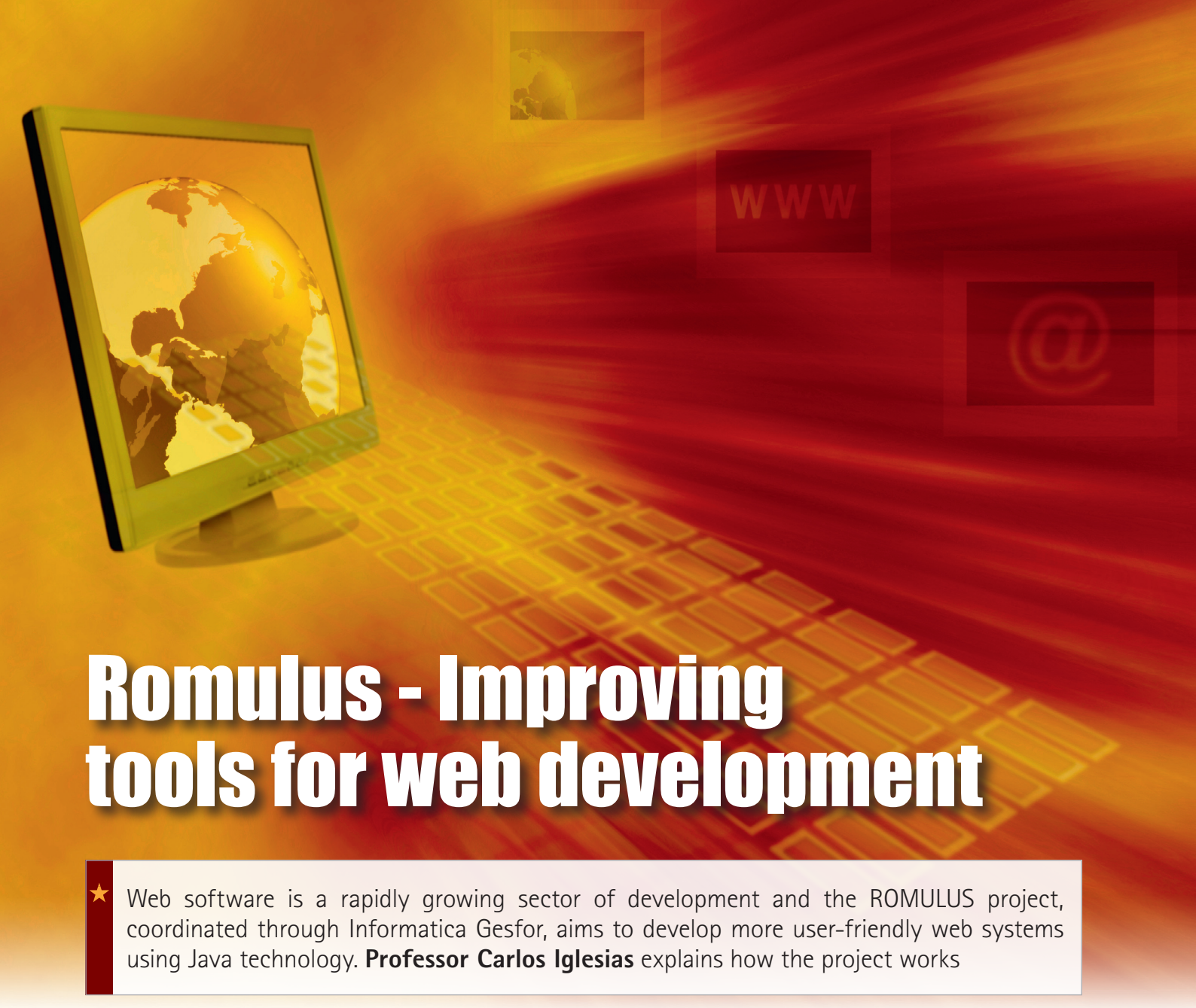


Romulus - Improving tools for web development

Web software is a rapidly growing sector of development and the ROMULUS project, coordinated through Informatica Gesfor, aims to develop more user-friendly web systems using Java technology. **Professor Carlos Iglesias** explains how the project works

The Internet is the key technology of our age for business, research and for personal use and web development software is therefore highly influential and important as a tool.

Currently, the wide range of technologies and frameworks available for Java Web Development gives it a wide range of attributes when compared to other solutions that have emerged, such as Ruby on Rails. Nevertheless, this is also one of its main shortcomings, as developers spend a substantial amount of time learning new technologies and frameworks and new versions of these frameworks, which in turn decreases productivity.

In addition, simple tasks require too much coding. New solutions such as Ruby on Rails have shown that web development can be easier, based on important concepts, such as (1) conventions over configuration, (2) providing a framework that automates up to 80 per cent of the most common tasks and (3) a simple and modular MVC model for developing applications. ROMULUS aims to learn from the lessons of Ruby on Rails and provide a productive solution based on Java.

ROMULUS is pushing to improve Java web development in several directions such as improving the productivity with the provision of a Domain Driven Design Roma Metaframework and IDE integration, and involving soft goals in the development process such as providing

> “Romulus aims at improving productivity by reducing the effort in repetitive tasks but also in improving the software quality”

web and security testing facilities; and research on how 'mashup' technology can improve web development.

"The main objective of the Romulus project is improving productivity in web development techniques whilst developing Java Web Applications," summarises Professor Carlos Iglesias,

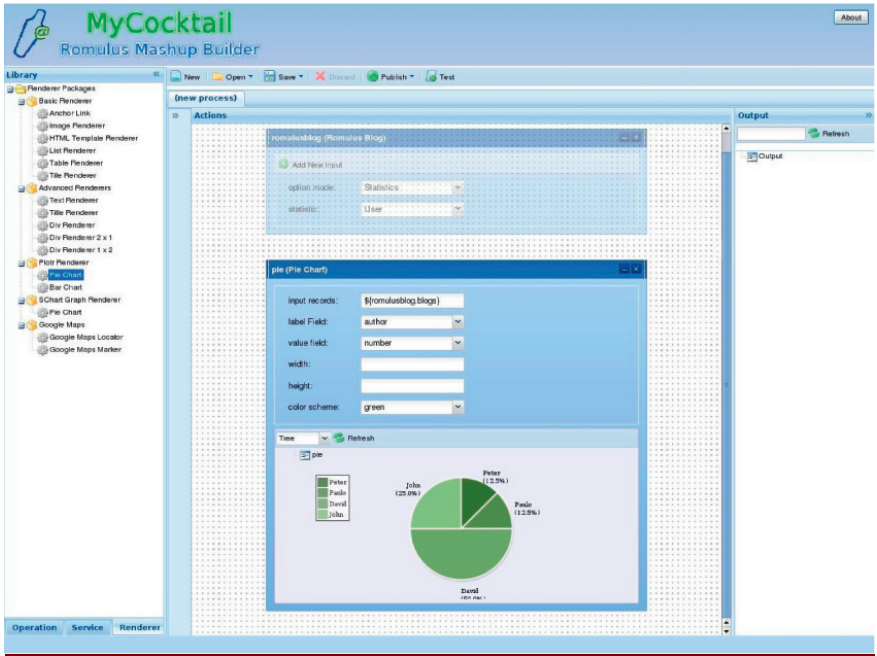
"Romulus is an industry driven project, and it is very interested in providing exploitable solutions. Thus, we are interested in researching methods and evaluating the effectiveness of these methods through the provision of open source tools.

"Domain Driven Design provides a new look regarding how systems should be designed, not only to understand better user requirements but also to be able to involve domain experts along the software project, thanks to the usage of the ubiquitous language shared by technicians and domain experts. Roma Metaframework automates the Java Web Development from a domain described with simple POJOs (Java classes)."

The rise of ROMULUS

Romulus methods are targeted mainly at software development professionals, as well as academics. The project doesn't start from scratch: in order to be able to provide results in two years, it has grown from the seeds of several open source projects (Roma, Liferay, DERI Pipes and Wapiti) which have been extended according to the project needs. There are two main novel notions in ROMULUS: the notion of a metaframework for providing an abstraction layer on top of web frameworks and research on how 'mashups' can improve web development.

Regarding mashups, several lines have been started within ROMULUS. Roma has been re-architectured and now Roma Applications can be exposed as mashups. A tool called MyCocktail, the Romulus Mashup Builder and Editor, provides facilities for combining available services such as Flickr and Google Maps, with Roma Applications in order to extend their functionalities and publish the resulting services as widgets in Netvibes, iGoogle or Liferay Portal. In addition, Roma Applications can be exposed as Linked Data using Semantic Technology, and a Software Process (LD2SD, LinkedData for Software Development) has been defined in order to help developers with the understanding of software assets, combining available information from bug tracking systems, feature requests systems and project management tools. Another interesting area of research has been how Roma applications can be integrated with the existing Enterprise systems through the usage of Enterprise mashups. Finally, in the portal mashups research topic, ROMULUS has proposed the extension and combination of applications based on 'copy and paste' at the interface level in order to compose a new one.



A screenshot of the MyCocktail Romulus Mashup Builder

A screenshot of the Romulus Design Wizard

A higher level of productivity

Several demonstrators have been developed within ROMULUS in order

At a glance

Full Project Title

Domain Driven Design and Mashup Oriented Development based on Open Source Java Metaframework for Pragmatic, Reliable and Secure Web Development (ROMULUS)

Project Objectives

The main concept of ROMULUS is researching on novel methods for increasing productivity and reliability of web software development, in particularly, focused on Java web development.

Project Partners

• Informática GESFOR • Asset Data • Liferay • Universidad Politécnica de Madrid • IMOLA Informatica • National University of Ireland Galway - Digital Enterprise Research Institute • National Institute for Research and Development in Informatics – ICI

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ROMULUS

GRUPO GESFOR

to evaluate how ROMULUS technology can be applied in different environments (CRM, Finance, Project Management and Social Networks). The tools developed within ROMULUS are modular and open source, in order to provide extensibility facilities from the open source community. The ROMULUS system is therefore highly accessible to developers.

"Romulus aims at improving productivity by reducing the effort in repetitive tasks but also in improving the software quality. With this aim, several tools (ATP4Romulus and Wapiti) provide advanced facilities for automatic testing at different levels (functional, web flow, performance, security). In addition, the automatic generation of code from the domain, based on a robust metaframework, minimises the number of bugs introduced by developers," says Professor Iglesias, elaborating on the type of people who will use the system.

"My opinion is that web engineers require a broad range of skills for developing simple applications, and the requirements change from project to project, and a global knowledge of the technologies is needed for debugging and optimising the web application."

Productivity for Romulus is measured in terms of effort (person-hours) dedicated to develop a software. Improving productivity means reducing costs (in development and maintenance) and improves competitiveness for the Enterprise.

There has been a long debate regarding whether open source policies are good for security but it is the stance of the project that open source extends the facilities for vulnerability scanning software as well as reduces considerably the reaction time when a vulnerability has been detected.

Commercial partnerships

Industrial partners have signed agreements to extend their partnership to a commercial partnership to exploit several of the results of the project, such as Roma Metaframework, Wapiti and MyCocktail.

"Since we are following an open source policy, having a wider community is one of our goals. With this purpose, Wapiti has been accepted by OWASP (Open Web Application Security Project), a well-known open source community, which distributes OWASP Wapiti in their live CD. Increasing the members of our community will improve the quality and range of available modules, and is the basis of our business models, since the more popular our software is, the more consultancy leads we will have," explains Iglesias.

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Romulus has been structured as a set of interlinked open source projects to facilitate its exploitation and continuation after the project concludes, and in this way it remains as a permanent initiative. Regarding the future, several lines have emerged.

The last version of Roma includes a very exciting facility, a visual designer which allows the configuration of the domain in a broad sense, as well as the application flow from the interface. For example, you can configure that before deleting one field - a confirmation should be asked to the user or the security of this field. Content mashups are now being integrated within MyCocktail, and the emerging voice mashups for adding voice to applications are in the research roadmap. ★