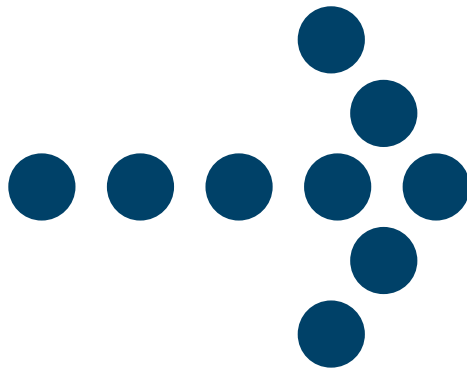


# FOI annual report 2010



FOI – Research for a more secure world





# FOI annual report 2010

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## Comments from the DG

In 2010, FOI strengthened its position as a desirable partner with respect to research and development, analyses, studies, for defence as well as the safety and security of society. Our success is based on our ability to work with both defence-related and civilian needs, as well as our ability to combine various skill sets to handle our assignments. The unique knowledge base that FOI possesses and has built up for many years has thus benefited our clients in many ways.

During the past year, FOI continued to develop its role as strategic partner within the framework of the Armed Forces' work with the new focus and regarding the capacity to be created over both the short and long term. FOI's goal is to use our collective expertise to support the Armed Forces in all its phases by continually supplementing long-term research projects with short assignments, such as developing protection against homemade bombs and evaluation of interventions abroad.

FOI received more orders from the Swedish Civil Contingencies Agency (MSB) in areas such as IT security and the future of crisis preparedness. As of July 1, 2010, the Swedish government is financing CBRN operations directly through grants, a clear indication of the significance of the field and the need for long-term expertise.

Our international collaborations have been successful in 2010. In addition to our partners in Europe and North America, our collaboration with South Korea and Singapore also developed positively. Under the EU's Seventh Framework Programme for security research, FOI consolidated its position as an important European player. FOI is also the eighth Swedish player in magnitude with respect to research funding from The Seventh Framework Programme overall. FOI participated in six new projects launched in 2010.

Starting this year, FOI is reporting on its knowledge-building activities, aimed at conducting long-term research and development, and on activities in which it applies research, development, analysis, to more short-term problems.

We adopted our vision and mission statement in 2010. We formulated three long-term goals with strategies and clarified our focus on our clients, expertise and employees. Our vision is as follows: FOI shall be in demand as a world leader in defence and security issues, thereby contributing to a safer and more secure world.

This annual report provides several exciting examples of work we performed on behalf of our clients. In summary, 2010 has been a successful year and the work carried out serves as a solid foundation for the future.

Jan-Olof Lind



## Pursuit of new knowledge

New knowledge seldom appears by itself; it is usually created by innovative researchers. The Swedish Armed Forces therefore financed a programme enabling FOI's researchers to start projects on the absolute cutting edge of research in their fields of knowledge. These projects, which involve higher risk-taking in research than usual, are carried out under the heading of "strategic research". When the projects are completed, and the benefit and applications of the results analysed, the intention is that they will continue under other programmes.

Projects in 2010 included research on invisible marking of digital images to detect falsifications, new methods for positioning of individual soldiers where GPS is inadequate and solutions for distributed databases that work in mobile wireless networks for tactical communications between mobile units. A platform for onsite-analysis for maritime use that can detect and identify remnants of dumped weapons and chemical substances in the Baltic Sea was evaluated and tested. The project also included scanning of emerging fields

to identify research boundaries. Such projects include studying the development of new methods for evaluating peace support operations and application of ultrashort laser pulses in sensor and countermeasure systems.

In 2011 work with strategic research centers will be self-funded by FOI, now under the heading "Scanning the research horizon".

# IT security

It is May 2010. Some of Europe's sharpest IT brains are sitting in front of their computers in Stockholm, Linköping, Tallinn, Riga, Kaunas and Brussels. Via virtual networks, they are trying to protect the control systems in two steam engines sitting on a bench outside a computer room in Linköping that supply energy to a small toy factory beside them. The steam engines are subject to constant attempts at sabotage, mainly from Estonian experts who are playing the role of "IT saboteurs".

The fact that the exercise, in which FOI was the principal organiser and designer of the technology platform, was held in 2010 can be largely explained by the increased interest shown in cyber warfare in recent years.

FOI researchers have been seeking to put the spotlight on vulnerabilities in today's industrial control systems for a long time. These previously closed systems are increasingly being controlled via the Internet, such as when e.g. power and telecom companies wish to measure consumption in their systems remotely in order to generate invoices via a business system. This offers huge savings, but increases the risk of outsiders accessing the system.

"We have been going on about these risks for at least ten years, but more often than not our warnings fall on deaf ears. However, the attention given to the Stuxnet computer worm in particular, has given work designed to protect control systems a totally different priority," says senior researcher Mikael Wedlin.

In 2010 FOI was also asked to act as the centre of excellence for the SCADA project, which pursues research on security in industrial systems and is run by the Swedish Civil Contingencies Agency (MSB). This commission includes creating technology exercises and training courses for companies and authorities to help make their IT systems more secure.





## Record cold winter exposes failings

The extremely harsh winter months of 2010 proved a difficult and sometimes cruel test of society's ability to cope in a crisis.

Large parts of Sweden had not experienced such a cold winter and so much snow since the mid 1980s. Heavy snow storms caused chaos on the roads and trains became stuck to the tracks. It also emerged that many organisations had not performed adequate risk and vulnerability analyses.

“The problem is due to too little analysis being performed from a social perspective today. There are too many detailed analyses and too few that look at the whole picture,” says Maria Bergstrand, a researcher who performs risk and vulnerability analyses at FOI.

One important lesson to learn, says Bergstrand, is

the need for various authorities to perform more joint exercises, such as within the transport sector.

As part of its risk and vulnerability analysis research, FOI has developed working methods and analysis methods to support important social functions.

“Risk and vulnerability analysis is a process that often involves many parties. Our methodology can sometimes help the parties involved to perform analyses that factor in data from several parties or parts of organisations to enable everyone to see the whole picture. This offers all parties a better tool to evaluate where the vulnerabilities are and what needs to be done to prepare for them,” says Bergstrand.

# FOI measured Icelandic volcanic ash cloud

In April 2010, the Icelandic Eyjafjallajökull volcano erupted and affected air traffic in the whole of Europe. In the case of Sweden, around 11,000 flights, including overflights, were cancelled and Stockholm Arlanda Airport was closed for the first time in its 50-year history.

FOI, together with the Swedish Armed Forces and the Swedish Meteorological and Hydrological Institute, was asked to measure and analyse the concentration of ash in the atmosphere. The measurements were taken by a Saab J32 Lansen fighter aircraft, fitted with six measuring pods under its wings. The pods, originally designed to measure radioactive substances, were fitted with filters to collect the ash particles. The concentration was then determined by FOI researchers.

FOI research in this area has made Sweden the only Nordic country able to perform safe air sample collection. This meant that the commissioning clients, the Swedish Air Navigation Services and the Swedish Transport Agency, were able to make scientifically based decisions on flight paths and possible flight bans.



# One of many award-winning FOI scientists

Stefan Nilsson, Deputy Research Director at FOI, was awarded the Scientific Achievement Award 2010 for his work on technologies that can “see through walls”. He thus became one of the many FOI scientists who won awards in 2010.

Stefan Nilsson represented Sweden in an international group known as SET-100 Task Group on Sensing Through the Wall Technologies. The group studied technology involving the use of radar to interpret what was on the other side of a wall, and ways in which this work could be developed. The research was carried out within the framework of the NATO RTO (Research Technology Organization) and the award can be interpreted as recognition that the group, which also includes members from Norway, Canada, the United States and Italy, was one of the most prominent of the hundred or so groups engaged in research within the organisation during 2010.

Research within FOI also underpins important parts of the developments in this area.

“We have, for example, contributed important research into ways of creating good images of people behind walls and we have added new knowledge about how different wall materials transmit radar waves,” says Stefan Nilsson.

Stefan Nilsson sees many future areas of application for this technology which can be of benefit to Swedish industry. Primarily, this is about system solutions to meet the needs of the Swedish Armed Forces. There could also be policing applications, for example in being able to know whether there was anyone hiding in a room or behind a door. In the future, the technology could also be used to see whether there is anyone in a burning building.





## Research to counter terrorist bombs

In December 2010, a suicide bomber detonated a bomb in the centre of Stockholm. Fortunately, people in the vicinity escaped unharmed.

FOI has taken a leading role in 2010 in Swedish and international research aimed at making it possible in the future to detect people carrying bombs and to prevent illegal bomb manufacturing.

For instance, FOI is coordinating the EU-funded Lotus and Prevail research projects. Around ten European research organisations and associated companies are cooperating on the Lotus project to create anti-terrorist tools based on chemical background monitoring of urban environments where bomb production is suspected.

In the Prevail project, FOI is leading work aimed at preventing the manufacture of bombs from readily available everyday products that individually are not dangerous, but can pose a deadly threat when mixed together in a certain way.

Researchers on the project are seeking to develop additives that prevent substances being explosive in new combinations, including the development of trace elements that can be mixed in with the products to make them easier to detect in environments where they should not be present.

FOI is also a member of a national working group along with the Swedish Civil Contingencies Agency (MSB) that is looking at restricting the sale of chemicals that can be used for bomb making. FOI has also been commissioned by MSB to test the manufacture of homemade bombs, based on products that can be bought in retail stores. We are pleased to report that these tests showed it is more difficult to manufacture a bomb than was initially feared.



# Sought-after partner in Europe

FOI is an increasingly sought-after partner in EU-funded research projects. In 2010, FOI researchers participated in 40 such research projects, ranging from aerospace engineering to security.

A good example is the FOI coordinated Lotus project that is researching into how you can locate terrorist threats in an urban environment. Another is the Optix project where three different complementary optical technologies are being combined to enable tiny residual explosive substances to be traced on a suitcase or on a car. A third is the Effisec project that is designed to enable more secure border control systems that can more effectively detect chemicals, weapons and explosives, along with improved ID checks with the aid of biometric and other data.

What makes FOI such an attractive partner on EU-funded joint projects is the breadth and depth of the highly advanced research pursued here.

“In the case of energetic materials we are developing our own detection solutions, while also manufacturing and characterising explosives. So we know both where the front line is and where the challenges lie. The breadth of our research means we are able to bridge the gap between pure research and industry, and we are used to working across disciplinary borders,” says researcher Anna Pettersson.

FOI’s extensive civilian research alongside defence research means the Agency can keep a foot in each camp. By often being more open than defence research organisations in other countries, FOI is more easily able to work with civilian research partners.

“Having said that, we know how to apply strict confidentiality if and when required,” says Anna Pettersson.

# Safer intervention in Afghanistan

In 2010, tensions heightened in the areas where Swedish troops worked in Afghanistan, with armed attacks and roadside bombs, which in turn, increased the need for FOI's research on how to protect against improvised, often home-made bombs, known as IED threats.

“We've been working for a long time to protect against this threat and are trying to counter it on several levels: detection of manufacturing, detection of explosives on people and in the ground, protection of vehicles and people from the effects of an explosion and tracing the origin of the bomb after the fact,” says Rolf Arremark, Marketing Director Defence at FOI.

FOI supports the Swedish Armed Forces in many areas under this initiative. The Agency's research in telecommunications and electronic warfare is being used to secure communications for ISAF troops. Under the electronic warfare research programme, FOI has also developed protection for Swedish 10B helicopters (superpuma), improving the ability to deceive heat-seeking anti-aircraft missiles by sending out small flares that attract the robot.

FOI's environmental reports about diseases, air and water quality, or environmentally hazardous industries in

an area often serve as the basis for how Swedish soldiers act. The same applies to the “cultural” intelligence reports about Afghan culture in general, the differences found in the country and the implications for working with people. FOI also supports this work on a daily basis through its function as on-call commander, equivalent to the civilian on-call administrator. It is staffed by senior researchers and can be reached 24/7, from Sweden or Afghanistan. This individual can quickly provide information through the FOI network on important issues that require a rapid response.

“Collaboration with the Swedish Armed Forces in Afghanistan has developed our rapid response capabilities, sometimes within 24 hours. The need for quick decisions has also made us better at understanding the client's world and at describing things more understandably,” says Rolf Arremark.



# South Korea requested FOI help

On 26 March 2010, a South Korean Navy corvette, the Cheonan, sank off the west coast of South Korea. Immediately after the sinking, the South Korean Ministry of Defence asked Sweden for help in investigating the cause of the sinking. The Swedish Accident Investigation Board headed a Swedish delegation including experts from FOI and Swedish Defence Materiel Administration (FMV).

“They chose us in this instance because we have experts in explosive substances, underwater weapons and in analysing the effects on ship designs,” explains Matts Gustavsson, Head of Department at FOI.

The international investigation, whose final report concluded that the ship had been the subject of a torpedo attack, also included representatives from the USA, Australia and Great Britain.

When reporting on the incident, the Swedish media often turned to political analysts at FOI to explain what had happened. Asia researchers John Rydqvist and Jerker Hellström were the principal experts who clarified and explained the factors behind the conflict between North and South Korea on TV, radio and in press reports in Sweden.





## Research into greener flights

FOI developed models to reduce the environmental impact of flights, including how to make air traffic control more efficient.

One consequence of the current method of air traffic control is that most aircraft do not fly the shortest route, but the route they are given by the air traffic control authorities. This also makes it more difficult in peak periods to make “green landings” where the aircraft glides the final stretch to the runway. More efficient air traffic control has, in individual cases, shown that you can make fuel savings of up to 15 percent, which also means lower emissions. However, such savings must be weighed against the complexity this creates for air traffic controllers.

“One conclusion we have come to, is that there is no model or theoretical understanding in place for how air traffic is controlled. As such, FOI has been working to

develop a scientifically based theoretical platform for how best to control air traffic close to airports,” says Deputy Research Director Martin Hagström.

In 2010, FOI organised research in which researchers compared atmospheric data with air traffic control information to see when aircraft contrails can lead to cirrus clouds. These clouds affect the earth’s radiation balance, as they trap heat in the earth’s atmosphere at night and contribute to global warming. More detailed information on what properties in the atmospheric layer contribute to cloud formation from aircraft contrails can help enable aircraft to be controlled in a way that reduces the risk of new cloud formation.



# FOI shortlisted for UN Award

FOI's internationally acclaimed research into peacekeeping initiatives and humanitarian efforts that can be implemented with the least possible environmental impact was shortlisted as one of three finalists for the UN 21 Environment Award 2010.

Once all the personnel and infrastructure making up a peacekeeping or humanitarian mission arrive on site, there is a risk that they will create environmental problems, such as water and energy shortages or contamination of the ground and water supply. An illustration of this is the aid work following the earthquake on Haiti where the rescue efforts helped worsen an already unsustainable situation in terms of waste. In a worst case scenario, the end result can be a worsening of the conflict the relief work seeks to address. If, on the other hand, you can implement environmentally sustainable initiatives within the parameters of the peacekeeping or humanitarian effort, you increase the chances of such work promoting peace and helping to rebuild the local community.

FOI researchers have published a number of scientific papers in this area. The UN also asked FOI to develop the first ever UN environment training courses for initiatives in conflict zones or crisis areas and to train UN forces on the ground in missions in the Democratic Republic of Congo and Sudan.

“The nomination means FOI is now recognised as a heavyweight organisation in this area. You could say we have achieved this through our wide ranging expertise as these issues are so complex that all our divisions are involved,” says researcher Birgitta Liljedahl.

The UN has now commissioned FOI for a number of other assignments. “The number of initiatives is constantly growing, not least in connection with major natural catastrophes. Which is why we are striving to do more in-depth research in this area,” says Liljedahl.

# Systems for safer ports

FOI, on assignment from the Swedish Armed Forces, is engaged in a three-year project for the development of passive surveillance systems capable of detecting and warning of any attempt by divers or small craft to enter a port area.

During 2010, the FOI project team succeeded in developing a prototype capable of creating an underwater “barrier” which can detect all attempted intrusions in a port area. The system employs two kinds of sensors: hydrophones that measure sound and electrode sensors that measure the electrical field. The prototype includes detectors that function in real time which enables surveillance operators to see immediately when something happens.

FOI’s work has raised the general level of interest in passive surveillance systems for port areas. In the past, such systems have been regarded as being inferior to active sonar systems which, under favourable conditions, have a considerably greater range. As the research work has progressed, the view is increasingly being taken that the more robust passive systems are a good complement to

the active systems in providing for the effective and reliable surveillance of a port area.

“A major reason for our success is that FOI has been conducting research into passive multi-sensor systems for surveillance in shallow waters for more than a decade,” says FOI researcher Ron Lennartsson.

During 2010, the Swedish, Norwegian, German and Italian authorities decided to collaborate in the development of port area protection systems. Within this framework, FOI’s passive systems are to be tested in German and Italian ports.

“Since every port has its own particular problems, we want to test the system in foreign ports while also looking at how the system works in conjunction with active sonar systems in other countries,” says Ron Lennartsson.



# New record for FOI CBRN symposium

The 2010 CBRN\* symposium in Umeå held on the theme of “New threats, new requirements” broke the attendance record for participants.

Speakers at the event included Karin Måwe from the Swedish Ministry of Defence on the EU action plan for CBRN readiness, Magnus Ranstorp, the Swedish National Defence College, who gave a lecture on terrorism and Birgitta Rasmusson of the Swedish National Laboratory of Forensic Science (SKL), talked about networks for the forensic analysis of chemical substances.

A growing number of authorities are expressing interest in this area since the CBRN concept was expanded from a previous concentration on nerve gases and pathogenic microorganisms to now apply to dangerous substances in general, and to a certain extent, even environmental problems.

Anders Norqvist, Head of Division at FOI, describes the days as a gathering for “everyone in the industry” and as the

best opportunity of the year to update yourself in the area, especially for those who do not address these issues on a daily basis.

“Perhaps the most important thing is that people get a chance to talk with each other, exchange business cards and gain inspiration from the lectures. Coffee breaks are an important part of the CBRN symposium,” he says.

The CBRN symposium is a joint arrangement organised by FOI, the Swedish Armed Forces’ Centre of Excellence for protection against CBRN events (the National CBRN Defence Centre) and the Swedish Civil Contingencies Agency (MSB).

\*CBRN stands for Chemical (C), Biological (B), Radiological (R) and Nuclear (N) substances.



# Detects and recognises bacteria clouds

By combining infrared (IR) and ultraviolet (UV) lidar\* technology, a research project led by FOI has created a system which can both detect and classify a cloud of biological agent at a distance of several kilometres. As the culmination of four year's work, the results of the project were handed over to the assigning authority, the Swedish Defence Materiel Administration (FMV), in the form of a specification for a working demonstrator.

Detection of a bacteria cloud at a distance using an IR laser is a technique that has been known for many years. In addition, FOI has a well-known technique to recognise and classify hazardous bacteria by means of the fluorescence stimulated by UV laser illumination.

This led FOI's research scientists in 2006 to take the initiative for a pilot study to investigate the possibility of combining the two technologies in one and the same system. The outcome of that study was that, in the following year, the Swedish Defence Materiel Administration asked FOI to take the lead in a three-year research project together with industry and university participants with the aim of developing a demonstrator.

When FOI's project manager Per Jonsson and researcher

Fredrik Kullander presented the results, they were able to report to FMV that they had developed a system capable of detecting a bacteria cloud at a range of 2-5 kilometres.

"And that we were able, from the same set of measurements, to classify the most common biological agents by means of the characteristic fluorescence created by a particular bacteria when illuminated by UV laser light," explains Fredrik Kullander.

The next stage in the system development is likely to take place at a European level.

"Probably within the framework of EDA, the European Defence Agency," says Fredrik Kullander.

\*Lidar = Light Detection and Ranging, (cf. Radar = Radio Detection and Ranging)

# New faces at FOI

In 2010 FOI recruited 43 new employees. Meet some of them:



**Dr Amer Nezirovic, 30**  
PhD in radar technology  
and a researcher at FOI.  
Joined FOI in June 2010.



“I work with the very latest research in radar signal processing and radar systems. This research, which ranges over both military and civilian application areas, concerns everything from being able to detect people behind walls with the help of radar, to radar surveillance using drones. My job gives me tremendous freedom to decide over my career choices and to develop my own ideas.”



**Dr Lina Thors, 29**  
PhD in pharmacology  
and a researcher at FOI.  
Joined FOI in August  
2010.



“I am working on several research projects, on everything from applied research into personal decontamination to pure research within toxicology. I really enjoy working at FOI as it gives me the opportunity to work with researchers across disciplinary boundaries, which leads to the creation of greater knowledge within projects. It is also great to see how my research contributes to a safer society.”



**Maria Adenfelt, 38**  
Reader in Business  
Administration and  
a researcher at FOI.  
Joined FOI in April  
2010.



“I perform research within logistics, personnel and finance. At the moment, I am providing direct support to a department at the Swedish Armed Forces, and also on a project that is evaluating the Swedish Armed Forces’ materiel supply strategy. At FOI, I am able to tackle complex and interesting tasks which means that I learn a lot. I also get to work with great colleagues in an organisation that possesses plenty of knowledge.”



**Dr Patrik Krumlind, 35**  
PhD and researcher  
in organic chemistry.  
Joined FOI in September  
2010.



“My research at FOI is related to energetic materials. Right now I dedicate most of my working hours to an EU project, whose goal is to prevent the manufacture of home made explosives from readily available consumer products. This involves plenty of international contact, which I like. At FOI, I am able to work in a dynamic research environment with numerous opportunities for interdisciplinary exchange and good development opportunities.”



## FOI in figures

In this section we present FOI's services with a focus on finance. To provide an easily understandable overview of FOI's economy we provide tables and diagrams with comments and references.

Strong demand for FOI's expertise continues, with intensive activities in 2010. In order to meet client needs, FOI worked with strategic skills development and recruitment. The financial performance for the year was positive.

### **Lower income and higher costs, how does that work?**

Compared with 2009, income fell and costs climbed. Although this financial situation may seem worrisome, the opposite is true. Costs rose mainly because we hired more employees during the year to be able to meet the growing client demand for FOI's expertise. Lower revenue is to some extent the result of our policy to prioritise strategically important initiatives in order to retain and develop expertise. Skills development initiatives negatively impacted revenue this year, but are necessary for our long-term survival. In addition, orders from the Swedish Armed Forces were not as extensive as previous years, while income from civilian and foreign clients increased, which is completely in line with our strategy. For the past few years

FOI has had the target of civilian revenue accounting for 30 percent of total revenue. Civilian revenue accounted for 26 percent of revenue in 2010, an increase of 2 percentage points compared with 2009.

### **How efficient are we?**

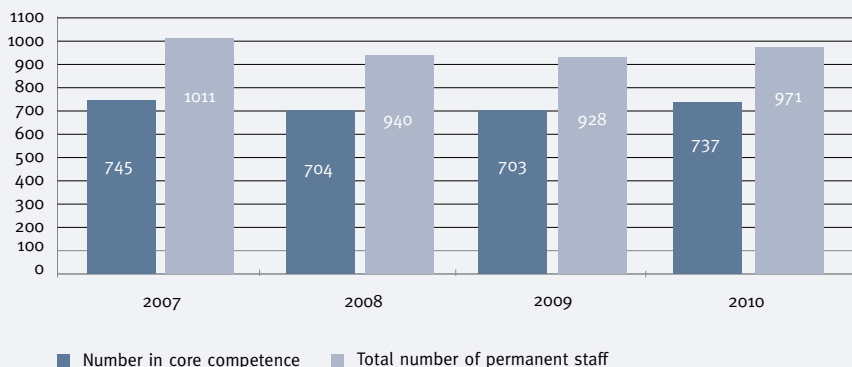
In recent years, we increased the number of employees within our core operations, while reducing the number of employees in central administration and support operations. The costs for central overhead (OH) operations are in our opinion on a stable acceptable level in relation to our revenue. Another parameter to emphasize is that we have not increased the hourly rate for our clients since 2007.

In light of the fact that, with unchanged fees we implemented skills initiatives, increased the number of employees in core operations, and kept central overhead at a stable level, we feel that the operation has been carried out efficiently and economically.

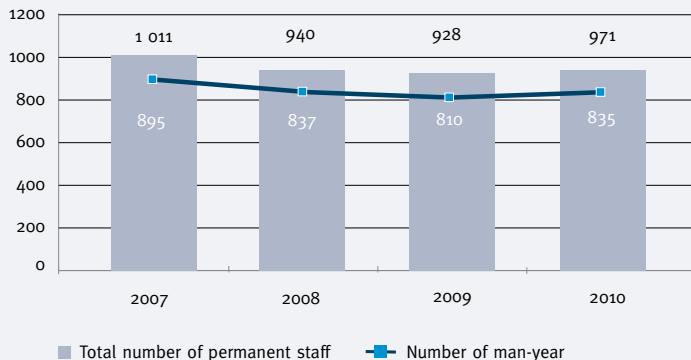
## 1. Personnel development

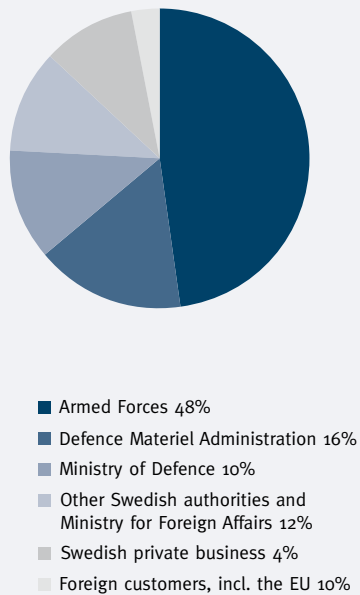
To meet changing client needs and the increasing demand for FOI's core competence, FOI hired 43 people this year. The total number of permanent employees in 2010 was 971, including 737, or 76 percent permanent employees within our core competency, compared with 74 percent in 2007.

Total number of permanent staff



Total number of permanent staff

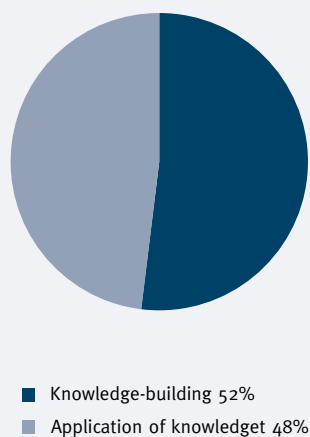




## 2. Revenue from clients

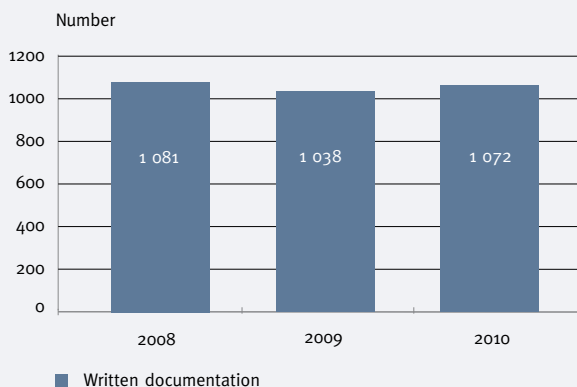
FOI's total revenues in 2010 were SEK 1,066m. Military revenue accounted for 74 percent of the agency's financing and revenue from civilian clients accounted for 26 percent.

FOI is mainly financed by clients in the armed forces, especially the Swedish Armed Forces and Defence Materiel Administration. Orders from outside the armed forces come in part from other countries, and in part from Swedish government authorities and companies mainly in the fields of crisis preparedness and security. The percentage of revenue from the Swedish Armed Forces and Defence Materiel Administration has decreased over the years. The percentage of revenues from foreign clients and from Swedish authorities has doubled since 2006.



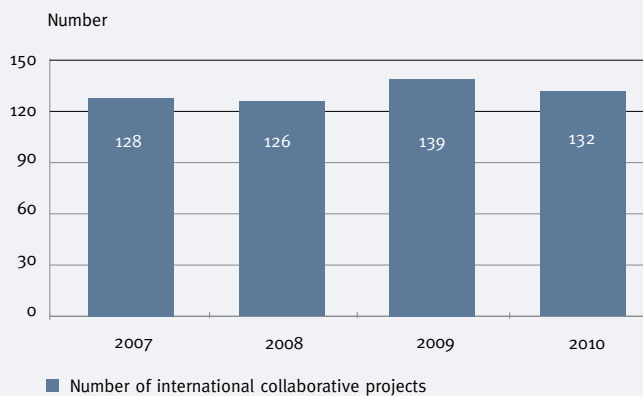
## 3. FOI's services

FOI divides its services into two categories: knowledge-building and application of knowledge. Knowledge-building services involve research and development in a long-term perspective and mainly occur in projects within Research and Technology Development (R&T) from the Swedish Armed Forces, as well as via grants from the Swedish Ministry of Defence and the Ministry for Foreign Affairs. Knowledge-building services are an essential foundation for services related to application of knowledge where research and development, analyses, etc., are used for short-term problems. In 2010, knowledge-building comprised 52 percent (SEK 559m) of FOI's total services, while application of knowledge comprised 48 percent (SEK 507m).



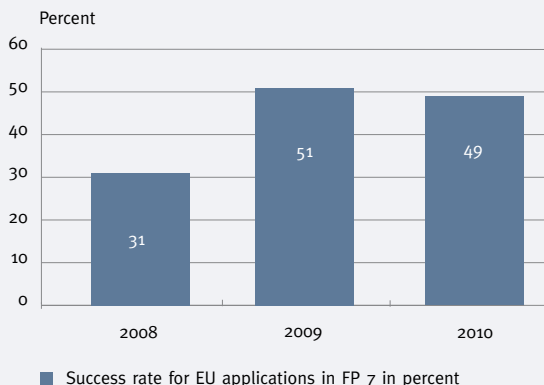
## 4. FOI's Reports

In order for FOI to be strategically significant over time, while keeping up with technology and methods as well as changing client needs, it must continuously pursue research. FOI's research mainly involves knowledge-building. The results are presented in scientific articles, conferences, reports, seminars, demonstrations and client days. In 2010 FOI produced a total of 1,072 written reports. Application of knowledge activities mainly involves individual assignments from clients, with the products adapted to client needs.



## 5. International collaborative projects

International collaborations are the core of FOI's services. FOI has access to knowledge and experimental equipment that make it possible to meet the needs of the Swedish Armed Forces and other clients, which increases the cost efficiency of the research. Collaborations also serve as quality assurance regarding FOI's research and generate international credibility for Swedish excellence. FOI's international collaborative projects comprise bilateral and trilateral and multilateral collaborations, such as collaborations with NATO and the European Defence Agency (EDA). In 2010, FOI was involved in 132 international collaborative projects. Services linked to the EDA have the highest priority of all multilateral activities. The highest priority bilateral activities in terms of research involve collaborative efforts with the US. France, Great Britain and Germany are FOI's main partners in Europe.



## 6. EU's Seventh Framework Programme

One important activity at FOI is financed by external funding agencies and applications are submitted in competition with other actors, often on an international level. FOI is a key player in the EU's Seventh Framework Programme for Security. In 2010, FOI was the eighth Swedish player in magnitude in terms of research funding from the Seventh Framework Programme overall. During the year FOI participated in 68 applications related to calls from the EU's Seventh Framework Programme. The percentage of approved applications, known as the success rate, for FOI is extremely high at 50 percent. Sweden's average success rate was 25 percent, which meant fifth place among the 27 EU member countries, according to the European Commission. FOI participated in six new projects initiated in 2010.

# Income Statement Dec. 31, 2010

The financial year shows a positive performance at SEK 29.2m. Compared with 2009, total income decreased by SEK 13.6m. The revenue decrease is partly due to the reduced volume of orders from the Swedish Armed Forces and partly due to its ability to complete projects for clients, since FOI had a staff shortage, despite the hiring of new personnel. Total costs increased by SEK 4.8m compared with 2009, mainly due to the increase in personnel.

## Income statement 2010-12-31

INCOME/COSTS (SEK '000)	2010-01--12	2009-01--12
<b>Operating income</b>		
Income from allocations	144,544	92,807
Income from fees and other remuneration	824,554	894,216
Income from grants	95,659	91,078
Financial income	1,564	1,840
<b>Total Operating Income</b>	<b>1,066,321</b>	<b>1,079,941</b>
<b>Operating expenses</b>		
Expenses for staff	-674,622	-641,219
Premises expenses	-121,505	-120,743
Other operating expenses	-205,927	-234,587
Financial expenses	-1,729	-1,889
Depreciation and impairment losses	-33,363	-33,916
<b>Total Operating Expenses</b>	<b>-1,037,146</b>	<b>-1,032,354</b>
<b>Activity Outcome</b>	<b>29,175</b>	<b>47,587</b>

# Board of Directors

## **Board of Directors and management**

FOI is managed by a Board of Directors with full responsibility, whose members are appointed by the government. The government has appointed Jan-Olof Lind to be Director General of the Swedish Defence Research Agency. He manages the agency in accordance with the Board's directives and guidelines and makes decisions in cases that are not encompassed by the Board's decision-making authority. The Director General represents the agency's highest level of operational management.

## **Chairman of the Board**

Sören Mellstig, MBA, former CEO of Gambro AB

## **Board Members**

Jan-Olof Lind, Director General, FOI  
Eva Lindencrona, Director, Vinnova  
Hans Hentzell, CEO, Swedish ICT Research  
Olle Stendahl, Professor, Linköping University

## **Staff Representatives**

Jörgen Trued, SACO  
Rolf Tryman, ST