Soft4Soft
RESORT Code Analysis

RESORT Static Analysis Tool

❑ Static Analysis Tool

- RESORT for C, C++, C#, Java(JSP), R, Python, JavaScript, Flex, ABAP
- RESORT for iOS (Swift, Objective-C)
- RESORT for Android (Kotlin, Android-Java)
- RESORT for JavaFP

❑ *Plug-in*

- Eclipse, Intellij, Android Studio, Visual Studio, Xcode, etc.
- Jenkins/Hudson

❑ Static Analysis Process

Check Environment
Rule

↓

Code Verification
Defect Code
Security Hole

↓

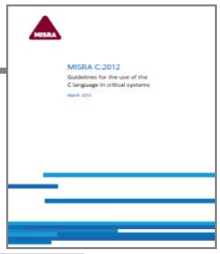
Code Evaluation
Code Violation
Rule Compliance

The RESORT static analysis tool checks and verifies code defects and security holes with the advanced code defect verification technology of inter-procedural path analysis to ensure the program's reliability, safety, security, and code metrics.

❑ Code Analysis Features

- **(No Compile Step)** Works on source code analysis without compile step
- **(No False Positive)** Code verification with an extended static analysis technology of Inter-procedural path analysis(concrete path-based call and return analysis)
- **(Fully Code Assurance)** All detection of reliability, safety, security, and code metrics
  - Supporting the concept "One Guide to One Rule" to prevent duplicate detection
- **(Tool Qualification)** ISO 26262, IEC 61508, EN 50128, CWE Compatibility, etc.

Reliability (Coding Guide)



- MISRA-C, MISRA-C++, JSF++, Java Code Convention, JPL Java & C
- Automotive Embedded C, C++ Coding Guide Compliance
- Coding Guide: JavaScript, Python, R, ABAP, Mobile(iOS, Android)

Safety (Run-time Error)

- CWE-658(for C), CWE-659(for C++), CWE-660(for Java), AUTOSAR C++14
- Automotive Embedded C, C++ Run-time Error Compliance

Security (Security Vulnerability)

- CWE, OWASP, CERT (C, C++, Java)
- Automotive Embedded C, C++, Java Security Compliance

Code Metrics (Complexity)

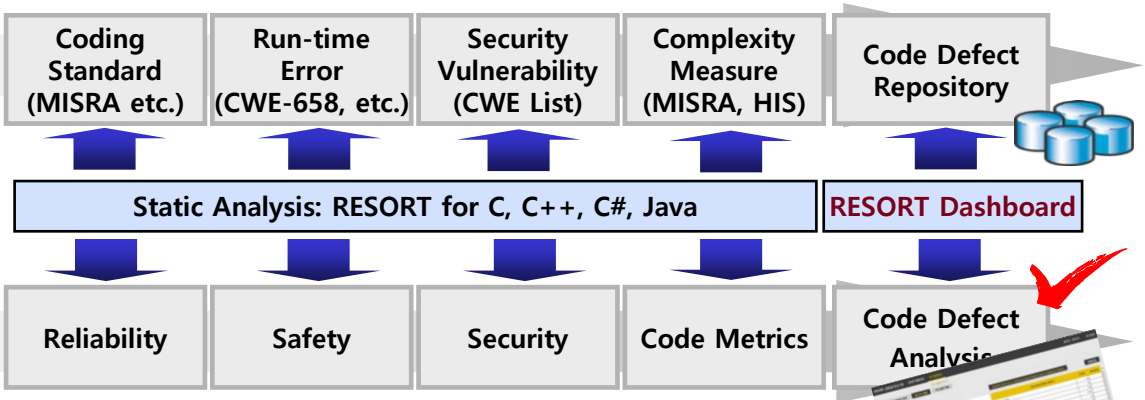
- MISRA Software Metrics, HIS Source Code Metrics
  - Automotive Embedded Code Metrics Compliance

Static Analysis Dashboard

- Defect Analysis: Evaluation Summary, Top 10 Rule Violation, Violation Trend, etc.
- Defect Exception Transaction: Exception Request, Review & Approval, Automated Exclusion of Exception Codes, etc.

Java Function Point

- Java Function Point Counting based on IFPUG
  -Automatic/semi-automatic/manual Function Point based on reverse engineering



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RESORT Dynamic Analysis Tool

RESORT Code Analysis

❑ Dynamic Analysis Tool

- RESORT for C, C++, C#, Java
- White-box Path Testing

❑Supported Compilers

- C/C++ test supports all compiler families based on big-bang technique

❑ Automated White-box Path Testing Process

Test Environment
Target Compiler

↓

Auto Test Design
Path Test Case
Path Instrument

↓

Test Evaluation
Code Coverage
Pass/Fail

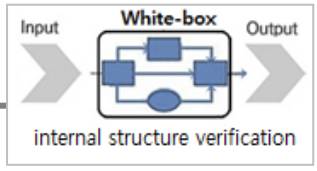
The RESORT automated white-box path testing tool analyzes code coverage of units/integrations/requirements and verifies execution paths by using technology to extract test data of white-box-based feasible paths automatically.

❑ Automated White-box Path Testing Features

- **(Path Test)** Path testing based on the "How" of the program's internal structure
  - Path testing automation based on the big-bang technique
  - Automated generation of feasible paths, which are test cases, for each function
  - Automated extraction of test data(input value) from concrete execution
  - Host or Embedded Target Testing
- **(Path-based Fault Injection Test)** Integrated support for fault Injection test
  - Verification for robustness and correctness of the logical structure of code by injecting fault values for each test case
- **(White-box vs. Black-box)** "How" of the program vs. "What" of the functionality
  -(White-box Code Coverage) Achieving higher levels of code coverage quickly
  -(White-box Code Verification) Verifying program bugs based on MBD
  -(Automated White-box Testing) Reducing effort/time/money with automated testing
  (Development Process Chain) Reduce time/cost of code verification with integrated static/dynamic analysis

Automated Path Test Case Design

- Path Testing Methods: Automated Path Test, Path Instrumentation Test
- Path Test Case Design: Statement/Branch Coverage, MC/DC



Code Coverage Evaluation

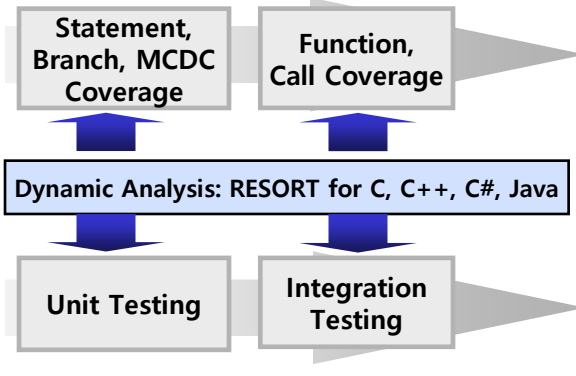
- Unit Coverage: Statement, Branch, MC/DC, Path Coverage
- Integration Coverage: Function, Call Coverage
- Requirement Coverage: Requirement Traceability, Requirement Consistency
- Code Coverage Analysis: Identification of coverage types performed on the code

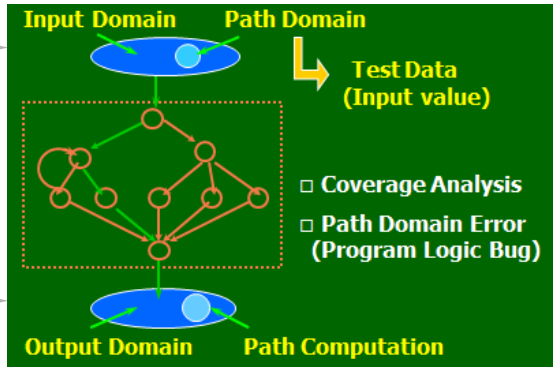
MBD-based Path Verification

- Verification for "program logic" by comparing before and after the path test execution of the tested Statement, Branch, MC/DC
- Path verification of program bug based on MBD of Extended Control Flow Graph

Safety Standard Compliance

- ISO 26262(Automotive), DO-178B/C(aerospace), IEC 61508(electrical and electronic)
- EN 50128(railway), IEC 61513(nuclear), IEC 62304 (medical), etc.





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