IBM

The Finnish Defense Forces are winning the battle for closer cooperation between service branches

Overview

■ **Business Challenge**

Like many militaries, the Finnish Defense Forces (FDF) faces the challenge of managing and adapting to increasingly dynamic and complex situations with limited resources. The FDF realized that closer coordination between its own service branches and with those of other nations was essential, but deeply entrenched silos in its command, control, communications and computing (C4) systems presented a major barrier.

■ **Solution**

The FDF teamed with IBM to create an SOA-based service hub that enables all branches to share common C4 applications and—by enabling the dynamic reuse of services—allows the FDF to get new applications out to the field in a fraction of the time.

■ **Key Benefits**

— *Projected 80 percent reduction in time required to develop new C4 systems via SOA service reuse*

The 17,000 employees of the Finnish Defense Forces (FDF) are responsible for territorial surveillance, safeguarding territorial integrity and defending national sovereignty in all situations. Comprised of the Finnish Army, Navy and Air Force, the FDF has taken part in peacekeeping operations since 1956, with recent missions including Bosnia-Herzegovina, Kosovo and Afghanistan.

— *Projected 75 percent reduction in required infrastructure through consolidation and virtualization*
— *Tighter coordination and information sharing between FDF service branches*
— *Improved ability to coordinate operations with other militaries, nongovernmental organizations and other theater players*

Beginning just after World War II and lasting some 40 years, the Cold War was the single most important factor shaping the mission, structure and practices of Western military institutions in the postwar period. Though the world was far from peaceful during this time, the bipolar nature of the Cold War produced a climate of relative stability—however uneasy. Moreover, the fact that geopolitical and military actions were generally viewed through the prism of Cold War politics also produced a certain degree of clarity as to intentions, ramifications and, where necessary,

Flexible integration enables a new level of military coordination

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Business Benefits

- Projected 80 percent reduction in time required to develop new command, control, communications and computing (C4) systems via SOA service reuse

- Projected 75 percent reduction in required C4 systems infrastructure through consolidation and virtualization

- Tighter coordination and information sharing between FDF service branches

- Improved ability to coordinate operations with other militaries, nongovernmental organizations and other theater players

- Improved overall decision-making and increased FDF force effectiveness

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"Most of our current C4 systems are stove-piped systems to support Army, Navy or Air Force operations. We cannot afford to develop future systems on top of old systems by patching and bridging gaps and trying to maintain old technology."

– *Major General Markku Koli, Chief of Operations, Finnish Defense Forces*

required solutions. Western nations adapted to this environment by creating security structures like NATO that provides a framework through which they can coordinate their intelligence and military resources for the common good.

Different world, new challenges

The fact that NATO has outlasted the Cold War—and has also grown in membership—provides a strong validation for the idea of collective security and military collaboration. However, the major conflicts of the post-Cold War era also reveal how much has changed in the global security landscape. In contrast to the clarity and stability of the Cold War, the military experiences of Somalia, Yugoslavia, Kosovo and Afghanistan are a chronicle of ambiguity and changeability. Multinational forces in such settings often face not only unfamiliar and unforgiving terrain, but also the increasingly difficult challenge of discerning friend from foe. The smaller scale and increased mobility of combatants only heightens this challenge.

Participating nations are in universal agreement on the need to adapt their traditional operational practices and procedures to the ambiguous and dynamic nature of today's military engagements by making them faster, more flexible and information-driven. The biggest barrier to this transformation is the long-standing tendency to compartmentalize processes and information within military service branches, such as the Army, Navy and Air Force, a practice that not only compromises a nation's ability to align its own military resources toward a common mission, but also makes operational coordination with the armed forces of other nations next to impossible.

The Finnish Defense Forces (FDF), an active member of the NATO Partnership for Peace since 1994 and a provider of peacekeeping forces to the Afghanistan and Kosovo missions, was one of the first to address the problem head-on. The FDF realized that its vision of a faster, more flexible and more coordinated force required not only institutional change but also a fundamental change in the way it managed information. Having participated in a NATO working group tasked with laying the groundwork for this vision, the FDF adopted the group's resolution—to rely on SOA technology—as a guideline for its own transformation effort. The FDF found that IBM had the best mix of SOA-enabling technology, deep technical resources, and business process expertise it required to get the job done.

Like its coalition allies, each of the FDF's service branches rely on its own separate cluster of command, control, communications and computing (C4) systems. The problem wasn't with the systems themselves—which were tried and true—but with the technology that governed how they were accessed and integrated. The fact that the FDF's C4 systems were built as stovepipe systems to serve specific branches of the military made them inherently inflexible and thus harder to reconfigure and repurpose in response to changing situations. The FDF's vision was to make its C4 systems more flexible and adaptable by essentially disaggregating

them, and thus breaking down the service-specific framework that has traditionally kept them apart. This would then enable the FDF to abstract specific C4 applications into service components that could be rapidly reassembled and reused to address the specific needs of a campaign or operation. Most importantly, these reconstituted services could be accessed by all branches under a scheme known as network-centric operations, whose aim is to increase the agility, efficiency and information consistency of the systems supporting troops in the field.

A new command and control model

This vision is being realized in a 10-year program known as Finnish Network-Enabled Defense (FiNED), scheduled to be completed in 2010. As designed by IBM Global Business Services, the solution uses IBM WebSphere® Enterprise Service Bus to assemble various C4 application components to develop specific operational capabilities. One early example is the development of a "common operational picture," which will provide a single view of all information relevant to a particular operational area, including the position of troops, the location of equipment and the status of bridges and roads. Using the new SOA framework, the Navy and Air Force branches of the FDF will be able to leverage the common operational picture developed by the Army, thus reducing system overlap and ensuring that all branches of the FDF are operating with the same information. To ensure security, common access for all services is enabled via IBM WebSphere Portal, with role-based access governed by IBM Tivoli® Identity Manager and Access Manager, respectively. The FDF employs IBM Rational® as its application development environment.

One of the biggest promises of the new environment is that it will help the FDF adapt its operations quickly in response to situational changes. The key enabler is the reusability of service components, which will make possible the rapid prototyping, testing and ultimate deployment of operational capabilities—a sharp contrast to the 10-year application development cycle typical of traditional C4 architectures. With agility also important on the hardware front, IBM designed an infrastructure flexible enough to address both high-volume backend processing requirements as well as more specialized—and often mobile—processing tasks closer to the theater of operations. To address the tactical reality that network connections are not always possible in the field, IBM designed the solution in a way that guarantees availability, while at the same time supporting replication and off-line use. The infrastructure, comprised of a mix of IBM System p and IBM BladeCenter servers running Linux®, was deployed by IBM Global Technology Services and is supported by IBM Strategic Outsourcing Services. Over the span of the project, the FDF also expects the efficiency and flexibility of SOA to translate into higher hardware efficiency by enabling virtualization and consolidation as the different branches of the FDF share more and more of their C4 applications.

Key Components

Software

- IBM WebSphere Enterprise Service Bus
- IBM WebSphere Portal
- IBM WebSphere Application Server
- IBM Tivoli Identity Manager
- IBM Tivoli Access Manager
- IBM Rational development software

Servers

- IBM System p™
- IBM BladeCenter®

Services

- IBM Global Business Services
- IBM Global Technology Services
- IBM Strategic Outsourcing Services

Timeframe

- Initial system design – 6 months
- First phase of development – 12 months
- Extended deployment – In progress

Why it matters

By introducing revolutionary changes in the way its service branches share operational information, the Finnish Defense Forces (FDF) are better able to adapt to the increasing dynamism and uncertainty of modern military engagements. The SOA framework developed by IBM also helps the FDF to bind its operations more closely with other nations' forces and—by enabling service reuse and rapid development—enables the FDF to adapt its operations quickly in response to situational changes on the ground.

Good coordination

While intra-service coordination is a key goal of the FDF's FiNED initiative, it is also a prerequisite to the broader goal of working with external parties (such as EU, NATO and nongovernmental organizations in the case of military or peacekeeping operations) as well as other Finnish agencies (such as police, fire and hospital services in the case of natural disasters and the like). Because the FDF is consistent with the SOA framework laid out by NATO, it will be far better positioned to share information with other military forces in international engagements. The fact that it can control information access levels provides the security capabilities it needs to work in collaboration with the armed forces of other nations.

With the groundwork laid for improved coordination among its service branches, the FDF has already been able to transform some of its most important core processes. Leveraging the new SOA platform, IBM Global Business Services is helping the FDF optimize the processes through which the Army, Navy and Air Force concentrate their resources jointly within military engagements, a process known as joint operational fires. To further build on the success of the project and to concentrate future innovation efforts, IBM and the FDF also set up a European Network-Centric Operations Centre of Excellence in Helsinki which includes a software lab, test environment, and capabilities for live demonstrations. FDF Chief Architect Mika Hyytiainen sees the Centre as an expression of IBM's commitment to continue to develop its expertise in network-centric operations as well as to the FDF's success. "The solution we've developed with IBM gives us the flexibility and resource efficiency our military needs to adapt to a more dynamic and uncertain world," says Hyytiainen.

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