# A revolutionary approach to fully automatic synthesis of embedded system software

**eSSYN**
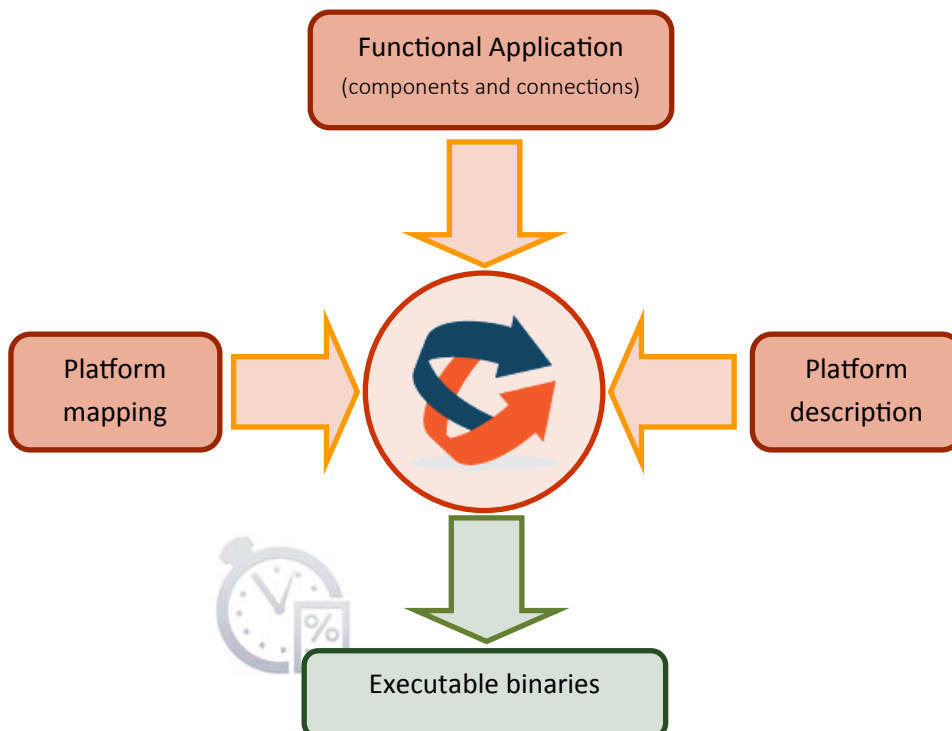*embedded software synthesis*

## What is eSSYN?

eSSYN is a software synthesis tool that automatically generates, platform specific executable binaries from a component based model of a software application and a simple model of the target hardware platform (supporting complex multicore heterogeneous platforms).

## Who can benefit from eSSYN?

Anyone willing to boost the productivity of software design for embedded systems. Specially those involved in architectural design of embedded systems, including selection of target platform, mapping of software modules to available resources (GPP, DSP, GPU,...), code parallelization, application migration to new platforms, etc.

## What is the main benefit of eSSYN?

eSSYN is an incredible effort saver for common system level tasks. For instance, splitting an application into two executables and mapping those to two cores of a platform can be done, from start to end (binaries) in five minutes. Doing that by hand is a matter of days.

Functional Application
(components and connections)

Platform mapping

Platform description

Executable binaries

**UNIVERSIDAD DE CANTABRIA**

**Microelectronics Engineering Group**

**Universidad de Cantabria**

TEISA Department (GIM Group)
Avenida Los Castros
39005 Santander
Spain

email: essyn@teisa.unican.es

**eSSYN**
*embedded software synthesis*

## Platform Independent Model

A component based model of the application is generated by the user using a simple semantic (even a wizard is available making it extremely easy to generate). This model is independent of the target HW platform and therefore is reusable among different platforms. As part of the component description, functional C, C++ or OpenCL source code is provided (actually several alternative implementations of the componet functionality may be included) and a description of the component interfaces. Last, a system view showing the connections among components complete the platform independent model of the application.
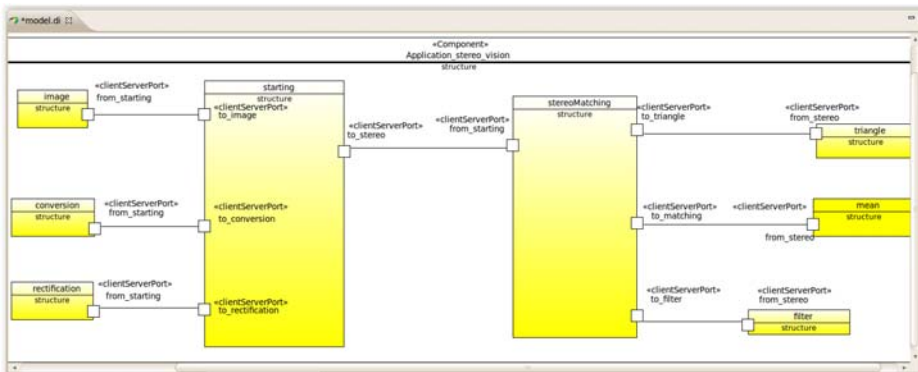


## Platform Specific Model

eSSYN allows the user to play with different mappings of components into executables though a convenient GUI. Similarly each executable can be assigned to one of the microprocessor cores, DSP or GPU available in the hardware platform. With a simple click and drag the user can completely redefine the mapping of the application and in five minutes obtain new binaries for the new implantation, exploring this way different parallelisms, resource usages etc.

Equally powerful is the capability to map an application to different platforms in a similar way. eSSYN only needs a very simplified model for each platform to test, an upgraded System Architecture as shown below and with the click of a button a new binary is generated for the new platform.
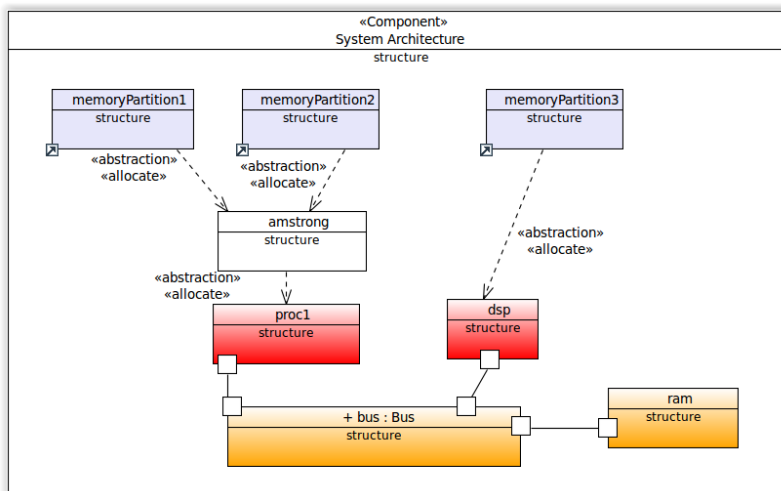


**Want to know more about eSSYN? Contact eSSYN team for a hands on demo and get to know the new way to generate complete embedded software systems in minutes.**

UNIVERSIDAD DE CANTABRIA

SEVENTH FRAMEWORK PROGRAMME

PHARAON

eSSYN
embedded software synthesis