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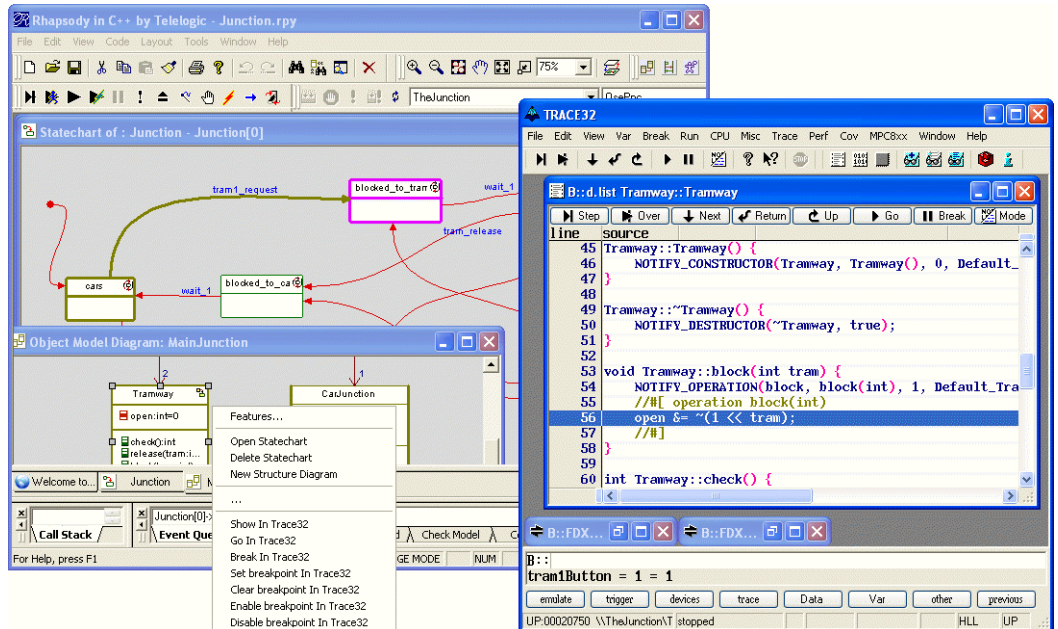
## Integration for Rhapsody in C/C++

- Download and Start Application within Rhapsody via TRACE32
- Navigate to Source Code in Rhapsody
- Navigate to Model Element in TRACE32
- Set and Remove Breakpoints on Model Elements
- Continue and Halt Application within Rhapsody
- Run Animated Diagrams via TRACE32
- Use Animation with Instruction Set Simulators

The TRACE32 debuggers include an interface for external access to TRACE32 systems (API). The interface can be used to integrate with other development tools like editors, CASE tools or source configuration management systems.

Our software package contains a ready-to-run integration to Rhapsody in C/C++ from IBM. The integration includes a mutual navigation of source code, debugging functionality inside the UML tool, and the animation without an external interface.

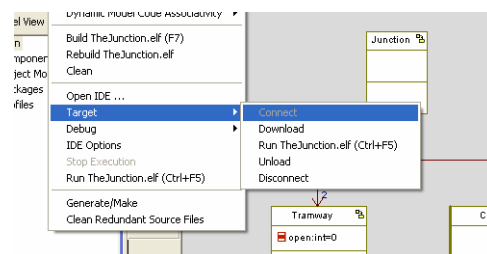
## Integration to Rhapsody in C/C++



### Download and Start Application within Rhapsody via TRACE32

The integration of the tools offers the ability of downloading and starting the application on the target hardware directly within Rhapsody. There's no external interface necessary, the debugger accomplishes the download.

By configuring the debugger accordingly, no initializing software ("boot loader") is needed. Both, the download and the start of the application, is completely managed by the debugger and is configurable.

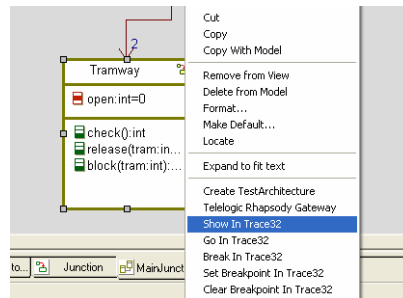


Download and start menu in Rhapsody

## Navigate to Source Code in Rhapsody

The context menu for model elements in Rhapsody is extended. One item allows the display of the source code generated for this model element within

TRACE32. There you can then easily set breakpoints or view variables of this portion of the source code.

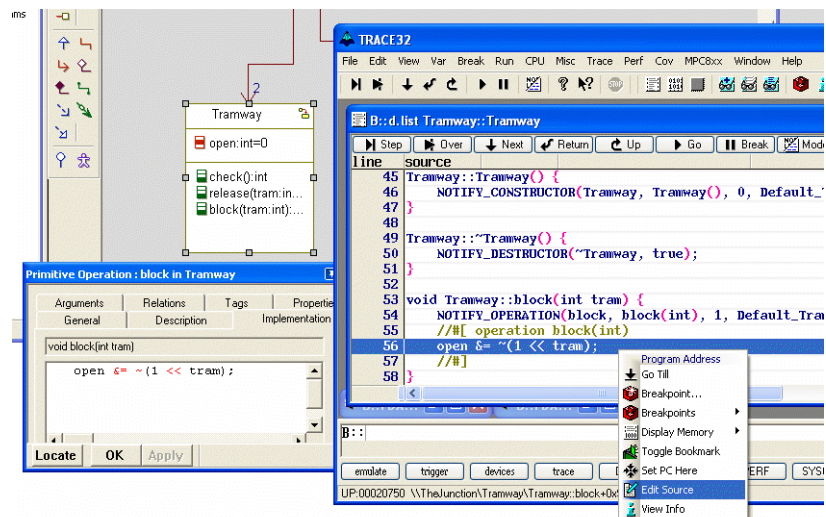


Context menu on model element in Rhapsody

## Navigate to Model Element in TRACE32

Especially interesting is the navigation from the generated source code to the model element: if you find a bug in the C/C++ code, a simple mouse click in the debugger is enough to automati-

cally open the according model element within Rhapsody. There's no longer a long-time search of the place to change in the UML model.

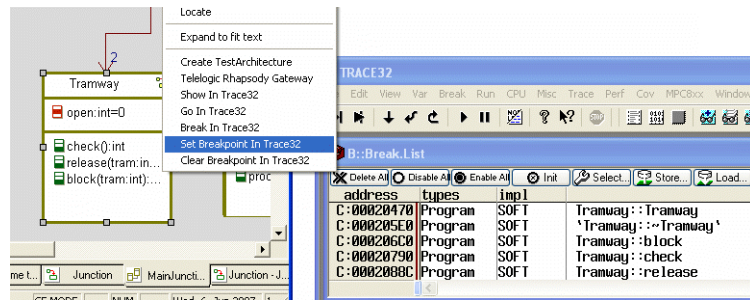


Context menu in TRACE32 to edit model element in Rhapsody

## Set and Remove Breakpoints on Model Elements

Additional items in the context menu allow the setting and removing of real-time breakpoints directly on the model

element. You don't need to search for the according function names in TRACE32.



Breakpoint set within Rhapsody

## Continue and Halt Application within Rhapsody

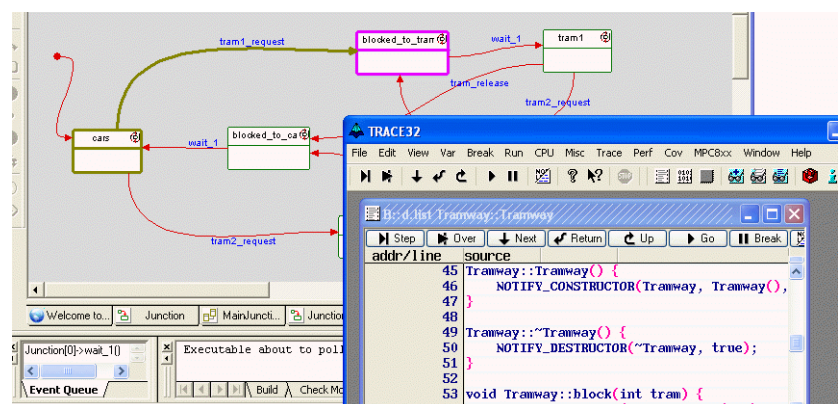
The extended context menu allows to continue or halt the application within Rhapsody. Using this in conjunction with the breakpoints, you can run to

specific model elements and their methods, immediately out of the UML model.

## Run Animated Diagrams via TRACE32

Rhapsody offers an "Animation" of the UML model. This animates and generates state charts and sequence diagrams right out of the real target run. To do this, Rhapsody communicates with the target hardware via an Ethernet interface. The integration with

TRACE32 allows using this animation via the debug interface, removing the necessity of hardware resources. Animation becomes available even on boards without any communication interface.



Animated state charts with TRACE32

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## Use Animation with Instruction Set Simulators

TRACE32 debuggers are also available as Instruction Set Simulators. A limited version can be downloaded at the Lauterbach home page. Using those, you can compile and link your application for the actual micro controller, but still

simulating and animating the run in your PC. Of course, Animation works on that simulators, too.

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