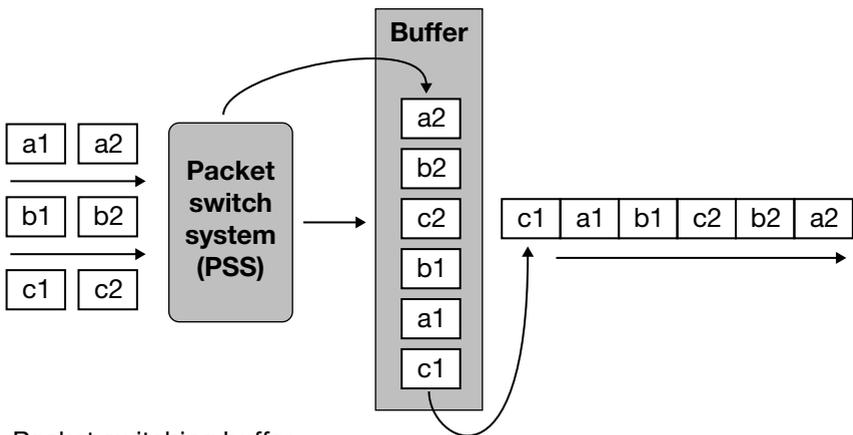

P

Packet filtering A method used to promote network security, where packets are filtered according to predefined criteria. Packet filtering is possible using screening routers and security gateways.

(See Screening router and Security gateway.)

Packet-switched network A data transmission and reception technique where data streams are divided into packets coded with origination and destination information. The packets may be interleaved with different data transmissions. For instance, packets that may be providing a two-way audio communication link in IP telephony might be interleaved with other streams such as videoconferencing data. Packets may follow dissimilar routes over a network, and are directed over what are perceived as the quickest and least congested routes. If available routes or logical channels are congested, then packets are buffered before transmission. The buffer is a FIFO (first in, first out) storage, where the first packet placed in the buffer



Packet switching buffer

Paintbrush

is the first to be retrieved and transmitted when the appropriate virtual channel is available. The X.25 protocol standard dictates that a packet may contain between three and 4100 octets or bytes. (*See X.25.*) Up to 4095 logical channels may be accommodated on a single physical link (1997). The logical channel followed by a packet is determined by its header information. There is also error correction, where the receiver might request that a particular packet is re-transmitted. The original packet switching standard for public data networks is CCITT X.25. This is a multi-tiered recommendation embodying everything from physical connectors to data formatting and code conversion. Packet switching is rather like the logistics involved in shipping a motor car part by part. The disassembled parts are sent and then assembled at the factory of destination. Equally, if a part is damaged, the factory will request that it is sent again. The packets may have one of two identities:

- multicast packets (or items of transmitted information) can be delivered to more than one destination
- unicast packets have one destination only.

Packet-switched networks (that use IP) are currently displacing switched networks in the telecommunications industry, and drive the growing use of IP telephony or Internet telephony. The comparative advantages of IP telephony include reduced costs and reduced cost of ownership for telcos and corporations running IP-compatible networks such as intranets. The reduced costs are largely brought by the fact that IP and Internet traffic is unregulated. Corporations and government departments may experience savings in the cost of voice traffic that might reach as much as 80 per cent. Flexibility is also an advantage. IP telephony makes better use of bandwidth. For example, Australian telecommunications giant Telstra introduced the virtual second line in the late 1990s. This allows subscribers to its ISP (Telstra Big Pond) to receive incoming calls while connected to the Internet. (*See Internet telephony.*)

Paintbrush A Windows application used for editing and drawing.

PaintShop Pro A popular graphics capture, and editing program. It has numerous special effects.

PAL (Phase Alternating Line) A video standard developed in West Germany, delivering 50 fields/25 frames per second on the 625 line system. Used in the UK, much of Europe, Africa, Australia and South America.

PalEdit An 8 bit colour palette editing program supplied with Video for Windows and other programs that include Asymetrix ToolBook 3.0.

Palette An item of colour information accompanying 8 bit digital video sequences and images.

Palette editor A program used to edit the palette of 8 bit graphics or video. Palette editors such as Microsoft PalEdit are used to alter the colour characteristics of 8 bit video sequences. They are also useful for building palettes that work with a number of different 8 bit video files. The importance of this relates to switching between two or more different 8 bit sequences on screen that contain different palettes, which can result in flicker. The degree to which the flicker occurs depends upon the difference that separates the palettes, as well as upon the general video and graphics speed of the playback system. Building a common palette is easiest if you run multiple instances of the palette editor, provided the program has this capability, or where it is possible to open multiple palettes.

Palette switching An instant when a colour palette is switched from one to another. Palette switching occurs most often when 8 bit video is cut from one sequence to another which has a different colour palette, or when one 8 bit still image is cut to another which has a different palette. Palette switching can result in a brief screen flicker. The screen flicker can be eliminated using a common palette for all bitmaps (images) and video clips. A common palette can easily be achieved using a palette optimiser or by using an editing program such as PalEdit.

Paradigm A workable and (to many) conceivably optimum model that defines the manner in which an activity should be implemented. Multimedia and the Internet may be considered as paradigms for communicating information.

Parallel programming (or concurrent programming) A genre of programming where the target system is an MPP architecture. Parallel or concurrent languages include Java and Occam. Named after William of Occam (circa 1300 to circa 1349), Occam is based on the idea of Co-operating Sequential Processes (CSP), which was originated by Tony Hoare. CSP puts forward the *monitor* concept, which coordinates tasks.

(See Java, MPP and Occam.)

PARC (Palo Alto Research Center) A research establishment founded in 1970 by Xerox. It is the birthplace of many multimedia-associated technologies and concepts, including laser printing, local area networks, the graphical user interface (GUI) and object-orientated programming (OOP). The GUI system integrated into the Apple Macintosh, launched in 1984,

Parity bit

was a direct result of Apple's Steve Jobs visiting PARC. During his visit he saw a GUI platformed on PARC's Alto system.

(See Windows.)

Parity bit A bit used in data storage and electronic memory to indicate whether an item of data should contain an odd or even number of positive bits. A parity bit is used in 9 bit electronic memory devices such as 9 bit SIMMs.

Parser A function of a compiler, interpreter, or translator that attaches semantics to tokens, which are generated by the lexical analyser.

(See Java.)

Partial frame updates A video frame that is not a full frame. Compressed video is often composed predominantly of partial frames which cannot be displayed in isolation because they do not contain the necessary frame information. Partial frames rely on preceding frames to provide adequate frame information. MPEG contains such partial frames in the form of Bi-directional (B) frames.

(See MPEG.)*

Pascal A high-level general purpose programming language that is used in Inprise Delphi. The original implementation was developed in the mid 1960s by Prof. Niklaus Wirth of Eidgenössische Technische Hochschule, Zurich. A structured language, it was one of the main advancements in computer programming languages to follow Algol 60. The most popular and successful implementation of Pascal was Turbo Pascal from Borland (now called Inprise).

(See Basic, C++, Java and Visual Basic.)

Password A series of alphanumeric characters used to protect a system against unauthorised access. Using TCP/IP, the password file is used to prevent unauthorised access.

(See Security.)

Path/trail A path through a series of links in hypertext, hypermedia or multimedia material.

PC A generally standard architecture for desktop and notebook computers. In terms of specification PCs vary dramatically. The standard was introduced by IBM when it launched the PC XT in the early 1980s. This

was a text-based system, featuring an Intel 8086 processor and an 8 bit expansion bus.

PC Card (*See PCMCIA.*)

PCI (Peripheral Component Interconnect) A local bus implementation which permits the addition of expansion cards to a system. Such cards typically include graphics controllers, internal modems and sound cards. Local bus technology provides high performance communications between such devices and the system processor and memory. It does this by providing a data path width and operating clock speed that is more closely matched to the internal and external data bus of the processor. While PCI has become the industry's chosen local bus standard, Vesa Local Bus (VLB) is also used. Non-local variants include:

- IBM's 8 bit XT bus
- IBM's 16 bit ISA (Industry Standard Architecture) or AT (Advanced Technology) bus
- IBM's MCA (Micro-channel Architecture)
- EISA (Enhanced Industry Standard Architecture).

(*See AGP.*)

PCM (Pulse Code Modulation) A method of encoding data in digital form for transmission over a network or for storage on DSM. Used in the Integrated Services Digital Network (ISDN) standard, multiplexing involves creating a data stream consisting of 8 bit PCM blocks. The blocks are created every 125 microseconds. By interleaving the blocks with those from other encoders, the result is time division multiplexing (TDM). In North America ISDN typically interleaves data from 24 64 Kbps sources or channels. This results in connections that provide 1.536 Mbps. In fact the connection has a bandwidth of 1.544 Mbps, because each channel's frame has a marker bit 'F', adding 8 Kbyte/s. Europe sees ISDN that typically interleaves 30 64 Kbps channels, giving 2.048 Mbps. This and the 1.544 Mbps/s connection are known as primary rate multiplexes. Further interleaving of primary rate multiplexes sees:

- 6, 45 and 274 Mbps in North America
- 8, 34, 139 and 560 Mbps in Europe.

PCM was conceived in 1937 by Alec Reeves, but was not applied widely for many years.

Sampling Using ISDN, a 3.4 kHz analogue signal is sampled at 8 kHz. The sampling rate is less than twice the bandwidth of the analogue signal, in accordance

PCMCIA

with Nyquist's sampling theorem, and prevents aliasing. A sampling frequency of a multiple of 4 kHz was used because the existing networks used 4 kHz carriers, and would cause audible interference in the form of whistles.

Coding The amplitude of each sample is measured and encoded using 12 bit values, which give ± 2048 possible values.

Compression The 12 bit samples are reduced to eight bits using logarithmic compression, which may be:

- 'mu-law' in North America
- A-law in Europe.

Compression standards permit the system to be embedded anywhere in an analogue network. See: *CCITT Recommendation G.711. Pulse Code Modulation (PCM) of voice frequencies.*

(See *ATM, ISDN and TI.*)

PCMCIA (Personal Computer Memory Card International Association)

A slot which connects with almost credit card-size peripheral devices. The exact dimensions of a PCMCIA card are 8.5 cm \times 5.5 cm, and their thickness may be 3.3 mm, 5 mm or 10.5 mm. Memory cards are 3.3 mm thick, I/O devices are 5 mm thick and hard disks are 10.5 mm thick. The original PCMCIA was designed for memory cartridges only, but in September 1991 the PCMCIA Type II (PCMCIA 2.0) specification was launched, facilitating hard disks and modem/facsimile devices. However, though the PCMCIA laid down a hardware specification for slots and cards it did not specify a software interface, so some PCMCIA cards are proprietary. To solve this Intel introduced a standard interchangeable card aimed at Intel-based machines. Called Exchangeable Card Architecture (ExCA), third-party manufacturers are free to use the logo provided their cards are ExCA-compliant.

PCX A bitmap file format developed by ZSoft, featuring RLE compression.

PDA (Personal Digital Assistant) A pocket-size appliance which provides data entry using a stylus or pen and can be used to support computer-related applications. Apple is remembered for having introduced the first commercial PDA in the Newton. PDAs exist at a number of different levels. The most basic are mere personal organisers, while highly specified versions feature cellular communications able to send faxes and communicate with remote systems and connect to the Internet. The PDA vision is that of a mobile communications device that embodies a mobile video phone, a means to access the Internet and a remote personal computer.

Peer-to-peer network A network that permits each network user to access the directories and the peripheral devices associated with any connected computer. When computers are linked together so that they can share the resources of one or more computers, a network is formed. You can build a peer-to-peer network using Windows 95/98, simply by adding Ethernet cards to connected systems. Another type of local area network (LAN) is the server-based variant, which permits users to access and share information stored on a powerful computer, commonly termed a server.

Pentium A fifth-generation Intel processor, and successor to the 486DX family of processors. Currently the Pentium with MMX Technology is the *de facto* Intel fifth-generation processor. MMX Technology is the registered trade name for Intel's additional instructions that lend themselves to multimedia. They drive performance gains through such applications as speech recognition, video and 3-D graphics. The clock speed of the Intel Pentium processor has increased steadily, and currently there are 200 MHz, 233 MHz and 266 MHz versions. The more modern Intel Pentium II processor offers yet higher performance.

(See MMX Technology and Pentium II.)

Pentium II An Intel processor which integrates MMX Technology as standard.

(See MMX Technology and Pentium.)

Pentium Pro A sixth-generation Intel PC processor which integrates SMP design features. It used for servers and for workstation class PCs.

(See Pentium and SMP.)

Perl (Practical Extraction and Report Language) A programming language for processing text. It was developed by Larry Wall who once joked that Perl stood for 'Pathologically Eclectic Rubbish Lister'. He describes Perl as: '...an interpreted language optimized for scanning arbitrary text files, extracting information from those text files, and printing reports based on that information. It's also a good language for many system management tasks. The language is intended to be practical (easy to use, efficient, complete) rather than beautiful (tiny, elegant, minimal). It combines (in the author's opinion, anyway) some of the best features of C, sed, awk, and sh, so people familiar with those languages should have little difficulty with it. (Language historians will also note some vestiges of csh, Pascal, and even BASIC-PLUS.) Expression syntax corresponds quite closely to C expression syntax ...'

Perl

Perl variables Scalar variables are assigned single data values, which may be integer, floating-point or string:

```
$transform=25;
$response="You did not enter the correct patient
symptoms.";
```

Numeric variables are incremented using the syntax:

```
$transform=$transform+1;
```

or

```
$transform++;
```

Numeric variables are decremented using the syntax:

```
$transform--;
```

Subroutines are named using the syntax:

```
&subroutine;
```

Perl arrays An array of scalars is defined using the syntax:

```
@trans(2,4,5);
@forward(7,8,9);
```

The number '4' in the defined three-element array is addressed thus:

```
$state=@trans(4);
```

Arrays may be combined using the syntax:

```
@combine=(@trans, @forward);
```

The definition of array variables is accompanied by the generation of scalar variables (of the same name), which have the `@#` prefix. These store the array size, or more precisely the sequence number of their final element. The array size need not be defined, and it is legal to insert elements into an array at whatever point, thus:

```
@transform = (10,25,35,55);
$transform[25] = 7;
```

An associative array of scalars may be assigned to a variable (with the `%` prefix) thus:

```
%transform = ("x",100, "y",20, "z", 20);
```

This equates transform to the element strings x, y and z, whose values are 100, 20 and 20.

Subroutines Subroutines begin with the word `sub` and the code or block is contained within opening and closing braces:

```
sub transformt_every {
    $state=@trans(1);
}
```

(See *CGI*.)

Personalisation A Windows NT-based server which is part of the MCIS suite of servers. It functions to allow Web developers to deliver specific dynamic content to individual visitors.

(See MCIS.)

Personal Web Server *(See PWS.)*

PhotoCD A CD variant developed by Kodak in conjunction with Philips, and launched in 1992. PhotoCD permits the processing of photographic negatives into digital form on PhotoCD disc. Kodak continues to license high-street photographic finishers to develop conventional film reels into images on PhotoCD using a CD-R drive. Additional films can be processed and added to the same PhotoCD on up to 99 different occasions (99 being the maximum number of tracks supported). Following the addition of the second batch of images, it becomes a multisession CD.

PhotoShop *(See Adobe PhotoShop.)*

PicoJava A chipset from Sun Microelectronics which is optimised for the Java programming language. It is used in cellular phones and computer peripherals.

(See Java and Sun Microelectronics.)*

Ping A name for ICMP (Internet Control Message Protocol) Reply/Echo. It is also used to describe programs that use ICMP. ICMP is used to test the reliability and connection speed to a remote host. The reply to such a test is called a pong.

Pipe A network communication channel, which provides a means of transferring packets between *local* or *wide* destinations. Pipes have addressable names and can be used to send and receive data (which is typically assembled into packets) to and from a central computer over a WAN.

Pixel A dot on screen, or stored in memory, that is represented using a number of bits. On CRTs, pixels physically consist of red, green and blue phosphor deposits. The term is derived from the phrase 'picture element'.

Plug-in A module that adds functionality to an application. In the case of a browser, a plug-in might take the form of a video playback feature. Numerous plug-ins are available for the Netscape Navigator browser. An alternative technology to Microsoft's ActiveX Controls, plug-ins tend to be

a feature of browsers. ActiveX Controls are applied more broadly and cut through boundaries that separate many different software sectors, including client-side and server-side component architectures. The plug-in architecture adds processing capabilities to the client browser and displaces logic from the server side.

(See Active Desktop, Active document, Active server, ActiveX and Netscape Navigator.)*

PMPSV (Part Motion, Part Screen Video) A video sequence that runs at a rate noticeably slower than 25 frames per second, and has a frame resolution that fills only a portion of the available screen.

PnP (Plug and Play) A hardware specification that ensures easier installation using Windows 95/98/NT. PnP hardware devices can be detected and installed automatically by these versions of Windows.

POI (Point Of Information) A means of exhibiting products electronically through the Internet or other medium such as CD-ROM or DVD-ROM. Traditionally, consumer education has consisted of publishing product brochures, advertising, allowing the potential customer to peruse in a shop or showroom and product demonstrations. These generally accepted ways in which the consumer chooses an appropriate product can be aided or replaced using multimedia in a point of information (POI) guise. POI terminals present the customer with the ability to browse through product ranges, or experience just those items that fit a user-defined profile. POI can be a powerful marketing and advertising tool, providing the means to display products. The benefits are clear: it gives an opportunity to promote products in a medium that cannot be rivalled by (current) television advertising. It also allows small and medium-sized companies to promote products on terms that only large companies and corporations could previously afford. Furthermore, if products can be demonstrated adequately through multimedia, the need to exhibit them physically becomes unnecessary, so floor space can be saved. Research also indicates that users of POI terminals spend more money than those shoppers using conventional means. Finally, the possibility of fewer sales staff is raised. With the growing number of multimedia systems in the home and with the falling price of disc replication, POI may be distributed free, like junk mail. In the computer industry, there is also the possibility of distributing short advertisements/demonstrations containing video sequences on floppy disk. Museums of various kinds throughout the world have installed POI terminals. These give visitors the opportunity to follow user-defined guided tours. Such an approach also allows visitors to experience interesting items which might otherwise be catalogued and hidden away from public view. Many other

areas, such as careers advice, geographic information systems and surrogate travel (brochures) are also possible through POI.

Polymorphism An object-oriented concept where an entity has many forms. For example, a function call can be used to apply an object in different ways. The object might be a button, whose various forms include different methods which determine its response to mouse clicks. Polymorphism allows messages to stimulate context-sensitive processing. For instance, the message might be interpreted by one of a number of methods in a single object.

(See C++, Java and OOP.)

POP3 (Post Office Protocol) A protocol for sending and receiving e-mail. Compliant e-mail applications are called POP3 agents.

Port 1. A channel through which a computer communicates/drives a peripheral device. Standard PCs include Centronics parallel ports and serial ports (which are often referred to as COM ports). Typically parallel ports are used to connect with such peripherals as printers, mass storage devices and scanners. Serial ports are often used to connect with external modems. Other ports include FireWire and USB (Universal Serial Bus). 2. A method of translating a program from one platform to another, or from one language into another.

POS (Point Of Sale) A method of selling products or services from e-commerce Web sites, or even multimedia booths. It is a rarely used term, with *e-commerce* being the preferred label.

PostScript A standard formatting language used to store and print documents. Many commercial printers and reprographics bureaux are able to accept files in the PostScript format, from which they are able to print or produce film. The language itself is the property of Adobe. PostScript printers are more expensive than others, mainly because Adobe require licence fees.

PowerBook A range of notebooks manufactured by Apple Computer. Such notebooks may operate as DOS, Windows and Windows NT systems using emulation software.

PowerPC A processor architecture designed for Microsoft and Apple OS compatibility. The technology is integrated in Apple desktop and notebook systems.

PowerPoint

PowerPoint A presentation program that is marketed and sold by Microsoft. It may also be used as a drawing package, and is included in the Microsoft Office integrated package.

PowerPoint Animation Player A Microsoft animation player, which may be added to Web pages.

(See ActiveX control.)

PPP (Point-to-Point Protocol) A standard protocol used with standard access technologies such as POTS and ISDN. Such connections to ISPs see it used with the IP protocol.

(See SLIP.)

PPTP (Point-to-Point Tunneling Protocol) An evolution of the Point-to-Point Protocol (PPP) which may be applied to the construction of VPNs (Virtual Private Networks).

(See VPN.)

Precedence In C++, arithmetic operators have a precedence value. These indicate the order in which such operators are implemented, which is significant with expressions such as:

```
dev = xx + yy* zz + yy;
```

Control over such arithmetic operations is obtained by using parentheses, i.e.:

```
dev = (xx + yy)* zz;
```

Parentheses can be nested.

(See C++.)

Preemptive multitasking A type of multitasking in which the operating system interrupts applications running concurrently. It is more seamless than non-preemptive multitasking in that a higher degree of concurrency is achieved. Windows 95 and OS/2 Warp embody preemptive multitasking.

Principal A user or software component or object which uses services.

Private key encryption An encryption model that requires the sender and the receiver of encrypted matter to use a single password key. The size of the key (in bits, such as 56 bit) is a function of the encryption techniques harnessed.

(See Cryptography and Encryption.)

Process flow A diagram which shows the processes included in a system architecture. It shows how the processes, and their leaf processes, inter-relate and interact with entities that might be data or program modules.

Processing power A measure of a system's processing performance, it may be measured in:

- millions of floating point operations per second (MFLOPs)
- gigaFLOPs or billions of FLOPs (GFLOPs)
- teraFLOPs or trillions of FLOPs (TFLOPs)
- the rate at which instructions are executed in millions of instructions per second (MIPs)
- SPECmarks
- whetstones
- dhrystones.

(See Dhrystone and Whetstone.)

Processor A device that embodies the functionality of a CPU (Central Processing Unit). The familiar Intel PC processor continuum broadly equates to: 4004, 8088, 80286, 80386DX, 80386SX, 80486DX, 80486SX, 80486DX2, Pentium, Pentium Pro, Pentium II. The generic PC processor continuum is a little more complex, with companies such as AMD (Advanced Micro Devices) and Cyrix producing reverse-engineered, and often enhanced, Intel-compatible processors.

Production The process of marrying media files with hypertext-based structure on a multimedia application. At this point in development, the application can be tested. Easily remedied bugs of various kinds warrant a return to the application development stage for fine-tuning. More serious problems, such as inappropriate paths, indicate inadequate testing at the storyboard (design) stage, and can necessitate significant modification. Testing (in the form of a CD simulation) requires the building of a precise disk image, which reflects the actual data content of a required CD-ROM or CD-I disc. For simpler applications, testing can often be carried out from within the authoring environment.

Program Manager A desktop metaphor used in pre-Windows 95 versions of the Windows operating system. It provides double-click access to all the different applications that can be run using Windows. It consists of group windows that contain different categories of application. The Main program group, for instance, consists of important Windows utility programs, including the File Manager and Control Panel. The release of Windows 95 saw the inclusion of an alternative to the Program Manager in the form of

Programmer

the Start button, which provides access to applications via a menu system. The menu system can be browsed and navigated by dragging the mouse. Menu items include programs and sub-menus which replace group windows. Menu items are invoked using a single mouse click. The group windows making up the Program Manager can be moved, resized, maximised and minimised. The Window menu on the Program Manager allows group windows to be tiled or cascaded (stacked diagonally).

(See Explorer.)

Programmer A broad term used to describe a person engaged in developing computer programs. Programmers tend to specialise. For example, applications programmers might specialise in the development of financial systems, RDBMSes (Relational Database Management Systems) or client/server applications. RDBMS programmers might use programs/development tools such as Paradox for Windows, dBase, FoxPro, Microsoft SQL Server, DataEase for Windows and Compsoft Equinox. High-level language (HLL) programmers might specialise in C++, Java or Visual Basic. Low-level language (LLL) programmers, or machine code programmers or software engineers, work at the machine code level. They generally program using assembly languages that are indigenous to different processors.

(See C++, Java and Object*.)*

Project planning The process of organising a project so that its component parts are completed on time. The compilation of a design, development and production schedule is essential for the efficient use of studio time or for providing a completion date. As with costing, estimation may play a role, the accuracy of which will increase with greater experience. A reasonable starting point for accurate scheduling is a design network, within which the frequency of targets or milestones depends upon fineness of granularity. A low-level approach will yield a more accurate basis upon which to build a precise schedule, where each stage can be allocated a precise period of time. The real function of a design network, however, is to illuminate a critical path, highlighting those stages whose target dates, will, if exceeded, set back the entire project. Equally, less important stages manifest themselves. For example, it might be found that certain production processes running in parallel with application development can overshoot target dates without setting back the completion date.

PROM (Programmable Read-Only Memory) A type of read-only electronic memory that is used to store firmware such as BIOS (Basic Input Output System) software.

(See BIOS.)

Protocol A format used to transmit and to receive data. Examples of industry standard protocols include IP, Ethernet, SMTP and HTTP. Each protocol is optimised for the information it is intended to carry and for the network over which it is to be used. A protocol often consists of:

- an information field for data
- the destination address
- error detection and correction codes
- originating address

All of this information is held together in a single unit, which might be a *packet, cell or frame*. In IP networks, such as the Internet and intranets, they are called packets, but it is just a new term; really they are all the same thing. The packets are assembled at the point of transmission, and sent over various different paths to their destination. Once received they are checked for errors and then appropriately assembled. Network protocols are analogous to the Royal Mail: the packets are comparable to envelopes, and they have destination and originating addresses etc.

(See *TCP/IP*.)

Prototyping The process of developing an initial working model of a multimedia application. Often it will consist of the hypertext structure only, and in some instances it may be little more than an electronic storyboard authored using either an authoring tool or presentation program. It might include some media, such as MIDI files, wave audio files, graphics, animations and video sequences, depending on their availability. Navigation, or retrieval system design, is often verified through an electronic storyboard emulation. Hypermedia authoring tools such as HyperCard provide a prototyping environment where nodes or objects can be created and linked at the required levels. This permits thorough testing and fine-tuning of meaningful paths at an early stage. The number of person-hours consumed during this stage of design, verification and testing is a function of title complexity in terms of user interaction. This will be related to the number of links implanted and to the levels at which they occur. A children's title, for instance, is likely to include a greater percentage of links at the macro level. A leisure title such as a jukebox simulation might be equally simple. Electronic storyboards or hypermedia applications also help convey to clients, publishers or even investors what can reasonably be expected from the final product in terms of functionality.

Pseudo-conversational communication A communication regime between two software components or objects that exists only for the duration of interaction.

PSTN

PSTN (Public Switched Telephone Network) A voice-grade public telephone network.

Public Key (*See Cryptography.*)

Public key encryption An encryption technique which requires both private and public keys. A public key is used to encrypt sent data.

(*See Encryption.*)

Publishing medium A medium that can be used to publish information. The Internet, CD-ROM and DVD-ROM are publishing media.

Push technology A technology with which a user is served requested Web-sourced information. It is sometimes referred to as the push model.

(*See Webcasting.*)

PWS (Personal Web Server) A downsized implementation of IIS, bundled with Microsoft FrontPage. It can be used to:

- test Web applications
- build intranets.

(*See IIS.*)