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A WHITE-PAPER BY  
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# HUMANIZING TECHNOLOGY WITH DIALOGUE

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# Humanizing Technology With Dialogue

By Andrew Dean Hyder

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It has been said that the information age is like a tidal wave that won't stop growing. Over the last 20 years or more - the accumulation of information has been monumental; the sheer volume of raw data is more than quadrupling every year. (*source: Cyveillance*)

Just as the industrial revolution found its own balance after its "tide-like" beginnings, so the future holds for our incredible information age. Never in history has so much information been accessible to the average individual. The average American has at their disposal 1 trillion documents and texts within 10 minutes from his or her fingertips thanks to internet based technology. Although this information utopia creates significant opportunity for those interested in learning and becoming self-educated in any subject, it is also a "double-edge sword".

Just knowing the information you seek is out there is little consolation for not knowing where it is. You have to find it. Finding one document out of 1 trillion can be frustrating to say the least. The last 20 years has produced an entire industry of information, document and data mining companies and technologies, to help index and "inventory" our new world of information.

Today there are a growing, number of people that see the future of information accessibility in a new and clear way. Not in how to better "tag" or inventory information, but the deeper psychology on how people interact with data or better said, how *data* interacts with humans. What is the ideal environment for humans and data to interact?

## Artificial Intelligence

There are for the first time in history new types of Artificial Intelligence that truly interact with people in a unique and more useful way. Technology currently exists for people to communicate with their computers and simply ask for the information they want, as you would ask another human. This is different from search technology or "Natural Language" (NL). This is the ability for users to "chat" using (human inspired) bi-directional dialogue with their data through engines developed by companies like Subjex Corporation (otcbb:SBJX) (<http://www.subjex.com>) and others. This is a completely "human-like" communication experience with Artificial Intelligence (AI) software, which is natural for most people looking for information from computers. We are at the threshold of a new beginning of technology and information accessibility and it's called AiNDEE™ (Artificial Intelligence Natural Dialogue Expert Entity).

What is "human-like" conversation? Well, when humans communicate with one-another they use what is called "bi-directional" dialogue. This means that questions and answers are raised and answered by both parties. For example:

- **User:** *I would like to know if this product has a warrantee?*
- **AiNDEE:** *Sure. Are you referring to product A or product B?*
- **User:** *Actually, I was interested in product C.*
- **AiNDEE:** *Ok, Product C has a 2 year warranty. Would you like to know details on our extended warranty?*
- **User:** *Sure...*

In this example you can see, that this type of interaction is not possible with an FAQ, a Search Engine or Natural Language technology. Understanding what someone types, does not give a Search Engine the ability to understand intent. Only follow up questions and a progressive knowledge accumulation can accomplish this; true dialogue like humans have is the only way to accomplish this.

The ability to communicate with an iterative “back and forth” (bi-directional) interaction between people is basic, natural and has been refined for thousands of years. If we want or need something, we ask for it. If the giver does not completely understand what you mean, he or she asks you a question that helps define exactly what you want - in other words – dialogue.

Imagine people being able to access information without having to learn the device or software they are actually using. What all people know - is how to carry on a conversation. Using this as a starting point, or a lowest common denominator, is where these technologies begin. Taking the most inexperienced user and keeping them as far as possible from having to learn something new should be the real goal of all technologies. Dialogue allows the user to specialize in their area of expertise, not in the “technology” of learning the device (or software) that delivers the information.

Movies have us all dreaming of the day when we can talk to computers and robots like “Hal” (from 2001 A Space Odyssey), or “C3-P0” (from Star Wars). We see these non-human devices doing work for us, making our lives easier and talking to us about anything imaginable. Unfortunately, this type of advancement has not happened at the speed that most people have expected. One of the most ambitious projects noteworthy to this discussion is what Boris Katz, a Principal Research Scientist at the Massachusetts Institute of Technology (MIT) AI Laboratory has been doing for over the last few decades. Katz has been pioneering a type of AI called “Natural Language”. This project, called “START”, is an academic study in the area of query/question understating. <http://start.csail.mit.edu/>

This project has influenced many technology companies in this area. Most noteworthy are companies like Ask Jeeves, a “Natural Language” search engine. Therefore, the question begs to be asked; Has the different outgrowths of this ‘Natural Language’ technology resolved the world’s information overload issue? Hardly! The START project attempts to answer *any* question given it. “Who was the 23<sup>rd</sup> president of the United States?”...and it tries to tell you. Ask it, “How many pints are in a U.S. Gallon?” ...and it forwards you to a weights and conversions web site. Impressive? Yes, but is it practical to answer *any* question that users give it, and is this realistic to think that we can give a correct answer under all circumstances?

The question that is important to understand is: Why does the AI community feel it is necessary to engage people in any kind of conversational “free-for-all”? Would we as conversational humans tolerate a conversational “free-for-all” in a meeting or business setting? As a general benchmark, could it be that we have inadvertently emulated what we see in the movies,

attempting to be all things to all people, taking on any conversation, before we have become an expert in one area of dialogue? Could trying to rival not just the human brain but trying to rival a human brain that knows *everything* be realistic? Is this watering down and giving a false sense of the possibilities of the AI industry as a whole? I think so. So what is the solution?

## Modular Specialization

The solution as I see it, is modular dialogue or a subject-based design and seen in AiNDEE™. It is not just practical it is inevitable. This is more than just “Natural Language” taking a stab at an answer at every iteration, but a dialogue that specializes in how to talk eloquently in a narrow area of knowledge, while asking questions back to the user, learning from each user interaction. More than an “expert system” or “Natural Language”, this specialist or “frame” as it has become known, is an expert at one broad subject *only*. Yes, this is the new AI reality that actually works.

Imagine walking into your kitchen and asking your refrigerator, “How many pints are in a U.S. gallon?” Your refrigerator would know the answer because it has been enhanced with an intuitive “kitchen frame” dialogue expert. If your refrigerator could communicate, (and soon it will), it *should* know that answer. Why? Because it’s just a well-suited question for a refrigerator to know. Ask your refrigerator, “How many castaways landed on Gilligan's Island?” and it surely would not know. Now walk into the living room. This is where the Gilligan's Island question might be more appropriately addressed by your entertainment center.

What the great minds at MIT have yet to implement is a system that is modular, understands its application or surroundings and its specific purpose in the world, and is not trying to become all things to all people. What is needed is dialogue - segmented into applications - which are an expert in their own niche, and understands its surroundings. We see this in Nature. Humans have the ability to specialize. We produce experts in academia, by focusing our attention to a specific field. So now, we have before us, AI dialogue technologies that are beginning to eloquently rival human experts in one specific narrow specialization.

Imagine the advantages for people *not* having to learn another device or program every time Microsoft or Sony releases a new product. For all the volatility, hysteria and hype of the technology booms the world has seen, nothing can change the core human desires to avoid frustration and have a fun experience. An interface that is natural and remarkably human - or like themselves - is what is preferred. We call this “geek not necessary” interfaces. What the “Dolby” brand is to audio, AiNDEE™ type dialogue infrastructure will become to the technology sector. Dialogue *will* become the standard for all technology that must interface with people, on and off the web. It *must* happen. Dialogue *is* the people’s interface *naturally*. Think about it.

How can Google or other search engines of today possibly find correct documents for their users when they have not even *asked* the user what they *specifically* want? Today 80% of all search engine queries are one or two word phrases. For example: The phrase “Digital Camera” could never imply enough information for *any* system to find out that the phrase actually means, “I am looking for a Sony Mavica Digital recording disk - and by the way - I want to comparison shop for generic brands” – *in the mind of the user*. How is that possible without a conversation, and questions back to the user? It is not. Dialogue is the next big evolution advancement in technology accessibility. Extracting from the users head what they really want is *as important* or perhaps *more important* as how well we know our data. The “tell me more about your Digital Camera search” kind of dialogue is the only way a system can learn what the user really wants.

This paradigm shift will soon effect every person who touches a dialogue enhanced device or technology. It will make simple what would otherwise require a complex learning curve. Giving technology users an AI agent that speaks to them eloquently about the device in front of them is not only efficient for the user but also becomes a marketing event. Why has the Apple Corporation always dominated their market, with virtually every product they offer? Because of the very powerful yet simple interfaces they design.

Users of the next generation of products will simply be able to chat with these products to find or accomplish whatever the help-desk/manual/call-center used to do. Hundreds of thousands of little dialogue experts, each one an expert at its own area, empowering technology, and more importantly empowering people to be able to access information with out having to learn an intrusive third technology.

What robots did for the auto industry, Modular Dialogue Technology is doing for the information age. This will happen not because people demand it. No, it will happen because corporations already know all too well that customer support using humans is their biggest corporate expense. Ironically, the call/contact center industry has the highest turn-over rate than any other corporate segment. Why? In a survey conducted by callcentercareers.com, exit interviews revealed that call center personnel who quit were typically “bored” with their job. After-all, how many times can a human answer the same question in one day before he or she begins to question their career choice? In other words, humans don’t like to do the job that AiNDEE loves to do.

## **Conclusion**

It is clear that the world of technology is struggling to achieve a better user experience with less frustration. Unfortunately, most companies believe that people will learn their process because it is better than the competition. This is a myth. Forcing users into a learning curve is irresponsible, and it is unprofitable. It is not wise to irritate your customer base, even if your product is less irritating than the competition. Technology should in fact reach out and speak the user’s language, make the user’s life easier and less complex. Those companies that implement Dialogue as part of their user, or customer service interface will become the defacto leaders of their business niche. Certainly, the next Microsoft-type technology leader will be a “dialogue infrastructure technology” company. This company will be the developer of the “Dialogue Standard” - the user’s language. Subjex Corporation the developer of the AiNDEE platform is positioned to set this standard.

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