

# OBSOLESCENCE MANAGEMENT IN A SERVICE LOGISTICS NETWORK

An innovative method to develop new functionalities for uninterrupted sailing missions

A network of companies has been involved in the maintenance of maritime equipment for the Royal Dutch Navy. More specifically, 'Directie Materiële Instandhouding' (DMI) maintains vessels on behalf of the Royal Dutch Navy and closely works together with shipbuilder Damen Schelde, maritime systems integrator RH Marine, and naval defense systems provider Thales. How can this complex network of organizations improve the way they work together to enhance availability of ships and uninterrupted missions due to missing spare parts for maintenance?



HOW TO INCREASE AVAILABILITY

The network wants to innovate the way they collectively manage this often-unexpected stream of unavailable parts and spares, also called obsolete resources. In the MARCONI project, supported by DINALOG and NWO, Eindhoven University of Technology, Netherlands Defense Academy, Twente University and Maastricht University are developing a method for network-level management of obsolescence in service logistics.

## THERE ARE ALWAYS TWO SIDES TO A STORY

Obsolescence problems can arise as a result of either logistical or functional obsolescence. Logistical obsolescence is a situation of obsolete parts, meaning that a part is not available anymore while the system might still need it (upstream problem in the value chain). Companies decide at some point to discontinue their production runs. Functional obsolescence, on the other hand, is a situation of changing performance requirements

in which the part is still available but from a customer point of view no longer compatible (downstream problem in the value chain). These two types of obsolescence problems lead to customers experiencing a capability gap during the operational lifetime of a part. The challenge is to synchronize the upstream development and production of a part with downstream asset use, monitoring, and maintenance.

In order to understand the existing management of obsolete resources and create a mutual beneficial situation, Work Package 2 in MARCONI created an Obsolescence Management Script (OMS) that includes both sides of the business:

- For the suppliers in the network the Script includes a wide range of aspects about their relationship with DMI, including benefits from the relationship, things to avoid, who is internally involved and what is contributed, the revenue model, and the information and material provided.



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- For DMI, representing the customer/ user, the Script includes the goal of obsolescence management, things to avoid, challenges, who is internally involved, formal and informal coordination mechanisms, and the information and material provided.

Two types of results can be reported from the first MARCONI obsolescence management workshop in Q3 2019.

## RESULT 1: UNDERSTANDING THE EXISTING BUSINESS MODEL AND RELATIONSHIPS

- A benefit that the suppliers experience from their relationship with DMI is the ability to better understand and plan the use of parts and spares, which is in line with DMI's goal of continued availability of parts.
- For suppliers to keep their customer (DMI) and customer's customer (Navy) satisfied, mission interruption and extension or delay of maintenance should be avoided, since they can both result in higher costs and reduced task execution.
- There is potential for advanced data analysis tools to take away uncertainty if the required data is collected and shared. An important step to better manage obsolescence is to reach consensus on which data is relevant and how it will be shared.
- The combination of trust, transparency and the long-term nature and strategic importance of network relationships can be a foundation for data sharing, including arranging for data value management and governance.



## RESULT 2: DEVELOPING A PLAYER FOR NETWORK-LEVEL OBSOLESCENCE MANAGEMENT

As a next step, the companies were asked to imagine a new abstract player with new capabilities in their relationship that would improve obsolescence management. Potential roles of a third party in obsolescence management are conceptualized in Figure 1. These roles are associated with increasingly innovative capabilities and services.

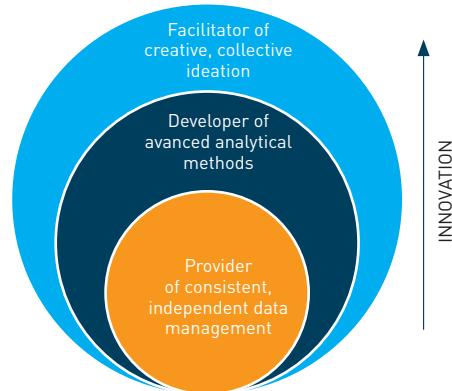


Figure 1: Third party roles in obsolescence management

First, at the core of managing obsolescence is managing the available data with the other supply chain players in order to get data consistency. A buyer and supplier can jointly organize this, but an alternative is to outsource data management to an independent ('neutral') specialist. Second, advanced analytical methods can be developed for improving obsolescence management. The use of data analysis based on Artificial Intelligence (AI) can be a learning tool for extracting knowledge from data. There is potential for academic organizations to transfer knowledge about data analysis tools based on AI, but also for business players sharing their best practices. And finally, third parties can be facilitators of creative, collective ideation and concept development for obsolescence management. Consultants can take this role by analyzing current operations and developing a new perspective. Various players, within and outside the network, can perform the potential roles of an abstract player described here. Networks that go beyond data management by extracting knowledge from data and involving fresh perspectives from third parties are on the path of finding innovative solutions.

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