Senior Security Studies Program

Strategic Studies Center ,
National Defence Studies Institute

Daniel K. Inouye Asia-Pacific
Center For Security Studies

CRISIS MANAGEMENT ON SPACE SECURITY

OUR TEAM (G.2)

Radm. Paisan Wongmek

Col. Saman Junsian

Gp.Capt. Pisuthiphong srichooros

Gp.Capt Jaruwat Juntong

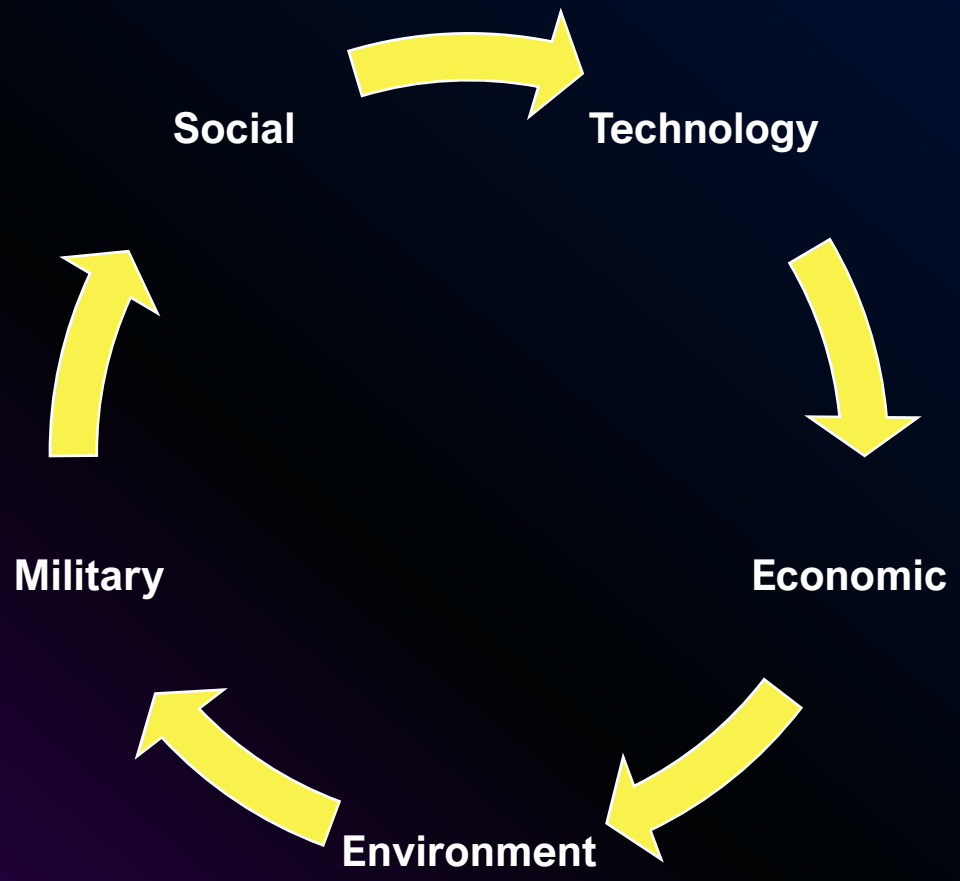
Ms. Angsumalin Chatsuwanwaree

Dr. Nirawat Thammajak

Mr. Anuk Pitukthanin

Piti Srisangnam

IMPACT OF SPACE DIMENSION ON THAILAND'S SECURITY



IMPACT OF SPACE DIMENSION ON THAILAND'S SECURITY

Social

Positive

- Increased national pride and interest in STEM (Science, Technology, Engineering, and Mathematics) among the youth, driven by achievements in space exploration and satellite technology.

Negative

- Potential social divide if access to space technology and its benefits are not equitably distributed across different socioeconomic groups.

IMPACT OF SPACE DIMENSION ON THAILAND'S SECURITY

Technology

Positive

- Rapid advancement in space technology, geospatial data capabilities, and innovation through international collaborations and knowledge exchange programs.

Negative

- Dependency on foreign technology and expertise might limit domestic innovation if not carefully managed.

IMPACT OF SPACE DIMENSION ON THAILAND'S SECURITY

Economic

Positive

- Boost to the economy through the development of a space industry, including satellite manufacturing, launch services, and space tourism. Enhanced capabilities in agriculture, disaster management, and urban planning through improved geospatial data.

Negative

- High costs associated with space programs could strain national budgets if not balanced with other economic priorities.
- Economic system disrupt due to dependency on foreign space technology

IMPACT OF SPACE DIMENSION ON THAILAND'S SECURITY

Environment

Positive

- Improved environmental monitoring and management through satellite data, aiding in conservation efforts, pollution tracking, and climate change mitigation.

Negative

- Risks associated with space debris and the environmental impact of satellite launches need careful consideration and mitigation strategies.

IMPACT OF SPACE DIMENSION ON THAILAND'S SECURITY

Politic

Positive

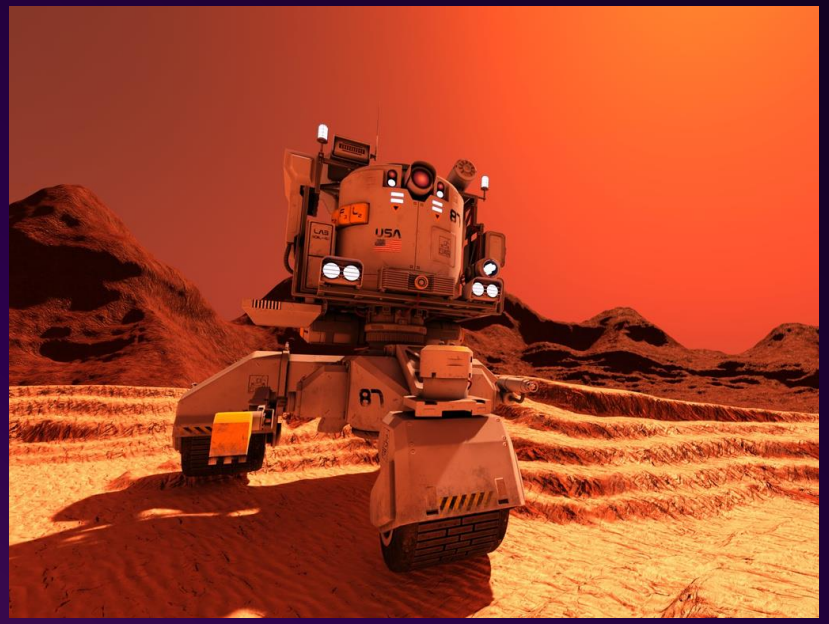
- Enhanced diplomatic ties and international cooperation through space partnerships, particularly with countries like France, which has collaborated on projects like THEOS-2.

Negative

- Geopolitical tensions could arise if space activities are perceived as aligning too closely with any one major power bloc, impacting Thailand's neutrality.

IMPACT OF SPACE DIMENSION ON THAILAND'S SECURITY

Military



Positive

- Strengthened national security through improved surveillance and reconnaissance capabilities. Development of dual-use technologies that can benefit both civilian and military sectors.

Negative

- Potential arms race in space technology and militarization of space could lead to regional instability and increased defense spending.
- Anti-satellite (Communication, Navigation, Aviation)

Policy Recommendation

Outward

Exploration/Deep Space

Outward

Power Bloc/Race

Safety

4 Research and Development
- Payloads
- Prototypes
- Publication
- Patents

7 Strategy
- Balance policy
- Share and Cooperation

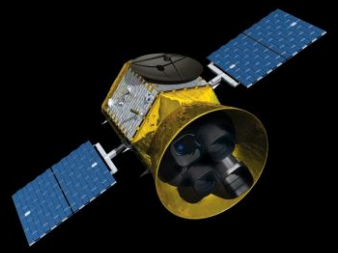
Neutrality
Diplomacy

CIVILIAN

DEFENSE

Academic/Research

Surveillance



Sensing/Timing

Control/Command

5 Business
- Startup-IDEs
- Supplies/Market
- Local content

Utility/Communication
/Navigation

3 Institutional Development
- Upgrade Concerning Unit Function/Task
- Division of labor

1 Geoinformatics
+Atmosphere +Coastal areas +Forest +Farmland

Monitoring Space Safety
+Space weather +Space debris +Asteroids

Consult
Inform

Observation

6 Invest
- Infrastructure/ Technology
- Public awareness
- Collaboration/alliance

Security

2 Utilization
- Hot spot/Forest Fire
- Flood Areas

Inward

Inward

Thailand Competency Domains for ESS

TCD1 EEE Components, Photonics, MEMS

- อุปกรณ์อิเล็กทรอนิกส์
- เซมิคอนดักเตอร์
- อุปกรณ์ Commercial-of-the-shelf (COTS)

TCD2 Structures, Mechanisms, Materials, Thermal

- โครงสร้าง, วัสดุ, การทนอุณหภูมิ, กลไก

TCD3 Avionic systems

- ระบบควบคุมการบิน / ระบบประมวลผลข้อมูลภายใน (On-board Computers and Data Handling Systems, OBCDHS),
- ระบบควบคุมการรับส่งสัญญาณ (Telemetry, Tracking, and Control, TT&C)

TCD4 Electric Architecture, Power & Energy

- ระบบเก็บและจ่ายพลังงาน

TCD5 RF & Optical Systems and Products

- ระบบสัญญาณวิทยุ
- ระบบสัญญาณแสง
- Remote sensing
- Image Enhancement

TCD6 Life Support, Robotics & Automation

- การดำรงชีวิตในอวกาศ (การดำรงชีพในอวกาศ เช่น การปลูกพืช ระบบอาหาร)
- ระบบหุ่นยนต์, ระบบการทำงานอัตโนมัติ

TCD7 Space logistic and launcher

- ลงจอด/ เพิ่มศักยภาพการขนส่ง
- เทคนิคการขนส่งระหว่าง orbit
- จรวด ระบบจรวด

TCD8 Ground systems & Mission Operations

- ระบบควบคุมสื่อสารภาคพื้นดิน
- ชุดคำสั่งของการ calibrate ดาวเทียม เช่น การปรับกล้องหลังปล่อยดาวเทียม (data preprocessing and orbit commissioning)

TCD9 Digital & Information Applications

- เทคโนโลยีข้อมูลดิจิทัล/ Big data analytics
- Artificial intelligence/ Virtual and augmented reality
- Advanced Simulators, Autonomy, Cybersecurity
- Data Post-Processing, Data Analytics, Geoinformatics

TCD10 Guidance, Navigation and Control (GNC) system

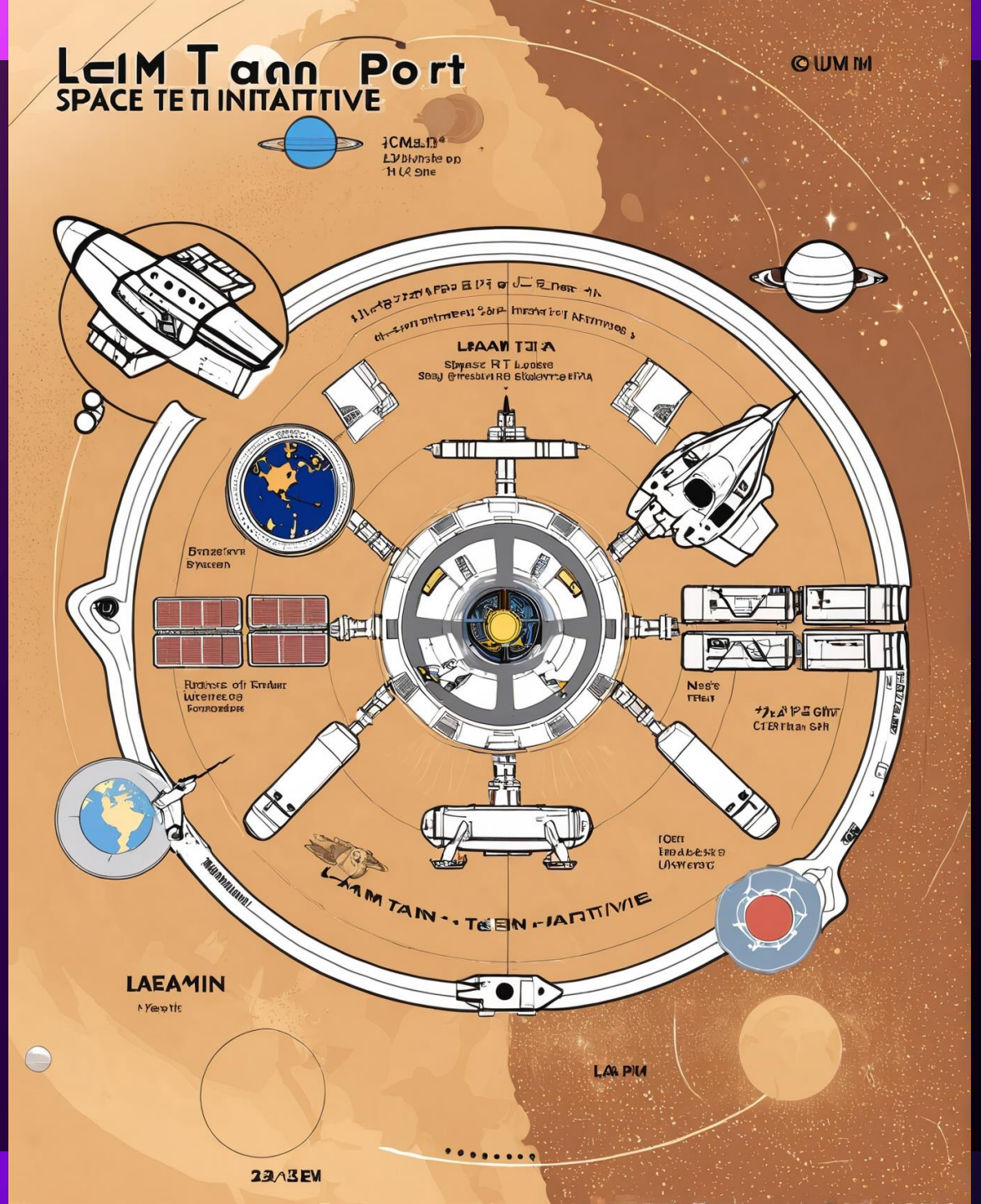
- การเคลื่อนตัวในอวกาศและพลังงานขับเคลื่อน
- ระบบควบคุมทิศทางการหันและหาตำแหน่งของดาวเทียม (Attitude and Orbit Control System, AOCS)

TCD11 Space Debris & Space Environnent

- การเฝ้าระวังภัยจากอวกาศ/ ขยะอวกาศ
- ความปลอดภัยในอวกาศ/ สภาพอวกาศ
- ดาวเคราะห์น้อย

TCD12 Science payloads and experiment

- อุปกรณ์ตรวจวัดทางวิทยาศาสตร์
- การทดลองในอวกาศ และบนโลกที่เกี่ยวข้อง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Welcome Speakers and Participants to
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August 5-9, 2024
Bangsaen, Chonburi
Strategic Studies Center.
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and
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THANK YOU