Introduction

• Software Engineering community has produced many tools.
• Challenges:
  – Usability
  – Ease of Installation
  – Interoperability
  – Copyrighted works (limited distribution)
    • DMCA (United States)

Introduction Cont’d

• We’ve faced these challenges with our own tools:
  – CIAO
    • Acacia (C/C++ Analysis)
    • Chava (Java Analysis)
  – Bunch (static clustering)
  – Form (dynamic analysis)
  – Graphviz (graph visualization)
  – …
**Background: Tools**

- Source code analysis:
  - Visual Studio, CIAO, …
- Design Extraction:
  - Bunch, Rigi, ARCH, …
- Visualization:
  - Graphviz, Rigi, Tom Sawyer, …

**Standardization Attempts**

- Difficult—tools address different needs
- Not all tools are portable to all platforms
  - “Java is write once debug many times”
- Not all interfaces are fully exposed

*Our proposed solution: REportal*

**Login to REportal**
**REportal Services**

- Source code:
  - Repository
  - Analysis
  - Querying
  - Browsing
- Clustering
- Visualization

**REportal’s RE Process**

**Using REportal**

1. Create a new project
2. Upload source code
3. Open the project
4. Perform analysis on the code
   - In this example, a software engineer needs to modify the `addFilter()` method in a software package, Form.
**Clustering...**

**Text Search...**

**REportal Architecture**

n-tiered Java servlet

User

ReportServlet

SQL

Local Filesystem

Tools (Service)

File Data

REportal Database
Extensibility

- Adding a tool is a two-stage process:
  1. Tool is added to the server’s tool set
  2. Servlet is extended to include the tool among its set of services
- In the future, this process may be automated via a wizard-like facility

Future Work

- Integrate more reverse-engineering tools into REportal
- Integrate dynamic analysis
- Security architecture
  - Sandbox for running user Makefiles and applications
- C/C++ support
- Distributed/multi-platform support
- REportal distribution for remote site use

Conclusions

- Advantages
  - RE services provided via consistent web-based user interface
  - No need to be aware of platform integration or interoperability issues
  - Latest versions of underlying tools always available
  - No software installs needed
REportal Web Site

http://reportal.cs.drexel.edu/