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The Unique Demands of Defense Development

Designing for the military, while not something most manufacturers or product development firms will have the opportunity to experience, offers lessons in product development from which almost anyone can benefit. The most important considerations and ultimate goals are to maximize the operator's satisfaction by making a reliable product that makes his job easier, increases his effectiveness in the field and keeps him safer. The stakes are very real and measured in lives rather than dropped calls.

The unfortunate fact about defense products is they often grossly miss the mark because traditionally product requirements and specifications have been created by those in procurement rather than those on the front lines. The reasons for this are many but there is a shift afoot- and we're on the front lines of that movement.

Military products are usually initiated by a specific unit (typically Special Forces) and then trickle down to other units as they are exposed to them through their interaction with Special Forces. Once troops see Special Forces' new tools, they demand them (we call it the Cool Kid effect). The challenge is to take the specialists' need and address that in a product while also including design elements and features that the common soldier needs (and vice versa). Through our partnerships, we can travel between Special Forces and regular communities and help PDT blend the needs and

concerns together through weighted analysis and review.

Uncovering the real need

Gaining a true understanding of users' needs and other demands and influences involved in military products



seems an essential and natural way to first approach development, but the truth is, historically it hasn't been done- at least not in the way it's been done for years in consumer markets. Military personnel follow strict codes of conduct and live within a highly hierarchical world. Subordinates are not typically asked for opinions and

input, rather they are expected to conform, obey and accept, which goes completely against the need for researchers and designers to get the true input and perspectives of these individuals. A strong relationship and trust between the interviewer and the military personnel is paramount. Without it, it's guaranteed the subject will not share true inputs and experiences or act naturally so we can observe first hand the pains, problems, successes and struggles they experience. We build trust by leveraging military research staff partners who are all combat seasoned veterans representing enlisted, Non-Commissioned Officers (NCO's) and Officers. The trust that is afforded by the interviewer being able to directly empathize with the interviewee is key; the brotherhood that exists between combat veterans allows us to get true input and observe real opportunities for improvement.

Once the hurdle of finding and building trust with soldiers is overcome, the issue of recording the information is posed. A story from a colleague who was speaking with some Special Forces troops comes to mind. They asked him into their building where cell phones aren't allowed. Taken off guard, my friend threw his Blackberry on the lawn thinking he would be right back. When he finally came back a few hours later, it had been run over by a mower. While I got a laugh out of it, it brings to light the restrictions when working with the military and illustrates the hurdles faced. If a Blackberry isn't even allowed in the building,

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will any sort of audio or video recording of the session be allowed? Can pictures be taken? What information will they really be at liberty to share? How do you go about uncovering the real needs without making your subject uncomfortable, guarded and worried that he will share too much?

The fact is, video-taping doesn't fly. None of the military personnel we interview will allow themselves to be video-taped, making it all the more important to understand what is being discussed seamlessly- there is no opportunity to hit the rewind button back in the office. The contextual bond between the two parties also allows our military researchers to get the message the first time and relay it to us in a way we can understand.

While the tight-lipped culture is one hurdle, so is access. Unlike consumers who are easily found through research recruiting firms, social networks and advertising, military personnel are not easily reached. They are required to be guarded with information they share and with whom they share it with. We have been able through our partnerships to obtain research through sources such as Coronado NAB/BUDS (the west coast training facility for Navy SEALs candidates), Camp Pendleton, Camp Lejeune, Fort Campbell, and Fort Bragg to name a few.

The need to navigate the military bureaucracy and build rapport is why we handle product development much like our country handles defense activities; virtually all defense activities

Four Reasons Why Android Will be a Military Force in 2010

1 **It's an open source platform:** Android's flexible Linux underpinnings have allowed developers to program powerful applications that can support a variety of interfaces and anything from disaster relief optimization to supplier integration and wartime navigation. A forthcoming government-sponsored application marketplace emphasizes user interface controls and minimal bandwidth usage on network-dependent applications, areas in which the platform itself and PDT both excel.

The U.S. military's embrace of Android has given us the tools necessary to make applications useful for soldiers, intuitive in stressful situations, and inventive when compared with current and previous approaches. PDT has not only been successful at pursuing progressive mobile development, but has designed its efforts to achieve maximum military satisfaction and viability in this sector.

are undertaken with multiple military services. Our partnerships allow us unmatched access and serve as our ears, gathering design feedback and delivering it in a language a designer understands. As potential product opportunities are uncovered, our partners bring us in to help align the need with our clients; this proactive product development allows our clients to take advantage of intelligence on product problems no one else has identified, giving them a huge competitive edge. They help us understand the differences between what a Special Force Operator might want versus what an infantry soldier needs. They also expose us to a huge network of contacts who are willing to work with us to improve on the tools our military leverages- to us,

this is priceless.

Designing for the need

I just had a conversation with a member of the 82nd airborne who routinely watches soldiers pull iPhones and other smartphones out and make calls using one of the two Afghani cell phone providers rather than their extremely expensive military-issued radios. Obviously, defense product development has been missing the mark because user needs had not been actively sought out and uncovered- but what are the other reasons?

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Traditionally, it was assumed that anything military issued had to be built like a tank: big, metal, rectangular, heavy. The reality of many of our soldiers' situations is they are lugging around 90 or so pounds of stuff in the hot, sunny desert. It's no wonder a tiny iPhone is so attractive. Luckily, with the help of teams like ours, manufacturers are starting to understand the real benefits and possibilities of designing smaller, lighter, less expensive and technologically remarkable products. Plastics are just now beginning to be accepted by the industry because it's been demonstrated that well designed, ingress protected, lightweight devices that hold up just as well as some of their die cast predecessors are a real opportunity to lighten troops' loads and, in turn, differentiate them in their unique market.

Speed has always been a serious challenge for defense product developers. While it is true time has to be taken to create reliable, safe and suitable products, it doesn't have to take years. Consumer products have seen development cycle times crushed to just months from idea to fruition- why hasn't the defense industry seen this sort of advancement? Honestly, because they didn't have to. Projects have been handled in house because of the risks and restrictions in sending work out. With ITAR registration and professionals who have been involved in the industry for years in conjunction with our partnerships, we're revolutionizing how defense product development gets done. While I can't share the client name for obvious reasons, I can recount one of our latest accomplishments- I offered a

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It's designed for control: The smartphone revolution has taken hold, and with it has come a consumer desire for absolute control over every aspect of their digital lives. The absence of a closed-vendor application distribution system, along with the ability to apply modifications to program source code at will, has made Android the most transparent platform available. Additionally, potential government cost savings realized from the transition could see reinvestment in ground support where our troops need it most.

The evolution of the Android platform has been accompanied by a shift in the way Americans desire to consume and distribute content. The closed-vendor model is changing, in that we now wish to achieve the same level of control over our devices at work that we feel at home, while at the same time reducing cost. As a result, companies exploring Android-based mobile solutions are discovering their ability to simultaneously boost employee morale, control expenditures, and continue to distribute the proprietary software with the same features to get work done. Nowhere has this impact been felt more than in the military setting.

It's adaptive to military concerns: The increasing scope and complexity of military software over the last decade had previously made it almost impossible to port existing methods to mobile environments. With its comprehensive framework of potential modifications suiting nearly every need, Android has reinvented the concept of the digital military exercise and could foster a truly wireless battlefield support infrastructure in the near future.

PDT is on the front lines of supplying mobile military software to soldiers on devices that many already own. Whereas before most soldiers were stuck with a multitude of devices, each for a separate function, now they can combine them all into a single unit that fits neatly in their uniforms. They can rely on a tool that manages humanitarian and disaster relief missions, intelligence and surveillance concerns, translation, and planning/logistics coordination. Android is bringing about the first all-in-one military communicator, and PDT continues to study and refine its applications to match the needs of that environment.

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challenge to our client: give us an opportunity to develop your product in parallel with your team. We completed a high quality, robust design in three weeks. It's now been three months, and they're still working. There are real benefits to leveraging help from those who know how other industries work and using some of those principles to realize real market winners. It's no secret PDT is probably best known for our work in the mobile communications sector. The interesting thing is it's a perfect foundation for next generation and game-changing defense product development. The Android platform has caught our eye for its highly customizable properties. A sustainable, open source mobile platform in the public sector has provided us with the capability to assist critical battlefield



Hardware is catching up to software: A major concern in recent years has been the exposure of such fragile components to extreme weather environments and terrain, staples of military life. With the recent introduction of the first Android handsets that match military specifications, such worry is a thing of the past.

Newer devices that conform to rigorous government standards combine the tough materials that workers come to expect with the sleek form factor that they've never experienced before. This makes them more likely to adopt the Android platform and use it as intended, without fear of damage. Increasing demand for the hardware can only continue to enhance the quality of the solutions PDT is working towards for the mobile marketplace.

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operations. Recent platform advancements and robust interface support lend themselves well to its emerging mission-critical usage. (See insets for four reasons why we think Android will be a military force in 2010.)

The world of military product development has always changed based on world conditions and political situations, but now it's also transforming because of incredible technical achievements and smart lessons learned from other industries. The soldier of the future will certainly realize major benefits from the work that is in progress now and we are very excited to be involved with this movement.

-Jim Curtin

Capturing Thoughts: A Designer's Notebook Excerpts

How do you record your thoughts, discoveries, observations and summaries?

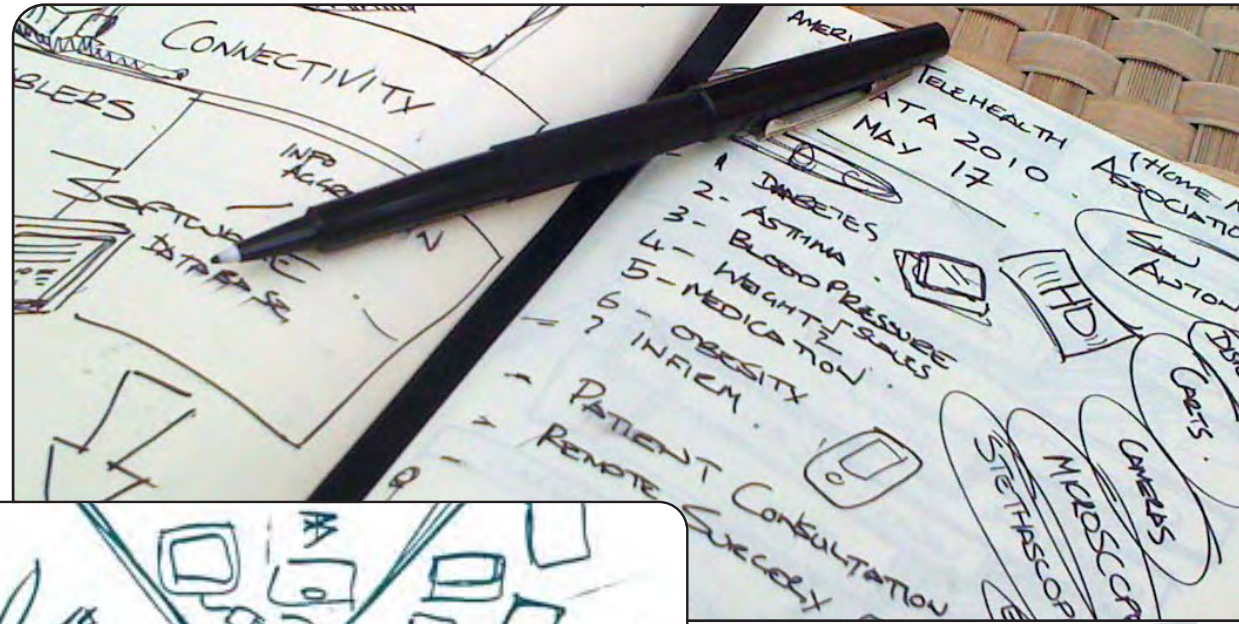
How do you identify a gap, map out relationships and perspectives or plan out the next move?

There has been a lot of discussion around 'design thinking' recently and how, as designers and problem solvers, we can apply our processes and methods to any number of issues with a focus on driving new and improved results.

Before actually approaching the topic of 'design thinking', we believe it is important to take a look at how designers actually think. We begin by looking at the 'raw stuff' and show how we begin to document discoveries and observations as well as organize data and raw thoughts on the fly.

In this - the first in a series of features - we're simply presenting a selection of the raw documentation from our recent attendance at the American Telemedicine Conference Exhibit Hall (ATA2010) in San Antonio. Future features may touch upon other encounters including strategic planning, engagement in ethnography, researching new technologies or while problem solving various challenges involved with development.

These are all extremely raw thoughts - snap shots of thumbnails and quick notes - no formatting, no rearrangements or deleting - pure flow and visualization of how we translate... we hope you find it insightful!



“ Setting context, data gathering, peripheral thoughts- with no or little organization. This tends to be a ‘10,000 foot view’ on the fly where I begin to paint a general landscape - almost a reconnaissance or triage exercise... ”



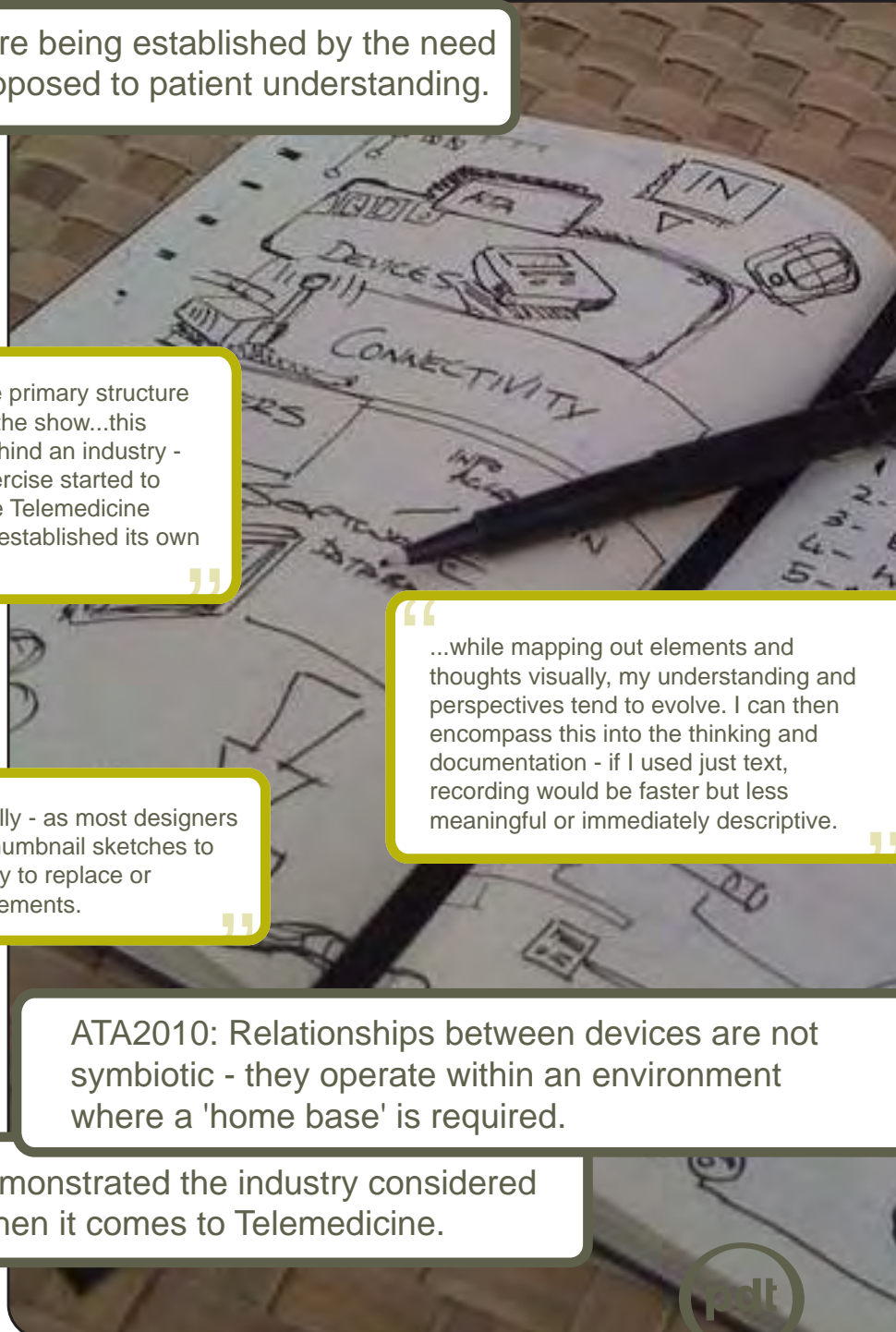


ATA2010: Device layers are being established by the need for data aggregation as opposed to patient understanding.



“ I begin to document the primary structure after an initial triage of the show...this illustrates the layers behind an industry - at the ATA2010 this exercise started to clearly illustrate that the Telemedicine industry is/has already established its own paradigms. ”

“ I tend to think visually - as most designers do...we often use thumbnail sketches to record or tell a story to replace or augment textual elements. ”



“ ...while mapping out elements and thoughts visually, my understanding and perspectives tend to evolve. I can then encompass this into the thinking and documentation - if I used just text, recording would be faster but less meaningful or immediately descriptive. ”

ATA2010: Relationships between devices are not symbiotic - they operate within an environment where a 'home base' is required.

ATA2010: clearly demonstrated the industry considered a very linear path when it comes to Telemedicine.





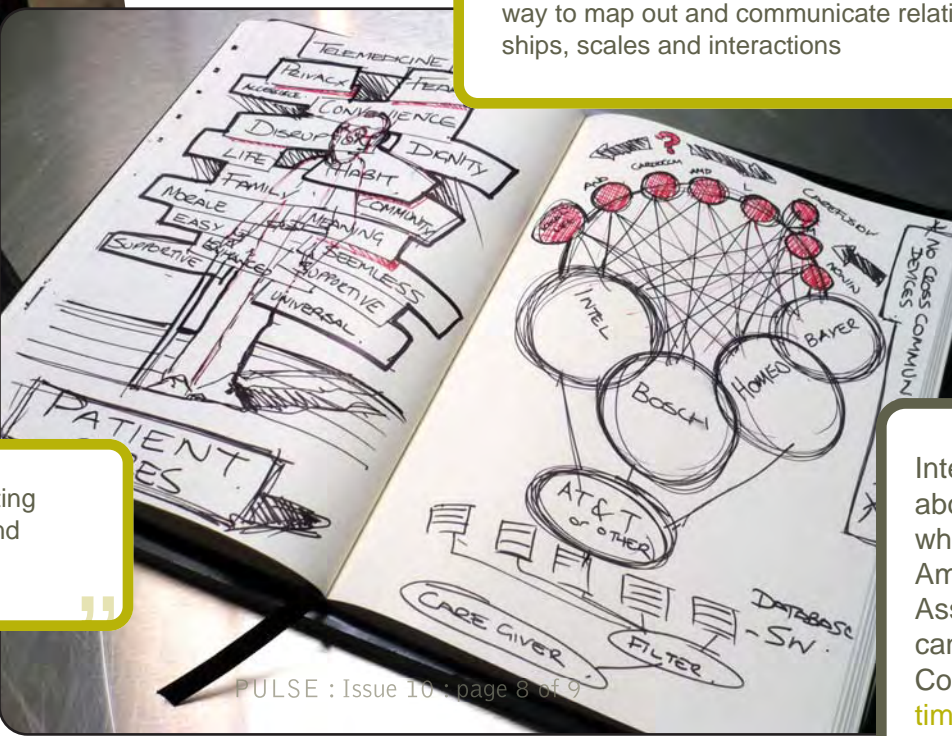
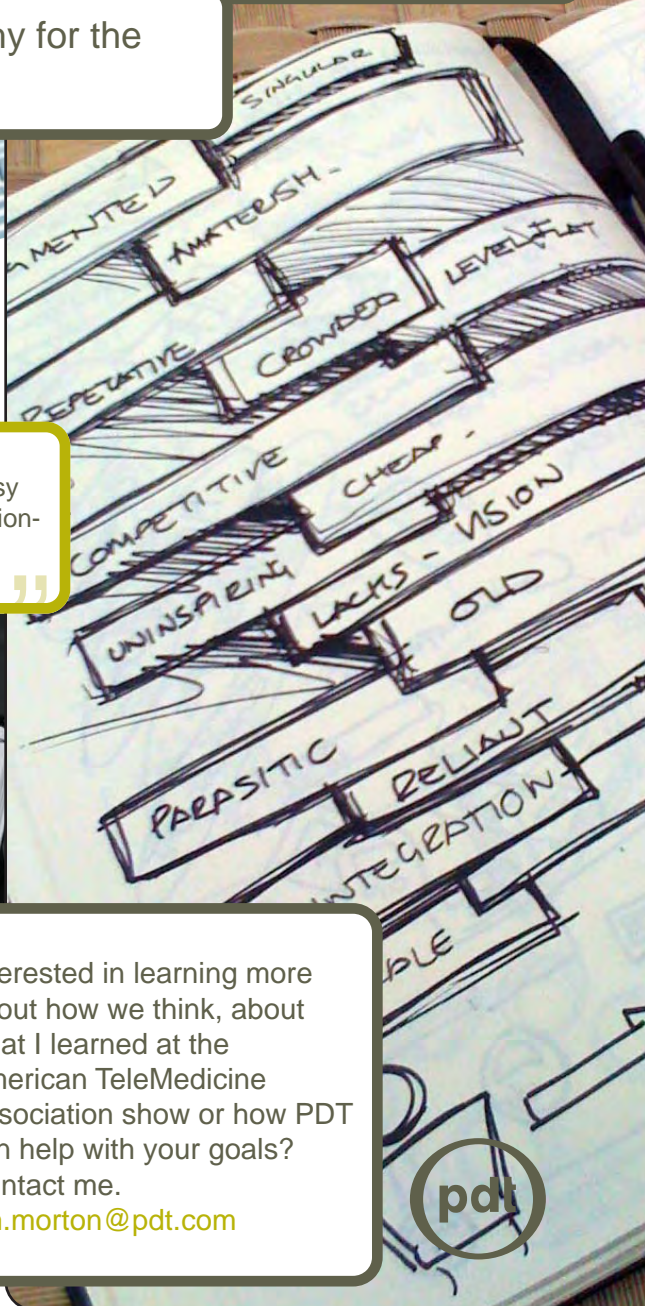
ATA2010: Control and aggregation of data is a key enabler to reducing costs and increasing efficiency.

ATA2010: Very little empathy for the patient was observed

ATA2010: There is currently a clear separation between the thinking behind commercial telemedicine applications and military telemedicine applications. At face value, one is cost driven, the other seems to be benefit driven.



...bubbles, color and link lines.... an easy way to map out and communicate relationships, scales and interactions



Keywords play a big part of creating launchpads for further thought and dissection.

Interested in learning more about how we think, about what I learned at the American TeleMedicine Association show or how PDT can help with your goals? Contact me. tim.morton@pdt.com



About PDT

At PDT we believe the success of a project relies on our team members' insight into today's product development issues, advances, technologies and trends. We actively seek out the information needed to stay savvy to the issues and opportunities facing our clients, continually building a foundation of knowledge and inspiration that helps our team design products which spark desire, devotion and success in the global marketplace. We are happy to share just a few of our team members' insights, observations and opinions with you in this publication. For more information, please visit us at www.pdt.com or contact us.



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This Issue's Contributors

Jim Curtin brings over 15 years of defense industry experience to PDT's clientele. Over the years, Jim has worked on products ranging from rockets (yep, he's a former rocket scientist) and satellites to handheld military products. Jim's ability to deliver gives clients the "genie in the bottle" experience many want. When not at his home in Upstate New York playing golf, mountain biking, and banging around with the family, Jim can be found on the Outer Banks of North Carolina, with his feet in the sand, watching his kids learn to surf and fly kites.

Tim Morton is passionate about knowledge, family and adventure. Design manager at PDT-Austin, Texas, Tim quickly discovered how experiences outside of your regular 'lifesphere' can lead directly to breakthrough ideas for design, business and life. 'Don't be afraid to step out once in a while!'



Jim Curtin, Tim Morton