

Information- and data-driven organisations from promise to practice?

Reflecting on maturity dynamics in a defence sustainment organisation

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Abstract

In today's increasingly digitised world, data is the common denominator in firms and public organisations like the Ministry of Defence (MoD). The Netherlands MoD (NLMoD) declared in its long-term vision that it wants to be an information- and data-driven organisation. How realistic is this vision, and what is necessary to really become information- and data-driven? Current literature provides limited answers to these questions. This chapter elaborates on the use of data-driven maturity models to be able to assess the current situation of the NL MoD sustainment organisation, and to explore what should be done to become a more information- and data-driven organisation. Our results contribute to literature on strategising on maturity evolution, and they offer professionals actionable insights for changing their organisation.

Keywords: Data-driven, Maturity model, Data maturity assessment, Defence sustainment, Sustainment organisation

5.1. Introduction

In today's increasingly digitised world, data is the common denominator. Leading organisations are turning data into valuable insight and powerful capabilities, not just enabling but driving strategy and decision-making.¹ However, even though leading organisations increasingly rely on data, others struggle to capture value from data and fail to fulfil this data-driven 'dream.'² We note that various communities refer to 'data- and/or information-driven.' Data per se does not improve organisations but it provides a required foundation for information. Data can be

defined as ‘a symbol set that is quantified and/or qualified’, while information is ‘a set of significant signs that has the ability to create knowledge.’³ We use in this chapter ‘data- and/ or information-driven’ interchangeably to relate to various academic literatures and professional communities, noting that conceptual clarity will be required as the field matures.

Researchers and consultants tend to believe that strategy development and execution based on pivotal elements like an organisation’s own mission and goals, analysis of the environment, and intra-organisational optimisation and adjustment are of significant importance for business continuity. Based on tools like McKinsey’s 7S model,⁴ organisations have invested for decades tremendous resources into strategy development and execution, the renewal of business processes and the improvement of their information systems to enact competitive advantage. Correct and in-time business decisions were and are crucial to remain competitive for which reliable, accurate and punctual information needs to be provided. Information processing has been acknowledged since the seventies as the lifeline of organisations.⁵

Especially over the last decade, the societal arena has changed significantly because of the “*continuous development and penetration of digital technologies that lead to disruptive changes in the economy and society that enable novel ways of leveraging data for optimizing business processes and design innovative data-driven business models*”⁶. These trends have increased pressure on organisations to become more data driven. In literature, these organisations are called Data-Driven Organisations (DDOs), with several definitions in use. Hupperz et al. (2021), for instance, present a high-level description of DDOs using five key elements to describe such an organisation: Digital Transformation, Data Science, Data-Driven Business Model, Data-Driven Innovation and Data Analytics. Decision-making is a pivotal concept in DDO, with data-driven decision making described as ‘multiple forms of data (that) are first turned into information via analysis and then combined with stakeholder understanding and expertise to create actionable knowledge.’⁷

The wish to become a data-driven organisation is often expressed. Yet many organisations fail to set steps to become a data-driven organisation because they often do not realise that DDO-transformation requires change of all relevant aspects of the organisation in a balanced way, as for example was illustrated by the 7S model of McKinsey or five key elements of DDOs.⁸ Therefore, there is a gap between on the one hand expressed intention, and on the other hand acting. Organisations often lack the knowledge to determine their direction (what are we aiming for?), and to determine how to transform the organisation in order to materialise ‘potential for improvement.’⁹ *The objective of this chapter is to examine*

the relationship between organisational goal setting pertaining to becoming data-driven, maturity in this realm, and process conceptualisation of actionable-balanced change. We draw on digital maturity theory and examine a Defence sustainment organisation as an illustration. This organisation includes maintenance, logistics, supply chain management, transport management, purchasing management, asset management and lifecycle management.

Maturity models have been used extensively to guide organisations toward domain maturity.¹⁰ With a maturity model, we can establish a desired to-be situation based on known experience and best practices. A maturity assessment then positions an organisation on the maturity model and determines the as-is situation of the organisation. When we have established the current state and the future direction, we can provide relevant information about the current challenges and opportunities. A maturity report provides information that can be used as the fundamentals of a strategic plan to become a mature data-driven organisation. Next, we examine theory on data-driven maturity, followed by an illustration concerning a Defence sustainment organisation.

5.2. Data-driven maturity models

5.2.1. Conceptual clarity across communities

Multiple professional and academic communities use concepts like ‘intelligence’ and ‘data-driven,’ representing at least a major hermeneutical problem. The (evolving) meaning of these – very same – words seems to differ between organisations and practices/communities. We therefore briefly clarify our understanding of the concepts and communities mentioned to make the positioning of our chapter more precise.

‘Multilevel decision making’ is a framework that resonates across communities; it therefore serves as our starting point. Organisations and the value chains in which they are embedded require decision making at strategic, tactical, and operational levels (in military thinking the latter two terms should be exchanged) (Figure 5.1). Note that multilevel thinking and organisation-vs-chain thinking represent two different units of analysis.

At the operational level, public organisations are responsible for security operations in a particular environment; it is their primary task. We can then distinguish two broad communities that span military business and war studies (depicted with grey and orange boxes).

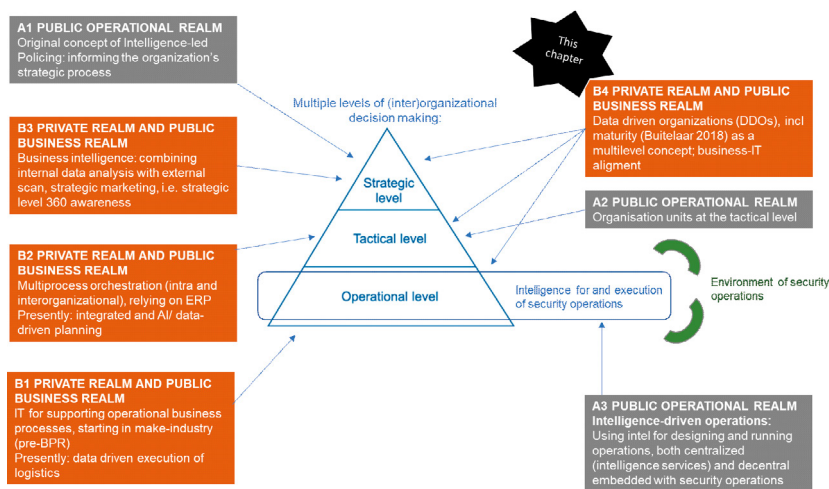


Fig. 5.1. Clarifying intelligence and data-driven concepts across communities.

- On one hand, community A (grey) is geared towards security. Within this community, A1 depicts original strategic Intelligence-led Policing thinking that has focused on strategically orienting an organisation's activities: 'holding out the promise of a more objective basis for deciding priorities and resource allocation'.¹¹ At the tactical level, MoD's HQ and service branches have centralised organisational units (A2). Shifting to the operational level, intelligence – defined as actionable information – increasingly plays a significant role in enabling or even initiating-steering operations,¹² including operational 'IGO' (Informatiegestuurd Optreden) at the NL Military Police¹³ (A3).
- On the other hand, community B concerns commercial organisations as well as business-like aspects of public organisations (including those focused on security). The advent of business computers spurred in the 1990s a new interplay of business process redesign and information technology (B1), starting bottom up rather than top down as mentioned above for A.¹⁴ Advances in computer and software capabilities expanded this approach to tactical (e.g. Enterprise Resource Planning, control towers, managing multiple business processes using dashboards,¹⁵ B2) and strategic levels (updating organisational positioning, business model, B3). Intelligence in the B community is predominantly reserved for strategic level decision-making.¹⁶ We note that at present, data-driven is still mainly focused on operational level topics like process mining (B1), with B2 showing gradual advances towards multi-process analytics and performance management 'on top of' B1. This has to do with the availability of data and algorithms. Recently, a multilevel approach is emerging embracing

the notion of information and data-driven as an organisational transformation concept, building on earlier work on business-IT alignment¹⁷ (B4).

Our chapter is positioned in the B-tradition, focusing on B4 for military sustainment organisations. At the same time, we are aware of the 'A-tradition' and carefully use resources emanating from different communities. We note that strategic level documents from the NL MoD tend to combine operational A3 innovations with future-oriented ideas on strategic level change¹⁸ (A1 and B4) and sometimes micro innovations (B1).¹⁹

5.2.2. Data-driven decision making: why, how

Organisations increasingly seek to improve their insight in operational-level processes, shifting from independent (sub)processes towards multiple interdependent processes. These efforts resonate with a simultaneous shift in analytics from description, towards prediction and prescription.²⁰

An important aspect of being data-driven as an organisation is that decision-making is supported by data-backed intelligent information instead of intuition, and that data-driven activities are fully integrated into business processes not only on the production level, but also on tactical and maybe in the future, strategic business levels. Data-driven decision-making increases the ability to understand patterns from the past and to predict future demand and operations, and therefore to optimise these in terms of, for instance, resource.²¹ It extends traditional ideas on organisation science on information processing.²²

Research has shown that companies that emphasise data-driven decision-making show higher performance.²³ Decision-making is a multi-level concept in modern organisations and therefore most employees, not just business analysts or data scientists, must be empowered to understand the possibilities of exploring and exploiting data to develop data-driven decision-making capabilities.²⁴

Though one might expect that faster access to, and implementation of, better and broader information positively affects business decisions, this is not easily determined. This effect seems more straightforward in a military operational context as epitomised by the OODA loop (A3 in Figure 5.1).²⁵ For other contexts, it is difficult to assess and/or measure the influence of information access on business results. This cannot be directly measured so far. As an intermediate step, we can use maturity models to examine the extent to which organisations are or are becoming more data driven.

5.2.3. *Maturity models*

Maturity models define levels of definition, efficiency, manageability, and measurement of the monitored environment. A universally used maturity model is Gartner's Maturity Model for Business Intelligence and Performance Management.²⁶ This model offers a non-technical view and discusses maturity in terms of business-technical aspects that can help identify bottlenecks, encourage discussions between departments and thus help improve maturity. Such improvement may concern the general maturity level of the organisation, the maturity level of individual departments and/or business units, and/or one or more areas defined by maturity models.

Guidelines are represented as a framework, defining layers and components that need to be integrated and aligned to generate a better-defined strategic vision and plan for implementing it.²⁷

Buitelaar²⁸ redesigned Gartner's maturity model and developed a new maturity model geared towards organisations interested in becoming more data driven. For this maturity model, the design approach described by Hevner, March, and Park (2004)²⁹ is followed. It is also in accordance with the research of Becker, Knackstedt, and Pöppelbuß (2009)³⁰ who published a paper on the development of maturity models for IT management and proposed a procedural model for the development.

Dimensions. Most maturity models are focused on analytics as an isolated activity within the organisation. The relation between analytics and the organisation is often left out or implicitly included in some dimensions. Therefore, Buitelaar's model includes two more dimensions: Integration & Empowerment. These dimensions are aimed to position analytics as an activity within the organisation as a whole. Integration is the concept of integrating analytically produced insight into business processes. Empowerment is the concept of empowering members and products of the organisation using analytical techniques and data.

The complete list of dimensions then becomes as follows:

- **Data.** The fuel for all data-driven activities. How do you source and manage your data?
- **Metrics.** The key to measuring output and managing performance. How do you use, collect, and enrich your KPIs?
- **Skills.** Essential for operating a data-driven organisation. Do you hire and educate the right people?
- **Technology.** The foundation for a data-driven organisation. What technology do you need to build an analytical process?
- **Leadership.** The cornerstone for a successful analytical transformation. How does leadership successfully steer the transformation?

- **Culture.** The driving force behind a data-driven organisation. How does culture affect and promote data-driven adoption?
- **Strategy.** The plan for success. What role does analytics have in your plans and vision of the future?
- **Agility.** The ability to adapt and deliver. How well are your roles and processes organised to change and deliver?
- **Integration.** The integration of analytical insight into processes. How is the organisation using and integrating analytical output?
- **Empowerment.** The empowerment of the organisation. How is data analytics helping your employees and products to succeed?

Data-driven organisations do not isolate analytics in a certain process or department. The entire organisation should be better equipped for success through the power of data and analytics.

Maturity stages. While the dimensions help organisations distinguish areas available for interventions, stages are required to conceptualise process. Five maturity stages pertaining to becoming data-driven are distinguished in a normative sense, i.e. they are believed to provide a developmental pathway for organisations (Figure 5.2).

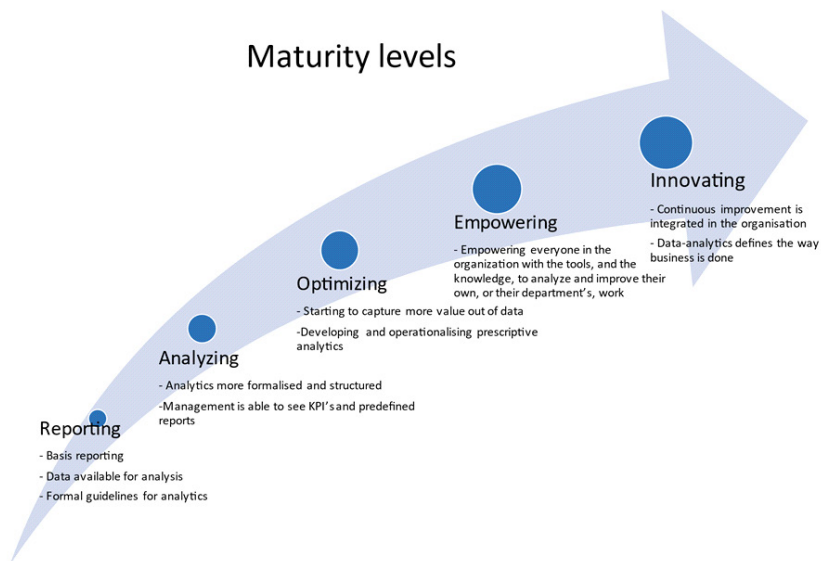


Fig. 5.2. Different maturity levels based on Buitelaar (2018).

Table 5.1. Maturity stages related to the **data** dimension of Buitelaar's (2018) model (modified)

	REPORTING	ANALYZING	OPTIMIZING	EMPOWERING	INNOVATING
	Visualize existing data and create the foundation for an analytical future.	Dive deeper into the data to achieve insight into why things happened.	Optimize business processes by bringing analytical insight to operations.	Empowering employees by providing the tools and knowledge to perform analytical activities.	Use data and experiments to innovate in products and transform the organization.
Data	Determine which data needs to be visible. Source and report critical data.	Determine which data is relevant for deeper analyses. Collect and analyze relevant data. Monitor and ensure data quality. Define a strategy for keeping data secure and private.	Collect data like user behavior on a bigger scale. Use customer data to personalize the experience. Focus on data quality.	Look for new data opportunities, including from third party sources. Create a clear data governance strategy that scales	Continue to look for new data sources from new products. Leverage alternative unstructured data sources, such as voice and images.

These stages apply to all dimensions, and they convey both business value and analytical capability. The stages also reflect a holistic and step by step developmental view on data-driven activities within the organisation. For instance, in stage three, the importance of *optimising* processes with analytical insight is stressed (a business process angle), while in stage four *empowering* members of the organisation shifts the emphasis to employees. These two stages then culminate in an *innovating* organisation based on data and analytics, with a workforce capable and willing to keep on experimenting and improving a data-driven approach to organisational work. Table 5.1 shows that Buitelaar's (2018) maturity model is useful for analysing the situation within (mostly large) organisations or partnerships. However, he seems to be less clear about (1) the desired maturity depending on the type of business/ industry, and (2) the extent to which an organisation has partially or fully reached a maturity level.³¹ In a normative sense, maturity improvement applies to an organisation as a social system at large, not

specific organisation units or processes possibly advancing more rapidly than the rest of the organisation.

Following the model, one can state that the ideal situation is that an organisation has reached a certain maturity level across its entire ‘width,’ but it is also conceivable that a certain independent part of an organisation has a much higher maturity level than the rest of the organisation. Hence, different normative conceptualisations of maturity dynamics can be distinguished.

Next, we examine the usefulness of these concepts in an empirical setting: the Dutch MoD sustainment organisation.

5.3. Long-term Netherlands “Defensievisie 2035” on becoming information and data-driven

The Dutch Defence organisation (NLMoD) presented in 2020 a new long term, 15-year strategy to address the envisioned national and international security threats called “Defensievisie 2035” (Defence Vision): “Vechten voor een veilige toekomst” (“Fighting for a secure future”).³² This vision describes the envisioned characteristic properties of the organisation in 2035 and ten guiding principles that will embody these organisational properties. The envisioned organisational properties and guiding principles are given in Table 5.2.

Table 5.2. NL MoD *Defensievisie 2035*: envisioned organisational properties and guiding principles³³

Organisational properties		
Technologically advanced	Information-driven	Reliable partner and protector
Principle	Principle	Principle
Unique individuals and labour extensive capacities	Authoritative information position	Transparent and visible in an engaged society
Flexible operations, rapid response, scalable, independent	Multidomain and integrated operations	Strive for a stronger self-reliant Europe
Strong innovative capacity		Strive for specialisation within NATO and Europe
Escalation dominance (in cooperation with partners)		Strategic capabilities for a resilient society

A further and refined interpretation of the vision can be found in the NLMoD research agenda³⁴ that focuses on future, vision driven knowledge and innovation: “The Defence Vision places a strong emphasis on strengthening the innovative capacity of the Ministry of Defence. The research agenda focuses on relevant (disruptive) technologies and research needed to support the goals of the NLMoD Defensievisie 2035. In the two mentioned documents as well as not publicly published MoD-documents we notice an understanding that there is a difference between an information-driven *organisation* and information-driven *action*. The difference indicates that in the NLMoD Defensievisie 2035 there is a distinction between:

- Managing and operating the organisation, i.e., creating policy and business management aspects, and
- Operational forces and their primary processes.

Public appearances by leading officers confirm this vision. Commander of the Netherlands Defence Forces General Eichelsheim stated during the MoD strategic meeting (8th October 2021, translation by the authors):

‘Focus points information-driven and digitised. Within strategic competition, digitisation is a rallying theme. Data is the foundation for our business operations and operations. This calls for modern and secure means of communications and IT, both in The Netherlands and abroad. On the battlefield, our people can make the difference because in addition to their human side (abilities), they bring something else: data. Data works for them; it gives them an edge in the strategic competition and the power to make decisions with important consequences.’

The interpretation of the information-driven organisation, in the philosophy of fact-based management, is directly tied with the data-driven philosophy (the existence, definition, conceptualisation, methods, knowledge possibilities, truth standards, and practices of working with data and information)³⁵ in the private and non-defence government sector (see also Figure 5.1). The information-driven action is much more tied to concepts as “intelligence led” in for instance policing (Information/Intelligence Led Policing) (A1 and A3 in Figure 5.1). This becomes clear given the interpretation of information-driven action: “Achieving the right effect in the right place by applying information smarter, faster and more powerful than our opponents.”³⁶

In the analysis in this chapter, we focus on the developments concerning sustainment and being or becoming data-driven in sustainment. We give a brief description of the developments since 2003, the current status and comment on

some of the proposed or already started actions to reach the goals set in the NLMoD “Defensievisie 2035”.

5.4. Dutch defence sustainment: from information management towards information and data-driven

The NLMoD sustainment organisation took its first steps into a more information and data-oriented approach with the decision to introduce an ERP-system in 2003 (B2 in Figure 5.1)³⁷. The main goals of the transformation were: (1) more effective equipment logistics support for (joint) operations; (2) support the new Defence management model; 3) more efficiency; (4) improve the management of the information provision by replacing numerous legacy systems with one ERP system.

After the implementation in 2013, an evaluation of the ERP-migration project SPEER (Strategic Process Enabled ERP Re-engineering)³⁸ took place in 2017. The evaluation concluded:

“We are therefore not surprised that Defence is still at the beginning of a growth curve towards maturity in working with ERP. In various places in the organization an upward trend is visible as well as a rising enthusiasm in the use of ERP.”

The report also concluded that most of the main goals that were formulated when the SPEER project started were not yet fully realised at that time. However, the implementation of the ERP-system in 2013 and the subsequent system development and migration to the ERP-system of almost all article categories and main sustainment processes within the NLMoD lead to the conclusion that its ERP-system is the leading system guiding the business process support within the sustainment organisation. Looking at today’s situation, NLMoD is preparing itself for the transformation to a more information- and data-driven organisation³⁹.

While the new data-driven strategy was formulated, three important building blocks of the future sustainment data infrastructure that are going to dominate the next 15 years or more have been (partially) designed. The building blocks are projects to rebuild the aging IT-Infrastructure, the implementation of a new iteration of the ERP-system, and a newly to be designed HRM-architecture which will be integrated in the earlier mentioned new ERP -system. For the NLMoD sustainment organisation, this implies that most of the sustainment processes will be supported by the new S4/HANA ERP⁴⁰-system from 2025 onwards.

Considering the efforts needed in time, capacity, knowledge, and experience to transform these building blocks during the next five years into fully deployed IT-systems that can support the goals set in the NLMoD Defensievisie 2035, the

question whether there is a foreseen transformation growth path to reach the demands of the NLMoD Defensievisie 2035 should be answered. Have we learned from previous experiences and other organisations? Is the ambition of NLMoD to become an information and data-driven organisation, considering the understanding that successful organisations transform holistically in well-defined (in terms of goals, time, and budget) steps to a certain data-driven maturity level, realistic without a well-defined transformation plan? While the full transformation trajectory plan is not ready yet, one may wonder whether the building blocks presently defined suffice for reaching the next levels of maturity.

In relation to the ambitions to migrate the current ERP system SAP R3 to the new generation ERP system SAP S4/HANA the following questions are relevant. Is the S4/HANA ERP-system enabling the organisation to reach information data-driven maturity and to what extent? Is the transition path sufficiently clear? Are the ambitions realistic considering the mandatory development phases, i.e., different maturity stages? Finally, what would be realistic steps to climb the ladder? To answer these questions,

- We analysed the final targets as laid out in the NLMoD Defensievisie 2035,⁴¹
- Mapped these targets to the maturity model of Buitelaar (2018),
- Derived the maturity stage of being “data-driven” of the sustainment organisation,^{42,43}
- Considered the steps to be taken to get from the current level (and phase) to the end goal, and
- Compared the current actions defined to climb to the next level with the path set out by the NLMoD documents at our disposal.

5.5. The maturity assessment of the current sustainment organisation

We start out by assessing the current maturity phase of the NLMoD sustainment organisation as DDO. The model by Buitelaar, as previously discussed, has ten different dimensions, and recognises five distinct stages of development. To be able to assess a current or future data-driven maturity stage of an organisation, Buitelaar has specified the ten dimensions in two or more relevant factors. For instance, the dimension DATA is constructed from the factors “data analytics storage,” “source variety” and “governance.” By scoring the level of use, integration, being up-to-date comparative to competitors etc. and combining the weighted scores leads to the total dimension score⁴⁴. To derive the score for the NLMoD sustainment organisation we used the tool by Buitelaar⁴⁵

The answers to the questions to assess the factor and dimension scores were scored based on the available documents, and experience of the research team

within the NLMoD sustainment organisation. Many of the answers are related to the recognised stages of development of the implementation of the current NLMoD ERP-system, processes and other systems that are used to store and analyse data in the sustainment organisation. In this way, it is possible to estimate the data-driven maturity of our sustainment organisation.

The assessment of the current level of maturity of the NLMoD sustainment organisation shows us the following diagram and is in line with the evaluation report of the ERP-migration in 2017:

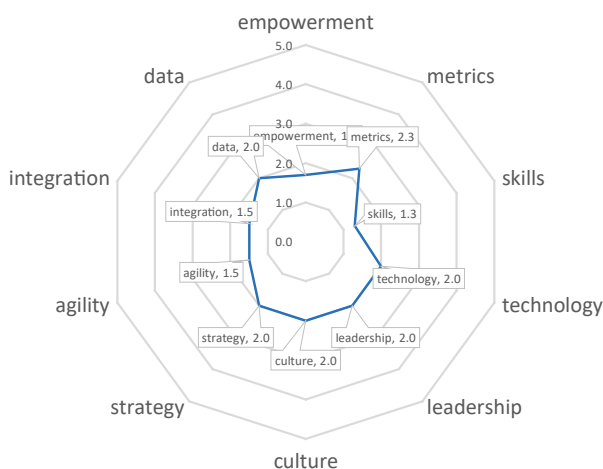


Fig. 5.3. Maturity assessment of the NL MoD sustainment organisation by the authors based on Buitelaar's (2018) assessment model.

The overall score is 1.8 out of 5. Looking at Figure 5.3, NLMoD is in the “analysing” phase implying that NLMoD is currently considering diving deeper into the data to achieve insight into why things happened and tries to make a start by optimising business processes by integrating analytical insights. In analytics terms, the organisation is at the crossroad of going from descriptive to analysis. The recently developed “Material and Personal Readiness” dashboard used by the Director Control of Operational Readiness at the Defence Staff is a good example of this maturity phase.

5.6. Maturity level of the future sustainment organisation

There are a lot of similarities between the NLMoD sustainment organisation and large public and commercial organisations. This becomes apparent when analysing the long-term goals as mentioned in the NLMoD “Defensievisie 2035” and the functionality requirements of the new S4/HANA ERP-system. This implies that we may assume – we cannot derive it from current sources – that the main underlying driving factor is algorithmic data-driven model evaluation incorporated in all or almost all decision-making processes within the sustainment organisation. Realising this and mapping the envisioned end-state of 2035 to the Buitelaar maturity model, the implication is that all ten dimensions should attain maturity level “innovating”, or “empowering” at least.

Given the result of the analysis for the current state, “analysing,” a transformative growth path must be formulated for all ten dimensions. It is known that an organisation must go through a development of all the different lower maturity levels to be able to reach a higher level of maturity. Experience shows that to transform from one level to another usually takes several years as learning takes time and stages cannot be skipped.⁴⁶

This points to the risk of taking a correct step at the wrong time, which does not lead to the proposed effect and can be very costly. For example, in the “innovation” maturity level, one needs innovative oriented individuals in the workforce, while in the level “analysing” these individuals cannot do more or less than routinely executing their tasks, so in the analysing phase you “just build the damn thing.” Training and hiring the wrong type of individuals at the wrong time can turn out to be a costly and ineffective affair.

This leaves us with the question: can we already find a transformative strategy in communications of the NLMoD and to what extent? And further, what should that strategy entail? Could the maturity model enable design of a transformative strategy?

Some indications can be found in NLMoD “Defensievisie 2035”:

“The Defence Vision wants to make room for experimentation and scaling up new technologies and working methods in the organisation by means of short-cycle innovation. Partly against this background, the Defensievisie 2035 stimulates the further development of innovative defence ecosystems of companies, universities, and knowledge institutions.”⁴⁷

These developments are needed to define objectives and may drive organisational developments.

This statement creates problems with our current state on the maturity ladder if this innovation must be widely implemented within the organisation. This is also

recognised: current successful innovative experiments cannot be embedded in the current organisation due to legal and cultural challenges, eliciting frustration with the innovators.⁴⁸ This again implies that before stimulating the innovative ecosystems, the ‘regular’ (routine-oriented) part of the organisation must be in order to be able and willing to support the innovators. Therefore, stimulating the innovation too much in this phase of the transformation again could have adverse effects.

In earlier NLMoD policies and statements,⁴⁹ the most important action program was to get the organisation in order and in line with its budget. The above analysis confirms that to be able to transform to a situation as defined in the NLMoD “Defensievisie 2035”, the organisation should be in line with its actual goals and budget.

5.7. Discussion

This chapter’s objective was to examine the relationship between organisational goal setting pertaining to becoming data-driven, maturity in this realm, and process conceptualisation of actionable-balanced change. Given the considerable number of dimensions and the size of the gaps as identified before and the necessary integrated approaches to data-driven working in the sustainment organisation, several major achievements must be realised: the implementation of the new ERP-system. Working data-driven means not only implementing the IT but also a redesign of the “business operations” side, what is required, what should the new working processes look like, and how the IT systems can support this. This in turn implies that the business side is aware of what is possible. This is called the classical business – IT alignment. But now, packaged in newer and more dynamic context, the data, information, and software rules in the SAP S/4 HANA ERP-system are even more determining the operational possibilities and efficiency than ever before.

This observation leads to the conclusion that the classic way of bringing in new IT functionalities is not only a matter of “change the business through a short-term project” or implement a new technical tool that delivers the required functionality but also needs a long-term perspective on how the organisation can be permanently transformed to a higher maturity level needed to be able to operate and work with the new functionality as a Data-driven Organisation. This means a long-term perspective not only on IT but also on all the ten mentioned dimensions.

Another consequence of maturity level awareness within a data-driven organisation should be the goal setting within (strategic) vision papers and requirement documents. An often-observed pattern in IT projects is that “the business” is asked what kind of functionality they require without completely realising the possibilities and limitations of the software and the IT department is often not fully aware

what the business consequences are after implementation of the IT-system. The new SAP S/4 HANA standard, which will be the new ERP/SAP functionality from 2025 onwards, has a lot of new Business Process Management (BPM) possibilities. The project business case of the migration project, called “Roger”, shows us the advanced functionalities NLMoD will be able to perform. However, the necessary maturity-steps that must be taken to be able to use the functionalities in an optimal way seem not well defined.

Not only should goal setting in strategic vision papers and requirements be looked at. In addition, the governance of “running the business” is a prominent issue. As already mentioned, to be able to use new complex functionalities on a high maturity level, all ten maturity dimensions should ideally function at the same level. This means for instance, at level X for data, that they are stored in one database, accessible through IoT, have high quality (complete, unique, actual), are well protected and managed. For the dimension skills, it means that the sustainment organisation needs high-level computer science and artificial intelligence skills to create analytical products and empower employees. It needs knowledge on how to rapidly create new analytical models for different applications and ventures to capture the maximum value out of our data. All the employees in the organisation have the mindset and the knowledge to continuously improve their work and processes, using a variety of data sources and methods.

The alignment of IT with business in a data-driven context is in the current organisation very much tied to the IT, while in successful companies the data are more tied to the business operations. To achieve a good alignment, it is necessary to bring this in balance and give IT a more integrated position in business. In the traditional strategical alignment model,⁵⁰ this situation is referred to as the competitive potential situation. NLMoD quite often seems to struggle with this problem.

5.8. Conclusion

To become a really successful information and data-driven organisation as mentioned in the NLMoD “Defensievisie 2035”, a broad, long-term and transformation encompassing multiple dimensions approach must be made before this end state can be reached and innovation permeates the blood vessels of the people and the organisation, for instance procurement processes for future weapon and IT-systems and their life cycle support. It is a difficult and time-consuming transformation process that can only be successfully achieved through the transparent and structural use of an implementable “maturity development strategy”.

‘Implementable’ concerns the ability of an extant organisation to take the next step in terms of maturity development. With respect to the extant Defence

sustainment organisation, one can point at the present challenges to achieve a 'normal' level of operations when looking at for instance around 600 vacancies, stock problems, and data immaturity. Addressing these challenges calls for not only budget but also a systematic fixing of foundational capabilities. Moving from sustainment towards the MoD organisation at large, we can conceptually generalise our findings. As becoming data-driven has developed into a strategic choice for the Dutch MoD, future research topics include refinement of a maturity model across all levels and across the military operational and non-operational sides. For instance, researchers may evaluate the extent to which military operational units are data-driven. They can examine operationalisation and use of fact-based/data-driven strategic management of military operations and organisational performances.

Notes

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