

WHICH DEGREE OF INTEGRATION BETWEEN SCIENCE AND PUBLIC POLICY?

Food Safety in France

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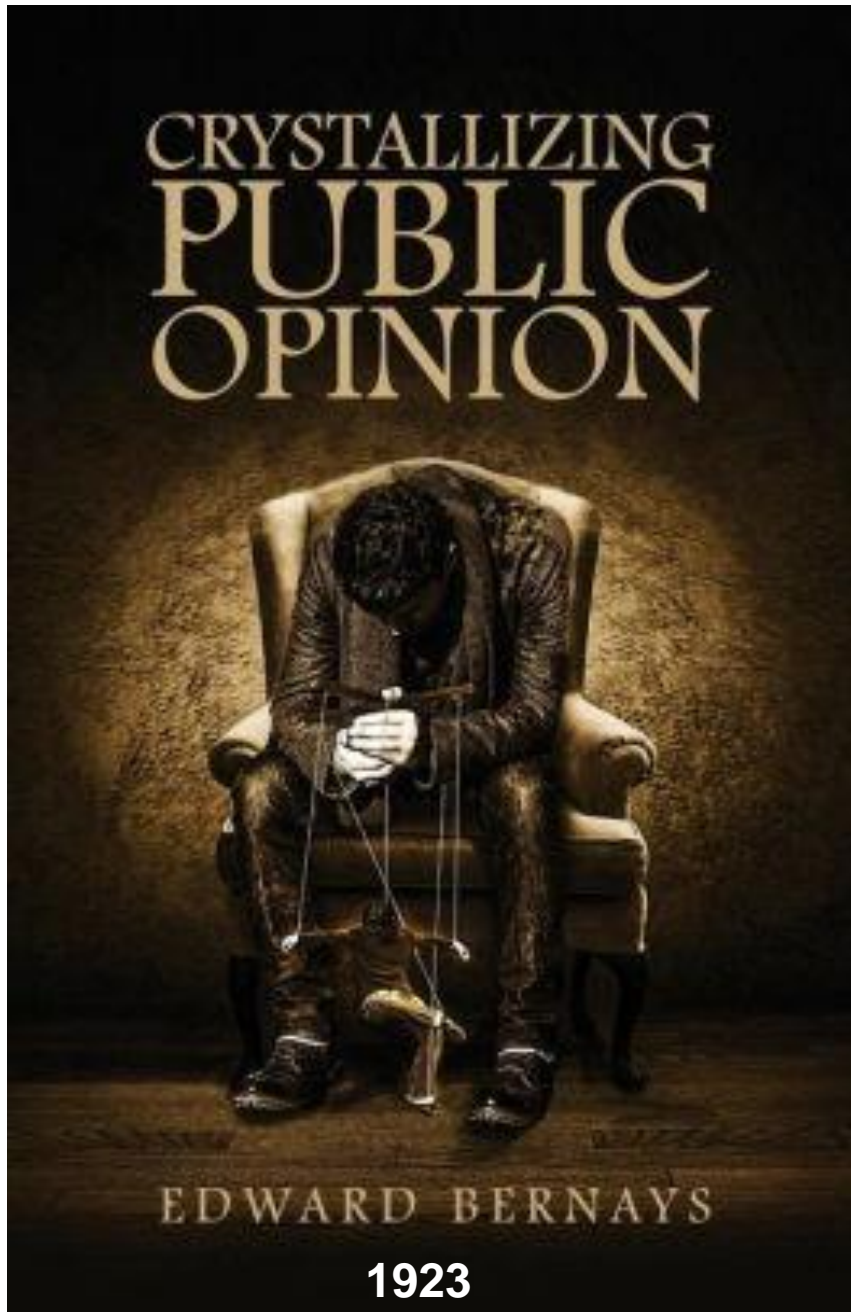
Detail from Abraham Bosse's frontispiece for Leviathan by Thomas Hobbes

**Power
Decision-making**

Science

**Risk management
Risk governance
(RM)**

**Risk assessment
(RA)**



Selling bacon for the Beech-Nut Packing Company

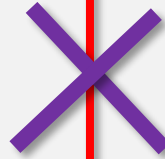
Question to a physician: "Might a heavier breakfast be more beneficial for the American public?"

**Power
Decision-making**

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**Risk management
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I. Segregation of duties should be preserved.

II. Structuring the demand is not neutral.

Problem structuring will impact the framing RA conclusions and than RM.

III. Organizational and governance mechanisms should be established for a responsible and sustainable RM and RA.

Risk



Safety

WHAT DO WE MEAN BY “RISK”?

- *Risk:*

- Definition (culture, experience, background, position, opinion, expectations, ...)
- Probabilities and consequences for scenarios
- is an uncertain consequence (positive or negative) of an event or activity with respect to something that people value
- Hazard \otimes Vulnerable stakes \otimes Mitigation measures

Risk modelling (resilience and sustainability) is multi-criteria and multi-stakeholders, multi-problems and multi-timescales.

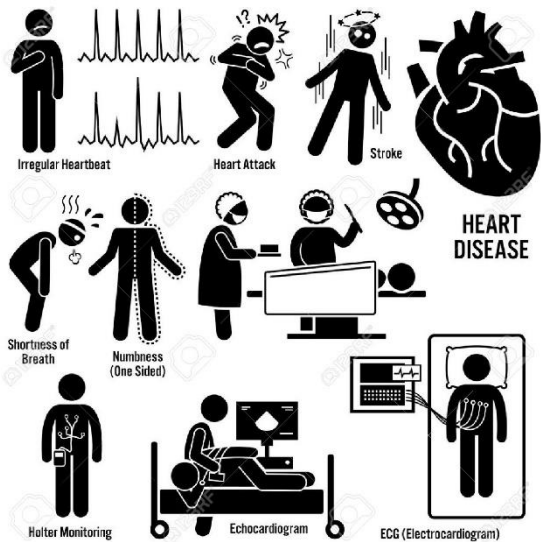
Risk



Acute risk



Chronic risk



Hazard



Cadmium

Diffuse risk

Accidental risk

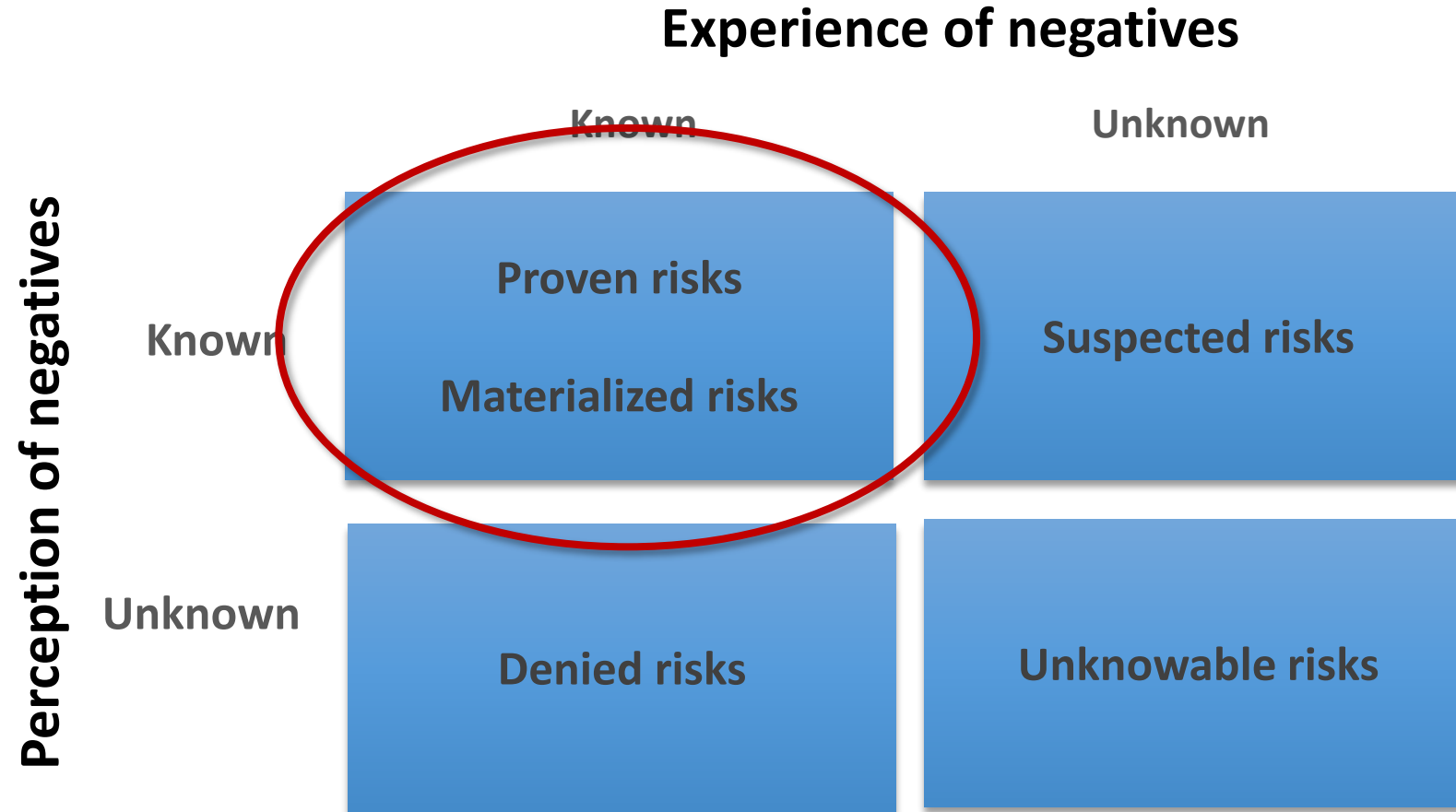
Safety

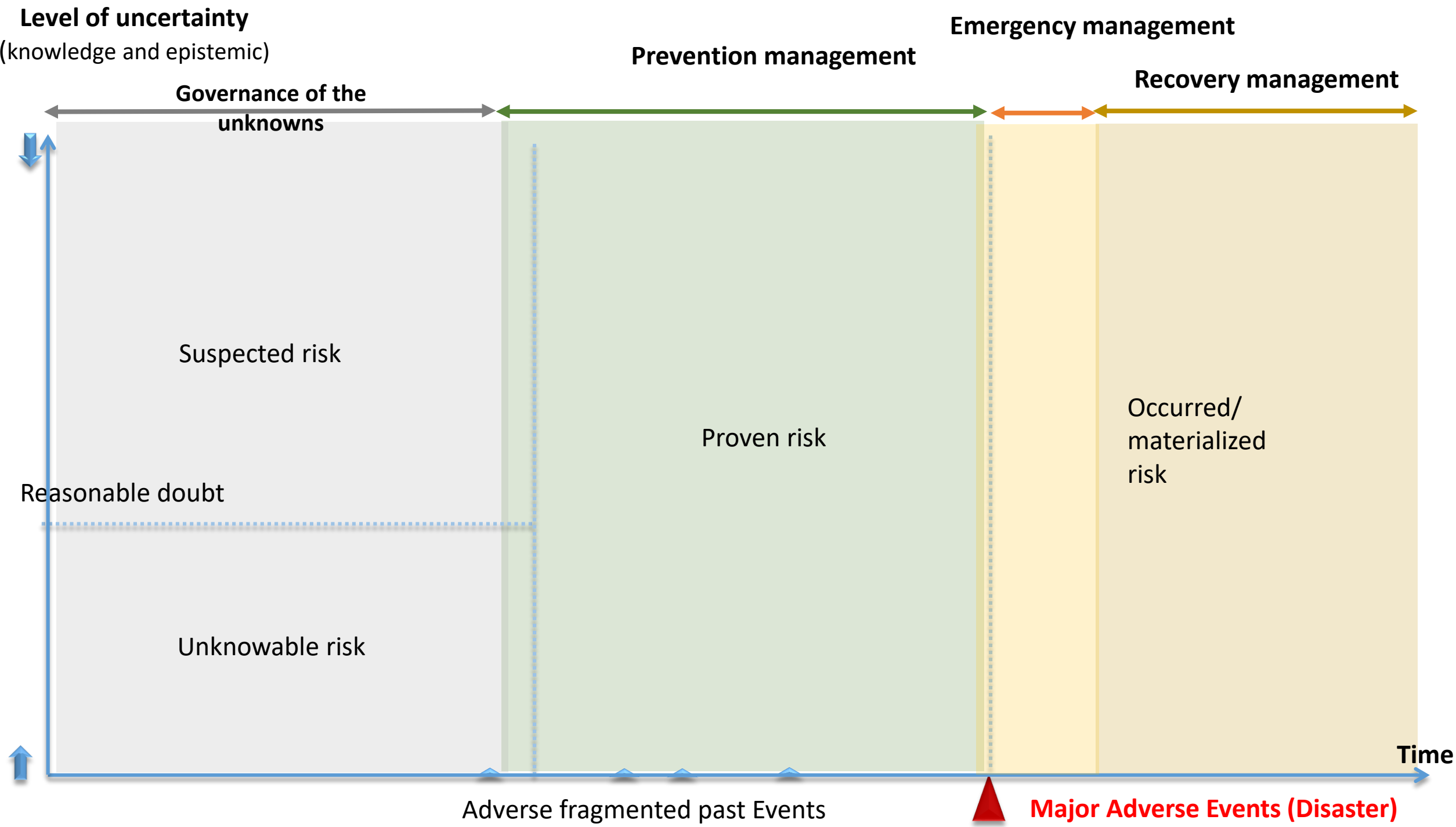
- *Prevent risks*
 - Reduce their occurrence
 - Reduce the vulnerabilities
 - Inform and prepare for accountability
 - Audit and control
 - Adapt

Food Safety

- *Health food safety*
 - Preventing “risks” (acute and chronic) - Toxicologist and microbiologists
 - Set up the right public-private health insurance
 - Balance between regulation, audit and control strategies.
 - Improve citizen awareness (GI, ...)

Risks and negatives





Regulation and policy

Known-Known Negatives on health

Integrated regulation

**Risk management
Risk governance
(RM)**



Council

Science

Health safety (Acute and chronic risks)

Health safety (Acute, chronic, accidental, economic, social)

**Risk assessment
(RA)**

Council

- Integrated approach to safety
- Evidences: Multidisciplinary and cross-disciplinary approach
- Perceptions and socio-political constraints

Frameworks: link between risk assessment and risk management.

Food Safety regulation in France

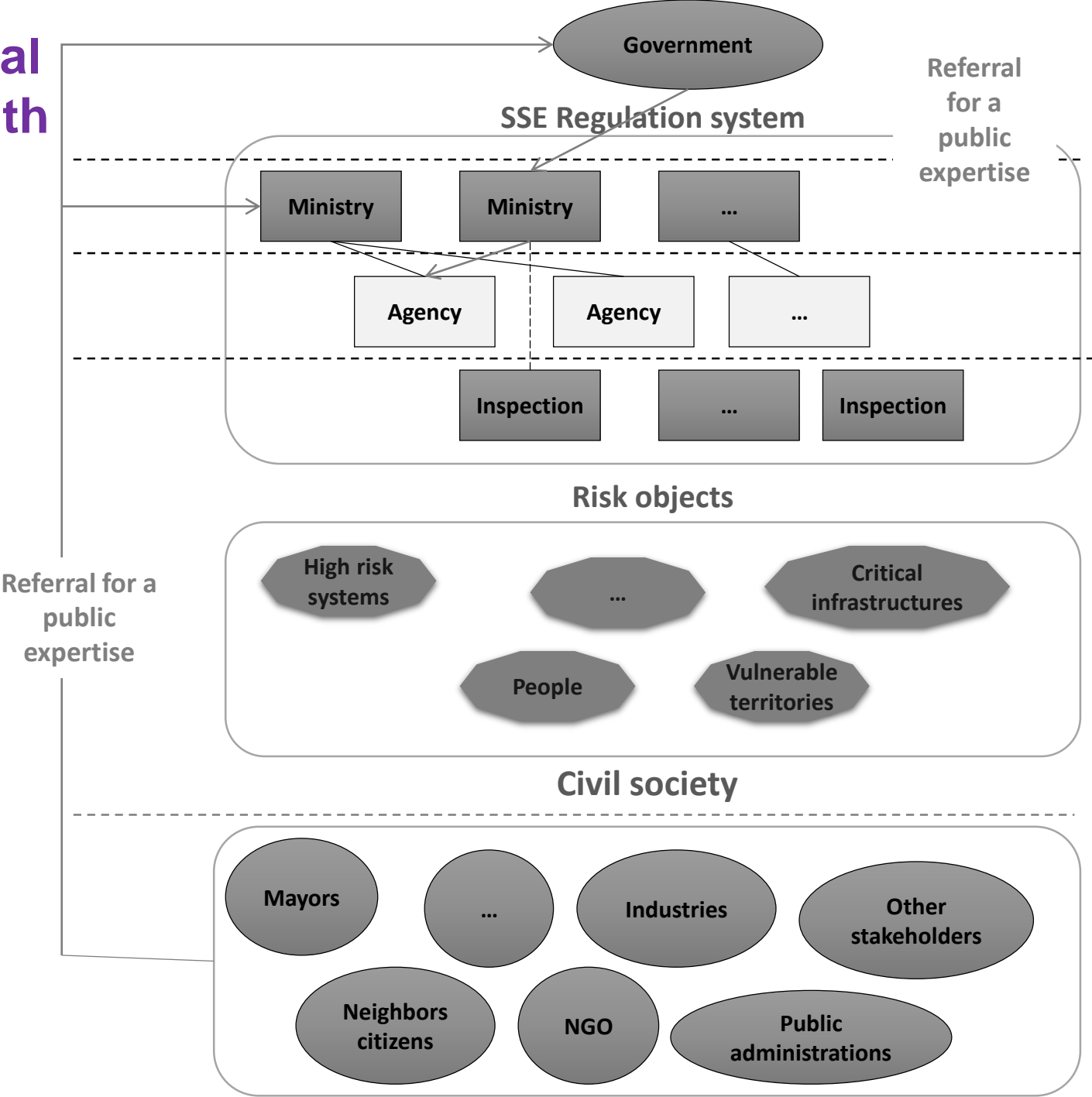
Specificities of the referral process when dealing with risks

Food safety

Ministries: Agriculture, Environment, Health

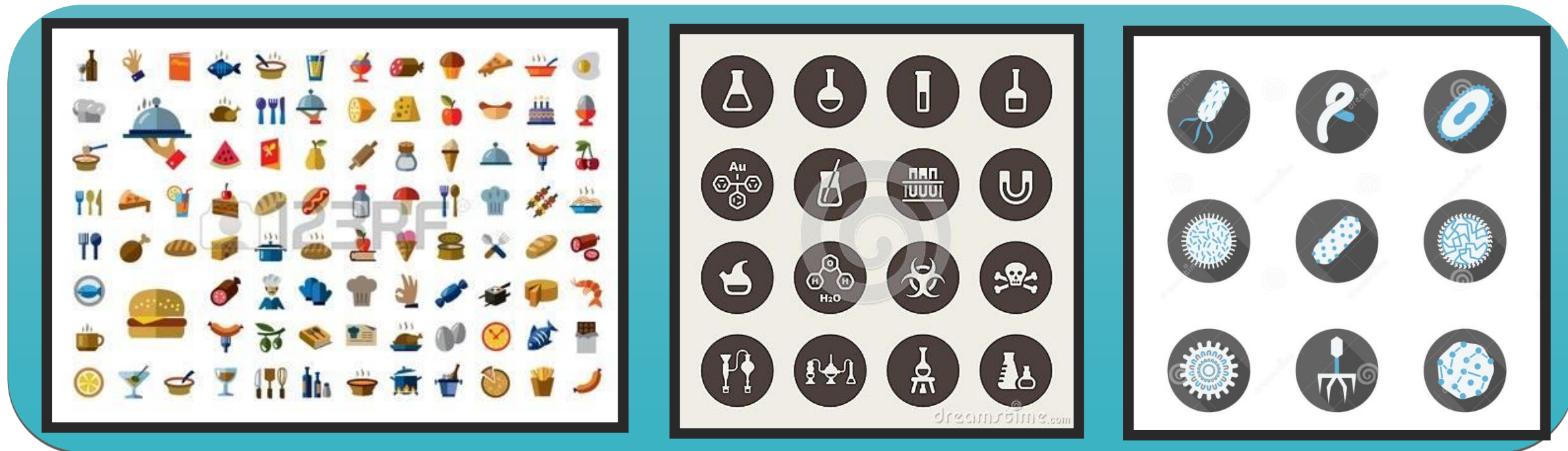
Agency: ANSES

Institutes: INRA, SPF, INERIS, ...



On going

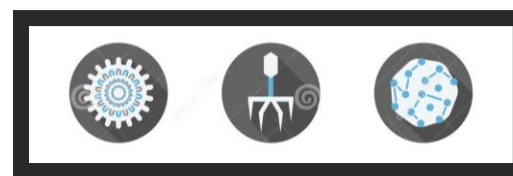
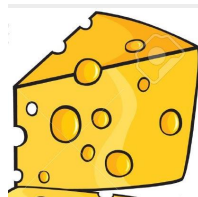
**Integrated approach to food health safety regulation in
France**



$$A = \{a_j\}_{j=1 \text{ à } m}$$

$$Ch = \{ch_i\}_{i=1 \text{ à } n}$$

$$B = \{b_i\}_{i=1 \text{ à } n}$$



$$\text{Couple (Aliment, Dangers)} = (a_j, Ch, B)$$

Example



Milk and ultra-fresh dairy products (Chemical hazards)

Milk and dairy products (Organic hazards)

- Arsenic inorganique
- Aluminium
- Cadmium
- PCB/dioxines/Furanes
- Résidus de pesticides

- *Salmonella* spp.
- *Listeria monocytogenes*
- *Staphylococcus aureus*
- *Yersinia enterocolitica*
- *Campylobacter jejuni*
- *E. coli* producteur de Shiga-toxines

$$A = \{a_j\}_{j=1 \text{ à } m}$$

$$Ch = \{ch_i\}_{i=1 \text{ à } n}$$

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Couple (Milk and ultra – fresh dairy products| dairy products, Ch, B)

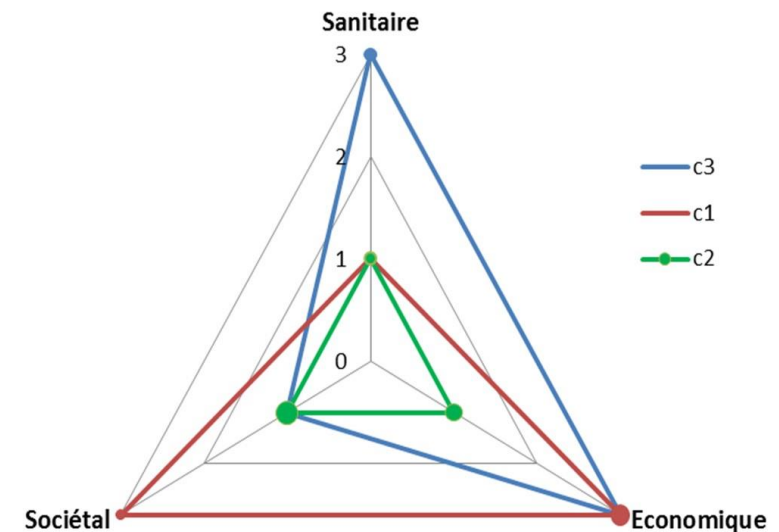
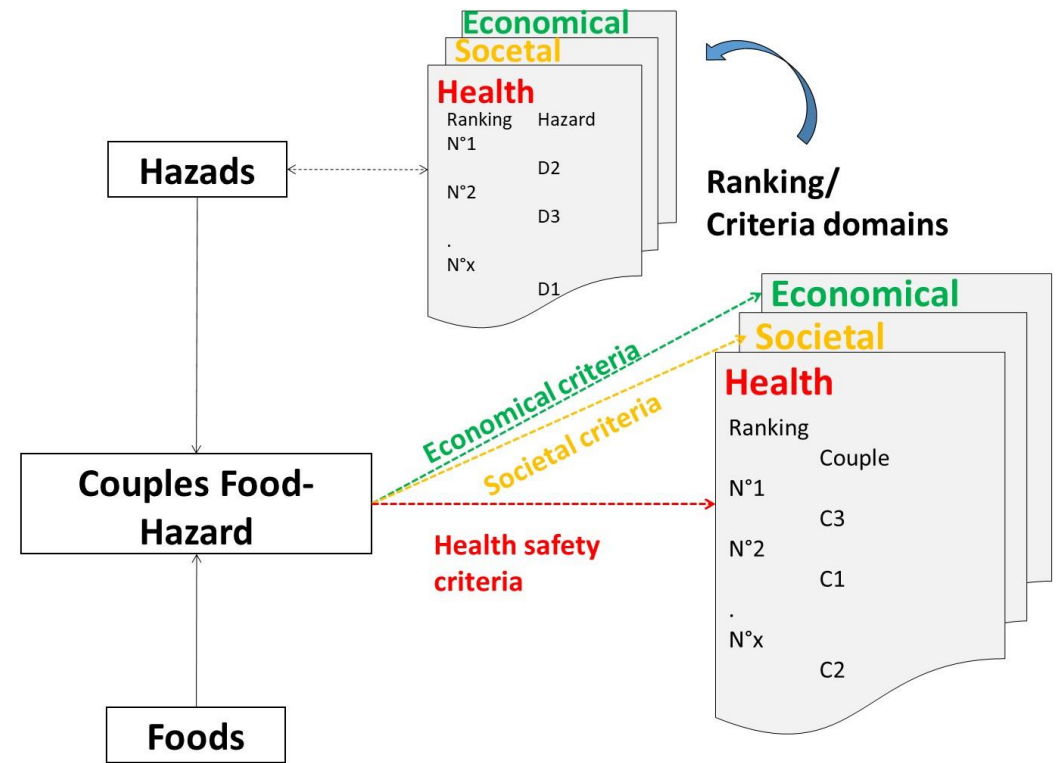


Sc 4 (Milk and ultra – fresh dairy products, "Cadmium") Sc 3 (Milk and ultra – fresh dairy products, "Inorganic arsenic") Sc 2 (Milk and ultra – fresh dairy products, Aluminium) Sc 1 (Milk and ultra – fresh dairy products, "Inorganic arsenic")

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Ministries:

- Risk ranking considering different categories of “evidence”.
- Nudging for their regulation strategies.

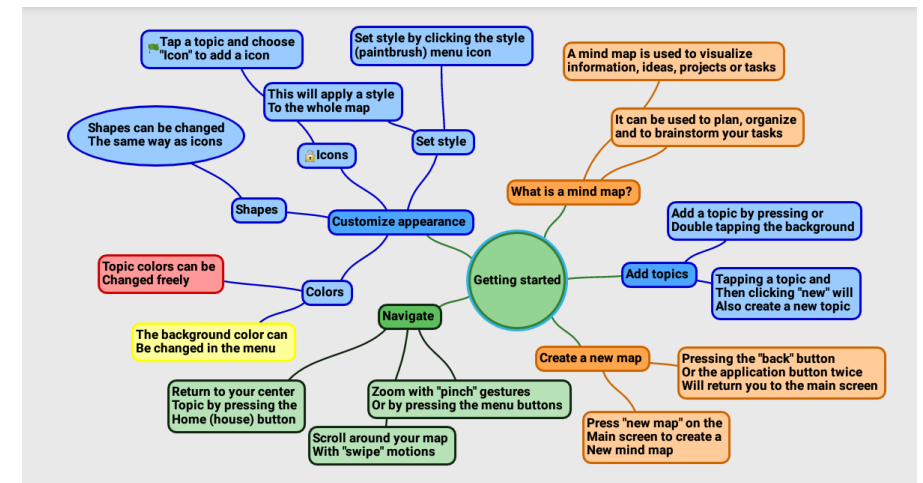
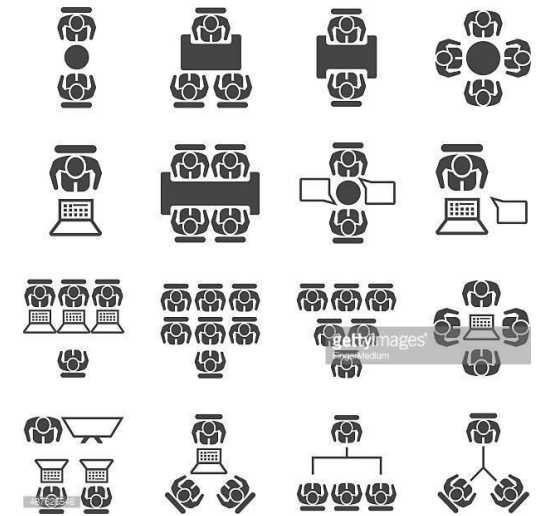


Identification of the consistent family of criteria

- Consistency
- No redundancy
- Completeness

Characterization of weight sets

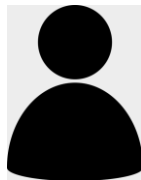
Scenario performance evaluation





a_j

Sc_1	Sc_2	Sc_3	Sc_4	...	Sc_n
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Criteria

- Set of criteria- Hazard
- Set of criteria - Vulnerability
- Set of criteria – Economics
- Set of criteria – Societal
- Set of criteria - Uncertainties

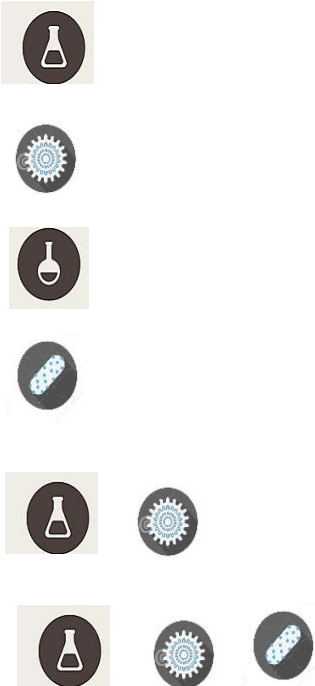
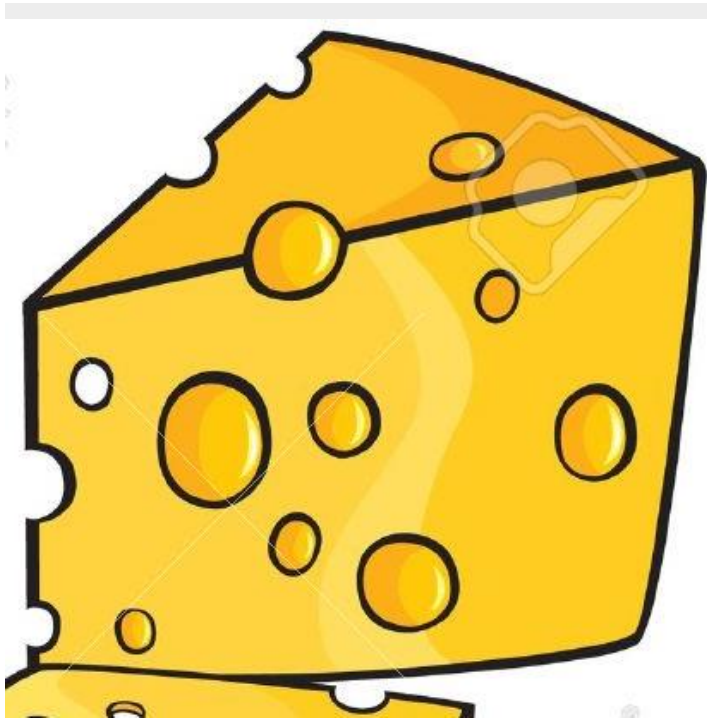
W	Sc_1	Sc_2	Sc_3	Sc_4	...	Sc_n




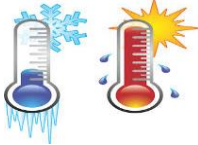































Performance of a scenario on a criterion

What level of health risk?



Conclusions of the risk assessment



 			 	Measures
				
				
				
				
				
				

Some books ...

