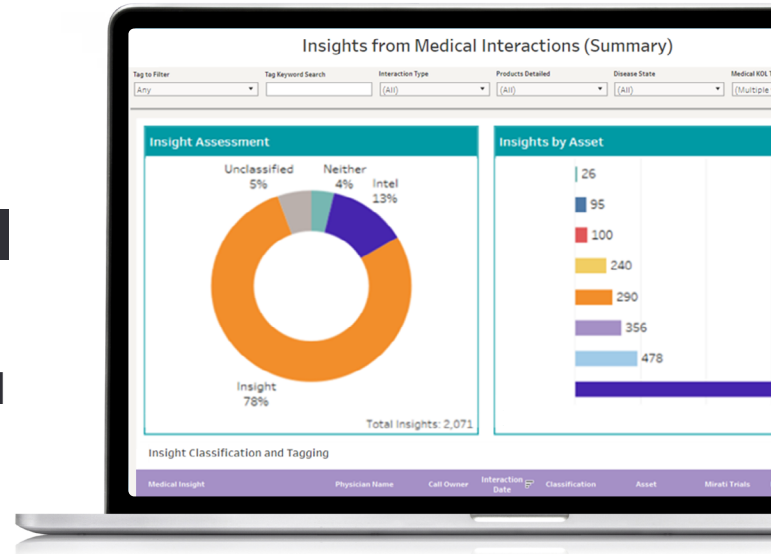**CASE STUDY**

Biotech company enables faster, more accurate medical insights with AI

Medical analytics team delivers real-time intel and decreases manual effort and errors

Challenge:

A biotech company struggled to achieve timely real-world insights from the vast amount of information contained in the unstructured call notes from field medical affairs reps stored in its CRM. The manual process of reading and categorizing the reports consumed considerable time and resulted in errors.

Solution:

The medical analytics team partnered with Beghou Consulting to use natural language processing (NLP) to optimize the process, gain real-time insights, reduce the required resources, and scale as their needs evolve.

Key results:

- Fit-for-purpose AI solution that scales
- Real-time insights vs. manual quarterly reports
- ~90% accuracy of call note categorization
- Significant manual time saved per week

Challenge: Extracting timely stakeholder insights

As the first competitor to the company's lead product entered the market, the leadership team desired better insights into the real-world treatment landscape so it could differentiate itself from the competition.

The team recognized that the rich information collected from the field medical affairs reps' during their interactions with healthcare professionals provided the insights they needed. However, although the reps recorded detailed notes in the company's CRM, the leadership team was unable to extract insights in a timely manner due to the labor-intensive manual review process.

Issues with the review process included:

- **Errors and biases** in the categorization/tagging that resulted in missed information when it was aggregated.

- **Significant time lost**, including more than 20 hours per month of administrative time for manual categorization, which was expected to increase over time.

- **Manual review** of the 1000s of notes again if a new signal emerged (e.g., a safety concern) that required a new tag.

- **Delay in actionable insights**, which were delivered only on a quarterly basis, limiting a timely response to the changing landscape.

Solution: Scalable, customized AI solution suited to the company's evolving needs

The team partnered with Beghou experts, including data scientists, medical analytics experts, and executive leadership (SMEs), to quickly implement a feasible NLP-driven AI solution to deliver the company's vision of automated, reliable, timely insight tagging and more granular categorization and reporting. While this project was launched prior to the advent of GenAI, this technology could now be layered on to accelerate and enhance insight generation.

At Beghou, we base our customer interactions on a collaborative approach to ensure the end product meets the specific organizational needs and gain stakeholder buy-in from the very beginning.

For this project, this meant that the company's clinical and medical teams, especially the regional directors, had multiple feedback opportunities during the iterative development process, including:

- Initial stakeholder interviews to align on the tags
- Review and input on the draft ontologies created by the Beghou team
- Review of additional tags identified by the NLP that were not in the original list
- Pilot testing of the system to incorporate changes before the full launch
- Review of the classification into the desired categories of "insight," "intel," and "neither" to ensure accuracy
- Feedback on the reporting and dashboards

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Key business questions that were considered:

➡ **Are the medical notes insight or intel, or do they hold any actionable value (neither)?**

➡ **Does this insight apply to another function (e.g., market access)?**

➡ **What is the insight trend per classification over a given time?**

➡ **Is the insight linked to a specific clinical trial?**

➡ **Is there competitive intelligence within the insight?**

➡ **How many insights are collected per insight type, product, healthcare professional, healthcare organization, key opinion leader, or territory?**

The cross-functional collaboration ensured that the tags, ontologies, and outputs in the final product provided the specific insights the company needed, when they needed them.

Examples of automated tagging and classification of notes in the CRM

Example entries in the notes	Tags assigned by the system	Notes category
"Asset 1 has the highest safety and tolerability for XXX indication. However, there are issues with YYY."	Asset, Efficacy & Safety, Indication	Insight
"Asset 2 is likely going to produce better clinical results than comp 1. It will be interesting to assess which regime will have the best efficacy profile for patients and how it will impact corresponding access restrictions."	Asset, Clinical Biomarker, Competitor, Efficacy & Safety, Indication, Access	Insight and intel
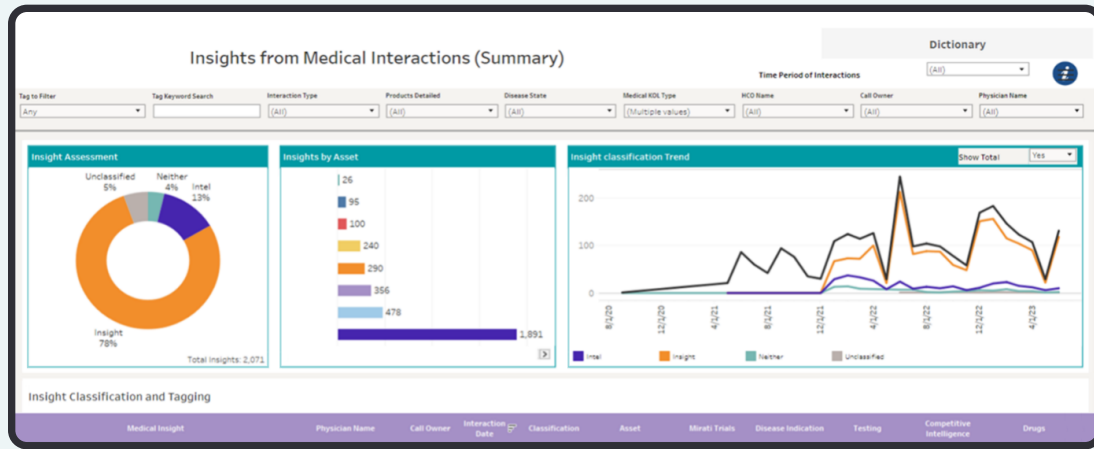
Example dashboards custom created for the company's needs

The system design also allowed for continuous progress, so we could meet the client where they were during the project and allow for future expansion as the market changed, such as adding tags to capture new types of information needed.
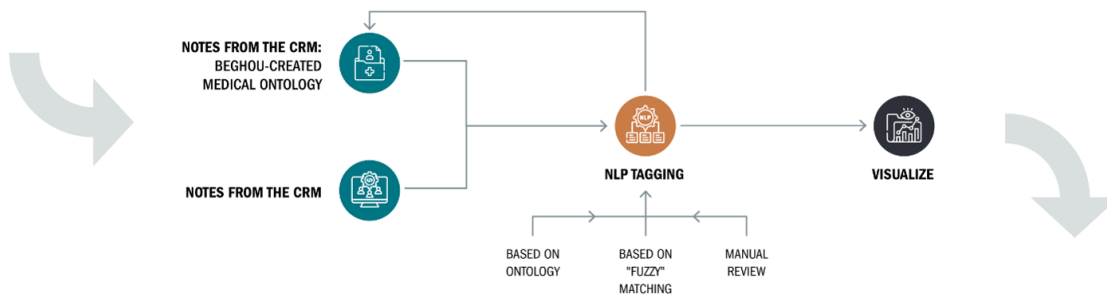
Simplified workflow for the NLP approach to tag, classify, and visualize notes

Additional planned improvements included sentiment analysis to better understand changes in perceptions of the assets over time; semantic searching to allow for different names for the same drug or clinical trial names, for example; and Q&A functionality using conversational AI (after the advent of GenAI) that would have allowed user-entered queries of the content. However, the company was acquired before the next phase of the project commenced.

Results: Real-time intel, reduced manual time, and 90% accuracy

The NLP-based solution went live only 2.5 months after the initial list of tags was created. Once in production, it eliminated the time spent by the field medical affairs team, improved the accuracy of the findings, has the ability to grow with the company's needs, and provides near real-time insights that could be used by the leadership team and the field medical affairs reps to plan their interactions with healthcare professionals.

Tangible outcomes achieved by the solution

Outcome	Beghou approach	Direct results
Comprehensive classifications across multiple categories	Collaborated with the company's medical and clinical experts to create robust medical ontologies and training data to appropriately classify notes across various groupings (Insights, Intel, No action)	• The resulting classifications accurately and reliably reflected the content. • The use of "fuzzy" matching accounted for different spelling and abbreviations, for example.
Predictable actionability	Iteratively validate and refine the process based on existing reports	• High prediction accuracies (~90%) were achieved for categorizing the feedback into the groupings (Insights, Intel, No action). • Intel or insight from relevant actions could be passed to the medical and clinical teams to plan follow-up activities with the stakeholders.
Highly configurable, scalable solution	Designed the model to be easily configured and able to integrate new data sources	• The model can adapt as medical strategies change or a new signal is identified. • The list of tags grew from 5-6 used during the manual process to ~40 tags in the automated process, and this can expand further, allowing for greater granularity in categorization and reporting.
	Built a feedback loop using periodic inputs	• The model can be continuously improved based on SMEs' classifications or insight assessments. • Using machine learning, the system can also learn from new inputs over time and benefits from having a human expert in the feedback loop.
Near real-time outcomes	Configured the data pipelines and model triggers to classify the insights as soon as the CRM data were refreshed	• The delay in insights with the manual process was significantly reduced. • Processing of the notes occurred automatically every couple of hours, instead of weekly or less often.
User-friendly interface	Packaged the results and outputs into a self-service dashboard	• Users can "slice and dice" the information at different levels of granularity to quickly read the call notes and plan subsequent follow-ups.

Driving success through partnership and change management

Another critical factor for a successful project like this one is organizational buy-in for what could be seen as disruptive technology, as well as changes to the existing processes. This was especially true for this company, as this was its first AI implementation. However, all sides approached this project as a partnership, and the company's leadership and project team trusted the expertise of Beghou's team to not only implement the technology but also guide effective change management, which needs to start from project onset.

Some key considerations in this project were:

- **Continual stakeholder collaboration:** The importance of early collaboration with the med affairs stakeholders for their input and feedback on how the solution will fit into their workflows, the outputs that are provided, and how it can be improved

- **Human feedback loop:** Incorporating a human feedback loop into the NLP and machine learning processes to reduce the perception of the solution as a "black box"

- **Early demos and stakeholder excitement:** Early system demonstration in a pilot phase not only for system refinement but also to initiate excitement about its capabilities

With the faster access to real-world insights, the company is able to better tailor its interaction strategies, identify trending topics, understand its customers' concerns, and refine evidence planning in a rapidly changing environment — ultimately enhancing patient care and treatment outcomes based on inputs from treating physicians.

Learn more about strategies and case studies on how life sciences companies can use AI to drive business impact in our recent webinar From POC to Production. Navigating GenAI Implementation in Life Sciences.