The characteristics of Defence materiel and more specifically large naval surface ships are unique, tailor-made, innovative, complex, expensive, the numbers per type of ship are small, and political sensitive (MoD deals with sensitive information and a rapidly changing security situation) and have substantial economic interest. Given the changing external factors is then the present procurement strategy or an alternative procurement strategy the best choice for the Ministry of Defence for the future procurement of Dutch large naval surface ships? Despite the reasonable satisfactory results on the criteria it is not possible to use the present procurement strategy in the future if the contextual factors are changing. When the code of conduct of the EDA is implemented it is not allowed to make use of a preferential policy and grant future orders to the national Defence related industry. Based on the knowledge about the reluctant behaviour of the other European countries and the difficulties to overcome to create a perfect competitive European Defence market another procurement strategy, then European tendering, can be more successful in the short term. In a number of cases countries can refer to the exceptions of the code of conduct of EDA. International cooperation should be the first step for the Ministry of Defence to a more open and transparent European Defence market. Above all with international cooperation Defence can build a strong competitive position in the European Defence market and procure Dutch large naval surface ships which satisfy the criteria.

LTZE2OC M.J. Blauw, April 2008

MSc Engineering & Policy Analysis, Delft University of Technology
Defence Materiel Procurement

A Scenario Analysis to the Future Defence Procurement Strategy for Dutch Large Naval Surface Ships

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Preface

This thesis is written to complete the four year part-time Master of Science Engineering & Policy Analysis at the faculty Technology, Policy and Management of the Delft University of Technology. In September 2004 I started this four year part-time study Engineering & Policy Analysis with full enthusiasm. And now, almost four years later I have reached the point of graduation and completion of this study with almost the same enthusiasm. In spite of a lot of lectures, the large number of projects, and the large quantity of time and energy which this study has cost me, I generally followed the study with much pleasure.

I choose the international programme in Engineering & Policy Analysis, because it is an interdisciplinary curriculum. The central focus was on analyzing and solving complex problems involving different public and private parties with conflicting interests and positions. As graduation subject I have chosen a subject related to the organisation I work for, namely the Defence materiel procurement of large naval surface ships. Investments in Defence materiel and the associated long-term projects are complex. The international relations, technology, regulations and the market are continuously affected by change. In the procurement process many actors are involved, both within and outside Defence, such as members of government, several ministries, parliament, the media, national research institutions and industries, foreign governments and industries, and organisations for international cooperation. The title of this thesis is: Defence Materiel Procurement – A Scenario Analysis to the Future Procurement Strategy for Dutch Large Naval Surface Ships.

I have conducted the Master of Science Engineering & Policy Analysis (EPA) and this research with much pleasure and the previous years I have learned a lot from the courses and the interaction with the teachers and students. I enjoyed all the hours spent at the Delft University of Technology with my fellow students Bart de Boer, Robin Bouwmeester and Hans Brouwer. I wish them good luck and success with their graduation!

I would like to express my gratitude to everyone who has contributed to the realisation of this thesis. First of all, I would like to thank my supervisors who provided me with the necessary support to complete this research. I thank KTZ ir. Paul de Leeuw for his comments, the pleasant interaction and for the introduction to the people I interviewed. Thanks to dr. ir. Joop Koppenjan for his support, contributions, suggestions and feedback during our meetings. And thanks to the other members of the graduation committee prof. mr. dr. J.A. de Bruijn and dr. ir. B. Enserink. I would like to thank all people who I approached for interviews. They gave some of their scarce time to talk with me and provided the information I needed. I would like to thank Deborah Trimpe Burger - Hogg for revising my thesis on English grammar and spelling.

Finally, I express a special word of thanks to a group of special people. I would like to thank my family and friends for their interest in my research. Thanks to Maartje and Madelein for their friendship, I could always count on their support. In particular, I would like to thank my parents, Henk and Sofie, I am most grateful for all the valuable things they taught me and they always stood behind me with good advice. To my brother, Michiel, for his mental support and his belief in me. Last, but not least to Marco, who showed much understanding the last four years every time I had to study and I had less time to spend together with him. Now we both have completed our study, we can focus on and enjoy together our new goals in life.

Marjon J. Blauw Slootdorp, April 2008
Absolutely no other aphorism then ‘Kennis is Macht, Karakter is Meer’ ¹, has inextricably been linked to the education of the midshipmen at the Royal Netherlands Navy College. This aphorism has been applied in the woodwork above the entrance of the recreation room of the midshipmen, het Zaaltje. In this place, above the double doors in the large vestibule of the main building of the Royal Netherlands Navy College, simply nobody can escape from this aphorism. It is a short, powerful saying of which the content is found characterizing for the education of future naval officers.

At this moment I work at the Royal Netherlands Navy College as divisional officer for the second year midshipmen. Every day I walk by this aphorism several times and during the progress of this study I dedicated my own meaning to this aphorism:

Knowledge is power, but you need character to gain this knowledge.

¹ Carel baron de Vos van Steenwijk (1885-1959)
Summary

Introduction
This thesis is written to complete the four year part-time Master of Science Engineering & Policy Analysis at the faculty Technology, Policy and Management at the Delft University of Technology. The research is executed in the period from July 2007 until April 2008.

Research Topic / Problem
Investments in Defence materiel and the relevant long-term projects are complex. The international relations, technology, regulations and the market are continuously affected by change. In the procurement process many actors are involved, both within and outside Defence, such as members of government, several ministries, parliament, the media, national research institutions and industries, foreign governments and industries, and organisations for international cooperation (MoD, 2007).

In the last decennia the Ministry of Defence used a preferential policy for the procurement of large naval surface ships and almost all orders were granted to the Koninklijke Schelde Groep (KSG) and the other participants of the Dutch naval shipbuilding cluster. KSG has a monopoly position for the construction of platforms of Dutch large naval surface ships. The procurement of large naval surface ships is liable to change, due to continuing changes in the (inter)national relations, technology, regulations, and market. This thesis statement leads to the following research question:

Given the changing external factors is the present procurement strategy or an alternative procurement strategy for the future procurement of Dutch large naval surface ships the best choice for the Ministry of Defence?

The objective of this thesis is to generate and assess alternative procurement strategies for the Ministry of Defence in order to safeguard the procurement of Dutch large naval ships in the future in a changing environment and make recommendations for this future.

Research method
This research into alternative procurement strategies for large naval surface ships in a future changing environment consists of four parts. First a theoretical framework is built; second the present procurement strategy is elaborated, third the contextual factors influencing Defence materiel procurement are explored and finally a scenario analysis is conducted to the future Defence procurement of Dutch large naval surface ships.

First, a theoretical framework is built based on desk research into the characteristic features of Defence materiel (procurement), the different type of suppliers, from perfect competition to monopolist, and the existing procurement strategy is described. Also multi-actor complexity is elaborated on the important features are trustworthy analysis, bridging interest and multi-perspective research focus. Literature about economics and procurement strategies are studied. Important concepts are monopoly, transaction costs, information asymmetry, hold-up, opportunistic behaviour and trust. This leads to a theoretical framework which is used in this thesis to structure the empirical research. Five criteria of success are determined to assess the present procurement strategy for large naval surface ships and to determine whether future procurement strategies satisfy. The criteria are:
Summary

- Criterion 1: meet the operational and technical specifications (staff requirements);
- Criterion 2: decrease the dependence on the supplier;
- Criterion 3: best product value within the available budget;
- Criterion 4: minimise transaction costs and/or agency costs;
- Criterion 5: realise trust, empathy and logic in a situation of multi-actor complexity.

Second, the present procurement strategy of the Defence Organisation is described. Defence pursues a preferential policy for the procurement of large naval surface ships and purchases these naval ships in a monopoly situation. In the introduction to this thesis the Defence materiel procurement process is introduced and is further explained in chapter three. The empirical part is the second part in which the practice of present procurement projects of large naval surface ships is elaborated on the so-called case studies. The following projects are studied; the Air Defence Frigate, the first and second Landing Platform Dock, Patrol Ships and the Joint Logistic Support Ship. To retrieve the necessary information interviews with people involved are carried out, like people of the Defence Materiel Organisation, the Koninklijke Schelde Groep etc. Also the policy documents relevant to the procurements projects are studied. The practice is compared to the theory described in chapter two. The practice of the present procurement of the naval ships is assessed with the five success criteria. In practice, it appears, the procurement without competition more specific a monopoly works satisfactory in contrast to the theory concerning monopolies.

Figure 0.1: second Landing Platform Dock - Hr. Ms. Johan de Witt.

Third, due to continuing changes in the (inter)national relations, technology, regulations, and market, the procurement of naval ships is liable to change. Interviews are elaborated with people involved in Defence and also desk research is used to describe these contextual conditions. These conditions have influence on the procurement strategy for large naval surface ships. The changing security situation, the decreasing Defence budget, which lead to changing capacity needs, and the consolidation of the Defence market are of influence on the procurement strategy. Also the European directives for the invitation to tender on the European competitive market and the code of conduct of the European Defence Agency (EDA) play a role. To reduce the fragmentation of the European Defence market and the realization of a transparent and open market for military procurements the code of conduct of the EDA is discussed. To acquire a strong international (European) market position the Defence-related industry has to increase their export. The behaviour of foreign European countries plays a role.
The three most important contextual factors form the axes for the scenarios, these are:

- Defence budget;
- European regulation;
- Defence related industry.

Last, a scenario analysis is conducted of the future procurement of Dutch large naval surface ships. Up to approximately 2015 there will be little change in the Netherlands, since still two large projects, the four Patrol Ships and the Joint Support Ship, are procured within the Dutch naval shipbuilding cluster. The expected completion of the Patrol Ships will be in 2010 and to the current expectation the contract for the JSS with KSG will be concluded in 2009, whereas the completion of the JSS will be in 2014. So the year 2015 will become the break-even point in the Netherlands with respect to the type of procurement strategy used for large naval surface ships. But the Defence Organisation must reflect before 2015 about future procurement of Defence materiel and make choices which strategy will work best in the future. In this chapter possible scenarios, how the world (Europe) might possibly change, are developed by means of a scenario analysis. The contextual factors, described in chapter four, are put into a scenario logic, and a concise scenario analysis is made. The objectives of the involved actors mainly stay the same, but the environment is changing. The combination of the contextual scenarios and alternative procurement strategies result in a matrix with nine future combinations. These future combinations will be assessed by means of the criteria established in chapter two.

Conclusions
The research and the scenario analysis generate an answer to the main research question. The main research question is:

Given the changing external factors is the present procurement strategy or an alternative procurement strategy for the future procurement of Dutch large naval surface ships the best choice for the Ministry of Defence?

Despite the reasonably satisfactory results for the criteria it is not possible to use the present procurement strategy in the future if the contextual factors are changing. The code of conduct of the EDA is implemented, it is not allowed to make use of a preferential policy and grant future orders to the national Defence related industry. Based on the knowledge about the reluctant behaviour of the other European countries, the difficulties to overcome to create a perfect competitive European Defence market, and based on the results of this research another procurement strategy can be more successful. In a number of cases countries can refer to the exceptions of the code of conduct of EDA. Based on the results of the scenario analysis the procurement strategy should be international cooperation. International cooperation can be the first step to a more open and transparent European Defence market.

Recommendations
Up to 2015 the MoD and the Defence related industry are still occupied with the outstanding orders of the Patrol Ships and the Joint Support Ship. But the Defence Organisation must reflect before 2015 about future procurement strategy of Defence materiel. It is important to reconsider before 2015 the present procurement strategy and take the code of conduct of the EDA into account. It is important not to wait for what other participating countries choose as procurement strategy within the changing environment, but to adopt a position and a procurement strategy for large naval surface ships in the future as soon as possible.

The future need for maritime capacity must be determined over the next years. The security-political agenda will continue to be dominated by threats such as failing states, proliferation
of weapons of mass destruction, organised crime, regional conflicts and terrorism. These threats will to a great extent determine the capacity needs of Defence.

The Netherlands should secure and strengthen its own position on the European Defence market to face up to the countries with a large Defence industry and strengthen its negotiation position for international cooperation. This does not exclude an intensive cooperation between the MoD and the Defence related industry. The Netherlands has to preserve a certain knowledge base of the maritime industry, to prevent that the MoD is obliged to purchase outside the Netherlands. The Ministry of Defence wants to preserve knowledge and know-how about shipbuilding in order to stay a smart user and smart buyer in the future. The Netherlands should focus on niches of this maritime industry and specialise, for example, on platform or combat systems (radar). By preserving this knowledge the MoD is able to keep a certain degree of independence. Dependency on other actors will be diminished by prevention of knowledge and also the principal agent problem based on information asymmetry can be avoided. The agent, in the principal agent relation, can not fully exploit its hold-up and opportunistic behaviour.

Determine with which countries it is possible and acceptable to cooperate for the procurement of this Defence materiel. Which countries have an equivalent need? Common needs should be identified and the time schedules should be geared to one another and financial sources should be available at the same time. Through cooperation the position of the involved actors on the European Defence market can be strengthened. The Netherlands has no large Defence industry, but the industry consists of small and medium size suppliers who deliver high-quality, innovative, specialised technological products. With which countries (with a smaller Defence related industry) should the Netherlands cooperate to face up the countries with a large Defence related industry?

International cooperation is just contracted if there is sufficient faith. Success of international cooperation depends also on the degree in which countries can trust (mutual confidence) each other. Security of information is very important, meaning mutual disclosure and protection of sensitive information. As mutual dependency in Defence capability grows, there must be mutual confidence and inevitably a wider circulation of classified information among the participating countries. Security of supply means avoiding supply problems in times of war or operational urgency, and a fair and equal treatment of suppliers. This will require transparency and equality of information.

In the upcoming years the directives for European tendering become more compelling. And of course still the code of conduct of the EDA is politically binding. Based on the knowledge about the reluctant behaviour of the other European countries and the difficulties to overcome to create a perfect competitive European Defence market another procurement strategy, then European tendering, can be more successful in the short term. In a number of cases countries can refer to the exceptions of the code of conduct of EDA. International cooperation should be the first step for the Ministry of Defence to a more open and transparent European Defence market. Above all with international cooperation Defence can build a strong competitive position in the European Defence market and procure Dutch large naval surface ships which satisfy the criteria.

Recommendations for Further Research
Recommendations are made for further research to get more insight in the possibilities for (inter)national cooperation.

♦ Inquire with which countries have an equivalent need and it is possible to cooperate for procurement of large naval surface ships (or general for the procurement of Defence materiel to strengthen the position of the involved actors on the European Defence market. Common needs should be identified and the time schedules should be geared to one another and
financial sources should be available at the same time. Examine more closely the points of view of other, participating EU-countries with respect to the code of conduct of the EDA.

♦ If the Defence Materiel Organisation chooses to cooperate with other countries, DMO must have a good idea of which points it does not want to concede (e.g. security, combat systems, and ergonomics) and on which points compromises can be made. The room for negotiation should be explored.

Recommendations: First, it is important to reconsider before 2015 the present procurement strategy and take the code of conduct of the EDA into account. Second, the future need for maritime capacity must be determined. Third, both the MoD and the KSG should increase their international competitive position on the European Defence market independently of each other. Because of that the mutual dependence is reduced. Future public-private partnerships between MoD and KSG should not be excluded. Fourth, the Netherlands should secure and strengthen its own position on the European Defence market to face up to the countries with a large Defence industry and strengthen its negotiation position for international cooperation. Fifth, determine with which countries (with a smaller Defence related industry) the Netherlands should cooperate to face up the countries with a large Defence related industry and to jointly procure large naval surface ships. Sixth, international cooperation is just contracted if there is sufficient faith. Success of international cooperation depends also on the degree in which countries can trust (mutual confidence) each other. Seventh, the interest of the involved actors should be bridged for the procurement of a large naval surface ship. Between all involved actors some kind of equality must exist; equity is an important concept. Last, the procurement strategy international cooperation can be the first step towards European tendering.

Usability
Up to 2015 the MoD and the Defence related industry are still busy with the current orders of the Patrol Ships and the Joint Support Ship. But it is important to consider the changing external factors and especially the more compelling directives for European tendering and the code of conduct of the European Defence Agency and their influence on the procurement strategy of Defence materiel. Besides that the Defence related industry national and international is also changing. The Ministry of Defence, more specifically the Directorate of Materiel Policy and the Directorate of Projects & Procurement of the Defence Materiel Organisation, can use the conclusions and recommendations of this research for the policy making about future Defence procurement of large naval surface ships.
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1 Introduction

In this chapter the research subject, the future Defence procurement strategy for Dutch large naval surface ships, is introduced. The background of the subject is described in the first paragraph. In the second paragraph the Defence Organisation is described, including the Dutch naval shipbuilding cluster and the procurement procedure of the Defence Materiel Organisation (DMO). The DMO is the part of the Defence Organisation which acquires all materiel for sea, land, and air forces and has a specific position in the Dutch naval shipbuilding cluster. Further is explained that the shipyard KSG has a monopoly position within this cluster. The research topic and the relevant research method are described in paragraph 1.3 and 1.4 respectively. This research into alternative procurement strategies for the procurement of large naval surface ships in a changing environment consists of four parts, these parts are described separately.

1.1 Background

The Netherlands is a trade nation pre-eminently and depends on the guaranteed supply of raw materiel, on safe commercial routes and on stable consuming markets. The vital interests of the Netherlands are the economic security, social and political stability and territorial integrity. These vital interests can be damaged by crises elsewhere in the world. Due to the large dependence of the import, throughput and the export of goods, frequently bound to a critical time path, a disruption of international or regional stability can have relatively more impact on the Netherlands than other economies (Defensienota, 2000 and Commando Zeestrijdkrachten, 2005). Traditionally, the Netherlands has always had a battle-ready and balanced navy. The Netherlands want to ensure this advanced role of its navy in the future. The mission and tasks of the Royal Netherlands Navy (RNLN) require modern and flexible units that can be deployed in both national and international areas (Hendrickx et al, 2003). Large naval surface ships form a part of these modern and flexible units. To procure these naval ships the prescribed procurement procedure of Defence materiel should preferably be followed.

Defence has a materiel organisation (Defence Materiel Organisation, DMO), which acquires all the materiel for sea, land, and air forces. DMO is a part of the Dutch naval shipbuilding cluster and acquires its large naval surface ships in cooperation with this cluster on the national Defence market. Due to the close relationship between the RNLN and the naval shipbuilding cluster in the Netherlands, a self-sufficient industry has emerged, capable of both designing and constructing frigates and other types of naval vessels. This enables the RNLN to impose on its suppliers requirements that result in a product that is technologically very up-to-date and fully meets the imposed specifications. Within the Dutch Defence related industry only the naval shipbuilding cluster has the capability to undertake all the production stages from drawing board to launching ship (Hendrickx et al, 2003).

The shipyard Koninklijke Schelde Groep (KSG), also participating in the shipbuilding cluster, has been involved in most projects for the Royal Netherlands Navy’s large naval surface ships. The main activity of the Koninklijke Schelde Groep is (naval) shipbuilding. The State and Province owned KSG and in 2000 they sold their shares to Damen Shipyards Group (further Damen). KSG became one of the many shipyards of this ship building conglomerate, involved in new construction as well as maintenance and repair activities world-wide for government. In 2000 the MoD has facilitated the take-over of the nearly bankrupt shipyard...
KSG by Damen Shipyards by supplying one hundred million guilders as loans and gifts (Smit et al., 2001). In addition MoD declared the powerful intention that all naval orders until 2015 will be granted to KSG, under reasonable conditions and at an acceptable price (MoD, 2000; MoD, 2001).

One of these orders was the second Landing Platform Dock, Hr. Ms. Johan de Witt. Given the need to be able to operate at a larger distance from its own territory and in the light of the NATO-need for transport capacity, it was decided to acquire this second Landing Platform Dock (MoD, 1999). Also the procurement of the Patrol Ships (PS) and the replacement of the supply ship, the Joint (logistic) Support Ship (JSS), are included in this dowry. On the basis of the present planning the first Patrol ship will be handed over to the RNLN for operational use in 2010 and the JSS will be handed over in the year 2014.

Due to continuing changes in the (inter)national relations, technology, regulations, and market, the procurement of naval ships is liable to change. These conditions are changing and have influence on the procurement strategy for large naval surface ships. The changing security situation, the decreasing Defence budget, which lead to changing capacity needs, and the consolidation of the Defence market are of influence on the procurement strategy. Also the European directives for the invitation to tender on the European competitive market and the code of conduct of the European Defence Agency (EDA) play an important role. To reduce the fragmentation of the European Defence market and to realise a transparent and open market for military procurements the code of conduct of the EDA is implemented. These changing contextual factors have influence on the future procurement strategy for large naval surface ships.

In the following paragraph a short introduction on the Defence Organisation will be given, including the Dutch naval shipbuilding cluster and the procurement procedure of the Defence Materiel Organisation. Further is explained that the shipyard KSG has a monopoly position within the Dutch naval shipbuilding cluster. These descriptions give insight in the Defence Organisation and the procurement strategy for large naval surface ships.

1.2 The Defence Organisation

The Ministry of Defence is (politically) directed by the Minister and the State Secretary. The Secretary-General has been charged with the administrative control concerning the department. The department is responsible for policy, so that other Defence components can conduct this policy. Moreover the department evaluates the execution of the policy.

Besides the political and the administrative control the Chief of Defence has been charged with the military control. He is, on behalf of the Minister, responsible for the implementation of the military operations of Defence. The Chief of Defence is the military with the highest rank within the Defence Organisation. Therefore he is the most important military consultant of the Minister of Defence. The Defence staff supports him with his tasks. The Chief of Defence has the command concerning the operational commands of the armed forces. These are the Royal Netherlands Navy Command, the Royal Netherlands Army Command and the Royal Netherlands Air Force Command. The Royal Netherlands Marechaussee Command is also a part of the armed forces, but has its own commander, because the Marechaussee has a separate, jurisdictional, non-military task.

The primary task of the operational commands is composing, practicing and providing military capacity (operational entities), including the support which is directly coupled to the operational process. They report about the results to the Central Staff. The Support Command supports the operational process by assistance to the operational commands.
Also the Support Commands gives responsibility to the Central Staff. In figure 1.1 below the organogram of the Defence Organisation is visualized.

![Organogram of the Defence Organisation (2007).](image)

One of the Support Commands is the Defence Materiel Organisation, as said before the procurement of Defence materiel in general and more specific large naval surface ships is evolved by the Defence Materiel Organisation (DMO). DMO is responsible for materiel logistics policy, new materiel, maintaining materiel and the disposal of surplus materiel. The mission statement of the DMO is (MoD, 2006): “The Defence Materiel Organisation provides modern, robust, safe and high-quality materiel to all operational users throughout the armed forces. It cares for the materiel throughout its life cycle: from acquisition through upkeep to divestment. DMO draws up the materiel logistics policy needed to perform those tasks. The DMO listens to its customers’ wishes and delivers products and services in a timely fashion, on the basis of binding agreements and reasonable prices”. The DMO is a part of the Dutch naval shipbuilding cluster. In the following paragraph the procurement procedure of the Defence Materiel Organisation will be explained.
1.2.1 Defence Materiel Organisation

On Prinsjesdag, the day of the Queen’s speech on the third Tuesday of September, the Parliament is informed with a policy letter concerning the (Defence) policy in the up-coming cabinet period. The basis of the general Defence policy, the requirements and investment are determined. The Defence Materiel Process contains the rules and indications for development of the investment need per project (MoD, 2007).

The Defence Materiel Organisation preferably procure materiel off the shelf, but the DMO also takes part in development projects. Projects may extend over many years; projects of large naval surface ships may extent over ten to fifteen years. External factors, such as international relations, technology and the security situation are advancing all the time. The Handboek Verwerving Defensie (MoD III, 2006) states that ‘procurement policy has been aimed at providing materiel (among which understood services and works) and thereby the relevant logistical resources to the users, as such that is met the demands with respect to required quality and delivery period against an acceptable price’. The Defence Materiel Process (DMP) contains the rules for the procurement of projects exceeding 5 million euros. The DMP is applicable on both strategic and non-strategic projects. Under strategic is understood the materiel to which article 296 of the EC-treaty is related. By the exception clausal of article 296 of the EC-treaty is it possible that the, on the list of 1958, attentive military products (the weapons, ammunition and war materiel) can withdrawn to the regime of the directives to tender. The DMP covers two kinds of projects. Projects involving a relatively small amount of money which can be dealt with more or less as a matter of course (mandated projects), and projects which are complex, risky and politically sensitive or those in which substantial economic interests are involved (non-mandated projects). The DMP consists of five phases: the statement of requirements (phase A), the preliminary study (phase B), the study (phase C) and the preparation for procurement (phase D). Phase D is followed by realisation, which is not a part of the DMP. For projects exceeding 250 million euros or in special circumstances, there is also an evaluation phase (phase E). In the case of non-mandated projects, the decision-making throughout the DMP rest with the State Secretary for Defence and Parliament is informed of the outcome of each phase before the next phase begins.

The procurement projects of large naval surface ships are strategic; article 296 of the EC-treaty is applicable to this kind of projects. The procurement costs exceed the 5 million euros. Moreover the projects are complex, risky, and politically sensitive and economics interests play a role; these projects are not-mandated.

The DMO procures large naval surface ships in cooperation with the Dutch naval shipbuilding cluster.

1.2.2 Dutch Naval Shipbuilding Cluster

After World War II the RNLN has changed from a navy which bought (the designs) of its new ships in foreign countries into a Navy which possesses a self-supporting industry in its own country. This results in the creation of strong synergy between the DMO, the industry and the knowledge institutes. These three actors form the Dutch naval shipbuilding cluster (see figure 1.2). In previous decades Defence has acquired several different types of large naval surface ships in cooperation with the Dutch naval shipbuilding cluster. The projects are almost granted to the shipyard KSG and also the national Defence industry has been involved in the development, innovation and procurement of the relevant (sub) systems.
Since 1970 DMO, KSG and other Defence related industry, the research institutes (such as TNO) and the subcontractors has built a collective quantity knowledge and experience through their intensive cooperation. The DMO has, among others, two strong connections with on the one hand the shipyard KSG and on the other Thales-NL in the field of development. Combat systems are mostly government furnished equipment (GFE) or government furnished information (GFI) to reduce the procurement costs. The DMO, specifically the Centre for Automation and Management Systems (CAMS), is in most cases responsible for the software integration of these combat systems and also for the development of the combat management systems itself. Thereby the cluster is connected to international networks. Discontinuity in the orders placed by the MoD would imply the disappearance of the current knowledge infrastructure and oblige the MoD to procure future naval ships on the international market (Hendrickx et al, 2003). In paragraph 3.2 the Dutch naval shipbuilding cluster is described in more detail.

The cooperation with the industry and the knowledge institutes can be characterised as public private partnerships (PPP). PPP’s can be defined as a cooperation between public and private actors with a durable character in which actors develop mutual products and/or services and in which risk, cost and benefits are shared (Edelenbos & Klijn, 2007). Van Ham and Koppenjan define (2001) public-private partnership as a cooperation of some durability between public and private actors in which they jointly develop products and services and share risks, costs and resources which are connected with these products or services. In the Handboek Verwerving Defensie (MoD III, 2006) PPP is defined as a cooperation where government and business realize, with conservation of own identity and responsibility, jointly a project on the basis of clear tasks and risk partitioning (MoD III, 2006). In this thesis public-private partnership is defined as cooperation between public and private actors with a durable character in which they jointly develop products and services and in which risk, cost and benefits are shared. The cooperation between the DMO and KSG can be characterised as monopoly, this will further discussed in paragraph 1.2.3.

1.2.3 Shipyard KSG as Monopolist

In its procurement policy the Dutch Ministry of Defence makes a clear distinction between civil and military purchases. Civil purchases concern products and services which are available on open, transparent markets, where the principles of the free market apply (Adam Smits’ invisible hand). Preferably Defence procures such products in competition or materiel is bought off the shelf. Concerning military purchases Defence strives for conservation, and possibly, the extension of Defence related knowledge and expertise in the Netherlands. Such procurement occurs in imperfect markets, where the mechanisms of the free market do not apply or just partly. Defence thus strives for specific employment of Dutch Defence related industry, also at international cooperation projects by mediation of the foundation Nederlandse Industrie voor Defensie en Veiligheid (NIVD) (Hendrickx et al., 2003).

In spite of increasing international cooperation (for risk sharing) Defence orders are in the most countries still mainly a national matter. In the Netherlands this is most visible in the naval ship building. The government strives for conservation of technological knowledge and expertise in the Netherlands. Defence pursues wherever possible a preferential policy (the
present procurement strategy) at the invitation to tender for the procurement of large naval surface ships, including development, installation and integration of certain combat systems (these are sensor, weapon and command systems (SEWACO)) (Hendrickx et al., 2003).

In 1975 with the introduction of the Guided Weapon frigate a new generation of frigates was developed and constructed in the Netherlands. After the Guided Weapon frigate all large naval surface ships of the Royal Netherlands Navy were designed and constructed in the Netherlands. From the small group of shipyards the Koninklijke Schelde Groep positioned herself as the lead contractor. This role was, in the years afterwards reinforced, by the RNLN. The RNLN and MoD were helpful by commissioning the building of new ships at an earlier time than originally planned. Also KSG received considerable support from the shareholders; the only two shareholders were the Dutch State (90%) and the Province of Zeeland (10%) (Smit et al., 2001), by the construction of specialised production facilities, partly financed by the RNLN (Appendix C interview, 2007). In the last decennia the RNLN contracted only KSG for ship platforms (Hendrickx et al, 2003).

In the Prioriteitennota (1992-1993) of the Second Chamber of Parliament, the following is described: “The materiel policy and particularly the special attention of Defence for certain industrial sectors can be illustrated more closely by means of construction of naval ships. Defence attaches importance to the preservation of the technical knowledge for the construction of large naval surface ships, such as frigates, including development, installation and integration of combat systems and the platform automation. To this end a good harmonization between the schedule of the Royal Netherlands Navy and the occupancy of the Koninklijke Schelde Groep and the development efforts of for example Hollandse Signaal Apparaten (nowadays called Thales). Long-term undermanning, which can lead to loss of essential knowledge, must be prevented”.

In the Defensienota 2000 is written that the Dutch government strives for the conservation of technical knowledge and expertise concerning naval shipbuilding in the Netherlands (MoD, 2000). For this reason Defence pursues a preferential policy at the invitation to tender for large naval surface ships. In addition MoD declared the powerful intention that all naval orders until 2015 will be granted to KSG, under reasonable conditions and at an acceptable price. It was a political choice to put out to tender almost all naval ships to the KSG; a monopoly position is created throughout the years.

It is said that KSG has a monopoly on the building of platforms for naval ships. According to Png (2002), Himmelweit et al. (2001) and Brickley et al (2004) a monopolist as main supplier is not a good starting point for a procurement strategy. A monopolist is the only seller in the market and has market power. There are no close substitutes for the firm’s product. The numerous buyers have no market power against the monopolist. Generally, the sources of market power are the high or prohibitive barriers that deter or prevent entry by other competing sellers. Information is asymmetric; this implies that the principal-agent problem can arise and a hold-up situation can be exploited.

In a monopoly information is asymmetric; this implies that the principal-agent problem and hold-up can be exploited. A hold-up is an action to exploit another party’s dependence. A hold-up is distinct from moral hazard in that it does not require asymmetric information. A hold-up arises only when there is a conflict of interest between the parties. Generally, whenever there is the prospect that someone will engage in a hold-up, other parties will take precautions to avoid dependence. These precautions either reduce the benefit from the relationship or increase costs. The potential for a hold-up reduces the group’s net benefit (Png, 2002).
Due to the changing external factors and circumstances it may not be possible for the Defence Materiel Organisation to pursue its preferential policy in the future for large naval surface ships. In the paragraph 1.3 and 1.4 respectively the research topic and the research method are elaborated.

1.3 Research Topic

Investments in Defence materiel and the relevant long-term projects are complex. The international relations, technology, regulations and the market are continuously affected by change. In the procurement process many actors are involved, both within and outside Defence, such as members of government, several ministries, parliament, the media, national research institutions and industries, foreign governments and industries, and organisations for international cooperation (MoD, 2007).

The latest decennia the Ministry of Defence used a preferential policy and almost all orders were granted to the Koninklijke Schelde Groep (KSG) and the other participants of the Dutch naval shipbuilding cluster. KSG has a monopoly position for the construction of platforms of Dutch large naval surface ships. In the literature (Png, 2002; Himmelweit et al., 2001; and Brickley et al., 2004) is stated that a monopolist has advantages with respect to the buyer, in this context Defence. The procurement of Dutch large naval surface ships is liable to change, due to continuing changes in the (inter)national relations, technology, regulations, and market. This thesis statement leads to the following research question:

Given the changing external factors is the present procurement strategy or an alternative procurement strategy for the future procurement of Dutch large naval surface ships the best choice for the Ministry of Defence?

To answer to main research question has to be divided in several sub questions:

- What are the characteristics of a large naval surface ship?
- What are the features of Defence materiel procurement?
- Which type of market suppliers exist?
- Which alternative procurement strategies are at the disposal of the MoD?
- Which success criteria should a procurement strategy meet?
- Which procurement strategy is the MoD using nowadays (and in the past) for large naval surface ships?
- To what extent has the present procurement strategy met the success criteria?
- Which external factors are potentially influencing the procurement strategy and are liable to change?
- To what extent do the alternative procurement strategies meet the success criteria?

The objective of this thesis is to generate and assess alternative procurement strategies for the DMO in order to safeguard the procurement of large naval surface ships in the future in a changing environment and to make recommendations for this future. In the next paragraph the research method and the structure of this thesis will be explained.
1.4 Research Method

This research into alternative procurement strategies for large naval surface ships in a changing environment consists of four parts. First, a theoretical framework is built and five criteria of success are established. Second, the present procurement strategy is elaborated; with the criteria of success the present procurement strategy is assessed. Third, the contextual factors influencing Defence materiel procurement strategy are explored. Finally, a scenario analysis is conducted to the future Defence procurement of Dutch large naval surface ships. In the possible futures the alternative procurement strategies are assessed with the five criteria of success. These four parts together give an answer to the main research question (see figure 1.4). In the following paragraphs the five parts of this research are explained in more detail.

This research project will be an in-depth study; a small-scale approach, which will yield knowledge which can be generalised to a more specific extent, but will enable achieving depth, elaboration, complexity and a sound foundation with a minimum of uncertainties. The case study of projects on large naval surface shipbuilding will gain in-depth insights in the procurement of these kinds of naval ships. The qualitative aspect of this research project will be covered by both a desk-research and a case study.

1.4.1 Theoretical Framework

In chapter two a theoretical framework is built in which the following sub questions are answered:

- What are the characteristics of a large naval surface ship?
- What are the features of Defence materiel procurement?
- Which type of market suppliers exist?
- Which alternative procurement strategies are at the disposal of the MoD?
- Which success criteria should a procurement strategy meet?

A theoretical framework is built based on desk research to the characteristic features of Defence materiel (procurement), the different type of suppliers, from perfect competition to a monopoly, and the existing procurement strategy is described. Also multi-actor complexity is elaborated; the important features are trustworthy analysis, bridging interest and multi-perspective research focus. Literature about economics and procurement strategies are studied. Important concepts are monopoly, transaction costs, information asymmetry, hold-up, opportunistic behaviour, mutual dependence and trust. This leads to a theoretical framework which is used in this thesis to structure empirical research. To assess the present procurement strategy for large naval surface ships and to determine whether future procurement strategies satisfy five criteria of success are determined.
1.4.2 Present Procurement Strategy
In chapter three the following research question is answered:

- Which procurement strategy is the MoD using nowadays (and in the past) for large naval surface ships?
- To what extent has the present procurement strategy met the success criteria?

In the first part of this chapter is explained which procurement strategy the Defence Organisation is using nowadays. Defence uses a preferential policy for the procurement of large naval surface ships and purchases these naval ships in a monopoly situation. The empirical part is the second part in which the practice of present procurement projects of large naval surface ships is elaborated, the so-called case studies. The following projects are studied; the Air Defence Frigate, the first and second Landing Platform Dock, Patrol Ships and the Joint Support Ship. To retrieve the necessary information interviews with people involved are carried out, like people of the Defence Materiel Organisation, the Koninklijke Schelde Groep etc. Also the policy documents relevant to the procurements projects are studied. The practice of the procurement projects is compared to the theory described in chapter two and the practice of the present procurement of the naval ships is assessed with the five success criteria. In practice, it appears that procurement without competition more specific a monopoly works satisfactory in contrast to the theory concerning monopolies.

Qualitative explorative research (interviews); complete, personal interviews are held with the following persons:

- Resort Sea – head of department platform technology;
- Managing Director Schelde Naval Shipbuilding;
- Deputy Head Procurement;
- Deputy Head resort Sea;
- Program Manager Patrol Ships;
- Deputy Commander of the Royal Netherlands Navy;
- Program manager LPD-2;
- Director of Projects and Procurement;
- Senior employee DMO-Policy;
- Prof. Delft University of Technology - Ship Design, Production & Operations.

The interview with the professor of the Delft University of Technology - Ship Design, Production & Operations was focused on the procurement of the LPD-1 and specifically on the cooperation with Spain. With the senior employee of the policy department of DMO the interview was in-depth about the code of conduct of the European Defence Agency. The interview with the Deputy Commander of the Royal Netherlands Navy was limited, because there was only time for a few questions to fit into his tight schedule.

The most important interview questions are:

- What are the specific differences between the procurement of naval ships and other types of materiel projects?
- Has the present procurement strategy conduct into the desired product against the stated staff requirements?
- How do you see the future procurement of large naval surface ships?
- Are future orders of naval ships granted to KSG and can KSG fulfil the role as lead contractor?
- Or will DMO search for another shipyard, national or international? What are the (dis) advantages?
- Which factors are of influence on this choice?

The DMO plays an important and specific role in the Dutch naval shipbuilding cluster. DMO is the conceptual and functional designer, integrator and stimulator of innovation.
Introduction

- Can DMO preserve this role in the future? Which factors are of influence?
- Is it desirable that DMO keeps this role in the future? Which factors are of influence?

The complete questionnaire and a summary of the answers are retrieved in appendix B & C.

1.4.3 Factors Influencing the Procurement Strategy
In chapter four the conditions influencing the future procurement strategy of large naval surface ships are elaborated on, and the following sub research question is answered:
- Which external factors are potentially influencing the procurement strategy and are liable to change?

Due to continuing changes in the (inter)national relations, technology, regulations, and market, the procurement of naval ships is liable to change. Interviews are elaborated with people involved Defence (see paragraph 1.4.2 above) and also desk research is used to describe these contextual factors. These factors have influence on the procurement strategy for large naval surface ships. The changing security situation, the decreasing Defence budget, which lead to changing capacity needs, and the consolidation of the Defence market are of influence on the procurement strategy. Also the European directives for the invitation to tender on the European competitive market and the code of conduct of the European Defence Agency (EDA) play an important role. To reduce the fragmentation of the European Defence market and the realization of a transparent and open market for military procurements the code of conduct of the EDA is discussed. To acquire a strong international (European) market position the Defence-related industry has to increase their export. The behaviour of foreign European countries plays a role.

1.4.4 Future Procurement Strategy
In chapter five the last sub question is answered:
- To what extent do alternative procurement strategies meet the success criteria?

The expected completion of the Patrol Ships will be in 2010 and to the current expectation the contract for the JSS with KSG will be concluded in 2009, whereas the completion of the JSS will be in 2014. So the year 2015 will become the break-even point in the Netherlands with respect to the type of procurement strategy used for large naval surface ships. But the Defence Organisation must reflect before 2015 about future procurement of Defence materiel and make choices which strategy will work best in the future. In this chapter possible scenarios, how the world (Europe) might possibly change, are developed by means of a scenario analysis. The contextual factors, described in chapter four, are put into a scenario logic, and a concise scenario analysis is made. The objectives of the involved actors mainly stay the same, but the environment is changing. The combination of the contextual scenarios and alternative procurement strategies result in a matrix with nine future scenarios. These future scenarios will be assessed by means of the criteria established in chapter two. This final part will result in the objective of this thesis, namely generate and assess alternative procurement strategies for the DMO in order to continue the procurement of large naval surface ships in the future in a changing environment.

In the last, and sixth, chapter conclusion are drawn and recommendations for the future procurement strategy of Dutch large naval surface ships and for future research are made.
2 Theoretical Framework

In this second chapter a theoretical framework is built. In the first paragraph the distinctive features of Defence equipment (procurement) are appointed. This is followed by a description of the type of suppliers, from perfect competitive market with no market power to a monopoly with full market power and other types of market forms caused by market failures. In the third paragraph the different procurement strategies are elaborated from vertical integration to perfect competition and other forms in between. Several procurement strategies are characterised by cooperation; organisations have to deal with multi-actor complexity. Different factors influence the forming and functioning of these partnerships. In paragraph 2.5 an evaluation framework is built; criteria are elaborated which are used to assess the present procurement strategy and alternative procurement strategies for future procurement of large naval surface ships in different future scenarios.

2.1 Features of Defence Materiel (Procurement)

In the article “Defence Procurement: theory and UK policy” (De Fraja & Hartley, 1996) the features of equipment procurement are appointed. The acquisition of Defence equipment has a number of distinctive features which need to be incorporated into any economic analysis of procurement and contracting. This is not only applicable on the UK Defence materiel but also to the Dutch Defence materiel, because the demand and supply side of both Defence materiel markets show similarity. These include the following.

♦ The government has a role as a major or sole buyer and regulator, and could be a source of anti-competitive behaviour (De Fraja & Hartley, 1996). The Ministry of Defence is a major buyer, and some times a monopsonist, of Defence equipment and as such can influence technical progress as well as the size, structure, conduct and performance of national Defence industries (Sandler & Hartley, 1995).

♦ High technology Defence equipment is costly. Generally, equipment costs are divided between development and production at the acquisition stage and operational, maintenance, repair, upgrading and disposal costs during the life-cycle of the equipment (De Fraja & Hartley, 1996).

♦ Equipment costs are increasing in real terms at a rate of about 10 per cent per annum which results in a doubling in equipment costs every 7.25 years and a long-run trend towards smaller quantities being purchased. The combination of cost escalation and falling or stable Defence budget means that MoD cannot avoid the need for some difficult choices (De Fraja & Hartley, 1996).

♦ The industry has long lead times. Since the technologies and assets needed for the development and production of costly, high technology Defence equipment are often Defence specific, contractors are reluctant to invest their own funds where government, as the only buyer, might exercise its monopsony power at the firm’s expense (creating a hold-up situation) (De Fraja & Hartley, 1996).

♦ Information asymmetry exists between buyer and regulator (principal) and the contracting and regulated firm (agent). The principal-agent problem arises when one party, the principal, wishes to ensure that another, the agent, acts in accordance with the principal's interest in situations where the agent has information unavailable to the principal (Himmelweit, Simonetti...
& Trigg 2001). Whenever one individual depends on the action of another and agency relationship arises. The individual taking the action is called the agent. The affected party is the principal. In many contexts the relationship is reciprocal. The challenge in the agency relationship arises whenever – which is most always – the principal cannot perfectly and costlessly monitor the agent’s action and information (Pratt & Zeckhauser, 1991).

♦ Transaction costs arise from the cost of seeking out buyers and sellers and arranging, policing and enforcing agreements or contracts in a world of imperfect information. With high technology Defence equipment, many contracts are incompletely specified, this exacerbates the hold-up problem (Cowen & Parker, 1997 and Parker & Hartley, 2002).

♦ Imperfect markets, characterized by domestic monopolies and oligopolies, this leads to strategic interaction between suppliers and between suppliers and the procurement agency.

♦ In sole source procurement, MoD aims to negotiate ‘fair and reasonable’ prices. This means prices based on costs with a government-determined profit rate (De Fraja & Hartley, 1996).

All these characteristics can be applied on the type of materiel which is treated in this thesis, namely large naval surface ships, including development, installation and integration of combat systems (sensor, weapon and command systems). An additional feature of Defence materiel procurement, and specifically for complex projects such as large naval surface ships, is the expertise within a Defence Organisation to write specifications. Meant is the translation of the operational and technical requirements into specifications and a functional design.

Most of the large naval surface ships are designed and built in construction projects. The involvement of the Defence Organisation is much larger in ship building projects than in other types of materiel projects. Naval ships distinguish themselves from other type of materiel in several areas (Appendix C interviews, 2007).

♦ Large naval surface ships are unique, because of the specific operational and technical requirements (tailor-made).

♦ Ships are also tailor-made because of the complexity. This complexity is caused by the fact that on a relative small platform a diversity of (sub) systems must be placed. Most of these systems are delivered to the shipbuilder as government furnished equipment, which increases the complexity. A compromise is inconvenient to realize, because there is a need for combat systems, safety systems and propulsion systems. This diversity of systems and the integrations of these diverse systems make shipbuilding very complex.

♦ The numbers are small, approximately 1 to 4 ships per type.

♦ The diverse functions, besides the operational requirements there are numerous other requirements to be met (health and safety, hygiene, accommodation), leads to innovation. Furthermore all these requirements can mutually conflict, which increases the need for innovative and creative solutions. Dutch Defence wants to be able to sail with a reduced crew; this has its impact on the requirements. Defence requires a high innovative capacity of the systems.

♦ The development process of a Dutch naval ship is up to 15 years, but the security situation in the world is changing very rapidly. Because of this it is required that the systems are developed up to the last possible moment, so that the ship will be equipped with the most recent, innovative systems against the most recent threats.

♦ This complexity and the high innovative technology make the naval ships very expensive.
Sensitive information about the (weapons systems) can not be made public just like that. Defence Organisations are reluctant to supplying this sensitive information to others, because there is no country that will fight against an opponent, which has armed it first. For this reason governments will have a grip on the Defence industry and it is very difficult to procure (weapon) systems in an open transparent market.

By the exception clausal of article 296b of the EU-treaty it is possible that the attentive military products (the weapons, ammunition and war materiel) can be withdrawn to the regime of the directives to European tendering. Products which are not on this list, as well as products which are not intended for specifically military aims (dual use), do not fall under this exception clause. As stated before in paragraph 1.2 the procurement projects of large naval surface ships are strategic; article 296 of the EC-treaty is applicable on this kind of projects. The procurement costs exceed the 5 million euros. Moreover the projects are complex, risky, and politically sensitive and economics interests play a role; these projects are not-mandated.

| Large naval surface ships are unique, tailor-made, innovative, expensive, complex, the numbers per type of ship are small, and politically sensitive (Defence deals with sensitive information and a rapidly changing security situation) and have substantial economic interests. |

2.2 Market Suppliers

The state of competition in an industry depends on five basic competitive forces, which are shown in figure 2.1 Porters diagram (Porter, 1980). The collective strength of these forces determines the ultimate profit potential in the industry, where profit potential is measured in terms of long run return on invested capital. The focus is on the supply side, different types of suppliers can be distinguished.

Figure 2.1: Forces driving industry competition (source: Porter, 1980).
The five competitive forces – potential entrants, threat of substitution, bargaining power of buyers, bargaining power of suppliers, and rivalry among current competitors – determines the position (the strength and weaknesses) of a firm in its industry. Government policy can influence competition at all levels, this can be sector specific or general regulation.

The existing firms in a perfect competitive market have no bargaining power against their suppliers and customers. Rivalry is unbridled because the numerous firms supply an identical good or service (homogeneous product). In particular there are no technical, legal or regulatory barriers that constrain entry or exit. The fifth and last condition for perfect competition is that all buyers and suppliers have equal and complete information about market conditions (Png, 2002 and Porter, 1980). The market equilibrium in perfect competitive market is drawn in figure 2.2 below.

![Perfect competitive market](image)

**Figure 2.2: Market equilibrium in perfect competitive market.**

Production occurs at the lowest possible average cost per unit. Price equals average cost, implying that buyers acquire the product at cost (including normal rate of return on investment). The marginal revenue is the change in total revenue arising from selling one additional unit. The profit-maximizing scale of production is where marginal revenue equals marginal cost (MR = MC), if the price (p) is externally given, MR = p (Png, 2002).

Although the competitive model provides a useful description of the interaction between buyers and sellers for many industries, there are others where firms have substantial market power; prices are affected materially by the output decisions of individual firms. Market power can exist when there are substantial barriers to entry into the industry. The extreme case of a firm with market power is a monopoly, where the industry consists of only one firm. Here, the industry and firm demand curves are one and the same. In contrast to competitive markets, consumers pay more than marginal cost and the firm earns economic profits. Markets, other than perfect competition, are caused by market failures (see paragraph 2.2.1).

### 2.2.1 Market Failures
A market consists of the buyers and sellers that communicate with one another for voluntary exchange. The firm’s objective is specified as the maximization of profits, defined as the difference between total revenue and total cost, comparing with consumers who maximize utility. Markets can be differentiated based on the five competitive forces. In practice there
are many deviations from perfect competition, the so-called market failures. These include the following.

♦ **Public goods** are non-rival and non-exclusive; no one can be excluded from consumption and enjoying the benefits (e.g. national Defence, environmental protection). The combination of these two principles leads to free-riders; a supplier of a public good is not able to appropriate all benefits of producing the good. People, who do not pay, cannot be excluded from the consumption of the good. This result into a situation where no one wants to produce it, a public good cannot be provided through the market.

♦ **Imperfect information** is the absence of certain (full) knowledge. A single person can have imperfect information. By contrast asymmetric information means that buyers and sellers have different information about a market transaction. A market can be perfectly competitive even when buyers and sellers have imperfect information, so long as they have the same (imperfect) information. A market where information is asymmetric cannot be perfectly competitive.

The risk of moral hazard exists when one party to a contract can take advantage of asymmetric information to act in a manner inimical to the interest of the other party. Moral hazard exists when one party's actions are affected but are not observed by another party with whom it has a conflict of interest (Png, 2002).

The principal-agent problem arises when one party, the principal, wishes to ensure that another, the agent, acts in accordance with the principal’s interests in situations where the agent has information unavailable to the principal. The agent’s (supplier) actions may not be observed by the principal (hidden-action), or the suppliers may have information about the conditions for the project unavailable to the principal (hidden knowledge). The principal’s problem therefore is to devise an incentive scheme to persuade the agent to act in the principal’s interest (Himmelweit et al, 2001).

Figure 2.3: Principal-agent relation.

A hold-up is an action to exploit another party’s dependence. A hold-up is distinct from moral hazard in that it does not require asymmetric information. A hold-up arises only when there is a conflict of interest between the parties. Generally, whenever there is the prospect that someone will engage in a hold-up, other parties will take precautions to avoid dependence. These precautions either reduce the benefit from the relationship or increase costs. The potential for a hold-up reduces the group’s net benefit (Png, 2002).
Opportunism refers to ‘the incomplete or distorted disclosure of information, especially to calculated efforts to mislead, distort, disguise, obfuscate or otherwise confuse’ (Williamson, 1985). Imperfect information enables parties to a contract to operate opportunistically exploiting any information asymmetry (Parker & Hartley, 2002).

♦ Externalities are cost or benefit resulting from production or consumption imposed upon someone else through a process beyond the market (Png, 2002). Externalities are the cost or benefits created by the action of one party imposed on involuntary participants where the consequences of these actions are not regulated by the system or prices (Brickley, Smith & Zimmerman, 2004). For example: costs environmental pollution, benefits innovation. Externalities can be resolved through unilateral action (merger) or joint action (Png, 2002).

♦ Imperfect competition means a limited number of firms control price and potential competition. Generally output is lower and price is higher in imperfect competitive market compared with perfect competitive markets. Examples are monopoly, monopolistic competition, and oligopoly.

### 2.2.2 Monopoly

A monopolist is the only seller in the market and has market power. There are no close substitutes for the firm’s product. Information is asymmetric; this implies that the principal-agent problem can arise and a hold-up situation can be created. The numerous buyers have no market power against the monopolist. Generally, the sources of market power are the high or prohibitive barriers that deter or prevent entry by other competing sellers. These include the following (Png, 2002).

- Unique resource: ownership of strategic raw materiels or exclusive knowledge of production techniques;
- Intellectual property: patent rights for a product or production processes (temporary monopoly), this is a legal barrier to entry or copyrights;
- Economies of scale and scope;
- Regulation: government licensing or international trade barriers exclude (foreign) competitors;
- Product differentiation: brand identification and customer loyalties.

![Monopoly graph](image)

Figure 2.4: Profit maximisation monopoly.
The monopolist can be the price setter; the profit maximisation is drawn in figure 2.4 above. The firm’s objective is to choose the price-quantity combination along the demand curve that maximizes profit (firm is price-setter). At the profit maximizing quantity, the marginal revenue (MR) equals the marginal cost (MC). To maximize profit, a monopoly should produce at a scale where its marginal revenue balances its marginal cost (MR = MC) (first rule). At the crossing MR = MC the price (p) is higher than marginal cost (MC), p > MC, the monopolist earns supernormal profits. A monopolist restricts productions and stays under the competitive level of productions; therefore the monopolist can ask a higher price. The profit of a monopoly is larger than the combined profit of all suppliers in a perfectly competitive market. Moral hazard, hold-up, principal-agent problem, opportunistic behaviour, described in paragraph 2.2.1 market failures, applies to a monopoly.

2.2.3 Monopolistic Competition
Monopolistic competition is a market structure that is a hybrid between competition and monopoly (Brickley, Smith & Zimmerman, 2004). Monopolistic competition retains many aspects of perfect competition; large number of firms (multiple sellers and many buyers), free exit and entry, perfect knowledge and identical cost curves of firms (Himmelweit, Simoneti & Trigg, 2001). But the firms produce similar but differentiated products (market power); the customer does not view brands as perfect substitutes. In the monopolistic competition model supernormal profits are temporary, since new firms are attracted into the industry until only normal profits remain (Himmelweit, Simoneti & Trigg, 2001). Suppliers have a degree of control over price.

The difference between a monopoly and monopolistic competition is that in monopolistic competition, economic profits invite entry. Entry will tend to force profits to zero, yet some brands continue to be more distinctive than others (Brickley, Smith & Zimmerman, 2004). If firms have managed to associate a commitment to high quality, in consumers’ minds, with a differentiated brand, this is so-called branding.

2.2.4 Oligopoly
An oligopoly is a market structure containing a small number of firms whose decision making is influenced by recognized mutual interdependence. Strategic competition takes place where there is recognition of this interdependence between firms. The firms realize that their own actions will have an effect on the behaviour of its rivals which will, in turn, react back on itself. Firms may therefore take certain actions in order to influence other firms’ choices and beliefs about possible future reactions (Himmelweit, Simoneti & Trigg, 2001). In a tight oligopoly the leading four firms control 60 to 100% of the market. There are significant barriers to entry and the product may be differentiated.

The state of competition in an industry depends on five basic competitive forces, potential entrants, threat of substitution, bargaining power of buyers, bargaining power of suppliers, and rivalry among current competitors, and determines the position (the strength and weaknesses) of a firm in its industry. Markets can be differentiated based on the five competitive forces. The focus is on the supply side. The first market mentioned is perfect competition. In practice there are many deviations from perfect competition; the market failures. These are public goods, imperfect information, externalities and imperfect competition (monopoly, monopolistic competition and oligopoly). Imperfect information can lead to the principal-agent problem, opportunistic behaviour and hold-up.
2.3 Procurement Strategy

The procurement strategy outlines the strategic approach to procure goods, works and services. Procurement is the acquisition of goods and/or services at the best possible total cost, in the right quantity and quality, at the right time, in the right place for the direct benefit or use of governments, generally via a contract. The choice for a certain procurement strategy is partly based on the transaction costs. If for example the government prescribes to follow a certain procurement strategy and regarding the transaction costs another strategy is more appropriate then there will be an area of tension. The goal of each firm is to minimize the (transaction) cost function while maximizing organizational benefits. The transaction costs will be lower the more information is available to the contracting actors at the time of the contract.

Besides transaction costs the agency costs also have also influence on the choice for a procurement strategy. The agency costs are a type of internal cost that arises from, or must be paid to, an agent acting on behalf of a principal. Agency costs are associated with problems such as divergent principal-agent objectives and information asymmetry.

The decision to buy or to make can be based on the market transaction costs and the internal capability. See the matrix ‘transaction costs versus internal capability’ in figure 2.5 (Parker & Hartley, 2002).

![Transaction costs versus internal capability](source Parker & Hartley, 2002)

Figure 2.5: Transaction costs versus internal capability (source Parker & Hartley, 2002).

Parker & Hartley (2002) explain the make-or-buy decision as follows. In figure 2.5 the ‘make or buy’ matrix with transaction costs on the vertical axis and internal capability on the horizontal axis is visualised. Where transaction costs and internal capability are low, the case for outsourcing (buy) based on competition is high. Where transaction costs are high (perhaps because of strategic importance of the activity or because of the threat of hold-up resulting from power asymmetries in the supply chain) and internal capabilities to supply the activity exist, the case for outsourcing is much reduced (make). In the other two cases, where pressures to outsource or insource from transaction costs and internal capabilities conflict the decisions are less obvious. It will depend on careful calculation of the relative transaction costs and internal capabilities or benefits. In some cases, the optimal sourcing decision cost-benefit grounds may be to enter into some kind of joint venture or partnership to procure the good or service. Joint ventures or partnerships are a compromise between...
pure market contracting and vertical integration (Parker and Hartley, 1997). Where outsourcing occurs, opportunistic behaviour and hold-up are protected against through long-term collaborative arrangements.

According to Parker & Hartley (1997) procurement is seen as a continuum based on these transaction economics (see figure 2.1). On the left side the vertically integrated in-house production consists of one internal supplier to the ultimate right side, competition, see figure 2.6 below.

![Diagram showing the procurement continuum](image)

Figure 2.6: the procurement continuum (source: Parker & Hartley, 1997).

The extreme at the left side in the procurement continuum in figure 2.6 is vertical integration; the combination of the assets for two successive stages of production, under a common ownership. Vertical integration is downstream or upstream, depending on whether it involves the acquisition of assets for a stage of production nearer to or further from the final consumer. The decision to vertically integrate upstream is often characterized as the choice of whether to make or to buy (see figure 2.5).

The other extreme, at the right side, is the spot market; a product or service can be purchased from any one of a large numbers of suppliers. The perfect competitive market is described in paragraph 2.2 market suppliers.

Alliances are considered as cooperation bonds between organisations with common objectives and common decision-making in which risk and turnovers are shared. In many alliances partners have coordinated their working methods to gain common advantage and to share knowledge. Alliances can be closed between private ventures, between public institutions and between public and private organisations. It concerns contractual cooperation, partnerships, joint ventures and reciprocal participations. Fusions and adoptions are not counted as alliances. Alliances are closed to gain synergy with joint market forces, improvement of distribution and management, conjugation of research and jointly product innovation. Networks are considered as a coordinating organisation of autonomous organisations with reciprocal interests which want to strengthen their forces to realise their interests (Boonstra, 2007).

Joint ventures or partnerships are a compromise between perfect competition and vertical integration (Parker & Hartley, 1997). Public-private partnerships involve contracting between government and the private sector under conditions of imperfect information (Parker & Hartley, 2002). In the procurement literature partnership sourcing is said to have the following advantages over competitive supply (Parker & Hartley, 1997).

- Avoiding unnecessary costs of excessive tendering and frequent competitions;
- Fewer, dedicated suppliers;
- Long-term contracts;
- Coordinated strategies between buyers and suppliers;
- A sharing of risk and rewards;
- Trust relationship;
Theoretical Framework

- Single sourcing;
- Resulting mutual benefit (‘win-win’ outcomes).

In comparison to partnership sourcing, competitive supply is held to have the following disadvantages (Parker & Hartley, 1997).

- Arm’s length relationship;
- Frequent tendering which is risky and costly;
- Reliance on price;
- Spot contracts or complex contingent claim contracting;
- Multiple sourcing;
- Lack of trust;
- Reluctance to share information;
- Adversarial attitudes (‘win-lose’ outcomes).

According to Parker & Hartley (1997) procurement is seen as a continuum based on transaction costs. Transaction costs arise form the costs of seeking out buyers and sellers and arranging, policing and enforcing agreements or contracts in a world of imperfect information. Decisions to buy or to make can be based on these transaction costs and on the agency costs. Agency costs arise from an agent acting on behalf of a principal and derive from divergent principal agent objectives and information asymmetry. Procurement strategies are a continuum from vertical integration to perfect competition and several alternatives in between.

In the next paragraph the factors which are of influence on forming and functioning of a multi-actor complexity are discussed.

2.4 Multi-Actor Complexity

Cooperation between organisations or partnerships can be characterized by multi-actor complexity. In a multi-actor policy setting, resources are spread among actors. If government neglects the other actors in policy making, it risks a lack of support or even opposition, so that the resources needed become unavailable (Van de Riet, 2003). Opposition in policy preparation can result in counter proposals in which each of the actors initiates their own study from their own perspective, resulting in contesting reports (Klijn et al, 2000). Opposition can eventually lead to a policy deadlock (Edelenbos, 2000).

![Figure 2.7: The elements of actors’ problem perceptions (source: Van de Riet).](image)

Multi-actor complexity arises from the diversity in problem perceptions among the actors involved (Bennett et al., 1989; Rosenhead, 1989). This diversity stems from the divergent
interests among actors on the one hand and actor’s divergent perceptions on the other. The interests of actors and their perceptions of reality determine their objectives, see figure 2.7 above.

When resources and decision making are spread across actors, the actors become dependent upon each other, and a policy can only be realized on the basis of cooperation (or at least collaboration) in which the actors involved contribute the resources needed (Van de Riet, 2003). Government must share policy making in a multiple actor context. Nonetheless government is more than just one of the actors. Government occupies a special position because of the unique resources that are at its disposal, including sizeable budgets, legislative power and a monopoly on the use of force and democratic legitimization (Klijn & Koppenjan, 2000).

Theory about multi-actor complexity requirements developed by Van de Riet (2003) is visualized in figure 2.8. According to Van de Riet the central aim of policy analysis is the production of useful knowledge. Useful knowledge is knowledge that is scientifically valid and helpful in the policy debate. Too much focus on the support of the involved actor’s risks producing scientifically invalid knowledge (negotiated nonsense). If the involved actors are neglected the outcome is scientifically valid, without actors’ support (superfluous knowledge).

In a multi-actor setting, striving to produce useful knowledge means that one has to deal with single-actor and multi-actor complexity, see figure 2.8. There exist three types of requirements, trust, empathy and logic for both single-actor and multi-actor complexity.

Figure 2.8: Multi-actor complexity requirements (source: Van de Riet, 2003).
The three single-actor requirements are (Van de Riet, 2003):

- \( S_0 \): Scientifically sound analysis;
- \( S_1 \): Structured search for policy options;
- \( S_2 \): Broad research focus.

The information used must be scientifically valid (valid data, methods, techniques and models). The results should be verifiable and accessible. The interests, goals and objectives should be made clear. This is followed by a systematic and creative search for policy options to reach the objectives of the actor. A broad research focus means that all relevant parameters, effects and insights are taken into account, to gain maximum insight in the system and the effect of policy options. Uncertainties about the effects of the policy options should be taken into account.

A policy deadlock can exist if government neglects the other actors in policymaking. Government risks a lack of support or even opposition, if the policy proposal is either of limited relevance for the actors or because the policy proposal threatens their interests. The resources needed become unavailable (Mayer, 1997; Edelenbos, 2000). The situation is worsened if they feel bypassed in the policy process (De Vries & Van den Heuvel, 1998).

The involvement of multiple actors leads to additional complexity. The more actors involved the more complex the problem tends to be, since different actors not only tend to have different interests but also different perceptions or reality (Bennett et al., 1989; Rosenhead, 1989).

In the following three paragraphs the requirements of multi-actor complexity are described.

### 2.4.1 \( M_0 \): Trustworthy Analysis

The first requirement is the trustworthy analysis (Van de Riet, 2003).

- Involving analysts who are trusted;
- Giving stakeholders a voice in the analysis;
- Making the analysis accessible for all stakeholders.

The information should be made accessible to all involved actors. The transparency requirement means that all documents and other information prepared by the government and private actors should be made available to all actors (Flyvbjerg, 2003). Transparency concerns the provision of information about all sorts of aspects of the transactions that the company enters into, such as the quality of the products that it trades, the guarantee conditions, etc. (Velasquez, 1998).

According to Edelenbos & Klijn (2007) the value of trust lies in handling uncertainty in complex decision making because other actors’ actions become more predictable. But also lies in enhancing the capacity for information exchange and innovation. This is a very important feature in a situation where complex problems demand new innovative solutions and that must involve various actors who have resources and information to contribute to potential solutions. The risks of trust have to do with the vulnerability of trust and with the dangers of too much trust that could lead to overly relaxed attitudes from cooperating partners. This, in turn, could lead to risky and unhealthy situations in which trust easily turns into distrust.

The actors involved have a need for complete information, and want to diminish asymmetric and/or incomplete information. Trust (based on expectations for the future) and reputation (based on past behaviour) are very important concepts in relation to gain full information (transparency). Power is an important factor in the relation between the buyer (agent) and supplier (principal). When the supplier is a monopolist then the supplier has more power and
when the buyer is a monopolist then the buyer has the power. The actor with the power advantage mostly also has the advantage of asymmetric information and this actor can act opportunistically or exploit his hold-up and bounded rationality. Risk of opportunism and bounded rationality is that one of the involved actors will advantage his or her information advantage. Bounded rationality implies rational decision making by buyers and sellers but under conditions of incomplete information.

In the article ‘Transparency, market operation and trust in Dutch construction industry’ Graafland and Nijhof (2007) introduce four models of trust and market operation. In short this model is explained below.

The first pillar of figure 2.9, offering more information in advance or during the transaction may help to enhance the basis for trust and to further good market operation by the verifiability of the actions of the company.

The second pillar, the transaction partners will realize that unfair treatment of the contract party will strongly reduce the chance of successful cooperation in the future. Both in repeating and non-repeating contracts reputation will prevent the abuse of the trading partners when information about the transaction is incomplete. This only works properly if the performance of the past is transparent. This is not working when firms with a short-term horizon are involved.

The third pillar, integrity; the companies feel responsible for living up to the contracts. They have an intrinsic motivation and they consider it as moral commitment. This results in a situation where the involved companies can be very flexible within the boundaries of the contract. To increase the integrity are ethical training, training of social and communication skills and a code of conduct.

The fourth and last pillar, trust is based on mutually dependency between the partners and the congruity of interests (Klein Woolthuis, 1999). For example extra costs are shared, so involved parties try to keep the costs as low as possible. There is a shared interest, in which the involved parties have an incentive to realize the best possible price-quality ratio.
2.4.2 M₁: Bridging Interests

The second requirement is bridging interests (Van de Riet, 2003).

- Taking a broad scope and a multi-actor point of view in exploring policy options;
- Maximizing the benefits and minimizing the losses and identifying possibly irreconcilable differences among actors.

Bridging means that the interests of all stakeholders – including future generations – are taken into account and a broad scope is used (Van de Riet, 2003). This means that the point of view of all actors is involved.

Criteria for bridging interests are effectiveness and efficiency, but even more important equity. The ideal is to find a win-win solution (Susskind & Cruikshank, 1987; Pruitt & Carnevale, 1993; Edelenbos et al., 2000). In orienting the analysis towards win-win solutions, all interests are taken into account and the occurrence of losers is avoided as much as possible (Van de Riet, 2003). This is also called the Pareto-principle (1972). According to Pareto social welfare only increases if there are increases in the welfare of one or more members of the group and no decreases in the welfare of other group members.

2.4.3 M₂: Multi-perspective Research Focus

The third requirement is multi-perspective research focus (Van de Riet, 2003):

- Covering all features that are relevant for any of the stakeholders;
- Applying multiplicity if there are divergent views on assumptions;
- Giving insight into the distribution of gains and losses across the stakeholders.

According to Van de Riet (2003) this means that all features must be taken into account relevant to any of the stakeholders. Multiplicity means that the multiple views in policy issues, all of which potentially have some validity, must be taken into account. The insight into the distribution of gains and losses inform the involved actors about the features of the policy options identified so that the actors can understand the policy options and make the trade-offs between the options.

Useful knowledge is knowledge that is scientifically valid and helpful in the policy debate. Too much focus on the support of the involved actors’ risks producing scientifically invalid knowledge (negotiated nonsense). If the involved actors are neglected the outcome is scientifically valid, without actors support (superfluous knowledge). According to Van de Riet (2003) the three requirements in a multi-actor complexity are: M₀ trustworthy analysis, M₁ bridging interest, and M₂ multi-perspective research focus. The first requirement focuses on trust and transparency, the second requirement on equity and win-win solutions and the third requirement on the approach for analysis.

Without thrust (ethos) and empathy (pathos) it makes no sense to argue on the level of logic (logos).

2.5 Evaluation Framework

In this chapter a theoretical framework is built in which the features of Defence materiel (procurement), several types of suppliers, procurement strategies and multi-actor complexity have been described and explained. To assess the present procurement strategy for large naval surface ships and to determine whether alternative procurement strategies satisfy
criteria are formulated. In this fifth paragraph the criteria are elaborated and explained why these criteria are important.

The choice for a procurement strategy is partly based on the type of transaction. All the characteristics described in paragraph 2.1, features of Defence materiel (procurement), can be applied to large naval surface ships. Besides that the characteristics of large naval surface ships play an important role. In the Handboek Verwerving Defensie (MoD-III, 2006) is the following described about the procurement policy. The procurement policy of the Ministry of Defence has been aimed at ‘providing materiel (including services and work) and the relevant logistical resources to the users, as such that the demands are met with respect to the required quality and delivery period against an acceptable price’. In the first question of the interviews (Appendix C, 2007) these characteristics of naval ships are said to be important (and make the difference between a ship and another type of Defence materiel) and the design should fit the operational and technical specifications of the client; on this context the client is the MoD. The procurement strategy must be able to deliver a naval ship which matches the set of specifications. This leads to the first criterion.

**Criterion 1: meet the operational and technical specifications (staff requirements).**

Defence is a major buyer, and some times a monopsonist, of Defence materiel and can influence the size, structure, conduct and performance of the national Defence industries. In paragraph 2.2, market suppliers, is explained that markets can be differentiated based on five competitive forces, potential entrants, threat of substitution, bargaining power of buyers, bargaining power of suppliers, and rivalry among current competitors, and determines the position (the strength and weaknesses) of a firm in its industry. In this thesis the focus is on the supply side. The market for Defence equipment is characterised as an imperfect market. These monopolies and oligopolies lead to strategic interaction between suppliers and the procurement agency. Imperfect information can lead to the principal-agent problem, opportunistic behaviour and hold-up. The principal-agent problem arises when one party, the principal, wishes to ensure that another, the agent, acts in accordance with the principal’s interests in situations where the agent has information unavailable to the principal. A hold-up is an action to exploit another party’s dependence. A hold-up is distinct from moral hazard in that it does not require asymmetric information. A hold-up arises only when there is a conflict of interest between the parties. Imperfect information enables parties to a contract to operate opportunistically. Precautions to reduce a hold-up reduce the benefit or increase costs. The characteristics of large naval surface ships and the features of Defence of materiel procurement which can all be applied on large naval surface ships makes procurement of these ships sensitive for hold-up. To reduce the chance of a principal-agent situation, hold-up or opportunistic behaviour the dependence on the supplier should be diminished. This leads to the second criterion, decrease the dependence on the supplier.

**Criterion 2: decrease the dependence on the supplier.**

High technology Defence equipment, such as large naval surface ships, is costly. The industry has long lead times, and since the technologies and assets are Defence specific and costly, industries are reluctant to invest their own funds. Defence determines a budget to procure a certain type of ship. Within this budget Defence has to acquire a product that met the staff requirements (see criterion 1) for the least money possible. Or, the other way around, purchase the best product value within the available budget. In the Handboek Verwerving Defensie (MoD-III, 2006) is the following described about the procurement policy. The procurement policy of the Ministry of Defence has been aimed at ‘providing materiel (including services and work) and the relevant logistical resources to the users, as such that
the demands are met with respect to the required quality and delivery period against an acceptable price’. This leads to the third criterion.

**Criterion 3: best product value within the available budget.**

The transaction costs are first mentioned in paragraph 2.1, as a feature of Defence materiel procurement. In paragraph 2.3 the different procurement strategies are elaborated. According to Parker & Hartley (1997) procurement is seen as a continuum based on transaction costs. Transaction costs arise form the costs of seeking out buyers and sellers and arranging, policing and enforcing agreements or contracts in a world of imperfect information. Decisions to buy or to make can be based on these transaction costs. Besides transaction costs have also agency costs influence on the choice for a procurement strategy. The agency costs can arise from the principal-agent problem, more specifically the information asymmetry.

**Criterion 4: minimise transaction costs and/or agency costs.**

In the fourth paragraph the focus is on multi-actor complexity; the diversity in perceptions among involved actors. From these three requirements ($M_0$, $M_1$ and $M_2$) the factors are identified which influence the forming and functioning of a cooperation between different actors. These conditions are required for partnership sourcing. From the requirement $M_0$, trustworthy analysis, the factors trust, and transparency can be distinguished, from the requirement $M_1$, the factors equity and win-win situation are distinguished. From the third requirement, multi-perspective research focus, the factor understanding the approach for analysis can be distinguished. Without thrust (ethos) and empathy (pathos) it makes no sense to ‘argue’ on the level of logic (logos).

The involved actors in a partnership have a need for complete information, and want to diminish asymmetric of incomplete information. Trust is a very important concept in relation to gain full information (transparency). The actor with the power advantage has mostly also the advantage of asymmetric information and this actor can exploit hold-up. Trust is based on more transparency about performance that is to be delivered (testable actions), more transparency about performance in the past (reputation), integrity, and mutually dependency. More trust leads to more transparency and more transparency leads to more trust between the involved actors in a partnership.

**Criterion 5: realise trust, empathy and logic in a situation of multi-actor complexity.**

### 2.6 Research Approach

The first part of this research is completed; in this paragraph the set up for the next three parts is given. The four parts of research, including the sub research questions, are described in paragraph 1.4.

Part two of this research, the practice of multiple procurement projects of large naval surface ships is elaborated in chapter three. The projects elaborated in this thesis are the Air Defence Frigate (ADF), first and second Landing Platform Dock (LPD-1 & LPD-2), Patrol Ships (PS) and the Joint logistic Support Ship (JSS). Documents of the Ministry of Defence on this subject and literature about shipbuilding are studied. Several interviews are held with involved actors of the Defence Organisation and participating industry. The complete
interview and a summary of the answers are retrieved in appendix B & C. After describing the procurement strategies, including (the attempts to) international cooperation of these projects, these projects are evaluated with the criteria described above and assessed with the rating presented in table 2.1. This rating can be used to compare the combinations of the different procurement strategies and the contextual scenarios.

<table>
<thead>
<tr>
<th>Verbal judgement</th>
<th>Rating</th>
<th>Numerical rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very satisfactory</td>
<td>✔ ✔</td>
<td>2</td>
</tr>
<tr>
<td>Satisfactory</td>
<td>✔</td>
<td>1</td>
</tr>
<tr>
<td>Moderate</td>
<td>✔ ✗</td>
<td>0</td>
</tr>
<tr>
<td>Unsatisfactory</td>
<td>✗</td>
<td>-1</td>
</tr>
<tr>
<td>Very unsatisfactory</td>
<td>✗ ✗</td>
<td>-2</td>
</tr>
</tbody>
</table>

Table 2.1: (Numerical) ratings.

Criterion 1 and criterion 3 are related, because within the available Defence budget a product has to meet the staff requirements as best as possible (best product value) at the budgeted price. In criteria 1 is stated that the large naval surface ships to be procured should meet the operational and technical requirements. In criteria 3 the restriction is given that the staff requirements should be met within the available budget in the best possible way.

Also criterion 2 and criterion 5 are related, if the dependence between the customer (Ministry of Defence) and the supplier is large (or increasing), also the trust between them should increase to be able to purchase a product with the best suitable procurement strategy which meet the criteria. If the dependence between client and supplier is small (or decreasing), then also the trust can be at a lower level and still be able to purchase the product which meets the other criteria. Other combinations of dependence and trust can lead to less satisfactory situations to procure. If the dependence on the supplier is decreasing the rating will be (very) satisfactory (✔ (✔)). Criterion five will be rated (very) unsatisfactory (✗ (✗)) if the level of trust is small or decreasing.

Part three of this research, in chapter four is described that a number of vital external factors will change. But in which way the future will change exactly in relation to the procurement of Defence materiel is uncertain and thus an interesting question. Several conditions for future procurement are elaborated. These conditions have influence on the choice of a certain procurement strategy for large naval surface ships. The changing security situation, the decreasing defence budget, which lead to changing capacity needs, and the consolidation of the Defence market are of influence on the procurement strategy. Also the European directives for the invitation to tender on the European competitive market and the code of conduct of the European Defence Agency (EDA) play an important role. To reduce the fragmentation of the European Defence market and the realization of a transparent and open market for military procurements the code of conduct of the EDA is discussed. To acquire a
strong international (European) market position the Defence-related industry has to increase their export.

Final part of this research, in the fifth chapter possible scenarios, how the world (Europe) might possibly change, is developed by means of a scenario analysis. The contextual factors, described in chapter four, are put in to scenario logic, and a concise scenario analysis is made. The objectives of the involved actors mainly stay the same, but the environment is changing. The combination of the contextual scenarios and alternative procurement strategies result in a matrix with nine future combinations. The choice for these three specific strategies will be explained in chapter five. These combinations will be assessed by means of the ratings and criteria established in this two. This final part will result in the objective of this thesis, namely generate and assess alternative procurement strategies for the DMO in order to continue the procurement of large naval surface ships in the future in a changing environment.

In the last, and sixth, chapter conclusion are drawn and recommendations for the future procurement strategy of Dutch large naval surface ships and for future research are made.
3 Present Procurement Strategy

The maritime armed forces operate on and from sea and are more and more used for initiating, leading and supporting land operations. The Royal Netherlands Navy Command has for this several operational capabilities. These operational capabilities form together the contribution which the Royal Netherlands Navy Command makes to the worldwide usable armed forces (Commando Zeestrijdkrachten, 2005). In this chapter the practice of several procurement projects of large naval surface ships are elaborated, namely the Air Defence Frigate (ADF), first and second Landing Platform Dock (LPD-1 & LPD-2), Patrol Ships (PS) and the Joint Support Ship (JSS). The procurement procedure is described in short in paragraph 1.2.1 ‘Defence Materiel Organisation’ and the procedure will not be further discussed. In paragraph 3.1 the role of actors participating in the Dutch naval shipbuilding cluster, Defence, the industry, specifically KSG, and the suppliers are taken into consideration. Defence pursues a preferential policy, the present procurement strategy, and almost all orders of large naval surface ships are granted to the shipyard KSG and the Defence related industry. In the paragraphs 3.2 till 3.6 the present procurement strategy and (the attempts towards) international cooperation are examined. In paragraph 3.7 the practice of the different procurement projects are compared to the theory described in chapter two and finally the present procurement strategy is assessed with the criteria and rating elaborated in chapter two. This description of the present procurement strategy can be used as benchmark to chapter five, in which future alternative procurement strategies are combined with contextual scenarios and these combinations are assessed with the criteria.

3.1 Dutch Naval Shipbuilding Cluster

In the Netherlands the large naval surface ships are procured in cooperation with the Dutch naval shipbuilding cluster. This cluster consists of a rather fixed number of actors, namely the Defence Materiel Organisation, the industry and the knowledge institutes. In chapter one the origin of the cluster is described, in this paragraph the role the actors play within the cluster is elaborated on more detail. In paragraph 3.1.1 the Defence Materiel Organisation, in 3.1.2 the industry, including KSG, partners and sub contractors, and in 3.1.3 the knowledge institutes are described.

3.1.1 Defence Materiel Organisation

The Defence Materiel Organisation (DMO) is responsible for the procurement, maintenance and divestment of materiel of the armed forces (sea, land and air), and within the Defence Organisation DMO is supplier, policy-maker and responsible for research and development (MoD, 2006).
The materiel to be purchased must meet the specifications and be delivered against an acceptable price within the agreed period (MoD, 2002). Important conditions are the production capacity of the suppliers, the presence of international Defence industry and possibilities for international cooperation. To satisfy high innovative technology requirements, the access and outcomes of scientific research and development of technology are of great importance on gaining these requirements. The MoD stimulates innovation by financing research and setting exact requirements. The procurement directives are laid down in the Defence materiel process (DMP). See paragraph 1.2 ‘The Defence Organisation’. The summary of materiel projects (in Dutch: Materieelprojecten-overzicht (MPO)) gives insight in the strategic materiel projects in excess of 25 million euros, as well as the projects which lie under this financial criteria but are politically sensitive. Strategic projects are those projects which are related to military materiel. The MPO will annually be offered on the day of the Queen’s speech to Parliament (and placed on the Internet).

DMO itself fulfils several tasks within the shipbuilding cluster. First, the project management of the procurement projects is in the hands of DMO. Second, DMO translates the requirements of the Chief of Defence into a functional design. Third, DMO is responsible for the integration of the combat systems (sensor, weapon and communication systems), development of software systems to incorporated sensor, weapon and command systems. Moreover the technical risk for combat systems integration lies almost completely with the DMO rather than with an industrial party (KSG). This has a beneficial effect on the price of Dutch naval vessels. Fourth, by financing research and setting exacting requirements in the design of its naval vessels, it forces the Dutch naval shipbuilding cluster to innovate. Fifth, DMO purchases the vital (sub) systems, the so-called Government Furnished Equipment and Information, itself and carries the risk for these systems. The technologies and assets needed for the development and production of this costly, high technology materiel are often Defence specific, contractors are reluctant to invest their own funds, as the only buyer (Defence), might exercise its monopsony power at the contractors expense.

3.1.2 Industry
The shipyard (in all projects described below the shipyard is KSG) processes the functional design of DMO into specifications and constructs on the basis of this design the ship’s platform. The KSG provides a sailing ship’s platform. DMO transforms the ship into a naval (fighting) ship. DMO purchases the (sub) systems, the so-called government furnished equipment and information (GFE/I), and the KSG installs these systems on the platform. After that the DMO takes care of the (software) integration of the systems.

The construction of these high-technology ships for the RNLN considers the KSG as the condition to export naval ships. Much experience is gained with the building of the large naval surface ships. The condition for successful export is that the RNLN is launching customer; potential foreign buyers require most of the time that the navy of the producing country sails with the ships constructed by KSG. This indicates that there is a certain degree of dependence between KSG and the RNLN. KSG has recently received an order to construct four frigates for Morocco, construct eight Patrol vessels for Portugal and produces four corvettes to Indonesia.

The most important partners and subcontractors are Thales Nederland and Imtech Marine and Offshore. Only Thales Nederland has specialized in military products. The other companies the civil market is the most important (CPB, 2004). In table 3.1 the most important partners and subcontractors are indicated.
### Table 3.1: Suppliers Dutch naval shipbuilding cluster (source, CPB, 2004).

<table>
<thead>
<tr>
<th>Contractors</th>
<th>Core business</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thales Nederland</td>
<td>Radar and command systems. From origin <em>Hollandsche Signaal Apparaten</em>, now part of the French multinational Thales.</td>
</tr>
<tr>
<td>Imtech Marine en Offshore</td>
<td>Control and electric systems. From origin <em>van Rietschoten en Houwens</em>, installation of systems.</td>
</tr>
<tr>
<td>Stork-Bronswerk</td>
<td>Installation of cooling and climate systems.</td>
</tr>
<tr>
<td>Rohde &amp; Schwarz</td>
<td>Telecommunication, component of German concern.</td>
</tr>
<tr>
<td>Hertel Marine Services</td>
<td>Fire heat insulation and accommodation installation, part of conglomerate industrial services.</td>
</tr>
<tr>
<td>Rexroth Hydrauline</td>
<td>Hydraulic cylinders, part of the German concern Bosch.</td>
</tr>
<tr>
<td>Wärtsilä</td>
<td>Ships engines, from origin <em>Stork Dieselmotoren</em>, part of the Swedish concern.</td>
</tr>
<tr>
<td>MARIN</td>
<td>Research institute, measuring of the capacitance and the propulsion capacity of the ship.</td>
</tr>
<tr>
<td>Croon Elektrotechniek</td>
<td>Installation electronic systems.</td>
</tr>
<tr>
<td>Exendis</td>
<td>Energy conversion, medium-large Dutch-German company.</td>
</tr>
<tr>
<td>Loggers</td>
<td>Producer of shock-absorbing systems, small Dutch company.</td>
</tr>
</tbody>
</table>

The KSG has a special position in the Dutch naval shipbuilding cluster. In the last decennia the RNLN only contracted KSG for the procurement of ship platforms for the reasons mentioned in paragraph 1.2.2. This has historically grown this way. All large naval surface ships have been put out to tender (partly) at KSG. Of all shipyards in the Netherlands KSG (at the end of the nineties) remained as lead contractor. The choice of the State was based on the chances for employment in the province of Zeeland and in particular the region Walcheren. To procure naval ships within a monopoly is based on the political choice to give the economic interest in the Netherlands an impulse. In the Netherlands less naval ships were built to generate enough work for more than one shipyard. Defence has realized several infrastructural projects for KSG, so that KSG could continue and the knowledge concerning naval shipbuilding would not disappear in the Netherlands. By these political choices a monopoly is created for KSG. KSG is not the only shipyard in the Netherlands capable of building naval ships. Another Dutch shipyard is Merwede in Hardinxveld-Giessendam. It turns out that KSG is not a natural monopoly, but KSG has acquired her monopoly position in a different way. In paragraph 2.2.2 ‘monopoly’ five sources of market power are named. In the case of KSG the sources of market power are the following:

- **Unique resource**: ownership of exclusive knowledge. Many years of intensive cooperation between KSG and DMO has evolved into experience- and knowledge advancement of shipbuilding, specific large naval surface ships. This experience and knowledge are not replaceable just like that by another shipyard.

- **Regulation**: to procure naval ships within a monopoly is based on the political choice to give the economic interest in the Netherlands, and specifically the province of Zeeland, an
impulse. Defence has realized several infrastructural projects for KSG, so that KSG could continue and the knowledge concerning naval shipbuilding would not disappear in the Netherlands. This has been laid down in the Prioriteitennota 1992-1993 and the Defensienota (MoD, 2000). It was not possible for Dutch government to support multiple shipyards because there were too few orders to build naval ships.

♦ Product differentiation: brand identification and customer loyalties. KSG has a reputation of construction of high-quality products. The RNLN is a very loyal, because for decades it has procured its large naval surface ship with KSG. In the Defensienota 2000 is written that the Dutch government strives for the conservation of technical knowledge and expertise concerning naval shipbuilding in the Netherlands (MoD, 2000).

3.1.3 Knowledge Institutes
The TNO laboratories (Toegepast Natuurkundig Onderzoek) are an important subcontractor of technical knowledge to the RNLN. Within TNO particularly the Fysisch en Elektronisch Laboratorium, Technische Menskunde and also the Prins Maurits Laboratorium are busy with conducting scientific investigation. They have been involved in examining specific subjects during tests in the fields of vulnerability, management, ammunition, weapons, sensors, command systems and ergonomics. Beside support in the requirements and design phase, TNO also supports in the appraisal of systems DMO wants to purchase and assists in running tests.

The Maritiem Research Instituut Nederland (MARIN) is an independent foundation with as research aim hydrodynamics. Frigates sail at high speed, should accelerate quickly and should have a limited signature as well. MARIN is involved in the development of the hull form optimisation, propeller design, prevention of cavitations and noise & vibrations, since frigates must be able to operate in all weather conditions. The sea keeping performance of these vessels is very important. Frigates must be able to maintain high sailing speeds in extreme weather. MARIN investigates the sea keeping performance, roll stabilisation, the motions and the loads.

The Dutch naval shipbuilding cluster consists of DMO, the industry and the knowledge institutes. The most important tasks of DMO are functional designer, integrator of (combat) systems and stimulator of innovation. DMO bears the technical risk of the (sub) systems and therefore the costs are lower. In the last decennia the DMO only contracted KSG for the procurement of ship platforms of large naval surface ships. This is mainly based on a political choice to give the Dutch economy an impulse. KSG is not a natural monopoly, but has three sources of market power (1) unique resource of exclusive knowledge, (2) regulation of the government and (3) product differentiation and customer loyalty. A condition for successful export of navy ships by KSG is that the RNLN is launching customer. This indicates that KSG and RNLN are mutually dependent.

In the following paragraphs the procurements of several large naval surface ships are described. The emphasis will be on the cooperation between Defence and a private shipyard, KSG, in all described projects the KSG is the lead contractor of the projects. Less attention will be paid to the knowledge institutes and to the subcontractors. Also the international cooperation at the procurement or the attempts for cooperation will be described. Successively the procurement of the Air-defence and command frigate (ADF), the first and second Landing Platform Dock (LPD-1/2), the Patrol Ships and the supplier, and the Joint Support Ship (JSS) are described.
3.2 Air-Defence and Command Frigates

This project concerns the procurement of four Air-Defence and Command frigates (ADF). These AD-frigates are the replacement of two Guided Weapon (GW) frigates and two Standard-frigates. Moreover the increasing air threat in general and in particular of intercontinental ballistic missiles (ICBM) the air defence system had to be improved with respect to the GW-frigate with anti-ICBM capacity. With this capacity could and can considerable areas (and their own troops) be protected against this threat. The ADFs fit very well in the expeditionary ambitions of Defence. Further the command facilities of the GW-frigates had to be present in at least two of the four ADFs, this is realised. Concerning the realignment of priorities the cruise missile has disappeared from the planning (Appendix C interviews, 2007).

The project contributes to the following operational capabilities of military capacity: effective (weapon) uses, deploy ability and mobility, high-quality commando sheathing, and security and self-protection (MoD, 2007).

3.2.1 Procurement Strategy

The ADF is the continuator of the failed NATO-project, NFR-90 (NATO Frigate Replacement). In the end of the seventies the NFR-90 project was aimed at a cheap solution for the need for new frigates. It appeared a difficult task satisfying both the military and industrial requirements of several countries. The provided advantages of common projects (shared, therefore lower development and production costs, interoperability and common logistics) are so attractive that always attempts for cooperation are done. When in 1990 the NFR-90 project failed, the RNLN looked for a national replacement of the GW-frigates (Oosterhout, 2001).

Eventually it was chosen to procure the ADF-project in an international cooperation, in which the RNLN was involved, in this case the Trilateral Frigate Cooperation (TFC) program. The TFC-program was developed by Germany, the Netherlands and Spain in the beginning of the nineties. The objective of it was jointly developing the required systems, commonly purchasing and sharing the development costs. The TFC-program was characterised by a relatively loose construction where cooperation was only in the areas where the involved actors saw appreciation. Each country was independent in the design and construction of the frigates. Several frigates have thus originated in the LCF in the Netherlands, the F124 in Germany and the F100 in Spain. One of the areas where one wanted to lower the purchase costs was the air defence system. However Spain had opted to implement a system based on the American AEGIS-system (agreement with the United States). On the other hand Germany and the Netherlands had cooperated further. These countries had developed in cooperation with Canada and Thales Nederland the Active Phased Array Radar (APAR) and the associated anti-warfare technology (to have a defence against modern missile threat) (Hendrickx et al, 2003).

The procurement of APAR is part of the ADF-project. With the letter of 21 October 1998 (Kamerstuk 25 800 nr. 5) the Chamber was informed concerning the completion of the procurement of the four systems. The contract with the firm Hollandse Signaalapparaten (now Thales) in Hengelo was signed in 1998. The first APAR-system was provided to Germany. The first system for the Netherlands was provided in 2001, the remaining systems were provided each half year to Germany and the Netherlands. This schedule was geared to the construction programmes of these countries.

The State had granted the order to the shipyard KSG. KSG is as lead contractor responsible for the construction of the platform and for the procurement of the relevant platform (sub) systems. In 1998 the KSG had closed several contracts for (sub) systems with Dutch and
international suppliers. Much attention had been given to the design and procurement of the navigation bridge. The RNLN and TNO had made an ergonomic design which is ordered by Imtech (MoD-III, 1999). The first ADF was completed in 2002 and the fourth and last ADF in 2005.

The ADF is procured in an international cooperation of Germany, Spain and the Netherlands. The cooperation is characterized by a relatively loose construction where cooperation was only in the areas where surplus value could be reached. Each country was independent in the design and construction of the frigates; different frigates have originated the LCF in the Netherlands, the F124 in Germany and the F100 in Spain. The Dutch Ministry of Defence has pursued a preferential procurement strategy, the order for the Dutch ADF is granted to the national shipyard KSG for the construction of the platform and for the procurement of relevant platform (sub) systems.

3.3 First Landing Platform Dock

The design of the First Landing Platform Dock (LPD-1) is mainly dictated by the requirement to be able to embark, transport and disembark, in coastal areas, a full battalion of marines, including supplies for ten days. The specific design requirements made it a versatile ship and it is possible to use the ship for alternative tasks or transports. Mid 1990 it became clear that Spain had interest in the same type of ship.

3.3.1 Procurement Strategy

The design of the first amphibious transport ship was developed in cooperation with the Spanish navy and put out to tender in 1994. The successful cooperation regarding the joint developed new supply ship (in the Netherlands is Hr. Ms. Amsterdam the replacement of an older supply ship) has contributed to an adapted, by both partners approved, Spanish-Dutch staff requirements for the Landing Platform Dock.

The most intensive cooperation with the Spanish navy has taken place during the pre-study phase. The design specifications were developed jointly by the KSG and the Spanish shipyard Bazan (Hendrickx et al, 2003). The specifications for the construction of the LPD-1 have mainly been based on civil standards and regulations. It comes as no surprise that the civil industry also had interest in the construction of this ship. Referring to the white paper ‘de Nederlandse Defensie Industrie (NDI)’ regarding to naval shipbuilding could be inferred that the conservation of the specific shipbuilding knowledge can not be applied of LPD-1. According to this white paper the system of invitation to tender on the competitive market within the Netherlands should be applied (Hopman, 1994).

In the Prioriteitennota (1992-1993) the importance Defence attaches to the conservation of knowledge and know-how of naval shipbuilding is emphasized. LPD-1 is not a high technological ship such as the ADF; with LPD-1 combat systems determine only 10% of the total product, whereas this is at the ADF more than half. Despite this difference it seemed necessary to grant this order to the KSG to prevent the loss of essential knowledge. In the Netherlands the construction was granted to the KSG, because otherwise the future of KSG would be jeopardized.
The frigates of the Zeven Provinciënklasse have on the one hand a command function, which means that they can facilitate the staff of a squadron. On the other side these frigates have been equipped for air-defence and can protect a complete squadron. The most striking characteristic of this ship is the incorporation of Stealth-techniques, as a result of which she has a tight and angular appearance. Frigates have five main tasks: Protection own maritime entities; Suppression of hostile sea armed forces; Embargo and blockade operations and patrols on sea; Command military operations on sea; Support land operation. F802 Hr. Ms. Zeven Provincien, F803 Hr. Ms. Tromp, F804 Hr. Ms. De Ruyter, F805 Hr. Ms. Evertsen.

The main mission of a Landing Platform Dock will be the transport and disembarkation of a fully equipped battalion of marines to the objective area using organic landing assets such as helicopters and landing craft or existing port facilities. A LPD is a multifunctional ship that generally forms the core of a (maritime) expeditionary task group. A LPD can be used for several tasks, the most important commitments are: Amphibious operations; Evacuation & humanitarian assistance; Medical and surgical care; Support for special entities; Helicopter platform; Strategic transport; Support mine suppression operations; Command platform; Sea-basing operations. L800 Hr. Ms. Rotterdam, L801 Hr. Ms. Johan de Witt.

The increasing dependence of the Dutch economy on trade over sea, the increase in criminal activities and terrorism and the incapacity of a large number of states to protect coastal waters and adjacent seas leads to a growing demand to (Dutch) maritime Defence resources for international law enforcement and service. The patrol ships are suitable and effective for the following tasks: Maritime presence; Security; Search & Rescue; Logistic support; Calamity suppression; Humanitarian aid; Maritime interdiction operations; Evacuation operations.

Supply ships ensure the logistical support on and from sea and contribute to the expeditionary capacity of the armed forces. The supply ships have three core functions: The replenishment and the transport of (diesel oil and plane fuel), feeding and water, and several types of ammunition, offering hotel and workshop facilities; Strategic transport of fuel and ammunition (shuttle tanker); Supplying entities on and from sea. F832 Hr. Ms. Zuiderkruis, F836 Hr. Ms. Amsterdam.

Figure 3.2: ADF, LPD, PS and Supply ships (source: Leidraad Maritiem Optreden).
A second argument for the construction of the LPD-1 at KSG is the fact that KSG, by the common realisation of the Spanish-Dutch supply ship, already has a relation with the Spanish shipyard Bazan. This shipyard also will construct the Spanish version of the LPD. Continuation of these activities by the cooperation of the project LPD between Spain and the Netherlands result in continuing the existing experience as well as the reciprocal trust between the shipyards (Hopman, 1994).

In the realization phase the choice of DMO for diesel-electric propulsion and a divergent time schedule has led to the cooperation being limited to information exchange and restricted cooperation in logistics. By commonly acquiring the communication systems and the navigation radar DMO has approximately saved 4 million euros on the initial budget (Hendrickx et al., 2003). KSG has launched a design based on the design of LPD-1. The costs have been reduced by logistical arrangements, fixed modules and use of commercial standards. Because of this KSG has acquired a significant position on the export market. LPD-1 was taken into service in 1998. Meanwhile Spain has taken into service two sister ships of LPD-1, namely SNS Castilla and the SNS Galicia (MoD-II, 2001).

Despite the possibilities to put out to tender the order of LPD-1 on the competitive market, based on the civil standards of the design, in the Netherlands the construction was granted to the shipyard KSG (preferential policy). The risk of losing the knowledge and knowhow of naval shipbuilding in the Netherlands was the most important reason; second best argument was the successful experience of designing commonly a (supply) ship and mutual thrust between Spanish shipyard Bazan and the Dutch shipyard KSG. The most intensive cooperation with the Spanish navy has taken place during the pre-study phase. The design specifications were developed jointly by the KSG and the Spanish shipyard Bazan. In the realization stage the diverging time schedule and the difference in operational requirements have meant that the cooperation between Spain and the Netherlands is restricted to information exchange and limited logistic cooperation.

### 3.4 Second Landing Platform Dock

This project concerns the procurement and commissioning of the second Landing Platform Dock (LPD-2) for the Royal Netherlands Navy. This project contributes to one of the main principles of policy, namely the enlarging of the expeditionary capacity. In the maritime context it concerns thus the support and influence of land operations from sea and operating in and close to maritime junctions and transport routes, as well as in waters close to operation areas on land. This project is appropriate in striving to increase and promote the capacity to work in networks (Network Enabled Capabilities) and to increase the operational, national and international cooperation. Additionally, this project is appropriate in striving to reduce the shortages of the EU and the NATO in the fields of transport capacity and sea-going command facilities.

The project contributes to the following operational capabilities of military capacity: deploy ability and mobility, effective commitment, high-quality command & control sheathing and good logistical support and transport (MoD, 2007). Given the need to be able to operate on large distance of its own territory and in the light of the allied need for transport capacity, it was decided in the Defensienota 2000 to acquire a second Landing Platform Dock.

### 3.4.1 Procurement Strategy

A successful international cooperation is made in the design phase. The design of LPD-2 has been based on the design of LPD-1, which was designed in close cooperation with Spain
The experiences with the first Landing Platform Dock are very positive. This and the extra costs and time of an entirely new design made Defence decide to use the design of LPD-1 as the basis for the second LPD. The design of LPD-2 has been adapted to new facts and experiences. Defence keeps continuously informed about the plans of other countries and assesses always if cooperation is possible, for example the procurement of additional equipment (MoD-II, 2001).

Although the design of the LPD has internationally awoken much interest from the United Kingdom, Portugal and Germany, it appeared not to be possible to cooperate with other countries for the construction. Causes are the differentiation in needs, protection national industry, particularly France, availability of financial resources and a diverse time schedule. The previous years KSG has developed on the basis of the design of the LPD alternative designs to enhance her export chances. This has led to the employment of KSG by the design of the British Alternative Landing Ship Logistic ships. Also Belgium, France, Germany and Denmark have plans for some kind of amphibious transport ship.

In scope of the purchase of Koninklijke Schelde Groep by Damen Shipyards Group the State has declared the intention to put out to tender the LPD-2 at KSG, under reasonable conditions and at an acceptable price in the cabinet period 1998 – 2002. This agreement is laid down in the letter of the Directoraat Generaal Materieel to the State Secretary (Ministry of Defence, 2000). Moreover KSG have already built necessary expertise with the construction of LPD-1. This means that a monopoly position for the KSG is created. Employment of the Dutch industry was also possible for the equipment of the ship (MoD-III, 2000).

As said, KSG was lead contractor of the LPD-2; KSG ensured the procurement and integration of the platform (systems). At the end of 2002 KSG closed a partner agreement with Imtech and Offshore for the supply of the electronic installation and the ventilation system. Also other Dutch companies could be contracted for (parts of) the equipment of the ship. As usual the DMO acquired the combat systems on its own. When appropriate the directives of the European Union for international invitation to tender were followed. At KSG the detailed engineering took place. A part of the ship, namely the hull with exception of the machine chamber sections, was built at the Galatz shipyard (also part of Damen shipyards group) in Romania. After that the ship was dragged to the Netherlands and further run down.

LPD-2 was completed and put in service on 30 November 2007. The tight time schedule has led to an innovative working method, the so-called co-design. This is described in paragraph 3.4.2.

### 3.4.2 Co-Design

The usual procedure is that the RNLN writes functional design, where consultation with the possible lead contractor, in this case KSG, takes place to a limited extent. The specifications are sent to the lead contractor to draw a tender. If the usual procedure were to be followed, the contract specifications would not be ready in the cabinet period 1998 – 2002. It was necessary, seen the agreements with Damen, to put the invitation to tender for the LPD-2 in this cabinet period. To gain time the existing procedure had to be adapted.

An intensive cooperation between the Defence Materiel Organisation and the private Koninklijke Schelde Groep during the specification phase, where employees of the KSG with their technical and market knowledge and personnel of the DMO were part of the design team, had to bring about that the contract specifications could be established directly. This phase of the project becomes the so-called co-design (phase). The co-design started in January 2001 and was finished in October of that year with the blocking of the application
specification and the price-indication by KSG. The price-indication of the KSG was far above the available Defence budget.

**JOHAN DE WITT IN DIENST GESTELD**


De bouwmeester, directeur Heijn van Ameijden van Schelde Marinebouw, erende dat de aankoop naar de indienststelling erg lang was. Hij vergeleek de Johan de Witt met een kind dat onder en onder werd en maar niet het huis uit wilde. Maar met een goede verstandhouding tussen de betrokken partijen en na intensieve arbeid was het dan zover. Lex Hen-

**Figure 3.3:** The 2nd Landing Platform Dock put in service (source: Defensiekrant 44/2007).

This adapted procedure, the co-design, is evaluated by the Defence Materiel Organisation. The most important findings are described below (DM0, 2007).

The objectives of co-design have only been partly gained:

- Time profit by the parallel implementation of the technical and financial phase. The eventual objective is obtained with the employment of the crash team. Given the results at the end of the co-design on 1 October 2001 it cannot be concluded that the time profit can be attributed to the co-design.
- Minimising of financial risk for the DMO and the shipbuilder. This objective is obtained for KSG. The high price of the ship resulted in minimum financial risk.
- Quality improvement of the specifications by gaining synergy of the knowledge of KSG and the Defence Materiel Organisation. This objective has not been obtained. On the 1st of October a ship was presented that only marginally met the criteria for stability and sea pace behaviour.

The factors which have been of influence in gaining the objective are the following:

- Culture: the conflict of interest between the DMO (product) and KSG (profit) and the different cultures within the organisations has influenced the co-design in negative sense.
- Time: in general can be stated that there was too less time to work out the co-design as required.
- Organisation: the action plan has never been formalized. The agreement between DMO and KSG has been just signed at the end of the process of co-design. The set-up of the organisation was too complex and the responsibilities and competences were insufficiently established. A lot of personnel transferred throughout the co-design process. This has evolved disruption and detention in the implementation of activities.
Information: at the start of the co-design process several conditions and parameters, such as relevant financial and commercial provisions (among which tariffs KSG and available budget RNLN), list of approved suppliers and (results of) trade-off studies propulsion system had not been set down or to an insufficient degree. The financial information hastened too much, and as a result technical decisions on the basis of financial information could not be made (or too late). Because of this it came clear in a very late stage that the financial conditions could not be obtained. The information exchange has been insufficient in a number of cases.

A crash-team has been composed to finally gain the objectives. In a very short time it appeared possible to come to an agreement with KSG, in which the result was satisfactory. Crucial was that during the crash team phase the relevant financial information was available on time and that decisions, necessary for the project’s progress, were taken at an adequate level. It can be concluded that during the co-design phase the essential players did not sit at the table.

The design of LPD-2 was a continuation of a successful cooperation project with Spain. International cooperation for the construction of LPD-2 appeared impossible, especially as a result of diverging construction periods and/or divergent designs. It is noticed that, in spite of increasing international cooperation, the naval shipbuilding is in the most countries still mainly a national matter. The preferential policy of the different countries limits the cooperation possibilities in this area.

The agreements with Damen ensured that the LPD-2 project was put out to tender at KSG. Within this monopoly position a public-private partnership has taken place between DMO and KSG in the design phase. To satisfy the agreements co-design was used for the design of the ship. The objectives of co-design, time-profit, minimising financial risk and quality improvement, have only been partly obtained. This was caused by: different objectives, cultural differences, and too little time for co-design, lacking good functioning organisation and incomplete information and no or less transparency.

3.5 Patrol Ships

The surface fleet of the Royal Netherlands Navy Command is used for tasks in all parts of the violence spectrum. An important development is the increase of the tasks lower in the violence spectrum, such as coast guard and maritime security tasks. The project is an integral part of the naval study 2005. The project contributes to the following operational capabilities of military capacity: validated information, effective (weapon) uses, security and self-protection (MoD-II, 2007).

Since already six M-frigates have been sold to Belgium, Portugal and Chilli; Defence can not wait too long with the procurement of the Patrol Ships (MoD-III, 2007). In the period 2009-2011 the Dutch fleet is below the desired strength.

3.5.1 Procurement Strategy

In scope of the purchase of Koninklijke Schelde Groep by Damen Shipyards Group the State has declared the intention to put out to tender the Patrol Ships at KSG, under reasonable conditions and at an acceptable price. Indeed the State has granted the construction of the platforms of the four Patrol Ships to shipyard KSG. The KSG is the lead contractor and takes care of the engineering and the procurement of the required platform (sub) systems.
Employment of Dutch companies is also possible for the equipment of the Patrol Ships; there is sufficient knowledge and experience in the Netherlands present. The foundation NIDV (stichting Nederlandse Industrie voor Defensie en Veiligheid) has been informed.

An agreement is made that the platform of the first and second Patrol Ship (PS-1/2) will be built in Vlissingen by KSG. The platforms of the third and fourth Patrol Ship (PS-3/4) will be built in Romania by Damen Shipyards Galatz. Because of this an optimum equilibrium between the available capacity of both yards and project planning arises. By optimising the work scope in Romania costs are saved. With the construction of PS-1 and PS-2 in Vlissingen the available development risks are better manageable. Moreover above partitioning makes it possibly to produce the ships in relatively short time.

Although the requirements to the constructed Patrol Ships were not too ambitious and also relied on civil requirements, the initial offer of KSG went above the available budget of DMO. By strictly using civil standards, an efficient manner of design and implementation of the bare hull and re-locate the bare hull of the last two Patrol Ships to the associated company Damen Shipyard Galatz in Romania, the required savings have been realised. These savings were not accompanied by adaptations of operational and functional requirements.

The possibilities for international cooperation had been limited. A number of countries have started with similar projects. However there exist small agreements between the ships designs or project planning are divergent. However, information transfer with Spain has been possible and there exist possibilities to cooperate with Germany in the area of sensors (MoD, 2005). The Netherlands strived for cooperation with Germany for the procurement of the air defence radar. Both the possibilities of common development, based on a consortium of Thales Nederland and EADS (European Aeronautic Defence and Space Company), and put out to tender in competition between Thales Nederland and EADS on the basis of a Dutch-German specifications are thoroughly examined. In March 2007 Germany has chosen for the EADS system, which is not available in time for the Patrol Ships and does not fit in the design of the ISCS (Incorporated Sensor and Communication Suite). The Netherlands has chosen then for the system of Thales Nederland (Mod, 2007). The remaining (combat) systems for the Patrol Ships are put out to tender separately and are supplied to KSG as Government Furnished Equipment (GFE). The KSG wants to exploit the construction of the Patrol Ship to acquire export orders to non-NATO countries.
Present Procurement Strategy

3.6 Joint Support Ship

This project concerns the design, the construction and the commissioning of a Joint Support Ship (JSS), in substitution for Hr. Ms. Zuiderkruis. The new Joint Support Ship will be able to fulfil the tasks of the present fuelling ship, namely supplying ships at sea with among things others oil. Moreover the new ship is suitable for the transfer, maintenance and the availability of means-heavy transport helicopters for the transport of staff and materiel for expeditionary operations, among which heavy materiel such as the armour howitzer. The ship has been arranged as logistical basis at the beginning stage of joint serve operations on land (MoD, 2007).

3.6.1 Procurement Strategy

There are Dutch companies with sufficient knowledge and experience to build the Joint logistic Support Ship. In scope of the purchase of KSG by Damen Shipyards Group the State has declared the intention to put out to tender the JSS at KSG, under reasonable conditions and at an acceptable price. Indeed the State has granted the construction of the platforms of the four Patrol Ships to shipyard KSG. The possibilities for international cooperation had been limited by diverging time paths and different product requirements. The Netherlands strived for cooperation with Germany for the air defence radar both Germany and the Netherlands have chosen for another radar system.
In the *Behoeftestellingen Marinestudie 2005* (MoD, 2005) the following is said about international cooperation. Cooperation with countries such as Canada, Denmark and Germany offers restricted possibilities, because of different requirements for the mission capacities. In addition research has shown that the Canadian procurement strategy offers very little space for cooperation. Canada strives for a national procurement. On both sides apprehension exists that cooperation leads to unacceptable delay of both projects. Wherever possible however, exchange of information takes place. Experiences with the German and Danish Navies are exchanged at the development of the functional requirements into specifications.

To the current expectation the contract with KSG will be concluded in 2009, whereas the completion of the ship will be in 2014.

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**3.7 Theory versus Practice**

In this paragraph the procurement projects, described in paragraph 3.2 till 3.6, are evaluated with criteria based on the theory described in chapter two. From the paragraphs 3.2 till 3.6 it becomes clear that the RNLN granted all its orders for large naval surface ships to KSG. After World War II this is historically grown to ensure among other things employment and the national economy in the Netherlands (see paragraph 1.2.2).

**3.7.1 Features of Defence Materiel (Procurement) ~ Theory versus Practice**

In paragraph 2.1 the features of Defence equipment (procurement) are described, these features can be applied to the procurement of Dutch large naval surface ships.

♦ It turns out that the Government was (and is) sole buyer and regulator, and is a source of anti-competitive behaviour. In the *Prioriteitennota* (1992-1993) is said that the Dutch government make use of a preferential policy for the preservation of the technical knowledge of large naval surface ships in the Netherlands. From the construction of Guided Weapon frigates in the seventies until now the KSG is contracted by DMO as lead contractor for the construction of almost all large naval surface ships. The role of KSG as lead contractor is in the years afterwards reinforced by the construction of specialised production facilities, partly financed by the RNLN. The choices of Government resulted in anti-competitive behaviour, and a monopoly position is created.

♦ The high-innovative technological Defence equipment is costly. Defence has a fixed budget available for the procurement of a certain type of naval ship. This means that negotiation about the price is necessary to procure as much qualitative (meeting the requirements) materiel within the budget. Sometimes Defence has to make difficult choices.

♦ The industry has long lead times, but the world’s security situation is rapidly changing. The development process of a Dutch naval ship is up to 15 years. Because of this it is required that the systems are developed up to the last possible moment, so that the ship will be equipped with the most recent, innovative systems against the most recent threats.

♦ Information asymmetry exists between the agent (supplier is the Defence related industry) and principal (buyer is the Defence Materiel Organisation). Sensitive information about the
(combat) systems can not be made public just like that. Defence Organisations are reluctant
to supply this sensitive information to others, because there is no country that will fight
against an opponent that it has armed it first. For this reason governments will have a grip on
the Defence industry and is it very difficult to procure (combat) systems in an open
transparent market. But also the industry possesses specific knowledge about (combat)
systems unavailable to the principal.

♦ Transaction costs arise from the costs of seeking out buyers and sellers and arranging,
policing and enforcing agreements or contracts in a world of imperfect information (Cowen &
Parker, 1997). Beside transaction costs there are however the cost of the guarantee to the
producer (CPB, 2004), this are the so-called agency costs. This is described in more detail in
paragraph 3.7.3 Procurement Strategy ~ Theory versus Practice.

♦ The market for large naval surface ships is characterized by imperfect markets. In the
Netherlands the main supplier of the ship’s platform is a monopolist. This is described in the
following paragraph 3.7.2 Market Suppliers ~ Theory versus Practice.

The naval shipbuilding projects described above fit all the characteristics of large naval
surface ships uniqueness, tailor-made, innovative, complex, expensive, the numbers per
type of ship are small, and politically sensitive (Defence deals with sensitive information and
a rapidly changing security situation) and have substantial economic interests (see also
paragraph 2.1).

3.7.2 Market suppliers ~ theory versus practice
It turns out that KSG is not a natural monopoly, but KSG has acquired its monopoly position
in a different way. KSG is not the only shipyard in the Netherlands capable of building naval
ships; another Dutch shipyard is Merwede Shipyard B.V. in Hardinxveld-Giessendam.
Defence has realized several infrastructural projects for KSG (forced by political pressure),
so that KSG could continue and the knowledge concerning naval shipbuilding would not
disappear in the Netherlands. By these political choices, improving national employment and
the national economy in the Netherlands a monopoly is created for KSG.

In paragraph 2.2.2 Monopoly five sources of market power are named. In the case of KSG
the sources of market power are the following:

♦ Unique resource means in this context the ownership of exclusive knowledge. Many years
of intensive cooperation between KSG and DMO has evolved into experience- and
knowledge advancement of shipbuilding, specific of large naval surface ships for the KSG.
This experience and knowledge is not directly replaceable by other shipyards.

♦ Regulation means in this context the political choices in the past to support one shipyard,
namely KSG, resulted in the relationship between KSG and DMO. It was not possible for
Dutch government to support multiple shipyards because there were too few orders to build
naval ships. In the Defensienota 2000 is written that the Dutch government strives for the
conservation of technical knowledge and expertise concerning naval shipbuilding in the
Netherlands (MoD, 2000), and stimulation of the national (and regional) economy and
employment. In the Handboek Verwerving Defensie is said that one can choose to not put
out to tender a specific order if it is important for the Defence Organisation to preserve high-
quality knowledge and know-how (MoD-III, 2006).

♦ Product differentiation means the brand identification and customer loyalties. KSG has a
reputation of construction of high-quality products. The RNLN is a very loyal procurer,
because for decades she has procured her large naval surface ship with KSG. In the
‘Defensienota 2000’ is written that the Dutch government strives for the conservation of
technical knowledge and expertise concerning naval shipbuilding in the Netherlands (MoD, 2000). Defence has realized several infrastructural projects for KSG to prevent KSG from going bankrupt.

In spite of this monopoly position of the KSG the practice teaches that the procured ships meet eventually all operational and technical requirements within the determined budget and acceptable conditions. Thus it seems that not only the monopolist (agent) has market power, but the customer in this case DMO (principal) has also market power. This contradicts the characteristics of a monopolist described in paragraph 2.2.2. In short the characteristics of a monopoly are:

- Monopolist has market power;
- No close substitutes for the firm’s product;
- Information is asymmetric: principal-agent problem can arise and hold-up can be created;
- The buyers have no market power;
- High or prohibitive barriers to enter the market.

The monopolist can be the price setter and the risk exist that the customer becomes too dependent on the supplier. Below the reasons as a result of which the DMO (principal) have, however, influence on the relation between, themselves and the KSG (agent) and this are the reasons why KSG can exploit not entirely its position.

♦ KSG does not have a unique position. The monopoly position has been based on a political choice, but is no natural monopoly. This means that the monopoly in contrast to a natural monopoly can be discontinued more easily.

♦ In scope of the purchase of KSG by Damen Shipyards Group the State has declared the intention to put out to tender the LPD-2, Patrol Ships and JSS at KSG, under reasonable conditions and at an acceptable price. The PS and JSS are the last ships which are included in this agreement. If KSG wants to qualify for future Defence orders KSG must firmly establish its competition position, and deliver a qualitative product against acceptable prices and within the settled period. This undermines the monopoly position of KSG; they can’t exploit the monopoly for 100% (since KSG wants to get orders of DMO in the future). Discontinuity in the orders placed by the DMO would imply the disappearance of the present knowledge infrastructure, development of knowledge should be stipulated in times when no ships are order by the DMO.

♦ The tenders brought out by the KSG are audited by the Audit Dienst Defensie (ADD). Contract auditing includes, at the request of acquiring agencies, the examination of suppliers of the pricing of tenders in relation to possible contracts as well as with the conditions concerning pricing and advising the requesting agencies with respect to above mentioned aspects. The Defence Materiel Organisation (DMO) is the largest client within the Defence Organisation. Contract auditing is applied when purchases cannot take place under (perfect) competition. Transparency about demand and supply is assumed in the case of a competitive market, in which for each product or service a market price exists. In other words in all other cases in which DMO can negotiate with a potential supplier the ADD can be called in.

The RNLN and KSG have different objectives. KSG is, as a part of Damen Shipyards Group, a commercial company that strives for profit and a strong competition position. The DMO wants a product that meets the staff requirement (operational and technical) against a price within the available budget and against reasonable conditions.

The knowledge and experience of designing, engineering and constructing within the DMO makes is possible to audit the tenders itself and to express a qualitative opinion about the
price and the conditions (DMO is a so-called smart buyer). The expertise of the technical specialists at DMO decreases the information asymmetry between KSG and DMO.

♦ The role of the RNLN as launching customer has additional value for KSG, because KSG can enhance its chances to export naval platforms and systems. Potential foreign buyers require most of the time that the navy of the producing country sails with the ships constructed by KSG, and act as launching customer.

♦ KSG is lead contractor for the platform, but engages multiple sub suppliers himself. These sub suppliers have no monopoly, but there exists some strong competition amongst them. This has a favourable influence on the total price of the platform.

♦ The relation between DMO and KSG has for years been characterised by a pleasant manner of cooperation, professional, but a very well interpersonal relationship, open and direct communication and KSG has knowledge of person, procedures and directives of DMO (and vice versa).

♦ The knowledge of KSG is complementary to the knowledge of the DMO. The designing of the LPD-2 emphasises the mutually dependence between the Royal Netherlands Navy and Damen Shipyards Group. And it also shows that designing together is very difficult to ensure that the objectives of both parties are reached. To build large naval ships in the future the more general shipbuilding knowledge of this shipbuilder and the specific knowledge of Defence systems of the RNLN are complementary, the parties are mutually dependent.

The DMO and KSG are reciprocally dependent; they have in mind a long-term cooperation and keep that into account during the negotiations. Opportunistic behaviour and hold-up are protected against through long-term collaborative arrangements.

3.7.3 Procurement Strategy – Theory versus Practice

Defence has chosen for one certain procurement strategy to acquire all its large naval surface ships. The last decennia all the projects are granted to the shipyard KSG. The advantages and disadvantages of this relationship are described in the previous paragraph. The choice for a certain procurement strategy is partly based on the transaction costs and the internal capability. Transaction costs arise form the costs of seeking out buyers and sellers and arranging, policing and enforcing agreements or contracts in a world of imperfect information (Cowen & Parker, 1997). In paragraph 2.3 the ‘make or buy’ decision based on transaction costs and internal capability is explained. The present procurement strategy of Defence to procure large naval surface ships is compared with this table.

Defence does not have the internal capacity to develop, to design, to construct its large naval ships entirely with own capacity. The construction of all the platforms is nationally granted to KSG (creation of monopoly position) and not put out to tender in a competitive market. Within the Netherlands KSG has a monopoly position, Dutch naval ship’s platforms are not procured internationally. The relation between KSG as agent and DMO as principal is described in paragraph 3.7.2. At the purchase of the KSG by Damen the State declared the powerful intention to procure its naval ships at KSG, the procurement of LPD-2, PS and JSS are part of this agreement. The internal capability is low and the transaction costs are low, because no comparison is made between suppliers. The strategy should fit in the buy, but the platforms are not purchased in a competitive market, but the orders are granted to a monopolist. The procurement strategy for the ships platform does not fit in the table.

And also the (national) research institutes Defence industry has been involved for the development, innovation and procurement of the relevant (sub) systems. A large part of the combat systems is innovated by the research institutes commissioned by DMO and the
systems are purchased from these institutes. The internal capacity is therefore low and the platform and combat systems are not required in a competitive market. The procurement is marked in table 3.2 in the upper left side (make) of the table. Systems for civil and dual use are acquired on the competitive market; this is marked in the lower left side (buy). Particularly the tasks are put out to tender to Dutch companies, which forms a part of the Dutch naval shipbuilding cluster.

DMO translates the staff requirements into a functional design and DMO is responsible for the integration of the (combat) systems. DMO carries the technical risk (and the relevant costs) for the integration of these systems rather than an industrial party. The transaction costs are high if Defence has to choose between several industrial parties, these parties have to be willing to carry this risk. The internal capability to perform these two tasks is high and the transaction costs are also high. In table 3.2 this is marked in the upper right side (make).

It seems that not only the transaction cost and the internal capability play a role in the choice for a procurement strategy. Both the strategy for the ship’s platform and partly the strategy for (weapon) systems are influenced by other factors.

![Table 3.2: Transaction costs versus internal capability (source Parker & Hartley, 2002).](image)

To this preferential policy which guarantees the purchase to a producer costs are associated (CPB, 2004). The Ministry of Defence gives with the construction of the naval ship a guarantee to the producer, namely the Dutch naval shipbuilding cluster. Apart from the moment at which naval ships are procured, a guarantee to a producer has a price. Without this guarantee the Ministry of Defence has the opportunity to negotiate with all the suppliers for a better price-quality ratio on the disturbed market of large naval surface ships. One of the reasons is that a part of subsidies which are abroad given to national naval shipbuilding clusters in negotiations can be received by the purchaser. The difference between the price of that one producer and the price which can be negotiated on the disturbed market, has been nationally seen an expense.

The agency costs are a type of internal cost that arises from an agent (KSG) acting on behalf of a principal (DMO). Agency costs are associated with problems such as divergent principal-agent objectives and information asymmetry. The costs for the Audit Dienst Defensie (ADD) which audit the tenders of KSG and the costs of the technical specialist which also control the tenders to decreases the information asymmetry between KSG and DMO are agency costs.
3.7.4 Evaluation Framework ~ Theory versus Practice

In the last paragraph of chapter two five criteria are determined which a procurement strategy must satisfy. In this paragraph the present procurement strategy is assessed with these criteria and judge if the criteria are met. The criteria are:

- Criterion 1: meet the operational and technical specifications (staff requirements);
- Criterion 2: decrease the dependence on the supplier;
- Criterion 3: best product value within the available budget;
- Criterion 4: minimise transaction costs and/or agency costs;
- Criterion 5: realise trust, empathy and logic in a situation of multi-actor complexity.

Defence has chosen for one certain procurement strategy to acquire all its large naval surface ships. The last decennia all the projects have been granted to the shipyard KSG. DMO translated the operational and technical requirements into a functional design. All described projects were unique, tailor-made, highly innovative, complex, expensive and the numbers per type of ship are small. In the end all these large naval surface ships met the staff requirements (criterion 1 is met) (Appendix C interviews, 2007).

**Criterion 1: meet the operational and technical specifications (staff requirements) ✓ ✓**

DMO has built a relationship with KSG by cooperating for decades. Because of this Defence has become dependent on the KSG, but the KSG is also dependent of Defence. The knowledge and experience of designing, engineering and constructing within the DMO makes is possible to audit the tenders itself and to express a qualitative opinion about the price and the conditions (DMO is smart buyer). The expertise of the technical specialists at DMO decreases the information asymmetry between KSG and DMO. If KSG wants to qualify for future Defence orders KSG must firmly put down her competition position, and deliver a qualitative product against acceptable prices and within the settled period. This undermines the monopoly position of KSG; they can not exploit the monopoly for 100% (since KSG wants to get orders from DMO in the future). The role of the RNLN as launching customer has additional value for KSG, because KSG can enhance its chances to export naval platforms and systems. Potential foreign buyers require most of the time that the navy of the producing country sails with the ships constructed by KSG, and act as launching customer. DMO and KSG are mutually dependent. But Defence granted all her orders to KSG in the last decennia. DMO is dependent on the KSG (and also the other way around) and this dependence is large.

**Criterion 2: decrease the dependence on the supplier ✗**

High technology Defence equipment, such as large naval surface ships, is costly. Defence uses an in advance determined budget to procure a certain type of ship. Within this budget Defence has to acquire a product that met the staff requirements (see criterion 1). In the end the naval ships are procured within the available budget. Sometimes adjustments had to be made to the first design; the first tenders of KSG were frequently above the budget. By checking the tender by the ADD and by technical specialists of DMO the price was adjusted and re-adjusted with the respective adjustment from both the side of the DMO and KSG.

DMO itself fulfils several tasks which have a beneficial effect on the price. DMO translates the requirements into a functional design. DMO is responsible for the integration of the systems; the technical risk lies almost completely by DMO rather than an industrial party. By financing research and setting exact requirements it forces the Dutch naval shipbuilding
cluster to innovate. And DMO purchases the vital (sub) systems itself and carries the risk for these systems.

In the present situation many costs are carried by DMO, these costs are not charged directly or totally to a project. First, the Dutch price is underestimated because the costs of the technical departments of DMO are not taken into account. That is still reinforced as also so-called back flows of tax money is deducted (Hendrickx et al., 2003). Secondly, the Dutch price is underestimated because the value of technical risk run by DMO is not taken into account (CPB, 2004).

| Criterion 3: best product value within the available budget ✓ |

Transaction costs arise from the costs of seeking out buyers and sellers and arranging, policing and enforcing agreements or contracts in a world of imperfect information. The transaction costs are low (✓), because no comparison is made between suppliers and information about the supplier is available. DMO prefers a preferential policy and grants the orders mainly to KSG. The agency costs are a type of internal cost that arises from an agent (KSG) acting on behalf of a principal (DMO). Agency costs are associated with problems such as divergent principal-agent objectives and information asymmetry. The costs for the Audit Dienst Defensie (ADD) which audit the tenders of KSG and the costs of the technical specialist which control the tenders also decreases the information asymmetry between KSG and DMO are agency costs (✗). And to the preferential policy which guarantees the purchase to a producer costs are associated (CPB, 2004). The Ministry of Defence gives with the construction of the naval ship a guarantee to the producer, namely the Dutch naval shipbuilding cluster. Apart from the moment at which naval ships are procured, a guarantee to a producer has a price. Without this guarantee the Ministry of Defence has the opportunity to negotiate with all the suppliers for a better price-quality ratio on the disturbed market of large naval surface ships (see paragraph 3.7.3).

| Criterion 4: minimising transaction costs and/or agency costs ✓ ✗ |

Defence researches the possibilities for international cooperation for all the procurement projects. With all the projects Defence cooperated with other countries, but to a limited extent. There is only cooperation in those parts of the projects where the involved countries saw appreciation. The orders for constructing the ship are generally granted to the national industry. There is yet not sufficient faith between the parties for far-reaching cooperation.

Despite the monopoly position of the KSG and the theoretical disadvantage of the DMO in this situation large naval surface ships are procured which meet the operational and technical requirements within the available budget. In paragraph 3.7.2 Market Suppliers is the relation between DMO and the KSG described on several points; DMO and KSG are mutually dependent. There is a high level of trust between these two actors and this leads to a very satisfactory relationship. This criterion is rated with very satisfactory, because of the the trust relationship between DMO and KSG.

| Criterion 5: realising trust, empathy and logic in a situation of multi-actor complexity ✓ ✓ |

Satisfied or not with this present procurement strategy; a number of contextual factors change and as a result of which the procurement can or must take place differently. In chapter four the changing factors which have influence on the future procurement of large naval surface ships are developed.
4 Factors Influencing the Procurement Strategy

The former State Secretary of Defence, *Cees van der Knaap*, said the following in the foreword of a *Militaire Spectator* about procurement (JRG 176, 11-2007): “Leading in the procurement is and remains the need of Defence for good equipment. Our militaries are entitled to the best materiel, not only to be able to do their job very well, but also to offer them the best possible protection. At the same time we strive to acquire this materiel in the best possible cost effective way”. In this fourth chapter the factors influencing future procurement of large naval surface ships are discussed. The changing security situation and the decreasing Defence budget, which lead to changing capacity needs, and the consolidation of the Defence market are of influence on the procurement strategy (see paragraph 4.1). Also the European invitation to tender and the code of conduct of the European Defence Agency (EDA) plays an important role. In paragraph 4.2 the directives for European invitation to tender and therefore competitive tendering is discussed. To reduce the fragmentation of the European Defence market and the gradual realization of a transparent and open market for military procurements the EDA has been achieved, in paragraph 4.3 the code of conduct of the EDA is discussed. To acquire a strong international (European) market position the Defence-related industry has to increase their export (see paragraph 4.4). In paragraph 4.5 the fifth important factor, the attitude and behaviour of the other European countries, is elaborated on. In the last paragraph (4.6) the five most important contextual factors are highlighted.

4.1 Defence Materiel Policy

The Minister of Defence is responsible for the purchase, maintenance and disposal of materiel in the armed forces. Defence makes several contributions to the policy program of the cabinet Balkenende IV for the coming four years (MoD, 2007). In pillar two of the policy program, an innovative, competitive and undertaking economy, Defence makes a contribution in the field of knowledge and innovation. Defence contributes as a large investor in new materiel to socially relevant (technological) innovation.

The strategic focus for the Royal Netherlands Navy has been moved away from operating on open sea to operating in coastal areas. With that initiating, leading and supporting land operations have also become more important. This shift has consequences for the resources of the Royal Netherlands Navy Command.

The (vital) interests of the Netherlands are more and more interwoven with the interests of other countries. Many problems can only be possible solved at an international level. The world community strives towards peace, prosperity and stability, in spite of the problems that globalisation brings. The same world community has an important maritime dimension. Nine of the ten countries have a coast, more than 70 per cent of humanity lives within 150 kilometres of a coast and 90 per cent of the transport of goods is maritime transport. With problems on sea or in coastal areas the Netherlands must be able to appeal to its Royal Netherlands Navy Command.

The Dutch Defence is used for the protection and support of the vital interests of the Netherlands. Defence has three core functions: the defence of the monarchy of the Netherlands; the support of the international legal order and the support for civil authorities at maintenance of law and order, and calamity suppression. Defence realises those tasks in a combined and joint effort. This means that the commitment of maritime entities (always)
takes place in a larger and more international perspective. In the last decades the world has greatly changed, which has had a serious impact on Defence in general and for the Royal Netherlands Navy Command in particular. The following four changes are leading with regard to the role and composition of the Royal Netherlands Navy Command.

♦ With the end of the Cold War, the threat of conventional conflicts on the oceans of the western hemisphere has decreased. Defence is now faced with many local conflicts which have the potential to destabilise a much larger region. This means for the Royal Netherlands Navy Command that the emphasis is on initiating, leading and supporting military operations on land.

♦ The threat of catastrophic terrorism increases. The vulnerability of ports and installations located to important waterways is large. Also obstructing straits has worldwide political and economic impact. The ports and installations are considered as sources of prosperity. Not only for the Netherlands but also for Europe. Only by an intensively preventive policy and a good cooperation between the different maritime agencies terrorists can be deterred and attacks can be prevented. In this respect also the increasing piracy is a source of concern. Pirates extend their operation area, acquire continuously heavier weapons and their degree of organisation increases. Because of this the border between piracy and maritime terrorism blurs.

♦ By urbanisation, deforestation etc. the impact of natural disasters strongly increases. Examples of this are the tsunami in South-East Asia and the hurricanes which are rife in the Caribbean and Central America. Natural disasters often results in a humanitarian and social calamity. In many cases the Royal Netherlands Navy Command are appealed on to support the local and civil authority, not only to offer humanitarian aid but also to prevent that criminal organisations make abuse of the occasion and disturb the public order and security.

♦ The last ten years the available budget for Defence has decreased, whereas the range of duties has been moved but also has increased. To bring and keep resources, tasks and budget in balance, a far-reaching reorganisation has been started. This reorganisation aims at securing the affordability and the availability in the future of the armed forces, and therefore also of the Royal Netherlands Navy Command.

Summarizing, the next years the security-political agenda will continue to be dominated by threats such as failing states, proliferation of weapons of mass destruction, organised crime, regional conflicts and terrorism. These threats will to a great extent determine the capacity needs of the Western armed forces. Simultaneously large-scale operations and small operations in difficult and divergent circumstances have to be executed. Operations are executed in the whole violence spectrum, and the emphasis lies on rapid, effective and flexible commitment.

The end of the Cold War led to a considerable decrease of the Defence budgets and started a large-scale consolidation within the Defence industry, both in the USA and in Europe. In contrast to the United States this consolidation in Europe is still in full swing. This is among others the consequence of political pressure to keep certain industrial capacities at a national level. In the Netherlands this was written in the Prioriteitennota 1992-1993. The international Defence market can be considered as an imperfect market (DIS, 2007). To get an impression of the amount of investments, the expenditures of Defence materiel of fifteen European countries for the year 2005 are reflected in figure 4.1 below.
The objective of the materiel policy of the Dutch Defence Organisation is within the limited financial resources to provide the armed forces with the required, modern, effective and safe materiel. This requires a strong market position for Defence. Procurement strategies, for civil and dual use materiel, are by means of competition focused on restricting the technical and financial risks. A preferential policy is pursued so far for the development and procurement of large, naval surface ships and a part of the incorporated systems. The remaining materiel was and is put as much as possible out to tender internationally (DIS, 2007).

4.2 European Tendering

Defence distinguishes between civil and military purchases. Defence provides in its civil and dual use goods and services by means of European invitation to tender. The directives for European invitation to tender have been developed for the Netherlands in the *Besluit aanbestedingsregels voor overheidsopdrachten* (BAO), these also apply to the Ministry of Defence. In the directive Directorate-General (1999) of the Ministry of Defence the closer rules concerning the application of the European invitation are formulated.

The European directives to tender have four important main points:

- Objectivity in the selection of suppliers and allotment of assignments has to be guaranteed;
Factors Influencing the Procurement Strategy

- Equal and non-discriminatory treatment of all candidates has to be secured;
- Transparency of the market, as a result of which both the European and national market have knowledge of planned orders. Transparency is reached through publications, the prohibition of discrimination between contractors, suppliers or service provider;
- The proportionality between the demands made to the supplier and the orders put into the market.

The following exceptions on the European directives for tendering are described below. European tendering is not obligatory for these exceptions.

- Thresholds: public contracts for projects, supplies and/or services, which outreach the thresholds, must in principle put out to tender according the European procurement guidelines. The thresholds have been laid down in the Handboek Verwerving Defensie (MoD, 2006). If invitations to tender are below the thresholds then European tendering is not necessary.
- Security: if the public contract is declared as secret of certain security interests require particular security measures, or if specific procurement guidelines of a certain organisation (e.g. NATO) has to be followed.
- By the exception clausal of article 296b² of the EU-treaty it is possible that the attentive military products (the weapons, ammunition and war materiel) can be withdrawn to the regime of the directives to European tendering. Products which are not on this list, as well as products which are not intended for specifically military aims (dual use), do not fall under this exception clause.
- Urgent purchases for operational use of additional purchases of existing materiel.
- International-military cooperation, argument to cooperate with other countries are the increasing importance of standardisation of materiel and sharing of costs.
- Research and development: the involvement of the Dutch companies in the development of military materiel at an early stage reinforces the Defence related industry.

Defence distinguished between civil (and dual-use) and military procurements. Defence provides in its civil and dual use goods and services by means of European invitation to tender. If it has been determined that the European invitation to tender rules do not need to be followed (below threshold, security issue, art. 296 EC-treaty applies, urgent purchases, international cooperation or research & development) then Defence is still not entirely free in approaching the market. Since 1 July 2006 the Code of Conduct of the European Defence Agency (EDA) has to be applied in such cases.

In paragraph 4.3 the objective and functioning of the EDA is described in more detail.

4.3 European Defence Agency

In the most economic sectors Europe has nowadays an international market with free movement of goods and services and honest competition. This does not apply to military materiel. The EC-treaty makes an exception to the rules of the internal market for the trade in military materiel. Article 296 of the EC-treaty gives each EU member state the opportunity to take measures in this area, which the member states considers necessary for the protection of its substantial security interests. Many EU-members use this possibility not to European invitation to tender, but directly granting an assignment to a national supplier. The European Union’s (EU) Defence sector has long been fragmented into protected national markets,

² The original article 223, which as a result of the Treaty of Amsterdam is renamed in article 296.
despite the existence of European Community (EC) procurement rules. The code of conduct of the European Defence Agency must improve the Defence capacities of the European countries and reduce the fragmentation (fragmentation of market and industry, fragmentation of future capacities, and development of technology and materiel).

The Netherlands strives for cooperation, both European and transatlantic. The Dutch Defence market is too small to be able to preserve a complete Defence industry. The maintaining of all these national industries is a waste of tax money. The Defence related industry is a high technological industry, which makes an interesting contribution to the knowledge based economy, also in the Netherlands. In the recent years there was a cutback in the Defence expenditures; Defence can spend less money on materiel. The consequence is that Defence less frequently appeals to the industry. The Defence related industry can only survive if they can sell also products on the civil and/or international market. Also social-economic interest plays a role in the fragmentation.

The Netherlands signed the European Defence Agency (EDA) code of conduct for Defence procurements. The code of conduct has become effective on the 1st of July 2006 (MoD - III, 2006). In the code of conduct twenty-four participating EU countries commit themselves to give companies from participating countries equal chances at granting Defence assignments. The code of conduct applies exclusively to assignments of more than 1 million euros, to which article 296 of the EC-Treaty applies. It concerns here purchases of products and services which have been intended for specifically military aims, among which the large naval surface ships. If the participating countries want to purchase materiel, then they must publish the assignment on the internet site of the EDA. Countries have obliged themselves to competitive tendering by means of this central Internet site. The criterion for allotment of the assignments must be announced in advance and it is not allowed to discriminate. The creation of an internationally competitive European Defence equipment market should lead to a more efficient spending of European Defence budgets, improvement of the European Defence capacities and a strong European Defence industry and as a key means to strengthen the European Defence technological and industrial base.

Exceptions to the code of conduct of the EDA (EDA, 2006):

- Procurement of nuclear weapons, nuclear propulsion systems, chemical, bacteriological and radiological goods and services;
- Cryptographic equipment;
- Research & development projects;
- Collaborative procurements.

Participating countries can have exceptionally need to proceed with specific procurements without competition (EDA, 2006):

- In case of pressing operational urgency;
- Follow-on procurement and/or supplementary goods and services;
- Extraordinary and compelling reasons of national security.

In such exceptional cases the participating countries will, once the procurement strategy has been confirmed, provide an explanation to the EDA.

**Example procurement naval ship**: The Defence Materiel Organisation is the procurement organisation of Defence. If DMO wants to procure a large, naval surface ship, they can

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3 All EU-member states, except Denmark, Spain and Hungary. This means the following 24 countries: Austria, Belgium, Cyprus, Czech, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Poland, Portugal, Slovakia, Slovenia, Sweden and the United Kingdom. The new Member States Bulgaria and Romania have not yet signed the Code of Conduct.
appeal to article 296 EU-treaty and therefore decide not to put the invitation to tender on the European market. Then DMO has to ask itself the procurement falls inside the scope of the code of conduct of the EDA. If the exceptions rules do not apply the EDA has to be followed. An announcement has to be placed on the internet site of the EDA to announce that in the close future an assignment will be published. Eventually companies are asked for information. After that the task has to be published officially.

Differences with respect to European invitation to tender:

- More freedom than formal European invitation to tender;
- No obligatory periods for publications;
- Allotments and selection criteria are mainly free, as long as they are transparent and non-discriminatory;
- Requirements for security of supply have been permitted explicitly (important for military operations);
- Negotiation with potential suppliers is permitted;
- All companies get an honest chance; early market research cannot lead to invitation to quotation.

The code of conduct is not legally binding, but politically binding. This means that if the participating countries do not follow the agreements fixed in the code of conduct it is not possible to take legal actions against these countries. The Minister of Defence has signed this political voluntary non-binding code of conduct. Regular reports by the EDA will help to show whether the code is being interpreted and implemented on a uniform basis and, if not, why not. This will allow for peer pressure to be applied, thereby steering participating countries towards fair practices. To check the participating countries a system of control and reports is required. The code of conduct has been based on reciprocity and reciprocal advantage.

Success of the code of conduct of the EDA depends on the political will and the degree in which countries can trust (mutual confidence) each other. Security of information is very important; mutual disclosure and protection of sensitive information. As mutually dependency in Defence capability grows, there must be mutual confidence and inevitably a wider circulation of classified information among the participating countries. Security of supply means avoiding supply problems in times of war or operational urgency, and a fair and equal treatment of suppliers. This will require transparency and equality of information.

The differences between the countries in procurement policy, legislation concern weapon export, but also language forms barriers for an open market. The same applies to the state support in a number of countries. For some countries this is the reason to grant assignments in their own country, especially for important combat systems.

The code of conduct benefits governments directly by requiring transparency and fair and equal treatment of suppliers in national tendering. By definition, this should increase fair competition in Defence procurement. It will benefit governments as much as the industry by promoting economies of scale and offering all a clear view of who is buying what and also where the best price and best practices are operating (EDA, 2006). For the industry the code of conduct is an increased business opportunity in Defence procurement. The European Defence market should be open not only for the large industries, but also for the small and medium-size companies. The market and the export possibilities of these enterprises are increasing and because of this the legitimacy of these companies. In paragraph 4.4 more is described about the opportunities of the Defence related industry.
4.4 Defence Related Industry

A preferential policy has been pursued for the development and procurement of large, naval, surface ships, and a part of the incorporated systems, where KSG is appointed as the lead contractor for the designing and construction of these ships. Other materiel is as much as possible put to tender internationally (DIS, 2007). Naval ships are procured within the Dutch naval shipbuilding cluster. If by the changing security situation and the decreasing Defence budgets no orders for large naval surface ships are placed the existence of the Dutch naval shipbuilding cluster is threatened. This downfall will be irreversible, because the knowledge and experience of the designing and construction of naval ships will quickly degenerate. This has happened with the submarines. The Netherlands has also developed and built submarines of excellent quality. After the last submarine is produced, the knowledge degenerates in some years.

The disappearance of the Dutch naval shipbuilding cluster and the relevant consequence that naval ships have to be bought abroad has several consequences (Appendix C Interviews, 2007):

- Loss of employment at DMO, the industry and knowledge institutes (economic loss);
- Operational impact: Defence has less influence on the requirements of the ship;
- Loss of knowledge and experience of designing and building naval ships;
- Loss of national pride to present naval ships to the world.

To continue the legitimacy of the Dutch naval shipbuilding cluster, the cluster can (still) aim more at export. The cluster exports already (sub) systems, small surface ships with a low arms component and it performance maintenance for foreign navies to originally Dutch ships, which have been sold second-hand to those foreign navies (this is also export). The market is disturbed by national pride, the conservation of military independence and the protection of the own industry of the countries who built these kind of ships (CPB, 2004).

The USA is a difficult market because it is expected that the USA will not buy European military materiel from military-strategic considerations, independently of the quality of the materiel. The Dutch large naval surface ship and the radar of Thales Nederland are of these strategic goods. There are still arguments that the US policy will change. Export to non-NATO countries is hampered because then the Netherlands have to compete with other large NATO-countries. The non-NATO countries can exploit the position of a market with several suppliers. Thus the export can be politically sensitive.

To open up the European Defence market two measures have been found. This is on the one hand the code of conduct of the EDA, in which the participating countries agree to give...
Factors Influencing the Procurement Strategy

all companies equal chances at granting Defence assignments. On the other the Defence Industry Strategy will become effective in 2008, in which Defence together with the Minister of Economic Affairs try their best to give the Dutch Defence related industry an internationally strong position.

As stated above the European Defence market consists of several, mainly fragmented national markets, which more or less are secured by national politics. This is one of the reasons that Europe has overcapacity in the Defence related industry, mainly in the field of naval shipbuilding and military vehicles. This overcapacity forms in the long run a threat to the viability of the European Defence technological and industrial base. Besides consolidation of production capacities, it is also necessary for the small and medium size companies in Europe to achieve a level playing field. This aspect is important especially for EU-member states with relatively small Defence related industry such as the Netherlands (DIS, 2007).

The Netherlands has indeed no large Defence industry, but the industry consists of suppliers who deliver high-quality, specialised products. The industry consists of approximately 250 medium and small size companies with generally both civil and Defence activities. They are internationally and export-oriented, have generally a good innovative and technological capacity, and cooperate closely with both the Dutch institutions (e.g. TNO, NLR, MARIN) and the principal, the Ministry of Defence. One of the senior employees of the DMO says the following in the Militaire Spectator (JRG 176, 11-2007, p 471): “It is not the intention of the harmonisation of the Defence market that the large industries swallow the smaller ones. At least that is not the intention of the countries with modest Defence industry, such as the Netherlands. The code of conduct has been based on reciprocity and reciprocal advantage. However that reciprocal advantage cannot arise as only agreements concerning public contracts are made. A large part of the approximately 250 Dutch companies on the Defence market is subcontractor for companies which provide materiel. Small or medium ventures can be very flexible, innovative and competitive as a subcontractor of systems or components”. The majority of these companies is in the position to compete, and these companies are considered to be able to make an important contribution to the European Defence and industrial base. To play a role in international supply chains, which in the future in Europe and transatlantic cooperation, will develop, produce and maintain Defence systems, is positioning of these Dutch Defence related industries based on strengths and market chances necessarily. Defence wants in cooperation with the Ministry of Economic Affairs to try their best to position the Dutch Defence related industry as strongly as possible. For this the Defence Industry Strategy (DIS) has been established, which will be introduced in 2008 (DIS, 2007). In the DIS is explained which possibilities the Ministries of Defence and Economic Affairs have to reinforce the Dutch Defence related industry and to strengthen the international position. The DIS connects to the policy program of the cabinet Balkenende IV both to the objectives of pillar II: an innovative, competitive and undertaking economy and pillar V: security, stability and respect (MoD-II, 2007).

More and more the close interaction between civil and military increases and will be characterised by competition. Defence buys more products commercial off the shelf (COTS). This means also that the civil sector can penetrate more in the Defence market; of course some areas such as combat systems will remain relatively closed. There is a tension between the civil and military market. The requirements of Defence are reliability, security and a perfect connection at functional requirements. While the civil market aims at low costs, economies or scale and just-in-time.

4 All defence related industries and knowledge institutes which take place in the international supply chains for defence related industry for the development, production and maintenance of defence materiel (DIS, 2007).
If by the changing security situation and the decreasing Defence budgets no orders for large naval surface ships are placed the existence of the Dutch naval shipbuilding cluster is threatened. This downfall will be irreversible, because the knowledge and experience of the designing and construction of naval ships will quickly degenerate. To continue the legitimacy of the Dutch naval shipbuilding cluster, the cluster can (still) more aim at export. The market is disturbed by national pride, the conservation of military independence and the protection of the own industry of the countries who build naval ships. To preserve the experience and knowledge of designing and building naval ships, export and international competition and/or cooperation should be increased. Defence wants in cooperation with the Ministry of Economic Affairs to try their best to position the Dutch Defence related industry as strongly as possible. For this the Defence Industry Strategy (DIS) has been established, which will be introduced in 2008. In the DIS is explained which possibilities the ministries of Defence and Economic Affairs have to reinforce the Dutch Defence related industry and to strengthen the international position.

4.5 Situation in Europe

In 2005 research is elaborated about the future of the Netherlands maritime Defence industry and about the situation in several European countries with a significant naval shipbuilding cluster. The results of this research are summarised in this paragraph (MoD-II, 2005). The behaviour of the European countries can have an impact on the behaviour of the Netherlands. The military maritime industry is internationally characterised by a structural overcapacity and a strong relation with its own country. Worldwide there are few players with industries which have sufficient knowledge to build modern and sophisticated war ships, particularly in the field of the total system integration (fighting systems, propulsions and energy). European companies still take a prominent position and have approximately 30% of the world capacity in this sector. Nevertheless the European maritime industry has to deal with job losses and company fences. Strong competition from the United States and Asia and cutbacks on the Defence budget in Europe are the most important causes. Moreover the Defence industry has been fragmented strongly. This fragmentation, which goes paired with overcapacity and duplication of design, develop and production capacity stands in strident contrast with the concentration of the American navy construction industry. In the USA navy construction exists of only two concerns with both three shipyards. On the other hand Europe consists of twelve concerns and 22 shipyards. This situation makes it for Europe not easy to compete, because the concerns develop mostly independently their own products and offer them to the market. Moreover the ships built are mutually competitive on the export market.

Within Europe Germany, France, United Kingdom, Spain and Italy have a significant naval shipbuilding cluster. Moreover also the smaller countries such as Sweden, the Netherlands and Greece have naval construction capacity.

4.5.1 Germany

In Germany a consolidation is going on by a merger of the large naval shipyards (Howaldtswerke Deutsche Werft (HDW), Blohm&Voss, ThyssenKrupp), where also the Swedisch Kockums and the Greek Hellenic Shipyards are involved. Since autumn 2004 all these shipyards are called Thyssenkrupp Marine Systems. A European naval shipbuilding cluster is for Germany not yet opportune, because the first five years the German order portfolio is filled. Moreover Germany looks kindly towards cooperation with for example the Netherlands, but Germany will not act like that the first five years. Germany feels little for the merging of German and French shipyards and also not for the alternative where Germany
constructs the platforms and France provides the weapon systems. As long as the French industry is financed by government, one sees no possibilities for far-reaching cooperation. German naval shipbuilding technology is more sophisticated than the French. Germany sees the own focus in naval construction moving from shipbuilding to maintenance, after sales and modifications.

The German industrial capacities are largely complementary to the Netherlands. The Netherlands has with Thales-NL a prominent and innovating position in the field of radar technology. Germany has with Atlas Electronic (a daughter of British Aerospace (BAE)) a strong market position in underwater systems and mine suppression systems. The naval construction in the Netherlands has been already reorganized to a considerable degree and the German yards are also in favour of such an intervention. But in short the German and Dutch industries complement each other in many cases, cooperate already or are to a limited extent each other's competitor. In the field of weapon export restriction Germany and the Netherlands use frequently the same directives which are, moreover stricter, than the French or English rules.

4.5.2 France
France is a traditional naval power with a domestic self-sufficient naval industry. Procurement policy is the prerogative of the State. The Ministry of Defence takes the procurement decisions. The actual building of 90% of the naval vessels is carried out by the Direction des Constructions Navales (DCN) which is the state naval shipyard, and as such, part of the Ministry of Defence. Competition is mentioned only nationally, between French companies, and only for naval systems that are not of main strategic importance. This preference nationale is equally strong for combat systems. French is well known for its traditional striving for autonomy in arming its military services. It has an extensive Defence industry capable of supplying almost all weapon systems, either conventional or nuclear (Smit et al, 2001).

France wants to restructure its naval industry nationally and wherever possible to privatise. One considers cooperation in Europe necessary in the long term, because for the next ten years the French order portfolio has been well filled and France wants first to put things right nationally. In the long term one sees, after the national consolidation, two options: one (or two) European consortium or Seabus construction (this means central marketing, sales, design and project management, local production of systems and assembly on (French!) location. There is at present discussed with Spain, Italy and Germany concerning more cooperation, where mostly French supremacy is the motive.

France realize that especially building the ships' hulls in the future will be done in low-wage countries, but France wants to continue to play a prominent role as integrator and supplier of equipment. For the military naval shipbuilding a closer cooperation between Thales-NL and shipyard DCN (now state properties are still 100%). A future merger is not excluded. With that at national level the largest integrator of Europe would arise. Since France has the longest breath (orders for the coming 10 years versus Germany 5 years) France will be the key player in Europe. France considers a role for Germany, but certainly not a dominant one. Thales Naval considers for Thales-NL also a role, after the national process has been wound up. Thales NL is a 100% daughter of Thales. Neither Thales nor DCN saw a role for the KSG.

4.5.3 United Kingdom
The United Kingdom has a long-standing naval tradition with a domestic self-sufficient naval industry. The UK has five shipyards. Here too a national consolidation is going. There
discussions are going on to reorganise four shipyards (BAE systems, Babcock, DML, Vosper and Thorncroft) into two shipyards which specialise themselves on development and maintenance of surface ships and nuclear submarines. Only this last one seems to succeed. The most yards in the UK have a filled order portfolio. For this reason there are no initiatives expected from the British side for cooperation with the continent. The UK aims to an important degree at the American market. Still the UK is declining, due to the strongly changing demand. The yards believe, because they all have their own agenda, that the British government must take the control in consolidating naval shipping construction. Because BAE have most of the expertise and experience in design and management both of the construction of surface ships and submarines, they claim a large role in this consolidation. The policy of the government has been aimed within the British navy shipping construction lay the emphasis at core competences and put out other parts to subcontractors. The naval construction sector becomes smaller and as a result can anticipate more flexibly to the demand, and also improvements are realised.

Participation in the coming programme for aircraft carriers is for the shipyards essential to survive in naval shipping construction. Working together with companies on the European mainland is for the yards only an option if they will be part of this programme. International subcontracting is not considered, unless France cooperates with the UK to construct an aircraft carrier. By cooperating in the construction of the aircraft carrier large savings are to be realised, but this project is for the UK of very large strategic importance and cooperation should absolutely not produce a delay.

4.5.4 Spain
The Spanish shipyard IZAR is state property and enjoyed obviously broad state support, which leads to, obligatory by the EU, repayment of unlawfully supplied subsidies. This repayment creates reorganisations (for the naval construction this led to the establishment on 3 January 2005 of NEW IZAR, by 2 March 2005 called Navantia) with strong interventions in manpower which will challenge the attention according to the expectations and keeping back European consolidation.

4.5.5 Italy
The Italian shipyard Fincantieri is still state property, but considers floatation. It is one of the largest yards. The yard has a large share in the cruise ship market and has a very well filled order portfolio. Its success in serving the civil and military markets at a profit it is not an incentive to search seriously for (a) European partner(s).

4.5.6 Sweden
Sweden provisionally still has a full order portfolio. Concerning international cooperation Sweden concerns itself with the brown water knowledge which is important for Sweden. One fears that this knowledge will be lost in a Seabus like consortium. Sweden lays the focus thus on ships with a water displacement smaller than 2000 tons. The Netherlands and Sweden itself see mainly possibilities in cooperation in the field of subsystems. Here contacts have been already laid.
4.6 Contextual Factors

In this chapter the changing conditions for future procurement are described, also called the contextual factors. The five most important factors are highlighted and are described below.

Fragmentation, redundancy of production capacity crossing borders, duplication of Defence related industry is an increasing problem. More often Defence take joint and combined action crisis prevention operation with new tasks and threats. Cut-backs within Defence lead to less Defence assignments. Because of this the European Defence related industry is pressured. The separate national markets are too small. Due to the changing security situation and decreasing Defence budgets it is not possible to maintain all national markets.

Factor 1: security situation.

The Dutch Defence market is too small to be able to preserve a complete Defence industry. The maintaining of all these national industries is a waste of taxpayers' money. In the recent years there was a cutback in the Defence expenditures; Defence can spend less money on materiel etc. The consequence is that Defence less frequently appeals to the industry. The Defence related industry can only survive if they can also sell products on the civil and/or international market. The international Defence market can be considered as an imperfect market (DIS, 2007).

Factor 2: Defence budget.

Defence distinguishes between civil (and dual-use) and military procurements. In the most economic sectors Europe has nowadays an international market with free movement of goods and services and honest competition. Defence provides in its civil and dual use goods and services by means of European invitation to tender. If it has been determined that the European ‘invitation to tender’ rules do not need to be followed (below threshold, security issue, art. 296 applies, urgent purchases, international cooperation or research & development) then still is Defence not entirely free in approaching the market.

EC-treaty makes an exception to the rules of the internal market for the trade in military materiel. Article 296 of the EC-treaty gives each EU member state the opportunity to take measures in this area, which the member states considers necessary for the protections of its substantial security interests. Many EU-members use this possibility not for European invitation to tender, but directly granting an assignment to a national supplier. The European Union's (EU) Defence sector has long been fragmented into protected national markets, despite the existence of European Community (EC) procurement rules. The code of conduct of the European Defence Agency must improve the Defence capacities of the European countries and reduce the fragmentation (fragmentation of market and industry, fragmentation of future capacities, and development of technology and materiel).

Factor 3: European regulation.

If by the changing security situation and the decreasing Defence budgets no orders for large naval surface ships are placed the existence of the Dutch naval shipbuilding cluster is threatened. This downfall will be irreversible, because the knowledge and experience of the designing and construction of naval ships will quickly degenerate. To continue the legitimacy of the Dutch naval shipbuilding cluster, the cluster can (still) more aim at export. The market
is disturbed by national pride, the conservation of military independence and the protection of the own industry of the countries who built these kind of ships. To preserve the experience and knowledge of designing and building naval ships export and international competition and/or cooperation should be increased. Defence wants in cooperation with the Ministry of Economic Affairs to try their best to position the Dutch Defence related industry as strongly as possible. For this the Defence Industry Strategy (DIS) has been established, which will be introduced in 2008. In the DIS is explained which possibilities the Ministries of Defence and Economic Affairs have to reinforce the Dutch Defence related industry and to strengthen the international position.

**Factor 4: Defence related industry.**

The larger shipyards within Europe are Germany, France, United Kingdom, Spain and Italy. Also the smaller countries such as Sweden, the Netherlands and Greece play a role. How will these countries deal with the structural overcapacity and the preferred national procurement strategies in the future? How can the European companies still take a prominent position and have significant part of the world capacity in this sector? How will these countries behave?

**Factor 5: behaviour of foreign European countries.**

The changing security situation, the decreasing Defence budgets, the impact on the capacity needs, the fragmentation and duplication of the Defence related industry are factors of influence on the procurement of Defence materiel. The measures of the European Defence Agency and the Defence Industry Strategy are established to create an open, transparent, competitive, European Defence market. And last but not least how will the other countries in Europe behave? The conditions are changing and moving and the question is ‘what the impact is of these factors on future procurement of large naval surface ships?’

The contextual factors are influencing the environment in which Defence materiel is procured. Different future scenarios are possible and different futures mean different choices for procurement strategies. In the next chapter several scenarios are elaborated based on the contextual factors.
5 Future Procurement Strategy

In which way in the future the procurement of Defence materiel will change exactly is and remains an interesting question. In chapter four has been described that a number of vital contextual factors will change. Up to approximately 2015 there will be little change in the Netherlands, since still two large projects, the four Patrol Ships and the Joint Support Ship, are procured within the Dutch naval shipbuilding cluster. Shipyard KSG will be lead contractor, because these two projects fall within the agreement between the State and Damen. The expected completion of the Patrol Ships will be in 2010 and to the current expectation the contract for the JSS with KSG will be concluded in 2009, whereas the completion of the JSS will be in 2014. So the year 2015 will become the break-even point in the Netherlands with respect to the type of procurement strategy used for large naval surface ships. But the Defence Organisation must reflect before 2015 about future procurement of Defence materiel and make choices which strategy will work best in the future. In this chapter possible scenarios, how Europe might possibly change, are developed by means of a scenario analysis. The combination of the contextual scenarios and alternative procurement strategies result in a matrix with nine future combinations. These combinations will be assessed by means of the criteria established in chapter two.

At this moment the Defence market is a protected market. The market is disrupted by national pride, the conservations of military independence and the protection of the national Defence market, who build large naval surface ships. What does the future look like?

5.1 Contextual Factors

In conflicts, wars and political or business relations actors have been frequently destined for each other. In such a case it is good to have a picture of the possible scenarios; the scenarios are formed by the variable contextual factors. If the scenarios nevertheless do not execute, they play an important role. In chapter four the contextual factors are described, which can be of influence on the procurement strategy for Defence materiel, more specifically large naval surface ships. In this paragraph the three most influential contextual factors are highlighted. The three contextual factors described below will form the axes for the future scenarios. Every combination of different assumptions produces a potential image of the future. Contextual scenarios sketch how the environment or context of the policy field or system that is being explored could be developed. The future is full of uncertainties and the policymakers want to have some kind of insight into the problems that can possibly be expected in the future and an estimation of the chances on success or failures of the proposed policy.

Factor 1, security situation, and factor 2, Defence budget, are combined because in this thesis the available Defence budget is dependent on the development of the world wide security situation. Also factor 4, Defence related industry, and factor 5, behaviour of foreign European countries, are combined because the development of the Defence related industry is considered on the one hand in the Netherlands but on the other in Europe, they are mutually dependent.

♦ Defence budget (factor 1 & 2 combined): The end of the Cold war (changing security situation) led to a considerable decrease of the Defence budgets, but are the budgets during
the upcoming years further decreasing or can the security situation change in such a way that the budgets are increasing?

- European regulation (factor 3): to what extent does the European regulation prescribe to procure on the European market to create an open, transparent, competitive market, or are European countries allowed to support their national sovereign Defence industries?

- Defence related industry (factor 4 & 5 combined): in the Netherlands a preferential policy has been pursued for the development and procurement of large naval surface ships within the Dutch naval shipbuilding cluster. If no orders, or too few, are placed the existence of the Dutch Defence related industry is threatened. Will the Defence related industry be fragmented across Europe or will they consolidate with European partners to secure their future? How will the other European countries, with a substantial shipbuilding industry, behave the upcoming years with respect to the procurement of their large naval surface ships?

Every combination of the contextual factors is possible; in paragraph 5.2 three possible contextual scenarios are elaborated.

### 5.2 Contextual Scenarios

In figure 5.1 these three most important contextual forces will form the axes of the scenario-logic. Every combination of different assumptions produces a potential image of the future. In the following three paragraphs three plausible scenarios are elaborated.

![Figure 5.1: Scenario logic.](image-url)
5.2.1 Contextual Scenario 1 ‘One for all and all for one’

- EU regulation competitive EU Defence market;
- Decreasing Defence budgets;
- Consolidation European Defence related industry.

♦ Up to now Defence distinguishes between civil and military purchases. Defence provides in its civil and dual use goods by means of European invitation to tender. The European Union is a strong, leading and successful institution. The European directives become stricter and the EDA is implied. The code of conduct of the European Defence Agency is signed by the European countries. These countries commit themselves to giving companies from participating countries equal chances at granting Defence assignments. The code of conduct applies to purchases of more than 1 million euros, on which the article 296 of the EC-treaty applies. It concerns here purchases of products and services which have been intended for specifically military aims, amongst which large naval surface ships. The creation of an internationally competitive European Defence equipment market should lead to a more efficient spending of European Defence budgets, improvement of the European Defence capacities and a strong European Defence industry. The code of conduct is not legally binding, but politically binding and is based on reciprocity and reciprocal advantage. Transparency and equality of information is very important.

In a perfect competitive market production occurs at the lowest average cost per unit, because of the characteristics of a competitive market. The existing firms have no bargaining power against suppliers and customers. The numerous firms supply a homogenous product and they have no barriers to entry to the market. Both suppliers and buyers have equal and complete information (see paragraph 2.2).

One of the characteristics of a perfect competitive market is that all suppliers deliver a homogeneous product. The characteristics of large naval surface ships are described in paragraph 2.1 and are unique, tailor-made, innovative, and complex, expensive, the numbers per type of ship are small, and politically sensitive. Large naval surface ships are not a homogenous product. Naval ships are a heterogeneous product and there will be fewer suppliers than in a perfect competitive market.

It will benefit government as much as the industry by promoting economies of scale and offering all a clear view of who is buying what and also where the best price and best practices are operating. The industry has changes to increase business opportunity into Defence procurement. More competition leads to a harmonised and more transparent market.

♦ By the changing security situation and the decreasing Defence budgets no orders for large naval surface ships are placed the existence of the Dutch naval shipbuilding cluster is threatened. This downfall will be irreversible, because the knowledge and experience of the designing and construction of naval ships will quickly degenerate. If the order is not granted to the national industry, there will be loss of knowledge and loss of compatibility, no investment in the own economy and employment and sensitive information has to be shared.

♦ The European countries are willing to consolidate their Defence related industry. To continue the legitimacy of the Dutch naval shipbuilding cluster, the cluster aims more at export. To preserve the experience and knowledge of designing and building naval ships export and international competition (and/or cooperation) should be increased. The Ministry of Defence in cooperation with the Ministry of Economic Affairs try their best to position the Dutch Defence related industry as strongly as possible. For this the Defence Industry Strategy (DIS) has been established, which will be introduced in 2008. In the DIS is explained which possibilities the Ministries of Defence and Economic Affairs have to reinforce the Dutch Defence related industry and to strengthen the international position.
5.2.2 Contextual Scenario 2 ‘Mind yourself’
- EU regulation national sovereignty;
- Decreasing Defence budgets;
- Fragmentation Defence related industry.

- Defence distinguishes between civil (and dual-use) and military procurements. Defence provides in civil and dual-use goods and services by European invitation to tender. It has been determined that the European Union “invitation to tender” rules do not have to be followed if the procurement is below threshold, a security issue, art 296 of EC-treaty applies, an urgent purchase is needed, international cooperation or research & development.

- By the changing security situation and the decreasing Defence budgets no orders for large naval surface ships are placed and the existence of the Dutch naval shipbuilding cluster is threatened. This downfall will be irreversible, because the knowledge and experience of the designing and construction of naval ships will quickly degenerate. If the order is not granted to the national industry, there will be loss of knowledge and loss of compatibility, no investment in the own economy and employment and sensitive information has to be shared.

- Instead of aiming at a European competitive market, the countries which are belonging to the EU are reluctant to give up their national sovereignty. The European Union is fragmented in several countries, or groups of a few countries who work for themselves. The different maritime shipbuilder clusters hardly exports large naval surface ships. This means that the market is disturbed by national pride, the conservation of military independence and the protection of the own industry of the countries who built large naval surface ships. It is very difficult to exploit national Defence related industries in a sovereign environment without the cooperation of surrounding countries.

5.2.3 Contextual Scenario 3 ‘In between’
- EU regulation competitive EU Defence market;
- Decreasing Defence budgets;
- Fragmentation Defence related industry.

- Up to now Defence distinguishes between civil and military purchases. Defence provides in its civil and dual use goods by means of European invitation to tender. The European Union is a strong, leading and successful institution. The European directives become stricter and the EDA is implied. The code of conduct of the European Defence Agency is signed by the European countries. These countries commit themselves to give companies from participating countries equal chances at granting Defence assignments. The code of conduct applies to purchases of more than 1 million euros, to which the article 296 of the EC-treaty applies. It concerns here purchases of products and services which have been intended for specifically military aims, among which the large naval surface ships. The creation of an internationally competitive European Defence equipment market should lead to a more efficient spending of European Defence budgets, improvement of the European Defence capacities and a strong European Defence industry. The code of conduct is not legally binding, but politically binding and is based on reciprocity and reciprocal advantage. Transparency and equality of information is very important.

In a perfect competitive market production occurs at the lowest average cost per unit, because of the characteristics of a competitive market. The existing firms have no bargaining power against suppliers and customers. The numerous firms supply a homogenous product and they have no barriers to entry to the market. Both suppliers and buyers have equal and complete information (see paragraph 2.2).
One of the characteristics of a perfect competitive market is that all suppliers deliver a homogeneous product. The characteristics of large naval surface ships are described in paragraph 2.1 and are unique, tailor-made, innovative, and complex, expensive, the numbers per type of ship are small, and politically sensitive. Large naval surface ships are not a homogenous product. Naval ships are a heterogeneous product and there will be fewer suppliers than in a perfect competitive market.

It will benefit government as much as the industry by promoting economies of scale and offering all a clear view of who is buying what and also where the best price and best practices are operating. The industry has changes to increase business opportunity in Defence procurement. More competition leads to a harmonised and more transparent market.

♦ Due to changing security situation and the decreasing Defence budgets no orders for large naval surface ships are being placed and the existence of the Dutch naval shipbuilding cluster is threatened. This downfall will be irreversible, because the knowledge and experience of the designing and construction of naval ships will quickly degenerate. If the order is not granted to the national industry, there will be loss of knowledge and loss of compatibility, no investment in the own economy and employment and sensitive information has to be shared.

♦ The participating countries have a mutual interest: the European Union attracts more and more countries and becomes a stronger institute. The involved actors will be a part of the European Union, but also want to have a sovereign Defence related industry. The security situation is changing rapidly and the Defence budgets are decreasing. The Defence related industry in Europe is fragmented; there is a lot of redundancy of production capacity crossing the borders and duplication. European countries are willing to cooperate to some extent but will grant their orders to their national industry.

There are basically two types of incentives for international collaboration in naval shipbuilding. One is the desire for standardisation within NATO, encouraging interoperability. The other is the most cost-efficient through larger series production and to preserve technologies otherwise being lost (Smit et al., 2001). And collaboration or cooperation is one of the exception rules of the EDA.

To continue the legitimacy of the Dutch naval shipbuilding cluster, the cluster can (still) more aim at export. To preserve the experience and knowledge of designing and building naval ships export and international competition and/or cooperation should be increased. The Ministry of Defence in cooperation with the Ministry of Economic Affairs try their best to position the Dutch Defence related industry as strongly as possible. For this the Defence Industry Strategy (DIS) has been established, which will be introduced in 2008. In the DIS is explained which possibilities the ministries of Defence and Economic Affairs have to reinforce the Dutch Defence-related industry and to strengthen the international position.

5.3 Procurement Strategies

In this paragraph a choice is made from the existing procurement strategies (see paragraph 2.3), which Defence can use in the future. A much-heard pronouncement is why ships are not bought off the shelf, which may be possible for other types of materiel. It is literally not possible to buy a naval ship off the shelf, because of the characteristics of a naval ship (Appendix C interviews, 2007). A large naval surface ship is unique, tailor-made, and innovative, complex, expensive and the number per type of ship are small and therefore it is only constructed when it is ordered. For example Defence can buy a ship from the same serial of a foreign Defence Organisation. COTS, commercial off the shelf, in literal sense is
not possible. An exception is to purchase a second-hand naval ship, for example the Netherlands have sold naval ships to Greece, Chile and Belgium.

The DMO can choose between several procurement strategies. In this chapter three strategies are elaborated. The first strategy is European tendering, because the code of conduct of the EDA prescribes European tendering to create a competitive Defence market (see paragraph 4.3). The second one is international cooperation, because one of the exceptions on this code of conduct is cooperation with other countries and DMO already cooperates with other countries. The exception rule is a chance to enlarge international cooperation and also satisfy the code of conduct of the EDA. The third and last is the present procurement strategy, which is described in detail in chapter three of this thesis, and led to (very) satisfactory results.

5.3.1 European tendering
The DMO conform to the code of conduct of the European Defence Agency and give participating countries equal chances for granting Defence assignments. In this way the creation of an internationally competitive European Defence market is established and should lead to a more efficient spending of Defence budgets, improvement of the European Defence capacities and a strong Defence industry. In paragraph 4.3 the implications of the code of conduct of the EDA is described in detail.

5.3.2 International cooperation
As said before there are basically two types of incentives for international collaboration in naval shipbuilding. One is the desire for standardisation within NATO, encouraging interoperability. The other is the most cost-efficient through larger series production and to preserve technologies otherwise being lost (Smit et al., 2001). Collaboration or cooperation is one of the exception rules of the EDA.

Cooperation is divided into two parts. First the cooperation with the Dutch Defence related industry; the MoD and the ministry of Economic Affairs try their best to give the Dutch industry an internationally strong position. Second the international cooperation with other Defence Organisations (and their related industry). The first step for the Ministry of Defence is to look for partners to cooperate with and the Dutch Defence related industry must aim to create a strong European position in the Defence market. From a strong market position it is also easier to put out to tender in competition. Cooperation seldom comes about by means of one directive decision of an individual or organisation. The resources which are necessary for production of cooperation are frequently in the hands of a broad group of actors. In such a context each is dependent on the other and cooperation can only be realised if the actors are prepared to cooperate. A political deadlock should be prevented to bring about at cooperation with several actors. Because resources are spread over several actors, all actors must concede to complete collaboration. All countries within Europe have to deal with equivalent circumstances; changing security situation, decreasing Defence budgets, changing needs and the implementation of the code of conduct of the EDA. The different European countries will approach other countries for possible cooperation in the long run. The countries with larger, influential Defence-related industry will have less need.

5.3.3 Preferential policy
In chapter three the present procurement strategy of the Defence Materiel Organisation is described in detail. In short: in the last decennia the DMO pursued a preferential policy and
only contracted shipyard KSG for the procurement of ship platforms and procures within the Dutch naval shipbuilding cluster. KSG has a monopoly position.

In the present procurement strategy DMO has a specific role within the procurement process. DMO translates the operational and technical requirements into a functional design. And DMO is responsible for the integration of the systems; the technical risk lies almost completely with the DMO rather than with an industrial party. By financing research and setting exacting requirements in the design of its naval vessels; it forces the Dutch naval shipbuilding cluster to innovate. Last, the DMO purchases the (sub) systems itself, the so-called Government Furnished Equipment and Information (GFE/I).

In the next paragraph the procurement strategies are combined with the contextual scenarios in a matrix. Nine combinations, C\textsubscript{11} until C\textsubscript{33}, are assessed by means of the criteria based on the theory in chapter two.

### 5.4 Combination of Procurement Strategies and Contextual Scenarios

In this paragraph the contextual scenarios of the first paragraph and the three strategies from the second are combined in a matrix. In the rows the procurement strategies are described and in the columns the contextual scenarios. This result in nine combinations, C\textsubscript{11} to C\textsubscript{33}, which are reviewed with the criteria based on the theory (see chapter two). The matrix is visualized in figure 5.1 below.

<table>
<thead>
<tr>
<th></th>
<th>‘One for all and all for one’</th>
<th>‘Mind yourself’</th>
<th>‘In between’</th>
<th>Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>European tendering</td>
<td>C\textsubscript{11}</td>
<td>C\textsubscript{12}</td>
<td>C\textsubscript{13}</td>
<td>1. ...</td>
</tr>
<tr>
<td>International cooperation</td>
<td>C\textsubscript{21}</td>
<td>C\textsubscript{22}</td>
<td>C\textsubscript{23}</td>
<td>1. ...</td>
</tr>
<tr>
<td>Preferential policy</td>
<td>C\textsubscript{31}</td>
<td>C\textsubscript{32}</td>
<td>C\textsubscript{33}</td>
<td>1. ...</td>
</tr>
</tbody>
</table>

Table 5.1: Combination of procurement strategies and contextual scenarios.

The combinations of the strategies and contextual scenarios will be elaborated on using a fixed number of criteria, these are:

- Criterion 1: meet the operational and technical specifications (staff requirements);
- Criterion 2: decrease the dependence on the supplier;
- Criterion 3: best product value within the available budget;
- Criterion 4: minimise transaction costs and/or agency costs;
- Criterion 5: realise trust, empathy and logic in a situation of multi-actor complexity.

The different combinations are assessed with the ratings presented in table 5.2. These ratings are sufficient to compare the results on the criteria of the nine combinations.
Future procurement strategy

<table>
<thead>
<tr>
<th>Verbal judgement</th>
<th>Rating</th>
<th>Numerical rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very satisfactory</td>
<td>✔ ✔</td>
<td>2</td>
</tr>
<tr>
<td>Satisfactory</td>
<td>✔</td>
<td>1</td>
</tr>
<tr>
<td>Neutral</td>
<td>✔ ✗</td>
<td>0</td>
</tr>
<tr>
<td>Unsatisfactory</td>
<td>✗</td>
<td>-1</td>
</tr>
<tr>
<td>Very unsatisfactory</td>
<td>✗ ✗</td>
<td>-2</td>
</tr>
</tbody>
</table>

Table 5.2: Ratings.

In the following nine paragraphs all nine combinations are evaluated with the criteria.

5.4.1 Combination C₁₁: European tendering ~ ‘One for all and all for one’

When putting out to tender orders in a competitive market it is for DMO very important that it establishes in advance very specific requirements which a naval ship must satisfy. The potential suppliers then draw a tender on the basis of these requirements. It is no longer possible during the construction process to introduce changes in the design. This is exclusively possible against (very high) costs for the additional work. This has influence on high innovative technology, which can therefore no longer be adapted at the last moment. In the present situation DMO bears the risk of purchase and the integration of the sub systems. This risk and the relevant costs lie in the competitive situation at the supplier. The supplier wants to keep these costs as low as possible and therefore the supplier will not innovate up to the last moment. DMO has less influence on the result. The chance is larger that compromises must be made and that not all the operational and technical requirements will be met. Because of the high costs of the risk of innovating technology up to the last moment the materiel will be less up-to-date.

Because it is not allowed to conduct a preferential policy, the chance is smaller that the order is granted to the Dutch industry. The industry must fight hard for its competitive position, and gain such a position that it gets the order. Because of this competition the dependence on the supplier decreases. The choice for a certain supplier depends on the tender which is brought out by the possible suppliers. The company which is able to provide the required product against the lowest price becomes the supplier (reliance on price (Parker and Hartley, 1997)). Defence is no longer dependent on one supplier, the dependence on a supplier is diminished (✔ ✔). But because large naval surface ships are a heterogeneous product the numbers of possible suppliers are considerable smaller than the number of suppliers of a homogeneous product.

But when the order is granted to a certain supplier based on the tender a hold-up situation and information asymmetry can arise. A surface ship is a heterogeneous product and if after
construction additional work or knowledge is required the supplier can take advantage of its position. Because of the characteristics of the product the supplier is the only one who can supply the additional work. Therefore the dependence on the supplier increases (∙).

Criterion 2: decrease the dependence on the supplier ✓

In a perfect competitive market production occurs at the lowest average cost per unit. Price equals average cost, implying that buyers acquire the product at cost (including normal rate of return on investment) (Png, 2002). The suppliers in a competitive market have no market power and this result in lower prices. It is to be expected that the naval ships can be procured within the available budget regarding to the theory and according to the theory a lower price than with the present procurement strategy (✓) (best product value).

In the present procurement strategy DMO itself fulfils several tasks which have a beneficial effect on the price. DMO translates the requirements into a functional design. DMO is responsible for the integration of the systems; the technical risk lies almost completely by DMO rather than an industrial party. By financing research and setting exact requirements it forces the Dutch naval shipbuilding cluster to innovate. And DMO purchases the vital (sub) systems itself and carries the risk for these systems. These tasks will be fulfilled by the supplier in a competitive market and the associated costs are added to the price.

It is hard to make a comparison with the present price of the Dutch naval ships because of the following two reasons. First, the Dutch price is underestimated because the costs of the technical departments of DMO are not taken into account. That is still reinforced as also so-called back flows of tax money are deducted (Hendrickx et al, 2003). Secondly, the Dutch price is underestimated because the value of technical risk run by DMO is not taken into account (CPB, 2004). These costs are carried in the competitive strategy by the supplier and are charged to the price of the product.

It must be possible to purchase the ships within the available budget within the competitive strategy. Possibly the ships do not become cheaper than the price which is now paid, since many costs are carried by the DMO.

Criterion 3: best product value within the available budget ✓✗

Agency costs arise from an agent acting on behalf of a principal and derive from divergent principal agent objectives and information asymmetry. In a perfect competitive market both supplier and buyer have complete and equal information. So the agency costs should be low (√).

Transaction costs arise from the costs of seeking out buyers and sellers and arranging, policing and enforcing agreements or contracts in a world of imperfect information (Cowen & Parker, 1997). Competitive supply is characterized by frequent tendering which is risky and costly (✗) (Parker & Hartley, 1997).

Criterion 4: minimise transaction costs and/or agency costs ✓✗

According to Parker & Hartley (1997) competitive supply is characterized by arm’s length relationship’, ‘lack of trust’, ‘reluctance to share information’. A short-term, purely business relationship between both parties arises.
Future procurement strategy

By putting out to tender the orders on a competitive market Defence has to deal with a simple supplier buyer relation (principal-agent). In spite of that both parties have in principle complete and equal information nevertheless a hold-up situation can arise between this principal and the agent. As Defence has chosen for a certain supplier on the basis of the tenders and the construction of the product has started, then it is inconvenient to switch between suppliers. Given the complex product and the high costs the eventual supplier can use its position by charging price increases for example. The consumer has then in fact no choice but to pay these additional costs, because of investments already made. European tendering leads to a principal agent relation, where the principal can get into a hold-up situation.

Criterion 5: realise trust, empathy and logic in a situation of multi-actor complexity ✗

5.4.2 Combination C₁₂: European tendering ~ ‘Mind yourself’
The future combination C₁₂ of the contextual scenario ‘Mind yourself’ and the procurement strategy of European tendering is not realistic. In the contextual scenario is described that in the European Union it has been determined that the invitation to tender rules do not have to be followed if the procurement is below threshold, a security issue, art 296 of EC-treaty applies, an urgent purchase, international cooperation or research & development. Besides this the countries which are belonging to the EU are reluctant to give up their national sovereignty. The strategy European tendering is aimed at an open, transparent, competitive Defence market in Europe. The combination of the contextual scenario and the strategy will not work. The combination C₁₂ will not be further elaborated.

5.4.3 Combination C₁₃: European tendering ~ ‘In between’
The difference between combination C₁₁ and C₁₃ is just one contextual factor, in combination C₁₁ the European Defence related industry will consolidate their industry and in combination C₁₃ the participating countries like to stay more fragmented. The participating countries have a mutual interest: the European Union attracts more and more countries and becomes a stronger institute. The involved actors will be a part of the European Union, but also want to have a sovereign Defence related industry. This has consequences for criterion 5 with respect to combination C₁₁. The market is disturbed by national pride, the conservation of military independence and the protection of the own industry of the countries who built large naval surface ships. There will be less trust.

Criterion 1: meet the operational and technical specifications (staff requirements) ✗
Criterion 2: decrease the dependence on the supplier ✓
Criterion 3: best product value within the available budget ✓ ✗
Criterion 4: minimise transaction costs and/or agency costs ✓ ✗
Criterion 5: realise trust, empathy and logic in a situation of multi-actor complexity ✗ ✗
5.4.4 Combination C\textsubscript{21}: International cooperation ~ ‘One for all and all for one’

In an international cooperation the demand must be harmonised. The operational and technical requirements of all involved actors must be incorporated into the design. This means that the eventual design becomes a compromise. It is also possible to devise jointly a basic ship, to which involved parties can apply additional work or reductions according to their own needs. Defence has more influence on the design than with European tendering on the competitive market.

A problem is to have the navies of the participating countries to agree on common needs and requirements. The resulting compromise often turns out to be very expensive and often also not satisfactory to the participating navies (Smit et al, 2001).

Criterion 1: meet the operational and technical specifications (staff requirements)

| ✓ | ❌ |

The Dutch Defence Organisation can choose itself with whom it will cooperate. They deal with fewer, more dedicated suppliers than for European invitation to tender on the competitive market. The dependence on suppliers increases in relation to European tendering. A principal-multiple agent relation arises, in comparison with the principal-agent relation within the present strategy and competition.

Criterion 2: decrease the dependence on the supplier

| ✓ | ❌ |

Both the risk and rewards are shared (Parker & Hartley, 1997). By coordinating the demands and enlargements of the production lines the costs should be lower. Thereby the common purchases of sub systems lead to lower costs.

One problem is that even though co-operation is supposed to reduce national costs, it may turn out to be too expensive, for instance, because of high coordination costs or additional modifications of the ships to be procured (Smit et al., 2001). As said before at criterion 1: a problem is to have the navies of the participating countries to agree on common needs and requirements. The resulting compromise often turns out to be very expensive and often also not satisfactory to the participating navies (Smit et al., 2001). The Defence Organisation has more influence on the design, but it is difficult to find a compromise.

Criterion 3: best product value within the available budget

| ✓ | ❌ |

By international cooperation necessary costs of excessive tendering and frequent competitions are avoided. This means that the transaction costs are lower (✓). But the agency costs are higher (❌); these costs arise from divergent principal-agent objectives and information asymmetry. The different actors have different objectives and different perceptions of reality; to bridge these interests additional (agency) costs are made.

Criterion 4: minimise transaction costs and/or agency costs

| ✓ | ❌ |

International cooperation should be characterised by a trust relationship. Mostly these are long-term contracts resulting in mutual benefit (‘win-win’ outcomes). The countries are mutually dependent. The fear of the (smaller) participating countries is that the smaller industries are overlooked by the larger. The orders must be spread over the involved actors in such a manner that all can make a profit. A problem is the difficulty in reaching an
agreement on the division of work shared between the participating countries, they all want to protect or support their domestic industry (Smit et al., 2001).

Criterion 5: realise trust, empathy and logic in a situation of multi-actor complexity ✓

5.4.5 Combination C22: International cooperation ~ ‘Mind yourself’
The future combination C22 of the contextual scenario ‘Mind yourself’ and the procurement strategy of international cooperation is not realistic. In the contextual scenario is described that instead of a European competitive market, the countries which are belonging to the EU are reluctant to give up their national sovereignty. The European Union is fragmented in several countries, or groups of a few countries who work for themselves. The cluster barely exports large naval surface ships. This means that the market is disturbed by national pride, the conservation of military independence and the protection of the own industry of the countries who built large naval surface ships. The strategy international cooperation is aimed at a more open, transparent, Defence market in Europe in which several countries are willing to cooperate. The combination of the contextual scenario and the strategy will not work. The combination C22 will not be further elaborated.

5.4.6 Combination C23: International cooperation ~ ‘In between’
The difference between combination C21 and C23 is just one contextual factor, in combination C21 the European Defence related industry will consolidate their industry and in combination C23 the participating countries like to stay more fragmented. The participating countries have a mutual interest: the European Union attracts more and more countries and becomes a stronger institution. The involved actors will be a part of the European Union, but also want to have a sovereign Defence related industry. This has consequences for criterion 5 with respect to combination C21. The market is disturbed by national pride, the conservation of military independence and the protection of the own industry of the countries who built large naval surface ships. There will be less trust.

Criterion 1: meet the operational and technical specifications (staff requirements) ✓ ❌
Criterion 2: decrease the dependence on the supplier ✓ ❌
Criterion 3: best product value within the available budget ✓ ❌
Criterion 4: minimise transaction costs and/or agency costs ✓ ❌
Criterion 5: realise trust, empathy and logic in a situation of multi-actor complexity ✓ ❌

5.4.7 Combination C31: Preferential policy ~ ‘One for all and all for one’
The future combination C31 of the contextual scenario ‘One for all and all for one’ and the preferential policy is not realistic. In the contextual scenario is described that the European directives become stricter and the EDA is implied. The code of conduct of the European Defence Agency is signed by the European countries. These countries commit themselves to give companies from participating countries equal chances at granting Defence assignments. The present procurement strategy in which a preferential policy is pursued, and the Defence
orders are granted to national Defence industry, is not allowed. The combination of the contextual scenario and the strategy can not exist. The combination $C_{31}$ will not be further elaborated.

### 5.4.8 Combination $C_{32}$: Preferential policy – ‘Mind yourself’

The present procurement strategy described in detail in chapter three corresponds to the combination of the preferential policy and the contextual scenario ‘Mind yourself’; combination $C_{32}$. The results on the criteria are elaborated in paragraph 3.7.4, these are:

- **Criterion 1:** meet the operational and technical specifications (staff requirements) ✓ ✓
- **Criterion 2:** decrease the dependence on the supplier ✗
- **Criterion 3:** best product value within the available budget ✓
- **Criterion 4:** minimise transaction costs and/or agency costs ✓ ✗
- **Criterion 5:** realise trust, empathy and logic in a situation of multi-actor complexity ✓ ✓

### 5.4.9 Combination $C_{33}$: Preferential policy – ‘In between’

The difference between combination $C_{32}$ and $C_{33}$ is just one contextual factor, in combination $C_{32}$ the participating countries are, instead of a European competitive market, are reluctant to give up their national sovereignty. In combination $C_{33}$ is described that the European directives become stricter and the EDA is implied. The code of conduct of the European Defence Agency is signed by the European countries. These countries commit themselves to giving companies from participating countries equal chances at granting Defence assignments. The present procurement strategy in which a preferential policy is evolved, and the Defence orders are granted to national Defence industry, is not allowed. The combination of the contextual scenario and the strategy can not exist. The combination $C_{33}$ will not be further elaborated.

### 5.5 Summarizing

The nine combinations are assessed by means of the five criteria and the ratings described in table 5.3. An overview of these ratings are placed in matrix and visualized in table 5.4 below. To get a clear overview of the results also a numerical rating will be used, the different judgments get a different rating from 2, 1, 0, -1, -2 (see table 5.3). Four of the nine combinations are ruled out, because the combination of the contextual scenario and the procurement strategy was not possible to pursue. These are:

- Combination $C_{12}$: European tendering – ‘Mind yourself’;
- Combination $C_{22}$: International cooperation – ‘Mind yourself’;
- Combination $C_{31}$: Preferential policy – ‘One for all and all for one’;
- Combination $C_{33}$: Preferential policy – ‘In between’.
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The explanations why these combinations are ruled out are described in paragraph 5.4.2, 5.4.5, 5.4.7 and 5.4.9 respectively. These four out ruled scenarios have no rating, in the matrixes this is visualised by ‘---’.

<table>
<thead>
<tr>
<th>Verbal judgement</th>
<th>Rating</th>
<th>Numerical rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very satisfactory</td>
<td>✔ ✔</td>
<td>2</td>
</tr>
<tr>
<td>Satisfactory</td>
<td>✔</td>
<td>1</td>
</tr>
<tr>
<td>Moderate</td>
<td>✔ ☓</td>
<td>0</td>
</tr>
<tr>
<td>Unsatisfactory</td>
<td>☓</td>
<td>-1</td>
</tr>
<tr>
<td>Very unsatisfactory</td>
<td>☓ ☓</td>
<td>-2</td>
</tr>
</tbody>
</table>

Table 5.3: Ratings

With respect to the previous paragraph an extra numerical rating is added to assess the future combinations. In the last column of the matrix below (see table 5.4) the calculation is made (example combination C_{11} multiplying: $\boxed{\times \times -1 + \checkmark \times 1 + \checkmark \times 0 + \checkmark \times 0 + \times -1 = -1}$) and the scores can be read off in the last column of this matrix.

<table>
<thead>
<tr>
<th>Combinations</th>
<th>Criterion 1 Staff requirements</th>
<th>Criterion 2 Dependence supplier</th>
<th>Criterion 3 Available budget</th>
<th>Criterion 4 Transaction &amp; agency costs</th>
<th>Criterion 5 Multi-actor complexity</th>
<th>Numerical ratings</th>
</tr>
</thead>
<tbody>
<tr>
<td>C_{11}</td>
<td>☓</td>
<td>✔</td>
<td>✔ ×</td>
<td>✔ ×</td>
<td>×</td>
<td>-1</td>
</tr>
<tr>
<td>C_{12}</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>C_{13}</td>
<td>☓</td>
<td>✔</td>
<td>✔ ×</td>
<td>✔ ×</td>
<td>× ×</td>
<td>-2</td>
</tr>
<tr>
<td>C_{21}</td>
<td>✔ ×</td>
<td>✔</td>
<td>✔ ×</td>
<td>✔ ×</td>
<td>✔</td>
<td>1</td>
</tr>
<tr>
<td>C_{22}</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>C_{23}</td>
<td>✔ ×</td>
<td>✔</td>
<td>✔ ×</td>
<td>✔ ×</td>
<td>✔</td>
<td>0</td>
</tr>
<tr>
<td>C_{31}</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>C_{32}</td>
<td>✔ ✔</td>
<td>✗</td>
<td>✔</td>
<td>✔ ×</td>
<td>✔</td>
<td>4</td>
</tr>
<tr>
<td>C_{33}</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

Table 5.4: Combinations compared based on (numerical) ratings.
In Table 5.5 below another matrix in which the contextual scenarios and the procurement strategies are combined is visualised and the numerical ratings of the plausible combinations are added.

<table>
<thead>
<tr>
<th></th>
<th>‘One for all and all for one’</th>
<th>‘Mind yourself’</th>
<th>‘In between’</th>
</tr>
</thead>
<tbody>
<tr>
<td>European tendering</td>
<td>C_{11}  \text{ -1}</td>
<td>C_{12} \text{ ---}</td>
<td>C_{13} \text{ -2}</td>
</tr>
<tr>
<td>International cooperation</td>
<td>C_{21} \text{ 1}</td>
<td>C_{22} \text{ ---}</td>
<td>C_{23} \text{ 0}</td>
</tr>
<tr>
<td>Preferential policy</td>
<td>C_{31} \text{ ---}</td>
<td>C_{32} \text{ 4}</td>
<td>C_{33} \text{ ---}</td>
</tr>
</tbody>
</table>

Table 5.5: Numerical ratings

The following conclusions, based on the results, can be drawn:

♦ As said before four out of nine combinations can be ruled out based on the fact that the combination of the procurement strategy and the contextual scenario is not possible to pursue. These are combination C_{12}: European tendering – ‘Mind yourself’, combination C_{22}: International cooperation – ‘Mind yourself’, combination C_{31}: Preferential policy – ‘One for all and all for one’, and combination C_{33}: Preferential policy – ‘In between’. This is visualised in the matrixes by the three stripes ‘---’.

♦ The present preferential policy leads to the most satisfactory results (positive numerical rating), in comparison to the other two strategies. The combination of the preferential policy and the contextual scenario ‘Mind yourself’ (C_{32}) gives the best rating of the nine combinations. The numerical score is four (+4). But in two out of three scenarios, ‘One for all and all for one’ and ‘In between’ (C_{31} & C_{33}), this preferential policy can not be applied. By the implementation of the code of conduct of the EDA it is not permitted to continue this strategy.

♦ The strategy, European tendering, leads to most unsatisfactory results (negative numerical ratings), in comparison to the other two strategies. The combination C_{11} of European tendering and the contextual scenario ‘One for all and all for one’ gets a numerical rating of minus one (-1). The combination C_{13} of European tendering and the contextual scenario ‘In between’ gets a numerical rating of minus two (-2). In these two out of three scenarios, ‘One for all and all for one’ and ‘In between’ (combination C_{11} & C_{13}), the code of conduct of the EDA is implemented. The combination C_{12} is not elaborated, because the strategy European tendering can not be applied.

♦ The combination of the strategy international cooperation and the contextual scenario ‘Mind yourself’ (C_{22}) can not be applied and has no rating. International cooperation leads to the second best results (positive numerical ratings) in comparison to the other two strategies. The combination of international cooperation and the contextual scenario ‘One for all and all for one’ gets a numerical rating of one (+1). The combination of international cooperation and the contextual scenario ‘In between’ gets a numerical rating of zero (+0). In two out of three
scenarios, ‘One for all and all for one’ and ‘In between’ ($C_{21}$ & $C_{23}$), the code of conduct of the EDA is implemented.

Based on the (numerical) ratings the combination $C_{32}$, combination of preferential policy and ‘Mind yourself’, leads to the most satisfactory results. But because of the implementation of the code of conduct of the EDA it is not allowed to pursue this preferential procurement strategy in the future. The second best option then will be the best choice. This are the combinations $C_{21}$ and $C_{23}$, the procurement strategy international cooperation with ‘One for all and all for one’ or ‘In between’. These combinations result into satisfactory procurement of large naval surface ships.

In paragraph 5.6 is described which actions should be taken by the Ministry of Defence to conduct the alternative procurement strategy for large naval surface ships.

5.6 Future procurement strategy

Despite the satisfactory results on the criteria it is not possible to pursue the preferential procurement strategy in the future, because of the changing contextual factors. Two important reasons that the present procurement strategy can not be pursued in the future are the implementation of the code of conduct of the EDA and the more compelling directives for European tendering. Based on the numerical results of the analysis the procurement strategy should be international cooperation.

In short the results of the strategy international cooperation on the five criteria are the following. First, a challenge of international cooperation is to have the navies of the participating countries to agree on common needs and requirements. Second, the dependence is decreasing in comparison to the preferential policy. Third, one problem is that even though co-operation is supposed to reduce national costs, it may turn out to be too expensive, for instance, because of high coordination costs or additional modifications of the ships to be procured. The resulting compromise often turns out to be very expensive and often also not satisfactory to the participating navies. Fourth, necessary costs of excessive tendering and frequent competitions are avoided, but the increasing costs arise from divergent principal-agent objectives and information asymmetry. Last, the fear of the (smaller) participating countries is that the smaller industries are overlooked by the larger. The orders must be spread over the involved actors in such a manner that all can make a profit. A problem is the difficulty in reaching an agreement on the division of work shared between the participating countries, they all want to protect or support their domestic industry. The partnership should be characterised by trust and win-win outcomes.

Which steps must be taken, based on the strategy of international cooperation, to successfully procure Dutch large naval surface ships in the future?

5.6.1 What is to be done?

♦ The future need for maritime capacity must be determined. The next years the security-political agenda will continue to be dominated by threats such as failing states, proliferation of weapons of mass destruction, organised crime, regional conflicts and terrorism. These threats will to a great extent determine the capacity needs of the Western armed forces. Simultaneously large-scale operations and small operations in difficult and divergent circumstances have to be executed. Operations are executed in the whole violence spectrum, and the emphasis lies on rapid, effective and flexible commitment.
Through the decreasing budget the demand can fall under this level which endangers the continuity of the Dutch naval shipbuilding cluster. At this moment the Dutch Defence budget is too small for the complete preservation of the Defence related industry (Interviews Appendix C, 2007). International cooperation is an instrument to increase the demand by addition of the demands of the involved actors.

♦ The Netherlands should secure and strengthen its own position on the European Defence market to face up to the countries with a large Defence industry and strengthen its negotiation position for international cooperation. This does not exclude an intensive cooperation between the MoD and the Defence related industry. The Netherlands has to prevent a certain knowledge base of the maritime industry, to prevent that the MoD is obliged to purchase outside the Netherlands. The Netherlands should focus on niches of this maritime industry and specialise, for example, on platform or combat systems (f.e. radar). Dependency on other actors will be diminished by prevention of knowledge and also the principal agent problem based on information asymmetry. The agent, in the principal agent relation, can not fully exploit its hold-up and opportunistic behaviour.

♦ With international cooperation the dependence on the supplier(s) is decreasing in comparison to the present procurement strategy. The mutual dependency between DMO and KSG is decreasing on both sides. On the one hand shipyard KSG expands its export and has a lot of orders in its portfolio. KSG has constructed and is now delivering four corvettes to Indonesia, fetched an order for four frigates for Morocco, and is negotiating with Portugal for the construction of eight Patrol Ships. The Ministry of Defence is one of the clients of the shipyard KSG. Therefore situations are imaginable in which KSG has insufficient capacity to construct orders for the Ministry of Defence. On the other hand situations are imaginable in which MoD chooses to procure by another shipyard, situations of international cooperation or situation in which the price-quality of KSG is not acceptable for the MoD. Both the MoD and the KSG should increase their international competitive position on the European Defence market independently of each other. Because of that the mutual dependence is reduced. Future public private partnerships between MoD and KSG should not be excluded.

♦ Determine with which countries it is possible and acceptable to cooperate for the procurement of this Defence materiel. Which countries have an equivalent need? Common needs should be identified and the time schedules should be geared to one another and financial sources should be available at the same time. Through cooperation the position of the involved actors on the European Defence market can be strengthened. The Netherlands has no large Defence industry, but the industry consists of small and medium size suppliers who deliver high-quality, innovative, specialised technological products. With which countries (with a smaller Defence related industry) should the Netherlands cooperate to face up to the countries with a large Defence related industry?

♦ International cooperation is just contracted if there is sufficient faith. Success of international cooperation depends also on the degree in which countries can trust (mutual confidence) each other. Security of information is very important, meaning mutual disclosure and protection of sensitive information. As mutual dependency in Defence capability grows, there must be mutual confidence and inevitably a wider circulation of classified information among the participating countries. Security of supply means avoiding supply problems in times of war or operational urgency, and a fair and equal treatment of suppliers. This will require transparency and equality of information.

The trustworthy analysis is the attempt to cooperate internationally and the search for suitable partners and consists of three sub requirements. The first sub requirement, involving analysts who are trusted, should be read as those who conduct the negotiation concerning the possible cooperation. The involved partners (countries) should also be trusted. Trust can be increased if a partner provides insight into its intentions. The second sub requirement, giving actors a voice in the analysis, enhances trust. It broadens the acceptability of the
results in that it makes actors more willing to live with policies that are, in their view, less than perfect (Kahan, 2001). The third requirement, making the analysis accessible for all stakeholders, implies that the analysis should be available to all involved actors and that the information, conclusions, assumptions and boundaries are stated clearly. Transparency restores confidence; information makes actions of the company controllable and verifiable (Graafland & Nijhof, 2007). In the past the attempts to cooperate resulted mostly in a design commonly made or cooperation in one specific field such as radars, but the construction of the platforms and the relevant (combat) systems were granted to the national industry. Reasons are national pride, conservations of military independence, and protection of the national market. To twist things around trust and transparency should be enhanced by following up the sub requirements mentioned in this paragraph. Trust and transparency are two important concepts and are mutually related. If trust between actors enhances they will be more transparent, and if actors are transparent they trust each other.

♦ The interest of the involved actors should be bridged for the procurement of a large naval surface ship. The first sub requirement of bridging interest is taking a broad scope and a multi-actor point of view in exploring policy options, to find solutions to the policy problem. The second sub requirement is maximizing the benefits and minimizing the losses and identifying possible irreconcilable differences among actors. The most ideal situation is to find a win-win solution, but this is not always possible or feasible in a limited way. In order to find a solution which approaches the win-win solution all interests have to be taken into account and the occurrence of losers should be avoided as much as possible (Edelenbos et al., 2000). The Pareto-principle can be applied in a specific way. According to Pareto social welfare only increases when there are any increases in the welfare of one or more members of the group and no decreases in the welfare of other group members. The winners should compensate the losers. The interests of both the Dutch Defence related industry and the Defence Organisation have to be taken into account. And also the interests of (international) partners are to be taken into account to create a broad scope and a multi-actor point of view. For all participating actors some form of profit must arise. The Ministry of Defence wants to purchase naval ships which meet their requirements. Thus Defence wants that certain knowledge stays preserved in their own country and specific within Defence. By preserving this knowledge the MoD is able to keep a certain degree of independence. The industry wants to make profit and acquire a certain market share. Between all involved actors some kind of equality must exist; equity is an important concept.

The requirements for a certain type of naval ship of all involved actors must be harmonised. The operational and technical requirements must be incorporated into the design. This means that the eventual design becomes a compromise. It is also possible to devise jointly a basic ship, to which involved parties can apply additional work or reductions according to the own needs. DMO must have well in mind on which points it does not want to concede and on which points compromises can be made. Room for negotiation should be explored. Important conditions to future Dutch naval ships lie in the field of personnel. The safety of the large naval surface ships has to increase; the resilience of ships should be increased. And the reduced crew concept should be incorporated into the design (reduction of life cycle costs and less crew in operational situations). The development process of a Dutch naval ship is up to 15 years, but the world and the security situation are changing very rapidly. Because of this it is required that the systems are developed up to the last possible moment, so that the ship will be equipped with the most recent, innovative systems against most recent threats.

A multi-perspective research focus means that the problem is explored from the perspectives of all involved actors, and is aimed at gaining insight. A multi-perspective research focus has to be used to reach the sub requirement, covering all features that are relevant for any of the stakeholders. The second sub requirement is, applying multiplism if there are divergent views on assumptions. Applying the concept of multiplism acknowledges that there are multiple views on policy issues, all of which potentially have some validity and need to be taken into
account. The third sub requirement is giving insight into the distribution of gains and losses across the stakeholders. An overview of the gains and losses informs all actors about the options, including the win-win solutions, and the actors can make a trade-off of their own between the different options.

♦ In the years to come the directives for European tendering become more compelling. And of course still the code of conduct of the European Defence Agency is politically binding. European tendering leads to a lower cost, but the chance exists that there arises no honest competition because not all countries commit themselves for 100% to the code of conduct of the EDA. For example, by putting out to tender smaller projects on the European market, but no large naval surface ships. However, uniformity must exist between the European countries. The chance exists then that the smaller countries are overruled by countries with a large maritime industry. The confidence between the participating countries must grow and all participating countries must possibly benefit from the invitation to tender. As a certain country can develop and reinforce its own industry at the expense of other countries, the intention to put out to tender on the European Defence market decreases.

The procurement strategy for international cooperation can be the first step towards European tendering. First the focus is on the strategy international cooperation to strengthen the competitive position of the Netherlands on the European Defence market and to procure large naval surface ships. Because of this dependence on other countries with a Defence industry is reduced. From this stronger competitive position the Netherlands can put out to tenders orders on the European market.

Which steps must be taken, based on the strategy of international cooperation, to successfully procure Dutch large naval surface ships in the future? First, the future need for maritime capacity must be determined. Second, determine with which countries (with a smaller Defence related industry) the Netherlands should cooperate to face up to the countries with a large Defence related industry. Third, the Netherlands should secure and strengthen its own position on the European Defence market to face up the countries with a large Defence industry and strengthen its negotiation position for international cooperation. Fourth, International cooperation is just contracted if there is sufficient faith. Success of international cooperation depends also on the degree in which countries can trust (mutual confidence) each other. Fifth, the interest of the involved actors should be bridged for the procurement of a large naval surface ship and to jointly procure large naval surface ships. Between all involved actors some kind of equality must exist; equity is an important concept. Sixth, both the MoD and the KSG should increase their international competitive position on the European Defence market independently of each other. Because of that the mutually dependence is reduced. Future public private partnerships between MoD and KSG should not be excluded. Last, the procurement strategy international cooperation can be the first step towards European tendering.
6 Conclusions & Recommendations

The research of this thesis is executed to answer the main research question. “Given the changing external factors is the present procurement strategy or an alternative procurement strategy for the future procurement of Dutch large naval surface ships the best choice for the Ministry of Defence?” The objective of this thesis is to generate and assess alternative procurement strategies for the DMO in order to continue the procurement of large naval surface ships in the future in a changing environment and make recommendations for this future. In this sixth and last chapter the main research question will be answered and the most important conclusions from this research are coupled to concrete recommendations. In paragraph 6.1 the conclusions are drawn and the main research question will be answered. In the next paragraph 6.2 the recommendations are made for future procurement of large naval surface ships in a changing environment. In paragraph 6.3 the recommendations are made for future research in relation to procurement of Dutch large naval surface ships. Finally, this chapter will be concluded with a description of the usability in paragraph 6.4.

6.1 Conclusions

The procurement of large naval surface ships in the future is not straightforward, because of the characteristics of these naval vessels, the present procurement strategy and the changing environment in which Defence materiel is to be procured in the future.

To answer the main research question of this thesis research is performed to build a theoretical framework, to the present procurement strategy, to the practice of present procurement, to the changing contextual factors and finally a scenario analysis is executed to create an image of the future.

The characteristics of Defence materiel and more specific large naval surface ships are unique, tailor-made, innovative, complex, expensive, the numbers per type of ship are small, and political sensitive (MoD deals with sensitive information and a rapidly changing security situation) and have substantial economic interest.

In the present procurement strategy the Dutch government strives for conservation of technological knowledge and expertise in the Netherlands. Defence pursues wherever possible a preferential policy; during the last decades orders of Dutch large naval surface ships are granted to the national shipyard KSG. Also the national Defence related industry has been involved for the development, innovation and procurement of relevant (sub) systems. The actors, DMO, the national industry including KSG and knowledge institutes form the Dutch naval shipbuilding cluster. The shipyard KSG has a monopoly position which is partly created by political choices of the Dutch government. Reasons were to give national/regional employment and economics an impulse, and the conservation of technological knowledge in the Netherlands.

In this context important theoretical concepts are monopoly, information asymmetry, hold up, opportunistic behaviour, trust, and mutual dependence.

In total five criteria are determined, which are used to evaluate the present procurement strategy and the alternative strategies in possible future scenarios. The criteria are:
Conclusions & Recommendations

- Criterion 1: meet the operational and technical specifications (staff requirements);
- Criterion 2: decrease the dependence on the supplier;
- Criterion 3: best product value within the available budget;
- Criterion 4: minimise transaction costs and/or agency costs;
- Criterion 5: realise trust, empathy and logic in a situation of multi-actor complexity.

The practice of the Air Defence Frigate, first and second Landing Platform Dock, Patrol Ships and the Joint Support Ship is elaborated and assessed by means of the criteria and the ratings.

Based on the theory the relationship between DMO and KSG can be characterised as a monopoly, in which KSG as supplier is the agent and DMO as buyer the principal. A monopoly is characterised by a monopolist with market power, and the buyers have no market power. Information is asymmetric; the principal-agent problem can arise and hold-up situation can be exploited. There exists no close substitute for the firm’s product. According to the theory the monopolist has an apparent advantage over the buyer.

The present procurement strategy scores (very) satisfactory on the five criteria.

| Criterion 1: meet the operational and technical specifications (staff requirements) | ✓✓ |
| Criterion 2: decrease the dependence on the supplier | ✗ |
| Criterion 3: best product value within the available budget | ✓ |
| Criterion 4: minimise transaction costs and/or agency costs | ✓✗ |
| Criterion 5: realise trust, empathy and logic in a situation of multi-actor complexity | ✓✓ |

The ratings of criterion 2 and criterion 5 are the most striking. The dependence on the supplier is large, in this procurement strategy the supplier is a monopolist. It appears that KSG cannot fully exploit its monopoly position, because of various reasons mentioned in paragraph 3.7.2. Not only DMO is dependent on KSG; DMO and KSG are mutually dependent. Despite this monopoly and the theoretical disadvantages of the buyer the present procurement strategy scores (very) satisfactory on criteria 1 and 3. One of the reasons is the high level of trust between the two actors (criterion 5), based on the cooperation for many years. The cooperation is professional, but is also characterised by a pleasant interpersonal relationship, open and direct communication, and KSG has knowledge of persons, procedures and directives of DMO (and vice versa). They have in mind a long-term cooperation and take that into account during negotiations. Opportunistic behaviour and exploiting hold-up by the KSG are protected against through long-term collaborative arrangements. The trust-relationship is strengthened through the years of cooperation.

KSG, as part of Damen Shipyards Group, is a commercial company that strives for profit and a strong competitive position. DMO strives for the procurement of a product, large naval surface ships, which meet the operational and technical requirements against a price within the available budget. Despite the different objectives of the DMO and KSG both actors are reasonably satisfied with the results of their cooperation. Or maybe the other way around DMO foresees more problems to overcome if other procurement strategies, such as international cooperation or European tendering, are used. The objectives of both stay the same, and both are reasonably satisfied with the result of their cooperation, but several external factors are changing.
A number of contextual factors are changing which are of influence on the procurement of large naval surface ships. A scenario analysis is elaborated to gain insight into the possible futures regarding procurement of large naval surface ships. The five most important factors are (1) decreasing Defence budgets, (2) the rapidly changing security situation (and the relevant changing capacity needs), (3) European regulation, (4) behaviour of the Defence related industry and (5) the attitude and behaviour of the foreign European countries. These five factors are consolidated into three factors; Defence budget and security situation are combined and the behaviour of the Defence related industry and the foreign European countries. These final three contextual factors will form the axes for the possible future scenarios. Every combination of different assumptions produces a potential image of the future. Contextual scenarios sketch how the environment or context of the policy field or system that is being explored could be developed. Finally, three plausible contextual scenarios are developed and combined in a matrix with three possible procurement strategies. The strategies are European tendering, international cooperation and preferential policy. This matrix delivers in total nine combinations, which are assessed with the five criteria. The results are visualised in table 6.1. Besides the rating on the criteria, an extra numerical rating is added to assess the combinations. In the last column of the matrix above (see table 6.1) a calculation is made (example combination C; 1 multiplying: \( X^*-1 + \sqrt{1} + \sqrt{X^*0 + X^*-1 + X^*-1} = -1 \)) and the scores can be read off in the last column of this matrix.

<table>
<thead>
<tr>
<th>Combinations</th>
<th>Criterion 1 Staff requirements</th>
<th>Criterion 2 Dependence supplier</th>
<th>Criterion 3 Available budget</th>
<th>Criterion 4 Transaction &amp; agency costs</th>
<th>Criterion 5 Multi-actor complexity</th>
<th>Numerical ratings</th>
</tr>
</thead>
<tbody>
<tr>
<td>C11</td>
<td>( \times )</td>
<td>( \sqrt{1} )</td>
<td>( \sqrt{X} )</td>
<td>( \sqrt{X} )</td>
<td>( \times )</td>
<td>-1</td>
</tr>
<tr>
<td>C12</td>
<td>( \sqrt{1} )</td>
<td>( \sqrt{1} )</td>
<td>( \sqrt{1} )</td>
<td>( \sqrt{1} )</td>
<td>( \sqrt{1} )</td>
<td>( \sqrt{1} )</td>
</tr>
<tr>
<td>C13</td>
<td>( \sqrt{1} )</td>
<td>( \sqrt{1} )</td>
<td>( \sqrt{X} )</td>
<td>( \sqrt{X} )</td>
<td>( \sqrt{X} )</td>
<td>-2</td>
</tr>
<tr>
<td>C21</td>
<td>( \sqrt{1} )</td>
<td>( \sqrt{1} )</td>
<td>( \sqrt{1} )</td>
<td>( \sqrt{1} )</td>
<td>( \sqrt{1} )</td>
<td>1</td>
</tr>
<tr>
<td>C22</td>
<td>( \sqrt{1} )</td>
<td>( \sqrt{1} )</td>
<td>( \sqrt{1} )</td>
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<tr>
<td>C23</td>
<td>( \sqrt{1} )</td>
<td>( \sqrt{1} )</td>
<td>( \sqrt{1} )</td>
<td>( \sqrt{1} )</td>
<td>( \sqrt{1} )</td>
<td>0</td>
</tr>
<tr>
<td>C31</td>
<td>( \sqrt{1} )</td>
<td>( \sqrt{1} )</td>
<td>( \sqrt{1} )</td>
<td>( \sqrt{1} )</td>
<td>( \sqrt{1} )</td>
<td>( \sqrt{1} )</td>
</tr>
<tr>
<td>C32</td>
<td>( \sqrt{1} )</td>
<td>( \sqrt{1} )</td>
<td>( \sqrt{1} )</td>
<td>( \sqrt{1} )</td>
<td>( \sqrt{1} )</td>
<td>4</td>
</tr>
<tr>
<td>C33</td>
<td>( \sqrt{1} )</td>
<td>( \sqrt{1} )</td>
<td>( \sqrt{1} )</td>
<td>( \sqrt{1} )</td>
<td>( \sqrt{1} )</td>
<td>( \sqrt{1} )</td>
</tr>
</tbody>
</table>

Table 6.1: Scenarios compared.

In table 6.2 below the numerical ratings of the plausible combinations are visualized. The following conclusions based on the results can be drawn:

- Four out of nine combinations can be ruled out based on the fact that the combination of the procurement strategy and the contextual scenario is not possible to pursue. These are combination C; 12: European tendering – ‘Mind yourself’, combination C; 22: International cooperation – ‘Mind yourself’, combination C; 31: Preferential policy – ‘One for all and all for one’, and combination C; 33: Preferential policy – ‘In between’. This is visualised in the matrixes (6.1 and 6.2) by the three stripes ‘- - -’.
Conclusions & Recommendations

The present preferential policy leads to the most satisfactory results (positive numerical rating), in comparison to the other two strategies. The combination of the preferential policy and the contextual scenario ‘Mind yourself’ (C32) gives the best rating of the nine combinations. The numerical score is four (+4). But in two out of three scenarios, ‘One for all and all for one’ and ‘In between’ (C31 & C33), this preferential policy can not be applied. By the implementation of the code of conduct of the EDA it is not permitted to continue this strategy.

The strategy, European tendering, leads to most unsatisfactory results (negative numerical ratings), in comparison to the other two strategies. The combination C11 of European tendering and the contextual scenario ‘One for all and all for one’ gets a numerical rating of minus one (-1). The combination C13 of European tendering and the contextual scenario ‘In between’ gets a numerical rating of minus two (-2). In these two out of three scenarios, ‘One for all and all for one’ and ‘In between’ (combination C11 & C13), the code of conduct of the EDA is implemented. The combination C12 is not elaborated, because the strategy European tendering can not be applied.

The combination of the strategy international cooperation and the contextual scenario ‘Mind yourself’ (C22) can not be applied and has no rating. International cooperation leads to the second best results (positive numerical ratings) in comparison to the other two strategies. The combination of international cooperation and the contextual scenario ‘One for all and all for one’ gets a numerical rating of one (+1). The combination of international cooperation and the contextual scenario ‘In between’ gets a numerical rating of zero (+0). In two out of three scenarios, ‘One for all and all for one’ and ‘In between’ (combination C21 & C23), the code of conduct of the EDA is implemented.

The code of conduct of the EDA is not legally binding, but politically binding, the Minister of Defence has signed this political, voluntary, non-binding code of conduct. This means that if the participating countries do not follow the agreements fixed in the code of conduct it is not possible to take legal actions against these countries.

Success of the code of conduct of the EDA depends on the political will and the degree in which countries can trust (mutual confidence) each other. Security of information is very important; mutual disclosure and protection of sensitive information. As mutually dependency in Defence capability grows, there must be mutual confidence and inevitably a wider circulation of classified information among the participating countries. Security of supply
means avoiding supply problems in times of war or operational urgency. This will require transparency and equality of information. 

The code of conduct of the EDA can only work well if all countries put out to tender their orders for large materiel projects in competition on the European market. A lot of materiel is already bought on the European competitive market. The disclosures appear on the Internet site of the EDA. In newspapers and other disclosures European countries subscribe to the importance of one European market. The characteristics of large naval surface ships have lead to the fact that no naval ships have been put out to tender so far. The European countries with a large Defence industry take a reluctant position. These countries have for the next years still sufficient orders in their portfolio that European tendering is not yet necessary (MoD-II, 2005). This also applies to the Netherlands; up to 2015 the Dutch Defence industry is still occupied with the outstanding orders of the Patrol Ships and the JSS. In paragraph 4.5 is described that the upcoming years (5 to 10 years) the countries with a large naval industry such as Germany, France, Spain and Italy are reluctant to tendering in the competitive market, because of their filled portfolio and/or their national consolidation of their own Defence industry. Because of this by putting out to tender orders in competition on the European market it becomes more inconvenient to meet the criteria on the short term. For a profitable and a competitive industry it is necessary that enlargement of the demand side takes place. The harmonisation of the demand of the European governments has not been so successful up until now. In the long run the EDA has to ensure that this will improve by initiating European cooperation programmes (MoD-II, 2005). In a number of cases countries can refer to the exceptions of the code of conduct of EDA, one of these exceptions is the collaborative procurement. In spite of that one should strive for a competitive European market for Defence materiel in the long run, but international cooperation is an alternative strategy which falls within the exception rules of the EDA. The Dutch Defence Organisation should be focused on international cooperation in the short term (and starting today). This leads to a satisfactory procurement of Dutch large naval surface ships.

The research and the scenario analysis generate an answer to the main research question. The main research question is:

“Given the changing external factors is the present procurement strategy or an alternative procurement strategy for the future procurement of Dutch large naval surface ships the best choice for the Ministry of Defence?”

Despite the reasonable satisfactory results on the criteria it is not possible to use the present procurement strategy in the future if the contextual factors are changing. When the code of conduct of the EDA is implemented it is not allowed to make use of a preferential policy and grant future orders to the national Defence related industry.

Based on the knowledge about the reluctant behaviour of the other European countries and the difficulties to overcome to create a perfect competitive European Defence market another procurement strategy, then European tendering, can be more successful in the short term. In a number of cases countries can refer to the exceptions of the code of conduct of EDA. International cooperation should be the first step for the Ministry of Defence to a more open and transparent European Defence market. Above all with international cooperation Defence can build a strong competitive position in the European Defence market and procure Dutch large naval surface ships which satisfy the criteria.

The objective of this thesis is to generate and assess alternative procurement strategies for the DMO in order to continue the procurement of large naval surface ships in the future in a changing environment and make recommendations for this future. In this first paragraph
Conclusions & Recommendations

Conclusions are drawn based on the results of the present and alternative procurement strategies which are assessed with the criteria based on the theory and an answer is given to the main research question. In the following paragraphs recommendations are made for the future procurement of large naval surface ships and for further research.

6.2 Recommendations

In this second paragraph recommendations are made for the future procurement of large naval surface ships.

Over the last decades the Ministry of Defence has acquired its ships within the Dutch naval shipbuilding cluster. This far-reaching cooperation between the industry, knowledge institutes and Defence the purchase resulted in a product that met the criteria quite satisfactorily. The present procurement strategy, a preferential policy, to purchase large naval surface ships is not allowed to execute, because of the implementation of the code of conduct of the EDA. In the code of conduct participating EU countries commit themselves to give companies from participating countries equal chances at granting Defence assignments. The code of conduct applies exclusively to assignments of more than 1 million euros, to which article 296 of the EC-Treaty applies. It concerns here purchases of products and services which have been intended for specifically military aims, among which the large naval surface ships. It is said that the upcoming years (5 to 10 years) the countries with a large naval industry such as Germany, France, Spain and Italy are reluctant to tender on the competitive market, because of their filled portfolio and/or their national consolidation of their own Defence industry. This also applies to the Netherlands; up to 2015 DMO and the Dutch Defence related industry is still occupied with the outstanding orders of the Patrol Ships and the Joint Support Ship.

♦ Up to approximately 2015 there will be little change in the Netherlands, since still two large projects, the four Patrol Ships and the Joint Support Ship, are procured within the Dutch naval shipbuilding cluster. Shipyard KSG will be lead contractor, because these two projects fall within the agreement between the State and Damen. The expected completion of the Patrol Ships will be in 2010 and to the current expectation the contract for the JSS with KSG will be concluded in 2009, whereas the completion of the JSS will be in 2014. So the year 2015 will become the break-even point in the Netherlands with respect to the type of procurement strategy used for large naval surface ships. But the Defence Organisation must reflect before 2015 about future procurement of Defence materiel and make choices which strategy will work best in the future. It is important to reconsider before 2015 the present procurement strategy and take the code of conduct of the EDA into account. It is important not to wait for what other participating countries choose as procurement strategy within the changing environment, but to adopt a position and a procurement strategy for large naval surface ships in the future.

♦ The future need for maritime capacity must be determined. The next years the security-political agenda will continue to be dominated by threats such as failing states, proliferation of weapons of mass destruction, organised crime, regional conflicts and terrorism. These threats will to a great extent determine the capacity needs of the Western Defence. Simultaneously large-scale operations and small operations in difficult and divergent circumstances have to be executed. Operations are executed in the whole violence spectrum, and the emphasis lies on rapid, effective and flexible commitment.

Through the decreasing budget the demand can fall under a level which dangers the continuity of the Dutch naval shipbuilding cluster. At this moment the Dutch Defence budget is too small for the complete preservation of the Defence related industry (Interviews Appendix C, 2007). International cooperation is an instrument to increase the demand by addition of the demands of the involved actors.
Decreasing Defence budgets in the past decades and increasing costs of military systems imply trouble for the Defence related industry. Defence and their related industry have to make choices: downsizing, diversification into civilian activities, and further specialisation into military production, merging with other companies nationally or internationally. The code of conduct of the European Defence Agency also has impact on the developments for the Defence industry. The Dutch maritime industry, although globally not large, is a strong player in which technological innovations are applied. Characteristics are the relatively small crew, the very far-reaching automation especially in terms of integration of combat systems and progressive ergonomics. Defence does not have to maintain the industry as it did before. With international cooperation the dependence on the supplier(s) is decreasing in comparison to the present procurement strategy. The mutual dependency between DMO and KSG is decreasing of both sides. On the one hand shipyard KSG expands its export and has a lot of orders in its portfolio. KSG has constructed and is now delivering four corvettes to Indonesia, fetched an order for four frigates for Morocco, and is negotiating with Portugal for the construction of eight Patrol Ships. The Ministry of Defence is one of the clients of the shipyard KSG. Therefore situations are imaginable in which KSG has insufficient capacity to construct orders for the Ministry of Defence. On the other hand situations are imaginable in which MoD chooses to procure by another shipyard, situations of international cooperation or situation in which the price-quality of KSG is not acceptable for the MoD. Both the MoD and the KSG should increase their international competitive position on the European Defence market independently of each other. Because of that the mutual dependence is reduced. Future public private partnerships between MoD and KSG should not be excluded. The Netherlands should secure and strengthen its own position on the European Defence market to face up to the countries with a large Defence industry and strengthen its negotiation position for international cooperation. This does not exclude an intensive cooperation between the MoD and the Defence related industry. The Netherlands has to prevent a certain knowledge base of the maritime industry, to prevent that the MoD is obliged to purchase outside the Netherlands. The Ministry of Defence wants to preserve knowledge and know-how about shipbuilding in order to stay a smart user and smart buyer in the future. The Netherlands should focus on niches of this maritime industry and specialise, for example, on platform or combat systems (e.g. radar). By preserving this knowledge the MoD is able to keep a certain degree of independence. Dependency on other actors will be diminished by prevention of knowledge and also the principal agent problem based on information asymmetry. The agent, in the principal agent relation, can not fully exploit its hold-up and opportunistic behaviour.

In the past the Netherlands has (successfully) cooperated with Germany to procure the weapon systems of the ADF and with Spain (see paragraph 3.2). Spain and the Netherlands jointly developed the specifications of the first Landing Platform Dock (see paragraph 3.3). These were cooperations to fulfil a specific need to construct large naval surface ships. Besides that the Netherlands cooperated with Germany for the development of weapon systems. The European Defence industry is fragmented, has overcapacity, duplications of design, development and production capacity. The Netherlands has a small but skilled Defence industry and wants to preserve the technical knowledge in order to stay a smart buyer and smart user. Determine with which countries it is possible and acceptable to cooperate for the procurement of this Defence materiel. Which countries have an equivalent need? Common needs should be identified and the time schedules should be geared to one another and financial sources should be available at the same time. Through cooperation the position of the involved actors on the European Defence market can be strengthened. The Netherlands has no large Defence industry, but the industry consists of small and medium size suppliers who deliver high-quality, innovative, specialised technological products. With which countries (with a smaller Defence related industry) should the Netherlands cooperate to face up to the countries with a large Defence related industry?
♦ Success of international cooperation depends on the political will and the degree to which countries can trust (mutual confidence) each other. Security of information is very important, meaning mutual disclosure and protection of sensitive information. As mutual dependency in Defence capability grows, there must be mutual confidence and inevitably a wider circulation of classified information among the participating countries. Security of supply means avoiding supply problems in times of war or operational urgency. This will require transparency and equality of information.

International cooperation is an acceptable alternative if the code of conduct of the EDA is implied and European tendering is a bridge too far (in the short term). To be very successful it is important among other things to increase the basis for trust. Three important concepts are trustworthy analysis (trust), bridging interests (empathy) and multi perspective research focus (logic).

The first sub requirement, involving analysts who are trusted, should be read as those who conduct the negotiation concerning the possible cooperation. The involved partners (countries) should also be trusted. Trust can be increased if a partner provides insight into its intentions. The second sub requirement, giving actors a voice in the analysis, enhances trust. It broadens the acceptability of the results in that it makes actors more willing to live with policies that are, in their view, less than perfect (Kahan, 2001). The third requirement, making the analysis accessible for all stakeholders, implies that the analysis should be available to all involved actors and that the information, conclusions, assumptions and boundaries are stated clearly. Trust and transparency are mutually related, if trust between actors enhances one will be more transparent, and if actors are transparent they trust each other.

Bridging interests, the first sub requirement is, taking a broad scope and a multi-actor point of view in exploring policy options, to find solutions to the policy problem. The second sub requirement is maximizing the benefits and minimizing the losses and identifying possible irreconcilable differences among actors. The most ideal situation is to find a win-win solution, but this is not always possible or feasible in a limited way. In order to find a solution which approaches the win-win solution all interests has to be taken into account and the occurrence of losers should be avoided as much as possible (Edelenbos et al., 2000). The Pareto-principle can be applied in a specific way. According to Pareto social welfare only increases when there are any increases in the welfare of one or more members of the group and no decreases in the welfare of other group members. The winners should compensate the losers. The interests of both the Dutch Defence related industry and the Defence Organisation have to be taken into account. And also the interests of (possible) international partners are to be taken into account to create a broad scope and a multi-actor point of view. For all participating actors some form of profit must arise. Between all involved actors some kind of equality must exist; equity is an important concept.

The requirements for a certain type of naval ship of all involved actors must be harmonised. The operational and technical requirements must be incorporated into the design. This means that the eventual design becomes a compromise. It is also possible to devise jointly a basic ship, to which involved parties can apply additional work or reductions according to the own needs. DMO must keep well in mind which points it does not want to concede and on which points compromises can be made. Room for negotiation should be explored. Important conditions for future Dutch naval ships lie in the field of personnel. The safety of the large naval surface ships has to increase; the resilience of ships should be increased. And the reduced crew concept should be incorporated into the design (reduction of life cycle costs and less crew in operational situations). The development process of a Dutch naval ship is up to 15 years, but the world and the security situation are changing very rapidly. Because of this it is required that the systems are developed up to the last possible moment, so that the ship will be equipped with the most recent, innovative systems against most recent threats.
A multi-perspective research focus means that the problem is explored from the perspectives of all involved actors, and is aimed at gaining insight. A multi-perspective research focus has to be used to reach the first sub requirement, covering all features that are relevant for any of the stakeholders. The second sub requirement is, applying multiplicity if there are divergent views on assumptions. Applying the concept of multiplicity acknowledges that there are multiple views on policy issues, all of which potentially have some validity and need to be taken into account. The third sub requirement is, giving insight into the distribution of gains and losses across the stakeholders. An overview of the gains and losses informs all actors about the options, including the win-win solutions, and the actors can make a trade-off of their own between the different options.

♦ It has not been said that the prescribed trade manner of the code of conduct of the EDA, European tendering, must be taken over at once. Given the reluctant behaviour of the Defence Organisations abroad it is very complex to put orders out to tender on the European competitive market. And thereby the question arises if under the present circumstances the criteria can be met if European tendering is chosen as procurement strategy. On the other hand international cooperation leads to satisfactory results for the procurement of large naval surface ships. The EDA knows sufficient exception rules to find an appropriate strategy that fits the Dutch Defence Organisation. International cooperation, but also for example research and development projects, falls within the exception rules. Conform this research and scenario analysis the future scenarios in which European tendering is used as procurement strategy leads to unsatisfactory results on the five criteria. International cooperation should be the first step for the Ministry of Defence to a more open and transparent European Defence market. Above all with international cooperation Defence can build a strong competitive position in the European Defence market and procure Dutch large naval surface ships which satisfy the criteria.

First, it is important to reconsider before 2015 the present procurement strategy and take the code of conduct of the EDA into account. Second, the future need for maritime capacity must be determined. Third, both the MoD and the KSG should increase their international competitive position on the European Defence market independently of each other. Because of that the mutually dependence is reduced. Future public private partnerships between MoD and KSG should not be excluded. Fourth, the Netherlands should secure and strengthen its own position on the European Defence market to face up to the countries with a large Defence industry and strengthen its negotiation position for international cooperation. Fifth, determine with which countries (with a smaller Defence related industry) the Netherlands should cooperate to face up to the countries with a large Defence related industry and to jointly procure large naval surface ships. Sixth, international cooperation is just contracted if there is sufficient faith. Success of international cooperation depends also on the degree to which countries can trust (mutual confidence) each other. Seventh, the interest of the involved actors should be bridged for the procurement of a large naval surface ship. Between all involved actors some kind of equality must exist; equity is an important concept. Last, the procurement strategy for international cooperation can be the first step towards European tendering.

6.3 Recommendations for Further Research

In this third paragraph recommendations are made for further research to get more insight in the possibilities for (inter)national cooperation.

♦ Inquire which countries have an equivalent need and with which countries it is possible to cooperate for procurement of large naval surface ships (or general for the procurement of Defence materiel) and to strengthen the position of the involved actors on the European
Defence market. Common needs should be identified and the time schedules should be geared to one another and financial sources should be available at the same time. Examine more closely the points of view of other, participating EU-countries with respect to the code of conduct of the EDA.

♦ If the Defence Materiel Organisation chooses to cooperate with other countries, DMO must have well in mind on which points it does not want to concede (e.g. security, combat systems, ergonomics) and on which points compromises can be made. The room for negotiation should be explored.

6.4 Usability

Up to 2015 the MoD and the Defence related industry are still occupied with the current orders of the Patrol Ships and the Joint Support Ship. But it is important to consider the changing external factors and especially the more compelling directives for European tendering and the code of conduct of the European Defence Agency and their influence on the procurement strategy of Defence materiel. Besides that the Defence related industry national and international is also changing. The Ministry of Defence, more specific the Directorate of Materiel Policy and the Directorate of Projects & Procurement of the Defence Materiel Organisation, can use the conclusions and recommendations of this research for the policy making about future Defence procurement of large naval surface ships.
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Nederlandse samenvatting (summary in Dutch)

Inleiding
Deze scriptie is geschreven ter afronding van de vierjarige deeltijd Master of Science Engineering & Policy Analysis aan de faculteit Techniek, Beleid and Management van de Technische Universiteit Delft. Het onderzoek is uitgevoerd in de periode van juli 2007 tot en met april 2008.

Probleemstelling
Investeren in Defensie materieel en de bijbehorende lange termijn projecten zijn complex. De internationale relaties, technologie, regelgeving en de markt zijn continue aan verandering onderhevig. Bij het verworvenproces zijn veel actoren betrokken, zowel binnen als buiten Defensie. Te denken valt aan de overheid, verschillende ministeries, de media, nationale onderzoeksinstituten en industrie, buitenlandse overheden en industrie, en organisaties voor internationale samenwerking (MoD, 2007).

De afgelopen decennia heeft het Ministerie van Defensie gebruik gemaakt van een preferentieel beleid. Bijna alle orders voor grote bovenwaterschepen zijn gegund aan de scheepswerf Koninklijke Schelde Groep (KSG) voor het platform en aan andere actoren, industrieën en kennisinstituten, die deel uitmaken van het Nederlandse scheepsbouw cluster. KSG heeft een monopolie voor de constructie van de platformen van Nederlandse grote bovenwaterschepen. De verwerving van deze marineschepen is aan verandering onderhevig, doordat de externe factoren, zoals de (inter)nationale relaties, technologie, regelgeving en de markt aan verandering onderhevig zijn. Deze stelling leidt tot de volgende onderzoeksvraag:

Gegeven de veranderende externe factoren is de huidige verwervingsstrategie of een alternatieve strategie voor de toekomstige verwerving van Nederlandse grote bovenwaterschepen de beste keuze voor het Ministerie van Defensie?

Het doel van dit onderzoek is het beoordelen van alternatieve verwervingsstrategieën aan de hand van de opgestelde criteria. Om vervolgens aanbevelingen te doen over de te gebruiken verwervingsstrategie voor de toekomstige verwerving van grote bovenwaterschepen door het Ministerie van Defensie.

Onderzoeksmethode
Dit onderzoek naar alternatieve verwervingsstrategieën voor de verwerving van grote bovenwaterschepen in een toekomstige, veranderende omgeving bestaat uit vier delen. Ten eerste is een theoretisch raamwerk opgesteld, ten tweede is de huidige verwervingsstrategie beoordeeld, ten derde zijn de externe factoren die de Defensie materieelverwerving beïnvloeden bestudeerd en als laatste is een scenario analyse uitgevoerd.

Het theoretische raamwerk is gebaseerd op desk research, hierin worden de karakteristieken van Defensie materieel(verwerving), de verschillende type leveranciers, van perfecte competitie tot monopolie, en de bestaande verwervingsstrategie beschreven. Ook is multi-actor complexity uitgewerkt; de belangrijkste kenmerken zijn betrouwbare analyse, afstemmen van interesse en een multi-perspectieve onderzoeksfocus. Literatuur over economie en verwervingsstrategieën zijn bestudeerd. Belangrijke concepten zijn monopolie, transactiekosten, informatieasymmetrie, hold-up, opportunistisch gedrag en vertrouwen. Dit
onderzoek leidt tot een theoretisch raamwerk dat in deze scriptie is gebruikt om empirisch onderzoek uit te voeren. Vijf criteria zijn opgesteld om de huidige verwervings-strategie te beoordelen en om te beoordelen of de toekomstige verwervingsstrategie voldoet. De criteria zijn:

- Criterium 1: voldoen aan de operationele en technische specificaties (stafeisen);
- Criterium 2: verminderen van de afhankelijkheid van een leverancier;
- Criterium 3: beste product binnen het beschikbare budget;
- Criterium 4: minimaliseren de transactiekosten en/of de agency kosten;
- Criterium 5: realiseer vertrouwen, empathie en logica in situatie van multi-actor complexity.

Ten tweede is de huidige verwervingsstrategie van de Defensie Organisatie beschreven. Defensie gebruikt een preferentieel beleid voor de verwerving van grote bovenwaterschepen en verwerft deze marineschepen binnen een monopolie. In de inleiding van deze scriptie is het Defensie materieelverwerving proces geïntroduceerd en wordt verder uitgelegd in hoofdstuk drie. Het empirische deel is het tweede deel waarin de praktijk van de huidige verwervingsstrategie van grote bovenwaterschepen is uitgewerkt, de zogenaamde casestudie. De praktijk van de volgende projecten zijn bestudeerd: het Luchtverdediging en Commando Fregat, het eerste en tweede Amfibische Transport Schip, de Patrouille Schepen en het Joint Support Ship. Om de noodzakelijke informatie in te winnen zijn interviews met betrokken personen gehouden, zoals personen van de Defensie Materieel Organisatie, the Koninklijke Schelde Groep etc. Ook zijn de relevante beleidsdocumenten bestudeerd. The empirie is vergeleken met de theorie beschreven in hoofdstuk twee. De praktijk van de huidige verwervingsstrategie van grote bovenwaterschepen is beoordeeld aan de hand van de vijf criteria. In de praktijk blijkt dat verwerving zonder concurrentie-stelling, of meer specifiek binnen een monopolie, tot een bevreiddigend resultaat leidt, in tegenstelling tot de theorie betreffende monopolies.

Ten derde, de verwerving van marineschepen is aan verandering onderhevig wegens voortdurende veranderingen in de (inter)nationale relaties, technologie, regelgeving, en de markt. Interviews zijn uitgevoerd met betrokken personen van Defensie en tevens desk research is uitgevoerd om te externe factoren te beschrijven. Deze factoren zijn van invloed op de verwerving van grote bovenwaterschepen. De veranderende veiligheidssituatie, die leidt tot veranderende behoeftes, en de dalende begroting van Defensie zijn van invloed. Eveneens de Europese regelgeving voor de aanbesteding in concurrentie op de Europese competitieve markt en de gedragscode van de European Defence Agency spelen een

belangrijke rol. Om de fragmentatie van de Europese Defensie markt te verminderen en de realisatie van een transparante en open markt voor militaire verwerving te vergroten is deze gedragscode geïmplementeerd. Om een sterke internationale (Europese) concurrentie positie te verwerven moet de Defensie gerelateerde industrie de export vergroten. Eveneens speelt het gedrag en de houding, ten aanzien van de gedragscode van de EDA, van andere Europese landen een belangrijke rol.

De drie belangrijkste contextuele factoren vormen de assen voor mogelijke toekomstige scenario’s, dit zijn:
- De begroting van Defensie;
- Europese regelgeving;
- De Defensie gerelateerde industrie.


Conclusies
Het onderzoek en vooral de scenario analyse produceren samen een antwoord op de onderzoeksvraag. De onderzoeksvraag is:

Gezien de veranderende omgevingsfactoren is de huidige verwervingsstrategie of een alternatieve verwervingsstrategie voor de toekomstige Verwerving van Nederlandse grote bovenwaterschepen de beste keuze voor het Ministerie van Defensie?

Ondanks de redelijk bevredigende resultaten behaalt op de criteria is het niet mogelijk om de huidige verwervingsstrategie te gebruiken in de toekomst vanwege de veranderde omgevingsfactoren. De gedragscode van de European Defence Agency is geïmplementeerd, het is dus niet toegestaan om gebruik te maken van een preferentieel beleid en om toekomstige orders te gunnen aan de nationale Defensie industrie. Gebaseerd op de kennis over het terughoudende gedrag van andere Europese landen, de te overwinnen moeilijkheden om een perfecte competitieve Europese Defensie markt te creëren en gezien de resultaten van dit onderzoek is een andere verwervingsstrategie meer succesvol. In een aantal gevallen kunnen landen terugvallen op de uitzonderingen van de gedragscode van de EDA, internationale samenwerking kan de eerste stap zijn naar een meer open en transparante Europese Defensie markt.
Aanbevelingen
Tot 2015 is de Nederlandse Defensie industrie nog bezet met de openstaande orders van de Patrouille Schepen en het JSS. Defensie moet voor 2015 de toekomstige verwervingsstrategie overwegen en hierbij de gedragscode van de European Defence Agency in ogenschouw nemen. Het is belangrijk niet te wachten op hetgeen andere Europese landen kiezen als verwervingsstrategie binnen de veranderende omgeving, maar Nederland moet een standpunt innemen en een strategie kiezen voor de verwerving van grote bovenwaterschepen.

De toekomstige behoefte aan maritieme capaciteit moet worden bepaald. De komende jaren zal de veiligheidspolitieke agenda worden overheerst door bedreigingen zoals proliferatie van massavernietigingwapens, georganiseerde misdaad, regionale conflicten en terrorisme. Deze bedreigingen zullen grotendeels de capaciteitsbehoefte van Defensie bepalen.


Het is voor Nederland zeer belangrijk om een sterke concurrentiepositie te verwerven binnen de Europese Defensie industrie. De Nederlandse maritieme industrie, hoewel wereldwijd niet groot, is derhalve een sterke speler en in de industrie worden technologische vernieuwingen toegepast. Nederland heeft een kleine, maar zeer bekwame Defensie industrie en Nederland wil technische kennis en kunde behouden om op te kunnen blijven treden als smart buyer en smart user. Het Ministerie van Defensie moet actief zoeken naar landen om mee samen te werken om de concurrentiepositie te vergroten binnen de Europese Defensie markt. Anders bestaat de kans dat Nederland wordt gedomineerd door de landen met een grotere Defensie industrie. Het MoD moet zoeken naar partners om samen een sterke positie op de Europese Defensie markt te verkrijgen, om te concurreren met de grote Defensie industriën en om gezamenlijk grote bovenwaterschepen te verwerven. Er moet bepaald worden met welke landen het mogelijk en aanvaardbaar is om de verwerving van Defensie materieel samen te werken. Welke landen hebben een gelijkaardige behoefte? De gemeenschappelijke behoeften moet worden geïdentificeerd, de tijdschema's zouden elkaar moeten worden afgestemd en de financiële middelen moeten beschikbaar zijn op dezelfde tijd.

Internationale samenwerking wordt enkel aangegaan als er voldoende vertrouwen is. Het succes van internationale samenwerking hangt ook van de graad af waarin de landen op elkaar kunnen vertrouwen (wederzijds vertrouwen). De veiligheid van informatie is zeer belangrijk; wederzijdse onthulling en bescherming van gevoelige informatie. Als wederzijdse afhankelijkheid van de Defensie capaciteit toeneemt, dan moet er wederzijds vertrouwen zijn en onvermijdelijk een bredere omloop van geclassificeerde informatie onder de deelnemende landen zijn. Veiligheid van levering betekent het vermijden van leveringsproblemen in tijden van oorlog of operationele urgentie, en een eerlijke en gelijke behandeling van leveranciers. Dit zal transparantie en gelijkheid van informatie vereisen.
In de komende jaren wordt de regelgeving voor Europese aanbesteding steeds dwingender. Daarbij is de gedragscode van de *European Defence Agency* nog steeds politiek bindend. In de wetenschap dat andere Europese landen terughoudend gedrag vertonen met Europese aanbesteding, de te overwinnen moeilijkheden om een perfect competitieve Europese Defensie markt te creëren, en gezien de resultaten van dit onderzoek is een andere verwervingsstrategie meer succesvol op de korte termijn. In een aantal gevallen kunnen landen terughijden op de uitzonderingen van de gedragscode van de EDA. Internationale samenwerking kan de eerste stap voor het Ministerie van Defensie zijn naar een meer open en transparante Europese Defensie markt. Bovenal met internationale samenwerking kan Defensie de concurrentiepositie op de Europese markt vergroten en grote bovenwaterschepen verwerven die voldoen aan de gestelde criteria.

### Aanbevelingen voor Verder Onderzoek
In deze paragraaf worden aanbevelingen voor verder onderzoek gedaan om meer inzicht te verkrijgen in de mogelijkheden van internationale samenwerking.

- Onderzoek grondig welke landen een overeenkomstige behoefte aan Defensie materieel hebben en met welke landen het mogelijk en/of wenselijk is om in een samenwerking grote bovenwaterschepen te verwerven (of algemener het verwerven van Defensie materieel). En om de gezamenlijke concurrentiepositie op de Europese Defensie markt te vergroten en te versterken. Gezamenlijke behoeften moeten worden geïdentificeerd, tijdsplanningen moeten op elkaar worden afgestemd en financiële middelen moeten op hetzelfde tijdsstip beschikbaar zijn. Onderzoek nauwkeurig de standpunten van andere, deelnemende EU-landen met betrekking tot de gedragscode van de *European Defence Agency*.

- Indien de Defensie Materieel Organisatie gaat samenwerken met Europese landen, dan moet de onderhandelingsruimte worden bepaald. Onderzoek nauwkeurig op welke punten DMO niet wil toegeven bij een gezamenlijke verwerving (bijvoorbeeld, veiligheid, SEWACO-systemen, ergonomie), en op welke punten een compromis kan worden gesloten.
Toepasbaarheid
Tot het jaar 2015 is het Ministerie van Defensie en de Defensie gerelateerde industrie nog bezet met de uitstaande orders van de Patrouille Schepen en het bevoorradingschip (JSS). Het is belangrijk om de veranderde externe factoren en vooral de steeds meer dwingende regelgeving voor Europese aanbesteding en de gedragscode van de European Defence Agency en de invloed van de factoren op de verwerving van Defensie materieel in ogenschouw te nemen. Daarnaast is zowel de nationale als internationale Defensie industrie aan verandering onderhevig. Het Ministerie van Defensie, en meer specifiek de Directies Beleid en Projecten & Verwerving van de Defensie Materieel Organisatie, kunnen de conclusies en aanbevelingen van dit onderzoek gebruiken om het beleid voor de toekomstige verwerving van grote bovenwaterschepen verder te ontwikkelen.
Appendix A  List of Abbreviations

<table>
<thead>
<tr>
<th>A</th>
<th>Description</th>
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<tbody>
<tr>
<td>ADF</td>
<td>Air Defence and Command Frigate</td>
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<td>ADD</td>
<td>Audit Dienst Defensie</td>
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<td>AEGIS</td>
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<td>B</td>
<td>British Aerospace</td>
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<td>BAE</td>
<td>British Aerospace</td>
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<td>C</td>
<td>Centre for Automation and Management Systems</td>
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<td>CAMS</td>
<td>Commercial off the Shelf</td>
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<td>COTS</td>
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<td>CPB</td>
<td>Centraal Plan Bureau</td>
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<td>D</td>
<td>Direction des Constructions Navales</td>
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<td>DCN</td>
<td>Defensie Industrie Strategie</td>
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<td>DIS</td>
<td>Defence Materiel Organisation</td>
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<td>DMO</td>
<td>Defence Materiel Process</td>
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<td>DMP</td>
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<td>E</td>
<td>European Aeronautic Defence &amp; Space Company</td>
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<td>EADS</td>
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<td>EC</td>
<td>European Committee</td>
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<td>EDA</td>
<td>European Defence Agency</td>
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<td>EU</td>
<td>European Union</td>
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<td>G</td>
<td>Government Furnished Equipment</td>
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<td>GFE</td>
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<td>GFI</td>
<td>Government Furnished Information</td>
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<td>H</td>
<td>Howaldtswerke Deutsche Werft</td>
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<td>HDW</td>
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<td>Hr. Ms.</td>
<td>Hare Majesteits</td>
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<td>I</td>
<td>Incorporated Sensor and Communication Suite</td>
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<td>IGCS</td>
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<td>J</td>
<td>Joint logistic Support Ship</td>
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<td>JSS</td>
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<td>K</td>
<td>Koninklijke Schelde Groep</td>
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<td>KSG</td>
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<td>L</td>
<td>Landing Platform Dock</td>
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<td>LPD</td>
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<td>M</td>
<td>Maritiem Research Instituut Nederland</td>
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<tr>
<td>MARIN</td>
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<td>MC</td>
<td>Marginal Cost</td>
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<td>MoD</td>
<td>Ministry of Defence</td>
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<td></td>
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<tr>
<td>Abbreviation</td>
<td>Description</td>
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<tr>
<td>MPO</td>
<td>Materieel Projecten Overzicht</td>
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<tr>
<td>MR</td>
<td>Marginal Revenue</td>
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<tr>
<td>NIID</td>
<td>Nederlandse Inschakeling Industrie Defensie</td>
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<tr>
<td>NLR</td>
<td>National Aerospace Laboratory</td>
</tr>
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<td>P</td>
<td>price</td>
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<td>PPP</td>
<td>Public Private Partnership</td>
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<tr>
<td>PS</td>
<td>Patrol Ship</td>
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<tr>
<td>RNLN</td>
<td>Royal Netherlands Navy</td>
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<tr>
<td>SEWACO</td>
<td>Sensors Weapons Communication</td>
</tr>
<tr>
<td>TNO</td>
<td>Toegepast Natuurkundig Onderzoek</td>
</tr>
<tr>
<td>TFC</td>
<td>Trilateral Frigate Cooperation</td>
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<td>TUD</td>
<td>Delft University of Technology</td>
</tr>
</tbody>
</table>
Appendix B   Interview

Mijn naam is Marjon Blauw (LTZE2oc) en op dit moment ben ik werkzaam op het Koninklijk Instituut voor de Marine als divisiechef voor 2e-jaar adelborsten. In 2004 ben ik gestart met de 4-jarige deeltijdopleiding ‘Master of Science Engineering & Policy Analysis’ aan de TU Delft. Het schrijven van een scriptie (ofwel master thesis) is de afronding van deze opleiding.

Subject of master thesis:
Future Defence procurement of large specialized surface ships by the Defence Materiel Organisation. The focus is large naval surface ships, including the development, installation and integration of SEWACO-systems. Koninklijke Schelde Groep has a monopoly position, according to the theory this is a potential problem.

Problem statement:
Investments in Defence materiel and the relevant long-term projects are complex. The international relations, technology, regulations and the market are ongoing affected by change. To the procurement process are many actors involved, both within and outside Defence, such as members of government, several ministries, parliament, the media, national research institutions and industries, foreign governments and industries, and organisations for international cooperation (MoD, 2007). “Due to continuing changes in the (inter)national relations, technology, regulations, and market, the procurement of naval ships is liable to change”. This thesis statement leads to the following problem formulation:

“In which way should the future procurement of naval ships be formed, so that the Defence Materiel Organisation can realise the staff requirements within the available budget? What are the alternatives for procurement of large, specialized surface ships in the future and what are the strengths, weaknesses, opportunities and threats compared to the current procurement strategy within the Dutch Naval Shipbuilding cluster?”

This leads to the following research objective: Generate and assess alternative procurement opportunities for the DMO in order to continue the procurement of naval ships in the future.

Interviewvragen

Inleidende vragen:
1) Wat is uw functie?
2) Wat houdt deze functie in (in relatie tot verwerving)?
3) Heeft u hiervoor functies, die gerelateerd waren aan verwerving, vervuld? Zo ja, welke?
4) Bij welke verwervingsprojecten bent u betrokken (geweest)?
Kernvragen over toekomstige verwerving van marineschepen:

5) Wat zijn specifieke verschillen tussen verwerving van schepen en andere materieelsprojecten?

a) Is het naar uw mening mogelijk om schepen van de ‘plank’ te kopen?
   Zo nee, redenen …
   Zo ja, redenen …

6) Welke verwervingsstrategieën worden gebruikt voor verwerving van schepen?

7) Welke verwervingsstrategie(en) is (zijn) gebruikt bij het (de) project(en) waarbij u betrokken bent geweest?

8) Waarop was (waren) deze keuze(s) gebaseerd?

9) Heeft de verwervingsstrategie geleidt tot het gewenste product binnen de gestelde criteria/eisen?

10) Welke factoren zijn van invloed op de keuze van een verwervingsstrategie?
    - Sociaal;
    - Politiek;
    - Economisch;
    - Technisch.

Voor grote schepen is de Schelde werf de hoofdaannemer. Door de overname van de Koninklijke Schelde Groep door Damen zijn in ieder geval de verwerving van de ‘Patrol Ships’ en JSS bij de Schelde belegd.

11) Hoe ziet u de toekomstige verwerving van marineschepen?
    a) Is het KSG gegund om rol van hoofdaannemer te blijven vervullen?
    b) Of wordt er gezocht naar een andere werf, nationaal of internationaal? Wat zijn hiervan de voor- en nadelen?
    c) Welke factoren zijn hierop van invloed?
       - Sociaal;
       - Politiek;
       - Economisch;
       - Technisch.

De KM/DMO speelt een grote rol binnen het Nederlandse Marinebouwcluster. Zij vervult een specifieke en internationaal gezien vrij unieke rol binnen de Nederlandse Marinebouwcluster. Zij is zowel conceptueel en functioneel ontwerper, integrator en stimulator van innovatie.

12) Kan zij deze rol behouden in de toekomst? Welke factoren zijn hierop van invloed?
    - Sociaal;
    - Politiek;
    - Economisch;
    - Technisch.
13) Is het wenselijk dat zij deze rol behoudt? Welke factoren zijn hierop van invloed?

- Sociaal;
- Politiek;
- Economisch;
- Technisch.

Afsluitende vraag:

14) Wat is volgens u het belangrijkste ten aanzien van toekomstige verwerving van marineschepen?
### Appendix C  Results interviews

<table>
<thead>
<tr>
<th>Name</th>
<th>Function</th>
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</thead>
<tbody>
<tr>
<td>ir. J. Huisman</td>
<td>Resort Sea – head of department platform technology</td>
<td>13 July 2007</td>
</tr>
<tr>
<td>mr. J.H.N. van Ameijden</td>
<td>Managing Director Schelde Naval Shipbuilding</td>
<td>07 September 2007</td>
</tr>
<tr>
<td>mr. A.G.J. van de Geijn</td>
<td>Deputy Head Procurement</td>
<td>11 October 2007</td>
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<td>CDRE ir. A.J.J.M. Koningsbrugge</td>
<td>Deputy head resort Sea</td>
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<tr>
<td>ir. M.C.W. M.Janssen</td>
<td>Program Manager PS</td>
<td>15 November 2007</td>
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<tr>
<td>SBN W. Nagtegaal</td>
<td>Deputy Commander of the Royal Netherlands Navy</td>
<td>19 November 2007</td>
</tr>
<tr>
<td>GENMAJ mr. E.H. Evers</td>
<td>Director of Projects and Procurement</td>
<td>22 November 2007</td>
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<tr>
<td>Mevr. mr. R. Wijman</td>
<td>DMO-Policy</td>
<td>29 November 2007</td>
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<tr>
<td>ir. J. Huisman</td>
<td>Resort Sea – head of department platform technology</td>
<td>06 December 2007</td>
</tr>
</tbody>
</table>

### Vraag: Wat zijn specifieke verschillen tussen verwerving van schepen en andere materieelsprojecten?

♦ Schepen zijn ‘one of a kind’, met name van de grote bovenwaterschepen worden slechts enkele stuks geproduceerd. Het tweede verschil is dat een schip een combinatie is van verschillende systemen (platform met deelsystemen), SEWACO, voortstuwing, drinkwaterinstallaties etc. Zowel voor veilig varen, vechten en leven aan boord zijn verschillende soorten systemen benodigd, die aan boord geplaatst en geïntegreerd dienen te worden. Bij bijvoorbeeld een tank of een gevechtsvliegtuig heb je dit in mindere mate. De aanschaf van een schip kan je vergelijken met het kopen van een huis en tank met het kopen van een auto. Schepen zijn complex en hebben kleine series.


♦ KSG = hoofdaannemer (een contract). Per project nog 25-125 contracten verwerving (deel)systemen (Government Furnished Equipment). Deze (deel)systemen worden door tussenkomst van DMO geleverd aan Schelde. Voor LCF bijvoorbeeld 125 contracten.
Voordelen:

- Goedkoper (anders hoofdaannemer met eigen onderaannemers voor (deel)systemen, geld aan de strijdstok ongeveer 10%);
- Risico voor de (deel)systemen ligt bij DMO, anders bij hoofdaannemer (dit brengt extra kosten met zich mee);
- Innovatief product, doordat DMO zelf contract aangaat met de leveranciers van de deelsystemen. Bij het aangaan met de samenwerking met de werf is de ontwikkeling van de deelsystemen nog niet gereed zijn. DMO draagt zelf het technische risico dat systemen uiteindelijk gaan voldoen aan de eisen en tijdig gereed zijn (prijs-kwaliteit). Hierdoor zeer hoogwaardig, technisch innovatief product;
- Werf bezit beperkte kennis van SEWACO systemen, DMO bezit deze kennis wel;
- DMO heeft hierdoor grote invloed op ontwerp en daardoor voldoet het volledig aan de operationele eisen.

Aan het project management wordt hoge eisen gesteld, zowel voor onderhandeling maar ook technische kennis.

♦ De betrokkenheid van de defensieorganisatie is veel groter bij schepen dan bij ander type materieelprojecten. Schepen zijn maatwerk door o.a. de complexiteit en ze worden niet in serie geproduceerd. Deze complexiteit wordt veroorzaakt door dat op een relatief klein platform een verscheidenheid aan systemen moeten worden geplaatst (in vergelijking met bv. F16). Daarbij wil Nederland met 'reduced' bemanning kunnen varen, dit stelt ook weer andere eisen. Nederland stelt hoge eisen aan innovatief vermogen van de systemen. Een compromis is lastig te bewerkstelligen, want zowel oorlog voeren, veiligheid en varen (grote diversiteit aan functies). Oorlogschip is zeer complex. Maatwerk, innovatief en complex.

♦ Je koopt geen schip uit een serie, maar het schip wordt ontworpen naar de specifieke operationele en onderhoudseisen van de klant, die zodanig grote invloed op het ontwerp wil uitoefenen dat hij het ontwerp veelal zelf ter hand neemt. Dan van onderdeel tot onderdeel beslissingen wil nemen.

Vraag: Is het naar uw mening mogelijk om schepen van de ‘plank’ te kopen?

♦ Nee, schepen liggen niet gereed in een magazijn om verkocht te worden. Het is wel mogelijk om een schip te kopen dat voor een ander is ontwikkeld en je dus aan te sluiten bij een voorgaande productie van bijvoorbeeld een ander land. Hierbij lever je als klant wel in op de gewenste stafeisen aan het product.

♦ Schepen worden nooit geproduceerd op voorraad, dus daadwerkelijk van de plank kopen is niet mogelijk. Hooguit wordt het casco van het schip op voorraad geproduceerd, maar het uiteindelijke product wordt altijd afgestemd op de wensen van de klant. Hierbij geldt dat de ontwerpkosten relatief laag zijn, waarbij een kleine aanpassing het volledige bedrag vereist.

♦ Resulteert in een compromis, waar op alle fronten toegegeven dient te worden en wellicht niet aan gestelde eisen wordt voldaan. Deze speelruimten nemen steeds verder af. Met de huidige schaarse middelen dient het optimale en maximale product te worden voorzien. Schepen van de plank kopen wordt daarom steeds minder opportuun.

♦ Ja, maar dit heeft wel consequenties, met name minder invloed op ontwerp en minder innovatie (deel)systemen doordat het niet meer mogelijk is om verder in het verwervingsproces. Het product dat volledig aan de eisen voldoet is doorgaans niet op de markt te koop.

♦ Ja, maar hierbij gelden wel beperkingen, er kan dan niet meer worden voldaan aan alle gewenste eisen (compromis). In theorie is het mogelijk om aan te sluiten bij een serieproductie van bijvoorbeeld de Amerikanen. Ieder schip wordt toegesneden op de bedrijfsvoering van een land. Nederland vaart met relatief weinig bemanning aan boord in vergelijking met andere landen en stelt hoge eisen aan de accommodatie van alle bemanningsleden.
Nee, omdat bij het type schepen voor de KM zodanig specifieke eisen gesteld worden dat deze nooit gerealiseerd kunnen worden door een bestaande serie. Er bestaan in de scheepsbouw alleen schepen van de plank als het gaat om sleepboten en soortgelijke eenvoudige schepen.

Vraag: Welke verwervingsstrategieën worden gebruikt voor verwerving van schepen?

♦ DMO ontwikkelt een bestek, aanvragen van offerte, onderhandelen. De KM werkt voor de grote bovenwaterschepen met een ‘preferred supplier’, de KSG.

♦ (Grote) bovenwaterschepen worden aanbesteed bij KSG (HOV, LCF, M), deze producten vallen onder art 296 van EU-verdrag. Aanbesteding op basis van open begroting, raming ADD en ‘smart buyer’ (de gehele offerte wordt doorgerekend).

♦ Grote schepen bij SMB (monopolist), intern voldoende controle middelen teneinde negatieve effecten van de monopolist te ondervangen. Kleine schepen (e.g. LCVP en LCU) in concurrentie


♦ Voor grote, complexe (bovenwater)schepen: aanbesteding zonder concurrentie (monopolist), maar
  - Prijsopbouw wordt gecentraliseerd door accountantsdienst;
  - DMO heeft eigen kennis & ervaring, zodat goede beoordeling kan worden gemaakt;
  - Eventueel “second opinion” door ingenieursbureau.

Kleinere schepen worden wel in concurrentie aanbesteed.

♦ Op basis van de specificaties wordt door middel van een open begroting onderhandeld totdat het gewenste product gerealiseerd kan worden tegen de prijs die overeenkomt met het gestelde budget. Uitgangspunt is de financiële transparantie van de bouwmeester en de belangrijkste onderleveranciers. Men spreekt ook van een marinebouwcluster: opdrachtgever (“leading firm”), industrie en kennisinstituten die de productie van een complex marineschip mogelijk maken.

Vraag: Welke verwervingsstrategie(en) is (zijn) gebruikt bij het (de) project(en) waarbij u betrokken bent geweest?

♦ Zie antwoord vraag 6.

♦ PS en JSS aanbesteden bij KSG, daarna richtlijnen EDA volgen. KSG moet investeren in zijn concurrentiepositie.

♦ Zonder concurrentie bij monopolist

♦ Voor de grote, complexe schepen; aanbesteding zonder concurrentie.

Vraag: Waarop was (waren) deze keuze(s) gebaseerd?

♦ Het is een politieke beslissing geweest om KSG in beginsel (mits goed product en acceptabele prijs) als vaste bouwmeester in te schakelen voor de Patrouilleschepen en straks voor de JSS.

♦ Politieke beslissing om geen concurrentie te stellen gebaseerd op soevereiniteit (historisch) en nationaal economische voordelen door aan te besteden bij de Nederlandse werf.

♦ Historisch gegroeid en politieke besluitvorming (prioriteitennota 1993).
   Na WO II
   Van Speijk-klasse werf Amsterdam en werf Vlissingen Schelde (Schelde beter prijs-kwaliteit verhouding).
   GW-klasse Schelde werf Vlissingen (defensie financierd loods).
   S-, M- en LCF zijn eveneens bij de Schelde gebouwd.
   Defensie financierd overkapping infrastructuur.
   Keuze voor Schelde: Economische Zaken wilde werkgelegenheid in de regio Vlissingen stimuleren,
daarbij Schelde betere prijs-kwaliteit verhouding en defensie kon niet meerdere werven ondersteunen door financiering en het gunnen van opdrachten.

♦ Op de monopoliepositie van de Schelde en de eis het schip in een nationale setting te realiseren.

Vraag: Heeft de verwervingstrategie geleid tot het gewenste product binnen de gestelde criteria/eisen?

♦ Ja, tegen een eerlijke prijs het gewenste product. Prima prijs-kwaliteit verhouding. Noodzakelijke betrokkenheid van KM in verband met de specifieke karakteristieken van het product. De offerte van KSG wordt beoordeeld door zowel de DMO als de Audit Dienst Defensie (ADD). Daarbij veel kennis en ervaring aanwezig bij eigen personeel (‘smart buyer’).

♦ Ja, absoluut, de producten voldoen aan de operationele eisen en binnen budget.

♦ Ja, ook door alle interne controle instanties (ADD, eigen engineering). Zonder deze instanties was de kans zeer reëel geweest dat er een suboptimaal product met een hogere prijs was verkregen.

♦ Ja, zonder uitzonderingen. Schelde is monopolist (gemaakt), maar wederzijdse afhankelijkheid (vertrouwen, wederzijds respect, ervaring, reputatie). Schelde wil zich concurrerend op de wereldmarkt zetten, hierdoor heeft zij de KM als launching customer nodig om haar product te promoten. Daarbij mist de Schelde de benodigde militaire technische kennis met name van SEWACO-systemen. Systeem van ‘open boek’ boekhouding. DMO heeft veel technische specialisten in dienst (en accountants) die nauwgezet de contracten doorlopen en ter discussie stellen (marktonderzoek) en een zo scherp mogelijk prijs-kwaliteit verhouding voor het product willen behalen. Deze kennis is ook benodigd als je een schip van de plank wilt kopen, omdat je zonder de technische kennis een offerte niet goed kan beoordelen (dan weet je niet wat je koopt).

♦ Ja, maar er moeten wel compromissen worden gesloten (bijvoorbeeld LPD-1 voortstuwingsinstallatie genereert niet die snelheid die in eerste instantie in de eisen was gesteld).

♦ Ja, met een klein aantal tekortkomingen ten gevolge van een te klein budget.

Vraag: Welke factoren zijn van invloed op de keuze van een verwervingsstrategie?

- Sociaal;
- Politiek;
- Economisch;
- Technisch.

♦ Voornamelijk politiek.

♦ Sociaal (4); Politiek (3); Economisch (1); Technisch (2).

♦ Politiek (EDA); Economisch (werkgelegenheid en economie nationaal ondersteunen) (afnemend); Technisch (operationele eisen schip)

♦ Sociaal (4); Politiek (3); Economisch (1); Technisch (2).

♦ Sociaal (werkgelegenheid), nu niet meer van belang. Economisch: veel minder duur dan de schepen in omringende landen 10-20 %. Technisch: door sterke synergie tussen de bouwmeester en opdrachtgever (en kennisinstituten) wordt een product verkregen dat in vrijwel alle aspecten aan de eisen en verwachtingen voldoet.

Voor grote schepen is de Schelde werf de hoofdaannemer. Door de overname van de Koninklijke Schelde Groep door Damen zijn in ieder geval de verwerving van de ‘patrol vessels’ en JJS bij de Schelde belegd.

Vraag: Hoe ziet u de toekomstige verwerving van marineschepen?

♦ De Nederlandse behoefte aan marineschepen is te klein om een werf en de bijbehorende defensie industrie in stand te houden. Het is een gezamenlijke uitdaging (KM en industrie) om hiervoor een oplossing te zoeken. De industrie kan schepen voor de civiele markt bouwen en voor Nederland ontworpen marineschepen produceren voor een geïnteresseerde buitenlandse marine. De KM is niet noodzakelijkerwijs gebonden aan Nederland. Tot nu toe heeft de Nederlandse industrie altijd goede kwaliteit afgeleverd (en verondersteld tegen een eerlijke prijs). Er is voldoende vergelijkingsmateriaal in het buitenland om een vergelijking te treffen. De oplossing moet een win-win situatie opleveren voor zowel de KM als industrie. Zijn de werven te afhankelijk van de vraag van Defensie of kunnen zij zonder Defensie zelf hun broek ophouden?

♦ EDA richtlijnen dus Europees aanbesteden of internationale samenwerkingsverbanden opstarten. Er heerst terughoudendheid niemand wil de eerste zijn bij Europees aanbesteden, want bij open concurrentie geef je alles uit handen. Bij internationale samenwerking behoudt je een deel van je invloed. Toekomstige verwerving is afhankelijk van de keus:

- in open concurrentie aanbesteden;
- internationale samenwerking.

Eventuele optie is een lease contract.

De belangen van de partijen blijven hetzelfde, maar de omgeving wordt anders. Belangen beschrijven.

KM: specificaties + functioneel ontwerp -> plaatje, schip is maatwerk

Offerte ½ a 1 miljoen; bedrijven lopen groot risico.

♦ PV en JSS aanbesteden bij Damen/Schelde, dus voorlopig geen urgente verandering op stapel.

Drie mogelijkheden:

- Van de plank (de vraag bestaat of er al daadwerkelijk een schip op de markt is, die voldoet aan de behoefte van Defensie)
- Internationaal aanbesteden (mn nadelen, minder invloed, minder innovatief, lastig PM).
- Internationale samenwerking (valt dit binnen de EDA? Zijn er partners te vinden die dezelfde operationele behoefte hebben)?

♦ Als de door de EDA opgestelde en door de landen ondertekende “code of conduct” gevolgd wordt, dan zullen ook de marineschepen op de Europese markt gebracht gaan worden en wordt de relatie met KSG doorbroken en wordt zij slechts een der aanbieders.
Vraag: Is het KSG gegund om rol van hoofdaannemer te blijven vervullen?

♦ Het is wellicht niet mogelijk binnen het regime van de EU.

♦ Dat is nog maar de vraag, gelet op het verplicht Europees aan besteden. Indien scheepsbouwsector op termijn onverwacht onder druk komt zal regering waarschijnlijk bijspringen om redenen waarom ze in het verleden altijd zijn bijgesprongen. Indien SMB er in slaagt zich breder te ontwikkelen, een sterk product neer te zetten met bijbehorende order portefeuille vermindert zij de afhankelijkheid van KM orders. Derhalve zijn er scenario’s denkbaar waarin SMB geen voldoende capaciteit voor KM heeft, niet aantrekkelijk voor KM meer is (financieel, product) waardoor KM naar andere werf gedreven wordt. Met zo makkelijk kan de balans de andere kant op gaan, waardoor KSG een aantrekkelijke Bouwmeester blijft. Op de korte tot medium lange termijn is het daarom verwijtbaar dat beide partijen de onderlinge afhankelijkheid vergroten.

♦ Nee, niet volgens de EDA, inspanningsverplichting internationaal aanbesteden.

♦ Politieke besluitvorming (EDA) bepaalt dat Defensie Europees gaat aan besteden.

De vraag is natuurlijk of de Europese markt eerlijk en transparant is. En of de Europese industrie de mogelijkheden heeft om in concurrentie offertes uit te brengen die voldoen aan de eisen gesteld door defensie. De industrie zal het gehele risico moeten dragen voor de ontwikkeling van de systemen. In de huidige situatie draagt defensie het risico voor de ontwikkeling en systeemintegratie.

Koninklijke Schelde Groep (is onderdeel van Damen) zal zich wellicht meer gaan internationaliseren. In de civiele scheepsbouw wordt een goed product op de markt gezet en Damen/KSG kan zich hierdoor sterk in de markt zetten.

KSG heeft aan Indonesië korvetten verkocht. Defensie heeft hierbij ondersteund door tijdens de proeftocht de commandant te leveren. Er wordt veel kennis & personeel uitgewisseld (wederzijdse afhankelijkheid).

Wellicht zijn er vormen van Europese samenwerking mogelijkheid. Frank & Duitsland zijn hiermee bezig. Voor het LCF hebben Spanje, Duitsland en Nederland samengewerkt.

♦ Nee, maar op de voorwaarde dat ook andere landen dit beleid gaan volgen en dat is nog niet geheel waarschijnlijk. Het lijkt onwaarschijnlijk dat Frankrijk of Duitsland schepen in bijvoorbeeld Nederland laten bouwen.

Vraag: Of wordt er gezocht naar een andere werf, nationaal of internationaal? Wat zijn hiervan de voor- en nadelen?

♦ Na de bouw van de PS en JSS heeft de KM de vrije keuze voor een bouwmeester. Indien de Schelde in aanmerking komt zal zij zich moeten herbevestigen als ‘preferred supplier’. Per project wordt bekeken of de Schelde in aanmerking komt. Dit alles binnen de Europese regelgeving/EDA. Is het een eenvoudig schip, dan is het ook eenvoudiger om de markt op te gaan. Voorbeeld LCVP. Het is een risico voor beide partijen, dat KSG te afhankelijk wordt van de defensie-orders.


♦ Ja, tot nu toe alleen nationaal.
Vraag: Welke factoren zijn hierop van invloed?
- Sociaal;
- Politiek;
- Economisch;
- Technisch.

♦ De politiek.

♦ Sociaal (4); Politiek (1); Economisch (2); Technisch (3).

♦ Zie antwoord vraag 10.

♦ Sociaal (3); Politiek (1); Economisch (2); Technisch (4).

♦ Economisch: concurrentie geeft lagere prijzen en regulering van de markt.

De KM/DMO speelt een grote rol binnen het Nederlandse Marinebouwcluster. Zij vervult een specifieke en internationaal gezien vrij unieke rol binnen de Nederlandse Marinebouwcluster. Zij is zowel conceptueel en functioneel ontwerper, integrator en stimulator van innovatie.

Vraag: Kan zij deze rol behouden in de toekomst? Welke factoren zijn hierop van invloed?
- Sociaal;
- Politiek;
- Economisch;
- Technisch.

♦ Is dit wel een unieke rol voor Nederland of spelen Defensieorganisaties in het buitenland ook een dusdanige rol in hun nationale defensiemarkt? De vraag is of er voldoende werk wordt gegenereerd om het cluster in stand te houden. De Nederlandse marine is op dit moment hoogwaardig en betaalbaar maar is qua omvang geslonken vergeleken met enkele jaren geleden. "Quantity is a quality on its own" - "Hoeveelheid heeft een geheel eigen kwaliteit." Joseph Stalin

♦ Ja, want niemand kan de KM vertellen hoe haar bedrijfsvoering eruit moet zijn. De bedrijfsvoering heeft grote invloed op het ontwerp.

KM is integrator van systemen, KM loopt het risico.

Maar voor de prijs van 4 koopt Duitsland 3 fregatten van hetzelfde type.

Risico's zijn te groot, zeer innovatief, ontwikkelingskosten zijn hoog, defensiestaf stelt hoge eisen.

Taken DMO: Conceptueel & functioneel ontwerp, integrator (uitbesteden tegen hoge kosten), innoveren (de markt doet het niet, veel onderzoek en ontwikkeling technologie).

♦ Sociaal (3); Politiek (1); Economisch (2); Technisch (4).

Huidige constructie geeft best value for the buck. Politiek is veruit de overheersende factor. De rol van SMB is in het huidige (economische) klimaat veilig gesteld. De rol van Defensie (DMO) komt met de immer krimpende krijgsmacht steeds verder onder druk. Op zoek naar reducties zal de gerealiseerde ambitie van eigen ontwerpcapaciteit steeds verder ter discussie worden gesteld. De gevolgen zijn op korte termijn nauwelijks merkbaar en daarom voor een politicus aantrekkelijk.

Indien meer in concurrentie wordt aanbesteedt wordt dit lastiger. Indien volledig in concurrentie wordt aanbesteed moet van te voren het eisenpakket 100% op papier staan. Dit leidt tot minder innovatief product, minder invloed, hogere kosten?De vraag is of de politiek bewust is van deze kennis.
Politiek: de internationale politiek, het streven naar een vrije Europese markt. Technisch: een belangrijk deel van de technische risico’s wordt gedragen door DMO, dit leidt tot durf bij de industrie om innovaties door te voeren en tot lagere prijzen omdat de risico’s niet worden doorberekend.

Vraag: Is het wenselijk dat zij deze rol behoudt? Welke factoren zijn hierop van invloed?

- Sociaal;
- Politiek;
- Economisch;
- Technisch.

Een zekere hoeveelheid kennis bij DMO is benodigd, zowel bij het nationaal als internationaal aanbesteden. Schepen zijn een eenmalig product met specifieke karakteristieken. Ze worden niet in serie geproduceerd zoals tanks of vliegtuigen. De (dis)continuïteit van orders heeft een grote invloed op behoud van kennis.

Het is uitermate wenselijk dat DMO/KM de huidige rol behoudt vanwege haar unieke plaats ((gebruiker)kennis en ervaring) in de driehoek industrie-laboratoria (onderzoeksinstituten)-defensie: haal je er een uit dan stort het geheel in elkaar (onderlinge afhankelijkheid). Teneinde de dreiging onder 12 te ondervangen dient DMO/KM haar basis te verbreden. Door verdere internationale samenwerking (projecten internationaal beleggen) moet dat mogelijk zijn.

EDA is politieke beslissing. Technische kennis moet sowieso behouden blijven omdat in welke vorm dan ook wordt aanbesteed contracten toch moeten worden nagekeken door technisch specialisten.

De marine bezit veel specifieke maritieme en militaire kennis door de grote verwevenheid bij nieuwbouw. Deze kennis moeten we ook in de toekomst behouden, omdat bij defecten de onderhoudsorganisatie deze kennis nodig heeft voor reparatie en ondersteuning.

TNO (MARIN) heeft ook veel kennis (driehoeksverhouding Defensie, TNO, MARIN (onderzoeksinstituten) en industrie). TNO en MARIN hebben dieptekennis, en Defensie breedte kennis. Geruisloosheid van de rompen, radarcross sections LCF.

Dit is een verschil met de land- en luchtmacht. Indien er bv. een scheur ontstaat in de vleugel van een F16 is deze kennis aanwezig bij Lockheed. De kennis zit met name bij de industrie, door de grotere hoeveelheid van dit materieel.


Vraag: Wat is volgens u het belangrijkste ten aanzien van toekomstige verwerving van marineschepen?

Hoeveel omzet/body heb je op z’n minst nodig om een realistische werklast te hebben voor een eigen ontwerp capaciteit bij de DMO-organisatie? Het was niet mogelijk om de PS en JSS gelijktijdig te verwerven in verband met onder andere interne capaciteiten. Er wordt nu een type schip tegelijkertijd geproduceerd. Is er voldoende continuïteit bij een krimpende marinenvloot (defensie bezuinigt) om het cluster volledig in stand te houden. Nederlands defensiebudget is te klein voor instandhouding defensie industrie. Er is een Marine van voldoende ‘body’ nodig om denkkracht in stand te houden. Indien dit niveau zakt dan ‘second best’ oplossing.

Onderzoeken wat de mogelijkheden zijn om binnen EDA-regelgeving schepen te verwerven. Zo vroeg mogelijk samenwerking opzoeken. Behoeftes afstemmen in tijd en eisen.

Hoe ziet de toekomst eruit?
In concurrentie:
- internationale samenwerking (wel partner met dezelfde behoeften nodig);
- integraal aanbesteden voor eenvoudige (klein danwel groot) schepen.

Voor technische complexe fregatten andere oplossing.

♦ Ongeacht hoe de schepen worden ontworpen of verworven in de toekomst,
  - de schepen moeten veiliger,
  - goede (betere) prijs-kwaliteitverhouding en
  - varen met kleine bemanning (beperken van de levensduurkosten).

Zo min mogelijk mensen in gevaarlijke situaties. Minder mensen, veiliger product (incassatievermogen schepen omhoog).

Daarbij een innovatief product (schip heeft lange doorlooptijden, maar de wereld en veiligheidssituatie verandert snel).

♦ Monopoliepositie Koninklijke Schelde Groep.

De monopoliepositie van de Schelde moet wel genuanceerd worden. Na de aanbesteding van de PS en JSS worden de schepen niet automatisch aanbesteed bij de Schelde, maar zal er ook gekeken worden naar alternatieve werfen (bijvoorbeeld Merwerde werf).

1. Indien de Schelde in de toekomst in aanmerking wil komen voor de order zal zij haar concurrentiepositie stevig moeten neerzetten. En een kwalitatief goed product tegen acceptabele prijzen binnen gestelde termijn moeten opleveren. Hierdoor wordt de monopoliepositie van de Schelde ondermijnd; zij kan haar monopolie niet voor de volledige 100% benutten. Aangezien zij in de toekomst de orders van de KM binnen wil halen, kan zij de KM niet volledig “uitknijpen”.

2. De offertes uitgebracht door de Schelde worden doorberekend door de ADD. De offertes worden beoordeeld op prijs, maar ook op kwaliteit. Door eigen kennis en ervaring binnen de KM kan hier een gekwalificeerde uitspraak worden gedaan (KM is “smart buyer”).

3. De KM is “launching customer” en dit heeft veel waarde voor de Schelde, voor de nationale en internationale concurrentiepositie (export kansen).

4. De Schelde heeft geen unieke positie. De monopoliepositie is gecreëerd door politieke keuze, maar is geen natuurlijk monopolie. Dit betekent dat dit monopolie in tegenstelling tot een natuurlijk monopolie makkelijker opgeheven kan worden.

5. De Schelde is de hoofdleverancier voor het platform, maar huurt zelf weer veel onderleveranciers in. Deze onderleveranciers hebben geen monopolie, maar er bestaat zelfs sterke competitie tussen deze onderleveranciers. Dit heeft een gunstige invloed op de totale prijs voor het platform.

Er bestaat wederzijdse afhankelijkheid tussen de KM en de Schelde.

Binnen richtlijnen EDA Europees aanbesteden.

Het principe van de EDA is goed.

Maar Nederland moet er wel voor zorgen dat ze niet het braafste jongetje van de klas wordt. Er moet wel uniformiteit bestaan tussen de Europese landen. Europees aanbesteden leidt tot een lagere kostprijs, maar de kans bestaat dan er geen eerlijke concurrentie ontstaat, doordat niet alle landen zich voor 100% confirmeren aan de EDA (bijvoorbeeld wel kleinere projecten aanbesteden, maar geen grote complexe projecten zoals fregatten). De kans bestaat dat de kleinere landen ondergesneeuwd worden door de landen met een grote maritieme defensie industri. Het vertrouwen
tussen de deelnemende landen moet groeien en alle deelnemende landen moeten voordeel kunnen halen uit aanbesteding. Als een bepaald land z’n eigen industrie kan versterken en ontwikkelende landen en andere deelnemende landen met lege handen komen te staan, wordt de wil om Europees aan te besteden steeds minder (er moeten win-win situaties gecreëerd worden).

“Some are more equal than others”.

Nederland wil de werkgelegenheid in eigen land zeker stellen en de kennisbasis in Nederland behouden. Dit behoeft niet op alle gebieden van maritieme industrie te zijn, maar NL wil op enkele punten zich kunnen ontwikkelen en sterk in de markt kunnen zetten (bijvoorbeeld of platform of radar).

Nederland heeft een hoogwaardige maritieme industrie. De Nederlandse industrie haalt een aantal orders binnen, die Europees gewild zijn.

De grootste zorg is het handhaven van de werkgelegenheid die nu wordt gecreëerd door de maritieme industrie. Indien er niet voldoende orders binnen komen kan de kennis basis en jarenlange ervaring verloren gaan en het is onmogelijk om dit terug te halen (vergelijking onderzeeboten).

**Internationale samenwerking:**

Nederland zal blijven zoeken naar mogelijkheden voor internationale samenwerking. Op die gebieden, waar gemeenschappelijke belangen kunnen worden geïdentificeerd en waar de tijdspaden voor deze belangen synchroon lopen kan, samenwerking plaatsvinden (en vindt deze ook al plaats).

Het is niet realistisch dat Nederland complex materieel volledig nationaal ontwikkeld en aanbesteed. Veel voordelen kunnen worden behaald, lagere kostprijs, synergie etc. Het voordeel van samenwerken ten opzichte van Europees aanbesteden is dat de invloed bij samenwerking groter is. Bij een samenwerking zal er altijd een win-win situatie zijn en wordt er een samenwerking aangegaan indien er voldoende vertrouwen is.

**Toekomst:**

De eenheden moeten een toekomst bestendig product zijn. Dit houdt in dat er wordt voldaan aan verschillende eisen.

Flexibel, modulair, levensduur.

Opmerking: zijn er al uitspraken gedaan door andere Europese landen dat ze bijvoorbeeld zwaar militair materieel niet binnen EDA willen aanbesteden.