Time Management (creating the project diagram, work estimation, resource planning, generating the schedule)

Goals

- We will follow how time management specific methods are implemented and applied for accomplishing project scheduling; initial resource planning is also tracked.

Theory Overview

See lecture 3.

Time management is to help and assure that the project is finished on time. For this a project schedule is built, schedule which will be used in monitoring project progress and changes management (the schedule itself must be adequately modified if the situation imposes so).

For creating the schedule, the following processes must be followed, in this order:

1. Defining activities (see lecture notes, subchapter 3.1.1)
   - Starting from the WBS leaves type work packages, a list of activities will be assembled (in MP this list can be created with the 'Task/List the tasks' option);
   - Activities must abide to the 5/10 rule (or 8/80) and must apply/target one department only (preferably one personnel category, location);
   - You can now fill in some of the details in the activity chart (in the 'Notes' option in MP);
   - Don't forget the integration activities, error correction, etc.!!
2. Sequencing activities (by establishing the dependencies between activities), for building the project diagram (see lecture notes, subchapter 3.1.2)
   - Even if dependencies can be by FS, SS, FF, SF type, FS is preferred because it offers increased readability (in MP, dependencies can be created via the 'Task/Schedule activities' option);
   - Add time reserves/delays for particular activities;
   - It is essential in establishing which are the optional dependencies and which are the obligatory ones, for determining the schedule's flexibility.
   - Attention to external dependencies (which allow the project to be synchronized with other organization projects/activities).
3. Work estimation / activities duration (see lecture notes, subchapter 3.1.3)
   - Work efforts are estimated (the interval necessary for accomplishing an activity, working with one single employee) and then the time (the interval needed for accomplishing an activity, working with all the allocated employees/resources) – in MP, the duration does not add time reserves for inter-employee communication and other additional activities;

- It is recommended using multiple methods (top-down, bottom-up) for comparing (checking) the results. It is recommended applying the PERT method, for determining effort and dispersion (attention, large dispersion indicates an increased risk of respecting the schedule) – and avoiding the error of considering the most frequent duration/effort value as the value that can be broken with the highest probability;
- The time reserve (slack) can be incorporated into a virtual activity (10-15% of the total duration).

4. Schedule generation (see lecture notes, subchapter 3.1.4)
   - Semi-flexible and inflexible restrictions are entered (the flexible ones result from precedence relations);
   - The schedule is built – generated automatically by MP, highlighting the critical path and the free time slacks (reserves);
   - Certain conflicts are corrected (free days, etc.) and various alternatives are tried, adequately configuring resource allocation, optional dependencies, etc.;
   - The PERT method is applied for determining: the total project time estimation (the sum of all critical path durations) and dispersion (see the formula in the lecture notes). If the dispersion is high, the risk of not respecting the project timeline is high as well. In this case, reconfigurations, re-estimations, and risk analysis is needed;
   - If for certain critical dates the desired result cannot be obtained, it may be necessary: dividing activities, using the 'fast tracking' or 'crashing' method.

   Pay attention the critical path and activities with small time reserves!!!

The project participants' acceptance is obtained.
Schedule monitoring and updating is realized via the control process.

MP offers facilities for automatically generating the schedule, modifying and monitoring it.

Work plan:

For one of the presented applications, these steps will be followed:

- Creating the activities list and their preliminary documentation (in MP, the 'Task/List Activities' option will be used);
- Creating the project diagram (in MP the 'Task/Schedule Activities' option will be used. For visualizing, use 'Network diagram');
- Work effort/duration estimation using a preliminary resource allocation (PERT) – in MP, the durations will be entered, without resources allocation;
- Creating the schedule (see 'Gantt chart' and 'Calendar' in MP, including the provided facilities in the 'Track' option);
- Determining the critical path;
- Reconfiguring the schedule;
- Applying the PERT analysis method.