GLIF

Thu Feb 17 11:30:05 PST 2000

Package *Guideline_Step_Package*

Subpackages

package Guideline_Step_Package.Decision_Step_Package
package Guideline_Step_Package.Macro_Package

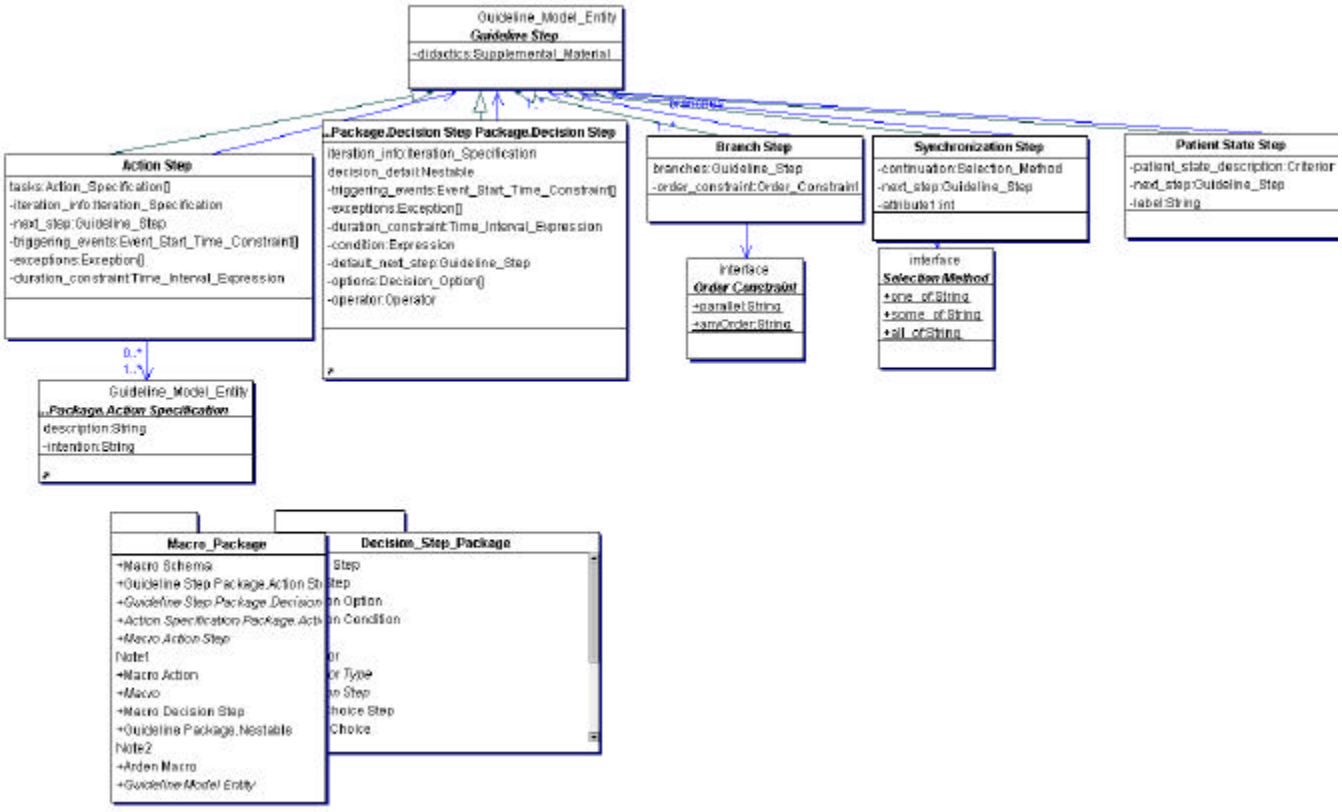
Classes

class Guideline_Step_Package.Action_Step
class Guideline_Step_Package.Branch_Step
class Guideline_Step_Package.Guideline_Step
class Guideline_Step_Package.Patient_State_Step
class Guideline_Step_Package.Synchronization_Step

Interfaces

interface Guideline_Step_Package.Order_Constraint
interface Guideline_Step_Package.Selection_Method

Class Diagram



Package Node Detail

Package *Guideline_Step_Package.Decision_Step_Package*

Package *Guideline_Step_Package.Macro_Package*

Interface Node Detail

Interface *Guideline_Step_Package.Order_Constraint*

Interface *Guideline_Step_Package.Selection_Method*

Class Detail

Class *Guideline_Step_Package.Action_Step*

Inherits from:

Guideline_Step_Package.Guideline_Step

Action Steps specify clinical actions that are to be performed in the patient-care process. An action step specifies a set of tasks (Action_Specifications) that need to be performed. An action step has only one next-step. The action step has attributes that specify its iteration information, duration, triggering events, and associated exceptions. Action Steps are nested by including a Subguideline_Action type of task in the step. The Subguideline_Action task has a (sub)guideline attribute that contains the nested subguideline.

When a guideline step finished its execution and the control flow is about to pass to the next step, then, if the next step has associated triggering events, then this next step is executed only after one of its triggering event occurred.

Attributes

duration_constraint
exceptions
iteration_info
next_step
tasks
triggering_events

Attribute Detail

duration_constraint

Data type: Time_Literal_Expression
Multiplicity: 0:1
description: An interval shose start time is the shortest time that the step should take and whose end time is the maximum time that a step could take.
Level: B

exceptions

Data type: Exception
Multiplicity: 0:*
description: the set of exceptions that upon their occurrence a new next step is entered.
Level: B

iteration_info

Data type: Iteration_Specifiation
Multiplicity: 0:1
Description: the iteration specification is compared
Level: A, B and C

next_step

Data type: Guideline_Step
Multiplicity: 1:*
Description: The next step
Level: A, B

tasks

triggering_events

Data type: Event_Start_Time_Constraint
Multiplicity: 0:*
Description: set of events that can trigger the step and their associated timing constraints. If several triggering events are defined for a step, then the step can occur whenever one of the events occur, provided that you are in the previous step.
Level: B

Class *Guideline_Step_Package.Branch_Step*

Inherits from:

Guideline_Step_Package.Guideline_Step

Description:
Branch steps deirect flow to multiple *guideline steps*. All of these *guideline steps* must occur in parallel. A *branch step* may link a *guideline step* to any other *guideline step*.

Purpose:
The *branch step* is used to model concurrent *guideline steps*. The selection method and order constraint attributes that previously characterized the *branch step* were removed so that the *branch ste*p would not semantically overlap the *case* and *synchronization* steps.

Considerations:
The selection method attribute that previously characterized the *branch step* were removed so that the *branch step* would not semantically overlap the *case* and *synchronization* steps.

Attributes

branches
order_constraint

Attribute Detail

branches

Data type: Guideline_Step
Multiplicity: 1:*
Description: an unordered list of subsequent guideline steps that should occur in parallel.
Level: A, B

order_constraint

Data type: Order_Constraint
Multiplicity: 1:*
Description: specifies whether the branches should be done in parallel or in any order
Level: A, B

Class *Guideline_Step_Package.Guideline_Step*

Inherits from:

Guideline_Model_Entity

Attributes

didactics

Attribute Detail

didactics

Class *Guideline_Step_Package.Patient_State_Step*

Inherits from:

Guideline_Step_Package.Guideline_Step

Description:
A Patient State step (scenario) is a guideline step (a node in the flowchart) that is used for two purposes. One is as a label that describes a patient state that is achieved by previous steps. This way, a guideline may be viewed as a state transition graph, where

states are scenarios, or patient states, and transitions between these states are the networks of guideline steps (excluding patinet state steps) that occur between two patinet state steps. The other purpose of a patient state step is an entry point to the guideline (e.g., patient came back to the clinic at state A).

A patient state step has a criterion that describes the state of the patient who is at that patient state. A patient state step is followed by a guideline step.

When a patient arrives at a clinic, his current state is compared to the last patient state that was recorded for him. If he is not at that state, then the patient state steps that represent new encounters are searched. These can be determined either by an implementation-level attribute called "new_encounter" of type boolean, which characterizes a patient state step (implementation level attribute) or by looking at patient state steps whose next-step is triggered by an event of type "new patient encounter".

Purpose:
as defined above.

Considerations:
1) When a patient arrives at a clinic he is matched to one of the p[ossible Patient State Steps. If none fit, we try to track his expected current state going forward from the last scenario that the patient was at. It is important to acknowledge the fact that a patient might not follow the guideline precisely, and that he/she may be treated also outside the regular clinic.

2) In Samson's EON guideline model, a patient state step has a reference advice guideline that offers advice as to what tests should be done to further evaluate the patient's state. This advice guideline is different from a regular guideline in 3 respects. (a) it is not required that this advice guideline be followed; (b) it does not include activities; (3) the steps of the advice guideline. This special reference advice, or consultation guideline, is used in order to avoid using the branch step. Having a consultation guideline as an attribute of a patient state step overlaps in functionality with the branch step. It allows the possibility that the physician sees the recommendations listed under the consultation guideline but can follow these recommendations (or not) up until the time that the patient enters another scenario (see example ERD). We sould like to use the branch step, and so, we do not need to use consultation guidelines, and will stick to using just one kind of guideline for now.
3) We commented out the new_encounter attribute. The guideline author would probably not want to specify whether a patient state step represents a new encounter or not; this would probably be institution specific, and needs to be determined during localization/ implementations.
4) Instead of specifying that a patient state step represents a new encounter, we can alternatively specify a triggering event of type: "patient encounter" that will trigger the next step pointed to by the patient state step.
3) If there is a criterion that refers to a generalization (e.g., "state is not well") it also applies to specializations of that class (e.g., "state is fever"). The hierarchy of terms is defined in the domain ontology.

Attributes

Attribute Detail

label

Data type: String
Multiplicity: 1
Description: defines the patient state in text that refers to terms taken from the domain ontology
Level: B
Example:
While the patient_state_description can be "Temperature > 99 F", the label can say "fever".

next_step

Data type: Guideline_Step
Multiplicity: 0:1
Description: The step that follows the scenario, if its criterion evaluates to true
Level: B

patient_state_description

Data type: Criterion
Multiplicity: 1
Description: the expression that defines the patient state
Level: B

Class *Guideline_Step_Package.Synchronization_Step*

Inherits from:

Guideline_Step_Package.Guideline_Step

Synchronization steps are used in conjunction with branch steps. When a branch step is followed by multiple guideline steps, the flow of control must eventually converge in a single step. Each branch may lead to a series of steps, resulting in a set of branching paths. The step at which the paths converge is the synchronization step. When the flow of control reaches the synchronization step a continuation attribute specifies whether all, some or one of the preceding steps must have been completed before control can move to the next step.

Attributes

Attribute Detail

attribute1

continuation

Data type: Selection Method
Multiplicity: 1
Description: specifies whether the next step should wait for all, some or one of the branches to finish execution.
Level: A, B

next_step

Data type: Guideline_Step
Multiplicity: 1:*
Description: The next step
Level: A, B

Interface Detail

Interface *Guideline_Step_Package.Order_Constraint*

Attributes

Attribute Detail

anyOrder

parallel

Interface *Guideline_Step_Package.Selection_Method*

Attributes

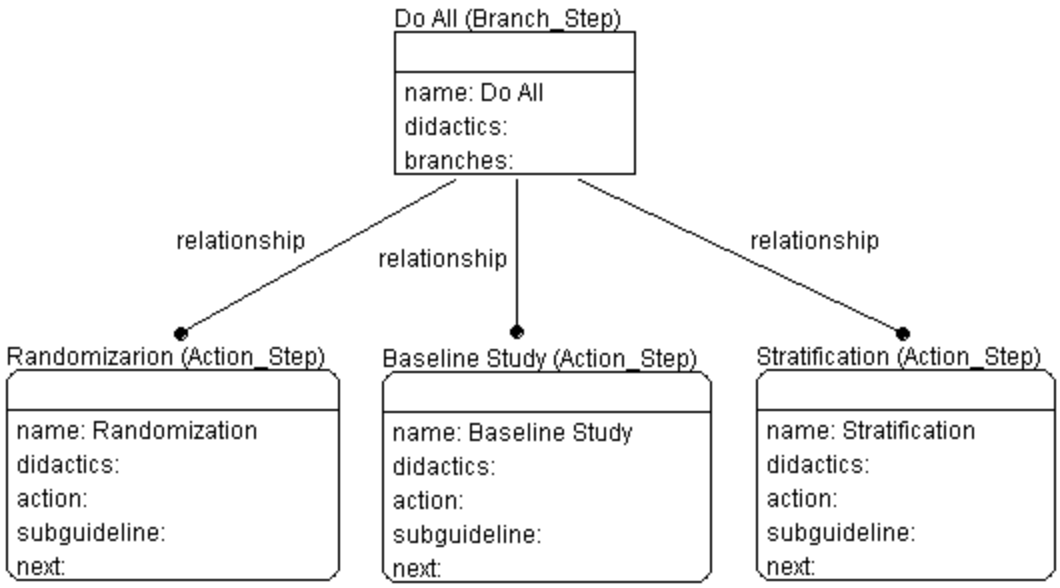
Attribute Detail

all_of

one_of

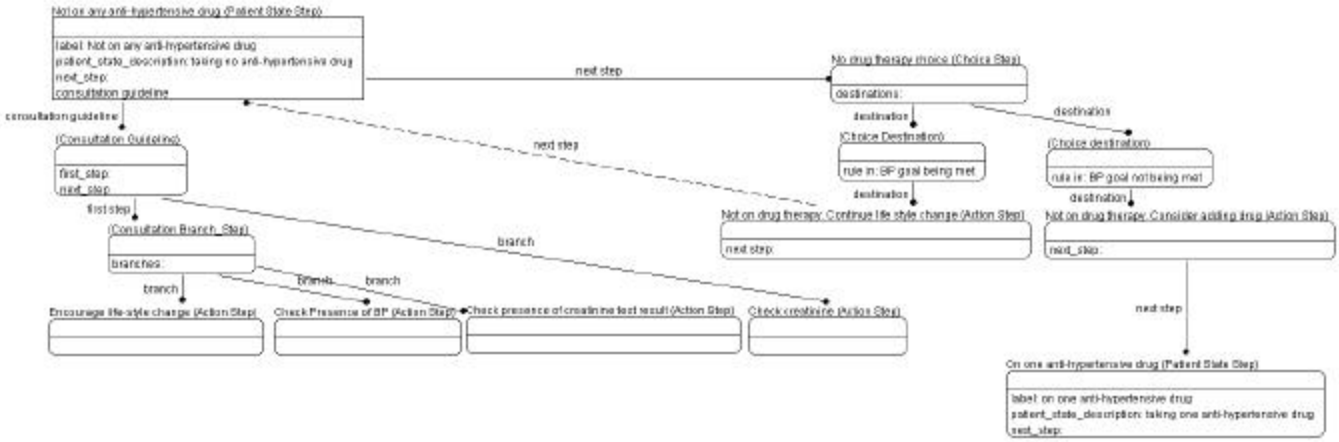
some_of

Example:



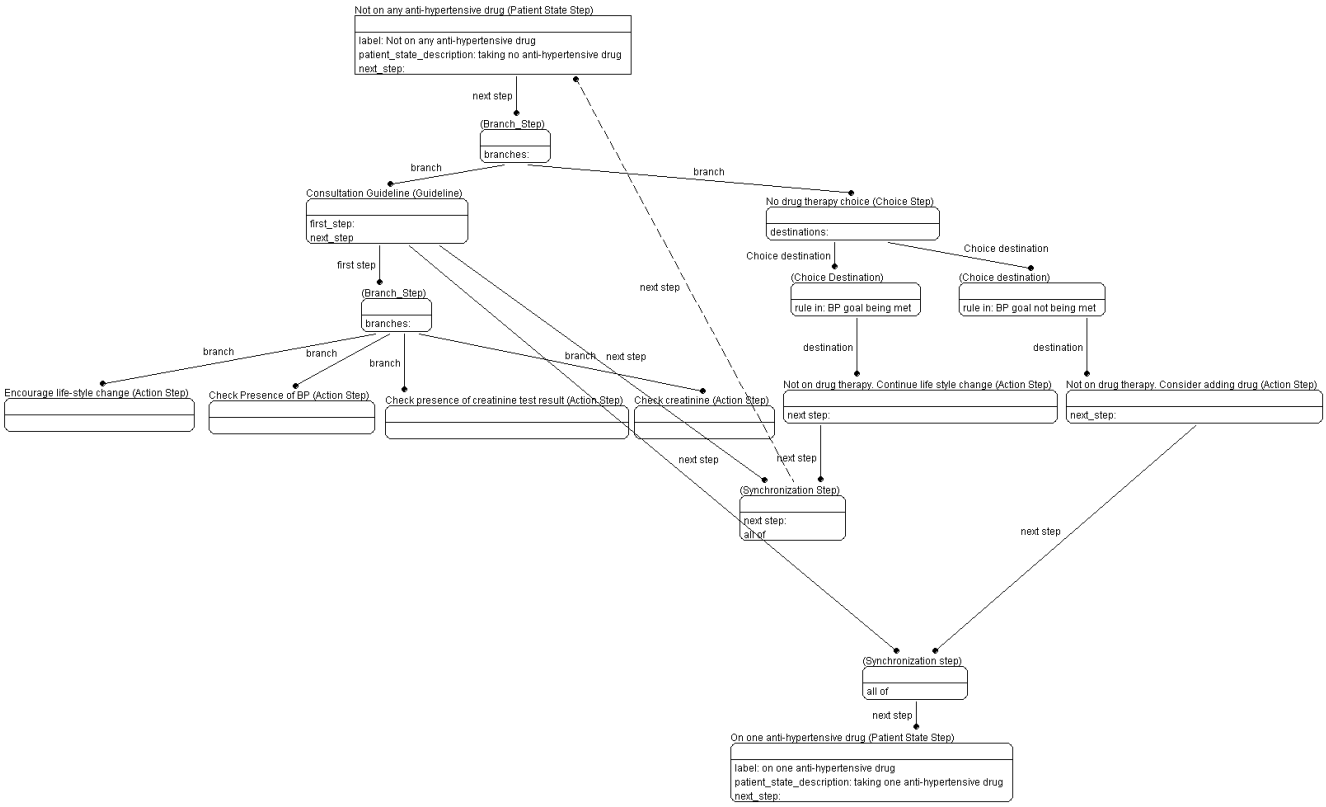
In this example, the branch step, named "Do All" is shown on the top. There are 3 branches, which are all action steps: randomization, baseline study, and Stratification. The selection method specifies that all of these action steps should be performed following the branch step, and the order constraint specifies that they should be done in parallel.

Example:



(Samson: With Consultation Guideline)

Example:



(MOR) with branch step