

BASIC INFORMATION ON SUB-PROJECT

NAME OF PROGRAMME/FUND	Scholarship Fund - Sciex NMS ^{ch}
RESEARCH FIELD AND OTHER RESEARCH FIELDS INVOLVED (if applicable)	Engineering Sciences
TITLE OF THE SUB-PROJECT	Productive and Efficient dynamic Analysis through aspect-oriented domain-specific Languages (PEARL)
REGION OF THE CZECH REPUBLIC (according to the location of the home institution)	Prague
GRANT AMOUNT SPENT	64 171,12 CHF
INTERMEDIATE BODY	Swissuniversities
HOME INSTITUTION	Charles University in Prague, Faculty of Mathematics and Physics
HOST INSTITUTION	Università della Svizzera italiana (USI), Faculty of Informatics
NAME OF THE FELLOW	Lukáš Marek

<p>ABSTRACT OF THE SUB-PROJECT</p>	<p>Dynamic analysis tools such as profilers or debuggers are essential in software development. However, the implementation of dynamic analysis tools remains a tedious and error-prone task, because it requires resorting to low-level implementation techniques, such as program instrumentation at the bytecode level. The PEARL project aims at significantly raising the level of abstraction in the development of dynamic analysis tools. Building on the combined expertise of the Host and the Home Mentors' research groups in the area of aspect-oriented programming and profiling, we will design a novel, high-level, aspect-oriented domain-specific language (DSL) for dynamic program analysis. On the one hand, high-level language features will increase productivity in the development of analysis tools. On the other hand, the language will offer advanced optimization mechanisms such as the support for custom static analysis at weave-time and deferred execution of analysis code on multicores, ensuring that the resulting dynamic analysis tools are effective and efficient. We will implement a compiler and a weaver for the DSL, and validate and evaluate them in concrete case studies in the profiling domain. All developed software will be open-source. In addition, we will work on joint conference and journal publications.</p>
<p>DATE OF REALISATION OF THE FELLOWSHIP</p>	<p>1.6.2011 - 31.5.2012</p>
<p>MORE INFORMATION ON THE PROGRAMME</p>	<p>www.sciex.ch</p>