

# International Security and Cybersecurity III



# Introduction

- Reminder: Course outline
- Recap: Main points from last week

# Course outline

- Introduction, contexte et notions clés
- La sécurité internationale
  - Approches d'analyse
  - Menaces et dangers
- Acteurs majeurs de la sécurité internationale
  - L'État
  - Organisations internationales
  - Organisations régionales
  - Autres organisations et acteurs
- Le cyber espace – réalité ou « hallucination collective »
  - Le cyber espace comme milieu conflictuel
  - États, entreprises et acteurs dans le cyber espace
- Conclusions



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# Recap - Key Notions

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## Cyber espace

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## Conclusions

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## Examen

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# Security Threats

TABLE 1.5 Security threats

<i>Threats</i>	<i>The threatened</i>			
	<i>Individuals</i>	<i>Societal groups</i>	<i>Government</i>	<i>The world</i>
<i>Individuals</i>	crime, 'hate crimes'	'hate crimes'		
<i>Societal groups</i>	'hate crimes'	genocide	civil war	
<i>Government</i>	human rights abuses	genocide, politicide	war, economic sanctions	nuclear war
<i>Global structures</i>	poverty, industrial accidents, pollution	global warming	global warming	
<i>Non-human</i>	disease, natural disasters			asteroid/comet collision

Hough, P. (2023. 20-21)

Hough, P. (2023). *Understanding Global Security*. London and New York, Routledge.

# L'État

- L'État demeure l'acteur central des relations internationales (Système Westphalien)
- Affaiblissement de l'État
- Plusieurs degrés d'étatisation (Cooper)

# La puissance

The “ability to affect others to get the outcomes one wants”  
(Nye 2009, 61)

## Hard Power



## Soft Power





# Les instruments de puissance de l'État

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E





# Stratégie militaire

D



I



M



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(Military) Strategy

E



# Grande Stratégie

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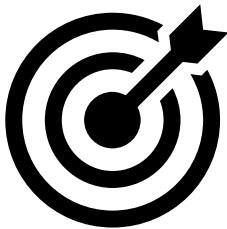


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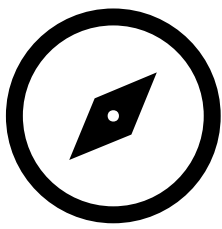


(Grand) Strategy

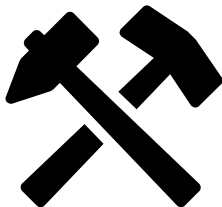
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# Synthèse

- Permanence de l'État
- Puissance
- Instruments de puissance
- Stratégie



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# Recap - Key Notions

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**Cyber espace**

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**Conclusions**

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**Examen**

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# La manœuvre sur les arrières

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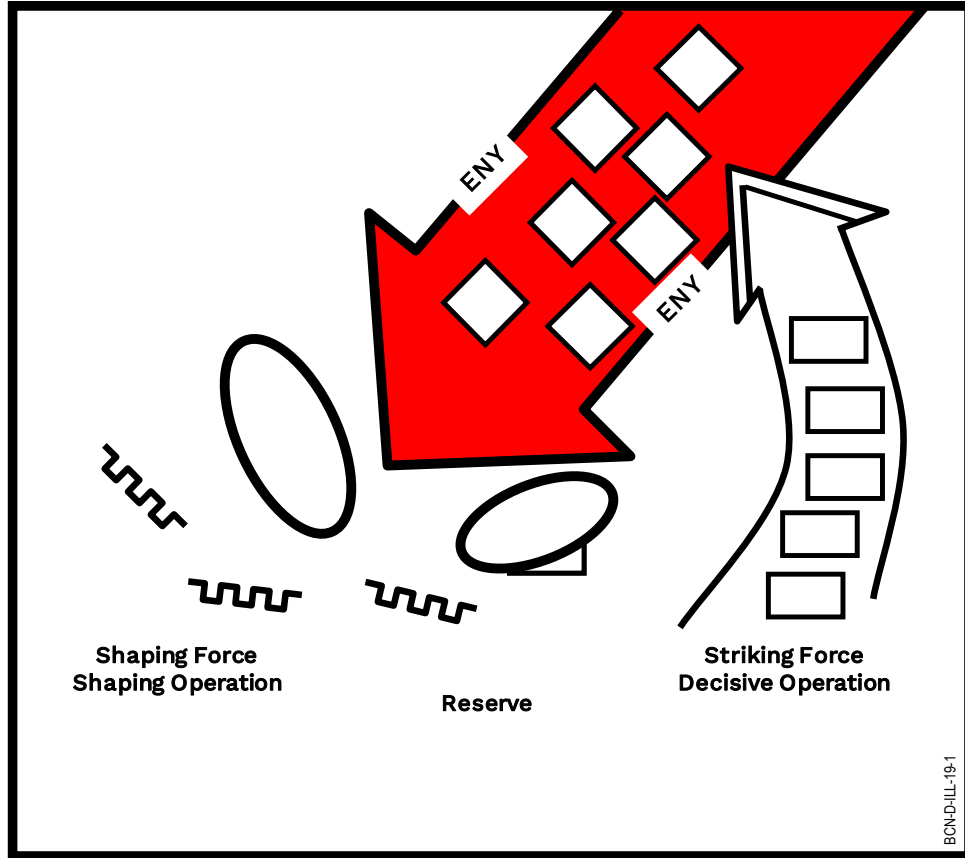


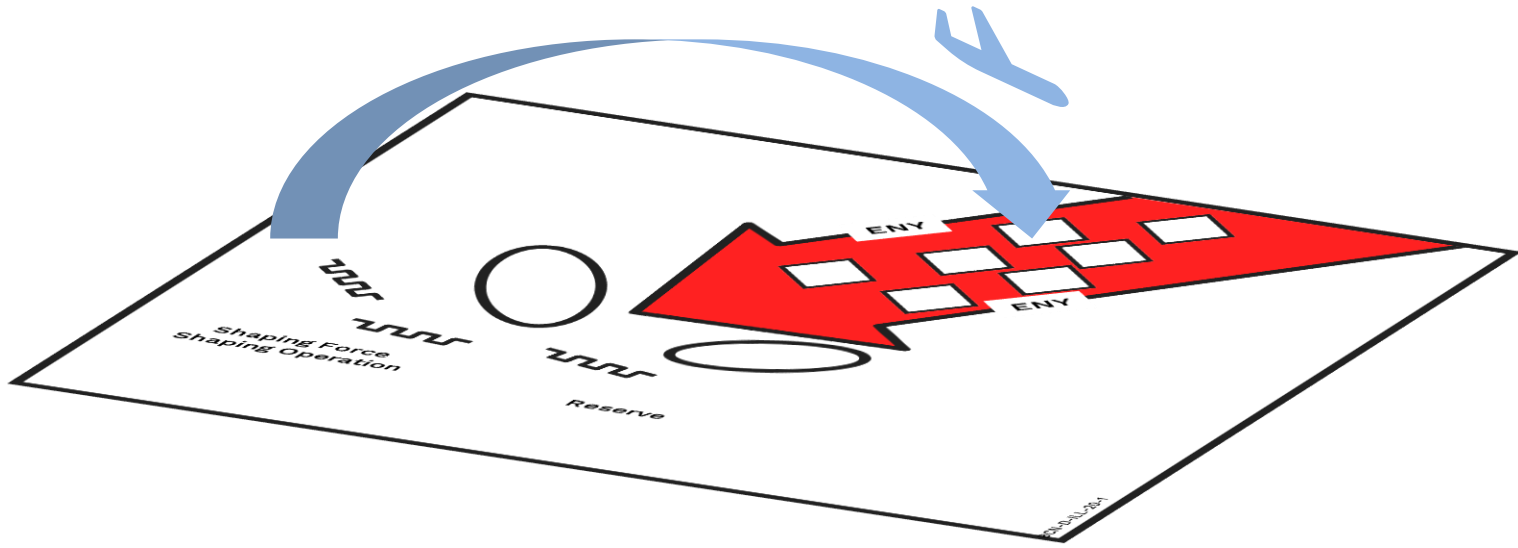
(Military) Strategy

E



# La manœuvre sur les arrières







# L'espace cyber

« The global environment consisting of all interconnected communication, information technology and other electronic systems, networks and their data, including those which are separated or independent, which process, store or transmit data. »

## **Cyberespace**

Sources : UK Ministry of Defence (MOD). 2023.

*Joint Doctrine Publication (JDP) 0-50, 2nd Edition draft.*

# L'espace cyber

« Le réseau planétaire qui relie virtuellement les activités humaines grâce à l'interconnexion des ordinateurs et permet la circulation et l'échange rapides d'informations. »

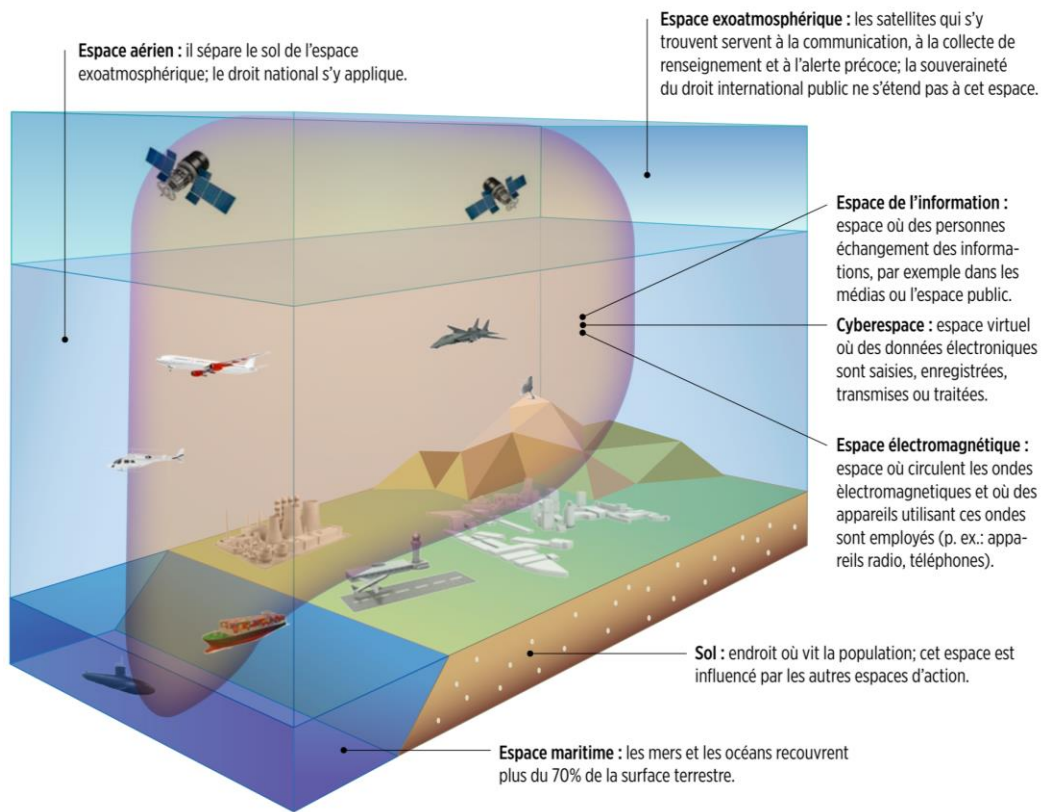
« The fifth dimension of strategy. »

## Cyberespace

Sources : Centre de doctrine et d'emploi des concepts militaires du ministère de la Défense. 2010, in Deschaux-Dutard, D. 2018. *Introduction à la sécurité internationale*. Fontaine, Presses universitaires de Grenoble, page 210.

Lonsdale, D. J. 1999. "Information Power: Strategy, Geopolitics, and the Fifth Dimension." *Journal of Strategic Studies* **22** (2-3): 137-157.

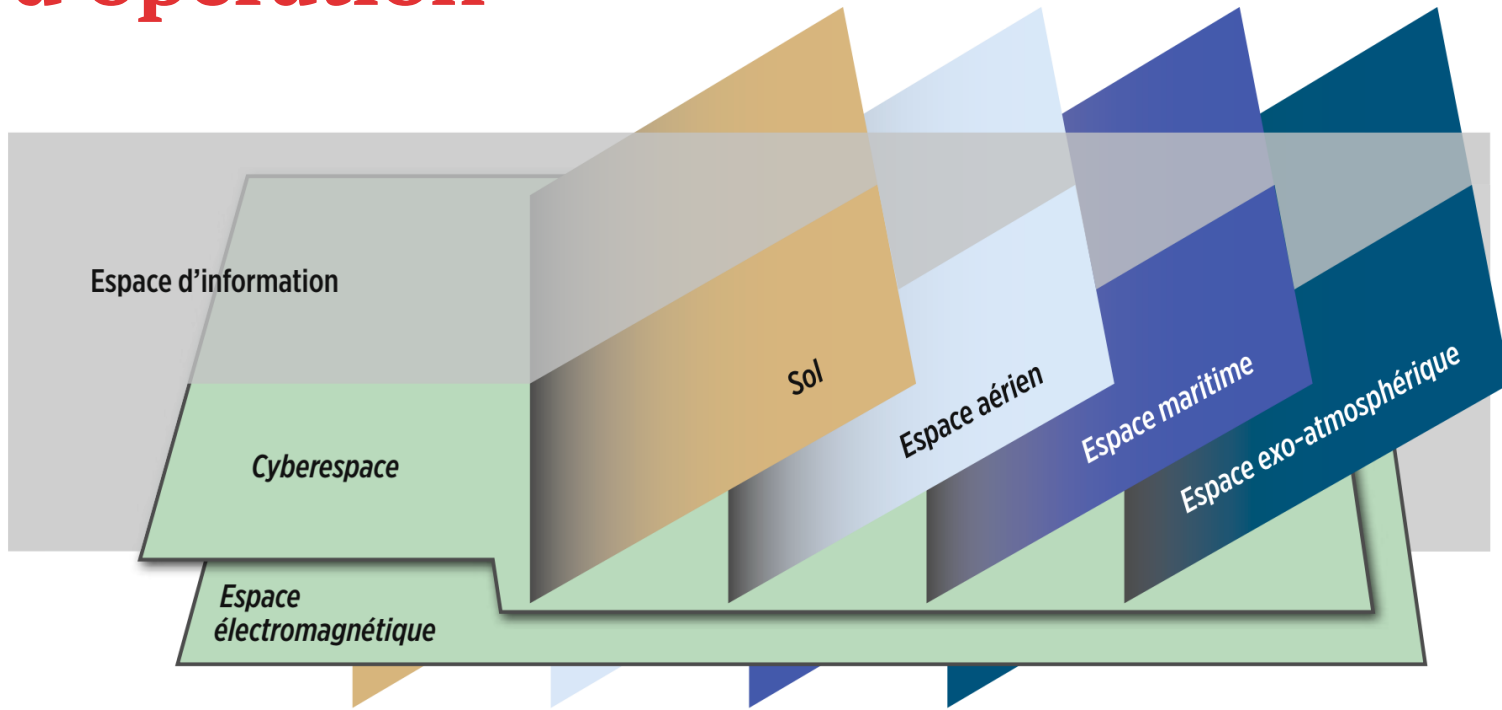
# Espaces d'opération



## Espaces d'opération

Source Groupe d'experts [Cyber]. 2022. *Conception générale cyber*. Berne, Département fédéral de la défense, de la protection de la population et des sports (DDPS), page 19

# Colonne vertébrale des autres espaces d'opération



## Le CYBEM. colonne vertébrale des autres espaces d'opération

Source: Groupe d'experts [Cyber] 2022. *Conception générale cyber*.  
Berne, Département fédéral de la défense, de la protection de la population  
et des sports (DDPS), page 20.

# Caractéristiques du cyber espace

1. Universalité
2. Plusieurs niveaux
3. Multiples acteurs
4. Attribution difficile
5. Non létalité
6. Lien ténu avec la géographie
7. Facteur temps

## **Caractéristiques stratégiques du cyberspace**

*Basé sur Kempf, Olivier. 2013. "Stratégie du cyberspace"*

*Diploweb.com la revue géopolitique (blog).*

<https://www.diploweb.com/Strategie-du-cyberspace.html>.

# Les niveaux du cyber espace



3. Sémantique

2. Logique / logicielle

1. Physique

## Caractéristiques stratégiques du cyberspace

Source Kempf, Olivier. 2013. "Stratégie du cyberspace"

*Diploweb.com la revue géopolitique* (blog).

<https://www.diploweb.com/Strategie-du-cyberspace.html>.

Images: *Aspects and Pillars of Cyber Security* [online].

<https://web.archive.org/web/20200813090540/>

<https://www.usna.edu/CyberDept/sy110/calendar.php?type=class&event=2>

# Layers of cyberspace

## Cognitive

Encompasses all forms of interaction and thoughts, beliefs, interests and perception of individuals and groups.



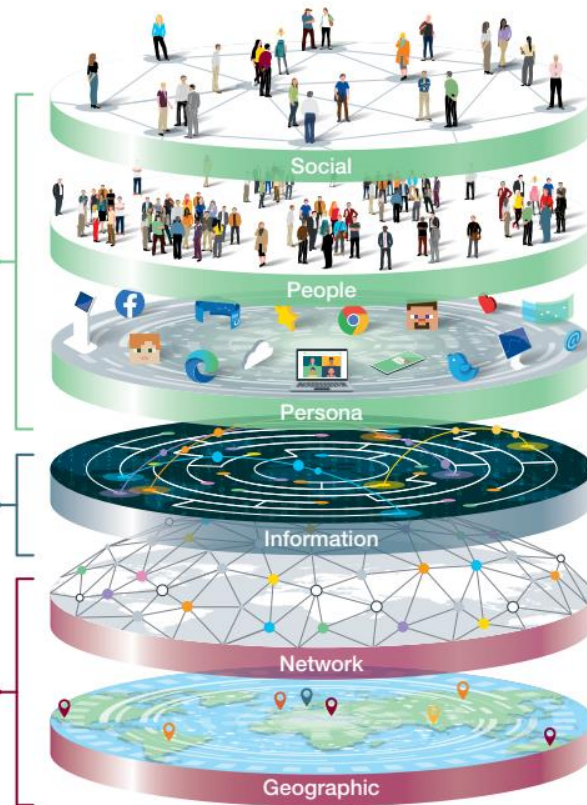
## Virtual

Consists of intangible activity in cyberspace such as the connections between network nodes transmitting data and information, and the electronic representation of information and narratives.



## Physical

Consists of individuals, objects, infrastructure, digital systems, networks (which may be electromagnetic spectrum-dependent) and their associated geography.

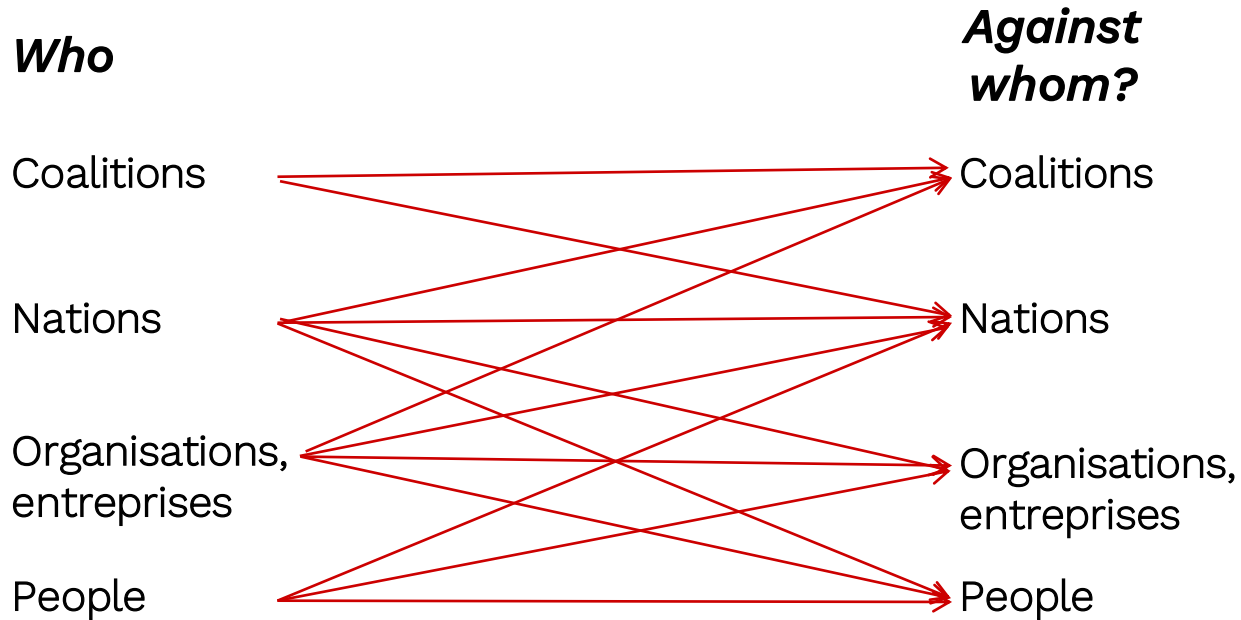


## Layers of cyberspace and their relationship with the three effect dimensions

Source Development, Concepts and Doctrine Centre. 2023. *Cyber Primer*. UK Minister of Defence, page 7.  
<https://www.gov.uk/government/publications/cyber-primer>



# Multiples acteurs



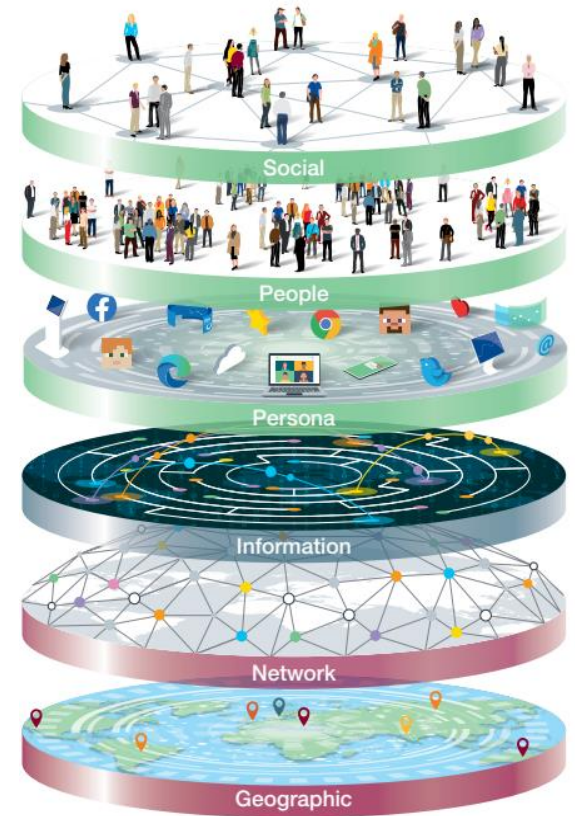
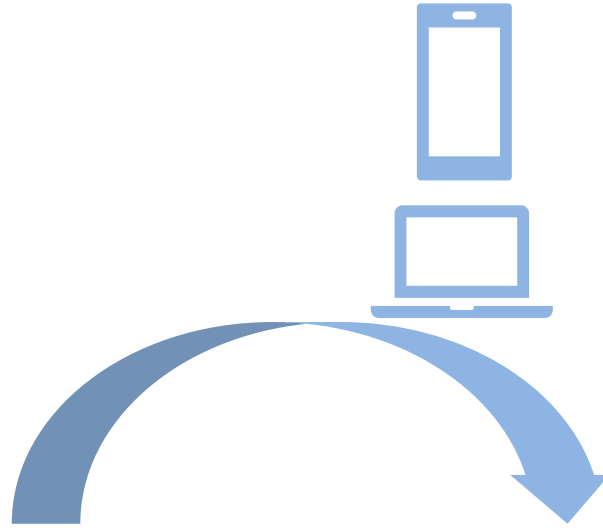
## Caractéristiques stratégiques du cyberspace

Basé sur: Nicander, Lars D. 2001.

“Information Operations/Information Assurance - A Swedish View”,  
Presentation at *INFORMO 2001*

# La cyber espace – milieu conflictuel

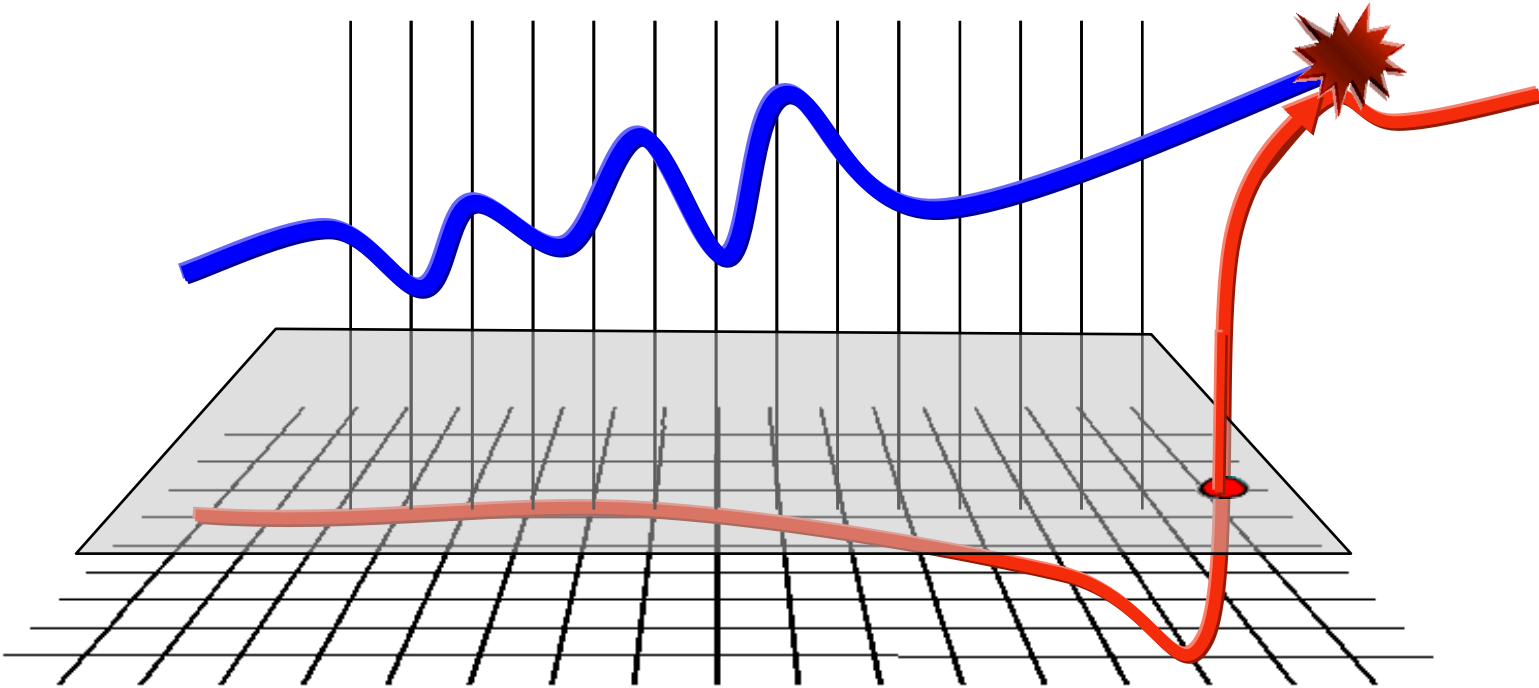
- Intangible
- Opaque
- Artificiel
- Social



## Cyberespace

Sources: Deschaux-Dutard, D. 2018. *Introduction à la sécurité internationale*.  
Fontaine, Presses universitaires de Grenoble, page 214-215.

# Facteur temps dans le cyber espace



## **Attaque asynchrone**

Bühlmann, Christian. 2003.

"Innovative Lösungen zum Schutz der kritischen IT-Infrastruktur." *Informationstechnik und Armee*, 7-1 - 7-15.

Bern: Untergruppe Führungsunterstützung.

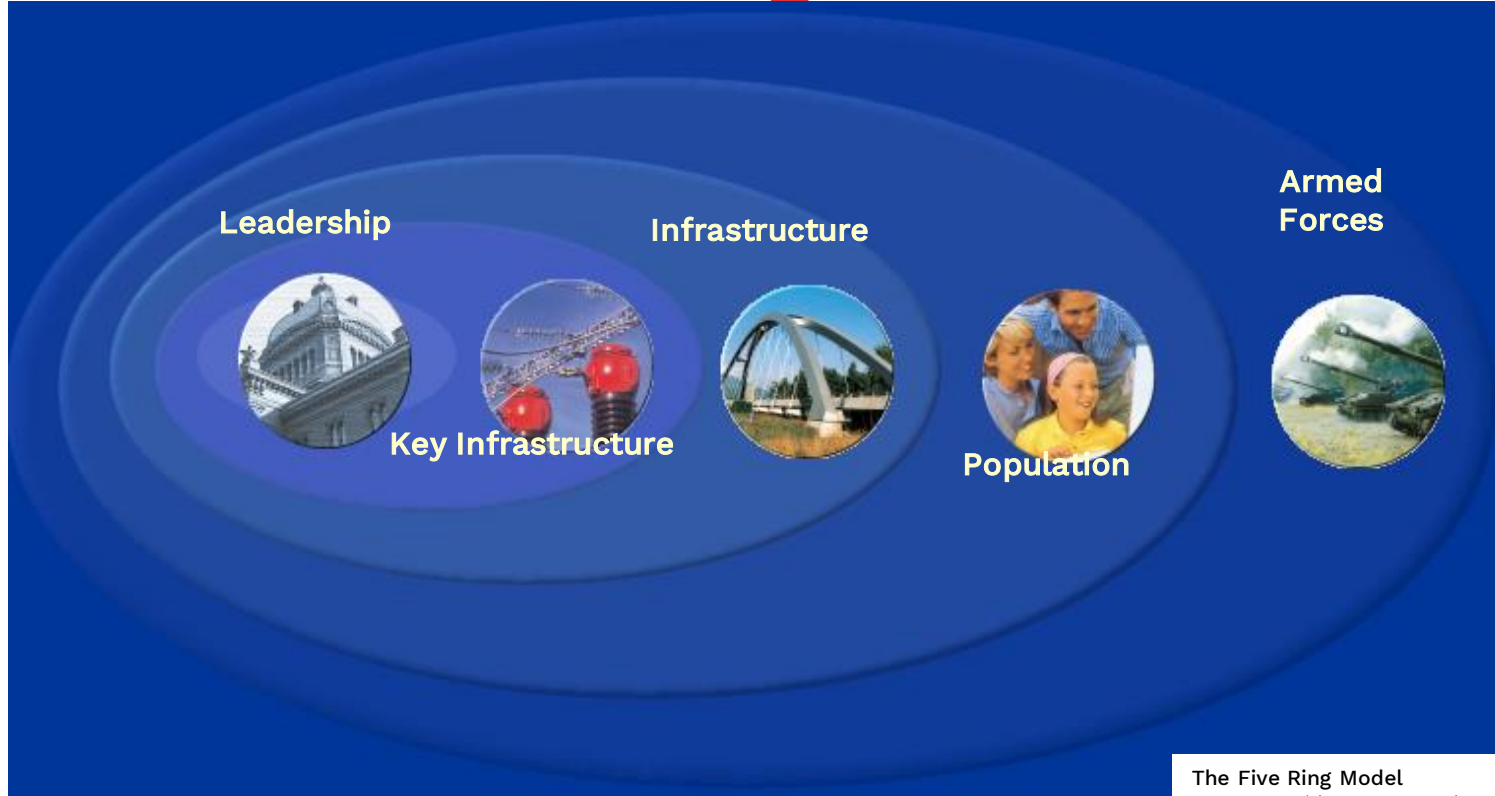
# Menaces dans le cyber espace

- ICT security threats
  - Illegal access, system interference, data interference, interception, destruction
- Hacking
- Hacktivism
- Cybercrime
- Cyber terrorism
- Cyber espionnage
- Military operations in cyberspace

## Menaces dans le cyberspace

Sources : Kopczewski, M. et al., 2022. "Security threats in cyberspace." *Scientific Journal of the Military University of Land Forces*, vol. 205, no. 3, pp. 415-426. <https://doi.org/10.5604/01.3001.0016.0040>.  
Deschaux-Dutard, D. 2018. Introduction à la sécurité internationale. Fontaine, Presses universitaires de Grenoble, page 212-213

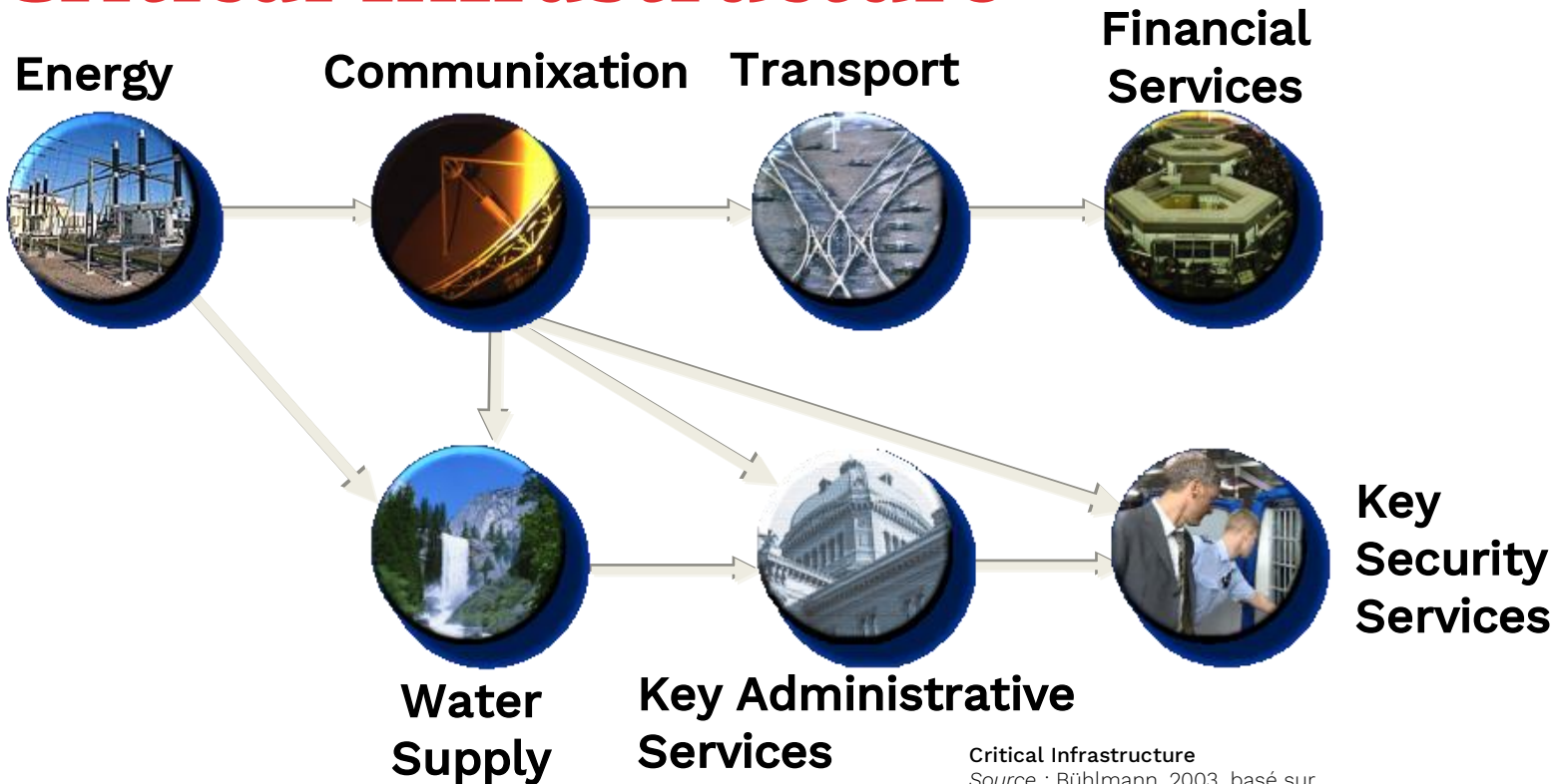
# Warden Five Rings Model



## The Five Ring Model

Source : Bühlmann. 2003, basé sur Warden, John A. 1995. "The Enemy as a System." *Airpower journal*. 9 (1): 40-55, page 47.

# Critical Infrastructure



## Critical Infrastructure

Source : Bühlmann. 2003, basé sur Dearth, Douglas H. 2000. "Critical Infrastructures and the Human Target in Information Operations." In *CyberWar 3.0 Human Factors in Information Operations and Future Conflict*, edited by Alan D. Campen and Douglas H. Dearth. Fairfax, VA: AFCEA International Press (AIP).

# Cyber security

Cyber security “refers to any technology, measure or practice for preventing cyberattacks or mitigating their impact.”

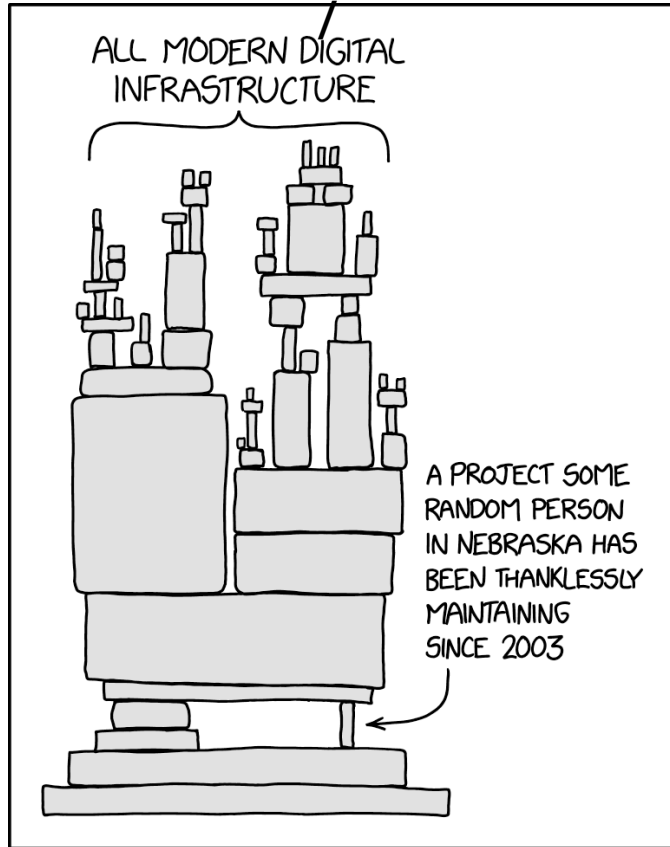
1. Critical Infrastructure security
2. Network security
3. Endpoint security
4. Application security
5. Cloud security
6. Information security
7. Mobile security

## **Cyber security**

Source : IBM Website, 2024. *Cybersecurity*  
<https://www.ibm.com/topics/cybersecurity>



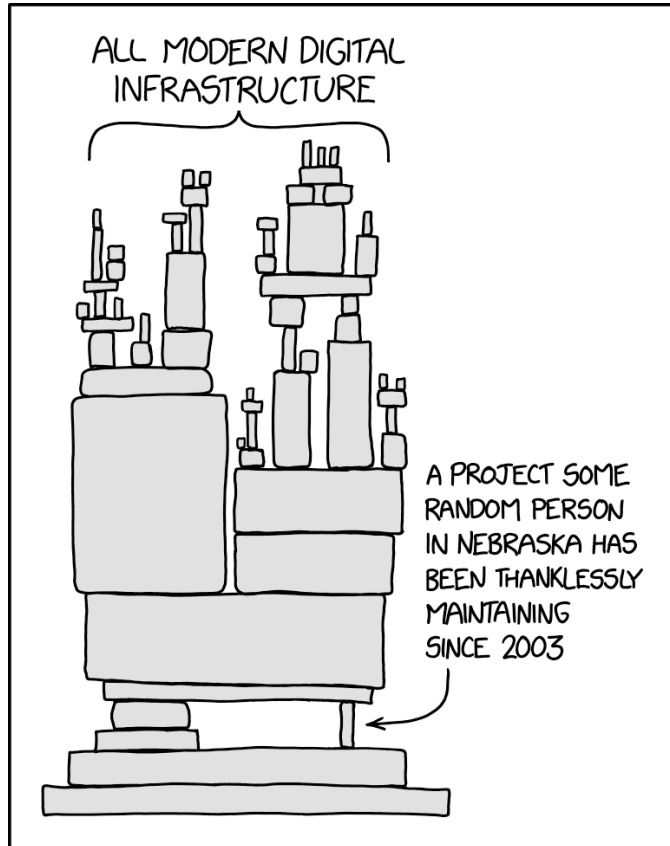
# Vulnérabilités



**Dependency**

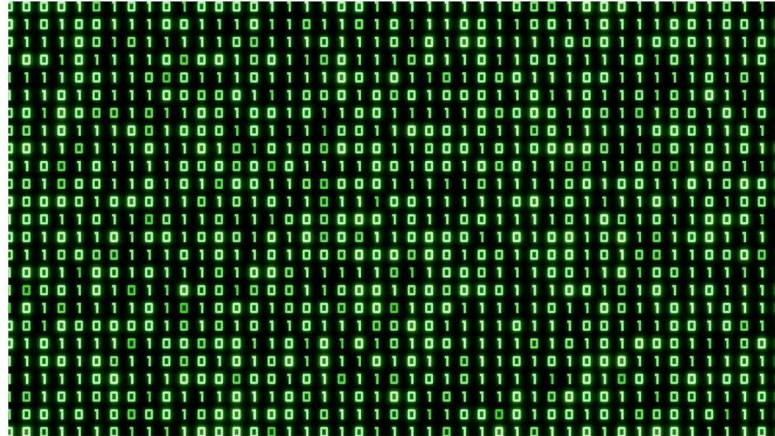
Source : xkcd, 2020 *Dependency*, <https://xkcd.com/2347>

# Vulnérabilités



## A stealth attack came close to compromising the world's computers

The cyber-scare, perhaps involving Russia, shows the internet's crowdsourced code is vulnerable

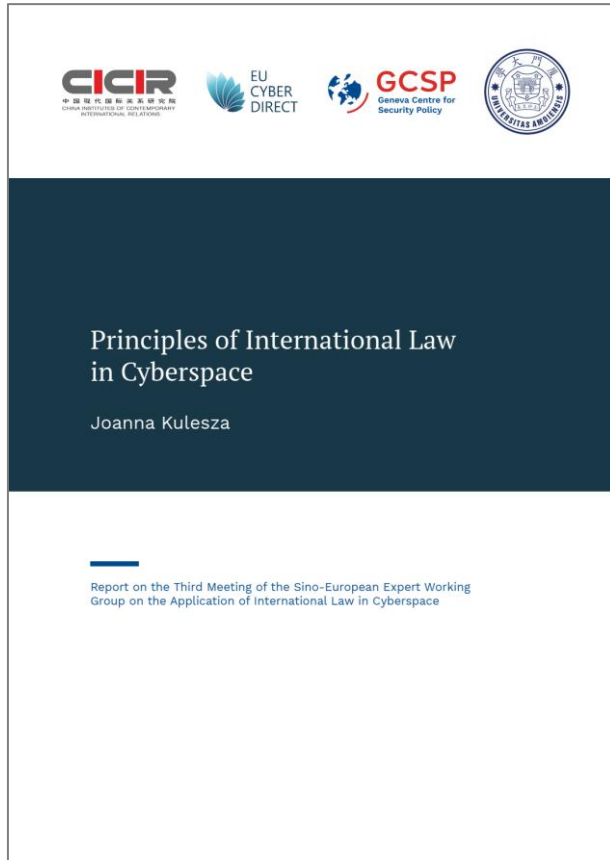


PHOTOGRAPH: GETTY IMAGES

### Dependency

Sources : xkcd, 2020 *Dependency*, <https://xkcd.com/2347>. *The Economist*, 2.4.2024

# Dimension juridique du cyber espace



Source : Kulesza, Joanna 2023. *Report on the Third Meeting of the Sino-European Expert Working Group on the Application of International Law in Cyberspace* Gcsp., <https://www.gcsp.ch/publications/report-third-meeting-sino-european-expert-working-group-application-international-law>



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# Recap - Key Notions

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## Cyber espace

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## Conclusions

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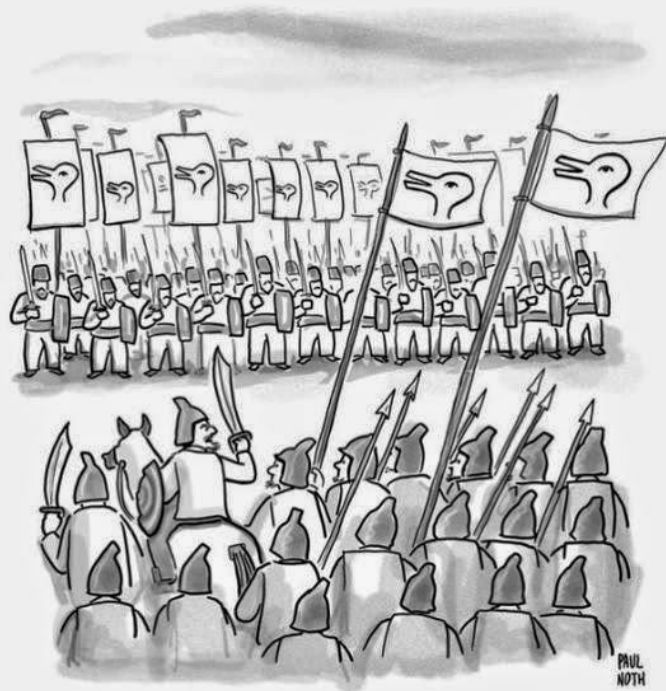
## Examen

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# Conclusions

Que représente la sécurité pour vous ?



*“There can be no peace until they  
renounce their Rabbit God and  
accept our Duck God.”*