

Asteroid Mining, Citizen Science, and Crowdsourcing



Michelle Cadieux, MBA Community Safety Programs

bit.ly/1qq2K ABSTRACT PRESENTATION AND 5 pages of links.

★ Business case on social media, gaming

Developing a game that actually has access to the space vehicles that are doing the mining can be one way to deal with the huge time lag in getting the material back for processing. It ...should stimulate the physicists to think about what they are doing and its value to the market. How does their research add value to corporation which is funding their research? - Aidan Schaeffer

LiftPort.com

Lunar Space Elevator for mining

<http://vimeo.com/liftportal> for Space Elevator Demo



Asked for \$8000, received \$110,000

<https://www.kickstarter.com/projects/michaellaine/space-elevator-science-climb-to-the-sky-a-tethered>

<http://facebook.com/liftportal>

youtube, twitter, goodreads, and many other sites.

Science: NASA NAIC Grant, Marshall Eubanks, Asteroid Initiatives LLC and Charles Radley AIAA Fellow, Greg Samways, Petroleum

Geologist and a cast of thousands

★ Morning Jokes

What does the solar system use to hold up it's pants?

- An asteroid belt

Why did the astronomer order a double hamburger?

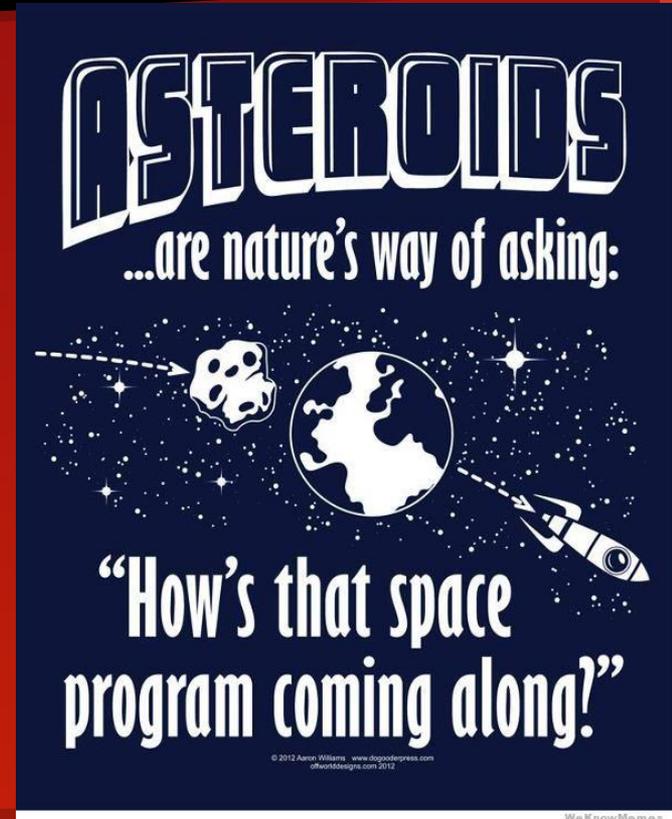
- He wanted a meteor burger!

What did the astronaut say after eating his first meal on the moon?

- "The food was good, but the place lacked atmosphere."

Read more at http://www.top10-best.com/a/top_10_best_astronomy_jokes.html#K8SXZmKyQAAz2TGm.99

See camilla-corona-sdo.blogspot.com Camilla, Space Chicken for fun STEM education



★ Speaker Bio

Michelle Cadieux, MBA.

Michelle has been involved with Leeward Space Foundation, LiftPort Space Elevator as the VP, Space.StartupWeekend.org coach, Silicon Valley Space Center advisor, and more. She has worked in satellites with Lockheed, SolSpike.com rocket powered boot with SolarSystemExpress.com and Pong Sat conference with SVSC.org, LunarCubes.com, and many other events. She's a supporter of XPrize Team Jurban Mars Rover, and the board and webmaster with Team Prometheus.org. MBA, CNCP Certified Nano and Cleantech Practitioner, Hazmat instructor, and NASA Systems Engineer trained from Saylor.

She is the executive director of Community Safety Programs, a MN disaster prep nonprofit

<http://www.linkedin.com/in/creativecommunications>

<http://www.linkedin.com/in/communitysafetyprograms>

★ Asteroid Mining for Fun and Profit

.....orbit every 23 months and is a half-kilometer by one kilometer in size. A spacecraft could travel to it in around eight months. Peter Diamandis estimates its total worth at between \$300 billion and \$5 trillion

s John Logsdon of the GWU Institute of Space Policy said after the "Selling Space" debate in March, "It's not as sexy as platinum but I think the most valuable resource in space is water."

<http://www.newrepublic.com/article/117815/space-mining-will-not-solve-earths-conflict-over-natural-resources>

Note that the asteroidal materials we are talking about are, simply, water, nickel-iron metal, hydrocarbons, and silicate rock. Purified, and made available in low earth orbit, they will be worth something like \$500,000 per ton, by virtue of having avoided terrestrial gravity's "launch cost levy."

These are values up there with optical glass, doped semiconductors, specialty isotopes for research or medicine, diamonds, some pharmaceuticals, illicit drugs. On the mining scene, the only metal which has ever been so valuable was radium, which in the 1920's reached the fabulous value of \$200,000 per gram!

Platinum Group Metals (which are present in metallic and silicate asteroids, as proved by the "ground truth" of meteorite finds) have a value presently in the order of \$1,000 per ounce or \$30 per gram. Vastly expanded use in catalysts and for fuel cells will enhance their value, and PGM recovery from asteroid impact sites on the Moon is the basis of Dennis Wingo's book, *Moonrush*.

<http://www.nss.org/settlement/asteroids/key.html>

Oxygen will be one of the first element to be refined, and is a large component of regolith.

★ ROI Return on Investment

400% ROI - Estimates, Dana Andrews U of WA

http://nia-cms.nianet.org/RASCAL/2010-Winning-Papers/University-of-Washington_2012-RASC-AL.aspx

Asterank.com

ranks them by value, cost effectiveness.

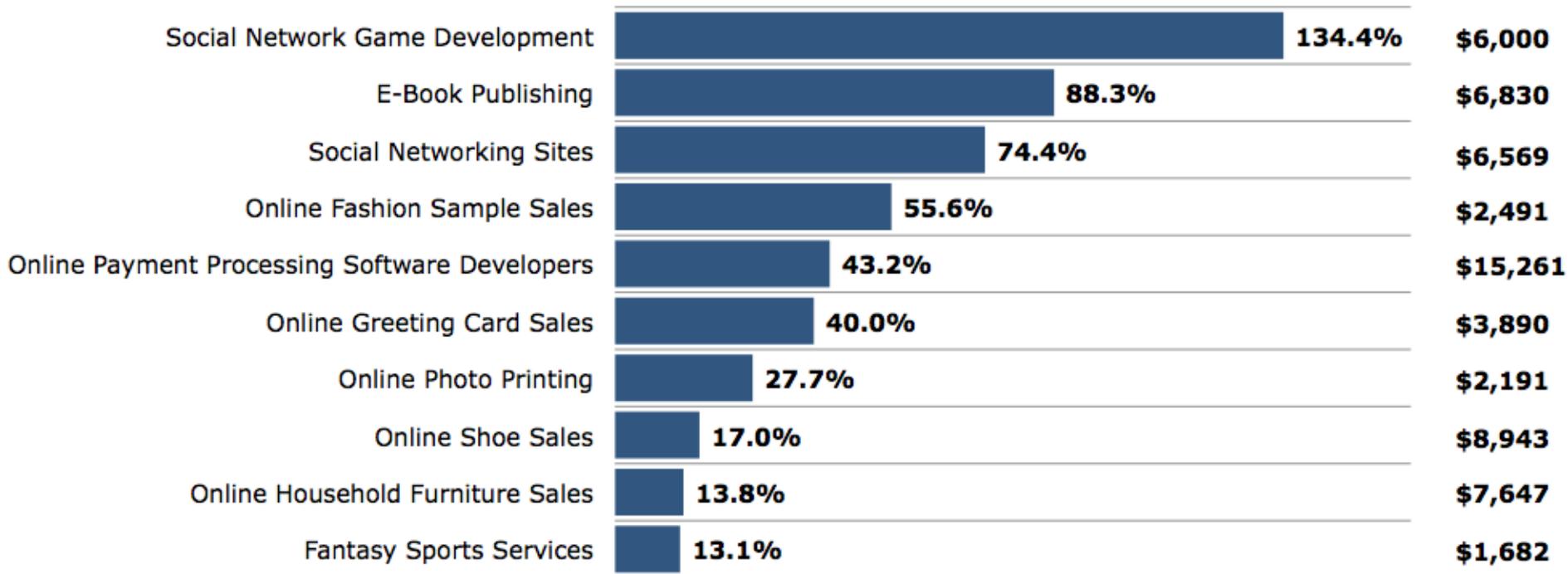
http://www.asterank.com/?_ga=1.17786096.874473588.1399643717

✦ Meteorite Taxonomy

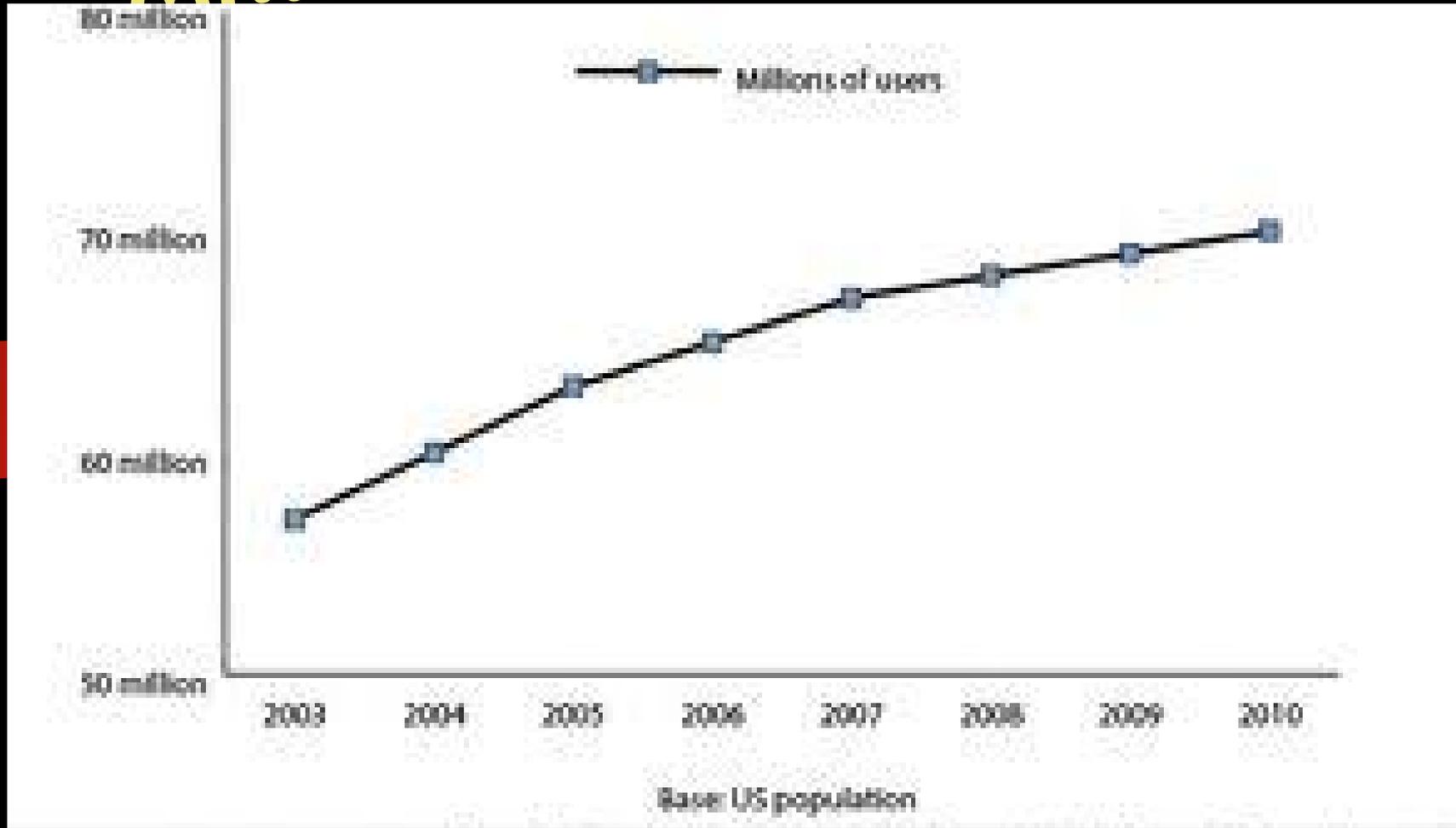
Top 10 Fastest-Growing US Industries

by annualized revenue growth / 2013 Revenue (\$m)

2003-2013



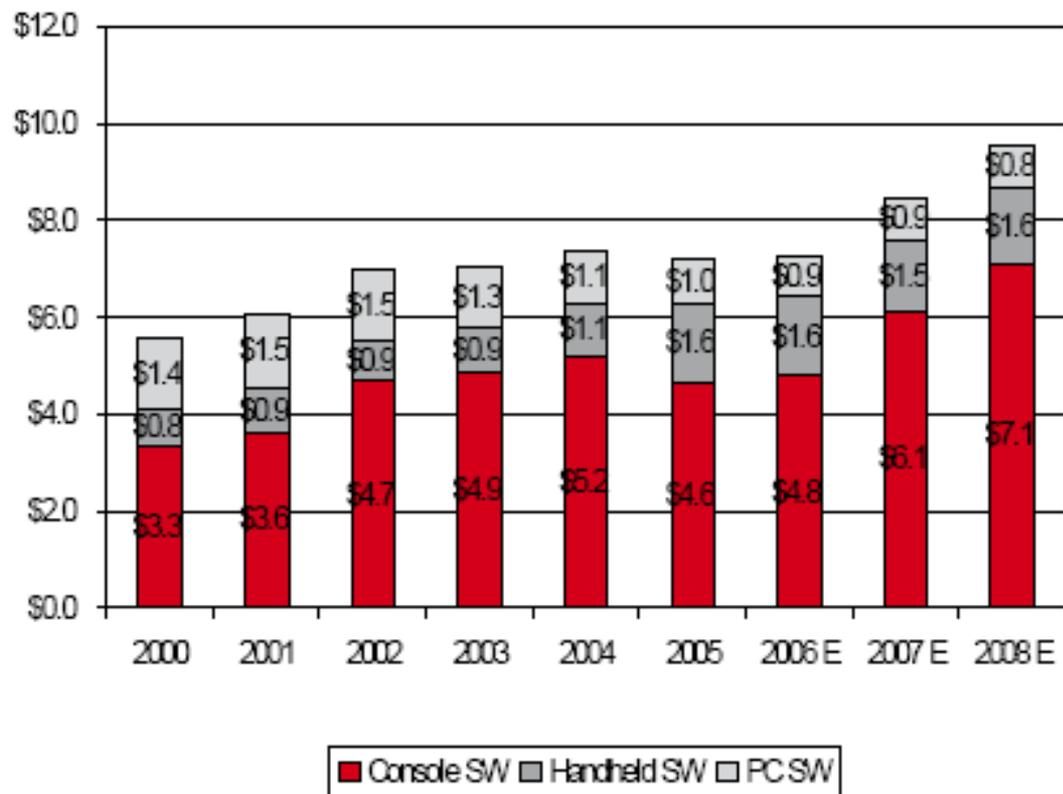
Millions of Gamers



Video Game Software Forecast

U.S. Retail Sales

(\$ billions)



<http://www.wikinvest.com/image/Gamessoftwaresales.png>

★ CITIZEN SCIENCE

TeamPrometheus.org

[NASA spaceappschallenge.org](http://NASA.spaceappschallenge.org)

CreateTheFuture.com design contest

PongSat by SolarsystemExpress.com and SVSC.prg

LunarCubes.com

SpaceGambit.org

★ CROWDFUNDING

Kickstarters have been successful for space projects. ie: NanoSat, Planetary Resources Arkyd (most successful \$1.5 m) space 'selfies'

<http://www.theverge.com/2013/5/29/4376258/planetary-resources-launches-kickstarter-for-arkyd-telescope> ,

Space Concordia \$15k

Coming: PongSat,

See spacefinancegroup.com for consulting.

★ CONTESTS

ASTEROID GRAND CHALLENGE

1st Asteroid Data Hunter, \$35,000

Tracker:

<http://www.topcoder.com/asteroids/tracker/>

<http://www.mining.com/nasa-is-offering-35000-in-awards-to-asteroid-hunters-93563/>

★ GRANTS

http://www.nasa.gov/offices/education/programs/national/spacegrant/home/Space_Grant_Consortium_Websites.html#.U50i7CiiXd4

Offices by state.

Travel Grants by 6/13:

<http://impact.colorado.edu/lungradcon/2014/>

★ EVENTS: spacecalendar.com

JUNE 10-11 Colorado

<http://isruinfo.com> space resources roundtable and <http://csmospace.com/events/srr/agenda.html>, <http://twitter.com/creativecomm>

JULY 3-5 Minneapolis <http://www.convergence-con.org/at-the-con/schedule/> Women in STEM, Build a Better Ironman, DIY Electronics

JULY 20 Silicon Valley

Lunar and Small Bodies Graduate Conference <http://sservi.nasa.gov/NESF2014/lunargrad.html> Grads and Early Post-Doc

JULY 21-23 Silicon Valley

NASA Exploration Science Forum <http://sservi.nasa.gov/NESF2014/>

JULY 24 <https://newspace.spacefrontier.org>

JULY 23-25 Silicon Valley <http://space.startupweekend.com>

<http://www.eventbrite.com/e/startup-weekend-space-tickets-11847796077?aff=eac2>

★ SHOP

<http://amazon.com/shops/everydayspacer>
supports

<http://teamprometheus.org/shop> (DIY kits for balloon experiments, supports Austin TX model rocket team and partners)

and <http://www.solarsystemexpress.com/store.html> GDB board, more efficient than the Arduino

★ FOR MORE INFO:

<http://facebook.com/creativecommunications>
for calls for speakers, hackathons, entries.

<http://twitter.com/creativecomm> space news

Coming soon: (abstract, 5 pages finance,
gaming and resource links.)

[https://docs.google.](https://docs.google.com/document/d/1RN0DJu53fQkrHGAmnPKl)

[com/document/d/1RN0DJu53fQkrHGAmnPKl](https://docs.google.com/document/d/1RN0DJu53fQkrHGAmnPKl)