

# Toward OWL Restriction

## Reconciliation in Merging Knowledge



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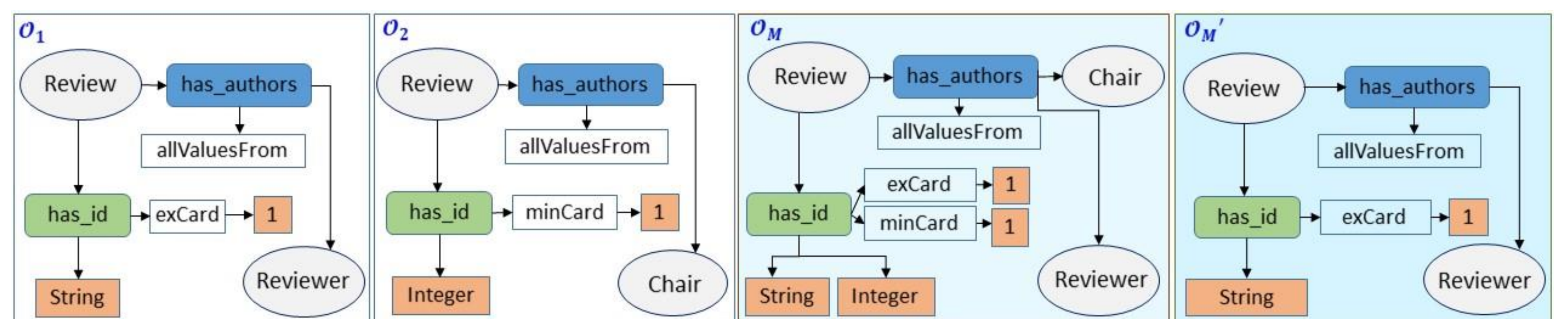
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### INTRODUCTION

- ▶ Different modeling of source ontologies
- ▶ Can lead to **conflicts** in merging process [1,2]
- ▶ One Type Conflicts
- ▶ OWL Restriction Conflicts
  - ▶ Cardinality conflicts
  - ▶ Value conflicts

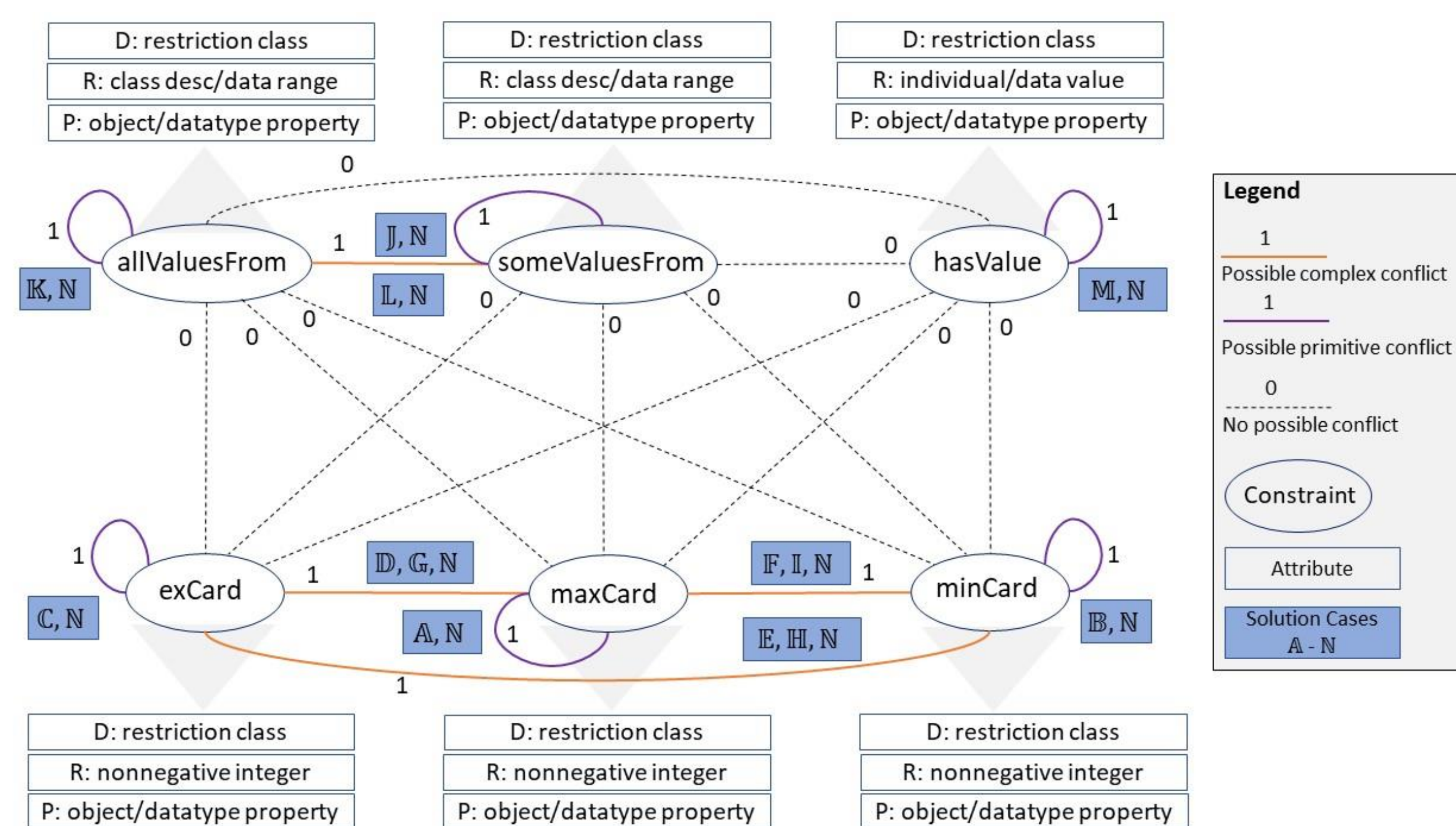
### EXAMPLE OF CONFLICTS IN MERGED ONTOLOGY

- ▶  $\mathcal{O}_1$  and  $\mathcal{O}_2$  are modeled differently
- ▶ Merging  $\mathcal{O}_1$  and  $\mathcal{O}_2$  leads to conflicts in  $\mathcal{O}_M$ 
  - ▶ In example: one type conflict, cardinality conflict
- ▶ In  $\mathcal{O}_M'$  the conflicts are resolved



### DETECTION AND RESOLUTION

- ▶ **One type conflicts:**
  - ▶ Subsumption hierarchy
- ▶ **OWL Restriction conflicts:**
  - ▶ Attribute Graph
  - ▶ Cardinality: upper and lower bound
  - ▶ Value: semantic relatedness



### REFERENCES

[1] R. A. Pottinger and P. A. Bernstein, "Merging models based on given correspondences" in VLDB, pp. 862-873, 2003.  
 [2] S. Babalou and B. König-Ries, "GMRs: Reconciliation of generic merge requirements in ontology integration" In SEMANTICS Poster and Demo., 2019.