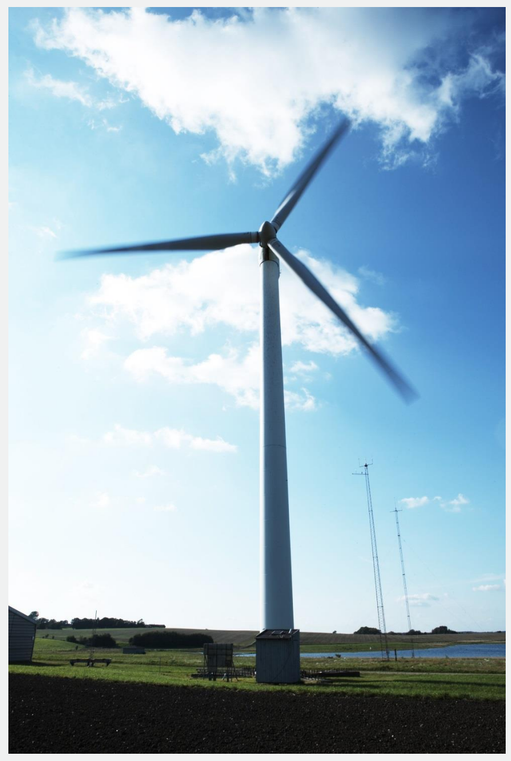
DTU Management Engineering
Department of Management Engineering

Local and global knowledge sourcing in wind power innovation



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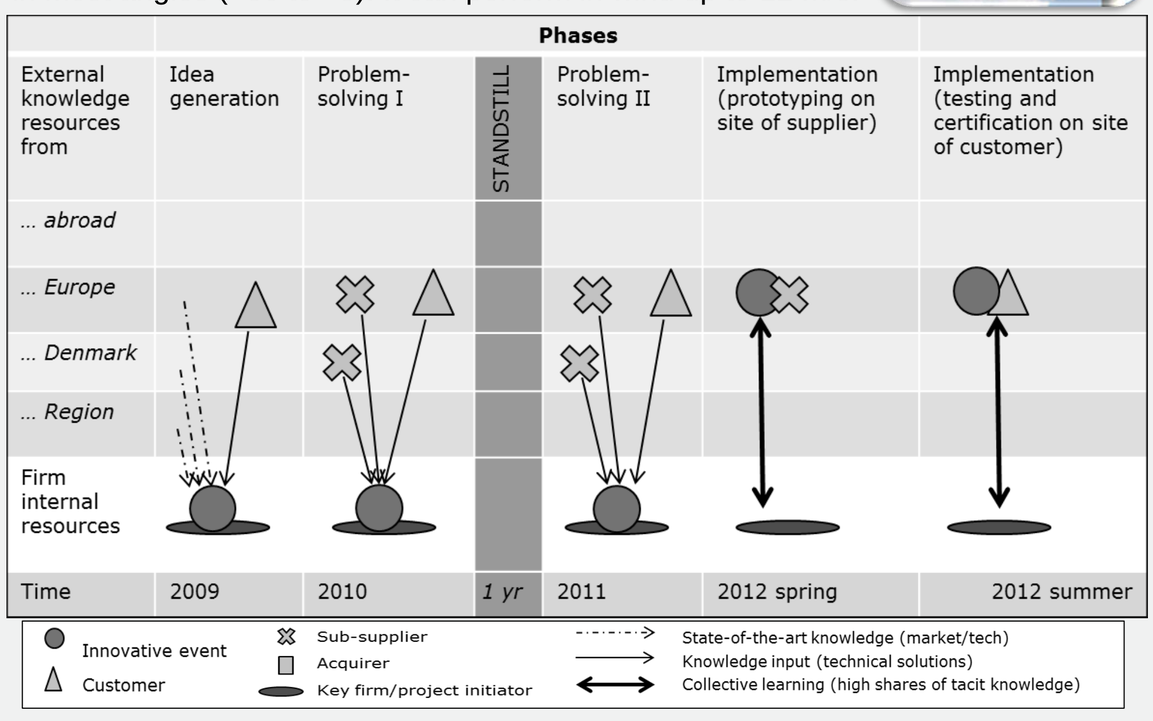
The increased globalization of economic activity calls for a greater understanding of the interplay between localized learning and global knowledge flows. The question is: When during the innovation process do a company rely on local or international knowledge sources? Answers to this has implications for how we design and implement innovation policy in Denmark and the rest of EU. In EU, lots of national and regional innovation policy is designed to strengthen local industrial networks in clusters or science-parks. This poster displays how successful innovations are strongly linked to international knowledge sources and, thus, recommends to integrate an international dimension to policies on innovation.

The case of wind power

The wind power industry has undergone significant change during the last couple of decades which has resulted in an internationalisation of the industry. Due to a strong focus on mitigating the environmental impact of energy production as well as increasing energy security we see a continuously increasing world wide demand for renewable energy sources, including wind power. This has attracted a diverse range of OEMs from different world regions and today the industry is no longer dominated by Danish wind turbine manufacturers. Activities related to manufacturing, sales and more recently research and development has been internationalised. This study focuses on suppliers located in Denmark and asks whether these companies are able to adapt to the new international agenda and take advantage of both local and international knowledge sources in the development of new innovations.

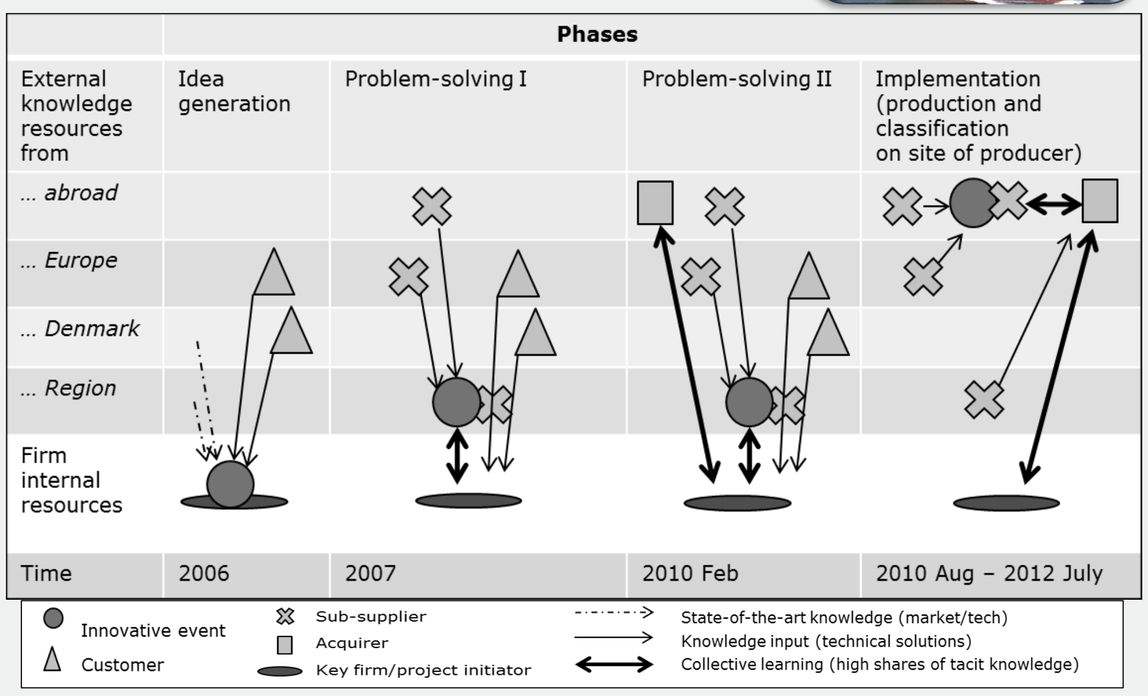
Figur 1: Innovation biography of Blade Dragon, Liftra A/S
Blade Dragon is a yoke that enables installing blades on rotors in most angles (+30 to ÷5). It can perform in wind up to 12 m/s.



Method

Most studies treat innovation as an outcome measured by patents or innovation statistics, however it is important to remember that innovation processes are contingent processes that unfold over time. Consequently, I apply an '*innovation biography approach'* that focuses on the entire "lifespan" of the innovation process from idea generation through problem solving to implementation. Hereby, I can study the type of knowledge, its geographical source and when during the innovation process companies chose to integrate external knowledge. The study comprises three innovative event, each has been documented through 2-3 interviews per case including secondary data and documents.

Figur 2: Innovation bio. of Pacific Orca, Swire Blue Ocean
Pacific Orca is an offshore installation vessel. Six 105 m legs makes it safe to operate in wind up to 20 m/s.



Results

The analysis reveals three innovation biographies (only two displayed here, see fig. 1 and 2). They show that the investigated innovation projects rely to a high degree on knowledge input from external partners, however the source and content changes throughout the phases: In **'idea generation'**, local knowledge input about market directions and customer-needs plays a large role. In the **problem-solving phase**: knowledge input is of a more technical character and is not geographically bounded as such, and in the **implementation phases** the innovative event changes site and requires temporary physical co-location (often expressed as stationing of employees) in order to transfer accumulated tacit knowledge.

Conclusion

This study shows that it is equally important to invest in international knowledge networks to successfully innovate. An interesting finding of this study is that the innovative event itself shifts location through the different phases of the innovation process. This means that an innovation process unfolds over time and *through space*. The policy implications of this study points to the importance of encouraging companies to engage in international networks.

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