mu

The *mu* command applies a proof rule to a goal involving a definite description (μ) expression.

$$\frac{\exists_1 \, s \bullet true \vdash ? \; p_1(\exists \, s \bullet p_2[e/(\mu \, s \bullet e)])}{\exists_1 \, s \bullet true \vdash ? \; p_1(p_2(\mu \, s \bullet e))}$$

The unique existential antecedent must be selected first and crossed. The predicate p_2, which contains the definite description expression but need not be the entire consequent p_1, must then be selected and crossed. The definite description expression itself must then be selected and inspected. The proof rule is not applicable if there are any names in the schema s that refer to declarations that are in p_1 but not in p_2.

The *mu* command is similarly applicable if the predicate p_1 is an antecedent.

$$\frac{| \; \exists_1 \, s \bullet true, p_1(\exists \, s \bullet p_2[e/(\mu \, s \bullet e)]) \vdash ?}{| \; \exists_1 \, s \bullet true, p_1(p_2(\mu \, s \bullet e)) \vdash ?}$$

The unique existential is necessary to ensure that the definite description expression is defined. It will probably have to be *cut apart* before this rule can be used. A variant of this rule that generates the unique existential automatically as a side-condition is provided by the *mu tac* command.

1. Tactic example

"*mu*" p_3 p_2 e_2

This example applies the *mu* command to unique existential antecedent p_3, predicate p_2, and mu expression e_2.

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