TECHNOLOGY

A powerful, flexible and accessible communications network is the foundation for the technology legacy BASOC envisions for the 2012 Olympic Games. Building on the foundation of hardware, software and applications from earlier Olympiads, we plan to provide personal portable or stationary devices to members of the Olympic Family. These devices, along with hundreds of millions of other computing devices around the world, will be used to interface with our system, a portal called *My Olympic Games,* through which all information related to the 2012 Olympic Games will be accessed, unique to each individual's role.

Through *My Olympic Games,* schedules, results, maps, video, communications and more will be instantly and easily accessible anywhere, anytime and using any access device, some of which will render today's cell phones, pagers and laptop computers obsolete. *My Olympic Games* will also serve as the gateway to the Olympic Games' management system, *Info 2012*. Information offered to all visitors to *My Olympic Games* will be determined by preestablished preferences and security codes programmed into the system.

The Olympic Games in the San Francisco Bay Area will be as advanced as it is accessible: By 2012, smart-card technology will drive a number of our systems from accreditation and ticketing to transportation management and security.

While ease of use is a top priority, we also recognize that what is familiar to people from one nation can be unknown to those from another. Our plan is to connect all members of the Olympic Family to our increasingly global community through education and training in communications technology. BASOC believes that this exposure and knowledge will enable the athletes, officials, volunteers and spectators who participate in the 2012 Olympic Games to acquire new skills, tools and understanding. Participants will be able to share this with others, expanding their view of what is possible, and, therefore, furthering the goals of the Olympic movement in a brand new way.

15.1   TELECOMMUNICATIONS

Describe the existing telecommunications systems within your city and at the locations where you propose to hold sports events and/or accommodation of participants, stating all technical details (date of installation, capacity, pass-bands, saturation points, available frequencies and spectrum control regulations for radio transmission, etc.).

The San Francisco Bay Area is home to one of the most sophisticated telecommunications networks in the country. Intense economic competition and the Silicon Valley "innovation engine" are driving a rapid, ongoing buildout of the communications network, the deployment of new services and the powerful convergence of voice, data, Internet and video communications.

Pacific Bell, a subsidiary of SBC Communications, is the incumbent local exchange carrier. In California, Pacific Bell has more than 583,000 miles of fiber-optic cable installed. Pacific Bell handles more than 285 million calls on an average business day on more than 16.7 million access lines – with a 99.999% reliability record. Pacific Bell can provide local and regional telephone service for all the proposed venues for the 2012 Olympic Games.

Pac Bell competes and collaborates with numerous telecommunications providers and Competitive Local Exchange Companies (CLECs) who provide service within the San Francisco Bay Area, including AT&T, Qwest Communications, Worldcom, Covad, ICG Communications, Frontier Communications, Metropolitan Fiber Systems (MFS), GST, Northpoint, Teligent, Winstar and RCN. Each company is building or upgrading a substantial amount of infrastructure.

Table 15.1 Pacific Bell in the San Francisco Bay Area

Fiber-Optics Cable Sheath Miles	Planned expansion to add 976 miles within next 5 years
SONET (Synchronous Optical Network) Interoffice Rings	145
Access Lines	5,195,000
Telephone Switching Centers	171
Digital (90%)	154 (Plans are in place to convert to 100% digital by 2012)
Public Telephones	7,371

The San Francisco Bay Area has frequencies available on all UHF, VHF and Trunked 800 megahertz two-way radio systems. It also has local access to PanAmSat and Loral Skynet satellite systems. The Napa County teleport, 50 miles north of San Francisco, has fiber connectivity to the Pacific Bell and Vyvx hubs.

Two world-class Pacific Bell Network Operations Centers in Sacramento and San Diego (either can monitor the entire state and back up the other) feature state-of-the-art monitoring and diagnostic electronics for network security and reliability. The Network Operations Centers allow Pacific Bell to monitor and control the entire network around the clock. They provide instant information on the functioning of more than 700 switches and the entire fiber network.

Pacific Bell maintains the highest standards of network reliability in the industry. Network and service availability objectives at the OC-3c level are 100%. Its record of reliability and availability, as officially documented to the Federal Communications Commission (FCC), includes:

– Network uptime that consistently exceeds 99.999%;
– Re-route time of 50 milliseconds; and
– Protection built into the infrastructure to prevent failures through advanced redundancy, backup systems and physical protection.

SONET (Synchronous Optical Network) is a second-generation digital optical transport protocol. The fiber-based carrier network uses synchronous operations among such network components as multiplexors, terminals and switches. Pacific Bell's SONET-based rings create a robust, high-availability network that can "heal" itself automatically by routing around failures. The optical fiber rings offer security, high bandwidth, low signal distortion and loss capability.

Pacific Bell makes extensive use of SONET technology – the most robust, reliable and powerful carrier technology available – to enhance the performance and dependability of its network.

Pacific Bell's SONET-based network has the following characteristics:

– More than 14 million route miles of fiber-optic cable in California;

– More than 12,000 miles of fiber facilities in San Francisco alone, and each facility
with an average of 56 fiber strands;

– Fiber-optic connectivity to all major inter-exchange carriers (IECs);

– 400 SONET Rings statewide, including 145 in the San Francisco Bay Area to date;

– An interoffice network built on a SONET foundation;

– 337 central offices equipped with SONET statewide; and

– Pacific Bell's San Francisco SONET network comprises fiber facilities operating at
speeds of 2.486 gigabits per second. The rings are dual-ring, bidirectional,
line-switched facilities employing protection switching around failures within
50 milliseconds of problem detection.

15.2   *Describe also which services are normally available (voice and data transmission, mobile
telephones, paging systems, Videotex, RF information for wireless LAN and USOC usage,
and other value-added services).*

Increasingly the wireless, telephone, Internet and cable worlds are converging. By 2012 we
expect to incorporate a large number of new platforms, services and devices. Pacific Bell
currently offers a variety of analog and digital voice and data services, including dedicated
digital services from 9.6 Kbps (kilobits per second) to OC-48 service. Pacific Bell also
offers voice mail, system integration, Internet access, wireless services and fast-packet
technologies from Frame Relay 2 to Asynchronous Transfer Mode (ATM),
Videoconferencing, ISDN, and DS3 and DSL service.

Data Service Level 3 (DS3)

DS3 services will be an important way to address the extraordinary bandwidth needs of
the 2012 Olympic Games for video-rich and interactive content. DS3 provides dedicated
digital service provisioned on end-to-end fiber facilities across a diverse fiber loop. Its fiber-
optic technology provides synchronous transmissions at 45 Mbps (megabits per second).
DS3 digital transmission improves accuracy, increases transmission speeds and reduces the
need for retransmissions.

DS3 supports all high-bandwidth data requirements, including:

– Internet access
– LAN/WAN interconnection
– High-volume, high-speed file transfers
– Real-time delivery of full-motion video
– Transmissions of voice, data and video over the same circuit.

Digital Subscriber Line (DSL)

DSL enables high-speed Internet access over existing copper wiring. At the 2012 Olympic
Games, DSL would make possible fast and cost-effective Internet access from event venues,
housing and media facilities. Videostreaming, video on demand and real-time video of
Olympic events would be sent over DSL to all Olympic Family locations in the San
Francisco Bay Area.

DSL offers variable speeds, from 384 Kbps upstream to as much as 6 Mbps downstream.
This is up to 200 times faster than a 28.8 modem. DSL is a dedicated, continuous

connection that offers the same security levels as Frame Relay and Asynchronous Transfer Mode (ATM).

Asynchronous Transfer Mode (ATM)

Pacific Bell's plan is to deploy a multivendor, standards-based two-tiered ATM architecture over the next three years. At the core of this next-generation network, high-capacity backbone ATM switches will provide high-speed SONET trunking and switching. Edge switches, acting as feeder nodes, will connect to the core switches and provide customer access. The edge switches will also provide seamless integration of ATM with other network technologies such as Frame Relay. Users can connect to these edge switches using various interfaces and technologies.

ATM Network Architecture

Pacific Bell currently offers T1 ATM service where ATM service is in place. This service is a powerful way to interconnect multiple Local Area Networks (LANs) and data centers or to distribute high-quality video to the Olympic Family and fans. The service offers speeds ranging from 384 Kbps to 1.536 Mbps. OC3c ATM service is also available wherever ATM service is in place, with speeds ranging from 50 Mbps to 148 Mbps. Since ATM service is standards-based, any Customer Premise Equipment (CPE) that follows those standards is compatible with this service. Among the CPE vendors that offer solutions for OC3c ATM are Cisco Systems, Nortel, ADC Kentrox, 3Com, Newbridge, Cascade, Bay Networks and Fore System.

Internet Service

The San Francisco Bay Area is home to some of the world's largest Internet Service Providers (ISPs) and Internet search engines, such as Yahoo!, Alta Vista and Snap.com. The April 2000 edition of *Nielsen NetRatings* ranked San Francisco as the top U.S. city by Internet Household Penetration Rate, with about 2.5 million, or 61% of households, connected to the Internet.

The OCOG will provide Internet access for all members of the Olympic Family through connections to their home ISPs and from local-account ISP. Today's standards-based Internet access enables several different ways to connect to ISPs, including DSL, T-1 or wireless technology.

Wireless

The San Francisco Bay Area has one of the most competitive and technologically advanced wireless networks in the United States. Wireless carriers are Pacific Bell, Sprint, Verizon and AT&T. Pacific Bell utilizes Global System for Mobile Communications (GSM) technology, the recognized international standard. Other providers use GSM as well as other standards, including Code Division Multiple Access (CDMA).

All local wireless carriers continue to enhance their service offerings. For example, Pacific Bell is planning the following upgrades to their wireless network in the next 12 to 18 months:

- – Dual-mode analog and GSM handsets, which enable travel outside the GSM network without losing service. The handsets switch between analog and GSM, depending on where the user is.

– Alliances with more than 25 international access providers for roaming in international territories.

– Pacific Bell PCS Email℠ Service Expansion, providing enhanced user interface and addition of group text messaging via the Web. Another added feature to the Pacific Bell PCS Email℠ product suite is PCS InfoPak℠, which will deliver daily news information (such as stock quotes, major headlines, sports scores and weather reports) directly to a PCS handset. Such a system would be very effective to "push" delivery of start lists, results and other vital information to appropriate officials and media.

– A Virtual Private Network application allowing PCS integration with a business Centrex system for in-building and macro-network use.

Paging Systems

A multitude of local and national paging services are available in the San Francisco Bay Area.

Videotex

Videotex is not a common service in the United States. It delivers the same information using the Internet and other devices rather than a television medium. Pagers, cell phones and laptops all have the capability of providing text information.

Wireless Local Area Network (LAN)

Wireless LAN access is currently available in three formats, depending on the application needed. The three formats are 900 MHz (best range for in-building LANs with a maximum data rate of 1 Mbps), 2.4 GHz (allows for higher data rates of 10 Mbps but a shorter range than 900 MHz), and 5 GHz (highest data rate of 20 Mbps and least range).

Public Communications

Pacific Bell operates 7,371 public pay telephones in the San Francisco Bay Area, 137,722 in California and more than 300,000 nationwide. Other independent companies also provide public phone services.

Centrex

Centrex is a feature-rich, central-office-based business telecommunications system, customizable for businesses with two or more lines. Centrex serves as a strong alternative to Private Branch Exchange (PBX)-based telecommunications systems due to its lower operating costs and superior disaster protection. ISDN is also available in a Centrex package.

15.3 *Include a description of other systems within your area that are necessary for connections with international telecommunications systems, including satellite links.*

Satellite broadcast is ideal for the high-bandwidth, global communications needs of the Olympic Games, including worldwide broadcast of the event and innovative multimedia communications, such as "postcards" from the athletes to their families at home. While its latency is a limitation, satellite is ideal for all data and telecom needs with the exception of real-time voice communications. Satellite technology will also play a key role in two-way communications across the Internet and via e-mail. Other systems that are available for

international telecommunications include our long-distance network and the Internet. All major U.S. long-distance companies and ISPs that provide international service have significant presence and local access points in the San Francisco Bay Area.

Two systems with local access in the San Francisco Bay Area provide satellite linkages. The first, PanAmSat, has 22 satellites with worldwide coverage. In the United States, there are seven teleports (uplink/downlink facilities) for this satellite network. The San Francisco Bay Area is home to the Napa PanAmSat teleport, the major North American hub for transmitting voice, data and video to Asia in seconds. The Napa teleport adds another link to PanAmSat's global network that connects North America, Asia, Latin America, Europe, Africa and Australia. The Napa teleport became PanAmSat's first facility to provide a complete turnaround service between the Pacific Rim and the Americas when the PAS-5 Atlantic Ocean Region satellite was launched on August 27, 1997.

The Napa teleport has fiber connectivity into the Pac Bell and Vyvx hubs. It can also reach any of the international or domestic satellites with one-hop access through teleports. Broadcasts occur at a quarter-second delay for every satellite that is used, and transponders can broadcast at 45 Mbps. The number of transponders varies from 40 to 70 per satellite.

The second system, Loral Skynet has eight satellites with reach to 85% of the world's population. Our region hosts its San Francisco International Gateway (SFIG), which provides comprehensive ground and teleport services that interconnect with two-thirds of the world from Asia to Western Europe. SFIG is a cost-effective gateway that runs round-the-clock for uplink, downlink, video turnaround, digital video compression, telephony and Internet applications. Video capacity is for both C- and Ku-band transmissions; analog and digital with fiber interconnect, tape playback, encryption and microwave from first to last mile. Data services include Internet backbone extension, private data circuits and data circuits for telephony applications. Both steerable and fixed antennae are currently in operation at SFIG, and it is connected to the Pac Bell hub via two TV1s. The SFIG also services PanAmSat and Intelsat satellites. Like PanAmSat, broadcasts are delayed by a quarter-second for every satellite, and available bandwidth per transponder is 45 Mbps (DS3).

Two separate consortia of ISPs and global telecommunications companies are nearing completion of trans-Pacific fiber-optic cable routes to connect the United States with China and Japan. We expect these routes to be fully operational by 2002. They will provide greater flexibility and bandwidth for data and video transmission since they can be used in conjunction with satellite facilities.

15.4   *Describe all improvements which, in your opinion, would have to be made to your local and national telecommunications systems in order to satisfactorily meet the requirements of the Olympic Games: construction of new telecommunications towers, new land satellite stations, large-scale optical fiber wiring and installation of new international exchanges, including media/broadcast communications and potential. Give the timetable of this work.*

The San Francisco Bay Area, with Silicon Valley at its heart, is home to the nation's most advanced telecommunications infrastructure as well as a large number of the world's telecommunications research, development and manufacturing companies. Driven by economic opportunity and competition, current technology and planned improvements

will exceed the requirements of the 2012 Olympic Games. Communications providers are moving and will continue to move rapidly to deploy leading-edge platforms, capabilities and services. For example, Pacific Bell's network is evolving over the next three years to become a network based on Internet Protocol (IP). This network will include IP-based voice, data and video networking. The ongoing, rapid buildout of the communications infrastructure ensures that the San Francisco Bay Area will remain the leader in communications technology for many years to come.

Across California, the scope of this network buildout is extraordinary:

–   There are more than 1.5 million new Internet users each month (source: City of San Jose Office of Economic Development); and

–   Two of the four national Internet hubs are located in the Silicon Valley. MAE West (Metropolitan Area Exchange) is in San Jose, and PAIX, in Palo Alto, is managed by AboveNet of San Jose. More than 50 national and international ISPs connect into MAE West.

In addition to its planned expansion of wireless base stations, Pacific Bell can add wireless capacity through portable relay stations called cell on wheels (COW). COWs are self-contained, portable stations that can be strategically positioned and moved to meet forecasted and ad hoc demand for wireless transmissions.

Existing access to satellite services enables all major media to deploy their own satellite facilities in California.

The ongoing buildout of the region's communications network will be augmented by specific telecommunications services that will be built to meet the needs of the Olympic Village, Media Services area and all venues. All required work can be completed within the timeframes set forth in Section 15.5.

Pacific Bell is building an all-digital communications network for California, deploying System Signaling 7 (SS7), optical fiber and intelligent network software to meet the rapidly growing demands of businesses, government and individuals for highly reliable and flexible communications.

Using advanced switching and transmission technology, Pacific Bell is moving toward a broadband, high-capacity network able to deliver advanced services, such as video imaging and multimedia, at speeds ranging from 155 to 622 Mbps. The greatly enhanced capabilities of the network will accommodate new high-technology applications and provide a more robust telecommunications infrastructure throughout California.

15.5   *Indicate approximate quantities and technical characteristics (speed, functions, etc.) of terminals, lines or other measurable units you intend to make available to the Olympic family (including TV and other media). Also identify the associated costs and timetable.*

Reliable, *secure* and *easy to use* are words that describe the communications services the San Francisco Bay Area will provide the Olympic Family. Though exact numbers are difficult to predict, we will fully support the telecommunications needs of the Olympic Family. It is equally difficult to predict the exact nature of the technology or the associated costs. The OCOG will provide the terminals, lines, wireless units and ISP connections listed below at

its own cost, where appropriate or at a rate-card cost approved by the USOC and/or the IOC, where appropriate:

- *Upon Becoming a Candidate City*
  We will build an Interactivity Center for use by USOC staff or their designees whenever Olympic business brings them to the San Francisco Bay Area. The center will provide meeting space, private and shared office space, access to the Internet via laptops, desktop PCs, and wireless and other devices for which we will also provide at least six dedicated terminals. We anticipate providing workspace for laptop computers with wireless Internet connectivity or a stationary computer in a "hoteling" arrangement at a select location. Terminals will be platform-, user- and location-independent. ISP connectivity will be included at DSL speeds (384 kbps) or greater, and wireless phones will be available.

- *Upon Becoming Host City*
  We will expand the Interactivity Center to accommodate all the needs of Olympic Family members as their requirements grow.

- *2010*
  We will add further facilities to the Interactivity Center to accommodate a growing number of people, more frequent use and the latest communications technologies.

- *2011*
  We will expand the Interactivity Center as needed. It will also become the "control center" for the buildout of infrastructure for Olympic venues, housing and media facilities.

15.6 *Describe and explain the general plan for establishing so-called OCOG Internal Telecommunications Systems for communication between the Olympic Family and organizers within Olympic areas: voice and data telecommunications, mobile radio telephone systems (radio trunking systems, walkie-talkies, radio-pagers, etc.)*

The internal telecommunications system for the OCOG before and during the 2012 Olympic Games will fully integrate voice, video and data over wireless or wired media. For example, we expect high-speed video streaming to handheld wireless devices to be commonplace. We fully expect a single wireless device to provide voice, paging, two-way radio, voice mail and high-speed Internet access, as opposed to the three or four devices that are needed today. Dedicated cell sites for wireless communication among members of the Olympic Family will be provided, utilizing an advanced in-place wireless network as well as portable relay stations. All venues will be interconnected with a SONET/ATM network platform.

To help personalize the Olympic experience, we will provide communications devices that are channel-specific for each group, country, organization or other agreed-upon entity of the Olympic Family. Local Internet access will be provided for the Olympic Family.

Athletes, their coaches and families will be able to obtain customized, real-time information in video, text, voice or multimedia formats from specialized Web sites and through Internet appliances – either personal handheld devices or strategically located static devices.

Security is clearly a key requirement for the communications system that supports the Olympic Family and organizers. The identity, location, movement and plans of Olympic Family members are of paramount importance to the overall security of the Olympic Games. Leading-edge communications security, particularly for wireless communications, incorporates advanced techniques: data scrambling, frequency hopping, encryption and others. Our plan incorporates the use of these technologies in their latest implementations to ensure the safety and privacy of Olympic Family members.

15.7 *Give precise details of rates for:*

– *National and international telecommunications*

– *The use of satellite links and relay*

The following table provides an example of current rates of one carrier for national and international telecommunications:

Table 15.7 Sprint Prepaid Calling Card Rates – Costco Rate Program

COUNTRY	$/MIN	COUNTRY	$/MIN	COUNTRY	$/MIN
Antigua	0.65	Cuba	1.24	Mexico	0.23
Argentina	0.50	Dominica	0.65	Nicaragua	0.50
Aruba	0.40	Dominican Republic	0.65	Nigeria	0.80
Australia	0.40	Ecuador	0.50	Panama	0.50
Bahamas	0.65	El Salvador	0.50	Paraguay	0.50
Barbados	1.88	Ethiopia	0.87	Peru	0.50
Belize	0.55	France	0.30	Russia	0.90
Bermuda	0.65	Germany	0.30	Spain	0.50
Bolivia	0.50	Grenada	0.65	St. Lucia	0.65
Brazil	0.50	Guatemala	0.50	St. Vincent	0.70
Canada	0.20	Guyana	0.70	Suriname	0.88
Cayman Islands	0.65	Haiti	0.68	Trinidad	0.65
Chile	0.50	Honduras	0.50	United Kingdom	0.12
China	0.35	Israel	0.50	United States	0.05
Colombia	0.50	Jamaica	0.65	Uruguay	0.50
Costa Rica	0.50	Japan	0.18	Venezuela	0.50

Current pricing for satellite use is:

– $400/hr for transponder time for domestic, $250/hr uplink, $150/hr downlink

– $1000/hr for transponder time for international link, $500/hr uplink, $300/hr downlink.

15.8 *Ensure that the competent regional and local authorities will provide your OCOG and the Olympic Family with the necessary authorization to use the telecommunications tools and/or services required and will allocate the required frequencies for wireless transmission. The original document must be given to the USOC (***Theme 19 – ***Guarantees). Provide timetables.*

The likely telecommunications providers to the 2012 Olympic Games and the competent regional and local authorities have provided assurances that all OCOG and Olympic Family needs for telecommunications tools and/or other services will be authorized and met. Refer to the guarantee provided in **Theme 19** – *Guarantees*. The timetable would be the same that applies for Section 15.9.

15.9   *Ensure that the telecommunications companies (public or private, and the broadcasters if necessary) will place at your disposal, from the date of the host city election until the end of the Olympic Games, all the technical equipment and services required for telecommunications in order to prepare for and host the Olympic Games. The original document must be given to the USOC (***Theme 19** *– Guarantees). Provide timetables.*

Likely providers of telecommunications technology to the 2012 Olympic Games include Pacific Bell, a subsidiary of SBC Communications, and Cisco Systems, the world's leading provider of network integration equipment. We are working with SBC, a global telecommunications provider and a Fortune 25 company, and with its affiliates, Pacific Bell and Pacific Bell Wireless, to design and deliver all necessary local telecommunications services.

Pacific Bell provided voice, video, wireless, data and Internet services to the National Convention of the Democratic Party in Los Angeles in August 2000. More than 15,000 journalists and 5,000 delegates attended the convention. Pacific Bell also provided telecommunications services to the National Convention of the Republican Party in San Diego in 1996 and to the Los Angeles Olympic Games in 1984.

Pacific Bell, Cisco and other local providers will place at the disposal of the OCOG all the technical equipment and services required for the preparation and hosting of the 2012 Olympic Games. Fees and costs are included as part of the budget. Links with international and satellite companies are also available and included in the budget.

In support of the specific operational telecommunications needs of the Olympic Games, we propose the following general timetable:

- *2002*
  Upon award by the USOC – secure or assist in securing official telecommunications providers.

- *2005*
  Upon award by the IOC – in consultation with our providers, determine short-term administrative and telecommunications needs.

- *2006*
  Begin reviewing previous Olympic Games systems.

- *2007–2008*
  Conduct venue-by-venue telecommunications surveys to determine overall telecommunications needs and to highlight key issues.

- *2008–2009*
  Based upon our review of the 2008 Olympic Games systems, develop an interim overall telecommunications plan to determine overall plan scope and areas of potential concern. All interested parties will review this plan in detail.

- *2009–2010*
  Make ongoing revisions to the interim plan that reflect necessary changes to venue networks and other operational plans.

■ *Early 2010*
Adopt final telecommunications plan.

■ *2 Years Prior to Games*
Implement plans, including installation and testing of required equipment.

■ *2 Months Prior to Games*
Final walk-through of installation and review for "last-minute" changes. Extensive test events are conducted to verify readiness of telecommunications systems.

■ *21 Days Prior to Games*
Installation complete. All telecommunications teams on standby.

15.10   DATA PROCESSING

Describe the functions you are planning to support with Information Technology:
– *During the Olympic Games' preparation period*
– *During the Olympic Games themselves*

Also provide a brief explanation of the level of services you expect to achieve (by comparison with some of the previous Olympic Games, with an indication of potential improvements). Provide timetables for implementation.

Though we will build the communications network for the 2012 Olympic Games on a firm technology and operational foundation, we will break new ground in the use of technology. Our vision is based on the following assumptions:

– By 2012 there will be a pervasive, high-speed network – a true communications utility, comparable to current utilities for electricity and water.

– Standards-based wireless communications will be common, reliable and flexible.

– Applications will enable users to retrieve only data relevant and customized to their individual needs.

– Athletes, organizers, volunteers and spectators will use information "appliances" that will be platform – and location – independent to access the utility. These appliances will be simple to use and specialized for this task.

– Smart-card technology will be powerful and will drive a number of systems from accreditation and ticketing to transportation management and security. Technology like palm geometry – a handheld device that can currently identify a person from the lines in the palm of the hand – will allow our smart-card system to validate that a person is the legitimate holder of the card.

– "Applications-on-tap" and "storage rental" will be key elements of the network. By 2012 the practice of utilizing Application Service Providers (ASPs) will be readily accepted and will allow companies to rent applications and associated infrastructures as needed with negligible security risks.

– Systems and content will be provided in English and French, with the ability to translate as needed.

The 2012 Olympic Games will use a state-of-the-art communications network to transmit the huge volume of information the event generates. The entire Olympic Family – athletes, officials, governing bodies, media, spectators and suppliers – will access the Olympic system via a single portal – *My Olympic Games* – or gateway to the network, applications, storage and services. And not only will we create this revolutionary system for the Olympic Games, but every member of the Olympic Family will be offered training and technical support in the use of the system – knowledge that will extend their Olympic experience and provide a legacy that they can take with them and share upon their return home.

With *My Olympic Games*, all Olympic users will first log on to a single site on the Internet to view information, much like today's user would with My Yahoo! For example, an athlete might want to verify what time his or her event will be run, an official may need to consult a rulebook, a spectator may wish to search for results, or a supplier might need to check inventory. Based on how users identify themselves, the information yielded will be customized to their role and previously established preferences, guiding them quickly and efficiently to what they need.

One System, Multiple Audiences

My Olympic Games will be designed for four key audiences – two external and two internal:

- *The Olympic Family comprises:*
  – Olympic athletes
  – Olympic Family proper: IOC, NOCs and International Federations
  – Media

- *Olympic spectators*
  Technically, this group could include the world, as the 2012 Olympic Games will be fully interactive and accessible anywhere on the planet. Here, however, we define *spectator* as one who physically attends the Olympic Games.

- *OCOG staff and volunteers*
  Upon being named Host City, we will create an operational enterprise system for the OCOG and the USOC, which will also be accessed through the *My Olympic Games* portal. Initially, we will focus on developing back-office systems, such as finance, accounting, logistics, human resources management, venue and event planning, communications and more for the organizing committee to use in preparation for the Olympic Games.

  During the Olympic Games, this system will manage two distinct types of information: the repository of Olympic results (*Info 2012*) and the precise instruments used for scoring and timing at each venue. We will leverage systems from previous Olympic Games to include:

  – Superior fault tolerance, reliability and accuracy
  – Accessibility in real time through the *My Olympic Games* portal

  As we approach implementation, we will decide whether to build, lease or leverage existing systems. In the interest of cost and simplicity, we envision that we will outsource most of these applications to existing service providers.

The enterprise system that we envision creating for the 2012 Olympic Games will fully integrate the following discrete applications:

– Venue and Event Planning
– Human Resources Management
– Payroll
– Resource Scheduling
– Financial Administration
– Supply Chain Administration
– Planning and Logistics Administration
– Call Center Management
– Systems Management

■ *Olympic suppliers*
There are numerous ways we could automate the supply chain that provides goods and services to the Olympic Games. Part of the system we envision will be advanced, just-in-time logistics to support and manage the delivery of goods and services before and during the Olympic Games. With the technology we envision, we believe we will be able to involve a relatively small number of proven, high-quality suppliers.

Flexible Access, Targeted Information

For every member of the Olympic Family, systems will be available through myriad sources, including standard kiosks and in-room personal computers (PCs), as well as high-speed wireless access. Each individual will log on to *My Olympic Games* to receive relevant data based on pre-established preferences.

For example, content common to all users could include:

– Full-motion video of live or prerecorded events
– Traffic, weather and transportation data
– Event schedules
– Communication with other members of the Olympic Family, as well as those outside of it, through Web pages, chat rooms or interactive Web conferences
– Access to results and statistical information

We could program *My Olympic Games* in the following ways to provide unique services to each group within the Olympic Family:

1. We will provide Olympic athletes with technical support to maintain a Web page that can be used for communication with friends and family in their home country, fans and other athletes. Additionally, all athletes will be able to access e-mail via high-speed connections in their room and around the Olympic Village.

2. We will provide members of the IOC, USOC, International Federations and NOCs with a technically supported access appliance, such as a Palm PC, to ensure real-time access to the information they desire and the colleagues they need to contact anytime, anywhere.

3. Members of the media will also have access to, and training on, state-of-the-art technology to perform the following activities:

    – E-mail
    – Story publication
    – Word processing
    – Image transmission
    – Start lists and results

Smart System

For all Olympic constituencies, smart-card technology will handle accreditation and provide security, giving the Olympic management team visibility as to who is passing through checkpoints and entering venues, and whether the card is being held by the appropriate person. Smart-card technology can also handle ticketing, freeing spectators and the Organizing Committee from the more cumbersome process of paper ticketing. Critical to an Olympic Games in a major metropolitan region such as the San Francisco Bay Area, the technology will allow transportation managers to more accurately anticipate demand by analyzing data that cross-references an athlete or fan's accommodation, time of the event and venue location.

Implementation timelines for the Olympic Games' management system, *Info 2012* and the *My Olympic Games* portal, will closely follow the timeline for the human resources aspect of technology outlined in Section 15.12.

15.11 *Describe the general conceptual design of the planned Information System.*
    – *Centralized or decentralized or combined (and if so, how)*

    – *Level of integration between computer applications*

    – *Level of integration with other technologies (timing and scoreboards, TV broadcasting equipment, multimedia services, local and/or international telecommunications networks, etc.)*

    – *Approximate number of computer workstations (personal computers, terminals, etc.) to be installed for the Olympic Family and your internal use.*

Our vision for the information systems of the 2012 Olympic Games has three components: First, we'll build on legacy systems and applications, as well as existing infrastructure, to the greatest extent possible. We will also adapt advanced applications, services and platforms in order to create a powerful, airtight network that will not only support the Olympic Games flawlessly but also enrich the experience for everyone. Finally, we will leave a substantial legacy of technologies and skills to all those who participate in these Olympic Games and to those who will carry the torch forward.

Information systems for the Olympic Games will function and be administered at the 2012 standard for high-speed networking, flexibility, integration and ease of use. We will combine wireless and wire line communications as well as stationary and mobile access points locally, regionally, nationally and internationally. Much as the Internet is today, data and applications administration will be centralized from a highly secure facility with some decentralization for security, availability and access at the venue level.

We understand every member of the Olympic Family needs to have a personal interface with the systems of the 2012 Olympic Games. Our goal would be to provide the

appropriate access device based on the particular role of each individual. We expect to provide as many of those access devices to Olympic staff as determined by operational needs and the technical requirements in 2012.

In keeping with modern-day standards as well as the expectations of our technologically sophisticated region, *Info 2012* and the Olympic Games' management system, as well as the event timing and scoring systems, will be integrated with the *My Olympic Games* portal and accessible by any of the devices provided. This is based on preestablished preferences and access codes programmed into the system. For example, a spectator could check the bus schedule from a kiosk adjacent to the venue, a broadcaster could view live video from a workstation in the International Broadcast Center, or an athlete, just after completing a race at the Aquatics Center, could communicate with a family member at home from a handheld device. And by linking timing and scoring systems to *My Olympic Games* and eliminating complex and time-delayed data entry at each individual venue, a competitor's time or a game's score, once declared official, will be instantly accessible by fans everywhere.

15.12   *How many people do you plan to assign to work on information technology during the design, development, standardization and implementation phases? Also specify the number to be allocated to assist prior to and directly following the Olympic Games?*

The Information Technology department will draw upon an array of resources, including organizing committee employees, technology partners and volunteers. The core of this virtual team will be the OCOG, beginning with a single resource to oversee operations immediately after San Francisco is selected as the Host City. In the first year, we will identify leaders to drive the development of the various applications that we will deploy during the Olympic Games. Staff will continue to increase as required to ensure the successful completion of all technology applications.

Approximately one year prior to the 2012 Olympic Games, the OCOG will establish a decentralized team of venue technology managers, to manage specific technology needs at the venue level. This team, projected to number from 150 to 250, including both venue-based and centrally located resources, will ultimately be accountable for the technological success of the Olympic Games.

Technology partners will play a critical role in developing, testing, deploying and supporting virtually all technology that will be utilized during the 2012 Games. These partners will consist of hardware providers, software providers and system integrators as selected by either the IOC or the OCOG and the USOC. Partners will work closely with the OCOG members to effectively gather and verify requirements and will be asked to adhere to strict quality standards throughout the development process. During the 2012 Olympic Games, partners will be expected to provide the resources necessary to ensure that all technology systems perform without disruption.

Leveraging the unparalleled technological talent pool residing in the San Francisco Bay Area, we will primarily utilize volunteers during the 2012 Olympic Games. The OCOG will call upon local technology companies to "donate" employees to assist in various technical support roles at all venues and central operations centers. We anticipate that more than 5,000 volunteers will be involved in supporting technology during these Olympic Games.

Following the final event at each venue, the associated technology staff will disband rapidly. Within a few weeks of the Closing Ceremonies, only a skeleton crew of central OCOG members will remain to perform any remaining wrap-up activities.

15.13 *Describe the information technology infrastructure resources you plan to use:*

   – *Do you plan to use any of the information technology infrastructure resources (data center facility for primary and backup operations, data telecommunications lines and networks, etc.) that already exist in your city (or country)?*

   – *If so, are there any changes, upgrades or improvements required to meet the Olympic Games requirements, and what are they?*

   – *If not, what are you planning to do (build your own data center, finance new data telecommunications lines or systems, etc.)?*

All of the world's largest data centers operate, or are headquartered, in the San Francisco Bay Area, giving the region a naturally robust infrastructure to host an event of the magnitude of the Olympic Games. This infrastructure offers world-class availability and redundancy, is highly secure and can provide powerful backup and disaster-recovery services. This infrastructure presently includes several million feet of raised floor space, thousands of customers and strategic partners such as Cisco Systems, Compaq, Dell, Inktomi, Microsoft, Oracle, Softbank and Sun Microsystems.

To stage the 2012 Olympic Games, we will leverage this existing infrastructure and utilize local data centers to facilitate groundbreaking modes of communication for the Olympic Games, permanently rewire venues to state-of-the-art capacity, create a completely connected Olympic Village, transform traffic management and leave an unprecedented technological legacy to the Olympic Movement as well as to the region. Because we expect this infrastructure to evolve steadily until 2012 as the San Francisco Bay Area continues to lead a worldwide communications revolution, we anticipate existing facilities in 2012 will meet the needs of the Olympic Games as they would today.

As a prime example, AboveNet (a wholly owned subsidiary of Metromedia Fiber Network, or MFN) counts 26 data centers in North America (five in the Bay Area) and Europe. In addition, MFN has 29,000 route miles of dedicated long-haul fiber in place worldwide that connects all 26 facilities. To date, MFN has 742,000 intra-city fiber miles in service and is well along in its plan to deploy 3.6 million fiber miles by 2004. The result will be the world's largest and most advanced end-to-end, purely optical IP network.

Each data center located in the San Francisco Bay Area offers a full range of physical security features, including state-of-the-art smoke detection and fire suppression systems, motion sensors, round-the-clock secured access as well as video camera surveillance and security breach alarms. Within these facilities, redundant subsystems deliver the highest levels of reliability, with multiple fiber trunks coming into each center from multiple sources, fully redundant power on the premises and multiple backup generators.

15.14 *Provide a guarantee stating that all obligations referred to below will be fulfilled (reference Annex H of the Host City Contract).* (**Theme 19** – *Guarantees*).

   – *Transfer all source software and objects to the IOC, with all ownership rights*

– *Endeavor to acquire ownership of the software used*

– *Update after the Olympic Games the information, statistics, etc. provided previously to the OCOG or resulting from the Olympic Games, and hand over to the IOC with complete rights*

– *Transfer the Games software to the IOC one year before the Olympic Games*

– *Connect OCOG users, immediately upon creation of the OCOG, to the IOC's electronic mail system*

– *In principle, use the main software from preceding Olympic Games (results, INFO, accreditation, etc.) and update it*

A letter of guarantee from the Executive Director of the Bay Area Sports Organizing Committee is provided in **Theme 19 –** *Guarantees*.

Security

In an age where computer technology has such a vast impact on our day-to-day lives, the need for viable security measures prior to and during the Olympic Games is of primary importance. Bid cities are urged to devise stringent security measures to ensure the confidential transfer and dissemination of all electronically relayed information including:

– *Limited access to media facilities, workstations and equipment rooms*

– *Change security codes for main computers daily*

– *Strict confidential handling of all materials as deemed necessary by the USOC*

The San Francisco Bay Area's technological preeminence requires companies and individuals to incorporate routinely the most advanced technical and physical security for their facilities, data, networks and servers, as well as access to their information and systems. This expertise will ensure the protection of the physical premises that host the telecommunications and data infrastructures for the 2012 Olympic Games, as well as the management of sensitive information intended for access and use by certain members of the Olympic Family or specified others attending, managing, reporting from or working at the Olympic Games.