



8 Enterprise Analytics

Trends to Watch

in **2018**

Introduction

With the world's biggest brands being constantly challenged and upended by disruption, a recent survey reveals that 85% of enterprise decision makers feel they have just two years to make significant inroads on digital transformation before suffering financially and/or falling behind their competitors.

Ready or not, the future is here. For enterprise organizations, it must be a data-driven one.

Whoever can use technology to transform the customer experience, and be the first to discover and deliver on new business models, will be the disruptor. Those who can't, the disrupted in this period known as the "era of Digital Darwinism."

As we hone and focus our organizations' 2020 (and even 2030) vision, MicroStrategy has compiled top trends we all should be watching today and in the near future from leading influencers in business intelligence, data analytics, and digital transformation, including Boris Evelson, Michele Goetz, David Menninger, Jen Underwood, Ronald van Loon and Ray Wang.

From the Internet of Things and artificial intelligence, to machine learning and natural language generation, to some very human factors, we hope you'll find this gathering of insights a resource for looking and planning ahead.

TREND 1: AI WILL RESHAPE

ANALYTIC AND

BUSINESS INNOVATION

TREND 1: AI WILL RESHAPE ANALYTIC AND BUSINESS INNOVATION



Boris Evelson
VP & Principal Analyst,
Forrester Research

Boris Evelson is a leading expert in business intelligence (BI) and delivers strategic guidance, helping enterprises define BI strategies, governance, and architectures and identify vendors and technologies that help them put information to use in business processes and end user experiences. He has more than 30 years of experience with enterprise software and applications implementation, management consulting, and strategic advisory skills which includes executive roles at Textra, JPMorgan, PricewaterhouseCoopers and Citibank.



Michele Goetz
Principal Analyst,
Forrester Research

Michele Goetz serves enterprise architects, chief data officers, and business analysts trying to navigate the complexities of data while running an insight-driven business. Her research covers artificial intelligence technologies and consultancies, semantic technology, data management strategy, data governance, and data integration. Michele has more than 20 years of experience in data management, business intelligence, and analytics. Prior to joining Forrester, she was the VP of Marketing at Trillium Software.

From the Forrester blogs: “If CIOs and chief data officers (CDOs) are serious about becoming insights driven, 2018 is the year they must realize that simplistic lift-and-shift approaches will only scratch the surface of possibilities that new tech offers.

In Forrester’s 2018 AI predictions, we provide CIOs working on data and analytic initiatives with pragmatic and tangible recommendations on how to act now with their AI initiatives. Here are just a few ways we predict AI will shape enterprises in 2018:

- **AI will reshape analytic and business innovation:** A quarter of firms will supplement point-and-click analytics with conversational user interfaces, and AI will make decisions and provide real-time instructions at 20% of firms.
- **Big Data environments will evolve or suffer the same fate as yesterday’s data management:** One-third of enterprises will take their data lakes off life support in 2018, and half of firms will adopt a cloud-first strategy for big data analytics.
- **Firms will remake traditional data and analytic roles to activate insights:** Two-thirds of firms will create customer insight centers of excellence, and data engineers will become the new hot job title in 2018.
- **The insights market landscape will become as complex as three-dimensional chess:** The IaaS (Insights-as-a-Service) market will double, with 80% of firms relying on insights service providers for some portion of insights capabilities in 2018.

2018 will be the year that CIOs will realize that new technologies like AI require hard work. Forward-looking organizations will create new roles and processes to take full advantage of them – not by simply shifting away from old architectures, but by redesigning their whole operating models to suit the new wave of technology.”

“2018 will be the year that CIOs will realize that new technologies like AI require hard work.”

Boris Evelson, Michele Goetz,
Predictions 2018: AI Hard Fact –
Treat It Like a Plug-And-Play Panacea and Fail,
Forrester Research Blogs, November 9, 2017

TREND 2: COMPETITION

FOR DATA SCIENCE

AND ANALYTICS TALENT

TREND 2: COMPETITION FOR DATA SCIENCE AND ANALYTICS TALENT



Teresa Green
VP, Global Talent
Acquisition, MicroStrategy

Teresa Green is the VP of Talent Acquisition for MicroStrategy. Teresa leads a global team of over 40 talent acquisition leaders focused on today's and tomorrow's top talent for data science and analytics. Prior to her role at MicroStrategy Teresa served as the Head of Global Talent Acquisition at CEB, now Gartner. She has also held similar roles at Capital One, Deloitte Consulting and Marriott International. Teresa holds a Bachelor of Science in Business Management from University of Maryland, University College.

"In 2018 and beyond, enterprise organizations need to focus attention not just on their recruiting efforts for top analytics talent, but also retention efforts, as the shortage for those with data science and analytics skills begins to grow.

A Business Higher Education Forum (BHEF) and PwC report titled *Investing in America's Data Science and Analytics Talent: The Case for Action* predicts that in 2020, there will be 2.7 million job postings for data science and analytics roles. Many of these will not be traditional engineering, operations or IT roles. These will be spread across the entire organization. In a related BHEF and Gallup survey, 59% of employers said data science and analytics skills would be required of all finance and accounting managers by 2020; 51% said these skills would be required by all marketing and sales managers; 49% said they would be required of all executive leaders; and 48% said they would be required of all operations managers.

The challenge lies in that less than five percent of college students today are taking courses in data science and analytics, and the future supply of talent isn't predicted to grow to meet needs. While 69% of employers focused on data's role in digital transformation say in the next few years they will prefer job candidates with data science and analytics skills over those without, educators say only 23% of all graduates in 2021 are on course to hold these skills.

For enterprise organizations to have the talent they want and need tomorrow, they not only need to up the ante on their acquisition efforts today, but also prepare to grow their own talent in house with training and education."

In 2020, there will be 2.7 million job postings for data science and analytics roles.

America's Data Science and Analytics Talent: The Case for Action

TREND 3: CONVERGENCE

OF REAL-TIME AND

BATCH-BASED ANALYTICS

TREND 3: CONVERGENCE OF REAL-TIME AND BATCH-BASED ANALYTICS



Tim Lang
Chief Technology Officer,
MicroStrategy

Tim Lang is the CTO of MicroStrategy. Previously, he served as the Chief Product Officer and Senior Vice President of Talemtry Inc., as well as its Vice President of Product Strategy. During his career, he also served as the Vice President of Product Management (Reporting and Visualization product lines) at SAP AG, where he was responsible for software engineering, software testing and product management. He was responsible for Product Management across the Business Intelligence business (SAP Business Objects). Tim holds a degree in Information Management from The University of Melbourne (Australia).

“The real-time and batch-based analytics worlds have been disconnected. People with real time analytics have the need to compare it to historical data.

Real-time isn't (just) what's in the stream, but includes streaming and processing the historical data, as well. Let's imagine a retail store using sensors to measure and monitor traffic in real-time. With historical data, the analytics application can predict the most profitable product categories, and by combining the real-time distribution of customer traffic, sales personnel and historical sales, it can recommend the optimal distribution of sales people.

More organizations use and store data from multiple sources (structured and unstructured), and they need to be able to act on it in 'real-time.' The fusion of real time data and analytics from historical data enables a host of new use cases for actionable analytics.”

80% of retailers worldwide say they agree that the Internet of Things will drastically change the way companies do business in the next three years. More than 70% of surveyed retailers have sensor-related projects underway.

**Retail Systems Research: The Internet of Things in Retail:
Great Expectations**

TREND 4: VOICE AND NATURAL
LANGUAGE INTERFACES
BECOME MAINSTREAM

TREND 4: VOICE AND NATURAL LANGUAGE INTERFACES BECOME MAINSTREAM



David Menninger
SVP & Research Director,
Ventana Research

David Menninger is responsible for the overall research direction of data, information and analytics technologies at Ventana Research covering major areas including analytics, big data, business intelligence and information management along with the additional specific research categories including IT performance management and IoT. David has more than 25 years of experience bringing leading-edge data and analytics technologies to market. He served as the Head of Business Development at Strategy at Pivotal (Dell/EMC); and VP of Marketing and Product Management at Vertica Systems, Oracle, Applix, InforSense and IRI Software. David has an MS in Business from Bentley University and a BS in Economics from University of Pennsylvania.

“Voice and natural language processing will be the most significant enhancement to man machine interfaces since the advent of the graphical user interface.

For decades, the man-machine interface has been based on keyboard and mouse interactions. We have learned to use these devices, but neither is natural to us, and as a result, it restricts the audience for various technology initiatives including analytics and business intelligence. Language is our normal means of communication for everyday interactions. As our devices of all types allow users to leverage language, we will see adoption of related types of technology among a broader audience. This is particularly relevant for analytics initiatives which have traditionally struggled to reach widespread and regularly usage throughout an organization.

Voice is not the only trend to watch. Natural language generation has already started to make its mark, as well. Not everyone knows how to read a table of numbers or a chart, or agrees on what conclusions to draw from the same. A written summary can be consumed by all and reduces the ambiguity of many types of data displays.

As an industry, we have been obsessed with providing maps and geographical displays as part of our information systems, but our research shows that users consider text more important than maps. Voice and natural language interfaces are becoming a reality today. Organizations should be exploring these options and finding ways to incorporate them into their systems to maximize the value of their technology investments.”

By 2020, 50% of all searches will be voice searches.

comScore forecast

TREND 5: CONVERGENCE

TREND 5: CONVERGENCE



Hugh Owen

SVP, Product Marketing,
MicroStrategy

Hugh Owen is the Senior Vice President in charge of Product Marketing for MicroStrategy. He is responsible for the product marketing of MicroStrategy's Enterprise Analytics and Mobile Software platforms. Prior to running Product Marketing, he launched and ran MicroStrategy's Mobile Product business (launch in 2010). From 2006-2010 he worked as a Senior Product Manager, during which he launched multiple new MicroStrategy Business Intelligence products. From 2000-2006 he cut his BI teeth in MicroStrategy Technology Services as a Technical Support Engineer and Premium Support Engineer. Hugh holds a Bsc (Hons) degree in Business from The University of Bath, England.

"The analytics market will continue to see convergence across three vectors: vendor convergence (in the market), emerging technology convergence, and tool convergence (within organizations):

Vendor Convergence: The merger and acquisition activity will continue in the broader analytics space. The analytics market continues to be one where new players can add value mapped to niche opportunities. These solutions solve a pain point that results in a number of quarters of revenue and growth, yet long-term growth isn't typically feasible, so each one of these companies then looks to make true on their original exit strategy.

These exits usually involve either quickly selling to a larger player to make money for the investors, or recoup some money before the lack of profitability forces the company out of business. This M&A activity will continue to reduce the number of vendors in the space, yet it's such a vibrant space that new vendors will emerge to replace them, innovating at specific tasks for a specific subset of organizations.

The larger vendors either acquire these smaller companies (and their customers) or innovate to create their own approaches to solving the problems. Many new smaller companies have emerged in the last five years. Yet many struggle to financially make ends meet, and 2018 will see a lot more M&A activity in the analytics market.

Recommendation: if you want a quick solution that needs to work in one to two years, pick whatever tool you want. If you want something for three years or more, pick a vendor that isn't courting a big stack tech behemoth or in need of saving from a private equity financier.

Emerging Technology Convergence: More than in previous years, the range of technological advances (or waves of tech evolution) are greater in variety and multitude than ever before. Beyond mobile, cloud, big data, data discovery, and security are voice, AR, VR, AI, next-gen analytics, IoT, telemetry, and more. These emerging technologies are mature enough to provide various and immediate business opportunities, based on a foundation of business data.

In 2018, these emerging technologies will continue to overlap and merge. Next-gen analytics will integrate with AI for augmented intelligence. Machine learning will only reap its full value on big data (that's structured or semi-structured). Voice (and smart bots) will require AI to truly bring transformative experiences to users who want to ask questions of information.

TREND 5: CONVERGENCE (cont.)

“In 2018, we’ll continue to see organizations standardizing on a platform on which they based their analytics ecosystem, and merging as many projects into that solution as possible, and connecting various clients and enterprise assets and third-party libraries to it where necessary.”

Hugh Owen

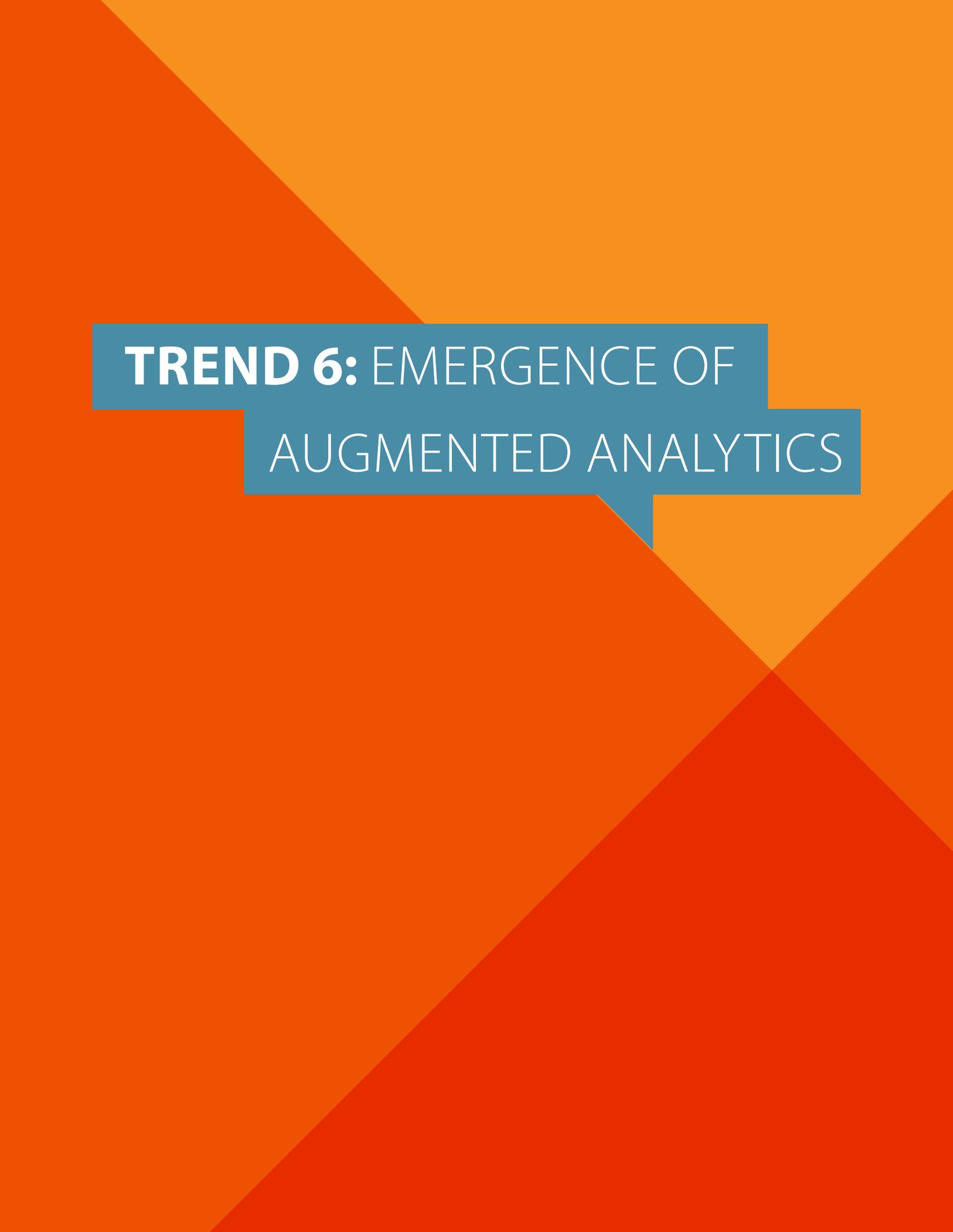
Telemetry data from security systems will generate so much information that only big data storage will be able to capture the machine-like data from people – and only next-gen analytics will be able to take advantage of the telemetry data to provide answers and analytics based on proximity. And next-generation analytics will combine with AI and cloud computing for smart-scaling – tapping into cloud computing which is available like water. The intersections will be various, but the evolution of each technology will increasingly rely on other technologies around it to deliver real value.

Tool Convergence: Organizations, specific to their analytics needs, have compiled collections of products to solve various problems. These different problems span different departments (with different tools), include different tools integrated together to solve specific problems within departments, and even have different tools fighting to solve the same problems.

The consumerization of IT empowered organizations (and departments and users) to access to a large array of products to help them fix (or bandage) their problems immediately. Rather than waiting for IT/IS to provide a solution, users downloaded free product, paid using credit cards for tools from the web, used open source technology, and did what business people often do – make do now to make themselves look good in front of their boss in their next review.

IS/IT are now finally being empowered by two trends – powerful enterprise software that has caught up or leapfrogged the free or cheap tools from the web... and various failed projects that can’t scale past the excitement of projects that look good yet can’t scale. Pretty attractive pictures don’t run businesses. Yet when powerful enterprise tools are suddenly great looking too, IS/IT and business both have what they want. This results in less or little need for the various tools companies have acquired over the past five-plus years.

In 2018, we’ll continue to see organizations standardizing on a platform on which they based their analytics ecosystem, and merging as many projects into that solution as possible, and connecting various clients and enterprise assets and third-party libraries to it where necessary. It’ll act more as the beating heart to the analytics ecosystem than the tool of choice... users will get powerful Mac, PC, web and mobile clients to connect to their analytics; managers and executives will see the business running on data they can rely on, and IS will get fewer tools to manage and pay for, the governance they need, and happy business users working alongside them to digitally transform their respective businesses.”



TREND 6: EMERGENCE OF
AUGMENTED ANALYTICS

TREND 6: EMERGENCE OF AUGMENTED ANALYTICS



Jen Underwood
Founder,
Impact Analytix

Jen Underwood is the founder of Impact Analytix, LLC and a recognized analytics industry expert. Her experience includes a unique blend of worldwide analytics product management, design, and more than 20 years of “hands-on” data warehouse, reporting, visualization and predictive analytics solution development. She writes for InformationWeek, O’Reilly Media and other industry publications. Jen holds a Bachelor of Business Administration – Marketing, Cum Laude from the University of Wisconsin, Milwaukee and a post-graduate certificate in Computer Science – Data Mining from the University of California, San Diego.

“We are witnessing an unprecedented pace of continuous technological change. New augmented analytics approaches will alter the analytics landscape once again. Search, natural language and intelligent analytics automation innovations powered by AI are beginning to vastly transform the human-computer experience democratizing the power of analytics and data science.

Similar to the second wave of modern self-service BI disrupting the first wave of traditional BI, augmented analytics technologies in the third wave will change the game once again. Augmented analytics combines the beauty of the human mind and artificial intelligence. Augmented analytics approaches are smart, forward thinking and actionable. In addition to providing historical reports and dashboards, augmented analytics automates predictive and prescriptive actionable guidance. Early adopters of augmented analytics tout unmatched speed to insight and enhanced competitive advantage.

Automating analytics is not a novel idea. This old concept is rapidly improving and expanding across the entire analytics life-cycle from finding data sources to discovering crucial insights. Next generation augmented analytics capabilities can automatically prepare and cleanse data, perform feature engineering, identify and rank key insights, answer what-if questions, provide suggestions and reveal hidden patterns in oceans of data. Automation expedites investigation across millions of variable combinations that would be far too time consuming for a human to do manually.

When given unbiased, properly prepared data, augmented analytics delivers amazing results. Since automated analytics relies on statistical techniques, inaccurate, biased or poor-quality data that doesn’t sufficiently represent business processes will deliver low quality results. Think garbage in, garbage out. Much like preparing your data for statistics, data warehousing, or operational reporting applications, there is an art to preparing your data for automated augmented analysis.”

“Similar to the second wave of modern self-service BI disrupting the first wave of traditional BI, augmented analytics technologies in the third wave will change the game once again.”

Jen Underwood

TREND 7: MACHINE LEARNING,
AI AND EDGE AND
VIDEO ANALYTICS

TREND 7: MACHINE LEARNING, AI AND EDGE AND VIDEO ANALYTICS



Ronald van Loon
Top 10 #Analytics
Influencer

Ronald van Loon is globally acknowledged as a Top 10 Influencer in big data, IoT, data science, machine learning and predictive analytics. He is ranked among Analytica's Top Global Big Data Influencers. Ronald helps organizations in their digital transformation efforts, including providing insights and best practices to become more data-driven and customer-centric. Recently appointed as Advisory Board Member for Simplilearn, he is a frequent public speaker at industry events and is an author for Dataconomy, Datafloq and Data Science Central.

"Digital technologies are disrupting and forever altering the enterprise landscape, and there are upcoming trends that indicate truly compelling applications for organizations of all industries.

A key trend is arising around artificial intelligence and machine learning capabilities, which allows enterprises to build a real-time data and analytics infrastructure that drives valuable analytics-based insights. All large software vendors are currently adding AI and ML capabilities into their existing software applications.

This indicates a movement towards mainstream AI and ML applications within the next year, as these companies start augmenting human capabilities and increasing efficiency levels with the support of these digital capabilities. Ease of use, in particular, is propelling the transition from 'buzz' to mainstream. Cost-effectiveness, speed, responsiveness, and intelligent automation are crucial components that factor into its pervasive adoption by large companies.

Artificial intelligence and machine learning will continue to be a valuable analytics-driven trend for years to come as companies reshape their infrastructures and models to cater to individual consumer needs, improve productivity, and automate repetitive tasks.

Secondly, there's rapid growth in edge analytics stemming from the massive increase in connected devices, which is forecasted to reach 30 billion by 2020. Many devices are generating vast amounts of data that cannot be centrally analyzed, and edge analytics is providing the solution. Its applications will continue to increase in the coming years, corresponding to the increase in IoT enabled sensors that gives organizations the ability to perform real-time analyses at any point where data is generated, whether it's a network switch, sensor, or connected device.

Edge analytics will help companies address challenges related to centrally analyzed data generated from so many connected devices. The huge volumes of streaming data can pose data management difficulties for businesses including delayed analysis as a result of overtaxed central systems and slow or restricted network availability.

A notable third trend is video analytics. As video camera use continues to increase from connected devices like smart phones, tablets, and security cameras, videos are becoming another source of valuable data generation for businesses. Accordingly, video analytics is becoming a rising trend fueled by digital capabilities like AI and IoT.

TREND 7: MACHINE LEARNING, AI AND EDGE AND VIDEO ANALYTICS

“Around 29 billion connected devices are forecast by 2022, of which around 18 billion will be related to IoT.”

Ericsson Mobility Report,
June 2017

Videos are now another medium for obtaining information, and companies are utilizing video analytics in retail, law enforcement and city surveillance. When augmented with intelligent technologies like AI and machine learning, organizations are able to utilize applications for video analytics that include facial tagging, tracking technologies, and micro-expression analysis.

Powered by AI, video analytics can quickly analyze enormous volumes of streaming data contained within video to identify objects like people, cars, trucks, traffic, and license plates in real-time. Video analytics also facilitates faster communication across systems, enabling organizations to make swift decisions, predictions, and be proactive in developing intelligent solutions.

As cities increase their development of smart cities, smart transportation, and smart buildings, video analytics is becoming an increasingly viable and valuable solution.”

TREND 8: ACCESS VS. OWNERSHIP
OF ANALYTICS AND
INSIGHT STREAMS

TREND 8: ACCESS VS. OWNERSHIP OF ANALYTICS AND INSIGHT STREAMS



R. "Ray" Wang
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R "Ray" Wang the Principal Analyst, Founder, and Chairman of Silicon Valley based Constellation Research, Inc. He's also the author of the popular business strategy and technology blog "A Software Insider's Point of View." Wang has held executive roles in product, marketing, strategy, and consulting at companies such as Forrester Research, Oracle, PeopleSoft, Deloitte, Ernst & Young, and Johns Hopkins Hospital. Ray is a regular contributor to Harvard Business Review and well quoted in The Wall Street Journal, Forbes, Bloomberg, CNBC TV, Reuters, IDG News Service, and other global media outlets. His is also the author of the new best-selling book *Disrupting Digital Business*, published by Harvard Business Review Press.

"Sixty percent (60%) of mission critical data is no longer within your four walls or data warehouse/data lake. Organizations should learn how to use "dirty" data to deliver insights in batch, near-real-time, real-time and predictive streams moving forward.

In addition, one of the biggest opportunities for monetizing analytics will come from the development of insight streams. These insights will come from least likely sources, as well the most obvious. Least likely sources include power consumed, water used, visitors into a building, foot traffic on the sidewalk, and density of parking lots. These sources may seem mundane or perhaps useless, but large insight brokers will begin taking this data to drive contextually relevant information. Obvious sources? These include internal systems such as workforce performance data, customer satisfaction data and product quality stats. The goal here will be to use this information to differentiate.

Organizations should start focusing on getting their data house in order. Build a foundation to support strong governance, data prep, streaming and agility.

There are three models to build big data/insight business models that I shared in the Harvard Business Review and that I'm happy to share in the accompanying graphic ([click here](#)). These should prove helpful to any organization.

Another trend I'd encourage enterprise organizations to watch is infinite ambient orchestration. Mass personalization is delivered through insights in the background across networks and platforms. AI-driven smart systems will depend on infinite ambient orchestration. These systems will augment human decisions. They will predict outcomes. They will deliver on regulatory compliance, and they will reduce recalls. Read more [here](#).

Organizations need to build a foundation from data, context, journey design, and recommendation engines."

"Data is the foundation of Digital Business. Every touch point, every click, every byte of digital exhaust."

R. "Ray" Wang

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For more enterprise analytics insights throughout the year, follow these experts on Twitter:



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