INCHRON Tool-Suite

Installation Guide

Software Version 2.7

Installation Guide

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Installation

The Tool-Suite's user interface follows the standard Windows look & feel. The installation of the INCHRON Tool-Suite requires knowledge of the Windows operating system. The user interface of the INCHRON Tool-Suite is in English language.

The INCHRON Tool-Suite comes on an installation CD-ROM together with this user manual. In case of a WIBU-KEY license a hardware dongle is enclosed. If a FLEXlm license is used no dongle is required. In case any of the aforementioned parts are missing in your delivery, please contact your Tool-Suite distribution partner.

Throughout this manual

- user input is indicated with key,
- menu choices are represented as *Start* > Run > Setup.exe
- alternative activation via toolbar buttons is indicated with the corresponding icon aside the text.

NOTE:

Before installing INCHRON Tool-Suite you should make sure that:

- You are authorized to install software on your computer. The installation of INCHRON Tool-Suite requires Administrator permissions.
- All running applications are closed, including programs that are started automatically during system startup.
- You have a current backup of all your files.

1.1 System Requirements

INCHRON Tool-Suite's single license is designed to be installed on workstations or notebook computers. With a floating license INCHRON Tool-Suite can be used via a local area network or any other Internet connection as well.

1.1.1 Hardware Requirements

INCHRON Tool-Suite is designed to run on standard x86-based PC hardware. In order to run INCHRON Tool-Suite, your computer must meet the following minimum requirements:

- at least 512 MB RAM, 1024 MB recommended
- x86-64 based processor with 1,4 GHz or above
- at least 1.5 GB of free hard disk space
- a CD-ROM drive in case of CD installation
- a graphics adapter with at least 256 colors and a screen resolution of 1152 x 864 pixel or above
- a free USB connector in case of a WIBU-KEY license -or- a network card with TCP/IP protocol (floating license only)

1.1.2 Operating System Requirements

INCHRON Tool-Suite requires Microsoft Windows XP™ in German or English language with Service Pack 2 installed or alternatively Microsoft Windows 7™ or 8.

For displaying control flow graphs the external software GraphViz is used. Absence of these 3rd party software packages does not impair proper operation of INCHRON Tool-Suite, but will only affect the displaying and printing of graphs. These 3rd party software packages can be installed directly from your INCHRON Tool-Suite CD-ROM.

1.2 Software Installation

The INCHRON installation CD has been designed to start INCHRON Tool-Suite installation routine automatically when you insert the CD-ROM into your CD-ROM drive. To prevent the INCHRON Tool-Suite installation from starting up, hold the shift key until your operating system has recognized the CD-ROM.

1.2.1 Installation

NOTE:

For running INCHRON Tool-Suite either a license dongle or a FLEXlm license files with valid license information is required. This will not be needed for INCHRON Tool-Suite installation. Depending on the capacity of your computer the installation will take some minutes

1 Before installation terminate any WIBU-KEY-Server already running e.g. with the context menu of the WIBU icon in the task-bar

2 Insert the installation CD into the CD-ROM drive.

The Installation starts automatically and checks the integrity of the CD data. Proceed with step 5 if the installation starts automatically. Proceed with the following steps if the installer does not start automatically.

Figure 1.1: *The INCHRON Tool-Suite Setup is Being Loaded*

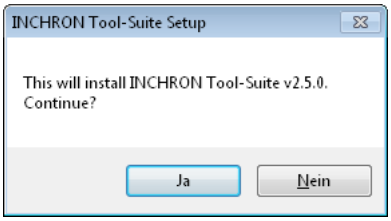
3 Run the installer Setup.exe from the CD, e.g. via *Start* > Run > Browse .

4 Select the drive letter of your CD-ROM, click *Setup.exe* and confirm with Open and OK.

5 After the verification has finished start the installation with Yes or abort with No.

The installation routine checks the software environment of your computer.

Figure 1.2: *INCHRON Tool-Suite Installation Question*



NOTE:

INCHRON does not guarantee proper operation of the INCHRON Tool-Suite on other platforms than specified in .

6 A welcome window displays recommendations for the installation. Click Next to continue.

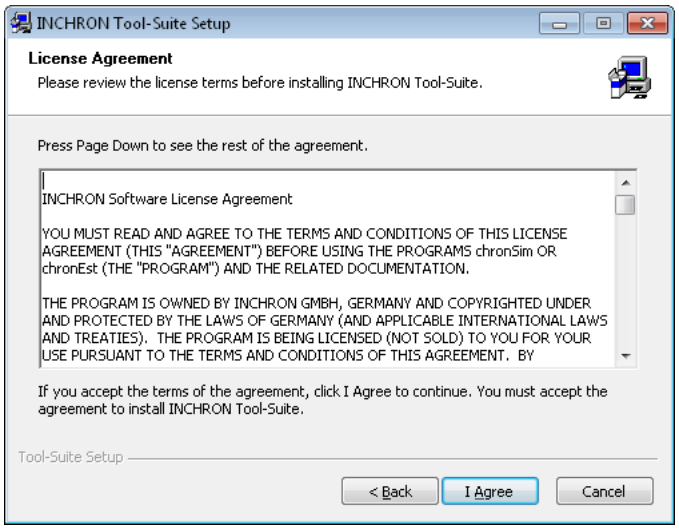
Figure 1.3: *INCHRON Tool-Suite Setup Welcome Page*

7 Read the INCHRON Tool-Suite's license agreement carefully. If you agree with the terms and conditions of this license, click I_Agree.

You cannot install INCHRON Tool-Suite if you do not agree with the terms and conditions of this license.

In this case cancel the installation with Cancel.

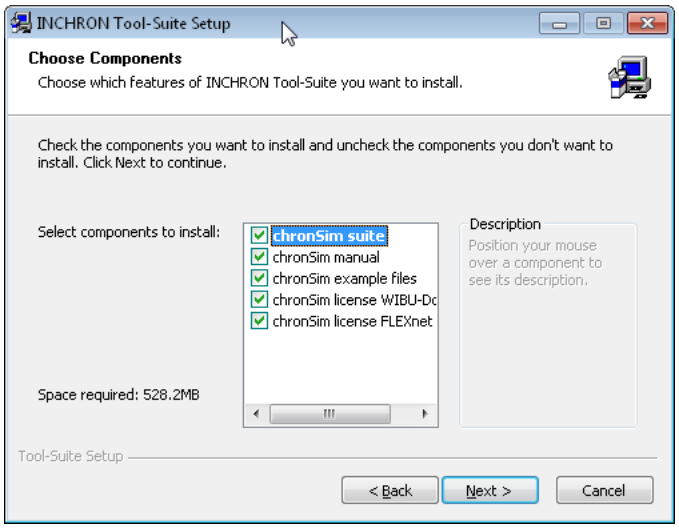
Figure 1.4: *INCHRON Tool-Suite Software License Agreement*



8 If you accept the license agreement, setup will ask you which INCHRON Tool-Suite software components should be installed.

The default selection will install all available software components.

Figure 1.5: *Selection of Software Modules for Installation*



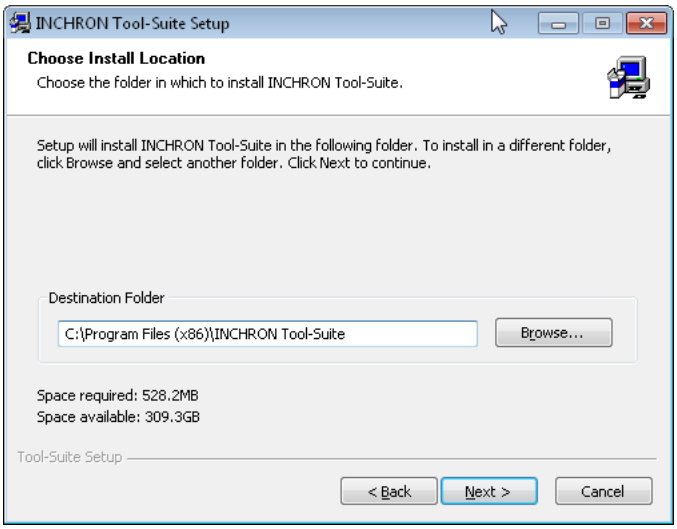
9 Deselect all program modules that you do not need and want to be excluded from installation by clicking the respective checkboxes.

10 Confirm your selection with Next.

In the next step you will be asked to provide an installation path for your INCHRON Tool-Suite installation. You can manually modify the default installation path by clicking Browse....

A dialog appears for choosing a custom installation directory.

Figure 1.6: *INCHRON Tool-Suite Installation Path*



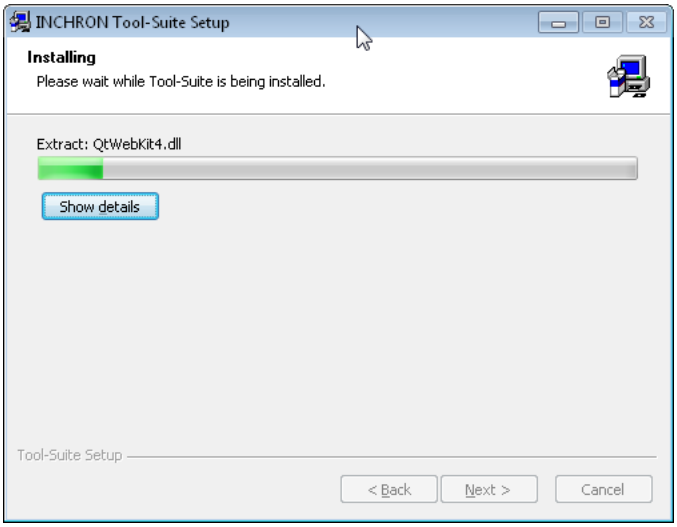
11 Confirm your selection with Next.

INCHRON Tool-Suite setup has now collected all relevant information for installing INCHRON Tool-Suite.

12 Click Install.

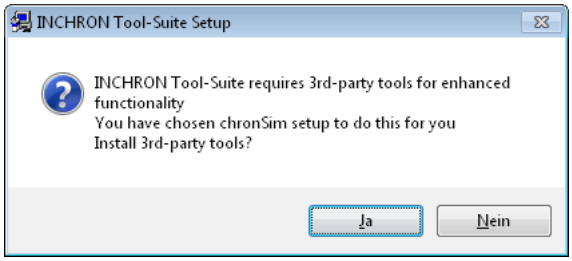
The installation starts. You can observe the progress and all details of the installation on the screen. Please wait until all data is saved onto your hard disk. This may take several minutes.

Figure 1.7: *Installation Progress*



13 After the installation of INCHRON Tool-Suite you will be asked to confirm the installation of 3rd party tools.

Figure 1.8: *Installation of 3rd Party Tools*



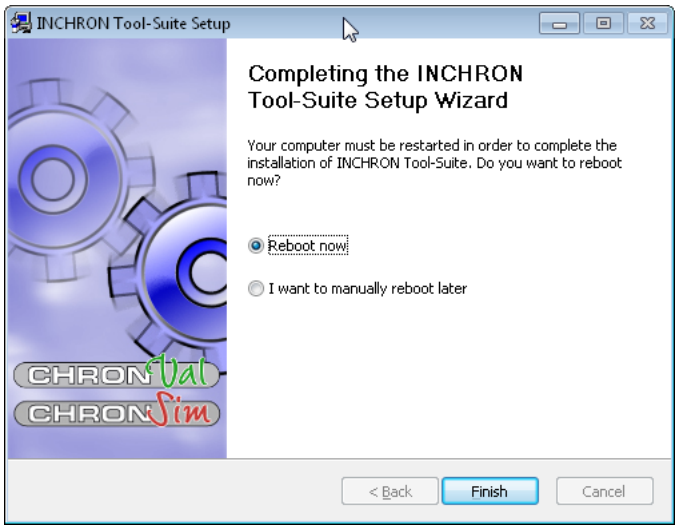
14 Confirm with Yes or abort the installation of 3rd party tools by clicking on No.

Only the selected software modules will be installed. If you already have appropriate versions of the 3rd party tools installed on your computer, you will be asked if you want to re-install them.

15 Follow the installation instructions of the respective 3rd party tools installers.

16 To finish the installation click on Finish.

Figure 1.9: *The Installation is Complete*



17 Restart your computer.

1.2.2 License Management

The INCHRON Tool-Suite comprises different tool licensing options namely chronSIM, chronEST and which may be used separately. The usage of any of these tool options requires a license option. The license may be available either as USB dongle or FLEXlm license. In both cases single-seat as well as network licenses are possible.

The configuration of a license server and the management of licensing options to be used is done with the *Manage Licenses* dialog from within the INCHRON Tool-Suite. Server license allocation may be limited by restricting any workstation to a single instance of the Tool-Suite application Changing the current set of INCHRON Tool-Suite tool license options is done as follows:

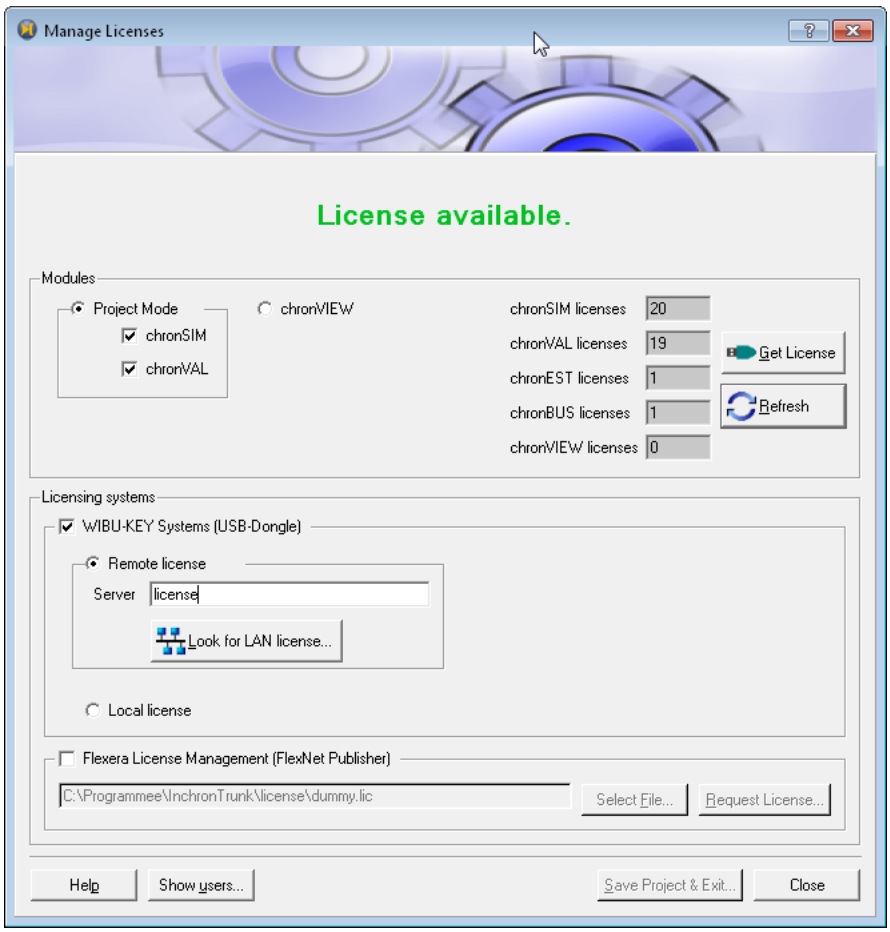
1 Start the INCHRON Tool-Suite with *Start* > Programs > INCHRON Tool-Suite > Suite .

In case no simulation or validation license is configured the *Manage Licenses* dialog will appear. Otherwise

2 Select *Settings* > Manage Licenses... .

The *Manage Licenses* dialog shows up.

Figure 1.10: *Manage Licenses Dialog*



3 Select the appropriate tool options chronSIM, chronVAL, chronVIEW and press Get License.

The *License available* will be shown if the selected options are covered by your license server or license dongle.

4 Close the dialog and restart the INCHRON Tool-Suite.

In case you selected the option chronVIEW only, INCHRON Tool-Suite will directly start in simulation mode instead of project mode.

1.2.3 License Management with WIBUKEY Systems

1.2.3.1 Separate Installation of Dongle Software

In case INCHRON Tool-Suite is configured to use the WIBU-KEY Systems license mechanism all license information is stored on an USB dongle. By default the dongle software is installed during the INCHRON Tool-Suite installation. However, you may also install the dongle software separately.

This is done as follows:

1. Close all other running applications.

2. Terminate any WIBU-KEY-Server already running e.g. with the context menu of the WIBU icon in the task-bar

3. Double-click SETUP32.EXE from the `WibuKey` folder on the INCHRON Installation CD.

   Follow the instructions on the screen.

   The installation program displays the identified operating system and lists all files required for the dongle.

4. Clicking Continue will copy and install all listed files onto your hard disk.

5. If you encounter an error during the installation, you should restart your computer and start again from a).

   After successful installation a new folder `WIBU-KEY` can be found in *Start* > Programs .

> **NOTE:**
>
> To configure INCHRON Tool-Suite for using a WIBU-KEY based license you have to check *WIBU-KEY Systems (USB-Dongle)* in the *Manage Licenses* dialog . In case of a local license (local connected USB dongle) also check the *Local License* option.

INCHRON Tool-Suite automatically checks on every start for the dongle and the dongle software. With a "single license" the dongle is required to be connected to your computer's USB connector when INCHRON Tool-Suite is running. With a floating license the dongle software should be installed onto a separate constantly available computer in your network. In order to use your floating license the dongle must remain in the USB connector of the separate computer. Accessing the floating license may be restricted by a firewall. In such a case, please contact your system administrator.

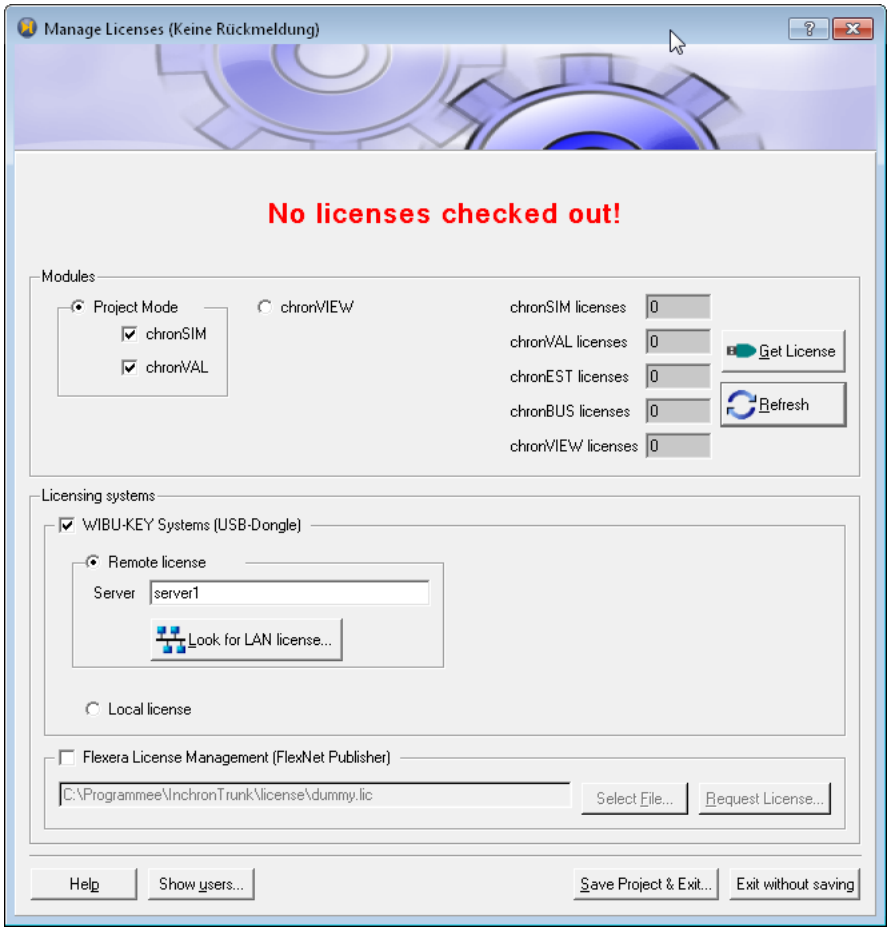
1.2.3.2 Configuration of a License Server

In the *Manage Licenses* dialog you may configure a network license server instead of using a local license dongle. To select a network license server do as follows:

1. Select *Settings* > Manage Licenses... .

   The *Manage Licenses* dialog appears.

Figure 1.11: *Manage Licenses Dialog*

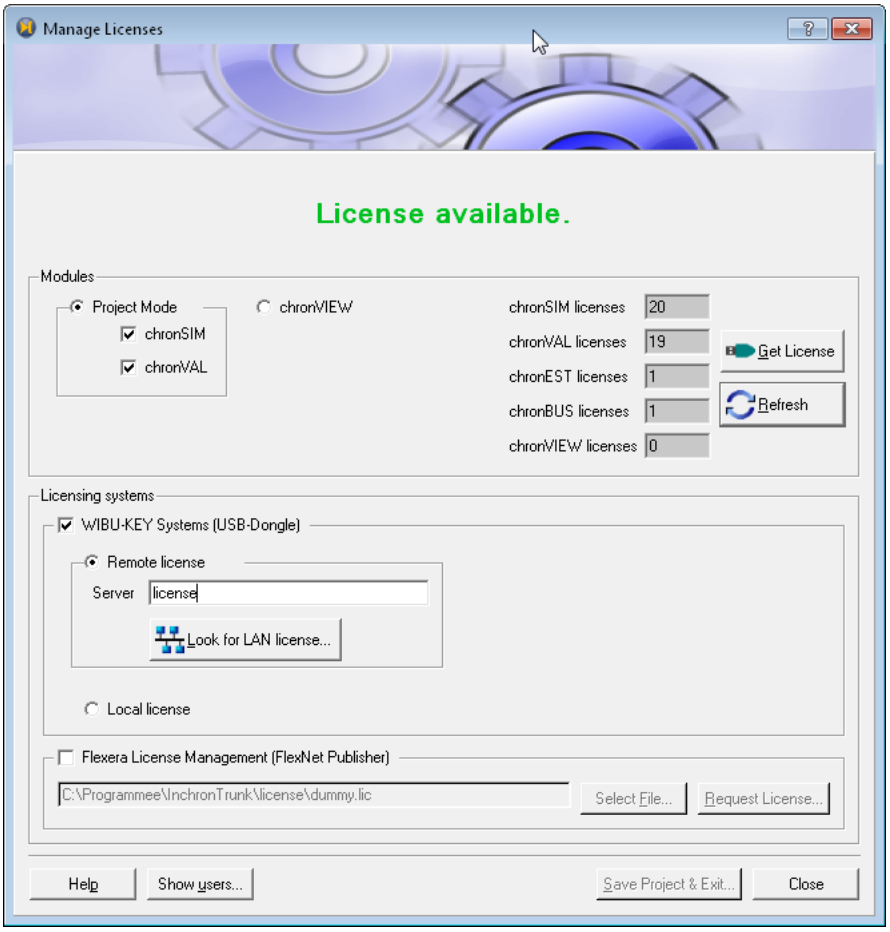


2 Check the *Local License* checkbox if you have plugged the INCHRON USB license dongle directly into your computer's USB port. If you have a INCHRON license server in your local area network or on the Internet, enter the server's hostname or its IP address into the *Server* input field.

3 Click on Get License.

INCHRON Tool-Suite checks if there is a license dongle connected to your PC or if the license server is available. If successful, the status will change to *License available*.

Figure 1.12: *Valid WIBU-KEY License*



In case searching the license was not successful, check if your license server is running and the network is up and/or the license dongle is plugged in correctly. Then repeat steps 2 and 3

INCHRON Tool-Suite periodically checks for the license dongle or its connection to the license server when running. In case the license check fails, the license manager dialog appears and the Tool-Suite is paused. If the license check failure was only due to a temporary glitch, the dialog will automatically disappear and INCHRON Tool-Suite will continue with normal operation.

In a network license environment the license server must be constantly available for proper operation of the INCHRON Tool-Suite. Make sure that legitimate users can access port `22347` (TCP and UDP) on your license server. We strongly advise you to protect your license server from unauthorized access by making use of a firewall.

Please find more information on how to run a network license server in the windows start menu under *Start* > Programs > WIBU-KEY > WIBU-KEY Help .

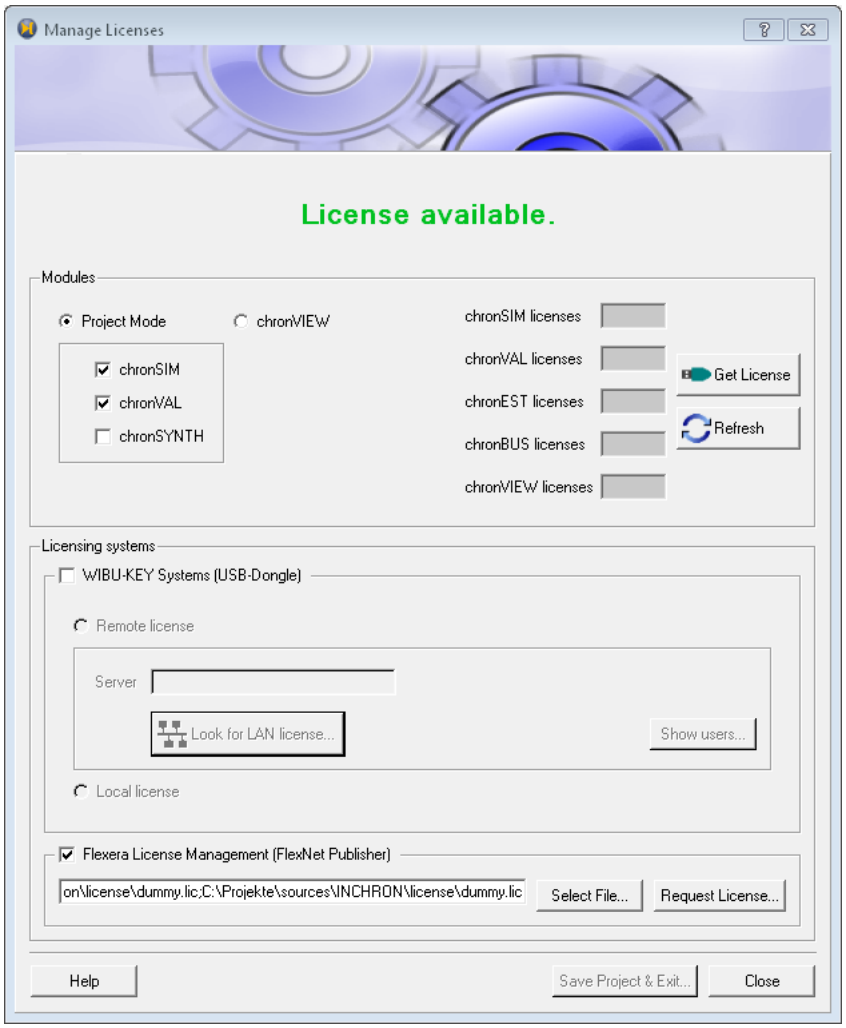
1.2.4 License Management with FLEXlm

Alternatively to using a USB dongle the Flexera FLEXlm® license mechanism may be used. A FLEXlm® license is bound to the host ID of your computer or the network server respectively. The FLEXlm licensing mechanism requires no additional Flexera software to be installed on your computer.

1.2.4.1 Selection of The License Mechanism

In order to switch to the FLEXlm® licensing mechanism select *Settings* > Manage Licenses... from the menu. In the *Manage Licenses* dialog . Check the *Flexera License Manager (FlexNet Publisher)* option.

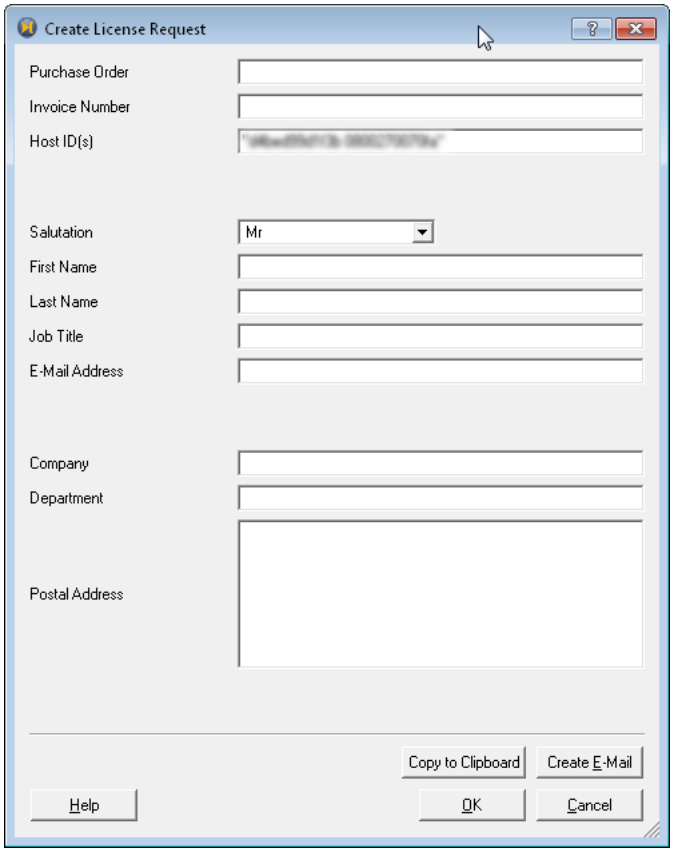
Figure 1.13: *Manage Licenses Dialog with Activated FLEXlm License*



1.2.4.2 Installation of The License File

The FLEXlm® licensing mechanism requires a `LIC` license file in the `license` subdirectory of the INCHRON Tool-Suite installation directory. The license file can be obtained by clicking on *Request License...*. It opens a dialog which already contains your Host ID. You have to add your invoice number and your address. The buttons *Copy to Clipboard* or *Create E-Mail* both create the content of an email which you can send to `<license@inchron.de>`. For this purpose your configured email tool is started, the Tool-Suite does not send any emails on its own.

Figure 1.14: *Request License Dialog*



IMPORTANT:

Please take care that in case of a FLEXlm server you have to use the Host ID of the server, not the one of your desktop computer.

Another way to request a license is as follows:

1 Use the windows start menu to open the command shell.

2 Change to the folder `license` of your INCHRON Tool-Suite installation.

3 Invoke the program lmhostid.exe.

The host ID of your computer will be queried and displayed.

4 Send the Host ID together with the number of your INCHRON Tool-Suite invoice to `<license@inchron.de>`.

5 INCHRON will send you a license file which has to be stored in the `license` folder of your INCHRON Tool-Suite installation.

6 Restart the INCHRON Tool-Suite.

1.2.4.3 Usage of a License Server

The FLEXlm® license mechanism may also be used with a network or floating license. For this you need a license file on your license server, which has to be copied to each client installation.

1 First use the lmhostid.exe application to get the server host ID and request a server license file from INCHRON as described in the previous section.

2 Copy this license file together with the program inchrond.exe to the license server.

3 On each client copy the same license file to the `license` folder of your INCHRON Tool-Suite installation.

4 Restart the INCHRON Tool-Suite.

In order to use a network license the license server must be running and connectable by the client.

1.2.5 Selection of Tool Options

In large installations it is common that a company acquires a different number of licenses for e.g simulation (chronSIM), validation (chronVAL), and trace analysis only (chronVIEW). In such a case it is important that each installation of INCHRON Tool-Suite occupies only the required tool license options.

The selection of required license options can be changed as follows:

1 Select the menu *Settings* > Manage Licenses....

The *Manage Licenses* dialog opens .

2 In the lower part of the dialog is a set of checkboxes for the tools. Select the licenses you want to use.

The license is requested immediately and the result is displayed.

3 Close the dialog.

If you change from or to trace analysis (chronVIEW) you have to restart the INCHRON Tool-Suite for the changes to become effective.

When started chronVIEW comes up with the Simulator Window. There you can import trace files immediately. This function is also contained in chronSIM. Thus for comparison of simulation results with measured traces once in a while you do not need to change the license options every time.

1.2.6 Verifying your Installation

NOTE:

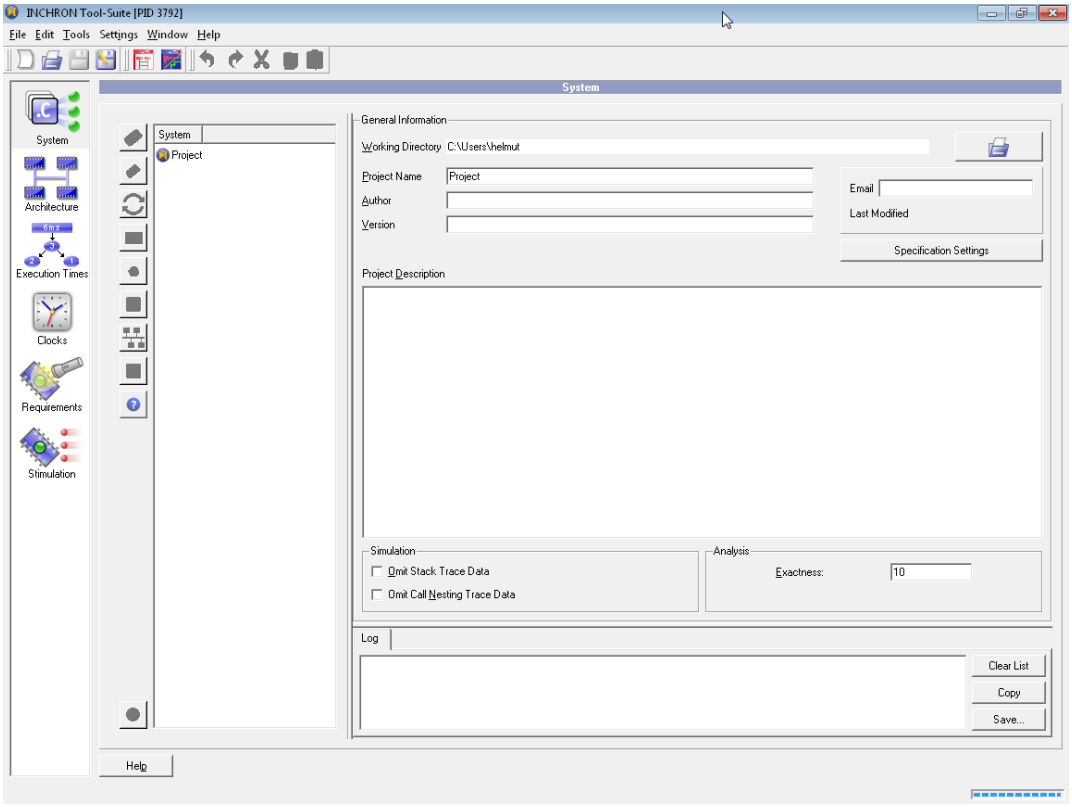
It is recommended to run the system check after each installation or update of the INCHRON Tool-Suite. The system check verifies all program directories and registry entries of the installation.

The installation verification is exemplified with an example project.

1 Start the INCHRON Tool-Suite with *Start* > Programs > INCHRON Tool-Suite > Suite.

INCHRON Tool-Suite splash screen will shown and the Tool-Suite starts in project mode.

Figure 1.15: *INCHRON Tool-Suite Project Window*



2 From the menu choose *File* > Open Example Project... .

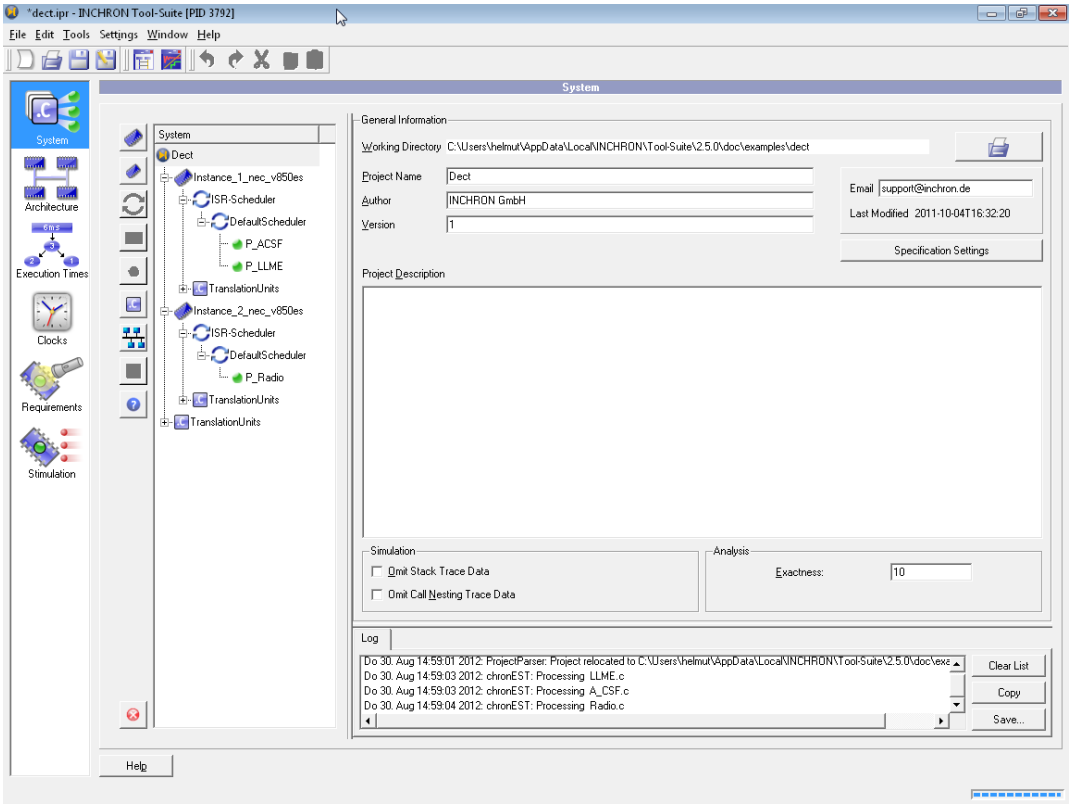
The file open dialog for example projects appears.

3 Open the `dect` subdirectory and select the `dect.ipr` project file.

4 Confirm with Open.

The project will be loaded.

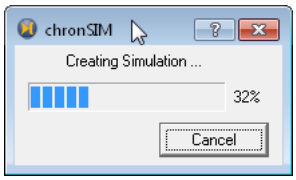
Figure 1.16: *INCHRON Tool-Suite Project Window with Example Project*



5 Select *Tools* > Simulate from the menu.

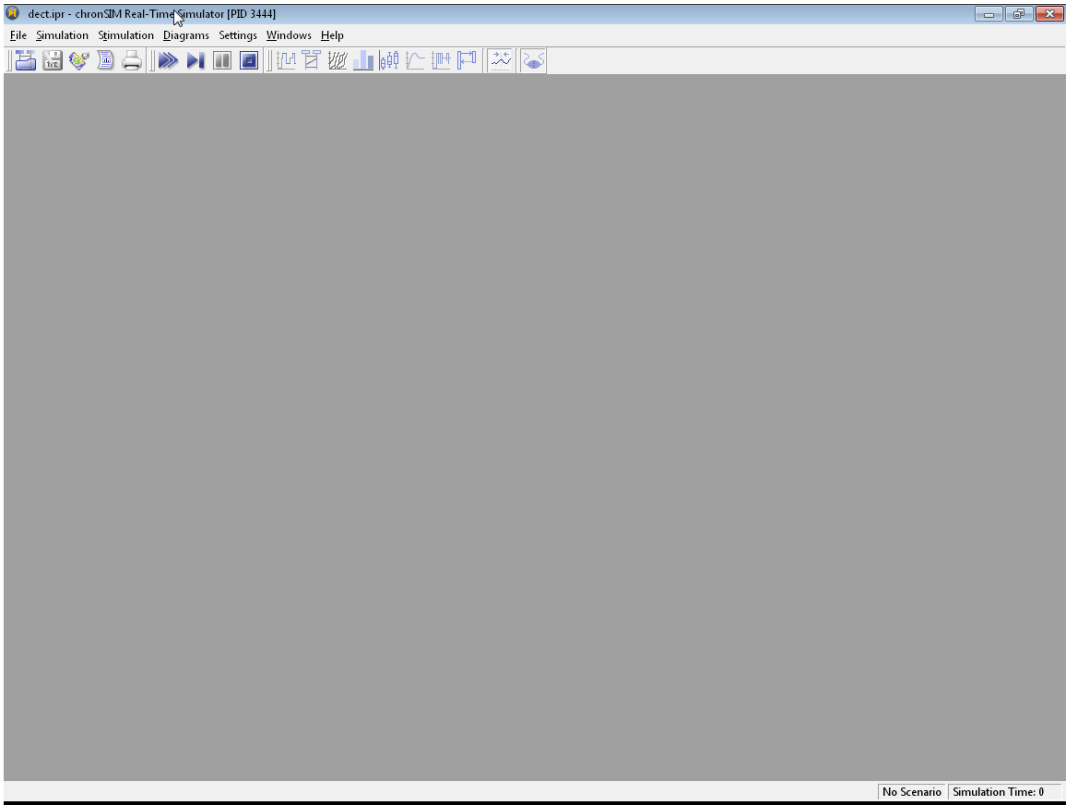
During preparation of the simulation a progress dialog is displayed.

Figure 1.17: *Progress Dialog During Simulation Preparation*



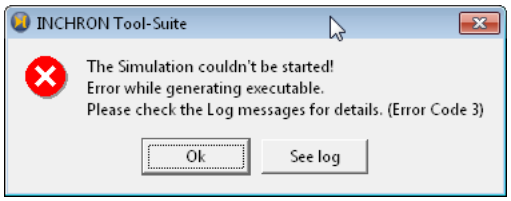
After generation of the executable simulation model the *INCHRON Tool-Suite Real-Time Simulator* window opens.

Figure 1.18: *INCHRON Tool-Suite Real-Time Simulator Window*



6 If the generation of the simulation fails you will be notified with an error pop-up window.

Figure 1.19: *Simulation generation failed*



In this case you should uninstall INCHRON Tool-Suite and repeat the installation procedure. If the re-installation does not succeed contact your contractual partner.

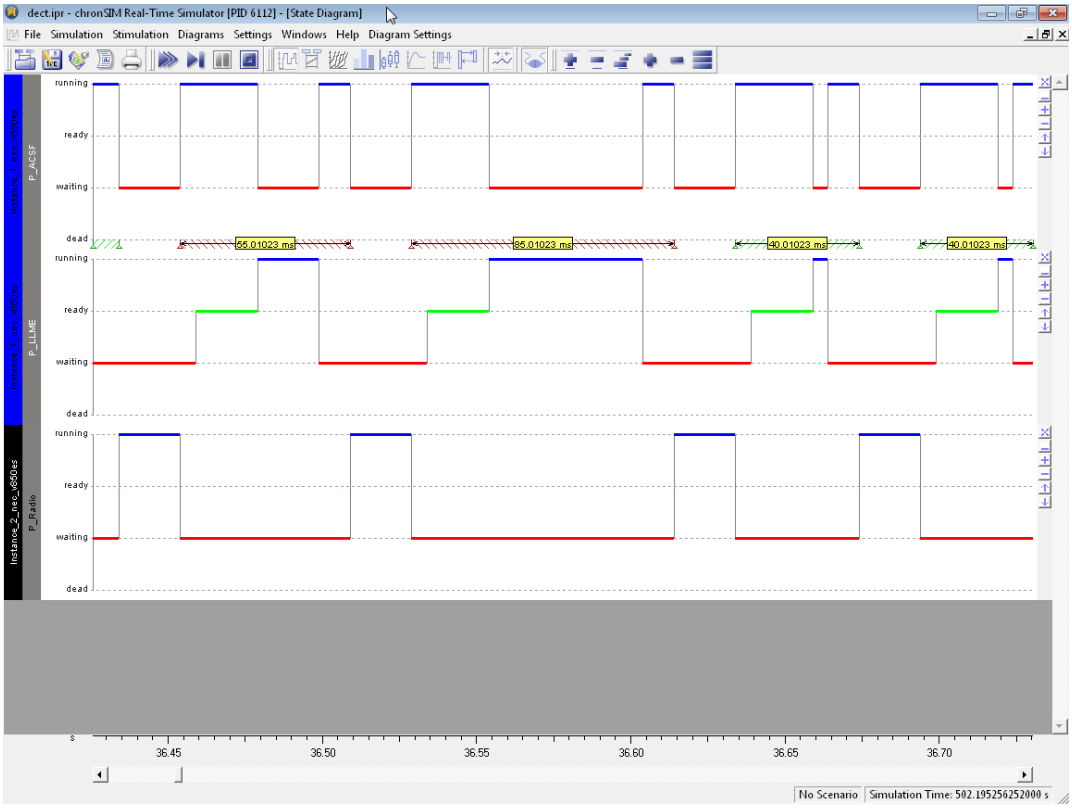
7 Select *Diagrams* > Show State Diagram from the menu.

An (empty) *State Diagram* window opens.

8 Start the simulation with *Simulation* > Run Simulation.

The *State Diagram* window will show a timeline of processor states as . If necessary adjust the vertical of timescale with the + and – buttons in the toolbar.

Figure 1.20: *State Diagram Window During Simulation*



By successfully simulating an example project the installation of the INCHRON Tool-Suite is verified.

9 Terminate the simulation with *Simulation* > Stop Simulation.

10 Close the *INCHRON Tool-Suite Real-Time Simulator* window with *File* > Close Simulation Window .

11 Terminate the INCHRON Tool-Suite with *File* > Exit .

1.3 Configuring the IBM Rational DOORS Integration

The INCHRON Tool-Suite has built-in support to connect to an IBM Rational DOORS server and to import and export requirements from and to the DOORS database.

The connection to the DOORS database as well as the attribute mapping must be configured to match the DOORS server configuration. The procedure, the mechanism for deploying a predefined configuration, and the prerequisites for the integration itself are described in the following sections.

1.3.1 Prerequisites

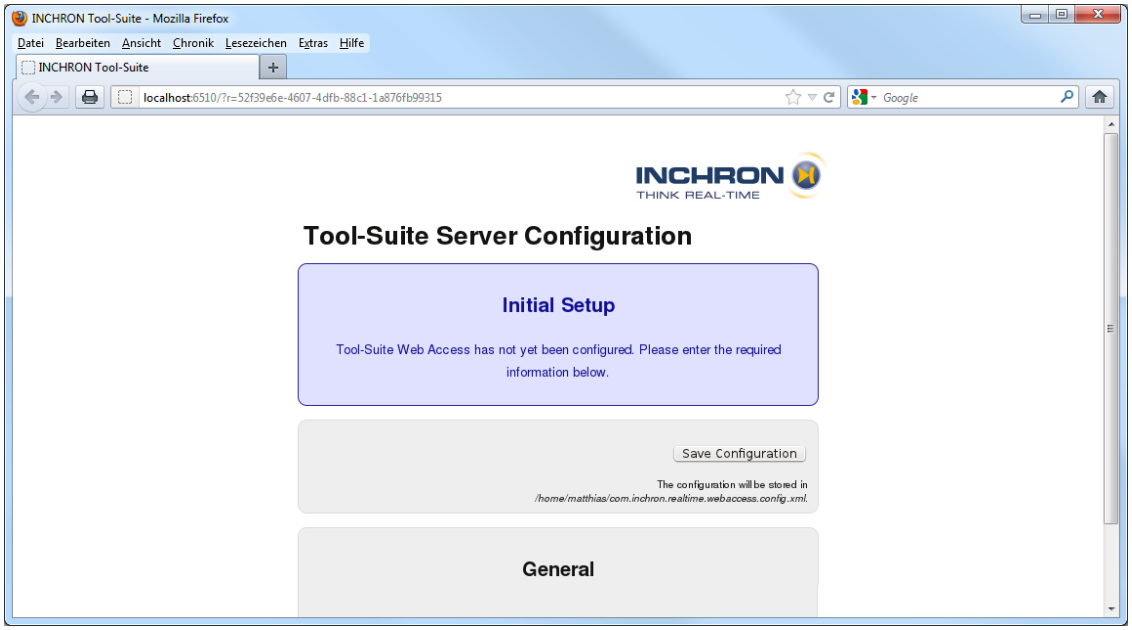
The connection to the DOORS database is based on Open Services for Lifecycle Collaboration (OSLC). It supports Requirements Management (RM), version 1.

IBM Rational DOORS offers this interface via the DOORS Web Access (DWA). The Tool-Suite requires at least DOORS 9.3.0.4 and DOORS Web Access 1.4.0.4. The following sections assume that these DOORS components have been installed. Additionally administrative permissions on the DOORS database are required for configuration.

1.3.2 Configuration

The INCHRON Tool-Suite OSLC integration can be configured using a web browser. Select *Settings* > IBM Rational DOORS Settings... to start the configuration. On an unconfigured system the Initial Configuration Page will also be shown when selecting any other DOORS-related operation.

Figure 1.21: *The Initial Configuration Page*



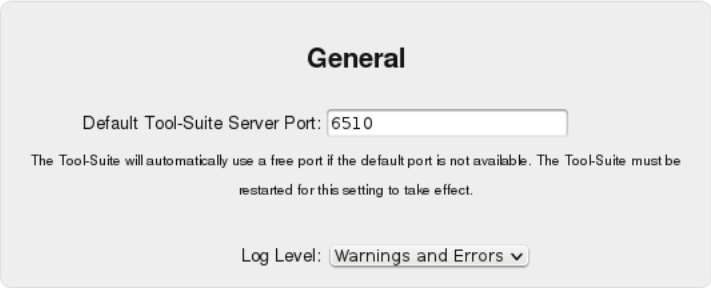
At the top and the bottom of the page a *Save Configuration* button is located. It stores the actual values to an XML encoded file.

Figure 1.22: *The top section of the Configuration Page*

The OSLC based connection to the DOORS database is a two-way communication. Therefore the Tool-Suite also opens a local TCP port and listens for connections. In the *General* section this port can be configured. The port is only reachable from `localhost`.

The *Log Level* can be configured. All messages are shown in the *Log Messages* Window of the Tool-Suite.

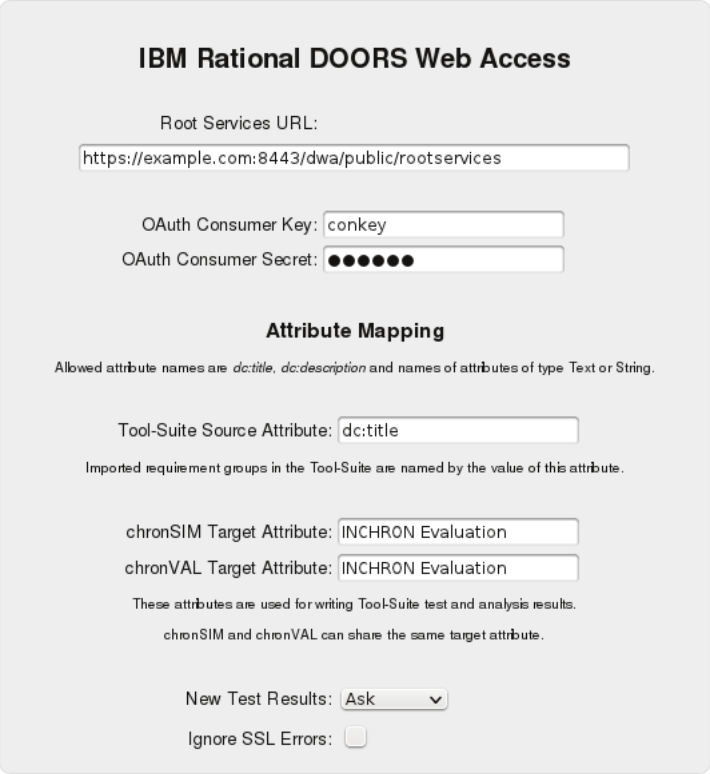
Figure 1.23: *The General section of the Configuration Page*



The connection to the DOORS database has to be configured in the DOORS Web Access section. The options are:

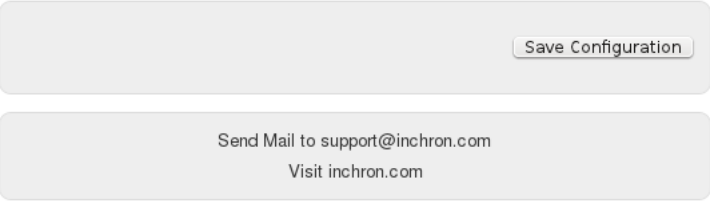
- The Root Services URL identifies the connection point to the DOORS database. Usually it contains the scheme `https://`, a hostname, a port and the path component /dwa/public/rootservices. The hostname can be a fully specified hostname, a local hostname, or an IP address. The port number is defined by the configuration of the DOORS database with the default being 8443. Ask your DOORS administrator for the actual values. Valid examples are:
  - `https://doors.example.com:8443/dwa/public/rootservices`
  - `https://localhost:8443/dwa/public/rootservices`
  - `https://10.10.17.42:8443/dwa/public/rootservices`
- In addition to the user credentials the INCHRON Tool-Suite has to authenticate itself as a registered application for the DOORS database. For this purpose the *OAuth Consumer Key* and the *OAuth Consumer Secret* are used. Enter the same values here which you have registered in the DOORS database.
- The name for an imported requirement is taken from the attribute specified in the *Tool-Suite Source Attribute* field. The default is `dc:title`.
- In the same way the name of the attributes can be specified where the chronSIM and the chronVAL results are written into. These fields have to be added by the DOORS database administrator before they can be used. The same value is allowed for the *chronSIM Target Attribute* and the *chronVAL Target Attribute*. If this is the case the results are either overwritten or prepended according to the strategy selected for *New Test Results*.
- The dropdown-box *New Test Results* defines the strategy which is used when results are exported to DOORS and there is already a result from earlier simulations or analyses. You can change between *Overwrite* (keeps only the last result), *Prepend* (the last result is the first paragraph) or *Ask* (which requires user interaction).
- *Ignore SSL Error*: Continues the import and/or export process even in the case of errors during the SSL handshake. Otherwise the error is shown and the process is canceled.

Figure 1.24: *The DOORS Web Access section of the Configuration Page*



At the bottom of the configuration page the *Save Configuration* button is repeated. Hyperlinks provide access to the INCHRON Support and to the INCHRON web site.

Figure 1.25: *The bottom section of the Configuration Page*



1.3.3 Deploying a Predefined Configuration

The configuration of the connection to the DOORS database can be shared by multiple users by performing the following steps:

1 Install the Tool-Suite and start it as an ordinary user.

2 Edit the IBM Rational DOORS Settings .

3 Save the configuration settings.

A file `com.inchron.realtime.webaccess.config.xml` is created in the directory `%USERPROFILE%`.

4 Copy the file `com.inchron.realtime.webaccess.config.xml` to the installation directory of the INCHRON Tool-Suite. This is one level above `Suite.exe`.

Now every user running this Tool-Suite installation will use the set configuration.

1.4 Uninstall INCHRON Tool-Suite

NOTE:

The Tool-Suite's uninstaller will delete the entire installation directory. You are advised to save and backup all of your project files and simulation results.

To uninstall INCHRON Tool-Suite follow the instructions below:

1 Exit the INCHRON Tool-Suite.

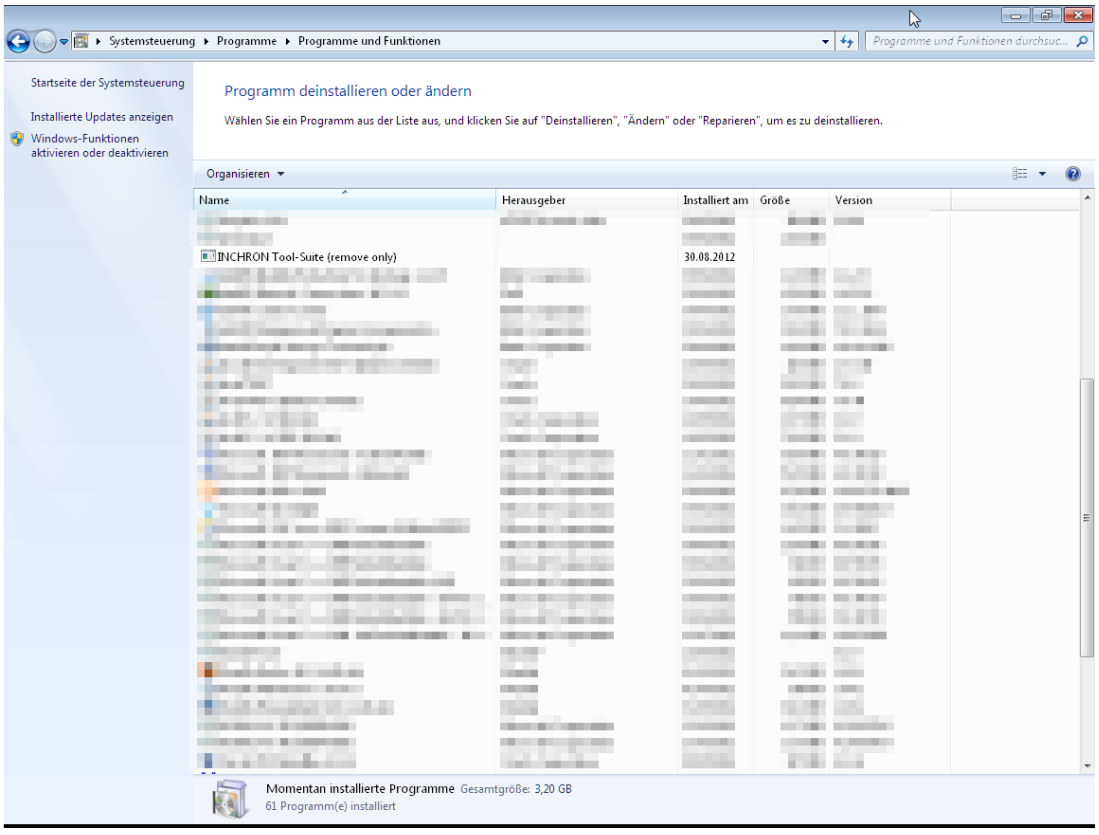
2 Save all your simulation results and project files on an external drive. Make sure to preserve the folder structure.

3 Start the software management panel by clicking *Start* > Settings > Control Panel and select *Software*.

The list of installed programs appears.

4 Select *INCHRON Tool-Suite* from the list.

Figure 1.26: *Windows Deinstallation Window*



5 Click on Change/Remove and follow the instructions on the screen.

NOTE:

3rd party tools like Adobe Reader, GraphViz and WIBU-KEY will *not* be removed during deinstallation of the INCHRON Tool-Suite.

These programs may be removed separately with *Start* > Settings > Control Panel > Software > [name of the program] > Change/Remove .

1.5 Re-install INCHRON Tool-Suite

After deinstallation the INCHRON Tool-Suite may be re-installed with the same procedure as on initial installation.