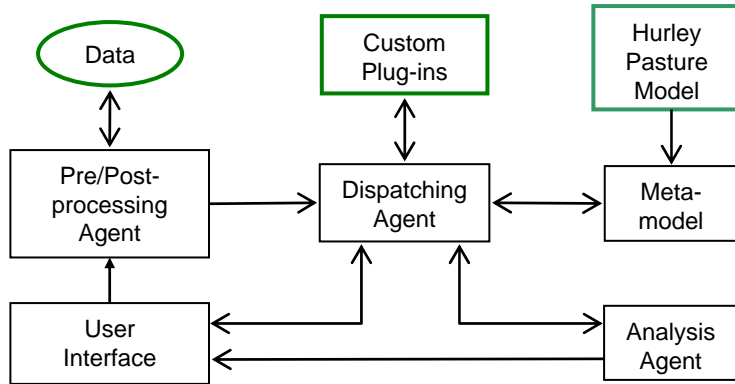# Agent-based Metamodeling
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THESIS DESCRIPTION

In the modeling systems where data is distributed and multiple components collaborate, a generic framework is necessary to simplify deployment of new models. The frame work is rule-based and also includes user interfaces. The Hurley Pasture model is used as a case study.

OBJECTIVE/APPROACH

Objective:

- Make the model flexible: run with distributed heterogeneous data
- Transform the data into the required formats
- History analysis: compare all the runs of the model at different times and provide a feedback for the user
- Sensitivity analysis: advise what the input should be to get the desired output

Approach:

- Create framework-based agents:
  - ✓ to retrieve the distributed data
  - ✓ to compare the different runs of the model, and
  - ✓ to analyze input and output data for history and sensitivity analysis
- Develop rule based meta model
- Develop a meta model driven friendly user interface

SCHEDULE

Key development milestones for 2004:

Develop rules for the meta model	10, June 2004
Proposal Presentation	15, June 2004
Reformat the data	20, June 2004
Develop agent to retrieve the distributed data	05, July 2004
Compare the model runs	20, July 2004
Develop learning agents for the sensitivity analysis	20, August 2004
Develop the user interface	01, Sept 2004
Case Study with Demo	10, Sept 2004
Thesis Document	30, Oct 2004
Thesis Defense	Nov 1st week

MISCELLANEOUS SUPPORTING DATA

Benefits:

1. Enhancing a family of agent-based models by providing meta modeling framework.

2. Rules in the meta model are independent of the platform and the software or hardware used.

3. Feeding data into the model from multiple distributes sources.

4. Enhancing the custom model by providing pluggable analysis logic.

5. Enhancing the custom model by providing pluggable preprocessing logic.

6. Friendly user interfaces with generic meta model-driven features.