Through Life Management in OCCAR

Dietmar Fiegas
Content

TLM basics

TLM blocks

OCCAR-EA
Content

- TLM basics
- OCCAR-EA
- TLM blocks
OCCAR is an international organisation for the management of European collaborative defence equipment programmes

OCCAR was created through a Convention, equivalent to an international treaty. Current Member States are:

- Belgium (🇧🇪)
- France (🇫🇷)
- Germany (🇩🇪)
- United Kingdom (🇬🇧)
- Italy (🇮🇹)
- Spain (🇪🇸)

OCCAR-EA is the executive administration of OCCAR
## OCCAR-EA Currently Managed Programmes

<table>
<thead>
<tr>
<th>Programme</th>
<th>Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Airbus Military SL</td>
<td>Airbus SAS, TAI, FLABEL</td>
</tr>
<tr>
<td>ARTEC</td>
<td>Kraus-Maffei Wegmann, Rheinmetall LS</td>
</tr>
<tr>
<td>PDS Alliance</td>
<td>Thales Air Systems, Thales UK, EADS-DE</td>
</tr>
<tr>
<td>NAMSA SLA*</td>
<td></td>
</tr>
<tr>
<td>a4ESSOR</td>
<td>Elektrobit, Indra, Saab, Selex, Radmor, Thales FR</td>
</tr>
<tr>
<td>DCNS</td>
<td>Fincantieri, Finmeccanica</td>
</tr>
<tr>
<td>Orizzonte Sistemi Navali</td>
<td></td>
</tr>
<tr>
<td>EUROSAM</td>
<td>Thales, MBDA (FR), MBDA (IT)</td>
</tr>
<tr>
<td>UKAMS</td>
<td>EUROSAM, MBDA (UK)</td>
</tr>
<tr>
<td>EUROCOPTER Tiger</td>
<td>EADS</td>
</tr>
<tr>
<td>MTRI, NAMSA SLA*</td>
<td>MTU, Turbomecca, Rolls Royce, ITP</td>
</tr>
<tr>
<td>INDRA, SAGEM, EADS-DE</td>
<td>SLA* …Service Level Agreement</td>
</tr>
<tr>
<td>Programme</td>
<td>PD Strength</td>
</tr>
<tr>
<td>-----------</td>
<td>------------</td>
</tr>
<tr>
<td>A400M</td>
<td>38⇒39</td>
</tr>
<tr>
<td>BOXER</td>
<td>16</td>
</tr>
<tr>
<td>COBRA</td>
<td>9⇒12</td>
</tr>
<tr>
<td>ESSOR</td>
<td>4</td>
</tr>
<tr>
<td>FREMM</td>
<td>25</td>
</tr>
<tr>
<td>FSAF, PAAMS</td>
<td>34⇒35</td>
</tr>
<tr>
<td>TIGER</td>
<td>51</td>
</tr>
</tbody>
</table>

Overhead 1.0 %

Turnover 17 MEUR per employee

Total:
- PD Strength: 3.990
- Total programme cost: 39.750
Content

TLM basics

TLM blocks

OCCAR-EA
The OCCAR Convention aims at:

- Improving **efficiency** and **reduce costs** of armaments cooperation;
- Developing **new programme management methods**;
- Making procedures for the **granting of contracts more effective**;

**Our mission**
To facilitate and manage collaborative European armament Programmes through their life cycle and Technology Demonstrator Programmes to the satisfaction of our customers.
TLM Basics: TLM, because of the Equipment Cycle

Generic Equipment Cycle

- Preparation
- Definition
- Development
- Production
- In Service
- Disposal

Generic representation of Reality (Equipment Cycle)

Representation of Equipment Cycle with timescale

Representation of Equipment Cycle with LCC
TLM Basics: TLM to avoid unnecessary Interfaces

Generic Equipment Cycle

- Preparation
- Definition
- Development
- Production
- In Service
- Disposal

Creation of a Defence System (generic national way)

- Capability
- Gap
- Preparation
- Definition
- Development
- Production
- In Service
- Disposal

TLM Basics: TLM to avoid unnecessary Interfaces
TLM Basics: TLM, because we are not alone in Europe.

INDUSTRY

USER (Nations)

OCCAR

EDAC

Through Life Management

User of

Capability

Defence System

Programme
Definition of OCCAR TLM

Through Life Management means managing a programme throughout its whole life cycle, in a use-centric way.

TLM is achieved by applying and integrating best practice management techniques

- in a coherent manner
- across all system aspects

in order to deliver, sustain and dispose the required cost-effective defence system.
Only one Optimisation Goal:

In Service Availability ($A_o$) use-centric

In concrete terms: All management decisions have to be approached with these two basic questions in mind:

- does the design of the defence system fill the capability gap throughout its in service phase?

- will the defence system be available when the commander on operations needs the system?
TLM Basics: End-to-End Management

- Factory
- Design
- Disposal
- Foxhole
TLM Basics: TLM adds flexibility for Participating States

DIRCM = Directed Infra-Red Counter Measures
MUSIS = Multinational Space-based Imaging System
BIO EDEP = Biological Equipment Development & Enhancement Programme
AEJPT = Advanced European Jet Pilot Trainer
UGTV = Unmanned Ground Tactical Vehicle
FUAS = Future Unmanned Air System

DIRCM
MUSIS
BIO EDEP
AEJPT
UGTV
FUAS
Content

TLM basics

OCCAR-EA

TLM blocks
### Strategic Initiatives

<table>
<thead>
<tr>
<th>Initiative</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expand OCCAR-EA approach to Through Life Management (TLM)</td>
<td>ongoing</td>
</tr>
<tr>
<td>Consolidate obsolescence management methods and tools</td>
<td>ongoing</td>
</tr>
<tr>
<td>Promote and Develop Co-operation with other European Defence Actors</td>
<td>ongoing</td>
</tr>
<tr>
<td>Consolidate financial management procedures</td>
<td>ongoing</td>
</tr>
<tr>
<td>E-Business: Develop Shared Data Environments</td>
<td>ongoing</td>
</tr>
</tbody>
</table>

*Information: You can find more about the strategic initiatives on the OCCAR internet in the OCCAR Business Plan 2010  www.OCCAR-EA.org*
TLM Blocks: OCCAR TLM Perimeter

Follow the trend within the nations

- Use-centric thinking
- Continuous management
- Optimal entrance/exit strategies
- Stakeholder involvement
- OCCAR-EA Staff involvement

TLM Concept

Organisation

TLM Plan

ISS Guide

Establish ISS IPs

Interface with customers

Optimised Programme Arrangements

Manage the TLM Process


Cost-Effectiveness

Flexibility

Part of ETLCM

ODIG, EGA, BoS, Committees

Change of Attitude and Behaviour

Procedures

Programme Maturity Assessment

Expand LCC Capacity

ISS Process Model

ISS support for PDs

Interface with industry

Human Resources

Financial Arrangements
TLM Blocks: The Through Life Management Plan (TLMP)

- The TLMP is the Overarching Plan of all Element Programme Management Strategies and Plans
- Single source of strategic information to manage the Programme
- Provides access to more detailed information
- Provides information required to plan and make decisions
- Captures high level information from subordinate plans to manage interface issues
- It allows to compile Programme History
Examples for Element Plans in Preparation Phase

- ISS Strategy/ Plan
- Procurement Strategy/ Plan
- Capability Management Strategy/ Plan
- Technology Management Strategy/ Plan
- Programme Management Strategy/ Plan
- Programme Arrangements Strategy/ Plan
- LCC/ Cost Forecasting Strategy/ Financial Planning
- Environmental Impact Strategy/ Plan including Disposal
- Risk Management Strategy/ Plan & Identification of Major Risks
TLM Blocks: TLMP provides information now, for the future
TLM Blocks: TLMP provides information now, for the future

Information Density

0 10 20 30 40 50 50

Preparation | Definition | Development | Production | In Service | Disposal

now
TLM Blocks: TLMP same idea in EDA and OCCAR

- Shared TLMP: initiated under EDA continued under OCCAR
- Sharing TLMP ensures seamless transition
- Best practice: TLMP initiated as early as possible
- TLMP initiated/developed in parallel with CSR & BC

TLMP not extra work, rather it addresses work in a structured End-to-End way!
For OCCAR PD staff: high level ISS overview

ISS Guide

- Information management
- Planning & reporting
- Quality management
- Performance management
- Planning & reporting
- Requirements management
- Legal support
- Finance & budgeting
- Security management
- Business framework

- Post Design services
- Training support services
- Technical Doc management
- Obsolescence management
- Supply support management
- Technical Event management
- Maintenance management
- Configuration management

OCCAR TLM

- ISS Tailoring
- Performance Parameters

Programme Division

- Contract Inclusions

For Industry: What to expect from OCCAR during ISS phase

For Nations: What OCCAR Manages during ISS phase
## Example Page

<table>
<thead>
<tr>
<th>Second Level Task</th>
<th>Third Level Task</th>
<th>Tasks to be performed by industry through a contract managed by OCCAR</th>
<th>Tasks to be managed by OCCAR</th>
<th>Performance Parameters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Configuration Accounting</td>
<td>Configuration Status Accounting</td>
<td>Data Recording: Record all data from the other Configuration Management activities (Current approved configuration Baseline, Results of Configuration Audits, Engineering Change Proposal status and plan)</td>
<td>Depending on the specific programme this task could be contracted to the Industry</td>
<td>Percentage of Accounted Items vs total number of identified Items</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Controlling Information Security: the information security procedures shall be guaranteed and applied to prevent unauthorized access and loss of data (ask IT security)</td>
<td>Depending on the specific programme this task could be contracted to the Industry</td>
<td>Percentage of Accounting Error vs total number of items selected for Configuration Management</td>
</tr>
<tr>
<td>Configuration Data Management</td>
<td></td>
<td>Elaboration of Information Needs: Define the information related to configuration management that is necessary to be provided to the Participating States and other stakeholders</td>
<td>No contract for this task</td>
<td>OCCAR-EA will define the necessary information to be shared and exchanged in the Configuration Management Plan</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
TLM Blocks: What to Manage in the ISS Phase

General Programme Management Activities
- Risk Management
- Contract & Legal Support
- Information Management
- Facilities & Infrastructure Management
- ST&E Management
- Life Cycle Costing

Main ISS Activities
- Configuration Management
- Supply Support Management
- Obsolescence Management
- Technical Support Services
- Environmental Impact Management
- System Engineering
- Technical Info & Data Services
- Training Support Services
- Safety Management
- Maintenance Management
- Quality Management
- General Support of PD

ILS related and Domain Specific Activities
- Organisation Update
- Concept & Doctrine Review
- Environmental Impact Management
- Security Management (PD)
- History & Lessons Process
- Planning & Reporting Management
- Software Support
- Disposal Management
- Security Management (DS)
- Manpower & Human Factors Analysis
- Financial, Budgetary & Commercial Management

Activities
- ILS related and Domain Specific

TLM Blocks: What to Manage in the ISS Phase
The objective is to detail each ISS activity and to establish a set of key parameters able to measure the contribution to the System Effectiveness, for each support element included in the In Service Phase.

It explains how:

✓ to structure the ISS activities task by task

✓ .....and how to measure activities’ performances and link them to the System Operational Availability
The ISS Process Model represents an application of Performance Based Logistics (PBL). Through the use of parameters, it answers to the question: What are the results obtained for each € spent on ISS activities?

Parameter form

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MDT = MMT + MLDT</td>
<td>Mathematical links</td>
</tr>
<tr>
<td>MLDT = [PNSS * MMT + (1 - PNSS) * DT]</td>
<td></td>
</tr>
<tr>
<td>CDC = CDCr * CDCp</td>
<td></td>
</tr>
</tbody>
</table>

### Related Service
- Configuration Management (CM)

### Indicator reference
- 1.1.1

### Indicator Title
- Percentage of identified items (PID)

### Indicator Description
- It represents the percentage of identified items (hardware/software with detailed functional and physical characteristics) vs total items under Configuration Management. A PID value less than 100 signals the presence of items not identified by CM.

### Unit
- Percentage (100 best value).

### Measurement owner
- TBD

### Data required for computation of result

<table>
<thead>
<tr>
<th>Reference</th>
<th>Description</th>
<th>Data source</th>
</tr>
</thead>
<tbody>
<tr>
<td>DI</td>
<td>Total number of identified items (completed with configuration data) (metric)</td>
<td>Shared Data Environment</td>
</tr>
<tr>
<td>TI</td>
<td>Total number of items designed for CM (metric)</td>
<td>Shared Data Environment</td>
</tr>
</tbody>
</table>

### Formula for calculation of result
- $\text{PID} = \frac{\text{DI}}{\text{TI}} \times 100$

### Frequency of measurement
- Monthly bases

### Period to Date aggregation
- Average of intermediate results

### Formula for score computation
- The score computation can be used for PBL contracts.
  - Overcoming a predefined value shall set off problem identification and corrective actions.
  - Conventionally it is possible to link this performance parameter to specific system requirements (e.g. Operational Availability)
  - Other contractual specifications
## TLM Blocks: ISS Process Model; Use of the Model

To **plan** and **monitor** each activity on ISS phase

### Second Level Task | Third Level Task | Tasks to be performed by industry through a contract managed by OCCAR | Tasks to be managed by OCCAR-FA | Performance Parameters
--- | --- | --- | --- | ---
Configuration Accounting | Configuration Status Accounting | Data Recording: Record all data from the other Configuration Management activities (Current approved configuration Baseline, Results of Configuration Audits, Engineering Change Proposal status and plan) | Depending on the specific programme this task could be contracted to the industry | Percentage of Accounted Items vs. total number of items identified
Configuration Data Management | Elaboration of Information Needs: Define the information related to configuration management that is necessary to be provided to the Participating States and other stakeholders | No contract for this task | OCCAR-FA will define the necessary information to be shared and exchanged in the Configuration Management Plan | Percentage of Accounting Error vs. total number of items selected for Configuration Management

---

**Plan**

Q: What do I have to do?
Q: Who is acting?

**Monitor**

Q: How can I monitor it?

### Example Table

<table>
<thead>
<tr>
<th>Related Service</th>
<th>Configuration Management (CM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator relevance</td>
<td>V.1.1</td>
</tr>
<tr>
<td>Indicator Title</td>
<td>Percentage of Identified Items (PIE)</td>
</tr>
<tr>
<td>Indicator Description</td>
<td>Represents the percentage of identified items (PIE) (PIE 2) defined the functional and physical characteristics of total items under Configuration Management. A PIE value less than 100 signals the presence of items not identified by CM.</td>
</tr>
<tr>
<td>Unit</td>
<td>Percentage (100 least value)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Measurement area</th>
<th>PIE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data required for computation of result</td>
<td>Reference</td>
</tr>
<tr>
<td>1.1.1</td>
<td>Total number of identified items (completed with configuration data) (PIE 1)</td>
</tr>
<tr>
<td>1.1.2</td>
<td>Total number of items designed for CM (PIE 2)</td>
</tr>
</tbody>
</table>

**Formulas for calculation of result**

- **PIE-001/P/p**
  - Monthly basis
  - Average of intermediate results

**Formulas for score computation**

- The score computation can be used for PSE contracts
- Overcoming a predefined value shall set all problem identification and corrective actions
- Conventionally it is possible to link this performance parameter to specific system requirements (e.g., Operational Availability)
- Other contractual specifications
Mathematical links between Parameters and Operational availability

Parameters and their metrics (PBL concept)
TLM Blocks: LCC usage for cooperative programmes

- Evaluation of alternatives for decision-making
- Estimate “Should Cost” prior to contract negotiations
- Establish budget forecasting and assess affordability
- Identify cost drivers and undertake sensitivity analysis on some key parameters
- Estimate the cost impact of risks
TLM Blocks: LCC Example – evaluation of alternatives

Objective
Evaluate the impact of common support solutions on LCC

TOTAL SAVINGS EXPECTED:
9 % OF THE A400M LCC

Gain from common
- Material support: 36%
- Aircraft Maintenance: 11%
- Air Crew Training: 48%
- Ground Crew Training: 5%

common_analysis
TLM Block: LCC Example – evaluation of alternatives

| Objective | Economical study to prove the added value of a Common Spares Pool for the TIGER Participating States |

Expected SAVINGS:

11% to 43%
Depending on Nation and alternative used.
OCCAR-EA is a lean & agile European Organisation, customer-oriented, offering and developing through life leading edge programme management.

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