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# How does Virtual Organizations as Collaboration Networks Benefit Society? Descriptions and Experiences from Collaboration Networks in the Rogaland Area

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## ABSTRACT

*This article describes two successful virtual organizations and tries to extract features that may have a role in their success. The first, TESA, is the oldest and was on the height of activity in the 80s. The second, RKK, is still increasing its activities. Both cases seem to suggest that a "change agent" combined with "open door" policy and shared benefit is important. ICT was never an issue with TESA but has an increasing importance for RKK enabling a higher frequency of collaboration. Both cases seem to benefit from surrounding infrastructure and provides to society more than most single companies or other struggling collaborations.*

## BACKGROUND

The author has worked with several industrial collaboration networks over a long period. This includes several network start-up attempts, being employed in one, being coordinator/ secretary for networks, and being hired as consultant. Literature mentions several types of collaboration networks. (1-3) Most of these are either collaboration of similar companies (former competitors) or collaborations along the supply chain to provide some delivery. Our experience is that virtual organizations for developing/ distributing knowledge or developing competitiveness are far more interesting as their impact for long term improvement and local society seem to be better.

There are some issues that seem to be more relevant than others when we aim for developing industry by active use of technology transfer and industrial clusters / collaborations. (4) The hypothesis for our descriptions is that is a few dominating characteristics determine the success of a virtual organization. If that seems to be the case, then development and implementation of ICT tools should emphasis those issues as much as possible.

## CASES

Sometimes cases may help us to understand the mechanisms involved in how industry is developing. We have several collaboration networks or industrial clusters in the Rogaland area, and several attempts have also later disappeared. I will describe two cases that seem to have most impact on their surroundings. First, the TESA network because it is the oldest and has initiated most of the other newer ones. Second, the RKK organization because its aim is to direct utilize public resources for industry to the benefit of society.

It must be added that many people have been involved in these organizations, and some of them may view what has happened from different perspectives than the one described here. However, being one of few people who have followed these organizations over a long period and the only one to have written a PhD thesis about the development of the TESA collaboration and its members, I feel entitled to promote my observations from a long period of time and the causes I find relevant.

## TESA

TESA is /was the oldest industrial collaboration in Norway. The name is from the Norwegian "TEknisk SAmarbeid", or technical collaboration. The purpose of TESA was to increase competitiveness for the member companies, and even from the start it was recognized that this included an open attitude towards local schools that would supply both future employees and vendors.

## HISTORY

TESA started in 1957 by 4 local companies in the Rogaland region of Norway. For many years it was a small meeting place where employees got to meet each other and thus it created a local infrastructure together with the local vocational schools.

Even if the initiative was from the head managers or owners of the companies and they stayed on the board of TESA, the main activity soon was dominated by the foremen and middle management of the companies. These people created various meeting places according to their common need.

There was some change in participating companies, and when Gunnar Finne started out as full time manager (referred to as Secretary) of TESA in 1970 there were 5 companies. Finne merged the TESA with some companies in the Bryne area in Rogaland and formulated the strategy as shown in Figure 1.

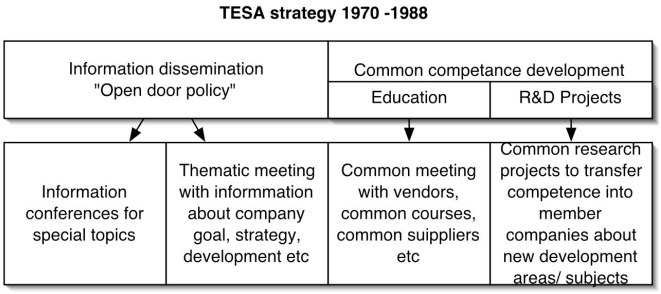



Figure 1 shows the TESA strategy as outlined by manager Gunnar Finne when he became manager in 1970

When next TESA manager took over as Managing Director of TESA in 1988, it included 14 companies. Finne was very observant to establish a frequent contact between middle management of the companies, insisting that this was the group of people whose competencies developed the companies. He was organizing activities for these people such as common vendors meeting, common study groups of "Toyota" literature, common courses, and common research projects. All of this was organized by the TESA organization on behalf of the companies. Of course, holders, vendors, researchers were hired to deliver and collaborate, but it was clearly stated as important to keep the companies in the driving seat.

In the late part of this period TESA charged the member companies 100 000 NOK per year as a membership fee, but all net-income from specific activities was transferred back to the participating companies, and a eventual net income from a year at TESA itself was returned to member companies in equal shares.

An important rule that lived within TESA for a long time was that any company applying for membership should be considered to be a positive addition by all present members. This ensured that competitors were allowed only in some specific cases, and then only when the competition area was not part of the core business of the newcomer.

This "Action Learning/ Action Research" method of working has later been recognized to develop world-class companies. (5) In the 1970-90 this was the normal way of conducting study groups and research projects coordinated by TESA. A main issue in this was probably the focus in the TESA collaboration at that time at middle management and foremen as the knowledge core of the companies. These people were also a stable workforce that kept experience and contacts within the companies when managing directors and operators came and left frequently.

On example is the action learning based common course in industrial automation in the sixties, which resulted in several of the companies building and later selling industrial robots as products. Today, only one is left as ABB Flexible Automation, the major vendor of "spray painting robots" for the automobile industry.

TESA was instrumental in creating Jærtek in 1986-88. Jærtek is a foundation with a main purpose to provide up to date knowledge to industrial employees. The establishment of Jærtek had as stated goal to increase the number of courses available for industrial employees, and the number did increase. What was not anticipated was that the main target group for TESA courses, which was the middle management, consisted of too few people. That made repeating of courses almost impossible. The result was that Jærtek aimed on the operators as primary target since they had the numbers to keep the business going by ability to repeat courses. The number of courses for the TESA main group, the middle managers, was actually reduced.

TESA managers after 1988, were mostly occupied with the main administrative directors of the companies. These were the people who sat in the board, and these were the people that demanded results for the shareholders. One of the consequences of this was that TESA no longer took initiative to common research projects nor managed such projects for the companies. TESA and the companies participated from now on as cases for research institutions such as Rogaland Research institute and SINTEF. These changes generated a search for more members in parallel with a question from the member companies why they should pay so much per year as the specific individualized service declined. TESA increased numbers to 15 member companies in 1999.

TESA activity was then reduced close to zero in 2001 as most companies stopped being members and only 2 companies continued. The main reason stated for terminating the membership was that the remaining activity was mainly purchasing and information exchange. On purchasing agreements it was said that the company had better agreements available through corporation or otherwise, and that remaining activities was too small to allow the use of money and time.

## Activities

The main TESA structure was the experience groups that met normally 4 times a year. In some periods these were only the "production leader" and "purchaser" groups, but in most years there were 4-8 parallel groups in action based on the principles of learning by doing. In many of these groups people from outside like local teachers, local research institute employees etc. were admitted for a period, thus generating an infrastructure around the companies.

*Figure 2: TESA used groups for experience transfer. Here as captured in the book Action Learning by C. Revans(6) where TESA was cited a reference in the Norwegian edition.*

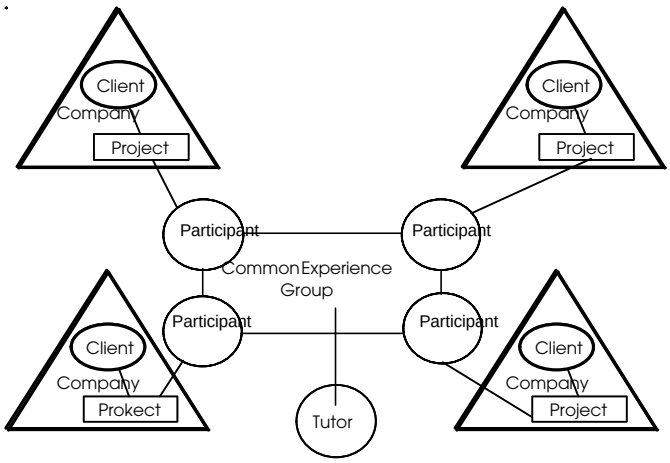
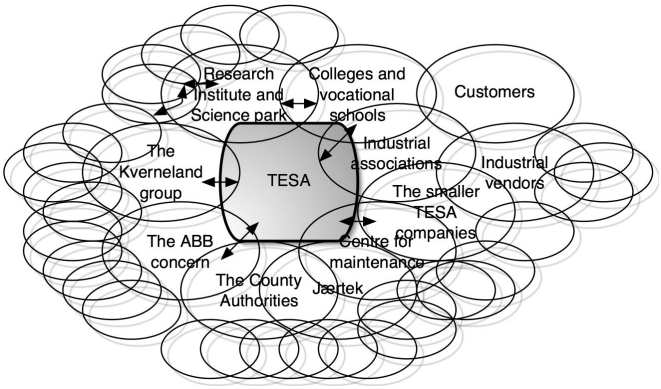



*Figure 3: The TESA structure developed over time to a very complex infrastructure of companies, corporations, R&D partners, educational institutions, public organizations etc (7)*



The purchasing group negotiated common purchasing agreements for all members, and for some time in the 1980s, these agreements were better than the corporation agreements available to some of the members with such owner organization.

When TESA was conducting / managing research projects, one of these groups were the board of the actual project, whereas project manager and project workers typical were a mixture of employees from the companies and researchers from a research institute on hourly based hire. Typical these projects did include participants from local schools and research organizations, but the main project force were employees from several companies.

## Observations

The TESA system developed to a complex infrastructure, as more companies were included. At the same time many of the companies went from a local ownership to become part of large corporations and more public institutions and schools in the area and national developed relations to TESA. This external infrastructure development has been a slow but consistent process during the last 30 years.

More than 15 industrial collaboration networks of various kinds have been generated over the last 20 years in the relative small county of Rogaland. To my knowledge all of them include people that have either direct or indirect experience from the TESA.

TESA participated to establish open chambers of commerce in the area, industrial course vendors as Jærtek, etc., and thus laboured to let others do work for the companies that TESA previous had done itself.

When TESA started to gain momentum in the 60s and 70s the companies were not obviously different than several other similar companies in the area. That meant local oriented companies with export as an exception and slow growth, if any. When we came to 1995, many of the TESA companies (all that had been active in the TESA system) had 80- 96% export and were regarded international as major producers. None of the non-TESA member neighbour companies had such a position.

As stated, TESA as such, reached a major decline two years ago. The foundation for the collaboration smouldered away without the last manager being able to supply a new context. It may be said that as TESA generated many other collaboration contexts between public authorities, schools etc. and the companies it followed a kind of product life cycle on its own. The two last included companies still collaborate in the TESA name.

## RKK

Rogaland Training and Education Centre. (Rogaland Kurs og Kompetanse senter, RKK)

was established in 1989. It is a private foundation set up by the County of Rogaland in conjunction with the regional branches of the Confederation of Norwegian Business and Industry (NHO) and the Norwegian Federation of Trade Unions (LO).

Rogaland Training & Education Centre comprises the 32 upper secondary schools in the County of Rogaland. Each school is itself a resource centre for further and continuing education.

## History

RKK started up in 1987 in parallel with Jærtek. It was an initiative from a few local politicians who wanted to increase the use of public investments in vocational schools to promote competitiveness of industry. To the luck of RKK, they managed to keep it as a foundation and was allowed to direct the money earned back into the participating schools. In that way the industrial use provided extra money to develop people and equipment at the schools. (The following citations are collected from http://www.rkk.no)

RKK had a slow start, as the idea was foreign to both industry and schools. Then in 1993 came a new manager from a local wharf with a significant different understanding of how such an infrastructure should be run:

"In the early years, the public labour market services were our biggest client. Schools wishing to run courses outside normal school hours co-operated with the various labour market offices, and targeting of a specific market had no real priority. The big change came in 1993/1994 when RKK went actively out into the market with a clear marketing strategy. Industry realised at once the potential of using the resources of 32 schools with well-qualified and experienced teachers, and the proportion of course participants from the private sector increased sharply.

After 10 years, our customer profile has undergone a radical change. While the private sector accounted for only a small percentage in the initial years, its share by 1998 had risen to 85%. Industry has clearly come to appreciate the cost-effective RKK model."

In 2000 RKK sold for more than 40 M NOK with a nice net income, and in 2001 close to 45 M NOK with 15% net income. This increase is said to be due to the utilisation of eLearning. Ca 3500 of a total of ca 8000 learners uses elearning to some degree, this making the RKK system one of the very few providers that earn money on their main activity including elearning.

## Activities

"RKK, in its capacity as resource centre, can point to steady expansion. Upper secondary schools in Rogaland deliver an increasing range of competence development programmes to the industrial and commercial sectors, also undergoing marked expansion. These programmes meet a wide need for both general and specialised competence and incorporate cost-effective teaching methods also designed to meet the needs of the customer, whether from the public or private sector, institutions or individuals **.....** As a supplier, we have managed to live up to our motto: What you need, when you need it and where you need it." RKK has been more focused than its competitors to adjust content to the company need, not trying to cling to a standard setup.

*New technology*

"To enable us to serve the current, and not least the future adult education market, the implementation of ICT-based teaching methods has been absolutely essential. In mid-December 2000, we had about 1000 participants on networked courses. ....

In contrast to our competitors, we have opted for a net-based method that puts the teacher in the centre. We don't believe in the efficacy of e-Learning programmes designed by technocrats who put greatest emphasis on the technology and require teachers to keep pace with increasingly fancy solutions." RKK have been eager to systematic use low-end Learning Management Systems, but starting slow along with the learning path of the actual teacher in each course.

*New alliances*

"RKK is able to operate with a minimum administrative organisation thanks to capable associates and favourable alliances. We have acquired partners with specialist competence in their fields, which include technology, planning, teaching and marketing. Wherever possible, we aim at using local resources in the interests of stimulating and helping to develop the level of professional competence in our home area. ..." This is a virtual organization that is constant changing due to input from the client companies.

*Internationalisation*

"RKK is in the preparatory phase of becoming a knowledge provider on the European education market. We have established an International Network for development and distribution. Our aim is to accompany Norwegian enterprises into the international market. Rogaland County has specialist competence and know-how in a number of fields, such as petroleum and aquaculture. In collaboration with Norwegian and international partners, we are planning a range of net-based programmes which will be made available on the European market in the course of the next few years.

The RKK model is being introduced in Latvia, Greece and Spain through a 3-year project with EU financial backing. We are also engaged in other EU networked education projects, for both distribution and teaching methodology." The present work includes sub-sea well-drilling

courses in Angola and teaching teachers in the Baltic countries to teach by applying internet.

### Observations

The RKK story is really amazing as it shows how the ideas of a manager given the opportunity can transform individual public vocational schools into a money-generating infrastructure. Everything based on voluntary participation where teachers and schools now often line up to be allowed to participate in stark contrast to a past where many of them worked quite isolated towards industry.

It is a bit too simple though to think that this is the effort of one person, a change agent. The organization was defined by politicians well before any of the present employees became involved, but my opinion is that in this case we had (and have) one person that has abilities in enabling other people to provide and participate. (8, 9)

The RKK system has during the last years transferred more than 43 M NOK to the participating schools. That represents a net income of 13% at RKK as an average for 10 years, and these are funds the schools use for their development in addition to the normal funds yearly provided by public authorities.

## KNOWLEDGE TRANSFER OR?

So what can we deduct from these cases? We recognize some issues that seem to be important to develop a sound collaboration, but we do not know if these issues are dependant on local culture or other neglected factors. TESA shows a kind of product life cycle for the organization, and both virtual organizations make an impact on local society including local vocational schools in both cases. As in many other situations involvement is a major issue. In these cases involvement is combined with an open door for various mutual benefits in alliances. A high frequency in relation/ communication is also important. Here we may assume that the RKK use of ICT and videoconference equipment has a clear relation to the faster growth compared with the TESA without such tools.

In both cases we have an individual whose work with strategy is significant, possibly a necessity, in relation to the people involved. Thus he is acting as a change agent being able to change the mood and involve other people.

In my opinion, we see traces that indicate that virtual organizations behave like knowledge or organizational learning. The more you use it, the more it generates, both in terms of local infrastructure and local competitiveness.

The TESA never got hold of using ICT as a collaboration tool even if it was tested several times in the later years. In the RKK case it seems to be a catalyst for further growth as RKK uses the Learning Management System (LMS) both for internal coordination and communication, and uses these systems to expand into marked outside of Rogaland and outside of Norway. So what can be said about the hypothesis?

If a strategic relation-builder or change agent is this important, then this should be recognized and combined with both tools for communication and an open information sharing for mutual benefit structure. The RKK situation as of today seems to indicate that this may be enhanced by proper use of ICT tools.

The TESA case and the RKK case shows us that industrial collaboration with emphasis on knowledge transfer may have a huge impact both on the participating organizations and the region.

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