THE NEW ERA OF INNOVATION

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100 percent of jobs, 100 percent of industries, and 100 percent of professions will be affected by Artificial Intelligence in the next 5 to 10 years.

By 2020, companies using AI will take $1.2 trillion from competitors who don't. Every day we see or hear another mind-boggling statement about the impact Artificial Intelligence will have on the future. As consequential as these statements are, the truth is nobody can predict just how profound this emerging technology of AI will be.

For example, just look at Amazon. No one could have foreseen what started out as an online store could have grown to be one of the world's most powerful and valuable companies—specifically, how the "Amazon Effect" has grown it's supporting ecosystem comprised of manufactures, logics, and even suppliers like the card board box industry, which has greatly benefited from Amazon shipments.

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Part 1: The AI Foundation

Every 10 to 15 years, the world receives a new game-changing technology platform. Look at what the desktop computing and publishing revolution achieved for the democratization of the creation of and access to information via the internet. This was soon followed by the ubiquity of mobile devices that helped deliver all this content to our fingertips. This vast amount of data created the need for cloud storage. The desire to take advantage of that information, or digital exhaust (data that is the result of the choices and actions made by people online) led to the acceleration of the development of AI. In other words, artificial intelligence, in many ways, was driven by the need for a tool to make sense of all this data.

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AI has the potential to innovate the creation of products, services, and experiences at scale, and will then power automation to increase productivity for these outputs. Innovators have always been in the business of creating opportunities for both their products and customers, and AI supercharges that opportunity. There's a saying (attributed to Albert Einstein) that the true sign of intelligence is not knowledge, but imagination. In the case of AI, the true measure of intelligence is intelligent imagination—imagination that can now be more informed and more tangibly enlightened through the unlocking of data.

Changing Landscape: Customer Behaviors and Expectations

To better understand the tremendous opportunities surrounding AI, we first must look at the changing landscape. We are living in an unprecedented time of societal transformation. Digital is disrupting every industry, all societies, and each individual. Content is being consumed through more devices at a faster rate than ever before. People expect their experiences to be personalized, connected, and flawless across every touch point, and they won't tolerate any-thing less. This is at the core of the digital transformation. Businesses are now realizing they need to shift from a product-focused approach to an experience-focused strategy for both their customers and within their organizations.

Yet, the more things change, the more they stay the same. Ultimately, AI is about being of service to humanity. How can AI technology provide services, products, and experiences that enrich people's lives? The goal with AI is not simply to build smarter machines, but rather to build smarter organizations, smarter societies, and ultimately a smarter world.

Another perspective on the impact that technology has had on society is from a generational perspective. Consider that 18-year-olds (born in the year 2000 or later) were born into a world with mobile devices, social media, YouTube stars, tablets and wearable devices. This is their reality and basic to their view of the world. These digital natives see things differently because

it's so effortless for them to communicate with anyone or anything at any time. Their expectations have had a halo effect across not only generations but also across businesses. We are now in the "experience economy."

The Digital Transformation: From Messaging to Experiences

Exceptional experiences have become critical to attracting and retaining customers. Creating amazing and inspirational content is key. Powerful experiences change the way we interact, entertain, work, and relate to the world around us. Experiences can be one-on-one, among families, or with friends and co-workers. It can be how we collaborate at work, or engage through social media. It can also be one-to many, business-to-consumer, business-to-business, teacher-to student, government-to-citizen, artist-to-audience, and so on. Today, these data-informed experiences are how businesses can break through the noise and make a connection and an impact.

Creating and maintaining an experience culture relies on information. This information helps better understand the behaviors, desires, and actions of employees and customers in order to deliver exceptional experiences. That implies vast amounts of data must be collected, stored, sorted, categorized, and understood rapidly and efficiently. Without the data, it's literally impossible to provide optimal experiences online. This need for data introduces a whole set of challenges. Out of those challenges come phenomenal opportunities.

Infinite Data: Driving Better Outcomes

Experiences online are powered by data, and that in turn drives business innovation and success. By leveraging the power of data, we can create experiences that matter. For instance, 2.5 quintillion bytes of data are created daily, and AI can use much of that data to intelligently determine, for instance, how consumers are interacting with or abandoning a brand. This helps inform what works and what doesn't, leading to future experiences improved by insights,

supported by data, and brought to life through beautiful, powerful, created experiences. However, AI is not about the technology in and of itself; it's about how technology can be leveraged to assist in creating these immersive and unexpected experiences. With AI, machine learning, deep learning systems, and a number of supporting AI techniques, machines are becoming indispensable, and fueling superhuman innovation.

Ultimately, all this data is used for increased insights, profits, and decision-making. Part of the remaining challenge is breaking down the silos and organizing the data. Information is most often streamed from different sources. A merchandising company might store data in three departments—shipping, receiving, and customer support. Each of these is a different silo of information. To get the most value, it's important to be able to see the broader picture by refer-encing data from all three silos. This becomes even more complex when you consider there are also different types of data. For a customer, for example, you need to store their phone number, which is one simple type of data, and their sales history, which is a more complex set of data.

Essentially there are two types of data sets. Structured data is organized in an easily under-standable format. Examples include name, age, gender, and date. Unstructured data comes from multiple sources and in different formats. You-Tube videos, tweets, Facebook posts and comments are all examples of unstructured data. Unstructured data is basically everything else. If it can't be easily classified, it's unstructured. User-generated content and user activity are a huge

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portion of unstructured data. This includes videos posted to YouTube (over 100 hours are uploaded each minute) and comments posted in social media accounts (510,000 comments were posted every minute in 2012 on Facebook alone). Unstructured data also includes information generated passively, such as GPS-location data generated by cellphones. With all this data, much consideration must be given to the infrastructure of where it will be stored and accessed.

Part 2: The AI activation

Artificial Intelligence: The What and Why of the AI Revolution

We mentioned earlier how AI is going to have an impact on humanity at the same level as the invention of electricity. We are now entering the Fourth Industrial Revolution, which will cause the most dramatic change in human society in history. McKinsey recently noted AI is advancing 10 times faster and at 300 times the scale of the Industrial Revolution.

Until the 1980s, schools taught the technical aspects of computing. Fast-forward to today and the methodology is no longer about the technology, but about putting the computer or the software into action—whether it be handing out iPads to learn math strategies or using a smartboard for reading. With that in mind, we're at a similar point with artificial intelligence.

We don't start off with the technical aspects, but instead we focus on how and where it can be used and leveraged to solve business problems. A great metaphor is that of the maestro or the composer. They understand the capabilities of the instruments within their orchestra, but they don't necessarily need to be able to play each of them or know how the instruments were created or constructed. Their role is to bring all those instruments together to create a masterpiece. That is essentially what we're talking about with artificial intelligence on a business strategy

level. Customers are not interested in the technicalities of AI. They want to know what it can achieve and how AI technology can serve people and business.

A lot of people think intelligence is measured by a thing or a test, but actually human intelligence can be categorized into nine types: intrapersonal, spatial, naturalist, musical, logical-mathematical, existential, interpersonal, bodily-kinesthetic, and linguistic. Of course, everyone has all these components to a greater or lesser degree. Some are strong musically while being weaker spatially, while others are strong in the existential area but are introverted and thus have less in the interpersonal area. However, people are holistic in nature—they do not normally fit into just one category. Herein lies the complexity of artificial intelligence, the purpose of which is to try to re-engineer the human mind to a certain extent.

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The Super Framework: A Superhuman Strategy

Now that we've laid the foundation of the technical aspects of AI, let's talk about the strategic model that will unleash competitive advantages for you and your business. It is called the SUPER framework, and it will provide superhuman capabilities. SUPER is an acronym for Speed, Understanding, Performance, Experimentation, and Results.

It's a powerful five-pronged model that harnesses AI as a catalyst for innovation, and all five prongs must be addressed by your AI strategy for your project to succeed.

- **Speed** (by facilitating work processes)

- **Understanding** (by revealing and mastering deep insights)

- **Performance** (by enabling customization of delivery to customers)

- **Experimentation** (by allowing the iterative process of re-invention and feedback)

- **Results** (by providing tangible, measurable and optimizable results)

In this world of product and pricing parity, the delivery of superior experience of service has become the new marketing and competitive edge. With the AI SUPER framework, companies and entrepreneurs can now harness the power of data, personalization, and on-demand availability—to name but a few—at the touch of an intelligent button.

Speed: Facilitating Work Processes

AI will help with business efficiencies, as well: everything from speed of manufacturing, to ideation, to content creation, to internal processes. For the consumer, this will result in faster service and faster delivery of products.

Let's take a more detailed look at **Speed**, by which we mean increasing the velocity of work and reasoning, or getting to a starting point more quickly. If you want to improve customers' experience of getting through an airline check-in procedure more efficiently, you'd focus on optimizing their traffic flow. One airline company, Trans States Airlines (TSA), has been testing a new system that could accelerate the speed with which travelers pass through security at the airport. It uses AI to evaluate the facial expressions and posture of travelers to point out any that may pose a threat to security. Of note body scans are not shown to TSA screeners to ensure travelers' privacy is protected; TSA personnel will only be alerted about those who might pose a threat.

Understanding: Revealing and Mastering Deep Insights

AI will permeate innovation across marketing campaign creation, service bots, applications, attribution, and delivery. AI makes experiences more effective through better **Understanding**. AI can access vast amounts of data very quickly, revealing and interpreting that information to provide insights into marketing, customer behavior, healthcare, automotive, driving habits and so on. Combined with IoT and similar technologies, the possibilities for comprehending the world around us are unlimited. Netflix uses predictive analytics to understand customer preferences and make predictions to provide optimal recommendations. The recommendation engine not only connects viewers to the content they want to see, but it improves over time. It learns about customer tastes and distinguishes between what people say they want to see and what they really like.

Performance: Measurement and Optimization

When we talk about **Performance**, we mean efficiency, which measures the effectiveness of the process. In this respect, we're concerned with how well the job, service or product is or has been performing. AI strategies and their application must be measured and optimized on their performance and how well they are supporting the overall business strategy. In other words, those strategies must pay off, and that must be measured, quantified and reported to various stakeholders. Key performance indicators need to be defined before the AI initiative is begun, to measure business-level success.

As the volume of data and content explodes, companies need to deeply embrace AI and machine learning techniques to unlock true insights from these datasets at scale. With AI/machine learning, cloud computing will evolve from a simple automation layer to an indispensable and pervasive intelligent fabric across organizations for predictive audience segments and hyper-personalization capabilities.

Experimentation: Actionable Curiosity

AI also ushers in a new era of **Experimentation**, by allowing for faster interactive processes, meaning supporting minimum viable product (MVP) feedback loops; creating, testing, and optimizing. Also, AI inspires new approaches to products and services that were unimaginable in the past.

We are now at a point in time that is reminiscent of the mid-1990s, where the early winners of the internet were those who identified opportunities and experimented to address those business problems. We are in a very similar setting with AI today. However, there needs to be a systematic game plan for experimentation with AI.

Results: Business Transformation

Finally, AI must produce **Results** that support businesses, consumers, and industries. PayPal, for instance, uses deep learning to detect deceptive merchants and pinpoint sales of illegal products. In addition, their models optimize operations by providing an understanding of why transactions fail. Both these solutions improve the ability of PayPal to deliver service to its customers by cutting down on fraud and improving reliability.

As AI matures, we'll be able to measure results in a more quantifiable way because it can quickly process vast volumes of data and make inferences based on what it finds. This opens up the power of predictive analytics and highlights the value of the virtuous feedback loop.

Part 3: The AI future

Where to Start

The first thing to figure out when beginning an AI project is where to start. Before beginning, define the problem to be solved and who needs the solution. Put the customer need first.

To operationalize the SUPER framework, use the concept of people, process, data, and technology. With people the focus is with building a team with the right skill set and organization. Processes deal with how the project is developed and the different methodologies available to achieve the goal. With data, have a data strategy and focus on quality not quantity, as well as accessibility. Finally, technology provides the software and hardware considerations on which to build the project. The SUPER framework can be molded and customized to fit the needs of any project. Just to be clear, this is a blueprint and is not intended as a straitjacket. Use the framework to enable progress, not to restrict your freedom of action.

Security, Privacy, and Ethics

As businesses become more reliant upon AI in their strategies, it becomes vitally important that security be at the forefront from the beginning. Everything from huge databases to fast networks to computer systems must be designed and built with strong security policies in mind. AI is becoming mission-critical to the success of businesses, governments, and individuals. Many of the initiatives currently being designed and rolled out involve aiding in the decision-making process by analyzing extremely large amounts of data to produce reports and even recommendations used to drive a company or government.

A closely related subject has to do with privacy. The challenges of data privacy related to computing and AI are difficult to overstate. Not only is it technically challenging, but quite often those speaking about the subject are prone to rhetoric and highly emotional discussions. Complex privacy agreements written in legalese don't make the topic any easier to understand. As the internet of things grows almost exponentially, and companies make more use of massive amounts of big data for artificial intelligence and other purposes, keeping data private becomes challenging, to say the least.

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One solution is privacy through anonymization. There are four types of data anonymization, which is the removal of personally identifiable information. You can completely remove any information that can be used to identify a person; you can redact, which means to blackout the data on paper with a marker; you can encrypt the data; or you can mask the personally identifiable information.

There are also security needs. Essentially, there are two sides to AI in security. First, AI must be secure, and that introduces challenges. Second, AI can be used to improve security, solving one of the most critical problems facing the internet of things and business today. So, the most important consideration becomes, 'How do organizations keep AI safe.'

Yesterday, Tomorrow, and Today

We can look to the past to better predict the future and its impact. Some of the greatest glimpses into the future have been in the world of science fiction. Some of the fundamental hopes and promises AI aims to achieve and deliver can be uncovered and reveled through science fiction.

The intriguing thing about some of these viewports into the future is that they aren't just showing single devices or technologies. Instead, the indicate a connected world, a smart city or smart home in which a set of interconnected devices that can, in many cases, communicate with each other and with systems in the cloud. The resulting data can be used to feed AI-based systems to provide even more capabilities.

The point is that artificial intelligence will dramatically improve the lives of individuals and humanity going forward. AI is already being used to give individuals superhuman powers that were not even dreamed of until recently. The possibilities provided by AI and humans working together are practically endless.

Next-Gen Creativity: Improving the Human Experience

The question here is: What does humanity do if AI lives up to its full potential and helps solves many of the world's major problems? Will the power of human creativity combined with AI be fully unleashed for the good of business and the world?

Creativity, like intelligence and consciousness, is hard to define. There are varying definitions, including the one from Steve Jobs: Creativity is just connecting things. When you ask creative people how they did something, they feel a little guilty because they didn't really do it, they just saw something. It seemed obvious to them after a while. That's because they were able to connect experiences they've had and synthesize new things. And the reason they were able to do that was that they've had more experiences, or they have thought more about their experiences than other people.

That brings up the topic of the dynamic between creativity and innovation in business. For a number of years there has been a rise in the need for innovation in business. Let's take a look at advertising.

Traditional agencies have historically created advertising that is one-way messaging, such as TV commercials, print ads, magazines, and banner ads. But the advent and then the rise of digital and social platforms have created the need for more inventive experiences and services.

It's important to remember that creativity is at the core of solving business problems.

Fundamentally, creativity is a tool for creation. And it's important to remember that creativity is at the core of solving business problems. As we've established, things are changing so quickly, we must reimagine businesses. As such, the role of creativity in business has expanded and must be woven into everything from technology, consulting, and strategy, to digital and business transformation.
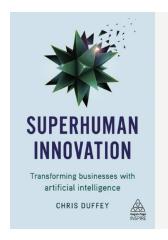
The AI-Infused Future: Transforming the World

Technology has changed our world forever. Individuals can communicate with anyone at any time from a small handheld device. They can retrieve information from all the libraries in the world, stream movies online in the comfort of their own home, and play vast multiplayer games with tens of thousands of people.

With this new digital reality, AI promises to advance the world—and advance us on an individual level. Virtual and augmented reality, guided by AI, is enabling new vistas of understanding. IoT devices such as smart refrigerators already order food automatically to be delivered in a few hours. Education can be delivered wherever an individual may reside, and entertainment of all forms is available at anyone's beck and call. AI is changing you, the individual, into 'superyou.' You are immersed directly into the connected world, whether it be your smart device, your virtual reality headset or voice assistant, and can send and receive information to and from wherever and whomever you want. You can take classes wherever you might be, play video games at will, work from home or the beach if you desire.

In the end, business and consumer power will drive and determine the course and success of AI. It's important to understand that AI is a tool, to be leveraged for good, to unite the art of human creativity with the logic of science to create magical experiences to propel business and societal innovation for years to come. **With that understanding, the opportunities for innovation with AI seem endless**. 🗎
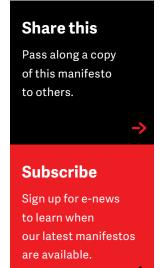
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