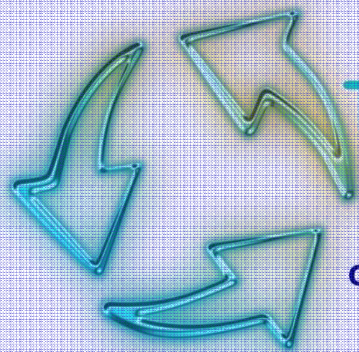


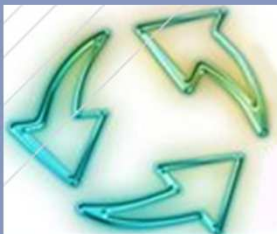


**Through-Life
Management**

the key to effective
cooperation

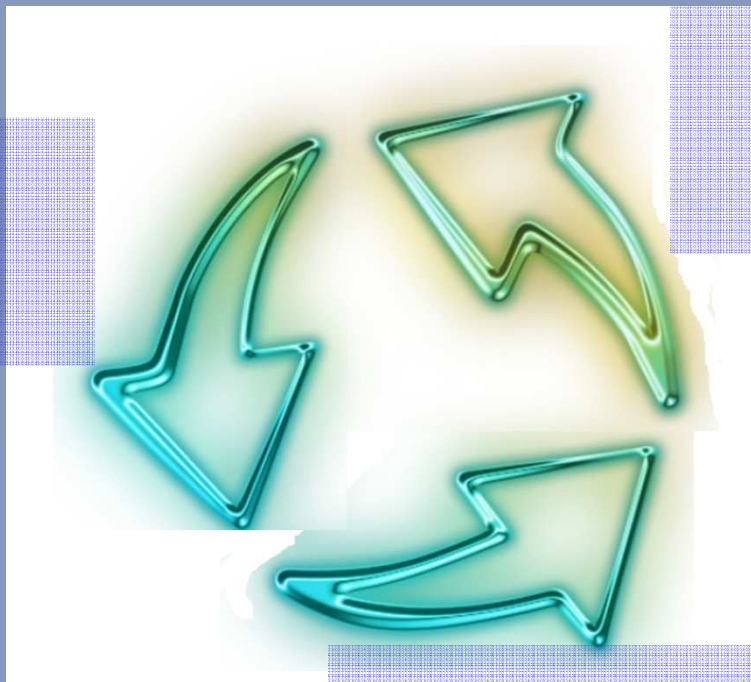
Through Life Management in OCCAR

Dietmar Fiegas



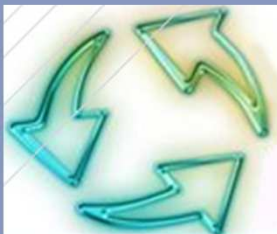
Content

TLM basics



OCCAR-EA

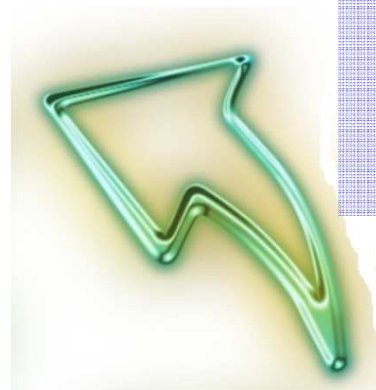
TLM blocks



16/11/2010

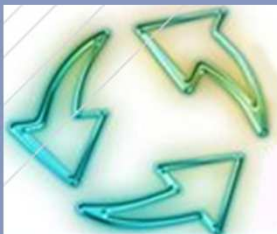
Content

TLM basics



OCCAR-EA

TLM blocks



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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.

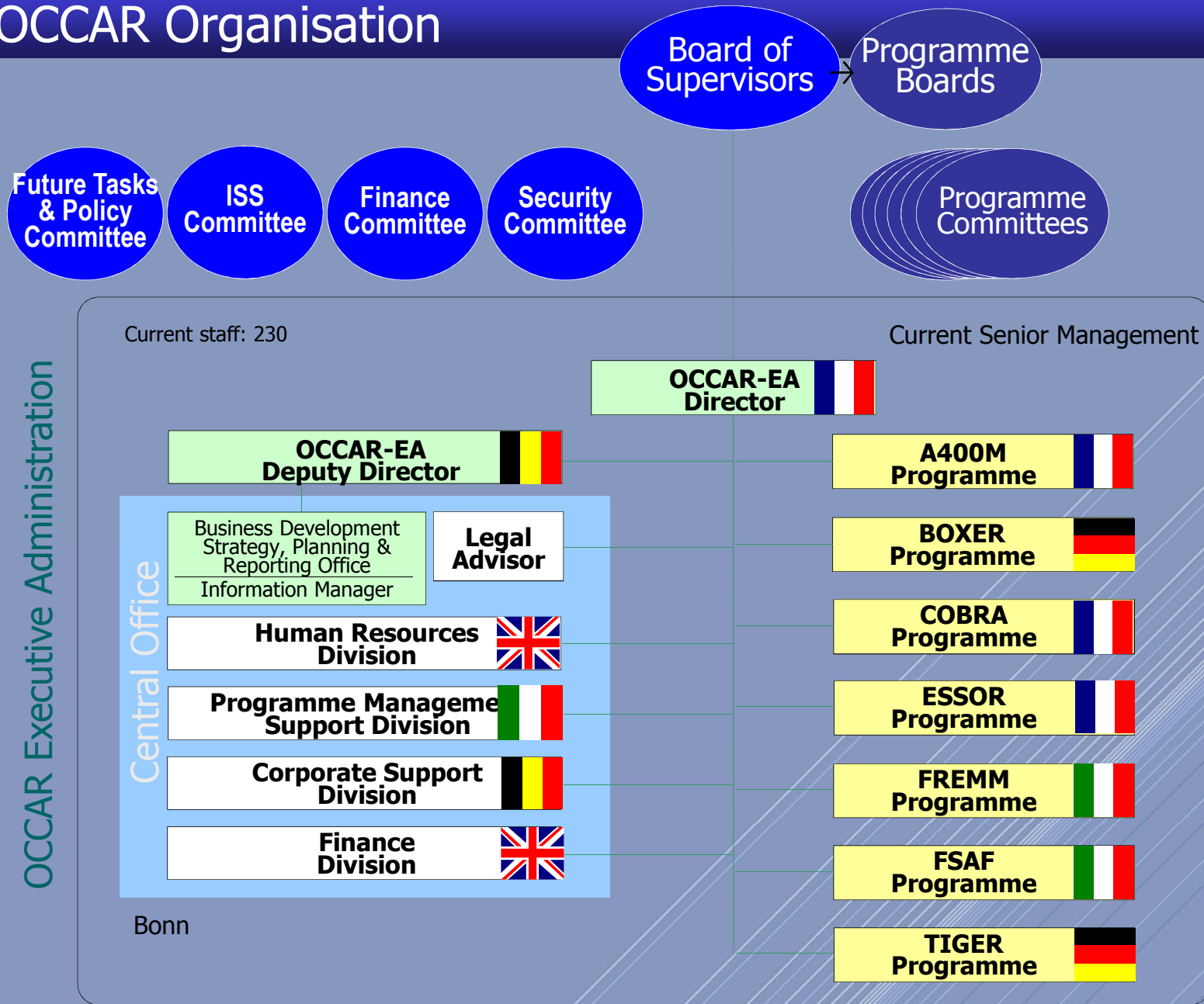
Current Member States are:



OCCAR-EA is the executive administration of OCCAR



OCCAR Organisation



OCCAR Executive Administration

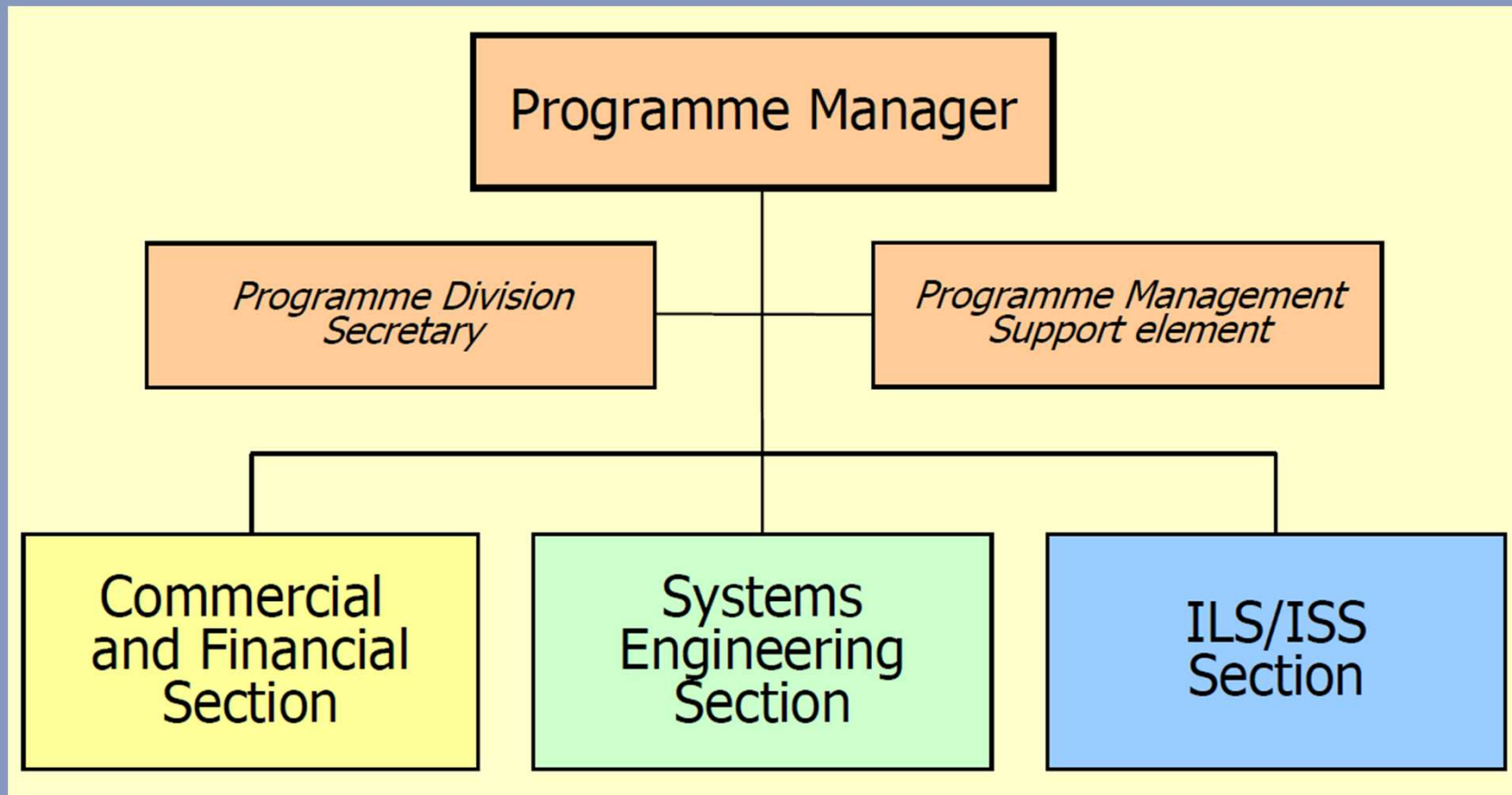
Central Office

Bonn



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OCCAR Generic Programme Division



OCCAR-EA Currently Managed Programmes

A400M
Heavy Transport Aircraft



BOXER
Multi-role Armoured Vehicle



COBRA
Target Locating Radar



ESSOR
European Secure
Software-defined Radio



FREMM
Multi-purpose Frigates



FSAF
Family of
Air Defence Systems



TIGER
Family of
Multi-role Helicopters



Airbus Military SL

Airbus SAS, TAI, FLABEL

ARTEC

Kraus-Maffei Wegmann, Rheinmetall LS

PDS Alliance

NAMSA SLA*

Thales Air Systems, Thales UK, EADS-DE

a4ESSOR

Elektrobit, Indra, Saab, Selex, Radmor, Thales FR

DCNS

Orizzonte Sistemi Navali

Fincantieri, Finmeccanica

EUROSAM

Thales, MBDA (FR), MBDA (IT)

UKAMS

EUROSAM, MBDA (UK)

EUROCOPTER Tiger

EADS

MTRI, NAMSA SLA

MTU, Turbomecca, Rolls Royce, ITP

INDRA, SAGEM, EADS-DE SLA* ...Service Level Agreement



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Current Programme Status



Overhead
1.0 %

Turnover
17 MEUR
per employee

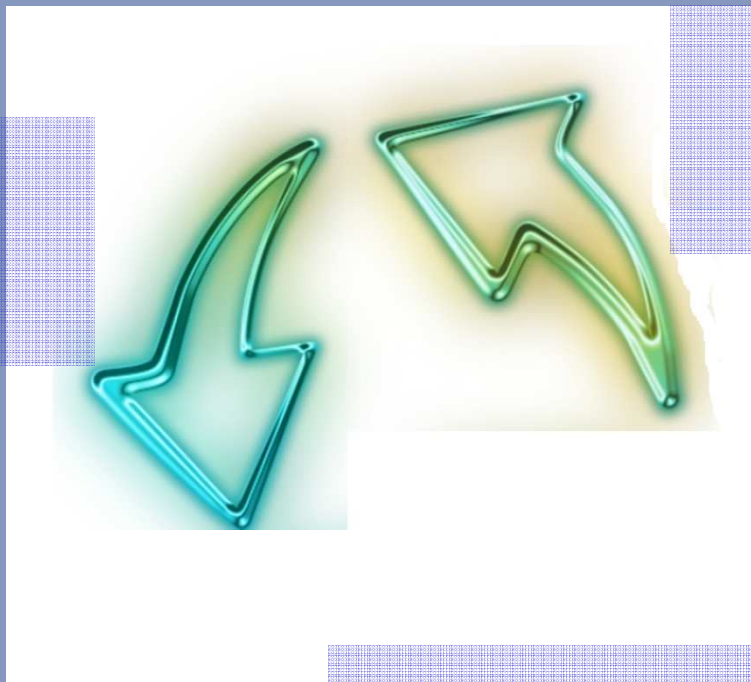
		<u>PD Strength</u> [FTE]	<u>Ops Budget 10</u> [MEUR]	<u>Total programme cost</u> [MEUR]	
A400M		38⇒39	1.513	20.330	Development, Production, Initial In-Service Support
BOXER		16	294	1.436	Development Production
COBRA		9⇒12	25	145	In-Service Support (2003 – 2012)
ESSOR		4	36	106	Development & Production
FREMM		25	922	10.412	Development, Production, Initial In-Service Support
FSAF PAAMS		34⇒35	264 89	2.294 540	Development & Production
TIGER		51	847	4.548	Development (since Int), Production, In-Service Support (2007-2015)
			3.990	39.750	



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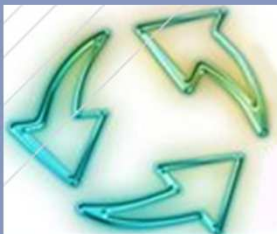
Content

TLM basics



OCCAR-EA

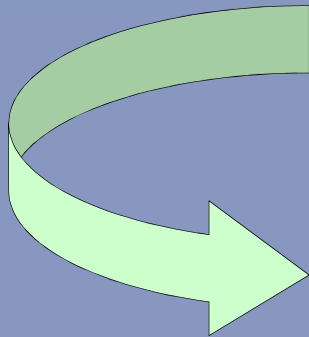
TLM blocks



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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



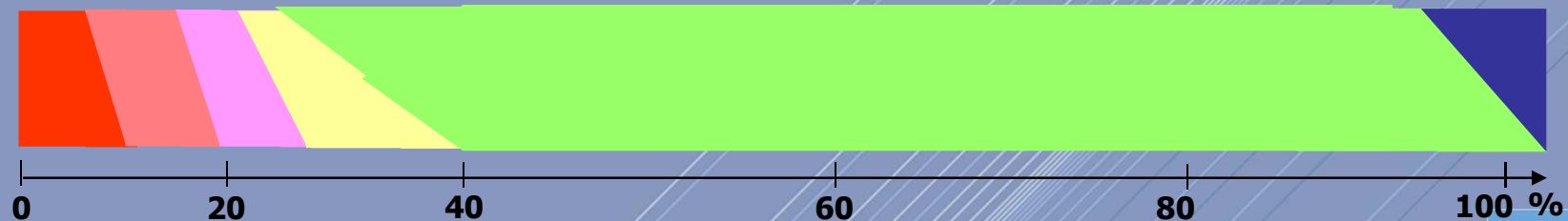
Generic representation of Reality (Equipment Cycle)



Representation of Equipment Cycle with timescale



Representation of Equipment Cycle with LCC

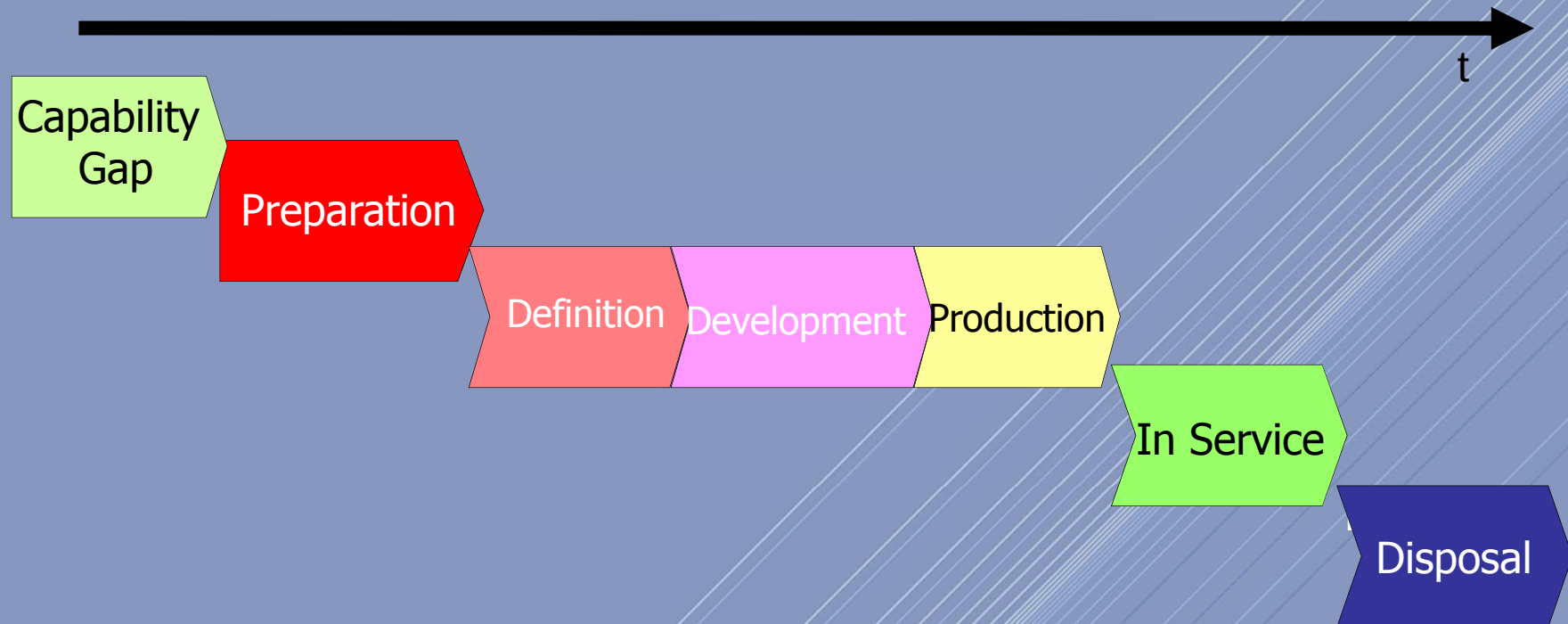


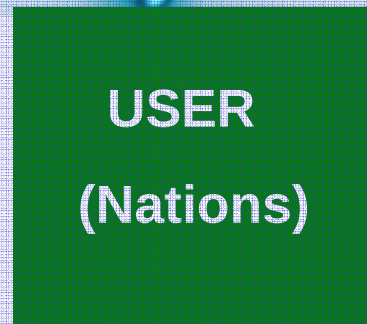
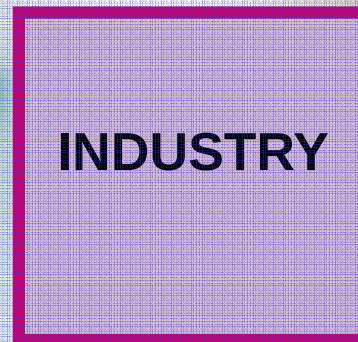
TLM Basics: TLM to avoid unnecessary Interfaces

Generic Equipment Cycle



Creation of a Defence System (generic national way)





TLM Basics: The Idea of the OCCAR TLM Approach

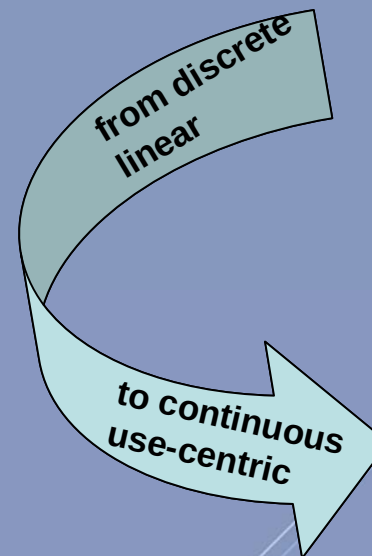
Definition of OCCAR TLM

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

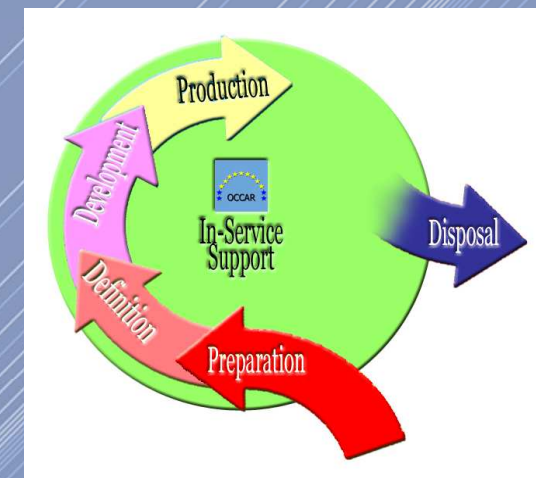
in order to deliver, sustain and dispose the required **cost-effective** defence system.



OCCAR conventional Programme Management Model



OCCAR use-centric Through Life Programme Management Model

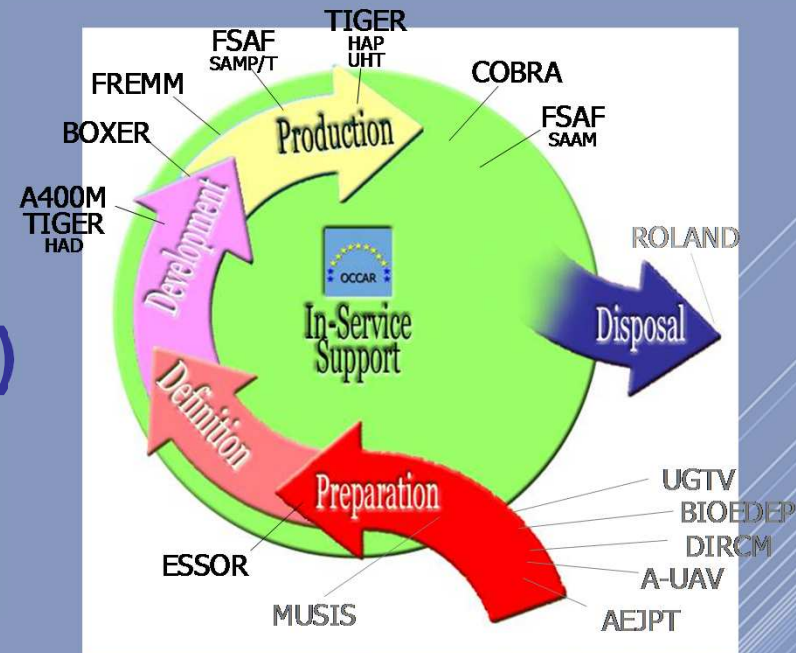


TLM Basics: The use-centric OCCAR TLM Concept

Only one
Optimisation Goal:

In Service Availability (Ao)

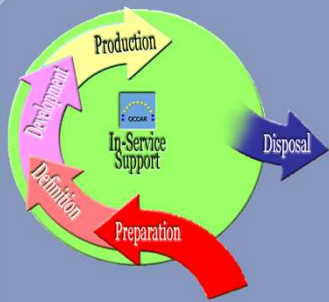
use-centric



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

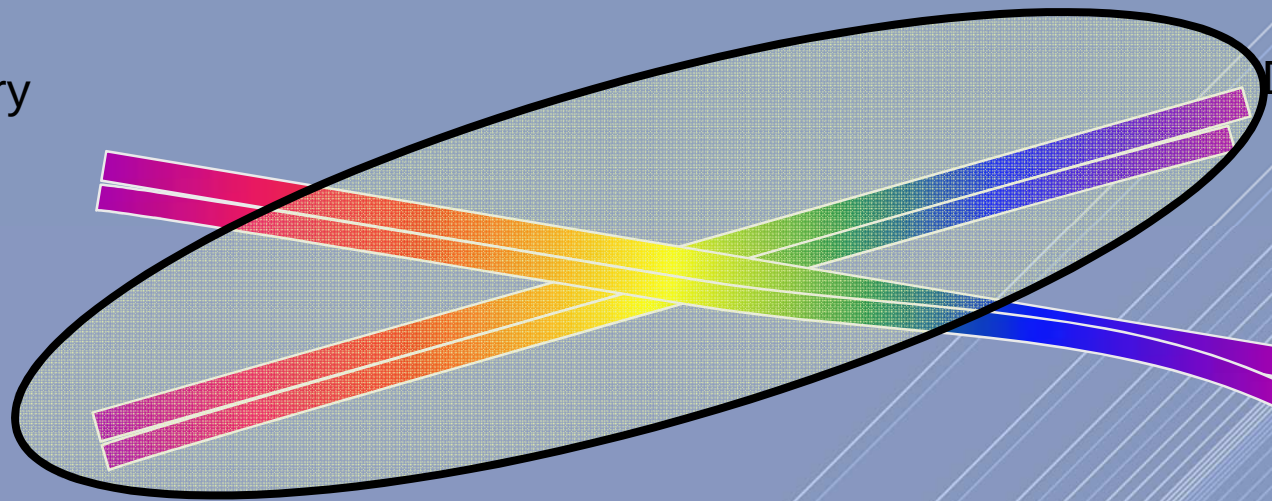


Factory

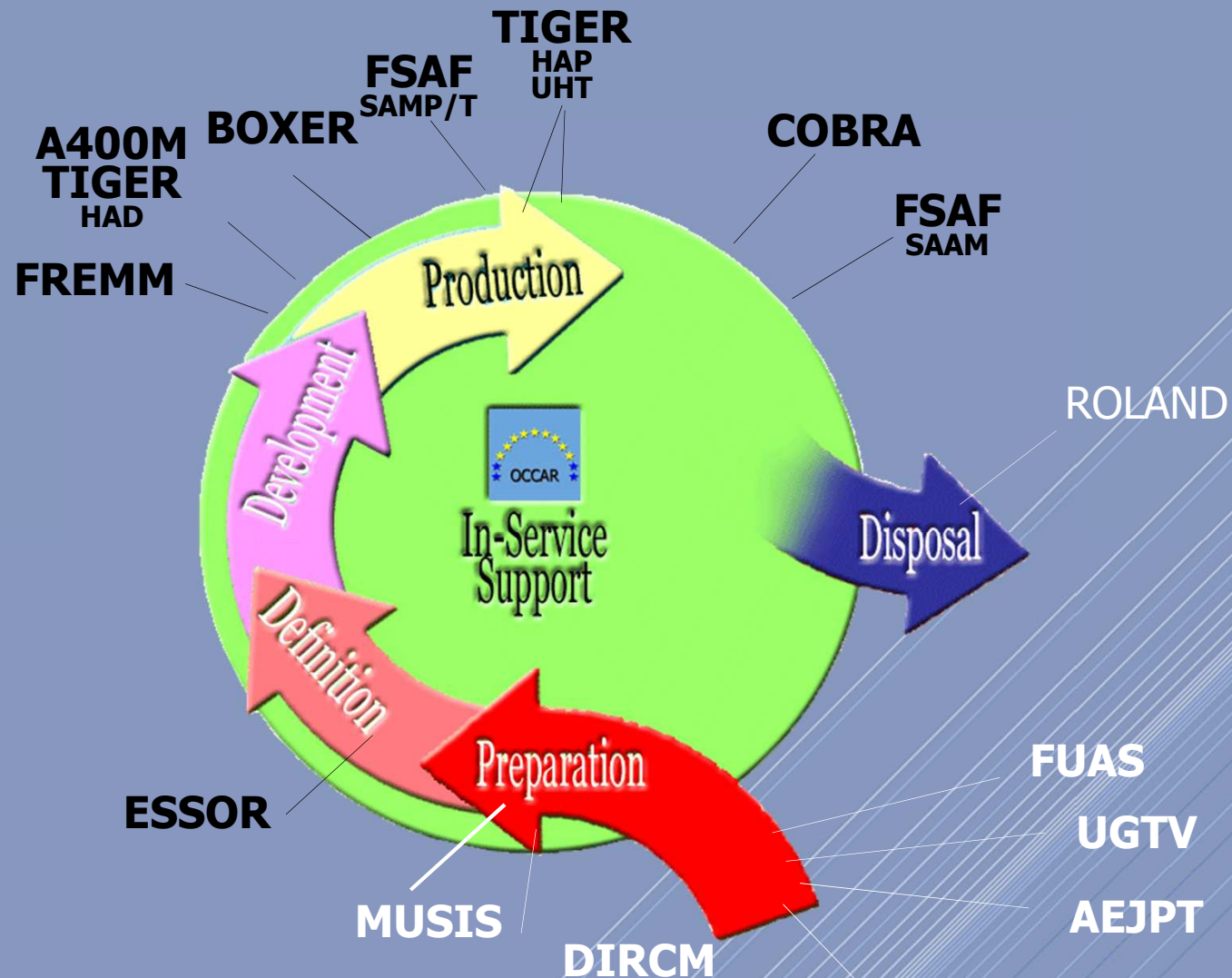
Disposal

Design

Foxhole



TLM Basics: TLM adds flexibility for Participating States



DIRM
 MUSIS
 BIO EDEP
 AEJPT
 UGTV
 FUAS

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

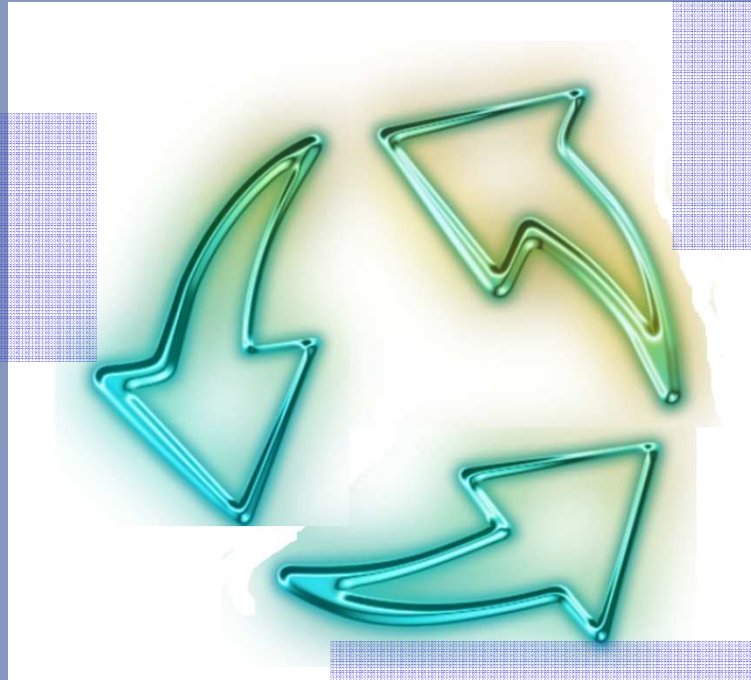


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Content

TLM basics



OCCAR-EA

TLM blocks



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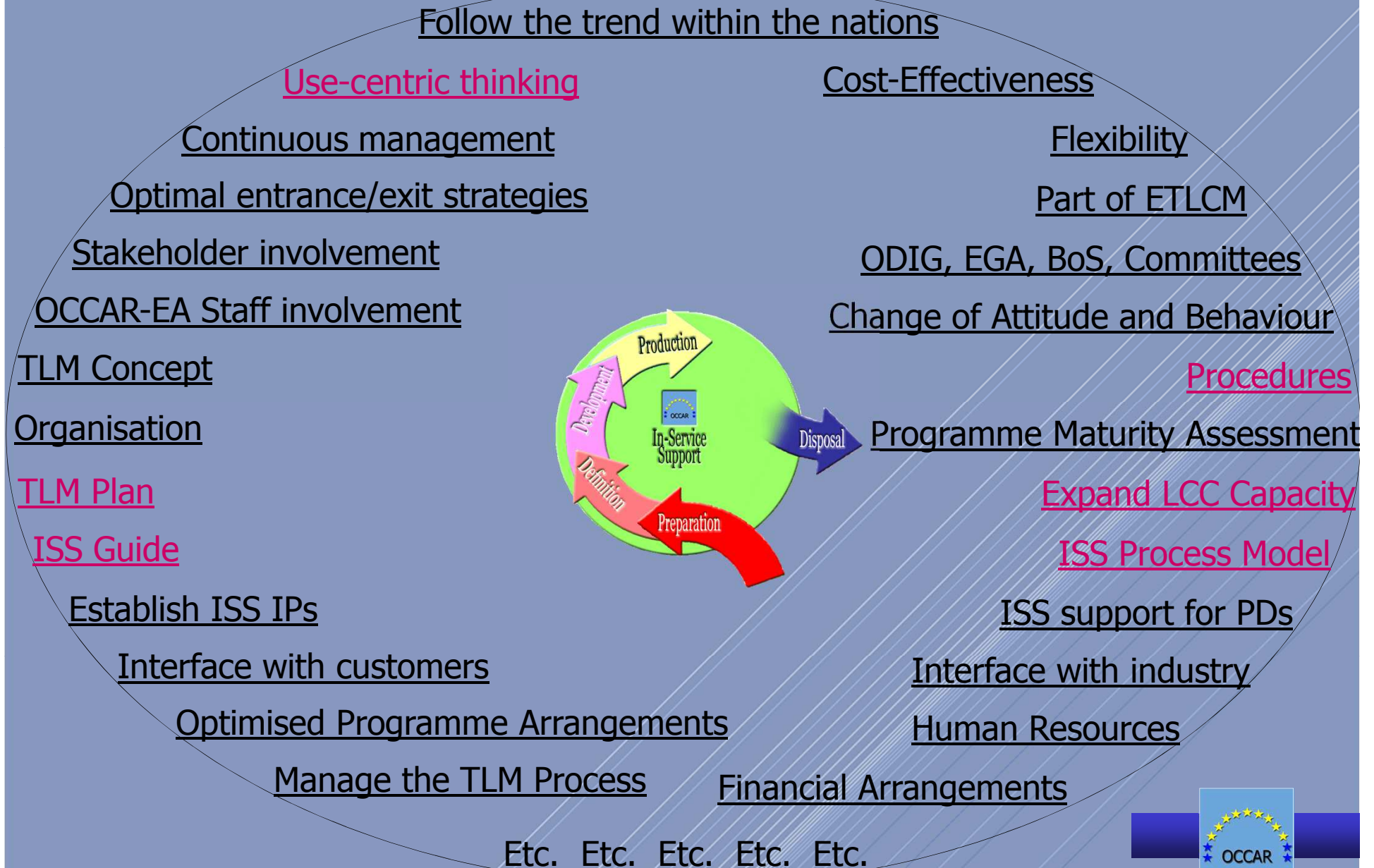
TLM Blocks: The Strategic TLM Initiative

Strategic Initiatives	Status
Expand OCCAR-EA approach to Through Life Management (TLM)	ongoing
Consolidate obsolescence management methods and tools	ongoing
Promote and Develop Co-operation with other European Defence Actors	ongoing
Consolidate financial management procedures	ongoing
E-Business: Develop Shared Data Environments	ongoing

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

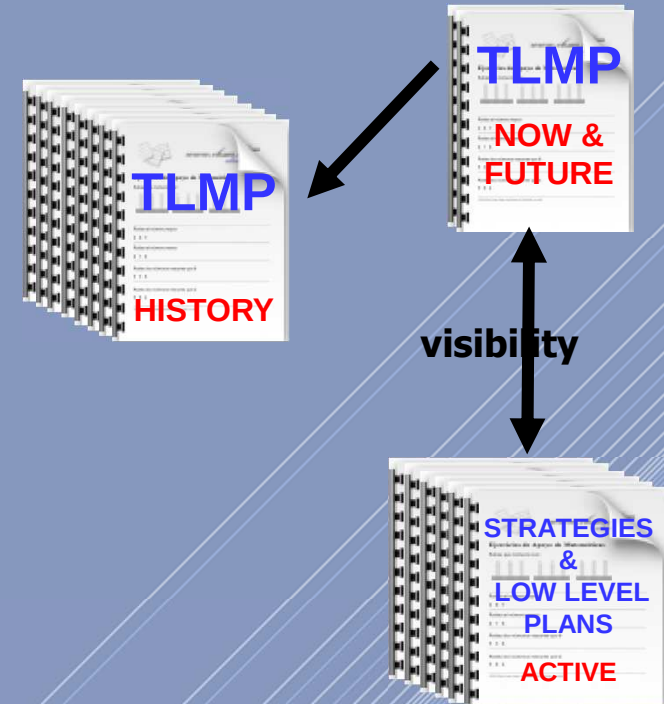


TLM Blocks: OCCAR TLM Perimeter



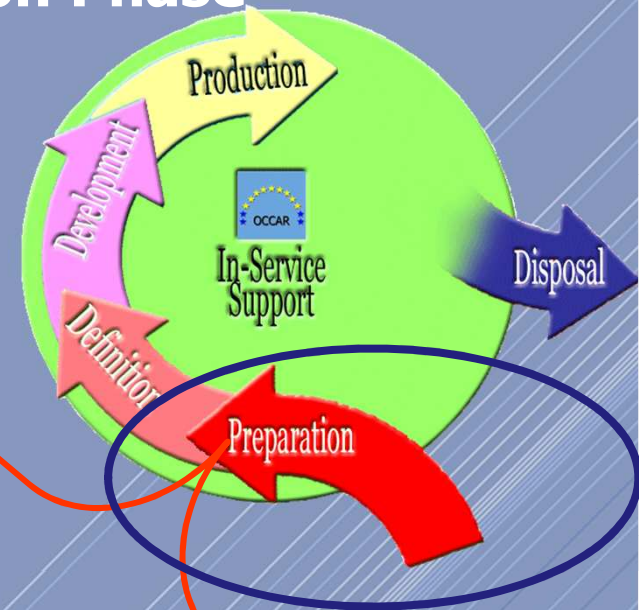
TLM Blocks: The Through Life Management Plan (TLMP)

- 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

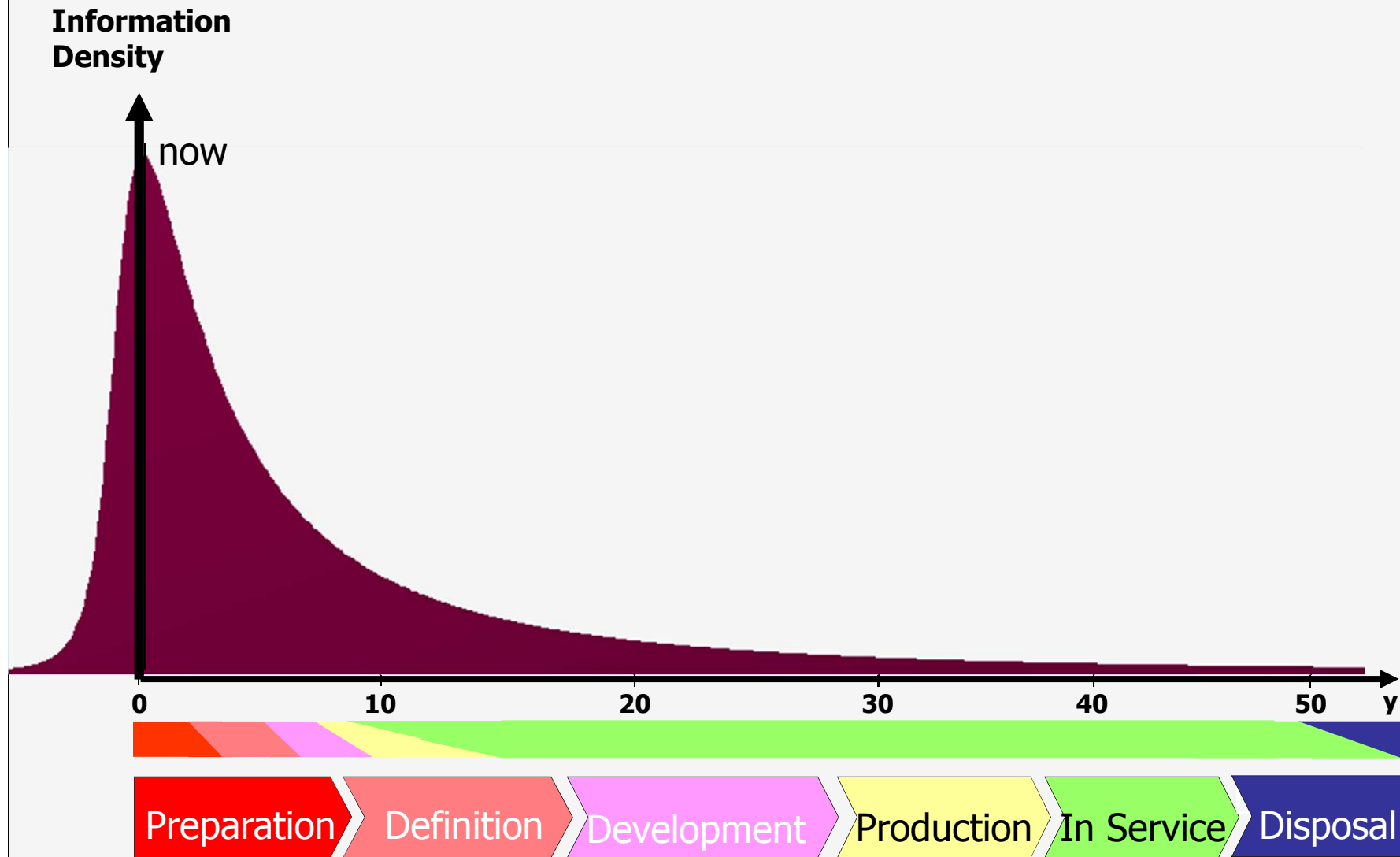


Examples for Element Plans in Preparation Phase

- **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

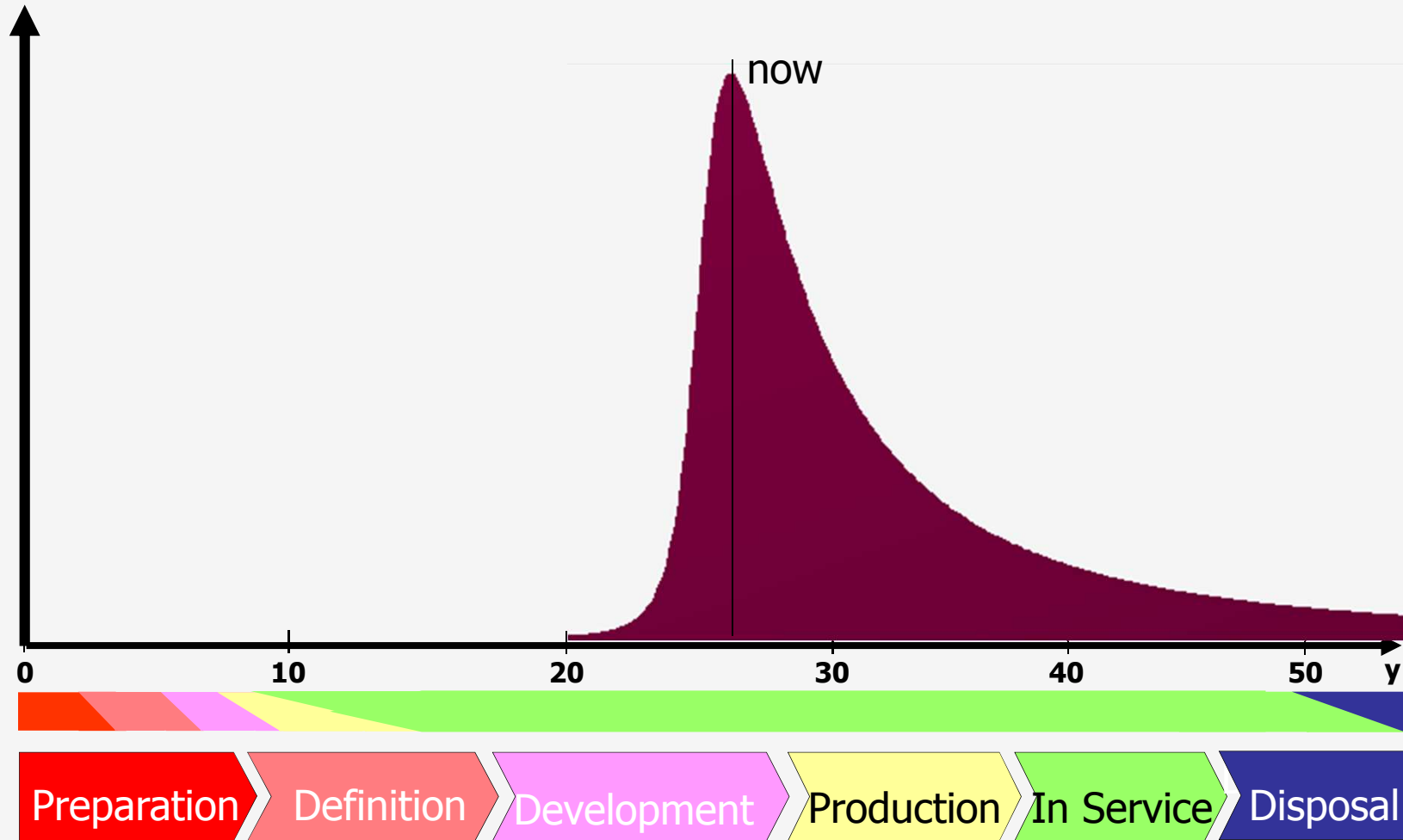


TLM Blocks: TLMP provides information now, for the future



TLM Blocks: TLMP provides information now, for the future

Information
Density



TLM Blocks: TLMP same idea in EDA and OCCAR

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

Shared TLMP: initiated under EDA continued under CSR

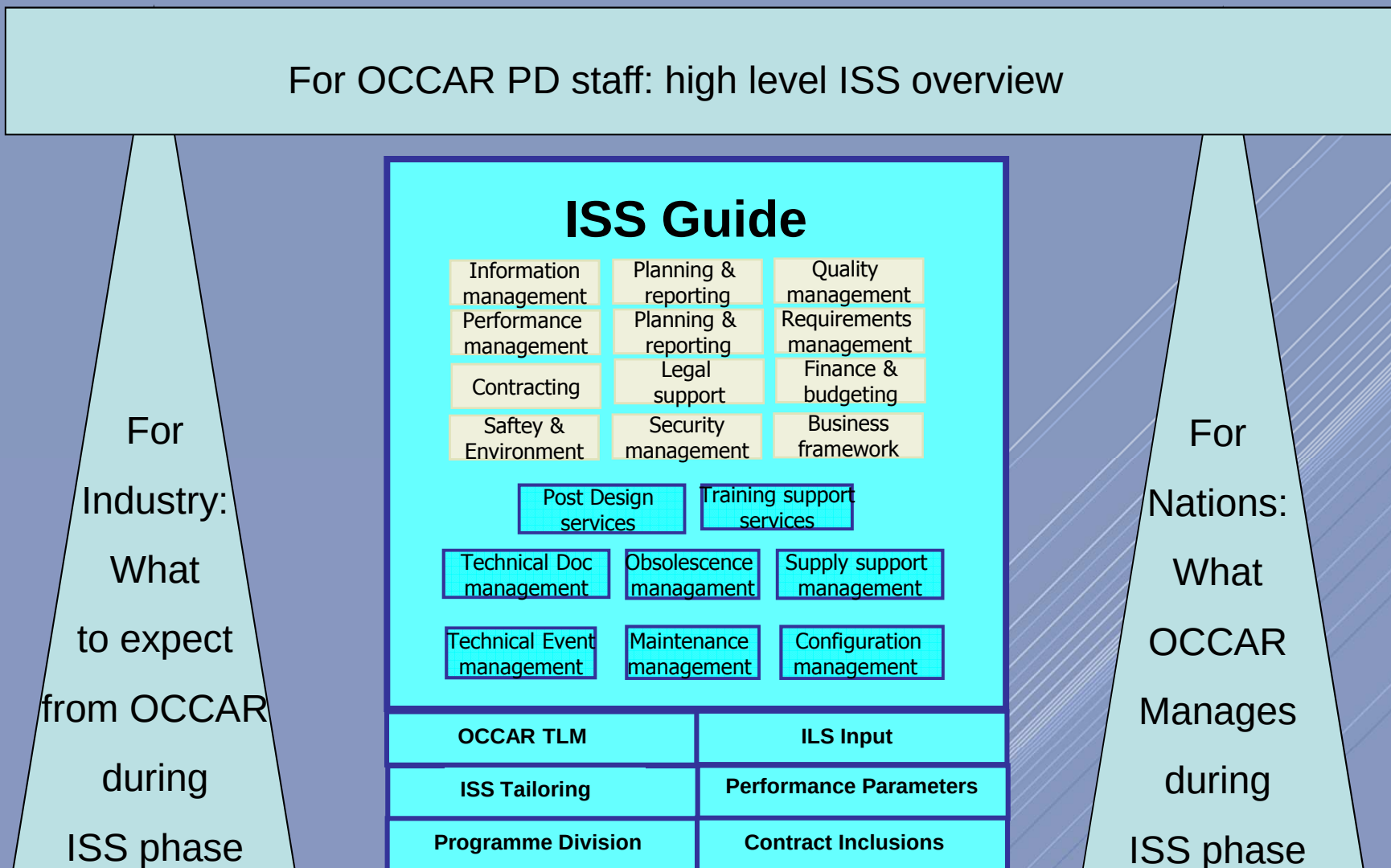
Sharing TLMP ensures seamless business transition

Best practice TLMP initiated as early as possible

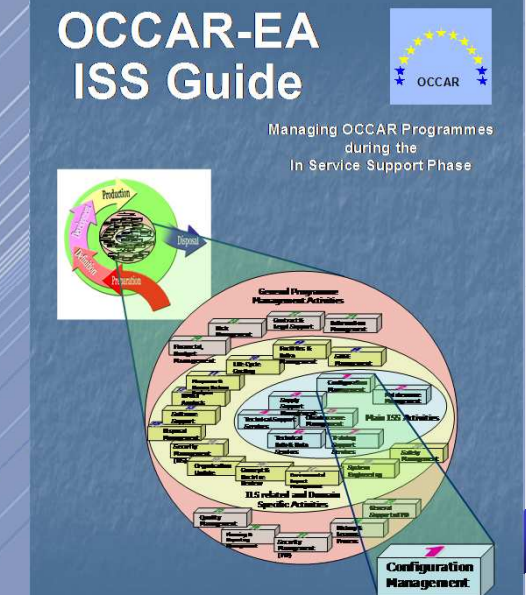
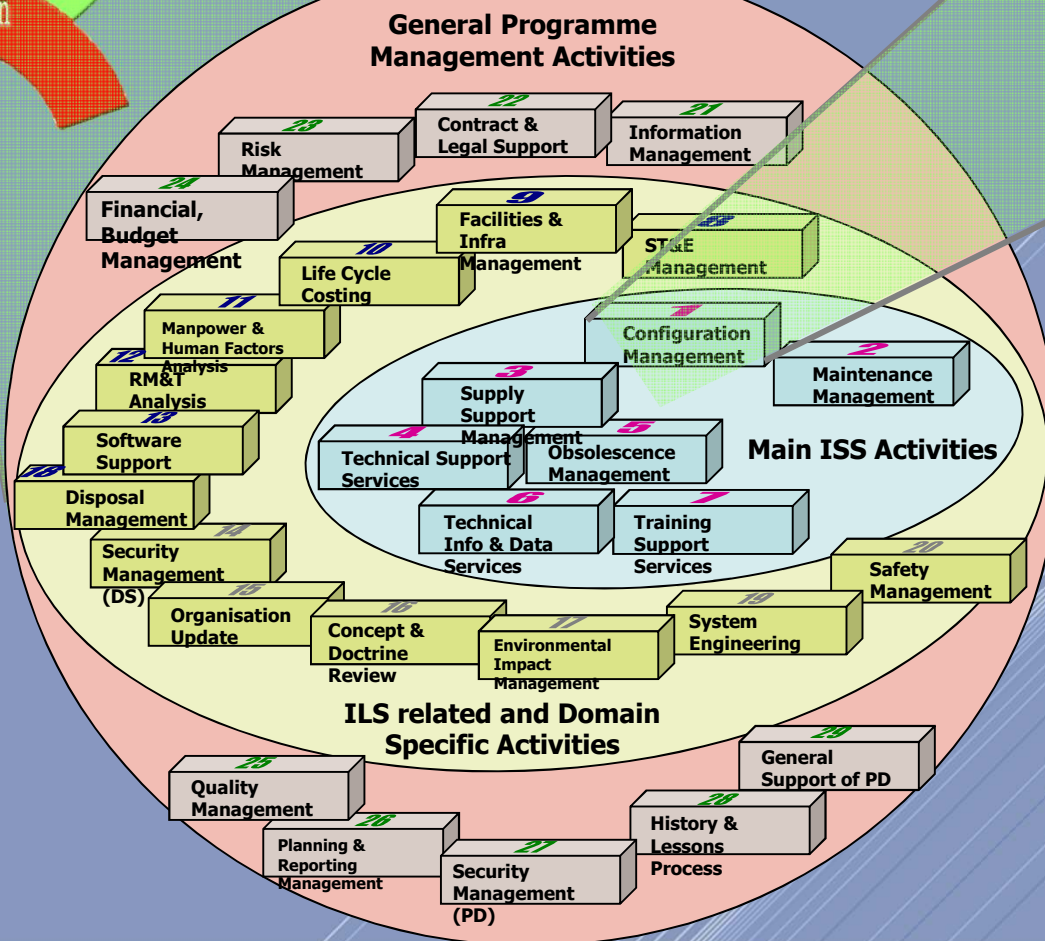
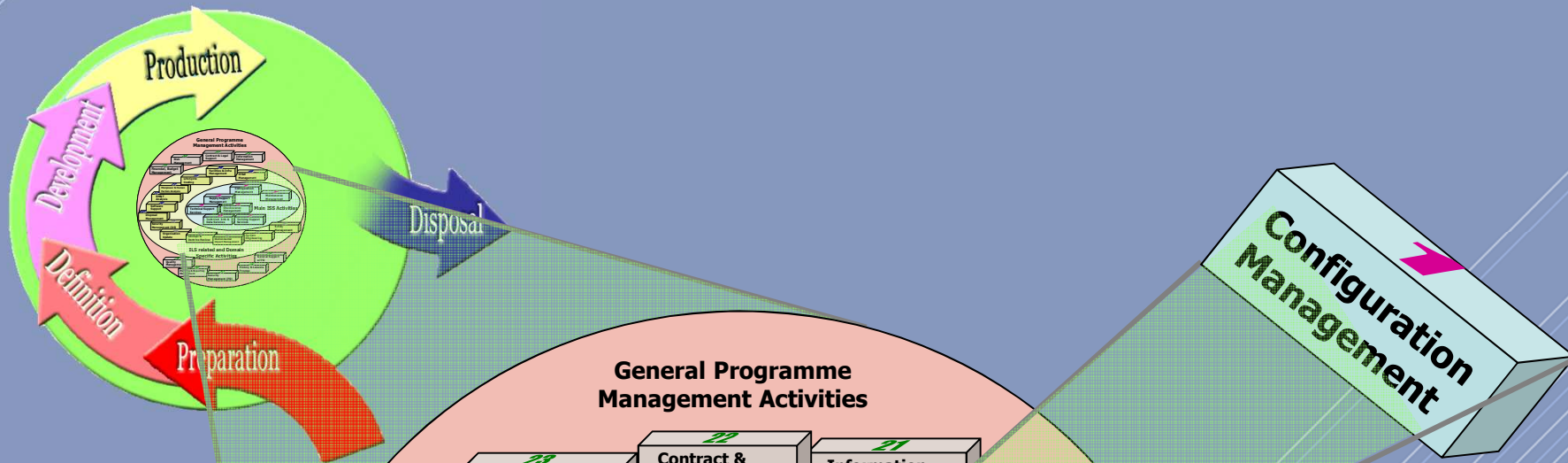
TLMP initiated/developed in parallel with CSR & BC

rather it addresses work, End-to-End way !!

TLM Blocks: ISS Guide; Audience



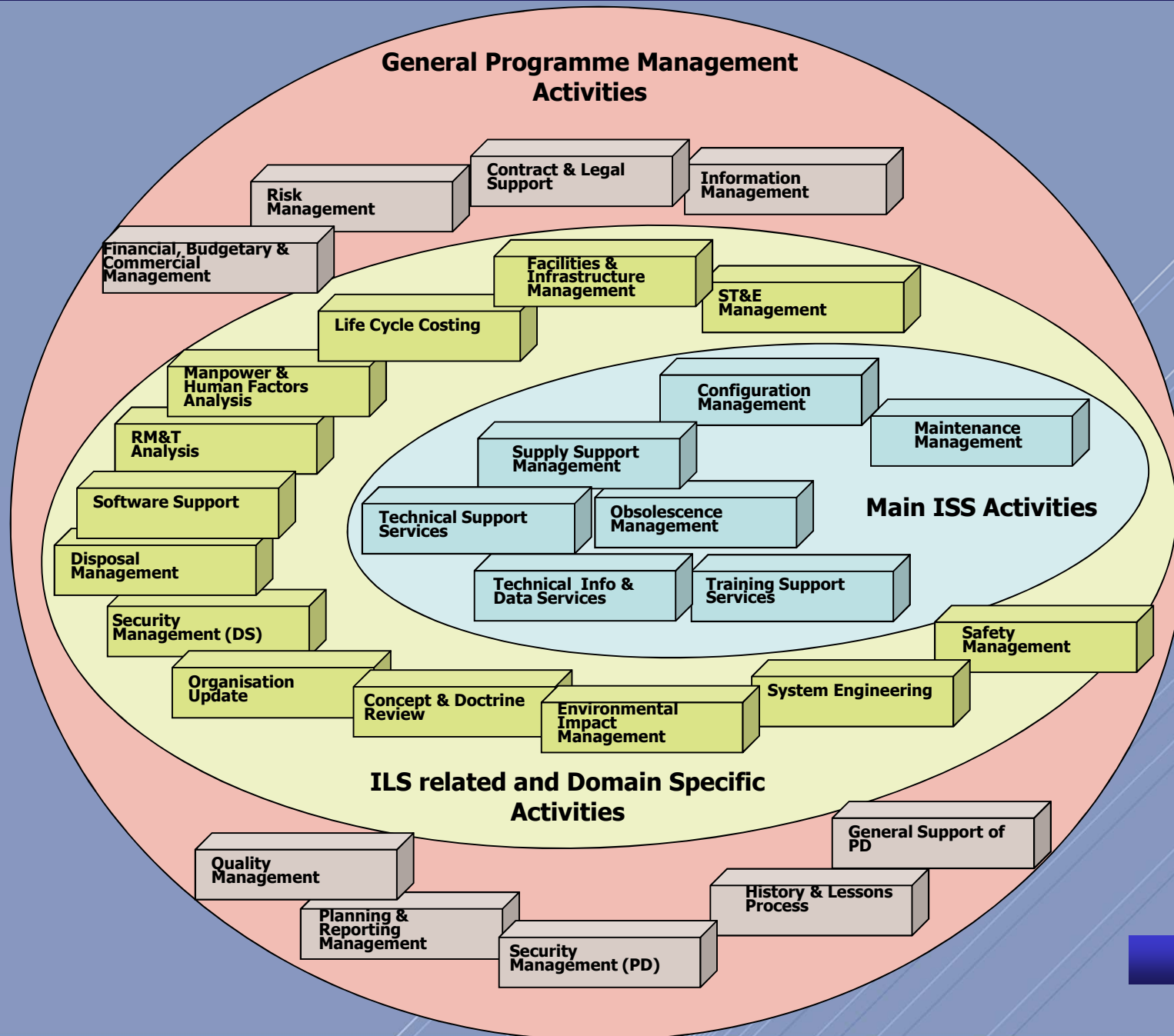
TLM Blocks: ISS Guide; Structure



Example Page

Second Level Task	Third Level Task	Tasks to be performed by industry through a contract managed by OCCAR	Tasks to be managed by OCCAR	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 $\frac{\text{vs.}}{\text{total number of identified Items}}$
		Controlling Information Security: the information security procedures shall be guaranteed and applied to prevent unauthorized access and loss of data (ask IT security)	Depending on the specific programme this task could be contracted to the Industry	Percentage of Accounting Error $\frac{\text{vs.}}{\text{total number of items selected for Configuration Management}}$
	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-EA will define the necessary information to be shared and exchanged in the Configuration Management Plan

TLM Blocks: What to Manage in the ISS Phase



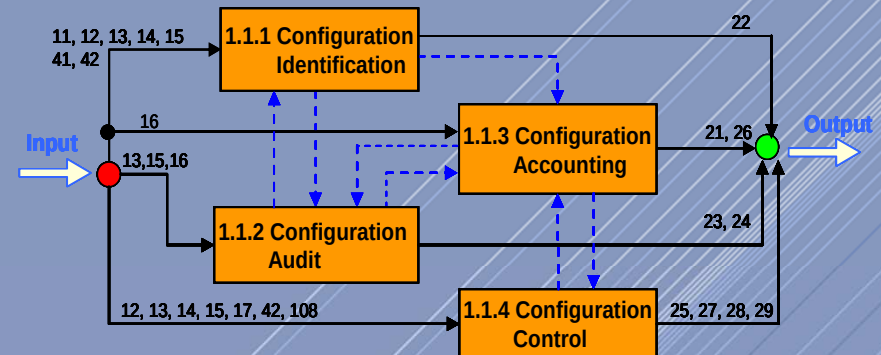
TLM Blocks: ISS Process Model - Objective



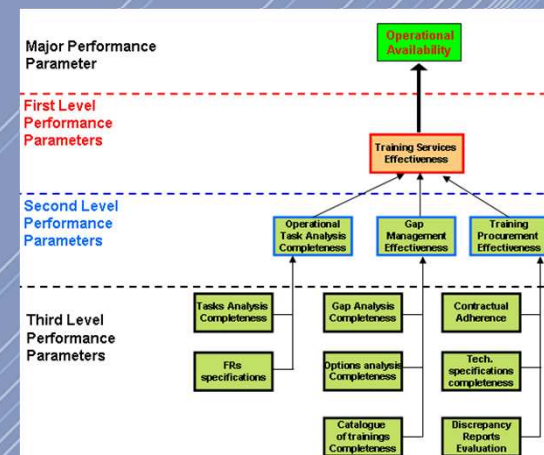
The objective is **to detail each ISS activity** and to establish **a set of key parameters** able to measure the contribution to the **System Effectiveness**, for each support element included in the In Service Phase.

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



TLM Blocks: ISS Process Model; Performance Parameters

The ISS Process Model represents an application of Performance Based Logistics (PBL). Through the use of parameters. It answer to the question:
What are the results obtained for each € spent on ISS activities?

Parameter form

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 HW/SW (with defined the 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	Reference	Description	Data source
	DI	Total number of identified Items (completed with configuration data) (metric) <i>NB: Each Item must be considered multiplied for its own "criticality factor".</i>	Shared Data Environment
	TI	Total number of Items designed for CM (metric) <i>NB: Each Item must be considered multiplied for its own "criticality factor".</i>	Shared Data Environment
Formula for calculation of result	PID= DI/TI*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		

Mathematical links

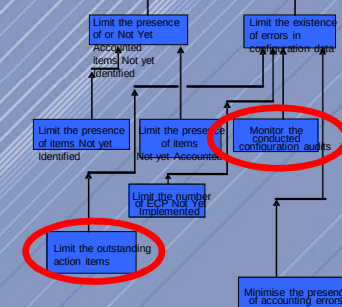
$$A_y = \frac{M}{M} \times \frac{R}{P} \times \frac{S}{T} \times \frac{M}{M} \times e^{-T} \times \frac{M}{P} \times \frac{M}{T} \times \frac{M}{P} \times \frac{M}{T}$$

$$MDT = MMT + MLDT$$

$$MLDT_0 = [PNSS * MMT + (1 - PNSS)DT_s]$$

$$MLDT_{PM} = MLDT_0 * [1 + f(t_x)] * P1 * P2 * P3$$

$$CDC = CDCr * CDCp$$



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	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 <i>vs.</i> total number of identified Items
	Configuration Data Management	Controlling Information Security: the information security procedures shall be guaranteed and applied to prevent unauthorized access and loss of data (ask IT security)	Depending on the specific programme this task could be contracted to the Industry	Percentage of Accounting Error <i>vs.</i> total number of items selected for Configuration Management
	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	

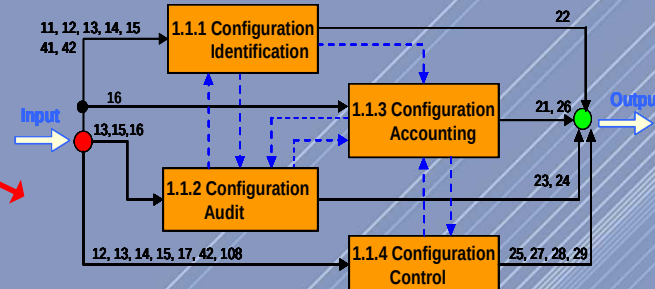
Monitor

Q: How can I monitor it?

Plan

Q: What do I have to do?

Q: Who is acting?



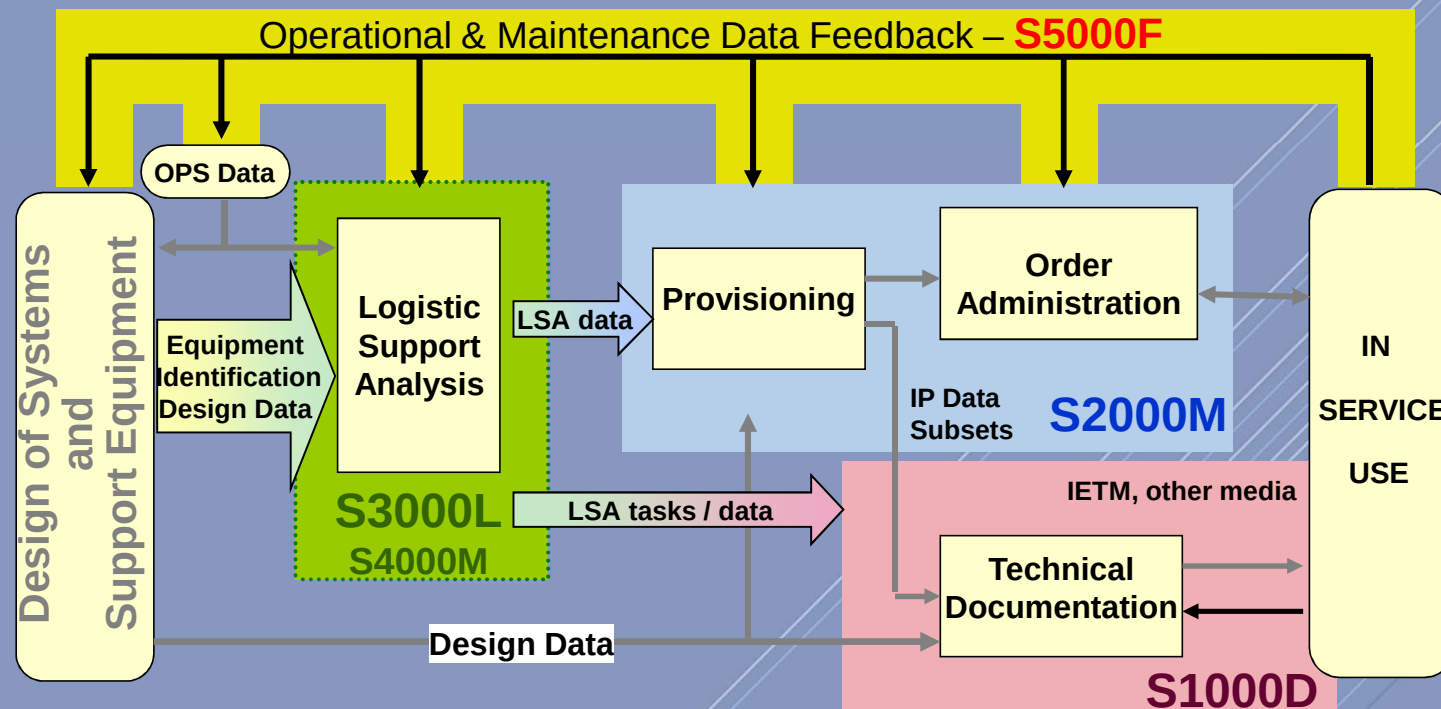
Related Service	Configuration Management (CM)		
Indicator reference	1.1.1		
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Indicator Description	It represents the percentage of identified items HW/SW (with defined the functional and physical characteristics) <i>vs.</i> total items under Configuration Management. A PID value less than 100 signals the presence of items not identified by CM.		
Unit	Percentage (100 best value).		
Measurement owner	TBO		
Data required for computation of result	Reference	Description	Data source
	DI	Total number of identified items (completed with configuration data) (metric) NB: Each Item must be considered multiplied for its own "criticality factor".	Shared Data Environment
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Formula for calculation of result	PID= DI/TI*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; Other results

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

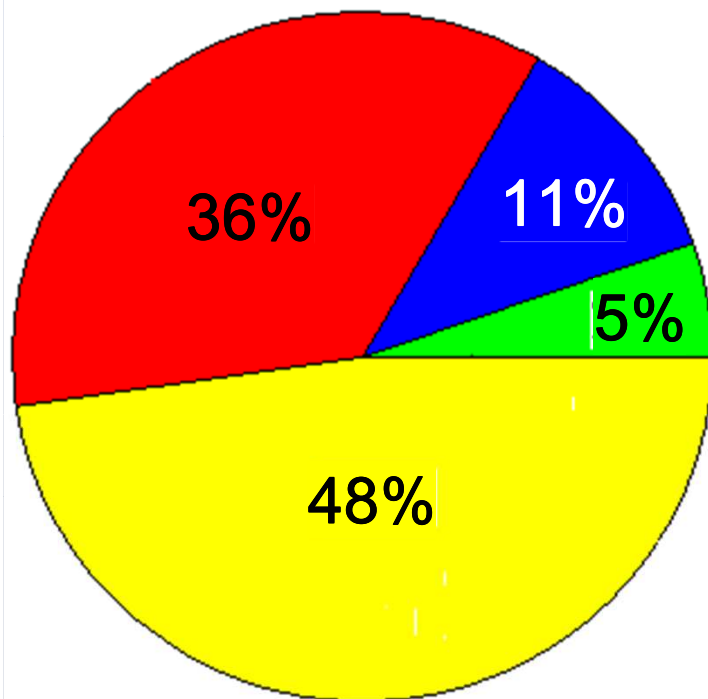
TLM Blocks: LCC Example – evaluation of alternatives



Objective

Evaluate the impact of common support solutions on LCC

**TOTAL SAVINGS EXPECTED:
9 % OF THE A400M LCC**



Gain from common

-  **Material support**
-  **Aircraft Maintenance**
-  **Air Crew Training**
-  **Ground Crew Training**

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

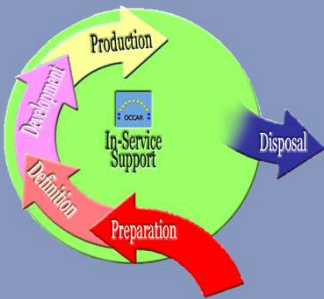
Expected SAVINGS:

11% to 43%

Depending on Nation and alternative used.



Conclusion



OCCAR-EA is a
lean & agile European Organisation,
customer-oriented,
offering and developing through life leading edge
programme management.

Questions?



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E-mail: Dietmar.Fiegas@OCCAR.int

