New_commands

A restricted proof language

The grammar (a bit simplified)

nc
- ncs
- BY ... (WITH ...) ncs
- PROVE FORM nc MYIN nc
- BYABSURD HYPNAME nc
- SET EQUAL nc
- LABEL HYPNAME

ncs
- DEDUCE FORM nc
- TRIVIAL
- meta

meta
- LET CST meta
- SEARCH VAR meta
- ASSUME FORM meta
- SHOW FORM nc SHOWN
- meta MYTHEN meta
- PBEGIN meta PEND
- PROOF nc ENDPROOF

The interpretation

BY ... (WITH ...) : given as hints to the prover
PROVE FORM : the (valid) cut rule
DEDUCE FORM : FORM is proved
TRIVIAL : the current goal is proved
LET CST : a new constant added
SEARCH VAR : a new variable added
SHOW FORM : FORM implies the current goal
THEN : a new premiss for the rule
PBEGIN (...) PEND : parenthesis
PROOF (...) ENDPROOF : proof of the current premiss

The justification

- For each rule a formula is computed that justifies it
  - Share variables as much as possible
  - If no goal has changed, don't use the goal formula in the formula
- Formulas given with BY and WITH if not hypothesis
  - Are first proved
  - Are used as hints for the prover
  - Are forgotten in the next goals