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Supporting flexible regulation of crisis management by means of situated artificial institution

Key words: Situated artificial institutions, Normative system, Tangible interaction, Crisis management

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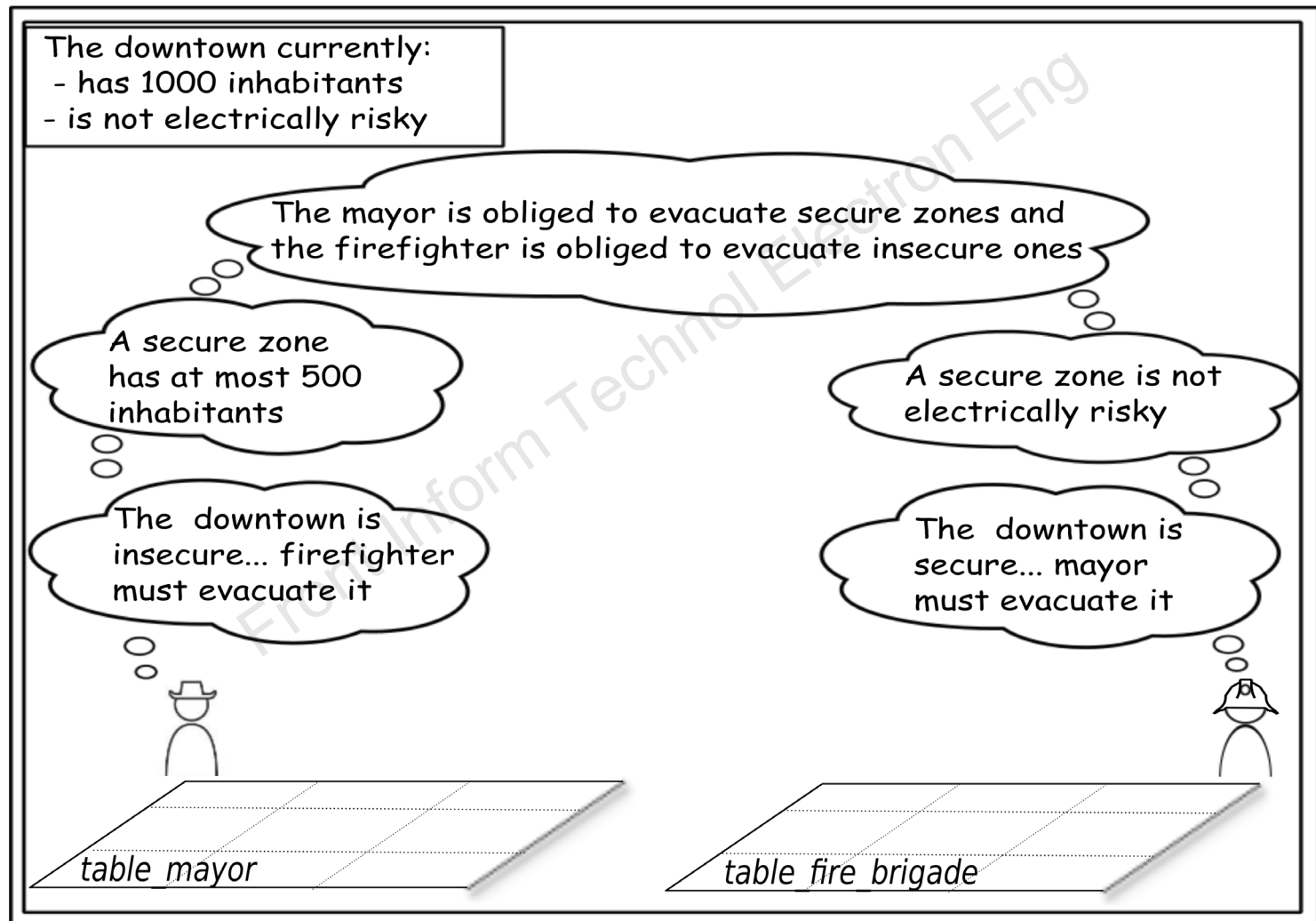
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Introduction

- Crisis management collaborative platform: actors and organizations (e.g., firefighters, police, citizens) interact through TangiSense tables to deal with disasters
- Conceived as a hybrid, interactive, normative multi-agent system: norms define the expected behaviour of the actors while tangible tables mediate their opportunistic interaction
- Challenges:
 - To have a common “institutional” interpretation of the environmental elements
 - To contextualize regulation on the tangible environment (extract notions of evacuations, secure zones, etc. from the tangible tables)

Example: Conflicts in the interpretation of the current state of the environment



Approach

Norms to define the expected actors' behavior:

1. `secure(Zone)`: obliged mayor evacuate(Zone).
2. `secure(Zone)`: prohibited firefighter evacuate(Zone).

Constitutive rules to link the normative concepts with the environment:

```
/*E.g., the institutional definition of secure zone*/  
security phase(Zone,preventive)  
    count-as secure(Zone)  
    while not(electrically risky(Zone)) &  
        ((nbInhabit(Zone,X) & X=500) |  
        (phase(Zone,preventive) is secure(Zone))) .
```

Conclusions

- **Situatedness:** Bridge the gap between the environmental and normative elements
- **Clear coordination:** Avoid interpretation discrepancies and norm inconsistencies
- **Flexibility:** Changes in the environment activate the appropriate norms. Modifications in the constitutive and normative level are independent