



## **GLOSAS/USA**

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### **Synopsis of Global Early Warning System (GEWS) Project**

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## 1. Introduction:

The Global Early Warning System (GEWS) with a globally distributed computer simulation system 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. The idea involves interconnecting experts in many countries via the global Internet to collaborate in the prevention of crisis and developing solutions to mitigate and adapt to already existing world crises or the ones in the making, such as the deteriorating environment of our globe, the 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.

This project is to construct national socio-economy, energy, environment simulation models of each participating country, which will then 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, 2003). Global University System (GUS) (Utsumi, et al, 2003) is to assist the model building, maintenance, and administration and gaming execution.

The GEWS is the outgrowth of Globally Collaborative Environmental Peace Gaming (GCEPG) (Utsumi, 2003) project, which started in early 1970s. It was originally proposed by the Prime Minister of the U.K., Mr. Gordon Brown, at the G20 Summit in London in April 2009.

## 2. Need:

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 generation, it is an urgent task to curb the sources of such global warming. Moreover, accelerating its trends are the high and still raising consumption levels in the industrialized countries, the continued population increase in developing countries and rise of living standard with economic improvement, all causing severe strain to resource availability, particularly of water in many parts of the world. This will inevitably end with conflicts of interests among various stakeholders, e.g., bio-fuel vs. food production in poor countries, land grabbing by wealthy nations to feed their population, etc., to name but a few. There will be many other conflicts on environmental issues in local, regional and global scales.

Subsequently, it is now an urgent need to educate young would-be decision makers who are now in the teens and twenties who will be the decision makers around 2030s. Most of the United Nations Millennium Development Goals (MSGs) will not be met, and hence the trend for more fierce resource competitions and potential conflicts. The new decision maker generation must therefore be well prepared to cope with those issues. 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.

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

## 3. Purpose:

This project will train local experts for leadership development, in relation to strategic use of technologies and cooperation among stakeholders 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)** on economic, social and environmental issues in various countries, which will be interconnected through broadband Internet for conducting the following two-tier system;

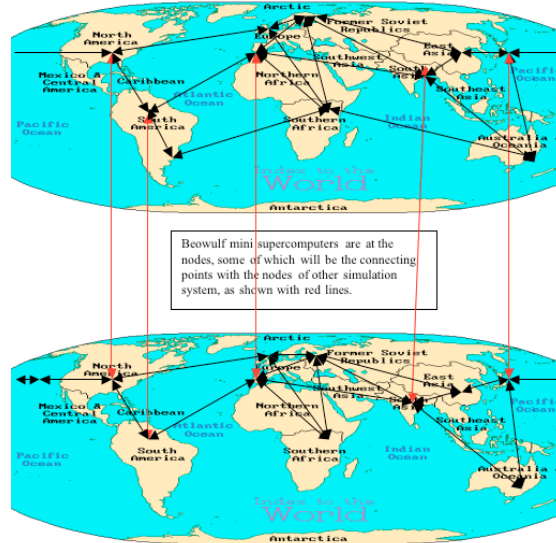
- a. One for training young would-be decision makers for understanding interwoven world phenomena with rational analysis and critical thinking, and then in crisis management, conflict resolution, and negotiation techniques basing on "*facts and figures*" and,

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

#### 4. Technical Infrastructure:

With global cloud computing technology, we plan to develop a socio-economic-environmental simulation system and a climate simulation system in parallel fashion, both of which are to be interconnected in global scale.

##### Globally Distributed Climate Simulation System (GDCSS)



##### Globally Distributed Socio-Economic-Environmental Simulation System (GDSEEESS)

Each country model runs all the time, continuously and repetitively, say, from the year 2000 to 2050, as similar to a repetitive analog computer. The graphical presentation of the year 2000 to the present would be the past data, and the one from the present to the 2050 would be the prediction made by the simulation model. The initial conditions at the present would be revised with the fresh input data, say, about the national consensus or GDP (gross domestic product) figure, etc. This makes the simulation as similar to the one of a simulator/trainer of nuclear power plant or petroleum refinery or ethylene plant — or it could be the engine of a large oil tanker, which President Obama often quotes as analogous to the operation of the United State economy.

Each Global University System (GUS) (which is an associating project) of various countries will maintain the sub-models of their countries 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.

#### 5. Gaming/Simulation Demonstration:

We plan to conduct a gaming/simulation demonstration (\*) on the verification of energy policies proposed by former Vice President, Mr. Al Gore and President Barack Obama (both Nobel Peace Laureate) to replace fossil fuel with renewable one (e.g., wind and/or solar energy) to generate electricity in the USA in ten years in relation to appropriate allocation of oil revenue in Niger Delta of Nigeria, -- What would also be the consequences to other economic and social structures in the US and in other countries, particularly Nigeria? Would this be a viable direction? The Nobel Peace-winning Intergovernmental Panel on Climate Change (IPCC) also advocated reduction of meat-eating for mitigating climate change. How would this affect food availability and price, the environment, human health and social structures in the US as well as in other countries?

(\*) This is to be held during Global Symposium on “Climate Change and International Peace and Security, Global Challenges and Global Solutions” at the Interdisciplinary Approaches Center for International Conflict Resolution (CICR) in the School of International and Public Affairs (SIPA) of Columbia University in May 2010 (tentative). The potential invitees would be from all different

fields including scientists, energy specialists, military figures, academics, practitioners, policy makers, government representatives and representatives from multi-lateral organizations.

The main idea of this conference is mainly based on conflict resolution; “Much of the public and political debate on global warming has focused on finding substitutes for fossil fuels, reducing emissions that contribute to greenhouse gases and furthering negotiations toward an international climate treaty — not potential security challenges.” “Or we will pay the price later in military terms,” -- “And that will involve human lives.” (Broder, 2009)

## **6. Beneficiaries:**

Our first milestone of this project is to make the GCN/CCPMRs as one of the Research and Training Center (RTC) programs of the United Nations University (UNU) with the collaborative efforts of the Earth Institute (EI) of Columbia University, Millennium Institute (MI), New York University/Polytechnic Institute (NYU/PI), International Communication of Negotiation with Simulation (ICONS) of the University of Maryland, GLOSAS/USA, and Global University System (GUS)/UNESCO/UNITWIN Networking Chair Program at the University of Tampere, Finland, etc.

If accepted, as the mandate of the UNU/RTC, this project will help decision-makers at the various agencies of the United Nations. At each center of GCN/CCPMRs in various countries, this project will also train local experts and young would-be decision-makers among grassroots, government, university, etc., for leadership development in relation to strategic use of technologies and cooperation among stakeholders for more effective advocacy, informed policy, public understanding and participation and concrete community development.

## **7. Action Plan:**

With a series of workshops for this multi-lateral, multi-year project, we will devise asynchronous, interactive coordination of globally dispersed, dissimilar simulation models of socio-economic-energy-environmental system through broadband Internet as focusing on the sustainable development of participating countries. We will utilize the existing models as much as possible; otherwise, researchers will construct their country models. Those models will form an Open Model Network (OMN) with appropriate tables of variables which will be interconnected each other. The organization and management structures of the GEWS with time and task schedules will also be formed, which will build fund raising plans for further development.

As using most sophisticated university-based mathematical modelling techniques and social science skills of experts, graphic info modelling/mapping and potential "gaming" on key issues and solutions will assist each group's ability for standardized data gathering and situational analyses, projecting out possible outcomes for more informed decision making and activities.

Prof. Onishi of Japan has agreed to replace each country model of its 192 countries and 8 UN sectors in his FUGI world model (mostly made by econometrics) with the one of the models preferred by the participating countries — either made by system dynamics, econometrics or input-out methodologies, as far as they produce time-series (Excel type) tables.

Millennium Institute (MI) in Washington, DC area is now consummating a contract to construct models of national energy model (by system dynamics) of 15 Economic Community Of West African States (ECOWAS) member states — ECOWAS is a UN unit. MI plans to construct national economy models of 100 countries in the next two year period. MI has already conducted a seminar of system dynamics in Dhaka, Bangladesh in early October 2009. MI will assist modeling for our colleagues in Nigeria, India and Bangladesh, some of who are now applying funds for constructing their country models to the International Development Research Centre (IDRC) of Canada with our assistance. We also assisted our overseas colleagues to get seed fund from the Italian government through the CICR of Columbia University for creating their GEWS<sup>2</sup>.

## **8. Dissemination:**

The results of this project will be disseminated throughout the community of UNU/RTCs to add to the general body of knowledge or methodology in dealing with the global warming by the following procedures; (a) Through the design of socio-economic-energy-environment problem and solutions framework into the nation's education curricula and system, (b) Through the electronic media, and (c) Presentations at relevant conferences and in journals.

The success of the workshops mentioned above will also be publicized over the Internet and with press release to attract further support from other contributors.

## 9. Conclusions:

The ultimate goal of our project is to attain global peace by promoting mutual understanding among young would-be decision-makers, by having them engage in Peace Gaming for conflict resolution of various environmental issues in local, regional and global scale with the extensive use of most advanced Information and Communication Technologies (ICTs). Education of youngsters/adults on a global scale is the **best** future investment for global peace and progress. Senator Fulbright once said that *learning together and working together are the first steps toward world peace*.

We will also foster creativity of youngsters around the world by enabling the ones in developing countries to work with colleagues in advanced countries and perform joint collaborative research with use of virtual laboratories for hands-on experiential/constructive learning and creation of knowledge through the global GRID technology, thus forming Globally Collaborative Innovation Network (GCIN) <<http://tinyurl.com/fuwg6>>.

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## **11. Participating Institutions:**

### **Canada**

- 1. International Society for Systems Science**
- 2. University of Ottawa**

### **Japan**

- 1. Soka University**

### **Netherlands**

- 1. International Research Society on Methodology of Societal Complexity**

### **Nigeria**

- 1. Igbinedion University, Okada (IUO)**

### **Russia**

- 1. Novosibirsk State University**
- 2. Russian Academy of Sciences**

### **Turkey**

- 1. Bogazici University**

### **United States of America**

- 1. Columbia University**
- 2. GLObal Systems Analysis and Simulation Association in the U.S.A. (GLOSAS/USA)**
- 3. McLeod Institute of Simulation Sciences (MISS) at California State University at Chico**
- 4. Millennium Institute**
- 5. Polytechnic Institute of New York University**
- 6. University of Maryland**