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# **'A BOTTOM-UP VIEW OF LOGISTICS IN THE SOUTH AFRICAN MILITARY'**



**SECURITY INSTITUTE FOR GOVERNANCE AND  
LEADERSHIP IN AFRICA (SIGLA) SEMINAR - 14  
FEBRUARY 2024  
PRESENTER: Roy Marais.**

# AIM

To present an overview of Logistics (Supply Chain) in the South African Military from a bottom-up perspective looking briefly at the past (Pre-94), the present (Post-94) and the future required to logistically support the SA Military in Africa.

"It Doesn't Matter Where You Came From, All That Matters Is Where You Are Going." Brian Tracy



# SCOPE

- **BACKGROUND:**
  - Pre- 1994.
  - Post 1994.
- **BACKGROUND TO THE WAY FORWARD.**
- **INTRODUCTION.**
- **SETTING THE SCENE.**
- **SA MILITARY SUPPLY CHAIN (SC) CONCEPTS:**
  - Expeditionary Logistics.
  - Reserves and Stock Levels in the SA Military.
  - Basing.
  - Forward Mounting / Staging Bases.
  - Forward Operating Bases.
  - Performance Based Logistics (PBL).
  - Distribution.
  - Asset Management.
- **INTERVENTIONS OVER TIME THAT CAN ENABLE THE SUCESSFUL IMPLEMENTATION OF THE SA MILITARY SC CONCEPTS.**
- **CONCLUSION.**



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# BACKGROUND – PRE 1994

- In 1838 Baron Antoine-Henri Jomini formulated a **theory of war** which was based on unity of **Strategy, Grand Tactics, Logistics, Engineering and Tactics**.
- The logistic systems implemented by the SA Military pre '94 were based on a mixture of the **British military logistic** - and the **US military logistic systems**. The United States (US) military general staff system was adopted by the South African Defence Force (SADF) in the **1970s** and **continues to function in the SA Military today**.
- The protracted South African Border War also known as the **Namibian War of Independence**, and sometimes denoted in South Africa as the **Angolan Bush War**, was a largely **asymmetric conflict** that occurred in Namibia (then South-West Africa), Zambia, and Angola from **26 August 1966** to **21 March 1990**. This war was the **catalyst** to move from a conventional logistic support system to an unconventional logistic support system and all training had to be adapted to support our deployed forces over protracted distances.

# BACKGROUND – POST 1994

- The collapse of the Soviet Union in 1989 resulted in the end of the Cold War, and the cessation of Soviet Russian and surrogate operations in Africa, which were aimed at enhancing the spread of the Marxist ideology and the expansion of Soviet influence. **Closer to home it resulted in a new political dispensation in South Africa, an end to the South African military deployments in Namibia and Angola, and SANDF peacekeeping deployments even further afield than Angola.**
- Force projection over large distances have had a profound effect on the SA Military Logistics. Not only in South Africa but in the US and United Kingdom (UK) as well. **Long distance deployments make the concept of logistic support to military forces by the holding of first (1<sup>st</sup>), second (2<sup>nd</sup>), third (3<sup>rd</sup>), forth (4<sup>th</sup>), and fifth (5<sup>th</sup>) line support (reserves) on the ground problematical and very costly.** The type of force projection which the military now executes links the force's supply chain to the home base more closely than before. This being the case, **contracted logistical support to military operations both nationally and in-country of operations** is possible and should be implemented as far as is practicable.

# BACKGROUND – POST 1994 (1)

- A significant development in the post-Cold War period has been **African states' active involvement in peacekeeping operations**. Of the **105,078 personnel** deployed in support of **nine United Nations peacekeeping missions in Africa**, more than half are uniformed Africans. Ethiopia, Nigeria, and **South Africa** have the largest contingents of the **38 African countries contributing peacekeepers**. Even states that were once devastated by war, such as Sierra Leone, are now deploying peacekeepers.
- Support to SA Military forces deployed in Africa is provided largely by **aircraft** flying over foreign states. Although the countries have good diplomatic relations with South Africa, **road and rail communications are not good**. The **magnitude** of the logistical task is thus not to be underestimated. It is to the credit of the SA Military, that the logistic support provided is **succeeding in keeping the forces deployed operational**. Media coverage from time- to-time reports the results of poor logistic support, but generally the SA Military has managed to **adopt and adapt** the military logistical system to the operational scenario. Ultimately a military logistical support system depends upon a **real knowledge of the supply and movement factors involved in the operations being conducted**. The South African military has had years of experience in supporting its African peace- keeping deployments, **and it is thus surprising that its logistical procedures were not well documented**.


## BACKGROUND – POST 1994 (2)

- Despite its logistical success in supporting its force deployments in Africa, it is evident that the overall **SA Military logistic system**, and **command and control generally**, are **not functioning well**. As a result, the organisation of the force restructured since the system introduced in the **1990s** was based on **business principles**, and these are **not effective in a military environment**. One of its many failings is the lack of inter-corps training in the army, which the proposed **SA Army's Vision 2020 and 2025** would have rectified. The other is the **over-complicated logistical system** which has some major weaknesses.
- To its credit the SA Military has published its logistical weaknesses in an unclassified form stating that the main risks confronting the Joint Logistic Services are in the fields of **maintenance and repair of facilities, vehicles and equipment**, as well as the **lack of skills and experience of its personnel**. The condition of the SA Military facilities and infrastructure are **so poor** that much of it **no longer conforms** to the minimum requirements of the Occupational Health and Safety Act.



# Where are we heading

...

A black and white photograph of a person standing on a hilltop, looking out over a vast, hazy landscape. The person is wearing a hat and a backpack, and is holding a telescope or binoculars to their eye. The landscape is flat with some distant hills and a power line visible on the left.

**“Leaders win through logistics. Vision, sure. Strategy, yes. But when you go to war, you need to have both toilet paper and bullets at the right place at the right time. In other words, you must win through superior logistics.” ~ Tom Peters**



# BACKGROUND TO THE WAY FORWARD

- **Military logistics** is inseparable from combat. Moving forces to hotspots around Africa, providing for their needs while deployed, and bringing them home as tensions subside are all part of the complex process of military logistics. Meeting the challenges of coming decades **will require a substantial logistics capability**, and the **nature of that capability** will differ from what it has been in the past.
- **Current and future** military needs require forces to **have a smaller logistics train (more teeth; less tail)**. The logistics supply chain must be **flexible** and **able** to be deployed rapidly to meet these needs. **Enhanced logistics processes** can help the South African Military (SA Military) to **produce more combat capability**. Successful implementation of this change is essential, and will have a far-reaching impact on the **people, business processes and technology infrastructure** of the SA Military, its allies and Military Related Industry partners. **Effective logistics** are essential both to **combat effectiveness** and to **operations other than war**.

# BACKGROUND TO THE WAY FORWARD (1)

- **Military logistics is expensive.** Moving large numbers of people and considerable heavy equipment and cargo drives cost in an obvious way. Other factors also drive cost. One such factor is the **uncertainty of future requirements**, and the impact of this uncertainty on readiness. To prepare for uncertain events, military planners' budget for **"stockpiles", "war reserve materials", and a reserve transportation capacity**. These reserve or excess capacities provide the means for combat commanders to react rapidly to events that would otherwise overwhelm their normal based logistics support.
- Presently, the SA Military is engaged in **realigning its supply chain requirements** aligned with the **Defence Review 2015**. The focus of the alignment is **how to transform the SA Military to better respond to the requirement of its military supply chain**. The transformed military supply chain must be far more **effective, robust** and **less costly** than it is presently. The SA Military Supply Chain, like our military force, **must be able to react to** the unexpected **quickly, appropriately** and **effectively**.

# BACKGROUND TO THE WAY FORWARD (2)

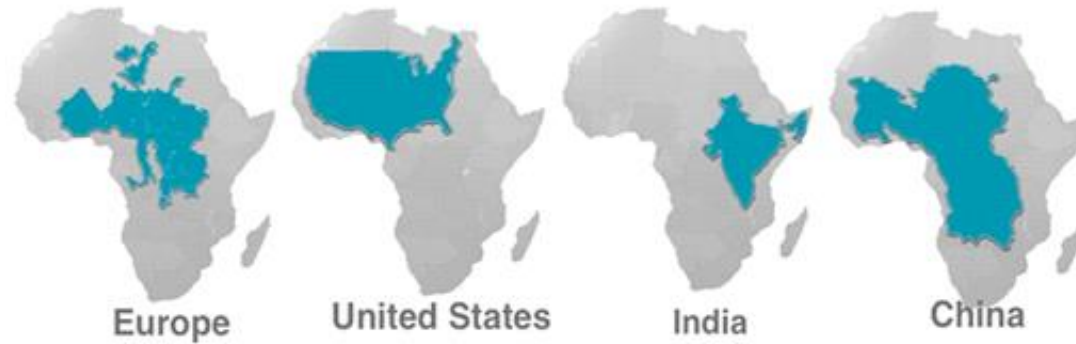
- Hedges against uncertainty are used regularly in financial and currency markets, in supply chain management and in manufacturing. In fact, one could argue that **"military readiness"** has always been the **art of hedging against uncertain threats**. Since we don't know the **location** of the next attack, we must be able to **move quickly to meet it**. We don't know the **timing of the attack**, so we must **vigilant**. We don't know the **nature of the attack**, so we must be able to **respond in a variety of ways**. Traditionally, managing risk involved the use of **"rules-of-thumb"**. Military logisticians specified the number of days of supply to be stockpiled for various commodities like munitions, fuel and repair parts. Until recently these **"rules-of-thumb"** were the best tools available since more sophisticated planning tools were data intensive and too computationally demanding.
- Supply Chain Management is one of the key practices developed in the private sector over the past two decades. This concept, which **involves significant process changes**, holds great promise for **improving military logistics support to operations**. Making successful use of this concept requires the **proper mix of commercial practices, modern technologies, and consideration of the SA Military's unique logistics characteristics**.



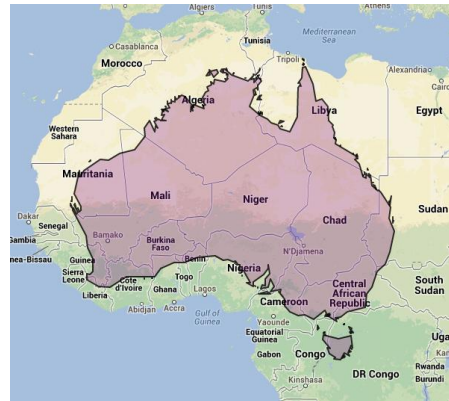
# INTRODUCTION

- Within the African Theatre there are **multiple risks** in predicting the future. In executing these analogies, we will be able to identify the factors that **shape the future, understand the relationships between these risks** and **identify the trends within the Supply Chain System** not only Nationally but Regionally, Continently and Globally with specific reference to the **African Theatre**. In doing so we will be able to manipulate these factors to create a selected Supply Chain Option where required.
- There are many reasons for the implementation of the supply chain - or the supply chain management concept in the SA Military. Through globalisation, entities are forced to look for more **effective ways** to coordinate the flow of goods and material between facilities, into and out of the organisation. Customers are consistently demanding products that are **delivered faster, exactly on time, with no damage** and **fresh**.

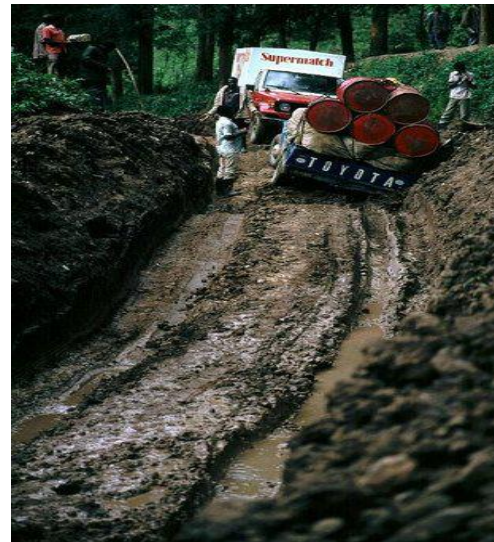
# Africa is Large.....



Source: Creative Commons, Karl Schause, October 2010.



Australia



That presents major challenges in deploying and supporting forces.....



Aggravated by the lack of roads and bridges, and the poor state of many that do exist...



# Africa is Large, with varied terrain that challenges

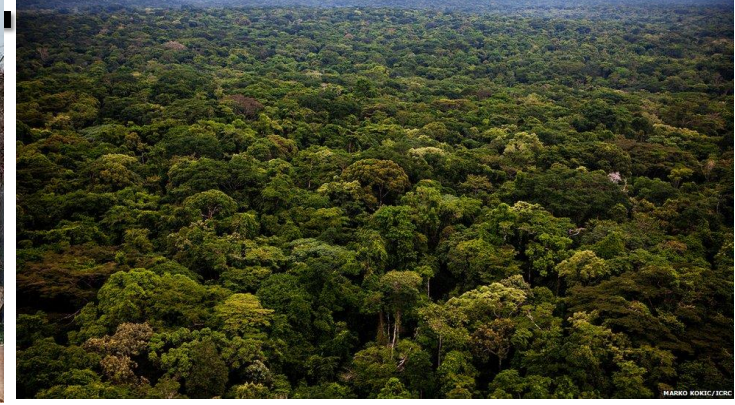
Mali



Darfur



Central African Republic



South Sudan



Burundi



DRC





# SETTING THE SCENE

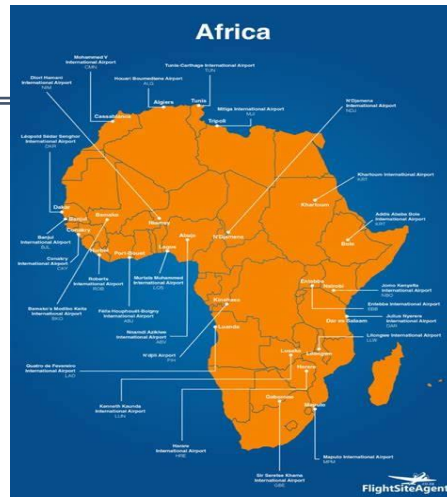


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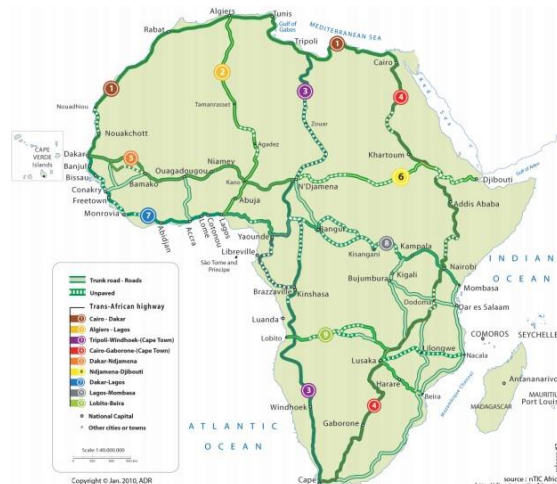
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- If we are to realise manoeuvre warfare and truly improve the **effectiveness** and **efficiency** of our joint forces, then we simply must get into the **modern supply chain world**.
- The trend in most modern defence forces is towards lighter, more mobile, expeditionary forces (the “teeth”).
- This will impact on the size, nature, capabilities and capacity of the supply chain system (the “tail”).
- The SA Military Supply Chain **should be moving** from a “**mass model**” of dumping huge quantities of supplies into a theatre, to a lean, agile and sustainable delivery system focused on the war-fighter's needs.
- The nature of the African theatre – It is **large**, and with **low force densities** and with **great distances** to cover, making quick responses to changing situations very difficult. It will present a **protection challenge** wrt **logistic columns and movement**. Related to this is that a **focus on high-mobility / high-tempo operations** will demand logistic support that is equally **highly flexible** and both **prompt and quick in execution**, despite the challenges of distances and thin transport networks.

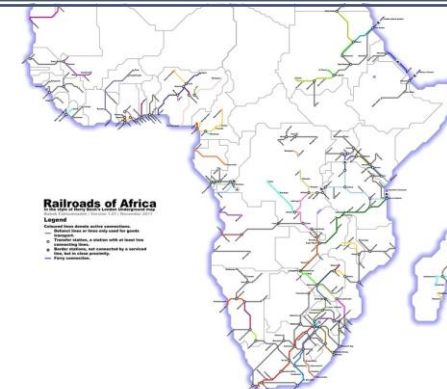
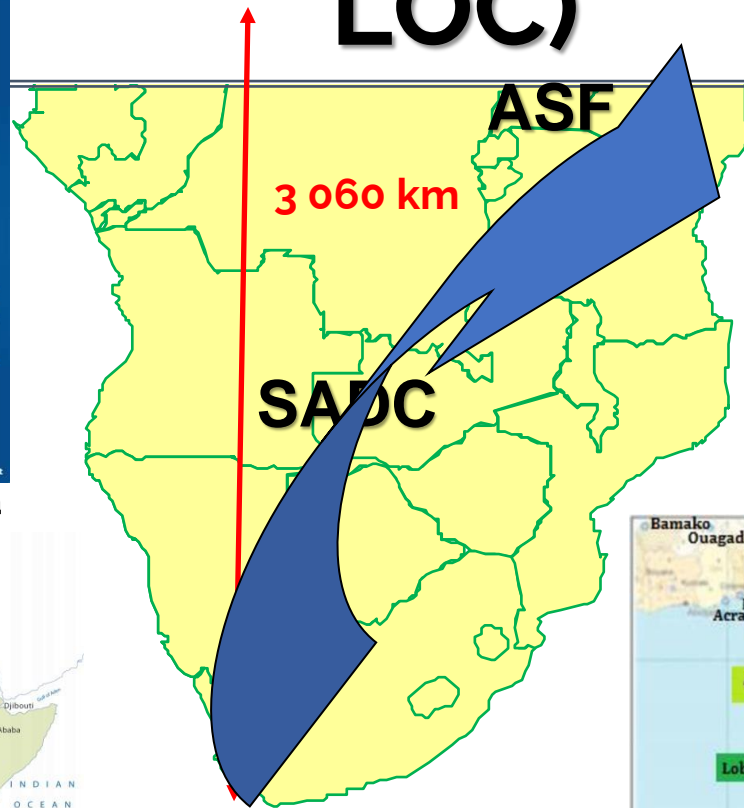
# SA MILITARY SUPPLY CHAIN (LINES OF COMMUNICATION - LOC)



Major Airports in Africa



Trans-African Highways



Railroads in Africa



SADC multimodal corridors and major ports

# SA MILITARY SUPPLY CHAIN (SC) CONCEPTS

## (EACH CONCEPT MUST BE FULLY DEVELOPED)

- **Expeditionary supply chain**. The SA Military must provide Commanders with a Force that has **joint** and **expeditionary knowledge** and **capabilities**. Such a force requires **interdependent, joint supply chain capabilities** that support the full range of military operations at all levels of war (**strategic**, **operational**, and **tactical**) consistent with the SA Military's Operational Concepts. This supply chain system must include a **responsive infrastructure** with **simultaneous deployment, employment, and sustainment capabilities** and a **single, integrated, responsive end-to-end distribution system**. These supply chain structures must also be capable of integrating **joint, interdepartmental, interagency, intergovernmental** and **multinational** capabilities (JI<sup>3</sup>M).



# SA MILITARY SC CONCEPTS (1)

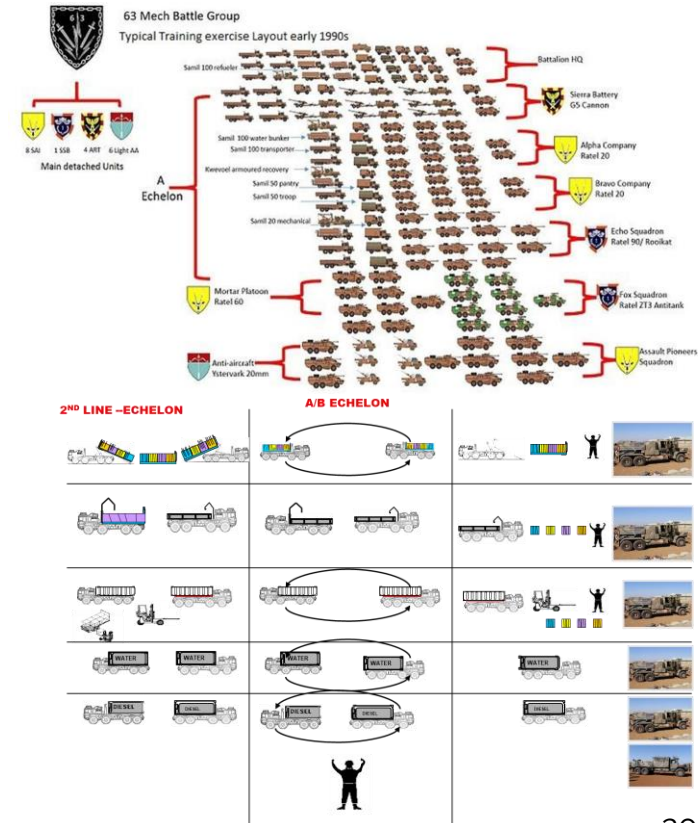
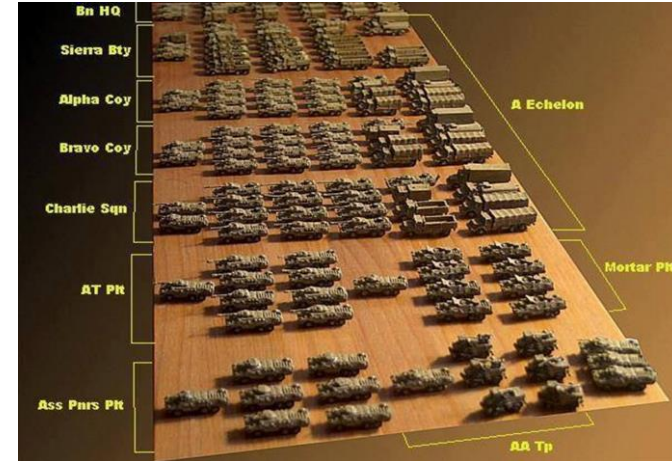
- **Reserves and Stock Levels in the SA Military.** Reserve and stock levels are prescribed amounts of stores, maintained on various levels in the SA Military to support a specific campaign, operation or battle. Maintenance of reserves is a principle of war and a principle of logistics. It includes **Strategic -**, **Operational -** and **Tactical Reserves**:
  - **National Strategic Reserves.** These reserves are determined by **National risk factors** such as **security**, **economy** and **technology**. From a military point of view these reserves are kept **bridging a gap** between the **peace** and **war economy**. Examples are the National Strategic Fuel Reserves (SALDAHNA). These reserves have **no direct bearing on Military Capabilities**.
  - **Military Strategic Reserves.** Military Strategic reserves are determined by **risks emanating from foreseeable Military contingencies** such as **conventional threats**, **regional disasters**, **regional instability**, **crime and labour action**. Examples are **military strategic placement** of Fuel, Oil and Lubricants (FOL) reserves, as well as **Military strategic mobilisation reserves**.

# SA MILITARY SC CONCEPTS (2)

- **Material reserves at the operational level.** Material reserves are those **pre-determined quantities of stores** and equipment that **must** be maintained at the **various levels within the theatre** to support the supply chain capability. This **includes the sea basing of reserves**. The Strategic - and Operational reserves (30 days) are maintained in Landward Mobilisation centres. **Maintenance of Reserves** is a **Principle of War** and a **Principle of Logistics**. Mobile operational reserves are maintained for conventional forces as follows:
  - **First (1<sup>st</sup>) line.** The 1<sup>st</sup> line reserves are those stores, and equipment carried by the fighting echelons (F Echelon) of a unit, needed for the immediate battle (**2 days**) (in the Combat Zone [CZ]).
  - **First line Reserve (1<sup>st</sup> line res).** The 1<sup>st</sup> line Res are those stores, and equipment carried between the A and B Echelons of a unit for the immediate replenishment of the 1st line (**3 days**) (in the CZ).

# SA MILITARY SC CONCEPTS (3)

- **Second (2<sup>nd</sup>) line.** The 2<sup>nd</sup> line reserve are those stores, and equipment carried at both **brigade** and **divisional level**. In general, 2<sup>nd</sup> line reserves are found at the brigade level (BAA), and second line general support at services / divisional level (DAA) for the replenishment of the 1<sup>st</sup> line (**10 days**) (in the BAA or DAA).
- **Third (3<sup>rd</sup>) line.** The 3<sup>rd</sup> line are those reserves carried further down the line of support, from which the 2<sup>nd</sup> line is replenished (**15 days – 5 days on wheels and 10 days stacked**) in the Communication Zone (Com Z).
- **Fourth (4<sup>th</sup>) line.** With mobilisation, the 1<sup>st</sup> -, 2<sup>nd</sup> - and 3<sup>rd</sup> line reserves are issued. The remaining stores and equipment are kept in the base area and serves as replenishment for utilisation by the 3<sup>rd</sup> line (**21 days**). 4<sup>th</sup> line is replenished by industry (5<sup>th</sup> line).
- **Fifth (5<sup>th</sup>) Line.** Military Related Industry as well as the National Industry.





# SA MILITARY SC CONCEPTS (4)

- **Basing**. **Pre-positioning** (forward supply bases) of stock at identified positions and the **maintenance of strategic-, operational- and tactical reserves** is the foundation of the **expeditionary supply chain system**. This is applicable to land and sea basing of reserves. The **protection of Military convoys** is critical and will present a **big threat** not only from the enemy but the local population where poverty is extreme.
- **Forward Mounting (FMB) / Staging Bases**. A secure **base, port or airfield**, from which an operation may be launched. It is normally, but not necessarily, external to the theatre of operations and may be an **essential stepping stone** into the theatre. A FMB should have the capacity for an **insertion force to form – up** within it and subsequently be able to handle reinforcements, reserves and evacuees. Depending on the scale of an operation, the FMB can also be required to provide 3<sup>rd</sup> line support. This base must allow for **integration training** for all force groupings.
- **Forward Operating Bases (FOB)**. A location in the combat zone which provides the **full range of infrastructure for planning, command and support of helicopter and fixed wing operations** (this base must allow for mission ready training – smallest “combat team”).

# SA MILITARY SC CONCEPTS (5)

## Performance Based Logistics (PBL)

- The SA Military **must re-enforce** its **strategic relationship** with the Defence industry sector (**South African Aerospace Maritime and Defence Industries [AMD]** who coordinate the inputs from the SA Military Industry Sector). The assumption that South Africa as example will have the capability to buy equipment off-the-shelf during a contingency is **flawed**, because such equipment will **not necessarily be available** and, secondly, the **economy might not be strong enough to make large purchases**. South Africa (as an example), and specifically its Military component, will therefore rather opt to **reduce the strategic reliance on others (risk)** and be as self-sufficient as is economically possible.
- Performance-based logistics **can increase the efficiency** and **lower the cost of the military's logistical system** through **well-designed partnerships between government-run depots and private contractors**.
- The RSA Government should encourage both the use of **performance-based logistics** and the **expansion of public-private partnerships** at these depots (this can include logistic support in Peace Support Operations - PSOs / Peace Keeping Operations - PKOs / External Operations).

# SA MILITARY SC CONCEPTS (6)

## Performance Based Logistics (PBL) (cont.)

- The RSA Government should recycle the **savings** from an **improved Military Supply Chain** system back into the Military budget to procure the next generation of weapons systems.
- Performance-based logistics **should not become an excuse for the Government to cut the Military budget.** The primary objective should be a **stronger and more cost-effective Just in Time (JIT) / Just Enough (JE) military.**
- South Africa cannot develop and produce everything it requires. It should therefore **concentrate on weapons and equipment that are uniquely tailored for the African battlespace**, the local support of all **equipment at a systems level vital for military readiness**, the **ability to modify, upgrade and integrate major equipment**, **capabilities that will be kept secret** and, finally, on the **sustainability of all equipment**, to ensure operational sovereignty.
- The SA Military must **set the standard of the technology** it requires and not accept anything other than what it specified as a **minimum requirement**.

# SA MILITARY SC CONCEPTS (7)

- **Distribution**. Logisticians recognised that while the Military certainly has the capability to move and position vast amounts of materiel and supplies, that does not necessarily make it desirable. It is **expensive**, **not necessarily more effective**, and **consumes resources required to move, manage and protect the stockpiles**, and "mass-based logistics" poses a tremendous cost to the warfighter in terms of **footprint**, **risk redundancy** and **mobility**. The changes in military logistics envisioned a **distribution based logistical system** versus a **supply-based system**, where "**velocity offsets mass**, as echelons of inventory are **replaced** by **managed flows of materiel**. The **distribution pipeline** effectively becomes the **warehouse**. Certainly, one of the desired benefits of this system is a **reduced logistics footprint in theatre**, especially in **non-contiguous environments where the enemy can target support forces and supplies**. The Military will need to shift from a **massed-based logistics system** to a more cost-effective, **velocity-based logistics system** that closely parallels the distribution system used in the commercial sector to leverage techniques and technology being used in commercial industry. The commercial world has moved away from a **supply-based logistics system** with "**just-in-case**" (JIC) inventory levels, to a **transportation based "just-in-time"** (JIT) or a "**just enough**" (JE) supply chain / logistic system.



# SA MILITARY SC CONCEPTS (8)

- **Velocity Management (VM)**. VM focuses on **improving the speed and accuracy** with which materials and information flow from providers to users. The optimum solution will add to ensure a **judicious mix** of **Just-in-Time (JIT)** and **Just-in-Case (JIC)** to deliver **Just Enough (JE)**, **tailored** to the **realities of the African Battlespace** and the **South African industrial base**.

# SA MILITARY SC CONCEPTS (9)

(EACH CONCEPT WITHIN ASSET MANAGEMENT MUST BE FULLY DEVELOPED)

- **Asset Management**

- Logistic Intelligence.
- Lighter Logistic Footprint.
- Lean Logistics.
- Total Asset Visibility (TAV).
- Anticipatory Logistics.
- Expeditionary Logistics.
- Joint, Inter Departmental, Inter Agency and Multinational (JI<sup>2</sup>M) Logistics
- Maintenance and Repair
- Joint Management Systems (Joint Command, Control and Consultation Information Exchange Data Model - JC<sup>3</sup>IEDM)



# INTERVENTIONS OVER TIME THAT CAN ENABLE THE SUCCESSFUL IMPLEMENTATION OF THE SA MILITARY SC CONCEPTS

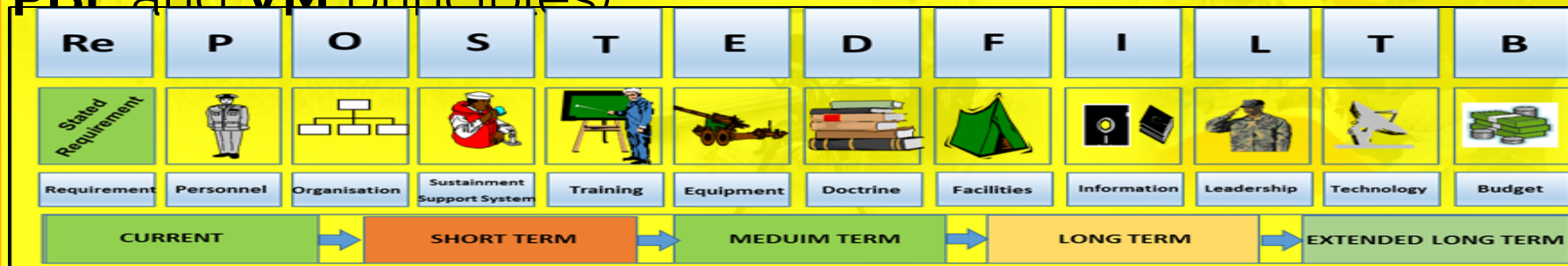


## SHORT TERM

A fully capacitated 1<sup>st</sup> line capability ('A'-, 'B'- and 'F' Echelons) must be developed to allow forces autonomous operations by lessening the dependency on 2<sup>nd</sup>- and 3<sup>rd</sup> line structures and systems aligned with the SA Military Doctrine (LEAN Supply Chain Systems must include the PBL and VM principles).

# INTERVENTIONS OVER TIME THAT CAN ENABLE THE SUCESSFUL IMPLEMENTATION OF THE SA MILITARY SC CONCEPTS / MEDIUM TERM

A fully capacitated (RePOSTEDFILTB aligned with the SA Military Doctrine) **1<sup>st</sup> line Reserve capability** to be developed to allow forces to **execute autonomous operations** by **lessening the dependency** on 2<sup>nd</sup>- and 3<sup>rd</sup> line structures / systems. An investigation into capacitating the 2<sup>nd</sup> Line Capability must be a **very high priority**. (LEAN Supply Chain Systems must include the **PRI** and **VM** principles)





# INTERVENTIONS OVER TIME THAT CAN ENABLE THE SUCCESSFUL IMPLEMENTATION OF THE SA MILITARY SC CONCEPT LONG TERM

**Standardisation of commodities** must be a **priority to ensure a common interface between all systems** (e.g. Aviation Fuel to be used for aircraft, ships, vehicles and other power packs). This will **enhance interoperability** in the SA Military and will include interoperability with other external users (UN, AU and the SADC). This will also **assist in decreasing the logistic footprint of the SA Military and simplify the supply chain requirement**. (LEAN Sustainment Systems must include the **PBL** and **VM** principles)

# INTERVENTIONS OVER TIME THAT CAN ENABLE THE SUCCESSFUL IMPLEMENTATION OF THE SA MILITARY SC CONCEPTS (3)



## EXTENDED LONG TERM

**Integrated, Automated and Digitised (IAD) supply chain development to incorporate intelligent / automated accounting and other related ICT systems, based on a modular interface that is common between Landward, Medical, Air - and Seaborne forces.**

**(LEAN Supply Chain Systems must include the PBL and VM principles)**



# INTERVENTIONS OVER TIME THAT CAN ENABLE THE SUCESSFUL IMPLEMENTATION OF THE SA MILITARY SC CONCEPTS (4)



## INSURANCE

**The SA Military must plan for the deployment of Civilian Contractors in the 2<sup>nd</sup> and 3<sup>rd</sup> Line of operations. This plan must include the insurances and medical cover for these members whilst deployed in areas of conflict**

# CONCLUSION


**“To wage war, first of all you will need money, second you need money; and third you also need money.” Prince Montecuccoli.**

## The Challenge

Dependence on logistical support is the **primary enabling factor** that can **improve** or **halt military operations**. Be it fuel for vehicles, maintenance of equipment or replenishing supplies, **maximising agility** and **freedom of action** is achieved when **reliance on logistic support is reduced**. Reducing logistic need is about achieving the optimum balance between **all-arms demand reduction** and **logistic capabilities** to deliver the **8 Rs in Logistics** (the **right commodities**, in the **right quantity**, at the **right time**, in the **right condition**, at the **right place**, in the **right quality** with the **right (financial) resources**, to the **right entity**) through:

- **Agility**. The SA Military needs to **respond quickly to external factors** with **lead times minimised**.
- **Flexibility**. The SA Military Force Groupings **must** be **capable of operating** in a **variety of environments** and **combat a wider range of threats** when mobilised. Equipment / personnel must become adaptable to overcome **unpredictability**.
- **Reach**. **Military capability will be increased** when **operations can last longer and achieve more with less reliance on combat support services**.





The SA Military needs a  
robust Supply Chain  
Strategy as a course  
correction to avoid the  
troubled waters ahead!  
**'AFRICAN SOLUTIONS  
FOR AFRICAN  
PROBLEMS'**

# QUESTIONS & DISCUSSION







# Thank you!

**“Logisticians are a sad race of men, very much in demand in war, who sink back into obscurity in peace. They deal only with facts but must work with men who merchant in theories. They emerge during war because war is very much fact. They disappear in peace, because in peace, war is mostly theory”** – Military History Dictionary.

**Disclaimer:** The viewpoints expressed in this presentation are solely the author's personal opinions and do not represent the official position of the South African National Defence Force (SANDF).