



Rule Server and Manager

The core machinery underlying the Intelligence Factory is the Rule Server and its support mechanisms (Figure 1). The Rule Server contains the facilities that actually execute the rules in a knowledge base (a Policy). The Rule Server itself contains the Agenda manager, the Inference Engines, and the Data Management connections (bi-directional connections to Variables and the Blackboard.) A variable contains the connections to the Universal Data Adapter. The Blackboard Service provides shared connectivity to the client software (as well as to multiple knowledge bases.) The Anterus Model Designer is a point and click environment for creating, maintaining, and deploying models. The Knowledge Base Explorer provides a visual way of executing and testing knowledge bases.

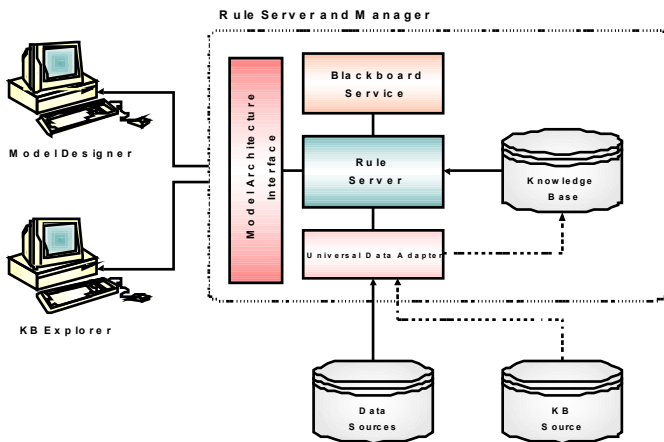


Figure 1. The Rule Server and Manager

The rule server accesses data through a series of Universal Data Adapters, thus cleanly separating business and technical intelligence from the client's application framework (Figure 2). This provides a robust and effective mechanism for dynamically accessing both static and dynamic (generated) knowledge bases. Multiple knowledge bases (called policies) can be executed and connected through the rule language, the blackboard server, and the messaging system. Several applications (either concurrent or serial) can share data through the backboard facility.

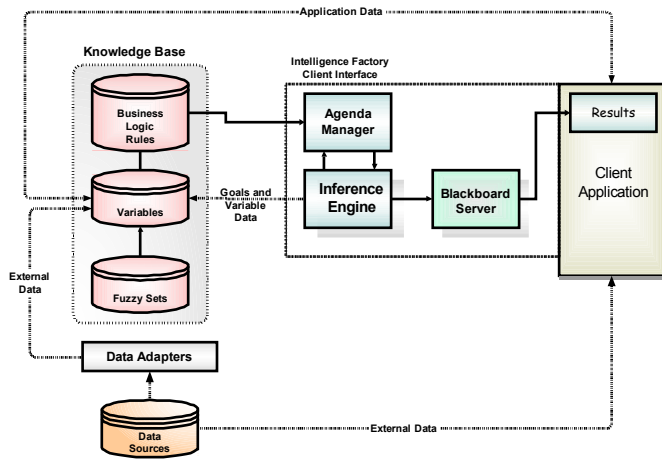


Figure 2. Rule Server Access



Features:

Data Management

Separation of Reasoning from Data

Structured Variables

Numeric, Strings, Booleans, Arbitrary Binary

Objects

Scalars, vectors, lists, tables

Multi-dimensional and time series subscripts

Explicit lead and lag specifications

Sampling rates

History and forecasted data

Evidence support for data points

Reasoning

Multiple Inference Engines

Backward Chaining

Forward Chaining

Mixed Hybrid (Impact Analysis)

Fuzzy (parallel) Reasoning

Intelligent Agenda Management

Priority

Probabilistic least cost ranking

Nearest neighbor ranking

Tight coupling with strategic blackboard facilities

RETE mapping for high speed rule execution

Semantic Network meta-knowledge management

Is-Equivalent-To

Is-A-Kind-Of super and subsets

Contains, Omits, Has

Rules

Complex, nested, block-structured *if-then-else* rules

Fuzzy, crisp, and mixed hybrid rule language

Conditional and unconditional rules

Built-in string, numeric, Boolean functions

Pattern matching

Time series

Mathematics

Statistical

Financial

Strings

Fuzzy memberships

Rate of change and differences

Rule contribution weights

Opportunistic Forward Firing

Exposed Variable Management

Extensive and multiple Consequent actions

Set variable value(s)

Select and fire other rules

Open and run another knowledge base

(policy)

Explicitly Resolve variable's value via

backward chaining

Interrupt, stop, or restart agenda

Send or receive messages

Run a method

Execute external procedure

Communicate with global blackboard

Dispatch, Interrogate, Re-direct, or Stop an

Agent

Extensive explanatory facility