

## **Interoperation and Interchange of Rulebases**

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Rulebases (facts and rules), even of the same expressiveness class, are usually heterogeneous. They are often serialized by using different syntax and have various semantics. We propose a framework for both the interoperation and interchange of rulebases. Using our framework, existing rulebases can be reused. While interoperation supports query transformation, distributed querying, and answer composition for distributed (and often autonomous) rulebases, interchange transforms heterogeneous rulebases into a canonical form, thus supporting uniform querying. In the interchange approach, transformation can be done declaratively by using transformation rules, which themselves are interchangeable. This transformation can be total or partial, in that information may be preserved or lost through the transformation. In the interoperation approach, an input query is decomposed into subqueries for execution in distributed rulebases. Answers from those local rulebases are then composed into a global one and returned to users. By following the interoperation approach, rulebases can be kept unchanged and executed in an environment best suited for a specific (sub)task but queries have to be processed (repeatedly). By following the interchange approach, entire heterogeneous rulebases have to be transported and transformed into a homogeneous form (once), but this facilitates uniform querying and optimization.