

The SISTEMA Cookbook 3

Running several instances of SISTEMA in parallel (terminal server)

Version 2.0 (EN)



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Contents

- 1 About these instructions 4**
- 2 Creation of a central standard user library and standards library 5**
 - 2.1 Overview 5
 - 2.2 Criteria 5
 - 2.3 Copying standard user libraries and standards libraries to the server 5
 - 2.4 Configuration of the SISTEMA environment settings 6
 - 2.5 "FirstStart" option 7
- 3 Testing the configuration and further information 8**
 - 3.1 Tests 8
 - 3.1.1 Write protection of the modified registry entries 8
 - 3.1.2 Firebird server 8
 - 3.1.3 Standard user library and standards library 8
 - 3.2 Remarks 9
 - 3.2.1 Language setting 9
 - 3.2.2 File paths: [DataDir] and [WorkDir] 10
 - 3.2.3 SISTEMA configurator 10
 - 3.2.4 Conflicts during simultaneous generation of reports 10
 - 3.2.5 Working with SISTEMA libraries 11

1 About these instructions

SISTEMA has been designed as a client application. Up to and including Version 1.1.2, the internal libraries required for launching SISTEMA (including the standard user library and the standards library) had to be present on the local hard drive. For accessing these databases, only the "Firebird Embedded" database component was employed, which locked these files for exclusive use following successful creation of a connection. Owing to this form of database access, it was not possible for multiple instances of SISTEMA launched in parallel to use the database simultaneously.

With Version 1.1.3, support for the "Firebird Classic Server" and "Firebird Superserver" was introduced. Management of the database files is therefore now the task of the database server, and exclusive access to a database file need no longer be assured when a "Firebird server" is employed.

Chapter 2 of this guide describes the configuration settings which must be made in order for multiple instances of SISTEMA to be launched on a computer, as for example when a terminal server is employed. In this case, each of these instances of SISTEMA accesses the same standard user library and standards library via the Firebird server.

Chapter 3 describes the configuration test and provides further information on particular software aspects of SISTEMA.

Note that SISTEMA is not a terminal application. SISTEMA can in principle be run on a terminal server; no assurance can be provided however of its stability and the risk of crashing, since comprehensive testing has not been performed.

A known possible conflict exists when reports are generated simultaneously from multiple instances. Please refer in this context to the comments in Chapter 3.2.

This version (2.0) of the SISTEMA Cookbook 3 applies to SISTEMA versions from 1.1.3 onwards. The file names of the standard user library and the standards library have changed in SISTEMA 2.0 as follows:

– Up to version 1.1.9:

`SISTEMA_LIB_EN.SLB` and `SISTEMA_GEN_EN.FDB`

– From version 2.0 onwards:

`SISTEMA_LIB200_EN.SLB` and `SISTEMA_GEN200_EN.FDB`.

This guide uses the file names in SISTEMA Version 2.0. The guide can also be used for all other SISTEMA versions from 1.1.3 onwards.

2 Creation of a central standard user library and standards library

2.1 Overview

When SISTEMA is launched, it must be able to access the standard user library (`SISTEMA_LIB200_EN.SLB`) and the standards library (`SISTEMA_GEN200_EN.FDB`). This occurs by default with the "embedded" version of Firebird, which then locks these files to assure exclusive access. The paths to these files are stored automatically in the registry under the subkey `HKCU\Software\IFA\SISTEMA\x.y.z\database` (`x.y.z` stands for the SISTEMA version number) by the SISTEMA configurator utility. If a second instance of SISTEMA is launched, it is not granted access to the necessary libraries, and the launch must be aborted.

From Version 1.1.3 onwards, the Firebird server can be used for access to SISTEMA libraries, and also for access to the standard user library and standards library required for the launch.

The criteria to be met by the database server and the configuration required on the computer on which the instances of SISTEMA are to be launched are described in the following sections. Section 3.1 describes how these changes can be tested. Further important instructions can be found in Section 3.2.

2.2 Criteria

A criterion for the operating mode described here is that a Firebird server must be properly installed and activated on the computer concerned (refer to the detailed description in SISTEMA Cookbook 2, Chapter 1; follow the instructions there in Sections 1.1, 1.2, 1.3 and 1.4). **Please note that Firebird 1.5 should be used for SISTEMA versions up to and including 1.1.9; for SISTEMA 2.0 onwards, Firebird 2.5 must be used.**

2.3 Copying standard user libraries and standards libraries to the server

Once the Firebird server has been installed, the necessary databases must be copied to the **local** drive of the Firebird server.

To locate the required files (standard user library: `SISTEMA_LIB200_?? .SLB` and standards library: `SISTEMA_GEN200_?? .FDB`), launch the SISTEMA configurator and follow the paths entered there for application data directory [`DataDir`] and working directory [`WorkDir`]:

```
Application data directory [DataDir]\db\SISTEMA_GEN200_EN.FDB
```

```
Working directory [WorkDir]\Libraries\SISTEMA_LIB200_EN.SLB
```

The files differ in their language code according to the language selected at the bottom of the dialog, for example `EN` for English or `DE` for German. `"??"` will be used below as a placeholder for this code.

Note: These files are generated when SISTEMA is launched for the first time.

Create a folder on the Firebird server, e.g. C:\SSM-Databases\Global\, and copy the two files SISTEMA_LIB200_?.SLB and SISTEMA_GEN200_?.FDB to it.

You can create an alias for these two files if you wish. Details can be found in SISTEMA Cookbook 2, Section 1.5.3. An example:

Edit the file: aliases.conf

Add the aliases, e.g.:

```
SISTEMA_GEN200_EN=C:\SSM-Datatabases\Global\SISTEMA_GEN200_EN.FDB
SISTEMA_LIB200_EN=C:\SSM-Datatabases\Global\SISTEMA_LIB200_EN.SLB
```

2.4 Configuration of the SISTEMA environment settings

The paths to the required database files are normally written/overwritten automatically each time the SISTEMA configurator is executed **and** the action is confirmed with OK.

In order to prevent the user-defined entries from being overwritten by the SISTEMA configurator, you must set the following entry in the registry (for example using "regedit", Windows' own registry editor):

```
[HKEY_CURRENT_USER\Software\IFA\SISTEMA\x.y.z\database]
"LockDatabaseNameEntrys"=dword:00000001
```

The next step involves manually configuring the database settings for the standard user library and the standards library. The purpose here is to link to the files previously copied to the Firebird server. The following information is required for this purpose:

- **Server name** (IP address **or** host name of the database server)
- **Database name** (full local path\filename of the library **or** alias of the database file)

The entries in the registry have the following syntax:

```
[HKEY_CURRENT_USER\Software\IFA\SISTEMA\1.1.X\database]
"DatabaseNameGen"="server name:database name"
"DatabaseNameLib"="server name:database name"
```

The example is as follows (Figure 1/Figure 2):

Standards library:

```
"DatabaseNameGen" =
"192.168.224.138:C:\SSM-Datatabases\Global\SISTEMA_GEN200_EN.FDB"
```

or (by means of a DB alias)

```
"DatabaseNameGen"="192.168.224.138:SISTEMA_GEN200_EN"
```

Standard user library:

```
"DatabaseNameLib" =
"192.168.224.138:C:\SSM-Datatabases\Global\SISTEMA_LIB200_EN.SLB"
```

or (by means of a DB alias)

```
"DatabaseNameLib"="192.168.224.138:SISTEMA_LIB200_EN"
```

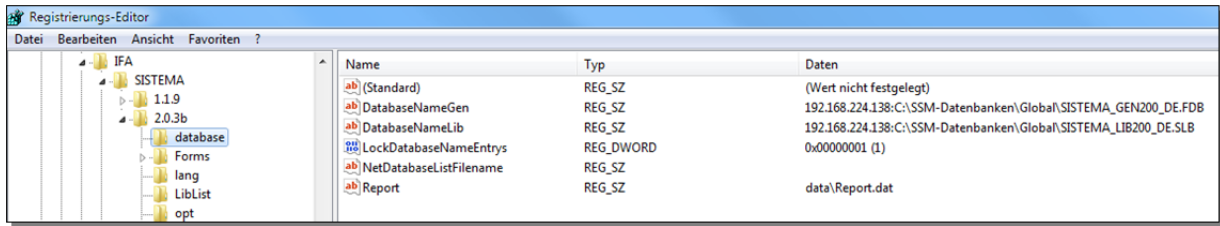


Figure 1: Database configuration by specification of the full DB path

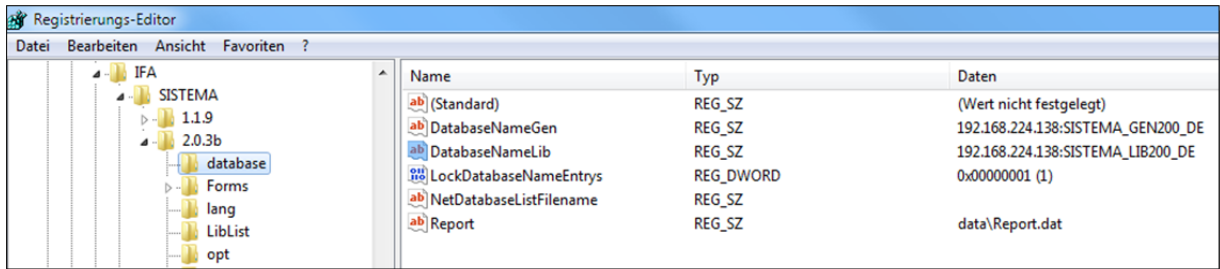


Figure 2: Database configuration by means of DB alias names

2.5 "FirstStart" option

When SISTEMA is launched on a computer for the first time, the application checks whether the "FirstStart" registry entry has the value "FirstStart"=dword:00000001 (true) or does not exist. If the value is "true" or "does not exist", the SISTEMA configurator is launched automatically.

If however all relevant entries have already been written once, for example by means of the SISTEMA configurator, and the particular configurations have been made, such as the database paths, options, etc., this code should be set to "false" (see Figure 3):

```
[HKEY_CURRENT_USER\Software\IFA\SISTEMA\x.y.z\startup]
"FirstStart"=dword:00000000
```

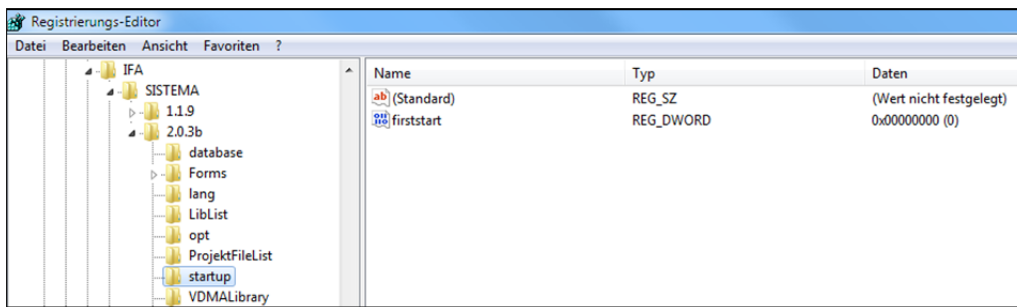


Figure 3: "FirstStart" setting

This prevents the SISTEMA configurator from being launched to check the current paths when SISTEMA itself is launched.

3 Testing the configuration and further information

3.1 Tests

The following sections describe certain tests that check the launching of multiple SISTEMA instances.

3.1.1 Write protection of the modified registry entries

Check on the computer (Terminal Server) on which the SISTEMA instances are to be run whether the registry adjustments described above (Section 2.4) take effect and whether database paths are not being overwritten by the SISTEMA configurator. Test as follows: Launch the SISTEMA configurator and confirm the current settings with OK. Check that your changes to the database paths in the registry are still correct and not reset by the SISTEMA configurator.

3.1.2 Firebird server

The "Firebird Server Manager (32-Bit)" should be visible in the control panel on the Firebird server computer. Launch the server manager and check that the service is running (top text line to the right of the Firebird logo, see Figure 4). If not, click on the "Start" button. Launching of the service should be set to "Automatically". You can use "Shift + Right click" to launch the Firebird control tool with administrator privileges.

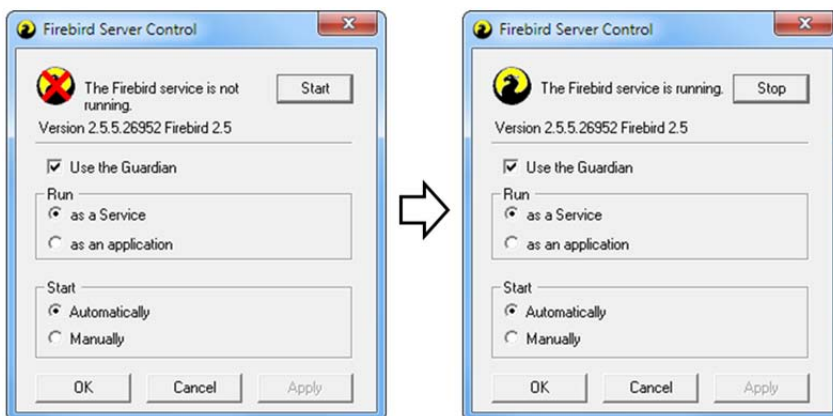


Figure 4: Firebird Server Control

3.1.3 Standard user library and standards library

Now launch SISTEMA. If you wish to prevent the SISTEMA configurator from being opened, refer to Section 2.5.

The location of your selected standard user library in the SISTEMA library should point to your Firebird server (Figure 5). If this is the case, the settings are correct.

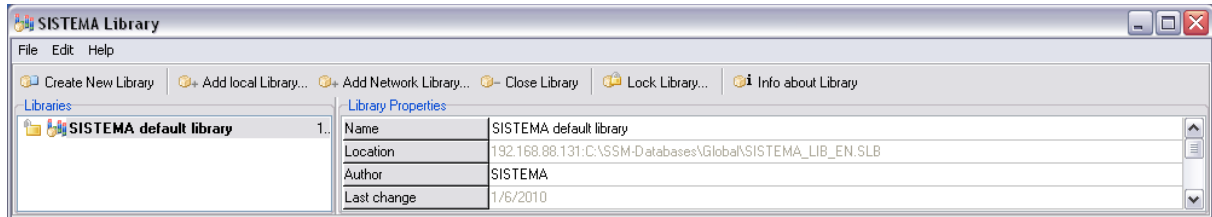


Figure 5: Path in the SISTEMA library

You cannot see here directly whether the standards library has been connected to properly. Launching of a second SISTEMA application should not however be a problem (Figure 6). Should a problem exist with the standards database, the launch of SISTEMA would be aborted.



Figure 6: Multiple open instances of SISTEMA

3.2 Remarks

Certain constraints apply when several instances of SISTEMA are launched on a computer (e.g. a terminal server). The sections below provide information relevant to the use of SISTEMA.

3.2.1 Language setting

The SISTEMA environment settings are taken from the registry and can be configured for each user, since they are saved in the key "HKEY_CURRENT_USER".

Since overwriting of the required database files (standard user library and standards library) has been prevented (see Section 2.4), the SISTEMA configurator could still be used, for example for path configurations or for selection of the language, if desired.

The language setting is subject to a restriction, however.

The standard user library and standards library contain texts; the standards library (SISTEMA_GEN200_?? .FDB) in particular contains a large number of texts. An example are the descriptions of the CCF measures described in the standard (Figure 7).

The administrator must ensure that the appropriate database for the language used by SISTEMA is linked to; the user can no longer influence this because the registry entry LockDatabaseNameEntry is set to "1" (see Section 2.4). The selected language can be recognized from the language code in the name of the file: DE – German, EN – English, FI – Finnish, FR – French, IT – Italian, etc.

In order for a standard user library and standards library to be created for a different language, proceed as described in Section 2.3, "Copying standard user libraries and standards libraries to the server".

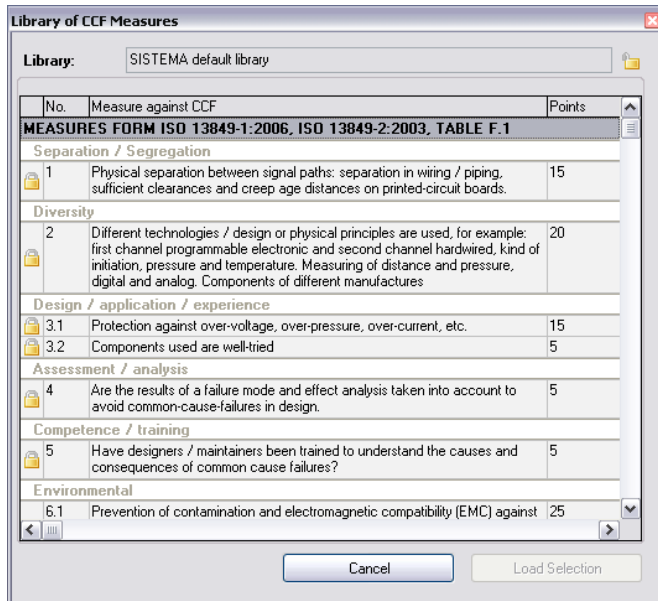


Figure 7: Standards library, CCF measures

3.2.2 File paths: [DataDir] and [WorkDir]

The paths for application data [DataDir] and the work folder [WorkDir] can be modified by means of the SISTEMA configurator. From SISTEMA 2.0 onwards, the SISTEMA configurator also permits the use of network drives. Standard user libraries and standards libraries cannot however be saved on a network drive. A Firebird server is therefore needed that manages access to these databases.

If the standard user library and the standards library are accessed via a Firebird server, these paths could in principle be changed, since the two libraries (SISTEMA_LIB_???.SLB and SISTEMA_GEN_???.FDB) in these folders are no longer used (they could also be deleted).

If SISTEMA is used on a terminal server, it may be advantageous to define the working folder once for all users. In order to prevent users from changing this folder, access to the SISTEMA configurator should be prevented (see Section 3.2.3).

3.2.3 SISTEMA configurator

The SISTEMA configurator can be launched directly from the SISTEMA menu (Edit → SISTEMA Configurator) or from the link in the Start menu. Should you wish to prevent it from being used by users, you can rename the "Configurator.exe" application in the SISTEMA program folder, and delete links. The menu action will then remain present in SISTEMA, but the utility will no longer launch when it is used.

3.2.4 Conflicts during simultaneous generation of reports

As soon as multiple SISTEMA instances are launched, users will wish to generate reports of their projects simultaneously. However, only one report can be generated at any one time;

other reports must wait. In the SISTEMA instances which must wait, the following message (Figure 8) then appears:



Figure 8: Report error message

This message indicates that data could not be transferred to the software component generating the report. Should this message be displayed, the user must wait a few seconds **and then click on "Wiederholen (Retry)".** The same message may appear again. As soon as the software component is available for generation, the report appears as usual.

An error message is displayed and SISTEMA is shut down if "**Abbrechen (Abort)**" is clicked instead of "**Wiederholen (Retry)**". This does not cause data loss in the selected project, since the project must be saved before the report is generated.

It is however conceivable that other projects open at the time may not be saved. Should SISTEMA be terminated incorrectly, a backup of these projects would be saved. For this reason, all projects should always be saved before a report is generated.

3.2.5 Working with SISTEMA libraries

If SISTEMA is used in terminal server form, all SISTEMA libraries in use should be hosted on a Firebird server.

This would not be necessary if a dedicated profile were generated for each person who is able to launch an instance of SISTEMA. It would also have to be ensured that each library is opened only once and locally (Firebird Embedded constraint). In most situations, this will not be the case. For this reason, all SISTEMA libraries should be made available through a Firebird server. Details can be found in SISTEMA Cookbook 2.