

The 4th PHS MoU Group General Meeting Held in Tokyo

Current Status and Future Prospects for PHS Reviewed

On December 19, the 4th General Meeting of the PHS MoU Group was held at the Toranomom Pastoral in Tokyo. A total of 60 persons participated in the meeting, including seven persons of three members in Indonesia, where the Indonesia PHS Forum has recently been formed.



Address to the 4th PHS MoU Group General Meeting in Tokyo

In his opening address to the meeting, guest speaker Mr. Seiji Tanaka, Director-General, Telecommunications Bureau of MPT Japan, said: "The rate of increase in PHS subscriber numbers is, at present, stagnant. However, PHS, with its data transmission and other excellent capabilities, will come to be used much more widely because of the strong demand for mobile computing. I urge that the PHS MoU Group to promote further penetration of PHS."

Dr. Hiroshi Ishikawa, Chairman of PHS MoU

Group, presided over the meeting. First, six companies were approved new Signatory memberships, bringing the total number of the members to 85. The new Signatory Members are: Kanematsu Corp. (Japan); NEC do Brazil S.A.; TelecomAsia Corporation Public Company Limited (Thailand); Infocomm International

Corp. (Taiwan); PT Telekomunikasi Indonesia; and Dassault Automatismes et Telecommunications (France).

It was noted that Mr. Yoshio Iwayama was appointed the new Secretary General of PHS MoU Group as the successor to Mr. Takeshi Yoneda. There then followed reports on the Group's activities for the first half (July-December) of the fiscal year 1997. Mr. Yoshio Iwayama, Secretary General of the PHS MoU Group, presented an overall review. And reports on activities of the working groups were made by: Mr. Takuo Kashiwamura, Chairman of the Technical WG; Mr. Shigeru Mori, Chairman of the Business WG; and Mr. Yoji Naito, Chairman of the Promotion WG. The chairmen also reported on each WG's plans for the second half of the fiscal year 1997 (January through to June 1998).

Mr. Pinudji Rahardjo, PHS Implementation Team Leader of PT Telekomunikasi Indonesia and Vice Chairman of PHS Forum Indonesia, reported on the activity and establishment of the PHS Forum in In-

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onesia where public PHS services are scheduled to launch in this year.

Revisions to the PHS MoU Technical Specifications, particularly those aimed at enhancing the PHS-WLL (Wireless Local Loop) system were presented. The revised specifications have been published for sale under the title of "New and revised PHS MoU TS (July 1997)."

The meeting also approved the establishment of a new working group, the "Next-Generation PHS Study WG." This WG will study about what and how the next generation of PHS should be under the circumstance of the next generation mobile communication IMT-2000.

The next PHS MoU Group General Meeting will be held in either June or July outside Japan.

Service Profile

PHS Frequencies Allocated in Taiwan

Taiwan Set to Allocate Low-tier Mobile Communications Frequencies

PHS MoU Group held the PHS Seminar in Taipei on November 25 and 26, 1997 in cooperation with "Communication Magazine." PHS frequency is expected to be allowed in Taiwan soon. A Taiwanese newspaper reported on January 2 about "low-tier wireless communication frequency allocated in Taiwan." The general outline of the article is as follows:

The Directorate General of Telecommunications, Republic of China (RoC Taiwan), has announced it will reallocate 1880MHz-1918MHz and 1975-1990MHz bandwidths to the low-tier wireless communication service by the end of 1998 so as to allow both public and private communications operators to offer low-tier wireless communications service in populous urban areas.

The Directorate General plans to draft and publicize regulations regarding the reallocation by this June. It intends to have all the work completed by the end of 1998, including reception of applications and granting approvals. Low-tier wireless communications in Taiwan, therefore, is expected to commence as early as July 1999.

At present, there are three major technologies available for low-tier wireless communications: DECT in Europe, PACS in the U.S., and PHS in Japan. All three technologies use 20MHz frequency

band at around 1900MHz. The Directorate General negotiated with the Ministry of Defense and broadcasters, and gained their approval to reallocate the bandwidths to the communication operators. Businesses who had failed to obtain licenses for the mobile phone service last year are all gearing up for the low-tier wireless communications service.

The Director-General of the Directorate General of Telecommunications, RoC, emphasized that the Directorate General will maintain technology neutral and that it is the communications operators who will choose any of the three technologies.

He said that consideration would be given to granting additional evaluation points to those operators who choose systems manufactured in Taiwan as a way of boosting the low-tier wireless communications industry in Taiwan.

He also noted that the low-tier wireless communications services will initially be introduced in Taipei, Taichung, and Kaohsiung.



Taipei, Taichung and Kaohsiung are the most highly populated cities in Taiwan, which has the world's second highest population density of 598 people per square kilometer. (Population figures are from 1997)

New PHS Products and Services

PHS at the Nagano Winter Olympics

NTT Central Personal Communication Network Inc. (NTT Personal) has provided PHS services at the 18th Winter Olympic Games at Nagano on February 7 to 22, 1998.

NTT Personal has established new service areas to ensure in principle that PHS services are available throughout all the Nagano Olympic facilities and at the major game sites.

The PHS service areas cover all indoor facilities as well as main outdoor sites, including the finish points where there are stands for the press and spectators.

The traffic volume for telecommunication generated by the staff, press and general spectators during the Olympics is very large, so cell stations (CSs) with high traffic capacities are installed to assure smooth communication.

The PHS equipment for the respective



Wrist-watch type PHS is Being Tested at the Nagano Olympics

sites are designed to handle large traffic volumes; in order to handle traffic in excess of the expected capacity, spare circuits and CSs are also reserved.

Various sophisticated technologies have been tried in Nagano Olympics such as wrist-watch type PHS telephone sets allowing voice-activated dialing and multi-media radio terminals for concurrent communication of voice and images are demonstrated in cooperation with NTT.

Services provided at the Nagano Olympics

* Provision of PHS services for the Nagano Organizing Committee (NAOC):

In the PBX constructed at each site, an adapter for office station service (OSS) are installed, and 600 dual terminals which can be used as PBX extension telephones at



Athletes arriving at Nagano try-out NTT Personal PHS phones

each site and also as public PHS terminals are provided for managing the games.

* Provision of "Wireless Mobile Environment" by 32k Data Communication Service:

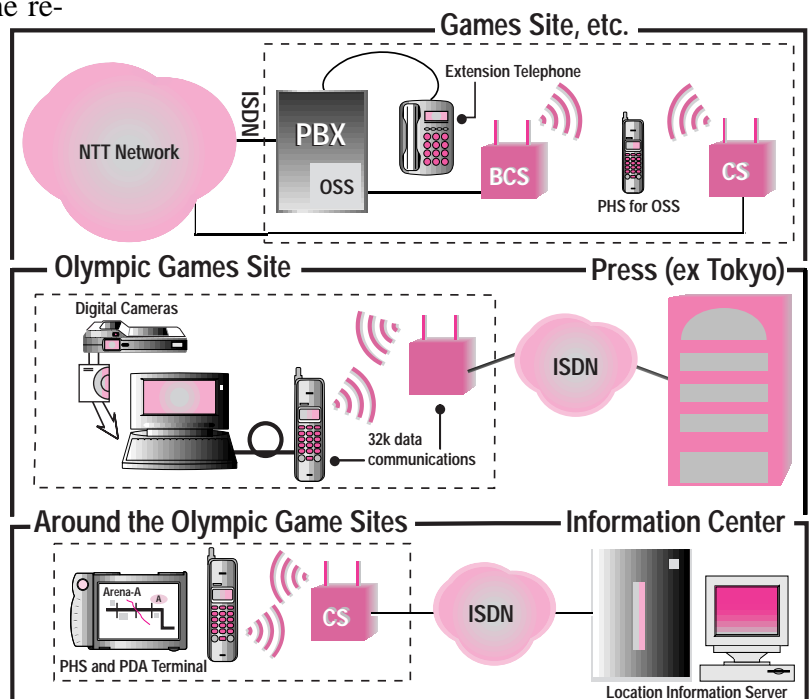
NTT Personal started its 32 Kbps Data Communication Service in April last year, and for the Olympics has set up facilities for transmitting images taken by electronic still cameras, etc. at game venues to head offices, etc., and for sending and receiving e-mail via the Internet.

* Provision of Navigation System using location information:

The area covered by one cell station in the PHS system is as small as 100 to 200 m in radius, so the location of each person who transmits information by PHS can be approximately identified.

NTT Personal started feasibility experiments in July last year for commercializing its Location Information Service by utilizing this feature.

At the Nagano Olympics, this location information is also used in combination with PDA termi-



NTT's PHS Mobile Communications System at the Nagano Games

nals to provide a prototype Location Retrieval Service.

Main Services

To ensure smooth management of the games, Office Station Service (OSS) is provided together with about 600 terminals which can be used as indoor extension telephone sets and also as outdoor public PHS terminals.

*Provision of "Wireless Mobile Environment" by 32Kbps Data Communication Service:

Facilities are set up for the press, etc. to allow 32Kbps data communication at the Olympic Game sites for transmitting photo data, etc. to head offices, etc.

*Provision of Navigation System using Location Information



PHS Multimedia
Communications System



PHS Made a Big
Impact at Nagano

The location information of PHS is used in combination with PDA terminals to provide a Location Retrieval Service.

For related information, see the NTT Personal homepage: <http://www.nttphs.co.jp>

New Organization

PHS Forum Indonesia Established

Public PHS Service Will be Launched in 1998

Public PHS services will be launched in Indonesia this year, in the Surabaya area by PT Indoprima Mikroselindo, and in the Jakarta area by PT Telekom Personal, as the first step toward regional services to be followed by tendering licences for a further five regions.

The Forum PHS Indonesia was established by a group of eight founder members of operators and manufacturers on November 24, 1997. They selected Mr. FX Soehartono to Chairman, Mr. Pinudji Raharjo and Mr. Heri Wiwardhana to Vice Chairmen, and Ms. Lily Dahlia to General Secretary.

The objectives of the Forum are to achieve an "Indonesian PHS Incorporated" with the capability of exploring, developing and improving PHS industries, to cultivate and coordinate all the PHS Industries' potential in Indonesia, and to give visions

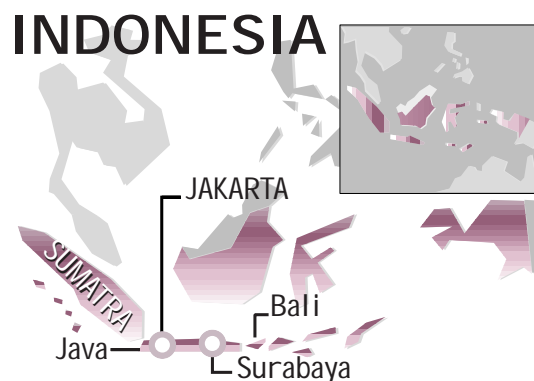
and inputs to the government.

They also pursue establishing PHS as one of the reference of telecommunications infrastructure in Indonesia, and developing PHS industries in Indonesia by fulfilling customers' need.

They have established three working groups under the Forum in order to handle the respective subject and elected chairman and vice chairman of each WG: Technology and Standardization WG; Business WG; and, Public Relation and Education WG.

Each WG has started activity toward the above services launching this year.

They are enrolling qualified organization and individual members and the honor members from the governmental organizations to enforce the activity of the Forum.



Standards

Expanded PHS Frequency in Japan

Based on the report from the Radio Regulatory Council for revising Radio Regulations on the measures for expanding PHS frequency allocations to cope with the increase in PHS subscribers, the Ministry of Posts and Telecommunications (MPT) of Japan promulgated the amendments of the Radio Regulations on December 16, 1997.

Main points of the amendments are as follows:

1. 3-MHz bandwidth frequencies can be used for public PHS services in addition to the current bandwidth frequencies,
2. In addition, public PHS can also use the frequency bands now used for private PHS application, provided the public PHS services operate their cell stations at the same antenna power and absolute antenna gain as those used for private PHS system cell stations.

The Association of Radio Industries and Businesses (ARIB), which established the PHS technical standards (RCR STD-28), has started the revision of RCR STD-28 in line with the above amend-

ments to the Radio Regulations. The revised RCR STD-28 will be published within two to three months.

Fig. 1 Current PHS frequency bands

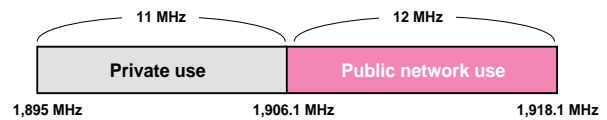
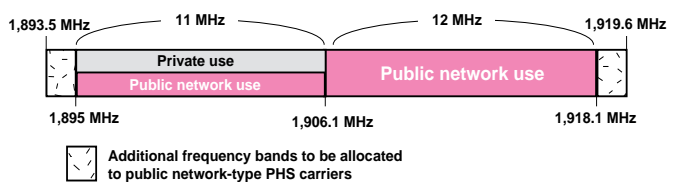


Fig. 2 Expanded PHS frequency bands



With the expanded frequency allocations, PHS carriers can cope with the increase in subscriptions and the longer call duration resulting from data communications using PIAFS. This will help realize seamless communications thanks to hybrid use of public, home-use and private-use PHS systems.

New PHS Services

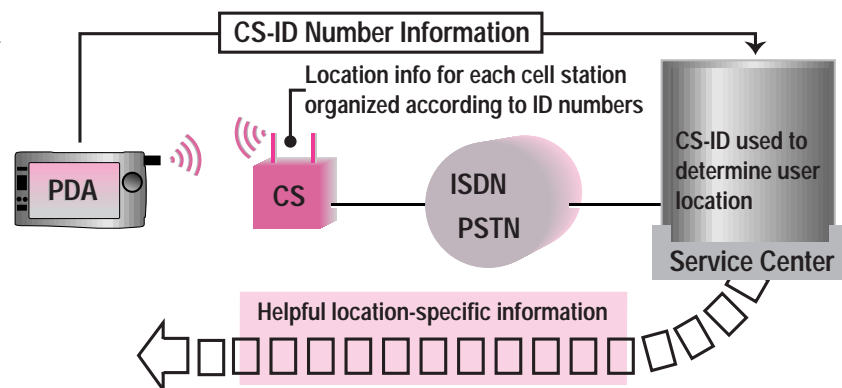
DDI Pocket's Location Information System

Location Information System Makes Waves

PHS is designed to function in smaller cells than other cellular phone systems. This characteristic has led to the realization of the PHS location information system. As one PHS cell station covers a radius of mere 100 to 500 meters*, the approximate whereabouts of a PHS user can be detected by monitoring the cell stations in the proximity of the user. Utilizing this characteristic, various content services, such as road map information service, can be offered to PHS users.

The main features of the positioning service are as follows:

- The central service counter has information about locations (addresses as well as positions in lati-



* Differs by operators

tude and longitude) and ID numbers of cell stations (CS-ID).

- Users need to inform the service center in some ways of the ID number of a nearby cell station (CS-ID).
- The service center determines the user's location and provides information helpful for the user in the specified location.

DDI Pocket Group offers "Navigation Service near Stations", PHS location information service, through cooperation with Toshiba Corp. since October, 1997 as its first commercial service. Toshiba Corp. has the Web site, "Exploring Club of the Downtown near Stations." This site provides businessmen with a wide variety of information, including restaurants, hotels and station malls information.

PHS user, with PDA (Personal Digital Assistance, e.g., Toshiba's GENIO), only need to access the Web site: the PHS location information system will identify the location of the user and the site will send information about the areas where the user is.

[Note: Notebook PC plus a PHS terminal can be used for PDA.]

More applications of the PHS location informa-



tion system are now under preparation. In an office equipment maintenance company, repair service persons take PHS terminals with them and their locations are being notified to the operation center. When a customer asks for checks on equipment, the company can route efficiently a service person to the customer.

It is applicable to detecting the location of wandering elderly people who have difficulty in identifying themselves. Taxi companies are studying for routing taxi cabs. Businesses in various fields have high expectations for the PHS positioning service as it does not require large-scale investment.

New PHS Services

Inter-office PHS Roaming Services

PHS is the Choice for Mission-Critical Indoor Voice and Data Communications Worldwide

One of the favorite applications of PHS technology is as personal indoor cordless systems in the office, factory, hotel, hospital, hall, etc. So many systems are working in various locations worldwide. Its terminals have become smaller and lighter than ever, and enable high-speed data transmission.

Meanwhile, there have been demands from users for the expansion of indoor cordless communications service areas. To meet these demands, the additional service of inter-office PHS roaming has been adopted in many businesses. This service enables PHS users traveling from one business site to another to originate and receive calls as an extension of the PBS systems.

The features of inter-office PHS roaming ser-

vice built into private networks are:

- 1) A PHS terminal has one number in the network and its user can originate or receive calls anywhere of the sites within the private network, as the network system automatically tracks the whereabouts of the PHS terminals;
- 2) The Users can introduce the service among multiple vendors' systems and also select PHS terminals from multiple vendors as the transmission protocol between PBXs used for the service complies with the standards of the Telecommunication Technology Committee (TTC).

Figure 1 shows an example of network configuration for the service. PBXs installed in multiple sites are connected with each other via ISDN leased circuits to transmit roaming signals.

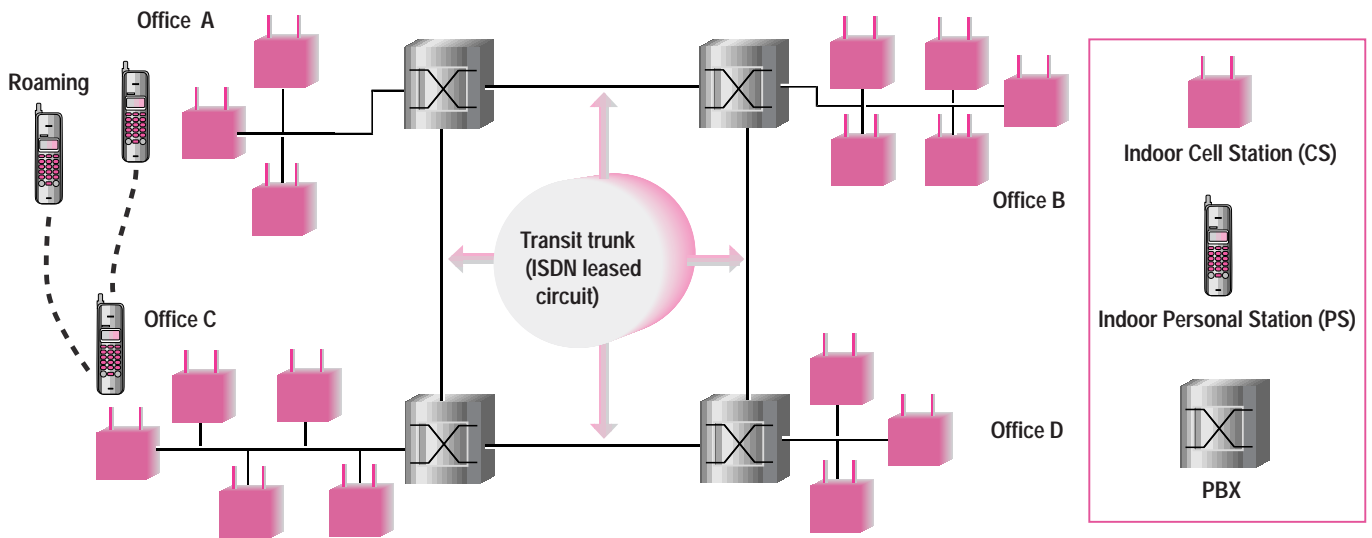


Fig.1 Network Configuration

This inter-office PHS roaming service spur the introduction of PHS systems in the businesses who have the sites in various location. Besides this, another service is also available that a pre-registered

public PHS terminal can automatically originate and receive calls as an extension of the PBX in the business site toward realization of seamless communication.

New PHS Products

Motorola's PHS Digital Cordless Phone

Nippon Motorola Ltd. released "StarWit," a new home-use digital cordless phone with PHS functions in December 1997. Marketing a new PHS phone indicates Motorola's strong commitment to PHS technology.

"StarWit" is designed for use in homes and consists of one master unit and as many as four sub-handsets. The sub-handset can be also used as a public PHS terminals outside the home.

The main features of the product are:

- A number display service compatibility shows a caller's number
- Call refusing button and call refusing address book
- Ringing tone section (3 melody tones)
- Address book registration of 100 telephone numbers

Nippon Motorola will also release another PHS phone, which will be the worlds smallest (as of Feb. 1, '98), with a volume of 62 cc and weighing 79 g. This phone will also be usable as a sub-handset for the "StarWit."



Motorola's StarWit, and (inset) the Paldio 311M Handset



PHS Subscribers in Japan

The total number of PHS subscribers in Japan was 6.93 million as of January 31, 1998. Though new subscribers are increasing, there was no increase in the number of accumulated subscriptions.

PHS Worldwide

PHS MoU Group Members**Signatory Members**

- ADC Wireless Systems
- AIWA Co., Ltd.
- ArrayComm, Inc.
- ASTEL Tokyo Corporation
- Australian PHS Forum
- Bahrain Telecommunications Company
- Cable & Wireless Japan Ltd.
- CASIO Computer Co., Ltd.
- Cirrus Logic K.K.
- Dassault Automatismes et Telecommunications, France
- DDI Corporation
- DDI TOKYO POCKET TELEPHONE, Inc.
- DENSO Corporation
- DSC Communications
- DST Communication Sdn.. Bhd
- FUJITSU LIMITED
- Hitachi, Ltd.
- Hong Kong Telecommunications Ltd.
- INFOCOMM International Corporation, Taiwan
- ITOCHU Corporation
- Iwatsu Electric Co., Ltd.
- Japan Radio Co., Ltd.
- JAPAN TELECOM CO., LTD.
- KANEMATSU CORPORATION, Japan
- Kenwood Corporation
- Kokusai Denshin Denwa Co., Ltd
- Kokusai Electric Co., Ltd.
- KYOCERA Corporation
- Kyushyu Matsushita Electric Co., Ltd.
- Lucent Technologies Japan, Ltd.
- Meisei Electric Co., Ltd.
- Matsushita Communication Industrial Co., Ltd.
- Mitsubishi Electric Corporation
- NEC Corporation
- NEC do BRASIL S.A., Brazil
- Nippon Motorola Ltd.
- Nippon Telegraph and Telephone Corporation
- NITSUKO Corporation
- Northern Telecom Japan, Inc.
- NTT Central Personal Communications Network Inc.
- NTT Mobile Communications Network Inc.
- Oki Electric Industry Co., Ltd.
- OKURA & Co., Ltd.
- PANTECH Co., Ltd
- PHS International Ltd.
- PIONEER Electronic Corporation
- PT Indoprima Mikroselindo (PT PRIMASEL)

- PT Industri Telekomunikasi Indonesia (PERSERO)
- PT TELEKOMUNIKASI INDONESIA (PT TELECOM)
- Rockwell Semiconductor Systems
- ROHDE & SCHWARZ GmbH & Co. KG.
- SANYO Electric Co., Ltd.
- SHARP Corporation
- SJ Company Limited.
- SONY Corporation
- ST Telecommunication Pte Ltd.
- Sumitomo Electric Industries, Ltd.
- Symbionics Ltd.
- Telephone Organization of Thailand
- Teleway Japan Corp.
- TelecomASIA Corporation Public Co., Ltd.
- Tokyo Electric Power Company Inc. (TEPCO)
- Toshiba Corporation
- Uniden Corporation
- UTStarcom, Inc.
- Victor Company of Japan, Ltd.
- Yupiteru Industries Co., Ltd.

Telecommunications Authority Members

- Australian Communications Authority
- Ministry of Posts and Telecommunications, Japan
- Telecommunications Authority of Singapore

Public Organization Members

- Association of Radio Industries and Businesses
- Radio Equipment Inspection and Certification Institute of Japan
- The Telecommunication Technology Committee of Japan

Observer Members

- Aldiscon, Ltd.
- Colombia Tel S.A
- Companhia de Telecomunicacoes de Macau S.A.R.L
- Diamond Field Co., Ltd.
- Global Systems
- HQ Link Philippines, Inc.
- Link Telecommunications Pty Ltd.
- National Semiconductor bv
- National University of Singapore
- Philippines Long Distance Telephone Company
- Singapore Telecom Pagelink Pte. Ltd.
- Thai Telephone & Telecommunication Public Co., Ltd.
- The Telecommunications Association of Thailand

(As of February 1, 1998)

Dear readers:

The format and font size have been renewed in this issue. We welcome your comments and opinions. Subscription renewal is on the way, so please register with the secretariat if you have not renewed yet.

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