of defence equipment and services that is what FMV achieved during 2012. Two of these were multifunctional vessels: HMS Visby and HMS Nyköping, which the Swedish Armed Forces can now use to hunt submarines with torpedoes, depth charges and sonar. They can deploy and clear mines and fire anti-ship missiles. They also have an airport function for the takeoff and landing of helicopters.
The Swedish Defence Materiel Administration, FMV, is a civil authority. On behalf of the Swedish Government, we develop products, services and systems for the Swedish Armed Forces and other agencies, often in collaboration with several other actors.

Through the combination of technical expertise and business know-how, we ensure that the equipment will be of the required quality and performance level, and at the right cost. Every year we handle up to a thousand various projects. Here we give a description of some of them and of some of our employees.

From the year 2013 we took over part of the logistics tasks belonging to the Swedish Armed Forces. As a result, we grew from 1,500 employees to 3,000. Those tasks taken over are storage services, service and maintenance. These newly assumed tasks mean that FMV has taken an overall responsibility for supplying equipment and logistical supplies to the Swedish defence.

It is about supplying defence material and logistics - whenever and wherever needed. That is FMV’s contribution to Sweden’s defence capability.
The world’s heaviest thermal chameleon
By outfitting the vehicle with CD-sized thermal plates, the vehicle operator can choose to project any pattern seemingly in any temperature. So you can trick the enemy into thinking that a combat vehicle that weighs 35 tons is something completely different, or to get it to blend into the surroundings to avoid detection from thermal sensors.

One of the FMV’s development projects sounds like Harry Potter’s invisibility cloak and is based on the widespread military use of thermal imagers. With the help of the plates, the vehicle can either mimic its surroundings or take the form of a harmless object, like a passenger car, if you are, for example, in an urban environment. Read more about the project on page 17.
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Effective Defence Logistics
– when and where it is needed

The Swedish Defence Materiel Administration, FMV has a mission from the Swedish government to provide the Swedish Armed Forces with defence logistics. This means supplying them with defence, services and logistics solutions. FMV will do this cost-effectively and in a manner satisfactory to both the Swedish Armed Forces and other customers’ needs and requirements. This is FMV’s contribution to Sweden’s defence capability.

New tasks
On March 1, 2012 FMV and the Swedish Armed Forces, presented their joint proposal on how to apportion the responsibilities and duties regarding logistics tasks. The proposal was based on the principle that the Swedish Armed Forces will continue to pursue imminent logistics. FMV takes over the logistics operations that are not imminent.

The work to prepare FMV for the new tasks has been done in close cooperation with the Swedish Armed Forces. It has been an intense process, and it has been fruitful even though we sometimes had different starting points. So far, the transition of logistics operations from FMLOG to FMV has worked well.

We have defined customers and ordering processes. We have also worked to implement the Swedish Defence Structure Committee’s proposals on changes to the material process with clearer roles, where the Armed Forces is the client and FMV the supplier.

Large projects
Each year FMV handles nearly a thousand small and large equipment projects. 200 new ones are added every year, and about as many are concluded.

I would like to highlight some of these.

We are faced with a task which is the largest since the 1980’s, the modernization of the JAS 39 Gripen System. Faced with the task, we have gathered the Gripen staff in a separate business unit in order to have full focus on the task.

Multifunction and low signatures make Visby corvettes unique ships. In 2012 FMV delivered two of five ships to the Swedish Armed Forces.

In collaboration with the Swedish Armed Forces, FMV acquired an entirely new medium weight helicopter system in record time 12 helicopters in a year, as well as training and maintenance concepts.
Constant development
Apart from equipment projects, FMV has completed Action Program 2012 with the goal of saving SEK 500 million, started a project to review FMV’s goal and management model, and begun implementation of LEAN as a business tool. We have allocated approximately 3.5% of our working time to develop our skills, and we have also worked hard with defence structure issues. All this has been done while FMV’s ability to deliver was only marginally affected.

FMV must be able to deliver large and small projects with high complexity, and sometimes it has to be done with tight deadlines and in a diverse environment. At the same time, we must continuously develop our organization, business, work, and our own expertise.

Developments within these areas are not for our own benefit, but for the people we are here for. It is so that we can be better as a partner with the Swedish Armed Forces, and better at identifying risks and preventing problems at an early stage in both the delivery of services and the procurement of projects. It is also so we can become even more professional.

Lena Erixon
Director General, Swedish Defence Materiel Administration

"To go from modernizing the JAS 39 Gripen System in cooperation with Switzerland, to managing a very large number of new orders for service and maintenance from the Swedish Armed Forces, shows the range of activities and challenges for FMV.”

Lena Erixon, Director General FMV
These vehicles will live for 30 years, so it is important that the agreements are rational and efficient right from the start.

Carl-Johan Widmark, Project Manager FMV
The sun is shining over a proving ground in southwestern Sweden. A rumble breaks the stillness as a truck approaches at high speed. The driver suddenly makes a quick evasive maneuver causing the max-laden car to sway and swerve between cones placed on the ground, where after it continues straight ahead.

It is the spring of 2012 and we are on FMV’s test track outside of Skövde, Sweden where a test team is subjecting 12 heavy vehicles from four different manufacturers to rigorous trials.

“Our tests include evasive maneuvers, accessibility, and starting in cold conditions. We make different measurements and record videos”, says Roger Larsson, test leader at FMV. The results that we deliver from these tests provide the project team with information on whether or not each vehicle meets the given requirements.

Bids submitted from four major truck manufacturers qualified to take part in the competition for the framework agreement concerning the heavy-wheeled vehicles that are to be given to both the Swedish and the Norwegian armed forces. The bids came from the Swedish company Scania, the Italian company Iveco, and the German companies: Mercedes and MAN.

“The defence logistics organization in Norway, FLO, is responsible for the procurement. But it is a joint project”, says FMV project manager Carl-Johan Widmark. “The need for this type of vehicle is the same in both countries, and with a joint framework agreement, we gain larger volumes and can reduce costs, especially in terms of the lifecycle of the vehicles considering both spare parts and maintenance.”

During the year the Norwegian-Swedish project worked to evaluate all 12 vehicle models based on comprehensive procurement material containing over 130 documents, which among other things, included a list of all the specified requirements. This concerned everything from the commercial terms of mobility, protection, maintenance issues and the finances seen over the vehicle’s entire lifetime.

Among the vehicles that are to be procured is everything from civilian-grade trucks that can be used at airports, to armored vehicles for transportation of heavy loads weighting over 70 tons.

“In connection with the signing of the agreement there will also be suborders. These deliveries will begin one or two years after that”, says Carl-Johan Widmark.

The plan is to sign both the framework agreement and maintenance contract in June of 2013.

Heavy procurement

Many trucks will be procured within the ten-year framework agreement that FMV and Norwegian FLO will sign in collaboration with a truck manufacturer. The agreement includes 12 different types of vehicles and their maintenance.
“We developed the new body armor along with those to use it. It has made it very flexible despite a high protection factor.”
Klas Åberg, Project Manager FMV
You can protect a soldier from all possible threats, but then he is basically immobile. When it comes to personal protection, it is always a balance between protection and mobility.

The new body armor for the Swedish Armed Forces consists mainly of two different protection vests. One can be used hidden under the uniform jacket, and one can be used for external purposes and has the possibility of adding and attaching other protection devices.

“I would say that we now have one of the best body armors there is, just because it is complete and very flexible”, says Klas Åberg, project manager at FMV.

The new body armor is called Body Protection 12 (KRSK 12) and protects against shrapnel and projectiles. By using different reinforcement protection devices it is possible to customize protection by threat, task, environment and position.

To the safety vest you can add neck protection, arm protection and protectors for your private parts. It is also possible to adjust the vest so that it can be used on missions involving crowds. It then provides added protection for the legs, arms and feet. This means an easier configuration that provides protection against strikes and jabbing.

Procurement and Development
How do you develop a completely new type of body armor able to fit with both already existing and future equipment? Body armor like this did not exist on the market. This is why FMV procured a supplier based on the criteria of technical expertise and commercial terms and conditions.

Following successful completion of the competitive procurement process, a project team was formed with representatives from FMV, Mehler Vario System (supplier), and The Swedish Land Warfare Centre. This group then developed the new body armor, and all within three months.

“We did the work in several steps, with tests at The Swedish Land Warfare Centre, where we evaluated the ergonomics and how people felt after using the body armor. We also did tests showing how it worked in vehicles, along with other equipment, and on different types of assignments in different temperatures”, explains Klas Åberg.

“The unit (FS 24) that was deployed to Afghanistan in the autumn of 2012 was supplied with the new body armor, and was then trained in its use. That is important to really get the maximum performance out of the body armor”, says Klas Åberg.
"The best thing about working at FMV is that I get great opportunities to learn new things and to grow as a person."

Erik Bergström, Test Systems Manager,
FMV test site in Vidsel
Radio-controlled targets

Radio controlled military SUV’s and all-terrain carrier vehicles that can be used for missile testing and exercises are the latest technology addition to FMV’s test facility in Vidsel.

“Behind the development of radio-controlled targets is a combination of customer requests for realistic testing and exercises, as well as our own exacting requirements for personal safety”, says Erik Bergström.

The man with the radio control is an increasingly common sight at the test site in Vidsel. Here some 150 people, 70 of whom are FMV employees, work all year around to design and conduct tests and exercises for both Swedish and international clients.

Realistic tests and exercises

“We try to satisfy the customer’s requirements at a price which they are prepared to pay. This means that we use commercial market products when it is possible, and we develop the products ourselves, if we can do it better or more inexpensively. History shows that it is often both better and less expensive when we do it ourselves. It also means that we know exactly how the system works, which is necessary if the system, needs to be adapted to specific requirements.”

In a container on the flat top of a snowy hill in the north of Sweden sits a man in front of some screens operating a radio controlled car. The car weighs 2.4 tons and will soon be fired upon by a missile.

“This technology helps the Swedish Armed Forces to practice on realistic targets at a low cost without the risk of anyone getting hurt”, says Erik Bergström, Director of test systems at FMV’s facility in Vidsel, Sweden.

When FMV verifies that the weapons perform in the way that the supplier claims, the possibility of our testing the missiles under realistic conditions is very important. But the Vidsel test facilities are also used for exercises where pilots can practice shooting live ammunition at realistic targets.

Customers from all over the world

With its unique expertise in radio-controlled targets, the test site in Vidsel attracts customers from all over the world, both within the Swedish Air Force and even manufacturers who want to have an opportunity to test their weapons under realistic conditions.

As head of the test systems, Erik Bergström works in close collaboration with FMV partner, The Swedish Space Corporation, SCC. They are in charge of the daily maintenance for part of the test facilities. After more than ten years in Vidsel, Erik Bergström has no plans to change jobs.

“No, I’m passionate about this. Test and evaluation is an interesting and varied field to work within. Here something new happens every day. It is also very rewarding to work with something that is this important. It is meaningful to be a part of the work that strengthens our ability to defend Sweden”, says Erik Bergström.
“It is possible to send data, and to listen and transmit on two different radio networks simultaneously. In doing so, we have simplified a lot for users.”

Maria Asplund Wakander, Project Manager at FMV
A group of soldiers on a mission has an urgent need to communicate both within the group and with the platoon chief. The ability to handle both types of communications in a simple way, and to be able to transfer data, has been long awaited. With the new generation of group radios, this has become possible.

“Now it will be much easier for the commander to simultaneously manage group networks, and platoon networks”, says Maria Asplund Wakander, project manager at FMV.

The earlier versions of Internal Group Radio (IGR) were introduced into the Swedish Armed Forces in 2006. They cover the need for voice communication both within the group and between the group and the vehicles, but it is a solution that requires two radio systems. FMV has now supplemented the IGR system with new handheld and vehicle mounted devices and fixtures that add several new capabilities.

Among other things, the new radio delivers data with a bandwidth of approximately 12kbps, at the frequencies and configurations used today.

**Magic box creates flexibility**

To make it easy to use different radios, headsets and intercom systems, FMV has developed an inter-connect unit in close cooperation with the Swedish Armed Forces and Sweden’s Land Warfare Centre (Army Academy).

It allows users to simultaneously send and listen to two different types of radio stations, and via intercom to be plugged into a vehicle using a noise-canceling headset. Maria Asplund-Wakander is very pleased to have succeeded in realizing this capability.

“By adding this little “can”, we have created a great deal of flexibility for the user.”

**Complex integration**

The Group radio project has made its procurements from existing products already on the market. The requirements for products are exacting. The equipment should, among other things, be able to withstand the most diverse of environments and also be safe to use.

But although this project has not been one of development work, it has not been without its problems.

“The products are each individually performance-competent, but when products from different manufacturers are to be integrated into a system, the slightest modification must be checked so that it does not affect the other units”, says Maria Asplund Wakander.
“My mission is to show the possibilities and limitations of new technology. Then it is up to the supplier to proceed with any commoditization, and to the customer to proceed with any acquisition.”

Ola Dickman, Project Manager – technical development at FMV
“By avoiding detection valuable time is gained during an operation. It is a relatively inexpensive method of protection. In case of discovery one must have other protective capabilities, such as warning and countermeasure systems, ballistic protection, or the possibility to move away very fast”, said Ola Dickman.

One of the development projects is about tricking the enemy into thinking that a combat vehicle that weights 35 tons is something completely different, or to get it to blend into the surroundings to avoid detection from thermal sensors.

It sounds like Harry Potter’s invisibility cloak and is based on the widespread military use of thermal imagers. By outfitting the vehicle with cd-sized thermal plates, the vehicle operator can choose to project any pattern seemingly in any temperature. The vehicle simply acts like a huge heat-TV, where each tile is a pixel.

**Blending in with the surroundings**

With the help of the plates, the vehicle can either mimic its surroundings or take the form of a harmless object, like a passenger car, if you are, for example, in an urban environment. The technology of the thermal plates transforms the combat vehicle into the world’s heaviest thermal chameleon. With a special camera the vehicle operator can take pictures of another vehicle or background pattern and then direct the system to create a disguising thermal pattern image. In less than a minute the vehicle will appear just like the camouflage-generated model when viewed by an infrared camera.

“My focus is technology development. We are always one step ahead of the acquisition. By working with development, we have good control of future sensors and the technology solutions that will be needed to conceal people, vehicles and equipment from future threats of detection.”

**Brilliant solutions are not always best**

Rapid developments in the sensor area put new demands on those who want to operate without being detected. There are many technical possibilities, but FMV’s task is to see if the technology fits with the Armed Forces’ capabilities.

“We must constantly ask ourselves which solution is the best. Is it a question of being able to move quickly, or having good ballistic protection? Or not being seen? In the end, reality can cause an ingenious technical solution to be unworkable. But investments in research and development are never wasted - they always leads to new ideas. Our investment in technology development is also about building skills among suppliers, because knowledgeable vendors always benefit us in the end”, says Ola Dickman.
“SSIC is a separate system, but there is a possibility to connect it to the Armed Force’s management system, Sweccis.”

Carl-Martin Larsson, Project Manager FMV
Live Transmissions from the Eagle

The tactical UAV aircraft, The Eagle, can remain airborne for six hours. While in the air, it can send video images and data directly to the unit on the ground. This means that the work of analyzing the data can begin immediately without waiting for the Eagle to return to base.

While the Eagle is in flight, linked video is transmitted down to the ground control station in real time. From there it is sent to a container where the processing equipment is located. Here begins the work of quickly analyzing sensor information, to produce images and intelligence reports which form the basis for the unit’s planning.

When the Eagle made its first reconnaissance flight in Afghanistan in August of 2011, in order to get the image processing capability to Afghanistan right from the start, FMV developed an interim version in parallel with the regular equipment of the tactical UAV system, the Eagle. Development took approximately a year.

In the spring of 2012 FMV delivered the complete equipment system to the Swedish Armed Forces. The name of the system is SSIC. The system is a ground-based system used to analyze video data from the Eagle 03-System. It is based on the same platform used for evaluation of the images from the Gripen system reconnaissance pod.

“The heart of the UAV system

The work of analyzing the information takes place in a 20-foot container packed with equipment for the processing of sensory information. From here the UAV mission is run by controlling the operators responsible for the aircraft and sensors.

“SSIC gives the Swedish Armed Forces the ability to process the sensory information and quickly develop a basis for the planning of operations”, says Carl-Martin Larsson, who is responsible for the image processing part in the TUAV-03 project at FMV.

The system can receive data from two 03-UAV systems simultaneously. Furthermore, it is possible to receive data from the Gripen’s reconnaissance pod, satellite information, and other UAV platforms or video / imaging systems for easier modifications.
“My job is to satisfy military needs and to do it in the smartest most inexpensive way possible. I enjoy working in this environment, and it is satisfying to be able to contribute to Sweden’s defence.”

Ian Kinley, Technical expert at FMV
When an ordinary shrapnel hand grenade explodes, half of its shrapnel goes into the ground to no tactical use. The other half goes into the air, spreading in all directions creating unnecessary danger to a third party. Only a few fragments have the chance to hit the target, provided that the target is not behind some small obstruction. In this case the grenade has no effect.

“Regular grenades do not fulfill their purpose. They are an unnecessary danger to innocent people, and generally are not able to reach their targets”, says Ian Kinley, technical expert in specialized munitions at FMV.

Instead, Ian Kinley’s solution is based on the grenade suspending itself in the air before exploding.

“Because it can propel itself upwards, it does not only reach targets located behind obstacles. This advanced technology also means that the grenade “knows” up from down. This allows us to aim the shrapnel downwards, in an area of five meters from where it hits the ground”, says Ian Kinley.

By concentrating the effect into a cone formation under the grenade rather than spreading the shrapnel spherically, the cluster density increases several times. In this case the target is struck from above, over a larger area, with heightened cluster density. This increases the likelihood that the target receives a direct hit. No splinters go sideways, which dramatically reduces the risk to any bystanders.

"In addition, we have incorporated an additional safety feature that slows the shrapnel down and makes it harmless to innocent people”.

The effect is achieved because the shrapnel is designed to slow itself down the farther from the grenade it travels. At 30 meters normal clothes are enough to serve as protection. Conventional grenades can seriously harm people who are much farther away from the explosion than that.

Basically Ian Kinley’s work is to continuously find the most effective solutions at the lowest costs. Since the Blast Grenade 07 is so much more efficient than regular hand grenades, the soldiers need a smaller number. This not only provides better cost effectiveness and simpler logistics, it also means reduced training requirements.

"Anyone can manufacture expensive things and get them to work – that’s not the challenge. The challenge is to keep it simple. With the “jumping” hand grenade, we have really just given it a new shape and added some new pyrotechnics in a smart way. It is an inexpensive way to achieve a whole new capability”.

The result - the greatest change within hand grenades since the First World War - and a world patent for FMV.

Innovation

An FMV engineer is behind the biggest news in the hand grenade area since World War I. By both “jumping up” just before it explodes and directing its shrapnel in a cone formation towards the ground, this hand grenade not only minimizes the risk of innocent victims, it also becomes many times more effective against military objectives.
Facts:

March 1, 2012 FMV and the Swedish Armed Forces handed over the accounting for the transformation of defence logistics to the Government. Ten work groups had then been working hard for five months to study and analyze the various service areas and cross-cutting issues such as finance and human resources. A decision to implement the change came from the Government in June the same year.

When the decision came from the Government, work began on a large business transition. 1,500 employees in FMLOG changed employers when FMV took over all the logistics that were not imminent in the beginning of 2013. The name of the new department in FMV, which will handle logistics services, is the FSV, which stands (in Swedish) for storage, service and repair shops.

“By doing the right things in the right place for the needs of the Armed Forces, we will be able to streamline logistics services.”

Tomas Salzmann, Manager FSV within FMV
In the beginning of 2013, around 1,500 employees within the Swedish Defence Logistics Department changed employers, and became a part of FMV. This means that FMV will now deliver both supplies and logistics to the Swedish Armed Forces.

SEK 330 million is to be saved, but when it comes to logistics services, it will continue to have the same high quality. Is it really possible to reconcile that equation?

“The main focus of our mission is to see if the job can be done in new ways. It is a challenge, but my assessment is that it is possible. One of the important elements is to build a management organization that makes us do things in the right place and for the needs of the Swedish Armed Forces.”

The person behind that statement is FSV head, Thomas Salzmann. FSV is responsible for FMV’s new logistics business. According to Thomas Salzmann it is basically about looking at things in a new way. To do so is a huge challenge, especially when you have spent years doing things in a certain way.

For example, he says that it is impossible to consider the resources you have as permanent. Just because you have both staff and equipment, does not mean that a particular job should be done by that person right then and there. Thinking in this new way means that all other options are to be put on the table, such as manufacturing elsewhere using more modern equipment, or perhaps it should be a job for an external actor.

Production will be at the center of FSV, with a small management staff function and a flat organization. A key part of the new organization is modern management thinking. It will be the managers who are to both find the right staffing and optimize resources.

“The roles of the new equipment and logistical supplies will be clearer. The Swedish Armed Forces is the client and FMV is the supplier. This means that the Swedish Armed Forces are free to concentrate on their main business, and all of us at FMV can focus on delivery. Those who changed employers now get to work in a business where the work they do belongs to the core of our business. They end up more in the center, and I believe this makes the job more stimulating”.

With a small management staff organization, modern management thinking, and new ways to manage, the logistics support within the Swedish Defence will become even more effective.
“Unique is a strong word, but in the case of the Visby corvettes it is true. Multifunction and low signatures make it so that they do not have an equivalent.”

Anders Nilsson, Project Manager FMV
In 2012 FMV delivered two corvettes of Visby class to the Swedish Armed Forces. This means that there are now two Visby corvettes which can hunt submarines with torpedoes, depth charges and sonar. They can both deploy and clear mines, and fire anti-ship missiles. They also have an airport function for takeoff and landing helicopters.

All five Visby corvettes have advanced surveillance radar and a 57-millimeter cannon that can hunt and defeat both sea and air targets.

Anders Nilsson, who is project manager for the Visby corvettes, notes that there were delays in the early stages of the project, but that FMV now is in complete agreement with the timetable set up in agreement with the Swedish Armed Forces.

“It is of course, incredibly satisfying that two of the five vessels now have all the functionality requested by the customer. The first missile firing from a ship

Right up to delivery the project team worked on getting all systems in place. Among other things, the vessels participated in joint exercises with other units of the Swedish Armed Forces, where the Visby-class Corvettes got their airport operation certified. Another important milestone was the verification of the qualifying test firing of anti-ship missiles from a vessel.

Of course it was a bit tense. We had tested everything over and over again, but there were many things that were supposed to happen not only in a short time, but also for the first time”, says Anders Nilsson. “Compared to a test site on land which is completely still, a ship that rolls and heaves is a very different thing.”

But the test shots went well and Anders Nilsson concludes that “FMV has managed to integrate the powerful weapon onto a ship with requirements for very low signatures something that is not a given, considering the forces that the missile unleashes.

There is no equivalent

It is difficult to find ships with the same characteristics as the Visby corvettes. They are multi-purpose vessels with the ability to operate both below and above water, plus they also have very low signatures, making them difficult to detect on radar and other sensors, both above and below water.

During the project several major technology barriers have been broken through. Multifunctional ability is one. Stealth characteristics with low signatures, and with the hull in carbon fiber as a key part, is another. Development at the brink of what is technically possible is either very expensive or rather protracted. The Visby Project allowed for the time necessary to find new solutions.

But that is all in the past. Work is now underway to upgrade the remaining three corvettes, and in 2014 FMV will have delivered all corvettes of the Visby class in version 5.
"The IT attacks against governments and companies show just how important it is that we, in our open democratic societies, have the best possible security products and systems."

Martin Bergling, CTO CSEC
IT Security

“FMV is an important part of democracy”, says Martin Bergling, working with IT security at CSEC which is an independent division of FMV.

“Here at FMV I get to work long term and help ensure democracy and a free and open society. This makes the work I do feel very meaningful and important”, says Martin Bergling, technical manager at CSEC.

CSEC is Sweden’s Certification Body for IT security. This means that they create and develop rules for how to examine IT security products and systems. CSEC does not conduct the actual testing, but different companies can apply for approval as testing companies. The companies that are approved are supported and supervised by CSEC. After an audit CSEC then issues a certificate which shows that a product meets the expected requirements.

“It is a process with many process flows that may seem complex”, says Martin. “But it is a process deliberately designed to make the examination impartial and neutral”.

Common security requirements
One of the assignments that CSEC has is to set exacting requirements for secure USB flash drives. This entails describing potential threats to information security in a USB memory device, such as unauthorized access to information or making changes incorrectly. Each threat is handled by formulating objectives for safety and by describing the features needed to meet those objectives. The result is called a protection profile, or PP. The work is done in close collaboration with five other agencies with responsibility for information security. The next step is to develop common security policies for other products, such as computers and mobile phones.

Back at FMV
Fifteen years ago Martin Bergling began working at FMV. Back then he worked on the so-called security team. Before choosing to come back to FMV and CSEC, he spent some time working for Telia, the Swedish National Bank (Riksbank) and also IBM.

“There has been increased focus on information security. More people realize how important it is to be able to rely on security products. There is a larger market now for independent reviews and certifications, the very thing that CSEC is all about. Because of this, it feels good to be back at FMV and to be working in this area”, concludes Martin.
International Cooperation
FMV provides the Swedish Government Office with continuous and broad support in matters of materiel procurement. Among other things, we do this by coordinating different types of activities and carrying out different studies, and by submitting official comments on specific questions or issues.

FMV also offers the Swedish Government Office support by sharing our experience, and by coordinating the MoU (Memorandum of understanding) collaboration with other countries. Projects directly aimed at the development or procurement of joint systems have as their main objective, the sharing of both risks and costs and to ensure interoperability.
It has been a hectic first year for Michaela Lindh. From being a new employee at FMV in the spring of 2012, she has stepped into the international defence arena. When Sweden and FMV took over the presidency of the LoI in 2012, where six European nations cooperate, Michaela assumed, after an introductory period, a role in the group that prepares the Executive Committee meetings.

Since the overall goal of the LoI is to facilitate the restructuring of the European defence industry, very much of the work is about how to influence in this matter.

LoI is a forum for issues related to defence and security in Europe. And in times of declining defence budgets and increased competition in the defence market, there is a need for more cooperation between the countries in order to maintain a strong national defence and to create conditions for a healthy market for the defence industry.

Michaela attends work group meetings in Brussels four to five times a year. In between there is work at home and cooperation with the Ministry of Defence and the Armed Forces.

“We want the LoI to serve as a think tank which can support the EU Commission and the European Defence Agency, EDA, in efforts to introduce market regulations and issues such as research and technology.”

In 2013 the European Commission will present a strategy for the defence area, and defence issues is one of the items at the European Council this year. It will be an interesting year”, Michaela notes.

“The Commission has set up a task force for defence issues, focusing on the internal European market, industrial policy, and research issues. The countries within the LoI want to be involved in that process.”

Michaela’s entrance on this scene started when she met an FMV representative at a career fair. Then she saw an advertisement for “an analyst with an international focus” and now she is here.

“This year I have gained much experience and it is certainly true that FMV is a good place to work at if you like international affairs.

With study abroad in Spanish, a master’s degree in European and International Law, and a trainee job in Brussels, she has lived and worked abroad for five years. But now it fits in well with a base in Sweden and a job with many international contacts.

“The best thing about this job is that I get to meet people with so much experience, and gradually get into the issues and take more part in the discussions.”
“I like the range of my job tasks. One day I can be working with technology to avoid a vendor taking unnecessary risks in a project, and the next, I can be working strategically to create systems thinking. It’s an attractive mix, which makes this a unique place to work.”

Fredrik Hyllengren, Technical Expert in composite materials at FMV
Know-how: Composites

Using composite materials does not only allow for rigid and lightweight aircraft and ships. Carbon-fiber reinforced plastics also give them reduced maintenance costs and longer life spans. But the use of this technology places high demands on delivering high performance. FMV’s Fredrik Hyllengren has the know-how that will allow the Swedish Armed Forces to get the maximum value from their investment.

Fredrik Hyllengren, FMV’s technical expert in composite materials, describes his field as designing in mud and straw, only a bit more advanced. The principle of carbon-fiber composite is very simple. Build a structure of carbon fibers, fill it with plastic, and let it harden. The result is one of the stiffest and lightest materials - perfect for building airplanes and ships. But baking the composite incorrectly can end in disaster.

“The snag is that you define the properties when you bake it. You have to have the right material, pre-treatment, environment, processes and trained personnel. If you do it right, you get a fantastic result, but flaws made somewhere in the chain will mean that you cannot trust the strength of the materiel. This is something that cannot be detected from the outside.

The main benefit of composite structures is the weight in relation to the strength. A high-performance design with the equivalent performance made of aluminum often weighs much more.

For steel and aluminum constructions there are systems made to handle corrosion and fatigue. In much the same way, we have created the conditions for the development of a system to deal with the special risks associated with composite structures.

In order to not be dependent on the manufacturer for the maintenance of the Swedish Armed Forces vessels, FMV has developed a system for companies to certify their techniques for composite repair work.

It is important that the large suppliers are subjected to fair competition. This ensures that the Swedish State does not pay too high a price while developing the Swedish industry.

By using a way of thinking that we brought over from composite repairs in aviation, all potential repair yards can compete on equal terms. If the system is used correctly by the Swedish Armed Forces, the quality increases considerably since the same requirements are applied to all who want to submit a tender.

This is what is so great about working at FMV. There are interesting products for an engineer, at a high technical level. At the same time there is a focus on increasing efficiency for the Swedish Armed Forces at a reasonable cost. Delicately balancing these perspectives when contracting business, in order to create enhanced technology that is what drives me.”
FMV’s economic objective is full cost recovery over time. Net income was a loss of SEK 85.1 million. The main reasons for the negative result is conversion costs for ongoing changes and reduction charge because of the vacancy situation. But with a turnover of SEK 18.6 billion the negative result is around minus 0.5 percent, which is close to the goal of achieving a zero result.

From the FMV’s Annual Report 2012
FMV in figures

Results for 2012

FMV’s financial objective is full cost coverage over time. The reasons for the year’s negative result are partly, some adjustment costs for the ongoing change process, and partly reduced billing because of the vacancy situation. With a turnover of SEK 18.6 billion, the result is about negative 0.5 %. This is close to the goal of achieving a zero result.

With regard to operational efficiency FMV has not improved any individual indicator in 2012, but in most cases it is a question of marginal changes.

2012 meant the final year of FMV’s cost savings work within “Handlingsprogram (action plan) 2012”. In addition, FMV has carried out extensive work to implement the Government’s decisions within the framework of the Defence Structure Survey. Despite fewer FTE’s FMV concludes that has delivered good results. The efficiency with respect to both our customers and to our business operations has maintained a good level.

<table>
<thead>
<tr>
<th>Economy</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surplus for the year, million SEK</td>
<td>13</td>
<td>4</td>
<td>-85</td>
</tr>
<tr>
<td>Invoicing, billion SEK</td>
<td>19,6</td>
<td>19</td>
<td>17,8</td>
</tr>
<tr>
<td>Employees per year, average, number</td>
<td>1500</td>
<td>1471</td>
<td>1464</td>
</tr>
</tbody>
</table>

Source: FMV’s production management system.

<table>
<thead>
<tr>
<th>Delivery capacity</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delivery Commitment, number</td>
<td>1,049</td>
<td>976</td>
<td>949</td>
</tr>
<tr>
<td>Completed deliveries, number</td>
<td>957</td>
<td>905</td>
<td>839</td>
</tr>
<tr>
<td>Delays, number</td>
<td>96</td>
<td>71</td>
<td>113</td>
</tr>
<tr>
<td>Renegotiations, number</td>
<td>67</td>
<td>103</td>
<td>84</td>
</tr>
<tr>
<td>Delivery Capacity (%)</td>
<td>93</td>
<td>94</td>
<td>90</td>
</tr>
</tbody>
</table>

Source: FMV’s production management system.

Distribution of order stock 2012

- **Swedish Armed Forces**: 87.6%  
- **Others**: 12.7%
### Regulatory costs

<table>
<thead>
<tr>
<th>Million SEK (in 2012 prices)</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Staff costs</td>
<td>1,130</td>
<td>1,126</td>
<td>1,139</td>
</tr>
<tr>
<td>Premises</td>
<td>54</td>
<td>44</td>
<td>52</td>
</tr>
<tr>
<td>Travel</td>
<td>10</td>
<td>11</td>
<td>10</td>
</tr>
<tr>
<td>Resource Consultants</td>
<td>6</td>
<td>4</td>
<td>14</td>
</tr>
<tr>
<td>Service Products</td>
<td>259</td>
<td>270</td>
<td>259</td>
</tr>
<tr>
<td>Other expenses</td>
<td>57</td>
<td>55</td>
<td>54</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1,516</strong></td>
<td><strong>1,510</strong></td>
<td><strong>1,528</strong></td>
</tr>
</tbody>
</table>

Source: FMV's production management system.

### Staff structure 2012

<table>
<thead>
<tr>
<th></th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employees, average, number</td>
<td>1,568</td>
<td>1,532</td>
<td>1,529</td>
</tr>
<tr>
<td>Women, percent</td>
<td>28</td>
<td>28</td>
<td>29</td>
</tr>
<tr>
<td>Employees with university degree, percent</td>
<td>55</td>
<td>56</td>
<td>56</td>
</tr>
<tr>
<td>Employees over 55 years, percent</td>
<td>28</td>
<td>28</td>
<td>27</td>
</tr>
<tr>
<td>Employees under 35, percent</td>
<td>10</td>
<td>9</td>
<td>8</td>
</tr>
<tr>
<td>Average age</td>
<td>48</td>
<td>49</td>
<td>48</td>
</tr>
<tr>
<td>Sickness leave, percent</td>
<td>2,1</td>
<td>2,2</td>
<td>2,2</td>
</tr>
<tr>
<td>Female managers and project managers of large projects, percent</td>
<td>22</td>
<td>22</td>
<td>23,3</td>
</tr>
<tr>
<td>Skills development, percentage of working time</td>
<td>3,2</td>
<td>3,5</td>
<td>3,5</td>
</tr>
</tbody>
</table>

Source: FMV's production management system.

If you want FMV's complete Annual Report for 2012, e-mail: info@fmv.se
FMV’s main activities are in Stockholm. The Agency also has locations in Arboga, Enköping, Karlsborg, Karlskrona, Linköping, Skövde, Vidsel and Östersund. Our new unit FSV (stores, services, and workshops) will add 40 operating locations from the year 2013.
FMV is led by a board whose members are appointed by the Swedish Government. Lena Erixon was appointed as Director General of the Swedish Defence Materiel Administration by the Swedish Government. She leads the Authority in accordance with the directives and guidelines set out by the Board. She also makes decisions on matters outside the Board’s domain. The Director General is the Authority’s highest operational executive.
CHAIRMAN OF THE BOARD: SVEN-CHRISTER NILSSON

Born in 1944

B.Sc. in Mathematics and Theoretical Physics at the University of Lund.

CEO of Ripasso AB and previously MD and CEO of telecommunications company Ericsson. Occupied various managing positions in the Group between 1982 and 1997 and was CEO for the Group 1998-1999.

Board member of Assa Abloy AB, Sprint Nextel Corporation and CEVA, Inc. Up to December 31 2011 chairman of the Board for the Management Foundation of the public service companies Sveriges Radio AB, Sveriges Television AB and Sveriges Utbildningsradio AB.

Member of the Royal Swedish Academy of Engineering Sciences and the Royal Swedish Academy of War Sciences.

Extensive experience from leading large high-tech and global industrial companies. Has been especially committed to corporate management and similar issues within the official administration.
LENA ERIXON
Born in 1960

Holds a degree in Management (concentration in economics) from the University of Stockholm, and also pursued further studies in economics and management at the University of Stockholm and at the Gothenburg School of Economics.

Has been CFO and Director General of the Swedish Road Administration.

After the formation of the Swedish Transport Administration, she became head of the business area: Society, and Deputy Director General of the Swedish Transport Administration. Has also been CFO of the municipality of Södertälje, and worked at the Swedish Ministry of Finance.

Former Chairman and member of SweRoad AB, as well as a member of the Administrative Board of Dalarna’s advisory council.

Participated in several government studies and reviews, and in 2011-2012 was responsible for the study to increase the capacity of the Swedish transport system (capacity study).

MONICA WIDEGREN
Born in 1944

B.A., M.A. in Political Science at the University of Uppsala.

Between 1992 and 2011 head of Department at the Swedish Competition Authority for EU and international issues and during a number of years also for strategic issues.

Has been working as teacher in economics, as trading advisor, and with competition issues for 20 years, within the EU and international trading. Swedish delegate at OECD, WTO and other international organizations. Since 2007, the Swedish Competition Authority is also the authority monitoring public calls for tenders.
KERSTIN PAULSSON

Born in 1962

Civil Engineer in Electro-Technology at the Faculty of Engineering, University of Lund.

Since 1999, CEO and partner of Netsoft Lund AB, which develops and markets control and monitoring solutions for telecom networks in the international market. Is also Board member of Elanders AB and the Swedish Agency for Economic and Regional Growth. Previous board missions include Getinge AB, Lifco AB, KK-stiftelsen and NUTEK.

JOHAN ADOLFSSON

Born in 1960

Academic degree in business administration and economics with doctorate studies. The research project treats the exchange rate’s effect on share prices and the predictability of the quality measurements regarding the development of share prices. Has published a range of scientific articles and written two books in business administration. Partner of BDO AB.

Works as authorized accountant with audits of companies listed on stock markets and as consultant specializing in procurement of risk equity, valuation of companies and restructuring of larges companies.

Has also worked with similar subjects internationally for UNDP, SIDA and OECD. Teacher at the University of Stockholm within accounting and financing since 1982. Is also a reserve officer and serviced for example for the UN in Sudan in 2005 as administrative officer for the Joint Military Commission.
"With a great deal of innovation we managed to lower costs and increase efficiency in equipment supply. The savings are permanent and our deliveries are kept at least at the same extent as before."

Lars Falk, Manager Action Program 12
FMV started Action Program 12 to lower costs and shorten lead times for increased benefits for the Swedish Armed Forces.

“By proactively reducing costs and increasing efficiency in equipment supply, we wanted to free up resources that the Armed Forces could use both for the development of the rapid reaction force, and for increasing operational capacity and we succeeded!”, says Lars Falk, who managed the program.

There is a variety of activities that have led to success. In some cases, FMV has managed to reduce the cost of materials and services from industry. In other cases, a foundation was laid by changing work practices along with professional skills development, and additionally by influencing attitudes, all of which then ultimately led to savings.

A great deal of innovation underlies the FMV solutions in equipment supply everything from the conversion of older combat ammunition into practice ammunition, to the more comprehensive support and maintenance of the Gripen fighter aircraft. To be approved, the savings must be permanent and deliveries should be kept at least to the same extent as before, something that is verified by the Swedish National Audit Office.

When it comes to negotiations and contracts, it has been a question of creating improved conditions which foster even better business dealings.

“In the business skills area, the efforts have led to behavioral changes within the organization. This has, among other things, resulted in fewer small orders and in increased competition. We’re still working on this, and it will produce even greater results in the long term”, says Lars Falk.

Lars Falk says that some measures in the action program have been of the kind that set the stage for more creative business conditions. They have a more indirect impact on the cost of conducting business within FMV. But even those measures are beginning to show results. It can be seen in the budget for 2013, which means a reduction in agency costs by SEK 125 million compared with 2008.

“Not all measures have produced full results. For example, we started introducing LEAN to reduce lead times within the agency, but we have not yet been able to reach the set target of a 25% reduction. We have, however, created the conditions for ultimately achieving significant lead time reductions”. 

How can a government agency save SEK 500 million without compromising its existing supply capability level? Mr. Lars Falk at FMV has the answer.
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FMV:
Page 5, 7, 8-10, 14, 18-19, 22-26, 29, 32, 36-39, 40-41.
Tobias Larsson HeliAir – Cover picture, cover page back side.
Ola Jacobsen – page 4, 12-13, 16-17, 20-21, 30.
Marcus Boberg FMLOG – page 23
Lars Forsstedt – page 37-39
Pia Ericson T&E – page 41 (top at left)

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