

# Outsourcing the Front End of Innovation

B. Likar, K. Širok

**Abstract**—The paper presents a new method for efficient innovation process management. Even though the innovation management methods, tools and knowledge are well established and documented in literature, most of the companies still do not manage it efficiently. Especially in SMEs the front end of innovation - problem identification, idea creation and selection - is often not optimally performed. Our eMIPS methodology represents a sort of "umbrella methodology" - a well-defined set of procedures, which can be dynamically adapted to the concrete case in a company. In daily practice, various methods (e.g. for problem identification and idea creation) can be applied, depending on the company's needs. It is based on the proactive involvement of the company's employees supported by the appropriate methodology and external experts. The presented phases are performed via a mixture of face-to-face activities (workshops) and online (eLearning) activities taking place in eLearning Moodle environment and using other e-communication channels. One part of the outcomes is an identified set of opportunities and concrete solutions ready for implementation. The other also very important result is connected to innovation competences for the participating employees related with concrete tools and methods for idea management. In addition, the employees get a strong experience for dynamic, efficient and solution oriented managing of the invention process. The eMIPS also represents a way of establishing or improving the innovation culture in the organization. The first results in a pilot company showed excellent results regarding the motivation of participants and also as to the results achieved.

**Keywords**—Creativity, distance learning, front end, innovation, problem.

## I. INTRODUCTION

IN global competitive environment companies do not consider the dilemma whether to innovate or not, but instead consider the amounts of necessary investments (financial and other resources) into the innovation process. On one side, the methods and tools on innovation management are well developed and documented in scientific and expert literature. The market also offers different IT support systems, consulting services, organization support for managing the innovation process. Later phases of innovation process are often formalized and legally regulated, e.g. implementation phase, protection of intellectual property. Also in medium sized and large companies, the innovation process incl. the idea management phase is most often formalized yet rarely supported by appropriate, daily and effective supporting activities [6]. Even though the innovation management methods, tools and knowledge are well known and available,

most of the companies still do not manage the innovation process efficiently. They do often invest significant resources and financial assets into innovative projects itself, like development of new products, investments into technology and machinery etc., but not enough into appropriate management of the innovation process itself. But the evidence from Slovenia showed that investments into mastering the innovation process are at least as important as investments into innovations. For SME's and micro companies, such organized innovation systems are quite often nothing more than a 'wishful thinking', meaning that more than 75% of companies struggle with catching up the 'innovation train'.

The presented problem can be translated into a question, how to bring the innovation closer to SME's, micro companies and also large ones lacking the time and experts who possess required qualifications or expertise of innovation management. How to offer them at least part of this knowledge via outsourced service and thus taking away the burden of significant initial investments? Can innovation process be subjected to optimization following the lean & mean concept and outsourced by external providers and to what extent? And, can such an innovation support service be massified, yet still providing protection of the emerging intellectual property?

The next starting point of our paper/method is related to the established viewpoint towards idea management. There are many scientific publications dealing with the 'front end of innovation' or 'fuzzy front end of innovation' [2], but they mainly start the discussion on innovation management with the phase of ideas generation [3]. As [4] reports, the main goal in the front end of innovation is to discover the right ideas, generate attractive product concepts, and identify a suitable business model for the commercialization of the concept. He is also not addressing the very first, the problem/opportunity identification phase. Some other authors tackle the "problem phase" at the principle level only [2] mentioning its importance but not explaining how to manage it in practice. One of interesting approaches is focused mainly into the problem phase, which is clearly defined. The authors [5] defined the front end of innovation activities as five elements: opportunity identification, opportunity analysis, idea generation and enrichment, idea selection, and concept definition.

One way to positively approach the described challenges is through the eMIPS methodology, which was developed. Within the paper, the conceptual framework of eLearning based innovation support system focusing into the front end of innovation process is presented.

## II. EMIPS CONCEPT

A methodology which enables to outsource the front end of

B. L. is with the University of Primorska, Faculty of Management, Slovenia, EU (corresponding author to provide phone: +386 1 2839053; fax: +386 5 6102039; e-mail: borut.likar1@guest.arnes.si).

K. Š. is with the University of Primorska, Faculty of Management, Slovenia, EU (e-mail: klemen.sirok@kabelnet.net).

innovation called eMIPS (e-supported mass identification of problems and solutions) was developed. eMIPS is a well-defined set of procedures which can be dynamically adapted to the specific case/challenge in a company. The eMIPS methodology represents a sort of "umbrella methodology" - a set of procedures where various methods (e.g. for problem identification, decomposition and idea creation) can be applied, depending on the company's needs. It is based on a proactive involvement of the company's employees supported by the appropriate methodology and external experts. The goal is to establish/improve the innovation process and to create concrete solution.

eMIPS incorporates the principles of blended learning, offering appropriate mix and sequence of F2F (face-to face) and online (eLearning) activities by combining F2F workshops with eMentoring of companies taking place in eLearning Moodle environment and utilization of other using other ICT communication channels (videoconferencing).

Alongside the ability to adapt to specifics of involved companies, eMIPS provides the flexibility and the broad selection of potentially suitable innovation tools and methods. Out of broad selection of innovation tools and methods that are being applied in first phases of innovation process, eMIPS mentors offer involved companies only those few methods and tools for which it was established to be suitable within their line of business and at the same time suits the company specifics - mainly company size. In order to address this requirement a catalogue of more than 40 innovation tools and methods has been compiled as well as corresponding rudimentary decision making system in Excell enabling the overview of the methods and supporting the method decision process.

The eMIPS implementation encompasses three constitutive elements:

1. Preparatory activities,
2. Core activities: problematisation & ideation phase,
3. Sustainability providing activities.

#### A. Preparatory Activities

These consist of the following sub activities:

1. Identification of main challenge(s)
2. Company's team definition
3. Introductory workshop

##### 1) Identification of Main Challenge(s)

This phase deals with the basic problem often representing the top of the iceberg. It can be a single serious problem from any field or department of the company. It can be related to a concrete product, process, organizational issues, and marketing challenge or similar. It can also be defined as a challenge of enhancing incremental innovations among all the employees. However, it is important that a basic problem has been clearly defined. Even though it is not an obvious pre condition it is also useful to check whether the problem is not too narrow (probably dealing with very specific technical details) and if offers possibilities for team work.

##### 2) Company's Team Definition

A great deal of importance is also given to selection of participants, since this can be a crucial factor in the creativity processes. If viable, the eMentor selects participants with various profiles and backgrounds. The company's team coordinator is also an important part of the group, which should possess personal characteristics like empathy, openness, proactivity, creativity etc.

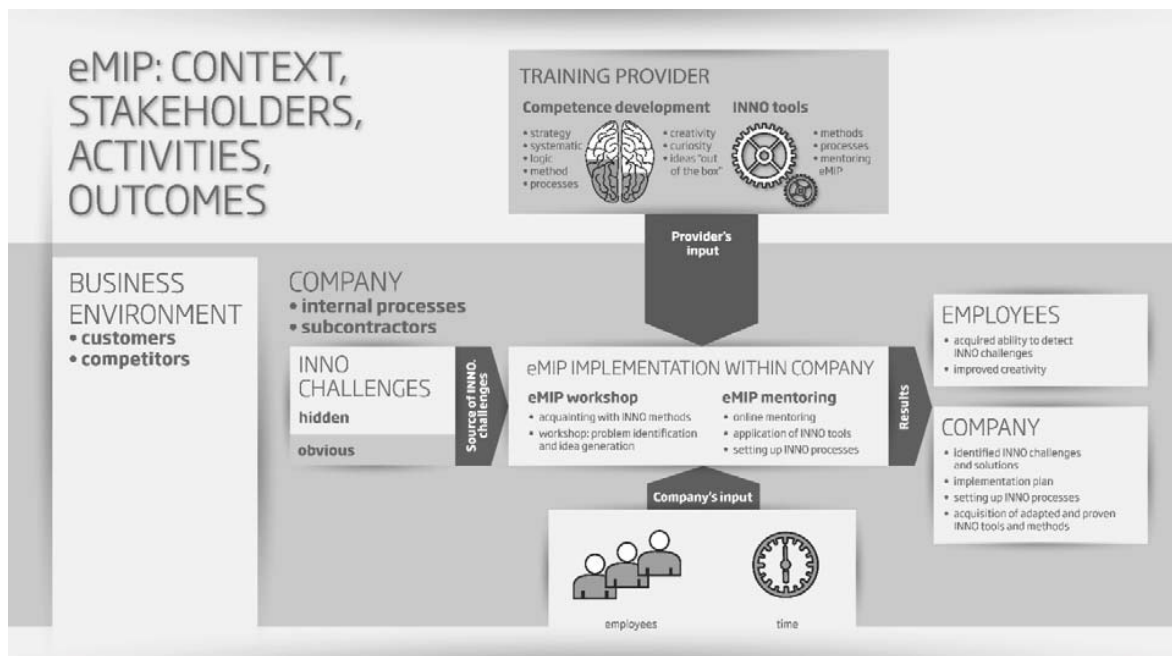


Fig. 1 eMIPS Concept

According to the eMIPS concept, external partners (customers, suppliers, other experts and subcontractors) are also provided to take place in the eMIPS process in problems where appropriate.

### 3) Introductory Workshop

eMIPS envisages the organization of two F2F (face-to-face) events. First – introductory workshop serves the purpose of introducing the participants the eMIPS and providing the initial motivational impetus. It is a short format workshop, taking less than 8 hours.

The primary aim of the workshop is to demonstrate the potential of innovation tools and to learn how to use them. The workshop introduction is short, relying basic information on creativity and innovation, and the advantages of open innovation [1]. In order to build up the motivation impetus the presentation focus is tilted towards presentation of advantages for the company. Next, a condensed presentation of three to five problem identification methods takes place. The principle and usefulness of each method are presented in few sentences, accompanied by visual aids to reinforce the comprehension. The continuation of workshop is comprised by three activity sets.

In the first activity set, the participants are being tasked to identify as much real problems within their company as possible. In order to achieve this, the workshop facilitators take each working group through 3-5 problem identification methods, whereby each of the methods used follows different underlying principle. Different methods are carried out successively, subjecting the participants to different mind-sets (production, marketing, management, organization...) and different underlying principles conveyed by each method (for instance: Problem focus, Quick and Dirty Innovation Method and Ishikawa diagram).

The aim of the first activity set is to demonstrate that under proper guidance each participant can identify relatively numerous and actual problems in short time period. The modus operandi of this exercise also exploits the potential of group dynamics, since under proper guidance an exchange of alternative views of participating companies takes place.

In the second set of practical activities, the participants are being tasked with evaluation of the problems identified beforehand. They assess each problem as whether it is a fundamental problem already suitable for direct solution seeking, a problem requiring further decomposition or as a problem suitable for discarding.

The third activity set strives to demonstrate the potential of idea generation methods (for instance: brainstorming, Phillips buzz 66 etc.) as well as the fact that guided implementation of the method can provide significant results in short time period.

Last part of the workshop is reserved for the presentation of eClassroom, whereby the emphasis is given on the eMentoring as presented in the next section. The aim of the presentation is to depict the companies the realistic picture of envisaged activities and required resource inputs as well as expected results and benefits. Within the workshop, participants from the company get the information on eMIPS principles and

basic knowledge on methods used. (e)Mentors later support and guide the innovation team at the company level during the implementation of the methods through Moodle based eClassroom and other ICT channels.

### *B. B. Core Activities: Problemization & Ideation Phase*

This is the most important part of the whole methodology. The phases of the Core activities are the following:

#### 1) Identification of Innovation Problems/Opportunities

This phase deals with the basic problem often representing the top of the iceberg. If the company has one serious problem, it might be useful to redefine or decompose the problem in smaller, clearer sub-problems. The result of this phase is a set of most important problems or roots of the basic problem.

The other option is to focus into "mass" detection of problems/innovation opportunities within certain department or in the whole company. The result is a clearly defined basic problem or set of problems.

#### 2) Evaluation of Problems/Opportunities

In case of many (sub) problems identified, those with a high potential should be selected. Regarding the basic problem and the company's needs, an appropriate method and selection criteria should be defined first. According to them, the selection process is performed. We can simply say that these are the problems, if solved, that in prospect offer significant benefits. The result of this phase is a set of most relevant and serious (sub) problems.

#### 3) Searching for Solutions

Similar to the procedure presented in section "Introductory workshop", for each of the selected problems the ideas for solutions should be found. Even though there are at least hundred idea creation methods available, it is important to choose the appropriate one. For many simple problems, e.g. Phillips buzz 66 or Brainwritting could be appropriate, for single but important problems a Gordon's technique, for technical problems Sinectics or a combination of methods is recommended. The result is most often a huge repository of ideas, which should be obviously evaluated.

#### 4) Ideas Selection

The selection process consists of the appropriate method and criteria selection. It is important to stress that criteria should be chosen according to the initial innovative challenge, company's specificities and some other influencing factors. The result is a set of best ideas for solutions of the initial problem(s).

#### 5) Implementation Plan

The last phase is dealing with the preparation of the implementation plan taking into account the most important issues of project management, e.g. goal(s) definition, tasks and deadlines, resources needed, risk planning etc. The result is a clear and realistic plan ready for implementation.

#### 6) eClassroom

eClassroom repeats the method application sequence of the introductory workshop in real environment, whereby implementation is carried out by company employees themselves under supervision and support from eMentors. Innovation team members are enrolled in eClassroom as study group. This gives eMentor the possibility either to adapt tasking to implementation dynamics or to encourage the innovation team when needed. Group work in eClassroom also separates individual and group communication. This is essential for proper communication management what in turn provides protection of intellectual property in relation to other companies in eClassroom.

All eClassroom activities are focused on building up the innovation competencies at the company level. In the eClassroom the innovation team is provided with tools, corresponding instructions and relevant additional information (cases, articles...). Participants follow the instructions prepared for a specific method/tool and report back to eMentor on the implementation. Reporting is also structured in form of guided reflection or structured discussion. eMentor promptly responds to each posted document providing feedback or setting additional questions or suggestions stimulating the implementation process and bringing it to a higher level. Simultaneously eMentors also gather valuable information useful for fine-tuning the tools and methods as well as eMIPS *modus operandi*.

After conclusion of first problem identification – problem selection – idea generation – idea selection cycle, the cycle is repeated once more but with different set of methods. eMIPS concludes with focused action planning. At this point, the mentoring in eClassroom envisages the integration of (middle) management structures in the feedback loop, first by only informing them of eMentor's feedback, and if necessary also by consulting them on viability of proposed suggestions.

#### *C. Sustaining the Innovation Processes*

The third eMIPS pillar represents the set of activities intended to provide sustainable long term effects at the company level. Three sets of activities serve this purpose: collection and dissemination of good practices, proper communication and innovation process monitoring. Information collected in eClassroom serves as a rich source of good (and bad) practice examples that can be shared among participating companies when and if complementary interests emerge. Communication of eMentors is focused on boosting the implementation effectiveness. Regular and open communication also represents a channel for collecting relevant monitoring data on extent and quality of innovation activities. It is important to include the top management and PR department and to use all available communication channels (internal conference, newspapers, intranet and e-news etc.). Obviously, it is important to strive towards systemic implementation of good practice into the strategic and operational plans of the company or at least to upgrade them.

### III. DISCUSSION

eMIPS concept is in line with the concept of slim organization. Contrary to other activities, which are outsourced (e.g. cleaning, transportation), this one is closely related with the companies' core business. Therefore, eMIPS represents a new theoretical contribution towards "slim organization", also offering the implementation flexibility; both in terms of implementation tempo and number of addressed problems and employees involved.

Very often, the problems in organizations are interdisciplinary, tackling different aspects and departments. Due to the e learning environment and eMIPS concept one of the eMIPS additional advantages is the possibility to support horizontal, interdisciplinary cooperation among departments and different employees.

eMIPS as an outsourcing service can be easily carried out with more participating companies simultaneously in duration of one to two months. Number of participating companies as well as the size of company's innovation team is flexible within the limitations imposed by eLearning environment and number of trained eMentors. Theoretically speaking, a team of three eMentors can simultaneously service up to 10-15 companies. The optimal extent and quality of mentoring can be achieved with five to eight companies, whereby each participating company is being represented by an 'innovation team' comprised of a team leader and at least two or three employees.

Even though the eMIPS duration is limited to 1-2 months, we believe it can represent an important trigger for changing employee's attitudes towards more innovative way of thinking and performing. This intensive experience resulting in concrete, measurable outputs and outcomes might even serve as a tool for big companies intending to change or initiate the innovation culture of their suppliers or daughter companies.

The first results in a pilot company (international supplier of state-of-the-art solutions for electromotor drives and components domiciled in Slovenia) showed excellent results regarding the motivation of participants and as to the results achieved. Initial involvement of three employees seeking the way to address the challenges of modernization of company's IT supported idea management system outgrew in three months into companywide involvement of more than 12 people, divided into two development teams addressing the two interlinked sets of problems: the modernization of IT solution and the rethinking of innovation culture / organization culture supportive elements. The described development took place only within three months period from the time of establishing the initial contact with the company.

### IV. ACKNOWLEDGMENT

The project is funded under the Cross Border Programme Slovenia-Italy 2007-2013 from the European Regional Development Fund and national funds.

This publication does not necessarily reflect the official view of the European Union. This publication's is the sole responsibility of the authors.

## REFERENCES

- [1] H. Chesbrough, W. Vanhaverbeke, J. West, "Open Innovation: Researching a New Paradigm", University Press, Oxford, 2008.
- [2] J. Kim, D. Wilemon, "Focusing the Fuzzy Front-end in New Product Development." R&D Management, Vol 32, No. 4, pp 269–279, 2008.
- [3] Koen et al, "Fuzzy Front End: Effective Methods, Tools, and Techniques". In: Belliveau, Paul, Abbie Griffin, Stephen Somermeyer. The PDMA ToolBook 1 for New Product Development. John Wiley & Sons, 2004.
- [4] M. Martinsuo, "Teaching the Fuzzy Front End of Innovation: Experimenting with Team Learning and Cross-Organizational Integration". Creativity and Innovation Management 18, No. 3, pp. 147–59, 2009.
- [5] J. Paasi, P. Valkokari, P. Majjala, T. Luoma, S. Toivonen, Managing Uncertainty in The Front End of Radical Innovation Development, International Association for Management, Iamot Proceedings, 2007.
- [6] B. Likar, O inovativnosti slovenske predelovalne in izbranih storitvenih dejavnosti, (Scientific mongraph). Koper: Fakulteta za management, 2014.

**Borut Likar** is a full professor and a research counsellor at the University of Primorska – Faculty of Management. Likar achieved his PhD in electro-technical sciences at the Faculty of Electrical Engineering in Ljubljana and completed MBA studies at the IEDC – Bled School of Management. Moreover, Dr Likar is the author of many scientific and expert publications. His work encompasses management of creativity, R&D, technology, and innovation processes in the field of educational system and industry. Besides, he is an innovator, initiator and the head of dozens of successful researches, applied, technological and other national and EU projects as well as the author of countless patents, models and copyright works, which many proved to be extremely marketable. In addition, prof. Likar is the founder of the national association of innovative youth. He is also active as an evaluator of EU projects and an invited speaker. Among numerous lectures he has given, the talks at the United Nations' headquarters in Geneva and at the European Parliament in Brussels were met with a particularly wide response.

**Klemen Širok** is assistant professor at the University of Primorska, Faculty of management, lecturing Human resource management, Organizational behavior and Quality management in education. His research interests include evaluation studies, innovation management and research methodology within area of labor market, QAA in education and economic policies. He has been conducting or participating in many international (Euro found and EC) and national evaluation projects. He was also member EC 'Impact Monitoring Working Group of the LLP Committee' and EC 'Expert Group on the Benchmark on Learning Mobility'.