Project Management (PRO)

Kandidatekursus CS/INF

Lecture 10: Handover and Operations

Part 4: Operation and Maintenance

Nina Boulus-Rødje (PhD), Assistant Professor
Informatics & User-Driven Innovation. Institute for People and Technologies. ninabr@ruc.dk

After this lesson you will

- Know and be able to explain the relevant concepts in Operations and Maintenance
- Have an overview of which considerations and activities are relevant for operations and maintenance for (IT) products
- Be able to develop a project plan for preventive maintenance activities

Intro to Operations and Maintenance

- All projects (and especially IT projects) end up delivering some **product**
- The product will be used = put in **operation**
- Therefore:
  - the product must be **maintained**
  - And elements of both Operations and Maintenance must be considered during the project

Relevant considerations

Product

Typically considered part of the project

Operations: f.ex. focus on

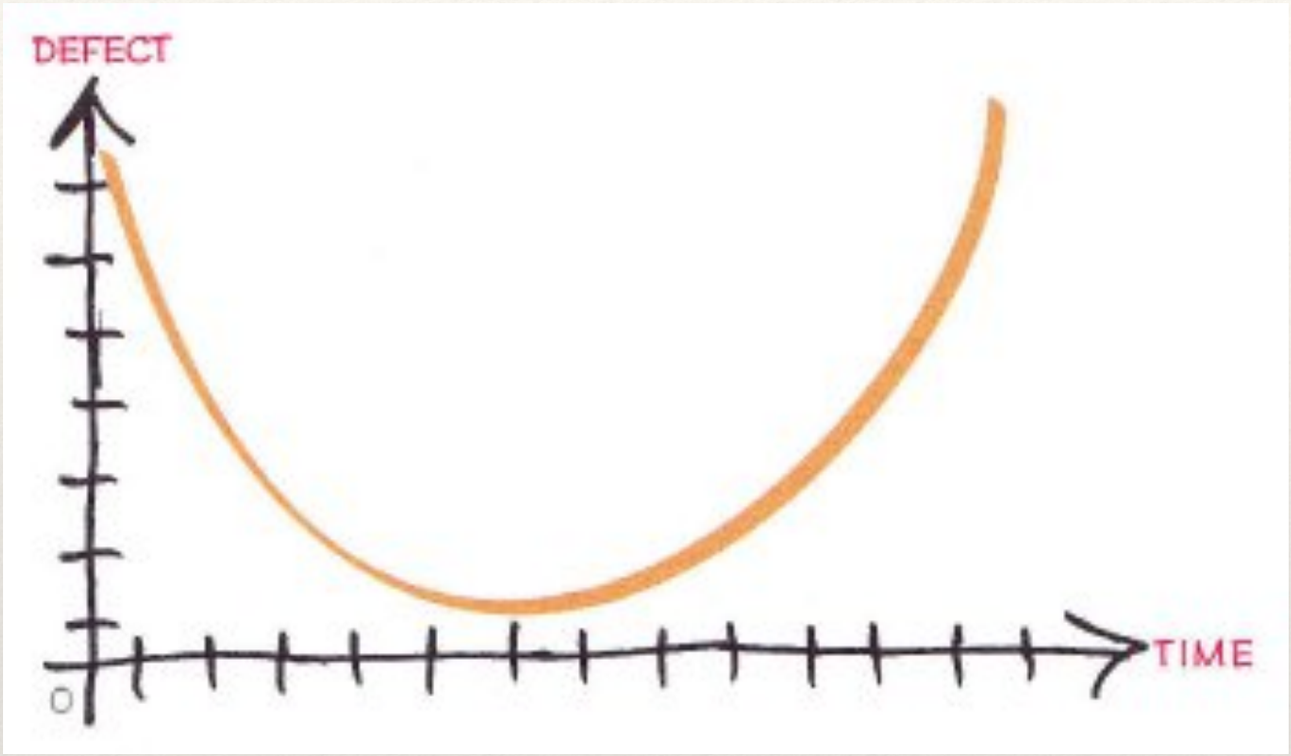
- Usability
- Up-time requirements
- Training
- User manual

Typically **not** considered part of the project

Maintenance: f.ex. focus on

- Establishing an organization and training of staff – at the client and supplier organization
- System updates, backup et al.
- Project documentation and Maintenance manual
- Maintenance agreement/contract
- Ongoing quality improvements of product and process through involvement of employees
- Scope/performance indicators for operations and maintenance (SLA)
- Risk analysis for final delivery / prioritization of effort

Defects during the product life time

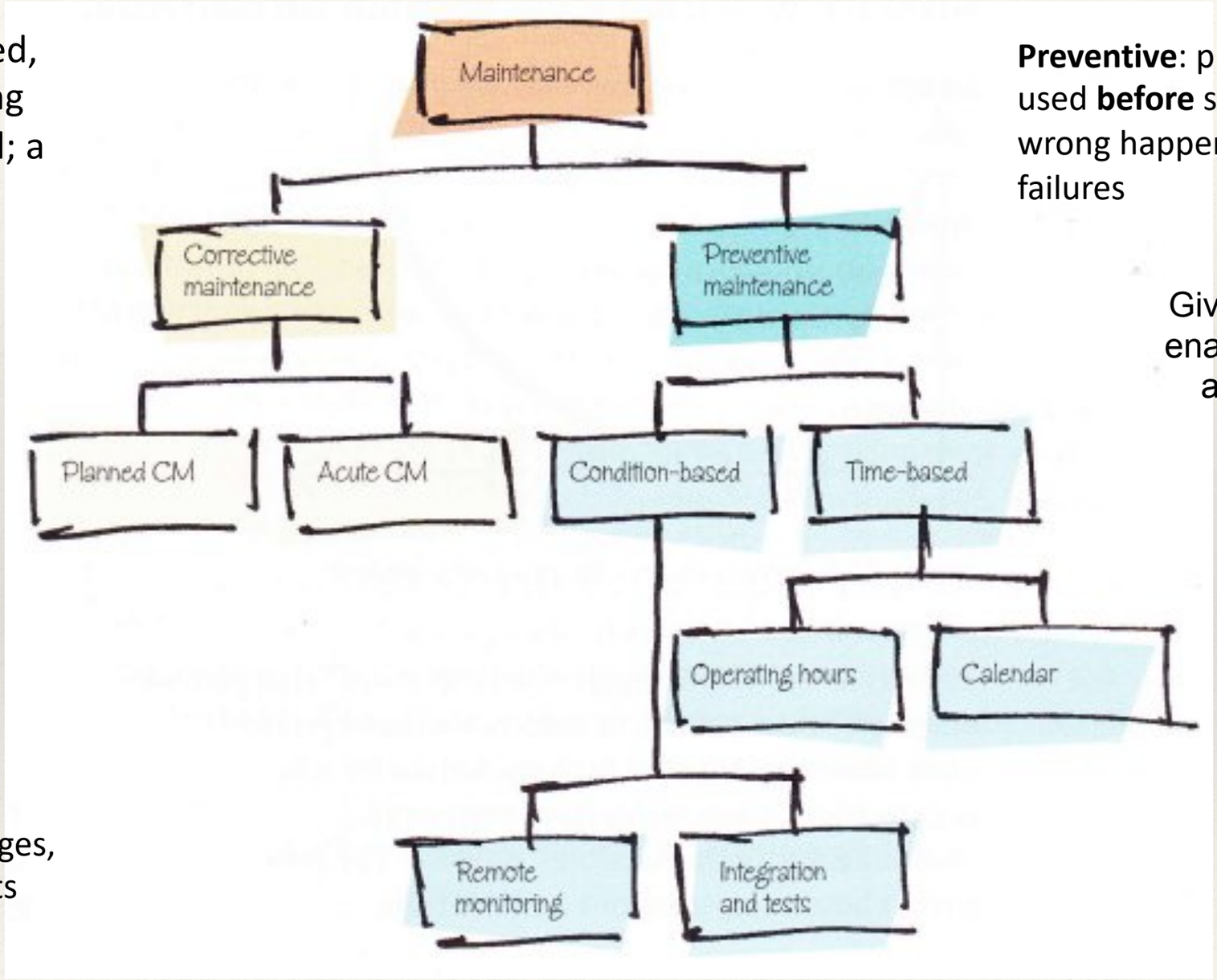


Kousholt (2012e: 463)

The figure shows that most products come with a number of ”teething troubles”. Then follows a period of few defects. Over time wear outs and breakdowns are the cause of defects.

Different types of maintenance

Corrective: unplanned, used **when** something wrong has happened; a failure



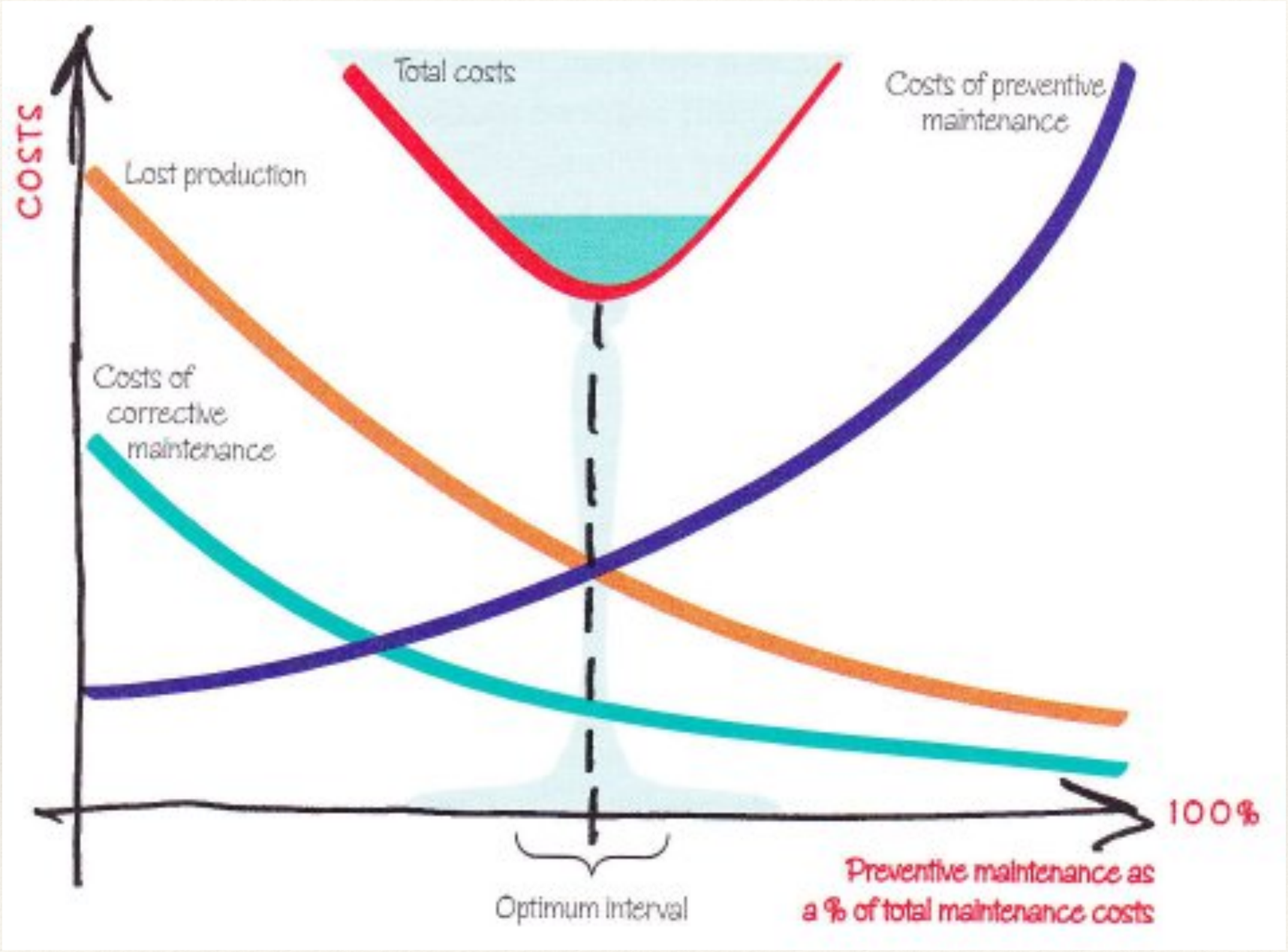
Preventive: planned, used **before** something wrong happens; prevents failures

Gives predictability and enables standardisation and training of staff

+ Improvements: changes, updates, enhancements

Kousholt (2012e: 464)

Maintenance costs



Kousholt (2012e: 468)

Scope for Maintenance

Recommendations:

- Involve the users during the specification of the product and **include the maintenance aspect**

  → **E.g. by deciding the important key figures for maintenance and including them in the requirements specification**

- For material products plan for a 50% split between preventive and corrective maintenance (Kousholt, 2012e: 469)
- Develop **emergency plans** in case the product/system is not available/ accessible

Key figures for maintenance (Kousholt, 2012e: 469):

- **Costs** for maintenance in general; and for preventive maintenance as a % of the total maintenance costs
- **Time** spent on maintenance in general; for training in maintenance; and preventive maintenance as a % of total time for maintenance

Defect management and categories (1:2)

Examples of defect categories:

- Catastrophe: Prevent the whole system to perform correctly
- Fatal defect: Prevent several groups of users from performing their job, or that major parts of the system is not performing correctly
- Serious defect: Prevent a specific type of job to be performed for a single group of users, or a specific function in the system
- Defect: where there is a way for the users to bypass them temporarily (work-around)
- Annoyance: Smaller defects, partly “cosmetic” issues
- Change request: The system functions as specified, but a change/improvement is wanted

Defect management and categories (2:2)

Procedure for defect management

- Define where/how users report defects
- Define who examines/evaluates defects and their further process, decision and solution
- Define deadlines for solution of the different defect categories
- Define the order of defect correction in case of conflicts (within the same category, or other client priorities)
- Define how decisions are reported to the users
- Document the correction of the defect
- Measure defect frequency by category

Organization of Maintenance- at the supplier organization

- Even after the product has been handed over and the client has accepted responsibility for operations and maintenance of the product typically there will be questions et al.
  → The supplier cannot just say ”too bad” and run away
  → There is usually a warranty period after handover (e.g. 2 years)

- Therefore the supplier must establish a maintenance function (’After sales service’). E.g. for handling of:
  - Warranty claims on the delivered product
  - Training of and consultancy services to the client’s operations and maintenance staff
  - Follow-on sales; properly thought out this can mean really good business
  - Maintenance agreement: break downs, defect correction, support hotline

Remember:
Handling of and accountability for both corrective and preventive maintenance is required

Organization of Maintenance- at the client organization

Two strategies:

- Organizational separation of use from maintenance = **Centralization**
  - Advantages: Opportunity for technical specialization
  - Disadvantage: ”Them and Us” thinking
- Integrated operations and maintenance = **Decentralization**
  - Advantage: Users have easy access to support
  - Disadvantage: Maintenance staff has less opportunity for technical specialization

And some other possible strategies:

- Super users
- Outsourcing

Remember:
Handling of and accountability for both corrective and preventive maintenance is required