

ICAIL 2021 -18th International Conference on Artificial Intelligence and Law
RELATED Workshop - Relations in the Legal Domain

Towards an Ontology of Healthcare Compliance based on Just Culture Paradigm

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Introduction

1. The shifting of the paradigm of measuring and vindicating human failures in organizations: from retributive to restorative paradigm;
2. The representation of the current paradigm: new proposals to model the restorative culture - an ontological approach;
3. Ontology engineering: the building of ontologies based on foundational ontologies.

Retributive Paradigm

Reference:

<https://www.patientsafety.com/en/blog/human-error-retributive-culture-vs-just-culture>

- Focus on rules (right or wrong);
- Focus on individual (guilty or not guilty);
- Consequences of failures (punishment);
- Decision-maker to judge a failure (the top of the organizational hierarchy).



Assume the failure is human error



Analyze the event, searching for the *culprit*; stop the analysis when one is found

Restorative Paradigm

An example...



Reference:

<https://www.patientsafety.com/en/blog/human-error-retributive-culture-vs-just-culture>

- Focus on the victim;
- Focus on victim needs;
- The responsibility to help the victim;
- Consequences of the failure: how the organization can learn with the failure?

Swiss-cheese Model



- From the perspective of just culture, different flaws deserve different consequences:
- **Honest mistakes** deserve assistance and research on the triggers that led to the failure.
- **Risky behavior** - not previously authorized - requires mentoring, advice and warning.
- **Gross errors** and **malicious activities** require discipline and eventual notification to the regulatory bodies.

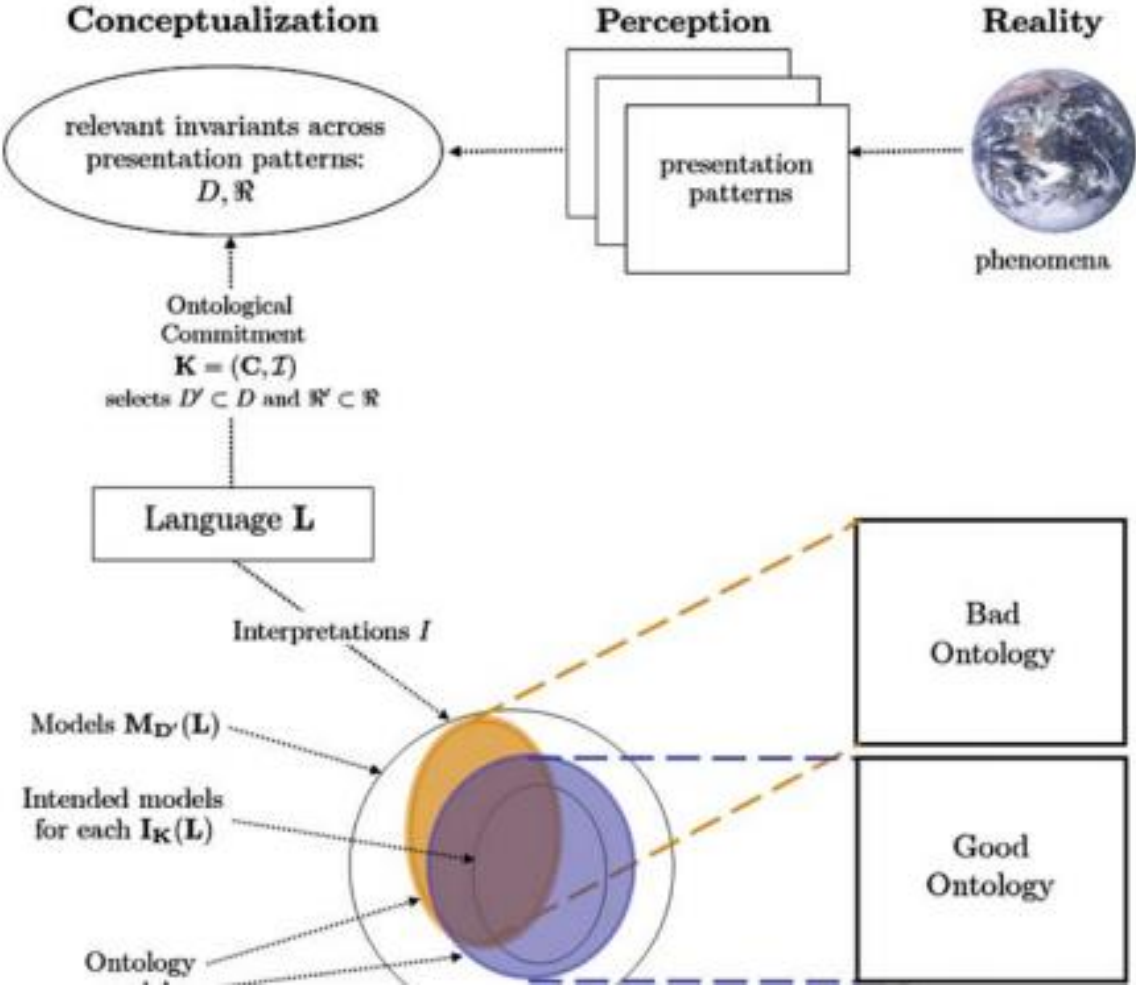
A just culture recognizes that there are honest mistakes, which are triggers of the very form of organization; it recognizes that competent professionals also fail.

Ontology-driven Conceptual Modeling

“We will handle all reported errors fairly, **unless** they involve gross negligence, intentional violations, or improper behavior. This still leaves people feeling uncertain, because ***there are no clear definitions of these concepts.***”

Reference: Just Culture: Theory and Practice (eBook). Available at: <https://www.patientsafety.com/en/resources/ebooks/just-culture?hsCtaTracking=acffc683-2c36-4db9-b8af-d273e97c28e6%7Cc2f5ad6b-e3f9-4dcc-9d3e-5819736b6e0d>

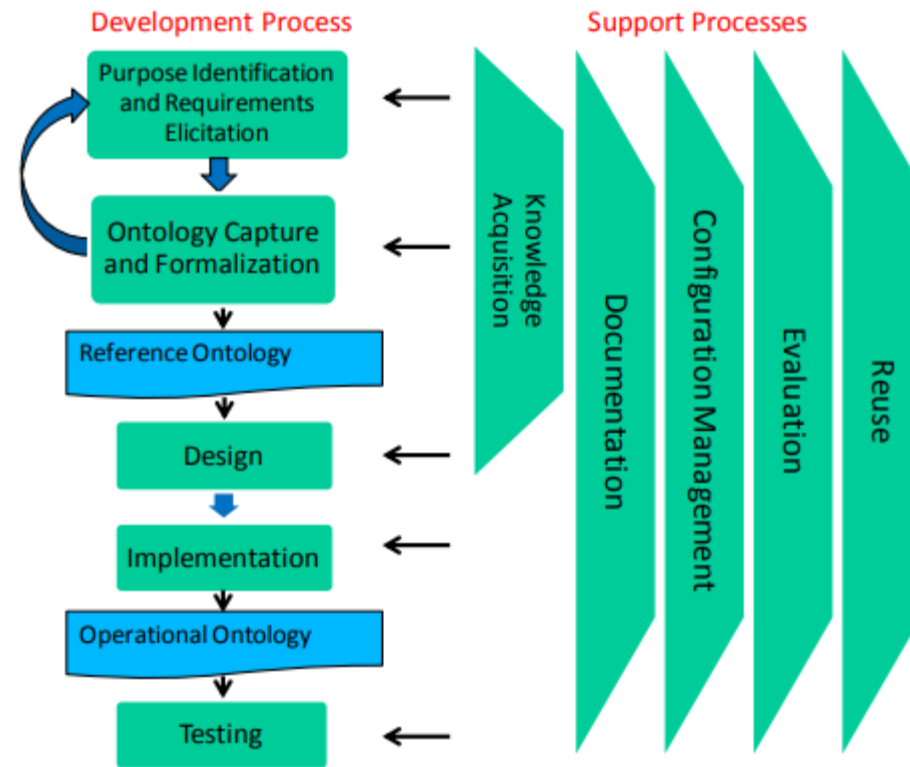
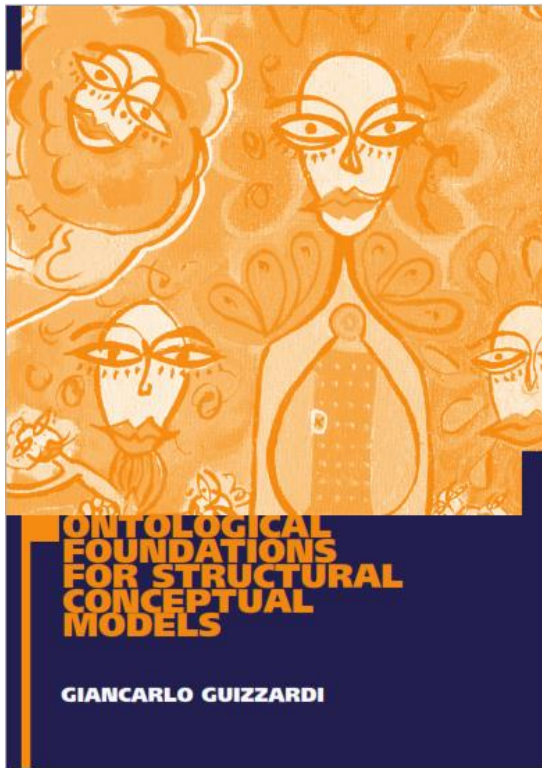
What Is an *Ontology*?



Reference: Guarino N, Oberle D, Staab S. What is an ontology?. In Handbook on ontologies 2009 (pp. 1-17). Springer, Berlin, Heidelberg.

Ontology of Healthcare Compliance

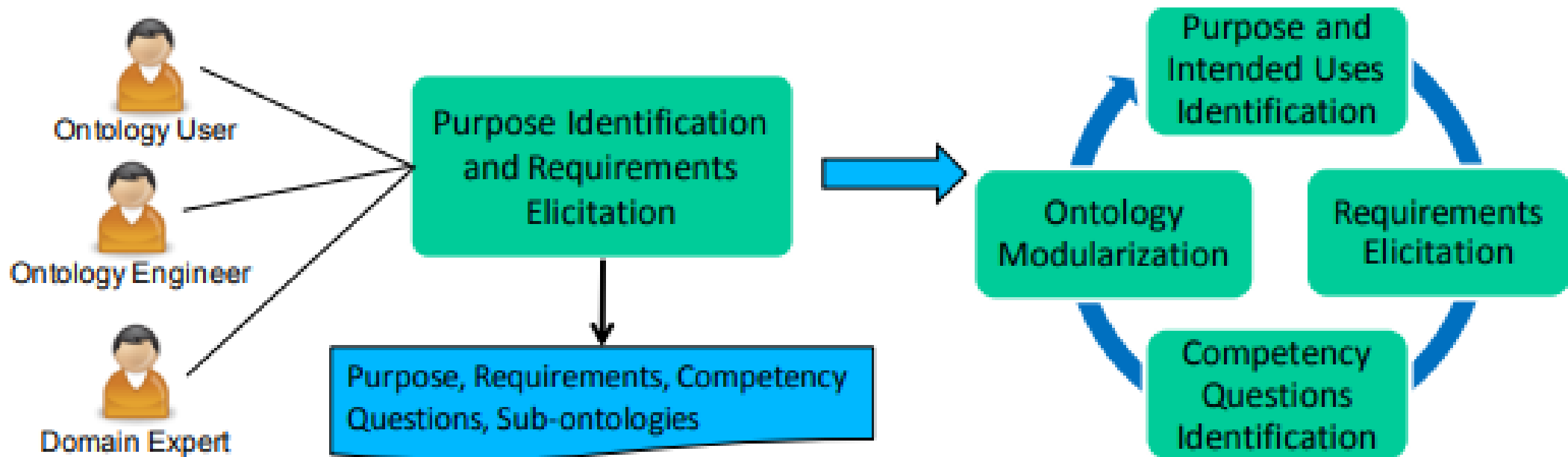
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Reference: de Almeida Falbo R. SABiO: Systematic Approach for Building Ontologies. In ONTO.COM/ODISE@ FOIS 2014 Sep.

Ontology of Healthcare Compliance

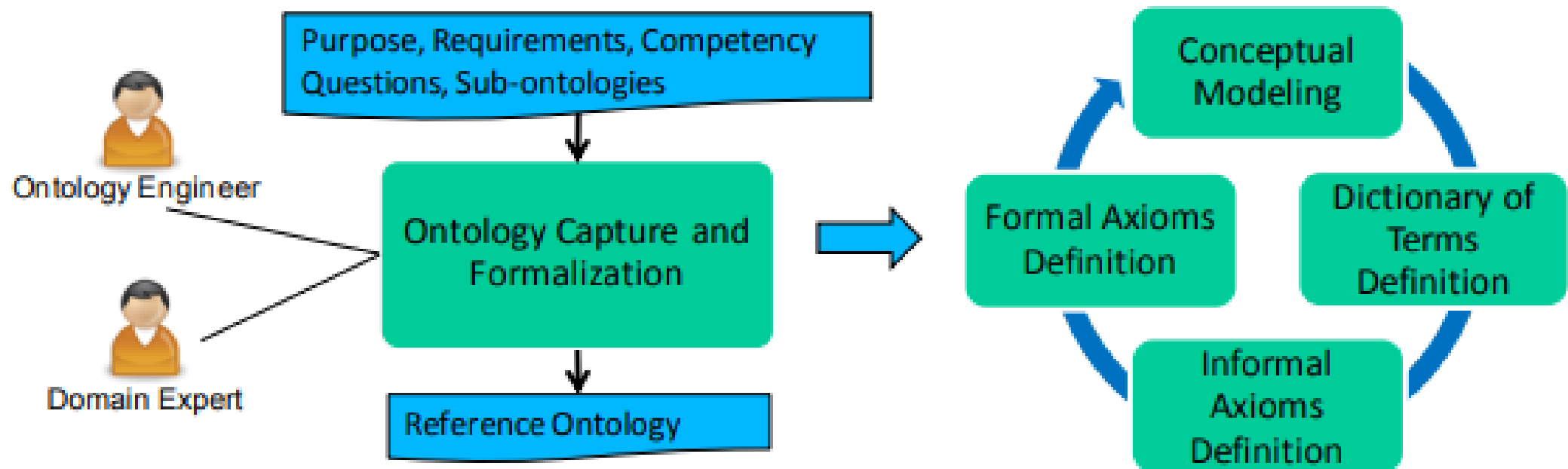
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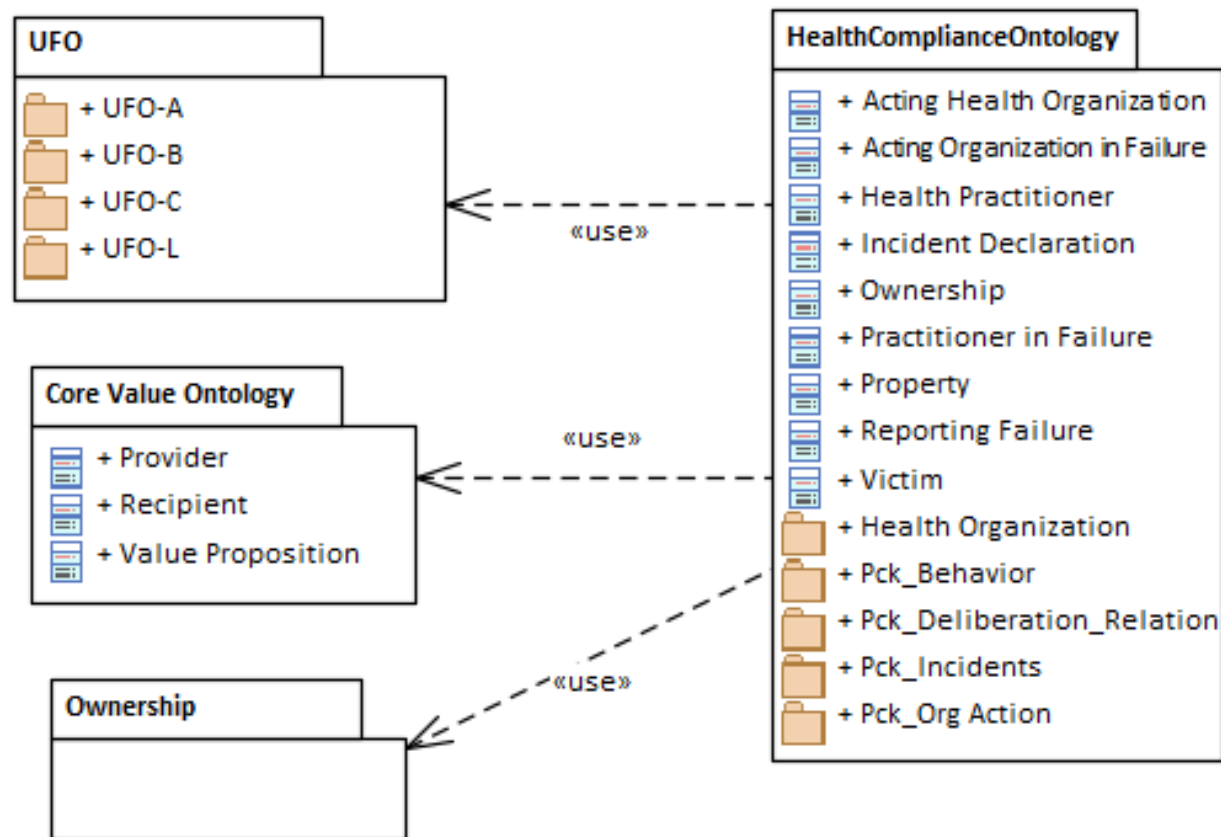
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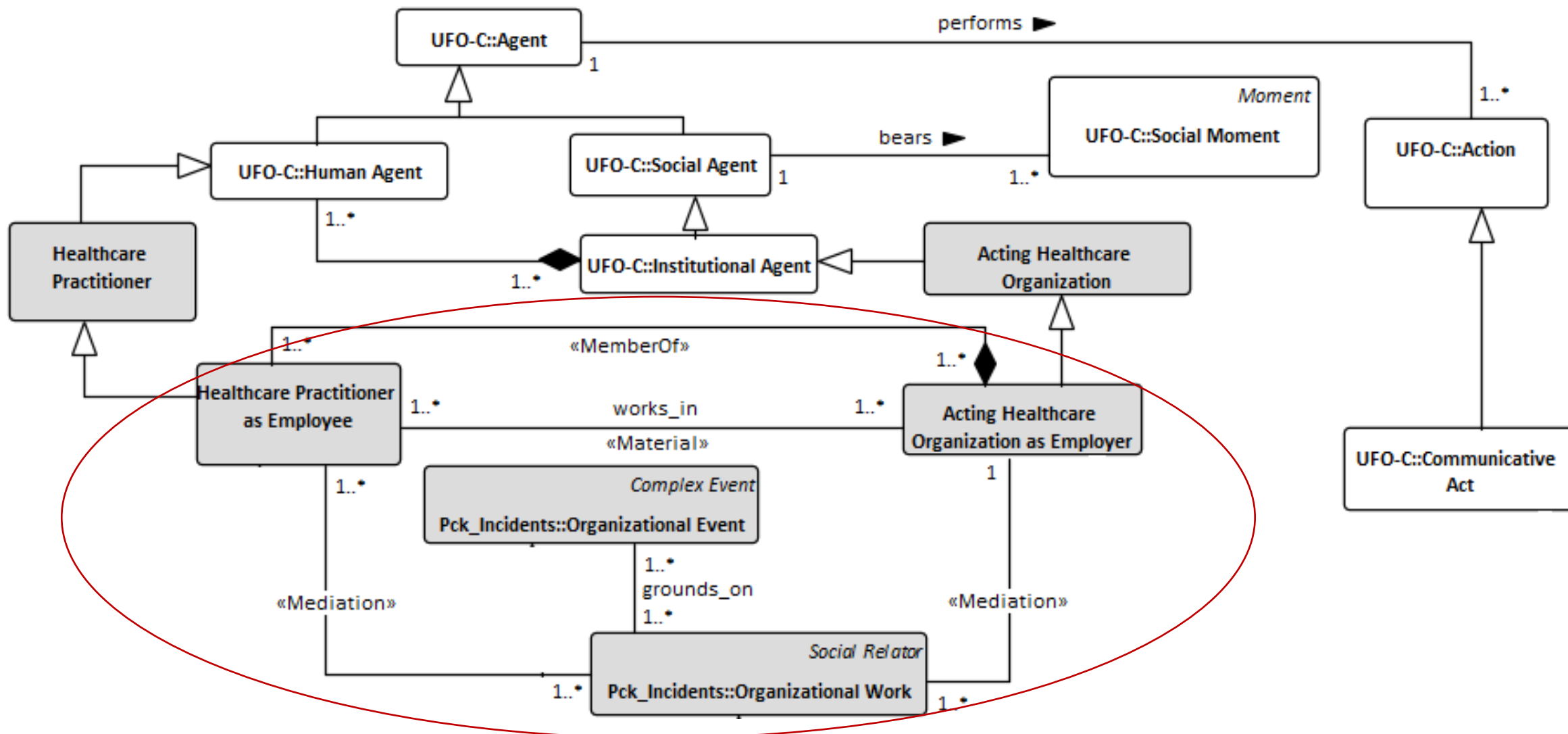


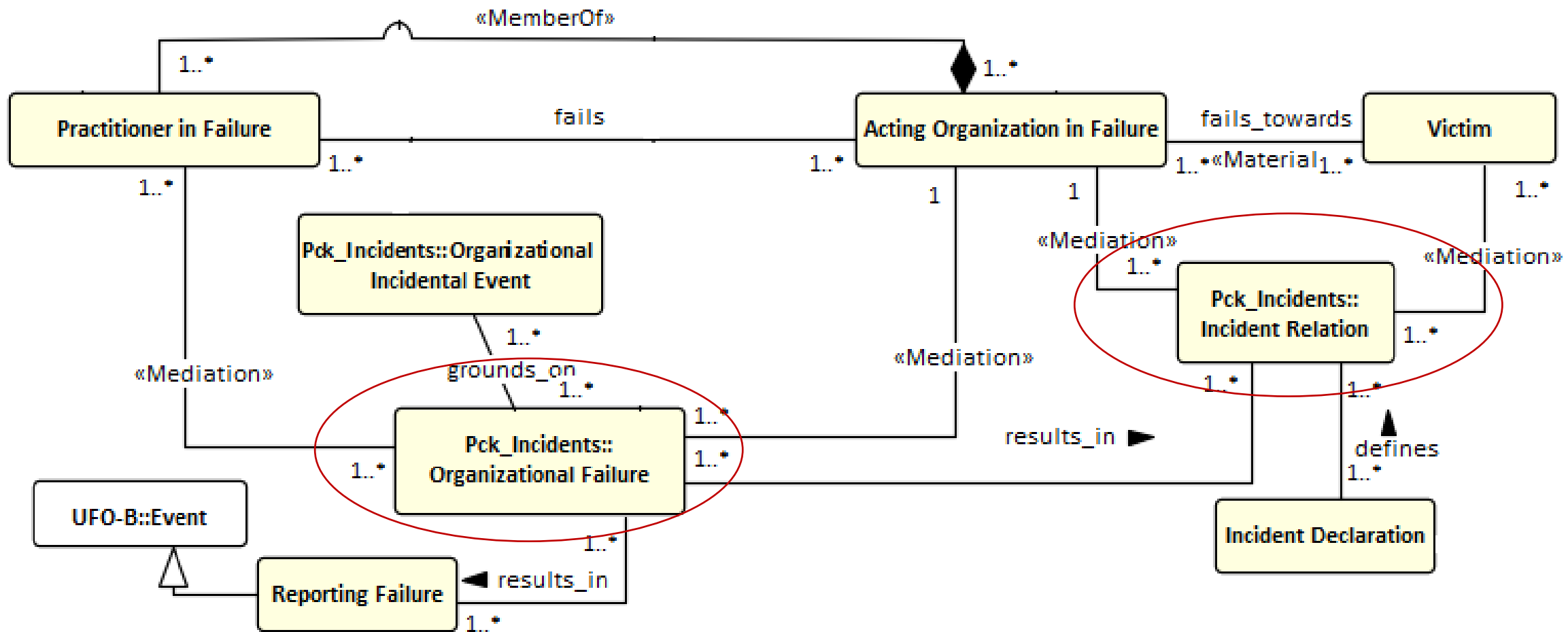
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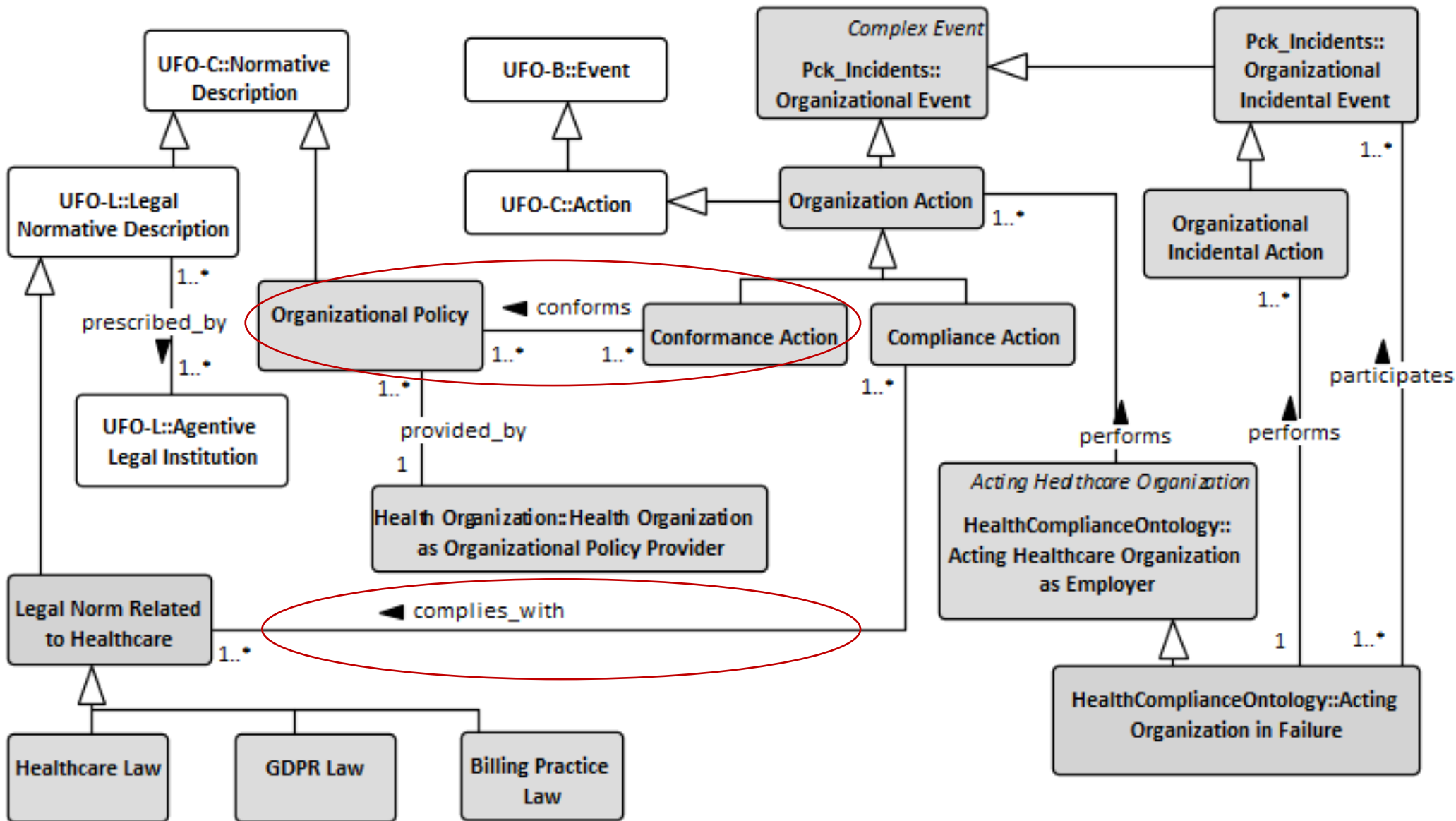
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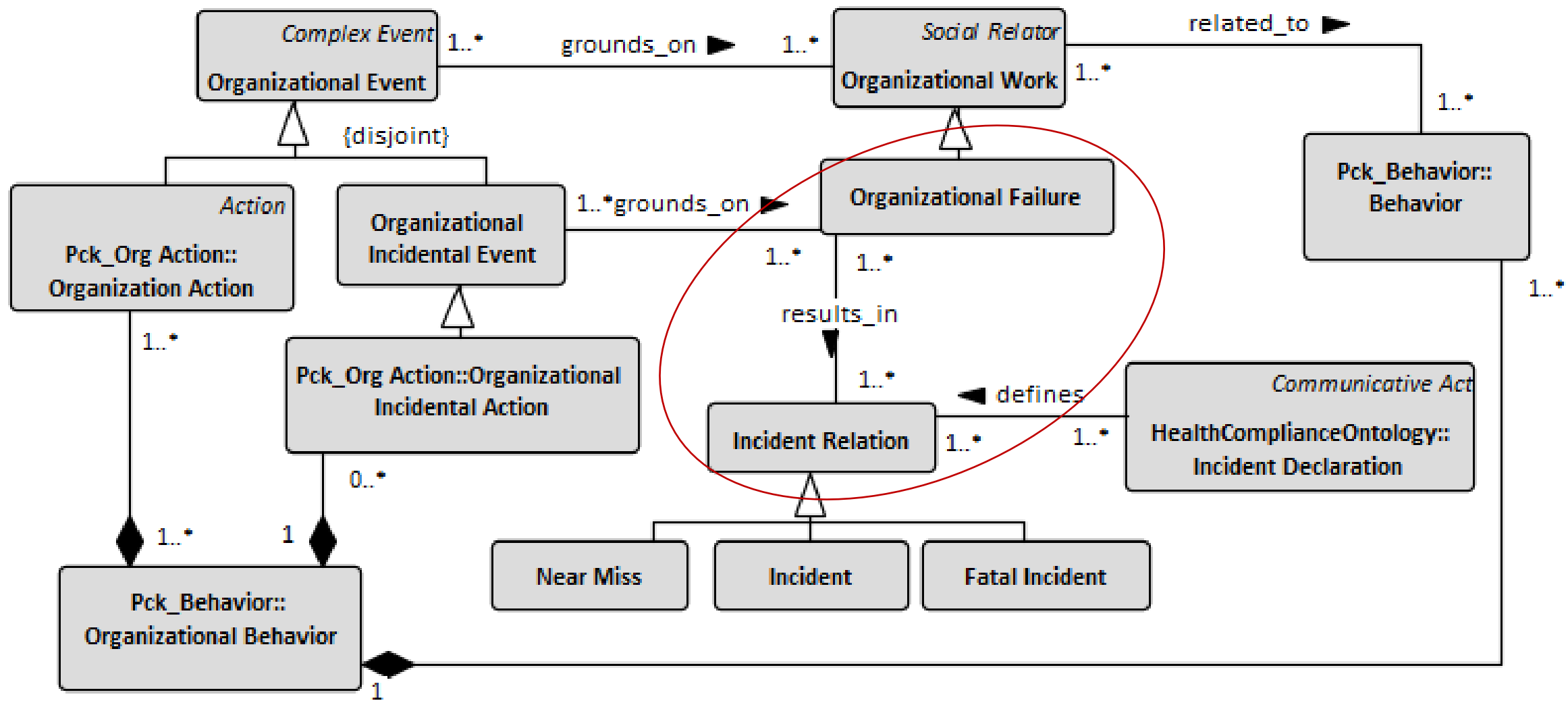
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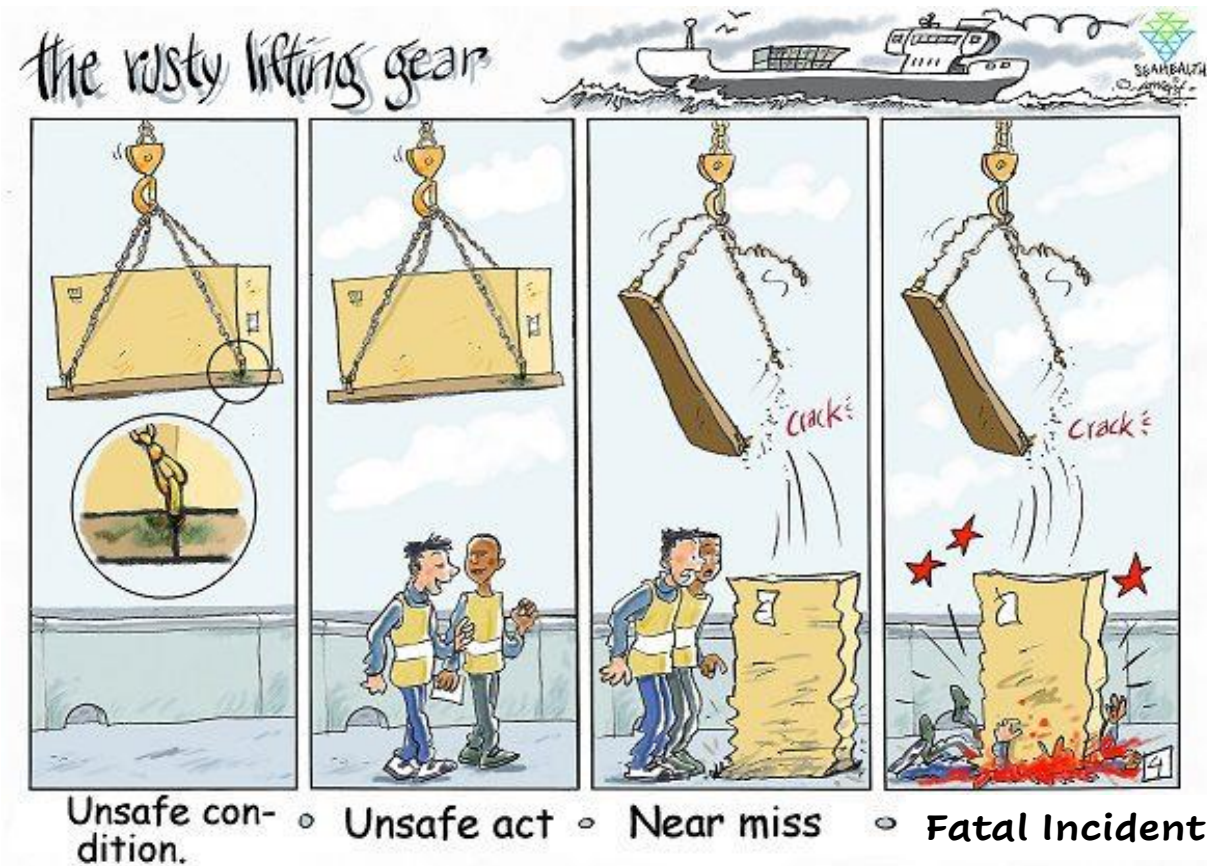






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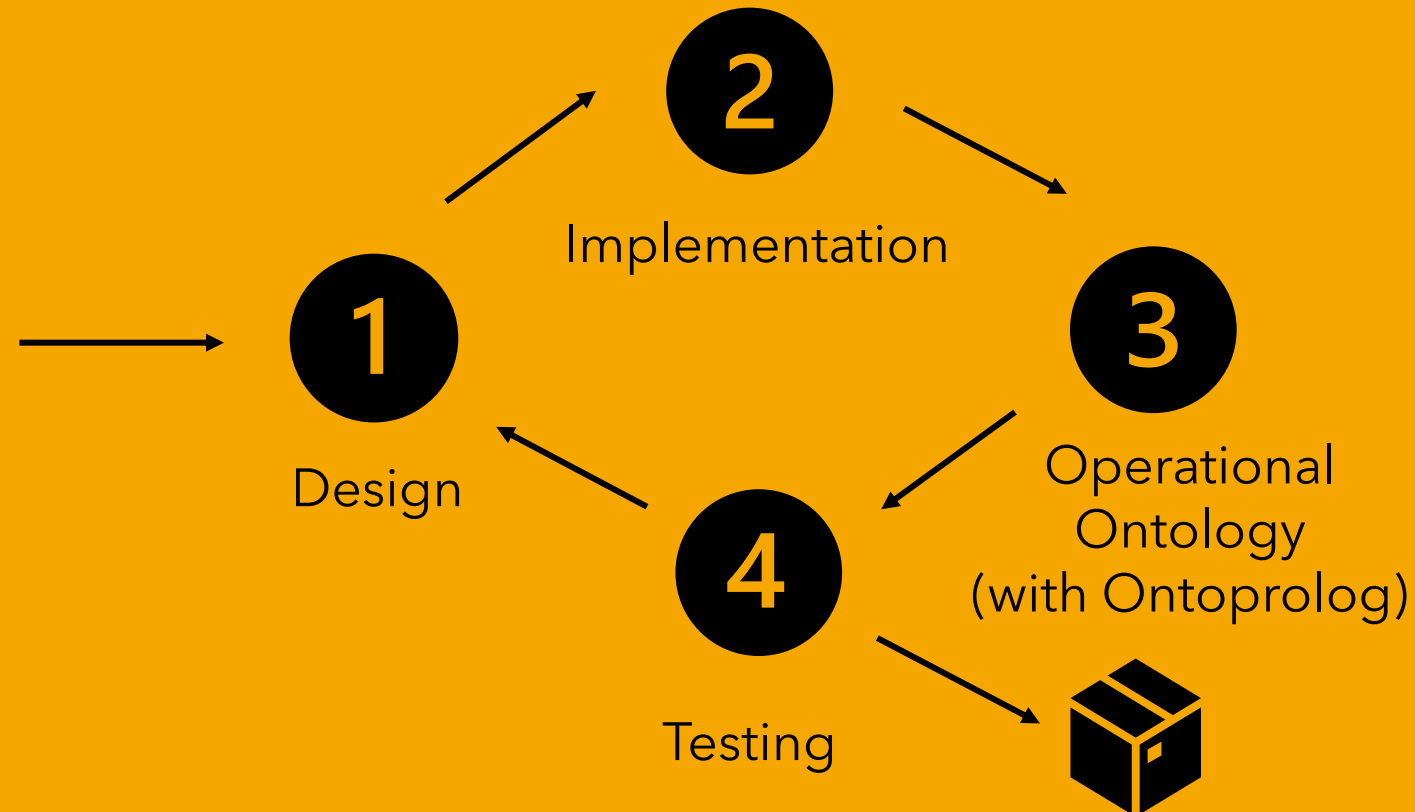
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“Near miss is an incident in which no property was damaged, and no personal injury was sustained, but where, given a slight shift in time or position, damage or injury easily could have occurred.”

Occupational Safety and Health Administration (OSHA)

Next Steps:



Next Steps

- ❑ Verification of the models with Alloy (first iteration);
- ❑ Modeling other categories and relations of the Just culture (second iteration);
- ❑ Learning on ontologies of value, organization, behavior, and action (second iteration).

Open Issues

1. How to balance safety and accountability in the just culture paradigm?
2. Which ontologies can we reuse to keep the ontological consistency?
3. Regarding events, how integrate ontologies with process modeling (e.g., BPMN)?

what's the
opposite of
all-or-nothing?



willing, flexible, yielding



 Thesaurus.plus



Thank you!



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<https://www.inf.unibz.it/krdb/>