



The importance of Life Cycle Management (LCM) in the context of Integrated Product Support (IPS)

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The importance of Life Cycle Management (LCM) in the context of Integrated Product Support (IPS)

AGENDA

- Presentation
- Life Cycle Management (LCM)
- The untapped potential of analytical LCM
- The future combination of analytical LCM and IPS (or ILS)
- Summary and conclusions



IPS Integrated Product Support | ILS Integrated Lifecycle Support

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Presentation by Mr. Mikael Löfgren

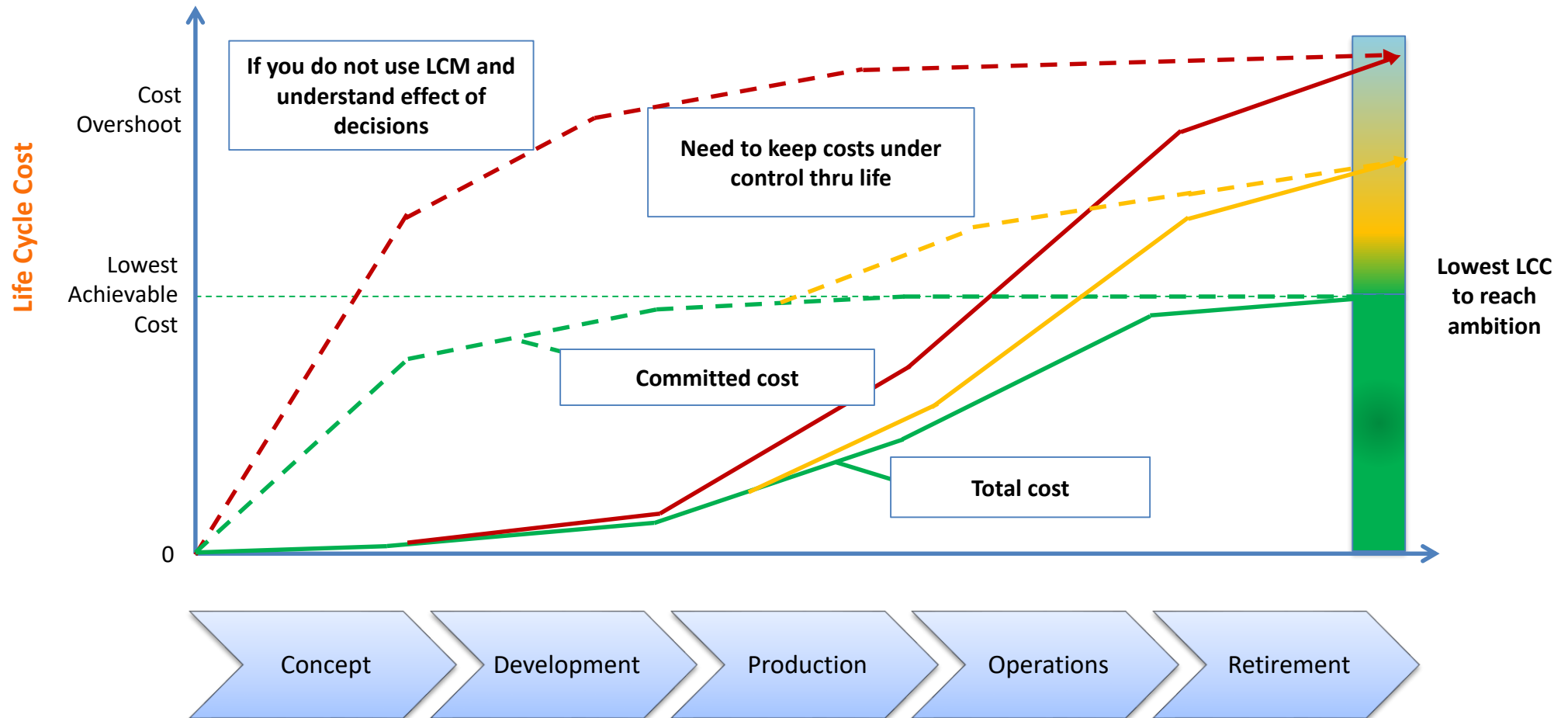
■ Background

- Swedish Ministry of Defence
 - **Policy Development**
 - **Government Export**
- Swedish Defence Material Administration
 - **Capability Development – The Air Domain**
 - **Procurement - Ground Based Air Defence**
 - **Development - Radar & Missile systems**
- Swedish Armed Forces
 - **Army – Ground Based Air Defence**



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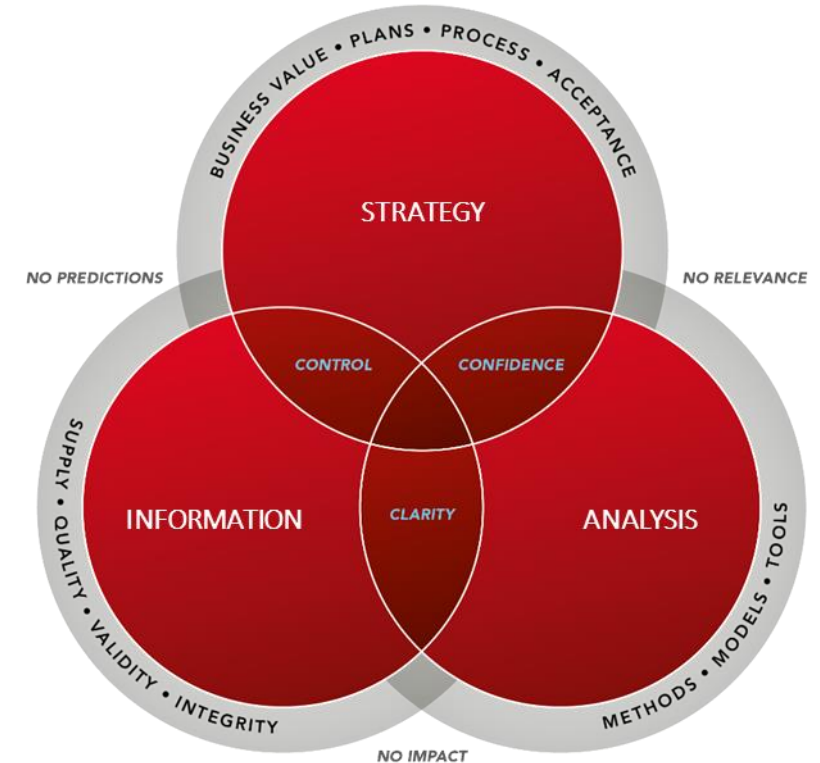
Life Cycle Management (LCM)



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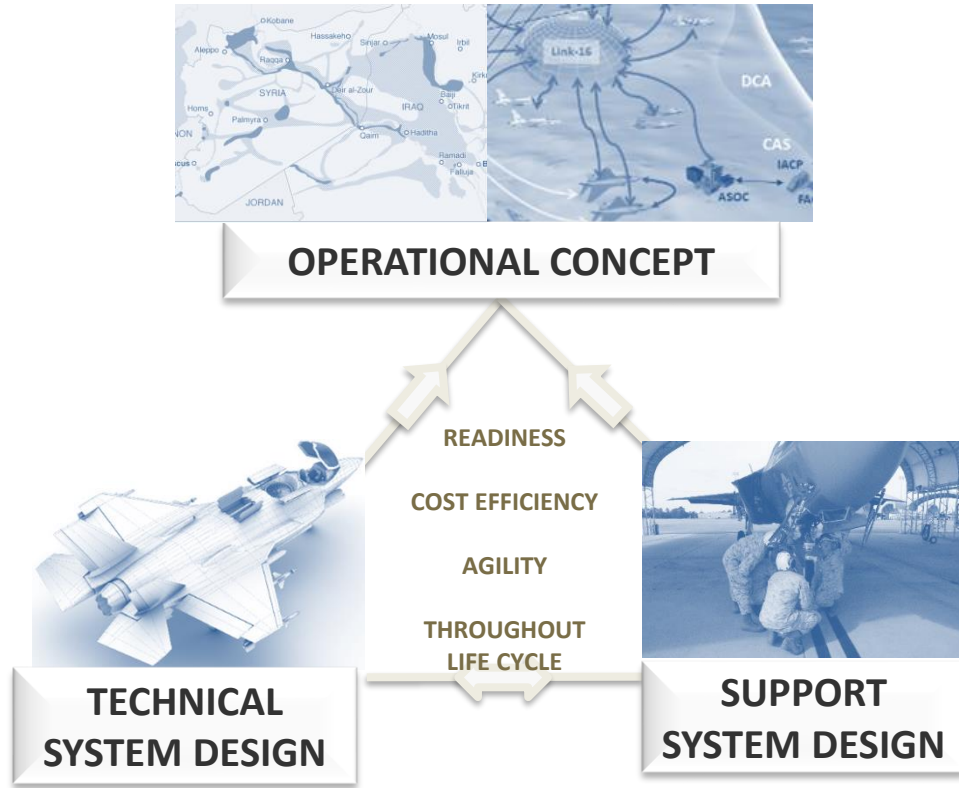
Life Cycle Management (LCM)

- **An umbrella of methods and processes for strategic management of product/system in all lifecycle phases.**
- **The overarching purpose is to achieve the desired performance or effectiveness to the lowest possible whole life cost, thru a structured approach to seek and find the best balance between conflicting items such as availability and cost.**
- **The basic idea of an analytically driven LCM work:**
 - Link information and analysis with strategy, processes and decisions.
 - Translate real-world issues into analytical questions and use information and facts to improve decision-making.



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Analytical Life Cycle Management



ITERATIVE

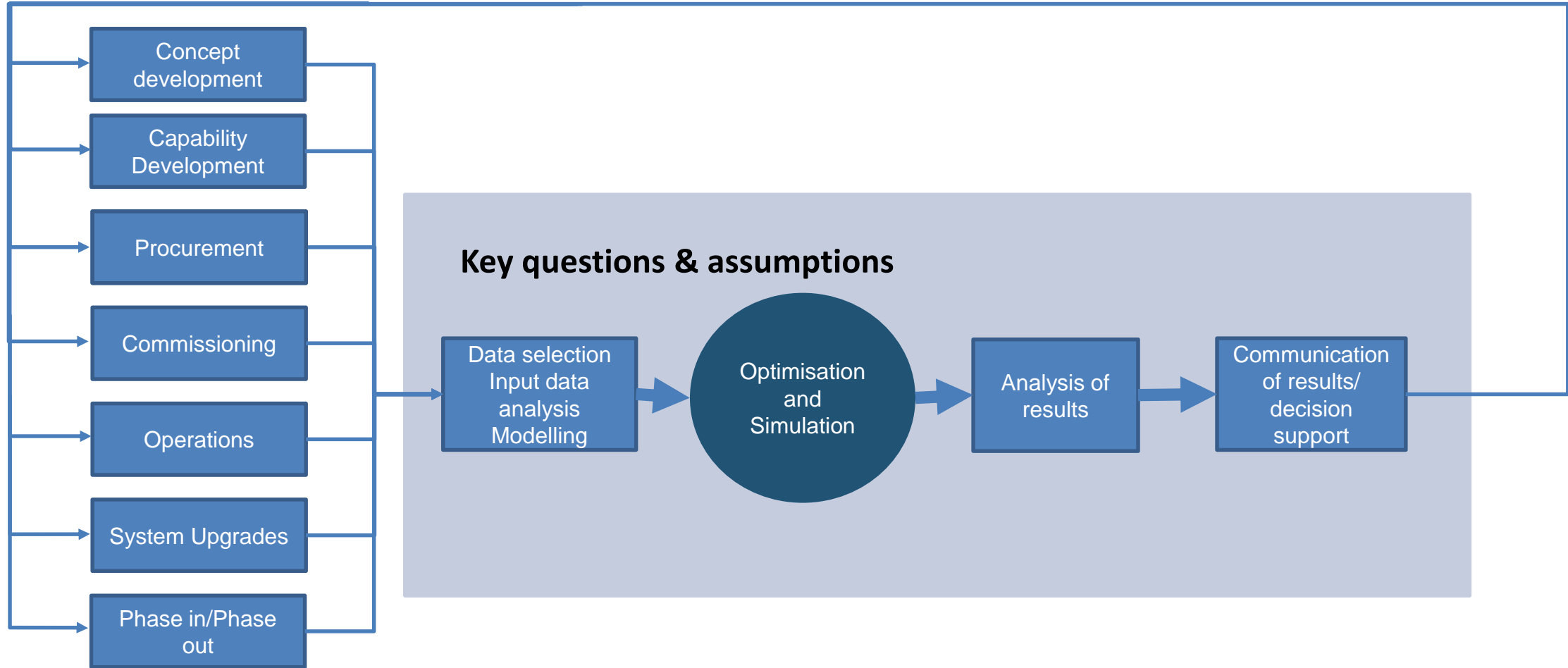
DATA DRIVEN

- Key questions & assumptions
- Data gathering – relevance, quality
- Analysis – turn data into actionable insights
- Communicate - decision makers and other stake holders

MODELLING OPTIMIZATION SIMULATION EVALUATION

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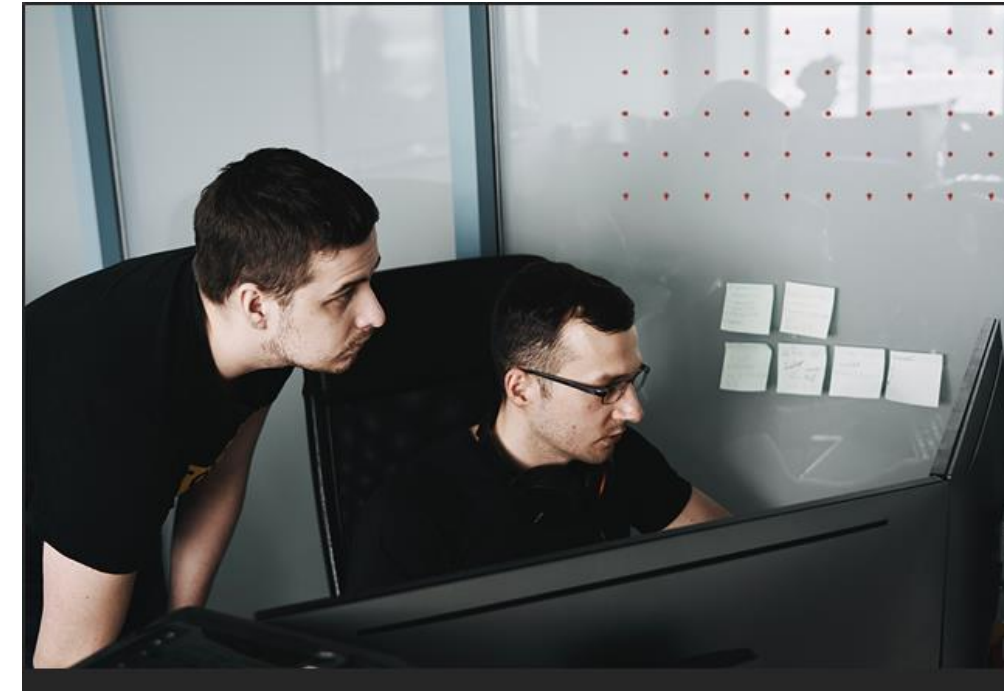
Analytical Life Cycle Management



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Common concerns and challenges related to analytical LCM

- Lack of (quality) data
- Increased modelling complexity
- New application areas / new analysis capabilities needed
- Calendar time from question to answer
- Lack of (management) understanding and commitment



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The untapped potential of analytical LCM

- 1. Data Availability**
 - More accurate input
- 2. Large-scale computing**
 - More knowledge from data
- 3. Integration and iteration**
 - Fast turnaround
- 4. Visualizations and information sharing**
 - Greater impact



The importance of Life Cycle Management (LCM) in the context of Integrated Product Support (IPS)

Data Availability – More accurate input

■ Phenomena

- Exponential growth of available data
- Real time storage and close real time access
- The use of standards and formats (S3000L, 1388, 00-60 etc.)

■ Effect

- More detailed decision support from analytical LCM
- More easily exchange of data (i.e., between supplier and buyer)
- Relevant to apply analytical LCM in all stages of the Life Cycle



Data is key to making good decisions and Analytical LCM turns data into knowledge

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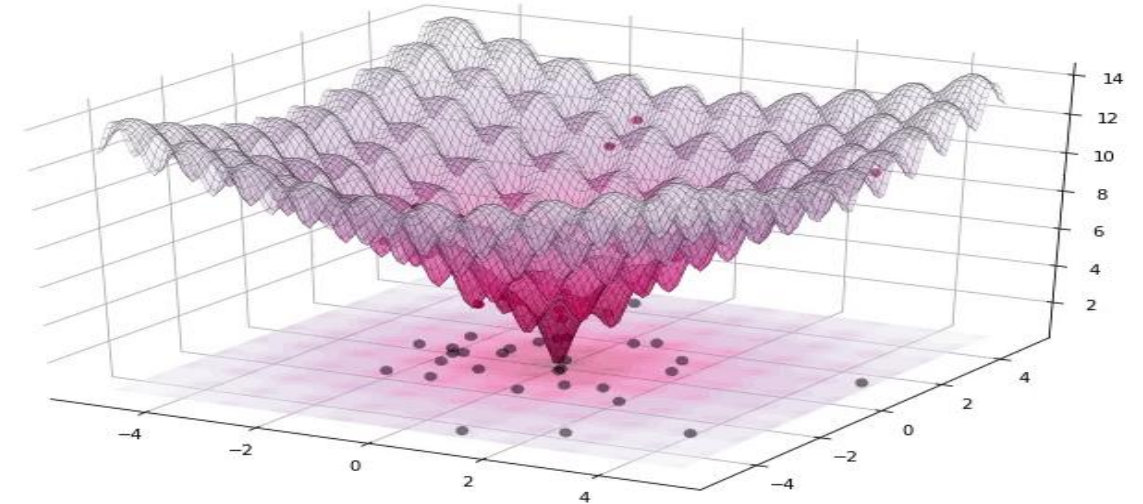
Large-scale computing – More knowledge from data

■ Phenomena

- Large scale computing (network)
- Growth of processing power
- CPU resources in ordinary everyday equipment

■ Effect

- Simulations of more complex scenarios
- Calculations with intensive algorithms, like Heuristics, AI/machine learning
- Enable digital twins for continuous analytical support in decision making in all life cycle phases



By Pablormier - <https://pablormier.github.io/2017/09/05/a-tutorial-on-differential-evolution-with-python>, CC BY-SA 4.0, <https://commons.wikimedia.org/w/index.php?curid=62208829>

Great analytical capability is key to getting the most knowledge out of the data gathered

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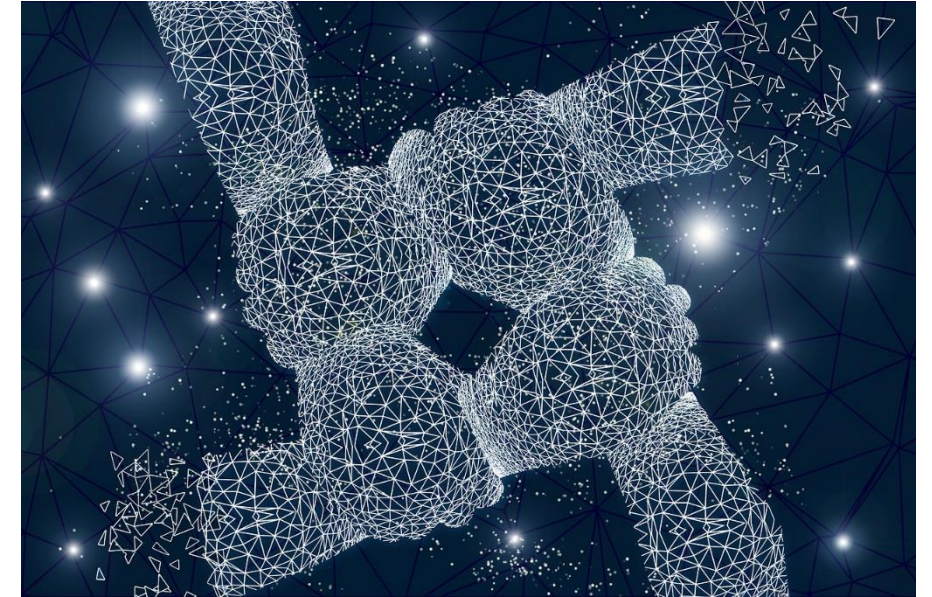
Integration and iteration – Fast turnaround

■ Phenomena

- System Integrations (analytical LCM capabilities with Maintenance Systems, ERP, PLM, Fleet management etc.)
- Network solutions
- Standards (ASD S-Series for ILS)

■ Effect

- Integration supports a digitalized process, reducing workload and saves time
- Integration support rapid iteration and rapid iteration enables agility, increases the quality and accuracy of the analytical LCM
- Unveil extraordinary potential ($1+1 > 2$)



Integration and iteration is key to shorten the time to get results and decision support

The importance of Life Cycle Management (LCM) in the context of Integrated Product Support (IPS)

Visualizations and information sharing – Greater impact

- **Real impact require that analytical results are**
 - Visualized for comprehension
 - Tailored to stakeholder specific needs
 - Preferably adaptable, without compromising data integrity

Visualization involves stakeholders, increase management understanding and commitment



Available and understandable results, is key in getting real value from analytical LCM

The importance of Life Cycle Management (LCM) in the context of Integrated Product Support (IPS)

The future combination of analytical LCM and IPS

- Mutually creating value from data
- Suitable objects for integration
- Digitalized process
- DDDM – Data driven decision-making vs intuitive

Higher operational availability to a lower cost



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Summary and conclusions

- The overarching trend of digitalization and growth in computational power have had a profound impact on **analytical LCM in the context of Integrated Product Support** and **hold an extraordinary**, but to large degree **untapped potential**.
- The **value of data-driven decision making (DDDM)**, backed up by hard data, rather than making decisions that are intuitive or based on observation alone is undisputable. In combination with the capability to integrate with different systems, incorporate analytics in a digital network using interfaces and evolved standards, such as the ASD S-Series for IPS & ILS, offer not only great possibilities, but also graspable, tangible, and real opportunities here and now.

Does it require some work? **YES**
 Does the work make a difference? **HUGE**



IPS Integrated Product Support | ILS Integrated Lifecycle Support



Thank You

for your attention!

Questions?

[In the box to the left, insert either a copy of your business card or another image - or enter your name and address in text in this box]