

Good Morning, Distinguished Guests, Speakers, Delegates from Many Organizations, Ladies and Gentlemen,

Please forgive me if I look a little sleepy but I just arrived in this morning from Tokyo at 4 am!

My name is Shuichi IWATA. And I am very pleased as President of CODATA, the Committee on Data for Science and Technology, to welcome you here for this two day International Workshop. This workshop will address important issues of a large impact on scientists, scientific research and society.

*CODATA, the Committee on Data for Science and Technology was established in 1966 by the International Council for Science, ICSU. The initial report recommending the establishment of CODATA refers to an increase in available data as “**approximately doubling every eight years**”.*

*In 2002 it has been estimated that the human species scientific project stored approximately five exabytes of new information on various supports (paper, film, optical or magnetic media), a **number that doubled in the past three years**, Five exabytes, as it happens, is equivalent to the number of all words ever spoken by humans since the dawn of time(after UC Berkeley report).*

What is the impact in the future in this growth of data, information and knowledge:

The entire store of available scientific data and information-the results of several centuries of work- will become available electronically and accessible virtually everywhere by everyone. In short, the digitization of all scientific data, information and knowledge is inevitable.

Science will be carried out more and more through long-distance collaborations enabled by the internet, that relies on access to large data collections, large scale computing resources and high performance

visualization. Therefore we will see the continued explosive growth of information technology.

The powerful infrastructure needed to support e-science will be metadata and meta-knowledge to extract values from mega-tons of data and information, intensive computing (clusters), distributed databases (GRID) and parallel visualization. These mammoth and comprehensive data collections will be a major source of scientific discovery in the future, with e-science gradually gaining precedence.

There will be a greater use of data by non-scientists for individual and collective decision-making that will force scientists to be more accessible, visible and transparent to the public. Scientific responsibility and deontology will be the future actors of the ongoing information society.

There will be a growing potential for deriving economic and /or social values directly from collected data, and new success stories are now being produced.

The developments listed above apply to every area of science. While each discipline will naturally follow developmental paths reflecting its own practices and culture, many areas of commonality have emerged through elaborate compiling efforts-browsing, data and knowledge processing, structuring, standardizing, linking, networking and so on.

Today CODATA, within its network of 23 National Members must address data, information and knowledge issues that threaten to overwhelm the digital society with unprecedented amounts of data and metadata. Some of the challenges we must address as a result of this growth in data, information and knowledge are:

How to access these data, information and knowledge, from a legal, economic and technological nature

How do we archive and preserve these data, information and knowledge, including standards, science and technology guidelines etc

How do we manage these data, information and knowledge

How do we maintain accurate, scientific data- in other words avoiding data pollution

What role do these new data and information play in ensuring good policy and decision making

For example, if the proper data and information had been available could the death and destruction that followed the tsunami over one year ago have been avoided or reduced.

We here need to pay attention information services! It costs a lot, and has been ignored to carry out remedies proactively. Usually reactive actions used to rush after they happened.

To speak my personal experiences committing international data projects, Information service is not so easy. It requires huge works to realize the status of passing a set of right information, to a right person at a right time by a right way.

100 M\$ project to prepare a set of data to establish a safety standard for nuclear fuels did not allocate a budget and human resources so as to digitize huge semantics behind each data set. As a consequence, a very conventional standard was established and had been used over two decades as they were, so that we have lost a lot of economic benefits. If they are digitally open to everyone, we can make another story and may have another result.

Due to a blocking of refractory materials data, one project must use additional 800 M\$, which can save many people in the world. I think you may have similar experiences also.

There are many valuable data even in the currently available database, but the data mining technology is premature if compared with natural resource mining technology for oils, gold, natural diamond and so on.

Information service is not so easy as it is inconspicuous. I have seen many mistakes, troubles and accidents due to the lack of one channel of information services. How to protect people from aircraft accidents, train accidents, nuclear accidents, medical accidents, Infections, Tsunami and invisible Tsunami, and Hurricane? We relearn the same nightmare through Hurricane Katrina today. We need to establish important service channels for each case, each suffering individual by taking advantage of ICTs and Exabyte digital information anyway. We have many things to do. You agree, I think.

Channels for information services are easily hidden, blocked and closed unless properly maintained. There are several barriers between available data and their proper utilizations due to

- complexity of IPR,
- deep semantics of specialized and domain-differentiated scientific fields,
- differences in languages and explanations, and even in digital formats.

Scientists can prepare the best data, and in CODATA many scientists have compiled the best selection of high quality data as “public goods” to be used by everyone. Many success stories there are using such “public goods” and getting chances for discovery. But many people fail to avoid accidents, miss exploring new businesses, establishing reasonable industrial standards and so on due to such barriers-blocking service channels to such public goods dynamically and closely.

There are many tasks we need to work together internationally and carefully in a smart way. Please permit me to use the metaphor of materials; We can produce diamond from graphite by high temperature and high pressure condition as “hard path”, but as “soft path” there might be another way of producing another kind of diamond by manipulating electron energy properly step by step as carbon nano tubes.

A higher level of “phase transition” to reach a status of ideal “commons” of freedom from “entangled” property-right networks may exist.

Due to the international scope of digital networks and research collaborations it is essential, in order to exploit their potential, that every effort must be made to try and develop institutional policies and guidelines for action that will contribute to creating the "information commons" for global e-Science as the first milestone. And this is why this two day workshop is so important for the next milestone-possibly establishing a global network of all scientists as proposed by Kurokawa, President of Science Council of Japan. It will be one important core of the information society realized by intensive collaborations of all national academies in the world.

The workshop will build on the body of practical experience and studies carried out by the participating organizations and other research and information policy institutions. Moreover, collaboration in this initiative by our co-sponsoring organization ICSTI, INASP, ICSU, UNESCO, TWAS, the OECD and the U.S. National Academies -- has provided an unprecedented opportunity to work towards the formulation of a common, international set of principles and guidelines.

Now let's talk together, think together and work together for the society as well as ourselves.

Thank you very much for your attention.