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**LDRA Ltd**  
**C/C++ LDRA Tool Suite RELEASE NOTES**

For Platform specific configuration, please refer to the Installation Guide.

**New Features for 9.8.2**

**TBrun Section**

**NEW**

C++. Improved calling of test cases for partially specialised static member functions.

**NEW**

Dictionary. Improved detection and applying of values to dereferences of pointers, particularly when the pointer is an element of a structure.

**NEW**

TBextreme. Improved removal of duplicated values as inputs. Especially when the values are lexically different but are equivalent in value.

**NEW**

C++. Class Hierarchy Reports and User Defined Types Reports indicate if a class is specialised or partially

specialised.

**NEW**

Improved resolution of functions that mismatch the use of the keywords typename and class on their template

arguments between their prototypes and bodies. (LM ref. 7699)

**NEW**

Improved instantiation of base classes in stubs when the constructor is from a nested class and it

instantiates a templated base class. (LM ref. 8084)

**NEW**

C++11. Functions that are deleted or defaulted are checked when creating managed stubs for the sequence.

The functions are marked as Defaulted or Deleted in the calls view. (LM ref. 8034)

#### **NEW**

When instantiating a base class in a stub, if the base class is templated but the template instantiations match

the type of the parameters in the derived class, then the parameters from the derived class will be passed to the

base in the constructor initialisations.

#### **NEW**

Improved initialisation of pointers especially when the pointer part is realised through a typedef

and the variable of the typedef type is const.

#### **CHG**

Parameter and Member items now have input, output or input/output icons

#### **FIX**

Processing of declarations formed of keywords such as auto. (LM ref. 8336)

#### **FIX**

Initialisation of the code section in the Override Return Variable Declaration dialog for a test case. (LM ref. 8363)

#### **FIX**

Create New User Defined Include File - browse for file, filter "Include Files (\*.h \*.hpp \*.hxx)" displays files

with a matching file extension. (LM ref. 8300)

#### **FIX**

The command line arguments -guimin and -guimax start the application minimised or maximised respectively.

(LM ref. 8293)

## **LDRA Testbed Section**

### **NEW**

LDRA\_INSPECTED annotations are now automatically changed within the internal LDRA analysis representations of

the source to be able to utilise the new LDRA\_EXCLUDE annotation facilities.

### **NEW**

LDRA\_EXCLUDE source code annotation facilities replace LDRA\_INSPECTED source code annotation facilities.

Consult the ldra\_exclude.pdf documentation for more information.

### **NEW**

The following INI entries have been added to allow switching on / off of specific language version

dialect elements:

CPP14\_DIALECT=TRUE/FALSE Enable/disable C++14 language elements.  
(When enabled also enables C++11 elements)

CPP17\_DIALECT=TRUE/FALSE Enable/disable C++17 language elements.  
(When enabled also enables C++14 and C++11 elements)

### **CHG**

Code Review set report. Source and associated header reporting shows additional violations

for each associated header generated by it's inclusion in non-associated source files.

### **CHG**

Dynamic analysis executable can resize with table too small error when running initialisation mode.

### **FIX**

Quality Review configuration dialog. "Add/Remove procedures in report" settings retained. (LM ref. 8241)

**FIX**

When running analysis on a single file, code/quality review reports for another file could be removed.

**FIX**

Enhanced TBpublish compatibility with latest versions of Google Chrome. (LM ref. 8437)

**TBvision Section****NEW**

TBexclude facility available to exclude programming standards violations and to subsequently

justify/document their exclusion. Contact your local LDRA representative for more information.

**NEW**

Code Review report. Exclusions table has Justification information.

**NEW**

Code Review report. Exclusions table shows only exclusions that are valid

in the scope of the report. Set SCREEN\_INVALID\_EXCLUSIONS=FALSE to show all.

**CHG**

Enhanced header file handling for Group Sets.

**CHG**

Enhanced reporting of functions declared in header files for Code Review and Quality Review for Group Sets.

**FIX**

Enhanced Code Review By Violations view for exclusions. (LM ref. 8389)

**FIX**

Enhanced compatibility of Violation by Violation Code Reviews and TBexclude. (LM ref. 8389)

**FIX**

Enhanced design of TBexclude dialogs in Linux. (LM ref. 8402)

**TBmanager Section****NEW**

Unable to launch Callgraph message displayed if Callgraph is requested and Static Analysis results do not exist.

(LM ref. 8262)

**NEW**

Tags column available in the Templates view during Project Setup and in the main TBmanager GUI. (LM ref. 8245)

**CHG**

Matrix View - Export CSV to Excel option is available on platforms that support Microsoft Office. (LM ref. 8285)

**CHG**

Enhanced consistency in the menus on the Project Setup Dialog. (LM ref. 8239)

**CHG**

Unable to launch Flowgraph message updated with additional information on running Static Analysis. (LM ref. 8258)

**CHG**

Enhanced context menus in the Project Setup dialog. (LM ref. 8243, 8247, 8248)

**FIX**

None txt/html files do not open with the default OS associated application (LM ref. 8236, 8271)

**FIX**

Web Link menu opens reports as local files and not web based files. (LM ref. 8278)

**FIX**

Reports - Generate CSV from View... option no longer appends space after csv file extension. (LM ref. 8281)

**FIX**

Code Review TBvision option from TBmanager Verification dialog during Interactive Verification, invokes TBvision

displaying the appropriate Code Review results. (LM ref. 8274)

**FIX**

Updated location of TBmanager Support Files directory to be consistent across platforms. (LM ref. 8429, 8430)

**FIX**

Enhanced creation and population of Custom Attributes from a Polarion import. (LM ref. 8312, 8313)

**Static Analysis Module****CHG**

Enhanced Static Analysis. (LM ref. 8362)

**CHG**

Enhanced Static Analysis with respect to multi-line specifies. (LM ref. 8129)

**CHG**

Enhanced Static Analysis of inline assembly. (LM ref. 6349)

**CHG**

Enhanced detection of the size of anonymous structs and unions. (LM ref. 6884)

**CHG**

Enhanced Static Analysis. (LM ref. 8083)

**CHG**

Enhanced Static Analysis. (LM ref. 7900)

**CHG**

Enhanced Static Analysis. (LM ref. 8336)

**CHG**

Enhanced detection of beginning and end of lambda function bodies. (LM ref. 8342)

**CHG**

Enhanced detection of 550 S. This may result in more reported instances. (LM ref. 8128)

**CHG**

Enhanced Static Analysis. (LM ref. 8331)

**CHG**

Enhanced detection of 620 S. This may result in more reported instances. (LM ref. 5695)

**CHG**

Enhanced Static Analysis. (LM ref. 8242)

**CHG**

Enhanced Static Analysis. (LM ref. 6027)

**CHG**

Enhanced Static Analysis. (LM ref. 7551)

**CHG**

Enhanced Static Analysis. (LM ref. 7928)

**CHG**

Enhanced Static Analysis. (LM ref. 7910)

**CHG**

Enhanced MC/DC instrumentation. (LM ref. 8276)

**CHG**

Enhanced Static Analysis. (LM ref. 7955)

**CHG**

Enhanced Static Analysis. (LM ref. 8106)

**CHG**

Enhanced Static Analysis. (LM ref. 8267)

**CHG**

Enhanced Static Analysis. (LM ref. 8329)

**CHG**

Enhanced Static Analysis. (LM ref. 8341)

**CHG**

Enhanced Static Analysis. (LM ref. 8310)

**CHG**

Enhanced Static Analysis. (LM ref. 8343)

**CHG**

Enhanced detection of 489 S. This may result in more reported instances. (LM ref. 6733)

**CHG**

Enhanced source reformatting, ensuring spaces are inserted around the & and \* characters. (LM ref. 7717)

**CHG**

Enhanced detection of 459 S. This may result in fewer reported instances. (LM ref. 7577)

**CHG**

Enhanced detection of 46 D. This may result in fewer reported instances. (LM ref. 7580)

**CHG**



Enhanced Static Analysis of inline assembly. (LM ref. 6348)

#### **CHG**

Enhanced Static Analysis. (LM ref. 8391)

#### **CHG**

Enhanced Static Analysis. (LM ref. 8449)

#### **NEW**

C++14 and C++17 language dialect settings to enable/disable language elements. (LM ref. 8330)

#### **Data Flow Module**

##### **CHG**

Enhanced detection of 128 D. This may result in fewer reported instances. (LM ref. 7734)

##### **CHG**

Enhanced detection of 17 D. This may result in fewer reported instances. (LM ref. 8266)

#### **Instrumentation Module**

##### **CHG**

Enhanced Instrumentation with respect to constexpr specifier. (LM ref. 8372)

##### **CHG**

Enhanced Structure Bitmap Instrumentation. (LM ref. 8371)

##### **CHG**

Enhanced Instrumentation of case statements. (LM ref. 8361)

##### **FIX**

Enhanced handling of very large file names. (LM ref. 6975)

#### **Utilities Section**

##### **NEW**

TBglhapi. Displaying of array bounds on the declaration type for members of structures. (LM ref. 7552)

#### **NEW**

Added Build Import guide to the Launcher. (LM ref. 8428)

#### **NEW**

Visual Studio Integration. Added Execution Options menu. (LM ref. 8447)

#### **FIX**

TBbuildimport. Compiler Preprocessing discovery for dialect analysis no longer runs automatically after BTF

creation.

#### **FIX**

LDRAlauncher. Workarea Management dialog displays the current Workarea path in use. (LM ref. 8298, 8451)

### **Documentation Section**

#### **CHG**

Command Line. Added -profile= argument to Contbrun section. (LM ref. 8150)

#### **CHG**

Command Line. Added more context to the -renanalyse\_set argument. (LM ref. 8422)

### **New Features for 9.8.1**

#### **TBrun Section**

##### **NEW**

TBextreme. Enhanced user defined configuration options. Eight profiles are available

and the user can associate the TBextreme run (standard, tabular etc.) with a chosen configuration.

If no configuration is chosen, then the default settings will be used.

#### **NEW**

Filtering of ill-formed constant names from the dictionary so they are not applied in TBextreme.

#### **NEW**

Improved assignment of constructor initialisations in constructor stubs by assigning an initial

value to a member based on the most likely name match of parameter.

#### **NEW**

Improved resolution of template types particularly for nested types in a template class

and the type being scoped in the nested type matches a template argument.

#### **NEW**

Improved processing of declaration types with array bounds declared inside the instantiated template arguments.

#### **NEW**

Mutable has been removed from the declaration type of a member variable and now appears as a property in the API.

#### **NEW**

TBextreme. When stub parameter values are captured, for pointers, the value captured will be null or not-null.

#### **NEW**

If a driver program does not use exception handling, then the processing of output variables no longer checks if an exception was raised.

#### **NEW**

TBextreme. Expressions such as `var = var &0xff` are treated as an assignment expression and are applied to the test case as input and output

even if the variable is a dereference of a pointer.

**NEW**

Enhanced source code browser integration for Linux systems. (LM ref. 7625)

**NEW**

Improved assigning of constructor initialisers from the parameter list where the only difference in declaration

types between the member and the parameter is the location of the const keyword.

**NEW**

Improved assigning of constructor initialisers from the parameter list where the only difference in declaration

types between the member and the parameter is that the parameter is a reference to the member type.

**NEW**

TBextreme. Improved adding of dereferenced structure elements to test cases.

**NEW**

TBextreme. Improved adding of dereferenced variables to test cases.

**NEW**

TBextreme. Improved adding associated global variable pointed to by input variables

as output variables in the test case.

**NEW**

TBextreme. Improved filtering of values applied to a variable when the values are numerically

equivalent but are displayed in different formats.

**NEW**

Improved initialisation of structure variables where all the elements of the structure are const data.

**NEW**

Improved generation of delta values for variables used in a loop, particularly when the loop

variable is evaluated using a division operation.

**FIX**

Removal of GPF when double clicking the Combined Coverage Run node. (LM ref. 8218)

**FIX**

Test Case dynamic dataflow coverage report. Improved matching of Test Case variables where

a dereference operator is used.

**FIX**

Enhanced selection of default browser for PDF files. (LM ref. 8113)

**FIX**

Handle source code browser specified with spaces and without quotes. (LM ref. 8082, 8188)

**LDRA Testbed Section****CHG**

Sysppvar generation. If adding the source directory as an include path for the preprocessor command,

this uses the compiler command line flag as defined by INI entry COMPILER\_INCLUDE\_PATH\_FLAG (or

it's default values).

**CHG**

Dialect Generation. Generated macdat files have header file markers.

**FIX**

The help PDF on the Include File Option dialog is no longer showing with an incorrect personality. (LM ref. 8132)

**FIX**

Global Cross Reference failed to run correctly when rerunning Cross Reference phase

with one or more files failing analysis.

(Where `continue_system_analysis` has been enabled).

**TBvision Section****NEW**

Enhanced handling of invalid exclusions/notes in TBexclude.

To display all exclusions/notes (including those not valid for the currently

selected scope) set `SCREEN_INVALID_EXCLUSIONS=FALSE` or `SCREEN_INVALID_NOTES=FALSE`

in the INI file. (LM ref. 8095)

**CHG**

Enhanced handling of calls to the License Configuration Dialog. (LM ref. 8143)

**FIX**

Violations within a child of a Namespace were categorised as Namespace violations.

**FIX**

Namespace member function and variables, that were not reported on, are now included.

**FIX**

Linux - Enhanced configuration option dialogs. (LM ref. 8144)

**FIX**

TBexclude. Code Review report generated from context menu on Code Review view correctly processes

exclusions that have macro expansion elements.

## **TBmanager Section**

### **NEW**

Integration with codeBeamer ALM (Intland Software).

### **NEW**

Integration with PTC Integrity.

### **NEW**

Polarion integration now available on Linux/Mac platforms.

### **NEW**

Import Filters available to third party integrations to further filter what is imported to each Group.

### **NEW**

Configuration to choose which attributes have write privileges available to third party integrations.

### **NEW**

Documentation for installed integrations is available from the Help menu.

### **CHG**

Integration with SILKROAD ALM enhanced.

### **CHG**

Integration with Jama enhanced - Users with existing Jama configurations will be required to update their

configurations.

### **CHG**

Jama Integration - Integration is now provided as a separate deliverable.

### **CHG**

Integration with Polarion enhanced - Users with existing Polarion configurations will be required to update their

configurations.

**CHG**

Polarion integration - Use of profiles in TBmanager is no longer required.

**CHG**

Polarion integration - Updated default query text for Requirement import to include system and software

requirements as well as default requirement types.

**CHG**

Polarion integration - Confirmed that Polarion API access is granted when using self signed SSL

certificates providing the user installs the public SSL certificate into their Java key store.

**CHG**

Polarion Integration - Integration is now provided as a separate deliverable.

**CHG**

SystemWeaver integration - Updated dialogs for Import and Export of items.

**CHG**

SystemWeaver integration - Enhanced to import traceability between items.

**CHG**

JIRA Integration - Enhanced importing of the Labels field.

**CHG**

Added Filter mechanism to Integration import to allow further filtering of imported data.

**CHG**

Removed restriction that Requirement Name requires a value on the Edit Requirement dialog.



**CHG**

Excel Integration - By default, split characters will only be set for \$(RefReq) and \$(TciParent). (LM ref. 7394)

**CHG**

Support added to display procedures that are included via an include statement but not from

a traditional header file. e.g. a .c file including another .c file. (LM ref. 7168)

**CHG**

PDF import - New icon on Open Document button. (LM ref. 8217)

**FIX**

Polarion integration - Enhanced import of items with descriptions containing line breaks or other white

space formatting characters. (LM ref. 7024)

**FIX**

Polarion integration - Enhanced reporting if no items are returned from the server based on the query string.

**FIX**

Enhanced import of items from tbmspec files with malformed parent requirement references.

**FIX**

TBmanager Integration enhancements. (LM ref. 6819, 7019, 7071, 7323)

**FIX**

Enhanced handling of blank/empty rows in between items during Excel import. (LM ref. 8089)

**FIX**

Properties such as const are now included in return types when analysing source code. (LM ref. 8145)

**FIX**

Enhanced importing of trackers in the codeBeamer integration. (LM ref. 8196)

**FIX**

Enhanced installation configuration of the SystemWeaver Integration. (LM ref. 8203)

**FIX**

Enhanced resource selection in Project Setup. (LM ref. 8240)

**Static Analysis Module**

**CHG**

Enhanced detection of 582 S. This may result in fewer reported instances. (LM ref. 7591)

**CHG**

Enhanced detection of 59 S. This may result in fewer reported instances. (LM ref. 8077)

**CHG**

Enhanced detection of 692 S. This may result in fewer reported instances. (LM ref. 8078)

**CHG**

Enhanced detection of 47 S. This may result in fewer reported instances. (LM ref. 7961)

**CHG**

Enhanced detection of 114 S. This may result in fewer reported instances. (LM ref. 7639)

**CHG**

Enhanced detection of 57 S. This may result in fewer reported instances. (LM ref. 7595)

**CHG**

Enhanced detection of 560 S. This may result in fewer reported instances. (LM ref. 8069)

**CHG**

Enhanced detection of 1 J. This may result in more reported instances. (LM ref. 7810)

**FIX**

Enhanced static analysis. (LM ref. 8083)

**FIX**

Enhanced static analysis. (LM ref. 8085)

**Data Flow Module****CHG**

Enhanced detection of 137 D. This may result in fewer reported instances. (LM ref. 8076)

**Instrumentation Module****CHG**

The type specified by the INTZZQ field is used for the definition of aqqmcdcstore.

If this type is changed, declarations in c/cppinstr.dat may also need to be changed to match. (LM ref. 8185)

**CHG**

Enhanced Bitmap (Bitmap MC/DC) instrumentation. (LM ref. 8009, 8029, 8112)

**Dynamic Coverage Module****CHG**

Enhanced Dynamic Analysis for Bitmap (Hitmap MC/DC). (LM ref. 8190)

**Utilities Section****NEW**

Visual Studio Plugin - Visual Studio 19 is now supported.

**CHG**

Enhanced handling of calls to Source Code Browsers from Launcher. (LM ref. 8184, 8187)

**CHG**

Enhanced top menu options in the Visual Studio Plugins. (LM ref. 8191)

**CHG**

Enhanced menu options available in the Eclipse Plugin on Linux. (LM ref. 8219)

**CHG**

Enhanced consistency across the Safe\_Uilities example project on Linux. (LM ref. 8272, 8273)

**Documentation Section****FIX**

Updated TBmanager Documentation. (LM ref. 8193)

**New Features for 9.8.0****TBrun Section****NEW**

When running from the command line, if the execution command of the harness times out,

then when the application closes, it will return the exit code 93. (LM ref. 8007)

**NEW**

C++ / TBextreme. Improved generation of values for array type pointers when a constraint has been deduced.

**NEW**

Improved detection of parameters being treated as input and output due to a sub-element being dereferenced and

defined.

**NEW**

Improved casting of declaration types by not removing the const keyword.

**NEW**

Delta values applied to types lying outside of the analysis scope will be cast.

## **NEW**

TBextreme. Improved generation of output variables for parameter pointers to structures where the pointer is

indexed as if it was an array.

## **NEW**

TBextreme. Improved capturing of pointers sub-elements of variables added that are pointed to by inputs.

## **CHG**

Enhanced handling of alternative source code browsers. (LM ref. 8082)

## **FIX**

Function Unit icons no longer reduce in size when a sequence loaded or created. (LM ref. 8020)

## **LDRA Testbed Section**

### **CHG**

When using a cppen.dat from a previous release, which has AUTOSAR-C++ rule numbers,

these will be displayed as AUTOSAR-C++:17-03 rule numbers.

### **FIX**

Shorten did not add full path of expanded header files in some cases

leading to incorrect reformatted to source line conversion.

### **FIX**

Source to reformatted line conversion for the last line in the file

matches the conversion for other lines, aligning to the last matching

reformatted line instead of the first.

## **TBvision Section**

### **FIX**

Improved processing of mapped standards when using data files from previous

releases. For example CERT-C will map to CERT-C:2014 if CERT-C:2016 is not available.

## **FIX**

Model overrides of category or flags for some violations were not correctly processed.

## **TBmanager Section**

### **NEW**

Jira Integration.

Ability to import Jira Items into TBmanager as Requirements or Test Cases.

Export to Jira is available to update items that have been imported into TBmanager from Jira.

## **CHG**

Enhanced handling of symbol characters when importing from Excel. (LM ref. 8074)

## **Static Analysis Module**

### **CHG**

Enhanced detection of 90 S. This may result in fewer reported instances. (LM ref. 7620)

### **CHG**

Enhanced detection of 47 S. (LM ref. 1953, 3091, 4106, 4676, 4689, 4708, 4709, 4878, 4902, 5090, 5153, 5254, 5453, 5619, 5756, 6350, 6734, 6991, 7014, 7109, 7134, 7389, 7525)

### **CHG**

Enhanced detection of 123 S. (LM ref. 3971)

### **CHG**

Enhanced handling of C++ auto keyword and uniform initialisation. (LM ref. 7313)

### **CHG**

Enhanced detection of 369 S. This may result in more reported instances. (LM ref. 7233)

#### **CHG**

Enhanced detection of 476 S. This may result in fewer reported instances. (LM ref. 7311)

#### **CHG**

Enhanced handlings of unions. (LM ref. 7522)

#### **CHG**

Enhanced detection of 41 S. This may result in fewer reported instances. (LM ref. 7652)

#### **CHG**

Enhanced handling of variable declarations using typename keyword. (LM ref. 7780, 7802)

#### **CHG**

Enhanced detection of 446 S. This may result in fewer reported instances. (LM ref. 6165)

#### **CHG**

Enhanced detection of 629 S. This may result in more reported instances. (LM ref. 7769)

#### **CHG**

Enhanced detection of 577 S. This may result in more reported instances. (LM ref. 5800)

#### **CHG**

Enhanced detection of 20 D. This may result in fewer reported instances. (LM ref. 6394)

#### **NEW**

Penalty 699 S Macro terminated with semi-colon. (LM ref. 7970)

#### **CHG**

Enhanced detection of 56 S. This may result in more reported instances. (LM ref. 7306)

#### **CHG**

Enhanced detection of 629 S. This may result in more reported instances. (LM ref. 7912, 7913)

#### **CHG**

Enhanced detection of 286 S. (LM ref. 5861)

#### **CHG**

Enhanced detection of 286 S. This may result in fewer reported instances. (LM ref. 6036, 6916, 7629)

#### **CHG**

Enhanced detection of 441 S and 444 S. This may result in fewer reported instances. (LM ref. 7545)

#### **CHG**

Enhanced detection of 114 S. This may result in fewer reported instances. (LM ref. 7406)

#### **CHG**

Enhanced detection of 306 S. This may result in fewer reported instances. (LM ref. 6624, 7643)

#### **CHG**

Enhanced detection of 629 S. This may result in fewer reported instances. (LM ref. 5646, 6089, 6091)

#### **CHG**

Enhanced detection of 340 S. This may result in more reported instances. (LM ref. 1960, 6769, 7187)

#### **CHG**

Enhanced detection of 190 S. This may result in fewer reported instances. (LM ref. 7403)



**CHG**

Enhanced detection of 114 S. This may result in fewer reported instances. (LM ref. 7933)

**CHG**

Enhanced detection of 139 S. This may result in fewer reported instances. (LM ref. 7408)

**CHG**

Enhanced detection of 59 S. This may result in fewer reported instances. (LM ref. 8044)

**CHG**

Enhanced detection of 623 S. This may result in fewer reported instances. (LM ref. 7870)

**CHG**

Enhanced detection of 459 S. This may result in fewer reported instances. (LM ref. 6031)

**CHG**

Enhanced detection of 489 S. This may result in more reported instances. (LM ref. 6733, 7779)

**CHG**

Enhanced detection of 303 S. This may result in fewer reported instances. (LM ref. 7459)

**CHG**

Enhanced detection of 69 X. This may result in fewer reported instances. (LM ref. 3091)

**CHG**

Enhanced detection of 139 S. (LM ref. 4959, 5724, 5749, 5834, 7144)

**CHG**

Enhanced detection of lambda functions nested in parameter lists. (LM ref. 7421)

**CHG**

Enhanced detection of 221 S. This may result in fewer reported instances. (LM ref. 5401)

**CHG**

Enhanced detection of 439 S. This may result in fewer reported instances. (LM ref. 4844)

**CHG**

Enhanced static analysis. (LM ref. 7925)

**CHG**

Enhanced detection of 127 D. This may result in more reported instances. (LM ref. 7911)

**CHG**

Enhanced detection of 629 S. This may result in fewer reported instances. (LM ref. 7915)

**CHG**

Enhanced detection of 560 S. This may result in fewer reported instances. (LM ref. 7634, 7592, 7874)

**CHG**

Enhanced detection of 434 S. This may result in fewer reported instances. (LM ref. 7862)

**CHG**

Enhanced instrumentation regarding classes defined in non-instrumented header files. (LM ref. 7966)

**CHG**

Enhanced detection of 433 S. This may result in fewer reported instances. (LM ref. 7235)

**CHG**

Enhanced detection of 3 X. This may result in fewer reported instances. (LM ref. 7621)

**CHG**

Enhanced detection of 76 D. This may result in fewer reported instances. (LM ref. 7347)

**CHG**

Enhanced detection of 382 S. This may result in fewer reported instances. (LM ref. 7877)

**CHG**

Enhanced detection of 435 S. This may result in fewer reported instances. (LM ref. 6870)

**CHG**

Enhanced detection of 139 S. (LM ref. 1855, 5781, 5892, 6509, 7162, 7375, 7431, 7432)

**CHG**

Enhanced detection of 458 S. This may result in fewer reported instances. (LM ref. 7893)

**CHG**

Enhanced detection of 9 S. This may result in fewer reported instances. (LM ref. 7099)

**CHG**

Enhanced instrumentation regarding classes defined in non-instrumented header files. (LM ref. 8001)

**CHG**

Enhanced detection of 283 S. This may result in fewer reported instances. (LM ref. 7346)

**CHG**

Enhanced detection of 71 S. This may result in fewer reported instances. (LM ref. 7078)

**CHG**

Enhanced detection of 105 D. This may result in fewer reported instances. (LM ref. 7866)

#### **CHG**

Enhanced detection of 114 S. This may result in fewer reported instances. (LM ref. 7344)

#### **CHG**

Enhanced detection of 71 S. This may result in fewer reported instances. (LM ref. 7581)

#### **CHG**

Enhanced detection of 57 S. This may result in fewer reported instances. (LM ref. 7595)

#### **CHG**

Enhanced detection of 620 S. (LM ref. 8046)

#### **CHG**

Enhanced handling of malloc and free when analysed with the CWE model. (LM ref. 6357)

#### **CHG**

Enhanced static analysis. (LM ref. 7310)

#### **CHG**

Enhanced detection of 306 S. This may result in fewer reported instances. (LM ref. 7863)

### **Data Flow Module**

#### **CHG**

Enhanced detection of 45 D. This may result in fewer reported instances. (LM ref. 7720)

#### **CHG**

Enhanced detection of 63 D. This may result in fewer reported instances. (LM ref. 6872)

#### **CHG**

Enhanced detection of 91 D. This may result in fewer reported instances.

## **Cross Reference Module**

### **CHG**

Enhanced detection of 3 X. This may result in fewer reported instances. (LM ref. 7412)

### **CHG**

Enhanced detection of 80 X. This may result in more reported instances. (LM ref. 7769)

## **C/C++ Penalties and Standards Mappings**

### **NEW**

MISRA-C:2012(Ed 3 Rev 1) standard model - MISRA C:2012 Guidelines for the use of the C language in critical systems (Third Edition, first revision).

MISRA-C:2012 now refers to this version.

### **NEW**

Penalty 692 S Array index is negative.

### **NEW**

Penalty 699 S Macro terminated with semi-colon.

### **CHG**

Updated LDRA\_NOANALYSIS description in Testbed Manual. (LM ref. 7968)