The Age of Artificial Intelligence

How AI is Amplifying Human Potential and Reshaping Business.

- By Ken Toombs and Roberto Busin -

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Artificial Intelligence is polarizing. Elon Musk has called it "our greatest existential threat," and said that it is "potentially more devastating than nukes".

At the same time, renowned artificial intelligence (AI) expert and Google/DeepMind Director of Engineering Ray Kurzweil has said, *"In my view, biological humans will not be outpaced by the AIs because they will enhance themselves with AI. It will not be us versus the machines ... but rather, we will enhance our own capacity by merging with our intelligent creations."*

On one side we have Armageddon. On the other, a Utopian vision of harmonious marriage. The messy reality is that the debate won't be settled for many years, if ever. What we do know, however, is that the age AI is now upon us.

For evidence, look no further than Elon Musk – the man intent on being AI's conscience – who has now embraced it through Tesla's commitment to self-driving cars.

Indeed, as we'll explore in this article, we now see examples of AI creeping into industries as diverse as medical services, financial engineering and travel. The changes now underway represent tectonic shifts that will play a key role in determining who wins and who loses in the coming decades.

So what exactly is AI, and how will it impact my business?

Similar to many movements with transcendent potential, AI is a term that means different things to different people.

From a business perspective, AI can be thought of as machine learning, robotics and big data brought together to identify patterns and perform functions that were previously the domain of humans, but at massively increased scale and speed. This execution of human tasks at superhuman scale and speed allow AI to identify causal connections where before there was only noise. The implications to business, while vast, can be distilled into a few key questions:

- **How will AI shift the expectations of my customers?**
- **How will AI transform the way my competitors run their businesses?**
- **How should my company respond to AI, and what will the implications be if we fail?**

How will AI shift the expectations of my customers?

AI is fundamentally altering customer experiences in two important ways:

1. **Personalizing customer experiences in ways that used to be reserved only for premium clients**
2. **Moving beyond the delivery of tools into the delivery of solutions that can work with unstructured data**

When we think of service levels, it's helpful to first ponder the world we are leaving. Historically, when a customer engaged with a business, the exchange would start at the very beginning: businesses would establish a dialogue with customers, learn about their businesses // needs and then prescribe solutions.

In a world with AI, however, the conversation no longer starts at the beginning. Instead, businesses harness contextual information, compare it with millions of historical patterns and determine what customers need, even if customers aren't able to articulate it themselves. This enables businesses to skip straight to the last step, and to do so with precision, providing a far superior customer experience. To demonstrate, let's look at a few real world examples.

Picking up a phone and calling customer service has traditionally ranked somewhere between a root canal and a standardized test in terms of enjoyment. Customers spend time educating the person on the other end of the phone about who they are and what they need. From there, it's an exercise in frustration as the service rep suggests solutions to the wrong problems.

Yseop Smart Machine observed this problem and developed an AI program that acts as a "smart coach" for customer service teams by providing contextual knowledge based on both pattern recognition as well as CRM data. Instead of relying on training and experience to suggest solutions, the smart coach aggregates all of the meta data about a client and guides the customer service representative through a dialogue that's being informed by all of the conversations that came before it. Even better, the system evolves as time passes, adjusting to changing customer preferences as markets change and more permutations are recorded.

Adding another layer of value, a company called Mattersight, generated $40m in revenue last year with a tool that uses AI to classify callers based on personality traits and match them with people who communicate in a complimentary style. Building a comprehensive emotional profile of people based on their language structure and word choice, Mattersight determines what call center employees are best suited to have an immediate emotional connection with the caller. As Mattersight says, "When personalities click in the call center, magic happens."

Combining Yseop and Mattersight yields an experience where customers are connected with someone they innately relate to who already knows all about them and can seamlessly leverage big data to suggest exactly what they need.

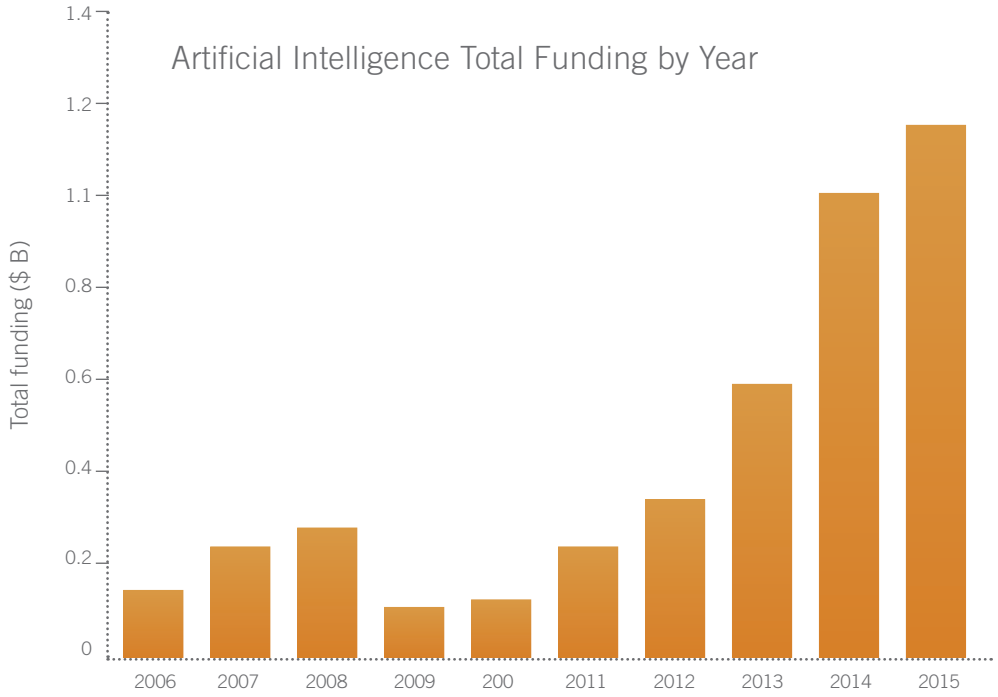
The personalization of services is also happening with highly sophisticated customer interactions, such as financial services. Machines' outsized role in equity markets has been well documented. According to Thompson Reuters, algorithms now account for 75% of all financial market volume, a number that continues to grow.

Complicating matters, however, is that private individuals want a customized, human interaction that matches sophisticated analysis with their unique financial goals. Historically, this has been too expensive to scale and has been reserved for the ultra-wealthy, leaving the investing masses with a disparate set of generic, complex tools.

A startup named WealthArc, which raised an additional $1.2m in venture funding in June, is capitalizing on this customer pain point by "leveraging data analytics and artificial intelligence support systems to empower wealth managers to transform the way they share relevant and understandable information with clients."

Essentially, they're using AI to take a service – in this case heavily customized financial recommendations – that has historically been reserved for the 1-percenters and extend it all investors in a cost-effective way, creating a game-changing offering that can't be matched without the power of algorithms.

The CEO of WealthArc sums up this transformation nicely, "I believe that the future of private wealth management will be like Mr. Spock from Star Trek – thinking like a machine but with a human mother."



Source: Venture Scanner https://venturescannerinsights.wordpress.com/category/artificial-intelligence-2/

Moving beyond tools

In addition to customer intimacy, the nature of the problems being solved by companies is also changing. Historically, web applications provided users tools to solve problems: banks gave you apps to deposit money, retailers gave you sites with clothes to search through and buy, etc.

But with the advent of AI, companies are taking giant leaps forward by taking unstructured customer problems – "I want a fun dress for my company holiday party" – and transforming them into complete solutions. Travel services company WayBlazer - which was created by Terry Jones, Founder of Travelocity and Kayak – provides a great illustration of this concept in the travel industry. Speaking with the Harvard Business Review, Terry had this to say about WayBlazer:

"I've spent my whole career in travel and IT. I started as a travel agent, and people would come in, and I'd send them a letter in a couple weeks with a plan for their trip. The Sabre reservation system made the process better by automating the channel between travel agents and travel providers. Then with Travelocity we connected travelers directly with travel providers through the Internet. Then with Kayak we moved up the chain again, providing offers across travel systems. Now with WayBlazer we have a system that deals with words. Nobody has helped people with a tool for dreaming and planning their travel. Our mission is to make it easy and give people several personalized answers to a complicated trip, rather than the millions of clues that search provides today. This new technology can take data out of all the silos and dark wells that companies don't even know they have and use it to provide personalized service."

WayBlazer, which has raised $6.8m in venture capital, has fundamentally shifted where the thinking takes place to plan a trip. Instead of a customer saying to themselves, "I want to plan a romantic weekend with my partner to a quiet island" and then using a set of tools to run exhaustive hotel and flight searches, they simply articulate their original problem statement and the program solves the problem for them in a way that is informed by all of the customer experiences that have come before them.

How will AI transform the way my competitors run their businesses?

As we move forward, company operations will be impacted in three important ways due to AI:

1. Automation of tasks

2. Creation of more efficient systems

3. Increase in proactive decision-making

1. Automation of tasks

Much has been written about the adoption of robotics to automate repetitive tasks. We have, for example, observed the rise of tools such as optical character recognition (OCR), which successfully navigated the journey from cutting edge technology to 21st century table stakes.

But as we move into an epoch where AI is embedded into our technology infrastructure, robotics is able to access the core application data required to travel beyond low-level, repetitive tasks into the realm of high-value, sophisticated tasks.

This fundamental shift can be observed through the development of models. Historically, this has been the domain of highly paid quants. Each week, these math czars would sift through sets of data, identify disparate elements with the promise of correlation and build models to explain their relationships. These models would then be plugged into algorithms, which would power things like trading strategies for hedge funds.

But in a world where machine learning meets big data, the task of creating models is shifting to software that is guided by engineers to identify the meaningful business correlations that unlock valuable competitive insights. A process that used to generate two models per quant per week now generates thousands of models each day.

The benefits of these efforts are now appearing across several industries. As an example, Google has built an entire health care division within DeepMind, which is effectively bridging the gap between the two massive data sets of medical literature and an individual's human genome in a way no human could.

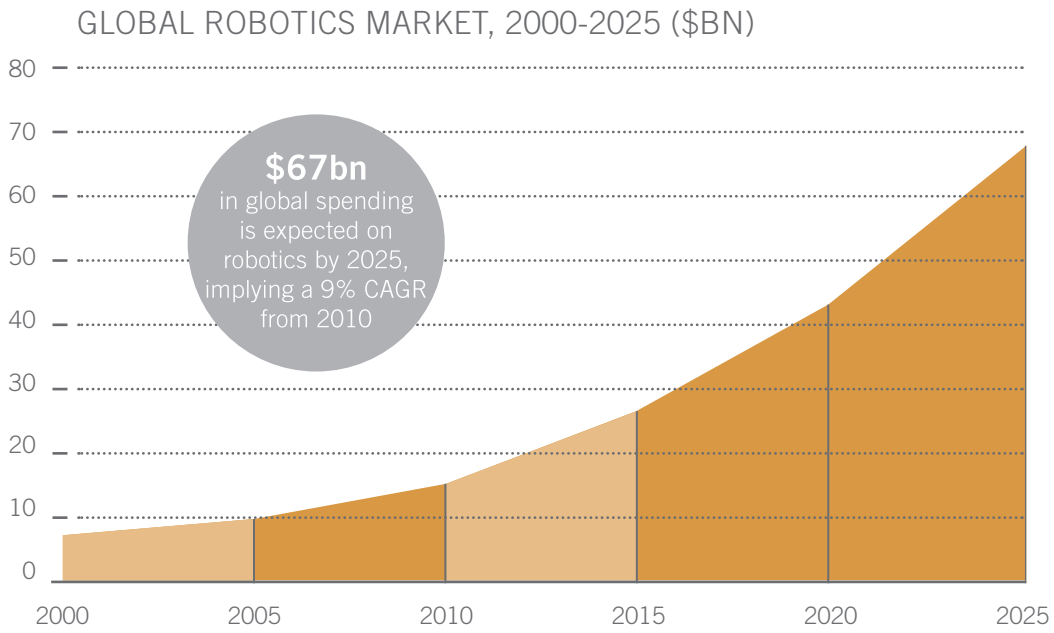
Taking it one step further, tech giants like Facebook are now building AI that builds AI. Essentially, because AI is hard and the global supply of people who do it well can fit in a high school gym, they're building programs that can generate AI algorithms in alternate environments. This technology could enable companies that can't hire their own AI developers to generate native AI programs for their businesses.

2. Creation of more efficient systems

The creation of models doesn't just apply to customer-facing solutions. In July, Google announced that DeepMind researchers had developed energy efficiency strategies allowing them to reduce energy consumption by multiple percentage points. Given Google's massive consumption of energy to power data centers, this AI-generated insight has yielded massive annual savings.

3. Increase in proactive decision-making

Cybersecurity has rapidly shifted from an afterthought to a top CIO priority in a few short years. Much is made of the threats from external hackers, and for good reason, but according to Fortune



Source: Raconteur 2015 http://raconteur.net/technology/investing-in-artificial-intelligence-is-it-the-right-time-to-buy

magazine, "27% of electronic attacks on organizations – public and private – come from within."

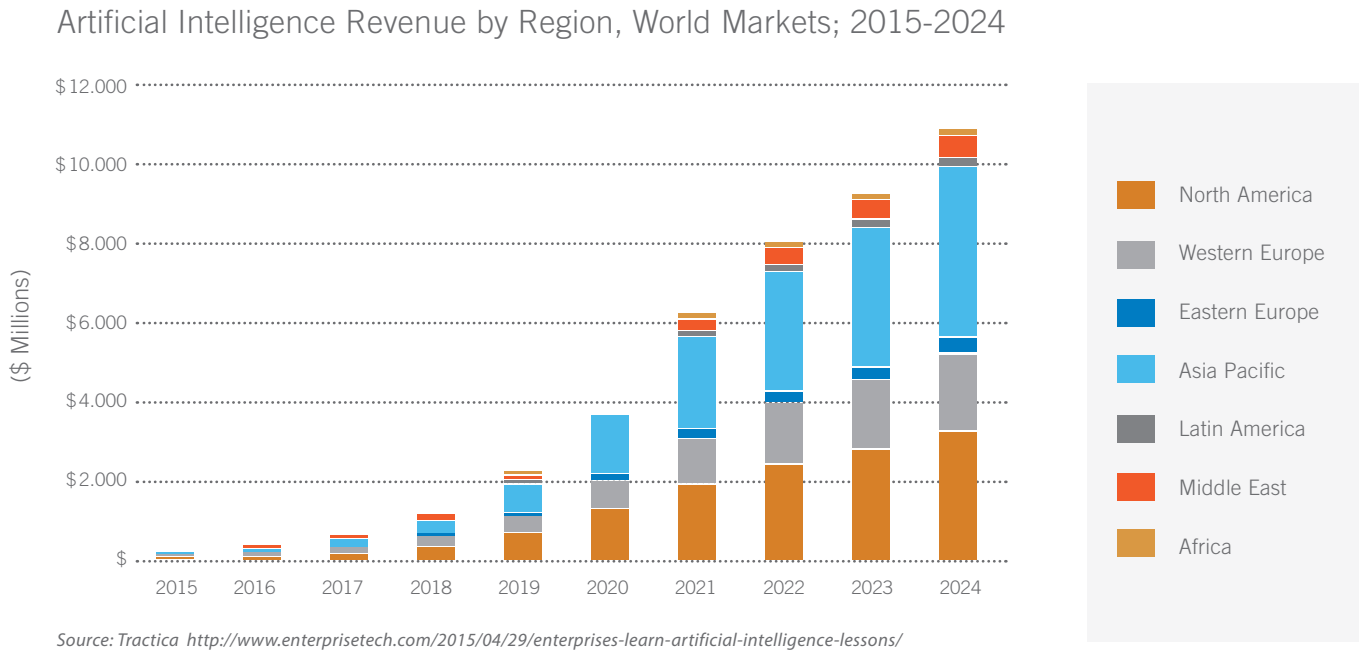
The tricky part about internal breaches is that it's traditionally been hard for companies to proactively identify employees at the greatest risk of committing breaches.

A new software program called Scout, which was developed by cybersecurity firm Stroz Friedberg, is now leveraging AI to change that. By leveraging Scout's algorithms, companies can "autonomously detects risk indicators in employee communications, enabling companies to detect, assess, and respond to threats before they cause harm to the organization, its assets, or its people."

Moving beyond simple keyword searches for alarming words, Scout scans large bodies of text to identify unnaturally high concentrations of unconscious, negative sentiments – such as feelings of victimization – by specific employees. The program can then generate an actual list of the 10 employees at any given time who are most at risk of committing a breach.

This doesn't mean a company needs to mimic Minority Report and penalize workers for breaches they are likely to commit in the future. Instead, it enables firms to address disgruntled workers before negative feelings escalate into an actual breach, which is ultimately a much more efficient, inexpensive and humane outcome.

Of course, the simplest way to avoid disgruntled employees is to get it right the first time and find candidates who are the right fit with your company's culture. This has traditionally been the job of corporate HR, who pre-screen candidates for company fit prior to passing them over to hiring managers. But it's very difficult to fully understand a company's culture and to predict how an employee will fit in at a large firm over an extended period of time. Understandably, companies often get it wrong.



Source: Tractica http://www.enterprisetech.com/2015/04/29/enterprises-learn-artificial-intelligence-lessons/

Dating firm eHarmony, which has spent an inordinate amount of time evaluating interpersonal compatibility, saw this and realized their AI algorithms could apply as well in professional settings as romantic ones.

As Dan Erickson of eHarmony recently told Christopher Steiner of Forbes, "We are not allowing the HR department or C-suite to just say what the culture is – we're using current employees to get a real reading."

To accomplish this, eHarmony gives personality tests to a wide group of a company's employees. They then aggregate the data into a true company culture, which is evaluated against potential applicants' readings. The end result is ever-improving employee fit, which leads to happier offices and more productive employees.

How should my company respond to AI, and what will the implications be if we fail?

The explosion of structured data from the Internet of Things and the cataloguing of web data is providing AI the fuel it needs to create ever more sophisticated algorithms. As the volume of this data continues to accelerate, so will the power and reach of AI.

When evaluating how your company should respond, start with your customers.

Ask yourself what the implicit assumptions are about your customers that drive your engagement with them? How would that engagement change if you knew more about them and were able to effectively predict what their needs were before they realized it themselves? These answers will help illuminate where forces of AI will push your industry. From there, develop a strategy to evolve your customer offerings to accommodate those customer expectations.

Once you've considered AI's impact on your customers, redirect your focus internally. Identify the knowledge tasks with rates of production limited by the uniqueness of their offering. These activities – which conventional wisdom traditionally argued were beyond the reach of outsourcing or automation – are precisely the things next generation AI is targeting.

Paradoxically, this elimination of human activities may be a good thing for those affected. According to a 2015 Gallup Workforce Survey, only 32% of the U.S. workforce is considered engaged. The majority (50.8%) of employees were "not engaged," while another 17.2% were "actively disengaged", which suggests today's biggest enterprise waste relates to human potential – raising the question of using AI to redesign work for top enterprise roles to amplify engagement, performance and innovation (and automate more routine, task-oriented roles.)

After looking at your workforce, take time to examine the way your company consumes resources, placing particular focus on your largest areas of spend. Are these consumption cycles fully optimized? If you could reduce these line items by 5%, what would that do to your overall company performance?

If you let the competition get there first, you'll be stuck with inferior margins while you fight to retain customers. But if you're able to leverage AI to transform the way your business operates, you'll generate an enduring cost advantage while concurrently increasing customer responsiveness.

As we ponder the way forward, it's instructive to remember Victor Hugo's prescient words, "You can resist an invading army; you cannot resist an idea whose time has come." The age of AI is here. It's up to you to leverage it as a tool for a better world and superior company performance.

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