

# The Global Service Trust Fund

## *Bridging the Digital Divide for Education and Health*

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If we are to believe George Gilder, bandwidth will be free, someday, perhaps soon.<sup>2</sup> Right now it certainly is not, and Gilder made his prediction back in 1993. The cost of broad bandwidth, in many cases of any bandwidth, is prohibitive for many potentially valuable projects in developing countries. The Global Service Trust Fund (GSTF)<sup>3</sup> would address the digital divide by making available bandwidth free or at below market prices for qualifying education and health projects in developing countries. Think of it as a voluntary international e-rate for education and health with conditionality to induce improved health, education, and telecommunications policies.

The idea is to provide incentives for the development of educational and health content requiring broad bandwidth and better policies now in developing countries, with South-South and South-North collaboration encouraged by making the required bandwidth free or close to free. The scheme could be phased out gradually as the price of bandwidth falls.

The fund would come from two donor sources: telecommunications companies with underutilized bandwidth and organizations possessing financial resources. Funds would be allocated as grants to qualifying projects and as in-kind assistance with connections; bandwidth would be allocated in-kind through a per capita income-stratified auction-like process. Conditionality regarding health, education, and telecommunications policies would apply for a country to be eligible to submit applications to the GSTF. This conditionality would be established through a participatory process involving major stakeholders.

### Background and Rationale

There are still at least two billion people out of a global population of six billion that have major unmet needs in education, health care and water supply, sanitation, and nutrition. Many of these people are located in remote rural areas, with limited or no access to formal educational systems, health care, potable water, electricity, or jobs related to the new information economy. Even in urban areas, many people lack access to the Internet and its great potential to improve education and health. These deficiencies are core to what has been described as the “digital divide.”

Conventional approaches to these issues such as trying to train new teachers and doctors cannot possibly meet the needs. In fact, there are more people to be educated in the next fifty years than have been educated up to this point in human history. Information and communications technologies cannot replace the need for teachers and health care pro-

fessionals, but they can expand and magnify conventional capabilities in powerful ways that are only now beginning to be studied and understood.

The Internet, with its rapidly expanding and improving infrastructure, will be the main telecommunication media of tomorrow. It has been extended to most countries, albeit with slow-to-medium speed in most developing countries, even in large parts of the developed world. But the full potential for achieving revolutionary advances in education and healthcare in developing countries cannot be realized with the currently available information infrastructure and at currently prevailing market prices.

Improved distance education requires much better ways of *presenting* information and of allowing learners to *interact* with facilitators to enable the learners to process that information into personal knowledge.

At present most electronic distance learning takes place by one of two equally primitive programming and delivery modes. On the one hand, much instruction is primarily text and simple graphics delivered over the web and/or through email and its derivatives (electronic fora, bulletin boards, chatrooms). On the other, there is “room-based” or desktop-based videoconferencing, usually with relatively small groups involved and low production values so far as the video and audio are concerned. Both techniques allow significant interaction, but the quality of instruction suffers from the lack of high-quality audio and video.

High-quality instruction is possible by broadcast television, with multi-million dollar production budgets having been deployed to good effect in some countries – for example Annenberg/CBP in the US, BBC/Open University in the UK, The Roberto Marinho Foundation’s *Telecurso 2000* and *Canal Futura* in Brazil, and SCS and MINCS-UH in Japan. There have also been reasonably high-quality and effective programming produced in newly industrializing countries by the Ministry of Education and Central China Television for the Chinese National TV University, by the Indonesia tele-education training center for the PALAPA satellite system, as well as high-quality audio tele-courses produced by the University of the West Indies and the University of the South Pacific.

Today, narrow bandwidth systems and high telecommunications costs will not allow the use of streaming video and audio on a large scale in developing countries. Often telecommunications pipes get clogged even with heavy net use of more conventional kinds. Ironically, many audiences, even in developing countries, are “spoiled” by commercial television with high production values when it comes to attempts to promote tele-education course delivery. Thus audiences, even in developing countries, do not easily accept jerky movement, small windows, failing connections, and low production values. The quality of tele-lectures, video inserts and the like has to approximate that of high-quality commercial television. Nevertheless, high quality online courses at lower bit rate transmissions are also increasingly in production and more pervasively available.

As for telemedicine, there is a proven need for high-definition moving images, or at least extremely high-resolution still images. Even with low-cost or free broadband connectivity between nations, the cost and pricing structure of telecommunications in many developing countries keep the cost of access to the Internet at prohibitive levels, and inappropriate policy and regulatory frameworks do not encourage efficient use of those public resources devoted to education and healthcare.

Although many countries (including some developing countries) are now geared to establish broadband Internet, their initiatives are mainly domestic. There is no international or-

ganization that provides such a network across national boundaries, oceans, and continents for the use by non-profit organizations, e.g., tele-education, tele-healthcare, libraries, and local governments. This international gap is now a major cause of network congestion, and there is an urgent need to close it in a rapidly globalizing world society.

In sum, **what is needed is both high quality audio/video delivery and high quality interactivity.** Although these terms will be understood and applied differently in various parts of the world, the objective of increasing quality, interactivity, and system throughput can be seen as a global objective for improving tele-education and tele-health services. A true revolution in distance learning and telemedicine requires high-speed access to the World Wide Web, and the flexibility to offer a variety of media. These might include two-way audio, full-motion video-conferencing up to MPEG 2 quality, television-quality netcasting, and high-resolution image transfer for tele-medicine. Such capabilities require medium to broad bandwidth. Developing countries need broadband Internet via international satellite and fiber-optic cable.

The revolution in education and healthcare in developing countries also requires a more favorable policy environment – not just for telecommunications but also for education and healthcare. A key to bringing down prices to affordable levels is to establish national and international competition or at least flexibility in the provision of telecommunications, education, and healthcare services. Also rapid transfer of knowledge from developed to developing countries needs to be actively encouraged along with support for higher quality local educational program development.

## Origins and History of the GSTF Proposal

The first draft of this proposal was developed by Dr. Takeshi Utsumi, Chairman of [GLOSAS/USA](#) with Dr. Salah Mandil of World Health Organization ([WHO](#)) and presented at the International Workshop and Conference on Emerging Global Electronic Distance Learning ([EGEDL'99](#)) held 9-13 August 1999, at the University of Tampere, Finland. It has been developed since then by a team led by the present author and including Francis Method, Joseph Pelton, and Takeshi Utsumi. Members of the team have made a series of papers and presentations in several countries including the United States, Brazil, Pakistan, and South Africa.<sup>4</sup>

As a result of the G-8 meetings held in Okinawa, Japan, in July 2000, important initiatives have been started to address these great needs. [The Okinawa Charter on Global Information Society](#) provides an important framework statement

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calling on G-8 governments to “foster an appropriate policy and regulatory environment to stimulate competition and innovation, ensure economic and financial stability, advance stakeholder collaboration to optimize global networks, fight abuses that undermine the integrity of the network, bridge the digital divide, invest in people, and promote global access and participation” and called on “all, within both the public and private sectors to bridge the international information and knowledge divide....”

The report of the G8 Digital Opportunities Task Force (Dot-Force) formed to prepare a set of action proposals for the Genova G8 summit requested support for expanding “opportunities for training, education and knowledge sharing for people living in rural and remote areas through distance learning” and “the interconnection of education and research networks among developing countries and industrialized countries for instance through high-speed networks, twinning or bandwidth pooling....” The current proposal falls within the Okinawa Charter and the DotForce framework, though it cuts across several of the proposed DotForce action points.<sup>5</sup>

The satellite industry that has the technology that can most easily reach the isolated populations should seek to do its share to address this problem with innovative answers. INTELSAT has undertaken its Project Share and Project Access programs over the last 15 years. WorldSpace has set up a Foundation to support health and education activities. EUTELSAT, ASIASAT, INSAT, and the Chinese National Television University have provided important new satellite-based capabilities.

Several satellite companies have agreed, in principle, to support the GSTF initiative that has been accepted as one of its first three projects by the Arthur C. Clarke Institute for Telecommunications and Information (CITI) at its launch meeting in February 2000. More recently, at the *infoDev* Symposium held at the World Bank on December 5-6, 2001, José Maria Figueres Olson (Managing Director for the Global Agenda, World Economic Forum and former President of Costa Rica) made a proposal that contained many elements similar to the GSTF. The GSTF team is happy to work closely with him and any other individuals or organizations espousing similar ideas.

## Finance and Organization

Expansion of high-speed broad bandwidth connections for education and health applications in developing countries would be financed by the GSTF. Funding should be sufficient to eliminate or greatly reduce the telecommunications cost for qualified education and healthcare applications in a significant number of countries and number of applications. This might be done by a voluntary international mechanism akin to the “E-Rate” now benefiting schools in the United States and the Brazilian “Fund for Universalization of Telecommunications Services”(FUST). In fact, many countries have used public policy tools of some kind to create a less-than-market rate for education, health, and/or other priority applications. Another option could be to begin with free bandwidth for qualifying education and health applications, but raise it toward (expected to be declining) market prices in gradual steps.

Under the current model of the GSTF, two separate contribution “funds” or “sources” would be established – an in-kind *bandwidth transmission source* and a *financial assistance source*. The Coalition supporting the GSTF would include commercial and non-profit sources. These should include key international organizations such as the International Telecommunications Union (ITU), the United Nations Educational, Cultural, and Scientific Organization (UNESCO), and the World Health Organization (WHO), as well as multilateral development banks (The World Bank and the regional development banks for Africa, Asia, Latin America and the Caribbean, and Europe and Central Asia). The Coalition would also include bilateral aid agencies, foundations, and companies contributing to the Fund as well as organizations contributing education and healthcare knowledge. The Fund could be administered in a variety of ways, but it should have a credible, well-organized, and financially scrupulous entity of significant international standing in charge in the disbursement of funds. The proposed Fund would be financed from a variety of public and private sources, which could include:

- Overseas Development Assistance funds of countries belonging to the Organization for Economic Cooperation and Development.
- Cash contributions from the profits of international financial institutions, such as The World Bank and the regional development banks.
- Cash contributions from foundations and companies.
- Contributions in kind from companies owning underused satellite transponders and/or fiber optic cable – for these companies, the marginal cost of making available underused existing bandwidth is near zero, but

providing it may build future markets for sale at (declining) commercial prices.

The Fund's *bandwidth source* might be allocated through a variety of means that might include an auction process to organizers of distance education and telemedicine projects in qualifying countries. The GSTF could function as a bandwidth aggregator itself or could work with commercial and non-profit aggregators through business arrangements to be established.

The *cash source* might be used for grants to such projects, with rules favoring poorer countries and end beneficiaries, assuring a certain geographical distribution of benefits between regions, encouraging national initiatives to increase Internet access and encourage competitive provision of bandwidth, and so forth. Grants might also favor international knowledge sharing. All grants would be made through open competitive process. The cash source could also be used to purchase additional bandwidth from companies providing free bandwidth, giving an additional incentive for these companies to make in-kind contributions.

These are only some preliminary ideas. The details, including the establishment of a pilot version of the Fund to test operational principles, need to be worked out during the next stage in proposal development.

## Conditionality

GSTF funding would only be available for education and health projects in developing countries with telecommunications, education, and health policies meeting certain minimum standards. These standards, or conditionality serve as an incentive to better policies and as a means to limit and focus the application of GSTF resources. Three main reasons to establish this conditionality have been proposed by the GSTF team:

1. The essential justification for the GSTF is that important public goods objectives (development objectives) are going unmet because of lack of access to affordable broadband and related technology services. Support for the overall initiative requires that the resources be focused on entities meeting the public goods criteria.
2. Financial resources will not be adequate, at least initially, to meet all needs. Unless some means is found to ensure resources are used for high priority and high quality applications they may be viewed as undesirable subsidies for less cost-effective applications without the public good characteristics meeting local allocation criteria for scarce public financial resources.

3. Technology and bandwidth resources will not be made available by providers at the scale or the prices necessary to have a significant impact if there is not some assurance that:

- a) The resources will be put to good use on high priority public goods applications.
- b) The demonstration projects will be sufficiently well identified that they can be monitored and assessed.
- c) The GSTF approach is not so open-ended that it precludes the development of new commercial-rate markets for ICT technology and services.

At the same time, it is undesirable to burden the GSTF mechanism with complex conditionality criteria requiring substantial review and judgment by a board or governing body or with such detailed analysis and reporting processes that the mechanism becomes a policy-setting, standard-setting or technical assistance entity. To the maximum extent possible it is desirable to:

- Set criteria that meet bright line eligibility standards.
- Limit criteria to those that are essential to GSTF allocation.
- Set standards that can be determined by entities other than GSTF.

A more detailed examination of criteria for establishing conditionality is beyond the scope of this short article, but may be found on the Web at [www.friends-partners.org/GLOSAS/Tampere\\_Conference/GSTF/GSTF\\_2-28-01/Proposal\\_2-28-01.html](http://www.friends-partners.org/GLOSAS/Tampere_Conference/GSTF/GSTF_2-28-01/Proposal_2-28-01.html).

A major effort will be needed to further develop provisional criteria suggested by the GSTF team and to develop feasible arrangements for screening the applicants. Confidence in the relevance of the criteria, the technical validity of the criteria and the arms-length neutrality in establishing eligibility is essential.

## Participation

Participation by the United Nations, the World Bank, Regional Development Banks, and specialized members of the UN family (UNESCO, WHO and ITU) as well as representatives of the technology providers and relevant specialized NGOs will be needed.

1. As early as possible upon securing the necessary funding, a working group should be established of four to six members designated by the above organizations to meet

- with GSTF organizers in a workshop to draft initial criteria.
2. Following the completion of draft criteria, each participant should vet the materials as necessary within their respective organization and with key officials in the focus countries. The purpose of this exercise is to refine the criteria, not to revise the GSTF mechanism or proposal. This process should be relatively short, perhaps one month, maximum two months.
  3. During this same period, GSTF organizers will need to begin preparation of necessary materials for dissemination and for application. It should be possible during this period to complete the graphics and the work plan for duplication and dissemination.
  4. An additional workshop and decision meeting will be needed to reach agreement on the final set of criteria and the dissemination package for the initial set of GSTF applications.
  5. At least four pilot projects will be prepared prior to the launch of the GSTF.

### Next Steps in the Development of the GSTF

The GSTF team is seeking funds to develop the conditionality along the lines set forth above, mobilize bandwidth and financial resources, prepare four pilot projects, find an institutional home for the GSTF, and hold an international meeting to launch the pilot version of the fund.

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<sup>2</sup> See Kevin Kelly, "George Gilder: When Bandwidth is Free, the Dark Fiber Interview with George Gilder," *Wired*, 1.04 (September/October 1993), available online at [www.wired.com/wired/archive/1.04/gilder.html](http://www.wired.com/wired/archive/1.04/gilder.html) or [www.gildertech.com/public/articles\\_about/bandwidth.html](http://www.gildertech.com/public/articles_about/bandwidth.html).

<sup>3</sup> The GSTF (TM of GLOSAS/USA) proposal has been developed over the past four years by a team consisting of Peter Knight ([peter@tedbr.com](mailto:peter@tedbr.com)); Francis Method ([fmethod@erols.com](mailto:fmethod@erols.com)), education policy analyst, advisor to *TechKnowLogia* and to UNESCO, [www.resiliencies.net](http://www.resiliencies.net); Joseph Pelton ([ecjpelton@aol.com](mailto:ecjpelton@aol.com)) one of the board members of GLOSAS/USA, Research Professor with the Institute for Applied Space Research at the George Washington University ([www.seas.gwu.edu/~iasr](http://www.seas.gwu.edu/~iasr)) and Executive Director of the Arthur C. Clarke Institute of Telecommunications and Information ([www.clarkeinstitute.com](http://www.clarkeinstitute.com)); and Takeshi Utsumi ([utsumi@columbia.edu](mailto:utsumi@columbia.edu)), Chairman of GLObal Systems Analysis and Simulation Association in the USA (GLOSAS/USA) and Vice President for Technology and Coordination of Global University System (GUS) ([www.friends-partners.org/GLOSAS](http://www.friends-partners.org/GLOSAS)).

<sup>4</sup> Versions of the proposal may be found at [www.knight-moore.com/projects/GSTFproposal.html](http://www.knight-moore.com/projects/GSTFproposal.html), [www.clarkeinstitute.com/trust.html](http://www.clarkeinstitute.com/trust.html), and [www.friends-partners.org/GLOSAS/Tampere\\_Conference/GSTF/GSTF\\_2-28-01/Proposal\\_2-28-01.html](http://www.friends-partners.org/GLOSAS/Tampere_Conference/GSTF/GSTF_2-28-01/Proposal_2-28-01.html). PowerPoint presentations of the proposal may be found at [www.knight-moore.com/presentations/GSTF/GSTFCITIK-MGLOSASweb\\_files/frame.htm](http://www.knight-moore.com/presentations/GSTF/GSTFCITIK-MGLOSASweb_files/frame.htm) and [www.friends-partners.org/GLOSAS/Global\\_University/Global%20University%20System/Reference\\_web\\_sites.html](http://www.friends-partners.org/GLOSAS/Global_University/Global%20University%20System/Reference_web_sites.html). The current article draws freely on this documentation.

<sup>5</sup> All of the documents cited in this paragraph can be found on the DotForce website at [www.dotforce.org](http://www.dotforce.org).