



The Royal Swedish Academy of Engineering Sciences

ANNUAL REPORT 2004

»The Academy's mission is to promote the engineering and economic sciences and the development of industry for the benefit of society.«

IVA is an independent arena for the exchange of knowledge. By initiating and stimulating contacts between experts from different disciplines and countries, the Academy promotes cross fertilisation between industry, academia, public administration and various interest groups. Bringing people together to take part in lectures, conferences, research exchange and other projects, serves to generate new ideas and knowledge.

The Academy has a longstanding tradition of highlighting the implications of strategic choices that, in various ways, are affected by technology, the economic consequences of new technology, and prerequisites for sustainable development.

The Academy directs its activities into four areas:

- Education and research
- Technology transfer and enterprise
- Technology and society
- Techno-economic foresight.

IVA's network consists of distinguished engineers and economists from business and industry, education and public administration. With close to 1,000 Swedish and foreign members elected to the Academy by their peers and some 250 members in IVA's Business Executives Council, the Academy constitutes a highly competent knowledge bank.

His Majesty King Carl XVI Gustaf is the patron of IVA and takes an active part in Academy activities.

PREFACE	5
TECHNOLOGY AND SOCIETY	6
TECHNOLOGY TRANSFER AND ENTERPRISE	10
TECHNOLOGY AND RESEARCH	14
TECHNO-ECONOMIC FORESIGHT	18
CHINA	22
IVA'S BUSINESS EXECUTIVES COUNCIL	24
GENERAL ACADEMY ACTIVITIES	26
IVA'S CONFERENCE CENTRE	33
IVA DOCUMENTATION	34



GENEROSITY RESTORES CONFIDENCE IN THE FUTURE

On Boxing Day we heard the news on the radio and TV of the disaster in Southeast Asia. The losses were impossible to comprehend, as was the sorrow for so many, both here in Sweden and throughout the world. Our global community came together and the desire to help those affected gave rise to a level of generosity we have seldom witnessed. It will take many years to work through this; the question is if we will ever fully recover from the biggest natural disaster in living memory, even though the people in the affected countries have shown a hugely powerful resolve to rebuild their homes and lives again.

In spite of this disaster, we will be able to remember 2004 as the year when things turned around. And in many areas, this meant change for the better.

The EU welcomed ten new members into the Union. Peace efforts in Europe can now be developed further with the common market as an effective tool.

The Swedish business community started an extensive self-clean-up initiative following a series of scandals and revelations. Companies were supported by the efforts of the Commission on Business Confidence (Förtroendekommissionen), in which I participated. Now we are seeing more women as board directors and more clearly defined regulatory frameworks for corporate governance.

And finally, after a difficult period, there was an upswing in the economy, the pressure was relieved, and the world could breathe again.

In the race towards the future, Sweden took the lead when Newsweek, this summer, compared opportunities in the world's industrial nations. China, with its anticipated technological leap, was described as the nation of the future for engineers. The US still seems to be the country for those seeking wealth, while Germany offers the best conditions for artists and performers. But for people who want to live in the "land of opportunity," Sweden is the place. We were ranked best overall in education, income, health and democracy.

In today's globalized society, Sweden has many advantages. As a small country we have a wealth of experience in international enterprise – a necessity if our companies are to be able to grow. We are already well established in the world's largest and fastest-growing markets, with operations in China, South America and Russia that were established more than a hundred years ago. Our engineers laid the foundations early on for Swedish success. As globetrotters and often adventurers too, they enabled our companies to deliver cutting-edge technology internationally throughout the last century.

Another important factor enabling Sweden to increase its prosperity was the strong climate of cooperation between Swedish public administrations and the business community. With the Government here at home as a knowledgeable and reliable customer, industrial enterprises could grow strong enough to expand internationally. State-owned Vattenfall and Televerket took the domestic market; ASEA and LM Ericsson conquered the world.

But that was then. Today we lack a common strategy for Sweden's growth. After deregulation we need new ways to connect the public and private sectors. It is time to find new forms of cooperation for an innovative Sweden. And Sweden is certainly in a strong position as we look forward to new technological advances within areas such as security, IT and biotechnology. But it is vital that we make the most of our talents.

Now that major future-oriented technology sectors such as space, telecom and computer engineering are coming together in a giant European project entitled GALILEO, Sweden needs to be involved. 30 satellites are

to be put in place for civil and military use. We need to link up the third generation telecom systems currently being rolled out to combine text, speech and images, with positioning via satellites. Everything needs to be in place by 2008. GALILEO means that the Americans will no longer have the monopoly on satellites, and Europe can develop its own security systems. And this brings new challenges.

It is not merely a question of linking satellite systems with other communication networks. In order to get the systems to interact, we need common and standardised software. This provides limitless possibilities for the integration of civil and military information to make the everyday lives of citizens safe and secure. The entire EU is waiting for solutions. Sweden understands IT and should take the lead here, especially now that the Swedish military is about to be reorganised. But first we need to take care of this at the national level. We need to develop e-governance with integrated IT systems for the armed forces, police, fire brigade and hospitals, linking them all together.

Only by being strong at home can we qualify for international cooperation with the very best. And Sweden is too small to be a world leader in all areas. The signals from the new research bill indicating a priority on strong research environments with an emphasis on natural sciences, technology and medicine, are therefore very welcome.

We need to create environments that are so attractive that both Swedish and international corporations conduct their research and manufacturing here. Technical development and production go hand in hand, and in the global society, companies are locating their production operations where the conditions are the most favourable and cost-effective.

IVA welcomes the Innovative Sweden initiative from the Ministries of Industry and Education. But words are not enough. We need to create new political incentives so that the business community will work with academia and invest in Swedish R&D. And we need incentives and new structures so that our universities will be able to profitably commercialise our excellent research results. We are not good at this. Venture capital is needed. Perhaps the resources are available within government-owned companies, perhaps in the pension systems, perhaps in the private sector.

There is a good deal of funding available from the EU's extensive research programmes. The next Framework Programme, which is expected to cover EUR 40 billion, will get under way in 2007. Before this time, we need to become better at presenting Swedish interests in Brussels! Because, although we are known as a research nation, we are not participating in setting the agenda. As we now review the public structure for Swedish participation in EU research, we should also increase the influence of experts and decision makers, and coordinate our lobbying activities. This should not be the task of administrators, but rather of influential individuals from the business and academic worlds – only those will attract the attention of EU commissioners and directors.

It is time to create "Vision Sweden" and unite the efforts of the public and private sectors in a joint initiative for the future. IVA is more than happy to help out.



Professor Lena Torell, President.

Healthy People Build Successful Businesses

“We need to think about our lifestyle. As individuals we have a strong personal responsibility to make sure we do not set our sights too high or try to live up to impossible ideals,” says IVA member Leif Johansson, Chairman of the IVA project “Healthy, Successful Companies” and CEO of Volvo.

Leif Johansson began his IVA involvement with these issues in the project entitled “A Healthy Working Life.”

“We identified a growing problem that we wanted to fix. We often hear a plaintive tone when people discuss their working life. But we have learned that everything is connected. We are not isolated in our careers; there are many other things that affect us: our families, sick children, the house that needs painting.”

Leif Johansson and the Volvo Group have maintained their commitment to these issues through the IVA project “Healthy, Successful Companies,” a competition-neutral forum involving the companies and organisations with which Volvo normally works. The question is why. Volvo could have continued with this on its own, with its subcontractors and customers. The company has had a good record in issues of work and health.

“There is no conflict of interests. Healthy, Successful Companies is an exciting project and the results we can achieve together are greater than the sum of what we could achieve on our own. We don’t believe in merely gathering experiences; we want to convert these into knowledge and theories, and to produce results we can base future decisions on. And IVA’s role is important in converting practical experiences into theory and vice versa ‘for the benefit of society’ as they say.”

Why, then, did sickness absence start to increase in the 1990s?

“The answers can be found by looking at the sickness benefit insurance system, among other things. It’s also related to the lack of measures in the labour market for people who are not in perfect health. But it also has something to do with our high-pressure lifestyles. Sickness absence related to psychosomatic complaints is on the rise; although these problems are seldom solely job related,” says Leif Johansson.

He believes that society doesn’t bear the full responsibility.

“As individuals we have a strong personal responsibility to make sure we do not set our sights too high or try to live up to impossible ideals. This only leads to stress and frustration. My wife Eva and I have five children, so we haven’t had time for much of anything other than our children and our jobs. It wasn’t possible to have a zero handicap in golf or take a trip to the Himalayas. But life is a package deal – you have to decide what you can manage and not try to be perfect. My wife is a

teacher working with handicapped children. We have talked a lot about this and I believe that the solution is to work together, within your family, to set up your life in a reasonable way.”

So much for society and the individual. But in what way do companies have a responsibility to keep their employees healthy?

“As the head of the company, I need to remember that everything we do should be aimed at making better lorries and excavators than the Germans, Japanese and Americans. If we don’t do that, we have failed. But I usually also say that a company must have values. We talk a lot about respect for the individual, and if we are to be an attractive workplace, it’s important to have values that don’t result in people getting sick and missing work. We can’t work people to death – we wouldn’t sell any lorries if we did that either. But it is only possible to be flexible if we continue to be competitive.”

“We have statistics that show that the model we are using gives financial results and profitability. Take something as simple as the fact that I know I need seven or eight hours of sleep every night. Here at Volvo they call me ‘Mr. 10 o’clock,’ because that’s when I have to stop.”

The question is: What drives Leif Johansson during his waking hours?

“The best thing about my job is being able to build something of long-term value together with gifted, agreeable people. I need other people around me and that’s why I need to be working within a large organisation.”

“The most difficult thing is taking decisions that will have negative consequences for the employees, such as staff cuts. In order to do this, you need to be convinced that it is the only way to go.”

Leif Johansson believes that employee health will be an even more important issue when times get tougher.

“The Group’s values apply to all the countries where we have operations. In the US the issue of lack of exercise and overeating is increasingly important. There they are on their way to a paradigm shift, similar to what happened with smoking.”

A paradigm shift that is well worth working for, with Swedes getting heavier and less mobile for every year that passes, suffering from “prosperity complaints” such as diabetes, vascular diseases and back problems.



THE PROJECT WITH ONLY WINNERS

Sick pay in all its forms costs society SEK 120 billion every year – and this figure does not include the costs carried by companies. The total bill for one burned-out employee can be as much as SEK 12 million. Business productivity and competitiveness, the inconceivable cost of sickness absence in Sweden, the country's ageing population, and the problem of maintaining levels of knowledge and expertise within companies, were the reasons behind IVA's launch of the "Healthy, Successful Companies" project in Spring 2004.

The Healthy, Successful Companies project is based on a conviction that developing human capacity and the skills and well-being of employees generates pure economic value alongside the human value. One central issue to be addressed is if and how it is possible to tie a company's long-term success to the health of its employees.

A company's workforce is its most important resource and has become a dramatic reality in these times of increased globalisation, rapid technological development and structural changes. Business leaders who want to see their companies achieve good profitability need to understand that the old, obligatory policy statement is now an acute threat to every company exposed to a competitive situation.

Long-term sickness absence costs the most. For businesses, the loss of productivity is the costliest aspect, and for the Government it is sickness benefits. Four diagnosed conditions account for 80 per cent of these: back and neck problems, vascular disorders, diseases of the lungs and psychological complaints. Although in the case of burn-out, the individual's situation in general is the cause of the problem, conditions at work are all too often a dominant factor.

The project is creating networks where knowledge gained in research is combined with practical experiences from companies that are working methodically and consciously to create stimulating and healthy working conditions – organisations that are simply endeavouring to ensure the good health of the employees and the company itself.

The aim is to build several networks: in Skåne, Mälardalen, Dalarna and Norr-/Västerbotten. But as a first step, IVA is testing the programme in Gothenburg on the West Coast. This network has been set up to be competition-neutral while allowing the local connection to facilitate an exchange of experiences. The West Coast is an important Swedish industrial region with a wide variety of companies. Several of them are already working with these issues. A number of R&D centres also exist that have been working for some time with issues linked to the Healthy, Successful Companies project.

A research group is attached to the project to aid companies in their development work. This group specialises in issues of leadership, organisation, health, work environment and processes of change.

The network includes Atlet, Astra Tech, Elanders, Gothenburg University, Ericsson Microwave, Ramböll Sverige, Sahlgrenska Hospital, Schenker, SKF, Södra Cell, Volvo and White Arkitekter. These companies are working systematically and purposefully with work environment issues, analysis, improvement measures and follow-up. Their experiences will be communicated to other companies in the region through conferences and seminars. The first phase of the programme is being funded by AFA and VINNOVA.

NOBEL LAUREATE VISITS SIXTH GRADERS

Excitement, TV cameras, a Nobel Laureate and the Minister for Schools, celebration and science – Is it perhaps the Nobel Banquet? No, it is the Swedish Minister for Schools, Ibrahim Baylan and the 1988 winner of the Nobel Prize for physics from the US, Leon Lederman, visiting NTA (Science and Technology for All) sixth graders at Vasaskolan in Djursholm, Stockholm.

Leon Lederman entered the classroom and immediately sat on the floor with the students as they tested rubber band-propelled crafts built by the sixth. What happens if we twist the rubber band in the opposite direction? Do you know how a propeller works? The pupils made a great impression on Mr. Lederman, who is very involved in improving the status of science education in schools in the US.

"The most important thing is that children have fun and discover the world through their natural curiosity. Working in this way, the children approach science just like the scientists themselves. It's great to see. And they all speak such good English!" he said.

After a few minutes the next "celebrity" appeared, Swedish Minister for Schools, Ibrahim Baylan. He whole-heartedly agreed with the Nobel Laureate that investment in science, mathematics and technology is vital for society and emphasised the fact that learning must be fun.

"When it gets too difficult, it's not fun anymore. It's important that teachers are able to explain the concepts in an interesting way and to generate enthusiasm," he said.

And the enthusiasm of the teachers for "Science and Technology for All" is very obvious.

"Finally, a concept that works. The combination of well thought-out instructions, experiment units that work well and ongoing trai-

ning for teachers, making it possible for us to grow in our role and to venture into this kind of teaching. It really is a lot of fun! And we are seeing the results faster than we expected, first and foremost in the attitudes of the children," says teacher Katarina Nohrborg.

According to Els-Britt Sellin, Project Manager of the programme's development department, the links with the local area as well as with the Royal Academies are important.

"The high level of knowledge, scientific standards and continuity that the members of the academies contribute are very apparent. This is a programme that the local authorities rely on and that is clearly of a high quality. It's a teaching method that really works," she says.

Science and Technology for All (NTA) is intended to stimulate curiosity and increase interest among both pupils and their teachers. At present, NTA is mainly aimed at preschool up to sixth grade. 40,000 pupils and 2,200 teachers from 45 municipalities and 9 independent schools in Sweden are participating, in cooperation with the Royal Swedish Academy of Sciences (KVA) and IVA.

Starting from 1 January 2004, NTA participating municipalities and independent schools are continuing with NTA activities in the form of an incorporated association, NTA Produktion och service with representatives of KVA and IVA on the committee.

KVA and IVA are maintaining their commitment through a new project entitled NTA Development, in which research with a practical approach will be conducted. Based on this and previous experience, a variety of products and services will be created and developed. NTA Development's Steering Committee has representatives from KVA and IVA and a representative from the municipality.

IVA BROADENS BIOSCIENCE DIALOGUE

IVA is creating new meeting places within the “Science Generation” project. The aim is to open up a broad and democratic dialogue about the possibilities and mysteries of bioscience.

An expanded dialogue is necessary because of the explosive increase in our knowledge of genes. Bioscience can help to develop a more sustainable society. At the same time, many people are worried.

How can decision makers assess the general public’s level of understanding of bioscience? What do the younger generation, parents and teachers think about the developments?

In order to answer these questions, IVA has for a couple of years,

been organising discussion groups on the bioscience theme in Malmö, Gothenburg and Stockholm. In these groups people can meet knowledgeable scientists and talked about how bioscience can be put to best use. The groups discuss everything from ethics and legislation to cancer, ageing, cloning, and infectious diseases.

Each year an international symposium is organised and this year it was Sweden’s turn to make the arrangements. Teachers and pupils from all over Sweden participated in the symposium. It showed that young people and scientists have a great deal to teach each other.

Read more about the project at: www.science-generation.nu

EXPERIMENTAL INCLINATION RENAISSANCE AT FESTIVAL

A blue building filled with unexpected encounters awaited when the Stockholm Concert Hall opened for the Stockholm Arts+Science 2004 festival. 9,200 happy visitors were enticed by street dancers, fashion shows, computer games, installations and conversations between artists, researchers and laymen the future. Today, artists and engineers are meeting in professional contexts. Systems engineers need creative talent to develop computer games and knowledge about materials sparks the imaginations of fashion designers. “The festival puts Stockholm on the map. Stimulating meetings happen and careers of the future are developed,” says Anders

Flodström, Chairman of the Foundation for Science Information (SVI) and President of the Royal Institute of Technology (KTH). KTH and SVI were the main sponsors and IVA served as project manager. Participants were: The Swedish Ballet Academy, University College of Dance, University College of Film, Radio, Television and Theatre, University College of Arts, Crafts and Design, KTH, Royal University College of Fine Arts, Royal College of Music in Stockholm, University College of Opera, Royal Dramatic Theatre, E.L.D. Mälardalen Dance Ensemble, Stockholm Concert Hall, Royal Swedish Academy of Sciences and Public & Science.



Several exciting concepts on the theme “Access for All” were presented at IVA’s Queen Symposium. Her Majesty the Queen handed diplomas to students from the School of Engineering at Jönköping University. In the background is Steering Committee Chairman Stig Larsson.

THE QUEEN PRESENTS DIPLOMAS FOR “ACCESS FOR ALL”

Wheelchair gears, a device to connect bikes for side-by-side cycling, a zip aid and a hybrid wheelchair were the winning concepts when students from the School of Engineering at Jönköping University and the School of Design and Crafts at Gothenburg University received diplomas last year from Her Majesty the Queen during IVA’s symposium entitled “Access for all”

One in eight people in Sweden have some form of disability. The students were charged with the task of designing products that can give people with disabilities more freedom to choose how they spend their leisure time. By the time the seminar took place, two of the ten proposals were already being developed by commercial companies.

The project was supported by the Swedish General Inheritance Fund, Swedish National Labour Market Board, National Rail Administration, Drott, Swedish Council for Working Life and Social Research, Grimaldi Industries AB, the Disability Ombudsman, Swedish Handicap Institute, Jönköping Municipality, the Knowledge Foundation, Swedish Consumer Agency, Nacka Municipality, NCC, the Swedish Business Development Agency, Skanska, Swedish Foundation for Strategic Research, Stockholm Municipality, Svensk Industridesign, Swedish Language Committee, Umeå Municipality, The Swedish Agency for Innovation Systems, Swedish Research Council and the Vårdal Foundation. Read more at www.tillganglig.se

COMMERCIALISING RESEARCH IS GOOD BUSINESS

KTH Professor and super-entrepreneur, Mathias Uhlén, is a symbol of technology transfer from the academic world to the commercial arena. He has published more than 250 research papers and founded a number of companies that manufacture tools for drug development: Pyrosequencing AB, Affibody AB, SweTreeGenomics AB, Magnetic Biosolutions AB and Creative Peptide AB. This IVA member and Gold Medallist has also been involved in several IVA projects including "Technology Foresight" and "Sweden and Community Research."

"I was driven by a desire to create job opportunities and build something of value in Sweden, and that's why I am particularly interested in entrepreneurship. In the field of engineering sciences research, it is natural to think about possible applications," says Mathias Uhlén.

In the 1980s and the beginning of the 1990s his department started to sell and patent its ideas, primarily to large corporations in order to secure research grants. All in all, Mathias Uhlén has licensed out 41 of his ideas to other companies.

"It's tough for an entrepreneur to discover that he has 39 ideas lying in his desk drawer," he says, commenting on the fact that only the two that are still in Sweden have resulted in finished products. These have, on the other hand, generated over a billion Swedish kronor in export income.

"Now we are trying to achieve a more balanced situation by hiving off new companies from research projects. This is a very good model, albeit a difficult one. Although we have more control, we still face many financial problems," he says.

Mathias Uhlén is convinced that every krona invested in commercialising research results gives two or three kronor in return – which is obviously a good deal.

"But right now so-called pre-seed funding is being handled poorly in Sweden. Society requires that good ideas should first be commercialised with private venture capital. But the cost of patenting alone costs around SEK 100,000, a sum that very few researchers can pull out of their own wallets," he says.

One of the possible problems relates to the unique rules that give Swedish researchers sole rights to their inventions – the so-called academic exemption.

"Clearly the Government should be providing generous funding for both patenting and for the development of prototypes, and in return it would receive a share in the ownership of the idea. Obviously a safe investment," says Mathias Uhlén.

Only then, according to Mr. Uhlén, should private capital and seed financing be obtained.

"The Government should, at the same time, get involved and co-fund development work, as we often see in the US. There the government encourages those willing to take a chance and has a forgiving attitude towards those who are less successful. They will have other opportunities," says Mathias Uhlén.

So, what needs to be done to encourage research that can be commercially viable?

"I believe that the Government has a vested interest in getting involved and investing more money for need-motivated research. Naturally, it is beneficial if basic research is trying to meet a need."

But what is Sweden good at today?

"Sweden's welfare and prosperity are based on science and technology. High-tech industries such as ASEA, Ericsson, Volvo and Saab put a lot of money into research and development and they can get by without daily entrepreneurial initiatives. But if we are to survive, all parties must be focused on enterprise: the big corporations, the new upstart companies creating their own niche, and the universities."

"Within academia, we must face our responsibility and clean up our own backyard. We have excellent students. We must maintain the high academic standards, but we need to supplement this with a much larger dose of life learning and enterprise."



IVA IN LONDON UNDER THE ROYAL FLAG

In 2004, IVA's "Royal Technology Mission" set its sights on the United Kingdom, focusing on London, Cambridge and Oxford. Under royal patronage, thirty individuals participated, including prominent biotech figure Mathias Uhlén, Astra Zeneca's Vice Chairman Håkan Mogren, President of the Knowledge Foundation, Madeleine Caesar, President of Stockholmsbörsen, Kerstin Hessius, Director General of FOI, Madelene Sandström, Investor's CEO, Marcus Wallenberg and the President of Gothenburg University, Gunnar Svedberg.

The UK economy has enjoyed an exceptional recovery over the past few years and is now stronger than it has been for many years. One reason is the numerous new knowledge and technology companies that have emerged around British universities; innovative clusters that act as bridges between academic research and private enterprise. Professional support for commercialisation of research results is developed here, and it is also easy to find funding for new ideas.

In order to compare the situation in Sweden with the UK, the Royal Technology Mission decided to study British de-

velopment in biotechnology, a knowledge field that is important for both countries. The IVA delegation visited and studied both small, newly formed companies and larger organisations in Cambridge, Oxford and London. The delegates also met the Manager of the English national soccer team, Sven-Göran Eriksson, who talked about his experiences in the country.

This was IVA's seventeenth international delegation trip for the purpose of learning about a country and forging contacts that in the future may lead to an increase in the exchange of ideas and business opportunities.



Photo: Stefan Eriksson

His Majesty the King and Pehr G. Gyllenhammar in conversation. Kerstin Hessius of Stockholmsbörsen and Erna Möller of the Knut and Alice Wallenberg Foundation.

NEW SPRINGBOARD FOR THE WORLD'S ENERGY MARKETS

Sweden has deregulated the public monopolies faster than other countries. In the "Cooperation for Growth" project, IVA has studied how innovative forces changed when the electricity, defence, railway and telecom sectors became re-regulated. The project focuses on technical development, R&D, the strategic development of companies, and the actions of the central government and government agencies over the past 20 years. The goal is for the project to provide proposals for ways in which the interplay between industry and the government can be developed to stimulate Swedish innovation. The

long-term goal is for Sweden to be able to maintain its strong engineering industries and thereby ensure positive growth.

A direct result of "Cooperation for Growth" is the proposed initiative to gather and energize the expertise in the field of electric power in Sweden. A new project has been created with the title Elkraftringen (The Electric Power Ring). The aim is to increase Sweden's ability to sell electric power technology expertise, education, research, services, products and systems in an increasingly globalized electric power market.

INTERNATIONALLY COMPETITIVE PRODUCTION IN SWEDEN

Sweden will regain its position as one of the world's leading production nations. That is the goal of the IVA "Production for Competitiveness" project, which started in 2004 with the participation of much of the technology community in Sweden.

"It's important to make a determined effort right now to reverse the negative trend and increase Sweden's chances of regaining its position as one of the world's leading production nations," says Hans-Olov Olsson, Chairman of the project's steering committee and CEO of Volvo Personvagnar AB.

Manufacturing industry accounts for most of Sweden's exports and directly contributed one quarter of the total GNP in 2003. However, there are indications that Sweden is becoming less competitive, for example, with the transfer of production operations to low-

wage countries, low utilisation of the capacity of our factories, and the shortage of skilled personnel.

This is why IVA is taking stock of the situation and providing suggestions for ways to strengthen production and rectify the problems. Experts are working within the project to examine and describe the role of production in Sweden today. Based on current trends, such as globalisation, restructuring, relocation, specialisation, increased cooperation and higher expectations for resource utilization, they are trying to predict what the production situation will be in the future. Sweden's strong points as a production nation are also being examined. Education and research within the production field are being scrutinised in order to generate proposals for a structure that will make it possible to meet future competence requirements.

Behind this project are: Teknikföretagen, Metall (Swedish Metal Workers Union), IVA, VINNOVA, the Foundation for Strategic Research and the Knowledge Foundation. The project will conclude with a conference on 14 April 2005.

THE SPIN-OFF COMPANY OF THE YEAR WARNS OF DAMP
The Gothenburg company, Alfasensor, was the winner of the fourth "Spin-Off Company of the Year" competition. The company has developed and is marketing an effective, inexpensive humidity indicator.

In this competition organised by IVA and Connect Sweden, 27 companies competed and six went to the finals: the winner and Eutech Medical, Oxen, Chromogenics, Innate Pharmaceuticals and NordNav Technologies.

The jury consisted of Lars Öjefors, CEO of Industrifonden; former CEO of Ericsson, Sven-Christer Nilsson; CellaVision's CEO Yvonne Mårtensson; and Ulf Lundkvist, formerly the head of research at Pharmacia.

Alfasensor was the "Spin-Off Company of the Year" thanks to the company's effective humidity indicator.



Hans-Olov Olsson, Chairman of the Production for Competitiveness project, was one of the speakers at the project's launch.

IVA PROJECT SETS UP ON ITS OWN

Six years ago Connect Sweden started as an IVA project to support entrepreneurs in new high-tech companies. The project developed so well that in 2004 it was hived off to form a separate organisation.

Connect Sweden has grown to be much larger than its prototype in San Diego, USA. The organisation's goal is to stimulate the development of growth companies by bringing together entrepreneurs, investors and other professionals, such as accountants, lawyers and management and marketing consultants. The organisation is present all over Sweden, working both at the national level and through regional networks. Connect Sweden's immediate task is to focus on making the organisation more visible.

In 2004 most of the funding for Connect Sweden came from the Confederation of Swedish Enterprise and the Swedish Industrial Development Fund. At the Annual Meeting in March, Lars Öjefors, CEO of Industrifonden was elected as the new Chairman. He takes over from Christer Zetterberg who has served as Chairman since 1998.

Education in a Broadening Perspective

“The most important aspect of projects like “Engineers of Tomorrow” is the process itself,” says Vice Chairman of the IVA project’s steering committee, Sigbrit Franke, a new member of the Academy.

In her everyday life, she is the Swedish University Chancellor and Director General of the National Agency for Higher Education, Professor of Education and Psychology and former Rector of Umeå University.

Sigbrit Franke believes that it is important to increase cooperation between different universities and colleges in order to facilitate the distinct profiling of the individual institutions. If it is possible in the future for their activities to be more concentrated and focused, it will be easier to improve quality. These ideas are confirmed by the conclusions of the “Engineers of Tomorrow” project.

“We need to find incentives in order to reach these objectives. Colleges need to receive funding and support when they decide to specialise,” she says. “The current system of resource allocation works in the opposite direction.”

“The most important aspect of projects like Engineers of Tomorrow is the process itself. Many individuals are directly involved. Even more people reflect on the issues when various problems rise to the surface and are discussed. The public debate is deepened and this increases our chances of influencing politicians, players in the business world, teachers and students,” says Sigbrit Franke.

She feels that it is important to stimulate an interest among young people in science and technology, long before it is time for them to apply to university, if we are to meet the future recruitment needs of science and technology programmes.

“I usually tell young people that they should choose to study topics that interest them. They will be more committed and their choice is not experienced as so definitive or final. There are often several twists and turns along the way.”

Sigbrit Franke herself was first educated as an elementary school teacher, although this was not her own choice.

“I actually wanted to go to Uppsala University to study medicine. But teaching was considered a safe profession with a steady income for a girl from the countryside.”

As soon as she secured a position and was able to continue studying by taking partially-paid leave, she studied to become a psychologist. She taught education and started with post-graduate studies. In 1982 Sigbrit Franke became a professor.

Today, in addition to her job as Sweden’s University Chancellor, she is also the Chairman of the Board of the Royal Dramatic Theatre in Stockholm and Universeum in Gothenburg.

“As an IVA member I hope to be able to contribute by sharing my experiences from the National Agency for Higher Education (Högskoleverket) to produce various factual materials and analysis to increase people’s understanding of the world of higher education. But I also want to initiate new studies, raise questions about issues that need to be highlighted, and to help improve quality and further IVA’s initiatives.

Sigbrit Franke says that one of the most important issues for the future facing the National Agency for Higher Education is improving the quality of Swedish academic institutions.

» I usually tell young people that they should choose to study topics that interest them. They will be more committed and their choice is not experienced as so definitive or final. There are often several twists and turns along the way.«

“It’s clear that our evaluations are quality driven,” she says. She is also involved in these issues at the European level.

“I believe that here in Sweden we have a lot to contribute to the efforts to find a uniform system for Europe,” she says.

Sigbrit Franke thinks the most exciting aspect of her professional duties is that she is always broadening her perspective. As head of a department in Umeå University, the institution’s perspective that was important thing, as a dean, it was the faculty’s perspective, as rector it was the entire university’s, and as University Chancellor, the perspective is a national one.

“The difficult thing is to be bold enough to be an independent agency; working independently of both the Government and the academic institutions. It’s important to find a balance and always remember that the information and analysis that we provide will be used to make wiser decisions,” says the University Chancellor.



QUALITY ASSURANCE FOR THE UNIVERSITIES OF THE FUTURE

The tough competition for students is making more and more seats of learning pay the cost of empty places at the same time as they are missing out on government funding. The conditions for researchers have also changed; the reduction in government funding is increasing the need for external sources of financing, at the same time as external financiers are raising their expectations for cooperation and network building.

Sweden and the EU need strong universities to be able to reach the goals set in Lisbon; namely, of being the world's most competitive knowledge-based economy. That is why most people agree that reforms are necessary. In order to prepare proposals for plausible strategies, IVA initiated a project in the autumn entitled "The University of the Future." The project was launched at the annual Royal Technology Forum.

The universities need to reinforce their autonomy and their professionalism in research and business, in the same way as they must secure their own supply of competence and skills development.

The universities are expected to reach the goals set in the Bologna Declaration, of supporting regional needs, cooperating more with the business community, and disseminating and using new knowledge in society. At the same time, Swedish universities are struggling with financial problems. Cooperation and collaboration are buzzwords in the academic world today, but competition and specialisation are equally important.

Christer Heinegård, Vice Chancellor at the Swedish University of Agricultural Sciences (SLU) is heading the project. The Chairman of the Steering Committee will be Hans Dalborg, the next IVA Chairman. For many years he has been a leader within the business,

cultural and academic worlds with a strong commitment to society. He is the Chairman of Nordea and has led the transformation of Nordbanken with mergers with Merita in Finland, Unibank in Denmark and Kreditkassen in Norway.

Hans Dalborg believes that universities are vital for the creation of cutting-edge expertise in the future and that there are many factors to take into consideration.

The balance between basic and applied research, for example. And how are we going to fund research in the long term?

The missions of regional universities compared to the traditional major universities is another issue to examine:

"In the future we need far greater cooperation between universities. In Mälardalen, for example, there is already an institutionalised collaboration in place. Courses in minor languages are offered at one location instead of at all of the colleges," he says.

"One of the main problems in Sweden is the half-hearted attitude towards technology. If a country does not have enough engineers, its welfare is threatened. Many people believe that it is possible to slow development down, work less and still maintain the country's welfare. That equation does not make any sense," says Hans Dalborg.

IVA GROUP MEETS EU RESEARCH DIRECTOR

In 2004 IVA arranged a trip to Brussels for leading Swedish R&D directors to meet Achilleas Mitsos, Director-General for the European Commission's Research Directorate-General.

No decision has been taken yet on the European Commission's next research programme, the seventh of its kind. But the lobbying is in full swing, and the programme is expected to run from 2007 to 2013. The idea for a lobbying initiative by Swedish industry arose when the people responsible for the Seventh Framework Programme expressed their surprise to IVA's President, Lena Torell, over the fact that Swedish companies are not particularly visible in Brussels when it comes to presenting their plans and visions for future research projects.

"I want to show that it is possible to be heard in the highest echelons of the EU if we send a strong delegation. When it comes to strategy choices within the EU, we need to make use of our top leaders in research. Initiatives by the administrators are not sufficient," says Lena Torell, who has, herself, worked with research issues at the European Commission. IVA's delegation consisted of the heads of research at ABB, Ericsson, Saab, Volvo, AstraZeneca and Sandvik.

The EU programmes are important; they set the agenda for research at the national level as well. The goals set by the EU for its Framework Programmes affect the course of research at Swedish universities and institutes. Discussions are currently underway within the EU on doubling the size of research grants. If companies are involved they can ensure that research that is relevant to them is conducted at the national level, and that students are educated to gain the skills they need.

In light of this, IVA intends to launch a project in 2005, which will aim to increase industry interest in participating in the next EU research programme, FP7. It is important that industry and universities work together to form effective proposals, to discuss and suggest measures that can improve the chances of Swedish co-financing of EU research, and to actively impact planning work in Brussels by making the case for Swedish priorities. This is a natural continuation of the 2003 FP6 project, which, among other things, successfully activated Swedish networks to participate in the Sixth Framework Programme.

THE ENGINEER OF TOMORROW, A GLOBAL TRAVELLER WITH SOCIAL SKILLS

It is time to get rid of the old, scurrilous image of the engineer as a narrow-minded, introverted nerd who knows everything about engineering, but nothing about the world. That does not match up with the work situations that today's engineers find themselves in and the job market of the future. We heard this from the industry representatives and educators working with "Engineers of Tomorrow," an IVA research project that concluded in 2004.

Soon Sweden will be educating one in ten students each year to become engineers. But three out of ten will be working outside the traditional engineering professions and this development will place new demands on educational programmes. The Engineers of Tomorrow project intends to awaken an interest in issues that affect the role of the engineer and engineering education in the future. The project arrived at three crucial questions:

How are we to awaken an interest among young people in science, technology and engineering? More role models are needed in the public debate and cultural sphere, and better education.

How can our universities cope with the competition in the global education market? Their finances will continue to be strained and they will be compared in an international context to a far greater extent than in the past. Students are becoming increasingly mobile and see their studies as a means of gaining international experience. Traditional academic seats of learning will, of course, continue to have an important role, but they must be more flexible, specialised

and businesslike to cope with international competition.

How can we improve cooperation between academia and industry? This is important because industry is dependent on the expertise of graduate engineers. When fewer and fewer Swedes consider it to be an attractive profession, the engineering-oriented companies need to help by providing a clearer image of the profession. This is crucial if we are to succeed in recruiting to engineering education.

The project agreed on ten central messages to initiate and stimulate processes of change. The universities are charged with developing programmes that focus on a holistic approach, supplementing traditional analytical content with creativity and social skills.

The universities are also assigned the "task" of reintroducing practical elements as a natural part of their programme and also recruit more professors with a professional, industrial background.

The university administrations are charged with facilitating cooperation between the schools leading to intensified specialisation.

The government is charged with earmarking funds so that the universities are actually able to take care of their "third mission."

Industry is charged with offering more internships and opportunities for thesis work, acting as sponsor companies, and being open to new forms of collaboration with universities.

The Ministry of Education and Science is charged with extending engineering education to five years in order to increase the possibility for international mobility.

Photo: Knowledge Foundation



Photo: Anders Kolberg



The steering committee of the Engineers of Tomorrow include Managing Director of the Knowledge Foundation, Madeleine Caesar, and President of the Royal Institute of Technology (KTH) Anders Flodström.

THE EU SHOULD BETTER PROTECT ITS SOFT ASSETS

In January IVA held an IT seminar in Brussels entitled "Shaping the Future in Information Society Technologies." This was IVA's contribution to the series of high-level seminars that Euro-CASE – the umbrella organisation of the European engineering sciences academies – arranged to celebrate its 10th anniversary. IVA wanted to highlight the joint activities that are necessary if Europe is to maintain its strong position within technology, infrastructure and services. The topics discussed included IT research, the launch of 3G and the problem of the European Commission's position that it should not be possible to patent software. The main argument against this is

that companies in the EU will be less competitive than US ones. In the US software can be patented and this covers development costs in the industry. Within the EU there is a risk that investments by companies in software research will quickly become worthless, which in turn creates a risk of slowed development in the region.

The European Commissioner Erkki Liikanen, among others, participated. Speakers included the heads of a number of Europe's most technology-intense corporations and the President of IVA, Lena Torell, the CEO of TeliaSonera, Anders Igel and Ericsson's CEO Carl-Henrik Svanberg.

A MANDATE TO PREDICT THE FUTURE

“Working with foresight issues is a good way to divine what may happen in the future and to be more open to the unexpected,” says Director General of VINNOVA, Per Eriksson. In 2003 Mr. Eriksson became Chairman of IVA’s Division XI and is also on the steering committees for the IVA projects “Cooperation for Growth” and “Technology Foresight.”

Per Eriksson is a Doctor of Engineering specialising in teletransmission theory. He is Director General of VINNOVA and has been an IVA member since 2001. In 1989 he was appointed as the first rector of Blekinge Institute of Technology and succeeded in profiling the university with an emphasis on applied IT. He also established a postgraduate technology research programme, and built up close ties between the institute, the business world and the community.

“It’s not just the results of the Technology Foresight project that are valuable, but the actual process as well. It allows you to avoid the problem of merely working with what already exists. The existing structures always have their advocates and ambassadors, but not too many people are pleading the case of the unborn child.”

The connection between Technology Foresight and VINNOVA is both a close and self-evident one:

“VINNOVA has been mandated by the Government to develop, finance and evaluate work on technology foresight issues. We are assessing which areas have good growth potential, and in particular the areas where research and development are needed. But judging which activities have strong growth potential is not all that easy. The Technology Foresight project plays a central role in the foresight work in which we have several components to consider. VINNOVA provides the main source of funding for Technology Foresight; we have invested SEK 10 million and our intention is to invest the same amount again,” says Per Eriksson.

He says that the material produced by the Technology Foresight project will be the basis for VINNOVA’s work on updating its action plan, which is to be completed by the autumn.

“The plan will be based on four cornerstones: Technology Foresight is one cornerstone, in particular in terms of the approach taken, i.e. interplay with other knowledge areas, the ability to listen and understand what is happening in the external environment, and being prepared to act when the unexpected happens. Another cornerstone is, of course, the Government’s research bill, and the third is the upcoming EU Seventh Framework Programme. The Government’s innovation policy as outlined in “Innovative Sweden” as well as our own experiences and analysis of the external environment form the final cornerstone.”

COOPERATION FOR GROWTH

Per Eriksson’s involvement in the Cooperation for Growth project is also closely linked to VINNOVA’s activities. The project’s main focus is to study how research and long-term technical development are being affected now that government monopolies have been deregulated.

“VINNOVA’s task is to maximise the return on the Government’s investment in research by developing effective innovation systems

and funding problem-oriented research. That’s why Cooperation for Growth is so interesting to VINNOVA”

“The former government monopolies, Televerket, Vattenfall and SJ (Swedish State Railways), were major customers of private enterprise. They also commissioned research and development projects that were of enormous importance for Ericsson and ASEA. All of this has now disappeared and there has been a drastic decline in the amount of research activity because the old system has not been replaced by any new mechanism. International comparisons indicate that we need to find new formats for major procurement. It is not possible to choose the easy path; merely going for the lowest price will not promote development”

“Sweden is probably particularly vulnerable to the effects of deregulation because our research institute sector is small compared to, for example, Finland, Norway and Germany. In these countries, the research institutes are similar in size to the technology faculties and can therefore replace the advanced assignments of the past where the Government took risks in the first stage.”

“The lack of problem-oriented research could seriously damage the potential for growth in our country. With many smaller operators working alongside each other, no one is taking overall responsibility for research relating to Sweden’s common industrial and societal needs.”

“A key to increasing the number of advanced research assignments is to increase and intensify cooperation between politicians/the public sector, the business community and researchers in academia – the so-called Triple Helix.”

IVA XI

Per Eriksson is Chairman of IVA’s Division XI – Education and Research Policy.

“The division’s members are focusing on the entire research and education system, without attention to any specific subject. Among other things, the division has initiated “country seminars” where international specialists are invited to attend with a view to comparing research and development in different countries.”

“We have studied development in Canada and this spring we will hold a seminar about Finland and the approach in that country to systems for research and innovation.”

“We have also studied the Irish innovation system and welcomed visitors from Ireland, a country that has enjoyed fantastic development and enormous growth and which has an incredibly professional way of working. Today, Ireland has a higher income per capital than Sweden, which is a little hard for us to swallow given that it was a poor country ten or fifteen years ago.”



SWEDEN MUST BE BOLD ENOUGH TO MAKE DIFFICULT CHOICES

If Sweden is to be competitive in the global arena in the future, we need to take a number of difficult and important decisions now. A small country like Sweden cannot lead the field in every sector. If we are to continue to prosper and grow, we must be bold enough to specialise in certain areas and stop focusing on others. This is the advice of the experts working with the “Technology Foresight” project, Sweden’s national arena for issues concerning the future. Within this programme, a hundred or so specialists have been working together to try to predict patterns of technological, scientific and medical development over the next 15–20 years and to assess the consequences.

Technology Foresight, which was concluded in 2004, has highlighted a hundred areas of technology and expertise in which Sweden is deemed to have strong potential for success internationally. In evaluating these areas, the level of innovation, technological maturity, as well as market conditions and requirements were taken into consideration. Biotechnology and IT are common themes in “Knowledge Sweden,” while traditional industry is presented as a strong growth generator. The knowledge areas deemed to be strong include mechanical systems, functional materials, healthcare technology and sustainable food production. Also, as it is impossible to focus throughout the whole of Sweden, it is necessary to highlight a few strong regions.

The project also concluded that decisions must be made in the political arena concerning what will be jointly funded and what individuals should be responsible for in the future, since fewer and fewer resources must be stretched further and further. At the same time, progress in research is resulting in an ever-increasing supply of products and services, not least in the healthcare sector.

The deregulation over the past few years has also resulted in a decline in the role of the authorities in maintaining and providing new funding for investment in the industrial society’s infrastructure. According to the experts working with the Technology Foresight project, new forms of cooperation and agreements are needed to revamp and modernise outdated communication and distribution networks.

Another conclusion is that Sweden, in order to be able to compete globally, needs to develop rules and fiscal systems that encourage innovative activity, enterprise and risk taking.

Naturally, it must be profitable to study and work.

Last but not least: we must be better at utilising people’s expertise, creativity and commitment. Sweden needs strong management, healthy labour organisations, efficient authorities and a system for special pensions and health insurances, as well as other disbursements such as child benefits and parents’ allowance, that encourage work, enterprise and participation in society.

During the autumn the second round of Technology Foresight was concluded (the first took place in 1999–2000) with seminars focusing on the future in a number of key regions in Sweden and elsewhere. At these seminars, the results of the project were discussed as well as important national and regional choices for the future.

Running this project jointly with IVA are the Swedish Industrial Development Fund, the Knowledge Foundation, the Swedish National Board for Industrial and Technical Development (Nutek), the Swedish Trade Union Confederation, the Confederation of Swedish Enterprise, the Swedish Research Council and the Swedish Agency for Innovation (VINNOVA). The goal, among other things, is to support forward-looking companies and organisations in their endeavours to promote sustainable growth and to create a foundation for prioritising areas where Swedish expertise can be developed.

Technology Foresight will support visionary endeavours by providing greater insight into long-term technical development and by encouraging cooperation between social and technical processes.

Read more at www.tekniskframsyn.nu

Photos: Kåre Gabor



Sweden's choices; technology for growth and welfare was the theme of Technology Foresight's concluding conference in March 2004. The discussions revolved around the choices Sweden must make and what will influence these decisions in the next 15–20 years.

Photo 1: Cristina Glad, Ulla-Britt Fräjdin-Hellqvist and Erika Rönquist Hoh discussed the future of Swedish technology fields.

Photo 2: Representatives for the future included Unga Spekulerar (Young People Speculate)

Photo 3: Chief economist Gunnar Wetterberg of the Swedish Confederation of Professional Associations (SACO) offered a historical exposé on the former Chancellor of Sweden Axel Oxenstierna.

Photo 4: The Swedish model must be re-examined according to the project's chairman Lennart Lübeck.

Photo 5: Pär Nuder said that we have a technology-friendly tradition in Sweden, a tradition we should preserve.

CHINA

China is becoming one of the world's most important economies in a number of ways. In 2004 the country's economy – the sixth largest in the world – grew by almost 9 per cent. Also, thanks to China's membership in the WTO, the country is assuming an increasingly important role internationally. But China is also heavily dependent on the surrounding world.

In 2004 IVA began working more closely with the Chinese Academy of Engineering (CAE). The collaboration is focusing on the environment and renewable energy. IVA's President, Lena Torell, visited China in June and the collaboration agreement was signed at that time. The Academies are already planning research exchanges as well as joint workshops. The project will run for four years and will be funded by SIDA.

HUNGRIEST TECHNOLOGY MARKET

Growth in China is technology driven. China has a population of almost 1.4 billion, and the demand for mobile phones, TVs, PCs and other consumer goods is enormous.

The Chinese government has decided that when the country hosts the 2008 Olympic Games, the latest information technology will be installed and most of it will be developed and manufactured in China.

GLOBAL KNOWLEDGE IMPORT

When companies from around the world want to set up operations in China, negotiations include a prerequisite that the company will conduct part of its R&D in China.

China is ABB's third largest market today and the company plans to invest at least USD 100 million in the country.

China is currently Ericsson's second largest market and it is shifting more and more responsibility to its research units in Shanghai and Beijing.

The Swedish research community is represented through a number of guest professors from the Royal Institute of Technology (KTH) at Chinese universities.

In 2004, researchers from Chalmers University of Technology and Shanghai University began collaborating in the field of micro- and nanosystems.

CHINA AIMS TO BE THE STANDARD FOR THE WORLD

The government and major corporations in China are no longer satisfied with merely being the world's leading manufacturer. They are becoming increasingly active in the development of global technology standards. As a leading consumer and producer of many technology products, China is able to impact global standards, and Companies that fail to adapt may be excluded from the world's fastest growing market.

China is Sweden's largest Asian trading partner after Japan and activity at operations located in China is increasing. A third of the Swedish companies in the region have manufacturing operations. Producing goods in China makes it possible to meet an increased demand throughout Asia.

The number of Swedish investment initiatives in China has risen rapidly over the past few years; there are currently more than 130 such initiatives with a total value of over USD 1 billion. In total, there are around 200 Swedish companies with operations in the country.

WAS THE WEST EVER SO WILD?

In China, sophistication, high fashion and wild capitalism are mixed with poverty, hard-line government and social tensions.

From a geographical perspective, China's growth has been uneven and is primarily concentrated to the coastal areas in the east. In China an estimated 250 million people have moved away from their homes to work in another region.

In the wake of rapid economic development, with more industrial plants and increased private consumption, the electricity supply has become a serious issue of concern in China.

At the end of 2003, 20 or so provinces were experiencing electricity shortages resulting in rationing. A number of new power plants have already been opened and this increased production in 2004 by more than 22 per cent.

Photo: Lars Thorsén and Bengt Lindberg



The annual trip by IVA's Industrial Research Committee (IFG) went to China. The venues visited included the Swedish Embassy in Beijing, Ericsson China, Ericsson RDC, GE China Technology Center; the Nordic Centre at Fudan University, Shanghai Urban Construction Group and the Trade Council in Shanghai.

Photo: CAE



In 2004 the Chinese Academy of Engineering Sciences (CAE) celebrated its 10th anniversary. On this occasion an agreement was signed between IVA and CAE.

A Meeting Place for New Ideas

IVA's Business Executives Council is a knowledge bank where the broad scope of the members' expertise enables IVA to arrange meetings between people representing a variety of fields; meetings between individuals who perhaps do not exchange ideas on a daily basis; meetings where reflection can open up new, unexpected avenues. It is these boundary-breaching meetings that make IVA such an attractive arena.

This was particularly evident at the Business Executives Council Annual Meeting in November where the theme was "Sweden's Role and Competitiveness in the Expanded EU." A lively exchange of opinions was interspersed with many light-hearted moments when Sweden's new Minister for Industry and Trade, Thomas Östros, former Minister for Europe, Ulf Dinkelspiel and IVA member, Percy Barnevik, among others, discussed Sweden's role in the expanded EU.

There are indications that Sweden is a strong competitive force. But Ulf Dinkelspiel, former President of the Swedish Trade Council, wondered if appearances might be deceptive:

"Important functions are being outsourced. What happens when investment in Sweden comes to a standstill?" he asked.

"I'm convinced that development in Asia will lead to profits for Swedish Industry. It's a win-win situation for businesses which will have a positive net effect for Sweden," said Percy Barnevik. He expressed his concern, however, about what will happen with all of the – as he calls them – 'poorly educated and overpaid' workers in the US and Europe. The solution according to him is to focus on research and education, and also to increase the flexibility of both capital and labour.

This prompted Thomas Östros to caution the business leaders not to compromise on security and thereby reduce the willingness for change among employees. He pointed out that Sweden has changed in many respects since the 1990s.

"Take the unholy alliance that existed between politicians and industry in the constant process of devaluation. Industry was struggling with low productivity and employees were not given any real wage increases. Today, we have low inflation and stable price levels. Over the past ten years industrial productivity has increased by 57 per cent," said Thomas Östros.

WELL-ATTENDED BREAKFASTS

IVA issues from a business perspective are also addressed when IVA's Business Executives Council arranges breakfast meetings with guest speakers. This year's speakers were: Per-Olof Lööf, from the US Tyco Fire & Security Services, who

spoke about "The Shareholder Value Race – from the perspective of a CEO through Swedish-American eyes"; Eva Halvarsson of the Ministry of Industry Employment and Communication, who addressed the topic of "Government Ownership – myths and reality"; and Jan Nygren, Saab AB, who talked about "Growth in a globalized world."

ABSOLUT IS MORE THAN A BOTTLE...

... is what we heard from Bengt Baron of V&S Absolut Spirits when he visited the Business Executives Council. Swedish Absolut is the second best-selling vodka in the world. More than a billion bottles have been sold during the 25 years that the vodka has existed. Bengt Baron's topic was "Absolut Strategies for Success – From product development to market." He told the Business Executives Council about the well thought-out strategic concept behind the company's success. A focus on quality, careful market planning, taking care of the brand and a streamlined approach are among the factors contributing to the strong export success.

"All of the raw materials used to produce our vodka come from local sources. 15 per cent of Skåne's arable land is used to cultivate what we need," said Bengt Baron. "And we have no plans to move production closer to the large markets. Keeping production in one place helps to ensure consistent quality."

THE UGLY DUCKLING STRIKES BACK...

... was Boliden chief Jan Johansson's theme when he was the guest of the Business Executives Council. After a number of tough years, Boliden is well equipped for the future. This was the message of Boliden's President and CEO Jan Johansson when he visited the Business Executives Council.

Mr. Johansson talked about the rapid rise in demand for copper and zinc from China, as well as other metals from countries like India. As a result of this demand, the global metals market will stay strong for a very long time. He believes that there is every reason to be optimistic about Boliden's progress and was therefore surprised by the low value the market gave the company's shares. Mr. Johansson also welcomed the Russian decision to sign the Kyoto Protocol.

"It's not easy to compete with smelting plants in countries that permit emission levels that are a thousand times higher than we permit at, for example, our Rönnskär plant," he said. At Boliden, advanced technology and environmental awareness are regarded as competitive advantages. Few other com-

panies, for example, can extract gold from electronic waste in an environmentally-friendly way.

Mr. Johansson regards the shortage of engineers with the appropriate education for the metal industry as a global problem, and feels it is regrettable that the Swedish debate mainly concerns the service industry and ignores the traditional sectors of industry in the country.

VATTENFALL IS GROWING AND ENERGETIC...

... affirmed CEO Lars G. Josefsson when he spoke at a Business Executives Council breakfast. In a few years the EU's energy markets will be deregulated. The competition is getting stiffer and only a handful of European energy companies are

expected to survive. Swedish Vattenfall intends to be one of them. But to do so, the company needs to double its size. This is what the company's CEO, Lars G. Josefsson, said at the breakfast meeting at which he was the guest speaker.

"We produce as much electricity in Germany as we do in Sweden. Borders between nations are becoming less and less important", he said.

The cable network is one of the bottlenecks impeding deregulation of the European electricity market. But according to Lars G. Josefsson "The Nordic region will still be a low-price area if we do not close any more nuclear power plants than the one in Barsebäck. And that provides Vattenfall with a competitive advantage," he said.

Photo: All photos provided by the respective companies/organisations.



Bengt Baron, V&S Absolut Spirits, Lars G. Josefsson, Vattenfall, Per-Olof Lööf, Tyco Fire and Security Services, Jan Johansson, Boliden, Eva Halvarsson, the Ministry of Industry, Employment and Communications.

At the seminars and debates arranged by the Business Executives Council, the members can forge contacts outside their own industry and learn about the latest trends in technology and economics. Membership also provides access to IVA's entire network. In addition to the Council's activities, member companies participate actively in IVA's programmes and in seminars arranged by the various divisions.

Member companies contribute both knowledge and resources to IVA's activities. Through the Business Executives Council, IVA gains strong links with the business community, a prerequisite for the Academy's work.

IVA REWARDS EXCELLENCE

IVA has three different awards to present to individuals who have made considerable contributions within the fields in which the Academy is active: the Great Gold Medal, the Gold Medal and the Brinell Medal. This year's medallists received their awards in the Stockholm Concert Hall at IVA's Annual Meeting on 29 October.

THE CREATIVE FATHER OF SWEDISH BIOTECHNOLOGY
Gold Medal was awarded to Professor Lennart Philipson for his vision and conviction in introducing molecular biology into higher education in Sweden and establishing genetic engineering within Swedish academic research, and for making Swedish industry aware, early on, of the industrial significance of this field.

Lennart Philipson, M.D., became a professor of microbiology at Uppsala University in 1968.

He was the founder of the Wallenberg Laboratory in Uppsala where subjects such as X-ray crystallography, microbiology, virology, cancer and molecular biology were cross-fertilized.

One of the first successful cloning experiments in Europe was carried out in Philipson's laboratory.

He was also the Director General of the European Molecular Biology Laboratory (EMBL) in Heidelberg and the Director of the Skirball Institute at New York University. His research paved the way for antiviral drugs such as inhibitors for HIV and herpes.

COOL PHYSICIAN WITH MOTIVATIONAL WARMTH
A Gold Medal was awarded to Professor Tord Claeson for his pioneering research within basic and applied low temperature physics and his achievements as a leader in research and as a teacher.

Tord Claeson's research is characterised by both great depth and breadth. Among other things, he has worked with quantum-mechanical tunnel effects, superconductor materials and their applications, nanotechnology, mesoscopic superconductors and epitaxi for the production of ultra thin film. He is currently studying the weak magnetic fields generated in nerve paths, i.e. neuroactivity in vivo, with SQUID technology.

Tord Claeson's keen sense for applications has resulted in some ten patents. Among other things, he has worked with

scientists at the Onsala Space Observatory to develop equipment that has become standard for radio astronomy observatories and satellites.

BRILLIANT ENTREPRENEUR PROVIDES INSPIRATION
A Gold Medal was awarded to Director Salvatore Grimaldi for inspiring industrial enterprise and leadership, a luminary figure in a period when business ownership is becoming increasingly diluted.

Salvatore Grimaldi was born in southern Italy and came with his family at the age of seven to Västerås in the beginning of the 1950s. He founded Grimaldi Mekaniska Verkstad AB at the age of 25 which grew into Grimaldi Industri AB with 2,000 employees and a turnover of close to SEK 3 billion.

The Group includes Europe's largest bicycle companies under the brands Monark Stiga, Crescent and Bianchi. It also includes Alpha Sweden, which develops and produces CDs and DVDs, and the labelling solutions company, Pricer AB.

Salvatore Grimaldi's life-work is an inspiring example for all young people in Sweden, both immigrants and native Swedes. His contribution is characterised by down-to-earth entrepreneurship combined with visionary leadership to promote growth.

**JAPANESE METAL EXPERT STRENGTHENS
SWEDISH INDUSTRY**

The Brinell Medal was awarded to Professor Toshishiko Emi of Chiba, Japan. For many years, Professor Emi has contributed to the development of modern metallurgy and has been working as a consultant in the Swedish steel industry since his retirement.

Professor Toshishiko Emi has been a guest professor at several universities and institutes, such as the Royal Institute of Technology (KTH), where, back in 1973, he was a guest professor at the Department of Iron Metallurgy.

Photo: Anders Kolberg



The 2004 IVA medallists: Lennart Philipson, Salvatore Grimaldi, Tord Claesson and Toshishiko Emi.

A HOTHOUSE WHERE IDEAS CAN GROW

IVA is like a hothouse for ideas and within IVA's twelve divisions – which are divided by subject area and to which IVA members are assigned – ideas for forthcoming projects are frequently hatched. Each division holds four meetings a year at which the members discuss and highlight current issues and problems within their respective domains.

Sometimes the discussions are only of academic interest, but every so often they are considered of general interest and then the public and the media are invited.

In the spring, for example, the biotechnology division invited guests to a meeting with the theme “A National Swedish Biotech Strategy.” The evening's point of departure was a report published recently by the Swedish biotech industry's trade association. The report presents international comparisons and gives suggestions for what needs to be done to strengthen the Swedish biotech industry. The identified needs are in the areas of research, education and funding, and the organisation recommends investment stimulus in the form of subsidies.

During the autumn IVA arranged a seminar on nuclear power – yesterday, today and tomorrow. The purpose was to provide an overall picture of the state of nuclear power around the globe. Invited guests included former Director General of SKI, Lars Högberg; Director of Research at SKI, Gustav Löwenhielm; SKB's CEO Claes Thegerström; and KTH pro-

»Why are Swedish companies getting foreign ownership? Does it matter? Can or should someone do something about it?«

fessors Waclaw Gudowski and Thomas Lefvert.

A seminar under the heading “Swedish Nanotechnology Between Two Stools – Basic research and technical development” was held in March. This has already generated a new project entitled “Strategy for a Swedish Nanosystem.”

“Why are Swedish companies getting foreign ownership? Does it matter? Can or should someone do something about it?” These questions formed the theme of another seminar evening with participants such as Magnus Henreksson from the Stockholm School of Economics and Lars Öjefors, CEO of Industrifonden.

IVA West and IVA South work to attract members who are active on the West Coast of Sweden and in Skåne. In March, for example, IVA West's Ulf Olsson held an evening meeting under the heading “A Capitalist in the Welfare State.” In May, IVA South visited Trelleborg AB with the theme “From Galoshes to Space Rockets.” Every year, IVA President Lena Torell travels to these regions to give the speech she delivered at the Annual Meeting for members who were unable to attend the meeting at the Stockholm Concert Hall.

TECHNOLOGY IN THE POETRY OF HARRY MARTINSON

In 2004 it was one hundred years since the birth of Harry Martinson and thirty years since he shared a Nobel Prize in Literature with Eyvind Johnson.

The last Academy Assembly of the year was devoted to the role of technology in Harry Martinson's poetry. IVA's Chairman, Arne Wittlöv, highlighted Harry Martinson's vision of everyday technology, which he found both attractive and troubling. Kjell Espmark, a member of the Swedish

Academy, spoke about Martinson's importance as a stylist, and Svante Lindqvist, Director of the Nobel Museum, talked about Martinson's role as a technology critic. The ensuing discussion was led by Ulf Olsson, Professor of Economic History at Gothenburg University. Later the Nobel Museum opened its doors for a tour of its anniversary exhibition in honour of Harry Martinson. The exhibition was presented by the person who produced it, Ulf Larsson, Senior Curator

CONTACT BETWEEN SCIENTISTS AND THE PUBLIC

The Royal Academies are working together on a very popular Saturday lecture series for the general public. The lectures are followed by scholarly discourse spanning different subject areas with specially invited guests. The purpose of these discussions is to highlight, along interdisciplinary lines, various issues in society, and to help improve communication between scientists and the public.

This year's lectures included one by IVA Chairman Arne Wittlöv who spoke on The Time of Society and the Tempo of Politics. Professor emeritus, Bertil Albrektson talked about The Holy Era – The Profane Era – The Eternal Era, and philosopher Hans Ruin expressed his thoughts on The Inconceivable Notion of Time.

Read more at www.iva.se/adademigruppen

IVA ASKS YOUNG PEOPLE

IVA works constantly with a number of issues relating to the future. In order to hear the opinions of young people on important issues, IVA has created a meeting place for technology students called the Student Council.

The Student Council has already held a number of meetings and will initially act as a reference group for the new project entitled “The University of the Future.” The group consists of representatives from all technology education programmes in the country, a total of twenty young people.

Photo: Anders Kolberg



The 2004 Annual Meeting, which was the 85th since the Academy was founded on 24 October 1919, took place on 29 October. Around 800 people were in attendance. The Annual Meeting was held at the Stockholm Concert Hall and was concluded with a banquet for invited guests at Stockholm City Hall. In the photos: Jan-Eric Sundgren, President of Chalmers University of Technology, Karin Markides, Vice Director General of VINNOVA, HRH Princess Lilian and IVA's Chairman Arne Wittlöv, Speaker of the Swedish Parliament Björn von Sydow. IVA's President, Lena Torell holds her annual speech at Stockholm Concert Hall. Minister for Industry, Employment and Communication Thomas Östros.

GENERAL ACADEMY ACTIVITIES

Photo: Anders Kolberg



Sofia Källgren sang at the Concert Hall and entertainment at the City Hall was provided by the vocal group Riltens Vänner (bottom right). Ericsson's CEO, Carl-Henric Svanberg, Cecilia Schelin Seidegård, CEO of Huddinge University Hospital and Chairman of Astra Zeneca Percy Barnevik converse during dinner in Stockholm City Hall. Håkan Mogren, Vice President of Astra Zeneca (bottom left).



Information consultants and man and wife Gunhild Sällvin and Helge Jonsson dance in the City Hall's Golden Room. Marta Sandén, Communication Director of Kista Science City, Weje Sandén Editor-in-Chief of the business journal Veckans Affärer and prominent IT expert Ann-Marie Nilsson.



According to tradition, the Royal Technology Forum is held the day before the Annual Meeting, and a dinner follows, especially for the international guests. The theme for 2004 was "The University of the Future." IVA's retiring Chairman Arne Wittlöv thanks Anders Scharp for his work as Chairman of the "Engineers of Tomorrow" Project. Anders Scharp, Michael Treschow and Hans Dalborg, IVA's new Chairman from 2005, and the Chairman of the University of Tomorrow project. The Japanese Brinell Medallist Toshihiko Emi with IVA's President Lena Torell.

GENERAL ACADEMY ACTIVITIES

“THE EARTH IS FLAT” RECEIVES PRIZE FROM IVA

“Jorden är platt” (The Earth is Flat), a TV science magazine from the Swedish Educational Broadcasting Company (Utbildningsradion) received the Scientific Media Prize of SEK 75,000. The prize is awarded annually by IVA and the Foundation for Science Information.

The producers were awarded the prize for bringing science into people’s everyday lives and for serving up valuable information along the way.

“We want to use humour to inspire and to show that science is fun,” said project manager Ami Malmros.

In the programmes scientists and science are shifted to different milieus. Ice researchers drill jig holes and magnetism is easy to find at a car breaker’s yard. The producers’ main goal was to increase curiosity about science among young girls to counterbalance all of the male scientists. More than half of the people working on the programme are therefore women.

Close to half a million viewers have seen Anna Charlotta Gunnarson presenting the programme, a viewer rating record for the Swedish Educational Broadcasting Company.

Photo: Utbildningsradion



Anna-Charlotta Gunnarsson, presenter of the TV programme “Jorden är platt” (The Earth is Flat).

TWO SWEDISH COMPANIES IN EUROPEAN IT CHAMPIONSHIP FINALS

When the outcome of the European Information Society Technology Prize (IST Prize) was decided, Sweden had two companies, Cypak and Illuminate Labs, among the twenty finalists. The competition for a place in the finals of the European IST Prize was fierce. 430 companies from 29 countries competed for EUR 700,000.

Cypak was competing this year with a “PIN-on-Card,” a smart card for logging on to a computer without using a normal keyboard.

Illuminate Labs develops faster rendering technology for visualization of 3D environments for the film and gaming industries.

IVA is responsible for the nominations in Sweden. The criteria for nominees are: technological excellence, innovative content, potential market value and capacity for generating employment opportunities.

Read more at www.ist-prize.org

MILLIONS TO YOUNG GRADUATES

This year 21 young university graduates shared SEK 3 million when IVA awarded its Hans Werthén Scholarships. The scholarship amounts range from SEK 60,000 to 200,000 and are to be used for an extended period of study or work abroad.

“It’s great that IVA is able to give graduate students and researchers the opportunity to study abroad in this way. Our world is becoming more and more globalized and it is therefore important for young Swedish graduates to have the chance to work and develop in international environments,” says Lena Torell, IVA’s President.

The scholarship recipients are active in the fields of science, technology, economics or law at universities or in industry and have already received a university degree.

Photo: Anders Karlberg



The 2004 Hans Werthén scholarship recipients.

MEETING PLACE IN THE HEART OF THE CITY



IVA'S CONFERENCE CENTRE is the natural venue for the Academy's own meetings, but it is also one of Stockholm's leading day conference facilities. Every year some 1,200 meetings are arranged here and attended by around 50,000 people. The Conference Centre's customers include many of Sweden's most prominent listed companies, companies that offer training and education, and various types of organisations.

The recent slump in the economy had a negative impact on the conference market, but IVA's Conference Centre ended 2004 with its strongest quarter for several years. We are now working intensively on developing the Conference

Centre's technology, milieus and services, so that we will be able to offer our customers an even better meeting place in the future – right in the heart of the city.

During the year, the Conference Centre's technical equipment was upgraded and the lobby and meeting rooms on the second floor were modernised. The plans for a new reception area, cloakroom and lobby on the ground floor are well underway.

In 2004, we started to work with a new web-based platform to improve services through a more effective integration of customer relations, reservations, resource planning and administration.

Facts about IVA's Conference Centre:

- 11 conference rooms, 4 of which are smaller meeting rooms
- 4 assembly halls for parties/banquets
- Space for 175 people
- Wireless Internet
- Food prepared at Restaurant Grodan
- 6 members of staff
- Central location

THE EXECUTIVE COMMITTEE OF THE ACADEMY

The Academy's activities are directed by an Executive Committee, which is the governing body of both the Academy itself and the IVA Foundation. The Chairman of the Academy chairs the Academy's assemblies and meetings of the Executive Committee.

The members of the Executive Committee in 2004 were as follows:

Chairman: Dr. Arne Wittlöv (Division I) (2002–2004)

Vice Chairman: Dr. Cristina Glad (Division XI) (2002–2004)

Vice Chairman: Managing Director Peggy Bruzelius (Division IX) (2003–2005)

Vice Chairman: Professor Jan-Eric Sundgren (Division VII) (2003–2005)

Vice Chairman: Professor Billy Fredriksson (Division I) (2004–2006)

Chairman of the Business Executives Council: CEO Mats G. Ringesten (2004–2006)

President of the Academy: Professor Lena Torell (Division V) (2001–2007)

THE ADVISORY COUNCIL

The Academy has an Advisory Council whose task it is, prior to decisions being taken in the Executive Committee, to discuss business and draft recommendations in matters that concern all the Divisions.

The Advisory Council also coordinates, prioritises and makes recommendations in issues concerning the shaping of the Academy's programme activities. The members of the Advisory Council of the Academy in 2004 (excluding alternates) are listed on page 36.

Back row: Anders Blom, Div. I, Chairman Arne Wittlöv, Lars Gunnar Larsson, Div. VII, Harry Frank, Div. II

Third row from the front: Ivan Öfverholm, Chairman, IVA West, Mats Ringesten, Chairman of the Business Executives Council, Christer Karlsson, Div. VI, Mårten Lindström, Div. III.

Second row from the front: Per Eriksson, Div. XI, Ann-Marie Nilsson, Div. XII, Kjell Nilsson, IVA South, Hans Sievertsson, Div. X, Harry Flam, Div. IX, Tom Lindström, Div. VIII.

Front row: Ann-Margret Malmgren, Secretary, IVA's President Lena Torell, Vice Chairman Karin Markides, Secretary to the Academy Per Storm.

THE GOVERNING BODY OF THE BUSINESS EXECUTIVE'S COUNCIL

The Business Executives Council has its own governing body which appoints the Chairman and Vice Chairman. The Chairman is also a member of IVA's governing body, the Executive Committee. In 2004 the members of the Business Executives Council's governing body were as follows:

Chairman: CEO Mats G. Ringesten, Partner, Neuman & Nydahl (2002–2006)

Vice Chairman: Senior Vice President Elisabeth Morris-Elenbring, SEB (2002–2004)

Vice Chairman: CEO Lars G. Josefsson, Vattenfall AB (2004–2006)

CEO Finn Rausing, Tetra Pak International AB (2002–2004)

CEO Mats Pettersson, Biovitrum AB (2003–2005)

CEO Peter Sandberg (2003–2005)

President Stina Blombäck, Billerud Karlsborg AB (2004–2006)

President Eva Lindqvist, TeliaSonera International Carrier (2004–2006)

Director Christian Salamon, Industri Kapital AB (2004–2006)



THE EXECUTIVE COMMITTEE

Chairman: Dr. Arne Wittlöv (Div. I) (2002–2004)
 Vice Chairman: Dr. Cristina Glad (Div. XI) (2002–2004)
 Vice Chairman: Managing Director Peggy Bruzelius (Div. IX) (2003–2005)
 Vice Chairman: Professor Jan-Eric Sundgren (Div. VII) (2003–2005)
 Vice Chairman: Professor Billy Fredriksson (Div. I) (2004–2006)
 Chairman of the Business Executives Council: CEO Mats G. Ringesten (2004–2006)
 President: Professor Lena Torell (Div. V) (2001–2007)

THE ADVISORY COUNCIL

The Advisory Council to the Academy comprises the Chairman of the Academy, the Chairmen or Vice Chairmen of the Academy's divisions, the Chairmen of the regional chapters and the President of the Academy. The other members of the Executive Committee may attend the meetings of the Advisory Council. The Chairmen of the Business Executives Council and various committees may also be invited to attend meetings.

Chairman: Dr. Arne Wittlöv (Div. I) (2002–2004)
 President: Professor Lena Torell (Div. V) (2001–2007)
 Professor Anders Blom (Chairman, Div. I 2002–2004)
 Director of Research Harry Frank (Chairman, Div. II 2004–2006)
 Mårten Lindström, MSc. (Chairman, Div. III 2004–2006)
 Professor Krister Holmberg (Chairman, Div. IV 2002–2004)
 Professor Arne Melander (Chairman, Div. V 2003–2004)
 Professor Christer Karlsson (Chairman, Div. VI 2004–2006)
 Gunnar Edwall, Lic. Eng. (Chairman, Div. VII 2002–2004)
 Professor Tom Lindström (Chairman, Div. VIII 2003–2005)
 Managing Director Carl Wilhelm Ros (Chairman, Div. IX 2004–2006)
 Professor Hans Sievertsson (Chairman, Div. X 2002–2004)
 Director General Per Eriksson (Chairman, Div. XI 2003–2005)
 Fmr. CEO Ann-Marie Nilsson (Chairman, Div. XII 2002–2004)
 CEO Mats G. Ringesten (Chairman of the Business Executives Council 2004–2006)
 Professor Bengt Lindberg (Div. I) (Chairman, Industrial Research Committee)
 Dr. Dan Brändström (Div. XI) (Chairman, the Group of Royal Academies)
 Jan-Crister Persson, MSc. (Div. XI) (Chairman, IVA West 2004–2006)
 Kjell Nilsson, Lic. Eng. (Div. IV) (Chairman, IVA South 2002–2004)

MEMBERS

Details about the Academy's members are included in the current IVA Register of members. As of 31 December 2004, IVA had 750 Swedish and 249 Foreign Members. Membership changes during 2004 are noted below.

The number of Swedish members below the age of 65 is restricted to 385, including not more than 42 supernumeraries. Swedish members below the age of 65 numbered 349 at the beginning, and 355 at the end of the working year.

Swedish Members elected during 2004

Professor Jan-Eric Ståhl (Div. I)
 Dr. Lars Gunnarsson (Div. III)
 Eva Rudberg, Lic. Eng. (Div. III)

Kajsa Sundberg, MSc. (Div. III)
 CEO Per-Håkan Westin (Div. III)
 Professor Staffan Folestad (Div. IV)
 Director of Research Lars-Eric Aaro (Div. V)
 CEO Staffan Söderberg (Div. V)
 Head of Research Jan Tengzelius (Div. V)
 CEO Tomas Thorvaldsson (Div. V)
 CEO Anders Werme (Div. V)
 Rector Eric Giertz (Div. VI)
 CEO Salvatore Grimaldi (Div. VI)
 CEO Anna Nilsson-Ehle (Div. VI)
 Chairman of the Board Lars Nyberg (Div. VI)
 Professor Clas C. H. Bergström (Div. IX)
 Chairman of the Board Lars Bertmar (Div. IX)
 Ass. Professor Karl-Olof Hammarkvist (Div. IX)
 Chairman of the Board Stefan Persson (Div. IX)
 CEO Lars H. Thunell (Div. IX)
 Director of Research Maris Hartmanis (Div. X)
 Chairman of the Board Carl Bennet (Div. XI)
 Director of Technology Håkan Eriksson (Div. XI)
 University Chancellor Sigbrit Franke (Div. XI)
 Head of Division Ulla-Britt Fräjdin-Hellqvist (Div. XI)
 Director General Madelene Sandström (Div. XI)
 CEO Torbjörn Kronander (Div. XII)

Foreign members elected during 2004

Professor Ene Ergma, Estonia
 President Pekka Erkkilä, Finland
 Senior Vice President Veikko Hara, Finland
 CEO Björn Wahlroos, Finland
 Professor Marie-Paule Pileni, France
 Professor Giorgio Picci, Italy
 Professor Vladimir Fortov, Russia
 Professor Earl M. Murman, USA
 Professor Richard Neil Zare, USA

Deceased members, 2004

Sigvard Ando, MSc. (Div. V 1974, VI 1987)
 Professor em. Olav Axelson (Div. VI 1979)
 Professor em. Sune Bergström (Div. XI 1962)
 Dr. Bertil Bjurel (Div. XII 1961)
 Sven Borelius, MSc. (Div. VI 1990)
 Professor Carl-Ivar Brändén (Div. X 1988)
 Erik J. Eriksen, MSc. (Div. II 1972)
 Professor em. Nicolai Herlofson (Foreign Member 1971)
 Professor em. Torsten Hägerstrand (Div. XI 1969)
 Stig Kjellström, MSc. (Div. IV 1971)
 Håkan Ledin, MSc. (Div. XI 1983)
 Dr. Gudmundur Pálmason (Foreign Member 1987)
 Thore Rydh, MSc. (Div. IV 1985)
 Professor em. Edmund Schjånberg (Div. IV 1953)
 Axel Scholander, Lic. Eng. (Div. IV 1963)
 Professor em. Per-Olof Strandell (Div. V 1975)
 General Stig Synnergren (Div. VI 1977)

ACADEMY MEETINGS

16 March.

Swedish Nanotechnology Between Two Stools – Basic research and technical development.

3 June.

Technology Foresight: Smart investment in R&D.

23 September:

Vulnerability and Security – Is it time to expand our defence outlook?

23 November:

Technology in the Poetry of Harry Martinson.

IVA DIVISION ACTIVITIES**Division I, Mechanical Engineering**

Chairman: Professor Anders Blom (2002–2004)

Vice Chairman: Johan Siberg, MSc. (2003–2005)

Vice Chairman: Professor Bengt Lindberg (2004–2006)

Secretary: Doctoral Candidate Dario Aganovic, IVA

Total number of members as of 31 December 2004: 73, of whom 33 below the age of 65.

Meetings

18 February.

Autonomous Robotic Systems and their Application as Tools to Aid the Disabled.

27 April.

Robots of the Future (arranged jointly with Div. II and Div. XII).

2 September:

Visit to Scania in Södertälje.

16 November:

Nuclear Power in the 21st Century (arranged jointly with Div. II).

Division II, Electrical Engineering

Chairman: Director of Research Harry Frank (2004–2006)

Vice Chairman: Executive Vice President Lennart Billfalk (2004–2006)

Vice Chairman: Investment Manager Sigrun Hjelmquist (2004–2006)

Secretary: Staffan Eriksson, MSc., IVA

Total number of members as of 31 December 2004: 45, of whom 23 below the age of 65.

Meetings

4 February.

Autonomous Flying Crafts (arranged jointly with Div. XII).

27 April.

Robots of the Future (arranged jointly with Div. I and Div. XII).

2 September:

Information Recycling on the Web – The future of search engines (arranged jointly with Div. XII).

16 November:

Nuclear Power in the 21st Century (arranged jointly with Div. I).

Division III, Building and Construction

Chairman: Mårten Lindström, MSc. (2004–2006)

Vice Chairman: Professor Lennart Elfgrén (2003–2004)

Vice Chairman: President Claes Bankvall (2004–2006)

Secretary: Thomas Malmer, MSc., IVA

Total number of members as of 31 December 2004: 69, of whom 29 below the age of 65.

Meetings

28 January.

Internal meeting.

1 April.

How Should we Conduct Research to Bring about Growth and Sustainability in the Civil Engineering Sector?

8 September:

Vulnerability of Technical Infrastructure.

10 November:

Internal meeting.

Division IV, Chemical Engineering

Chairman: Professor Krister Holmberg (2002–2004)

Vice Chairman: Director of Research Thomas Berglin (2002–2004)

Vice Chairman: Professor Karin Markides (2004–2006)

Secretary: Teresa Jonek, MSc., IVA, until 30 June 2004, position vacant thereafter.

Total number of members as of 31 December 2004: 55, of whom 32 below the age of 65.

Meetings

3 February.

Biocompatible Materials (arranged jointly with Div. V).

19 April.

Green Materials – An important step towards a sustainable society? (Arranged jointly with Div. VIII).

22 September:

Chemistry in Focus (arranged jointly with Div. VIII).

24 November:

Nanotechnology in Industrial Applications (arranged jointly with Div. VIII).

Division V, Mining and Materials

Chairman: Professor Arne Melander (2003–2004)
Vice Chairman: Professor Eric Forssberg (2003–2004)
Vice Chairman: Professor Jan-Olof Sperle (2003–2005)
Secretary: Dr. Per Storm, IVA

Total number of members as of 31 December 2004: 58, of whom 23 below the age of 65.

Meetings

3 February
Biocompatible Materials (arranged jointly with Div. IV).

21 April.
Small Innovative Companies in the Steel Industry.

14 September.
Material Requirements and Material Flows in Society.

17 November.
Suppliers to the Mining and Steel Industries.

Division VI, Management

Chairman: Professor Christer Karlsson (2004–2006)
Vice Chairman: Partner Sven-Christer Nilsson (2004–2006)
Vice Chairman: Professor Gunn Johansson (2004–2006)
Secretary: Dr. Henrik Blomgren, IVA

Total number of members as of 31 December 2004: 99, of whom 45 below the age of 65.

Meetings

5 February.
Commission on Business Confidence (Förtroendekommissionen) (arranged jointly with Div. IX).

20 April.
Why are Swedish Companies Getting Foreign Ownership? Does it matter? Can or should someone do something about it? (Arranged jointly with Div. IX).

15 September.
The Future Role of the Financial Supervisory Authority in Corporate Governance. (Arranged jointly with Div. IX).

11 November.
Prerequisites for Enterprise (arranged jointly with Div. IX).

Division VII, Basic and Interdisciplinary Engineering Sciences

Chairman: Dr. Gunnar Edwall (2002–2004)
Vice Chairman: Lars-Gunnar Larsson, MSc. (2003–2005)
Vice Chairman: Professor Anders Martin-Löf (2004–2006)
Secretary: Johan Schuber, M.A., IVA

Total number of members as of 31 December 2004: 71, of whom 32 below the age of 65.

Meetings

29 April.
Information and Communication Technology (ICT) in Nursing and Care – Can synergies between current and past investments put Sweden in a leading position?

21 September.
The Marvellous Applications of Mathematics.

18 November.
Nuclear Power of Tomorrow: Evolution and revolution.

Division VIII, Forest Technology

Chairman: Professor Tom Lindström (2003–2005)
Vice Chairman: Fmr. Managing Director Per Erik Frick (2002–2004)
Vice Chairman: Eva Färnstrand, MSc. (2004–2006)
Secretary: Teresa Jonek, MSc., IVA
Total number of members as of 31 December 2004: 45, of whom 21 below the age of 65.

Meetings

11 February.
Current Wood Engineering Initiatives.

19 April.
Green Materials – An important step towards a sustainable society? (Arranged jointly with Div. IV).

22 September.
Chemistry in Focus (arranged jointly with Div. IV).

24 November.
Nanotechnology in Industrial Applications (arranged jointly with Div. IV).

Division IX, Economics

Chairman: Managing director Carl Wilhelm Ros (2004–2006)
Vice Chairman: Professor Harry Flam (2003–2005)
Vice Chairman: Chairman of the Board Arne Mårtensson (2003–2005)
Secretary: Communicator Hampus Lindh, IVA

Total number of members as of 31 December 2004: 83, of whom 43 below the age of 65.

Meetings

5 February.
Commission on Business Confidence (Förtroendekommissionen) (arranged jointly with Div. VI).

20 April.
Why are Swedish companies getting foreign ownership? Does it matter? Can or should someone do something about it? (Arranged jointly with Div. VI).

15 September.
The Future Role of the Financial Supervisory Authority in Corporate Governance (arranged jointly with Div. VI).

11 November:

Prerequisites for Enterprise (arranged jointly with Div.VI).

Division X, Biotechnology

Chairman: Professor Hans Sievertsson (2002–2004)

Vice Chairman: Professor Siv Andersson (2003–2005)

Vice Chairman: Professor Staffan Josephson (2004–2006)

Secretary: Dr. Anna Sandström, IVA

Total number of members as of 31 December 2004: 50, of whom 27 below the age of 65.

Meetings

22 January:

Internal meeting.

22 April:

A National Strategy for Swedish Biotechnology.

16 September:

Visit to Uppsala Cinema.

25 November:

“Tissue Engineering” – Regeneration of tissue through biotechnology.

Division XI, Education and Research Policy

Chairman: Director General Per Eriksson (2003–2005)

Vice Chairman: Managing Director Lennart Lübeck (2004–2006)

Vice Chairman: Vice Chancellor Ingegerd Palmér (2004–2006)

Secretary: Architect Bengt A. Mölleryd, IVA

Total number of members as of 31 December 2004: 61, of whom 26 below the age of 65.

Meetings

2 March

Companies involved in National Industrial and Research Policies.

28 April:

Seed Funding, Venture Capital for Early Development of Technology – A critical phase in the innovation process.

7 September:

Technology Foresight – From ideas and proposals to reality.

9 November:

Streamlining the Structure of the Swedish Higher Education System.

Division XII, Information Technology

Chairman: Fmr. CEO Ann-Marie Nilsson (2002–2004)

Vice Chairman: CEO Curt Andersson (2002–2004)

Vice Chairman: Professor Bo Kågström (2003–2005)

Secretary: Katarina Arbin, MBA., until the September meeting, thereafter Camilla Koebe, MSc., IVA

Total number of members as of 31 December 2004: 41, of whom 22 below the age of 65.

4 February:

Autonomous Flying Crafts (arranged jointly with Div. II).

27 April:

Robots of the Future (arranged jointly with Div. I and II).

2 September:

Recycling Information on the Web – The future of search engines (arranged jointly with Div. II).

16 November:

IT in the Care Sector – Updates and discussion.

IVA West

Chairman: Ivan Öfverholm, MSc. (Div. II)

Secretary: Ulla Svantesson, B.A., IVA

Meetings/Study visits

15 March:

A Capitalist in the Welfare State.

21 April:

Göteborg University – A major university gaining ground.

18 November:

Sweden's Choices – Technology for growth and welfare.

29 November:

Engineers of Tomorrow – Conclusions from IVA's project on Swedish engineering education.

9 December:

IVA West's Annual Meeting.

9 December:

Technology Evening with IVA West.

IVA South

Chairman: Kjell Nilsson, Lic. Eng. (Div. III)

Secretary: Ulla Svantesson, B.A., IVA

Meetings/Study visits

3 March:

Will IP telephony revolutionise the telephone?

31 March:

Sweden's Choices – Technology for growth and welfare.

22 April:

Innovation Systems Generate Growth in the Region.

5 May.
Heat Exchangers of Tomorrow – A strong development and production niche in southern Sweden.

25 May.
From Galoshes to Space Rockets.

7 September:
Research Collaboration for the Future in the Skåne region.

19 October:
Hardwood Forests, Vegetable Fibre, Vegetable Oils and Much More.

11 November:
Is our Waste Management Efficient and Environmentally Friendly or Impeded by Government Regulations?

1 December:
IVA South's Annual Meeting.

1 December:
Technology Evening with IVA South.

ACTIVITIES OF THE BUSINESS EXECUTIVES COUNCIL

Governing Body

Chairman: CEO Mats G. Ringesten, Neuman & Nydahl (2002–2006)

Vice Chairman: Senior Vice President Elisabeth Morris-Elenbring, SEB (2002–2004)

Vice Chairman: CEO Lars G. Josefsson, Vattenfall AB (2004–2006)

CEO Finn Rausing, Tetra Pak International AB (2002–2004)

CEO Mats Pettersson, Biovitrum AB (2003–2005)

CEO Peter Sandberg (2003–2005)

Senior Vice President Stina Blombäck, Billerud Karlsborg AB (2004–2006)

President Eva Lindqvist, TeliaSonera International Carrier (2004–2006)

Director Christian Salamon, Industri Kapital AB (2004–2006)

Members and contact persons

At the close of 2004, the Business Executives Council had 237 members representing 158 enterprises, national government agencies and other organisations that carry out, utilise or fund technical research and development. 108 contact persons are also attached to the represented organisations.

Meeting

18 November:
Sweden's Role and Competitiveness in the Expanded EU. Annual Meeting of IVA's Business Executives Council.

Breakfast meetings

19 February.
"The Shareholder Value Race" – From the perspective of a CEO through Swedish-American eyes.

30 March.
Government Ownership – Myths and reality.

6 May.
Conclusions from the Technology Foresight Synthesis Group: Prerequisites for growth in a globalised world.

10 June.
Absolut Strategies for Success – From product development to market.

1 October:
The Ugly Duckling Strikes Back!

13 October:
Vattenfall – From public utility to leading European energy company.

Other meetings

29 November:
Lunch at IVA for new members of the Business Executives Council.

OTHER IVA ACTIVITIES

20 January.
Shaping the Future in Information Society Technologies. A Euro-CASE seminar, arranged in Brussels by IVA.

31 January.
The Time of Society and the Tempo of Politics. The Royal Academies' lecture series: A Joint Existence – Time. Arranged by IVA.

17 February.
Engineers of Tomorrow – Messages for the future. Concluding conference of the Engineers of Tomorrow project at KTH Learning Lab.

19 February.
International Outlook on Research and Development in Deregulated Industries. Seminar in connection with the IVA's "Cooperation for Growth" project.

4 March.
European Research and Innovation for the Future. Conference arranged by IVA.

4 March.
Sweden and European Research and Innovation. Round table discussion.

6 March.
The Holy Era – The Profane Era – The Eternal Era. The Royal Academies' lecture series: A Joint Existence – Time. Arranged by: The Royal Swedish Academy of Letters, History and Antiquities.

16 March.
Swedish Nanotechnology Between Two Stools – Basic research and technical development. Seminar.

23 March.
Technology Foresight conference: Sweden's Choices: Technology for growth and welfare.

17 April.

The Inconceivable Concept of Time – Philosophical theories of time. The Royal Academies' lecture series: A Joint Existence – Time. Arranged by the Swedish Academy.

22 April.

Fuel Cells – End of Patience? Seminar.

3 May.

Canada – A country to learn from in development and innovation. Seminar arranged jointly by IVA and VINNOVA (Swedish Agency For Innovation Systems).

8 May.

Children Look to the Future. Seminar in cooperation with the International Science Festival Göteborg. An exhibition on this theme was on display 7–16 May.

8 May.

The Academies and Time. The Royal Academies' lecture series: A Joint Existence – Time. Arranged by the Royal Academies.

11 May.

Kick-off for the IVA "Healthy, Successful Companies" project.

11 May.

Inspiration for Innovation. Seminar in Gothenburg arranged by Technology Foresight sub-project called Inspiration for Innovation.

12 May.

Kick-off for the "Production for Competitiveness" project.

13 May.

Healthy, Successful Companies. Seminar in Gothenburg.

7 June.

An Accessible Neighbourhood. Seminar.

10 June.

Accessible IT and Communication. Seminar.

24 August.

Biotechnology: Possibilities, Risks, Ethics and Society. The Third International Science Generation symposium.

7 September.

Technology Foresight – From ideas and proposals to reality. Seminar in cooperation with the Swedish Research Council, VINNOVA (Swedish Agency For Innovation Systems), the Confederation for Swedish Enterprise, the Knowledge Foundation, and others.

16 September.

IVA Queen Symposium (Drottningssymposium: Access for All – More award-winning products and services. Guest of honour: Queen Silvia.

24 September:

Sharpening Business Skills at Swedish Technical Universities and Institutes. Seminar as a gift for the 175th anniversary of the Royal Institute of Technology (KTH).

26 September:

Swedish Self-Righteousness. IVA contribution to the Stockholm Arts & Science 2004. A festival for the curious at Stockholm Concert Hall. Art, concerts, performance, installations and conversations between scientists and artists.

26 September:

And the winner is ... Sweden. IVA contribution to the Stockholm Arts & Science 2004. A festival for the curious at Stockholm Concert Hall. Art, concerts, performance, installations and conversations between scientists and artists.

30 September – 1 October:

Baltic Future 2004. An international symposium arranged by the Royal Academy of Sciences, Royal Swedish Society of Naval Sciences and the Royal Swedish Academy of Engineering Sciences.

20 October:

Nanotechnology for Health, in Medicine and Bioengineering. Seminar arranged by the Swedish-German Research Association (STYFF) and IVA.

28 October:

IVA's Royal Technology Forum 2004: The Role of Universities in the Europe of Knowledge.

9 November:

Saw, Boil, Burn – What is the best way to use raw materials from the forest? Seminar arranged by IVA, the Royal Swedish Academy of Agriculture and Forestry (KSLA) and the Royal Swedish Academy of Sciences (KVA).

18 November:

Sweden's Role and Competitiveness in the Expanded EU. Annual Meeting of IVA's Business Executives Council.

22 November:

How are Companies Organising their R&D Efforts to Make the Best Use of Research? Symposium on how the government, the business world and academies can work together on research initiatives, arranged by IVA's Industrial Research Committee.

8 December:

Ireland – An environment for knowledge-based growth. A seminar in cooperation with IVA and VINNOVA (Swedish Agency For Innovation Systems) on research, development and innovation in Ireland.

STEERING COMMITTEES FOR IVA PROJECTS

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Göran Tuvstedt, Swedish Industrial Development Fund
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Spin-Off Company of the Year

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 Staffan Larsson, Swedish Business Development Agency (Nutek)
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 Marcus Wallenberg (Div. VI)
 Project Manager: Staffan Eriksson, IVA

AWARDS AND SCHOLARSHIPS

The Brinell Medal

Professor Toshishiko Emi (from Japan) for his significant contribution over a period of many years to the development of modern metallurgy.

The Great Gold Medal

Professor Lennart Philipson because he, with visionary conviction, introduced molecular biology into higher education in Sweden and established genetic engineering within Swedish academic research, and for making Swedish industry aware, early on, of the industrial significance of this field.

Gold Medals

Professor Tord Claeson for his pioneering work within fundamental and applied low-temperature physics and his achievements as a leader in research and as a teacher.

Director Salvatore Grimaldi for inspiring industrial enterprise and leadership, a luminary figure, particularly in a period when business ownership is becoming increasingly diluted and lacking firm roots in Sweden.

The 2004 Commemorative Booklet

The 2004 commemorative booklet is dedicated to the memory of J. Sigfrid Edström (1870–1964) for his work within Swedish industry and associations. Author: Professor Jan Hult (Div. VII).

The Hans Werthén Scholarship Fund

For post-doc studies

Tomas Akenine-Möller, Maria Andersson, Georg Jöngren and Johan Stålgren for studies in the USA, Nadia Ljungberg for studies in France, and Malin Siklosi for studies in the UK.

For MBA studies

Maria Alm, Stefano Dell'Orto, Philip Hallenborg and Martin Tideström for studies in France, Johanna Bentsson and Mats Rosenberg for studies in Spain and Junyi Yang for studies in Switzerland.

For post-graduate studies

Marcus Bjelkemyr and Mattias Stenberg for studies in the USA, Mats Johansson and Regina Riegerbauer for studies in France, Sandra Marinelli for studies in Italy, Björn Thunström for studies in Japan, Jenny Trumars for studies in Denmark and Charlotta Windahl for studies in New Zealand.

The Jacob Wallenberg Foundation

The 2003 scholarships of SEK 100,000 each were presented to Professor Sören Andersson, Royal Institute of Technology, Stockholm, Dr. Philippa Cann, Imperial College, London, and Dr. Anders Thuvander, Swedish Institute for Metals Research, Stockholm.

Stockholm Industry Water Award

Awarded to the Staple Fibre Division of Grasim Industries Ltd. in India. Awarded by the Stockholm Water Foundation in cooperation with IVA and the World Business Council for Sustainable Development in Switzerland.

Great Energy Prize

Herman Lindborg, CEO of LindinVent in Lund, received the Great Energy Prize (Stora Energipriset – the highest honour in the field of energy saving), for development of the IDCC – Intelligent Diffuser for Climate Control. Awarded by IVA and Sweco Theorells.

The Scientific Media Prize

The editorial staff for the TV science magazine from the Swedish Educational Broadcasting Company (Utbildningsradion) called "Jorden är platt" (The Earth is Flat) received SEK 75,000. Awarded by IVA and the Foundation for Science Information.

OFFICIAL STATEMENTS

To the Ministry of Industry, Employment and Communications

IVA's statement on the proposal by VINNFORSK, VINNOVA concerning improved commercialisation and increased returns in the form of growth from research investment at universities (VINNOVA Policy VP 2003:1)

IVA's statement on the Negotiators' report – Mer trä i byggandet (More wood in construction). Foundation for a national strategy to promote the use of wood in construction (Ds 2004:1)

To the Ministry of Education and Science

IVA's statement on the white book to develop the Nordic region as a leading research and innovation region (NORIA – Nordic research and innovation – global leadership through increased cooperation, main report, October 2003)

Statement by the IVA project Engineers of Tomorrow on the report: "Developing Higher Education – The Bologna Process from a Swedish perspective" (Ds 2004:2)

IVA's statement on the Research Studies report (SOU 2004:27)

IVA's statement on "Financing Strong Research Environments – An international Survey" (Ds 2004:21)

Production for Competitiveness. Informational materials for the government's research bill for the period 2005–2008

PUBLICATIONS

IVA-M series

Engineers of Tomorrow. Final report from the project. IVA-M 346. 58 pp. (In Swedish)

A Tribute to the Memory of J. Sigfrid Edström (1870–1964) – engineer, industrialist, institution founder, sports promoter. IVA Commemorative Booklet 2004. IVA-M 347. 28 pp.

Broadened Horizons. IVA's third quarter of a century under Gunnar Hambræus and Hans G. Forsberg. IVA-M 348. 173 pp. (In Swedish)

IVA-R series

An External View of the Swedish System of Engineering Education. Contribution to the IVA Project "Engineers of Tomorrow." IVA-R 448. 36 pp.

How are this year's spin-off companies doing? A random sample of Swedish academic enterprise based on the participants in the Spin-Off Company of the Year competitions 2000–2002. IVA-R 449. 32 pp. (In Swedish)

Strategy for Increased Technology and Skills development in the Swedish Railway Sector. Final report from the Railway Panel within the IVA "Cooperation for Growth" project. IVA-R 450. 23 pp. (In Swedish)

Technical Development in Deregulated Markets. What we can learn from the telecom, energy, railway and defence sectors. Executive summary. (English version of IVA-R 443). IVA-R 451. 44 pp.

Cooperation for Growth in the Swedish Electricity Sector. Strategy ideas and proposals. Final report from the Electricity Panel within the IVA "Cooperation for Growth" project. IVA-R 452. 24 pp. (In Swedish)

Ombudsman

Justice of the Supreme Administrative Court Bertil Werner

Auditors

Justice of the Supreme Court Bo Svensson
Professor Lars-Gunnar Mattsson (Div.VI)
Authorised Public Accountant Jan Larsson

Alternates

Bertil Edlund, MSc. Econ (Div.VI)
Authorised Public Accountant Jan Palmqvist

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AFA

Bank of Sweden Tercentenary Foundation

Brothers Jacob and Marcus Wallenberg Memorial Foundation

Confederation of Swedish Enterprise

EU Fifth Framework Programme

Foundation for Science Information

Knowledge Foundation (KK Foundation)

Marianne and Marcus Wallenberg Foundation

Ministry for Foreign Affairs

Ministry of Industry, Employment and Communication

Marcus and Amalia Wallenberg's Memorial Foundation

Swedish Agency for Innovation Systems (VINNOVA)

Swedish Association of Engineering Industries

Swedish Business Development Agency (NUTEK)

Swedish Energy Agency

Swedish Foundation for International Cooperation in Research and Higher Education (STINT)

Swedish Foundation for Strategic Research (SSF)

Swedish Industrial Development Fund

Swedish International Development Cooperation Agency (SIDA)

Swedish National Rail Administration

Swedish National Road Administration

Swedish Research Council

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MOGENSEN INGRID UENOHARA MICHYUKI UHLÉN MATHIAS UHRENIUS BJÖRN ULFVARSON ANDERS ULLBERG ANDERS ULLENIUS CHRISTINA ULLMAN ANDERS ULLRING SVEN UNGER JONAS UPPMAN RAGNAR E URMI JAAK URSING HANS URSPRUNG HEINRICH UTTERBACK JAMES WACHTMEISTER TOM WAHLBIN CLAS WAHLROOS BJÖRN WAHREN DOUGLAS WALDENOR RAOUL WALL ANDERS WALLANDER JAN WALLENBERG JACOB WALLENBERG MARCUS WALLENBERG PETER WALLGREN SVEN WALLIN AMELIE WALLMARK TORKEL WALSHOK MARY VAN BRUSSEL HENDRIK VAN LEDE CEES VAN MONTAGU MARC VAN REIS DOUGLAS WANG YU-ZHU VANNERBERG NILS-GÖSTA WANNHEDEN CHRISTER WARD MELVYN WARNANDER CLAES VEDIN ANDERS VEDIN BENGT-ARNE WEGDELL THOMAS WEHTJE URBAN WEICHBRODT BJÖRN WEISS PETER WEJDLING SVEN VELIKHOV EVGENY VENDEL MARTIN WENNERSTRÖM HÅKAN WERBIN DAN WERME ANDERS VESSMAN JÖRGEN WESSMAN GUNNAR WESTBERG ULF WESTER MARGARETA WESTERHOLM BARBRO WESTIN PER-HÅKAN WESTLING HÅKAN WESTLUND CARL-AXEL WESTLUND PER WESTWOOD ALBERT WEYERHAEUSER GEORGE WEYERHAEUSER JR GEORGE H WEYRICH CLAUD WIDMARK HENRIKWIDMARK 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