

According to one of many definitions, a project is a “temporary undertaking with the objective of creating a unique service or product – where the uniqueness means that the service or product is completely different than all similar services or products”. This implies that each project does something which has never been done before, it makes a unique reality. Often, especially in case of research projects, this uniqueness is pushed so far that project implementation involves conducting tasks which the project team has never conducted. What is more, sometimes it is not clear if a given project task can be done at all and what will its implementation and results look like.

That is why it is difficult to plan a project in such a way that this plan can be kept to. Usually there exists a project plan, but the reality often differs from it a lot. Then the project implementation becomes very difficult. We have planned a certain amount of resources, we have assumed that in certain moments we will get some results, and it turns out that there are no results or they are completely different than we expected, and the time and money are close to being exhausted.

Additionally there is the problem of various interests and different perception of different persons related to the project. Other things will be important for the author of the project idea, other for the team implementing the project and other for the sponsor or accountant.

That is why in the research on project management sometimes not “usual” numbers, but fuzzy ones are used. A fuzzy number can model two situation types. The first one is incomplete knowledge: for example, if before the project start someone asks us for the duration of a project task and we are not able to give him an exact time, but we can only say that the task will take about 5 weeks. The second situation type is a gradual satisfaction decrease or increase, down or up to a certain threshold. For example to the question which project duration will be satisfactory to us, we can answer: “a shorter one than 3 months, however, if the project prolongs itself to 5 months, we will still be satisfied to a certain, although smaller and smaller degree, up to value 5, where our satisfaction drops to zero”.

The goal of this research is to apply to project management a special kind of fuzzy numbers, the so called type-2 fuzzy numbers. They allow modelling of incomplete knowledge and of the satisfaction of various groups related to the project, but have hardly been used in the research on project management. We will elaborate methods of preparing a project plan which will not be “hard” (as we will not be able to keep to a hard project plan anyway), but fuzzy – thus, it will show various scenarios and possibilities of project implementation. Then methods of dealing with such a plan during project implementation will be proposed: the plan will have to be updated, the current project success chances will have to be estimated, and all this will have to take into account various persons related to the project, so that a compromise can be attained and everybody can be satisfied at least to a certain degree.

An important element of the research will be the care for simplicity of the dialogue with decision makers. Project managers will not have to understand fuzzy numbers. Special dialogue methods will be elaborated that will allow them to use an almost every day language, which will be then, invisibly to them, translated to the type-2 fuzzy language. Also results given by the proposed methods will be translated to a non-mathematical language, understandable to everybody interested in the project course.

The proposed methods will undergo a preliminary verification, using several real world R&D and IT projects.