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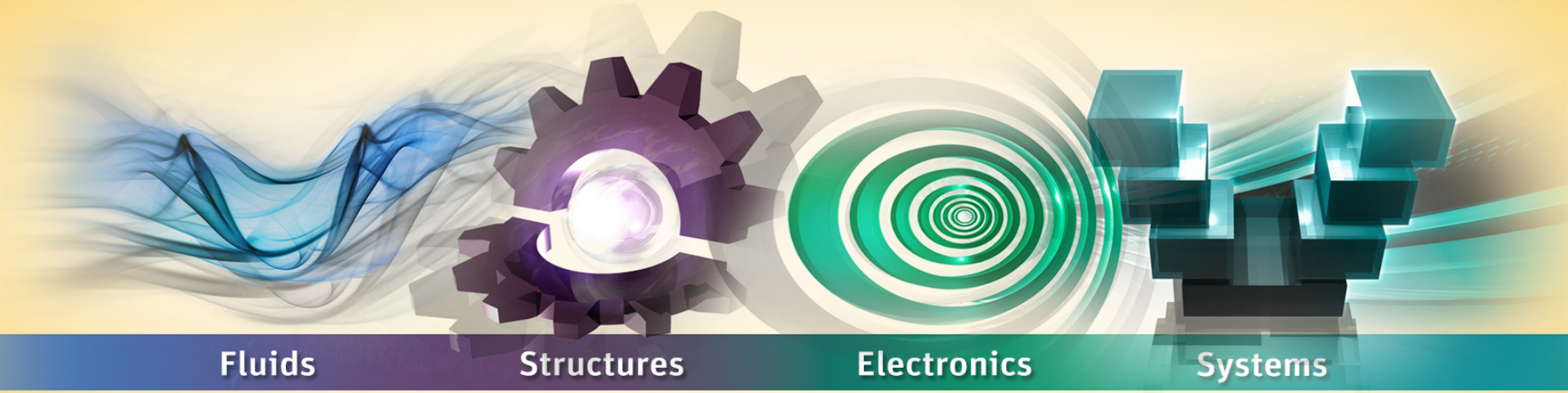
SCADE LifeCycle Dashboard



Introduction

SCADE LifeCycle Dashboard Use

Customizing a Dashboard

ESTEREL Technologies

INTRODUCTION

Project Information Challenges

SCADE Lifecycle Dashboard

Project Information Challenges

Managing Project data is one of the key success factor of a project.

Decision makers need the right information at the right time to be able to monitoring activities, to anticipate issues and take the right decisions.

Information Management is the process that supports these duties

Project Information Challenges

Information Management is about:

- Gathering information about the project activity we want to monitor,
- Comparing the data with expected or recommended data,
- Providing graphical dashboard to decision makers.

Applied to SCADE projects, this activity is a key performance factor for Project Manager or Designer or Safety and Quality Manager.

Project Information Management Flow

1. Collect Data (from files or Databases)
2. Define Metrics and Customize Data schema accordingly
3. Build Reports (graphical or tabular)
4. Setup Alarms or Warning messages
5. Build Dashboards
6. Setup Access to Dashboards (mobility, Web, export PDF, Excel)

SCADE LifeCycle Dashboard

Based on Prelytis Live Dashboard OEM Solution (http://www.prelytis.com) completely integrated in SCADE framework

Supports Project Information Management and provides Secure Access to Team Data

Computes metrics for SCADE Decision Makers

Builds Dashboards and reports that can be customized

Dashboards are available within SCADE environment or thru any Web-Browser and Smartphone

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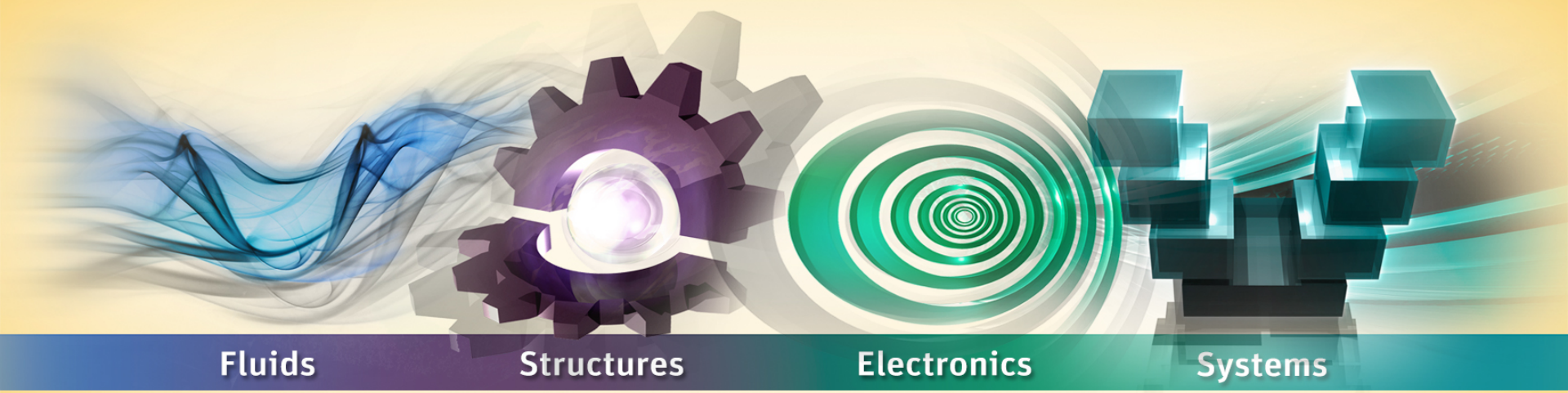
Use Cases



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SCADE LifeCycle Dashboard for Project Managers

It is key that the Project Manager has at his disposal a Dashboard that is:

- Comprehensive
- Impartial
- Clear
- Repeatable
- Easy to regularly update
- Customizable to the various organizations that need reports

At the project closure, objective results and performance measurement of the project contribute to wider Business Intelligence

- Business Intelligence makes the company data driven through strategies and experiences that are true project and business knowledge

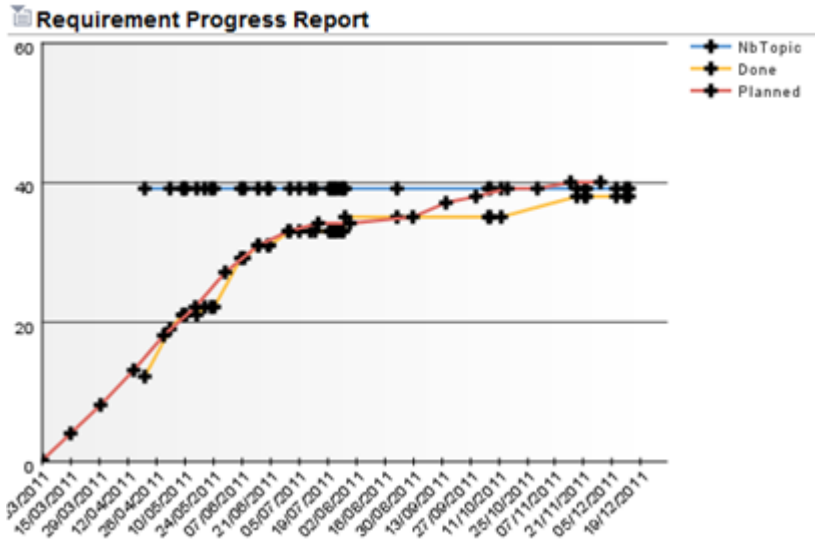
SCADE LifeCycle Dashboard for Project Managers

SCADE LifeCycle Dashboard provides basic default metrics:

- Requirement Design Coverage
- Model Test Coverage

SCADE LifeCycle Dashboard automatically collects data:

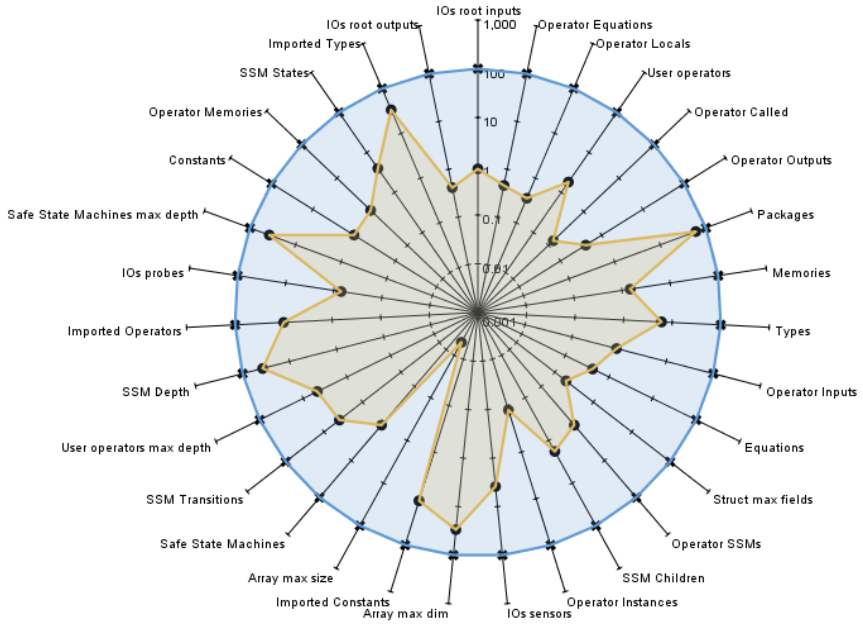
- Requirements to be implemented, Requirements already implemented, Model coverage, etc.



SCADE LifeCycle Dashboard for SCADE Designers

SCADE LifeCycle Dashboard provides metrics on SCADE Suite model sizing and compares the actual values to the recommended max values

Criteria	Value	Max
Array max dim	3	10
Array max size	10	200,000
Constants	85	8,449
Equations	73	17,211
Imported Constants	0	9
Imported Operators	0	10
Imported Types	0	3
IOs probes	0	142
IOs root inputs	9	1,021
IOs root outputs	3	729
IOs sensors	0	26
Memories	8	544
Operator Called	3	2,187
Operator Equations	22	4,801
Operator Inputs	9	1,021
Operator Instances	2	1,601
Operator Locals	17	4,800
Operator Memories	6	544
Operator Outputs	3	729
Operator SSMs	3	272
Packages	24	40
Safe State Machines	3	272
Safe State Machines max depth	3	8
SSM Children	1	55
SSM Depth	3	8
SSM States	2	50
SSM Transitions	2	50
Struct max fields	2	1,023
Types	46	761
User operators	6	329
User operators max depth	3	63



Using th project i
complexity, therefore the cost of verification and the overall schedule.

Reducing the complexity of the model is a success key for long term maintainability

SCADE LifeCycle Dashboard and CVK

Compiler Verification Kit (CVK) is a test suite that verifies that your cross-compiler correctly compiles code generated by SCADE Suite KCG

CVK Test Suite is made of tests that are defined to cover the exhaustive set of elementary C constructs generated by KCG and cover a set of “typical” and deeply nested combination of these constructs to stress the compiler following some predefined metrics (ANSI and ISO)

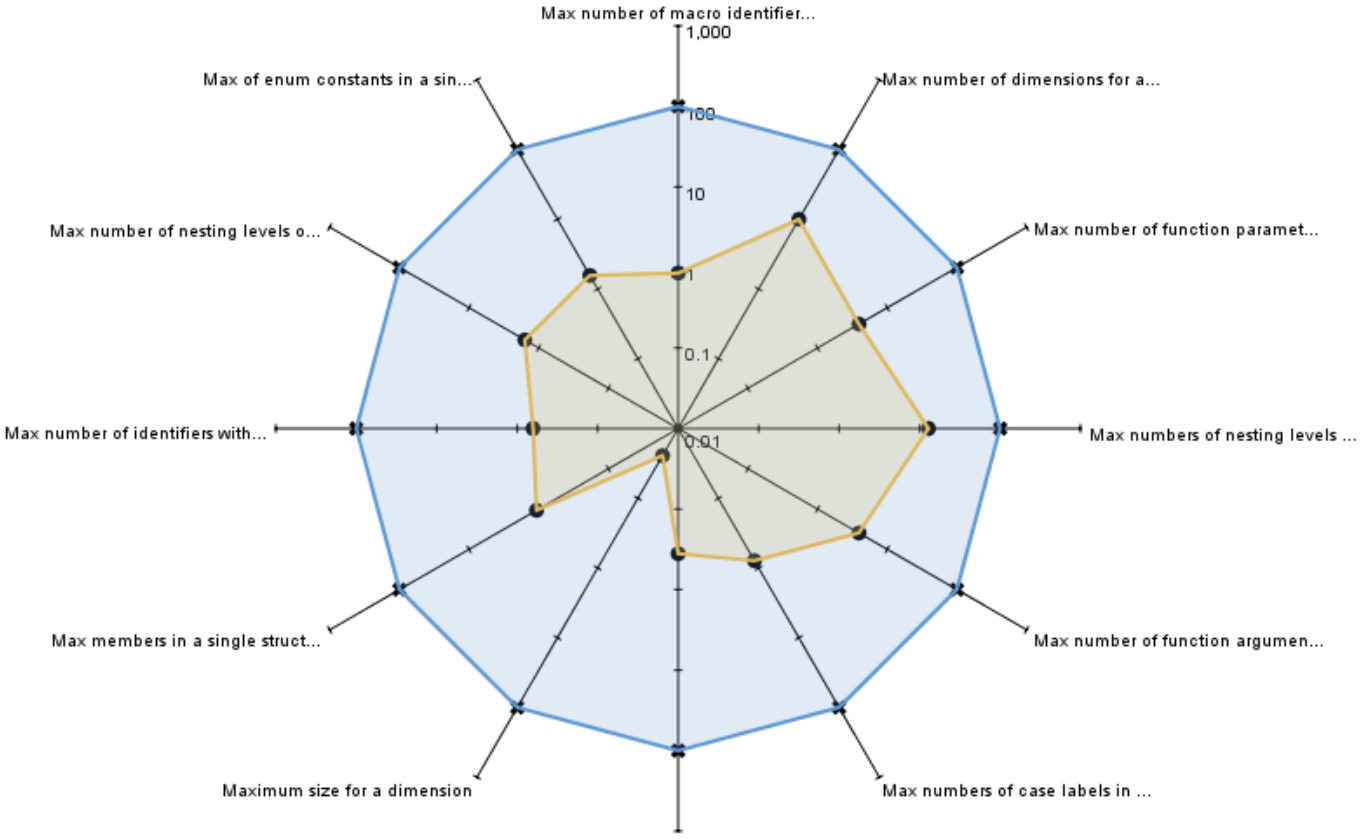
The objective is to define a domain of safe Usage of the cross compiler where we can assess its correct behavior

Then KCG generates the value of the metrics for the generated code.

The SCADE LifeCycle Dashboard provides a mean to allow Safety and Quality Managers to check that the code generated by KCG meets the domain of safe Usage of cross compiler

SCADE LifeCycle Dashboard for Safety and Quality Managers

SCADE LifeCycle Dashboard merges metrics generated by KCG on your application and data coming from SCADE Compiler Verification Kit (CVK)



SCADE LifeCycle Dashboard

Unique Monitoring Capabilities

- **Web-based solution to master Project Data Information**

•Provides Secure Access to Team Data

•Computes Metrics for Decision Makers

  - **For Project managers, to monitor an activity (Project, Design, Verification).**
  - **For Software designers, to measure and master Design complexity (Model Metrics)**
  - **For Safety/Quality Engineers, to produce**
  - **certification artifacts**

- **Produces Dashboards and Reports**
  - **Fully customizable**
  - **Integrated in SCADE environment**
  - **or any Web Browser or Smartphone**

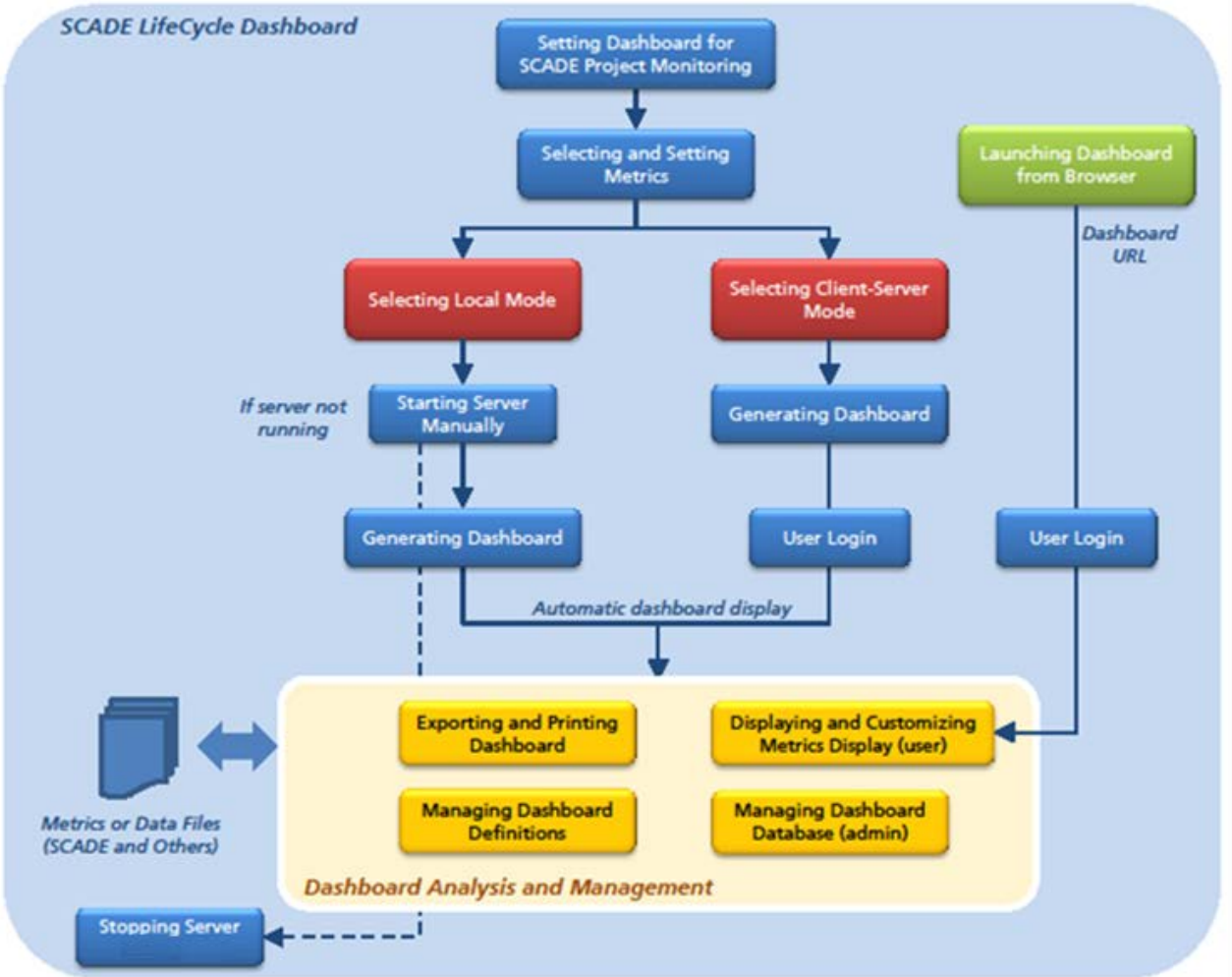
AGENDA

Introduction

SCADE LifeCycle Dashboard Use

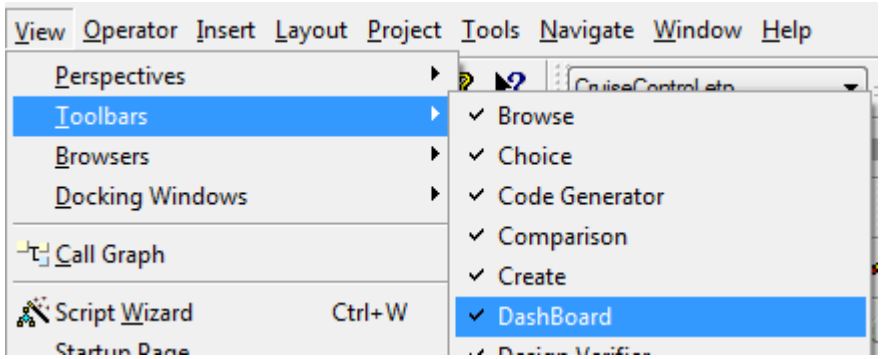
Lab

SCADE LifeCycle Dashboard Flow

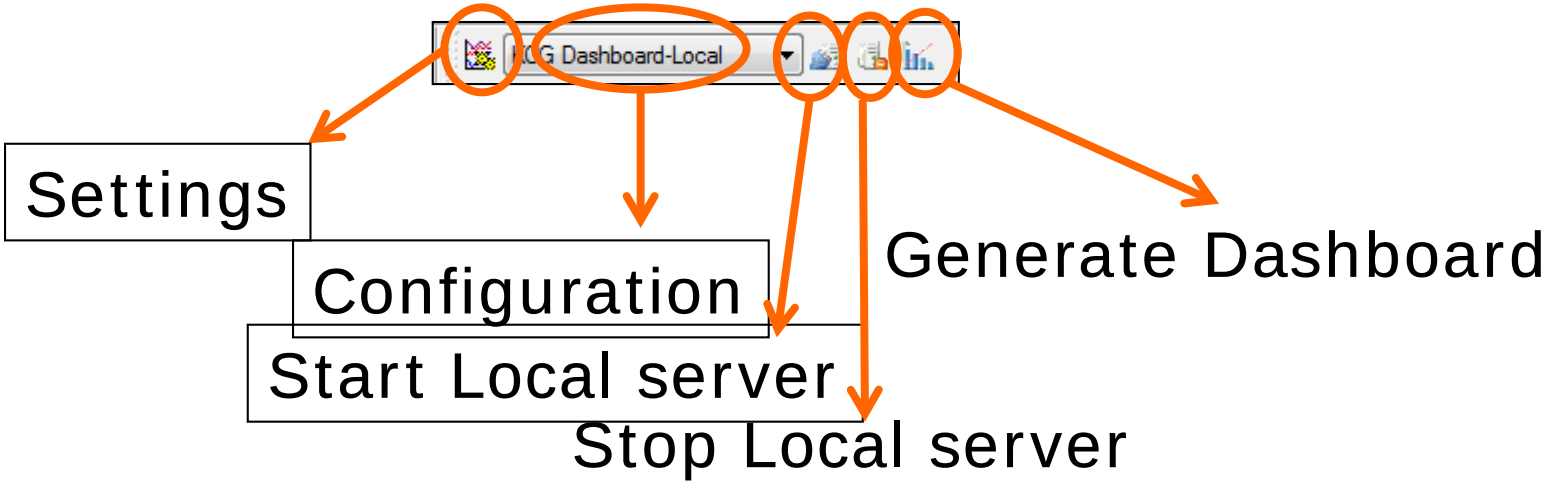


Setup Dashboard

New Toolbar to activate (if needed):

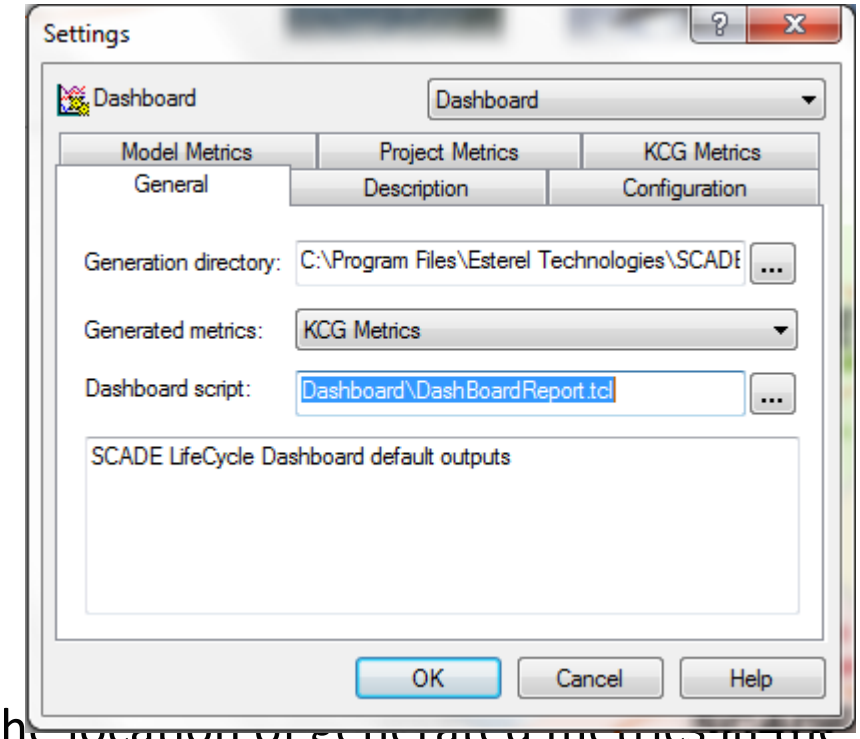


Toolbar:



Settings (1/6)

General Tab:



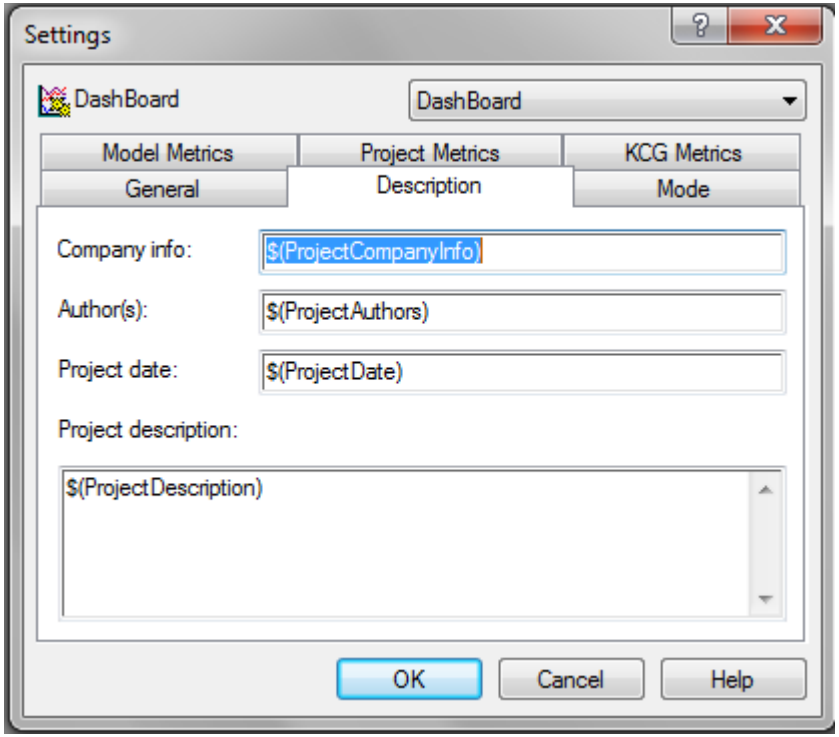
Generation Directory : Specify the location of generated metrics in the Generation directory field.

Generated metrics : select the kind of metrics that will be generated

Dashboard script: Specify the script that handles the metrics computation and the generation of dashboards in the Dashboard script field. The default script is DashboardReport.tcl.

Settings (2/6)

Description Tab:



Provides information for Dashboard header

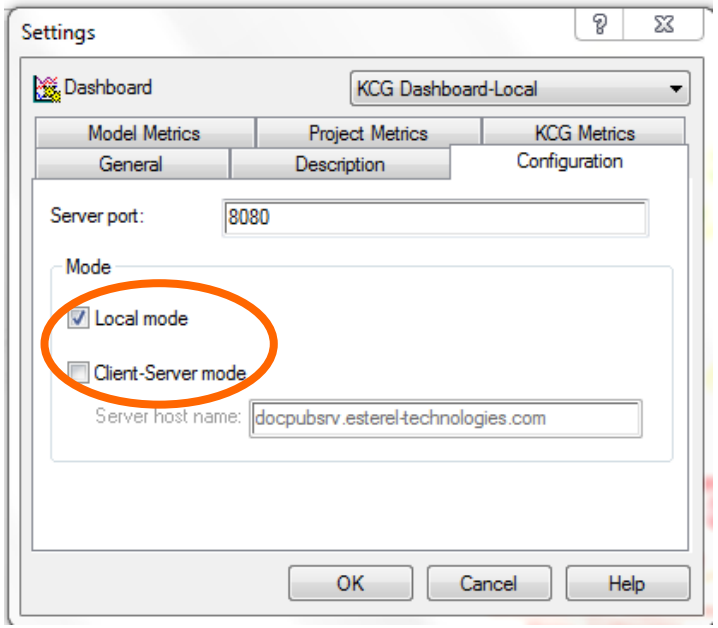
Settings (3/6)

Configuration Tab:

Two possible modes:

- Local mode : Server is running on your PC,
- Client-Server mode : Server is running on a Company server

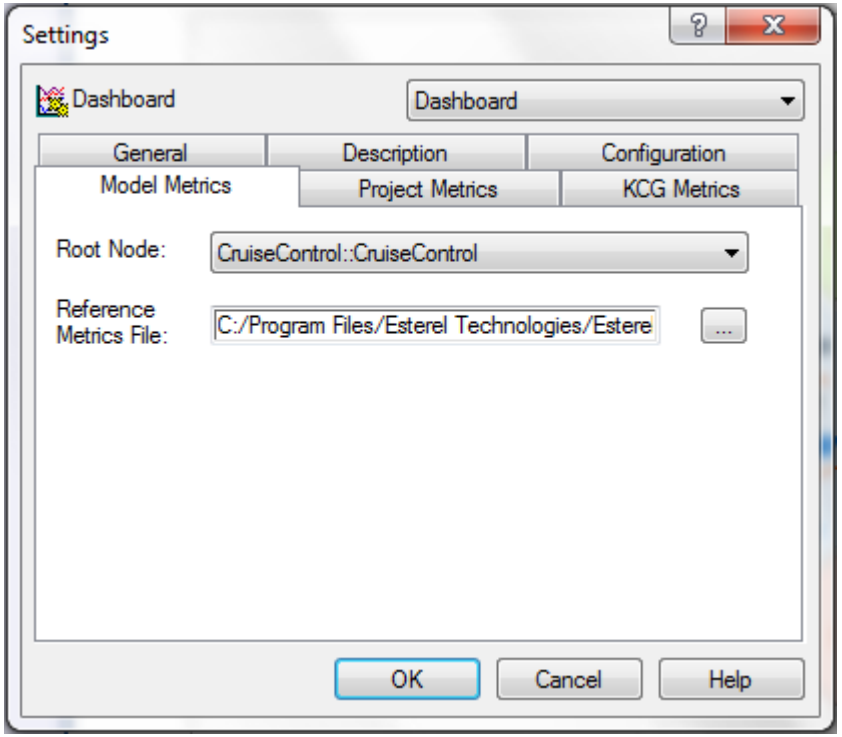
Server port : to setup the port that will be used for Client/Server communication



Settings (4/6)

Model Metrics Tab:

(customizable using TCL script)



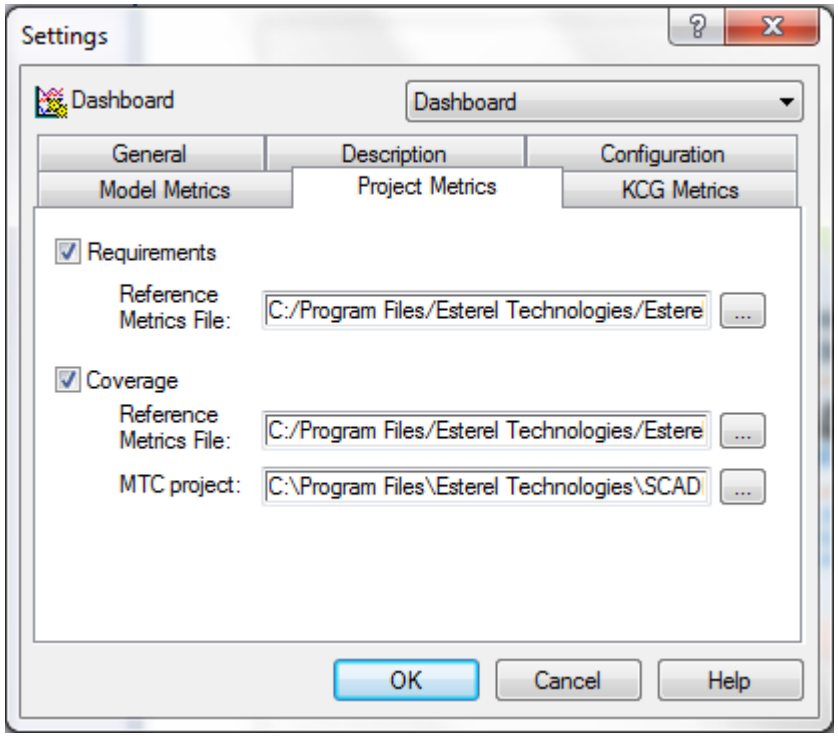
Specify the model Root Node

Specify the Reference Metrics File that is defining your maximum size values of the model

Settings (5/6)

Project Metrics Tab:

(customizable using TCL script)



Requirements

Specify the metrics file that is defining the actual requirements design progress versus the planned shape – SCADE RM Gateway is used

Coverage

Specify the metrics file that is defining the actual test coverage progress at model level versus the planned shape – SCADE MTC is used

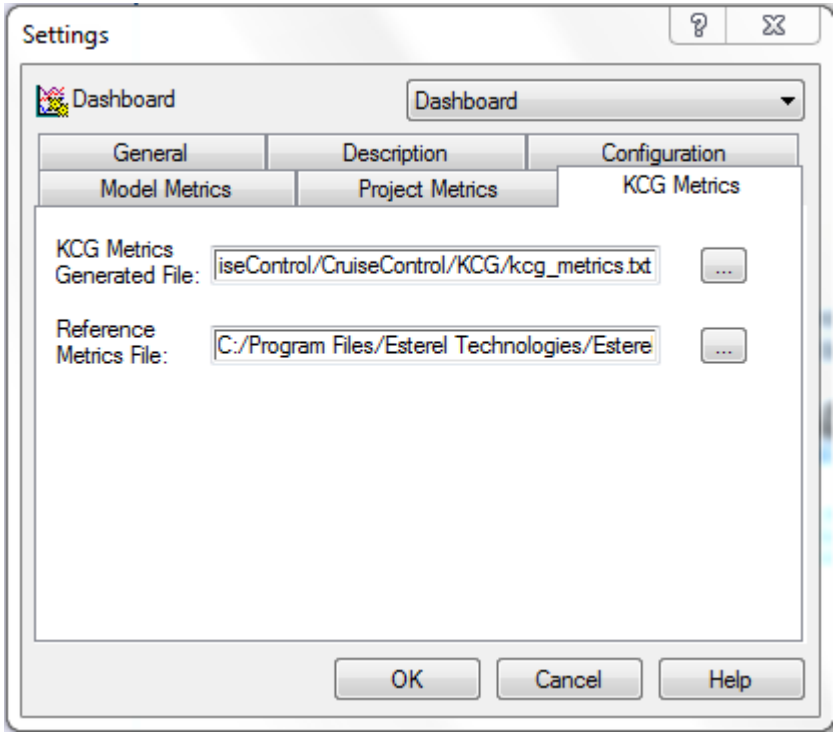
Settings (6/6)

Project KCG Tab:

(customizable using TCL script)

KCG Metrics Generated File:

Specify path for kcg_metrics.txt file generated by KCG



Reference Metrics File: Specify path for Max values (cf CVK)

AGENDA

Introduction

SCADE LifeCycle usage

Lab

Lab

The Name of the Game : Build this Dashboard…

SCADE Dashboard — trainingDashboard — SCADE

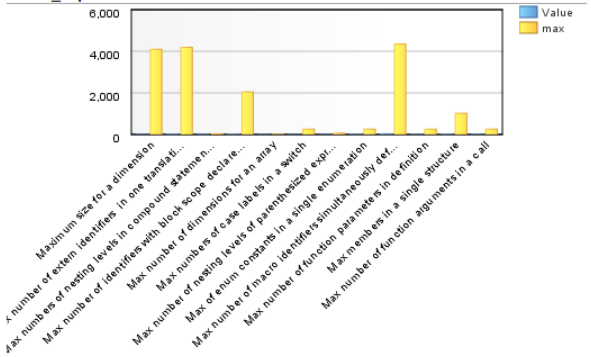
tabtext

KCG Metrics Dashboard as example

tab_report1

Criteria	Value	Max
Maximum size for a dimension	0	4,095
Max number of extern identifiers in one translation unit	15	4,187
Max numbers of nesting levels in compound statement	4	31
Max number of identifiers with block scope declared in one block	13	2,047
Max number of dimensions for an array	0	10
Max numbers of case labels in a switch	2	255
Max number of nesting levels of parenthesized expression in a full expression	1	63
Max of enum constants in a single enumeration	4	255
Max number of macro identifiers simultaneously defined in one preprocessing translation unit	37	4,343
Max number of function parameters in definition	10	255
Max members in a single structure	11	1,023
Max number of function arguments in a call	10	255

tab_report2



Steps

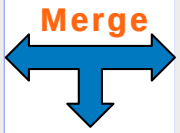
Lab

1. Build Dashboard Data Dictionary
   - Create your data scheme
   - Import each data (file) in a Data Dictionary
   - Merge data
2. Build Report (graphical area)
   - Table report
   - Graphical report
   - Textual (including picture report)
3. Build the Dashboard
4. Make it available (browser)

1. Build Dashboard Data Dictionary
Create you data scheme

KCG_metrics (form KCG)

criteria	value
Max members in a single structure	11
Max number of dimensions for an array	0
Maximum size for a dimension	0
Max of enum constants in a single enumeration	4
Max numbers of case labels in a switch	2
Max numbers of nesting levels in compound statement	4
Max number of function parameters in definition	10
Max number of function arguments in a call	10
Max number of nesting levels of parenthesized expression in a full expression	1
Max number of identifiers with block scope declared in one block	13
Max number of macro identifiers simultaneously defined in one preprocessing translation unit	37
Max number of extern identifiers in one translation unit	15



CVK_data (from CVK)

criteria	max
Max members in a single structure	1,023
Max number of dimensions for an array	10
Maximum size for a dimension	4,095
Max of enum constants in a single enumeration	255
Max numbers of case labels in a switch	255
Max numbers of nesting levels in compound statement	31
Max number of function parameters in definition	255
Max number of function arguments in a call	255
Max number of nesting levels of parenthesized expression in a full expression	63
Max number of identifiers with block scope declared in one block	2,047
Max number of macro identifiers simultaneously defined in one preprocessing translation unit	4,343
Max number of extern identifiers in one translation unit	4,187

Criteria	Value	Max
Maximum size for a dimension	0	4,095
Max number of extern identifiers in one translation unit	15	4,187
Max numbers of nesting levels in compound statement	4	31
Max number of identifiers with block scope declared in one block	13	2,047
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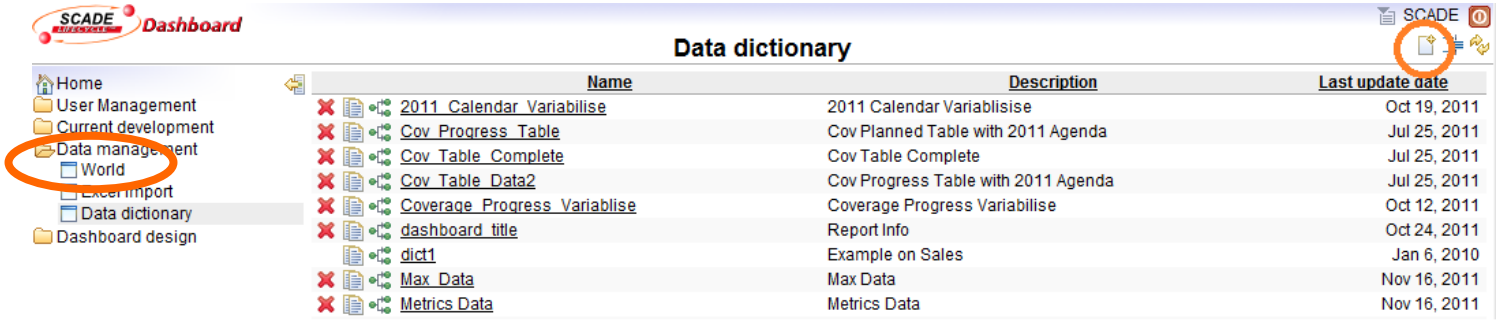
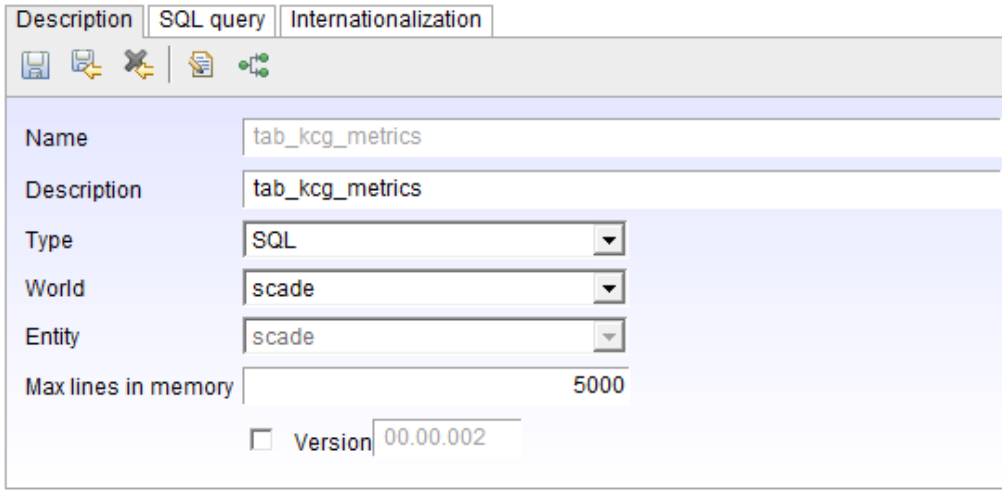
Max number of function parameters in definition	10	255
Max members in a single structure	11	1,023
Max number of function arguments in a call	10	255

1. Build Dashboard Data Dictionary
Import each data in a Data Dictionary

Create a Data Dictionary



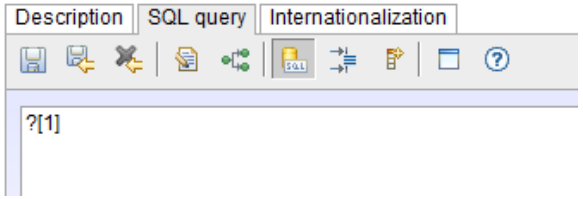
Fill the field (SQL Type to import data using SQL)



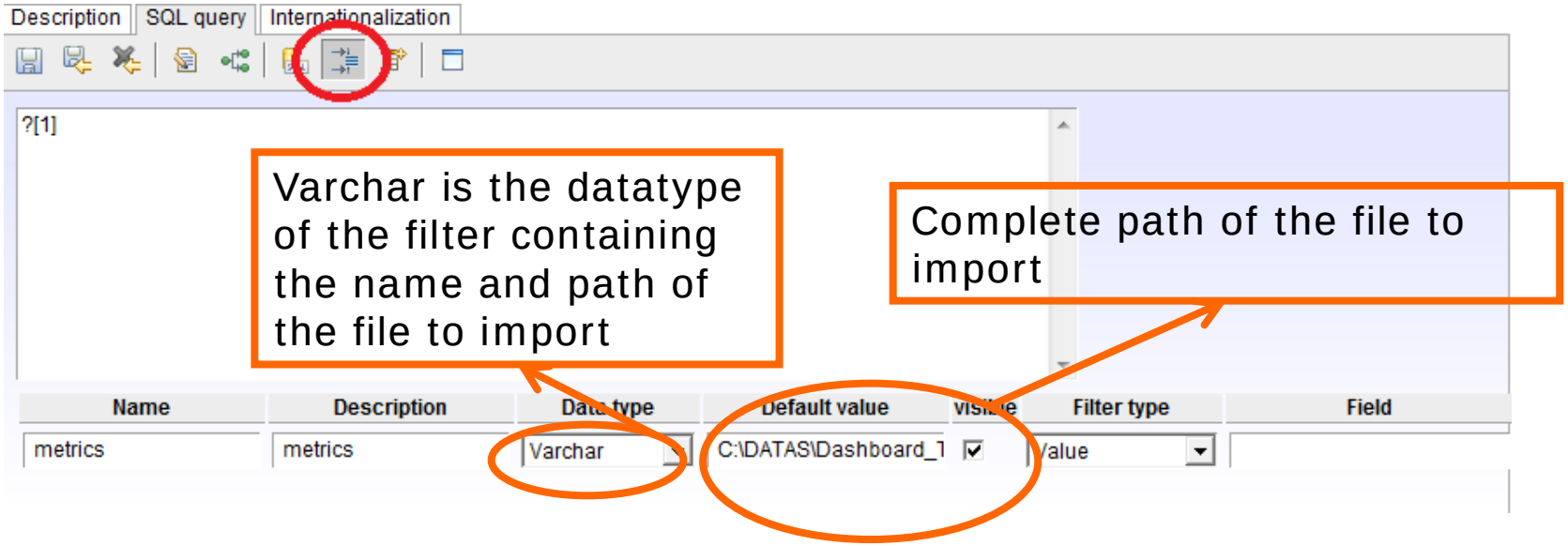
Lab

1. Build Dashboard Data Dictionary
Import each data in a Data Dictionary

SQL Query: Any SQL query is allowed. When importing a csv file a dedicated simplified syntax is used « ?[1] » means content of the file specified in filter 1

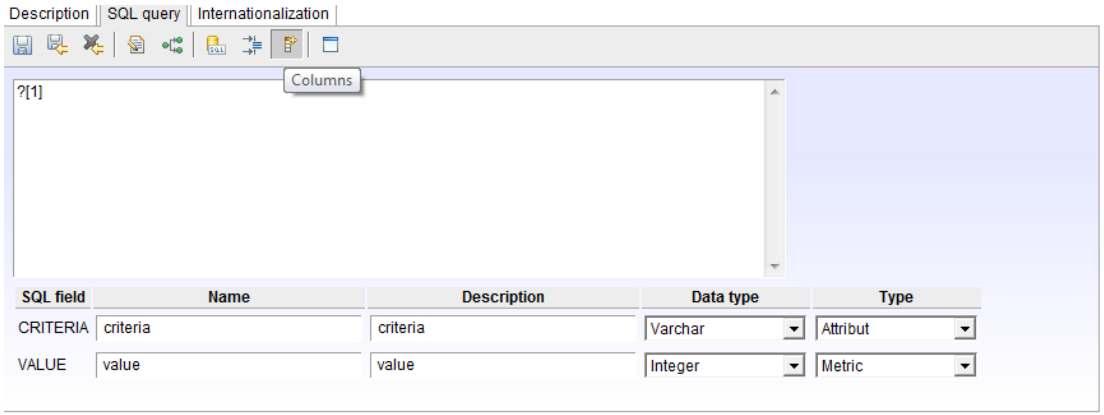


Setup the filter with the file (and path)

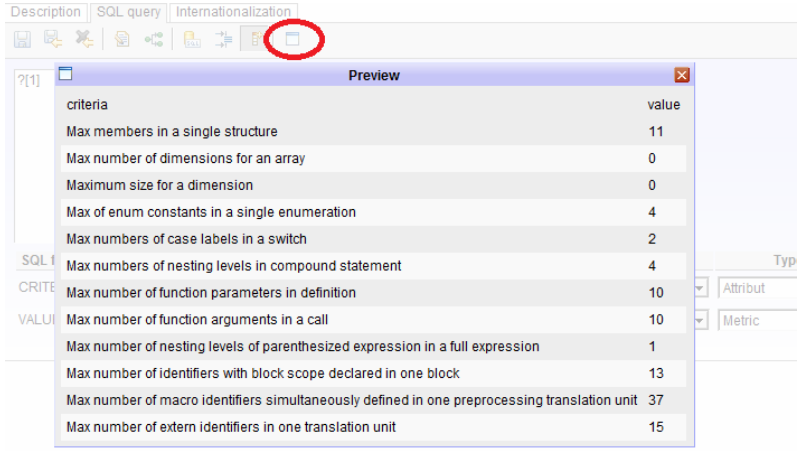


1. Build Dashboard Data Dictionary
Import each data in a Data Dictionary

Columns are automatically defined from the File

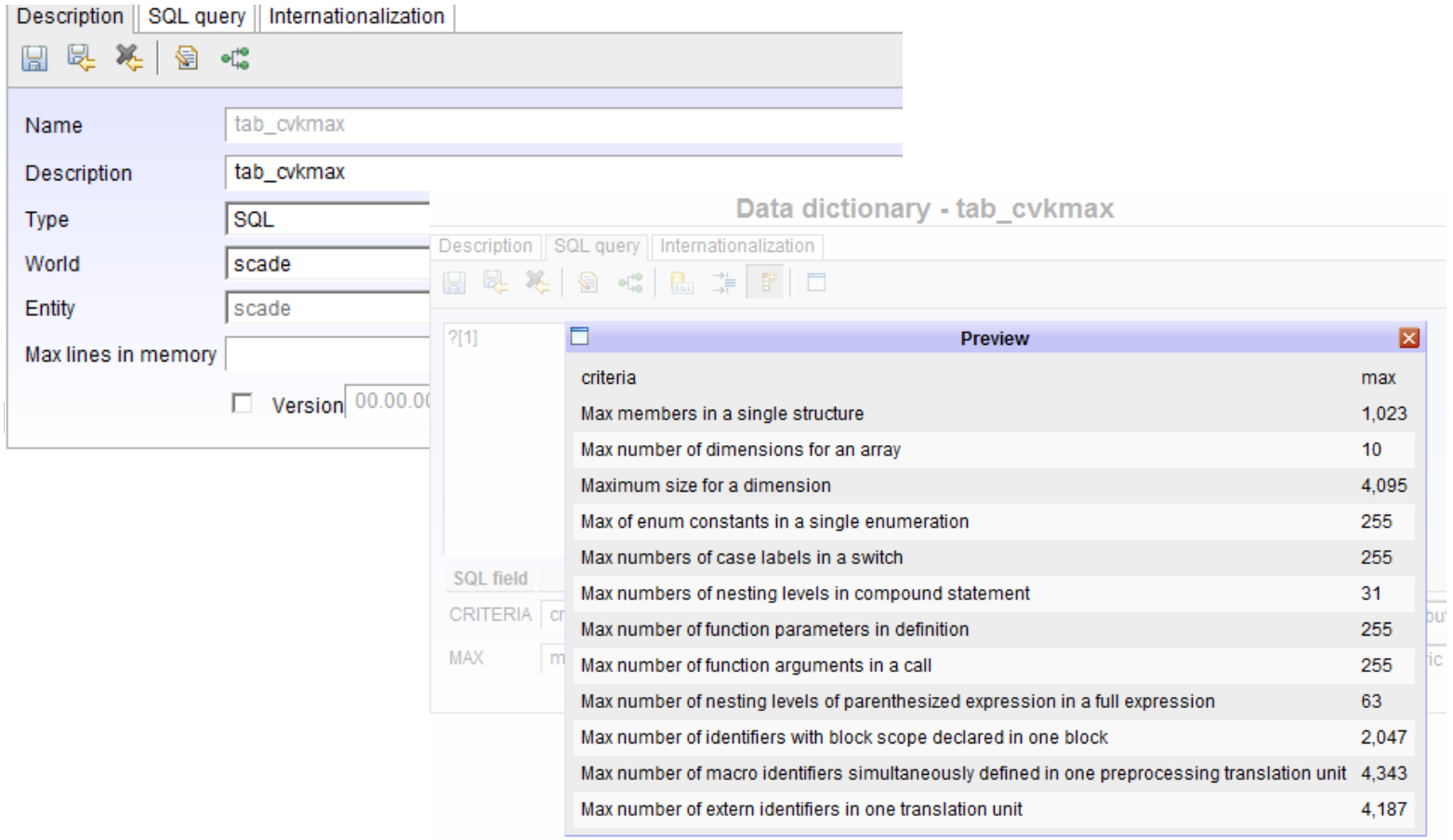


Preview



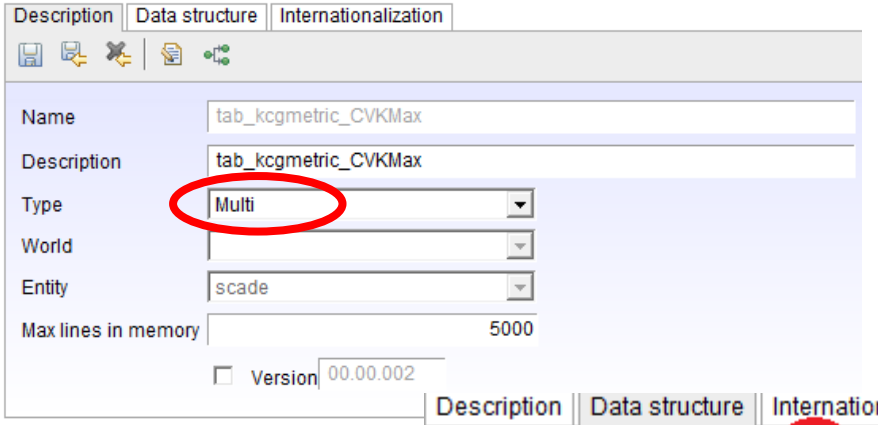
1. Build Dashboard Data Dictionary
Import each data in a Data Dictionary

Same for the other file (CVK max)

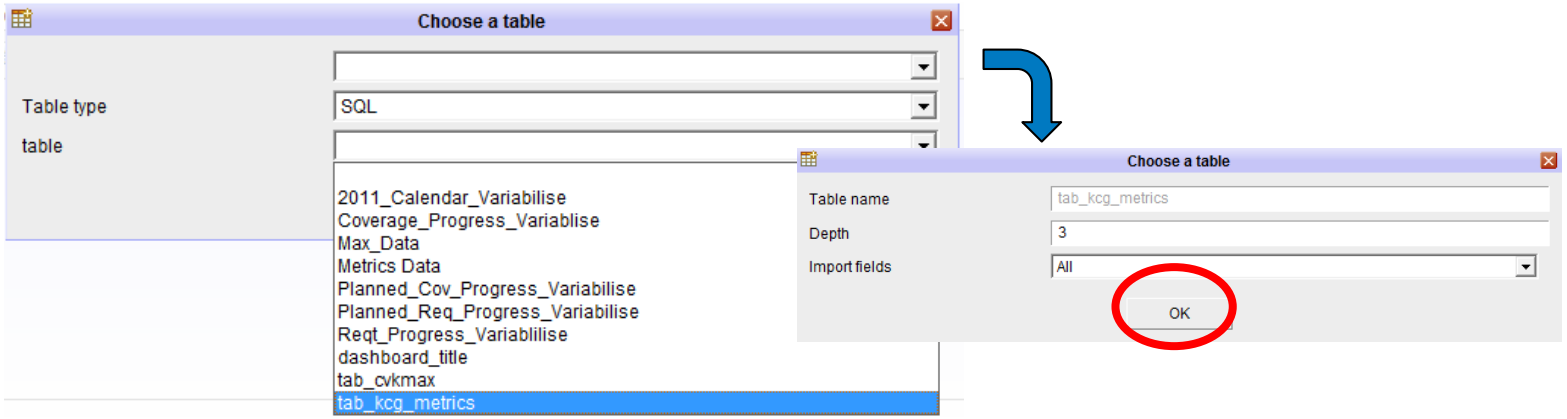


1. Build Dashboard Data Dictionary Merge Data

Create a multi-dictionary

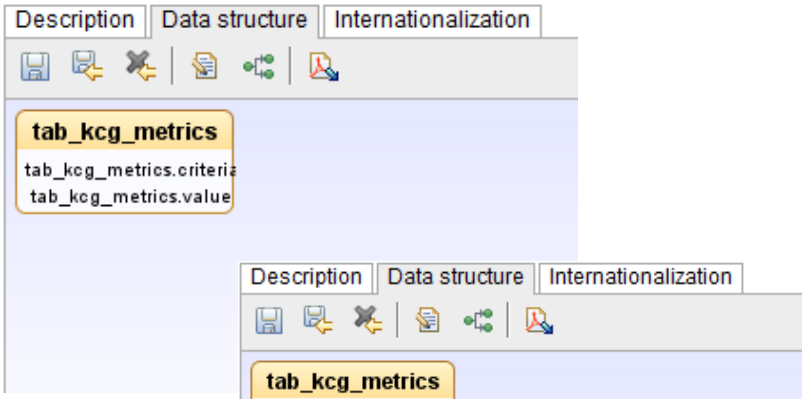


Select the data dictionary you want to Merge

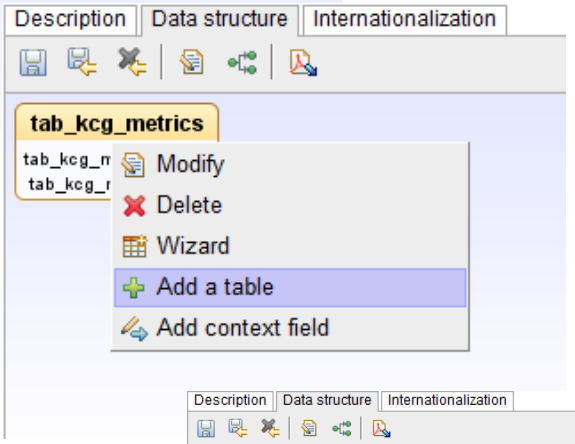


1. Build Dashboard Data Dictionary Merge Data

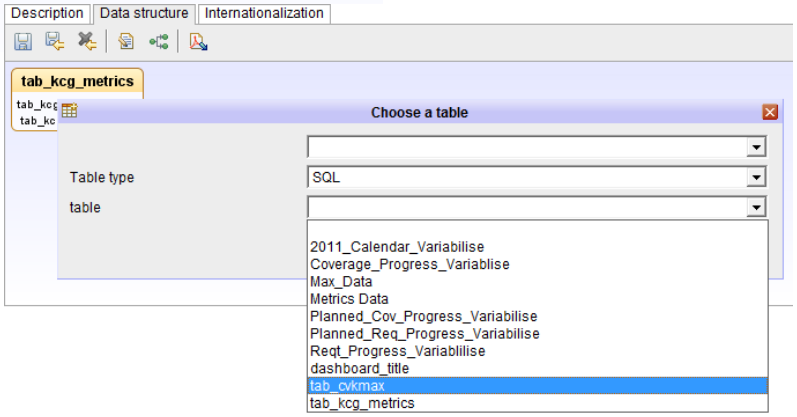
Result



Click
On the
Data Dictionary



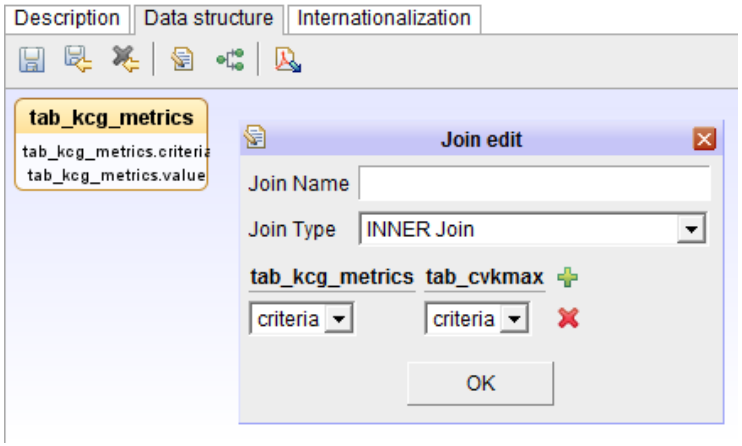
Select the data dictionary you want to Merge



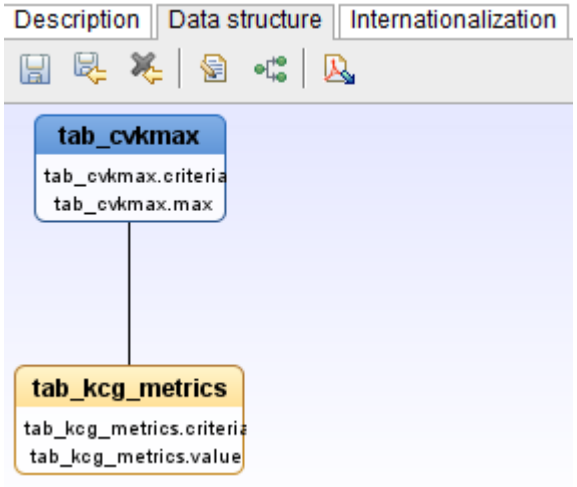
1. Build Dashboard Data Dictionary Merge Data

Lab

Select the king of Merge (inner Join)

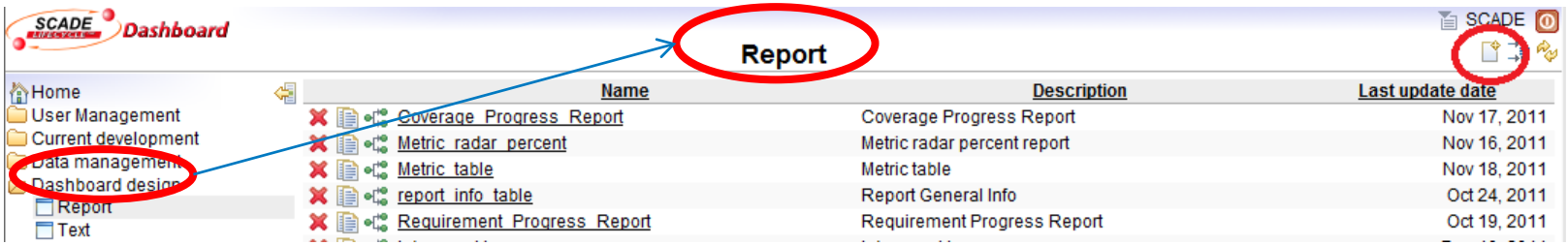


Result

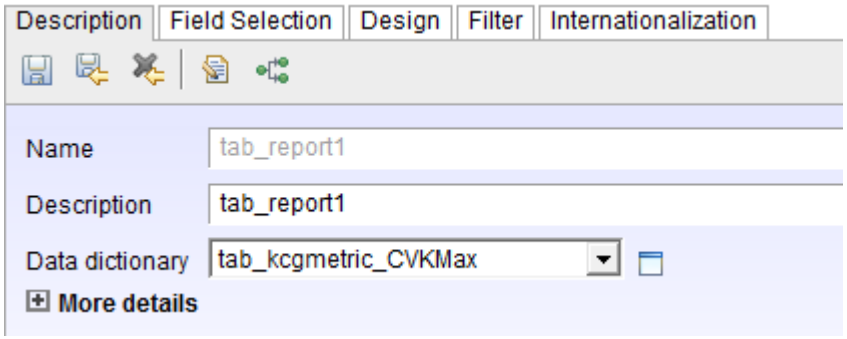


2. Build Report (graphical area) table report

Create a report per graphical area



Fill the field and select the Dictionnary



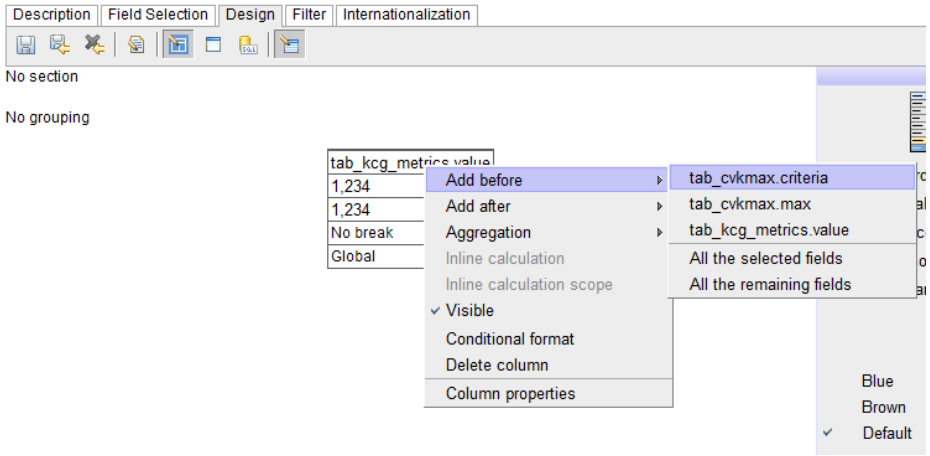
Lab

2. Build Report (graphical area) table report

Lab

Select the fields you need : (Attributes or Metrics are arbitrary classification)

Select the fieds you want to display (in a table)

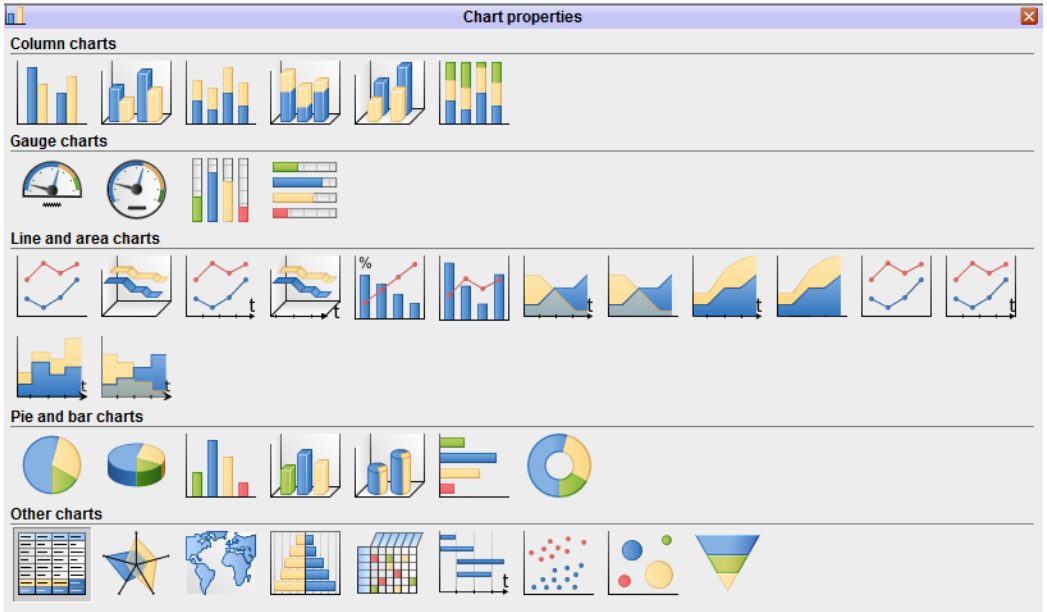


2. Build Report (graphical area) Table report

Result

Criteria	Value	max
some text...	1,234	1,234
some text...	1,234	1,234
No break		
Global		

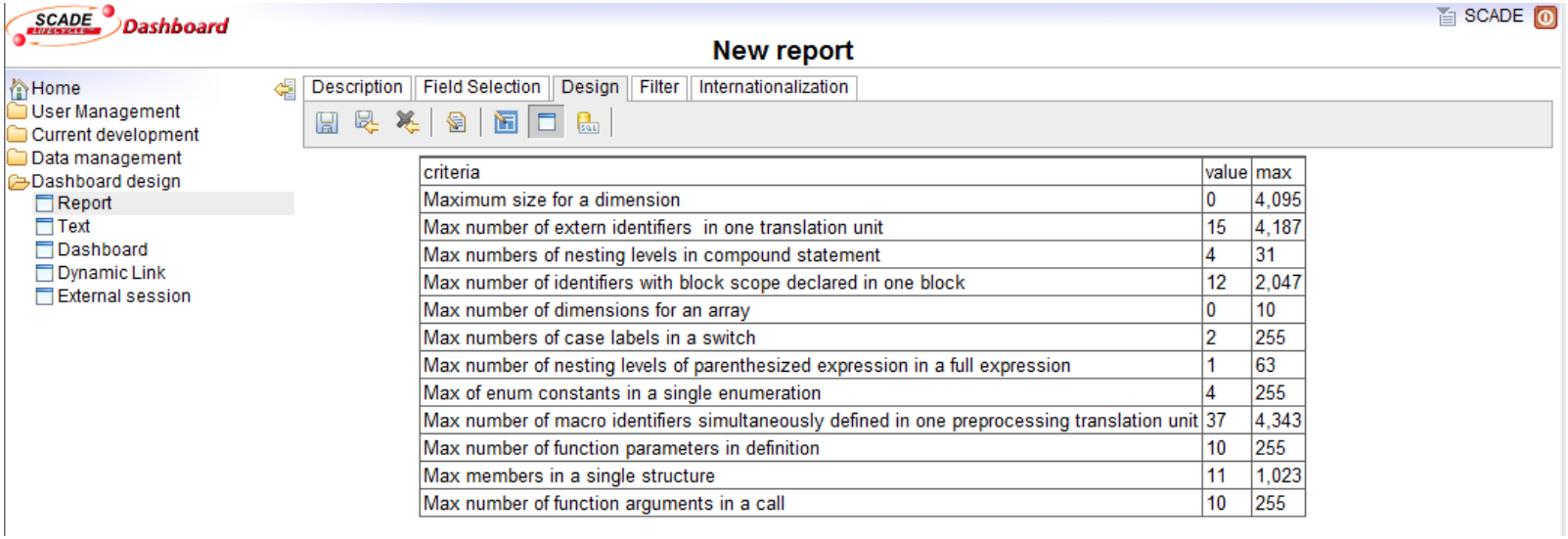
Select the layout



Lab

2. Build Report (graphical area) Table report

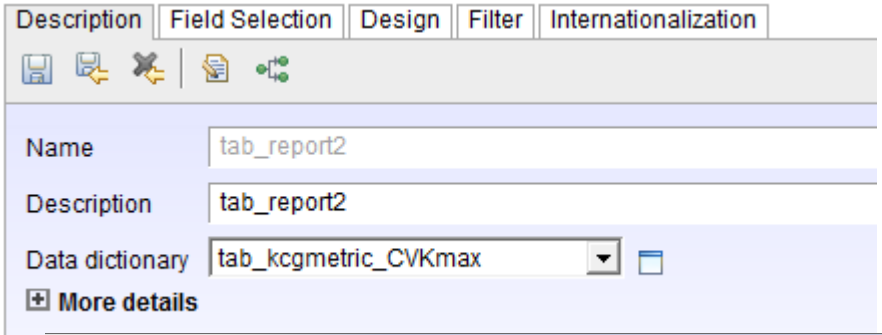
Preview



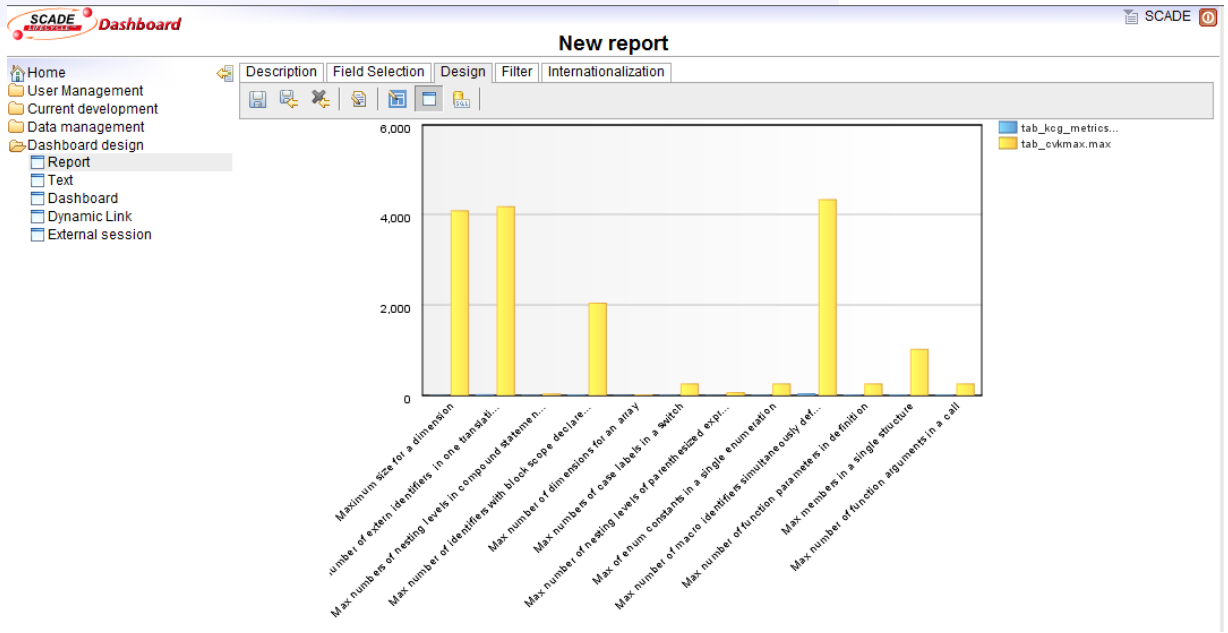
criteria	value	max
Maximum size for a dimension	0	4,095
Max number of extern identifiers in one translation unit	15	4,187
Max numbers of nesting levels in compound statement	4	31
Max number of identifiers with block scope declared in one block	12	2,047
Max number of dimensions for an array	0	10
Max numbers of case labels in a switch	2	255
Max number of nesting levels of parenthesized expression in a full expression	1	63
Max of enum constants in a single enumeration	4	255
Max number of macro identifiers simultaneously defined in one preprocessing translation unit	37	4,343
Max number of function parameters in definition	10	255
Max members in a single structure	11	1,023
Max number of function arguments in a call	10	255

2. Build Report (graphical area) Graphical report

Create the second report (same way)

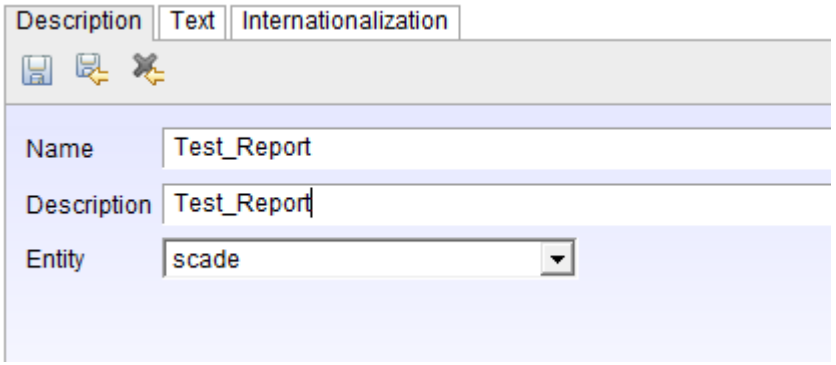


Preview :



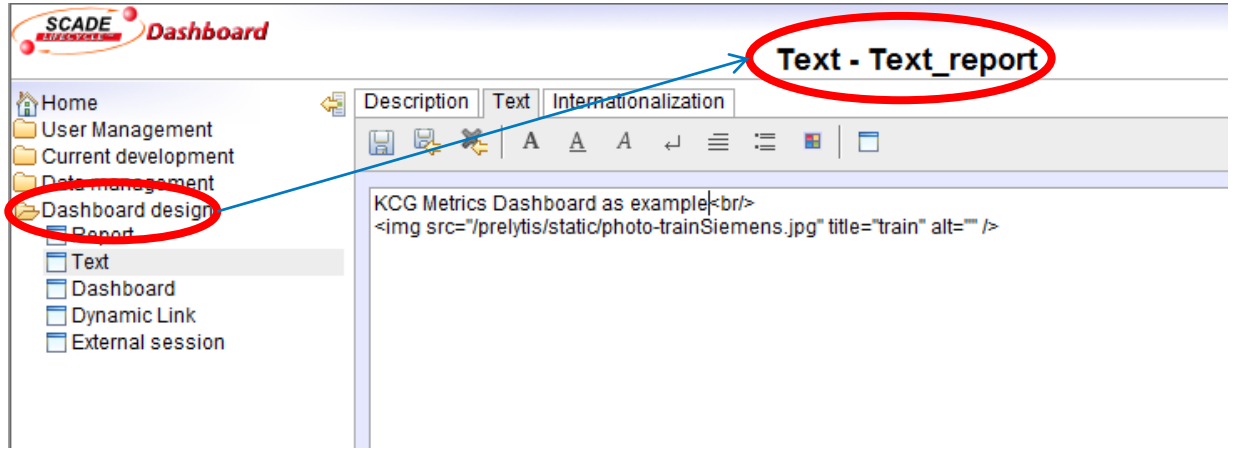
2. Build Report (graphical area) Text report

Create the Third report



Picture file must be in **pub** folder of **livedashboard**

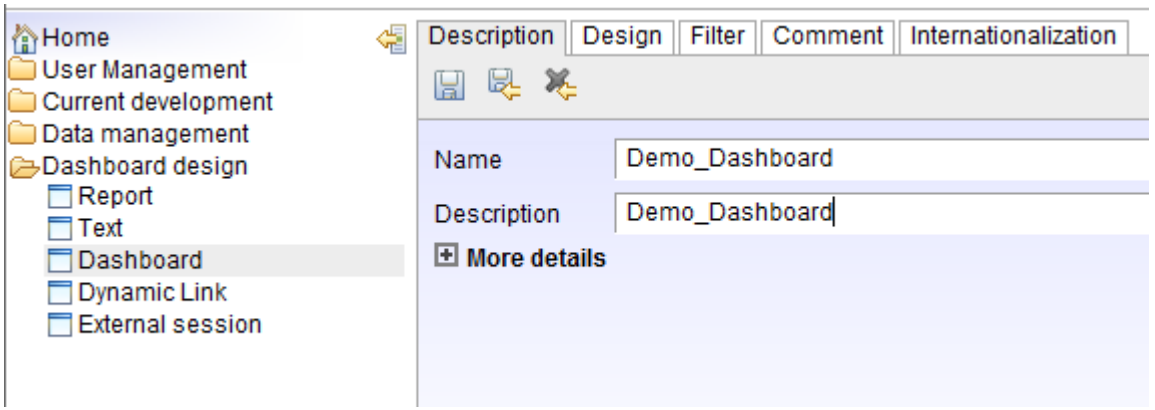
Capture the Text



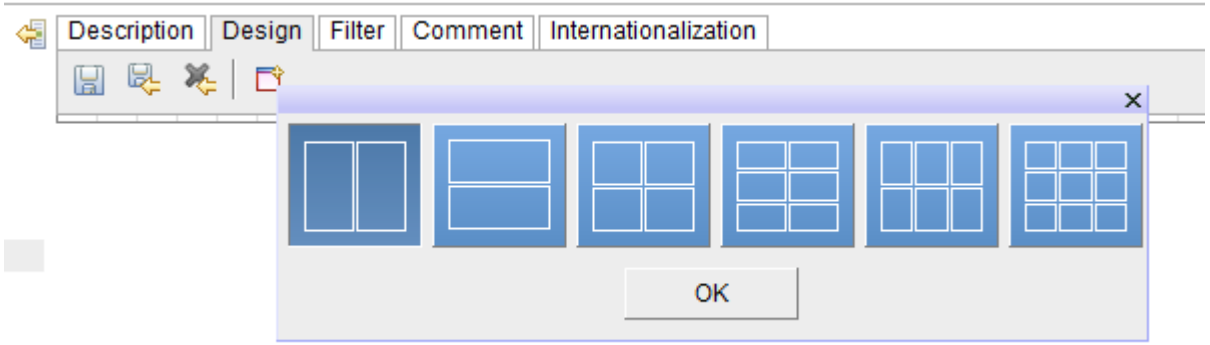
3. Build the Dashboard

Lab

Create the Dashboard



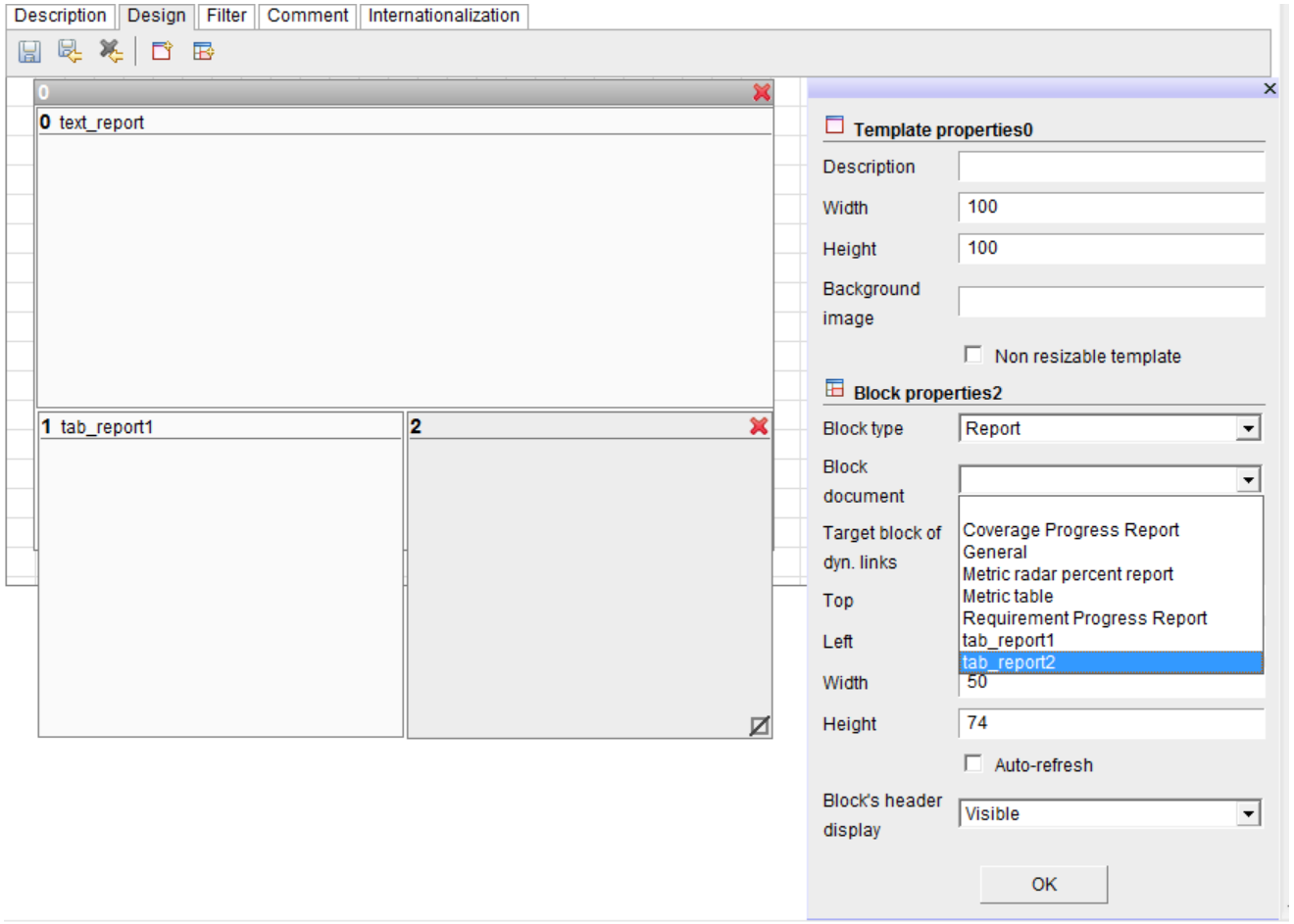
Design the Layout



3. Build the Dashboard

Lab

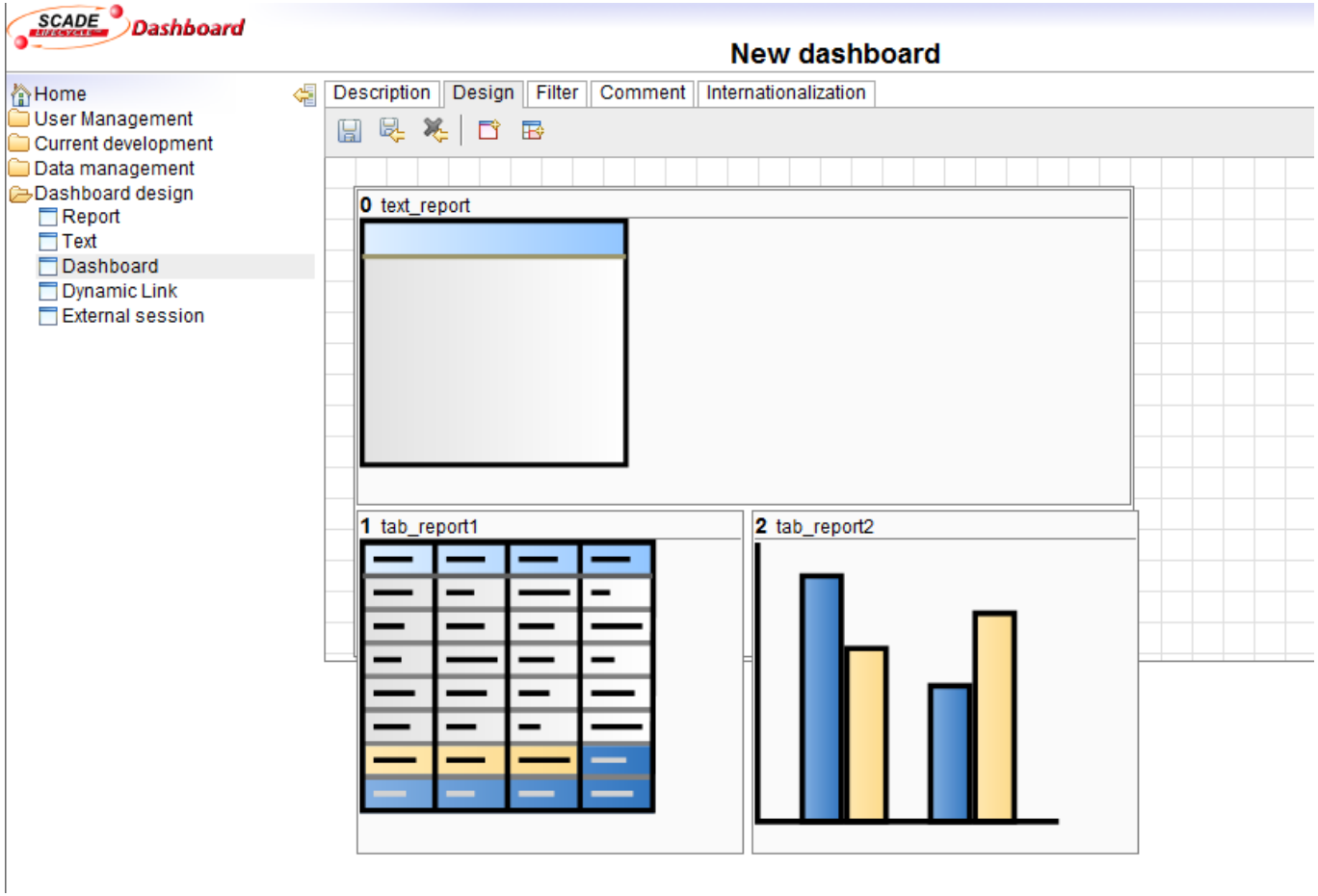
Link the Areas to the Report



3. Build the Dashboard

Lab

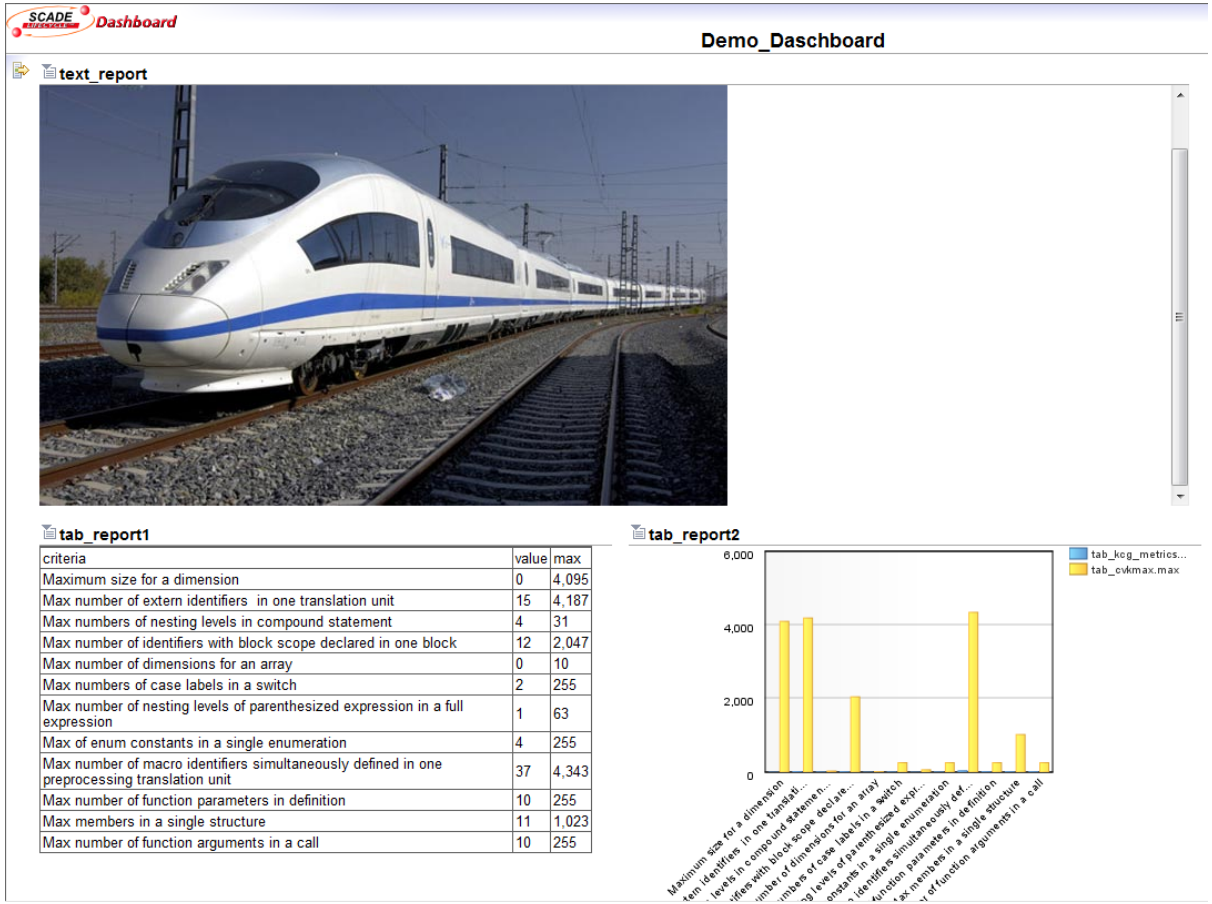
Preview



3. Build the Dashboard

Lab

Preview in « current development »



criteria	value	max
Maximum size for a dimension	0	4,095
Max number of extern identifiers in one translation unit	15	4,187
Max numbers of nesting levels in compound statement	4	31
Max number of identifiers with block scope declared in one block	12	2,047
Max number of dimensions for an array	0	10
Max numbers of case labels in a switch	2	255
Max number of nesting levels of parenthesized expression in a full expression	1	63
Max of enum constants in a single enumeration	4	255
Max number of macro identifiers simultaneously defined in one preprocessing translation unit	37	4,343
Max number of function parameters in definition	10	255
Max members in a single structure	11	1,023
Max number of function arguments in a call	10	255

4. Make it available

Lab

With any Browser …

url:
http://localhost:8080/prelytis/trackbackDashboard.faces?login=SCADE&name=Demo_Dashboard

With any Smartphone …