U.S.-China Roundtable on Scientific Data Cooperation
Summary Report from 2007 Meetings

Prepared by
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A. Introduction

This is the Summary Report from the second meeting of the U.S.-China Roundtable on Scientific Data Cooperation (referred to below as the U.S.-China Roundtable) and of two side workshops, which were held at the National Academy of Sciences in Washington, DC. on 1-2 November 2007. In addition, there was an afternoon briefing on 31 October for the Chinese delegation members by National Institutes of Health staff of their activities, but there were no proposals or action items resulting from that meting. The U.S.-China Roundtable is an activity that is co-organized by the CODATA National Committees of the two countries under their respective Science Academies. Appendix A provides the summary description of the U.S.-China Roundtable.

The list of participants in all the meetings on 31 October-2 November is included in Appendix B. There were 26 members of the Chinese delegation and approximately 55 U.S. participants. The agendas for the National Institutes of Health's International Research Programs and Database Activities, the Workshop on US-China Cooperation on Health and Biomedical Data, the Workshop on U.S.-China Cooperation on Seismological Data, and the Second Meeting of the U.S.-China Roundtable on Scientific Data Cooperation are provided in Appendixes C, D, E, and F, respectively. In the online version of this report, the slides from each presentation are linked to the agenda item; the slides are not included with the print version because they are too voluminous. The U.S. CODATA wishes to acknowledge and express its appreciation for the generous support for this activity from the National Institute of Biomedical Imaging and Bioengineering (NIBIB) at the National Institutes of Health (NIH) under Contract No. N01-OD-4-2139, and from the National Science Foundation under Award No. GEO-0622279.

The remainder of this Summary Report presents the results of the discussions from the three meetings on 1-2 November in the areas of health and biomedical data cooperation, environmental and geospatial data cooperation, and cooperation in cyber-infrastructure data applications. The summaries are based on the notes taken by the U.S. rapporteurs. The report was reviewed by all the participants in each meeting and incorporates their comments.

B. Health and Biomedical Data Cooperation Proposals and Agreed Actions

This part summarizes the results of discussions from the Workshop on U.S.-China Health and Biomedical Data Cooperation, held on 1 November 2007, and from the continued discussion of these issues at the health and biomedical data breakout session in the US-China Roundtable meeting on 2 November. The Workshop was co-chaired in the morning by Dr. Roberta BALSTAD, Columbia University, U.S., and Prof. Jiarui WU, Shanghai Institutes for Biological Sciences (SIBS), China. In the afternoon, the Workshop was co-chaired by Prof. Michael JOHNSON, Center for Pharmaceutical Biotechnology, University of Illinois at Chicago, and Prof. Heng WANG, Basic Medicine Institute, China Academy of Medical Sciences. The breakout session at the U.S.-China Roundtable on 2 November was co-chaired by Dr. Belinda SETO, NIBIB/NIH, US, and Prof. Jiarui WU, SIBS, China. The rapporteurs for both meetings were Paul UHLIR, JD, National Academy of Sciences, U.S., and Dr. Ling YIN, PLA General Hospital, China.

In preparation for the discussions of health and biomedical data cooperation, the organizers at both the U.S. and the Chinese National Committees for CODATA developed an informal questionnaire that was sent to all the principal investigators on each side who are engaged in bilateral research with the other country. These names were obtained from the respective principal funding agencies on each side, in the case of the United States, from the public CRISP database of the National Institutes of Health. Appendices G and H provide the summary results of the Chinese and U.S. responses, respectively. In the case of the U.S., the responses were used to invite the principal investigators who expressed an interest in the U.S.-China Roundtable activity, of which 15 attended the meetings.

1. Proposal to establish the international biomedical data sharing platform
Prof. Ling YIN, PLA General Hospital, and Dr. Yuan LIU, National Institute of Neurological Disorders and Stroke (NINDS)

Dr. YIN provided a proposal for this activity, which is included in Appendix I. A pilot project in neuroinformatics was proposed by Dr. LIU, who noted that there are different strengths in the two countries that can be very complementary. China has centralized support and data sharing program and a lot of data. The U.S. has a more mature research system and robust neuroinformatics capabilities. Several steps were proposed—begin with a joint meeting on a specific neurological topic such as stroke to discuss collaboration details. Select some low-hanging fruit and start small. Establish a platform for promoting joint database work. Then work on interoperability through establishing standards and ontology, access and use. Dr. LIU's summary proposal is included in Appendix J. The NIBIB also has neuroimaging database activities that could be part of this cooperative activity.

Action #1.1: Drs. YIN, LIU and the Roundtable Steering Committee will develop a full proposal in the first quarter of 2008, with a view to holding the first meeting in conjunction with the December 2008 U.S.-China Roundtable meeting in Kunming, or earlier, if resources are available.

Action#1.2: Establish a Web site to share for results of the Roundtable on both sides. The Chinese Academy of Sciences Computer Network Information Center (CAS/CNIC), which also provides the secretariat for the Chinese National Committee for CODATA, will host the Chinese side. The Web site on the U.S. side will be hosted by the U.S. CODATA.

2. Establish an international Working Group on Biomedical Data Sharing under the international CODATA, Prof. Ling YIN.

Prof. YIN also suggested developing a proposal for an international CODATA Working Group on Biomedical Data Sharing. This will be done separately from the U.S.-China Roundtable activity, since it is an international CODATA proposal.

Action#2: Dr. YIN will take the lead to develop proposal on Chinese side in 2008 for possible consideration and approval by CODATA. The U.S. CODATA will cooperate on this and be a co-sponsor.

3. Public Health Data Sharing: Proposal for cooperation on emerging infectious diseases through a Web-based Surveillance System
Robert SPEAR, Alan HUBBARD, Edmund SETO, University of California (UC) at Berkeley, Michael JOHNSON, University of Illinois, Junxing KANG, Sichuan Center for Disease Control (CDC), Guanhua XU, CAS (and former President of the Ministry of Science and Technology--MOST), and Wuchuan CAO, Key State Lab of Pathogens and Biosecurity at Beijing Institute of Microbiology and Epidemiology

This proposal was submitted by the UC Berkeley experts (see Appendix K). A related proposal was submitted by Dr. Michael JOHNSON (see Appendix L), but it was agreed that the Berkeley group's activity was already more fully developed and would provide the basis for further discussion. The focus of the UC Berkeley proposal is to link agricultural and human surveillance systems to better anticipate new pandemics (e.g., HIV, SARS, swine flu, potential avian flu). There are overlapping activities and potential uses by surveillance and research communities that would benefit from more data sharing. Data policy, working procedures, and standards need to be discussed and established. China has quite a comprehensive surveillance system already, but the data disclosure and access are limited and the quality of data may be problematic. The surveillance system can be improved by examining the existing cooperation activities and policies for data sharing to see what the situation is and to identify areas for further cooperative work. A pilot project is proposed at the Sichuan CDC, where the UC/Berkeley team is already collaborating. During the discussion of this proposal, it was noted that the participants in this project need to determine what the World Health

Organization (WHO) and the Chinese CDC are already doing in this area first. Also the new report of international disease surveillance by the U.S. Institute of Medicine's Board on Global Health provides additional background information. Coordination of this project with the Chinese and U.S. CDCs, and with the WHO may be desirable.

Action #3: The UC Berkeley team will continue to take the lead on developing this proposal. The UC Berkeley group is invited to consult with the U.S.-China Roundtable Steering Committee and with the IOM Board on Global Health. Specific cooperation activities can be discussed at the next U.S.-China Roundtable meeting, which is planned to take place in China next December.

4. Improving policy and practice for biological sample transfer and use in bilateral and international research
Wei ZHENG, Vanderbilt-Ingram Cancer Center, Vanderbilt University School of Medicine

There is a well-recognized need to promote understanding and improvement of the policy and practice associated with bilateral (and international) transfer of biological samples and materials. This issue was identified as the #1 problem from the perspective of U.S. biomedical scientists doing research with China, based on the responses to the questionnaire that was sent out in advance of the U.S.-China Roundtable meeting and workshop, as well as through the discussion at the meetings. There is a problem with both export from China to the U.S. and import of materials into China from the U.S. The process needs to be streamlined to reduce the transaction costs and negative effects on research. The procedures for approval of such transfers are not transparent to either the U.S. or Chinese scientists. They do not understand the process or how to deal with it. There are rules, but they are not well known and not always followed.

There are two possible approaches to addressing this identified problem, one at the working scientist level and the other at the government policy level. At the working scientist level, a handbook of good practices could be developed for researchers involved in bilateral (and international) transfers of biological materials in life science research. It could address how to avoid the pitfalls of this process and on strategies for developing the research project plan to minimize the costs and barriers. The U.S.-China Roundtable could form a separately funded working group from both sides; do some research; organize a workshop; draft a report; and support a high-level dialogue. See the proposal by Wei ZHENG in Appendix M.

At the government policy level, one possible follow-up is to organize a workshop or study at the U.S. NAS and another is to recommend to the U.S.-China S&T Bilateral Cooperation mechanism to take this issue up. Another possible approach is for the CAS to write a letter to the Chinese Ministry of Health requesting them to be more consistent and transparent in the application of the rules for transport of biological samples.

Action #4.1: Wei ZHENG will develop a proposal with Paul UHLIR for a possible Working Group on the U.S. side to create an online handbook on the transport of biological samples from the two countries. Paul UHLIR will then contact the NIH-funded PIs and other life science groups at the U.S. National Academies to determine next steps, and will consult with U.S. side of the Roundtable Steering Committee. Once the U.S. side is organized, the U.S. side will discuss the proposal with the Chinese side.

Action #4.2: Paul UHLIR will consult with other life science groups at the National Academies and with the NIH to determine whether there is an interest in doing a study or major workshop on this topic at the international level, not just for U.S.-China.

5. Cooperation on the information system of clinical practice and clinical research of traditional Chinese medicine (TCM)
Baoyan LIU, China Academy of Chinese Medical Sciences (CACMS), and Jeffrey WHITE, NCI

Prof. LIU highlighted the need to improve the TCM clinical terminology, improve the model of TCM clinical information, and review the policy of sharing data with hospitals. Standards are important in TCM data, as in other areas. In the U.S. there is a lot of activity to standardize treatments and data and there is a question whether the standards are the same as in China. It is a very complex area. The NCI is already cooperating with the CACMS TCM group. One action that was identified on the U.S. side was the need to translate some of the materials into English. Other actions will be determined.

Action #5: The U.S.-China Roundtable Steering Committee will consult with Prof. LIU and Dr. WHITE about whether or how the Roundtable could be used to promote such cooperation.

6. Biological Data Sharing and Bilateral Cooperation
Yixue LI, Shanghai Institute of Biological Sciences (SIBS), and Jun YU, Beijing Institute of Genomics, CAS

Drs. LI and YU proposed to establish a formal biological data sharing committee and conduct regular cooperative activities with NCBI/NIH. James LUO suggested that several NIH Institutes, including NIBIB, NCI, and NINDS could share information about data management and interoperability practices through this group. However, such information sharing also could be done through the mechanisms proposed under proposal #1.

In addition, Dr. Donald LINDBERG, Director of the National Library of Medicine, suggested the following areas of possible cooperation:
   a) A Chinese mirror site for PubMed Central (Contacts: Drs. David LIPMAN and James OSTELL, NLM/NCBI);

b) Genomic input for sequencing the influenza gene (Contact: Dr. David LIPMAN NLM/NCBI);

c) Permission to use the Chinese version of Medical Subject Headings (MeSH) for the Unified Medical Language System (UMLS) (Contact: Dr. Stuart NELSON, NLM); and

d) Accruing Chinese clinical trials for the ClinicalTrials.gov database (Contact: Dr. Deborah ZARIN, NLM).

Action #6: Profs. LI and YU will develop their proposal further. A committee of experts could be formed in collaboration with the Roundtable Steering Committee. The U.S. side of the Roundtable Steering Committee will contact the NLM/NCBI and other NIH Institutes to determine next steps in forming this group and promoting this cooperation.

7. How Chinese funding agencies could provide supplemental funding for projects in China that are primarily (or initially) funded by NIH
De-Kun LI, Kaiser Permanente

NIH has a competitive supplement grant already and MOST also funds cooperative international research. To encourage and facilitate Chinese scientists to participate in NIH-funded biomedical research, the Chinese Natural Science Foundation, the main funding agency for Chinese biomedical research, could establish a separate review panel to review applications that are supplemental to NIH-funded U.S.-China collaborative studies. See Appendix N for his proposal.

8. A Proposal for China-U.S. Cooperation in National Trial Sites of Chinese Healthcare Security System for Massive Farming and Rural Communities
Steve CHEN, Third Brain Research Institute

Dr. CHEN described his project (see his slides).

Action #8: Dr. CHEN will develop a proposal for consideration by the Roundtable Steering Committee.

9. Proposal of West of China Environment and Health Institute
Dr. Guowei YU

Dr. YU had two suggestions for follow-up work: (1) an environmental health impact assessment; and (2) a disease syndrome early warning system (see her presentation slides).

Action #9: Dr. YU will prepare proposals for consideration by the Roundtable Steering Committee

C. Environmental and Geospatial Data Cooperation Proposals and Agreed Actions

This part summarizes the results of discussions from the Workshop on U.S.-China Seismological Data Cooperation, held on 1 November 2007, and from the continued discussion at the environmental and geospatial data breakout session in the U.S.-China Roundtable meeting on 2 November. Both the Workshop and the breakout session were co-chaired by Dr. Raymond WILLEMANN, IRIS, U.S., and Prof. Huadong GUO, CEODE, CAS, China. The rapporteurs were Mr. Raed SHARIF, National Academy of Sciences and Syracuse University, U.S., and Prof. Chuang LIU, Institute of Geography and Natural Resources, CAS, China.

1. Development of Additional Meteorological Data Sharing Between China and the United States

This was a proposal by Prof. Yaxi GUO, Director General, Department of Sciences and Technology Development, China Meteorological Administration. See the background paper by Prof. GUO for more details in Appendix O.

CMA and NOAA began data exchange in the 1980s. CMA provides monthly and daily surface data of 196 stations, and promotes research of climate change and other areas. In 2006, CMA and NOAA had the fifteenth regular meeting, which was hosted by NOAA's National Weather Service. The main purpose of the meeting was to develop a U.S. – P.R.C Bilateral Agreement on new cooperative activities in the field of Atmospheric Science and Technology for the years 2006-2008. Data access, dissemination, and exchange are included in this agreement, but there is still some work to be done to further promote and enhance this collaboration.

A number of ways to further the development of meteorological data sharing services in China were presented and discussed. These include:
- Use all the capabilities of operational systems and provide more and better services.
- Rely upon the advances of science and technology, improve data resources integration and data security, and provide high-quality data products for sharing.
- Strengthen domestic and international cooperation with other departments, organizations, and countries
- Enact the Chinese national information sharing law and policy, and construct a new order of information sharing

There were two requests from the Chinese delegation in order to enable Chinese scientists to do more and better meteorological research:
Access NOAA's global observation datasets:
- Update COADS (Comprehensive Ocean-Atmosphere Data Set)
- Update CARDS (Comprehensive Aerological Data Set)

- Update GDCN (Global Digital City Network)
- GHCN (Global Historical Climate Network)
- Global weather report (base on GTS)
- Analysis of grid data (1°×1°)

The application of NCAR's software in CMA
- CDP (common data protocol)
- IDV (Integrated Data Viewer)

Actions:
1- NOAA's representative who was present at the meeting, Margarida YUAN, Senior International Relations Specialist, offered to facilitate and coordinate the communication between the Chinese delegation and agencies and individuals at NOAA.
2- Prof. Yaxi GUO will send an official communication to NOAA counterparts with more details about her ideas and requests.
3- The U.S.-China Roundtable may serve as a forum for future discussions of this cooperation, if the parties consider that appropriate.

2. Emergency Access to and Sharing of Global Earthquake Disaster Data

See the proposal by Dr. Guosheng QU, NERSS, in Appendix P for more details. The main goals of this proposal that were discussed included the following:
- To establish disaster information collection networks in areas and countries strongly affected by earthquakes for international USAR operation at a global scale.
- To improve some quick estimation models of strong earthquakes.
- To establish useful databases worldwide for quick estimation of strong earthquake disasters.
- To quickly estimate the situation, scale, area, and tendency of disaster events.
- To make decisions correctly for disaster rescue operations.
- To make decisions and suggestions for emergency managers and rescue operators quickly during disaster operation.

Long-term actions:
1- To develop emergency response systems, including early warning and quick estimating, decision-making models, and databases (e.g., seismotectonics, active faults, historical earthquakes and death toll of earthquakes, density of population, houses or building and their resistance standards, etc).
2- To develop some standards and policies for data access and sharing by organizing workshop and promoting cooperative research.
3- To establish about 50 nodes for earthquake disaster emergency response in the developing countries in Pacific seismic zones, and Himalayan-Alps seismic zones, and other earthquake impacted areas.
4- To set up two centers, one each in the USA and China, for managing this network.

5- To operate earthquake disaster emergency response networks in developed and developing countries step by step.
6- Find sources from USA and China for funding.

Short-term actions:
1- Dr. Toral PATEL-WEYNAND from the USGS has already conveyed the proposed activities of the Chinese delegation to her colleagues at the USGS. William LEITH of the USGS will follow up with Dr. QU.
2- A seismology workshop will be held at the University of Colorado in May 2008 (Contact: David WALD), at which time Dr. QU will follow-up on these proposed activities.
3- The U.S.-China Roundtable meeting in December 2008 can be used as a further opportunity to continue these discussions and actions.

3. Improve the processing of the digital data at larger scales to help detect the location of earthquakes

This was an informal proposal by Prof. Paul RICHARDS. The processing of such data is currently done using traditional methods and most of the time at small scales. There is an urgent need for new and modern methods of analysis at larger scales.

Proposed specific activities:
- Documentation of these new methods of analysis
- Publications of the results of these modern methods
- Writing a proposal for funding to work on larger scale datasets
- Training of new participants in both countries (students and professionals)
- Choose much larger datasets for analysis
- Actual application of data products from these methods to be used by wider communities

Actions:
1- Prof. RICHARDS will pursue this personally with Chinese and U.S. colleagues.
2- Dr. QU will contact some Chinese colleagues who might be interested in participating.
3- Prof. RICHARDS will finish the writing of this proposed activity and send it to the Chinese colleagues.
4- This proposal also will be discussed at the University of Colorado workshop in May 2008 and the next U.S.-China Roundtable meeting will be considered as a forum for discussing follow-up actions.

4. Updating the bilateral Remote Sensing Ground Station (RSGS) Agreement to include the new Chinese Center for Earth Observations and Digital Earth (CEODE)
Prof. Huadong GUO of the Chinese Academy of Sciences recently established the CEODE and requested that the existing bilateral RSGS Agreement be amended to include the new Center.

> 1- Dr. Toral PATEL-WEYNAND has conveyed to her colleagues at the USGS the request of Prof. Huadong GUO to consider updating the RSGS Agreement to include CEODE and to improve collaboration and exchange of data.

5. Promote and facilitate visits by Chinese scientists for joint research, especially in the seismology area, to the United States

There was a discussion of possible visits by Chinese experts to the U.S. to conduct cooperative research. It was suggested that they could bring their datasets and instruments and work on them while in the U.S. Both the USGS and IRIS Data Centers expressed an interest to host Chinese scientists.

> 1- The parties at this Workshop will follow up on possible visits by Chinese scientists to the U.S.

6. Select complementary databases on each side for mirroring

There was general interest in exploring the possibilities for establishing mirror sites to improve access to complementary data on a bilateral basis. Databases at the following pairs of data centers were mentioned as potential candidates: (1) The Center for International Earth Science Information Network (CIESIN) at Columbia University and the Institute for Geographic Sciences and Natural Resource Research at CAS; (2) the National Snow and Ice Data Center (NSIDC) at the University of Colorado and the CAS Langzhou Snow and Ice Data Center; and (3) the National Center for Atmospheric Research at the University of Colorado and the CAS Computer Network Information Center (and several other institutes).

> 1- Huadong GUO and Paul UHLIR will contact the managers of these data centers on each side, respectively, to determine interest in this and to invite them to the next U.S.-China Roundtable meeting to discuss such plans.

7. Initiate the exchange of lunar data on a bilateral or multilateral basis

A brief discussion of lunar data exchange was initiated by the Chinese side, but no specific proposal was made.

1- This is a topic that could be explored at the 2008 U.S.-China Roundtable. Huadong GUO and Paul UHLIR will explore interest on each side in advance of the next Roundtable meeting. Such an activity also could be initiated on a multilateral basis through an international CODATA Working Group.

D. Cyber-infrastructure Data Applications Cooperation Proposals and Agreed Actions

This part summarizes the results of the breakout session on cyber-infrastructure data applications cooperation at the U.S.-China Roundtable meeting. The Co-chairs were Prof. Hal ABELSON, Massachusetts Institute of Technology, U.S., and Prof. Yun XIAO, Computer Network Information Center (CNIC), CAS, China. The rapporteurs were Dr. Roberta Balstad, Columbia University, U.S., and Mr. Runqiang WANG, CAS, China.

The breakout session participants discussed several proposals that had been submitted for consideration at the Roundtable and theses are summarized below first. The participants then made their own proposal that combined several of the proposals, and this is presented at the end.

1. Data mirrors and data exchange, **submitted by Runqiang WANG, CAS**
See Appendix Q. This proposal suggested picking a Chinese database and mirroring it in the U.S. The benefit of this proposal is that an important database will be exchanged and mirror sites established. It would also create models for integrating local scientific data with data in mirror sites. Participants discussed the issue of translation of the data, but felt that this would not be a major problem for observational data. They agreed that this could serve as an empirical case study that would help scientists to better understand the issues involved in cross-national, cross-linguistic data mirroring. Among other issues that were discussed were updating databases at mirror sites, the need for research in the synchronization of data grids, the need for data-consistent formats, solutions for large-scale data transfer, and managing queries across distributed databases. With regard to this last issue, the discussion concerned whether to distribute the query or to go to a higher level of integration.

Steps identified for implementation of this proposal include selecting potential datasets to mirror by surveying scientists in both countries; creating policies for data acquisition, updating, and management at the parent site and the mirror site; creating the mirror site; creating software for access control and usage statistics; and making the mirror site public.

2. Data management and long-term curation practices: training the next generation of stewards, submitted by William ANDERSON, Praxis101, U.S.
See Appendix R. This proposal involved using a joint data mirror program to serve as a case study in training individuals for future data management. Participants discussed potential benefits. It could define data management training from the perspective of both the student and the teacher; engage the next generation of data managers; contribute to the development of on-line data resources to support scientific data managers; document the experience so that it can serve as a element in a growing body of knowledge about data management; and possibly contribute to the construction of a data management

handbook. It was also suggested that individuals involved in the project keep web-logs about their experience that can serve as a source of information on the project.

The discussion of steps to implementation included the suggestion that there be an advisory group, joint conferences that could bring the participants together to discuss their experiences, the creation of on-line resources, and, most ambitiously, the creation of an international degree program in data management.

3. Cooperation in scientific workflow, a proposal submitted by Yuanchun ZHOU, CAS.

See Appendix S. This proposal was directed toward research and the development of tools in scientific workflow. Participants noted that it would require a survey of the current status of data applications and there would be a need to understand the application process for each organization. One of the issues involved the provenance of the data and its quality. A second is related to defining the ontologies and tools.

4. A Case Study for US/China Joint Data Management

The participants in the breakout group on cyber-infrastructure data applications cooperation decided to recommend a new project that combined several of the proposals it reviewed. The activity would involve selecting a large scientific database in the US and mirror it in China, as well as a large Chinese scientific database, which would be mirrored in the US. In addition to providing the benefit of the wider access to data, participants suggested that it should be conceived as a reflective case study which can be a resource for learning about management of scientific and technical data and international cooperation.

Initial steps would include the following:
1. Selection of the host organizations in China and the US;
2. Assembly of a team to create a detailed funding proposal, including cost estimates and time lines;
3. Selection of the databases for mirroring
   a. They should be large enough to require addressing basic issues related to successful mirroring
   b. They should have sufficient scientific value to make it worthwhile to establish a mirroring program
   c. There should be initial confidence that each database can be integrated into the receiving host's data management infrastructure
4. Identify a partner to work on documenting the case study and prepare educational materials; and
5. Identify participating user groups and scenarios in both countries.

Participants in the group suggested Fall 2008, as the target date for the launch of this activity.

Appendix A

U.S. – China Roundtable on Scientific Data Cooperation

U.S. National Committee for CODATA
Board on International Scientific Organizations
National Academy of Sciences, U.S.
and
Chinese National Committee for CODATA
International Cooperation Bureau
Chinese Academy of Sciences

The U.S. National Committee for CODATA and the Chinese National Committee for CODATA, under the auspices of their respective Academies of Sciences, will organize a U.S. - China Roundtable on Scientific Data Cooperation, which will convene a series of meetings over an initial four-year period pursuant to the following Statement of Task:

1. Provide a unique bilateral forum for government, academic, and private-sector stakeholders in the United States and China to discuss and address scientific data practices and policies, pursuant to a mutually agreed agenda.
2. Serve as a catalyst and coordinating body for bilateral cooperation on scientific data practices and policies at the Academy and national level in each country, with appropriate recognition and representation of other thematically related bilateral and international activities.

The four areas identified for framing the scope of discussion include: data policy, cyber-infrastructure data applications, health and biomedical data, and environmental and geospatial data. The following types of possible cooperation initiatives in these four areas are suggested for discussion and potential implementation:

1) Exchanging of information and identification of issues concerning scientific data activities, policies and developments in intellectual property law and public information policies, including barriers to data exchange at the national and international levels, which may have implications for database development, access, sharing, and use.
2) Identification of scientific data and information resources that might be translated and made more widely available in our respective countries.
3) Identification of mutual high-priority databases in both countries that should have either mirror sites, or subsets of the contents established in each other's country, and determine how to implement that.
4) Promotion of opportunities for both senior and junior scientists and engineers to visit each other's countries for various periods of time to learn about each other's scientific database activities and to engage in cooperative research in select areas.
5) Promotion of opportunities for university students to visit and study in each other's universities and research centers in areas within CODATA's scope of activities.
6) Exploration of the possibility for joint projects in scientific database development, studies, or training, including topics such as common standards and interoperable systems and techniques; metadata management practices; clearinghouses and portals for data resources; and other topics by mutual agreement.

A steering committee for planning and overseeing the Roundtable will be formed by the collaborating organizations.

Appendix B

List of Participants in All Meetings of the US-China Roundtable on Scientific Data Cooperation
October 31 - November 2

Prof. Huadong GUO (Chinese Delegation Leader)
Deputy Secretary-General, CAS

Prof. Gonghuan YANG
Vice Director, China CDC

Prof. Baoyan LIU
Vice President, China Academy of Chinese Medical Sciences

Dr. Ling YIN
Director, Neuroinformation Center, PLA General Hospital

Prof. Yun XIAO
Assistant Director, Computer Network Information Center, CAS

Dr. Yuanchun ZHOU
Assistant Researcher, Computer Network Information Center, CAS

Ms. Hui ZHANG
Executive Secretary, Chinese National Committee for CODATA, CAS

Mr. Runqiang WANG
Engineer, Computer Network Information Center, CAS

Dr. Jun YU
Associate Director, Beijing Institute of Genomics, CAS

Prof. Jinnian WANG
Director, Department of Science and Technology, Institute of Remote Sensing Applications, CAS

Prof. Yaxi GUO
Director, Department of S&T Development, China Meteorological Administration

Dr. Ruifeng LIU
General Engineer & Researcher, China Earthquake Networks Center, China Earthquake Administration

Prof. Chuang LIU
Director and Researcher, Global Change Information Research center, Institute of Geographic Sciences and Natural Resources Research, CAS

Prof. Jiarui WU
Vice President, Shanghai Institutes for Biological Sciences

Prof. Yixue LI
Director, the Bioinformation Center, Shanghai Institutes for Biological Sciences

Prof. Heng WANG
Vice President of Basic Medicine Institute, China Academy of Medical Sciences

Dr. Ailin LI
Secretary of Neuroinformatics Center, PLA General Hospital

Dr. Guowei YU
West Environmental Health and Hygiene Institute, Northwest University for Nationalities

Prof. Zhihong YAO
Shanghai Institute of Life Science, CAS

Dr. Steve CHEN
President of the Third-Brain Research Institute

Prof. Guangliang SHAN
Institute of Basic Medicine, China Academy of Medical Sciences

Prof. Jie CHEN
Vice President of Beijing Union Hospital

Dr. Guanhua DU
Pharmacologic Dept. of Beijing Union Medical College

Dr. Meng CUI
Information Center of China Academy of TCM Science

Mr. Manda WANG
Director, Division of Bilateral Cooperation, China Earthquake Administration

Dr. Guosheng QU
Chief Engineer, National Earthquake Response Support Services

Dr. Roberta BALSTAD
Chair, US National Committee for CODATA

Dr. Greg WITHEE
Senior Adviser, National Oceanic and Atmospheric Administration

Prof. Hal ABELSON
Massachusetts Institute of Technology

Prof. Abu SM ABDULLAH
Boston University School of Public Health

Prof. Michael BATES
UC Berkeley, School of Public Health

Prof. Amy BORENSTEIN
Department of Epidemiology & Biostatistics, University of South Florida

Prof. Kirby DONNELLY
Texas A&M School of Rural Public Health

Prof. Ka HE
Departments of Nutrition and Epidemiology, University of North Carolina at Chapel Hill

Prof. Ethylin WANG JABS
Department of Genetics and Genomic Sciences, Mount Sinai School of Medicine

Prof. Michael JOHNSON
Director, Center for Pharmaceutical Biotechnology, University of Illinois at Chicago

Prof. Kenneth KIDD
Department of Genetics, Yale University

Dr. Rick KREUTZER
Environmental Health Investigations Branch, California Department of Public Health

Dr. De-Kun LI
The Division of Research, Kaiser Permanente

Prof. Chao-Yang LEE
School of Hearing, Speech and Language Sciences, Ohio University

Prof. Kenrad NELSON
Johns Hopkins University School of Public Health

Prof. Wei ZHENG
Vanderbilt-Ingram Cancer Center

Dr. Cunlin WANG
Epidemiology Branch, Food and Drug Administration

Dr. Donald LINDBERG
National Library of Medicine, NIH

Dr. Belinda SETO
National Institute for Biomedical Imaging and Bioengineering, NIH

Dr. Kenneth BUETOW
National Cancer Institute, NIH

Dr. Mary Jo DEERING
National Cancer Institute, NIH

Dr. Yuan LIU
National Institute of Neurological Disorders and Stroke, NIH

Dr. James HERRINGTON
Fogarty International Center, NIH

Dr. James LUO
National Institute of Biomedical Imaging and Bioengineering, NIH

Dr. Yantian ZHANG
National Institute of Biomedical Imaging and Bioengineering, NIH

Dr. James OSTELL
National Center for Biotechnology Information, NIH

Dr. Rene EPPI
National Oceanic and Atmospheric Administration

Dr. Leigh HOUSE
Department of Energy

Dr. Libin JIA
National Cancer Institute, NIH

Dr. Jeffrey WHITE
National Cancer Institute, NIH

Dr. Dan XI
National Cancer Institute, NIH

Dr. Hua SHAN
Department of Pathology, Johns Hopkins Medical Institutions

Ms. Bonnie CARROLL
Information International Associates

Dr. Raymond WILLEMANN
Incorporated Research Institutions for Seismology Consortium

Prof. Paul RICHARDS
Columbia University

Prof. Goran EKSTROM
Columbia University

Dr. William LEITH
U.S. Geological Survey

Dr. Lind GEE
U.S. Geological Survey

Dr. Michael RITZWOLLER
University of Colorado

Dr. Paul SILVER
Carnegie Institution of Washington

Dr. James WHITCOMB
National Science Foundation

Dr. John LaBRECQUE
National Aeronautics and Space Administration

Dr. Craig DOBSON
National Aeronautics and Space Administration

Dr. Carmelle TERBORGH
ESRI

Dr. Frank XIA
ESRI

Prof. Harlan ONSRUD
University of Maine

Dr. Robert CHEN
Center for International Earth Science Information Network

Dr. Reagan MOORE
San Diego Supercomputing Center, UC, San Diego

Prof. Mian LIU
University of Missouri

Dr. Subha MADHAVAN
National Cancer Institute, NIH

Dr. Elliot SIEGEL
National Library of Medicine, NIH

Dr. William BLANPIED
George Mason University

Anita EISENSTADT, Esq.
Department of State

Dr. Rongsong JIH
Department of State

Dr. Lawrence LIN
Department of State

Dr. Ebonique PADGETT
Department of State

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Millennium Infotech

Dr. John RUMBLE
Information International Associates

Dr. Richard HOGAN
EROS Data Center, U.S. Geological Survey

Prof. Ralph CICERONE
President, National Academy of Sciences

Prof. Harvey FINEBERG
President, Institute of Medicine

NRC Staff

Dr. John BORIGHT
Director, Office of International Affairs, National Academy of Sciences

Dr. Eileen CHOFFNES
Board on Global Health, National Academy of Sciences

Ms. Kathie BAILEY-MATHAE
Board on International scientific Organizations, National Academy of Sciences

Paul UHLIR, JD
USNC/CODATA, National Academy of Sciences

Mr. Raed SHARIF
USNC/CODATA, National Academy of Sciences

Ms. Makeeya HAZELTON
USNC/CODATA, National Academy of Sciences

Appendix C

U.S. – China Health and Biomedical Data Cooperation
National Institutes of Health's International Research Programs and Database Activities

U.S. National Committee for CODATA
Board on International Scientific Organizations
National Academy of Sciences, U.S.
and
Chinese National Committee for CODATA
International Cooperation Bureau
Chinese Academy of Sciences

Room 150
National Academy of Sciences
2100 C Street NW
Washington, DC

31 October 2007

Agenda

13:30	Introductions	Paul Uhlir US CODATA, NAS
13:40	Overview of National Institutes of Health and Fogarty International Center	James Herrington FIC/NIH
14:10	The Neuroinformatics Landscape in the New Era of Data Management and Sharing	Yuan Liu NINDS/NIH
14:50	National Cancer Institute	Mary Jo Deering & Subha Madhavan NCI/NIH
15:30	Break	
15:50	National Institute of Biomedical Imaging and Bioengineering	James Luo & Yantian Zhang NIBIB/NIH
16:30	National Center for Biotechnology Information	James Ostell NCBI/NLM/NIH
17:00	*End of meeting and reception*	

Appendix D

Workshop on U.S. – China Health and Biomedical Data Cooperation

U.S. National Committee for CODATA
Board on International Scientific Organizations
National Academy of Sciences, U.S.
and
Chinese National Committee for CODATA
International Cooperation Bureau
Chinese Academy of Sciences

Lecture Room
National Academy of Sciences
2100 C Street NW
Washington, DC

1 November 2007

<u>Agenda</u>

Morning Session Co-Chairs:
Dr. Roberta Balstad, Columbia University, US
Prof. Jiarui WU, Shanghai Institutes for Biological Sciences (SIBS), China
Workshop Rapporteurs:
Paul Uhlir, JD, National Academy of Sciences, US
Dr. Ling YIN, PLA General Hospital, China

Session One: Background to this Initiative

9:00	Introductions by Co-Chairs	
9:10	Welcoming Remarks	John Boright, NAS and Dr. Belinda Seto, NIH
9:30	Overview of the U.S. – China Roundtable on Scientific Data Cooperation activities	Dr. Roberta Balstad Columbia University Chair, US CODATA
9:40	Results of the 2007 Xiangshan Conference on International Biomedical Data Sharing	Prof. Heng WANG China Academy of Medical Sciences
10:00	*Keynote presentation*: Importance of Data Sharing for Progress in Biomedical Research and Applications	Dr. Kenneth Buetow NIH/National Cancer

Institute

10:20   Background and Objectives of this Workshop   Paul Uhlir, JD
                                                                       US CODATA, NAS

10:30   *Tea and coffee break*

Session Two: Requirements Analysis and Planning for Biomedical Data Sharing and Integration—Identification of Key Issues for Further Work

10:50   Introductory comments by Co-Chairs

11:00   Results of Questionnaires of Bilateral Researchers in China and the United States
        -   Dr. Ailin LI, PLA General Hospital
        -   Paul Uhlir, JD, US CODATA, NAS

11:30   General discussion

12:00   *Lunch*

Afternoon Session Co-Chairs: Prof. Michael Johnson, Center for Pharmaceutical
                               Biotechnology, University of Illinois at Chicago
                               Prof. Heng WANG, China Academy of Medical Sciences

Session Three: Discussion of Proposals
13:00   Introductory comments by Co-Chairs
13:10   Short presentations of proposals by each side and general discussion

16:00   *Tea and coffee break*

Session Three: Discussion of Proposals (continued)
16:30   Short presentations of proposals by each side and general discussion

Session Four: Closing Remarks

18:00   Summary of major points from discussion by Rapporteurs and overview of
        discussion agenda at the U.S. – China Roundtable on the next day
18:20   Concluding observations by afternoon session Co-Chairs

18:30   *End of meeting*
        Reception and buffet dinner at NAS Great Hall

Appendix E

Workshop on U.S. – China Seismological Data Cooperation

U.S. National Committee for CODATA
Board on International Scientific Organizations
National Academy of Sciences, U.S.
and
Chinese National Committee for CODATA
International Cooperation Bureau
Chinese Academy of Sciences

National Academy of Sciences
Room 150
2100 C Street NW
Washington, DC

November 1, 2007

<u>Agenda</u>

Session One: Introductions and Opening Remarks

12:00   Working Lunch for Workshop Participants at the Academy Refectory
- Introductions of the participants

13:00   Welcoming remarks by Workshop co-Chairs
- Roberta Balstad, Chair, U.S. National Committee for CODATA, National Academy of Sciences (NAS)
- Huadong GUO, leader of Chinese Delegation, Chinese Academy of Sciences (CAS)

13:30   Background and objectives of this Workshop   Raymond Willemann
                                                            IRIS

Session Two: Scientific Uses of Continuous Data from Seismic Stations

13:40   Ambient noise tomography   Michael Ritzwoller
                                                            Univ. of Colorado

14:00   Cross-correlation detection of repeating earthquakes   Paul Richards
                                                            Columbia University

14:20   Detection of slow seismic events, including   Goran Ekstrom
        mid-oceanic earthquakes, fast glacial sliding,   Columbia University

landslides, and volcano-related slip

14:40	Monitoring stress changes on the San Andreas Fault using signal codes from small earthquakes	Paul Silver Carnegie Institution of Washington
15:00	*Tea break*	
15:20	Uses of Global Seismic Data at the National Earthquake Information Center and the Albuquerque Seismological Laboratory	Lind Gee and William Leith, USGS
15:40	Using continuous data to monitor the newly-discovered phenomenon of "tremor and slip"	Ken Creager Univ. of Washington
16:00	Emergency Access to and Sharing of Global Earthquake Disaster Data	Guosheng QU NERSS
16:20	Introduction to the China Seismological Observation and Data Service System	Ruifeng LIU China Earthquake Administration (CEA)

Session Three: Seismological Data Sharing Policies

16:40	Presentations of seismological data access and use policies at government agencies in the United States and China *- Discussion*	James Whitcomb, NSF, William Leith, USGS, and Manda WANG, CEA

Session Four: New Proposals for Seismological Data Exchange and Cooperation

17:20	Presentations of proposals from the United States and China *- Discussion*	

Session Five: Closing Session

18:10	Summary of major points and overview of discussion agenda for the U.S.–China Roundtable on the next day	Raymond Willemann IRIS
18:20	Concluding observations by Workshop co-Chairs	
18:25	*End of meeting*	
18:30	*Reception and buffet at NAS Great Hall*	

Appendix F

U.S.-China Roundtable on Scientific Data Cooperation

Organized by
U.S. National Committee for CODATA
Board on International Scientific Organizations
National Academy of Sciences (NAS), U.S.
and
Chinese National Committee for CODATA
International Cooperation Bureau
Chinese Academy of Sciences (CAS)

Lecture Room
National Academy of Sciences
2100 C Street NW
Washington D.C., USA

2 November 2007

Agenda

Session One: Background to the Roundtable Initiative and Keynotes

8:00   *Breakfast buffet and registration*

8:45   Welcoming Remarks
- Dr. Roberta Balstad, Columbia University, Chair of US Committee for
CODATA, and Roundtable Co-Chair
- Dr. Ralph Cicerone, President, National Academy of Sciences
- Prof. Huadong GUO, Deputy Secretary General, Chinese Academy of Sciences,
leader of the Chinese Delegation, and Roundtable Co-Chair
- Introduction of Roundtable participants

9:15   Overview of Results from 2006 Roundtable Meeting   Roberta Balstad
and Goals for this Meeting   Columbia University
Chair, US CODATA

Keynote presentations on the potential benefits of scientific data cooperation

9:30   Data cooperation for better health
-    Dr. Donald Lindberg, Director, National Library of Medicine
-    Prof. Depei Liu, President, Chinese Academy of Medical Sciences and
Prof. Jie Chen, Vice President, Beijing Union Hospital

10:00 Data sharing for solving global environmental problems
- Dr. Greg Withee, Senior Advisor, National Oceanic and Atmospheric Administration, US Group on Earth Observations
- Prof. Huadong Guo, Deputy Secretary General, Chinese Academy of Sciences, and Director, Center for Earth Observations and Digital Earth (CEODE), CAS

10:30 General discussion

10:45 *Tea and coffee break*

11:15 Data policies for effective international data sharing
- Dr. Roberta Balstad, Senior Scientist, Columbia University
- Prof. Chuang Liu, Leading Professor, Institute of Geography and Natural Resources, CAS

11:45 Advanced cyberinfrastructure for cooperative data applications
- Dr. Heather Boyles, Director, International Relations, Internet*2,* US
- Prof. Jiarui Wu, Vice President, Shanghai Institutes for Biological Sciences

12:15 General discussion

12:45 *Lunch*

Session Two: Parallel Breakout Sessions

A. Cooperation on Advances Cyberinfrastructure Data Applications
Co-Chairs: Prof. Hal Abelson, Massachusetts Institute of Technology, US
            Prof. Yun Xiao, Computer Network Information Center, CAS, China
Rapporteurs: Dr. Roberta Balstad, Columbia University, US
            Dr. Runqiang Wang, Computer Network Information Center, CAS, China

14:00 Introductory comments by Session co-Chairs

14:10 Presentation of background papers and proposals

14:40 Discussion of papers, breakout session questions, and proposals
       - General discussion

B. Cooperation on Environmental and Geospatial Data
Co-Chairs: Dr. Raymond Willemann, IRIS, US
            Prof. Huadong Guo, CEODE, CAS, China
Rapporteurs: Mr. Raed Sharif, National Academies, US

Prof. Chuang Liu, Institute of Geography and Natural Resources, CAS China

14:00   Introductory comments by Session co-Chairs

14:10   Presentation of background papers and proposals

14:40   Discussion of breakout session questions, results
        from November 1 Workshop, and proposals

C. Cooperation on Health and Biomedical Data
Co-Chairs: Dr. Belinda Seto, National Institutes of Health, US
                Prof. Jiarui Wu, Shanghai Institutes for Biological Sciences, China
Rapporteurs: Paul Uhlir, J.D., National Academies, US
                Dr. Ling Yin, PLA General Hospital, China

14:00   Introductory comments by Session co-Chairs

14:10   Discussion of breakout session questions, results
        from November 1 Workshop, and proposals

15:45   *Afternoon tea*

Session Three: Discussion of Future Plans of the Roundtable

16:15   Plenary discussion by participants

17:00   Summary of next steps   Roberta Balstad
                                                   US CODATA
                                                   and
                                                   Huadong Guo
                                                   China CODATA

17:15   *End of meeting*

18:00   *Dinner for Chinese Delegation at the Old Ebbitt Grill, 675 15th Street NW*

Appendix G

<u>Summary of Chinese Biomedical Principal Investigator Responses to Questionnaire</u>

[Note: Available only in online version]

Appendix H

Summary of U.S. Biomedical Principal Investigator Responses to Questionnaire

[Note: available only in online version]

Proposal to establish the international biomedical data sharing platform

By Dr. Ling YIN

Foreword

On Oct 2006, the 20th CODATA conference was held in Beijing. In conjunction with that Conference, China and the US held the first bilateral Roundtable on Scientific Data Cooperation. Participants analyzed the current status and requirements, and agreed that one of the main areas of cooperation would be health and biomedical data.

In March 2007, the 298th XiangShan Conference was held in Beijing on the topic of "Strategic Conversation on International Biomedical Data Sharing". This meeting suggested the US and China as core nations to establish an international biomedical data sharing platform. The framework that was suggested was through three levels of cooperation: government to government, institution to institution, and scientist to scientist. The overarching goal was to promote biomedical data source integration and applications worldwide.

Continuously growing amounts of biomedical data are produced everyday globally. Data that are not shared or made known to others lead to duplication of research, sub-optimal quality of data, and incomplete or false results and publications in scientific journals and the media, thus misleading researchers and the broader population and wasting time and resources. Considering these reasons, the participating experts considered it essential to establish international biomedical authoritative databases.

Mission

The mission would be to integrate biomedical data resources internationally by establishing a harmonious biomedical data sharing network. The focus would be especially on high quality scientific data management and applications to avoid duplicative and ineffective research. The project would serve government policy-makers, healthcare professionals, researchers, medical students and the broader population. It also would help to narrow

the gap in biomedical data capacities and applications between the developed and developing counties, and generally improve biomedical research and human health.

As noted above, we propose to form three levels of cooperation for discussion.

1. Three Levels of Cooperation

1.1 The following three levels of cooperation on biomedical data sharing are proposed for discussion:

1.1.1 Government to Government Cooperation:
   A. Raising funding support for Biomedical Data Sharing from both China and US;
   B. Initiate the China-US International Biomedical Data Sharing Cooperation Project;
   C. Develop an international biomedical data source assessment and plan;
   D. Create a biomedical data sharing mechanism.

1.1.2 Institution to Institution (or Data Center) Cooperation:
   A. Establish data sharing standards and regulations;
      * Data classification
            * Data standards
      * Raw data standard
      * Data set regulation
   B. Build database mirror connections;
   C. Create a harmonious biomedical research network environment.
   D. Construct an information release platform for international biomedical data sharing.

1.1.3 Scientist to Scientist Cooperation:
  A. Propose collaborative applications to join the international biomedical data sharing project;
  B. Perform data resource assessments and data processing;
  C. Collect and publish data standards;
  D. Database updating, management;
  E. Create harmonious research environments

2. Tasks

2.1, Develop a requirements analysis and data resource assessment to start the biomedical scientific data resource strategic plan.

2.2, Review international biomedical scientific data standards and regulations, focusing on the following four issues:
* Data classification
* Raw data standard
* Data exchange standard
* Data set regulations

2.3, Construct an international data cooperation network and national nodes;

2.4, Establish a data cooperation mechanism

2.5 Data sharing issues:

2.5.1 Data quality control:
    A. Help ensure that data are authoritative and verifiable;
    B. Keep data updating practical.

2.5.2 Intellectual property rights:
    A. Data sharing is under protection of intellectual property rights;
    B. Consider how to minimize potential conflicts between intellectual property rights and data sharing needs;
    C. Encourage database owners, which include countries, institutions, or private sector parties to provide data sources for sharing inside the network.

2.5.3 Data exchange issues:
  A. Data exchange organization;
    ● Between nation and nation
    ● Between data center and data center
    ● Between institution and institution
  B. Data exchange content;
  C. Data exchange standard;

D. Data exchange regulation.

2.5.4, Data sharing service issues:

1) Data classification:
    E. Type 0—Broad public user data;
    F. Type 1--- Specialized data for professionals;
    G. Type 2--- Research data sharing inside of task group;
    H. Type 3--- Data not for public release, which may need permission by some department.

2). Data user classification:
  -- Public users;
  -- Government policy officers;
  -- Research organizations;
  -- Private enterprises and companies;
  -- Individual professionals;

2.5.5. Funding resource issues:
  -- Government international cooperation project
    * National cooperation project, China Natural Science Foundation;
    * International cooperation project, Ministry of Science & Technology
  -- Various funding sources;
  -- Private enterprise and company investments.

3. Project Planning:

1> Preparing period: (Nov, 2007—Mar, 2008)
  1) Requirements analysis, data resource assessment, and allocation planning for global data sharing;
    2) Research on standards and regulations for international biomedical data sharing.
- Data classification;
- Data standard;
- Raw data standard;
- Data sets regulation;

2> China -US Cooperation Period (Mar, 2008—Dec 2008):

 1). Create strategic plan on international biomedical data resources;

2). Revise data standards on international biomedical data classification, raw data and data sets;

3). Develop the structure of the international biomedical data sharing platform;

4) Initialize two or three databases to study bilateral data sharing data
- Gene database
- Oncology database
- Neurology database

3>, Global cooperation period (2009--…)

1), Publish the first version of Standards and Regulations on International Biomedical Data Sharing;

2) More national nodes construction;

3) Biomedical data sharing begins to serve global professionals;

4) Under CODATA, establish an international task group on biomedical data sharing

Appendix J
Joint Proposal for Data Sharing in Neuroscience & Neurological Research

By Yuan LIU and Ling YIN

Goal:
To establish neurological disorder research databases via international collaboration between the U.S. and China. The primary focus will be on a selected set of neurodegenerative disorders (e.g., Parkinson's Disease - PD) or stroke. The ultimate purpose is to promote collaborations in research, diagnosis, prevention and treatment of neurological disorders and stroke through data and resource sharing between the two countries.

Aims:
1. Establishing data classification, and meta data standard
2. Establishing interoperable databases on a common data sharing platform, or populating, expanding and enhancing existing databases

Potential Data Sources:
1. Basic mechanistic and translational research
2. Epidemiology
3. Clinical research (including genetics, pathology and imaging)
4. Clinical trials

The first step:
Organizing a joint workshop in a focused research area (e.g., PD or stroke) to:
1. Exchange information on existing research and informatics resources
2. Identify opportunities and select the "low-hanging fruits"
3. Identify barriers and challenges (e.g., data acquisition protocols, clinical trial design, data standards, meta data format and ontology, interoperability, translation of Chinese database into English etc.)

Potential meeting date:
1. Spring of 2009 in conjunction with a potential workshop to explore opportunities for collaborations between U.S. and China in neurological research, or
2. Dec 2008 in conjunction with the U.S. China Roundtable meeting in KunMing.

Organizers:
Dr. Yin Ling, PLA General Hospital
Dr. BaoYan Liu, China Academy of Chinese Medical Sciences
Dr. Yuan Liu, NINIDS, NIH

Participants:
Neurological and informatics research leaders in the research areas being selected (e.g., PD or stroke) from the U.S. and China.

There are complementary strengths in informatics and neurological research in the U.S. and China

China
- Large patient populations and different genetic and environmental factors that impact neurological disorders and stroke

- Combined (Western medicine and traditional Chinese medicine) treatment for neurological disorders (e.g., stroke)

- Clinical trials on compounds derived from traditional Chinese medicine for neurological disorders (e.g., Parkinson's disease)

- Centralized effort in establishing informatics infrastructure and large-scale databases of neurological disorders and stroke (e.g., databases established by the China Academy of Chinese Medical Sciences - Dr. BaoYan Liu; databases being established by the Neuroinformation Center, PLA General Hospital - Dr. Yin Ling)

U.S.
- Strong basic, translational and clinical research and well-designed clinical trials of neurological disorders and stroke

- Coordinated large-scale collaborations in translational research (e.g., Specialized Program of Translational Research in Acute Stroke - SPOTRIAS; Neuroprotection Exploratory Trails in Parkinson's diseases NET-PD, http://www.parkinsontrial.ninds.nih.gov/)

- Centralized research database (e.g., Parkinson's Disease Data and Organizing Center PD-DOC https://urresearch.rochester.edu/handle/1802/4923)

- Centralized genetics and data repository (e.g., the Human Genetics DNA and Cell Line Repository http://ccr.coriell.org/Sections/Collections/NINDS/?SsId=10)

- Rich informatics resources and tools
  - caBIG (https://cabig.nci.nih.gov)
  - BIRN (http://www.nbirn.net/nih/index.shtm)
  - Neuroscience Information Framework NIF (http://neurogateway.org/catalog/goto.do?page=.home)
  - Neuroimaging Informatics Tools and Resources Clearinghouse NTRIC (http://www.nitrc.org/)

Appendix K

Focus of the proposed activity.	Data Cooperation for China CDC's Web-based Disease Surveillance System
Statement of Purpose - describe the importance, potential impact, and expected outputs and outcomes of the activity.	The proposed project relates to China's new web-based disease Surveillance system. This system was developed by China CDC in response to SARS, and currently tracks over 30 reportable diseases in China down to the township level. Initially, the system was under-utilized and suffered from under reporting. However, over the past year, we have had a graduate student from UC Berkeley work with China CDC to better understand this system and identify ways it can be improved. From what we have learned, we have every reason to believe that this is going to be a world class surveillance system – a system that if sufficiently open to the rest of the world, may forewarn against global pandemics of disease. We suspect that it may take 5 years or so for the system to mature, and clearly, there are still a number of issues that need to be addressed with the system, many of which have to do with data cooperation. We propose that a pilot data cooperation project could be established at Sichuan CDC, where we have had longstanding research collaborations. Our proposal would be to 1) open up the China CDC's disease surveillance system across disciplines, allowing data sharing for instance, with the Ministry of Agriculture who manage diseases in animal populations, and researchers within the Chinese Academies of Sciences who might better explore linkages between disease and environmental/geospatial and vector population datasets, and 2) provide opportunities for a wider group of US scientists to learn about China's current surveillance capabilities, work together to improve it, and identify ways to interface with it. We are lucky to have guidance on this project from Prof. Robert Spear, who received the 2005 China Friendship Award, the highest honor for foreign experts in China, and has sufficiently high-level Chinese ties to make this proposal feasible.

Who do you think should be involved in the implementation and in the support and funding of the proposed initiative? (Use all the space you need for your answers)	**Organizations:**	1-US Funding: NSF, NIH, CDC	
	2-China Funding: China NSF, China CDC, China Ministry of Science and Technology (MOST), State Environmental Protection Agency (SEPA)		3- WHO
	4-		5-
	People:	1- Robert C. Spear, Alan Hubbard, Edmund Seto (representing Environmental Health and Infectious Disease Modeling, Biostatistics, and Spatial Epidemiology at UC Berkeley)	
	2- Junxing Kang, Director Sichuan CDC		3- Guanhua Xu, Director China MOST
	4- Wuchuan Cao, head of Key State Lab of Pathogens and Biosecurity in Beijing Institute of Microbiology and Epidemiology		5- Others TBD as opportunities for data integration are identified.

Practical steps to begin implementation - how will it be initiated and run?	1- Existing research collaborations with Sichuan CDC make them ideal partners to work with on a case study. Junxing Kang, Director of Sichuan CDC is aware of our interest in the new CDC surveillance system and is supportive of our work. 2- Drs. Spear and Seto will meet in next month in China with the Guanhua Xu, Director of China Ministry of Science and Technology to discuss the opportunities

	for improving China CDC's disease surveillance system. Director Xu is familiar with our work, and will likely support the vision for data cooperation with China CDC. 3- Endorsement from Director Xu will provide us with the needed support to enlist the involvement of other Chinese agencies that have data to contribute to the understanding of disease outbreaks. These include national and provincial-level connections that we already have with SEPA, Key State Lab of Pathogens and Biosecurity, and the Ministry of Agriculture. 4- We will identify US and other international agencies who wish to learn more about China's disease surveillance system and identify data sharing opportunities. 5- Based on the support of the agencies contacted, a small number of data integration/sharing projects will be identified and initiated as case studies. 6- UC Berkeley will work with Sichuan CDC to implement and evaluate the value of data integration into the understanding of disease outbreaks. The team at Berkeley are represented by Spear (environmental health and infectious disease modeling), Hubbard (biostatistics and epidemiology), and Seto (computer science and spatial epidemiology).
Timeline of the proposed activity, starting with a target date for initiation.	**Suggested Starting Date:** Spring 2008
	Suggested Ending Date: Spring 2013
	Major Milestones: 1. Fully document of the current capabilities of the China web-based surveillance system. 2. Creation of a roadmap for data integration and sharing between China CDC and other Chinese organizations and between China and US/International organizations. 3. Successful implementation of data integration projects. 4. Evaluation of the data integration projects.
Contact information for the lead individual (if known).	Dr. Edmund Seto School of Public Health University of California 140 Warren Hall Berkeley, CA 94720 Tel 1-510-642-9219 Fax 1-510-642-5815 Email seto@berkeley.edu Dr. Robert Spear School of Public Health University of California 140 Warren Hall Berkeley, CA 94720 Tel 1-510-642-0761 Fax 1-510-642-5815 Email spear@berkeley.edu
Please provide any	

other comments not covered above.	

Your Name and Affiliation: Edmund Seto, School of Public Health, University of California, Berkeley
Your Email address: seto@berkeley.edu

Appendix L

Focus of the proposed activity.	Chinese and US policies on data sharing and management in emerging infectious diseases, e.g., SARS, avian influenza		
Statement of Purpose - describe the importance, potential impact, and expected outputs and outcomes of the activity.	**Goal**: To develop policies on both sides that facilitate rapid sharing of data **Significance/Impact**: Rapid release and publication of data on incidents of unusual infectious disease (agricultural or human) will provide an alert to new emerging infectious diseases, enabling more rapid and effective public health response **Expected outcome**: Policies to promote transparency in public health and agricultural health data.		
Who do you think should be involved in the implementation and in the support and funding of the proposed initiative? (Use all the space you need for your answers)	**Organizations:**	1- U.S. Universities and Research Institutions	
	2- Leading Chinese Research & Development Institutions		3- U.S. NIH/HHS & CDC
	4-Chinese Academy of Medical Sciences		5- US National Academy
	People:	1- Leading infectious disease & drug discovery/development scientists	
	2-		3-
	4-		5-
Practical steps to begin implementation - how will it be initiated and run?	1- Establish a working group including both US and Chinese Scientists 2- Exchange visits by Chinese officials/scientists and US scientists/officials to selected institutions involved in emerging infectious disease data management 3- Workshop on past successes and failures, and policy changes that could improve future success. 4- Conference report with recommendations		
Timeline of the proposed activity, starting with a target date for initiation.	**Suggested Starting Date: Summer, 2008**		
	Suggested Ending Date: Indefinite		
	Major Milestones: a Working group establishment; b) Exchange visits; c) Workshop; d) Report and recommendations; e) Implementation		
Contact information for the lead individual (if known).			
Please provide any other comments not covered above.			

Your Name and Affiliation: Michael E. Johnson, Professor and Director
Center for Pharmaceutical Biotechnology; University of Illinois at Chicago
Your Email address: mjohnson@uic.edu; Tel: 312-996-9114; Fax: 312-413-9303

Appendix M

Focus of the proposed activity.	Chinese policy for biologic sample use in international research.
Statement of Purpose - describe the importance, potential impact, and expected outputs and outcomes of the activity.	**Goal**: To evaluate the policy for biologic sample export. **Significance/Impact**: A large number of human studies involve the use of biologic samples. At present, the policy for biologic sample export from China is unclear and inconsistent from time to time. This has raised significant concerns regarding the future of Sino-US collaborative research. **Expected outcome**: A clear and consistent policy that promotes international research.

Who do you think should be involved in the implementation and in the support and funding of the proposed initiative? (Use all the space you need for your answers)	**Organizations:**	1- NIH	
	2- Chinese Academy of Medical Science		3- Other relevant entities in China
	4-		5-
	People:	1-	
	2-		3-
	4-		5-

Practical steps to begin implementation - how will it be initiated and run?	1- Establish a working group represented by both American and Chinese scientists. 2- Invite selected Chinese officials/scientists to visit NIH and selected sites that conduct Sino-US collaborative studies. 3- Organize a workshop to discuss and present international studies and policies of biologic sample use in China, USA, and other countries. 4- Draft a report.
Timeline of the proposed activity, starting with a target date for initiation.	**Suggested Starting Date: May 1, 2008**
	Suggested Ending Date: April 30, 2009
	Major Milestones: a) Establishment of working group; b) Site visits; c) **Workshop; d) Report**
Contact information for the lead individual (if known).	
Please provide any other comments not covered above.	

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Appendix N

Focus of the proposed activity.	**How Chinese funding agencies to provide supplemental funding for projects in China that are primarily (or initially) funded by NIH**
Statement of Purpose - describe the importance, potential impact, and expected outputs and outcomes of the activity.	To set up a Chinese funding mechanism to provide supplemental funds for Chinese investigators who are collaborating with US investigators on projects primarily funded by US funding agencies. This will encourage Chinese scientists to get involved in US-funded projects, which is good for Chinese scientists and raises China's profile in biomedical research.

Who do you think should be involved in the implementation and in the support and funding of the proposed initiative? (Use all the space you need for your answers)	**Organizations:**	1-Chinese National Academy of Science	
	2-Major Chinese funding agencies for biomedical research		3-
	4-		5-
	People:	1-	
	2-		3-
	4-		5-

Practical steps to begin implementation - how will it be initiated and run?	1- Chinese delegates need to bring this idea back to Chinese funding agencies to gauge their enthusiasm 2- If enough support, a funding mechanism needs to be established and made available to Chinese scientists
Timeline of the proposed activity, starting with a target date for initiation.	**Suggested Starting Date: After this roundtable meeting**
	Suggested Ending Date:
	Major Milestones:
Contact information for the lead individual (if known).	
Please provide any other comments not covered above.	

Your Name and Affiliation: De-Kun Li, Division of Research, Kaiser Foundation
Research Institute, Kaiser Permanente

Appendix O

Focus of the proposed activity.	1)exchange of atmospheric data, 2)research and application of CDP (NCAR) and IDV (UNIDATA/UCAR) in CMA
Statement of Purpose - describe the importance, potential impact, and expected outputs and outcomes of the activity.	1) Promote the research in new fields for US and China scientists with exchange data. CMA need get: ● Update global atmospheric-oceanic data (ICOADS, NCDC) ● Update global upper air data (CARDS, NCDC) ● Update GDCN and GHCN (NCDC) ● Global weather report (GTS) (NCDC) ● Reanalysis grid data (1° ×1°) (NCAR/NCEP) 2) Advance environmental data service level by the application of CDP and IDV in China. CDP and IDV software will install in "China Meteorological Data Sharing Service System (CMDSS)", realize interlinkage in both data service systems.

Who do you think should be involved in the implementation and in the support and funding of the proposed initiative? (Use all the space you need for your answers)	**Organizations:**	1- National Meteorological Information Centre (NMIC, CMA)	
	2- NCDC/NOAA (US)		3- CISL/NCAR (US)
	4- UNIDATA/UCAR		4- NCAR/NCEP
	People:	1- WANG Guofu (NMIC/CMA)	
	2- XIONG Anyuan (NMIC/CMA)		3- Michael Burek (CISL/NCAR)
	5- Don Murray (UNIDATA/UCAR)		5-

Practical steps to begin implementation - how will it be initiated and run?	1- affirm exchange data in both, soon after this meeting (end of this year) 2- exchange data sets, before July 2008 two NMIC scientists work with update data sets in NCDC, before Oct. 2008 3- the implementation project of CDP and IDV by email, before May 2007 development of CMDSS application of CDP and IDV in NCAR, before Oct. 2008
Timeline of the proposed activity, starting with a target date for initiation.	**Suggested Starting Date: Jan. 2008**
	Suggested Ending Date: Dec. 2008
	Major Milestones: July 2008 Finish the data exchange and the development of CDP and IDV application for NMIC
Contact information for the lead individual (if known).	WANG Guofu NMIC, CMA (Zhuanguanchun Nandajie 46#, Beijing 100081) Email: wanggf@cma.gov.cn, Tel: 86 10 6840 7274, Fax: 86 10 6217 5930
Please provide any other comments not covered above.	Wish more active activity in both

Your Name and Affiliation: Guo Yaxi, Director General, Department of Sciences and Technology Development, China Meteorological Administration
Your Email address: guoyx@cma.gov.cn

Appendix P

Focus of the proposed activity.	Emergency Access to and Sharing of Global Earthquake Disaster Data	
Statement of Purpose - describe the importance, potential impact, and expected outputs and outcomes of the activity.	To establish disaster information quick collection network in strong earthquake impacted area and countries for international USAR operation in global scale. To improve some quick estimation models of strong earthquake. To establish useful databases worldwide for quick estimation of strong earthquake disaster. To quick estimate the situation, scale, area, and tendency of disaster events. To make decisions correctly for disaster rescue operation. To make decisions and suggestions for emergency managers and rescue operators quickly during disaster operation.	
Who do you think should be involved in the implementation and in the support and funding of the proposed initiative? (Use all the space you need for your answers)	**Organizations:**	1-National Earthquake Response Support Service (NERSS), China Earthquake Administration (CEA)
	2-US Geological Survey (USGS)	3-FEMA
	4- Lamont-Doherty Earth Observatory , Columbia University	5- other countries
	People:	1- Expert from USGS
	2- QU Guosheng, Prof., Chief Engineer of NERSS	3- Arthur Lerner-lam, Prof. Associate Director of SG&T, Director CHRR
	4-Expert from FEMA	5- Experts from developing countries
Practical steps to begin implementation - how will it be initiated and run?	1- To develop an emergency response systems, including early warning and quick estimating, decision-making models, and databases (seismotectonics, active faults, historical earthquakes and death toll of earthquakes, density of population, houses or building and their resistance standards, et al) and decision-making.- To make some standards and policies for data access to and sharing by holding workshop and cooperative researches. 3- To establish about 50 nodes for earthquake disaster emergency response in developing countries in Pacific seismic zones, and Himalayan-Alps seismic zones and earthquake impacted areas. To set up two centers in USA and China for managing this network.4- To operate this earthquake disaster emergency response networks in developed and developing countries step by step.5- Find foundations from USA, China, Inter-American Bank, and others.	
Timeline of the proposed activity, starting with a target date for initiation.	**Suggested Starting Date: 2008**	
	Suggested Ending Date: 2011	
	Major Milestones: To form an efficiently emergency response systems; to form about 50 nodes and set up two centers in USA and China.	

Contact information for the lead individual (if known).	Expert from USGS QU Guosheng, National Earthquake Response Support Service (NERSS), China Earthquake Administration (CEA), e-mail: qgsh@263.net, cell: 86-13801225593 Arthur Lerner-lam, Doherty Senior Research Scientist, Associate Director of SG&T, Director CHRR; LDEO-Seismology Geology and Tectonophysics, Lamont-Doherty Earth Observatory, USA, e-mail1: lerner@ldeo.columbia.edu Expert from FEMA Expert from Developing Countries
Please provide any other comments not covered above.	

Your Name and Affiliation: QU Guosheng, NERSS
Your Email address: qgsh@263.net

Appendix Q

Focus of the proposed activity.	**A Proposal for Initiatives of Data Mirror and Data Exchange between US and China**	
Statement of Purpose - describe the importance, potential impact, and expected outputs and outcomes of the activity.	Scientific database is key part of Cyberinfrastructure. Both the United States and China have vigorous ongoing and planned scientific data collection and related research activities. Scientists both in US and China are expecting to share other research data. So it is important and necessary to facilitate the data exchange between two countries. This initiating program will start by selecting data exchange and data mirror between NCBI, NCAR and CNIC, CAS. The program will initiate surveys of data requirements of scientists in both countries, identify the priorities of data exchange and data mirror, fix the solutions for data mirror, data exchange, data management and application, and share the experience and technologies for maintaining TB/PB magnitude scientific data . Furthermore, experts on S&T data in NCAR, NCBI , NAS and CAS will work together to develop the data sharing policies and specifications, integrate the databases distributed in both countries, and develop and deploy the software and tools for data analysis and applications. By this project, the following two achievements are expected: 1. Some important databases will be exchanged and set up mirror sites in each country. 2. A model for integrating local scientific data and mirrored scientific data will be set up.	

Who do you think should be involved in the implementation and in the support and funding of the proposed initiative? (Use all the space you need for your answers)	**Organizations:**	1-Computer Network Information Center, CAS
	2- Board on International Scientific Organizations, NAS	3- National Center for Atmospheric Research (NCAR)
	4- National Center for Biotechnology Information(NCBI)	5-
	People:	1- Paul F. Uhlir
	2-Yun Xiao	3- Jianhui Li
	4-Zaihua Ji(From NCAR)	5- People from NCBI
	6- Runqiang Wang	7- Other People

Practical steps to begin implementation - how will it be initiated and run?	1- Initiate the data requirement surveys and identify the potential mirrored datasets in NCBI, NCAR and CAS. 2- Discuss and develop the technical solutions for data mirror and data exchange, including data sharing policies, data acquisition methods, data updating technology, data service portal and system and data storage. 3- Data transfer and set up the mirror sites in each country 4- Develop and deploy the software for access control and usage statistics in each mirror site 5- Public the mirror data and sites in each country and communicate the usage metrics between US and China

Timeline of the proposed activity, starting with a target	**Suggested Starting Date:2008.1.1**
	Suggested Ending Date:2008.12.31

date for initiation.	**Major Milestones:** 2008.3.1 Finish the data requirements surveys and get the list of data mirror and data exchange 2008.6.1 Finish the technical solution and start to data transfer 2008.10.31 Public the data mirror sites 2008.12.1 Share the usage metrics of mirrored datasets with each other
Contact information for the lead individual (if known).	
Please provide any other comments not covered above.	

Your Name and Affiliation: Runqiang Wang, Computer Network Information Center, CAS
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Appendix R

Focus of the proposed activity.	Data management and long-term curation practices: training the next generation of stewards.	
Statement of Purpose - describe the importance, potential impact, and expected outputs and outcomes of the activity.	**Purpose**: Establish practical training activities for developing and mentoring the next generation of S&T data managers and data collection stewards, and documenting a body of knowledge. **Importance**: The exponential growth in the volumes of digital S&T data and information requires the development of professionals skilled in managing the day-to-day operations of large scale, long-lived, data collections. **Potential Impact:** Mitigate the risks of losing data and access to data as experienced folks retire. Raise the professional status and support for career paths focused on management and curation of long-term, large-scale S&T data collections. **Expected Outputs and Outcomes:** (1) Establish defined, measurable, and predictable data management training and mentoring practices that help new data managers learn from experienced data managers and from each other. (2) Engage the next generation of S&T data managers in the development of their profession. (3) Develop and evaluate online resources that support professional S&T data managers. (4) Build and document a long-term S&T data management body of knowledge. Establish an online, open, and peer-reviewed data management handbook.	
Who do you think should be involved in the implementation and in the support and funding of the proposed initiative? (Use all the space you need for your answers)	**Organizations:**	1-CODATA and the Task Group on Preservation and Access to S&T Data in Developing Countries
	2-UN-GAID e-SDDC Programs	3-ICSU
	4-Digital Curation Centre or other EC program?	5-
	People:	1- Prof. Morakot Tanticharoen, Thailand, Prof.Liu Chuang, CAS
	2- Raymond McCord, ORNL, Helen Berman, Protein Data Bank, other US?	3- Dora Ann Lange Canhos, CRIA, other Latin American?
	4- SADC	5- Australia? Europe?
Practical steps to begin implementation - how will it be initiated and run?	1- Establish a small advisory group to seed practical activities. Rotate membership to provide diversity. The primary task of this group is to get things started and enlist others in implementing specific activities. The intent is for a short-lived catalyst activity. Carry out advisory group activities completely online to minimize expenses. 2- Organize conference sessions at key conferences such as CODATA Biennial Conferences, PV Conferences, DCC Conferences, IASSIST Conferences, etc. 3- Establish a managed online resource for documenting the requisite body of knowledge. This might include portal, wiki, and other social media technologies and	

	practices. Obviously this needs an institutional home and funding. 4- Collect information on established and planned degree programs internationally. 5- Funding: TBD
Timeline of the proposed activity, starting with a target date for initiation.	**Suggested Starting Date: Spring 2008**
	Suggested Ending Date: 2011
	Major Milestones: 1. **CODATA 2008 Conference session(s) on practical experiences managing large S&T data collections.** 2. **Establishment of online training resources.** 3. **Publication of case studies on management of specific data collections in, e.g., CODATA Data Science Journal.**
Contact information for the lead individual (if known).	TO START: William L. Anderson, Praxis101, Austin, TX, USA band@praxis101.com +1 512-560-9753
Please provide any other comments not covered above.	This proposal needs to be coordinated with existing organized, ongoing, and proposed data management education and training activities. Participating people and organizations listed above are only a draft starting point.

Your Name and Affiliation: William L Anderson, Praxis101
Your Email address: band@praxis101.com

Appendix S

Focus of the proposed activity.	A Proposal for cooperation in scientific workflow		
Statement of Purpose - describe the importance, potential impact, and expected outputs and outcomes of the activity.	Worldwide scientific collaborations are beginning to use internet access to create opportunities for scientists to make data available to worldwide communities, thereby enabling expedited collaborations among geographically distributed researchers. While this creates opportunities through the broader availability of more comprehensive scientific analyses, it also creates risks arising from uncertainty about the way in which internet-accessed data were produced and the appropriate ways in which they can be used. Scientific workflow is the application of workflow technology to scientific endeavors, and is becoming recognized as a valuable approach for assisting scientists in accessing and analyzing data. So scientific workflow can expand the capacity and improve the efficiency of scientific research Through the cooperative activity, We look forward to have two results: 1. Having some research achievements in scientific workflow. 2. Developing a good, friendly tool for scientists.		
Who do you think should be involved in the implementation and in the support and funding of the proposed initiative? (Use all the space you need for your answers)	**Organizations:**	1- Computer Network Information Center, CAS	
	2- Board on International Scientific Organizations, NAS		3- San Diego Supercomputer Center(SDSC)
	4- UC Berkeley		5- National Center for Atmospheric Research (NCAR)
	People:	1- Paul F. Uhlir	
	2-YunXiao		3-Jianhui Li
	4-Kaichao WU		5- Zaihua Ji(From NCAR)
	6-People from SDSC		7- People from UC Berkeley
	8-Yuanchun Zhou		9-Other people
Practical steps to begin implementation - how will it be initiated and run?	1-Understanding of the current status data applications services mutually 2-Understanding of the application progress of scientific workflow for each organization mutually 3-Discuss and find the application domain of scientific workflow 4-Develop the scientific workflow tools together		
Timeline of the proposed activity, starting with a target date for initiation.	**Suggested Starting Date:2008.01.01**		
	Suggested Ending Date:2008.07.01		
	Major Milestones:		
Contact information for the lead individual (if	2008.2.1 Understanding of the current status data applications services mutually and the application progress of scientific workflow for each organization mutually		

known).	2008.4.1 Discuss and find the application domain of scientific workflow 2008.7.1 Develop the scientific workflow tools together
Please provide any other comments not covered above.	

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