THE HUMAN ASSET WITHIN THE CONTEXT OF GLOBALLY EMERGING TECHNOLOGY, REGIONAL MARITIME CAPABILITY DEVELOPMENT AND THE COHERENCE OF REPUBLIC INDONESIA (RI) STRATEGIC POLICY RESPONSE

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I. Thesis

Thesis Questions and Policy Statements

1) How RI shall take the most out of globally emerging technology for her maritime capability development that in its turn will contribute to the coherence of RI's strategic policy response?, 2) what does constitute the maritime capability development?, 3) what does constitute the coherence of RI's strategic policy response within the maritime domain?

1) Given RI's non-alliance defense policy, RI shall accelerate her readiness to adopt new technology available by constructively engaging the global markets based on constructed common values and interests; 2) RI shall give the priority to the development of national maritime infrastructures and regionally respectable naval forces (2022–2045); 3) RI shall ensure the fundamental elements in policy coherence that covers the sound-basis and strategically future oriented policy (2022–2045), and the acceleration of formulation and implementation of the respected policy through a sophisticated policy-making process that includes all significant variables in the respected policy that is suitable for preparing RI in the cooperative, competitive, and conflictual setting.

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Thesis Questions and Policy Statements

At the bottom line, answers to these three questions depend on RI human asset as the lynchpin variable to take the most out of globally emerging technologies to develop RI maritime capability that in turn will contribute to the likely achievement of the RI maritime strategy toward 2045.

The data in this presentation is primarily drawn from the open source while using the policy as the unit of analysis. The analysis is mostly qualitative with some quantitative analysis to supplement the qualitative one so that contributing to the research question of this panel: "How would the advancing maritime technology coincidentally contribute to secured and balanced global architecture under such fragmented situation?"

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II. Globally Emerging Technologies

Definitions

Emerging technology: a term generally used to describe a new technology, but it may also refer to the continuing development of and existing technology. Alternatively, it is an innovation that significantly modifies the way that consumers, industries, business, or the military operate. A disruptive tech quickly devastates the systems or habits it replaces due to its superior attributes (ex: e-commerce, online news sites, ride-sharing apps, and GPS). At one time, the automobile, electricity service, TV, and atomic weapons were considered disruptive tech.

Rapid Tech that changes the character of war (2018 NDS):

- **Advanced computing**
- **Big data analytics**
- **Artificial Intelligence (AI) including Machine Learning/ML**
- **Autonomy (lethal autonomous weapons systems)**
- **Robotics**
- **Directed Energy (weapons)**
- **Hyper-sonics (weapons)**
- **Biotechnology**

Top 10 Emerging Tech (CompTIA Emerging Tech Community):

- **AI**
- **5G (fifth-generation tech standard for broadband cellular)**
- **Internet of Things**
- **Serverless computing**
- **Biometrics**
- **Augmented reality/virtual reality**
- **Blockchain**
- **Robotics**
- **Natural language processing**
- **Quantum computing (CQ)**

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III. The Maritime Capability Development

INDIKATOR KEBERHASILAN
menjadikan Indonesia Negara Maritim ynag KUAT

TUJUAN DAN NDIKATOR TUJUAN	SASARAN DAN INDIKATOR SASARAN	AGENDA/PROGRAM KERJA	INDIKATOR AGENDA/PROGRAM
TS-01: ***Menjadikan Indonesia Negara Maritim yang KUAT***, yaitu Negara dengan struktur ekonomi maritim yang kokoh, **yang tumbuh pesat dengan adil, merata dan berkelanjutan**, sebagai penopang perekonomian nasional: 1. PDB Maritim (share, green PDB) 2. Indeks Rasio Gini	**SS-01:** ***Terwujudnya pemerataan Pembangunan dan hasil-hasilnya***, dengan indikator: 1. Disparitas Ekonomi antar Kawasan (Varian Green PDRB) 2. Indeks Kinerja Logistik	**AP-01** **Pengembangan Sarana Prasarana Maritim**	1) Indeks Disparitas Pembangunan Maritim (Investasi, Sarpras Maritim) 2) Indeks Daya Saing Infrastruktur Kemaritiman
		AP-02 **Peningkatan Konektivitas Maritim**	3) % Biaya Logistik Terhadap PDB 4) Dwelling Time Nasional
	SS-02: ***Terwujudnya perairan Indonesia yang bersih, sehat dan produktif***, dengan indikator: 3. Indeks Kesehatan Laut Indonesia	**AP-03** **Pengelolaan Sumber Daya Alam dan Lingkungan Perairan**	5) Produktivitas Perairan 6) Indeks Kualitas LH (Air)
	SS-03: ***Meningkatnya produksi dan nilai tambah barang dan jasa kemaritiman***, dengan indikator: 4. Nilai Tambah Barang dan Jasa	**AP-04** **Pengembangan Industri Maritim**	7) Neraca Ekspor/Impor 8) Indeks Daya Saing Industri

marves Maritim 2045

INDIKATOR KEBERHASILAN
menjadikan Indonesia Bangsa Bahari yang UNGGUL

TUJUAN DAN NDIKATOR TUJUAN	SASARAN DAN INDIKATOR SASARAN	AGENDA/PROGRAM KERJA	INDIKATOR AGENDA/PROGRAM
TS-02: ***Menjadikan Indonesia Bangsa Bahari yang UNGGUL***, yaitu Bangsa yang berdayasaing tinggi, yang **berdaulat dan mandiri dalam mengelola potensi maritim, didukung SDM yang maju, inovatif serta berkarakter nusantara.** 3. Indeks Daya Saing Global 4. Indeks Kedaulatan Maritim	**SS-04:** ***Terwujudnya kedaulatan maritim dalam arti luas***, dengan indikator: 5. Indeks Ketahanan Maritim 6. Maritime Leadership Index	**AP-05** **Peguatan Pertahanan, Keamanan & Keselamatan Maritim**	9) Indeks Hankam Laut 10) Indeks Keselamatan Maritim
		AP-06 **Penguatan Diplomasi & Okupasi Maritim**	11) Indeks Diplomasi Maritim 12) Efektivitas Penguasaan Wilayah Laut
	SS-05: ***Terwujudnya penatakelolaan maritim yang baik*** *(good maritime governance)*, dengan indikator: 7. Indeks Tata Kelola Maritim	AP-07 **Penguatan Tatakelola Maritim**	13) Indeks Tatakelola Laut 14) Indeks Tatakelola Pesisir & Pulau Kecil
	SS-06: *Terwujudnya* ***masyarakat maritim yang inovatif dan berkarakter kuat***, dengan indikator: 8. Indeks Pembangunan Manusia (Maritim)	**AP-08** **Pemajuan Budaya dan Karakter Bangsa Bahari**	15) Indeks Pembangunan Karakter Bahari 16) Indeks Literasi (Maritim)
		AP-09 **Pengembangan Iptek dan SDM Maritim**	17) Tingkat Kompetensi SDM (Maritim) 18) Marine Science Technology Index

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Capability Development Indicators in terms of RI as the Strong Maritime State and as the Globally Competitive Maritime Nation.

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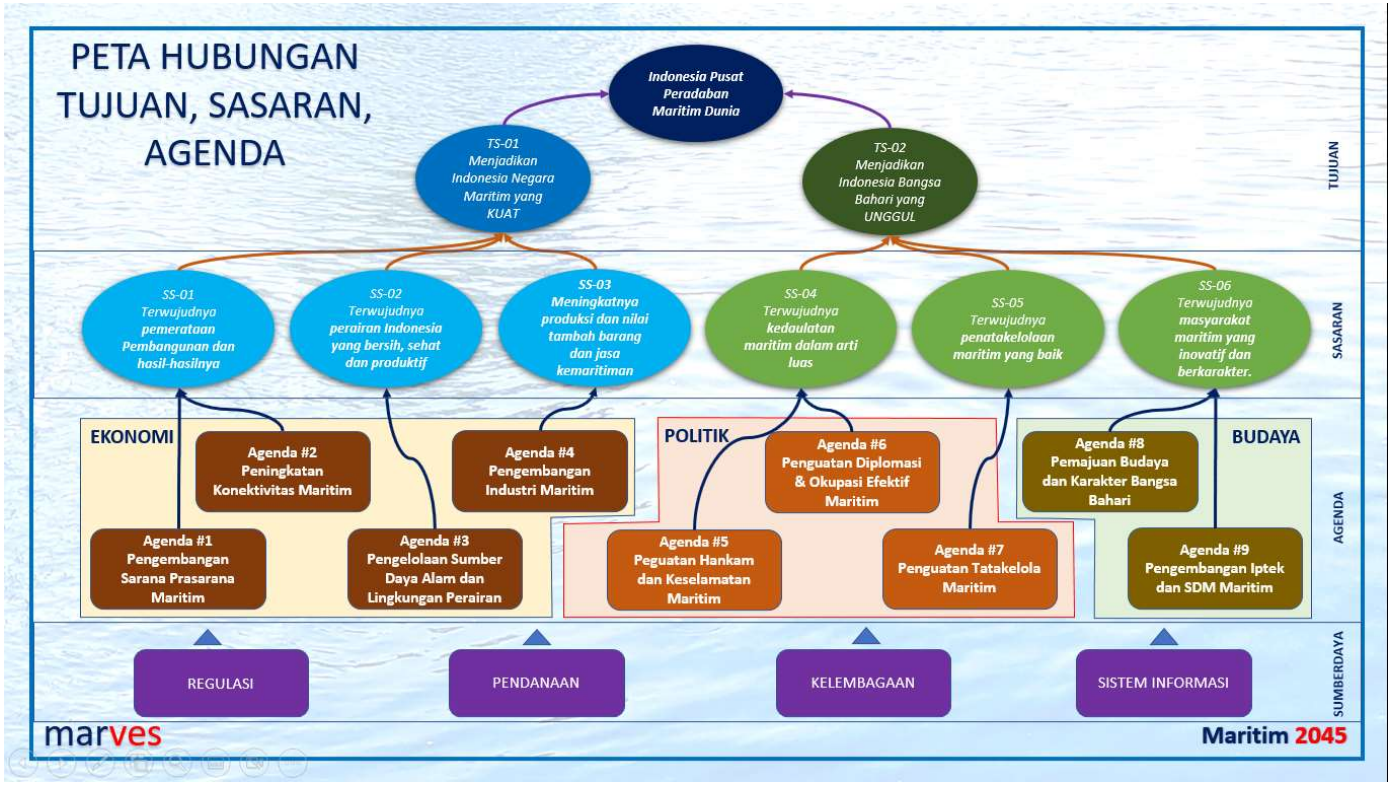
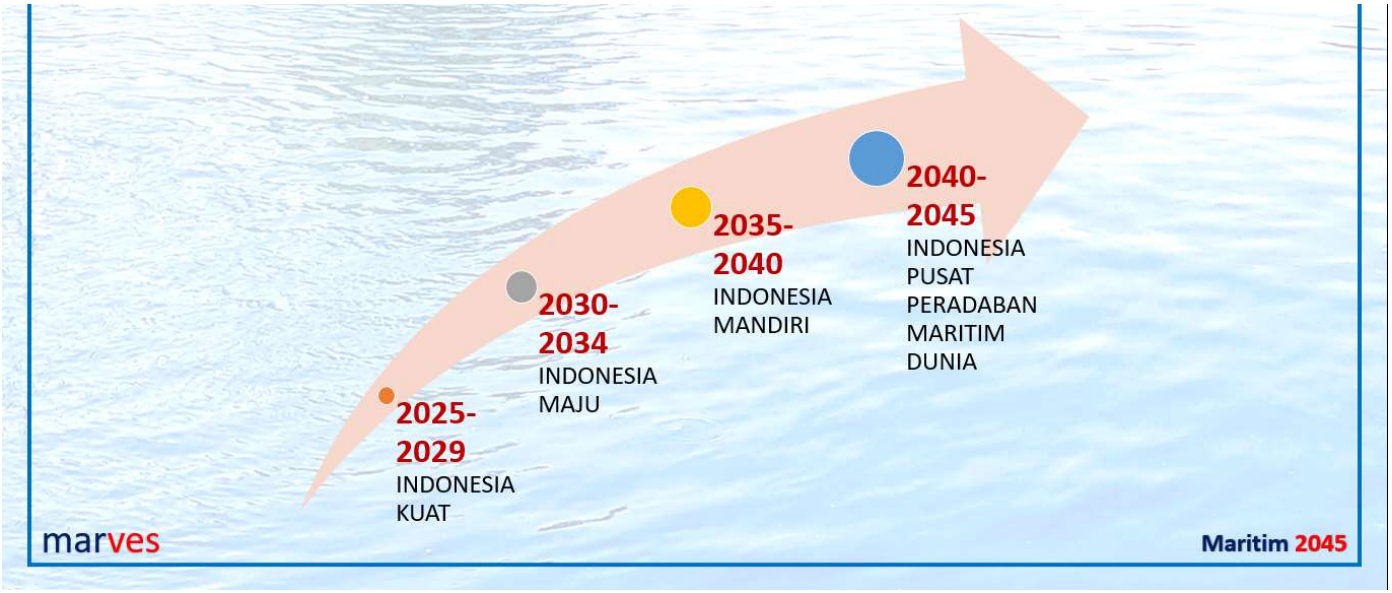
IV. The coherence of RI maritime strategy toward 2045





Strategic Mapping and Roadmap of Maritime Strategy toward 2045.

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V. Key Takeaways

The Human Asset as the Lynchpin Variable

1. **The future strategic leadership of RI maritime domain shall understand the vocabulary and concepts behind the emerging (and potentially disruptive) technologies of AI and ML that impacts the dynamics in maritime domain.**

2. **The future strategic leadership of RI maritime domain shall understand the current and potential future applications and capabilities, as well as some of the limitations and concerns, of AI and ML within the context of maritime domain and its relationship with other strategic domains: land; air; space; and cyber domain.**

Assumption: a low level of prior knowledge about AI/ML.

The future strategic leadership of RI maritime domain is to familiarize with innovation and leadership through change, where RI's future strategic leaders can anticipate and lead rapid adaptation and innovation during a dynamic period of acceleration in the rate of change in warfare under global competition and disruptive technology. That said, leveraging the educational system by providing RI human asset with the baseline knowledge and skills, and how to think about these disruptive tech, will be crucial to RI's future economic and security success in the maritime domain that is interconnected to other strategic domains: land; air; space; and cyber domain.

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VI. Conclusion

Conclusion

Globally emerging & disruptive technologies must be seen as both challenging and opportunistic phenomena to manage and exploit for advancing RI's national interests to achieve the maritime strategic objective in 2045 and to become a winning nation at the global level. We shall not have the preconceived mind pertaining to the globally emerging technologies without first preparing our mind to embrace this phenomenon with a truly strategic mindset: critical; thinking in time; synthesis; systemic; creative; and futuristic.

Subsequently, we also need to revamp our ways to educate today's leaders for future global competition and contemporary environment relatively to what PRC, NATO, Quad, FPDA, the Five Eyes, and AUKUS are doing. In this case the RI National Resilience Institute (LEMHANNAS) will have the important role to play.

VII. Recommendation

Proposed Initiatives (Cognitive Wise)

1. **RI is to deepen the understanding of the implications of disruptive and future tech for adversaries, contenders, and ourselves (vis-à-vis PRC, NATO, Quad, FPDA, the Five Eyes, AUKUS).**

2. **RI is to introduce the current evolution of AI/ML and its challenges, limitations, and vulnerabilities, and also global competition on quick development of AI for both economic development and military dominance (vis-à-vis PRC, NATO, Quad, FPDA, the Five Eyes, AUKUS)**

3. **RI is to position AI/ML within larger strategic landscape of securing RI's national interests, and how RI could move forward to become the first to develop certain, niche-based AI/ML tech.**

4. **RI is to stimulate thinking and debate –and logically defend- their thoughts and potential biases on the large issue of AI/ML as a disruptive tech.**

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Prospective Initiatives (Organizational Wise)

5. To create the Joint AI Centre (synergy between National Resilience Institute/LEMHANNAS, Coordinating Ministry of Maritime and Investment Affairs, MOD/KEMHAN, Cyber State Agency/BSSN, and Cyber Quad-helix) to coordinate efforts in using ML and other AI to maintain a comparative lethality and efficiency edge over other nations economic and military capabilities (vis-a-vis PRC, NATO, Quad, FPDA, the Five Eyes, AUKUS). Why?

a. **AI and ML are topics worth the attention of future strategic leaders. Incorporating new tech into governmental or commercial process requires significant leadership and effective direction that all stakeholders can easily understood.**
b. **AI/ML tech is an integral part of our lives already, and its ubiquity will only increase. Strategic leaders will be called on to evaluate how we can better use the strengths of AI – while acknowledging its weakness- to augment our ability to defend our national interests.**
c. **AI/ML can compute the big data intricately and tremendously without fatigue based on the information humans provide, but AI/ML does not understand strategy.**
d. **AI/ML needs humans to take those insights and determine what role they will play in a larger strategy that accomplishes the identified objectives.**
e. **We need to harness its strength and acknowledge its weakness to better use these tech for future success.**

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Next Research Questions

1. Could AI/ML advances truly disrupt? Which applications would be the most disruptive?, and over what time frame?

2. To what level do strategic leaders need to understand AI/ML and other emerging/disruptive tech to become effective decisionmakers?

3. Commercial sectors and big tech firms are the forefront AI/ML research. How can we benefit from these advances?

4. Which application of AI provides the most potential for our economic and national security interest?

5. What strategic-level actions RI should do today and in near future (vis-a-vis PRC, NATO, Quad, FPDA, the Five Eyes, AUKUS)?

Who Thinks Win, Who Dares Win.
The Winning Nation is the Thinking and Daring One.

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