



Experiment Scoping

Eduardo Figueiredo

<http://www.dcc.ufmg.br/~figueiredo>

[Experiment Scoping]

- In the scoping phase, the foundations of the experiment if determined
- Its purpose is to define the goals of the experiment
 - The Goal-Question-Metric (GQM) method can be used



[Defining the Goals]

- A template can be used to define the goals of the experiment
- The basic template consists of five elements
 - Object of study (what is studied?)
 - Purpose (what is the intention?)
 - Quality focus (which effect is studied?)
 - Perspective (whose view)
 - Context (where is the study conducted?)

[Template for Scoping]

Analyze *<object of study>*

from the purpose of *<purpose>*

with respect to *<quality focus>*

from the point of view of *<perspective>*

in the context of *<context>*

[Object of Study]

- The object of study is the entity that is studied in the experiment
- It can be product, processes, resources, models, metrics, or theories
 - Example: the final product, inspection processes, concern metrics, etc.

[Purpose and Quality Focus]

- The purpose defines what the intention of the experiment is
 - It may be to evaluate the impact of two different techniques, tools, methods...
- The quality focus is the primary effect under study
 - It may be effectiveness, cost, reliability, etc.

[Perspective and Context]

- The perspective tells the viewpoint from which the results are interpreted
 - Examples: developer, project manager, costumer, etc.
- The context is the environment in which the experiment runs
 - It defines subjects and objects

[Examples for the Template]

Object of Study	Product, Process, Model, Metric, Theory
Purpose	Characterize, Monitor, Evaluate, Predict, Control, Change
Quality Focus	Effectiveness, Cost, Reliability, Maintainability, Portability
Perspective	Developer, Modifier, Maintainer, Project Manager, Corporate Manager, Customer, User, Researcher
Context	Subjects, Objects

[Example of Use (Book)]

Analyze the PBR and checklist techniques
from the purpose of evaluation
with respect to effectiveness and efficiency
from the point of view of the researcher
in the context of MSc and PhD students
reading requirements documents

[Another Example]

Analyze software metrics
from the purpose of evaluation
with respect to their accuracy
from the point of view of the developers
in the context of students detecting smells
in source code

[Bibliography]

- C. Wohlin et al. **Experimentation in Software Engineering**, Springer. 2012.
 - Chapter 7 – Scoping