

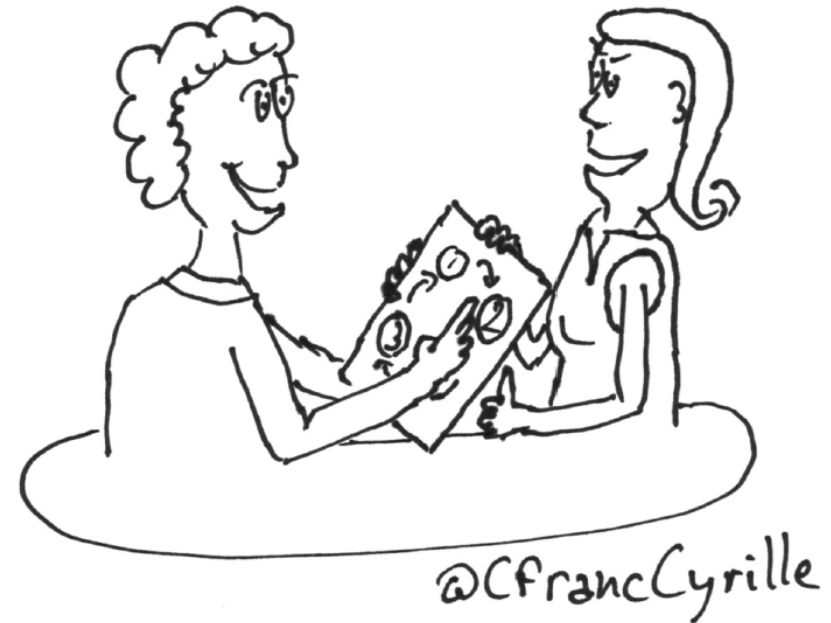
A decorative graphic on the left side of the slide consisting of a network of thin, dark blue lines. These lines form a complex, branching pattern that resembles a circuit board or a neural network. Some lines end in small circles, while others are open. The pattern is denser on the left and tapers off towards the right.

# PLUGIN SONAR ICODE CNES

SONAR PLUGIN FOR THE CODE ANALYSIS TOOL: ICODE CNES

# GET STARTED WITH SONAR PLUGIN ICODE CNES

- Sonar Server (OPS)
  - VirtualBox and VMs
  - Sonar configuration
  - Deploy & run
- Development environment (DEV)
  - Java JdK
  - Eclipse



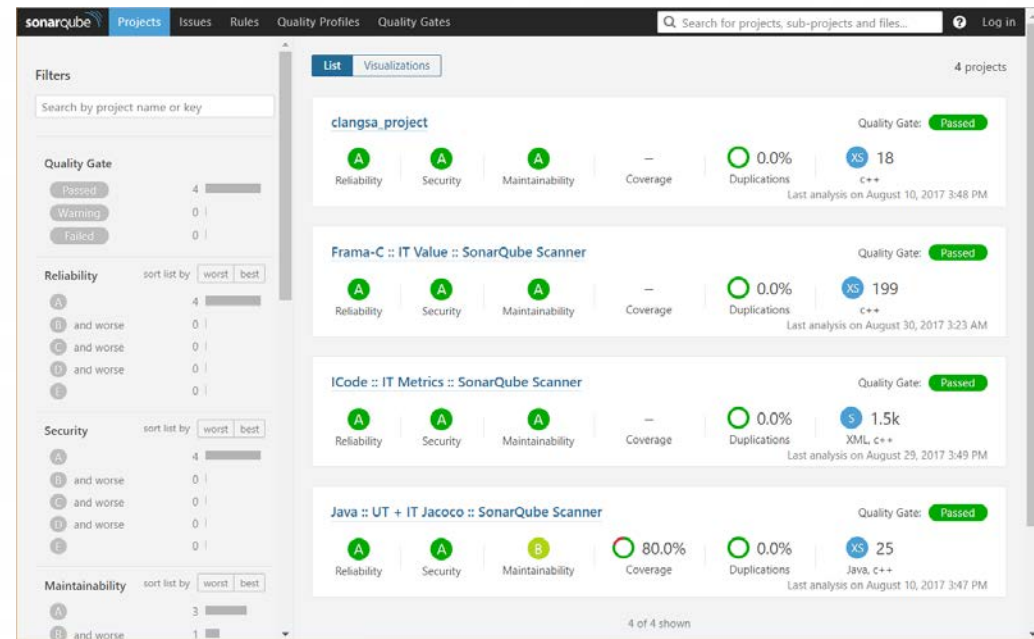


# PLUGIN ARCHITECTURE

- languages: Specific Plug-in language
- measures: Metrics and computed measures definitions
- report: Parse a ICode output report
- rules: ICode rules definition
- sensor: Sensor executed by sonar-scanner into ICode projects
- settings: Plug-in preference

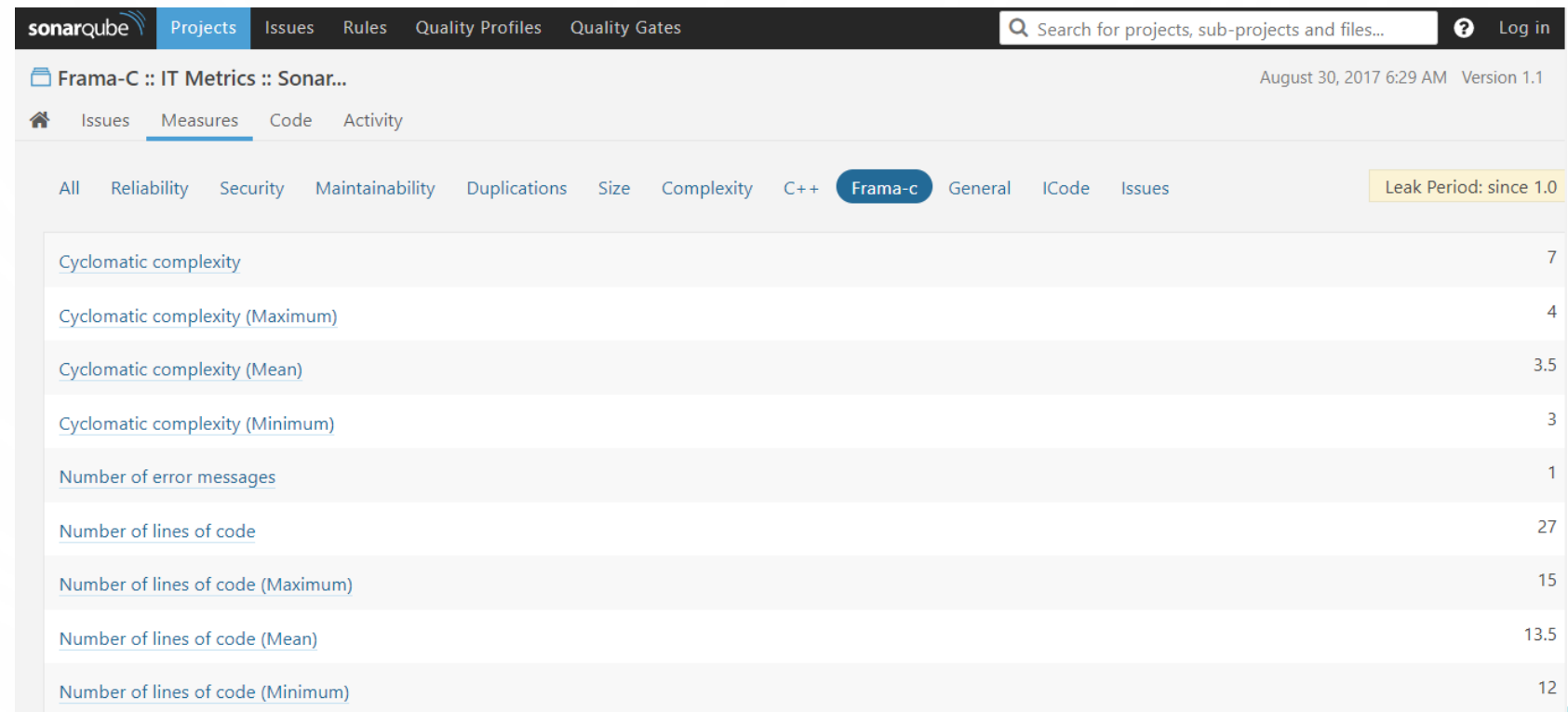
# PREPARE ICODE CNES PROJECT

- Source files:
  - File name: \*.f, \*.f77, \*.f90, \*.sh
- Sonar.properties
- Report directory: /icode-reports
- Report files:
  - Into the report directory
  - Same name as source file



# ANALYSE A ICODE CNES PROJECT

- Sonar scanner
- Metrics:
  - Cyclomatic complexity (Sum, Mean, Min, Max)
  - Line of codes: SLOC (Sum, Mean, Min, Max)
- Sonar web

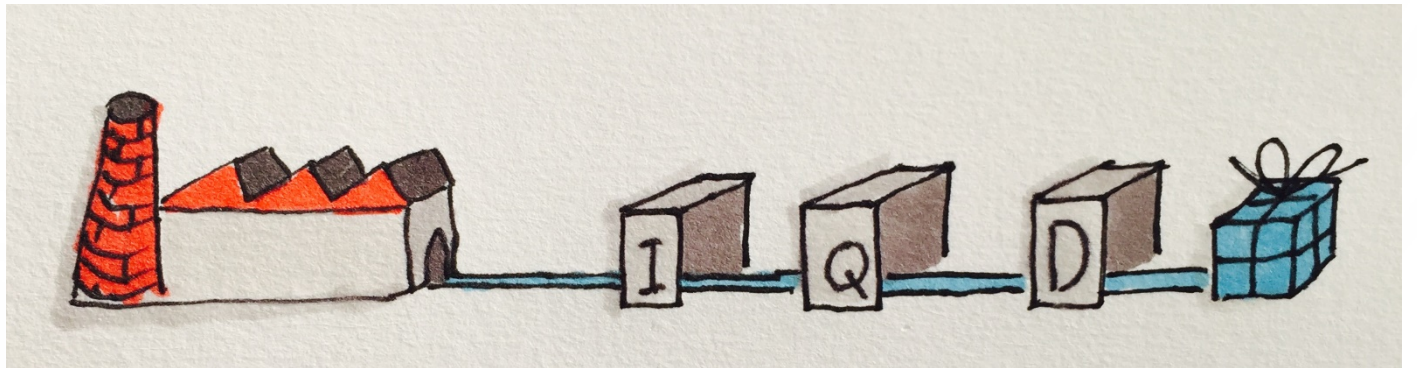


The screenshot shows the SonarQube web interface for the 'Frama-C' project. The 'Measures' tab is selected, displaying a table of metrics. The table has two columns: the metric name and its value. The metrics listed are Cyclomatic complexity (7), Cyclomatic complexity (Maximum) (4), Cyclomatic complexity (Mean) (3.5), Cyclomatic complexity (Minimum) (3), Number of error messages (1), Number of lines of code (27), Number of lines of code (Maximum) (15), Number of lines of code (Mean) (13.5), and Number of lines of code (Minimum) (12). A yellow box in the top right corner indicates 'Leak Period: since 1.0'.

Metric	Value
Cyclomatic complexity	7
Cyclomatic complexity (Maximum)	4
Cyclomatic complexity (Mean)	3.5
Cyclomatic complexity (Minimum)	3
Number of error messages	1
Number of lines of code	27
Number of lines of code (Maximum)	15
Number of lines of code (Mean)	13.5
Number of lines of code (Minimum)	12

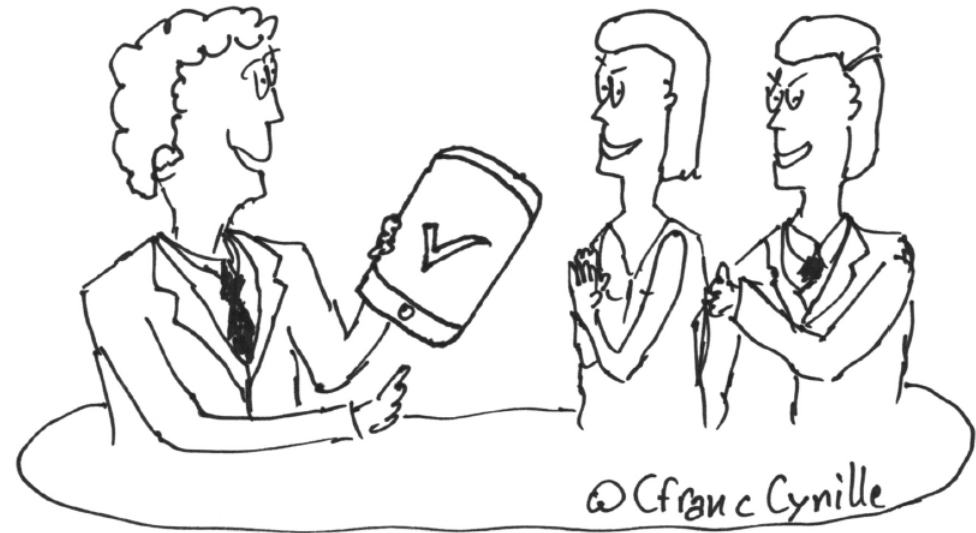
# DEVOPS

- From a new plugin revision  $\Rightarrow$  `deploy-plugin.sh`
- To a new project analysis into Sonar



# QUALITY PROFILES & RULES

- ICode default Quality Profile without rules
- Create a new Quality Profile
- Pattern matching



# ICODE CNES RULES & ISSUES

```
317     </check>
318     <check
319         class="fr.cnes.analysis.tools.fortran90.rules.F90TYPEReal"
320         id="fr.cnes.analysis.tools.fortran90.rules.F90TYPEReal"
321         name="F90.TYPE.Real" languageId="fr.cnes.analysis.tools.languages.f90">
322     </check>
323 </extension>
324
325 </plugin>
```

- Plug-in resources: icode-rules.xml
- Sonar issues
- From Icode CNES plugins.xml file to icode-rules.xml...

SONAR PLUG-IN FOR ICODE CNES

```
1992     </rule>
1993     <rule>
1994         <key>F90.TYPE.Real" </key>
1995         <name>F90.TYPE.Real" </name>
1996         <internalKey>*</internalKey>
1997         <description>Unreferenced rule</description>
1998         <severity>MAJOR</severity>
1999         <cardinality>SINGLE</cardinality>
2000         <status>READY</status>
2001         <type>CODE_SMELL</type>
2002         <tag>value</tag>
2003         <remediationFunction>CONSTANT_ISSUE</remediationFunction>
2004         <remediationFunctionBaseEffort>30min</remediationFunctionBaseEffort>
2005     </rule>
2006 </icodelint-rules>
```

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# PLUGIN ICODE CNES PREFERENCES

- File suffixes for *ICodeLanguage*
- Report file suffixes:
  - Replace the source file extension
- Report sub-directory
- Plugin metrics:
  - Number of error messages
  - Report files error

SONAR PLUG-IN FOR ICODE CNES

The screenshot shows the SonarQube Administration interface. The top navigation bar includes 'sonarqube', 'Projects', 'Issues', 'Rules', 'Quality Profiles', 'Quality Gates', and 'Administration' (highlighted). A search bar is on the right. Below the navigation bar, the 'Administration' section is active, with sub-tabs for 'Configuration', 'Security', 'Projects', and 'System'. The 'Configuration' tab is selected, showing 'General Settings' for the SonarQube instance. On the left, a sidebar lists various plugins: 'Analysis Scope', 'C#', 'C++ (Community)', 'Flex', 'Foo', 'FramaC' (selected), 'General', 'Java', and 'JavaScript'. The main content area displays the 'FramaC' configuration. It includes a 'Report subdirectory' section with a text input field containing 'oracle' and a 'Reset' button. Below this is the 'Report file Suffixes' section, which has a text input field containing '.res.oracle' and a '(default)' label. The 'File Suffixes' section at the bottom has a text input field containing '\*.c,\*.i' and a '(default)' label.

Plugin	Report subdirectory	Report file Suffixes	File Suffixes
FramaC	oracle	.res.oracle	*.c,*.i

24.10.2017

# CONTINUOUS INTEGRATION (CI)

Github -> Travis -> sonar.cloud

- Create Travis and sonar.cloud account
- Configure Travis into Github project
- Add sonar.cloud key to .travis.yml
- Demo & CNES Github/Travis/etc settings



# CONCLUSION

- Generic architecture
- ICode CNES rules definition with properties file
- Simple plug-in preferences
- Ready to DevOps & CI
- Compliant with ICode CNES requirements (from ICode CNES plugins.xml files)
- Warning some rules are defined several times into different plugins.xml files