

Planning / Scheduling 23.2 23.3
 Risk Management 22.1
 Cost / Price 23.5 23.1
 People Management 22.2 22.3

Engineering or Management?

- management requires experience
 - not your first job
- career path?
 - programmer – software engineer – project manager
 - compare: professor prefect
 - or: Dilbert Dilbert's boss
 - take two courses (available in any company):
 - elementary bookkeeping
 - "leadership"

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2

Dilbert's boss



From: the Dilbert Principle

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3

Project proposal

- external customer
 - bidding process
 - networking
- internal customer
 - you sell your idea
 - someone ask for a solution

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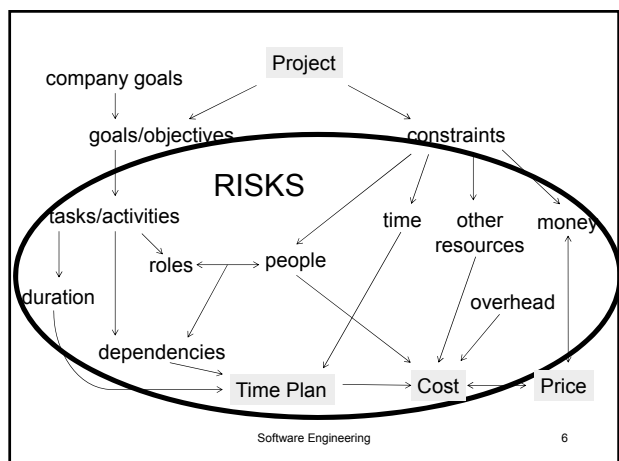
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The planning problem

- you must present
 - content
 - cost
 - time plan
- with no/limited knowledge of
 - detailed requirements
 - resources (people)
 - budget

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5



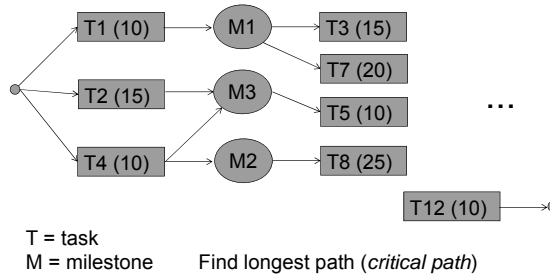
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Figure 23.5 Tasks, durations, and dependencies

Task	Effort (person-days)	Duration (days)	Dependencies
T1	15	10	
T2	8	15	
T3	20	15	T1 (M1)
T4	5	10	
T5	5	10	T2, T4 (M3)
T6	10	5	T1, T2 (M4)
T7	25	20	T1 (M1)
T8	75	25	T4 (M2)
T9	10	15	T3, T6 (M5)
T10	20	15	T7, T8 (M6)
T11	10	10	T9 (M7)
T12	20	10	T10, T11 (M8)

Activity Network



T = task
M = milestone Find longest path (critical path)

Figure 23.6 Activity bar chart

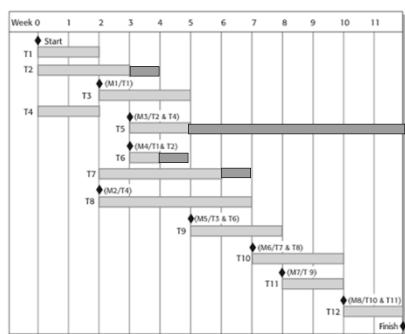
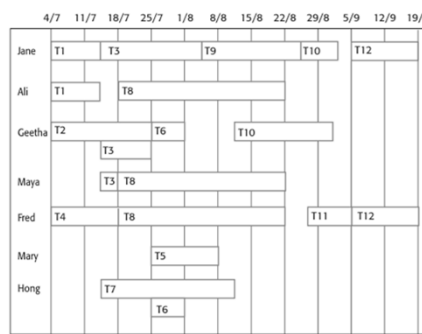
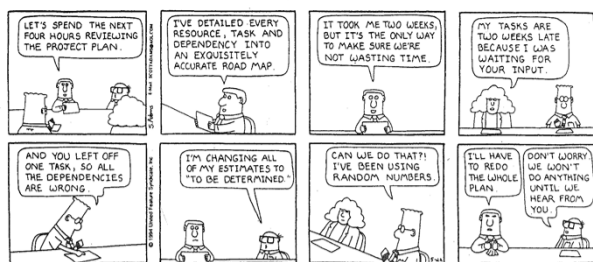


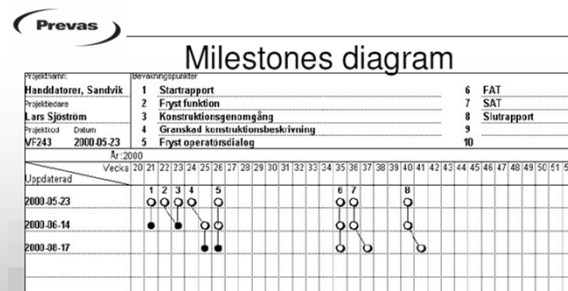
Figure 23.7 Staff allocation chart



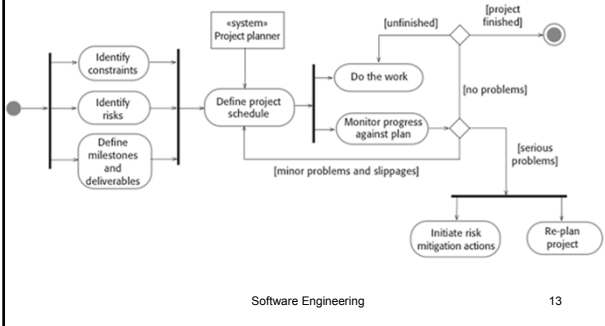
For large projects, Team Leaders use sophisticated project management software to keep track of who's doing what. The software collects the lies and guesses of the project team and organizes them into instantly outdated charts that are too boring to look at closely. This is called "planning."



Following the plan



Continuous planning process



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13

Process Risk Management 22.1

- ~~Product risks~~
 - loss of life etc.
- Process risks
 - delays
 - lose to competition
- Hazard identification
- Risk identification
- Risk assessment
- Risk analysis
- Hazard analysis
- Risk planning
- Risk reduction
- Risk monitoring

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14

Risk classification

- | | |
|--|---|
| <ul style="list-style-type: none"> • Project <ul style="list-style-type: none"> - delays - extra cost • Product <ul style="list-style-type: none"> - unable to deliver • Business <ul style="list-style-type: none"> - can't sell it | <p style="text-align: center;"><u>Hazards</u></p> <p>people: leaving, sick, ...
underestimation
requirements change
subcontractors
technology shift
competition</p> |
|--|---|

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15

Risk planning

- Reduce probability
 - working conditions
 - contracts
 - good estimation techniques
- Reduce effect - "Plan B"
 - redundancy in teams
 - buffers/margins

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16

Risk analysis & planning

<u>Risk</u>	<u>Probability</u>	<u>Effects</u>	<u>Strategy</u>
... staff	High	Failure	free meals
component	Medium	Serious	evaluate alt.
management	Low	Failure	contacts
... delay	High	Moderate	monitor

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17

Mythical Man-Month

- effort ≠ progress
- not all tasks can be made more parallel



Mythical Man-Month

- adding people to a late project makes it later
 - reorganisation
 - training / education (new staff)
 - doing the training (old staff)
 - added communication

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19

Beyond project planning

- Staff
- Long term goals, policies
 - Quality Assurance
 - Technology development
 - Staff development
- Maintenance

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20


Software Cost & Price

- What determines the outcome?
 - requirements
 - available people
 - budget
 - risks
 - eventual ownership

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21

Software Cost – Plan based

- Salary costs dominate
- = People * months * salary * overhead 
- planned to satisfy requirements
 - available: "Parkinson's Law"
 - Work expands so as to fill the time available for its completion
- This could mean:
We will implement as much as time allows

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22

Overhead

- building – energy
- recruitment
- proposal preparation and marketing
- support staff
- computers, network, communication
- recreational facilities
- Social Security and employee benefits

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Experience

- Compare to previous projects
- Ask several experts

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24

Algorithmic cost modeling

- = Org x PP x Size^{Complexity}
- Org = organizational constant
 - PP = project and process
 - people, support, schedule, reuse, platform
 - Size
 - line of source code?? (KLOC)
 - function points
 - screens, complexity (user interfaces)

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Complexity

- = Org x PP x Size^{Complexity}
- "done it before?"
 - team cohesion
 - flexible process?
 - mature process?
 - risks analyzed?
- A factor between 1 and 1.5

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26

My views on Alg. Cost Mod.

- Risk: unmotivated precision
 - "it will take 2306 person-months"
- Requires organisational experience
- Recommendation: use intervals
 - [1928 ... 2712] person-months
- Use the factors as a checklist
 - for an experience based calculation

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27

Software Cost & Price

- Budget-limited project:
Cost = Price – Profit
This means:
We will implement as much as the budget allows
- Profit
 - + if we have risks (requirement changes)
 - if we need a contract (jobs, market share)
 - if we can reuse the work

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28

Peopleware 22.2 22.3

A leadership course could contain:

- How to treat people
- Why people work for you (or not)
- How to hire people
- How to compose a team
- How to organize a team – roles

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29

Teams

- Project manager – Technical leader?
- Decision-making
 - one vision vs. democratic compromise
- Information sharing
 - avoid single point of failure
- Outside communication
 - making software – meetings
- Distributed teams

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Offices vs. Landscape

- Need for concentration vs.
- Need for communication (formal/informal)

