Dismantling droids for breakfast - The current state of app reverse engineering

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#whoami

- 3rd year PhD-Student at Secure Software Engineering Group Darmstadt, Germany (Prof. Dr. Eric Bodden)
- Research interest:
  - Applied software security on Android
  - Static-/dynamic code analyses

- Android Security:
  - Found 2 AOSP exploits
  - Security Analysis of Backend-as-a-Service
  - Korea Threat investigation together with McAfee Research Lab

Google play

How easy is it to dismantle your app?

How to secure my app against piracy

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Source: stackoverflow.com

Is it still easy to dismantle your app?

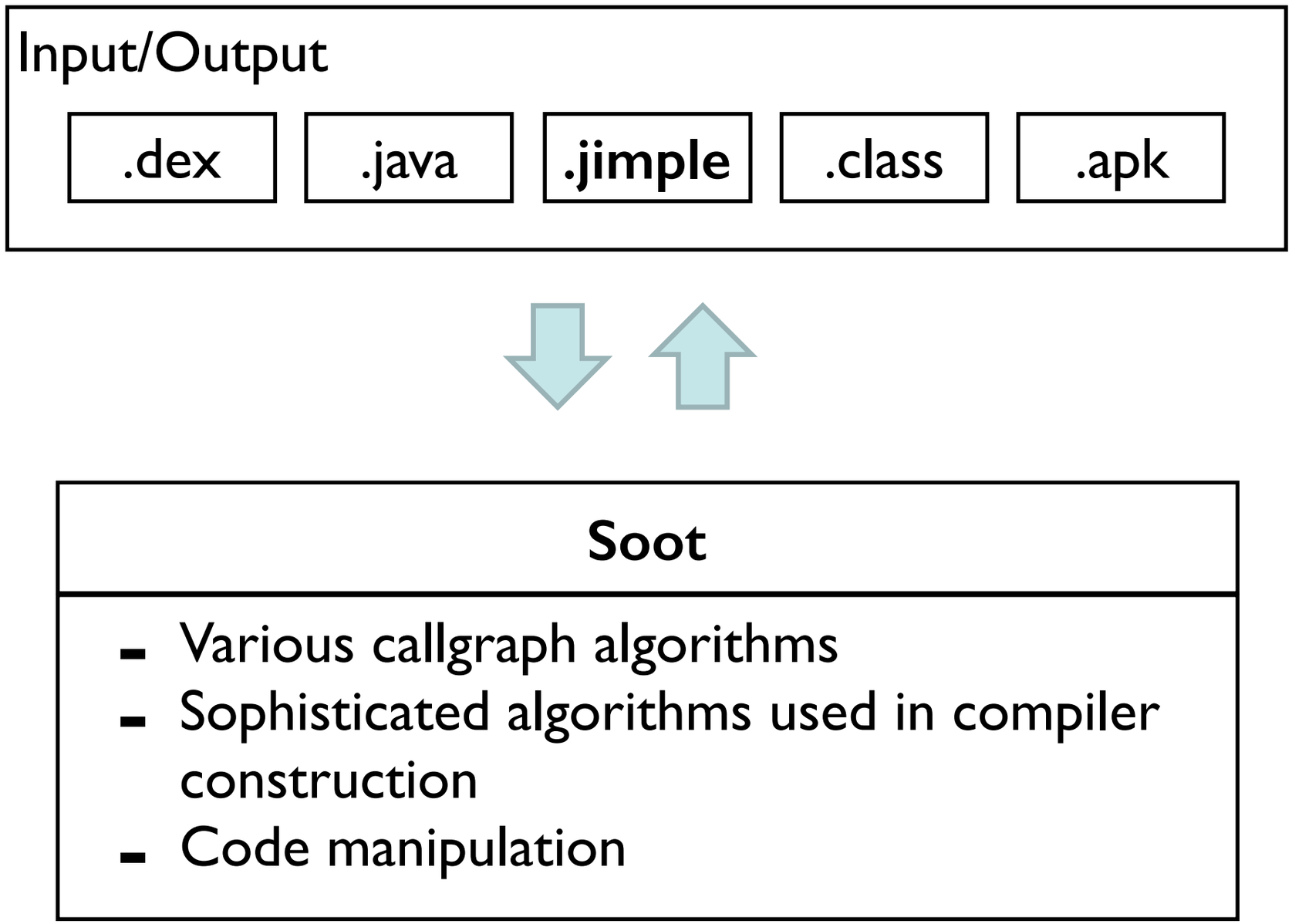
Code Inspect

A new Binary Analysis Framework for Android and Java Bytecode

VS

Soot

Soot



https://github.com/Sable/soot/wiki

Jimple

Soot

Jimple

Soot

```
public static boolean UsbAutoRunAttack(android.content.Context $param0)
{
  java.lang.String $String;
  $String = <smart.apps.droidcleaner.Tools: java.lang.String urlServer>;
  ...
  staticinvoke <smart.apps.droidcleaner.Tools: boolean
     DownloadFile(java.lang.String, java.lang.String, java.lang.String,
     java.lang.String, android.content.Context)>
     ($String, "autorun.inf", "ftpupper", "thisisshit007", $param0);
  return true;
}
```

Declarations

Code

Return-Statement

CodeInspect

Jimple

Soot

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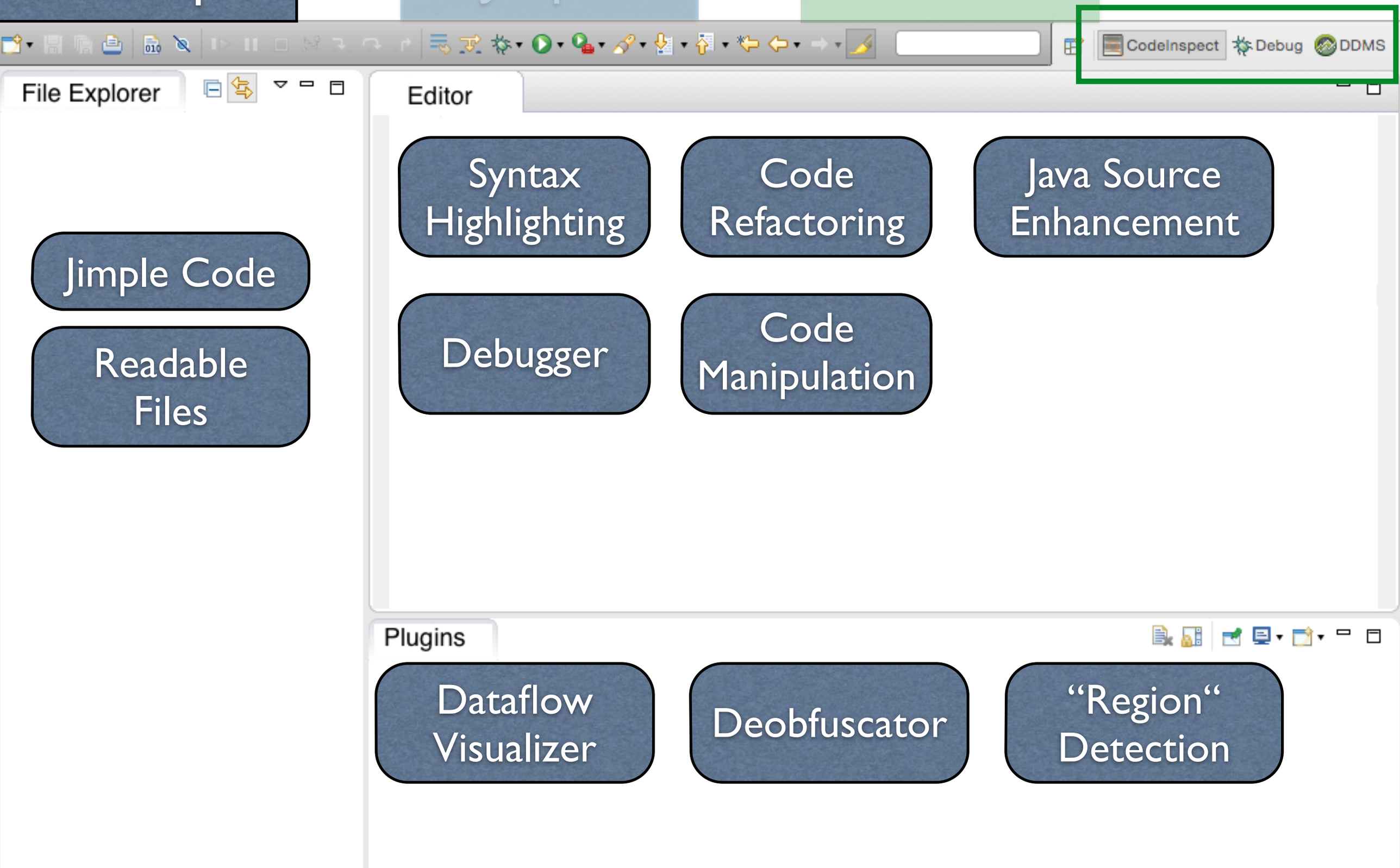


Jimple Code

Readable Files

Syntax Highlighting

Code Refactoring

Java Source Enhancement

Debugger

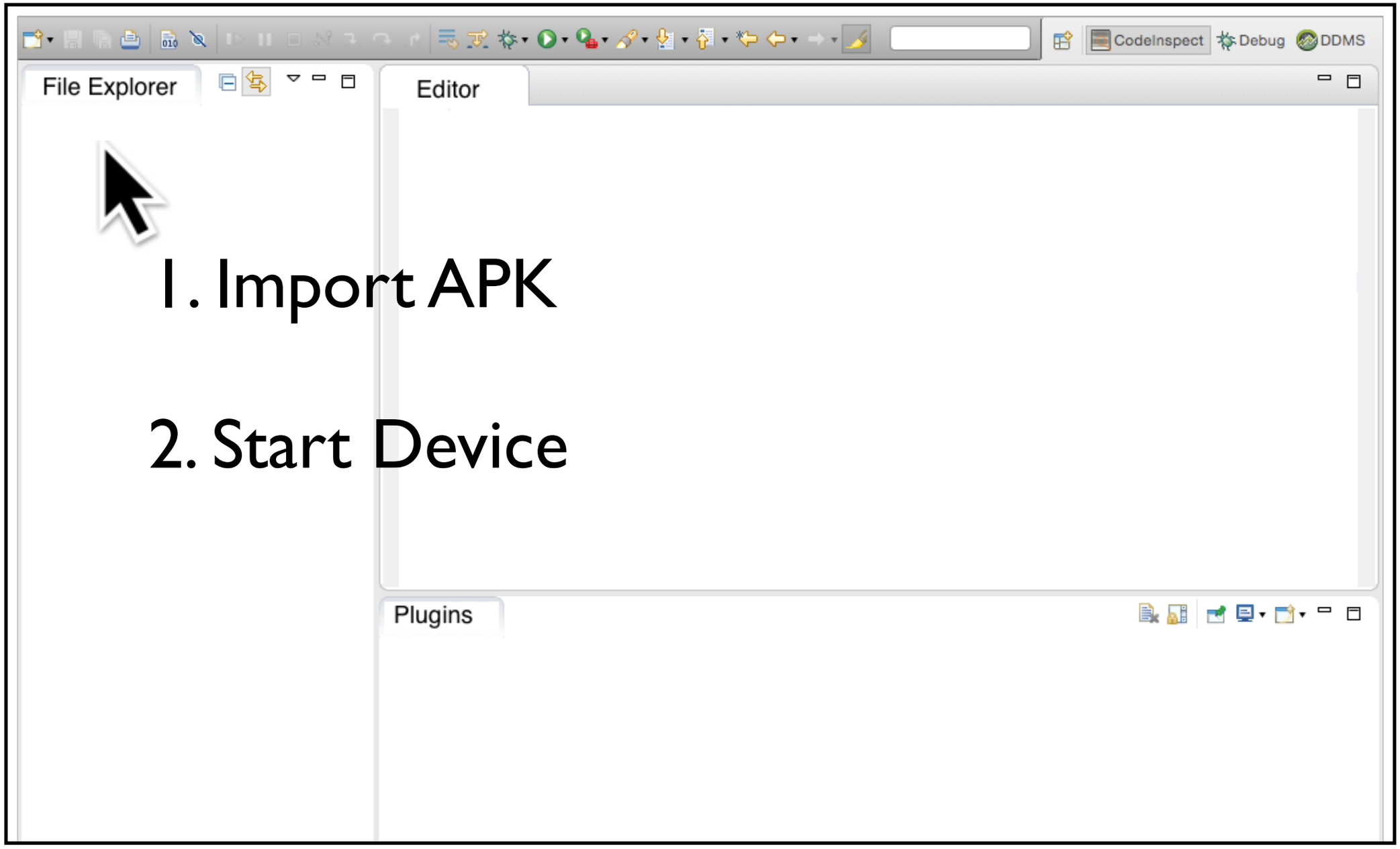
Code Manipulation

Dataflow Visualizer

Deobfuscator

"Region" Detection

Let's get started…

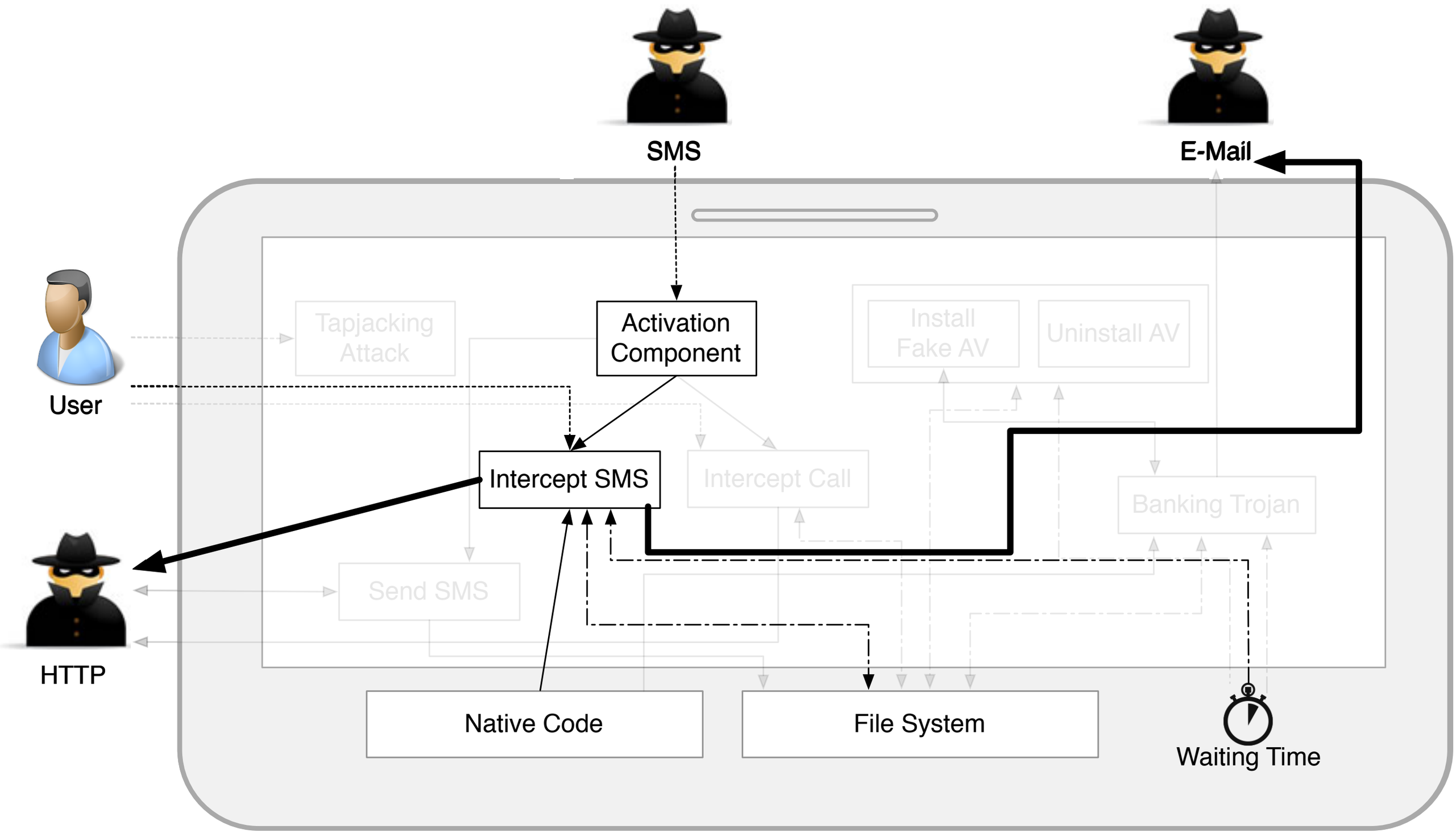


1. Import APK

2. Start Device

infected >20,000 user

Android/BadAccents



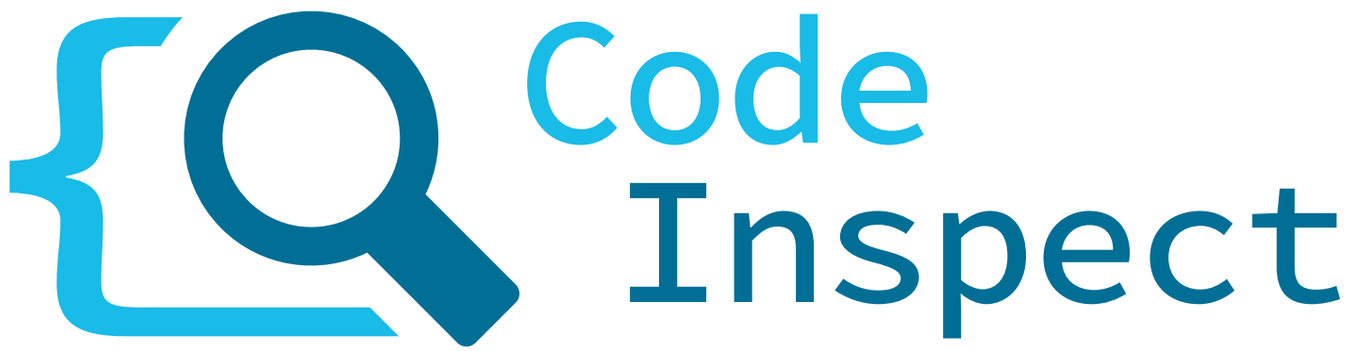
Live-Demo

Future Steps

Plugins

- New Plugins under development
- Easily add own analyses

How do I get this tool?



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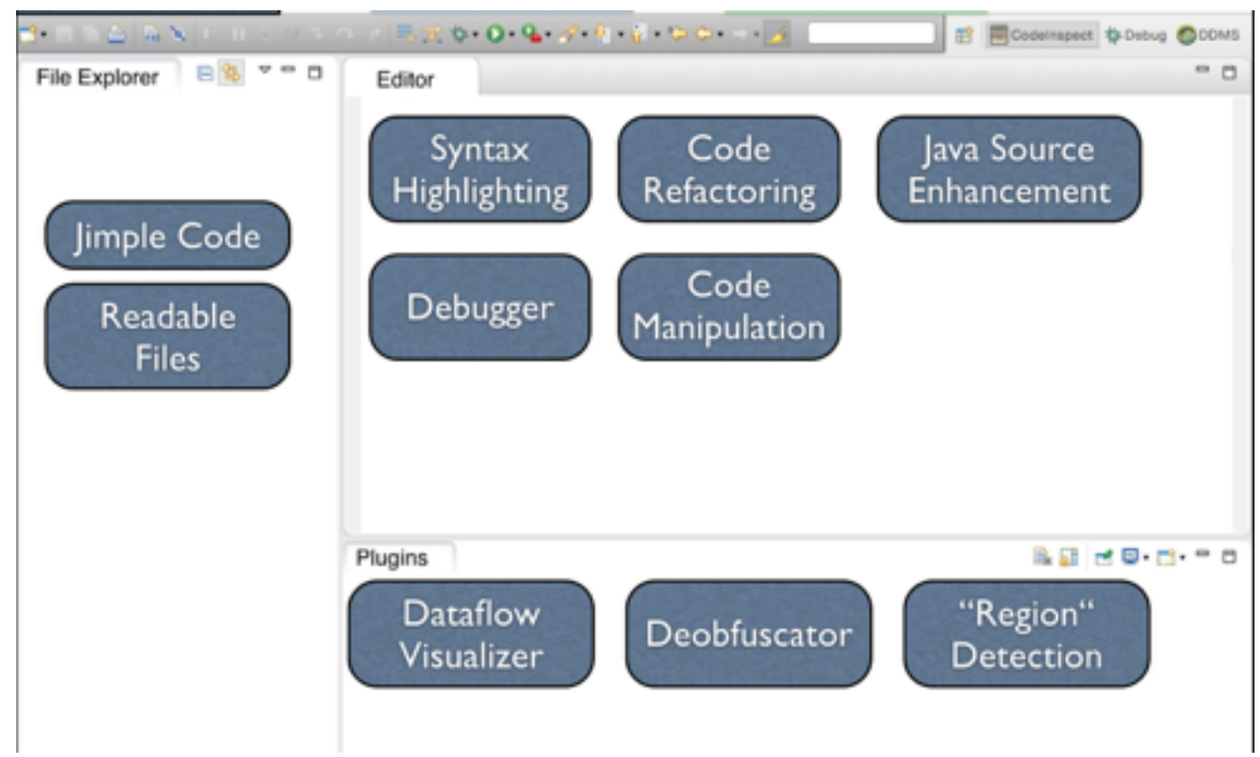

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