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The BCI X PRIZE: This Time It's Inner Space

Written By: Surfdaddy Orca

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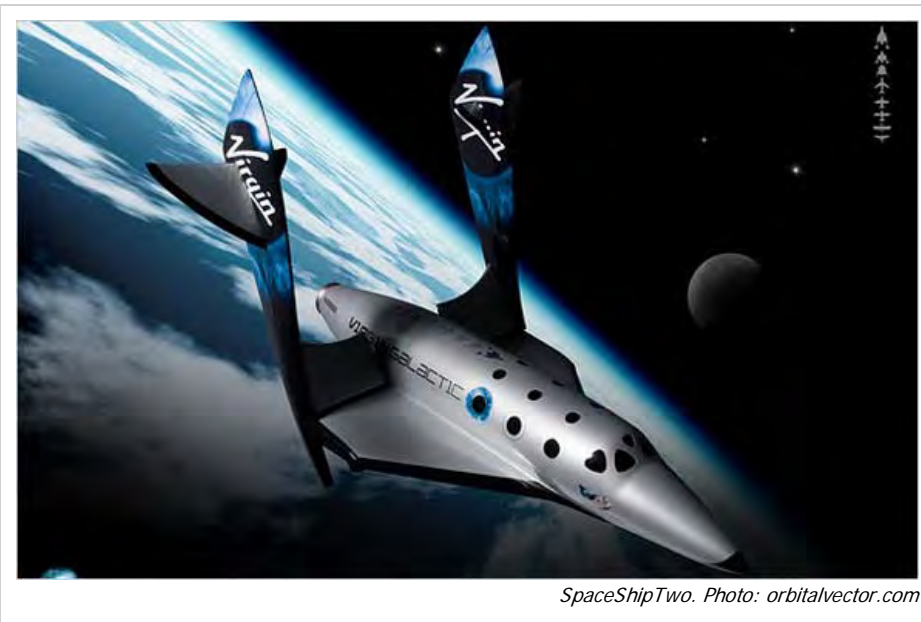*SpaceShipTwo. Photo: orbitalvector.com*

Virgin Galactic and Scaled Composites recently rolled out SpaceShipTwo, a commercial passenger

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DIY RFID

I'm sort of inured to pain by this point…

### Where's Your Flying Car (and Your Jetpack)?
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spaceship designed after the winning ship that captured the $10M Ansari X PRIZE for spaceflight in 2004. For those few of you who don't yet know, an X PRIZE is a $10 million+ award given to the first team to achieve a specific goal, set by the X PRIZE Foundation, which has the potential to benefit humanity.) Here's an animation of SpaceShipTwo:
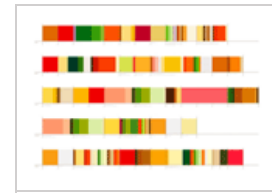
While SpaceShipOne carried only one pilot and two passengers, SpaceShipTwo can accommodate two pilots with seats for six paying passengers.

The latest X PRIZE, however, has nothing to do with the commercialization of outer space. The Brain-Computer Interface (BCI) X PRIZE will reward nothing less than a team that provides vision to the blind, new bodies to disabled people, and perhaps even a geographical "sixth sense" akin to a GPS iPhone app in the brain. Communicate by thought alone? Recent h+ articles have explored early research into this intriguing possibility (see Resources).

Peter Diamandis modeled his Ansari X PRIZE after the Orteig Prize that Charles Lindbergh won in 1927 by flying solo across the Atlantic Ocean. Inspired by President Kennedy's 1961 goal of putting a man on the moon by the end of the decade, Diamandis has, in turn, inspired pioneers and risk takers to take up the X PRIZE Challenge of flying humans into space — except this time it's inner space.

The Brain-Computer Interface X PRIZE will reward a team that provides vision to the blind, new bodies to disabled people...

Cyberkinetics), Dr. Gerwin Schalk (holds a brain computer interface patent), and Ed Boyden (MIT Synthetic Neurobiology Group). Diamandis' X PRIZE foundation is just starting to conduct interviews with experts, governments, and potential competitors. The foundation must court donors to make the $10 million+ prize a reality. Once funding is secured, companies and teams from around the world will compete – as Burt Rutan once did with financing from Microsoft co-founder Paul Allen to engineer SpaceShipOne. The intent is that one or more teams will engineer a BCI solution with "ideas that could be won with a decade."

During the MIT workshop, Peter Diamandis discussed the history of the X PRIZE. Ray Kurzweil followed with a 36-minute presentation called "Merging the Human Brain with Its Creations." Here's a video of the presentation:

SEE ALSO

Peter Diamandis Interview: From X Prize to Singularity U (http://hplusmagazine.com/articles/ai/x-prize-singularity-university)

By Thought Alone: Mind Over Keyboard (http://hplusmagazine.com/articles/neuro/thought-alone-mind-over-keyboard)

Mind Reading Goes Mainstream (http://www.hplusmagazine.com/articles/neuro/mind-reading-neural-decoding-goes-mainstream)

A recent workshop on the BCI X PRIZE – sponsored by Singularity University and held on the campus of MIT – brought together Peter Diamandis (Chairman of the X PRIZE Foundation), Ray Kurzweil, John Donoghue (Founder of

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tools/where%E2%80%99s-your-flying-car-and-your-jetpack)

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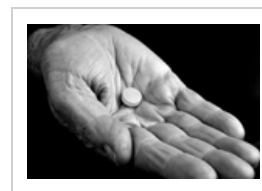
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Senators John McCain and Byron Dorgan have introduced legislation in Congress to bring dietary...

After presentations by Donoghue, Schalk, and Boyden, the 50 or so workshop attendees broke into discussion groups on Input/Output, Control, Sensory, and Learning. Software Engineer and Singularity University alumnus Rod Furlan, who attended the workshop, writes about some of the problems discussed at the break-out sessions — for example, communicating with a brain v. implanting memories or skills, non-invasive v. invasive input/output solutions, and the difficulties of using EEG to capture brain wave states. Furlan concludes, "While we still have significant technical and scientific hurdles ahead of us, given the current pace of progress it is reasonable to expect that robust, albeit limited, implanted BCI solutions will be widely available commercially within a 10 to 20 year time frame."

James Cameron's trippy vision of a part-alien, part-human body controlled by the thoughts of a marine in the film *Avatar* or William Gibson's cyber-cowboy Case plugging into the Matrix, as in *Neuromancer* — if truly feasible — are likely more than 10 years out. But given the incentive of a $10 million+ BCI X PRIZE, who knows what might be possible by 2020?

See Also

- **Peter Diamandis Interview: From X Prize to Singularity U** (http://hplusmagazine.com/articles/ai/x-prize-singularity-university)
- **By Thought Alone: Mind Over Keyboard** (http://hplusmagazine.com/articles/neuro/thought-alone-mind-over-keyboard)
- **Mind Reading Goes Mainstream** (http://www.hplusmagazine.com/articles/neuro/mind-reading-neural-decoding-goes-mainstream)

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http://www.huffingtonpost.com/peter-diamandis/commercial-spaceflight-fo_b_381988.html
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X PRIZE Foundation
http://www.xprize.org/x-prizes/overview (http://www.xprize.org/x-prizes/overview)

Igniting a Brain-Computer Interface Revolution - BCI X PRIZE
http://singularityhub.com/2010/01/21/igniting-a-brain-computer-interface-revolution-bci-x-prize/
(http://singularityhub.com/2010/01/21/igniting-a-brain-computer-interface-revolution-bci-x-prize/)

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BitCortex
http://www.bitcortex.com/2010/01/03/brain-computer-interfaces-inputoutput-vs-readwrite/
(http://www.bitcortex.com/2010/01/03/brain-computer-interfaces-inputoutput-vs-readwrite/)

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Your response, for the most part, is fair and thoughtful. The final sentence was unecessarily violent considering that my primary objection was to...

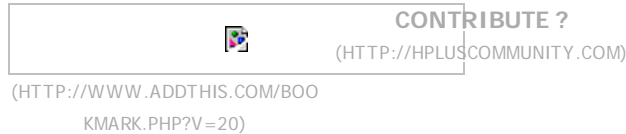**Article:** **Is Hyperlongevity Immoral?** (/editors-blog/hyperlongevity-immoral)

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Wow,

The first comment by "anonymous" is an amazingly cogent research program and insight. Moreover, it's the kind of program that could…

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Submitted by Laborious Cretin (not verified) on Sun, 02/07/2010 - 13:33.

First I would add **http://www.youtube.com/watch?v=4Cq35VbRpTY** (http://www.youtube.com/watch?v=4Cq35VbRpTY) consumer BCI arm tinkering. Next BCI telli presence robot **http://www.youtube.com/watch?v=TQ7EOpPNQyw** (http://www.youtube.com/watch?v=TQ7EOpPNQyw) . As to augmented reality it is happening many ways, from this type **http://www.youtube.com/watch?v=fSfKlCmYcLc** (http://www.youtube.com/watch?v=fSfKlCmYcLc) to other types like what I'm doing **http://www.youtube.com/watch?v=N28VFzW7TEs** (http://www.youtube.com/watch?v=N28VFzW7TEs) with controlling 4 comps at the same time trying for 5, oh and for the first time I can clog my 1000T home network without rendering or BOINC like programs. The 3 consumer BCI for me is like extra hands, or cognitive thought triggers, which is just more human output. I'm still limited to input ATM . The new output is way cool though, but I can only do 2 flight sims or 4 FPS before my brain gets taxed, and music or being tired will reduce that some times. A fit mind and body seem to be a advantage for the thought triggers. Oh and if you where wandering which BCI's, Epoc, OCZ NIA, neurosky, all 3 layer and overlap with unique triggers, and all under $700 US Pic of the overlap **http://s869.photobucket.com/albums/ab251/LaboriousCretin/?action=view&cu...** (http://s869.photobucket.com/albums/ab251/LaboriousCretin/?action=view&current=Picture037.jpg&newest=1) . Also personal A.I. agents will warp some of this to varying degrees for the individuals. If they come up with a contest/prize it better be good and forward looking, and not something already being done. Oh well just my 2 cent's P. Carpe Diem, let them know you've been there.

Submitted by Dr a none e moose (not verified) on Sun, 02/07/2010 - 10:14.

The most promising line of research for a direct brain machine interface is light. By geneitc manipulation you can alter nerves to become sensitive to light. Once you have a input/output pathway into the central nervous system you can create a interface through simple engineering.

BUT any direct manipulation of the human genome like this would require either a massive military/govermental project or a blackhat 'genehacker' project. Niether of whom would be eligible to claim the x-prize.

So wasted money no? This prize money would be better used in a more short term project in plant genetics or synthetic biology.

(Also please alter your captcha to be more drunk poster friendly)

Submitted by gary maloney (http://deepcomputedbciashortstory.blogspot.com/) **(not verified) on Sat, 02/06/2010 - 15:58.**

For both invasive and non invasive devices, and for actions of virtual avatars, robotic devices, or stimulated motion of paralyzed limbs and/or prosthetic apparatus moving limbs, imagined movements have the greatest potential for near future results. Success will be realized when imagined movement becomes a kind of actual movement.

Submitted by Jane (not verified) on Sat, 02/06/2010 - 12:08.

I want to volunteer to have a brain computer interface. I am an autodidact and have learned about computer interface since computers entered the mainstream. I looked around the MIT website and the XPrize website, but haven't seen any contact info for the BCI Xprize, and am anxious to get involved and follow the blogs.

Submitted by William J. Tyler (http://www.synsonix.com) **(not verified) on Thu, 02/04/2010 - 10:50.**

Within the scope of emerging neurotechnologies, a brain-computer interface X prize is by no mean over-reaching at this point. One only needs to examine the dense literature on emerging BCI technologies for controlling brain activity like optogenetics, ultrasonic neuromodulation, DBS electrodes, nanowires, carbon substrates for improved microelectrodes to recognize BCI's are about to change the world. This is further highlighted by the success of technologies for monitoring brain activity, supporting radical developments in microelectronics and optics, and the many medical device neural interfaces already in use (i.e. DBS electrodes or cochlear implants seem to be solid benchmarks for starting points). It is in fact true that traditional government funding typically cannot cover the massive costs needed or provide for the raw intellectual power required to drive novel technologies forward that will be needed for accomplishing a feat like developing true BCIs. It requires a much larger effort. The core technologies and concepts needing improvement do in fact already exist. An X prize just puts a little extra incentive on the mission of many. I think it is an excellent idea and certainly look forward to contributing our efforts to helping drive the development of BCIs forward.

Submitted by Alex.Norton (not verified) on Wed, 02/03/2010 - 18:55.

There have been huge leaps in EEG interfacing in the last couple of years to the point where advanced articulation of robots such as ASIMO have been performed purely by the power of thought. To say that thought interfaces are not an existing technology that can be improved is very ill-informed.

I cannot wait to see the results of this competition. I think that whoever wins is going to change the world in a very interesting way.

Submitted by Gregory.Bloom (http://babyzoink.com) **(not verified) on Wed, 02/03/2010 - 10:55.**

I think they're over-reaching on this one. The space X prize called for improving an existing technology into a form that could be supported outside a government-funded framework.

With this brain-interface X prize, they're asking for fundamental and complicated research to be performed successfully and then distilled into practice. A much bigger leap.

They should let skeptics like myself help out. We could increase the size of the prize now in exchange for being awarded the prize if nobody successfully claims it by a deadline. I'd bet on that.

Your name:

Anonymous

E-mail:

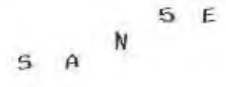The content of this field is kept private and will not be shown publicly.

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