Interview Engine

Guiding Users To Get The Work Done

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What is *Interview Engine*?

Interview Engine provides the capability to deploy web-based business applications using an interview-style user interaction that can handle from simple to complex branching logic without any programing.

An interview-style user interaction is useful in self-service applications where the system guides the user in the completion of a task.

In order to avoid asking unnecessary or irrelevant questions, the system takes into consideration the answers of previously asked questions to determine the next set of questions to ask the user.

Interview Engine At a Glance:

➢ Interview-style data capture with rule-based branching logic.

➢ Transcript report of questions and collected answers augmented with inferred outcomes or recommendations.

➢ Web-based authoring tools to define interviews with branching logic.

➢ Web-based rule authoring using Semantic Web Tagging technique in an innovative way.

➢ Seamlessly integrated with Top Engine's inference engine with *forward* and *backward* chaining and *querying* capability (SPARQL-like syntax.)

Typical Use Cases for Interview Engine

Disease Management / Therapy Compliance

➢ DM / Compliance medical notes are often recorded manually on paper and not encoded to support reporting.

➢ Static questionnaires are not adequate to cover all stages of the disease / therapy.

➢ Web-based interview-style data gathering allows patients and family members to self assess the disease progression / therapy effectiveness.

➢ Rule-based interview dynamically adapts questions based on the stage of the disease / therapy.

➢ Recommendations / alerts are immediately inferred based on answers provided.

Product Recommendation / Configuration

➢ Selecting an Healthcare coverage product must consider many factors, some are eligibility requirements, others are electable.

➢ On the payor/broker side, setting up group benefit to meet specific requirements is done by experts based on submitted requirements.

➢ Interview Engine approach has been used to enable a self-service model:

A series of questions is used to identify the recommended Healthcare coverage product or the set of transactions required to setup the group benefit in the legacy systems.

Therapy Compliance Example (simplified)

Information is Collected in Three Categories

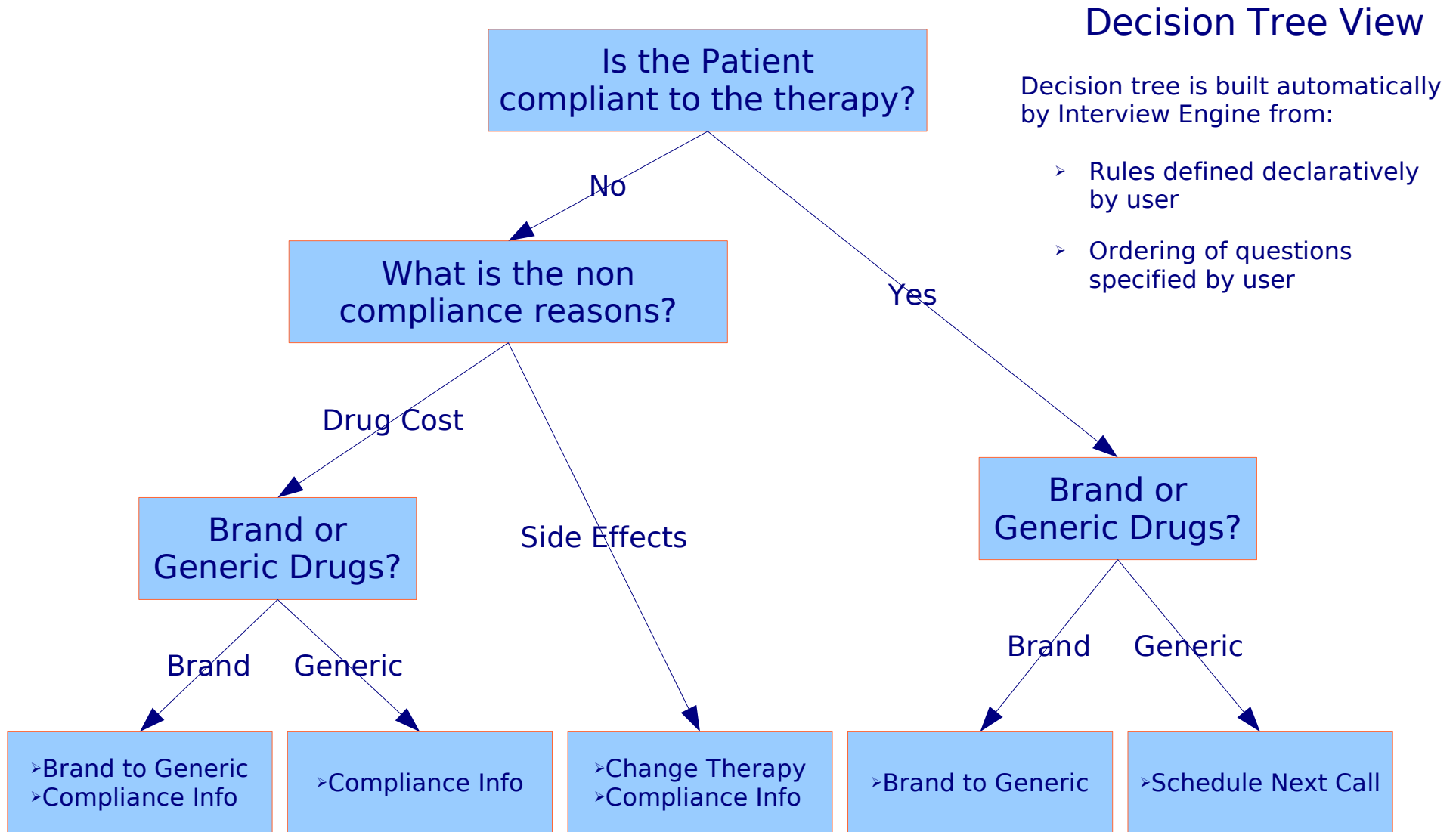Simplified Therapy Compliance assessment questionnaire:

➢ Is the Patient compliant to the therapy? (taking the drug(s) as prescribed or not)

➢ If not compliant, what is the non compliance reasons (drug cost and/or side effects)?

➢ Is the Patient on brand or generic drugs? If the Patient is taking brand drugs then cheaper generic drugs may be available.

Four Recommendations

➢ Provide therapy compliance information if Patient is not compliant for any reason.

➢ Initiate a Change Therapy Protocol if the Patient is not compliant because of drug side effects, regardless of the type of drug (brand or generic) used.

➢ Initiate a Switch from Brand to Generic Protocol if Patient is taking Brand drug and is either compliant or not compliant because of drug cost, unless the Patient is also not compliant because of drug side effects.

➢ Schedule next follow-up call if Patient is compliant and taking Generic drug.

Therapy Compliance Example (simplified)

Decision Tree View

Decision tree is built automatically by Interview Engine from:

- Rules defined declaratively by user
- Ordering of questions specified by user

Is the Patient compliant to the therapy?

- No → **What is the non compliance reasons?**
  - Drug Cost → **Brand or Generic Drugs?**
    - Brand → ➢Brand to Generic ➢Compliance Info
    - Generic → ➢Compliance Info
  - Side Effects → ➢Change Therapy ➢Compliance Info
- Yes → **Brand or Generic Drugs?**
  - Brand → ➢Brand to Generic
  - Generic → ➢Schedule Next Call

Therapy Compliance Example (simplified)

Each interview page has a title and description text and a list of questions.

Answers to questions can be:

- Single / multi selection from a list of tags;
- Entered text (string);
- Numeric (int, real);
- Date, time, duration;

Top Engine

Semantic Web Engine for the Enterprise

Home > Available Interviews > Performing Interview

Models

OWL Model

...s Configuration

...ase

...owledge Base

...gories

...s

...es

...ules

...s

...Rules

...B Triples

View Session Triples

Interviews Session

Import Interview Session

Export Interview Session

Start Interviews Session

Available Interview

Therapy Compliance

Therapy compliance is important to ensure best quality of care.

Please indicate if the patient is compliant to the on-going therapy

Compliant ○

Non-Compliant ◉

Cancel | Continue Later | Next >

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Therapy Compliance Example (simplified)

This question is asked only if the user answered 'Non-Compliant' to the previous question.

This is a user-defined pre-condition attached to the question.

Interview can be embedded in a third party website using javascript integration.

AJAX is used for validation and communication with Interview Engine.

Therapy Compliance Example (simplified)

Questions with required answers must be answered for interview to proceed.

Visual indicators and tooltips exist to help users.

Therapy Compliance Example (simplified)

Interview completion page display a custom message.

Inferred information can be displayed, e.g., 'Relevant Recommendations' was inferred based on previous answers.

Sample Interview Transcript Report

Interview transcript report is available and includes specified inferred information.

XML version is available and can be used with system integration middleware.

Top Engine
Semantic Web Engine for the Enterprise

Home > Available Interviews > Interview Report

Models
mport OWL M...

...nfiguration
...rt Knowledge Base
...ew Knowledge Base
...xport Knowledge Base
...ag Categories
...ser Tags
...ser Rules
Testing Rules
Interviews
Interview Rules
View KB Triples
View Session Triples

Interviews Session
Import Interview Session
Export Interview Session
Start Interviews Session
Available Interview

Interview Report

Interview Report for 'Therapy Compliance Assesment'. [XML version of the report]

Status: Completed

Interview Pages

Compliance Page

Please indicate if the patient is compliant to the on-going therapy

Answer: Non-Compliant

Non-Compliance Reasons Page

Please select all applicable reasons for non-compliance to the therapy:

Answer: Drug Cost
Drug Side Effects

Drug Type Page

Please select the type of drug the patient is currently taking:

Answer: Brand Drugs

It is assumed here that a generic drug is available for demonstration purpose. In a real application, there would be another tag to indicate if a generic drug is available for this therapy.

Relevant Recommendations:

- Initiate Therapy Change Protocol
- Provide Therapy Compliance Info

Web-based Rule Authoring

User defines Categories and Tags for each category. Here, the Category 'Recommendations' contains 4 Tags:

• Initiate Therapy Change Protocol

• Perform Brand to Generic Protocol

• Provide Therapy Compliance Info

• Schedule Follow-up Call

Users define rules using Tags. The rule shown here is:

IF the Drug Type is Brand Drug AND the Therapy is Non-Compliant AND the Non-compliance Reason is Drug Cost,

THEN the Recommendation is to Perform a Brand to Generic Protocol,

UNLESS the Non-compliance Reason includes Drug Side Effects.

User Tags
User Rules

Select Categories / Tags for constructing the Rule

Show All Tags

Category Name
Interview Tags
Non-compliance Reason
Page Tags
Recommendations
Therapy Compliance

Tags for Category	S?
Initiate Therapy Change Protocol	No
Perform Brand to Generic Protocol	No
Provide Therapy Compliance Info	No
Schedule Follow-up Call	No

Add Category to IF   Add to IF   Add to THEN   Add to UNLESS

IF Criteria

Category	Tag Name	S?
Drug Type	Brand Drugs	No
Non-compliance Reason	Drug Cost	No
Therapy Compliance	Non-Compliant	No

Remove Tag from IF

THEN Criteria

Category	Tag Name	S?
Recommendations	Perform Brand to Generic Protocol	No

Remove Tag from THEN

UNLESS Criteria

Category	Tag Name	S?
Non-compliance Reason	Drug Side Effects	No

Remove Tag from UNLESS

< Back to Rules

Summary
Top Engine is *the* Business Rules Software Appliance

Interview Engine

- Interview Engine extends Top Engine with the capability to deploy web-based business applications using an interview-style user interaction.

- Simple to complex branching logic can be defined without any programing.

- Web-based authoring tools provide out-of-the-box interview-style web applications.

- AJAX data validation and server communication allow integration within third party websites.

- Web-based interview transcript reports available.

- XML-based integration with external systems.

Top Engine

- Uses OWL DL ontological definitions for vocabulary primitives to write rules.

- Generates Logic Programs rules to retain class axioms from ontology so that they can be used to infer information at run time.

- Provides the ability to write rules on top of ontology with closed-world semantics.

- Contains an inference engine in C++ using rete-based algorithm with forward and backward chaining, and querying capability.

- Supports negation with truth maintenance.

- Uses an RDF graph for domain model.