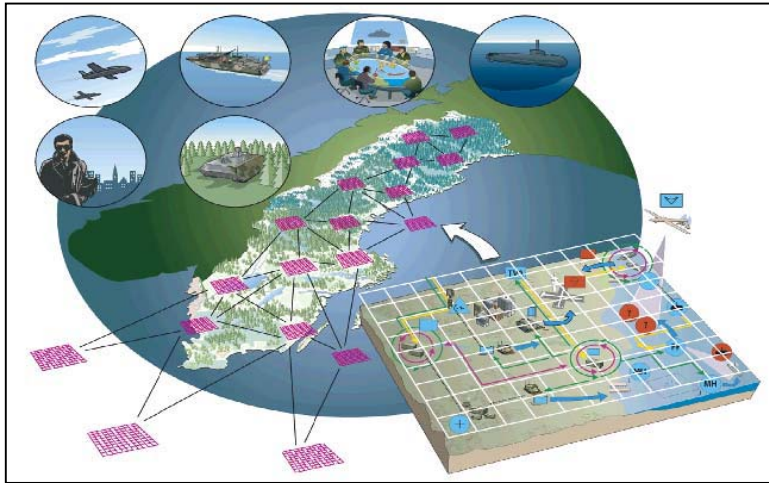


Swedish Geographic Support Section in Kosovo

- Deployable Geographic Field Support -

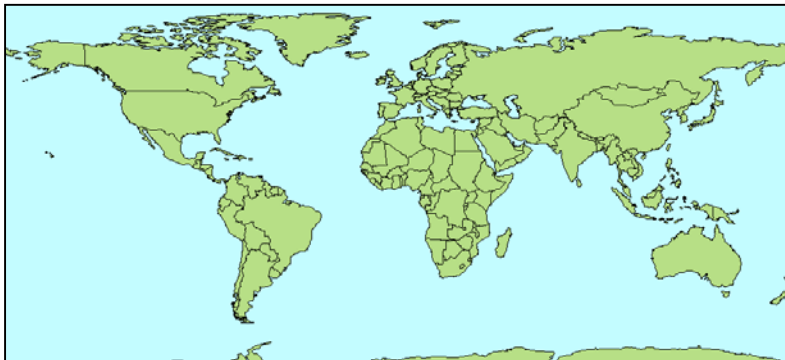
Anton Basic
Geographic Information Support Establishment



The Swedish Armed Forces today.

Over the last years there has been a drastic paradigm shift in Swedish foreign security policy, transforming the Swedish Armed Forces from a static invasion defence towards a more flexible Task – oriented defence force with increasing international involvement and co-operation.

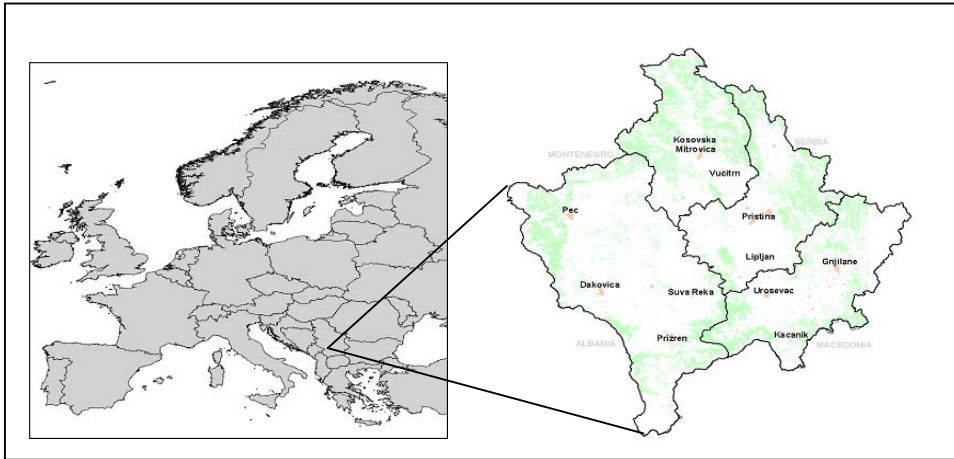
New equipment and skills must be developed and the Armed Forces will be a smaller and a more flexible organisation, better adapted to the international arena.



Peacekeeping Operations with Swedish Participation

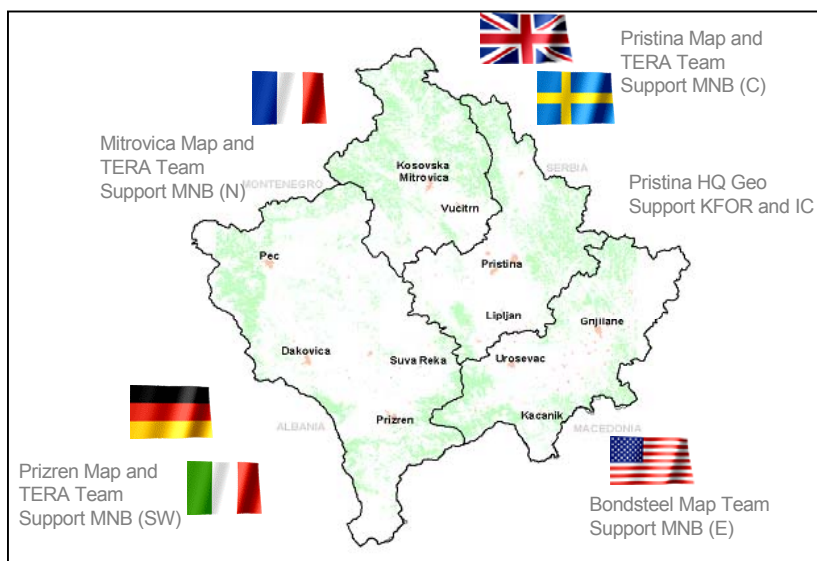
International activities are increasing in importance at the same time as improved forms of international co-operation are being developed.

The commitment of the Swedish Armed Forces to international causes is nothing new. Sweden has supported UN peace operations around the world since the Second World War. Sweden is part of the Partnership for Peace (PfP).



Operations in Kosovo

The Kosovo Force (KFOR) is a NATO-led international force responsible for establishing and maintaining security in Kosovo. The objectives of KFOR are to establish and maintain a secure environment in the region and to provide assistance to the UN Mission (UNMIK). KFOR contingents are grouped into four multinational brigades. Although brigades are responsible for a specific area of operations, they all fall under a single chain of command under the authority of Commander KFOR.



The Geographic support sections in Kosovo

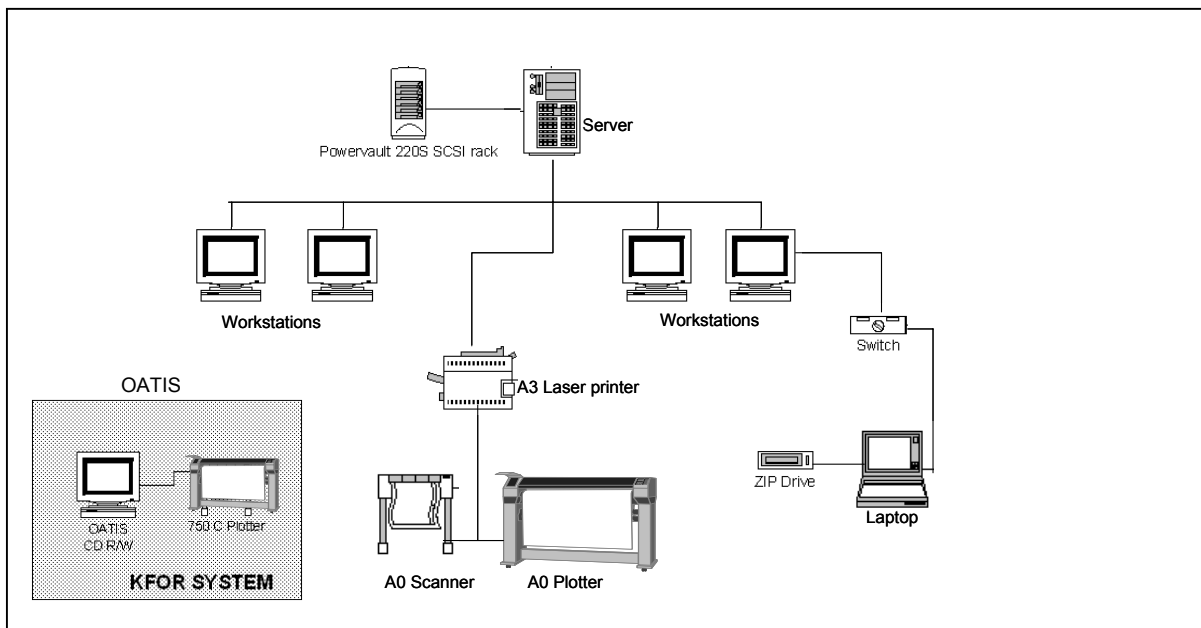
Sweden is contributing to the multi-national brigade in Kosovo, and for the first time Sweden has sent a deployable Geographic support abroad. The Geographic support sections are organised one for each brigade area and the Swedish Geo Cell took over from the British Geo Cell at MNB(C) just outside of Pristina.

In Sweden the joint and Coordinated provision of Geographical Information is organised by the Swedish Military Geographic Service at HQ together with the geographical Information Support Establishment at National Land Survey of Sweden.



Personnel

The Swedish Armed Forces is based on conscription and a mobilization system. Sweden has a compulsory national service in the Total Defence for all citizens and all permanent residents between the age of 16 and 70. Within this system all Swedish men (and woman on a voluntary basis) are liable to military service. The Swedish Geographic Section comprises volunteers that have been selected from personnel with a GIS and geographic background.



Configuration

The planning assessment aimed to provide one officer and four soldiers; two responsible for Terrain Analysis and two for Production. The training that lasted for five weeks was conducted by specialist personnel from Royal School of Military Survey - RSMS and was mainly focused on geographic support in the field.

The training sessions was based on the software: ArcMap with the extensions; Spatial Analyst, 3-D Analyst and ERDAS Imagine with Virtual GIS but also Image software like Adobe Photoshop and Illustrator. We also trained them in the Swedish system GIS IM- GIS for International Missions. The reason for selecting ESRI software is mainly because it is the official GIS software within the Swedish Armed Forces but also because its the most used GIS software among the other geo-sections in Kosovo. During our reconnaissance trip to prepare for the Geo Cell we learned that there were many different GIS software used in theatre i.e. the Germans use Geomedia and the French use the French system Geo-concept but they all had knowledge and also used ArcView and many had plans for

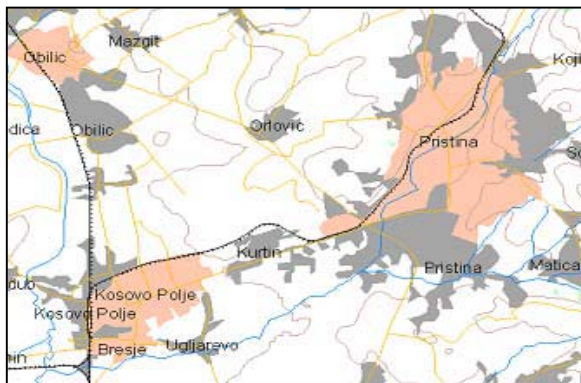
starting to use ArcMap. The term “geographic support” can be defined as any and all activities that are necessary to meet a recognised need for geographic information as well as specialist advice or technical assistance. This includes specifically the:

- Geographic Advice, Acquisition and creation of data
- Management of geographic data
- Terrain Analysis
- Production / Reproduction / Dissemination
- Geographic training



Geographic Advice

Specialist geographic advice must be available to commanders to ensure that best use is made of geographic data, products and capabilities. Geo Support personnel are able to offer specialist advice with respect to the core geographic capabilities.



Geographic data

Geographic products are the property of the producing nation. As such there are copyright issues and restrictions on copying and dissemination that require to be sanctioned prior to their use. However, there is additional geographic data that is currently used by the KFOR geographic section that is not releasable to all nations. There is a Release Matrix that specifies what data may be given to whom. Requests for restricted geographic data is made through a bilateral agreement with the producing nation, this needs to be actioned as soon as possible. Not being a NATO country these issues were solved before the Swedish Geo Cell took over the data from the British. There are also monthly geo-conferences among the geo-sections in Kosovo where they share information and also work rotation to learn from each other's work.



Aerial imagery

The most common requested data by the units in theatre today is aerial imagery. It is used together with vector data as an overlay for operational planning and visualization. A Swiss company for the Kosovo Cadastral Agency has photographed the whole of Kosovo from air; this data is also released to KFOR.

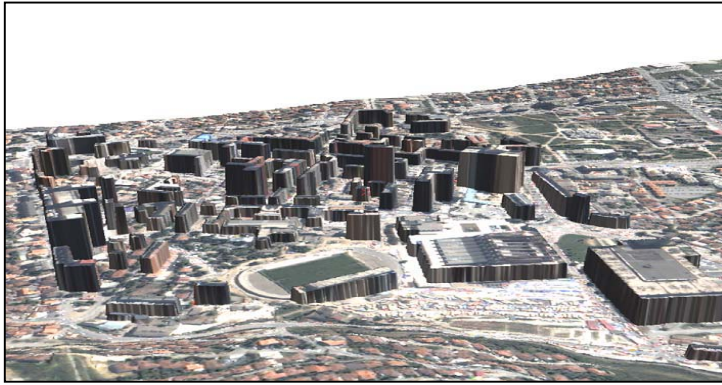
Earlier on in the mission there was also possibility to obtain aerial reconnaissance imagery as operation support from manned and unmanned platforms. These were withdrawn in beginning of 2003.



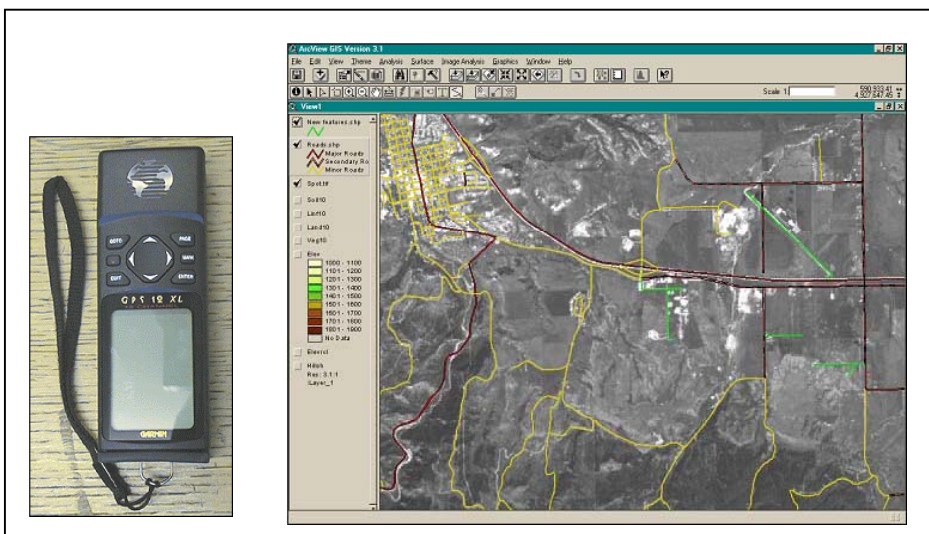
Satellite imagery

We can also see an increasing use of high-resolution satellite imagery.

In the beginning of the mission, satellite imagery was rare and only a few had access to it. During these past years there has been a gradual change of its use and it has now become more widespread and more accessible.

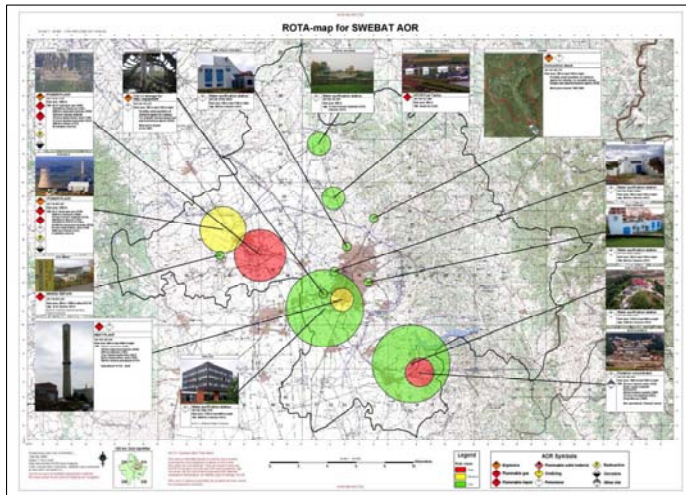


Digital Surface Models The urbanisational aspect of 3D visualisation has increasing utility with the demand for greater definition of the environment. This dataset in the picture is a 3D model over Pristina that was done by using satellite imagery with single image measuring.



Acquisition and creation of data.

Personnel are able to acquire and exploit additional source data and imagery in the field, which can then be used to create more detailed datasets. This may include sources such as satellite imagery, local datasets and geodetic point positioning data.



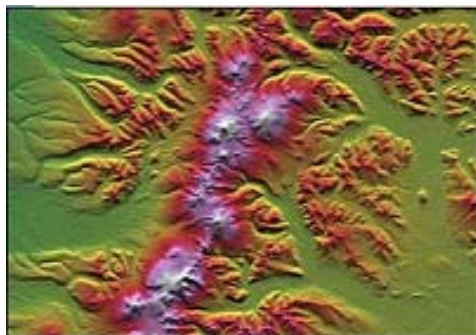
Production and Reproduction

Geographic information production is the production and reproduction of digital and paper-based geographic products. Production may result in three types; these are: New Products, Enhanced and, Reproduced products

GIS IM – Geographic Information System for International Missions

And this brings me to the Swedish application GIS IM that I mentioned earlier on in this presentation. The project, GIS IM (Geographic Information System for International Missions), was initiated by the Commanding Officer of the 1994 Nordic UN battalion in Bosnia. Since then GIS IM has been used by several Swedish international missions now last in Liberia.

It is an easy to use GIS application that relies on routines for both implementation and for geographic data support. It is installed on every computer within the Swedish battalion and everyone has access to it. Before deployment GIS IM operators undergo a three-day training programme with emphasis on practical usage of the software. GIS IM is developed to support the diverse needs of different branches involved in international missions on any geographic location in the world.



Terrain Analysis.

The mentioned before the geo personnel was divided into two teams: Production team and terrain analysis. This was mainly done to give them responsibility areas, but in practice all of them had the knowledge and competence to do each other's tasks. Terrain Analysis (TERA) is the process of analysing a geographic area to determine the effects of the terrain, geography and weather on military operations.

Some of the main tasks for Terrain Analysis capabilities are:

- Mobility movement.
- Intervisibility/visibility.
- Site selection
- Fly and drive throughs



Management of geographic data

Geographic Information consists of two distinct areas; that of Digital Geographic Information (DGI) and paper products. The provision of geographic information in the form of paper maps has been a recognised process for many years and as digital data becomes more available customers seek this data as additional information to paper products.

In Kosovo as in every other major military operation there is Theatre Map Depot (TMD) where all the maps are stored. In this case it is located at KFOR HQ in Pristina

A TMD in the operational area is established to be capable of providing products to all deployed forces in the force AOR and will generally hold seven days supply. The TMD will re-supply any deployed map depots.



OATIS

The Geo team in Kosovo also manage the Brigade HQ geographic database that is run on ArcIMS software. It was first developed by the British Geo Cell and it is part of a military computer network that enables all Brigade staff officers to utilise this geographic information in their operational planning.

The Swedish Geo-team took over the management of OATIS and has made further development.

Data that is currently held on the Geo server to the Brigade LAN (OATIS) has been cleared for issue and use to all KFOR contributing nations



The nature of geographic support is in the process of transition. Traditionally geographic support has been based on the production, maintenance and distribution of a limited number of standard hardcopy and digital geographical products, designed to satisfy homeland security and defence requirements. Current defence planning acknowledges the greater unpredictability in the location, nature, scale and duration of future operations worldwide. Therefore, the Swedish Armed Forces are adopting a more global role in the future, capable of supporting a broad range of tasks. This demands more responsive capabilities, and information that is better tailored to the range of future missions. In a relative short period of time the Swedish Armed forces managed to organise and deploy a Geographic support section. It was the first time ever the Swedish Armed Forces has sent geographic support section abroad. The project has been a challenge and we have gained new competence. Geographic support also continues to be the foundation of future military command and control innovations such as Network Based defence. These initiatives have enabled the Swedish Armed Forces to provide a small but highly effective contribution to the International military community.