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Making Enterprise Business Systems Pay Dividends

AERA TECHNOLOGY TURNS DATA INTO DECISIONS AND ACTIONS

AERA COGNITIVE WORKBENCH: YOUR NEXT BREAKTHROUGH?

About Aera

Aera Technology focuses on delivering technology that enables the Self-Driving Enterprise: a cognitive operating system. Aera endeavors to understand how businesses work and make real-time recommendations, predict outcomes, and take action autonomously. Using proprietary data crawling, industry models, machine learning and artificial intelligence, Aera's goal is to revolutionize how people relate to data and how organizations function.

Headquartered in Mountain View, California, Aera serves some of the world's largest enterprises from its global offices located in San Francisco, Bucharest, Cluj-Napoca, Paris, Munich, Pune and Sydney.

Technology is changing the world today. On a personal level it changes the way we live, work and play. On an enterprise level, it changes the way we communicate and transact business. The rapid pace of technology innovation and exponentially growing volumes of data can be both exhilerating and also a little frightening. Artificial intelligence (AI) is insinuating itself into our personal and professional lives in many ways. As consumers we are subjected to personalized targeted marketing. We frequently have conversations with our mobile devices (think Siri and Alexa). And self-driving vehicles, while not perfected (yet) are no longer the stuff of science fiction.

And yet, even as we are surrounded by all this technology, even as modern enterprise applications open new doors to us in terms of data accessibility and visibility, most important business decisions are still made in much the same way as they have been for decades. We spend hours pulling reports to gather data and review exceptions. Next we spend days analyzing it to determine what options are available. Then we spend weeks sending emails and making calls to gain a more complete understanding. We run through different scenarios, trying to play the "what if" game and figure out the best decision. Only then do we take action and by that time, guess what? The data and the conditions have already changed. Windows of opportunity may already have closed.

Aera Technology thinks there is a better way. Its data crawlers (patented real-time crawling technology) collect, index and harmonize billions of data points from complex enterprise systems and external data sources. Its processing engine analyzes data continuously (even while you sleep) to detect business risk and opportunities. After utilizing decision trees and algorithms to recommend the best course of action, its new Cognitive Workbench engages the relevant users to collaborate, evaluate and approve a suggested course of action. Based on your response, it learns what works and what doesn't. And in the future, it will evolve to take action autonomously right in transactional systems like Enterprise Resource Planning (ERP).

A RANGE OF DECISIONS: FROM SIMPLE TO COMPLEX

Any enterprise today faces a range of different types of decisions. Some decisions have always been complex, and with growing volumes of data, from a growing variety of data sources, the degree of complexity is also growing. On

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the other end of the spectrum are those simple kinds of decisions and routine actions that distract us from the tough ones. Aera Technology is setting out to address both: by automating the routine and applying cognitive capabilities to help us make sense of the complex. In fact, the more complicated the scenario, the more value Aera adds.

PROVIDING TRIBAL KNOWLEDGE

For decades companies have relied on tribal knowledge as a way to negotiate the complexities of business. There were always those few "smart" individuals that had accumulated knowledge over a span of years, perhaps even decades, who understood all the intricacies of the business and could apply that knowledge, some might even say wisdom, to recommend a course of action, to predict outcomes, and solve problems. Sometimes they couldn't even explain **why** they were recommending a plan, they just knew it was the way to go. And they were usually right.

This kind of tribal knowledge was built up over a long period of time. All this was possible because workers stayed with corporations for most of their careers, accumulating knowledge and passing it from one generation to another. Those workers seemingly relied on intuition as much as accumulated data. But then, the volume of data used to be much more manageable than it is today.

Today's work force is far more transient, and we rely much more heavily on hard data and technology. And we must process far more data, from a greater variety of data sources. First there is the data collected and managed by enterprise applications. At the core is enterprise resource planning (ERP), which is typically surrounded by other applications such as customer relationship management (CRM), supply chain planning and management (SCP and SCM), and any number of others.

And as the size of the enterprise grows, so does the likelihood that it will have multiple ERP solutions. For many years, corporate finances were run on a single administrative ERP (or accounting solution), which often didn't meet the operational needs of its divisions or subsidiaries. As a result, subsidiaries were left on their own to select and implement a solution that would then feed financials up to a corporate system, often in aggregate. This spurred a proliferation of applications that is still creating challenges for many companies today.

Even though we find 96% of large corporations today have developed corporate standards, those disparate applications are woven into the very fabric of the large enterprise, making it difficult, if not impossible to extricate them. And therefore decision-makers must take into account data across any number of applications, all storing data in different formats. Aera normalizes and harmonizes all this data for end-to-end visibility.

And then there is the Internet. If you had a hard time making sense of the structured data managed by your enterprise applications, you are likely in a world of hurt trying to assimilate all the unstructured data that is accessible through the world wide web. Are you even trying?

While those "smart" individuals with tribal knowledge somehow were able to keep an ear to the ground in their respective industries, in a world where terabytes of data are being replaced with zettabytes, it is no longer even possible for the human brain to process data at the speed and granularity required for effective decision-making. This is where artificial intelligence exceeds the capabilities of human intelligence.

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Aera Cognitive Technology can detect patterns and make correlations that the human mind would instantly reject as counter-intuitive. It can correlate seemingly unrelated data points, capture knowledge and build memory, whereby it learns, getting smarter and smarter over time – much like those few "smart" individuals did, but over a lifetime, or even over several lifetimes. It doesn't eliminate the people from the decision-making; it makes them more effective through better (guided) analysis and suggested actions. Reactions to these suggested actions might range from, "Of course, why didn't I think of that?" to "Wow, I never would have thought of that." Either way, they serve to add a whole new dimension to dealing with complex problems.

COGNITIVE AUTOMATION: BUILDING TRUST AND CONFIDENCE

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And then there are all those simple decisions and routine processes that distract us from the more strategic planning and decision-making. Any manager's time can easily be consumed with routine decisions that hardly feel like decisions at all. You might find yourself rubber-stamping requests for approval from certain trusted employees, while you carefully scrutinize others. Both are perfect candidates for cognitive automation, freeing the decision-maker from reviewing the simple decisions and calling their attention to anomalies and questionable activities.

And yet these same managers will be unwilling to relinquish control until they are sure they can trust the technology that automates the process. Aera's Cognitive Workbench has been added to its Cognitive Technology to do exactly that, whether the individual is trying to extricate him (or her) self from the mundane, or making critical, strategic decisions. It is the catalyst that can help decision-makers move away from making decisions the hard way.

BREAKING THROUGH SELF-IMPOSED LIMITS

Cognitive technology exists today that can enable us to use far more data, in finer detail, and speed decision-making. But that requires a new mindset, and also some investment in that new technology. And yet we find a scant 13% of our 2018 Mint Jutras Enterprise Solution Study participants have invested in predictive analytics and even fewer (10%) have invested in cognitive analytics. While some have plans to invest, the largest percentages are still considering

(and therefore have not yet decided to invest) or have no plans or activity underway (Table 1).

Table 1: Plans and Investments in Predictive and Cognitive Analytics

	Invested	Planning to invest in 1 year	Planning to invest long term	Actively considering	No plans/no activity
Predictive analytics	13%	10%	18%	24%	35%
Cognitive analytics	10%	9%	15%	19%	46%

Source: 2018 Mint Jutras Enterprise Solution Study

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Instead we still find spreadsheets are involved in almost 80% of decisions and actions. Not only are spreadsheets prone to errors, but also they only represent a snapshot of the data, frozen in time. Making matters even worse, reports and spreadsheets only provide a historical view. You wouldn't drive your car (even your self-driving car!) while only looking in the rear-view mirror. Decisions, particularly planning decisions, require you to not only understand the past and present, but to anticipate (predict) the future, particularly today as the pace of change continues to accelerate. Only then can you take decisive action and move confidently towards a positive outcome.

AERA'S COGNITIVE TECHNOLOGY GETS AN UPGRADE

A year ago Mint Jutras introduced Aera's Cognitive Technology to our readers, along with Aera's take on enabling the "self-driving enterprise."

> *Enterprise applications have been used to streamline and automate transactional processes for several decades now, particularly where simple and straight forward rules can be applied. When inventory falls below safety stock, order more. But how do you know when to change safety stock? How do you balance inventory across your distribution network or work off excess inventory? How accurate is your forecast? Is it possible to automate the cognitive functions that **understand** (recognize patterns and learn from the past), **predict** the future, and not only **make recommendations**, but also **take action**? Aera Technology not only thinks it is possible, it is delivering on that promise today to enable the Self-Driving Enterprise.*

When it comes time for strategic decision-making, it's not about making the same decisions faster, it's about changing the decision-making process, coming to different conclusions and making better decisions. Last year's report detailed the four steps Aera's Cognitive Operating System takes:

- It understands
- It predicts
- It recommends
- It acts

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Aera's new Cognitive Workbench (CWB) increases the speed and the quality of decisions across the organization with AI-driven recommendations and actions.

Recently it added a Cognitive Workbench to its arsenal. So, what more does the Cognitive Workbench (CWB) bring to the party? In short, it helps users make the transition from the "old way" of planning and decision-making, to a new and better way, increasing the speed and the quality of decisions across the organization with AI-driven recommendations and actions.
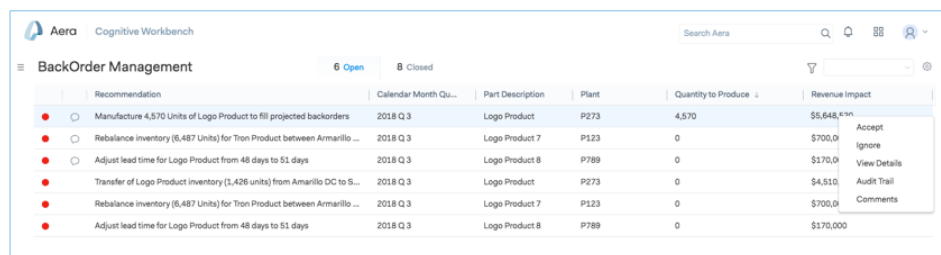
While over time the actions recommended by Aera's Cognitive Technology will become more autonomous, most customers today still rely on humans to take action. And before they do, those who are ultimately held responsible for those actions want to fully understand their options and the corresponding implications. Responsible decision-makers will not accept advice purely on blind faith.

Aera's CWB is now an important tool for guiding people through the relevant data behind suggested actions, and more importantly, showing them the expected results. Recommendations are generated by "Skills" - packaged, cloud-based, cognitive capabilities that are built by Aera, its partners and customers. Examples of Cognitive Skills are listed below. Most focus primarily on the supply chain and forecast accuracy, which is the starting point for most Aera customers:

- Supply Chain 360
- Cognitive Demand Management
- Perfect Order
- Trade Promotion Optimization
- On-Time In-Full (OTIF)
- Available to Promise and Capable to Promise
- Inventory Optimization
- Manufacturing Performance

Decision-making with CWB

Prescriptive: *Time sensitive recommendations are automatically generated, prioritized and presented*

Quantified Impact: *The economic impact (revenue, cost, operational) is quantified before recommended actions are taken*

Guided Actions: *Select the best course of action from available options (ignore, accept, change value, cancel, etc.)*

Closed-loop: *AI algorithms continuously learn from recorded decisions to improve recommendations over time*

These recommendations are prioritized in the Cognitive Workbench automatically. Figure 1 shows you how they might look. Users can click into any recommendation to take further action. But unlike a spreadsheet that is a still shot (a snapshot in time), Aera CWB is more like a moving picture because the data is accessed in real time, and we all know how quickly data can change in today's fluid, global, digital economy.

Figure 1: Decision-making with the Cognitive Workbench (CWB)

Source: Aera Technology

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What makes these recommendations unique? First of all, they are prescriptive. Time sensitive recommendations are automatically generated, prioritized and presented. But before taking action, decision-makers can drill down for more detail, evaluating the different options. The potential impact of each option is quantified in the context of revenue, cost and operational changes. Users can then easily accept, change values, cancel or ignore the different options. All guided actions are stored so that the system can learn what works best. Aera's AI algorithms continuously learn from recorded decisions to improve recommendations over time.

CONCLUSION AND SUMMARY

Today's fast-paced, global, digital technology requires a new way of making decisions. No longer can we rely on the tribal knowledge of key individuals to just "know" what to do. We need to tap into volumes of data that are growing exponentially, well beyond the capacity of the human brain to process. We need to automate simple and routine processes in order to free up our time and attention for the strategic. We need to analyze the situation and evaluate all different courses of action, predict outcomes and execute with confidence. And we can't take days, weeks or months to come to conclusions and plan an attack.

Aera's Cognitive Technology, with its new Cognitive Workbench has the potential to change the way you make decisions, transitioning from the old, hard way, to a new and improved way of working. Its patented technology crawls through massive volumes of data almost instantly, continuously analyzing the situation, sensing issues and identifying possible problems and opportunities. Using decision trees and algorithms, it recommends one or more courses of action.

The Cognitive Workbench allows you to drill down for more detail, understand how the recommendations were derived, collaborate throughout your organization and accept or reject the suggested actions right on the spot.

And so… if the decisions you face every day in managing and growing your business are simple, by all means continue to address them as always. But if you are faced with a growing challenge of complexity and speed in our global, digital economy, perhaps it's time for a new approach. In which case, take a look at what Aera has to offer.

About the author: *Cindy Jutras is a widely recognized expert in analyzing the impact of enterprise applications on business performance. Utilizing 40+ years of corporate experience and specific expertise in manufacturing, supply chain, customer service and business performance management, Cindy has spent the past 12+ years benchmarking the performance of software solutions in the context of the business benefits of technology. In 2011 Cindy founded Mint Jutras (www.mintjutras.com), specializing in analyzing and communicating the business value enterprise applications bring to the enterprise.*