

# AIST Advisory Board Meeting 2002

Comprehensive Review of AIST Annual Performance by Worldwide Authorities  
AIST Tokyo Waterfront Center, May 16, 2002

The AIST Advisory Board was set up as an Independent Administrative Institution (IAI) in April 2001 to conduct an annual review, by eminent scientists and authorities both from Japan and overseas, of all aspects of institute management. The first meeting was held at the AIST Tokyo Waterfront Center on May 16, 2002, with fifteen advisors in attendance, and was chaired by Makoto Morio, the president of Kyoto University. In the morning session, AIST President Yoshikawa first presented his management policy for AIST. Vice-President Hiraishi and Trustees Ikegami and Tanaka followed, and described the organization and its activities, its collaborations with the industrial sector and academia, and the evaluation system. The three research topics, correlation electron, glycoscience, and grid technology, were then presented by research unit directors Tokura, Jigami, and Sekiguchi. In the afternoon session, the members reviewed and discussed selected items: performance in the 2001 fiscal year, the roles of AIST as a public institute, and the future direction of the institute. The focus of the discussion was on the effect of new systems introduced as IAIs, i.e., the research unit organization created by unifying the former 15 institutes, the evaluation system for units and persons, and collaboration with the private sector. During the lunch break, a poster exhibition of 16 selected topics was held to help the advisors understand AIST activities. A laboratory tour of the Tsukuba Center was also provided on May 15 and 17. The result of the review and the opinions of the Board were summarized and released to the public as the Chairman's Summary.

## Advisors at Meeting 2002 -Extract from Discussion in the Afternoon Session

**Swan-Foo Boon, Managing Director, Agency for Science, Technology and Research, Singapore**

--- I must start off by saying that I feel AIST is doing everything right. That's because we are doing exactly the same thing as Singapore. --- I think the more important issue is about the funding: who pays your salary? This will form the basis of where the AIST will go. In our case, if we have something of interest and the government isn't inter-



ested in it, we have to find external funding. Currently, about 20% of funds are coming from external organizations. ---

**Seizo Miyata, President, Tokyo University of Agriculture & Technology**

--- Compared with universities, I find that AIST's research is not so different in its individual themes, but different in its concept of "full research". It would take 15–20 years in a nightmare because of its trial-and-error approach. To shorten the nightmare period and to reach the reality faster, you should hire many technicians. That would help make the national institute beneficial for the industry. ---

**Hiroshi Kukimoto, Senior Managing Director, Toppan Printing Co. Ltd.**

--- What AIST has gotten in moving to IAI is the increase in freedom of licensing of intellectual properties. First, I expect AIST to transfer the research output to industry and to promote development of venture enterprises. Second, we wish you to keep or improve the present three principles of licensing, i.e., no monopoly, no discrimination, and transfer with proper value. Even in the IAI status, AIST should avoid profit-making like a private corporation and should serve the public through licensing, taking into account that AIST is funded by the government to contribute to industrial progress. ---

**Masuo Aizawa, President, Tokyo Institute of Technology**

--- I feel the policy of "full research" that was presented by the president this morning is persuasive. But I wonder what structural measures were set up for realizing "full research". Do you do this based on structural measures



or on research themes? Is the present structure of three categories of research units suitable for full research? Who decides all of the themes, from what viewpoint, and who stops some of them along the way? ---

**Hiroshi Komiyama, Professor, University of Tokyo**

--- It would make little sense to differentiate the research done in public institutes, universities and private companies. I feel that you may do whatever you can do best with your capability. If we consider the role of IAI in this way, I tend to think that IAI should be responsible for the development and maintenance of infrastructure. The infrastructure is not limited to hardware but software as well. As well as standards of measurement, substances and geological survey, we should also note the accumulation of knowledge, which is increasing exponentially. IAI's like AIST will be the only organizations that can afford to do this. ---

**Karen Brown, Deputy Director, National Institute of Standards and Technology, USA**

--- I have some difficulty in trying to understand this. I read that AIST aims to make the dream become reality and to make the nightmare shorten. But is it for everything in the economy? Is it for infrastructure or for more focused areas? Is it to make spin-off ventures? What are the measures of success? These are all very different measures, and in some cases it needs to be measured over a long term. I have to admit, we in NIST also have a great difficulty in focusing. We are to focus on infrastructure; we are not to focus on new products and we are not to focus on new technology except as it relates to building the infrastructure, so it may be more limited. ---

**Jean-Luc Clément, Director of Int'l Affairs, Centre National de la Recherche Scientifique, France (on behalf of Geneviève Berger, Directrice Générale)**

--- My organization, CNRS in France, is the biggest research center with twenty five thousand salaried persons and with a thousand laboratories connected with universities. If we identify our difference from universities, I think that we have more freedom than universities. We can set up new laboratories more easily and develop more contacts with industries. -----I would like to give you an example of this freedom. First was the increase in inter-disciplinary programs.

We cover all fields of research, e.g., mathematics, biology and chemistry, and we can very quickly create an inter-disciplinary program. The second priority was to increase the transfer of technologies. We developed more collaboration with industries and created new small industries.---

**Hans-Jürgen Warnecke, President, Fraunhofer-Gesellschaft, Germany**

--- My main concern is whether AIST can achieve success in this configuration and in this mission. At first glance, it is a good idea to have Type-1, Type-2 and industrial research under the one roof because you will have a continuous flow, but you will spoil the criteria for evaluation because each of these research units need its own criteria to measure its effectiveness and efficiency. In Germany, we have three organizations. For basic research, we have the Max Planck Society. One hundred percent of funds are paid by the government and they do not care for applications. For long-range research for the benefit of society—for instance, environment and energy issues—we have the Helmholtz Society. For more short-term research, or contract research, including even big companies, we have the Fraunhofer Society. ---

**Chang-Sun Hong, President, Korea Advanced Institute of Science and Technology, Korea**

--- I am very pleased to be here to learn something about the courageous restructuring of AIST. In Korea, we have had similar discussions under IMF controls. I think the role of AIST must be different from the universities. As taxpayers, they will expect AIST to play some role in economic growth and human welfare. Especially this morning the management philosophy presented, is a very beautiful outline, but the next step is what the strategy of AIST is for this mission. --- In the case of our institute, 70% of the license fee will be given to inventors. ---

**Minoru Morio, Vice Chairman and Director, SONY Corporation**

--- I am speaking from the perspective of industry. The data are a little outdated, but from the year 2000, the amount of money that was given by Japanese industry to Japanese universities amounted to 70 billion Yen; but to overseas universities, it amounted to 150 billion Yen. What

overseas industries spent on Japanese universities was only 700 million Yen. These figures are not meant to indicate the research level of Japanese universities, but that the Japanese universities are not quite listening to what the Japanese industries need. There is not enough communication between academia and industry. This has long been a common belief among us industrial people. We see here one reason why this organization was turned into IAI. It is that the R&D should be more beneficial to the Japanese industries. ---

**Tomoyo Nonaka, Journalist**

--- AIST has spent one year to sum up all of the 15 institutes. You had to change the culture of the institute. It has been a year of “trial and error”, seeking what to organize and how to manage. Rather than restructuring, re-engineering is a suitable word for these cases. I think AIST should have a more positive attitude towards being an IAI, not a negative one. When you talk about restructuring your organization in Japan, you tend to consider some kind of safety net first, but I’d like to think you may develop the possibility. ---

**Hisashi Kobayashi, Professor, Princeton University**

--- The Ministry of Education and Science is planning seriously how to develop a very strong, global-scaled COE in Japan. I don’t think it’s important to have a distinction between a university COE and a similar center to be established by AIST. Japanese university strength in terms of research is not comparable to some of the best universities in the United States. Here we have a chance for both AIST and the university community to work together, ideally to make a very competitive COE. So rather than making a separate mission and making the distinction between university and AIST, I’d like to see some cooperation and exchange of personnel and ideas to make some Japanese center visible on global scale. ---

**Naomasa Nakajima, Professor, University of the Air**

--- It is a great step forward that you made an evaluation of these fifty-something units. The evaluation result shows: Units that are still in the dream stage are given a high rating; those in the nightmare stage don’t receive a high rating; those in the reality stage are given a high rating. I could be corrected, but I have that impression. That means that emphasis on Type-2 basic research is not clearly communicated to people outside. If you want to continue the external evaluation, you have to make this clear. Along with this, you should have internal evaluations as well. It is crucial that you should let them know your intentions. ---

**Satoru Oya, Director and Chairman, Oyo Corporation**

--- Today, science has been fragmented into many specialty areas. Accordingly, scientific societies have been bro-

ken down into many fragments. As a result, you can do in-depth study, but there is very little across-the-board coordination. To put science to good use for society, you need to reintegrate those fragmented disciplines. Now that AIST has been launched with integration of 15 different institutes, I hope that you will give your priority to a project where you can aggressively pursue interdisciplinary studies. ---

**Makoto Nagao, President, Kyoto University,  
Chairman of the AIST Advisory Board**

**CHAIRMAN’S SUMMARY  
for MEETING 2002**

**(1) Mission and Planning**

The AIST research policy focusing on the role of cross-linkage between the free and basic researches in the academia and the commercialization efforts in the industry, can be regarded as appropriate target-setting, for one of Independent Administrative Institutions established by the government, considering the achievement of three missions: i) To carry out difficult and long-term research tasks with which government itself should tackle; ii) To enhance industrial competitiveness and to create new industries based on advanced and innovative technologies; and iii) To consolidate the intellectual infrastructures for supporting industrial technology.

Unlike research works in academia based on researchers’ non-binding thinking, AIST should first focus their efforts to select i) comprehensive, medium- to long-term development tasks in consideration of industrial and social needs, ii) large-scale projects difficult to be exercised by universities, or iii) researches integrating multi-disciplinary areas; then press those researches on with relevant specialists collected from within the Institute. In this way, augmented endeavor will be needed for dynamic management of AIST. With the previous organizations under MITI combined together, which had fifteen different missions, it is essential to make the identity of New AIST clearer, to enhance the sense of solidarity among staff members, to make efforts for carrying out efficient R&D works, and to contribute to the society through the development of advanced technology leading the world industry. Such a comprehensive and dynamic project management is of enormous importance.

For selecting specific research themes, it is crucial to resort to open process with high transparency, so that not only opinions from the AIST but also those from the industry and the society in general could be well reflected. In regard to the planning of medium- and long-term develop-

ments, strategic approaches and systems for their implementation should be investigated.

## **(2) Research Organization and Strategy**

The merits of research organizations, including three categories of research units: research centers, research institutes/research divisions and research initiatives; and the graded allocation of research expenses cannot be assessed properly at this point after one year's experience only. Due to the short time of discussion, the Advisory Board failed to obtain detailed information on which of previous laboratories were merged to formulate each research unit, how researchers have been re-grouped, which of three missions have been given priority, and so on. Should any one be doing research works merely as an extension of those in the previous organization, without shaking up one's thinking to adapt to the new organization, the new environment and the clear targets, this had to be amended immediately.

The R&D strategy should be built up not by the mere compilation of an individual technology development, but on comprehensive footing to cover impacts of research results, if successfully commercialized, to individuals, societies and global environment. Such an approach can be realized only by the AIST where many research laboratories with diverse missions and specialties were integrated. Should positive R&D efforts be focused on specific problems which Japanese society must resolve, in addition to priority research areas, such as biotechnology, information technology and nanotechnology, where advanced countries in the world are competing vehemently, those efforts might result in leading-edge technologies which would lead other countries in the future.

While massive efforts directed to research collaborations among industrial, academic and government sectors can be appreciated, further striving may be needed for increasing substantial collaborations. Various methods including personal exchanges, joint researches, venture incubations have been strengthened; more substantially effective way should be sought.

It is also important to build up research environment where the equipment and facilities of state-of-the-art quality and highest possible grade are provided, and scientists and engineers of international class can proudly devote themselves to R&D works.

## **(3) Evaluation of Research Activity**

The research works of an individual research unit are evaluated thoroughly by the external reviewers as a part of the internal evaluation. It is an easy-going way to assess research achievements by numerical factors, such as the num-



ber of papers, patents and other forcibly quantified expression, which should be avoided. While the numerical evaluation may be inevitable when comparing the performances among different research units, the numerical data should be interpreted with care, viewing from a number of different angles and giving weight to comments by world-eminent specialists. In case of personal evaluation, it will be necessary to avoid numerical assessment as much as possible depending upon the nature of respective researches. It is desirable to place emphasis on qualitative evaluation based on opinions from superiors and outside peers so as to boost researchers' morale. Disclosing the evaluation results as a rule will be beneficial to those evaluated, those to evaluate and the communities concerned.

The evaluation can be made based on the degree of accomplishments in reference to terms and milestones of the research schedule, as specified by the previously set up R&D plan. In evaluation, therefore, it is desirable to review not only the appropriateness of the R&D plan but also the degree of achievements. Then, it is critical to fix beforehand a "yardstick of evaluation" corresponding to the category of R&D plan.

## **(4) Conclusion**

Generally speaking, it is of utmost importance to shake up researchers' thinking and to raise awareness about why previous laboratories were re-organized into an Independent Administrative Institution. It may be expected that if R&D works were carried out taking notice of the Board's comments given above, good accomplishments would become available by the end of the first Mid-Term.

It must be admitted that the Meeting of the AIST Advisory Board, 2002, failed to capture the actual status of AIST owing to the shortness of time, and the discussion lingered at the level of overview. From the next meeting on, the Board will hopefully provide in-depth assessment for focused items.