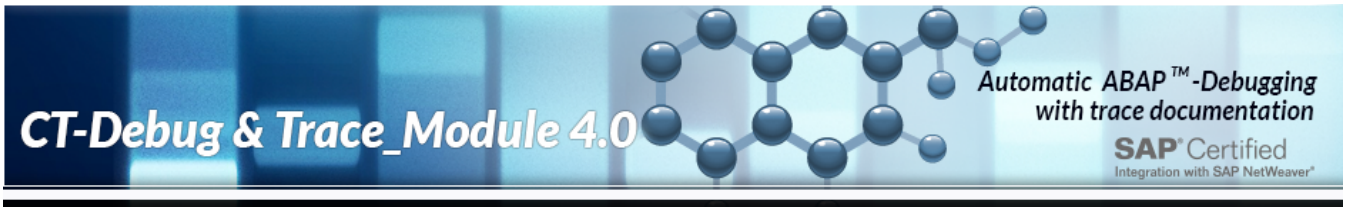


CT-Debug&Trace_Module 4.0

Add-On for SAP® ABAP™ Workbench

Automated testing and debugging
of ABAP™ programs.

SAP® Certified
Integration with SAP NetWeaver®

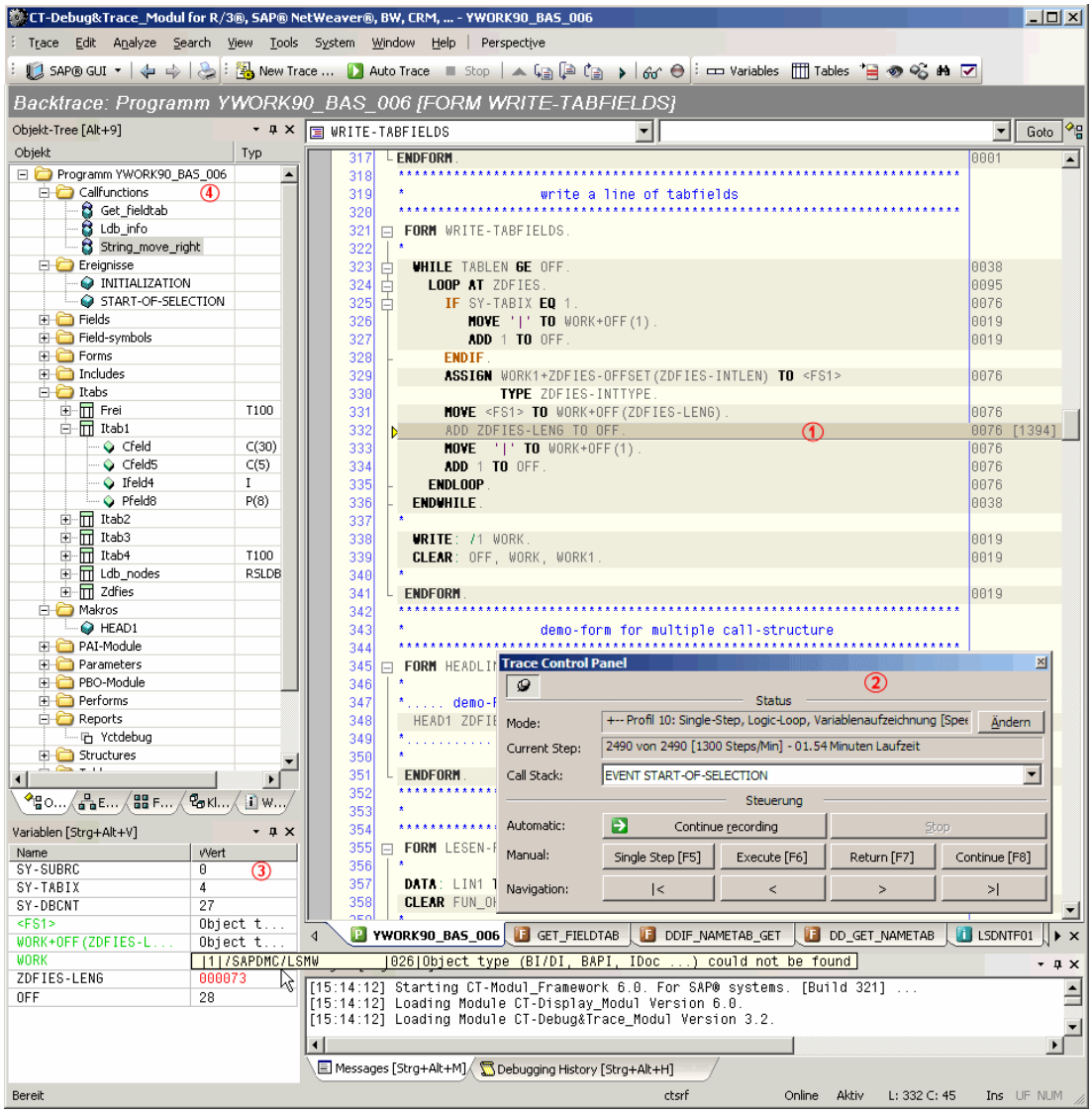
In future, the testing & debugging of the ABAP™ programs will become easier, simpler and more effective ...

Large scale single debugging - that's yesterday

1. Documentation of the processed commands and variables ...

The time consuming traditional way of debugging (F5, F6, F7 etc.) will be done in the future by your PC.

Automatic documentation and trace recording



Screen Info's

1. Each processed coding line is marked.
2. 'Trace Control Panel' gives LIVE information on the actual debugging session recording process .
3. The variables of the current and previous source line are shown here.

④ Fast double-click navigation through the object tree.

You can now concentrate on the **really important coding lines**. So, leave the routine debugging to your PC. It is a lot quicker than you (much quicker, approx. 1000 - 1500 debugging steps/min.).

2. The manual debugging with automatic trace documentation ...

You can stop the **automatic debugging** and carry on with **manual debugging** and change back to the automatic debugging at **all times**. Because every machine or manual step is documented, an analysis of the previous debug steps is possible.

Additionally, all processed source code lines are marked, so you can see which line was executed and which not.

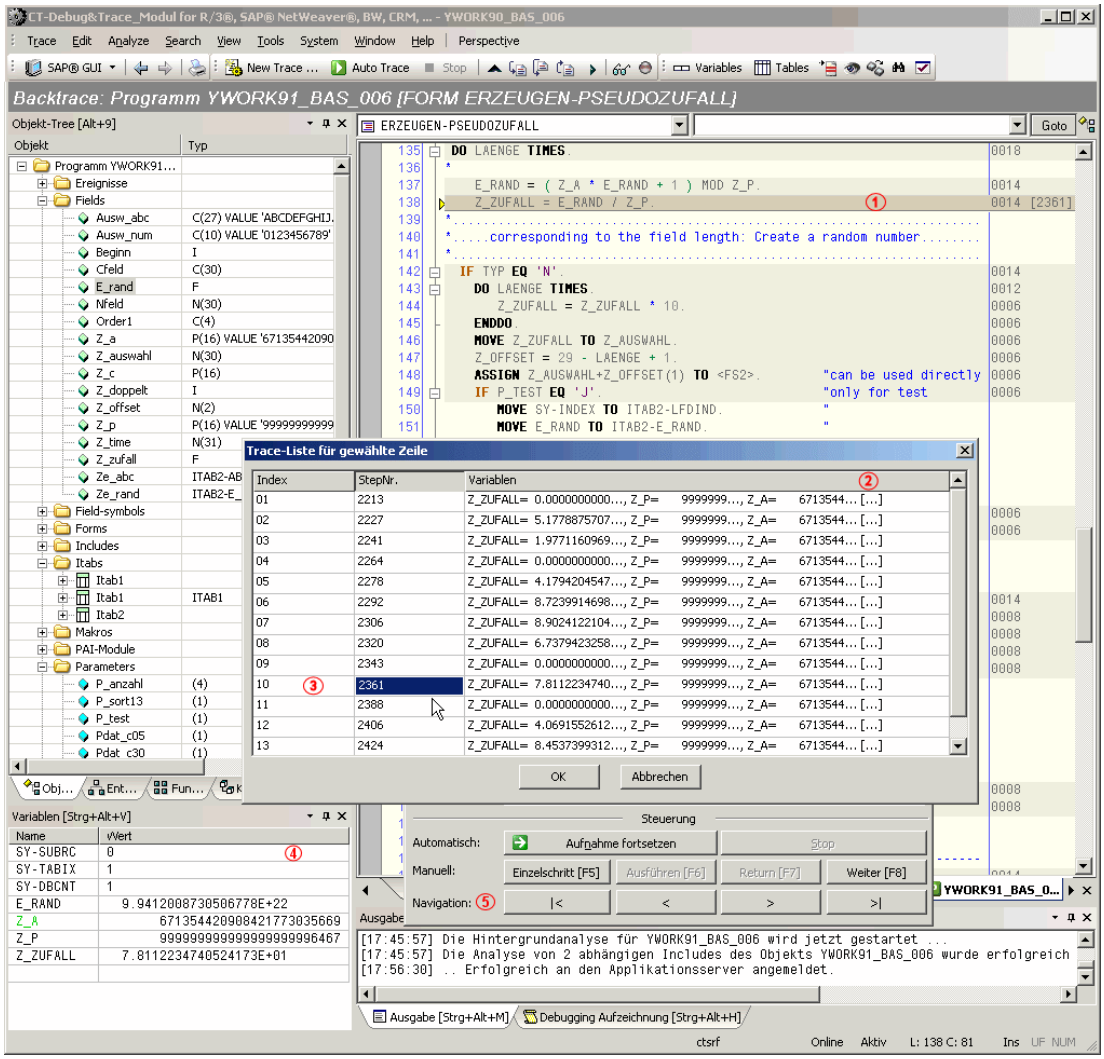
Optionally, the **synchronized** SE38 debugger screen (classic ABAP Debugger) is made available at the current coding place.

3. The Back trace mode - back stepping on the Frontend-PC ...

The CT-Debug & Trace_Module makes an **offline-trace** available on the frontend PC. You are thus able to step forward & backwards through already **processed coding parts** and at the see the corresponding **contents of the processed variables** at that time.

Also **during a still active debugging session**, you are able to e.g. test a relevant coding part again.

Backtrace and variables contents...



Screen Info's

① This ABAP™ source code line was processed 0014 times.

② Double-click on the '0014' will show you all of these 14 executions (step numbers) in a popup window.

③ Double-click on step number '2361' will show the variables at this point of time (see ④).

⑤ Through the navigation buttons '>' or '<' you can step forward/backwards in the recorded trace.

4. The variables are automatically determined and their content is documented ...

The variables of each processed coding lines are automatically determined. Then two snapshot of these variable are carried out: **Before and after** the execution of the coding line. So changes of the variable content are automatically recognized and also part of our trace documentation (max. 24 variables/command).

If you for example want to test if certain subroutines (**FORMs, FUNCTIONs, METHODs** etc.) were correctly executed, just have look at the trace documentation: All **subroutine parameters** (single fields, structures) **before and after** the call were saved.

5. Controlling the debugging session through debug profiles ...

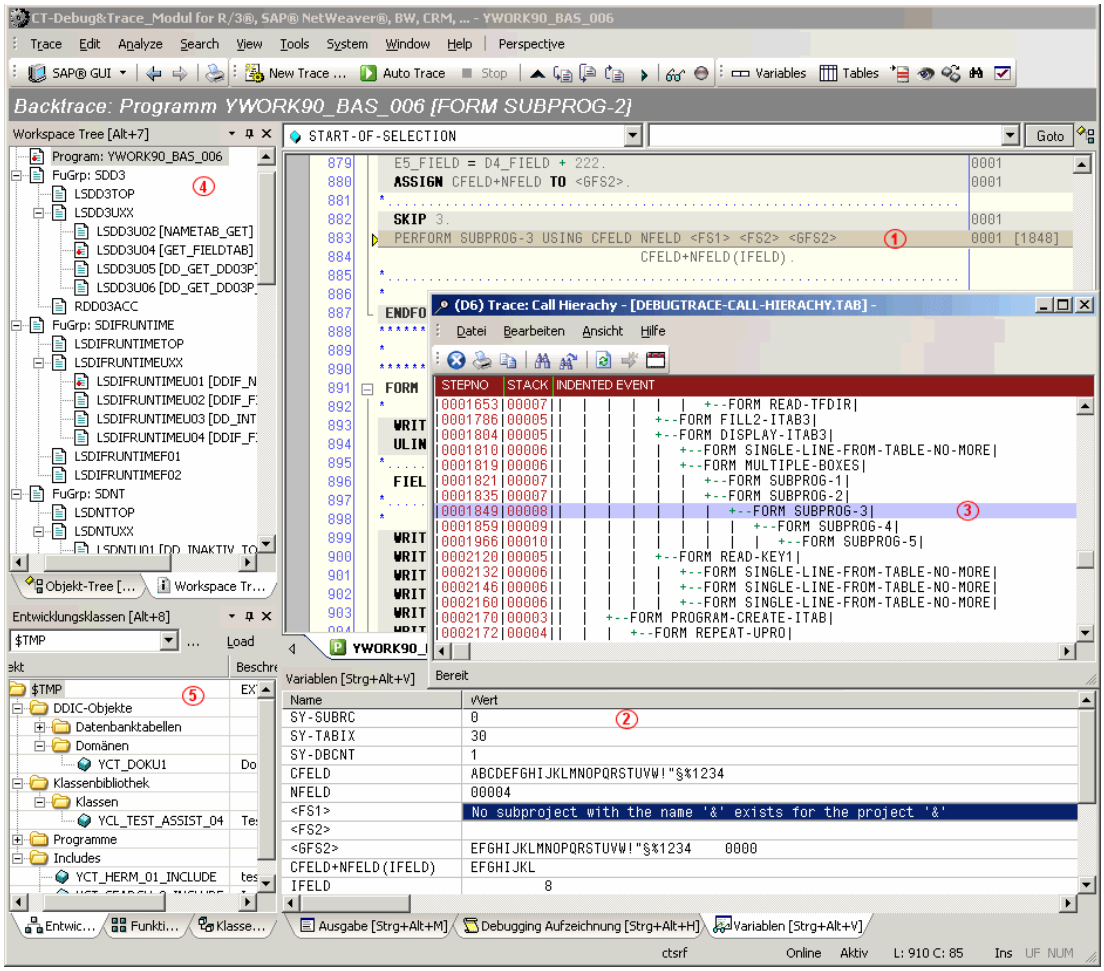
The transcription of your debugging session will be supported considerably through **11 debug profiles**.

You control through a choice of a suitable profile the **details** which are recorded during the debugging session. You can for example let the CT-Debug&Tracer record each executed ABAP™ source lines (single step), or you can e.g. just record all subroutine, function module and method calls (with their parameters).

The program flow of large programs (e.g. transaction) is made transparent and important events and variable contents can be easier identified (compared to the classic .

You can also record only certain ABAP™ source code parts of a transaction (shown in our manual - section **'Tips&Tricks'**). An example would be the processing of only one given transaction screen or a special **user exit**. After reaching the desired source code include, just use one of our debug profiles to process it and document every step (with the contents of the variables).

Debugging of large programs ...



Screen Info's

1. The parameters of e.g. FORM/PERFORM are also recorded (step 1848).
2. The parameter content is represented in the variable window (sizeable).
3. The interactive CALL hierarchy shows the position of the current FORM-Call (Step 1849) within the program flow.
4. The called function modules are shown in the workspace tree.
5. The current development class/package gives additional information.

6. The analysis mode with 20 interactive reports ...

Central component of the trace data analysis is the **integrated report engine** which was designed to handle large amounts of trace data. One important report is the debugging tree, which gives a quick hierarchical overview on the recorded debugging session (processed FORMs, FUNCTIONs, METHODs ...).

With a double click on a tree element, you can jump to more detailed data. In the **analysis mode** more than **20 interactive reports** are offered, and all reports are synchronized with the recorded debug session (cockpit information).

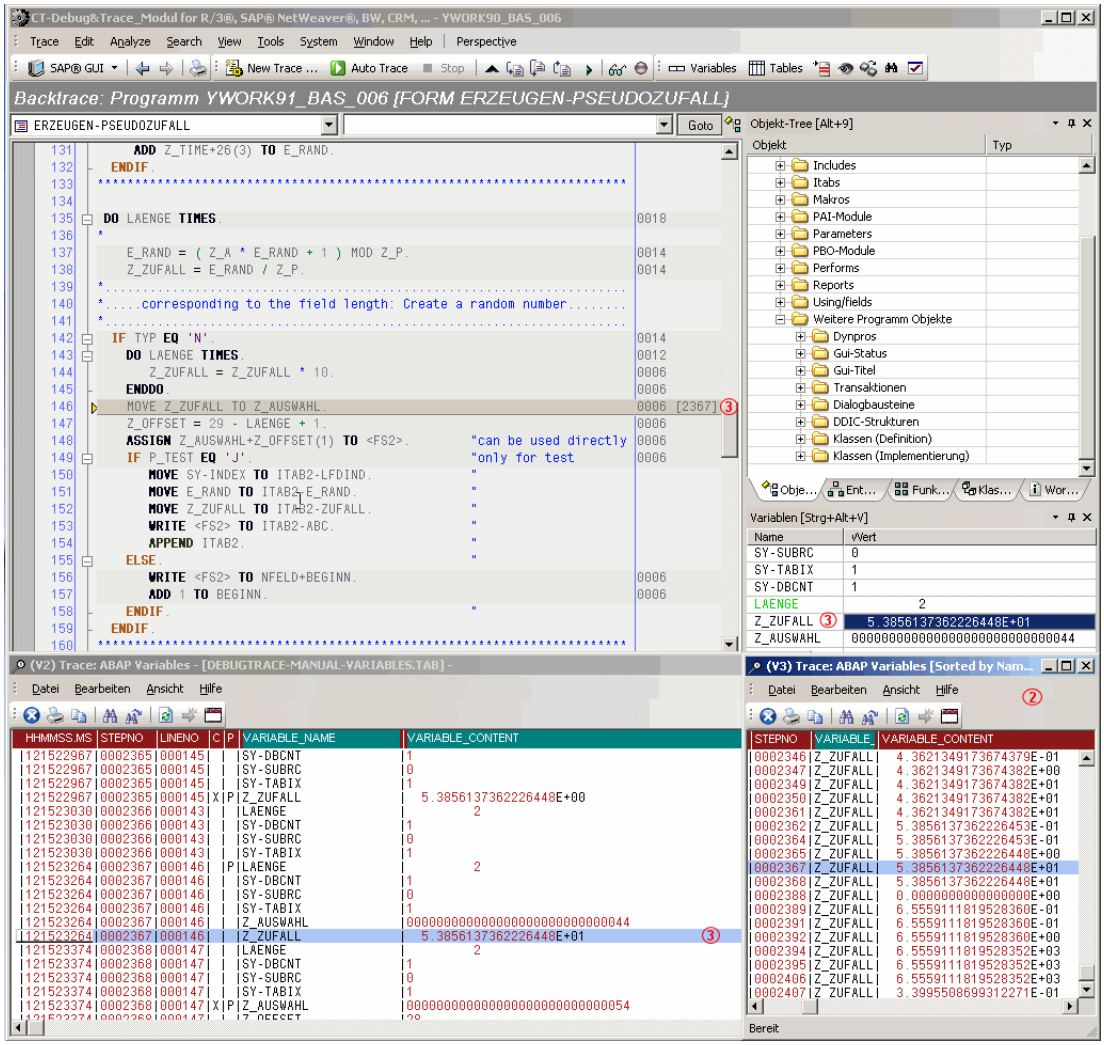
7. Type & coverage of the documentation of a debugging session ....

During an automatic debugging session of approx. **10 minutes**, you can e.g. automatically document more than **10,000 single program steps**, by using our single step trace profile. Additionally, approximately 20,000 variables with their contents (and content changes !!) are recorded in that time. No user activity is necessary here.

At the same **time all processed ABAP™ coding member** from the application server program library (e.g. **100** ABAP includes, when tracing approx. **30,000** coding lines) will be stored in our offline database for later **analysis, control and documentation purposes**. So you will get a consistent documentation of the program flow.

The processed **source code lines are marked in color** and additionally are synchronized with all our interactive trace reports.

Extensive program flow documentation ...

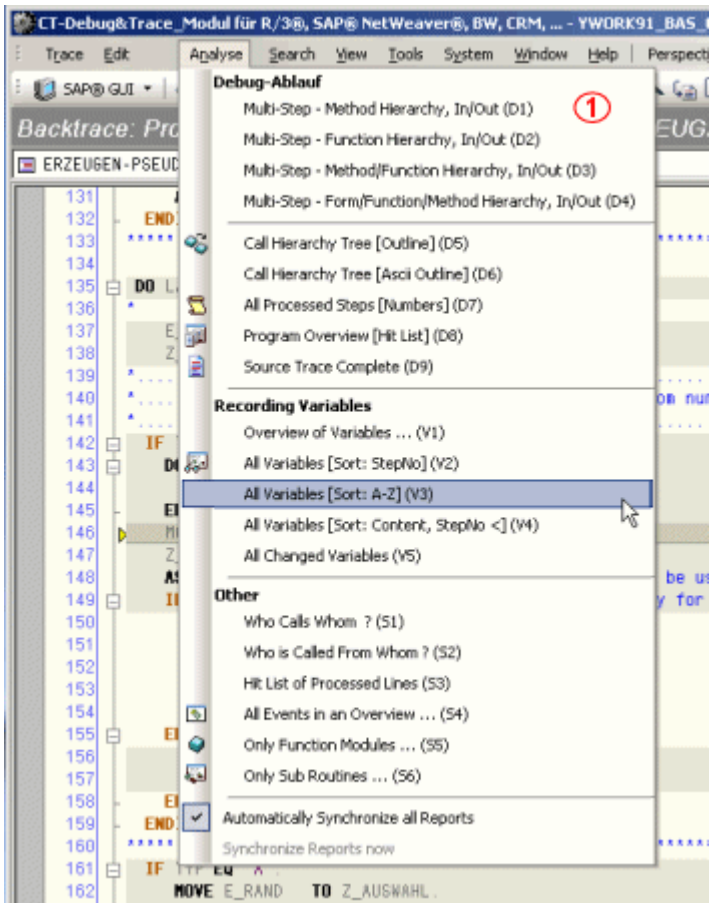


Screen Info's

① 20 interactive reports are available.

② The report 'V3' displays a list of all recorded variables. So you can immediately have a look at the variable 'Z_ZUFALL' at different processing times.

③ If you double click on Step No. '02367' all other reports are automatically synchronized, so each report show the same step number (which corresponds to a time code).



8. The intensive and thorough testing of programs ...

Through the **auto-debugging** feature (with is control through debug profiles), you can process your program and **extensively** test it in a short time. The automatic documentation of each debugging step can later be added to the technical program documentation as a **test protocol**.

It is therefore possible, at a later time , to browse **forward and backwards** in the **offline-mode**. You will an interactive documentation of your program flow **at a specific time**, which can be (re)processed at any time in the future (without any connection to the application server). So if an ABAP™ source is changed or deleted in the future, the trace documentation will stay consistent.

It is therefore possible at a later time, to browse with the essential trace recordings, **forward and backwards** in the **offline-mode** and **at the same time** analysis the variables that were involved. The current contents of the **processed variables** are available over the whole course of the program.

9. Separating documentation from analysis in debugging ...

The possibility to automatically record the complete program flow in a short time, leads to a more efficient course of work with the **testing of programs** and the **solving of bugs**:

- To start with, the debugging session is **documented** (your PC does this for you in the background)
- This followed by an **analysis** which is supported by the **dedicated reporting features**.

Also consideration has to be given, that the complete program flow is automatically part of the documentation, which includes **access to control, master und other data tables and the used test data**.

You can then process the exact recorded program flow at any time with our offline trace feature. In contrast: It is often quite difficult to reproduce the exact program flow manually (e.g. database tables were updated during the last test run).

10. Further Add-On debugging functions ...

- **LIVE** information on the actual debugging session recording process through the **'Trace Control Panel'**,
- Ability to go back to already processed program lines **at any time** (back trace feature), even after a short dump
- **Code folding feature** (outlining) makes it easy to understand large programs (e.g. a large CASE statement can be folded and unfolded directly in the debug session,
- **Trace pool** for the reconstruction of, test data, the program flow, situations were errors occurred,
- **Syntax highlighting** of ABAP™ sources (report, program, function module, classes ...),
- Object browser (programs, classes, function groups, structures ...) can e.g. search for certain variables,
- Work space tree of the **actual processed** source code member, a history of the session,
- **Multi search functions** with regular expressions, the result can be displayed in multiple windows,
- Display of **tool tips** when placing the mouse cursor of certain coding coding part (e.g. declaration data of variables is displayed),
- Modern eclipse like user interface, each gui element can be individually arranged, these window arrangement can be saved and restored as a **perspective** ...

11. Communication with SAP® R/3®, mySAP(tm) ERP, SAP Netweaver(tm) ...

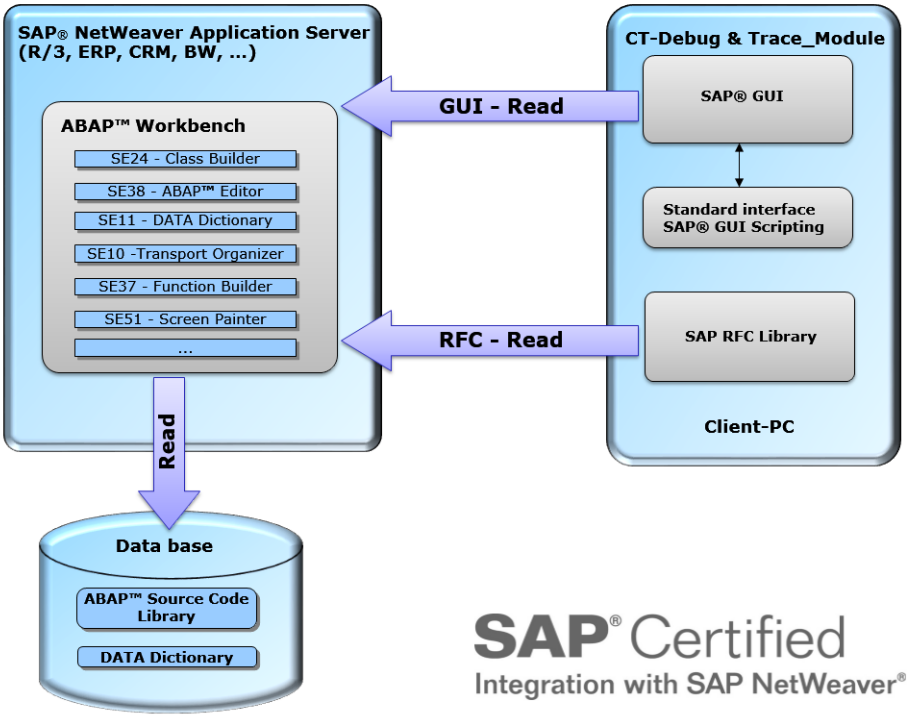
The CT Add-On is suitable for the following SAP® systems: R/3® from release 3.1x up to 4.7 (Enterprise), mySAP™ ERP, mySAP™ CRM, SAP® BW, SAP® APO and SAP Netweaver™ (up to 6.4).

The CT-Debug & Trace_Module uses a modern GUI library, which can be fully customized. More than 20 GUI elements (display windows, trees, control elements ...) can be individually arranged to build your individual environment.

Diagram

Communication between SAP® NetWeaver Application Server and CT-Debug & Trace_Module

The CT-Debug & Trace_Module communicates via ***Read-only*** with the application server:



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