

# NATURAL LANGUAGE PROCESSING MARKET

## GLOBAL FORECAST TO 2021

BY TYPE (RULE-BASED, STATISTICAL, AND HYBRID), TECHNOLOGIES (RECOGNITION, IVR, OCR, SPEECH RECOGNITION, TEXT PROCESSING, PATTERN & IMAGE RECOGNITION), BY DEPLOYMENT TYPE, BY VERTICAL & BY REGION

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## 1 EXECUTIVE SUMMARY

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The Natural Language Processing (NLP) is a human to computer interaction which assists machines to understand the language in which humans communicate or basically read and write. In the NLP market, the solution vendors such as 3M, Apple Incorporation, Dolby Systems, Google, HP, IBM Incorporation, Microsoft Corporation, NetBase Solutions, SAS Institute, and Verint Systems offer high end NLP solutions. The NLP market has been segmented on the basis of type of NLP solutions such as rule-based NLP, statistical NLP, and hybrid NLP. The rule-based NLP solutions segment is estimated to hold the largest market share for the year 2016. The statistical NLP solution segment which incorporates machine learning is projected to grow at the highest CAGR from 2016 to 2021. The NLP technologies are classified into broader segments that include recognition, operational, and analytics which are further split into their respective sub-segments. In the regional analysis of the NLP market, North America is estimated to hold the largest market share during the forecast period.

The NLP market is growing at a rapid rate and is being pushed by a variety of growth drivers such as growing demand for enhanced customer experience, increasing adoption of smartphones, to leverage big data, evolving M2M technologies, growing need of converting manual documents into electronic records, increasing number of contact centers, and increasing adoption of more cloud-based technologies. The NLP market has been forecast to provide numerous opportunities such as emerging areas of applications and investment in the healthcare industry that would contribute to the growth of the market. However, certain limitations have also been observed in the market such as low customer adoption. There are a few customer segments which are yet to adopt the NLP techniques. As per the Porter's five forces analysis carried out for the overall NLP market, it is also concluded that the extent of competition in this market will be moderate-to-high and is expected to intensify in the coming years which implies that more small and medium-sized vendors are progressively entering the market leveraging the 3rd platform technologies, especially big data and analytics.

Government rules and regulations will remain a major challenge for business organizations operative in this industry. However, as business organizations are looking for human to machine translation solutions to provide better access to important data, the demand for NLP solutions is expected to increase at a high rate.

Globally, North America, followed by Europe, would account for the maximum market share in the NLP market. However, regions such as MEA, and LA are the fast-growing regions. In order to survive the competitive landscape of the market, small and medium-sized businesses (SMBs) as well as large enterprises are continuously deploying state-of-the-art NLP solutions to enhance the efficiency of their operations. Meanwhile, the solution vendors as well as service providers are progressively adopting diverse market expansion strategies such as acquisitions, partnerships, and collaborations to enhance their market presence and improve the technical capabilities of their offerings.

Further, in the NLP market, the NLP techniques are getting deployed through two kinds of models, i.e. on-premises and on-demand (cloud-based) which are covered in this report.

**TABLE 1** NATURAL LANGUAGE PROCESSING MARKET SIZE AND GROWTH RATE, 2016–2021 (USD MILLION, YOY %)

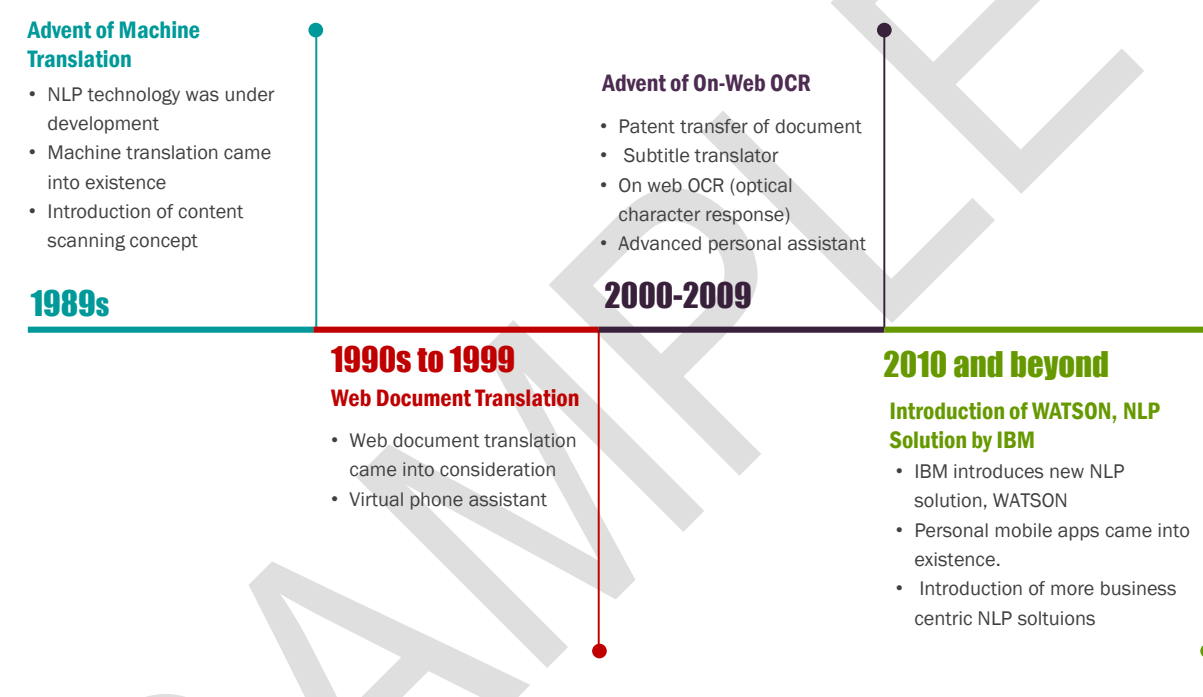
Natural Language Processing Market	2014	2015	2016-e	2021-p	CAGR (2016-2021)
<b>Market Size</b>	XX	XX	XX	XX	XX
<b>YOY %</b>	XX	XX	XX	XX	XX

Note: e-Estimated; p-Projected

Source: MarketsandMarkets Analysis

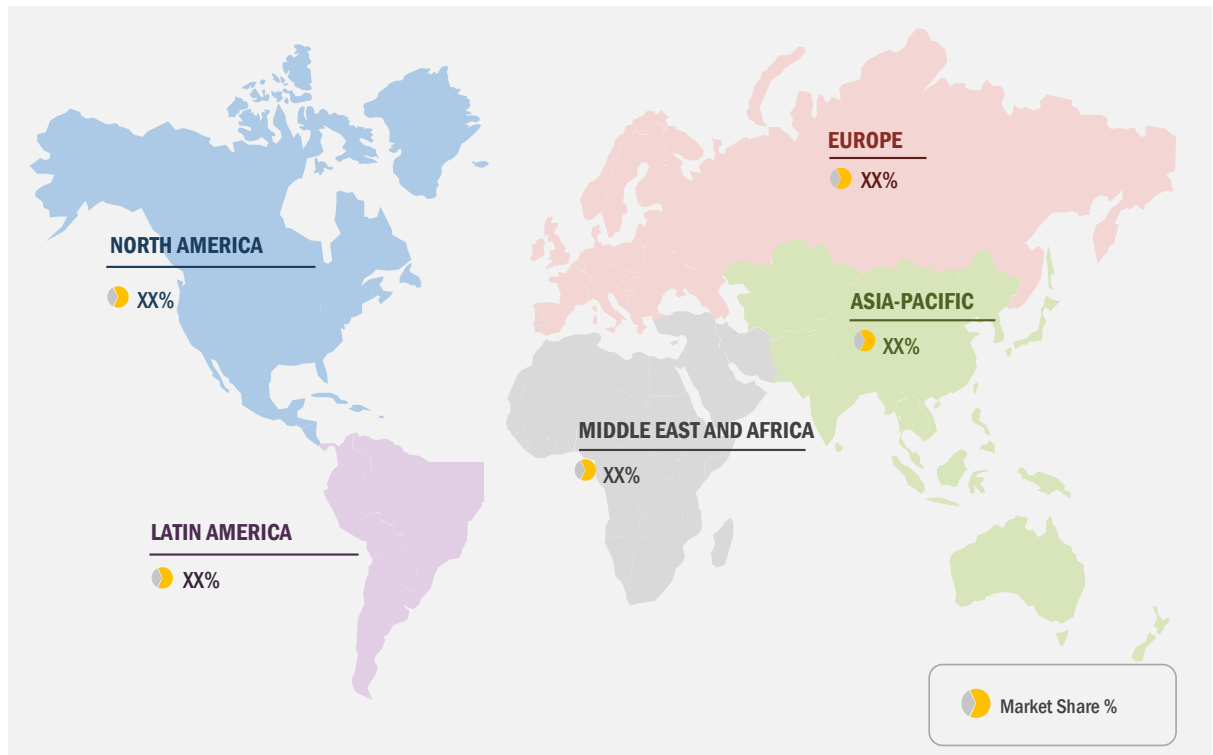
The table given above highlights the NLP market size which is estimated to grow from USD XX million in 2016 to USD XX million by 2021, at a CAGR of XX% during the forecast period.

**FIGURE 1** EVOLUTION OF NATURAL LANGUAGE PROCESSING



Sources: Press Releases, Expert Interviews, and MarketsandMarkets Analysis

**FIGURE 2** NORTH AMERICA IS EXPECTED TO HAVE THE LARGEST MARKET SHARE IN 2016



Source: Secondary Literature, Expert Interviews, and MarketsandMarkets Analysis

The figure above represents the regional market share of the five regions. North America accounted for almost XX% of the overall NLP market share for the year 2015-2016. Europe on the other hand accounted for XX% of the overall market share for NLP in 2015-2016. APAC accounted for around XX% of the market share, whereas Latin America and MEA were projected to have captured XX% and XX%, respectively, in the overall NLP market.

## 2 MARKET OVERVIEW

### 2.1 INTRODUCTION

The business organizations operating in a number of industries generate enormous amount of data through a number of systems that act as data sources such as Enterprise Resource Planning (ERP), Supply Chain Management (SCM), and Customer Relationship Manager (CRM). The organizations thus require state-of-the-art technology-based solutions to manage, analyze, and make future-proof forecasts from these enormous data volumes to frame improved business strategies and to ultimately draw higher Return on Investment (ROI).

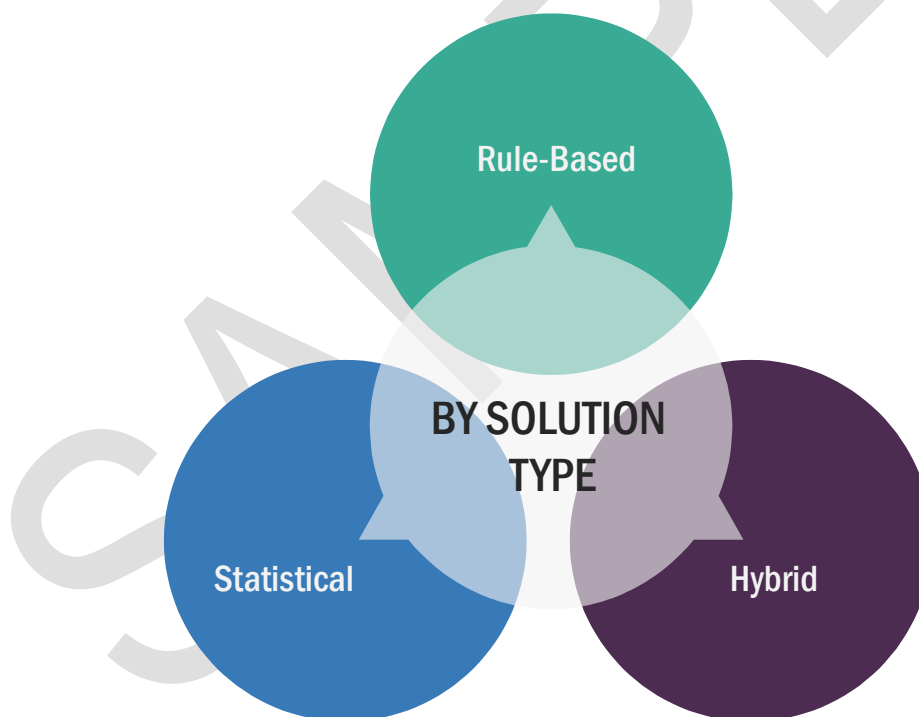
### 2.2 MARKET SEGMENTATION

The NLP market research report segments the global market on the basis of types, technologies, services, deployment models, applications, verticals, and regions. It also forecasts the market size and analyzes the trends in each of the sub-segments.

#### 2.2.1 BY SOLUTION TYPE

Type of solutions in the NLP market includes rule-based NLP solutions, statistical/machine learning NLP solutions, and hybrid NLP solutions.

**FIGURE 3** NATURAL LANGUAGE PROCESSING MARKET SEGMENTATION: BY SOLUTION TYPE

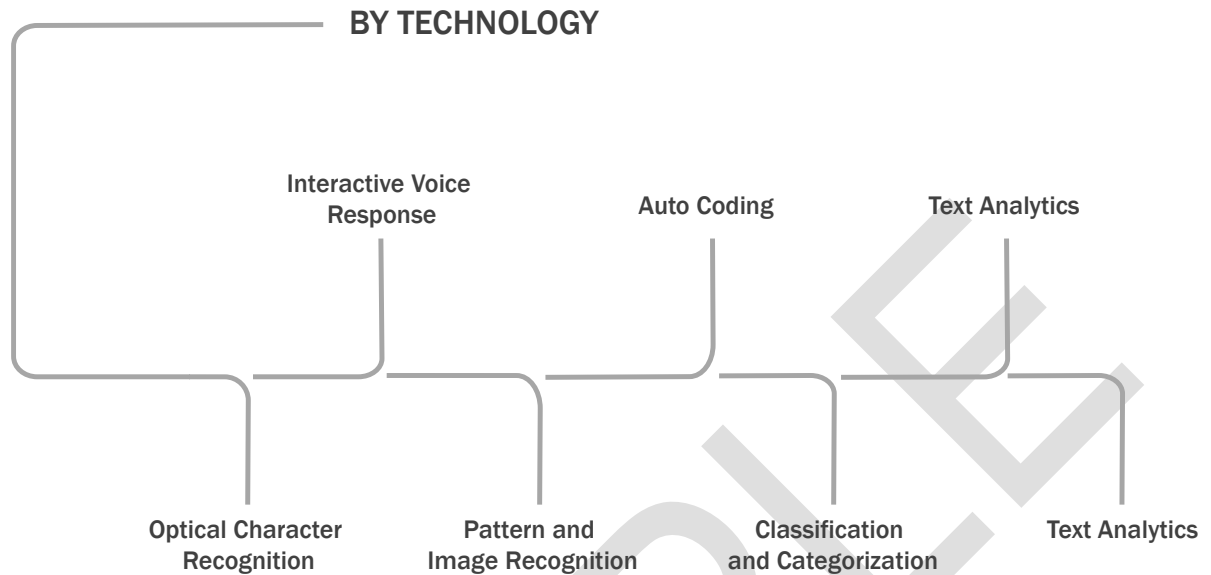


Source: Secondary Literature, Expert Interviews, and MarketsandMarkets Analysis

### 2.2.2 BY TECHNOLOGY

Technologies in NLP market includes interactive voice response, optical character recognition, pattern and image recognition, auto coding, classification and categorization, text analytics, and speech analytics.

**FIGURE 4** NATURAL LANGUAGE PROCESSING MARKET SEGMENTATION: BY TECHNOLOGY



Source: Secondary Literature, Expert Interviews, and MarketsandMarkets Analysis

### 2.2.3 BY SERVICE

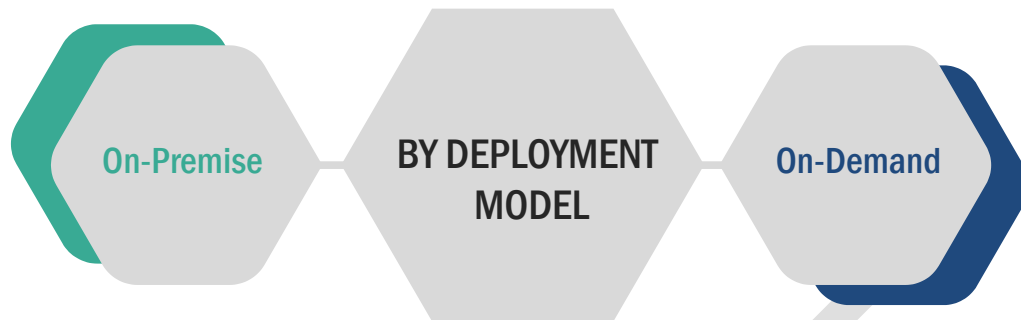
The service segment consists of professional services and support & maintenance services.



Source: Secondary Literature, Expert Interviews, and MarketsandMarkets Analysis

### 2.2.4 BY DEPLOYMENT MODEL

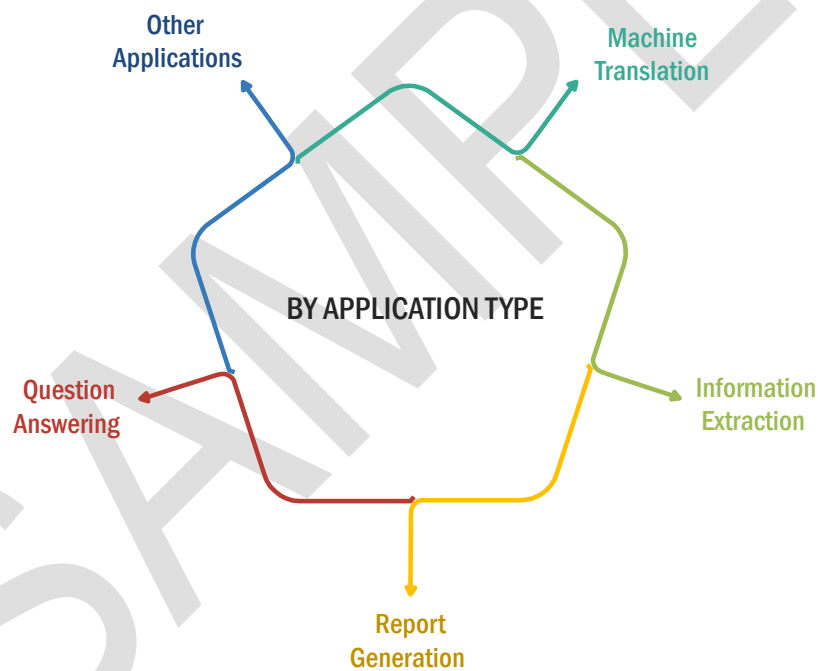
On the basis of deployment models, the NLP market consists of on-premises and on-demand/cloud-based deployment models.



Source: Secondary Literature, Expert Interviews, and MarketsandMarkets Analysis

### 2.2.5 BY APPLICATION TYPE

By application, the NLP market is segmented into machine translation, information extraction, Text Processing, Report generation, question answering, and other applications.

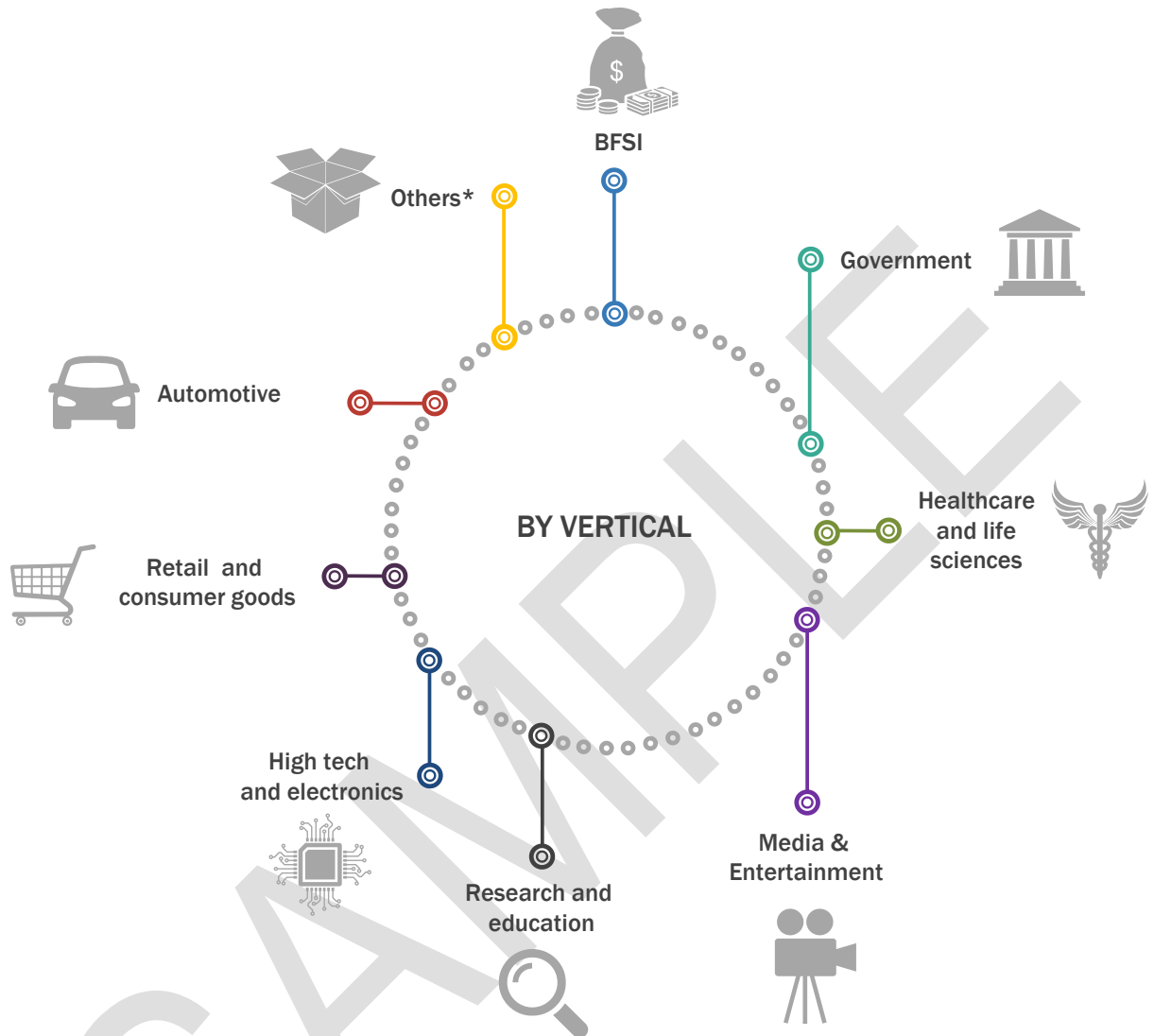


Source: Secondary Literature, Expert Interviews, and MarketsandMarkets Analysis



### 2.2.6 BY VERTICAL

On the basis of verticals, the NLP market is divided into BFSI, retail & e-commerce, healthcare & life sciences, automotive, research & education, media & entertainment, high tech & electronics, government, and others (including travel & hospitality, oil & gas, and utilities).



*Note: Other verticals include travel and hospitality, energy and utility, construction, and journalism*

### 2.2.7 BY REGION

The NLP market is divided into the following regions: North America, Europe, APAC, MEA, and Latin America.



Source: Secondary Literature, Expert Interviews, and MarketsandMarkets Analysis

SAMPLE

### 3 NATURAL LANGUAGE PROCESSING MARKET ANALYSIS, BY TYPE

#### 3.1 INTRODUCTION

The chapter focuses on Natural language processing market by type and will explore into the different types with respect to revenue and geography that exist in the language processing market which is segmented into rule-based NLP, statistical NLP, and hybrid NLP

**TABLE 2 NATURAL LANGUAGE PROCESSING MARKET SIZE, BY TYPE, 2014-2021**

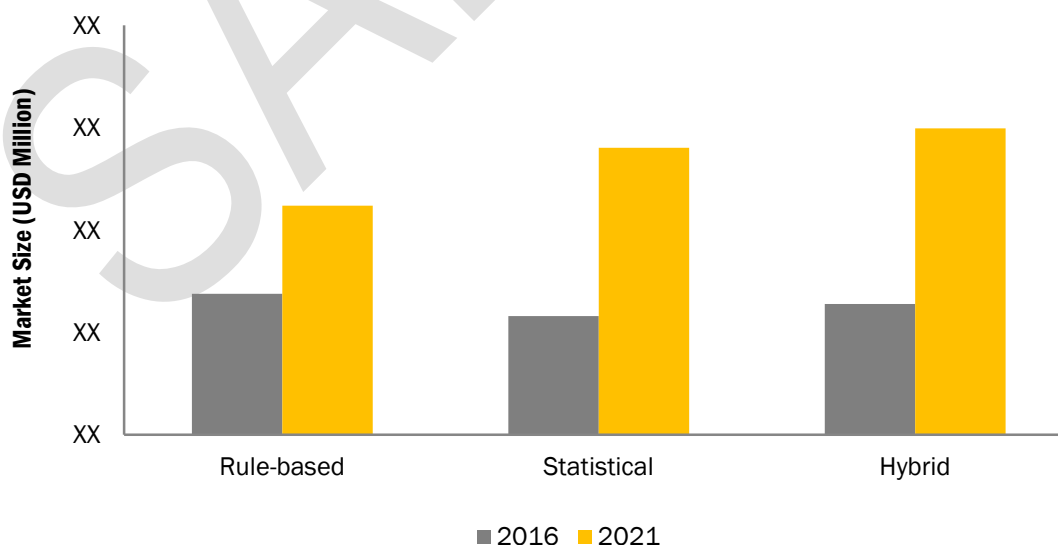
Type	2014	2015	2016-e	2021-p	CAGR (2016-2021)
Rule-based	XX	XX	XX	XX	XX
Statistical	XX	XX	XX	XX	XX
Hybrid	XX	XX	XX	XX	XX
<b>Total</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>

e-estimated; p-projected

Sources: Related Research Publications, Government Publications, Company Press Releases, Company Annual Report, Company Websites, Company Publications, and MarketsandMarkets Analysis

The table above depicts the overall NLP market size by type. Its market size is estimated to be USD XX million in 2016 and is projected to reach USD XX million by 2021 at a CAGR of XX% during the forecast period. The rule-based NLP segment is estimated to have the highest market size of USD XX million in 2016 and is projected to reach USD XX million by 2021, at a CAGR of XX%. The statistical NLP market is expected to grow at a faster rate than the hybrid market. This is due to the fact that the statistical NLP solutions are progressively utilizing machine learning techniques. This is also the reason for lower CAGR and hence lesser market shares of the rule-based NLP solutions by 2021.

**FIGURE 5 RULE-BASED NATURAL LANGUAGE PROCESSING SOLUTIONS TO HOLD THE HIGHEST MARKET SHARE IN 2016**



Sources: Related Research Publications, Government Publications, Company Press Releases, Company Annual Report, Company Websites, Company Publications, and MarketsandMarkets Analysis

### 3.2 RULE-BASED NATURAL LANGUAGE PROCESSING

Rule-based NLP type is used to execute lexical analysis, which evaluates language by the means of human rules. This type of NLP derives the solutions from the set of data-based on certain rules. With the help of symbols, it recognizes human language and accordingly processes it with the help of NLP technologies. Rule-based NLP is basically implemented during the automation of business processes. Though the rule-based NLP solutions are becoming unpopular, they still hold their validity and are being widely used by business organizations across a number of industries. Major use of rule-based NLP lies in business process optimization through enhanced customer interaction. Rule-based methods are widely used for tokenization (breaking long running textual matter into simpler words), when processing English as well as many other languages. Some of the major vendors on rule-based NLP are IBM, 3M, and Expert Systems.

**TABLE 3** RULE-BASED: NATURAL LANGUAGE PROCESSING MARKET SIZE, BY REGION, 2014–2021 (USD MILLION)

Region	2014	2015	2016-e	2021-p	CAGR (2016-2021)
North America	XX	XX	XX	XX	XX
Europe	XX	XX	XX	XX	XX
APAC	XX	XX	XX	XX	XX
MEA	XX	XX	XX	XX	XX
Latin America	XX	XX	XX	XX	XX
<b>Total</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>

e-estimated; p-projected

Sources: Related Research Publications, Government Publications, Company Press Releases, Company Annual Report, Company Websites, Company Publications, and MarketsandMarkets Analysis

The table above depicts the rule-based NLP market size by region. Its market size is estimated to be USD XX million in 2016 and is projected to reach USD XX million by 2021 at a CAGR of XX% during the forecast period. The rule-based NLP methods are becoming less popularity basically due to the high proliferation of the statistical NLP solutions, which incorporate state-of-the-art machine learning techniques. The North American region is estimated to have the largest market size of USD XX million in 2016 and is projected to reach USD XX million by 2021 at a CAGR of XX%.

**TABLE 4** RULE-BASED: NATURAL LANGUAGE PROCESSING MARKET SIZE, BY VERTICAL, 2014-2021 (USD MILLION)

Vertical	2014	2015	2016-e	2021-p	CAGR (2016-2021)
<b>BFSI</b>	XX	XX	XX	XX	XX
<b>Automotive</b>	XX	XX	XX	XX	XX
<b>Healthcare and Life Sciences</b>	XX	XX	XX	XX	XX
<b>Retail and Consumer Goods</b>	XX	XX	XX	XX	XX
<b>Research and Education</b>	XX	XX	XX	XX	XX
<b>High Tech and Electronics</b>	XX	XX	XX	XX	XX
<b>Media and Entertainment</b>	XX	XX	XX	XX	XX
<b>Government</b>	XX	XX	XX	XX	XX
<b>Others</b>	XX	XX	XX	XX	XX
<b>Total</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>

e-estimated; p-projected

Sources: Related Research Publications, Government Publications, Company Press Releases, Company Annual Report, Company Websites, Company Publications, and MarketsandMarkets Analysis

The table above depicts the rule-based NLP market size by vertical. Its market size is estimated to be USD XX million in 2016 and is projected to reach USD XX million by 2021 at a CAGR of XX% during the forecast period. Health care and life sciences is estimated to have the largest market size of USD XX million in 2016 and is projected to reach USD XX million by 2021 at a CAGR of XX%.

## 4 NATURAL LANGUAGE PROCESSING MARKET ANALYSIS, BY TECHNOLOGY

### 4.1 INTRODUCTION

The NLP market encompasses NLP technologies and related services. The various NLP technologies are categorized into three major types, namely recognition technologies, operational technologies, and analytics technologies. Recognition technologies include Interactive Voice Response (IVR), Optical Character Recognition (OCR), and pattern and image recognition technologies. It includes auto coding technologies and classification & categorization technologies. Lastly, the report covers two types of analytics technology, namely text analytics and speech analytics technologies.

**TABLE 5 NATURAL LANGUAGE PROCESSING MARKET SIZE, BY TECHNOLOGY, 2014–2021 (USD MILLION)**

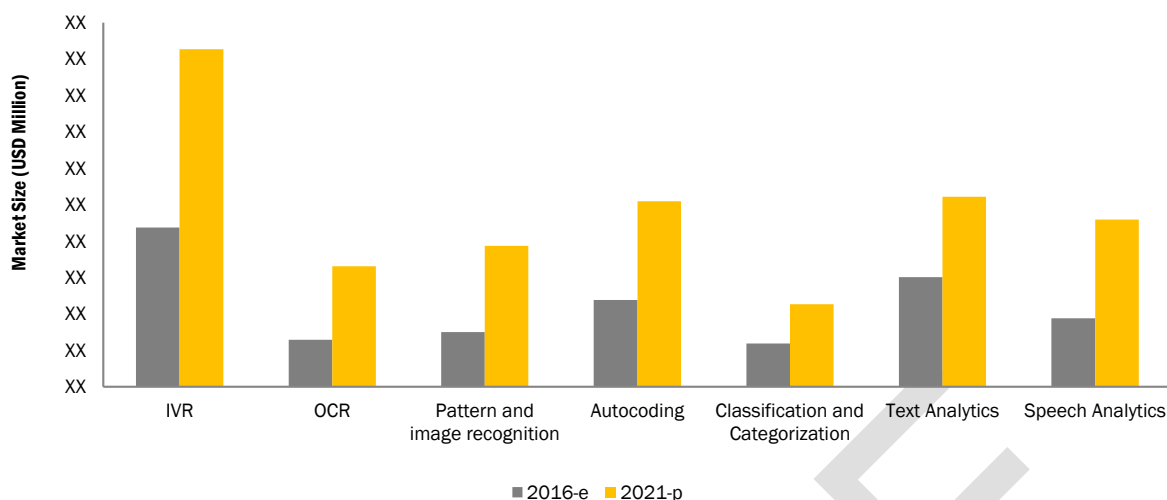
Technology	2014	2015	2016-e	2021-p	CAGR (2016-2021)
IVR	XX	XX	XX	XX	XX
OCR	XX	XX	XX	XX	XX
Pattern and Image Recognition	XX	XX	XX	XX	XX
Auto Coding	XX	XX	XX	XX	XX
Classification and Categorization	XX	XX	XX	XX	XX
Text Analytics	XX	XX	XX	XX	XX
Speech Analytics	XX	XX	XX	XX	XX
<b>Total</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>

e-estimated; p-projected

Sources: Related Research Publications, Government Publications, Company Press Releases, Company Annual Report, Company Websites, Company Publications, and MarketsandMarkets Analysis

The table above depicts the overall NLP market size by technology. Its market size is estimated to be USD XX million in 2016 and is projected to reach USD XX million by 2021 at a CAGR of XX% during the forecast period. The IVR technology is estimated to have the highest market size of USD XX million in 2016 and is projected to reach USD XX million by 2021, at a CAGR of XX%. The pattern and image recognition technology market is expected to grow at a faster rate than the other technologies in this market. This is due to the growing demand of image and video data in various applications due to drastic improvement in processing technologies.

**FIGURE 6** NATURAL LANGUAGE PROCESSING MARKET, BY TECHNOLOGY



Sources: Related Research Publications, Government Publications, Company Press Releases, Company Annual Report, Company Websites, Company Publications, and MarketsandMarkets Analysis

## 4.2 INTERACTIVE VOICE RESPONSE (IVR)

Nowadays, due to the growing demand of automated call services, the IVR systems are gaining popularity. IVR systems integrate NLP technologies to provide applications such as automated-response phone systems, question answering, and fusion speech recognition. IVR techniques are majorly used to serve high call volumes, reduce costs, and to provide better customer experience. Hence, the IVR techniques are majorly used in customer centers. By applying natural language techniques to a speech-enabled self-service IVR system, automation rates will increase leading directly to lower costs. A few of the major vendors implementing IVR solutions are Nuance Communications, AT&T, and West Interactive.

**TABLE 6** INTERACTIVE VOICE RECOGNITION: NATURAL LANGUAGE PROCESSING MARKET SIZE, DEPLOYMENT MODEL, 2014–2021 (USD MILLION)

Deployment Model	2014	2015	2016-e	2021-p	CAGR (2016-2021)
On-premise	XX	XX	XX	XX	XX
On-demand	XX	XX	XX	XX	XX
<b>Total</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>

e-estimated; p-projected

Sources: Related Research Publications, Government Publications, Company Press Releases, Company Annual Report, Company Websites, Company Publications, and MarketsandMarkets Analysis

The table above depicts the IVR market size by deployment model. Its market size is estimated to be USD XX million in 2016 and is projected to reach USD XX million by 2021 at a CAGR of XX% during the forecast period. On-demand deployment model is estimated to have the largest market size of USD XX million in 2016 and is projected to reach USD XX million by 2021 at a CAGR of XX%.

## 5 NATURAL LANGUAGE PROCESSING MARKET ANALYSIS, BY SERVICES

### 5.1 INTRODUCTION

This chapter revolves around the segmentation of NLP market on the basis of services including professional services and support and maintenance services.

**TABLE 7 NATURAL LANGUAGE PROCESSING MARKET SIZE, BY SERVICE, 2014-2021 (USD MILLION)**

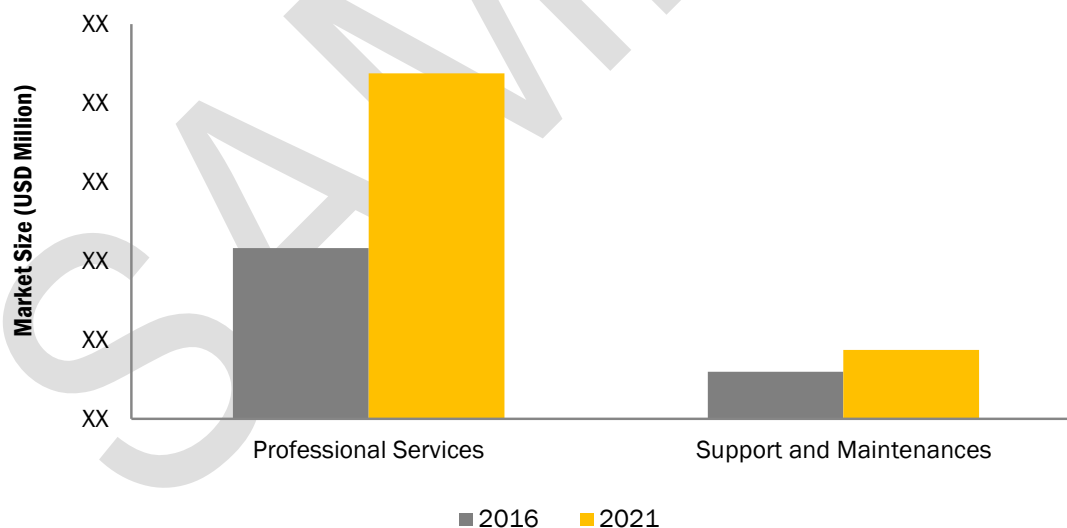
Service	2014	2015	2016-e	2021-p	CAGR (2016-2021)
Professional Services	XX	XX	XX	XX	XX
Support and Maintenance Services	XX	XX	XX	XX	XX
<b>Total</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>

e-estimated; p-projected

Sources: Related Research Publications, Government Publications, Company Press Releases, Company Annual Report, Company Websites, Company Publications, and MarketsandMarkets Analysis

The overall NLP market by service is estimated to be USD XX million in 2016 and is projected to reach USD XX million by 2021, at a CAGR of XX% during the forecast period. Professional services are estimated to have the highest market size of USD XX million in 2016 which is projected to grow to USD XX million by 2021, at a CAGR of XX% during the forecast period.

**FIGURE 7 THE PROFESSIONAL SERVICES MARKET IS EXPECTED TO GROW AT THE FASTEST RATE DURING THE FORECAST PERIOD**



Source: Press Releases, Investor Presentations, Expert Interviews, and MarketsandMarkets Analysis



## 5.2 PROFESSIONAL SERVICES

Professional services includes cost of integration, installation, and maintenance of NLP solutions, voice biometrics, Computer Technology Integration (CTI), and agent desktop solutions. It also includes services which are required to provide technical help at the initial stage of projects using NLP solutions. Professional Services:

**TABLE 8 NATURAL LANGUAGE PROCESSING MARKET SIZE, BY VERTICAL, 2014-2021 (USD MILLION)**

Vertical	2014	2015	2016-e	2021-p	CAGR (2016-2021)
<b>BFSI</b>	XX	XX	XX	XX	XX
<b>Automotive</b>	XX	XX	XX	XX	XX
<b>Healthcare and Life Sciences</b>	XX	XX	XX	XX	XX
<b>Retail and Consumer Goods</b>	XX	XX	XX	XX	XX
<b>Research and Education</b>	XX	XX	XX	XX	XX
<b>High Tech and Electronics</b>	XX	XX	XX	XX	XX
<b>Media and Entertainment</b>	XX	XX	XX	XX	XX
<b>Government</b>	XX	XX	XX	XX	XX
<b>Others</b>	XX	XX	XX	XX	XX
<b>Total</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>

*e-estimated; p-projected*

*Sources: Related Research Publications, Government Publications, Company Press Releases, Company Annual Report, Company Websites, Company Publications, and MarketsandMarkets Analysis*

The table above depicts the professional services market size by vertical. Its market size is estimated to be USD XX million in 2016 and is projected to reach USD XX million by 2021 at a CAGR of XX% during the forecast period. The healthcare and life sciences industry grows at the highest market size of USD XX million in 2016 and is expected to reach USD XX million by 2021 at a CAGR of XX%. NLP professional services segment is gaining popularity in the healthcare industry due to the growing demand to maintain records of doctor-patient conversations. This helps to industry to maintain electronic health record with real-time access to data. The increase in usage of social media platforms by organizations and by individuals are responsible for the increased the need of NLP solutions in the media and entertainment industry. Hence, this industry is growing at the highest CAGR of XX% from 2016 to 2021.

**TABLE 9** PROFESSIONAL SERVICES: NATURAL LANGUAGE PROCESSING MARKET SIZE, BY REGION, 2014-2021 (USD MILLION)

Region	2014	2015	2016-e	2021-p	CAGR (2016-2021)
North America	XX	XX	XX	XX	XX
Europe	XX	XX	XX	XX	XX
APAC	XX	XX	XX	XX	XX
MEA	XX	XX	XX	XX	XX
Latin America	XX	XX	XX	XX	XX
<b>Total</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>	<b>XX</b>

e-estimated; p-projected

Sources: Related Research Publications, Government Publications, Company Press Releases, Company Annual Report, Company Websites, Company Publications, and MarketsandMarkets Analysis

The table above depicts the professional services market size by region. Its market size is estimated to be USD XX million in 2016 and is projected to reach USD XX million by 2021 at a CAGR of XX% during the forecast period. North America is estimated to have the largest market size of USD XX million in 2016 and is projected to reach USD XX million by 2021 at a CAGR of XX%.

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