Project's Costs Forecasting and Project's Budgeting

Goals:
> Students will get acquainted with methods for assessing a project's costs and its budget tasks.

Theory Overview:
> See lecture notes (Chapter 6).

Processes that assure the right management of a project's budget are:
1. Resource planning – establish the resources required to develop the project (type, quantity, time periods);
2. Estimating costs – costs are approximated for resources allocation using the plan previously developed.
3. Budgeting – distribute the costs on tasks/phases;
4. Controlling costs – efficiently monitoring the project's evolution and managing changes to maintain the project in the established budget.

To establish the needed resources, we have to analyze the desired result for each task, working plan and then correlate this information with available resource in the organization.

Once allocated, the resources, for a **better estimation of costs** it is recommended constructing a recouping structure and some coherent codification systems according to the company's analytical accounts plan.

The following costs categories may be used:
- Acquisitions: materials. Software, equipment, consumable;
- Human resources: earnings, trainings;
- Advising: experts earnings;
- Utilities, Rents, Equipment ageing;
- Administrative departments costs, etc.;
- Outsourcing
- Reserve for the identified risks: inflation, etc.

Recouping may consider an expense's location, if the company defines working points as different cost centers. For some resources categories, a rate per time unit might be allocated to determine the associated cost, considering the number of time units when that resource is used in the project. In MP this facility is implemented for the human resources (rate/hour). This can be individually managed for each resource or to simplify, some organizations might compute an average rate for resources in their projects (the parametric computing method).

It is recommended:
- Working together with the accountancy department;
- Checking if the internal standards of the organization and sponsor's standards are honored (eligible costs categories, the way of building the a. computation quotations, the way of reporting realized costs and the way of financially assessing the project!!);

- Verifying the estimations by applying multiple estimation methods (top-down, bottom-up – see lecture notes);
- Discussing estimations results with the project team.

Based on the estimations, project's **budgeting graphic** can be generated (automatically generated in MP >> see View/Reports/Costs/Budget).

Most of the experts consider that a **costs surmount** of 10-20 % is frequent for small projects. Caution, the overflow is a high impact risk, for which purchaser's agreement is hard to obtain even if there aren't such contractual clauses. Larger projects are much vulnerable to budget overflows, because of the impact of these variations on organization's stability. Speaking about larger budgets we have to consider cautiously the risk of costs overflow. Price surmount is a secondary direct effect of inflation, but there are some other factors that might produce costs surmount in a project (incorrect estimations, changing the requirements, etc.). Just because costs surmount is a high frequency event, it is a good idea to mention is in the contract such that the purchaser supports the additional costs caused by inflation, growth of the interests, etc. For monitoring a project's development, we suggest the earned value method (see lecture notes, 8th lecture note). This method allows tracking the evolution of costs according to achieving the planned activities and correctly interpreting the delays/overflows intervened in the project.

To analyze economically the project you can use the following indices:

- *„Net Value Present Analysis" (NPV)* = the expected net value for a period: we compute the net earning estimated for k years and translate this earning to the current year by applying a correction factor:

$$income\_year_k^{translated} = \frac{estimated_{cash_{IN}} - estimated_{cash_{OUT}}}{(1 + \frac{r}{100})^k} \qquad NPV = \sum_k income\_year_k^{translated} - Cost_{initial}$$

- *„Return of Investment" (ROI)* – the investment's efficiency

Computed without a correction factor – earnings and total costs are computed for the entire desired period of time:

$$ROI = \frac{Total_{gross_{earning}} - Total_{cots}}{Total_{costs}}$$

Computed using a correction factor – consider inflation, etc.:

$$ROI = \frac{\sum_k \frac{Earning_k}{(1 + \frac{r}{100})^k}}{Initial_{cots}}$$

- *„Payback" (Pb)* – the period required to recover the investment.

Working plan:

For one of the presented applications we have to follow the steps described below (using MP):
- Determine consumptions categories;
- Assess costs in each category (by using bottom-up/top-down methods);
- Budget tasks and phases;
- Develop graphics for budget allocation in your project;
- Estimate quality indices like ROI, payback, etc.;
- Apply the earned value method (using fiction work data) and explain the results.