GROUP 2

User Manual

Interaction Editor/Recorder

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CASETool

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This CASETool is used as a helpful tool to design embedded systems. All its different units help in different ways. The main focus of this user manual is the interaction Editor/Recorder.

The complete program consists of 5 units; a component editor (and message definition), deployment editor, simulator, interaction Editor/Recorder and a dashboard. In the component editor you define your components, and messages (see below). The deployment editor is used to define messages between components (see below). The interaction Editor/Recorder is used to draw and record interaction diagrams of the designed embedded system (see below). The dashboard is showing the embedded system visually. The simulator simulates the messages sent between the components.

Component Definition

When designing embedded systems you need some components. The components can be a controller, a software component or a hardware component. Each component needs a port definition and an automaton with a definition of the different states and transitions of the components.
Since the components are supposed to send messages to each other, you need a message definition. The message definition defines the messages to be used.
Such component definition and message definition can be created using the component editor.

Deployment Editor

When you have defined the components and their ports, and of course the messages, you need at deployment to state which messages are going between which components. For this you will use the deployment editor. This editor is also used to define which messages are using which ports.

Simulation

The simulator uses a deployment and sends the defined messages between the components. This is helpful to see how the messages are defined between the components.

Interaction Editor/Recorder

This part is used to draw an interaction diagram of the deployment you have made. First you can draw the interaction diagram as you would predict the messages to be sent, and then you can record from the simulation of the deployment. It is not necessary to draw your own diagram first. The alternative is to start recording right away.

Dashboard

The dashboard shows visually how the different components reacts to the messages they receive. This way you can see that the state changes due to a message sent from one component to another.

User manual

Author: Daniel & Philip

View of the Interaction Editor/Recorder

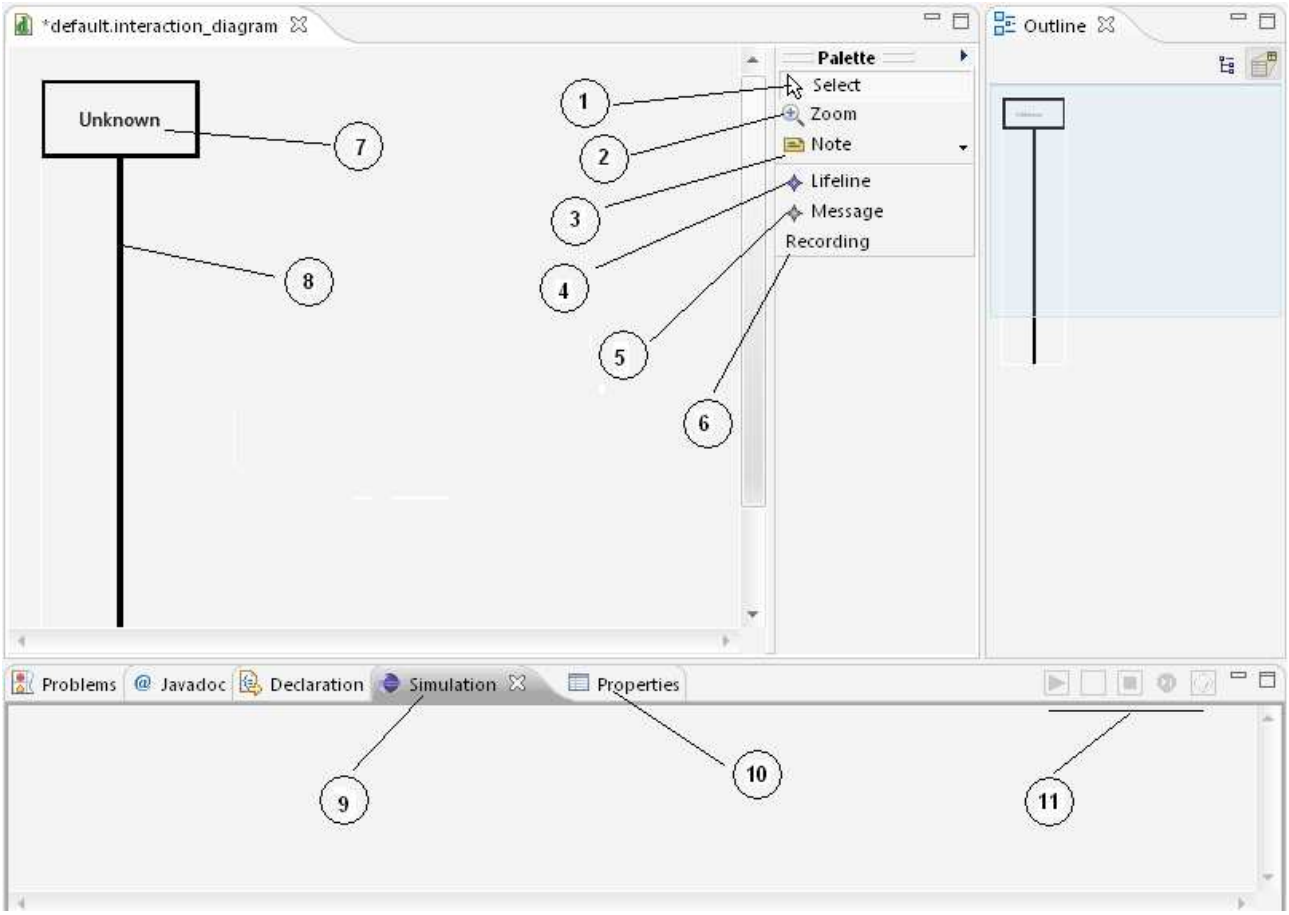

Figure 1
Explanation of the editor

Description

1. Select – select the drawn objects
2. Zoom – zooms on the screen
3. Note – insert a note in the diagram
4. Lifeline – draw a lifeline on the diagram
5. Message – draw a message from one lifeline to another
6. Recording – record a given simulation and get the send messages drawn
7. Name on lifeline
8. Lifeline object
9. Simulation view
10. Properties view
11. Options in simulation view

Simulation Properties view

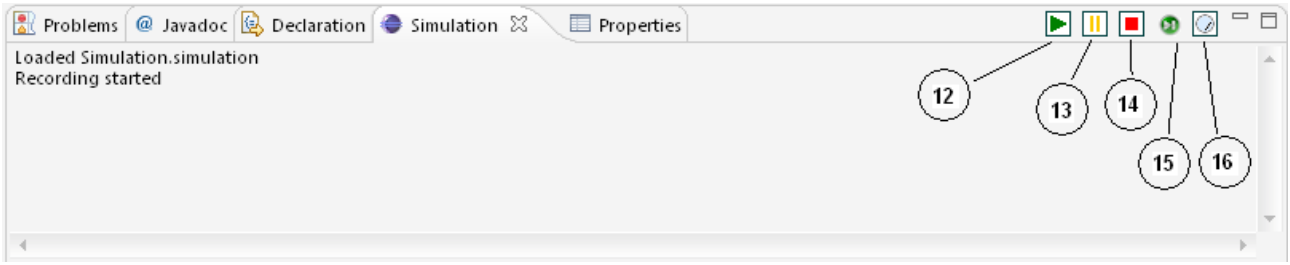

Figure 2
Simulation properties

12. Play – starts the simulation
13. Pause – pauses the simulation
14. Stop – stops the simulation
15. Step – performs a step on the simulation
16. Speed – sets the simulation speed

Step-by-step

When you have created a component definition, message definition and a deployment of those you can draw an interaction diagram of it using the Interaction Editor/Recorder.

1. Create a new project (see Eclipse help)
2. Right-click on the project in the “Package Explorer” and choose New -> Example (Figure 3)

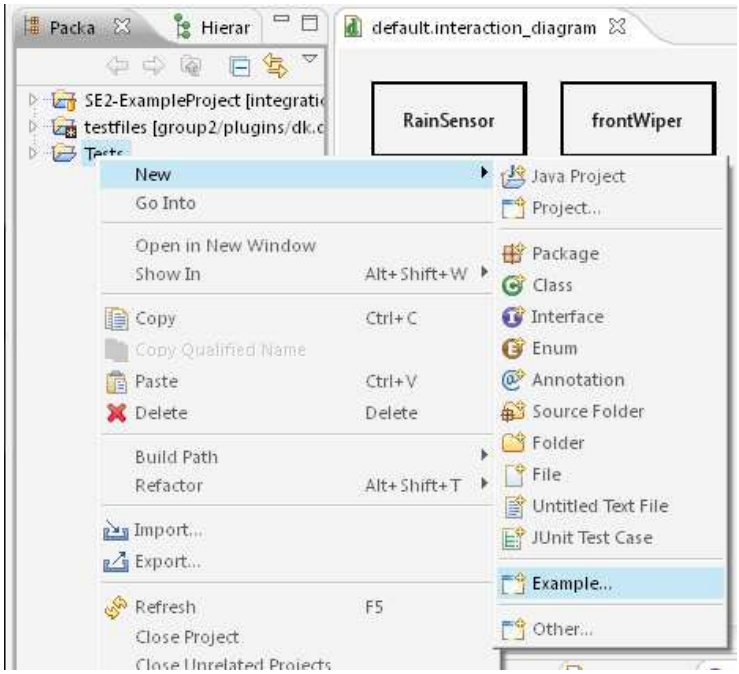

Figure 3
New interaction diagram

3. Choose “Interaction Diagram” and press Next

4. Name your interaction diagram <name>.interaction_diagram and press Next
5. You have to create an interaction for the diagram. This is done automatically, you just have to name it <name>.interaction and then press Finish
6. Open the Interaction Editor/Recorder
7. Right-click on the field of the editor and choose “Load Resource” (Figure 4)
8. Browse your file system or your workspace and choose your deployment (Figure 5). Now your message definition should be loaded as well. If not do the same for your message definition

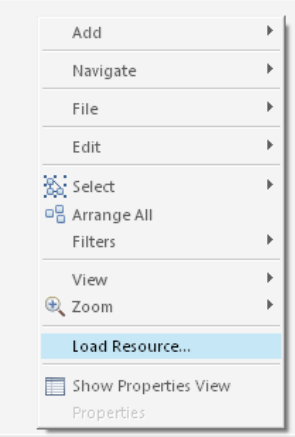

Figure 4
Load Resource

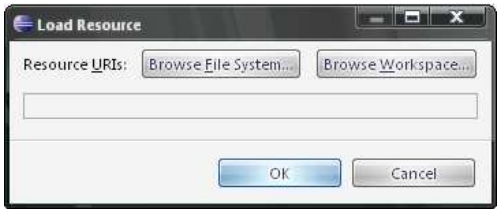

Figure 5
Choose Resource

9. Select the properties view (#10 on Figure 1)
10. You will now be able to choose one of the loaded deployments (Figure 6)

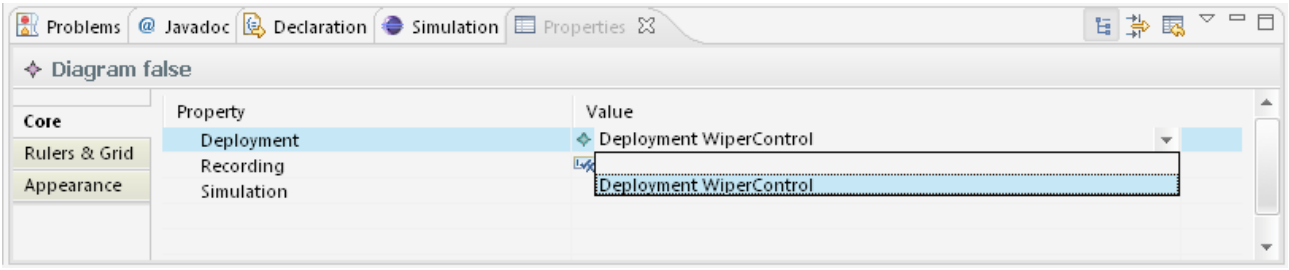

Figure 6
Properties view

11. Choose the deployment that you would like to draw an interaction diagram of
12. Create a lifeline by choosing “Lifeline” (#4 on Figure 1) and left-click on the editor field. A lifeline will be drawn and automatically sized and positioned.
13. Left-click on the visual lifeline and choose the properties view (#10 on Figure 1).
14. In the properties view (#10 on Figure 1) you can choose which component (in the deployment) the selected lifeline should represent. When you have chosen one of the components, then the name

of the lifeline will automatically be updated (Figure 7). Repeat step 12 to step 14 for those components you would like to be represented

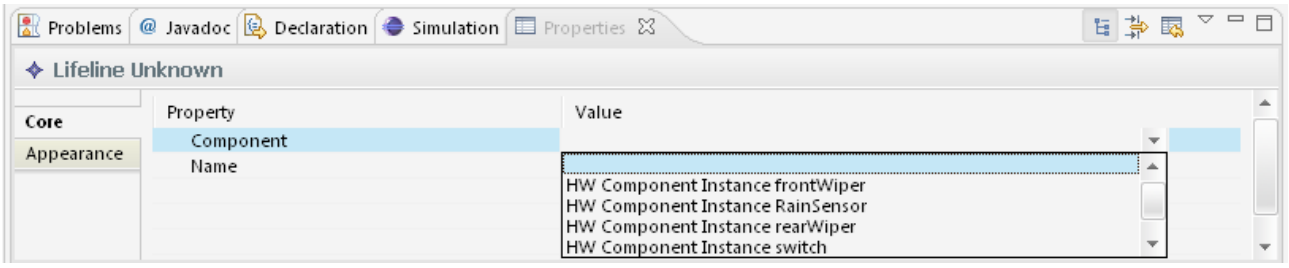

Figure 7
Lifeline properties

15. Draw messages between the components (lifelines) by selecting “Message” (#5 on Figure 1) and left-click (hold down) on the source lifeline, and drag the mouse to the target lifeline and release the left mouse button. A message (arrow) will be drawn between the two lifelines and automatically be positioned. A name-tag for the message will appear with the text “unnamed message”. It is possible to choose the same component (lifeline) as source and target.

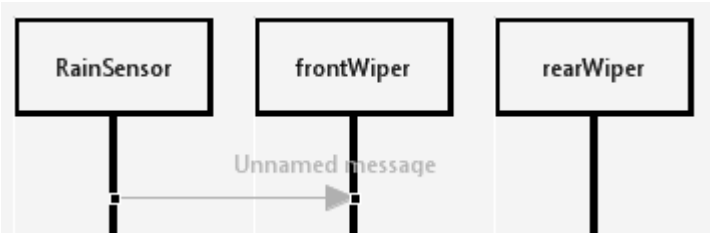

Figure 8
Unnamed message

16. In order to name the messages, click on the message and choose the properties view (#10 on Figure 1). In “type” you can select which message, from your message definition, you would like the drawn message to represent (Figure 9). The name-tag on the message will automatically be updated (Figure 10). Repeat step 15 to step 16 for all the messages you would like to be represented.

17. If you would like to delete a message or a lifeline simply use the “Select” tool (#1 on Figure 1) and select the message/lifeline and press the delete button on your keyboard. Messages attached to the lifelines that is being deleted, will automatically be deleted.

18. Saving the interaction diagram is simply done by pressing CTRL+S (shortcut) or closing the editor and press “yes” when asked to save or not.

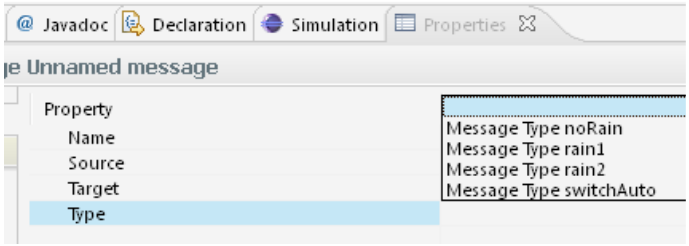

Figure 9
Message types

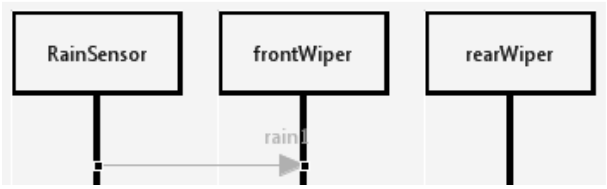

Figure 10
Message properties

19. Click ”Recording” (#6 on Figure 1), and a dialog box will pop-op (Figure 11). In this dialog you can select a name for the simulation (*.simulation) and a place to save it. Whenever you make a change in the simulation it will be saved automatically.

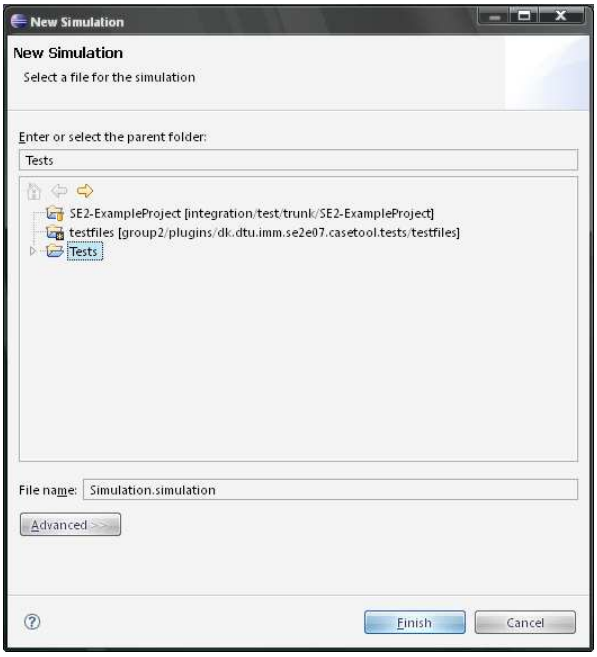

Figure 11
Save simulation

20. Go to the simulation view (#9 on Figure 1). Press the play button (#12 on Figure 2) and the simulation starts.

21. Pause the simulation by clicking the pause-icon (#13 on Figure 2), and click the “Select”-tool (#1 on Figure 1) to stop recording, save the diagram and re-open it, now you are able to see the drawn messages.

22. You can also do a step-wise simulation, by clicking the step-wise-icon (#15 on Figure 2). Save the diagram and re-open it, now you are able to see the drawn messages.

23. To set the speed of the simulation click the speed-icon (#16 on Figure 2) and enter a speed. Save the diagram and re-open it, now you are able to see the drawn messages.

24. Stop the paused simulation by clicking the stop-icon (#14 on Figure 2) or continue the simulation by clicking the play-icon (#12 on Figure 2). Save the diagram and re-open it, now you are able to see the drawn messages.

In the simulation properties view (#10 on Figure 1) you will at all time be able to see a description of the performed action, like starting a simulation, stopping, pausing etc.

25. There is another way to create a simulation. Go to your Package Explorer (see Figure 12) and find the deployment you would like to simulate. Right-click on the deployment and choose “Create Simulation” (Figure 12), a dialog will pop-up where you need to name your simulation (*.simulation) and choose where to save it (Figure 11).

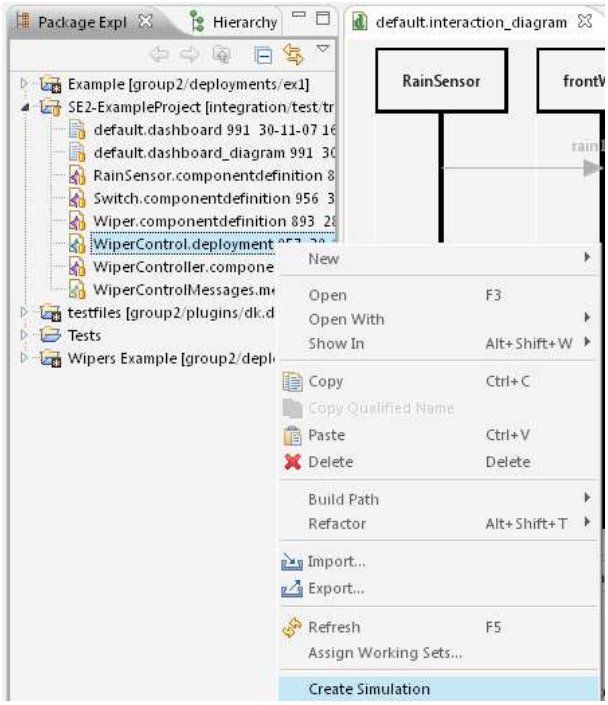

Figure 12
Create simulation

Quick reference guide

Reference word	Step number :	Page number:
Add name (object) to a lifeline	14	5-6
Add name (object) to a message	16	6
Choose deployment	8-10	5
Delete message/lifeline	17	6
Draw a lifeline	12	5
Draw a message	15	6
Load resource	7-8	5
New interaction diagram	1-5	4-5
New simulation	19 or 25	7 or 8
Pause simulation	21	7
Play simulation	20	7
Record simulation	19	7
Save an interaction diagram	18	6
Set simulation speed	23	7
Step in simulation	22	7