INTRODUCTION

Within the installation research project Dynamics of Specialized Knowledge Categories (DIKA, ihj.hr/dika), financed by the Croatian Science Foundation, a lexical database is being created in which terms from the field of aviation are defined in semantic frames with relevant frame elements and conceptual relations. The AirFrame database is being designed following the methodology of description of semantic frames, frame elements and lexical elements in the lexical database FrameNet. Data categories and their relations have been defined by taking into account the specific aspects of the domain of aviation.

The database is going to be organized around several key semantic frames in aviation: Flight, Airplane, Airspace, Airport, Air traffic and Air traffic control. Each frame consists of frame definitions, core and non-core frame elements (FEs) or semantic roles, frame to frame relations and other semantic information.

METODOLOGY

In order to make the description of frames as uniform as possible, generic semantic frames or frame templates have been created, using top-level categories or upper level ontologies as the starting point. The following steps have been taken:

1. compare and analyze several upper level ontologies
2. define the top-level categories most relevant for aviation
3. create the classification of top-level categories used in the description of aviation semantic frames
4. define the key semantic frames in aviation
5. define the generic semantic frames used for the description of all frames in the field of aviation

TOP-LEVEL CATEGORIES

These upper level ontologies – WordNet, SUMO ontology and GOLD ontology – have been analyzed in order to create a classification of basic top-level categories relevant for aviation. The category of Entity is the basic category in the organization of all knowledge, and it can be divided into two broad groups: Physical_entity and Abstract_entity.

The category of Abstract_entity is a complex category that is in WordNet divided into 8 hyponyms, but only the following are relevant for aviation: Psychological_feature, Attribute, Relation, Communication and Amount. Some of these categories have a large number of hyponyms, such as relation and attribute. However, they appear to be of different complexity and relevance, therefore only the most important ones are chosen, e.g. Spatial_relations, Temporal_relations, Causality, Possession, etc.

The definition of specialized knowledge starts from defining universal categories and finding your way to domain specific types of knowledge categories, taking into account the influence of culture which is manifested in mid-level and domain specific categories. The diagram shows the immediate or inherited relations between the categories of e.g. Vehicle and Airplane, or Location and Airplane. The dotted lines show other relations, e.g. uses between Airplane and Airspace or is causative of between Pilot and Airplane.

REFERENCES


Generic semantic frames and frame elements in AirFrame

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