

【Grant-in-Aid for Scientific Research (S)】

Integrated Disciplines (Informatics)



Title of Project : Collecting, Analyzing, and Evaluating Software Assets for Effective Reuse

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Research Area : Software

Keyword : Software Engineering

【Purpose and Background of the Research】

Recent software development employs various kinds of software assets including Open Source Software OSS and proprietary systems. Efficient and effective reuse of assets is extremely important to the success of software development project. In this project, we will propose a support framework, named SARF (Software Asset Reuse Framework), for effective reuse of software assets. Figure 1 shows an overview of SARF. At Step 1, it collects and analyzes various kinds of software assets in the Internet or in the organizations. At Step 2, the collected assets are evaluated quantitatively to get their values. At Step 3, the values and other associated data on the assets are visualized for efficient development support using integrated development environment IDE.

Using various background techniques on code search, clone analysis, metrics, program analysis and reuse, we will explore the approaches to each step, and will develop prototype systems. Furthermore, based on the evaluation of the prototypes, practical systems will be implemented and released as OSS to get many users.

【Research Methods】

We will develop various novel approaches and methods for each step. For Step 1, we will design a project search engine which efficiently finds similar and related projects to a project (see Figure 2). A meta-search approach with external code search engines would be used for this purpose. Step 2 will be composed of two value models with the global

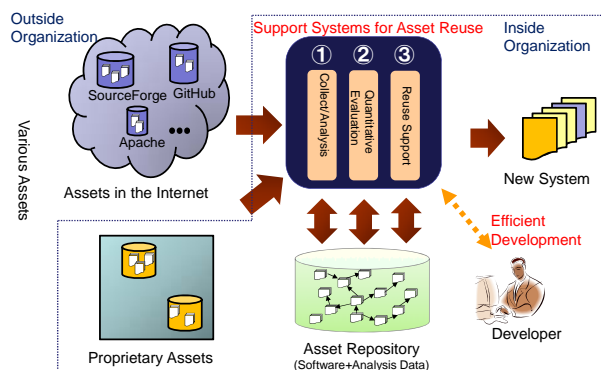


Figure 1 Overview of SARF

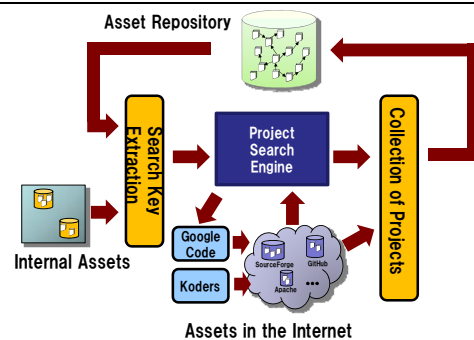


Figure 2 Overview of Project Search Engine

and empirical ones. The former is similar to Page Rank model using software project relations. Step 3 would use city metaphor visualization for various values and associated date of the assets. Also, an IDE composed of the above mentioned systems will be developed.

【Expected Research Achievements and Scientific Significance】

Novel approaches for each step will be important contributions to software engineering research community. The developed systems will be widely distributed to boost the software asset reuse.

【Publications Relevant to the Project】

- Katsuro Inoue, et al., Where Does This Code Come from and Where Does It Go? -Integrated Code History Tracker for Open Source Systems-, 34-ICSE, pp.331-341, Zurich, Switzerland, 2012.
- Pei Xia, et al., Studying Reuse of Out-dated Third-party Code in Open Source Projects, Japan Society for Software Science and Technology (accepted).

【Term of Project】 FY2013-2017

【Budget Allocation】 93, 500 Thousand Yen

【Homepage Address and Other Contact Information】

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