GUIDE

TO KNOWLEDGE
COLLABORATIONS
THAT CREATE GROWTH
IN ENTERPRISES

KNOWLEDGE BRIDGES FOR GROWTH

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REG LAB is Denmark's leading network and think tank in promoting regional business and innovation. REG LAB is a non-political organisation financed 100% by its more than 100 member organisations, ranging across state, regions, municipalities, business councils, educational institutions, cluster initiatives and enterprises – all with the common goal to strengthen business development in Denmark.

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WHY THIS GUIDE TO KNOWLEDGE COLLABORATION?

In today's world, there is a strong focus on how our knowledge institutions contribute to growth and prosperity in society. This is not limited to research and education, but also through direct collaborations with Danish enterprises in the development of products, technologies, qualifications, skills and business concepts.

And it is obvious why: We know that collaborations between enterprises and knowledge institutions may result in great value. However, we also know that it is still only relatively few small and medium-sized enterprises (SMEs) that get involved in knowledge collaboration, even considering that this number seems to have been increasing during recent years. Furthermore, the full benefits of the knowledge collaborations are often not collected. It may result in many challenges when researchers or teachers and SMEs with very different goals, cultures and time frames have to collaborate and convert theoretical knowledge into commercial value.

Thus, a wide range of REG LAB members have taken initiative to initiate and follow through with the analysis Knowledge Bridges for Growth. Based on in-depth studies of 50 successful knowledge collaborations, the analysis has provided new and important knowledge, from which essential factors lead to value creation in the enterprises through the collaborations. This guide is based on insights and specific experiences from the many cases.

The guide has been designed as an easy-to-read handbook with advice and practical tips on handling the various phases of a knowledge collaboration, to ensure the desired outcome. It is important to note that the guide is based on the need of SMEs to convert knowledge into specific value creation. Other investigations have focused on what motivates knowledge institutions to knowledge collaboration.

The tips and recommendations of the guide have been discussed and tested along the way, during dialogue meetings with knowledge institutions and other actors. It is our hope that the guide will serve as a useful inspirational tool for all actors involved in promoting, supporting and implementing knowledge collaborations – including both enterprises, knowledge institutions and actors that promote business and innovation.

REG LAB, May 2017

WHY KNOWLEDGE COLLABORATION?

In Denmark, there is an increased focus on the use of knowledge collaborations in business environment. More and more enterprises prioritise collaborating with knowledge institutions on development and innovation. Considering that enterprises that collaborate with knowledge institutions perform considerably better than enterprises that do not, this is hardly a surprise.

Previously, knowledge collaboration was primarily a matter for the research based enterprises. Today, a wide range of enterprises collaborate with universities and other knowledge institutions. Amongst other things, there goal is to:

- Take advantage of new knowledge to develop own products and processes.
- Get closer to students, and highly qualified potential employees.
- Acquire input and ideas to business development, based on new research.
- Obtain new qualifications.
- Find solutions to complex challenges.

WHEN IS KNOWLEDGE COLLABORATION RELEVANT?

Knowledge collaboration may contribute to strengthening competitiveness in many areas. The knowledge institutions possess a vast range of top-level expertise that may stimulate innovation and development in Danish enterprises. Knowledge collaboration is especially relevant when:

- The use of research based knowledge is a possible way of creating development in the enterprise, and to stand out from its competitors.
- The enterprise may benefit from being challenged by researchers or students that view the enterprise from a different perspective.
- Customised skills development forms part of the solution to the challenges or ambitions of the enterprise.

WHO ARE THE KNOWLEDGE INSTITUTIONS?

There are many possible collaborators for the enterprise. These may include:

Universities that each play a role in applying academic research and education within both technical sciences, health sciences, natural sciences, social sciences and humanities, into the business environment and challenging the already established ways of running enterprises.

University Colleges that are higher education institutions that offer practice-oriented educations and internships, as well as further training and upskilling, both within social welfare areas such as health care and education, as well as a wide range of other areas, such as communication, design and media.

Business Academies that are higher education institutions with close ties to the enterprises and that, inter alia, collaborate in practice oriented innovation and upskilling. The academies are strong within the technical areas, e.g. construction and design and the business areas, such as finance and service.

Vocational Schools that also have very close ties to the Danish industry – and that are competent in operationalising new knowledge and strengthening enterprises by upskilling and raising awareness. The vocational schools, like the business academies, are focused on the technical and business-related areas.

GTS Institutes (Advanced Technology Group – a network consisting of independent Danish research and technology organisations) that are specialised in repatriation of knowledge, developing technological solutions and knowledge services tailored for SMEs. Furthermore, the GTS Institutes offer customised upskilling and a wide range of testing facilities.

Hospitals that play a significant role in developing, testing and demonstrating technological solutions within the health area.

VARIOUS TYPES OF KNOWLEDGE COLLABORATIONS

There are various ways of implementing and financing knowledge collaborations. This makes is easier to agree on a collaboration and matching the challenges, resources and ambitions of the specific enterprise. Knowledge collaborations cannot be strictly divided into specific categories, but below follows a description of the typical types of collaborations.

TYPE OF COLLABORATION	DESCRIPTION	DURATION	RELEVANT WHEN	FUNDING
Student project	Students develop solutions to a specific problem in an enterprise as part of a semester project, internship or assignment.	From one week to a semester.	For enterprises that 1) have specific challenges, where methods and tools from the knowledge institutions are relevant and 2) have a desire for creative inspiration and ideas.	Usually very limited or no funding needed.
Knowledge services	Customised counselling services, based on the special qualifications, skills or facilities of the knowledge institution.	Subject to agreement.	Very specific problems, most suitably resolved through the purchase of consultancy services from a knowledge institution.	Knowledge is purchased on market terms, e.g. hourly rates. Funding may be applied for, inter alia, through InnoBooster (Innovation fund managed by Innovation Fund Denmark, aimed at small enterprises and entrepreneurs).
User driven upskilling	Customised upskilling aiming to 1) improve the skills of the participants and 2) specific value-creating measures in the enterprise.	From a couple of weeks to 1 year.	Practice-oriented projects aimed at reaching specific goals for the enterprise (e.g. an increased productivity rate or new business models) and where upskilling is part of the solution.	Usually a combination of enterprise funding and subsidies, e.g. by funding part of the upskilling activity through AMU (adult vocational training) funds.
Innovation project	Project collaborations aiming to resolve specific challenges in one or more enterprises, through targeted project collaborations (e.g. through a range of workshops or similar activities).	From a couple of months to a couple of years.	Technological or business-related challenges that are best solved in collaboration with professionals at a knowledge institution. Might include product development, new business models or testing/documentation.	E.g. InnoBooster or programmes and projects offered by regional growth forums, such as the European Regional Development Fund, Priority Axis 1a.
Research project	Long term collaborations regarding development of brand new knowledge and technology.	Usually 3-5 years.	Enterprises involved in research that invest in long term accumulation of knowledge and development of technology.	Major Danish or international funding programmes, e.g. Great Challenges, managed by Innovation Fund Denmark, Horizon2020 and Eurostars. Or co-funded PhD projects.

HOW TO PUT KNOWLEDGE COLLABORATION ON THE AGENDA IN ENTERPRISES

Business promotion actors, VEU centres (publicly funded initiative, offering guidance aimed at adult education and upskilling), trade associations etc. play significant roles in motivating more enterprises to participate in knowledge collaborations, as they often communicate with the enterprises, regarding their needs and challenges.

When is it relevant to mention knowledge collaboration, though? When is knowledge collaboration a useful alternative to more traditional courses, and the use of private consultants? How to prepare for the good dialogue that also focuses on knowledge collaboration? Here are some practical tips:

- Focus on the enterprise – the conversation should be based on terminology that concerns the business areas of the enterprise (see examples in the column on the left side), as opposed to courses and opportunities for support.
- Initiate the conversation as an open dialogue with the enterprise, regarding markets, competitiveness structures, goals and strategies. This will provide the best starting point for a discussion on how the challenges of the enterprise may be handled.
- Start by asking who the enterprise is already collaborating with. Have an open discussion on whether knowledge, qualifications and skills from the knowledge institutions might contribute to developing the enterprise? Would it be relevant for researchers or students to consider the enterprise from a new perspective?
- Be conscious about the various great objectives for knowledge collaboration (see the REG LAB analysis of "Knowledge bridges for growth"). This might include closing in on students and candidates that might become potential new employees at the enterprise.
- Consider bringing successful examples of knowledge collaboration – preferably from the same line of business (e.g. from the REG LAB case collection).
- Allocate time for follow-ups. Most often, careful consideration and dialogue with possible collaboration providers is needed, in order to identify the most suitable solution for the enterprise.
- ... Come prepared! Know the various types of collaborations and the relevant possibilities for funding.

TOPICS FOR DIALOGUE ON SUCCESFUL DEVELOPMENT

- **Market conditions.** Who are the competitors of the enterprise? What are the strengths and weaknesses in relation to the competitors? How does the enterprise stand out?
- **Productivity.** How does the enterprise manage technology use, adaption, optimisation, processes etc.?
- **Customer relations.** How does the enterprise collaborate with its customers?
- **Innovation.** How does the enterprise manage innovation and development? How are users included? Does the enterprise have the relevant qualifications, skills and knowledge on new innovative methods?
- **Products and services.** Are the key products of the enterprise competitive? Could they be strengthened, e.g. through implementation of new technology? Could the business model be developed further?

THE THREE PHASES OF A SUCCESSFUL KNOWLEDGE COLLABORATION

Knowledge collaboration is a diverse entity that cannot be accounted for in a simple formula. There are various objectives and types of collaboration, and obviously it is different collaborating with a university than with a vocational school. There is also a difference between collaboration for that first time and collaborating again.

In general, though, it is useful viewing a knowledge collaboration from a "before-during-after" perspective. Often, the process of maturing, preparing and follow-up is just as important as the knowledge collaboration itself. The value for the enterprises might be limited, if all the phases are not handled in a competent and conscious matter.

The figure to the right shows 14 critical points in a knowledge collaboration. The 14 points are not equally important in all projects. But this overview is a great checklist that may serve as a supporting tool during the process in most collaborations. The 14 points will each be elaborated on at the following pages.

WHO CAN HELP?

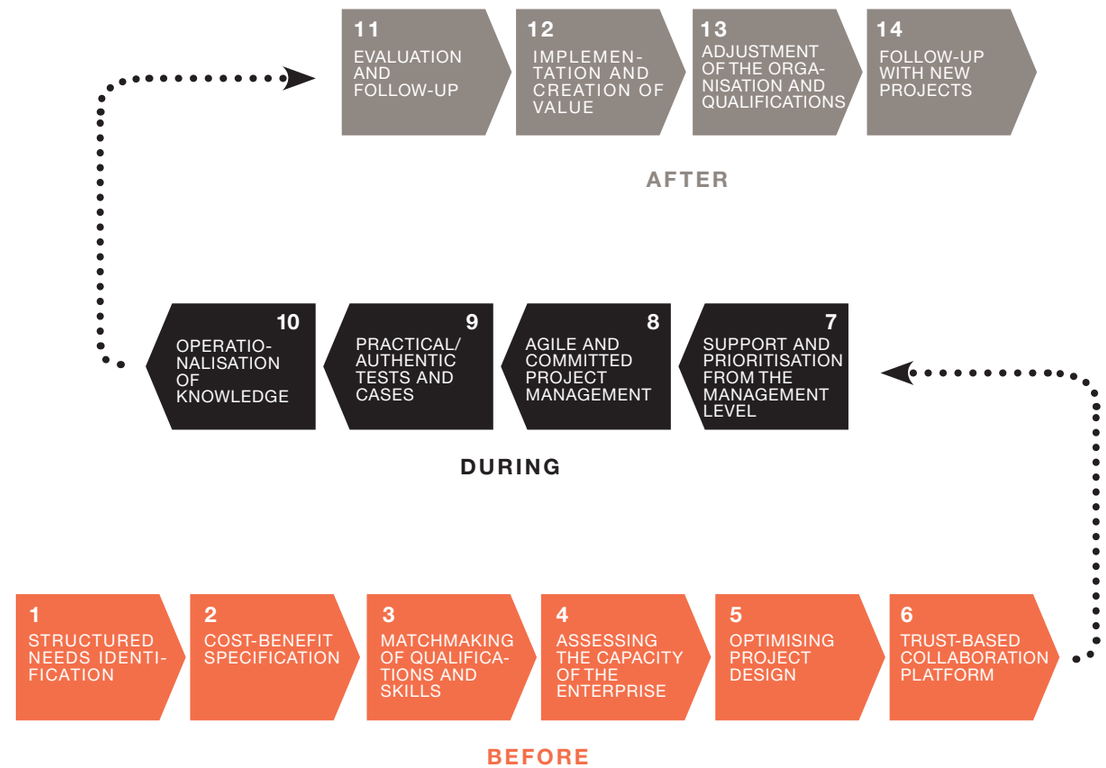
In Denmark there are various actors that might help implement a knowledge collaboration.

REG LAB's analysis of knowledge collaboration shows that external facilitators may play a significant role in benefitting fully from the collaboration – especially for enterprises with little or no experience in knowledge collaboration.

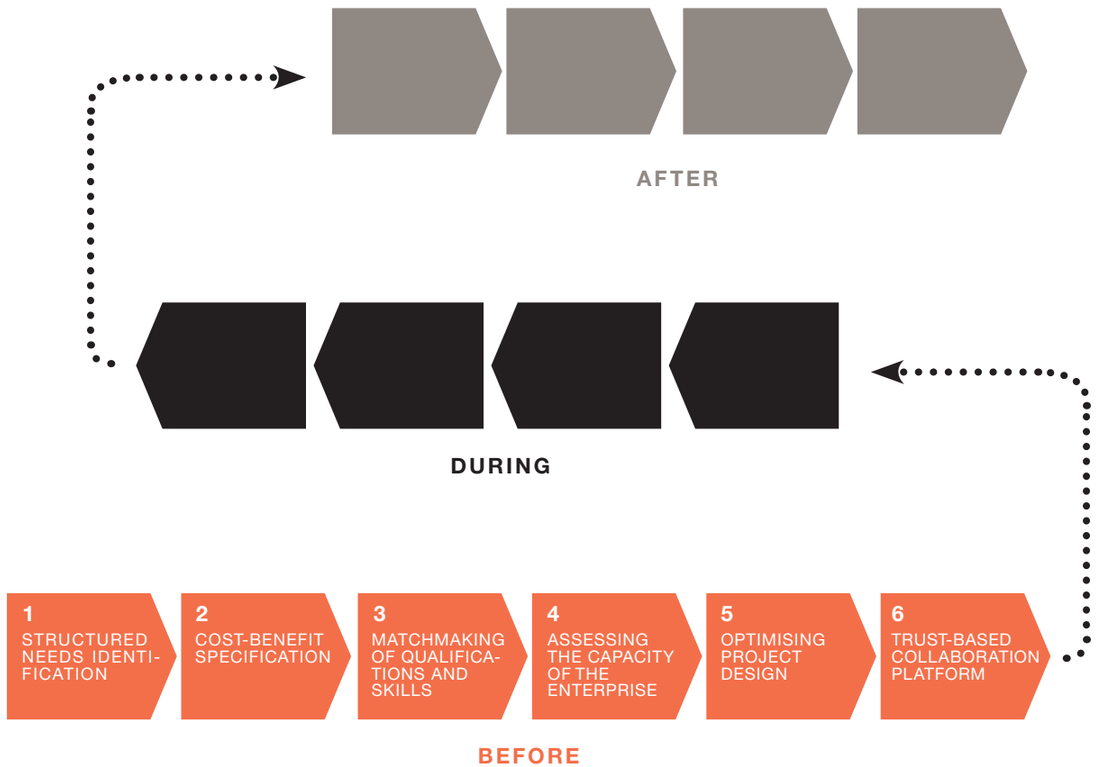
Thus, cluster organisations, innovation networks and support functions at the universities often have insights that are beneficial in guiding the enterprises and the collaborators through the points in the figure at the right. An overview of the various clusters and innovation networks can be found at the homepage www.clusterexcellence.dk.

Furthermore, business promotion actors, such as Business Development Centres (regional offices, offering free and independent counselling on growth, to entrepreneurs and enterprises) and "local business service offices" (municipal offices, offering counselling on starting, running and developing business, to entrepreneurs and enterprises) may also be suitable independent partner for discussion.

FIGURE 1.
THE THREE PHASES AND 14 CRITICAL POINTS IN A SUCCESFUL KNOWLEDGE COLLABORATION



BEFORE
THE KNOWLEDGE COLLABORATION



1

STRUCTURED NEEDS IDENTIFICATION

It is important that the knowledge collaboration is based on an actual challenge and that there is a real need for the solutions that will be the outcome of the project. A structured needs identification may include both mapping the enterprise's need for a knowledge collaboration, as well as a small-scale pre-investigation of the market, and mapping the users' needs for new solutions.

Thus, structured needs identification may take place in the following way:

- A meeting, where the challenges and the needs for qualifications and skills of the enterprise are thoroughly discussed, to design the contents and activities of the process. It may be useful that the knowledge partner or a facilitator takes the role as coach to ask challenging questions and aim at identifying non-acknowledged needs.
- Workshops, where the end-user is involved in making challenges tangible or contributing to developing ideas in a future knowledge collaboration.
- Pre-investigations, which may clarify if solutions already exist in the area.

Structured needs identification is especially important when:

- The enterprise has a general challenge (e.g. productivity or an increasing pressure in competitiveness), but does not have a clear idea on how to address the challenge.
- The enterprise wants to test the market with a new business idea.
- The collaboration contains development of brand new products and solutions, where user input and experiences are essential for design, functionality, user interface etc.

2

MAKING A COST-BENEFIT SPECIFICATION

To have a base, when making a qualified decision on whether to implement the project or not, it might be useful to make a cost-benefit specification. This is a specification of the potential outcome of the collaboration, weighed up against the expected costs.

A cost-benefit specification might focus on:

- Whether there is a demand for the solution, as well as who and how large the target group is?
- What is the target group willing to pay for the solution?
- What are the costs of producing/delivering the product/service?
- Whether the product/service may be scaled and internationalised?
- What would the costs be, of both the knowledge collaboration, as well as the further commercialisation?

A cost-benefit specification is especially important when:

- Developing new products or services.
- Major resource-intensive collaborations.

However, a cost-benefit specification might also be beneficial in knowledge collaborations that focus primarily on strengthening the internal processes of the enterprise. For example, by comparing the potential financial winnings/savings against the use of resources for development and implementation of the solution.

3

ENSURING OPTIMAL MATCHMAKING OF QUALIFICATIONS AND SKILLS

It is important that the qualifications and skills, and the profile of the knowledge partner match the challenges of the enterprise. Thus, matchmaking is often a vital part of a knowledge collaboration. Matchmaking may be done by a knowledge mediator, using the following steps:

- Defining what kind of knowledge, qualifications and skills the enterprise need, in order to solve the specific challenge.
- Finding out which knowledge institutions/researchers possess the relevant professional knowledge (e.g. by assistance from the entities of business collaboration at the knowledge institutions).
- Finding out whether the relevant environments have the necessary time and resources to participate in a knowledge collaboration within the required timeframe, and whether they are interested in the project/idea.
- Assess if the enterprise and the knowledge institution is a good match, e.g. through a meeting where the parties are introduced.
- Help the parties identifying the best type of collaboration, e.g. by presenting various types of collaboration and funding solutions.

Matchmaking may be especially relevant when:

- The enterprise does not have prior experience in knowledge collaboration (that requires a lot, regarding the collaborating partners' communication skills, and ability to build a trust-based relation).
- When it is expected that the knowledge partner will be a university or a university college, where there is a high demand for proper knowledge and specialisation.

4

ASSESSING THE CAPACITY OF THE ENTERPRISE

It is important that the enterprises are able to allocate the necessary resources – considering both time, money and the relevant qualifications and skills. This is important both in implementation of the collaboration, as well as in converting the results into value after the project ends.

The capacity may be assessed in a meeting with participation from a facilitator, and may focus on the following questions:

- How many resources will the project require from the enterprise?
- Is it realistic that the enterprise is able to allocate the necessary resources?
- How will the management be involved in the project?
- Which and how many resources are needed to implement the results after the project ends?

Matchmaking may be especially relevant when:

- The enterprise requires many resources to convert the project results into value after the project ends. For example, when the collaboration does not result in a market-ready product, and thus would require further resources for product ripening. Or if new qualifications and skills are required to introduce the solution to the market etc.
- When the enterprise does not have experience in knowledge collaboration.

5

OPTIMISING PROJECT DESIGN

Ensuring that the knowledge collaboration will result in a value creating output for all participants, it is essential to optimise the project design, where contents and activities are organised in a way that addresses the objective of the collaboration.

As part of optimising the project design, all involved project parties should discuss and define the following together:

- What is the objective of the project?
- What activities and mile stones should the project consist of?
- How should the activities of the project be organised, and which areas are each project party responsible for?
- What is the most suitable model for project management?

Often, it is recommendable to write down the conclusions regarding project design (e.g. as a project description) that all involved project parties have read and commented before the project is launched, or the application is sent.

Thoroughly optimising the project design and allocating plenty of resources for this step is especially relevant when:

- Planning large and long-term projects. In this case, it is often necessary breaking down the project in smaller parts/"working packages" that address on of the sub-objectives and consist of a range of close-ended activities (possibly with different project managers).
- Many parties take part in the project. In this case, it is important to assess what their chief skills are, and how to use them most efficiently. In that context, it is also essential making clear and logic division of responsibility between the involved parties, that cohere with their respective chief skills.

6

ESTABLISHING A TRUST-BASED COLLABORATION PLATFORM

Successful knowledge collaborations are based on trust-based collaboration platforms, characterised by constructive dialogue and mutual respect. To establish a trust-based collaboration platform, all project parties should be invited to a meeting with the following focus:

- Discussing the objective of the project. This is to ensure that all parties work towards a common goal, and that their decision to participate in the project is based on a deep and mutual understanding of what that project should result in.
- Aligning the goals and expectations of each involved party. By clarifying goals and critical success factors from the beginning, it is possible to build a mutual understanding of what drives each party in the project, and how that might influence their commitment.
- Voicing any barriers of the collaboration to the parties. By being open about barriers and challenges, and how they might be tackled, potential conflicts during the process might be prevented.

A thorough commitment to establish a trust-based collaboration platform is especially relevant when:

- Many parties are involved in the project. In this case it is important to create a balance between the interests of the goals and expectations of the individual project partner and the greater objective of the project.
- Several enterprises, that compete, participate in the project. In this case, it is important with an open dialogue on whether the competitive relationship may obstruct the collaboration, and how the challenges can be solved.
- Parties that have not previously collaborated with each other. In this case, the collaboration platform must be built up from scratch.
- There is a need to clarify rights to use and share future project results.

CASE 1

LEDON'S UPSKILLING PROCESS WAS THOROUGHLY PREPARED

Ledon is a family owned enterprise that produces play equipment for housing associations and public institutions. In 2016, Ledon participated in an upskilling process with Design School Kolding and Capital of Children.

The enterprise initiated the collaboration because the management had been unsure for some time, as to which products they should promote, and how they should work with innovation. The enterprise needed external qualifications and skills, to push development towards the right direction. Thus, a board member contacted Capital of Children to discuss whether it would be relevant for them to participate in the development process "Play User Lab" that focuses on upskilling in the area of user driven innovation.

After this, an employee from Play User Lab started an initial screening process to find out if Ledon had the necessary prerequisites to benefit from the process. The screening consisted partly of desk research of the history of the enterprise, financial situation and potential for growth. And partly of an initial meeting with the management of the enterprise where it was discussed:

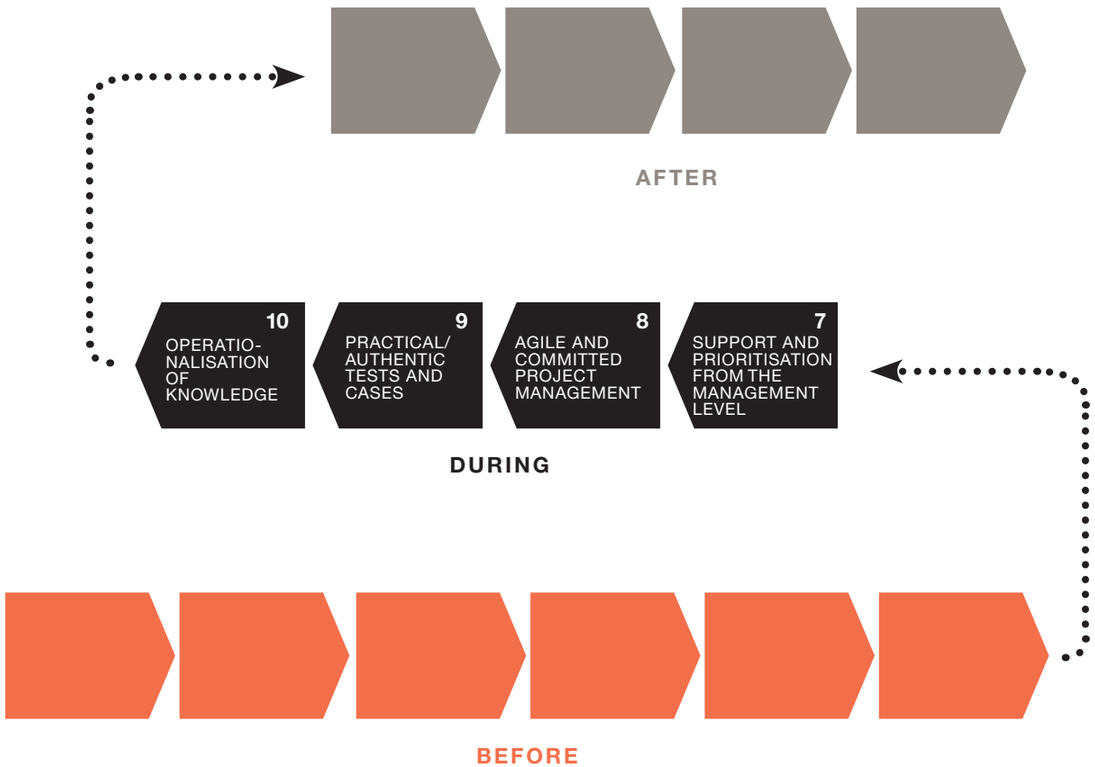
- What would the process require from the enterprise?
- Whether the enterprise was able to allocate the resources necessary for the process?
- What value was the enterprise expecting as an outcome from the process?
- How would the management be involved in the process?

Then, professional consultants from Design School Kolding went to visit Ledon, with the objective to review the enterprise and identify which employees should be involved. Based on the dialogue, the professional consultants planned a process aiming to strengthen Ledon's qualifications and skills within:

- Working systematically with design from "first product draft, to the final product at the customer".
- Working with user driven innovation methods in the design process, to ensure the enterprise a stronger end-product, a more profitable production process – and ultimately to increase earnings.

In the first part of the upskilling process, three members of management were introduced to design thinking and user driven innovation methods that they used to identify children's needs and demand for various play equipment through observation and interviews at a school playground. The new insights led to Ledon's following work with developing a prototype for a new piece of play equipment that is expected to generate earnings of 1 million Danish kroner during the first years on the market.

DURING THE KNOWLEDGE COLLABORATION



7

ENSURING SUPPORT AND PRIORITISATION FROM THE MANAGEMENT LEVEL

During the knowledge collaboration, it is essential that the management level shows active ownership – both in the enterprises, but also often in the knowledge institutions. Firstly, to motivate the parties and ensure sufficient resources for the process. Secondly to ensure anchorage and implementation of the results.

Management support may be ensured by:

- Getting management to commit to the contents and goals of the project, for example by including them in initial meetings, where contents and objectives are presented.
- Ensuring that the management allocates sufficient resources and time for the project.
- Agreeing on the type of management involvement, e.g. by forming a steering committee with management representatives from both sides, that continuously are kept up to date regarding the progress and challenges of the project.
- Ensure visibility of the management in the project, to signal interest and commitment from the enterprise.

Support and priority from the management is always an obvious advantage, but the need for management support is especially needed:

- If the participants do not have prior experience with knowledge collaboration and/or do not know each other beforehand.
- In projects where the timeframes and motivations for participating are very different, for example in collaborations between SMEs and researchers.
- In major projects that involve many participants.

8

AGILITY AND COMMITMENT IN PROJECT MANAGEMENT

Knowledge collaborations rarely follow the project plans to the letter. The agility and ability of the project manager to make adjustments during the process, is often essential in ensuring a valuable process for all involved parties.

More specifically, agile and committed project management consist of:

- Building bridges between the participators, by facilitating a continuous dialogue and adjustment of expectations between the parties.
- Continuously adjusting themes, project plans and possibly also the line of participants, as far as the needs of the parties become clearer or as they change.
- Ensuring continuous commitment through close dialogue with the involved parties, mini interviews along the way and individual feedback.
- Bringing new ideas and perspectives into play, or introducing new parties in the project, if relevant.
- Identify special needs – e.g. for testing results, operationalisation of knowledge etc.

Agility and commitment are fundamental project management abilities. In knowledge collaborations, it is especially important to:

- Choose the most adequate project manager. In close-to-the-market projects, it may be an advantage with a project manager that knows the enterprise/market. On the other hand, it might be an advantage with a project manager at the knowledge institution, if the project aims to generate new knowledge.
- In some projects (e.g. by first time collaborations) it might be an advantage with a neutral project manager or facilitator.

9

INCLUSION OF PRACTICAL/ AUTHENTIC TESTS AND CASES

In a knowledge collaboration, it is often important with an interaction between development and testing. The latter, might be through practical testing or trials of early prototypes among end users.

It is important, both during the "before" phase and the "during" phase, to assess how experiments, tests and cases might strengthen the project, including:

- Whether tests, user cases or other types of realistic scenarios – executed in collaboration between the enterprise and the knowledge institution – are a must in introducing solutions to the market.
- E.g., to which extent the enter prise gets closer to commercialising a solution, by demonstration in an authentic testing environment. And whether the knowledge partner may obtain new and valuable data or cases as part of the project?
- How, specifically, practical/ authentic trials and cases should be included? For example, by a trial set up, establishing a mockup, involvement of end users, observations etc.
- When should the practical/ authentic cases and trials be executed? When, in the project, should the reality involvement take place and with how many iterations? The activities should be integrated into the project plan.

The relevance of practical/authentic trials depends of the objective and content of the specific project, including how close the project is to the market. However, it might be especially important when:

- The knowledge collaborations focus on challenges in society. In the area of welfare technology and the smart-city area for example, testing, trials and documentations are often mandatory.
- When attracting capital for commercialisation forms a vital element in the "after" phase.

10

OPERATIONALISATION OF KNOWLEDGE

In knowledge collaborations, qualifying new knowledge for the enterprise it is often important, in order to convert that knowledge into skills, tools, products etc. There might be far from a research result and implementation in a small enterprise.

Thus, it is essential considering:

- How should the knowledge be operationalised? Operationalisation might take place in various ways, but often the issue is considering tangible tools that are applicable for the enterprise after the project ends. Examples are visual tools (graphic boards, typology, models etc.), new concepts for production and collaboration, prototypes etc.

- What is needed for an increased level of operationalisation? Often, it is up to the project manager (or a facilitator) to assess how knowledge should be operationalised. This might be done by including workshops in a process, where the range of partners aim to adjust theories and results to the needs of the enterprise, or by planning follow-up activities to experiment with and collaborate on implementation in the enterprise.

Operationalisation of knowledge might be a special focal point in knowledge collaborations between researchers and SMEs without prior experience with knowledge collaboration or lacking specific departments for development.

Some knowledge institutions (e.g. GTS institutes and business academies) are very apt at operationalising knowledge, and would often already before starting the project, have worked e.g. on converting new research into practical ways of application.

CASE 2

EV METALVÆRK BENEFITTED GREATLY FROM A COLLABORATION WITH AALBORG UNIVERSITY, THROUGH THE USE OF A FACILITATOR AND A FLEXIBLE PROCESS

EV Metalværk is metallurgical enterprise in Ringkøbing, Denmark that produces fittings, valves and high-pressure tubes. In 2014, the enterprise went through a facilitated workshop process. The enterprise entered the process without a clear problem formulation, except for a desire to strengthen sales and optimise the product development process. The Business Council of the municipality of Ringkøbing-Skjern introduced the enterprise to the programme “Shortcut to New Knowledge”. Through this programme, the enterprise was matched with researchers from Aalborg University, to a process that included a total of 10 workshops. Furthermore, EV Metalværk chose their contact person in the Business Council of Ringkøbing-Skjern, as a facilitator. This facilitator was vital for the great outcome that the enterprise received from the process. The role of the facilitator was, in particular, to ensure good communication between the parties through:

- Mini interviews between all involved project parties during phase of starting up.

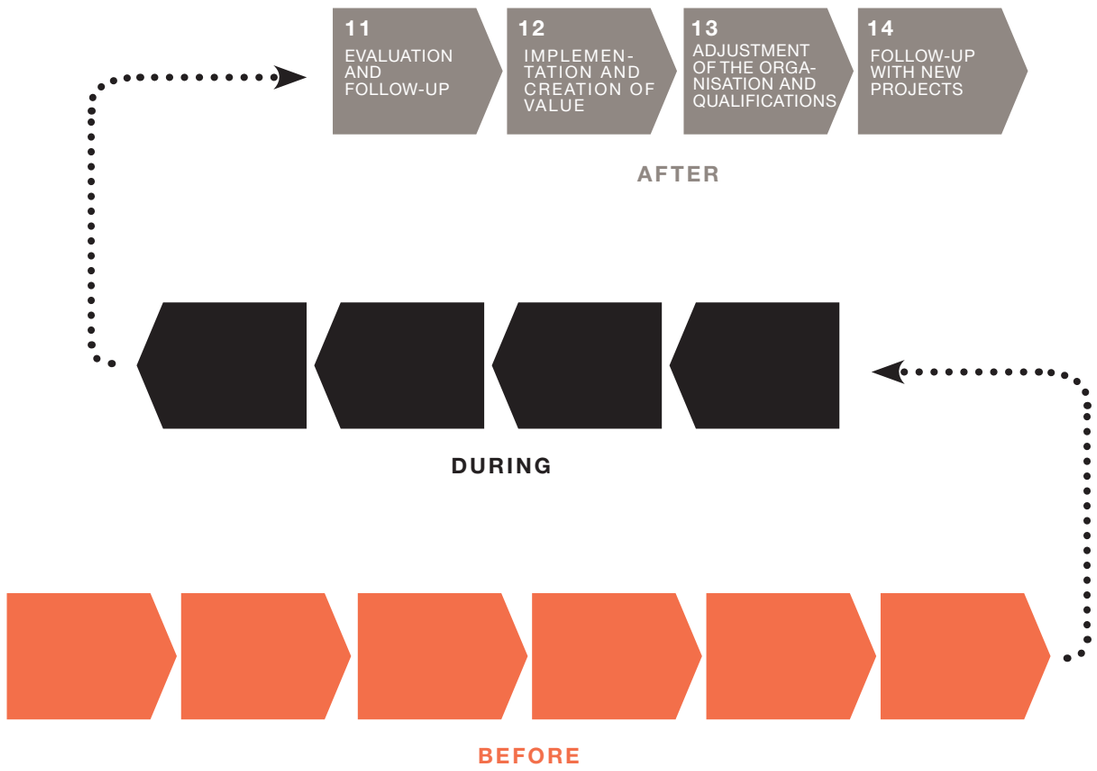
- Continuous needs identification in the enterprise.

- Reconciliation of the expectations of the parties and the wishes for professional themes, during the progress of the project.

During the specific workshops, the facilitator had an observatory role, but asked both the enterprise and the researchers clarifying questions, if she saw the need for that. After having participated in a few workshops, the enterprise wished to change the profile of the process. They got to know one of the researchers’ methods to business model development that their management wanted to have more knowledge about. This meant a replacement in the group of researchers, since one of the other researchers’ knowledge did not match the need of the enterprise. The facilitator took on this responsibility, to save EV Metalværk from doing this themselves.

The most significant outcome for the enterprise in the process was strengthening its sales and innovation processes, by going directly to the development department of their customers, instead of the purchasing department. The knowledge of the researchers was operationalised through a tangible management tool – a board in the project room of the enterprise, where management is able to match their customers’ development processes with the development projects of the enterprise. This way, the enterprise may enter the development processes early on. The researcher has since been used as an external consultant by the enterprise, to support the implementation of the management tool.

AFTER
KNOWLEDGE
COLLABORATION



11

EVALUATE AND FOLLOW-UP ON THE KNOWLEDGE COLLABORATION

It is always a good idea to evaluate the process. Both to support the follow-up work in the enterprise, in converting the results to value. But also to follow-up on the learning that the project partners have obtained through the process.

Evaluating meetings may be held twice – immediately after the project has ended and approx. 3-6 months later. The evaluation meetings may include the enterprise, knowledge partner, a possible facilitator/knowledge mediator that discuss:

- Have the agreed project goals been met?
- What worked well and what worked less well through the process?
- How should the enterprise continue to work with the results of the knowledge collaboration and where can they find support for this? Could the knowledge partner maybe play a role in the further implementation and commercialisation?
- In which ways have the enterprise continued its work and how it works with implementation of the obtained knowledge, qualifications and skills.

Evaluation and follow-up is especially important when:

- The project partners have limited experience in knowledge collaboration. In this case, the partners may have obtained many new experiences with the knowledge collaboration that might be useful to follow-up on in relation to future projects.
- The project partners have not previously collaborated.
- There may be a need for the knowledge partner to be involved in the “after” phase, e.g. as a consultant.

12

FOCUSING ON IMPLEMENTATION AND CREATION OF VALUE

Putting the results of a knowledge collaboration into use, may be a challenge. It might require:

- Product development and adjustments.
- "Go-to-market" strategies for solutions that the enterprise has not worked with previously.
- A great commitment, in implementing new principles, technologies or working processes in the organisation.
- Further funding, e.g. for documentation, equipment, production line, construction of sales organisation etc.

It is vital to keep in mind that some enterprise may face challenges in solving this task themselves. Thus, it is important to consider the following together:

- It there a continuous need for counselling with the knowledge partner when it comes to implementing the results? Should private consultants be involved?
- Might it be relevant applying for help from a local business promotion actor, e.g. when it comes to independent counselling on the "go-to-market" strategy or a referral to private consultancy and funding of the effort?
- Could other types of knowledge collaborations contribute to the implementation? E.g. student projects or user driven upskilling that improve the skills of the employees in relation to the specific case of implementation.

It is especially important to focus on implementation and creation of value in the following cases:

- Projects that demand further development, official permits, tangibility, business cases etc.
- Projects with participation of enterprises with limited experience in knowledge collaboration and limited capacity for development.

13

ADJUSTMENT OF THE ORGANISATION AND QUALIFICATIONS OF THE ENTERPRISE

Implementation of knowledge collaboration often requires adjustment in the organisation or the qualifications and skills of the enterprise.

This might include:

- New employees with primary qualifications within the product or business areas of actual collaboration or upskilling of own employees.
- A new development function to carry out implementation or the effort of further innovation and knowledge collaboration.
- Establishment of special units or spinoff companies to take on development, introduction and funding of the go-to-market strategy.
- New qualifications on the board.

It is important that the enterprise is aware of this already before starting up the collaboration, but also that the knowledge partner or a facilitator discusses this with the enterprise when the collaboration ends. Furthermore, the enterprise may look for independent counselling, e.g. by a local business service operator or a Business Development Centres (regional office, offering free independent guidance counselling on growth, to entrepreneurs and enterprises).

Adjustment of the organisation and qualifications/skills is especially relevant when:

- Results and solutions are innovative compared with what the enterprise has worked with so far. This is especially relevant in research and innovation projects.
- The enterprises have limited experience in working with innovation, development and knowledge collaboration.

14

FOLLOW-UP WITH NEW PROJECTS

It often pays off to launch new collaboration projects after ending a knowledge collaboration. Either as part of converting the results to commercial value or to boost the knowledge collaboration even further.

Many enterprises start up softly with projects that require fewer resources, such as student projects. This might open their eyes for new collaborations that might demand more resources, own funding and formal applications.

New projects may:

- Develop results of the previous knowledge collaboration further. The goal might be to develop new products or business models based on the obtained insights.
- Further strengthening of relations developed as part of the finished knowledge collaboration.
- Focusing of brand new business areas and collaborators based on the general insight that the enterprise obtained through the knowledge collaboration.

The step towards the next collaboration may be challenging, as it might be relevant to look towards professional areas and knowledge institutions with whom the enterprise has not collaborated with previously.

Business promotion actors as well as cluster and network organisations may play a central role in counselling the enterprise regarding the next steps. These actors should focus specifically on reaching out to enterprises that have just concluded their first knowledge collaboration, and should contribute to ensure that the enterprise allocates time and get further insight into how to initiate – and fund – new collaborations.

CASE 3

HANNEMANN ENGINEERING CONVERTED THE RESULTS OF A RESEARCH PROJECT INTO COMMERCIAL VALUE

Hannemann Engineering is a small enterprise in Southern Denmark that develops, sells and provides consultancy services regarding mechanical handling and automatisation equipment to the industry. In 2013-2015, the enterprise collaborated with University of Southern Denmark, Vocational Educational Centre South, The Development Council of Southern Denmark and three other consultancy agencies on a project aiming to increase the automatisation level in small and medium sized production enterprises in Southern Denmark.

The project had two tracks. In track 1, Hannemann Engineering, in collaboration with the rest of the project parties, identified the need and potential for automatisation, and developed strategies for implementation of automatisation solutions in 40 Southern Danish production enterprises. In track 2, Hannemann Engineering applied the insights from the identification of needs to develop a prototype of a robotics system for item storage, customised to the needs of industrial SMEs.

After finishing the project, Hannemann Engineering focused on implementation and creation of value. The enterprise aimed specifically at converting the results of the knowledge collaboration (specifically the prototype) to commercial value by:

- Adjusting the organisation through a spin off into a new company called “EasyRobotics” that focused solely on further development of the prototype into a market ready product. The reason was that Hannemann Engineering had assessed that the product development risked losing momentum in the busy everyday of operations and sales in the parent company.
- Fundraising for the continuous product development effort in the spin off company EasyRobotics from a private business angel (private investor that invests capital and often also skills and experience in start-ups and already established enterprises) and Syddansk Innovation (investment fund and consultancy service for entrepreneurs).
- Attracting new qualifications and skills, by onboarding a new CEO of EasyRobotics that possess strong technical skills and many years of experience from mechanical engineering, to head the further development of the prototype into a commercial product.
- Launching a follow-up project where EasyRobotics, in collaboration with The Danish Technological Institute and Dansk Produktions Univers (member based network and consultancy services for SMEs in the production area), with the aim of further developing and fine tuning the robotics technology of the prototype. This project was funded by the Videnkuponordning (Innovation Voucherprogramme managed by Innovation Fund Denmark).

The final product ”Profeeder” was launched at the market in2016, approx. one years after the project finished. EasyRobotics has so far sold approx. 10 robotics systems and is currently looking for new qualifications and skills, specifically an employee to head the further tasks with marketing and selling the new product.

ABOUT THE ANALYSIS
KNOWLEDGE BRIDGES TO GROWTH

This guide is based on analysis results and conclusions from the focus analysis Knowledge Bridged to Growth that was completed in 2017 by REG LAB in collaboration with the Ministry of Higher Education and Science, The Capital Region of Denmark, The North Denmark Region, The Central Denmark Region, The Region of Southern Denmark, Frederikssund Erhverv, Municipality of Slagelse, Municipality of Vejle, Municipality of Thisted, Municipality of Silkeborg, Municipality of Herning, The Danish Confederation of Professional Associations and The Danish Confederation of Trade Unions.

The scope of the analysis is to understand what characterises successful knowledge collaborations and what we can learn from them.

The analysis consists of the following "products":

- A main report, identifying critical success factors for knowledge collaborations, based on 50 case studies (available in Danish).
- The present guide, giving practical instructions in establishing, supporting and executing a successful knowledge collaboration (available in Danish and English).
- An international case report, describing international initiatives within knowledge collaborations with interesting perspectives (available in Danish).

Iris Group have been consultants of the main report and the guide, while the REG LAB secretariat is behind the international case report.

The Central Denmark Region participates in the Interreg Europe project INKREASE, and has thereby funded part of their contribution to this publication. The translation and publication of the Guide in English is funded through the INKREASE project.

INKREASE – Innovation and Knowledge for Regional Actions and Systems – aims at improving innovation delivery capacity of participating regions. The project's main goal is to mainstream, into the different regional strategies of partners, policies and tools to increase the capacities of the various innovation ecosystems, reinforce the collaboration between research and business communities and exploit the economic valorization processes of research results.

INKREASE learning process tackles aspects related to:

- Management of structures innovation networks and clusters;
- Appropriate tools and mechanisms to leverage business investments in research and innovation;
- New and more effective governance models;
- Sector specific needs.

INKREASE has a clear focus on the challenges emerging for RIS3 and the identification and development of new value chains to support research-enterprise cooperation. Good practices on governance models, industry-science relations management schemes, business clustering and networking experiences are taken as inspiration for the regional Action Plans.

INKREASE
Interreg Europe

European Union
European Regional
Development Fund