

2nd Scientific and Strategic Workshop on “Cognitive Warfare”: *Operationalizing the Concept of Cognitive Warfare*

US Military Academy West Point - March 4, 2022

Cognitive Warfare and C2

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François du Cluzel - Innovation Hub - NATO ACT - Norfolk (VA)

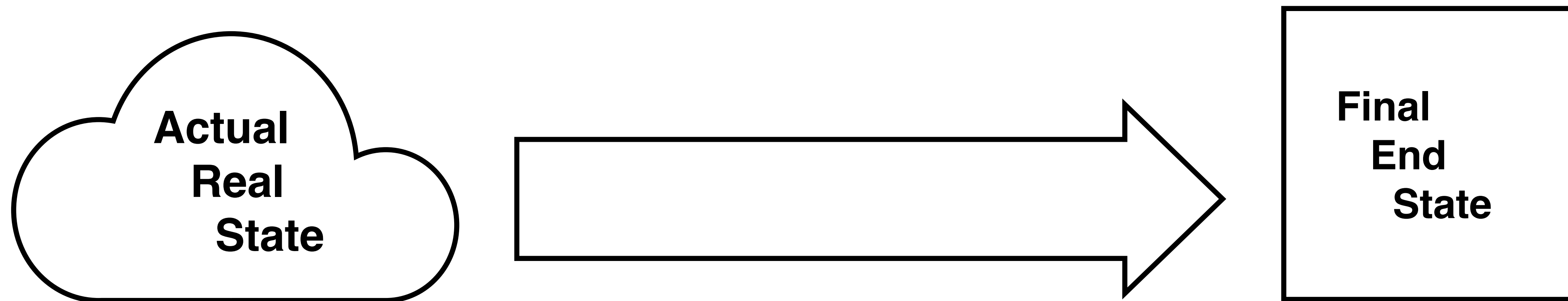
Gal. Gilles Desclaux - ENSC - HEAL - Thales France

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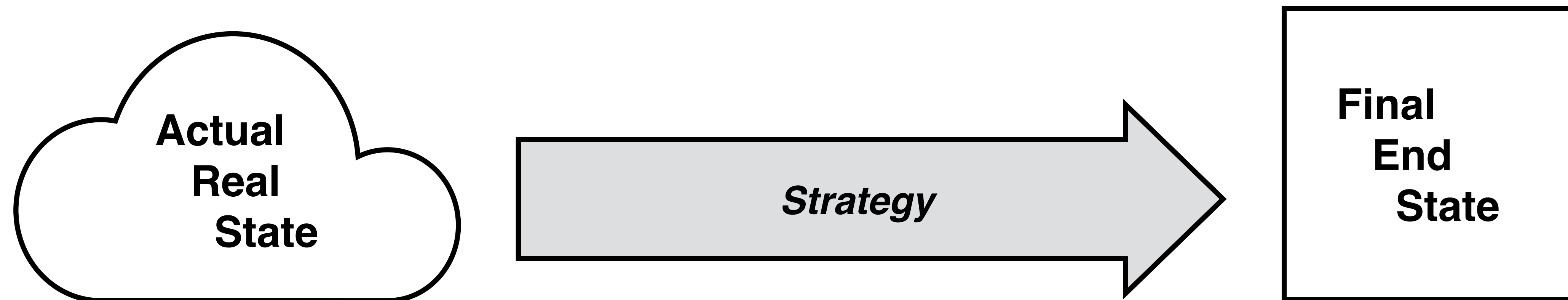
MILITARY ACTION

The way to go from an actual state to an expected new state



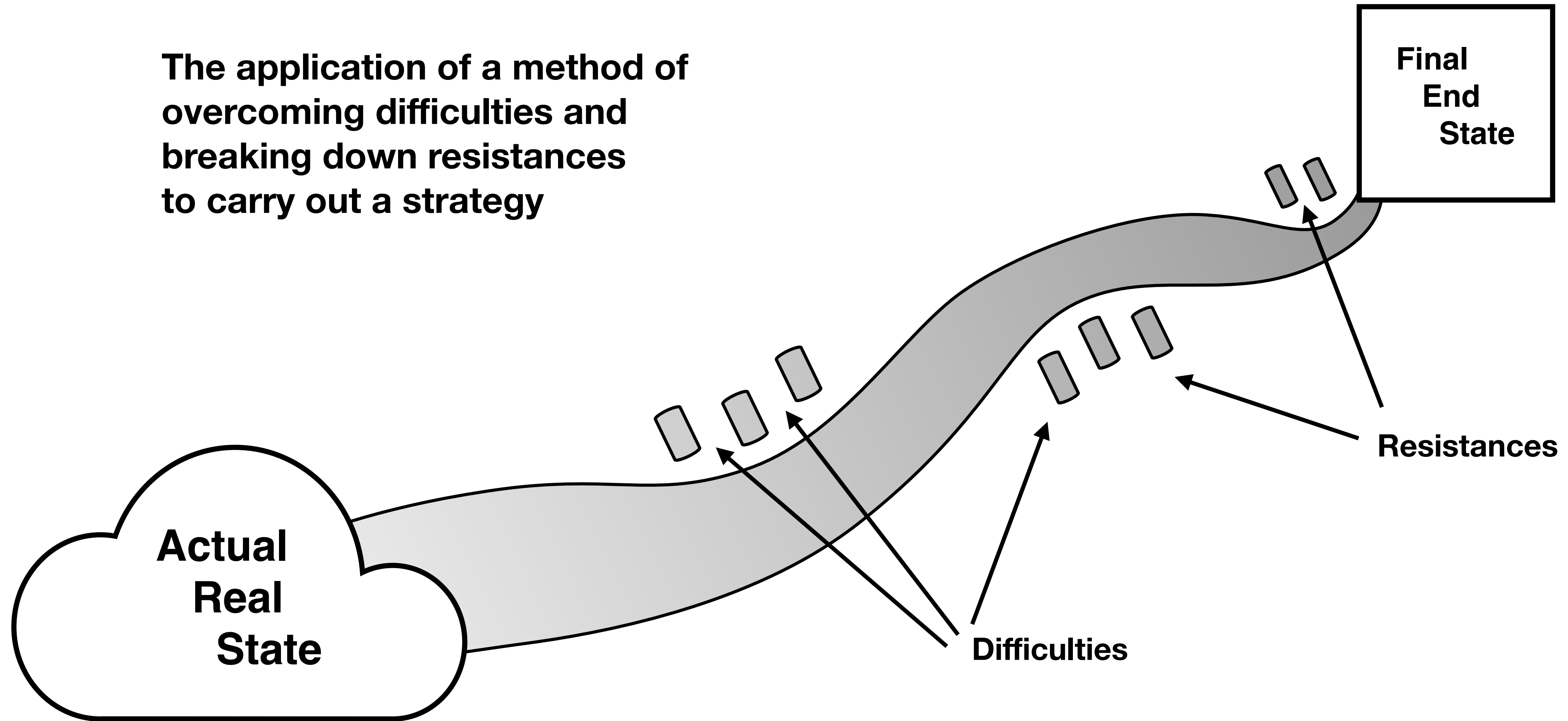
THE STRATEGY

The Art of making a state evolve until an objective and the achievement of a hoped final end state.



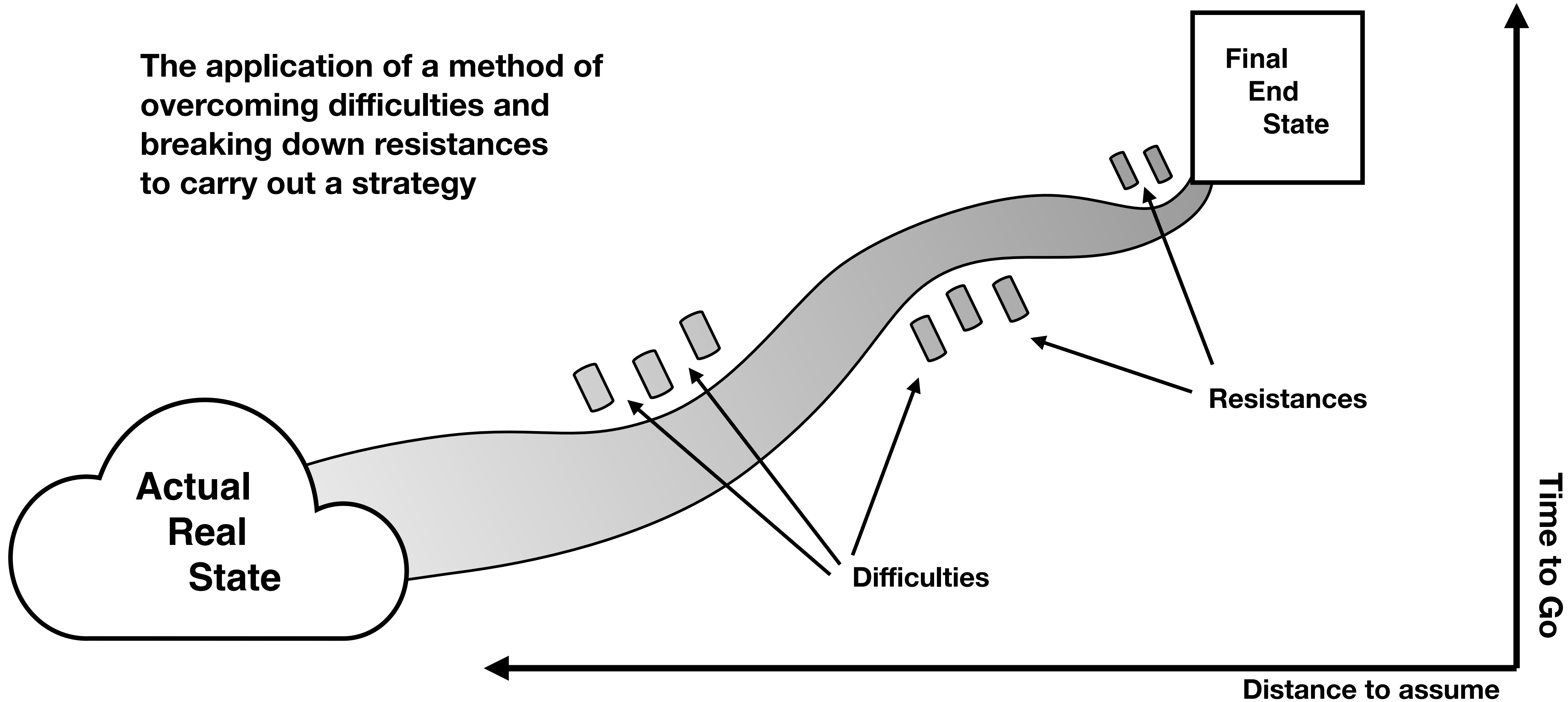
THE WAY TO GO

The application of a method of overcoming difficulties and breaking down resistances to carry out a strategy

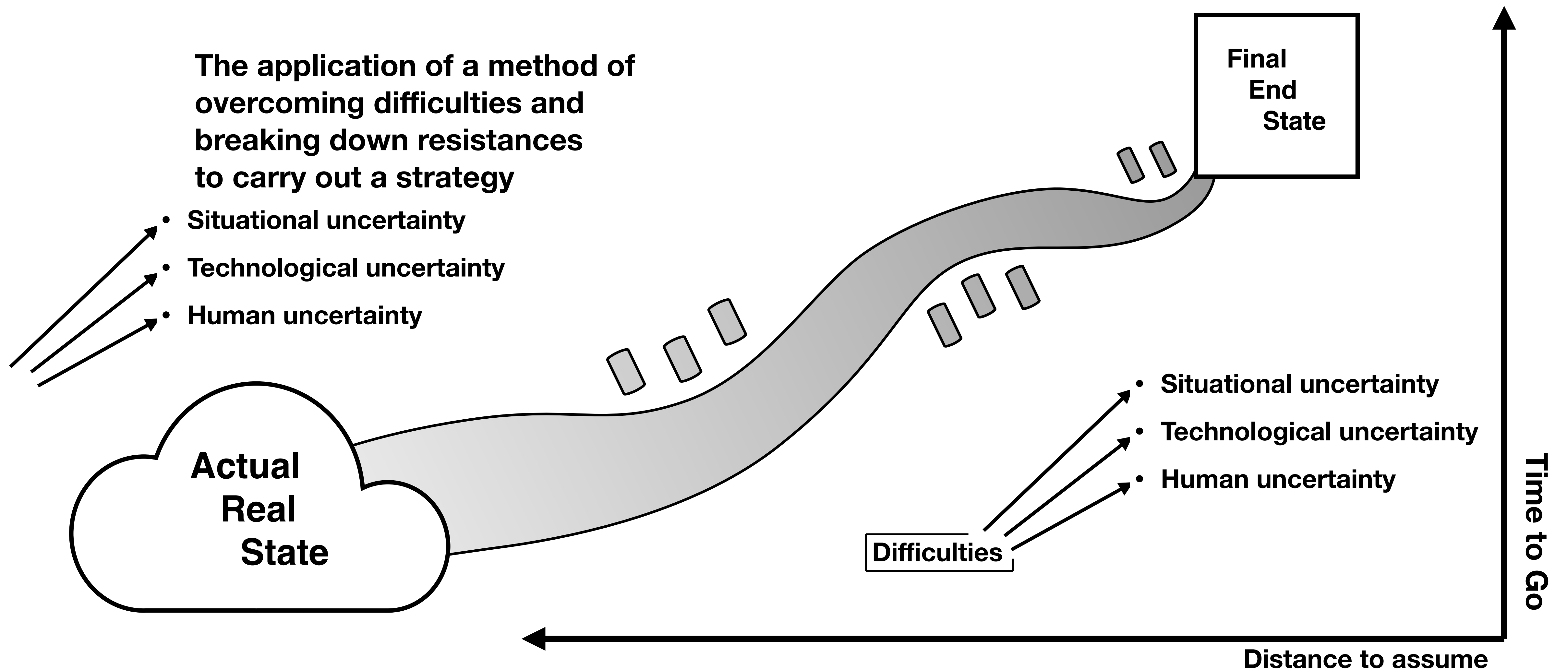


THE WAY TO GO

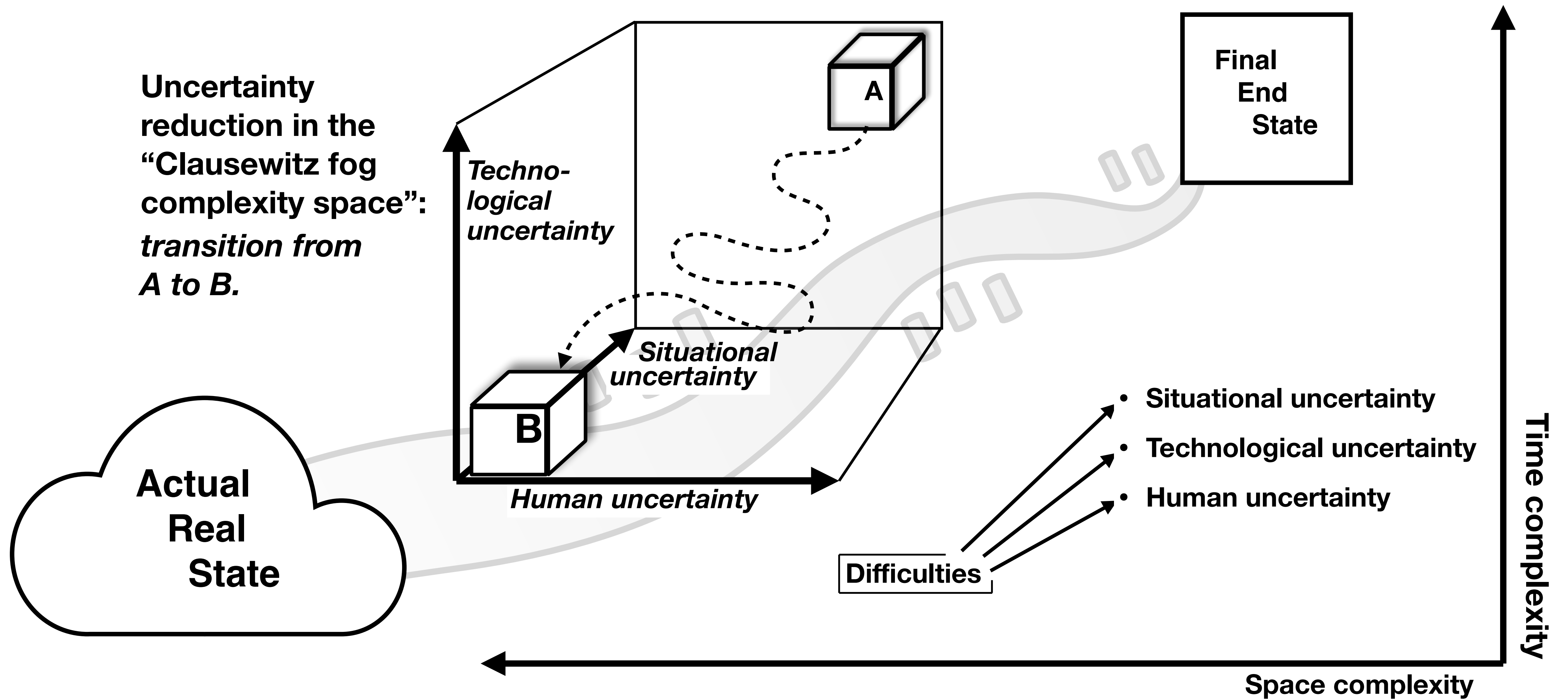
The application of a method of overcoming difficulties and breaking down resistances to carry out a strategy

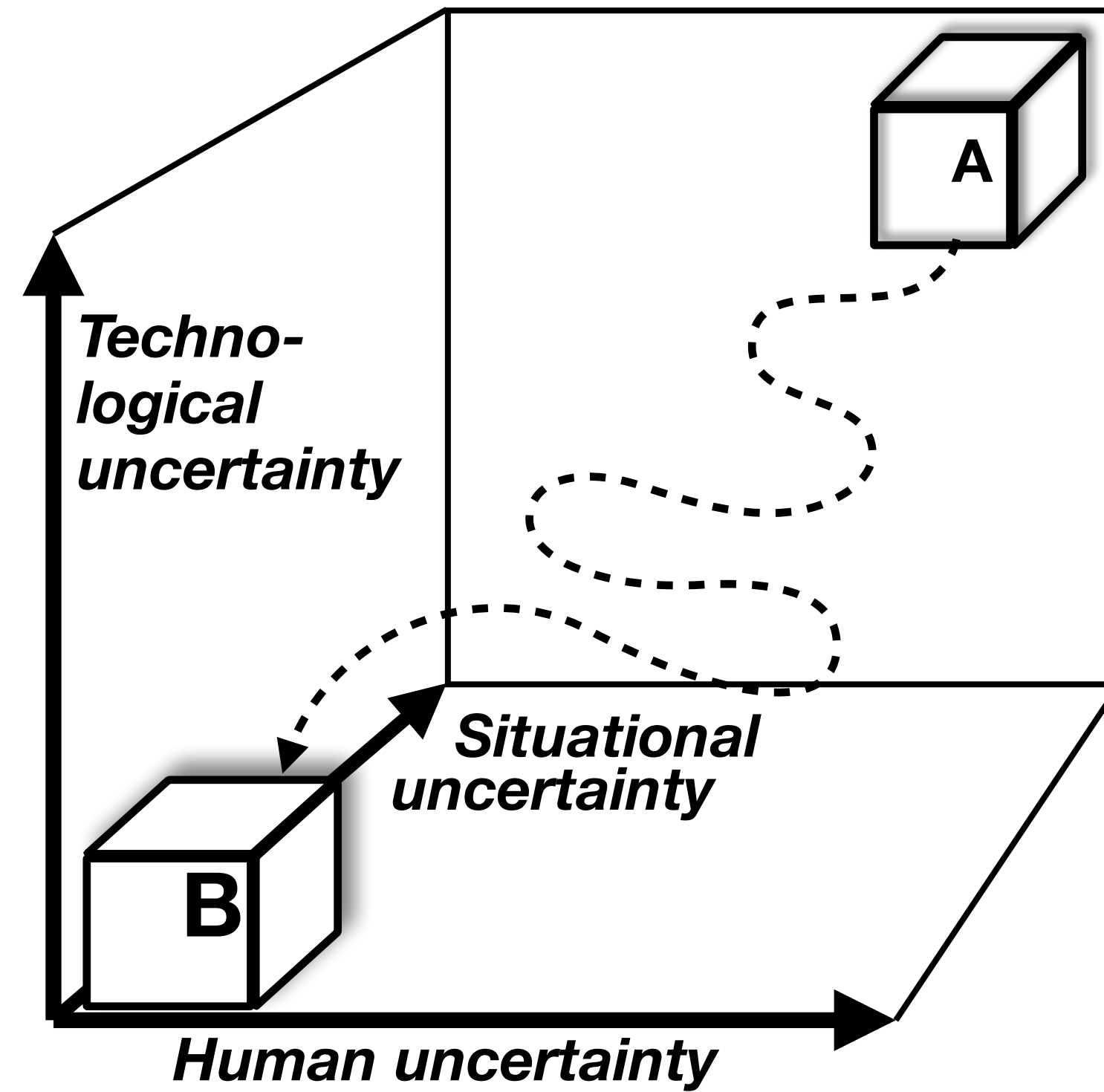


THE WAY TO MASTER COMPLEXITY



THE WAY TO MASTER COMPLEXITY





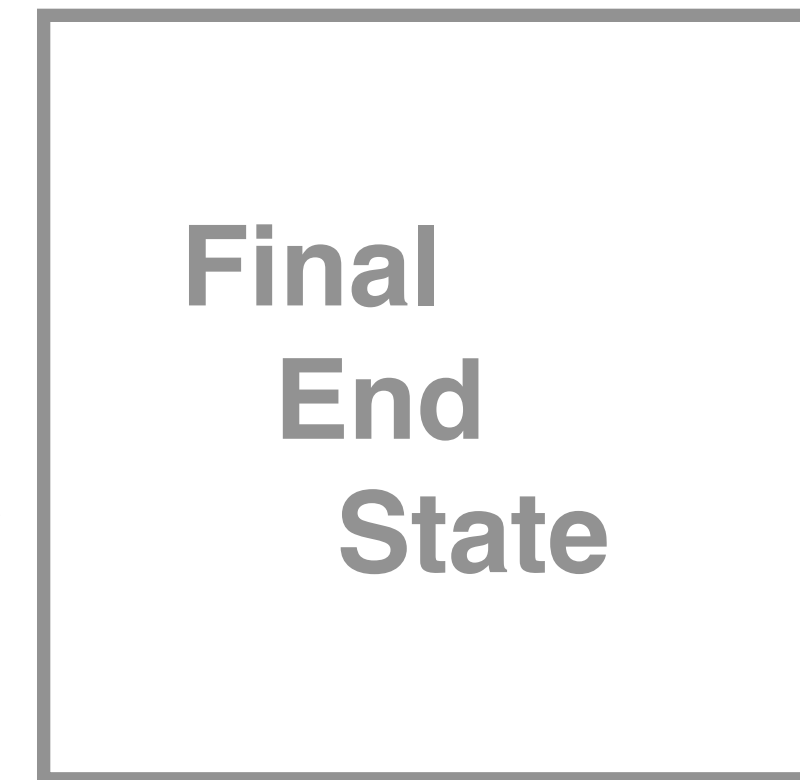
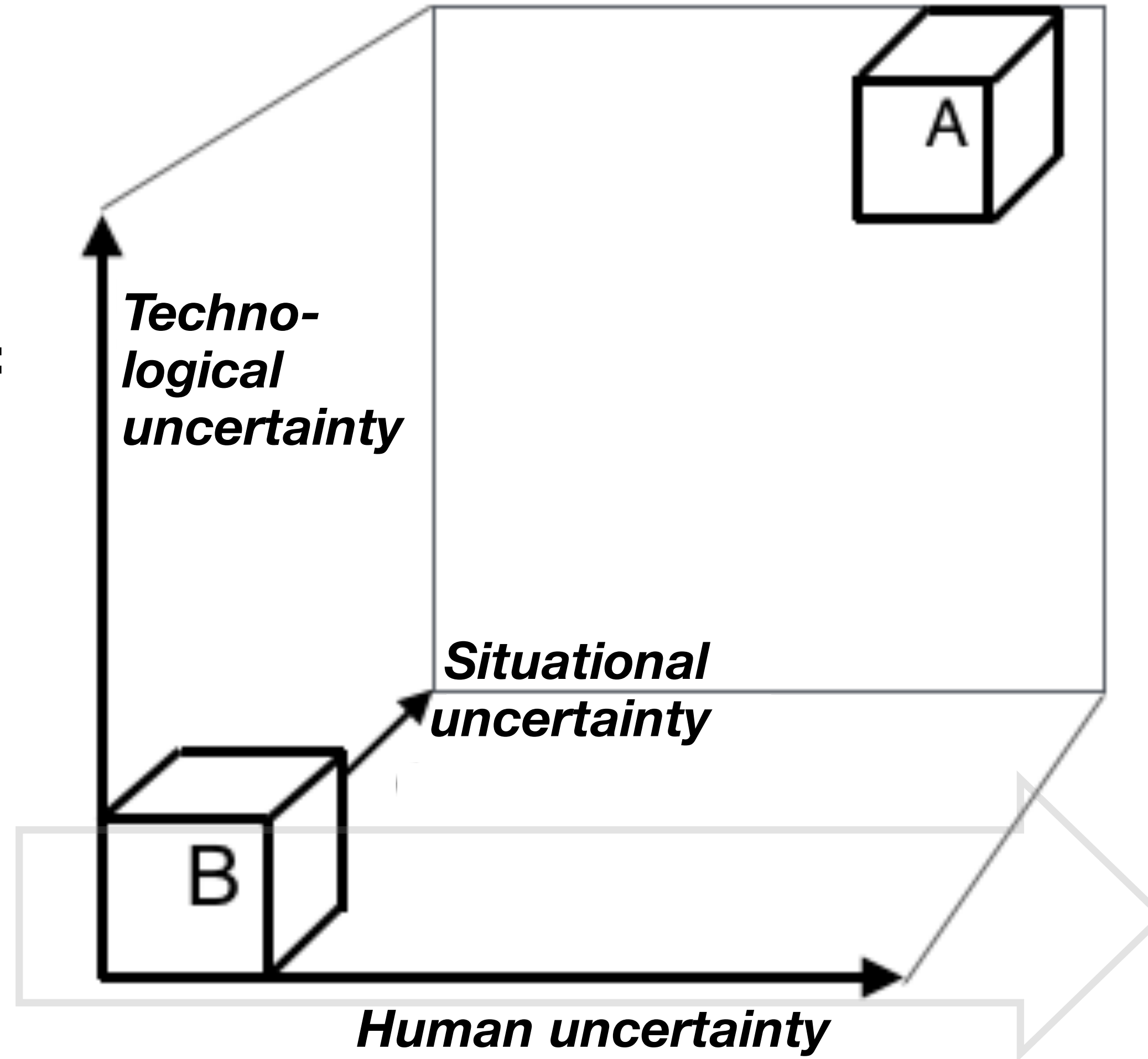
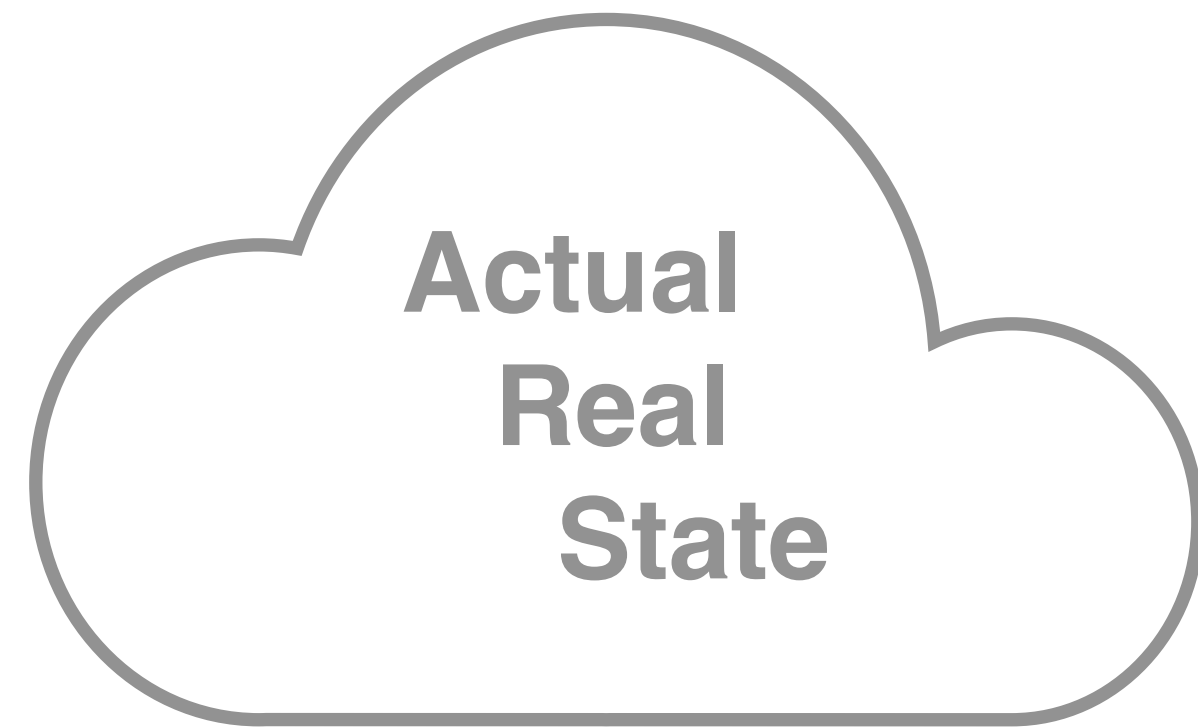
**Uncertainty reduction in the “Clausewitz fog complexity space”:
*transition from A to B.***

Difficulties

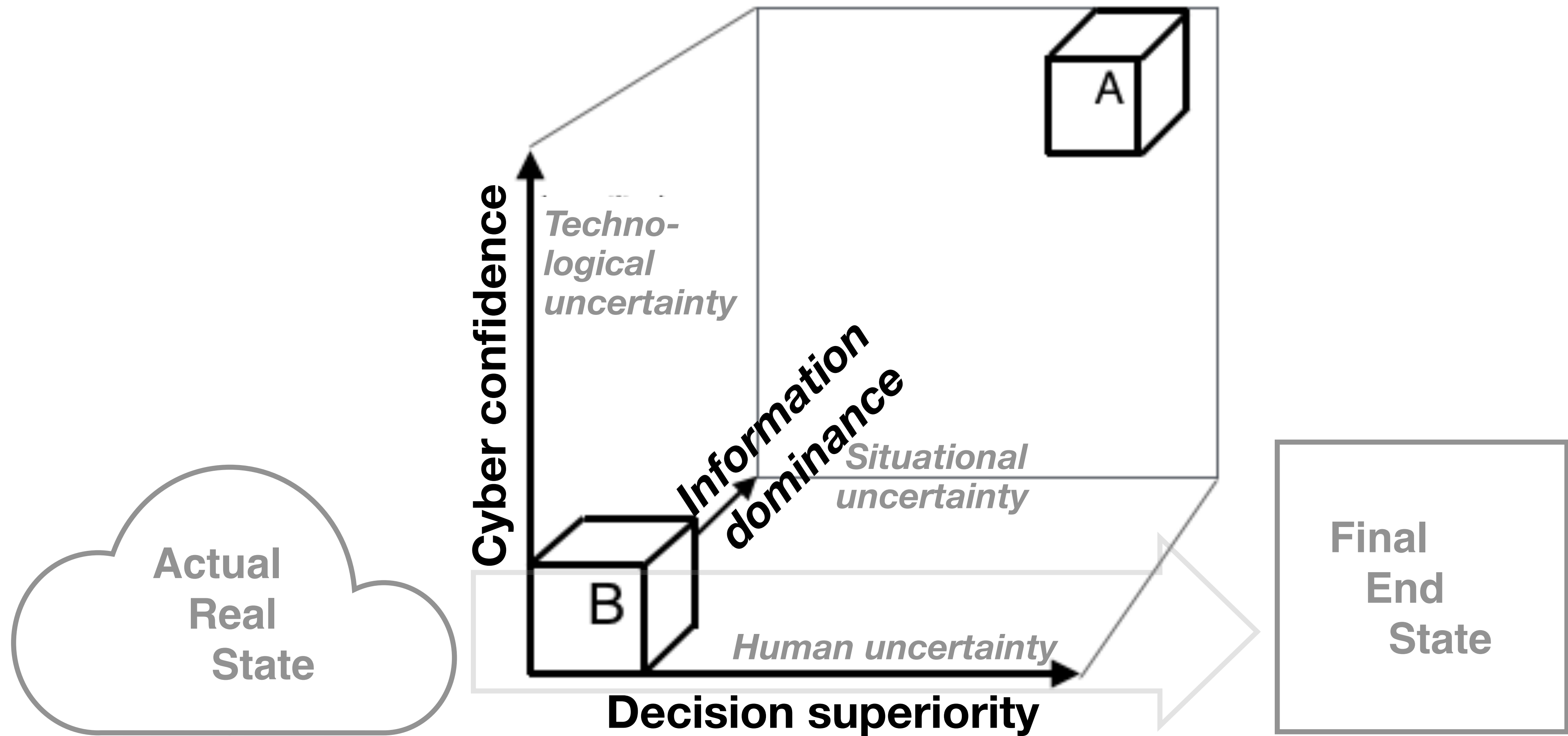
- **Situational uncertainty**
- **Technological uncertainty**
- **Human uncertainty**

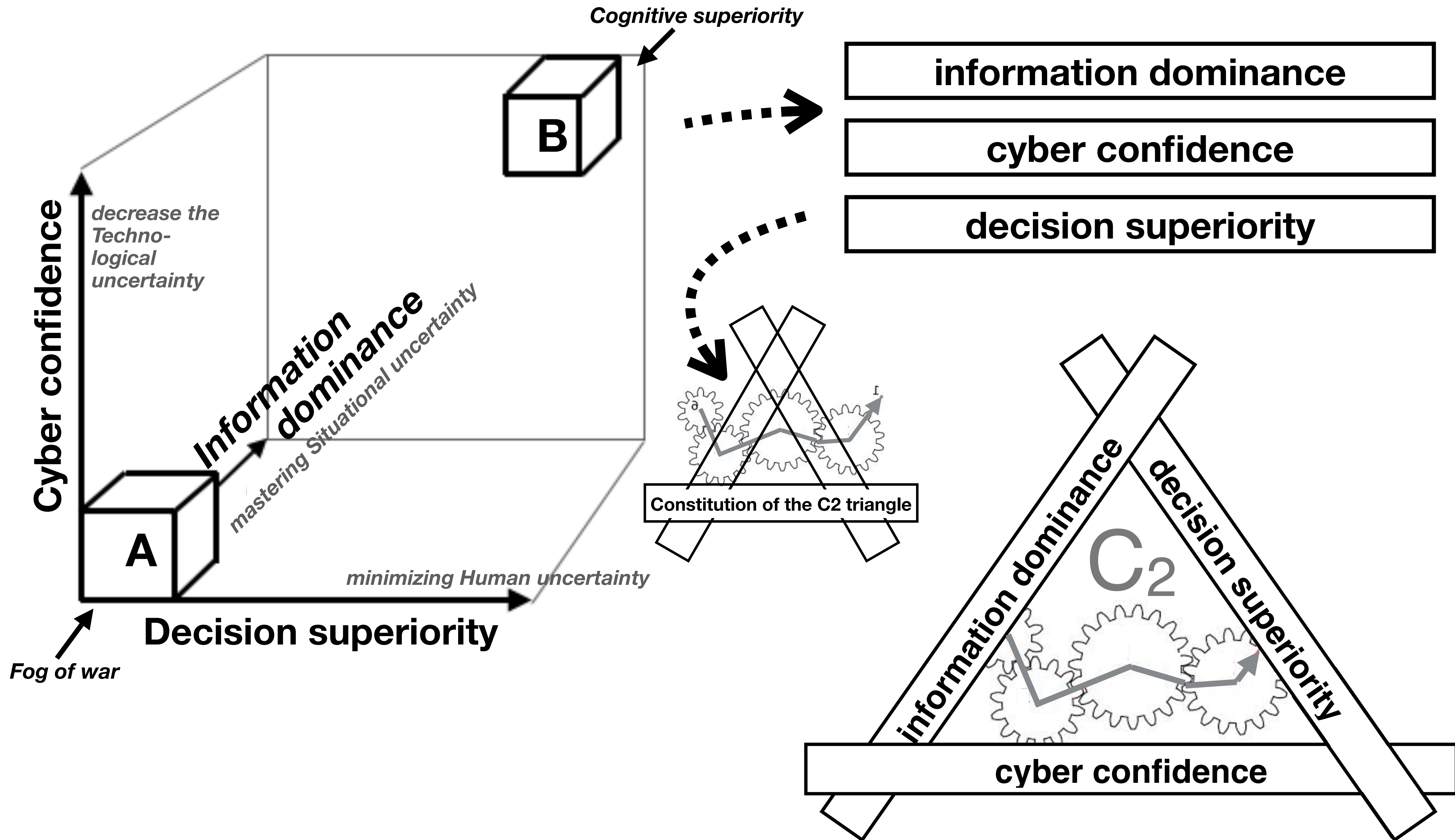
THE WAY TO MASTER COMPLEXITY

Uncertainty reduction in the Clausewitz complexity space: transition from situation A to situation B.



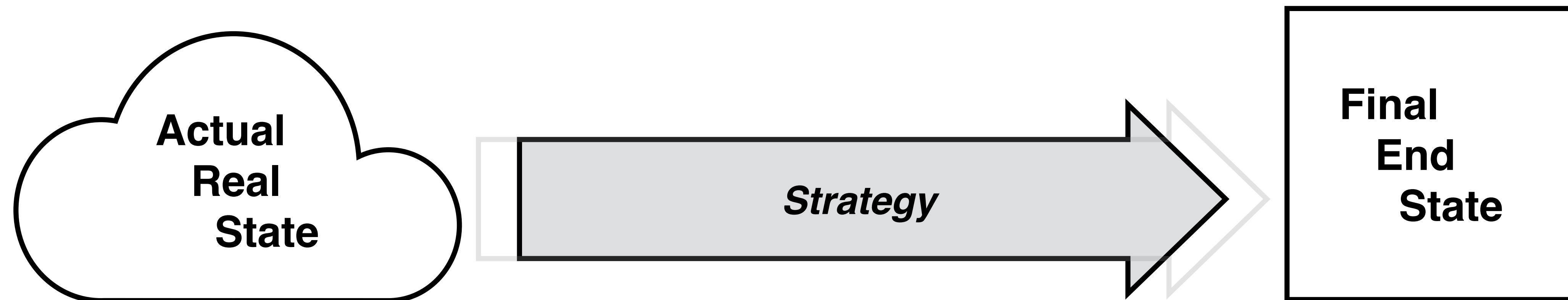
THE WAY TO MASTER COMPLEXITY





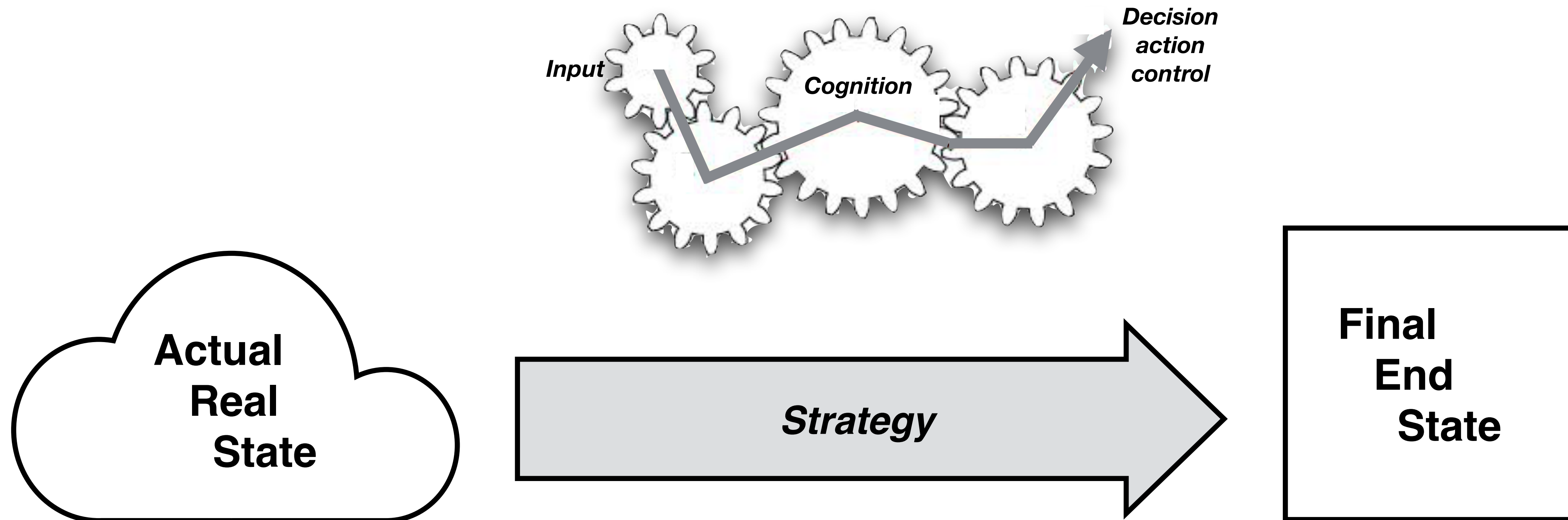
THE C2

The “Command and Control” or “C2” is the theoretical part of a set of means and methods (C4ISR-TAR...) for managing large human complex systems usually engaged in military operations.



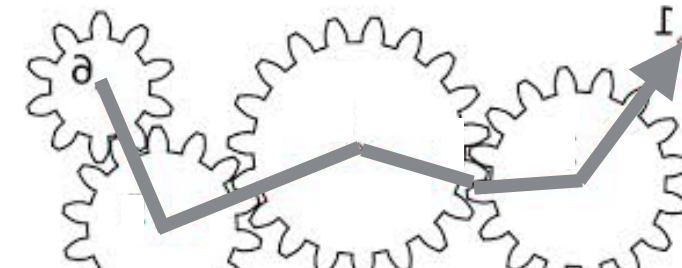
THE C2

The Method to lead a Strategy

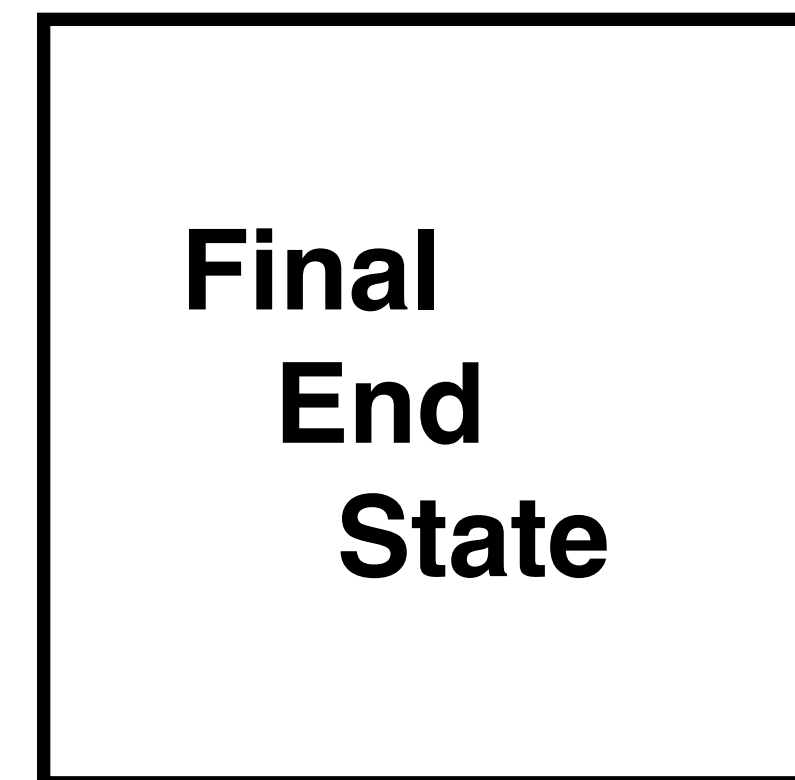
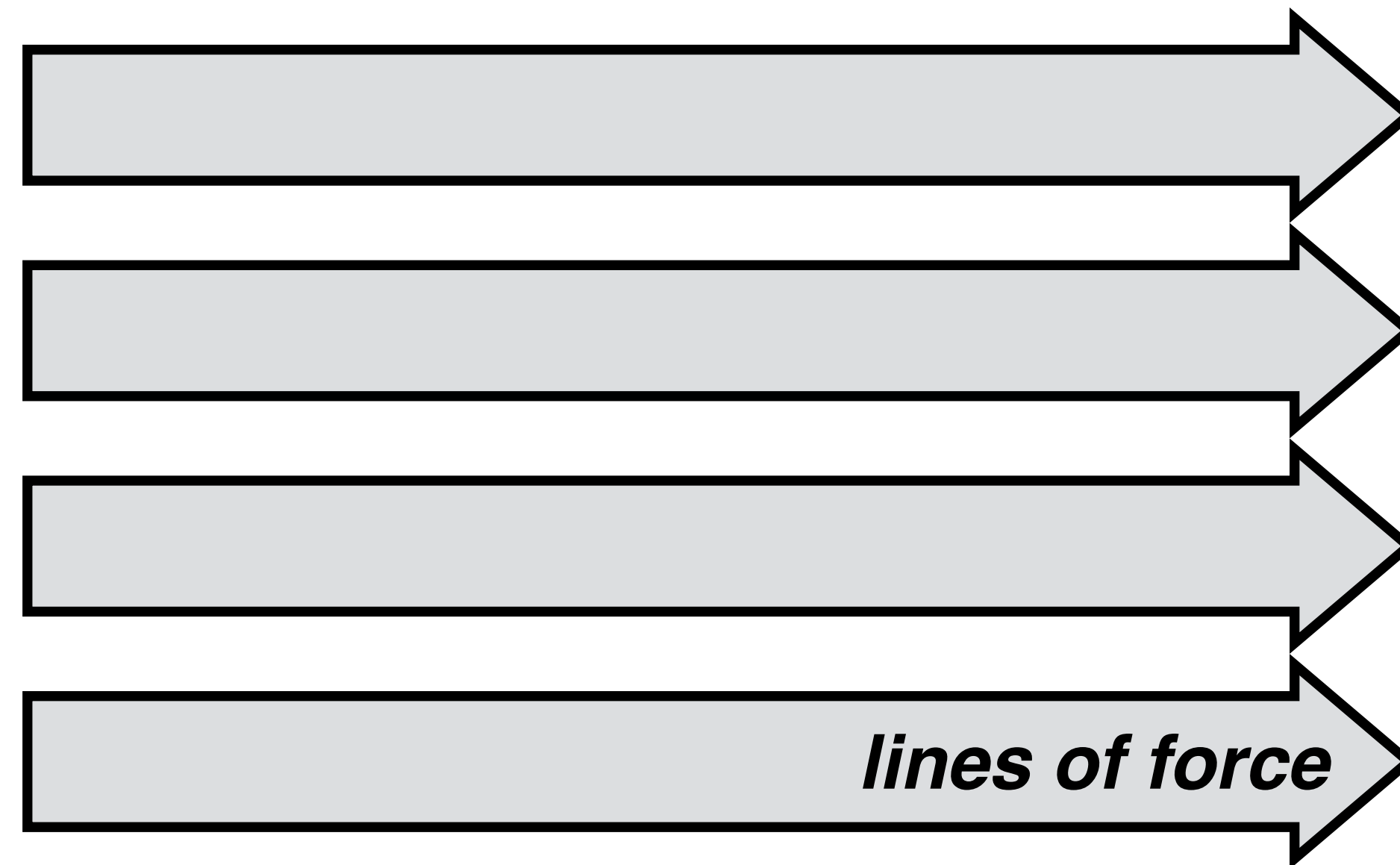
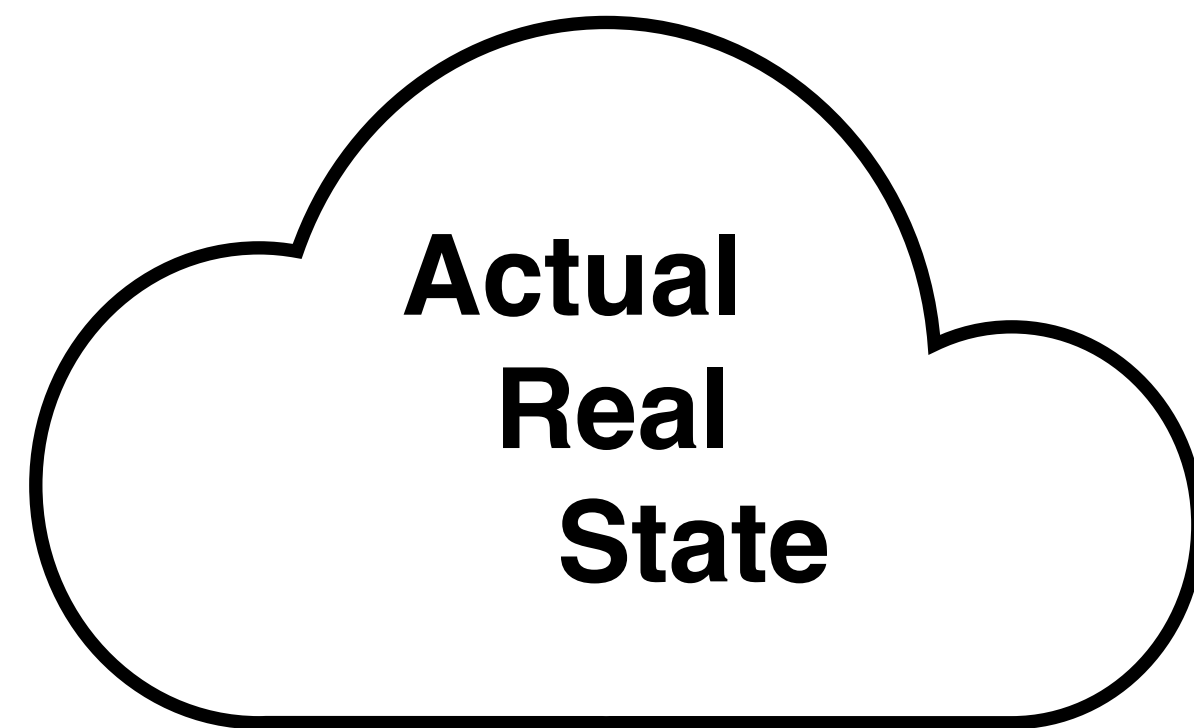


THE C2

The Method to lead a Strategy

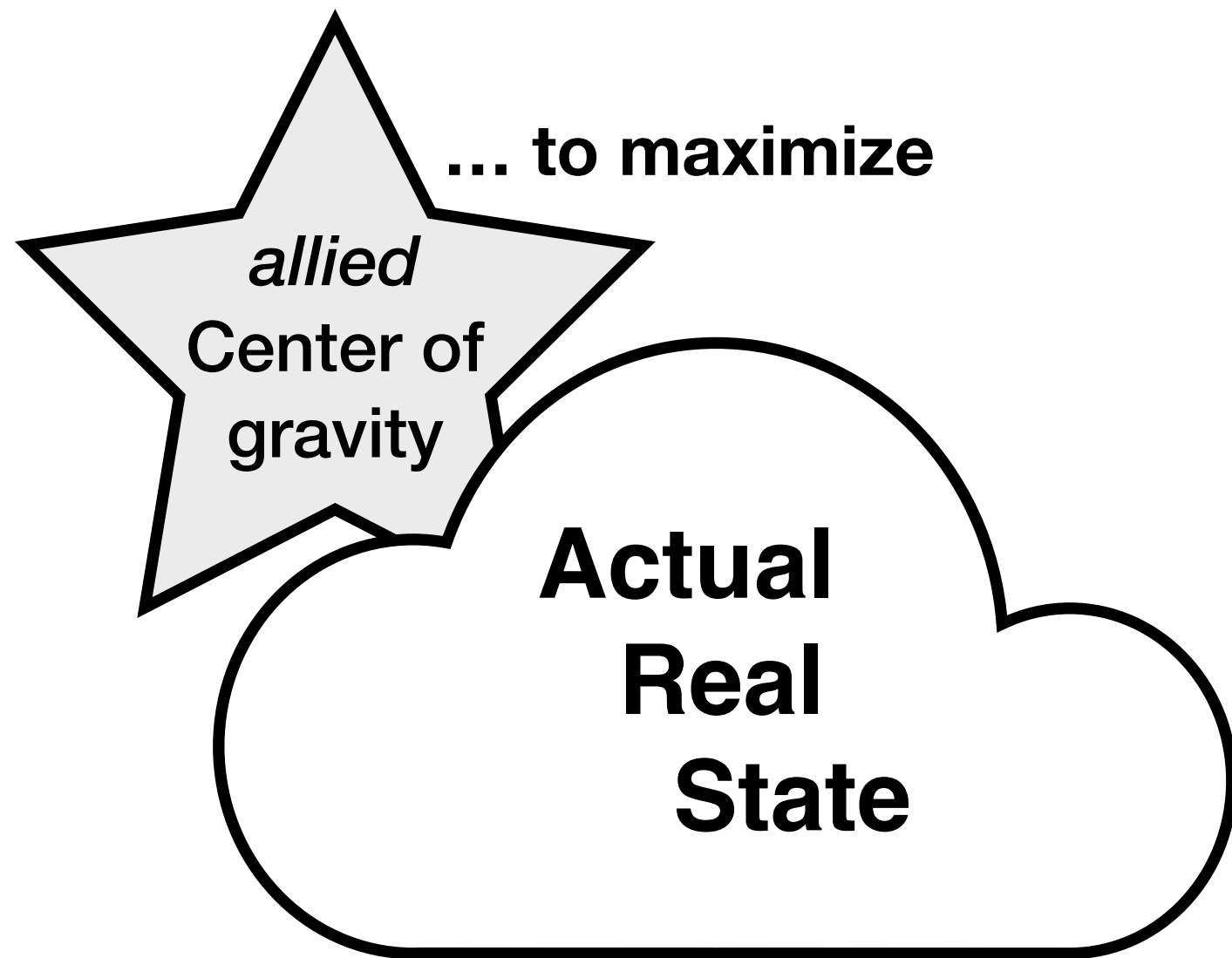
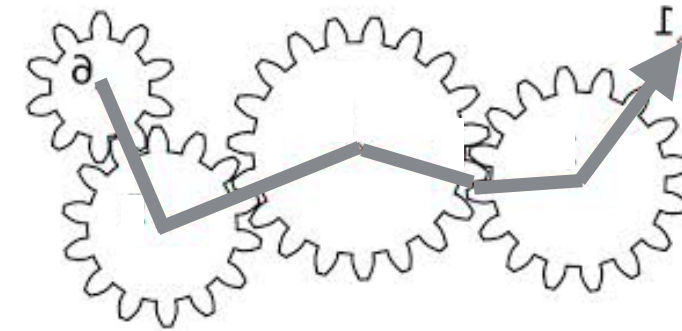


C2 is a cognitive machine.

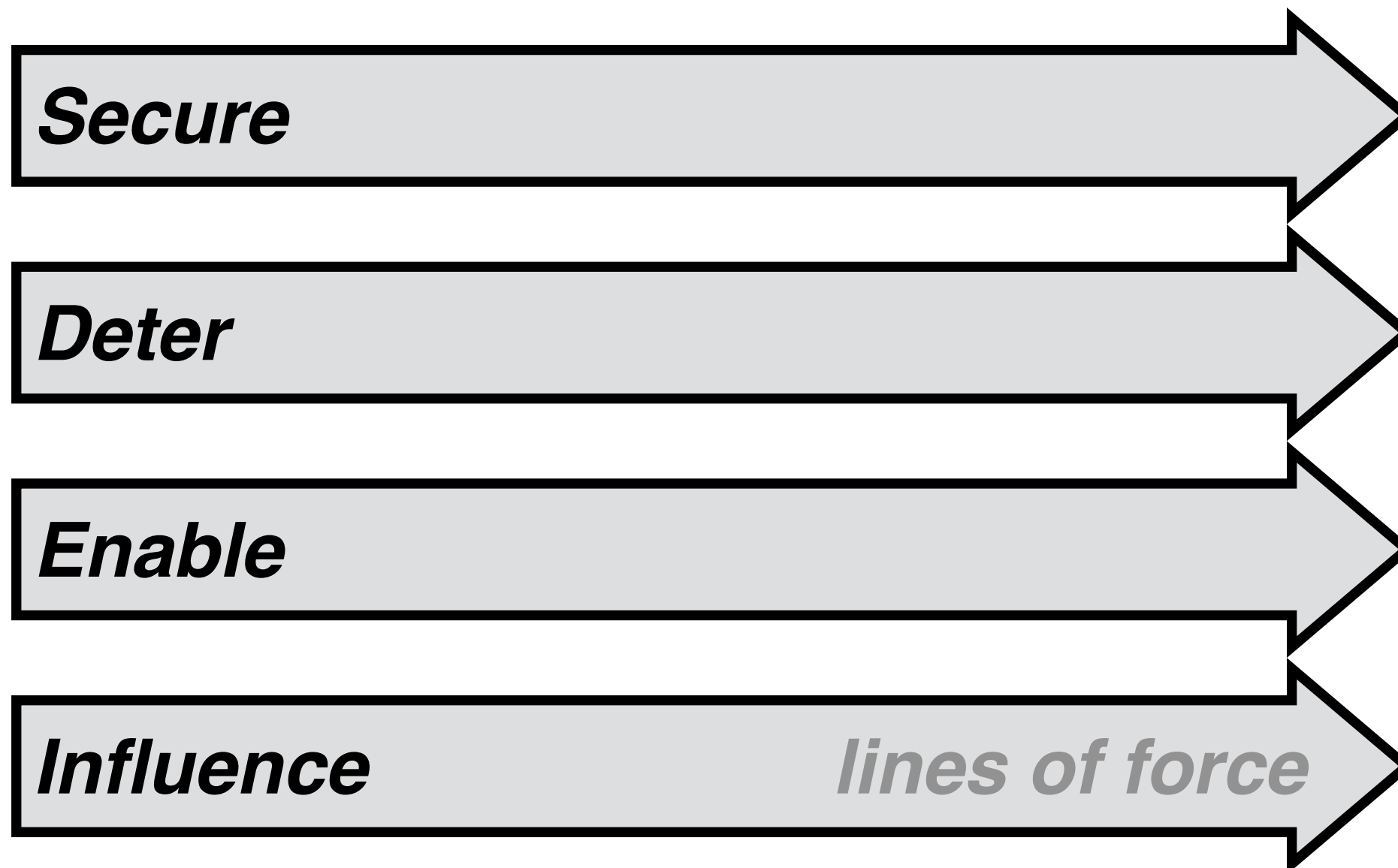


THE C2

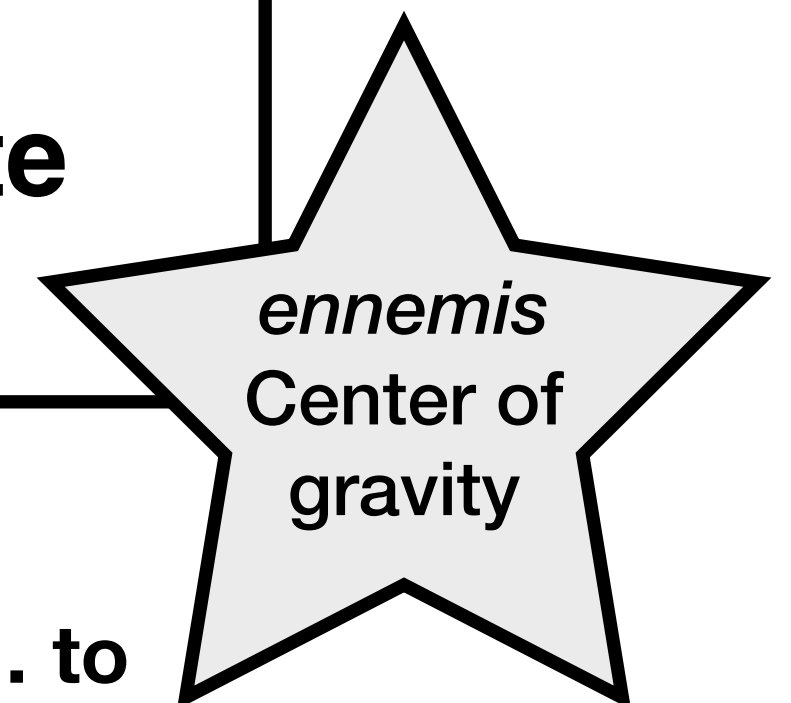
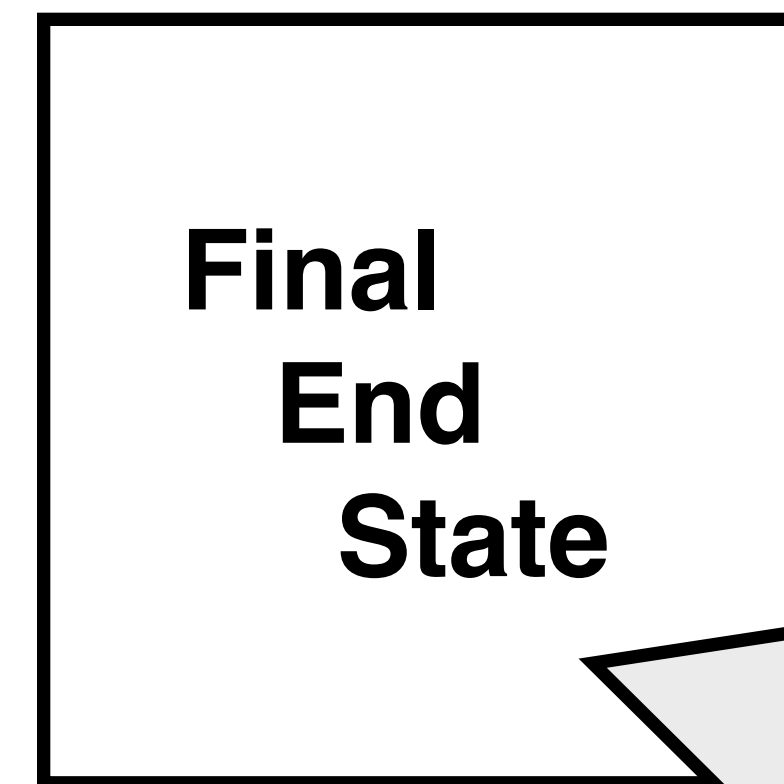
The Method to lead a Strategy



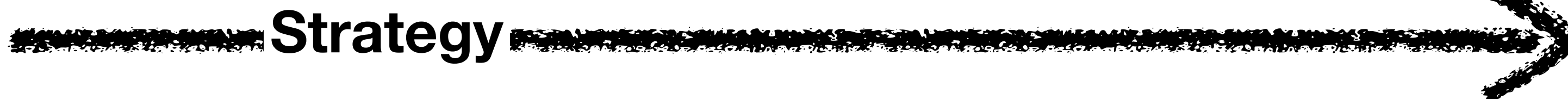
... to maximize



lines of force

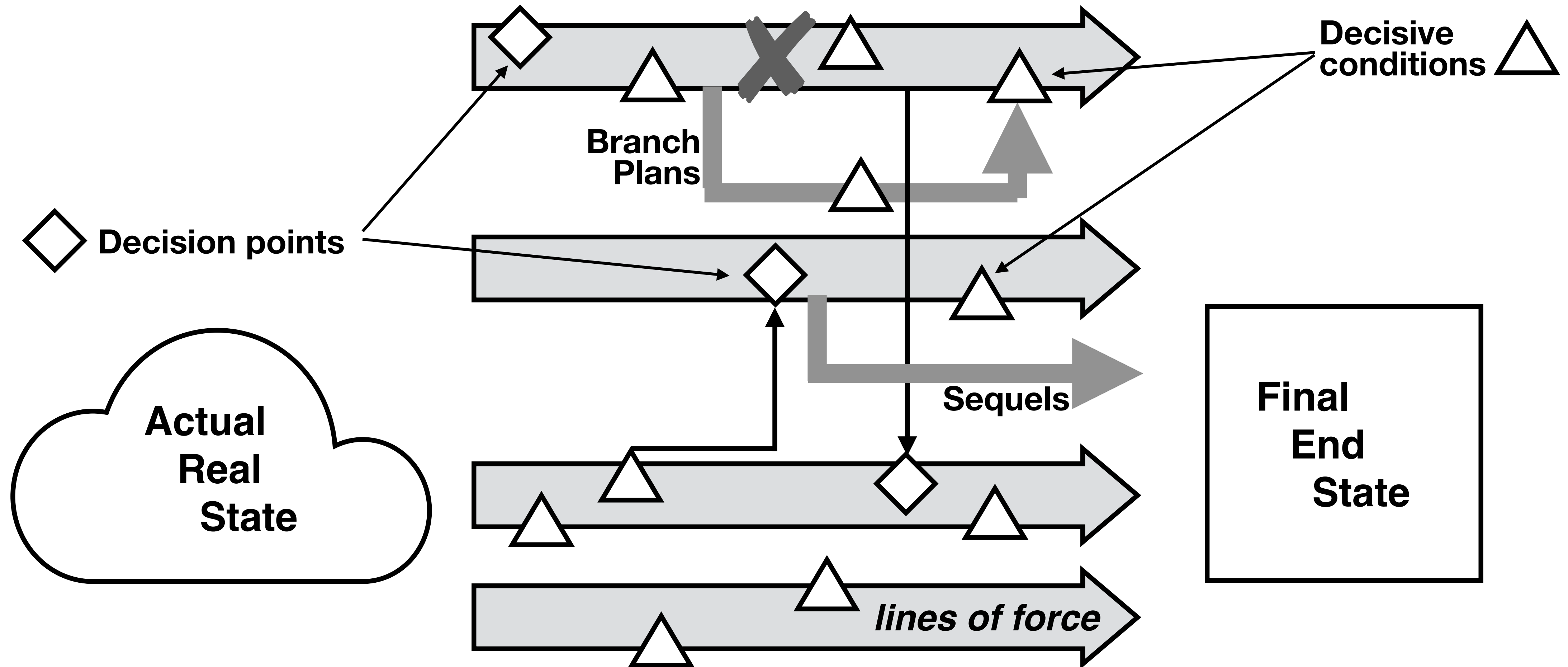


... to minimize



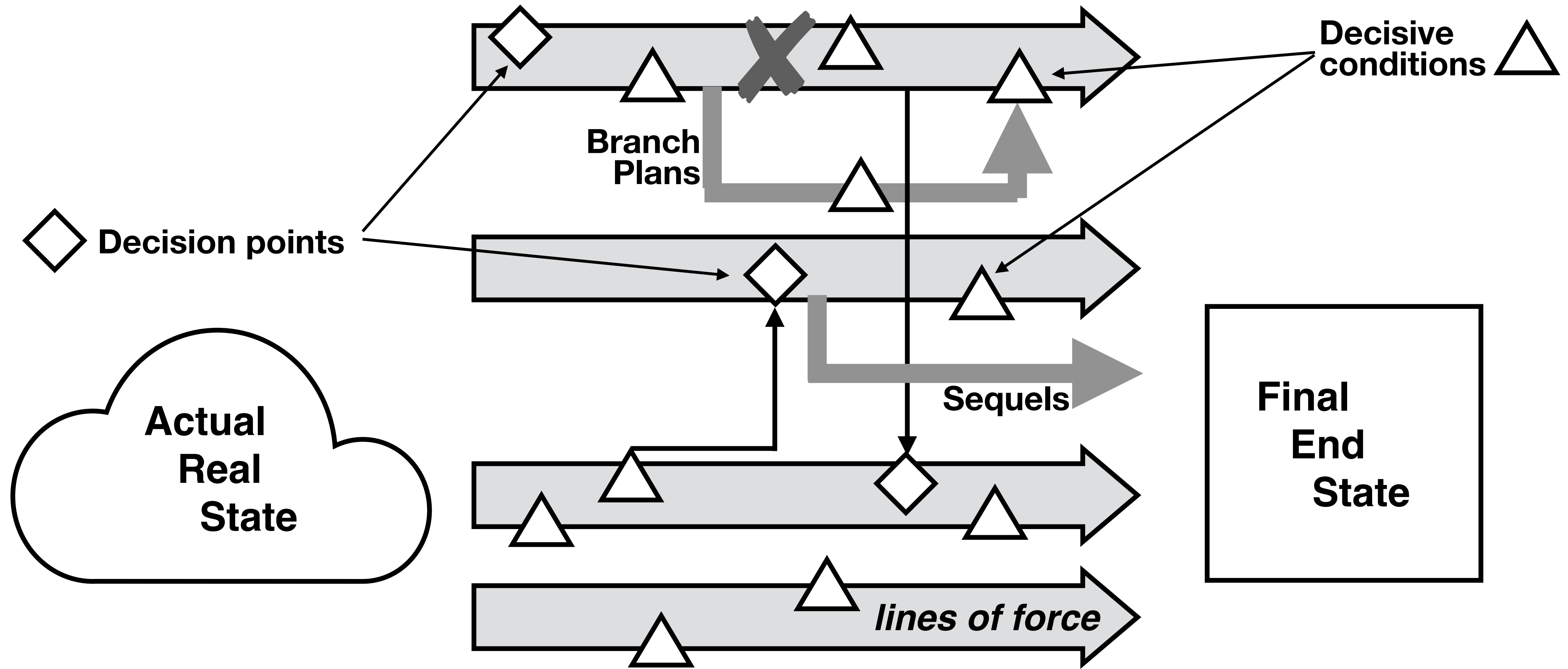
THE C2

Operational design



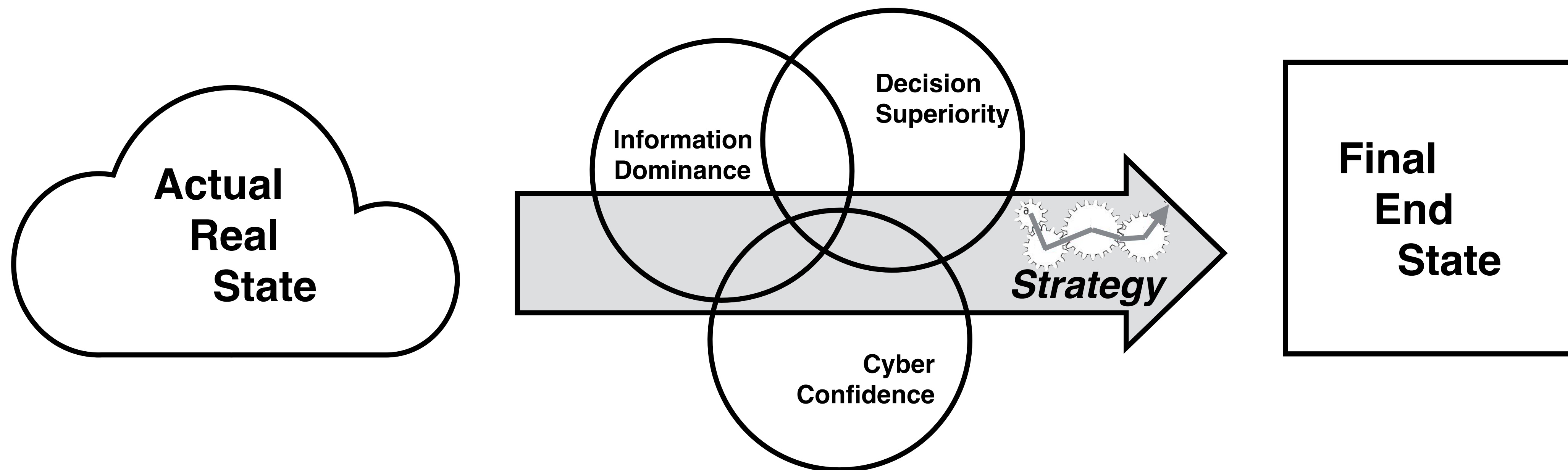
THE C2

Operational design

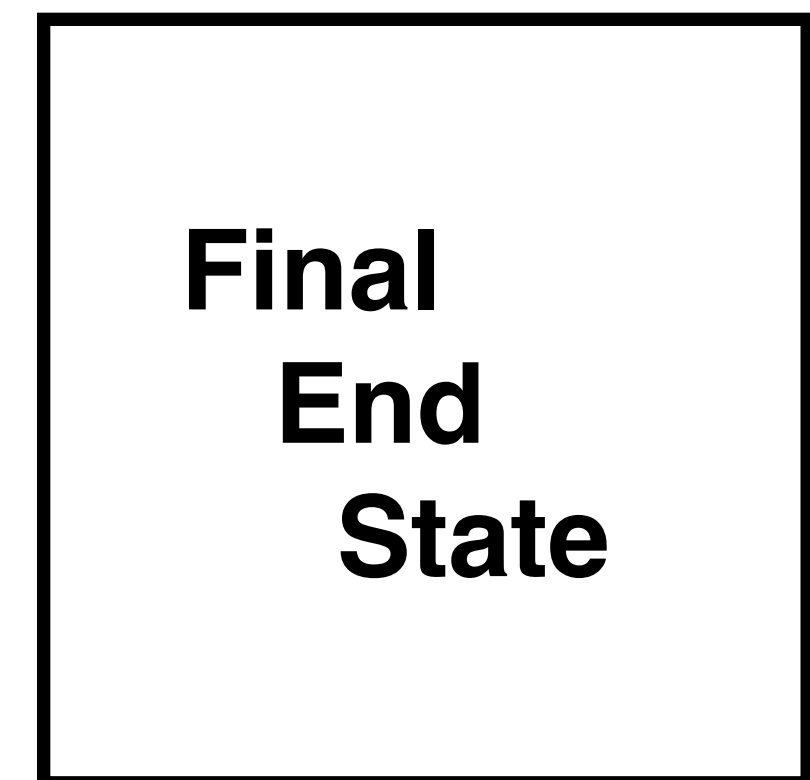
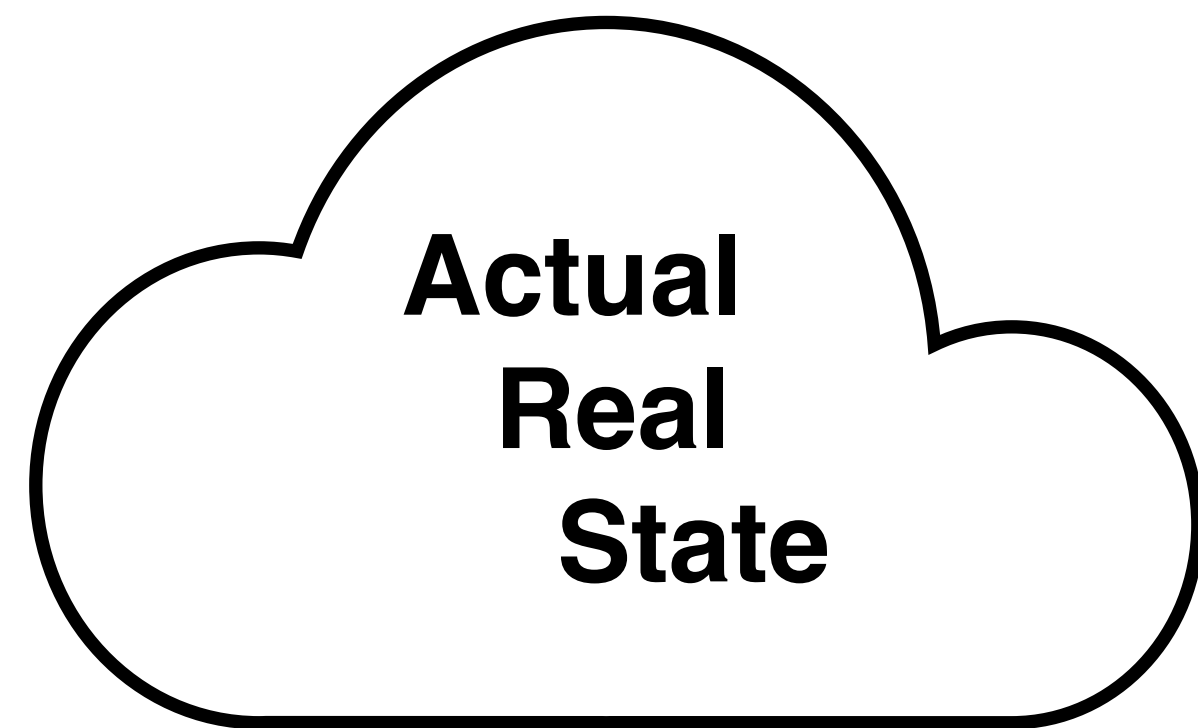
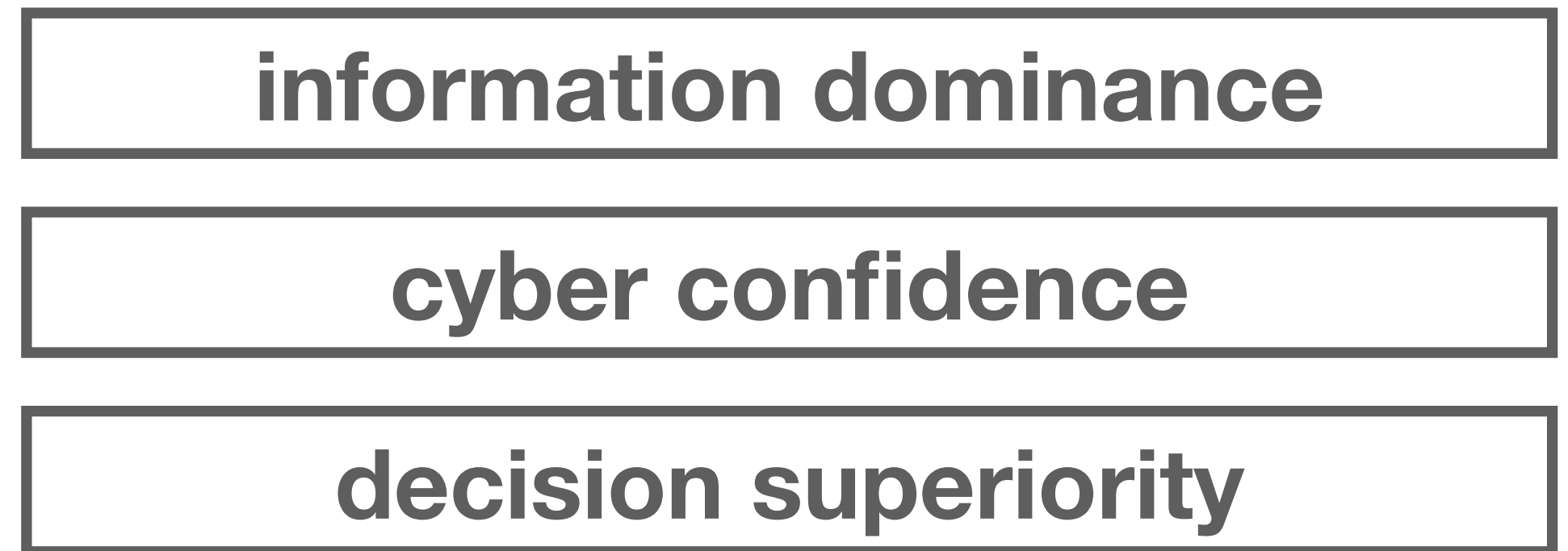
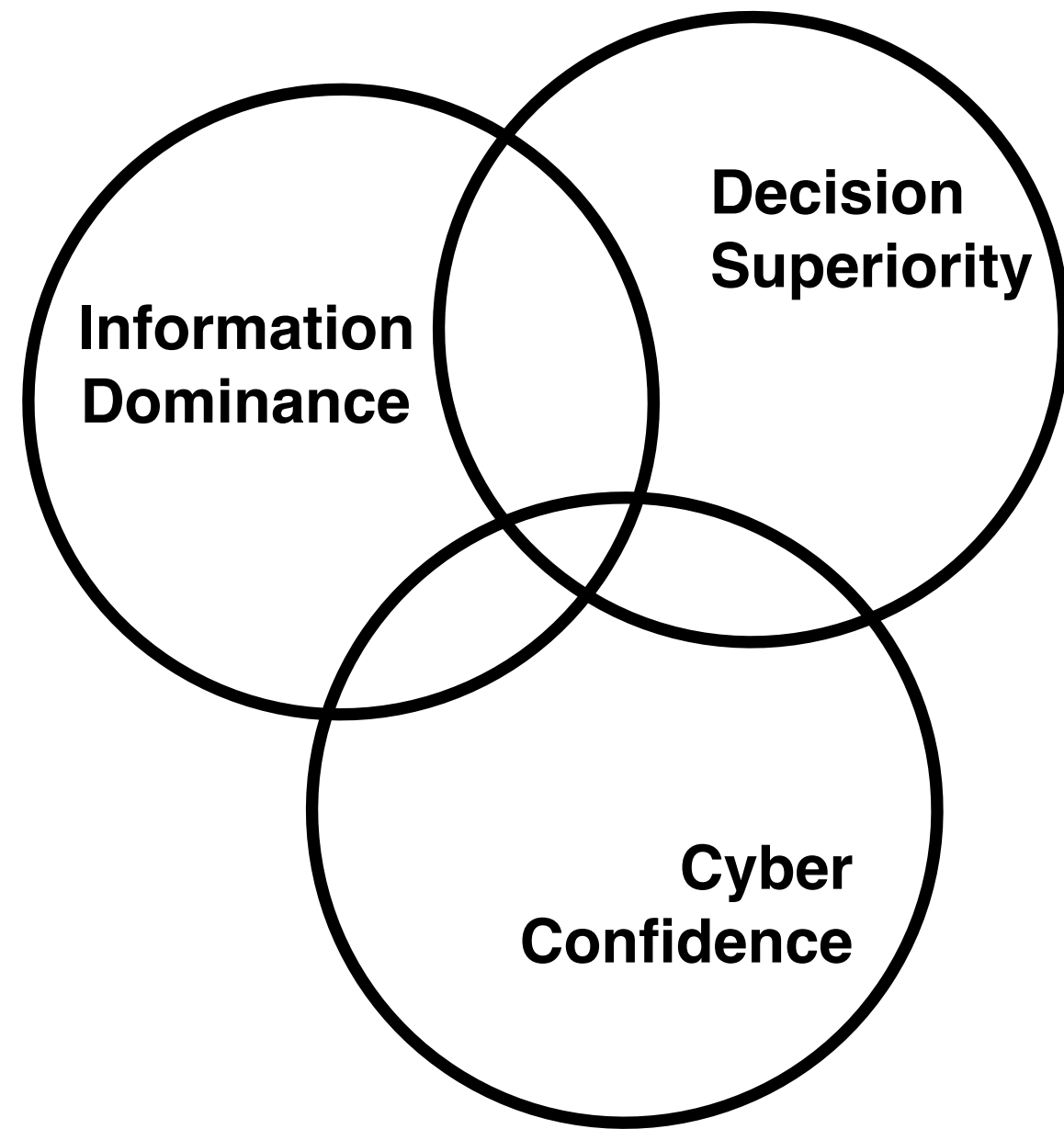


THE C2

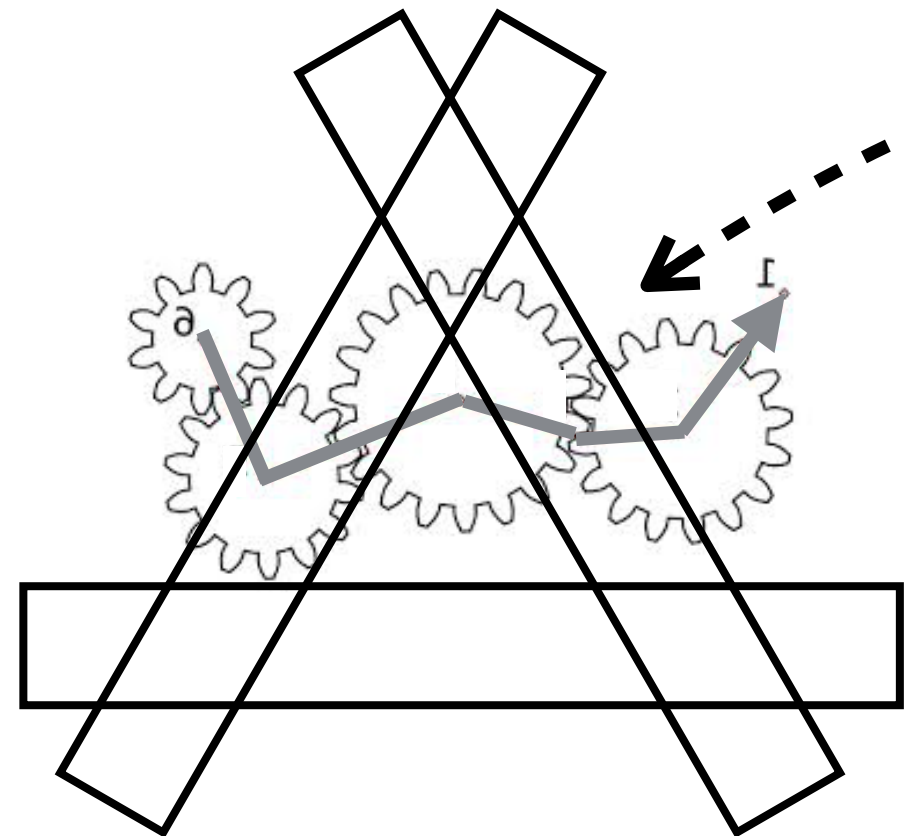
Three Strategical Support Dimensions



THE C2



THE C2

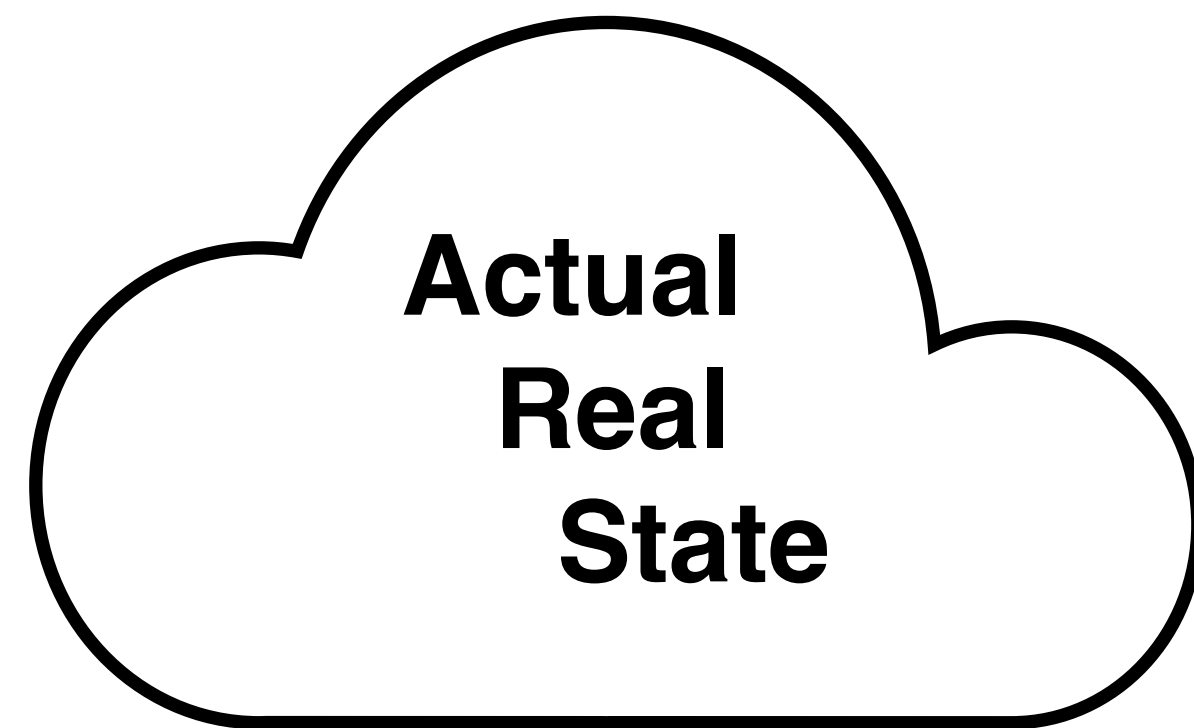


The C2 cognitive machine.

information dominance

cyber confidence

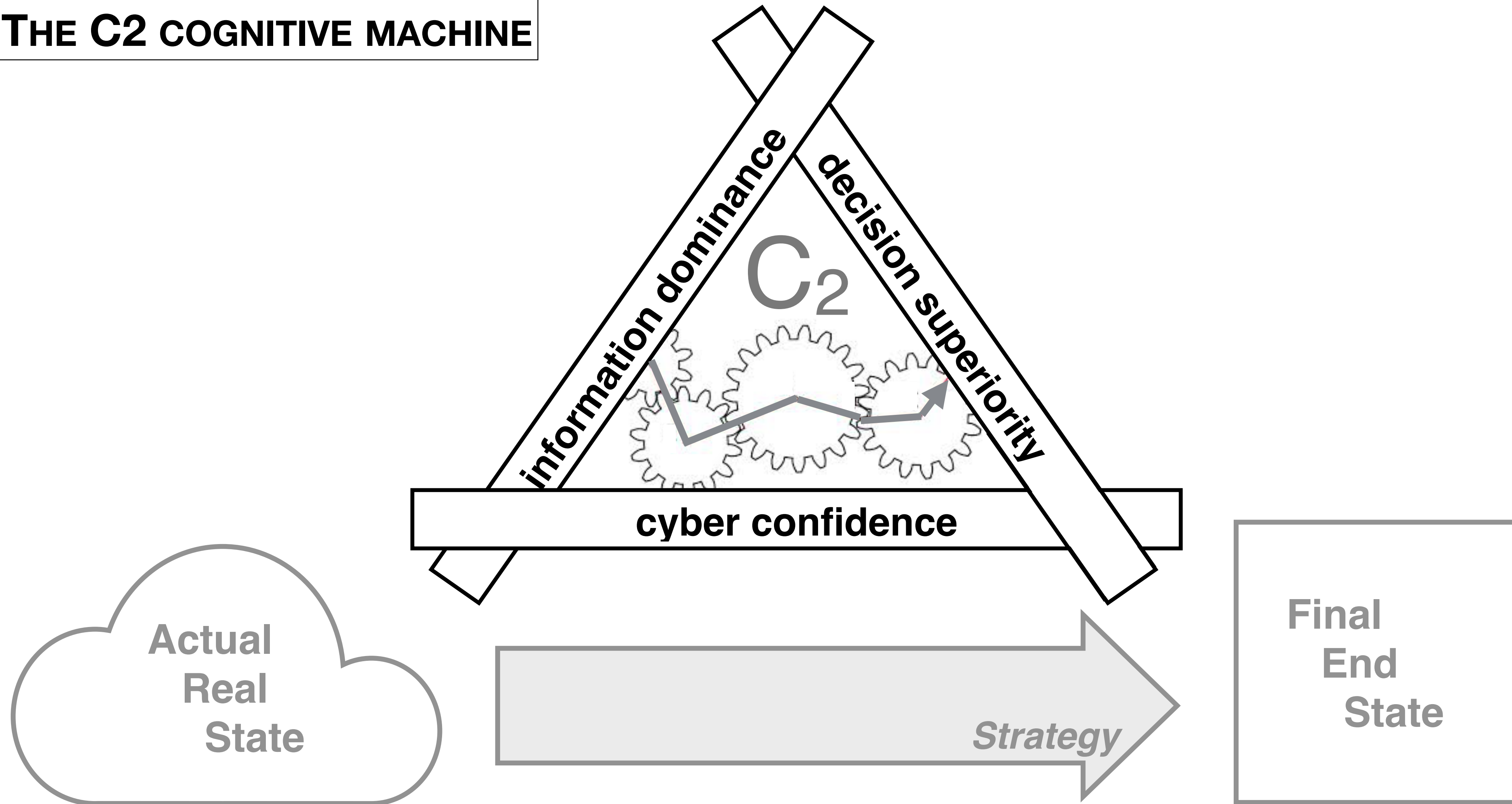
decision superiority



**Final
End
State**

First argument : C2 as “*Cognitive Machine*”

THE C2 COGNITIVE MACHINE



THE C2 AND SOME FIELDS OF MENACE

Technological and Cyber ressources field

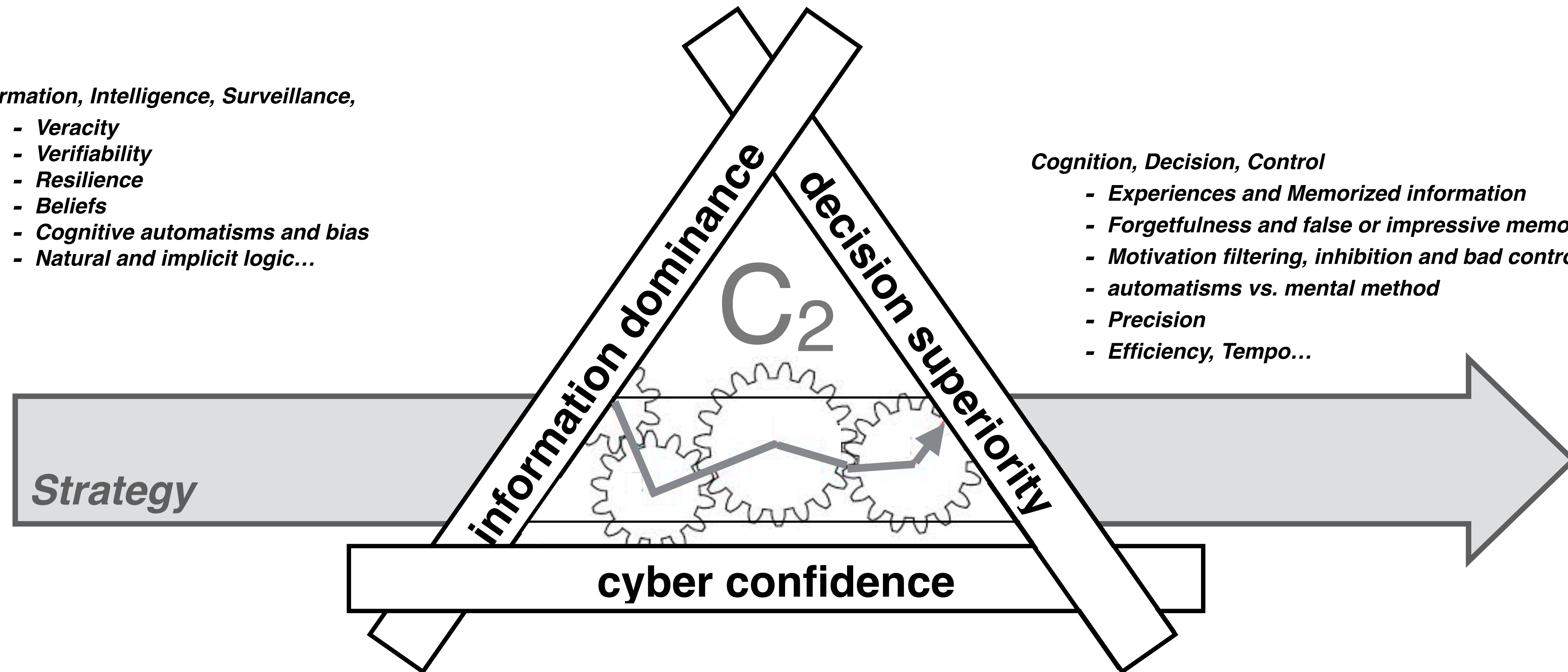
- *Environment*
- *Interfaces*
- *Machines*
- *Viruses, trojans*
- *Operators*
- *Vectors...*

Information, Intelligence, Surveillance,

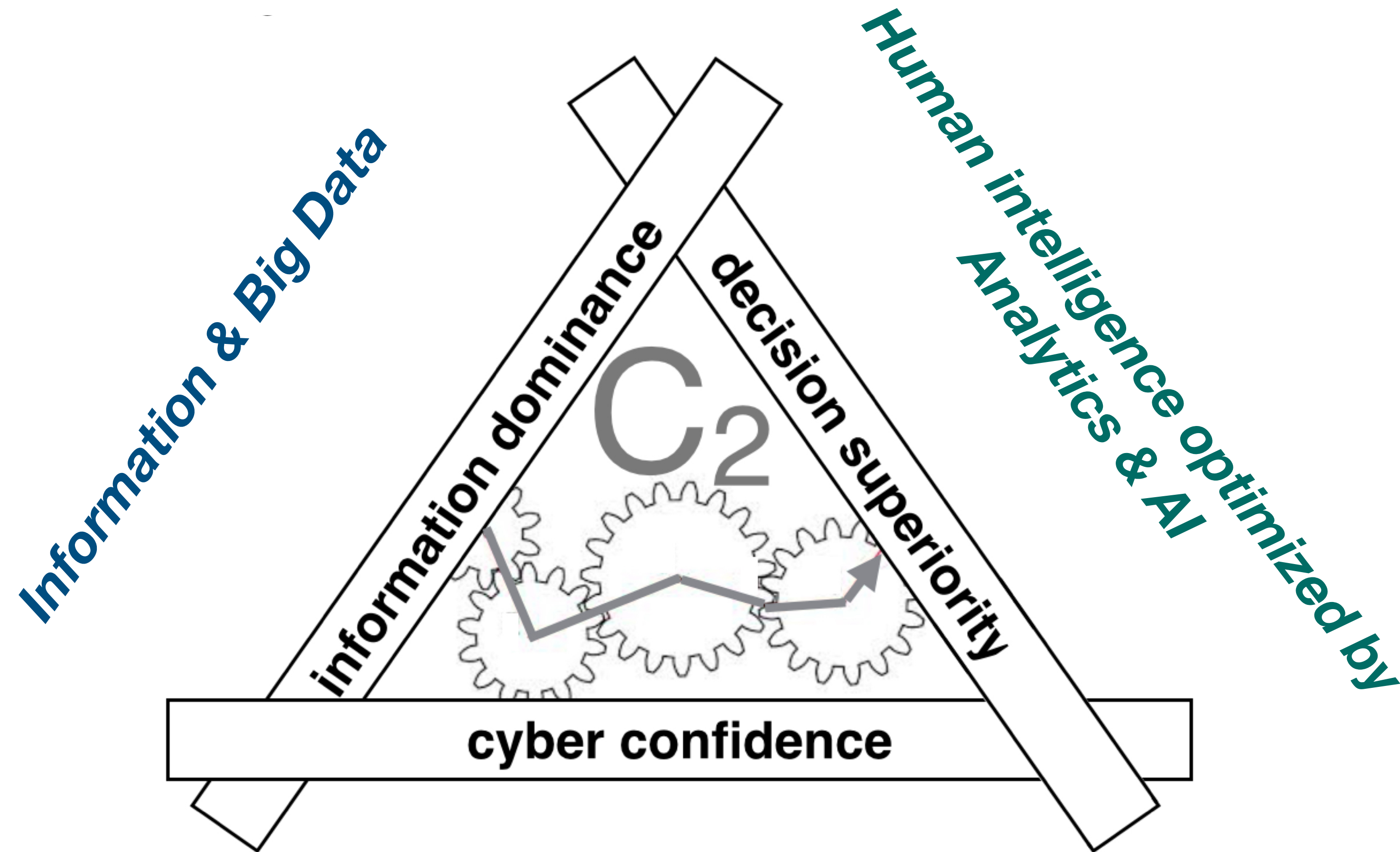
- *Veracity*
- *Verifiability*
- *Resilience*
- *Beliefs*
- *Cognitive automatism and bias*
- *Natural and implicit logic...*

Cognition, Decision, Control

- *Experiences and Memorized information*
- *Forgetfulness and false or impressive memory*
- *Motivation filtering, inhibition and bad control*
- *automatism vs. mental method*
- *Precision*
- *Efficiency, Tempo...*



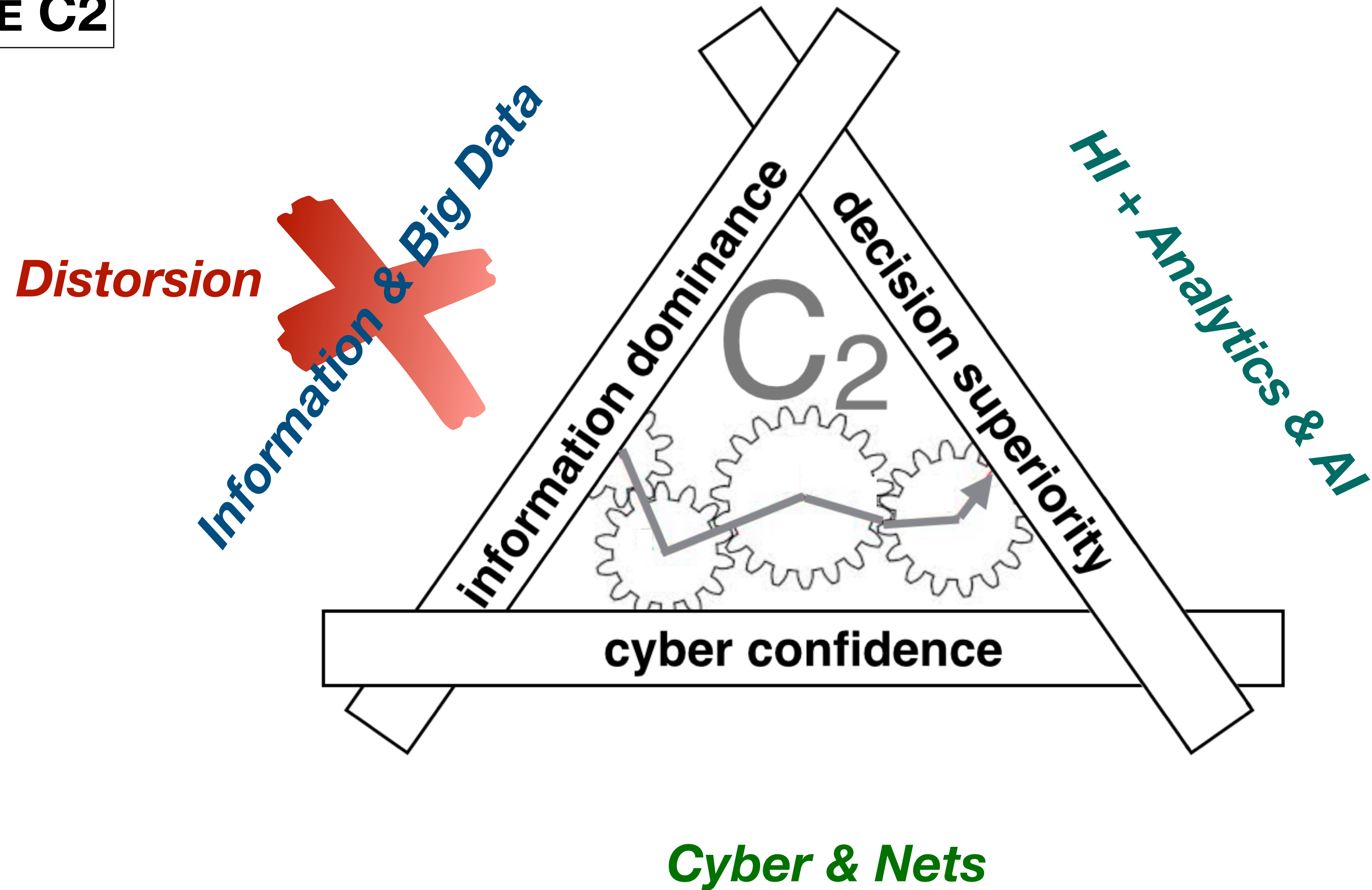
THE C2 AND SOME FIELDS OF MENACE



Machines, Cyber and Nets

Second argument : “*threats on the C2*”

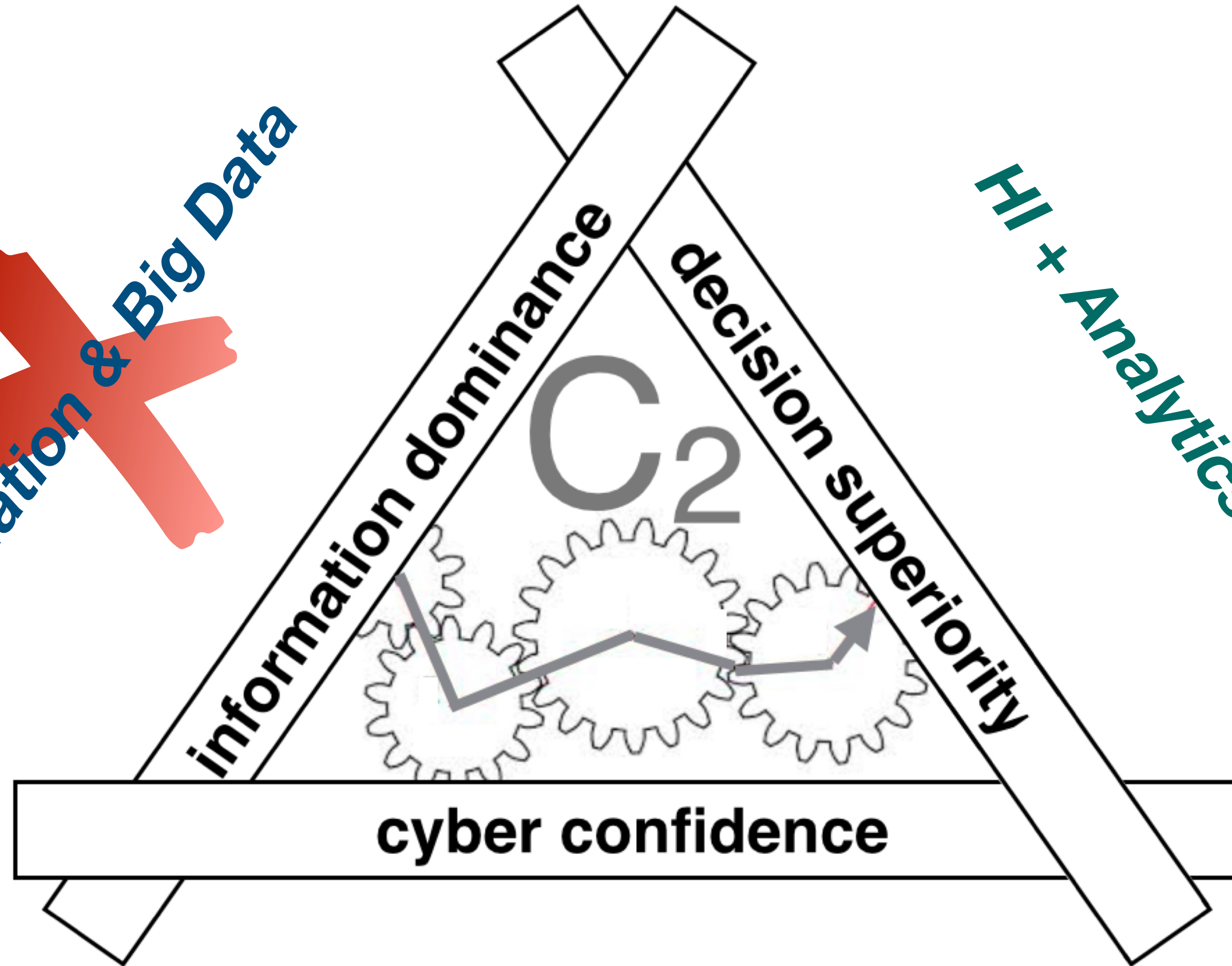
COGNITIVE C2



COGNITIVE C2

Distorsion

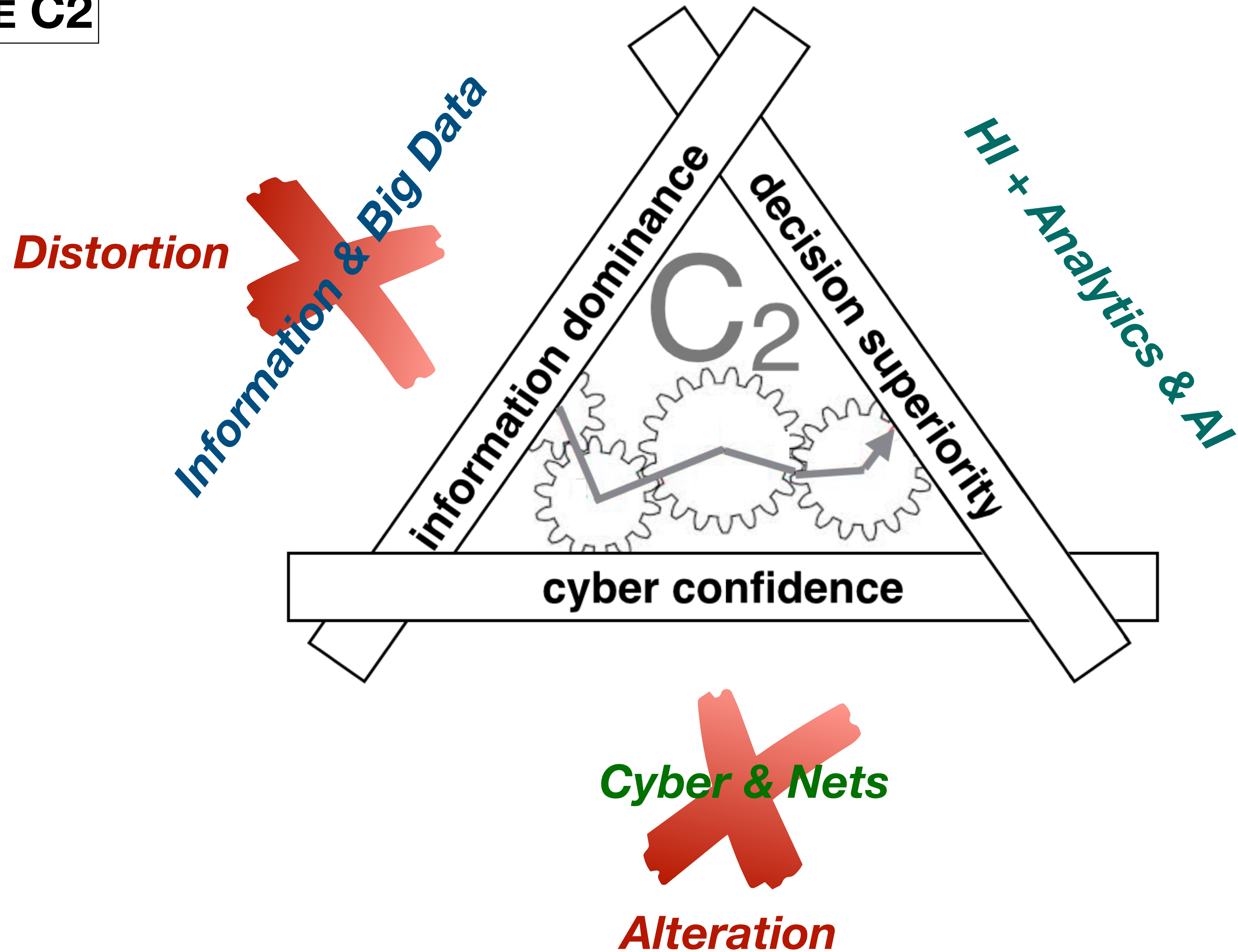
Information & Big Data



Information warfare attempts to control what a target group sees and knows.

Psychological and sociological operations attempt to information to disrupt what target individuals or groups feel or believe.

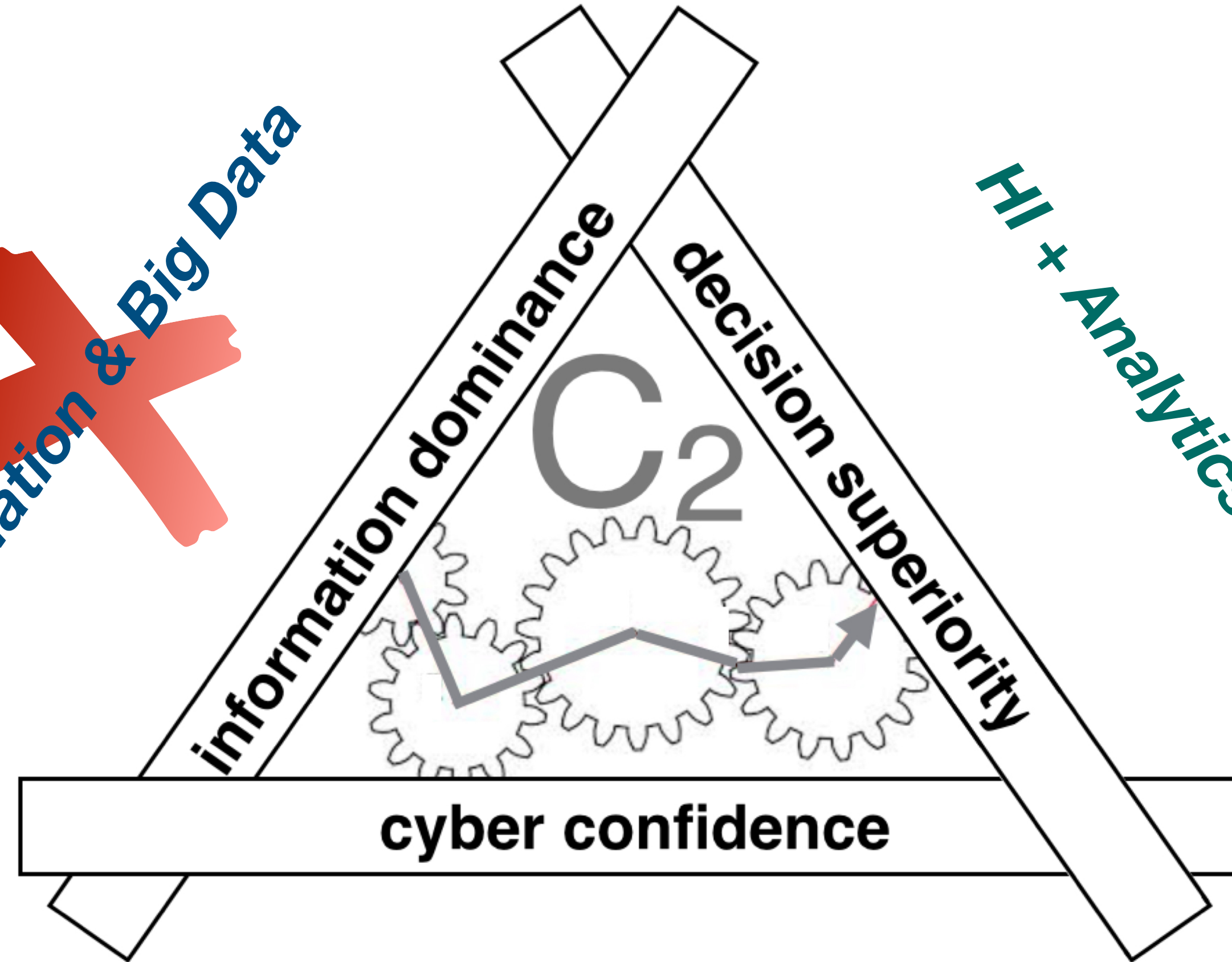
COGNITIVE C2



COGNITIVE C2

Distortion

~~Information & Big Data~~



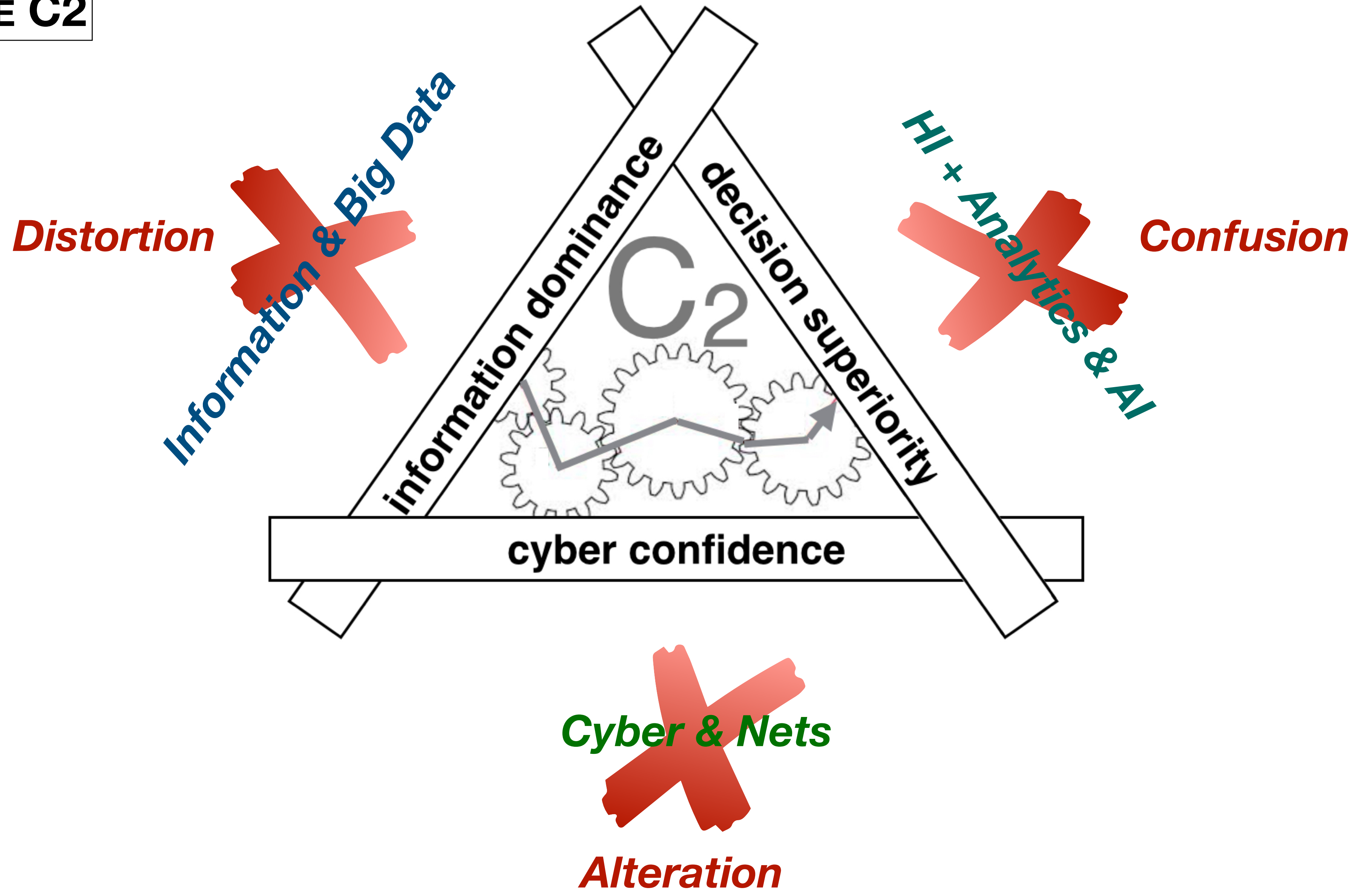
HI + Analytics & AI

Cyber warfare attempts to disrupt or to control technological numerical capabilities of a target individual or a target group.

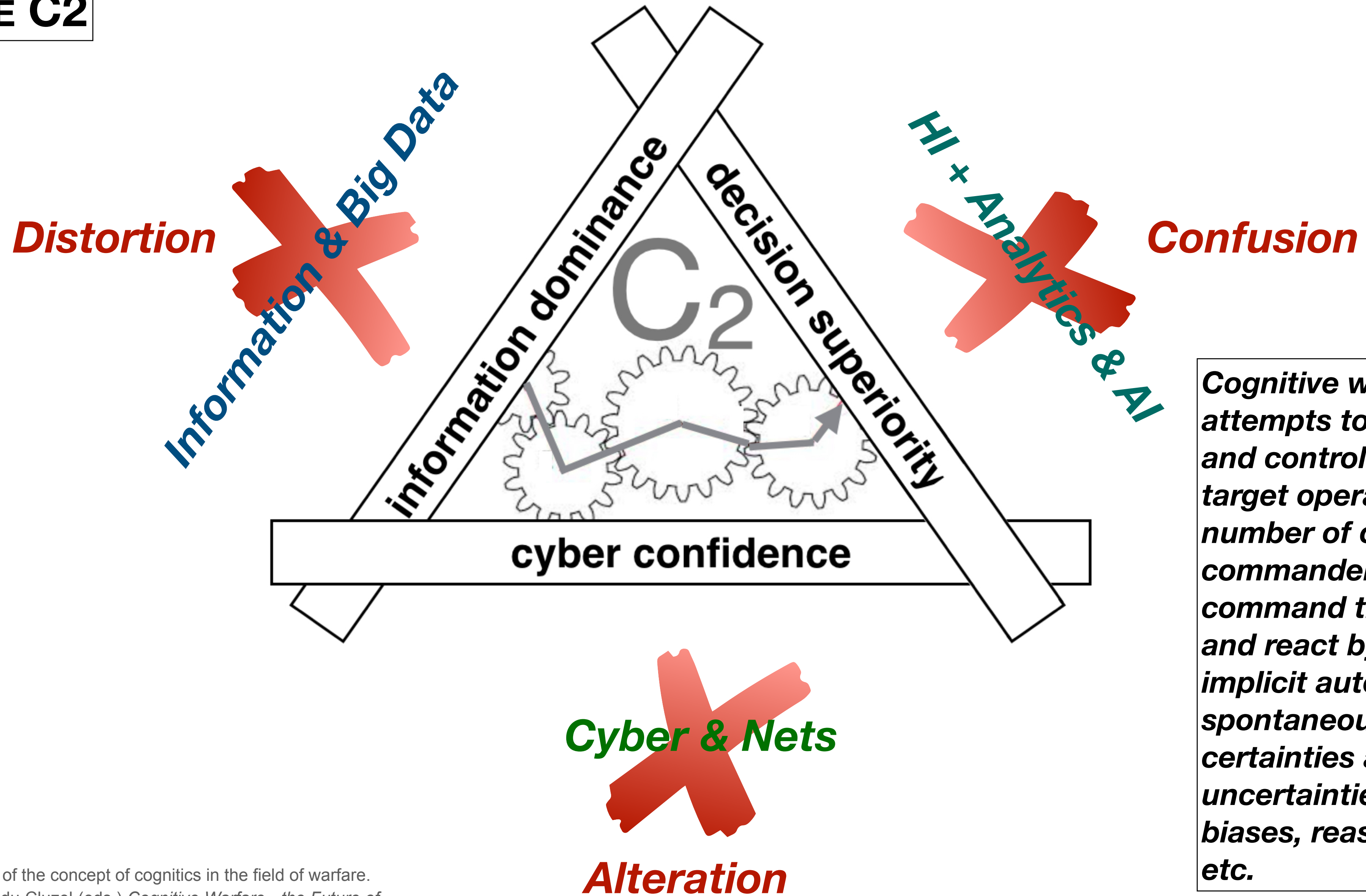
~~Cyber & Nets~~

Alteration

COGNITIVE C2



COGNITIVE C2



Cognitive warfare attempts to parasitize and control the way a target operator or a large number of operators, or a commander or a chain of command think, decide and react by exploiting implicit automatism, spontaneous beliefs, certainties and uncertainties, cognitive biases, reasoning errors, etc.

Claverie, B., Du Cluzel, F. (2022).

“The “Cognitive Warfare” - The advent of the concept of cognitics in the field of warfare.
In B.Claverie, B.Prebot, N.Beuchler, F.du Cluzel (eds.) *Cognitive Warfare - the Future of Cognitive Dominance*.

First NATO scientific meeting “Cognitive Warfare”, Bordeaux (FR) - June, 21 2021.

Paris: NATO Collaboration Support Office. pp.21-28.

COGNITIVE C2

Information warfare attempts to control what a target group sees and knows.

Distortion

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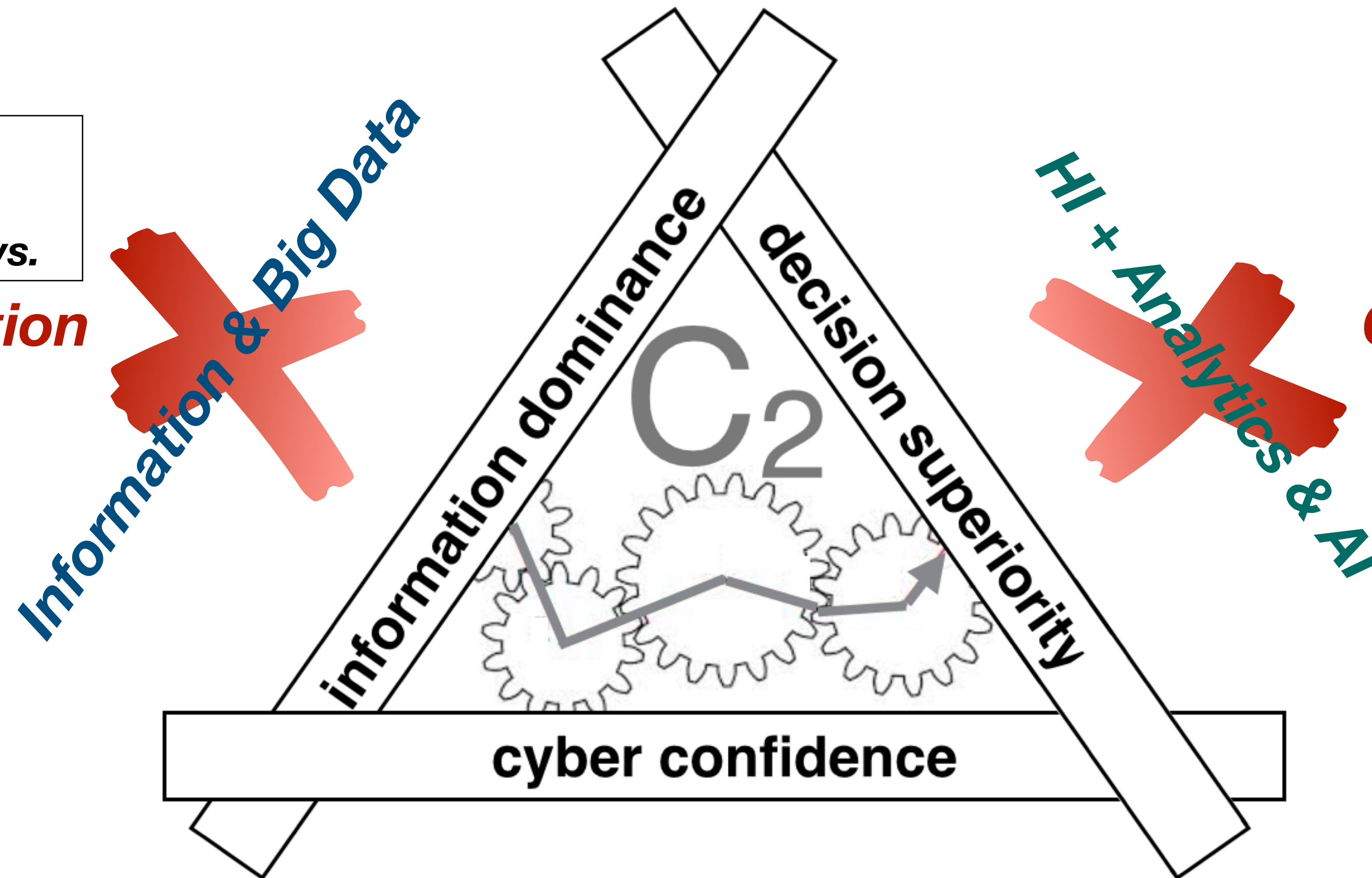
Cyber & Nets

Alteration

HI + Analytics & AI

Confusion

Cognitive warfare attempts to parasitize and control the way a target operator or a large number of operators, or a commander or a chain of command think, decide and react by exploiting implicit automatisms, spontaneous beliefs, certainties and uncertainties, cognitive biases, reasoning errors, etc.



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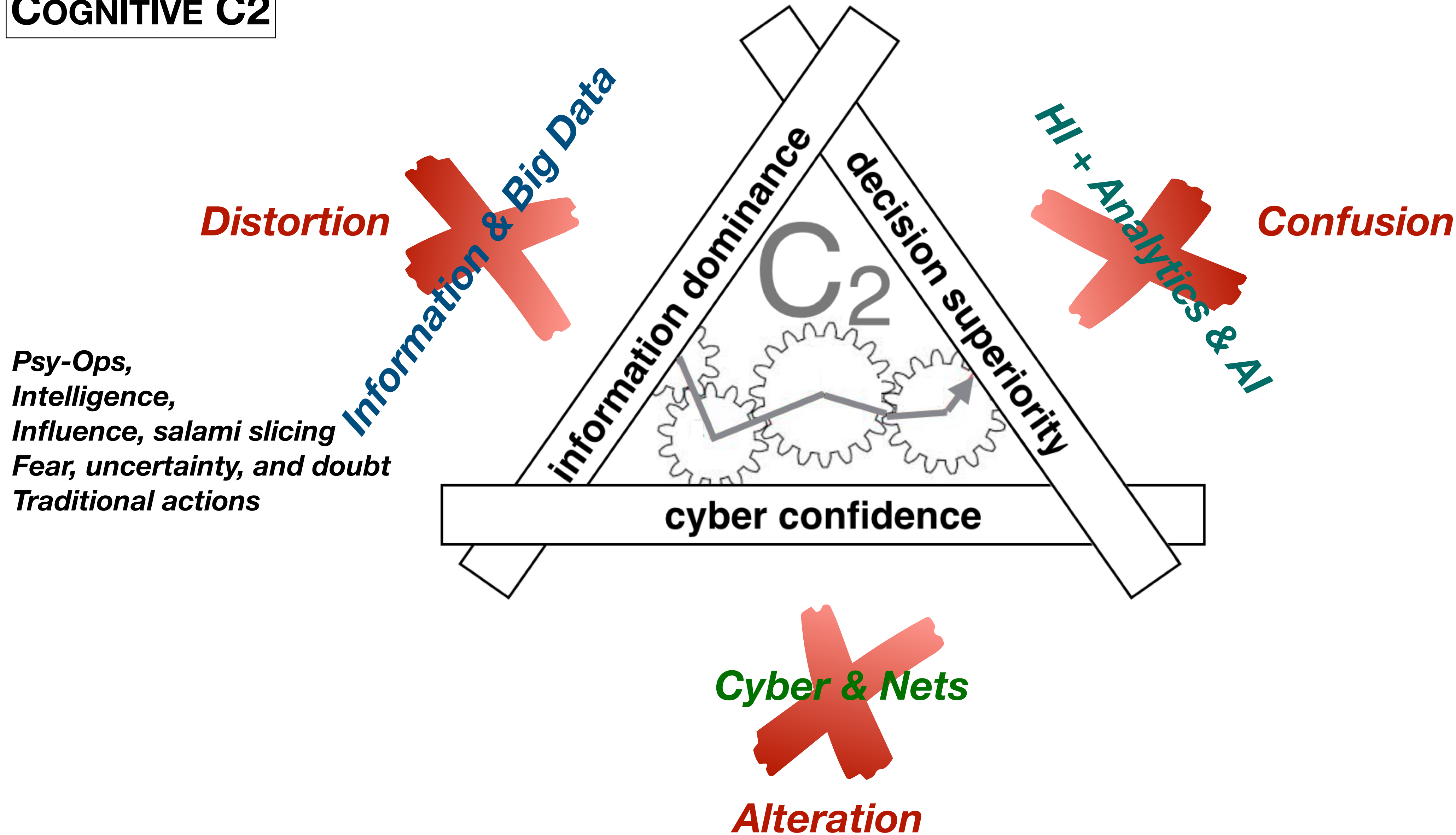
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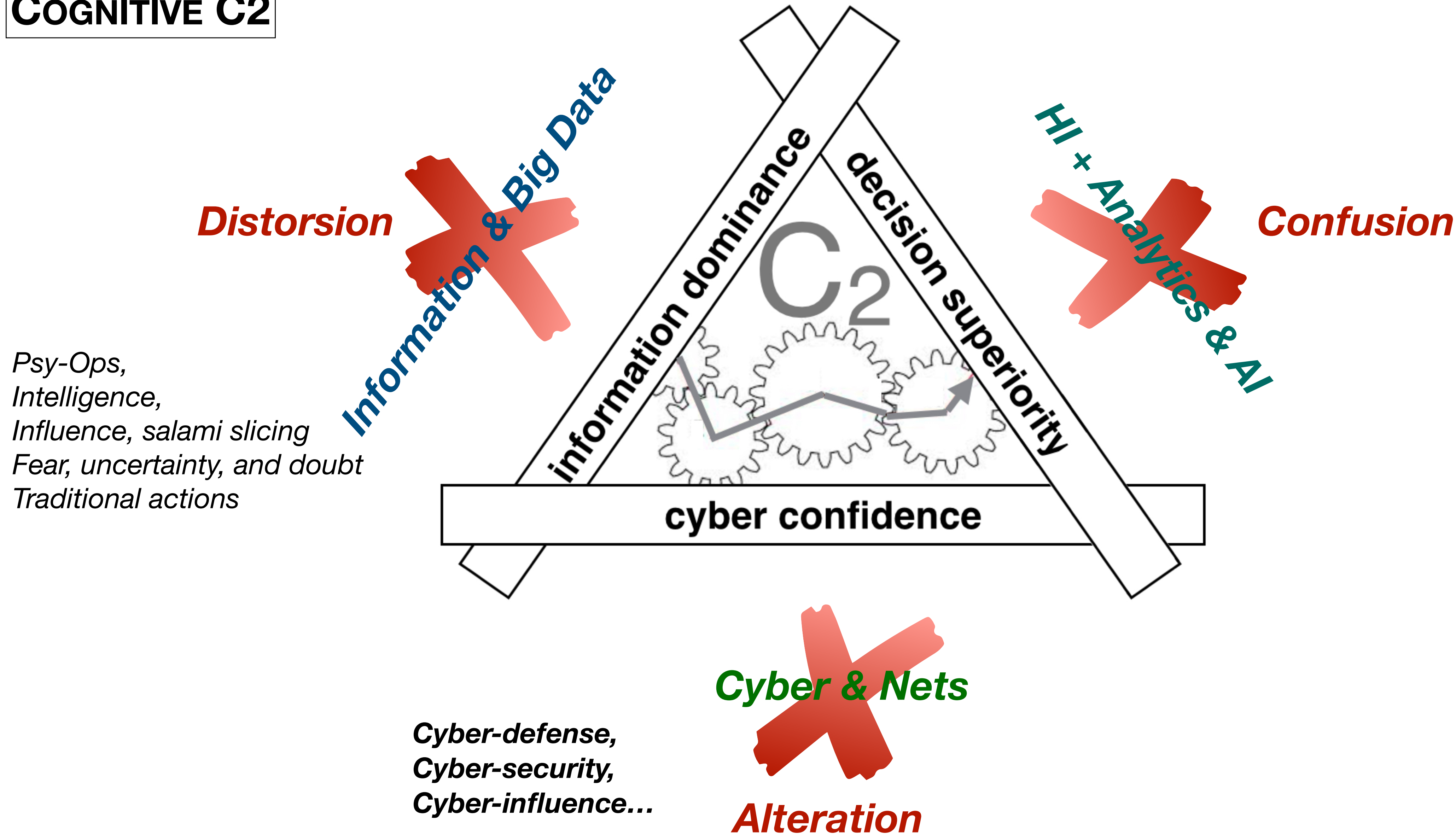
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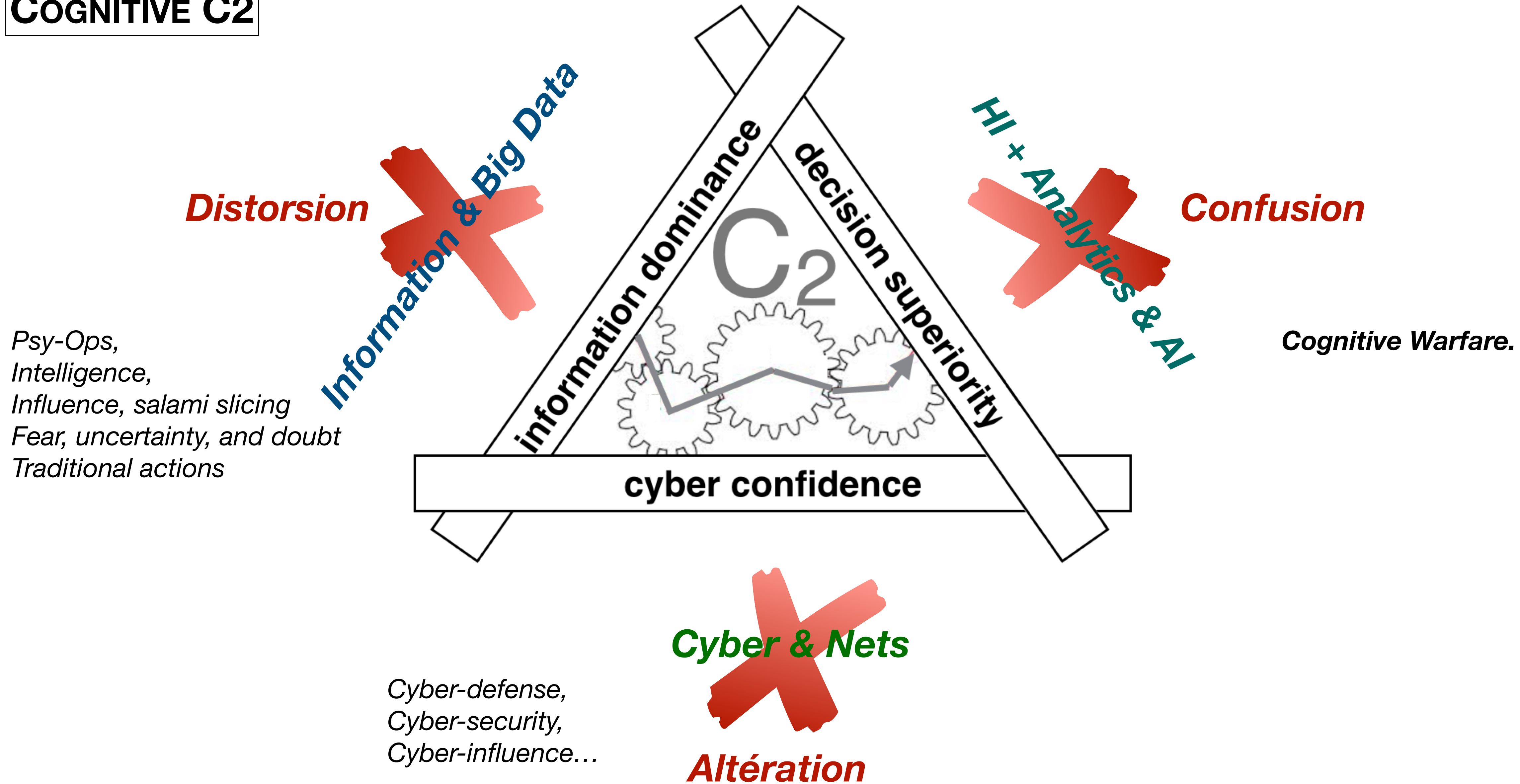
COGNITIVE C2



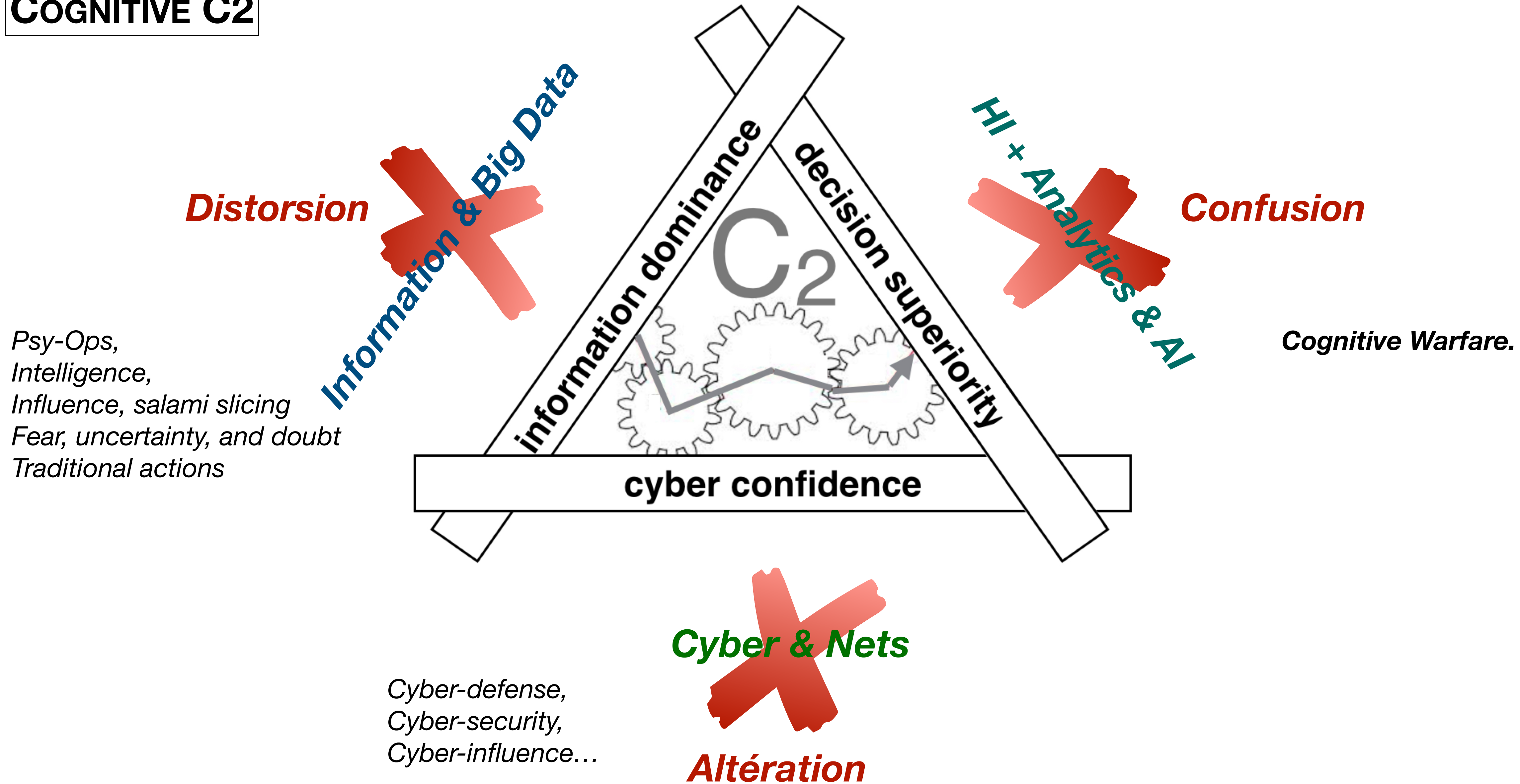
COGNITIVE C2



COGNITIVE C2



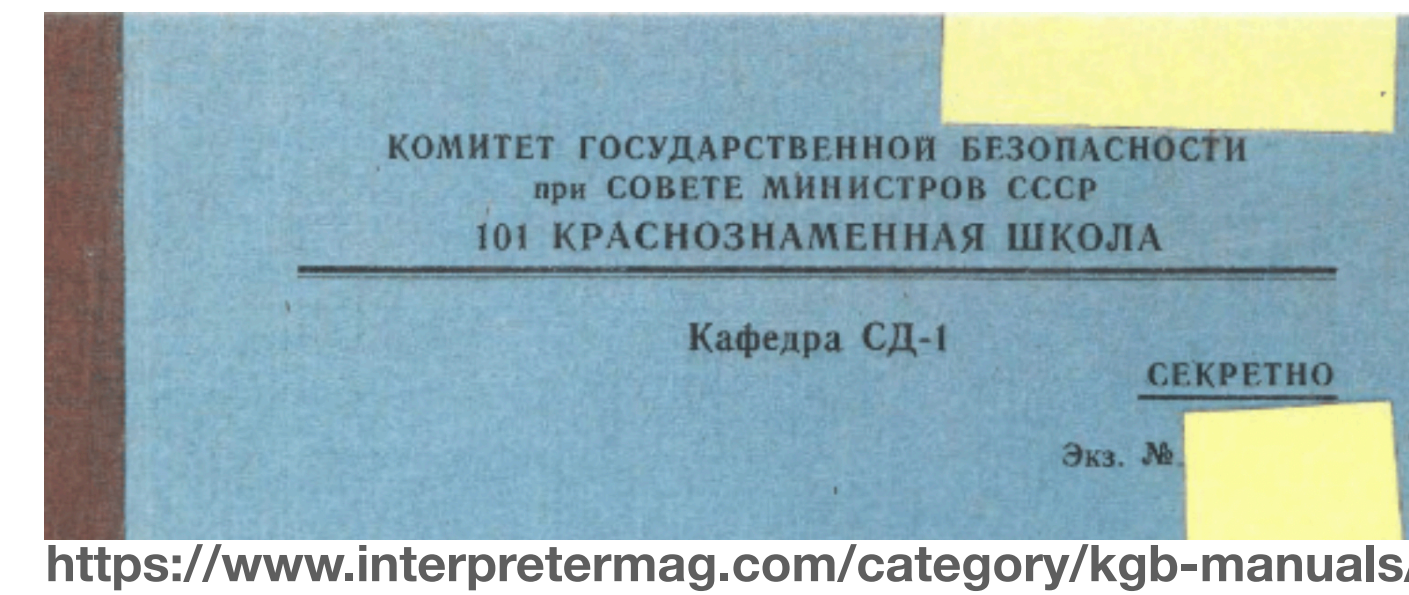
COGNITIVE C2



Third argument : “*Cognitive Warfare combine all these threats*”

“MASKIROVKA” AS AN EXEMPLE

A coordinated combination of three types of attack.



Distorsion

Information & Big Data

Psy-Ops,
Intelligence,
Influence, salami slicing
Fear, uncertainty, and doubt
Traditional actions

Focusing cognitive energy on formats rather than what the information contains.

Confusion
HI + Analytics & AI

Cognitive Warfare.

Focusing cognitive energy on the risk of the decision rather than the decision.

Cyber-defense,
Cyber-security,
Cyber-influence...

Focusing cognitive energy on the tools rather than what the tools are made for.

Cyber & Nets

Alteration



Fourth argument: “this is only the beginning”; Why ?

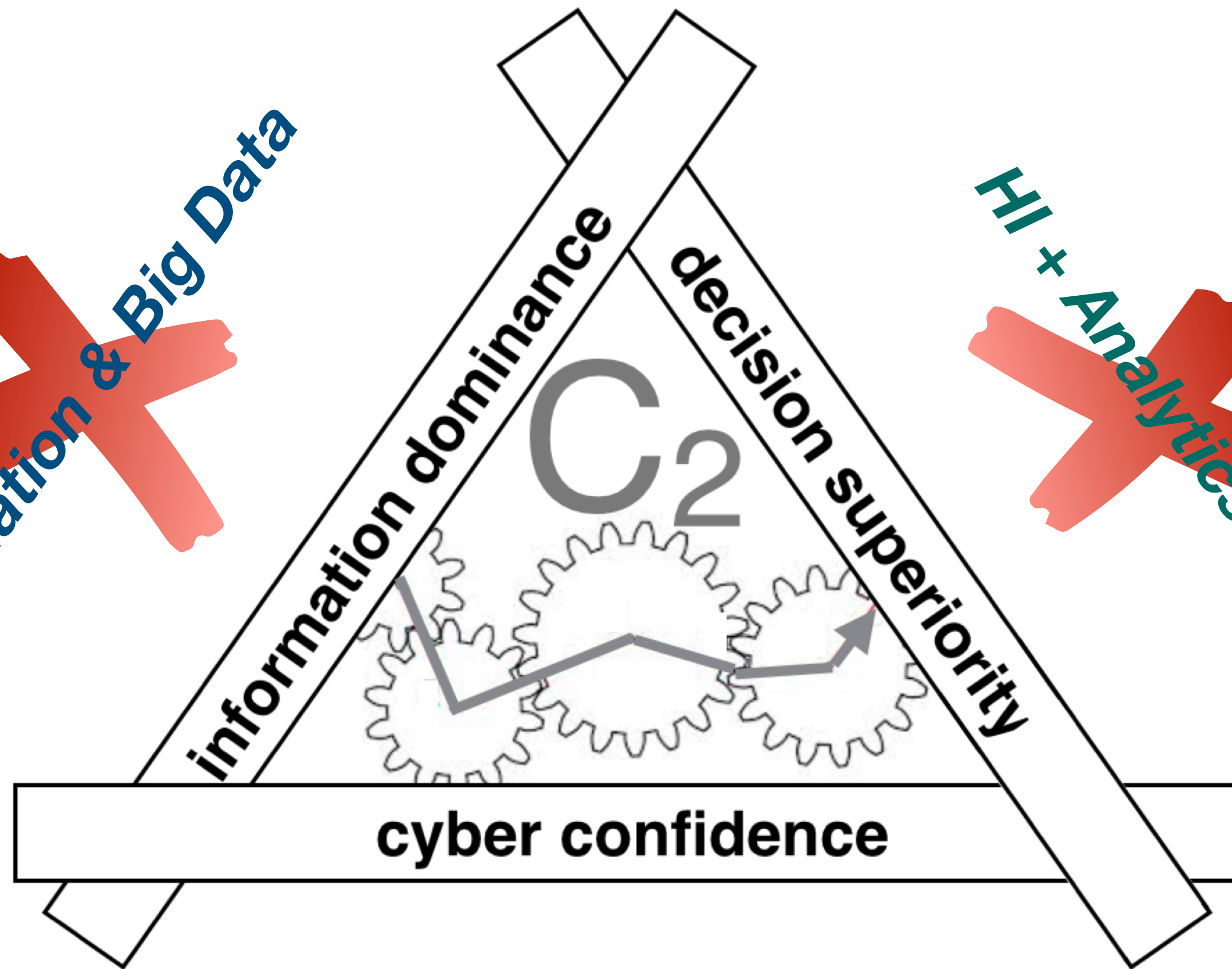
COGNITIVE C2

*Psy-Ops,
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Fear, uncertainty, and doubt
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Information & Big Data

Distorsion



*Cyber-defense,
Cyber-security,
Cyber-influence...*

Cyber & Nets

Alteration

HI + Analytics & AI

Confusion

Focusing cognitive energy on the tools rather than what the tools are made for.

Focusing cognitive energy on the risk of the decision rather than the decision.

Cognitive Warfare.

Two dynamics

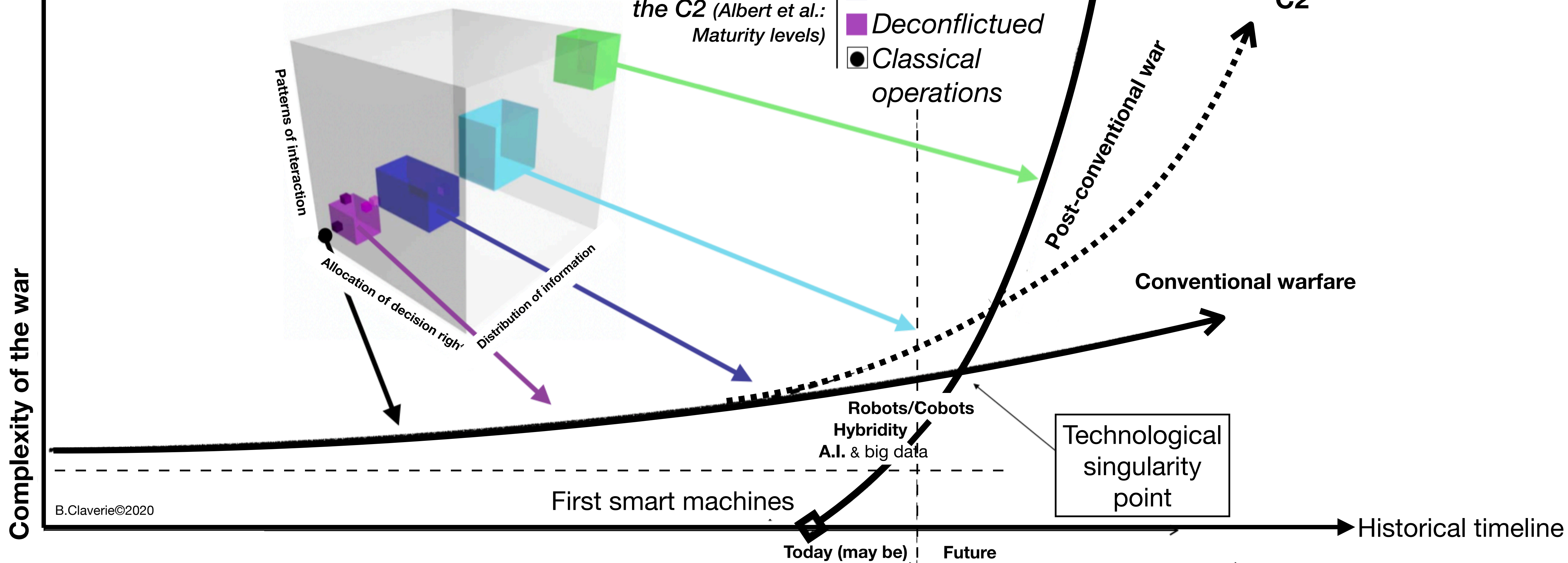
The very rapid progress of means of warfare, defense and attrition, on land, at sea, in the air and in space.
 The ultra-rapid evolution of means, tools and methods, digital systems and autonomy.

This involves two types of complexity:

- the complexity of the world, those of the balance between war and peace,
- the complexity of the decision, the consistent use of systems, and their command and control.

The five ages of the C2 (Albert et al.: Maturity levels)

- Edge
- Collaborative
- Coordinated
- Deconflictued
- Classical operations



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Claverie, B., Du Cluzel, F., Desclaux, G. (2022). Cognitive Warfare and C2. *Second conference on Cognitive Warfare*. USADEVCOM & NATO Science and Technology Organization. USM Academia West-Point (NY, USA), march 4, 2022.

Albert, D.S., Hubert, H., Moffat, J., and SAS-065 group (2006). *NATO NEC C2 Maturity Model*. Washington (DC, USA) : US Department of Defense CCRP Publication Series.

Two dynamics

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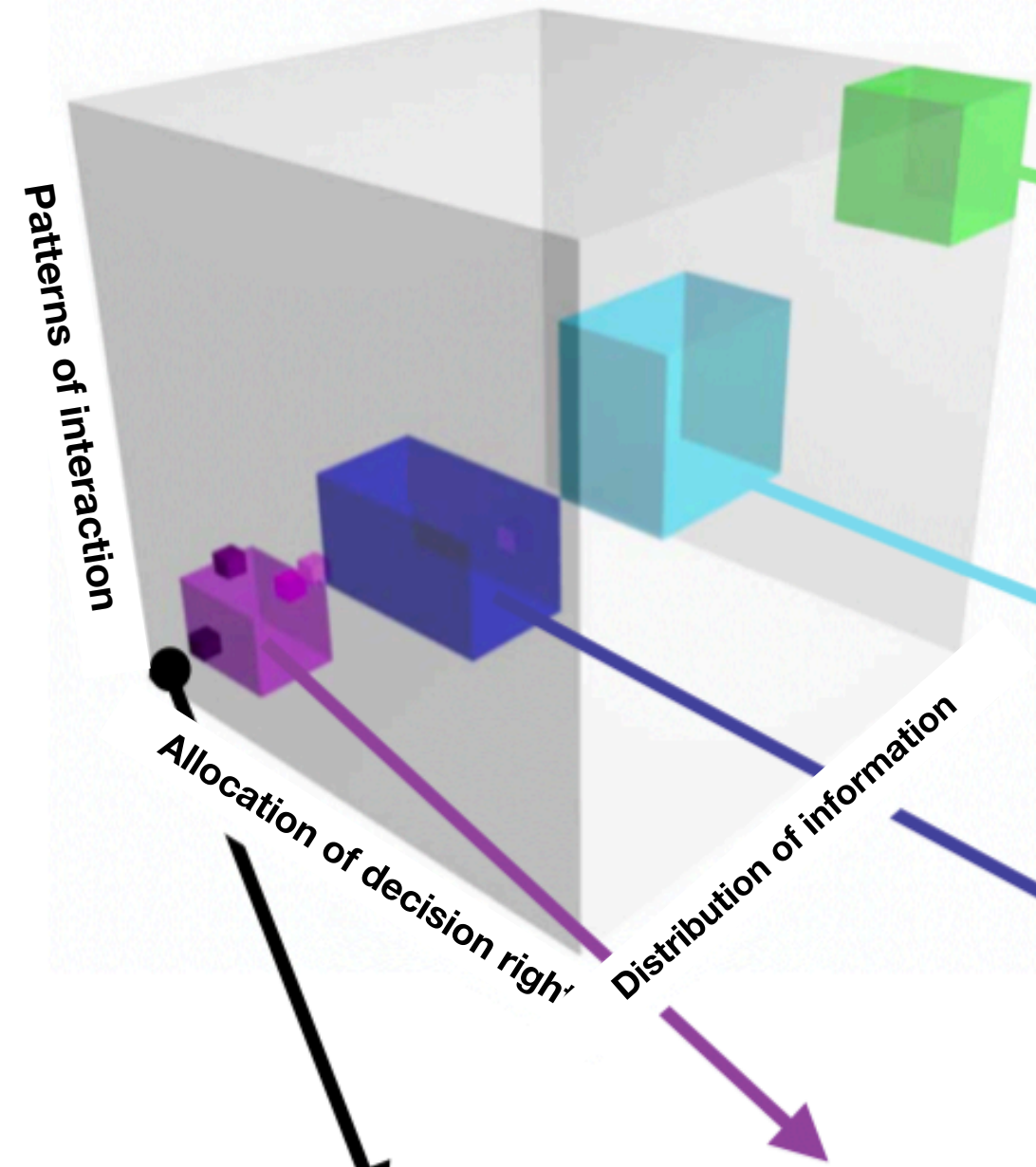
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- Classical operations



Complexity of the war

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Historical timeline

First smart machines

Today (may be)

Future

Robots/Cobots
Hybridity
A.I. & big data

Technological singularity point

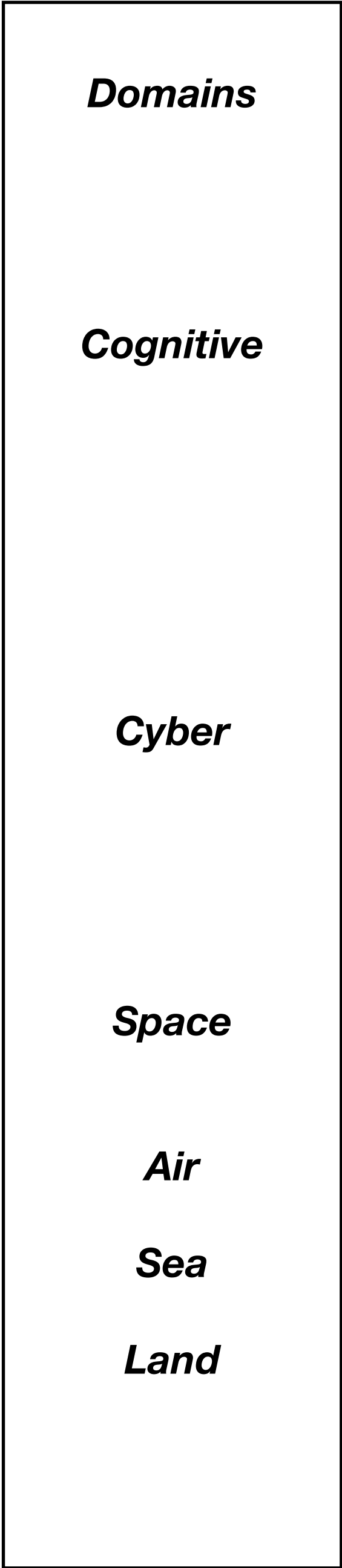
To Cognitive Warfare

Human-Autonomy Teaming
HAT
HI + Analytics & AI

Future
C2

Post-conventional war

Conventional warfare



Domains

Cognitive

Cyber

Space

Air

Sea

Land