

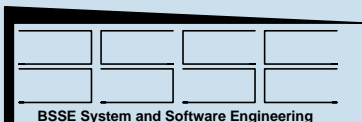
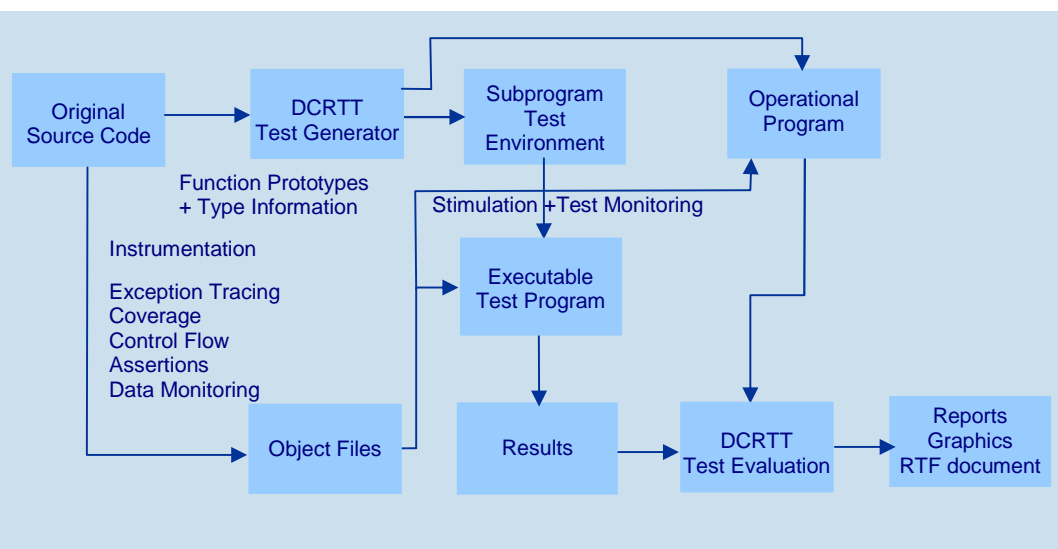
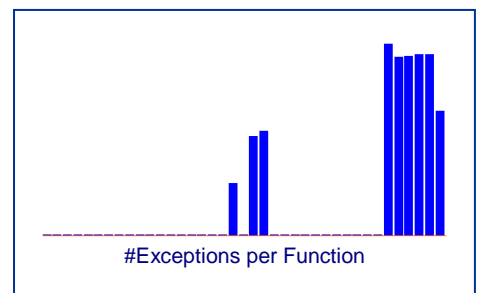
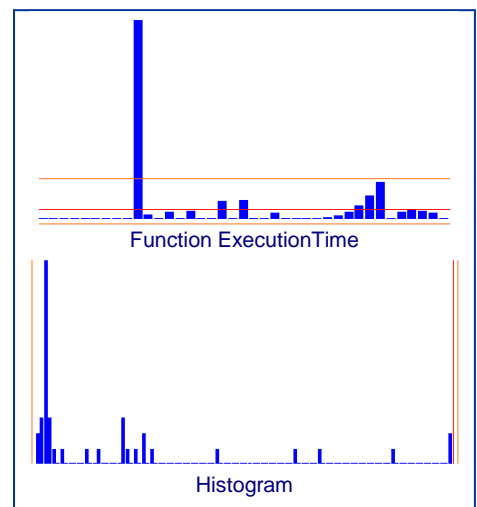
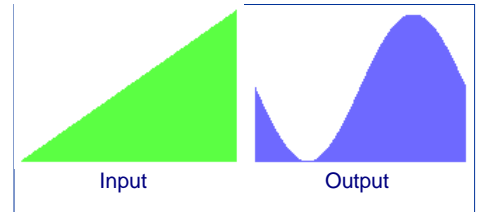
## Major Features

- Automated Function Testing
- Random, Statistical and Incremental Test Steps
- Automated Test Vector Generation (Input and Output)
- Automated Robustness Testing and Fault Injection
- Automated Coverage Analysis (Block and Decision Coverage during Module and Integration Testing, in operation)
- Automated Control Flow Analysis
- Automated Exception Recording
- Determination and Recording of Execution Times
- Instrumentation support for Integration and System Testing
- Automated Documentation
- Code Analysis: Function and Type Properties
- Integration with Canatata++
- Auto-Filtering of Test Cases and Test Driver Generation
- Classification of Test Cases (graphical figures)
- Monitoring of Data Range of Function Parameters and Static Variables
- Automated substitution of missing functions and data with stimulation capabilities
- Full support of any user-defined data type
- Full support for ANSI C

DCRTT automates testing of C functions from test case generation to test evaluation and documentation. The product offers high productivity of testing, coverage analysis, identification of exceptions and execution times. Starting of a script in the source directory is fully sufficient to run the automated tests and to get the results in an automatically generated document.

## Automated Test Procedure

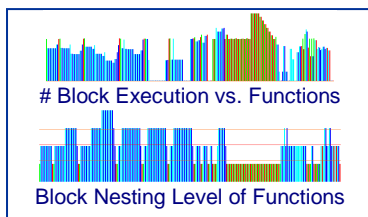
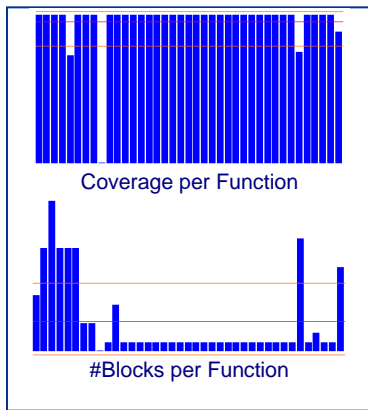
- **User Interaction:**  
provide the source files, wait for completion of tests, analyse the documented results
- **Test Case Generation** for all C and user-defined types incl. fault injection, selection of singular cases
- **Test Vector Recording** in ASCII and spreadsheet input format (e.g. MS-Excel)
- **Execution Time Recording** for each function, optionally
- **Exception Recording:** file, function and line of raising statement, sorting according to user-defined categories
- **Data Monitoring** by automated instrumentation for function parameters, static and stack data, identification of limits.
- **Assertions** on function parameters, static and stack data by automated instrumentation.
- **Coverage Analysis:**  
block coverage (C0), MC/DC coverage (C3)
- **Source Code Analysis and Metrics:**  
Functions, types, source lines, comment and blank lines
- **Automated Test Case Identification**  
Auto-generation of Cantata++ test drivers, test case selection according to coverage criteria (statement, MC/DC, exceptions), singular cases.



## Coverage Analysis

Coverage analysis provides objective measurement of how effective testing has been in executing the source code.

- Code Coverage Metrics**  
 Entry points, Call Returns  
 Statements, Basic Blocks  
 Decisions (branches)  
 Conditions  
 MC/DC (DO-178B)  
 Exceptions



Expression	False	True
A    B	240	60
A	300	0
B	240	60

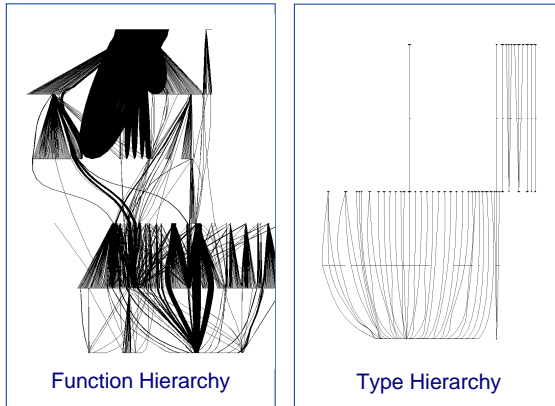
A	B	Res
0	0	0
1	0	1
0	1	1
1	1	1

Truth Tables and Occurrences

## Code Analysis

Static analysis provides information on code quantities, functions and types.

- Procedural Metrics** including code lines, comments, functions, and counts of most code constructs.
- Function and Type Information:** prototypes, caller-callee dependencies, type dependencies



Control Flow and Coverage, Occurrence of Exceptions

Filename:	Spoc	LSS	WBS	CS	prio	
blinker.c	i	S	S	i	i	o
Function:	S	t	k	i	o	m
CrashBlinker	L	D	L	S	H	L

Step	BlockCoverage	DecisionCoverage
Random_M1_Step1	100.00% = 44 of 44	100.00% = 10 of 10
Random_M1_Step2		
Random_M1_Step3		
Random_M1_Step4		
Random_M1_Step10		
Random_M1_Step17		

Classification of Filtered Test Cases

## Integration and System Tests

The capabilities for coverage analysis, data monitoring and exception identification are also available for integration and system level testing.

# DCRTT

## Supported Platforms

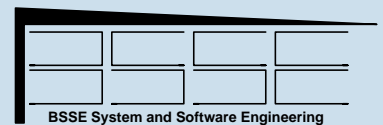
DCRTT is available for ANSI C and MS-VC++ (V6 and V7 .NET) compilers, gcc (3.2.3, 3.4.6), KEIL compiler, VxWorks targets other compilers on request

## Native Development Platforms

Windows 2000, XP  
Linux on request

## Further Information

BSSE's testing tools support the unit / module, integration and system level testing of ANSI C (DCRTT) and Ada (DARTT) high integrity and business critical development projects. Further information and detailed product presentations are available from the BSSE website.



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