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1st STUDY CASE: FINLAND

Professor Lauri Lajunen Rector of the University of Oulu

The Technology Center of Oulu

Among the leading centers of technological research and innovation there is one which is different from the others in several crucial respects. The technology center of Oulu is out of way and 200 kilometers from the Arctic Circle. There are only two hundred thousand people living in the area. Weather conditions are harsh. Winter is cold and dark with a lot of snow. Nevertheless, Oulu has developed into one of the leading centers of technology over the past ten years. In the eighties Oulu was known for its chemical and wood processing industry. It was then that Oulu declared itself a city of technology. The city, university and the enterprises collaboratively produced a strategy for the development of local economy. This strategy has been followed and updated when necessary ever since. Today Oulu's strength lies in information and communication technology, especially in wireless communication. Other important areas include biotechnology, environmental technology and wellness technology. In the area of mobile communication Nokia has been the driving force of the techno economy of Oulu. There are twelve thousand persons employed in the hi-tech in the Oulu region. This is ten per cent of all employees. Twenty per cent of all the Finnish hi-tech can be found in Oulu region. There is a tightly knit network of education, research and enterprises between the city and the surrounding communities.

The following stages can be mentioned when tracing the development in the region: founding of the university in 1958, founding of the Technical research center of the state in 1974, founding of the Technology Village in 1982 and the declaration of Oulu as a city of technology in 1984.

The most important of these phases was the founding of the University. Without the university this success story would not have been possible. What is more, Oulu has the right kind of university: it was founded at the right moment, its scientific basis was built in the right manner and at the beginning of the nineties the right strategic choices were made. The areas in which the university decided to develop can today be seen in the center of excellence programme for the Oulu region, in the development strategy of economy, which is called "growth agreement two thousand and six" and in the whole of Oulu's techno economy.

Oulu specialises in few areas of sophisticated technology. To make choices does not mean that Oulu shuts the doors to other areas. When we master the central technologies of our time we can, through combinations and applications, create something truly innovative and unheard of.

The Finnish Universities

The Finnish university is based on Humboldtian ideals of autonomy, freedom of research and teaching and the unity of research and teaching. These are still essential elements in the university but we have to be able to combine them with cooperation with other research and teaching organisations, with businesses and with officials. The needs of society have to be taken into account. However, it must be made clear that universities shall not be the executors of every whim of businesses. Universities must be pilots. Universities must research that knowledge and those applications which society needs in five or twenty years.

Universities are faced with great expectations and demands. While universities are looked upon for solving the problems of the present and for the participation in social development projects, they should also create visions and makers of the future. However, it is important to all the universities that they concentrate in scientific research and teaching based on that. The aim is a good international level of quality. That is how a university can work for the human kind and for its own sphere of influence.

During the history of universities their esteem has varied greatly. Our time emphasises the meaning of universities and they are highly appreciated. In Finland universities hold the third place in trust barometer together with the press. (Trustworthy are only the police and the army.) University professions are also among the most highly esteemed within all professions in Finland. The esteem and importance of universities will remain high only if they manage to accept the challenges presented by modern changing societies. This cannot be successfully accomplished by using old attitudes, strategies and structures. At present we need to take into account globalisation, technological developments as well as environmental aspects and custom orientation.

During the last ten years there has been a 40 percent increase in the number of students. Most of this has been in the academic fields central to businesses, that is, natural sciences, technology and economics. Universities are an essential part of the national innovation system. Different departments, teachers and researchers cooperate closely with other universities, research institutes, businesses and politicians. Majority of academic diploma works are done on themes which interest the economic life.

One of the most important challenges for education and research is the acknowledgement of problem based approaches and multi- and cross disciplinarity. At this moment the fastest growing

areas include environmental sciences, bio-sciences, information technology and new materials. Each of these areas requires knowledge from different areas of sciences. It is also to be noted that knowledge concerning molecules is necessary in nearly all fields of sciences. University education must be able to react to changes in the scientific knowledge and to social changes which can be seen as changing working conditions. University graduates and post graduates will have to work problem based and to work in teams as experts of their own field.

The University of Oulu

University of Oulu is a science community of 3,100 employees and over 15,500 students. The university has a large scientific base of nine educational areas, which are organised in six faculties (education, humanities, natural sciences, medicine, economics and business administration, and technology).

One department cannot do everything possible under the sun and at the same time acquire a good international level of quality and efficacy. Devising a strategy requires making choices and setting clear goals. This entails taking into account changes in scientific knowledge and social relevance. University of Oulu has defined its basic mission to be the advancement of educational and material well-being of Northern Finland. In this multi-disciplinary university there are only four fields of focus, which are bio-technology, information technology, northern issues and environmental issues. In these areas the university is a strong international scientific community and each of these fields has a great impact on the economic and cultural life of Northern Finland.

Competition introduces new challenges continually. To maintain an achieved position will be increasingly difficult, since everyone is investing in improving their performance. In addition to identifying your strengths and potentials it is necessary to recognize your weaknesses and threats and to deal with them.

The strengths of University of Oulu include multi-disciplinarity and a broad knowledge base of high international level in the fields of focus. The university networks closely with the surrounding society and it has advanced strategies and a structure for regional cooperation. Out-dated basic funding and the diminishing recruiting sphere due to decreasing number of population in Northern Finland are clearly threats. In order to be successful in research, education and in societal resource mission a university must have good human and financial resources and functional internal processes and structures. A university will maintain its competitive edge only if these processes and structures remain flexible and only if it offers its researchers and teachers a chance to develop and renew themselves. In addition to this, success necessitates good partners and allies. In the future, it is predominantly networks who compete and to belong to strong networks is part of success. It can

be said that for a university to be successful it is not only the scientific development which counts, but also the needs of the surrounding society and the global developments.