

Diabologic: Launch Plus 50

by Frank Dolinar

This October marks the anniversary of a singular event that changed the technological, political, and educational landscape for all of us, and has brought a continuous stream of change and innovation into our lives, much of it in the form of what are known as “disruptive” technologies – new technologies or innovations that replace the older technologies that are bulwarks of the status quo.

On October 4th, 1957, the Soviet Union surprised and frightened much of the world with the launch of Sputnik I, Earth’s first artificial satellite, an event whose repercussions are still being felt five decades later.

October 4th 2007 is the 50th anniversary of that event. The surprise is gone, the fear has dissipated, and the Soviet Union is history. Today, the launch of Sputnik is marks the beginning of the first stage of the space age and is generally celebrated around the world.

Thanks to Sputnik and the American reaction to it, all of the high school and college math, physics, and chemistry courses were completely re-written over the next few years, just in time to provide my generation with a dramatically improved science curriculum. (Biology courses would be written, too, but that would take another decade. Moreover, we are still learning the meaning of that revolution in the life sciences.)

I now pay an annual homage to Sputnik, and the impacts it has visited upon our lives.

Because of the technologies brought to us by the space program and its spin-offs, we have microelectronics, computers we can carry in a briefcase, instant worldwide communications, weather satellites, GPS navigation satellites, spy satellites (*but you didn’t hear that from me*), space-based astronomy, exploratory probes to every planet in the solar system and beyond, not to mention ceramic cookware that we can safely take directly from the freezer to a hot stovetop, new medical technology for joint replacement, the ability to download entire films to our laptops on demand, and the ubiquitous Star Trek communicator (aka cell phone).

Would you have guessed that any of that was possible when Sputnik was launched? Few did.

Over the last twelve months, we’ve seen the following selection of items – among many more – reported about space-related research and exploration, demonstrating the continuing development of and world-wide interest in the development of space as man’s next frontier.

- Computerworld published an article a couple of days ago (Sep 24, 2007) titled “**Happy Birthday, Sputnik! (Thanks for the Internet)**” in which it discusses how the launch of Sputnik caused the creation of the DOD’s Advanced Research Projects Agency and catalyzed the invention (still ongoing) of an astonishing array of information technology innovations.
http://computerworld.com/action/article.do?command=viewArticleBasic&articleId=9036482&intsrc=hm_ts_head

Most people don’t realize that the interlocking requirements for getting a functional satellite into orbit have driven the development of smaller, faster, more energy efficient, and more flexible electronics for anything that goes into orbit. The continuing development of microelectronics – now verging on becoming nanoelectronics – has driven the development of the electronic infrastructure that we take for granted and have provided the computers that, in 2007, we all have at work and at home.

- An MIT team has designed a new sleek, skintight spacesuit, far lighter than suits used by astronauts today. The new BioSuit promises greater mobility than traditional suits and uses “mechanical counter pressure” in the form of skin tight layers wrapped around the body. <http://web.mit.edu/newsoffice/2007/biosuit-0716.html>

- Landing humans on Mars will be difficult primarily because of the thin atmosphere. Universe Today published an article on the problem in its July 19, 2007 issue. The best idea so far appears to be an inflatable torus called a hypercone that would act as an aerodynamic anchor to slow the vehicle once it reaches the Martian atmosphere (July 2007) <http://www.universetoday.com/2007/07/17/the-mars-landing-approach-getting-large-payloads-to-the-surface-of-the-red-planet/>
- Our favorite little “robots-that-could”, the Martian explorers Spirit and Opportunity were temporarily shut down due to a large Martian dust storm, but they survived and have continued their slow but thorough exploration of the Martian surface (July 2007). <http://www.jpl.nasa.gov/news/news.cfm?release=2007-080> On Sep 12, Opportunity took its first foray into Victoria crater. <http://www.jpl.nasa.gov/news/news.cfm?release=2007-99b>
- Northrop Grumman has purchased Burt Rutan’s Scaled Composites, which developed and flew the X-Prize winning SpaceShipOne three years ago. Scaled is currently working with Virgin Galactic to develop the next generation SpaceShipTwo, which would carry two pilots and six passengers on a sub-orbital flight. (July 2007) <http://www.jpl.nasa.gov/news/news.cfm?release=2007-080>
- The Mars Phoenix lander was launched Aug 4, 2007. It will land in the far northern latitudes to investigate subsurface ice for chemical precursors of life. http://www.nasa.gov/mission_pages/phoenix/main/index.html
- The Cassini spacecraft returned a number of excellent high resolution photos of Saturn’s moon Iapetus about two weeks ago <http://www.jpl.nasa.gov/news/news.cfm?release=release=2007-099a>
- California physicist, Dr. Young Bae, has demonstrated a prototype Photonic Laser Thruster that provides enough thrust that – scaled up – it could be used to send a spacecraft to Mars in less than a week. <http://dialog.newsedge.com/newsedge.asp?site=2006121916143901110346&block=folderstory&briefs=off&action=XMLStoryResult&smd=true&storyid=p0906509.2rw&rtcrdata=off>
- Google, in conjunction with the X-Prize Foundation, is offering \$30 million to the first privately funded organization to land a robotic rover on the moon. Details are on the website at <http://www.googlelunarprize.org/>
- Japan launched its first lunar probe, bringing it into competition with India, China, the US, and Google. <http://www.reuters.com/article/scienceNews/idUST11303420070914?feedType=RSS&feedName=scienceN>

We’re off and running in a new, expanded, and multifaceted push to get planet Earth’s inhabitants exploring space again. The players are governments, private industry, and anyone with an idea of how to get people and equipment off the ground and into space. The sphere of exploration is pretty small at this point, but it is growing. This time I don’t think it will stop. Fifty years ago, we couldn’t imagine where Sputnik might lead. Today there are dozens of new technologies coming out of the labs that have application to the new, second stage, space program.

I’m sure we’re in for a future full of surprises kicked off by today’s new tech.