The Implementation of Telemaintenance

“A Study on Change Management with respect to the Naval Maintenance and Service Agency”

Master of Science in Asset Management Control

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Thesis presentation program

- 14.00 hr Reception (15 min)
- 14.15 hr Thesis Presentation (30 min)
- 14.45 hr Public Defense (30 min)
- 15.15 hr Assessment by the Examining Panel (15 min)
- 15.30 hr Presentation of Results and Diploma (15 min)
- 15.45 hr Closing
Content

- Introduction
- Research Subject
- Research Approach
- Results
- Recommendations
- Wrap up
- Questions
Introduction (I)

Integration complexity vs. manning
(Slot, H.C.W., 45 jaar Maritiem Militaire Automatisering, In KVOO: Marineblad nr. 4, June 2012, ISSN: 0025-3340, The Hague, The Netherlands).

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Introduction (2)

Trends in crew reduction
Telemaintenance

Remote condition monitoring
Remote diagnose
Remote (software) recovery
Remote support of maintainer (=TM)

Maintenance process (a) without and (b) with Telemaintenance
RNLN Telemaintenance example

Samenwerking
Centralisatie van informatie
Optimale ondersteuning vanaf de wal
Versneld problemen oplossen
(Verbeterd inzicht)
Iceberg model, representing the formal and informal organization

Change Management

Three types of Organizational Change:

1. **Planned changes** originate from an economic approach. It is assumed that goals can be met using planned and agreed goals and objectives;

2. **In Organizational Development** a partnership between managers and employees is presumed. These changes are more programmatic in nature but less planned;

3. **Continuous Change** If organizing, changing and learning are seen as part of an interactive process, change is a continuous activity, where employees give meaning to their own social realities.
Research Subject

How to implement Telemaintenance within the NMSA taking into account organizational Change Management approaches.

Changing an organization is far more complicated than changing only the technical aspects of an organization by implementing a new technical system or work process; it also means that the social and cultural aspects of an organization have to be taken care of. Indeed, the latter is very important; the chance of success is very much dependent on how the organization takes care of Change Management.

Cameron, K.S., Quinn R.E. (1999), Diagnosing and Changing Organizational Culture: Based on the Competing Values Framework, Addison-Wesley.
Objective of this Research

Contribution to a positive implementation process of Telemaintenance in the NMSA / NL MoD in general.
Thesis Research Question

How can Change Management approaches facilitate the implementation of Telemaintenance within the Naval Maintenance and Service Agency?
Sub Questions

1. What is Telemaintenance?
2. What are the needs of the RNLN, the operator of naval assets, with respect to Telemaintenance?
3. How does the Telemaintenance work process in general look like?
4. How can Change Management approaches help facilitating implementation processes?
5. Which Change Management approach(es) is (are) appropriate to support the implementation of Telemaintenance?
Research Approach

Literature study of Telemaintenance and Change Management. Survey research at defense related companies (suppliers, etc.). Culture research within the NMSA. Learn from internal defense Case Studies by doing interviews.
Research participants

Figure 6: Overview of the Quantitative Research.

Figure 7: Overview of the Qualitative Research.
Literature research provides three factors of change influences when Telemaintenance is implemented:

- **Autonomy** – influence on the ships management and command.
- **Knowledge distribution** – a better and more effective distribution of knowledge, but with tension of scarcity of maintenance skills.
- **Shift from reactive to proactive maintenance** – the shift of the maintenance environment from diagnostics to prognostics.
Literature results (2)

- Change approach must be experienced based.
- Start with a ‘top-down’ change then follow that with ‘bottom-up’ approach.
- Change Architecture of Carnall is chosen as effective strategy by introducing small steps of change and use of Change Capability framework.
Change implementation framework; the areas of concern when implementing Telemaintenance within the NMSA.
Culture of the NMSA

Figure 15: Naval Maintenance and Support Agency OCAI profile of the present culture.
Primary research results

What the Defense related companies (suppliers, etc.) and the Defense Case Studies learnt us is presented by the high level analysis of the questionnaire and interview results:

- **Learning and development from the work floor is possible and raises initiatives for change ad hoc when the work floor needed it. Effective communication is established by people with same background as the affected with cooperation of live models and demonstrations.**

- **The use and adaptation of formal processes (DMP process) must be met to realize change in the NL MoD organization.**
## DMP process

| DMP phase A | A detailed description of the “need” is generated. In the Policy, Planning and Budgeting Process (PPB), a total investment concept is prepared on the basis of the ambitions of the Defense organization and the budgetary parameters. The results of the PPB process are reported in the statement of requirements (A-document), which reflects how the Defense organization arrived at the requirement from among the various options. This document is edited by CDS/DOBBP and is responsible for the content. |
| DMP phase B | is concerned with translating the requirement into functional and, where possible, technical requirements that the product must satisfy. The responsibility is lay down by DMO. |
| DMP phase C | the general requirements from the previous phase are worked out in more detail and a shortlist is drawn up of the most eligible alternatives. They are then assessed in terms of the more elaborate requirements. |
| DMP phase D | During this phase potential suppliers are asked to submit offers based on the requirements and the regulations in force in respect of procurement. After studying the offers, and any related negotiations with the supplier who is ultimately awarded the contract, and after a line of credit has been approved, a contract will be signed. |
| DMP phase E | The realization of the project begins after phase D. Only in the event of a project exceeding € 250 million does a formal DMP project evaluation take place after the materiel has been taken into service. |
Change approach based on simultaneous tracks of Planned Change and Organizational Development for implementing Telemaintenance within the NMSA.
Change Architecture

DMP phase A

Stakeholder participation to come to one common motive / need. CDS/DOBBP will interact with DMO and the Operational Command to discuss the needs, to discuss which solutions to what problems are addressed and to envision the end state.
- qualitative demands;
- quantitative demands;
- personal, materiel and organizational consequences.

Why are we doing this? Training and education of technical expertise is costly and takes a lot of time. Reduced manned ships is an increasing trend, and the consequence is the increase of general ship tasks also for the technical staff onboard and develops a general trained and skilled engineer on board who is not able to diagnose and repair (complex) all malfunctions of systems. Telemaintenance will solve this lack of knowledge.

Create involvement in the process DMP-A. Communicate the need for Telemaintenance implementation well to the employees and stakeholders who depend on it. Bring it as solution for the aforementioned problems. The reason for implementation must be communicated with employees and all stakeholders (upper and lower management) to ensure a common notice of the need and motive for change. Make the stakeholders owner of their part of the problem, so they can realize the need for Telemaintenance as well.

Actions to perform:
Innovation and work floor initiatives must be part of the requirement process (DMP) where CDS/DOBBP, DMO and the Operational Command will talk about the problem, the supposed solution, the (formal) need and the estimated impact on the structures of the organization. Establish an entry point at DMO where initiators of initiatives and innovators of the Operational Commands present their wishes, initiatives to DMO and CDS/DOBBP as formal input to the requirements phase of the DMP process (DMP-A).

The DMP process will enable the needed change by acquire the Telemaintenance solution. For implementation a formal project management process of NL MoD can be followed to accommodate the project of acquiring the needed Telemaintenance systems. A planned change concept is used with milestones where at each milestone participation of employees is needed for establishing participation, collaboration in development and a learning phase for establishing the change in work activities and accepting the new way of working.
# Recommendations (1)

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<th><strong>NL MoD organizational recommendations</strong></th>
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| • Create a formal input in the DMP process where initiators of innovation and initiatives of the work floor are established.  
• As part of the DMP process create a business case for informing and develop sponsorship of higher management of CDS/DOBBP, DMO and the affected Operational Command.  
• The exploitation of doing maintenance and giving support of operational units must be under responsibility of one stakeholder.  

## Recommendations (2)

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<th>NMSA Organizational Recommendations</th>
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<td>- Get up the implementation team of Telemaintenance with members who have the same background, culture and ‘speaking the same language’ as the affected employees.</td>
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<td>- The technical infrastructure must already be in place in front of the change element during the implementation.</td>
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<td>- Develop and implement performance indicators of the Telemaintenance system.</td>
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<td>- Establish board level accountability of the implementation.</td>
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<td>- Use the Prince2 project management method for introducing the new system. This project management method will fit on current organizational processes and accelerates the implementation.</td>
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<td>- Apply job rotation for (shore) employees. This to develop broad knowledge and get experience with coping of changing environments.</td>
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<td>- The Telemaintenance change implementation will resonate several change initiatives within the Operational Command. Set up Program management to coordinate these changes.</td>
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| Telemaintenance Implementation team recommendations | • Start training courses with themes of Change Management topics. Train the team members of the Telemaintenance Implementation team.  
• Create a communication plan for the implementation team who can use a demonstration model for convincing people in the new way of working.  
• Give experienced (older) employee a significant (technical) role in the implementation part and during exploitation of Telemaintenance. |
Reflection

- Defense related companies (suppliers, etc.) does not use methods of Change Management.
- They are focused on the technical aspect of the project.
- NL MoD does research ‘soft’ topics like Change management aspects within its own organization.
Wrap up

- The need for Telemaintenance is clear.
- Implementation facilitated with Change Management.
- Use Change Architecture where the capability to change of the NMSA is taken into account and where an integral approach is necessary.
- Integral approach is taken care off by use of formal processes (DMP).
Questions