



Internationalisation of innovation in SMEs

Case Studies, Exemplary Support Practices and Policy Implications

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Case Study No. 12:

WEPROG, Denmark/Germany: Adapting weather forecast services to specific needs of customers worldwide

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About the InterSME Study

The study on "internationalisation of innovation in SMEs" was based on a contract between the European Commission, Directorate General Research and Innovation, and empirica Gesellschaft für Kommunikations- und Technologieforschung mbH (coordinator, Bonn, Germany) as well as Dialogic (Utrecht, the Netherlands).

The study focuses on two subjects – innovation and internationalisation – which are deemed to be crucial for the European economy. It has two main parts: (1) Twelve case studies of small and medium-sized enterprises (SMEs) with insightful international innovation practice and (2) an analysis of strengths, weaknesses, opportunities and threats (SWOT) of European policy measures seeking to enhance such internationalisation. This publication presents one of the twelve cases selected.



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WEPROG provides weather forecast services to business clients in the energy industry. The company customises its services for each client, adapting them to weather-related processes. Although there are a number of challenges in markets outside Europe, offering services globally is vital and worth the effort.

Abstract**WEPROG**

WEPROG provides weather forecast services mainly to the renewable energy industry. The company was founded in 2003 and has two locations in Denmark and Germany. The company's clients are predominantly large energy corporations. WEPROG serves markets on a world-wide scale and needs to persistently develop its technology and services further. WEPROG can offer the same services anywhere in the world, tailor-made to the clients' specific requirements and weather-related processes. WEPROG started right off as an international company. Internationalisation is vitally important for WEPROG because the home markets do not offer sufficient business opportunities. The company experiences similar barriers in the home markets and internationally. Some specific difficulties apply to countries outside Europe, related to cultural and regulatory differences. The main barrier everywhere is reluctance to adopt innovations on the part of potential customers. Further barriers include for example skewed competition and unfavourable legislation. WEPROG developed its international links mostly through active participation as speakers in conferences, workshops, research projects, and publications. So far WEPROG did not make use of governmental support measures other than publicly funded R&D projects. All in all, internationalisation of innovation had a significantly positive impact. It helped WEPROG to sustain and develop its business.

Case study fact sheet

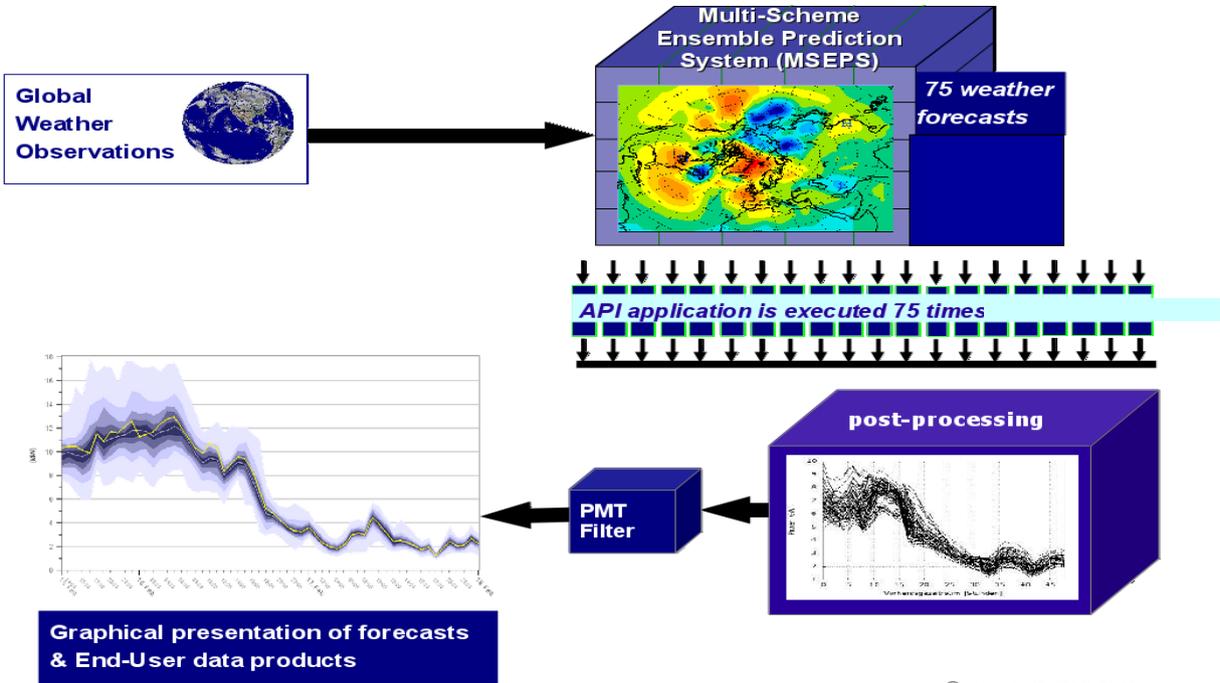
<i>Name of company and URL:</i>	<i>WEPROG ApS, Assens, Denmark / WEPROG GmbH Germany, Altdorf (http://www.weprog.com)</i>
<i>Year of foundation:</i>	<i>2003</i>
<i>Number of employees (year):</i>	<i>< 50</i>
<i>Budget in most recent financial year:</i>	<i>n.a.</i>
<i>Industry sector:</i>	<i>Business services</i>
<i>Business activity:</i>	<i>Weather forecast services mainly to energy industry</i>
<i>Activities focused in this case study:</i>	<i>Customising weather forecast services to customers outside Europe</i>
<i>Case gatekeeper:</i>	<i>Dr. Corinna Möhrlen, Director WEPROG</i>

Background

Business activity and competitive situation

Profile: WEPROG provides real-time weather forecast services mainly to the renewable energy industry, in particular wind and solar energy. The company specialises in so-called ensemble forecasting, meaning that it generates a large number of forecasts, 75 in fact. This enables WEPROG to provide probability ranges for all weather parameters, e.g. precipitation, cloud cover, temperature, and wind speed. WEPROG uses the probability ranges to generate specific forecasts for the energy area, such as wind and solar power generation, demand, and market prices. Exhibit 1-1 shows a schematic example of the forecasting processes. The customers’ benefit is in optimal trading, managing and operating power units and electricity grids – or, in other words, in avoiding costly and environmentally unfriendly forecast errors. The company is small in terms of employees, was founded in 2003 and is today operating from two locations in Denmark and Germany.

Exhibit 11-1: Scheme of WEPROG’s forecasting processes (example for wind power generation)



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API = Application Programming Interface, PMT = Probabilistic Multi-Trend.

Source: WEPROG

WEPROG’s **clients** are predominantly large energy corporations such as system operators and energy management companies, power traders, developers and operators of renewable assets. The company’s main competitors are research institutes, national public weather services, energy forecast providers and resellers. WEPROG operates under high competition. WEPROG targets and serves markets on a world-wide scale. Since its inception, WEPROG has had customers inside and outside Europe, for example in Australia, Africa, Canada, China, Egypt, India, Japan, Taiwan, and the US.

WEPROG’s **business objective** is to further the use and application of their advanced ensemble forecasting technique and to assist in the development of a world with sustainable and environmentally friendly industries. In order to broaden its markets and become less dependent from a few big trusts, WEPROG aims at spreading the use of ensemble forecasts into other markets such as shipping, logistics, marketing, sales, and event management.

The most important **market development** affecting WEPROG is related to the company's core technological expertise. Until a few years ago, targeted industries and also research institutes did not recognise ensemble forecasting as a future technology. This has changed dramatically recently, opening up new business opportunities for WEPROG but at the same time also potentially leading to new competitors.

Innovation is vitally important for WEPROG in order to stay competitive. WEPROG needs to persistently develop its forecasting techniques to be able to use newest computing technology as well as improve forecast quality and services offered around its core technology. One could assume that the renewable energy sector, which is attributed paramount importance for the future of European economy and society, is eagerly absorbing innovations. However, WEPROG finds it difficult to market its innovative technology to potential customers. One reason is that integrating WEPROG's weather forecast technology often requires implementing new data management systems as well as new business processes, implying considerable investments. Many large and often inflexible enterprises shy away from such costs. Instead, WEPROG's customers rather require incremental innovations in terms of improving forecasts.

How and why WEPROG internationalised its business activities

WEPROG started right off as an international company because the principal client in the first two years was located outside the home markets. The company built its forecasting system and services in a way that it was able to offer the same services worldwide after only three years of operations. WEPROG runs a technical helpdesk that is available at all times on all days to be able to service customers in all time zones whenever required.

WEPROG builds its services upon computing and network facilities in ISO certified hosting centres that WEPROG has partnered up with, at present two in Germany and one in the US. Generating real-time weather forecasts worldwide requires recurring input of weather-related measurements on a global basis. WEPROG uses input data from the National Center for Environmental Prediction (NCEP) in the US.

Internationalisation of innovation in WEPROG

Practice

For WEPROG, each service implementation in a new country is a milestone, because WEPROG learns more about its forecasting system when the company applies it in regions with different climates and geographic characteristics. Hence, while the basic service is always the same, every single service is unique. In other words: WEPROG customises its services for every client, adapting to weather-related processes.

Based on customer requests, WEPROG reviews its services and business strategy every three to six months and modifies them if needed. An example is cloud computing. In the past two to three years, the market became much more dynamic. Contract periods decrease and computing resources need to be more flexible; launching a service with a new customer anywhere in the world requires increased computing resources for a short period of time. WEPROG therefore moved to cloud computing in order to be able to quickly allocate resources for specific tasks.

Drivers and barriers

For WEPROG, internationalisation of its innovative services is very important, because the home markets of Denmark and Germany do not offer sufficient business opportunities. Confining business to the home markets and even to Europe would increase the risk of failure of business proposals and engagements, particularly if customers develop in a direction that WEPROG is not geared to follow or if competition is too high and cheaper products take market shares.

WEPROG experiences similar business barriers in the home markets and internationally, with some specific difficulties outside Europe. The main barrier is widespread **reluctance to adopt innovations** on the part of the customers, as described above. Part of WEPROG's strategy to

overcome this reluctance is the recent introduction of a weather forecast application for the public (see <http://weather.weprog.com>) – entitled “find the weather you like”. Through making ensemble forecasts and their benefits widely known, WEPROG intends to create a level of public awareness that will also influence the mindsets of decision makers in potential business clients.

Another barrier, especially since the beginning of the finance crisis in 2008, is unfavourable **governmental policies** of savings that lack holistic and future-oriented views, particularly with regard to developing regenerative energies. WEPROG has also experienced challenges in terms of rules, regulations and policies about power systems and other operation areas.

Furthermore, customers tend to drive **prices** down towards cheap, low-quality services, challenging WEPROG’s offers of high-quality services. More generally, prices in a globalised market are not always compatible with local costs, especially for human resources. WEPROG tackles this challenge by strongly automating processes with information technology to reduce manual work done by costly staff. WEPROG also outsources certain processes and shares staff with partner companies.

There are also **cultural barriers**. For example, entering the Asian market has been a challenge for WEPROG because of a different communication culture as well as potentially high costs and risk of failure in case of disputes. As regards the communication culture, especially for tech companies, requests for extremely detailed information about products and services in contract negotiations are problematic. WEPROG often has to take care which information is necessary or dangerous to provide. One should also be prepared for particularly slow communication during contract negotiations and decision making in operative projects as well as for particularly late payment. It is therefore advisable for any SME to take pre-cautions with respect to payments. As regards legal disputes, it may in WEPROG’s assessment be much easier and less costly to resolve a dispute within Europe than outside. While WEPROG has so far not had legal disputes, the company calculates them in its offers and in international tenders.

Finally, there is a specific barrier for WEPROG in **developing countries**. According to WEPROG, public research institutions in developing countries receive funds from internationally operating development organisations, thereby out-competing commercial businesses without introducing long-term value to the country. Although funds may be supposed to support SMEs to enter such markets, large development organisations often prefer to fund public research institutions.

Support to internationalisation

WEPROG develops its international links mostly through the directors’ active participation as conveners of and speakers in conferences and workshops as well as in research projects and publications. Last but not least, WEPROG's directors also act as advisors for an international non-profit organisation in the field of energy.

WEPROG has experience with **public research and development (R&D) projects** since 2005, for example funded by the Danish Public Service Obligation (PSO) or the German ministries for the environment and the economy. WEPROG's directors also have experience in other Danish and also Irish national R&D projects as well as EU Framework Programme projects. However, most potential partners operate far too inefficiently for a commercial company like WEPROG that is driven by fast market developments. In WEPROG’s experience, public research projects are often not managed effectively and too much time is spent on education of partners and reporting to the funding agencies. Considering that project funding allocated to commercial companies is usually 50% (70% under Horizon 2020), it is often cheaper to finance dedicated research internally instead.

So far, WEPROG has not yet participated in other public support measures. One reason is that applications for such support would consume too much time.

Impact of internationalising innovation on WEPROG and lessons learned

Impact

All in all, internationalisation of innovation had a **significantly positive impact**. It helped WEPROG to sustain and develop its business, to be a recognised international player, and to gain experience that improved services in Europe as well.

Like all companies, WEPROG also experienced some unsuccessful tenders and contracts over the past decade. WEPROG attributes this to protectionism (e.g. unspoken rules of having to apply with a partner from the country concerned), skewed competition due to national funding for research organisations, or disadvantageous changes in legislation caused by industry lobbying that made forecasting no longer feasible.

Lessons learned

▪ **Be prepared for high risk abroad**

Following WEPROG's experience, other SMEs seeking to internationalise their innovation activities need to be aware that there is a high risk abroad. A new market entrant often lacks understanding of the local community, politics, and governmental policies. WEPROG recommends other SMEs to be well prepared for the pitfalls of foreign communication cultures and regulations, particularly in Asian markets.

▪ **Select your partners carefully**

In case of international joint R&D projects, it is advisable to only engage with partners who comply with the company's business objectives.

▪ **Difficulties are manageable**

However, in order to run a sustainable business it may be necessary to offer services globally – and after all the difficulties are manageable.

References

Research for this case study was conducted by Stefan Lilischkis, senior consultant at empirica Gesellschaft für Kommunikations- und Technologieforschung mbH, Bonn, on behalf of the study about internationalisation of innovation in SMEs. Sources and references used include desk research plus the following:

Interviews

- Corinna Möhrle, Director, WEPROG, answers by e-mail on 23 October and 10 November 2015.

Websites

WEPROG: <http://weprog.com> and <http://weather.weprog.com>, last accessed 13 November 2015.