How Semantic Web Technologies are Enabling the Bench to Bedside Vision
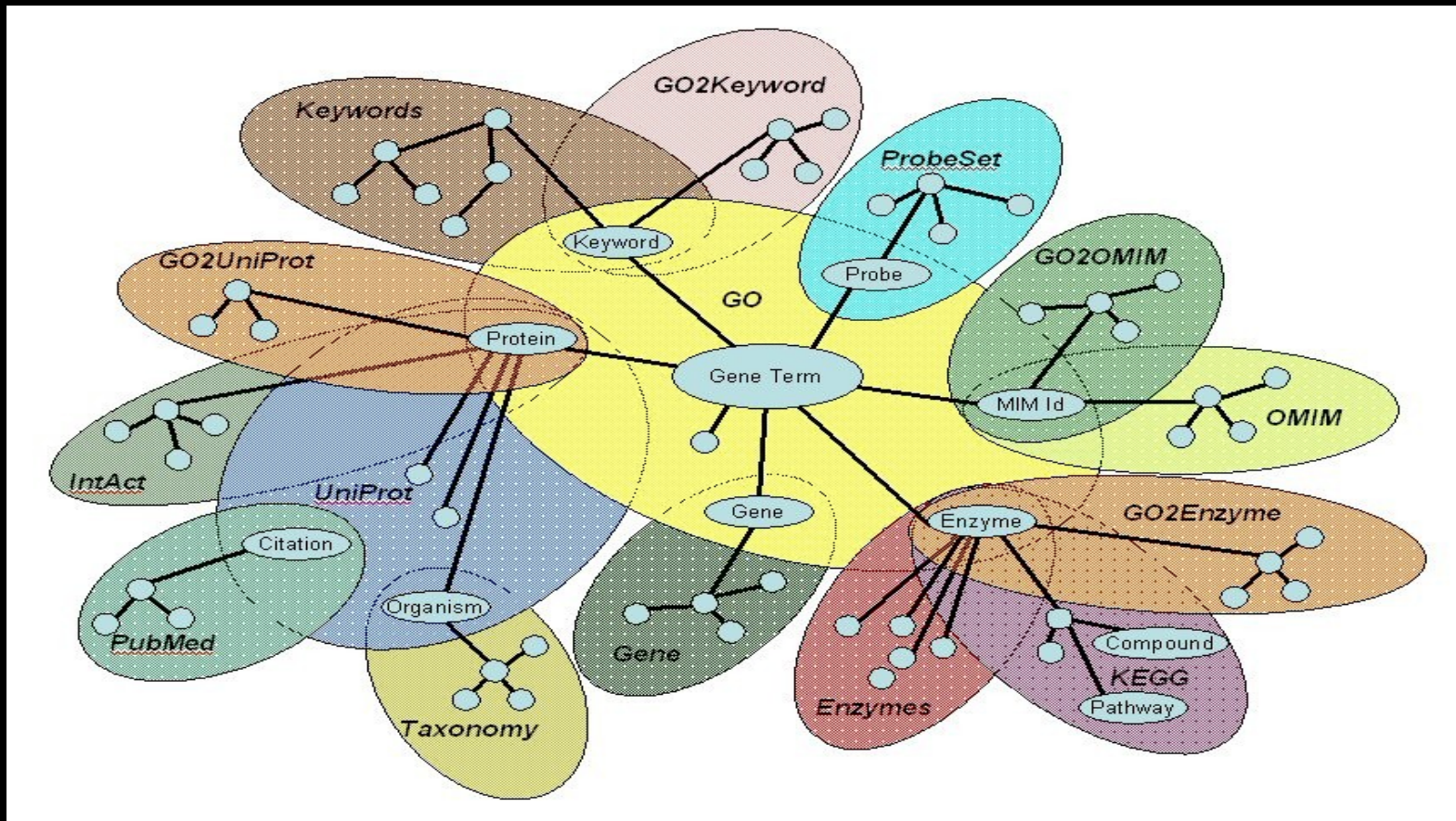
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Achieving the Vision

Source: Stephens et al. J Web Semantics 2006

Drug Safety Determination

IF compound has >90% structural similarity to a failed compound
  AND compound binds to target with more than 5 SNPs
  AND therapeutic index is low
  AND histology indicated >5% incidence of liver necrosis in preclinical
  AND ALT reading is >2x above normal in Phase I
  AND therapeutic dose is >30 mg in Phase II
  AND >80% of patients with Cytochrome P450 2DE report skin rash in Phase III
THEN consider immediately stopping trials for those patients

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A Hybrid World

- Relational, XML, and RDF data
- Triple stores and on the fly mappings to RDF

Summary

- Semantic Web Technologies help to integrate diverse data sets

- Beneficial for drug safety and personalized medicine

- Triple stores and on-the-fly mappings

- Many organizations are deploying Semantic Web solutions in the life sciences