



Newsletter



Editorial

Welcome to the third issue of our FUJABA¹ newsletter. In this newsletter we give you some background information about the beginnings of our FUJABA project. As in the last issues (see <http://www.fujaba.de> for archived newsletters), we also continue our series about realized and pending plug-ins for FUJABA. This time, we present the XProM plug-in which was inspired by eXtreme Programming and by Watts Humphrey's Personal Software Process.

Note, that this issue includes a call for papers for the 1st International Fujaba Days, which will be held in Kassel, Germany.

And now, enjoy the articles...(rw)

FUJABA - The Beginnings

Once upon a time in the graph grammar world. The community, especially Aachen University has developed the graph rewrite system PROGRES. Based on a proprietary object-oriented database, the PROGRES environment was limited to UNIX systems with much memory. PROGRES generates C++ code, which was also not really portable to other platforms.

During the late 90's the Java programming language grew up and this was the birth of the FUJABA system. In October '97 three students started their master theses with the goal to develop a graph rewrite system using Java's runtime object-structure as graph and generating Java source code for rewrite rules. Originally, the theses were planned only for code generation facilities using PROGRES as editing environment. The limitations of the environment and the experiences of the three students developing applications lead to the decision to implement the new system in Java, completely.

However, the focus of the master theses and the system changed from a new graph rewrite system to a round-trip engineering tool based on the Unified Modelling Language and a new software developing process called story-driven-modelling.

None of the three students nor their supervisor have expected that the new system will become a basis for many other research projects. Therefore, FUJABA's architecture was monolithic and there was no real team support. This decision currently produces expensive reengineering activities but the effort pays back, because the current version has a very flexible plug-in mechanism and team support is on the way.

1. FUJABA is a project from the Software Engineering Group, University of Paderborn, Germany. See www.fujaba.de for further details.

The first FUJABA prototype was available in January '98 and the three students finished their master theses in July '98. At that time FUJABA comprised about 150.000 lines of code, which also includes design pattern support developed in parallel to the master theses by a student research group.

Our picture shows the three master theses students Thorsten Fischer, Lars Torunski and Jörg Niere five years after their master theses. At their time, we called our development method „Structure Oriented Modeling“.

Accordingly, this first generation of FUJABA developers is called „the SOMbies“, also because they and their work are still important parts of the project. Meanwhile, FUJABA has grown up to 1.000.000 lines of code until it was split into plug-ins by the next generation developers. (jn)



The XProM Plug-in

Inspired by eXtreme Programming and by Watts Humphrey's Personal Software Process, a student research group at University of Braunschweig developed a new eXtreme PROject Management (XProM) plug-in for FUJABA intended to facilitate the estimation of time efforts for new tasks and the planning and tracking of projects. UML diagrams made usual Lines-of-Code based measurement, estimation and planning techniques unapplicable. Thus, first we had to define the „FUJABA development process“ (FUP) with dedicated measurable steps. Second, we had to find a

handy size metric system for UML diagrams allowing to measure diagram sizes and to relate this to time effort estimations.

The FUJABA development process FUP is an iterative process starting with requirements based on use cases. For each use case FUP requires at least one textual scenario description with a predefined structure. To allow this, the XProM Plug-in extends FUJABA with a HTML based text editor

allowing embedded editing of UML diagrams. The resulting documents may be exported to usual HTML and then viewed by a conventional browser or they may be printed. In the next step, a special

command derives a so-called story board from the textual scenario description. Now the developer models each step by a collaboration diagram that is embedded in the corresponding story board activity. We call this phase story boarding. During story boarding all used elements like objects, links, attributes and methods get corresponding declarations in an accompanying class diagram. When a scenario has been modeled by a story board, FUJABA provides a command to turn it automatically in a simple JUnit test case specification for this scenario. Afterwards the developer „just“ has to implement the methods employed within the scenario such that the modeled behavior is achieved. This approach corresponds to the test driven software development process idea of eXtreme Programming.

To compare the complexity of different use cases and as a basis for effort estimations we needed a size measurement for the employed UML diagrams. Therefore, we came up with „graphical items“ such as classes, attributes, methods, parameters, etc. Due to our measurements the required time to create a graphical item roughly corresponds to the effort for one line of code. In addition, a diagram with about 60 graphical items roughly corresponds to one page (like 60 LOC fill a page, too). However, this measurement still needs to be evaluated in experiments.

Currently the XProM plug-in protocols the time distribution of user interaction during the creation of graphical items. In addition we measure the sizes of use case descriptions, use case scenarios and use case realizations. We try to come up with statistics to estimate the effort for use case realizations on the basis of the size of the corresponding use case descriptions and scenarios.

Note, the FUJABA development process and the XProM plug-in have already successfully been used within a number of student projects. Within these projects design documents of up to 100 pages have been generated. The XProM plug-in will be available via FUJABA's plug-in loader, soon. Send further questions to zuendorf@upb.de. (az)

May I introduce...



...the originator of using FUJABA for specifying production control systems, Ulrich A. Nickel. Before that time, a reconfiguration of a production line meant a hardware reconfiguration and afterwards some weeks of testing the handwritten software. FUJABA'S facility of generating code from a specification was a possible solution to produce the software much faster and thereby test the software in parallel to the hardware reconfiguration by simulation. The major contribution of Ulrich A. Nickel's research to FUJABA has been the integration of statecharts which are semantically defined by graph grammars. Thus, the generation of executable code and the analysis of the specification by simulation and verification become possible. Under his supervision also topology diagrams have been introduced. Both, the statecharts and the simulation are the basis of a 3D visualization plug-in currently under development.

Today Ulrich A. Nickel is finishing his Ph.D. thesis and is going to leave university to a company, where he will apply his work in the domain of embedded systems. (jn)

PARTNERS



1st International Fujaba Days

University of Kassel, Germany

October 13-14, 2003

<http://www.fujaba.de/fdays>



University of Kassel



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TOPICS AND GOALS

FUJABA is an Open Source UML CASE tool project started at the software engineering group of Paderborn University in 1997. In 2002 FUJABA has been redesigned and became the FUJABA *Tool Suite* with a plug-in architecture allowing developers to add functionality easily while retaining full control over their contributions.

At the early days, FUJABA had a special focus on code generation from UML diagrams resulting in a visual programming language. Today, at least four rather independent tool versions are under development in Paderborn and Kassel for supporting (1) reengineering, (2) embedded systems, (3) the Fujaba Development Process, and (4) education. According to our knowledge, quite a number of research groups have also chosen FUJABA as a platform for their own UML related research. In addition, quite a number of FUJABA users send us requests for more functionality and extensions.

Therefore, the 1st International FUJABA Days aim at bringing together FUJABA developers and FUJABA users from all over the world to present their ideas and projects and to discuss them with each other and with the FUJABA core development team. We look for

- Position papers presenting projects employing or extending FUJABA or
- Position papers presenting approaches that use FUJABA in innovative ways.

The proceedings will be published as a technical report at University of Kassel.

IMPORTANT DATES

Submission deadline: **September 1st, 2003**

Author notification: **September 17th, 2003**

Camera ready copy: **October 1st, 2003**

Fujaba Days: **October 13th-14th, 2003**

SUBMISSIONS

Please send your submission electronically in PDF format to albert.zuendorf@uni-kassel.de. The submission should follow the ACM standard format (<http://www.acm.org/sigs/pubs/proceed/template.html>) and should consist of 1 to 4 pages.

TUTORIALS

In addition, we plan short tutorials on

- „How to create a FUJABA plug-in“,
- „How to add a new kind of diagram to FUJABA“,
- „Adapting FUJABA code generation“, and
- „Scenarios and Method Body Specification with FUJABA“.