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A product is not a project is not a process

Karol Frühauf, *INFOGEM AG*, CH-5401 Baden, Switzerland
Karol.Fruehauf@ACM.ORG

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1. Entities of interest
2. Measuring the product, project, and process
3. E-* specifics
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Quality and entity

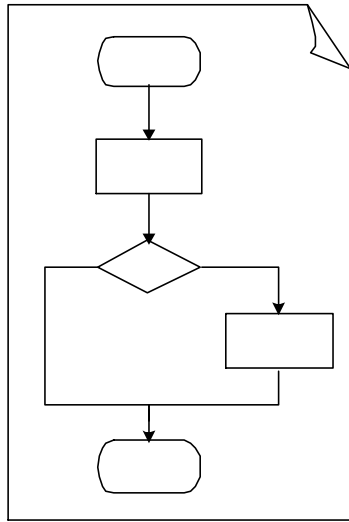
Quality ... is a topic for philosophy

Quality of ... is a topic for engineering

Quality the totality of characteristics *of an entity* that bear on its ability to satisfy stated and implied needs

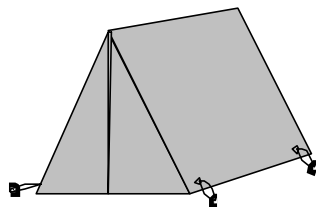
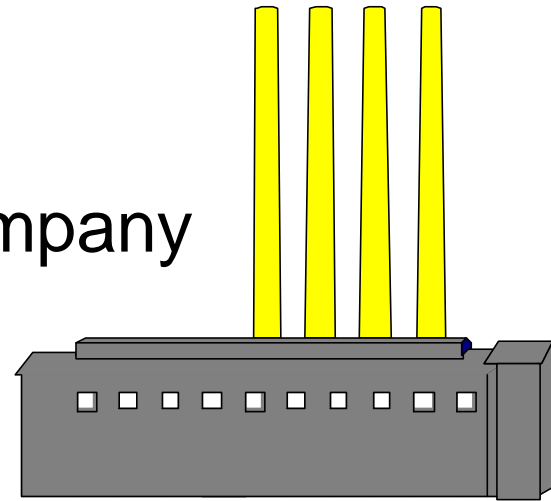
Entity that which can be individually described and considered

Quality of ... three pro's

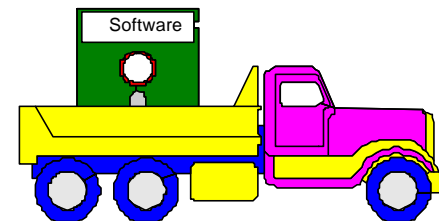


proces

company



projekt → produkt



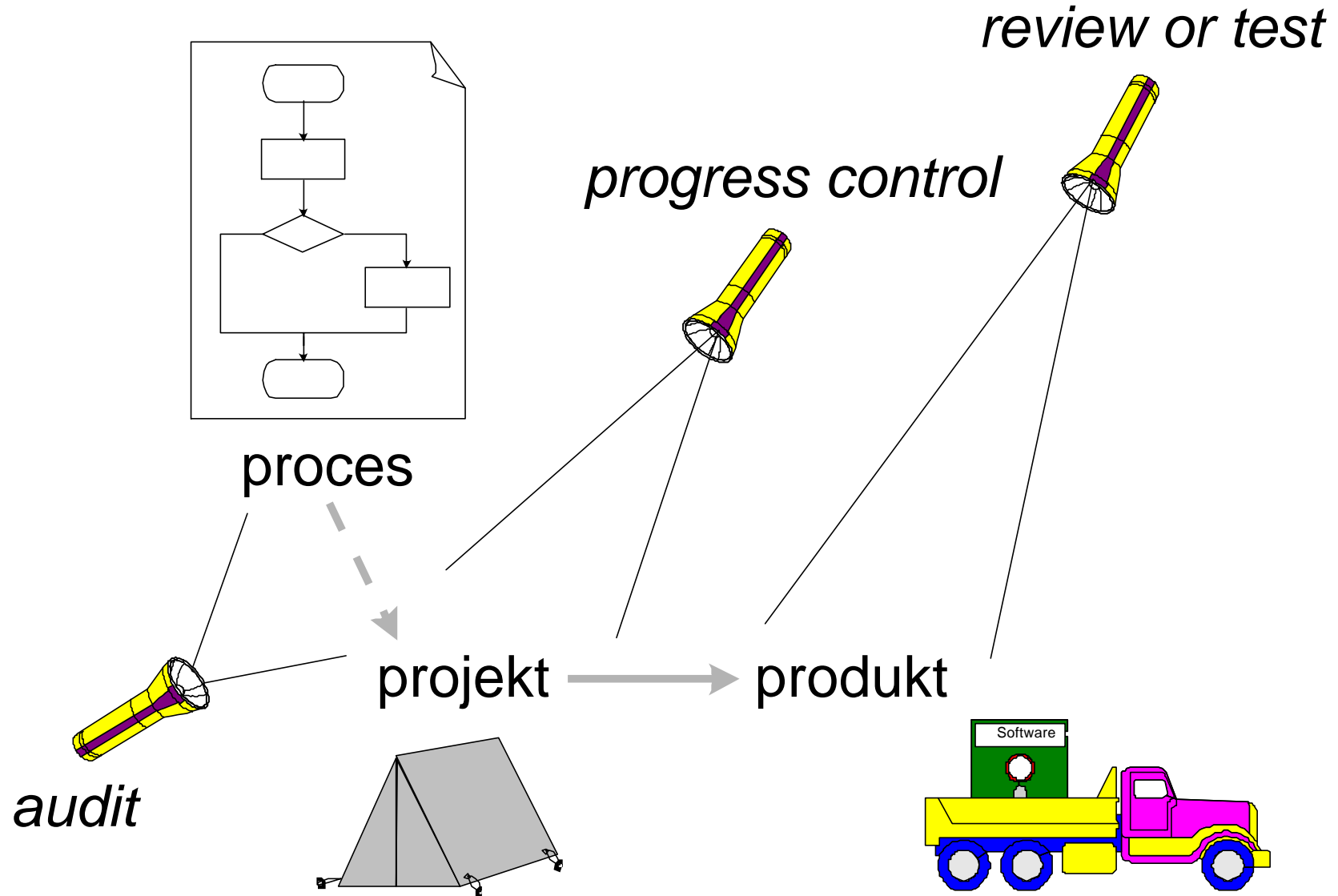
The three pro's

- Product** A software package, consisting of code and publications, that eventually is delivered to a customer. In a broader sense, the definition of product also includes the product support materials that are related to such activities as marketing and maintenance.
- Project** The combined resources (people, machines, materials), processes, and activities that are dedicated to building and delivering a product. A project has a defined starting point and defined objectives from which completion is identified. Also, a group of people, typically comprised of two or more organisations, working on the same project.
- Process** A systematic approach that is designed to achieve a specific purpose.

Quality aspects of the three pro's

| entity | requirements stated in | evaluation techniques | evaluated objects |
|---------|--|--|--|
| product | requirements specification | review; test | documents; source code; executable code |
| project | project initiation document; project plan | progress control meeting; milestone meeting | review and test reports; progress and forecast reports; audit and assessment reports; risk analysis reports |
| process | own process definition; standard; maturity model | audit; (self-) assessment | activities and their sequence; existence of the results; use of methods and tools |

Evaluation techniques



Measurable characteristics of the product

| approach | question to answer | example |
|-------------------------|---|-------------|
| front door | What do I want to observe? | feedback |
| back door | What I don't want to observe? | consistency |
| effort | What effort am I ready to afford for ...? | portability |
| constitution | How does it need to be that the effort for ... is acceptable? | flexibility |
| functionality | What functionality is needed to possess the property ...? | integrity |
| development environment | Which development environment supports the property ...? | testability |

Examples for measurable product characteristics

feedback ? $\frac{\text{number of actions with feedback}}{\text{total number of possible actions}}$

consistency ? $1 - \frac{\text{number of objects referenced with different names}}{\text{total number of objects}}$

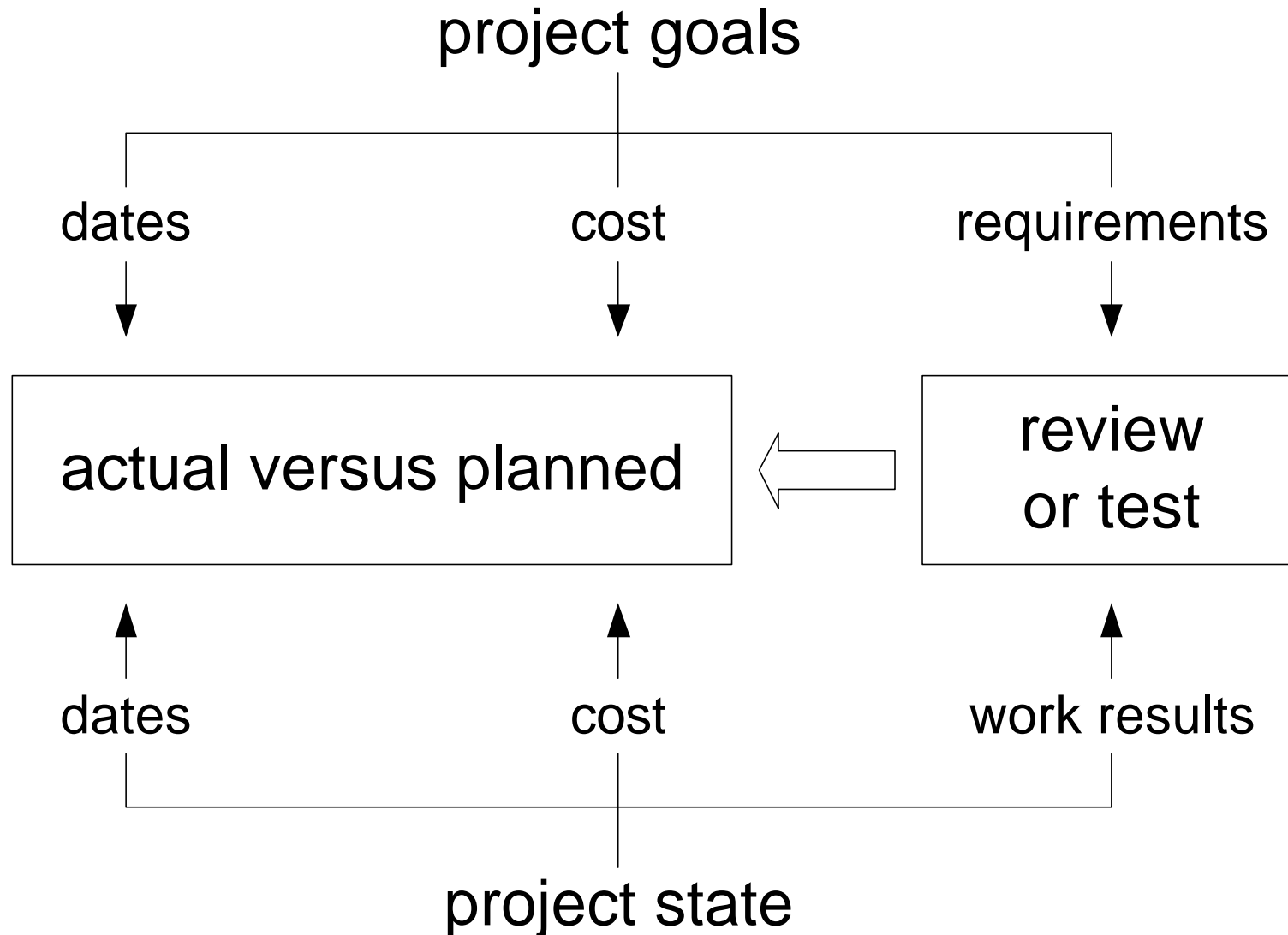
portability ? effort to port on a new release of the same operating system ? person days

flexibility ? $1 - \frac{\text{number of literals}}{\text{kilnon-commentlines of sourcecode}}$

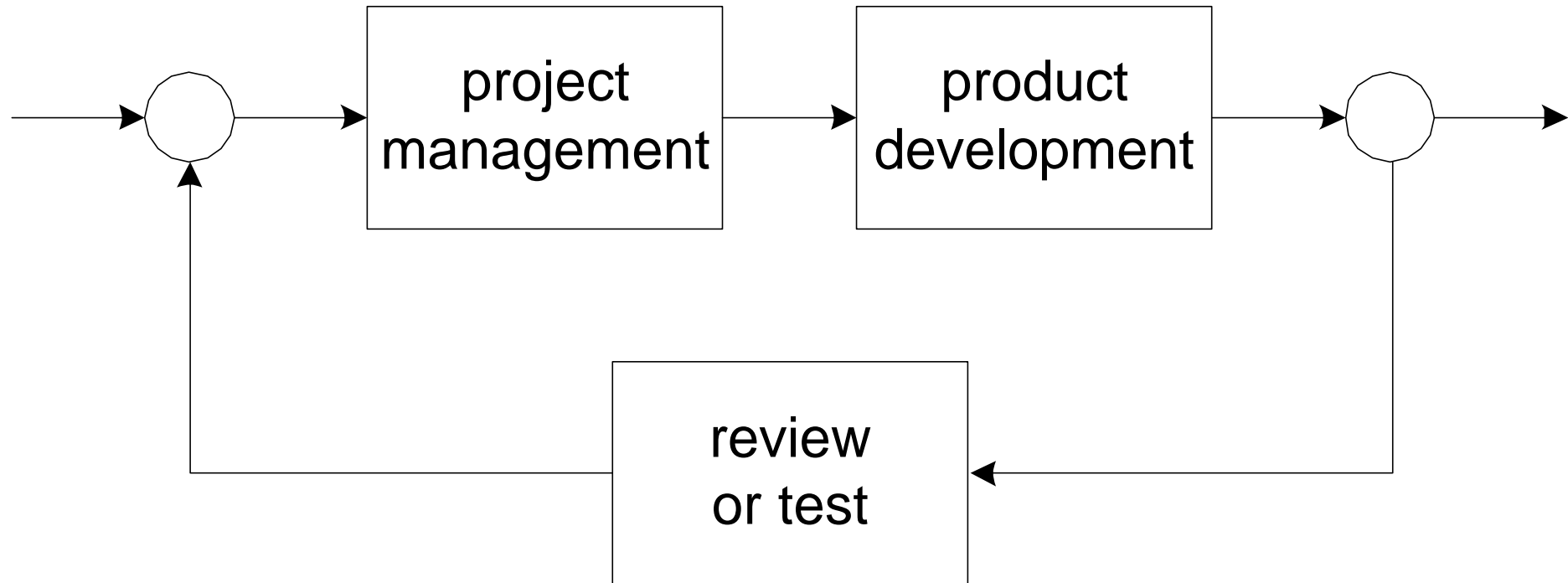
integrity ? $1 - \frac{\text{number of trials of not admitted access}}{\text{total number of access trials}}$

testability ? $\frac{\text{number of automated test cases}}{\text{total number of documented test cases}}$

Measurable characteristics of the project



The role of reviews and tests for progress control



Basic project metrics after project completion

| | |
|-----------------------|---|
| deadline faithfulness | deviation from the planned duration (<i>plus the duration „sold“ on change requests</i>) in % |
| cost faithfulness | deviation from the planned costs (<i>plus the costs „sold“ on change requests</i>) in % |
| product reliability | number of defects per unit of size and unit of time in operation |
| customer satisfaction | result of an inquiry |

Examples of project metrics during project execution

$$\text{degree of completion} = \frac{\text{number of completed work packages}}{\text{number of work packages}}$$

$$\text{quality of estimate} = \frac{\text{planned effort for completed work packages}}{\text{actual effort for completed work packages}}$$

$$\text{quality of planning} = \frac{\text{planned effort for completed work packages}}{\text{planned effort for work packages which should be completed according to the plan}}$$

$$\text{progress indicator 1} = \frac{\text{effort spent}}{\text{forecast effort at completion}}$$

$$\text{progress indicator 2} = \frac{\text{current duration}}{\text{forecast for overall duration}}$$

Measurable characteristics of the process

1. binary conformance to a standard, e.g. ISO 9001
2. on a scale capability models, e.g. CMM, BOOTSTRAP, SPICE
3. statistical percentage of projects / products within a bandwidth
 - ✍ ✍ deadline faithfulness
 % of projects with less than $\pm X\%$ deviation from the planned duration
 - ✍ ✍ cost faithfulness
 % of projects with less than $\pm X\%$ deviation from the planned cost
 - ✍ ✍ reliability faithfulness
 % of product releases with less than $\pm X\%$ deviation from N defects per unit of size and unit of time in operation

Is this old quality view appropriate in new economy times?

What is new from IT suppliers point of view?

- ✂ ✂ you don't know your users
- ✂ ✂ you don't know the user's system configuration
- ✂ ✂ you don't know what the many stakeholders want
- ✂ ✂ the stakeholders don't know what is possible with the available technology
- ✂ ✂ you know that either the deadline (first) or the quality is deadly serious (followers)
- ✂ ✂ you know the technology and that it is evolving rapidly
- ✂ ✂ you know the user processes – in this area we're not yet in the stage of innovation

Critical success factors in the web world

from user's point of view

- ✂✂ security of the transactions data (trust)
- ✂✂ availability of the system (fidelity)
- ✂✂ high useful information / gadget ratio
- ✂✂ responsiveness of the organisation (support process)

from supplier's point of view

- ✂✂ content quality (topical, up to date, under version control)
- ✂✂ scalability (easy to adapt to bigger volumes)
- ✂✂ architecture (easy to expand)
- ✂✂ skills to manage multidisciplinary teams

Conclusions (1)

a product lives (hopefully) longer than a project

? ? in its life the product is shaped by many projects

? ? a project employs a number of processes

? ? a process is employed in more than one project

all processes are continuously improved

  in order to improve projects

  in order to improve products

  in order to improve customer satisfaction

  in order to improve company results

  in order to improve ...

Conclusions (2)

- ✂✂ the concept of quality is still useful

- ✂✂ quality management has to say good bye to the concepts of
 - one process for all
 - fixed responsibility assignments
 - not scalable traceability requirementsand adopt the concepts of
 - + values, principles for project work
 - + product visions instead of requirements
 - + people's knowledge, skills instead of documents
 - + disciplined use of practices (this should be easy)

Conclusions (3)



The
New Economy
is
the best thing
that happened
to the Old Quality – it is a kind of liberation