

CENTRO DE INVESTIGAÇÃO  
DA ACADEMIA MILITAR  
(CINAMIL)

# Information Age Vulnerabilities and Risks: The Emergence of a National Information Strategy



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11th International Command and Control Research and Technology Symposium (11<sup>o</sup> ICCRTS)

“COALITION COMMAND AND CONTROL IN THE NETWORKED ERA”

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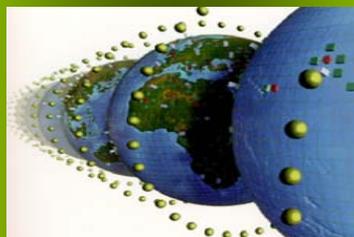
# Summary

- Introduction
- The National Information Infrastructure
- Risk Analysis and Risk Management Model
- The Emergence of an Information Strategy
- Implementing the National Information Strategy
- NII Protection
- Conclusions



# Introduction

**Internet & Global  
Networked Society**



**oNew Competition  
Parameters**



**Information  
Infrastructures &  
States Sovereignty**

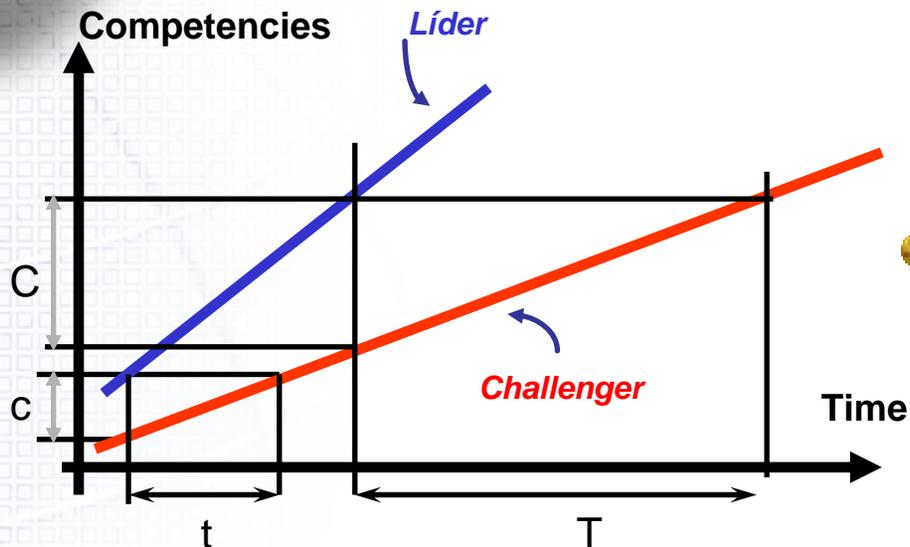


**Information  
Competition  
and Conflict**



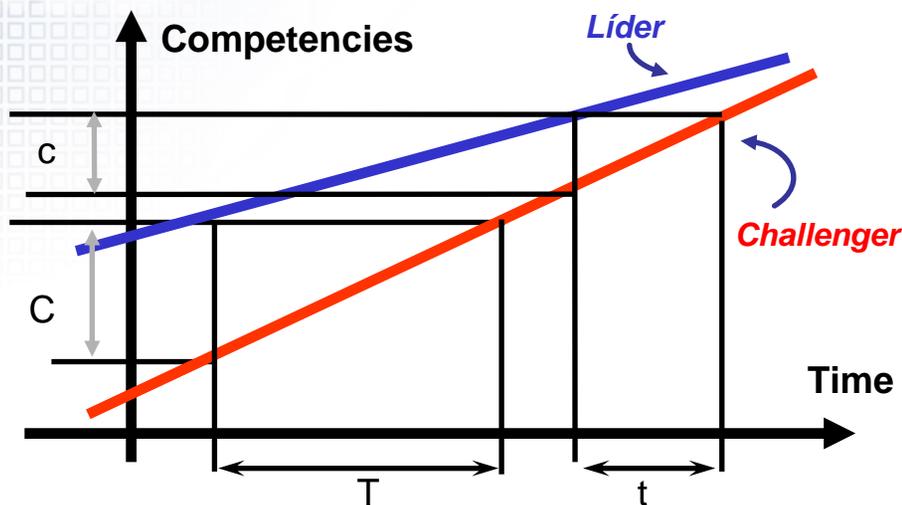


# Technological Evolution Impact



$$\frac{dC_{\text{Leader}}}{dt} \gg \frac{dC_{\text{Challenger}}}{dt}$$

- **Before:** Available technologies increased leader advantage position



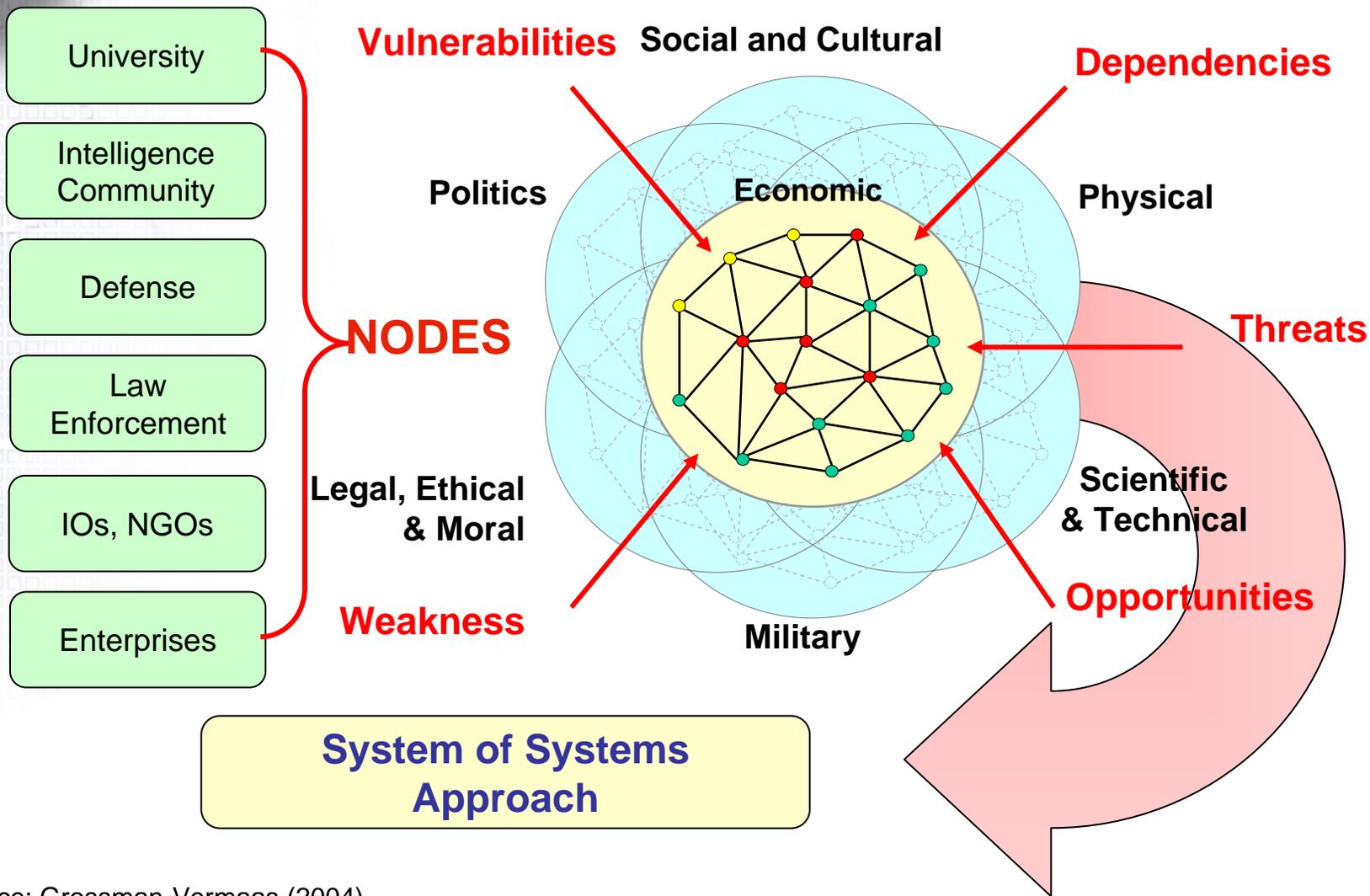
$$\frac{dC_{\text{Leader}}}{dt} \overset{\text{is possible}}{\lll} \frac{dC_{\text{Challenger}}}{dt}$$

- **Now:** ICT reduces leader advantage

Source: "A Nova Economia Digital" ( 4ª Conferência NETIE 1999).



# Networked Society: A System of Systems



Source: Grossman-Vermaas (2004)



# Concepts

Source: Taborda, João e Ferreira, Miguel (2002), Competitive Intelligence: Conceitos, Práticas e Benefícios, Editora Pergaminho, Cascais, p. 61.

## *Competitive Intelligence*

The **ethic** and systematic process of retrieving, analyzing and managing information that could affect **planning** activities, **decision making** and the **operations** of an organization.



### Objective:

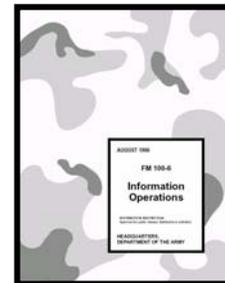
Achieve an **Information Advantage** over **Competitors** in a **Ethic and Legal Way**



# Concepts

## Information Warfare

Source: FM 100-6  
(1996, p.GL-8)



“encompasses all kinds of actions that we can conduct to **preserve** our information systems and resources from the **exploitation**, **corruption** or **destruction** and to explore, corrupt and destroy the information systems and resources of an adversary”



**Objective:**

- **Information Superiority;**
- **Defensive Information Warfare;**
- **Offensive Information Warfare.**

Achieve a **Information Advantage/Superiority**



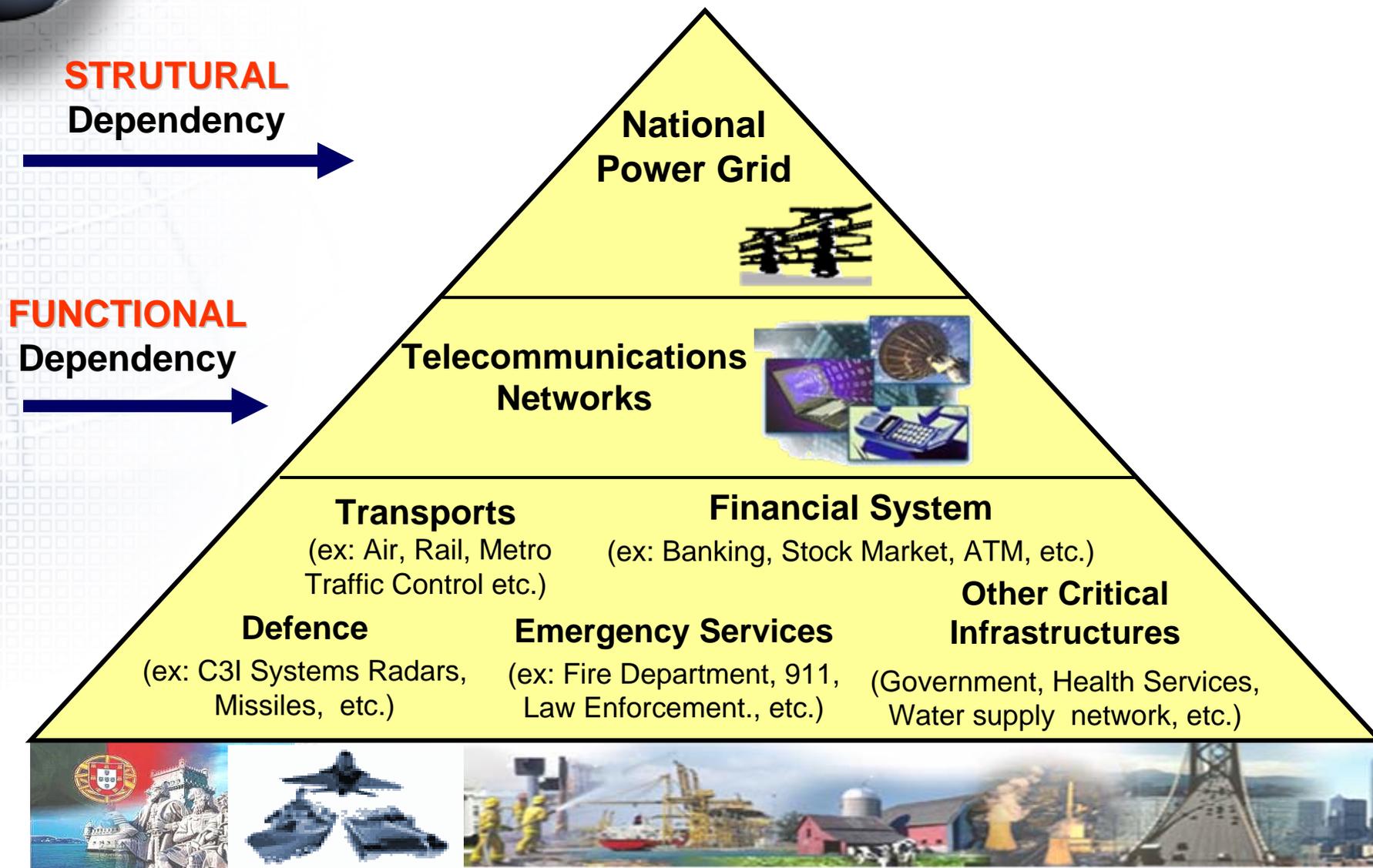
# National Information Infrastructure



- **Undefined States' traditional Sovereignty Borders (Transnational Communications Networks);**
- **Difficulties to establish territorial jurisdictional principles;**
- **Emergent need to rethink and redefine NII's Security and Protection.**

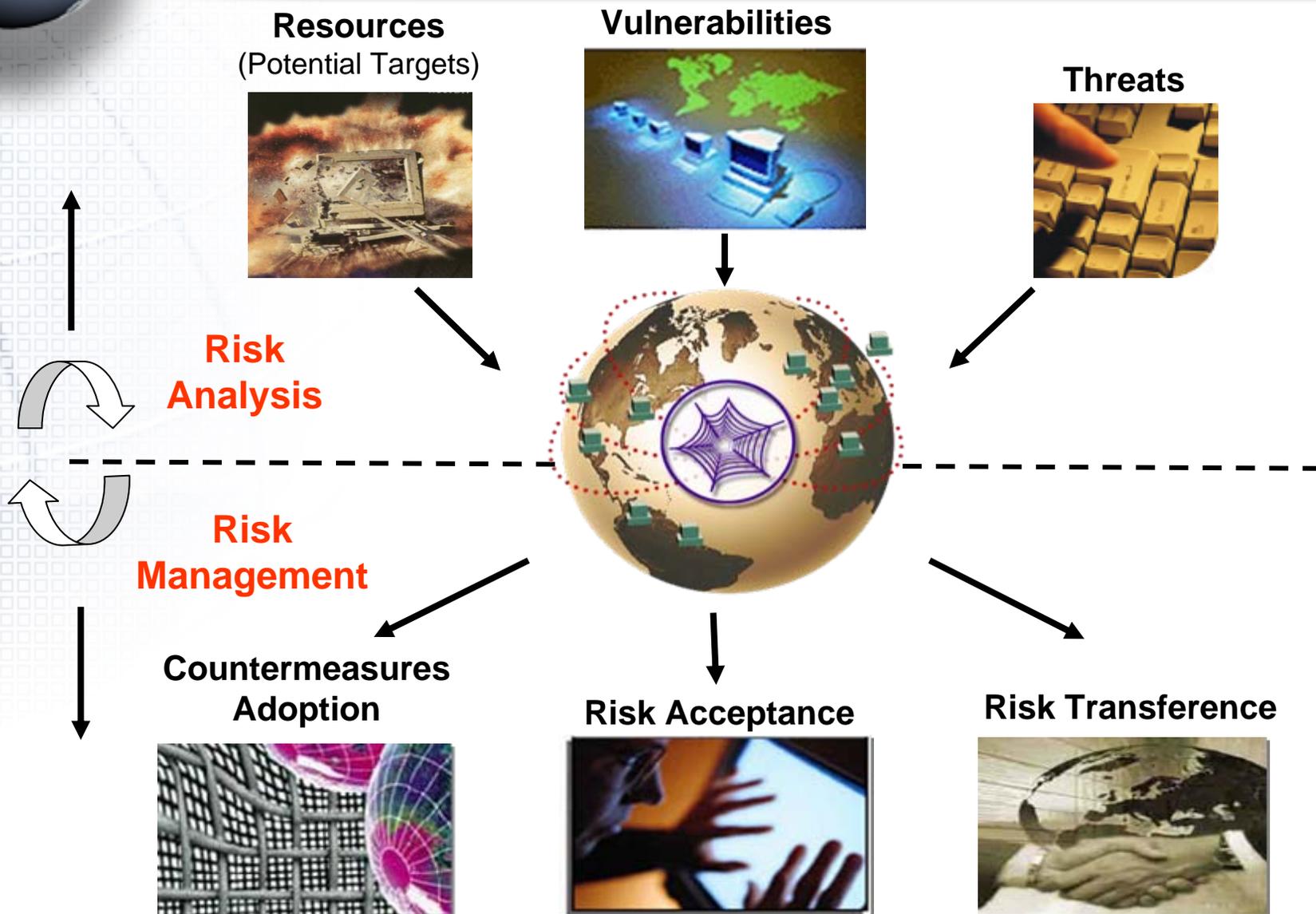


# National Critical Infrastructures: Interdependencies Model





# Risk Analysis and Risk Management Model



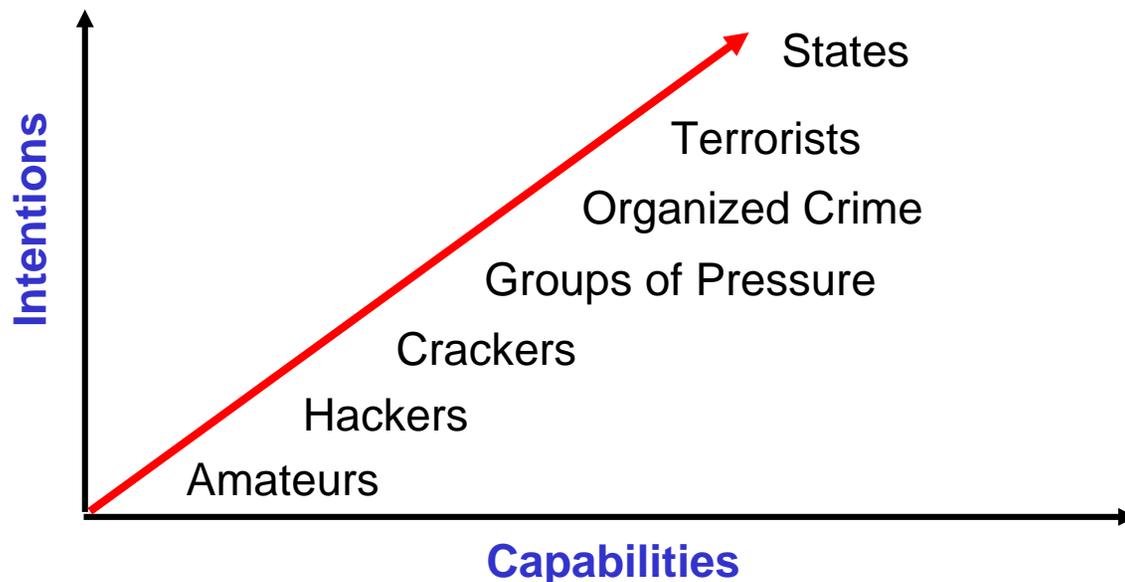


# IW Threats to States' Government ...

	PM / Governo	Negócios Estrangeiros	Administ. Interna	Justiça + Forças Polic.	Defesa	Finanças	Economia	Energia + Transportes
<b>Echelon</b> 	●	●		●	●	●	●	●
<b>Espionagem</b> 	●	●	●	●	●	●	●	●
<b>Insiders</b> 	●	●	●	●	●	●	●	●
<b>Ciberataq.</b> 	●	●	●	●	●	●	●	●
<b>Virus &amp; Co</b> 	●	●	●	●	●	●	●	●
<b>Acidentes</b> 	●	●	●	●		●	●	●
<b>Destabiliz.</b> 	●	●		●	●		●	
<b>Desinfor.</b> 	●	●		●	●	●	●	
<b>Manipulaç.</b> 	●	●		●	●	●	●	
<b>Chantagem</b> 	●	●		●	●	●	●	●
<b>Extremismo</b> 	●	●	●	●	●			●
<b>Terrorismo</b> 	●	●	●	●	●	●		●



# Threat Level



Fontes: Martin Libicki (1996);  
Morris (1995)

Information Attack

Probability X

Capabilities  
vs  
Intentions



Threat Level



Important  
vs  
Strategic  
Level



Information Warfare  
Weapons

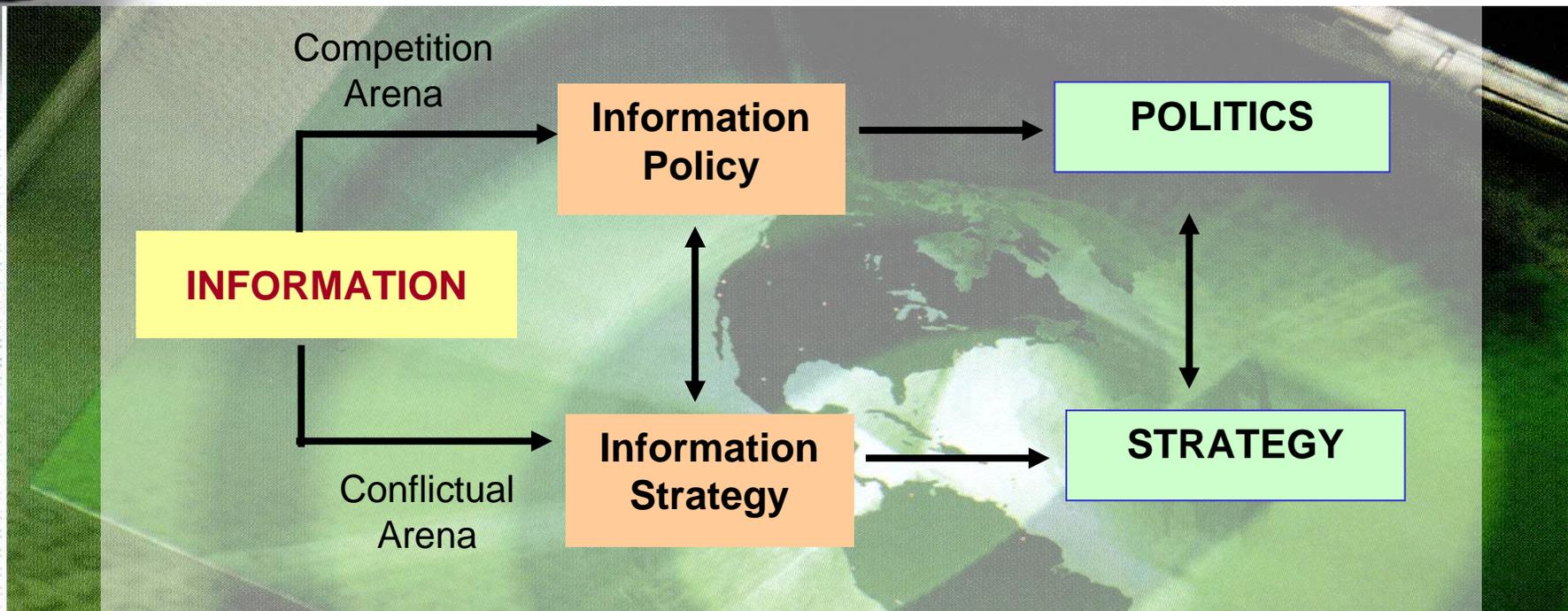
can be considered

**Weapons of  
"Mass Disruption"**

Disruptive Power



# National Information Strategy



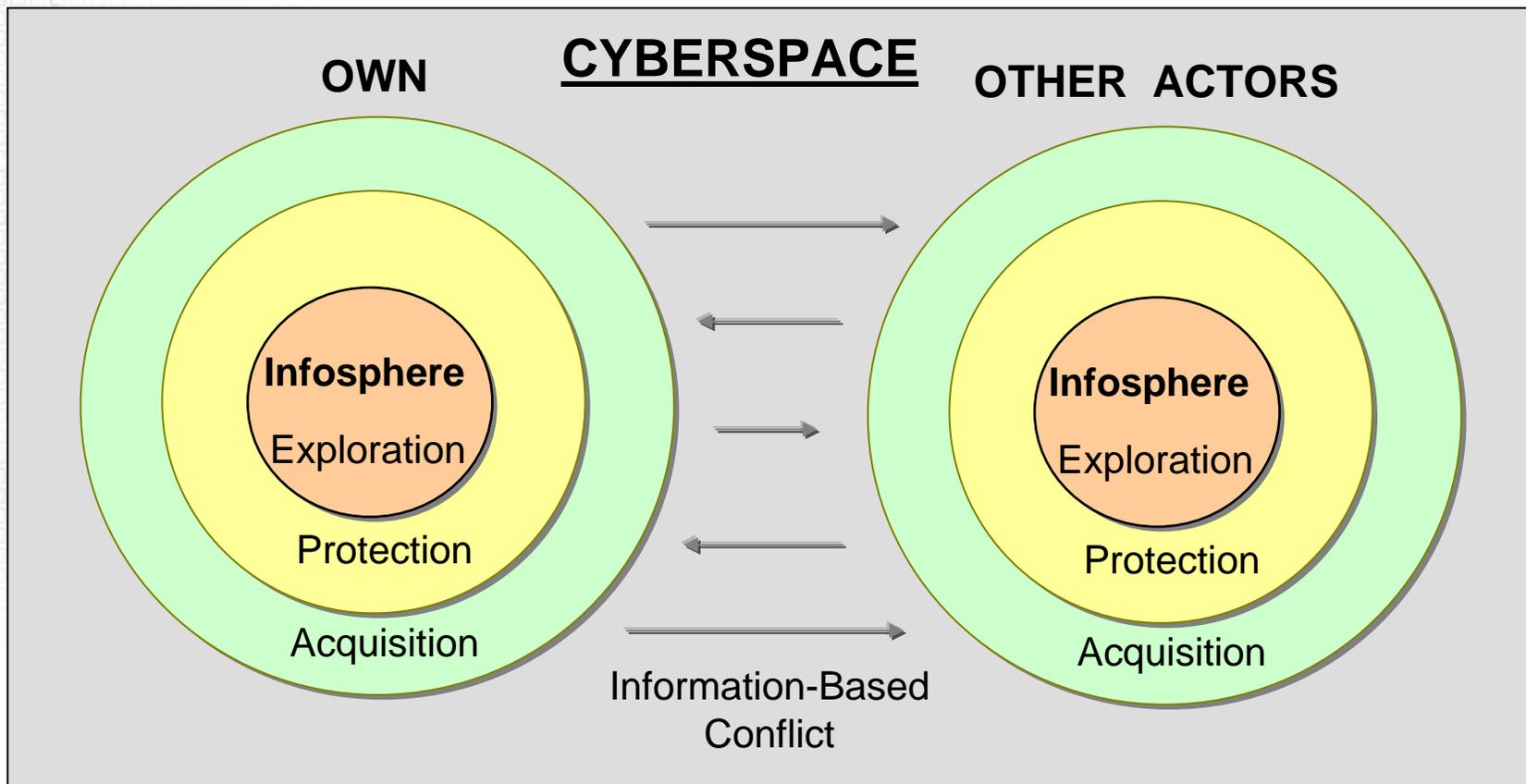
## NATIONAL INFORMATION STRATEGY

The **art and science of the information (resource/weapon) development** and its use with the aim to fulfil the objectives defined by National Policy.





# National Information Strategy: **Scope**



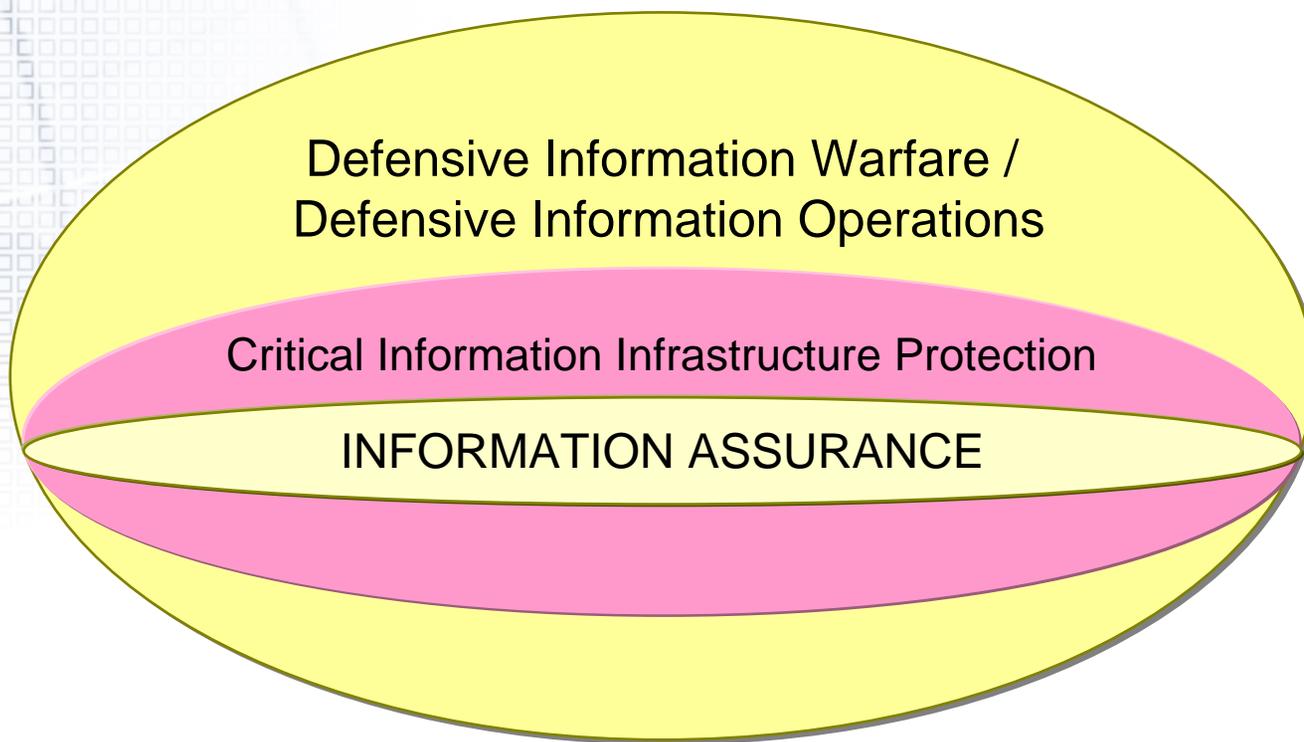
Source: Canadian Forces Information Manual Operations (1998)



# National Information Infrastructure Protection: **Conceptual Model**

## **MAJOR CONCERNS:**

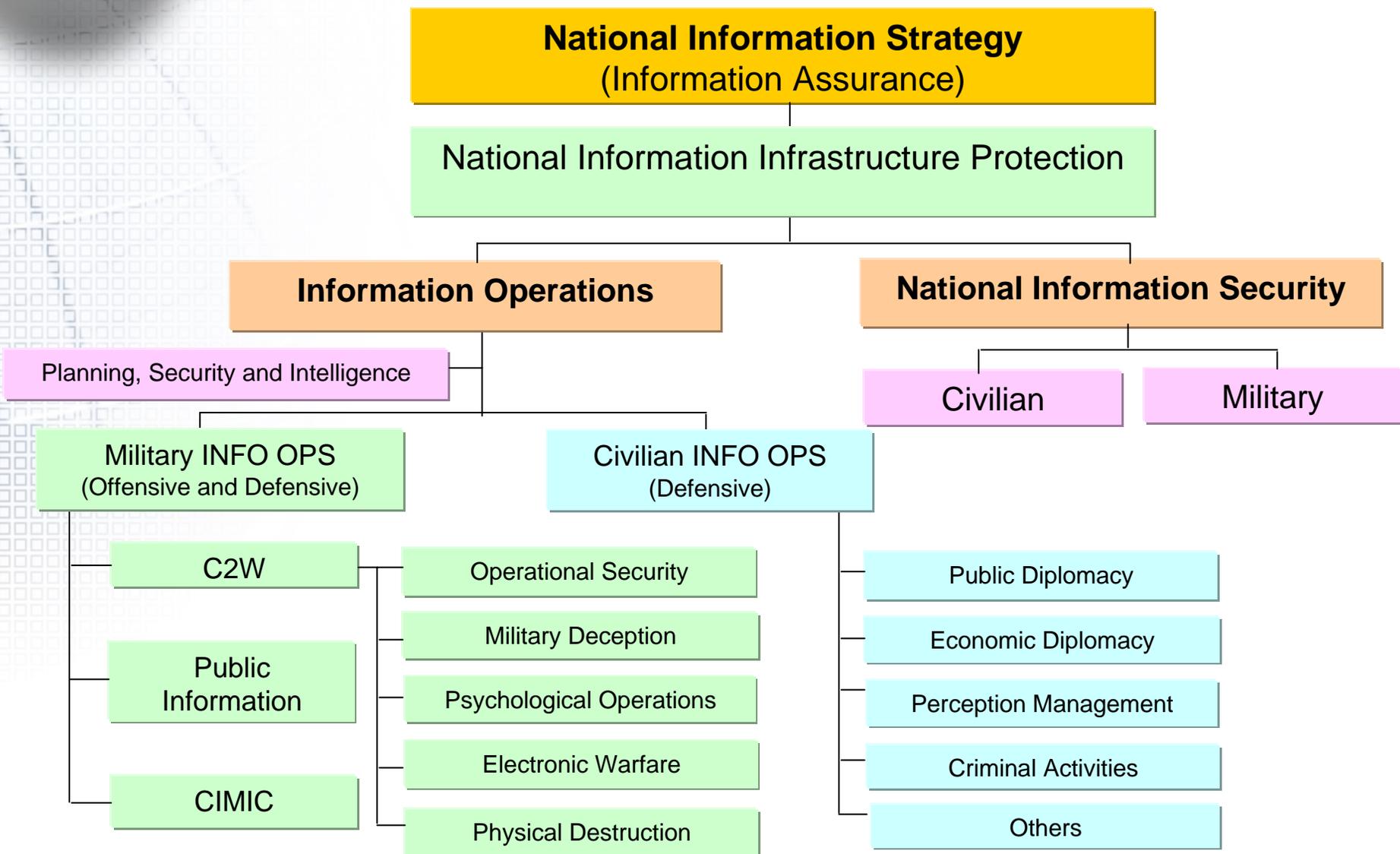
- Availability and Integrity of Information of National interest;
- Country's efficiency in its information processing and exploitation.



Source: Lars Nicander (2001)



# National Information Strategy: Related Activities



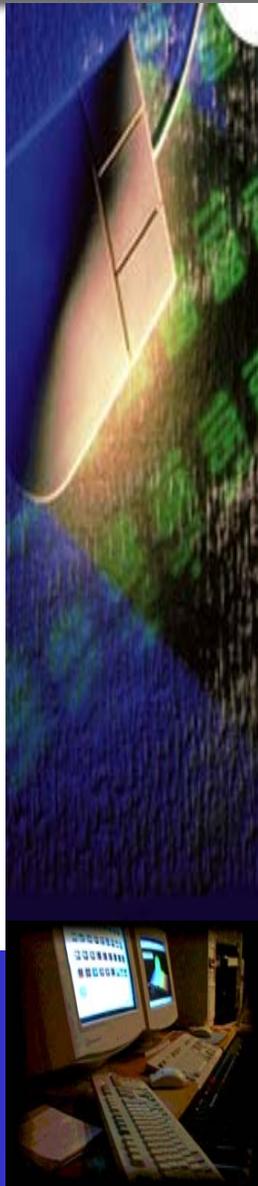


# NII Protection: Important Issues

- **New Organization/Structure? New Function?**
- Critical Information Infrastructures **Security Standards Definition** (Governmental & Private);
- **National CERT** (Alert & Report System)
- **Education & Training Programs;**
- Security mechanisms and Critical Information Infrastructures redundancy **Financing;**
- **International Cooperation Programs** (e.g. ONU, UE, OTAN).
- **Risk Management Philosophy: Protection, Detection & Reaction.**

- **Protection:** Information Operations (Military/Civilian);

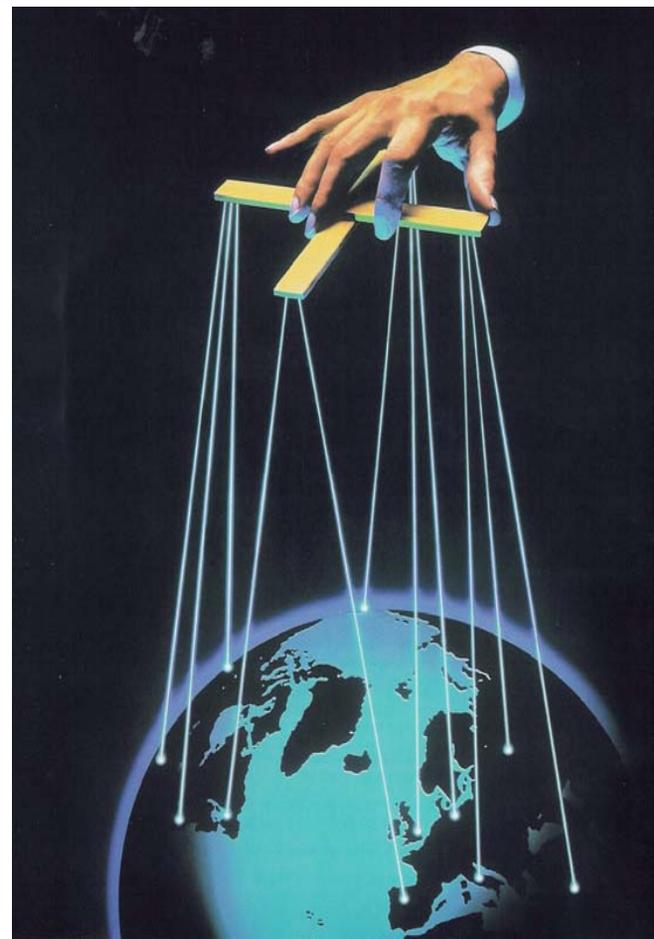
- **Detection and Reaction:** National Information Security





# Conclusions

- Paradigmatic relationship between Social development and security (**Information Age vulnerabilities dynamics**)
- IW is a **global concept** that deeply influences Nation-States' Policy as well as its Security and Defense;
- **Modern conflicts epicenter** moved to the geo-economics and transnational arenas (ex: Echelon e Carnivore);
- **National interests fulfillment requires a clear definition of a National Information Strategy.**



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