FirstSpirit™ Unlock Your Content

FirstSpirit™ Release Notes
FirstSpirit™ Version 5.2 Release 18

Version	**5.2.1806**
Status	**RELEASED**
Date	**2018-02-15**
Department	FS-Core
Copyright	2018 e-Spirit AG
File name	Releasenotes_5.2.1806_EN

e-Spirit

Table of contents

First Spirit™
Unlock Your Content

1   FirstSpirit product update 2018

In keeping with its best-of-breed strategy, FirstSpirit uses a range of software components that are provided by third-party vendors. For security reasons, and to stay abreast of the latest developments in each type of technology, the ways in which these software components are used in FirstSpirit undergo regular updates.

In today's approach to product development, updates are being provided with increasing frequency and the length of time for which "older" versions can rely on support is becoming shorter and shorter.
As a result of this, it is becoming inevitable that customers will need to switch to a newer software version more frequently. It is also important to address the fact that individual third-party components are becoming dependent on one another in more and more ways. Oracle Java is a system that many components rely on, for example, but there are some third-party components that are not available in a version compatible with Oracle Java 9.

Here at e-Spirit, we are setting a challenge for ourselves. To ensure that using third-party components with FirstSpirit achieves the same levels of accuracy and quality that are achieved with the core product itself, we are investing a great deal of time and consideration in implementing and organizing processes, and performing quality control measures for them. e-Spirit is committed to making it as easy as possible for customers to update to new FirstSpirit releases at any time, and offers support during the process of rolling out new functions. However, it will not be possible to rule out the need for some outlay in this project altogether. 2018 will be a year characterized by a handful of new features in the area of third-party components integrated into FirstSpirit. In order for customers to benefit from these features, they will need to take certain actions.

As is the case with the FirstSpirit core, the use of third-party components will be subject to intensive quality assurance processes consisting of both manual tests and software-supported, automated tests, and incorporating the experiences gained from using the components in production applications in-house at e-Spirit. With such a multitude of operating systems being supported, as well as Java versions, inter-faces with third-party components, and the various possibilities for combining and configuring all these systems, the test environment will naturally be extremely complex. Consequently, there will remain a certain degree of probability that the QA activities will not be able to identify and resolve every single problem in advance.

With this in mind, e-Spirit wishes to emphasize that it is relying on customers to assist it in this process: Some new features will be provided to customers in an early development stadium as part of an Early Access Program ("EAP"). In this context, the status "EAP" means that the functionality is not yet in the

state "General Availability" (GA). With e-Spirit's agile approach, new features are being developed in small increments and provided to customers successively in order to reduce potential problems and susceptibility to errors as well as to be able to react in a timely manner to customer feedback. Thus, EAP features will very likely be augmented with further functionality in later versions. Features in EAP state have already been subjected to extensive quality assurance, however, due to the test complexity described above, may still show problems when used on production systems. Generally, features in EAP state are mature enough to be put to use by customers. They should, however, be initially used on testing systems, and e-Spirit should be notified of potential problems. Customer feedback is expressly requested.

2　Oracle Berkeley DB 7

Oracle Berkeley DB is used in FirstSpirit as a repository for saving content data. Until now, versions 3 and 5 have been in use and running reliably and stably for many years. However, in order to benefit from performance advantages, to remain at the forefront of technical development, and last but not least, for security reasons, plans are in place to update the internal Berkeley DB to version 7 in the near future.

FirstSpirit uses Berkeley DB firstly for the repositories of individual projects ("project repositories") and secondly to save system data ("internal repositories", e.g., registry, archiving database, Access Control Database). Both points of use are affected by the update to version 7 and must be handled accordingly on existing FirstSpirit servers: From a technical point of view, the data saved in the Berkeley DBs has to be converted to the new data format. This normally takes just a few seconds.

From FirstSpirit version 5.2R19 (March 2018, planned), a conversion tool will be available, which will enable all data saved in the Berkeley DBs to be conveniently converted via command line to existing FirstSpirit servers in just a few commands. As server-level data also has to be converted, a conversion of this nature can only be performed when the FirstSpirit Server is offline in order to prevent any loss of data. A conversion will generally be completed in a short time. Only in exceptional cases may it take up to several hours; for example, in the event of very large and/or numerous projects. To make it easier for customers to calculate appropriate maintenance windows, plans are underway to publish comparison values relating to project size and conversion duration in future release notes. These values will have been established from conversions that have already been performed in production conditions.

FirstSpirit version 5.2R18 already allows individual project repositories to be converted to version 7, under the early access program ("EAP", see chapter "Oracle Berkeley DB 7"). This function can be used to gather experience on the conversion process. Should problems unexpectedly be encountered when using Berkeley 7, these should be reported to e-Spirit immediately to enable them to be resolved before the official release of Berkeley 7.

A conversion can generally be completed in just a few seconds. It is also possible to convert data back to an older Berkeley version; however, this takes much longer and requires additional disk space.

Berkeley 7 is not compatible with Java 7. The FirstSpirit Server therefore requires at least Java 8 in order to use Berkeley 7.

Compatibility of FirstSpirit versions

An official release of Berkeley version 7 is intended for the time frame between FirstSpirit version 5.2R19 and R21 (March to May 2018). Following a transitional period, during which Berkeley versions 3, 5, and 7 will be able to be used in parallel on FirstSpirit servers, it is planned – for reasons relating to maintainability – to only offer version 7 and to withdraw support for versions 3 and 5 from around the end of 2018. After this point in time, FirstSpirit servers which are still running version 3 and/or 5 will then no longer start. Consequently, a server-wide switch to version 7 must be completed by this date. Switching from version 3 or 5 to 7 at the earliest possible opportunity is therefore recommended.

Following a conversion to Berkeley version 7, a FirstSpirit downgrade to versions earlier than version 5.2R18 will no longer be possible. However, downgrading to FirstSpirit versions above 5.2.R18 will be possible. For a downgrade, the file `fs-berkeleydb7.fsm` should be manually deleted from the `../ data/modules` sub-directory.

When switching from FirstSpirit version 5.2R17 or earlier to FirstSpirit version 5.2R27 or later, a conversion using the conversion tool must be completed beforehand.

3   Oracle Java

FirstSpirit 5.2 is currently released for use with Oracle Java 7 and Oracle Java 8.

Work on Oracle Java 9 support capability is currently underway, with the release planned for the near future.

Following a transitional period during which Oracle Java 7, 8, and 9 will be supported in parallel with each other, support for Java 7 will expire: From summer 2018, FirstSpirit will no longer support Oracle Java 7. This means that FirstSpirit will no longer be able to run with Oracle Java 7 and e-Spirit AG will no longer implement any measures designed to eliminate errors or problems associated with Java 7. Modules currently being developed by e-Spirit for the first time (e.g., "FirstSpirit Third Party Preview") are already optimized for Java 8 and no longer compatible with Oracle Java 7.

Not least because it is in the customers' interest, FirstSpirit preferably supports Long-Term Support versions. For development activities that have dependencies to Java, e-Spirit regards Oracle's release plan. Oracle itself has not provided any public updates for Java 7 since 2015 and recommends that

developers and end users transition to Java 8 in order to continue receiving public updates and security enhancements. In the medium term, the aim is to provide FirstSpirit support for Java 10 or 11, since Java 9 is not a long-term support version (for more information, see http://www.oracle.com/technetwork/java/eol-135779.html).

From FirstSpirit version 5.2R18, support for Java 9 (for FirstSpirit Server and Clients) will be part of the early access program ("EAP"). Using existing FirstSpirit installations with Java 9 will require slight changes to configuration files in the file system

Due to the extended security checks in Java 9, the use of this Java version will lead to slowdown, especially during client start-up and during the first execution of functionality that is dynamically downloaded by the client.
If Java 9 is being used, a corresponding message is logged when the Server is started.

In cases where Oracle Java 9 is being used, it is important to note that some functions in FirstSpirit are based on third-party software. However, not all vendors of third-party software have converted it in order to ensure compatibility with Java 9. Consequently, functions that are based on third-party software of this kind will not be available if FirstSpirit is being operated with Oracle Java 9. See also Chapter "Using Java 9 (EAP)".

4   Eclipse Jetty

"Eclipse Jetty", the open-source product integrated in FirstSpirit, is used to provide a web server and a JSP/servlet engine that run as part of the FirstSpirit Server in the same VM. This integrated web server is only intended to be used for test purposes, so that customers can use FirstSpirit directly with web server functions and do not need to install and connect an external web server beforehand. In productive operation, and especially in operational scenarios that require a more complex configuration, a web server of an Apache Tomcat type, for example, should be used and integrated into FirstSpirit.

An integrated Jetty web server in version 9.2 is currently being used in FirstSpirit. This version is no longer receiving support from the manufacturer, which means that it no longer provides security patches; additionally, it is not compatible with Oracle Java 9. For these reasons, switching to a more recent Jetty version is essential. In the future, Jetty will be made available as a module so that it is less reliant on implementation by the manufacturer, and so that it is easier to provide support for the functions within FirstSpirit.

Jetty has already been released as a module (`fs-jetty.fsm`) in FirstSpirit version 5.2R13. Due to the isolated class loading in "isolated mode", the amount of potential library conflicts in customer-specific web applications is noticeably reduced in this mode. Thus, the Jetty module is especially suitable for use with FirstSpirit servers that operate in "isolated mode".

As of FirstSpirit version 5.2R18, this module can also be used with FirstSpirit servers that are not operated in "isolated mode" but in "legacy mode". For usage in "legacy mode" it is part of the early access program ("EAP"). This module bases on the most recent version: 9.4. However, this version is not compatible with Java 7 and requires at least Java 8.

Both the earlier implementation "InternalJetty" and the new implementation as a module run within the same JavaVM as the FirstSpirit server. This configuration is not suitable for production operation and should only be used for tests. For more complex configuration requirements (e.g. adjustment of memory size, timeouts, number of threads per deployed application, …), use of an external web server (e.g. Tomcat) is recommended.

The functions of the integrated Jetty server will be discontinued with FirstSpirit version 5.2R18, and are scheduled to cease existing at all in August 2018 (FirstSpirit version 5.2R24). In the meantime, the currently integrated Jetty functions as well as Jetty as a module will be available in parallel with one another. During this period, it will be possible to test out the module and convert the operation of existing FirstSpirit installations that use Jetty to the Jetty module.

For more information please see Chapter "Usinge Jetty as a module (EAP)".

5   Browser integration

Special software is used for the "integrated preview" function in FirstSpirit SiteArchitect; this is integrated in SiteArchitect and is based on the browser being used in each case (Mozilla Firefox, Microsoft Internet Explorer or Google Chrome).
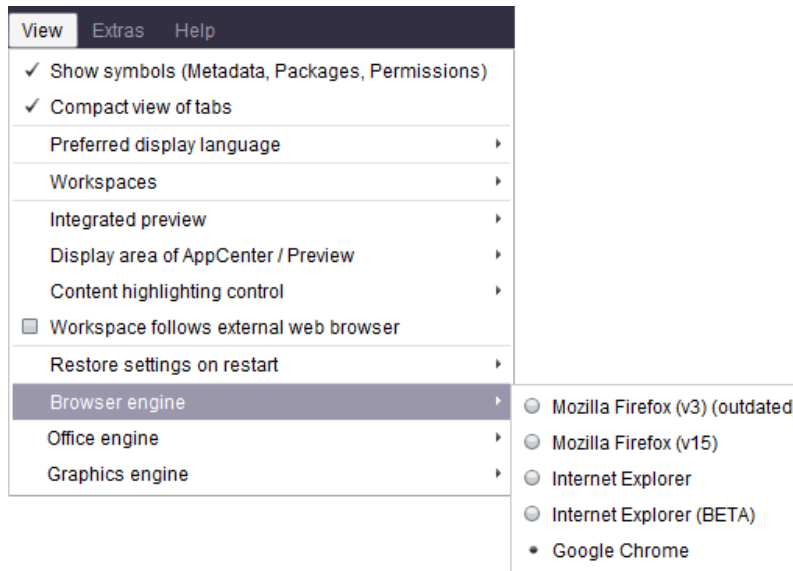
Microsoft and Mozilla are no longer developing their respective products (Internet Explorer or Firefox). The most recent version of Mozilla "Quantum" and Microsoft Edge as well unfortunately lack the interfaces required for embedding the browser into FirstSpirit. The versions of Firefox that are currently being used in FirstSpirit do not provide any support for Java 9. Firefox as a browser engine for the integrated preview function will therefore be discontinued as of FirstSpirit version 5.2R18.

The versions of Internet Explorer that are currently used in FirstSpirit also provide no support for Java 9. The plan is to provide support for Microsoft Edge in the future, both in order to operate Content-Creator and in order to use the integrated preview function in SiteArchitect. Until this time, it will be possible to continue using Internet Explorer for the integrated preview function with Java 8. Support for the current "Internet Explorer" version will expire and, as such, will be discontinued in advance of May 2018 (FirstSpirit version 5.2R21). As a replacement, the previous BETA variant ("Internet Explorer (BETA)") will be released and will then be called "Internet Explorer".

6   Administration

6.1   Optimization in Schedule Management

During the following actions, the associated project is temporarily deactivated:

- Switching the repository backend ("FirstSpirit ServerManager / Project properties / Repository / Backend")

▪ Installing an archive ("FirstSpirit ServerManager / Project / Archive / Install archive")

As of the current version of FirstSpirit, schedule tasks configured in such a project will no longer be deactivated (Schedule management / option "active") as the project is temporarily deactivated. Schedule tasks that are currently running will be aborted (status "aborted") when one of the actions listed above is started; the action will only be executed once schedule task has been ended.

7 Module Development, Scripts, API

7.1 Deleting Elements

The new interface `DeleteOperation` in the package `de.espirit.firstspirit.store.opera-tions` (FirstSpirit Developer API) may be used to carry out server-side deletion of FirstSpirit elements.

In the course of this work, the following methods of the class `AccessUtil` (package `de.espir-it.firstspirit.access`, FirstSpirit Access API) have been deprecated and can be omitted in subsequent versions:

```
AccessUtil#delete(IDProvider, boolean)
AccessUtil#delete(Collection, boolean)
```

In contrast to `AccessUtil`, the new interface also supports deletion of datasets.

Example script for the deletion of a single element:

```
import de.espirit.firstspirit.agency.OperationAgent;
import de.espirit.firstspirit.store.operations.DeleteOperation;
storeElement = context.getElement();
operationAgent = context.requireSpecialist(OperationAgent.TYPE);
deleteOperation = operationAgent.getOperation(DeleteOperation.TYPE);
deleteResult = deleteOperation.perform(storeElement);
```

7.2 Extended functionality for FS_BUTTON scripts

An error has been fixed which could lead to incorrect evaluation of group and user information in Content-Creator forms which were opened using the interface `ShowFormDialogOperation` (package `de.e-spirit.firstspirit.ui.operations`, FirstSpirit Developer API).

In the course of this bugfix, the context object available to scripts which are called in SiteArchitect via the input component FS_BUTTON has been changed to the type `de.espirit.firstspirit.ac-cess.ClientScriptContext` (previously, the context object was of type `de.espirit.first-spirit.access.BaseContext`). In contrast to the old context type, this new type offers extended functionality.

For further information, see *FirstSpirit Online Documentation*, page FS_BUTTON, parameters `onClick` and `onDrop`, variable `context`.

7.3   Extension of the interface "RenderingAgent"

The interface `RenderingAgent` (package `de.espirit.firstspirit.agency`, FirstSpirit Developer API) now also supports passing of FirstSpirit templates and thus the opportunity to render output channel source code as desired.

Until the current version of FirstSpirit, "RenderingAgent" already supported the following FirstSpirit object types (including subclasses):

- `Page`

- `Section`

- `PageRef`

- `Dataset`

- parsed `Media`

New as of the current version of FirstSpirit, `RenderingAgent` additionally supports passing of dynamic output channel source code (`java.lang.String`) and of FirstSpirit templates, e.g.:

- Page templates

- Link templates

- Render templates

Here, it is necessary that a page reference or a media element is passed via `linkRoot()`. The calculations of relative links are done within the context of this node.

Example 1:

```
import de.espirit.firstspirit.agency.StoreElementAgent;
import de.espirit.firstspirit.agency.RenderingAgent;
import de.espirit.firstspirit.access.store.sitestore.PageRef;
storeElementAgent = context.requireSpecialist(StoreElementAgent.TYPE);
renderingAgent = context.requireSpecialist(RenderingAgent.TYPE);
pageRef = storeElementAgent.loadStoreElement("mithras_home", PageRef.UID_TYPE, false);
return renderingAgent.createRenderer("<a href=\"$CMS_REF(ss_product_overview)$\">
    $CMS_VALUE(linktext)$</a>").linkRoot(pageRef).additionalContext("linktext",
    "Some text").urlFactory("Advanced URLs").render();
```

Example 2: Possible use case: obtaining the preview URL of a medium

```
PageRef pageRef = ...; // obtain current page ref (link source)
Media targetElement = ...; // obtain target medium (link target)
RenderingAgent renderingAgent = context.requireSpecialist(RenderingAgent.TYPE);
RenderingAgent.Renderer renderer = renderingAgent.createRenderer("$CMS_REF(target)$");
          // obtain a renderer that is configured with output channel code
String mediaUrl = renderer.linkRoot(pageRef)
  .additionalContext("target", targetElement)
  .preview()
  .render();
```

In this example, output channel code to generate the URL of a medium is passed to `RenderingAgent.createRenderer(String)`, which returns an object of type `RenderingAgent.Renderer`. This `Renderer` object is then used to specify the parameters of generation, e.g. to create the association between the `CMS_REF` parameter `target` and the store element `targetElement` via the method `additionalContext(String, ?)`. The call to the method `render()` returns the generated result.

Furthermore, with the new methods

```
skipProjectProperties()
evaluateProjectProperties(boolean)
```

it is possible to specify whether or not project settings (in FirstSpirit SiteArchitect under "Global settings") should be considered during generation.

7.4 Extension of the interface "ScheduleStorage"

The interface `ScheduleStorage` (package `de.espirit.firstspirit.access.schedule`, FirstSpirit Access API) was extended with the method `createScheduleEntry(String name, Project project)`. This method allows direct creation of project-specific schedule entries. This method may be used with project administrator privileges.

For security reasons, the already existing method `createScheduleEntry(String)`, which may be used to create server-wide schedule entries, can now only be used with server administrator privileges.

To ensure that current uses of `createScheduleEntry(String)` to create project-specific schedule entries continue to work with project administrator privileges, the code must be modified accordingly.

Example "previously":

```
import de.espirit.firstspirit.access.AdminService;
// Obtain a ScheduleStorage object from the AdminService.
scheduleStorage = context.getConnection().getService(AdminService.class)
        .getScheduleStorage();
// Create a ScheduleEntry object, name "test123".
scheduleEntry = scheduleStorage.createScheduleEntry("test123");
// Associate the ScheduleEntry object with the current project.
scheduleEntry.setProject(context.getProject());
// Set ScheduleEntry object to active, save and unlock the object.
scheduleEntry.setActive(true);
scheduleEntry.save();
scheduleEntry.unlock();
```

Example "now":

```
import de.espirit.firstspirit.access.AdminService;
// Obtain a ScheduleStorage object from the AdminService.
scheduleStorage = context.getConnection().getService(AdminService.class)
        .getScheduleStorage();
// Create a ScheduleEntry object, name "test123", associated with the current project.
scheduleEntry = scheduleStorage.createScheduleEntry("test123", context.getProject());
// Set ScheduleEntry object to active, save and unlock the object.
scheduleEntry.setActive(true);
scheduleEntry.save();
scheduleEntry.unlock();
```

7.5 Saving Elements

Saving of store elements and datasets can now be triggered programmatically via the API using the new interface `SaveOperation` (package `de.espirit.firstspirit.store.operations`, FirstSpirit Access API).

Unlike save actions triggered via the graphical user interfaces, saving an element or dataset via `SaveOperation` may be carried out even if the object to be saved contains erroneous or invalid data, e.g. due to a rule infraction (method `setValidationEnabled(false)`).

The method `setRecursionEnabled` may be used to specify that child elements should also be saved.

Furthermore, the method `setComment` may be used to add a custom comment which will be shown in version history.

8 Repository

8.1 Oracle Berkeley DB 7 (EAP)

Oracle Berkeley DB is used as standard in FirstSpirit as a repository for saving content data, until now, in versions 3 and 5. In order to benefit from performance advantages, to remain at the forefront of technical development, and last but not least, for security reasons, plans are in place to update the internal Berkeley DB to version 7 in the near future. For more information please see also Chapter "Oracle Berkeley DB 7".

Individual project repositories can be converted to version 7 as of the current FirstSpirit version. The related function can be found in FirstSpirit ServerManager under "Project properties – Repository", option "Backend":
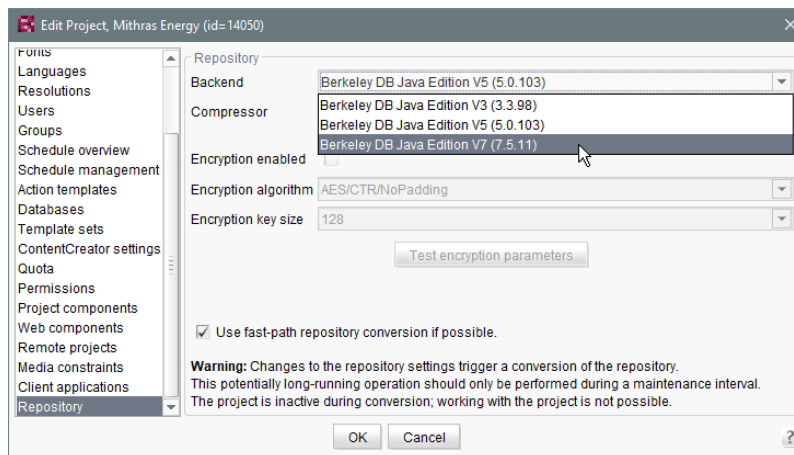
This function can be used to gather experience on the conversion process and is currently in beta test stage. Should problems unexpectedly be encountered when using Berkeley 7, these should be reported to e-Spirit immediately to enable them to be resolved before the official release of Berkeley 7. Using Berkeley 7 requires at least Oracle Java 8.

Version 5 is the default for new and imported projects. It is planned for the medium-term only to support Oracle Berkeley DB 7.

- Migration **from version 5 to version 7** generally takes just a few seconds if the option "Use fast-path repository conversion if possible" has been activated.

- When switching **from version 3 to version 7**, converting to version 5 first is recommended, with activated "Use fast-path repository conversion if possible" option, too.
  A direct switch from 3 to 7 can be completed; however, accelerated conversion is then not possible ("Use fast-path repository conversion if possible" option).

- **Conversion back** to an older Berkeley version is also possible but takes much longer and requires additional disk space.

When the user confirms the selection with "OK", the system starts to convert the data using the desired settings. The relevant project is deactivated during the process.
To prevent any data loss, anyone using the project should log off first. Changes to the repository settings can take some time and should only be performed during a maintenance interval. We recommend you create a data backup before starting a repository conversion. Use of the new Berkeley version 7 was subject to extensive systematic quality assurance checks; however, as this is a significant version

upgrade and it concerns a third-party product, this version should be tried out on a test system before being launched on production systems.

Berkeley version 7 is, like the other Berkeley DB variants, implemented in form of a system module: `fs-berkeleydb7.fsm`.

For more information please see Chapter "Oracle Berkeley DB 7" and *FirstSpirit Manual for Administrators*, Chapter "FirstSpirit ServerManager / Project properties/ Repository".

9   SiteArchitect / ContentCreator

9.1   Optimized Search

During indexing for search, FirstSpirit historically did not add English-language "stop words" (short words which appear often in a language but seldomly indicate relevant information about the contents of a document) to the index, e.g.

- "a"

- "and"

- "are"

- "is"

- "the"

- "was"

- "with"

- ...

For example, in the demo project "Mithras Energy", a search for "the future" previously resulted in an empty search results list because the word "the" of that phrase was not in the search index. As of the current version of FirstSpirit, such stop words will no longer be handled specially but added to the search index as well; in the demo project "Mithras Energy", a search for "the future" will now return the English-language start page of that project (text: "Solar energy is the energy of the future, ...") as a search result.

Due to this change, the size of the search index of a project will increase slightly, and more search results will be shown accordingly.

This change will not have automatic effects on search results; the different indexing behavior will only be shown after modifying respective content, which causes the associated element to be reindexed individually. Thus, the words or character sequences listed above can be found during a search in existing FirstSpirit projects only once a given FirstSpirit element (page, section, dataset, etc.) was changed and saved. Alternatively, it is possible to reindex the entire project or parts of a project via a schedule task or the API. Such a reindexing process creates higher CPU and memory loads, however, and should only be carried out during a maintenance period.

9.2   Snippets: Outputting Metadata

Contents from metadata which are defined explicitly on a given element may now be output in snippet definitions using the new system object *#meta*. This object is available when metadata are defined on the element for which the snippet is being generated. Output of individual input components from metadata is done via

```
#meta.IDENTIFIER
```

For further information, see *FirstSpirit Online Documentation*, "Template development / Template syntax / System objects / #meta".

Also, in the course of this work, an error was remediated: when metadata were output via API, it was possible that the language-dependent preset value was mistakenly output instead of the language-independent fallback value.

10   System

10.1   Updated third-party software

The browser engine "JxBrowser", used to integrate "Google Chrome", has been updated to version 6.18.

10.2 Using Java 9 (EAP)

As of FirstSpirit version 5.2R18, support for Java 9 (for FirstSpirit Server and Clients) will be part of the early access program ("EAP", see Chapters "FirstSpirit product update 2018", and "Oracle Java"). Using existing FirstSpirit installations with Java 9 will require slight changes to configuration files in the file system:

1. First, perform an inplace upgrade of the desired FirstSpirit server (see *FirstSpirit Installation instruction*, Chapter "Via a tar archive"). In this way, the start script will be updated automatically (`fs5` for Linux).

2. Replace the file `fs-wrapper.conf` (or for servers running in "isolated mode" the file `fs-wrapper.isolated.conf`) in the FirstSpirit subdirectory `~\conf` by the content of the file `fs-wrapper.conf.default.txt` (or by the content of the file `fs-wrapper.iso-lated.conf.default.txt`) in the subdirectory `~\conf\conf-all` and adopt individual changes which you have made in the file `fs-wrapper.conf`.

3. Copy the files
   `fs-wrapper-j1.include.conf.default.txt`
   `fs-wrapper-j2.include.conf.default.txt`
   from the subdirectory `~\conf\conf-all` to `~\conf`, rename them to
   `fs-wrapper-j1.include.conf`
   `fs-wrapper-j2.include.conf`
   and adopt the GC and storage parameters to the individual requirements of the FirstSpirit server.

FirstSpirit can also be used with Java 9 as a Windows Service. If you wish to do this, please contact Technical Support for assistance.

New installations do not require a change of the above mentioned files.

Due to the extended security checks in Java 9, the use of this Java version will lead to slowdown, especially during client start-up and during the first execution of functionality that is dynamically downloaded by the client.

If Java 9 is being used, a corresponding message is logged when the Server is started.

10.3 Using Jetty as a module (EAP)

As of FirstSpirit version 5.2R18 the module `fs-jetty.fsm` can also be used with FirstSpirit servers that are not operated in "isolated mode" but in "legacy mode". For usage in "legacy mode" it is part of the early access program ("EAP"). This module bases on the most recent version: 9.4. However, this version is not compatible with Java 7 and requires at least Java 8.

In order to use Jetty as a module, the module `fs-jetty.fsm` has to be installed on the FirstSpirit server and the corresponding service "JettyService" has to be started in the server properties of the ServerManager:
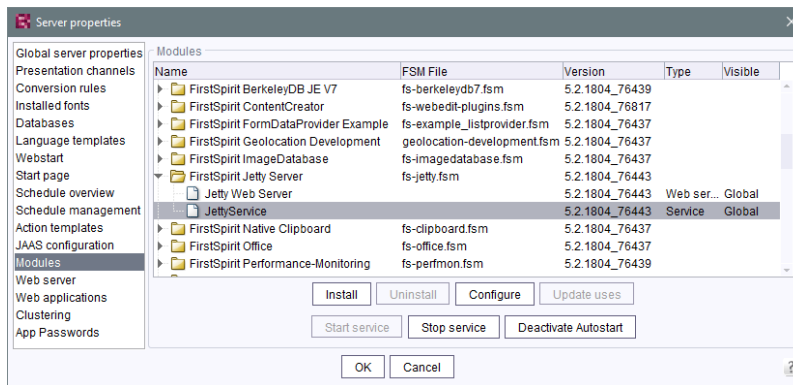
Here it is also possible to configure the favored port (changing the port requires a restart of the service:
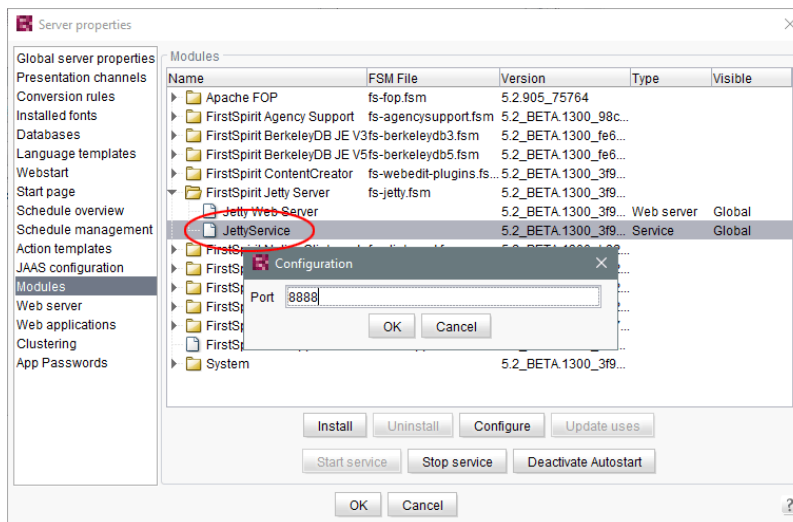
A new web server of the type "Jetty Web Server" may be added using "Webserver" in the server properties (e.g. with the name "IsolatedJetty"):
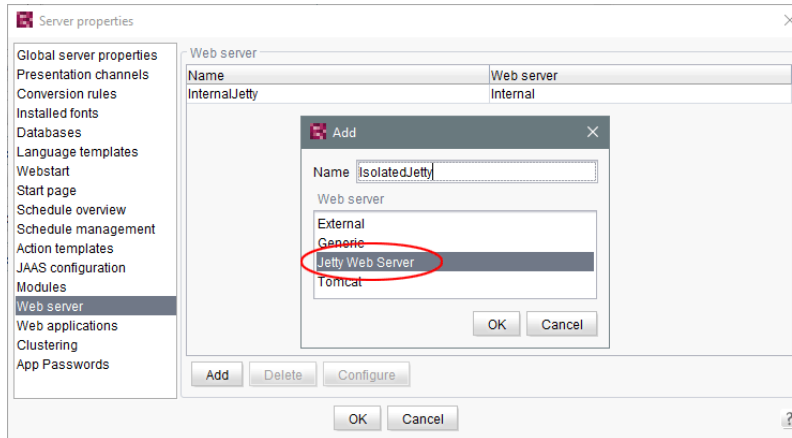
The web server may now be selected in the project properties under "Web components":
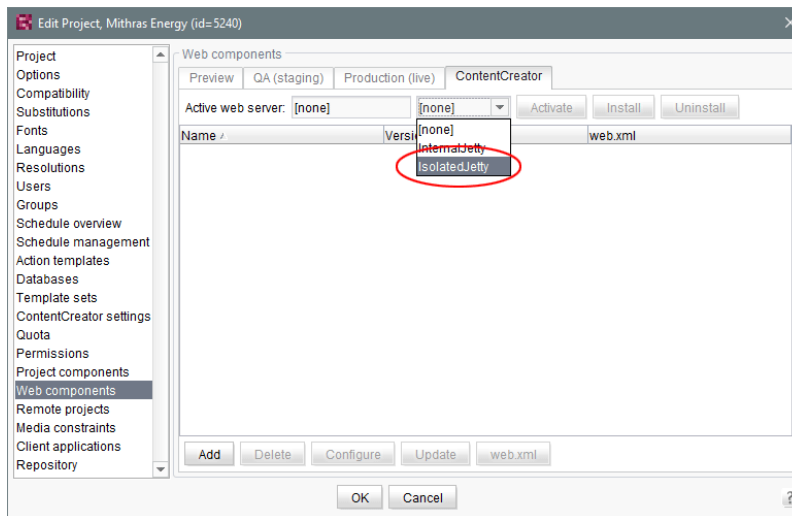
! Both the earlier implementation "InternalJetty" and the new implementation as a module run within the same JavaVM as the FirstSpirit server. This configuration is not suitable for production operation and should only be used for tests. For more complex configuration requirements (e.g. adjustment of memory size, timeouts, number of threads per deployed application, …), use of an external web server (e.g. Tomcat) is recommended.

11 Deprecations

For e-Spirit, an important goal in software development is to avoid introducing incompatibilities and migration expenditures related to updating from one FirstSpirit release to the next as much as possible or to compensate for these within the software. FirstSpirit updates should generally be deployable with little effort or able to be carried out in a fully automated fashion.

However - not least in order to ensure maintainability and to future-proof the software - e-Spirit cannot fully avoid replacing existing functionality with new mechanisms. In the future, functionality that will be removed from the software will be listed in this section, including the date at which time the functionality will be removed.

Functionality	Deprecated as of	Will be removed/ Was removed as of
Oracle Java 7 Support	5.2R15	June 2018
FirstSpirit Developer API: de.espirit.firstspirit.agency.GroupsAgent	5.2R15	May 2018
Integrated preview for content (Mozilla Firefox, v3 and v15)	5.2R18	August 2018
Integrated preview for content (Internet Explorer)	5.2R18	May 2018
Integrated Jetty	5.2R18	August 2018

12 Overview

ID	Description	Categories
178853	Optimized consideration of edit mode when moving sections.	SiteArchitect
179964	Saving of store elements and datasets can now be triggered programmatically via the API using the new interface `SaveOp-eration` (package `de.espirit.firstspirit.store.opera-tions`, FirstSpirit Access API). Further information can be found in chapter "Module Development, Scripts, API: Saving Elements".	Developer, FirstSpirit API

ID	Description	Categories
180416	The new interface `DeleteOperation` in the package `de.espir-it.firstspirit.store.operations` (FirstSpirit Developer API) may be used to carry out server-side deletion of FirstSpirit elements and datasets. Further information can be found in chapter "Module Development, Scripts, API: Deleting Elements".	Developer, FirstSpirit API
194851	When the browser Mozilla Firefox was used, inputting text following a link in a table cell could cause erroneous behavior.	ContentCreator
198993	As of the current version of FirstSpirit, English-language stop words will be added to the search index during indexing. Further information can be found in chapter "SiteArchitect / Content-Creator: Optimized Search".	Editor, Search, SiteArchitect
201807	In SiteArchitect, using the keyboard shortcut Ctrl + Shift + F2 in the input components CMS_INPUT_DOM and CMS_IN-PUT_DOMTABLE will cause the contents of the input component to be written to the SiteArchitect client log with log level "info" (see menu item "Help / View log").	Input Components, SiteArchitect
202737	Improved use of images in snippets in conjunction with user privileges.	SiteArchitect
203340	Erroneous behavior could arise when deleting a folder in the Page Templates section of the Templates store.	SiteArchitect
203364	The browser engine "JxBrowser", used to integrate "Google Chrome", has been updated to version 6.18. This corrected an issue which could occur during use of "Multi Perspective Preview" (MPP). Further information can be found in chapter "System: Updated third-party software".	Editor, Integrated software, Multi Perspective Preview, SiteArchitect
203380	Contents from metadata which are defined explicitly on a given element may now be output in snippet definitions using the new system object *#meta*. Further information can be found in chapter "SiteArchitect / Content-Creator: Snippets: Outputting Metadata".	Developer, Snippets

ID	Description	Categories
203556 198194 204356	As of FirstSpirit version 5.2R18, support for Java 9 (for FirstSpirit Server and Clients) will be part of the early access program. Further information can be found in chapter "System: Using Java 9 (EAP)".	FirstSpirit Administrator
204283	Optimized check for new FirstSpirit versions in the Health Center of FirstSpirit ServerMonitoring.	Health Center
204490	In order to allow better problem analysis on workflows, logging was extended.	Workflow
204526	Optimized consideration of erroneous revision metadata during archiving.	Archiving, Backup
204644	Related to the functionality "Multi Perspective Preview" (MPP), improved scrolling behavior in the preview.	ContentCreator
204870	Oracle Berkeley DB 7 can be used for project repositories as of the current FirstSpirit version. Further information can be found in chapter "Repository: Oracle Berkeley DB 7 (EAP)".	Repository
205227	Under macOS, windows were in rare cases not opened in the foreground.	ServerManager, SiteArchitect
205265	In the database-linked input component CMS_INPUT_CHECKBOX, optimized display of checked values.	SiteArchitect
205315	Optimized consideration of FirstSpirit build number in the file `Project.xml` in order to improve mergeability.	External synchronization
205316	During export, unmapped IDs will now be logged with a warning.	External synchronization
205574	Related to the functionality "FirstSpirit ContentTransport", a meaningful error message will now be displayed if elements of the Templates store cannot be added to the feature.	Content Transport
205624	Optimized editing of the configuration file for server start options (`fs-wrapper.conf`) via ServerMonitoring.	Isolated mode (BETA)
205672	Performance optimizations related to loading database-based content.	Performance

ID	Description	Categories
205712	Optimized method `getOperation(OperationType<P>)` in interface `OperationAgent` (FirstSpirit Developer API, package `de.espirit.firstspirit.agency`).	FirstSpirit API
205713	An error has been fixed which could lead to incorrect evaluation of group and user information in ContentCreator forms which were opened using the interface `ShowFormDialogOperation` (package `de.espirit.firstspirit.ui.operations`, FirstSpirit Developer API). Further information can be found in chapter "Module Development, Scripts, API: Extended functionality for FS_BUTTON scripts".	Developer, FirstSpirit API
205721 205744	As of the current version of FirstSpirit, the interface `RenderingAgent` (package `de.espirit.firstspirit.agency`, FirstSpirit Developer API) also supports passing of FirstSpirit templates and thus the opportunity to render output channel source code as desired. Furthermore, you can now determine whether or not project settings (in FirstSpirit SiteArchitect under "Global settings") should be considered during generation. Further information can be found in chapter "Module Development, Scripts, API: Extension of the interface "RenderingAgent"".	FirstSpirit API
205787	Erroneous behavior could arise when displaying related elements.	ContentCreator
205814	In rare cases, display of the "favicon" of the FirstSpirit start page was erroneous.	FirstSpirit home page
205819 206024	As of FirstSpirit version 5.2R18 the module `fs-jetty.fsm` can also be used with FirstSpirit servers that are not operated in "isolated mode" but in "legacy mode". Further information can be found in chapter "System: Using Jetty as a module (EAP)".	FirstSpirit Administrator, Integrated software, Modules, ServerManager
205823 203733	Improved visualization of modified sections.	ContentCreator

ID	Description	Categories
205846	The interface `ScheduleStorage` (package `de.espirit.first-spirit.access.schedule`, FirstSpirit Access API) was extended with the method `createScheduleEntry(String name, Project project)`, and the privilege evaluation for creation of schedule entries via the method `createScheduleEntry(String)` was improved. Further information can be found in chapter "Module Development, Scripts, API: Extension of the interface "ScheduleStorage"".	FirstSpirit API, FirstSpirit Administrator
205861	Optimized installation of FirstSpirit servers in *Isolated mode* ("RISO") on Linux operating systems as the `root` user.	Isolated mode (BETA), Server Administrator
205866	In rare cases, erroneous behavior could arise when editing contents of an FS_LIST (type DATABASE) input component.	SiteArchitect
205868	Optimized display of the page status which can be visualized using the plugin `WebeditStatusNotePlugin`.	ContentCreator
205881	When generating pages in a ContentCreator context via the interface `RenderingAgent` (package `de.espirit.firstspirit.agency`, FirstSpirit Developer API), subsessions will now be considered.	Developer, FirstSpirit API
206024 205819	Eliminated problems when using the internal Jetty	FirstSpirit Administrator, Integrated software
206154	Optimized schedule management. Further information can be found in chapter "Administration: Optimization in Schedule Management".	FirstSpirit Administrator, ServerManager, Tasks
206164	Optimized parameters for garbage collector logging of FirstSpirit server.	Developer
206229	Erroneous behavior could arise when opening module configuration dialogs.	FirstSpirit Administrator, ServerManager
206317	Erroneous behavior could arise when recursively calling the method `render()` of the interface `RenderingAgent.Renderer` (package `de.espirit.firstspirit.agency`, FirstSpirit Developer API).	Developer
206521	Optimized consideration of changes in connection settings.	FirstSpirit home page

ID	Description	Categories
206522	Optimized display of action names in the keyboard shortcut list (menu: "Help / Keyboard shortcuts").	SiteArchitect

13   Categories

13.1   Archiving

ID	Description
204526	Optimized consideration of erroneous revision metadata during archiving.

13.2   Backup

ID	Description
204526	Optimized consideration of erroneous revision metadata during archiving.

13.3   Content Transport

ID	Description
205574	Related to the functionality "FirstSpirit ContentTransport", a meaningful error message will now be displayed if elements of the Templates store cannot be added to the feature.

13.4   ContentCreator

ID	Description
194851	When the browser Mozilla Firefox was used, inputting text following a link in a table cell could cause erroneous behavior.
204644	Related to the functionality "Multi Perspective Preview" (MPP), improved scrolling behavior in the preview.
205787	Erroneous behavior could arise when displaying related elements.

ID	Description
205823 203733	Improved visualization of modified sections.
205868	Optimized display of the page status which can be visualized using the plugin `WebeditStatus-NotePlugin`.

13.5 Developer

ID	Description
179964	Saving of store elements and datasets can now be triggered programmatically via the API using the new interface `SaveOperation` (package `de.espirit.firstspirit.store.operations`, FirstSpirit Access API). Further information can be found in chapter "Module Development, Scripts, API: Saving Elements".
180416	The new interface `DeleteOperation` in the package `de.espirit.firstspirit.store.operations` (FirstSpirit Developer API) may be used to carry out server-side deletion of FirstSpirit elements and datasets. Further information can be found in chapter "Module Development, Scripts, API: Deleting Elements".
203380	Contents from metadata which are defined explicitly on a given element may now be output in snippet definitions using the new system object *#meta*. Further information can be found in chapter "SiteArchitect / ContentCreator: Snippets: Outputting Metadata".
205713	An error has been fixed which could lead to incorrect evaluation of group and user information in ContentCreator forms which were opened using the interface `ShowFormDialogOperation` (package `de.espirit.firstspirit.ui.operations`, FirstSpirit Developer API). Further information can be found in chapter "Module Development, Scripts, API: Extended functionality for FS_BUTTON scripts".
205881	When generating pages in a ContentCreator context via the interface `RenderingAgent` (package `de.espirit.firstspirit.agency`, FirstSpirit Developer API), subsessions will now be considered.

ID	Description
206164	Optimized parameters for garbage collector logging of FirstSpirit server.
206317	Erroneous behavior could arise when recursively calling the method `render()` of the interface `RenderingAgent.Renderer` (package `de.espirit.firstspirit.agency`, FirstSpirit Developer API).

13.6 Editor

ID	Description
198993	As of the current version of FirstSpirit, English-language stop words will be added to the search index during indexing. Further information can be found in chapter "SiteArchitect / ContentCreator: Optimized Search".
203364	The browser engine "JxBrowser", used to integrate "Google Chrome", has been updated to version 6.18. This corrected an issue which could occur during use of "Multi Perspective Preview" (MPP). Further information can be found in chapter "System: Updated third-party software".

13.7 External synchronization

ID	Description
205315	Optimized consideration of FirstSpirit build number in the file `Project.xml` in order to improve mergeability.
205316	During export, unmapped IDs will now be logged with a warning.

13.8 FirstSpirit API

ID	Description
179964	Saving of store elements and datasets can now be triggered programmatically via the API using the new interface `SaveOperation` (package `de.espirit.firstspirit.store.operations`, FirstSpirit Access API).

ID	Description
	Further information can be found in chapter "Module Development, Scripts, API: Saving Elements".
180416	The new interface `DeleteOperation` in the package `de.espirit.firstspirit.store.operations` (FirstSpirit Developer API) may be used to carry out server-side deletion of FirstSpirit elements and datasets.
	Further information can be found in chapter "Module Development, Scripts, API: Deleting Elements".
205712	Optimized method `getOperation(OperationType<P>)` in interface `OperationAgent` (FirstSpirit Developer API, package `de.espirit.firstspirit.agency`).
205713	An error has been fixed which could lead to incorrect evaluation of group and user information in ContentCreator forms which were opened using the interface `ShowFormDialogOperation` (package `de.espirit.firstspirit.ui.operations`, FirstSpirit Developer API).
	Further information can be found in chapter "Module Development, Scripts, API: Extended functionality for FS_BUTTON scripts".
205721 205744	As of the current version of FirstSpirit, the interface `RenderingAgent` (package `de.espirit.firstspirit.agency`, FirstSpirit Developer API) also supports passing of FirstSpirit templates and thus the opportunity to render output channel source code as desired. Furthermore, you can now determine whether or not project settings (in FirstSpirit SiteArchitect under "Global settings") should be considered during generation.
	Further information can be found in chapter "Module Development, Scripts, API: Extension of the interface "RenderingAgent"".
205846	The interface `ScheduleStorage` (package `de.espirit.firstspirit.access.schedule`, FirstSpirit Access API) was extended with the method `createScheduleEntry(String name, Project project)`, and the privilege evaluation for creation of schedule entries via the method `createScheduleEntry(String)` was improved.
	Further information can be found in chapter "Module Development, Scripts, API: Extension of the interface "ScheduleStorage"".
205881	When generating pages in a ContentCreator context via the interface `RenderingAgent` (package `de.espirit.firstspirit.agency`, FirstSpirit Developer API), subsessions will now be considered.

13.9 FirstSpirit Administrator

ID	Description
203556 198194 204356	As of FirstSpirit version 5.2R18, support for Java 9 (for FirstSpirit Server and Clients) will be part of the early access program. Further information can be found in chapter "System: Using Java 9 (EAP)".
205819 206024	As of FirstSpirit version 5.2R18 the module `fs-jetty.fsm` can also be used with FirstSpirit servers that are not operated in "isolated mode" but in "legacy mode". Further information can be found in chapter "System: Using Jetty as a module (EAP)".
205846	The interface `ScheduleStorage` (package `de.espirit.firstspirit.access.schedule`, FirstSpirit Access API) was extended with the method `createScheduleEntry(String name, Project project)`, and the privilege evaluation for creation of schedule entries via the method `createScheduleEntry(String)` was improved. Further information can be found in chapter "Module Development, Scripts, API: Extension of the interface "ScheduleStorage"".
206024 205819	Eliminated problems when using the internal Jetty
206154	Optimized schedule management. Further information can be found in chapter "Administration: Optimization in Schedule Management".
206229	Erroneous behavior could arise when opening module configuration dialogs.

13.10 FirstSpirit home page

ID	Description
205814	In rare cases, display of the "favicon" of the FirstSpirit start page was erroneous.
206521	Optimized consideration of changes in connection settings.

13.11 Health Center

ID	Description
204283	Optimized check for new FirstSpirit versions in the Health Center of FirstSpirit ServerMonitoring.

13.12 Input Components

ID	Description
201807	In SiteArchitect, using the keyboard shortcut Ctrl + Shift + F2 in the input components CMS_INPUT_DOM and CMS_INPUT_DOMTABLE will cause the contents of the input component to be written to the SiteArchitect client log with log level "info" (see menu item "Help / View log").

13.13 Integrated software

ID	Description
203364	The browser engine "JxBrowser", used to integrate "Google Chrome", has been updated to version 6.18. This corrected an issue which could occur during use of "Multi Perspective Preview" (MPP). Further information can be found in chapter "System: Updated third-party software".
205819 206024	As of FirstSpirit version 5.2R18 the module `fs-jetty.fsm` can also be used with FirstSpirit servers that are not operated in "isolated mode" but in "legacy mode". Further information can be found in chapter "System: Using Jetty as a module (EAP)".
206024 205819	Eliminated problems when using the internal Jetty

13.14 Isolated mode (BETA)

ID	Description
205624	Optimized editing of the configuration file for server start options (`fs-wrapper.conf`) via ServerMonitoring.

ID	Description
205861	Optimized installation of FirstSpirit servers in *Isolated mode* ("RISO") on Linux operating systems as the `root` user.

13.15 Modules

ID	Description
205819 206024	As of FirstSpirit version 5.2R18 the module `fs-jetty.fsm` can also be used with FirstSpirit servers that are not operated in "isolated mode" but in "legacy mode". Further information can be found in chapter "System: Using Jetty as a module (EAP)".

13.16 Multi Perspective Preview

ID	Description
203364	The browser engine "JxBrowser", used to integrate "Google Chrome", has been updated to version 6.18. This corrected an issue which could occur during use of "Multi Perspective Preview" (MPP). Further information can be found in chapter "System: Updated third-party software".

13.17 Performance

ID	Description
205672	Performance optimizations related to loading database-based content.

13.18 Repository

ID	Description
204870	Oracle Berkeley DB 7 can be used for project repositories as of the current FirstSpirit version. Further information can be found in chapter "Repository: Oracle Berkeley DB 7 (EAP)".

13.19 Search

ID	Description
198993	As of the current version of FirstSpirit, English-language stop words will be added to the search index during indexing. Further information can be found in chapter "SiteArchitect / ContentCreator: Optimized Search".

13.20 Server Administrator

ID	Description
205861	Optimized installation of FirstSpirit servers in *Isolated mode* ("RISO") on Linux operating systems as the `root` user.

13.21 ServerManager

ID	Description
205227	Under macOS, windows were in rare cases not opened in the foreground.
205819 206024	As of FirstSpirit version 5.2R18 the module `fs-jetty.fsm` can also be used with FirstSpirit servers that are not operated in "isolated mode" but in "legacy mode". Further information can be found in chapter "System: Using Jetty as a module (EAP)".
206154	Optimized schedule management. Further information can be found in chapter "Administration: Optimization in Schedule Management".
206229	Erroneous behavior could arise when opening module configuration dialogs.

13.22 SiteArchitect

ID	Description
178853	Optimized consideration of edit mode when moving sections.
198993	As of the current version of FirstSpirit, English-language stop words will be added to the search index during indexing. Further information can be found in chapter "SiteArchitect / ContentCreator: Optimized Search".
201807	In SiteArchitect, using the keyboard shortcut Ctrl + Shift + F2 in the input components CMS_INPUT_DOM and CMS_INPUT_DOMTABLE will cause the contents of the input component to be written to the SiteArchitect client log with log level "info" (see menu item "Help / View log").
202737	Improved use of images in snippets in conjunction with user privileges.
203340	Erroneous behavior could arise when deleting a folder in the Page Templates section of the Templates store.
203364	The browser engine "JxBrowser", used to integrate "Google Chrome", has been updated to version 6.18. This corrected an issue which could occur during use of "Multi Perspective Preview" (MPP). Further information can be found in chapter "System: Updated third-party software".
205227	Under macOS, windows were in rare cases not opened in the foreground.
205265	In the database-linked input component CMS_INPUT_CHECKBOX, optimized display of checked values.
205866	In rare cases, erroneous behavior could arise when editing contents of an FS_LIST (type DATABASE) input component.
206522	Optimized display of action names in the keyboard shortcut list (menu: "Help / Keyboard shortcuts").

13.23 Snippets

ID	Description
203380	Contents from metadata which are defined explicitly on a given element may now be output in snippet definitions using the new system object *#meta*.

ID	Description
	Further information can be found in chapter "SiteArchitect / ContentCreator: Snippets: Outputting Metadata".

13.24 Tasks

ID	Description
206154	Optimized schedule management. Further information can be found in chapter "Administration: Optimization in Schedule Management".

13.25 Workflow

ID	Description
204490	In order to allow better problem analysis on workflows, logging was extended.