



This issue reports the newly launched Evening Salon, a Lecture Meeting in relation to IEEE Milestone and a Technical Tour, and announces the schedules in the future.

### 1. Evening Salon

LMAG-Tokyo launched an evening salon as a new event. The salon aims to offer a place where a member provides a topic on which all participants in a relatively small number exchange their opinions freely while eating and drinking.

The first meeting was held at 18:00 to 21:00 on May 19th, Friday at the Shiba Club of NEC, gathering 30 participants. Dr. Rikio Maruta who published an electronic book entitled "Strong Japan comes back: Reinventing PDCA for innovations" was asked to be a topic provider.

At first, he provided a talk entitled "Japan's power which is recovered by nurturing : Personal view of a once-researcher of a communications engineering". Then, discussion by all participants followed.

After the discussion, participants expressed their opinions that the provided topic was of useful information. Judging from the experience, an evening salon will be useful for not only LMAG members but also members in general, and deserves being held with a theme requested by members.



Scene of the talk by Dr. Maruta.

### Summary of the talk

Japan made a marvelous economic growth after recovery from the War. But after the abrupt stop of the growth around 1995, a stagnant state without growth continued for 20 years. Meanwhile, there were discussions and attempts to reactivate Japan on a growing orbit, but in vain. They did not clarify the causes of the stagnancy, and sought for the hints on a measure in foreign countries. However, the Japan's problem was only for the most advanced country, and could not solved with experiences of foreign countries.

Japan's success in the past was brought by simultaneous happenings of innovations that were not recognized in other examples. In general, To begin an innovation, a knowledgeable worker of type 2 who is creative is needed. However, such persons are rare in number, and cannot be raised by nurturing through learning, education. On the other hand, we can bring up a knowledgeable worker of type 1 who has knowledge by education. Some of the type 1 workers were nurtured to the type 2 workers in the work place.

In a team work, they plan (P), do (D), check the results (C), and act for the further improvement (A). Such a cycle of PDCA was carried out as a matter of course. The individual members made his / her best effort to pursue the tasks required by the team. This attitude was strengthened with norm and aesthetics senses of a Japanese.

It is nurturing through thinking for a team member to increase the creative power by thinking deeply by oneself. Through this activity, a substantial number of the type 1 workers were changed to the type 2 workers. A new type 2 worker became the core of a new innovation.

Then, has come a paradigm shift due to digital technology development and internet popularization. The superiority of a work team to refine products by deliberate design and elaborate work are not effective in creating attractive products any more. Internet destroyed the superiority of a vertical integration model that produces all parts in one company.

The innovation capability shifted from the aforementioned features to planning and executing of the concept suitable to needs, the procurement of necessary technologies and components, and the application environment. Main players were changed from a field work team to individuals in the indirect sections of planning or management. These tendencies weakened the Japan's advantages.

In those sections, persons are mostly trained as the type 1 workers. The type 1 workers were not nurtured through thinking as the PDCA cycle was not popular. The type 2 workers are native, and small in number. Moreover, different talents are not respected in Japan so that the type 2 workers are not much produced. Accordingly, the type 2 workers were less to appear than the other countries.

In industries of components or cars, Japan

currently keeps its superiority, but the above-mentioned paradigm shift may occur also in these fields in a short time. The recovery of innovation power clearly depends on nurturing through thinking, and on generating the type 2 workers in all sections.

Mr. Maruta said that he understood the reasons why PDCA did not spread in the indirect sections, and proposed so-called Timed ODCA method in his book. He said that in any business, PDCA cycle could be actively used under the influence of norm and beauty senses. He confirmed that the type 1 workers have been nurtured through thinking to become the type 2 workers in his own company using the proposed method.

He concluded that innovation power would be activated by nurturing through thinking, and strong Japan could be recovered.



Group photo of participants in the evening salon.

**2. IEEE Milestone memorial lecture meeting for "Nobeyama 45-m Telescope, 1982"**

The achievement of "Nobeyama 45-m Telescope, 1982" completed by the National Astronomical Observatory of Japan (Tokyo Astronomical Observatory at that time) and Mitsubishi Electric Corporation in 1982, was acknowledged as an IEEE Milestone.

On June 14 Wednesday, the ceremony of the Milestone plaque presentation was held in commemoration of this recognition in the Room Fuji on the third floor of Josui-Kaikan. The memorial lecture meeting with the following three lectures was held in the same room gathering 98 participants.



Chair of J.C. H. Committee Shirakawa giving his talk.

**Lecture 1**

At first, Isao Shirakawa, Chair of JC History Committee, overviewed IEEE Milestone, and introduced the IEEE Milestones of Japan and some examples in the whole world.

**Lecture 2**

Next, Osamu Sakakibara gave a lecture entitled "Development of Nobeyama 45-m Radio Telescope." He was the project coordinator of the development team in Mitsubishi Electric Corporation at the time and now the President and Representative of Taiyo-Musen Ltd. He started his speech with words of gratitude to all the people who supported such a big project and went on to look back on the development.

The 45-m Radio Telescope has a diameter 4 times larger than previous millimeter telescopes. The major obstacles were pointing and surface accuracy. Regarding the former, very precise pointing and tracking performance was achieved by a special encoder, master collimator, whose structure was independent of the telescope structure. For the latter, gravitational deformation is minimized by adopting a so-called homologous design, and the thermal deformation is suppressed by the air circulation inside the sun shield panel and the reflector surface panels made of the low-thermal expansion material CFRP(carbon fiber reinforced plastic); between them an aluminum honeycomb was sandwiched.

The campus of Nobeyama Radio Observatory was open to public since the founding. More than 3 million visitors have come since then.



Mr. O. Sakakibara giving his talk.

**Lecture 3**

Finally, Nobuo Kaifu gave a lecture entitled "45-m Radio Telescope investigating mm-wave Astronomy." He was the Director of National Observatory and the former chair of International Astronomical Union. He was engaged in the design and construction of 45-m Radio Telescope. He started his speech with words of gratitude to all the people who supported such a

big project and went on to look back on the development.

In 1968-1969, it was reported that interstellar molecules were discovered such as Ammonia and Formaldehyde by using the Radio Telescope. Then mm-wave astronomy was taking the important role in this field. Moreover, in the mm wavelength region, many absorption spectra existed relating to the carbon molecules and the 45-m radio telescope was strongly desired in order to observe the dark galaxy where many interstellar molecules should exist.

Then the collaborative work to establish the 45-m radio telescope started between Tokyo Astronomical Observatory and Mitsubishi Electric Corp. In 1975, the investigation cost of this telescope was approved by the government, and in 1978, the construction cost was approved. In 1982, this telescope was established and started to work in Nobeyama. The first target was fulfilled to have discovered many interstellar molecules and the enormous black hole. These results contributed to research the origin of the stars and to develop further the Radio Observatory. This success has been leading to the Subaru Telescope and the ALMA telescope.



Dr. N. Kaifu giving his talk.

### 3. Lecture Meeting, Technical Tour, and Get-together in Fujitsu Laboratories Ltd.

The lecture meeting, the technical tour, and a get-together were held in Fujitsu Laboratories Ltd. at 15:00-20:00, on Thursday, July 13, 2017. The number of participants was 37.

#### Lecture on the Research and Development of Artificial Intelligence

The Lecture was delivered by Dr. Nobuhiro Yugami, Senior Director, AI Laboratory, Fujitsu Laboratories Ltd. He gave the lecture entitled "Research and Development of human-centric AI in Fujitsu AI Laboratory," focusing on the recent activities.

Through advanced Information and Communi-cation Technology (ICT) performance and Artificial Intelligence (AI) progress, the utilization of AI has been expanding rapidly in various fields in the society. It is expected that AI

will support human judgement and activities by enhancing its autonomous prediction and judgment capabilities. Moreover, machines are expected to be more empathetic with people.

In the study of AI, technologies consist of Perception/Recognition, Knowledge processing, and Decision making /Decision support, where machine learning such as deep learning (DL), is the key issues in the developments.

For the Perception and Recognition, DL is expected to be used in various fields in the society. The following technologies are being developed to optimize neural network and improve the learning efficiency to extract its latent learning potential. The relevant technologies are such as the integrated learning to process the image, speech, text data, etc. and the reduction of learned neural networks to put into the practical use.



Dr. N. Yugami giving his talk.

The multimedia processing, which realizes functions of human five sensors, connects the real world and the virtual world of computer, from the viewpoint of image, speech & audio, and natural language. Cognitive systems are developed for understanding the human emotions and affections to offer the customized services to individuals.

For Knowledge processing, the knowledge database is established by linking the diverse data such as web data, open data published by government, in-house business data of each company. And based on the knowledge database, AI systems are going to be realized such as the natural language dialogue, prediction and optimization.

For Decision making / Decision support, by using enormous data, AI systems are performing the



Scene of the technical tour.  
prediction and optimization, especially projection beyond the current expectation.

### Technical Tour

In the exhibition room, the practical examples were explained. They showed image processing technology for watching the motion of people, natural voice technology for synthesizing speech, tracking technology of human eyes, and visualization technology of the relation between various data to create the new knowledge. The data of prefectures on industry, education, population, etc. were visualized to find out the strong points of prefectures to create innovation. In this room, other practical examples except AI were exhibited and explained.

### Get-together

In the end of the events, the get-together was held including members of Fujitsu Laboratories, in the lounge on the 20th floor of the main building. All participants enjoyed the magnificent scenery of Tokyo and nice talking each other.



Scene of the social meeting.

## 4. Announcement

### 4.1 Technical Tour of IEEE Milestone facility sponsored by LMAG-Tokyo

Technical tour of Yosami Transmission Station that was recognized as IEEE Milestone in 2009, and the lecture by Eisuke Arai, Professor emeritus of Nagoya Institute of Technology who contributed to the recognition of the station as the then president of Tokai Branch of IEICE, will be held as follows:

- Place: Yosami Station Memorial Hall  
1 Yamanota, Takasu-cho, Kariya, Aich-prefecture
- Date&Time: October 6, 2017 (Friday) 14:30 - 17:00  
(Meet at the place at 14:30)

On the way back, a social with members of IEEE Nagoya Branch will be held near JR Nagoya Station.

### 4.2 IEEE Metro Area Workshop in Nagoya

- Date: October 7 (Saturday) to 8 (Sunday)
- Place: Chuukyou University, Nagoya campus  
101-2 Yagoto-honmachi, Showa-ku, Nagoya  
(near Yagoto Station of Maizuru and Meijo Lines)
- Program
  - October 7: Session 1 IoT  
Session 2 Automotive
  - October 8: Session 3 4k/8k  
Session 4 Standardization

**IEEE Tokyo Section Life Members Affinity Group**  
**Newsletter No.20, Issued on August 30, 2017**  
Issued by IEEE Tokyo Section Life Members Affinity Group  
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