ADHOC

ADVANCED DESIGN PROCEDURE FOR TAILOR-MADE HIGH PERFORMANCE OPEN AND FLEXIBLE CONTROL SYSTEMS

Budget: 706 KEuro
From 2012 to 2013

excellence and passion in automatic control design
EICAS Automazione S.p.A.

ADHOC addresses the market of industries (especially SMEs) which - having lost their internal design capability - are currently using "general purpose" control systems and consequently have a very limited possibility to modify them for improving the achievable performance.

ADHOC intends to offer the chance to develop, in a low cost and a highly efficient way, specific control "ad-hoc" tailored for their products, in order to increase their strength to compete in the international market.

The project intends to test and validate in three different technological domains (industrial automation, automotive, energy) an **innovative methodology** for the design of control systems at guaranteed performance, supported by

- sophisticated "**Automatic Algorithm and Code Generation**" techniques, specifically oriented towards each application sector
- a "**software-hardware suite**" easy to use, open and configurable, including operating modes, software functionalities and hardware tools fully customizable for each application sector, able to support in a complete, efficient and reliable way the overall control design process.

The Consortium includes 5 partners, 2 SME involved as technology providers (EICAS and SKY), 1 LE involved as final end-user (FIDIA), 1 academia involved in system validation (POLITO), 1 SME involved for future product marketing and as training service provider (TEORESI).

The expected main benefits in the use of the ADHOC proposed solution are:
- quick delivery time of the order
- minimized time for installation and testing
- performance higher than those achievable by integrating the "general purpose" control available on the market
- affordable costs, with reference to prices of automation systems currently on the market
- improvement of quality and reliability in operations related to processes with high safety requirements.

TECHNOLOGIES

In term of adopted technologies, the ADHOC "**software-hardware suite**" is composed by
- a suite of "**user friendly**" and "**interoperable**" software tools, based on **EICASLAB**™ technology (www.eicaslab.com), able to support all the developing phases of the control system, from system concept to final on-field setup
- a "**low-cost**" multicore platform for the Rapid Control Prototyping (RCP) activities, based on a commercial PC equipped with a free RTOS (Linux based) and managed through advanced multithreading and multicore techniques
- an **embedded platform** completely open and adaptable for the control system designer (named "**White Box**"), configurable as the final hardware target.

APPLICATIONS

The ADHOC approach will be tested and validated in the following three applications:
- machine tool control (industrial automation, leader FIDIA)
- test-bed for experimental validation of shock absorbers for vehicle suspensions (automotive, leader POLITO).
- academic test cases to be used for training purposes (energy and others, leader TEORESI).
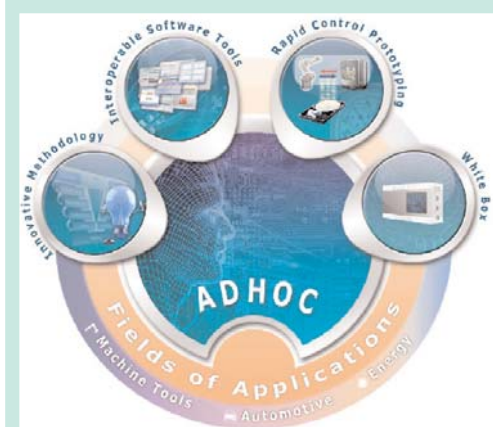
INDUSTRIAL EXPLOITATION

ADHOC will promote the development and implementation of highly professional, open, configurable software and hardware tools - made in Italy, affordable in term of cost and exportable all over the world - as a concrete alternative to standard control systems currently marketed (general purpose, closed and high cost systems).

The project is expected to primarily provide access to the innovative methodology for local firms operating in the industrial automation sector (with specific attention to SMEs located in Piedmont Region and, more generally, in Italy), so as to regain the ability to design and develop customized control systems with performance superior to those attainable with the use of general purpose control systems, thus allowing to cope with international competition. It is also expected a significant impact in the automotive, energy and aerospace sectors.

PARTNERS

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