



## Making clinical trial data come alive A comprehensive cognitive computing framework

### CLIENT PROFILE

**SECTOR**  
Life Sciences &  
Healthcare

**COMPANY**  
One of the largest pharmaceutical  
companies in the world

**REVENUE**  
EUR 13+ Billion

**EMPLOYEES**  
Approx. 50,000



**700+**

million USD invested  
in trials with no success

**2000+**

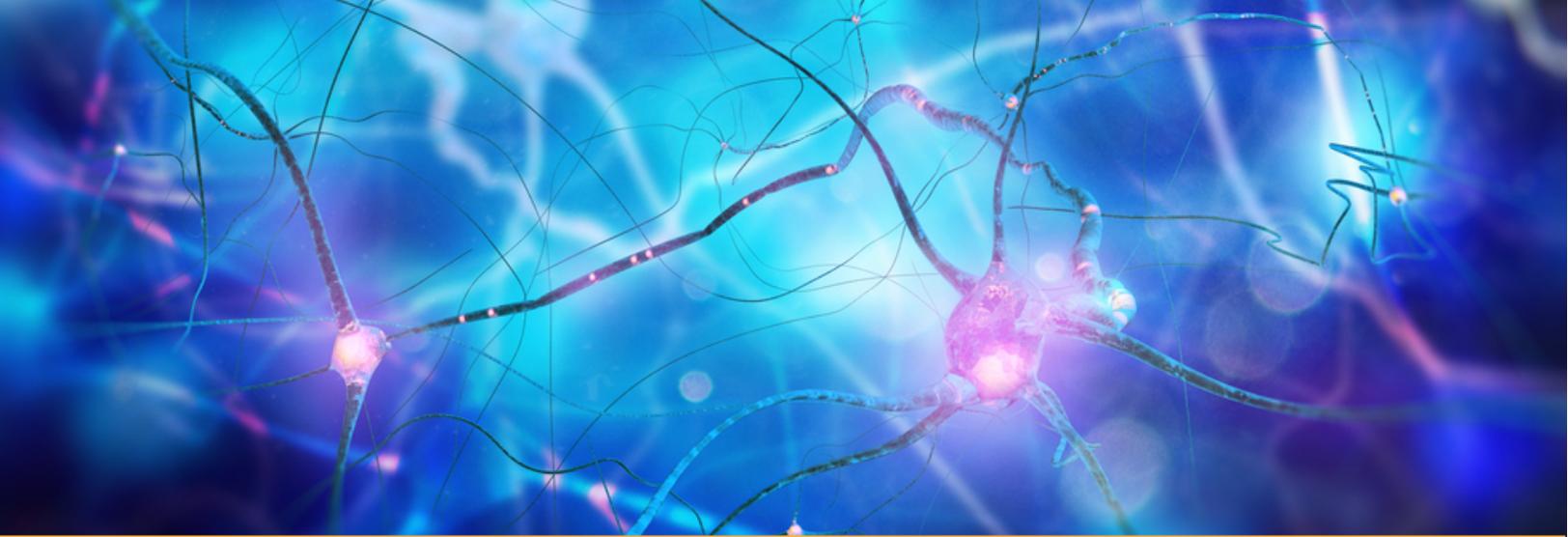
documents having  
unstructured data

### MAKING SENSE OF THE HUGE AMOUNT OF DATA GENERATED DURING CLINICAL TRIALS

Clinical trials are long, expensive and their timely success is imperative for the long-term growth of a life sciences organization. For every successful molecule that passes through the clinical trials and reaches the market, there are 1000's of molecules that do not pass through the entire cycle. Their trials are terminated during either drug discovery or development phase.

However, during this entire cycle enormous amount of data is generated at each stage. Our client wanted to leverage technology and cognitive computing to analyze this data, help generate insights regarding rationale for failed clinical studies, and leverage that to monitor studies going forward. This will allow them to predict failures early, take corrective action or terminate the studies and save costs.

Clinical studies and trials include large volumes of data, which comes in both structured and unstructured format, has various semantic and contextual nuances for driving analytics and deriving any meaningful insights. This makes it challenging to read, understand and interpret the data. Moreover, to learn something from that data and apply it on future studies requires a framework that learns from past data and applies it on future projects as well.



## UNIQUE

problem solving approach

## INSIGHTS

to support better decisions

## MODULAR

& extensible solution

# A COMPREHENSIVE COGNITIVE COMPUTING FRAMEWORK

Nagarro developed a comprehensive big data and machine learning based cognitive computing framework which leveraged the client data and guided a learning system to extract similar information in future from documents and generate insights.

### Scoping the problem

Given the nuanced and ambiguous nature of this engagement, we ran a series of natural language processing and machine learning based functional and technical experiments (each ranging from a few hours to few days) and documented those results to understand opportunities, feasibility and limitations of what could be accomplished.

### Our problem solving approach

- We leveraged 'signal extraction framework' to mine the right insights determining success or failure of clinical trial, from a large unstructured set of data.
- Using our functional expertise, we annotated the signals and developed a self-learning system which could conduct a 'sentiment analysis' and help identify the polarity strength of each signal.
- We employed a disease area specific clinical trial success framework to develop detailed compound profiles and interpret the signal from.

### The computing framework

Using the insights coming from the above exercise, we developed a dashboard wherein our client could look at the summary profile of each candidate being experimented in the clinical study or any competitor compounds, and based on that answer a series of question such as:

- Correlations observed on the data set and what can be learned from it for future studies on same compound
- Could the client have terminated the study earlier and at what point
- What are the successful predictors for a project of this nature
- What could the client have learned from the competition during the course of the drug discovery project



## CHANNELIZING TIME AND RESOURCES TO THE RIGHT INITIATIVES

- The client can now leverage disease and treatment pathway contextual insights to identify early on the compounds most likely to be successful.
- The state-of-the-art solution will potentially save millions of dollars every year across various research efforts.
- The solution enables the client to save critical time and resources which can be channelized to the right research initiatives to help develop treatments.



“Nagarro showed great transparency in outlining their approach, clearly communicated the methods used, gave their assessment and results to our challenging questions, and a dashboard containing the results of the sentiment analysis...This is a fairly new and developing technology and therefore we had the need to describe the approach, thank-you for that.”

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INNOVATION & ENTREPRENEURSHIP  
INCUBATOR LEAD FOR THE CLIENT



## ABOUT NAGARRO

Nagarro provides technology services for digital disruption to both industry leaders and challengers. When our clients want to move fast and make things, they turn to us. We combine design, digital and data to help them outperform the competition. We distinguish ourselves by our agility, imagination and absolute commitment to our clients' business success.

Some of our clients include Siemens, GE, Lufthansa, Viacom, Estée Lauder, ASSA ABLOY, Ericsson, DHL, Mitsubishi, BMW, the City of New York, Erste Bank, T-Systems, SAP and Infor. Working with these clients, we continually push at the boundaries of what is possible to do through technology, and in what time frame.

Today we are more than 3,500 experts across 12 countries. Together we form Nagarro, the global services division of Munich-based Allgeier SE.