Brief Bio and $(PR)^2$: Problems & Pitches – Rants & Raves by *Masatsura Igami*

Self Introduction

Please introduce yourself by providing a

- photo of yourself
- brief biography of about 250 words

Masatsura IGAMI is a senior researcher of the National Institute of Science and Technology Policy, NISTEP. He was born February 22, 1974, in Mie, Japan. He received a Ph. D. from University of Tsukuba, Japan, in 2001. As a Ph. D. student, he studied the transport properties and electronic states of carbon nanotubes and nano-graphites. After receiving a Ph.D. in engineering, he worked for a private company, engaging in the development of computer simulation programs of molecular dynamics. He joined the present institute, NISTEP, in 2002. In the NISTEP, he planned and conducted the 8th National Technology Foresight in Japan as part of Terutaka Kuwahara's group (FY2003-FY2004). He developed a bibliometric method to find out emerging research areas and to analyze the contribution of Japanese activates in these areas. This work is the origin of the Science Map which is now biannually published by NISTEP. The latest report "Science Map 2006" will be published in the spring of 2008. He was seconded to the OECD for about two years from July of 2005. He engaged in developments of new science and technology indicators, especially indicators related to nanotechnology patent applications, in the organization. The mapping of nanotechnology patent applications is his latest work which will be published in Scientometrics.

- up to five major publications
  - Exploration of the evolution of nanotechnology via mapping of patent applications, Masatsura Igami, Scientometrics, Accepted, 2008.
  - Capturing Nanotechnology's Current State of Development via Analysis of Patents, Masatsura Igami and Teruo Okazaki, OECD/STI Working Paper 2007/4, 2007.
  - Mapping Modern Science Using Co-citation Analysis, Ayaka Saka and Masatsura Igami, 11th International Conference Information Visualization (IV '07), pp. 453-458, 2007.
  - Capturing the Evolving Nature of Science, the Development of New Scientific Indicators and the Mapping of Science, Masatsura Igami and Ayaka Saka OECD/STI Working Paper 2007/1, 2007.
  - Effective Mass Theory of Carbon Nanotubes with Vacancies in Magnetic Field, M. Igami, T. Nakanishi and T. Ando, Journal of Physical Society of Japan, Vol. 70, pp. 481-491, 2001.
- link to your home page and
  - http://www.nistep.go.jp
- links to data or software you serve (if applicable).
  - Science Map 2004 (http://www.nistep.go.jp/achiev/ftx/eng/rep100e/idx100e.html)

General Questions

1) What is (are) your main interest(s) in attending the workshop?

- How to uses sophisticated visualization techniques to capture the dynamics of science, especially the emergence of new fields like nanoscience.
- The possibility of the maps of science as a tool which stimulate dialogues among scientists.

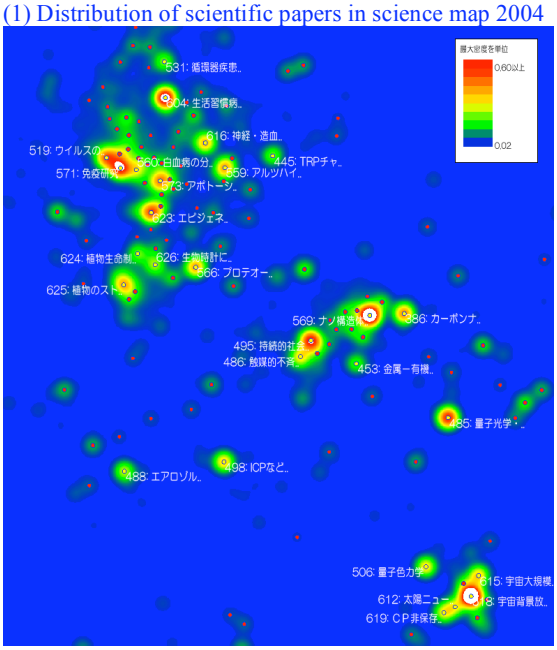
2) What information/knowledge management needs do you have?
Explain your 'dream tool' for scientific discovery and innovation.

- Real time monitoring system of the dynamics of science on which various information such as countries' shares, knowledge flows, human flows, funding can be shown.
- The cutting-edge visualization techniques would be useful to summarize knowledge individual scientists have. But, I personally think that the visualization alone is not enough, somebody needs to digest the results. Along with sophisticated visualization tool, places where scientists can discuss the results and share their ideas freely would be needed.

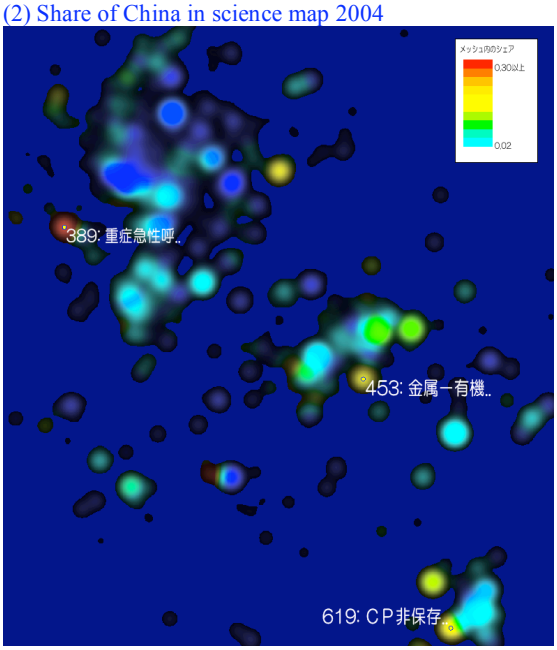
3) What is the most insightful visualization of static or dynamic phenomena you know?
[Ideally this visualization led to a major discovery/innovation. Examples could come from science, art, or any other field of human endeavor. Note that we plan to use this visualization on your name card.]

- I am not a specialist of visualization, so my knowledge is limited. As used be physicist, I think that we would learn something from visualization techniques which are applied to display large molecules and their wave functions in physics, chemistry, and life sciences. Software called "advanced visual systems" (http://www.avs.com/) is a tool commonly used.
- Our group recently developed a visualization tool for our science map. It can visualize distribution of scientific papers, countries' shares, and distribution of scientific field, e.g. physics, chemistry, biochemistry, etc., on the map. Below shows examples.

(1) Distribution of scientific papers in science map 2004



(2) Share of China in science map 2004



(in Japanese)

4) What would you like to learn / achieve at the workshop?

- To what extent visualization techniques are actually used in decision making process in governments and enterprises.
- What is the limitation of the visualization?

Please send the completed document by <u>February 20th, 2008</u>
to Katy Borner <katy@indiana.edu> and Elisha Hardy <efhardy@indiana.edu>