



ET01 - A Deep Learning based Assistant for better and faster Clinical Insights

Changing the paradigm of gaining
insights into clinical data



Presenters for Today's Session



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We will focus on...

- Current challenges in clinical trial analytics
- Why you should care about a deep learning-based assistant
- Functional architecture of a deep learning-learning based Assistant
- Capability, clinical intent, and entity recognition
- Sample use case - Early detection of subjects at risk of withdrawal

Challenges with Clinical Data Analytics



- Juggling disparate data sources
- Non-linear, more complex business questions
- Reports, Reports, Reports!
- Visualization fatigue
- Rapidly changing business needs
- Probability -> Prediction -> Prescription

What if...

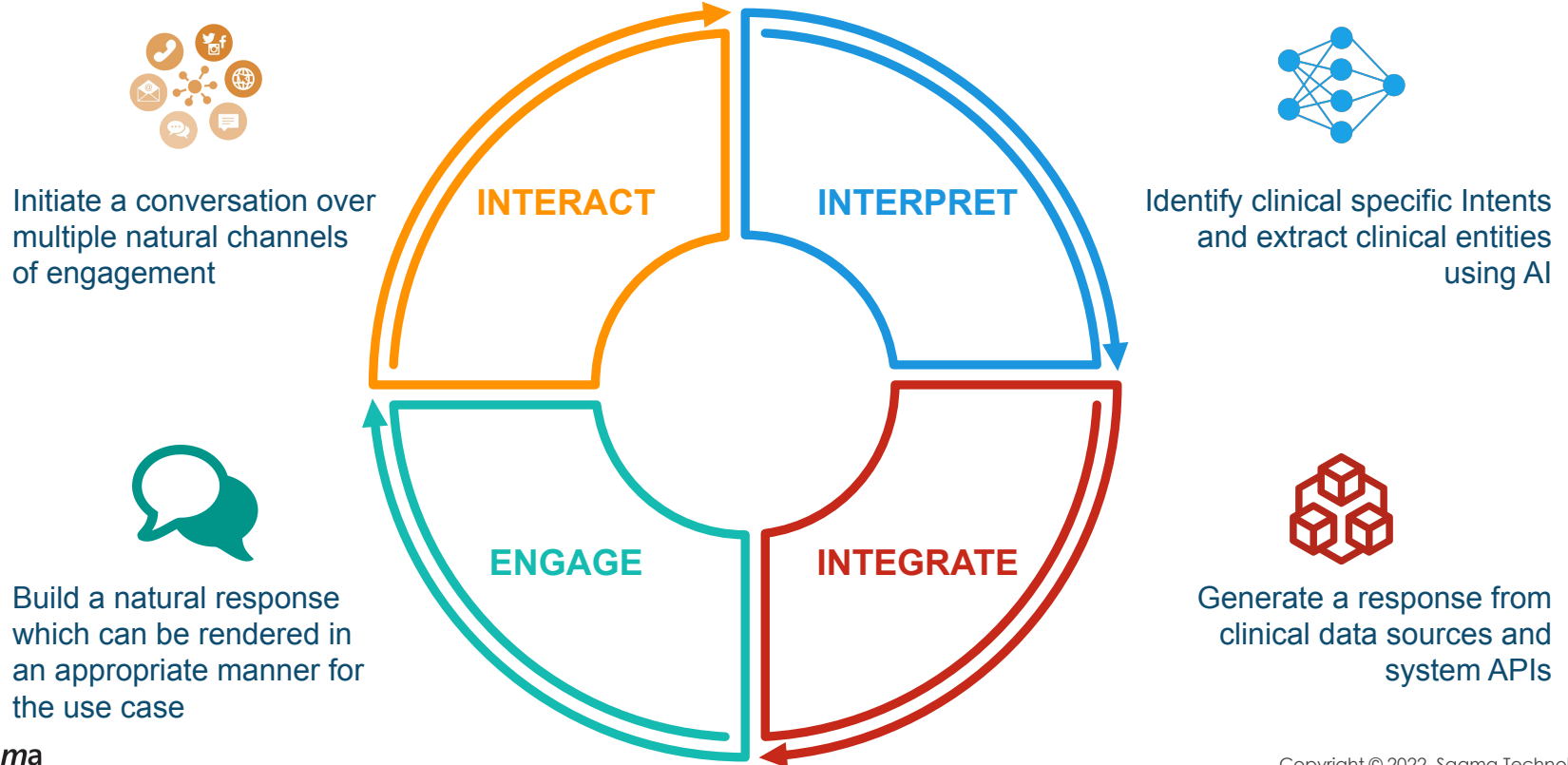


- ... I could just ask for what I am looking for?
- ... it was an expert at clinical terminology
- ... it could understand my train of thought?
- ... it could complete my sentences?
- ... it already knew the context of my trials and sites?
- ... it could answer my specific question?
- ... it could predict my next question and suggest it?
- ... I could help it learn to better understand me?

This is the case for an AI-enabled Smart Clinical Assistant!

What is an AI-enabled Smart Clinical Assistant?

A software agent that is trained on Clinical context and can perform tasks or services for an individual using text, voice and other methods of interaction.



Key Terminology

Natural Language Understanding (NLU)

The part of NLP(Natural Language Processing) programming that deals with machine reading comprehension

Intent Interpretation

Classifying the sentences based on what the user wants to achieve

Clinical Named Entity Recognition (NER)

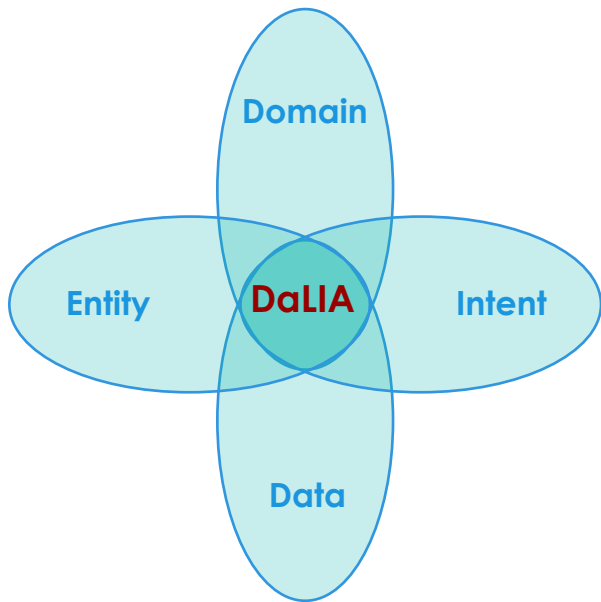
Information extraction that seeks to locate and classify clinical named entities

Entity Extraction

Locating and classifying the named entities in the provided sentence

DaLIA - Saama's **Deep Learning Intelligent Assistant**

DaLIA is integrated into the conversational user interface of Saama's Life Science Analytics Cloud

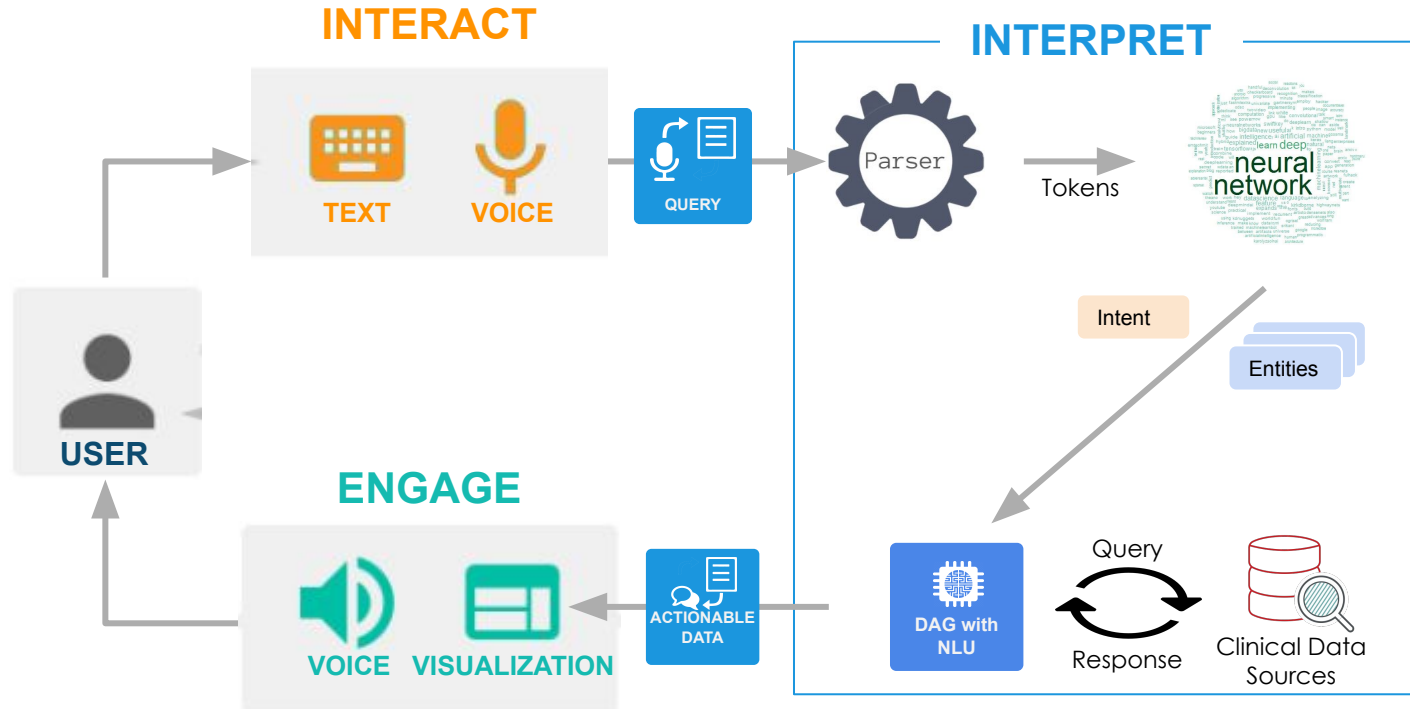


User interaction framed by:

- Focus on the study conduct **domain** of life sciences. Do not ask about the weather...
- Given the domain focus, DaLIA establishes the “context” of your query:
 - Interpreting what you want to know (**intent**) [e.g., what, when, and how many]
 - Identifying the set of parameters (**entities**) needed– to properly answer your question [e.g., study names, site locations, time, etc.]
- With an understanding of the query, DaLIA uses the **data** resources available from your enterprise LSAC deployment

Components and workflow of DaLIA

DaLIA uses natural language processing (NLP) to convert text and voice input to executable commands using AI



[Intent]- Interpreting the Question and Context

Input phrase (plain english)

Identified intent



Count of Studies in...

List of subjects with...

Open issues in timeframe...

Subject discontinuations at...

Queries closed in timeframe...

Visits at sites in country...

[Entity] - Identifying the Focus of the Question

STUDY METADATA

TA, Country,
Compound ID,
Provider, Indication,
Subject Disposition,
Study ID, Name,
Phase, Status,
Program, Sponsor

...etc

SITE METADATA

Site ID,
Site status,
Site region,
Site CRA,
Site Investigator

...etc

QUERY

Query Type,
Query Status

...etc

VISIT

Schedule compliance,
Category,
Visit,
Visit Number,

...etc

ADVERSE EVENTS

Relatedness,
Severity,
AE Term,

...etc

ISSUE MGT

Issue Type,
Form ID

...etc

PROTOCOL DEV

Deviation Name,
Deviation Category

...etc

LAB TEST

Lab test Code,
Lab test name,
Lab test cat. / subcat.,
Study arm

...etc

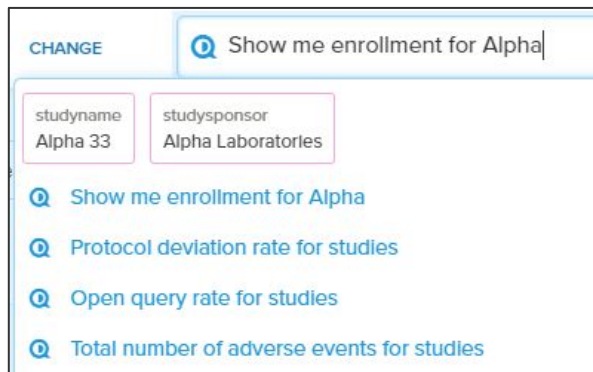
MEDICATION

Standardized name,
Route of admin.,
ConMed Indication,
ConMed status,

...etc

User Experience Options for a Smart Clinical Assistant

Smart Search



Transactional: request - response

Integrating: brings together intelligence from across the application

Context reset: generally reset the clinical context for each distinct search

Smart Assistant

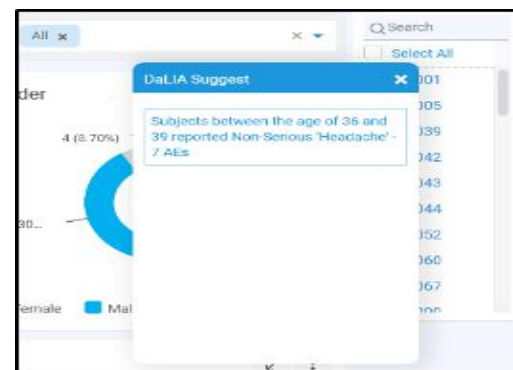


Continuous: request - response - follow-up - ...

Complementing: adds information in addition to other information on the screen

Context maintained: generally maintain the clinical context for the full conversation

Smart Suggestions



Proactive: Independent machine generated insights without user input

Prescriptive: Suggesting insights and actions which are important to the user to consider

Persona driven context: Suggestion context is based on the persona and user workflow

Thank You!



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