



Mobile System Technologies Certification Program

This is the Mobile Computing Promotion Consortium's (MCPC) official certification program for engineers who wish to obtain deeper knowledge of and experience in the mobile system industry, which include wireless systems such as cellular phone systems, as well as business and consumer application systems that use mobile and Internet technologies. As explained in section 3, the MCPC is the leading Japanese industry association for mobile and wireless technologies.

The certification program provides four grades of certificates reflecting the levels of technological knowledge and experience covered in each program. The basic grade is for entrants who want a grounding in the fundamental concepts of mobile technologies and industry trends. Upper grades, labeled 2nd grade and the higher 1st grade, are for system and wireless engineers, and require more in-depth knowledge and understanding of the industry as prerequisites. Finally, the Senior Mobile System Consultant grade represents the uppermost level of the certification program and results in skills that qualify graduates to provide professional services for mobile system design and operation.

The pace of change is very fast in our industry. Therefore, professionals in this area must keep current by obtaining, digesting and incorporating leading-edge technologies in their day-to-day work. The MCPC plans to launch supporting programs, such as seminars and information services, to supply the necessary information and training to certificate holders from this program to help keep their expertise up to date.

1 Program Objectives and Goals

The MCPC Mobile System Technologies Certification Program is for Information and Communications Technology (ICT) systems engineers, sales engineers and sales representatives, as well as engineers and managers of the information systems division for all companies involved in ICT-related consulting.

The certification program (basic through 1st grade) deals with a wide range of technologies related to mobile application systems such as wireless communications and mobile device technologies, middleware technologies required for application development, packaged software, and basic technical



knowledge of various forms of mobile content and application development. The Senior Mobile System Consultant grade is granted for attending MCPC advanced mobile system case study classes, learning system planning and design processes including project handling and management methodologies and skills, and demonstrating significant potential to fill managerial or consultative positions.

The conventional approach to building a mobile IT system is to combine separately built mobile communication and IT systems. This is because completely different technological knowledge is required for each type of system due to their differing historical development backgrounds. In view of an overall system concept, this conventional approach may lead to poor solutions for mobile-system users.

The MCPC Certification Program promotes integrated processes for planning, designing, building and operating mobile systems. It does this by classifying the required knowledge, clearly delineating the prerequisite knowledge criteria and the program levels (basic, 2nd, 1st and SMC), thus stimulating motivation for learning in needed subject areas. MCPC believes that integration-oriented professionals will experience greater job satisfaction after completing one or more of the certification programs. For beginners and those who do not need deep industry knowledge, the MCPC Basic Grade Certification is a good tool for acquiring general knowledge of the mobile industry.



2 Program Structure

The Certification Program has three grades with increasing degrees of difficulty: 2nd, 1st and Senior Mobile Consultant (SMC). The required prerequisite knowledge for each grade is shown in Table 1. The mobile system technologies field is one of the most rapidly advancing areas today. MCPC recommends consistent efforts by engineers to stay abreast of advanced information through specially arranged seminars and literature. MCPC provides opportunities such as its Mobile Solution Fair, Mobile System Awards and Case Books of Advanced Mobile Systems in various business applications for graduates of this program.

Table 1: Grades and Required Expertise Level

Grade	Eligibility for Exam	Required Knowledge Level	Professional Level Achieved
Basic Mobile System Technologies	None	Basic knowledge of mobile terminals (cellular phones, smart phones and Personal Handyphone System [PHS]) including their functions and means of communication (both mobile and via the Internet). Service features and security issues are briefly mentioned.	Graduates have basic knowledge of mobile devices and information-processing technologies for mobile application systems. This certification helps provide a basis for the higher-grade certification programs.
2 nd Grade	None	General and outline knowledge of mobile systems and their elements such as wireless communications networks, mobile terminals (their hardware and software), and mobile content. General knowledge of mobile services and security issues to operate mobile businesses are also required. This skill level is equivalent to IT certification of the basic information technologies engineer or the	Knowledge equivalent to one to three years experience in a system engineering position or three to four years in a field sales representative position. Graduates can successfully communicate with potential mobile users and understand their requirements.

Grade	Eligibility for Exam	Required Knowledge Level	Professional Level Achieved
		primary system administrator. (Eq. to IT Skill Standard [ITSS] levels 2 to 4.)	
1 st Grade (-1.Network, -2. Mobile Terminals and Applications, -3. Mobile Systems)	Completed 2 nd Grade Certification	Having sufficient knowledge of components for mobile systems to analyze target business practices, in order to optimize the system architecture and to follow through on upgrade plans. This skill level corresponds to the IT certification of a senior systems administrator or an application engineer (Network). (Equivalent to ITSS levels 4 to 6.)	Knowledge equivalent to more than four years experience in a system engineering position or more than six years in a field sales representative position. Able to work as a lead in analyzing the business practices of mobile system users, optimizing system architecture and following through with upgrade plans.
SMC: Senior Mobile Consultant	Completed 1 st Grade Certification	More than one year of experience in mobile system design and operation. Successfully completed MCPC SMC Seminar (including case studies). Equivalent to ITSS level 7.	Graduates will be capable of working as a professional mobile-system architect.

Categories and detailed elements of the certification tests are shown in Table 2.

Table 2: Question Items

Question Categories	Detailed Items	Question ratios (%)	
		2 nd grade	1 st grade
Outline of mobile systems and mobile communications service	Mobile systems, mobile computing, remote access, local interface, mobile system elements (mobile network, mobile terminals, fixed network/servers), history of mobile communication services, mobile communication operators, browser phone service, mail service, SMS, wireless data communication service, international roaming, location-based services, telephony service,	15	5

Question Categories	Detailed Items	Question ratios (%)	
		2 nd grade	1 st grade
	Mobile Virtual Network Operator (MVNO).		
Principles of wireless communication and network functions	Radio-access networks, transmission systems, multiple access, frequency bands for mobile communication, propagation characteristics by frequency band, radio-access-network (RAN) structure, RAN systems (1st generation, 2nd generation, 3rd generation, PHS, wireless LAN, etc.), transmission power control, handover technology, 4th generation system development activities, mobile core networks, IP networks, circuit-switched systems, packet-switched systems, 3rd generation core networks, PHS core networks, mobility management, roaming technology, mobile number portability.	15	15
Main and peripheral functions of mobile terminals	Mobile handset knowledge, power-saving technologies, components of a handset (CPUs, memory devices, displays, antennas, imaging devices, batteries, external memory devices, UIM, USIM, finger-print sensors, RFID, NFC devices), external interfaces (audio microphone, earphone, cellular radio modules of 2 nd generation/3 rd generation systems, IrDA, Bluetooth, automobile device interfaces), PC card, CF card, SD card, PDA, wireless interfaces, peripheral devices (printers, scanners, modems, barcode and 2D-barcode readers), software for handsets, OS of PCs, embedded OS (for mobile handset and PDAs), handset application (development environments, PC applications, embedded applications), Java, BREW, PDA applications, source coding, signal compression, audio/video transmission, MCPC Wake-on radio function.	25	15
Overview of Internet technology in a mobile environment	TCP/IP, OSI reference model, physical layer/data link layer protocols (Ethernet, PPP), network-layer protocols (IP), transport-layer protocols (TCP, UDP), application-layer protocols, VoIP, Internet access methods in mobile environments (cellular phones, data-communication services, wireless LANs, DNS, Web accelerators), mobile content, mark-up languages, WAP, content-development environments, content-conversion technologies, new technologies for content development (Flash, Java, BREW, barcode, 2D-barcode).	20	15

Question Categories	Detailed Items	Question ratios (%)	
		2 nd grade	1 st grade
Information security and administration	Threats to information systems and needs for security measures, encryption technology and information security, security concepts for mobile systems, fundamentals of security measures (security policy, countermeasures for computer viruses, access control, personal information protection).	5	5
Mobile system applications and application fields	Overview of mobile content services (browsing download, streaming, DRM, billing systems), mobile-content variation (images, video, games, music tone, LBS), mobile system applications (groupware, sales force support system, field operation support systems, tele-monitoring systems, telemetry systems), fundamental technologies of mobile application systems (integration with legacy system, mobile middleware), efficient utilization of mobile systems (ASP service utilization, innovation of work style, mobile commerce settlement systems).	20	15
System analysis, development, operation and evaluation for mobile application systems. Government regulations.	Work-flow analysis, planning, conducting customer interviews, development of system requirements, data collection, estimation of system size, system introduction, operation and effectiveness evaluation. Mandatory regulatory issues for system design.	—	30



3 About MCPC

MCPC was established in April 1997 in Japan as a voluntary association of leading companies in the mobile system industry to promote mobile computing systems, which integrate wireless data communication and information systems. The organization includes the top mobile network operators, information processing firms, cellular phone and PHS handset manufacturers, and system integrators. Membership had reached 164 firms as of June 2008.

MCPC comprises a Technology Committee (including the MCPC 802.xx Committee, Bluetooth Committee and Mobile Security Committee), a Promotion Committee and the Mobile System Technology Certification Committee.

The Technology Committee works on the standardization of interfaces mainly between cellular phone and computing devices including in-vehicle systems, verification of interconnection compatibility, and research and development of security issues for mobile devices. Examples of standards that have been developed include the “Wake-On” function, mapping of call progress functions on the USB interface (USB specification for cellular phone) and hands-free operation specification for Bluetooth.

The Promotion Committee conducts an official commendation program (such as Commendation by the Minister of General Affairs), which acknowledge outstanding system applications in mobile computing systems. It also provides a promotional support program for mobile venture firms in Japan, and a promotional seminar program for small- and medium-sized mobile system integrators.

MCPC published Wi-Fi connectivity measurement results for metropolitan Tokyo and Osaka in 2006 that were widely recognized by mobile communication users for solving user problems. MCPC has been providing a Bluetooth compatibility test environment for equipment manufacturers in order to speed up their development process.

MCPC maintains a close relationship with the Portable Computer and Communications Association (PCCA, its sister organization, facilitating the exchange of leading-edge technical information, the confirmation of mobile-related standards and joint conferences.



Version of February 24, 2009