Introduction

Discern Expert is a rule based decision support expert knowledge system. From a Discern Expert standpoint, the rules created using Discern Expert are called Expert Knowledge Modules (EKMs) or modules for short to make a distinction between Discern Expert rules and other system options that are also referred to as rules. However, because the laboratory only ever works with one type of module, they are generally just referred to as rules.

Discern Expert is event driven, meaning that events passing through the system trigger or "evoke" the rule. There are a number of system events that can evoke a rule. Several of the more common ones are listed below:

- Orders (placed directly in a Millennium application or interfaced)
- Patient Events - admits, transfers and discharges (directly in a Millennium application or interfaced)
- Clinical Events - patient results (laboratory results, height, weight)
- Synchronous Events - events that can be evaluated during the ordering process and intercept order transactions as they are occurring in the system. The two most common events are the "add to scratchpad" and "sign order" events.

Discern monitors all of these system events as they are being processed by the system to determine when to evoke a rule.
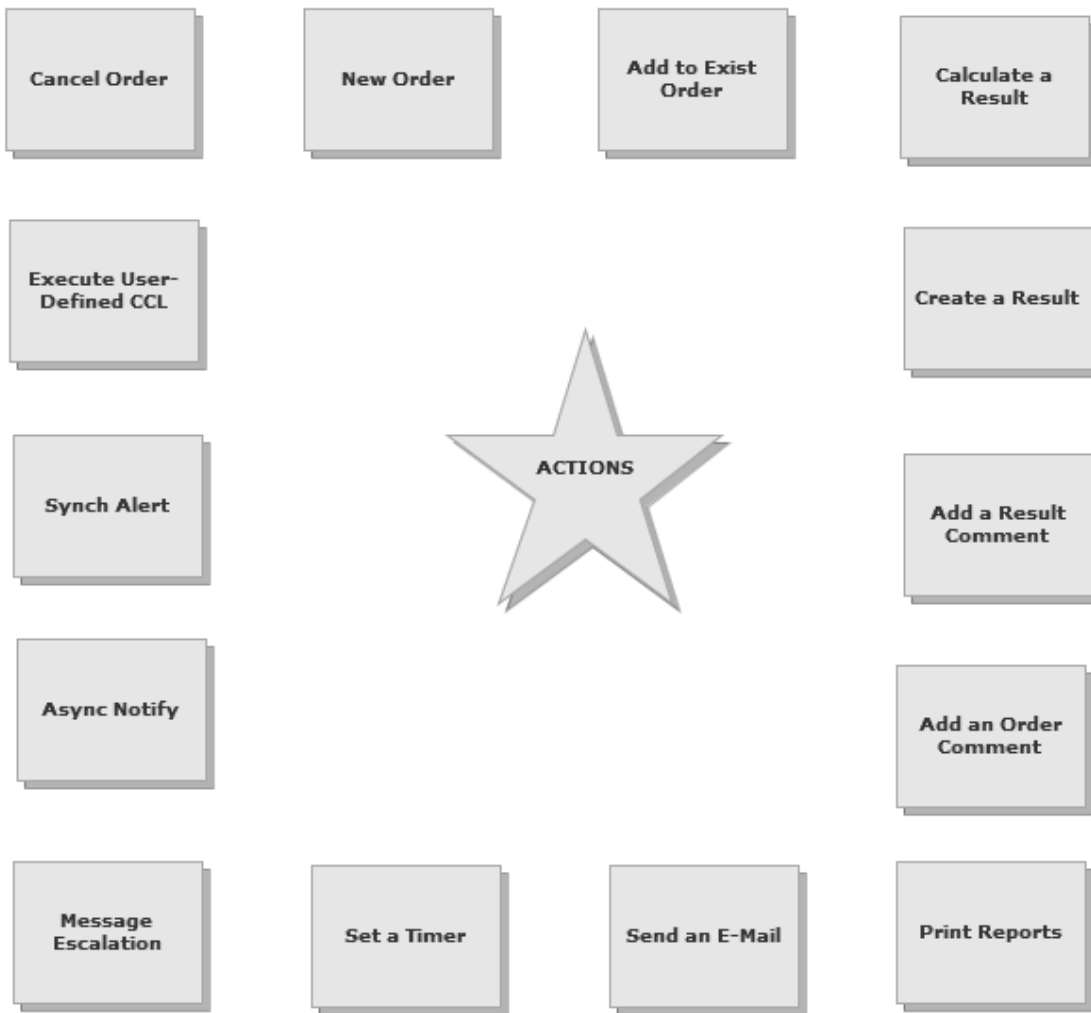
Once a rule is evoked, Discern uses Boolean logic (If/Then logic) to evaluate database information and determine whether an action is required through three main sections.

Evoke - The evoke section of a rule allows Discern to determine whether to start evaluation or not. Defined in the evoke section are the system events in which the rule will trigger on. **For instance...**

If (logic section) - Provides the mechanism to evaluate existing information that resides in the Millennium Database. For example, evaluation can be performed to determine whether laboratory results are out of the correct range. Other examples of pieces of information that can be evaluated on are: orders that have been placed, orders that have not been placed, laboratory results, patient gender and patient age. There are hundreds of database entries that can be useful for logic evaluation. Discern has the ability to evaluate this data at the time the triggering event occurs.

Then (action section) - Provides the activity that the end result of the module can perform.The following diagram shows the possible end results.

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Cancel Order	New Order	Add to Exist Order	Calculate a Result
Execute User-Defined CCL			Create a Result
Synch Alert		ACTIONS	Add a Result Comment
Async Notify			Add an Order Comment
Message Escalation	Set a Timer	Send an E-Mail	Print Reports

- Expert can cancel orders and place orders. The orders placed can either be new orders or orders adding additional procedures to existing specimens. For example, if an RPR is resulted as positive, order an RPR Titer. Expert is used extensively to carry out decisions about orders that are appropriate or inappropriate utilizing these useful actions.

- Expert can perform calculations. Many useful results from body surface area to creatinine clearance are the result of calculations. Expert can do the calculation and then post the result to the patient's chart. You can also create alphanumeric results.

- Expert can add comments to results and orders. If Expert placed the order, it can add a comment to the order indicating that it was the origin of the order.

- Expert can notify the user in several different ways. A "Notify" is a window-type message box defined to pop-up on users screen or create a message icon designed to flash when there is a new message. Another way Expert can notify is by using synch alerts or interactive alerts. These alerts are used most often when ordering to pre-evaluate orders before the order is processed by the system. Experts ability to evaluate patient information during the ordering process, before the order becomes an order, provides the ability to warn the ordering personnel to change, reconsider or cancel the order altogether.
- Expert can escalate alert messages, meaning a message can be sent to another recipient after a defined length of time if the original recipient has not acknowledge receipt of the message.
- Expert can set a timer which can trigger another rule to produce an action after a defined passage of time.