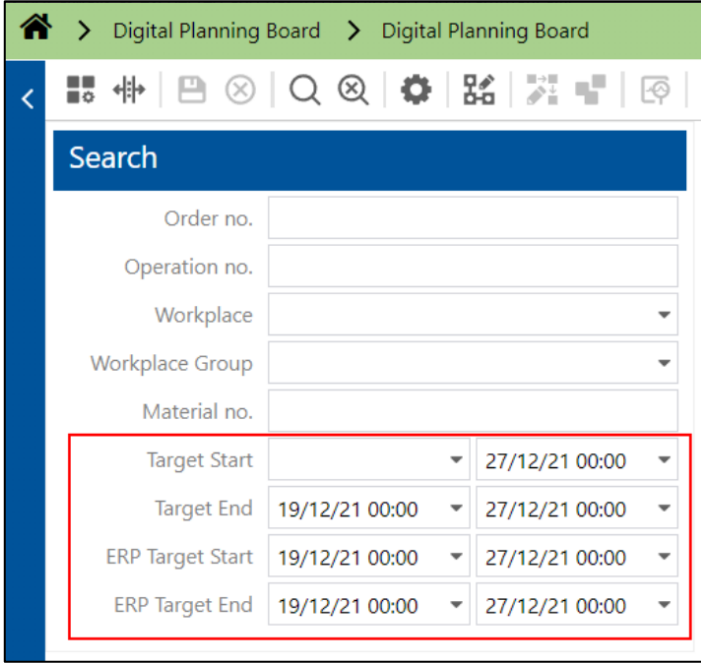CVE-2021-44228, CVE-2021-45046 and CVE-2021-45105.
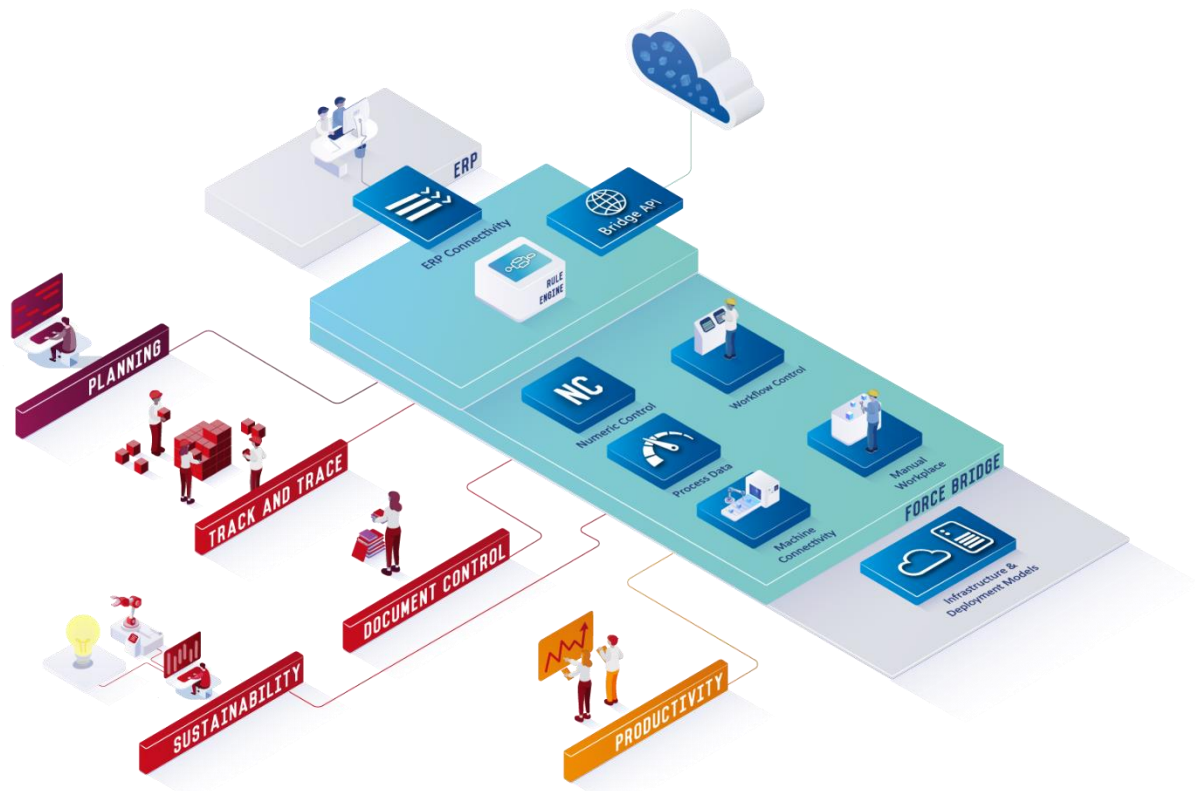
2 Planning

2.1 More intuitive search field behavior

Affected module	Affected area	Status
Workbench	Digital Planning Board	Change

Digital Planning Board

The search field behavior of the attributes "Target Start", "Target End", "ERP Target Start" and "ERP Target End" was adjusted to be more intuitive. The behavior is now as follows:

from	to	Expected result
not given	given	<= to
given	not given	>= from
given	given	>= from AND <= to
not given	not given	No filtering at all
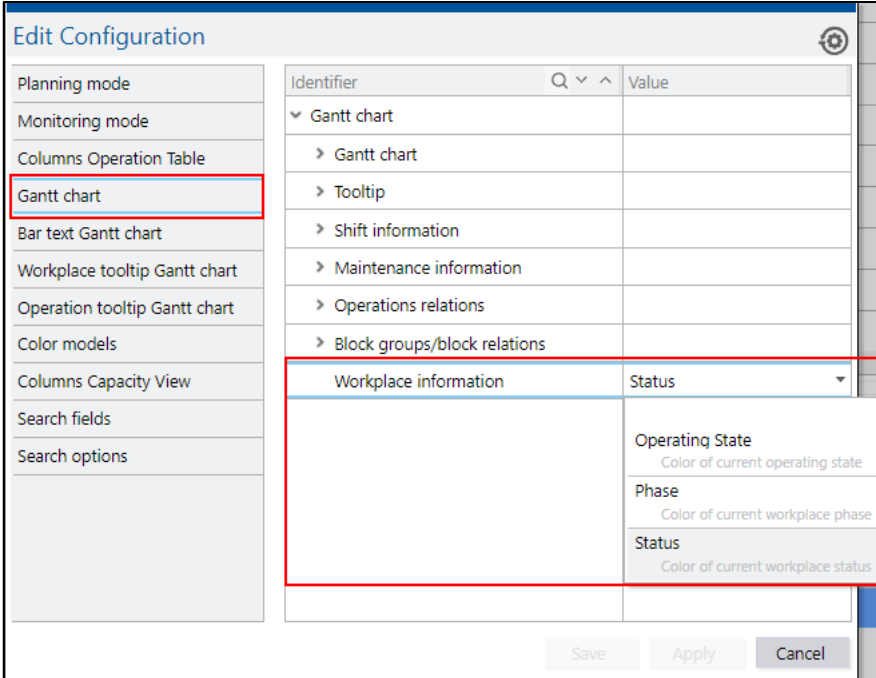
2.2 Configurable workplace information in the Gantt chart

Affected module	Affected area	Status
Workbench	Digital Planning Board	Change

Digital Planning Board

The background color of the workplaces shown in the Gantt chart is now capable of showing different information. The user can choose background coloring to be:

- None
- Operating state
- Phase or
- Status
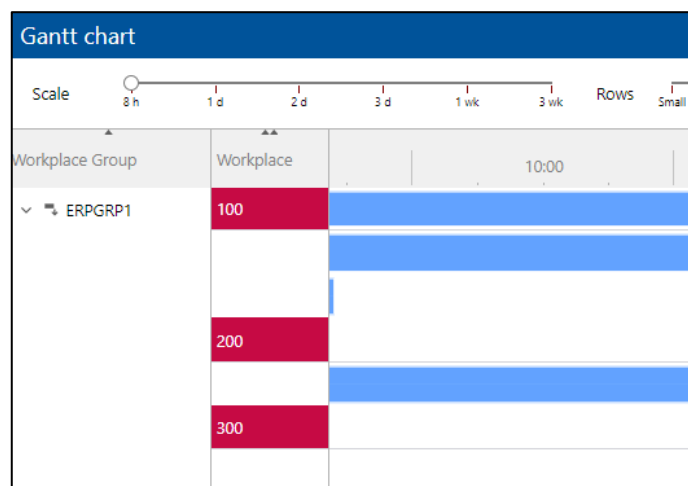
3   Track & Trace

3.1   Machine card adjustments

Affected module	Affected area	Status
FFWorker, FFWorkbench	Track & Trace	Change

The physical assembly position of components is provided and tracked by the ERP system. However, since the assembly positions of individual components may change during a possible rework process, which in this case cannot be specified by the ERP system, the following functional extensions have been added in the assembly plan:

- Manual change of the ERP assembly position via the assembly rework dialog and the assembly dialog
- Hiding the disassembled components in the assembly rework dialog
- Display the rework context in "Assembly info downstream search"

Dialog to capture assembly plan and rework assembly plan

The ERP system can send the assembly position of any user field of the operation component. The user can configure this user field in the "Grid column configuration" to capture the assembly plan or the rework assembly plan.

✓ Grid column configuration	∧ ∨ Assembly Position
Column name	⊕ Assembly Position
Column width	20%
Column visibility	✓
Column attribute	⚙ User Field 50 ▾

To identify which column configuration belongs to "Assembly position", the user can select the same user field in "Assembly position field name". The field is editable by selecting the "Assembly position editable" flag.

Assembly position editable	✓
Assembly position field name	User Field 50 ▾

Dialog to capture rework assembly plan

In the rework assembly plan, the user can also configure a "Hide disassembled components". This means that if this flag is true, then a component that is removed by a disassembly will not be shown in the "Assembly rework dialog" and will also not be considered in progress calculation.

Limitation

Technically, the disassembled component will only disappear if the "Assembly rework dialog" is opened and when the component has already been removed.

ⓘ A disassembled component is not immediately hidden after clicking the "Disassemble" button in the "Assembly rework dialog".

Capture assembly plan (background activity)

In the "Assembly plan background activity step", the user can also define the "Assembly position field name". This is sent to the ERP system when the assembly process is completed.

Order change possible	☐
Assembly position field name	▾

User Field 01 User Field 01	
User Field 02 User Field 02	
User Field 03 User Field 03	
User Field 04 User Field 04	
User Field 05 User Field 05	
User Field 06 User Field 06	
User Field 07	

FFRuntime

Adapt the changes in "OperationComponentAssemblyCommand" to send the assembly position field value if configured. Then runtime sends the assembly position field value to the ERP system with the ERP tag "<ASPOS>". If there is no value, the field is empty.

To send this value to the ERP system, the user must change the "ERP Upload" configuration in Workbench to enable the new field. The background is that the "EPIC" will not change the existing functionality of existing customers/installations automatically.

```
<xsl:choose>
    <xsl:when test="ASPOS">
        <ASPOS>
            <xsl:value-of select="ASPOS"/>
        </ASPOS>
    </xsl:when>
</xsl:choose>
```

Limitation

Currently, the "GenericUploadService" does not support the "OperationAsBuilt" to which the component details are sent. This also means that "OperationComponentAssemblyCommand" is not supported by "GenericUploadService". Thus, there are no changes for it.

Trace processing

Trace processing captures the assembly plan, sends the "OperationComponentAssemblyCommand" to the runtime and also captures the context of the rework assembly plan, i.e. the operation and operator context.

Office

Now it is possible to view the rework assembly context (i.e. operation and operator context) in the single piece downstream search and also the assembly position field value.

4   Productivity

4.1   Allow more than five arbitrary parameters for Groovy scripting

Affected module	Affected area	Status
Shopfloor Terminal	Template editor	Change

FFWorkbench

Path: Configuration > Shopfloor Terminal > Template editor > Base page > Button bar > Activity
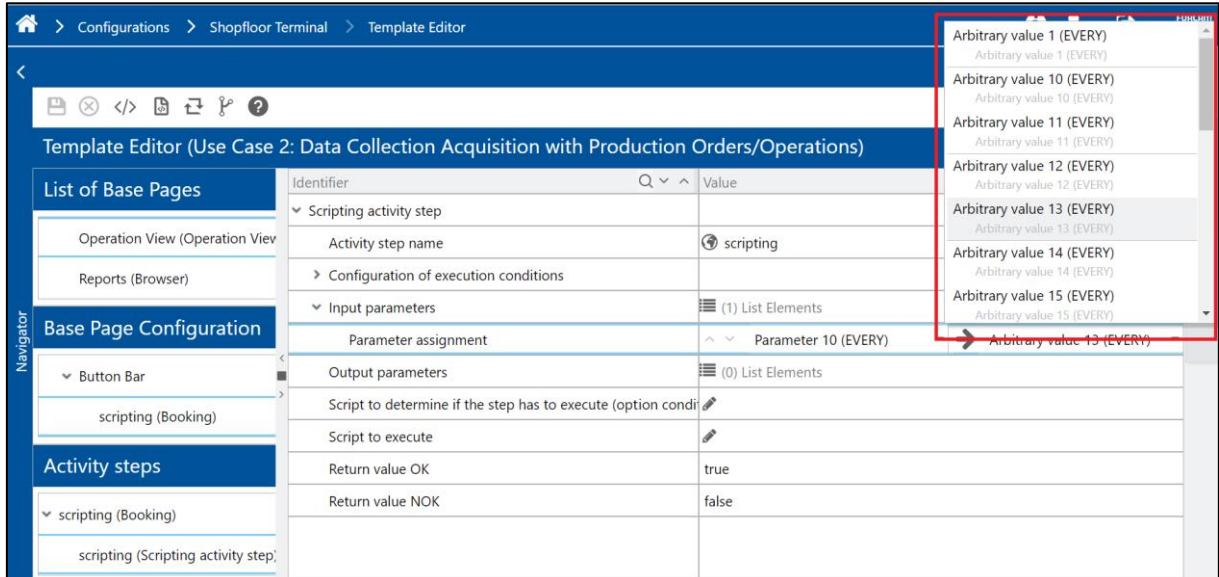
So far, scripting steps were limited to 5 arbitrary parameters and the core framework was limited to 7. Now, the input and output parameters of the domain "EVERY" have been increased to a value of 15.
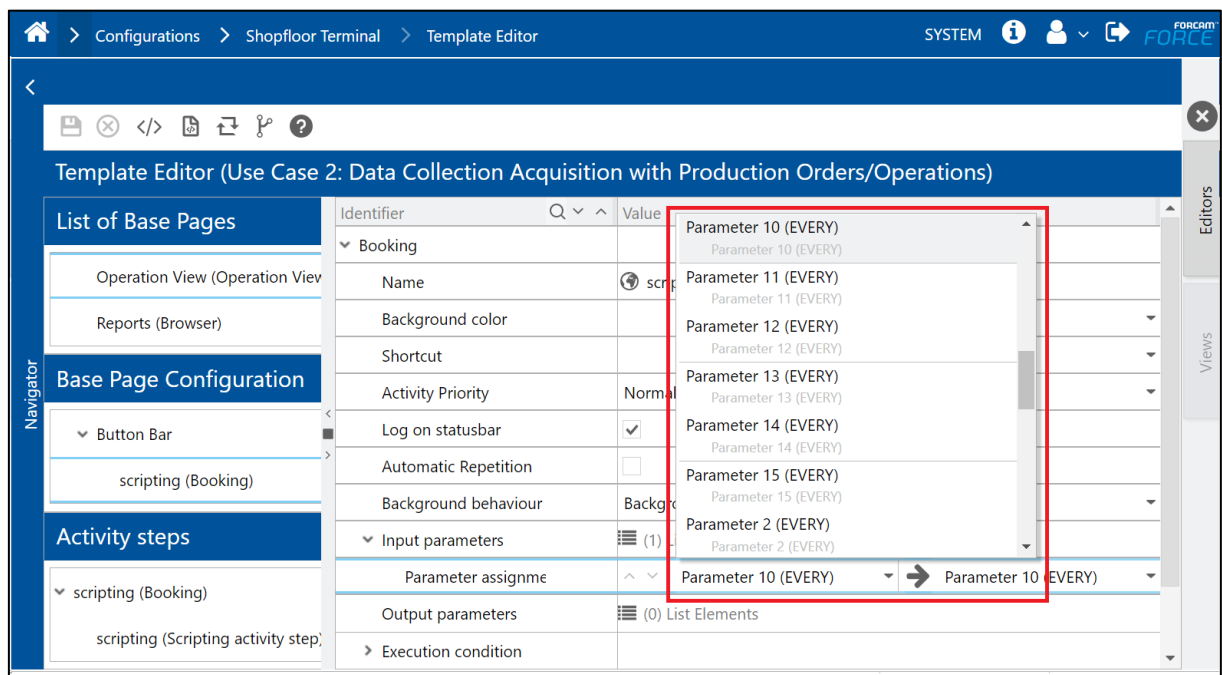
Productivity

: Configuration > Shopfloor Terminal > Template editor > Base page > Button bar > Activity > Scripting activity step configuration

The input and output parameters for "Arbitrary value (EVERY)" have been increased to a value of 15.
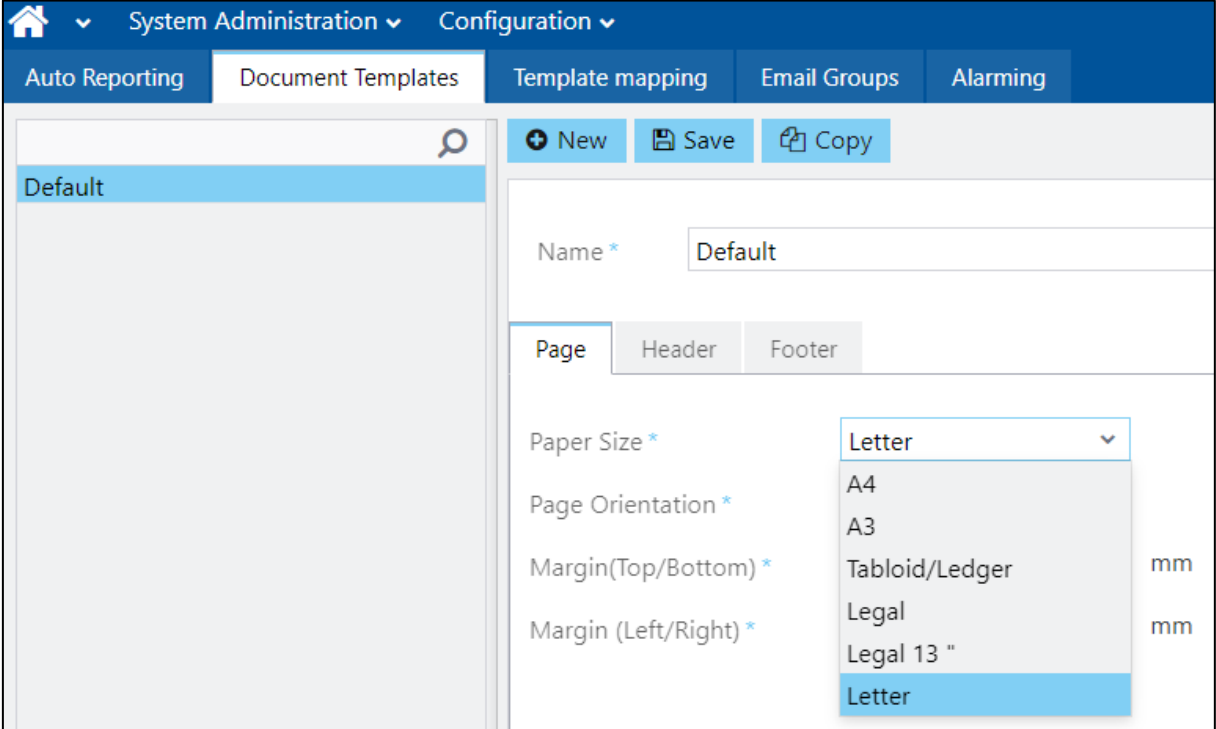
4.2   US paper formats for document templates

Affected module	Affected area	Status
Office	Document templates	Change

Document templates

The following paper formats can be used in document templates:

Name	mm	inches
Tabloid/Ledger	279.4 x 431.8	11 x 17
Legal	215.9 x 355.6	8.5 x 14
Legal 13 "	215.9 x 330.2	8.5 x 13
Letter	215.9 x 279.4	8.5 x 11

4.3   Configuration option to disable initial loading of all workplaces

Affected module	Affected area	Status
Master Data	Workplace configuration	New

FFWorkbench

Path: Master Data > Workplace configuration

A new configuration has been added to the workplace configuration page, located under "Configure search options" followed by "Display all workplaces".

Productivity

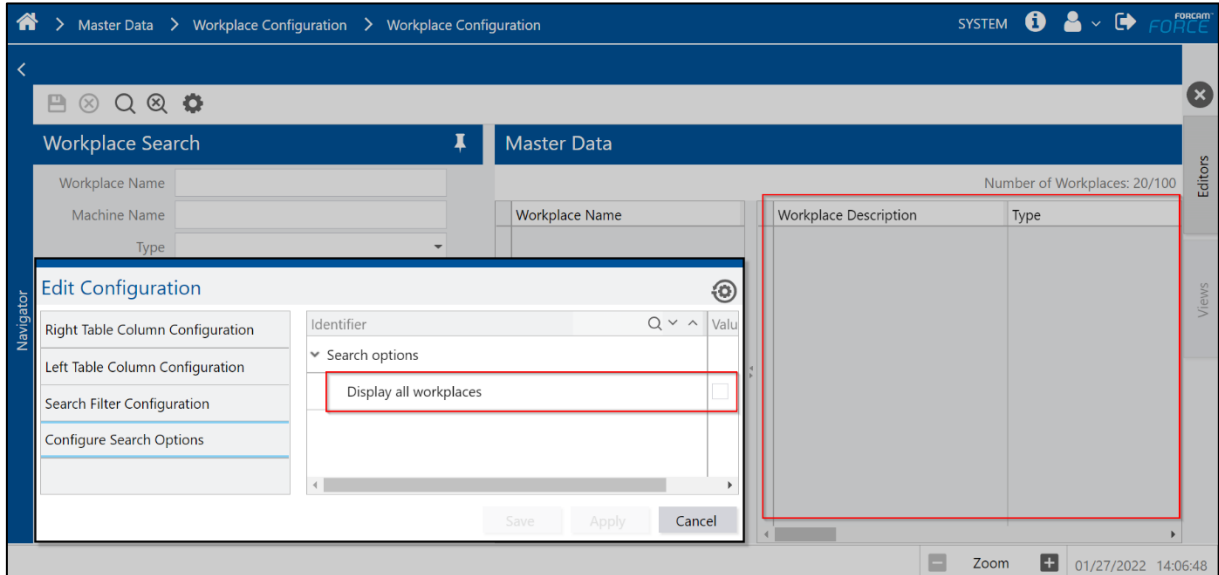By default, "Display all workplaces" is set to checked (i.e. "true") and all workplaces should be loaded initially. When the user unchecks the checkbox (i.e. "false"), the workplaces will not be loaded, and an empty table will be displayed.

If the user has selected some search filters in the workplace search area, the corresponding workplaces will be displayed based on the selection of the search filter. For example, if the user selects the type of workplace filter as manual workplace, only manual workplaces will be displayed in the table.
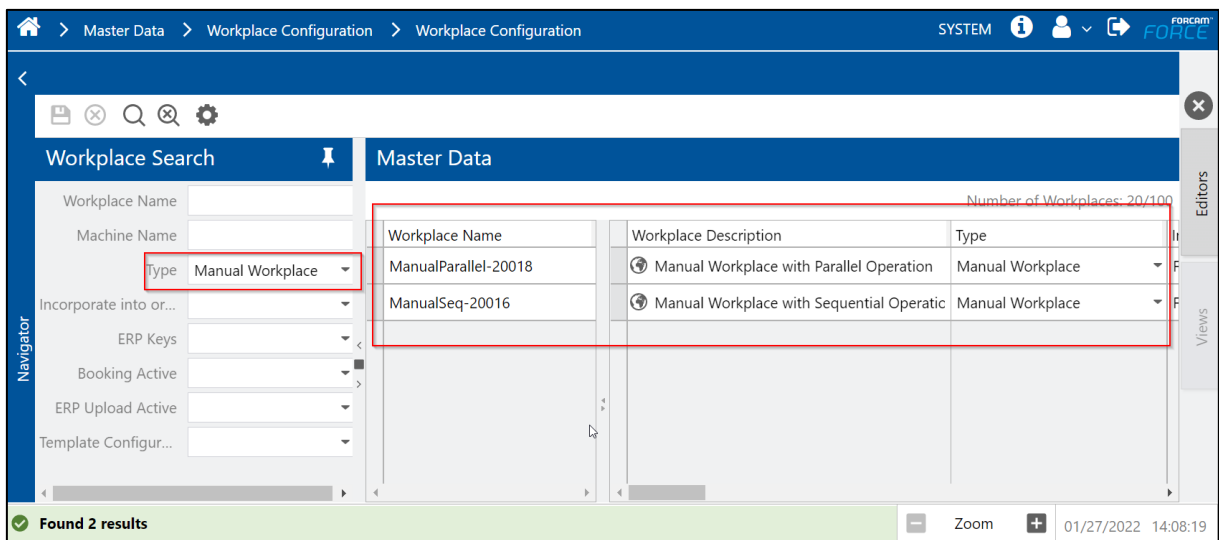
ⓘ If the user resets the filter, the page will be empty again unless the "Display all workplace" checkbox is selected.

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4.4   Target setup time expired status configurable for any phase

Affected module	Affected area	Status
FFRuntime	Target setup time	Change

This change corrects the behavior of the target setup time tracking so that any phase can be configured to pause the timer rather than abort it, regardless of whether the phase is active or inactive.

Rule Engine

The rule for monitoring target setup times has been modified to achieve more consistent behavior: It is no longer relevant whether an operation phase is active, but only whether it is configured or not. This makes it possible to count setup phases separated by an inactive phase against the same target setup time without restarting the timer.

## 4.5   PDF exports will not take place until the rendering is complete

Affected module	Affected area	Status
Office	Visualization & Dashboard	Change

A visualization or a dashboard, which contains a visualization, are exported to PDF when the rendering of the single visualization graphs is finished.

Visualization

If a visualization contains graphs, it must be ensured that the rendering of the graphs is complete before the visualization is exported to PDF. With CaptainCasa version in 5.11.27, it is possible to receive events when the rendering of a graph is complete. PDF exports are now only done when the rendering of all visualization graphs is completed.
With this feature, it was detected that hiding the center pin of a chart of type "gauge" by setting its color to "null" is an invalid configuration. To handle drawing failures correctly, the center pin needs to be displayed for "gauge" charts:
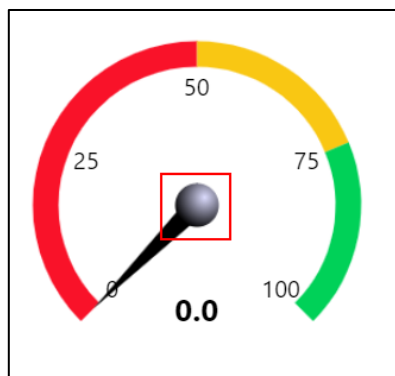
4.6 New operation filter component

Affected module	Affected area	Status
Shopfloor Terminal	Configuration	New/Change

Operation chooser activity step is extended to have operation filter component to filter the rows from the operation grid. The filter component consists of two sections:

− Quick text search filter
− Dynamic attribute popup filter

Shopfloor Terminal configurator

The configuration of the operation selection step ("OperationSelectionActivityStepUI") is extended by the following parameters:

− Barcode scan configuration (the configuration for barcode scanning)
− Operation table filter (filter configuration)
  o Text search filter (it consists of the attribute mapping of the quick text search; this attribute is also mapped with barcode scan search)
  o Attribute search filter (it consists of the attribute mapping for dynamic attribute popup)

Shown below is the step view when filter is configured:

4.7   Enable automatic closing of the activity steps dialog on success

Affected module	Affected area	Status
Shopfloor Terminal	Configuration	New

Shopfloor Terminal

The number of button clicks required in the activity steps are reduced by introducing the automatic close of dialog on success.

- "TransmitNCElementsActivityStepUIConfiguration" send files to the machine and receive files from the machine
- "DomainAttrMachineSequenceTransmissionActivityStepUIConfiguration" send a machine sequence
- "SendRecipeElementsActivityStepUIConfiguration" sends a recipe (the properties are available but need to be verified)

Shopfloor Terminal configurator

A configuration has been introduced that allows automatic closing of the above mentioned activity UIs. When the processing of the activity step is "OK" and detected with no error, auto close will be executed. Delay time until the UI is auto closed is configurable. During the delay time, the UI and the result is visible for the user. The "OK" button is enabled in the queuing time where the user can interrupt the queuing time and close the dialog manually.

Send of machine sequence	
Activity step name	🌐 Send to Machine
› Configuration of execution conditions	
› Sizing	
› Input parameters	☰ (1) List Elements
Output parameters	☰ (0) List Elements
Show messages on local message bar	✓
All workplaces have the machine sequence	☐
Return value OK	true
Return value NOK	false
Sequence steps row span	5
Machine sequence	1 - Focas Start
Machine reset sequence	1 - Focas Start
Close dialogue on success	✓
Auto close delay [seconds]	10

4.8 Editor for auto report attachments enables multilingual names

Affected module	Affected area	Status
Office	Auto reporting	New

Auto reporting

If the same report/dashboard is defined in an auto report multiple times as an attachment, the attachment names will be equal in the send email. To distinguish between the different attachments, the user needs to be able to define a name for an attachment.

In the editor of auto report attachments, a new field has been added to define a multilingual name for an auto report attachment:
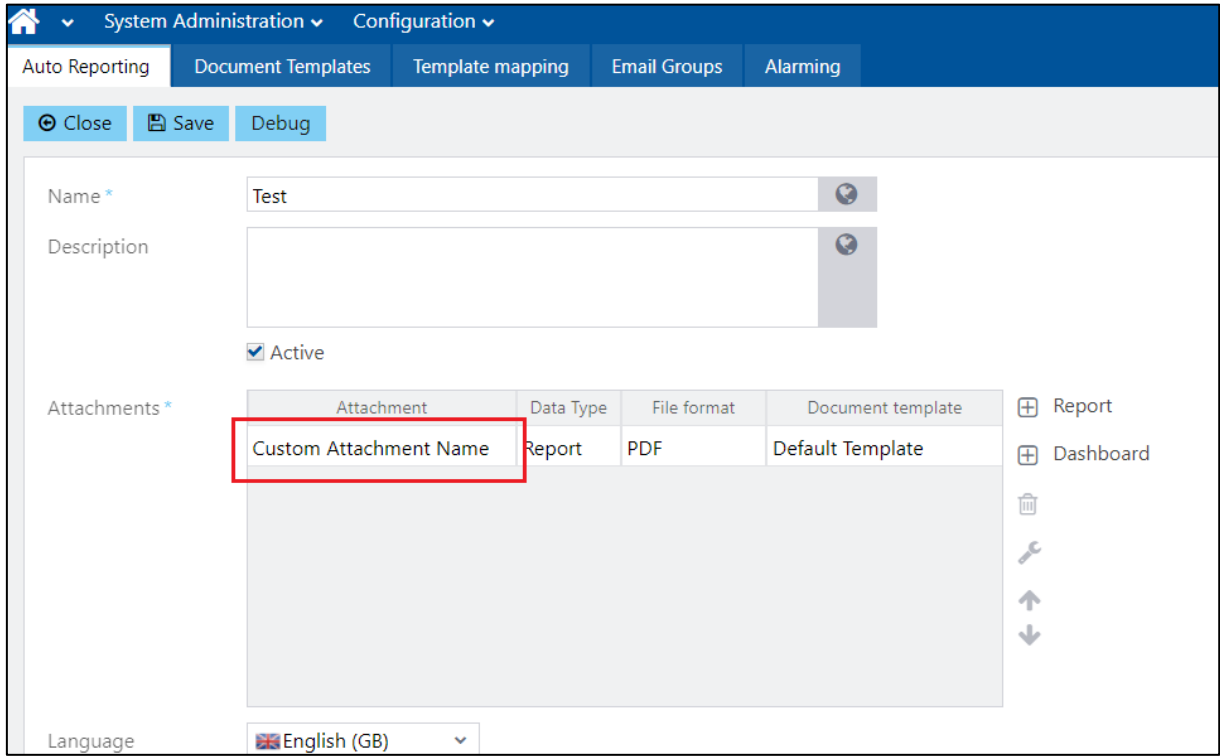
The name of the attachments will be directly visible in the attachment table of the auto report editor:
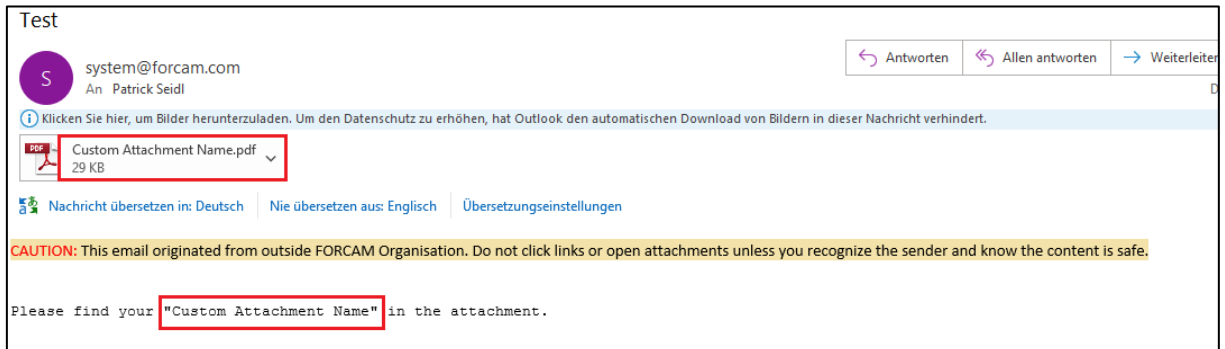
In the email, the attachment will be named after the defined name and the placeholder will also be replaced with the defined name:

4.9   Easier handling of custom literals

Affected module	Affected area	Status
Office	Editors using the Custom Literal Management UI	Change

Office

Path: Performance Analysis > Reporting > Editors using the custom literal management UI

The change allows the clearing and the saving of custom literals without setting a value for the default language. The editors using the custom literal window in the "Performance Analysis-Reporting-Module" no longer enforce that the literal of the default language is set, to allow clearing of previously saved custom literals.
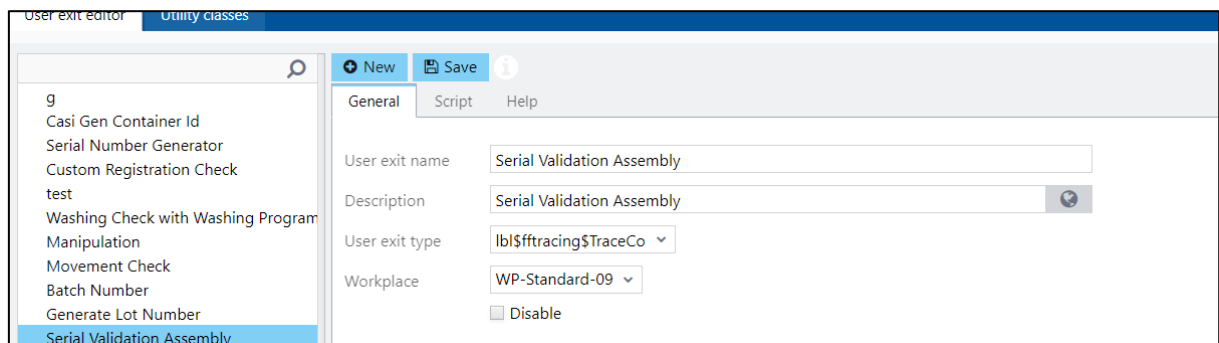
5   Process

5.1   Provided a user exit configuration for Track & Trace

Affected module	Affected area	Status
Office	Track & Trace	New

User exit configuration for Track & Trace

Added a new user exit configuration "Serial Validation Assembly", where the user can write a Groovy script to validate the scanned serial number during the assembly process.

6   Platform & Connectivity

6.1   New JSON scheme for MQTT plugin

Affected module	Affected area	Status
Machine Data Connectivity	DCU/DACQ	Change

The MQTT plugin for DCU/DACQ requires a specific (undocumented) scheme to capture data from a machine. The machines of some customers send MQTT telegrams in a JSON scheme that was not supported in the past by the MQTT plugin of FORCAM FORCE IIOT.

Requirements

The MQTT plugin must support the JSON scheme sent by machines. The JSON scheme from the machines may contain substructures, therefore it must be possible to read such substructures in a JSON telegram.
The new JSON scheme should only require the necessary information and formatting characters. It should be more flexible than the already supported schemes.
This solution is intended to ensure that MQTT telegrams that correspond to the JSON standard can be interpreted.

JSON format
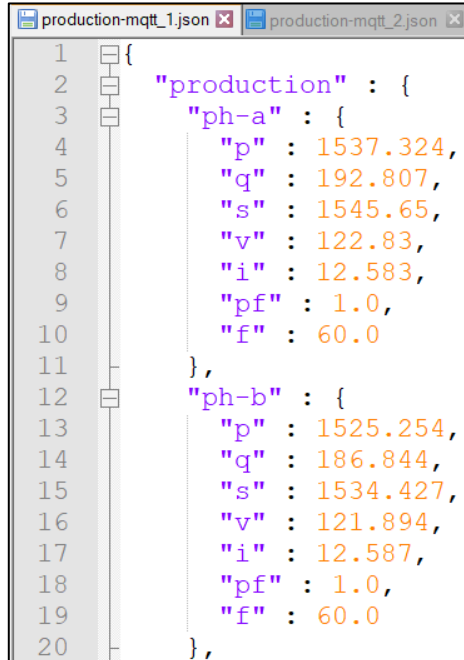
Information about the header data of a JSON telegram.

"controller": "900035313",
"ts": "2018-06-27T10:10:00+01:00",
"name": "TOPIC",
"value": "forcam/receive/MQTTTest/4711"

The controller name is not necessarily required, but if the controller name is available, it must match to the controller name in the workplace configuration. The "controller" field in JSON is only needed if two controllers use the same URL and topic. In this case, it makes more sense to use a head controller.

The time stamp is also not required. If it is present in the JSON telegram, it is checked against the configured "maximum data delay" (see below). The topic and the topic URL are not needed in the JSON telegram. Different JSON formats are now supported, including structures of different depths.
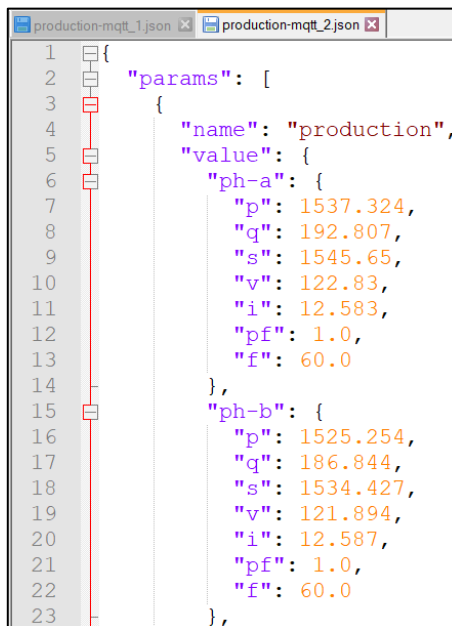
```
production-mqtt_1.json   production-mqtt_2.json
 1   {
 2       "production" : {
 3         "ph-a" : {
 4           "p" : 1537.324,
 5           "q" : 192.807,
 6           "s" : 1545.65,
 7           "v" : 122.83,
 8           "i" : 12.583,
 9           "pf" : 1.0,
10           "f" : 60.0
11         },
12         "ph-b" : {
13           "p" : 1525.254,
14           "q" : 186.844,
15           "s" : 1534.427,
16           "v" : 121.894,
17           "i" : 12.587,
18           "pf" : 1.0,
19           "f" : 60.0
20         },
```

```
production-mqtt_1.json   production-mqtt_2.json
 1   {
 2       "params": [
 3         {
 4           "name": "production",
 5           "value": {
 6             "ph-a": {
 7               "p": 1537.324,
 8               "q": 192.807,
 9               "s": 1545.65,
10               "v": 122.83,
11               "i": 12.583,
12               "pf": 1.0,
13               "f": 60.0
14             },
15             "ph-b": {
16               "p": 1525.254,
17               "q": 186.844,
18               "s": 1534.427,
19               "v": 121.894,
20               "i": 12.587,
21               "pf": 1.0,
22               "f": 60.0
23             },
```

```
production-mqtt_1.json  production-mqtt_2.json  Forcam_standard_format.json

  1  {
  2      "controller":"Controller",
  3      "ts":"2021-10-28T16:30:55",
  4      "params":[
  5          {
  6              "name":"TOPIC",
  7              "value":"machine123"
  8          },
  9          {
 10              "name":"signal1",
 11              "value":"TRUE"
 12          },
 13          {
 14              "name":"signal2",
 15              "value":"FALSE"
 16          },
 17          {
 18              "name":"signal3",
 19              "value":"32767"
 20          }
 21      ]
 22  }
```

```
production-mqtt_1.json  production-mqtt_2.json  Forcam_standard_format.json  Alternative_format.json

  1  {
  2      "controller": "Controller",
  3      "ts": "2021-10-28T16:30:55",
  4      "TOPIC": "machine123",
  5      "signal1": "TRUE",
  6      "signal2": "FALSE",
  7      "signal3": "32767"
  8  }
```

Workbench

Path: Master Data > Workplace configuration > Workplace configuration

The time stamp in the MQTT telegram can be used to set that telegrams are discarded that are older than the time that was entered in the controller configuration of the workplace in the field: Maximum data delay (sec). The MQTT topic can contain blanks.

Path: Master Data > Workplace configuration > Template configuration

Signal configuration

The signal name for FORCAM FORCE IIOT in the "Name" field should be one word and it should only contain letters, numbers, and underscores. Other special characters should not be used. However, the signal name should not start with a number.

Each leaf element of a JSON-formatted MQTT telegram can be configured as a signal. The respective signal name of a MQTT telegram must be entered in the "Alias" field. For telegrams with structured or hierarchical data, the path to the data in the telegram must be entered in the "Alias" field in addition to the signal name. Backslashes are used to separate the individual hierarchy levels, for example: net-consumption\ph-b\q.

6.2   Location identifier for all commands

Affected module	Affected area	Status
BridgeAPI	Location identifier	Change

CommandAPI

All commands can now also carry the optional field "LocationIdentifier".

7   Appendix

Abbreviation/Term	Description
BridgeAPI	The first application interface (Open API) for smart manufacturing
CaptainCasa	A framework for developing Web front ends for business applications
CommandAPI	An API to use the command UI
ERP	Enterprise Resource Planning
FORCAM FORCE EDGE	The FORCAM FORCE EDGE solution enables companies to fully exploit the digitization potential of machines from a wide range of manufacturers and models. With FORCAM FORCE EDGE, you can easily digitize even heterogeneous machine fleets. Even machines that were never intended for digitization can later be made fit for the smart factory.
JSON	JavaScript Object Notation is a compact data format in an easy-to-read text form for data exchange between applications.
MQTT	Message Queuing Telemetry Transport
Rule Engine	The "brain" of FORCAM FORCE IIOT, which generates a unified data model for the entire enterprise
UI	User interface