# Logic-Based Representation

## About logic-based representation

**Natural language** is the most **expressive** knowledge representation formalism we have. However, it is hard to model and reasoning becomes very complex. The other **problems with natural language** are **ambiguity** of natural language, **understanding** of syntax and semantics, and **little uniformity** in the structure of sentences.

**Logic** was developed as an attempt to overcome the problems with natural language by creating a **formal language** based on mathematical principles. Logic-based representation should be **expressive, unambiguous, context independent, and compositional**. Logic-based representation requires the following concepts to be defined [1]:

- **Vocabulary**: a collection of symbols represented as chars, words, icons, or even sounds.
- **Syntax**: a logic must have grammar rules that determine how symbols combine to form well-formed sentences.
- **Semantics**: it is necessary to make meaningful statements. It comprises a theory of reference that determines how the constants and variables relate to things in the universe of discourse. Moreover, it also includes a theory of truth to distinguish true statements from false.
- **Inference**: carried out by rules that determine how patterns are generated from others. Appropriate inference rules allow reasoning mechanisms automation and, thus, the generation of new knowledge from previous one.

## Technologies

first order predicate logic

## Tools

### Prolog

### Other tools

## Bibliography

1. [Roberto García. A Semantic Web Approach to Digital Rights Management](#). Retreived April 28, 2012.

# Read more

1. Franz Baader. Logic-based Knowledge Representation