Development of Plug-in Platform for Metrics Measurement

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Metrics Assessment plugin-platform for Software Unit of multiple programming languages

Problems

Many metrics tools have been proposed
However, these are three problems

- Ambiguous definitions
  - A metric has several definitions
  - Each tool has its own measurement logic

- High cost of implementation
  - In case of new metrics, source code analysis has to be implemented in addition to logic of measurement

- Lack of compatibility
  - Existing tools can hardly handle multiple programming languages

Solutions

- Metrics measurement is completely separated from source code analysis
  - Users easily implement their original logic
  - MASU stores the result of analysis to internal database
  - Users only have to implement measurement logic as a plug-in

- MASU handles multiple programming languages
  - Java and C#

- For instance, a RFC plug-in is presented as below:

```java
import jp.ac.osaka_u.ist.sel.metricstool.main.plugin.AbstractClassMetricPlugin;
import ...
public class RfcPlugin extends AbstractClassMetricPlugin {
    protected Number measureClassMetric(TargetClassInfo targetClass) {
        final Set<CallableUnitInfo> rfcMethods = new HashSet<CallableUnitInfo>();
        // gets defined methods
        final Set<TargetMethodInfo> localMethods = targetClass.getDefinedMethods();
        rfcMethods.addAll(localMethods);
        // gets called methods from localmethods
        for (final TargetMethodInfo m : localMethods) {
            rfcMethods.addAll(MethodCallInfo.getCallees(m.getCalls()));
        }
        return new Integer(rfcMethods.size());
    }
    protected String getDescription() { return "Measuring the RFC metric."; }
    protected String getMetricName() { return "RFC"; }
    protected boolean useFieldInfo() { return true; }
    protected boolean useMethodInfo() { return true; }
}
```

Development of Eclipse Front-end

GUI front-end of MASU
- Easily measure the metrics from Eclipse

Features
- Selects files or directories that you want to measure the metrics
- Two types of output format
  - Outputs the result to view in Eclipse
  - Also shows difference of the result measured before and after
  - Exports the result to a text file

In the future work, we will implement the function of generating a template of MASU plug-ins

http://sourceforge.net/projects/masu/