

Application to CONFIDENCE with negotiation in emergency situations

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■ Negotiation

- Bilateral: e.g. selling a product (1 seller, 1 buyer)
- Multilateral
 - Confidence: Stakeholders
 - Critical infrastructure resilience: Pharmacies, dialysis clinics, energy suppliers...
 - Traffic: Cars, traffic lights...

Agents in the communication (e.g. social, electricity, water, traffic) networks.

Multi-layers.

■ Multi-issue

■ Conference

e.g. Evacuation: the size of sheltering area, the size of evacuation area, the size of area where the children need to take iodine tablets...

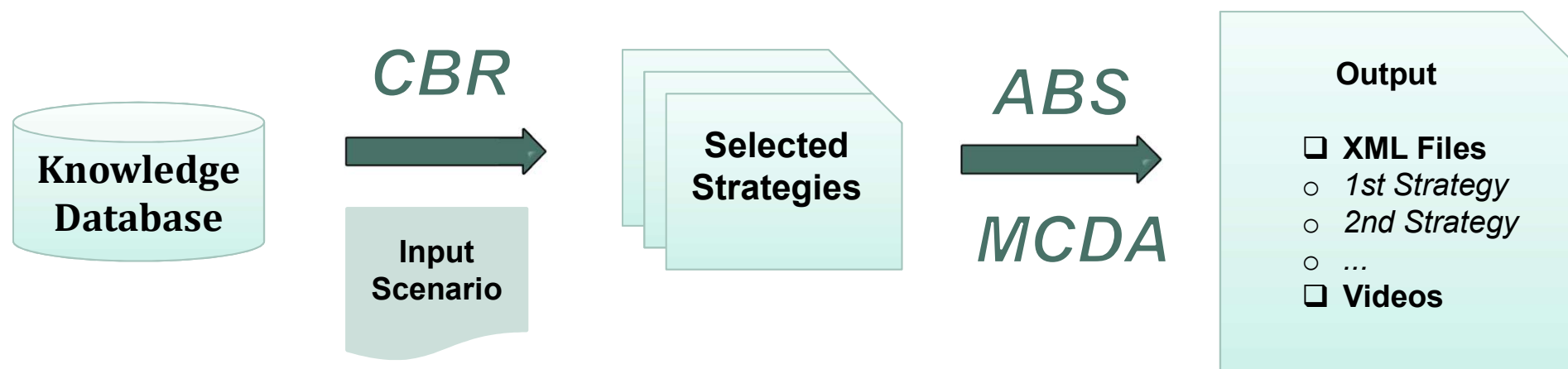
■ Critical infrastructure (CI) resilience

Condition of the supply (for electricity, water, medicine...), running situation of CIs, the plan of patients...

■ Traffic:

Condition of the traffic (cars, network...), the plan of drivers (go to work at 9 o'clock, go back home at 5 o'clock, go to shop after work, go to dinner at 8 o'clock)...

Architecture of Our Program - the Intelligent Strategy Evaluation System



- Stakeholders in Conference Project
- Criteria and Preferences in Conference Project
 - Recommended Preference Values for Agent Group
- Negotiation Process
- Other Topics in the Intelligent Strategy Evaluation System
 - Case-based Reasoning
 - Possible Parameters for Input Scenarios
- Uncertainty
- Possible Works

Stakeholders in Conference Project

- The agents representing stakeholders are divided into five groups:
 - Expert
 - Politician
 - Lawyer
 - Non-governmental organization (NGO)
 - Industry/consumer
- Others?

Criteria and Preferences in Conference Project

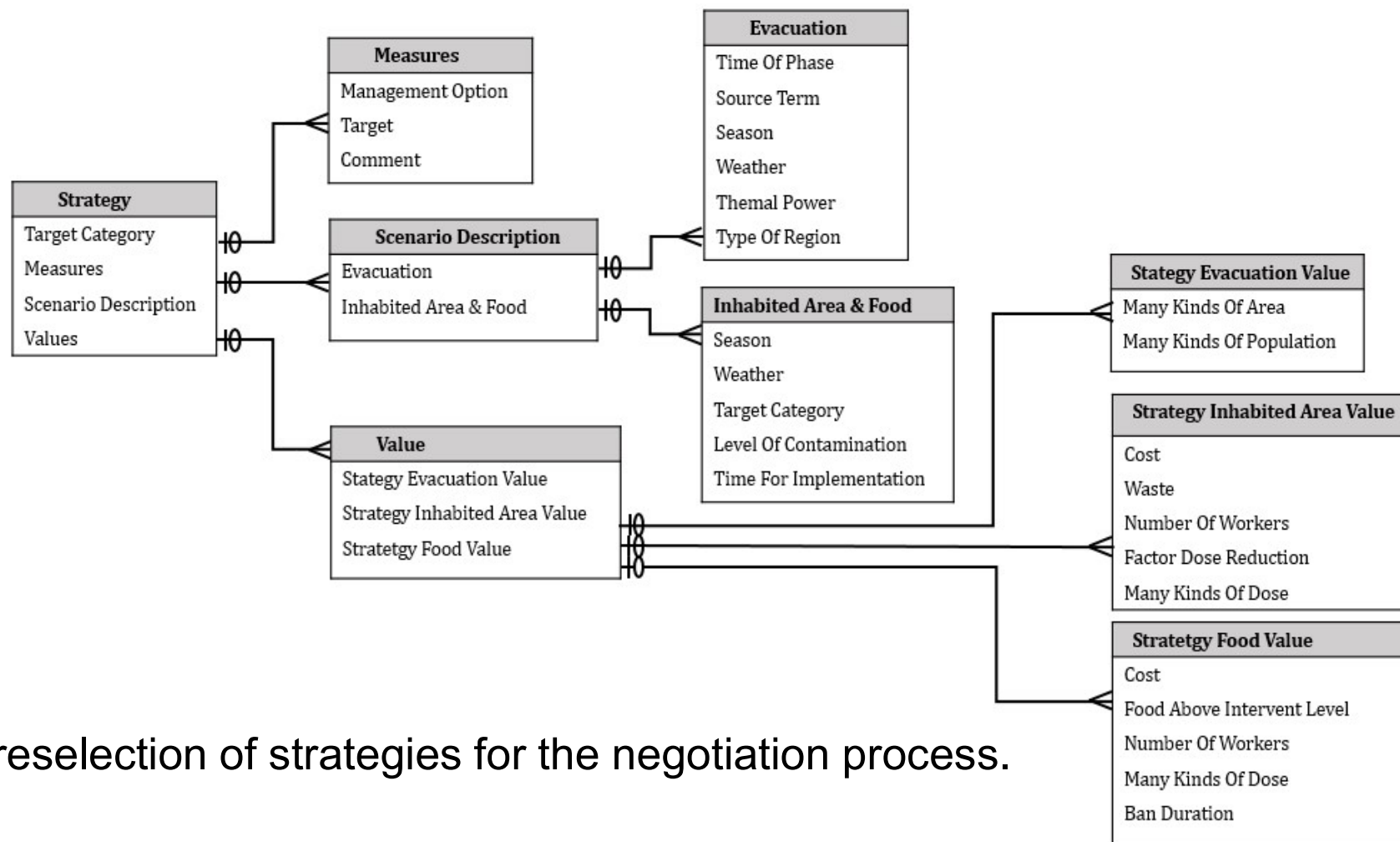
- The criteria are defined as:
 - Effectiveness
 - Cost
 - Acceptance
 - Resources
- Give recommended preference values to each agent groups and the preference value to each agent should be set according to the reference.

Neogtiation Process

- The negotiation process will usually run many time steps. At each time step, the agents in the meeting room are in negotiation and give the score of the strategies. It will be stopped until the agreement is achieved or the time runs out.
- The win-win situations - The random tit-for-tat method.
- The cut-down mechanism.

Case-based Reasoning (CBR)

- Strategies in knowledge database (KDB).



- Preselection of strategies for the negotiation process.

Possible Parameters for Input Scenarios

Parameter for CBR	
Season	spring, summer, autumn, winter
Weather	rain, no rain low wind, no rain medium wind, no rain stable wind
Target Category	people
Time of Phase	release
Source Term	5,6,7
Type of Region	rural, urban

Parameter for CBR	
Threshold	Integer no more than 8, usually 7
Case	Integer no less than 1, usually 3

Possible Parameters for Input Scenarios

Parameter for CBR	
Season	spring, summer, autumn, winter
Weather	roughly equal dry/wet conditions, wet conditions
Target Category	inhabited area, food
Time for Implementation	short term, intermediate term, long term
Level of Contamination	high, low
Type of Region	rural, urban

Parameter for CBR	
Threshold	Integer no more than 8, usually 7
Case	Integer no less than 1, usually 3

Uncertainty

- Context uncertainty (Walker et al., 2003)

The context: the conditions, circumstances and even the stakeholder's values and interests that underlie the choice of the boundaries of the system, and the framing of the issues and formulation of the problems to be addressed within the confines of those boundaries.

- Scenario uncertainty (Walker et al., 2003)

The scenario: a plausible description of how the system and/or its driving forces may develop in the future. In nuclear emergency, it consists of accident phases, weather, season, the size of affected area, the population in the affected area, which are all the important factors to implement strategies to prevent or reduce the loss of lives and property.

- Others...

Possible Works

- The agent groups
- The recommended preference values to each agent group
- The criteria

- The protocol
- The negotiation strategies

- The definition of the action in score strategy model

Thank you very much for your attention

Questions?