

Lean Software Development. Week 10

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Lean Software Development

The GQM + Strategies Approach

One of the tenets of Lean management is visual control.

However, software is invisible!!!

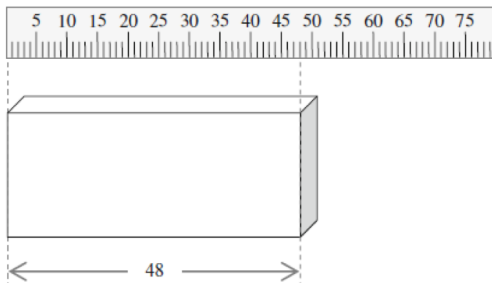
How we can to exercise visual control on something that is not visible???

GQM approach

So, the answer is **software metrics**

A **software metric** is a standard of measure of a degree to which a software system or process possesses some property.

To measure means to compare



¹https://en.wikipedia.org/wiki/Software_metric

What Can We Measure?

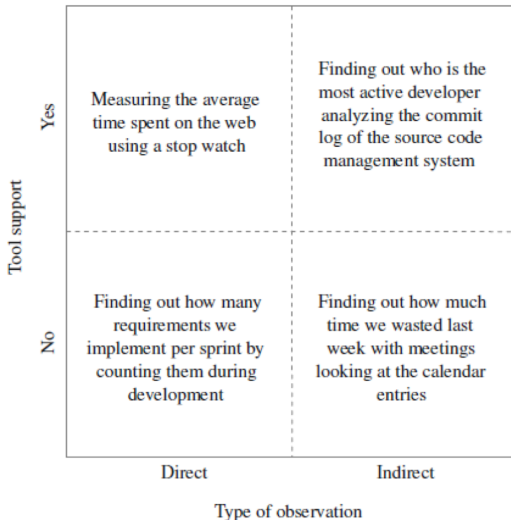
We can measure everything that we are able to observe:
direct observations:

- Which activities are executed in a typical project?
- How much time do we spend for testing?
- How much code is reused?

indirect observations:

- How many mistakes do we make per week?
- What is the quality of our code?

GQM approach



What Should We Measure?

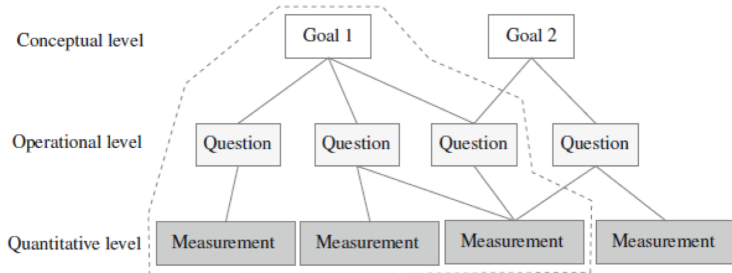
To answer this question we should answer the next questions:

- What we want to study? **Goal**
- How we want to study it? **Question**
- What should we measure? **Metrics**

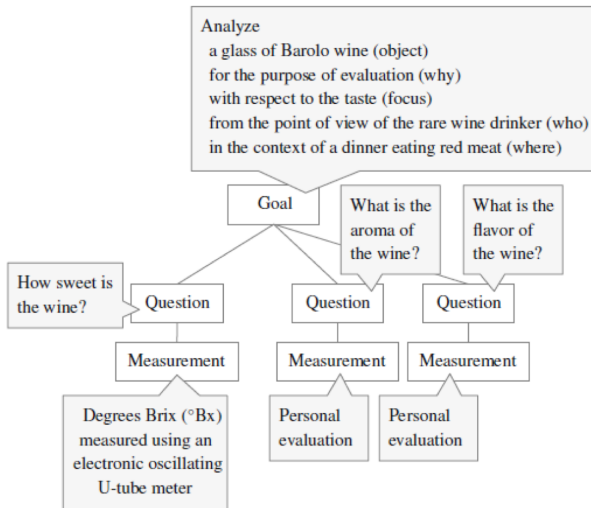
GQM approach

The GQM is defined on three levels:

- Conceptual level (goal)
- Operational level (question)
- Quantitative level (metric)



Example



Example Cont.

The definition of measurement goals is critical to the successful application of the GQM approach. To ease the definition of measurement goals, the GQM supplies goal templates

Purpose

Analyze: *a glass of Barolo wine*

(objects: process, products, resources)

for the purpose of: *evaluation*

(why: to characterize, evaluate, predict, motivate, improve)

Perspective

with respect to: *the taste*

(focus: cost, correctness, changes, reliability, ...)

from the point of view of: *a rare wine drinker*

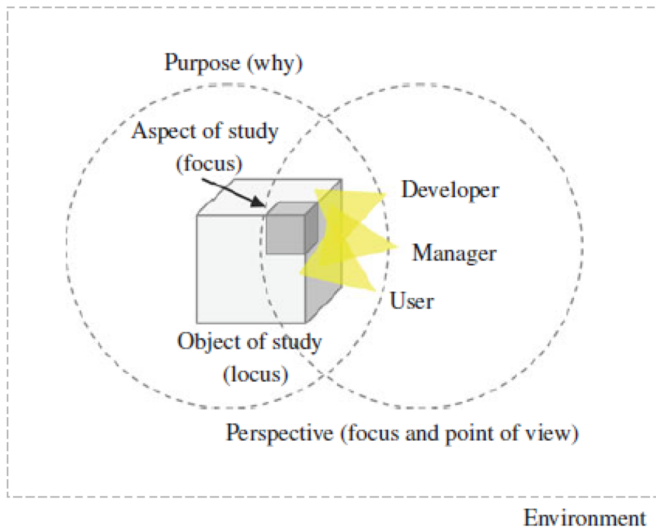
(stakeholder: user, customer, manager, developer, ...)

Environment

in the following context: *a dinner eating meat*

(context factors influencing the measurement)

Example Cont.



- Object: the object of study;
- Focus: the aspect of study;
- Magnitude: the desired magnitude of improvement;
- Time frame: the time frame for achieving the goal;
- Organizational scope: the scope of responsibility for achieving the goal;
- Constraints: constraints or conflicting goals;
- Relationships: relationships to other goals.

GQM+Strategies

business goal example

Element	Example
Object	Software product line A
Focus	Net income
Magnitude	8 % per year
Time frame	Every year
Organizational scope	Development team 2
Constraints	Maintain current product price
Relations	Business goal “Increase market share”

SWOT analysis

- Strengths: organizational aspects that support the achievement of the objective;
- Weaknesses: organizational aspects that inhibit the achievement of the objective;
- Opportunities: external conditions that support the achievement of the objective;
- Threats: external conditions that inhibit the achievement of the objective.

SWOT analysis

