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NEXT MEETING - MAY 23

We have scheduled the next meeting of the PCCA standards and architecture committee for May 23, 2001 in Boynton Beach, Florida. The proposed topic is GPRS in detail, including topics such as GPRS objects for PCCA standard STD-201, overview of devices, device drivers, IP address management, deployment, interfaces and interoperability issues. Note that the date has changed from May 15, which was previously listed. Further details will be posted soon.

This meeting will be held in conjunction with a PCCA/MDI-ng wireless workshop on GPRS, May 24 and 25, subject to network availability.

PCCA EXECUTES AN AFFILIATION WITH THE MDI-NG

The PCCA is pleased to announce its affiliation with the Mobile Data Initiative, next generation (MDI-ng). Like the PCCA, the MDI-ng is working with industry players to make sure Internet and intranet access with the next generation of wireless is a great user experience. In order to optimize time, energy, and resources, the PCCA and MDI-ng have agreed to combine efforts in hosting wireless interoperability workshops in North America this year. Please visit their web site at http://www.mdi-ng.org. The following are the guidelines published that describe this affiliation.

Guidelines for MDI-ng NA / PCCA Affiliation

The overall goal of the MDI-ng NA/PCCA affiliation is to increase the value of both organizations through coordinated efforts. The following guidelines are intended to describe how the two organizations will work together to make this happen.

❑ The affiliation between the PCCA and MDI-ng is defined by having a PCCA Director (initially the chair) serve as an MDI-ng Steering Member, and an MDI-ng Steering Member serve on the PCCA Board of Directors (BOD). These should not be the same person.

❑ There is no reciprocal membership implied by this affiliation: PCCA members wishing to be MDI-ng members must register (at no cost) at http://www.mdi-ng.org. MDI-ng members wishing to be PCCA members must follow the normal process for signing up for membership. See http://www.pcca.org for details.

❑ The PCCA and MDI-ng will initially acknowledge and endorse each other through an endorsement paragraph and URL on each web site.

❑ Individuals must belong to the PCCA to participate in the following:

    o Quarterly PCCA meetings

- Other PCCA activities or events not co-sponsored by the MDI-ng

❑ Individuals must belong to the MDI-ng to participate in the following:

- MDI-ng workgroups

- Other MDI-ng member events not co-sponsored by the PCCA.

❑ Individuals who belong to either the PCCA or MDI-ng may participate in the following:

- MDI-ng / PCCA workshops

- PCCA Wireless Workshop Task Force: This will be the main body for planning Workshops, and so should be open to members of both organizations.

- Other activities or events co-sponsored by the MDI-ng and PCCA

❑ Summaries and other material published for these activities may be included in the "Members Only" area of the respective web sites.

❑ Workshops are not intended to place an additional financial burden on the PCCA, at least in 2001. Funding for Workshops will generally come out of the MDI-ng program. However, it is expected that the PCCA and MDI-ng will work together to minimize costs.

JOINING THE MOBILE DATA INITIATIVE – NEXT GENERATION (MDI-NG)

By Ron Smith, Director of MDI-ng for North America.

MDI-ng is a new global wireless Internet initiative formed by industry leaders. It offers a unique opportunity to identify potential problems and solve them at an early stage. By looking at end-to-end solutions the group will help facilitate usage models, create forums for interoperability tests and roll out recommended solutions.

Like the PCCA, one of the objectives of MDI-ng is to identify and remove technical and market challenges/barriers to wireless connectivity for mobile devices/users. Whether you are an operator, application developer or telephone manufacturer, you will find a forum that will give you a genuine experience of the progression towards third generation services.

The end result for business people and consumers is that they will benefit, more quickly than ever before, from tested and proven solutions that are simpler to use and more reliable.

On behalf of the MDI-ng, I would like to invite all PCCA members to join the MDI-ng. Here are some reasons:

❑ No cost, and easy to join. Just go to http://www.mdi-ng.org/application.html

- ❑ Great exposure for your company: Your company's name and contact info will be added to the list of 80+ member companies (See http://www.mdi-ng.org/members.html). You will also be able to participate in MDI-ng events worldwide. This includes Europe and North America this year and Japan and Asia next year.

- ❑ The MDI-ng is an affiliate organization of the PCCA. This year we will co-host several workshops. To assure success in this endeavor, promote growth of both organizations, we are encouraging members respective organizations to join the other.

- ❑ In addition to participation in joint PCCA / MDI-ng workshops, you will be invited to participate in one or more of seven Workgroups to address different wireless interoperability issues in detail.

For more information about the MDI-ng, please visit http://www.mdi-ng.org, or contact me directly at Ronald.m.smith@intel.com or tel: +1-503-264-5550, mobile: +1-503-515-3090.

WIRELESS WORKSHOP TASK FORCE (WWTF) UPDATE

By Ron Smith, WWTF chairman.

A dozen PCCA members attended the WWTF meeting February 9th in Maui, where we kicked off planning for the first PCCA / MDI-ng workshop. We agreed to focus first on the corporate or "virtual office" usage model, whereby a traveler can access email and other corporate resources by the best available means, without risking security. We will initially test with a 2.5G cellular network (probably GPRS first) in conjunction with 802.11b. This is a good combination, as together they provide both umbrella and hotspot coverage, and are expected to become commonly available in public spaces. In the longer term we will test other usage models, and other wireless WAN technologies as they become available for testing.

The goal of the first 2 or 3 workshops is to arrive at group of 20+ products that have been extensively tested together for interoperability, problems resolved, and work seamlessly together as a virtual office. Among product types are mobile PCs (and other computing devices that fit the virtual office model), network adapters and handsets, VPN / mobile VPN products, and mission-critical applications such as Microsoft® Outlook® and Lotus® Notes®. Middleware products may also be included.

The date and place for the first workshop has not been set (to date), as it is subject to network availability. We are hoping to have a workshop in conjunction with the next PCCA meeting in May. If that is not possible, the workshop will probably be the month following. We will keep you posted via email.

We are now recruiting 16 to 20 companies to participate in this workshop. Seven companies have already committed. If your company is interested, please contact me (Ron Smith, see below), or the PCCA. Since I can only describe the workshop in partial detail here, please feel free to call me to discuss further.

Regards, Ron

Ronald.m.smith@intel.com, tel: +1-503-264-5550, mobile: +1-503-515-3090

MEMBERSHIP UPDATE

By Gloria Kowalski.

The PCCA welcomes two new members since the last issue of this newsletter:

❑ **Strix Systems.** Affiliate level. Representative: Rebecca Madigan, Director Market Management.

❑ **IQX Corporation.** Individual level. Representative: Peter Voghel, CEO.

SUMMARY OF MEETING FEBRUARY 7 TO 9

The Standards and Architecture Committee of the PCCA and the Mobile Computing Promotion Consortium (MCPC) of Japan held a joint meeting in Maui. The PCCA and MCPC have been working together on mobile computing initiatives for several years. The two organizations have a memorandum of understanding that was executed in 2000.

The intent of this meeting was to summarize the status of each organization's activities, and to explore the interoperability issues related to next generation wireless networks. The meeting was highly productive and well attended with some 36 people participating.

The following companies participated through the PCCA: 3Com, AT&T Wireless Services, Advanced Wireless & Telecom, Ericsson, Intel, Kawasaki, Kyocera Wireless, Lucas Valley Technologies, MCCI, Metricom, Motorola, Nokia, Novatel Wireless, Qualcomm, Rysavy Research, Sierra Wireless, Strix Systems, TDK, WRQ, and Xircom.

The following companies participated through the MCPC: Fujitsu, Hitachi, IBM Japan, Mitsubishi Electric, NEC, NTT DoCoMo, and Toshiba.

During this first day, the MCPC presented their work. Presentations were as follows:

❑ Introduction of Committees and Working Groups, Yuzo Tanaka, Mitsubishi

❑ MCPC Bluetooth Committee Technical Activities in Japan, Yasunori Akenaga, IBM Japan

❑ Bluetooth Promotion Working Groups and Other Activities, Itsuo Sakai

❑ MCPC USB Standardization Activity, Kenji Oguma, NEC

❑ Terminal Interface Working Group, Seiji Abe, NTT DoCoMo

- Application System Working Group, Junji Moriyama, Application System Working Group

- Introduction of MCPC Promotion Committee, Hiroshi Yamaguchi, NTT DoCoMo

On the second day, the PCCA made presentations, and we had a general discussion. Presentations included:

- PCCA Overview, Peter Rysavy

- PCCA Year 2000, Peter Rysavy

- PCCA / MDI-ng Affiliation, Ron Smith, Intel

- Wireless Hardware, Content will Drive Performance Requirements

- HDR (1xEVDO) Overview, Jim Willkie, Qualcomm

- AT&T Wireless plans for GPRS and UMTS, Bonnie Beeman, AT&T Wireless Services

Following the formal presentations, we had a general discussion about interoperability issues facing the industry.

One opportunity that we identified was to apply the work the PCCA has done in defining wireless extensions for NDIS to USB. This would involve working with the USB Device Working Group. The idea is to use the STD-201 wireless OIDs for the control plane. The best approach we could identify was to augment the Ethernet class (part of the USB Communications Device Class version 1.1). Paul Berg of MCCI volunteered to act as liaison to the USB Device Working Group. Our estimated time frame for doing this is Q4 of 2001 at the earliest. We will seek endorsement from MCPC and PCCA members for this effort.

On Friday, February 9, we had a joint meeting of the PCCA wireless workshop taskforce and the MDI-ng Testing Work Group. Ron Smith of Intel chaired this meeting.

Complete minutes of the meeting and copies of these presentations are available in the members' area of the PCCA Web page at http://www.pcca.org/private/members.htm. PCCA members needing a user ID and password should send e-mail to the PCCA.

FUTURE MEETINGS

Future meetings of the standards and architecture committee are currently scheduled as follows:

- August 2001. Hosted by AT&T Wireless Services, Redmond, WA. Date to be determined. Tentative topic: wireless interface and application issues associated with handheld and palm-size computers.

- September 2001. San Diego. PCCA board meeting in conjunction with the Wireless IT conference.

- ❑ November 2001. Date and location to be determined. Proposed topic: Java for mobile platforms: interfaces, application considerations, interoperability.

For the latest information on PCCA meetings and other events, see
http://www.pcca.org/news/news.htm

ARTICLE ABOUT THE PCCA

Peter Rysavy recently submitted an article about the PCCA to the UK publication "Global Wireless Developments" for the April 2001 issue. Here is an advance copy of the article:

Wireless Interoperability - The PCCA Mission

Wireless data has always held tremendous promise, a promise finally beginning to materialize with new wireless portals, services, devices and increased usage and awareness. But despite all the excitement, there are serious issues facing the industry such as the speeds of current networks, pricing and coverage. Though these issues are well recognized and understood, not so well understood are the interoperability issues between applications, platforms, operating systems, modems and networks. It is these interoperability issues that have hampered deployment of many wireless applications.

The Portable Computing and Communications Association (PCCA) has been active since 1993 in resolving technical issues facing this industry. Its mission statement is to promote interoperability for mobile computing and communications through standards, recommendations and testing. This article discusses the industry issues as viewed by the PCCA, and some of the solutions it has advocated.

Industry Vision

As the power of mobile computers and speed of wireless networks increases, as form factors diminish, and as applications become more innovative, the range of products and services available to users over the next five years will grow tremendously. However, for the maximum potential of the technology to be realized devices will have to function in concert with each other, and have the ability to easily traverse multiple networks. In other words, our personal digital assistants will have to communicate with our cellphones, with point-of-sale terminals, with our associates' devices, and with public network points of presence. Meanwhile, our cellphones will have to flexibly operate across multiple networks, with access to a common set of services from wherever we are. In effect, we are going to build the most complex machine that humanity has ever attempted. The range of interoperability issues will only increase as we move forward, and the success of this whole industry will depend on how readily all the pieces work together.

Wireless Extensions to AT Commands

One important area the PCCA has addressed is extending communications interfaces so they provide information about the wireless medium. For example, many wireless modems are controlled by AT (attention) commands, but there are no standardized commands for parameters such as signal strength, battery level, base station identifier, antenna selection and so forth. The PCCA has developed a standard (STD-101) to address this need. Using STD-101, developers of communications applications can use a consistent set of commands to control wireless modems, irrespective of the modem manufacturer and the type of network being used.
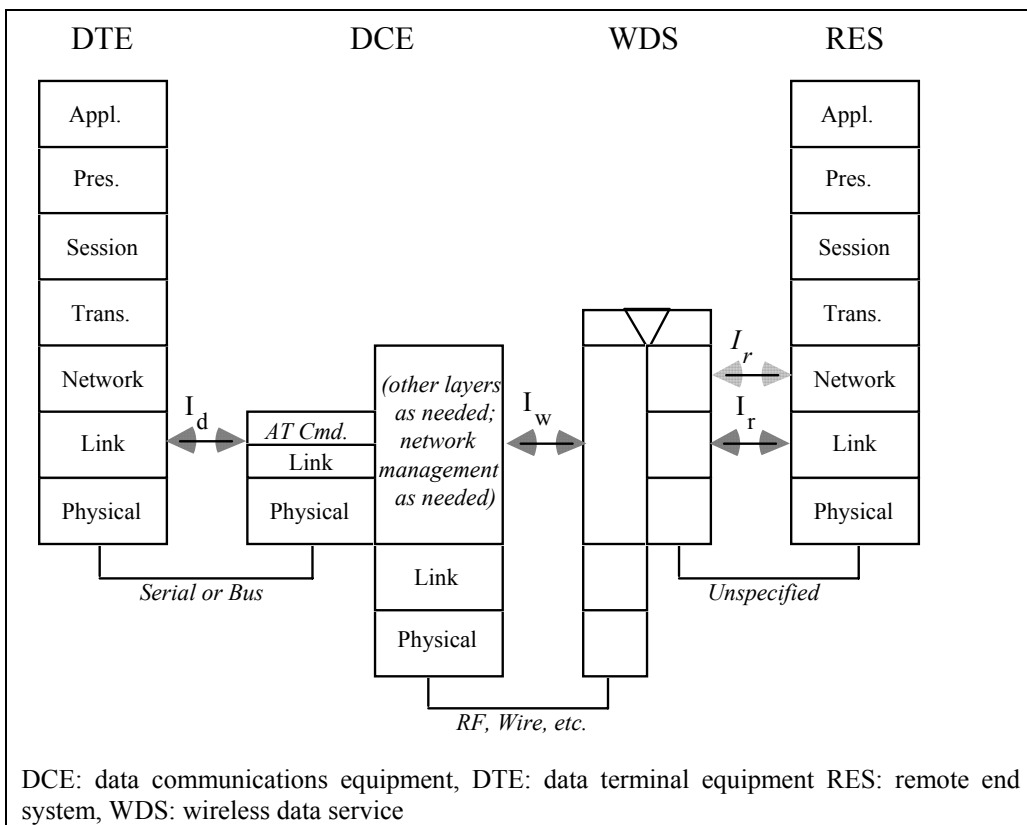

Figure 1: Wireless AT Commands allow a DTE to control a wireless DCE

The PCCA submitted STD-101 to the United States Telecommunications Industry Association (TIA) as a contribution and the TIA has published STD-101 as TIA/EIA standard 678. Key portions of this standard have been incorporated into Microsoft's modem implementation guidelines, GSM data standards from the European Telecommunications Standards Institute as well as standards of the International Telecommunications Union (ITU), which is the leading world body for communication standards. PCCA STD-101 has been implemented in a number of wireless modems being sold today.

Wireless Extensions to NDIS

In a related area, the PCCA worked closely with Microsoft to develop a standard that specifies a set of wireless extensions to NDIS (network device interface specification). NDIS defines an interface between protocol stacks (or network management software) and underlying networking systems. With NDIS, a protocol stack can consistently use the same interface to communicate across any network for which an NDIS driver is available. The NDIS driver is supplied by the network hardware vendor, e.g., Ethernet card vendor or wireless modem vendor. In effect, the NDIS driver translates between standardized networking functions and the proprietary hardware interfaces of the network adapter.
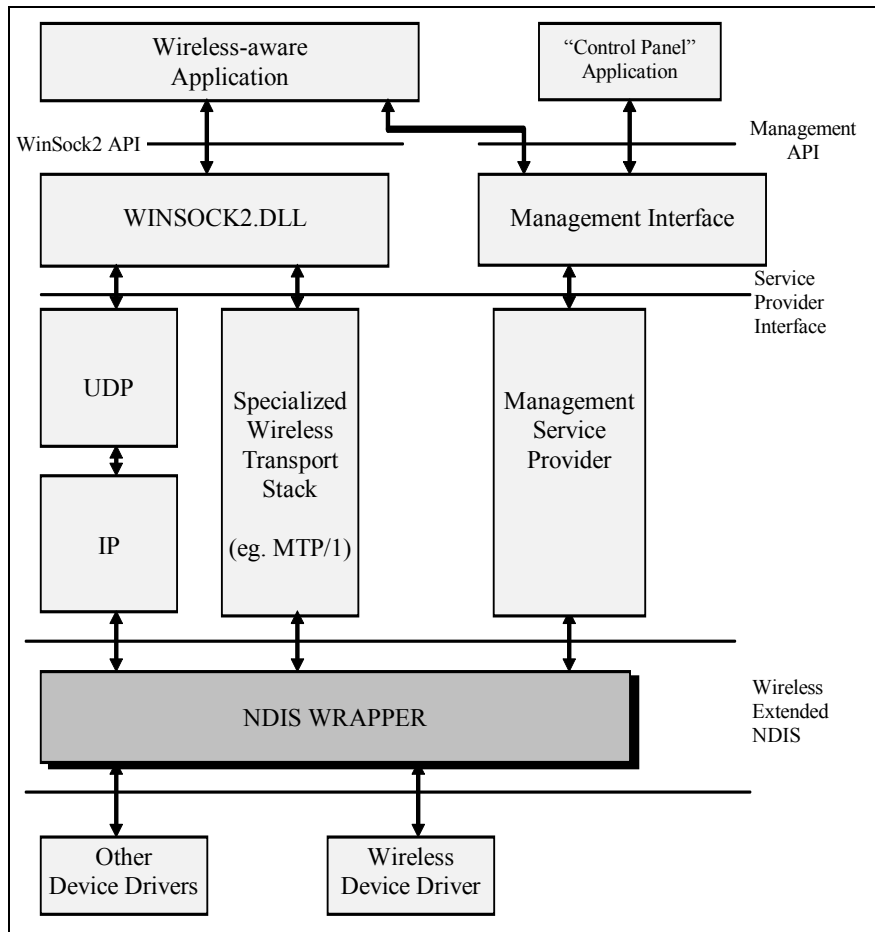

Figure two: wireless extensions to the network device interface specification

The goal of the wireless extensions was to add useful information regarding wireless networking. Using the extensions, applications and protocol stacks can know what wireless connections are available, can choose between them, and can monitor network conditions. For example, using the NDIS extensions a mobile computer can determine that it is no longer in coverage of a wireless local-area network and can automatically switch to a wide-area network connection. Applications can then automatically reconfigure themselves for

the lower bandwidth. An e-mail application might no longer download large attachments unless explicitly directed by the user.

Similar in scope to STD-101, the wireless extensions specify wireless objects for items such as base station information, signal strength, data throughput and battery level. There are also objects for specific networks such as DataTAC, Mobitex, Cellular Digital Packet Data (CDPD) and most recently, General Packet Radio Service (GPRS.) Microsoft has incorporated these objects into its NT version 4.0 and Windows 2000 operating systems.

TCP/IP Recommendations for Wireless Networking

TCP/IP has evolved over the years to operate reliably over many different types of networks. But wireless networks present a new set of challenges that can affect the reliability and performance of TCP algorithms. For example, variable latency is common with wireless-data communications, and can occur when a weak radio signal or heavy interference require that packets be retransmitted multiple times before they reach their destination without error. TCP incorrectly interprets such delays as network congestion, and throttles back the rate at which it transmits data. The result is significantly lower throughput than the channel itself provides under adverse conditions.

Recognizing these types of problems, the PCCA developed a set of recommendations for how TCP/IP should be implemented to handle wireless connections. These recommendations encompass experience gained by member companies using Mobitex, CDPD and the Metricom Ricochet Networks.

Interoperability Areas

Since 2000, the PCCA has had quarterly meetings that have focused on key interoperability areas facing the industry. The following describes the specific topics and principal conclusions reached in these meetings.

Virtual Private Networking (VPN) and Wireless Networking

VPNs are of crucial importance to wireless networks because most wireless networks provide a connection to the Internet. For a mobile user to reach a private intranet, they may have to communicate via the Internet. This poses a security risk for the intranet, which must be able to discern user communications from unauthorized traffic. VPNs provide a solution by offering mechanisms for authentication and privacy. The VPN is in effect a secure "tunnel" that can originate either at the mobile user or at the wireless service provider. There are pros and cons to the two approaches, but both will become common.

However, there are difficulties operating VPN protocols over wireless connections. First, VPNs are often session oriented, and can suffer from connections that are intermittent, common in the wireless environment. Secondly, many mobile platforms do not have the computing horsepower to handle VPN encryption algorithms. Third, the protocols can add to communications overhead. The industry is tackling this by developing security protocols

specific to the wireless environment, but this creates interoperability problems between wireless networks and other networks such as the Internet. This is an ongoing area of study for the PCCA.

<u>The Impact of Internet Standards on Wireless Networks</u>

In this meeting, the PCCA examined efforts by Internet standards bodies such as the Internet Engineering Task Force and their impact on wireless networking. Some sixty IETF working groups are working in areas that will have an effect on wireless networking. One area that will have considerable impact is IP version 6, which standards groups have mandated for third generation cellular networks. IPv6 provides a vast increase in the number of IP addresses, better mobility management and improved security. However adopting IPv6 in cellular networks before adopting it in the Internet at large will cause interoperability problems that few people fully grasp. The PCCA is continuing to monitor this important area. Another area to watch is harmonization efforts between the Wireless Application Protocol forum and the World Wide Web Committee (W3C).

<u>Wireless Device Interface Issues</u>

Since its formation, the PCCA has worked on interfaces between mobile computers and wireless devices. With the deployment of next generation networks and devices, a variety of new interface issues must be addressed. In this meeting, the PCCA identified and studied the following interfaces for interoperability: Microsoft Remote NDIS, Bluetooth and USB.

<u>Mobile Management Issues</u>

Joining forces with The Open Group and the Wireless Data Forum, the PCCA had a special meeting to study mobile management issues. Areas examined include the problems in using VoIP in mobile networks, wireless network operators not setting realistic expectations of performance with their customers, computer platforms such as Palm and Symbian and Java not being adequately represented in wireless interoperability forums and roaming involving heterogeneous networks.

The PCCA will continue to host special industry meetings such as these to study technical topics at a level of detail not available in conventional industry conferences.

Wireless Workshops

The PCCA is working with the Mobile Data Initiative, next generation (MDI-ng), to develop an ongoing program of wireless interoperability workshops where vendors can actually test their devices, platforms and applications. Some of the workshops under consideration include testing GPRS and cdma2000 1X devices, testing the use of VPN solutions over wireless networks, and assessing the usability of different types of applications (e-mail, Web-based, groupware, database, etc.) over new wireless networks.

Other Industry Organizations

There are other industry organizations doing work that harmonizes with the PCCA. The PCCA works closely with these organizations to disseminate information, avoid duplication of work, and to join forces where appropriate.

The PCCA has developed special relationships with the following organizations:

- Mobile Computing Promotion Consortium (MCPC) of Japan. The PCCA and MCPC have a formal memorandum of understanding, have republished each other's standards and have held joint meetings.

- The Open Group. The PCCA and Open Group have held a joint meeting and regularly share information.

- Mobile Advisory Council. The PCCA and the MAC have presented their work to each other and have joint members.

- Mobile Data Initiative, next generation. The PCCA and MDI-ng have a formal affiliation and are developing joint interoperability testing workshops.

Outstanding Industry Issues

Moving forward, the PCCA has identified a number of crucial areas that it intends to focus on, including:

1. WAP and other delivery methods for mobile content: The industry is fragmented with multiple mobile formats, including Wireless Markup Language, Handheld Device Markup Language, I-mode, Palm Query Applications, RIM Interactive Pagers and forthcoming standards by the World Wide Web Committee. The PCCA intends to provide a technology-neutral forum to examine the state of this industry, to identify the pros and cons of various approaches, and to recommend future directions.

2. Interoperability between mobile platforms and data-capable mobile phones: Many new phones will support data services for new networks such as GPRS and cdma2000. The PCCA intends to examine how readily these can be interconnected with notebook computers as well as personal digital assistants.

3. Java for mobile platforms: There are increasing options for adding Java capability to mobile devices. The PCCA intends to examine interoperability issues and to examine the interfaces that will be provided.

4. Roaming interoperability between homogenous and heterogeneous environments: Not only are there complex roaming issues for data services using a common network technology, but also the issues are even more complex when roaming between wireless LANs and wireless wide area networks. The PCCA will study this topic.

5. Pushing content in combination with wake-up mechanisms: Many mobile applications today require the user to pull information. But pushing content can be far more efficient and effective in providing timely information. However, what if the computer that is connected to a wireless device using USB or Bluetooth has gone to sleep? How can these interfaces support wake-up mechanisms? The PCCA intends to explore this issue.

6. Educating application developers on how best to take advantage of wireless commands and interfaces: Though organizations such as the PCCA have developed useful interfaces, the application development community is not necessarily aware of them, nor does it know how to take best advantage of them. The PCCA intends to provide educational programs to increase awareness of wireless programming opportunities.

The PCCA will address these areas through special meetings, development of recommendations and standards and interoperability workshops.

ABOUT THIS NEWSLETTER

This is the newsletter of the Portable Computer and Communications Association. Effective 2000, this newsletter is distributed via e-mail. The purpose of this newsletter is to keep PCCA members current with the activities and directions of the PCCA. This newsletter is published on a quarterly basis. This newsletter is distributed to everybody on the PCCA mailing list, including both PCCA members and non-members.

We welcome contributions. If you have any topics or articles you would like to contribute, please contact us. The editor of this newsletter and chair of the PCCA Standards and Architecture Committee is Peter Rysavy, http://www.rysavy.com, 1-541-386-7475. For questions about PCCA membership, please contact PCCA Director Gloria Kowalski, http://www.pcca.org, 1-541-490-5140.