

# PROJECT SELF-EVALUATION METHODOLOGY: THE HEALTREATS PROJECT CASE STUDY

*Martin Žnidaršič<sup>1</sup>, Marko Bohanec<sup>1,2</sup>, Nada Lavrač<sup>1,2</sup>, Bojan Cestnik<sup>3,1</sup>*

<sup>1</sup> Jožef Stefan Institute, Jamova cesta 39, Ljubljana, Slovenia

<sup>2</sup> University of Nova Gorica, Vipavska cesta 13, Nova Gorica, Slovenia

<sup>3</sup> Temida d.o.o., Ljubljana, Slovenia

e-mail: martin.znidarsic@ijs.si

Tel: +386 1 477 3366; fax: +386 1 477 3315

## ABSTRACT

The paper presents an approach to self-evaluation in collaborative research projects. The approach is taken from a case study of the project Healththreats, where it is used in practice. Aims and focuses of self-evaluation are presented in general and the proposed methodology is described in detail. We conclude with practical experiences and suggestions for improvement.

## 1 INTRODUCTION

Project-based organization that includes many collaborating partners is very common form of research and development (R&D) consortia. Among the reasons for this are the increasingly interdisciplinary nature of current R&D topics, the financing schemes for R&D (e.g. European Framework Program projects), and the general inclination of the industry towards such kind of work organization.

There are specific good managerial practices that should be followed in order to make collaborative project-based work successful. One of them is project self-evaluation. It is a collection of activities that are conducted in order to provide regular self-assessment of the project's activities and status.

This paper presents a methodology of project self-evaluation that was developed using the methodology of multi-attribute decision support. The developed methodology was used for project self-evaluation in the project Healththreats [5], aimed at the development of an integrated decision support system for health threats and crises management.

Characteristics of collaborative R&D projects, which the method is targeting, are presented in Section 2. The proposed self-evaluation methodology is presented in Section 3 and our experiences in the Healththreats example case are given in Section 4. The paper concludes with Section 5.

## 2 COLLABORATIVE PROJECTS

A typical setting of R&D collaborative projects is a nationally mixed group of experts from various fields of

research and industry. The work in these projects is usually divided into work packages (WPs). Each WP represents a separate group of activities that are focused towards a common objective. WP has a dedicated WP leader, i.e. a partner that is responsible for its successful operation, but usually many partners are involved carrying out specific WP tasks.

Collaborative projects are managed by project management that coordinates the work, takes care of keeping agreed deadlines and communicates with WP leaders and external entities (regulatory bodies, stakeholders, etc.). It is not uncommon for projects to have a special WP dedicated to managerial tasks.

Self-evaluation is also an organizational activity and is sometimes assigned to a specific WP. The aim of self-evaluation is to monitor the activities and achievements of the project, to present and evaluate them in an objective manner and to provide feedback in form of warnings and recommendations. This helps detecting potential project weaknesses that need timely reaction and improvement, thus helps preventing potential problems before they become real ones. Self-evaluation may also provide useful information for external reviewers of the project.

## 3 EVALUATION METHODOLOGY

In this section we present a methodology of project self-evaluation, which was developed and used in the project Healththreats, but is applicable to a wide range of similar projects.

### 3.1 What to evaluate

Collaborative projects are complex systems with many interconnected entities. They consist of WPs, which are on a higher level managed by project management. The WPs have specific tasks and goals, but usually some of the goals of the project depend on the activities that connect the specific achievements of the WPs. Therefore, it is not straightforward and simple to decide what components of the project to evaluate and on which level of detail.

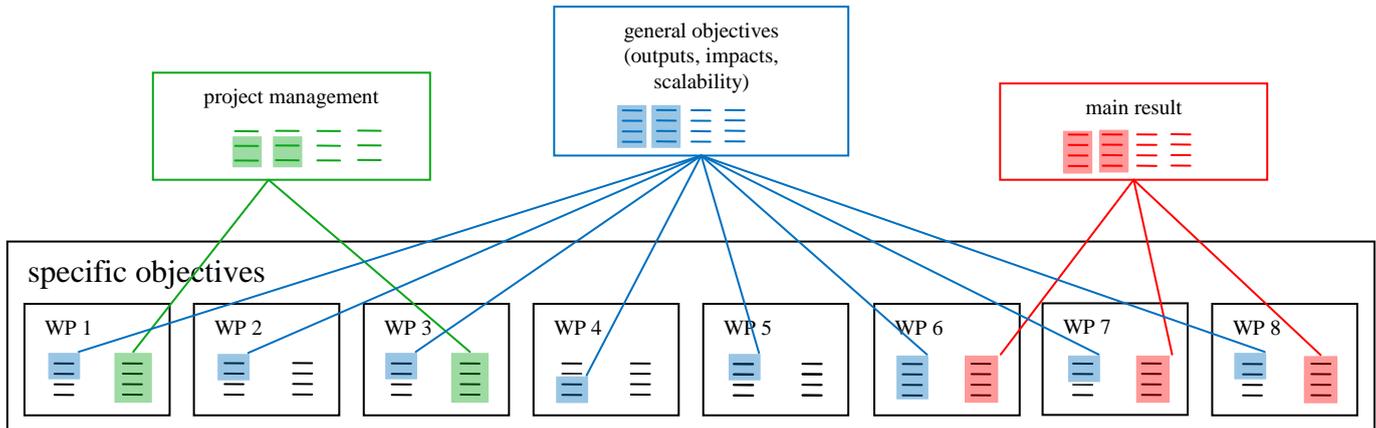


Figure 1: Schema of project self- evaluation aspects.

In our case, we chose to evaluate the project with four focus points that are presented in Figure 1:

- Project management
- General project's objectives
- Main result of the project
- Specific objectives (WP specific goals)

In this figure the small horizontal lines represent selected indicators and the colored/shaded boxes represent the aspects of evaluation. According to this schema, a separate focus point is devoted to *project management* activities. Another focus point is devoted to *general objectives* of the project, which are defined to be general and are monitored and evaluated on a high level of abstraction mainly by descriptive indicators. On the contrary, the *main result* of the project (a particular decision support system for end users) is evaluated at the highest possible detail with very specific, concrete and easily measurable indicators. Somewhat special is the evaluation of WPs, which are evaluated separately, but in a unified way (see section 3.2). All the WP evaluations are gathered under *specific objectives*.

Because of evaluation taking place on different levels of detail and with different contexts, some of the indicators (represented by small colored lines) are used more than once.

### 3.2 How to evaluate

The evaluation components were evaluated in different level of detail, depending on the focus point. There are different indicators and monitoring/evaluation processes dedicated to each of them. For the purpose of evaluation, the indicators get aggregated into higher level concepts in qualitative hierarchical evaluation models. The modeling and analysis of aggregated criteria follows the multi criteria decision modeling (MADM) approach [6, 3] and use the qualitative DEX methodology [1, 2, 7]. This methodology allows for an

efficient, comprehensible and transparent evaluation of multiple criteria.

#### PROJECT MANAGEMENT

The management of the project is evaluated according to communication, coordination of work, technical leadership and timeliness. The first three criteria are evaluated on the basis of a yearly questionnaire for project partners, which is provided to all the work package leaders. The indicator of success is the average answer to a question, where the answers can be given using a rating scale from 1 (worst) to 5 (best).

Timeliness is evaluated according to the timeliness of the deliverables and milestones reached. The indicator is a number of deliverables delivered in time, with agreed delay and with an exceptional delay.

#### GENERAL OBJECTIVES

The general objectives are evaluated through the assessment of:

- Outputs
- Impacts
- Scalability

#### Outputs

The evaluation of the outputs is the aggregation (a) of the aggregated indicators concerning the evaluation of project web site, publications and presentations, and (b) of the aggregated indicators concerning the developed system. Sketch of a possible aggregation hierarchy for this purpose is shown in Figure 2.

#### Impacts

The assessments of impacts are intrinsically ex-post assessments. In the Healthreats project the specific impact focus points were selected according to the CDC guidelines [4] and are not mentioned here since they are specific to the project's domain.

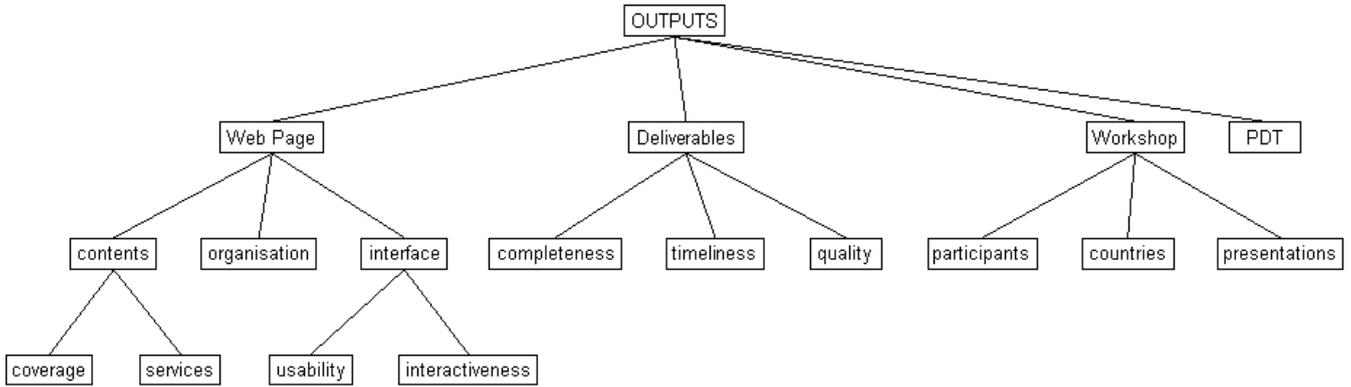


Figure 2: A hierarchy of aggregated indicators for evaluation of project's outputs. PDT is the acronym for the main result of the project in the Healthreats case.

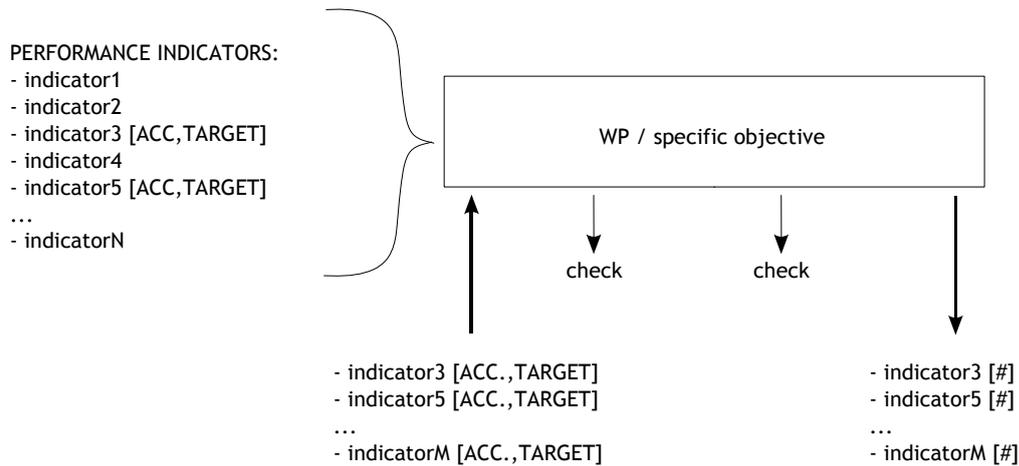


Figure 3: Sketch of procedure for definition, monitoring and evaluation of specific objectives.

The issue of ex-post nature of these assessments was solved by the following procedure: a pre-assessment by the stakeholders is made, according to the expected impacts of the project's results. The assessments are given as ++ (big positive expected impact), + (small positive expected impact), 0 (no impact), - (small negative impact), -- (big negative impact).

The assessments are made in the beginning of the project (before results testing phase) and at the end of the project (after the results testing phase). The final indicator of success is measured as cumulative shift in the positive or negative direction. No shift or a positive shift is considered a successful evaluation, since this would mean that the results of the project support the views and expectations that were present at the start of the project. A negative shift would indicate a possible underachievement or just a starting misinterpretation, thus would need further elaboration and explanation.

### Scalability

Scalability of the approach is assessed from two perspectives:

- geographical scalability,
- problem domain scalability.

The geographical scalability describes the ability of the approach to be used in different state regions, states, EU regions. The level of geographical scalability is assessed through the (dis)similarity of issues brought out in the case studies, which will be contributed to the differences caused by geographic (political) factors.

The problem domain scalability describes the ability of the approach to be used in different problem domains. The level of problem domain scalability is determined by the amount of problem-specific features that are incorporated in processes and tools of the project's results.

## SPECIFIC OBJECTIVES

Because the specific objectives and the WPs are typically very correlated, we evaluate the success in reaching the specific objectives and the success of the work in WPs together and uniformly for all the work packages.

For each pair, consisting of a work package and its specific objective, a set of indicators has to be chosen, which allows the evaluation of WP's work as well as the level of success in reaching a specific objective. Specific objectives usually share some of the indicators, but most of them are selected specifically for each objective. For some of the indicators, the responsible WP team is able to set its minimum (acceptable) and maximum (target) criteria goals at the beginning of the WP work. The status of all the criteria is checked at the end of the work and can also be monitored in between. A simple sketch of this procedure is presented in Figure 3.

For the indicators that are possible and agreed to monitor during the work, we use a qualitative three level scale for the measurement of completion and current quality for the purpose of monitoring. The values of the scale could be for instance green, yellow and red, where the green would mean a good or normal state of the indicator, the yellow would indicate a minor incoherence with the plans (like a postponed deliverable, or a result of work that needs some agreed further modifications) and the red would indicate a potential problem for the objective (like a deliverable missing a postponed deadline or an improper result).

The WP achievements (the achieved values of individual performance indicators) are given for every 12 months in three columns: acceptable, target and actual. Acceptable column represents minimal acceptable achievements that suffice for the purpose of the work package. Target achievements are set as realistic goals that can be accomplished within a given work package. Actual achievement column includes a list of achieved work package results.

In Healthreats project we monitored the specific objectives results in six month intervals and reported the status in intermediate reports that were made every six months.

## 4 EXPERIENCE AND SUGGESTIONS FOR IMPROVEMENT

The presented methodology was accepted well by the project partners in the case study and received particularly good feedback from the project officer. It was presented to some related projects as an example of good practice.

From our experience we can now make also some remarks and suggestions. It is very important that the project partners, especially the WP leaders, are involved in the planning of the self-evaluation and that they provide relevant and measurable indicators for their specific tasks. Further, it is important to review and convey the findings of self-evaluation in easily readable (graphical) form and as frequently as possible. The six months interval that we chose

in our case study could ideally be shortened to three months to keep the initiative more up-to-date.

## 5 CONCLUSION

A methodology of self-evaluation for collaborative projects was presented in the paper. Since it is successfully used in practice and received positive remarks from evaluation professionals, it is potentially interesting for any collaborative project consortium that decides to support its work with this activity. There are some lessons presented that were learned in practice, but the methodology might also evolve further or serve as a base that is adapted to specific needs of various types of projects.

## Acknowledgment

This work has been financially supported by the Healthreats project, which is sponsored and co-funded by the European Commission's Executive Agency for Health and Consumers (EAHC) and by the Slovenian Research Agency. The authors thank Healthreats' partners for their contribution in formulating specific indicators of the presented methodology.

## References

- [1] Bohanec, M., Rajkovič, V. 1990. DEX: An expert system shell for decision support. *Sistemica* Vol. 1, Issue 1, pp. 145–157.
- [2] Bohanec, M. 2008. *DEXi: Program for multi-attribute decision making, User's manual, Version 3.00*. IJS Report DP-9989, Jožef Stefan Institute, Ljubljana, 2008. Available at: <http://kt.ijs.si/MarkoBohanec/pub/DEXiManual30r.pdf>
- [3] Bouyssou, D., Marchant, T., Pirlot, M., Tsoukiàs, A. and Vincke, P.: *Evaluation and decision models with multiple criteria: Stepping stones for the analyst*. International Series in Operations Research and Management Science, Volume 86. Springer, Boston, 1st edition, 2006.
- [4] CDC. *Updated guidelines for evaluating public health surveillance systems: recommendations from the guidelines working group*. MMWR 2001;50(no. RR-13);1-35.
- [5] Healthreats (2007): HEALTHREATS 150107: *Integrated decision support system for health threats and crises management (2007–2010)*. <http://www.healthreats.eu/>
- [6] Keeney, R. L. and Raiffa, H.: *Decisions with multiple objectives: Preferences and value tradeoffs*. Cambridge University Press, 1993.
- [7] Žnidaršič, M., Bohanec, M., Zupan, B. 2008. Modelling impacts of cropping systems: Demands and solutions for DEX methodology, *European Journal of Operational Research*. Vol. 189, Issue 3, pp. 594–608.