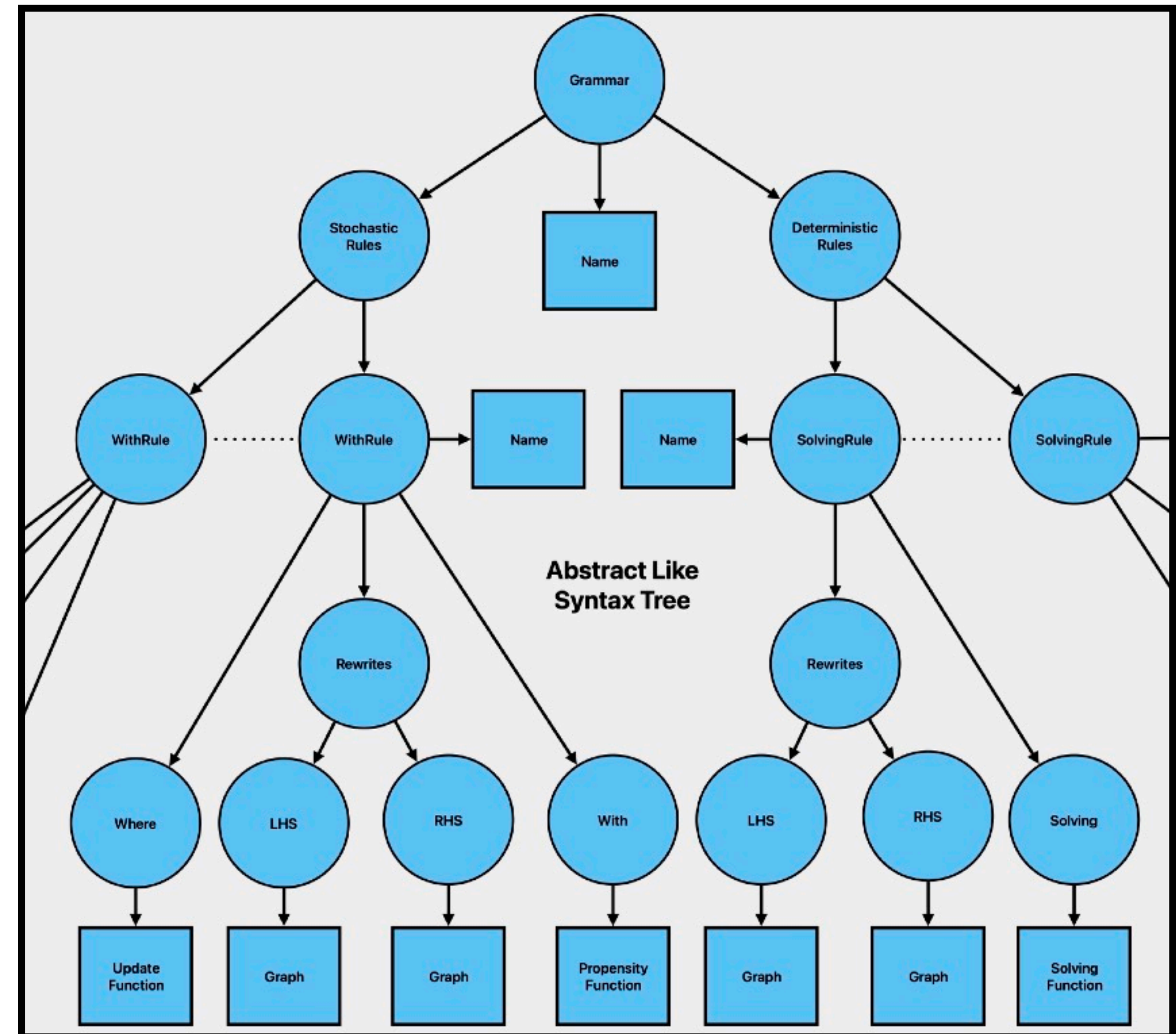


Grammar Analysis

Abstract Syntax Tree

- All grammars have stochastic and deterministic rules.
- Stochastic rules have:
 - Left-hand side (LHS) and right-hand side (RHS) graphs used in rewriting.
 - **With** clause for the propensity.
 - **Where** for sampling and updating the RHS output parameters.
- Deterministic rules have:
 - A rewrite as well, but that is semantically encoded in the **solving** clause.



A section of an abstract syntax tree (AST) for a DGG.

Developing a DGG

Recommended Steps

- There are six recommended steps for defining a grammar:
 1. Identify the initial conditions.
 2. Define a set of structure changing rules.
 3. Determine rate functions and differential equations.
 4. Define the simulation domain's geometry and topology.
 5. Set boundary conditions.
 6. Determine time scale and other parameter settings.