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CAIPAN-2

WORKSHOP

Evaluation Methodology for UAP cases @ GEIPAN

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Meta-Connexions

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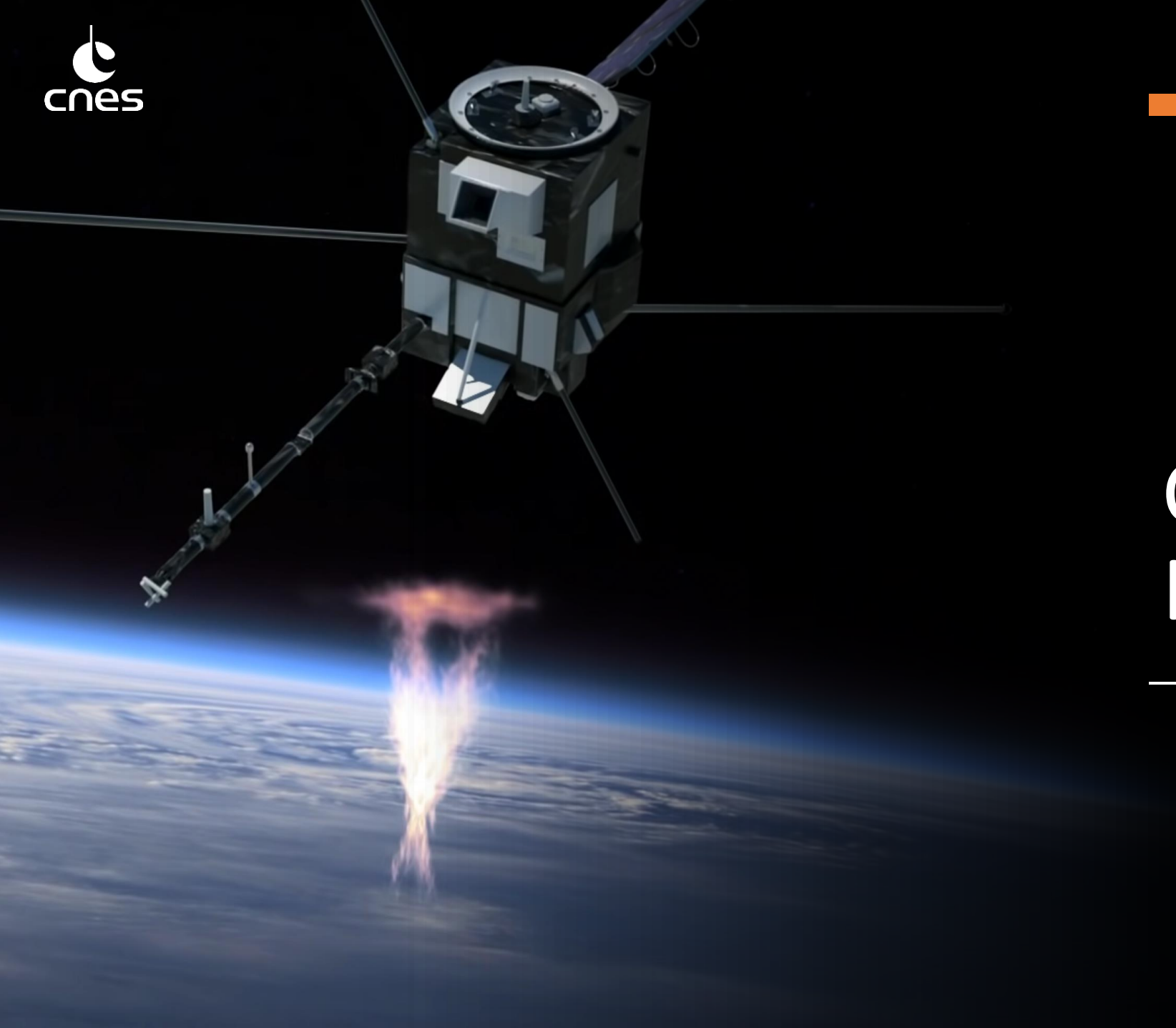
Collecte et **A**nalyse des **I**nformations sur les **P**hénomènes **A**érospatiaux **N**on identifiés



Context & Issues

Context : Processing an investigation

Observation

1 **Reception**
3-4 Steps

2 **Processing**
3-9 steps

3 **Classification**
Publication
5 steps

Public

Investigators
15-25%

Experts
2-5%

Objectives

- Collect and verify data, reconstruct observation conditions
- Meet the witness(es)
- Produce an investigative report

- **Help during the investigation**: support for investigators
- **After an investigation**: provide a collegial opinion, share views and take a multi-disciplinary approach on the most complex cases

Required qualities

- Excellent **generalists**
- Trained in standardized investigation methods
- Quickly available
- Familiar with digital processing tools

Neutrality
Humility

- Excellent **specialists**
- Independence of analysis

Context : The role of an investigation process

The role of the investigation process is **to collect, store and analyze** information to facilitate the classification. Its purpose is to provide one or more responses to an observed phenomenon. To investigate is to take a phenomenon out of an observer subjectivity and **render it objective**.

From a logical and computer point of view, **attain objectivity** consists in making **classification(s)**, *aka* **labeling a phenomena**. "*To pass from the state of internal data to that of a corresponding external reality*". Thus confirming, its nature.

Contexte : GEIPAN classification

Investigation process

A Known phenomena

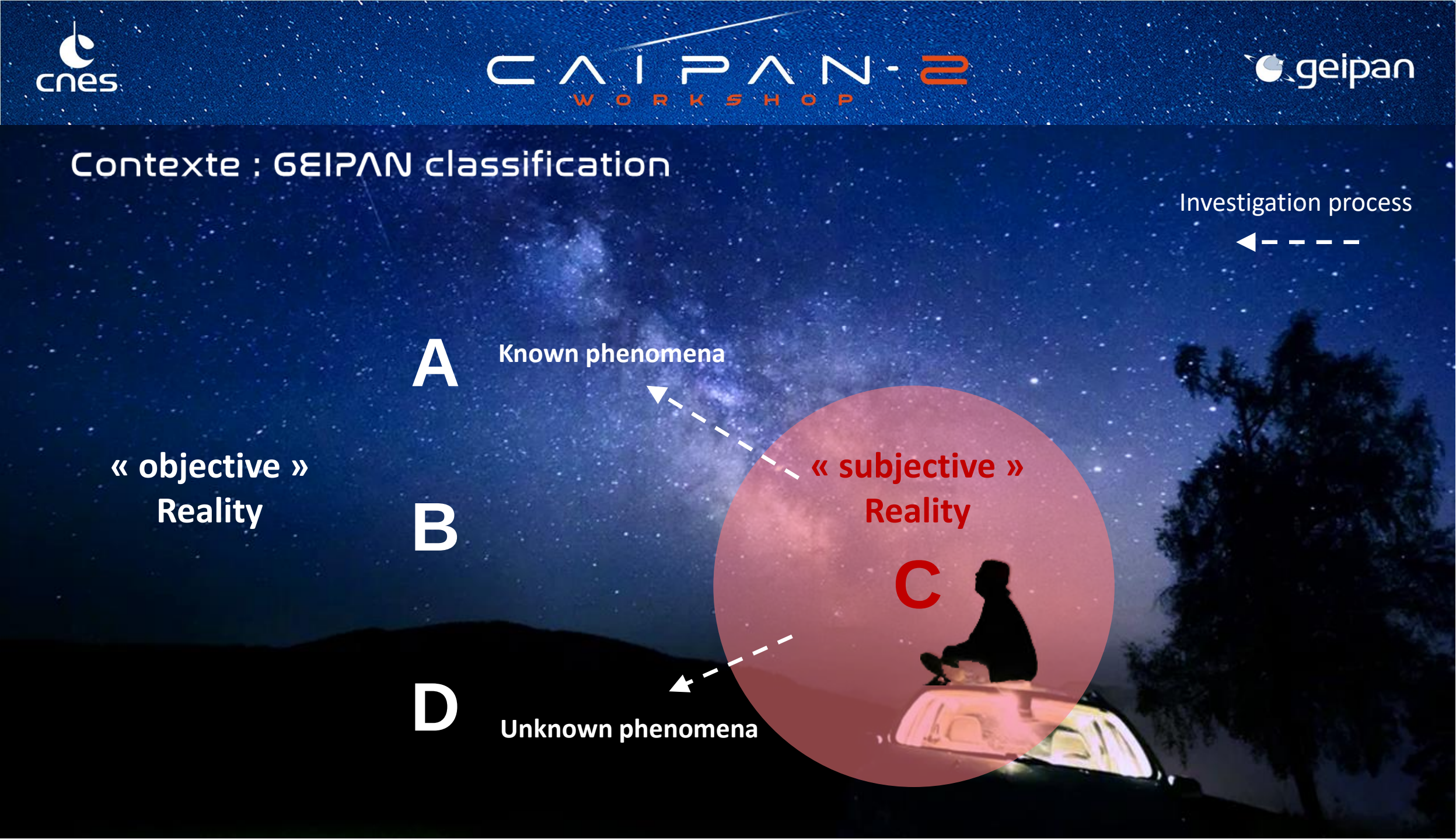
« objective » Reality

B

« subjective » Reality

C

D Unknown phenomena



A. Classification Issues

Historically, the "A, B, C, D" classification posed several issues:

- A, B, C, D definitions have varied over time,
- there was no clear evaluation criteria
- this resulted in variable and subjective classification according to the investigators in charge of classifying

A work was carried out and presented to a panel of experts in 2008 with the dual objective of:

1. improve the assessment of a case by matching it with precise indicators,
2. reduce the subjectivity at play when evaluating the case, i.e. the influence of our personal points of view

B. Issues concerning the investigation bias

1 Classification / Publication

Social desirability

The social backgrounds to which investigators belong will lead to **biases** due to the judgment of their communities. Divided social networks: "Zeteticians, Rationalists, Saucerists, Ufologists..."

Zet. ex : *"If these cases have been classified D, it is certainly an error!"* This is followed by invest. **exclusively** targeting D cases: finding an explanation is socially rewarding. **Not finding one is perceived as a failure.**

2 Analysis

Judgement bias

Confirmation bias: looking for arguments that support our favorite hypothesis.

Ex: *"There was that star in the direction of observation the explanation could only be that one!"*

An overly specialized investigator will introduce (despite himself) analysis biases: he will favor certain hypotheses according to his area of expertise.

3 Collect

Selection bias

Collecting information in a **partial** or **incomplete** way to confirm its hypothesis.

This selection mechanism can be conscious or unconscious.

Generally, because the investigator doesn't follow a strict protocol for selecting its datas.

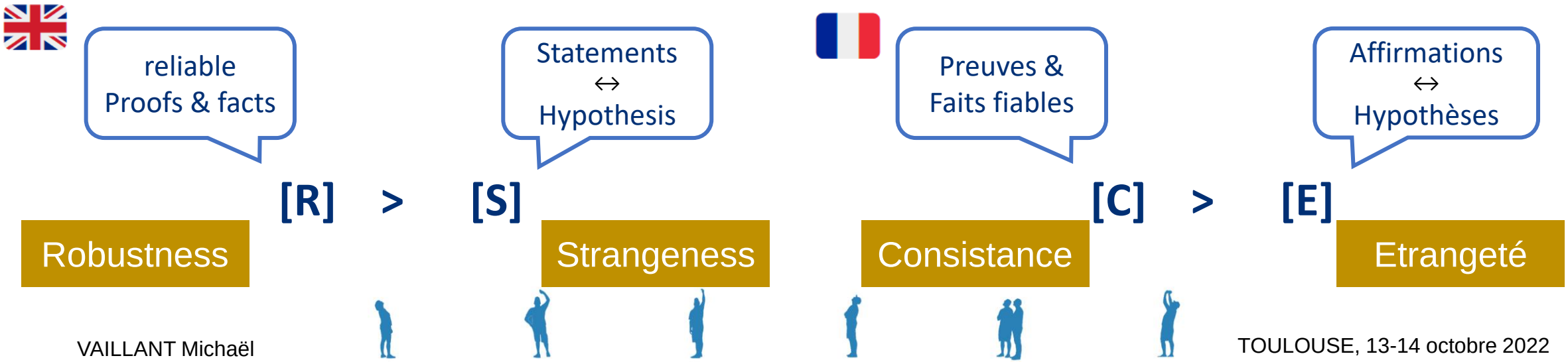
Tools & Methods

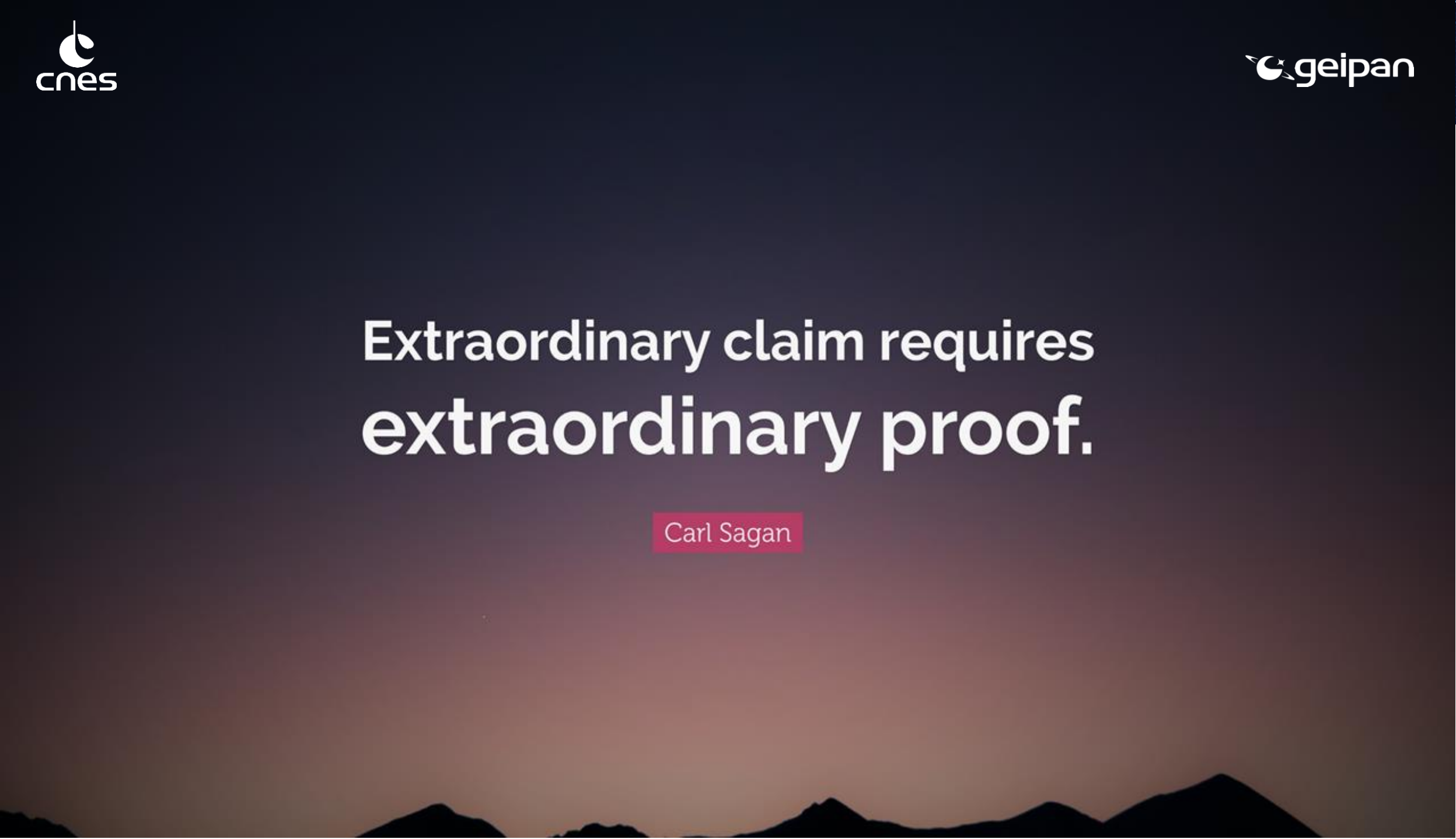
1 A classification Method

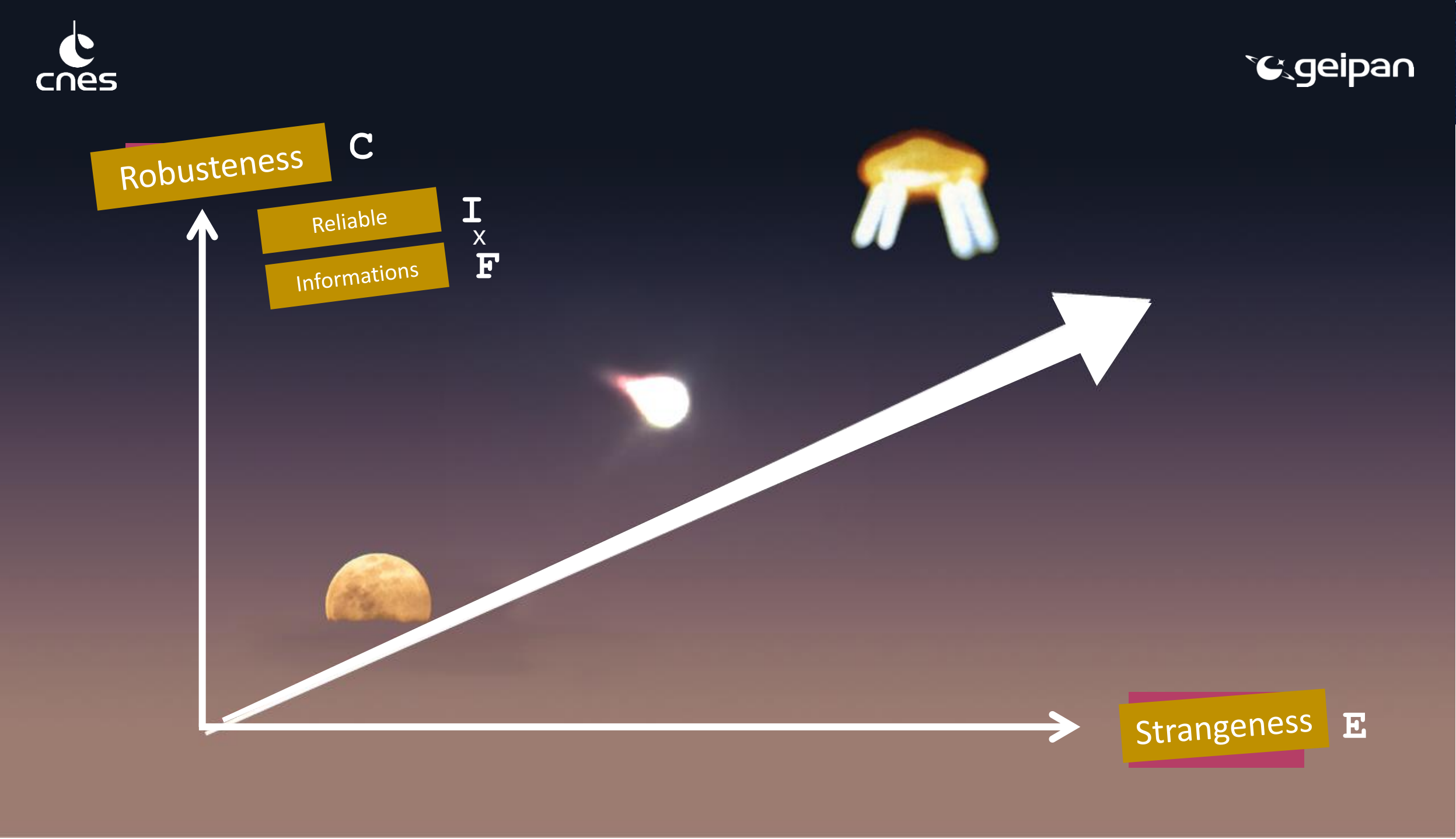
An investigation method for UAP is to objectify the facts, establish :

1. An evaluation of all **reliable proofs and facts** that constitute statements: the **Robustness [R]** level
2. The strength of these statements in a regard of standardized hypothesis: the **Strangeness [S]** level

Finally, we consider that a phenomenon is **objective** when:




Extraordinary claim requires
extraordinary proof.
Carl Sagan


Robusteness
C
Reliable
Informations
I
x
F
Strangeness
E

1 New Concepts: Strangeness, Robustness

Strangeness [S]

S = 1 is unattainable

S = 1-max(Hi)

[S] is a **mathematical measure** of the distance to the real. We denote Strangeness as the complement to 1 of the best-known explanatory hypothesis [0-1]. Nonlinear scale.

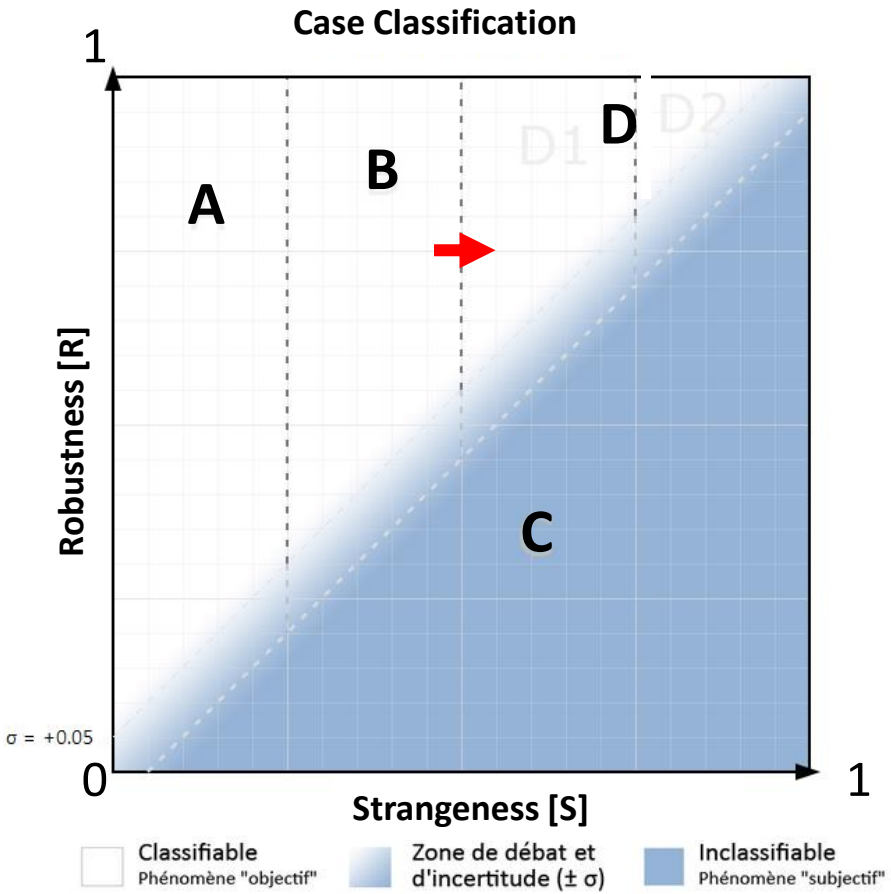
Robustness [R]

R = 1 is unattainable

[R] Is a measure of the amount of reliable information collected [0-1]. Nonlinear scale.

[R] = Reliability [F] x Information Qty [I]

1 Relations between [C], [ε] et A, B, C et D



The classification A, B, C and D is deduced from the concepts of **Robustness** and **Strangeness**, computed during the evaluation of the hypotheses and not the reverse.

This makes it possible to minimize the psychological affect or mental projections linked to categories A, B, C and D. But also, it put the proposed classification into context: while passing a case from B to D would create an immediate prejudice to the result of investigation, changing the strangeness factor from 0.48 to 0.52 is only a small change.

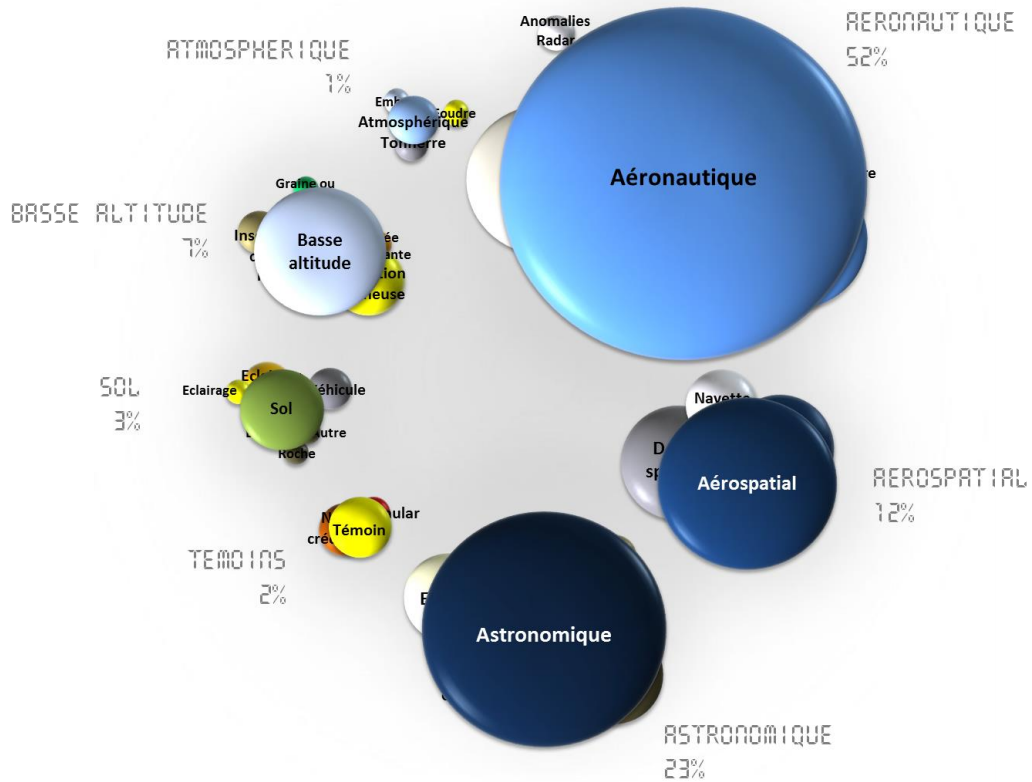
This approach reduces the impact of conscious or unconscious expectations about the classification

2 Hypothesis selection Method

The investigator is invited to create a **table of hypothesis** in order to evaluate each explanatory phenomenon that could be relevant in the observational context:

It is important:

- To **remain open** and not work only to defend the first hypothesis imagined
- The database software used by GEIPAN allows to automatically check a large number of phenomena, thus **reducing the selection and confirmation bias**



2 Hypothesis evaluation Method

Each hypothesis is broken down in a **table of arguments** made of a standardized list of **core elements.**
Each element is a unique descriptive criteria, orthogonal to the others : *size, color, form, trajectory, etc…*

HYPOTHESIS : Tennis ball ?

ELEMENT	PAN	HYP	PRO ARGUMENTS	CONS ARGUMENTS		VALUE (-1 to 1)
Shape	Sphere	Sphere	Exactly the same color	N/A	⇨	1
Angular Velocity	None	High	The phenomena was describided as motionless	A very short observation	⇨	-.8

- The validity of elements are assessed *for* and *against* hypothesis with "*Pros*" and "*Cons*" arguments
- **It is the most fragile elements ("weak links") that discriminate and limit the level of validity of a hypothesis.** There are generally more elements that work than elements that do not work for different phenomena
- **The list of elements is not limitative:** each hypothesis may have specific elements to check

2 Evaluation of selected hypotheses

Phenomena .1

ELEMENT	PAN	HYP	VALUE
Shape			
Colour			
Elevation			
Azimut			
Size app.			
Trajectory			
Angular vel.			-.8

Weakiest value [-1, 1] -.8

HYP 1. Tennis ball

?

HYP 2. Sun

The weakiest value is translated to a value between [0, 1] : this is our hypothesis value (.1 here)

2 Analytical stance

In summary, the array of arguments allows:

- To help in the evaluation to define the pros & cons of the hypothesis, and **encourage self-criticism**: adopt the posture of the “judge” not of the “lawyer”

- To identify quickly the weak points of your hypothesis, measure for each element its degree of coherence within its observational context

- Precisely, calculate the value of the hypothesis

Finally, for the **most complex cases (with higher strangeness** ~ 2-5%), a **panel of experts** (like a jury) may be requested to cross-check the investigation and ensure that no hypothesis or elements were forgotten.

3 Data collection Method

The data collection process is managed through different practices which allows to reduce the **selection bias:**

1. The implementation of a **standardized questionnaire** whose content is automatically interfaced with the fields of the database software
2. The training of investigators via the **Cognitive Interview** technique
3. The categorization of the **lexical field used by the witness** followed by evaluation of the **Quantity of Information [I]** available
4. **[R] = [I] x [F]: assessing Robustness** inevitably leads to addressing the issue of available data

3 Data collection - categorized elements

Categorized items are essential for a case evaluation. Typically, a case report **without a date or a location** is generally disreguared. A reduce number of rated items must be discouraged as it "makes it easier" for possible analogies.

Mandatory

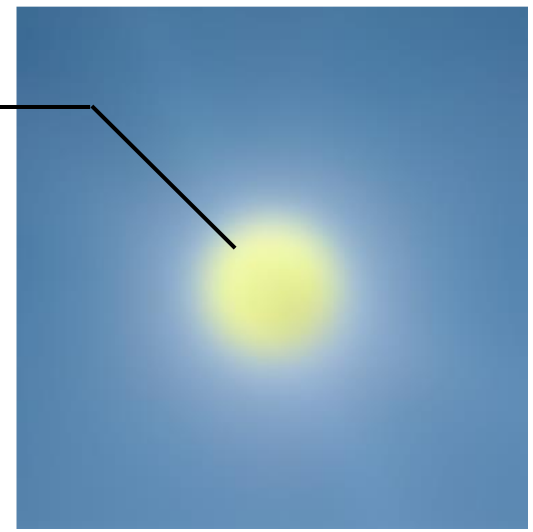
Environnemental Conditions

- Date, Hour
- Localisation

Essential

Description of the phenomena

- Form
- Color
- Azimut
- Elevation
- App. size
- Trajectory
- Angular speed
- Luminosity



“Forgetting a single item can sway the investigation”

In conclusion

	Collect	Analyse	Classification / Publication
Tasks	Reconstruction of the observation scenario	Assessing hypothesis	Production of the investigation report
Tools	✓ **Cognitive Interview** ✓ **Standardised questionnaire** ◆ ✓ **Completeness indicators** ◆	✓ **Environmental Analysis** ◆ ✓ **Hypothesis table** ◆ ✓ **Argument table** ◆ ✓ **Collegial approach** ◆	✓ **Standardized Investigation report** ◆ ✓ **[S] Strangeness evaluation** ◆ ✓ **[R] Robustness evaluation** ◆
To avoid	**Selection bias** Witness bias or hypotheses selection bias	**Judgment bias** Preliminary expectations on the hypotheses	**Social desirability bias** Preliminary expectations on classification

◆ *via the software database*