

### 7.3.2 Integrated Vocabularies

Sometimes attempts have been made to merge a number of independently developed vocabularies into a single large resource. The prime example of this is the Unified Medical Language System,<sup>6</sup> which integrates 100 biomedical vocabularies and classifications. The UMLS metathesaurus alone contains 750,000 concepts, with over 10 million links between them. Not surprisingly, the semantics of such a resource that integrates many independently developed vocabularies is rather low, but nevertheless it has turned out to be very useful in many applications, at least as a starting point.

### 7.3.3 Upper-Level Ontologies

Whereas the preceding ontologies are all highly domain-specific, some attempts have been made to define very generally applicable ontologies (sometimes known as upper-level ontologies). The two prime examples are Cyc,<sup>7</sup> with 60,000 assertions on 6,000 concepts, and the Standard Upperlevel Ontology (SUO).<sup>8</sup>

### 7.3.4 Topic Hierarchies

Other “ontologies” hardly deserve this name in a strict sense: they are simply sets of terms, loosely organized in a specialization hierarchy. This hierarchy is typically not a strict taxonomy but rather mixes different specialization relations, such as *is-a*, *part-of*, or *contained-in*. Nevertheless, such resources are often very useful as a starting point. A large example is the Open Directory hierarchy,<sup>9</sup> which contains more than 400,000 hierarchically organized categories and is available in RDF format.

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<sup>6</sup>[umlsinfo.nlm.nih.gov/](http://umlsinfo.nlm.nih.gov/).

<sup>7</sup>[www.opencyc.org/](http://www.opencyc.org/).

<sup>8</sup>[suo.ieee.org/](http://suo.ieee.org/).

<sup>9</sup>[dmoz.org/](http://dmoz.org/).