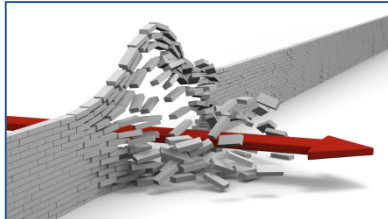


SMC 2016

WORKSHOP ON BRAIN-MACHINE INTERFACES

IEEE INTERNATIONAL CONFERENCE ON
SYSTEMS, MAN, AND CYBERNETICS
BUDAPEST, OCTOBER 9-12



Founders Keynote Session

Monday, October 10, 3:30 PM-6:30 PM,

Room: Main Lecture Hall

Chair: Bernt Wahl Co-Chair: Michael H. Smith

“From Research to Scientific Breakthroughs to Improving the Lives of People: Six Unique Paths”

How do scientific breakthrough technologies go from a simple idea, to a few research prototypes costing millions, to products produced in the millions costing consumers/users only hundreds? Can we replace confining multi-ton, multi-million dollar fMRI machines with helmets weighing less than the brains they are imaging? Can we stream brain activity from billions of people and feed it in meaningful and selectively tailored ways to others, enabling global collaboration in an augmented environment?

What does it take to create, invent, and develop revolutionary new technologies that most cannot even envision? Some factors behind scientific breakthroughs are:

- A burning need and passion to see a longstanding problem solved.
- A wide breadth of expertise in the founder and colleagues, crossing multiple disciplines, are needed to devise a viable solution – often where others have failed.
- The tenacity to stick with a tortuous development path riddled with technical challenges, naysayers, lack of capital and other resources, regulatory issues, etc.
- The ability to quickly alter course along the way, as well as knowing when to stay the course despite overwhelming difficulties!
- Creativity - the gift of being able to visualize and analyze problems in unconventional ways. May be enhanced through exposure to external stimuli, such as art, listening to or playing music, hiking in nature and conversing and collaborating with others.
- A creative and dedicated team given the freedom to invent and take risks, tempered with guidance and encouragement from the founder.
- The ability to recognize when research results become sufficiently significant and mature to be developed into a product, and when they are not.

In this session, founders from companies collectively worth over \$5 billion will share tales of pathways from research ideas to scientific breakthroughs to consumer/user products - how they went from identifying and finding solutions to scientific problems, ascertaining/recognizing/discovering customers, and building their enterprise using various models including:

- Grow as you go – letting early customers finance development
- Partner(s), consortia and virtual corporations
- Leveraging existing technologies to develop new products
- Licensing out technologies to provide revenue
- Raising investment capital



From a founder who drastically reduced the cost of local networking by replacing coax with twisted pair, to another who is creating powerful virtual reality environments for consumers, to one who repurposed ICs developed for defense to enable a wearable brain imager that unexpectedly shows promise for functional brain imaging, to another founder who used the power of computing to visualize chaos mathematics, to another who created high level security for mobile platforms, and finally, to another who analyzes deep-structure conceptual and neural connections between multiple areas of knowledge and creativity; each story will be exciting and unique.

Six such scientific product genesis successes, some carefully planned, others serendipitous, but all with the potential to help mankind, are briefly presented by the founders who helped make them happen.



Reese Jones
 Founder: Farallon,
 Netopia, BMUG



Jack McCauley
 Co-founder: Oculus



Joel Libove
 Founder: Furaxa, Ultraview



Stephen Pieraldi
 Founder: Fail Pro, 2BClear



Stuart M. Dambrot
 Founder: Critical Thought



Bernt R. Wahl
 Founder: Factle, Datahunt,
 Dynamic Software