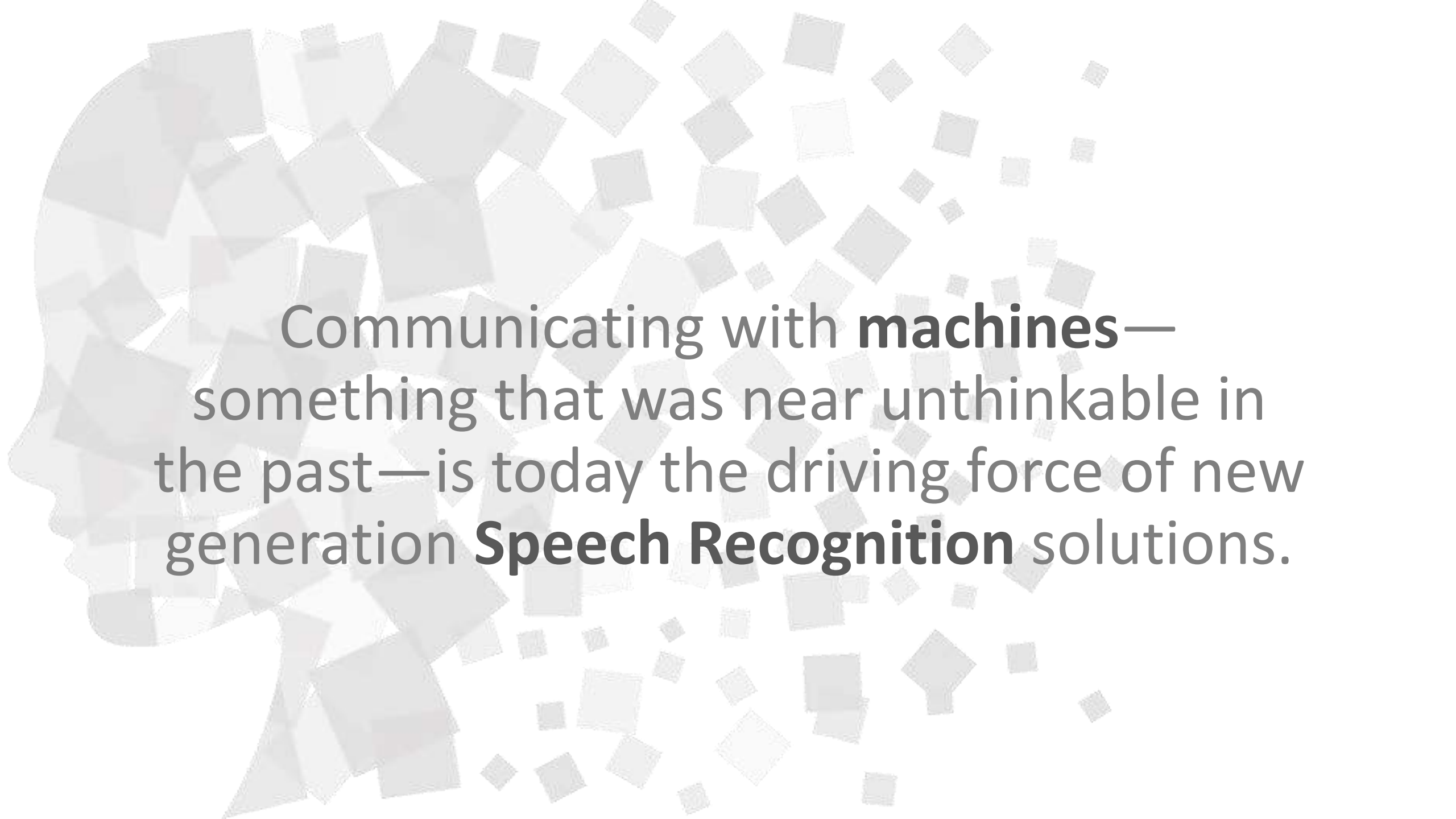




# THE USE OF ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING IN SPEECH RECOGNITION

A CS Approach By  
Uniphore Software Systems



Communicating with **machines**—  
something that was near unthinkable in  
the past—is today the driving force of new  
generation **Speech Recognition** solutions.



**ARTIFICIAL INTELLIGENCE AND  
MACHINE LEARNING.**

**THE NEW IMPERATIVES  
FOR SPEECH RECOGNITION.**



1

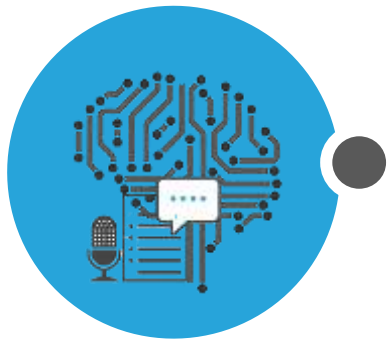
# INTRODUCTION TO SPEECH RECOGNITION TECHNOLOGY



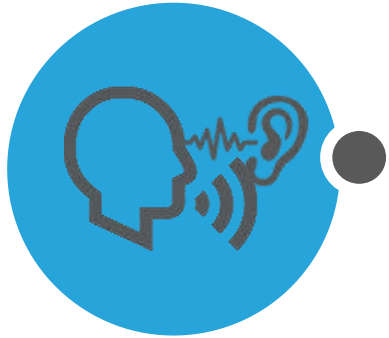
Two vintage microphones are positioned in the background, slightly out of focus. They have a classic, rounded design with a mesh grille at the bottom and a cylindrical body. The microphone on the right has a small, diamond-shaped logo on its side. A cable is visible extending from the top of the microphone on the right.

# Understanding Speech Recognition

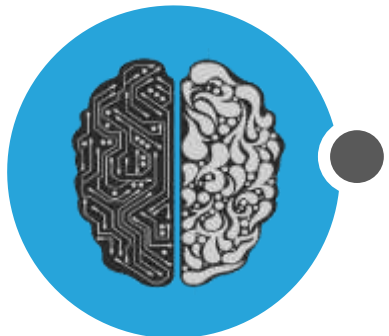
Merging the ability of speech to **relay information** with the use of **advanced analytical tools** acts as a fundamental pillar of modern day Speech Recognition.



Speech Recognition technology can be better understood by correlating it with **how our human body recognizes speech.**



Science has proven that humans **detect speech using our ears.**



People identify the **meaning** of the words using the **left side** of their brain (analytical), and decode the associated **emotions** and **expressions** using the **right side** of their brain (holistic and creative).

# SPEECH RECOGNITION UNRAVELED

# SPEECH RECOGNITION UNRAVELED

A Speech Recognition solution...



**recognizes** the  
words and phrases  
spoken



**converts** them into  
a machine readable  
format



paving the way for a  
**human-to-machine**  
**communication**



The spoken audio  
when converted  
into **machine**  
**readable text**



allows the user to  
**control** the digital  
device just by  
speaking



replacing **traditional**  
**methods** like keystrokes,  
button clicks,  
or screen taps



2

# APPLICATIONS OF SPEECH RECOGNITION



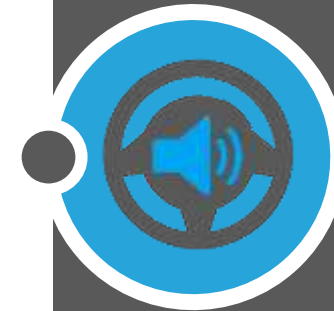
**DIY** Customer experience in Customer Support



**Hands-free** experience when booking a cab



**Voice-based** command system in in car systems



**Fool proof** authentication system to authorize access





Game-changing technology to **prevent fraud**



**High performance** aircrafts and air traffic control



Voice commands for people with **disabilities**

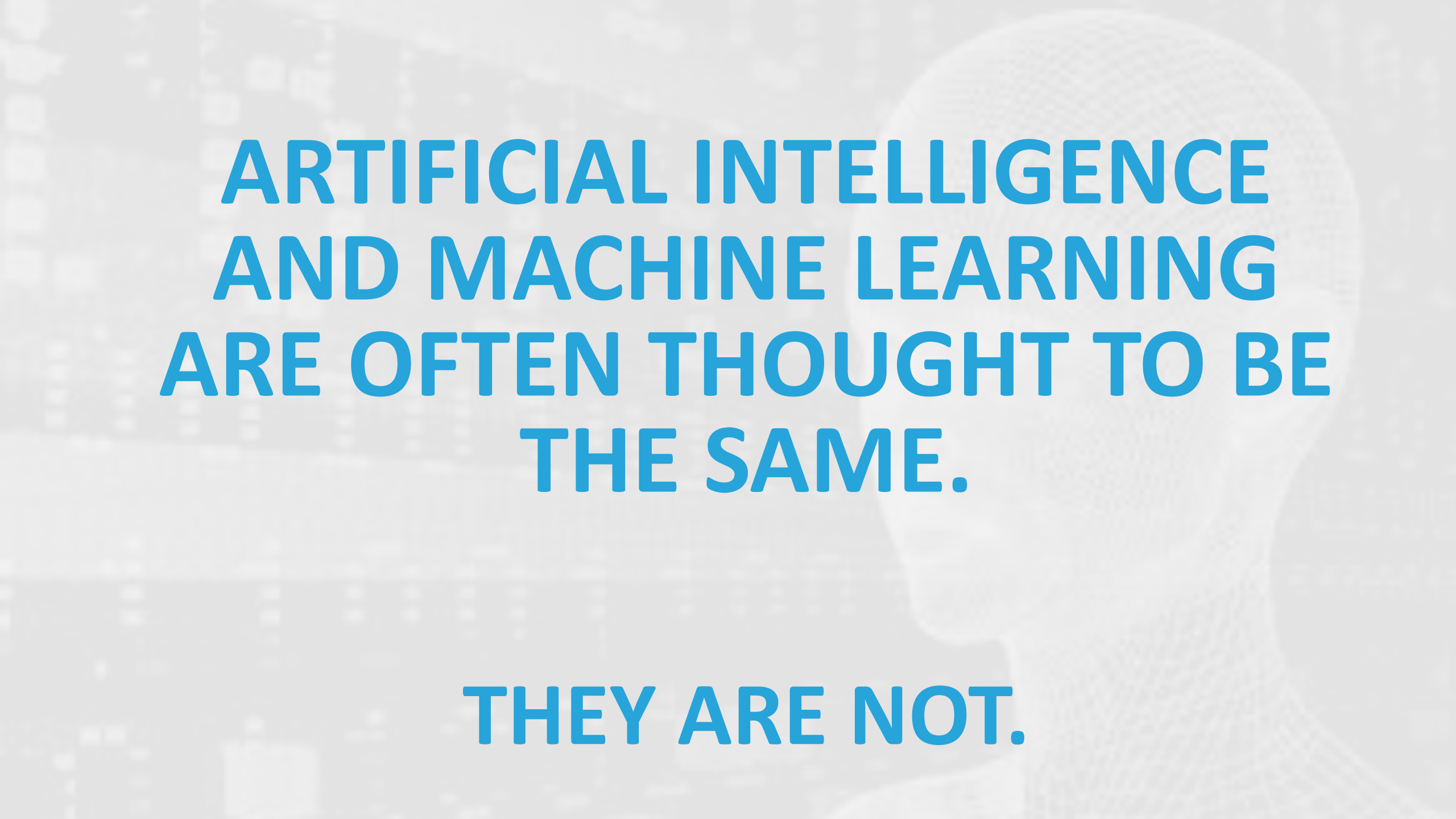


Restoring short term memory loss for people suffering from **stroke**



3

# A FIRST LOOK AT ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING

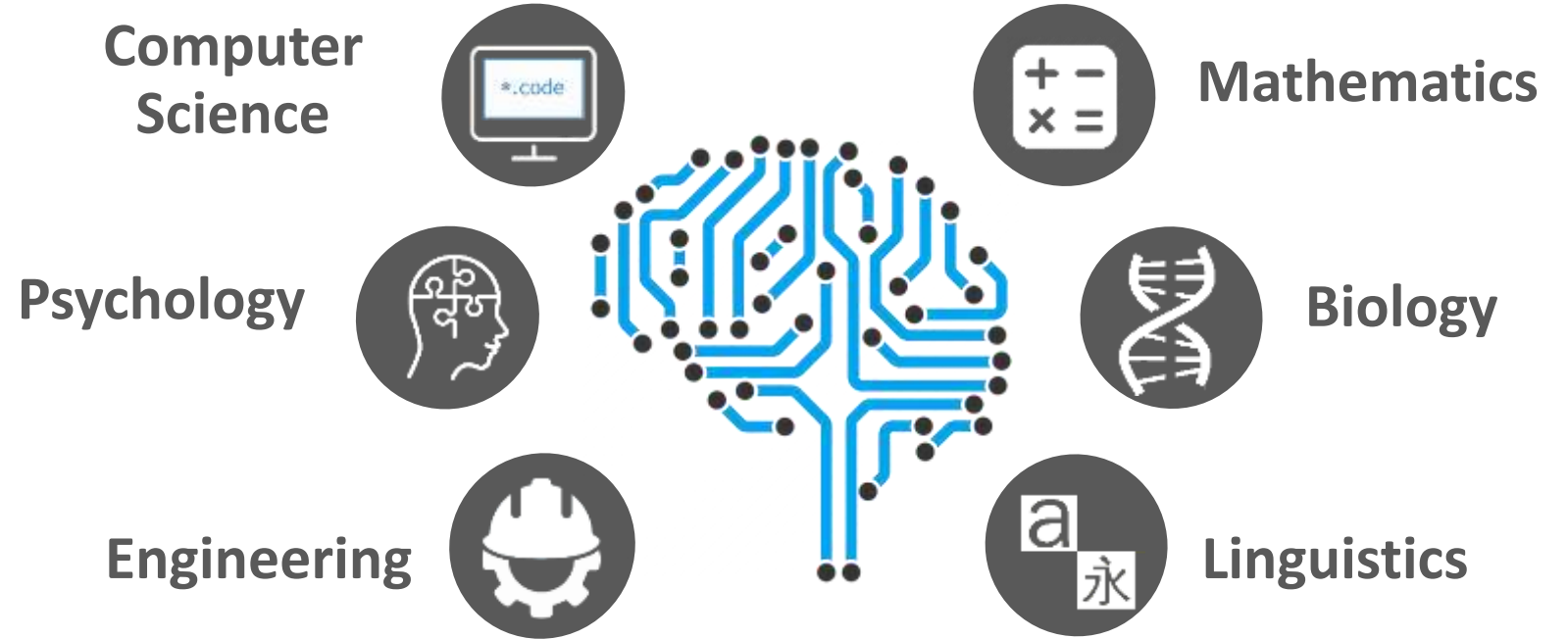


**ARTIFICIAL INTELLIGENCE  
AND MACHINE LEARNING  
ARE OFTEN THOUGHT TO BE  
THE SAME.**

**THEY ARE NOT.**

# ARTIFICIAL INTELLIGENCE DECODED

AI is based on various disciplines

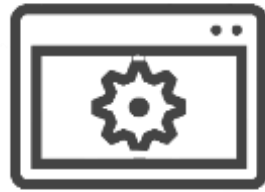


AI is all about **making machines intelligent** using advanced computer intelligence.



# ARTIFICIAL INTELLIGENCE DECODED

If a computer program is created...



**without** AI  
capability

VS



**with** AI  
capability

**ANSWERS**



the **specific** question or  
problem it is meant to  
solve



the **specific** question but also  
**related** general questions by  
understanding them intelligently

AI-based SR tools understand not only **spoken languages**, but also can track **emotions, accents, and behavior patterns**.

ML-based systems make use of...

Large  
data sets



Training  
algorithms

**DEVELOP**



**knowledge** from  
those data sets



**ALLOW**  
programs to



recognize  
patterns



make  
predictions

**MACHINE  
LEARNING  
DECODED**

Machine Learning is a subset of AI whereby the smart AI capable machine uses **large data sets to “learn” on its own.**



4

# HOW AI AND ML CAN BE LEVERAGED IN SR – BASED APPLICATIONS

Smart Speech Analytics software makes use of **AI and ML capabilities**, allowing contact centers to drive critical **business goals**.



the applications are able to **analyze** existing speech data



to **build** statistically strong models and enrich it with live data



to **predict** outcomes with high confidence levels



**CONFIGURATION OF  
BUSINESS RULES**



**SELF-LEARNING  
DIALECT ADAPTATION**



**EMOTION DETECTION  
AND TRACKING**

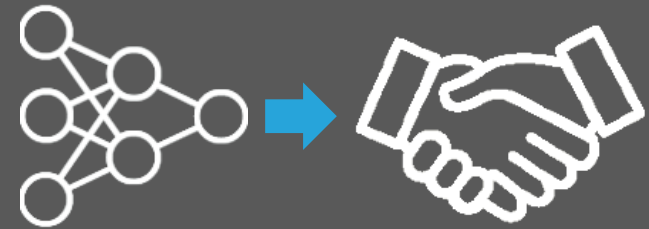


**DESCRIPTIVE AND  
DIAGNOSTIC ANALYSIS**

# SR-BASED SPEECH ANALYTICS TODAY IS NO LONGER WHAT IT WAS.



VS



Offering **pre-defined** analytics and improving contact center **efficiency**

**EARLIER**

Surfacing hidden **trends** and **patterns**, and decoding **new business opportunities**

**NOW**





5

# HOW AI AND ML HELP SCALE SPEECH RECOGNITION

**Microsoft** first introduced its **Speech Recognition technology** alongside its popular **OS Windows 95**.

Speech Recognition technology by Microsoft's Artificial Intelligence and Research Unit has **surpassed** the performance of human transcribers, making it one of the most **accurate** systems ever.

**Cortana**, Microsoft's latest phone assistant now built into Windows 10 that uses AI and ML based Speech Recognition technology, offers almost **90%** accuracy.

Google's AI experts have predicted that, by 2019, **half of web searches** will be through speech and images.

By improving its Speech Recognition technology, Google currently offers **voice search** with an accuracy rate of **92%**.

Google's Speech Recognition technology is offered to consumers via the Google app for **voice diction** on Android phones.



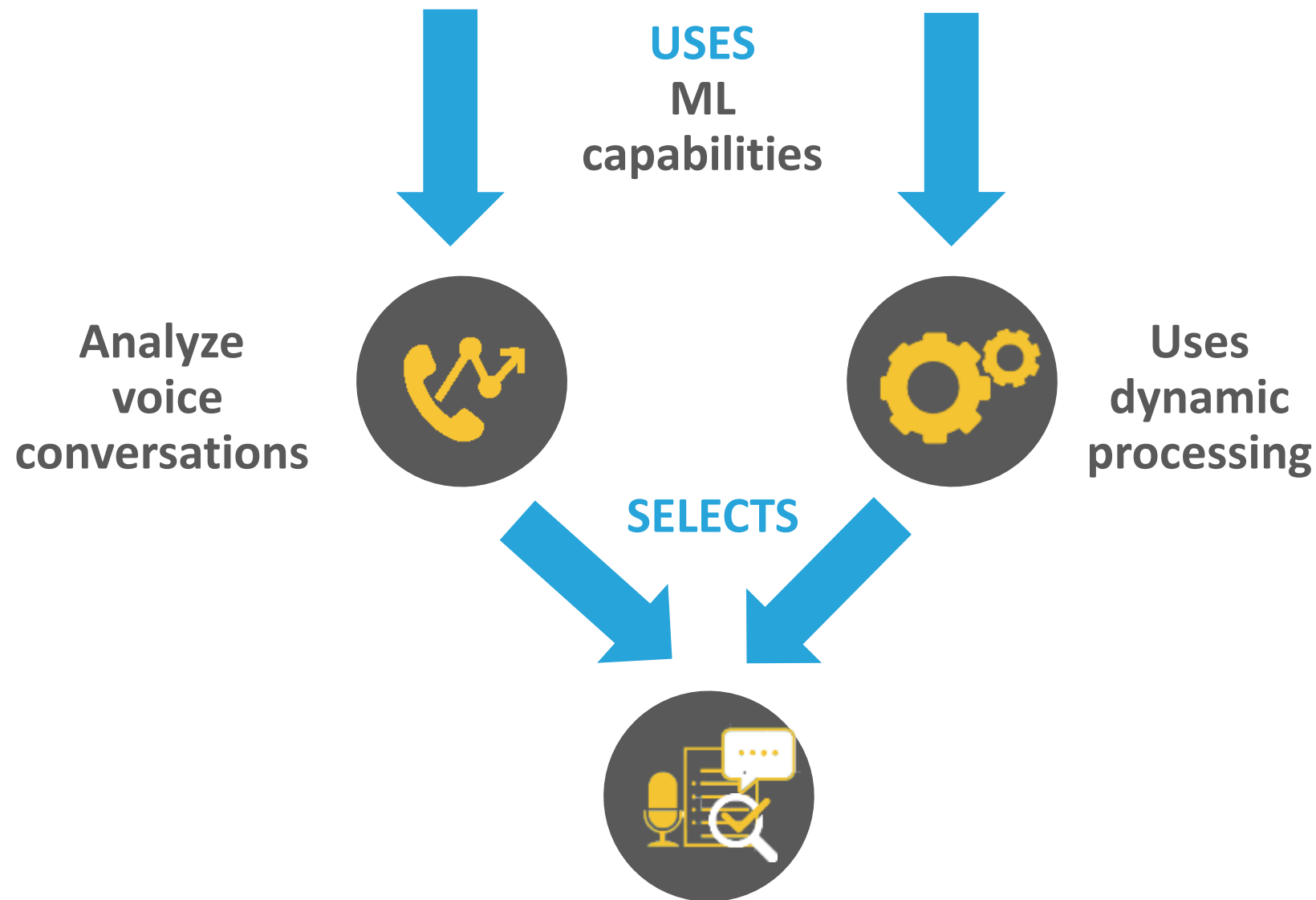
6

auMina

**FROM UNIPHORE:  
AI AND ML CAPABILITIES**

# REFINING QUALITY OF CONVERSATIONS

auMina offers an inbuilt audio quality tool that...



...the best speech engine without any **user intervention**



AI allows auMina's  
**Business Rules Assistant** to

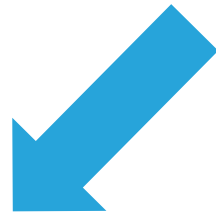
**LEARN**  
from



**Multiple  
Configurations**



**ENABLING**



**Superior  
Business  
Insights**



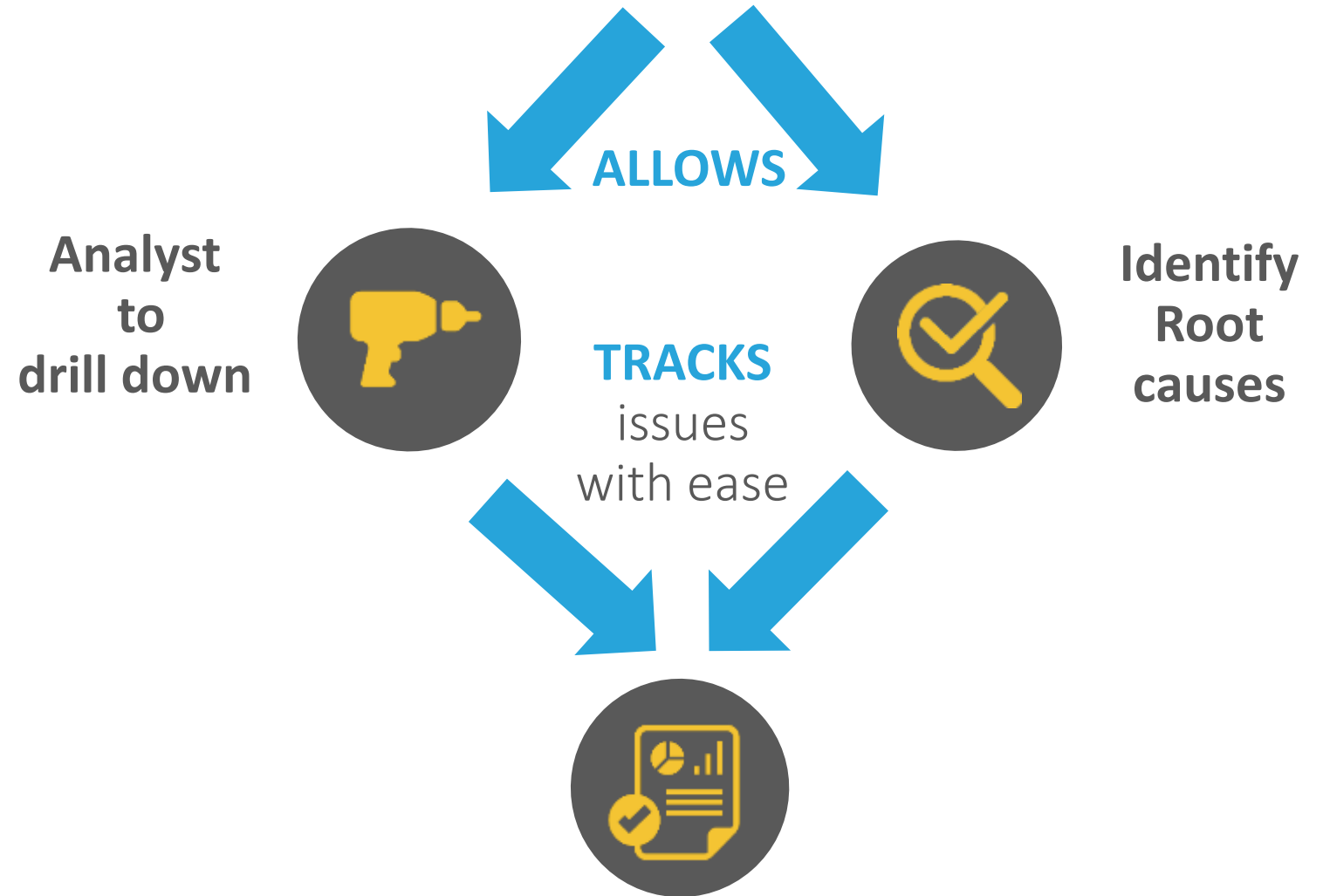
**Business  
Outcome  
Configuration**



**STRUCTURING  
DATA FOR  
INTERPRETATION  
AND ANALYSIS**

# IDENTIFYING ROOT CAUSE OF PROBLEMS SMARTLY

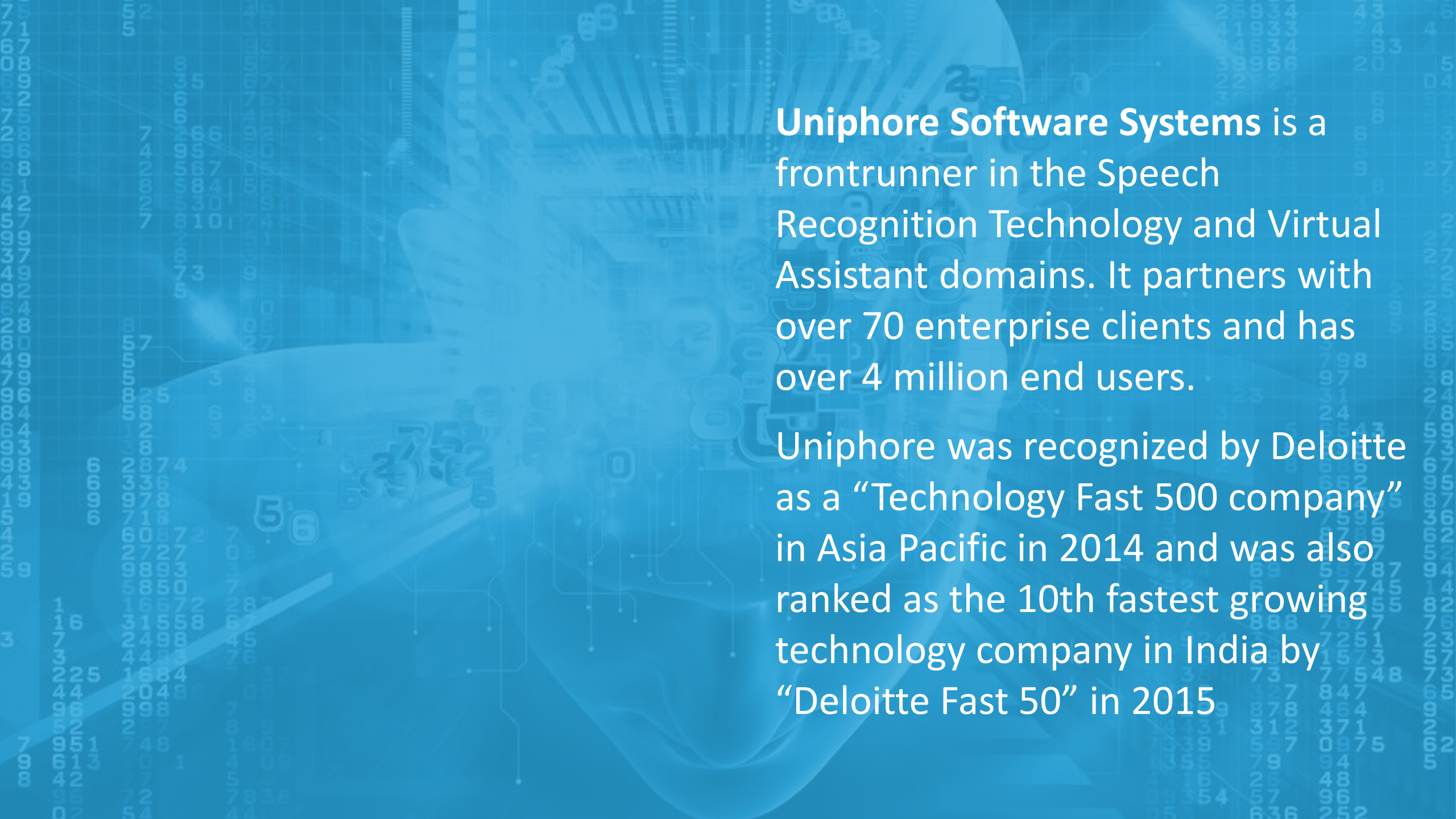
The AI and ML capabilities of auMina...



...giving businesses interactive **data analysis capabilities**

To know more about how your organization can benefit by deploying a smart customized speech analytics program through a demo, please write in at:  
**bd@uniphore.com**

To download your copy of the whitepaper on this subject, please click [here](#).



**Uniphore Software Systems** is a frontrunner in the Speech Recognition Technology and Virtual Assistant domains. It partners with over 70 enterprise clients and has over 4 million end users.

Uniphore was recognized by Deloitte as a “Technology Fast 500 company” in Asia Pacific in 2014 and was also ranked as the 10th fastest growing technology company in India by “Deloitte Fast 50” in 2015