Increasing need for cooperation in Vessel Traffic Management
Complex world demands new skills and competences

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Abstract/Introduction

The environment in which we work in changes rapidly. This applies to the context of inland shipping too, which has changed strongly the last decennia. Inland shipping has become a complex sector, that driven by global competiveness, continuously strives at working faster and more efficient. And this must be accomplished within a network with other actors and modalities. Actors like harbour-authorities, vessel traffic services, pilot and towage services, other harbours, etc. And modalities like road transport, rail transport, sea shipping and air transport.

Public organisations are stimulating ánd stimulated to adapt to this changing environment. For public organisations and their public servants, these developments imply a change to new working methods, new ICT and new ways of cooperation. These changes can only succeed when the behaviour of public organisations, its attitudes and competences of its servants are adapted to this new environment.

This article addresses the Vessel Traffic Manager as a public servant. Vessel Traffic Managers are responsible for safe and swift navigation on our inland waterways, in harbours and at sea. This article elaborates on the changes they are facing. Changes in behaviour, attitude and competences that are noticed within public organisations and their servants that have a role in vessel traffic management. First, this article will describe two main developments within the last two decades affecting the vessel traffic manager: New Public Management, with its focus on business models, and the growing need for cooperation in chains and networks of different actors. Secondly, this article will analyse the competencies of vessel traffic managers which are needed to cope with these developments: result-orientation and cooperation-competencies. The article will conclude on an elaboration on the modern vessel traffic manager.

Two developments affecting the vessel traffic manager

There are two main developments concerning public organizations in general, which affect Vessel Traffic Managers. First, since the eighties of the previous century, New Public Management has been introduced [1] as an answer to a steady growing and inefficient government. New Public Management aimed to introduce business management models and business administration techniques into public organizations. These methods were aimed at efficiency and transparency within governmental institutes. Examples of New Public Management were the introduction of markets within public transport, the division between policy making and implementation, and the introduction of techniques like life-cycle costs, risk management, performance indicators and business cases within the public domain. This focus on business-like efficiency in the Netherlands, for example, was strengthened by exceeded budgets on public works. Examples of New Public Management within Vessel Traffic Management are the Performance Indicators which are used in Dutch navigation to express the desired achievements of waterways and sluices. Sluices leading ships to the

Western Scheldt for example, have to let a ship pass within 30 minutes. In the Netherlands these performances are negotiated in a management contract between the policy makers of the ministry and navigation managers, an example of New Public Management as well.

A second major development is de growing need for organizations to cooperate with other organizations. Due to growing complexity within society, issues and organizations are becoming more and more intertwined. And actors are more and more interdependent on each other [2] [9]. This growing interdependency has an important consequence. Organizations can't reach their goals on their own, and need to cooperate with other organization to achieve these goals. Services are not delivered by only one single organization anymore, but within a chain of cooperating organizations. Like getting a ship into a harbor, for example, in which vessel traffic managers, pilot and towing services and ship agents have to cooperate to do this efficiently and safely. Roovers and Schwarz [8] conclude that in these complex situations rational or juridical approach are counter-effective. An actor-orientated network approach must be leading.

These two developments lead to new demands on vessel traffic managers. First, they have to have the competencies to operate efficiently and focus on results. Secondly, they have to develop cooperation skills. Skills and competencies which are not always taken for granted within the hierarchical world of navigation and which can lead to tensions between them. The next two paragraphs elaborate on these competencies.

First requirement: a result-orientated vessel traffic manager

'The new public servant' is topic of conversation in all government services. Stimulated by different motives, like efficiency and market demands stemming from New Public Management, the contemporary public servant is subject to change. To explore these new competences we'll look at research on public servants in general, starting with Harrison (1972). Harrison describes four ideal types of public servants culture, from which we use two to address this first requirement. Following Harrison, we distinguish a shift from a *role-based* culture to a *task-oriented* culture within public organizations.

In a *role-based culture* employees strive to maximize security and stability. The basis of this culture is formed by rules, appointments, procedures, and hierarchy. Role and status are more important than performance. A role-based culture can be found in former large, bureaucratic organizations. According to Harrison (1972) a role-based culture is a combination of:
- hierarchical orientation
- focus on dominating environment
- law of the jungle: personal success instead of organizational success
- straitjacket of cumbersome rules
- internally focused, many procedures in formal surroundings
- informal/personal strongly separated from formal/hierarchical
- people limit themselves strictly to the tasks associated with their role
- correct behavior is more important than effective behavior

Within the hierarchical environment of navigation, with its straight commanding lines and procedures, this role-based culture has a strong foothold, still in modern days. Rules often still dominate tasks. Rules like safety standards, rules on navigation, etc.

Since the seventies of the last century, public servants make a shift to a more *task-oriented culture*. In this culture the behavior of servants is mainly determined by the task that must be realized. Results are more important than rules, power relations or personal needs. The

strength of this culture is flexibility and focus on results. New Public Management has reinforced this task-orientated culture in the nineties of the previous century. According to Harrison (1972) a task-orientated culture has the following characteristics:

- Cooperation and focus on future
- Suppressing personal needs on behalf of the higher purpose
- Getting the job done in a changing environment, flexibility
- Management works to create fitting conditions
- Rules are there to encourage the higher purpose, or otherwise adapted / put aside
- Self-motivation and responsibility
- Decision-making by consensus

According to this shift to a more result-orientated culture, the vessel traffic manager has been encouraged to change. Steijn (2009) describes modern competencies of civil-servants:

- Integrity: no abuse of office
- Neutral: consideration for the common interest
- Flexible: capable and willingly to adjust
- Context-aware: open eye for surrounding
- Cooperative: within and outside own tasks
- Result oriented: eye for effectiveness and efficiency.

In these competences we'll find the remains of New Public Management, such as the result orientation and integrity, but some new competencies as well. The result-orientated competencies are not enough any more. Flexibility and cooperative are more connected with the complex networks in which public servants nowadays operate and bridge the gap to the second development, important for vessel traffic managers: the skills to cooperate.

Second requirement: a focus on cooperation

Result-orientated skills are important, but are not enough. The growing need for cooperation within networks of actors sets new standards for vessel traffic managers. Standards which even can conflict with the result-orientated approach: whose result is our focus?

Networks of actors, or chains of actors, such as navigation chains in harbors (vessel traffic management, pilot and towing services, sluice operators, agents, etc.) have two important characteristics. First, all actors are dependant on each other to reach their own goals. And secondly, as a result of this, no one has the power to impose its ideas on other actors. The only way to get things done here is cooperation and searching for compromises. Roovers and Schwarz [8] speak about 'a political approach' to strengthen cooperation between navigation organizations. And this cooperation is not focused on optimizing one's own business processes, but at optimizing the operations *within the whole network or chain*. An optimal navigation chain supply can demand suboptimal solutions for the individual actors to optimize the whole chain. And this leads to tensions: for example, the before mentioned performance indicator of getting a ship within 30 minutes through a sluice. Sometimes letting a ship wait in front of the sluices, can help to optimize the general performance of the navigation chain at a river. A suboptimal result for the sluice operator, and conflicting with its performance indicator. But helping the overall goal: getting as much ships, quick and safe, to its harbors.

This need for cooperation asks for new competencies of vessel traffic managers [6]. Important is their focus on results, *but not on their own results.* Focus is needed on the results of cooperation, or the chain goals. It's more important to diminish delay within the whole chain of getting ships from the sea to the quay, in stead of diminishing delay times at one single sluice. So, beside result-orientated skills, this asks for empathy and sensitivity, the skills to make decisions based on consensus and the ability to address other people.

Listening before telling. Furthermore, research shows that a strong organization culture can strengthen commitment and effectiveness of employers [1]. Organizations with a stable and reliable culture have a better performance at cooperation. And on the contrary, hierarchical organized organizations and management styles are much less effective when cooperation is needed. Finally, within complex networks on navigation the main skill to be developed is the ability to establish trust between people and organizations, despite different views [8]. Roovers and Schwarz point out to the need of accurate and consistent information for every actor within navigation chains. Information which has to be shared by all actors, but which can be frustrated by a lack of trust.

And thus: the modern vessel traffic manager

If we combine developments of result-orientation and cooperation, the outline of the skills of the modern vessel traffic manager emerges. The modern vessel traffic manager is result-orientated, focused on the performance of the chain or network of navigation in which he/she operates. And therefore has the ability to build trust, to be flexible and to decide on consensus within a world in which public and private goals are intertwined. This fits well into the findings of [4], who presented Future Work Skills 2020 of public servants, such as:
- Social Intelligence: the ability to connect with others directly, to feel what is going on with others and respond effectively.
- Adaptive thinking: skills in designing solutions and answers that go beyond memorized rules and solutions.
- Cross-cultural competence: the ability to operate in different cultures.
- Virtual collaboration: the ability to be productive and to work as a member of a virtual team.

Yet, these skills lead to tensions with vessel traffic managers. First, navigation has firm characteristics of a hierarchical culture, a culture needed as a basis to operate ships. And a lot of vessel traffic managers are educated at navigation or marine schools and ships. This hierarchical culture fits a role-based culture, gives some trouble in a result-orientated culture, but raises real tensions when intense cooperation and flexibility beyond its own goals are needed. For example. the question who's leading in making navigation choices within the chain between harbors, piloting services and the vessel traffic managers leads to tensions because all actors can consider themselves as leading.

Secondly, cooperation with public as well as private actors causes tensions when vessel traffic managers need to make neutral decisions. Every actor (agents, harbors, etc.) is inclined to influence the vessel traffic manager to decide in its own advantage, even if this disadvantages other actors or the overall-performance of the network. And the vessel traffic managers themselves need to develop new competencies to deal with this.

Finally, cooperation skills are not easily made explicit. While efficiency and performance indicators require explication of their performances. And ICT takes over. This addresses the tension between professionals and managers. Actions of professionals, like captains, pilots, sluice operators, etc., are based on their tacit knowledge, knowledge and skills developed by experience. Knowledge and skills which are difficult to explicit. And that can be hampered by management, but cause problems if management is absent [3]. And thus, tacit skills of Vessel Traffic Managers, like cooperation, can be hampered by a management focus on efficiency and results, shown by performance indicators. An example of these tensions can be found with piloting services. Pilots have developed firm tacit knowledge on navigating complex rivers, like the Western Scheldt. But new efficiency asks for piloting from the shore, with new ICT-techniques. With tensions between pilots and their managers as a result.

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