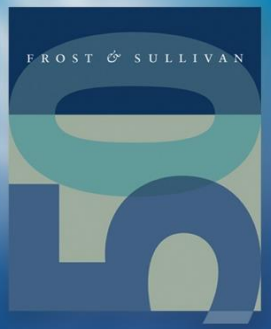
Artificial Intelligence Applied to the Customer Experience in Latin America, 2018

Moving Beyond Chatbots to Provide Seamless Customer Engagement

Global Digital Transformation Research Team at Frost & Sullivan



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Executive Summary

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Key Findings

- The millennial customer's passion for self-service and the increased use of mobile apps, intuitive user interfaces, and personalization have created a powerful driver for the adoption of artificial intelligence (AI) for the customer experience in Latin America.
- However, knowledge of AI across most enterprises is still preliminary, and most of the implementations made so far are based on either virtual assistants or chatbots.
- Several possible customer or enterprise-facing applications of AI can directly or indirectly enhance the customer experience, including predictive analytics, visual recognition, and cybersecurity.
- Vertical markets, such as retail, healthcare, home automation, and customer relationship management (CRM), are ripe for customer experience improvement through AI application, particularly in the realm of customer service. AI can be applied across business functions and can impact customer engagement, products, and services.
- The key benefits of deploying AI into the customer experience include the optimum use of Big Data, the enablement of smarter, personalized insights, products, and services, and the increased efficiency of organizations and the effectiveness of contact center solutions for an enterprise-wide impact.
- Some of the main vendors in the Latin American market include Next IT, Microsoft, IBM, Amazon, and Virtual Interactions.

Source: Frost & Sullivan

Market Overview and Definitions

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AI—An Introduction

Information technology (IT) is something of a misnomer. It has always been about data. We have become experts at generating, collecting, managing, transmitting, and storing data. With the advent of Big Data and its hardware equivalent, the Internet of Things (IoT), this ability to reduce the world to data streams has reached its ultimate expression. It is now possible to literally apply all available data to any problem we want to consider. There is one problem, though: not enough time or people.

Ironically, it is limitations in terms of people that has become a barrier to the effective use of data. This is because data is not information. Information is data in context, or more simply, the logical relationships within collections of data, and it takes humans to perceive those relationships. However, as the data collection expands exponentially, human perception will be inadequate to extract meaningful relationships from the same. In the past, the desire for more data led to what was called analysis paralysis, which implied the lack of data-delayed decision-making. Now, with the ability to access all the data available, we still have analysis paralysis, but for the exact opposite reason: too much data.

AI, especially machine learning (ML) technologies as applied to advanced analytics, provides a means to transcend the limitations of human analysis, and it helps to evolve from data-centric IT to information-centric IT. AI also provides the capabilities to deliver true intelligence technology, and once trained, it requires no human involvement to extract meaning from large data sets. AI is the secret ingredient for the transformation of IT.

Source: Frost & Sullivan

AI—An Introduction (continued)

AI is coming of age. ML, in particular, is being integrated into many aspects of advanced analytics and is being put to work in applications as far afield as supply chain optimization and the customization of cancer treatment. As a result, Frost & Sullivan's Stratecast Team forecasts substantial growth in the AI market.

Nevertheless, despite its many virtues, AI is still poorly understood by most businesses, and it is no different in the Latin American contact center market. In spite of survey data that indicates a strong commitment to deploy AI for the customer experience across market verticals, contact center companies hope that AI will be transformational, and they are making commitments to invest in it without really understanding what it is or what it can do.

However, AI has finally left the laboratory and is, despite uninformed hyperbole, far from taking over the world. It is, nonetheless, quietly being integrated into many applications where data sets are complex or where the volume or the speed of data acquisition are overwhelming for human analysis. AI-powered analysis has begun to deliver significant returns for businesses that have appropriately applied it.

Nevertheless, AI is not a standalone technology. It depends on a data infrastructure; that is, it requires a clean, current data set. Without such a foundation, AI simply amplifies the old "garbage in, garbage out" paradigm of early automated data processing. To extract maximum value from an AI investment, a substantial amount of attention needs to be devoted to building a trusted data pool. This involves investments in data preparation technology and the Big Data infrastructure necessary to store and retrieve relevant data.

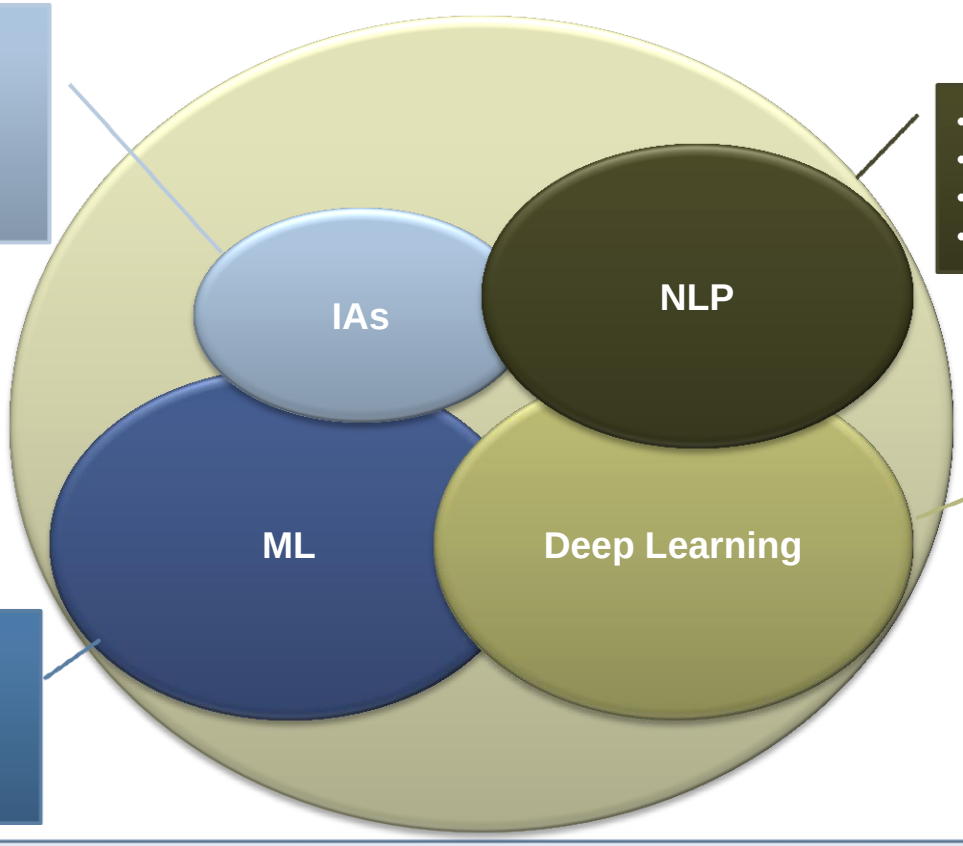
Source: Stratecast, Frost & Sullivan

AI—Definition

AI is a general class of technologies that seeks to emulate human cognitive capabilities. Included are areas such as **ML, intelligent agents (IAs), deep learning, and natural language processing (NLP).**

AI Applied to the Customer Experience: The Many Worlds of AI, Global, 2018

- Call Center (Virtual Customer Service Representative)
- E-mail Filtering
- Process Control
- Air Traffic Control



- Language Translation
- Question Answering
- Spam Filtering
- IA processing

- Facial Recognition
- Voice Recognition
- Voice Search
- Predictive Analytics
- Machine Vision

- Market & Sales Analysis
- Financial Analysis
- Cybersecurity
- Fraud Detection
- Decision Support

Source: Stratecast, Frost & Sullivan

AI—Definition (continued)

ML has achieved a great deal of traction in many different market verticals. It applies to a class of computing that can learn a task without being explicitly programmed to perform that task. In general terms, ML depends on a set of defined goals, which the computer attempts to achieve through an analysis of a data set. For example, if the desire is to seek statistical relationships in a set of data points, ML will apply a variety of statistical functions to assess the dependency of each data point on every other data point. Those with the strongest correlation will be preferred over those with lower correlations.

However, if the correlation is an incorrect one, based on either human feedback or comparison to known correct results, the ML application will select different statistical parameters and will try again. Once trained, the system can be expected to reliably find relationships in subsequent data sets. ML applications can be self-trained, human-trained, or can be a combination of both.

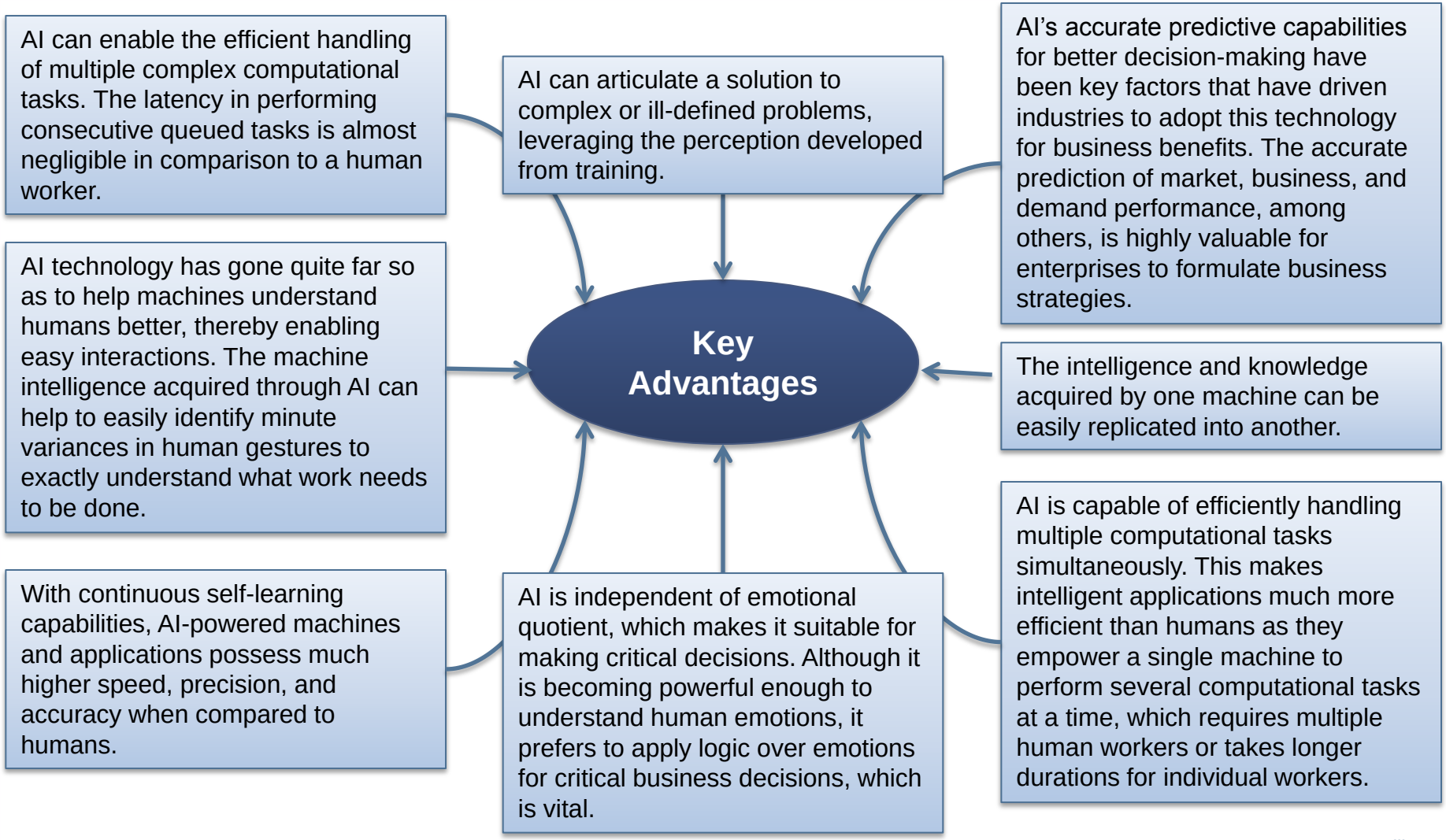
Deep learning can be considered a multi-level ML architecture where several levels of ML are used to parse up a problem. It is an approximation of a brain-like structure or neural network. Examples include DeepMind's AlphaGo and Tesla's Autopilot.

NLP is the application of pattern recognition technologies to understand human language. It can be applied to either spoken or written speech. When applied to spoken speech, complex front-end processing is required to parse speech into discrete words and then recognize the words. NLP usually front-ends other AI applications.

IAs—also known as chatbots—are a class of AI that applies the other AI technologies to provide a human-like interface to customer-facing applications. Examples include Apple Siri and Amazon Alexa.

Source: Stratecast, Frost & Sullivan

Market Overview—AI Enhances Machine Efficiency

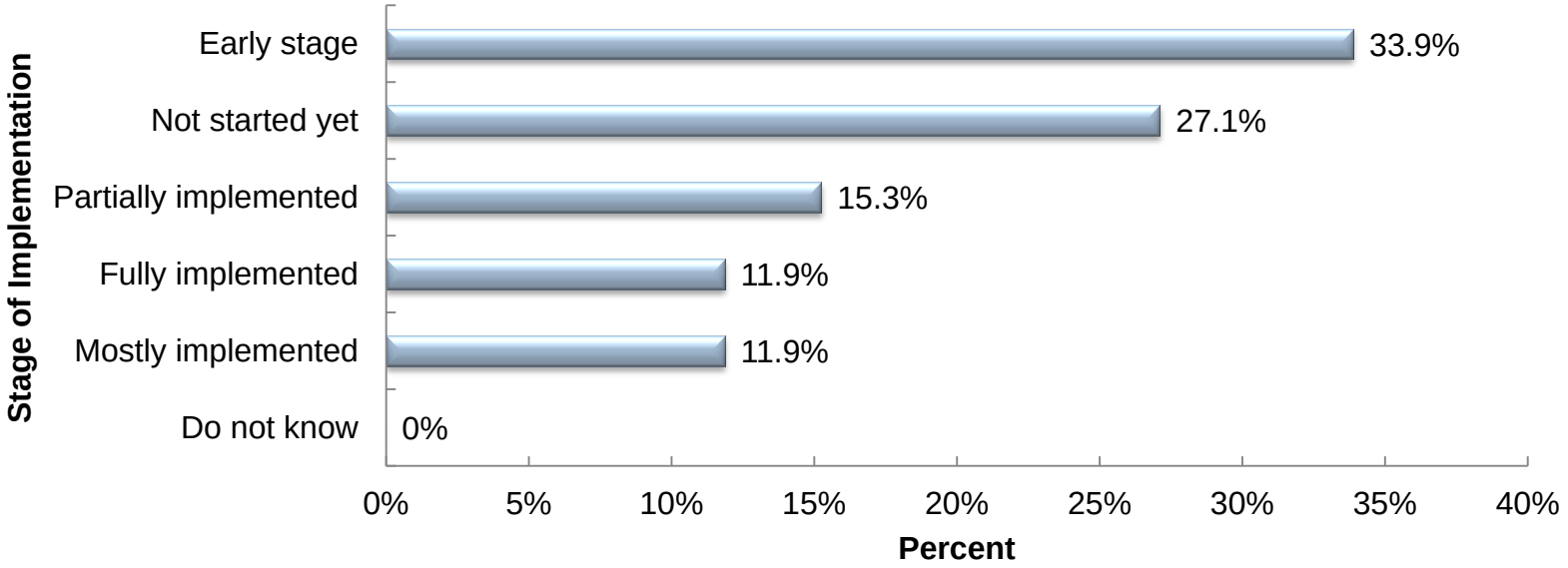


Source: Frost & Sullivan

Market Overview—Latin America

In Latin America, AI is increasingly used to develop intelligent applications that understand user needs and behave accordingly by making automatic recommendations and decisions that the user would have made. However, as the chart shows, the technology's integration and adoption is still in the nascent phase in the region as most contact center companies are in the early stage of implementation.

AI Applied to the Customer Experience: Stages of AI Implementation, Latin America, 2017



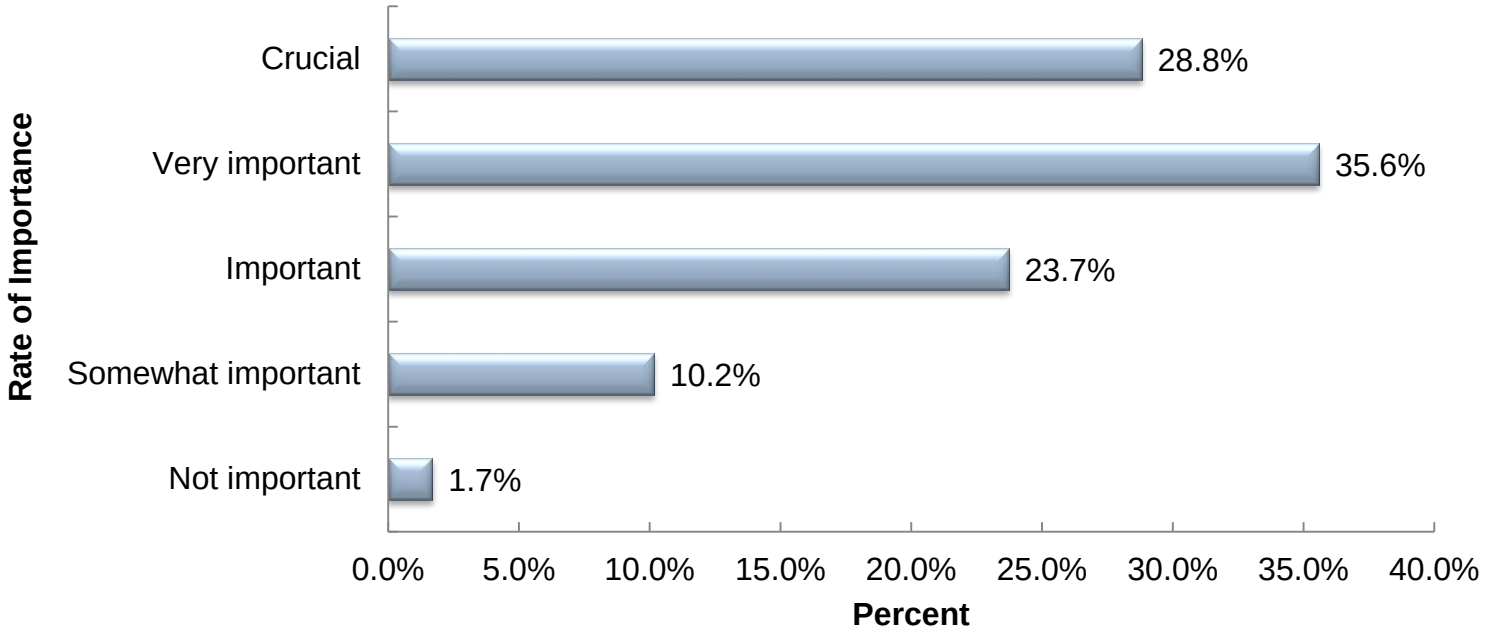
Base: All respondents (n=59);
Q39. For each of the following technologies, what stage is your company in, with regard to implementation? (Select 1)

Source: Frost & Sullivan

Market Overview—Latin America (continued)

Despite the rapid adoption, more than 50% of contact center companies state that they find it crucial or very important to invest in AI over the next 3 years.

AI Applied to the Customer Experience: Importance of AI Implementation, Latin America, 2017



Base: All respondents (n=59);
Q38. How important are the following investments for your organization's success over the next 3 years? (Select 1)

Source: Frost & Sullivan

Drivers and Restraints

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Market Drivers

AI Applied to the Customer Experience: Key Market Drivers, Latin America, 2018–2022

Drivers	1–2 Years	3–4 Years	5th Year
Increase in HMI Usage	H	H	H
Rising Focus on Productivity, Efficiency, and Cost Reduction	H	H	H
Growing Demand for Intelligent Applications	H	H	M
Rising Trend of Predictive Capabilities	H	H	M

Impact Ratings: H = High; M = Medium; L = Low

Source: Frost & Sullivan

Drivers Explained

Increase in HMI Usage

The rising adoption of mobile technology and broadband connectivity in Latin America plays a major role in terms of opening up new business opportunities. In fact, Brazil is the 4th-largest mobile market in the world – in terms of smartphone users - after China, India, and the United States.

As a consequence of this rise in the use of smart devices for computing, communication, and entertainment, among others, the increase in the number of interfaces with which humans interact with machines for different applications is exponential. New-age smart devices are equipped with rich user interfaces – such as Apple's Siri – and users can accordingly engage with devices and applications. Users demand simple but highly functional and intelligent interfaces that can make interaction effortless. It is essential for machine interfaces to be intelligent to efficiently and accurately perform critical applications. This need has driven the use of AI and NLP to develop intelligent, automated, self-service interfaces that users can enjoy without any complexities. The integration of intelligent algorithms in interface designs has made it possible to deliver highly personalized context-aware interactions.

Source: newzoo 2017 Global Mobile Market Report; Frost & Sullivan

Drivers Explained (continued)

Rising Focus on Productivity, Efficiency, and Cost Reduction

The emphasis on energy savings, efficiency, productivity, IoT, and services plays an important role in the Latin American contact center market. Companies are increasingly looking for ways to automate greater percentages of live agent call volumes and reduce agent headcount to diminish costs, improve agents' productivity and efficiency, enhance customer experience, and avoid the addition of new agents (along with supporting facilities and technology investments) as businesses grow.

In addition, considering the growing demand for automation in every sector, enterprises are migrating to intelligent machine-based business processes (for example, robotic process automation in a contact center to automate operational and repetitive tasks). Concepts driven toward bringing in another industrial revolution are transforming companies with increased digitization and the use of advanced technologies across front- and back-office operations. Such concepts are vastly dependent on the convergence of futuristic technologies that can be leveraged to develop innovative, automated, and self-service applications in contact centers. Companies require these smart applications to give them a competitive advantage. AI technology forms the backbone of the intelligence of machines and applications. The adoption of smart automation concepts has driven the development of new AI- and NLP-based technologies and applications that can significantly enhance the efficiency of business processes. AI is expected to deliver the ability of automatic decision-making (well-informed) by machines. This significant market need has been a key factor driving automated and self-service technology and application development.

Source: Frost & Sullivan

Drivers Explained (continued)

Growing Demand for Intelligent Applications

Generation Y and Z consumers demand highly customized and personalized applications where machines can individually identify them and interact with them. This has been a key driver toward making machines and applications intelligent and to also understand and efficiently meet users' needs. Consumers also demand intelligent applications that will minimize human effort and present the most desired output with optimum accuracy. Several business applications that are used for decision-making are required to be intelligent as they are relied upon to provide meaningful insights from business data. These insights are highly essential in terms of making critical business decisions. Eradicating human errors in data processing and achieving optimum accuracy with lightning speed are key requirements from these applications. AI and NLP deliver the desired intelligence to these smart applications to make work easier, safer, and faster through automated self-service tools.

Source: Frost & Sullivan

Drivers Explained (continued)

Rising Trend of Predictive Capabilities

Accurate prediction is an important aspect for every business. Market, business, demand, and performance prediction information is highly valuable for enterprises to formulate business strategies. AI and NLP can help understand complex data sets and reveal the most meaningful insights in real-time to make critical decisions with highly accurate predictions. This capability encourages most organizations to use such intelligent prediction applications, thereby driving development in this space.

AI will be incorporated into existing software, as with IBM Watson, Microsoft Azure, or Google's Prediction API. As an example, IBM Watson is used by CVS, the 2nd-largest pharmacy chain in the United States, to predict customers' deteriorating health. Adoption will also be driven by new start-ups that offer a mix of ML, machine vision, and NLP. Initially, the software will do more with existing data; however, gradually, it will find new applications, such as the identification of objects or human emotions in videos or the summarization of millions of words for an infographic.

Source: Frost & Sullivan

Market Restraints

AI Applied to the Customer Experience: Key Market Restraints, Latin America, 2018–2022

Restraints	1–2 Years	3–4 Years	5th Year
Ambiguous Nature of the Human Language	H	H	H
Complexity of Infrastructure	H	H	H
Complexity of the Human Brain	H	H	M
Limited Availability of Talent and Skills	H	H	M

Impact Ratings: H = High; M = Medium; L = Low

Source: Frost & Sullivan

Restraints Explained

Ambiguous Nature of the Human Language

While computer programming languages are highly structured and unambiguous, human language is full of emotion, nuances, slang, expressions, and implications. It is challenging to design NLP algorithms that can effortlessly and correctly interpret highly ambiguous human language, especially considering all the different variations of the Spanish language in Latin America.

Further, NLP research has, so far, been focused on developing algorithms that are language-specific and perform well only on closed-domain text. This language dependency of NLP algorithms is still a challenge and needs to be addressed by making NLP scalable.

Complexity of Infrastructure

AI technology has highly complex infrastructural capabilities for both hardware and software. The intelligent algorithms require high processing capabilities to be able to process large data sets in real-time. AI requires heavy computational power to acquire the intelligence by identifying patterns from data. Moreover, the connectivity of AI-powered applications to large data sets is highly complex. Training the intelligent systems with the data-driven knowledge to acquire high accuracy in predictions and computations to make correct decisions in real-time involves the integration of complex algorithms. The collection and the use of massive amounts of data to train the AI engines are also significant challenges. This demands the involvement of highly skilled professionals with supreme knowledge of machine intelligence.

Source: Abinee; Frost & Sullivan

Restraints Explained (continued)

Complexity of the Human Brain

AI technology is based on creating an artificial brain for machines, which must resemble a biological human brain. The understanding of the human brain and its functions that are used to generate perception for humans itself is highly complex and requires in-depth knowledge of neuroscience. This is a major challenge as the accurate functionalities of the human brain are not yet fully discovered by medical science. Hence, the development of an artificial brain model that mimics the human brain is a challenge. This leads to limitations in terms of developing perceptions in AI technology-powered brains of machines and applications.

Limited Availability of Talent and Skills

As AI is generally dependent on Big Data architecture, a company that wants to pursue AI capabilities must either build a Big Data lake or lease one in the cloud. Once this architecture is in place, the company must secure the necessary data to support the decisions it wishes to make, besides cleansing that data so it can be trusted.

Even a secure data source, though, is not entirely enough. Generally, AI applications require a substantial amount of training before their conclusions can be trusted. Reasonableness checks by subject matter experts are a necessary overhead to AI implementation. The shortage of domain experts to develop, train, and maintain AI systems is also a major barrier. The high demand for experts in this space significantly increases the cost of hiring and retaining them.

Source: Frost & Sullivan

Latin American Market Trends for AI Applied to the Customer Experience

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The Millennial Customer Drives AI Adoption in the Contact Center

Frost & Sullivan assesses technology on the basis of the impact it can have on a business' bottom line. From the standpoint of digital technology, generally, our conclusion is that digital transformation is a critical necessity for any business that wants to remain competitive, let alone grow. However, digital transformation is not an end game - it is a journey where the capabilities of technology will always improve over time.

The challenge is to begin adopting transformational technology quickly enough so that the business can ride the competitive advantage curve. This can be tricky: a company wants to utilize technology, not invent it or go through a prolonged shakeout with no guaranteed success at the end of the process.

In the case of AI, the applications delivered to the market validate the value of AI as a competitive advantage. The Latin American contact center market is one of those markets looking to provide a plethora of capabilities that speak for the change in consumer adoption and technology usage. The next couple of slides will explain why that is.

The Millennial Customer

A common refrain in business is that technology should not be deployed for technology's sake. This quote held good in the past; now, however, it has less impact, especially in terms of post-Boomer consumers. While Gen X started the digital native trend, Gen Y embraced it and accepted it as part of the millennial culture. Millennials are different consumers than prior generations and are the best-connected generation in history. They are highly attached to and comfortable with technology and their mobile devices, and practically live on them. They use them for virtually everything – for portable entertainment, to purchase goods and services, and to stay in touch and to network, among others.

Source: Frost & Sullivan

The Millennial Customer Drives AI Adoption in the Contact Center (continued)

An additional attribute of millennials that bodes well for the interest in and the adoption of AI technology in the contact center is their passion for self-service. As a group, they prefer to self-help - from researching information to troubleshooting issues - before contacting a business.

A further trait of theirs that has been leveraged by developers has been the demand for better, richer human-machine interfaces. This was sparked by the emergence of more intuitive user interfaces in software applications, entertainment, and mobile devices, ignited, in particular, by the user interface of Apple's iPhone. Apple broke the mold on usability in mobile devices. Once consumers started seeing the potential for simple yet highly functional interfaces, they demanded more. The launch of the iPhone's personal assistant, Siri, fuelled by Apple marketing dollars, set the stage for the mass awareness of the potential for easy-to-access and use, speech-driven personal assistants. Microsoft's Cortana and others soon followed. With applications such as Siri and Cortana leading the charge, the pump was primed for additional applications to hit the market.

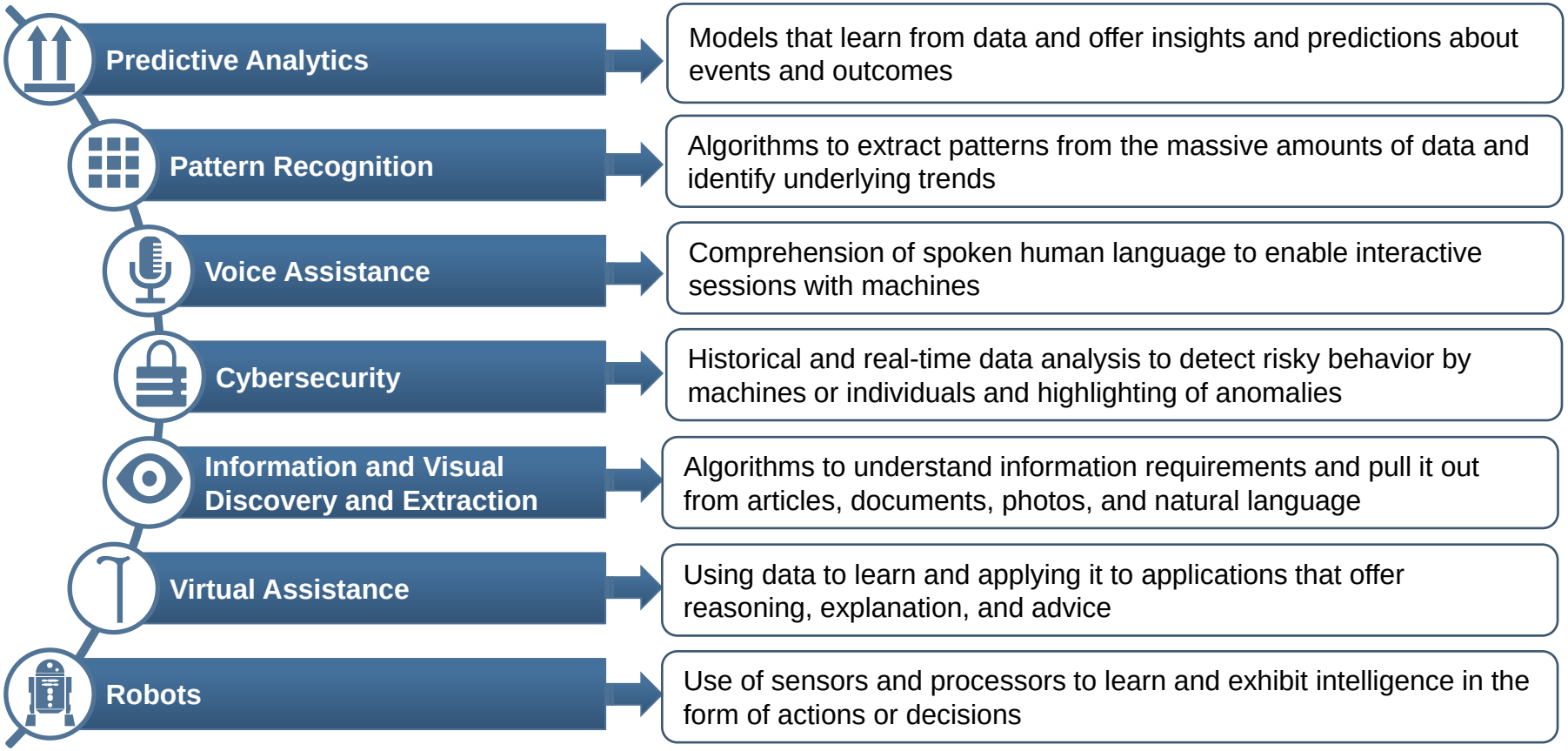
An equally important factor is millennials' desire for businesses to know them and the need for personalized interaction. When extended to intelligent interfaces, they demand highly customized and personalized applications that can individually identify them and interact with them. This passion for mobile apps, self-service, intuitive user interfaces, and personalization has created a powerful driver for the adoption of AI in the contact center.

Although the most common application of AI in Latin American contact center companies has been the IA, there are many other possible customer or enterprise-facing applications of AI that can directly or indirectly benefit the customer experience. These are discussed in the following slides.

Source: Frost & Sullivan

AI Applications for Customer Experience Improvement in the Latin American Contact Center Market

AI Applied to the Customer Experience: Applications for Customer Experience Improvement*, Latin America, 2017



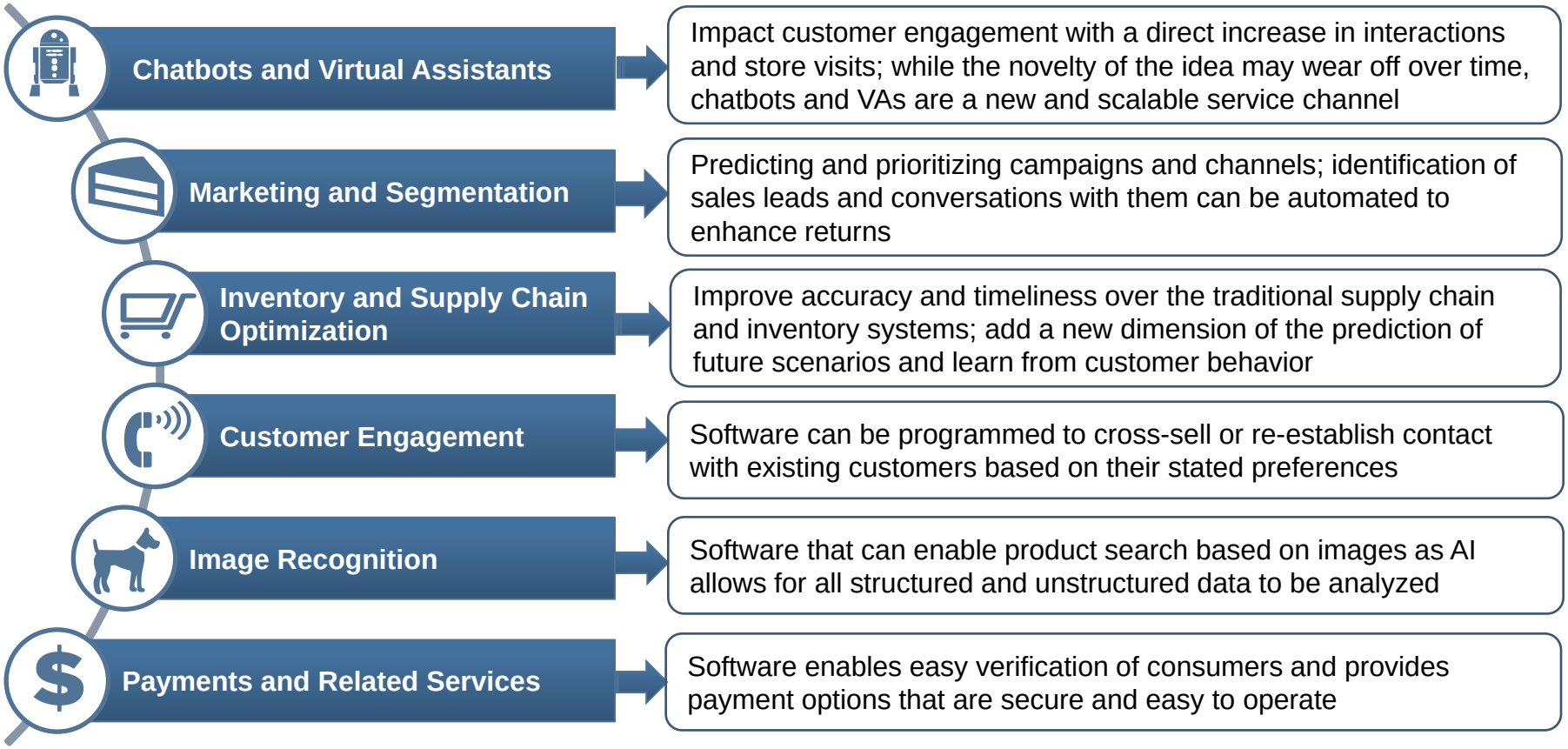
*Not an exhaustive list

Source: Frost & Sullivan

Vertical Market Application—AI in Retail: Understanding Consumers

AI Applied to the Customer Experience: Applications in Retail Services, Latin America, 2017

AI helps retail companies embrace the Bricks and Clicks future of commerce and offers a deep understanding of consumer preferences.

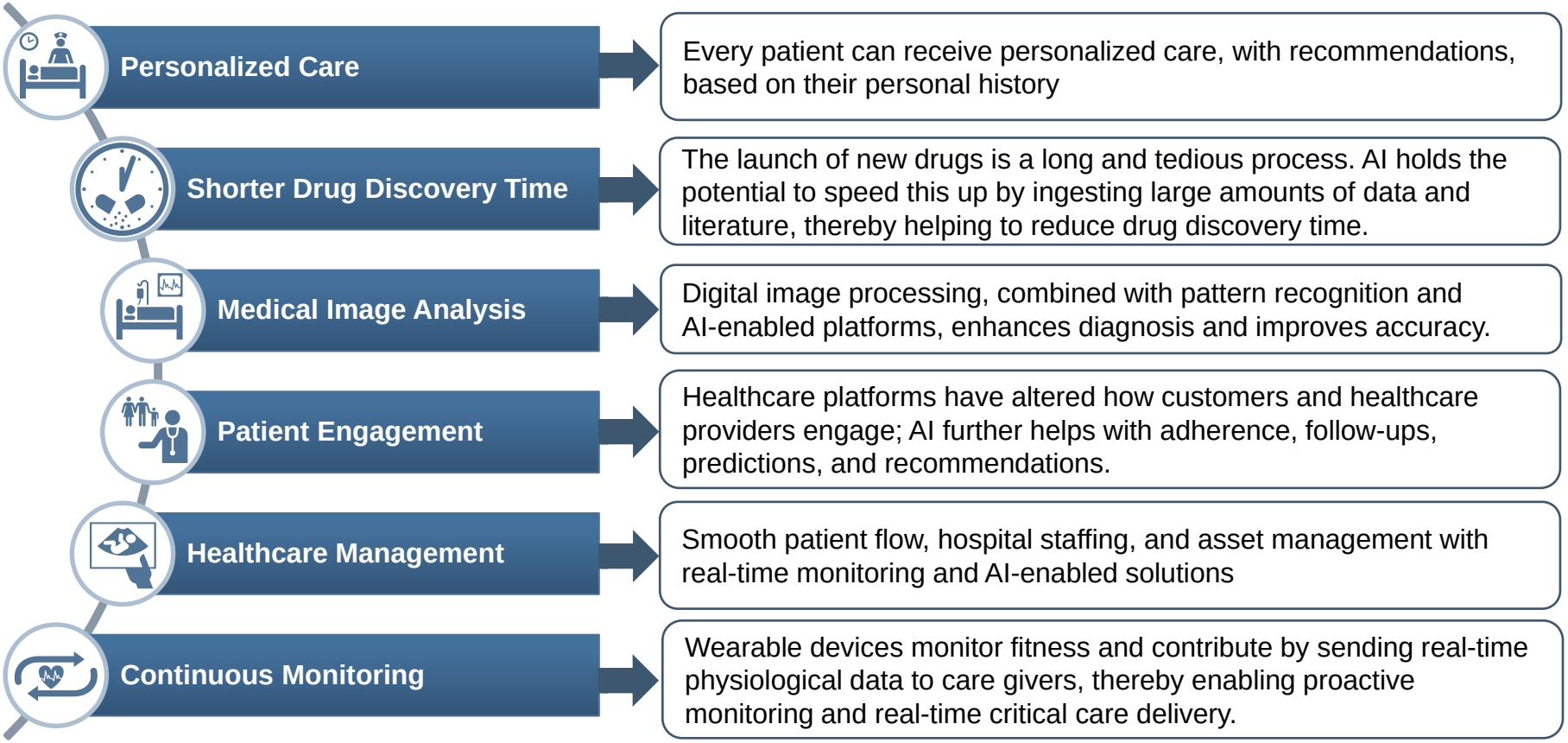


Source: Frost & Sullivan

Vertical Market Application—AI in Healthcare: Taking Care to New Levels

AI Applied to the Customer Experience: Applications in Healthcare Services, Latin America, 2017

The impact of AI on the entire range of healthcare - from drug creation to post-operative and lifelong care - makes the technology one of the major disruptors in the industry. The opportunity is expected to be worth approximately $6.60 billion by 2021.

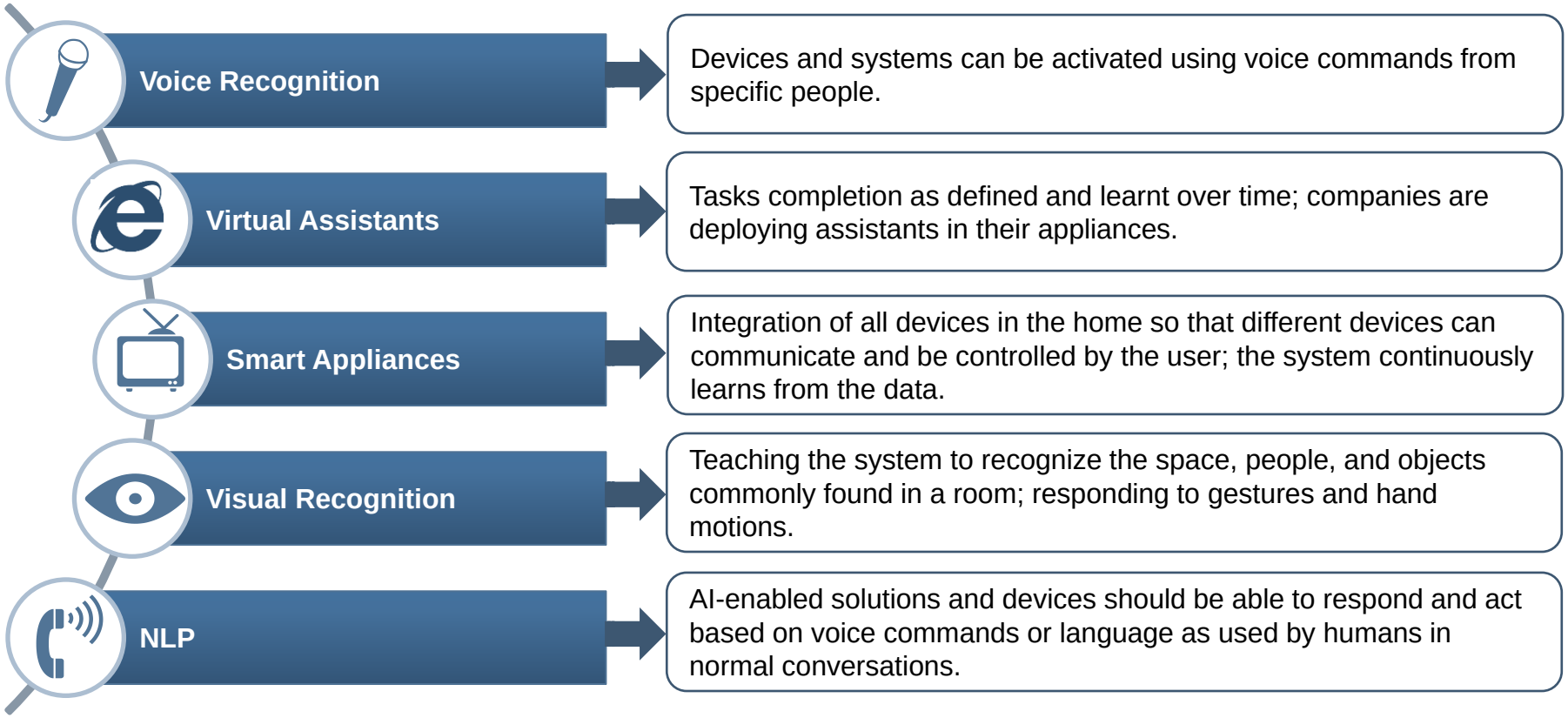


Source: Frost & Sullivan

Vertical Market Application—AI in Home Automation: Solution for Multi-device Settings

AI Applied to the Customer Experience: Applications in Home Automation, Latin America, 2017

With Alexa and Siri popularizing the concept of home automation, AI companies target this space and help to enhance user experience and increase the utility of connected devices, which are expected to increase exponentially in the near future.

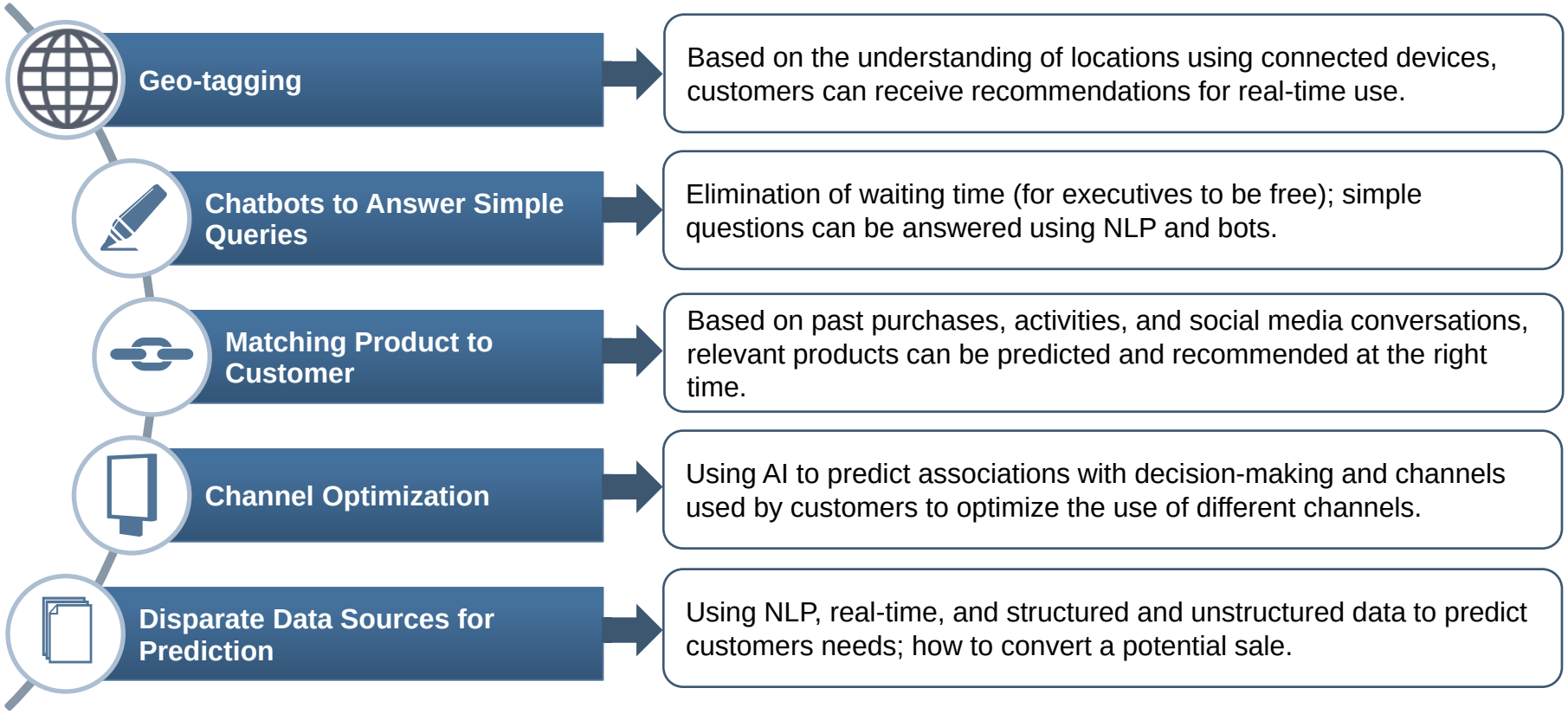


Source: Frost & Sullivan

Vertical Market Application—AI in CRM: Seamless Customer Engagement

AI Applied to the Customer Experience: Applications in CRM Services, Latin America, 2017

Companies can use existing customer data and AI to maximize their efforts in terms of sales and marketing, with guidance at the right time to contact customers and to offer the best-fit pertaining to products and services.



Source: Frost & Sullivan

Key Benefits of Employing AI for Customer Engagement

The benefits of deploying AI for customer engagement (be it through voice-centric or multi-modal applications, customer-facing or enterprise-facing) are many, and include the following:

- Optimizing live agent activities by offloading tedious and repetitive tasks
- Providing 24/7 workers that never get tired, do not quit, and deliver a consistent messaging and branding experience
- Catering to the growing need for high-quality self-service while saving customer time and effort
- Providing brand differentiation
- Cementing customer loyalty through personalization of the experience
- Enabling smarter, personalized insights, products, and services
- Optimum use of Big Data in data-intensive verticals
- Better insights and decisions based on data from disparate sources and verticals
- Increasing the efficiency of organizations and the effectiveness of contact center solutions for an enterprise-wide impact

The following sections discuss a few solutions and use-case examples in Latin America.

Source: Frost & Sullivan

Use Cases of AI Applied to the Customer Experience in Latin America

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IBM AI Initiatives Applied to the Customer Experience

AI Offerings

- Watson campaign automation
- Customer experience analytics
- Conversations and virtual assistants with chatbots
- Visual recognition + speech to text and vice versa

Company	Country	Reference Case
Grupo EFE	**Peru**	Grupo EFE announced that it acquired IBM solutions to boost its sales and position itself in the Peruvian market with its virtual stores www.lacuracao.pe and www.efe.com.pe. The group uses analytical and cognitive intelligence capabilities to recognize client preferences, which allows it to create personalized experiences, regardless of the location or the means of purchase. Complete Info: https://cioperu.pe/articulo/24797/tiendas-efe-elige-soluciones-analiticas-de-ibm/
Movistar	**Chile**	Movistar Chile announced that it acquired cognitive solutions from IBM to enhance its marketing processes, offering its clients exceptional experiences throughout the purchase process. As it has the capabilities of Watson-the IBM Artificial Intelligence platform- the tool learns from the behavior of customers. Complete Info: http://www.trendtic.cl/2017/09/telco-en-chile-implementa-solucion-de-inteligencia-artificial-para-marketing/
Via Varejo	**Brazil**	Brazilian retailer Via Varejo complemented a chatbot with Watson cognitive technology from IBM. The company states that the consumer can have access to information about orders, changes, cancellations, or product returns in a simple, fast, and effective manner. Complete Info: https://br.reuters.com/article/internetNews/idBRKBN18W1S4-OBRIN

Source: IBM; Frost & Sullivan

Microsoft AI Initiatives Applied to the Customer Experience

AI Offerings

- AI platform: Tools and services for developers
- AI solutions: Digital transformation with AI, data, and cloud
- Intelligent applications: AI in products and services
- Cortana: Personal assistant across home, car, and devices with a personalized customer experience

Company	Country	Reference Case
Atento	**Brazil**	Atento partners with Microsoft Brazil to use AI in the analysis of telephone calls. The project seeks to raise the level of understanding about consumer profile and behavior to draw up more assertive relationship strategies. In the initial phase of the project, Atento analyzed an average of 10 million voice calls per month. This volume is 350% higher than what the company was able to analyze prior to the adoption of Microsoft AI. The significant knowledge base generated is being used in a 2nd phase of the project, which consists of capturing the best service approaches and their application to virtual assistants (bots or robots). Complete Info: https://news.microsoft.com/pt-br/atento-utiliza-inteligencia-artificial-da-microsoft-para-entender-perfil-consumidor/#sm.0000v1e803lefdldytv1xsw2k256z
Grupo Oncoclínicas	**Brazil**	Grupo Oncoclínicas and Microsoft have joined forces for a project that will use AI to promote advances in cancer treatment in Brazil. In radiotherapy, the use of Microsoft AI will allow the delineation of structures of organs adjacent to the tumor or those organs considered at-risk. Thus, the technology offers information so that the specialist can establish a treatment plan that contemplates the design of the area to be irradiated, with a reduction from hours of evaluation to a few minutes. In chemotherapy, the partnership also counts on an academic reinforcement from the Center for Studies in Society and Technology of the University of São Paulo. The entity will play the role of adding researchers who will work on the development of an algorithm that will be capable of analyzing and establishing correlations between the diagnoses of different patients. The goal is to indicate the most appropriate treatment based on the verification of variables that can have a direct influence on the type of drug prescribed for the patient and the number of sessions that he/she will have to undergo.

Source: Microsoft; Frost & Sullivan

Aivo Case Study—AI-powered AgentBot in Education

AI Offerings

- AI-powered AgentBot
- Intelligent applications: AI in all products, including the AgentBot, omnichannel chat, automatic customer support on telephone channels, and an intelligent search engine
- NLP, data analytics, and a cognitive neuronal network

Company	Country	Reference Case
Universidad Siglo 21	**Argentina**	Universidad Siglo 21 decided to incorporate AgentBot technology in its processes to provide fundamental academic information for its students. The virtual assistant uses cognitive intelligence and understands the natural way of talking, thinking, selecting information, and presenting alternatives to a search or query, in a way similar to what a human would do. With every interaction the user makes, AgentBot learns new words, meanings, ways of asking, and regionalisms, thereby increasing its accuracy everyday. It uses automatic learning techniques to identify what the university should modify to improve the students' daily experience. Although the university stated that programming the bot required a lot of effort in terms of inputting the information and 'teaching' the software to understand the questions, a year later, the student satisfaction rate had increased to 74%, and in January 2016 it was of 94%. The main topics the AgentBot resolves are as follows: • Information about subjects • Questions about registration • Transfer to human chat • Features of the course of studies • Information about exams • Questions about scholarships and benefits • Payment processing • Help with accessing and using platforms • Contact information Complete Info: https://aivo.co/en/clients/education/case-siglo-21-university/ and http://www.elcontact.com/2018/01/implementan-inteligencia-artificial-de.html

Source: Aivo; Frost & Sullivan

Growth Opportunities and Companies to Action

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Growth Opportunity 1—Chatbots

Applicable Segments: Financial Services | **Retail** | Healthcare

- Vision Transformation
- Mega Trends Impact
- **Disruptive Applications**
- Business Models
- Current Offerings
- **New Capabilities**
- Value-add Services
- Vertical Integration
- Geographic Expansion
- Partnerships
- Investment / M&A

Context and Opportunity

- Chatbots have already made their presence felt as companies' contact channel, although mainly for seemingly repetitive and simple tasks.
- However, the implementation of AI allows chatbots to lead conversations, perform increasingly complex tasks, and respond to and anticipate user requests based on real-time data about user preferences, context, and available services (among others). They are moving companies away from presenting results to providing a single best response.
- Vendors include Next IT (Alme), Virtual Interactions, and Facebook.

Call to Action

- When applied to chatbots, AI can enable prescriptive and predictive recommendations.
- While basic recommendations are in place, advanced algorithms can ensure that these offer personalized insights that can enhance decision-making.
- To increase consumer confidence in chatbots, multiple levels of engagement are crucial.
- The potential to increase ROI, revenue, and projected cost savings is a powerful reason for every organization to take a hard look at implementing a chatbot.

Source: Frost & Sullivan

Growth Opportunity 2—Visual Recognition

Applicable Segments

Data Analytics	Home Automation	IoT

- Vision Transformation
- Mega Trends Impact
- Disruptive Applications
- Business Models
- Current Offerings
- New Capabilities
- **Value-add Services**
- **Vertical Integration**
- Geographic Expansion
- Partnerships
- Investment / M&A

Context and Opportunity

- Gesture recognition technologies will become a rising trend, and they will find increased application in neurorehabilitation, gaming, IoT, autonomous vehicles, and the smart home. Consumers will use gestures to communicate with their devices, leading to a paradigm shift in the future of the customer experience.
- Intelligent facial recognition systems will be the future of biometrics, and they will be incorporated into the design of devices, attendance systems, and access systems.

Call to Action

- Intelligent vision systems enable a far superior user and purchase experience through avenues such as gaming and entertainment, retail online purchase, cashier-less purchase, and drone deliveries, among others.
- Almost all business verticals are likely to be impacted.
- Open-source, APIs, deep learning, easy-to-use programming tools, and affordable computing are crucial to the growth of this AI segment.

Source: Frost & Sullivan

Growth Opportunity 3—Virtual Assistants

Applicable Segments: Home Automation | Healthcare | IoT

- Vision Transformation
- Mega Trends Impact
- Disruptive Applications
- Business Models
- Current Offerings
- **New Capabilities**
- Value-add Services
- Vertical Integration
- Geographic Expansion
- **Partnerships**
- Investment / M&A

Context and Opportunity

- With almost all the large tech firms, such as Google, Amazon, and Apple, launching virtual assistants, it has become one of the most competitive areas for AI.
- The vast range of applications and possibilities of virtual assistants creates significant scope for innovation.
- Despite the presence of large participants, innovative start-ups focus on small verticals, thereby creating opportunities for partnerships and M&As. Virtual Interactions in Brazil, for example, offers intelligent virtual assistants specifically for customer care.

Call to Action

- When implemented well, virtual assistants can provide a rich channel of customer interaction that can handle complete and complex customer inquiries. They provide an opportunity to enhance a brand's customer experience and brand differentiation. They also can speed-up service delivery and reduce costs.
- Companies need to pay attention to cybersecurity as virtual assistants have access to a number of devices.
- The presence of a strong platform that can support virtual assistants and connect them with devices and enable interaction is crucial.

Source: Frost & Sullivan

Growth Opportunity 4—Cybersecurity

Applicable Segments: Cloud | **Devices** | **Network**

- Vision Transformation
- Mega Trends Impact
- **Disruptive Applications**
- Business Models
- Current Offerings
- New Capabilities
- Value-add Services
- Vertical Integration
- Geographic Expansion
- **Partnerships**
- Investment / M&A

Context and Opportunity

- Many start-ups use AI to design forward-looking cybersecurity solutions.
- Rather than allow an attack, these solutions are able to identify new attacks and malicious intent to thwart all efforts of an attack.
- Companies that provide these solutions work with large technology firms to access cloud and data and test their solutions.
- Cybersecurity is one of the most well-funded AI applications.

Call to Action

- Collaboration is critical to ensure the success of AI solutions.
- As multiple layers of security are installed, companies should be able to enable different layers of security that will work in tandem.
- Real-time input and the sharing of insights are critical to improve the effectiveness of the solutions.
- Access to data will require that different stakeholders work together.

Source: Frost & Sullivan

Growth Opportunity 5—Robotic Process Automation

Applicable Segments	ACD	Outbound	QM	WFM	Analytics

- Vision Transformation
- Mega Trends Impact
- **Disruptive Applications**
- Business Models
- Current Offerings
- New Capabilities
- Value-add Services
- Vertical Integration
- Geographic Expansion
- **Partnerships**
- Investment / M&A

Context and Opportunity

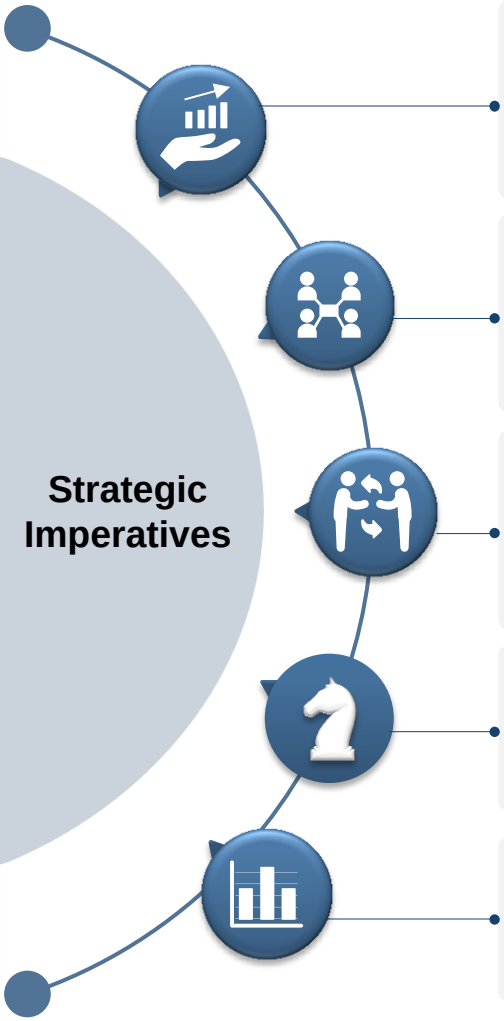
- Robotic process automation (RPA) can automate repetitive, time-consuming data entry or transactional processes across any part of the business.
- It can bring consistency and accuracy to data input and manipulation in areas where errors impact other departments. For example, accounting, order entry, order processing, and the contact center can be cross-impacted by errors in the re-keying of repetitive data.
- RPA can offload the IT of many simple projects for more complex, mission-critical applications.

Call to Action

- Develop a cross-organizational automation strategy to determine which projects require heavy IT involvement and which require simple RPA tools.
- Identify areas of high-volume, repetitive tasks and leverage vendor proof of concept to initiate a ‘land and expand’ approach to cross-enterprise automation.
- Use RPA to facilitate cross-organizational data dependencies and maintain consistency of data entry; for instance, repetitive customer information, such as address, need only be input once.

Source: Frost & Sullivan

Strategic Imperatives for Success and Growth



The most common applications of AI across Latin American contact centers are chatbots and virtual agents. Although it is important to invest in these, other AI applications that can immensely improve customer and employee experience include visual recognition and RPA.

AI application in visual recognition is a rapidly burgeoning field. AI holds the potential to revolutionize various applications, including medical imaging, retail, advertising, media, security and surveillance, and robotics. However, this is still a nascent field in the Latin American contact center space.

While virtual assistants are used to offload simple tasks, they need extensive training in the domains of interest for complex inquiries. Companies are advised to obtain references to evaluate how virtual assistants have successfully handled domain expertise.

AI's dependence on Big Data makes data security a significant responsibility for all contact center participants. Data breaches can be the chief disruptor to AI growth.

The development of ecosystem and strategic partnerships and investments to enable access to data, funds, information, domain expertise, and higher computing prowess are crucial.

Source: Frost & Sullivan

The Last Word

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The Last Word—3 Big Predictions

1. AI-enabled solutions are expected to be the most significant disruptors across business capabilities. Its forward-looking capabilities with prescriptive and predictive insights are likely to impact user experience like no other technology ever has.

2. Although interest is high and new solutions are emerging rapidly, AI adoption for the customer experience still remains low. To keep pace with the competition, enterprises must integrate AI technologies into their innovation to deliver more accurate and personalized services.

3. Large companies can opt for in-house R&D establishments for proprietary innovation. For start-ups and mid-sized enterprises, strategic collaborations with other companies and academia can be a suitable approach to cost effectively accelerate the time to market for their innovation.

Source: Frost & Sullivan

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List of Exhibits

The Frost & Sullivan Story

The Journey to Visionary Innovation

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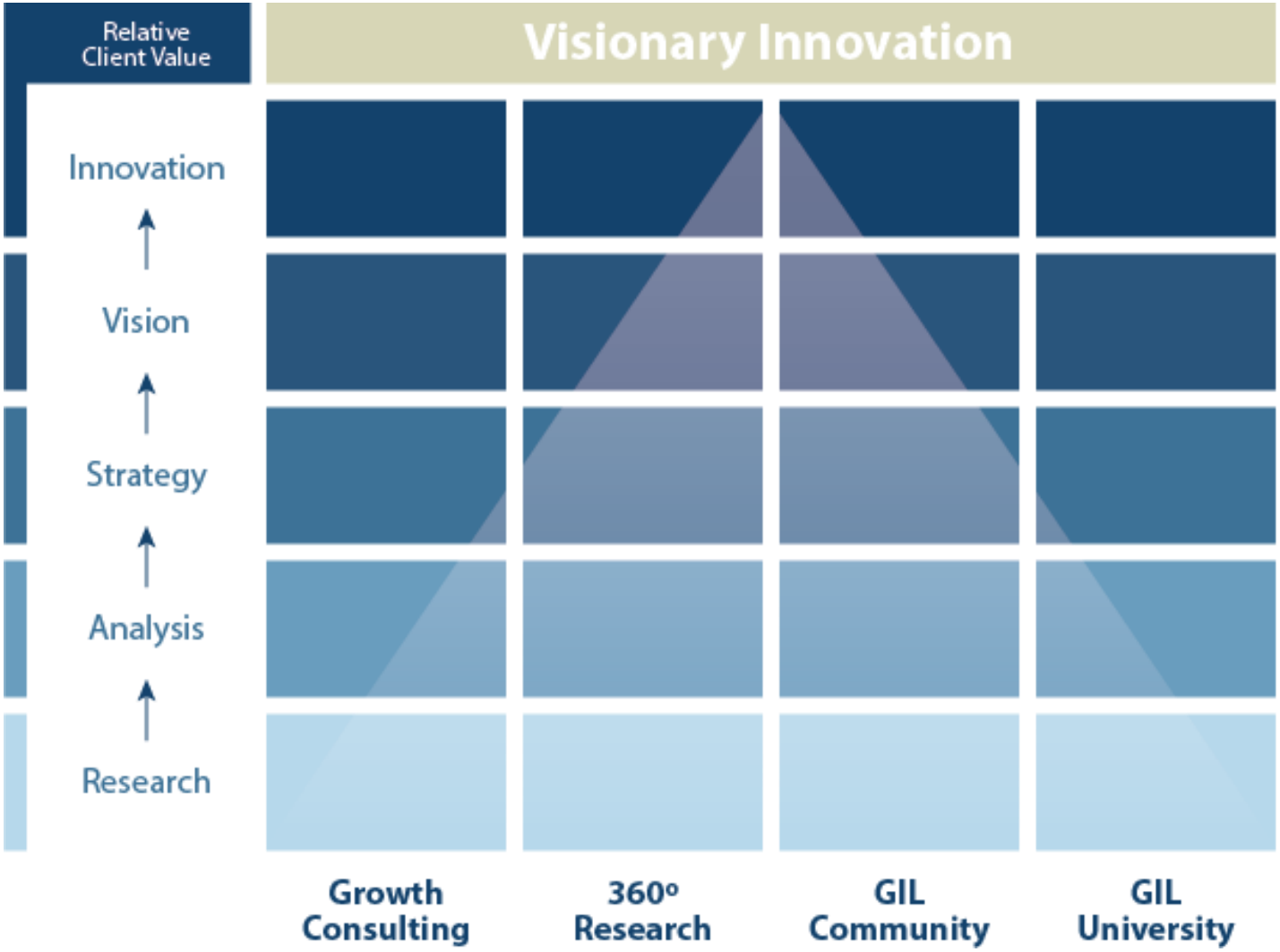
The Frost & Sullivan Story

Value Proposition—Future of Your Company & Career

Our 4 Services Drive Each Level of Relative Client Value



Global Perspective

40+ Offices Monitoring for Opportunities and Challenges

Industry Convergence

Comprehensive Industry Coverage Sparks Innovation Opportunities

Aerospace & Defense

Measurement & Instrumentation

Consumer Technologies

Information & Communication Technologies

Automotive Transportation & Logistics

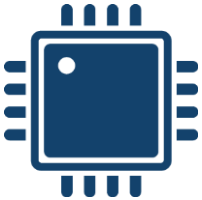
Energy & Power Systems

Environment & Building Technologies

Healthcare

Minerals & Mining

Chemicals, Materials & Food



Electronics & Security

Industrial Automation & Process Control

360º Research Perspective

Integration of 7 Research Methodologies Provides Visionary Perspective

Implementation Excellence

Leveraging Career Best Practices to Maximize Impact

Our Blue Ocean Strategy

Collaboration, Research and Vision Sparks Innovation