**GLOSAS/USA**
The GLObal Systems Analysis and Simulation Association in the U.S.A., Inc.
(A New York non-profit educational service organization since 1988) EID: 11-2999676
43-23 Colden Street, #9L; Flushing, NY 11355-5913; Tel: 718-939-0928; Fax: 718-795-1655
takutsumi0@gmail.com; http://www.friends-partners.org/GLOSAS

# Project Proposal
# for
# Rwanda and Democratic Republic of Congo

To be submitted to
PS David Kanamugire
Permanent Secretary
Ministry in the President's Office in charge of ICT
Kigali, Rwanda
Mob: +250-788 30 4442
kdavid@presidency.gov.rw

and

Prof. Dr. Kyandoghere Kyamakya
Polytechnic Faculty
Department of Electrical and Computer Engineering
University of Kinshasa
Maison B5, Plateau des Profs, UNIKIN, Commune de Lemba
Kinshasa, Congo
+243.990591179
Fax: +43 (0) 463 2700 993540
Mobil: +43 650 567 2831
kyandoghere.kyamakya@uni-klu.ac.at

November 30, 2010

Takeshi Utsumi, Ph.D., P.E.
Chairman, GLOSAS/USA
Takutsumi0@gmail.com
with
Francisco Bozzano-Barnes
Director, Tenure & Ecology, LLC
francisco@tenureecology.com

# Projects Proposal
# for
# Rwanda and Democratic Republic of Congo

**H.E. Mr. Paul Kagame, President of Rwanda**
"The transformational impact of broadband on people's lives and and global economies is no longer questionable; the remaining remaining challenge is to extend these obvious benefits to the the majority of global citizens and allow them to unleash their creative creative potential to fully integrate in the information driven global global economy. This will require new frameworks for global cooperation in areas of investment, research and technology." technology."
http://www.broadbandcommission.org/commissioners.html

## 1. INTRODUCTION

The present-day scientific and technical revolution can be a great asset for nations to manage international affairs with greater understanding if we create new means of deploying and developing our knowledge to overcome the current global Great Recession and ecosystemic challenges, and contribute to successfully mobilizing social actors towards a sustainable future. Our main tool to disseminate knowledge and cooperate in developing it further is Information and Communications Technologies (ICTs), including Internet. This is even more the case in societies with poor educational infrastructure, where knowledge transfer and creation could be facilitated if Broadband (BB) Internet were accessible for the population.

We seek to help offer Rwanda and the Democratic Republic of Congo (DRC) paths towards sustainable development by facilitating the deployment and innovative use of science and technology. To achieve this, we will start by organizing seminars on System Dynamics methodology, planning workshops on the Global Early Warning System (GEWS), Global University System (GUS) and BB in Kigali in Rwanda, Kinshasa and perhaps Goma in the DRC. This proposal is an attempt to develop the conceptual underpinnings of these seminars and workshops and to design the process leading towards the event, the event itself and define the expected outcomes.

## 2. BRIEF DEVELOPMENT HISTORY OF GEWS, PEACE GAMING AND GUS [Utsumi, T., (2008-a)]

Globally Collaborative Environmental Peace Gaming (GCEPG) was initiated by GLOSAS/USA in early 1970s [Utsumi, T., (2003)], with a focus on environment and sustainability in developing countries, and the Global University System (GUS) [Utsumi et al, 2003] was initiated in the summer of 1999 to supply the players for the game. Over time, GCEPG has evolved into the Global Early Warning System (GEWS) [Utsumi, T., (2010-a)] and both terms can now be used to mean the same thing. Since this system required powerful computational capacity, we initiated the global GRID computer networking technology to reach that capacity, without having to use costly supercomputers.

The combination of the development of the Internet and advanced socio-economic and environmental quantitative modeling was seen by us as a real opportunity to forge ahead scientifically in the process of sustainable development. The algorithms of these models can be modified to adapt to the specific key relationships in a given local, national, regional or planetary situation. Through changes of magnitudes and basic interdependent relations between nature and different demographic, agricultural, industrial, fiscal and other inputs, the models can generate various potential future scenarios. These become the basis for peace games involving participating countries. These games can be used to train decision-makers and youth in critical thinking and rational policy development based on verified data, that can be constantly updated to keep up with the changing environment under study. Thus science, technology, planning, policy development, education become more realistic and complex, to respond to the complexities of our time.

> This is the tenet of our GCEPG project with a globally distributed computer gaming/simulation system. This is to help decision-makers construct a globally distributed decision-support system for positive sum/win-win alternatives to conflict and war, particularly focusing on the issues of environment and sustainable development in developing countries.

We saw a great opportunity to further peaceful solutions thanks to the deployment of our socio-technical approach:

> The principle of Internet is "**sharing**," and that of the Grid is "**collaboration**." Sharing and collaboration are the basis of global peace. We are promoting those principles along with GCEPG and GUS projects.

To overcome the present planetary socio-economic and environmental crisis, we will need to develop from the diverse national models a Global model that will assist us in understanding and managing these phenomena through multilateral, regional and bilateral cooperation. To do this we will depart from the FUGI model (one of the most powerful models of the world economy) [Onishi, A., (No date-1)] [Onishi, A., (No date-2)] based on aggregated world data, substituting this aggregation with data and models generated at a national level, and gradually rebuilding the world model through this process. This is because:

> Based on the review of past attempts and experiences with model acceptance and validation, meaningful and credible simulation has to be implemented as a modeling network composed of a large number of locally developed and verified models. No single model developed by a local group of experts has a chance for universal acceptance when it deals with controversial and confrontation-prone areas such as global resource allocation and economic policies. This is to recognize the existence of national boundaries as the very basic premise of our human society, and then to abide with the Iron-Rule #1 of simulation, "Make simulation close to simuland as much as possible."

Yet, a comprehensive model of global resources, ecology, and economy is needed for the rational management of ecosystems and for economic cooperation between nations and economic blocks. As a solution to the dilemma between the need for a unified model and a diversity of views and the special interests of diverse groups, a public Open Modeling Network (OMN) was proposed which would consist of models developed by local experts interconnected by global Internet [Utsumi, et al., 1986].

## 3. GLOBAL EARLY WARNING SYSTEM (GEWS)

### 6.1 Objectives and Method

The **Global Early Warning System (GEWS)** involves interconnecting experts and communities in many countries via Cloud Computing to provide a wealth of knowledge and information on economic and environmental phenomena, to collaborate in crisis prevention and develop solutions to mitigate and adapt to existing or forthcoming world crises such as the deteriorating environment of our globe, social and economic stresses, among others, and to explore new alternatives for a world order capable of addressing the problems and opportunities of an interdependent globe.

The main goal of this project is to construct national socio-economic, energy, and environment simulation models for each participating country, which will be interconnected to form a global-scale simulation model. It will conduct a globally collaborative gaming/simulation to help decision-makers and train would-be decision makers in conflict prevention and resolution on environmental issues (Utsumi, T., 2003).

### 6.2 Purpose

This project will train local experts for leadership development, facilitated by cooperation among stakeholders and a use of technologies for more effective advocacy, informed policy, public understanding and participation and concrete community development.

We will create the **Globally Collaborative Network of the Centers for Conflict Prevention, Management and Resolution (GCN/CCPMRs)** (which is to be one of Research and Training Programs of the United Nations University) on economic, social and environmental issues in various countries, which will be interconnected through broadband Internet to enable the following two-tier system:

a. One for training young would-be decision makers to understand interwoven world phenomena with rational analysis and critical thinking to policy analysis and evaluation, and then in crisis management, conflict resolution, and negotiation techniques based on "*facts and figures*" and,

b. The other for helping decision makers to develop and use a globally distributed decision-support system for policy analysis and evaluation with positive sum/win-win alternatives to conflict and war.

### 6.3 Project Summary

- *Intellectual merits:* Goes to the root causes of conflict, promotes development in ways that overcome bottlenecks of ignorance and misunderstanding. Has access to source-verified high-quality data as a base for objective dialogue that multi-stakeholders in any domain can use to understand the constraints and opportunities they face. Offers different possible scenarios to shape and envision a common future can defuse conflict and encourage cooperation and coordination around real development options that receive wide acceptance. This is cheaper than war. It is cheaper than doing nothing.

- *Innovative and appropriate nature of this project:* This project is a new approach to interdisciplinary research on environment and development interrelations, using the latest dynamic modeling techniques to encompass the interdependent nature of global development processes. It helps us understand different potential scenarios resulting from diverse sets of interactions of energy, resource, social and economic phenomena, synthesizing the most recent advances in interdisciplinary scientific approaches and using Cloud Computing Technology to generate and disseminate more powerful quantitative scientific system dynamic models. These models can process larger amounts of verified facts and figures than previously feasible, with greater security of storage and access from many remote locations and outcomes that are still untested, since they have only recently become feasible through scientific and technological innovation. As a consequence, it will become possible to train and educate people, specifically the young, in rational analysis and critical thinking. This will enable them to respond more creatively to climate, environmental, social and economic challenges and conflicts. Local communities, regions, nations, continents and international actors and institutions will gain capacity to consider new policy solutions that may contribute to peace and development, creating the knowledge society of the future. This is a daring and potentially transformative exploration, complementary to other ongoing development and research initiatives.

- *Global climate change:* Human activities are now causing global warming, which will lead to major environmental, social and economic havoc in the years ahead. For the sake of our future generations, it is urgent to curb the sources of such global warming. Moreover, the accelerating trends are high and still rising consumption levels in the industrialized countries; continued population increase in developing countries and the rise of living standards with economic improvement are causing severe strain on resource availability, particularly water, in many parts of the world. This will inevitably lead to conflicts of interest among various stakeholders. Some examples are bio-fuel vs. food production in poor countries, or land grabbing by wealthy nations to feed their population. There will be many other conflicts about environmental issues in local, regional and global scales. They will be more severe and fierce as we get closer to 2015 which is the target year of the United Nations Millennium Development Goals (UN/MDGs). Under current scenarios it is likely that most of the Goals will not be met, hence the trend for more fierce resource competition and potential conflict could prevail.

  Subsequently, it is now urgent to educate youth who are now in their teens and twenties, who will become the real decision makers after 2015. The new generation of decision makers must therefore be well prepared to respond to those issues with rational analysis and critical thinking based on the facts and figures. Their training should be evidence based, as it is possible to do using systemic simulation models to play out different policy scenarios and then make informed decisions. Their training in crisis management, conflict resolution, and negotiation techniques should be based on "*facts and figures,*" rather than so-called “political illusions.”

In this area, gaming/simulation is the best tool we have for understanding the world's problems with potential for confrontation and the solutions we propose for them. This understanding gained with scientific and rational analysis and critical thinking aided by gaming/simulation could be the basis for world peace, and hence ought to provide the basic principle of global education for peace.

- *Global University System (GUS) (see below):* The GUS of each country will maintain the sub-models of its country autonomously – along with construction and maintenance of its databases, modification of their sub-models, and supply of game players in cooperation with their overseas counterparts through the global Internet.

- Our project promotes a *paradigm shift in international political science* when utilizing both "normative (role-playing simulation) [O'Neill, Donal A., (no date-2)]" and "quantitative" gaming/simulation approaches for *globally collaborative education and training — a very new and NON-TRADITIONAL approach for policy analysis and evaluation.*

### 6.4 GEWS in African Countries

#### 3.4.1. GEWS/RWANDA

Rwanda, a small, landlocked country, densely populated, one of the world's poorest, without natural resources, now forges ahead to be the forerunner in knowledge-based, technology-led economy by 2020 with the use of advanced Information and Communication Technologies (ICTs) [Murenzi, 2006], [Murenzi, 2008-a] and [Murenzi, 2008-b]. We hereby propose that Rwanda act as an African hub of our **Global Early Warning System (GEWS)**, promoting and coordinating it in various African countries. Seminars on system dynamics could be organized in various participating African countries (see below), interconnecting national simulation models through BB with an operation room (as NASA's) in Kigali.

The first task of the proposed hub of the GEWS in Kigali, Rwanda, could be the conflict resolution issues on water usage along Nile River with Ethiopia, Uganda, Tanzania, Kenya, the Democratic Republic of Congo, Burundi and Rwanda [BBC News, 2010] and [Cambanis, 2010] — as following the precedence of the "Law of Sea" computer mediated negotiations [Utsumi, 2010-b]. This project may be supported by the Japanese fund [JMOFA, 2010a].

Prof. Ed. Friedman's e-healthcare projects in Rwanda and sub-Sahara countries [Friedman, 2009-a] [Friedman, 2009-b] may also be enhanced through the deployment of broadband Internet. Around a dozen ambulances with ultrasound diagnostic [Onishi N 2007] and other medical equipment may be sought after, procured with Japanese Official Development Assistance (ODA) funds and Japanese commercial firms' contributions. This diagnostic equipment can be accessed through BB wireless Internet in remote rural areas, which has already been set up by Wibro, a South-Korean telecommunications company that has provided technology and funding. The deployment of mobile ultrasound would help overcome the tragic disaster of 350,000 or more per year deaths of women in childbirth in Africa – Nelson Mandela said "Giving birth is NOT to die!" This will also prolong the average lifespan of Rwandans, currently around 55 years (only 2/3 of the Japanese lifespan) and avoid the waste of valuable brainpower with accumulated knowledge and wisdom. In contrast to tangible raw materials (e.g., coal, iron, oil, wheat, etc.) of the industrial age, "intangible" brain power is indispensable raw material of the knowledge society of the 21st century.

#### 3.4.2. GEWS/DEMOCRATIC REPUBLIC OF CONGO (DRC)

Prof. Dr. Kyandoghere Kyamakya of University of Kinshasa and Prof. Mathias Buabua wa Kayembe, General Director of the National Agency for Investment Promotion [ANAPI] of the Democratic Republic of Congo (DRC) government, plan to initiate their GEWS and Global University System (GUS) activities (see below) along with the deployment of optical fiber broadband Internet throughout the country (see below). They would like to conduct a "nation building" exercise with the use of system dynamic methodology together with the deployment of advanced Information and Communication Technologies (ICTs). To make this possible, fibre optic cable may be installed along the super highway between African countries. The money (USD 4 billion) for its construction was pledged by the Japanese government at TICAD IV (see below). The action deploying broadband Internet will affect almost every facet of the participating

societies, thus it will need a scientific and rational approach, with the use of GEWS system dynamics methodology for policy analysis, setting and evaluation.

The similar project of our Rwandan colleague may be joined to this one to approach the Japanese government, so that Rwanda may also have a route to the west coast of Africa through Congo, and then to the outside world (in addition to the outlets to the east coast submarine cable of Africa though Tanzania or Uganda/Kenya) – see figures below. We are also initiating a relationship with Prof. Victor Lawrence at the Stevens Institute of Technology in Hoboken, New Jersey, who is the Chairman of Baharicom (a part of the New Partnership for Africa's Development (NEPA)), which deploys the ultra high-speed (5 tera bps) submarine cable along the African west coast with French Telecom and Alcatel — USD 700 million project [NEPAD].

### 3.4.3. GEWS/NIGERIA

With the seed fund from the Italian government through the Center for International Conflict Resolution (CICR) of Columbia University (which GLOSAS/USA arranged), our Nigerian colleague has started creating the GEWS/Nigeria to build climate change adaptation capacity (NBCCAC) in the Niger Delta. Its primary aim is to establish a network of collaborative research and capacity building for climate change adaptation in Nigeria, with emphasis on the Niger Delta Marshlands. The Niger Delta is of great significance, as it is the region that provides the greatest source of national income for Nigeria (97% of Nigeria government revenue). Violent clashes have limited oil and gas production to about 50% of installed output capacity, thereby seriously reducing national income.

Using System Dynamics methodology, a Niger Delta Energy and Climate Change Impact model will be developed to aid policy planning and management of the environment, which will then be integrated with the Nigerian National Economy Model being developed by the Millennium Institute [MI-a] [MI-b] [MI-c] and this is ultimately to be linked to the GEWS involving national models from various countries around the world. The simulation models developed will be useful planning tools for policy makers and educating young would-be decision makers in programs run in partnership with several universities around Nigeria.

We plan to conduct a gaming/simulation demonstration on the verification of energy policies proposed by Former Vice President Al Gore and President Barack Obama to replace fossil fuel with renewable sources (e.g., wind and/or solar energy) to generate electricity in the United States in ten years in relation to appropriate allocation of oil revenue in Niger Delta of Nigeria (Ollor, et al, 2009). If their policies were to succeed, it would be a severe blow to the Nigerian government's oil revenue.

This is because 97% of total Nigerian federal government revenue comes from oil, 40% of which is exported to North America — another 23% to Europe and 16% to the Far East Asian countries, including Japan, South Korea, and China. Thus, if Gore and Obama's proposals succeed in the U.S. (and are emulated in Far East Asian countries later), it would mean the end of oil revenue for the Nigerian government. What would be the consequences to other economic and social structures in the US and in other countries, particularly Nigeria? This demonstration will discuss the consequences of various policy alternatives in "what-if" trial mode with graphic presentations on large TV screens – in a sense, hands-on experiential learning based on "*facts and figures*" – NOT on "political illusions" as it is often done by more traditional approaches.

## 4. GLOBAL UNIVERSITY SYSTEM (GUS)

**Global University System (GUS)**, which is a consortium of higher educational and healthcare institutions in participating countries, aims to build a higher level of humanity with mutual understanding across national and cultural boundaries for global peace [Utsumi, T., et al, 2003] [Varis, et al, 2003] [Al Azab and Utsumi 2007]. The mission of GUS is to help higher educational and healthcare institutions in remote/rural areas of developing countries to deploy broadband Internet in order for them to close the digital divide. These institutions also act as the knowledge centers of their communities and help the eradication of poverty and isolation through the use of advanced ICTs. Learners may take courses from different member universities, obtaining their degree from the GUS, thus freeing them from being confined to the academic culture of a single university or country. In a sense, this is to create a 21st century version of the Fulbright exchange program.

The GUS is a worldwide initiative to create advanced telecom infrastructure for accessing educational resources around the world. The aim is to achieve "*education and healthcare for all*," anywhere, anytime and at any pace. The GUS has group activities in the major regions of the globe with partnerships of higher learning and healthcare institutions. Those institutions affiliated with GUS will become members of GUS/UNESCO/UNITWIN Networking Chair Program located at the University of Tampere in Finland. We envision interlinking those members through broadband Internet (see below) to conduct mega-videoconferences as well as the related research project, GEWS.

Students will also form a global knowledge forum for the exchange of ideas, information, knowledge and joint research and development. The Global E-Learning Center at the University of Tampere in Finland acts as the headquarters of the GUS. The GUS program is a comprehensive and holistic approach to building smart communities in developing countries for e-learning and e-healthcare/telemedicine.

GUS projects will combine (1) the Japanese government's Official Development Assistance (ODA) funds and (2) Japanese electronic equipment (computers, transceivers, dish antennas, etc.) with (a) Internet technology and (b) content development of North America and Europe, to help underserved people in rural and remote areas of developing countries by closing the digital divide.

## 5. BROADBAND INTERNET IN AFRICAN CONTINENT

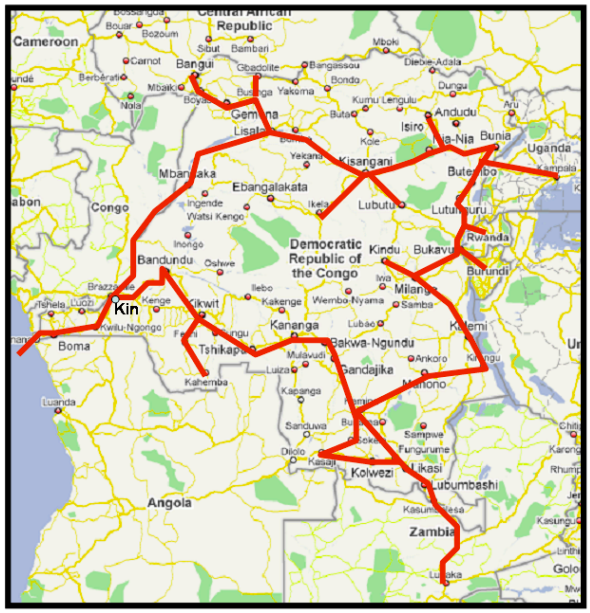
We are currently approaching cloud computing services of various vendors so that our project colleagues around the world can access the same simulation models to work together for our GEWS projects.

However, even though cloud computing enables us to interface it with netbook or iPad (e.g., the so-called “one laptop-per-child” type very light Internet terminals) even for high-performance computing power with very large storage accessible at bus-stops via WiMax wireless, the major drawback is the latency (i.e., speed) of media between them, from the terminals to cloud computing servers.

The Japanese government pledged US$4 billion to construct superhighways connecting various sub-Saharan African countries at the TICAD IV conference in Yokohama, Japan in the spring of 2008 [TICAD_IV] -- and an additional US$0.5 billion in the following year to aid African countries in general.

Although we are extremely delighted to know that major cities in Rwanda will be interconnected with 10 Gpbs trunk line for Internet access by the end of 2010, we have been advocating to deploy broadband Internet with ultra high speed (say, 5 tera bps) optical fiber network along the highways to take advantage of this opportunity — thus avoiding digging up the road later after obtaining right-of-way permissions, which are often the source of trouble and financial corruption. Broadband submarine cables are now being in place around the African continent, which could then be interlinked with GLORIAD, which now covers the northern hemisphere, – see figures below. This effort will be an extension of Dr. Utsumi’s work on closing the digital divide, which he pioneered almost 4 decades ago [Utsumi, T., 2008-a]. Our advocacy is also for ensuring an effective use of Japanese pledged funds.

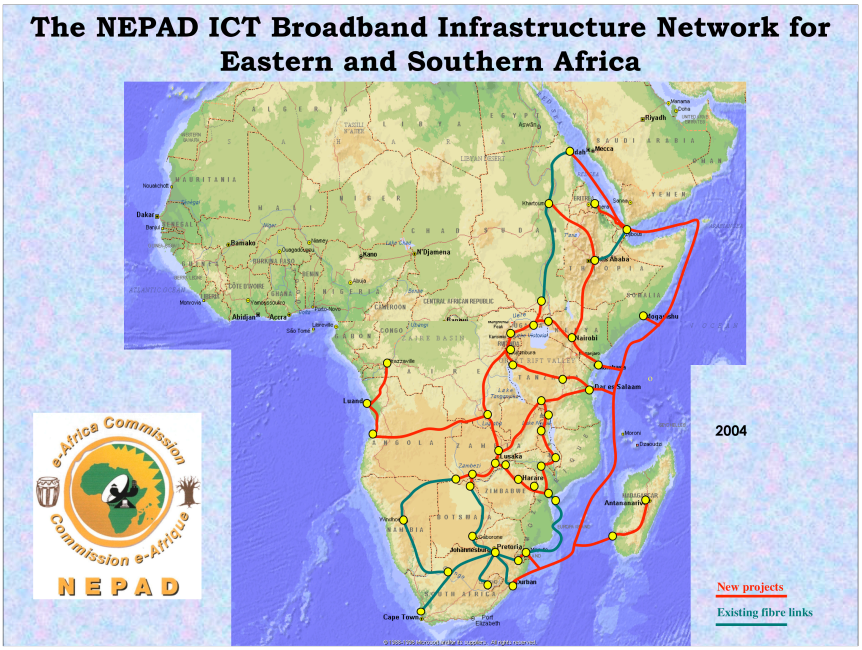
**Proposed Broadband Internet in Congo and Neighboring Countries**



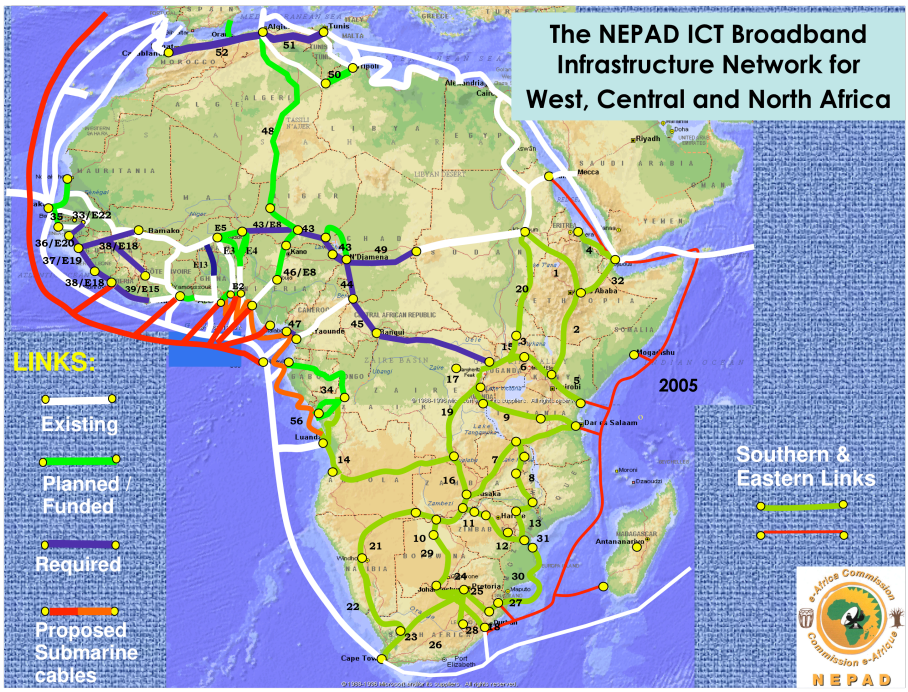

[Kyamakya_JN] <http://tinyurl.com/2u3wey6>

According to Mr. David Kanamugire, Permanent Secretary, Ministry in the President's Office in charge of ICT in Rwanda, the Presidents of Rwanda and DRC have already agreed to link their BB networks to contribute to the coordination of their development efforts. Rwanda is interested in gaining BB access to the West Coast submarine cable that is presently under construction, to complement its access to the submarine cable in the East of Africa. This could reduce the cost of Internet access, and provide enhanced security of access. Therefore, there is a basis for cooperation in BB development between both countries and this could make it feasible to coordinate the workshops that we are planning in both capitals. The development of BB infrastructure is more advanced in Rwanda through their connection with the already established submarine cable in the East Coast of Africa. We hope this effort will eventually form GLORIAD/Africa – see diagram below.

**The NEPAD ICT Broadband Infrastructure Network for Eastern and Southern Africa**




<http://tinyurl.com/27lmapr>




<http://tinyurl.com/24ojxq7>

## GLORIAD-Taj Expansion


<http://tinyurl.com/2uzyhrp>

# 6. SYSTEM DYNAMICS SEMINAR AND WORKSHOPS IN KIGALI AND KINSHASA

## 6.1 Seminar on System Dynamics

As our DRC colleague has already planned [Kyamakya, K._SD Seminar], we strongly encourage our colleagues in Rwanda and DRC to hold a two-day seminar on System Dynamics methodology prior to the workshop. This will ensure understanding of its methodology, which is the core of our GEWS project.

The seminar will be conducted by Millennium Institute, as it successfully did in Dhaka, Bangladesh in the fall of 2009 [MI-d] [MI-e].

## 6.2 Scenario settings for GEWS activities

The participants will typically be involved in the following set of social activities:

> …addressing the interplay of Social, Economic and Political drivers in complex investment and strategic decision-making by government and industry, while also taking into account the direct and indirect influences that can be brought to bear by opposition groups, multilaterals, NGOs, media and local communities. Use of such simulations permits players – whether from government, business, NGO, community or media backgrounds - to understand how the other stakeholders feel, think and operate and to develop better strategies than previously for reaching mutually satisfactory outcomes. -- taken from Short CV of Donal A. O'Neill <http://tinyurl.com/y8uob7p> [O'Neill, Donal A., (no date-1)].

This group firstly constructs scenarios to reach the above-mentioned objective, which will be followed by the Millennium Institute constructing their simulation models with System Dynamic methodology. This will then be the combined form of the "normative" and "quantitative" gaming/simulations.

The conclusions reached at the end of these discussions would be widely circulated and used to adapt the GEWS model to the specific situations of each country and guide the development of BB implementation.

## 6.3 Workshops on GEWS, GUS and BB projects

The leading civil servants dealing with ICT and the main actors promoting ICT and GEWS use in each country could negotiate the criteria for participation in the proposed workshops. The participants in these workshops would be leading decision-makers in the public and private sectors, consumer advocates, community leaders, NGOs, leading scientists and engineers, educators, youth, etc. GUS, GLOSAS/USA and Millennium Institute (MI) could suggest international expert participation and provide opinions on general selection criteria for the workshops. The initial teams of organizers of the workshops will start defining the issues that need to be specifically discussed, and attempt to match them to the profile of the participants.

The process of discussion during the workshops could begin with an attempt by the participants to define the purpose of GEWS, GUS and BB Internet establishment in their respective countries.

Then we could move on to define the constraints that these three related initiatives face in each country, in terms of availability of data, degree of Internet access, the difficulties of providing services to dispersed populations in rural areas, social resistance to the implementation of these innovations, availability of financing, lack of scientific or technical resources, weaknesses of their educational and health systems, potential for the development of e-health and telemedicine, etc. The list of themes to be addressed can change as the discussion evolves during the workshop.

Based on these three initial stages of discussion, the last stage of the workshops would be to define realistic paths for GEWS, GUS and BB development in the respective countries, possible pilot projects to test the feasibility of the conclusions of this debate, and opportunities for regional cooperation.

### 6.4 Follow up steps to these workshop

DRC colleagues may follow up taking the steps indicated by Prof. Mathias Buabua wa Kayembe, General Director of ANAPI, for establishing JAMBO NUMERIC broadband Internet in DRC with the possibility of obtaining funding from the Japanese government [wa Kayembe-LOI].

Our colleagues in DRC are now organizing a workshop alongside the seminar on System Dynamics methodology [Kyamakya, K. SD Seminar], which will also be formed by teams of experts in various fields such as education, healthcare, e-governance, agriculture, transportation, etc. Each of them would then construct their comprehensive proposal documents, and the combined form of them all will be submitted by the Congolese Ministry of Foreign Affairs to the Japanese Embassy in Kinshasa to request Japanese ODA funds.

## 7. PROJECT OUTCOMES

The outcomes of these workshops will be disseminated and developed in Rwanda and DRC in the following ways:

a. Based on the scenarios developed during the Rwandan and DRC planning workshops, the Millennium Institute will construct their simulation models with System Dynamic methodology. This will then become the combination of the “normative” and “quantitative” gaming/simulations;

b. The design of socio-economic-energy-environment problems and solutions framework in the nation’s education curricula and system;

c. The use of printed and electronic media; and

d. Presentations at relevant conferences and in journals.

The outcomes of the workshops will be publicized immediately after the planning workshops over the Internet, using targeted press releases and press conferences to attract further support for, and participation in GEWS.

## 8. CONCLUSION

The process of organization of these planning workshops on GEWS, GUS and BB development in Rwanda and DRC will be open-ended and participatory.

- Both normative and quantitative modeling will stem from these events.
- The educational and health systems will be key subjects of these discussions.
- The development of leadership for sustainable development and the participation of youth will be high priorities.
- A series of pilot projects will be defined to test and develop the key conclusions of these planning workshops.
- Great efforts will be made to disseminate to the widest possible audience the conclusions of these events.

| Support Letters | | | |
|---|---|---|---|
| 1. | Ryan Lelsey,<br>**Center for New Media Teaching & Learning (CNMTL) of Columbia University**<br><http://tinyurl.com/2a9qtwc> | | USA |
| 2. | Hans R. Herren,<br>**Millennium Institute**<br><http://tinyurl.com/23om7xu> | | USA |
| 3. | Allenna Leonard,<br>**Former President of the American Society for Cybernetics**<br><http://tinyurl.com/2avfzmz> | | Canada |
| 4. | Gregory S. Cole,<br>**Global Ring Network for Advanced Applications Development (GLORIAD)**<br><http://tinyurl.com/28wn8oj> | | USA |
| 5. | Ali Yazici,<br>**TOBB: University of Economics and Technology (ETU)**<br><http://tinyurl.com/29msyby> | | Turkey |
| 6. | Martin Kruger,<br>**Hasso Plattner Institute for Software Systems Engineering**<br><http://tinyurl.com/325hzbz> | | Germany |
| 7. | Mathias Buabua wa Kayembe,<br>**National Agency for Investment Promotion (ANAPI)**<br><http://tinyurl.com/2u2mpto> | | Democratic Republic of Congo |
| 8. | Akira Onishi,<br>**Center for Global Modeling**<br><http://tinyurl.com/293bpe9> | | Japan |
| 9. | Dennis Ramdahin,<br>**Vihara Foundation**<br><http://tinyurl.com/23bpavn> | | India |
| 10. | Dorien DeTombe,<br>**International Research Society on Methodology of Societal Complexity**<br><http://tinyurl.com/26xfejh> | | Netherlands |
| 11. | Natalia Baranova,<br>**Novosibirsk, Institute of City Development**<br><http://tinyurl.com/2ahblok> | | Russia |
| 12. | Ralph Huntsinger,<br>**California State University in Chico**<br><http://tinyurl.com/29nt4hl> | | USA |
| 13. | S. Sousptsyn,<br>**Institute of Economics and Industrial Engineering, Russian Academy of Science**<br><http://tinyurl.com/23al9za> | | Russia |
| 14. | Tatiana Novikova,<br>**Novosibirsk State University**<br><http://tinyurl.com/2bwgvjq> | | Russia |
| 15. | Veniamin Livshits,<br>**Institute of System Analysis, Russian Academy of Science**<br><http://tinyurl.com/35ujw97> | | Russia |
| 16. | Viktor I. Suslov,<br>**Institute of Economics and Industrial Engineering, Russian Academy of Science**<br><http://tinyurl.com/3ags8tb> | | Russia |
| 17. | Yaman Barlas,<br>**Bogazici University**<br><http://tinyurl.com/35hy933> | | Turkey |
| 18. | D. A. O'Neill<br>**Hoptoad Enterprises, Ltd.** | Ditto with signature<br><http://tinyurl.com/2ayrh39> | U.K. |

| | | | |
|---|---|---|---|
| | <http://tinyurl.com/28ybmj6> | | |
| 19. | Jenik Radon,<br>**School of International and Public Affairs, Columbia University**<br><http://tinyurl.com/2367xbm> | | USA |

| KEY PEOPLE for GEWS | | |
|---|---|---|
| Japan | Akira Onishi<br>Center for Global Modeling<br>Brief bio: http://tinyurl.com/22jwqxf<br>CV: http://tinyurl.com/2ctnt5x |  |
| Netherlands | Dorien J. DeTombe<br>International Research Society on Methodology of Societal Complexity<br>Brief bio: http://tinyurl.com/22jwqxf<br>CV: http://tinyurl.com/2bxf8v5 |  |
| U.K. | Donal A. O'Neill<br>Former executive of Shell Oil International<br>Brief bio:<br>CV: http://tinyurl.com/39brv6y |  |
| USA | Andrea Marcello Bassi<br>Millennium Institute<br>Brief bio: http://tinyurl.com/22jwqxf<br>CV: http://tinyurl.com/239astn |  |
| | Francisco Bozzano-Barnes<br>Tenure and Ecology LLC<br>Brief bio:<br>CV: http://tinyurl.com/25xhx88 |  |
| | Greg Cole<br>Global Ring Network for Advanced Applications Development (GLORIAD)<br>Brief bio:<br>CV: http://tinyurl.com/36ey2yp |  |
| | Hans Rudolf Herren<br>Millennium Institute<br>Brief bio: http://tinyurl.com/22jwqxf<br>CV: http://tinyurl.com/ydh6xcf |  |
| | Ralph. C. Huntsinger<br>International McLeod Institute of Simulation Sciences (MISS)<br>Brief bio:<br>CV: http://tinyurl.com/2fc7eug |  |
| | Jenik Radon<br>School of International and Public Affairs (SIPA)<br>Columbia University<br>Brief bio:<br>CV: http://tinyurl.com/23lb3sw |  |
| | Takeshi Utsumi<br>GLObal Systems Analysis and Simulation Association in the U.S.A. (GLOSAS/USA)<br>Brief bio: http://tinyurl.com/22jwqxf<br>CV: http://tinyurl.com/289ns59 |  |

| KEY PEOPLE for GUS | | |
|---|---|---|
| Finland | P. Tapio Varis, Ph.D.<br>Acting President, Global University System<br>University of Tampere<br>(Former Rector of the United Nations University of Peace in Costa Rica)<br>Brief bio: http://tinyurl.com/32w7bv<br>CV: |  |
| France | Marco Antonio R. Dias, T.C.D.<br>Vice President for Administration, Global University System<br>(Former Director of the Division of Higher Education of UNESCO,<br>Special Assistant to the Rector of the United Nations University)<br>Brief bio: http://tinyurl.com/2t8qhu<br>CV: |  |
| USA | Takeshi Utsumi, Ph.D.<br>Founder and Vice President for Technology and Coordination, Global University System<br>(Chairman of GLObal Systems Analysis and Simulation Association in the U.S.A. (GLOSAS/USA))<br>Brief bio: http://tinyurl.com/22jwqxf<br>CV: http://tinyurl.com/289ns59 |  |
| **Trustee Members of GUS** | | |
| Spain | Dr. Federico Mayor<br>President of the Foundation for Culture of Peace<br>(Former Director-General of the UNESCO)<br>Brief bio: http://tinyurl.com/2c99stj<br>CV: |  |
| **Special Advisors of GUS** | | |
| USA | David A. Johnson, Ph.D.<br>Professor Emeritus, University of Tennessee<br>Brief bio: http://tinyurl.com/28n8hs<br>CV: |  |
| Brazil | Fredric Michael Litto, Ph.D.<br>President of the Brazilian Association of Distance Education at the University of Sao Paulo<br>Brief bio:<br>CV: | |
| U.K. | Paul Lefrere, Ph.D.<br>(U.K. Open University)<br>Brief bio: http://tinyurl.com/2delusx<br>CV: |  |

## References:


Al-Azab, M. and T. Utsumi, (2007), "Creation of Global University System in Egypt (GUS/Egypt)," Paper for "ICT-Learn 2007" conference in Cairo, Egypt, September 2 to 4, 2007
<http://tinyurl.com/ypkaqo>

BBC News (2010), "East Africa seeks more Nile water," (14 May 2010)
<http://news.bbc.co.uk/2/hi/africa/8682387.stm>

Cambanis, T., (2010), "Egypt and Thirsty Neighbors Are at Odds Over Nile," New York Times (September 25, 2010)
<http://www.nytimes.com/2010/09/26/world/middleeast/26nile.html?ref=world>

Friedman, Edward A., (Summer, 2009-a), IEEE Technology and Society Magazine, Summer 2009; "Enhancing Rural Healthcare in Rwanda throuogh Clinical Decision Support"
<http://tinyurl.com/2fwn3oh>

Friedman, Edward A., (2009-b), "Computer-Assisted Medical Diagnosis for Rural Sub-Saharan Africa," IEEE Technology and Society Magazine, Fall 2009
<http://tinyurl.com/2c5qsoj>

Japanese Ministry of Foreign Affairs, (2010-a), "**Japan's Education Cooperation Policy 2011-2015: Education for Human Security ~Building Human Capacity, Nations and World Peace through Educational Development~**"
<http://tinyurl.com/24jk46a>

Japanese Ministry of Foreign Affairs, (2010-b), "**Japan's Global Health Policy 2011-2015: EMBRACE - Ensure Mothers and Babies Regular Access to Care-**"
<http://tinyurl.com/2bvhrct>

Kyamakya, K., "Expose Issued by GUS-DRC for Explaining 'JAMBO NUMERIC' to the DRC Head of State,"
<http://tinyurl.com/23u58ln>

Kyamakya, K., Preparation of a Seminar on "System Dynamics Methodology" for a subsequent and future development and implementation of a Global Early Warning System (GEWS) for DRC
<http://tinyurl.com/23w8zgd>

Millennium Institute

a. Corporate Profile <http://tinyurl.com/2bw26yz>
b. Threshold 21 Starting Framework: Integrated Development Model <http://tinyurl.com/3yvy5m9>
c. T21, Integrated Development Model <http://tinyurl.com/33txv33>
d. Workshop on An Integrated Approach to Address the Impacts of Climate Change in Bangladesh October 7 – 8, 2009, Spectra Convention Centre, Dhaka <http://tinyurl.com/y9ck3d6>
e. "Report of the Workshop on An Integrated Approach to Address the Impacts of Climate Change in Bangladesh, October 7 – 8, 2009. Dhaka, Bangladesh" <http://tinyurl.com/yfkw6z8>

Murenzi, R., (2006), "Building a Prosperous Global Knowledge Economy in Africa: Rwanda as a case study,"
<http://cid-3b330ff48f2bd93e.skydrive.live.com/self.aspx/.Public/Harvard%20Journal%20Article/Harvard%20Journal%20Article.pdf>

Murenzi, R., (2008-a), "Engineering growth: Technology, innovation and policy making in Rwanda," from Page 13 to 19 in; ENGINEERING CHANGE: Towards a Sustainable Future in the Developing World Edited by Peter Guthrie, Calestous Juma, and Hayaatun Sillen
<http://cid-3b330ff48f2bd93e.skydrive.live.com/self.aspx/.Public/Redesign%7C_AFRICAN%7C_ECONOMIES/engineering%7C_change%20.pdf>

Murenzi, R., (2008-b), "Broadband and the Development of Rwanda"
<http://www.connect-world.com/articles/recent_article.php?oid=AME_2008_05>

National Agency for Investment Promotion (ANAPI)
<http://www.anapi.org/spip.php?page=sommaire_en>

NEPAD e-Africa Commission
<http://tinyurl.com/24p34ln>

Ollor, Walter G., P. O. Jack, T. Utsumi, H. R. Herren, "NIGERIA ENERGY POLICY ANALYSIS: Modeling Nigeria's Energy Policy Response Dynamics" (January 19, 2009)
<http://tinyurl.com/2df8ybu>

O'Neill, Donal A., (no date-1), "Short CV"

<http://www.friends-partners.org/GLOSAS/Global_University/Global University System/List Distributions/2009/MTI2171_20091226/Short CV - Donal O'Neil Sep 09.jpg>
O'Neill, Donal A., (no date-2), "Understanding the Impact of Business — Through Role-Playing Simulations"
<http://www.friends-partners.org/GLOSAS/Global_University/Global University System/List Distributions/2009/MTI2042_02-20-09/Simulations Brochure.jpg>
Onishi, A., "FUGI global model" (No date-1), <http://tinyurl.com/24u9mev>
Appendix A, <http://tinyurl.com/235ztf8>
Onishi, A., "Alternative path of the global economy against CO2 emission: Policy simulations of FUGI global modeling system" (No date-2), <http://preview.tinyurl.com/3x75bc> and its Appendix B
<http://preview.tinyurl.com/36ox9s>
Onishi, Norimitsu, (2007), "In Japan's Rural Areas, Remote Obstetrics Fills the Gap," The New York Times, Norimitsu Onishi, April 8, 2007,
<http://tinyurl.com/5mjgbh>
Nigeria's Energy Policy Response Dynamics" (January 19, 2009)
<http://tinyurl.com/2df8ybu>
TICAD IV
<http://www.ticad.net/ticadiv/followup.shtml>
Utsumi, T., et al, (1986), "Peace Games with Open Modeling Network," Paper published in "Computer Network and Simulation III," S. Schoemaker (Editor), Elsevier Science Publisher B.V., (Noth-Holland)
<http://tinyurl.com/ywjjgu>
Utsumi, T., (2003), "Globally Collaborative Environmental Peace Gaming (GCEPG)"
<http://tinyurl.com/k2c7a>
Utsumi, T., P. Tapio Varis, and W. R. Klemm, (2003), "Creating Global University System (GUS)"
<http://tinyurl.com/sfgm7>
Utsumi, T., (2008-a), "Development History of Peace Gaming and Global University System"
<http://tinyurl.com/bdcjha>
Utsumi, T., (2010-a), "Global Early Warning System (GEWS) with Cloud Computing Technology"
<http://tinyurl.com/3y3gzup>
Utsumi, T., (2010-b), (20100925) "Law of Sea" as an Example of Computer Mediated Negotiation for Prevention of Conflicts"
<http://tinyurl.com/2g3teej>
Varis, T. T. Utsumi, W. R. Klemm (Eds.), (2003), *Global Peace Through The Global University System* University of Tampere, Finland,ISBN 951-44-5695-5; The entire contents of this book can be retrieved at;
<http://tinyurl.com/kofpf>
wa Kayembe, Mathias Buabua, "Letter of Intent (LOI) issued by ANAPI to coordinate from the "DRC Government" official side, the setting up of an "IT Infrastructure for Development" Project (JAMBO NUMERIC) in DRC jointly with the "Global University System for DRC (GUS-DRC) Team" headed by Prof. Kyandgoghere Kyamakya
<http://tinyurl.com/2fvqgtr>

Takeshi Utsumi, Ph.D., P.E.
Chairman, GLObal Systems Analysis and Simulation Association in the U.S.A. (GLOSAS/USA)
Laureate of Lord Perry Award for Excellence in Distance Education
Founder and V.P. for Technology and Coordination of Global University System (GUS)