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VIDEO AND ANIMATION TOOLS FOR REPRESENTATION OF INFORMATION

Abstract

With the development of computer multimedia technologies in the field of education, the concept, features, potential of multimedia technology and multimedia visualization of information are revealed, allowing to present content. The aspects of the implementation of the principle of visibility in teaching at a qualitatively new level are revealed. The review of on-line multimedia resources is given.

Keywords: *multimedia systems, platform, telecommunication, representation of information, World Wide Web, medium, message, image.*

Multimedia systems are becoming an integral part of our heterogeneous computing and communication environment. We have seen an explosive growth of multimedia computing, communication, and applications over the last decade. The World Wide Web, conferencing, digital entertainment, and other widely used applications are using not only text and images but also video, audio, and other continuous media. In the future, all computers and networks will include multimedia devices. They will also require corresponding processing and communication support to provide appropriate services for multimedia applications in a seamless and often also ubiquitous way.

Multimedia is probably one of the most overused terms of the 90s. The field is at the crossroads of several major industries: computing, telecommunications, publishing, consumer audio-video electronics, and television/movie/broadcasting. Multimedia only brings new industrial players to the game, but adds a new dimension to the potential market.

Each medium defines,

- *Representation values* – determine the information representation of different media
 - Continuous representation values (e.g. electro-magnetic waves)
 - Discrete representation values (e.g. text characters in digital form)
- *Representation space* determines the surrounding where the media are presented.
 - Visual representation space (e.g. paper, screen).
 - Acoustic representation space (e.g. stereo).

Following are the different classes of media,

- *Perception Medium*

- How do humans perceive information in a computer?

- Through seeing - text, images, video.
- Through hearing - music, noise, speech.

- *Representation Medium*

- How is the computer information encoded?
 - Using formats for representing and information.
 - ASCII(text), JPEG(image), MPEG(video).

- *Presentation Medium*

- Through which medium is information delivered by the computer or introduced into the computer?

- Via I/O tools and devices.
- Paper, screen, speakers (output media).
- Keyboard, mouse, camera, microphone (input media).
- *Storage Medium*
- Where will the information be stored?
- Storage media - floppy disk, hard disk, tape, CD-ROM etc.
- *Transmission Medium*
- Over what medium will the information be transmitted?
- Using information carriers that enable continuous data transmission - networks.
- Wire, coaxial cable, fiber optics.
- *Information Exchange Medium*
- Which information carrier will be used for information exchange between different places?
- Direct transmission using computer networks;
- Combined use of storage and transmission media (e.g. electronic mail).

High-impact multimedia applications, such as presentations, training, and messaging, require the use of moving images such as video and image animation, as well as sound intermixed with document images and graphical text displays. Multimedia applications require dynamic handling of data consisting of a mix of text, voice, audio components, video components and image animation. Integrated multimedia applications allow the user to cut sections of all or any of these components and paste them in a new document or in another application such as an animated sequence of events, a desktop publishing system, a spreadsheet. The components of multimedia are listed as below:

- *Facsimile*
- A facsimile is a copy or reproduction of an old book, manuscript, and art print, that is as true to the original copy.
- Facsimile transmission was the first practical means of transmitting document images over the telephone lines.
- *Text*
- Text and symbols are very important for communication in any medium.
- *Document Images*
- Document images are being used for storing business documents that must be retained for long time or may need to be accessed by a large number of people.
- *Photographic Images*
- Photographic images are used for a wide range of applications and it can also be used as employee records for instant identification at the security level.
- *Geographical Information Systems*
- The GIS maps are being used widely for natural resources and wild life management as well as urban planning.
- *Voice Commands and Voice Synthesis*
- Voice commands are being used for hands-free-operation for computer programs.
- Voice synthesis is used for presenting the results of an action to the user in a synthesized voice.
- *Audio Messages*
- Voice messages refer to a message that could be sent to a destination using voice media.
- *Video Messages*
- Video messages refer to a message that could be sent to a destination using video transmission media.
- *Full motion stored and Live Video (FMV)*
- Full motion video started out as a very useful idea for online training and maintenance manual.
- The evolutionary step of FMV is video conferencing.

- *Holographic images*
 - Holographic images extend the concept of virtual reality by allowing the user to get – inside a part such as operations from the outside.
- *Fractals*
 - This technology is based on synthesizing and storing algorithms that describe the information.

Benefits of multimedia

Multimedia is widely used in applications like,

- *Teleconferencing*
 - VoIP(Voice over IP).
 - PC-to-PC.
 - PC-to-Telephone.
- *Audio, Video and Multimedia messages*
 - Voice mail.
 - Multimedia mail.
- *Geographical Information System*
- *Image processing and image recognition*
- *Video Conferencing*
- *Universal Applications*
 - Education.
 - Science and Technology.
 - Medicine.
- *Business*
 - Advertisements.
 - Training materials.
 - Presentations.
 - Customer support services.
- *Entertainment*
 - Interactive Games.
 - Animation.
- *Enabling Technology*
 - Accessibility to web based materials
 - Teaching-learning for disabled children and adults.
- *Fine Arts and Humanities*
 - Museum tours.
 - Art exhibitions.
 - Presentations of literature.

The use of multimedia in learning offers many ***advantages***:

1. Enhancement of Text Only Messages: Multimedia enhances text only presentations by adding interesting sounds and compelling visuals.
2. Improves over Traditional Audio-Video Presentations: Audiences are more attentive to multimedia messages than traditional presentations done with slides or overhead transparencies.
3. Gains and Holds Attention: People are more interested in multimedia messages which combine the elements of text, audio, graphics and video. Communication research has shown that the combination of communication mode (aural and visual) offers greater understanding and retention of information.
4. Good for "computer-phobic": Those who are intimidated by computer keyboards and complex instructions are more comfortable with pressing buttons with a mouse or on a screen.
5. Multimedia is Entertaining as well as Educational:
Let's consider the most popular multimedia platforms:



► **GoAnimate** (formerly known as Go!Animate until 2013) is a cloud-based, animated video creation platform. It is designed to allow business people with no background in animation to quickly and easily create animated videos. These videos can be created in multiple styles, including 2D Animation, whiteboard animation (a.k.a. videoscribing or scribing) and video infographics.

► **PowToon** is Web-based animation software that allows users to create animated presentations by manipulating pre-created objects, imported images, provided music and user created voice-overs. Powtoon uses an Apache Flex engine to generate an XML file that can be played in the Powtoon online viewer, exported to YouTube or downloaded as an MP4 file.



PowToon is also available on the Google Chrome Store and has an application on Edmodo.com.



► **Moovly** is a cloud based digital media and content creation software platform. Content can be created via various interfaces, including the editor as well as simple, custom made video generation interfaces.

Using a combination of uploaded images, videos and sounds, as well as a pre-defined library of objects, users are able to quickly assemble new animated content. The final videos or presentations can be downloaded as an MP4 for example, or published on a variety of video platforms.

Moovly provides a feature-rich free license allowing users to create animated videos that can be exported to Facebook and YouTube, as well as premium licenses for advanced and professional use. The free videos include the Moovly branding. As an educational tool and for educational purposes, Moovly offers specific licenses.

► **Video Scribe** is software for creating whiteboard animations automatically.



VideoScribe is developed in Adobe Flash and produces QuickTime movies and Flash videos. Video files can be exported to Quicktime video, Flash video or image sequences (JPEG or PNG).

VideoScribe is available as a desktop version, an iPad app and an Android app on Google Play. The desktop version allows a seven day free trial after which users can buy VideoScribe Pro on monthly, yearly or one-off subscriptions, which gives users rights for commercial and resell use. There are multi-user discounts for businesses and education establishments.



► **Piktochart** is a web-based tool that has six decent free themes (and a whole bunch more for the paid version) for creating simple visualizations. You can drag and drop different shapes and images, and there is quite a bit of customization available; can also add simple line, bar, and pie charts using data from CSV (or manual entry); can export to PNG and JPG in either print or web quality. Note that with the free version, get a small Piktochart watermark on the bottom of the PNG / JPG downloads.

► **Easel.ly** is another free web-based tool for creating infographics. You cannot create graphs using real data with this tool, but its really good for conceptual visualizations and storytelling. It has a beautiful user interface and the themes you can start with are gorgeous. The themes support many common purposes: map, flowchart, and comparison/relationship graphing. This tool has the best selection of well design objects (people, a bunch if icons, landmarks, maps, animals, etc.) and backgrounds that I've seen throughout this list of tools. Additionally, you can upload your own images with the free version. You can download a web quality version as JPG.





► **Infogram** is another free, web-based tool with some really nice themes and a great interface for creating simple infographics. This option also allows you to create charts using real data. There are 31 chart options that offer some really cool displays, like a radial bar graph, scatter charts, bubble graphs, and map charts. You can also add your own images and video. When you're done creating your infographic, you can embed it on a website and publish it to the infogra.am site (I wasn't able to find a way to download). This app is also in beta, but again, seemed pretty solid to me.

► **Visual.ly** has some simple free tools worth mentioning, many of which integrate with social networks to analyze Twitter and Facebook data. You can create fun Venn diagrams, Twitter account showdowns, visuals that analyze hash tags, and a few others, but there's almost no customization available. However, they offer a marketplace where you can get connected with visual designers and motion graphics artists who specialize in infographics. The site itself also has a ton of great info graphics to inspire you or your designers. There is some serious data visualization eye candy in there, people.



► **Tableau** has some free tools for creating data visualizations. It is not web based, so you have to download the software. Once you do, you can upload a spreadsheet or CSV and create a variety of interactive data visualizations types, including heat maps showing density of an activity by location, Venn diagrams to show associations, bar charts, line graphs, and others. This tool is for Windows only.



► **Datavisualization.ch** has created an excellent list of packages, libraries, and data visualization frameworks for creating more complex and interactive visualizations using your own data sets and dev environments.

+ DATAVISUALIZATION.CH



► **OmniGraffle**. OmniGraffle is used to create graphics and visuals. The application features several design tools, along with a drag-and-drop WYSIWYG interface and a notes function that to annotate and create specification documentation for prototypes and mockups.

While OmniGraffle can produce graphics and visuals, it's often used as a tool to create content maps, screen flows, and wire frames. Visuals are often referred to as "graffles".

Although OmniGraffle is an industry tool, it lacks interactivity capabilities and is not easily used for team collaboration due to its limitations as a desktop and tablet application.

► **BalsamiqMockups** is a graphical user interface mockup and website wireframe builder application. It allows the designer to arrange prebuilt widgets using a drag-and-drop WYSIWYG editor. The application is offered in a desktop version as well as a plug-in for Google Drive, Confluence and JIRA.

balsamiq®



► **TimelineJS** uses a google spreadsheet with links to YouTube, Flickr, Twitter, Sound Cloud, and other media sources to create really nice-looking timelines. You could use this tool to create an interactive visualization of the starting of your company, your client's company, tell the story of an industry, etc.

TimelineJS is an open-source tool that enables anyone to build visually rich, interactive timelines. Beginners can create a timeline using nothing more than a Google spreadsheet, like the one we used for the Timeline above. Experts can use their JSON skills to create custom installations, while keeping TimelineJS's core functionality.

► **Prezi** is web-based presentation software, created in Hungary. This freedom of movement enables "conversational presenting," a presentation style in which presentations follow the flow of dialogue, instead of



vice-versa. The company that develops Prezi, also called Prezi, was founded in Budapest, Hungary in 2009, and has additional offices in San Francisco and Mexico City. As of March 2017, Prezi had reportedly over 75 million users, who had created more than 260 million prezis.

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ТОБЫЛОВ К.Т., ДАНИЛОВА В.В., ДАГАЛОВ И. АҚПАРАТТЫ ҰСЫНУДЫҢ БЕЙНЕ- ЖӘНЕ АНИМАЦИЯЛЫҚ ҚҰРАЛДАРЫ

Білім беру саласындағы компьютерлік мультимедиялық технологияларды дамыту барысында мультимедиялық технологиялардың тұжырымдамасын, ерекшеліктерін, потенциалын, сондай-ақ ақпараттың мультимедиялық бейнеленген мазмұнын ұсынуға мүмкіндік береді.

Мақалада оқытудың сапалы жаңа деңгейде көрнекілік принципін жүзеге асыру аспектілері көрсетілген. Мультимедийных on-line ресурстарына шолу жасалған.

Мақаланың мәнін ашатын сөздер: мультимедиялық жүйелер, платформа, телекоммуникация, ақпарат ұсыну, бүкіләлемдік желі, орта, хабарлама, бейне.

ТОБЫЛОВ, К.Т., ДАНИЛОВА В.В., ДАГАЛОВ, И. ВИДЕО- И АНИМАЦИОННЫЕ СРЕДСТВА ПРЕДСТАВЛЕНИЯ ИНФОРМАЦИИ

С развитием компьютерных мультимедийных технологий в сфере образования раскрываются понятие, особенности, потенциал мультимедийных технологий, а также мультимедийная визуализация информации, позволяющая представить контент. В статье выявлены аспекты реализации принципа наглядности в обучении на качественно новом уровне. Дан обзор мультимедийных on-line ресурсов.

Ключевые слова: мультимедийные системы, платформа, телекоммуникации, представление информации, всемирная паутина, среда, сообщение, изображение.