Business Rules

- Business Rules capture the What, How and Why of an organization:
  - What: The information used by the organization
  - How: The activity is performed
  - Why: The rules that govern the organization, why do we wish to take this action?

- Rules can be used to represent:
  - Activities, events and triggers, state information
  - Constraints (quality, consistency, integrity, etc.)
  - Policies and laws governing the organization
  - Expertise of key people in the organization
  - Data as knowledge through data mining

What comprises Business Rules?

- Company policies, conditions and procedures that must be satisfied
- External policies such as government regulations, tax code, security policy and safety requirements
- Transaction consistency and integrity constraints
- Business requirements such as:
  - Provider preferences, supplier contractual terms
  - Member preferences and policies, etc.

What are the benefits of Business Rules?

- Benefits of Business Rules:
    - Improve communication and understanding
    - Help get requirements right the first time
    - Centralize knowledge
    - Reduce development time and cost
    - Enable faster maintenance and enhancement
    - Lessen dependencies on manual intervention

How do Business Rules affect Sentinel Rules?

- Sentinel Rules Engine can take Business Rules and automate them within Jiva.

- Sentinel Rules Engine can detect events, prevent process errors and missed opportunities.

- The Sentinel Rules Engine can also implement rule-based predictive models.
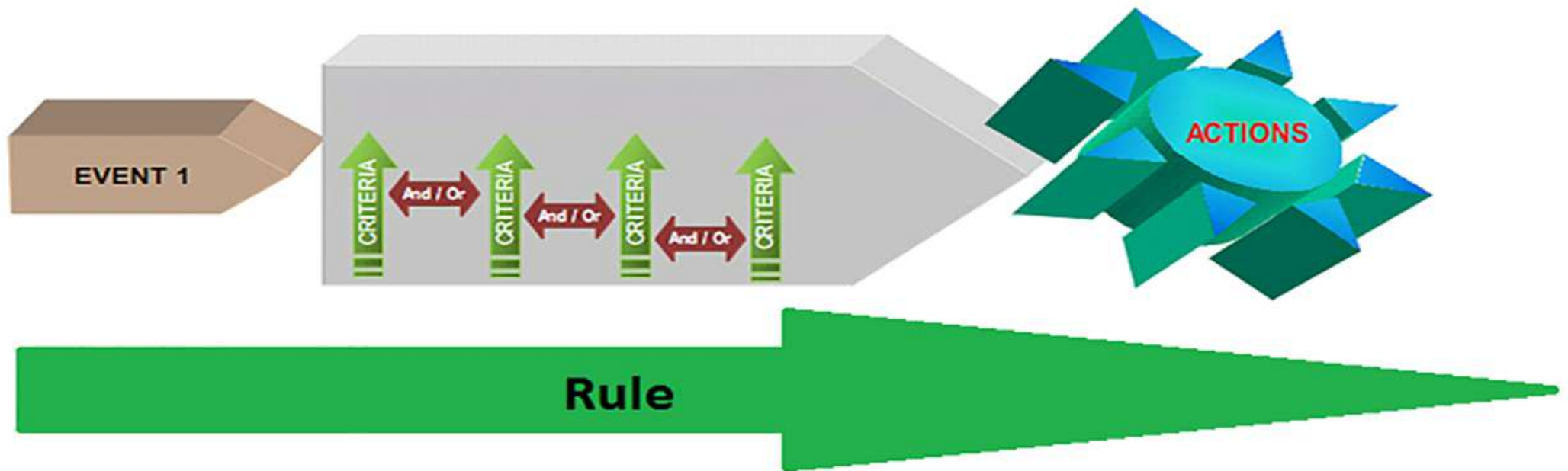
What is Sentinel Rules Engine?

SRE is an events processing or reactive rules engine that mimics **the event driven care management model**. It is based on the Event/Condition/Action (ECA) paradigm. It ensures a continuous flow of information across the various care management workflows by tracking activities, events, correspondence and alerts.

Sentinel Rules Engine is a domain specific deterministic rules engine.
- Event Triggered > Rule Invoked.
- Criteria Validated > Action(s) Performed.
- Simply put [(Criteria + Action) = Rule] invoked by Defined Event

Sentinel Rules Engine

Sentinel Rules Engine

- Rules can be :
  - Rule Type Specific
    - Constraint Satisfaction - Runs on single episode or member.
    - Identification - Runs on entire Jiva Data for claims, member or episodes.
  - Entity Type Specific
    - Member specific - Criteria such as Age, Gender, etc.
    - Episode specific - Criteria such as Diagnosis codes, Procedure codes, etc.
    - Claims specific - Criteria such as Type of Bill, Place of Service, etc.
    - User specific - Crtieria such as user roles, user title, etc.
  - Business process based Rules - UM based Rules, CM based Rules, DM based Rules.
  - Rule Execution Type Specific
    - Batched - Batched Rule is processed on the schedule time or at scheduled regular intervals
    - Realtime - Real Time Rule is processed immediately
    - Near Real Time - Near Real Time Rule is processed post delay of configured seconds

Sentinel Rules Engine

- The Sentinel Rules Engine (SRE) performs its robust functions using the following components:
    - Events: A pre-configured system generated trigger
    - Criteria(s): A condition on which a Rule is based
    - Action(s): A pre-defined function that is executed when criteria is satisfied
    - Rule(s):The combination of events, criteria and actions to achieve the desired outcome
    - Rule set(s): Group of rules based on priority
    - Merge ID Pool Rule(s): An ID pool, is a set of member IDs, episode IDs or Claim IDs
    - Assessment Rule Set(s): Performs actions based on answers received from assessment questions

Sentinel Rules Engine

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Rule

Events → Criteria → Actions

Sentinel Rules Engine

- In Sentinel, an Event triggers a Rule or Rule Set

- Each Rule can have:
  - ONLY 1 event
  - Multiple Criteria
  - Multiple Actions

- A Rule or Rule Set is considered executed once ALL of the actions have been performed

Reference Tables

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- A Reference Table contains the values that an attribute can take. Reference Tables contain the details against which a criterion needs to be compared with.

- Creation or definition of a criterion may require a user to check for an entity value against a large list of values

- In such cases, users can use Reference Tables containing the list of values

- Reference Tables are uploaded to Jiva and linked to the desired criteria

Reference Tables

Description	ICD codes
Diabetes mellitus with ketoacidosis type i uncontrolled	250.13
Diabetes mellitus with hyperosmolarity type 2 or unspecified type uncontrolled	250.22
Diabetes mellitus with hyperosmolarity type i uncontrolled	250.23
Diabetes with other coma	250.3
Diabetes mellitus with other coma type 2 or unspecified type not stated as uncontrolled	250.3
Diabetes mellitus with other coma type i not stated as uncontrolled	250.31
Diabetes mellitus with other coma type 2 or unspecified type uncontrolled	250.32
Diabetes mellitus with other coma type i uncontrolled	250.33
Diabetes mellitus with renal manifestations type 2 or unspecified type uncontrolled	250.42
Diabetes mellitus with renal manifestations type i uncontrolled	250.43
Diabetes mellitus with ophthalmic manifestations type 2 or unspecified type uncontrolled	250.52
Diabetes mellitus with ophthalmic manifestations type i uncontrolled	250.53
Diabetes mellitus with ketoacidosis type 2 or unspecified type not stated as uncontrolled	250.1
Diabetes mellitus with ketoacidosis type i not stated as uncontrolled	250.11
Diabetes mellitus with ketoacidosis type 2 or unspecified type uncontrolled	250.12
Diabetes mellitus with hyperosmolarity type 2 or unspecified type not stated as uncontrolled	250.2
Diabetes mellitus with hyperosmolarity type i not stated as uncontrolled	250.21

Decision Tables

- A Decision Table is a tabular presentation of a set of conditions and the respective actions that result from the combination of the specific conditions

- A Decision Table itemizes the criteria and actions of a Rule in a matrix

- The Decision Table in the Sentinel Rules Engine addresses the emerging needs of the complicated decision logic

- Decision Tables are best suited for rules with limited parameters, but a potentially large number of possible values for those parameters

Decision Tables

RULES	IF Episode Type	AND If Decision	Then Send Letter	AND Add Alert
	Episode	Decision	Add Notification	Add Alert
RULE 1	IP	Approved	IP Service Authorization Letter	Requested IP Service has been Approved
RULE 2	IP	Denied	Inpatient Denial Letter	Requested IP Service has been Denied.
RULE 3	OP	Approved	OP Service Authorization Letter	Requested OP Service has been Approved
RULE 4	OP	Denied	Outpatient Denial Letter	Requested OP Service has been Approved
RULE 5	OP Referral	Denied	Outpatient Referral Denial	Outpatient Referral Denial Follow up

Reference/Decision Table Best Practices

- Use Decision Tables when multiple unique criteria combinations exist for the same event and actions

- A Decision Table can be used for Real Time-Constraint Satisfaction rules only

- A Decision Table with multiple similar rows should not be used, this will result in multiple rows matched error

- A Decision Table criteria cannot be combined with other critera types

- Use Reference Table when a value has to be compared against a list of references

- A static criteria cannot be combined with other criteria types

- Always clear rule cache after any modification

Rulesets

- A Rule-set is a combination of Rules configured to automate certain processes in a care management workflow. A Rule-set defines the sequence of different Rule execution based on the priority.

- A Rule-set is attached to an event to ensure that all the Rules in the Rule-set are executed on occurrence of events.

- A Rule-set can be run in a Real time or in Batch mode.

Rulesets

- A Rule-set has the following features:
  - Consists of multiple Rules
  - Each Rule within the Rule-set can be assigned a priority
  - A Rule can be attached to multiple Rule-sets
  - Only active Rules can be attached to a Rule-set
  - The newly added Rules get attached to a Rule-set at the end of the list with least priority
  - The priority of Rules within the Rule-set can be changed by using the arrow buttons

Rulesets

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When configuring a Rule-set each Rule must first be configured individually

For Example: Rule-set: Automated Service Approvals
- Rule 1: Validate Member Eligibility
- Rule 2: Validate Provider Network Status
- Rule 3: Check if Service is in Auto Approval list

Prior to Starting the Rule

- Identify the required elements for Rule Configuration: Event, Criteria, Action(s) and other dependencies/Impacts.

- Dependencies can be Reference Tables, Decision Tables, Code Values, Worklists, Letters, Claim Fields, Loading Assessments or UDFs

Prior to Starting the Rule

- Before starting the actual configuration, it is advised to create Rule(s) catalog in a Microsoft Excel sheet with:
    - Existing Events, Attributes and Action Scripts in the system (Refer to Event, Entity Functions and Actions Catalog)
    - Active and Deactivated - Criteria, Actions, Rules and Rule Sets (Run Reports to generate this list)
    - Active Rule sets, Rules, Criteria and Actions along with the dependencies such as Letters, Code values etc.

Prior to Starting the Rule

- Make sure all the dependencies are available before starting the configuration.
    - For Example: If a Rule requires a Decision/Reference Table, it should be created and uploaded before configuring the rule. (Letters, Code Table values, etc.)
    - Impact Analysis against the Event on existing rules and new rules. Plan scheduling of batch Rulesets.
    - Establish standards for naming the Criteria, Actions, Rules and Rulesets

Where to Configure the Rule

- Start the rule configuration in CONFIG instance and test it. If the Rule is performing as expected then export it from CONFIG instance and import it into MASS.

- If the Rules are dependent on claims then we need to get the sample PROD claims data identified in CONFIG instance for testing to ensure the data storage format.

- After executing Rule(s) use Sentinel Log to find out the Rule execution details.

How to Configure the Rule

- Always configure the Rule with one Criterion and one Action at a time and test it.

- Once the execution is successful, add additional Criterion/Action one at a time and test.

- Repeat this process for effective configuration and troubleshooting.

Troubleshooting the Rule

- After Rule Execution, Check Sentinel Log (Sentinel >>>Log>>>Execution Log) to know the execution Result (i.e. Success/Failure)
- In the Log Results screen:
  - Failure result indicates Rule processed with Error. For Each Failure there will be two entries logged.
- Rule Execution Report: will display the result with relation to Criteria evaluation and Action execution.
- Trace Back Errors: will display the actual error details

Sentinel Rules Best Practices

- Requirement should be clear and freeze from client before starting the development or configuration of new Event titles, Entity Functions or Action scripts.

- Avoid creating duplicate criteria or action scripts, always check prior to creation, available criteria and actions can be used for creating rules.

- In the rule, if business process is selected for episode type (ex. IP, OP, CM, etc.) then there is no need to check episode type criteria in the rule.

- Similar rules can be achieved by configuring in ELSE-IF block in the same rule instead of creating another rule.

- Always search the Execution Log by adding a date range for faster results

- Before deactivating criteria, actions or rules, they have to be dissacoiated ffrom the related rule/rule set.