

Integrating the augmented SCOR model and the ISO 15288 life cycle model into a single logistic model.

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**For want of a nail, the shoe was lost –
For want of a shoe, the horse was lost –
For want of a horse, the rider was lost –
For want of a rider, the battle was lost.**

Benjamin Franklin



Three supply chain case studies

SC1: 76mm High Effect Fused Proximity Ammunition



Photo credits: Fuchs Electronics

SC2: Multi-commodity from manufacturer to SANDF contingent in Burundi



Photo credits: www.wikipedia.org

SC3: Weapon systems



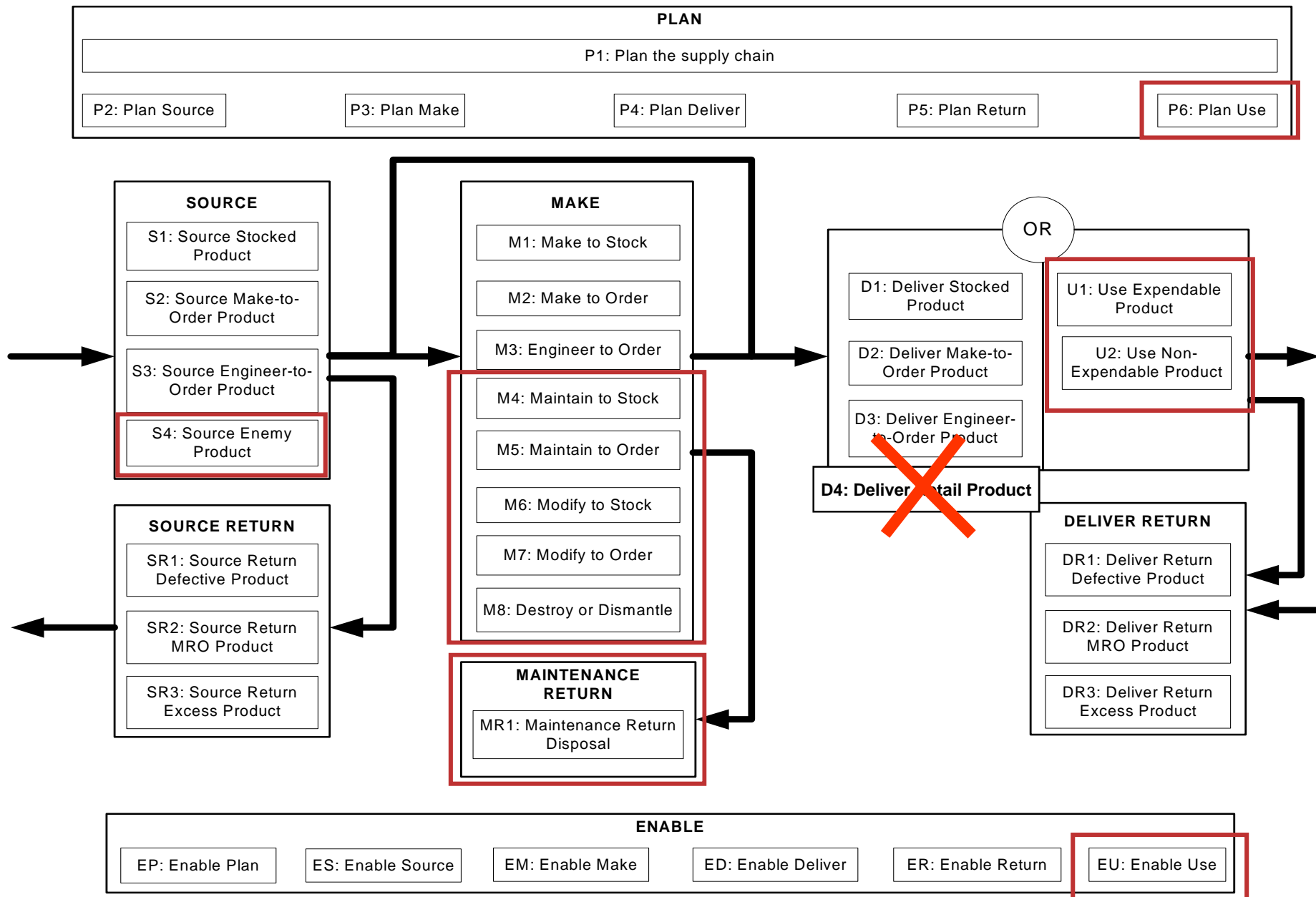
Photo credits: www.wikipedia.org, SA Navy and Dr P Schmitz

After the case studies:

- U.S. Deputy Under Secretary of Defense (2000)*
 - Used the SCOR model for the military.
 - We felt that the standard MAKE process categories were too vague for the SANDF with regards to maintenance, modification and disposal activities.
- There is a point in the supply chain where the SANDF does not deliver a product to a demanding entity, but employs it in training, war or peace keeping activities.
- The SANDF incorporates captured enemy matériel for future use in the SANDF.

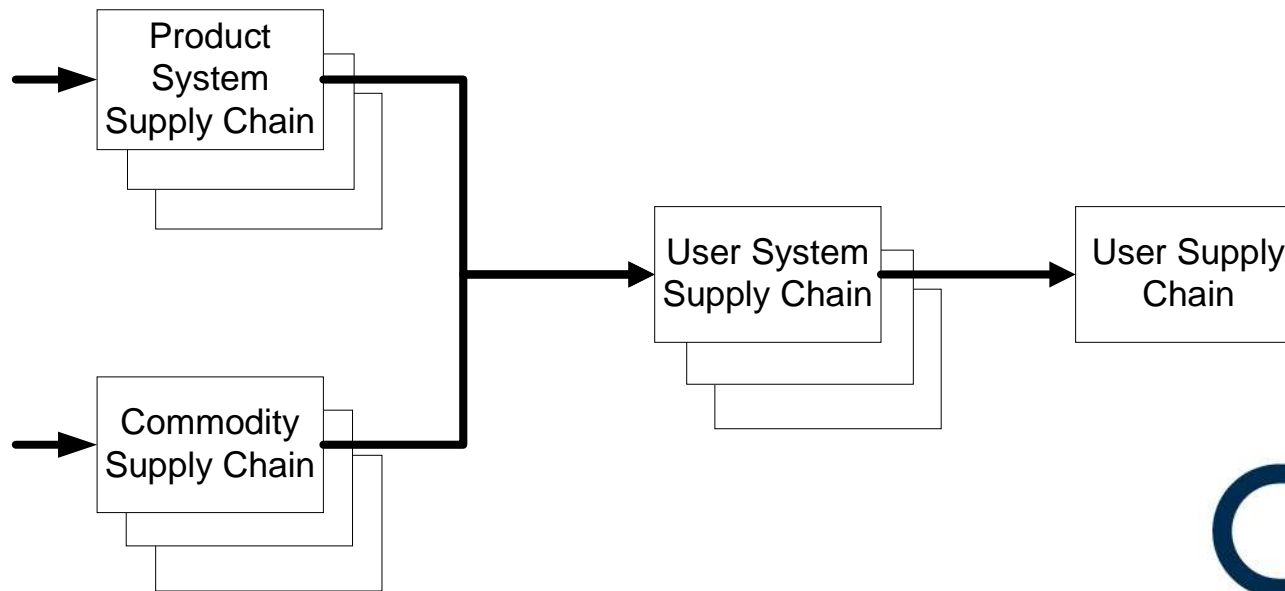
* Deputy Under Secretary of Defense (2000). *DoD Supply Chain Management Implementation Guide*. Deputy Under Secretary of Defense (Logistics and Materiel Readiness), Office of Supply Chain Integration. Logistics Management Institute, 2000 Corporate Ridge, McLean, Virginia 22102-7805, USA.

The augmented SCOR model

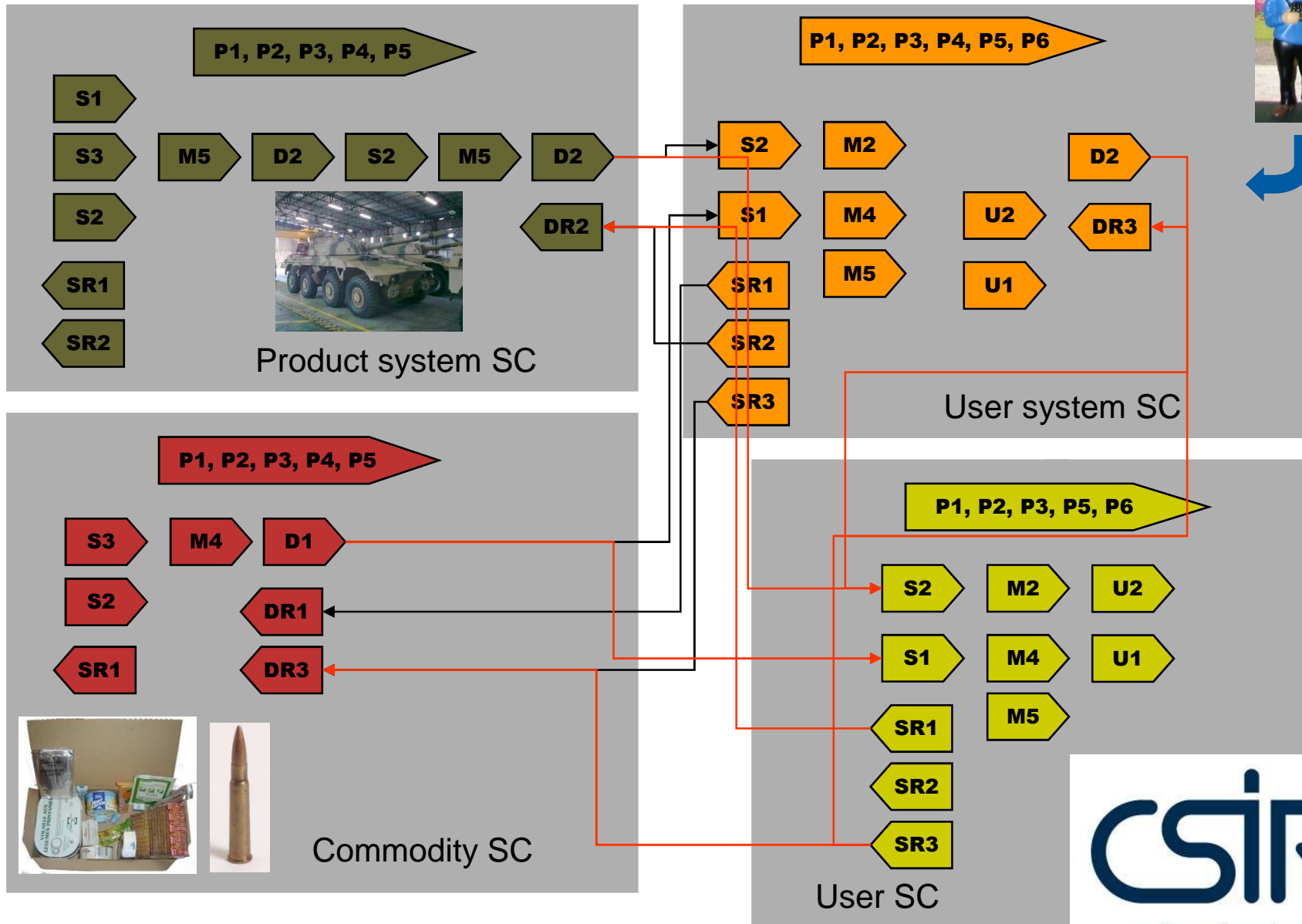


Configuring a Supply Chain

- A series of supply chains from raw material extraction to final product delivery at end user.
- The SANDF the End-to-End supply chain is configured as follows:



Configuring a Supply Chain



The six logistics perspectives for the SANDF

- **Logistics Strategy:**
 - Developed by South African Department of Defence.
 - Determine the requirements for a logistic process.
 - Based on six perspectives.

1. System perspective

Level	Designation	Example
8	Operational Force	Joint National Force
7	Combat Grouping	Joint Task Force
6	User System	AA Battalion
5	Product system	Radar
4	Product	Power supply
3	Product Sub-system	Modulator
2	Component	Resistor
1	Material	Silicon

The six logistics perspectives for the SANDF

2. Process perspective

- Process is seen as a functional layout in which products move from one function or process to the next.
- Function of process describes required inputs, product transformation and outputs.

3. Quality improvement perspective

- Total Quality Management principles used to reduce military logistics risk and improve quality of service.

The six logistics perspectives for the SANDF

4. Asset management perspective

- Takes South African National Treasury asset management guidelines into account.
- Asset management is the process of guiding the acquisition, use, safeguarding and disposal of assets to maximize their service delivery potential and manage risks and costs over their entire life.
- The management and accounting of assets are included in the single logistic process where applicable.

5. Supply chain perspective

- SIT 'N KORT SIN IN WAT DIT NET WEER VERDUIDELIK.

The six logistics perspectives for the SANDF

6. Life-cycle perspective

- Product or system life cycles are managed in an integrated fashion across all phases of the product's or system's life cycle.
- The first 5 perspectives are adequately addressed by the augmented SCOR model.
- The sixth perspective needs to be incorporated into the augmented SCOR model that resulted in the creation of a single logistics process model for the SANDF.
 - Must be a single, comprehensive, rigorous and tailorable logistics process.

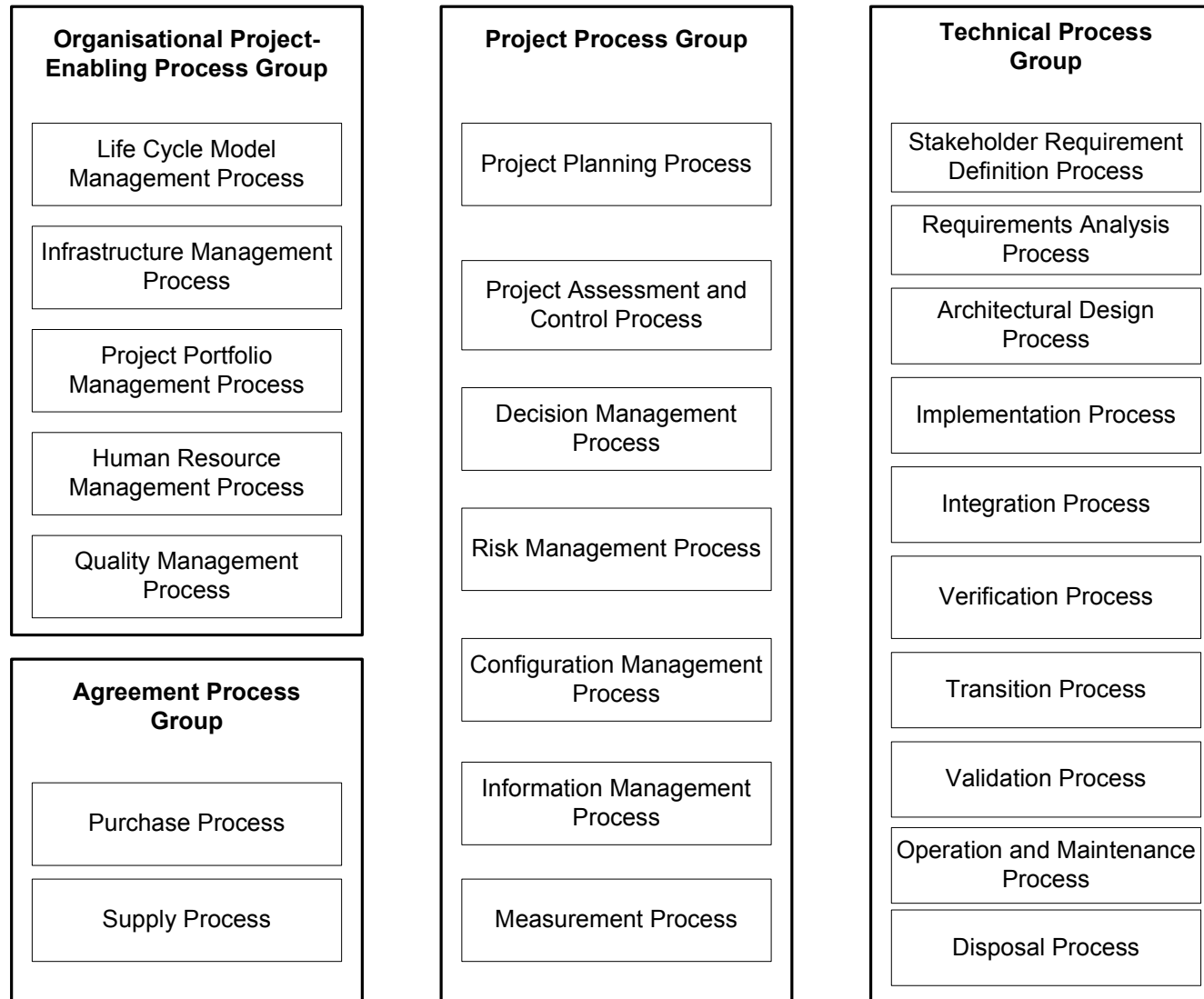
Life-cycle perspective

- **ISO-15288**
 - Provides a common framework for establishing and implementing agreements between the acquiring entity and the system or sub-system suppliers.
 - Agreements focus on developing, using and managing a system within its defined life cycle.
- The life cycle of the system spans from its conception of ideas through to the retirement of the system.
- Based on various entry and exit criteria a decision is made at the end of each life cycle phase to either:
 - proceed to the next stage;
 - to terminate the project;
 - to continue with the current stage;
 - to go to the previous stage;
 - or to hold the project.

Life-cycle perspective

- Each phase consists of one or more processes, which in turn has one or more activities.
- Each activity may consist of one or more tasks to support the process outcomes.
- Processes are:
 - Strongly cohesive - all the parts of a process are strongly related.
 - Loosely coupled - the number of interfaces among various processes is kept to a minimum.
 - Associated with a particular responsibility.

Life-cycle perspective



The single logistics process

- Sourcing of complex matériel such as frigates and aircrafts:
 - Included processes from stakeholder requirement definition to validation in SOURCE.
- The operation and maintenance process:
 - Integrated into the USE and MAKE.
- The disposal process:
 - Included in MAKE and RETURN.

The single logistics process

P PLAN					
P1 Plan Supply Chain	P2 Plan SOURCE	P3 Plan MAKE	P4 Plan DELIVER	P5 Plan RETURN	P6 Plan USE

S SOURCE		M MAKE		D DELIVER		U USE	
S1 Define stakeholder requirements	S2 Analyse requirements	M1 Finalise engineering	M2 Schedule production activities	D1 Receive, enter and validate order (demand)	D2 Enter order, commit resources and launch project	U1 Process demand	U2 Reserve resources and determine delivery date
S3 Design architecture	S4 Implement	M3 Schedule maintenance activities	M4 Schedule modification activities	D3 Reserve inventory and determine delivery date	D4 Schedule installation	U3 Obtain services	U4 Consolidate orders
S5 Integrate	S6 Verify	M5 Deactivate product	M6 Schedule disposal activities	D5 Consolidate orders	D6 Build loads	U5 Receive product from warehouse	U6 Issue product
S7 Transition	S8 Validate	M7 Inspect and test	M8 Confirm provisioning actions	D7 Route shipments	D8 Select carrier and rate	U7 Assign operators	U8 Activate product
S9 Authorise supplier payment	S10 Receive captured product	M9 Issue maintenance- or modification-enabling system and materials	M10 Issue disposal-enabling system and material	D9 Receive product from SOURCE or MAKE	D10 Pick product	U9 Expend or consume product	U10 Use product
S11 Characterise captured product	S12 Transfer captured product	M11 Issue production material	M12 Produce and test	D11 Pack product	D12 Load product and generate shipping documents	U11 Monitor operators	U12 Measure performance
		M13 Maintain or modify and test	M14 Destroy or dismantle	D13 Ship product	D14 Receive and verify product	U13 Handle arisings/ returns	U14 Dispose waste
		M15 Package	M16 Stage product	D15 Install product	D16 Provide assistance	U15 Return product	
		M17 Release product to DELIVER	M18 Archive information	D17 Sign off	D18 Transfer responsibility		
R SOURCE RETURN						R DELIVER RETURN	
R1 Source return non-conforming product	R2 Source return MRO product					R4 Deliver return non-conforming product	R5 Deliver return MRO product
R3 Source return excess product						R5 Deliver return excess product	
				R RETURN			
				R7 Return product for disposal			

E ENABLE								
E1 Enable SOURCE	E2 Enable MAKE	E3 Enable DELIVER	E4 Enable USE	E5 Enable RETURN	E6 Enable PLAN	E7 Manage supplier agreement	E8 Manage configuration	E9 Manage project

Augmented SCOR model

Augmented SCOR model and ISO 15228 life cycle process

ISO 15228 life cycle process

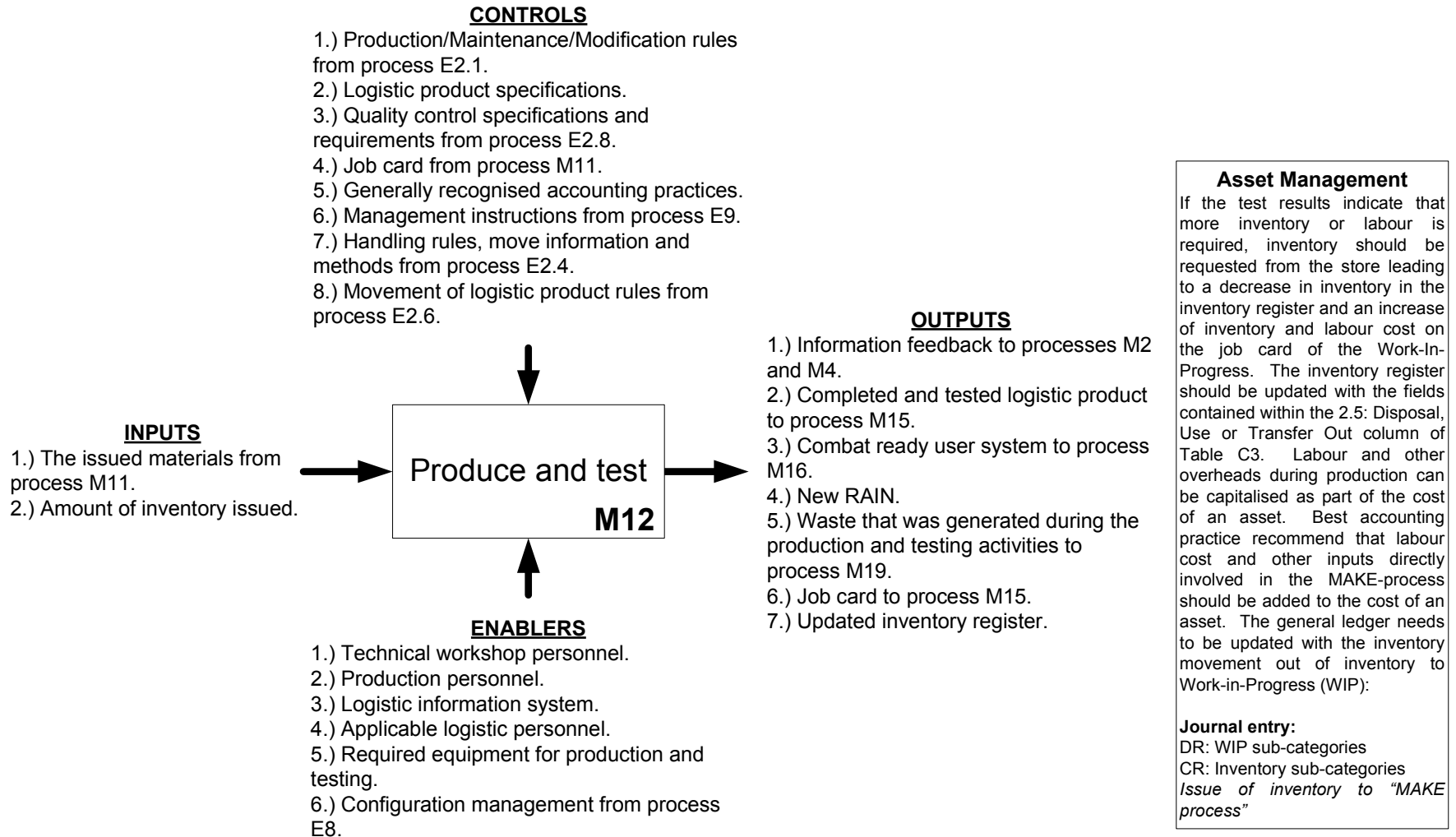
The single logistics process

- Combination of SCOR and IDEF0.
 - Processes and sub-processes are described.
 - Process inputs, outputs, controls and enablers identified.
- The enablers at each process are not necessarily the ENABLE processes as defined by the SCOR model.
 - But the various ENABLE processes can serve as enablers of process.
- Asset management activities are included in the process or sub-process where applicable.

The single logistics process

M12: Produce and Test

The series of activities performed upon sourced/in-process product to convert it from the raw or semi-finished state to a state of completion and greater value. The processes associated with the validation of product performance to ensure conformance to defined specifications and requirements.



What is currently happening?

- The development of a URS of the Logistics Information System (LIS):
 - To support the single logistics process model.
- Training of SANDF personnel:
 - To enable understanding the single logistics process model.
 - Used as a feedback platform for future improvement of the model.
- The development of metrics using the SCOR approach.
 - Most of SCOR's reliability, responsiveness, agility, cost and asset metrics can be directly applied.
 - A sixth group of metrics introduced to measure combat-ready performance in the SANDF.

What is next?

- The development of best practices for each process element.
- Finalising the incorporation of the project processes.
- Developing the macro structures for the SANDF to enable the application of the model.
- The final single logistics process model will be a manual similar to that of the SCOR model.
 - To allow for the orderly improvement of the logistics process, this manual will be kept under strict configuration control and updated in future to effect the improvement of process quality.

Acknowledgements

- Supply-Chain Council (Southern African Chapter)
 - Invitation to give the presentation.
- SAPICS
 - Opportunity to present the paper.
- CSIR
 - Enabling model development.
- SANDF
 - Opportunity to develop the model to improve their logistics activities.

“The only thing harder than getting a new idea into the military mind is to get an old one out.”

- Sir B. H. Liddell-Hart





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