Imperial College London

Faculty of Engineering

Department of Computing



LTSA Eclipse and SENSORIA Help Guide

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LTSA Eclipse and SENSORIA Help Guide

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1 Introduction

The LTSA Eclipse plug-ins for the SENSORIA Case Tool are a set of services providing interfaces to the LTSA suite of model-checking tools. The SENSORIA Case Tool provides a framework for offering these services and can be used to script the execution of service methods in a workflow style. The set of LTSA services and functions currently available includes the following:

- Core LTSA safety, liveness property model checking
- WS-Engineer (WS-BPEL and WS-CDL) FSP models and property checking
- LTSA MSC (MSC from LTSA traces and from MSC XML)
- LTSA UML (LTSA and FSP models and analysis from UML XMI Models)

2 Glossary and Acronyms

Acrony Description

<u>m</u>

FSPFinite State ProcessesLTSAThe Labelled Transition System AnalyserMSCMessage Sequence Chart

3 Installation

The LTSA Eclipse SENSORIA Case Tool plug-ins require the LTSA Eclipse plug-in, and can be installed as features from the main LTSA Eclipse Update site (which is used via the **Help -> Software Updates -> Find and Install** option in the Eclipse IDE.

Please see the LTSA Eclipse help guide for further details of installing the core LTSA Eclipse and associated plug-ins.

4 **Tutorials**

Featured tutorials include:

- 1. Illustrated MSC Trace from the safety check of a BPEL process
- 2. MSC Trace of a UML Interaction Diagram

4.1 MSC Trace from BPEL Process

This tutorial demonstrates producing a Message Sequence Chart trace from the analysis of a Business Process Execution Language for Web Service (BPEL4WS) process specification. Each step is illustrated with an example figure.

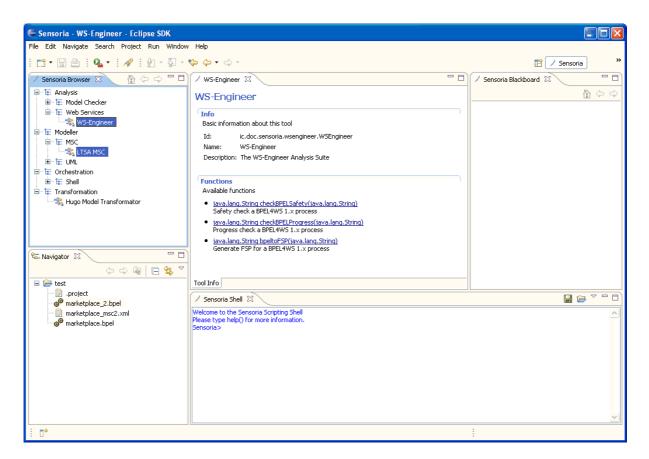
1. Locate the SENSORIA Browser view and check that the following plug-ins

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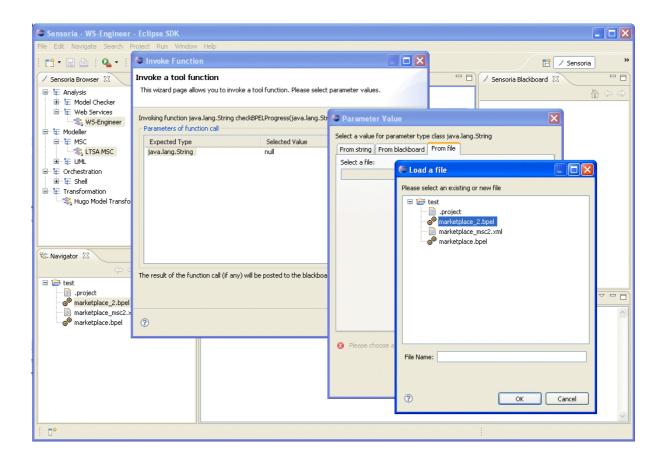
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have been installed.

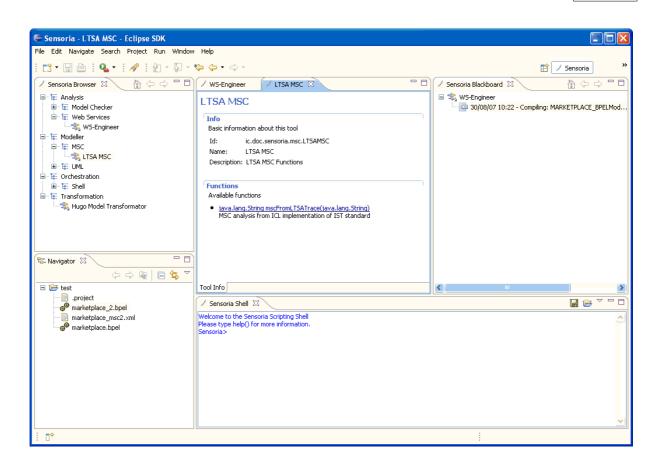
```
Analysis -> Web Services -> WS-Engineer
Modeller -> MSC -> LTSA MSC
```



2. Select and invoke the checkBPELProgress method on the WS-Engineer Tool info view, and then use the invoke function wizard to select a BPEL process file or string. 3

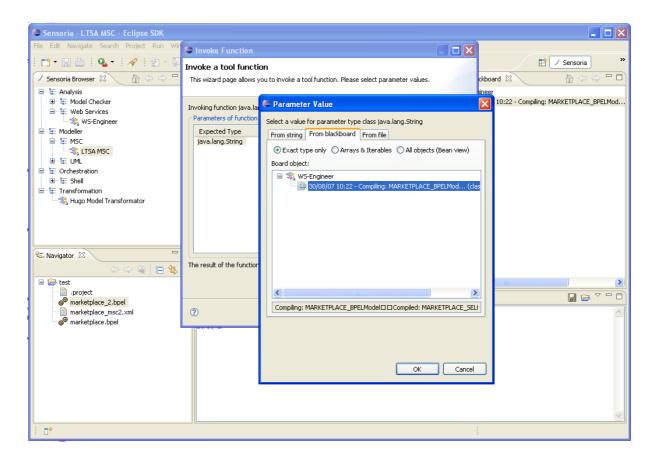


3. If the call was successful, check that the result is on the SCT Blackboard view.



4. Use the result on the SCT Blackboard as Input to the LTSA MSC plug-in method mscFromLTSATrace.

5



5. If successful, a new LTSA MSC editor window will display with a graphical trace of the BPEL interactions. If the call is not successful, please check the result on the SCT Blackboard.

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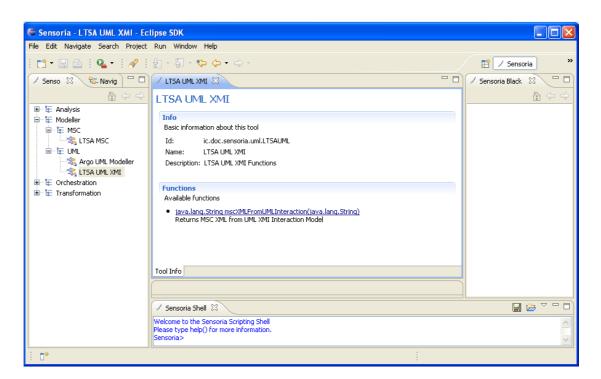
4.2 MSC Trace of UML Interactions

This tutorial demonstrates producing a Message Sequence Chart trace from the analysis of a UML2 interaction specification (exported to UML XMI 2 standards). Each step is illustrated with an example figure.

Note that this tutorial requires sources files downloaded from here: http://www.doc.ic.ac.uk/ltsa/eclipse/sensoria/tutorials/umlmscexample1.zip

1. Locate the SENSORIA Browser view and check that the following plug-ins have been installed.

Modeller -> MSC -> LTSA MSC Modeller -> UML -> LTSA UML XMI



2. Select the LTSA UML XMI plug-in and execute the

mscXMLFromUMLInteraction service method, using a valid UML2 XMI document containing the UML Interaction.

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3. If successful, an XML document will be placed on the Sensoria Blackboard. If the method is not successful, an error message will be placed on the

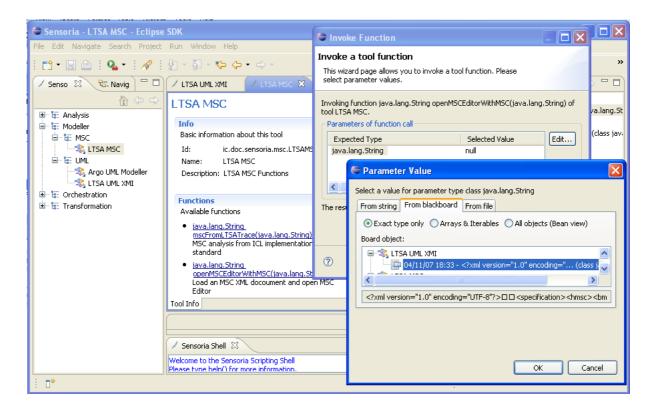
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	Functions	
	Available functions java.lang.String <u>mscXMLFromUMLInteraction(java.lang.String)</u> Returns MSC XML from UML XMI Interaction Model 	
	Tool Info	
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	Welcome to the Sensoria Scripting Shell Please type help() for more information. Sensoria>	
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4. Select the LTSA MSC plug-in and execute the <code>openMSCEditorWithMSC</code> service method, using a successful result of the LTSA UML XMI service method in 3.

9



5. If successful, the LTSA MSC Editor will be opened displaying a trace from the XML document generated in 3. If the method is not successful, an error message will be placed on the Sensoria Blackboard.

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5 Plug-in Reference

These plug-in references refer to specific details about each LTSA SENSORIA plug-in provided.

The plug-ins are categorized by Software Engineering topic. For example, by Analysis plug-ins or by Modelling plug-ins.

5.1 Analysis

The Department of Computing, Imperial College London provides the core LTSA model checker in the Analysis services within the SENSORIA browser.

5.1.1 Model Checking

5.1.1.1 LTSA

ID:	ic.doc.sensoria.ltsa
Name:	LTSA
Description:	Core LTSA Functions plug-in

5.1.1.1.1 Info

ID:	ic.doc.sensoria.ltsa
Name:	LTSA
Description:	Core LTSA Functions plug-in

5.1.1.1.2 Functions

Analyse

Provides a method to analyse a Finite State Process model.

Input: An FSP model (type: String) Output: A Trace (type: String)

Safety

Provides a method to safety check a Finite State Process model.

Input: An FSP model (type: String) Output: A Trace (type: String)

Progress

Provides a method to progress check a Finite State Process model.

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Input: An FSP model (type: String) Output: A Trace (type: String)

Compile

Provides a method to compile an FSP source model to a Finite State Machine.

Input: An FSP model (type: String) Output: Result of compilation (type: String)

5.1.2 Web Services

Enter topic text here.

5.1.2.1 WS-Engineer

Enter topic text here.

5.2 Modeller

Enter topic text here.

5.2.1 MSC

Enter topic text here.

5.2.2 UML

Enter topic text here.

6 Appendix