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PROJECT MANAGEMENT

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Agenda

- Why a lecture on Project management?
- Project – definition
- Project management
- Process approach to a project
- Initiation of a project
- Planning of a project
- Management and coordination of a project
- Closure of a project

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Why project management?

1. Changing nature of environment and its impact on management of companies;
2. Requirements on pretenders to managerial positions.

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Ad 1) Changing nature of environment …

- rapid development of new products;
- frequent and rapid changes of processes;
- individualization of products according to customer demand

=> All of these factors require a **one-shot managed set of activities.**

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Ad 2) Requirements on pretenders …

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Why project management?

=> increasing importance of project management knowledge and skills for businesses and graduates

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Project (definition)

- A project is a temporary organisation that is created for the purpose of delivering one or more business products according to an agreed business case.
- short-term effort undertaken to create a unique objective (product / service).

1. temporariness = start and completion dates are set.
2. uniqueness
   goal
   technology
   people (=KSA)
   outer influence and risks

=> specific (one-shot) = every project is realized only once.

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Why projects fail

- Lack of project justification, no valid business case.
- Insufficient attention to quality from the start and through development.
- Poorly defined outcomes, confusion over what the project needs to achieve.
- Lack of communication amongst stakeholders.
- Poorly defined roles and responsibilities amongst project personnel.
- Poor cost and time estimating.
- Poor planning and resource coordination.
- Insufficient measurables and lack of progress control.
- Lack of quality control.

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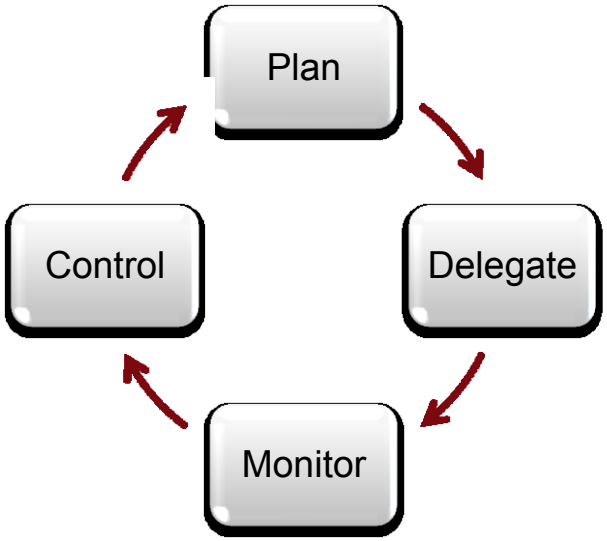
What is project management

- Project Management is the planning, delegating, monitoring and controlling of **all aspects of the project**, and the motivation of those involved, to achieve the project objectives within the expected performance targets for **time, cost, quality, scope, benefits, and risks**.



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Distinctions of PM

- What makes PM different from traditional management approaches?
  - temporariness;
  - uniqueness;
  - use of resources allocated based on the project's needs.

Advantages of PM

- rigorous delegation of authority and responsibility;
- use of resources allocated based on the project's needs => flexibility;
- creates environment for progress checks (to achieve the project's goals);
- system approach.

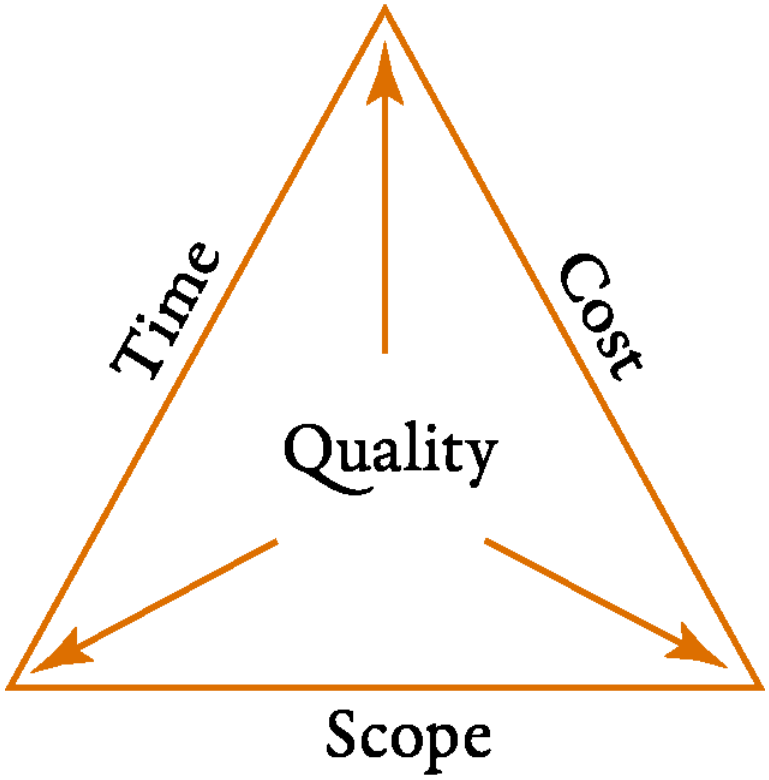
Disadvantages / risks of PM

- specific demands of customers arise only during realization phase;
- need for frequent org. changes;
- need for planning and valuation ex-ante (before realization).

Three bases of PM

Project is a unique sequence of coordinated activities and tasks:

- with a specific goal (final value);
- with a time framework;
- with a framework for drawing on resources.



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Problem of interdependence

- individual bases are interdependent
- specifics of the project define **relative** importance of every single level (base)

=> need to seek **balanced solutions**. It is more an optimization problem (x maximization of individual categories).

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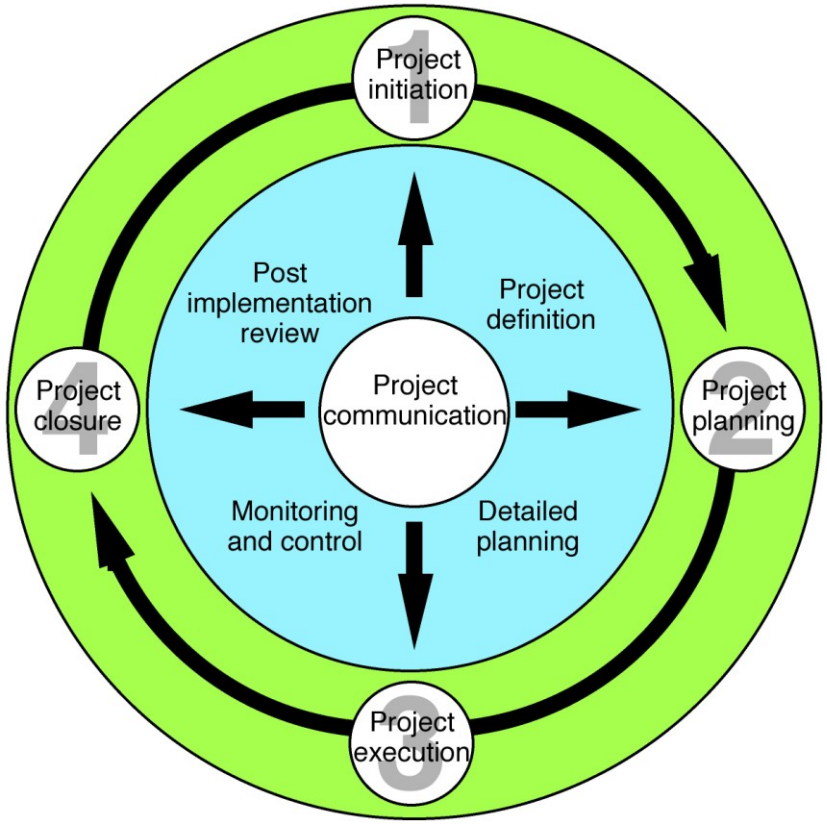
Lifecycle of a project

Sequence of phases

- Initiation
- Planning
- Execution (coordination, monitoring and control)
- Closing



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Goals setting

- Project goal = new final value resulting form the project.
- S.M.A.R.T.
  - Specific
  - Measurable
  - Assignable
  - Realistic
  - Time-bound

=>critera for evaluation

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(Outline) Business Case

Defintion

- Defines the justification for undertaking a project based on estimated costs against the anticipated benefits to be gained and offset by any associated risks.

Composition

- **Reasons** for undertaking the project
- (**Business) options** = how to reach the goals. => analysis and reasoned recommendation for which one option to choose => project approach
  - Do nothing
  - Do the minimum
  - Do something
- **Expected benefits** – desired outcomes (qualitative and quantitative) should be expressed in measurable terms.
- **Expected dis-benefits** – (potential) negative outcomes of project activities
- **Timescal**e
- (Estimated) **costs**
- (Expected) **major risks**

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Project Brief

Definition

- is used to provide full and firm foundation for the initiation of the project and is created during starting up a project.

Composition

- **Project definition** – explains what the project needs to achieve. It covers the background, definition of project objectives, desired outcomes, project scope and exclusions, constraints and assumptions, and project tolerances.
- **Outline business case** (see previous slide)
- **Project product description** – explaining quality expectations and acceptance criteria.
- **Project management team structure** – describing the role of those in the project management team.

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What to plan for?

- time
- cost
- quality
- scope
- benefits
- risks

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Work Breakdown Structure

- is a hierarchical structure of tasks ensuring a successful accomplishment of the set project goal

- it is important resource for managing all three bases of project management
  - ⇒allocation of resources (who will do what?)
  - ⇒time schedule (when?)
  - ⇒budget (how much is it going to be?)

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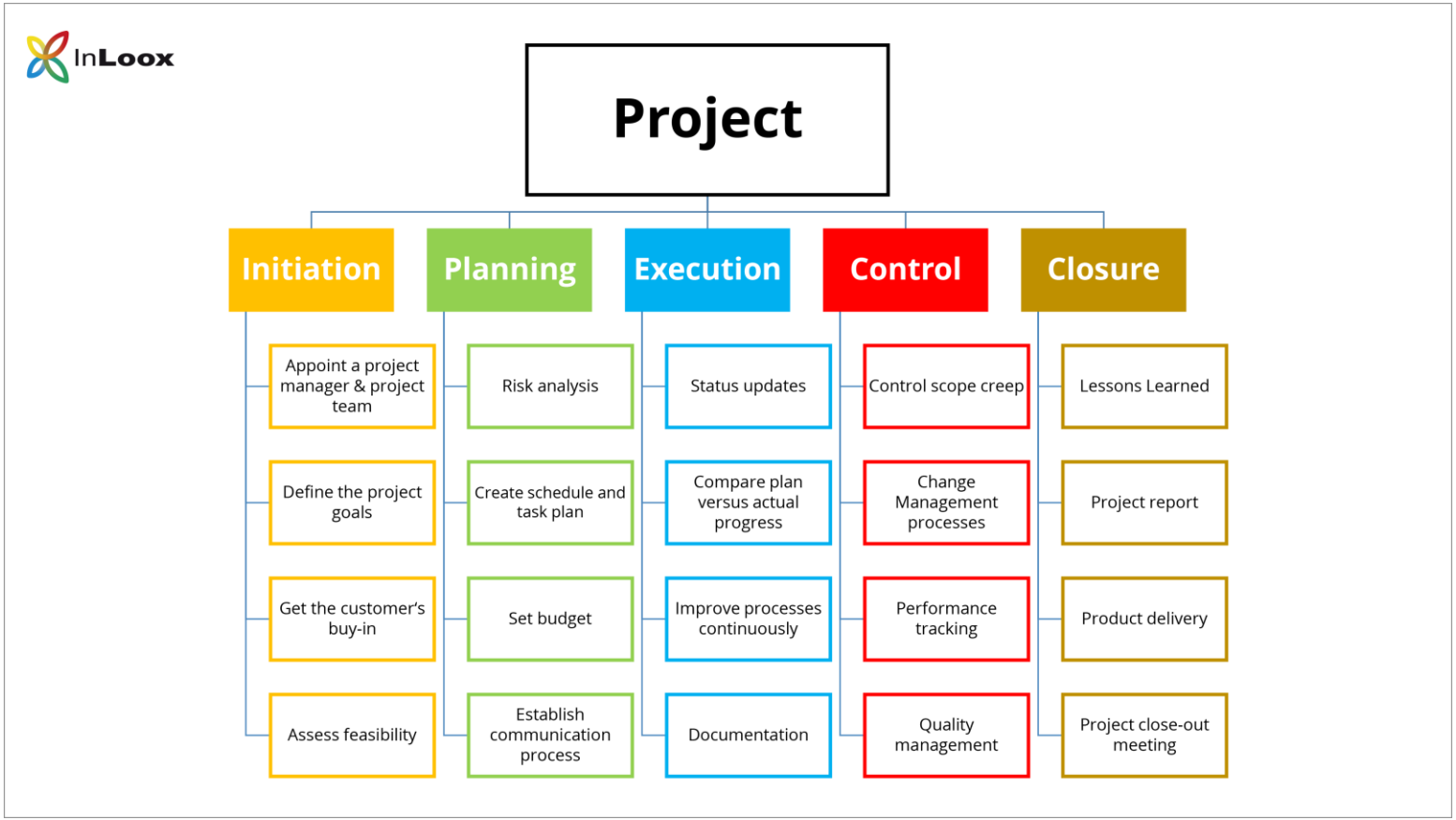
WBS – example 1



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WBS – example 2

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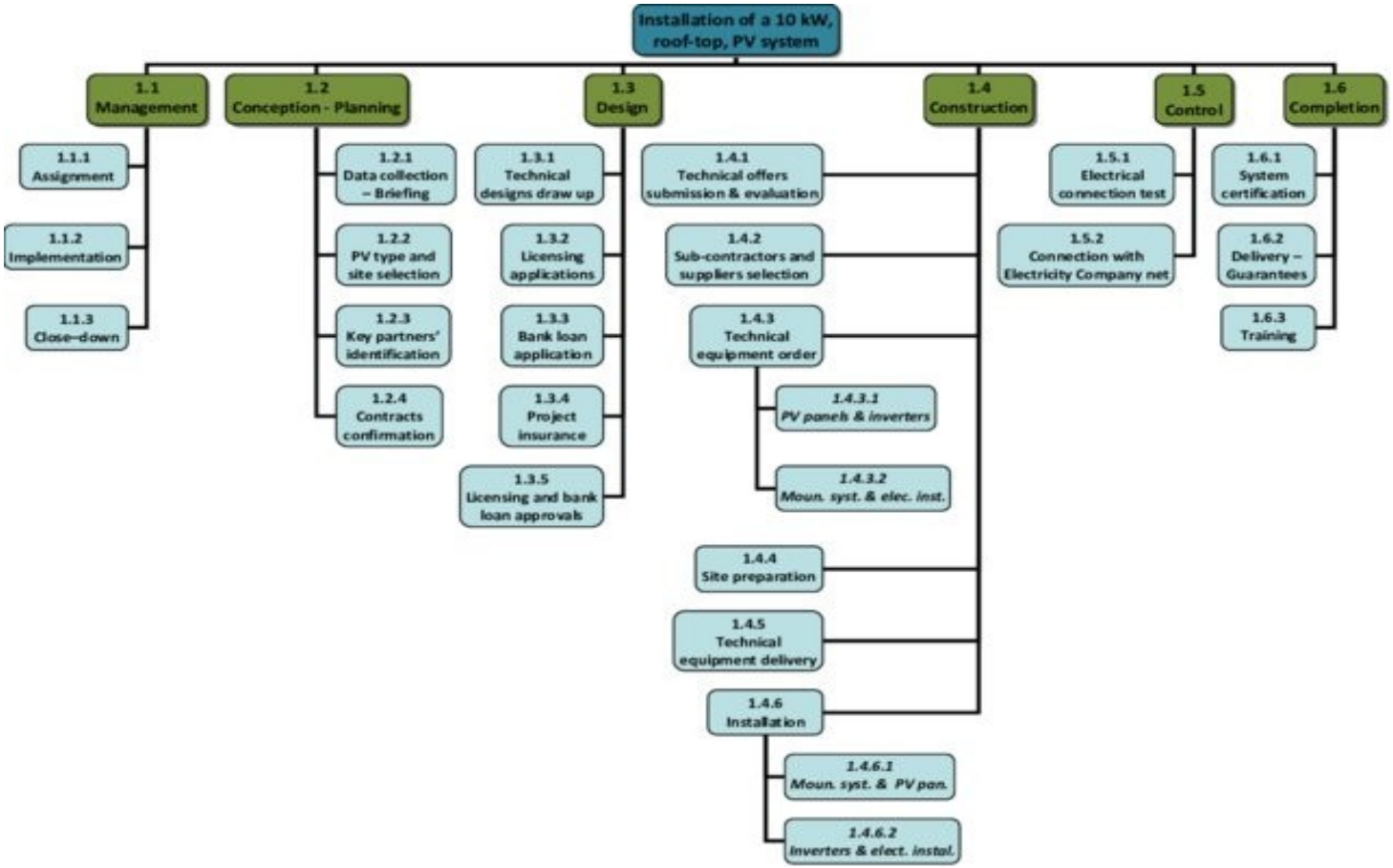
WBS – example 3



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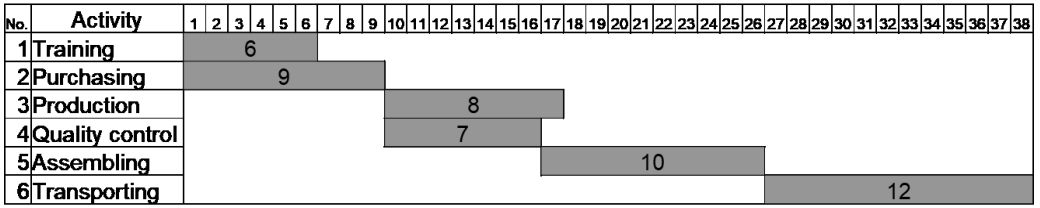
Time scheduling

- defines sequence and deadlines of activities within a project.
- tools:
  - **line segment charts (Gantt charts)**
    - + easy-to-create
    - + easy-to-follow
    - - inability to display the connections between activities
    - - inability to show the completion rate as a percentage



  - **network diagrams**

    C.P.M. – based on analysis of a critical path = longest sequence of activities without any float time (reserves).
    P.E.R.T. – duration set according to pessimistic, realistic and optimistic alternatives.
    G.E.R.T – improvement of PERT method
    + present interdependencies
    + allow for seeking alternative solutions
    + define critical path
    - complex
    - not that easy-to-follow

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Critical Path Method (CPM)

- to determine the **critical activities** = the activities whose delays will cause a delay in the completion of the entire project (or their shortening will mean earlier completion of the entire project).

  - ET = **earliest possible time** = time at which the activity can commence at the earliest (given the constraints, i.e. technology, resources);
    ET = max {ET(x) + t(x)}; where x = immediately preceding activity
  - LT = **latest possible time** = time at which the activity can be completed at the latest without a delay in the completion of the whole project;
    LT = min {LT(x) – t(x)}; where x = immediately following activity
  - FT = **float time** = the longest possible delay in the activity that will not cause a delay in the completion of the entire project.
    FT = LT – ET – t; for each activity ⇒ **If FT = 0 then no delay is possible ⇒ this activity is the critical activity!!**

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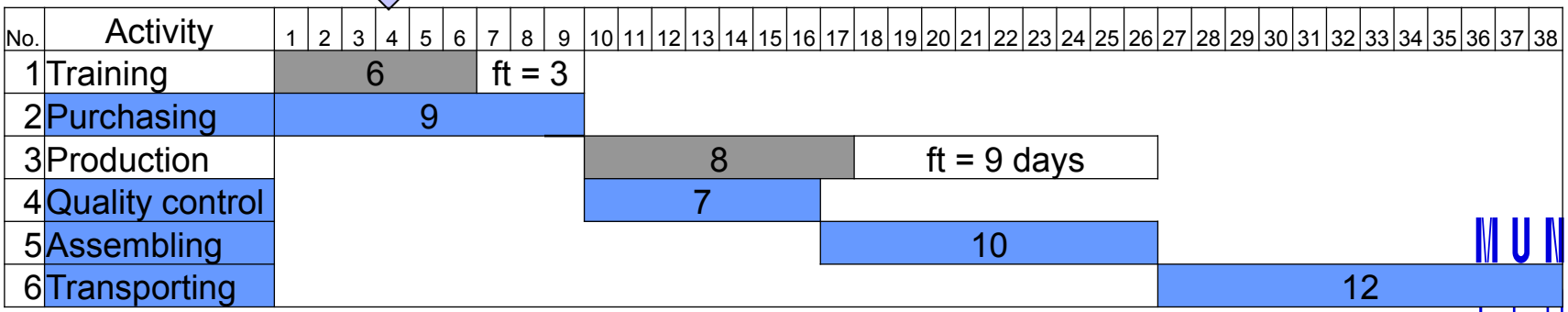
Critical path method - example

Project plan

Activity	Duration (days)	Immediate predecessors
1. Training	6	none
2. Purchasing materials	9	none
3. Production	8	1, 2
4. Quality control	7	1, 2
5. Assembling	10	4
6. Transporting	12	3, 5

CPM calculations

Activity	Duration	ET	LT	FT
Training	6	initial activity 0	LT(3) = 26-8=18 LT(4) = 16-7=9 9	**9-0-6** **3**
Purchasing	9	initial activity 0	LT(3) = 26-8=18 LT(4) = 16-7=9 9	**9-0-9** **0**
Production	8	ET(1) = 0+6=6 ET(2) = 0+9=9 9	LT(6) = 38-12=26 26	**26-9-8** **9**
Quality control	7	ET(1) = 0+6=6 ET(2) = 0+9=9 9	LT(5) = 26-10=16 16	**16-9-7** **0**
Assembling	10	ET(4) = 9+7=16 16	LT(6) = 38-12=26 26	**26-16-10** **0**
Transporting	12	ET(3) = 8+9=17 ET(5) = 16+10=26 26	terminal activity 38	**38-26-12** **0**



Budgeting

- timed plan represented with monetary or working (labor) units:
  - general x detailed
  - timed according to presumed time of spending the resources
- methods

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Project Plan

Definition

- provides a statement of how and when objectives are to be achieved, by providing the **major products**, **activities** and **resources required** for the scope of the plan. It identifies the **management stages** and other **major control points**.
- A plan should cover not just the activities to create products but also the **activities to manage** product creation.

Structure

- planning assumptions;
- products description;
- **tolerances** – time, cost and scope tolerances;
- budgets – time and cost budgets, including provisions for risk and changes;
- schedule – incl. a Gannt chart and work breakdown structure;
- monitoring and control details

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Progress tracking

- involves measuring actual progress against the performance targets of time, cost, quality, scope, benefits and risk.
- Plans need to be fit for progress tracking
- Progress tracking is a forward looking excercise
  - Estimates „to comlete“
  - Estimates „at completion“

- Monitor progress.
- Compare level of achievement with plan.
- Review plans and options against future situations.
- Detect problems and identify risks.
- Initiate corrective action.
- Authorize further work.

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Project Closure

- Verify user acceptance of the project's products and ensure that the host site is able to support the products when the project is disbanded.
- Review the performance of the project against its baselines.
- Assess any benefits that have already been realized and update the benefits management approach to include any post-project benefit reviews.
- Ensure that provision has been made to address all open issues and risks, with follow-on action recommendations.

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Thank you!

… any questions?

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