

## **Trip report to Stockholm, Sweden, 1-3 September 2008**

**Background.** Sweden has a rich tradition of military and technological (for instance, one of only a handful of nations able to organically build fourth generation fighters) leadership. In the past 50 years, it has been complemented by in-depth research and execution of peacekeeping and other non classified operations (indeed, Sweden has troops in Afghanistan and The Congo today; they lead the Baltic MDA effort). Sweden's relatively small size makes them forward leaning and organizationally flexible, especially with regard to organizations and implementation of emerging operational theories, such as net centric operations. At the turn of the century, Sweden completely revamped their national strategic defense focus, military organization, and reliance on net centricity. They are now emerging from an eight year transformation effort in ways our military can only dream about.

Therefore, I was honored when Dr Henrik Friman of the Swedish Defence Research Agency, also affiliated with the Naval Postgraduate School, invited me to learn more about Sweden's efforts in the non classified realm. Dr Friman leads Sweden's net centric operations research and has been engaged with OSD's Office of Force Transformation since its stand up. Henrik and I have exchanged ideas and research topics several times over the past few years. He is extremely well connected within the Swedish defence establishment. My prior research and discussions with other Swedish officers (from my Naval War College student days and through interaction with Swedes interested in Link-16 and J-series messages) confirmed the above progress in the Swedish military. Since I was to be in Europe for an AFRICOM exercise at NAVEUR, I accepted Henrik's invitation to meet key Swedish Defence thought and action leaders, with the consent of my chain of command. Current IEA and TEA are in effect between Sweden and United States.

Such trips of discovery and potential collaboration involve meetings with three components: first, there is the "sniffing each other out," process, determining where each other falls in the hierarchy, education, and experience levels; next, brainstorming of ideas of common interests; and lastly, a discussion of next steps of mutual cooperation. It is a win-win situation if one can determine areas that can be leveraged from each of the other organizations strengths. This trip found many leverage points that will benefit both parties and will add to the list of common research topics being pursued by collaborating Swedish and US military researchers.

The Swedish Ministry of Defence has adopted a total military concept consisting of four key branches: the Swedish joint military forces, headed by the supreme military commander; the Swedish military acquisition arm, which is quite capable despite Sweden's small size; the Swedish Defence Research Agency, similar to the Australia's DSTO (sort of a cross between NRL, DARPA, AFRL, and ONR); and the Swedish Emergency Management Agency, responsible for coordinating all national disaster responses ( including infrastructure protection) and facilitating international response when needed. Sweden remains neutral, and until recently, entirely focused on border protection and defense. Recent changes have defined that Sweden's defensive interests can be served by deployments outside of the region. Sweden is a member of the Partnership for Peace, which allows them to maintain contact with NATO members. Thus, many of Sweden's operations have a distinctive SSTR feel, similar to those

operations assigned in the DOD 3000.05 Directive of November 2005. For instance, Sweden writes the civil military scenarios for the EU, and their Viking series of exercises includes IO, NGO, NATO, and other military participants, and included 26 countries and 26 NGOs (recommend we send a rep to Viking '08 this November). The Swede's work frequently with JFCOM and SES Greg Knapp, JFCOM's Director of the Joint National Training Capability. Sweden's valuable and continuing contributions can be attributed to an awareness of and a strong effort to develop a wide social network of like minded thinkers and practitioners from around the globe. For instance, I learned later that SEMA, mentioned below, has a longstanding agreement with the World Food Programme to provide manpower resources in time of need. Also of interests is that Sweden sent fighters to participate in a recent Red Flag exercise in Nevada, and of course sent a submarine to San Diego for a year a few years back. They share a concern about growing Russian economic power and hegemonic intentions.

**Dr Henrik Friman** holds a PhD from Stockholm University in Strategic Organizational Studies. He serves as a researcher at the Swedish Defence Research Agency, as an Army Special Forces officer for the Swedish reserves, and as the President and CEO of a small specialty consulting company. His wide ranging research interests include large scale organizational transformation, organizational learning, and highly efficient gas turbine engines. Dr Friman accompanied me to all my meetings.

**First day** was spent with **Dr Lars Lindberg**, Department Head for Command and control systems and Decision Support Systems for the Swedish Defence Research Agency in Kista, Sweden and **Dr Pontus Swenson**, his Deputy.

I shared a view of the Navy's non classified goals and several observed problem areas, highlighting the policy issues related to information sharing across the continuum of various non classified operations, from international disaster response to sophisticated maritime domain awareness operations. These are areas of considerable interest to Sweden. On the afternoon of the second day I met their immediate senior, Martin Rantzer, the division head for Command and Control systems. Areas of common interests included semantic technologies for command and control systems, use of information management, fusion, and decision support wikis (an area we are working on with the InRelief.org work), and policies related to information sharing amongst diverse partners. They are also interested in how tagging is used, and were interested in the emerging USG classification and data tagging policy rewrite, as we all are. Finally, they expressed interest in the growing research area of applying massive multiplayer on line game precepts to C2 systems, such as the work that Professor Hales at NPS is doing for ONR in support of Wayne Perras at NWDC.

Mr Rantzer offered two intriguing areas of cooperative research. First, what is the economic funding model for SSTR operations? Is there a way to measure engagement success compared to resources expended? NAVEUR has started some good work in this area as well. Second, in net centric operations, the Swedes theorize that teams will become increasingly important (by the way, the US Army agrees and is starting an Army wide program on leadership of teams). Mr Rantzer wonders how are C2 displays (assumed to be visualization techniques) effective for teams. I will follow up with the NPS and SSC-SD human factors group on these questions.

Potential leverage areas included sharing emerging information sharing experiences and policies, co-developing data tagging protocols (I'll mention this to Paul Shaw), and understanding how to establish best practices for generating meaningful SSTR effects for operational leaders and planners. They liked my matrix of various non classified operations divided by regions, and preliminarily agreed to co-hosting Mashup#4 with me in San Diego as an addendum to the West'09 conference. Mashup #4 will be designed to fill out the matrix as fully as possible with information sharing challenges and solutions, policies needed to achieve the same, and consideration for various information protection techniques. Dr's Friman and Lindberg agreed to use their contacts with NGOs and European colleagues to ensure Mashup#4 is well attended by knowledgeable participants with relevance to US Navy objectives.

**The first night** I dined with COL Stefan Gustafsson, on leave from the Swedish Marine Corps. Stefan is a Naval War College classmate, and one of the key architects of the Swedish Defence transformation that occurred at the turn of the century. Interestingly, Stefan is working in the private sector as the incident response leader for a major Scandinavian power company. His duties are similar to that of the Swedish Emergency Response Agency, except Stefan has to ensure that power is restored as soon as possible, since it impacts his firms' bottom line. It is interesting to learn how applicable his military training and experience apply to his current job. In just three weeks he has already changed their approach to incidence response. He will eventually incorporate a net centric response approach, before returning to military service. I suspect he will make general rank and eventually become their senior military officer. Stefan was also quite frank in is description of the role of the Swedish military, from a solely border defense force, to one that intends to support international operations perceived as supporting the Swedish national security strategy.

**The second day** I spent the morning with Arvid Kjell, head of the Information Assurance Department of the Swedish Emergency Management Agency. This agency reports to the Minister of Defence, as part of their total defence concept. Indeed, SEMA is also merging with the Swedish National Rescue Service (which in turn is a standby partner of the World Food Programme). They do not have a close relationship with NORTHCOM, though it looks to me that would benefit both parties. Arvid is most concerned about data and information sharing, but from a more coordination point of view amongst diverse partners, similar problems that we face in non classified operations.

SEMA, though, is also responsible for the national information assurance approach, and was very much up to date on Russian CNA efforts in the recent Georgian clashes. He stated Georgian government officials responded to CNA by switching to websites running in a Google environment, which quelled the problem. I will mention this to Mike Davis, CSE for IA in SPAWAR 05.

While Arvid is primarily responsible for IA, their upcoming merger with the Swedish Rescue Service is forcing them to rethink how they share situational understanding. Heretofore, their common radio program answered most of their needs, but they think more attention to visualization will be required. I mentioned Virtual Alabama, our Google Earth efforts, and the use of academic centers of excellence in GIS

as possible starting points. Arvid mentioned a Stanford University visualization conference I will follow up on.

The discussion also brought up the question, “How do you solve national crisis, such as a cyber attack, when it will takes more than just national resources?” For instance, during the cyber attacks on Estonia in Spring 2007, an international consortium provided most of the assessment and analysis of the attacks. They did not have a ready answer. It was clear that in some areas SEMA was far ahead of US efforts, but in others, our efforts can serve to inform them.

Areas of cooperative leverage include inviting Arvid to the Mashup#4, sharing their studies on cyber attacks with our thought leaders at NPS, and insisting that IA is one of the topics covered at Mashup #4. Arvid will forward a copy of their IA risk assessment approach, and the tradeoffs they consider, which will be useful as the DOD attempts to craft new Information Sharing policy. Arvid and Henrik suggested that NPS and SDSU connect to the Swedish C2 lab in Norkoping. Also, Henrik stated that the Swedes may be able to fund thesis work at NPs, and Arvid stated he would draft some topic ideas. I also see a great opportunity for SEMA to contribute and participate in Golden Phoenix, Strong Angel, and STAR TIDES.

This is a part of some of their concerns about net centric edge command and control. They share a common US held belief that net centricity leads to high level micromanagement.

At the follow on lunch, the subject drifted to air control of sensors nets, especially autonomous. While not in this scope of my visit per se, it certainly would be useful for the MOVES Institute to engage along with the experiment work done by Dr Bordestsky. The Swedes think that the autonomous and networked control of three unmanned vehicles may be a near term maximum from their experience. They also suggested that the traditional risk assessment used today for conducting operations may need to be greatly shifted, since often no (friendly) human is at risk. The Swedes argue that decision makers may need a new calculus for how to most effectively employ unmanned units.

**The third morning** I met with Henrik Landerholm, Director General of the Folke Bernadotte Academy (FBA). The FBA is a 100 person strong Swedish government agency dedicated to supporting peace keeping research, education, and relationship building. A former Member of Parliament, Mr Landerholm, has been mentioned as a possible candidate to serve as the next Minister of Defence.

They teach 18 courses on civil military operations, including classes on the rule of law, disarmament, and the like. They develop TTP for civilian military operations, and have run an international Forum on peace operations for 11 years. Their customers include various military members from around the globe, NGOs, and members of IO's. One interesting concept they were developing was that of “swift trust”, which is a key dynamic for US military support in disaster relief. FBA works directly with the US Institute for Peace (a Congressional sponsored autonomous US government organization) and the US Army War College in Carlisle. I asked them to consider funding thesis work at NPS, especially for some of the students attending from foreign countries.

**Summary.** Sweden is a progressive and motivated country that wants to make the world a better place, and is willing to use national treasure to do so. They also are small

relatively in populations and resources, and very much want to partner with a wide a variety of capable colleagues. It is clear they can benefit from much of our work, and us the same. They already have a track record of working with various US military organizations; I believe the US Navy should do the same. By leveraging already existing resources at NPS and other places, we should follow through on the various recommendations included above, especially as they support the accelerated development of non classified operational techniques, technologies, and procedures.