Soft4Soft

RESORT Code Analysis

SCM

Quality
Managem
ent

Code
Inspection

Soft4Soft

RESORT for C, C++,
RESORT for Java, JSP, JS, Flex,
RESORT for ABAP
RESORT for QM

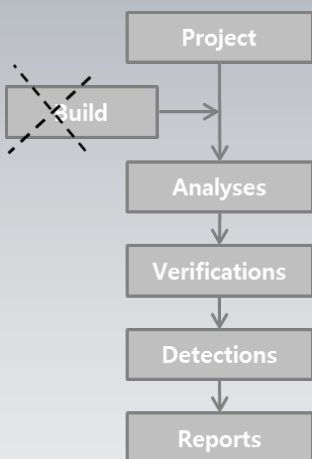*Integrated RESORT Code Analysis*

RESORT Integrity Product Line

RESORT Code Analysis Products

- RESORT for C
- RESORT for C++
- RESORT for Java(JSP)
- RESORT for JavaScript
- RESORT for Flex
- RESORT for ABAP

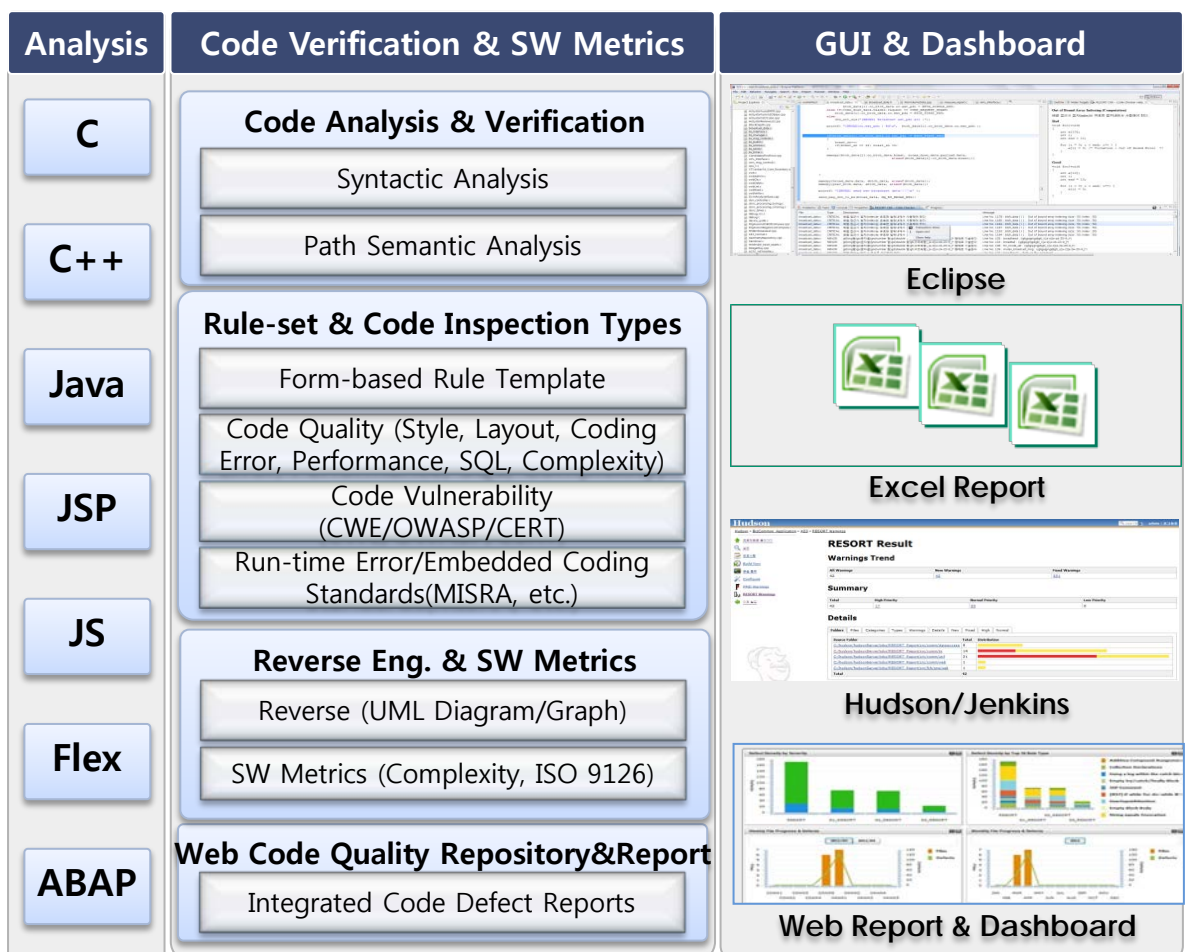## RESORT Quality Management Products

- RESORT for QM

Using RESORT

Project
↓
~~Build~~
↓
Analyses
↓
Verifications
↓
Detections
↓
Reports

Based on the uncompiled code only, RESORT is an static code analysis toolset to support code inspection, reverse engineering including software metrics measurement, and web-based code quality (defects) management solutions.

❑ RESORT Features

- Works on source code only using RESORT Code Analysis Technology (Simple 4 step process analysis without building(compiler) step: Analysis-Verification-Detection-Report)

- Integrated code verification techniques from simple syntactic analysis to complex semantic analysis

- Integrated code defect detection (code quality, code vulnerability, run-time error, embedded coding standards)

- Reverse engineering (Package/Class/Sequence Diagram, File/Call Graph, Control-flow Graph, Variable Reference Graph, etc.)

- SW metrics measurement and evaluation (SW size and structure Metrics, Halstead Metrics, ISO 9126 maintainability, MISRA Metrics)

- Web-based integrated defect analysis reports (Defect density, Defect Trend, Defect comparison, etc.)

- Automated code quality verification process (Interworking with existing SCM tools)

Analysis	Code Verification & SW Metrics	GUI & Dashboard
C	**Code Analysis & Verification** Syntactic Analysis Path Semantic Analysis	**Eclipse**
C++	**Rule-set & Code Inspection Types** Form-based Rule Template Code Quality (Style, Layout, Coding Error, Performance, SQL, Complexity) Code Vulnerability (CWE/OWASP/CERT) Run-time Error/Embedded Coding Standards(MISRA, etc.)	**Excel Report**
Java		
JSP		**Hudson/Jenkins**
JS	**Reverse Eng. & SW Metrics** Reverse (UML Diagram/Graph) SW Metrics (Complexity, ISO 9126)	
Flex		
ABAP	**Web Code Quality Repository&Report** Integrated Code Defect Reports	**Web Report & Dashboard**

RESORT - Code Checker Tool

• RESORT for C

• RESORT for C++

• RESORT for Java(JSP)

• RESORT for JavaScript

• RESORT for Flex

• RESORT for ABAP

❏ **Defects, Errors, and Vulnerabilities**

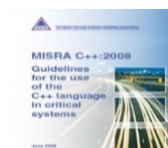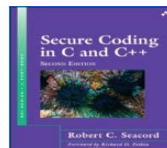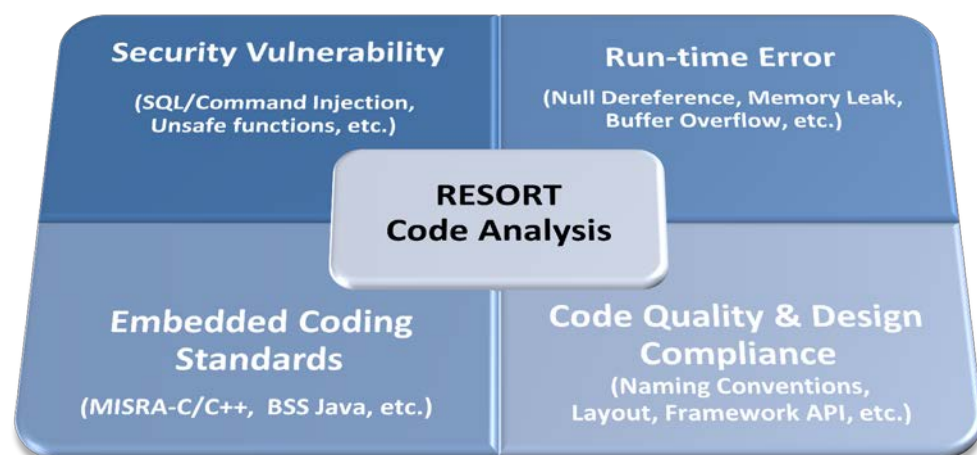| Defects |
|---|
| ↓ |
| Errors |
| ↓ |
| Vulnerabilities |
| ↑ |
| Non-Defects |

Based on RESORT Code Analysis without executing the source code, RESORT's Code Checker identifies all defects of code quality, code vulnerability, run-time error, and embedded coding standards.

❏ RESORT Code Inspection Types

• Coding Style and Coding Error (Naming convention and length, Comment, Layout, Dead Code, Unreachable Code, SQL, etc.)

• Design and Development Compliance (Architecture, Framework, Metadata, etc.)

• Run-time Error (Buffer Overflow, Null Pointer Dereference, Division by Zero, Memory/Resource Leak, Use After Free, Double Free, Free null Point, Uncontrolled Recursion, Data Anomaly, etc.)

• Code Vulnerability (SQL/Command/Resource/Xquery/Xpath/LDAP injection, Cross-site Scripting, Hard-coded Password, Password Comment, etc)

• Secure Coding Standards (CERT, CWE, OWASP, Android, ABAP Backdoor)

• Embedded Coding Standards (MISRA C, MISRA C++, HealthCare C++, Railway Control System C&C++, JPL Java & C Coding Standard, etc.)

• **Total number of rules per each language: 500+**

❏ RESORT Code Analysis Technology

• Intra-procedural Control/Data flow Analysis, Path-sensitive Inter-procedural Data flow Analysis

• Automatic collection of library path for C/C++, reducing source analysis setting time

Security Vulnerability
(SQL/Command Injection, Unsafe functions, etc.)

Run-time Error
(Null Dereference, Memory Leak, Buffer Overflow, etc.)

RESORT Code Analysis

Embedded Coding Standards
(MISRA-C/C++, BSS Java, etc.)

Code Quality & Design Compliance
(Naming Conventions, Layout, Framework API, etc.)

RESORT – SW Quality Tool

□ RESORT SW Quality Products

- RESORT for C
- RESORT for C++
- RESORT for Java(JSP)

□ Visualization
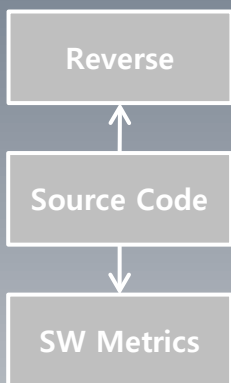
Reverse Engineering Tool supports a comprehensive visualization and OO/procedure metrics solution that analyzes a software system to identify its current modules and dependencies, to extract and create system abstraction and design information.

❑ RESORT Visualization Features

- Hybrid reverse engineering approach combining UML diagram/graph and OO/procedure metrics
- (Java) Automatic UML diagram/graph generation from package to method level: Class(Package) Diagram, Sequence(Collaboration) Diagram, Call Graph, Control Flow Graph, Data Flow Graph
- (C/C++) Automatic UML diagrams/graphs generation from file to function level: File Diagram, Call Graph, Variable Reference Graph, Control Flow Graph, Data Flow Graph
- (Java) Supporting 100+ software metrics such as size, structure and OO metrics: OO Metrics, Package Metrics, Halstead Metrics, Quality Metrics(ISO 9126 maintainability), System Metrics
- (C/C++) Supporting 100+ software metrics such as size and structure metrics: Procedure Metrics, Halstead Metrics, Quality Metrics(ISO 9126 maintainability)

Sequence Diagram
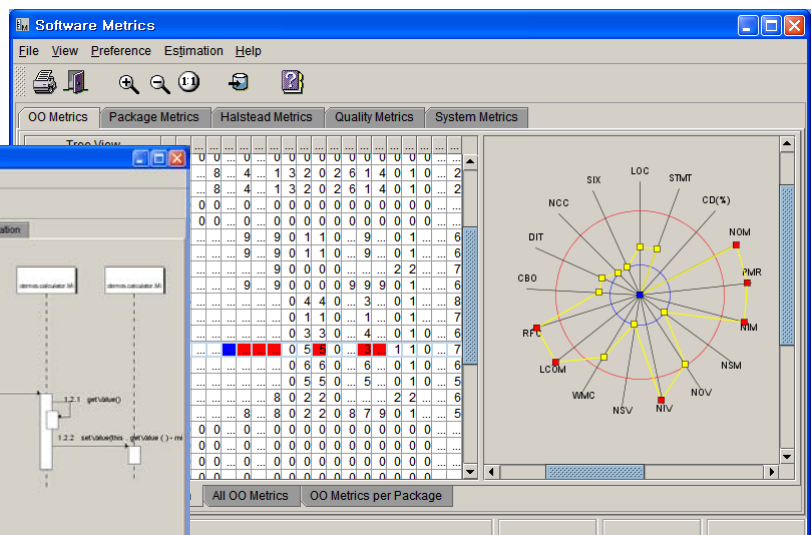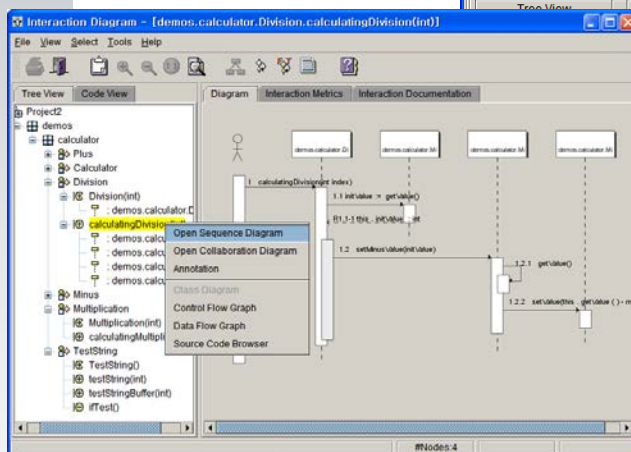
Software Metrics – Kiviat Graph

RESORT – Web Quality Management Tool

Quality Management Tool synthetically manages and controls the results of software metrics measurement and code defect detection per project. The tool provides quality analysis services for quality assurance or control by monitoring defect assessments and trend comparisons.

❑ RESORT Dashboard Types

• Code Quality Management: defect density analysis (per week/month)

• Code Quality Evaluation: compliance ration(%) per defect severity

• Detailed review per file: defect severity and code bug

• Reports per #Defect/KLOC/File

Defect Density (Summary)

Measurement by Defect Severity

❑ Platform and System Requirements

• Platform: Windows, Linux, UNIX, Solaris, AIX, Mac OS, etc.
• SW: SUN JDK 1.5.x or higher
• Memory: 4GB higher

❑ License and IDEs

• Floating License(Concurrent-user): PC Desktop/IDE Plug-in
• Server License(Node-locked): Server Machine/CLI
• IDE Plug-in: (Floating) Eclipse, UltraEdit, IBM RSA, MS Visual Studio, Oracle JDeveloper, (Server) Hudson/Jenkins

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