POLYCHRONY
A Toolset for Signal

Polychrony Installation and administration Guide

Signal ToolBox-Signal GUI

V1.0

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Visa			
Summary	**Installation and administration instructions for the Signal ToolBox and Signal GUI, components of the Polychrony tool**		

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1 Preface

1.1 Table of versions

Version	*Date*	*Description & rationale of modifications*	*Sections modified*
1.0	18/04/2012	First version	

1.2 Table of references and applicable documents

Reference/Applicable	*Reference*	*Title & edition*	*Author or editor*	*Year*

1.3 Acronyms and glossary

Term	*Description*

2 Subject

2.1 Purpose of the document

This document is the installation and administration guide for the Signal ToolBox and Signal GUI components of the Polychrony tool.

It describes the required environment for the installation of the tool, the installation procedure, the customization and the administration of the tool.

2.2 Editing particularities

2.2.1 Changes identification

All the changes made since the previous publication are identified using the sign | in

the left margin of each line holding a modification.

2.2.2 Temporary editing

Special points are signaled like this :

. ***temporary***

. ***incomplete***

. ***to be defined***

. ***to be confirmed***

2.3 Application scope

This document is applicable for the tool Polychrony.

2.4 Edition and evolution of the document

2.4.1 Responsibilities

Author

The installation and administration guide document is written by members of the Espresso team (INRIA Rennes Bretagne Atlantique/IRISA).

Checked by

The installation and administration guide document will be checked by Thierry Gautier and Loïc Besnard.

Approval

The installation and administration guide document will be approved by Jean-Pierre Talpin.

Diffusion

The installation and administration guide document is available on the forge with the source code of the tool.

2.4.2 Evolutions

The members of the Espresso Team (INRIA Rennes Bretagne Atlantique-IRISA, Rennes) are responsible of the evolution of the document.

This document shall be modified in case of change of the environment of the tool or if the modifications on the tool have repercussions on the installation, customization or administration of the tool.

3 Context

The POLYCHRONY TOOLSET, is an Open Source development environment for critical/embedded systems. It is based on Signa[1]l, a real-time polychronous dataflow language. It provides a unified model-\/driven environment to perform design exploration by using top-down and bottom-up design methodologies formally supported by design model transformations from specification to implementation and from synchrony to asynchrony. It can be included in heterogeneous design systems with various input formalisms and output languages.

The POLYCHRONY TOOLSET (See Illustration 1) contains three main components:

- The Signal ToolBox, a batch compiler for the SIGNAL language, and a structured API that provides a set of program transformations. The Signal ToolBox can be installed without the other components.
- The Signal GUI, a Graphical User Interface to the Signal ToolBox (editor + interactive access to compiling functionalities). Signal GUI requires the Signal ToolBox (or an other component that redefines the Signal ToolBox APIs).
- The SSME PLATFORM, a front-end to the Signal ToolBox in the ECLIPSE environment. SSME PLATFORM requires the Signal ToolBox (or an other component that redefines the Signal ToolBox APIs). SSME stands for Signal Syntax Model under Eclipse.

The POLYCHRONY TOOLSET, also provides:

- libraries of SIGNAL programs,
- a set of SIGNAL programs examples,
- user oriented and implementation documentations,
- facilities to generate new versions.

1For more information concerning Signal, see: http://www.irisa.fr/espresso/Polychrony.

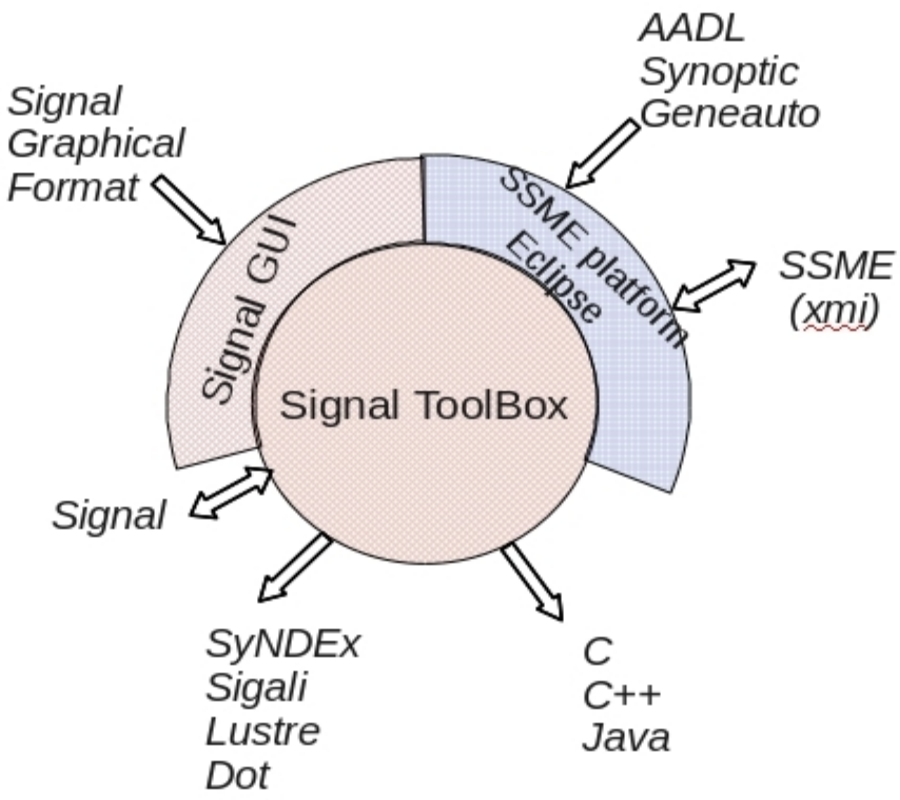

Illustration 1: Polychrony tool set

4 Installing the Signal ToolBox and the Signal GUI

Before installing the components read the License terms and check the availability of Required software. The installation and use of the components suppose the agreement to the license. To get the source files and build your own toolset (SRC), you must proceed to the toolset Extraction and Installation, and then setup the toolset Access. You may also download an available Binary version (BIN) without the source code.
This notice primarily describes the commands for Unix system in a command window (the commands are almost the same in a Windows command window).

A detailed Documentation is available and can be partially rebuilt (DOC). An online user documentation is provided by the Signal GUI.

4.1 License (BIN+SRC)

Signal ToolBox and Signal GUI are free software under the GNU General Public License, version 2. According to the license terms any user must have access to the source code, even if you

(re)distribute the original or a modified binary version.

4.2 Required software (BIN+SRC+DOC)

(SRC+BIN) The following software are required and not provided to build a Polychrony environment:

- cmake
- tcsh (all Unix based OS)

(SRC) The following software are required and not provided to build the executable files from the source files:

- C and C++ ANSI compilers (GCC or other)
- JDK version 1.2.2 or more (for Signal GUI)

(DOC) The following external software are required and not provided to build the technical documentation:

- doxygen
- pdflatex, makeindex

(SRC+BIN) The following external software are required and not provided to use the corresponding outputs of the Signal ToolBox:

- Graphviz for displaying graphs described in XX.dot files
- Lustre for XX.lus files (coming soon)
- **C, C++, Java compilers** for XX.c, XX.cpp, XX.java output files
- Syndex for automatic code distribution of XX.sdx files

(SRC+BIN) The following companion software are required to use the corresponding outputs of the Polychrony toolset; they can be downloaded at this Polychrony site.

- SME, the Eclipse frontend, for loading XX.ssme and XX.sme files
- Signal GUI, the Signal Graphical User Interface, for XX.gpk and XX.sig files
- Signal Toolbox for XX.sig files
- Sigali for XX.z3z files

4.3 Extraction (SRC+BIN)

The Signal ToolBox is provided as a compressed archive file that contains a root directory called PolychronyToolset_<Version> (where <Version> is the version of the Polychrony toolset). After an appropriate extraction in XXX directory, you should get PolychronyToolset_<Version> as a

subdirectory of XXX.

SRC+BIN	gunzip PolychronyToolset_<Version>.tar.gz tar xvf PolychronyToolset_<Version>.tar

4.4 Installation (SRC+BIN)

ⓘ☞ Make sure that the system variable “pK_ROOT” is unset.

To install the extracted Signal ToolBox first configure your own distribution (SRC+BIN) and then generate the executable files (SRC):

- Configure (SRC+BIN): after unpacking the archive, move to the PolychronyToolset_<Version>/cmake sub-directory, execute the command
  - (SRC) **cmake ..**, or (BIN) **cmake .. -DBIN_INSTALL=1** for Unix/MacOs,
  - (SRC) **cmake .. -G "NMake Makefiles"**,
    or (BIN) **cmake .. -DBIN_INSTALL=1 -G "NMake Makefiles"** for Windows

SRC	*Unix, MacOS* cd PolychronyToolset_<Version>/cmake cmake ..
	Windows cd PolychronyToolset_<Version>\cmake cmake .. -G "NMake Makefiles"

BIN	*Unix,MacOS* cd PolychronyToolset_<Version>/cmake cmake .. -DBIN_INSTALL=1
	Windows cd PolychronyToolset_<Version>\cmake cmake .. -DBIN_INSTALL=1 -G "NMake Makefiles"

- Generation (SRC): after configuring move to the PolychronyToolset_<Version> directory and execute the command “makePolychronyToolSet”

SRC	cd .. makePolychronyToolset

- To rebuild the documentation execute the following command line in the same directory:

SRC	makePolychronyToolset doc

4.5 Access (SRC+BIN)

Before using the Signal ToolBox first execute the following setup command in a fresh command window:

Unix, MacOS: SRC+BIN
```
source PolychronyToolset_<Version>/PolychronyToolset_setup
```

Windows: SRC+BIN
```
call PolychronyToolset_<Version>\PolychronyToolSet_setup.bat
```

A short description is given by the command:

```
signal -h
```

To use the Signal GUI execute the command **polychrony** and read the online user documentation.

```
polychrony
```

4.6 Installation verification

A verification of the installation can be done by testing the Signal compiler provided by the Signal ToolBox: execute the command **signal** with appropriate parameters and options. Some examples provided in the PolychronyToolset_<Version>/Examples directory (in each directory there is a AAREADME file) can be used for the test.

For the Signal GUI, run the **polychrony** command. Some examples provided in the PolychronyToolset_<Version>/Examples directory) can be used for the test.

4.7 Documentation (SRC+BIN)

All the user documentation related to the Polychrony toolset including Signal ToolBox is available on the distribution site. This includes a general presentation of the Polychrony toolset architecture.

The source documentation (SRC only) is recursively accessible from:

Unix, MacOS
```
PolychronyToolset_<Version>/doc/html/index.html
```

Windows
```
PolychronyToolset_<Version>\doc\html\index.html
```

4.8 De-installing description

Delete the **PolychronyToolset_<Version>** directory.

4.9 Error messages

When the pK_ROOT is not unset, the installation may failed. The cmake command cannot produce a corect setup (**PolychronyToolset_setup file).** To solve this problem, unset this shell variable and rerun the installing.

The cmake command fails when a required software (compiler) is not found.

5 Contacts

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