28th ARF HDUCIM · Victoria, Canada · 20–23 October 2026

EMERGING TECHNOLOGIES IN DEFENCE

Timor-Leste perspective on opportunity, risk, leadership and PME

AI | IoT | ROBOTICS | PAN-DOMAIN

STRATEGIC THESIS

For a small maritime force, the decisive advantage is not owning every technology.

It is learning faster, governing responsibly, and connecting effectively with partners.

Commander Duarte Borges Loe

Timor-Leste Delegation

Why this matters for Timor-Leste

A maritime operating environment makes information, awareness and resilient decision-making strategically important.

~15,000
km² land area

~103,800
km² total maritime area*

≈7×
maritime area vs land

11th
ASEAN Member State

Operational need

Persistent maritime awareness, border visibility, logistics reliability and faster access to trusted information.

Institutional reality

Resources are finite. Adoption must be selective, interoperable, supportable and matched to workforce capacity.

Regional opportunity

ASEAN membership increases the value of common standards, education exchanges and practical cooperation.

*Timor-Leste Blue Economy Policy and Action Plan (2026): ~15,000 km² land; ~103,800 km² total maritime area excluding disputed area. ASEAN admitted Timor-Leste as its 11th Member State in Oct 2025.

1. Opportunity and risk: adopt for mission effect, not for novelty

The same technologies that extend reach can also create new dependencies and vulnerabilities.

AI

OPPORTUNITY

Fuse data, detect patterns, support planning

RISK

Bias · opacity · adversarial manipulation

IoT

OPPORTUNITY

Connect sensors, bases and logistics

RISK

Cyber attack surface · data exposure

ROBOTICS

OPPORTUNITY

Extend reach and reduce human exposure

RISK

Control failure · escalation · sustainment

Timor-Leste priority use cases: maritime awareness • predictive maintenance • training & simulation • decision support

Organizer Annex A identifies AI, IoT and robotics as key examples and highlights bias and absence of human judgment as ethical concerns.

Decision advantage must remain human-led

Technology can compress the Observe–Orient–Decide–Act cycle; command responsibility cannot be compressed away.

OBSERVE

Sensors · UAS

More persistent awareness

ORIENT

AI fusion

Faster pattern recognition

DECIDE

Decision support

Options, not orders

ACT

Robotics

Reach with controlled autonomy

HUMAN COMMAND PRINCIPLE

Machine speed should improve situational understanding — not replace legal, ethical and professional judgment.

Responsible AI reference: NATO PRUs include lawfulness, accountability, explainability/traceability, reliability, governability and bias mitigation.

2. The leader we need: technology-literate, not technology-dependent

Five competencies translate emerging technology into responsible pan-domain effectiveness.

01	**MISSION JUDGMENT**	Connect technology to mission effect — and know when not to use it.
02	**DATA & AI LITERACY**	Interrogate data quality, assumptions, confidence and bias.
03	**ETHICAL & LEGAL REASONING**	Preserve accountability, proportionality and human judgment.
04	**PAN-DOMAIN THINKING**	Understand interactions across land, sea, air, cyber, space and information.
05	**PARTNER INTEROPERABILITY**	Operate with shared standards while protecting sovereignty and sensitive data.

"A future commander must be able to challenge a machine recommendation — not merely receive it."

3. PME is the bridge from technology access to technology advantage

Education should build judgment before it builds dependence.

01 FOUNDATION

0–12 months

AI / data literacy
Cyber hygiene
Technology ethics

02 APPLICATION

12–24 months

Simulation & wargaming
Human–machine teaming
Degraded-network drills

03 INSTITUTIONALISE

24+ months

Doctrine & lessons learned
Faculty development
Regional exchanges

PME design rule: technology-informed • ethics-embedded • scenario-driven • continuously updated

The ARF HDUCIM concept note calls for critical thinking, digital literacy, interdisciplinary collaboration, strategic communication, adaptability and continuous learning.

A practical pathway for Timor-Leste: Learn → Test → Govern → Connect

A selective approach can build confidence and capability without overextending resources.

LEARN

Build baseline AI, data and cyber literacy across PME.

2026–27

TEST

Pilot low-risk use cases: maritime awareness, maintenance, simulation.

2027–28

GOVERN

Set policy for data, procurement, accountability, testing and human control.

Parallel

CONNECT

Use ASEAN/ARF and bilateral partners for standards, faculty exchange and exercises.

Continuous

This is a proposed capability-development pathway — not a declaration of current F-FDTL capability or approved procurement.

Closing: technology should strengthen judgment, sovereignty and cooperation

Three messages from the Timor-Leste perspective

1 SELECTIVE ADOPTION

Prioritise mission problems where technology creates clear, supportable operational value.

2 HUMAN RESPONSIBILITY

Speed and automation must never dilute command accountability, ethics or law.

3 PME + PARTNERSHIP

The durable advantage comes from educated people, trusted standards and regional learning.

Timor-Leste's contribution to pan-domain operations can begin with a simple ambition:

be a trusted, adaptive and responsible partner in the regional security ecosystem.

OBRIGADO • THANK YOU • QUESTIONS

the 28th ASEAN Regional Forum Heads of Defence Universities, Colleges and Institutions Meeting.