

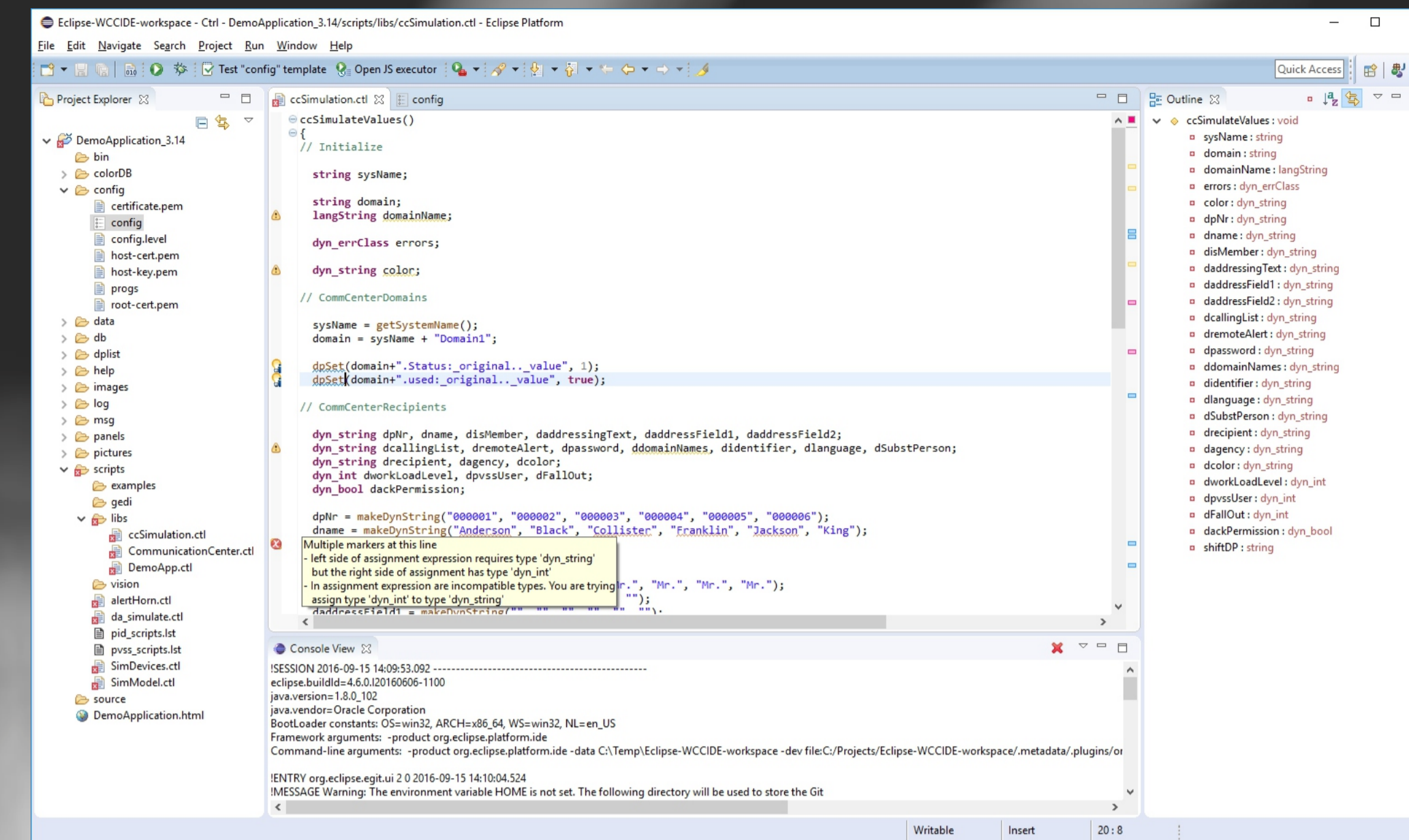
IDE for SCADA Development at CERN

Aim of the project

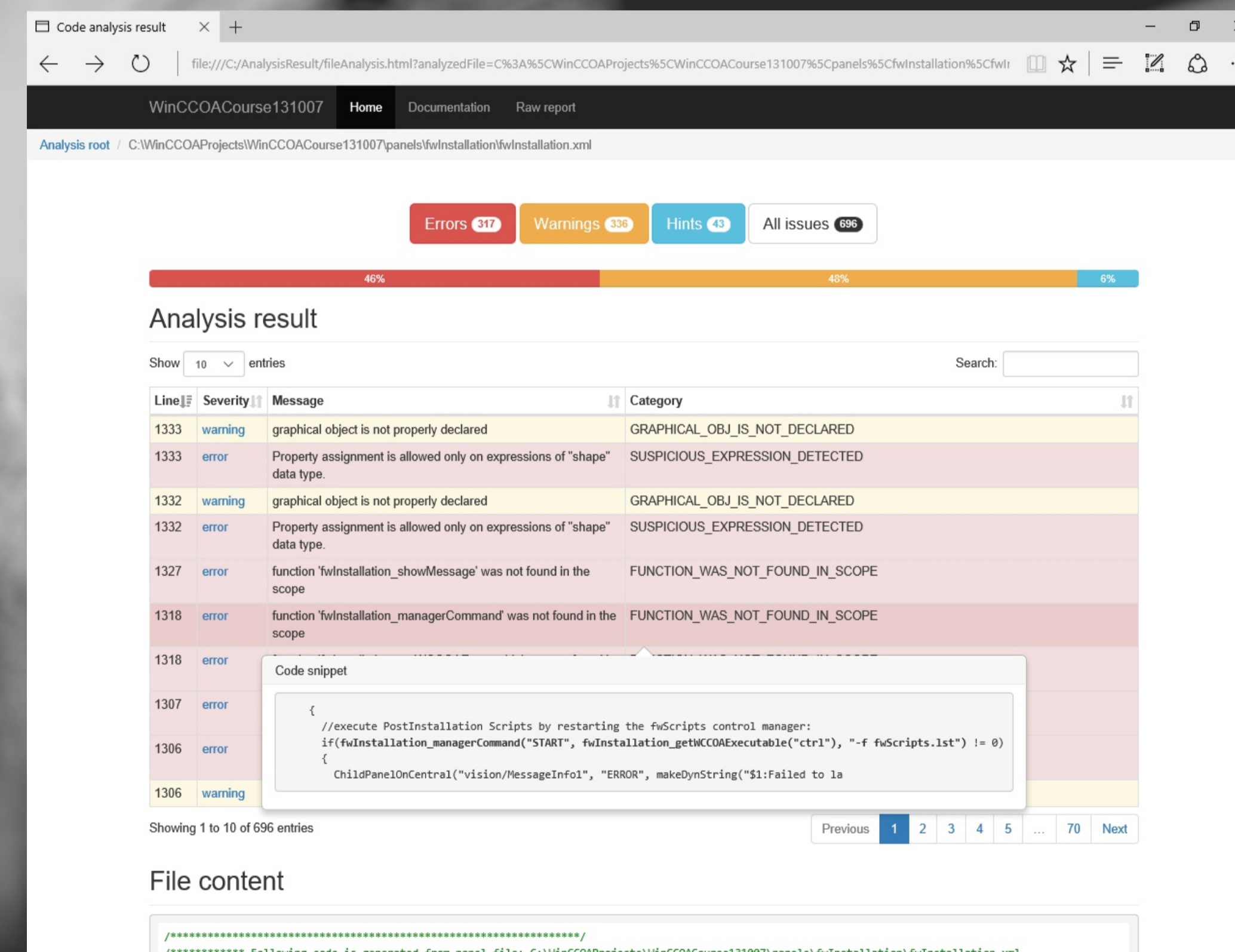
CERN (*European Organization for Nuclear Research*) is one of the biggest research organizations in the world. It uses many scientific, industrial and custom built machines that are supervised/operated using SCADA (*Supervisory Control And Data Acquisition*) software. The **purpose of this project was to create** a tool, in form of an IDE, that would make the development of SCADA applications simpler, more efficient and it would fit CERN-specific needs, such as online and offline code analysis and integration with other software used at CERN.

Achieved results

- Full support for custom C-like programming language
 - Code coloring
 - Refactoring
 - Code completion
 - Real-time code analysis and suggestions of possible code fixes
 - Additional CERN-specific features
- Analysis of SCADA projects
 - Online and offline analysis
 - Integration with Jenkins (continuous integration tool)
 - Reports in multiple formats
- Verification of configuration files
 - In order to verify correctness of configuration files for SCADA applications, a new domain-specific language (DSL) and its interpreter were created
 - The DSL and its interpreter are both integrated in the IDE
- Base for a research in *test case generation* area
 - A research of test case generation is conducted at CERN, the capabilities and API of the IDE are the base for its practical application



- The IDE with SCADA project open
- It is based on the Eclipse platform and it provides similar functionality as other modern IDEs
- Used technologies are: Eclipse, Java, Xtext and Xtend



- Result of an offline project analysis performed by the IDE
- This particular result is in a form of HTML page, however additional formats are supported as well as an integration with Jenkins

```
''print("Demo template!");''
[general]
{exactlyOnce} pvss_path = "C:/PVSS/" || "/opt/PVSS"
proj_path = ''(value.toLowerCase().startsWith("c:/proj/"))''
[ui]
showActiveShapes = 0
checkADAAuthIntervall = >= 60
```

- Example of a DSL that was specially designed to verify correctness of configuration files in SCADA projects