COORDINATION LECTURE

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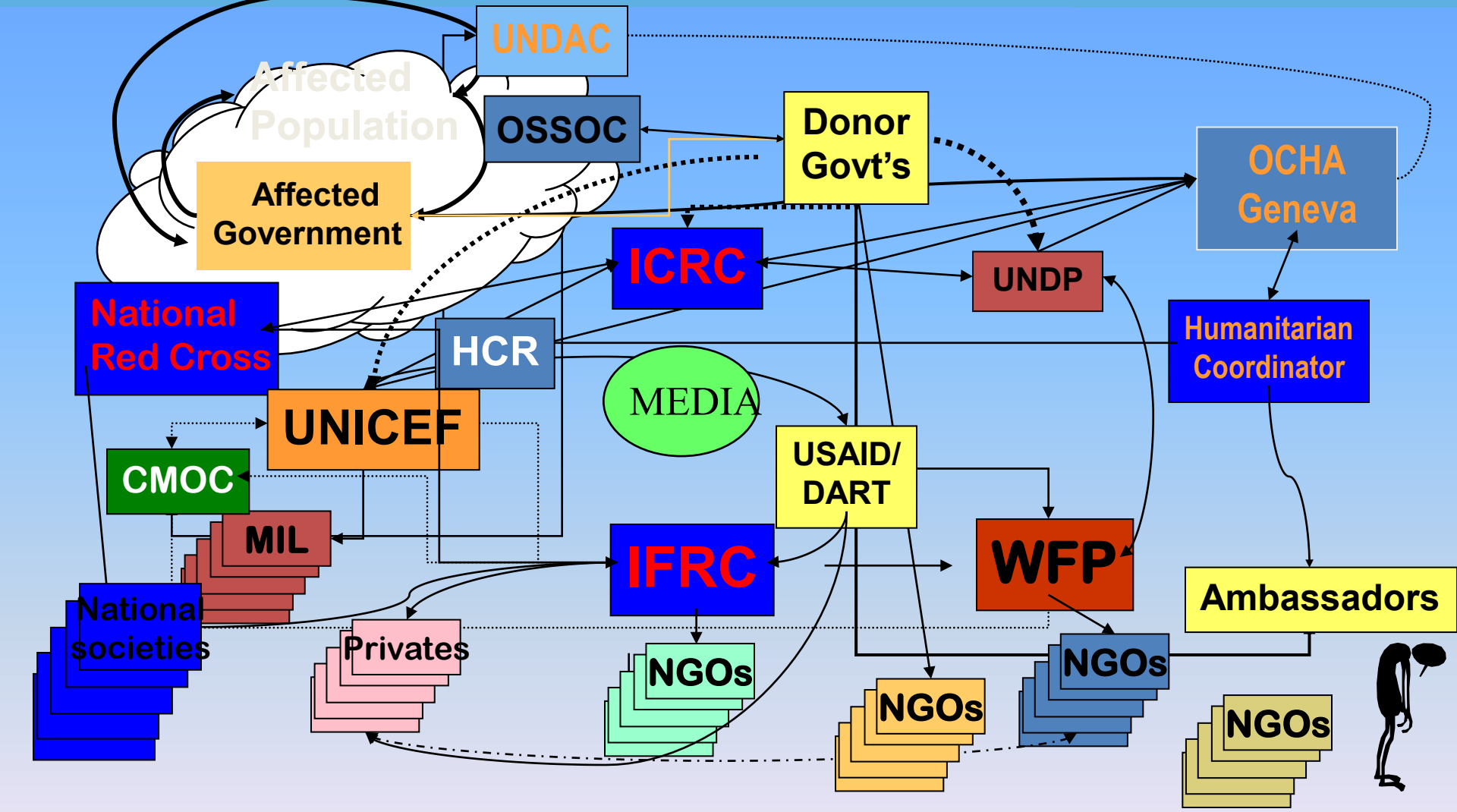
1. Intro: **Grand father Game**
2. Lecture input
3. Video: communication (confusion in the White House)
4. Videos: *Starlings, sardines and Ice Dance Acrobatic*
5. Video: Command & Control (USS Abraham Lincoln)
6. Video: Ocha´s mandate in Haiti

Getting Coordination Started

Jesper Lund, OCHA ESB

Perception of emergency coordination



Geospatial technologies and space-based solutions In support of Risk and Disasters Management

Bridging the gap between

the Space-Community perspective & expertise...

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…and the Disaster Management Community reality…

…when natural hazards become disasters.

Different perspectives

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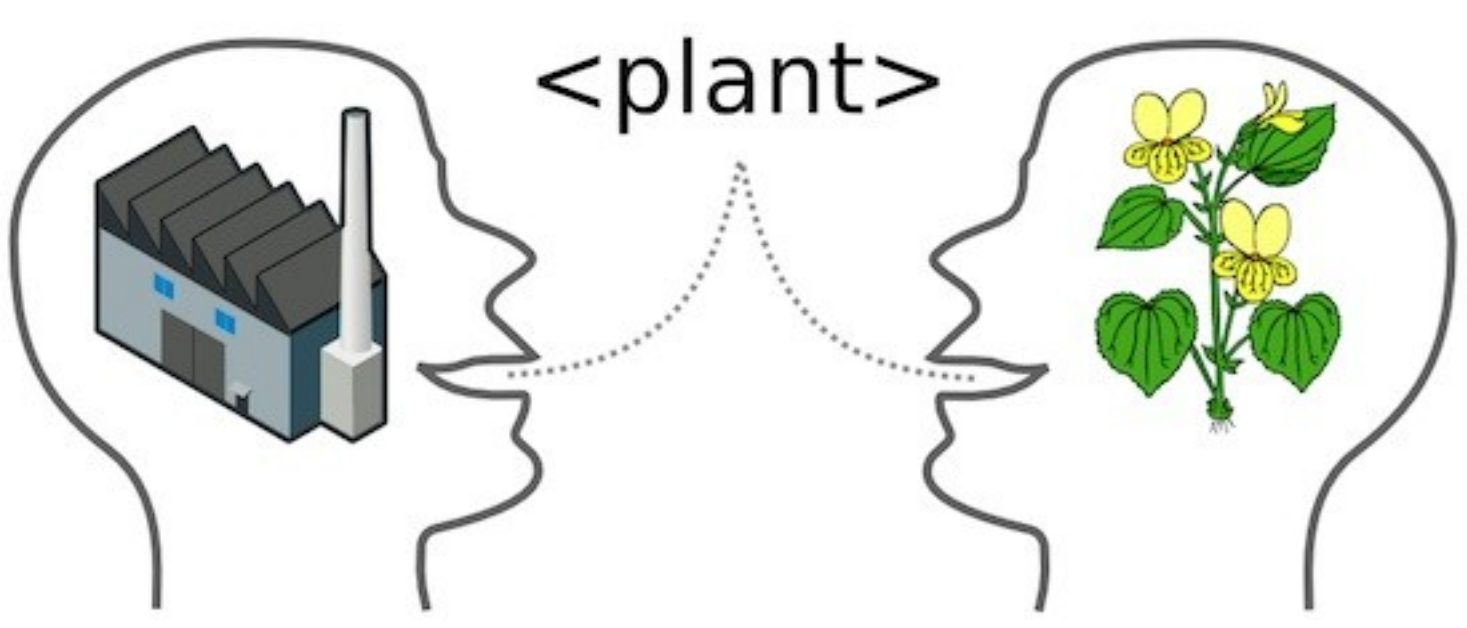
Different perspectives

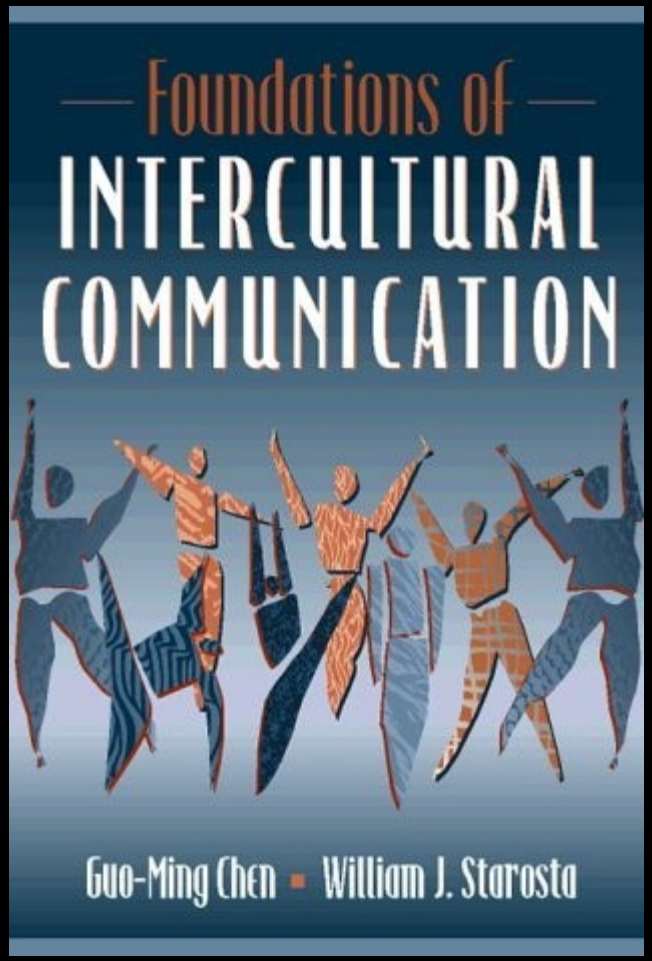


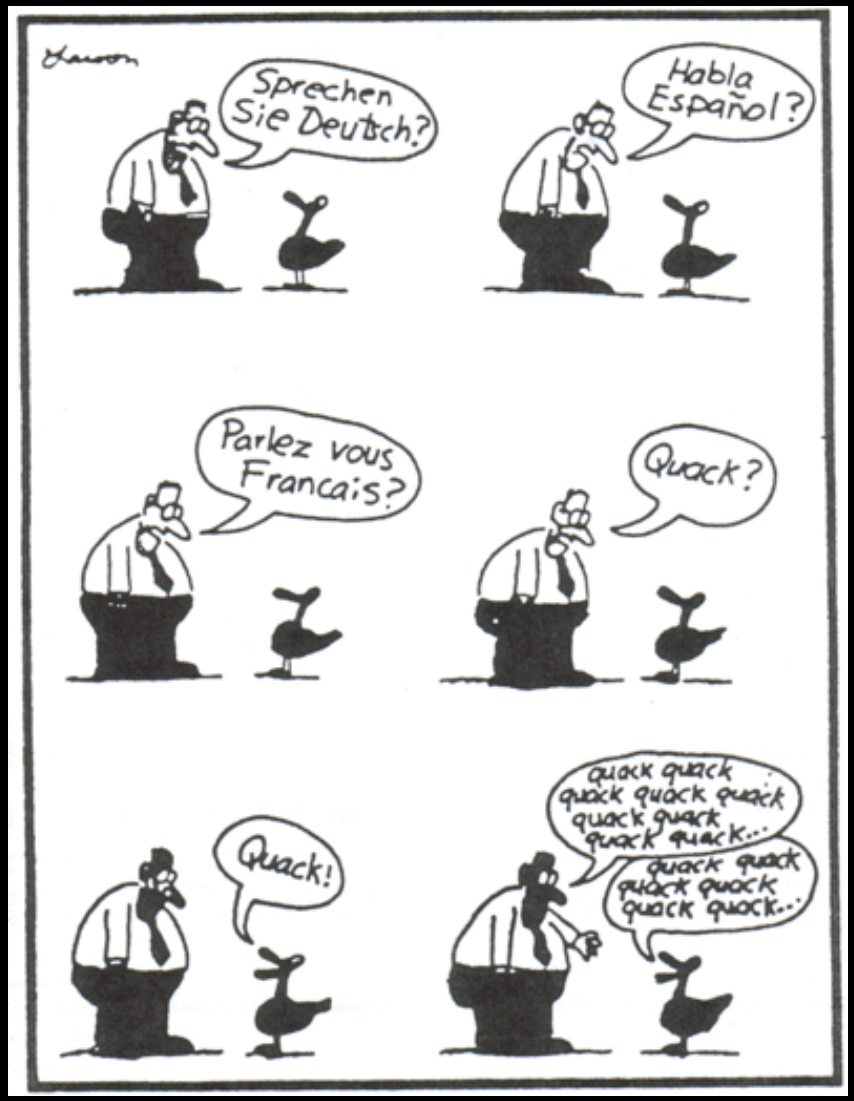
Different perspectives

Source: Boring, E.G. 1930, in: Metzger, W.: Psychologie. Darmstadt: Steinkopff, 1975

Different **perspectives** are very often leading to discrepancies between different communities, for example between the provider (space community) and user (disaster management community)

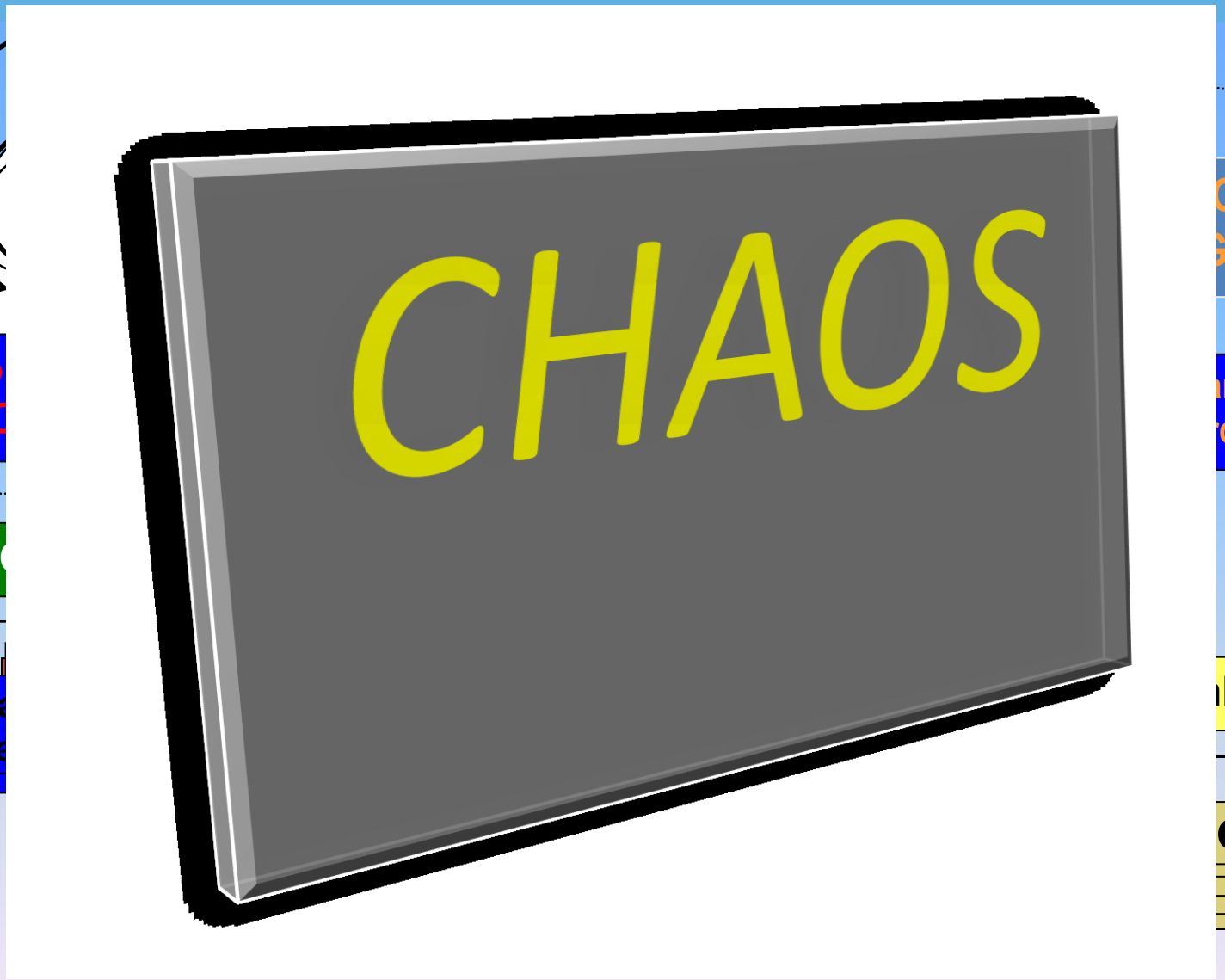
Intercultural communication





Video! „*Confusion in the White House*“

Perception of emergency coordination



What is Chaos?

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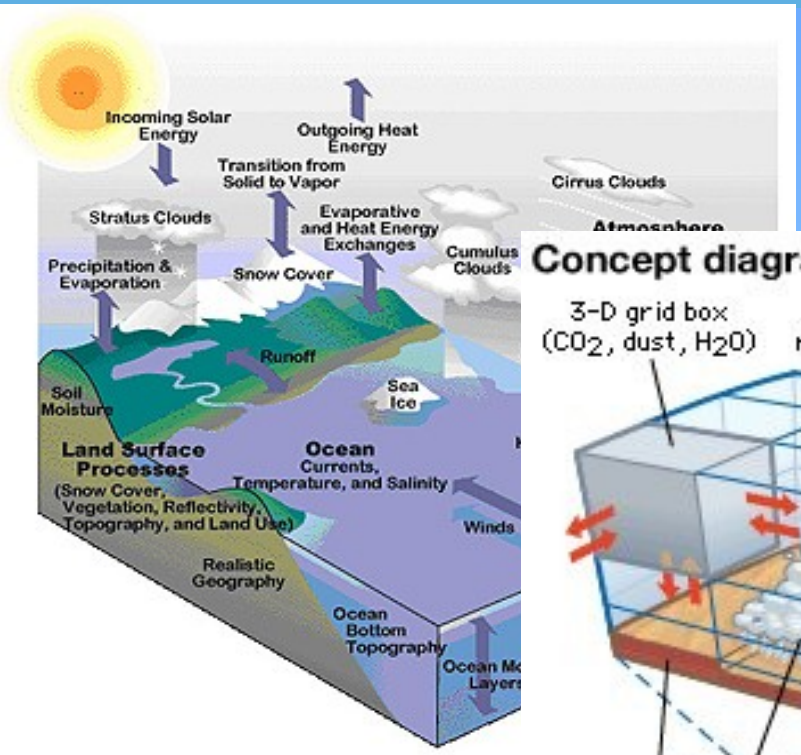
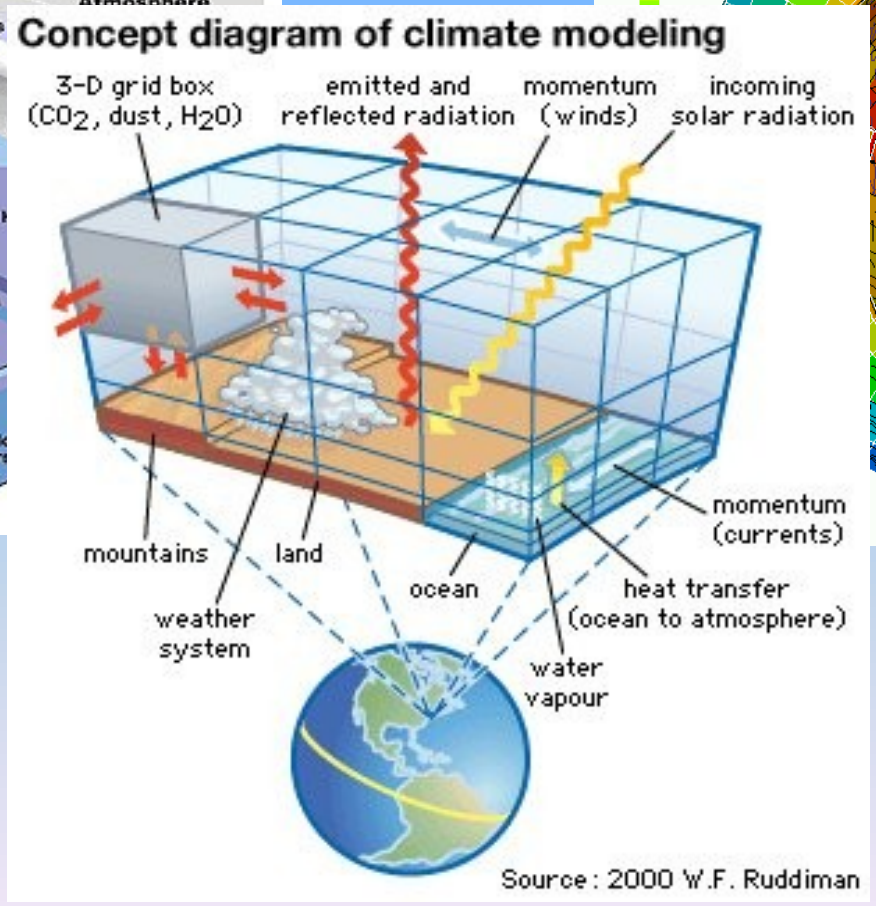
- Chaos was the first thing to exist in the Greek Mythology
- It means “open space”, “abyss”

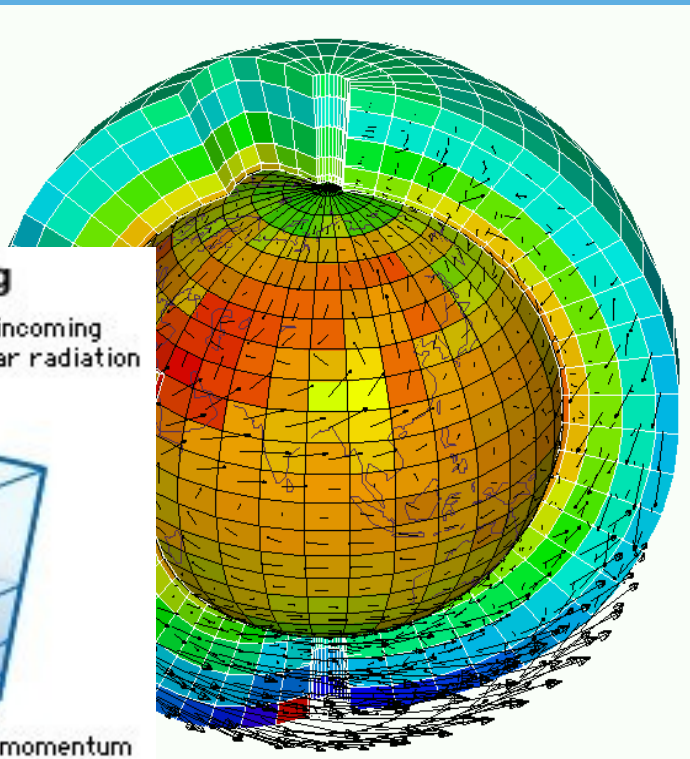
In physics and Mathematic a chaotic system is a dynamical system (which evolve in time and is subjected to internal / external forces) ***highly sensitive to initial conditions***

Chaos: When the present determines the future, but the approximate present does not approximately determine the future.

Climate Modelling







Do we have any instrument to asses the future?

Atmosphere as a complex system
(no analytical solution)

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Differential versions of equation describing atmospheric motion

Momentum

$$\frac{\partial U}{\partial t} = -U\frac{\partial U}{\partial x} - V\frac{\partial U}{\partial y} - W\frac{\partial U}{\partial z} + \frac{UV\tan\phi}{a} - \frac{UW}{a} - \frac{1}{\rho}\frac{\partial p}{\partial x} - 2\Omega(W\cos\phi - v\sin\phi) + \mathbf{Fr_x}$$

$$\frac{\partial V}{\partial t} = -U\frac{\partial V}{\partial x} - V\frac{\partial V}{\partial y} - W\frac{\partial V}{\partial z} + \frac{U^2\tan\phi}{a} - \frac{UW}{a} - \frac{1}{\rho}\frac{\partial p}{\partial y} - 2\Omega U\sin\phi + \mathbf{Fr_y}$$

$$\frac{\partial W}{\partial t} = -U\frac{\partial W}{\partial x} - V\frac{\partial W}{\partial y} - W\frac{\partial W}{\partial z} - \frac{U^2+V^2}{a} - \frac{1}{\rho}\frac{\partial p}{\partial z} + 2\Omega U\cos\phi - g + \mathbf{Fr_z}$$

Thermodynamic

$$\frac{\partial T}{\partial t} = -U\frac{\partial T}{\partial x} - V\frac{\partial T}{\partial y} + (\lambda - \lambda_d)W + \frac{1}{c_p}\frac{\mathbf{dH}}{\mathbf{dt}}$$

Continuity

$$\frac{\partial \rho}{\partial t} = -U\frac{\partial \rho}{\partial x} - V\frac{\partial \rho}{\partial y} - W\frac{\partial \rho}{\partial z} - \rho\left(\frac{\partial U}{\partial x} + \frac{\partial V}{\partial y} + \frac{\partial W}{\partial z}\right)$$

Thermodynamic

$$\frac{\partial q_v}{\partial t} = -U\frac{\partial q_v}{\partial x} - V\frac{\partial q_v}{\partial y} - W\frac{\partial q_v}{\partial z} + \mathbf{Q_v}$$

Equation of state

$$p = \rho RT$$

Chaos Lorenz toy model and the Butterfly effect

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$$\frac{dx}{dt} = \sigma(y - x)$$
$$\frac{dy}{dt} = x(\rho - z) - y$$
$$\frac{dz}{dt} = xy - \beta z$$

1972 conference - Predictability: Does the flap of a butterfly's wings in Brazil set off a Tornado in Texas?

Deterministic Nonperiodic Flow, Journal of Atmospheric Science, Vol.20, 1963

Chaos Lorenz toy model and the Butterfly effect

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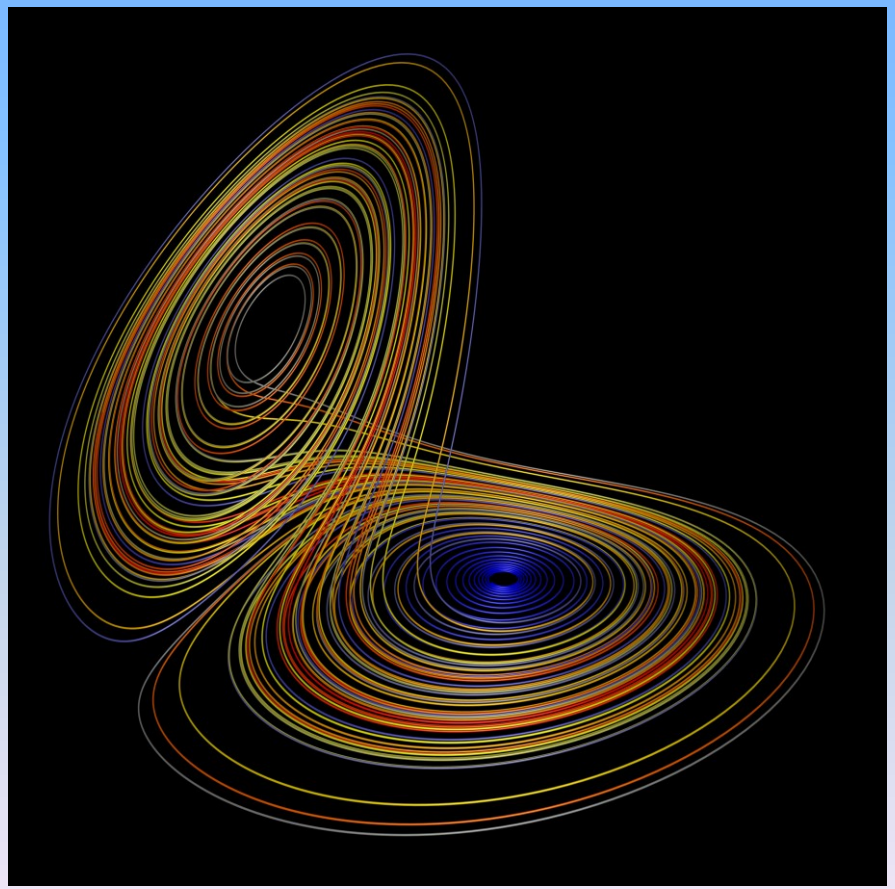
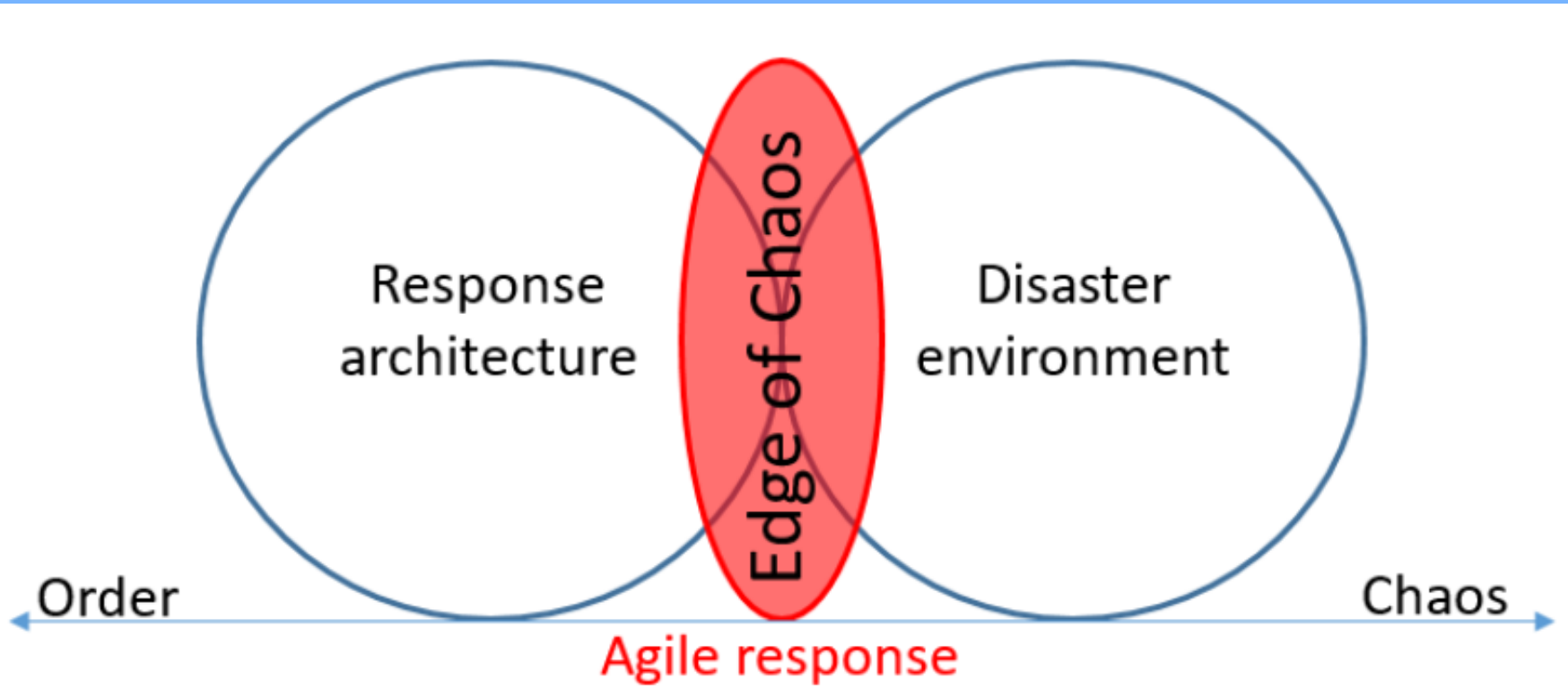
Is it impossible to predict the future in practice?

Two trajectories are, in general different, but they accumulate into two different “position”, the so-called Strange Attractors

The scope is not anymore to identify, with precision, every single trajectory, but to observe and study the strange-attraction points



Disaster Management and Chaos Theory



Kauffman, S.A. (1993): The origins of order: Self-organization and selection in evolution. S.A. Oxford: University Press.

Swarm Intelligence

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Videos!

„Starlings, sardines and Ice Dance Acrobatic“


Unfortunately, however,
there is not always
Swarm Intelligence ....

Approach to Coordination

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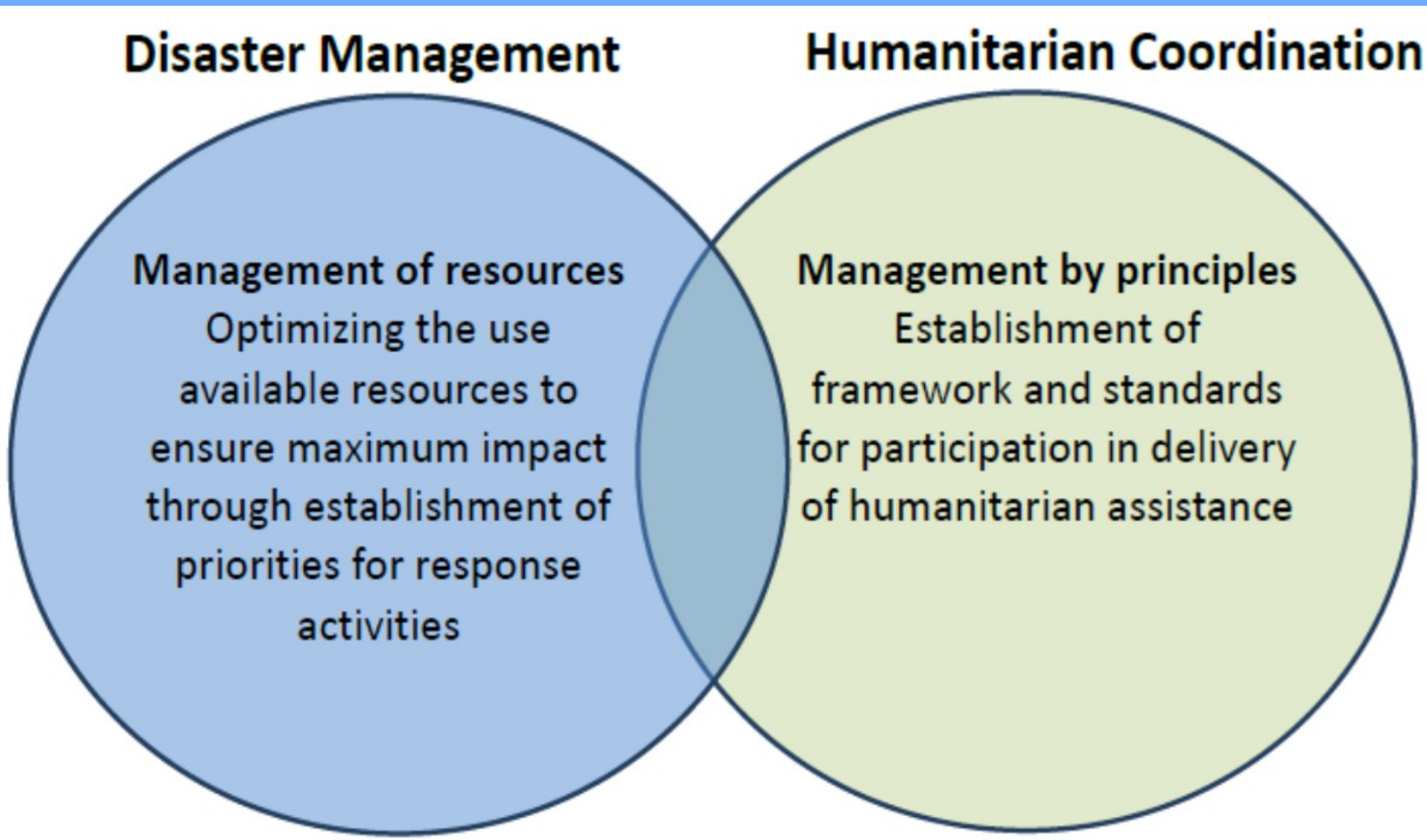

Coordination as decision making

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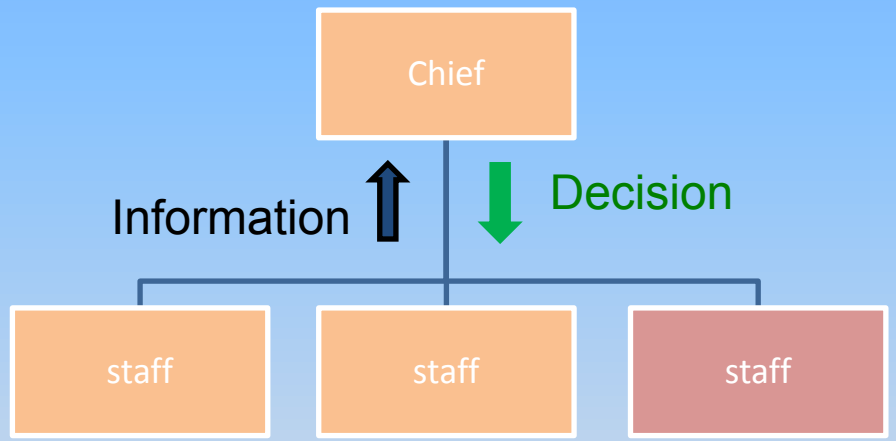
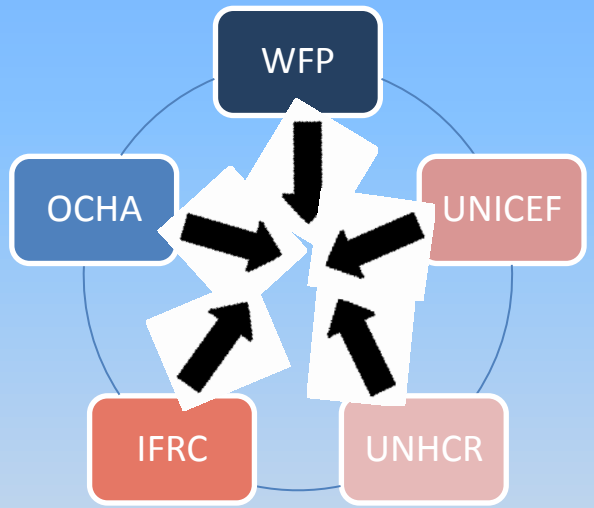
Command and control vs Consensus





Information

Where and how would they fit in?

Coordination as decision making

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Video on **Command and Control**
(USS Abraham Lincoln)

Humanitarian Response is based on…

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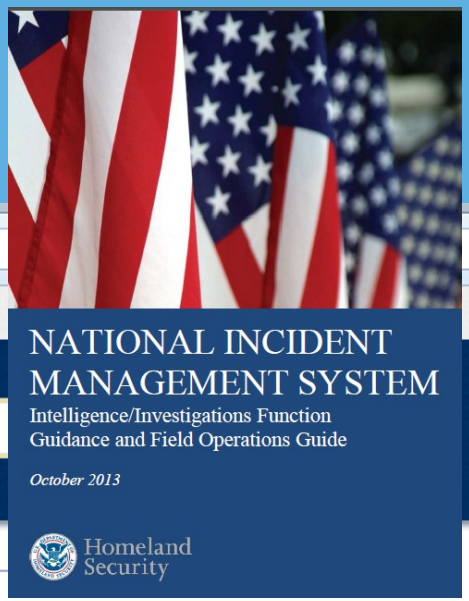
Humanitarian Principles

Humanity	Neutrality	Impartiality	Operational independence
Human suffering must be addressed wherever it is found. The purpose of humanitarian action is to protect life and health and ensure respect for human beings.	Humanitarian actors must not take sides in hostilities or engage in controversies of a political, racial, religious or ideological nature.	Humanitarian action must be carried out on the basis of need alone, giving priority to the most urgent cases of distress and making no distinctions on the basis of nationality, race, gender, religious belief, class or political opinions.	Humanitarian action must be autonomous from the political, economic, military or other objectives that any actor may hold with regard to areas where humanitarian action is being implemented.

INCIDENT COMMAND SYSTEM (ICS)



https://training.fema.gov/nims/

Federal Emergency Management Agency | Emergency Management Institute

Home Blog Photos

FEMA Emergency Management Institute

EMI Courses & Schedule	EMI Students & Instructors	Apply	Programs & Activities	Independent Study	Contact Us
Take a Course On Campus	Information for Students and Instructors	Learn how to apply to our programs	Resident, Trainer Program, RLO, IEMC, DFTO, etc.	Online courses available free of charge	Contact IS, NIMS, Admissions

Emergency Management Institute - National Incident Management System (NIMS)

Follow FEMA:

National Incident Management System (NIMS)

EMI works in collaboration with the whole community to provide training in support of the NIMS Training Program. The Preparedness Branch coordinates EMI's NIMS training efforts with the National Integration Center (NIC) to integrate NIMS doctrine and training with whole community needs.

NIMS and NIMS training program information is detailed at https://www.fema.gov/national-incident-management-system

NIMS online course certificate contact Independent.Study@fema.dhs.gov

NIMS resident course certificate contact netcadmissions@fema.dhs.gov

Frequently Asked Course and Training Questions

NIMS Core Curriculum Courses are comprised of ICS, NIMS, and All-Hazards Position Specific (AHPS) courses detailed below:

ICS and NIMS Courses

What is the Incident Command System?

The Incident Command System (ICS) is a model for command, control, and coordination of emergency response at the site level.

WHY USE THE INCIDENT COMMAND SYSTEM?

The same ICS structure can also be used to coordinate site support at an Emergency Operations Centre or regional/provincial support activity, or national support activity.

ICS Principles

1. Five Primary Functions
2. Establishing and Transferring Command
3. Single or Unified Command Structure
4. Management by Objectives
5. Consolidated Incident Action Plans
6. Comprehensive Resource Management
7. Unity and Chain of Command
8. Manageable Span of Control
9. Modular Organization
10. Personnel Accountability
11. Common Terminology
12. Integrated Communications

ICS Response Goals

1. Provide for safety and health of all responders
2. Save lives
3. Reduce suffering
4. Protect public health
5. Protect government infrastructure
6. Protect property
7. Protect the environment
8. Reduce economic and social losses

ICS Structure

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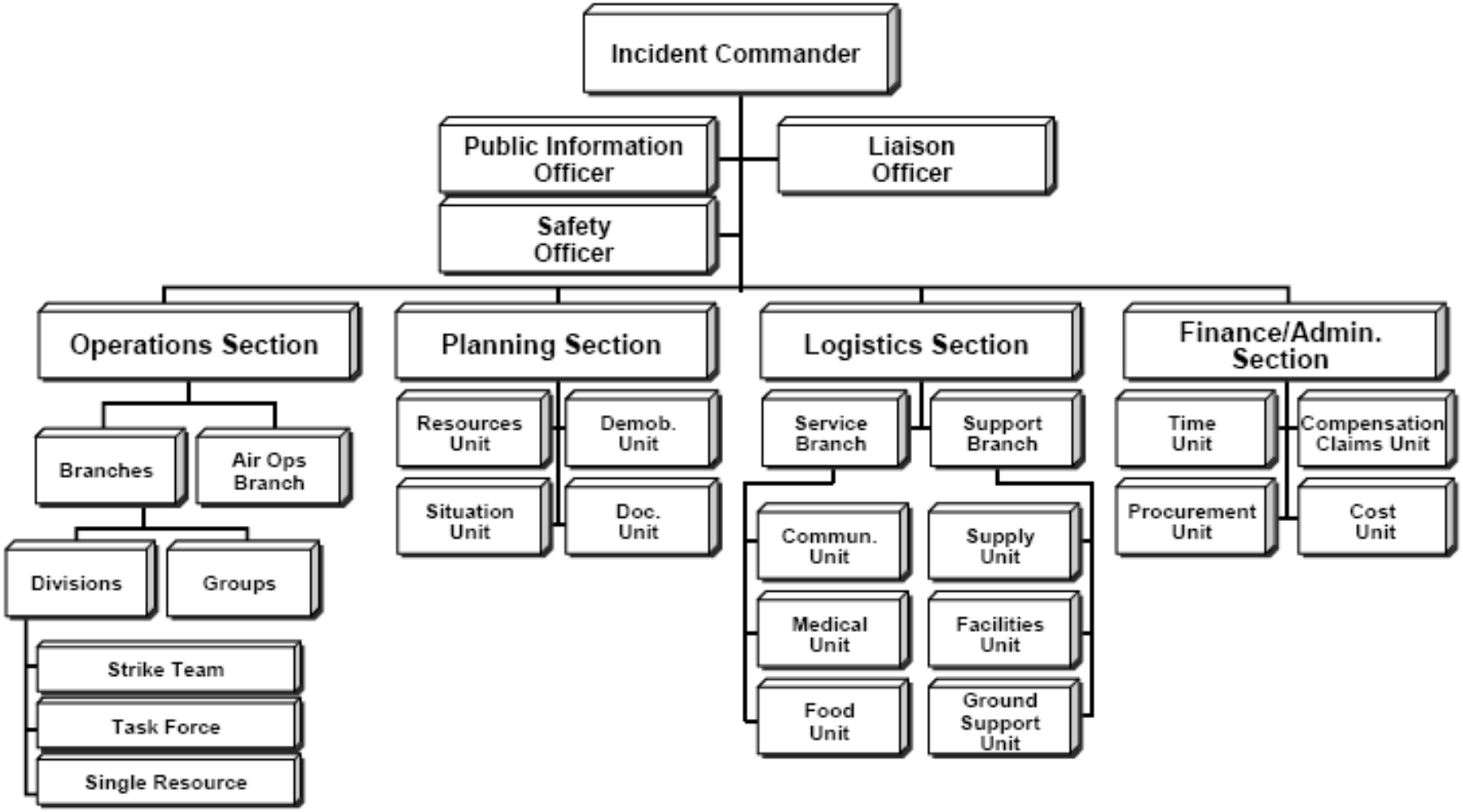
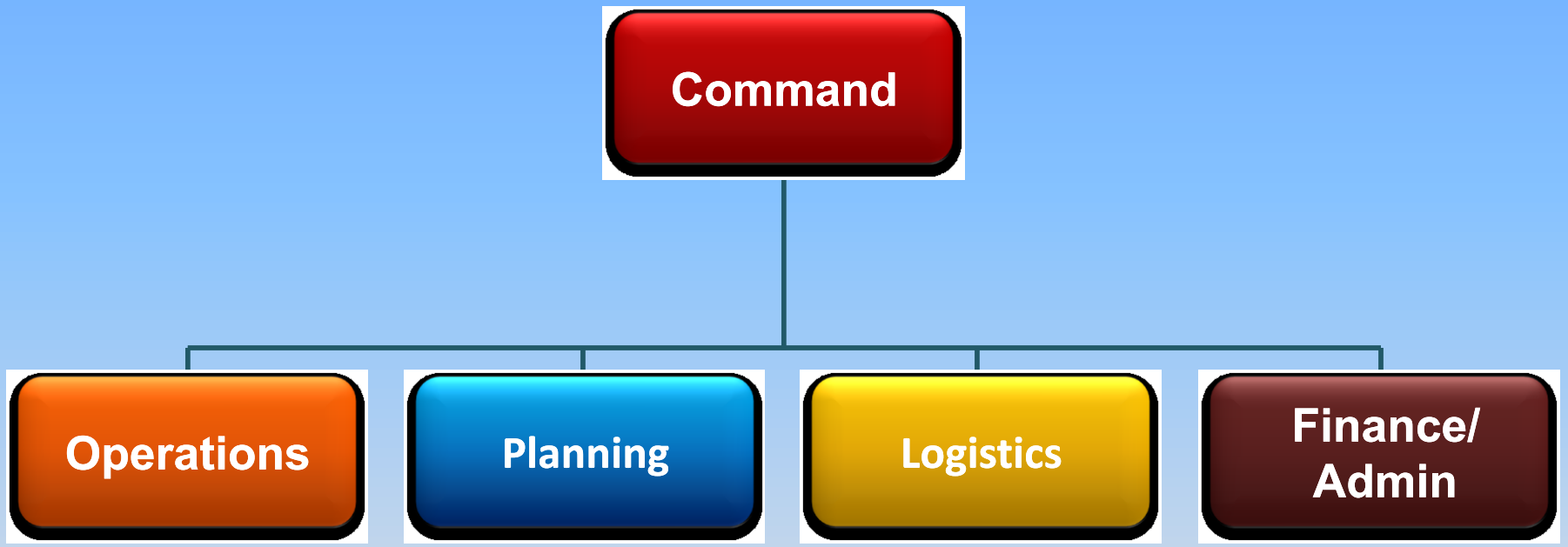


https://upload.wikimedia.org/wikipedia/commons/3/3e/ICS_Structure.PNG

Five Primary ICS Management Functions



ICS Response Functions

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- **Command** ➢ **The "Boss"**
- **Operations** ➢ **The "Do-ers"**
- **Planning** ➢ **The "Thinkers"**
- **Logistics** ➢ **The "Getters"**
- **Finance/Admin** ➢ **The "Payers"**

http://firefightertoolbox.com/wp-content/uploads/2013/09/image5.jpg

INCIDENT COMMAND SYSTEM

INCIDENT COMMAND SYSTEM

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http://www.jobird.co.uk/userfiles/image/allen_head_with_sara_personnel_and_fire_incident_commander_07_07_(75dpi).jpg

Levels of Coordination

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Strategic Coordination (gold)

- Priorities the overall use of resource and funding
- Ensuring principled approach

Tactical Coordination (silver)

- Optimizing the use of available resources
- Setting of technical standards

Operational Coordination (bronze)

- Meeting the established goals
- Sharing of information, resources e.g.

Strategic

- Strategic command defines 'what to do'.
- Strategic has overall command and responsibility for an incident. In relatively minor incidents gold command may not be formally established, but is just nominally identified.
- Strategic determines policy, overall strategy, resource deployment and the parameters within which lower levels of command will operate. A multi-agency Strategic Coordinating Group (SCG) may be established at Gold level if required.
- Goals at Strategic level may be general, unclear, multiple and implicit.
- Decision-making should be analytical, in-depth and broadly-referenced, making use of specialist resources, and being able to develop and maintain a Common Operational Picture, identify and assess options and evaluate progress.
- Information requirements are broad and relatively unpredictable, but Gold commanders should avoid the 'long stick' intervention at lower levels of command that too much and too detailed information may encourage.
- Information outputs are varied, including tasking, situational awareness to Silver and meeting public, media and political interests

Tactical

- Tactical command defines 'how to do it'.
- Tactical determines and directs the tactics of incident management within the strategy, parameters and with the resources defined at Strategic level, which may include resources from multiple agencies.
- Goals at Tactical level may be multiple and relatively general, although they should be clear and explicit.
- Decision-making needs to identify and evaluate options which necessitates an analytical approach, although pressure or rapidly changing circumstances may force an intuitive approach.
- Information requirements are more specific than those of Gold, focusing on hazards, vulnerabilities, risks and resources that shape the translation of policy and strategy into practice.
- Information outputs are task-specific to Bronze level, concerned with maintaining situational awareness at Silver and Bronze and the upward transfer of changing situational information that is of relevance to Gold.

Operational

- This level of command is concerned with 'doing it'.
- Operational commanders work within a functional and/or geographical area of responsibility to implement the tactical plan as defined by silver command. The Operational commander must have a clear understanding of the tactical plan and have access to information that is critical to its execution on the ground, including the activities of other agencies that may be pertinent to their own goals and actions.
- Goals at Operational level may be single or fewer in number, but should be specific, clear and explicit.
- Decision-making may be characterised by an intuitive approach, based on problem-recognition from previous experience, training and exercising.
- Information requirements are task-oriented.
- Information outputs are fed upwards to maintain an accurate and relevant Common Operational Picture.

Depth of Coordination

Information Sharing

Common Standards

Joint Reporting

Operational Coordination

Joint Planning

Resource Sharing

Inter Operability

CMCoord

Sphere

MIRA

Clusters

CHAP/CAP

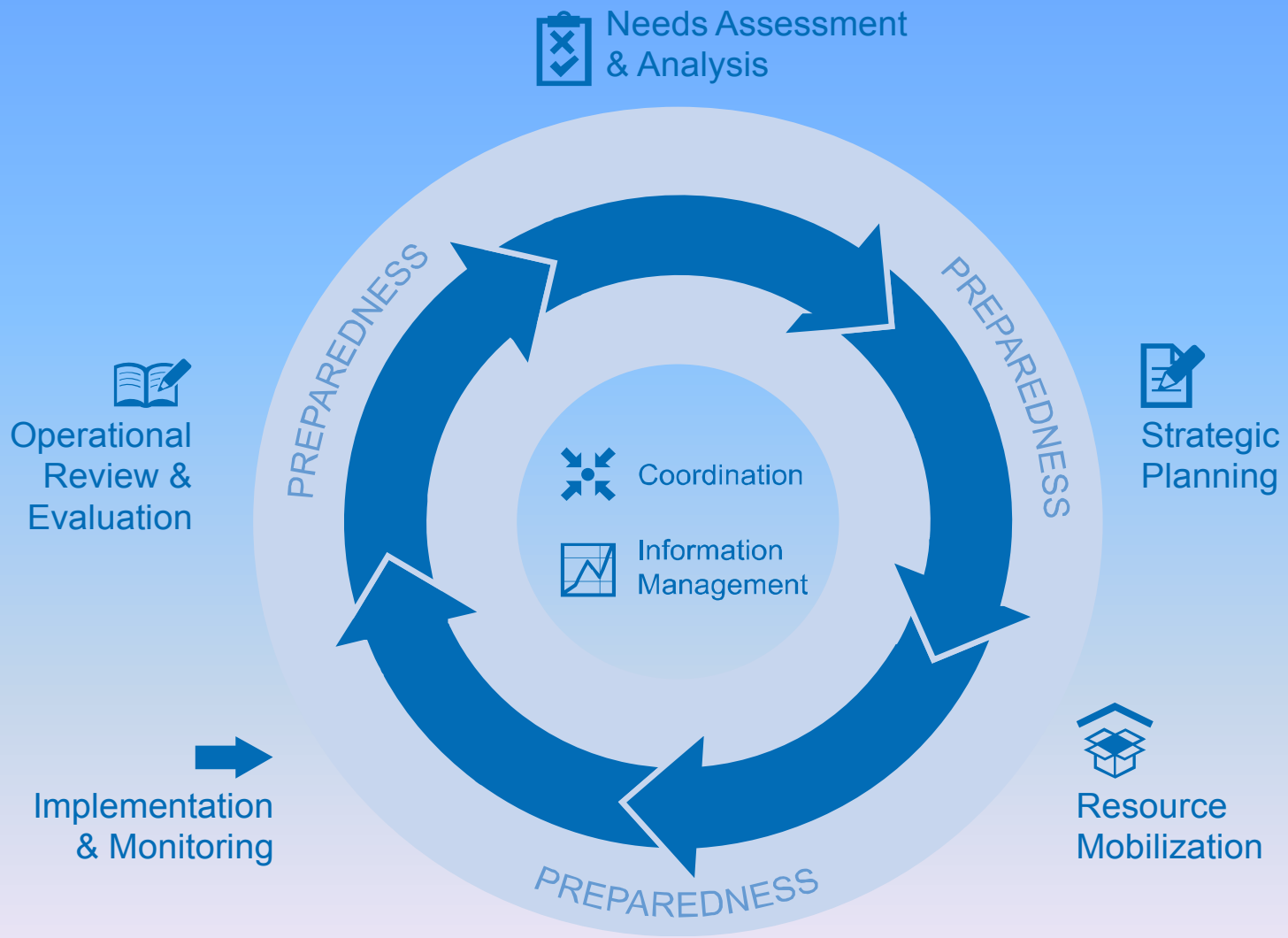
IHP

NATO

The questions is though if coordination is a linear process?

If so, the more coordination the better!

Coordination as a process



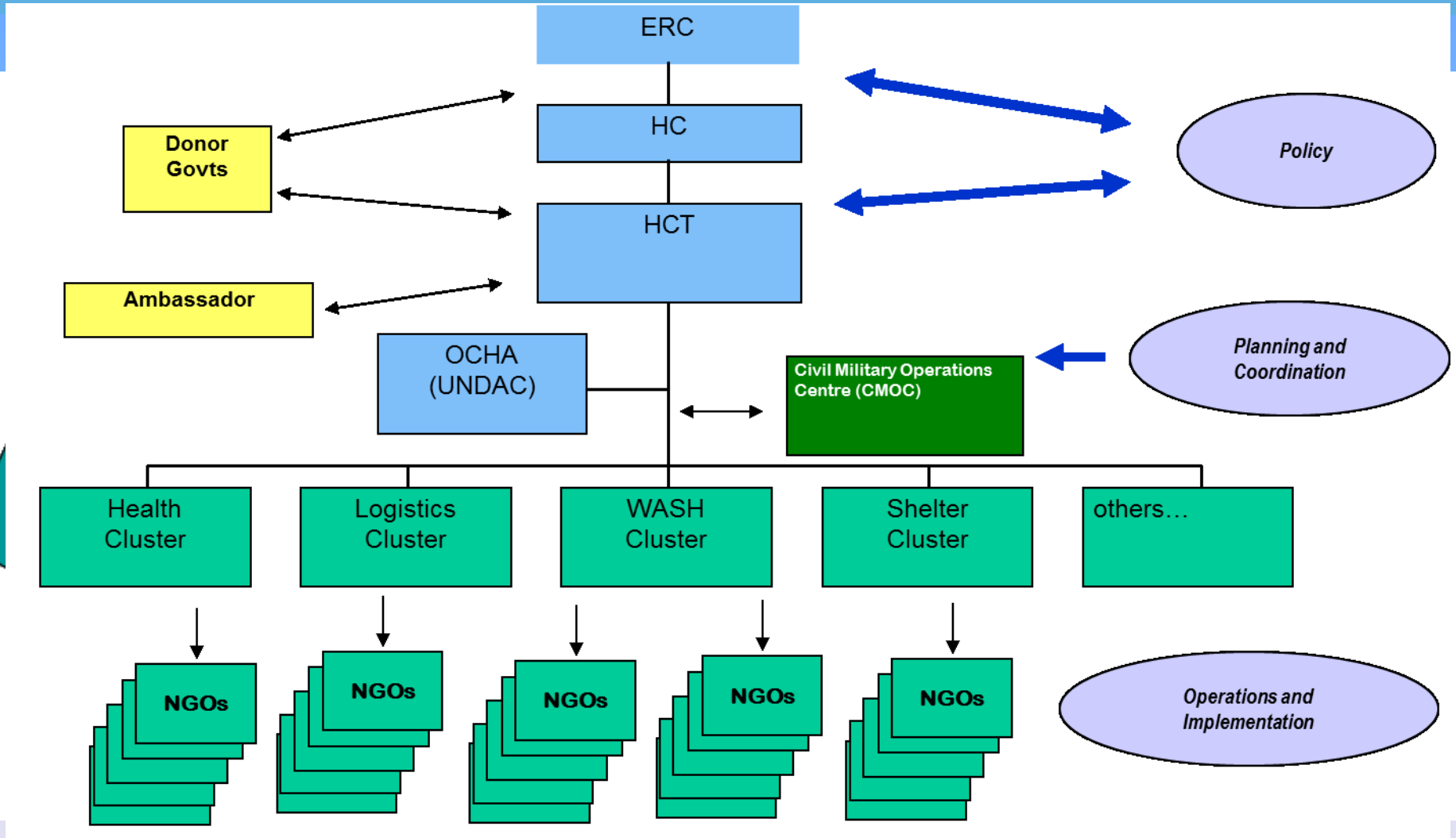
Coordination as a place

Command post

OSOCC

Cluster meeting

Coordination as a structure



And the question remains:
How to coordinate humanitarian aid within a devastated and chaotic environment?

Anibong town, Philippines on 9th November after Super Typhoon Haiyan, courtesy: Reuters

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OCHA's mandate in action – Haiti

https://www.youtube.com/watch?v=A4MSgyyfYII

- Video -