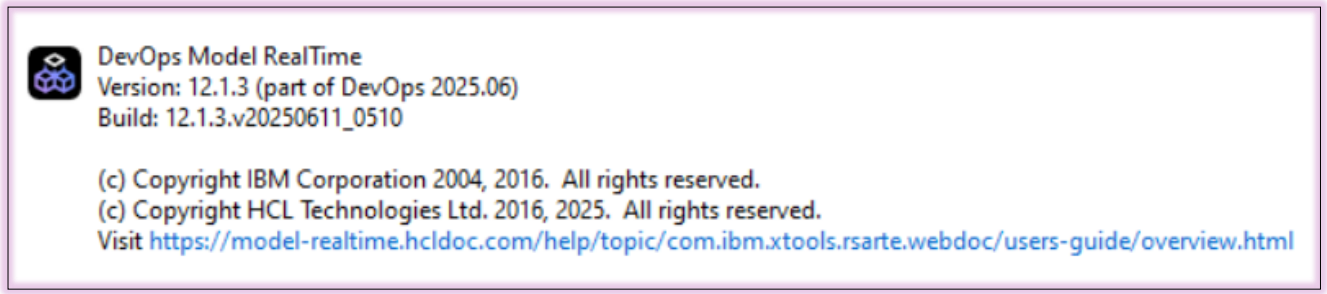
HCLSoftware

What's New in DevOps Model RealTime 12.1.3

updated for the DevOps 2025.06 release

Overview

- Model RealTime 12.1 is based on Eclipse 2024-06 (4.32)
- Two brandings of the product are available (HCL and IBM). There is no differences in functionality between them.
  - The only difference is in the licensing mechanism and branding (e.g. documentation)


DevOps Model RealTime
Version: 12.1.3 (part of DevOps 2025.06)
Build: 12.1.3.v20250611_0510

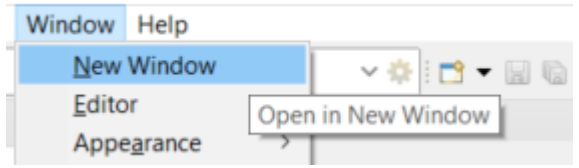
(c) Copyright IBM Corporation 2004, 2016. All rights reserved.
(c) Copyright HCL Technologies Ltd. 2016, 2025. All rights reserved.
Visit https://model-realtime.hcldoc.com/help/topic/com.ibm.xtools.rsarte.webdoc/users-guide/overview.html

Eclipse 4.32 (2024.06)

- Compared to Model RealTime 12.0, version 12.1 includes new features and bug fixes from 4 quarterly Eclipse releases:
  - 2023.09 (https://www.eclipse.org/eclipse/news/4.29/platform.php)
  - 2023.12 (https://www.eclipse.org/eclipse/news/4.30/platform.php)
  - 2024.03 (https://www.eclipse.org/eclipse/news/4.31/platform.php)
  - 2024.06 (https://www.eclipse.org/eclipse/news/4.32/platform.php)
- For full information about all improvements and changes in these Eclipse releases see the links above
  - Some highlights are listed in the next few slides...

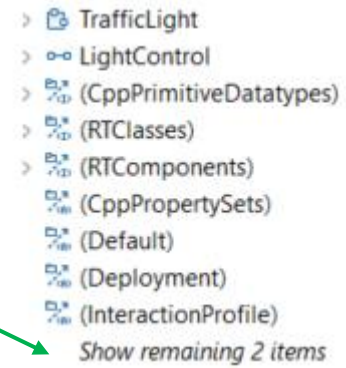
Eclipse 4.32 (2024.06)

- Better support for opening additional workbench windows when using multiple monitors
  - Now a new workbench window is opened on the same monitor where the current workbench window is located
  - Previously it opened on the primary monitor, which could be "far away" from the current workbench window



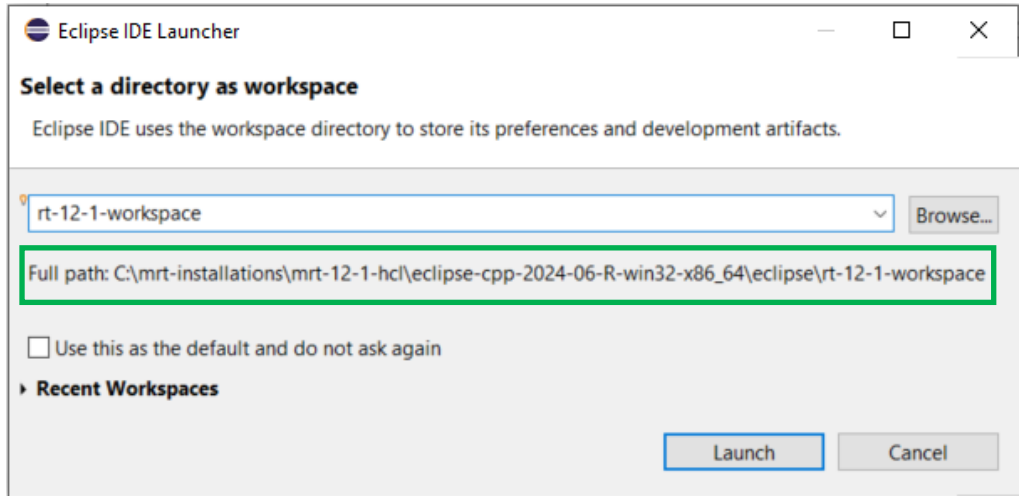
- The number of items shown in many views can now be limited to improve UI performance
  - Controlled by a new preference **General - Initial maximum number of elements shown in views** (by default 1000)
  - Affects for example the Problems and the Project Explorer views
  - Helps avoiding performance problems when a huge number of elements are shown in these views
  - You can disable this feature by setting the preference to 0

click here to show more items

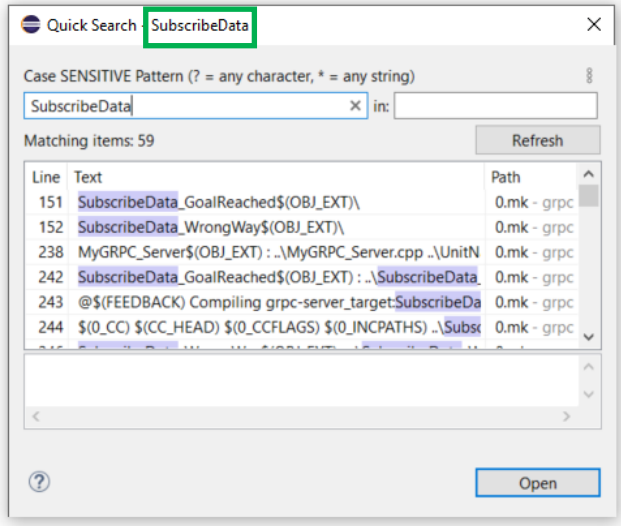


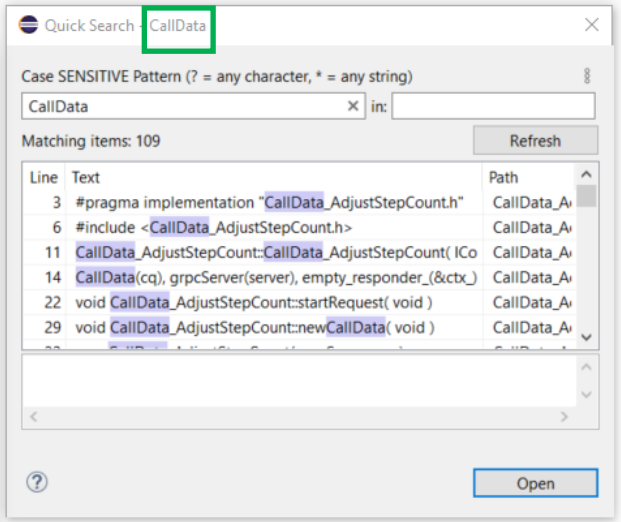
Eclipse 4.32 (2024.06)

- The launch dialog now shows the resolved path of the workspace that will be opened
  - Useful if you use relative paths or the ~ character on Linux/MacOs (for specifying the home folder)
  - Also tells you if you happen to use a character in the workspace name that is not valid on your operating system



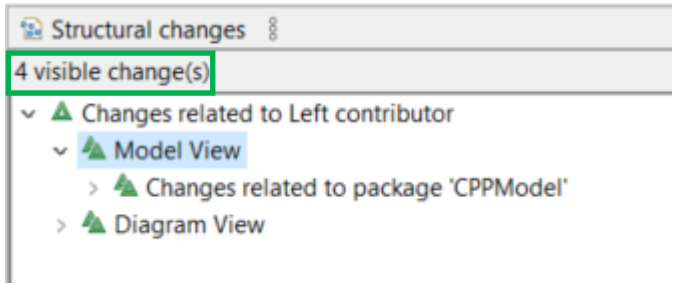
- Multiple Quick Search dialogs can now be more easily distinguished since the search term is printed in their titles
  - Useful if you tend to keep a few of those modeless dialogs open for repeated searches

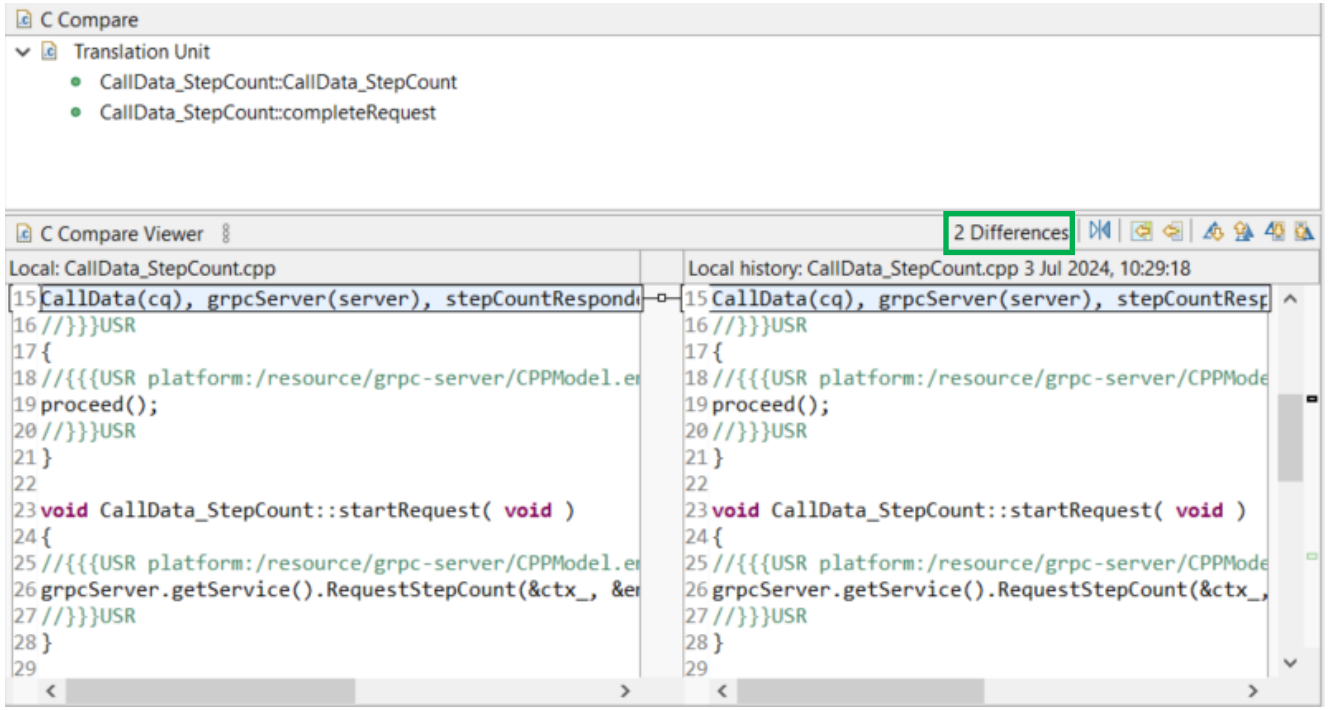




Eclipse 4.32 (2024.06)

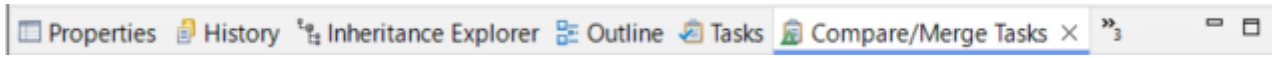
- The Compare/Merge editor for text files now shows the total number of differences
  - This was already before shown in the Compare/Merge editor for models





- A new preference can be set to avoid very short titles when a large number of views appear in the same view stack
  - **General - Appearance - Always show full titles**
  - Another new preference allows to hide the view icons to further save space

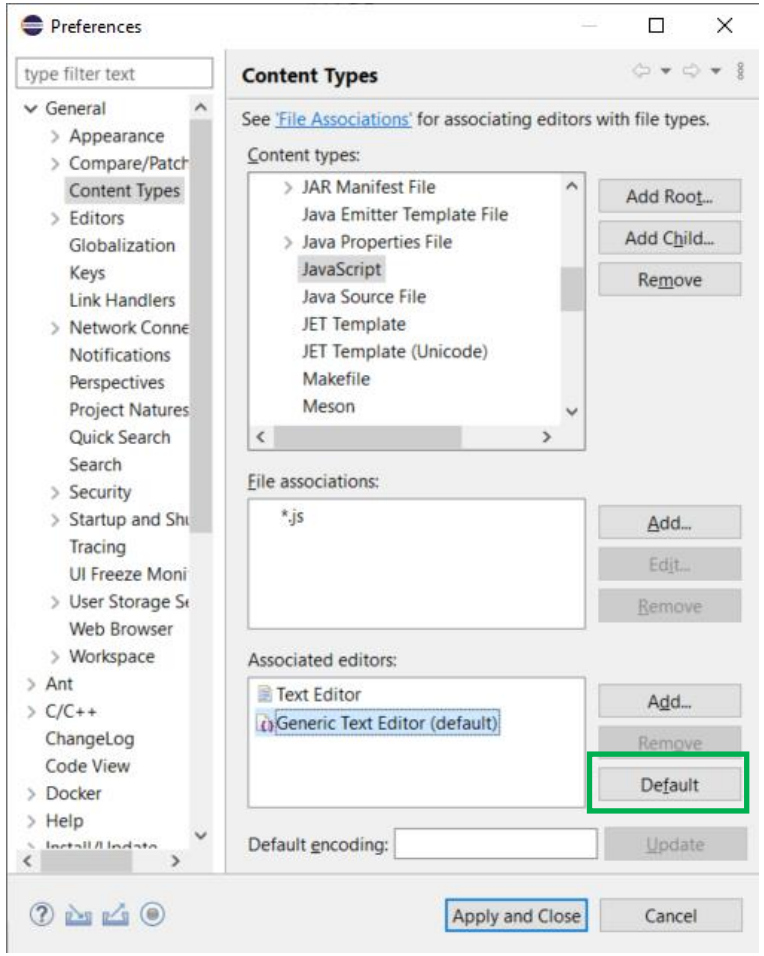
before (and still the default)



now (with new preference set)

Eclipse 4.32 (2024.06)

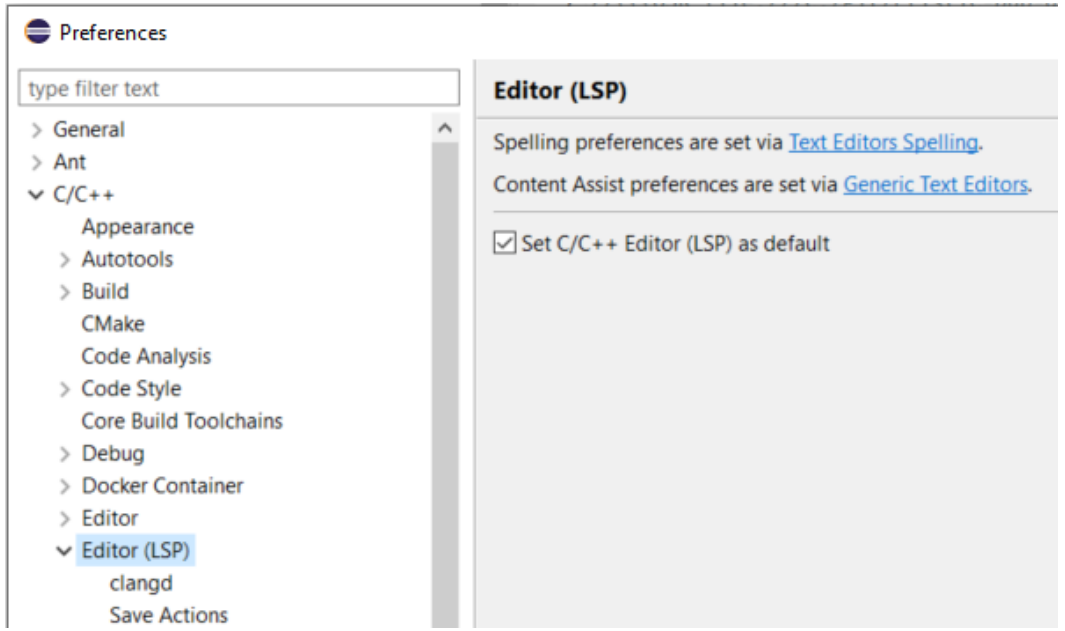
- It's now possible to change the default editor for a certain file content type
  - For example, if you use Build Variants, but don't have a JavaScript plugin installed, you can now create a content type for the *.js file extension and set the Generic Text Editor as the default editor
  - Previously it was necessary to always use the **Open With** command which was easy to forget
- Restart of Eclipse now works the same as an exit followed by a relaunch
  - For example, changes in `eclipse.ini` are now picked up when restarting



CDT 11.6 (included as part of Eclipse 2024.06)

- Information about the CDT improvements can be found here:
  https://github.com/eclipse-cdt/cdt/blob/main/NewAndNoteworthy/CDT-11.3.md
  https://github.com/eclipse-cdt/cdt/blob/main/NewAndNoteworthy/CDT-11.4.md
  https://github.com/eclipse-cdt/cdt/blob/main/NewAndNoteworthy/CDT-11.5.md
  https://github.com/eclipse-cdt/cdt/blob/main/NewAndNoteworthy/CDT-11.6.md

- **Note:** Eclipse 2024.06 also contains another plugin for C/C++ development called CDT-LSP which makes use of the Clang language server (clangd)
  - You have to enable this feature in the Preferences - by default CDT is still used for new projects
  - You can use both CDT and CDT-LSP in the same workspace for different C++ projects
  - Model RealTime does not yet support CDT-LSP (i.e. target projects are still always using CDT, and the Code View/Editor also uses CDT)



Newer EGit Version in the EGit Integration

- The EGit integration in Model RealTime has upgraded EGit from 6.6 to 6.10
  - This is the recommended and latest version for Eclipse 2024.06
- This upgrade provides several new features and bug fixes
  - For detailed information about the changes see
    https://wiki.eclipse.org/EGit/New_and_Noteworthy/6.7
    https://wiki.eclipse.org/EGit/New_and_Noteworthy/6.8
    https://projects.eclipse.org/projects/technology.egit/releases/6.9.0
    https://projects.eclipse.org/projects/technology.egit/releases/6.10.0

Java 21

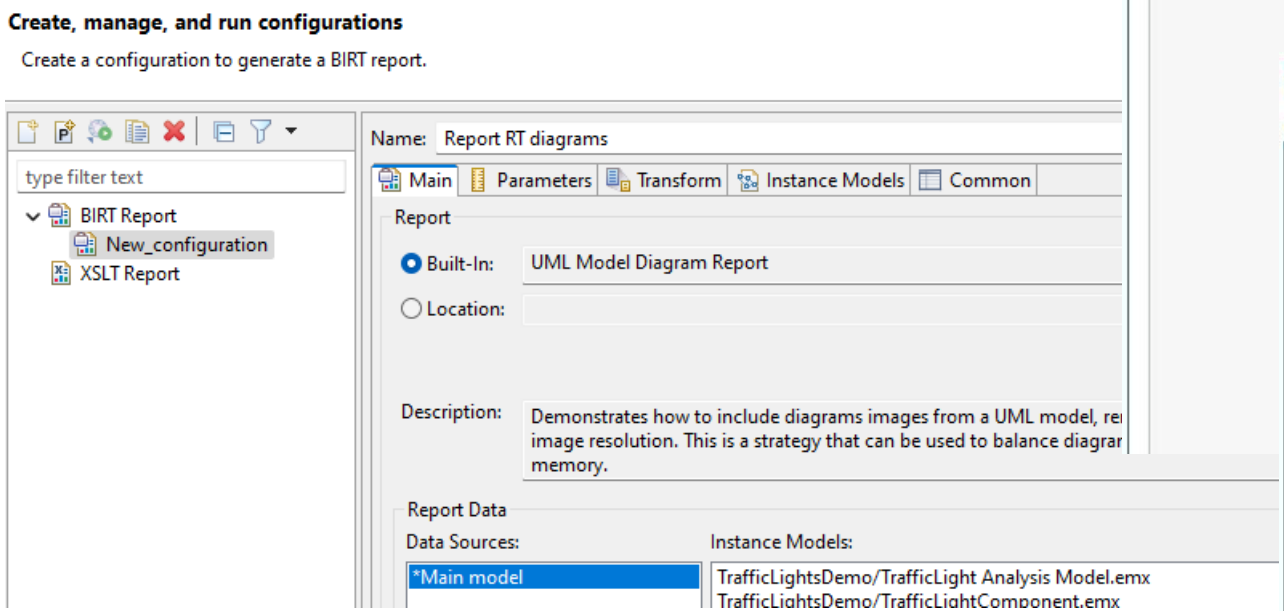
- Eclipse 2024.06 requires a JVM for Java 21 or newer
  - It comes with a Java 21 JVM included which will be used by default
  - Model RealTime therefore also requires Java 21 and it's recommended to use that exact version. A warning dialog will appear on start-up in case another JVM version is used.
    - This check can be disabled by setting the system property `com.ibm.xtools.umldt.core.disableJavaCheck`

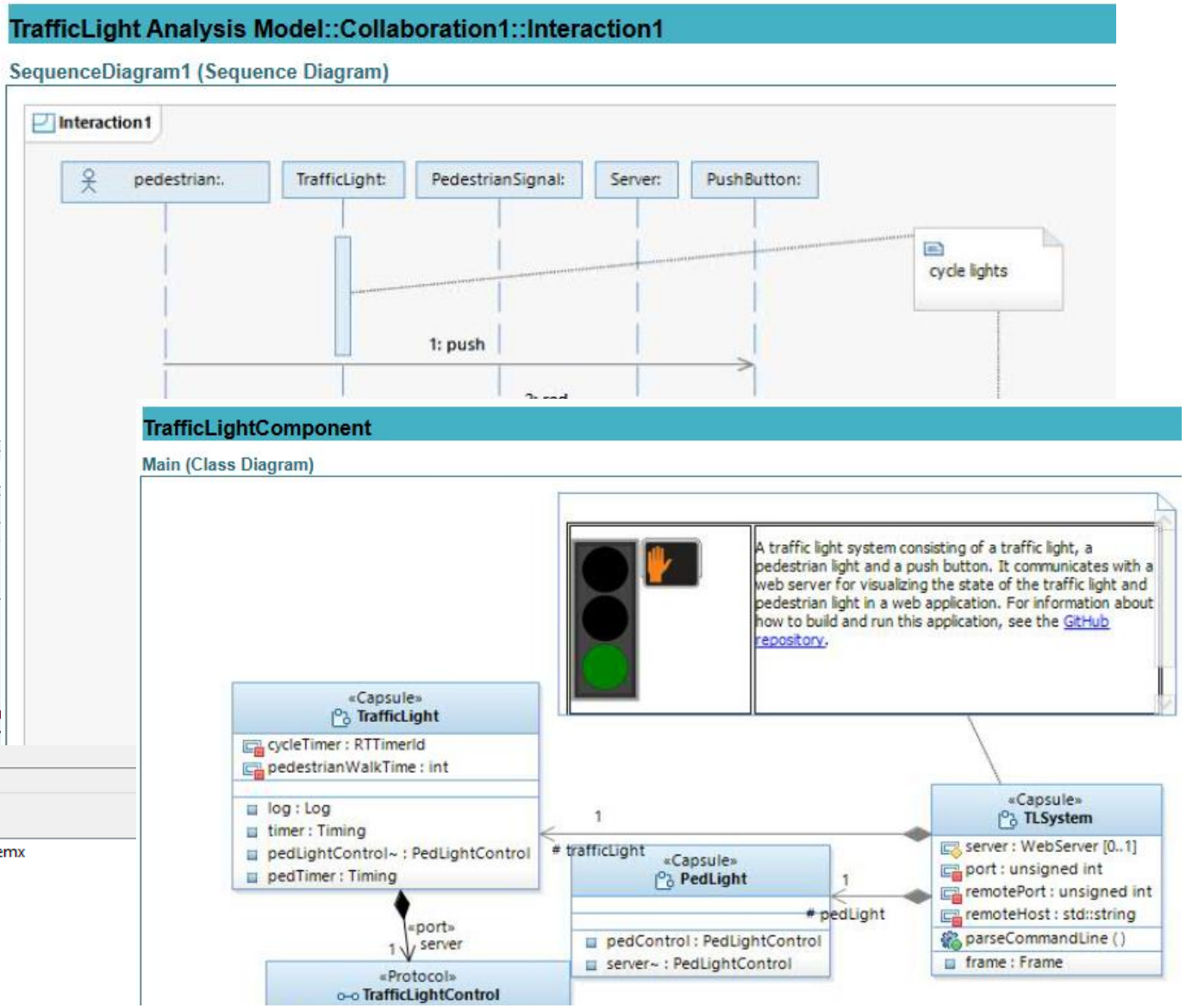
MacOS

- The Model RealTime user interface can be used on MacOS
  - Non-experimental support for both the x86_64 and Arm architectures
- All known MacOS specific defects have now been resolved

BIRT Reporting

- The BIRT Integration can now be used with Model RealTime 12.1.x
  - Delivered as a separate update site on the Info Center



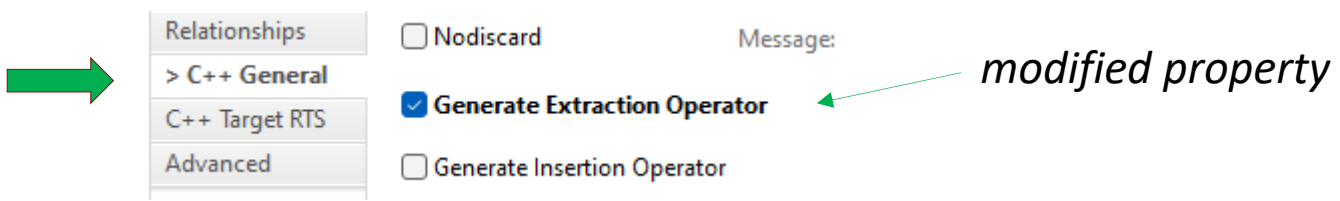


Removal of the One Test Embedded Integration

- The One Test Embedded Integration does not work with Eclipse 2024.06 and has therefore been removed from Model RealTime
  - The documentation on the Info Center will remain for some time for users still using One Test Embedded together with older versions of Model RealTime

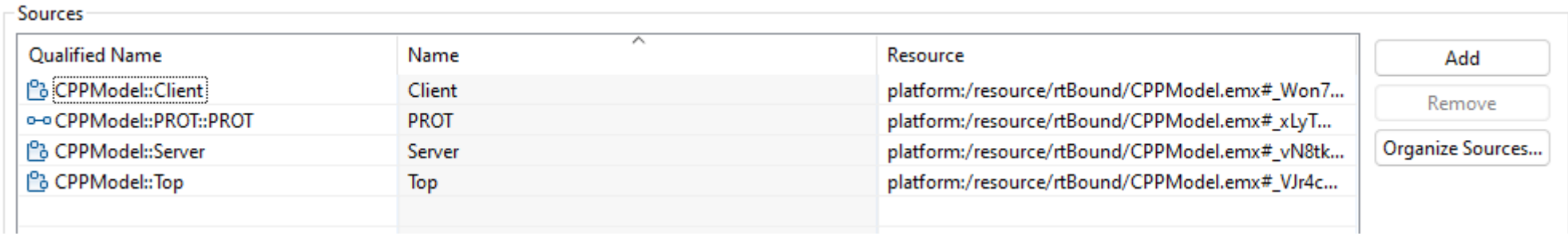
Visual Indication of Modified Properties in the Properties View

- The property tabs “C++ General” and “C++ Target RTS” contain a large number of properties
  - They affect how code is generated and are therefore more “important” than some of the properties elsewhere
- These tab names are now prefixed with “>” if any of these properties contain a non-default value
  - Makes it quick and easy to detect elements with custom property values
  - Avoid having to click and scroll these property tabs to find out



TC Editor Improvements (1/2)

- The Sources table now has columns to more easily manage the list of source elements
  - Possible to sort the source elements by clicking the column headers
  - The Qualified Name and Resource columns help distinguish multiple source elements with the same name



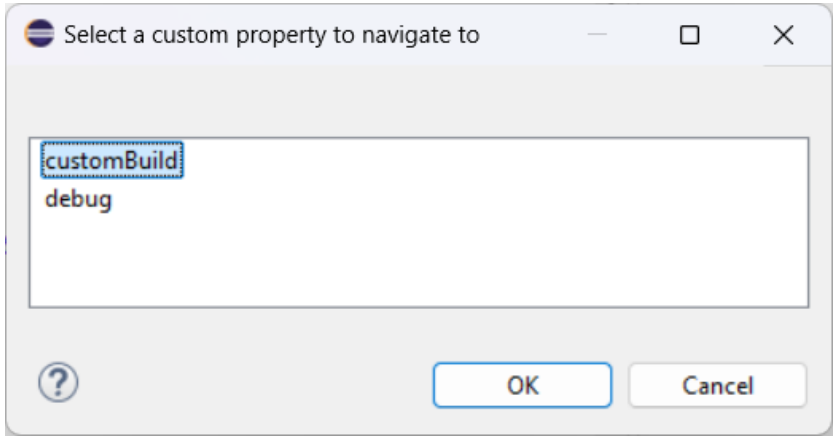
TC Editor Improvements (2/2)

- The presence of custom TC properties is now easier to detect thanks to a new hyperlink
  - It appears at the top of the TC editor if the TC has one or many custom properties
  - Click the hyperlink to navigate to the custom property (or properties)
  - Custom properties are for example useful when using Build Variants

[C++ Executable] app.tcjs

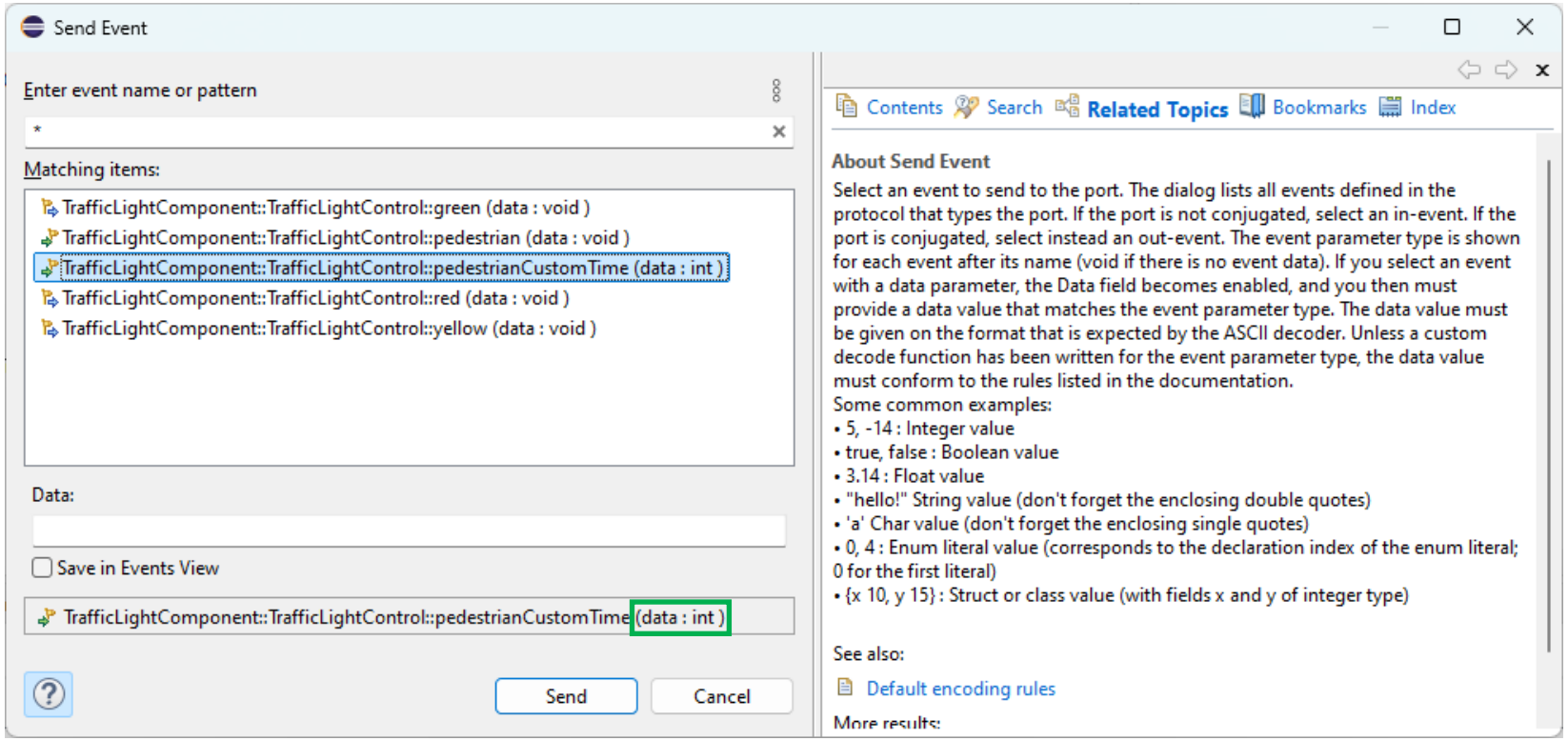
More custom properties present in Code tab

```
1  let tc = TCF.define(TCF.CPP_TRANSFORM);
2  tc.sources = [
3      'platform:/resource/TL/TrafficLightComponent.emx#__ayAoEg2EfCGm_vSAbO-SQ',
4  ];
5  tc.createTargetProject = true;
6  tc.customBuild = true;
7  tc.debug = true;
8  tc.targetProject = '/TrafficLight_target';
9  tc.topCapsule = 'platform:/resource/TL/TrafficLightComponent.emx#__aynxkg2EfCGm_vSAbO-SQ';
```



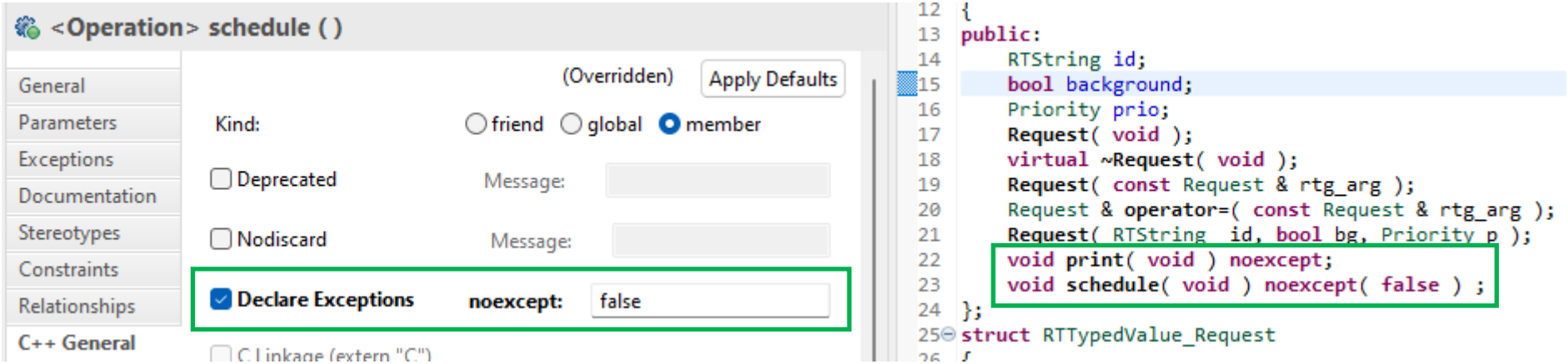
Improved Send Event Dialog

- The Send Event dialog now shows the parameter type for each listed event
  - Makes it easier to know what to type in the Data field when sending an event
- Context Sensitive Help is now also available for this dialog

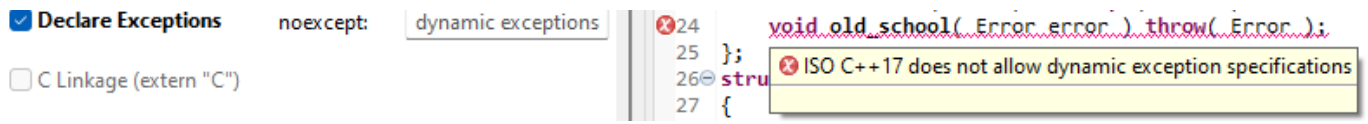


Generating Functions with “noexcept” Specifiers

- It’s now possible to specify that an operation cannot throw any exceptions, or may throw exceptions, by means of the noexcept specifier



- For backwards compatibility, dynamic exception specifications are still supported
  - But this feature was removed in C++ 17, and the Model Compiler will therefore print a warning if you attempt to use it with a too new code standard



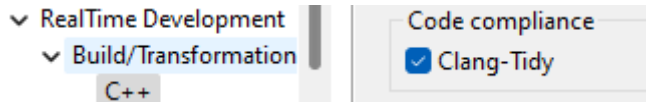

```
WARNING : Dynamic exception specifications should not be used with C++ 17 or later. Consider using the noexcept specifier instead.
```

- Use of noexcept requires C++ 11 or later
  - The Model Compiler will print a warning if you attempt to use it with a too old code standard

```
WARNING : Use of the noexcept specifier requires C++ 11 or later.
```

Code Compliance

- An additional Clang-Tidy rule is now supported when the preference **RealTime Development – Build/Transformations – C++ - Clang-Tidy** is set

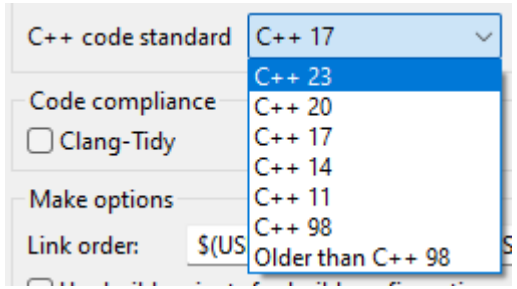


  - **misc-use-anonymous-namespace**
    Suppress warnings for use of the `static` keyword for non-member functions in generated .cpp files

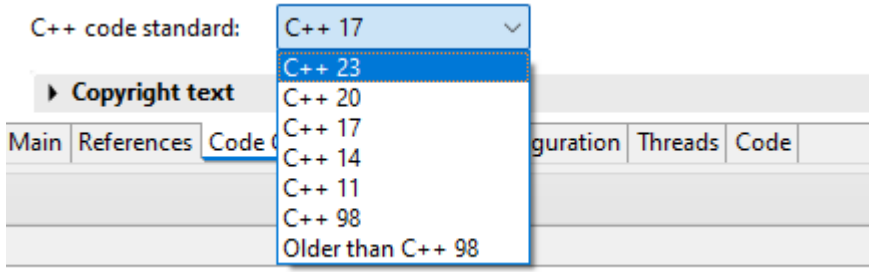
```
static void _rtg_deleteThreads( void ) /* NOLINT(misc-use-anonymous-namespace) */
```

C++ 23

- C++ 23 is now available as a new code standard to use
  - For both the TC setting and the workspace preference
  - Currently no features in Model RealTime require this new code standard, but if generated code is compiled with C++ 23, it's useful to be able to set this as the code standard to be used for code generation too (for consistency)



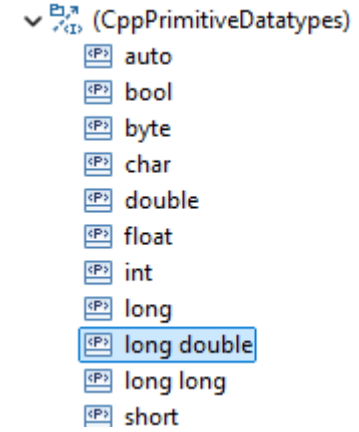
workspace preference



TC setting

Long Double

- The TargetRTS and Model Compiler now supports the primitive type `long double`
  - It was already available to be used in the CppPredefined package, but was previously ignored by the code generator (and not supported by the TargetRTS)
  - The Encoding, Decoding and Logging APIs were extended to support `long double` in the same way as other primitive types are supported



Log Streams

- The TargetRTS now provides two log streams `Log::out` and `Log::err`
- They provide a number of benefits compared to logging using traditional log ports
  - Available in all code, not just in capsule code snippets where log ports can be accessed
  - Consistent way of logging either to `std::out` or `std::err`
  - Easier to create log messages that contain a mix of text and data
  - Based on `std::ostream` – all standard C++ stream manipulators can be used
  - Possible to lock/unlock log streams to avoid interleaved log messages in multi-threaded applications
  - Possible to print log messages to a log file by means of log streams

```
Log::out << “Status: " << std::boolalpha << result.getStatus() << Log::endl;
Log::err << Log::lock << “Running in thread " << context()->name() << Log::endl << Log::unlock;
MyType mt(4);
Log::out << "MyType value: " << RTTypedValue(&mt, &RTType_MyType) << std::endl;
```

Changed Encoding of Some Primitive Types

- Primitive types that has a space in their name (`long long`, `long double` etc) are now encoded so that the space is replaced with an underscore (_)
  - For example, the value 4 of type `long long` was previously encoded as “4 long long” but is now instead encoded as “4 long_long”
- This change was done to ensure that encoded strings only contain one space that separates the value from the type name
  - Previously it was not possible to send events in the Model Debugger where the event parameter had a primitive type with a space in its name, but with this change it’s now working correctly
- Note: If your application somehow relies on the old encoding for these types it must be updated to accommodate for this change!

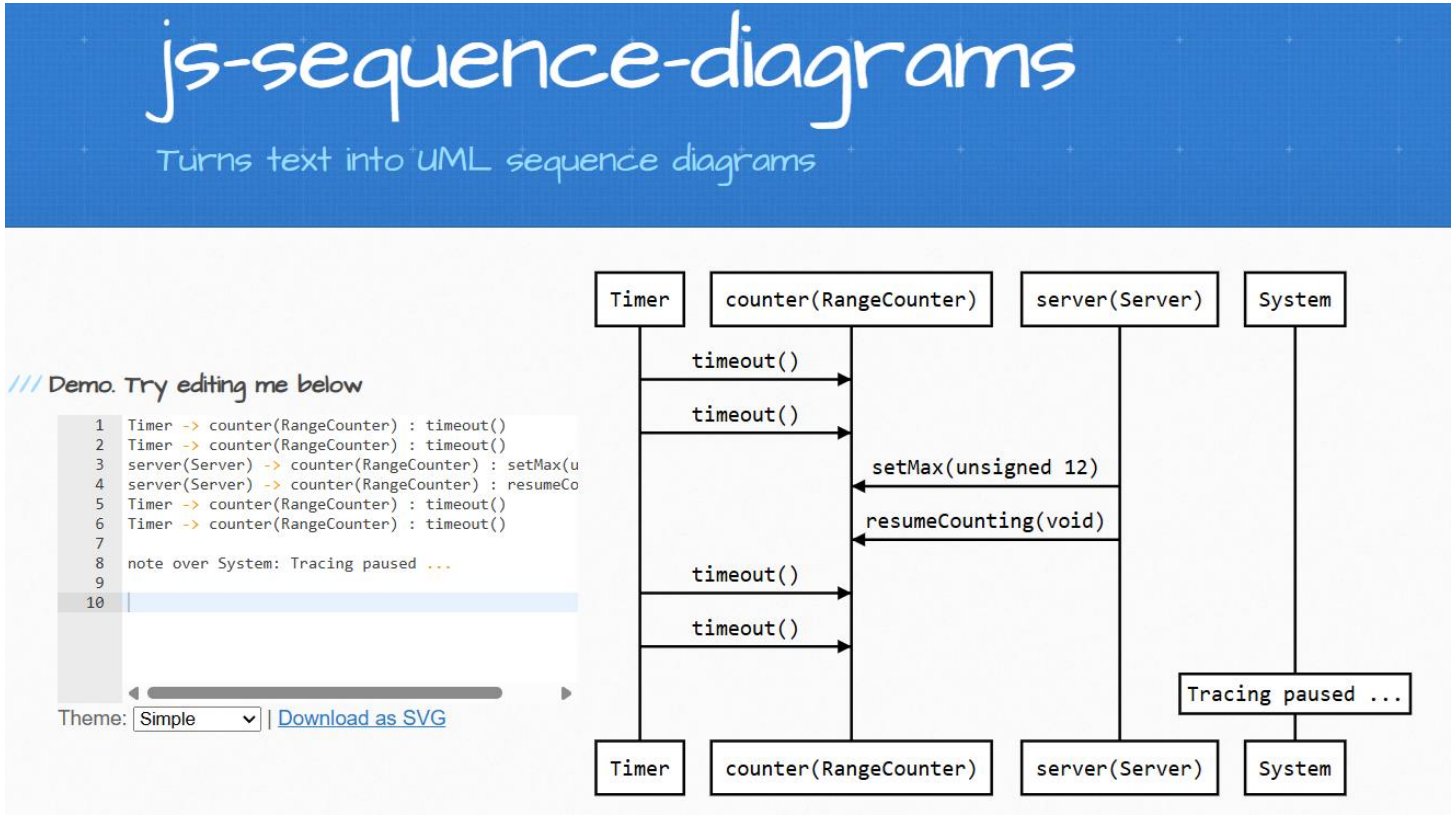
RTS Debugger Documentation

- The Run Time System Debugger (RTS Debugger) is included by default in every executable that is built with Model RealTime
  - It’s a very old feature, but was previously not covered in the documentation
- Now the RTS Debugger is documented here: https://secure-dev-ops.github.io/code-realtime/running-and-debugging/rts-debugger

```
>.\Top.exe

RT C++ Target Run Time System - Release 8.0.12

targetRTS: observability listening not enabled

RTS debug: ->
```

Tracing and Sequence Diagram Visualization

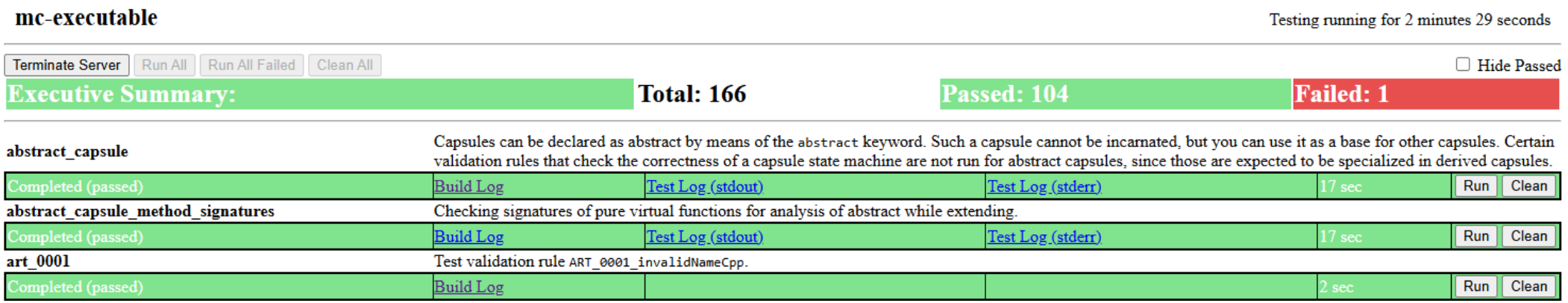
- A new trace feature is now available
  - Implemented in the TargetRTS and is independent of the Model Debugger UI
  - Captured traces can be visualized graphically as sequence diagrams
- This tracing can be turned on/off from
  - Command-line
  - RTS Debugger
  - Model Debugger
  - C++ Debugger
  - Code snippets (programmatically)



- For more information on this feature, see https://secure-dev-ops.github.io/code-realtime/running-and-debugging/tracing

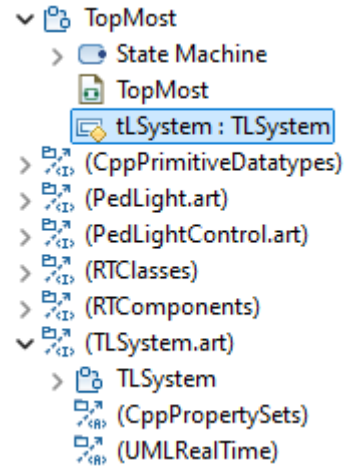
Test Runner Script

- A Node.js script is now available for automated testing of
  - Custom TargetRTS changes (making sure your changes to the TargetRTS work correctly)
  - Code RealTime libraries you may use in Model RealTime (traditional regression testing)
- The script can either be used in headless mode (useful when run from CI/CD tools) or in an interactive mode through a web browser (useful during development)
- See https://github.com/secure-dev-ops/code-realtime/tree/main/art-comp-test/runner for the script and documentation on how to use it

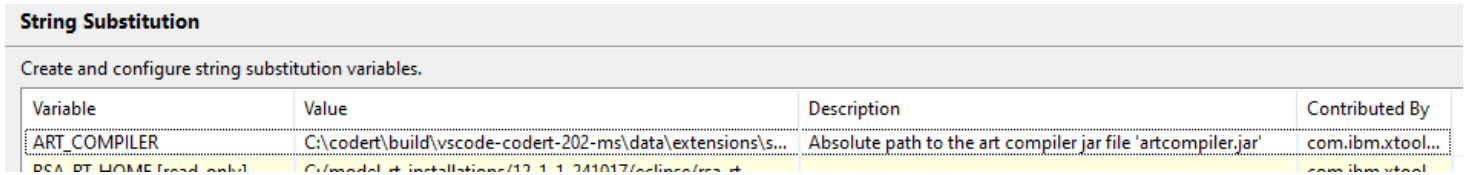


Support for Art Files (Code RealTime Integration)

- A larger subset of the Art language is now supported
  - Use Art protocols (as type of UML-RT ports, or to inherit UML-RT protocols from)
  - Art events with user-defined parameter types can now be used
  - Use Art capsules as type of UML-RT parts. Connect ports of the Art capsule to UML-RT ports.



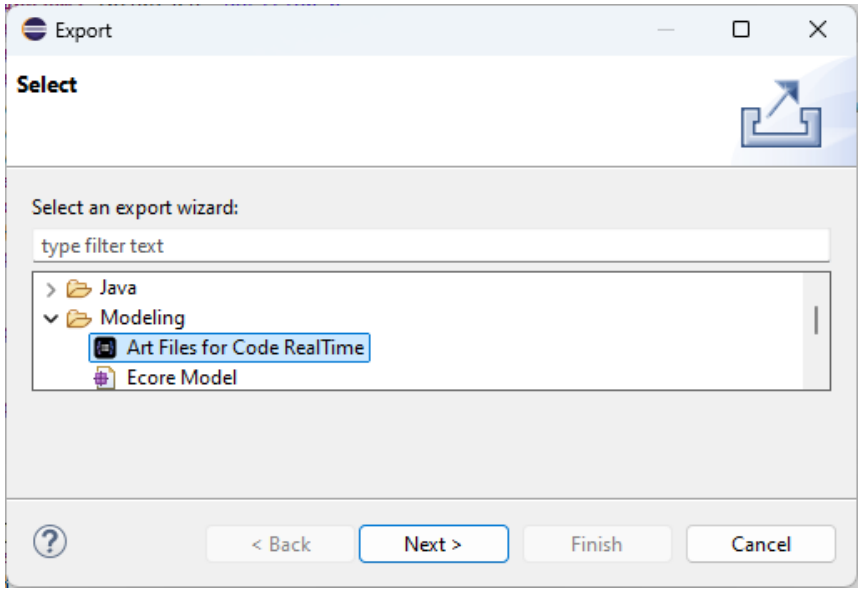
- The Art Compiler is now automatically invoked from generated make file
  - No longer necessary to manually build in Code RealTime if Art or TC files are changed
  - Requires Model RealTime to know where Code RealTime is installed (by means of a new string substitution variable ART_COMPILER)



- Note: This feature replaces the experimental feature “Support for textual state machines” which now has been removed

Art Exporter

- A new utility for exporting (parts of) your models to Art files for Code RealTime
- Available as a separate update site to be installed on top of Model RealTime
  - Get it from the Utilities page on the Info Center
- Examples of situations when it can be useful
  - Exporting data types from a model to reuse them in a Code RealTime application or library
  - Migrate a Model RealTime application to Code RealTime (not all model constructs, diagram layouts and TC properties are supported yet)



- The Art Exporter can either be run from the Eclipse UI as an export wizard, or from the command-line by calling the model compiler with a new `--exportArt` option
- Note: You can expect new releases of the Art Exporter to be delivered frequently during 2025 (more frequently than new versions of Model RealTime)
  - See the documentation for detailed release notes

HCLSoftware

hcltechsw.com