

The Virtual Machine

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My notion of executability by a virtual machine means at a minimum that a guideline is syntactically and semantically correct, insofar as the logical syntax can be parsed correctly, and all the terms are defined in a term dictionary. An analyzer could run down all of the branches and determine this, and an interpreter could execute the instructions, ask for input of values for parameters, evaluate the logic conditions, and follow the appropriate guideline paths.

I would like our abstract layer to do more than that eventually. Two primary items to consider are the following:

1. All decision steps are analyzed to ensure that alternatives are mutually exclusive, non-redundant or conflicting, nor missing, or at very least to document such limitations. Decision table techniques could be used, and optimization (such as done by Shiffman) could be applied at this point as a further refinement. The paper by Barry Silverman et al in AMIA Fall '99 ("HOLON/CADSE: Integrating Open Software Standards and Formal Methods to Generate Guideline-Based Decision Support Agents") also addresses some issues of analysis.
2. All variable parameters are fully specified in terms of allowable ranges or values and temporal constraints.

I think this is all one can do short of application-specific and system-specific implementation at Level C.