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**РЕФЕРАТ**

з дисципліни “Англійська мова професійного спрямування”(ІІІ курс)

на тему: **“Multimedia”**

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Contents

Introduction 2

Types of multimedia 3

Multimedia perspectives 5

Multimedia future 8

Multimedia in education 3

Summary in English 11

Summary translation 12

References 13

Glossary 14

# **Introduction**

As a technology, it is called multimedia. As a revolution, it is the sum of many revolutions wrapped into one: A revolution in communication that combines the audio visual power of television, the publishing power of the printing press, and the interactive power of the computer. Multimedia is the convergence of these different professions, once thought independent of one another, coming together to form a new technological approach to the way information and ideas are shared.

Multimedia can be recorded and played, displayed, dynamic, interacted with or accessed by information content processing devices, such as computerized and electronic devices, but can also be part of a live performance. Multimedia devices areelectronic media devices used to store and experience multimedia content. Multimedia is distinguished from mixed media infine art; by including audio, for example, it has a broader scope. The term "rich media" is synonymous for interactive multimedia. Hypermedia scales up the amount of media content in multimedia application.

What will society look like under the evolving institutions of interactive multimedia technologies? Well, if the 1980’s were a time for media tycoons, the 1990’s will be for the self-styled visionaries. These gurus see a dawning digital age in which the humble television will mutate into a two-way medium for a vast amount of information and entertainment. We can expect to see: ovies-on-demand, video games, databases, educational programming, home shopping, telephone services, telebanking, teleconferencing, even the complex simulations of virtual reality. This souped-up television will itself be a powerful computer. This, many believe, will be the world’s biggest media group, letting consumers tune into anything, anywhere, anytime.

Multimedia is content that uses a combination of different content forms such as text, audio, images, animation, video and interactive content. Multimedia contrasts with media that use only rudimentary computer displays such as text-only or traditional forms of printed or hand-produced material.

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Multimedia presentations can be live or recorded. A recorded presentation may allow interactivity via a navigation system. A live multimedia presentation may allow interactivity via an interaction with the presenter or performer.

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# **Types of multimedia**

* Text

It may be an easy content type to forget when considering multimedia systems, but text content is by far the most common media type in computing applications. Most multimedia systems use a combination of text and other media to deliver functionality. Text in multimedia systems can express specific information, or it can act as reinforcement for information contained in other media items. This is a common practice in applications with accessibility requirements. For example, when Web pages include image elements, they can also include a short amount of text for the user's browser to include as an alternative, in case the digital image item is not available.

* Images

Digital image files appear in many multimedia applications. Digital photographs can display application content or can alternatively form part of a user interface. Interactive elements, such as buttons, often use custom images created by the designers and developers involved in an application. Digital image files use a variety of formats and file extensions. Among the most common are JPEGs and PNGs. Both of these often appear on websites, as the formats allow developers to minimize on file size while maximizing on picture quality. Graphic design software programs such as Photoshop and Paint.NET allow developers to create complex visual effects with digital images.

* Audio

Audio files and streams play a major role in some multimedia systems. Audio files appear as part of application content and also to aid interaction. When they appear within Web applications and sites, audio files sometimes need to be deployed using plug-in media players. Audio formats include MP3, WMA, Wave, MIDI and RealAudio. When developers include audio within a website, they will generally use a compressed format to minimize on download times. Web services can also stream audio, so that users can begin playback before the entire file is downloaded.

* Video

Digital video appears in many multimedia applications, particularly on the Web. As with audio, websites can stream digital video to increase the speed and availability of playback. Common digital video formats include Flash, MPEG, AVI, WMV and QuickTime. Most digital video requires use of browser plug-ins to play within Web pages, but in many cases the user's browser will already have the required resources installed.

* Animation

Animated components are common within both Web and desktop multimedia applications. Animations can also include interactive effects, allowing users to engage with the animation action using their mouse and keyboard. The most common tool for creating animations on the Web is Adobe Flash, which also facilitates desktop applications. Using Flash, developers can author FLV files, exporting them as SWF movies for deployment to users. Flash also uses ActionScript code to achieve animated and interactive effects.

# **Multimedia perspectives**

The most extraordinary thing about the multimedia boom, is that so many moguls are spending such vast sums to develop digital technologies, for the delivering of programs and services which are still largely hypothetical.

So what is behind such grand prophecies? Primarily, two technological advances known as digitization (including digital compression), and fibre optics.

Both are indispensable to the high-speed networks that will deliver dynamic new services to homes and offices. Digitization means translating information, either video, audio, or text, into ones and zeros, which make it easier to send, store, and manipulate.

Compression squeezes this information so that more of it can be sent using a given amount of transmission capacity or bandwidth.

Fibre-optic cables are producing a vast increase in the amount of bandwidth available. Made of glass so pure that a sheet of it 70 miles thick would be as clear as a window-pane, and the solitary strand of optical fibre the width of a human hair can carry 1,000 times as much information as all radio frequencies put together. This expansion of bandwidth is what is making two-way communication, or interactivity, possible.

Neither digitization nor fibre optics is new. But it was only this year that America’s two biggest cable-TV owners, TCI and Time Warner , said they would spend $2 billion and $5 billion respectively to deploy both technologies in their systems, which together serve a third of America’s 60m cable homes. Soon, some TCI subscriptions will be wired to receive 500 channels rather than the customary 50; Time Warner will launch a trail full-service network in Florida with a range of interactive services.

These two announcements signaled the start of a mad multimedia scramble in America, home market to many of the world’s biggest media, publishing, telecoms and computer companies, almost all of which have entered the fray. The reasons are simple: greed and fear: greed for new sources of revenue; fear that profits from current businesses may fall as a result of reregulation or cut-throat competition.

Multimedia has already had a profound affect on how these businesses interact with one another. Mergers such as Time Warner, Turner Broadcasting, and Paramount have set the stage. These companies continue the race to be the first to lay solid infrastructure, and set new industry standards.

Following in the shadows will be mergers between: software, film, television, publishing, and telephone industries, each trying to gain market share in the emerging market.

So far, most firms have rejected the hostile takeovers that marked the media business in the 1980s. Instead, they have favored an array of alliances and joint ventures akin to Japan’s loose-knit Keiretsu business groupings.

TCI’s boss, John Malone, evokes “octopuses with their hands in each other’s pockets-where one starts and the other stops will be hard to decide.” These alliances represent a model of corporate structure which many see as mere marriages of convenience, in which none wants to miss out on any futuristic markets.

# **Multimedia future**

The games themselves are becoming more sophisticated and intelligent and are now offering some of the first genres capable of attracting and holding an adult audience. Just around the corner looms the promise of interactive television, which threatens to turn the standard American couch potato into the newly rejuvenated couch commando.

Through interactive television, which will actually be a combination of the telephone, computer, and television, you will have access to shopping, movies, and other types of information on demand. As this technology increases, it will give way to a form that is known as virtual reality.

Imagine, with the use of headgear, goggles, and sensory gloves, being able to actually feel and think you are in another place. For instance, going shopping at a mall could be done in the privacy of your own living room, by just strapping on your headgear. Another break through in the home market is video telephony.

These are telephone systems that also broadcast video images. Imagine being able to communicate instantly with voice, picture, and text with a business colleague or a loved one thousands of miles away.

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## ***Connectivity, the Key to Multimedia***

The term connectivity is hardly unfamiliar: we define it as the capacity of a program or device to connect with other programs or devices; internet networks and wireless phones bring it to mind. Essentially, connectivity allows us to connect with each other.

As with all technologies, we are constantly searching to push the limits and to find innovative ways to integrate it into our daily lives. Whereas interactivity allows for a dialogue between human and machine, in contrast, connectivity gathers, links and connects us, no matter where we are.

In 2015, we expect to see an even greater flourishing in the connectivity trend.

## **2. *Connectivity in Public Spaces***

How do we connect people who are already connected? Having achieved so-called “human” connectivity, the next challenge is to extend connectivity to our environment – in other words, to develop an interaction between the individual and their surroundings. The goal then becomes to make space an interface where content that adapts to the activity taking place in that space can be projected.

Interactivity in real time is used to achieve this goal: by means of sensors, we are able to detect a person’s movements or emotions and to transcribe them in the surrounding environment. A master controller, as with interactive projects, is no longer required; here, the activity in the space itself determines the projected actions. In other words, thanks to connectivity, launching an experience is not dependent upon a person to press a button: it is the space surrounding us, installed with sensors, that reacts according to what we are doing.

### **Case of the Los Angeles Airport (LAX)**

Cognisant that connectivity could be the key innovation for many future multimedia projects, Moment Factory has experimented with it in various installations.

Take, for example, our Tom Bradley International Terminal project at the Los Angeles Airport, where the ambient imagery changes according to passengers’ destinations. The digital artwork on the pillars is connected to the airport data system and regularly changes to reflect outbound flights. Real-time video and sound effects are triggered by passenger movements, sending passengers on their way with a personal touch of high-tech magic.

## **3. *Generating Content in Real Time***

Another major trend this year is the diversion of different types of software for use in multimedia projects.

At Moment Factory, the software program Unity, originally intended for video games, is used to create 3D content in real time. When connected to another software program, Touch Designer, and sensors are activated, the program content is projected into space. The people present and living this experience become, just like in video games, characters in their environment. The content we are talking about is therefore live, and connected to a database.

## 4. ***Wearable Technology***

As regards wearable technologies, 2015 will  continue where 2014 left off. Technological objects will be revisited and improved with the aim of facilitating the everyday. One very obvious trend in wearable technologies will be the “smartwatch,” the intelligent watch that, in addition to telling time, allows us to remain connected *and* keep our hands free.

## **5. *3D Printing***

When it comes to 3D printing, evolution of printer technology is at the fore. Refinements will be made to reduce printing time and improve the quality of printed objects.

**One of this year’s important themes will be improving and innovating the objects we became familiar with in 2014.We already mentioned it above, but will reiterate here: connectivity will be this year’s watchword, notably in relation to the appropriation of urban spaces by multimedia projects. Moment Factory is working hard to create future projects that showcase these new trends, and that will allow you to live experiences as intensely as last year!**

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# **Multimedia in education**

It is not feasible to discuss the role of multimedia in the future of education without paying some attention to the future of education (at all levels) itself. The issues are broad and varied without any evidence to date that there is a foolproof solution which educators may use. Nor is this likely to happen. Moreover, there is little sign of agreement amongst educators regarding the future structure and function of educational institutions servicing the different sectors. To predict the role of multimedia in such an uncertain climate would be ambitious to say the least. However, by adopting a suitable set of principles, educators are able to set themselves some viable targets which are less prone to the fickle changes in technology.

There is much current debate in the educational community regarding the concepts of putting education "online". A quick visit to any one of the conference listings on the Web (as in Yahoo) will reveal the extent of global investment being made in debating these subjects. Against this background it is probably useful to expect debate to move to a new level. Advocacy or opposition are meaningless without an appropriate context (This context is discussed in later sections.).

When dealing with the role of multimedia in education, it is obvious that little useful information will result from debate that becomes focused on technological ability rather than pedagogical strategy; achievement of machines, software and programmers rather than achievement of learners and mentors; and quality of technological wizardry rather than quality of learning experiences and outcomes. That is not to say that the technological parameters and achievements are not important. They are vital, as long as you have suitable educational strategies, goals, experiences and outcomes at which they can be focused.

For the purpose of this discussion, let us simply assume that all that has been stated as technologically possible now, actually is, and that if it isn't, it will be by the time all the groundwork has been done to enable its use. Notwithstanding that, if certain achievements are not possible, there is most likely a substitute. From this perspective we are able to move the debate away from the technology and deal with the pedagogy and strategy.

In a complex world of constant change, where knowledge becomes obsolete every few years, education can no longer be something that one aquires during youth to serve for an entire lifetime. Rather, education must focus on instilling the ability to continue learning throughout life. Fortunately, the information-technology revolution is creating a new form of electronic, interactive education that should blossom into a lifelong learning system that allows almost anyone to learn almost anything from anywhere, at anytime. The key technology in future education is interactive multimedia.

The purpose of multimedia in education as in so many other multimedia applications, is to: enhance the transfer of information, encourage participation, stimulate the senses and enhance information retention. Multimedia uses a powerful combination of earlier technologies that constitutes an extraordinary advance in the capability of machines to assist the educational process.

Interactive multimedia combines computer hardware, software, and peripheral equipment to provide a rich mixture of text, graphics, sound, animation, full-motion video, data, and other information. Although multimedia has been technically feasible for many years, only recently has it become a major focus for commercial development. Interactive multimedia systems can serve a variety of purposes but their great power resides in highly sophisticated software that employs scientifically based educational methods to guide the student through a path of instruction individually tailored to suit the special needs of each person.

As instruction progresses and intelligent systems are used, the system learns about the student’s strengths and weaknesses and then uses this knowledge to make the learning experience fit the need of that particular student.

Interactive multimedia has several key advantages. First, students receive training when and where they need it. An instructor does not have to be present, so students can select the time best suited to their personal schedules. Second, students can adjourn training at any point in the lesson and return to it later.

Third, the training is highly effective because it is based on the most powerful principles of individualized learning. Students find the program interesting, so they stick with it. Retention of the material learned is excellent. Fourth, the same videodisk equipment can be used to support a variety of training paths. Last, both the training and the testing are objectively and efficiently measured and tracked.

Educational systems of this type, offered by IBM under the product labeled Ultimedia, engage students in an interactive learning experience that mixes color movie, bold graphics, music, voice narration, and text; for instance, the program Columbus allows students to relive the great navigator’s voyages and explore the New World as it looked when Columbus first saw it. The ability to control the learning experience makes the student an active rather than a passive learner.

Other common systems include Sim City, Carmen San Diego, and a variety of popular multimedia games created by Broderbound Softwarek, one of the biggest companies in this new field. Rather than old drill and kill forms of computerized instruction that bore students, this new entertaining form of education is far more effective precisely because kids get totally immersed in an exciting experience.

Classroom computers with multimedia capabilities seem to have sky-rocketed in every faucet of the education arena. From pre-schoolers to college students, learning adapting to this multimedia craze was not hard to do.

Teachers and Professors alike share in this technology to plan out their curricular schedules and school calendar. Most will agree that classroom computers seem to have a positive effect on students of the 90’s. As schools and universities become more technology driven, there will be an even bigger plea for more multimedia enhancements.

# **Summary in English**

Computers have come a long way very fast since there start in the 1940's. In the beginning they were mainly used for keeping financial records by banks and insurance companies, and for mathematical computations by engineers and the U.S. Military.

However, exciting new applications have developed rapidly in the last few years. Two of these areas is Computer Graphics and sound.

Multimedia applications can include many types of media. The primary characteristic of a multimedia system is the use of more than one kind of media to deliver content and functionality. Web and desktop computing programs can both involve multimedia components. As well as different media items, a multimedia application will normally involve programming code and enhanced user interaction. Multimedia items generally fall into one of five main categories and use varied techniques for digital formatting.

Computer graphics is the ability of the computer to display, store and transmit visual information in the form of pictures. Currently there are two main uses for this new ability. One is in the creation of Movies and the other in Computer Games. Computer visual information is also increasingly being used in other computer applications, such as photographic storage, and the Internet.

Computers can also store, transmit and play back sound. It is hard to imagine the modern world without multimedia. Multimedia helps us to communicate with others and also to have fun, work, and even saves our lives sometimes.

Multimedia represents the convergence of text, pictures, video and sound into a single form. The power of multimedia and the Internet lies in the way in which information is linked.

Multimedia and the Internet require a completely new approach to writing. The style of writing that is appropriate for the 'on-line world' is highly optimized and designed to be able to be quickly scanned by readers.

A good site must be made with a specific purpose in mind and a site with good interactivity and new technology can also be useful for attracting visitors. The site must be attractive and innovative in its design, function in terms of its purpose, easy to navigate, frequently updated and fast to download.

When users view a page, they can only view one page at a time. As a result, multimedia users must create a "mental model" of information structure.

Multimedia finds its application in various areas including, advertising, art, education, entertainment, engineering, medicine, mathematics, business, scientific research and space-time applications.

# **Summary translation**

Комп'ютери пройшли довгий шлях дуже швидко,почнаючи з 1940 років. Спочатку вони в основному використовуються для підтримки фінансових звітів банками і страховими компаніями, а також для математичних обчислень, інженерами і військовими США.

Проте, нові додатки швидко розвивалися протягом останніх кількох років. Два з цих областей комп'ютерної графіки і звуку.

Мультимедійні програми можуть включати в себе багато видів мультимедіа. Основною характеристикою мультимедійної системи є використання більш ніж одного виду медіа для представлення контенту і функціональних можливостей. Web і програми можуть включати в себе мультимедійні компоненти. Мультимедійний додаток зазвичай включає програмний код і розширену взаємодію з користувачем. Мультимедійні елементи зазвичай потрапляють в одну з п'яти основних категорій і використовувати різні методи для цифрового форматування.

Комп'ютерна графіка є здатність комп'ютера для відображення, зберігання і передачі візуальної інформації у вигляді картинок. В даний час існує два основних способи застосування для цієї нової здатності. Одним з них є створення фільмів, а інший комп'ютерні ігри. Комп'ютерна візуальна інформація також все частіше використовується в інших комп'ютерних програмах, такі як збереження фото і Інтернет.

Комп'ютери можуть також зберігати, передавати і відтворювати звук. Важко уявити сучасний світ без мультимедіа. Мультимедія допомогає нам підтримувати звязок з іншими, розважатися, працювати, а деяким навіть рятує життя.

Мультимедіа знаходить своє застосування в різних областях, включаючи рекламу, мистецтво, освіту, індустрію розваг, техніку, медицину, математику, бізнес, наукові дослідження і просторово-часові програми.

Мультимедіа та Інтернет вимагають абсолютно новий підхід до написання. Стиль листа, який підходить для он-лайн світіу має бути високо оптимізований і розроблений, щоб бути взмозі швидко переглядатися читачами.

Хороший сайт повинен бути зроблений з певною метою, з хорошою інтерактивності і новими технологіями для залучення відвідувачів. Сайт повинен бути привабливим і інноваційним у своїй конструкції, функціонувати з точки зору його мети, легко орієнтуватися, часто оновлюватися і швидко завантажуватися.

Коли користувач переглядає сторінку, він може переглядати лише одну сторінку за один раз. В результаті, мультимедіа користувачі повинні створити "ментальну модель" інформаційної структури.

Мультимедіа знаходить своє застосування в різних областях, в тому числі, реклами, мистецтва, освіти, індустрії розваг, машинобудування, медицини, математики, бізнесу, наукових досліджень і просторово-часових додатків.

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# **Glossary**

1. Multimedia - Refers to the delivery of information that combines different content formats (motion video, audio, still images, graphics, animation, text, etc.)
2. Web Browser - A client application that fetches and displays Web pages and other WWW resources to the user. The most popular browsers are Microsoft’s Internet Explorer and Netscape’s Navigator.
3. Watermark - A background image. Typically used to decorate and identify pages in a Web site, a watermark remains stationary as the page scrolls.
4. VRML - Virtual Reality Modelling Language: a database description language applied to create 3D worlds. VRML viewers, similar to HTML Web browsers, interpret VRML data downloaded from the Web and render it on your computer. This allows the bulk of the processing to be performed locally, and drastically reduces the volume of information for transmittal from the Web.
5. Virtual Reality - Technology that allows the user to experience 3D interaction with the computer. Some VR systems may incorporate special visors, helmets, gloves, and special 3D graphics technology to simulate the real world environment.
6. Video1 - The default video compression algorithm in Microsoft’s Video for Windows. Can produce 8- or 16-bit video sequences.
7. VideoCD - Format that allows the viewing of MPEG-1 (also known as the ISO IEC 11172 compression standard) video on CD-ROM. Originally devised by Philips, it allows for more than an hour of compressed video, the audio also being compressed and giving hi-fi standard. The whole point of VideoCD is cross-platform compatibility. The discs should work on suitably equipped PCs, Macs, dedicated VideoCD players, and CD-i systems. Video CD is based on the White Book standard developed by Philips and other industry leaders. Also referred to as VCD.
8. Video Capture - Performed by an expansion board that digitises full-motion video from a VCR, camera or other video source. The digital video is then stored in a compressed format on hard disk.
9. VidCap - Microsoft’s Video For Windows program to capture video input to RAM or hard disk memory.
10. VHS - A VCR format introduced by JVC in 1976 to compete with Sony’s Beta format. VHS subsequently become the standard for home and industry, and Beta became obsolete. S-VHS (Super VHS) is a subsequent format that improves resolution.
11. VfW - Video for Windows: a standard established by Microsoft for the integration of digital video, animation and sound which uses the .AVI file format. The necessary software drivers are incorporated into the Windows operating system.
12. VDRV - Variable Data Rate Video: in digital systems, the ability to vary the amount of data processed per frame to match image quality and transmission bandwidth requirements. DVI symmetrical and asymmetrical systems can compress video at variable data rates.
13. VDI - Video Device Interface: a software driver interface that improves video quality by increasing playback frame rates and enhancing motion smoothness and picture sharpness. VDI was developed by Intel and will be broadly licensed to the industry.
14. VCR - Video Cassette Recorder: a videotape recording and playback machine that is available in several formats. Sony’s Beta tape was the first VCR format, but is now defunct. VHS 1/2in tape is the most commonly used format. Although VCRs are analogue recording machines, adapters allow them to store digital data for computer backup. See also VHS.
15. URL - Uniform Resource Locator: a logical address that identifies a resource on the Internet.
16. Time Code - A frame-by-frame address code time reference recorded on the spare track of a videotape or inserted in the vertical blanking interval. It is an eight-digit number encoding time in hours, minutes, seconds, and video frames (e.g.:02:04:48:26).
17. Teleconference - A general term for a meeting not held in person. Usually refers to a multi-party telephone call, set up by the phone company or private source, which enables more than two callers to participate in a conversation. The growing use of video allows participants at remote locations to see, hear, and participate in proceedings, or share visual data (“video conference”).
18. Tearing - Video artefact in which portions of a video window are not updated in time for the next frame.
19. SVCD - Super VCD: an evolution of the VCD format that uses MPEG-2 compression to store between 35 and 80 minutes (depending on bit rate) of SVHS quality video on a CD. Also known as Chaoji VCD.
20. Subsampling
21. Bandwidth reduction techniques which reduce the amount of digital data used to represent an image. Part of a compression process.
22. SSE - Streaming SIMD Extensions: Intel’s SSE and SSE2 technologies are effectively sets of instructions for accelerating multimedia applications. SSE is found on Intel Pentium III processors; SSE2 is an incremental supported on Intel Pentium 4 processors. Some of the benefits of SSE/SSE2 include rendering higher quality images, high quality audio, MPEG2 video, simultaneous MPEG2 encoding and decoding and reduced CPU utilisation for speech recognition. See also SIMD.
23. sRGB - Standardised Red, Green and Blue: the colour space standard established by the International Electrotechnical Commission which forms the basis of colour matching hardware devices such as CRT monitors, LCD panels, projectors, printers, scanners and digital cameras and applications, including the World Wide Web.
24. SMPTE Timecode - An 80-bit standardised edit time code adopted by SMPTE, the Society of Motion Picture and Television Engineers. See also Time Code, for measuring video duration. Each frame is identified in the form hours:minutes:seconds:frames.
25. SIMD - Single Instruction Multiple Data: a method of efficiently processing data in which a single instruction is applied to multiple pieces of data simultaneously rather than to each piece of data individually. Repetitive tasks are effectively consolidated into a single one, greatly increasing the speed of data processing. Instructions of this nature are often associated with 3D graphics and multimedia. See also SSE.
26. SIF - Standard Interchange Format: format for exchanging video images of 240 lines with 352 pixels each for NTSC, and 288 lines by 352 pixels for PAL and SECAM. At the nominal field rates of 60 and 50 fields/s, the two formats have the same data rate.
27. SECAM - Sequentiel Coleur A Memoire: European video standard, used in France and Eastern Europe, with image format 4:3, 819 lines per frame, 50 Hz and 6 MHz video bandwidth with a total 8 MHz of video channel width. Like the similar PAL standard, it has a 25-frame per second update rate. The major difference from PAL is that SECAM uses FM-modulated chrominance.
28. Scalability - The ability to vary the information content of a program by changing the amount of data that is stored, transmitted or displayed. In a video image, this translates into creating larger or smaller windows of video on screens (shrinking effect).
29. S-Video - Type of video signal used in Hi8, S-VHS and some laserdisc formats. S-Video is a hardware standard for the way a signal is carried on the cable itself and also defines the physical cable jacks. It transmits luminance and colour portions separately, using multiple wires, and avoids composite video encoding (such as NTSC) and the resulting loss of picture quality. Also known as Y-C Video.
30. RTV - Real Time Video: single step compression of video.
31. RPC - Regional Playback Control: restrictions to prevent unauthorised playback of DVD discs in countries they were not intended for.
32. RLE - Run Length Encoding: Microsoft’s video compression algorithm for base level multimedia PCs. Compresses 8-bit sequences only. Playback is also in 8 bit and isn’t scaleable for higher power PCs.
33. RIFF - Resource Interchange File Format: platform-independent multimedia specification (published by Microsoft and others in 1990) that allows audio, image, animation, and other multimedia elements to be stored in a common format. See also Media Control Interface (MCI).
34. RCA - Radio Corporation of America: refers to the standard single-ended analogue cables used to connect audio and video devices together. Typically red/white inputs are for the left/right channels of sound and yellow is for video.
35. QuickTime - Apple Computer’s video environment (like Microsoft’s Video For Windows). QuickTime video files must be converted to .AVI format to run under Microsoft’s Video For Windows.
36. PX64 - Similar to MPEG, but adapted to slower bit rate. Typically used for video conferencing over an ISDN phone line.
37. PDF - Portable Document Format: Acrobat file format containing embedded fonts and graphics.
38. PAL - Phase Alternating Line: video format – used in most of Western Europe, Australia and China as well as in various African, South American and Middle Eastern countries – with a 4:3 image format, 625 lines per frame, a field frequency of 50Hz and 4 MHz video bandwidth with a total 8 MHz of video channel width. PAL has a 25-frame per second update rate and uses YUV colour space.
39. Overlay - The ability to superimpose computer graphics over a live or recorded video signal and store the resulting video image on videotape. It is often used to add titles to videotape.
40. NTSC - National Television Standards Committee: the industry group that formulated the standards for American television. An NTSC signal is a composite video signal used by televisions and VCRs in North America and some other parts of the world. The NTSC system uses 525 lines per frame, a field frequency of 60 Hz, a 30-frame per second update rate, and the YIQ colour space. Modern NTSC encoders and decoders may also use the YUV colour space.
41. NLE - Non-Linear Editing: refers to the ability to manipulate digitised video on a computer under software control. The required file segments can be cut, pasted and copied anywhere in the timeline of your project. In the context of AV applications, NLE is to video editing what the word processor was to the typewriter.
42. MPEG-4 - A standard for video compression that is targeted at bit rates of tens of kilobytes and below to accommodate applications for digitally-encoded moving pictures and synchronised audio that can be enabled only at very low bit rates. The low bit rates targeted by MPEG-4 are the operating points for widespread communication channels, such as public switched telephone network and low-cost wired and wireless networks.
43. MPEG-2 - The newer MPEG-2 standard offers resolutions of 720×480 and 1280×720 at 60 fps, with full CD-quality audio. This is sufficient for all the major TV standards, including NTSC, and even HDTV. MPEG-2 is used by DVD-ROMs and is capable of compressing a 2 hour video into a few gigabytes.
44. MPEG-1 - MPEG-1 video, used in VideoCDs, is defined for non-interlaced, computer-type data streams. It is the form normally used with PCs. Typical MPEG-1 video compression ranges up to 100:1 for images comprised of 352 pixels (picture elements) by 240 lines at a refresh rate of up to 30 frames per second with 24-bit colour and CD-quality sound.
45. MPEG - Moving Picture Experts Group: a standards committee, supported by the ISO, formed to establish uniform methodologies and algorithms for digital audio and video compression.
46. MPC - Multimedia PC: a specification developed by the Multimedia Council. It defines the minimum platform capable of running multimedia software. PCs carrying the MPC logo will be able to run any software that also displays the MPC logo.
47. Motion-JPEG - A derivative of JPEG that includes some keyframe-based compression to make it suitable for video.
48. Motion Video - Video that displays real motion by displaying a sequence of images (frames) rapidly enough that the eyes see the image as a continuously moving picture.
49. Morph - Short for metamorphosing, morphing refers to an animation technique in which one image is gradually turned into another.
50. Mixed-Signal Device - Collects analogue signals and converts them into digital data to be processed. Once a DSP processes and compresses the digital data, a mixed-signal device decompresses, transmits and displays the digital data as either digital or analogue signals.
51. miniDVD - A CD-R(W) disc containing up to 15 minutes of DVD-encoded video.
52. MIME - Multi-purpose Internet Mail Extension: the format for transferring multimedia type file transfers across the Internet. Since email messages are designed for text data, this format converts non-text data into a text-based format.
53. MCI - Media Control Interface: platform-independent multimedia specification published by Microsoft Corporation and others in 1990. Provides a consistent way to control devices such as CD-ROMs and video playback units.
54. Laser Disc - An optical disk used for full-motion video. In the 1970s, various videodisc systems were introduced, but only the Philips LaserVision survived. Began being superseded by DVD-ROM during 1998.
55. Keyframe - Most video compression schemes work by taking keyframes at certain intervals and working out the differences between that frame and the following frames. This means that only small pieces of information need to be stored about each frame in order to allow the whole frame to be reconstructed. See also Delta Frame.
56. Inverse Kinematics - In an object hierarchy where there are parent and child objects, grabbing one child object at the end of a chain and automatically calculating the proper movements back to the first object, all according to a series of pre-programmed constraints. An example would be an articulated hand, where moving the tip of a finger causes all the other parts to move together in a properly jointed way.
57. Interframe Coding - Compression techniques which track the differences between frames of video. Results in more compression over a range of frames than intraframe coding.
58. Interactive Video - The fusion of video and computer technology. A video program and a computer program running in tandem under the control of the user. In interactive video, the user’s actions, choices, and decisions affect the way in which the program unfolds.
59. IMA - Interactive Multimedia Association: formed in 1991 (rooted in IVIA, Interactive Video Industry Association), an industry association chartered with creating and maintaining standard specifications for multimedia systems.
60. Hyperlink - A pointer from text or from an image map to a page or other type of file on the WWW. On Web pages, hyperlinks are the primary way to navigate between pages and among Web sites.
61. HTML - Hypertext Markup Language: an ASCII text-based, script-like language for creating hypertext documents like those on the Internet’s World Wide Web.
62. HDTV - High Definition TV: a television system with approximately twice the horizontal and twice the vertical resolution of current 525-line and 625-line systems, component colour coding (e.g. RGB or YCbCr) a picture aspect ratio of 16:9 and a frame rate of at least 24 Hz. The principal scanning formats have active vertical scanning lines of 720 progressive (720p), 1080 interlaced (1080i). Though 1080i as higher resolution than 720p, it doesn’t render motion quite as well the progressive scanning format.
63. HDCP - High-bandwidth Digital Content Protection: an encoding method for distributing digital content via a DVI (Digital Visual Interface) port. Using hardware on both the graphics adapter card and the monitor, HDCP encrypts data on route to a display device, where it is then decrypted.
64. GOP - In an MPEG signal the GOP is a group of frames between successive I frames, the others being P and/or B frames. The GOP concept allows the temporal redundancy across frames (from frame to frame) for video content to be reduced.
65. Full-Motion Video - FMV: video reproduction at 30 frames per second (NTSC-original signals), 25 frames per second (PAL-original signals) and 30 frames per second (compressed MPEG).
66. Frame Grabber - A device that “captures” and potentially stores one complete video frame. Also known as frame storer.
67. Frame Rate - How fast the source repaints the screen with a new frame. NTSC repaints the screen every 1/30th of a second for a frame rate for 30 frames per second. PAL is 25 frames per second. “Full-motion” playback of compressed MPEG files is at 30 frames per second.
68. Frame - A single, complete picture in video or film recording. A video frame consists of two interlaced fields of either 525 lines (NTSC) or 625 lines (PAL/SECAM), running at 30 frames per second (NTSC) or 25 frames per second (PAL/SECAM).
69. FPS - Frames Per Second: an expression of frame rate.
70. Filtering - A process used in both analogue and digital image processing to reduce bandwidth. Filters can be designed to remove information content such as high or low frequencies, for example, or to average adjacent pixels, creating a new value from two or more pixels.