The smE-MPOWER Business Innovation Roadmap methodology:

A methodological approach for establishing in a participative way a roadmap for business innovation in SMEs

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Executive summary

This paper introduces the "Business innovation roadmap", a methodological approach to support strategic business innovation in SMEs on two levels. In the context of a business innovation project the methodology can be applied to highlight project specific capacity gaps in the firm's business innovation system, and to establish a roadmap for dedicated expert support. This application may be relevant to the new EEN service "Key Account Management". In the context of a general assessment of a firm's business innovation capacity the methodology can be applied to establish a strategic roadmap to business innovation on the corporate level and thus to focus and strategically align future business innovation projects. This application may be relevant to the new EEN service "Enhancing SME innovation management capacity". The business innovation roadmap methodology has been developed and is frequently used by professional coaching experts and academics of the smE-MPOWER group and is supported by a dedicated coaching tool, which is made available free of cost under a CC-BY-SA licence[1]. The article describes the methodological approach along three analytical steps, shortly introduces its support tool, and demonstrates compliance of the approach to the CEN/TS 16555-1 standard for Innovation management systems.

1. Methodological approach for establishing a business innovation roadmap together with the SME

The proposed methodological approach entails the following analytical steps:

1. Context analysis and target setting
2. Business innovation analysis
3. Roadmap definition and initiation of strategic project setup

Context analysis and target setting

The first condition for successful business innovation support is to understand the context within which the support is placed. Two critical questions need to be clarified at this stage. The first one is the scope of analysis. Is it a particular business innovation idea / project, or is it the overall innovation system of a company / company unit? The CEN/TS 16555-1 standard for Innovation management distinguishes here between "specific innovation projects" and "general innovation management".[2] Likewise, the OECD, in the Oslo Manual, speaks of the so-called "object" and "subject" approaches.[3]

The second question is the current state of the company within its life cycle, clarifying the stage the company is targeting next. Business innovation challenges have typical patterns in different life cycle transitions. To help addressing this question, the following life cycle model is recommended:

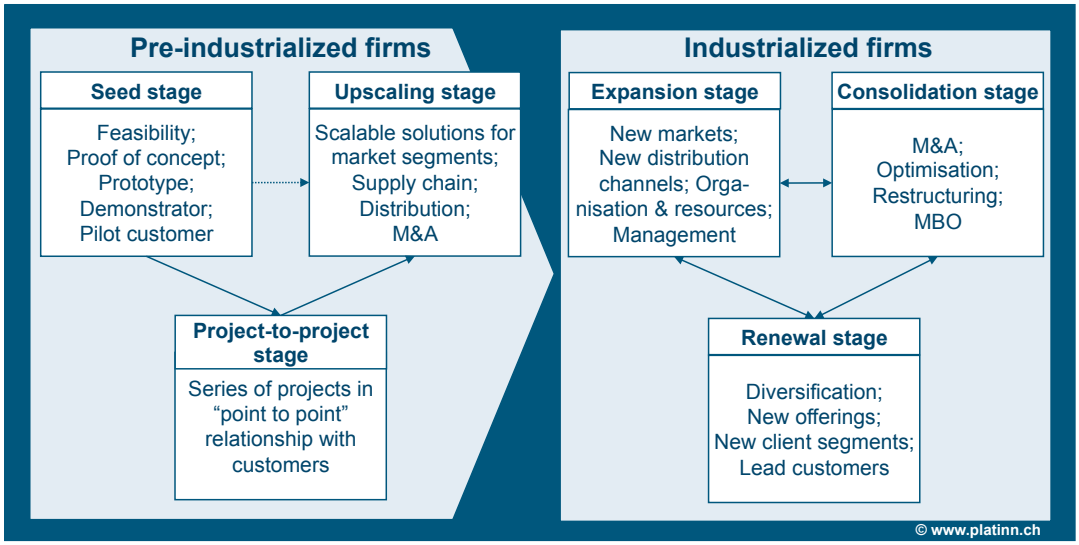

Figure 1: Life cycle model[4]

In this life cycle model a distinction is made between the "pre-industrialized companies", such as start-ups, post-start-ups, handicraft companies with a potential for innovation and growth, and the "industrialized companies" which operate at (relatively) high volume levels of production and sales including mass production and mass-customization. The model distinguishes the following six typical stages:

1. Seed stage: In the early seed stage, new ideas are generated, assessed and experienced. Typical examples include spin-offs from research laboratories and Universities. In their pioneer role, they try to test the market for new product concepts, new applications or new business approaches. A frequent strategy for these firms is to crosslink emerging technologies with emerging market needs. The main challenges of

seed firms are to attract first customers with convincing results. Firms at this stage need to invest heavily on development (e.g. proving feasibility, developing prototypes and demonstrators, or carrying-out pilot trials such as clinical tests).

2. Project-to-project stage: Success in the first stage can lead to business growth and the company moves on to a project-based activity. Although a direct transition to industrialisation is possible, it is also risky and exceptional. This is why most firms follow a 'natural learning' curve by multiplying the number of customized project applications. In this stage, cash flow is insufficient. The firm's performance remains fragile due to limited resources needed both for customer acquisitions and project execution. Nevertheless, their increasing experience with a growing number of customers allows them to sense potential market niches and segments for scalable solutions.
3. Upscaling stage: The next stage towards industrialization is the upscaling stage where market segmentation and product-service architecture are strategic tasks requiring a serious upgrade of the management capability. The firms at this stage will launch product and service developments based on the commitment of strong lead customer(s). Parallel to product/service development, other systems and processes within the firm need to be considerably upgraded such as the production and distribution systems. Typical challenges concern make-or-buy decisions, organisational design and resource development, definition of (new) business models, choice of supply and distribution partners, and financial planning.
4. Expansion stage: The successful upscaling effort is very likely to generate good business perspectives in new markets. The expansion to new markets is a promising option, but one involving a series of challenges. The company need to go beyond the recently acquired upscaling capability (economies of scale) and develop the capability to address different market/customer segments with the same product (economies of scope). Entering new markets, developing new distribution channels and scaling up and upgrading the production process are characteristic requirements for the expansion phase. Expansion requires also radical organisational development and adapted managerial structures such as the capability to delegate decisional power to professional managers within the enterprise.
5. Renewal stage: The expansion stage reaches its limits and related businesses can start shrinking. Well-thought and well-executed new offerings are needed to replace the old ones and renew the business. However, diversification and replacement of established offerings may be troublesome in long-established organisations and power structures (with their vested interests). Disruptive renewals may be favoured by allying with 'third parties' (open innovation paradigm) or by providing space to radical ideas in dedicated "innovation units". Renewals with more incremental character are generally implemented in-house while the involvement of radical renewals calls for the involvement of lead-customers and technology partners.
6. Consolidation stage: Businesses in the mature stage of the life cycle may face decreasing sales, profits, and cash flow. Firms can disappear or be acquired due to market concentration processes. At the heart of a cost-leadership strategy are measures aiming to increase the market share through large economies of scale; cost cutting programmes through drastic increase of productivity; and finally options for dislocating activities to suppliers or low labour cost countries. Only a few companies will have the strength for taking a winning position in the consolidation process. If initiated sufficiently early, smaller market players may move to the renewal stage and cross-finance diversification measures with current cash flow. If none of those two strategies succeeds, decline is inescapable.

Coaching focus: The support agent identifies the scope of analysis (object or subject), the current life cycle stage and the next stage targeted by the company. Most entrepreneurs do not have experience in this kind of transitions, are not aware of the related challenges, and are not adequately prepared for handling them. This sets the context for the next steps of analysis and action planning.

Business innovation analysis

Along these transitions the business innovation system needs to be adapted. As an example, a company, which has a direct sales model in the project-to-project stage, will have to move to an agent or distributor based model in the up-scaling stage and further progress to an OEM- or franchising-based model in the expansion stage. Transitions in the business life cycle tend to affect many other aspects of the business innovation system. Therefore, each transition should be evaluated with regards to its impact on those diverse factors. A holistic and systemic analytical frame is provided with the "business innovation model". This model distinguishes between the business innovation value drivers and the critical resources related to them. The four vectors mentioned in literature and confirmed in practice are offering, process, distribution, and customer[5]:

Offering	Products & services	Develop innovative new products or services.
	Platform	Use common components or building blocks to create derivative offerings.
	Solutions	Create integrated and customized offerings that solve end-to-end customer problems.
Process	Redesign	Redesign core operating processes to improve efficiency and effectiveness.
	Organisation & resources	Change form, function or activity scope of the firm.
	Supply chain	Think differently about sourcing and fulfilment.
Distribution	New distribution channels	Create new distribution channels or innovative points of presence, including the places where offerings can be bought or used by customers.
	Networking	Create network-centric intelligent and integrated offerings.
	Extension of a brand	Leverage a brand into new domains.
Customer	New customers (segment)	Discover unmet customer needs or identify underserved customer segments.
	Experience (new interface)	Redesign customer interactions across all touch points and all moments of contact.
	Value capture	Redefine how company gets paid or create innovative new revenue streams.

Table 1: The four vectors of business innovation

A creative change of one or more of these vectors will lead to "business innovation", defined as new value for the customer and the firm. A precondition for initiating and changing successfully these vectors is the availability of resources. Three main categories of resources should be taken into consideration[6]: sources of innovation ideas[7], internal resources (including aspects such as organization, intellectual property etc.), and partnerships and cooperations[8] (e.g. with pilot customers, clients, suppliers, and research organizations). The business innovation system can be visualized as a holistic tree model[9] in

which the four key vectors are represented as the branches and the three resource categories as the roots:

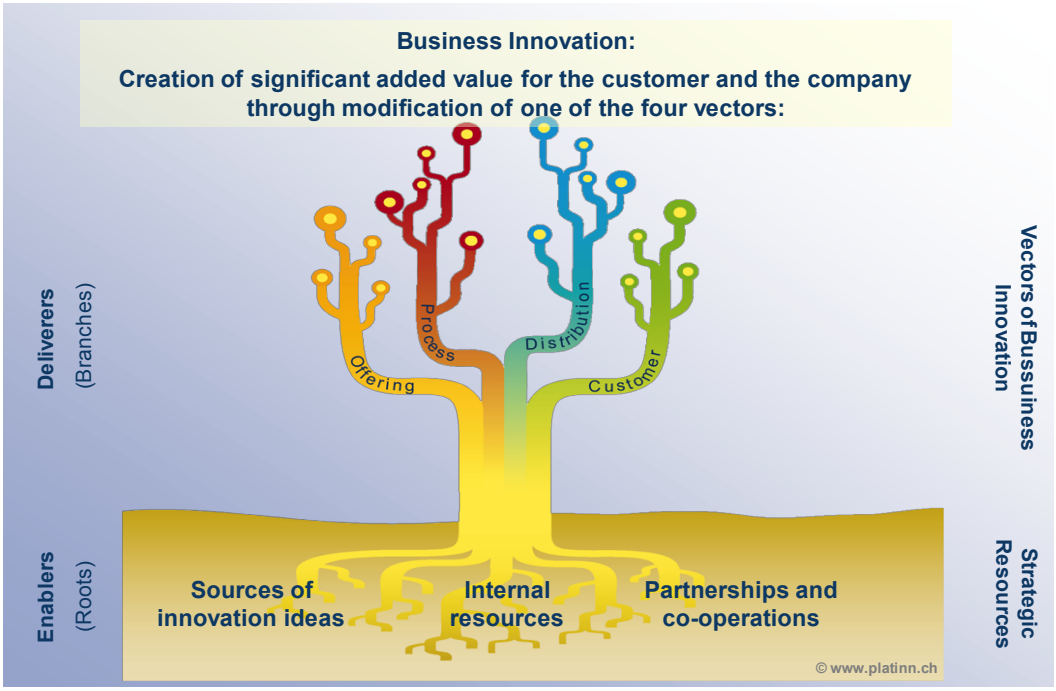

Figure 2: Business innovation model

As resources are limited in SMEs, strategic focus is essential. To achieve this, each of the seven critical dimensions of the business innovation model can be assessed with regard to two dimensions: First, its strategic importance for the future development of the company, and second, the level of satisfaction with the presently achieved status. This assessment results in a four quadrants matrix revealing areas of critical gaps in strategically important aspects. An action plan should focus on these strategic weaknesses.

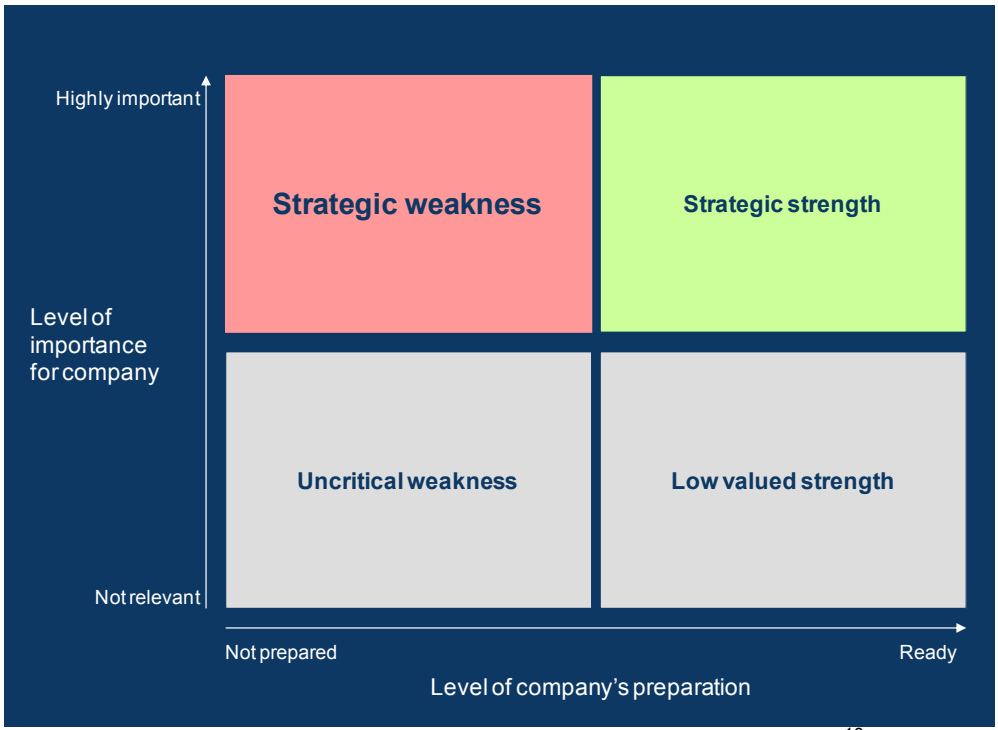

Figure 3: Business innovation assessment methodology[10]

Coaching focus: The support agent guides the company's management team through a process of self-assessment with regard to each of the seven critical dimensions. Taking all these into account is essential in helping the company to gain a comprehensive view on its development challenges. Many entrepreneurs tend to have an unbalanced and biased perception on the company's business innovation system, often neglecting the market side while overemphasizing product and technology. The holistic analysis provides the foundations for an action plan.

Roadmap definition and initiation of strategic project setup

The analytical results of step 2 need now to be transformed into a coherent action plan. There is no methodology or golden rule how to generate an action plan out of the assessment results. However, in most cases the needs for action become quite evident throughout the discussion between the support actor and the company management team. It is recommended to re-group these into a portfolio of key measures, which may be implemented as projects. In order to generate a business innovation roadmap the sequence of these measures is defined, and determined whether they can be implemented by the company itself or whether external support is demanded; in which case dedicated specialists (e.g. scientific partners, IP lawyers, coaches etc.) may be identified.

Coaching focus: The support agent helps the company identify the critical measures for strategic development. Actions should focus on areas identified as "strategic weakness" in the foregoing analysis. Finally these actions should be reflected on a time axis to provide a dynamic view on the company's business innovation intentions. The resulting "roadmap" may now provide the frame for the company's innovation actions and all related support activities.

2. The Business innovation roadmap tool

For guiding the company through the methodological steps of the reasoning process presented above, the support actor can use the smE-MPOWER "Business innovation roadmap tool". The tool permits to capture the results of the discussion at each stage of the analysis. For best results, it is recommended that the company team should represent all critical functions of the firm including top management, sales and production. The discussion usually takes up to two hours, depending on team dynamics. At the end a visualised roadmap is generated as shown in the following, which can be printed together with a pre-formatted 14-pages analysis report:

Innovation Roadmap					
#	Acronym	Description	Sequence of implemen-tation 1 - first 2 - second 3 - third	Support needed 1 - no 2 - maybe 3 - yes	Comment
1	**Specify add-on service**	Define a strategy and the functionalities of the service which is to be added to the product level	1	3	Conduct a competitor analysis as an input first!
2	**VAR**	Evaluate transition from distribution network to Value Added Retailer model	2	3	Exploit positive experiences with VAR pilots
3	**Strategy**	Formalise the long-term corporate strategy	1	2	Base on working paper by XY.
4	**R&D project**	Launch a collaborative project for developing next generation optical module of product x	3	1	Time horizon: 2-3 years
5	**Service ideas**	Organise creativity meeting for gathering internal innovation ideas for new service layer	1	1	Define methodology with creativity expert (brainstorming, brainwriting, world-café..)

Figure 4: Business innovation roadmap tool with resulting list of key measures (example)

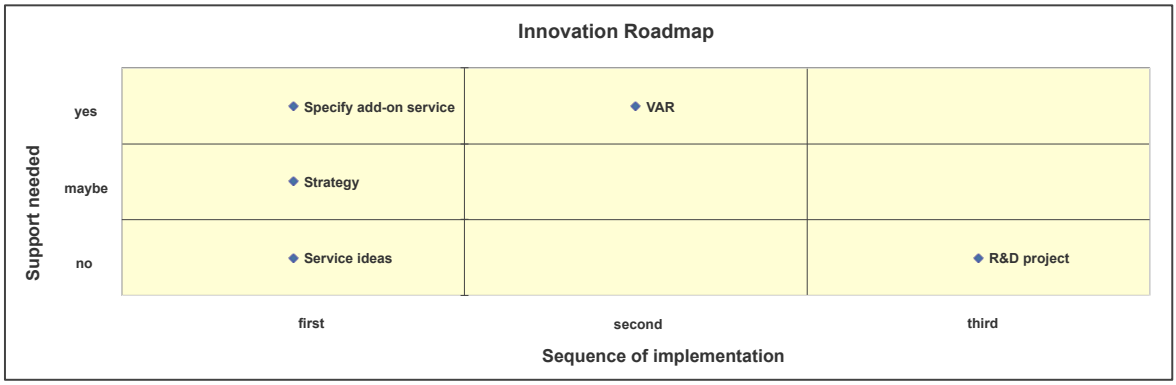

Figure 5: Business innovation roadmap tool with resulting roadmap view (example)

This coaching tool is one of a full set of tools, based on MS Excel and openly modifiable, which the smE-MPOWER group has developed out of many years of practical experience with coaching SMEs through the key challenges along their route to business innovation. All smE-MPOWER tools are designed in a simple, transparent and modifiable way. They are meant for being handed over to SME leadership, improving managers' skills, and leaving a legacy, such that the SME would be better able to overcome its future barriers to growth without lasting dependency on external aid.

3. Compliance to the CEN/TS 16555-1 standard for innovation management

In an SME, the two innovation approaches need to be addressed separately: the “object approach” focusing on a specific business innovation venture, e.g. the development of a new product; and the “subject approach”, in which the analytical context is the organisation, the firm or a sub-entity of the company. The standard model of the CEN innovation management system acknowledges this distinction and provides valuable pointers to a variety of aspects relevant in both. It is important, however, to understand the difference between object and subject approaches in the practice of business innovation in SMEs. Otherwise, there is a danger that the CEN model may be interpreted in a static way and not do justice to the dynamic nature of innovation in SMEs.

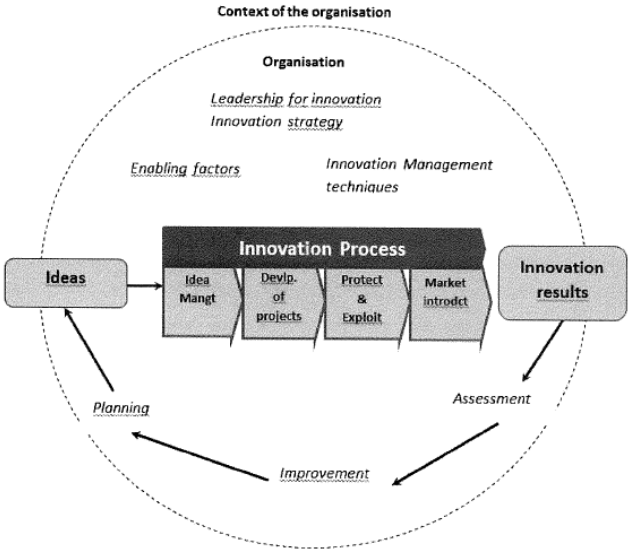

Figure 6: CEN/TS 16555-1 Innovation management system

Innovation projects, such as targeted e.g. by the SME Instrument of Horizon 2020, are typically related to an “object” approach. This object view reflects the way most SMEs are innovating. Experienced SMEs – in contrast to many start-ups – identify business innovation opportunities through their strong customer relationships. They develop solutions closely with pilot or lead customers, and they adapt their organisational set-up (the “subject”) in accordance to the dynamic requirements of the object progress. This influence of objects on subjects explains the innovation strength and the high adaptability of SMEs. There is a second impact of the object dominated innovation process in SMEs: by adapting organisation and resources, SMEs learn fast and develop their strategic resources for the future. Thus, the object based learning mechanism is a key vector for the SME’s long-term capacity building and for enhancing new input factors for future innovation objects.

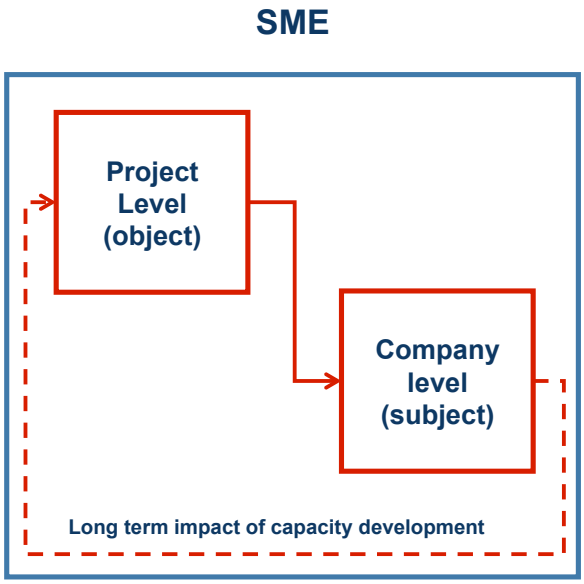

Figure 7: The “object approach” of the innovation process in SMEs

As the challenges of an innovation object change over its life cycle stages, the assessment needs to take into consideration this dynamic context. The CEN “Innovation Process” represents on a high abstraction level this dynamics. The four phases of that process are interlinked with the object approach in the following way:

1. In an object approach, the phase “Idea Management” is assumed to be finished and the object is already “on the way”! This is particularly the case of a project being supported by the SME Instrument of Horizon 2020. However, the strategic fit of the object with the SME’s strategic frame (long term corporate / resource strategy; mid term business strategy; business model) merits to be checked. If this strategic frame is not well thought through or if there is a mismatch between object and strategy, the commercial outcome of the venture will very likely not be successful. At this stage, the interdependency with the “Organisation” (subject level), including the related CEN issues, should be taken into consideration.
2. During the implementation of the idea via the “Development of Projects” (the second phase of the CEN process), a series of critical decisions need to be taken. A first critical issue is the identification of critical project partners and their strategic positioning on the value chain of future business models. Unbalanced competences or conflicts of interest are factors, which risk killing the consortium and make it impossible to generate a commercial solution. A second question must be related to the critical project resources, either in time or budgets. Finally, intellectual property (IP) issues need to be formalized in agreements. In general, IP strategies and policies must be explicitly defined with regard to project specific needs and with regards to long-term impacts on “Enabling Factors”. Who owns what and who has which rights to use the IP are the two key areas to be clarified. Also, the discussion of exploitation strategies of the SME and its consortium partners may lead to a blockade among partners. Typical situations arise when a partner requires general exclusivity. Thus, in an object approach, the third phase of the CEN process, which is “Protect and Exploit”, cannot be treated as a sequential step after the project ends. It must be integrated into the second phase.
3. The CEN phase “Market Introduction” itself is generally a long process with several intermediate steps. As mentioned above, already in the “Development of Projects”

phase, pilot end users or lead customers should be actively involved. A first reference of an innovative solution – pilot or demonstration – substantially increases the chances for finding additional clients. Moving from a first application to multi-applications, and then to industrialisation and expansion impacts at each transition the "Organisation" (subject level). New enabling factors, such as business models, dedicated competences, processes, partners, financing etc. will be required. Thus, the question whether the re-entry of project results in the organisation will be soft, hard or even radical, will determine the level of efforts being required for successful market introduction. The "Absorptive Capacity" methodology may help to identify critical bottlenecks and risks, and to develop contingency measures. For defining the criteria, the "Pareto Law" (20/80) will be important. Also, additional criteria from CEN "Organisation" can be integrated.

All over, the object approach is a highly dynamic process, which can be linked to the CEN "Innovation Process". However, the "readiness" of the "Organisation" for enhancing the innovation object and for preparing the terrain for exploitation of project results should not be assessed only once in a time. Measures for organisational readiness will be needed all over the life cycle of the project (the "object"), and assessments of relevant success factors should be made at the transitions of related stages and milestones. If applied in this dynamic way, a consistency between the requirements of SMEs and the rather static CEN model can be achieved. Related challenges are at the heart of the new EEN service *"to support beneficiaries of the SME Instrument of Horizon 2020"*. The regional Key Account Manager (KAM) is expected to analyse the challenges and needs of an SME and to identify suitable coaches. The smE-MPOWER Business innovation roadmap methodology may help the KAM to do so.

Compared to the "object" approach, where the starting point is an innovation venture, the "subject" approach focuses primarily on critical resources for the innovation performance of an SME. The expectation is that an improvement of the corporate innovation management system and processes will lead to improvements of the SME's innovation performance. This "subject" approach is related to a second EEN service, named *"SMEs with significant innovation activities and a high potential for internationalisation"*. The European Commission requires applying the CEN TS16555-1 definition of an innovation management system. This definition assures a comprehensive assessment of a SMEs innovation process and may lead to the involvement of consultants for better management of innovation by addressing the recognised gaps. In practice, it is rare that SMEs have a dedicated innovation process.[11] This is in contrast to larger companies. Therefore, focusing and working on an "innovation process" as a permanent aspect of the SME organisation may risk to compromise the relevance to the business, reduce the motivation of its management team and, by the end, to hardly impact innovation performance and growth in the company. However, turning the analytical scope on challenges related to the development and exploitation of opportunities for high innovation and growth within an SME, will substantially increase the strategic interest and commitment of its management. In other words, the "subject" approach should be linked to the SMEs innovation context and should take care of its innovation "objects". Time consuming assessments and heavy reports are not likely to foster innovation dynamics in SMEs. In contrast, smaller sequences of supporting identification of innovation opportunities, definition of actions, designing and implementation of projects, preparing commercialisation strategies etc. have much more chances of boosting the SME's innovation performance. First success will increase the willingness for next and – probably – more challenging steps. This

is the way a SME can move fast on its learning path. The Business innovation roadmap approach works with this philosophy in mind.

The CEN innovation definition embraces a comprehensive understanding of the innovation system. In accordance with this, the smE-MPOWER approach is intended for being used in dynamic interaction with SMEs. As elaborated above, it encompasses and interprets the CEN "Innovation Process" in a dynamic way. The Business innovation roadmap methodology and the overall smE-MPOWER approach also reflect other important aspects of the CEN standard, for example:

- The "Context of the company" is explicitly taken into account in the life cycle model as a foundation for all subsequent analysis.
- "Leadership for innovation and innovation strategy" are at the heart of the roadmap methodology, which includes resource based strategies (focusing on "Enabling Factors"), business innovation strategies, and business models;
- "Innovation Management Techniques" are supported by the holistic model of business innovation and by a portfolio of related support tools[12], which came out of many years of experiences with SMEs and their bottlenecks in the innovation process.
- "Enabling factors" are the critical resources for successful innovation. Three categories of sources are analysed in detail:
    - Sources of innovation ideas
    - Internal resources such as strategy, organisation, competences etc.
    - Partnerships and collaborations.
- Due to the dynamics of the approach, "Assessment", "Improvement" and "Planning" activities are embedded in all relevant steps of the process.

In conclusion, this paper argues an SME specific approach to innovation and innovation management. A lot of the existing methodologies to study or support innovation in SMEs is based on analytical approaches developed in the context of large corporations or at best in the context of extremely research intensive SMEs (such as university spin-offs). The proposed methodology offers a new analytical angle to enable the full alignment of the practice of innovation support in SMEs with the real needs of the vast majority of small companies. The authors hope to contribute towards to a growing discussion about these issues, rather than exhausting the discussion in the confines of this paper.

About smE-MPOWER

smE-MPOWER (www.sme-mpower.eu) is a European community of practice of "cooperation coaches" based on an „open knowledge" philosophy. It is the result of a like-named European support project (ETIS-CT-2005-023401) and has grown and matured since project end in 2007 on a self-sustained basis. Its principle hub is in Fribourg Switzerland at the innovation platform of Western Switzerland platinn (www.platinn.ch). About 40 coaches from 10 countries participate in smE-MPOWER. Hundreds of business innovation cases in SMEs were coached over the last years based on the smE-MPOWER methodology with very encouraging feedbacks from industry. All smE-MPOWER tools are designed in a simple, transparent and modifiable way. They are meant for being handed over to SME management, improving managers' skills, and leaving a legacy such that the SME would be better able to overcome its future barriers to growth. smE-MPOWER holds regular peer-to-peer learning events based on live-case coaching. Increasingly, these events are held decentrally at various regional partners. smE-MPOWER methodology and tools, incl. the Business Innovation Roadmap approach, have been successfully validated for use in EEN host organisations by the Lithuanian Innovation Centre (LIC), Vilnius, LT, and the South Moravian Innovation Centre (JIC), Brno, CZ, among others. For smE-MPOWER contact andreas.wolf@sme-mpower.eu.

Tool use and download

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http://www.platinn.ch/eng/Reference-documents/Business-Innovation/

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Literature and sources

[1] This means that you are free to "Share" and "Adapt" for any purpose, even commercially under the terms of "Attribution" and "ShareAlike". See https://creativecommons.org/licenses/by-sa/3.0/

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