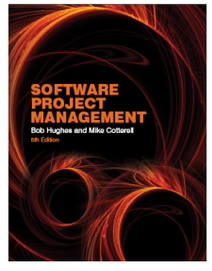
Project Management

An introduction

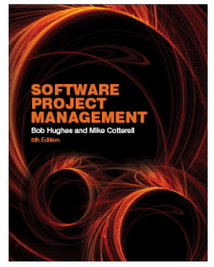
Ragnhild Van Der Straeten - ULB - Software Engineering and Project Management - 2013/2014

Key Questions



- What is software project management? Is it really different from 'ordinary' project management?
- How do you know when a project has been successful? For example, do the expectations of the customer/client match those of the developers?

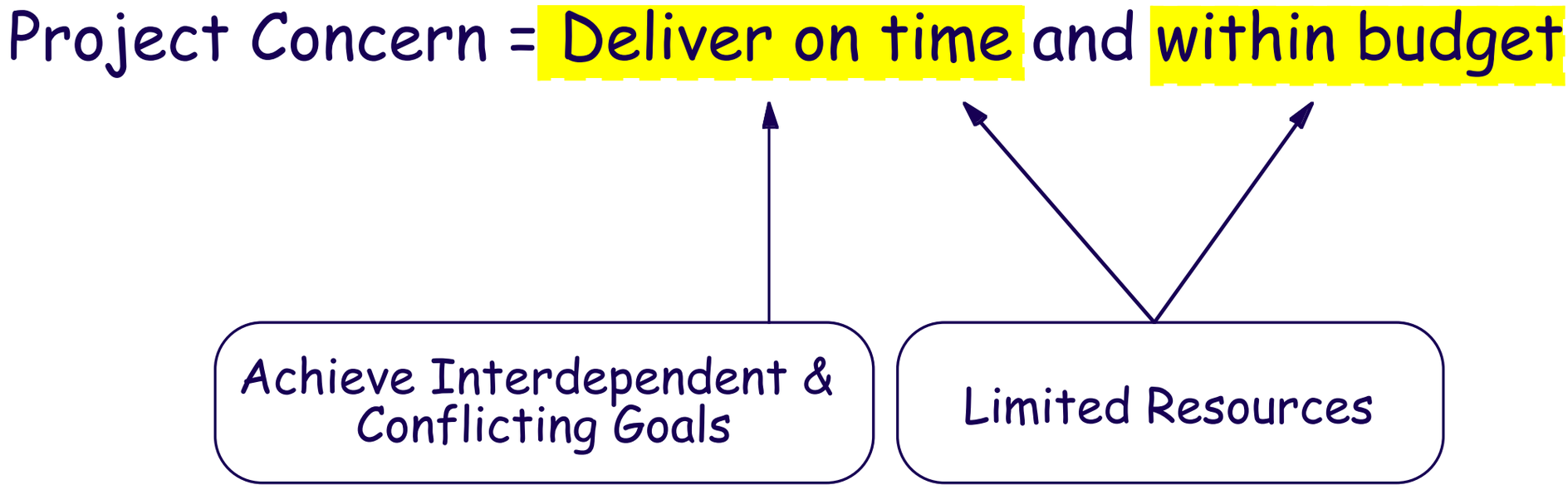
Why Project Management?



- Large amounts of money are spent on ICT e.g. UK government in 2003-4 spent £2.3 billions on contracts for ICT and only £1.4 billions on road building
- Project often fail – Standish Group claim only a third of ICT projects are successful. 82% were late and 43% exceeded their budget.
- Poor project management a major factor in these failures

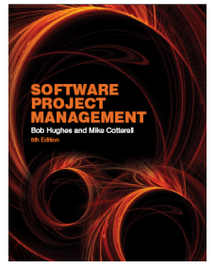
Why Project Management?

- Almost all software products are obtained via *projects*. (as opposed to manufactured products)



The Project Team is the primary Resource!

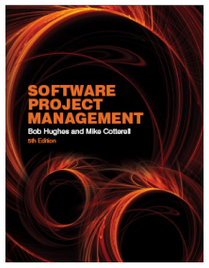
What is a Project?



- Some dictionary definitions:
  - *"A specific plan or design"*
  - *"A planned undertaking"*
  - *"A large undertaking e.g. a public works scheme"*

Key points above are *planning* and *size of task*

Are software projects really different from other projects?

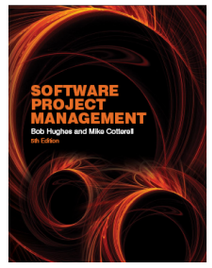


- Not really …but
  - Invisibility
  - Complexity
  - Conformity
  - Flexibility
    make software more problematic to build than other engineered artefacts.

Challenges of PM

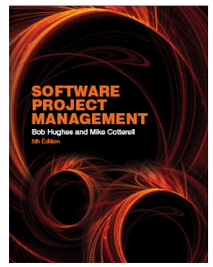
- Customers are seldom sure of what they want.
- Customers change their requirements and plans may not be updated
- It is hard to estimate up front the magnitude of the effort required.
- It is hard to coordinate the many requirements, the design elements corresponding to each requirement, and the corresponding code.
- There may be unforeseen technical difficulties to overcome
- It is not easy to maintain constructive interpersonal team dynamics.

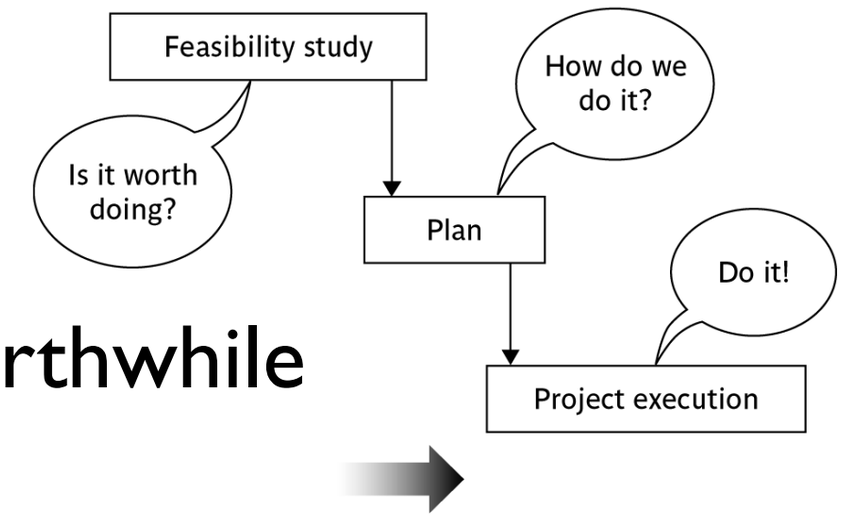
Contract management versus technical project management



- Projects can be:
  - *In-house:* clients and developers are employed by the same organization
  - *Out-sourced:* clients and developers employed by different organizations
- 'Project manager' could be:
  - a 'contract manager' in the client organization
  - a technical project manager in the supplier/ services organization

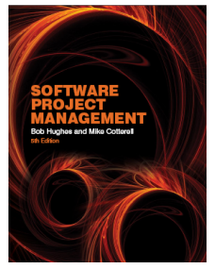
Activities covered by project management





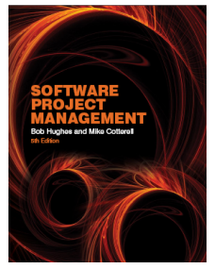
- Feasibility study
  - Is project technically feasible and worthwhile from a business point of view?
- Planning
  - Only done if project is feasible
- Execution
  - Implement plan, but plan may be changed as we go along

Setting objectives



- Answering the question *'What do we have to do to have a success?'*
- Need for a project authority
  - Sets the project scope
  - Allocates/approves costs
- Could be one person - or a group
  - Project Board
  - Project Management Board
  - Steering committee

Objectives

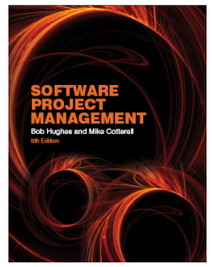


- *Informally*, the objective of a project can be defined by completing the statement:

  The project will be regarded as a success if.....

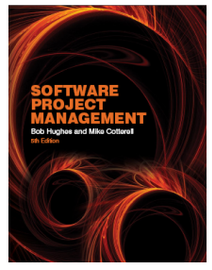
- Rather like *post-conditions* for the project
- Focus on *what* will be put in place, rather than *how* activities will be carried out.

Objectives should be SMART



- S – specific, that is, concrete and well-defined
- M – measurable, that is, satisfaction of the objective can be objectively judged
- A – achievable, that is, it is within the power of the individual or group concerned to meet the target
- R – relevant, the objective must relevant to the true purpose of the project
- T – time constrained: there is defined point in time by which the objective should be achieved

Goals/sub-objectives



- These are steps along the way to achieving the objective
- Informally, these can be defined by completing the sentence

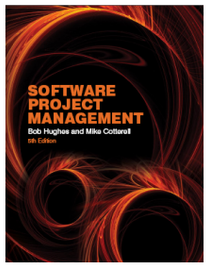
To reach objective X, the following must be in place

A……

B……

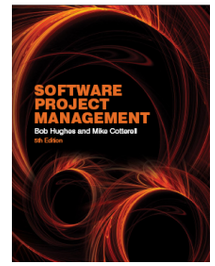
C…… etc

Goals/sub-objectives continued



- Often a goal can be allocated to an individual
- Individual might have the capability of achieving goal on their own, but not the overall objective e.g.:
  - *Overall objective* – user satisfaction with software product
  - *Analyst goal* – accurate requirements
  - *Developer goal* – reliable software

Measures of effectiveness



- How do we know that the goal or objective has been achieved?
  - By a practical test, that can be objectively assessed.
    e.g. for user satisfaction with software product:
  - *Repeat business* – they buy further products from us
  - *Number of complaints* – if low etc.

What is Project Management?

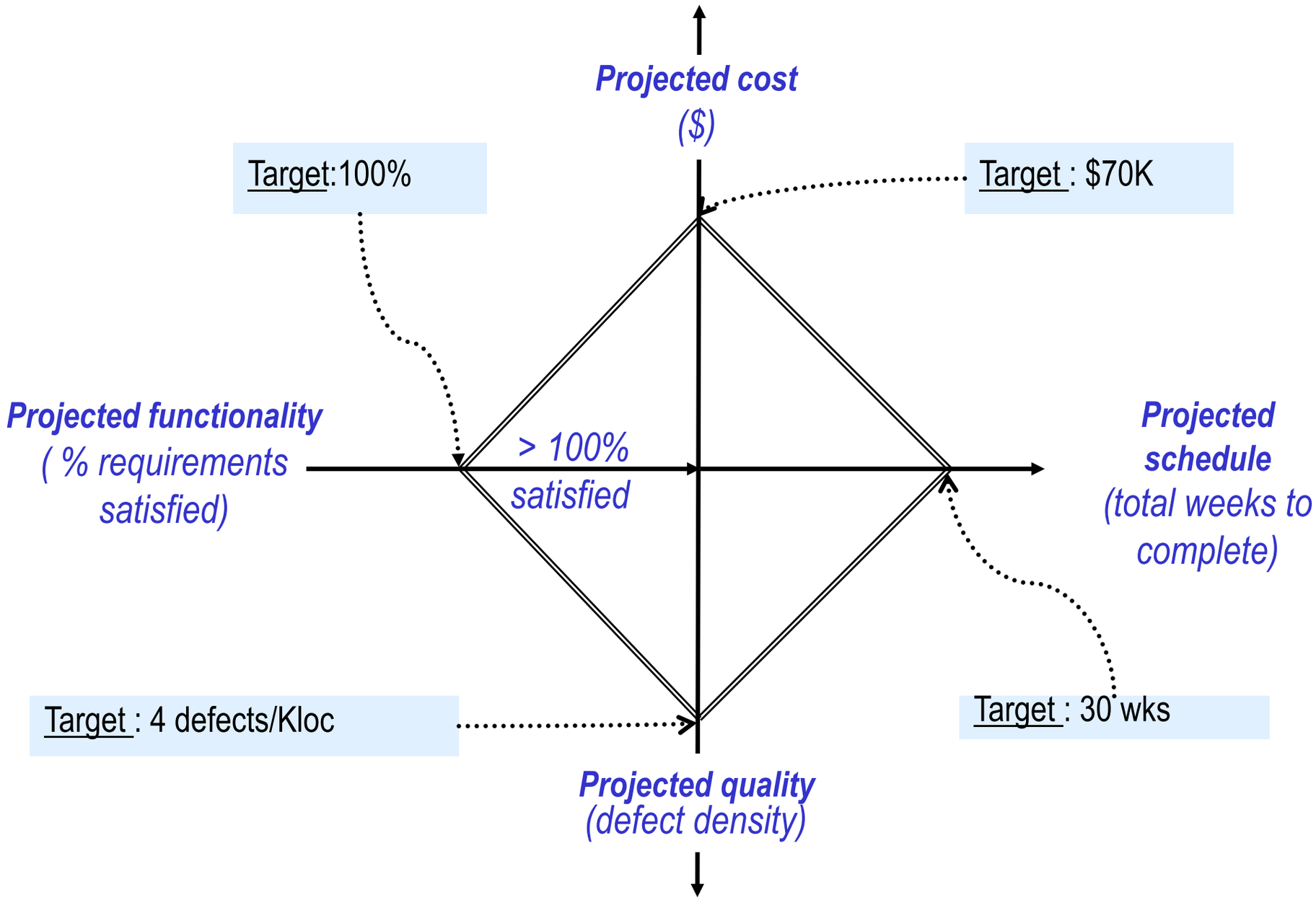
Plan the work and work the plan

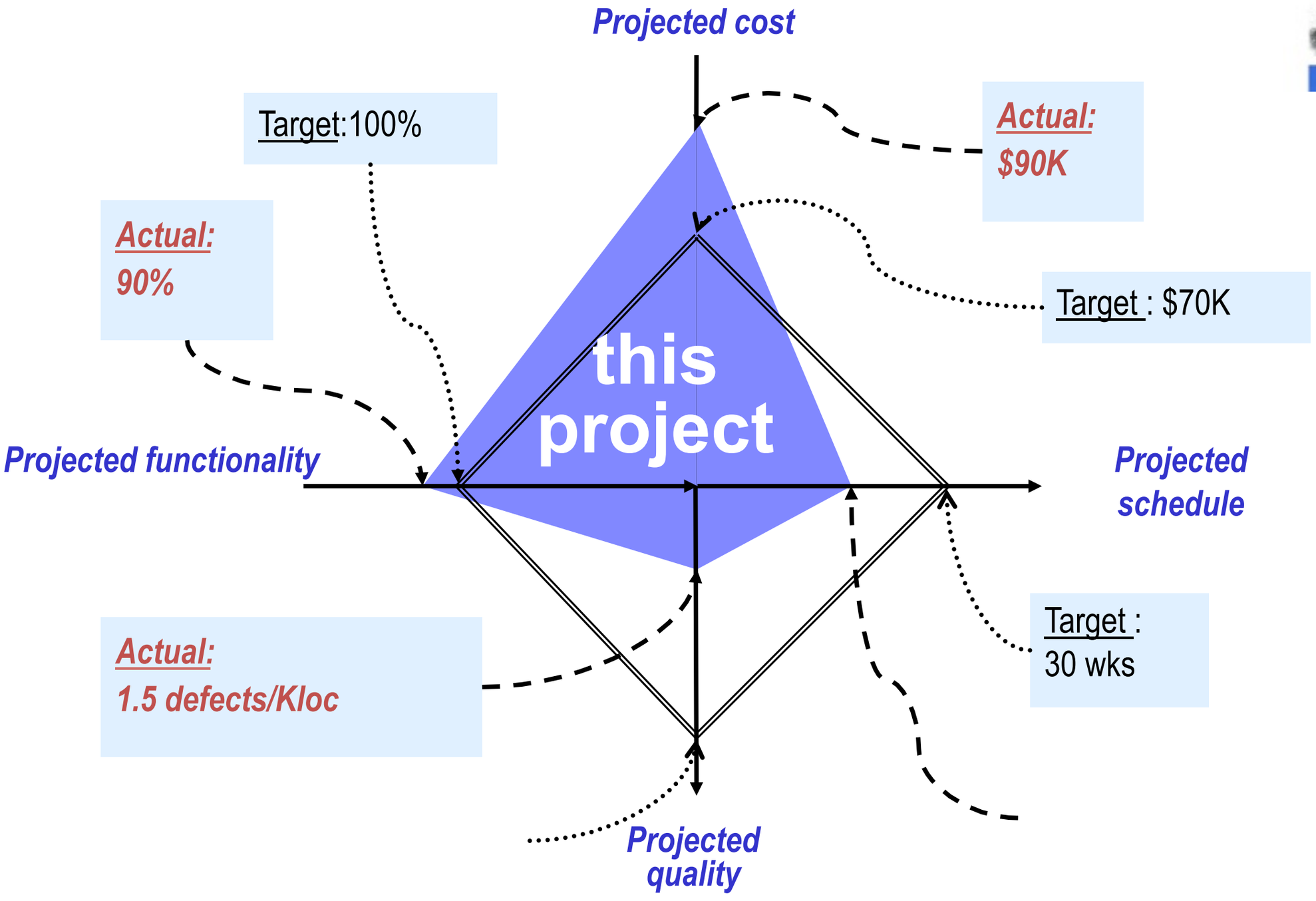
- Management Functions
  - Planning: Estimate and schedule resources
  - Organization: Who does what
  - Staffing: Recruiting and motivating personnel
  - Directing: Ensure team acts as a whole/ giving instructions
  - Risk management: Identification + treatment of risks
  - Monitoring : Checking on progress corrective actions
  - Controlling: Taking (corrective) actions
  - Innovating: coming up with solutions when problems emerge
  - Representing: liaising with clients, users, developers and other stakeholders

Principal Variables of PM

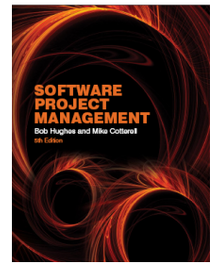
- The total cost of the project,
  - e.g., increase expenditures
- The capabilities of the product,
  - e.g., subtract from a list of features
- The quality of the product,
  - e.g., increase the mean time between failure
- The date on which the job is completed.
  - e.g., reduce the schedule by 20%
  - e.g., postpone project's completion date one month

Bulls-eye Figure for Project Variables





Key points



- Projects are non-routine - thus uncertain
- The particular problems of projects e.g. lack of visibility
- Clear objectives which can be objectively assessed are essential
- Stuff happens. Not usually possible to keep precisely plan – need for control
- Communicate, communicate, communicate!