



CT-Assist 7.1

Add-On for the software technology of SAP® AG

- Overview -

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CT-Assist functions - Overview ...

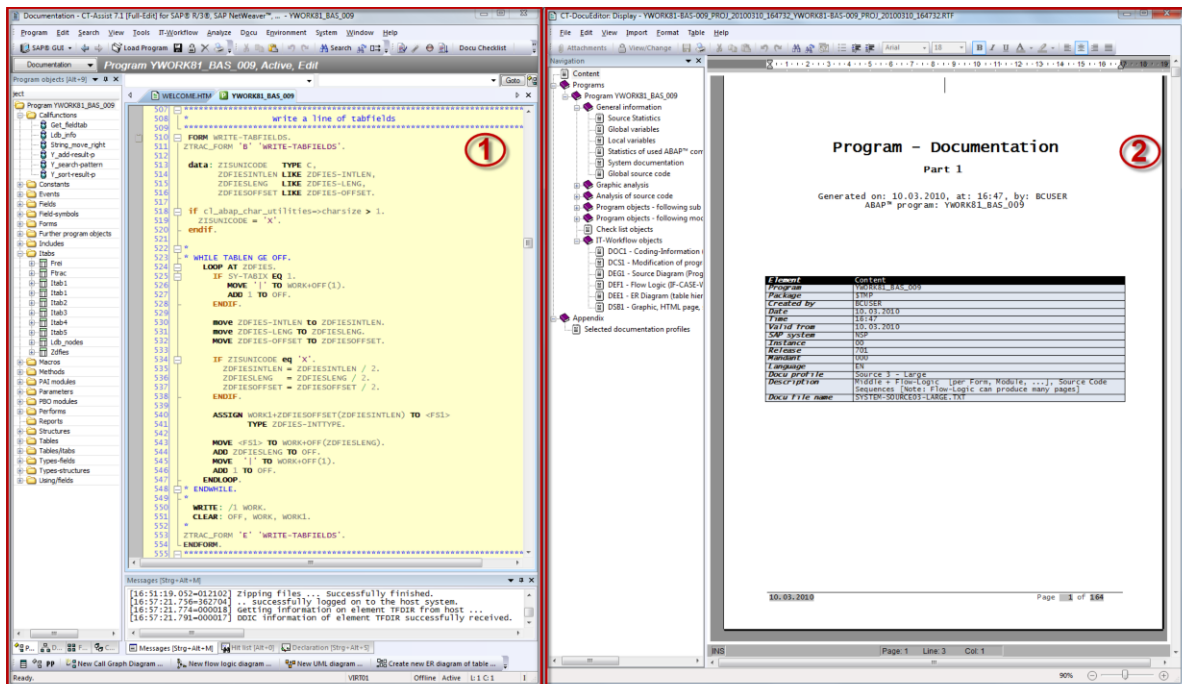
The software technology of SAP® AG is based on the programming language ABAP™. The goal of the CT-Assist is to optimize and reduce costs of standardized IT processes.

More than 850 add on functions (in the area of ABAP™ Documentation, BW/BI documentation and analysis, visualization, quality management, IT organization and IT revision) are available

1. Generation of ABAP™ program documentation and user documentation

The CT-Assist is able to generate program documentation on the base of ABAP™ source code . Templates are used during the generation process, so you can generate different documents for different target groups (e.g. a full detail documentation for the development department, less detail for more diagrams for the function department). It is possible to add external files to the ABAP source code (e.g. screenshots, power point presentations, word files), these attached files are then automatically part of the generated documentation.

Screenshot: Example of a generated documentation



- ① A program has been loaded into the CT-Assist.
- ② The corresponding program documentation was generated.

- **Analysis and display of ABAP source code (both as text and as graphical)**
A central part of the generated ABAP™ documentation is the program analysis and dual display of source code as text and graphic.
- **Multiple documentation formats**
The documentation can be generated in the following formats:
 - > Microsoft® Word - Format / RTF
 - > Zipped-Microsoft Word - Format / RTF
 - > Plain HTML- Format – Intranet
 - > HTML Help Format - Compact Help format with full text search
- **Different ABAP source code objects are supported**
You can add documentation to single ABAP includes, function modules, transactions, programs and ABAP objects methods.
- **Jump from the coding to additional documents via double click**
Single documentation elements (e. g. screenshots, check lists, graph elements, notices, documents) can be attached to ABAP™ source code lines. Via double click you can jump to these documents directly from within the CT-Assist ABAP™ source code display.
- **External documents can be integrated into the program documentation**
External documents and working papers (e.g. program specifications, email, minutes of meetings, maintenance forms, excel tables, word documents, screenshots, ...) are automatically integrated into the generated documentation. The complete documentation with all attached files and the ABAP program source code is zipped together into a single container file which can then be stored on a central file server. Alternatively the files can be compressed into a html help file.
- **Automatic extraction of system/inline documentation (e.g. ABAP™ source code comments)**
The CT-Assist also analyzes the ABAP source code comments. You can add special comments to the ABAP source code, these comments are extracted during the docu generation processes and information is added to the documentation. Besides special comments like ABAPDOC, standard subroutine comments are also parsed. Further the standard SAP docu is also automatically integrated into the documentation. The standard docu means: Program docu, Function Module Docu, Function Module Parameter Docu, Method Docu, Method Parameter Docu, Class Docu. -> This feature is well known in the Java World: JavaDoc.
- **All documentation files of ABAP source code are stored in a single central data container**
The entire documentation components are stored in a single zipped container file and can be easily moved from the development environment to the production environment. As a result the zip file can also be stored at the SAP® knowledge portal (via portal drive) or other document management systems (e.g. via ftp access). If a user adds documentation to the ABAP source code, it is automatically added to the central zip file.
- **Maintain documentation container and search for docu elements**
With the docu administration function you can manage the content of a documentation container and you can search for specific texts.

- **The complete program documentation on a 'time line'**
For each program version you can generate a 'complete' documentation. This special documentation includes the source code and all docu files. It can later be used to compare different program versions (together with its docu).

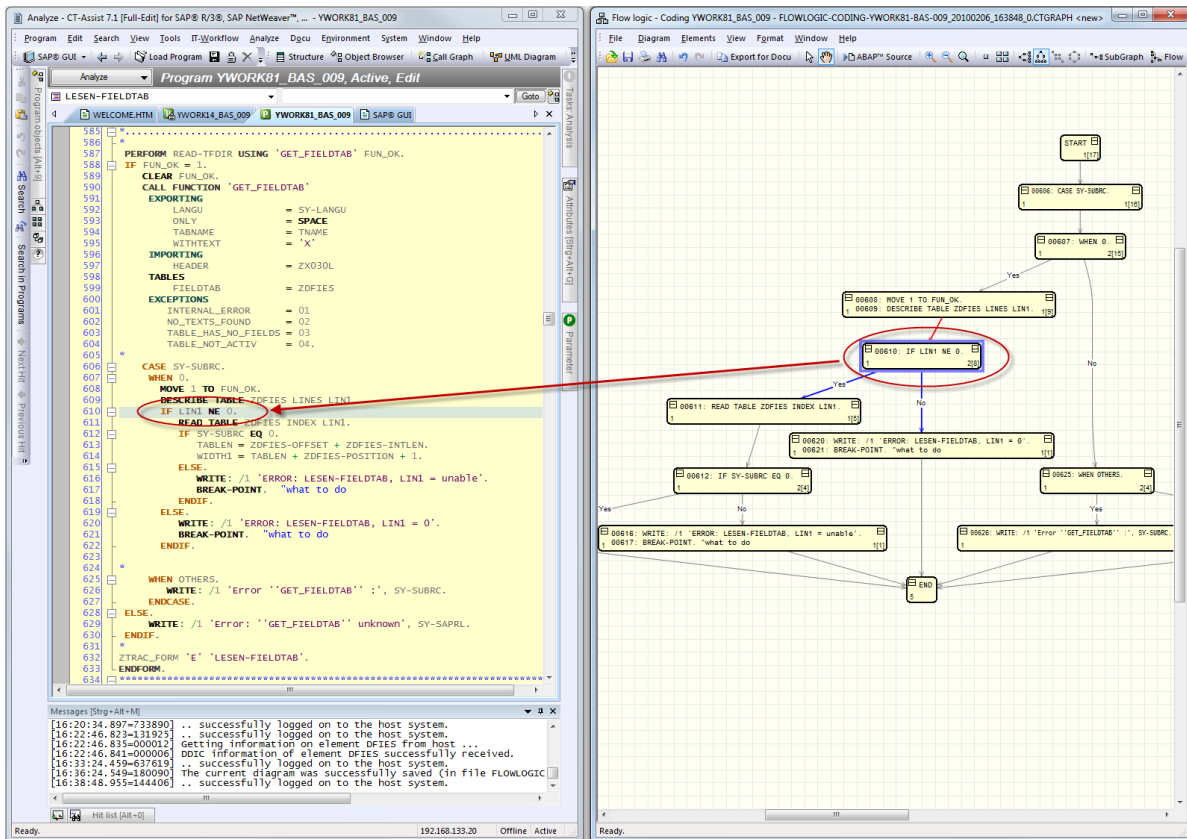
2. Visualization of ABAP™ source code (CALL graph, flow logic, ER diagrams, UML diagrams) ...

Why is the visualization of ABAP™ coding useful ?

During the program development or maintenance the visualization of ABAP source code representation of a meaningful opportunity to gain an overview of complex (program/logic) structures. You can use the generated diagrams to:

- ... get a quick overview of the program logic,
- ... inform your development team during a team meeting
- ... prepare the next program development steps,
- ... locate a special source code routine,
- ... get an idea how to do a program modification
- ... add it to the program documentation,

Screenshot: Analysis of ABAP™ coding with the help of Flow-Logic ...



The CT-GraphAssist analyzes, layouts and visualizes ABAP™ source code

The tool analyses and compresses the ABAP logic to get an overview on the relation of the certain source code parts:

" ... a picture is better than 1000 words ..."

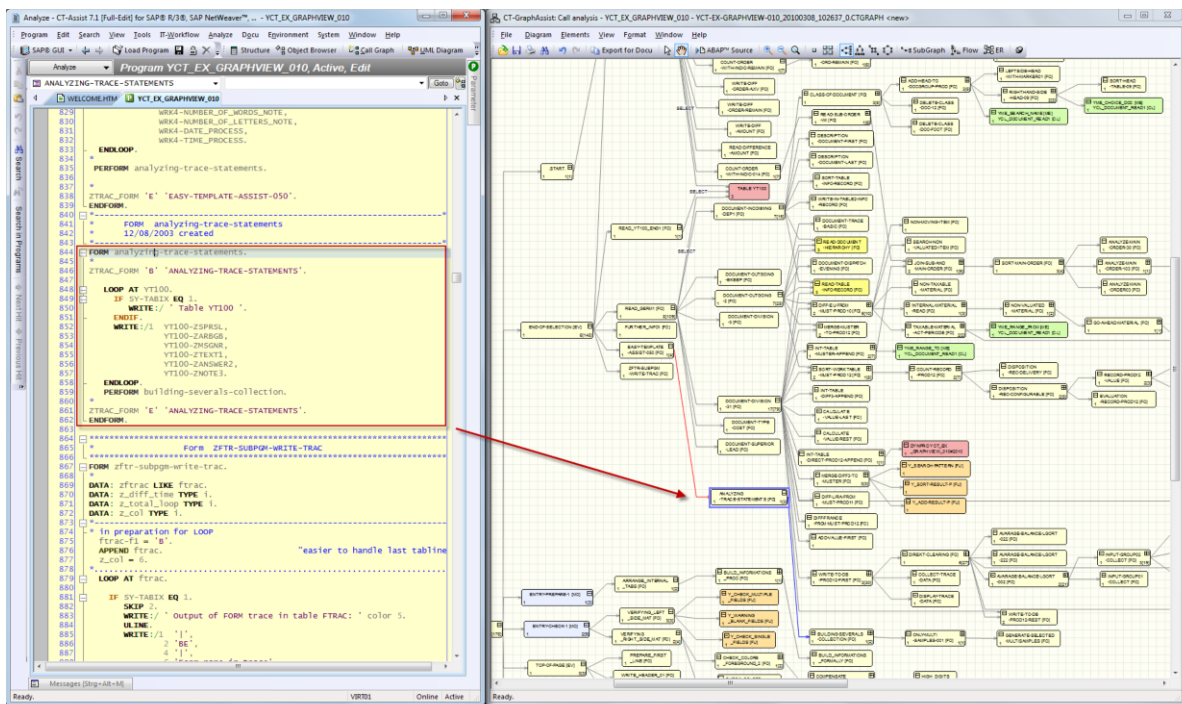
Analysis and display of ABAP™ source code as flow logic ...

The CT-Assist flow logic feature shows the detail program flow by parsing IF, CASE, WHILE, LOOP statements. You can create flow logic diagrams of forms, function modules, OO methods or just by marking source code lines ...

A more detailed look on ABAP™ call graphs

Call graphs can be useful if you analyze the source code during maintenance or development. The CT-Assist parses the complete source code of a program/function group/abap class and shows the relation of each form/function/method to each other. The diagram is automatically routed with the help of award winning algorithms of AT&T. Via double click you can always jump from the source code the graph and back.

Screenshot: Analysis of ABAP™ source code with the help of a call graph ...



3. Analysis of ABAP™ coding ...

One essential requirement for efficient development and maintenance of ABAP™ programs is the analysis and evaluation of customer-specific ABAP™ source code. These include among other things:

- Software metrics ...
- Analysis of code sequences and variables ...
- Analysis of security relevant ABAP™ commands ...
- Analysis to improve performance ...
- User-defined code analysis ...

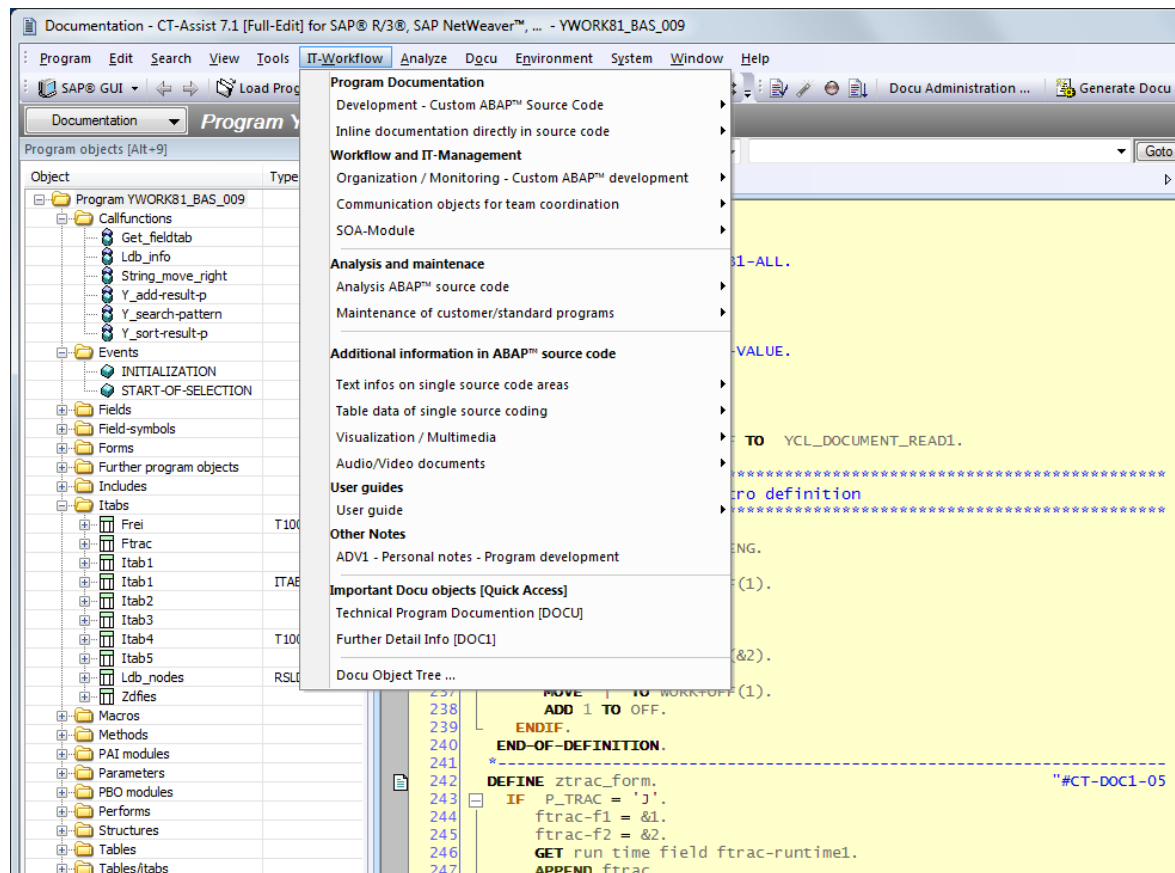
The CT Assist offers different analysis templates, which can be used to search multiple source code objects. Each template has a different analysis focus. Besides single programs, the tool can also analyze complete packages (development classes) and manual given groups of ABAP programs.

4. IT-Workflow controlling and reporting ...

The CT-Assist can help to organize your software development and maintenance process of ABAP related projects. The tools comes for example with many forms and the possibility to add external document to each form. Many other features can be used to organize the IT workflow:

- Workflow forms,
- Documentation checklists,
- Code Analysis,
- Software metrics,
- Graphic code display,
- Docu specifications,
- Automatic docu generation

A screenshot of 'IT-Workflow' functions ...



A screenshot of template 'Modification of program requirements ' (DCS1)...

The screenshot shows a document editor window titled 'CT-DocuEditor: Display - YCTDEMO#\$COMMENT#DCS1-01'. The document content is as follows:

Your Logo | **DCS1 - Modification of program requirements®** | [Help](#)
[IT-Rules](#)
Important changes to the program requirements/concepts

Program name	YCTDBMC	Docu created by:	EXT012,
System name	CTP	am:	04.12.2009, um: 12:49:12
Release	700	Last changed by:	BCUSER,
Client	800	am:	04.02.2010, um: 16:34:45
Host	ctvr15		

Statistics

Lines (LOC):	1826	Source lines (SLOC):	1107	ABAP™-Commands:	963
Com. Lines:	745	Blank lines:	49	Complexity (CYCLO):	96
Variables (gl):	52	Variables (loc):	39		

Sourcecode

```
Doku-Link:
APPEND ftrac.
ADD 1 TO I_MAX_FTRAC.                "#CT-DCS1-01 +03
IF I_MAX_FTRAC.GT P_MAXTRC.
  P_TRAC = 'N'.
ENDIF.
```

Information

Subject: D20080402 - Change request no. 102347 form 04.12.2009

Note:
The subsequent processing steps are regarded as examples.

Coordination of a modification (optimize trace routine)

The main processing steps to realize the change order no. 102347 are documented in the following:

- 1. Short description (Change workflow Department)**
The current workflow can be improved. The size of trace logs should be set individually. An additional selection parameter should be given to enter the maximum number of trace lines before starting the program.
- 2. Orderer:**
ITK-VEMA: orderer and cost unit of Sales-EMA
- 3. Organizational assessment**
IT_ZORG: Proposal to modify program agreed - 07.12.2009, HK
- 4. Cost estimate and budget approval:**
IT_BUDGET: 1,00 Md - Approved by IT officer.
The change effort is considered to be low, the program test can be made without test data generation, a documentation should be done.

Page: 1 Line: 5 Col: 1

5. 'Live Code-Completion' for ABAP™ and ABAP™-Objects, 9 interactive software assistants ...

Continuous live support during ABAP™ program development process with 9 background software assistants that feature more than 120 functions. "Software assistants" is our term for special "ABAP™ code completion" features:

- **Data Assistant**
Long meaningful variable names can be copied into the coding after typing 2 or 3 letters
- **Command Assistant**
Automatic code complementation of ABAP™ commands (adaptive, best guess tool tips).
- **Object Assistant**
Special dynamic support for ABAP™ Objects, virtual class listing, declaration, entities, ..
- **Browser Assistant**
Quick Selection and Assignment of variables and program objects, sort routines. Your helper even in time-consuming situations.
- **Template Assistant**
More than 100 code snippets for the practice, dynamic template generation.
- **Structure Assistant**
Select specific table fields through popup windows directly at the cursor position.
- **Info Assistant**
Context sensitive declaration help via tool tips.
- **Reference Assistant**
Managing the command reference with more than 3,500 entries as a tree for dynamic selection
- **Analyze Assistant**
Advanced code folding, outline functions, LIVE-replace, information pool, ..

Screenshot example : Code completion ...

The red highlighted characters are typed by the user.

```

761 * -----
762 FORM easy-data-assist-010.
763 *
764 DATA: ship_document_first TYPE d.
765 *****
766 MOVE pack_weight_allowed TO get_message_form_yt100.
767 MOVE n_global_answer_from_subprog TO i_integer_rule.
768 *
769 ASSIGN ship_document_first TO <control_var>.
770 *
771 CONCATENATE c_middle_work_area1
772             external_mat_group_iso
773             get_answer_from_database
774             INTO c_great_work_area1.
775 *
776 SEARCH last_pricing_actually FOR '123'.
777 *
778 COMPUTE i_integer_rule = n_temp_indicator_mat_01
779                    + i_get_offer_from_yt100
780                    / ( i_allowed_quality_for_billing
781                      * n_package ).

```

The green highlighted characters are added by the software assistants

```

761 *-----*
762  FORM easy-data-assist-010.
763 *
764 DATA: ship_document_first TYPE d.
765 *****
766 MOVE pack_weight_allowed TO get_message_form_yt100.
767 MOVE n_global_answer_from_subprog TO i_integer_rule.
768 *
769 ASSIGN ship_document_first TO <control_var>.
770 *
771 CONCATENATE c_middle_work_area1
772             external_mat_group_iso
773             get_answer_from_database
774             INTO c_great_work_area1.
775 *
776 SEARCH last_pricing_actually FOR '123'.
777 *
778 COMPUTE i_integer_rule = n_temp_indicator_mat_01
779                    + i_get_offer_from_yt100
780                    / ( i_allowed_quality_for_billing
781                    * n_package ).
782 *
783

```

Green: Added by the assistants.

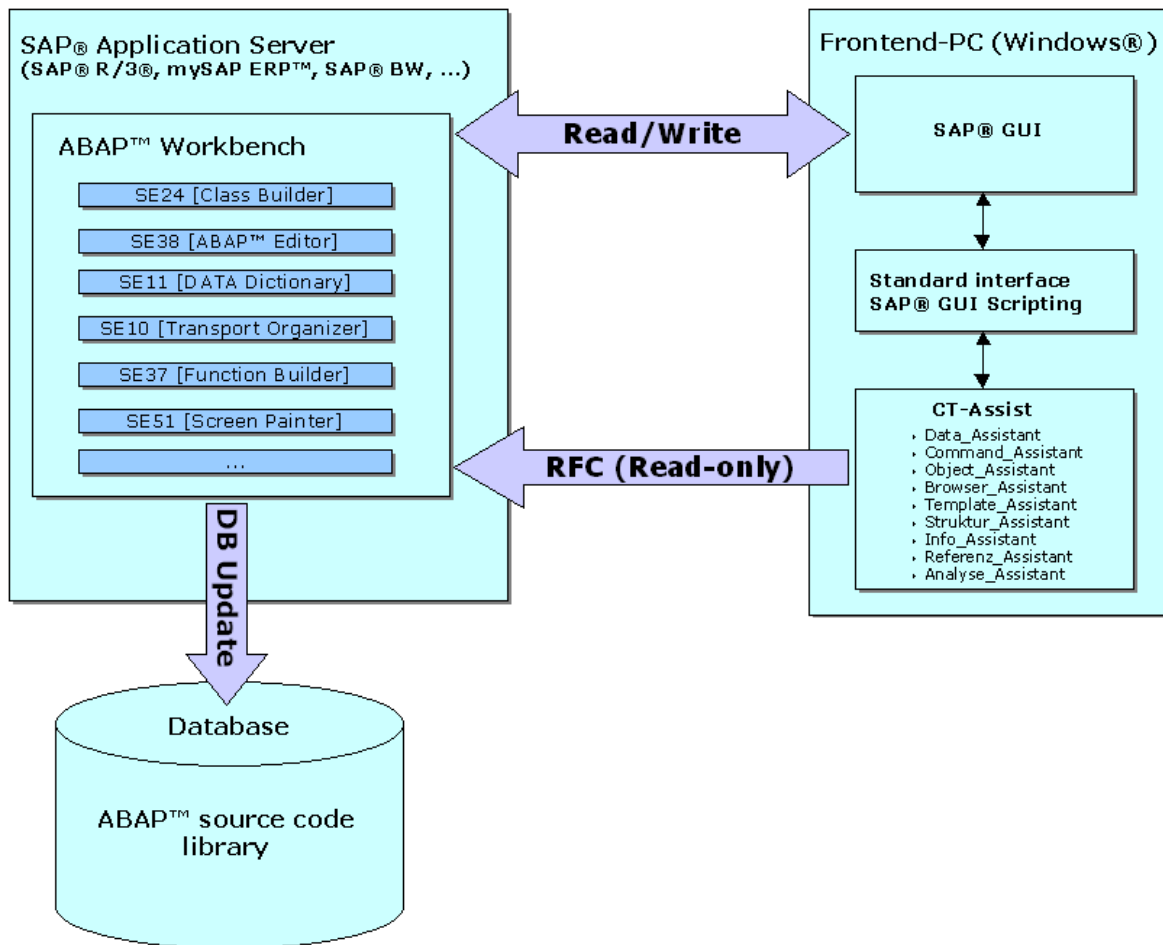
Interfaces to the SAP® Application Server

The communication between the 'CT-Assist' and the application server is exclusively based on certified standard interfaces of the company SAP ® AG, Walldorf.

The CT Add-On is suitable for the following SAP® systems: SAP® R/3® from release 3.1x up to 4.7 (Enterprise), SAP® ERP, mySAP™ CRM, SAP® BW, as well as all further components which are based on SAP Netweaver™ (up to 7.1).

Communication between SAP® Application Server and CT-Assist

The CT-Assist communicates via 'Read-only' RFC calls with the application server. The standard interface SAP® GUI Scripting is used for updates (original proven APAP™ Workbench transactions are used for source code updates, NO direct DB update is carried out).



The use of the CT-Assist is independent of the SAP® release. Even older R/3® releases (like 3.1x) can fully benefit from code completion functions and ABAP™ programming Assistants of the CT-Assist .

The installation process depends on the release and takes about 5 - 10 minutes.

Systemrequirements

Software requirements

- Operating system: Windows® NT 4.0 / 2000 / XP® / Vista® / Windows® 7
- SAP® system, application server: SAP® R/3® 3.x to 4.7 (R/3® Enterprise), mySAP™ ERP, SAP Netweaver® 6.10 to 7.10, SAP® APO, SAP® BW, mySAP™ CRM, as well as all further components which are based on SAP Netweaver®.
- Activated profile parameter 'sapgui/user_scripting' (see mySAP® Marketplace: SAP® Note 480149). A detailed tutorial can be found in our help file (CT-Assist -> Installation guide -> Notes for administrators).
- The correct installation of SAP® GUI Scripting is described in the SAP® GUI Scripting Security Guide (Release 6.20 / 6.40). General security aspects are also mentioned here (e.g. Chapter 7 'Security Q&A'). The guide can be downloaded at: <http://www.service.sap.com/sapgui>.
- SAP® GUI for Windows®: Current release from 6.203 (Nov. 2002) on [more]
- Standard interfaces: 'BC-MID-RFC' (SAP® RFC) and 'BC-FES-SCR' (SAP® GUI Scripting) installed during the SAP® GUI standard installation.
- During the installation an authorization key for the CT-Assist has to be entered.
- The CT-Assist was designed as a 'Single Session Program' and under these conditions successfully tested.

Information about Unicode SAP systems - Restrictions

Unicode SAP® systems will be supported (small-endian as well as big-endian Unicode systems). For these Unicode systems the server components of the CT-Assist (ABAP™ function module and ABAP™ work reports) are available in a compatible ABAP syntax Unicode form.

However some restriction take place when editing source code:

ABAP programs with comments or literal characters which are beyond the Unicode block 01 Basic-Latin and 02 Latin-1 Supplement (e.g. Chinese character) could only be displayed and not edited. The CT-Assist checks this condition when loading a member into the edit mode. All other CT-Assist features do not have this restriction (e.g. generation of documentation or graph analysis).

Hardware requirements

- Processor: Pentium®
- Main memory: Minimum 128 MB
- Graphics card: 65,000 colors or higher
- Monitor: 17 inches, 1024 x 768 or higher
- Disk memory: approx. 35 MB

Accessing ABAP™ sources in development systems

The CT-Assist should only be used to connect to SAP® development systems. No liability can be given regarding data loss or data modification because of improper program use.

Trial version

You get a trial version of the CT-Assist 7.1 on our web site:

<https://www.ct-software.de/englisch/download.htm>

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