Source: Swedish Armed Forces and Airbus Helicopters

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Case study Swedish NH90 (HKP 14)

Decision support and cost savings through optimization, modelling and simulation

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2016-10-11

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AGENDA

- Life Cycle Management and Opus Suite
- Background NH90/HKP14
- **Case 1** - Reduction in yearly flight hours due to cost reductions
- **Case 2** - Evaluation of supplier spare parts proposal (ICS buyout)
- **Case 3** - Adaption of spare parts optimization based on vendor quotations
- Questions

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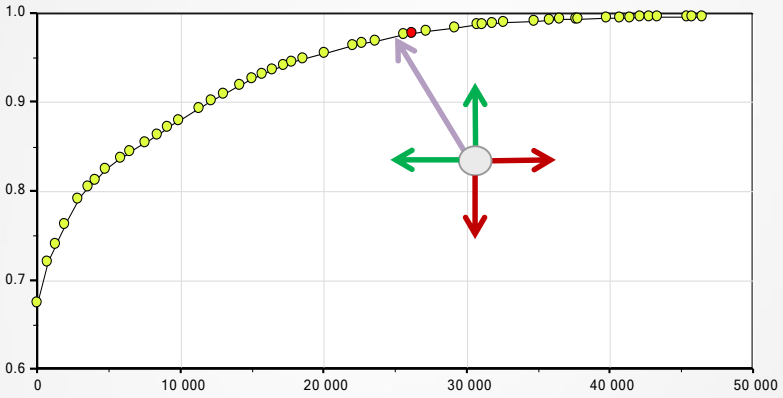
LIFE CYCLE MANAGEMENT

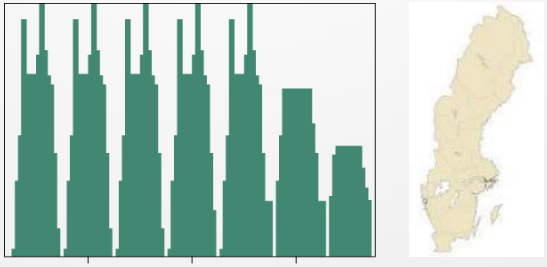
OVERALL OBJECTIVE

cost-effectiveness
MAXIMUM SYSTEM EFFECTIVENESS AT MINIMUM COST

TECHNICAL SYSTEM



SUPPORT SYSTEM



OPERATIONAL CONCEPTS

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OPUS SUITE – THREE INTEGRERATED TOOLS

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Background – NH90

- NHIndustries (NHI) NH90 is a medium-sized, twin-engine, multi-role helicopter
- **Placed orders:** Australia, Belgium, Finland, France, Germany, Greece, Italy, Netherlands, New Zealand, Norway, Oman, Spain, Sweden
- **Cancelled orders:** Portugal, Saudi Arabia
- **Total deliveries:** 274
- **Total order book:** approx. 500 helicopters

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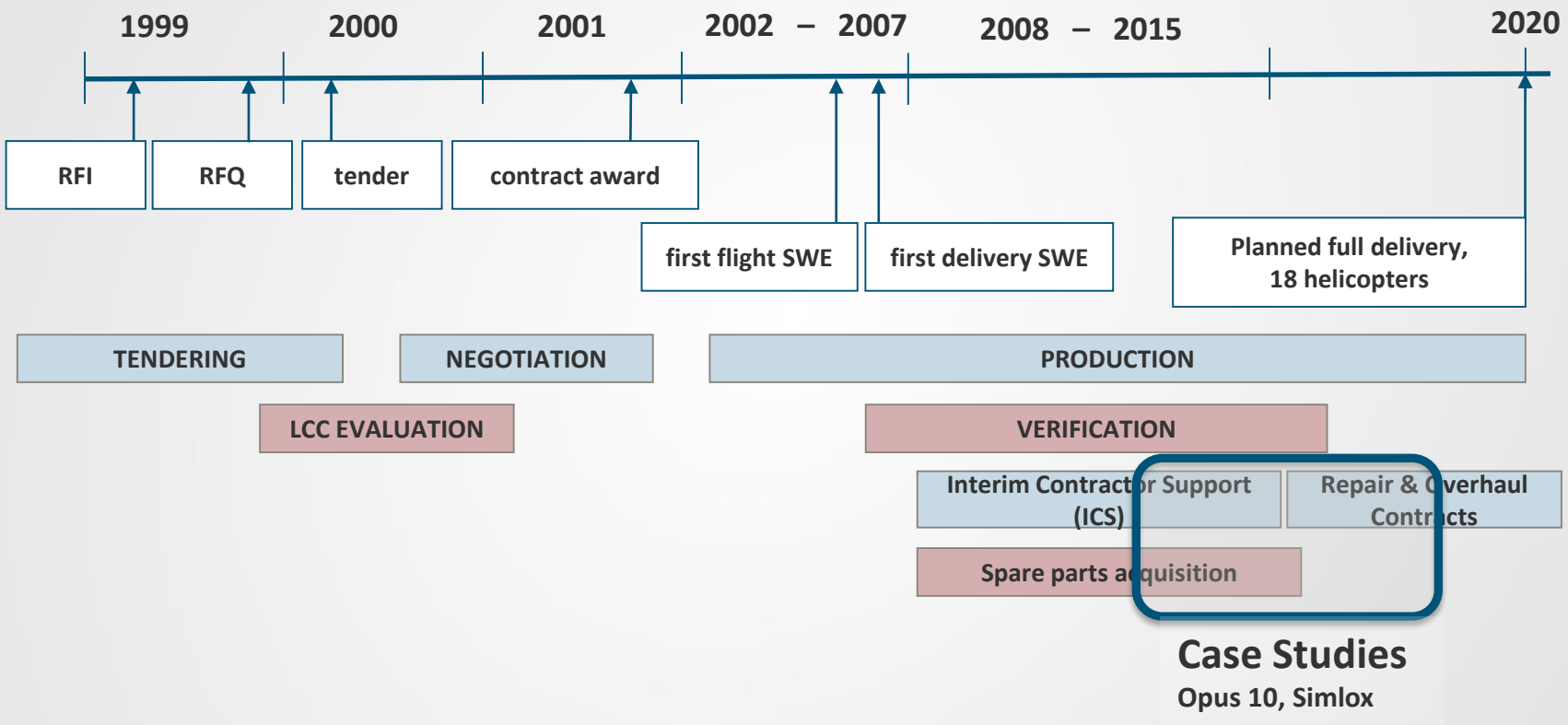
SWEDISH NH90/HKP14 TIME SCHEDULE

MAIN EVENTS

Systecon support to FMV – LCM and Opus Suite support



FMV = Swedish Defence Material Administration

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Case 1 - Background

- Reduction in spare part acquisition budget

  => not possible to reach required *y* FH/year

- Opus Suite was used to analyze the maximum yearly flight hours (*x* FH/year) possible with regard to reduction in spare parts investment

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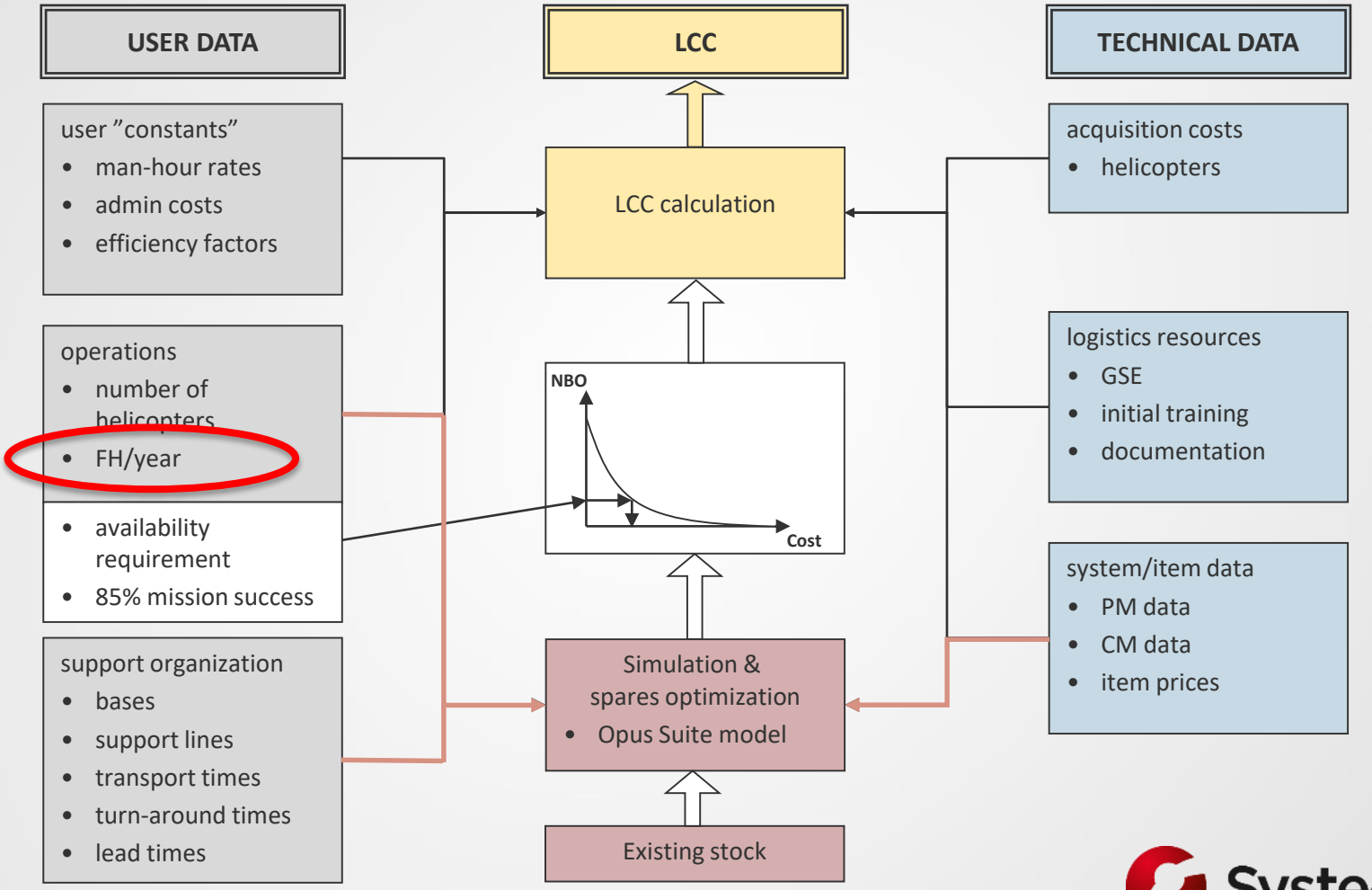
OPUS SUITE INPUT DATA MODEL – HKP14



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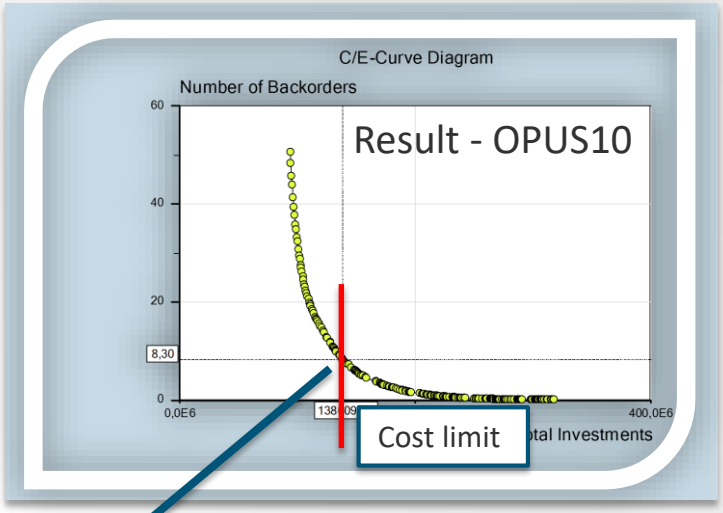
Analysis with OPUS10 and SIMLOX

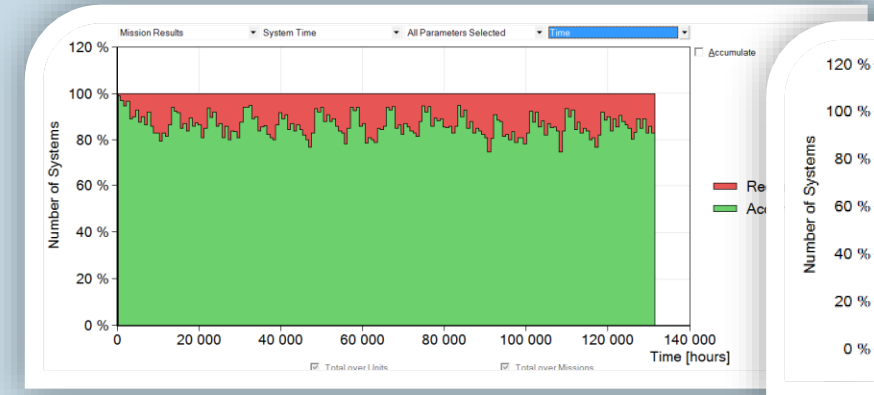
Opus Suite Model – update of input data:

- *x* FH/year
- Iterative analysis to find the ”*x*-value” that fulfills 85% Mission success rate

Output:
- Recommended *x* FH/year



Result - SIMLOX



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Case 1 - Summary

- The ”x-value” was found

Swedish Air Force operational planning for HKP 14 adjusted to **x FH/year**

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Case 2 - Background

- The Interim Contractor Support (ICS) contract was a performance based contract where the spare parts stock was owned by supplier
- Sweden and Norway
  - one common pool of spares
- The ICS contract was terminated during 2015
- The supplier offered SWE to buy the existing SWE stock items used during the ICS-contract period (“ICS buyout”)

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Questions asked

- Would it be cost effective to accept the buyout offer “as is”?
- Did the offer include items not contributing to system availability?
- Would it be more cost effective to pick individual items from the offer?
- Which items should be picked?

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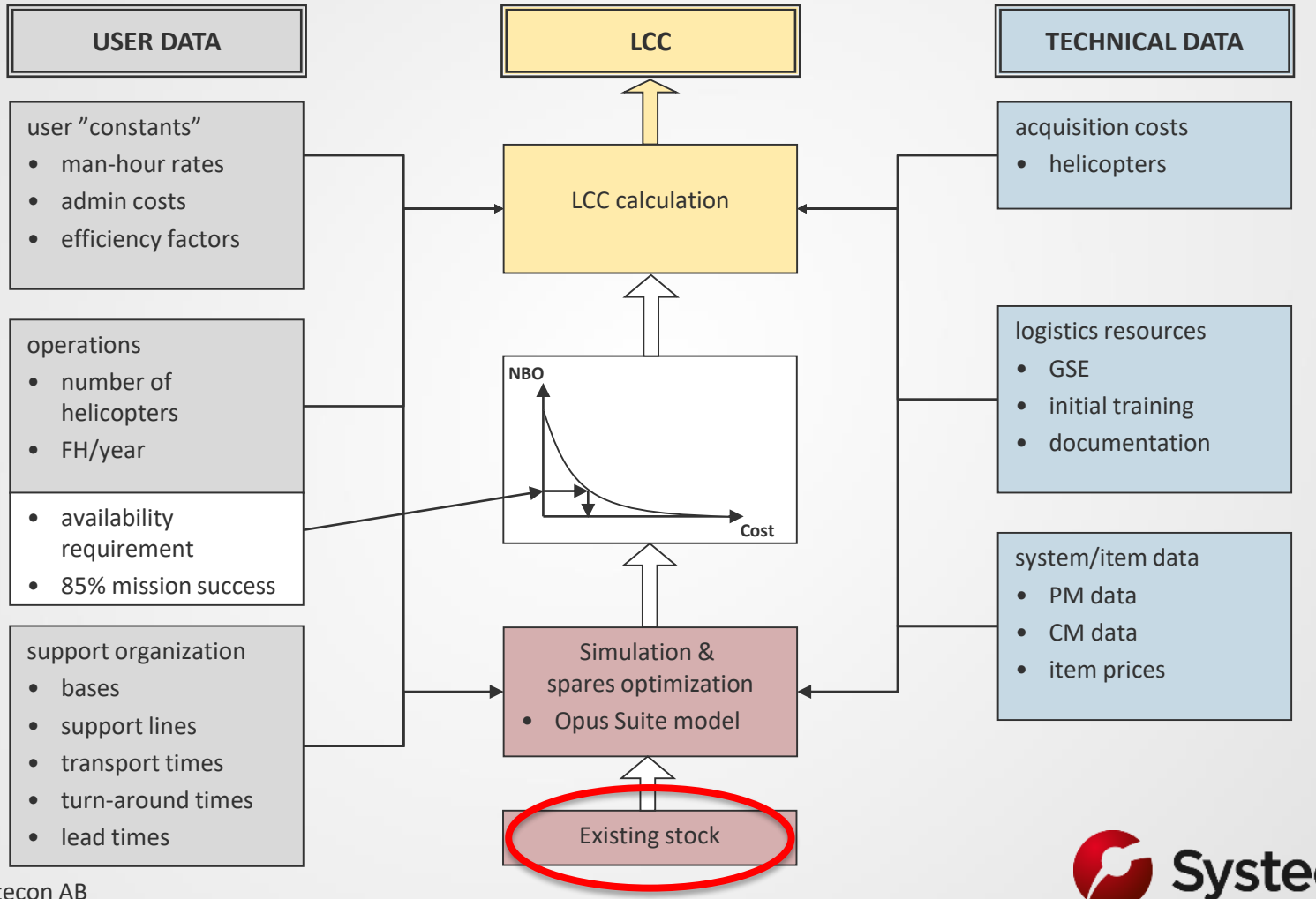
OPUS SUITE INPUT DATA MODEL – HKP14



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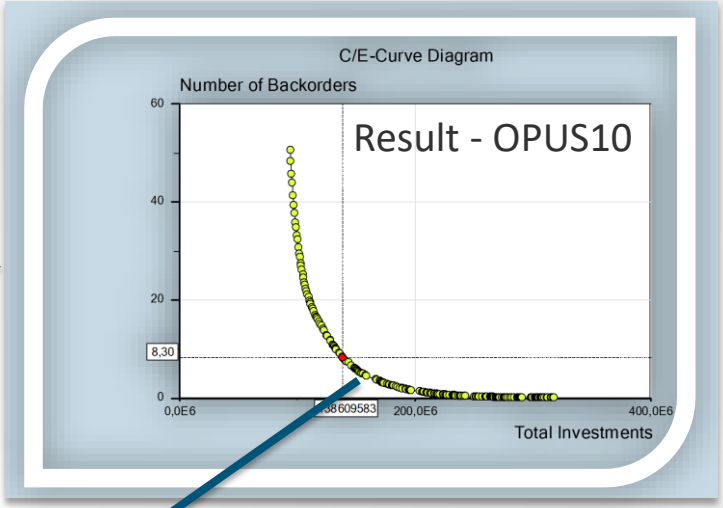
Analysis with OPUS10 and SIMLOX

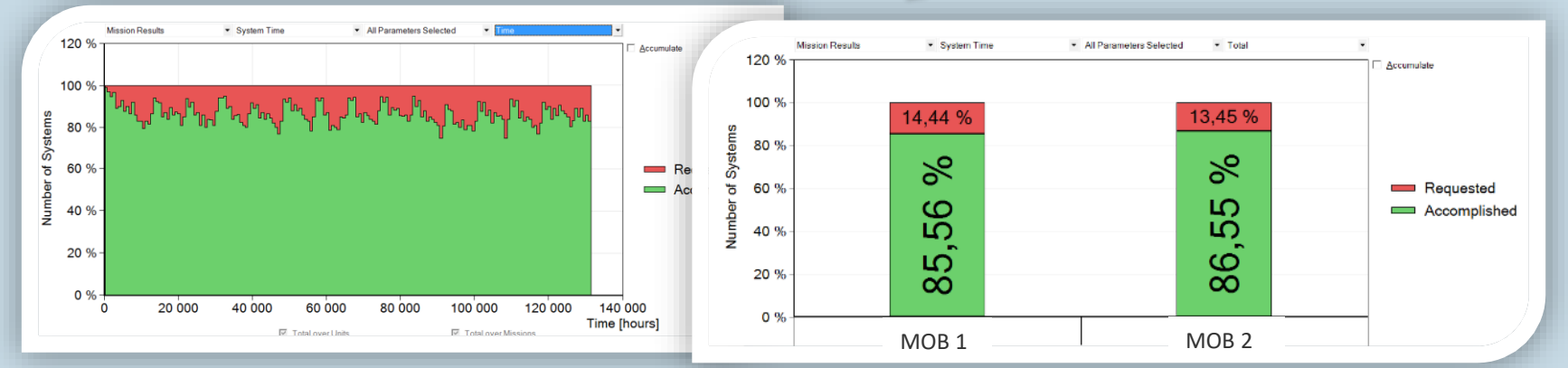
Opus Suite Model – update of input data:

Alt.1: Existing stock ”as is”
Alt.2: Existing stock based on ”free picking”

Output
- OPUS10 recommended stock to reach
  x FH/year



Result - SIMLOX



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Case 2 – Analysis results (1/2)

- Total spare investment to reach x FH/year
  - Alt. 1 (Existing stock ”as is”): **C_1 MEUR**
  - Alt. 2 (Existing stock based on ”free picking”): **C_1 – 6 MEUR**

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Case 2 – Analysis results (2/2)

Conclusions

- 6 MEUR saving if ”free picking” is allowed
- The recommendation is to not accept the existing stock ”as is”

Input to the negotiation team

- The goal should be a ”free picking” alternative
- If free picking is not allowed, there should be a discount of approx. 6 MEUR

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Case 2 - Summary

- The ”Free picking” alternative was accepted by supplier

Total saving: **6 MEUR**

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Case 3 - Background

- There is a need to Purchase spare parts
  - Alt. A: Purchase directly from the supplier, acc. to existing price list
  - Alt. B: Competitive tendering

- Alt. B was chosen
- During 2015 the Swedish Defence Material administration (FMV) released a Request For Quotation (RFQ) regarding spare parts acquisition

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Enquiry – spare parts acquisition

- Approx. 600 components (LRU/DU)
- Item by item approach

				To be filled in by the Tenderer					
Part Number 2	Denomination Item description (nomenclature)	Category (LRU/DU/C1C)	Indicative quantity needed	Quoted Part Number	Life Limit (months) (For offered P/N)	Remaining Life (months) (For offered S/N)	Price/unit (EUR)	Delivery Time PLT (months)	Comments
115340	SLIPRING	LRU	3						
1208E0000-02	ACTUATOR CTRL COMP.	LRU	8						
12-5003P24	SHRT TUNED VUHF ANT	LRU	1						
132CE02Y10	ALT/EPU PROT PCB	LRU	2						
142CE02Y03	AC I/O LOGIC PCB	LRU	2						
152CE02Y06	BITE PCB	LRU	2						

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Tender evaluation

- **Evaluated price** = Offered price + Surplus value

Surplus value: *Price addition in the evaluation set to 5% of the price per month for a delivery time (PLT) later than November 2015"*

FMV Enquiry		Rank Evaluated Price						Lowest Evaluated Price		
		Tenderer								
Denomination Item description (nomenclature)	Category (LRU/DU/C1C)	A	B	C	D	E	F	Unit Price	PLT	Company
ACTUATOR CTRL COMP.	LRU	4	1	3	2			700 000	10	B
SHRT TUNED VUHF ANT	LRU	2		1				20 000	8	C
ALT/EPU PROT PCB	LRU	4	1	3	2			25 000	6	B
AC I/O LOGIC PCB	LRU	4	1	3	2			30 000	6	B
BITE PCB	LRU	4	1	3	2			25 000	6	B
CONDEN. ELEC. FAN	LRU	2		1				80 000	14	C
EVAP ELEC FAN	LRU	2		1				15 000	13	C
BATTERY LOGIC PCB	LRU	4	1	3	2			500 000	13	B
RIGHT AC-DC EMB	LRU	4	1	3	2			100 000	7	B
LEFT AC-DC EMB	LRU	4	1	3	2			100 000	7	B
TRU LOGIC PCB	LRU									

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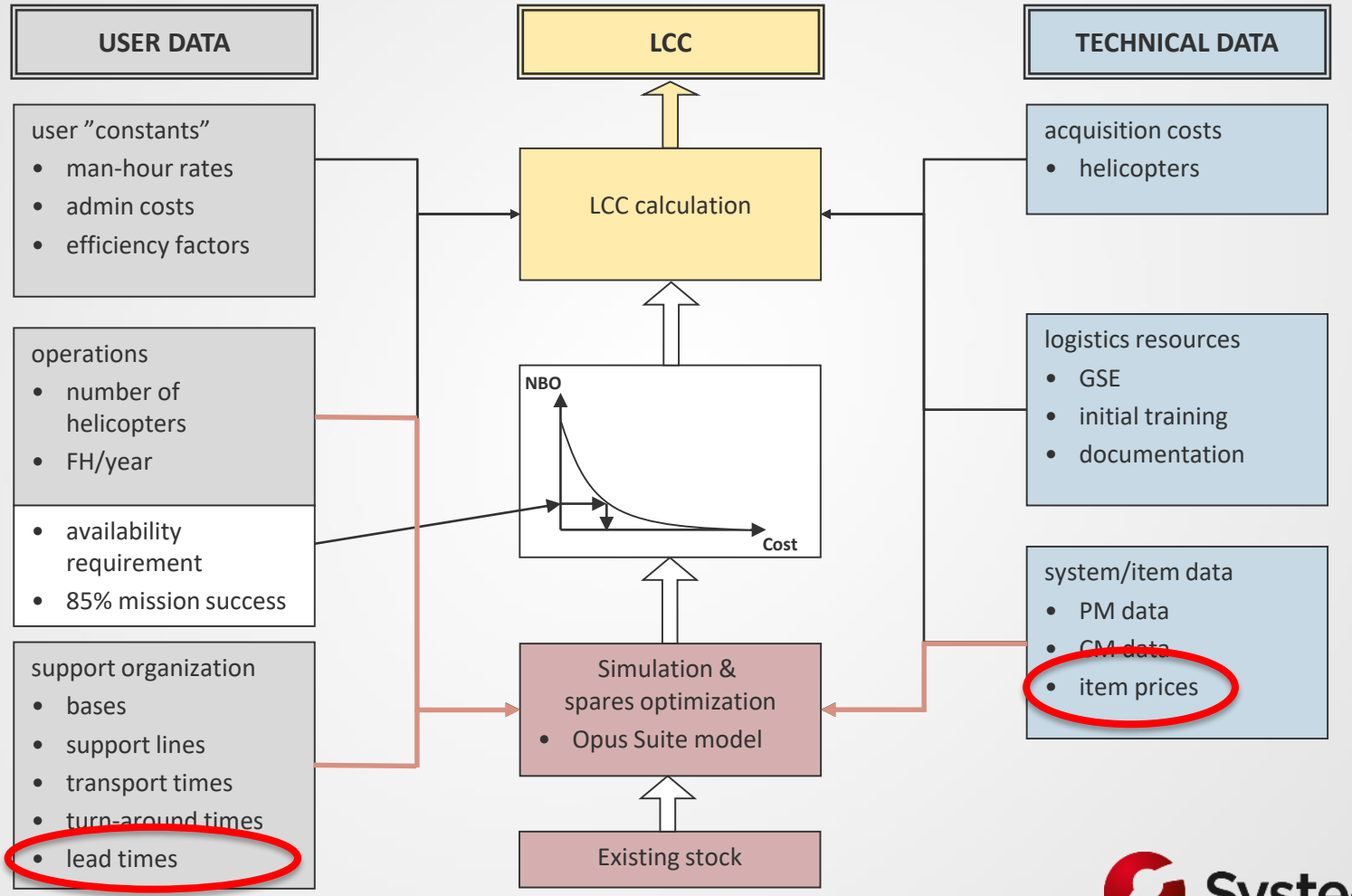
OPUS SUITE INPUT DATA MODEL – HKP14



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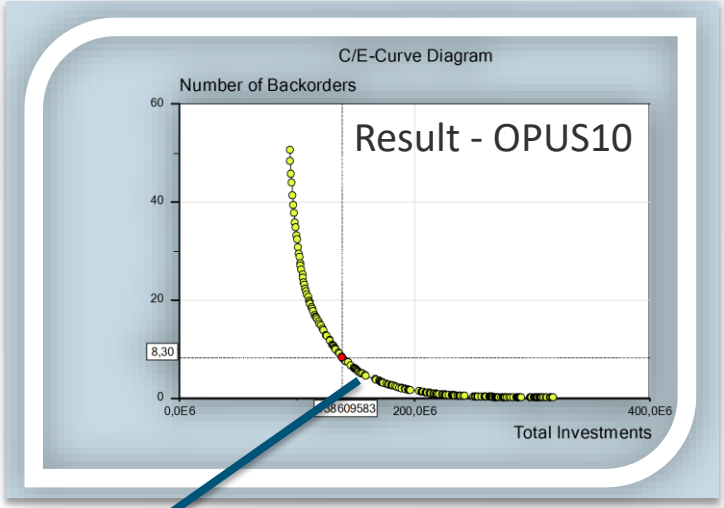
Analysis with OPUS10 and SIMLOX

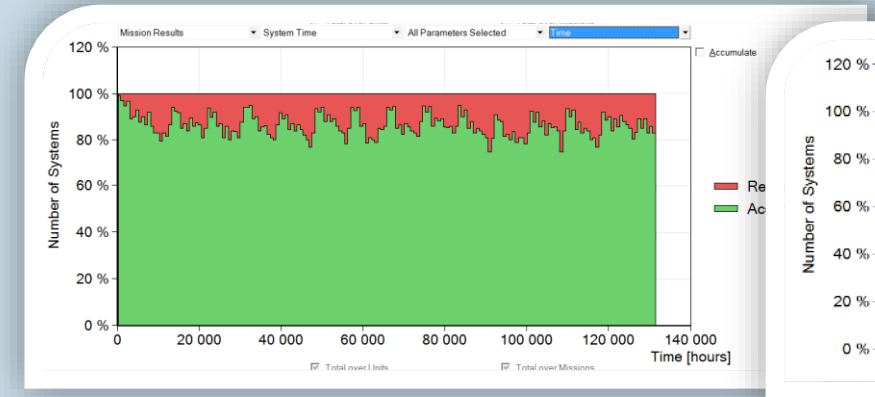
Opus Suite Model – update of input data:

- Updated item prices
- Updated Lead times

Output:
- OPUS10 recommended stock



Result - SIMLOX



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Case 3 - Summary

- Investment in spare parts according to OPUS10 recommendation
- Savings compared to supplier's existing price list:

Saving per Company, EUR					
A	B	C	D	E	F
0	**-2 000 000**	**-1 500 000**	**-1 000 000**	**-300 000**	**-200 000**

Total saving: **5 MEUR**

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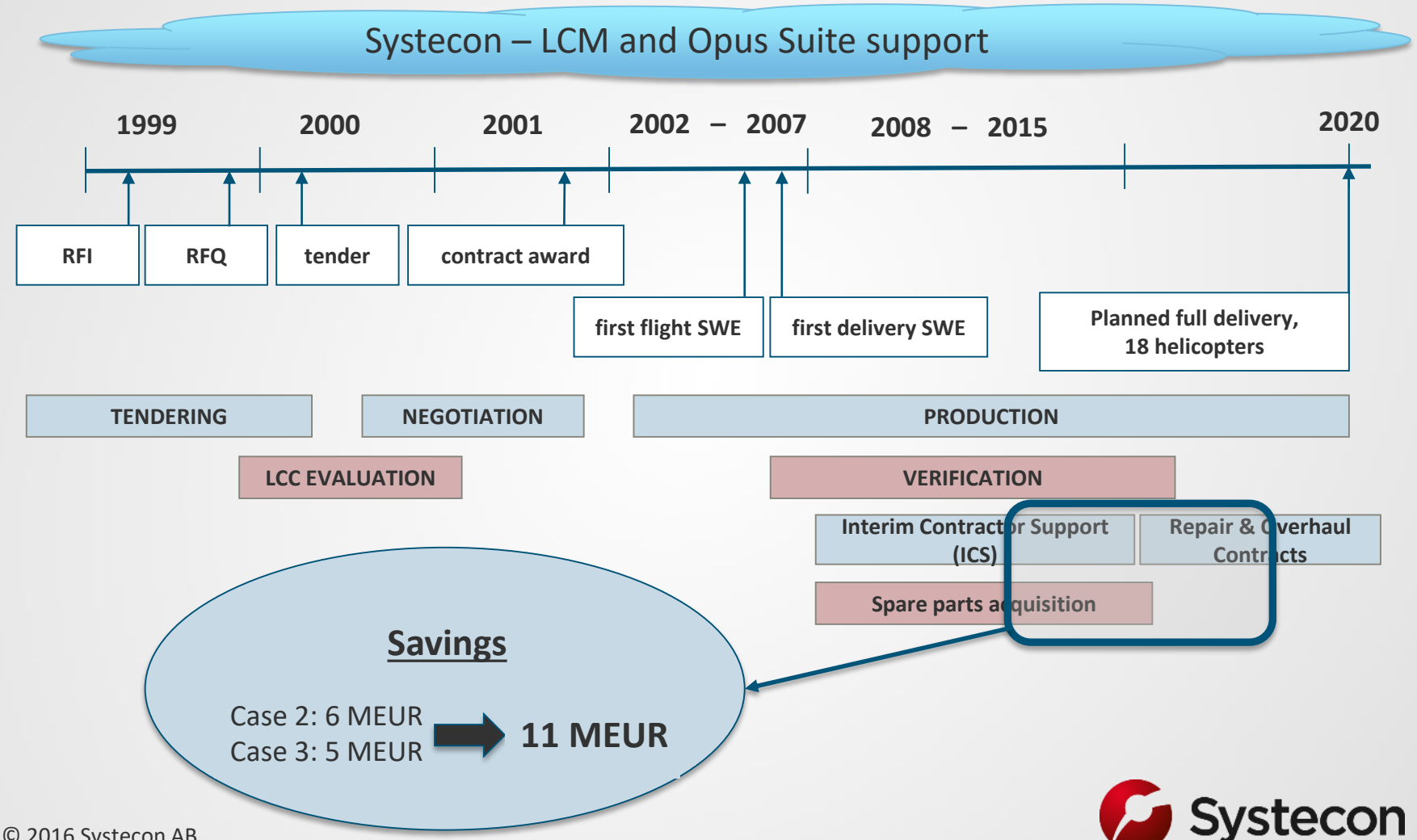
SWEDISH NH90/HKP14 TIME SCHEDULE

MAIN EVENTS



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THE END

Source: Swedish Armed Forces

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