Appendix 4.2

[IoT System for Water Reuse in Developing Cities]
[Wireless Communication and Intellectual Property Training]
Report/Minutes Form

I. Organizer:

Name:	Dr. Huan-Bang Li
Position:	Chief Senior Researcher
Institution:	National Institute of Information and Communications Technology (NICT), Japan

II. Program:

Date: Aug 28-30, 2023
Venue: Wireless Networks Research Center, Yokosuka and NICT headquarter, Koganei

Program Agenda:

1. Visit to NICT facilities at Wireless Systems Laboratory, Yokosuka

Date: 28/08/2023

Venue: 3-4, Hikarino Oka, Yokosuka, Kanagawa.

2. Technical training on wireless communication

Date: 28 & 30/8/2023

Venue: 3-4, Hikarino Oka, Yokosuka, Kanagawa.

3. Visit to NICT headquarters at Koganei

Date: 29/8/2023

Venue: 4-2-1, Nukui-Kitamachi, Koganei, Tokyo 184-8795, Japan.

III. Participants:

No.	Name	Organization
1	AP Dr. Leo Choe Peng	Universiti Sains Malaysia
2	Dr. Yu Kok Hwa	Universiti Sains Malaysia
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IV. Summary of the activities corresponding to the objectives

There are three objectives for this program, which are stated as follows

1. Technical visit to NICT facilities and knowledge transfer on wireless communication at Wireless Systems Laboratory, Yokosuka on 28th & 30st August, 2023.

2. Technical visit to NICT headquarters at Koganei on 29th August, 2023.

3. Knowledge transfer on intellectual property at wireless communication at Wireless Systems Laboratory, Yokosuka on 29th August, 2023.

Activities during the program
1. Workshop 1: Introduction of D2D technology and application of D2D systems in field work.

The overview of the D2D technology have been presented and shown in many applications. Dr. Azril Haniz presented the related project on the use of D2D systems for measuring the water quality in Tasik Chini. The performance of the D2D systems in transferring data from various locations on the lake has been presented to showcase the influence of the terrain on the data transfer capacity.

(Objective 1)

2. Workshop 2: Review and update on experiment results of current project.

Each of project members (i.e., Dr. Huan-Bang Li, Assoc. Prof. Dr. Leo Choe Peng and Dr. Yu Kok Hwa) had shared the recent updates on the current project. Dr. Huan-Bang Li had shared the D2D mechanism used and employed in the D2D system installed in USM. Dr. Leo Choe Peng had updated the outcomes of the filtration system used in this project. Meanwhile, Dr. Yu Kok Hwa had updated the use of artificial intelligence on the sensor measurement that employed for this project.

(Objective 3)

3. Workshop 3: Introduction of NICT patents related to D2D technology. Discussion on possible future cooperation.

In this workshop, the past experience on the patents application made had been shared by Dr. Huan-Bang Li. The details on the past applications on wireless communication device, for example on UWB technology has been described. Other details pertaining to the IP applications, including the application process, challenges and specifications required are explained.

(Objective 3)

4. Workshop 4: Discussion on interface between sensor system and D2D system.

In this workshop, the errors arise from the data transfer between IoT system with D2D system have been discussed. The details on this problem have been discussed prior to this training and outcomes on the amended program used in the IoT system have been described in this workshop.

(Objective 1)

5. Lab visit to wireless communication lab and interactive lab on Aug 28, hosted by Dr. Morio Toyoshima, Dr. Matsumura Takeshi and Dr. Huan-Bang Li. (Objective 1)
6. Lab visit to satellite communication lab on Aug 29, hosted by Dr. Alberto Carrasco-Casado and Dr. Dimitar Kolev. (Objective 2)
7. Lab visit to remote sensing lab on Aug 29, hosted by Dr. Seiji Kawamura and Dr. Philippe Baron. (Objective 2)
8. Lab visit to 5G communication lab on Aug 29, hosted by Dr. Norihiko Sekine. (Objective 2)

Changes of program
1. Due to unexpected injuries sustained by Dr. Yen Kin Sam on Aug 26, Dr. Yen is thus unable to join the scheduled program.
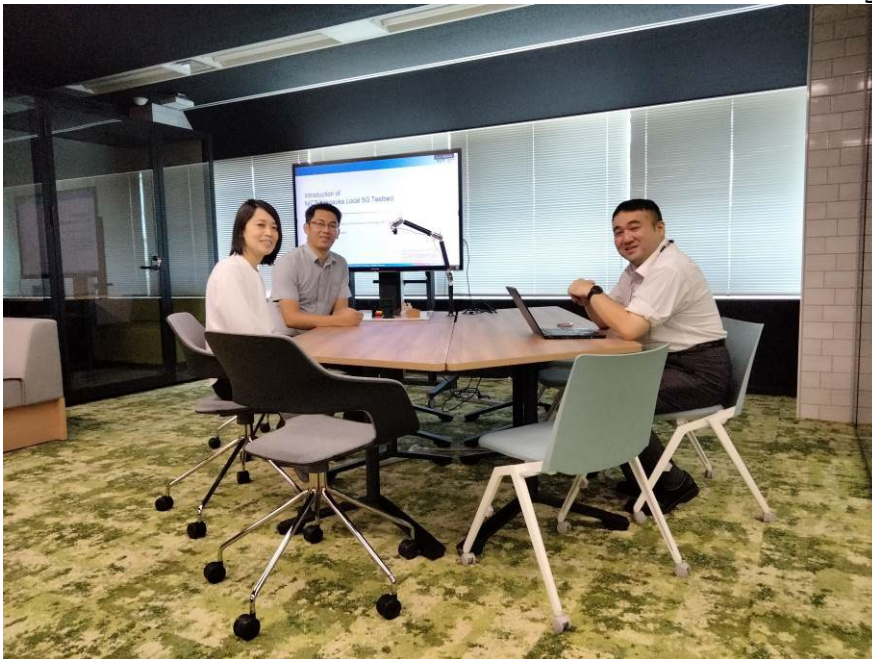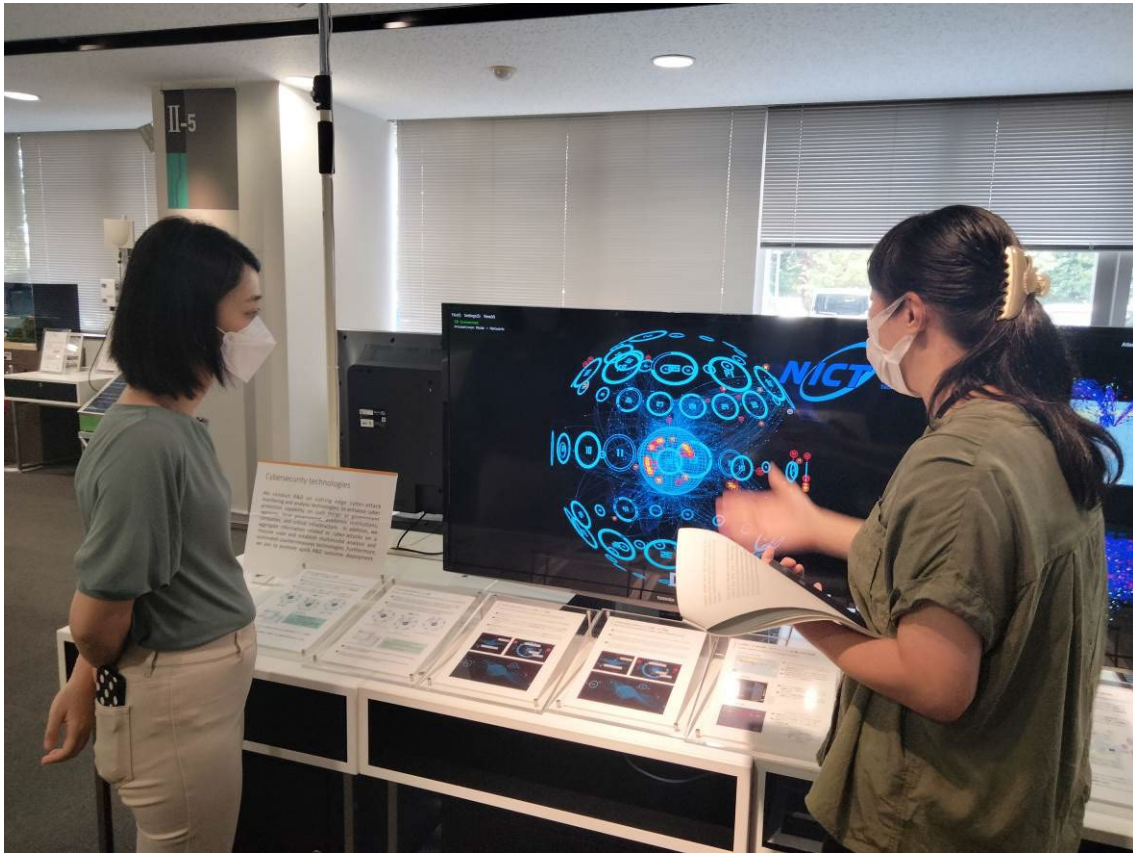
V. Others

Briefing by Director General Dr. Morio Toyoshima on 28 Aug.

Demonstration in the Wireless Networks Research Center on 28 Aug

Demonstration in the Interactive Lab on 28 Aug

Visit to exhibition room in NICT Koganei on 29 Aug

Visit to satellite communication lab on 29 Aug

Visit to 5G communication lab on 29 Aug

Talk by Dr. Azril Haniz on 30 Aug