MMI ILS
Design and spare parts optimization

Design e ottimizzazione delle scorte nei processi ILS della MMI

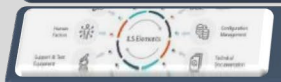
Napoli, 14 maggio 2025

CF (GN) Alessandro PEISINO

AGENDA

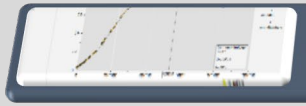

1.INTEGRATED LOGISTIC SUPPORT


- Change Management Roadmap


- Logistic Support System

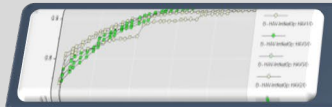

2. LOGISTIC SUPPORT PROCESSES


- Procurement, Logistic Databases


- Spare parts Design


- Feedback from the field

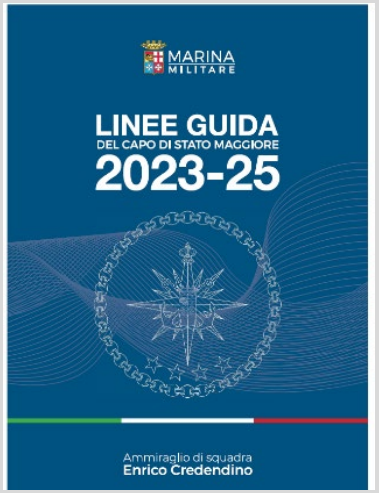

- Logistic Support Optimization


3. LOGISTIC SUPPORT RESULTS


4. KEY FACTOR AND WAY AHEAD

INTEGRATED LOGISTIC SUPPORT

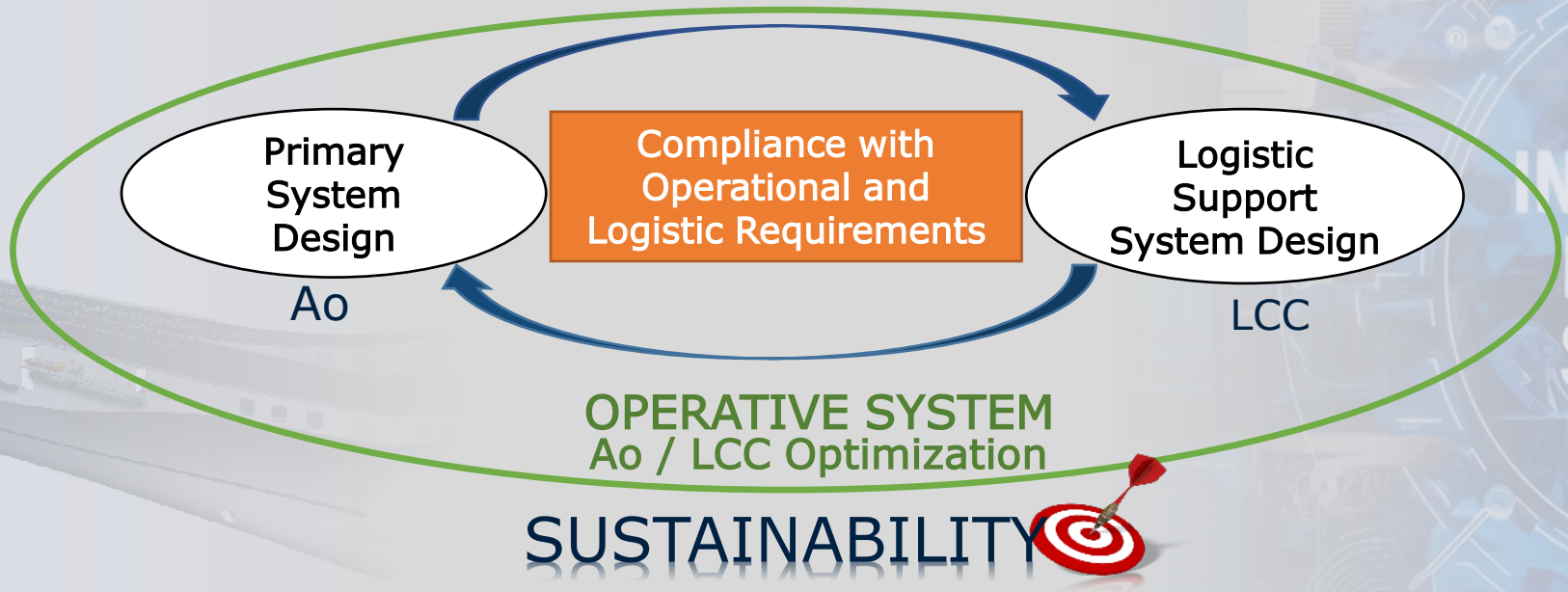
«…development of a **Logistics Support system** capable of continuously and adaptively supporting the operational tool at every command level (tactical, operational, strategic), with **big data analytics** and self-learning capabilities, essential to enhance, even in predictive mode, the growing amount of information coming from the state of the systems, to the advantage of their **operational availability** and the **management economies** of the tool.»



«It will also be necessary to continue with the management modernization of the logistics cycle, through more effective planning/management of maintenance and **analysis of returns from the field** on the basis of a broader and shared use of the Armed Forces info-logistics system and an appropriate reintegration of the levels of **self-sustaining supplies..**»

INTEGRATED LOGISTIC SUPPORT

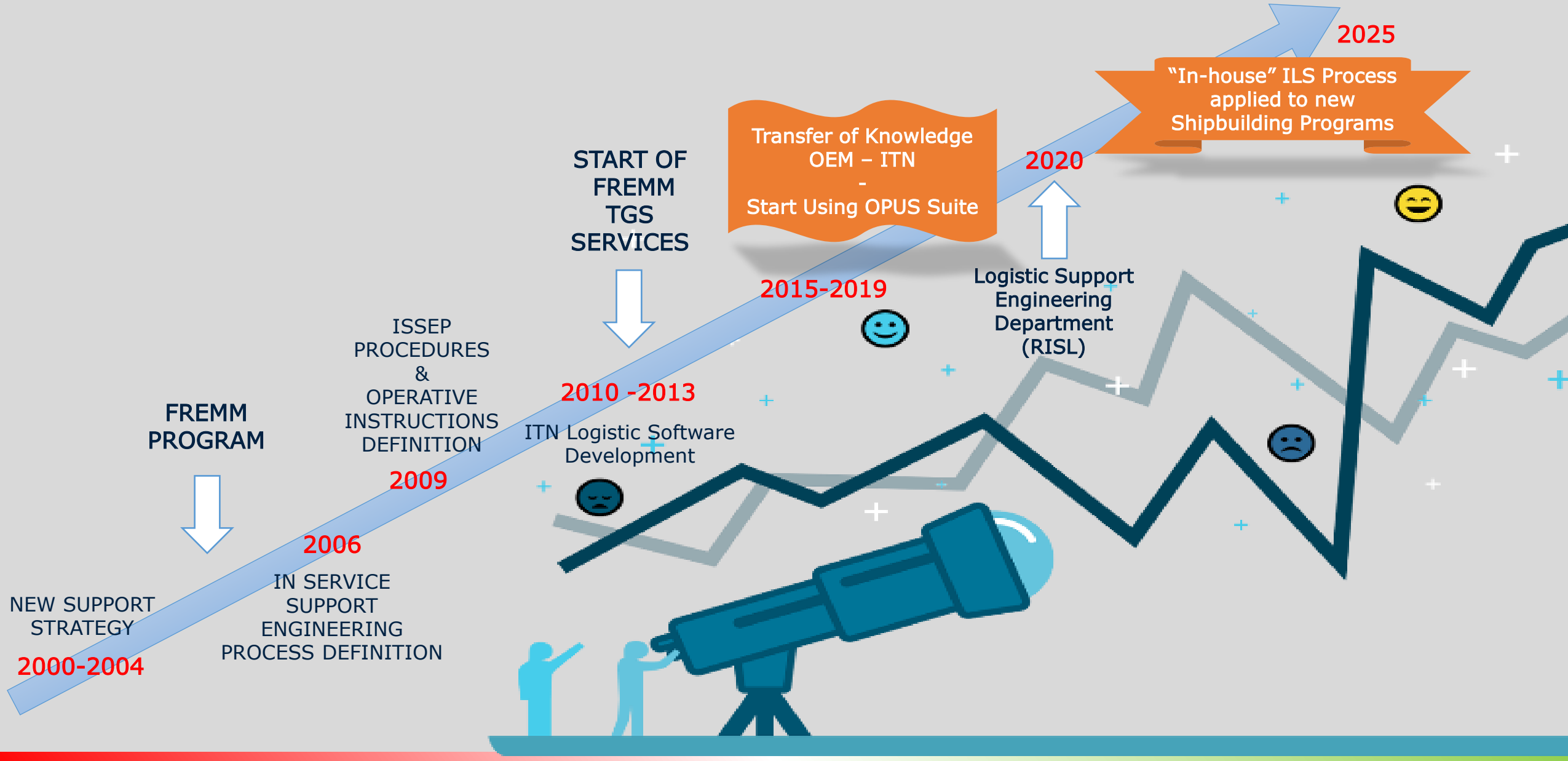
Integrated Logistics Support (ILS) is the management and technical process through which supportability and logistic support considerations are **integrated** into the design of a system and taken into account throughout its life cycle, to **minimize** the Operating System Life Cycle Cost (**LCC**) in **compliance** with Operational and Logistic **Requirements**.



A system is defined as EFFICIENT when it provides the predetermined performance (system performances) with the expected availability over the life.
Optimization of operational availability (Ao), over the life of the system, leads to positive returns in the cost sector.

INTEGRATED LOGISTIC SUPPORT

Change Managment Roadmap



INTEGRATED LOGISTIC SUPPORT

Logistic Support System

LOGISTIC DB database (Industry)
- Equipments Configuration and Item lists
- Maintenance Plans
- Technical Manuals
- Logistic Values (MTBF, MTTR, Lower Replaceable Units…ecc)

REQUIREMENTS (ITN)
- Operational Availability(Ao)
- Budget ($$)

MARICOMLOG

Design

- Uploading Configuration and Coherency Check
- Spare Parts List Definition (OPUS Suite, in compliance with Ao e $)
- Informatic Technical Manuals

UU.NN.

Feedback

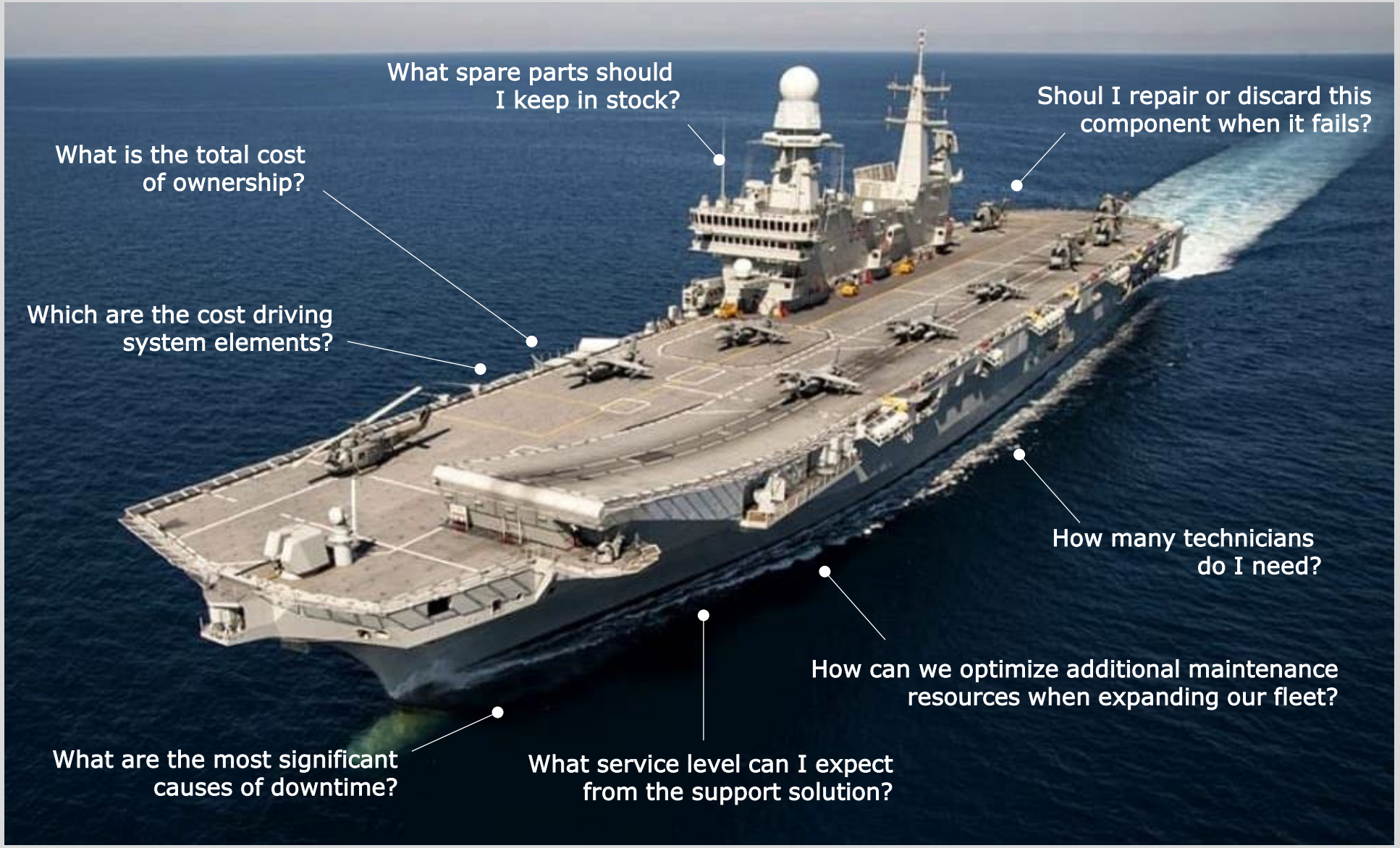
(IMA, Maintenance Engineering)
- Failures
- Systems running hours
- Obsolescence
- Configuration Discrepancy
- Technical Manuals / Maintenance Plane Discrepancy

Optimization

- Reliability Analysis and MTBF Recalculation
- Supportability Analysis and Spare Parts List Optimization (OPUS Suite)
- Maintenance Plans Optimization
- Technical Manuals Updating
- Obsolescence Evaluation
- Condition Based Maintenance

ILS ADDED VALUE:
OPTIMIZING IN REAL TIME NAVAL FLEET SUPPORT

INTEGRATED LOGISTIC SUPPORT



LOGISTIC SUPPORT PROCESSES

Procurement

COMMON SOURCE DATA BASE

CSDB

SWBS

SHIP WORK BREAKDOWN STRUCTURE

- Systems and Ship Configuration:
  (Product/Work/Logistic/Cost/Functional Breakdown Structure).

LSDB

LOGISTIC SUPPORT DATA BASE

- Materials Data:
  (Name, P/N, S/N, Cage, MTBF, Cost);
- Maintenance Plan :
  (frequency, skill, time, material, procedures);

LOGISTIC SUPPORT PROCESSES

Support Definition

ITN Software

ITN Software

Technical Manuals (.xml)

ITN Software

Maintenance Plans

Configuration & Logistic Data

SWBS

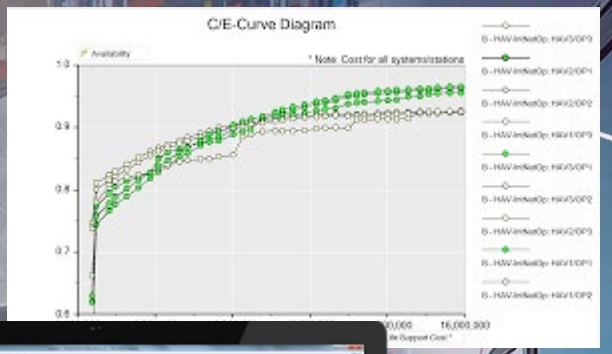
LSDB

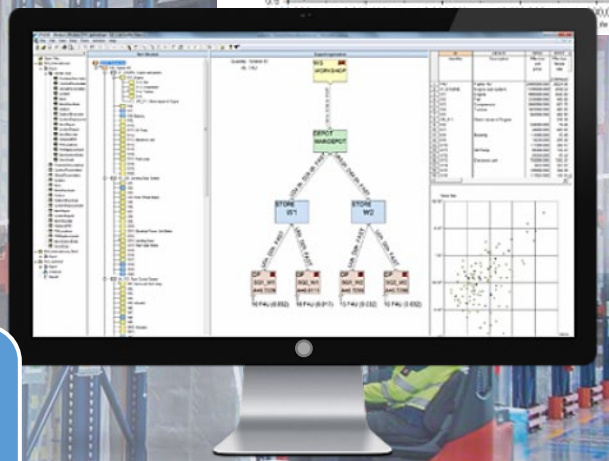
OPUS 10

m List Definition
LDDPP

CATLOC

Life Cicle Cost





LOGISTIC SUPPORT PROCESSES

Support Definition

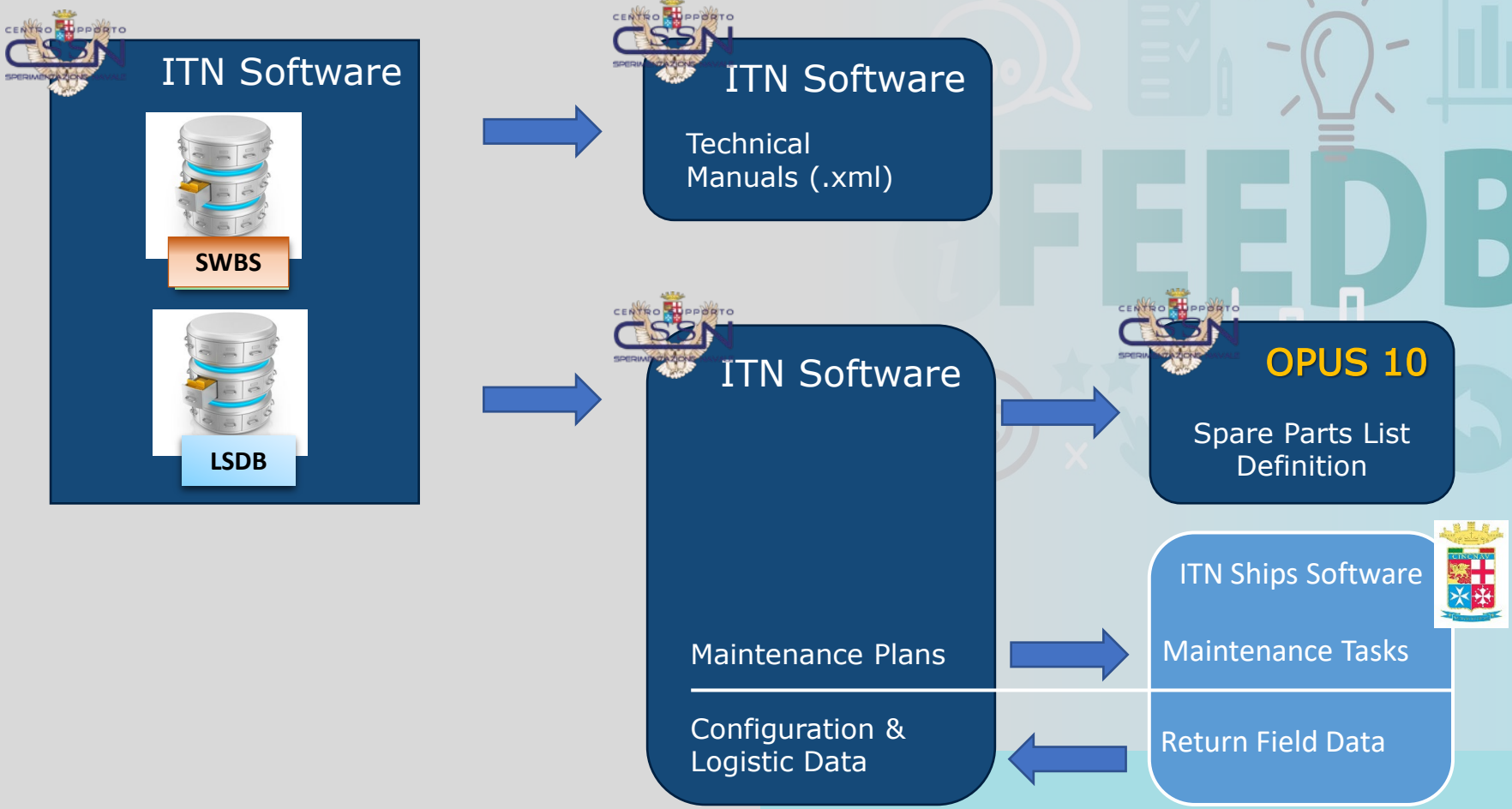
OPUS 10

Denominazione	Costruttore		Fornitore		Quantità per S/A	N° SS/AA	Quantità totale	Quantità Proposta		
	PN	Cage	PN	Cage				Totale	DT	DB
ALIMENTATORE 100-240/24Vdc 5A	XCFS120C	A3255	XCFS120C	A5562	2	1	2	2	1	1
PLC CP1L-M 241/16U, 24VDC	CP1L-M40DT1 -D	1319N	CP1L-M40DT1 -D	A5562	2	1	2			
SCHEDA DI CONNESSIONE RS232C	CP1W-CIF01	1319N	CP1W-CIF01	A5562	2	1	2			
ESPANSIONE	CP1W-8ET1	1319N	CP1W-8ET1	A5562	2	1	2			
TOUCH SCREEN TERMINAL 8.4" BLACK	NS8TV00BV2	1319N	NS8TV00BV2	A5562	2	1	2			
FUSIBILE IN CERAMICA 10,3X38 1A GG	0133 01	A4216	0133 01	A5562	6	1	6	20	10	10
FUSIBILE 10,3x38 2A aM	0133 02	A4216	0133 02	A5562	2	1	2	20	10	10
GEMMA BIANCA 022	ZB4-BV01	A0866	ZB4-BV01	A5562	2	1	2	20	10	10
RELE' DI POTENZA 40 BOBINA 24Vdc 2 CO	4,0529E+11	A3726	405290240000	A5562	30	1	30	20	10	10
MODUDULO FILTRO DIODO + LED	9902902499	A3726	9902902499	A5562	2	1	2	20	10	10
RELE' DI POTENZA 40 BOBINA 24Vdc 2 CO	4,0528E+11	A3726	405280240000	A5562	2	1	2	20	10	10
CONTATORE 9A Coil 24Vac 50/60Hz	LC1K0910B7	A0866	LC1K0910B7	A5562	8	1	8	20	10	10
CONTATTO AUSILIARIO	GV2AN11	A0866	GV2AN11	A5562	4	1	4	20	10	10
SEZIONATORE 3P 12 MONTAGGIO A PANNELLO	VCCF02	A0866	VCCF02	A5562	2	1	2	10	5	5
INTERRUTTORE A PRESSIONE ROSSO 022	ZB4-BA4	A0866	ZB4-BA4	A5562	2	1	2	20	10	10
TRASFORMATORE 100VA 230/24	14193 TT1 913	ENERG	14193 TT1 913	A5562	2	1	2			
VALVOLA A 2/2 VIE VA6011 PIASTRA A FLANGIA	13120051	MAVET	13120051	A5562	2	1	2			
VALVOLA A 3/2 VIE VA 6012 CON-NESIONI DA 1/8" CON FILTRO SINTERIZZATO	13120053	MAVET	13120053	A5562	2	1	2			
SEPARATORE DI CONDENSA MAVETECSIC CON INTERRUTTORE DI SPEGNIMENTO	BM13150070	MAVET	BM13150070	A5562	2	1	2			
TUBO POMPA 114ED/D	13110040	MAVET	13110040	A5562	2	1	2			
TUBO IN MARPRENE 3,2X1,6	141300007	MAVET	141300007	A5562	2	1	2			
SCHEDA DISPLAY MAVETECSIC	BP13463158	MAVET	BP13463158	A5562	2	1	2			
VENTOLA 24 V/DC 80X80X25 CON SEGNALE TACHIMENTRO	BE13463150	MAVET	BE13463150	A5562	2	1	2			
SMPS ALIMETAZIONE SU GUIDA DIN DA 60 W 24/2, 5A	13435200	MAVET	13435200	A5562	2	1	2			
RESISTENZA (MAVETECSIC)	BE13463151	MAVET	BE13463151	A5562	2	1	2			
FUSIBILE DI TEMPERATURA (MAVETECSIC)	BE13463152	MAVET	BE13463152	A5562	2	1	2			
SENSORE H2S	1340038	MAVET	1340038	A5562	2	1	2	2	1	1
FILTRO IN USCITA PEA 10.000	13520114	MAVET	13520114	A5562	2	1	2			
FILTRO MAVETECSIC CONDENSA (5pm)	13150065	MAVET	13150065	A5562	2	1	2			
MAVETECSIC FILTRO PUNTO DI CAMPIONAMENTO	13150056	MAVET	13150056	A5562	2	1	2			
MEMBRANA DELLA POMPA	RVM- FR.BB.026968	MAVET	RVM- FR.BB.026968	A5562	2	1	2	4	2	2
SENSORE CH4	RMV-FRBB.13463168+ RMV-	A5562	RMV-FRBB.13463168+ RMV-FRBE	A5562	2	1	2			
MOTORE ELETTRICO 0,25 kW	M2AA71A-4	A179G	M2AA71A-4	A5562	1	1	1			
CUSCINETTO	6202-2ZC3	A179G	6202-2ZC3	A179G	2	1	2			
MOTORE ELETTRICO 0,18 kW	M3AA63B-4	A179G	M3AA63B-4	A5562	3	1	3	2	1	1
CUSCINETTO	6201-2Z/C3	A179G	6201-2Z/C3	A179G	6	1	6			
VALVOLA LUG ASSE NUDO DN150 PN16	BLKI150WAABA0	A5562	BLKI150WAABA0	A5562	1	1	1			
ATTUATORE PNEUMATICO SEMPLICE EFFETTO	SR115	A5562	SR115	A5562	1	1	1			
ELETTROVALVOLA 3/2 25Vac	03700000072	A5562	03700000072	A5562	4	1	4			
VALVOLA LUG ASSE NUDO DN125 PN16	BLKI125CAABA0	A5562	BLKI125CAABA0	A5562	2	1	2			

Foglio1 Foglio2 Foglio3

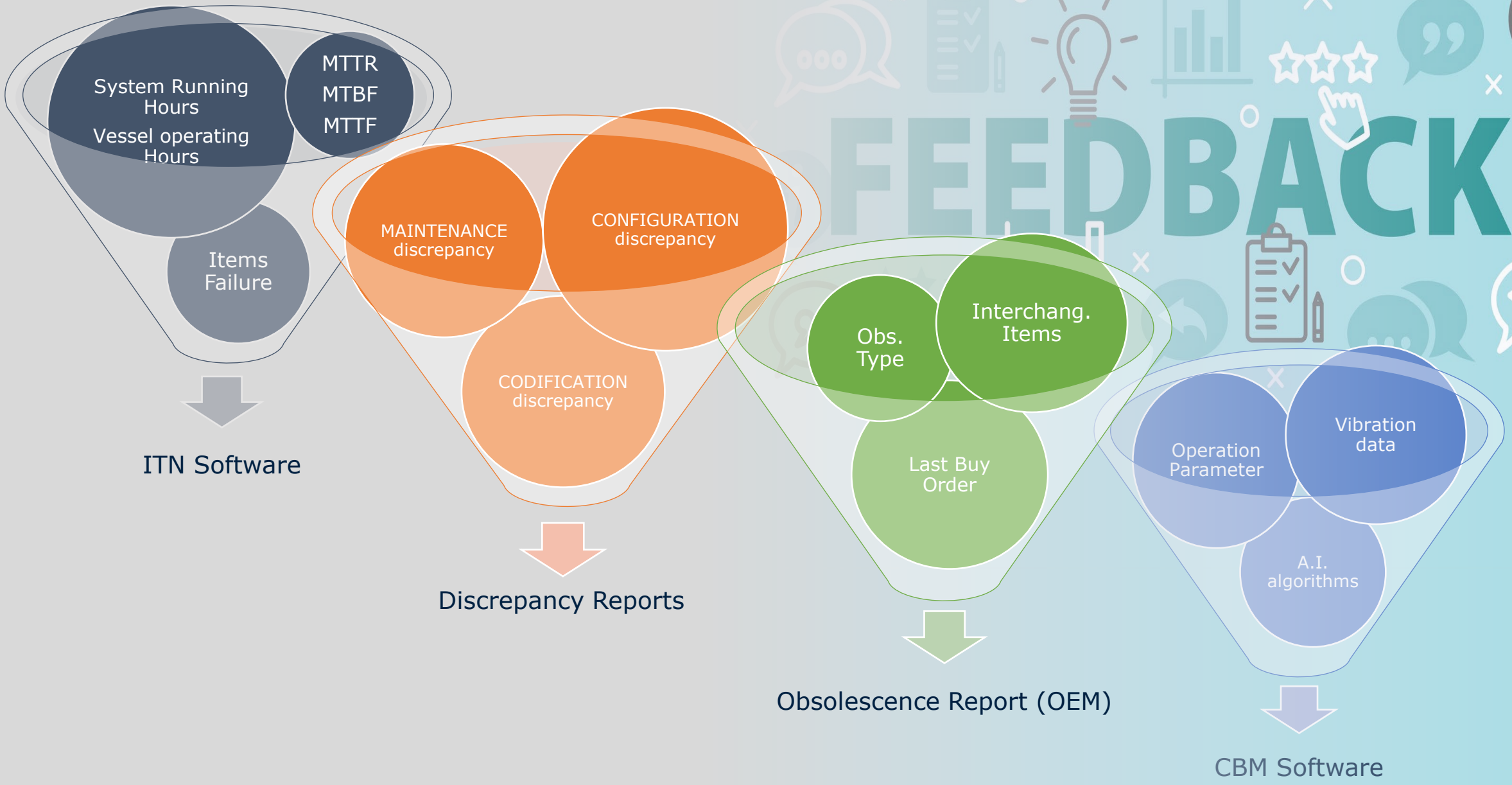
LOGISTIC SUPPORT PROCESSES

Feedback from the field



LOGISTIC SUPPORT PROCESSES

Feedback from the field



LOGISTIC SUPPORT PROCESSES

Support Optimization

ITN Software

ITN Software

SWBS

LSDB

ITN Software

Technical Manuals (.xml)

ITN Software

Maintenance Plans

Configuration & Logistic Data

OPUS 10

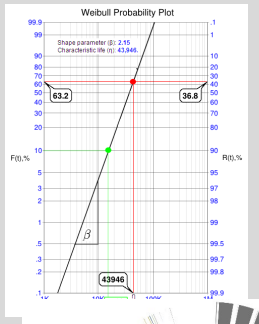
Spare Parts List Definition

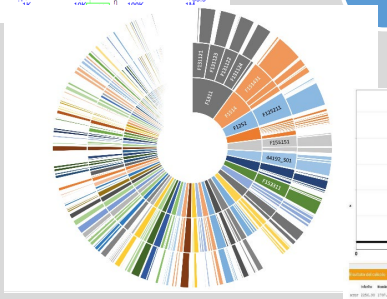
ITN Ships Software

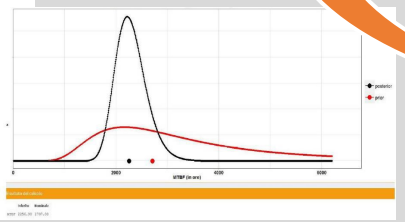
Maintenance Tasks

Return Field Data

Software Tools for MTBF evaluation



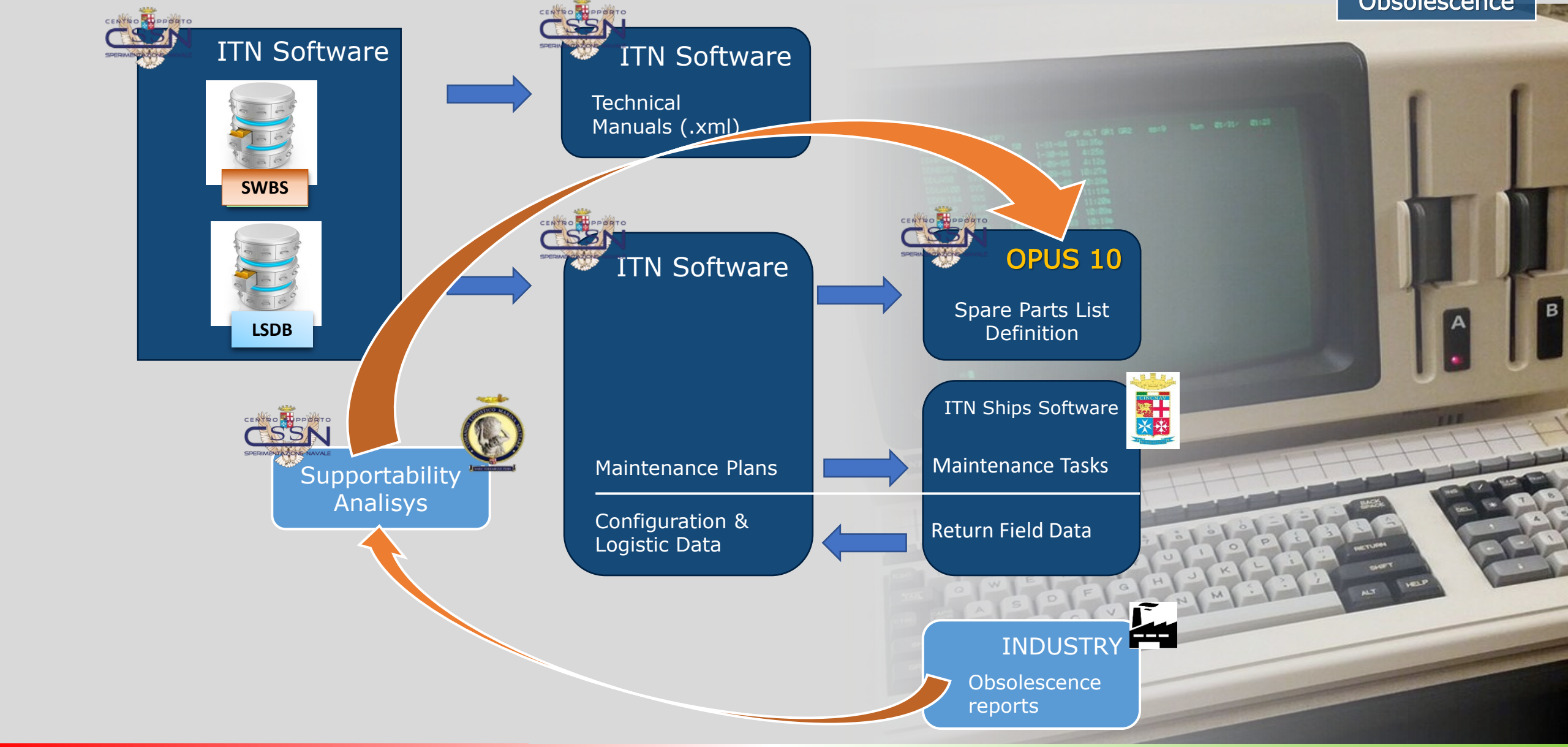




LOGISTIC SUPPORT PROCESSES

Support Optimization

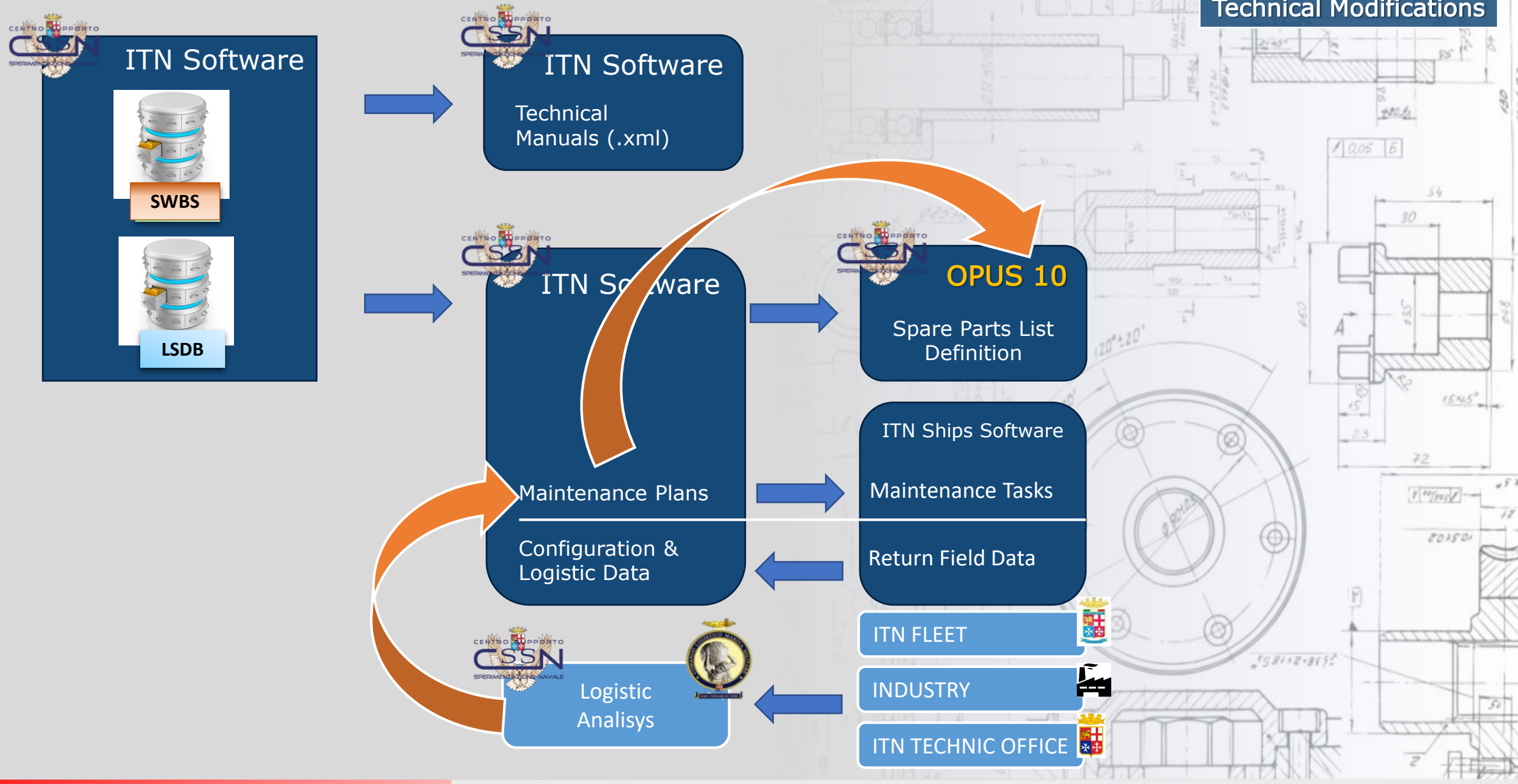
Obsolescence



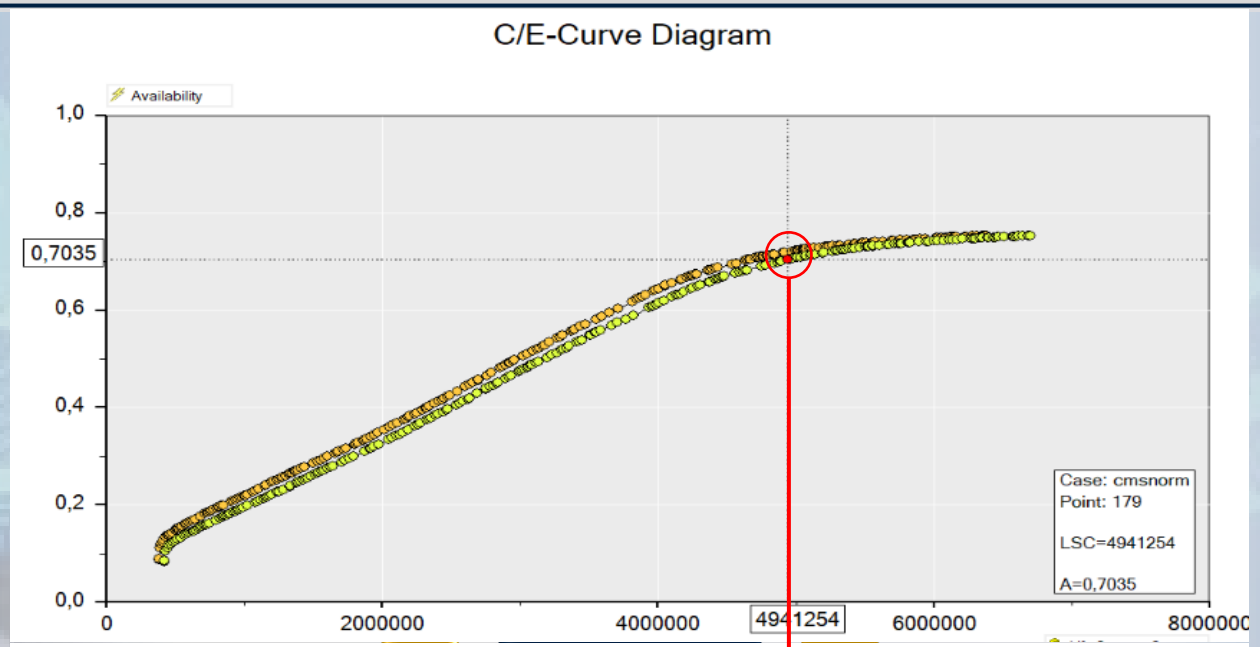
LOGISTIC SUPPORT PROCESSES

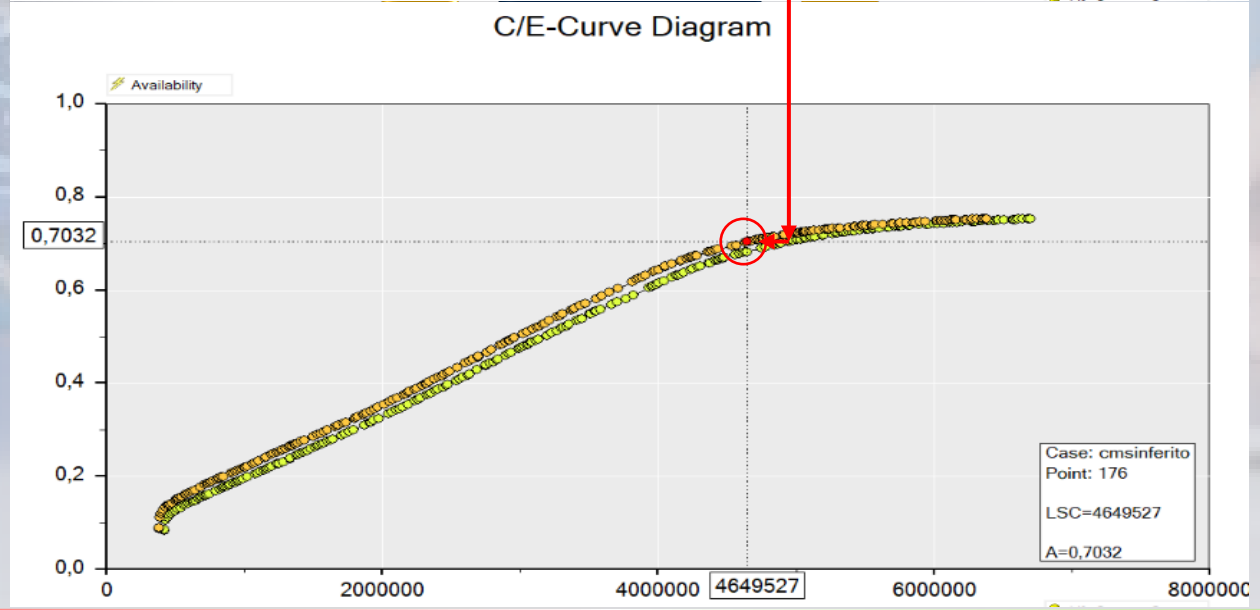
Support Optimization

Technical Modifications



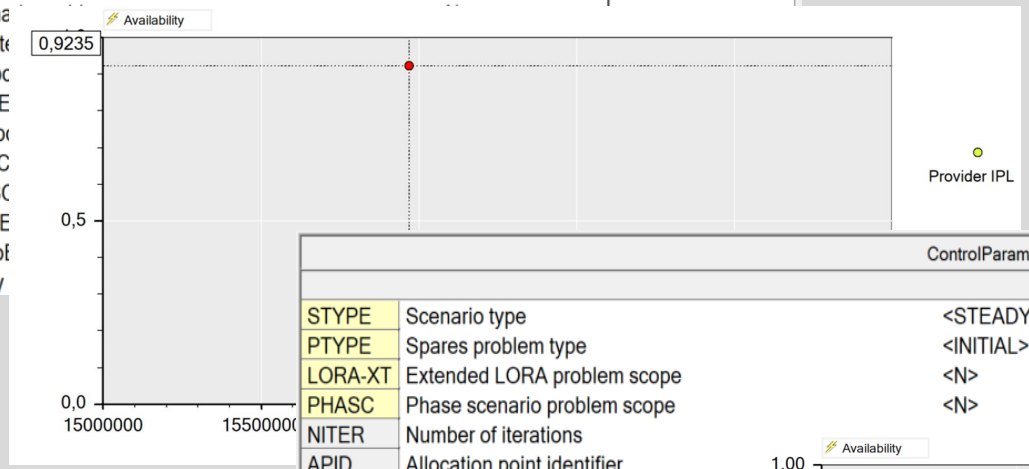
LOGISTIC SUPPORT RESULTS



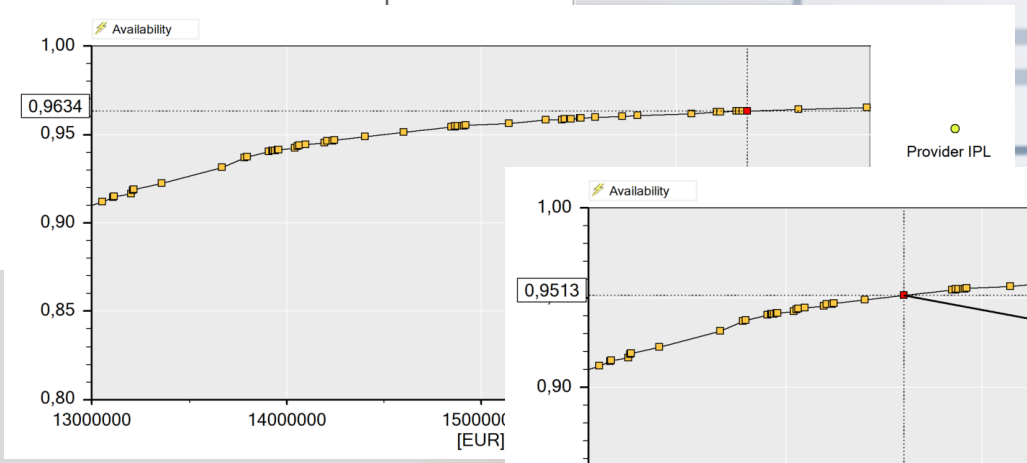


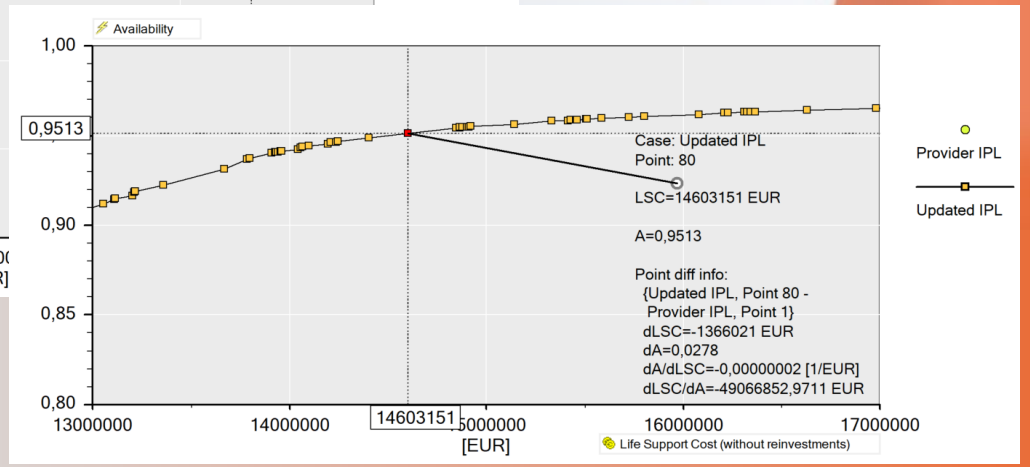
LOGISTIC SUPPORT RESULTS

ControlParameters			
STYPE	Scenario type	<STEADY-STATE>	STEADY-STATE
PTYPE	Spares problem type	<INITIAL>	ANALYSIS
LORA-XT	Extended LORA problem scope	<N>	
PHASC	Phase scena		
NITER	Number of ite		
APID	Allocation pc		
PRMOE	Primary MoE		
NPOINT	Number of pc		
MINLSC	Minimal LSC		
MAXLSC	Maximal LSC		
MINMOE	Minimal MoE		
MAXMOE	Maximal MoE		
STEXP	Stock policy		



ControlParameters			
STYPE	Scenario type	<STEADY-STATE>	STEADY-STATE
PTYPE	Spares problem type	<INITIAL>	INITIAL
LORA-XT	Extended LORA problem scope	<N>	
PHASC	Phase scenario problem scope	<N>	
NITER	Number of iterations		
APID	Allocation point identifier		
PRMOE	Primary MoE		
NPOINT	Number of points		
MINLSC	Minimal LSC		
MAXLSC	Maximal LSC		
MINMOE	Minimal MoE		
MAXMOE	Maximal MoE		
STEXP	Stock policy explicitly declared		





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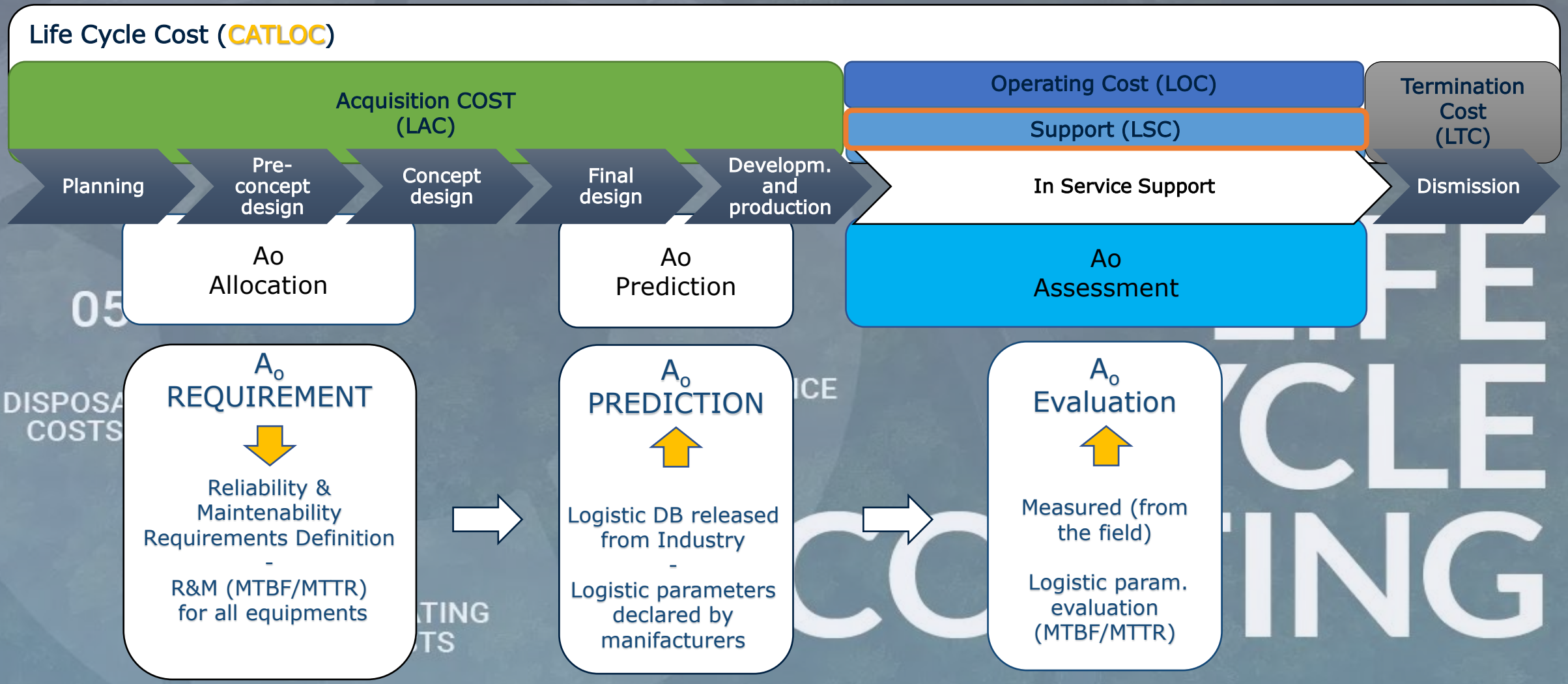

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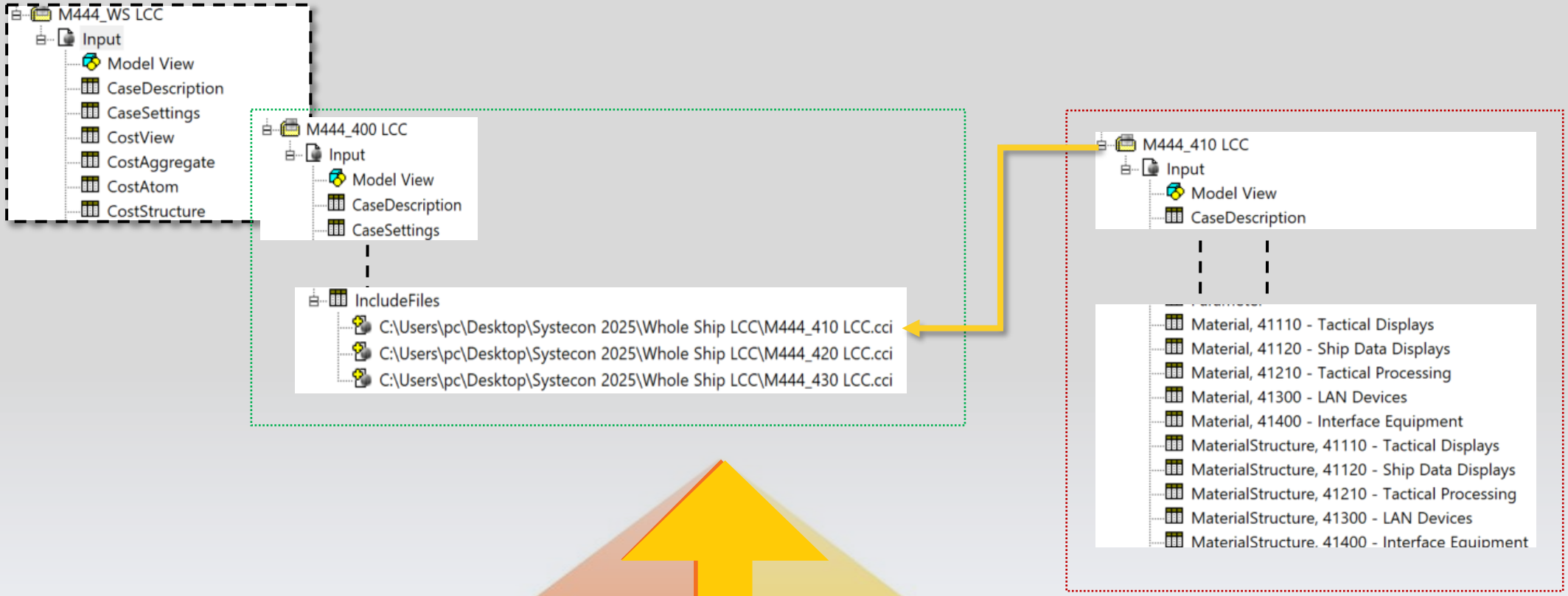
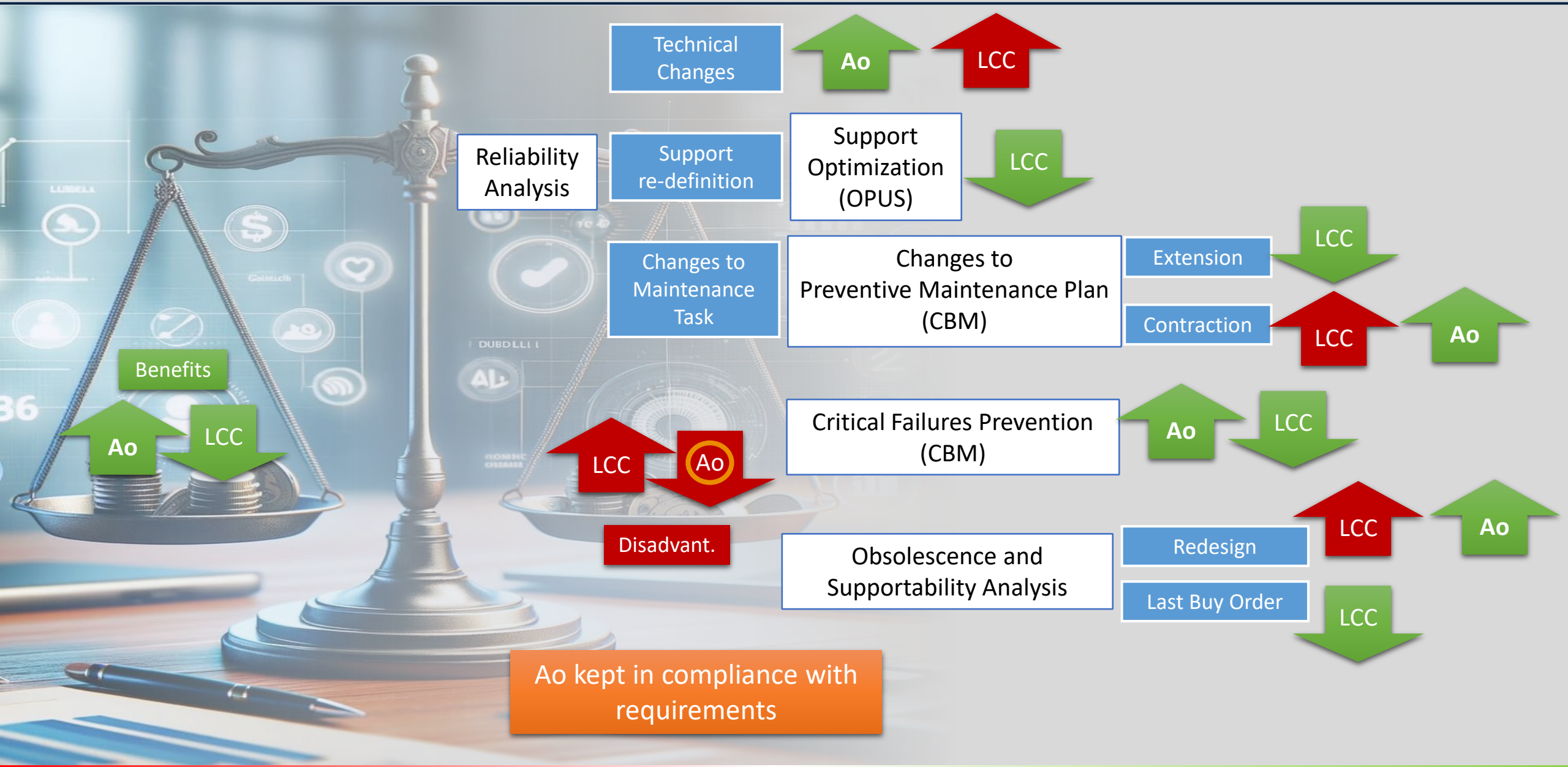


CATLOC

OPUS

LOGISTIC SUPPORT RESULTS



Technical Changes → Ao ↑, LCC ↑

Reliability Analysis

Support re-definition → Support Optimization (OPUS) → LCC ↓

Changes to Maintenance Task → Changes to Preventive Maintenance Plan (CBM)
- Extension → LCC ↓
- Contraction → LCC ↑, Ao ↑

Benefits: Ao ↑, LCC ↓

Critical Failures Prevention (CBM) → Ao ↑, LCC ↓

Disadvant.: LCC ↑, Ao ↓

Obsolescence and Supportability Analysis
- Redesign → LCC ↑, Ao ↑
- Last Buy Order → LCC ↓

Ao kept in compliance with requirements

KEY FACTORS & *Way Ahead*

- Continuous development and updating of IT systems

  (Planning of an update of IT Systems next years)

- Developing Business Intelligence and A.I. processes

  (Introducing predictive A.I. alghoritms in CBM)

- Proceed in improving the management of logistics processes

  (renovation of some logistic organization branches)

- Increase the cross-examination capabilities vs. Design Autorithy proposals, aimed at mutual growth

  (Continuous transfer of the analysis results we obtain to D.A.)

GUARANTEE LOGISTIC SUPPORT IN LINE WITH THE OPERATIONAL NEEDS OF THE FLEET IN ORDER TO MEET OPERATIONAL REQUIREMENTS AND MINIMIZE COSTS, DURING OPERATIONAL LIFE

MARINA Mmilitare

Thank you for your attention