FORCAM™ FORCE

Version 5.9

Multi-Site Administration

Manual

Document:	**Manual - Multi-Site Administration**
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1 Concept

FORCAM FORCE™ supports the Multi-Site Single Server architecture (see Figure 1). There is one FORCAM FORCE™ instance on which several plants are operated. The plants can be located in different countries and different time zones.

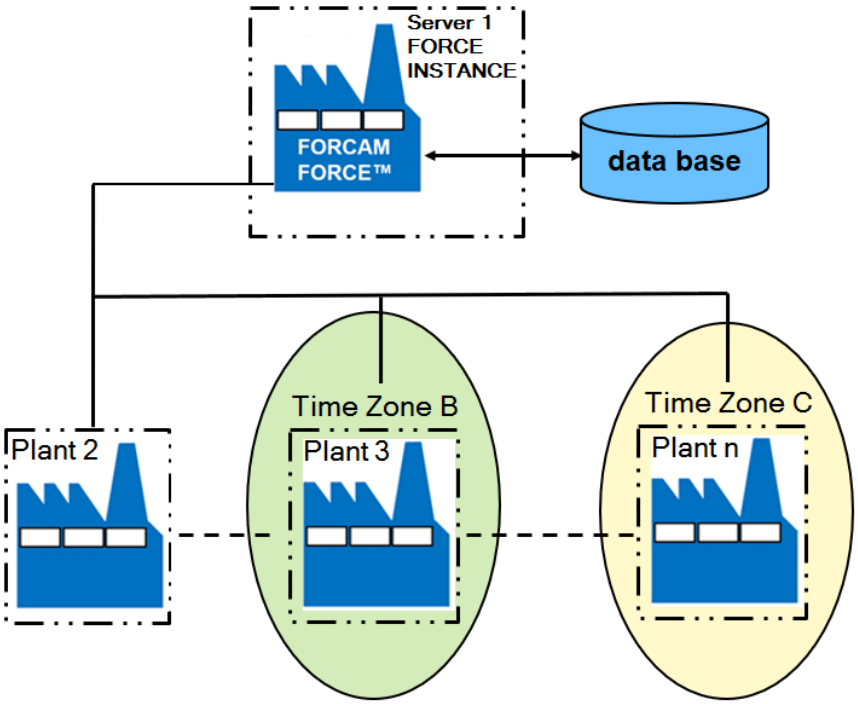

Figure 1: Multi-Site Single Server architecture

To ensure reliable administration and visibility of data, master data are classified as either **global** or **local** in a Multi-Site architecture.
Global master data are effective across all plants and include important data such as ERP keys, shift types or time bases. Local master data concern only the particular plant, e.g. user, personnel or workplaces.

Administrators are defined by the permissions and roles assigned to them. Administrators, including the permissions and roles, are likewise classified as **global** or **local**.
Global master data can only be edited by global administrators. They are super users and own all permissions to view and change global or local master data.
Local administrators can only administer plant-specific data. They can only view global data.

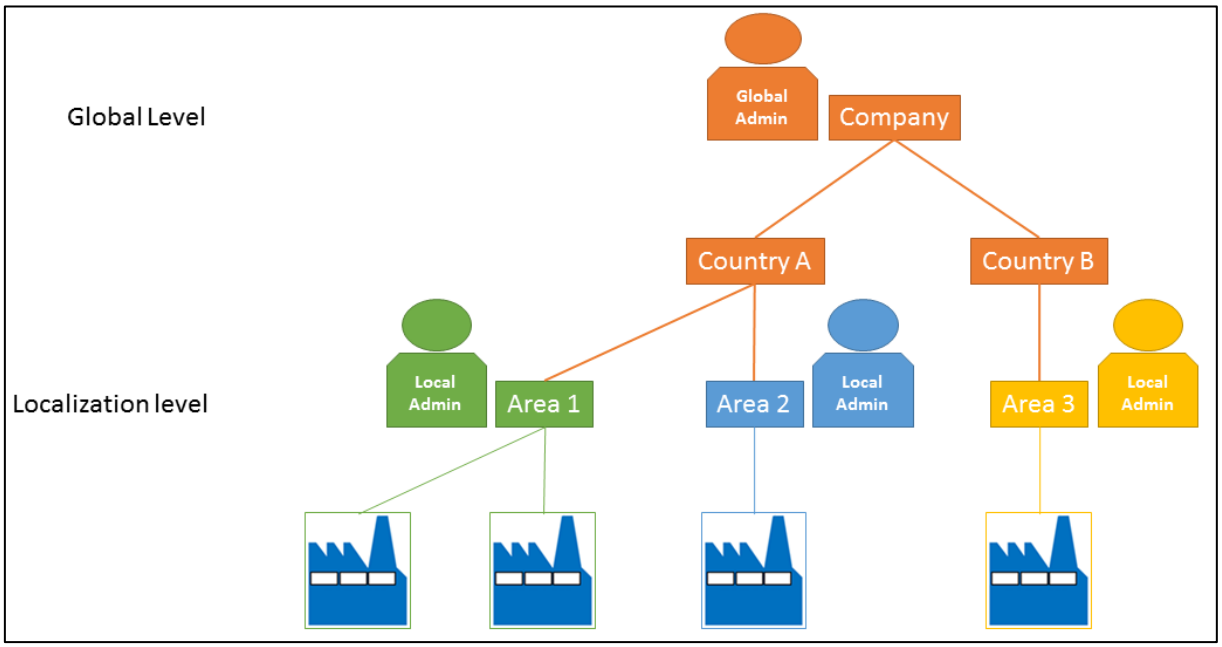

Figure 2: Global vs. local administrator

A new ORG hierarchy (organizational hierarchy) is being introduced as a system hierarchy in product version 5.7 to allow Multi-Site Administration. This is a mandatory hierarchy and is even required if Multi-Site Administration is not used.

One level of the ORG hierarchy can be defined as a localization level for Multi-Site (see Figure 2). This means that the organizational structure on which the local administration is depicted can be custom-defined.

As a new module and additional concept in FORCAM FORCE™, it is possible to define system attributes within this organizational hierarchy for the first time. System attributes are used to simply fix important data and relay the data in the hierarchy. This makes it quicker and easier to maintain master data and information (e.g. ERP keys, time zone etc.).

As of this product version, workplaces can no longer be created and exist as isolated elements; instead, they must be classified in the ORG hierarchy.

This manual explains the minimum configuration required as part of updating to product version 5.7, even if the Multi-Site Administration is not used.
All configurations are explained in the following chapters.

1.1 Necessary Configuration with/without Use of Multi-Site

The Multi-Site Administration is a basic function that is implemented with software version 5.7. Even if this function is not to be used, there are configurations that are mandatory.

ⓘ The administration of the permissions and roles (see section 5.5) is independent of Multi-Site and remains a requirement.

1.1.1 Without use of Multi-Site Administration

The following minimum configurations are required, even if the Multi-Site Administration is not used:

- Create ORG hierarchy (see section 2.1)
- Assign hierarchy attributes (see section 2.3.2)
- Check whether all (personnel) ERP keys and time zones are assigned to the hierarchy nodes correctly (see section 2.3.2)
- Incorporate *all* workplaces in the ORG hierarchy (see section 3)
- Check shift maintenance on the workplace time zone (see section 5.2)

1.1.2 With use of Multi-Site

The following configurations are required in addition to those in section 1.1.1 if the Multi-Site Administration is used:

- Select localization level and activate localization (see section i)
- Localize all users and define local administrators (see section 4)
- The following other data can be localized:
  - Personnel master data (see section 5.3)
  - Hierarchies and their elements (see section 5.4)

2 Configuration of the ORG Hierarchy

After creation of this system hierarchy, attributes must be assigned to the levels (at least elementary system attributes of the workplaces). If Multi-Site is used, one level of the ORG hierarchy is determined as the localization level on which the administration takes place.

2.1 Creating an ORG Hierarchy

Path: Master Data > Workplace > Workplace Hierarchy

The organizational hierarchy is a system hierarchy in which all workplaces must be incorporated. This ORG hierarchy serves as a framework for administering workplaces on an organizational level and maintaining them within the system.

⚠ It is not possible to delete system hierarchies once they have been created.

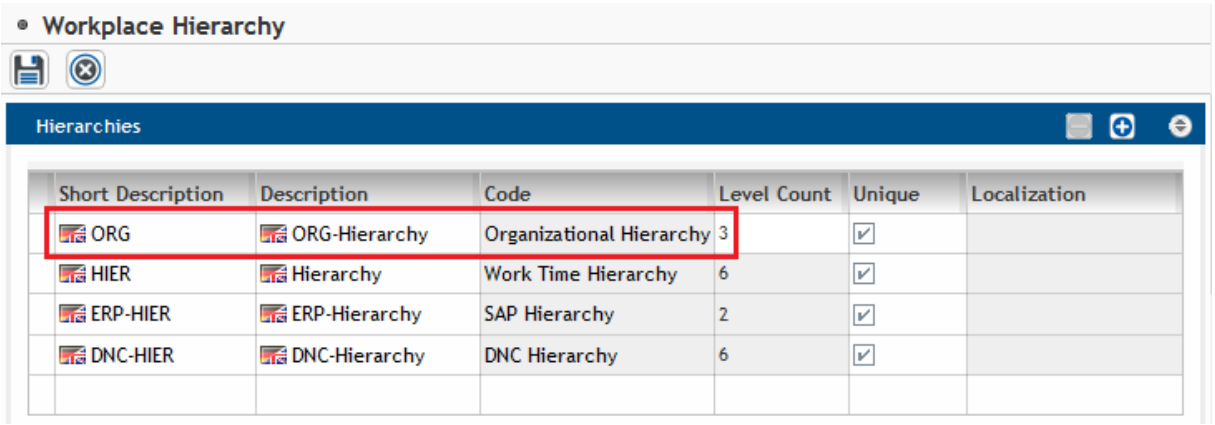

Figure 3: Creating a new ORG hierarchy

To create a new ORG hierarchy:

1. In the **Hierarchies** section, click on .
2. Enter the desired short description and description of the new hierarchy.
   The hierarchy appears under the entered short description under **Hierarchy Levels** (see section i.).
3. In the drop-down menu under **Code**, select the **Organizational Hierarchy**.
4. Enter the number of levels.
   The ORG hierarchy requires at least 2 levels. The number of levels is editable providing no element is created in the hierarchy.
5. Save with .

➔ The hierarchy appears in the **Hierarchy Tree** section (see section 2.3).

ⓘ As soon as workplaces are assigned to a hierarchy, their number of levels and, therefore, their basic definition can no longer be changed.

2.2 Determining a Localization Level

Path: Master Data > Workplace > Workplace Hierarchy

A localization level is only required for the use of Multi-Site Administration. The localization level defines the level from the ORG hierarchy on which the local administration is depicted from an organizational standpoint (generally the plant level). It is only ever possible to label one level of the ORG hierarchy as a localization level.

Workplaces are incorporated on the lowest level of the hierarchy (see section 2.3). This level cannot serve as a localization level.

⚠ If a defined and assigned localization level is changed subsequently, the localizations of all linked data are deleted. Automatic retrieval is not possible.

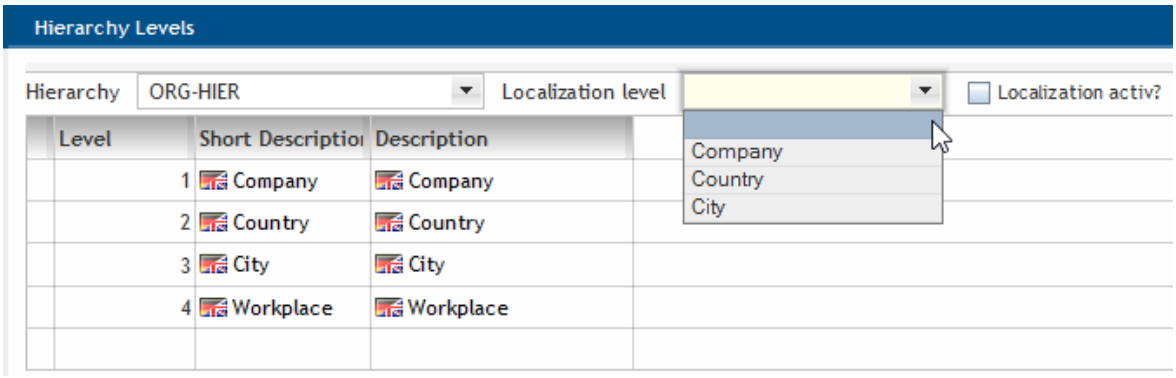

Figure 4: Selecting a localization level

To select a localization level:

✓ The ORG hierarchy is created and saved.

1. Enter short description and description of the levels in the **Hierarchy Levels** section.
   The short description and description are only visible here and do not appear at any other point.
2. Save with  .

➔ The levels become available for selection of the localization level.

3. Select desired level in the drop-down menu under **Localization level**.
4. Place a check mark next to **Localization active?**.
5. Save with  .

ⓘ Multi-Site Administration is not active until a localization level has been selected and a check mark has been placed next to **Localization active?**.
A change to a user's localization or the deactivation of Multi-Site does not take effect until after each user logs into the Workbench again.

2.3 Creating a Hierarchy Tree and Assigning Attributes

Path: Master Data > Workplace > Workplace Hierarchy

2.3.1 Hierarchy tree

The hierarchy tree allows the depiction of hierarchical structures. The nodes display the hierarchical structure which was defined in the **Hierarchy Levels** section (see section i). The lowest node cannot be set manually in the ORG hierarchy, but is created automatically as soon as a workplace has been added in the ORG hierarchy (see section 3).
It is possible to create a hierarchy tree with fewer than the indicated levels (e.g. 2 instead of 4 nodes). To incorporate a workplace, however, the tree must be constructed up to the lowest level.

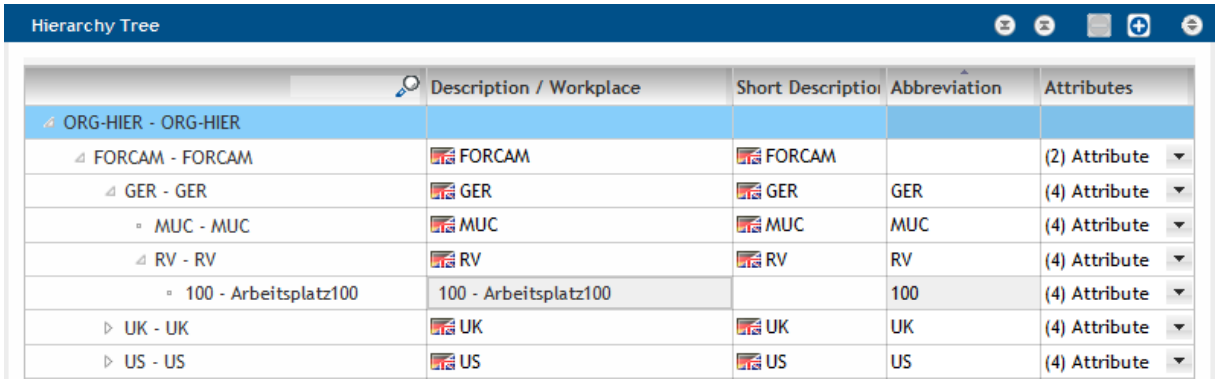

Figure 5: Hierarchy tree with defined structure

To create a hierarchy tree:

✓ A hierarchy is created and levels are defined.

1. In the **Hierarchy Tree** section, select the desired hierarchy and click on .
2. Enter description, short description and abbreviation of the created subnode.
3. Select subnode and click on .
4. Repeat steps 2-3 until the lowest node has been reached.
5. In the drop-down menu in the lowest node, select the desired workplace that is to be incorporated into this hierarchy.
   Not available in the ORG hierarchy. Workplaces are added automatically via the workplace configuration in the ORG hierarchy (see section 3).
6. Save with .

2.3.2 Attributes

Attributes are features that carry one or a list of configured values (e.g. language, time zone etc.). They can be defined and assigned on any node in the ORG hierarchy.
An attribute on a node can be passed on to lower child nodes (inherited). However, if a different attribute is set on the child node manually, it overwrites the attribute passed on from the higher node (local overwriting of the attribute).
A super user can write-protect attributes. Subnodes which have the attribute passed on also have the write-protection passed on and cannot be edited by users. The passing on of attributes with write protection has a higher weighting than the manual attribution on a (child) node and overwrites this attribution.
The super user can only activate/deactivate the write-protection on the initial node.

ⓘ The attribution was newly introduced in FORCAM FORCE™ version 5.7 and is independent of the Multi-Site Administration. Later functions will be based on this.

Passing on and write-protection of the attributes are determined in the dialog for attribute assignment:

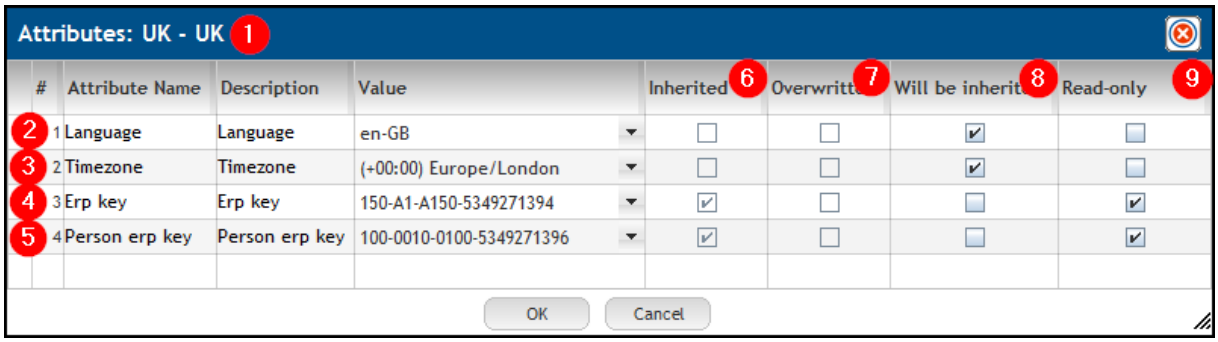

Figure 6: Dialog for attribute assignment

(1) Dialog title
Consists of description (left) and abbreviation (right)
(2) Attribute for language
(3) Attribute for time zone (mandatory attribute)
(4) Attribute for ERP key (mandatory attribute)
(5) Attribute for personnel ERP key (only a mandatory attribute if personnel data are used)
(6) Attribute passed on from higher node (non-editable field)
(7) Attribute overwritten by manual (local) attribution of the node
(8) Attribute passed on to lower node
(9) Attribute is write-protected (by super user)

ⓘ The attributes for ERP key and time zone must be defined. Otherwise a workplace cannot be saved after incorporation into the ORG hierarchy.
The time zone of a workplace is taken into account in FORCAM FORCE™ shift planning and shift generation. It represents elementary system information.

The following Table 1 shows the common scenarios of attribution and passing on:

Table 1: Example scenarios for attributes

Inherited	Overwritten	Will be inherited	Read-only	Meaning
✓				The attribute is passed on to the node from a higher node.
✓	✓			The attribute passed on from a higher node has been changed manually on this node.
		✓	✓	This node's attribute is passed on to all child nodes and cannot be changed.

To assign attributes to a node:

✓ A hierarchy tree is created.
1. Select desired node in the hierarchy tree.
2. Open the drop-down menu in the **Attributes** column.
3. In the subsequent dialog (see Figure 6), select the desired attribute value in the **Value** column (if not already populated as a result of inheritance).
4. Place a check mark next to the desired function (if not already populated as a result of passing on).
5. Save with  .

ⓘ System attributes are currently only used for resources, personnel and workplaces. This coverage will be extended to include further resources in future.

3 Incorporating a Workplace into the ORG Hierarchy

Path: Master Data > Workplace > Workplace Configuration

The uniqueness of a workplace is formed from the double name and ERP key of the production area. This means that a workplace with the same name can exist in different production areas (thus different ERP keys) and also plays a role in the ERP confirmation process.

The ORG hierarchy is the only one in which workplaces cannot be incorporated manually in the lowest node of the hierarchy tree. Workplaces are incorporated into this hierarchy in the workplace configuration. Three new columns for this were introduced in product version 5.7. **ERP Keys** is an existing column; however, it is no longer possible to edit it manually.

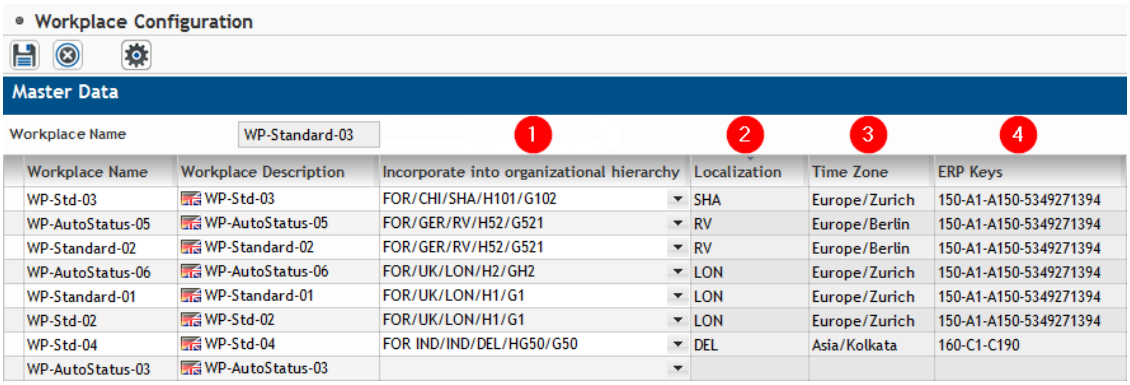

Figure 7: New columns in the workplace configuration

(1) Selection of ORG hierarchy nodes
Selection automatically incorporates the workplace into this hierarchy, and the workplace appears as the lowest node in the hierarchy tree (see section 2.3.1).

(2) Localization
Non-editable field. Results from the ORG hierarchy path if Multi-Site is active. The workplace is not localized if Multi-Site is inactive.

(3) Time Zone
Non-editable field. Determined in accordance with the selected ORG hierarchy path and populated automatically.

(4) ERP Keys
Existing field which is not editable as of this product version. Determined in accordance with the selected ORG hierarchy path and populated automatically.

To incorporate a workplace into the ORG hierarchy:

- ✓ An ORG hierarchy is configured.
- ✓ A hierarchy tree is created.
- ✓ Multi-Site Administration is activated.

1. Open the drop-down menu in the **Incorporate into organizational hierarchy** column.
2. In the subsequent dialog (see Figure 8), select the desired hierarchy nodes in the drop-down menus.
   The left column shows the abbreviation for the particular node, the right column shows the description.
3. Confirm and save with  .

ⓘ The attributes for ERP keys and time zone must be defined. Otherwise a workplace cannot be saved after incorporation into the ORG hierarchy.

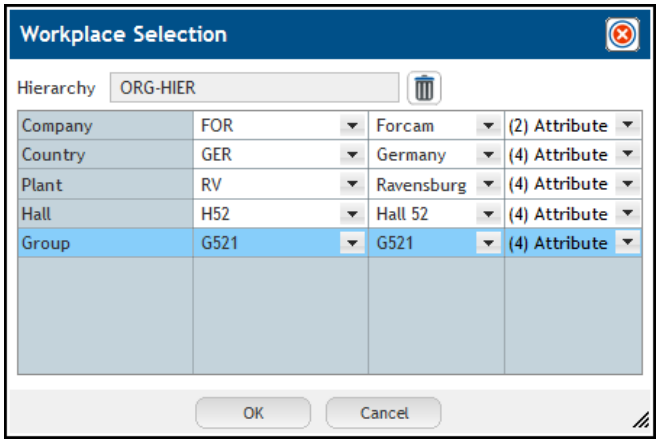

Figure 8: Dialog for selection of hierarchy nodes

4 Localizing Users

Path: User Administration > User Editor

If Multi-Site Administration is used actively, all users must be localized. Only localized users and super users can exist.
The **Localization** column was added in software version 5.7. Here a user is assigned instances of the defined localization level (see section i) for Multi-Site. The localization level instances from the ORG hierarchy have assigned configured attributes (see section 2.3.2).
A super user can create local administrators by localizing users. A super user has no restrictions on the viewing of data and has access to all localizations.
Localized users can only see their localizations assigned to themselves. They receive display, editing and creation permissions based on the existing permissions & role management.
Example:
In Figure 7, there is the localization **GER** (Germany). Workplaces **760-1** and **760-2** have been assigned to subnode **MUC** (Munich).
In Figure 9, users Wolf and Trapp have been assigned the localization **GER**. These two users can only view and edit data localized to the Munich site.

ⓘ Local administrators must have at least one localization; however, they can also have several localizations.

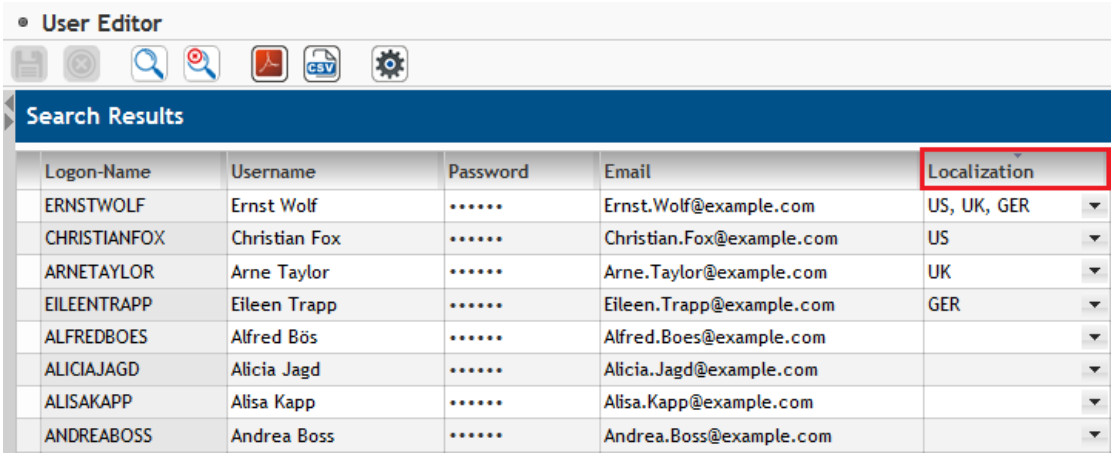

Figure 9: Localizing users

Local administrators with the relevant permissions can localize other users if they are part of their own localization. A user can also have a foreign localization (foreign key).
When editing localizations of other users, local administrators can only pass on or remove their own localization. If they create other users themselves, these users have the same localization(s) as they do.
Example (see Figure 10):
A super user localizes user X to plant A. X is local administrator for plant A.
X localizes user Y. Y is therefore also local administrator for plant A.
Y creates user Z. Z is not an administrator but automatically belongs to plant A.

ⓘ A user is only allowed to administer the master data of their own localization.

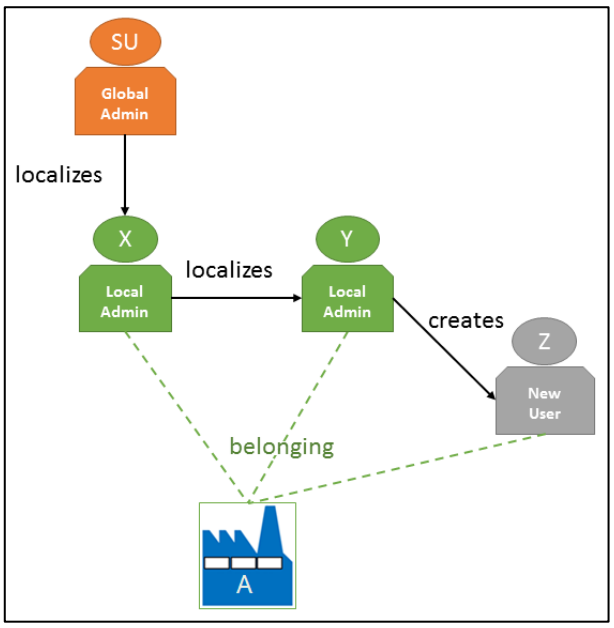

Figure 10: Localizing users (example)

To localize a user:

✓ The ORG hierarchy is configured.

✓ A hierarchy tree is created.

1. Open the drop-down menu for the desired user in the **Localization** column.
2. In the subsequent dialog (see Figure 11), select the desired localization in the **Available Localizations** section and click on  .
   Or
   Select all localizations and click on  .
3. Confirm and save with  .

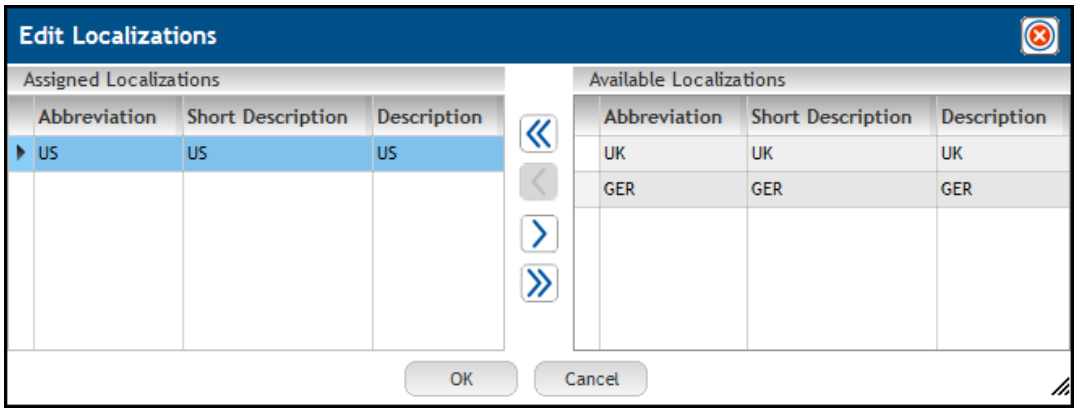

Figure 11: Adding user localization

ⓘ Super users have no localization. Consequently, they are global administrators and have unrestricted permissions.

5 Other Influenced Functions

The Multi-Site Administration has an influence on various functions and configurations in the Workbench. This chapter summarizes all influenced sections.

5.1 Visibility of the Localization Column

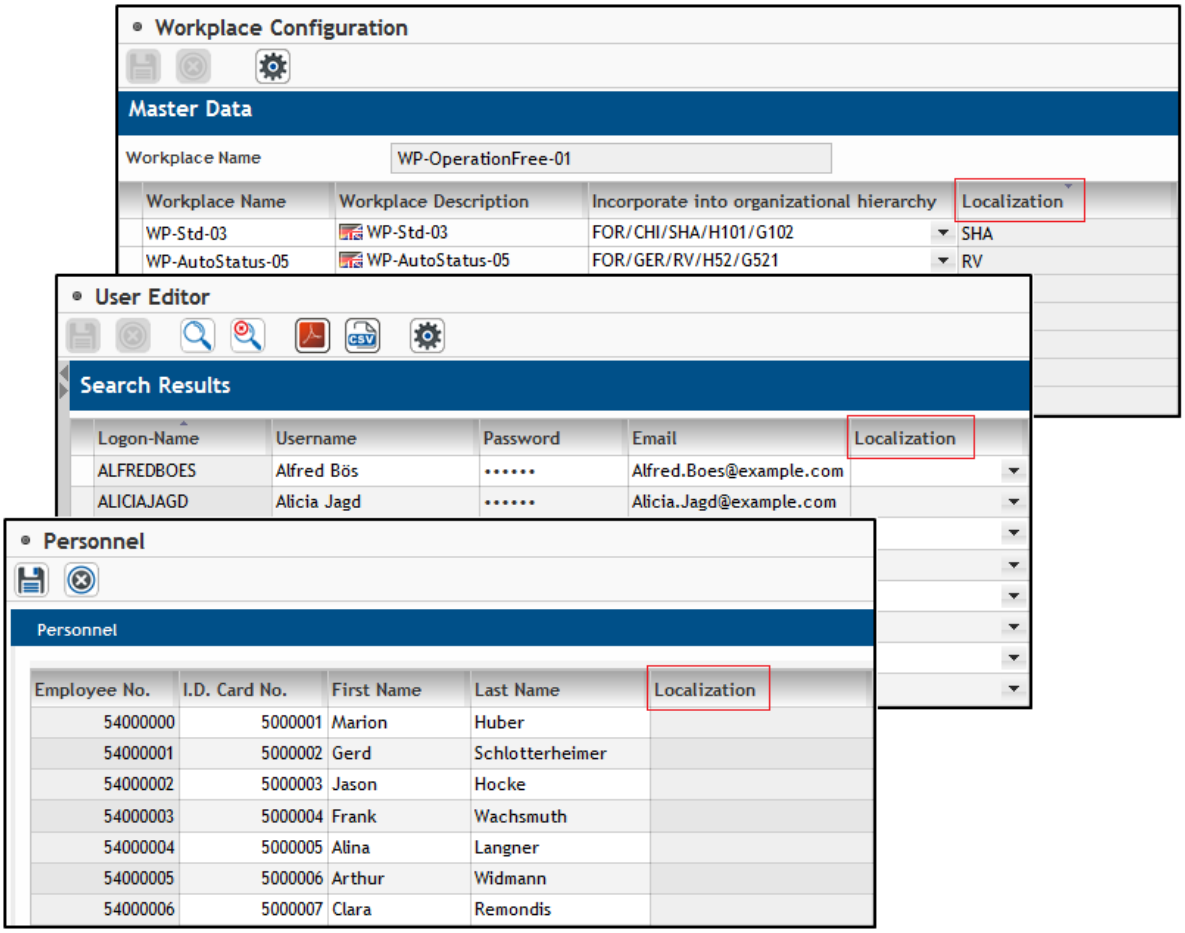

Figure 12: Localization column in various configuration pages

The **Localization** column has been introduced in some sections of the Workbench (see e.g. section 4). This is only displayed once a localization level has been defined. In this case, it is not relevant whether the activity status is active or inactive.

In the personnel configuration (see section 5.3) and workplace configuration (see section 3), the localization column is not editable since it is determined and populated automatically.

If Multi-Site is deactivated, the localization column cannot be edited by users; it is merely displayed.

The following Table 2 shows the access to global data sets.

- A user with the localization A can only view the data sets if Multi-Site is active. The user cannot edit them since a localized user cannot edit global data sets. A super user can freely edit the data sets, however.
- If Multi-Site is inactive, both super users and users can edit the data sets since the user localization does not apply if Multi-Site is inactive.
- If Multi-Site is not used, anybody can edit the data sets.

Table 2: Scenarios for visibility and editing of global data sets

Multi-Site	User with localization A	Super user
Active	Visible, write-protected	Read, write, delete
Inactive	Read, write, delete	Read, write, delete
Not used	Read, write, delete	Read, write, delete

In Table 3, the data sets are localized according to the key A and B.

- Whereas users with localization A and B can edit the data sets, they are not visible to a user with localization C since their different localization hides the data sets.
- If Multi-Site is inactive or not used, all localized users and the super user can edit the data sets.

Table 3: Scenarios for visibility and editing of data sets with localization A and B

Multi-Site	User with localization A	User with localization B	User with localization C	Super user
Active	Read, write, delete	Read, write, delete	Not visible	Read, write, delete
Inactive	Read, write, delete	Read, write, delete	Read, write, delete	Read, write, delete
Not used	Read, write, delete	Read, write, delete	Read, write, delete	Read, write, delete

5.2 Work Time Assignment

Path: Master Data > Shift Calendar > Work Time Assignment

In the work time assignment, the corresponding workplace time zone is displayed for each workplace shift day. Each shift relates exclusively to the displayed time zone.

backward	Week 30						forward
Week Model	Short week shift plan	Short week shift plan	Short week shift plan	Short week shift plan	Short week shift plan		
Date	24/07/17	25/07/17	26/07/17	27/07/17	28/07/17	29/07/17	30/07/17
Weekday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Working day	☑	☑	☑	☑	☑	☐	☐
Time Zone	Europe/Zurich	Europe/Zurich	Europe/Zurich	Europe/Zurich	Europe/Zurich	Europe/Zurich	Europe/Zurich
Shift 1	F 06:00 - 14:00	F 06:00 - 14:00	F 06:00 - 14:00	F 06:00 - 14:00	F 06:00 - 14:00		
Shift 2	S 14:00 - 22:00	S 14:00 - 22:00	S 14:00 - 22:00	S 14:00 - 22:00	S 14:00 - 22:00		
Shift 3	N 22:00 - 06:00	N 22:00 - 06:00	N 22:00 - 06:00	N 22:00 - 06:00	N 22:00 - 06:00		

Figure 13: Time zone in the work time assignment

In future, each shift will be created and saved by the shift generator in UTC. When the work time assignment is loaded, the system then converts the time into the corresponding workplace time zone. The workplace obtains the time zone data via the corresponding attribute maintained in the ORG hierarchy (see section 2.3.2). This attribution is independent of the use of a local administration.

UTC shifts generated in the past are counted back to the workplace time zone and displayed when the shift configuration page is loaded.

The addition of a fixed shift likewise always relates to the particular workplace time zone.

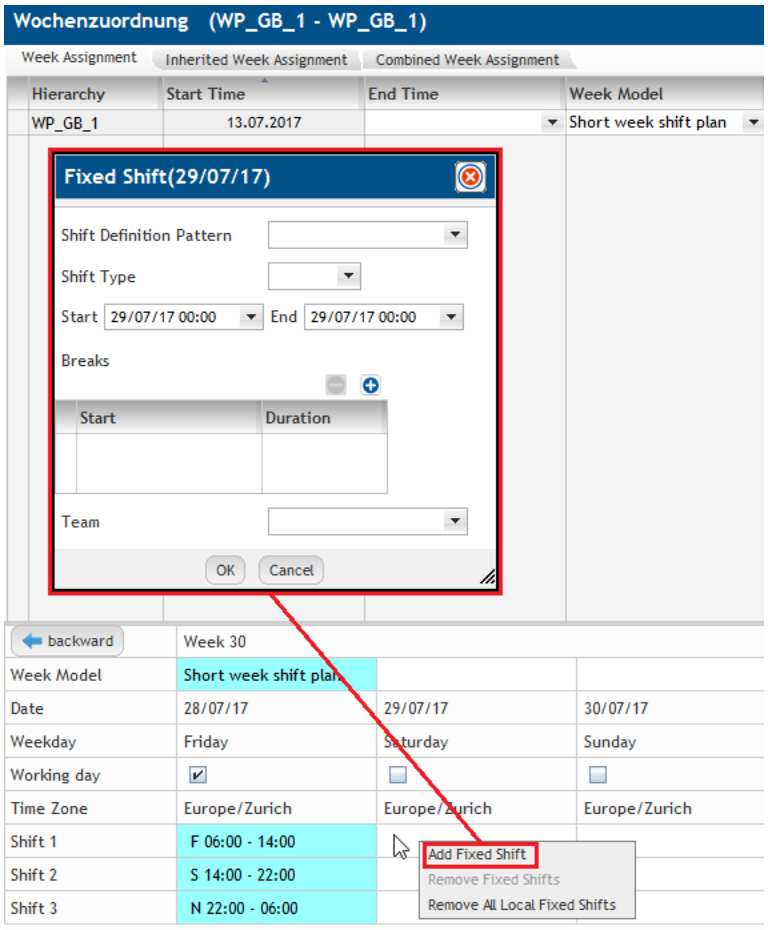

Figure 14: Adding a fixed shift

ⓘ In the event of a change to the workplace time zone with generated shifts (e.g. due to a move), all shifts in the past are displayed in relation to the new time zone. The generated shifts no longer have the time zone information.

ⓘ The view of the workplace time hierarchy in the configuration page **Work Time Assignment** can be controlled by the permissions & role management with organizational assignments (limitations) for users embedded in the product.

5.3 Selected Master Data

Path: Master Data > Personnel Data > Personnel

Through assignment of the system attribute **Person ERP Key** (see section 2.3.2) within the ORG hierarchy, the personnel are localized automatically in the case of automatic supply of selected master data from an ERP. The newly added **Localization** column shows active localizations next to the particular person.

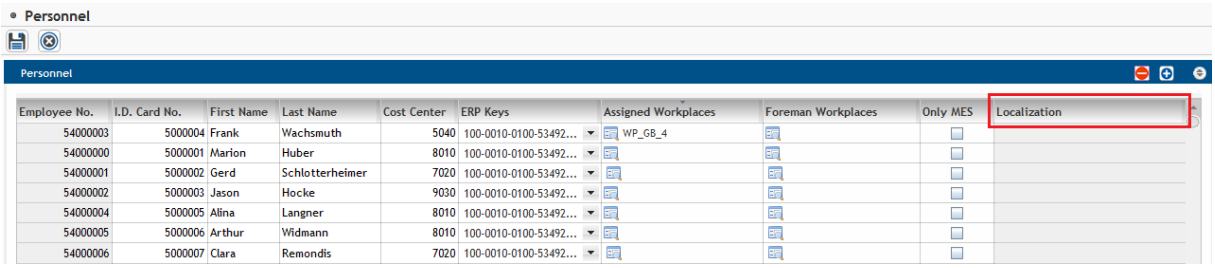

Figure 15: Localizing personnel

If a person is created manually, this person is not localized automatically. Localization takes place by manual assignment of a personnel ERP key. The quantity of localizations in which this personnel ERP key is assigned as an attribute is determined via a lookup in the ORG hierarchy.

Personnel areas can no longer be selected from the total quantity of master data, only from the personnel areas assigned via attributes in the ORG hierarchy. Only the super user sees all existing personnel areas in the master data tables. If the super user assigns a personnel area that is not assigned to the ORG hierarchy, this personnel data set is not localized.

5.4 Custom Hierarchies and System Hierarchies

Path: Master Data > Workplace > Workplace Hierarchy

The localization is not confined to the ORG hierarchy. System hierarchies (workplace, ERP and DNC hierarchy) and custom hierarchies can likewise be localized on every node. The localization concept applies fully here, too.

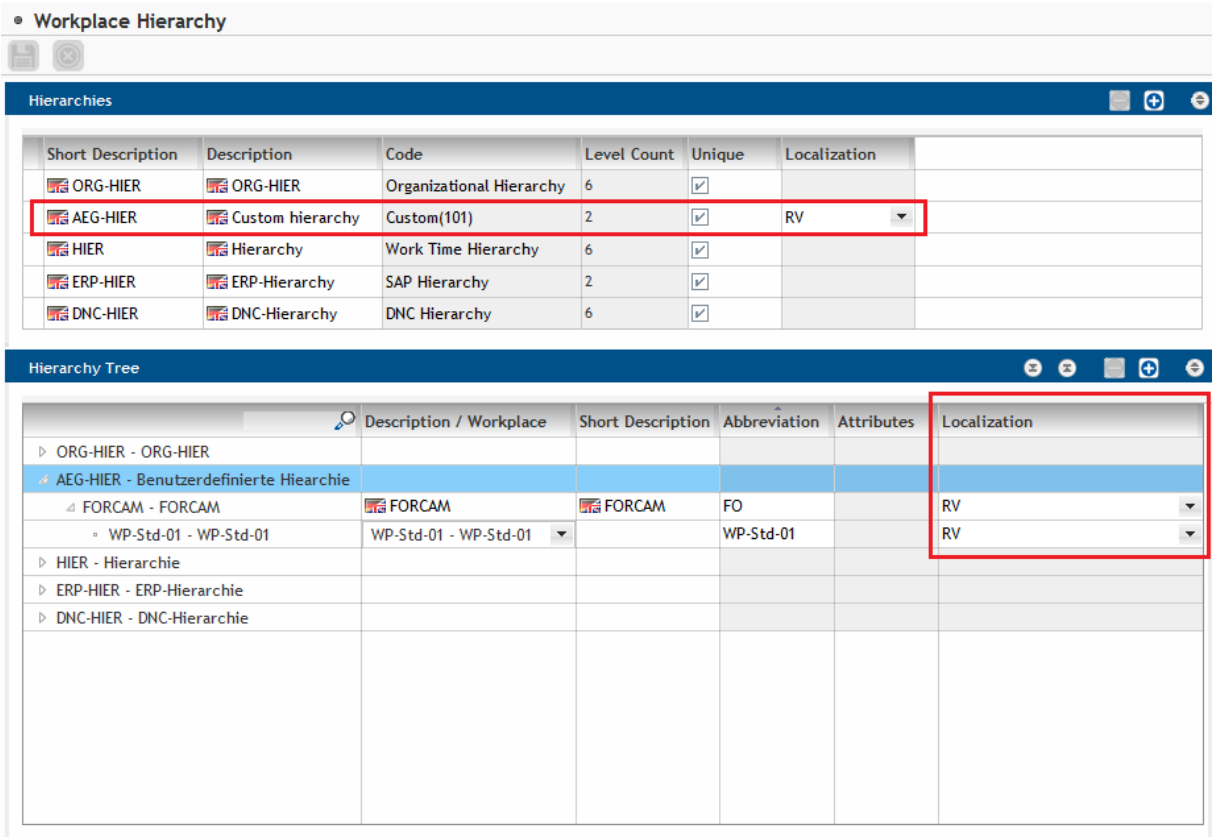

Figure 16: Localizing a custom hierarchy

Local administrators can only create local hierarchies and nodes. Node elements must therefore be created and localized by the super user so that local administrators can maintain and change these branches. New nodes can only be created under a localized node.
The ERP hierarchy is an exception. Here it is permissible for local administrators to add assignments on the top level. This allows maintenance independently of a super user.

5.5 Permissions and Roles

Path: User Administration > Permissions & Roles Editor

The use of permission and role management is necessary to handle the visibility and maintenance of data and user interfaces within FORCAM FORCE™. This will not change after the introduction of Multi-Site Administration.

A local administrator requires the assignment of the organizational entity to which they are localized (required branches of the ORG hierarchy of the localization). The assignment basically determines which hierarchy and branches of a hierarchy the user is allowed to see and pass on (assign) to users in roles.

6 Annex

6.1 Abbreviations and Terms

Table 4: Abbreviations and terminology used

Term	Description
Automatic localization	Each user in the system (except super users) has at least one localization. This determines which master data they are allowed to view. Their localization is passed on to master data they create (user, WPL etc.) automatically.
Hierarchy attribute	All nodes of an ORG hierarchy can receive hierarchy attributes. Each hierarchy attribute has specific semantics, defined by their attribute type. This is initially a fixed, defined quantity of attributes or types. This means attributes such as time zone, language, ERP key etc. can be passed on to subordinate nodes and master data belonging to the node.
Local & global master data	Master data which have a localization are only visible for users with the same localization. Master data can have several localizations and are valid and visible for several plants. Master data without a localization are global data and can only be created and edited by the super user. However, they are visible to everybody without restriction (read only).
Localization	Belonging of master data to a hierarchy level in the ORG hierarchy
Localization level	A hierarchy level in the ORG hierarchy which defines the belonging of master data to a hierarchy node level (plant) (localization/local assignment of master data)
Lookup	Systematic retrieval of electronic information
Multi-Site Administration	The depiction and operation of several locations (plants) in a FORCAM FORCE™ installation. Each plant can be administered separately (authorization). Master data usually receive a certain belonging (localization) to a plant which defines their visibility.
Organizational hierarchy (ORG-HIER)	System hierarchy which exists precisely once and is used to model a Multi-Site architecture. The user must define the number of levels (at least two). Precisely one level is labeled as the location level (localization level) here. This determines the belonging (localization).
Super user	Global administrator without any restriction. The super user initially creates other users and defines the belonging of the user to a plant (localization). This means, for example, that a user can be created for every plant. This user then continues further administration for the given localization.
UI	User Interface
UTC	Coordinated Universal Time
WPL	Workplace

6.2 Document Conventions

Table 5: Document conventions

Convention	Description
Bold type	The names of buttons and options are printed in bold type.
Icons	In the case of function displayed by an icon, this refers to the icon as an object.
Path	Each indicated **path** relates to the navigator.
Action step	Action steps are indicated by numbers at the beginning of the sentence. The sequence of the numbers specifies the order of actions. Alternative action steps are separated by the word "Or".
Action requirement	Action requirements are identified by ✓.
Action result	Results of an action are identified by ➔.
Note	Notes are identified by ⓘ.
Caution	Important information which has consequences if not observed is indicated by ⚠.

6.3 Icons

Table 6: Icons used in the Workbench

Sym-bol	Function	Sym-bol	Function
	Move function one level higher		Move function one level lower
	Navigate one level higher		Navigate one level lower
	Navigate left		Navigate right
	Move all available options to left column		Move one option to left column
	Move all available options to right column		Move one option to right column

	Open selection window		Edit entry
	Add new line for entering additional information		Delete selected entry/line
	Create new folder		Open help menu
	Define search area		Release defined search area
	Navigate one node higher		Navigate one node lower
	Restore original navigator symbols		Update/Reload
	Export		Import
	Display XML code		Open drop-down menu
	Mark line		Name/Description (literal)
	Copy selected terminal link		Minimize/Maximize
	Change size		Export in PDF format
	Export in CSV format		Open settings menu
	Search		Reset search filters
	Adopt change		Discard change
	Activity step dialog		Activity step command
	Close content		

6.4 Navigating in the Workbench

Table 7: Workbench navigation

Navigation	Description
Close icon	Any content called up in the navigator can be closed by  on the right edge of the screen.
Breadcrumb bar	In the case of subpages or additional displays, a breadcrumb bar appears at the top edge of the screen. Clicking on the first element closes all subpages.
Direct editing	Most cells in displayed tables can be edited either directly or via the context menu (right-click or drop-down menu).
Blocked columns	Columns with a gray background cannot be edited.
Update	Since the Workbench is web-based, updating via the browser (refresh) leads to logging out of the Workbench.
Error message	Error messages appear at the bottom left edge of the screen.

6.5 Table of Figures