



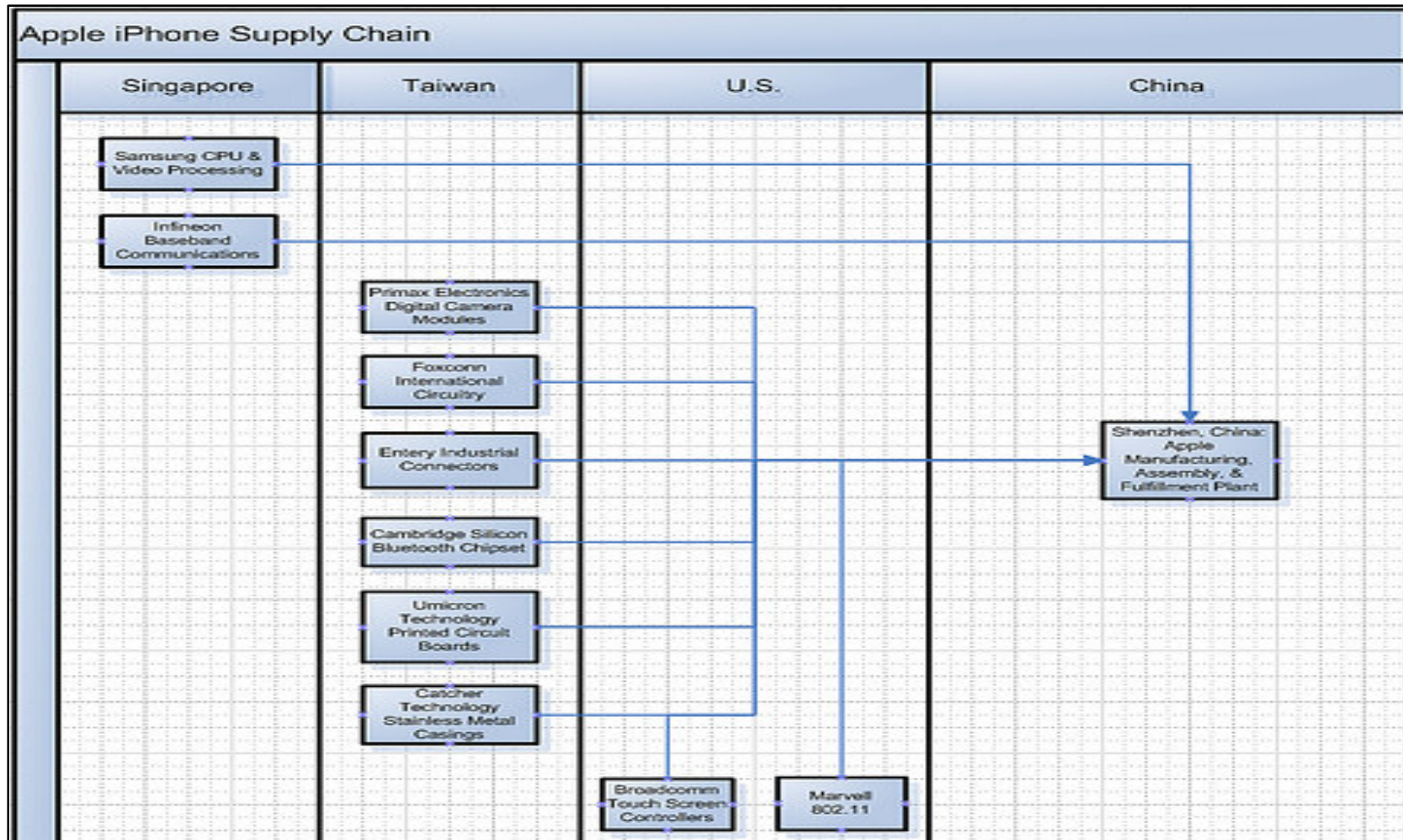
Technology Transfer and International Security: Why is Today Different?

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Four Disruptive Factors to Consider

- Global Supply Chains
- Open Source Software
- Open Innovation Models
- Social Networks

The iPhone Supply Chain: Designed in U.S., Made in Asia



How is NASA developing new ideas?: Open Source collaboration via Second Life

The image is a screenshot of a Wired News article. At the top, there is a navigation bar with the 'WIRED' logo, a search box, and links for 'HOME', 'SUBSCRIBE', 'SECTIONS', 'BLOGS', and 'READ MAGAZINE'. A blue banner at the top right contains the text 'It's your money. Invest more of it in you.' and 'TALK TO CHUCK' with a speech bubble icon. Below the navigation bar, the article title 'Young Scientists Design Open-Source Program at NASA' is displayed in a large font. The author's name 'Aaron Rowe' and the date '04.09.07' are listed below the title. To the left of the main text is a photograph of a woman in a virtual world, wearing a yellow hard hat and a black t-shirt with a NASA logo. The main text describes the 'CosmosCode' project, which aims to recruit volunteers to write code for live space missions. It mentions that the program was launched under NASA's CoLab outreach program and that members of the group have been meeting in Second Life. A quote from the organizers states: "CosmosCode is ... allowing NASA scientists to begin a software project in the public domain, leveraging the true value of open-source software by creating an active community of volunteers," said Cowan-Sharp, a NASA contractor. Below the main text, there is a section titled 'CosmosCode is indicative of a larger shift at NASA toward openness and transparency -- things for which complex and bureaucratic government labs are not known. The software project is part of CoLab, an effort to invite the public to help NASA scientists with various engineering problems. The space agency is also digging into its files from previous missions and releasing code that until now remained behind closed doors. Together, these projects are creating a sort of SourceForge for space.' To the right of the article, there are several interactive elements: 'Email Article', 'Print', 'Full Page', and 'Comments' links. Below these is a large advertisement for the Chevy Volt, featuring the text 'CHEVY VOLT WILL GO UP TO 40 MILES BEFORE USING ANY GAS AT ALL. FULLY CHARGED 2010' and a 'DISCOVER HOW' button. At the bottom right, there is a 'Most Popular' and 'Most Commented' section with a list of four items: 1. Top 10 Wired.com Reader Portrait Photos, Decided by You; 2. To Smell, Perchance to Dream; 3. Top 10 Wired Portrait Photos, Decided by Us; 4. Free, Legal and Online: Why Hulu Is the New Way to Watch TV.

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SCIENCE : SPACE

Young Scientists Design Open-Source Program at NASA

Aaron Rowe 04.09.07



Jessy Cowan-Sharp and Robert Schingler set up CosmosCode to help NASA develop open-source software for space exploration.


NASA scientists plan to announce a new open-source project this month called CosmosCode -- it's aimed at recruiting volunteers to write code for live space missions, Wired News has learned.

The program was launched quietly last year under NASA's CoLab entrepreneur outreach program, created by Robert Schingler, 28, and Jessy Cowan-Sharp, 25, of NASA's Ames Research Center in Mountain View, California. Members of the [CosmosCode](#) group have been meeting in *Second Life* and will open the program to the public in the coming weeks, organizers said.

"CosmosCode is ... allowing NASA scientists to begin a software project in the public domain, leveraging the true value of open-source software by creating an active community of volunteers," said Cowan-Sharp, a NASA contractor.

CosmosCode is indicative of a larger shift at NASA toward openness and transparency -- things for which complex and bureaucratic government labs are not known. The software project is part of [CoLab](#), an effort to invite the public to help NASA scientists with various engineering problems. The space agency is also digging into its files from previous missions and releasing code that until now remained behind closed doors. Together, these projects are creating a sort of [SourceForge](#) for space.

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What is P&G's New Model for Innovation?: Connect and Develop (C&D) Globally



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P&G's New Innovation Model

3/20/2006

For decades, Procter & Gamble fueled its consumer products engine from R&D inside its own walls. But as its markets have matured, P&G has directed its search outward. An excerpt from *Harvard Business Review*.

by Larry Huston and Nabil Sakkab

Editor's note: Procter & Gamble has operated one of the greatest research and development operations in corporate history. But as the company grew to a \$70 billion enterprise, the global innovation model it devised in the 1980s was not up to the task. CEO A. G. Lafley decided to broaden the horizon by looking at external sources for innovation. P&G's new strategy, connect and develop, uses technology and networks to seek out new ideas for future products. "Connect and develop will become the dominant innovation model in the twenty-first century," according to the authors, both P&G executives. "For most companies, the alternative invent-it-ourselves model is a sure path to diminishing returns."

This excerpt from a March 2006 Harvard Business Review article focuses on the company's assessment of its aging innovation process and the development of connect and develop.

From R&D to C&D

Most companies are still clinging to what we call the invention model, centered on a bricks-and-mortar R&D infrastructure and the idea that their innovation must principally reside within their own four walls. To be sure, these companies are increasingly trying to buttress their laboring R&D departments with acquisitions, alliances, licensing, and selective innovation outsourcing. And they're launching Skunk Works, improving collaboration between marketing and R&D, tightening go-to-market criteria, and strengthening product portfolio management.

But these are incremental changes, bandages on a broken model. Strong words, perhaps, but consider the facts: Most mature companies have to create organic growth of 4 percent to 6 percent year in, year out. How are they going to do it? For P&G, that's the equivalent of building a \$4 billion business this year alone. Not long ago, when companies were smaller and the world was less competitive, firms could rely on internal R&D to drive that kind of growth. For generations, in fact, P&G created most of its phenomenal growth by innovating from within—building global research facilities and hiring and holding on to the best talent in the world. That worked well when we were a \$25 billion company; today, we're an almost \$70 billion company.

By 2000, it was clear to us that our invent-it-ourselves model was not capable of sustaining high levels of top-line growth. The explosion of new technologies was putting ever more pressure on our innovation budgets. Our R&D productivity had leveled off, and our innovation success rate—the percentage of new products that met financial objectives—had stagnated at about 35 percent. Squeezed by nimble competitors, flattening sales, lackluster new launches, and a quarterly earnings miss, we lost more than half our market cap when our stock slid from \$118 to \$52 a share. Talk about a wake-up call.

The world's innovation landscape had changed, yet we hadn't changed our own innovation model since the late 1980s, when we moved from a centralized approach to a globally networked internal model—what Christopher Bartlett and Sumantra Ghoshal call the transnational model in *Managing Across Borders*.

What's the Next Step for Social Networks?

The Stanford Daily

News

WEDNESDAY October 10, 2007

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Stanford Faculty Club

Facebook to translate by early 2008

Social networking site will expand to overseas markets

October 10, 2007

By Devin Banerjee

With more than 45 million active members, social networking giant Facebook.com does not appear to be in need of new users. However, the Web site will soon be gathering even more members with its foreign language translation, part of what developers call “an ambitious overseas expansion.”

Facebook recently reached sixth place on the U.S. list of most trafficked Web sites — and third place on the global list. The current translation project could potentially bring the company its largest increase in users since its inception three and a half years ago.

“International growth is one of a few things that we are very focused on right now,” Facebook told the Financial Times in a recent article.

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So what's really behind these factors?

- Moore's Law: exponential processing power growth
- Metcalfe's Law: new networks, new sources of value
- Gilder's Law: exponential bandwidth growth
- Returning to Coase's Theory of the Firm (1937)
 - Transaction costs for collaboration are falling rapidly with the rise of Internet-based networks
 - The new small business is global and net-centric
 - ...as are today's non-state bad actors (terrorists/proliferators)
- How should governments respond?
 - “No matter who you are, most of the smartest people work for someone else.” -- Bill Joy, Sun Microsystems co-founder (1990)
 - Are more D.C.-based programs the answer?

What do we do about it?

A few thoughts

- Public-private info-sharing networks: Detect threats and ostracize private sector bad actors through public-private collaboration
 - “It takes networks to fight networks”, John Arquilla, Networks and Netwars: The Future of Terror, Crime, and Militancy
 - Local and private sector partnerships (e.g., NYPD’s Operation Nexus)
- Negative incentives: Internalize the security externalities of globalization
 - The potential role of insurance (Estimating Terrorism Risk, RAND, G. Woo)
 - Can strict liability complement regulatory approaches?
 - Increasing vigilance through institutional reputational risk awareness
- Positive incentives: Use prizes and fast lanes to recognize private sector excellence in technology transfer and international security best practices
 - Prize-based innovation models: Ansari X Prize, Netflix Prize
 - Fast lanes: Flyclear, Customs-Trade Partnership Against Terrorism (C-TPAT)