

Intelligent RPA using Machine Learning

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Speakers



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- Machine Learning and Data Science enthusiast
- Microsoft Azure Certified Professional
- Experience in chatbot and machine learning API development.
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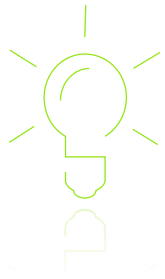
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Agenda





Industry Viewpoint



By 2025, automation technology innovations will assume control over tasks that are now performed by 250 million knowledge workers worldwide, freeing the remaining work force to devote their time and energy to more creative pursuits.

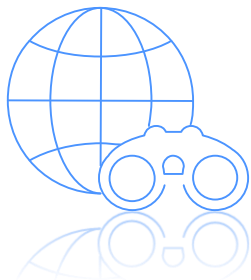
– McKinsey & Company

- 78% said delays within IT Support negatively impact productivity
- 60% describe their interactions with IT support as time consuming
- 48% said these interactions are frustrating.

– CIO Insight Survey

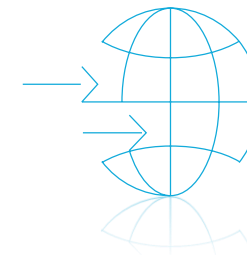
By 2018 half of all consumers will interact with services based on cognitive computing on a regular basis.

– IDC



By 2018, 30% of our interactions with technology will be through "conversations" with smart machines.

– Gartner





Automation Approach



Process redesign approach that systematically seeks to achieve small, incremental changes in processes in order to improve efficiency and quality.

Using software to handle high-volume, repeatable tasks that previously required a human to perform.

Simulating human cognition processes to enhance ability to solve business problems.

"The automation of an inefficient activity only increases the existing inefficiency."

- Bill Gates

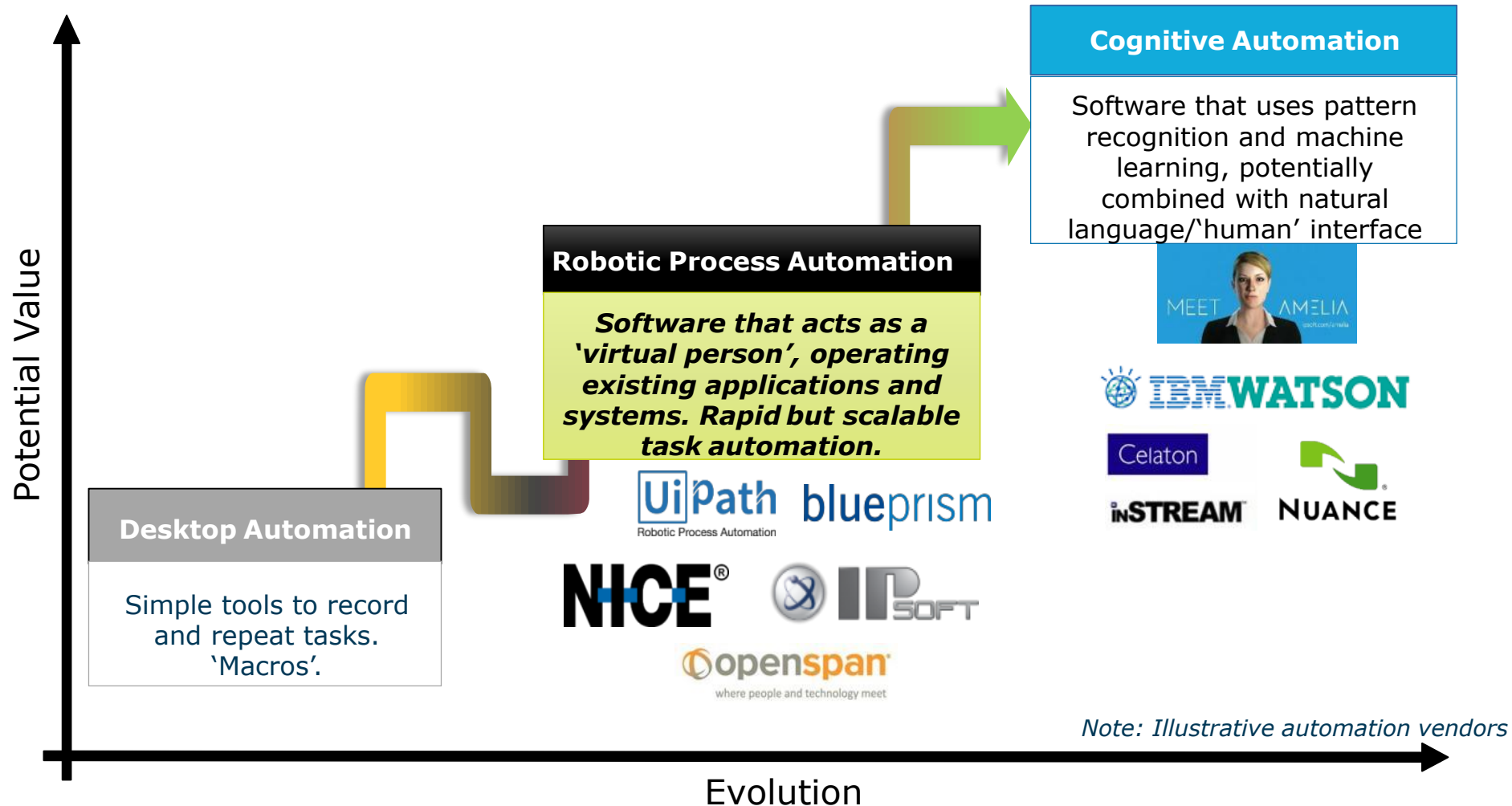
"Automation will change how we insure property, loan money, invest money, and what professionals in financial services do everyday."

- David Reilly, CTO at Bank of America

"In the future, every decision that mankind makes is going to be informed by a cognitive system."

- Ginni Pometty, Chairman & CEO of IBM

Evolution of RPA





Intelligent Process Automation

Intelligent process automation is an emerging set of new technologies that combines fundamental process redesign with robotic process automation and machine learning.



Core technologies:

- **Robotic process automation (RPA):**

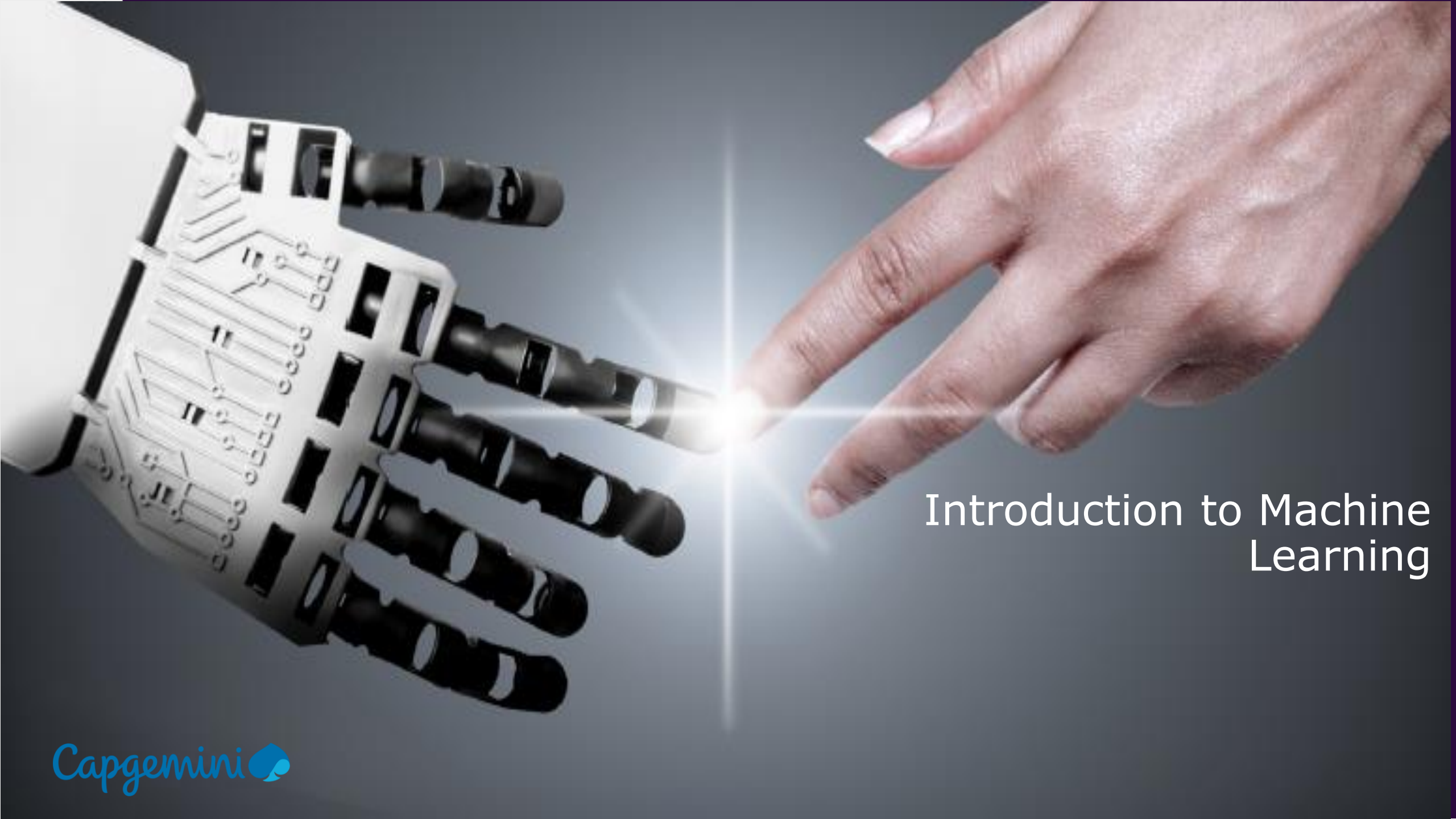
A software automation tool that automates routine tasks such as data extraction and cleaning through existing user interfaces.

- **Machine learning/advanced analytics:**

Algorithms that identify patterns in structured data, such as daily performance data, through “supervised” and “unsupervised” learning.

- **Cognitive agents:**

Technologies that combine machine learning and natural-language generation to build a completely virtual workforce (or “agent”) that is capable of executing tasks, communicating, learning from data sets, and even making decisions based on “vision, voice and text”



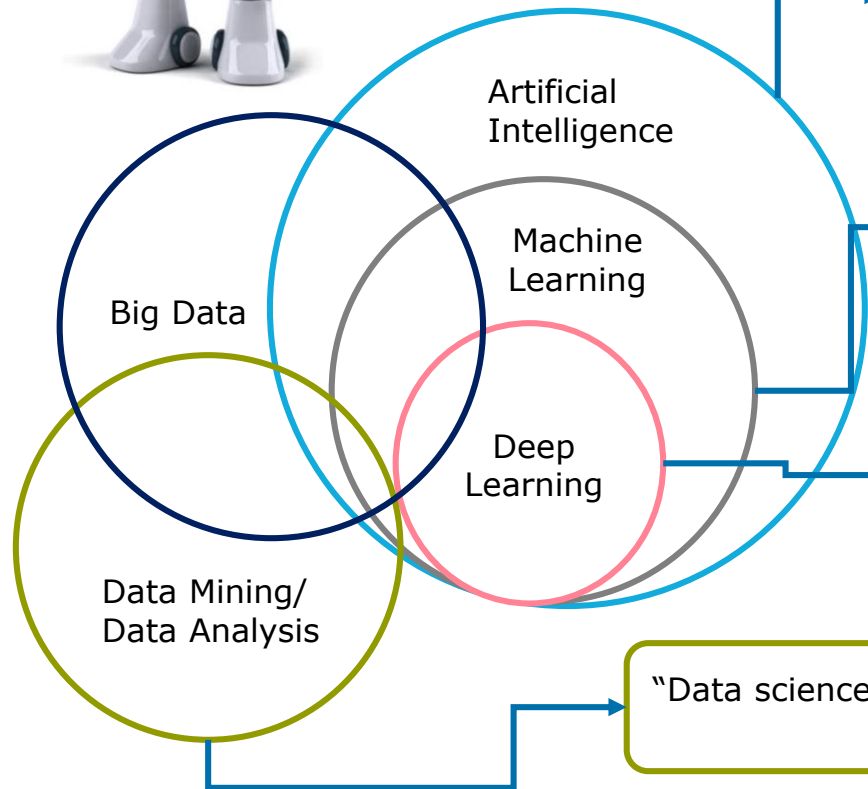
Introduction to Machine Learning



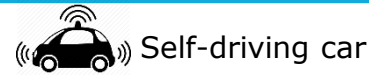
AI, Machine & Deep Learning



Capability to learn without being explicitly programmed



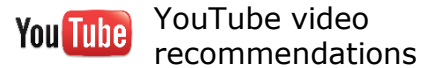
"Building technology that behaves like a human"



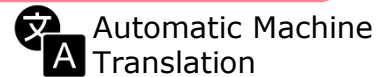
Self-driving car



"Subset of artificial intelligence that uses algorithms to learn from data sets"



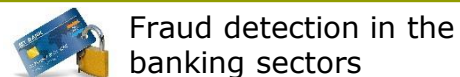
"A technique for implementing Machine Learning"



Automatic Machine Translation



"Data science is to gain actionable insights from data"



Fraud detection in the banking sectors





Types of Machine Learning



Supervised Learning

- Develop predictive model based on both input and output data.
- Task Driven
- (Regression / Classification)



Unsupervised Learning

- Group and interpret data based only on input data.
- Data driven
- (Clustering)

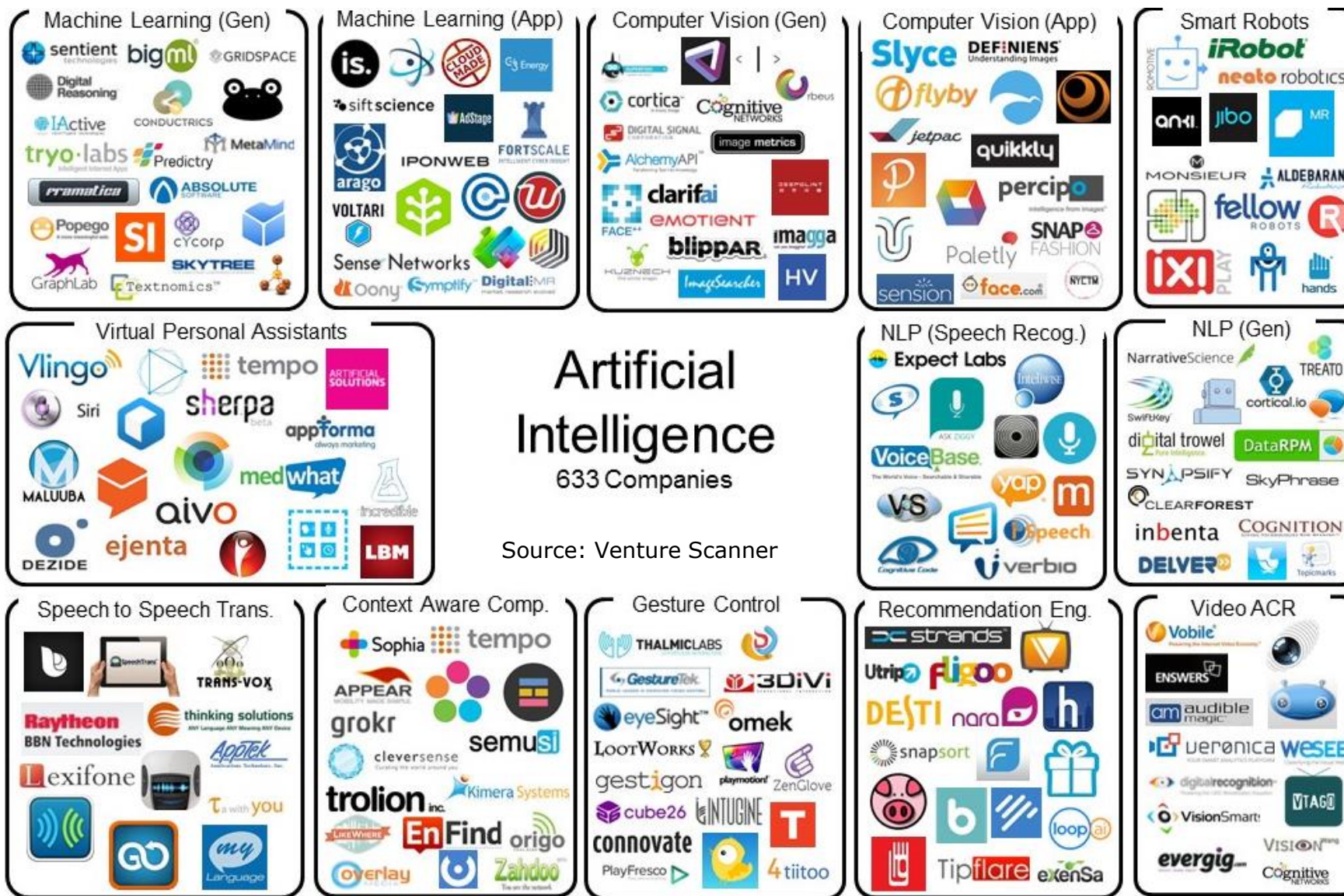


Reinforcement Learning

- Algorithm learns to react to an environment so as to maximize some notion of cumulative rewards.



AI Companies



Source: Venture Scanner




Cognitive Services

Cognitive computing is the simulation of human thought processes in a computerized model




Microsoft
Cognitive Services


- Computer Vision
 - Emotion
 - Face
 - Video

Vision 

- Custom Recognition
 - Speaker Recognition
 - Speech
 - Translator


Speech 

- Bing Spell Check
- Linguistic Analysis
 - Language Understanding
 - Text Analytics


Language 

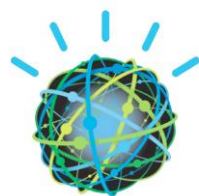


- Academic Knowledge
- Entity Linking
- Knowledge Exploration
- Recommendation

Knowledge 

- Bing Web Search
- Bing Image Search
- Bing Video Search
- Bing News Search
- Bing Autosuggest

Search 



IBM WATSON



amazon
web services



Common ML platforms

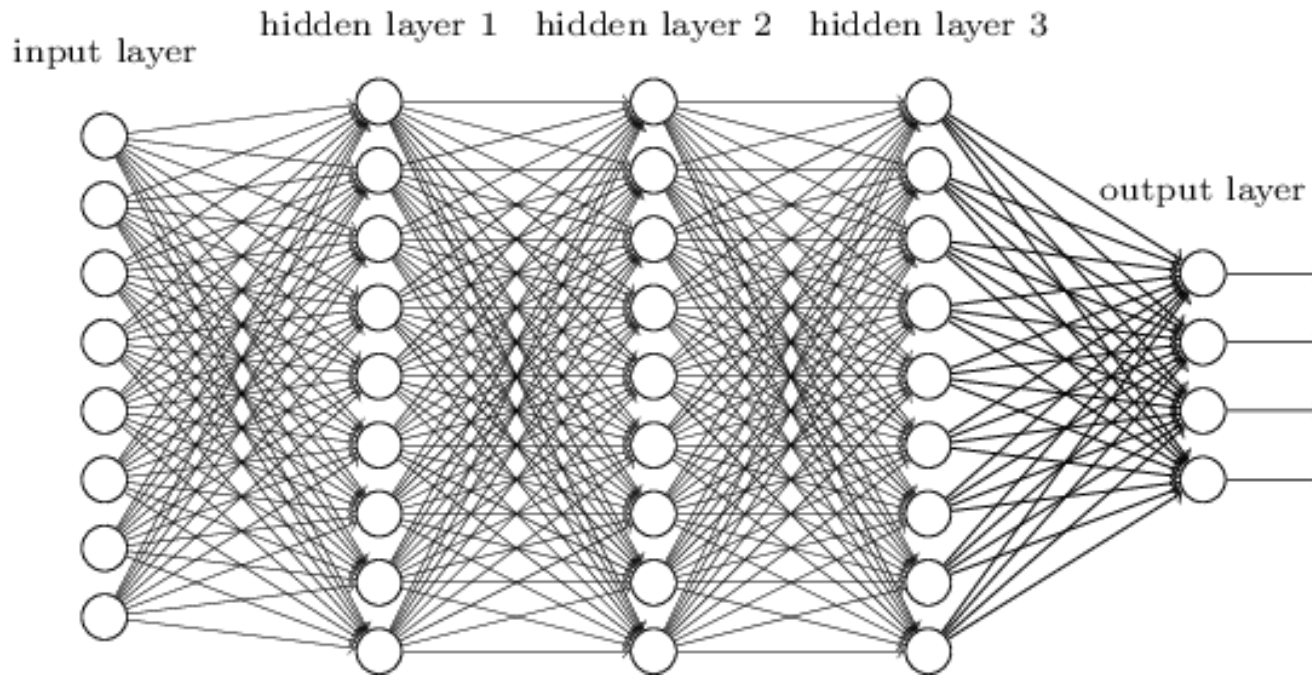
Cloud Platform



On-premise Platform

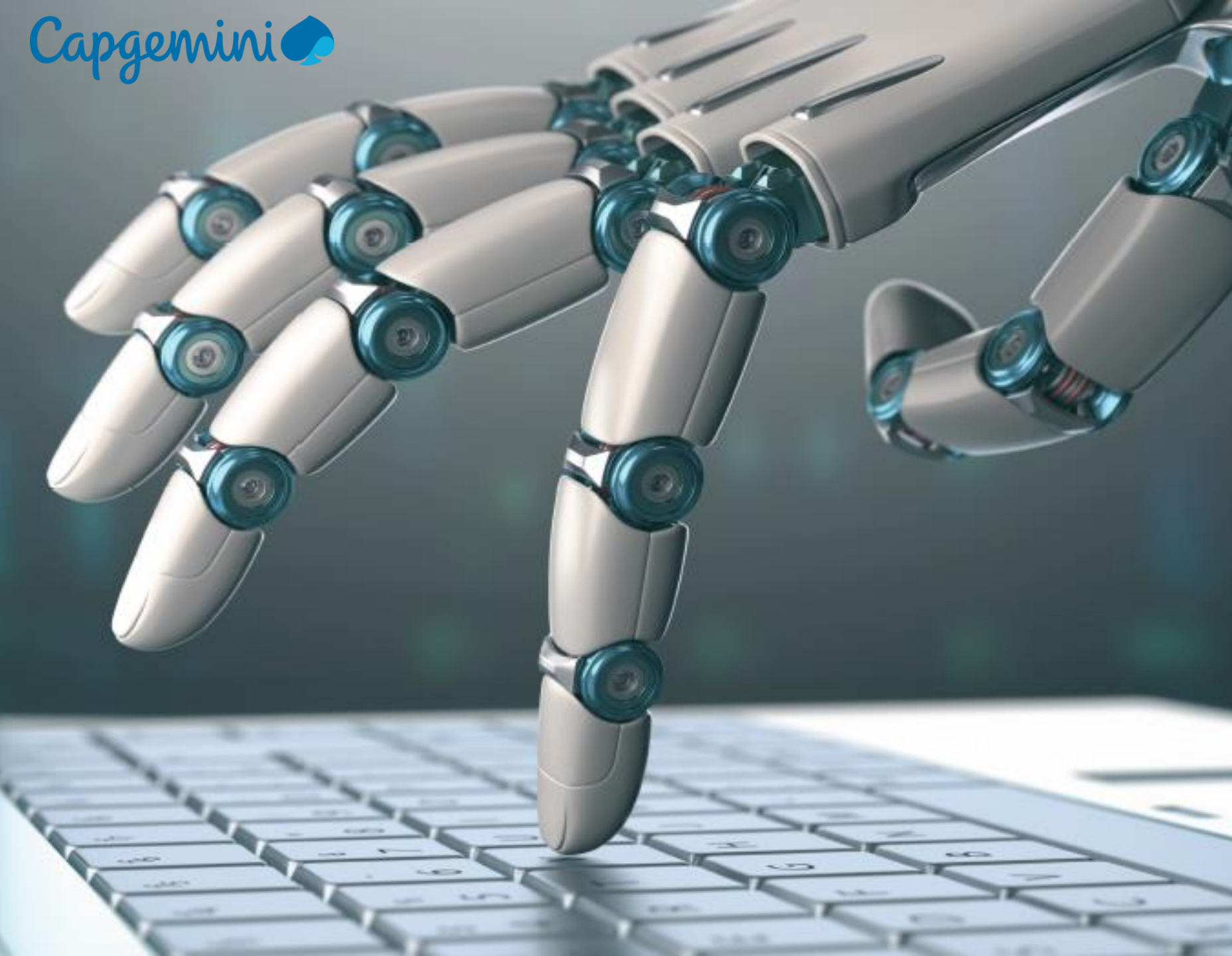


Major Architectures of Deep Learning Networks



Four major network architectures:

- **Unsupervised Pretrained Networks (UPNs)**
Initializes a discriminative neural net from one which was trained using an unsupervised criterion
 - Autoencoders
 - Deep Belief Networks (DBNs)
 - Generative Adversarial Networks (GANs)
- **Convolutional Neural Networks (CNNs)**
Well suited to object recognition with images
 - LeNet, GoogLeNet, AlexNet
- **Recurrent Neural Networks**
Includes a feedback loop that it uses to learn from sequences, including sequences of varying lengths.
 - Long Short-Term Memory (LSTM) and Bidirectional Recurrent Neural Networks (BRNN)
- **Recursive Neural Networks**
Ability to model the hierarchical structures in the training dataset.
Recurrent Neural Networks are traditionally used in NLP



Chatbot Next

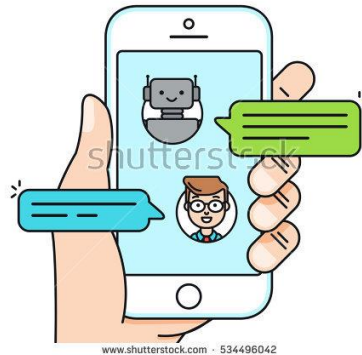


Chatbots

“A chatbot is a computer program which conducts a conversation via auditory or textual methods. Such programs are often designed to convincingly simulate how a human would behave as a conversational partner, thereby passing the Turing test.” - Wikipedia

Benefits of Chatbot:

- Available 24*7
- Handling Customers
- Helps you Save Money
- Provides 100% satisfaction to customers
- Automation of repetitive work

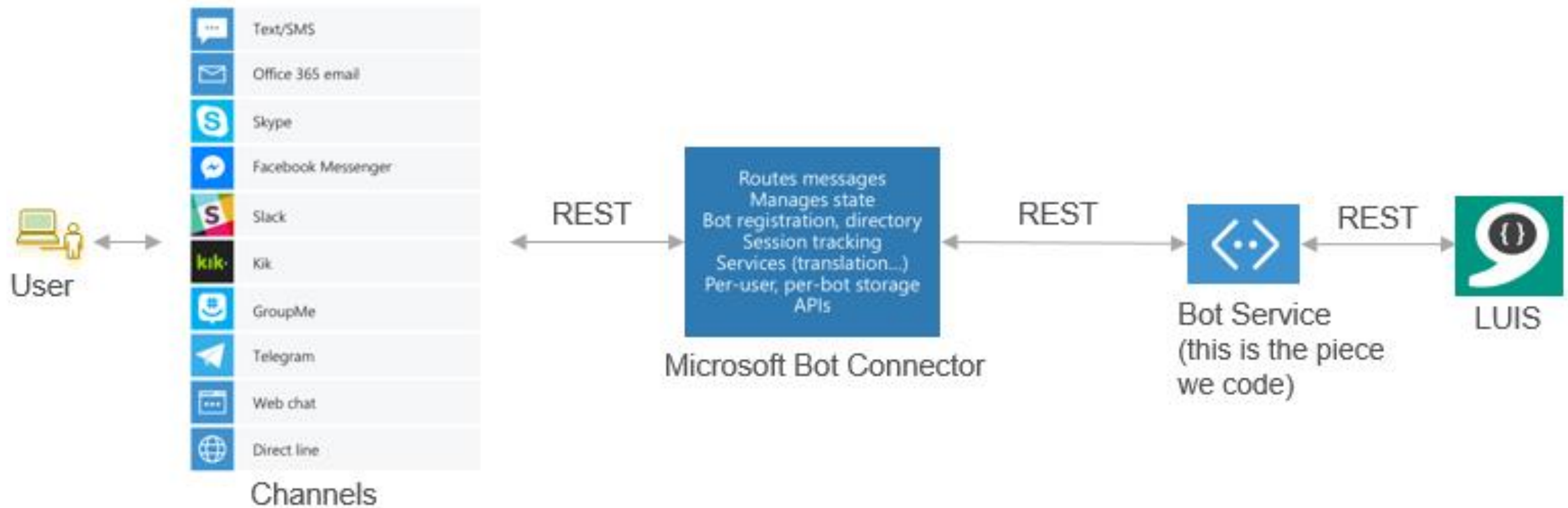


Bot Development Frameworks

- Microsoft Bot Framework
- Facebook Bot Engine (Wit.AI)
- API.ai
- IBM Watson Conversation Service

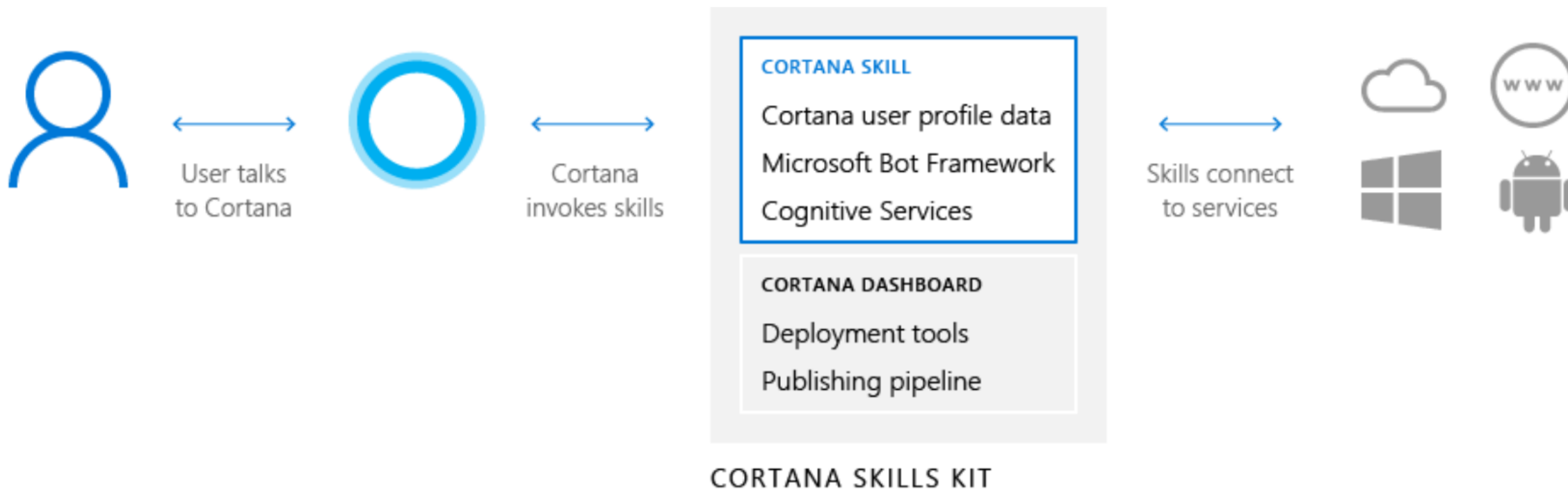


Chatbot using Microsoft Bot Frameworks



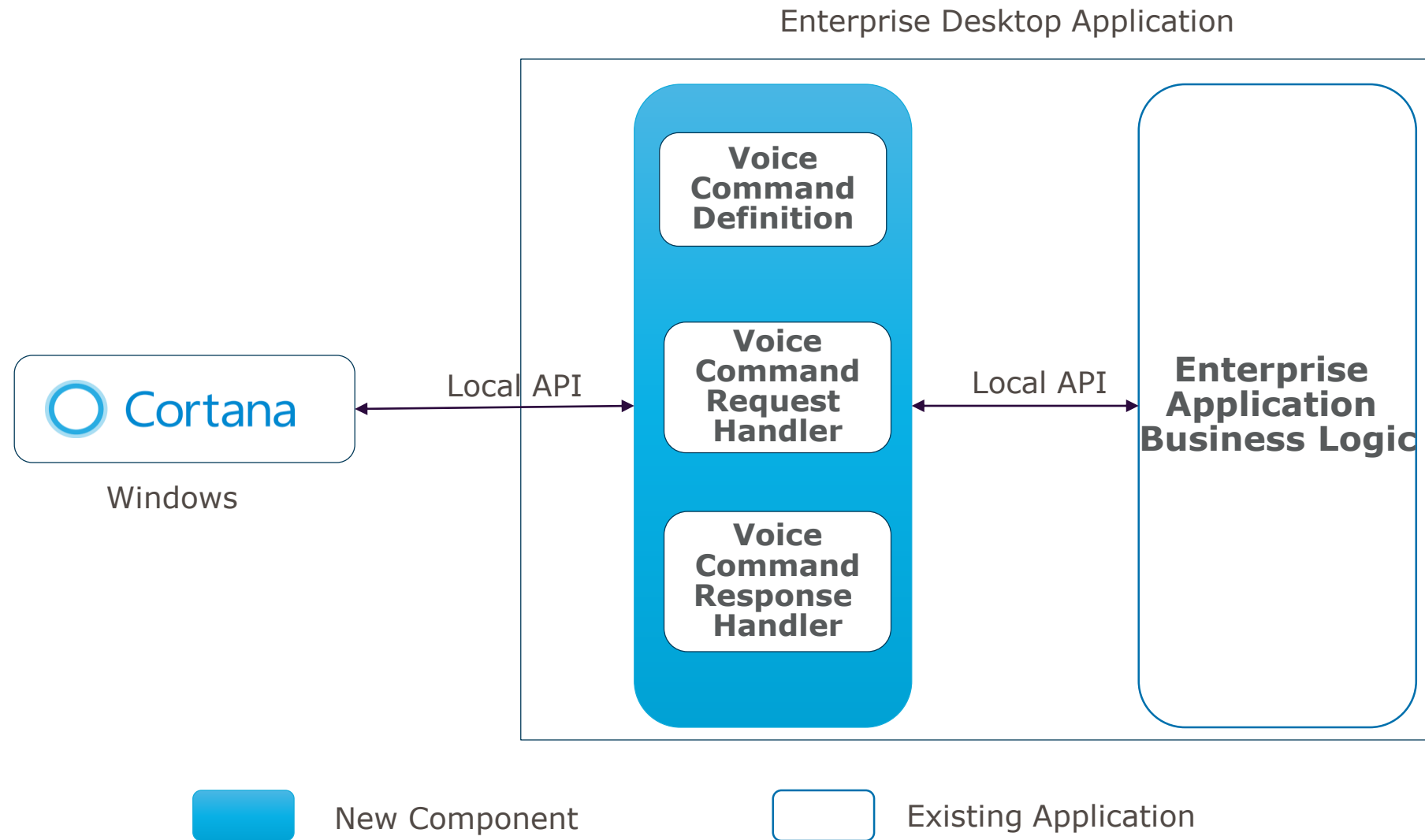


Chatbot Next - Digital Assistant

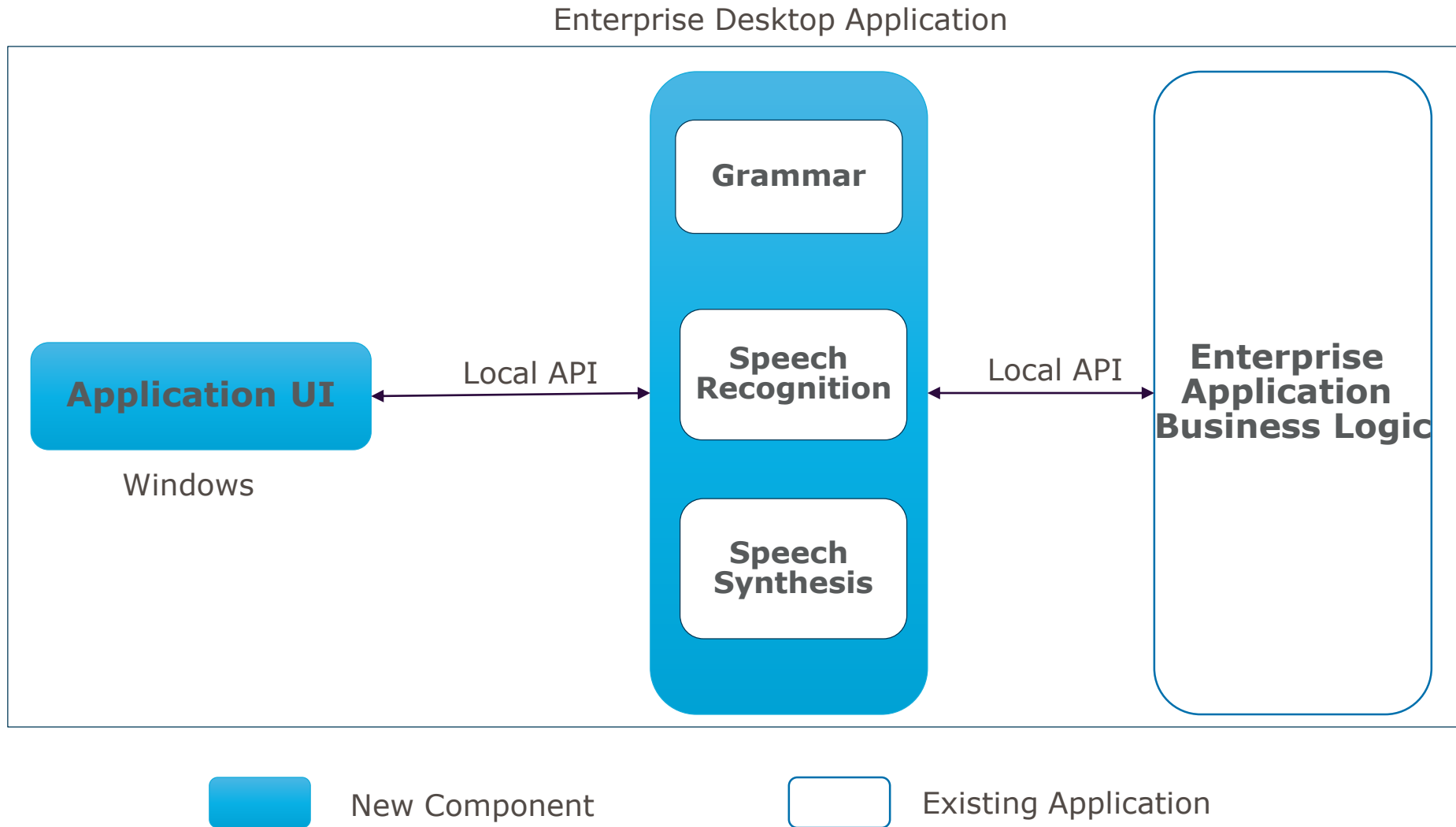




Cortana – Local Desktop Application Integration

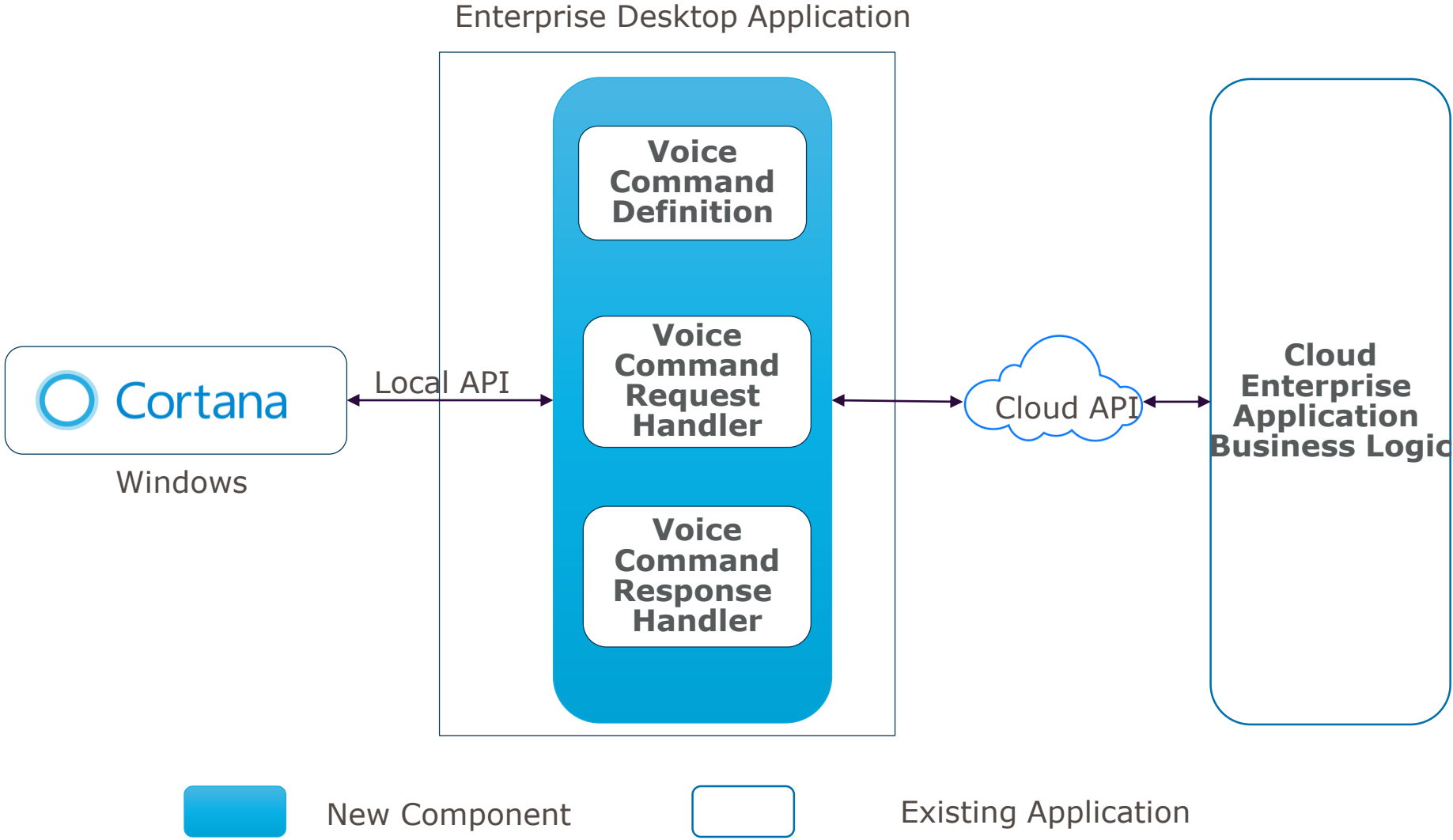


Speech SDK – In App Voice Recognition



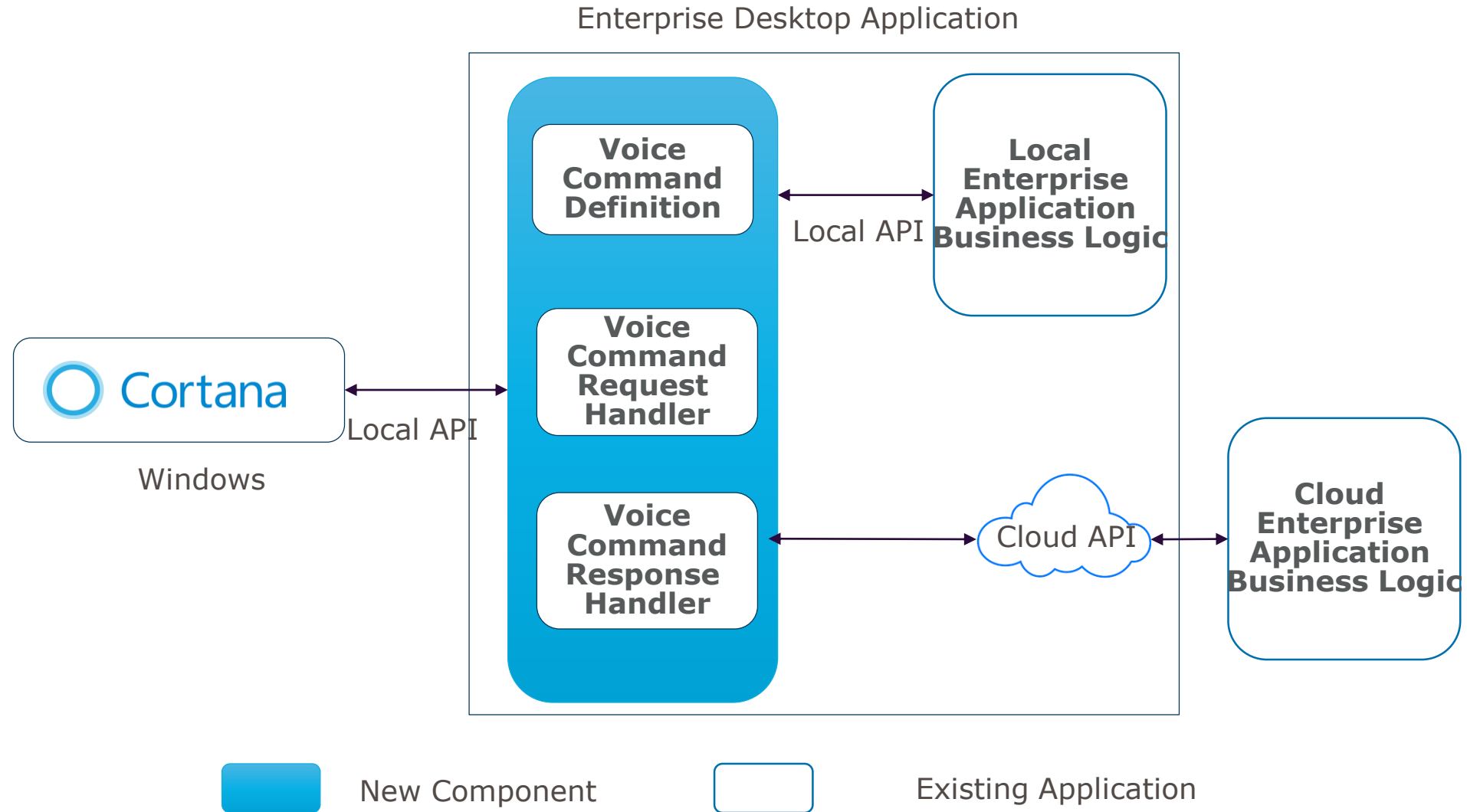


Cortana – Cloud Application Integration



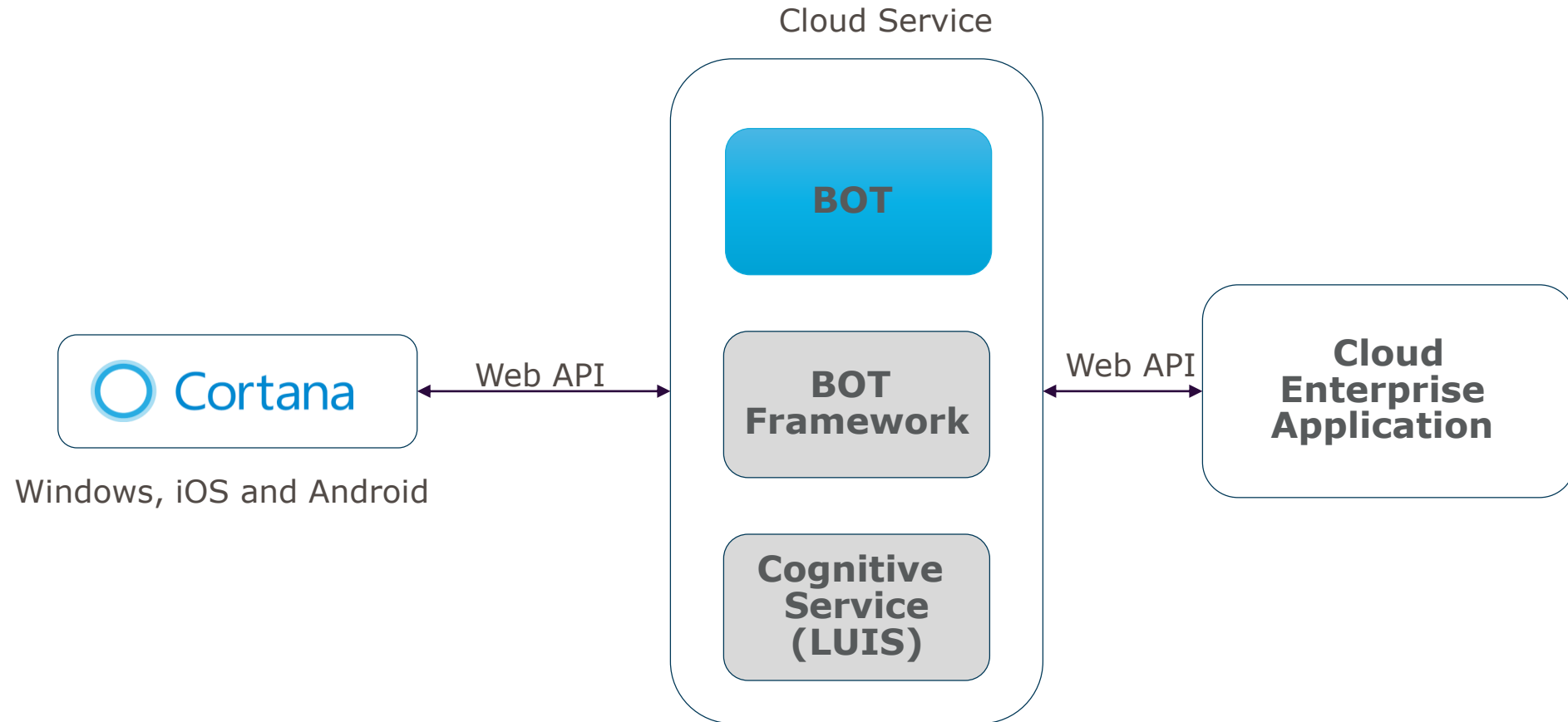


Cortana – Desktop and Cloud Application Integration





Cortana – Advanced Skills in Cloud



A futuristic, metallic robot hand is shown reaching out from the right side of the frame. The hand is highly detailed, with visible joints, cables, and a textured grip. The background is a light blue gradient with various digital and geometric patterns, including hexagons and concentric circles, some of which are highlighted in a glowing cyan color. The overall aesthetic is clean, modern, and technological.

Intelligent RPA Use Cases



Use Cases

Parking Lot

Product Support

Validate Voice Interface

Bank Cheque Deposit

Monitoring Surveillance

Q&A





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- <https://cypruscu.com/online/mobiledeposit.shtml>



People matter, results count.



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