



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



KING'S COLLEGE LONDON - BRAZIL INSTITUTE  
International Conference

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**“SCIENCE & TECHNOLOGY, STRATEGY AND DEFENCE INDUSTRY:  
CHALLENGES FOR THE WAY AHEAD”**

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# Summary

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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 C<sup>4</sup>ISR... /netcentric warfare...
- Cyber-weapons
- Direct energy weapons
- Soldier of the future

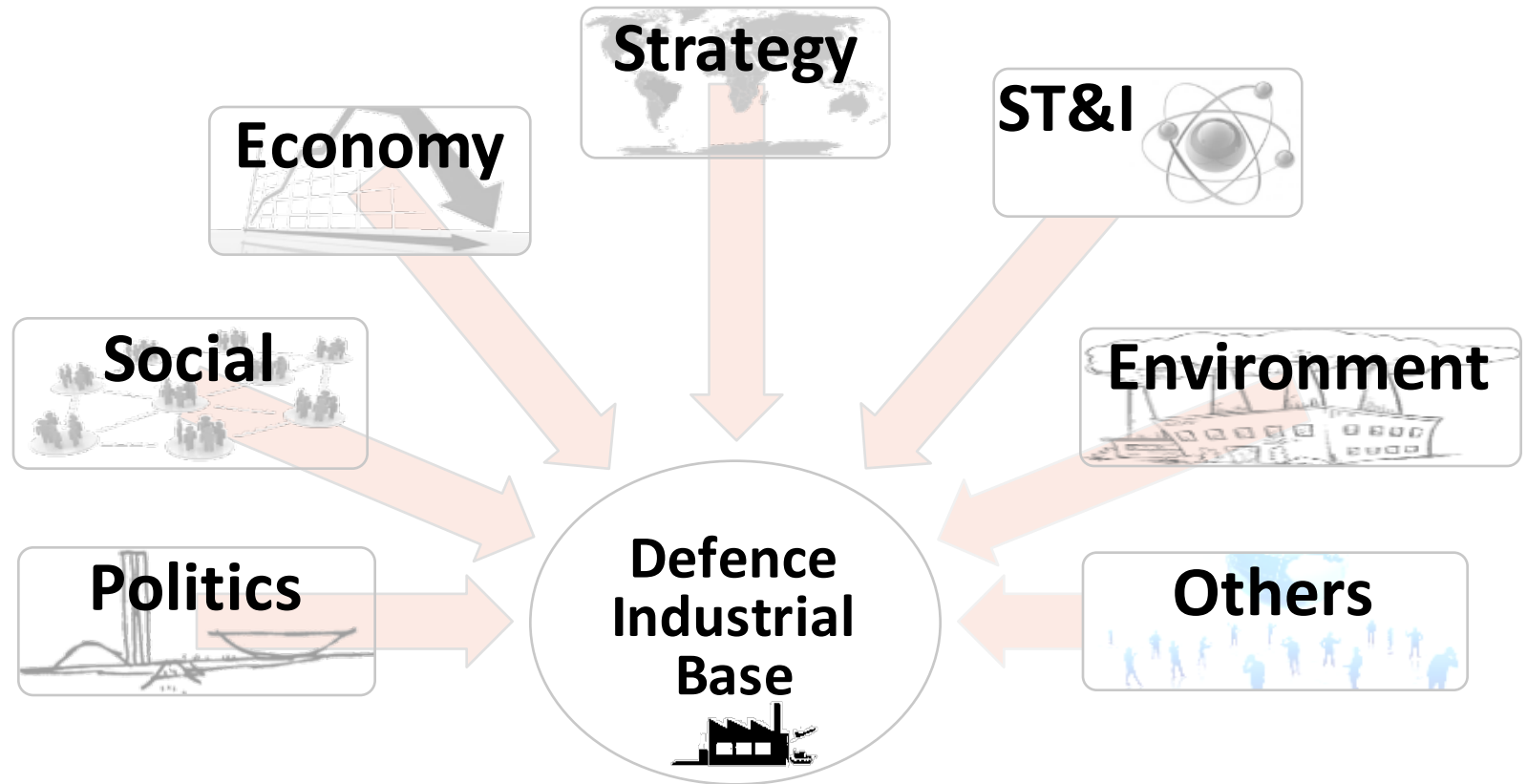
- What technologies to prioritise? Which are (or will be) within the arm's reach?

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

# Defence Industrial Base

## Context and conditioning factors

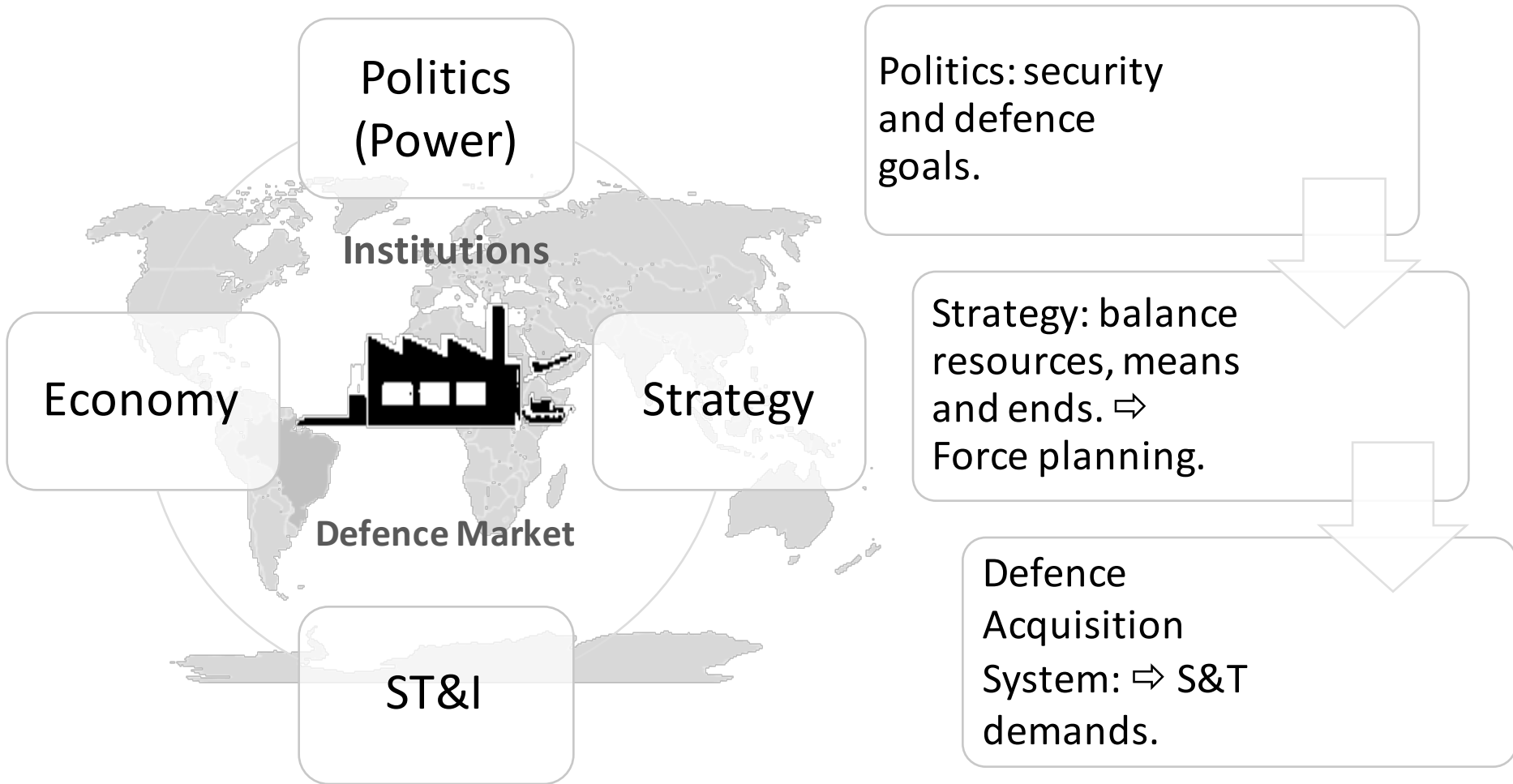
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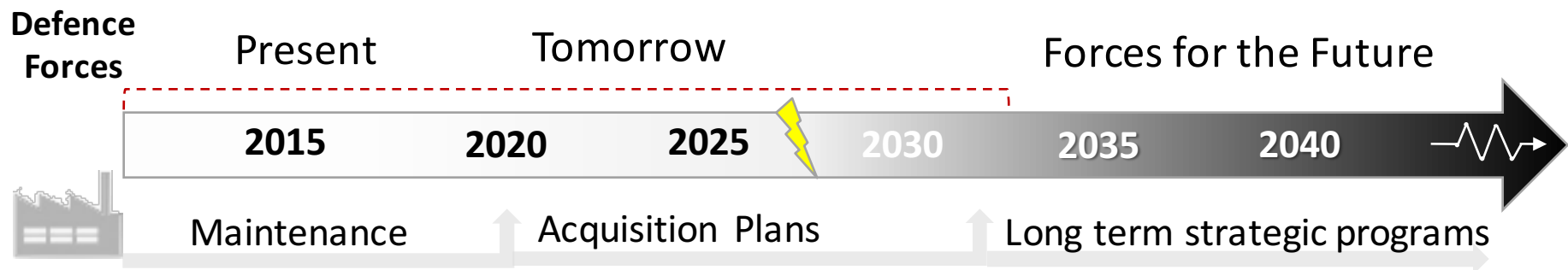
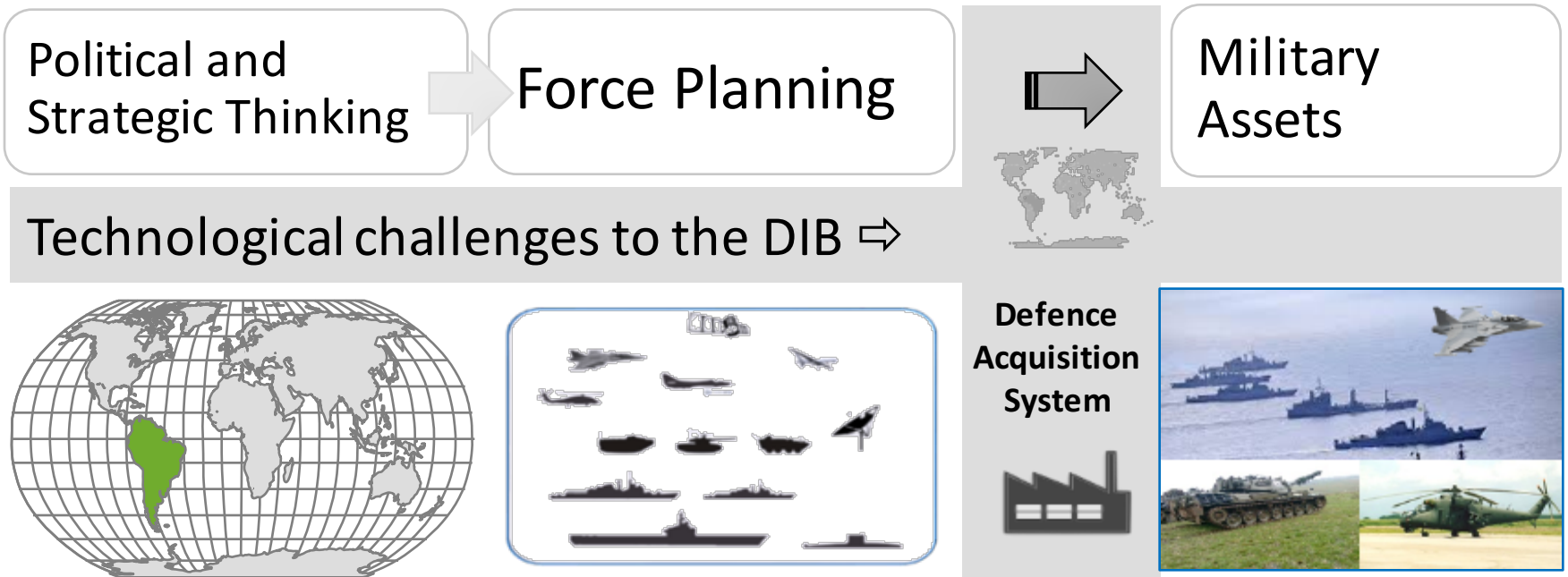
**Defence Industrial Base (DIB)** - Set of public and private enterprises, and civilian and military organizations that take part in one or more phases of research, development, production, distribution and maintenance of strategic defence products (MoD 2005).

# Context and conditioning factors

## Monopsony, Institutions and Force Planning



# Technology, Strategy and Force planning, and defence acquisition system



# Questions...

## The future weapons

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

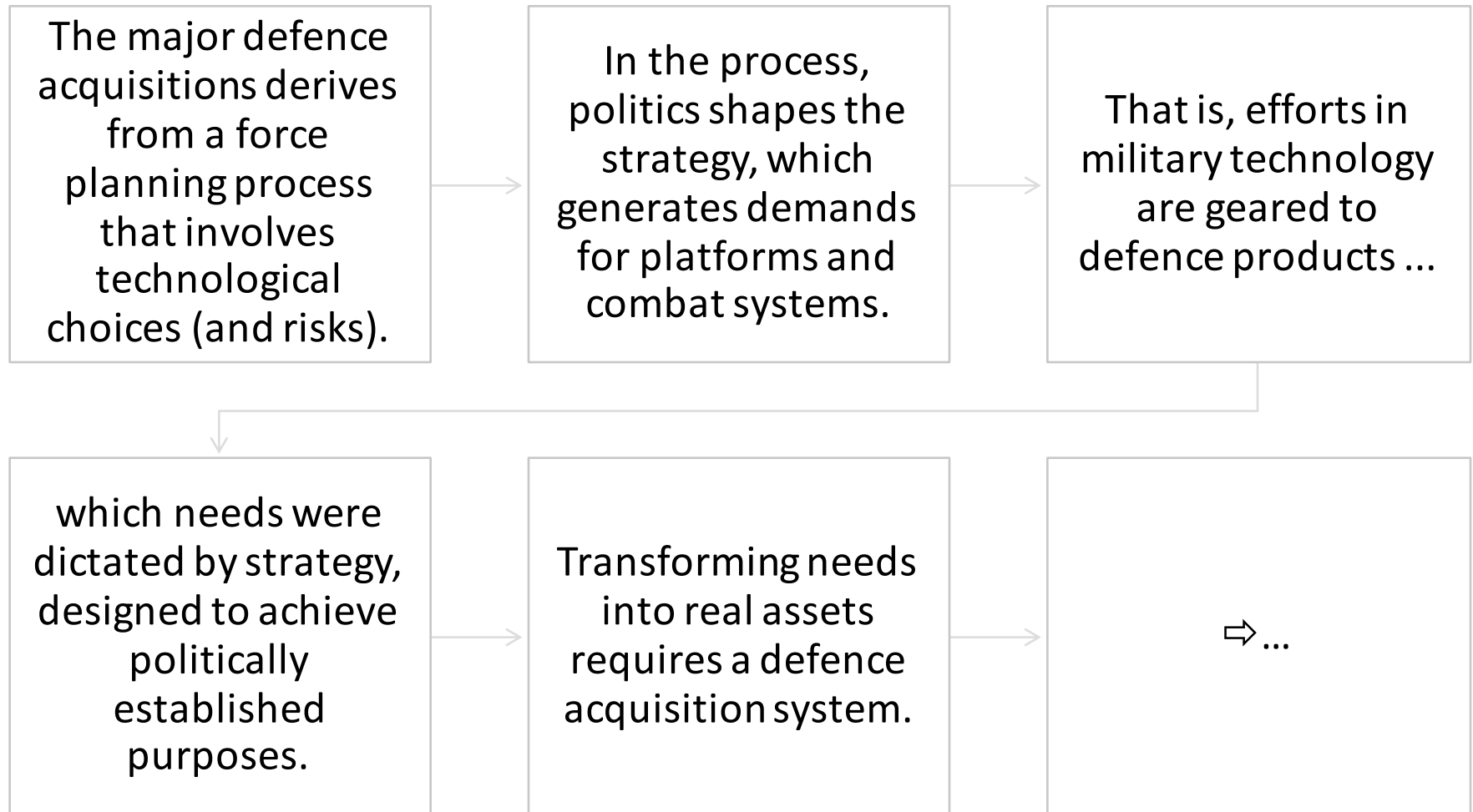


The current weapons will remain relevant in 30 years from now?



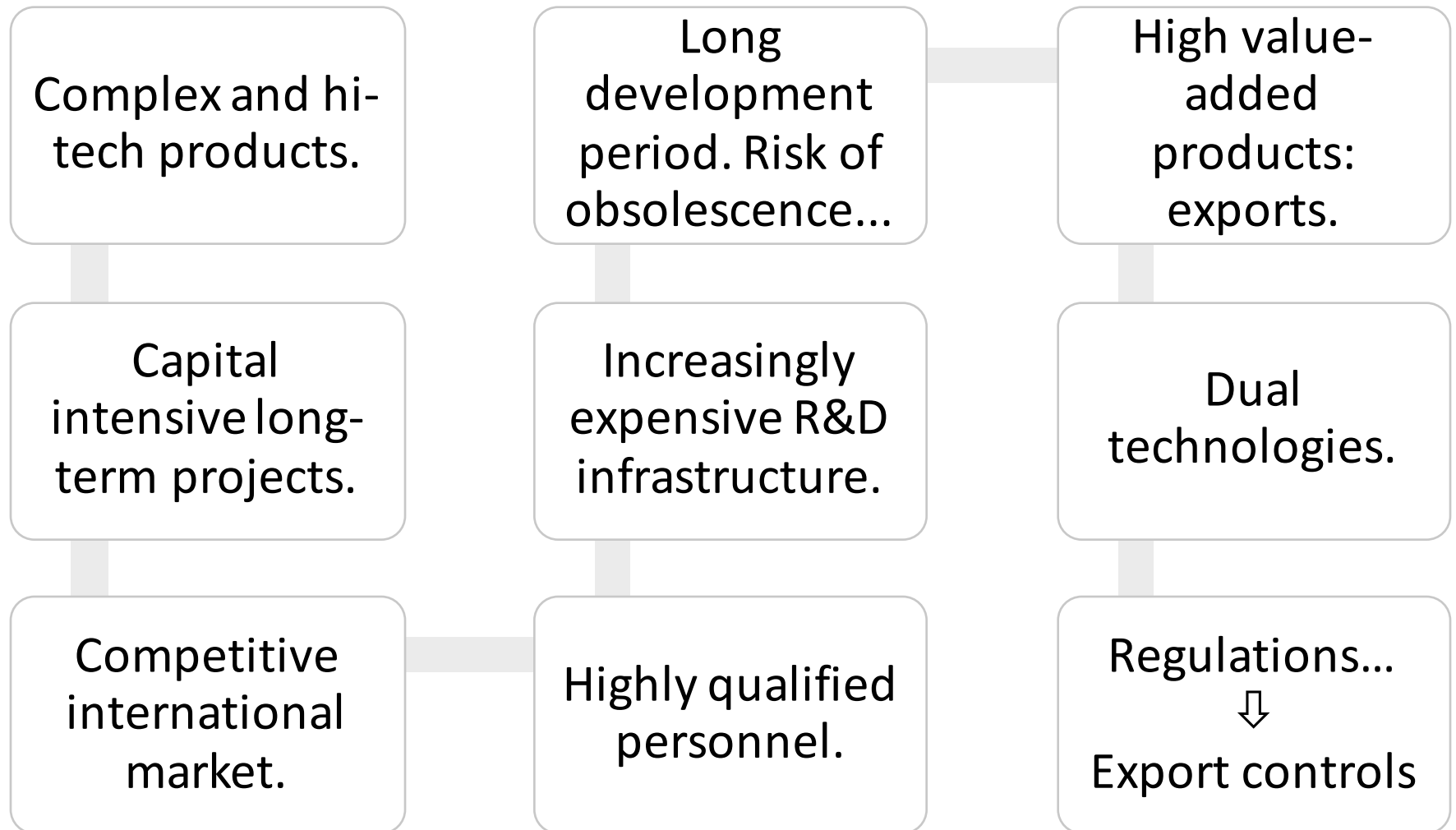
What are the challenges for the DIB and the implications for strategic planning in the long run?

# Politics, Strategy and Technology



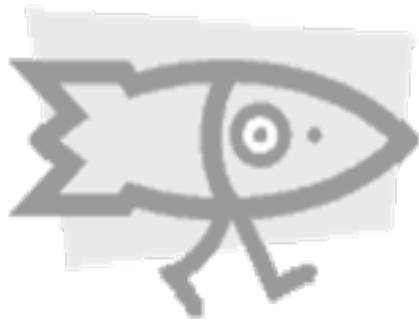


# Some challenges for the DIB



# Defence Acquisition System

STARTING POINT



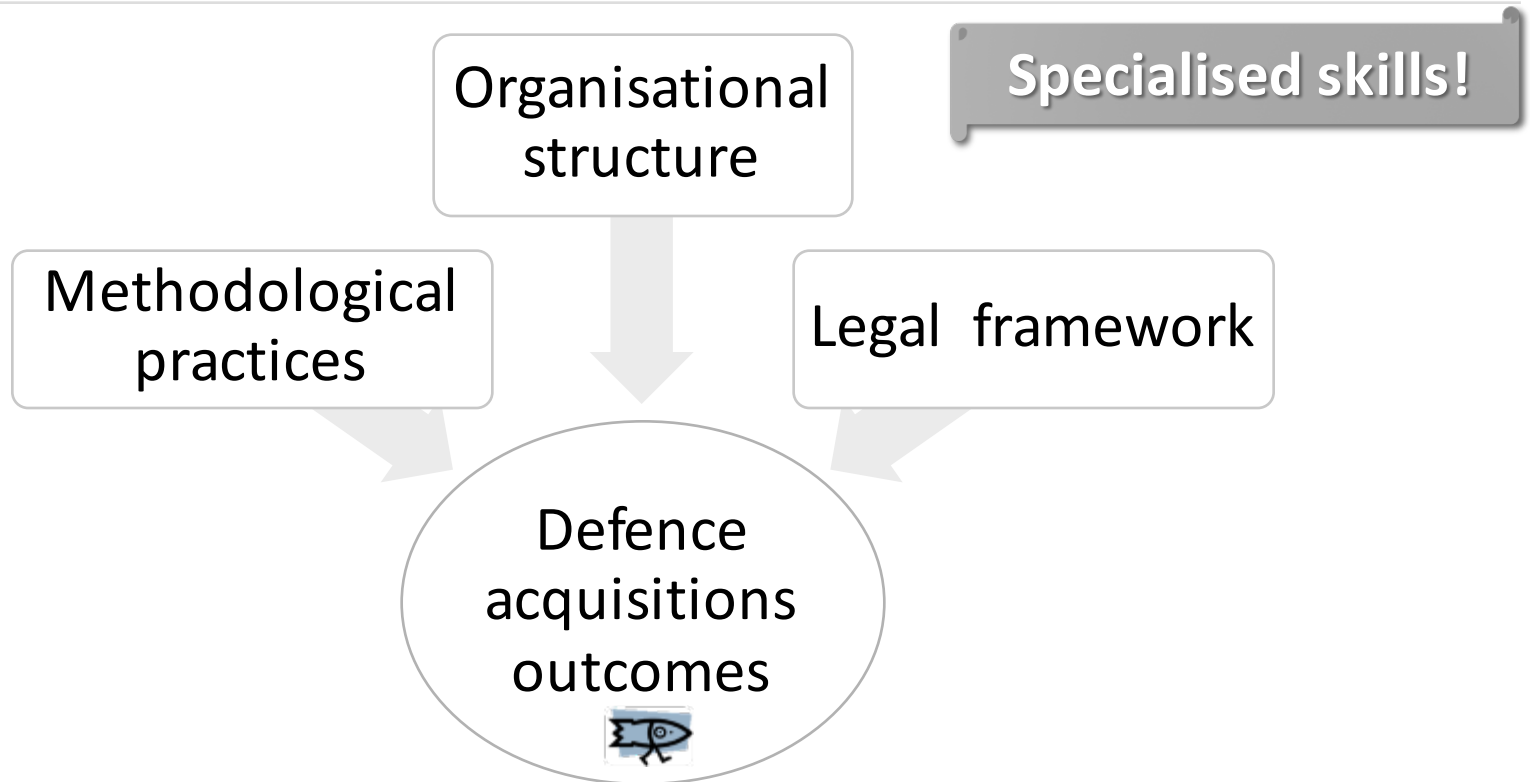
How to buy (procure)  
defence products  
successfully?

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.

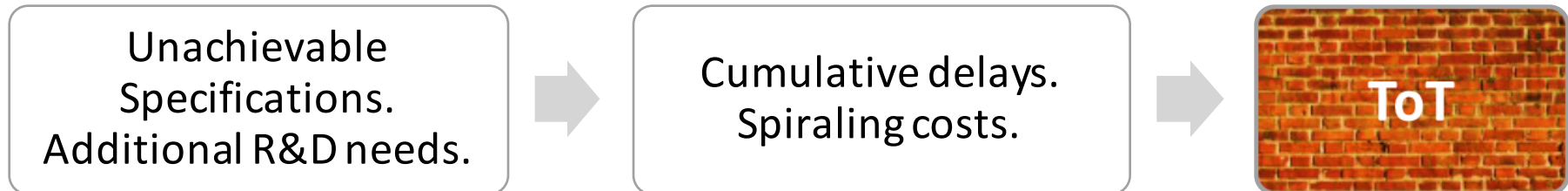


The investment strategy shall be postured to support not only today's force, but also the next force, and future forces beyond that.

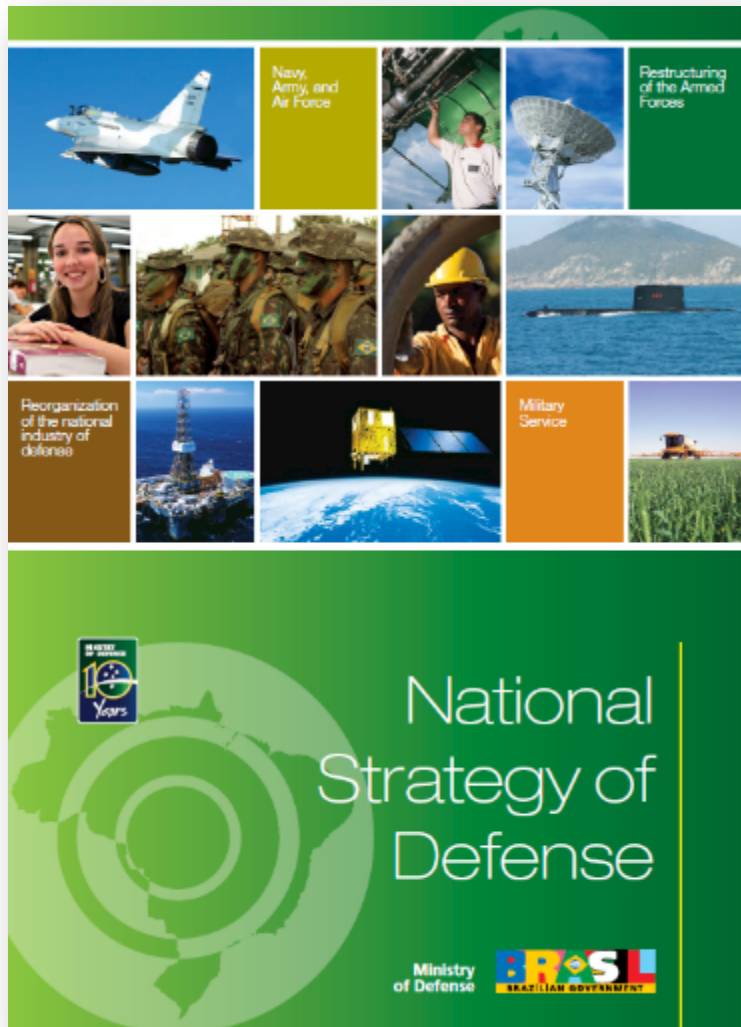
# Defence Acquisition System



## Problems



# Organisational structure and legal framework

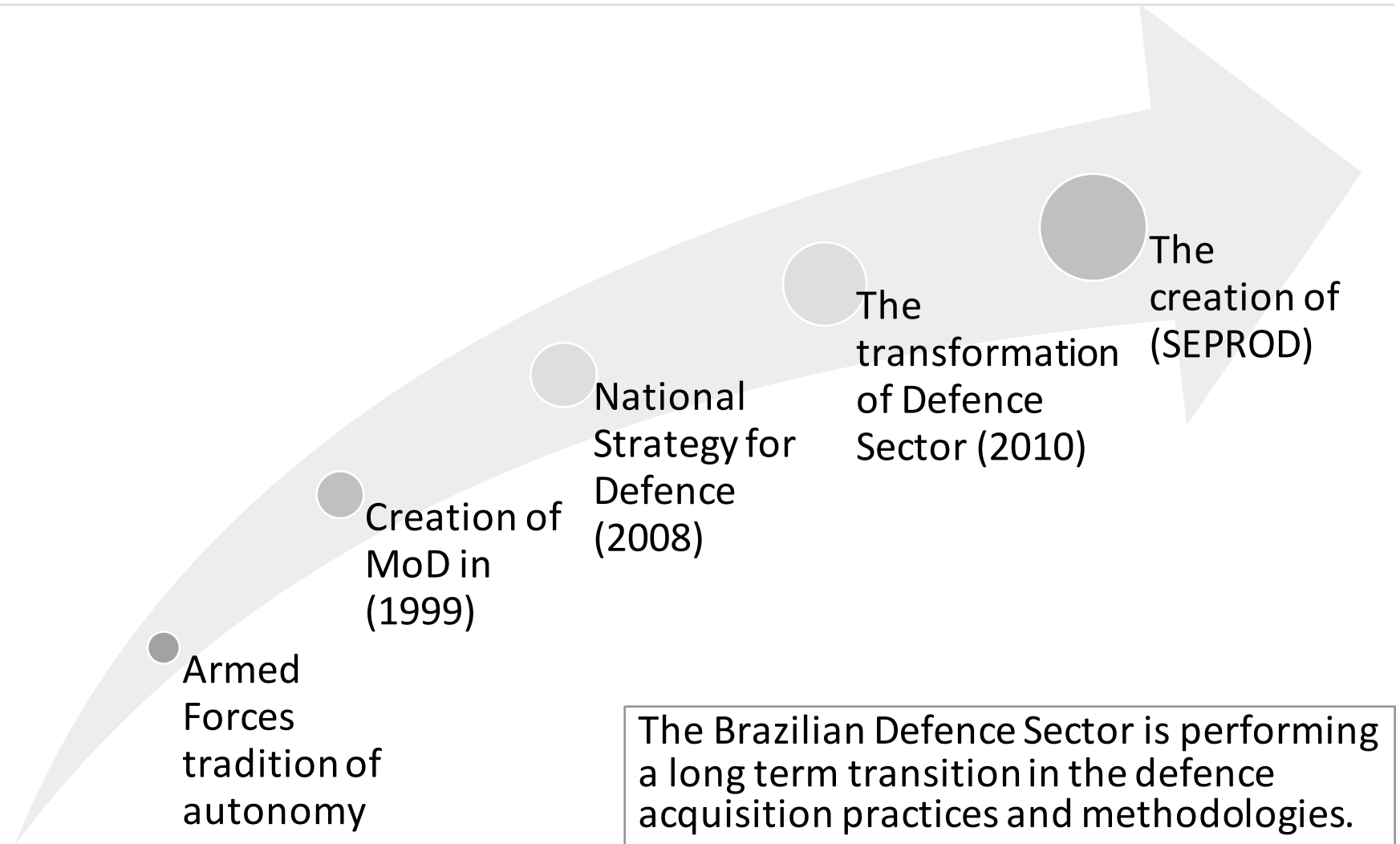


## Leverage of Defence Industry

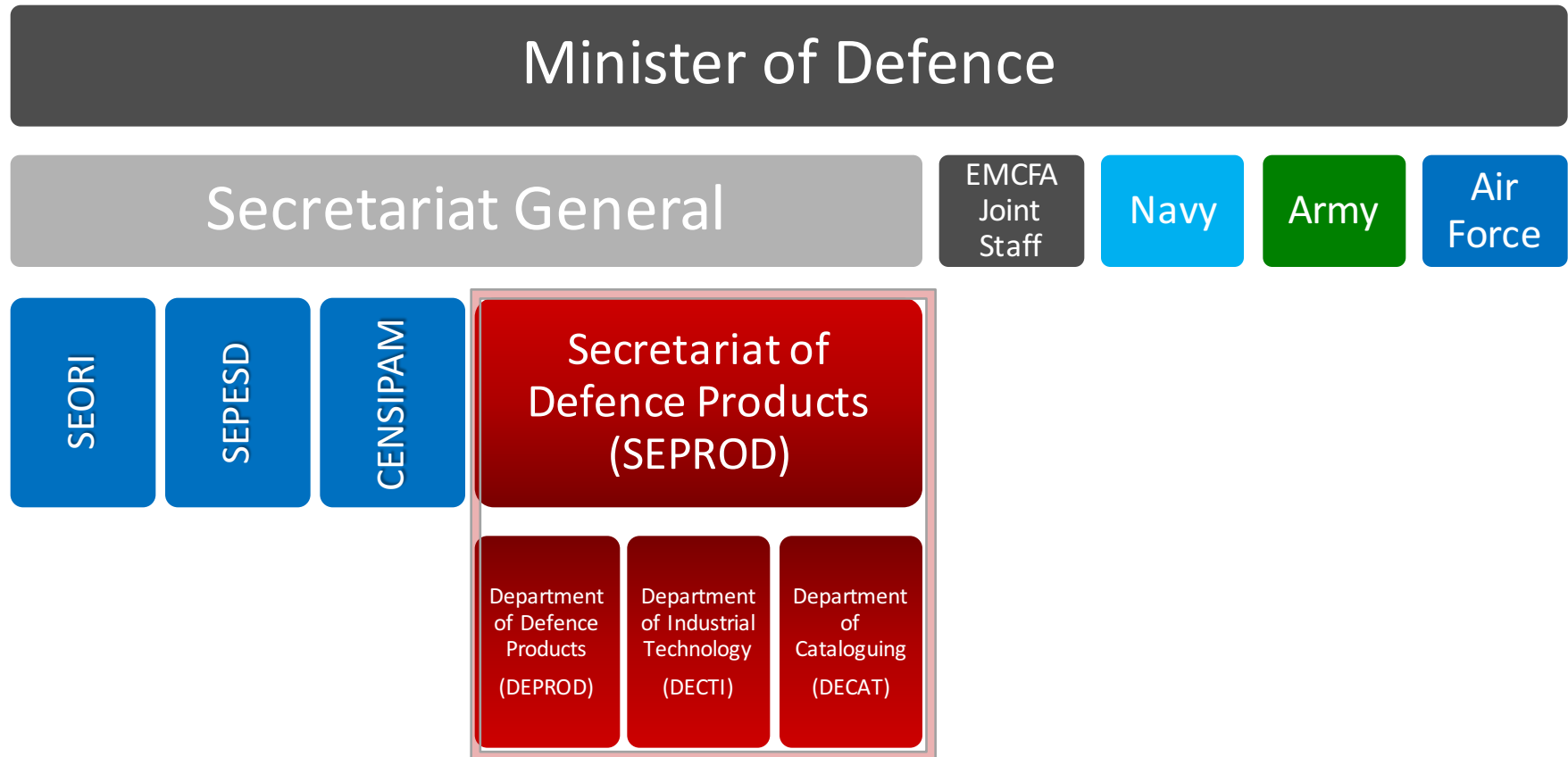
- Brazilian defence industry is intended to ensure that the equipment needs of the Armed Forces are based on technologies that are domestically mastered.
- Strategic Sectors: Nuclear, Spatial and Cybernetic

# Brazilian Defence Sector Historical perspective

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# Organisational Structure



**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.

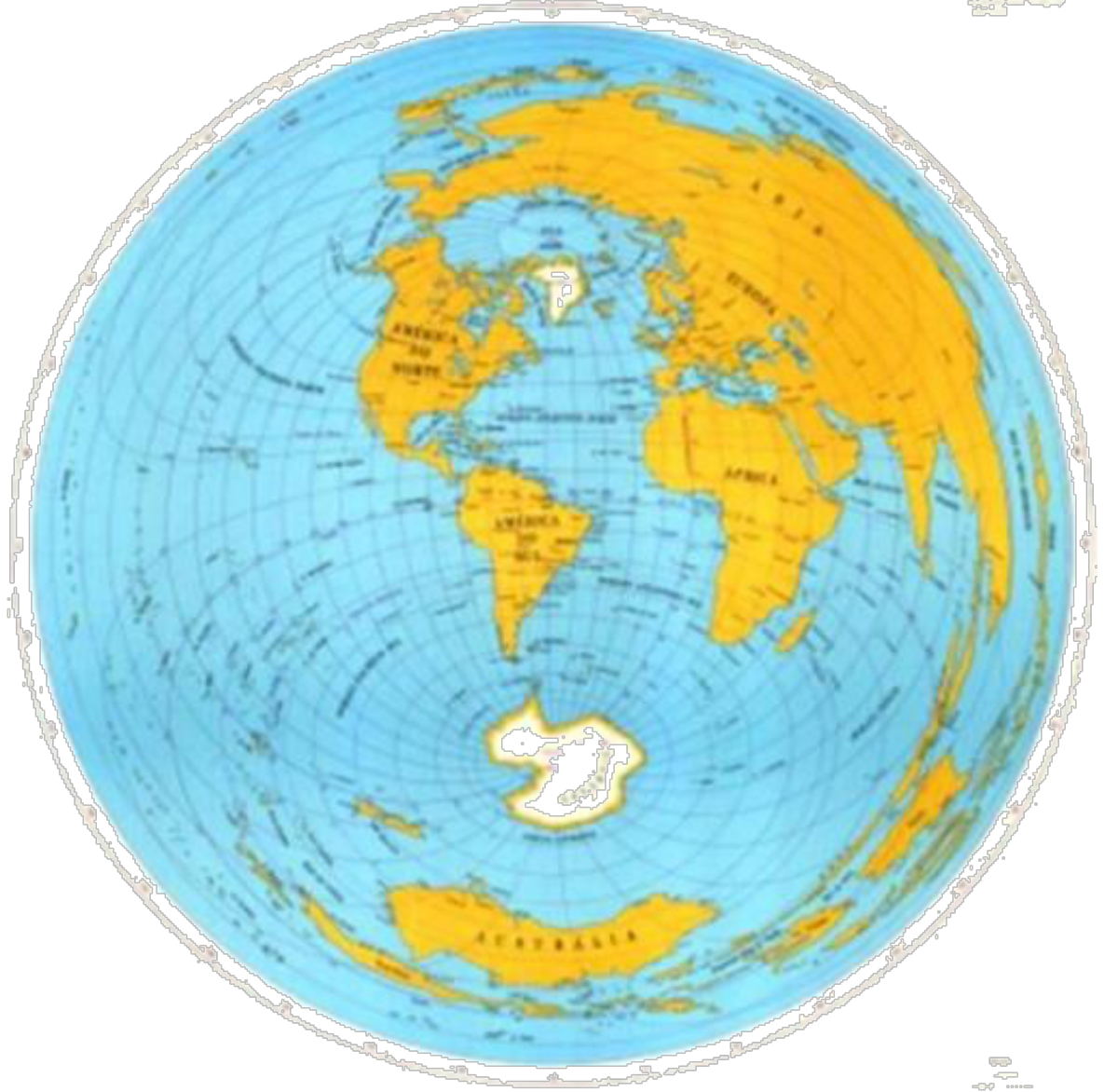
Challenging social inequality.

New and *hybrid* threats.

"Global player" aspirations.

Complex and fast changing world.

## Geopolitical and strategic context



Demands for defence and dissuasion capability.

# Force Planning and Defence Acquisition

Politics



Strategy



Force  
Planning



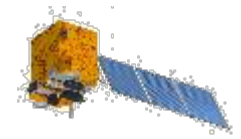
Strategic  
Projects

“Defence White Paper”





# Technological Challenges



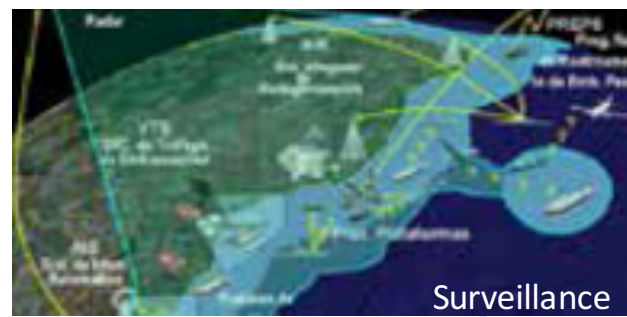
Space Program



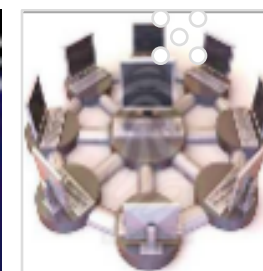
Nuclear Propulsion Sub



Rockets



Surveillance



Cyber defence



Surveillance

Imagens: divulgação

Imagens: divulgação

# Strategic Projects and the DIB

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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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