

EVALUATION OF SOFTWARE PROJECTS WITH MTA

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ABSTRACT:

The contribution describes the MTA – Milestone Trend Analysis Metod for evaluating status of software projects. Principles and graphical techniques are showed in paper. The extended MTA metod is presented.

KEYWORDS:

Project management, status of project, milestone of projects, Milestone Trend Analysis Method

Introduction

Due to problematic time and cost planning in software design, evaluation of software projects is difficult during their implementation (for example the complexity SW project as [5]). Methods like EVM - Earn Value Management, SSD – Structure Status Deviation), the percentage method and other methods traditionally used in software design are difficult to use for software projects[1] However, the Milestones Trend Analysis method (MTA) could be suitable for evaluating the progress of software projects. It is used by many companies implementing information systems (e.g. SAP [3]). It is based on defining a number of project milestones and on decomposing criteria for overall project success into a sequence of specific milestones to be continuously evaluated during the project implementation.

Description of MTA

Generally, project milestones are assigned to dates and times on a timeline when completion of a task important for the project implementation is expected [2] (e.g. for a software project: completing collection of user requests, designing software product architecture, completing algorithm analysis, completing module structure design for the software system, completing source code transcript of analysis results in the respective programming language, completing integration and acceptance tests, etc.). Then, these milestones serve as stage goals leading towards the final project goal (see Fig. 1).

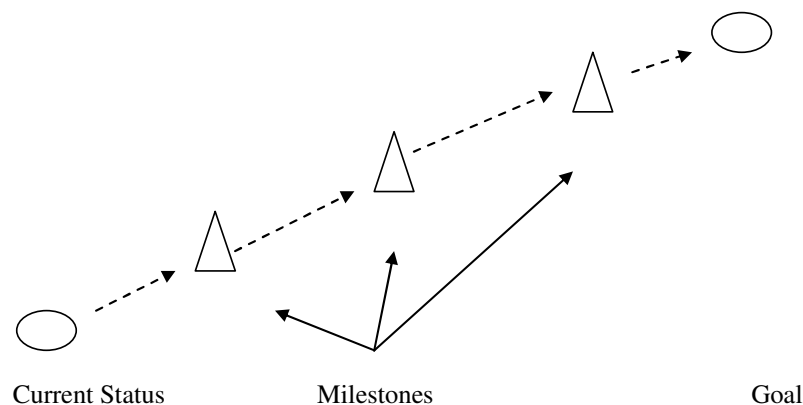


Fig. 1 Milestones as stage sub-goals (primary) in project (author)

When using the MTA method, at least one auxiliary milestone is inserted in between the primary milestones arising from the logical analysis of the implementation process. However, it is recommended to insert two auxiliary milestones between each pair of primary milestones to follow the principle of double-checking the situation between two primary milestones to be able to react to possible deviations from the original plan and, with the necessary steps taken, make sure that the next primary milestone is achieved according to the plan (Fig. 2).

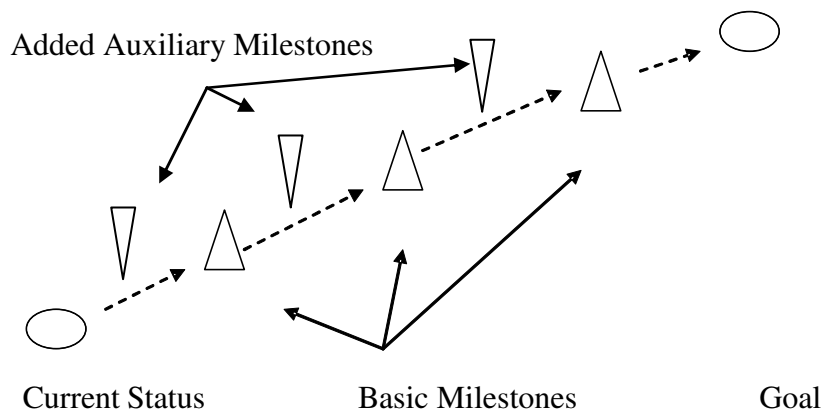


Fig. 2 Inserting auxiliary milestones for MTA (author)

Milestones generally used in projects are understood to be important events without necessary time or other costs (money, human resources). However, MTA requires that project status is evaluated during a project team meeting at auxiliary milestones. For primary milestones, a so-called inspection day must be planned. Besides the project team, the project supervisor, often a representative of the top management, as well as other important people (stakeholders, key contractors, etc.) take part in the inspection day. A more detailed report on the project status is necessary to be prepared for the inspection day. It is not sufficient to state the values achieved: mostly, a text report is required describing the project status (usually referred to as the Situation Report, Summary Report, Current Status Report, Progress Report, etc.). The report is based on activity reports and possible implementation problem reports. The report usually includes:

- a description of project progress since the last inspection and project status description in reference to the plan (schedule and cost plan);
- a summary of activities carried out;
- a description of available resources;
- a list of main problems;
- suggestions for problem-solving actions to be taken;
- decisions on project changes;
- an updated plan for the remaining part of the project;
- other facts that need to be pointed out in respect to the project.

Also, many companies recently tend to include a prediction of the project development as well as outlooks for completing the project in the report.

The inspection day usually requires a one-day project evaluation meeting; thus, it must be planned as any other project activities. As we have already pointed out, this fact means a different understanding of a milestone, which is usually understood to be an event without time and other costs, not requiring allocation of resources.

Charting of Project Development in MTA

When MTA is applied, a simple project development chart may be used to evaluate its status at individual milestones, as designed by The Project Group GmbH for their product visualizing MTA outputs as an add-in to Microsoft Project Client 2.8 (see Fig. 3).

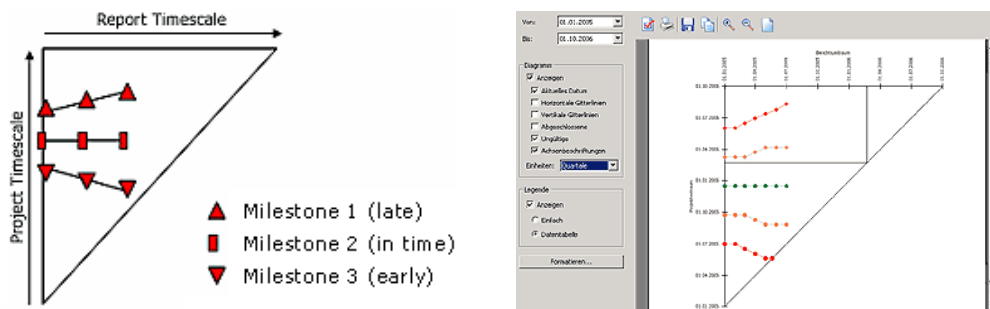


Fig. 3 Charting milestone status according to TPG.

(Source: <http://www.downloadpipe.com/The-Project-Group-GmbH-TPG-screenshot-1183598.html>)

Also, this graphic solution makes it possible to chart estimated milestone statuses to be evaluated in the future.

Extended MTA

MTA may be improved considerably when, at least for some selected milestones, values are defined for the EVM method (see [1]) including the calculation of primary Cost Performance Index (CPI) and Schedule Performance Index (SPI) indices for the reality at the evaluated milestone (SPI – current status on time, CPI – current status on cost).

If the EVM values are used:

- Planned Value PV
- Earned Value EV
- Actual Cost AC

to calculate Cost Performance Index (CPI) and Schedule Performance Index (SPI) with the following formulas:

$$\text{CPI} = \frac{\text{EV}}{\text{AC}} \quad \text{and} \quad \text{SPI} = \frac{\text{EV}}{\text{PV}}$$

The following picture Fig. 4 shows an example of these values:

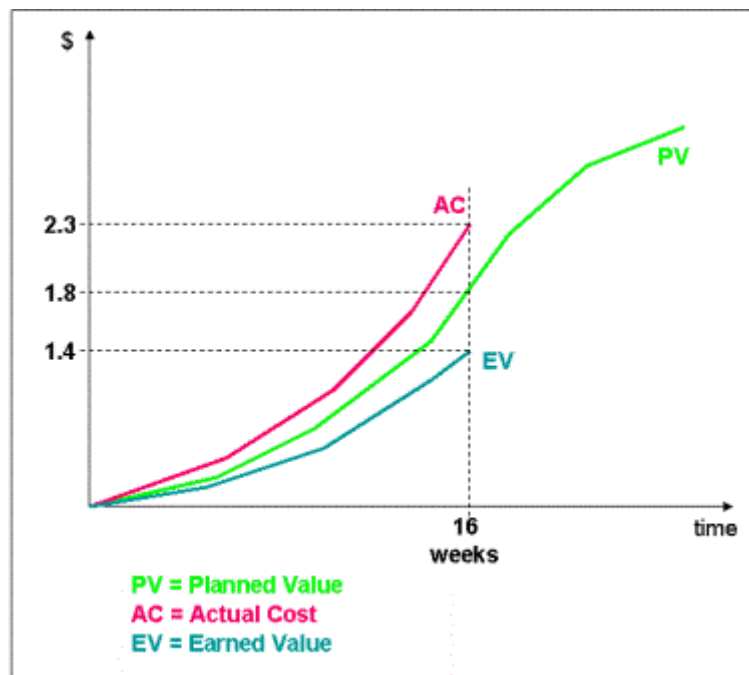


Fig. 4 Example of PV, AC and EV values

(http://www.project-management-knowhow.com/project_controlling_tools.html)

For this example $CPI = 0.609$ and $SPI = 0.778$ indicate that the project is over budget and behind schedule.

Extended MTA is used for research and development projects in the so-called Stage Gate Model, which defines some milestones as so-called stage gates (referred to as GATE) [4]. This means that, at each milestone of that type, the project may be:

- prematurely terminated when unfavourable project development is identified;
- suspended until a defined condition is fulfilled;
- approved for further continuation.

A GATE-type milestone is usually graphically represented by a traffic-light symbol (see Fig. 5).

GATE-type milestones should make it possible to terminate a project the continuation of which is not desirable in respect to its development or other circumstances (e.g. a new situation in the market, customer liquidity problems threatening payment for the project).

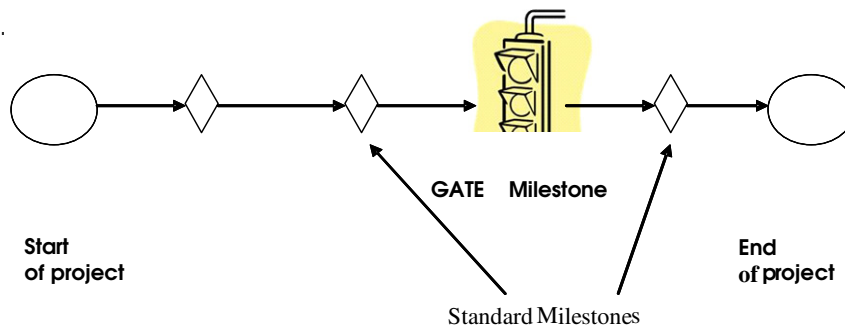


Fig. 5 MTA with a GATE-type milestone (author)

Conclusions

When designing software products, planning problems often result in formal evaluation of activities stating their status and just expecting bad situation to improve. Because no plan is available, it is often difficult to identify the progress of work on the project. Project team meetings then mostly deal with operational agenda and cover neither the overall status of the project nor measures necessary for eliminating additional costs and time delays.

On the other hand, simple definition of milestones from the perspective of SW project logical structure does not mean that MTA is used, especially when other principles of the method are not observed.

A well-implemented MTA may provide the necessary and proper supervision for software development projects, which is one of the key success factors in such projects (in details see literature [6,7]). Therefore the basic concept extended MTA method is described in this contribution.

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