# Flow Research SXP Agile Methodology for FOSS Projects

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**Abstract.** This paper aims to explain a procedure that takes into account the different research processes carried out in developing an open-source, allowing control and management. This study is the SXP methodology applied in this type of project was carried out, allowing the validity of the basis of this research.

**Keywords:** methodology SXP, open-source, production, research, software.

## 1 Introduction

The University of Informatics Sciences (UCI) has seven faculties and several development centers which in turn are composed of productive projects. Each center specializes in a different line of development; one of them is the Free Software Center (CESOL) which is dedicated to the development of the GNU/Linux Cuban distribution and lead the migration process to open source applications in the country. The migration process of companies to open source application is one of the most important services offered, in addition to counseling, consulting, training and support, and to expedite the work of specialists have developed applications that automate many of the process governing the service provided, raising the quality and quick response customer service.

For these products is created the SXP agile methodology [1], with the aim to develop projects with the greatest rapidity and quality expected by the end user. The great need for each project was implemented in less than one year, with frequent deliveries, with teams of no fewer than 10 members, where self-management and the ability of each of the members of the development team were some of the reasons why this methodology is used during the life cycle of these projects.

Although its application has fulfilled its main objective, did not include artifacts, and activities that define the research process that occurs when developing software [2], thus resulting in the need to integrate him a workflow process to collect research in the various projects, defining artifacts, activities and roles in order to obtain higher quality products, competitive, and could control and disseminate knowledge that occurs during software development.

adfa, p. 1, 2011.

## 2 Development

When starting a project already has how to carry out the development process, although at the beginning an entire previous research, which identifies the object of study, the current domestic and international situation is realized, which is framed in the first phase of any project; and it is the same theory that is followed in SXP.

### 2.1 Development methodology SXP

SXP is a Cuban hybrid agile, which is premised on avoiding duplication of efforts and customer integration into the development team which ensures no need for extensive documentation, and thus is well recorded which will be used in a future re-use. Behold the good practices of the XP and SCRUM agile methodologies, besides the quality guidelines defined by Calisoft, which is the entity responsible for monitoring the status of each of the projects that are developed in the development centers of the UCI and CMMi quality model. It is divided into four phases which form the basis of the structure of your project file [3], these are: Planning, Definition, Development, Delivery and Maintenance. Each of these phases is made up of a number of activities which generate artifacts that documenting the process and guide the development of the products.

### 2.2 ¿ Where is reflected the investigative work in SXP?

In the Planning-Definition phase is where the vision is established, the expectations are set and securing project financing is done. However not considered a research-oriented approach, because it is not spoken any time of writing the research project or research tasks that are thought to develop as a result of the production process, although this element should lead to torque software development process.

When starting the development cycle, where the implementation of the product is made, also carried hand research, which can be very intense according to the different technical aspects to be analyzed in order to define the most sensible when developing. A final product is obtained but nothing the study is documented, being within the knowledge of the researcher. Sometimes it happens that other projects need this information when developing, and not have them accessible, they should start their research from scratch, which impacts the product development time. So we can conclude that given the number of projects being developed, despite being guided by the SXP methodology, lose the opportunity to document the wealth of research that systematically develop them. This is knowledge that is generated and that in turn runs the risk of being lost with time, showing affected the scientific activity by this situation. By this reason it became necessary to develop a research stream with the inquiry process that takes place during the software production, allowing the control and disseminate the knowledge produced.

### 2.3 Flow Research with artifacts and role for SXP methodology

The methodology has a workflow that contains a number of artifacts that enables the control and management of research. This research stream will not be located in a specific phase, because its location will be chosen by the working group for each of the projects, although it is recommended that some of the artifacts begin the construction in early stage (Planning - Definition).
Below are by each of the evidence gathering activity that takes place in the workflow:
The Research Development Plan (IDP): artifact is a document that reflected the initial planning of the investigative activities to develop also should be done by the Research Manager, taking into account the characteristics defined for this role.
The State of the Art artifact: is a deliverable that will be developed after a preliminary investigation, so it is proposed that has its beginnings in the Planning - Definition phase, which does not mean that can't come changes in the remaining phases. This artifact may involve different roles of the development team in its preparation should not only be developed by the Research Manager.
The Research Report: artifact suggests that develops in the Development phase because that's where is getting the results of developed investigations. This artifact may involve different roles of the development team in its preparation should not only be developed by the Research Manager [4].

**Role:** Research Manager

- Person responsible to manage all the research tasks developed.
- It is responsible for planning the development of the researches, verify compliance and quality of them.
- It is responsible for the preparation of PDI.
- Not necessarily must have computer knowledge, but some domain of Research Methodology.

### 2.4 Assessment of the proposal

This method is novel because there isn't a pervasive culture about the documentation on the research conducted during the software development, although some productive projects manage the research without defining roles, artifacts or take responsibility for the control and dissemination of the same. It must be emphasized that this research stream can be implemented not only by the SXP methodology, but may be included in any other software methodologies analyzed in this research considering the stage of development that is more convenient when incorporate it. The artifacts can be applied to any research task running on a productive project because it meets the adjustable parameters to their characteristics. With the implementation of this proposal fails to meet four key fundamentals: First, the problem of the organization of research in productive projects is solved, and second, the basis for publication are encouraged, in addition to the socialization of knowledge produced in software development, third, a favorable economic impact is obtained in projects, reusing the basis of research to accelerate the development of future products and finally, the training of human resources for software production is favored. Since 2008 the methodology

has been applied in products like SistClon: System Image Cloning , applications operating system support for the Cuban Nova, NovaDesk and Service Desk for Nova, Xeiba: layout Manager for GNU / Linux , Summon Systems : Fitters distribution packages for Nova, Guano: lightweight desktop environment for Nova, Nova system Tools, Tools to configure the operating system and Serere Nova: Nova Installer distribution where developments have obtained very good quality developed in less than 8 months which have been tested with satisfactory results. Them much of the evidence that helped shape new projects that leave us publications and awards to date in the National Computer Competition with the presentation of the Migration Tool for Telematic Services Administration and the XV Convention and Fair took Havana International Computer Nova 2013 and in national events such as the Technological Peña Interior Ministry , the Twelfth Week FORDES Technological and international as the 1st Iberoamerican Congress on Project Engineering and Project Management IV International Congress where SXP methodology is presented .

## 3 Conclusions

In general we can draw the following conclusions:
The insertion of the research flow enables documenting the research tasks in the production of FOSS projects, it includes new artifacts and roles to software development methodology analyzed (SXP).
The knowledge gained in studies for reuse in new developments is guaranteed, and that serve as a basis for specialists who are interested in such projects.
Control the research tasks in productive projects, raising the engagement of specialists to exchange knowledge and scientific-technical work. It encourages collaborative work between developers and members of development teams, because centralizing research in a repository which can be accessed.
With the inclusion of PDI, State of the Art and Research Report artifacts, is guaranteed the quality control and documentation of the investigative work.

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