

BRAZILIAN NAVĀL WAR COLLEGE CENTRE FOR POLITICAL AND STRATEGIC STUDIES MARITIME STUDIES PROSTGRADUATE PROGRAMME



KING'S COLLEGE LONDON - BRAZIL INSTITUTE International Conference

"SCIENCE & TECHNOLOGY, STRATEGY AND DEFENCE INDUSTRY: CHALLENGES FOR THE WAY AHEAD"

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Summary

Challenges that the current S&T evolution pace poses to strategy and force planning.

Links and bridges between strategy, defence acquisition and defence industry.

Impact of strategic projects on the defence industrial base.

S&T and the future use of force



New capacities

- New materials and components
- Additive manufacturing
- Environment knowledge
- Sensors and big data processing
- Decision making support
- Speed

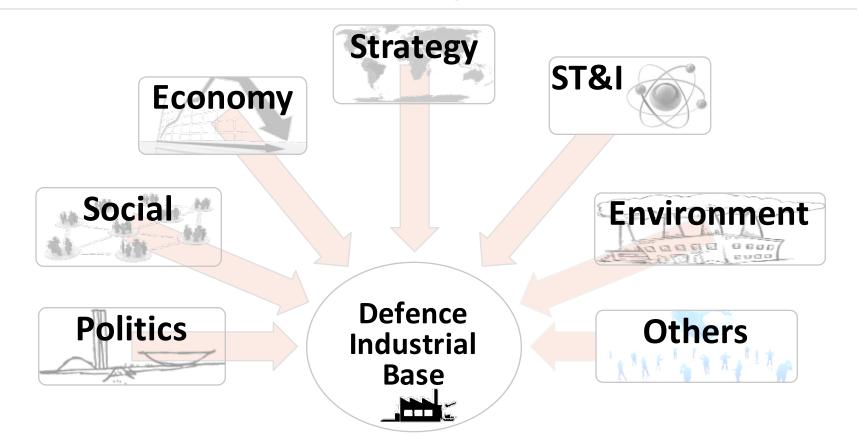


Innovation and use of force

- Remotely operated or increasingly autonomous platforms? "Robots"? AI?
- Network integrated systems C⁴ISR... /netcentric warfare...
- Cyber-weapons
- Direct energy weapons
- Soldier of the future
- What technologies to prioritise? Which are (or will be)
 Precision—Lethality
 within the arm is reach?

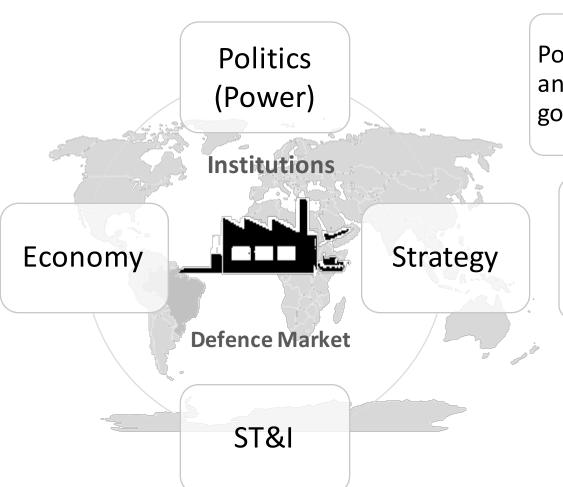
 Woapons of mass
 - Weapons of mass
- How the cutting edge (military) technology may affect?
 power distribution and the global governance?

Defence Industrial Base Context and conditioning factors



Defence Industrial Base (DIB) - Set of public and private enterprises, and civilian and military organizations that take part in one or more phases of research, development, production, distribution and maintenance of strategic defence products (MoD 2005).

Context and conditioning factors Monopsony, Institutions and Force Planning



Politics: security and defence goals.

Strategy: balance resources, means and ends. ⇒ Force planning.

Defence Acquisition System: ⇒ S&T demands.

Technology, Strategy and Force planning, and defence acquisition system

Political and Strategic Thinking

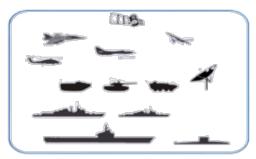
Force Planning



Military Assets

Technological challenges to the DIB ⇒











Defence Forces	Present	Tomorrow		Forces for the Future				
lui .	2015	2020	2025	2030	2035	2040	- ∕\/ →	
Solve Start	Maintenance	Acquisition Plans			Long term st	Long term strategic programs		

Questions...

The future weapons

What to expect in terms of "disruptive military innovations" in a 30-year horizon?

The current weapons will remain relevant in 30 years from now?

What are the challenges for the DIB and the implications for strategic planning in the long run?

Politics, Strategy and Technology

The major defence acquisitions derives from a force planning process that involves technological choices (and risks).

In the process, politics shapes the strategy, which generates demands for platforms and combat systems.

That is, efforts in military technology are geared to defence products ...

which needs were dictated by strategy, designed to achieve politically established purposes.

Transforming needs into real assets requires a defence acquisition system.

⇒...

Some challenges for the DIB

Complex and hitech products.

Long development period. Risk of obsolescence...

High valueadded products: exports.

Capital intensive long-term projects.

Increasingly expensive R&D infrastructure.

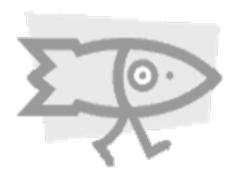
Dual technologies.

Competitive international market.

Highly qualified personnel.

Defence Acquisition System

STARTING POINT



Exists to manage the nation's investments in technologies, programs, and product support necessary to achieve the National Strategy for Defence and support the Armed Forces.

How to buy (procure) defence products successfully?

The investment strategy shall be postured to support not only today's force, but also the next force, and future forces beyond that.

Defence Acquisition System

Organisational structure

Specialised skills!

Methodological practices

Legal framework

Defence acquisitions outcomes



Problems

Unachievable Specifications. Additional R&D needs.

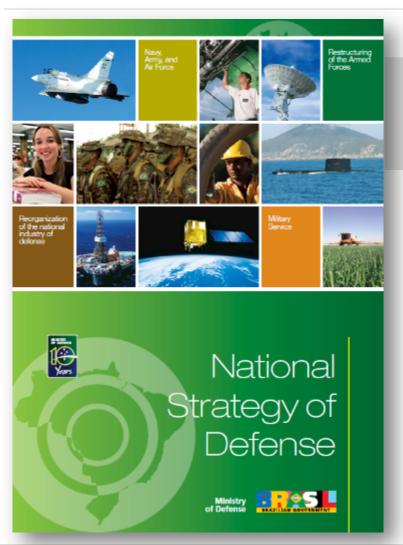


Cumulative delays. Spiraling costs.





Organisational structure and legal framework



Leverage of Defence Industry

- Brazilian defence industry is intended to ensure that the equipment needs of the Armed Forces are based on technologies that are domestically mastered.
- Strategic Sectors: Nuclear,Spatial and Cybernetic

Brazilian Defence Sector Historical perspective

The creation of transformation (SEPROD)

National of Defence Sector (2010)

Creation of MoD in (1999)

Armed Forces tradition of autonomy

The Brazilian Defence Sector is performing a long term transition in the defence acquisition practices and methodologies.





Minister of Defence

Secretariat General

EMCFA Joint Staff

Navy

Army

Air Force

SEORI

SEPESD

CENSIPAM

Secretariat of Defence Products (SEPROD)

Department of Defence Products (DEPROD) Department of Industrial Technology (DECTI) Department of Cataloguing (DECAT)

EMCFA: JOINT STAFF OF ARMED FORCES

SEORI: SECRETARIAT OF INSTITUTIONAL COORDINATION AND ORGANIZATION

SEPESD: SECRETARIAT OF PERSONAL, EDUCATION, HEALTH AND SPORTS

CENSIPAM: MANAGEMENT AND OPERACIONAL CENTRE FOR THE AMAZON PROTECTION SYSTEM

Huge areas to protect or to defend. Amazon and Blue Amazon.

Natural resources: water, biodiversity, energy, food...

Defined borders and jurisdictional waters.

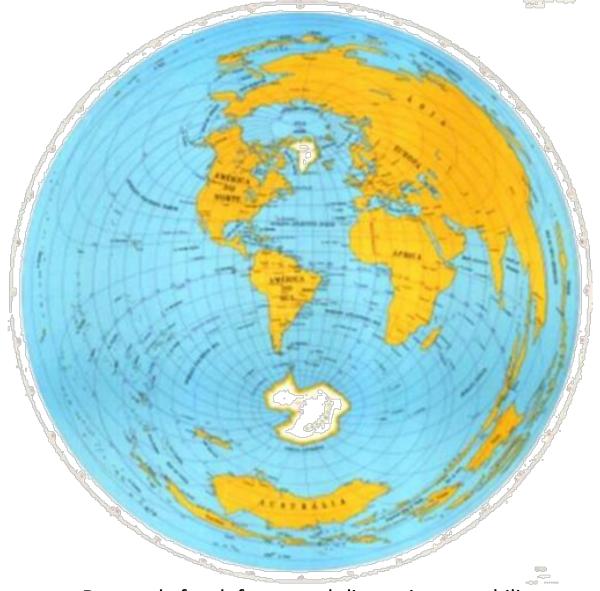
Challenging social inequality.

New and *hybrid* threats.

"Global player" aspirations.

Complex and fast changing world.

Geopolitical and strategic context



Force Planning and Defence Acquisition

Politics



Strategy



Force Planning



Strategic Projects

"Defence White Paper"





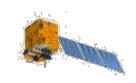


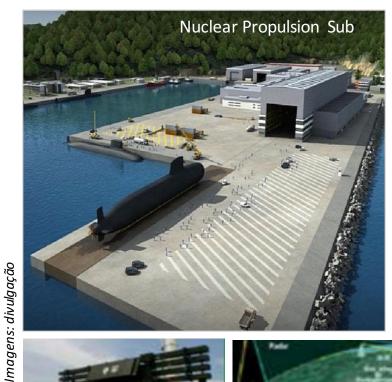






Technological Challenges



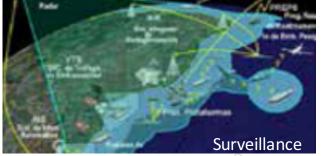




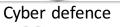














Strategic Projects and the DIB

Technological demands (orders) from the defence sector are a major challenge.

which is reflected in an enclosed and competitive defence market.

The answer depends on the DIB, the degree of technological self reliance,

among other factors, ST&I-Def. conforms an international arena of power struggle,

its determination to overcome obstacles and pursue innovation...

For emerging countries, the DIB requires an extraordinary effort because...

Final considerations

The challenge of the long term planning in the current S&T evolution pace.

The limitations and risks of the "technological determinism".

The importance of a "defence acquisition system"...

Between the list of needs and the acquisition of the military assets there may be a large distance...

Defence procurement can leverage the industry self reliance, but can also cause more dependence from abroad.

The force planning process requires the S&T feasibility to be continuously considered since the beginning.

It also requires taking into account the defence acquisition system dynamics and its intrinsic limitations.

It is inherent to the highest political levels the responsibility for the choices and risks of technological options.



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Thank You!

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