LINKING THEORY AND PRACTICE IN BUSINESS STUDY PROCESS

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Abstract. *The research paper presents a teaching methodology of Innovation management by using a practical innovation management assessment on-line tool. Empirical study is made with a group of business students, and the results of the research are presented for discussion. The theoretical part of the paper is based on desk research on innovation assessment methods and IMP³rove as one of them. IMP³rove is an on-line assessment and benchmarking platform for a comprehensive assessment of companies' innovation management.*
The practical part of the research is focusing on a case study in the RISEBA University. The use of the IMP³rove platform is integrated in the study process. IMP³rove platform is used for academic purposes to link innovation management theory and practice. The latest two years students' feedback on the IMP³rove assessment method and its usefulness as a learning method are summarized and analyzed, and proposed for discussion and further improvements.

Keywords: *experiential learning, IMP³rove, innovation management, innovation metrics, linking theory and practice, SMEs.*

Introduction

In the conditions of rapid technological development, market globalization and geopolitical instability, the companies face more and more challenges to stay competitive. Innovation and its purposeful management in the companies is one of the keys to success and competitiveness. Therefore recently most of the universities all over Europe have included innovation management in their curricula (OI-Net, 2015), and providing business students with theoretical background of innovation science. However, innovation, particularly open innovation, is not just a theoretical issue. Firstly, innovation as a driving force of economy requires multidisciplinary approach and a close cooperation between involved parties. Secondly innovation requires a range of competences – theoretical knowledge and skills to apply it into practice (OECD, 2011). Studies of innovation management should be closely linked to the real environment where innovation is developed and applied. During the innovation management studies in university, students should acquire the knowledge and skills for managing innovation in a company, starting with idea generation and screening, doing research and new product development, implementing the research results and commercializing them.

Teaching and learning innovation is a special area of pedagogy, called innovation pedagogy. The core idea in the application of innovation pedagogy is to bridge the gap between the educational context and working life (Penttila, Kairisto-Mertanen, 2013), or in another words linking academia and industry,

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theory and practice. Following to the previous research on teaching innovation management, the author concluded that "teaching open innovation requires new, innovative teaching methods, based on constructivism theory. Innovation teaching methods should be active teaching methods, corresponding to full learning style, including experiment, experience, reflection and conceptualization (Lapina, Slaidins, 2014).

In this paper the author offers a new but already approbated solution of teaching innovation management. This methodology includes teaching of theoretical knowledge of innovation management, and application of this knowledge for measuring the company's innovation performance, i.e. performing company's innovation metrics. In order to measure a companies' innovativeness, the students have to measure input, process and output indicators. This way the students learn in practice all details related to innovation management in the company. It is important to mention, that all students studying in professional master's business programs in RISEBA, are working in parallel to their studies, and most of them are working in managerial positions. It means they have access to a company, and its innovation performance data. For innovation metrics, the author has chosen the IMP³rove methodology, which is based on a holistic approach to innovation management, and provides students with a comprehensive practical experience in measuring innovation performance and benchmarking innovation management at companies. Doing the innovation management assessment and benchmarking exercise, the students obviously link together theoretical knowledge with practice. During the assessment, the learning process continues - students expand and strengthen their knowledge with its practical application. As innovation management is a multidisciplinary subject, students have to implement also knowledge gained in other subjects (e.g. financial accounting, protection of intellectual property rights, etc.). As additional learning benefit, students gain also team-working skills, strengthen their analytical thinking to analyze the innovation management and benchmarking report, and to develop the operation plan for improvement of innovation performance in the company.

The aim of the paper is to present the IMP³rove-based learning as a tool for linking theory and practice in business studies at university professional study programs. The author shares the results of implementation of IMP³rove-based learning of innovation management in the RISEBA University in the period of years 2013-2015.

The theoretical part of the paper is based on desk research on innovation assessment methods and IMP³rove as one of them. The practical part of the research is focusing on a case study of IMP³rove-based learning in the RISEBA University, as well as the author's ten years' experience in teaching innovation management. 12 business students feedback in a form of interview is summarized and analyzed. At the end, the conclusions, recommendations and thesis for further discussion are proposed.

Experiential learning and innovation metrics as a learning tool

In business world, when we speak about learning, we understand both traditional learning by gaining explicit knowledge, but also reflective learning – analyzing the own practical experience, and the lessons learned from clients, partners and competitors, leading to the tacit knowledge. Especially this other type of learning requires special skills to learn. J. Bessant distinguishes two important components in learning (Bessant, 2003). The first involves the accumulation and development of a core knowledge base – the "core competence" - which differentiates the firm from others and offers the potential competitive advantage. It is a systematic and purposive learning and construction of a knowledge base. The second component is long-term development of a capability for learning and continuous improvement across the whole organization. Learning is the engine that creates innovation – new things and new ways of doing things do not appear by magic, but via the operation of the learning cycle (Bessant, 2003).

In order to learn, the learner has to realize a full learning cycle. The learning cycle consists of four elements, which all are crucial for learning and involvement in innovation: concrete experience or experiencing (learning from specific experiences, relating to people, being sensitive to feelings and people), reflective observation or reflecting (carefully observing before making judgments, viewing issues from different perspectives, looking for the meaning of things), abstract conceptualization or thinking (logically analysing ideas, planning systematically, acting on an intellectual understanding of a situation) and active experimentation or doing (showing ability to get things done, taking risks, influencing people and events through action) (Kolb, Fry, 1975).

In order to ensure practical or experiential learning, the students should learn by implementing their knowledge in practice. For business students, studying innovation management, usually different types of questionnaires are offered to assess the innovation performance of their companies. In fact, doing assessment of specific company indicators, students have to go in depth analysis of the performance of the company, this way analyzing the reasons of success and failure. Students learn to read and receive signals of success or failure by analyzing the company's innovation data, and conceptualize the conclusions and implement them in further improvements.

From another side, innovation metrics is very important for a company to monitor the development of the company's innovation eco-system. Firstly metrics help managers to make informed decisions based on objective data, which is especially valuable given the long-term nature and risk associated with certain innovation projects. Second, metrics affect behavior by helping align goals and actions with the best interests if the company

Usually in reviewing innovation performance, the indicators and measures are divided into three main groups – inputs, process and outputs. According to

Muller, the input indicators measure those variables which set the preconditions for successful innovation. They can be measured in terms of money, talent and time devoted to innovation. Process metrics address those variables that affect the movement of ideas through the pipeline process, but the output metrics measure the results of innovation (Muller et.al., 2005). According to Tidd, (Tidd, et.al., 2003), measures of specific outputs of various kinds – for example, patents and scientific papers as indicators of knowledge produced, or number of new products, are indicators of product innovation success. Operational or process measures, such as customer satisfaction surveys measure and track improvements in quality and flexibility. Measures of strategic success, where the overall business performance is improved in some way and where at least some of the benefit can be attributed directly or indirectly to innovation, for example, growth in revenue or market share, improved profitability, higher value added. When measuring innovation performance, we could also consider a number of more specific measures of the innovation process or particular elements of it, for example – number of new products introduced over past three years and percentage of sales and profits derived from these new products due to them; number of new ideas generated at start of product innovation system; failure rates – in the development process, in the marketplace; customer satisfaction measures – was it what the customer wanted; time to market (average, compared with industry norms), and cost of product versus sector trends; quality versus sector trends; testability; man-hours per new product, etc. (Tidd., et.al., 2003).

In general, the innovation metrics are tools to evaluate and analyze capacity and potential of innovation. There are four types of innovation metrics (Trias & Kotler, 2011):

- Economics - sales from new product launch, profit from the launch of new product, total ROI in innovation;
- Intensity - number of innovations in services, business models; number of ideas generated per year; number of innovation projects in the pipeline / ongoing projects; investment in R&D;
- Effectiveness - success rate in new product, average investment per project, average impact of investment per successful project;
- Culture - percentage of employees that produce ideas; rate of ideas per employee per year; percentage of time spent on innovation; number of departments that innovate on an ongoing basis.

The innovation culture indicator is a clear input indicator; economics is output indicator, but intensity and effectiveness belong to the innovation process metrics.

Usually, when some methods are introduced and applied for company's innovation performance assessment, only some of the above mentioned indicators are assessed. However, the IMP³rove methodology provides a holistic approach to a company's innovation management, and includes all elements of the innovation metrics.

IMP³rove methodology in academic environment

IMP³rove is an acronym of Improving Innovation Management Performance with sustainable Impact. IMP³rove innovation management assessment and benchmarking methodology was developed within European Commission 6th Framework project from 2006 – 2008, and approbated during 2008 – 2011. Since 2012 IMP³rove is not funded by EC any more, and it has adapted its business model to the new conditions. IMP³rove provides an open platform for small and medium size enterprises (SMEs) and other target groups to assess their innovation management performance and compare it with the performance of other relevant sector companies in Europe (IMP³rove, 2015).

The IMP³rove methodology initially was the main target group for the IMP³rove project (European Communities, 2008). The methodology and related on-line tool was created for SMEs to assess their innovation management performance, analyze the assessment results and go on with improvements to achieve better results. The IMP³rove team emphasizes that IMP³rove is an excellent tool to raise the competitiveness of companies. To survive in todays' highly volatile innovation landscape, SMEs need to create a continuous flow of new ideas and require managerial capabilities to turn these ideas into profitable growth. There is empirical evidence of the interrelation of a systematic and holistic approach towards innovation management and profitable growth. To turn innovation expenditures into profitable growth, SMEs need to address all dimensions of Innovation Management at strategic, operational and cultural level including the innovation enabling factors (European Union, 2012).

Besides SMEs, other key beneficiaries of IMP³rove are consultants, intermediaries, financial advisors and policy makers. In year 2008 the IMP³rove methodology was recognized as the best innovation tool in Europe, and was awarded by Europe Innova prize. The project continued, and the methodology was developed, simultaneously thinking about independence of EU funding and its sustainability. Already in 2010, IMP³rove launched a new concept of IMP³rove Academy, pointing out academic organizations as partners and also beneficiaries of IMP³rove community. IMP³rove Academy positions itself as world–wide academic institution, developing and offering innovation management research results, implementing innovation management in higher education (Fig.1).

Figure 1. IMP³rove Academy mission and vision Source: IMP³rove, 2015

The key partners and beneficiaries of IMP³rove are SMEs, consultants, intermediaries, financial advisors and policy makers and academia (Fig.2).

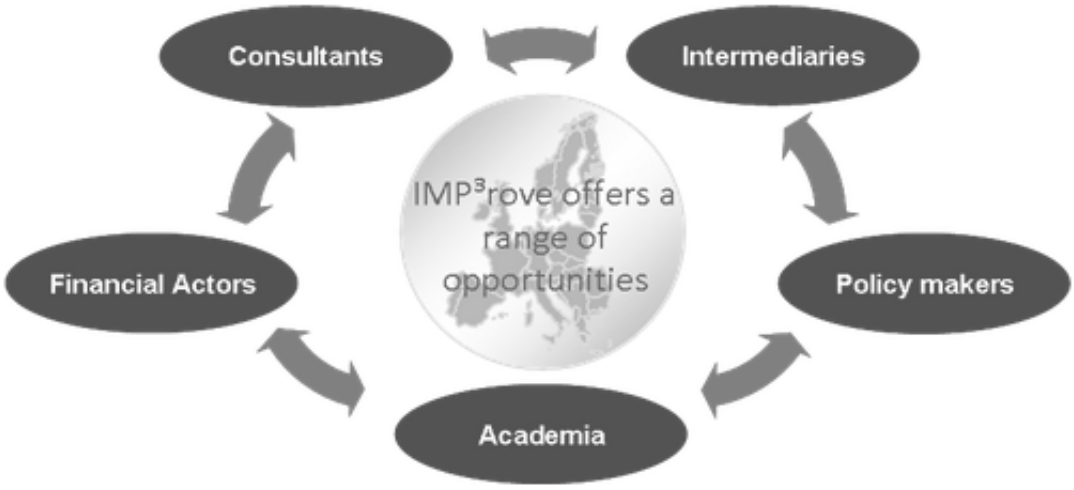

Figure 2. Partners and beneficiaries of IMP³rove Network. Source: IMP³rove, 2015

In many cases, the beneficiaries of the IMP³rove may belong to more than one of the partner groups mentioned above. For example, students of professional business programs usually represent two of the target groups – both SMEs and academia. This was the main argument to find a solution for using IMP³rove platform as a learning tool for business students. IMP³rove Innovation Management approach addresses all the aspects of Innovation management relevant to SMEs.

These include innovation strategy, innovation organization and culture,

innovation life cycle processes with idea management; and the development of new products, services, processes, organizational structures and business models; as well as the launch and continuous improvement. IMP³rove approach also addresses enabling factors for innovation management such as project management, human resource management, and knowledge management. In this way, IMP³rove builds on a holistic approach to Innovation management. (European Communities, 2008) The IMP³rove innovation management concept includes all innovation management dimensions in SME, representing input, process and output indicators (Fig. 3). The IMP³rove innovation management concept is useful to learn all aspects of innovation management and to link them together with knowledge gained in other than innovation management courses in university curricula, as well as with the practical experience gained working in SMEs.

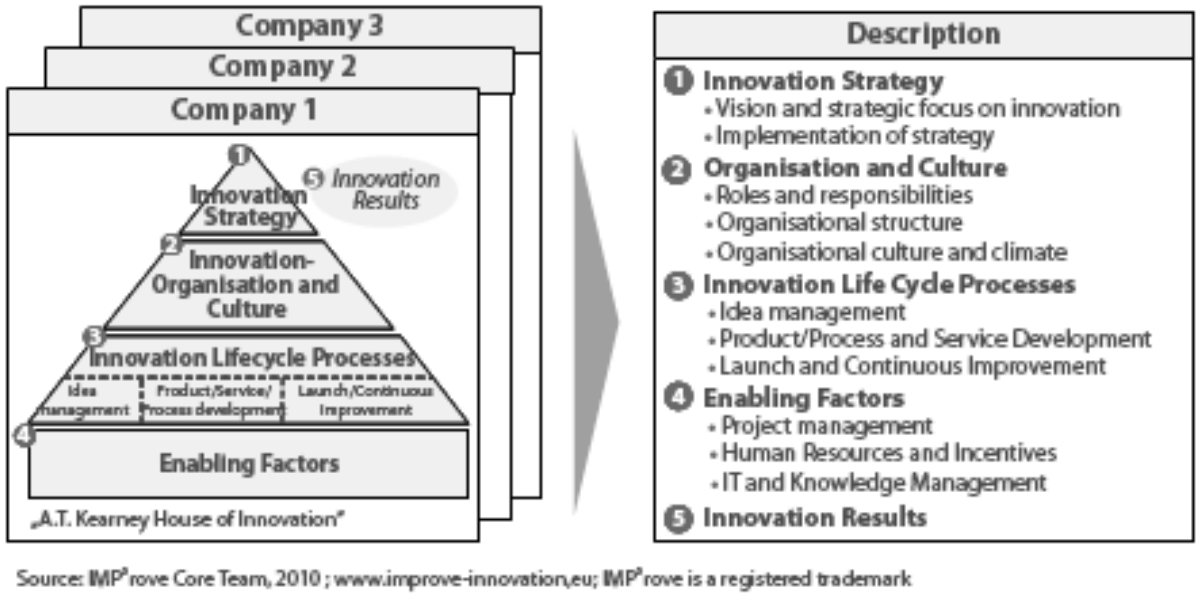

Figure 3. IMP³rove innovation management concept. Source: IMP³rove, 2015

IMP³rove team offers a wide variety of services to the Academic Community, including (IMP³rove, 2015):

- Integration of the IMP³rove Approach into the curriculum for future Innovation Management professionals on bachelor, master or executive level,
- Cooperation in developing special programs on Innovation Management within the regular curriculum or as Summer School program "IMP³rove for Students",
- Integration of selected components of the IMP³rove Training curriculum into the existing program,
- Development of new programs on Innovation Management for small and medium sized enterprises,
- Integration of proven courses on Innovation Management into the

program of the IMP³rove – European Innovation Management Academy,

- Networking opportunities within the international IMP³rove network.

Besides cooperation opportunities, IMP³rove has clearly defined the research, learning, quality benefits of the academic community:

- Effective combination of practical experience and academic research,
- Access to an innovative platform to further develop the research activities in the area of Innovation Management for competitiveness of enterprises,
- Building on a proven methodology based on the European pre-standard in Innovation Management Assessment,
- Opportunity to contribute to the economic development of the local enterprises.

IMP³rove team shares the experience of good practices in cooperation between academia and SMEs (European Communities, 2008). For example, former experience of University of Applied Sciences in Austria shows that IMP³rove approach can be an integral part of the curriculum. This includes the IMP³rove assessment, benchmarking, interpretation and the benchmarking report with the support of a trained improve expert, and development and implementation of the measures that will close the gaps identified. The experiences gained in this practical application of IMP³rove can later become part of students' thesis.

This approach was tried and tested in RISEBA University, study years 2013/2014 and 2014/2015, on small groups of students, studying entrepreneurship in master's level business program.

Case study in the RISEBA University – IMP³rove methodology integration in learning innovation management

According to the OECD study (OECD, 2011) the skills for innovation and research can be divided into basic skills, academic skills, technical skills, generic skills, soft skills and leadership skills. The pedagogic experience shows, that methodologically the most difficult to learn are the generic skills, like problem solving, creative thinking, ability to learn and ability to manage complexity, soft skills, like team work, motivation building, communication, violation and initiative, receptiveness for innovation, ability to manage emotions and behavior during interaction, as well as multicultural openness, and leadership skills like team building and steering, coaching and mentoring, lobbying and negotiating, coordinating. To acquire those skills, teachers integrate acquiring those particular innovation skills as learning outcomes, as well as use specific teaching methodologies.

In the case of Latvia teaching innovation management usually is organized in professional study programs. Professional business study programs are

oriented to link university and entrepreneurship. Usually it is organized by internship in companies, different case studies, company visits and visiting lecturers form the business world. However, the trial to integrate a readymade in-depth assessment and benchmarking method in the teaching methodology, to acquire and strengthen knowledge of innovation management in Latvia is a new experience.

RISEBA University is a private higher education institution, mainly focused to studies of business, economics and arts. Being international school, RISEBA is offering studies in three languages: Latvian, English and Russian. The academic staff is highly professional, both academically and professionally. All the master's programs of Business studies include a course related to innovation management (RISEBA, 2015). In order to ensure a link between theoretical studies and practice, an experiment was organized with two relatively small business student groups (altogether 28 students) in the period of 2013/2014 study year and 2014/15 study year. The author of this paper, being a teacher of Innovation Management course, did observation of the learning process, communicated with IMP³rove administration (legal issues, feedback for the quality of the assessment form), and assisted the IMP³rove assessment in the class. During this period 15 Latvian SMEs innovation management assessments were done. The companies are registered in IMP³rove database, thus giving contribution to the European benchmarking database. After accomplishing the study course, twelve students were interviewed to summarize their feedback on IMP³rove assessment integration in the learning process. Qualitative data analysis of the interviews is provided in this study.

During the course, the students were introduced to the theory of innovation management, by using the IMP³rove concept. At the beginning of the course, students were informed that they will have to make the IMP³rove assessment of their company innovation management, analyze it and on the basis of the analysis they will have to develop the operation plan for company's innovation management improvements. There were organized practical classes, where students filled the IMP³rove assessment forms with the assistance of the teacher, who is a registered IMP³rove guide.

To fulfil the IMP³rove assessment, students need to have access to detailed and also sensitive and confidential company information. As not all the students work in managerial positions, those students who could not access information and accordingly do IMP³rove assessment, were joining the teams of other students, taking managerial positions at their work. This way there were organized student teams (2-3 students) for analyzing one company. The team work turned out to be very successful, as it contributed to the learning process – discussion, communication, sharing experiences, reflecting, making decisions, as well as thinking from unusual perspectives and relating theory to the practice. During the assessment process, the students already made the first conclusions – about level of innovation organization and culture, as not all the data necessary

for assessment are recorded in the company; about lack of innovation strategy, as the company's managers in most cases have not studied innovation management and have not set an innovation strategy; about lack of specific knowledge on new product development, intellectual property, which they acquire during the learning process in the class. Also the exam in this course is organized in untraditional way – the student teams orally present the assessment results and the company innovation management development plan.

Seven from the interviewed students were assessing the companies they are working in a managerial position, five students – participated in the assessment team. All the students confirmed that this is the first time they experience this type of learning and exam. All the students noted that they liked this form of learning, one of them especially pointed out that it is because this learning form has linked theory to practice. All the students who assessed their own companies confirmed that this assessment gave an opportunity to learn more about the company they work; all students agreed that this form of learning strengthened their knowledge about innovation management. However, students also listed the difficulties they faced during the learning process. Most of the students pointed out that the difficulties have been related to language. The study language for those students is Latvian, but the on-line assessment form is not available in Latvian. Therefore 7 of 12 students pointed out that their insufficient English language has been the main obstacle for doing assessment, and four of them – that related terminology in English has caused problems. Six students realized that their knowledge on the companies' innovation performance was insufficient, because this type of knowledge is not cultivated (collected and stored) in the company. This shows that the companies in general, show low innovation culture indications, and it corresponds to the data students gained in their companies' on-line assessments. Another weak point of most of the assessed companies is the low indicators regarding innovation strategy. This can be explained with the fact of the companies' managers' insufficient knowledge of innovation management, and lack of innovation related strategic approaches. Also low performance of innovation results was a common feature to almost all of the assessed companies. This fact corresponds to the country indicators in innovation results in general (European Union Scoreboard, 2014).

The students were asked to present proposals for improvements of the IMP³rove - based learning. Only two of them were suggesting translating the assessment form in Latvian; two students were suggesting devoting more time to explanation of the specific terminology in the class. One student pointed out that this assessment has been a good incentive to learn more in detail about the company and to follow its innovation performance. In general, this assessment methodology requires a repeatedly assessment after some time (e.g. a year), to compare the results and to evaluate the achievements. Eight students answered that they would like to do it repeatedly, and that means they are very much engaged in their company development and they appreciate the method. As the

online assessment result provides students with detailed data of their companies' performance, the students were asked if they would like to use the assessment results in their Master Thesis. Five of the twelve students gave affirmative answers. As only seven of the interviewed students were assessing their own companies, then five of them are a remarkable result.

To conclude the summary on the case study results, the two year experience has been successful, and after slight improvements in the course syllabus, it is planned to continue the started approach in RISEBA University master's professional business programs.

Conclusions

1. The success of the IMP³rove-based learning of innovation management lies in the experiential learning. Learning goes through full learning cycle – applying the theoretical innovation management concepts in practice (experiment), then reflecting and analyzing data, conceptualizing the results, and making conclusions and new concepts for further experimentation.
2. The learning method utilizing the metrics of innovation performance supports professional learning outcomes – it helps to learn more about the company, brings unusual insights of company's performance, providing a holistic analysis of the company success, as well as paves a path to the improvement of company competitiveness in Europe.
3. The benefits for business students of IMP³rove-based learning, are following:
    - Linking business to studies and effective combination of practical experience and academic research;
    - Learning more about the company they are managing or being employed;
    - Development of soft skills, like team work, communication, initiative, receptiveness for innovation;
    - Deepening and strengthening their knowledge on innovation management;
    - Applying a new, advanced IT-based learning method.

Recommendations and thesis for discussion

The conclusions in general are positive and are targeted to further improvements and implementation of IMP³rove-based learning of innovation management. From the case study analyzed, it is obvious that IMP³rove-based learning really links industry and academy, as well as theory and practice in a very highly appreciated form for students.

It may be recommended to adapt the IMP³rove-based learning methodology in other business universities, but there are some restricting

factors, such as the language of the on-line assessment form, and the ability of teachers to assist this assessment, as well as the assessment costs.

In order to avoid the language problem, a further discussion and negotiation with governmental representatives about translation of the IMP³rove assessment tool into Latvian language is required.

In order to apply the IMP³rove-based learning of innovation management in larger scale, it would require innovation management teacher training in IMP³rove methodology. Currently there are 6 persons in Latvia, gained IMP³rove training, and only the author of this paper applies it in practice, particularly for academic purposes.

Both recommendations – translation of the assessment form and teacher training can be solved with EU funds supported project, where the author of the paper might take a coordination role.

The third restriction for implementation regarding the assessment costs has to be solved by the universities. According to RISEBA experience, it is possible to sign a licensing agreement with IMP³rove administration on implementation of the method only for academic purposes.

According to the long-term experience of cooperation with the IMP³rove team, and the presented case study on the IMP³rove-based learning of innovation management in RISEBA University, the author considers that the IMP³rove tool has an enormous capacity both for improving the SMEs competitiveness, and learning innovation management in whole Europe.

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