Five Internet Projects That Can Change the World

by

Lloyd S. Etheredge[1]

> "Most movements that are self-described as radical are highly urbanistic, or nationalistic, or oriented to obsolete class structures, or to central bureaucratic planning. The changes that we can see on the horizon are much more drastic than that. They reflect the ease with which communication can operate over global distances, and the abundance of bandwidth that can now be made available to all, without producing any exhaustion of the earth's resources . . . People who think about social change in traditional political terms cannot begin to imagine the changes that lie ahead. Conventional reformers cast their programs in terms of national policies, or in terms of laws and central planning. But in the end, what will shape the future is a creative potential that inheres in the new technologies [of freedom]."
>
> - Ithiel de Sola Pool (1983)

The emerging global Internet brings remarkably good news for the future of international cooperation. Today, as often has occurred in the past, institutions lag in taking advantage of new technologies. But if we recalibrate our imagination, there are new capabilities for linkups to solve urgent global issues that would have seemed a miracle, beyond imagining, to earlier generations of statesmen.

Today, the Internet reaches into almost every country and the world is in a five-year period that will witness the launch of hundreds of new communication satellites into earth orbits, more than in the previous forty years since Sputnik. Steadily improving technology and market forces are creating a new era of computer-based high-capacity networks, of increasingly global scale, user-initiated and user-controlled, interactive, low-cost, and widely

available. Five projects can accelerate the development of these technologies into new tools for global progress:

Project 1. A global CSPAN, using Internet technology.

The first project is a partial conversion of the former USIA's (one-way, outbound) global satellite capacity [Figure 1: http://www.voa.gov/worldnet/satmap.html] to create a Global Affairs Channel, using Internet technology. This channel, by analogy to our domestic CSPAN, would acquire discussions of international interest from many sites internationally and make them available on desktop PCs in all countries.

Few Americans are aware of the US government's global 24-hour/day commercial-quality television network, WorldNet, with 300 downlink dishes at all Embassies and Legations. Since the reduction in program budgets after the Cold War, there is abundant, unused capacity on these satellite links. Additional global satellite links (with unused capacity) support traditional shortwave broadcasts, which (today) are transmitted in digital form, via satellites, to regional radio transmitters.

The Internet technology for a basic Global Affairs Channel (audio plus slides or other images every 2-3 minutes) is well established. Yale Medical School, for example, has created a prototype for a regularly-scheduled Global Grand Rounds colloquium series (http://info.med.yale.edu/EIINet) that links weekly to several thousand health professionals in 140+ countries. More recently, such institutions as the Council on Foreign Relations (www.foreignrelations.org), the ARCO Forum at Harvard's Kennedy School of Government (www.ksg.harvard.edu), and the Carnegie Corporation's Commission on the Prevention of Deadly Conflict (www.ccpdc.org) have started to make their own lecture series and

WORLDNET TELEVISION

IBB VOA AFFILIATES

Match the satellite dish with the footprint in your area.

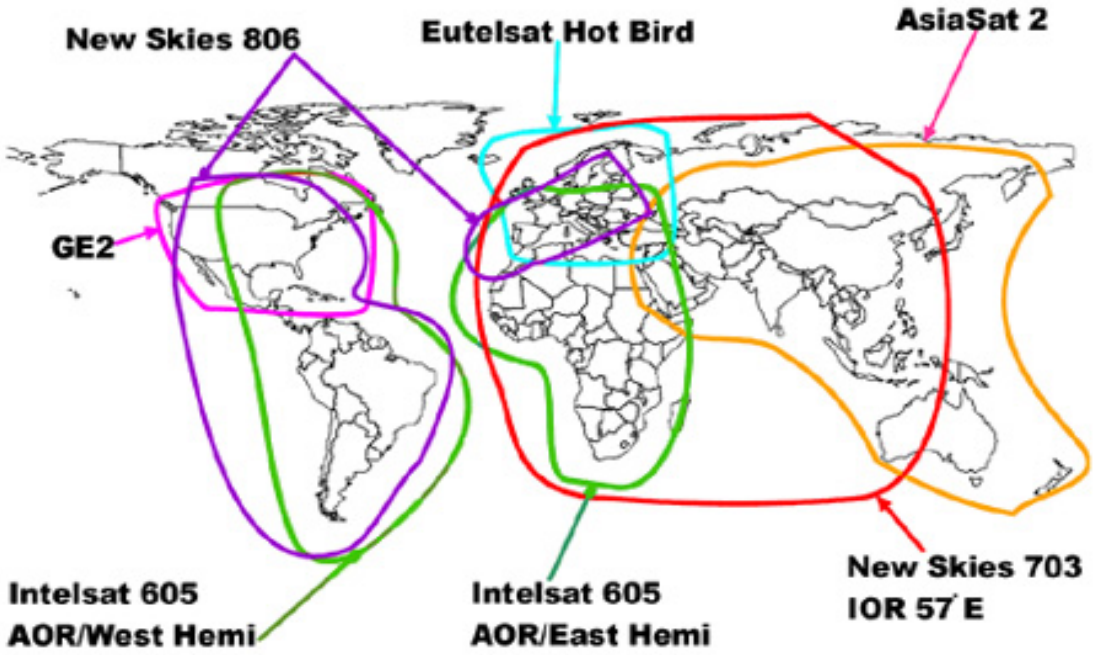
GE 2 Domestic Satellite

NEW Atlantic Ocean Intelsat 605

Eutelsat Hot Bird

Asiasat-2

Indian Ocean Intelsat 703



IBB/WORLDNET SATELLITE COVERAGE

If your not using a Web browser, try our Gopher Server for text information.

PLEASE VISIT OUR TECHNICAL SUPPORT PAGE FOR INFORMATION ON EUTELSAT 13 DIGITAL UPGRADE and new Digital Satellite service for Latin America.

AMERICANA
Arabic Programming

AFRICA JOURNAL
English/French Programming

CROSSROADS CAFE

ESTA NOCHE
Spanish/English Programming

FORO INTERAMERICANO
Political Talk - Spanish

GLOBAL EXCHANGE
Arabic/English Programming

HEARTLAND*USA
Americana

TALK TO AMERICA
Simulcast on VOA

WASHINGTON MONTHLY
Washington Political Talk with Ken Bode

NEW WASHINGTON WINDOW

WINDOW ON AMERICA
Ukrainian Programming

WORLDNET DIALOGUE

WORLDNET PRESENTS
English Programming

AT A GLANCE Guide

WORLDNET PROGRAM SCHEDULE

THE MESSAGE

conferences available, routinely, on-line. More advanced, continuous “streaming” audio and video already can be made available in developed countries to audiences of hundreds of thousands (e.g., www.broadcast.com - an application that is well-established for teenage music events.)

The Global Affairs Channel would send the right messages and build the right norms. Respect is important, in domestic and world politics, and it can convey enormous respect to have policy conferences in Beijing or Moscow available to a global audience. The Channel would build new relationships with the world's NGO community and signal a more interactive, democratic, and open diplomacy. The new pipeline for global Internet projects will encourage many institutions - who are beginning to think about using Internet technology - to recalibrate their imaginations about what is possible.

The Channel also will quickly become the most prominent forum to discuss opportunities for international cooperation and to link up government and NGO professionals, foundations, scientists, and others with an engaged interest to address urgent global issues. It will extend the potential reach of every speaker and NGO conference to the desktop of every Foreign Ministry in the world: By contrast - today - when the Rockefeller Foundation organizes a conference, the audience typically is limited to those who have the economic resources to attend physically, at a specific place and time. And there are the familiar anxieties - if a foundation report is issued - whether it will receive any visibility in the press and whether it will sell. And, even if it sells, there is the deeper anxiety about how many policy-influencing people will have the time to read the report, or even to skim the Executive Summary.

As it becomes the most prominent forum, the Global Affairs Channel will offer the creative potential to organize and support networks of individuals who seek progress and who

can make things happen. If the Channel helps to focus attention (and does not overwhelm its users) a great deal might be accomplished. A Tuesday brownbag in international public health, presenting high quality programming that nobody would miss, may achieve an audience of the government and NGO professionals, worldwide, who need to be linked (and to know that their counterparts are linked) to move agendas.

Obviously, the selection of program material is critical. In an earlier iteration, the governments of the world created the United Nations General Assembly as a forum for public discussion of humanity's agenda. We have inherited a venue for speeches conveying the official positions of governments that is almost universally ignored by every newspaper and, often, is an obligatory bore even for the members. Better would be a plan that uses a framework of common goals and bloc-grants global air time to a wide range of NGOs, universities, and think-tanks in all countries who adopt a policy-analysis, problem-solving approach.

Recently a proposal for a Global Affairs Channel was put forward by a Reinventing Diplomacy advisory group of 63 people (including former USIA and other government officials of both parties) meeting under the auspices of the Center for Strategic and International Studies. Their draft plan used a list of goals developed by the Department of State as part of the government's own reinvention process, including such goals as: security and peaceful settlement of disputes; human rights and democracy; economic growth with well-functioning global markets; health; effective assistance in humanitarian emergencies, and environmentally-sustainable development. The list is bipartisan and similar in spirit to the Universal Declaration of Human Rights. It would be a good beginning.

For example, the Human Rights Program at Harvard Law School might receive a bloc grant for seven hours in 1999-2000 for its distinguished lecture series in human rights - a

grant that would not involve any prior review of speakers or topics. The lecture series and conferences at the National Institutes of Health - a crossroads of the best and latest ideas in basic research, clinical applications, and areas of American international leadership (e.g., malaria and polio eradication, women's health, environmental health, emerging infectious diseases) could, overnight, enrich the curriculum at every medical school, research university, and four-year college in the world. There might be a special effort to build links with institutions in countries at a greater cultural distance: the National Committee for US-China Relations could, for example, receive a bloc grant to extend invitations to universities and international policy institutes in China.

Within the list of shared goals the Channel would seek, with journalistic integrity, to represent the views of actors sharing the commitment to progress and to support innovative projects intended for global audiences. Advisory boards would (like the allocation of grants for scientific research by the National Science Foundation) allocate these bloc grants for global transmission via a peer-reviewed process. Recipients would submit program material in standard form. In reviewing the architecture of the Channel that emerged from these bloc grants, a governing Board could, in the interests of fairness, add (but not censor) programming.

The Global Affairs Channel can be a desktop source of accurate information; a basis for understanding, productive dialogue, and policy development; a useful mechanism for feedback; and convey a decent respect to the opinions of all actors. It also will create a degree of due process and capacity for organizing: Since the end of the Cold War, it has become more difficult to develop shared agendas, especially for actors who are not the US government. The Global Affairs Channel provides a mechanism for presenting ideas for vision-created futures, policy analysis, and claims to an attentive global audience of potential allies.

It would be helpful for the US government to play a leading role. However, if leadership from the US government is unavailable, there are many global satellite networks with spare capacity to transmit the necessary compressed files to global audiences: Ted Turner's CNN (and new UN Foundation), the BBC, and MTV are among the current global television networks that could easily transmit compressed digital files for an Internet channel overnight; and there are many private data networks (e.g., SITA, which operates the world's airlines reservations network) with global capacity to resell.

The Internet technology for a Global Affairs Channel can improve upon our domestic CSPAN in three ways: 1.) Programming can be archived on local servers and retrieved at a user's convenience; 2.) It will be possible to skim presentations and use time efficiently; 3.) The presentations will be linked to Web sites that support discussions with presenters, retrieval of printed texts, linkups of viewers who discover shared interests, etc.

Programming in any language will be acceptable. Grantees will be encouraged to recognize that the spirit of the project is to make their views known as widely as possible, and they will be encouraged to make additional investments to this end (e.g., printed transcripts, summaries in different languages, supplementary files with translations.)

Project 2. Pre-empt the Information Scarcity Gap

The second project, building upon the Global Affairs Channel, is to pre-empt the information scarcity gap - and, thereby, avoid an unproductive use of traditional political categories that can require idealistic people to struggle (unnecessarily) for decades to solve the problem.

The international development community has already started to gear-up for a major effort to frame issues in this traditional way, and mobilize reformist concern about the alarming and growing gap between haves and have-nots in the information age.

However, this is unnecessary. As far as information is concerned, the partial conversion of the unused capacity on USIA's global satellite nets will make possible, overnight, a daily flood of digitized data that could almost-surely be greater than anybody could want.

To pre-empt the gap fully, two remaining pieces are needed. First, it would be helpful to provide a critical mass of 100,000 basic Internet terminals for health, science, and education - basic public access - for the poorest countries. And it would be useful to have a global purchasing cooperative for bandwidth, equipment, and software to assure that the lowest available prices for a rapid growth of Internet-based global applications are available to UDCs.

In principle, the acquisition of 100,000 terminals is easy - and perhaps especially so because the value of the American stock market has quadrupled over the past decade. The new Alcatel Internet screenphone [Fig. 2: http://www.alcatel.com/telecom/mbd/products/products/detailed/term/] is an example of technology that can probably be purchased, in quantities of 100,000, for $150 - $200 each. Alternatively, $15 million is within the roundoff error of the personal wealth of a rapidly-growing number of first-generation multi-billionaires of the new information age - people who might enjoy the chance to make a critical, catalytic investment and revolutionize the world of international health, economic development, and other human rights by contributing to a historical startup package that (already) includes the global satellite time and a core of high-quality programming.

Concerning a global purchasing cooperative for health, science, and education in UDCs:

ALCATEL

Web Touch™ Telecom

Products & Solutions
Web Touch
What Is It?
Who Is It For?
Where Can I Get One?
Business Opportunities
FAQ

The Hi-Speed Company

Affordable

Also, in these great colors

Alcatel introduces a way for the whole family to surf the Internet, check e-mail, make phone calls, check voice mail and even shop on the World Wide Web. . . all with an easy-to-use touchscreen interface.

The character of new technology makes cooperative purchasing an attractive option: The new low-earth-orbit (LEO) satellite nets are not in geosynchronous orbits, and they are often designed so that two satellites are overhead at any location on the planet. They also are designed to handle peak loads in the markets of the advanced countries of the Northern hemisphere. But the consequence is that, as these multibillion dollar investments rotate across the underdeveloped world, they generate no revenue. A rural health clinic or college library in the Third World may need to pay $3/minute - and there would be few sales. But an organization that could segment the nonprofit market, and make bulk purchases for nonprofit institutions in health, education, and science in UDCs, probably could make a deal.

A good model for this type of purchasing cooperative is TCI, a joint venture of the Ford, Carnegie, and Benton Foundations in the US at a time when there was monopoly pricing for long-distance telephone services. Today, after almost two decades, the cooperative has expanded to 5,000 nonprofit members, many with international programs. It is a good jumping-off point. And if the World Bank is prepared to be the 800-pound gorilla at the bargaining table on behalf, for example, of its 43 Global Knowledge Partners (organizations who expect to be major players in information technology and development), there could be extraordinary purchasing power leveraged for the poorest countries. And these Global Knowledge Partners could make the prices available to their projects and non-profit affiliates in the Third World: if the World Health Organization wished to sponsor them and serve as an agent, for example, every hospital, medical school, and clinic in the Third World could participate. As a start, it would be easy for the cooperative to obtain for everybody the types of lowest-available-price guarantees that very large purchasers in advanced industrial countries - like the US government, in its procurement contracts - require and receive.

The new global Internet technology also would permit a global purchasing cooperative to

operate efficiently via a Web site. Any company prepared to offer lowest available price guarantees and meet other conditions (e.g., international 800 numbers and multilingual support for technical assistance) could advertise today's price. Institutional purchasers (e.g., the World Bank, UNDP, etc.) could purchase directly, a model which Dell Computer has used to become the world's largest single supplier of computers. Small startup companies in UDCs, using older-generation chips and less-expensive operating systems (e.g., LINUX) for Internet terminals could find growing national or regional markets.

Purchasing cooperatives have widespread support across the ideological spectrum. They are a legitimate policy tool for the World Bank and other development-oriented organizations with a role to spur an evolution from oligopoly or monopoly in the Third World toward competition and marginal cost pricing. In an era of diminishing funds for foreign aid, leadership by major institutions in the developed world to unite their purchasing power to leverage benefits for institutions in the Third World should create widespread excitement and appreciation.

Project 3. Create large-scale collaboration systems

After the Global Affairs Channel is underway, the global satellite nets of the former USIA also can support the development of additional Internet resources for large-scale global collaboration by mirroring high-use Web sites in all countries. For example:

A.) Educational research. One example of a large-scale collaboration system has been proposed by MIT to accelerate applications of computers to foreign language education for seven languages - including English as a foreign language. They would create a global

colloquia series by drawing upon the lectures at MIT's Center for Educational Computing Initiatives and two partner universities (in Europe and Latin America). The best and latest ideas could be transmitted at soon as possible to the desktops of researchers and teachers in all countries. Next, educational resources from all countries could be pooled and available to everybody in the world with a mouse click. Experimental materials - which now are almost impossible to evaluate with a large N of users - could be posted for use by, and feedback from, interested teachers worldwide. For the first time, it may be possible to test the intuition that different students learn best by different methods - and to have first-rate materials for each method available. Indeed, much of the best age-graded educational material in each culture (e.g., Sesame Street) could be on-line to teach the same vocabulary and reading skills to foreign beginners.

B.) Conflict resolution and human rights education. A similar useful initiative would be a global colloquium series and large-scale collaboration system to build curriculum for human rights and conflict resolution in public schools, especially with a psychological component. Today, many institutions can post materials on local Web sites and, in the global scavenger hunts of Internet searching, people may eventually find it. But with the assistance of a high-visibility Global Affairs Channel, and a regularly-scheduled global colloquium series to discuss issues and current projects drawn from many international sites, the same institutions can organize and support a global movement in curriculum development.

A curriculum that unites human rights and conflict resolution with a psychological orientation may work best because young people, in the teenage years, become interested in other people and relationships. To engage young people and to create the empathy for conflict resolution and principled settlements, the language of psychology can be more helpful than the traditional language of law.

Social science research has begun to illuminate how much of the world's violence, in teenage gangs, tribal and ethnic violence, and armies, involves recruiting young males with a wide range of appeals to discipline, self-sacrifice for a group, ideals of honor and loyalty, strategic calculation, and other traits. In light of the extraordinarily youthful age structures in the developing world - especially in areas that may be at risk for ethnic and tribal violence - it would be timely to use these new technologies to get there first. A curriculum that links to interpersonal interests - and conveys a message that people engaged in human rights advocacy and conflict resolution have admirable qualities of honesty and courage, strength of character, deeper insight, moral reasoning and honor, and idealism that are called forth by this work can enroll recruits. If there are local public school teachers, anywhere, who want to develop such courses, a large-scale collaboration system for sharing curriculum materials, supporting them, and affording global peer recognition for contributions, might be an extraordinarily beneficial long-term investment.

C.) A Tuesday Global Brownbag: "Inventions Wanted . . ." A related proposal for a large-scale collaboration system: an "Inventions Wanted . . ." series, a global Tuesday brownbag for the international scientific community. The purpose would be to discuss breakthroughs that scientists and engineers are trying to achieve - and where they are stuck. It would be an invitation to think about a new problem and to work together in a creative process, across disciplines and national boundaries. For example, it would be attractive to gene-splice seaweed and cash crops, thereby being able to plant crops in the desert, irrigate with salt water, remove the salt biologically - and make the deserts bloom. A few people are trying to do this, but everything they have invented tastes terrible . . . and thereby begins a global process of scientific engagement and creative potential.

Another example: it is typical to discuss soil chemistry by reference to inorganic chemicals - e.g., this soil needs more nitrogen or phosphates - and the application of chemical

fertilizers to effect the change. But scientific analysis of highly fertile soils now shows that a wide range of microbes make a contribution. And one research project has recommended that a selection of 27 different microbes now might be packaged together in a nutrient solution, sprayed onto soil, multiply, enjoy a life in ecological balance, vastly enhance soil fertility, and reduce the need for commercial fertilizers to 1/3 or less. And the excitement of a high-visibility global colloquium - as any scientist will recognize - is that the mixture, SC27, is only a first draft . . . and research scientists and undergraduates around the world can immediately begin to use SC27 as a jumping-off point, testing how it could be improved upon for different initial soil and climate conditions, crops, etc. An "Inventions Wanted . . . " global collaboration project can accelerate new lines of global work, for amateur and professional inventors, for the common good.

D.) Visual Display Systems for Ending World Hunger. Shared visual display systems also can help NGOs to organize resources. In seeking to end world hunger, for example, it would be helpful to create and regularly update an on-line map with each village in Africa, where infant mortality exceeds a threshold value (an index of malnutrition) marked in red. Like fund-raising for local charities, donors could watch the map slowly change color as a result of their activities - and perhaps use the challenge, visually displayed, to mobilize new resources to speed the process.

Project 4. Organize opportunities for global philanthropy

The final two projects address the problem of long-term financing for the new public goods of the information age. Many good causes already compete for the limited funds of foundations and governments. If new sources of revenue can be organized, the future of well-

intentioned and idealistic people can become more productive than to struggle, for years, to secure even the modest funds needed to build creative Internet applications for the common good.

Domestically, we have expected large communication carriers (who use such public resources as radio frequency spectrum and satellite parking orbits without charge) to contribute to the public good. The domestic CSPAN is an example: it is supported by annual donations from the cable industry, provided in lieu of regulatory requirements or otherwise needing to alter the programming of individual members.

At this point, we are in an unusual historical period where the United States government has pressed passionately for global deregulation of the communications industry. And yet it has, at the same time, remained silent about the global civic obligations of the new multibillion dollar global communications oligopolies.

There has been a logic to this silence. First, American foreign policy has sought to secure the great and overriding advantages of deregulation - and business opportunities for American companies to compete in global markets - without permitting other political issues to interfere with a broader pro-market swing in public policy. Second, there has been a legitimate fear that any public discussion of international public service obligations would open the door to political abuse, as hundreds of local claimants step forward in almost 200 countries (including, in addition to legitimate causes, profit-seekers waving idealistic banners, suspect advocates of political fairness and other mischief from the earlier days of UNESCO's history, etc.) and threaten to reinstate government regulation.

A good political solution is to end the silence about public service obligations, and simultaneously address the concerns that erected these barriers, by creating global vehicles for

corporate and private philanthropy in the common good. For the global communications industry it would be an opportunity - like a domestic CSPAN - to write checks that would pre-empt inevitable political difficulty and a growing resentment of extraordinary profits (and the free use of public resources) without a civic conscience.

The creation of these philanthropic vehicles follows, in sequence, from the startup of the original Global Affairs Channel and prototype large-scale collaboration systems. They could evolve into an expanded set of specialized and technical global CSPANs that support both global colloquia and other large-scale, Internet-based collaboration systems. Each could be spun-off to grow and have a life of its own, with philanthropic support from corporations, foundations, and other stakeholders. For example:

A.) An International Public Health Channel. Today, the flood of current medical information in the advanced industrial countries is still a drought in most countries. An International Public Health Channel would make the US government and other organizers a daily partner with medical professionals in providing high quality medical care to people in all countries. The Channel could build upon the initial lecture series at NIH and Yale Medical School (discussed above) to bring Global Grand Rounds from the world's leading medical schools to the desktop PCs of medical professionals in all countries. It could provide overnight transfer of changes in the Index Medicus and the related software that allows doctors (and patients) to make sophisticated searches. A series of "best practices" programs could summarize lessons from public health projects at the local level in UDCs. The Channel could include a core group of on-line resources for medical education. Planning conferences and experiments to accelerate the growth of telemedicine. Regularly-scheduled research colloquia could stimulate the creative process by discussing developments in new technology to assist the disabled, and a weekly roundtable of science journalists (based on Washington Week in Review) could explore new developments and implications in

biotechnology (e.g., Biotechnology Week). Etc.

B.) An International Cultural Affairs Channel. An International Cultural Affairs Channel, would permit multinational corporations to support a worthwhile global civic initiative, with benefits to all countries. The Channel would provide basic startup and annual grants to one or more national museums (e.g., Smithsonian) in each country. The grants could be used to develop a Web site of key holdings and also to digitize (for their own citizens and distribution to worldwide audiences) 15 hours/year (x 200 countries) of current lectures, symposia, and exhibit tours concerning their national history, cultural heritage, visual and performing arts, etc. All countries in the world would acquire 3,000 hours/year of high quality programming. Web sites for each national museum could include museum reproductions and add revenues derived from global markets.

C.) An International Studies Channel. The US Department of Education provides grants for international and area studies to American research universities - often, grants to 10-15 universities for each major area of the world. The grants include funds for speakers' programs and outreach. It would be a simple step to bring these American lectures and research conferences, for each area of the world (e.g., Chinese studies) into a global Channel. And the next step - because it is rather limiting to have American academics talking to American academics about China - would be to provide basic startup authoring-technology grants, plus $5,000 for annual costs, to leading universities worldwide (including Chinese universities) to contribute to a Chinese Studies Channel cooperative. Each university would contribute its own best materials, x hours per year, and receive, in return, many times its own contribution. And everybody worldwide - not just the university members - would benefit. Many scholarly societies might be willing to get these projects underway in their fields - especially so if the broader project could be organized with a global boldness and visibility to appeal to corporate philanthropy.

D.) An Education Research Channel. It would be easy to expand the large-scale collaboration system that MIT has proposed (above) across a wide range of school subjects that are common in all countries: reading (including the latest research ideas and aides for diagnosis and treatment of learning disabilities), algebra, geometry, high school biology, calculus, computer programming, technical skills. Research discussions and conferences could be linked to global audiences of educators to stimulate the creative process, and updates of new teaching resources could be transmitted to local servers overnight. A comparatively modest investment from corporate philanthropy ought to make it possible for any student or teacher, anywhere, to have on-line access to the best education resources in the world.

Project 5. Organize Global Stakeholder Financing for Scientific Communication and Economic Growth

A final project of system-level innovation to enhance revenue, unleash a creative potential for global collaboration, and accelerate scientific innovation and economic growth is the development of stakeholder financing for scientific communication along the lines of the Industrial Liaison Program at MIT. Under MIT's program, corporate sponsors make annual donations and receive, in return, access to preprints and briefings of state-of-the-art research, 1-2 years before print publication. Revenue is shared and, in return for their participation, individual lecturers and research centers receive financial credits. (While these cannot be taken as personal income, they can be used to pay for professional travel, to purchase books and additional equipment, and other research expenses.) (A similar national model is the Technology Transfer Institute of Japan.)

In most scientific fields, it would be possible to generalize the MIT model to a global scale. The best and latest ideas concerning renewable energy research, for example, could be acquired from all sources and arrive on desktop PCs of academic researchers and corporations as quickly as possible. A Renewable Energy Research Channel could be financed solely as a cooperative, with each leading university - for example - spending $5,000/year to put its 10 best lectures on the channel, with the expectation that every other leading university and scientific society would put lectures worthy of international attention into the channel, and receive many times its own investment. But it also would be interesting - and revenue-generating - to ask leaders in R&D-oriented industries what technologies they believe to be crucial for the future of their industry - and to use this list to inform priorities and organize stakeholder contributions.

Thus, for example, the international automobile industry might identify key technologies related to environmentally sustainable development to be photovoltaics, battery design, efficient manufacturing, plastics, and synthetic fuels. And from this list, the programming and donations could flow. Only a small fraction of the potential benefits of these scientific breakthroughs, as public goods, need be acquired to pay for the projects. And participating research institutions could receive shares of the revenue generated by the global project.

In each case, corporate supporters will be agreeing to compete on the basis of their ability to recognize and use good ideas, the efficiency of capital markets, the alertness of management, etc. - rather than on proprietary and exclusive access to information.

Several years ago, the Sloan Foundation sponsored an interesting study that suggests another dimension, that advertising revenues from global scientific channels might become substantial. (Alongside advertising new products to a global audience, companies also could advertise for new employees: 5-minute multimedia recruiting ads, carried on several weekday

evenings in the early fall, with job opportunities for petroleum engineers, etc. To encourage innovation, smaller companies - e.g., from UDCs - might initially pay lower rates to advertise new products.) At the time, a 4-color, 2-page ad in Scientific American sold for $70,000+ and the information recall of a 1-minute television ad, compared with such a magazine ad, was estimated at a 3:1 advantage. Even selling 120 minutes/year of global advertising at these rates starts to exceed the amount of money that might be needed. Perhaps (and readily) there can be money for programming - and a great deal more to build scientific education and research capacities in many countries.

Today, nobody knows how much annual revenue the advertising on global scientific Internet channels, or sponsorships, could secure. But everybody might benefit from the initial organizing to create limited partnerships of stakeholders in scientific progress, all of whom agree that the revenue streams they seek are in the flow of creative and usable new ideas to desktop PCs - and perhaps the growth of global educational and scientific capacity in a field - alongside any immediate monetary return.

A UNESCO-sponsored advisory panel chaired by Dr. Joshua Lederberg has suggested that such global Internet linkups could have “spectacular” effects to accelerate scientific innovation. Linkups to accelerate environmental technology (e.g., a Renewable Energy Research Channel) would be an attractive candidate for a prototype.

In conclusion, we have new technologies to build a world that begins to work for everybody, across a wide range of outcomes - and at a surprisingly affordable cost that does not exhaust any of the world’s resources. A light touch of US leadership would be helpful to open the evolutionary pathway. While there is much work to be done to realize the promise of the new technology, a small number of thoughtful system-level projects, organized now, can help to recalibrate the imagination and permit a future of accelerated global cooperation

and progress to emerge.

Endnotes

[1] Policy Sciences Center, Inc., 127 Wall St. Room 322, P. O. Box 208215, New Haven, CT 06520-8215; (301)-365-5241 (v); (301)-657-4214 (fax); lloyd.etheredge@ yale.edu (Internet).