

Lecture № 11

Multimedia technologies



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Lecture purpose:

to study means and methods of information representation in a digital format, as well as technologies to create Business-processes.

Lecture content:

representation of textual, audio, video and graphic information in a digital format. Basic technologies for information compression. Animation and 3-D representations of the virtual world. Tools for developing multimedia applications. Use of multimedia technologies for planning, descriptions of business processes and their visualization.

Lecture 11 Multimedia technology

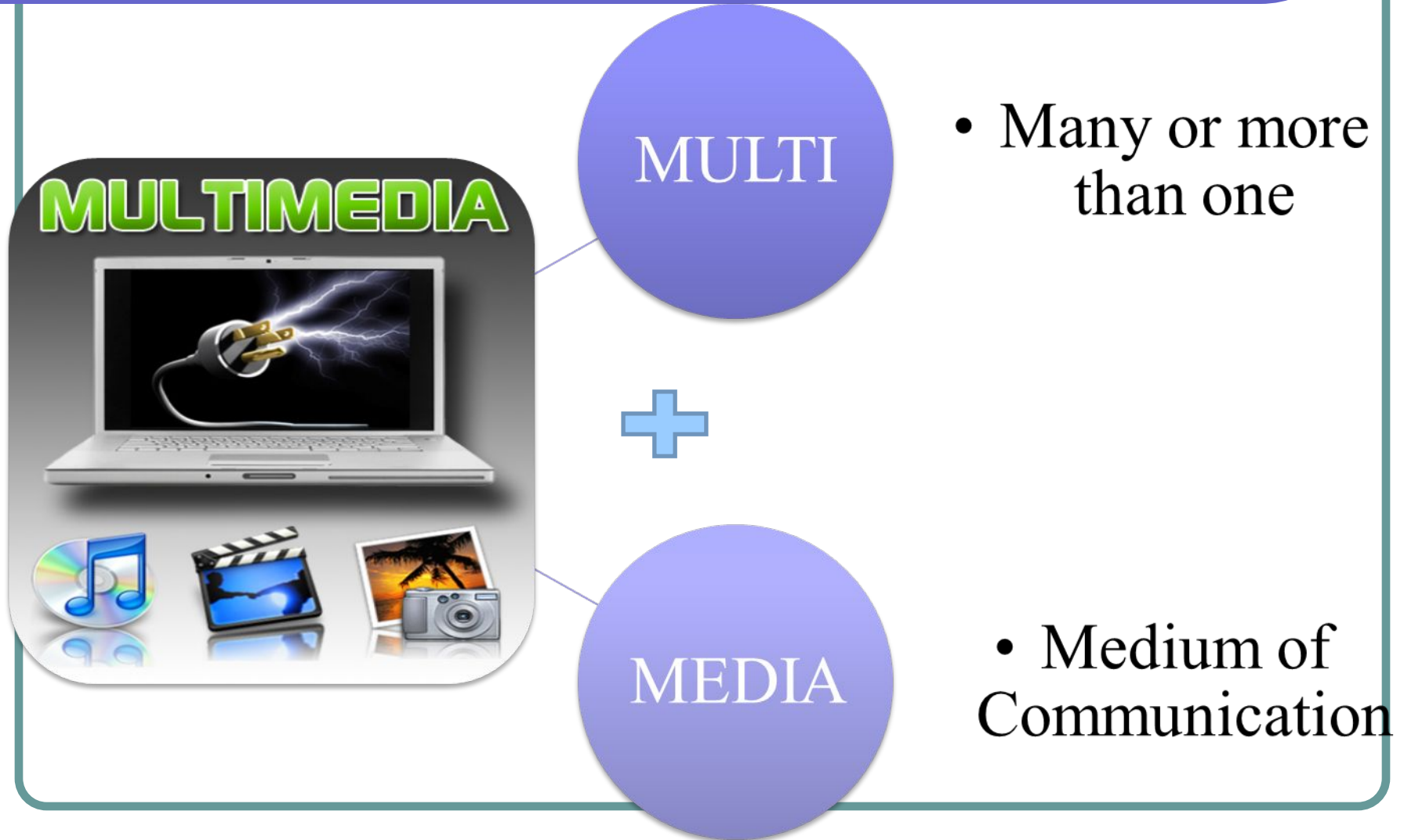


What is Multimedia?

Derived from the word “Multi” and “Media”

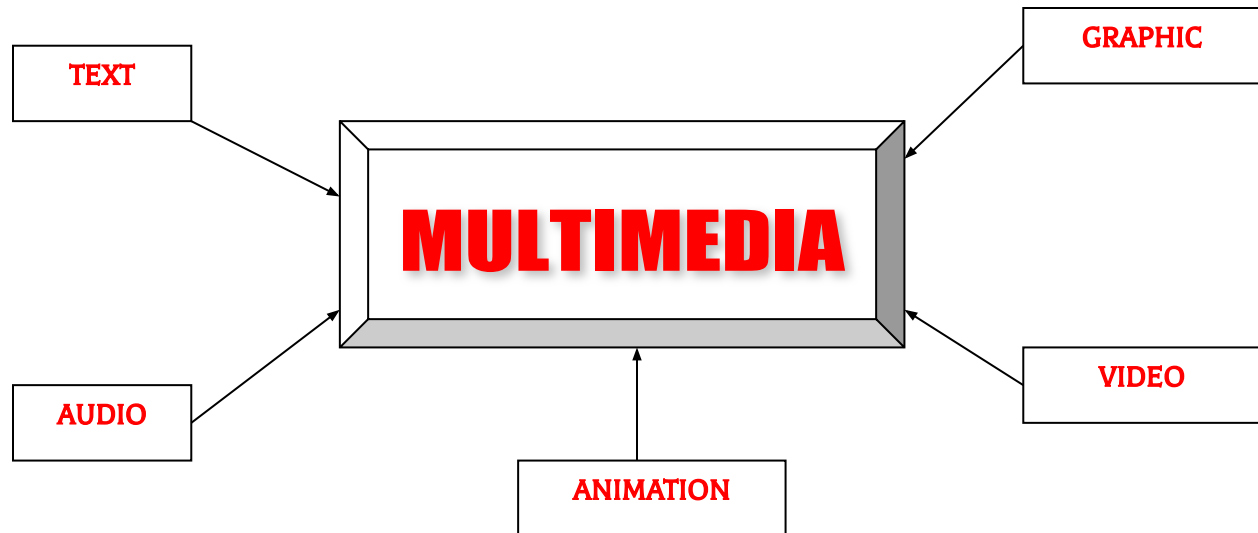
- Multi
 - Many, Multiple,
- Media
 - Tools that is used to represent or do a certain things, delivery medium, a form of mass communication – newspaper, magazine / tv.
 - Distribution tool & information presentation – text, graphic, voice, images, music and etc.

WHAT IS MULTIMEDIA ?



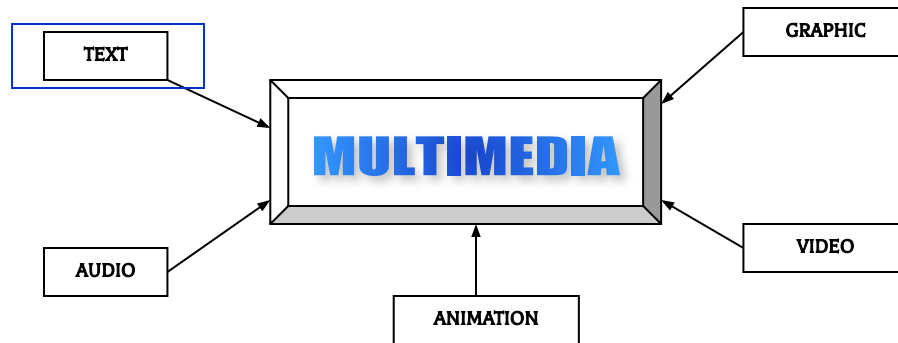
Definition of Multimedia

- **Multimedia** is a combination of **text**, **graphic**, **sound**, **animation**, and **video** that is delivered interactively to the user by electronic or digitally manipulated means.



Elements of Multimedia

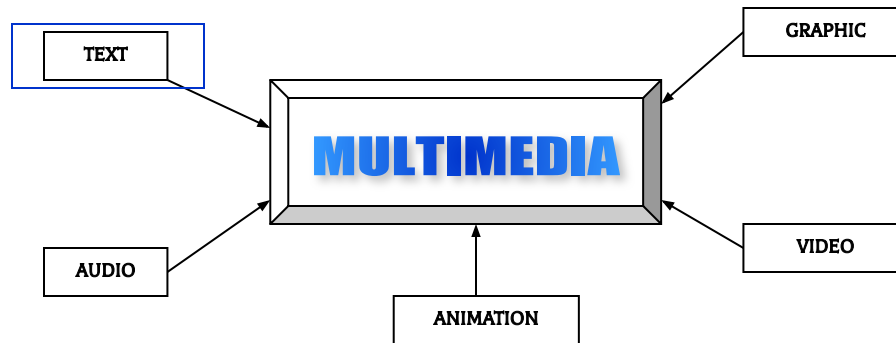
TEXT



- A broad term for something that contains words to express something.
- Text is the most basic element of multimedia.
- A good choice of words could help convey the intended message to the users (keywords).
- Used in contents, menus, navigational buttons

Elements of Multimedia

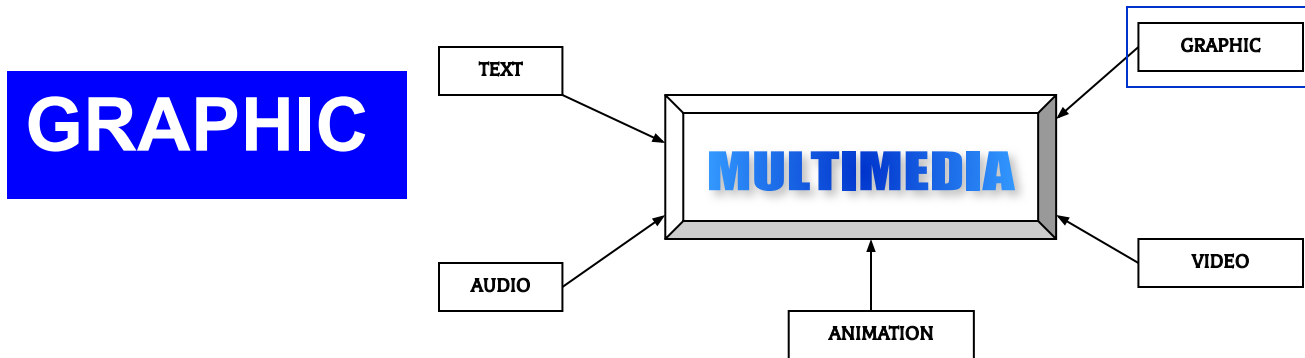
TEXT



- Example

ROAD SAFETY	Basic	Intermediate	Advanced
First, before crossing the road, make sure you look to your left, to your right and then left again..			
Then, walk carefully to cross the road.			

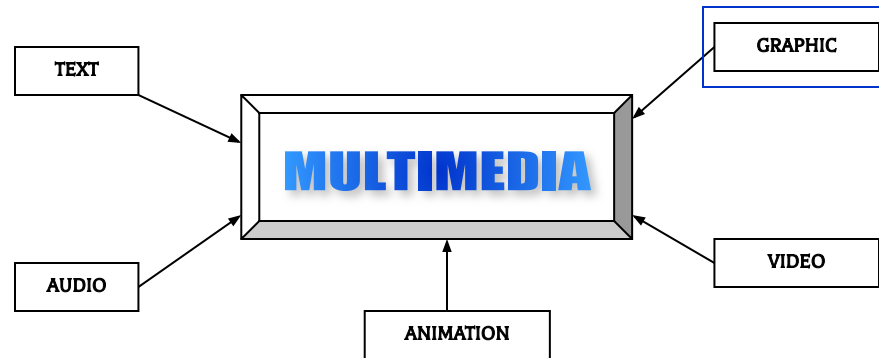
Elements of Multimedia



- Two-dimensional figure or illustration
- Could be produced manually (by drawing, painting, carving, etc.) or by computer graphics technology.
- Used in multimedia to show more clearly what a particular information is all about (diagrams, picture).

Elements of Multimedia

GRAPHIC



- Example

ROAD SAFETY Basic Intermediate Advanced

First, before crossing the road, make sure you look to your left, to your right and then left again.

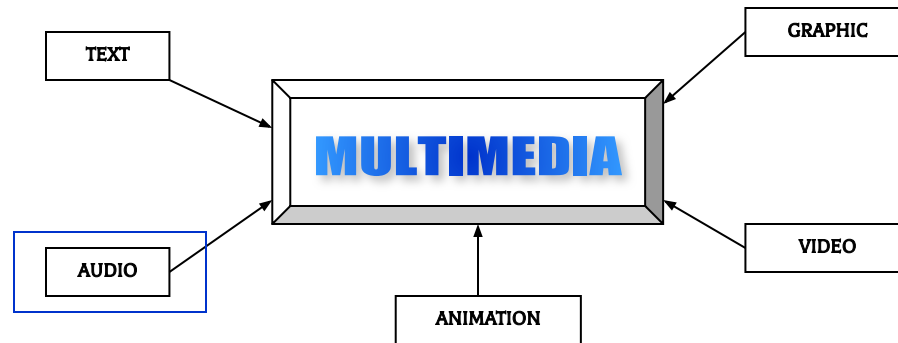


Then, walk carefully to cross the road.



Elements of Multimedia

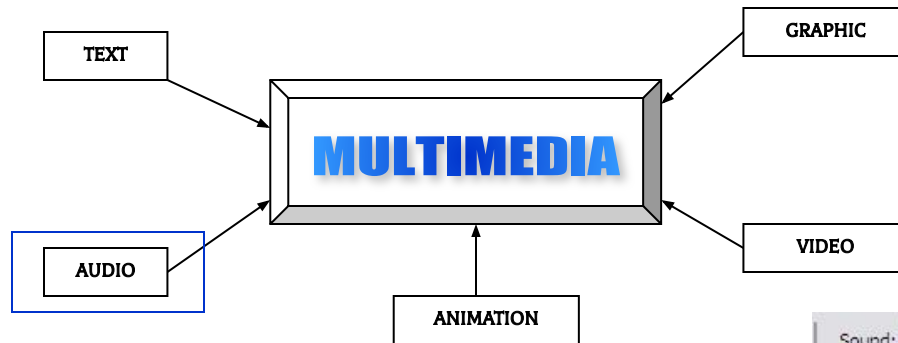
AUDIO



- Produced by vibration, as perceived by the sense of hearing.
- In multimedia, audio could come in the form of speech, sound effects and also music score.

Elements of Multimedia

AUDIO



- Example

ROAD SAFETY Basic Intermediate Advanced

First, before crossing the road, make sure you look to your left, to your right and then left again.

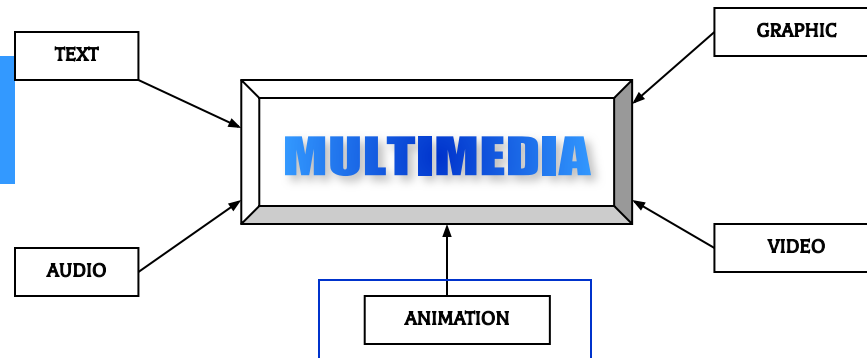


Sound: NG11905
Effect: Custom Edit...
Sync: Start Repeat 1
44 kHz Stereo 16 Bit 67.2 s 806.9 kB

The screenshot shows a multimedia software interface. At the top, there is a timeline with a ruler from 1 to 55. Below the timeline, there is a list of assets: 'sound', 'pic3b', 'pic3a', 'pic2b', and 'pic1b'. The 'sound' asset is selected, and its waveform is visible in the timeline. The interface also shows various icons and controls for editing and playback.

Elements of Multimedia

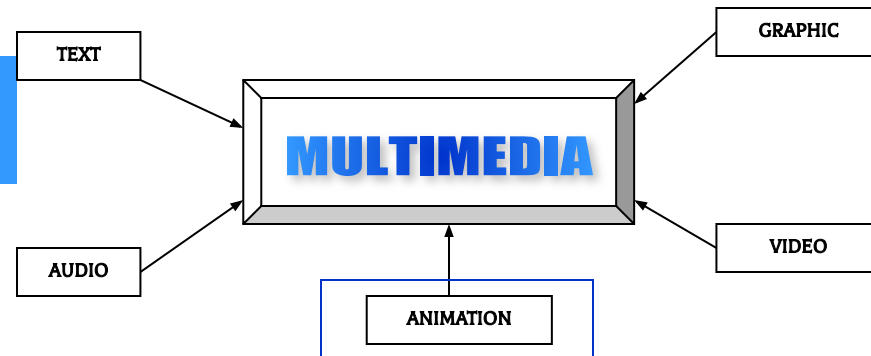
ANIMATION



- The illusion of motion created by the consecutive display of images of static elements.
- In multimedia, animation is used to further enhance / enriched the experience of the user to further understand the information conveyed to them.

Elements of Multimedia

ANIMATION



- Example

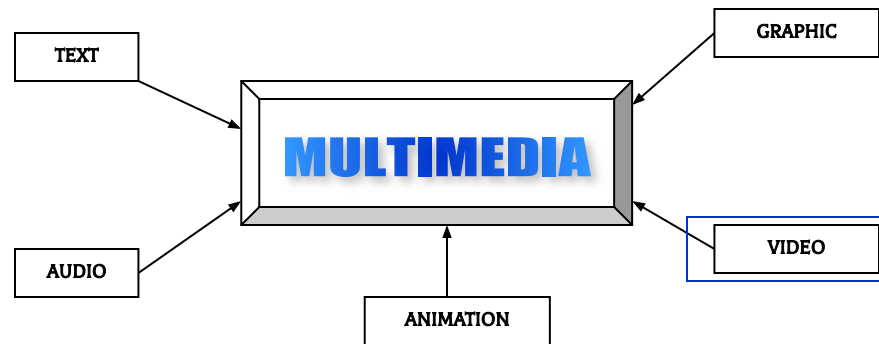
ROAD SAFETY Basic Intermediate Advanced

First, before crossing the road, make sure you look to your left, to your right and then left again.

The illustration shows a yellow character with a neutral expression looking towards a road. The road is flanked by three stylized green trees with brown trunks. The background is a light blue gradient.

Elements of Multimedia

VIDEO



- Is the technology of capturing, recording, processing, transmitting, and reconstructing moving pictures.
- Video is more towards photo realistic image sequence / live recording as in comparison to animation.
- Video also takes a lot of storage space. So plan carefully before you are going to use it.

Interactive Multimedia

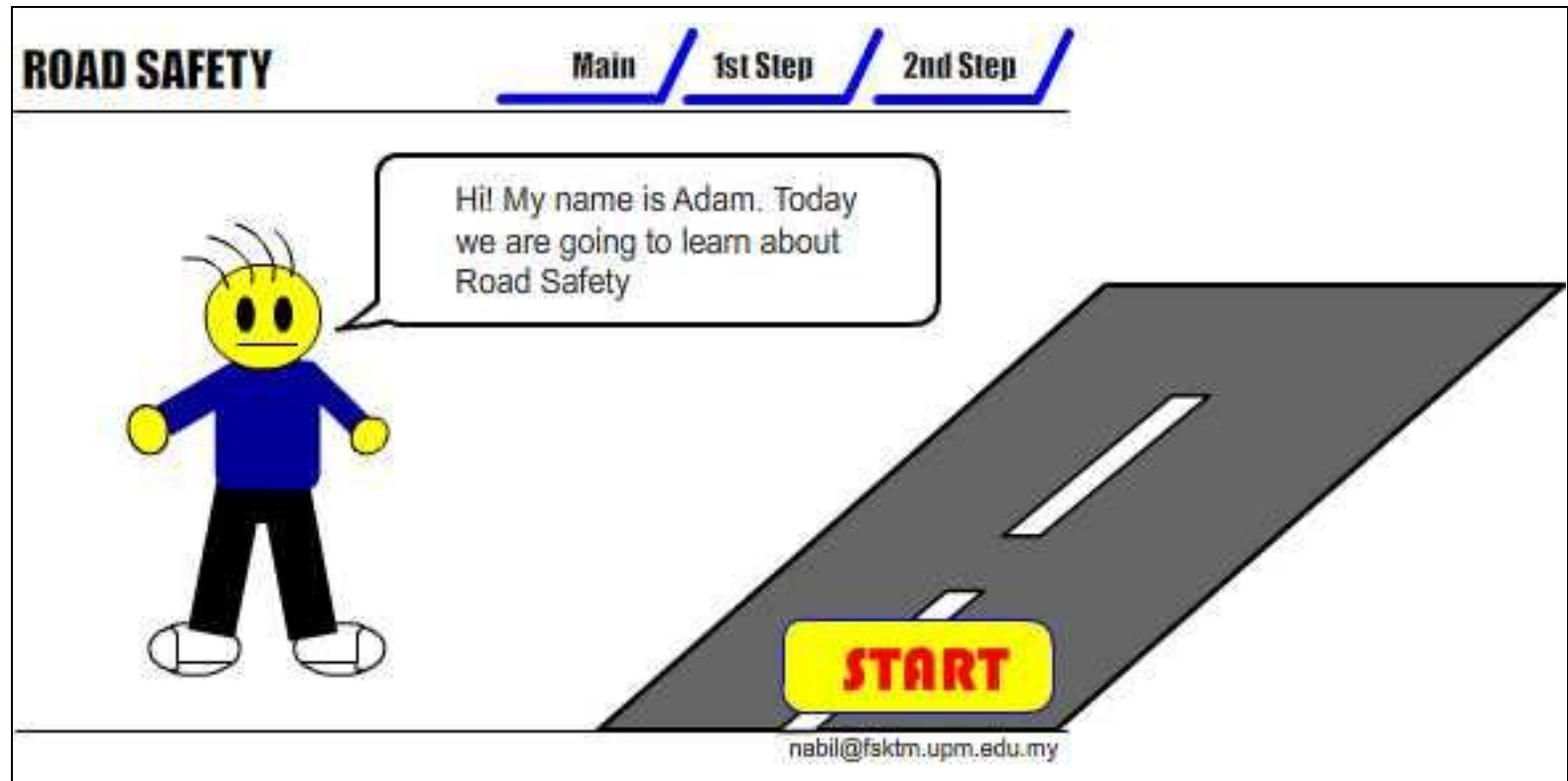
- When the user is given the option of controlling the elements.

Hyper Media

- A combination of hypertext, graphics, audio, video, (linked elements) and interactivity culminating in a complete, non-linear computer-based experience.

Example

- Interactive Multimedia



Example

Hyper Media

Video link

Image link

Audio Link



Linear VS Non-Linear

LINEAR

- A Multimedia Project is identified as Linear when:
 - It is not interactive
 - User have no control over the content that is being showed to them.
- Example: **A movie; A non-interactive lecture / demo show**

NON-LINEAR

- A Multimedia Project is identified as Non-Linear when:
 - It is interactive
 - Users have control over the content that is being showed to them.
 - Users are given navigational control
- Example: **Games; Courseware; Interactive CD**

Authoring Tools

- Use to merge multimedia elements (text, audio, graphic, animation, video) into a project.
- Designed to manage individual multimedia elements and provide user interaction (if required).



Authoring Tools

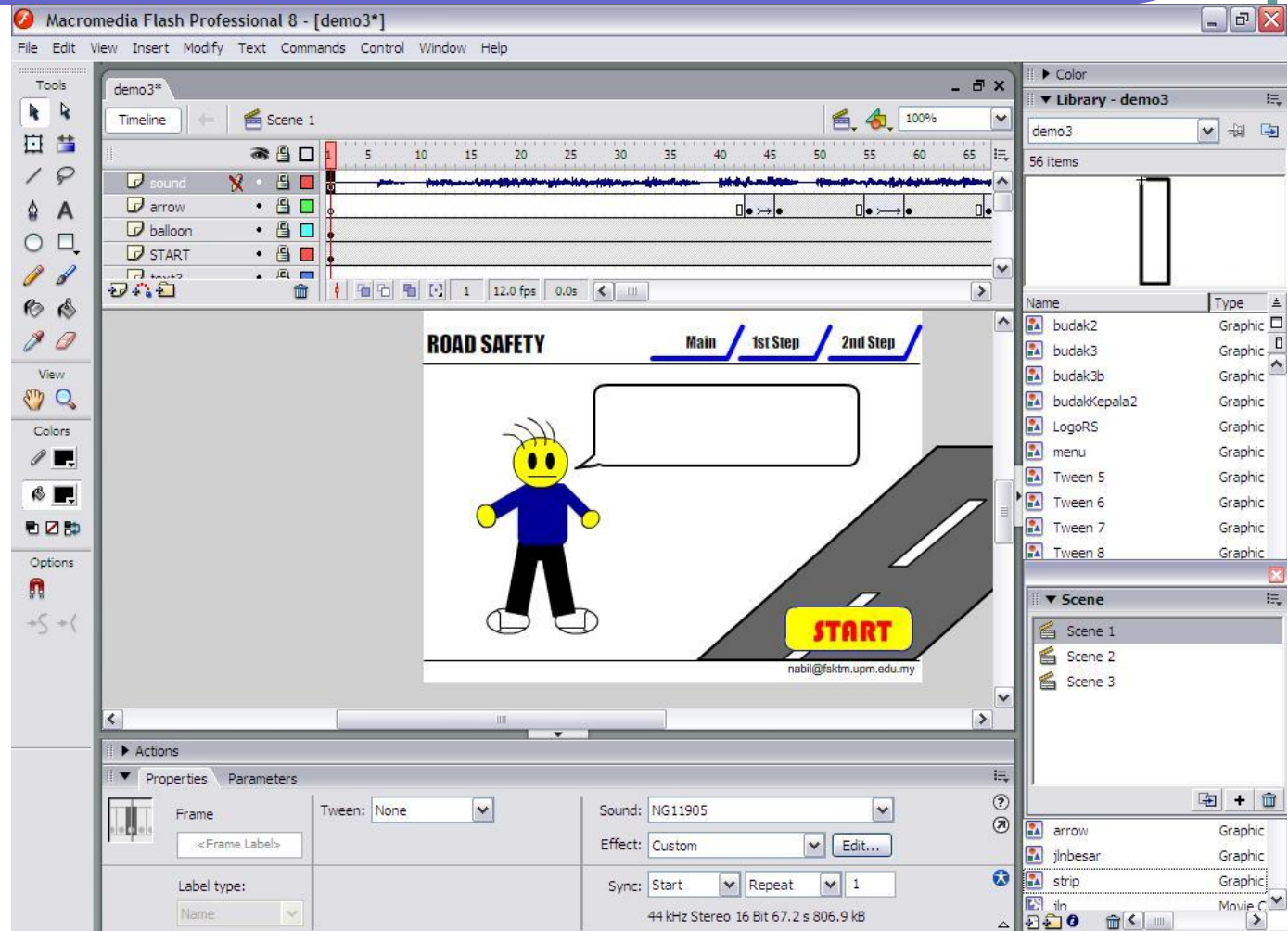
Example:

**Macromedia
Authorware**

**Macromedia
Director**

**Macromedia
Flash**

**Microsoft
Power Point**



Importance of Multimedia

- There are a number of fields where multimedia could be of use. Examples are:-

- Business
- Education
- Entertainment
- Home
- Public Places



Importance of Multimedia

- **Business**

- Use and Applications
 - Sales / Marketing Presentation
 - Trade show production
 - Staff Training Application
 - Company Kiosk



- **Education**

- Use and Applications
 - Courseware / Simulations
 - E-Learning / Distance Learning
 - Information Searching



Importance of Multimedia

- **Entertainment**

- Use and Applications
 - Games (Leisure / Educational)
 - Movies
 - Video on Demand
 - Online



- **Home**

- Use and Applications
 - Television
 - Satellite TV
 - SMS services (chats, voting, reality TV)



Тридцать первый канал



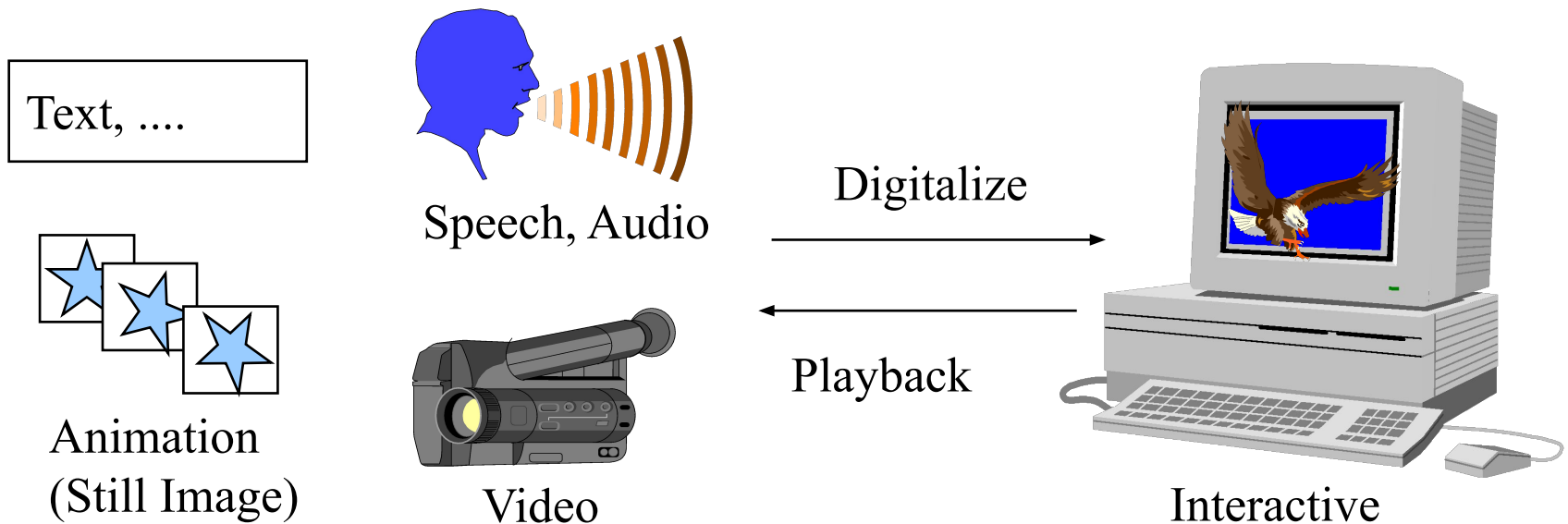
- **Public Places**

- Use and Applications
 - Information Kiosk
 - Smart Cards, Security



Introduction to Multimedia System

A multimedia system supports the integrated storage, transmission and representation of the discrete media types text, graphics and image and the continuous media types audio and video on a digital computer.



History of Multimedia Systems

Newspaper were perhaps the first mass communication medium to employ Multimedia, they used mostly text, graphics, and images.

In 1895, Guglielmo Marconi sent his first wireless radio transmission at Pontecchio, Italy. A few years later (in 1901) he detected radio waves beamed across the Atlantic. Initially invented for telegraph, radio is now a major medium for audio broadcasting.

Television was the new media for the 20th century. It brings the video and has since changed the world of mass communications.

- ❑ **The term “MULTIMEDIA” was first used by BOB GOLDSTEIN in July 1996 to promote opening of his light works.**
- ❑ **In 1970s the term was used to describe presentations consisting of multi-projector slide shows timed to an audio track.**
- ❑ **In 1990s ‘multimedia ‘ took on its current meaning.**
- ❑ **TAY VAUGHAN declared “Multimedia as combination of text, graphic art, sound, animation, and video that is delivered by computer.**
- ❑ **In common usage, the term multimedia refers to an electronically delivered combination of media including video, still images, audio, text in such a way that can be accessed interactively.**
- ❑ **Computers marketed in 1990s were referred to as “MULTIMEDIA COMPUTERS” because they contained a CD-ROM drive.**

MULTIMEDIA

- **Multimedia** is media and content that uses a combination of different content forms.

- The term is used in contrast to media which only use traditional forms of printed or hand-produced material.

- Multimedia includes a combination of
 - Text
 - Audio
 - Still images
 - Animation video
 - Interactivity content forms.

Types of multimedia

LINEAR MULTIMEDIA

Linear active content progresses without any navigational control for the viewer.

Cinema presentation is an example of linear multimedia.

NON-LINEAR MULTIMEDIA

Non-linear content offers user interactivity to control progress as used with a computer game .

Hypermedia is an example of non-linear multimedia.

Characteristics of a Multimedia System

A Multimedia system has four basic characteristics:

- Multimedia systems must be ***computer controlled***.
- Multimedia systems are ***integrated***.
- The information they handle must be represented ***digitally***.
- The interface to the final presentation of media is usually ***interactive***

CURRENT DEFINITION OF MULTIMEDIA IN ICT

In the field of Information and Communication Technology, multimedia means more than the use of the various media. A computer user interacts with the computer to perform tasks such as finding information or play games to develop a skill. Thus, the meaning of multimedia has changed as technology advanced in our lives.



HARDWARE AND EDITING SOFTWARE FOR MULTIMEDIA PRODUCTION

In producing a multimedia program, we need to: collect data for the 5 basic elements of multimedia: text, animation, graphics, video and audio by using hardware.



Multimedia products

Features of Multimedia products

Combination in one product text, graphic, audio, video, animation

The presence of interactive mode of operation

The ability to quickly find information

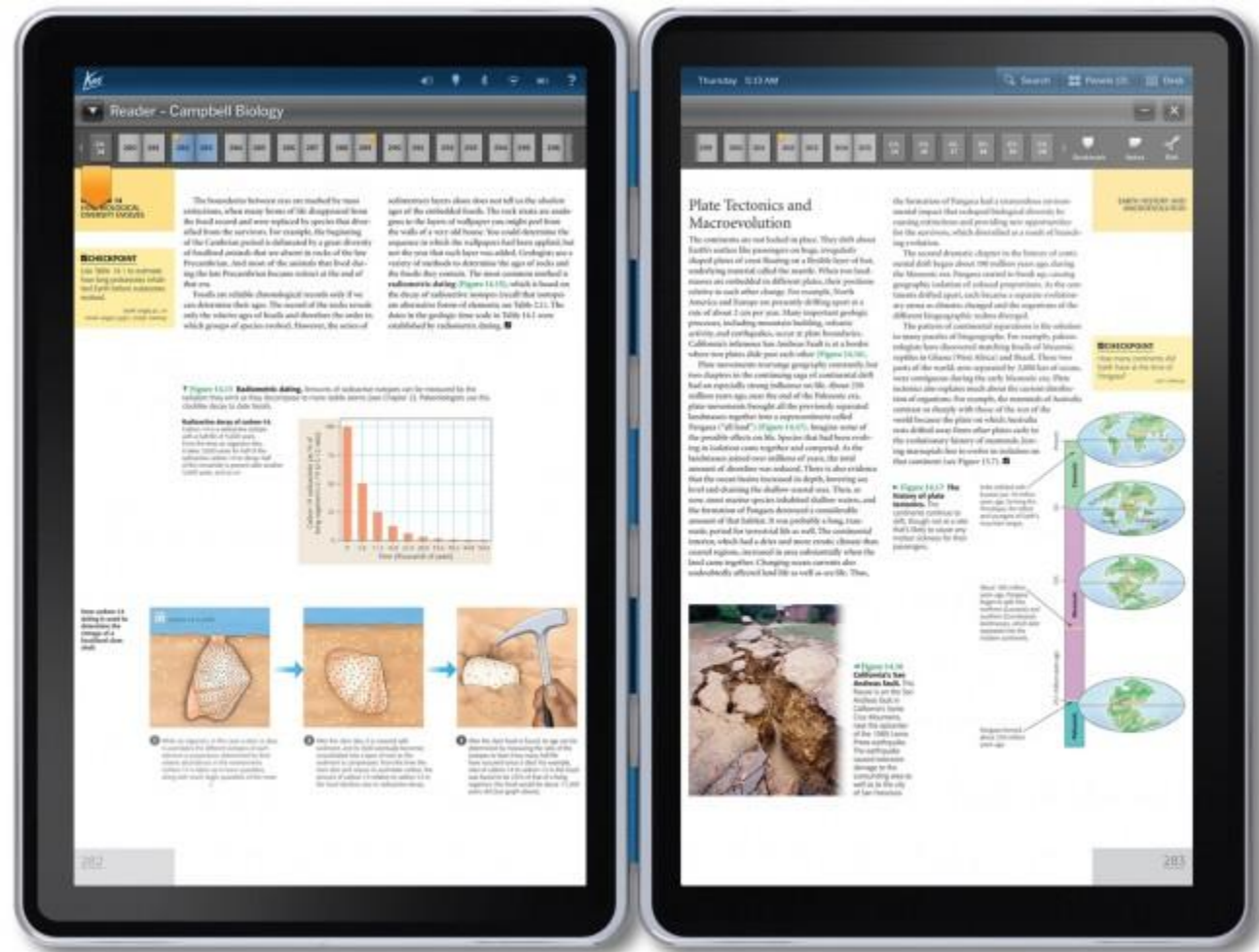
Extensive navigation options

Ability to work in real time, at a slowed or accelerated pace

Friendly User Interface

Areas of use for multimedia

Educa
tion



Electronic textbook

Areas of use for multimedia

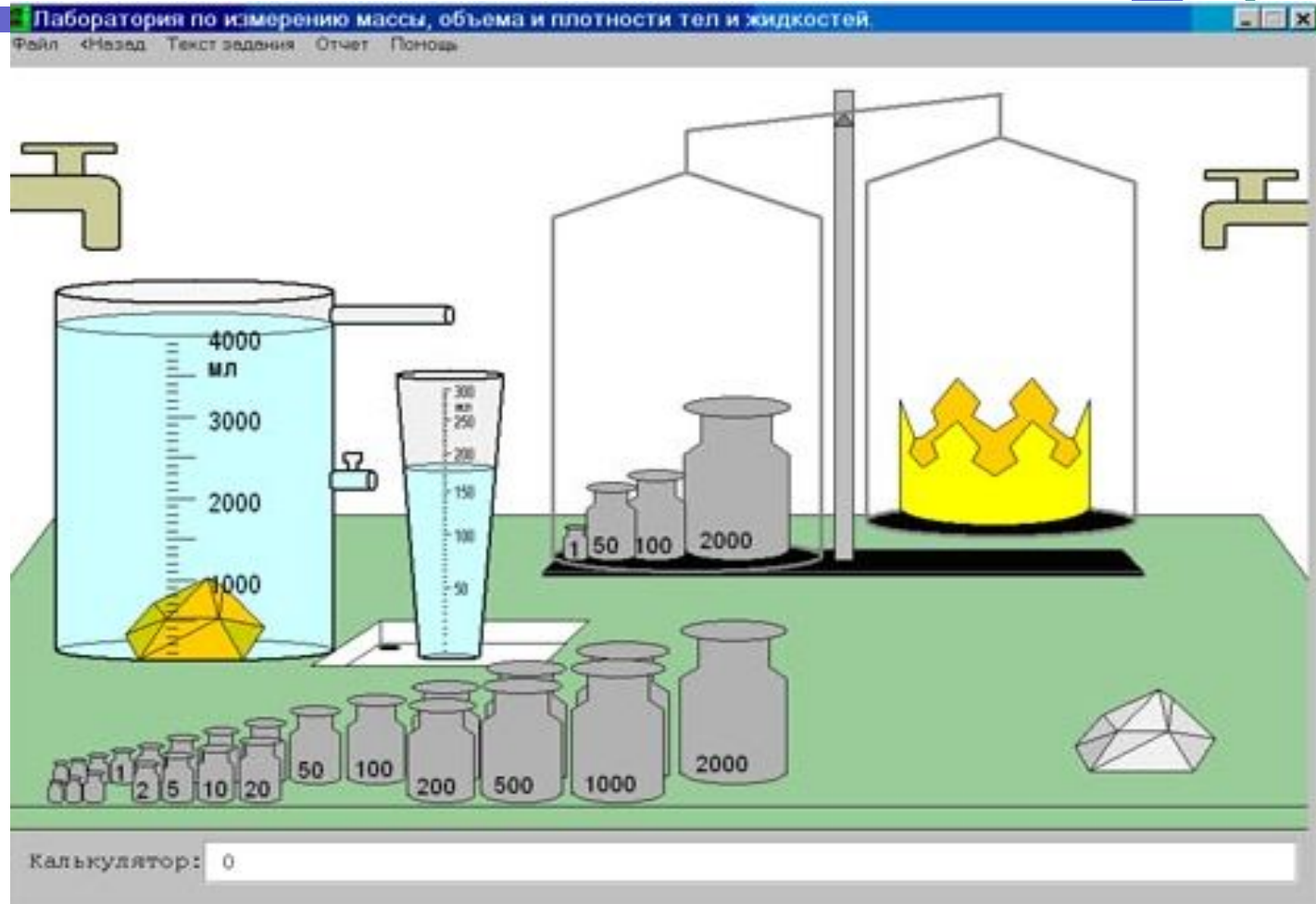
Education



Multimedia directory

Areas of use for multimedia

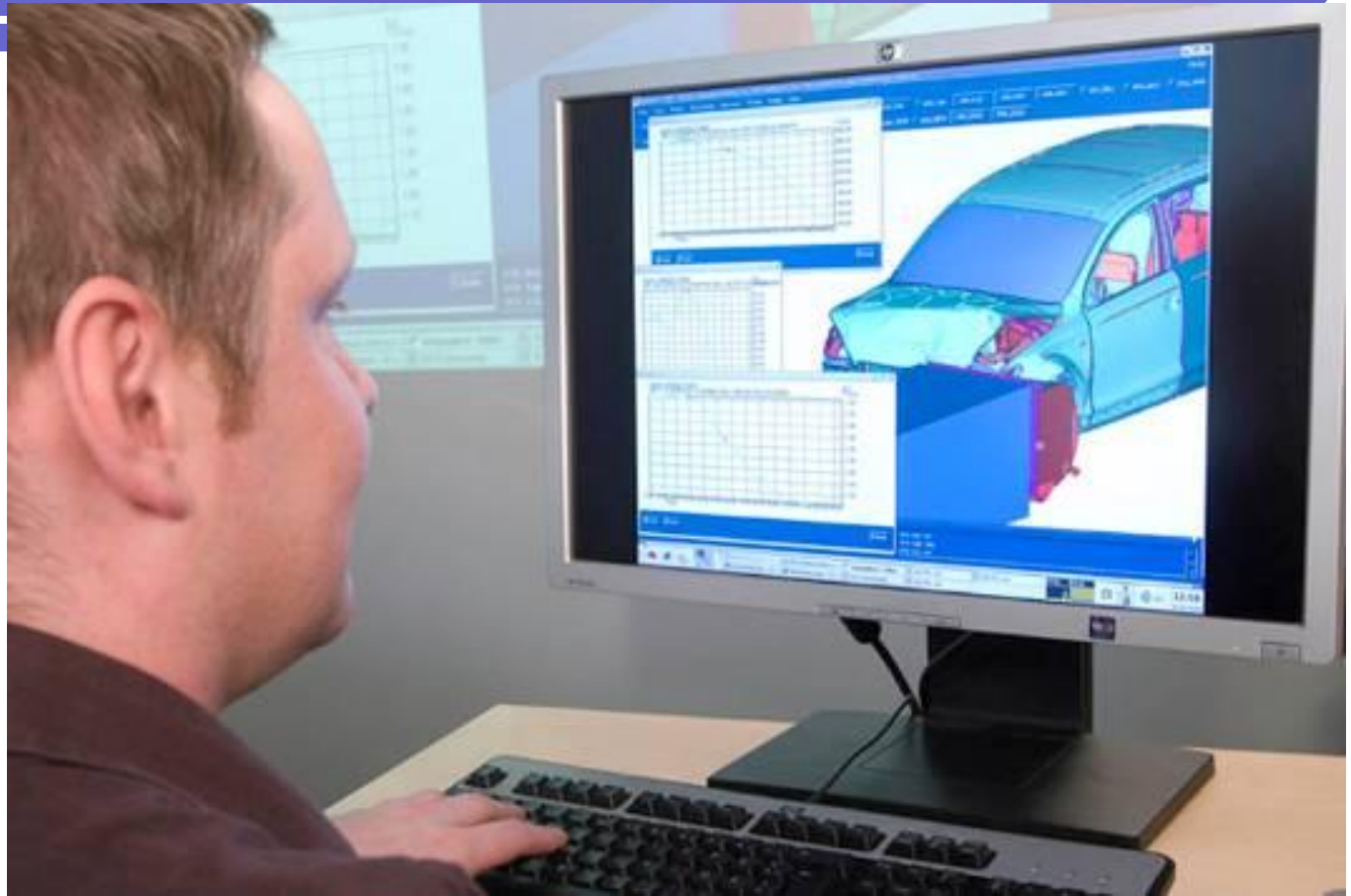
Education



Virtual laboratory

Areas of use for multimedia

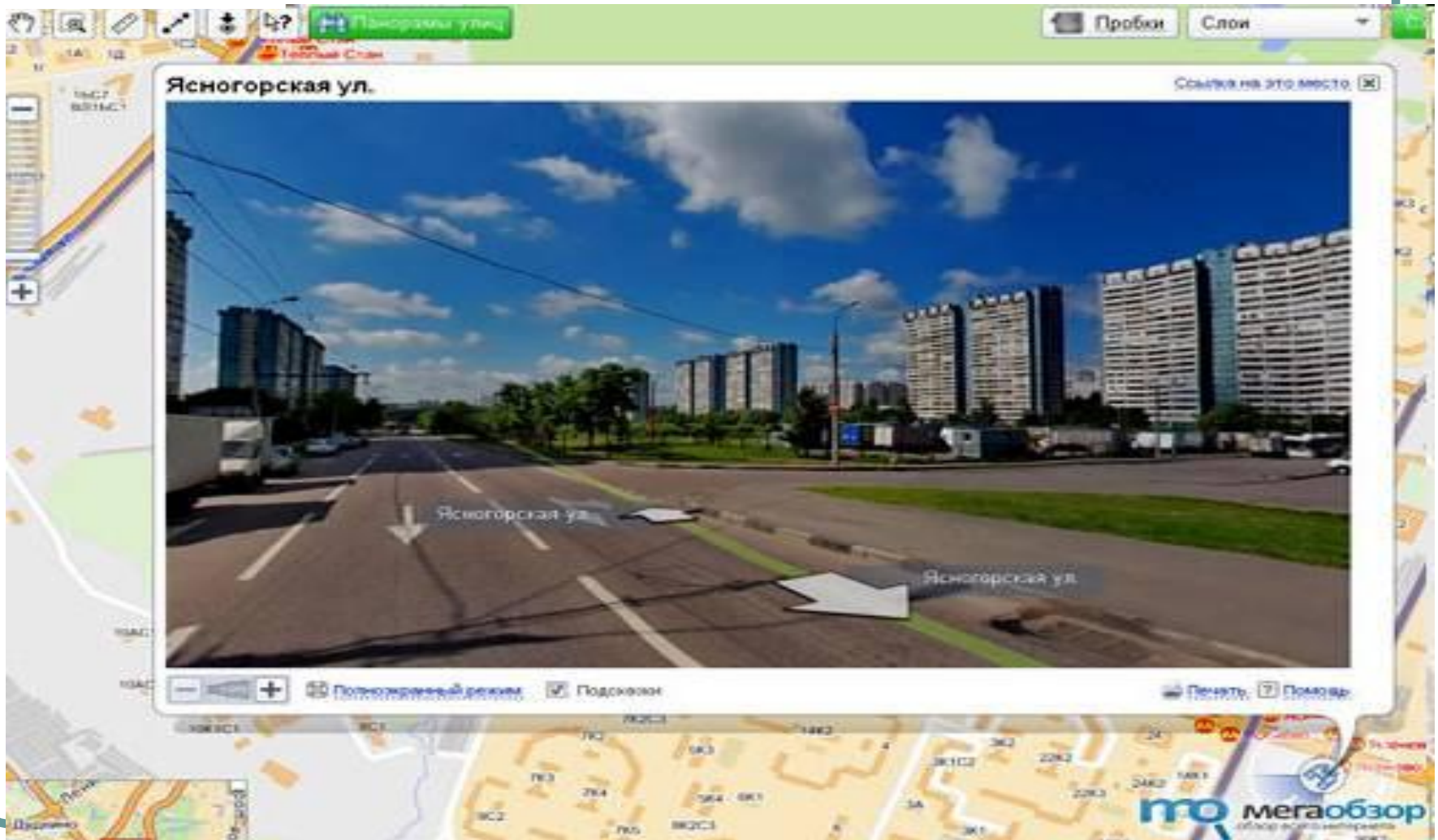
Science
and
Techno
logy



Computer Simulation System

Areas of use for multimedia

Tourism



Computer guide

Areas of use for multimedia

Computer games



Questions:

1. What is a concept of 3-D visualization?
2. What are the compression standards of speech?
3. What are the compression standards of video?
4. What are the compression standards of audio?
5. What is the field of application of Multimedia?
6. What are the types of three-dimensional simulation?
7. What is codec?
8. What are the program standards of interactive television?
9. What method of numeric coding on computer is standard?
10. How many phases does MPEG standard have?
11. What is animation?



THANK YOU
FOR YOUR ATTENTION!

