

F R O S T & S U L L I V A N

FROST & SULLIVAN BEST PRACTICES AWARD

IDENTITY VERIFICATION & AUTHENTICATION - EUROPE

Technology Innovation Award 2019



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Background and Company Performance

Industry Challenges

With the increasing amount of personal data being collected, the new data analytics era has paved the way for fraudsters to breach, hack, or even misuse other people's personal information and identities. With criminals shifting to the online world, about 4,149 data breaches were reported in 2016, compromising over 4.2 billion records, according to the Data Breach QuickView report by Risk Based Security. This number eclipsed the previous high of about 1 billion exposed records in 2013. In Q1 2019, \$1.2B was stolen in cryptocurrency according to CipherTrace, with SIM-swapping being identified as an increasing threat to identity theft.

In 2018, identity fraud rates were the highest in India, at 4.3%, followed by China and Italy, at 1.54% and 1.52%, respectively. With a large volume of online transactions between businesses and customers, companies must collect know-your-customer (KYC) information for all customers/users to prevent scammers from misusing identities and to prevent fraudulent money-back transactions.

To address this industry challenge of providing a KYC solution, Onfido has developed an advanced AI-based hybrid identity verification solution to help companies quickly verify the identification of the user or customer with ease.

Technology Attributes and Future Business Value

Industry Impact

London and San Francisco-based Onfido, is one of the pioneers in the development of identity verification solutions, and has developed a unique hybrid solution that includes AI, facial biometrics, and analysis by human experts. With a team of more than 240 highly qualified experts in the AI and identity verification industry, Onfido developed this state-of-the-art solution based on AI and machine learning to cater to all verification requirements across various industry verticals, such as banking and finance, insurance, retail, gaming, gambling, marketplaces, transportation, and government services, which are industries that come in contact with an immense number of customers and users on a day-to-day basis.

Onfido's hybrid, AI-based identity verification solution allows industries to verify and authenticate each user's/customer's identity and prevent any fraudulent activities. Posting a year-over-year (YoY) sales growth of 292% in 2018, Onfido has gained rich technological knowledge and experience in the identity verification industry, thereby forming its unique and strong technical foundation.

Hybrid Machine – Learning Processing

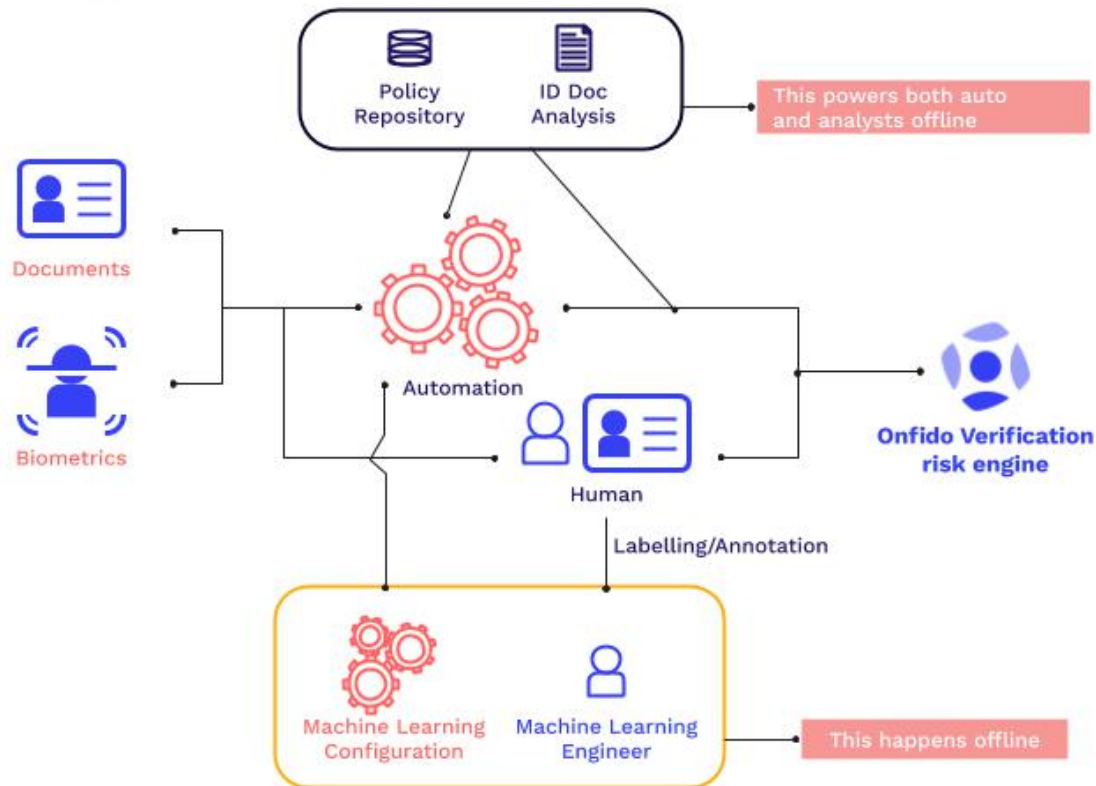


Figure 1 - Onfido's Hybrid Machine Learning Approach

Identification and KYC are considered crucial requirements for many industries dealing with millions of customers as well as employees; verification must be conducted quickly and with high precision to detect the submission of any fraudulent documents. Onfido's identity verification solution scans and verifies submitted documents in less than 20 seconds because of the multiple advanced algorithms running in parallel, which triangulate and verify the documents as efficiently as possible.

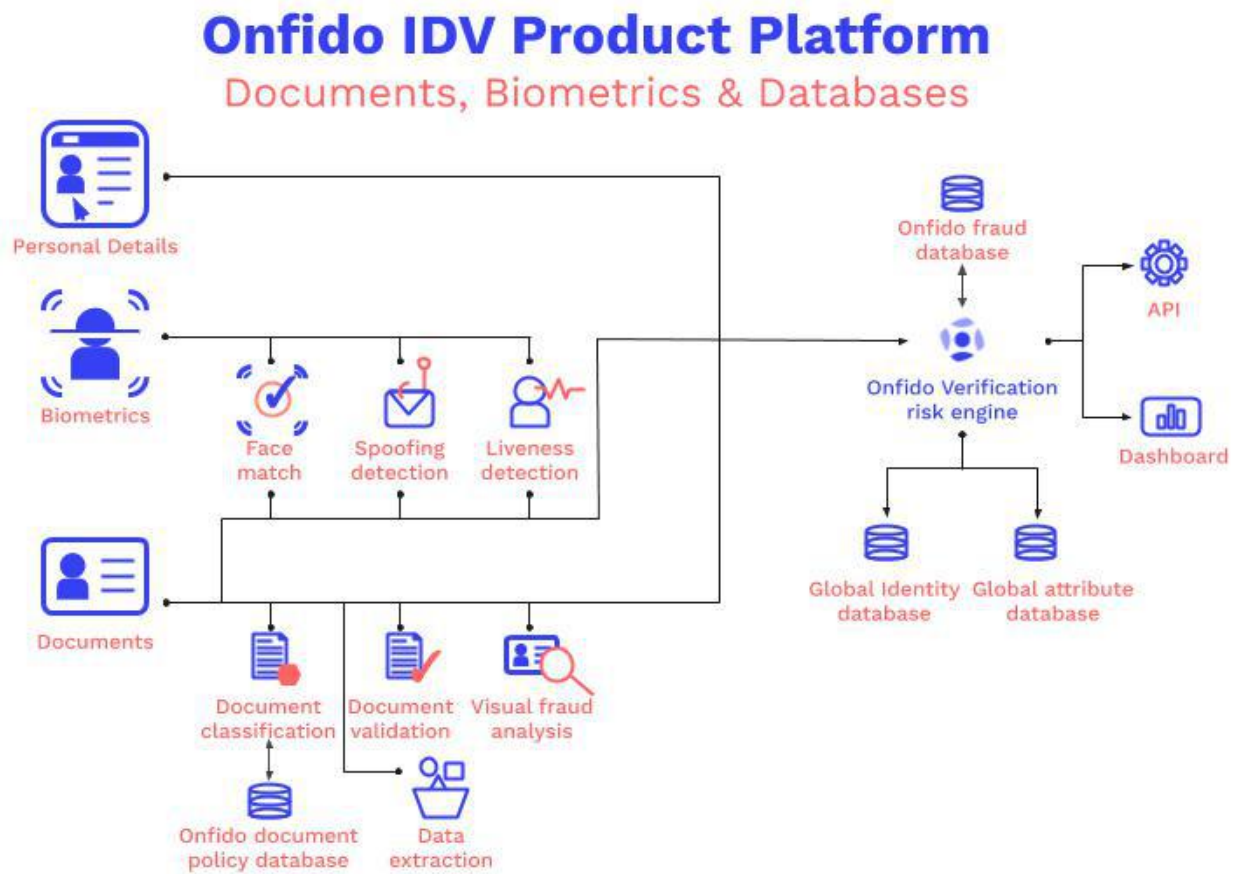
Frost & Sullivan is quite impressed with Onfido for optimally addressing customer as well as industry requirements by developing such an advanced AI-based verification and authentication solution. Onfido's acute focus on technology development and its customer-driven business strategy have made it one of the key participants in the emerging identity verification industry.

Product Impact

Onfido has a clear vision regarding the growing requirement for identification and authentication in all industries dealing with a large number of customers and employees. With the emergence of many fraud channels and people trying to use others' identities for

illegal activities, Onfido's proprietary solution efficiently recognizes and detects if documents are forged or modified in any way.

Figure 2 - Onfido's IDV Platform Showing Onboarding



In terms of fraud accuracy, out of every 10,000 checks, 203 are typically fake and Onfido catches 200 of these, missing 3 sophisticated attacks. Using internal and external measures and in partnership with its customers, Onfido is able to pick off these sophisticated attacks, analyze them and learn from them, training its AI models to recognize them in future.

Customers can choose from a fully automated, fully hybrid or fully manual checking approach, depending on whether speed of onboarding is more important or fraud exposure rate. Onfido also offers its clients consultation with its industry leading doc specialists that can train in-house teams that just want to use Onfido's fully automated products.

In general, every country worldwide has different identification documents, plus people and cultures vary across regions as well, which makes the process of collecting the purist sample of each document complicated. This also causes a significant matrix problem. Because anomaly detection is crucial for identity verification, Onfido's process uses machine learning technology to verify the 2D content documents at a high scale and within seconds. Compared to local KYC document collectors that are subjected to hacking

and data loss, Onfido's solution is cloud-based and highly secure. Moreover, because the company deals with many high-profile clients and because crucial personal information documentation is processed, Onfido has taken many advanced and necessary steps to prevent cyber threats as part of its global architecture.

Frost & Sullivan is also impressed with Onfido's approach to establish its AI-based identity verification software-as-a-service (SaaS) platform as a ubiquitous means for allowing enterprises to leverage identification and authentication requirements. Onfido's technology stands out in the industry because of its ability to verify a person's identity rapidly and accurately by leveraging facial biometrics and AI. Moreover, the company's hybrid identity verification solution will continue boosting the company's strong presence and standing in the global identity verification market by offering the best optimized performance between detecting fraud and shortening processing times to respect client business processes.

Application Diversity

Key participants from industries dealing with a large number of customers, platform users, and employees use Onfido's AI-based identity verification solution. For example, the finance industry (e.g. Revolut, BBVA) has been one of the main adopters of Onfido's solution for user identification to prevent money laundering or fraudulent transactions of funds.

Outside the financial services industry, retail and companies with global platforms or marketplaces, such as 1stdibbs, 5miles, are the next highest adopters of Onfido's solution. For example, customers in these industries predominantly use this cloud-based solution for identifying user accounts with suspicious money-back fraud charges and for identifying vendors that are selling fraudulent goods.

Other use cases of Onfido's technology include fraud deterrence and brand assurance. For example, companies such as Drivy are adopting Onfido's platform to verify and authenticate both the ride provider and ride sharer so that both parties feel secure when traveling together. Currently, Onfido's customer portfolio consists of key participants in financial services, eCommerce, automotive (e.g., vehicle rental (ZipCar) and ride sharing), online marketplaces, gaming and gambling (e.g. DraftKings), hospitality, social networking, and government agencies.

Onfido's identity verification solution can be adopted by all industry verticals for authenticating and verifying customers, users, and employees, thus expanding the solution's diverse application capabilities according to each industry's authentication requirements.

Visionary Innovation

Onfido's identity verification platform addresses the pressing current and future need for the increased ability to identify perpetrators of identity fraud. The company's platform works in the following three simple steps:

Step 1: The software visually scans the government-issued identity document submitted by the user. The primary task of this step is to confirm and authenticate that the document submitted is not fraudulent or fake. The software performs a visual fraud analysis, validates the document, and extracts the required data about the user. Onfido offers an option to have this data pre-populate a registration form.

Step 2: The user's facial biometrics are captured through a selfie, and the software then analyzes and compares the image with the image available in the identity document. This step is to confirm that the user is uploading their own document and to prevent identity theft.

Step 3: The software confirms liveness and authenticates whether the image submitted is of an actual person.

By using these three steps, the software triangulates all the information with a confidence model of matching the user's selfie image with the image on the document, thus confirming and authenticating that the legal identification document provided matches the user.



1. Do you have a genuine ID?
2. Does your face match your ID?
3. Are you a real-life human?

Figure 3 - Onfido's End-User Onboarding Process

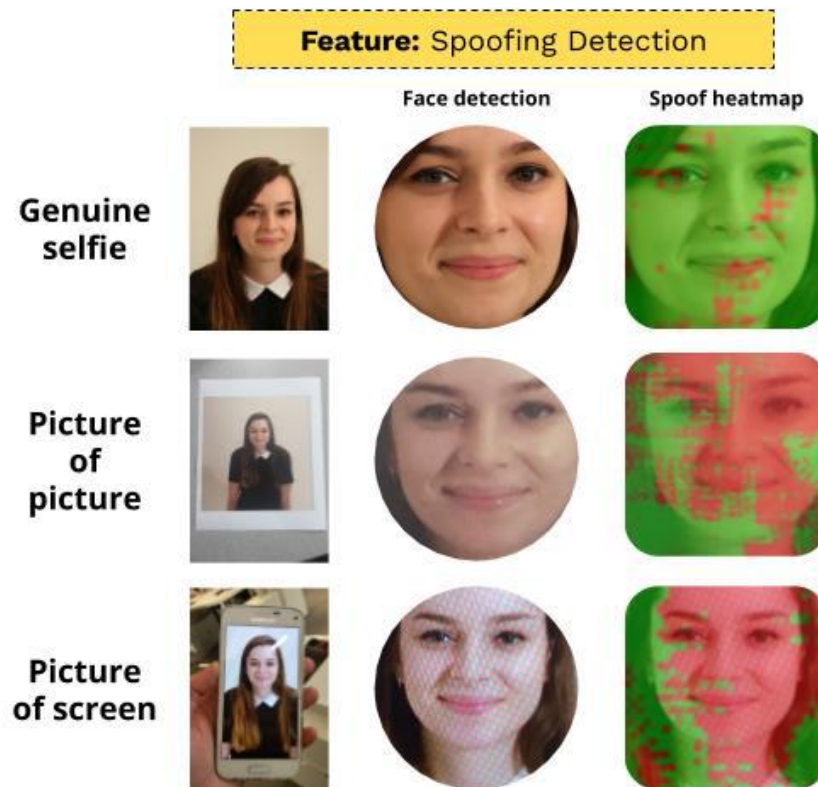


Figure 4 - Spoofing Detection - One of the Measures Onfido Takes to Detect Fraud

With many fraud perpetrators trying to bypass identity verification systems, several perfect fraudulent documents are in the market, enabling super sophisticated fraud. In some cases, the system does not detect the fraudulent documents; therefore, to prevent such problems, Onfido partners with its customers to get this incident feedback and also has a highly trained analyst team that rechecks sampled documents, and the company then updates the automation platform to continually evolve to address new fraud vectors. For example, when a super sophisticated fraud document is not detected by the software, the Onfido team fully analyzes the document manually and then builds an advanced new fraud detection model that allows the platform to detect any such documents in the future. Onfido has filed for six patents pending in relation to integrating machine learning technology for identity verification.

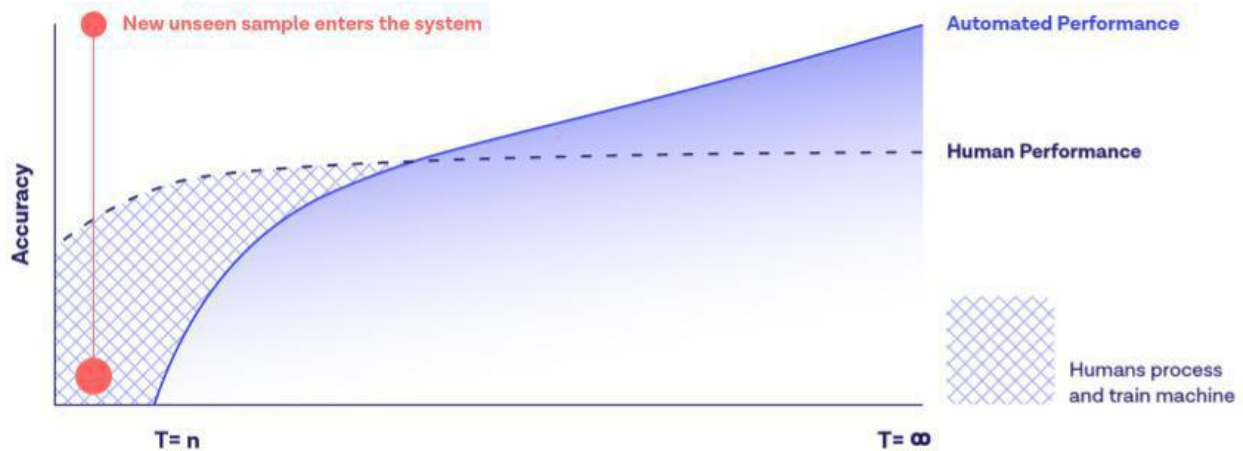


Figure 5 - Benefits of Hybrid, Human and Machine Performance

Technology Licensing

Onfido is currently a cloud-service provider of identity verification technology and offers its platform to companies that have a key requirement for identity verification. Onfido is clear on offering the solution under its own proprietary brand. The company offers its solution on a per transaction basis.

Brand Loyalty

Since its inception in 2012, Onfido has been successfully building its brand image by constantly engaging with customers and gaining valuable in-depth knowledge about current identity verification and authentication requirements. Onfido's expertise and insights in the identity verification industry have allowed it to acquire funding of more than \$100 million from several investors, such as SBI Investment, Salesforce Ventures, M12 (Microsoft's Venture Fund), and Crane Venture Partners.

With 240 technologists spread across six countries worldwide, Onfido realizes that the identity verification industry is emerging and expanding; therefore, the company understands that it needs to take a proactive stand to cater to the growing requirements of the industry, rather than avoiding taking the necessary measures to evolve with the industry. With a number of large technology participants emerging in the identity verification market, Onfido has a strong footprint in this industry and plans to remain as a major standalone participant, rather than as a funded start-up that could be acquired.

Frost & Sullivan commends Onfido's clear vision to be a standalone participant and to evolve with the emerging identity industry, rather than be a funded start-up that could be acquired and subsequently lose control over its future growth strategy decisions and evolution.

Conclusion

Onfido is playing a crucial role in the development and advancement of the identity verification market. The company's advanced AI-based hybrid identity verification solution delivers superior verification as well as authentication and is expected to continue being adopted by different vertical markets worldwide.

For its strong overall performance, Onfido is recognized with Frost & Sullivan's 2019 Technology Leadership Award.

Significance of Technology Innovation

Ultimately, growth in any organization depends on finding new ways to excite the market and maintaining a long-term commitment to innovation. At its core, technology innovation, or any other type of innovation, can only be sustained with leadership in 3 key areas: understanding demand, nurturing the brand, and differentiating from the competition.



Understanding Technology Innovation

Technology innovation begins with a spark of creativity that is systematically pursued, developed, and commercialized. That spark can result from a successful partnership, a productive in-house innovation group, or a bright-minded individual. Regardless of the source, the success of any new technology is ultimately determined by its innovativeness and its impact on the business as a whole.

Key Benchmarking Criteria

For the Technology Innovation Award, Frost & Sullivan analysts independently evaluated 2 key factors—Technology Attributes and Future Business Value—according to the criteria identified below.

Technology Attributes

Criterion 1: Industry Impact

Requirement: Technology enables the pursuit of groundbreaking ideas, contributing to the betterment of the entire industry.

Criterion 2: Product Impact

Requirement: Specific technology helps enhance features and functionalities of the entire product line for the company.

Criterion 3: Scalability

Requirement: Technology is scalable, enabling new generations of products over time, with increasing levels of quality and functionality.

Criterion 4: Visionary Innovation

Requirement: Specific new technology represents true innovation based on a deep understanding of future needs and applications.

Criterion 5: Application Diversity

Requirement: New technology serves multiple products, multiple applications, and multiple user environments.

Future Business Value

Criterion 1: Financial Performance

Requirement: Potential is high for strong financial performance in terms of revenue, operating margins, and other relevant financial metrics.

Criterion 2: Customer Acquisition

Requirement: Specific technology enables acquisition of new customers, even as it enhances value to current customers.

Criterion 3: Technology Licensing

Requirement: New technology displays great potential to be licensed across many verticals and applications, thereby driving incremental revenue streams.

Criterion 4: Brand Loyalty

Requirement: New technology enhances the company's brand, creating and/or nurturing brand loyalty.

Criterion 5: Human Capital

Requirement: Customer impact is enhanced through the leverage of specific technology, translating into positive impact on employee morale and retention.

Best Practices Recognition: 10 Steps to Researching, Identifying, and Recognizing Best Practices

Frost & Sullivan analysts follow a 10-step process to evaluate award candidates and assess their fit with select best practices criteria. The reputation and integrity of the awards are based on close adherence to this process.

STEP	OBJECTIVE	KEY ACTIVITIES	OUTPUT
1 Monitor, target, and screen	Identify award recipient candidates from around the world	<ul style="list-style-type: none"> Conduct in-depth industry research Identify emerging industries Scan multiple regions 	Pipeline of candidates that potentially meet all best practices criteria
2 Perform 360-degree research	Perform comprehensive, 360-degree research on all candidates in the pipeline	<ul style="list-style-type: none"> Interview thought leaders and industry practitioners Assess candidates' fit with best practices criteria Rank all candidates 	Matrix positioning of all candidates' performance relative to one another
3 Invite thought leadership in best practices	Perform in-depth examination of all candidates	<ul style="list-style-type: none"> Confirm best practices criteria Examine eligibility of all candidates Identify any information gaps 	Detailed profiles of all ranked candidates
4 Initiate research director review	Conduct an unbiased evaluation of all candidate profiles	<ul style="list-style-type: none"> Brainstorm ranking options Invite multiple perspectives on candidates' performance Update candidate profiles 	Final prioritization of all eligible candidates and companion best practices positioning paper
5 Assemble panel of industry experts	Present findings to an expert panel of industry thought leaders	<ul style="list-style-type: none"> Share findings Strengthen cases for candidate eligibility Prioritize candidates 	Refined list of prioritized award candidates
6 Conduct global industry review	Build consensus on award candidates' eligibility	<ul style="list-style-type: none"> Hold global team meeting to review all candidates Pressure-test fit with criteria Confirm inclusion of all eligible candidates 	Final list of eligible award candidates, representing success stories worldwide
7 Perform quality check	Develop official award consideration materials	<ul style="list-style-type: none"> Perform final performance benchmarking activities Write nominations Perform quality review 	High-quality, accurate, and creative presentation of nominees' successes
8 Reconnect with panel of industry experts	Finalize the selection of the best practices award recipient	<ul style="list-style-type: none"> Review analysis with panel Build consensus Select recipient 	Decision on which company performs best against all best practices criteria
9 Communicate recognition	Inform award recipient of recognition	<ul style="list-style-type: none"> Present award to the CEO Inspire the organization for continued success Celebrate the recipient's performance 	Announcement of award and plan for how recipient can use the award to enhance the brand
10 Take strategic action	Upon licensing, company is able to share award news with stakeholders and customers	<ul style="list-style-type: none"> Coordinate media outreach Design a marketing plan Assess award's role in strategic planning 	Widespread awareness of recipient's award status among investors, media personnel, and employees

The Intersection between 360-Degree Research and Best Practices Awards

Research Methodology

Frost & Sullivan's 360-degree research methodology represents the analytical rigor of the research process. It offers a 360-degree view of industry challenges, trends, and issues by integrating all 7 of Frost & Sullivan's research methodologies. Too often companies make important growth decisions based on a narrow understanding of their environment, resulting in errors of both omission and commission. Successful growth strategies are founded on a thorough understanding of market, technical, economic, financial, customer, best practices, and demographic analyses. The integration of these research disciplines into the 360-degree research methodology provides an evaluation platform for benchmarking industry participants and for identifying those performing at best-in-class levels.

360-DEGREE RESEARCH: SEEING ORDER IN THE CHAOS



About Frost & Sullivan

Frost & Sullivan, the Growth Partnership Company, helps clients accelerate growth and achieve best-in-class positions in growth, innovation, and leadership. The company's Growth Partnership Service provides the CEO and the CEO's growth team with disciplined research and best-practices models to drive the generation, evaluation, and implementation of powerful growth strategies. Frost & Sullivan leverages nearly 60 years of experience in partnering with Global 1000 companies, emerging businesses, and the investment community from 45 offices on 6 continents. To join Frost & Sullivan's Growth Partnership, visit <http://www.frost.com>.