

EXAMPLE IN DESIGN AND REASONING WITH FRAMES

The following description is given: "Animals are organisms that have skin and move. Elephants are large animals that have a trunk, a short tail and are usually gray in color. Mice are small animals that have long tails and are usually gray in color. Elephants are afraid of mice. Tambo and Clyde are elephants. But Clyde is a white elephant. Tambo gets used to eating sweets, while Clyde gets used to playing with a (specific) ball. Jerry is a brown mouse. »

A1. Represent the above knowledge with frames.

A2. Explain how the answer to the question "What is the color of Tambo?" based on the N and Z algorithms.

A3. Explain how the answer to the question "What is the color of Clyde?" based on the N and Z algorithms.

ANSWER

A1. The answer to A1 is the diagram on the next page.

A2. Based on the hierarchy of the diagram on the next page we have:

Algorithm N: It first looks in the 'Tambo' frame if there is a 'value' facet in the 'Color' slot/property. Since it doesn't exist, it goes up to the 'Elephant' superframe, where it also doesn't find a 'value' facet for 'Color'. It reaches the root 'Organization' and doesn't find it. It returns to the 'Tambo' frame and looks for an 'if-needed' facet in the 'Color' property. It doesn't find it there nor in all the way to the root, so it goes back to the 'Tambo' frame and looks for a 'reasonable-assumption' (default) facet in the 'Color' property. It doesn't find it, it goes up to 'Elephant' and finds 'gray' as a value in the 'default' facet which it returns.

Algorithm Z: It first looks in the 'Tambo' frame if there is a 'value' facet in the 'Color' slot/property. Because it doesn't exist, it looks for an 'if-needed' facet in the same frame, and since it doesn't exist it looks for a 'reasonable-assumption' (default) facet and still doesn't find it, so it goes up to the 'Elephant' superframe. It looks in sequence for 'value', 'if-needed' and 'default' facets, and finds only the last one and returns its value, which is 'grey'.

A3. Με βάση την ιεραρχία του διαγράμματος της επόμενης σελίδας έχουμε:

Algorithms N, Z: They first look in the 'Clyde' frame for a 'value' facet in the 'Color' slot/property. Because it exists, and it is 'white', they return it.

