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Abstract:

This document describes the second website of the GALAXY project.

This website is focused on EDA tools and IPs, mainly: advertisement and distribution of the tools, and publication and community sharing of IPs. It also provides feedback capabilities for bug reports.

URL: <http://www.cs.man.ac.uk/apt/projects/galaxy/>

Keyword list: Website, GALAXY, Tools, IP



GALAXY

GALS InterfAce for Complex Digital
SYstem Integration

Confid. Level: Public
Date : 30/04/2010
Issue: 1

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CHANGE RECORDS

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1 INTRODUCTION

This document describes the second website of the GALAXY project.

This website is focused on EDA tools and IPs, mainly: advertisement and distribution of the tools, and publication and community sharing of open-source IPs. It also provides feedback capabilities for bug reports.

The new website is available at the following URL: <http://www.cs.man.ac.uk/apt/projects/galaxy/>

Why 2 websites?

The main GALAXY website, www.galaxy-project.org, is hosted by IHP.

We will, of course, maintain links between the two websites, but hosting this part of the website at Manchester provides the following advantages:

- *Building on Balsa's user base*: BALSAs is UNIMAN's asynchronous framework developed over the last 15 years, and is widely used in educational institutions across the world (registered users from China, Singapore, USA, Germany, Spain, France, Italy, Denmark, Slovak Republic, Israel, Taiwan, Switzerland). The tools framework built as part of the GALAXY project allows BALSAs designs to evolve from an asynchronous-only style to a mixed synchronous-asynchronous style. It allows the Balsa language to be conveniently linked to other HDLs. As such, BALSAs users should be interested in the GALAXY framework. Having both sets of tools available next to each other will give users confidence to switch to the GALAXY framework.
- *Frequent updates*: This part of the website has dynamic content, with tools being updated frequently and new IPs being shared and added to the web pages. As website updates will be done by UNIMAN, it is better to have local access to the files.
- *Bugzilla*: The bugzilla bug report system is already installed and operational at UNIMAN for BALSAs, and can be re-used for GALAXY.

Section 3 shows a list of requirements and goals for the website.

Section 4 describes each page, as designed following the requirements

Section 5 describes the web site as a whole, with links and relationships between web pages.

2 REFERENCES

2.1 ACRONYMS

ASIP	Asynchronous-Synchronous IPs packaging format
GALS	Globally Asynchronous Locally Synchronous
IP	Intellectual Property

3 WEBSITE REQUIREMENTS

3.1 OVERVIEW

This website is focused on EDA tools and IPs, mainly: advertisement and distribution of the tools, and publication and community sharing of open-source IPs. It also provides feedback capabilities for bug reports.

It presents the research efforts of the GALAXY EU Project - GALs interfAce for compleX digital sYstem integration - and promotes the design of GALS (Globally Asynchronous, Locally Synchronous) systems.

Users can publish their designs in the ASIP format to the website and share them worldwide. The designed systems can be simulated and tested with the GALAXY tools provided on the website.

3.2 AUDIENCE

The website targets several categories of people

- Searching for tools for synchronous, asynchronous or GALS design
- Interested in making EDA tools extensions
- Interested in re-using open-source IP
- Interested in sharing open-source IP

These can be researchers, professionals from the industry, and home users.

3.3 GOALS

The website should achieve the following:

- Introduce the GALAXY project
- Introduce Manchester's part to the GALAXY project
- Introduce the tools both in overview and in details
- Be the main place for distribution of UNIMAN's GALAXY tools
- Show a repository of all the ASIP IP currently available
- Provide complete Asynchronous and GALS examples based on our tools
- Provide tools manuals and tutorials
- Allow users to submit their own IP
- Advise users on appropriate open-source licenses
- Allow users to register for emails announcements about new tools releases and new IP
- Publish the IP XML design format schema asip.xsd for online access by tools
- Link related research topics

3.4 LICENSES

Following the same model as www.opencores.org:

To simplify life for users, developers are strongly encouraged to use an unmodified LGPL (Lesser GPL) license or the modified-BSD license. The modified-BSD license is the original BSD license with the 'advertising clause' removed.

A modified-BSD style license essentially states that no warranty is given, the core may be distributed in source or binary form and the authors copyright must be acknowledged.

http://en.wikipedia.org/wiki/Modified_BSD_licence

The GNU Lesser General Public License (formerly the GNU Library General Public License) or LGPL is a free software license published by the Free Software Foundation (FSF). It was designed as a compromise between the strong-copyleft GNU General Public License or GPL and permissive licenses such as the BSD licenses and the MIT License. The GNU Lesser General Public License was written in 1991 (and updated in 1999, and again in 2007) by Richard Stallman, with legal advice from Eben Moglen.

http://en.wikipedia.org/wiki/GNU_Lesser_General_Public_License

3.5 DIRECTIONS FOR PAGES

3.5.1 *GALAXY project*

The project information is introduced to web visitors: GALAXY (GALS InterfAce for Complex Digital SYstem Integration) is an EC funded research project which will provide an integrated GALS (Globally Asynchronous, Locally Synchronous) design flow, together with novel Network-on-Chip capabilities, that will materially aid embedded system design for a significant class of problems. It will also provide an interoperability framework between the existing open and commercial CAD tools that will support development of heterogeneous systems at the different levels of abstraction.

3.5.2 *The University of Manchester in GALAXY*

The University of Manchester (UNIMAN) plays a core role in GALAXY project among nine different work packages. UNIMAN focuses on:

- Defining ASIP packaging format: asip.xsd;
- Developing GALAXY-IDE software system which enables fast prototyping and development of a/synchronous mixed systems;
- Developing back-ends to generate circuit design source codes, asip description;
- Integrating several design and simulation tools such as Icarus, SystemC, etc.

3.5.3 *GALAXY-IDE tools*

The tools downloaded from the website are:

GALAXY-IDE is the main graphical user interface to design entry by allowing the user to create, open, transform and save ASIP design files. The main view shows a graphical representation of the design.

It also serves as a front-end to launch all the other tools.

Asip-add-cosim-comps adds the required co-simulation components at the interfaces of each group of components targeting the same simulator.

Asip-split-sim splits one ASIP file into multiple ones, each of them containing only the components targeting the same simulators (1 ASIP file per simulator).

asip2systemc, asip2v, asip2asm, asip2bash these code generators read one ASIP file and generate the corresponding source code (SystemC, Verilog, ARM assembly language, bash script).

galaxy-wrapper-bitgen, galaxy-wrapper-map, galaxy-wrapper-ngdbuild, galaxy-wrapper-par, galaxy-wrapper-xst, galaxy-wrapper-gcc-systemc, galaxy-wrapper-arm-as, galaxy-wrapper-arm-ld are compilers to translate any HDL source code into formats that can be sent to simulators (including executable binaries, “simulated” by just executing them; e.g. SystemC simulations).

galaxy-launcher-precompiled-executable, galaxy-launcher-systemc-i386, galaxy-launcher-vcs, galaxy-launcher-icarus, galaxy-loader-arm-cpu-on-jim-s-board, galaxy-loader-virtexE-on-jim-s-board

are tools to launch different simulators.

3.5.4 Demos and IPs Library

Demos and IPs are open sourced asip designs to be used. Their asip description and source codes are packaged together in the website.

3.5.5 Users Management

Any user can register in the website and then download, upload IPs. A simple user management and file management scheme is used.

4 WEBSITE

This section describes each web page separately.

4.1 FRONT PAGE

The aim of this page is to provide an overview of the website.

It will introduce UNIMAN's part in the GALAXY project and direct the reader to the other pages of the site.

It will be located at this URL: <http://www.cs.man.ac.uk/apt/projects/galaxy/>

4.2 ABOUT GALAXY PAGE

The aim of this page is to give more information about the GALAXY project in general (other partners, project aims, FP7 call, etc.).

It will introduce the aims of the GALAXY project, linked to the FP7 call. An overview of the work activities will be shown, with the role of each partner.

We will refer the reader to the main www.galaxy-project.org website for more details.

4.3 ABOUT GALAXY TOOLS PAGE

The aim of this page is to give more information about the UNIMAN's part in the GALAXY project: the tools.

We will go through the aims of the tools, the FP7 call that they answer to, and the related project activities in details.

Future research ideas might be expressed here.

4.4 SCREENSHOTS PAGE

This page shows screenshots of the GALAXY-IDE tool to interest the reader.

All screenshots are saved in a "screenshot" directory. These screenshots are shown in 2 columns on the page.

4.5 DEMONSTRATORS PAGE

Similar to the screenshot page, but targeting specific demos for our tools, in order to demonstrate the capabilities of the tools and interest the audience in downloading them.

4.6 DOWNLOAD PAGE

This page has 2 parts: GALAXY-IDE part(its associated tools and documents including introduction, tutorials); IP and its introduction part.

For the GALAXY-IDE part, subdirectories “galaxy_ide_download”, “demo-download”, “doc” are created. “galaxy_ide_download” holds the newest release of GALAXY-IDE tool in a tar.gz compressed format. “demo-download” holds some extra demonstration for this tool. “doc” directory holds all documentation of this tool, which includes manual, paper, etc.

For the IP part, subdirectories “ip_download”, “schema” are created. “ip_download” holds all IPs available. “schema” holds the schema (asip.xsd) used to design an IP (asipdata.xsd is used by GALAXY-IDE).

Everyone can download items from this page. Only the web administrator has the right to write in these directories.

4.7 UPLOAD PAGE

This page will give instructions for users wanting to share their IP on our website.

IPs will need to be sent by email to the UNIMAN team. For conveniency reasons, we will ask to package IP in a single compressed file such as zip, tgz, gz.

4.8 SVN PAGE

The aim of this page is to provide users a way to browse the GALAXY tools source code on a web browser. A user can view the status of any file in our SVN repository.

The page will use the open source project *websvn*, and will be hosted on the same server as *bugzilla*.

4.9 BUGZILLA PAGE

For bug reports.

This will actually be a link to a separate server, which holds *bugzilla* and its *mysql* database: <http://solem.cs.man.ac.uk/bugzilla/>.

4.10 FAQ PAGE

Frequently Asked Questions will be reported, with answers, on this page.

5 CONCLUSIONS

This website, maintained by UNIMAN, is focused on promoting and distributing the EDA tools and asynchronous IPs developed as part of the GALAXY project and by its users.

Presented next to UNIMAN's 15 years old asynchronous design tools BALSAs, the GALAXY tools should benefit from their popularity and their associated web traffic.

A set of pages explains and encourages community sharing of open-source IPs following our GALS ASIP format. The designed systems can be simulated and tested with the GALAXY tools provided on the website.

The website also provides SVN and bug report feedback capabilities in case developers are interested in contributing to our open-source project.