Software Reuse on RCAS

Pamela K. Arya

General Research Corp.
1900 Gallows Road, Vienna, Va. 22101
Tel: (703) 827-4282, Fax: (703) 827-4299
Email: parya@grci.com

Abstract

In this position paper, I will describe the current state of the Reserve Component Automation System's reuse program. As the team leader of the reuse program, I have found that creating reusable components for a specific, active development effort is very different than creating components for a generic reuse library or even a domain specific library. I will also describe future plans for measuring the amount of reuse in our code and which components are the most popular.

Keywords: RCAS reuse program, developing reusable components, measuring reuse

Workshop Goals: To share experiences with other pracitioners who are running similar reuse library programs. To discuss models for measuring reuse and the financial savings produced. To compare the effectiveness and functionality of various reuse tools.

Working Groups: reuse process models, reuse education, position paper guidelines.

1 Background

My work in reuse began on a contract that supported the Army RAPID Center (now ARC - Army Reuse Center). In this position, I certified over 500 reusable components, analyzed components for reusability, evaluated the certification process and taught a tutorial in the use of RAPID's library tool. After changing employment to General Research Corp., I became the head of the reuse team for GRC's software development work on RCAS. My responsibilities include identifying and developing reusable components, encouraging donation of components, and promoting their use as well as developing a formal reuse plan, setting goals, and measuring reuse. In addition to my activities on RCAS, I am GRC's represent-itive to the STAR's TT affiliates program and an active member of the RIG's technical commitee 2 which I represented on a panel at ANCOST'93.

2 Position

The RCAS Reuse team supports over 100 software engineers who have donated 754 reusable Ada packages and 358 data objects (reusable SQL code). We also have reusable error messages and EVB's Grace components. The engineers have just finished the Block 1 phase of development where there was exstensive use of the reusable components to minimize the impact of an agressive schedule. This large volume of code now provides the opportunity to analyze the reuse habits of over 100 developers. By using GRC's commercial analytic tool ADAQuest to examine the Diana trees, we will be able to count all uses of package calls, types, generic instantiations, derived types, and renames.

I think this will help to answer an important question that doesn't seem to be discussed enough: What are the attributes of a successful reusable component ? Are COTS components preferred to those developed by one's colleague ? Is size a factor in the popularity of a component ? Do software engineers really crave a doubly-linked list or do they prefer functionality more specific to their development efforts ? We will be looking at these sorts of factors in the next few months after the ADAQuest tool is modified to produce the desired numerical data. Maybe other practitioners at the workshop can suggest interesting metrics and factors to analyze.

3 Comparison

Unfortunately I really do not know of anyone who is working on populating a reuse library for an active development effort in a multi-level secure environment. Also, due to contractual reasons, we may not reuse government furnished components. I think that the closest work to ours would be domain specific reuse efforts where components from one project are installed in the library targeted for use on designated future projects. In our case components are installed at the request of the software engineer for immediate use. Since the reuse team and the developers are working on the same site, there is much more human interaction and a quicker response time to maintenance and enhancement requests. It would be interesting to compare the number of such requests more generic libraries receive to the number of requests we receive.

4 Background

Pamela K. Arya heads the reuse team on the Reserve Component Automation System development effort for General Research Corporation, Vienna, Va. Her responsibilities include developing a reuse plan, developing and indentifying reusable components and measuring the results of reuse. She was previously a Senior Software Engineer for SofTech in support of the Army Reuse Center. Before that she worked for Computer Science Corporation developing attitude ground support systems for GSFC NASA. She received a M.S. in Computer Science from The Johns Hopkins University in 1992 and a B.S. in Geology-Physics from Brown University in 1984.