GLIF

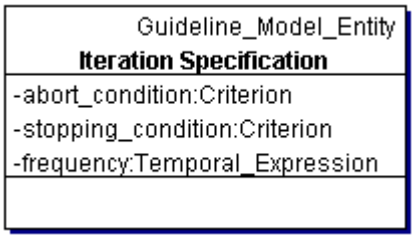
Thu Feb 17 11:30:05 PST 2000

Package *Iteration_Package*

Classes

class Iteration_Package.Iteration_Specification

Class Diagram



The Iteration_Specification class specifies information regarding the loop structure of the iteration. The action- and decision steps that should be iterated, that references the Iteration_Specification, are iterated until the abort condition or stopping condition criteria hold. The iterations are carried out at a certain (fuzzy) frequency (e.g., every 8h +/- 30min or, 3 times a day). If the iteration does occur within the specified frequency, then the iteration time points remain according to schedule, and are not reset (e.g., the patient came in after 8 1/2 hours. The next iteration should take place after 7 1/2 hours). Some frequencies may have a specified allowed offset. This means that if the iteration began outside the fuzzy frequency, but within the offset, then the iteration takes place and the iteration points are reset. For example, the patient came back after 9 hours. He gets treated (since the offset is 8 +/-2 h) but the next iteration is 8 hours late.

Class Detail

Class *Iteration_Package.Iteration_Specification*

Inherits from:

Guideline_Model_Entity

Description:

The *Iteration_Specification* class specifies information regarding the loop structure of the iteration. The thing to be iterated, that references the *Iteration_Specification*, is iterated until the abort condition or stopping condition *criteria* hold. The iterations are carried out at a certain(fuzzy) frequency (e.g., every 8h +/- 30min or, 3 times a day). If the iteration does occur within the specified frequency, then the iteration time points remain according to schedule, and are not reset (e.g., the patinet came in after 8 1/2 hours. The next iteration should take place after 7 1/2 hours). Some frequncies may have a specified allowed offset. This means that if the iteration began outside the fuzzy frequency, but within the offset, then the iteration takes place and the iteration points are reset. For example, The patient came back after 9 hours. He gets treated (since the offset is 8 +/-2 h) but the next iteration is 8 hours late.

Purpose:

To specify iteration information **Considerations:**

1. Executing an action at irregular intervals can be either modeled as an iteration or not. For example, a visit schedule that says: "visit every 5 weeks for 5 months and then every 2 weeks" is an iteration, but an immunization schedule may be modeled as an action (Immunization) that is event triggered (and not as give shot every 1 month for month, thaen every 2 months for 2 months, etc.).
2. Sometimes one wishes to give 1-2 pills every 4-5 hours, but no more than 8 pills within 24 hours. The iteration is still every 4-5 hours, but the dose that is determined for each iteration is dependant on previous doses and may be equal to zero.

Attributes

abort_condition
frequency
stopping_condition

Attribute Detail

abort_condition

Data type: Criterion
Multiplicity: 0:1
Description: the expression under which the iteration is aborted. A value of -1 means iterate forever
Level: B

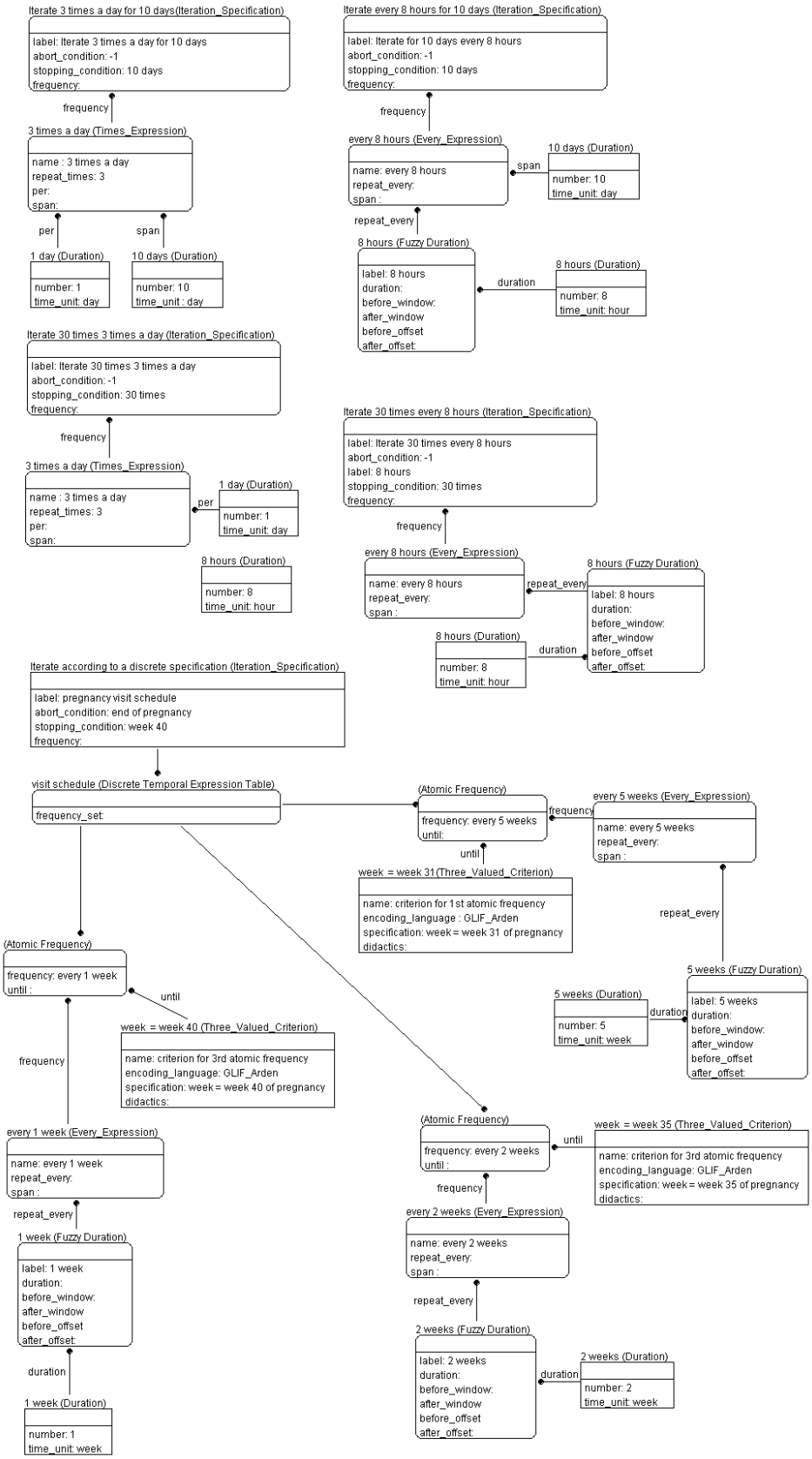
frequency

Data type: Temporal_Expression
Multiplicity: 0:1
Description: the frequency is either vague, e.g., 3 times a day, or fully specied, i.e., every 8 hours
Level: B and C

stopping_condition

Data type: Expression
Multiplicity: 0:1
Description: the expression under which the iteration should terminate. A value of -1 means iterate forever.
Level: B

Example:


Iterate 3 times a day for 10 days(Iteration_Specification)
label: Iterate 3 times a day for 10 days
abort_condition: -1
stopping_condition: 10 days
frequency:
frequency
3 times a day (Times_Expression)
name : 3 times a day
repeat_times: 3
per:
span:
per
span
1 day (Duration)
number: 1
time_unit: day
10 days (Duration)
number: 10
time_unit : day
Iterate every 8 hours for 10 days (Iteration_Specification)
label: Iterate for 10 days every 8 hours
abort_condition: -1
stopping_condition: 10 days
frequency:
frequency
every 8 hours (Every_Expression)
name: every 8 hours
repeat_every:
span :
span
10 days (Duration)
number: 10
time_unit: day
repeat_every
8 hours (Fuzzy Duration)
label: 8 hours
duration:
before_window:
after_window
before_offset
after_offset:
duration
8 hours (Duration)
number: 8
time_unit: hour
Iterate 30 times 3 times a day (Iteration_Specification)
label: Iterate 30 times 3 times a day
abort_condition: -1
stopping_condition: 30 times
frequency:
frequency
3 times a day (Times_Expression)
name : 3 times a day
repeat_times: 3
per:
span:
per
1 day (Duration)
number: 1
time_unit: day
8 hours (Duration)
number: 8
time_unit: hour
Iterate 30 times every 8 hours (Iteration_Specification)
label: Iterate 30 times every 8 hours
abort_condition: -1
label: 8 hours
stopping_condition: 30 times
frequency:
frequency
every 8 hours (Every_Expression)
name: every 8 hours
repeat_every:
span :
repeat_every
8 hours (Fuzzy Duration)
label: 8 hours
duration:
before_window:
after_window
before_offset
after_offset:
8 hours (Duration)
number: 8
time_unit: hour
duration
Iterate according to a discrete specification (Iteration_Specification)
label: pregnancy visit schedule
abort_condition: end of pregnancy
stopping_condition: week 40
frequency:
visit schedule (Discrete Temporal Expression Table)
frequency_set:
(Atomic Frequency)
frequency: every 5 weeks
until:
frequency
every 5 weeks (Every_Expression)
name: every 5 weeks
repeat_every:
span :
until
week = week 31(Three_Valued_Criterion)
name: criterion for 1st atomic frequency
encoding_language : GLIF_Arden
specification: week = week 31 of pregnancy
didactics:
repeat_every
5 weeks (Fuzzy Duration)
label: 5 weeks
duration:
before_window:
after_window
before_offset
after_offset:
5 weeks (Duration)
number: 5
time_unit: week
duration
(Atomic Frequency)
frequency: every 1 week
until :
until
week = week 40 (Three_Valued_Criterion)
name: criterion for 3rd atomic frequency
encoding_language: GLIF_Arden
specification: week = week 40 of pregnancy
didactics:
frequency
every 1 week (Every_Expression)
name: every 1 week
repeat_every:
span :
repeat_every
1 week (Fuzzy Duration)
label: 1 week
duration:
before_window:
after_window
before_offset
after_offset:
duration
1 week (Duration)
number: 1
time_unit: week
(Atomic Frequency)
frequency: every 2 weeks
until :
until
week = week 35 (Three_Valued_Criterion)
name: criterion for 3rd atomic frequency
encoding_language: GLIF_Arden
specification: week = week 35 of pregnancy
didactics:
frequency
every 2 weeks (Every_Expression)
name: every 2 weeks
repeat_every:
span :
repeat_every
2 weeks (Fuzzy Duration)
label: 2 weeks
duration:
before_window:
after_window
before_offset
after_offset:
duration
2 weeks (Duration)
number: 2
time_unit: week

Examples of Iteration Specifications including loose, tight and discrete temporal criteria

(a) Iterate 10 days every 8 hours.
(b) Iterate 10 days 3 times a day.
(c) Iterate 30 times 3 times a day.
(d) Iterate 30 times every 8 hours.
(e) Iterate according to a discrete specification.