

Design Concept of Strengthen and Ability Development at Naval Operation/ Information System to Supporting Archipelagic Sea Defence Strategy

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Abstract

Indonesia is archipelago state with shoreline that long and strategic geographical position. Indonesian Navy (TNI AL) is the main component for Maritime Security and Defence at sea. To perform that task, TNI AL formulates strategic product, namely is Archipelagic Sea Defence Strategy (Strategi Pertahanan Laut Nusantara, SPLN). Today's, SPLN has weakness to saturates various transformation warfare, nowadays and futures. SPLN can't anticipate form of modern, asymmetric, and information warfare. Meanwhile, mastery and ability for maritime Information and Technology system becomes absolut, critical and strategic for TNI AL. This paper will be focusing on collation of system design and TNI AL capabilities for IT/IS which it can be supporting and conformable with SPLN. This paper makes collation of system design and capabilities for Naval IT/IS with Henderson, Venkartraman approaching. And then, combination with Wilcocks and Feeny approaching to make core capabilities of Naval IS/IT. Based of this approach, the result is collation of Naval IS/IT design system with ranges target is strategic, architecture, application, and infrastructure that is regarded from IS/IT technology developing and communication. The collation consist of nine core capabilities and main capabilities that forms Naval IS/IT. Result of alignment between system design of IS/IT, core capability and main capability of Naval IS/IT be expected able to build strengthen and ability Naval IS/IT to supporting enforcement of Archipelagic Sea Defence Strategy (SPLN).

Keyword : Archipelagic Sea Defence Strategy (SPLN), IS/IT Capability, Indonesian Naval IS/IT.

INTRODUCTION

Indonesia is the largest archipelagic country in the world and geo-strategically located at the crossroads of two oceans (the Indian and the Pacific) and two continents (Asia and Australia) (1) comprising around 18.306 islands, which 8.844 islands have been named according to government estimates, with 922 of those permanently inhabited and the rest, being small islands along the coastline that have not yet been recorded formally (2). Indonesia has already called the

maritime countries because it has a sea area of 5.8 Million km² which consist of 0.8 million km² sea territorial, 2.3 million km² of sea Archipelago and 2.7 million km² of exclusive economic zone (3). Archipelagic state are states that are composed of groups of islands forming a state as a single unit, with the islands and the waters within the baselines as internal waters (4).

To create a sense of security in Indonesia's archipelagic sea lanes have implemented security measures undertaken by the Navy (5). Navy (TNI AL) as a major component of national defense in the sea, which has one of the main tasks is to maintain security in the sea area of Indonesia's national jurisdiction (5), (6). Today's, TNI AL has strategic product namely is Archipelagic Sea Defence Strategy (Strategi Pertahanan Laut Nusantara, SPLN). TNI AL has perceived the strategic funnels as potential future flashpoints, considering its proximity to neighbouring countries, abundant marine resources, and unresolved maritime boundary disputes (7). This Strategy is expected as moving based for TNI AL to sea defence and security in peace and warfare condition.

Substantially, SPLN is formulated into basic substances in proportional, well-balanced, and well-coordinated in order to creating a strong and effective sea defence power with a high deterrent effect capabilities (8). The main concepts of SPLN is layered defense, battlefield scrape, universe defense and total defense. SPLN strategic targets is deterrence strategy, layer defense strategy and sea control strategy.

Nowadays, SPLN has weakness to saturates various transformation warfare, today's and futures. SPLN can't anticipate form of modern, asymmetric, and information warfare. Meanwhile, mastery and ability for maritime Information and Technology System (IS/IT) becomes absolut critical and strategic for TNI AL.

Information system is an arrangement of groups, data, processes and technology that act together to accumulate, process, store and provide information output needed to enhance and speed up the process of decision making (9). Today, most organizations in all sectors of industry, commerce and government are fundamentally dependent on their information systems (IS) and would quickly cease to function should the technology that underpins their activities

ever come to a halt (10). Organizations make large investments in Information Systems (IS) expecting positive impacts to the organization (11).

Information is a fundamental resource which is essential for survival in today's competitive and wired world (12). Technology is progressively effacing the two previous environment: nature and society (13). Information technology is used as a strategic tool for companies to enhance their competitive advantages at a time when uncertainty is increasing (14). Information technology is any form of computer-based information system, including mainframe as well as microcomputer applications (15). Information Technology (IT) has grown and evolved over the last 50 years; think and plan a project, business or other initiative without the usage of this technology (16).

This paper makes concept of system design and Naval Information System and Technology (IS/IT) capability which it can be supporting and conformable with SPLN. In concept of system design and Naval Information System and Technology (IS/T) capability, utilized Henderson-Venkartraman approaching, whereas the system and strategy must be conformable with business or organization. Then, combination with Wilcocks and Fenny approaching to form naval IS/IT capability.

The inscriptive benefit from this paper is giving thinking and contribution to Indonesian Navy (TNI AL) in determine policy for IS/T system design. It gives academic contribution in development theories which concerning development of strenght and abilty of naval IS/IT. It gives contribution in formulation design and research model of State Defence Information System at sea.

This paper has many literatures to support it, such as literature about sea defense and warfare system, Politics, security and defence in Indonesia: Interactions and interdependencies (1). Indonesia and the Law of the Sea: Beyond the Archipelagic Outlook (17). The enduring strategic trinity : Explaining Indonesia's Geopolitical Architecture (18). Establishing the Location of Naval Base Using Fuzzy MCDM and Covering Technique Methods : A Case Study (19). Moving beyond Ambitions ? Indonesia's Military Modernisation (20). Maritime Strategy and Defence of the Archipelagic Inner Arc (21).

Paper literature explains about Information System likes Information System Security Threats Classifications (22). Utilizing a Learning Loop Framework in IS Security (23). Security Metric for Enterprise Information System (24). Information System Security Policies : A Survey in Portuguese Public Administration (25). Information Systems Threats and Vulnerabilities (26). Information Systems Security Measures and Countermeasures : Protecting Organizational Assets from Malicious Attack (27). A Study of Risk Management of an Information System by Assessing

Threat, Vulnerability and Countermeasure (28). Main human factors affecting information system security (29).

Paper literature about Information technology such as IT Security Review : Privacy, Protection, Access Control, Assurance and System Security (30). IS/IT Capability and Strategic Information System Planning (SISP) Success (31). Strategic alignment: Leveraging Information Technology for Transforming Organization (32). The Relationship Between IT Flexibility, IT-Business Strategic Alignment and IT Capability (33). A framework for integrating IT governance and business/IT alignment principles (34). Strategic IT-Business Alignment as Managers Explorative and Exploitative Strategies (35). An Integrative Model Linking IT-Business Strategic Alignment and Firm Performance: Aligning IT with Business Model to Perform Organizational Capabilities in Achieving Business Performance (36).

This paper is organized as follows. Section 2 reviews the basic concept of Information System and Technology. Section 3 gives result and analysis of this paper. Finally, in section 4 describes paper conclusion.

MATERIAL & METHODOLOGY

IT Governance :

Governance is the choice organizations make when allocating decision rights for OT activities such as selecting and prioritizing projects, assuming ownership of technology, and controlling budgets and IT investments (37).

IT governance is an integral part of enterprise governance and consists of the leadership and organizational structures and processes that ensure that the organization's IT sustains and extends the and processes that ensure that the organization's IT sustains and extends the organization's strategies and objectives (38). IT Governance has five domains (strategic alignment, value delivery, resource management, risk management, and performance measurement), which are accompanied by three IT principles : decision rights, organisation, and roles and accountability (39).

IT Governance focuses on the following five areas (40) :

- a. Strategic alignment.
Concentrates on the topic of alignment between IT and business.
- b. Value delivery.
Encompasses how IT adds value to the business and how the expenses and the return on investment are optimized.
- c. Risk management.
Assures a continous operation of IT and deals with

operational IT risks, mostly technological risks.

d. Performance measurement.

Monitors and controls the performance of IT toward the business goals.

e. Capability management.

Manages all resources including people, data and technology.

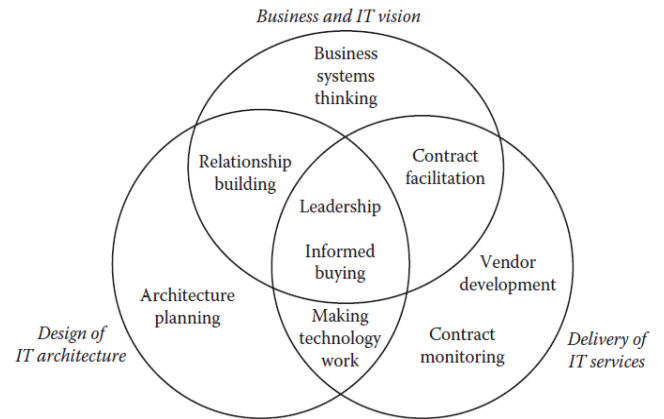


Figure 1: Nine Core Capabilities of IS/IT (45)

IT Capability:

IT Capabilities as the ability to control IT-related costs, deliver systems when needed, and affect business objectives through IT implementations (41). IT capability is defined as a type of ability organizations have that can support the activities and work processes in the organization by arranging and bringing together other resources that are important (42). According to Bharadwaj (43), IT resources can be split into three groups, which are IT intangible assets, IT infrastructure and IT human resources.

IT Strategic Alignment:

The concept of strategic alignment is crucial to achieve sustainable competitive advantages for many business or industrial organization (44). Strategic alignment can successfully speed up acquisition and strategic placement of IT that is in harmony with the competitive needs of the establishment as opposed to the current practice trends in the establishment (33). Venkatraman et al (32) define four interaction perspective between IT and Business activities at strategic level.

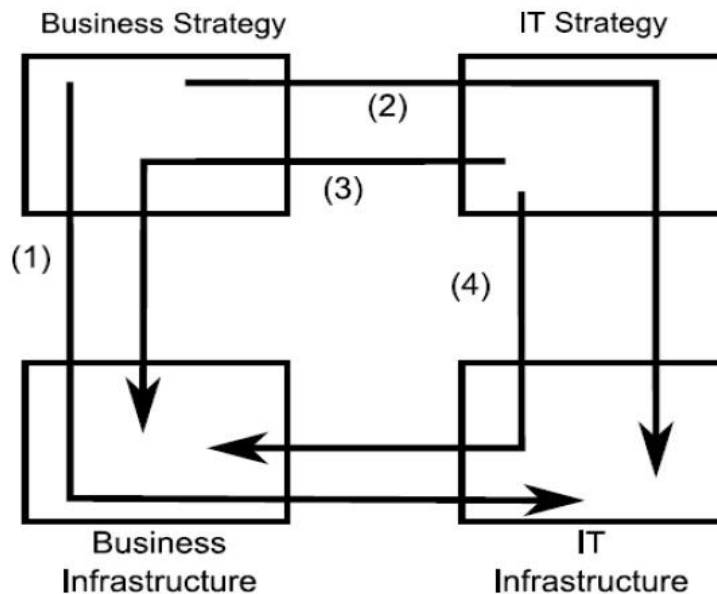


Figure 2: Strategic Alignment model (46)

Explanation :

- 1) Strategy Execution.
- 2) Technology Potential.
- 3) Competitive Potential.
- 4) Service Level.

Conceptual Framework:

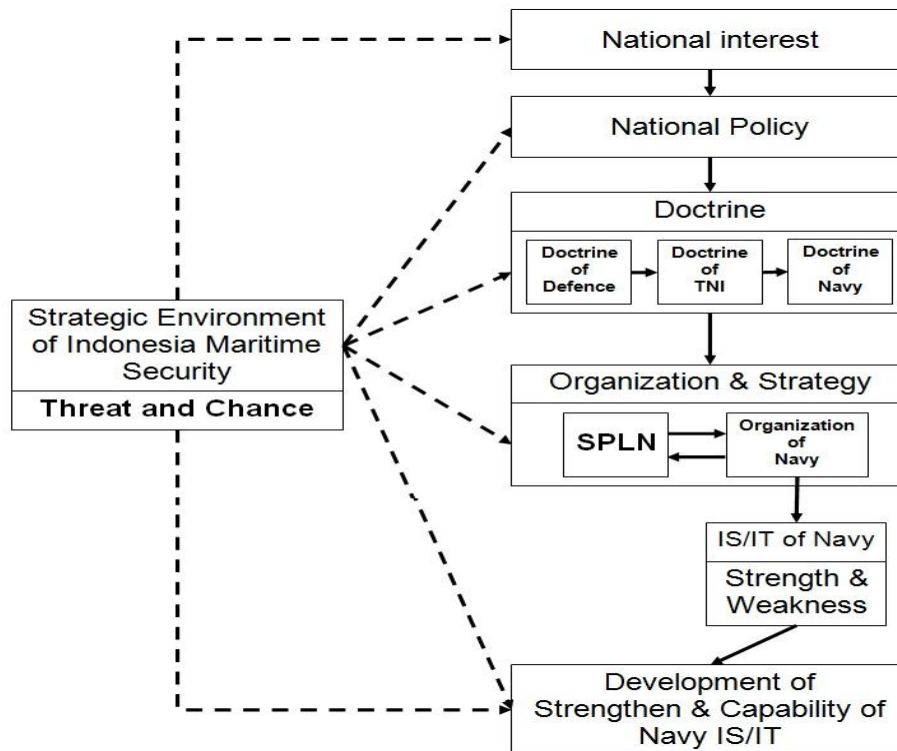


Figure 3: Conceptual Framework.

Materials:

- a. National Interest.
 - 1) National Security.
 - 2) Human Security.
 - 3) Economy Security.
- b. National Policy.
- c. Doctrine (Doctrine of Defence, Doctrin of TNI, Doctrine of TNI AL).
- d. Organization of Indonesian Navy (TNI AL).
- e. Archipelagic Sea Defence Strategy (SPLN). Three strategic targets of SPLN is to prevent initiative from enemy, most tackle a variety threat for enemy, most composes controlled condition at sea).

Steps:

The first steps is seeing SPLN as one system, then it is decomposed into objective formation, organization chart block, operation pattern and resources. Second stepsi is Make design system of Naval IS/IT should be supporting or conformable with SPLN system.

Targets:

The first targets is to reach conformable with targets of SPLN system with make formulates three IS/IT of TNI AL targets, which is built Command System, Control, Communication and Information (K3I). Second target is built interoperability system. Third target is built management system of integrated organization.

RESULT AND DISCUSSION

Based of this approach, this result gives system design of Naval IS/IT involve target and strategy, architecture, application and infrastructure that is regarded from developing of IS/IT technology and communication. This design consists nine cores capability and main capability Naval IS/IT maker. Mutually system design integrity between IS/IT, core capability and main capability from Naval IS/IT maker, it expected can building strengthen and capability of Naval IS/IT to supporting SPLN.

System design of Naval IS/IT consist of seven groups which is architecture data, system censor and receiver, analytic data system, data integration system, reporting system, master's management, and data security. Data architecture needs to be built on originally data or will be utilized deep agglomerate

daily organisational management, shaped various need operate for warfare Military Operation and Non-warfare Military Operation, and strategic environmental condition monitoring. Data architecture needs to be built on data that originates or will be utilized deep agglomerate daily organisation management, shaped various military operation and strategic environmental condition monitoring.

Aught data built by its architecture before turns in at succeeding data processing, then it become usable information with every consideration by a variety user(users) in organization of TNI AL. System architecture censor and receiver basically is how organization can gather various data kind of all activity which concerning with structure of TNI AL'S organization. Analytic data system architecture as system for processing of data and information becomes Intelligen form divides organization behalf that gets strategics character and tactically. Therefore, builds security architecture of data master is critical step. Last, architectur of Naval IS/IT that needs to be built by two strategy Naval IS/IT is reportation system that secures and ensure traffic of activities in TNI AL organization on the track with SPLN

framework.

Architecture design of Naval IS/IT consist of five main application. It must be comformable with pattern operation in SPLN, which is integrated system of K3I, integrated organization management base of IS/IT, suply-chain management, combat management system, and gets estuary to operation of application in network-centric operations. Entirely main application, eventually needs resource as infrastructure of Naval IS/IT. It must be comformable with resource which had by SPLN.

All of Naval IS/IT system has been designed, connected with development and trend of information and communication technology. Main focus of development and trend of information and communication technology is maritime technology, main weapon system technology, supporting weapon technology, battle system technology (ex. CMS, NCO, and etc.), technology gets bearing with organization management, visual technology and satellite. All of it elements will regard the target collation, strategy, application and infrastructure of Naval IS/IT.

Alignment of Systems Between SPLN and Naval IS/IT:

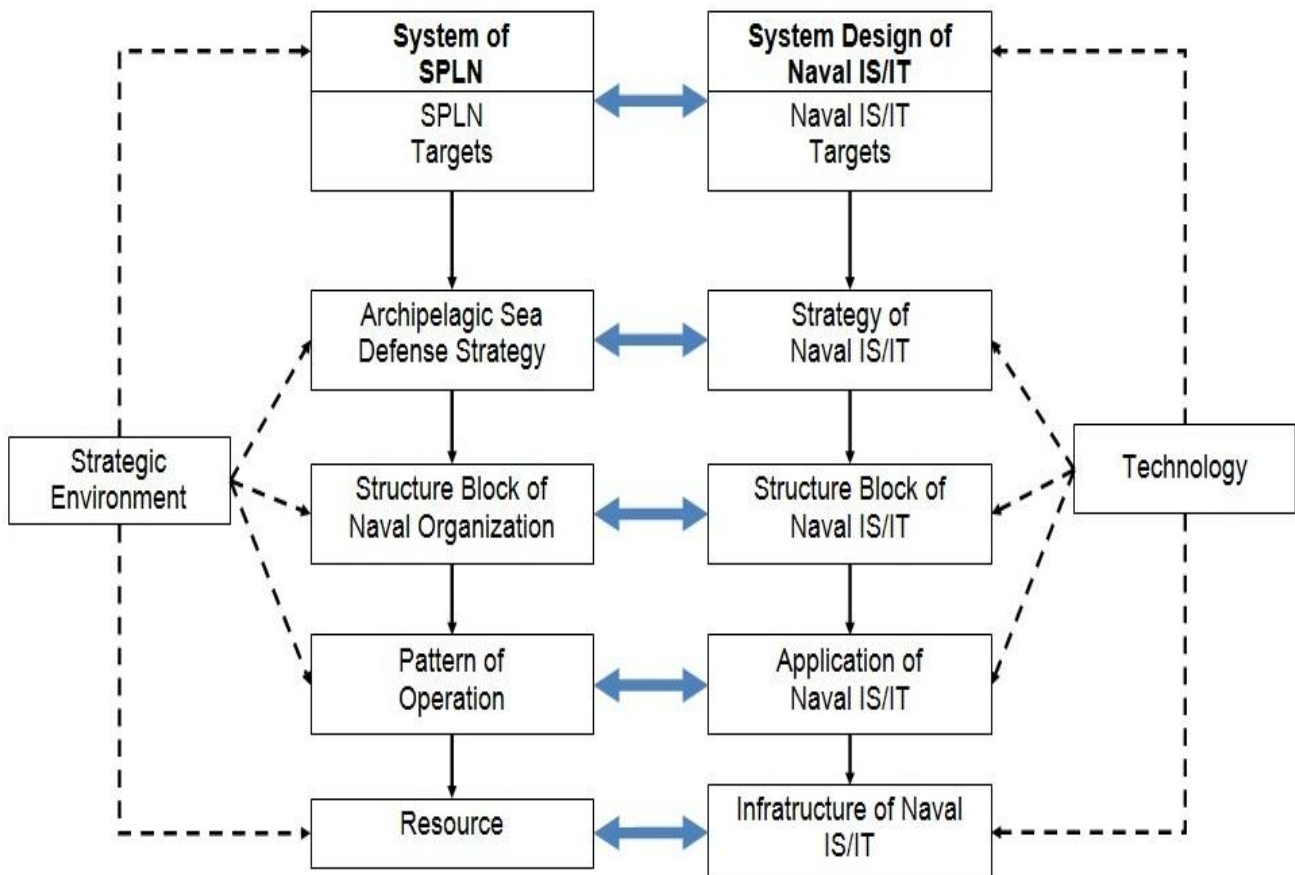


Figure 4: System Alignment Between SPLN and Naval IS/IT

Strengthen development of Naval IS/IT for supporting SPLN cover that exists in Naval IS/IT system design on development five main infrastructure, consist of :

- a. Computing equipment sort (including moving equipment, mobile divices).
- b. Laid up data (server and storage).
- c. Elected software (selected softwares) to a variety

beginning aim of simple adminstrasi need until with complex decision making good one gets routine category and also condition of critical / martial,

- d. Variety equipment such as stationary censor and receiver.
- e. Excellent Internal and External Network System based of analogue and digital.

Capability Development of Naval IS/IT :

System Design of Naval IS/IT

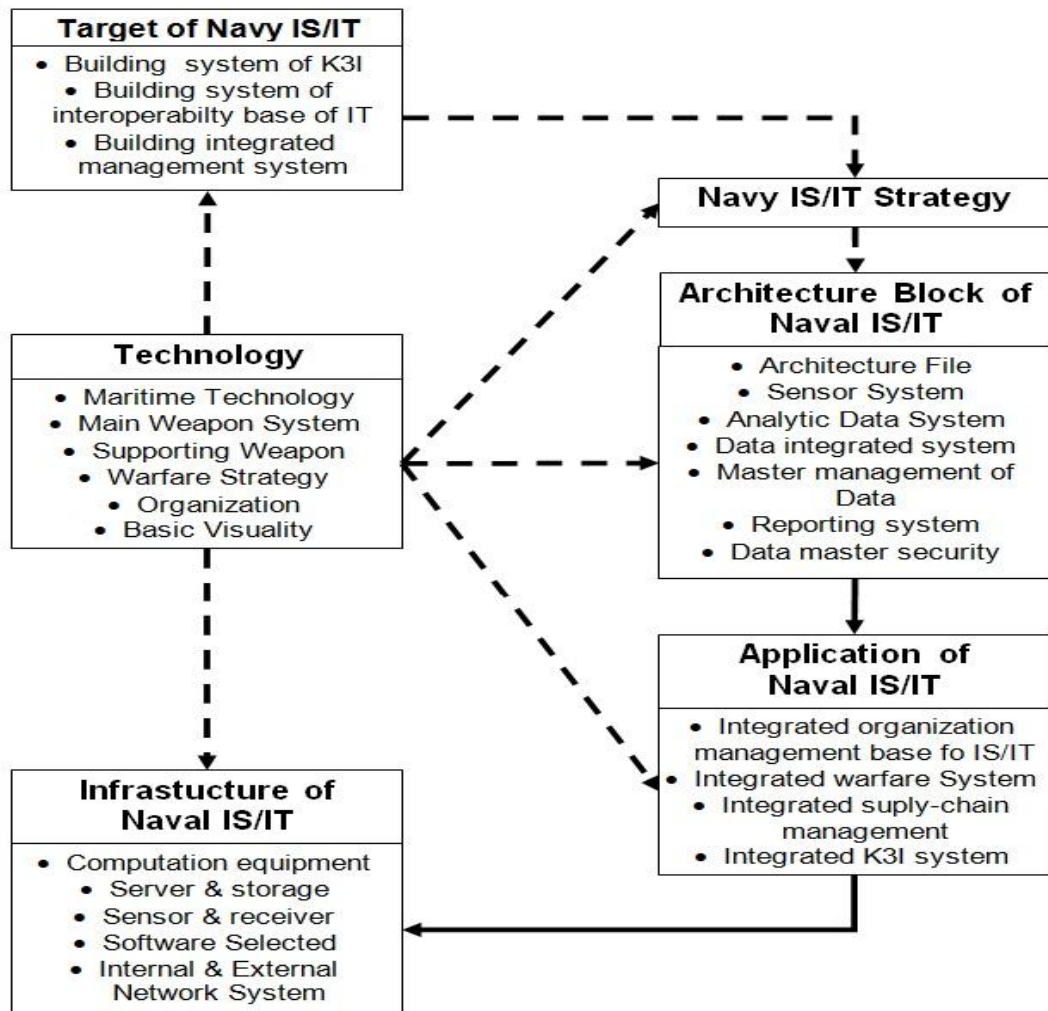


Figure 5: System Design of Naval IS/IT

Based of study upon, therefore development of Strengthen and ability of Naval IS/IT basically is effort of build resource and capability Naval IS/IT. with regard ability and strengthen posture organization of TNI AL, SPLN and system design of Naval IS/IT at arranges design of nine core capabilities of Naval IS/IT.

TNI AL as integral part of TNI which will refer to six ability of TNI in build of abilities structure of TNI AL. But, six abilities will be fused with specification and TNI AL operation interest. Structure of six abilites of TNI AL consist of maritime intelligent ability, defense and security ability, politics-social ability, territotial and supporting ability.

According Willcock and feeny (45) approaching, so ninth core capabilities Naval IS/IT consist of leadership of IS/IT, business system thinking of IS/IT, business system thinking of IS/IT, architecture planning of IS/IT, making technology work, relationship building of IS/IT, informed buying, contract

facilitation, contract monitoring, vendor development. Each element in core capability design of IS/IT will be downed as many design of main capability sort element.

Core Capability Design of Naval IS/IT:

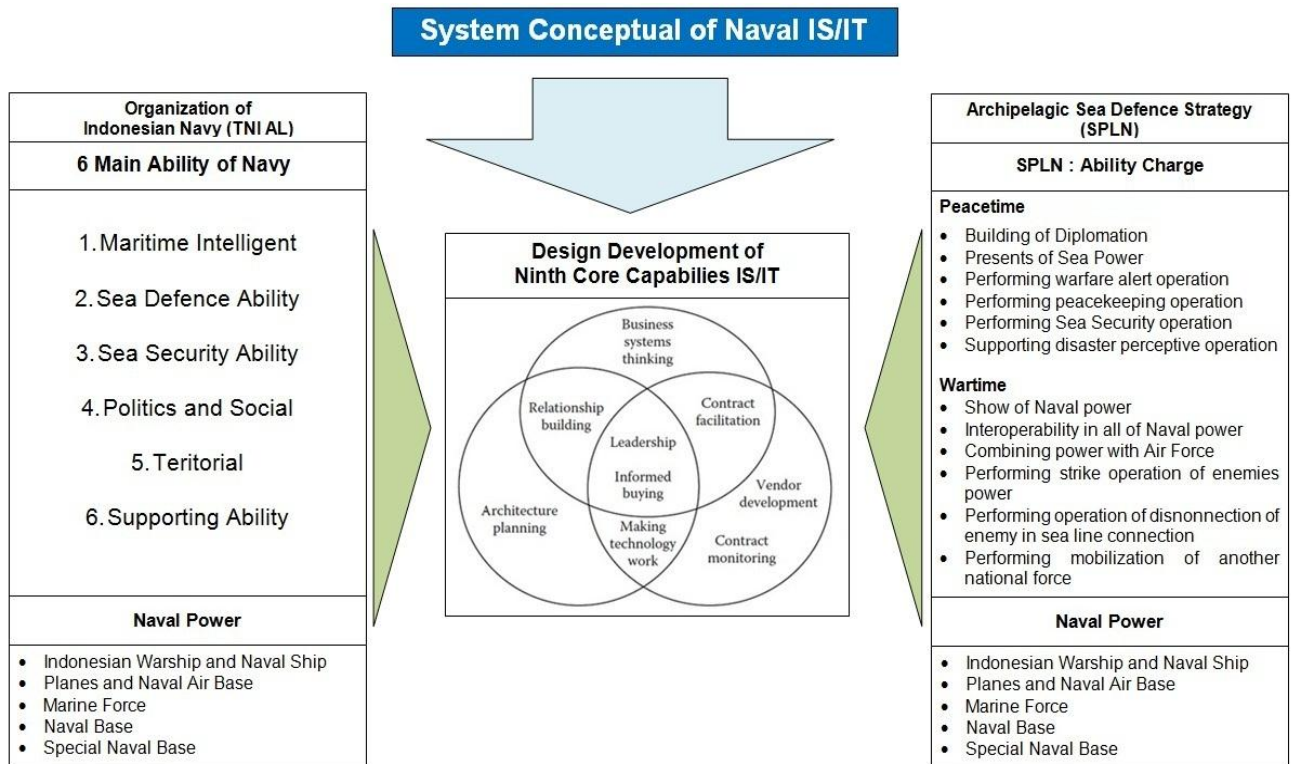


Figure 6: System Conceptual of Navy IS/IT

With regard ability and posture of navy organization, SPLN, and system design of Naval IS/IT, therefore at arranges design of nine core capabilities Naval IS/IT, such as :

- a. Leadership.
This capability uses for determining aim of IS/IT Development.
- b. Business System Thinking.
This capability uses for integrating all activities of navy organization to system design of IS/IT.
- c. Architecture Planning.
This cabality uses for arranges system architecture of IS/IT as conformable with SPLN and navy organization
- d. Making Technology Work.
This capability uses to optomation IS/IT with effiience and effective.

- e. Relationship Building.
This capability uses for helping user so most composes relationship between user of navy organization and IS/IT organization.
- f. Informed Buying.
This capability uses for monitoring developing and trend of information technology infrastructure and maritime communication.
- g. Contract Facilitation.
This capability uses for ensuring IS / IT contract sequel.
- h. Contract Monitoring.
This Capability uses for protecting position of IS/IT contract melindungi posisi kontrak IS/IT already proprietary by TNI AL.
- i. Vendor Development.

This capability uses for identifying of IS/IT vendor.

CONCLUSION

- a. Based on analysis result in strengthen and weakness of Naval IS/IT function, analysis of SPLN system nowadays, therefore it arranges development design of Naval IS/IT ability to supporting SPLN function.
- b. Based on analysis result upon, therefore will form design of Naval IS/IT that consist of target, strategy, architecture, application until with IS/IT infrastructure that also regarded by developing and trend of communication information technology.
- c. Based on ability of Navy Organization, system of SPLN, and system design of IS/IT, therefore it arranges design of nine core capabilities and main capability of Naval IS/IT.
- d. Result of alignment between system design of IS/IT, core capability and main capability of Naval IS/IT be expected able to build strengthen and ability Naval IS/IT to supporting enforcement of Archipelagic Sea Defence Strategy (SPLN).

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