

The SISTEMA Cookbook 3

Running several instances of SISTEMA in parallel (terminal server)

Version 1.0 (EN)



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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.

SISTEMA Version 1.1.4 has a known issue concerning a possible conflict when reports are generated simultaneously from multiple instances. Please refer in this context to the information in Chapter 3.2.4.

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_LIB_EN.SLB`) and the standards library (`SISTEMA_GEN_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 and 1.3).

2.3 Copying standard user libraries and standards libraries to the server

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

To locate the required files (standard user library: `SISTEMA_LIB_?? .SLB` and standards library: `SISTEMA_GEN_?? .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_GEN_EN.FDB
Working directory [WorkDir]\Libraries\SISTEMA_LIB_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 not copied to the target directories by the SISTEMA configurator until you confirm with `OK`.

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

You can create an alias for these two files if you wish. Details can be found in SISTEMA Cookbook 2, Section 1.4.2. An example:

```
Edit the file: aliases.conf
```

Add the aliases, e.g.:

```
SISTEMA_GEN_EN=C:\SSM-Datatabases\Global\SISTEMA_GEN_EN.FDB
SISTEMA_LIB_EN=C:\SSM-Datatabases\Global\SISTEMA_LIB_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\1.1.X\database]
"LockDatabaseNameEntry"=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** (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 following is an example:

Standards library (refer to Figure 1/Figure 2):

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

or (by means of a DB alias)

```
"DatabaseNameGen"="192.168.224.138:SISTEMA_GEN_EN"
```

Standard user library (refer to Figure 1/Figure 2):

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

or (by means of a DB alias)

```
"DatabaseNameLib"="192.168.224.138:SISTEMA_LIB_EN"
```

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

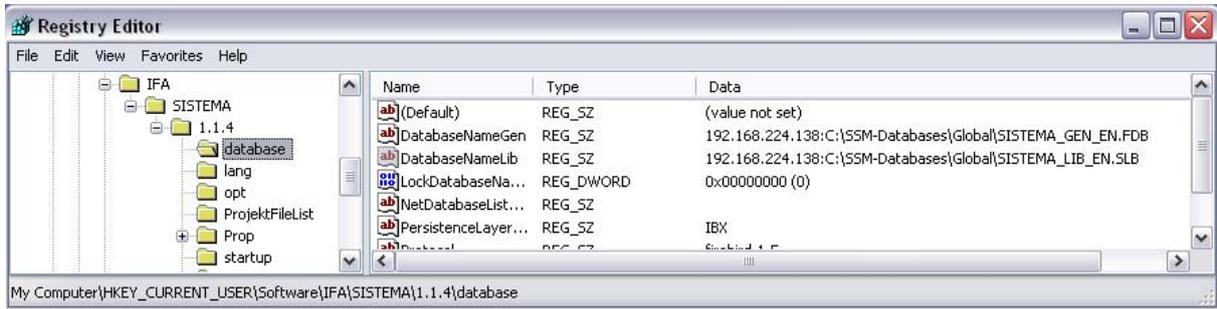
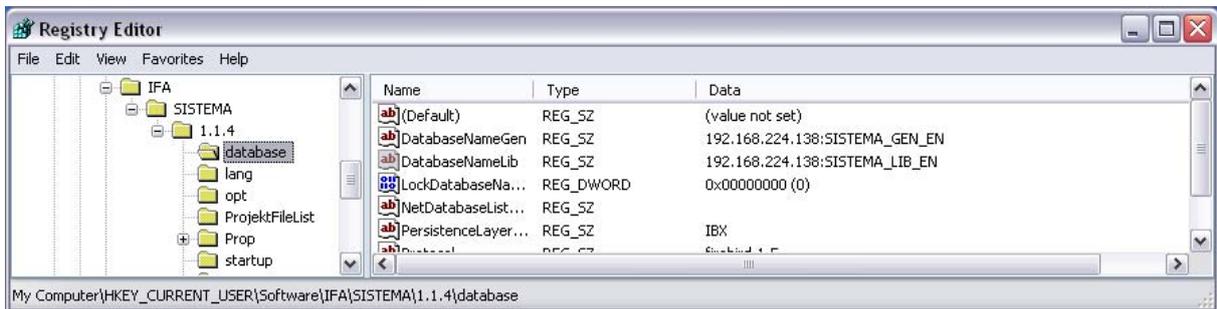


Figure 2: Database configuration by means of DB alias names



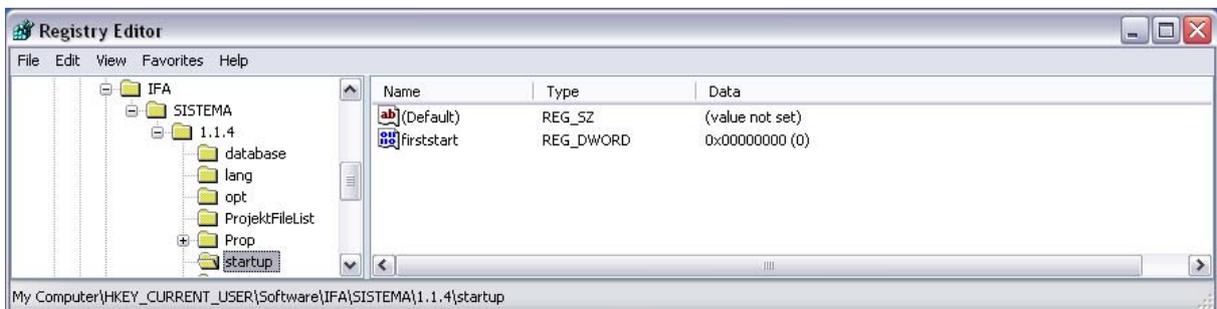
2.5 "FirstStart" option

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\1.1.X\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 Test

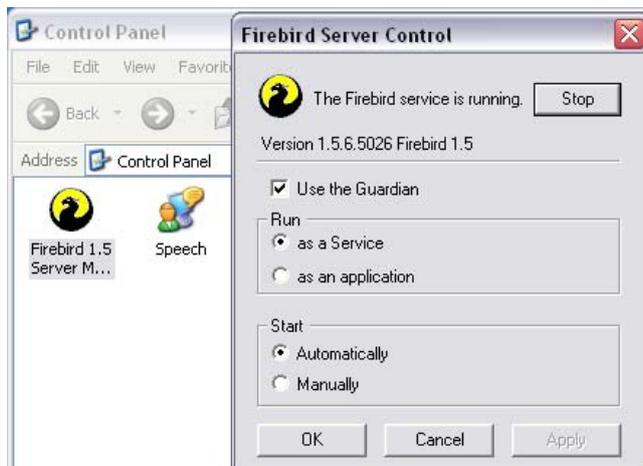
3.1.1 Write protection of the modified registry entries

Check on the computer on which the SISTEMA instances are to be run whether the registry adjustments described above take effect and whether database paths are 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.

3.1.2 Firebird server

The "Firebird 1.5 Server Manager" should be visible in the control panel on the server computer/PC. 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 (top). Use the options further down to specify whether this server service is to be launched manually, or automatically when the server computer is booted.

Figure 4: "Firebird Server Control"

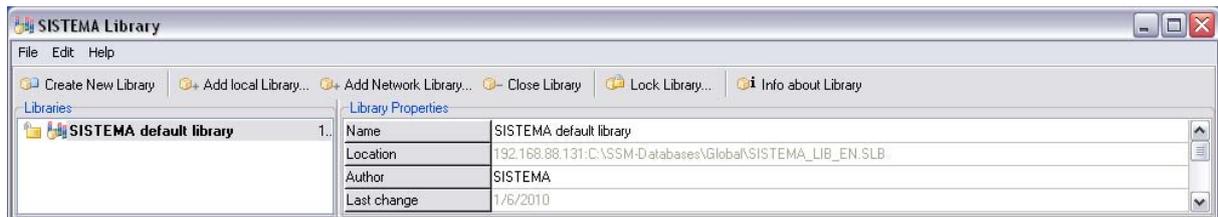


3.1.3 Standard user library and standards library

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 linked to correctly. Launching of a second SISTEMA application should not however now be a problem (Figure 6).

Figure 6: Multiple open instances of SISTEMA



3.2 Remarks

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.

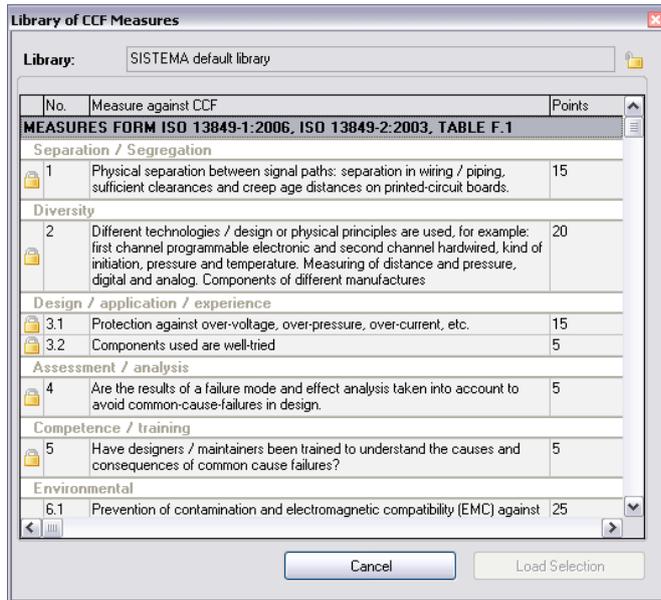
The language setting is subject to a restriction, however.

The standard user library and standards library contain texts; the standards library (SISTEMA_GEN_?? .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 by means of the SISTEMA configurator. 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.

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. These folders should not normally be located on network drives. The SISTEMA configurator checks whether this is the case; if so, changes are not accepted.

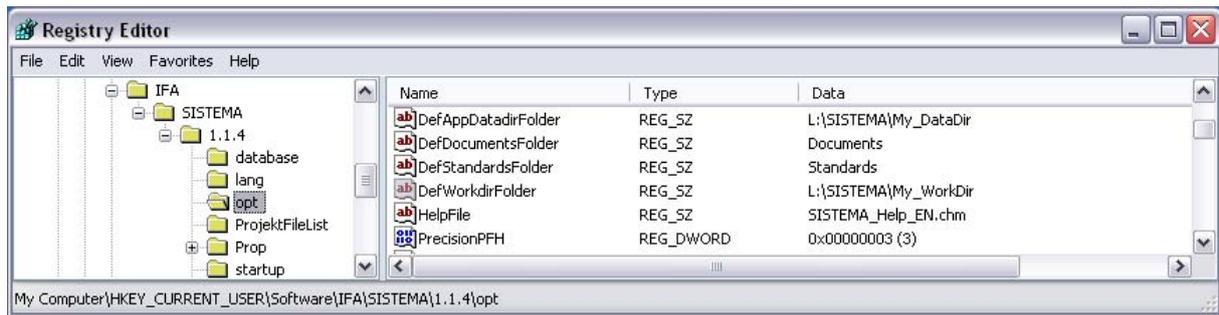
This constraint is due to the fact that SISTEMA libraries and therefore the standard user library and standards library must not be located on a network drive (owing to the "Firebird embedded" version in SISTEMA). Since the standard user library is copied by the SISTEMA configurator to the work folder [WorkDir] and the standards library to the application data [DataDir], these folders must also not be located on a network drive.

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).

Despite the switch to the Firebird server, the SISTEMA configurator does not allow these paths to be changed to a network drive (this will be corrected in future SISTEMA versions). In order for the paths to be changed (without use of the SISTEMA configurator) despite this constraint, the corresponding key in the registry must be modified. For example (Figure 8):

```
[HKEY_CURRENT_USER\Software\IFA\SISTEMA\1.1.X\opt ]
- Application data [DataDir]
  "DefAppDatadirFolder"="L:\\SISTEMA\\My_DataDir"
- Work folder [WorkDir]
  "DefWorkdirFolder"="L:\\SISTEMA\\My_WorkDir"
```

Figure 8: Changing the paths in the registry

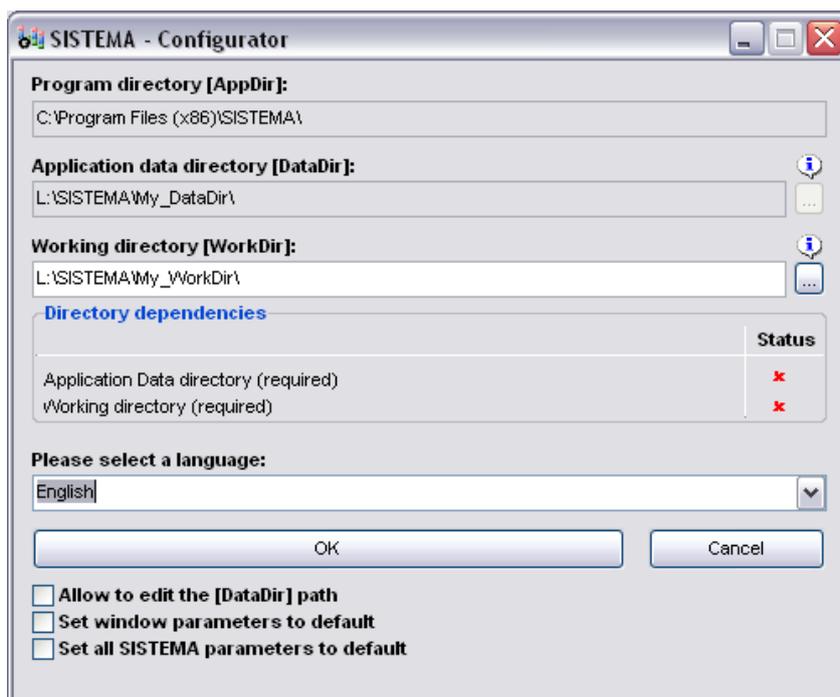


In the above example, the settings for the [DataDir] and the [WorkDir] folders have been changed to the folders SYSTEMA\My_DataDir and SYSTEMA\My_WorkDir on the mapped network drive L:\.

These folders should exist, but can be empty, and the user should possess **write permissions for them**. By default, the example projects are copied by the SISTEMA configurator into the [WorkDir]; this however has no impact upon the operation of SISTEMA. In addition to files relevant to SISTEMA, the [DataDir] would also contain the standards library, which, if made available through the Firebird server as described above, would however not be used.

If the SISTEMA configurator is now launched, these folders are displayed and also used by SISTEMA. As long as the paths stated are network drives, no modifications, for example to the language, can be made by means of the SISTEMA configurator, since network drives are not yet accepted by the SISTEMA configurator (Figure 9).

Figure 9: SISTEMA configurator



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 10) then appears:

Figure 10: 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.**

In SISTEMA Version 1.1.4, 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. When all projects have been saved, the "Save" action is greyed out, i.e. deactivated, both in the menu and the toolbar button.