



# The five senses of Artificial Intelligence

Why humanizing automation is crucial to the transformation of your business



*"Corporate adoption of cognitive systems and AI will drive worldwide revenues from nearly \$8 billion in 2016 to more than \$47 billion in 2020."<sup>1</sup>*

IDG Connect Ltd.

# The five senses of Artificial Intelligence: A deep source of untapped potential

There's a lot of excitement surrounding Artificial Intelligence (AI) right now—but this is also accompanied by good measures of uncertainty and fear. The fear that technology is going to replace us, or that we're going to be engineered out of all usefulness, and that machines will rule.

However, it's not the end of anything. It's the start of something new and exciting, which holds untapped potential for not only businesses, but consumers as well. Furthermore, workers will be freed from repetitive and dull duties as tasks become automated—enabling humans to concentrate on more complex aspects of the business.



*"Three in five companies (63%) say AI has not negatively impacted jobs in their organization ... the long-term view of the future is one the human employee is augmented with AI technologies."<sup>2</sup>*

Digital Transformation  
Institute  
Capgemini Consulting

<sup>1</sup> "The hidden risk of blind trust in AI's 'black box'," IDG Connect Ltd., July 6, 2017

<sup>2</sup> "Turning AI into concrete value: The successful implementers' toolkit," Digital Transformation Institute, Capgemini Consulting, September 7, 2017

# Humanizing automation

There's nothing new about automation: It started during the Industrial Revolution, of course. But what is indeed new is intelligent automation—harnessing digital technology to replicate cognitive processes, adapt to new circumstances and intuit appropriate responses. It's a development that's set to change the way the world works.

Global enterprises already have IT platforms, and few organizations are unaware of the benefits AI can bring. But taking advantage of it isn't simply a question of layering it on top of existing infrastructure or a current business process. AI is not an add-on. Like human intelligence, it's a combination of senses, experiences, and knowledge.

It's essential to recognize that harnessing AI's potential involves not just thinking about technology toolkits, but the processes to which it is applied as well, along with the human purposes you are aiming to serve. Properly implemented, AI should play a core role in the functioning of your organization.



*"I think for every job that is lost, there will be many more jobs that are gained. The role of AI is not to replace humans, it is to augment humans. It is about helping us do what we do better."<sup>3</sup>*

**Rob High**  
CTO of IBM Watson

*AI spans a wide range of cognitive technologies to enable situational reasoning, planning and, learning, aping the natural intelligence that humans and other animal species possess."<sup>4</sup>*

<sup>3</sup> "Turning AI into concrete value: The successful implementers' toolkit," Digital Transformation Institute, Capgemini Consulting, September 7, 2017

<sup>4</sup> "Turning AI into concrete value: The successful implementers' toolkit," Digital Transformation Institute, Capgemini Consulting, September 7, 2017

IDG Connect Ltd.

## Bridging humanity and AI to completely transform your business

We view AI as a combination of senses—and it's paramount that you seek out an automation provider who understands this and how it applies to your operations.

The five senses of AI combine to create a solution that's similar to our perception of human intelligence.

## The five senses—Listen/Talk, Watch, Remember, Think, Act

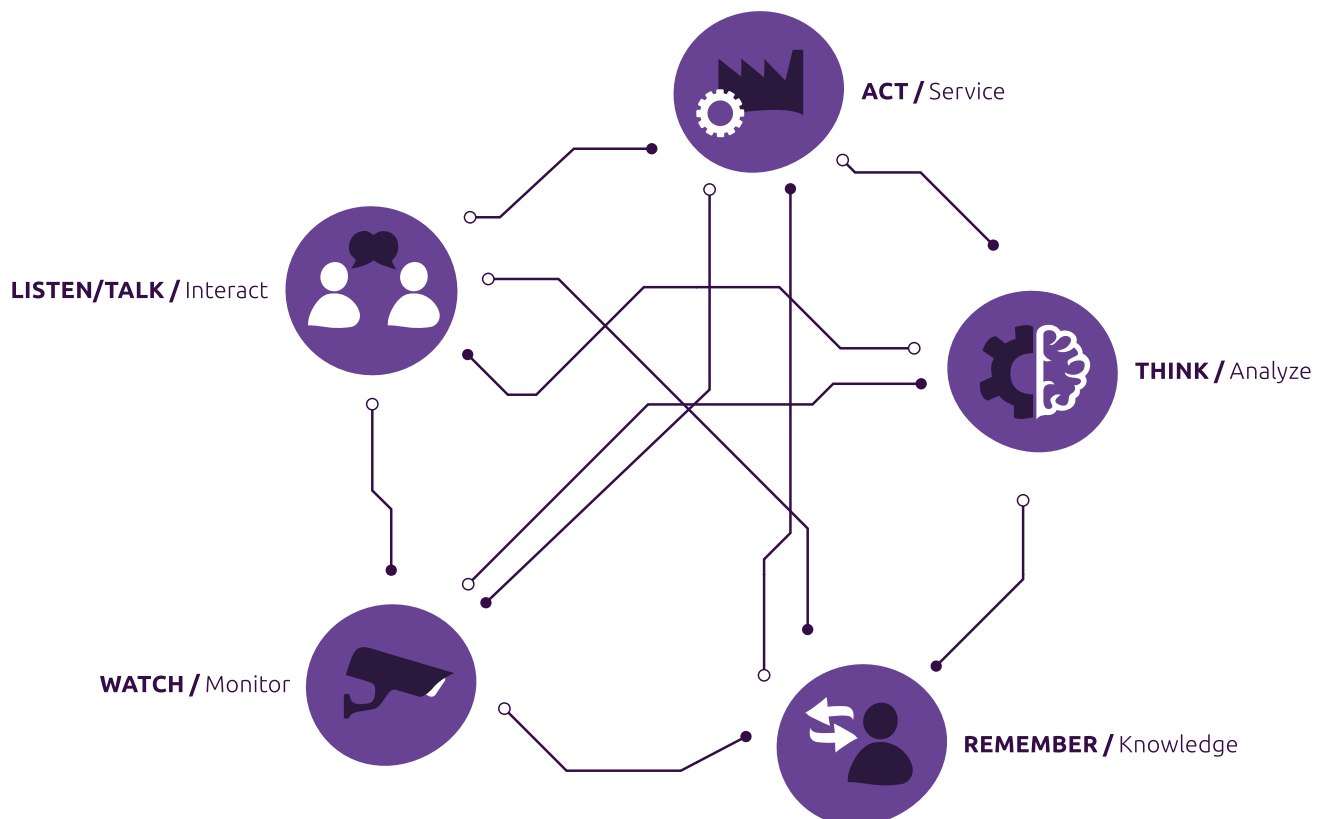
The five senses of AI work together to form automation solutions that deliver responsive, relevant, and intuitive user experiences. These attributes are a fusion of smart processes and intelligent automation, and they each have a corresponding human sense.



*"There are human issues that have nothing to do with the capabilities of the technology and everything to do with the culture of the organization and the quality of its leadership."<sup>5</sup>*

**Professor Michael Schrage**  
MIT Sloan

# THE FIVE SENSES OF ARTIFICIAL INTELLIGENCE



<sup>5</sup> "Turning AI into concrete value: The successful implementers' toolkit," Digital Transformation Institute, Capgemini Consulting, September 7, 2017

# Listen/Talk–Interact



Interactivity is the most human-like part of AI, because it's the area in which technology engages with people most—listening to them, reading what they say, and responding—either aloud or in writing. Chatbots and voicebots are common examples replacing staff-run service desks, or managed-service call centers. It's technology that needs to feel natural. It's integral to customer experience, so it needs to keep people happy.

Currently, technology focuses principally on the way people communicate with machines. As the table below shows, we're moving towards the reverse scenario—the use of natural language generation (NLG) to enable a machine to converse with people. For instance, technology could convert data into forms people can understand. It can interpret and present information and even summarize it to assist people with decision-making.

*"At Swedbank, a leading Nordic-Baltic banking group, Nina, a virtual assistant, managed to resolve 78% of the queries put to her at the first attempt. The bot sees an average of 30,000 conversations per month and she answers eight out of every ten customer questions."<sup>6</sup>*

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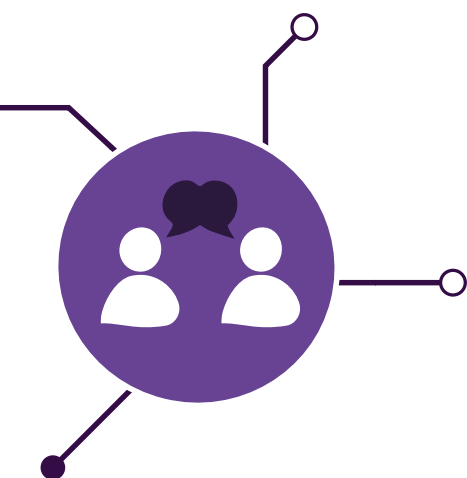
## Listen/Talk

### What we can do now

- Voicebot/chatbot service desk using natural language processing (NLP), intelligent character recognition (ICR) and rule-based responses
- Human intervention in 20%–25% of cases for exception handling

### Where it's heading

- Intelligent Virtual Agents with human empathy, employing Deep Learning-based knowledge, NLG, biometrics, image and video analysis
- Human intervention in managing configurations, monitoring performance and supporting continuous learning



*"Image recognition and facial scanning mimic humans' sense of sight, while speech recognition mimics humans' sense of hearing."<sup>7</sup>*

<sup>6</sup> "Turning AI into concrete value: The successful implementers' toolkit," Digital Transformation Institute, Capgemini Consulting, September 7, 2017

<sup>7</sup> TechRadar™: Artificial Intelligence Technologies And Solutions, Q1 2017," Forrester Research Inc., April 18, 2017

Forrester Research



*"More than 1 in 2 organizations (59%) agree that AI is supporting customer intimacy. And AI initiatives have helped more than 6 in 10 organizations increase customer satisfaction and reduce churn."*<sup>8</sup>

Digital Transformation  
Institute  
Capgemini Consulting

## Watch—Monitor

Technology has been used to keep track of and record data for some time, so people can watch over it and take appropriate action.

But what's new is the extent to which monitoring can now happen, and the manner in which data is captured. Standard metering and telemetry are being joined by CCTV, IoT sensors, and other forms of digital data capture. Organizations can assess the health of their IT systems, customer

experiences and expectations, market trends, and more.

What's also new about monitoring is the application of AI. Self-healing routines are being built into processes to automate remediation, and AI techniques will make them completely self-adjustable and self-manageable.

Before, monitoring captured data—now, it generates knowledge.



*"AI-powered mobile visual search tools are helping consumers quickly take a picture of something they want to buy and suggest similar items."*<sup>9</sup>

Digital Transformation  
Institute  
Capgemini Consulting

### Watch

#### What we can do now

- Self-healing elements employing RPA tools
- Human intervention in 25%–40% of cases for remediation purposes

#### Where it's heading

- Pre-emptive monitoring and full self-healing employing predictive analytics, Deep Learning, and image and video analysis
- Human intervention in managing configurations, monitoring performance, and supporting continuous learning

<sup>8</sup> TechRadar™: Artificial Intelligence Technologies And Solutions, Q1 2017," Forrester Research Inc., April 18, 2017

<sup>9</sup> TechRadar™: Artificial Intelligence Technologies And Solutions, Q1 2017," Forrester Research Inc., April 18, 2017

# Remember— Knowledge

Information only becomes knowledge when we can remember it and when it's relevant in answering a question, which is why data storage and retrieval are so important. Managing this knowledge typically involves the use of a central repository.

AI turns knowledge management on its head. Instead of being driven by the data and systems in which it resides, AI is driven by the needs of the business and the value it brings in shaping future direction.

Knowledge is power—and AI can help to release it.



*"What I have observed in companies that do AI well, is they have a policy and process around data governance and treating data as an asset."<sup>10</sup>*

**Professor Michael Schrage**  
MIT Sloan

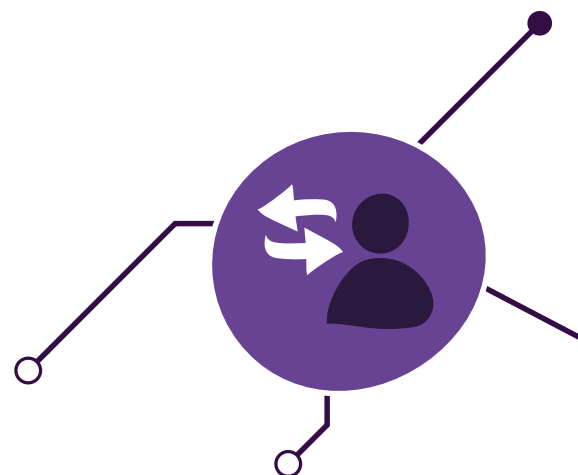
## Remember

### What we can do now

- Knowledge database using text analytics and NLP for quick retrieval
- Human intervention consists of database maintenance and exceptions handling

### Where it's heading

- AI-based knowledge platform employing Deep Learning techniques, text analytics and NLP, advanced analytics, and knowledge extraction algorithms
- Human intervention in managing configurations, monitoring performance, and supporting continuous improvements in intelligence and speed of retrieval



<sup>10</sup> TechRadar™: Artificial Intelligence Technologies And Solutions, Q1 2017," Forrester Research Inc., April 18, 2017

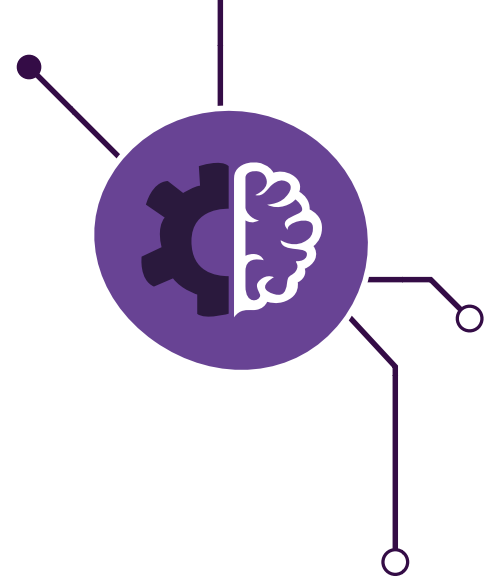
# Think–Analyze

Just as human minds apply thought to knowledge, AI detects patterns, recognizes trends, and applies algorithms to information to determine appropriate actions or predict future consequences.

What's more, AI can do this at scale. Deep Neural Networks (DNNs) can perceive patterns humans would miss because the data sets within which

they're operating are simply too large for any one mind to accommodate.

For example, in the next two years, most major businesses will redefine their processes and products to deliver enhanced customer experiences with AI-based technologies. These will have derived courses of action from vast data sets of customer interaction.



## Think

### What we can do now

- Language libraries and other tools are used to analyze market trends, service levels, and customer expectations
- Human intervention in the interpretation of statistical results

### Where it's heading

- Real-time machine learning using Deep Learning-based analytics, pattern recognition, and predictive analytics
- Human intervention in managing configurations, monitoring performance and supporting continuous Deep Learning, pattern recognition, and predictive analytics

*"[AI] involves self-learning systems that use data mining, pattern recognition, and natural language processing to mimic the way the human brain works, without continuous manual intervention."<sup>11</sup>*

HfS Research Ltd.

<sup>11</sup> "The 2017 AI-Powered OneOffice Premier League Table," HfS Research Ltd., August, 2017

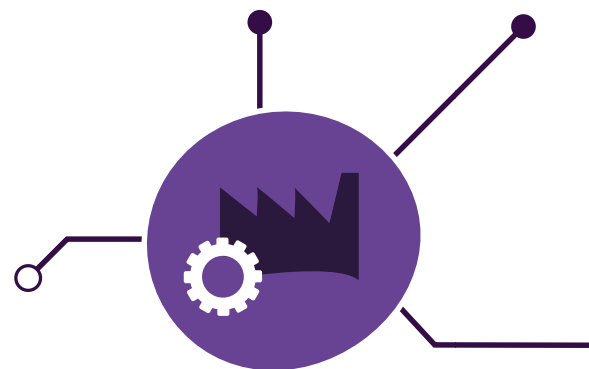


# Act–Service

If the other four senses described in this document are about processing information in various ways and engaging with people, this one is more dynamic. It's about using technology to complete processes and tasks.

Even though these robots aren't physical—you don't see them spray-painting car bodies on assembly lines—they are no less useful and no less tailored to the tasks they perform.

Common current examples of robotic process automation (RPA) include resetting a password, placing a customer order, or processing a supplier invoice. In the future, RPA will be extended by AI: Deep Learning algorithms will learn from historical data and decide appropriate processes and approaches to take in the delivery of services.



## Act

### What we can do now

- Rule-based RPA with service management tools for tracking
- Human intervention for exceptions handling (typically at levels of 20%-30%) and script management

### Where it's heading

- Fully-automated service delivery employing NLP, NLG, Deep Learning, biometrics, image and video analysis, and semantic technologies
- Human intervention in managing configurations, monitoring performance, and supporting continuous Deep Learning

# Weaving in AI and intelligent automation to transform your business

What conclusions should we draw here? First, of course, that AI is set to enhance and transform the way major enterprises and their employees manage their processes and serve their customers—and second, that AI reaches its fullest potential when it's approached with equal intelligence.

AI and intelligent automation need to be woven into your organization, not bolted onto it. This means taking time before any implementation

to understand the exact needs of your business, the efficacy of your processes, the extent of your current technology, and the capabilities of your workforce.

To learn more about Capgemini's Automation Drive solution and how you can augment your business with AI and intelligent automation, please get in touch. You'll find our contact details below.



*"Organizations are now convinced of the benefits that AI can bring. They are now asking themselves where and how they should invest."<sup>12</sup>*

**Gordon Schembri**  
Principal Digital  
Technology,  
GE Oil & Gas

<sup>12</sup> Ibid.





## About Capgemini

A global leader in consulting, technology services and digital transformation, Capgemini is at the forefront of innovation to address the entire breadth of clients' opportunities in the evolving world of cloud, digital and platforms. Building on its strong 50-year heritage and deep industry-specific expertise, Capgemini enables organizations to realize their business ambitions through an array of services from strategy to operations. Capgemini is driven by the conviction that the business value of technology comes from and through people. It is a multicultural company of 200,000 team members in over 40 countries. The Group reported 2016 global revenues of EUR 12.5 billion.

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**For more details contact:**

**Christopher Stancombe**

Head of Industrialization and Automation  
+44 3702388521

***[christopher.stancombe@capgemini.com](mailto:christopher.stancombe@capgemini.com)***

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