Simulation of UML StateChart

IETA MICHAËL RIGAUD

Stage chief: Prof. Hans Vangheluwe

Tutor: Simon Van Mierlo

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Introduction

Part I

Presentation

CHAPTER 1

Presentation of the project

1.1 The goal

The goal of this project is to create a simulator of Statechart which can be use with UMLDesigner. This simulator should permit to visualize and debug a model of a state machine. Moreover, UMLDesigner is a modeling software for UML model and Statechart, so we could create the model and simulate it on the same tools. The picture 1.1 represent the aim of this project.

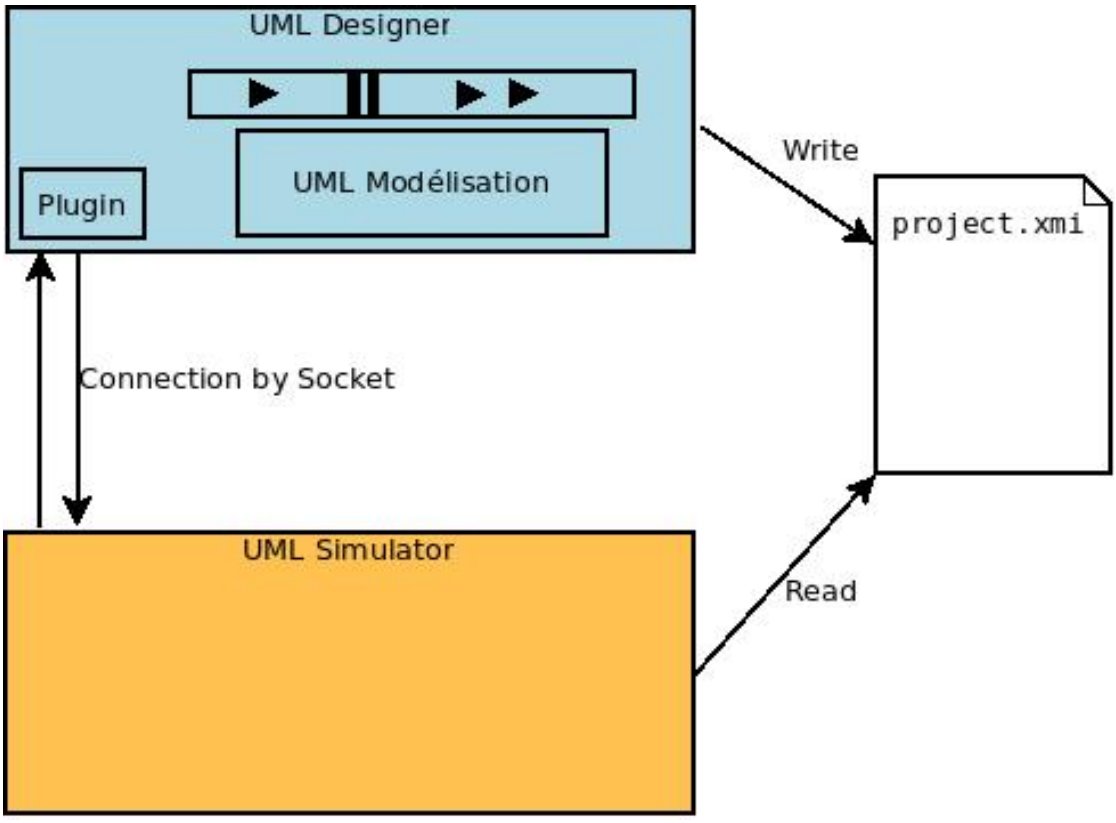

Figure 1.1: Description of the project

1.2 Tools at the disposal

At the begin of this project, some of the tools, which were needed, existed. In fact, ULMDesigner is a UML modeling tool develop by *Obeo*. However, it didn't exist yet

a simulator for Statechart adapted for UMLDesigner. On the chapter 2, the running of UMLDesigner will be discuss.

Then, Mr Ciprian Theodorov, one of my professor, has developed a simulator for Statechart. This simulator needed to be improved, but it composed a good beginning for this project.

CHAPTER 2

UMLDesigner

UMLDesigner is a graphical tooling to edit and visualize UML models created by the French company: *Obeo*.

It is an open source software.

Figure 2.1: UMLDesigner logo

2.1 Kernel

UMLDesigner is based on a Eclipse kernel. The interface is the same as Eclipse. You can notice on figure 2.3 that the menu are the same in the both software.

UMLDesigner use also Sirius. Is an Eclipse plugin which permit to represent diagrams. Sirius was created by *Obeo* to Thales.

Then *Obeo* develop a plugin to adapt diagram product by Sirius as UML diagrams.

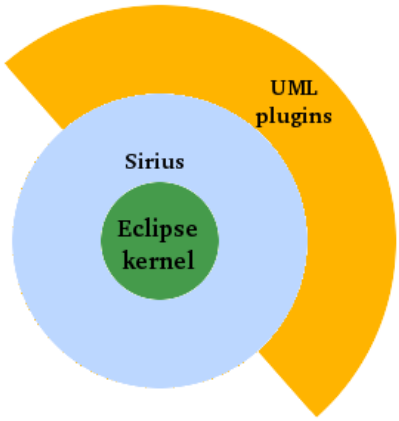

Figure 2.2: The UMLDesigner kernel

2.2 Operation

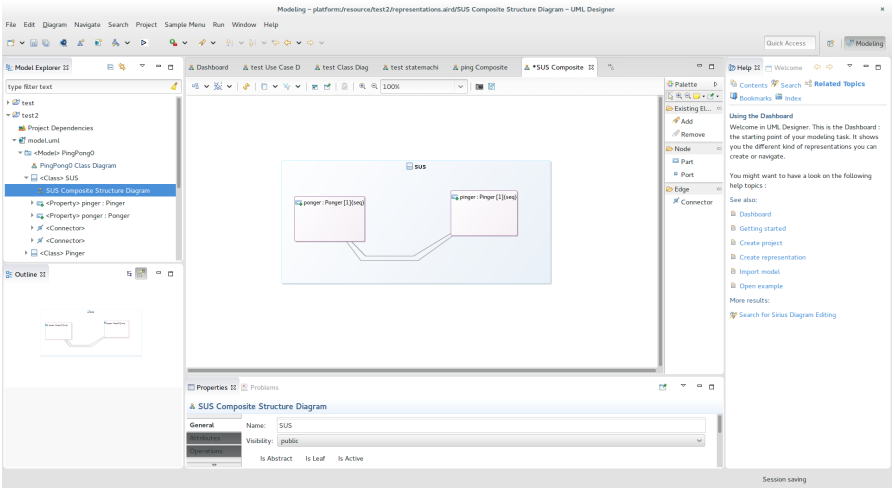

Figure 2.3: Screenshot of UMLDesigner

CHAPTER 3

Simulator

3.1 Description

At the beginning of this project, we had at our disposal the simulator of Mr Teodorov (figure 3.1). This simulator simulate a uml file. The uml file need to have a particular architecture.

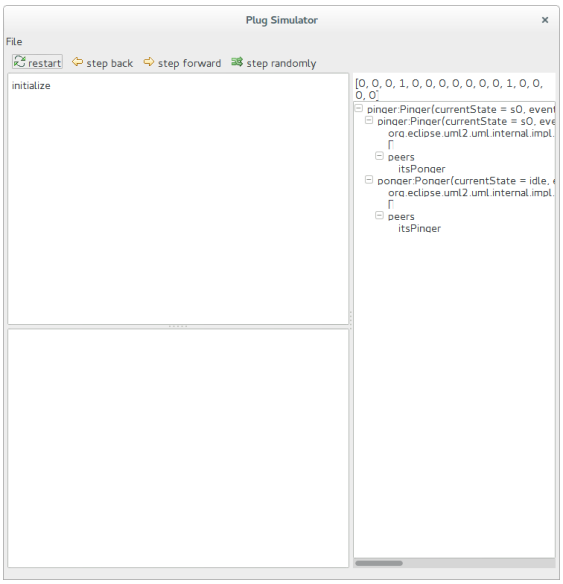

Figure 3.1: Mr Teodorov simulator

Part II

Study of the subject

CHAPTER 4

Communication inter process

4.1 Type of communication conceivable

A lot of type of communication inter process were suggested to create a discussion enter the plugin and the simulator. But we will present only the most consistent.

The communication is the part the most important of this project, because that will implement the interface between the two software.

Socket

Advantages	Drawback
Work with every simulator type (python, java, ...)	communication synchronous

File

Advantages	Drawback
Problem when two software want to change the same file at the same moment	Communication asynchronous

Named pipe

Advantages	Drawback
It is possible to use the Simulator outside the graphical modeling tool	

Shared Memory

Advantages	Drawback
It is possible to use the Simulator outside the graphical modeling tool	

Thread

Advantages	Drawback
	problem if the thread don't avance at the good speed

Heritage

Advantages	**Drawback**
Easy to implement	Need to add code in the simulator
	We can only use simulator in Java

Our solution

The solution was not in this list of common way to communicate inter process. In fact, we use the *Runtime* class which is in the java library.

Advantages	**Drawback**
It is possible to use the Simulator outside the graphical modeling tool	
Work with every type of simulator	

Conclusion

Annexe

Appendix A

Organisation of the work

A.1 Calendar

Tasks/weeks	1	2	3	4	5	6	7	8	9	10	11	12	13	14
State of the art	-	-												
Work on the plugin			-	-	-									
Unit tests						-	-							
Improve the simulator								-	-					
Other simulator										-	-			
Redaction		-	-	-	-	-	-	-	-	-	-	-	-	
Soutenance														-

A.2 Tools use for the project

The Framaboard application:

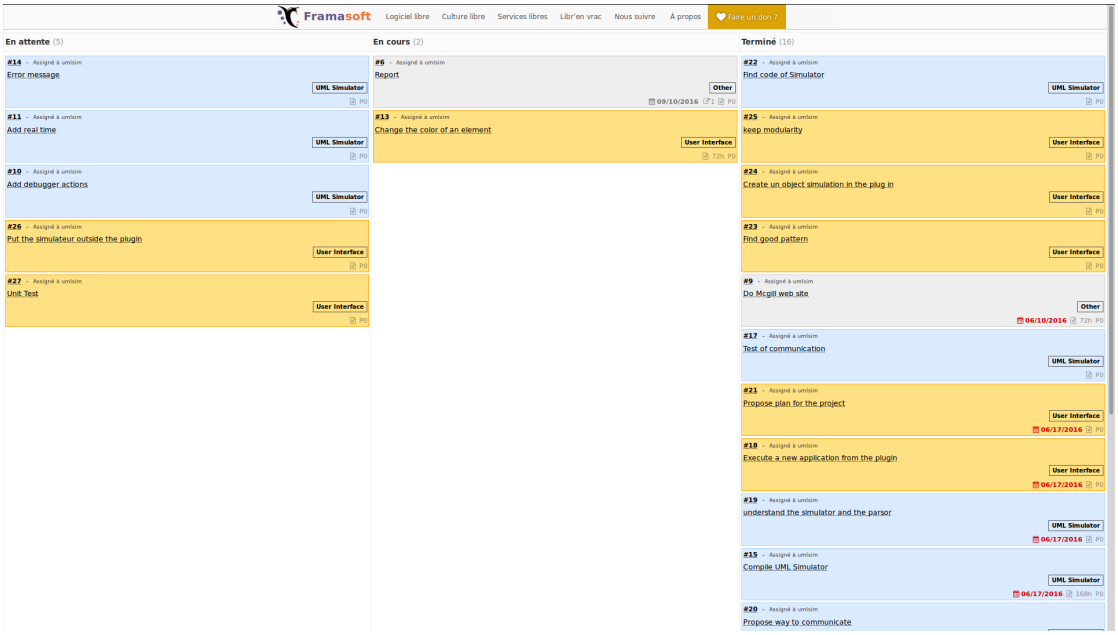

Figure A.1: screnshot of the framaboard

The web site of MSDL researcher:

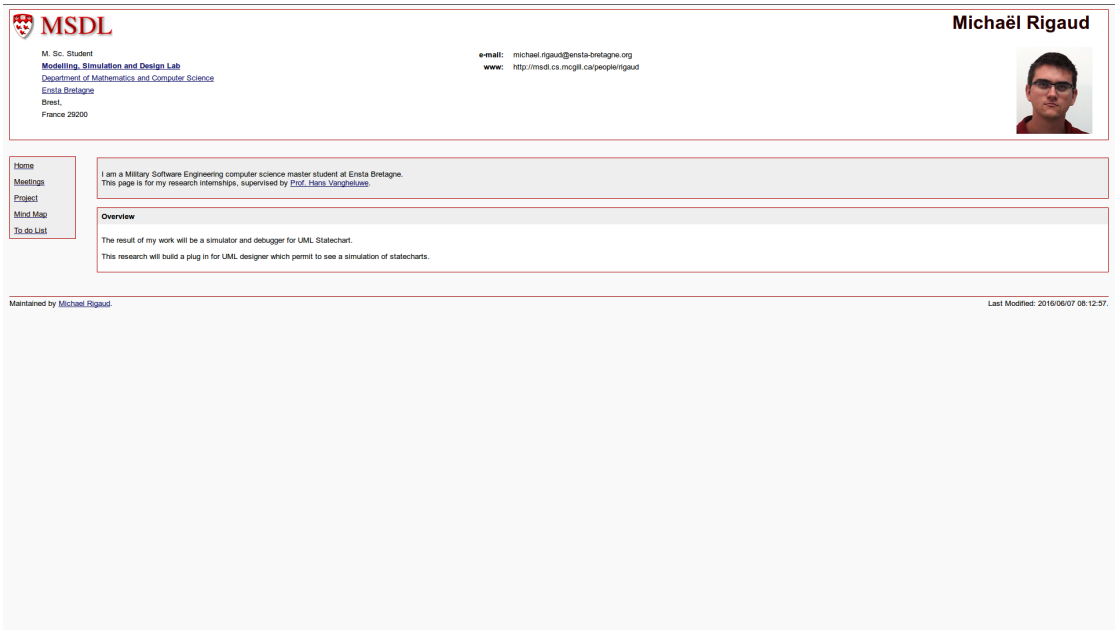

Figure A.2: MSDL web site

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Bibliography

[1] Obeo. Contribute developer guide.

[2] Eclipse Obeo. Sirius documentation.