

# Q&A: Six Questions To Ask Before Diving Into Text Analytics

## Make The Most Of Your Textual Enterprise Data

by Boris Evelson and Elizabeth Cullen

April 4, 2018

### Why Read This Report

Your company's understanding of its customers will be incomplete unless you can harness all types of enterprise data — structured and unstructured. While customer insights (CI) pros are comfortable with structured data analysis, they are only beginning to explore opportunities to use text analytics. In this report, CI pros will get answers to six key questions before they start on an often perilous journey of mining and analyzing unstructured enterprise data.

This is an update of a previously published report; Forrester reviews and updates it periodically for continued relevance and accuracy. We have elaborated on the uses cases and methods for text analytics in this update.

### Key Takeaways

#### **CI Pros Face A Plethora Of Analytics Options**

You will face a crowded fragmented vendor landscape. Choose the right one by concentrating on multilanguage capabilities, out-of-the-box connectivity to relevant data sources, business domain expertise, and a combination of rules- and AI-based technology as the key differentiating features.

#### **Don't Expect Full Implementation For Weeks**

A cloud-based, general-purpose, social media text analytics tool can be up and running in minutes. But most enterprise text analytics applications that need to connect to multiple data sources and require training in a business domain lexicon will take at least a few weeks from procurement to deployment.

# Q&A: Six Questions To Ask Before Diving Into Text Analytics

## Make The Most Of Your Textual Enterprise Data

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## 11 Supplemental Material

## Related Research Documents

[The Forrester Wave™: Big Data Text Analytics Platforms, Q2 2016](#)

[Now Tech: AI-Based Text Analytics Platforms, Q2 2018](#)

[TechRadar™: Business Intelligence Technologies, Q2 2017](#)



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## Leverage Text Analytics For Improved Business Insights

Hidden in vast troves of unstructured data are insights that can improve a company's operations and customer experience. Data and analytics technology decision makers recognize this business potential and are rapidly increasing the amount of unstructured data they store and analyze.<sup>1</sup> As text analytics tools become more user friendly and technology matures, adoption will likely continue to increase.

Firms often confuse textual data as unstructured data, but text is not exactly "unstructured"; it's defined by grammatical rules, with customer sentiment, emotions, and intentions hidden in it. Text analytics is the process/technology that extracts these attributes (structures) for analysis and insights. To help CI professionals prepare for and take full advantage of this technology, Forrester has identified and answered the most common questions about text analytics.

### 1. What are the various ways CI pros can use text analytics?

CI pros are desperate to understand their customers' ever-changing tastes and preferences, predict their behaviors, and connect with them emotionally. They're also looking to use text analytics to simplify enterprise content management, such as document classification and search. For this complete view of the customer and your internal business, you need insights from unstructured data sources like open-ended survey responses, call center interactions, contracts, legal paperwork, tweets, and Facebook posts.<sup>2</sup> Text analytics uses cases fit into three main categories: customer facing (characterized by a large volume of rapidly streaming short sentences and paragraphs); back office (mostly characterized by a smaller volume of long, complex documents); and other (such as semantic search and process automation) (see Figure 1, see Figure 2, and see Figure 3):

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**FIGURE 1** Text Analytics Uses Cases And Applications — Customer Facing

Use case/ application	Description	Can analyze streaming/ rapidly changing short documents	Supports linguistic rules for grammar and spelling correction	Can process long, complex documents
Voice of the customer (VoC)/ customer feedback management (CFM)	A system of software and processes that supports a company's VoC program by helping it solicit feedback from key customers across channels; centrally collect solicited and unsolicited feedback; analyze structured and unstructured feedback; distribute insights across the organization; close the loop with customers; act on the insights; and monitor progress continuously	●	●	
Competitive intelligence	A systematic and ongoing process for gathering information to derive actionable insights about competitors, the competitive environment, and trends to further the organization's business goals	●	●	●
Social intelligence	The management and analysis of customer data from social sources, used to activate, measure, and recalibrate marketing and business programs	●	●	
Brand management/ reputation/ awareness	The ongoing process to measure and manage a company's intangible brand based on reputation, awareness, satisfaction, and value	●		

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**FIGURE 2** Text Analytics Uses Cases And Applications — Back Office

Use case/ application	Description	Can analyze streaming/ rapidly changing short documents	Supports linguistic rules for grammar and spelling correction	Can process long, complex documents
Document analytics	The application of technologies to classify documents and sections of text within documents by categories (by customer, project, product, etc.) and to categorize documents (by risk, confidentiality, etc.)			●
eDiscovery	The application of technologies to identify, collect, and produce electronically stored information (ESI) in response to requests for investigation or a legal process			●

**FIGURE 3** Text Analytics Uses Cases And Applications — Other

Use case/ application	Description	Can analyze streaming/ rapidly changing short documents	Supports linguistic rules for grammar and spelling correction	Can process long, complex documents
Semantic/ cognitive search	The new generation of enterprise search solutions that employ AI technologies such as natural language processing and machine learning to ingest, understand, organize, and query digital content from multiple data sources	●	●	●
Robotic process automation (RPA)	The application of technology that automates workflow processes, primarily for administrative work; RPA software can help automate large volumes of digital manual-processing work, such as automating the data capture process, eliminating forms administration, or populating systems of record	●	●	●

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**2. What are the essential steps to understand text analytics?**

While CI pros don't necessarily need a deep technical knowledge of the machine learning and linguistic rules powering text analytics, they must know enough to understand what's under the hood of a text analytics tool. But achieving this level of familiarity can be challenging, as vendors often use different terms to describe similar techniques and steps. CI pros must get on the same page when using key terms that describe the text analytics process:<sup>3</sup>

- › **Text mining converts unstructured text to structured data.** In this core process, an application applies linguistic and statistical rules as well as machine learning to extract structured data from text. Linguistic rules use natural language processing (NLP) to detect parts of speech, identify sentence “triples” (subject, action, and object), fix incorrect grammar and spelling, and identify synonyms. Statistical language analysis is mostly language independent and relies on word counts, proximities, and sequences — lexical chains (i.e., word sequences) and word nets (i.e., word association to determine context). Most tools today use a combination of linguistic and statistical rules and machine learning.
- › **Text analytics explores insights.** Once the text-mining process extracts structures from unstructured text, a CI pro is ready to analyze the results. Through a graphical user interface (GUI), you can explore the findings and perform basic descriptive analysis (“what is happening”). For example, you can ask questions about whether customers in a particular demographic segment (by income, gender, and/or age) are expressing more positive or negative sentiment versus their peers in other segments. This descriptive analysis may reveal some inaccuracies or unexpected results, and you may choose to retrain the system and rerun the text-mining process again.
- › **Postprocessing analytics turns insights into decisions and actions.** The final step in the analysis is to look for patterns in the data based on various attributes. For example, a CI pro may further analyze sentiment by customer segments to determine what other attributes — such as time, geography, or specific product within a brand — are the top sentiment influencers (“why this is happening”). You can perform this analysis in the text analytics tool itself or by feeding the results into an enterprise analytical repository, like a data warehouse or data hub, for even richer insights.

**3. What are the typical challenges with text analytics?**

Text analytics, like any analytical endeavor, is not a plug-and-play journey from data to insights to action. Today's tools are a significant improvement over earlier-generation technologies that required linguists, data scientists, and technology pros to set up the application, often over a monthlong cycle. Despite that, don't expect any text analytics application to be highly accurate from the start or expect to have an operationalized application up and running in hours or days from procurement. Forrester often hears from frustrated clients who were unprepared for the time and resource commitment needed to see the desired outcomes. To set realistic expectations, plan for at least a few weeks to deploy and operationalize your text analytics application, allowing time for:

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- › **Data preparation.** Mining and analyzing many data sources require special treatment beforehand. For example, scanned documents need to go through an optical character recognition (OCR) process, which is never 100% accurate. Emails present a specific challenge due to the potential for duplicate keywords from multiple email chains and nested attachments (zipped attachments can be especially challenging).<sup>4</sup> Last but not least, when you “scrape” data from news websites, blogs, and wikis, you’ll inevitably need to cleanse the data to remove malformed HTML (missing tags), embedded JavaScript, and advertisements.
- › **Initial and ongoing system training.** While it’s quicker to deploy a general-purpose text analytics application, CI pros still need to train the system with specific business-domain knowledge (drug compounds in pharma, for example). This requires developing domain-specific lexicons (a dictionary and thesaurus) and taxonomies (product hierarchies). Vendors are jumping on this opportunity, offering multiple business-domain lexicons and taxonomies (often referred to collectively as ontologies) as part of the package or for an additional cost. While these products reduce some headaches, they are not a panacea: You still need to train the system against company-specific (and often changing) terms. An executive at a pharma company cited the ever-evolving industry lexicon as one of the primary challenges of the company’s text analytics implementation.
- › **The creation of a customized accuracy verification process.** Unfortunately, there are no industry-standard benchmarks for text analytics accuracy. CI pros must have a healthy dose of skepticism when vendors pitch the accuracy of their tools, since few vendors offer third-party verification and no product is 100% accurate.<sup>5</sup> The only practical method of measuring accuracy is to utilize linguists and business-domain subject matter experts to manually mark up sample texts and then compare their results to the output from the text analytics application.<sup>6</sup> Forrester further recommends setting a minimum viable accuracy threshold and conducting monthly or quarterly accuracy spot-checks. If results fall below the expected accuracy levels, you’ll need to trigger a process to retrain or recalibrate the system.

**4. What skills and roles should I consider to staff my text analytics projects?**

All text analytics initiatives require close collaboration between business sponsors, subject matter experts, and tech organization professionals. Business units generally sponsor customer-facing text-mining projects and often rely on tech organization pros to implement the tool. Even cloud-based text analytics tools will require data preparation and training. Forrester recommends staffing text analytics projects with the following roles (insourced or outsourced):

- › **Business domain expert.** This type of CI pro has a deep understanding of the business objectives or use cases driving the initiative, such as marketing, operations, or customer experience. Business domain experts are responsible for managing the project and translating the sentiment, emotions, concepts, and other entities into business-relevant actions. More tech-savvy CI pros will use their general knowledge of NLP, machine learning, and statistical mining to help build language rules.

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- › **Linguist/data scientist.** This is a technical expert who has advanced knowledge of and experience in NLP, machine learning, computational linguistics, and data querying. Linguists and data scientists are responsible for preparing data sets, building language rules, training or modifying the application, and validating models by creating the “golden copy” and setting the minimal viable threshold.
- › **Ontology administrator.** This role owns and maintains the corporate bodies of knowledge (documents, lexicons, and taxonomies) that define topics and concepts for a particular domain. Ontology administrators enrich data sets with these categorizations and are the liaison between the data science and business teams. The most effective administrators have business expertise and a working knowledge of programming, statistics, data wrangling, and data visualization.
- › **Corporate librarian.** This person manages the classification, categorization, and location of all enterprise data sets. Librarians should possess factual and theoretical knowledge within the context of the underlying business objective. At smaller firms, it’s not uncommon for the ontology administrator or data scientist to handle these tasks.
- › **Information architect.** This is a popular role within enterprise and/or data architecture teams. This knowledge worker owns the firm’s overall big data strategy and architecture, including data management, business intelligence (BI), data hubs, and data warehouses. This position’s purvey isn’t just technology — it also includes the people and processes driving data initiatives. Ultimately, this insight into all aspects of the strategy makes the information architect a key resource when selecting text analytics software and integrating it with other analytics processes and platforms.
- › **Programmer.** This application developer custom-builds text analytics applications or embeds text analytics functionality into other applications, like ERP, CRM, or BI.<sup>7</sup> Programmers translate business requirements into new software functions by developing across platforms and deployment options. A background in enterprise content management and enterprise search technologies is also helpful.

**5. What are some differentiating capabilities within text analytics applications?**

Forrester tracks over 100 text analytics vendors in this highly fragmented market, and we reviewed and categorized 34 of them in the Forrester report “[Now Tech: AI-Based Text Analytics Platforms, Q2 2018](#).”<sup>8</sup> Rather than evaluating table-stakes features such as richness of linguistic rules, scalability, or GUI, we recommend concentrating on four differentiators:

- › **Domain expertise.** No single vendor can boast domain expertise in several hundred subject areas — a multiple of every industry vertical by business-specific domains (social media analysis, competitive intelligence, and brand awareness as well as dozens of non-customer-facing domains such as finance, HR, logistics, and risk). Short-list vendors that provide out-of-the-box ontologies in your specific industry and use case.
- › **Multilanguage capabilities.** If you plan to mine and analyze textual data sources in multiple languages, be prepared to dig deeper than a statement on a vendor’s website about which languages it supports. Ask about the platform’s tier 1 languages — where each language has its

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own language-specific set of linguistic rules. This tier usually produces the most accurate results, as linguistic rules native to each language can also be used to correct grammar and spelling. Tier 2 languages use statistical rules that are language independent but less accurate. Lastly, tier 3 languages use programmatic translation (such as Google Translate) to translate text from the original into English and then apply linguistic rules and statistical algorithms to the English translation. Needless to say, this is the least desirable option, leading to the most inaccurate results.

- › **Out-of-the-box data connectors.** As a rule of thumb, CI pros working on analytical projects spend 80% of their time and effort sourcing and preparing the data and only 20% actually analyzing the results. Cut the 80% as much as possible to further short-list vendors based on the availability of out-of-the-box connectors to your application-specific data sources.
- › **Artificial intelligence.** Few analytical applications can address the “I-don’t-know-what-I-don’t-know” quagmire. The accuracy of your text-mining application and the richness of your derived insights largely depend on how well you trained the system plus all of the rules that platform engineers built into it. Older-generation systems can’t catch new word patterns or terms unless they’re preprogrammed. That’s precisely what the latest text analytics platforms that use AI techniques, such as neural networks, self-learning, and continuous improvement, can address. AI-based text-mining platforms will be less accurate initially, but they will improve over time. Until purely AI-based platforms mature, give preference to platforms that offer a healthy mix of rules-based and machine learning technologies (see Figure 4).

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**FIGURE 4** The Differences Between Linguistic-Rules-Based And Machine-Learning-Based Text Analytics

Technology	Description	Strengths	Cautions
Rules-based	Linguistic pattern recognition using rules hand-coded for each use case, domain, and/or language	<ul style="list-style-type: none"> <li>• Greatest user control</li> <li>• Results are easy to interpret</li> <li>• Can check and correct spelling/grammar</li> </ul>	<ul style="list-style-type: none"> <li>• Costly to update with new rules</li> <li>• Low accuracy as patterns miss alternate phrasings or capture unrelated text</li> <li>• Not self-learning, improving</li> <li>• Does not address “you don’t know what you don’t know”</li> </ul>
Unsupervised machine-learning-based	Computers that use statistical pattern learning to classify and reveal patterns such as entities, intents, and relationships in text	<ul style="list-style-type: none"> <li>• More efficient/cost-effective than manually coding rules</li> <li>• Proactively surfaces new patterns in the data, addressing “you don’t know what you don’t know”</li> <li>• Self-learning/improving</li> <li>• Language independent</li> </ul>	<ul style="list-style-type: none"> <li>• Requires effort to make insights actionable, as patterns can be unintuitive or be statistical artifacts</li> <li>• No grammar/spell-check available</li> </ul>
Supervised machine-learning-based	Subject matter experts, or crowdsourcing platforms, create labeled training data that an algorithm uses to identify patterns in the data	<ul style="list-style-type: none"> <li>• Highest accuracy</li> <li>• Lower effort than creating linguistic rules</li> <li>• Results are easy to interpret</li> </ul>	<ul style="list-style-type: none"> <li>• Training data is a high-effort, high-cost process</li> <li>• Models are often opaque</li> <li>• No grammar/spell-check available</li> </ul>
Hybrid	A mix of all of the above technologies	Applies each technology to different parts of the text analytics process and therefore shares the same strengths	Applies each technology to different parts of the text analytics process and therefore shares the same cautions

**6. How do I jump-start our text analytics initiative?**

CI pros looking to jump-start their text analytics initiatives should take five steps to increase their chances of success:

1. **Clearly define the business requirements for your first text analytics use case.** Don’t “build” a text analytics platform and hope that “they [text analytics applications] will come.” Rather, pick a use case that carries the biggest business value at the lowest effort and cost. Define clear business

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goals and objectives, and link them to specific metrics that you want to track. Then define the business outcomes and actions you plan to take when the metrics show whether your goals and objectives are being met. Next, map key performance indicators to the data sources from which you will build and populate these metrics. Now you have enough requirements to build a proof-of-concept (POC) prototype. One European bank followed a similar process to narrow the focus of its prospective text analytics journey from general exploration to improving service requests.

2. **Perform due diligence to ensure you really need a new text analytics platform.** Before investing in a new text analytics platform, evaluate whether the text analytics features of your enterprise's existing software platforms, applications, tools, and applications satisfy your requirements. Talk to your tech organization colleagues and find out if your DBMS or ETL platforms already have most of the text-mining features your use case calls for.<sup>9</sup> Or check with your voice-of-the-customer and contact center colleagues to see whether a customer survey tool or IVR speech analytics application they use provides the text-mining and analytics features you need.<sup>10</sup>
3. **Short-list no more than three text analytics vendors.** Leverage Forrester's research, including "Now Tech: AI-Based Text Analytics Platforms, Q2 2018" and "The Forrester Wave™: Big Data Text Analytics Platforms, Q2 2016," to create a long list of vendors.<sup>11</sup> Then field a request for information based on your requirements, with an emphasis on the key product differentiators delineated in the previous question. Conduct vendor presentations in two parts. In part one, share text data and requirements with vendors right before the demo. For the second session, give vendors access to the data and requirements a week before the demo. This will ensure that you have a clear understanding of what the proposed application can do out of the box versus after a week of system training and enhancements.
4. **Start with a small POC to prove ROI.** Run a small POC (a fraction of the data, a small set of customers, and only a subset of metrics) and measure ROI. Tangible business benefits may include top-line improvements, such as increased revenues due to improved customer satisfaction and better cross-sell/upsell ratios. Bottom-line benefits can come from cost avoidance based on replacing manual text-mining processes with automated ones. Extrapolate the POC's costs and benefits to a full implementation, and create a business case to obtain funding.
5. **Use Forrester's TEI methodology to build a business case for a larger deployment.** A successful pilot project doesn't guarantee resources for a full implementation unless you build an iron-clad business case. To ensure success, follow Forrester's Total Economic Impact™ (TEI) methodology for building strong, supportable business cases.<sup>12</sup> This framework will help you quantify the value of the text analytics investment by breaking it into four components: 1) benefits or impact on the business; 2) cost relative to maintaining the status quo; 3) the flexibility of the platform for future investments and benefits; and 4) costs and benefits adjusted for project constraints and risks. Forrester's thorough, transparent model will lend additional credibility to your proposal.

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## Supplemental Material

### Companies Interviewed For This Report

We would like to thank the individuals from the following companies who generously gave their time during the research for this report.

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Angoss

Clarabridge

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Converseon

Attivio

Cyxtera

Beyond the Arc

Digital Reasoning

Cambridge Semantics

EPAM

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Epsilon	Medallia
Expert System	Megaputer
EY	M-Files
ForeSee	Micro Focus
HCL Technologies	NetBase
Hewlett Packard Enterprise (HPE)	Newgen Software
Hexaware Technologies	Northern Light
IBM	OpenText
InfoNgen	Qualtrics
Infosys	RapidMiner
inQuba	RavenPack
Ipsos	Saama
KPMG	SAS
Lexalytics	Stratifyd
Linguamatics	SynerScope
MartizCQ	Sysomos
MeaningCloud	Tata Consultancy Services

## Endnotes

- <sup>1</sup> From 2016 to 2017, the number of data and analytics technology decision makers who said that their enterprises were storing more than 100 TB of unstructured data more than doubled. Source: Forrester Data Global Business Technographics® Data And Analytics Survey, 2017 and Forrester Data Global Business Technographics Data And Analytics Survey, 2016.
- <sup>2</sup> See the Forrester report "[Market Overview: Text Analytics.](#)"
- <sup>3</sup> For a more detailed description of the text analytics steps, see the Forrester report "[Vendor Landscape: Big Data Text Analytics.](#)"
- <sup>4</sup> In a survey of customer references as part of "The Forrester Wave™: Big Data Text Analytics Platforms, Q2 2016," respondents rated data ingestion and preparation platform capabilities as one of the most challenging.
- <sup>5</sup> In Forrester's evaluation of the top vendors in the space, only two offered independent, third-party verification of accuracy — 99% accuracy means one error in every 100 characters, or one error per two lines of typed text. See the Forrester report "[The Forrester Wave™: Big Data Text Analytics Platforms, Q2 2016](#)" and see the Forrester report "[Market Overview: Text Analytics.](#)"

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- <sup>6</sup> Creating “gold standard data sets” or annotations for training is tedious, time consuming, and complex. Reach a consensus by internally defining annotation guidelines. Source: Ashwin Ittoo, Le Minh Nguyen, and Antal van den Bosch, “Text analytics in industry: Challenges, desiderata and trends,” Computers in Industry, December 2015.
- <sup>7</sup> ERP: enterprise resource planning; CRM: customer relationship management.
- <sup>8</sup> See the Forrester report “[The Forrester Wave™: Big Data Text Analytics Platforms, Q2 2016.](#)”
- <sup>9</sup> DBMS: database management system; ETL: extract, transform, load.
- <sup>10</sup> IVR: interactive voice response.
- <sup>11</sup> See the Forrester report “[Now Tech: AI-Based Text Analytics Platforms, Q2 2018](#)” and see the Forrester report “[The Forrester Wave™: Big Data Text Analytics Platforms, Q2 2016.](#)”
- <sup>12</sup> See the Forrester report “[Key Elements In A BT Business Case.](#)”

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