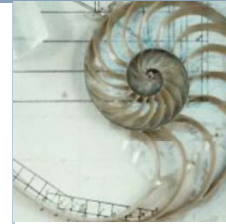




Risk Governance: Towards Zero-Risk



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Challenges of Occupational Safety

- Global competition promotes increased efficiency and discourages resilience against surprises
- Standardization of risk management practices through multinational corporations and world-wide cooperation
- New threats caused by high levels of stress, terrorism and sabotage
- Systematic interplay between physical, financial, economic, political, social and psychological risks (OECD: systemic risks)

Requirements for Integrated Risk Concepts

- Concepts that link risk assessment with risk perception and socio-cultural processing of risk
 - Avoiding relativist view of knowledge but including social constructions of risks
 - Link between risk assessment, management and communication

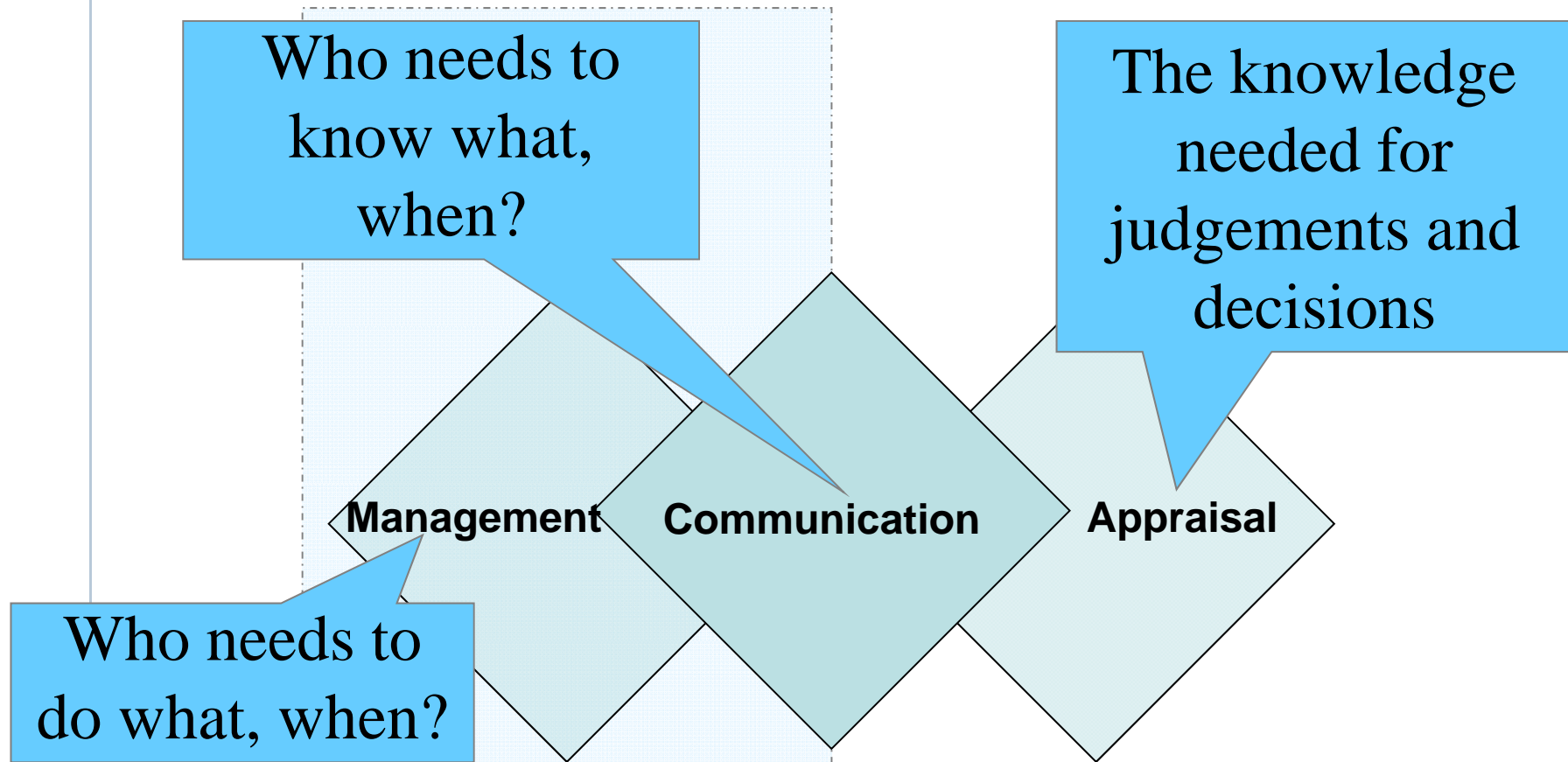
- Concepts that link physical risk analysis with financial, economic and social risk;
 - Explore social amplification pathways
 - Consider trans-sectoral and trans-boundary ramifications

- Concepts that link risk theory with organizational capacity building and management competency
 - Systematic use of management sciences and decision aiding
 - Emphasis on risk communication between and among agencies and professionals

The Basic Fabrics of Risk Governance

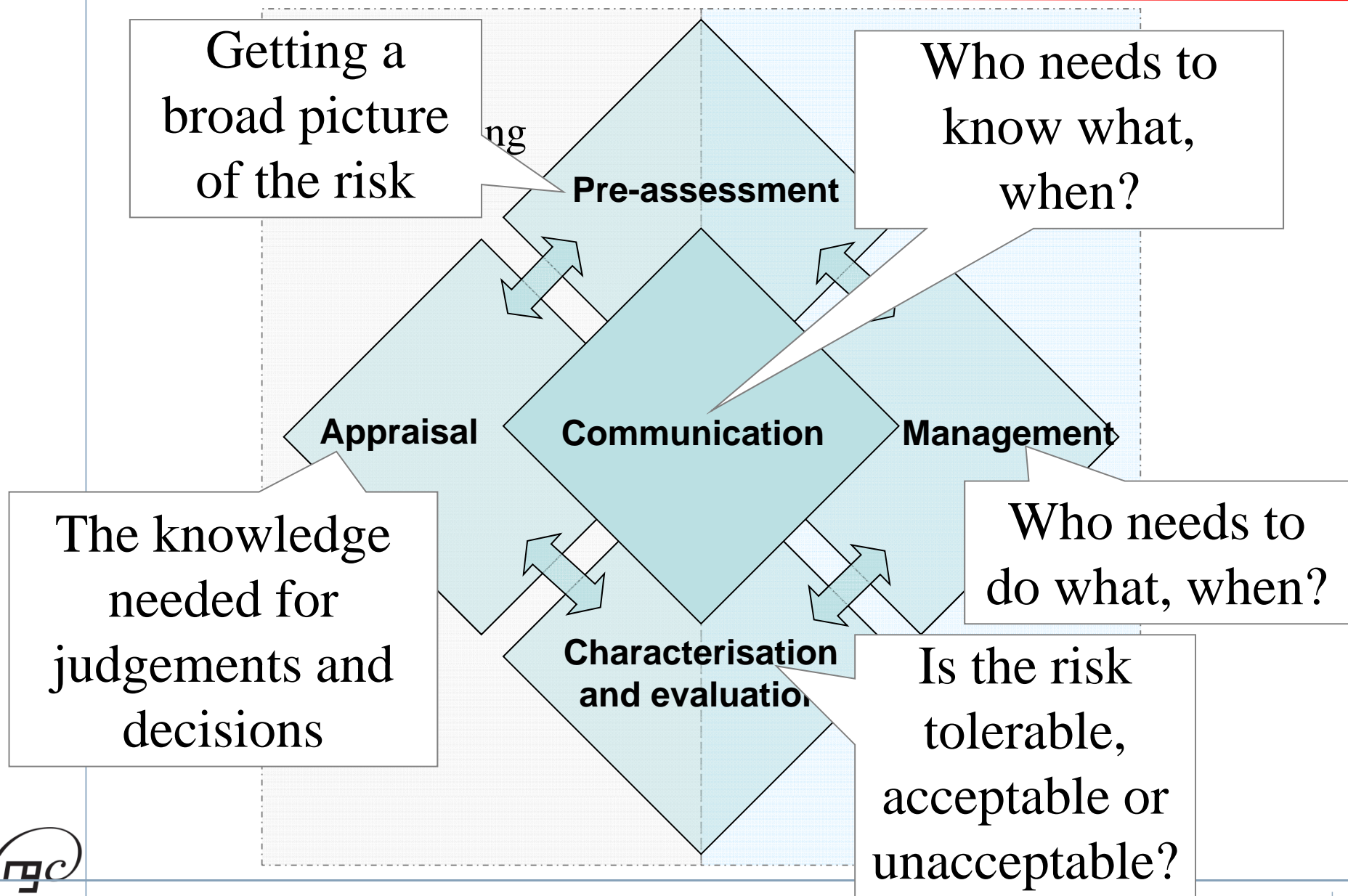
**The Five Components
of Risk Governance**

CONVENTIONAL RISK HANDLING



Most risk handling processes do not go beyond these steps

IRGC's RISK GOVERNANCE FRAMEWORK



INNOVATIONS IN THE IRGC'S FRAMEWORK

1. The **pre-assessment** phase
 - extending problem definition
2. Including **concern assessment** as part of risk appraisal
3. **Categorising the knowledge** about the risk as:
 - linear
 - complex
 - uncertain
 - ambiguous
4. The **characterisation and evaluation** phase
 - is the risk acceptable, tolerable or unacceptable?

Details of each phase

Achieving zero risk in occupational risk management

The interplay between the five components

Phase 1

PREASSESSMENT

Importance of Framing

Looks like a high risk from the outside



Importance of Framing

But consider this...



Importance of Framing

Or this...



IMPORTANCE OF FRAMING

- *Frames represent different views about the problem*
 - Technical failure
 - Human failure
 - Act of God (fate)
- *Frames determine boundaries of what is included and excluded*
 - Time frames
 - Location and space (workshop, factory, transportation, home)
 - Vulnerable groups
 - Types of adverse effects (physical, mental, social, psychological)
 - Primary or secondary impacts (ripple effects)
 - Criteria taken into account (risk reduction, cost, benefit, equity, environmental justice, value violations...)

Phase 2

APPRAISAL

RISK APPRAISAL

■ Risk Assessment

- Hazard identification and estimation
- Exposure assessment
- Risk estimation

■ Concern Assessment

- Socio-economic impacts
- Economic benefits
- Public concerns (stakeholders and individuals)

New Tasks and Challenges in Appraisal

- Integration of risk assessment and management in holistic governance strategies
- Involvement of quality circles to deal with complexities, uncertainties and ambiguities and development of flexible responses to new threats
- More attention to distributive effects (individual variability, different resource availability, individual agency)
- Development of “error-proof” technologies and safety systems as a means to improve prevention

CONCERN ASSESSMENT

- What are the workers' **concerns and perceptions**?
- What is the **response** to the risk by the affected workers?
Is there the possibility of under- or overestimating risk?
- Are there **rules, guidelines and/or procedures in place** that deal with perceptions and behavioral routines that effect workers' safety
- Is any of the safety issues associated with **conflicting goals** (for example quality management or cost reduction) or does it give rise to controversies or conflicts?

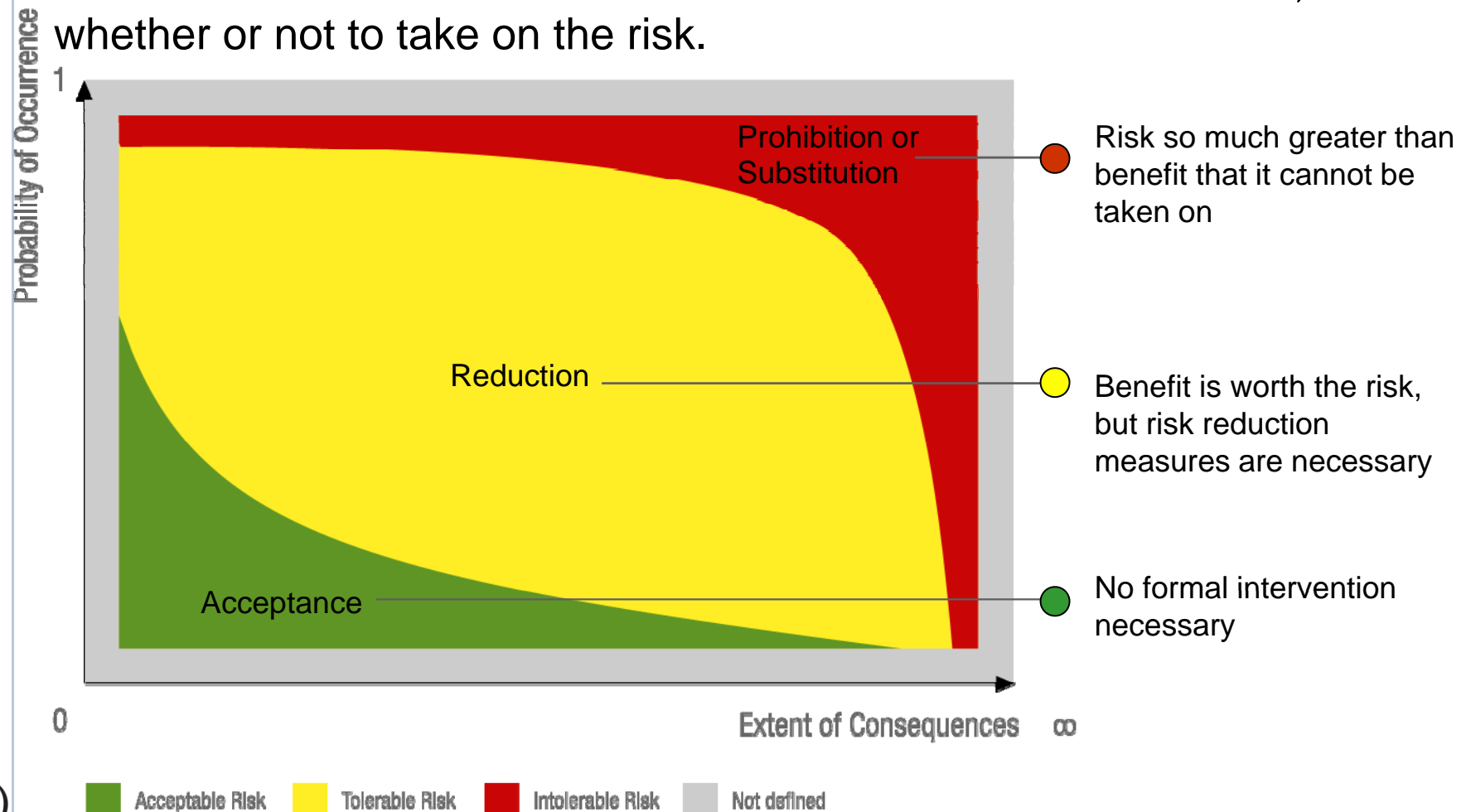


Phase 3

Tolerability and Acceptability Judgment

EVALUATION – IS THE RISK ACCEPTABLE, TOLERABLE OR INTOLERABLE / NOT-ACCEPTABLE (TRAFFIC LIGHT MODEL)

Based on **both the evidence from the risk appraisal and evaluation of broader value-based choices and the trade-offs involved**, decide whether or not to take on the risk.



CHARACTERISATION AND EVALUATION

What are the broader, value-based questions to consider?

■ Characterization:

- What are the **conditions and circumstances that lead to occupational** risk?
- Are there impacts on **other non-safety goals**?
- Are there **ethical issues** to consider?
- Are there **social promoters or attenuators** for workers' safety?

■ Evaluation:

- Is there a **need for risk reduction**?
- What can be done to get closer to the **zero-risk goal**?
- How can the **affected workers be included** in the evaluation?

Phase 4

RISK MANAGEMENT

COMPONENTS OF RISK MANAGEMENT

Assessment Components	Definition	Indicators
1 Option generation	Identification of potential risk handling options, in particular risk reduction, i.e. prevention, adaptation and mitigation, as well as risk avoidance, transfer and retention	<ul style="list-style-type: none"> ■ standards, voluntary agreements ■ performance rules ■ restrictions on exposure or vulnerability ■ economic incentives ■ compensation ■ insurance and liability ■ labels, information/education
2 Option assessment	Investigations of impacts of each option (economic, technical, social, political, cultural)	<ul style="list-style-type: none"> ■ effectiveness and efficiency ■ minimization of side effects ■ sustainability ■ fairness ■ legal and political implementability ■ ethical acceptability ■ public acceptance
3 Option evaluation and selection	Evaluation of options (multi-criteria analysis)	<ul style="list-style-type: none"> ■ assignment of trade-offs ■ incorporation of stakeholders & the public
4 Option implementation	Realization of the most preferred option	<ul style="list-style-type: none"> ■ accountability ■ consistency ■ effectiveness
5 Monitoring and feedback	<ul style="list-style-type: none"> ■ Observation of effects of implementation (link to early warning) ■ Ex-post evaluation 	<ul style="list-style-type: none"> ■ intended impacts ■ non-intended impacts ■ policy impacts

NEED FOR DIFFERENT RISK MANAGEMENT STRATEGIES

- dealing with routine, mundane risks
- dealing with **complex** and sophisticated risks (high degree of modeling necessary)
- dealing with highly **uncertain** risks (high degree of second order uncertainty)
- dealing with highly **ambiguous** risks (high degree of controversy)
- dealing with imminent dangers or crisis (need for fast responses)

Dealing with Routine and Mundane Risks

- Calculation of cost-effectiveness for each reduction option
- Integration of risk management in the complete production or service generating cycle
- Preference for prevention strategies
- Integration of risk reduction in larger context:
 - Personal well-being and motivation
 - Goals of the organisation
 - Work ethics and safety culture

Dealing with Highly Complex Risks

- Modelling causal pathways and making them plausible to all exposed individuals
- Inclusion of redundant safety measures and flexible response modes
- Investment in training and motivation
- Creation of a high reliability safety culture

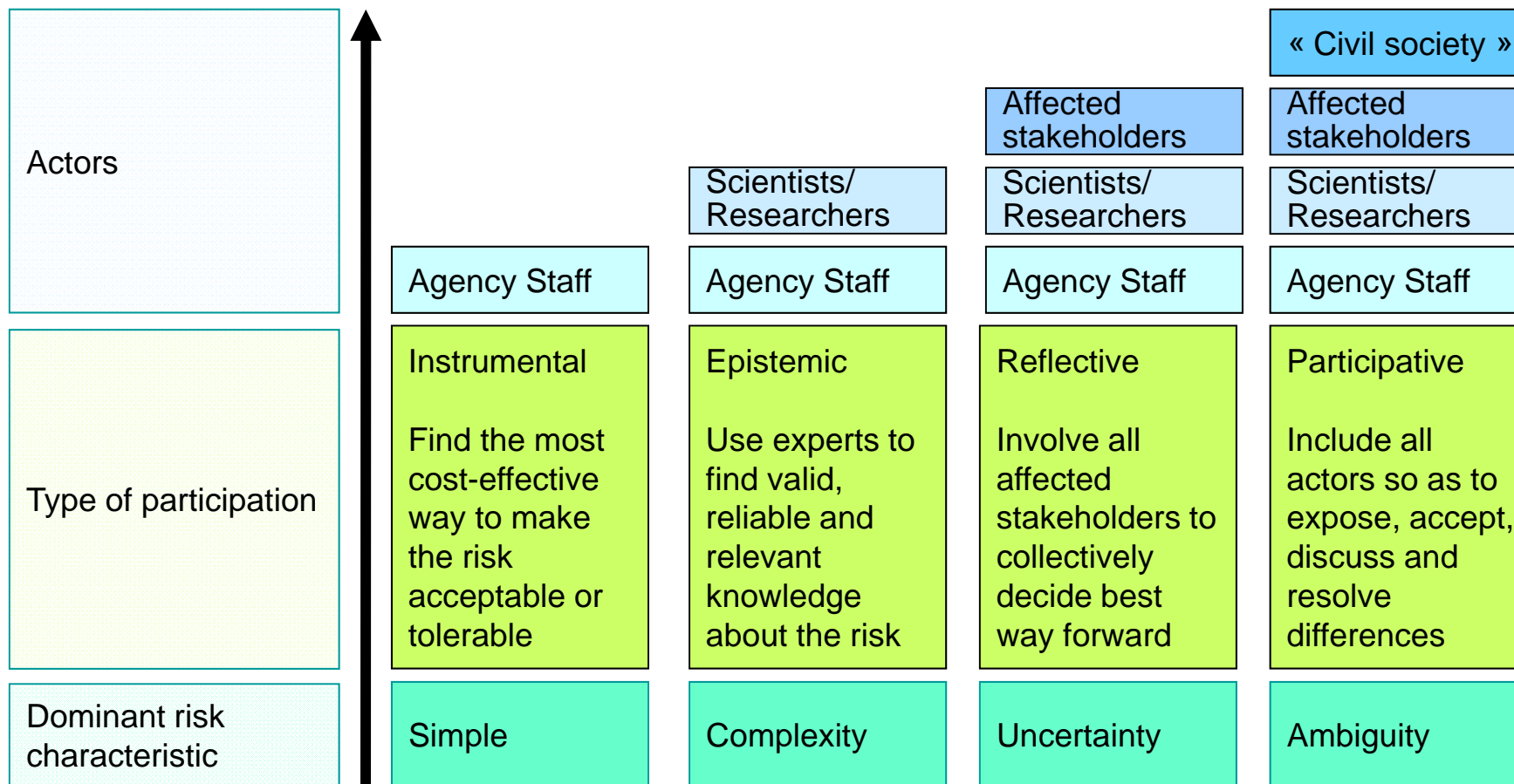
Dealing with Highly Uncertain Risks

- Search for substitutes where available
- Investment in know-how and experience (training and simulation with the workforce)
- Application of precaution (making processes more resilient)
- Containment strategies (regarding space, time, and function)
- Strict accountability

Dealing with High Ambiguity

- Emphasis on communication and participation
- Involvement of all affected parties and attempts to reach consensus or at least a “sense of responsibility”
- Cooperation with external trustworthy institutions (such as unions)
- Enhancement of personal responsibilities and duties

STAKEHOLDER INVOLVEMENT



As the level of knowledge changes, so also will the type of participation need to change



Complementary Phase

Risk Communication

RISK COMMUNICATION – POTENTIAL GOVERNANCE DEFICITS

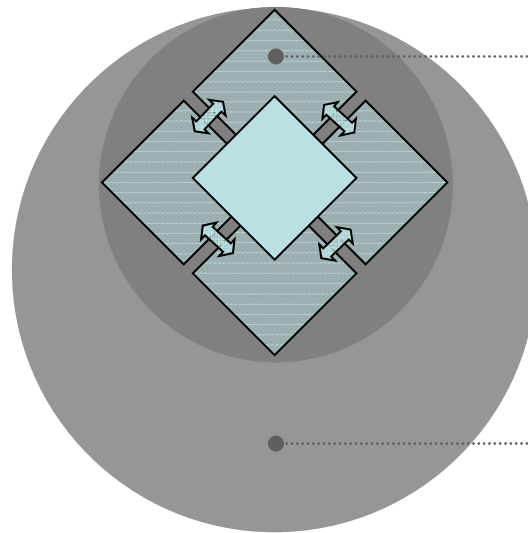
The most important governance gaps are:

- **One-way information** instead of two-way communication **prevents building a dialogue**
- **Certain concerns are treated as irrational** and, as a result, those holding them are alienated from the risk handling process (which may cause ignorance of safety regulations)
- The communication is **not adapted to the extent necessary**
- **Low level of confidence** or trust in the information given and in the decision-making process weakens the whole process

The wider context

Organizational Capacity

RISK GOVERNANCE INCLUDES AND IS SENSITIVE TO CONTEXT



Core Risk Governance Process

- pre-assessment
- risk appraisal
 - risk assessment
 - concern assessment
- evaluation: tolerability / acceptability judgement
- risk management
- communication

Organisational Capacity

- assets
- skills
- capabilities

Most risk management processes are done in this context only

ORGANISATIONAL CAPACITY (1)

Risk governance relies upon equipping all actors with adequate:

■ **Assets**

- *Laws and regulations* that establish rights and obligations
- *Resources* – financial and physical – to gather information and act
- *Knowledge* – the experience and expertise to best use the resources
- *Integration* – with which to access and deploy the other assets

■ **Skills**

- *Flexibility* – adapting to change in a dynamic situation
- *Vision* – preparedness to think “outside the box”
- *Directivity* – being an agent for external change when necessary

ORGANISATIONAL CAPACITY (2)

■ Capabilities

- *Relations* – links between the actors to create the basis for collaborative learning and decision making
- *Networks* – enhanced links between key actors
- *Regimes* – the structures that create and oversee the overall process and how all the actors interact

The Basic Fabrics of Risk Governance

Conclusions

CONCLUSIONS I

- Problems in handling occupational risks:
 - Plural values and knowledge claims
 - Conflict with other corporate objectives and goals
 - Social amplification and attenuation via perception and social mobilization
 - Pressure from globalized economy
 - Lack of organizational capacity
 - Lack of effective governance structures

- Necessity for integrating technical, scientific and social concepts of risk analysis and management

- Creation of a high-reliability safety culture

CONCLUSIONS II

- Good risk governance **integrates traditional risk analysis with the thorough understanding of how the affected workers perceive the risk** (“framing” and “concern assessment”)
- Understanding that risk management is a comprehensive activity that requires assets, skills, capabilities and dedication
- **Categorising the knowledge about the risk** as simple, complex, uncertain or ambiguous can help:
 - Select the appropriate risk management strategy
 - design the process for stakeholder involvement
- Using the results of both risk assessment and concern assessment can support a **tolerability/acceptability judgement that accounts for both scientific facts and workers’ perceptions**

Quotes:

Learning means substituting fate with error

Anonymus

Humans should learn how to simulate trial and error, since we may not be able to afford making real errors any longer

Aaron Wildavsky