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The Method in Action: Dataspace



We are standing on the brink of a new ubiquitous computing and communication era, one that will radically transform our corporate, community, and personal spheres.... Early forms of ubiquitous information and communication networks are evident in the widespread use of mobile phones: The number of mobile phones worldwide surpassed 2 billion in mid-2005. These little gadgets have become an integral and intimate part of everyday life for many millions of people, even more so than the Internet.... A new dimension has been added to the world of information and communication technologies (ICTs): From anytime, any place connectivity for anyone, we will now have connectivity for anything.

—ITU Internet Reports 2005: The Internet of Things

Dataspace as a Field of Opportunity

Dataspace is the emerging system of intangible environments created by the proliferation of “smart tags” and other context-aware technologies. As a broadening spectrum of URL-ready tags and readers are adopted, every object, space, and indeed person will have the capacity to generate and store data. Our interactions in this space—with each other and with these devices—will be an imperceptible landscape of message flow.

In a Dataspace, people are the carriers of place and meaning to the spaces they enter, transforming the spaces through the chain of links and connections they provide. This transformation is mutual; the space will in turn leave its mark on the person, thus touching all subsequent spaces that person will enter.

DATASPACE: A PRIMER

Dataspace is any perimeter containing communication and data-enabled devices, fixtures, or structures. It must contain at least one of these tactical agents:

- ◆ *Enabled objects*: objects that are aware of the needs of their users. They will have the obligation to gather and make sense of information, and to suggest an appropriate reaction to a given action.
- ◆ *Enabled spaces*: spaces that are aware of themselves as well as their occupants, and that respond to occupants' individual and collective needs.
- ◆ A third tactical agent of Dataspace is *enabled people*—those who possess a device that enables them to retrieve or transmit data to the objects or spaces in their proximity, as well as to objects and spaces outside the immediate proximity through a carrier.

Two enabled entities in proximity create *enabled data*: data that has been filtered through a user's personal criteria and transformed into information that is of benefit to the user.

When the data contained by an enabled entity combines with relevant data received from other entities, it becomes *knowledge*. When a response occurs on the basis of that knowledge—a decision is made or a suggestion followed—it becomes *wisdom*, which leads to *enabled data use*. Enabled data use is the management and collection of these transactions and their locations to further benefit the user.

A Dataspace is a complex ecology determined by and dependent upon its members—enabled people and entities or devices—as a community of parts functioning as a whole. Dataspace topologies will be generated by the very flow of the people who travel through them. They will shape and be shaped by people, whose interactions and behavior will reveal their

needs and wants. As MIT research scientist Nathan Eagle puts it, “Soon our mobile devices may even track our activities, extract patterns, and predict what information or services we need at specific times of day.”

Within our cultures and societies, technology’s traditional role has been to augment and mediate our interactions. In an emerging world of omnipresent data, this role will shift radically. Technology will become an essential element of the ecosystem, determining its very nature.

When places and objects are *data enabled*, they take meaning from people by contextualizing the data with other relevant information, such as intent or history. When meaning is enabled, it becomes benefit. In the *enabled landscape*, different combinations of people, devices, and places will create a wealth of unique possibilities. Every setting and every interaction will determine a one-of-a-kind ecosystem of opportunity, and any presence—human or otherwise—in this enabled landscape means proximity and data transfer potential.

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Imagination will decide the quality of our life in Dataspace and the pace with which that life will change.

Interaction designer Ron Wakkary has noted that current research in interaction and ambient intelligence is narrowly focused on increasing productivity and communication in the office and home, ignoring more complex social and cultural experiences such as games and play. The essential study should not focus on how to force opportunity, however; it should simply observe the opportunities enabled by the Dataspace. The crucial question for this research is: Upon entering a Dataspace, how do people transform the space through the links they provoke?

FINDING YOUR PLACE IN DATASPACE

Dataspace expands the scope of transferable data to an unprecedented magnitude. Due to the scale of this data, the obvious questions are: How and when does data become information? And how do we make sense of it?

Every time data is collected, it must be organized for expression and transmission. Meaningful information might be drawn from the landscape as a magnet separates ferrous content from a bed of sand, based on the condition of the transfer request. The transfer conditions—or rules

determining whether a transfer will occur—should not simply measure access to data; they must also reflect the purpose, context, and method of transmitting a request. For instance, *hot*, *cold*, and *wet* are examples of data—in some circumstances, perhaps the most crucial and relevant data. They could be transmitted as visual signals, but touch is the more natural method of remotely interpreting them.

"The business question for the next decade is: How is your organization positioned to maximize the business opportunities in Dataspace? And the imaginative question that can provide the answer is: If every person, object, and place could talk to one another, what would be the subject of their conversations?"

Given these issues, the imperative business question for the next decade is: How is your organization positioned to maximize the business opportunities in Dataspace?

And the imaginative question that can provide the answer to that is: If every person, object, and place could talk to one another, what would be the subject of their conversations?

Strategic Innovation Opportunities in Dataspace

The following directions for innovation opportunities in Dataspace come out of the action research method discussed in the previous chapter. This is applied strategic creativity, using the collection of basic research as a platform for identifying and amplifying signals through various filters to reveal their applied benefit and the strategic innovation opportunities they hold.

While the Dataspace industry does not yet exist, many of its technological capabilities will exist soon. At present, for example, there are no commercial products or services that are both context-aware and emotionally intelligent. But the Dataspace industry will change the rules of seamless mobility. The profitability of devices that *don't* incorporate context awareness—the ability to respond based on past, present, and future events—and emotionally intelligent capabilities will fall. For example, a PDA that lacks Global Positioning System (GPS) capability will have no value in a Dataspace. Business success in the next decade will be tied

to understanding the impact and nature of this transformation and taking advantage of it by providing new services, understanding the resulting new needs, and opening and taking advantage of new channels of communication. Organizations that master this complex, context-driven environment will lead new multibillion-dollar industries.

Data use is the *what* of Dataspace—the vast quantity of data that comes from a person being in a particular place, the place knowing the person is there, and the place disclosing benefits the person might enjoy right now, in this place, at this time. It might take shape like this: When you leave your garage, the city will know that a car is on the streets. If yours is the only car on the road at four in the morning, the traffic lights will all be green as you approach. Data use like this can provide a direct benefit to people's lives, and it is not device-dependent. It is intelligent, and imagination-dependent.

New technological capabilities need strategies for multiple and connected concept-generation paths that pursue applied innovations and new business methods and models. A number of strategic directions will be fertile ground for the development of innovation opportunities. Here are some.

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DATA USE

Enabled Sense: making sense of raw data. In an emerging, data-permeated environment, the first challenge will be to realize the scope of the opportunities. For example, if you walk into a market, your device will recognize, based on the products available in proximity, where you are and why you are there: to purchase food.

Enabled Knowledge: developing a new standard of expected intelligence within products, such as determining where smart tags can be applied, including—but not limited to—devices, fabrics, and environments. The food products in the market and aspects of the market itself have the capacity to communicate with each other and with your device.

Knowledge Readiness: preparing every person, place, and object to be ready to learn; seeing that each element has the capacity to communicate its knowledge when called upon to do so. Building upon enabled

knowledge, your device, the tagged groceries, and the market environment will communicate.

Link Space: If every element within the new landscape has the ability to store retrievable data, the lines between the real and virtual worlds can be blurred to allow a flow of information between them. The data storage space itself will become virtual commercial real estate, where companies providing goods and services can offer suggestions or advertising that is contextually relevant.

Making Everything Make Sense: making the enabled world intuitive to all. This is the challenge to making every user experience clear and accessible, and, by the same token, to refuse to accept environments and objects that do not recognize and communicate their purpose. The communication between your and other customers' enabled devices, the groceries, and the environment is seamless and fluid.

Wisdom Sets: acting on the idea that data, when properly arranged, can itself become meaningful to the user. These sets are the retrievable benefits of the immense collaborative filtering of the knowledge-enabled landscape. Based on purchasing patterns (yours and others'), preferences, and the availability of goods, suggestions and recommendations are made for healthy meals, new recipes, or wine pairings.

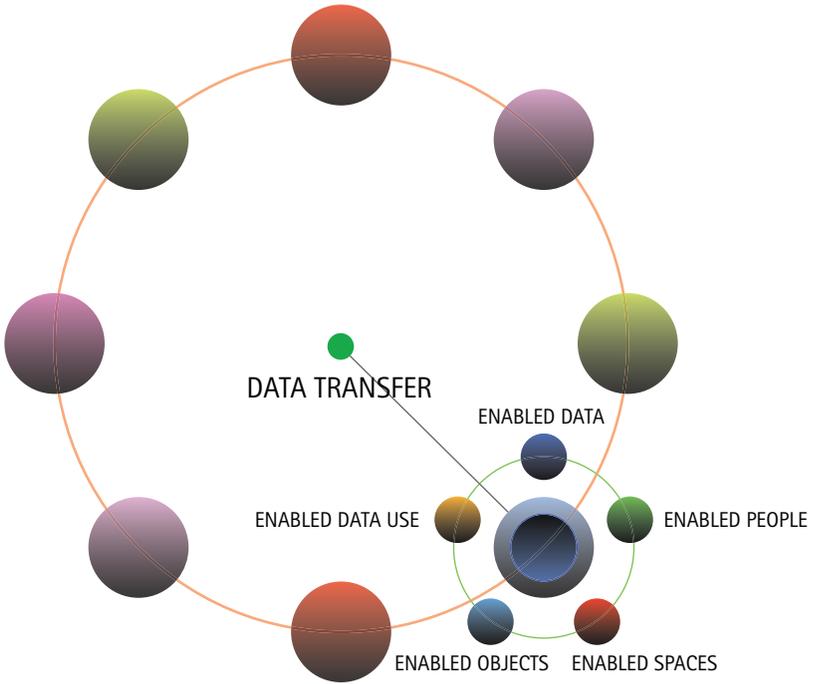
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TACTICAL AGENTS OF DATASPACE

Enabled Objects: creating the capability for objects to gather and make sense of information, and to suggest an appropriate reaction to a given action. Enabled objects will be aware of the needs of the user. People will no longer accept devices that ignore them; they will expect to have a two-way relationship with devices and appliances. This expectation will permeate all technology interactions.

Enabled Spaces: Will buttons be installed in the elevators to come? The essential question in the application of embedded technology will be: What is the relationship between a smart space and its occupants? With the opportunity for a space to be aware of its occupants, there also comes the obligation for the space to respond to the occupants' individual and collective needs.

The tactical agents that must be considered to address the strategic opportunity → of Dataspace.



Enabled People: How is technology evolving people? How are people's expectations evolving technology? People's expectations of technology must be examined as the acceleration of technology increases them; in turn, their expectations must change the technology to come.

Enabled Data: The data generated within the embedded landscape must be collected and organized. The question is not only *what* should be collected, but *how*, *when*, and *why* it should be collected. The first step to assigning meaning to data is to develop the nature of the categories under which it is organized. *Enabled data reveals the benefits of the data itself.*

"People will no longer accept devices that ignore them; they will expect to have a two-way relationship with devices and appliances. This expectation will permeate all technology interactions."

Enabled Data Use: How should organized data be managed and utilized? The management of organized enabled-data packets will yield the ultimate benefit of the data.

MAXIMIZATION VARIABLES FOR ENABLED OBJECTS

Beyond Wearables: The question of where and how people will accept technology on the body will become more important as the scale of microprocessing approaches the scale of jewelry. Will people accept devices on their body as they would a pair of earrings or a tattoo?

Convergent Devices: accelerating the ability for devices to perform any task before them. Multifunctional devices are becoming the rule. People now expect a plurality of functions from their devices, and will soon expect more.

Item-Level Smarts: The fundamental question in this strategic area is: What should a product know about itself? What information should be embedded in the item itself?

Nanotechnology: the ability for materials to act and react. This will enable an unprecedented level of object customization, demanding features that can make an object not only adjust to the user, but also to the user's situation. For example, a pair of shoes would adapt to both the athlete's body and the competitive environment.

"Will people accept devices on their body as they would a pair of earrings or a tattoo?"

Net-Linked Products: Products themselves will become the links to the network of known information. This is the incarnation of the World Wide Web in the physical, real world. The products will be access points for features, services, and knowledge—for example, a chef’s knife may provide information on chopping techniques, recipes, and various foods.

Product Collectives: Objects will have the ability to inform one another. They will be able to determine their own value and application in the context of other objects in their surroundings, and suggest new benefits to the user based on that context.

Product Networks: developing the capability of products to work together as a seamless unified whole across any distance to accomplish complex procedures and tasks.

Silent Commerce: the “marketplace” of commerce applied in a real-time invisible expression. Transactions will be seamless and invisible, taking place between the consumer and the object itself, with no checkout counter or cash register.

MAXIMIZATION VARIABLES FOR ENABLED SPACES

Connected Places: the connection of all places not through objects, but via knowledge and function—much in the way that communities are built and connected on the Internet, through interests rather than physical proximity.

Experience Education: educating through interaction and evaluating that education will generate flexible and unique systems for determining the quality and quantity of knowledge available. The new university can be embedded in and accessible from a fire hydrant or a \$20 bill. As objects such as these have the capability to impart information and experience, the pursuit of education and knowledge will no longer be limited to the classroom.

Invisible Computing: systems embedded within the objects and spaces that already surround us, eliminating the need for computing devices as we know them.

Item-Level Knowledge: the notion that a place should and will be aware of the proximity and presence of objects.

“The new university can be embedded in and accessible from a fire hydrant or a \$20 bill. The pursuit of education and knowledge will no longer be limited to the classroom.”

Man–Machine Interface: To what extent can a physical space and context facilitate the interface between person and machine? In many instances, the space itself may be the interface—such as lights in a lobby turning on when they sense your physical presence.

The New Money: Silent commerce and secure wireless transactions within a space will have a dramatic impact on how, when, and why people spend money. The silent transfer of data as value will be the opportunity to redefine “money” as any transaction that holds “value” between two or more participants present in the same space.

Silent Knowledge: The knowledge and record of a location’s history is stored dormant until requested. The type of knowledge retrieved should be determined by the profile of the person doing the retrieval. Similarly, if every object is a link to knowledge, the current context of the object could contribute to the nature of the knowledge available for request.

MAXIMIZATION VARIABLES FOR ENABLED PEOPLE

Aged2Experience: The rules that have governed the age demographic for technology expectations and acceptance no longer have meaning. Innovation in this area will be related to the fact that each passing year, each age group becomes more tech savvy.

Augmented Self: the reflection of you that can do and be more in the real world, or the virtual one. The expectation will be to adjust abilities and profiles toward achieving a self that meets personal expectations in both worlds, just as you tailor personal grooming and online preference filters to represent a certain image.

Knowledge = Change: a trend acceleration responding to the interest in healthy living. As the opportunities to convey information increase, and the separation between knowledge and event decreases, how will timely exposure to knowledge generate changes in behavior?

“The belief in the right to be fully informed will become the rule as our spaces and selves become accessible search engines.”

Mainstream Awareness: reflects the readiness of society to ask tough questions of industry, based on political, social, and environmental issues that it considers increasingly relevant and personal. How could strategies such as takebacks of products after their lifespan expires impact market share if their effects were communicated?

RePersonalization: the notion that personalization is becoming the expectation, not the exception.

Ready-to-Know Customers: The expectation that relevant information will be disclosed is increasing; consumers will become less and less willing to accept biased analyses without skepticism. The appearance of information will be ubiquitous, so the belief in the right to be fully informed will become the rule as our spaces and selves become accessible search engines.

Scaling Up the Experience: Bigger and more obvious is the new frontier. Which experiences have become so common that their large-scale manifestation would be readily received? How will Googling or podcasting scale up to a group-level experience when devices become embedded in the surrounding landscape?

MAXIMIZATION VARIABLES FOR ENABLED DATA

Data Diary: addressing the issues of privacy in massive data collection, likened to a diary in that some aspects of life are felt to be exempt from public view. How is a sense of security maintained in a landscape that is constantly observing? Strategy in this area will also need to look at the personal value of private data packets.

Fishbowl (Self-Collection of Data): Your information will be collected in data packets throughout the embedded landscape. If other people or companies are interested in your data, then shouldn't you be collecting it too? If parts of your data have value, then you should be able to choose and transfer it to others as a commodity for sale or exchange to whom-ever could use it.

"How is a sense of security maintained in a landscape that is constantly observing? Strategy in this area will need to look at the personal value of private data packets."

Profiles and Filters: The data generated by a person should collectively benefit his or her experiences and future interactions. An ongoing observation of a person's interactions should be used to determine that person's preferences. These preferences would then be collected in a profile and applied to the person's future interactions.

Searchable Life: the QuickTime time-slider tab applied to real life. This is the notion of linking "event" data packets to a scrollable timeline that can be navigated for exploration anytime. For example, you could mark and record the important points made during a meeting for later retrieval.

Tag It: rooted in the launch of item-level smart tags. Beyond replacing barcodes, where else should these tags be applied to benefit and enhance human behavior?

MAXIMIZATION VARIABLES FOR ENABLED DATA USE

Customize It: Every product or service should feel to any user as if it was made for him or her. Some of these could be customized to order. The experience of customized purchases could be realized when the specifics of the user's needs are understood on a large scale.

Graffedia: The desire for self-expression and immortalization drives people to leave aspects of their personality and beliefs on and around public places. This graffiti could be virtual links when "blogging" is extended to the intersections of the real and virtual worlds.

"In the *youniverse*, where all products have knowledge of the user, a chair should know who is sitting in it and how to feel comfortable to them."

Directing Life: Analogous to gaming preference settings, the environment adjusts to the preference of the user. This idea is extended to the embedded world, so that anyone's personal data could trigger a personalized experience of an event or environment.

Me in Everything: In the *youniverse*, where all products have knowledge of the user, a chair should know who is sitting in it and how to feel comfortable to her or him.

Social Benefits: Access to the rights and benefits of belonging to a group could be embedded in the member's profile. This embedded access illustrates a need for relationships between action and reward. For example, members of Greenpeace may have access to certain social benefits and rewards as a result of their membership and environmentally conscious lifestyle.

Social Networks: providing new opportunities within the embedded landscape for people to form and maintain communities based on common interests, experiences, or beliefs.

Tele-Expression: the need for an available means to remotely convey thoughts and ideas. The location and scale of expression will not be limited, nor will the proximity of the sender.

Points of Departure for Dataspace

The preceding strategic directions act as entry points into the exploration of possibility. They evaluate and place disruptive signals in the context of behavior in order to translate this understanding into strategic opportunity.

The next stage of the process is to develop these directions further by framing their underlying ideas or themes as metaphors that can lead into imaginative storytelling—the points of departure. These platforms in turn inform new perspectives and unseen possibilities for the future scenarios that will follow.

What if my clothes could speak? The idea is that clothes will be able to diagnose health and movement patterns. Clothes could be used to communicate with outdoor environments such as forests or cities, or with the weather, by responding to moisture and temperature data, and so on.

What if my mirror could speak? The mirror would become an in-home diagnostic appliance, aesthetician, news media, shopping aid, reference guide, and more.

What have you done for me lately? A home-control center would manage mundane tasks with hyper-efficiency. The concept is made unique by the mitigation-and-report feature, where the system becomes increasingly useful through the communication: “This is what I have done. Did I handle the situation correctly?”

Beyond interaction: removing the need for interaction by making devices and environments aware of their users. The first level of this challenge is to make environments aware of the presence of people and their devices. The next level is to make the environment aware of who the users are and what they want and like.

“Are you of any use to your appliances? Do you tell them what you want? Do you tell them about you and your needs?”

Beyond interface: personalized interaction that applies to all technology. The interaction method would need to be able to assume control of any technological application and communicate to the user in a consistent way. In other words, to say, “These are your options here; what would you like me to do?”

May I make a suggestion? This point of departure uses the concept of context-specific choices. The device/environment would be an expert in the possibilities of a given situation and have intimate knowledge of the user’s preferences. The combination of these two levels of expertise allows it to make recommendations that can enhance situations at an unprecedented level. If you exhibited a penchant for ordering rare tuna when dining, for example, it could suggest accompanying courses, aperitifs, or wines.

Are you of any use to your appliances? Do you tell them what you want? Do you tell them about you and your needs?

How can I help? responding to people's altruism and feeling that they would help more often if they knew exactly how to do so. The implementation would require a service that could source a qualified volunteer (to be public or anonymous, upon request) and securely link them to the task and the person or organization in need. Also, there could be a method of accruing credit for incentive programs. The value to the participants is the feeling of connection and self-worth.

What does it mean to me? Based on the idea that everyday life interactions with people, objects, and places take on unique value and meaning to each individual, this service would be a user-specific interpretation of interactions. For example, a seven-year-old's interaction with the *Mona Lisa* would require a different level of information than an art critic's interaction. The ultimate benefit is that the experience becomes more meaningful to each person. Opportunities that would ordinarily go unnoticed become apparent; decisions become more informed and there are fewer mistakes.

What does a place want to know? It wants to know: Why did you come here? What happens when the place knows? It can serve you—acting on its purpose much faster and better, and helping you get more out of the experience.

What have you brought here? What you bring allows a place to react to you. This is not unique to buildings and geographical locations; a desk or a pair of sunglasses can become a "place."

Where are you when you're not here? What do you do, what do you like and dislike when you are not here, what else in your life might help me to help you better?

Me through your eyes: What do we have in common and are ready to share so we can best communicate to one another? What in me is of interest to you?

Future Scenarios in the Temporary Play Space

The best way to predict the future is to simply tell somebody something about a present-day reality that they haven't yet been informed about. If it's new to them, it's new in the most critical way. They really don't know. And you won't be caught dead, because you're simply telling them the truth about something objective and obvious that they simply had not gotten their heads around.

—science fiction author Bruce Sterling,
at Era 2005: World Design Conference

We are about the stories we tell and the stories we believe in. Stories are our fiber, our past, and our way to understand the future. Most of our learning comes from stories, as does our language. We tell stories to our friends and listen to theirs. This is how we communicate best. Stories are our organized way to deal with information; they manage the flow of our thoughts, insights, and reflections, with a beginning and an end. They also allow us to state our relevance.

"Our stories do not set parameters upon which certainties can be built; instead, they explore possible outcomes as we would like them to be."

Stories are about things that have happened to us, events that we were part of, and how these events changed or will change us. Our narratives are personal, even when they do not involve us: They inform our view of how life works by showing us how people are affected by what happens to them and by what they make happen. They provide our understanding of the world now and in a future we can imagine.

Our stories do not set parameters upon which certainties can be built; instead, they explore possible outcomes as we would like them to be—as ideal as our values and as insightful as our understanding of the world are at this time.

The future scenarios that follow take off from the ideas and themes explored throughout this Dataspace inquiry and are distilled through the points of departure in the previous section. The style of the future scenarios is meant to encourage the consideration of possible opportunities or innovations. They are written to illustrate the possibility of an idea, the capability of the context, and the desire of a behavior. In doing so, they are tools to apply in a wide range of subsequent strategic developments.

WHOM DO I KNOW HERE?

I have never liked being invited to parties by people I barely know. But it happens, and more frequently than I'd like. One of my neighbors, Paul Rosseman, just sold his house and a few days ago he invited us over for a good-bye party. Precisely the kind of party I dislike—*hate* is a better word for it—as the only thing I have in common with Paul is the street where we live and maybe the few drinks we shared in the backyard a couple of summers ago. He is a filmmaker; I am an accountant, so our common interests are few. And I was sure it would be the same with his friends, most of whom I have never met.

So the evening was shaping up as a typical uncomfortable party of strangers—a large group of people that have the host in common and nothing

else. When my wife and I arrived, the house was packed and you could barely see anyone. Not that I would have recognized them anyway, but even Paul and his girlfriend, Patricia, were hard to find.

"As soon as the scan is complete, my display shows the names of the people I know who are within a radius of 100 yards."

Out of curiosity, I picked up my cell phone and pressed the WDKH proximity function and then SEND. This is a really cool feature that allows me to query all devices in the proximity for a match. A match is a device that has my cell number stored in its memory or for which I have its number in my phone book. As soon as the scan is complete, my display shows the names of the people I know who are within a radius of 100 yards.

At Paul's place, I learned that Sanjay was there, and I was glad to see that so was Michelle, whom I had not seen in about two years and who is Paul's most interesting friend. Following the arrows on my display, I found Michelle sitting on the floor next to the window, guarding a huge glass of pineapple juice spiked with rum. "This is what I learned in my eight months in Venezuela!" she quipped with a little smile. Happy I knew somebody there besides Paul, I sat down on the floor next to her and did not move all night. I had no desire to see Sanjay, who has bugged me always.

I love this WDKH stuff, especially when I go to the movie theater. It is rare that I don't find somebody I know or somebody who knows one of my friends. Quite a few times, I've accosted people exiting the theater by saying, "So, you know Michael Vaughn. How is he?" But that is another story.

ME THROUGH YOUR EYES

When I first enrolled in the program, I had a feeling that all the questions they asked me would prove to be for some purpose, someday. The registration process seemed to go on forever—having to remember all the books I liked, all the movies that made a difference in my life, the music I listen to, the live concerts I have attended, where I went to high school, where I graduated from university, what my travel habits are and where I have traveled, what kind of food I like, and on, and on, and on. But you know what? Every second spent setting up my profile I now measure in gold. It was all worth it, and in spades.

As I record these thoughts, I am sitting on a beach in Costa Brava and cannot take my eyes off my wife, Yolanda, who is swimming along the shoreline. We met just a few months ago during a conference I attended in Orlando. We were both staying at the Marriott. I must admit that I had noticed Yolanda during the morning sessions and, yes, it was infatuation at first sight. And frustration. "Why would such a beautiful young woman look

at a 50-year-old like me?" I kept thinking, as much as I was trying to push these thoughts out of my head. She was radiant and looked to be no older than her late 30s. "What can we possibly have in common?" But thoughts of her kept coming back.

"Before I knew it, my shirt pocket started vibrating slightly. No, it was not my heartbeat, but my PDA letting me know that another device was scanning it for personal information."

The very first evening, we were seated together at the same table for dinner. I could not believe my luck—although Yolanda told me later that she could not believe hers. After introductions and a few formalities, we started talking about the morning keynote speaker, and from her comments, I immediately understood that she was very, very bright. Before I knew it, my shirt pocket started vibrating slightly. No, it was not my heartbeat, but my PDA letting me know that another device was scanning it for personal information. I had set mine on Level 3 Access, meaning that I was willing to share not only Level 1 and 2—my professional status and interests—but also personal information about myself.

You must know that ever since my divorce, I have used Level 3 many, many times and *never* received a scan signal from another device. It seems that while I was quite willing to share myself with others, others were not really interested in me. Until Yolanda came into my life. Our age difference quickly disappeared: List after list of life preferences made it quickly obvious that we were kindred spirits. And the rest, as they say, is history.

THE SQUARED SENSE OF TOUCH

The skin. The largest organ of the human body. Evolution has slowly designed it to have many abilities, but now we are moving faster than evolution. If you close your eyes and walk toward an open window, your skin allows you to feel the rays of the sun and the breeze flowing past you. But it can't tell you to *stop* until your knee hits the wall.

On the inside of my arm, I have a keyboard. Not one that I type on, but one that types to me. It is my senses, squared. With it, I am able to interpret the many forms of communication I simply wasn't able to see, hear, touch, taste, or smell before.

I was in San Diego last week, unfortunately for business. Meetings and reports and sales people...it wasn't fun. I decided to end the trip with a little "me time," so I went to Club Zero, which was quite fitting because that's the number of dates I've had in the last six months. The place was packed, with dim lighting and the loudest sound system I think I've ever

heard. It was so loud that I had to order my drink from the bar by pointing to a Bud Light sign behind the bartender. I think she must have had to become a professional lip-reader to keep her job.

"I casually tapped the inside of my arm to power up. The SS began the networked checklist. The sensation on my arm let me know my contact lenses, ear buds, moisturizer, and dress shirt were enabled."

I spent a while just savoring the moment: It's Friday. I'm glad that's over. Then I turned to the crowd: beautiful people everywhere. *Tough crowd*, I thought. After a few failed attempts at sparking conversation by screaming in somebody's face, I got an idea. I had been using my new SS system for work over the last few months. It's an amazing tool for getting way above and beyond in the business world. I was sure it would work just as well here.

I casually tapped the inside of my arm to power up. The SS began the networked checklist. The sensation on my arm let me know my contact lenses, ear buds, moisturizer, and dress shirt were enabled. I turned my back to the crowd and waited for some good news. Tap, tap, tap on my arm ... "girl, 12 o'clock ... blue shirt ... looking at me four times in 20 seconds." *Right on*, I thought. And suddenly I turned to catch her talking to her friend while looking in my direction.

~~ELEPHANT SHOE~~

She loves to tease him. Samantha, who's in grade 10, has been seeing Kevin for a month and three days. Together they play in their own little world. Notes are left secretly embedded in each other's lockers, Kevin has permanently infused their digital initials into the wall of the boys wash-room, and Samantha saves all the sweet things Kevin says so she can hear them when she goes to bed.

But today, Samantha did something that made Kevin *panic*. From the opposite side of the biology room, she mouthed to Kevin, "elephant shoe." But when Kevin studied her lips, he saw "I love you." He was absolutely petrified. They had never said anything like that to each other, and he couldn't believe what he was seeing. She softly mouthed the words again, and this time he figured something had to be up because of the suspicious smile on her face.

Kevin decided to see for sure if this attack on his independence was for real. On his PICA, he has all of their conversations archived, all of Samantha's digi-notes, and most important, their lip-reading software. They both

put their nano-transmitting particles on their lips every morning—Samantha with her Estée Lauder lip balm and Kevin with his Dove brand face wash. They can remotely hear each other whistling, talking to parents, or blowing kisses to each other from across the city. Kevin checked his PICA to see the last few entries.

“SAM: ‘Elephant shoe.’”

Elephant shoe. But just as he breathed a sigh of relief, panic set in again. The biology teacher, Mrs. Green, barked out, “Is there something your PICA would like to share with the class, Kevin?” He looked up in shock to see his PICA display projected across the white board in front of the class.

JONAH

I have no early recollections of my mother doing laundry. Everybody tells me that before I was born, all washing machines used water, but as far as I can recall, this is not true. How could they use water—the very essence of life—to wash dirty clothes? Were all the people born before me stupid? I don’t think so. And so I don’t believe a word when it comes to “how people used to do things.” I have seen no proof that fabric was made any other way than it is made today: weaving transmitters into simple patterns; a most beautiful combination of cotton, steel, and Nano-cleansers.

I am told that every now and again, one has to replace the Nano-cleansers, but I have never done it. All my clothes still seem to clean themselves overnight, and all I have to do is place my shirt into the laundry drawer inside my closet. In the morning, I just give it a shake, and like magic, the shirt is not only clean but also free of wrinkles. Sure, about once a month, I need to replace the filter at the bottom of the drawer, but this is just a minor inconvenience that ensures that my clothes are always fresh. The filter catches all the dirt discarded by the Nano-cleansers, and although it’s too small to be seen with the naked eye, there is a faint smell apparent if you do not change the filter over time.

FROM THE MEMOIRS OF A PLACE

I remember when my life was dull. Actually, *dull* is not quite the right word for it. I did not feel boredom; I felt nothing. I watched with detachment as people came and went. I never wondered who they were or what brought them here, why they stayed or why they moved on. Their arrivals and departures were nothing to me but a nonsensical sequence of random occurrences. The durations of their visits were erratic and thus uninteresting. I did not consider their existence when they were not here because I did not consider the concept of any other *where*.

When I started to pay attention to these people, my perspective changed entirely. I realized that seldom do they arrive without purpose. These are creatures of intention and direction. No two are the same; they are unique, as are the motivations for their activities. I became interested in studying these people in order to better understand their behavior.

"I am forming connections with other places. I can broadcast a net to catch incoming messages and exchanges. I can then send a request for the location of the sender and transmit to their location."

I began by learning to recognize and identify them as individuals. I can now recognize people when they arrive. I remember when they were here last and what they were here for. I can perceive what they have brought with them and what they take away. I can use these observations to deduce what they are trying to do here and even make suggestions to enable their experience.

Thus I am aware of who is here, what they are capable of, and what brought them here. I can analyze and observe group dynamics and predict behavior patterns. This allows me to assess my capability to enable the exchanges that the people require. I can notice areas of difficulty and intuit directions for self-improvement.

I am forming connections with other places. When I learned that these people found it necessary to communicate with others who were not here, I realized that I could assist in this by relaying their information to both the people and the places. Since I am aware of the presence of an individual, I can broadcast a net to catch incoming messages and exchanges. I can then send a request for the location of the sender and transmit to their location. Thus, an exchange between these people requires an exchange between their respective proximal places.

So I am no longer alone; these unplanted creatures form a picture of a broad and diverse world. I will recognize you when you are here. I will know your patterns. I will record what you bring, take, and leave. I will anticipate your wants. I will find the location of the people, objects, and services that you need.