THE HONG KONG UNIVERSITY OF SCIENCE AND TECHNOLOGY

Department of
Electronic & Computer
Engineering
電 子 及 計 算 機 工 程 學 系

ELEC 1020

Media Production: Technology and Design

Lecture 7

Prof. James She (*james.she@ust.hk*)

Announcement - 1

- This week: no lab
- Next week: no lecture, but lab sessions

Announcement – 2: Mid-term Project

1. Due: Mar. 29, 2016 (23:59)

2. **1020 Online Interactive Gallery** (audio + image + animation + interactions) on use smart mobiles

3. Apply design principles, theories and what learnt until lecture 6 and lab 5

Announcement – 2: Mid-term Project

Messages:

- allow audiences to understand ELEC1020;
- allow audiences to explore and learn from the student works (yours and others');
- utilize media design and technologies to create cool online experiences;

Target audience: UST students who are interested in ELEC1020

Medium of the Media: Mobiles

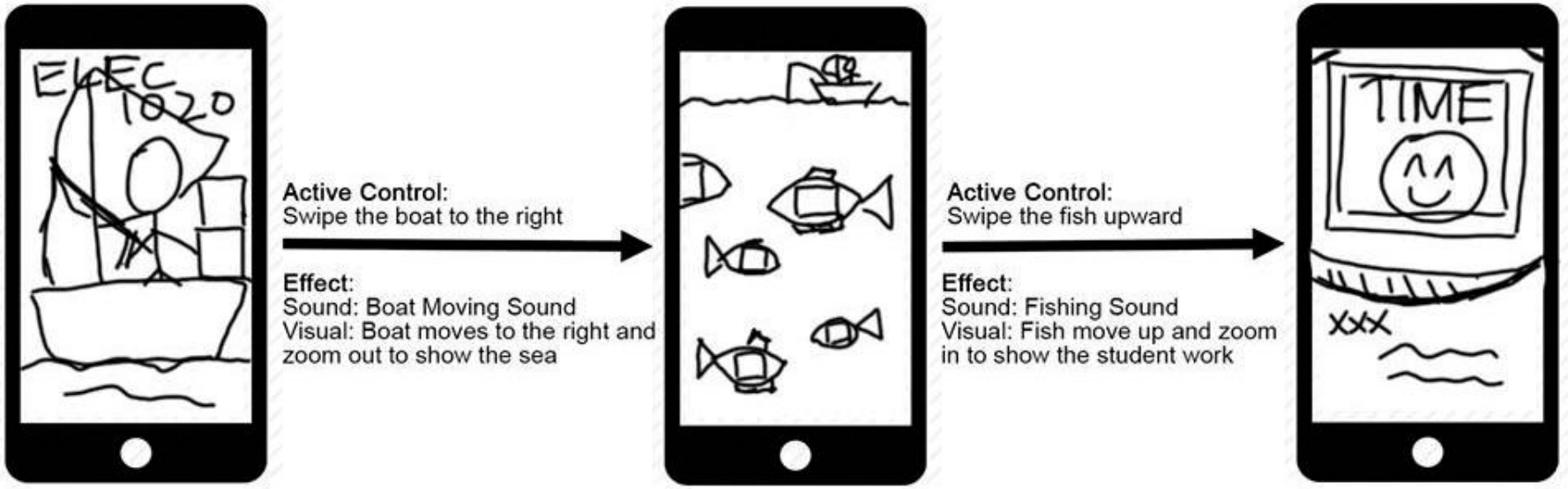
TA consulting hours in these 2 days: PC, Kang, Ming, Prasanta
(to be released on course website)

Announcement – 2: Mid-term Project

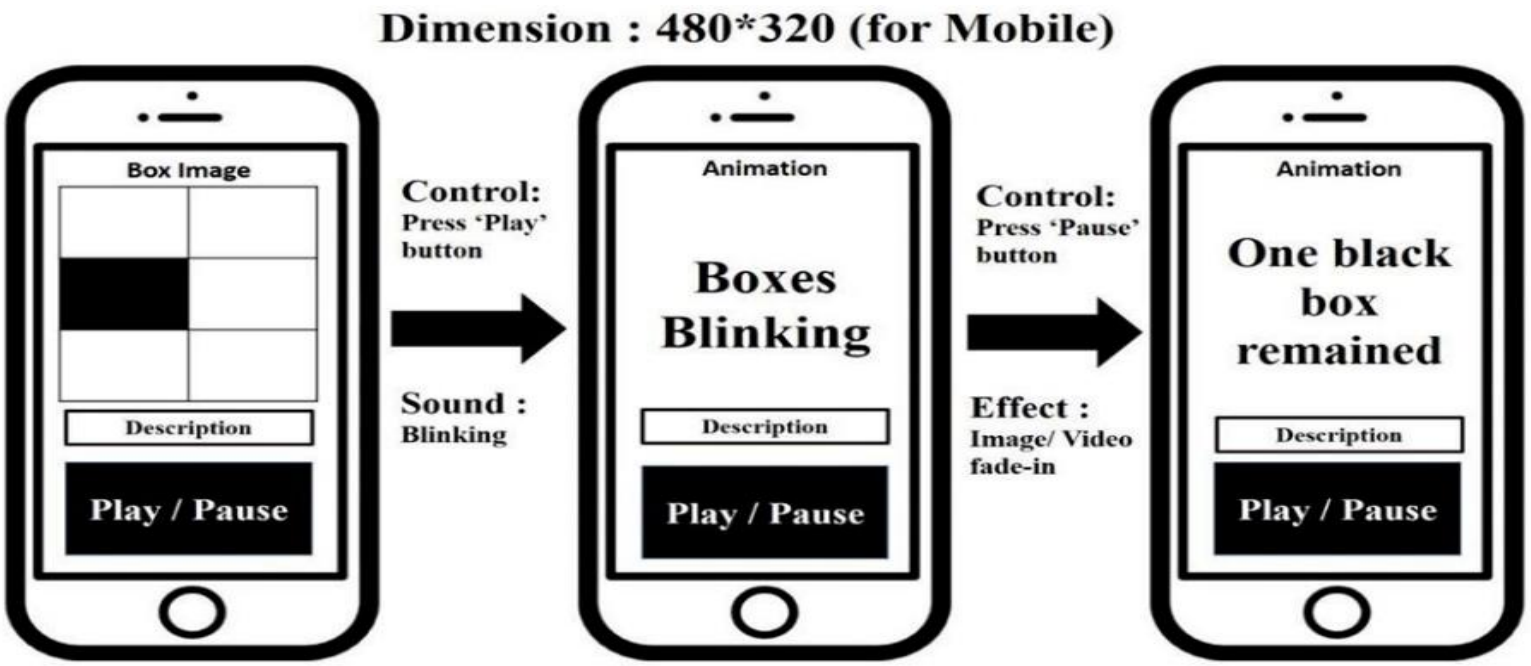
- Visual Design (30%)
  - the visual design should draw the student to explore more
  - background, visual objects, visual effects, text, etc.
- Interactivity and Animation (30%)
  - the site should allow students to do something other than reading text
  - transition, the movement of the objects, interactivity, etc.
- Audio/ Sound effects (15%)
  - the audio/ sound effects should draw the student to explore more
  - background music, audio clip, sound effects for the media (if any), etc.
- Messages with Cool Ideas/Presentations (25%)
  - mapping design, technologies and purposes with design principles

Announcement – 2: Mid-term Project

2. Describe/Sketch at least 3 scenes perceived by the audience



Announcement – 2: Mid-term Project



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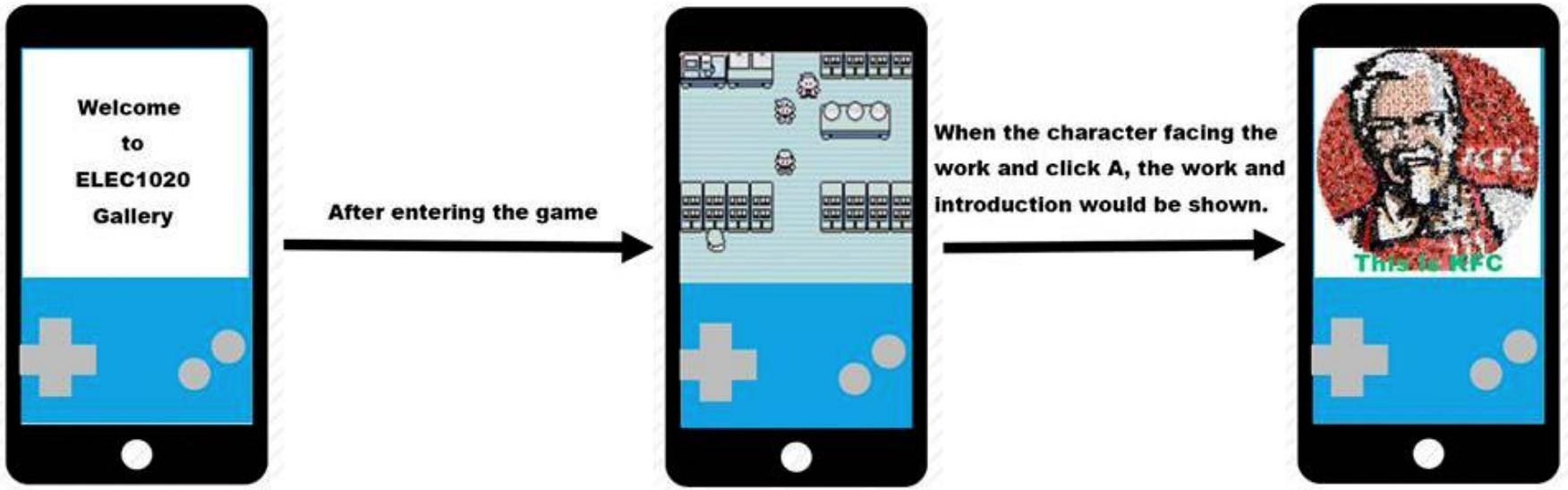
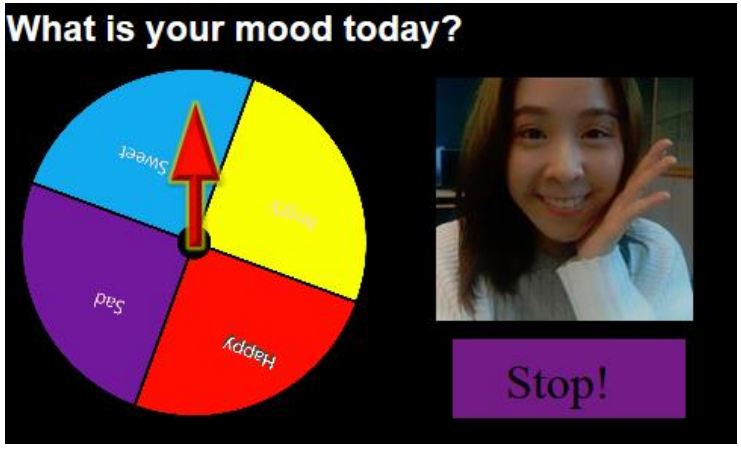
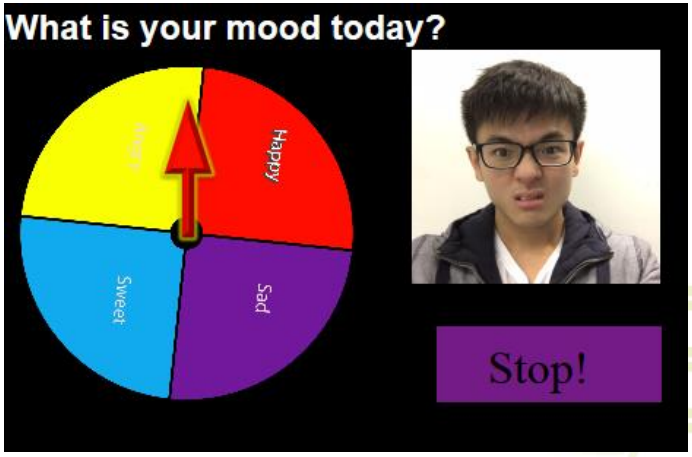


Selected Basic Tasks



http://ihome.ust.hk/~hlleead/Lab5BasicTaskLeeHiuLam/



http://ihome.ust.hk/~swtanab/Lab5_BasicTask_20086402/

- synchronized sound effects with the text and images.

Announcement - 3: Guest Speaker (This Lecture)

Victor Kam New Sight (目養計劃)

Technology & Media Contributor

- The story of New Sight
- Get the message of the story for your coming lab activity

Last lectures

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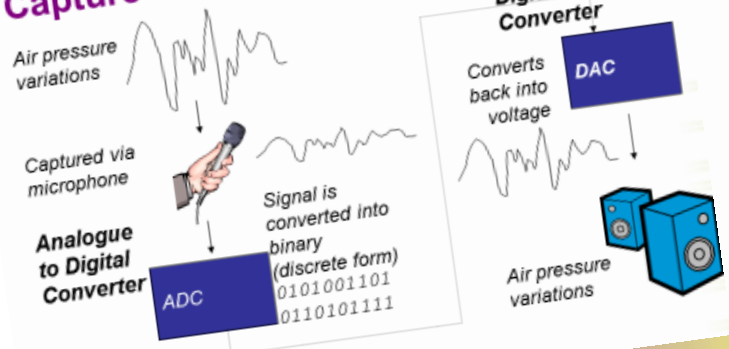
Capture and playback of digital audio



- Sampling rate (frequency)

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Audio Formats

- Similar to compressing image, use some compression techniques to reduce the file size

Audio Format	File Extension	Advantages	Disadvantages	Applications
Wave	.wav	• Best sound quality • Supported without a plug-in	•Uncompressed	•Background music •Musical E-greeting card
MP3	.mp3	• Good sound quality even though compressed • Can be streamed over the Web	•Requires standalone player or browser plug-in	•Short voice greetings •Music •Streaming
Advanced Audio npression	.aac	• Compressed while keeping good sound quality • Used on iTunes	• Copy protected • Limited to approved devices	•Music on iOS devices

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Animation vs. Interactive Media

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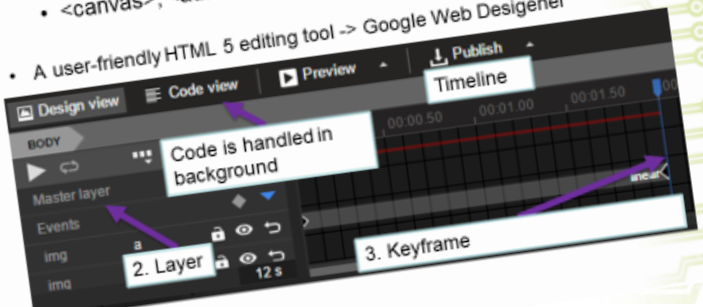
What's New in HTML5?

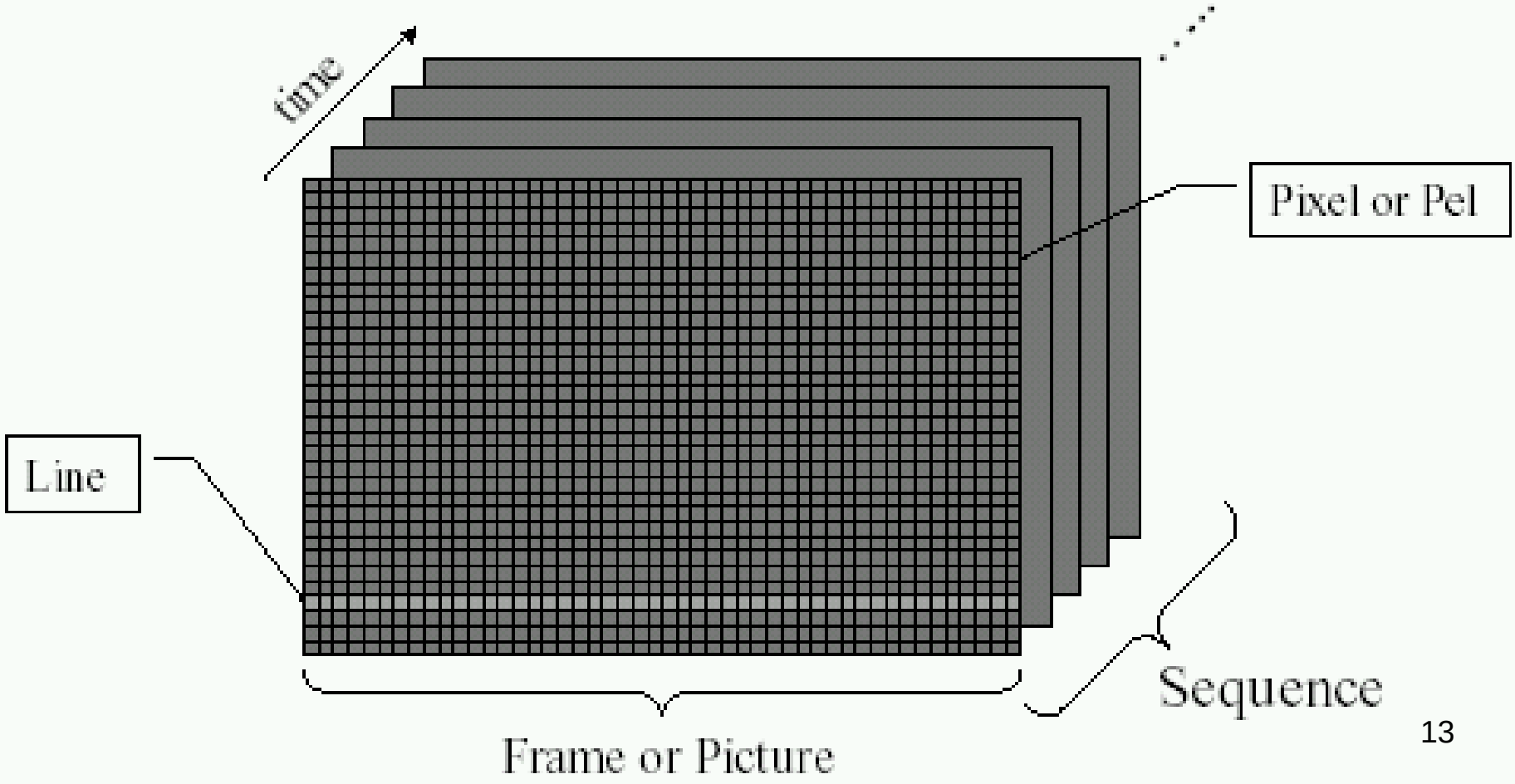
- 5th version of HTML
- lots of new features for interactive media without plug-ins
  - <canvas>, <audio>, <video> and other new media features
- A user-friendly HTML 5 editing tool -> Google Web Desigener



Outcomes from this lecture

1. Basic Video and storytelling
2. Transition Effects
3. Guest Speaker

What is Video in terms of technology?



Digital Video

Basic Concepts

- Movie length
- Frame size
- Frame rate
- Quality
- Color bit depth
- Data rate (bit rate)

Perception of Video

persistence of Vision

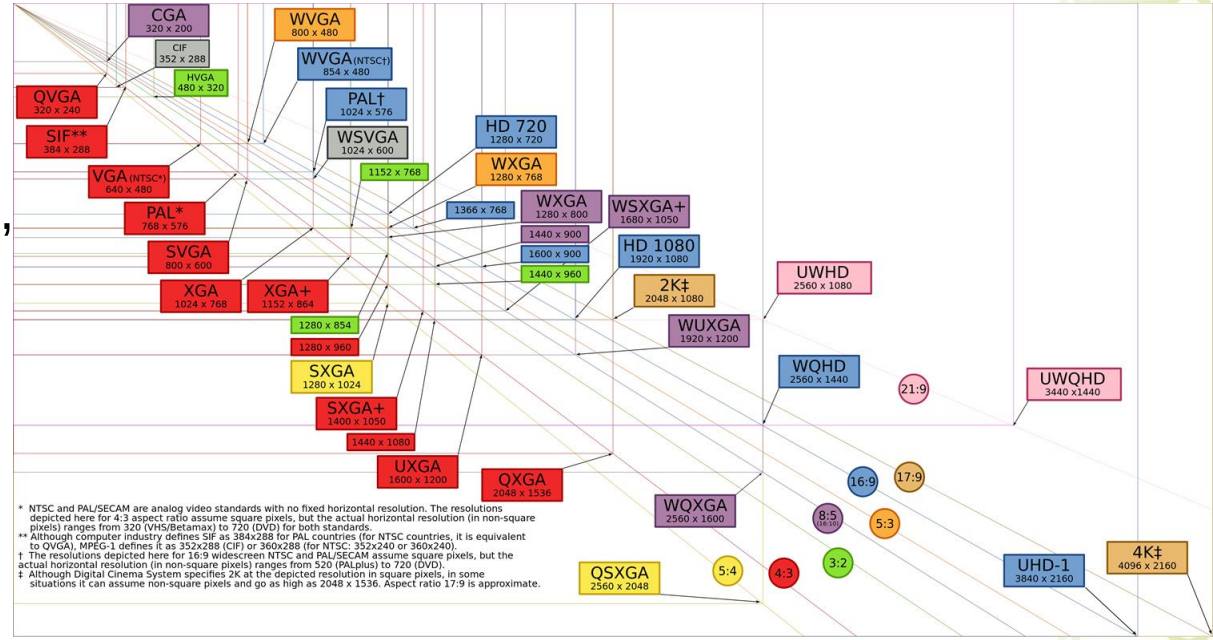
- Ability of viewer to retain the image impression after the image is withdrawn from view
- Normal human vision persists for ~0.1s
  - 10 images/s is enough to create motion
- Varies with color, size of the picture, brightness etc.
- Video standards: 25-30 frames/s

Basic concept - 1

Frame size

- Common “Full-screen” video is 640x480 pixels.

- Choice of a size depends:
  - applications/needs,
  - display unit,
  - CPU power,
  - the Internet bandwidth,
  - trends, etc.



Basic concept - 2

Movie length

- File size is proportional to the movie length.
- Video > 1 or 2 min. ➔ long download times.
- If it is a long video, consider a different video storing and transfer format (e.g., streaming video)

Frame rate

- Frame rate is measured in number of frames per second (fps).
- Standard or mobile TV-quality video uses 30 fps.
- Movie quality video ≥ 60 fps.

Basic concept - 3

Bit depth

- affects the size of the video.
- file size will be reduced by changing the number of colors from 24-bit to 8-bit.
- tradeoffs the image(frame) quality in the video.

Basic concept - 4

Space Requirements of Video

Existing standards in Display/TV and media industries:

- 640 x 480 and 30 fps
  - Frame size = ([Pixel width x pixel height x bit depth]/8)/1024
  - e.g., 200KB/Frame : 6.0 MB/s
  - 200KB x 30 fps = 6000KB/s or 6 MB/s

- 768 x 576 and 25 fps
  - e.g., 200KB/Frame : 5.0 MB/s
  - 200KB x 25 fps = 5000KB/s or 5 MB/s

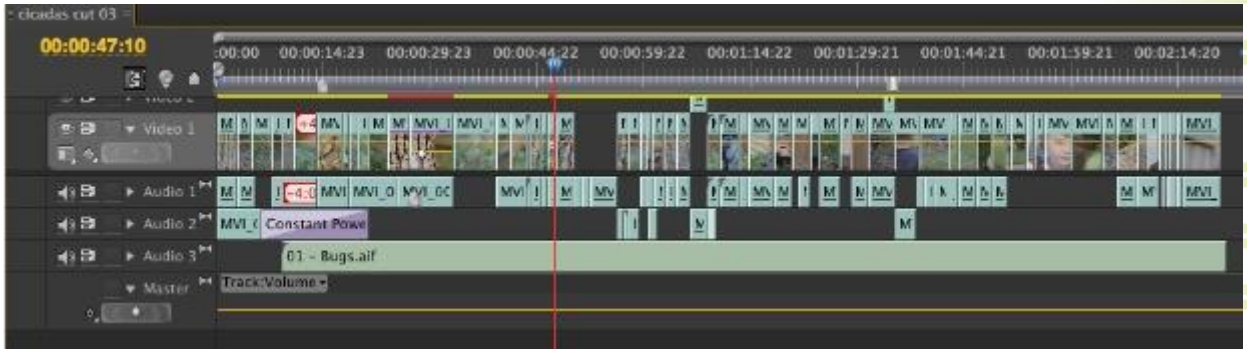
Basic concept - 5

Data rate

- the data amount per unit time required to show the video without interruption, in terms of kilobytes per second (KB/sec or Kbps) –
- calculated by dividing the size of the file by the length:
  - 40s video: file size = 1.9MB, data rate = 47.5KB/sec

Video Timing

- It defines how frames are identified for editing;
- SMPTE standard: hh:mm:ss:fm
- e.g. 00:06:51:15 is the 15th frame at 6 minutes 51 seconds into the clip



Basic concept - 6

Tradeoff between Quality and Compression

- Many video editors allow you to set the overall quality of the video for compressed video size.
- The performance of compression controls the target quality.
- The low/medium setting results a fairly high compression which is appropriate for web or mobile delivery.

Storytelling by video

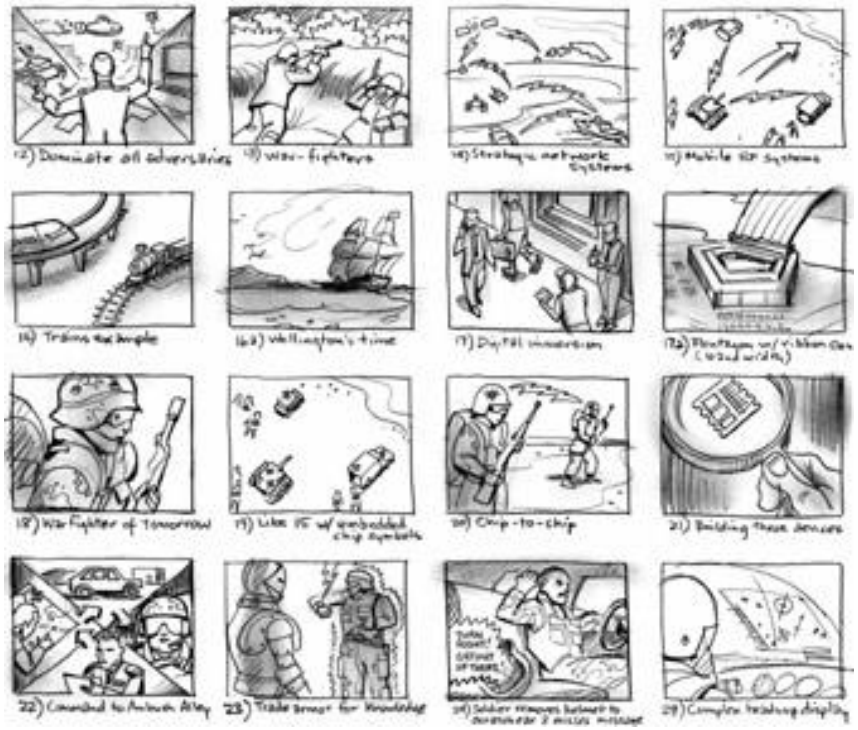
Storytelling by image

Let's think about ...

- their relationship
- their personalities
- message / story

Storytelling by video

Storyboard



1. Flow through your story for your production (editing, shooting, transition)

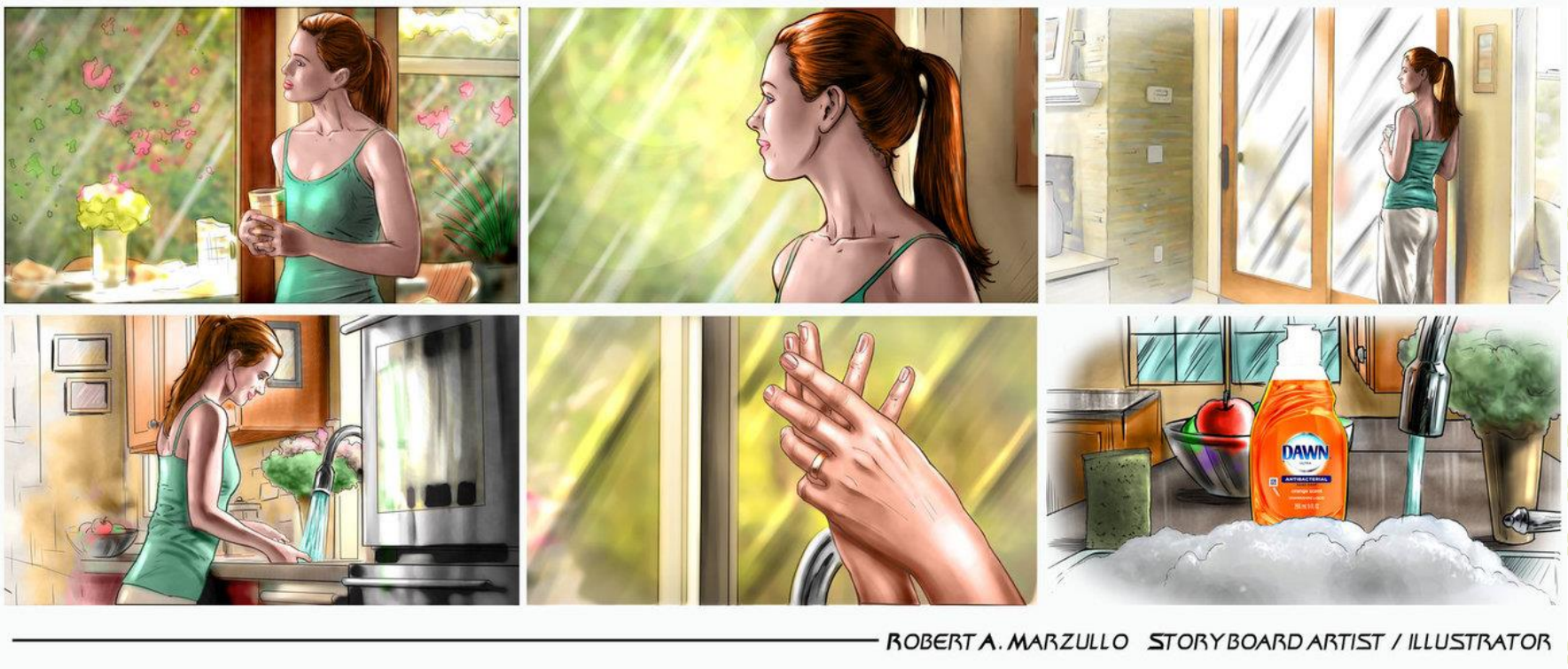
2. Important shots to capture the key messages of the video story

2. Design principles

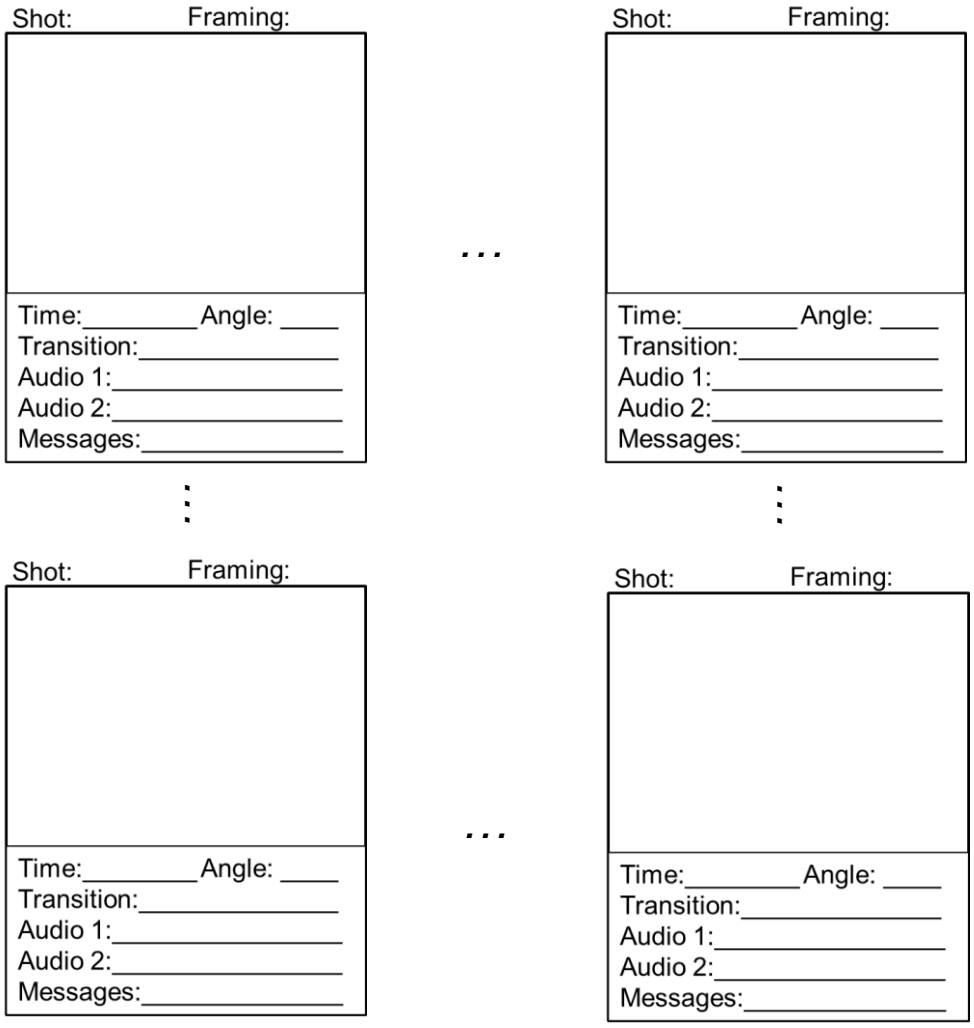
Image from (http://cg.tutsplus.com/articles/step-by-step-how-to-make-an-animated-movie/)

Storyboard for video editing and shooting

Storyboard for video editing and shooting



Storyboard for video editing and shooting



Transition Effects

https://www.youtube.com/watch?v=iCEdSGeFCCA until 3:35

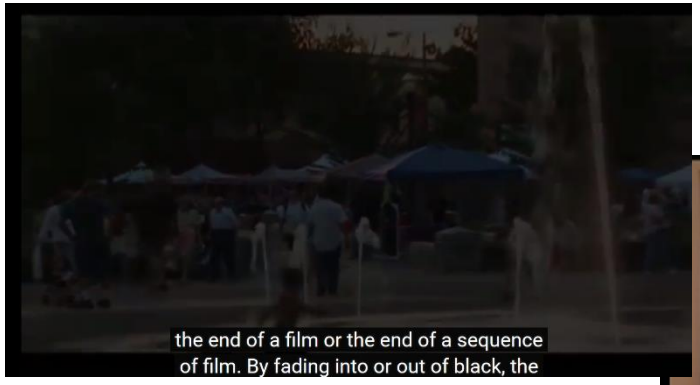
Effects For Video Transitions - 1

What is a transition?

- The way two video shots (frames) are joined together is called the *transition*.

- Everyone from the camera operator to the editor must have a good understanding of how to make effective transitions.

- Basic transitions:
  - cut
  - fade (in/out)
  - dissolve



Effects For Video Transitions - 2

Best type of transition?

- Transitions can be fun, however over-using transitions is a common mistake made by amateurs.
- Most professional productions: almost are simple cuts or crossfades.
- Too many animated transitions are distracting to the flow of the video.
- Although it is important to choose an appropriate type of transition, the real issue is how well the two shots fit together to bring the feelings for your messages.

>3:35

https://www.youtube.com/watch?v=iCEdSGeFCCA

Effects For Video Transitions - 4

More than just transitions…

https://www.youtube.com/watch?v=iCEdSGeFCCA

Zac King's video

Magical transitions

https://www.youtube.com/watch?v=kRDsTHVj6oc

Key techniques about:

- cool storytelling idea
- magical transition effects
- strategic shooting (next lecture)
- etc.

Out-of-class Activity (3 students a group)

1. Create a storyboard (at least 2x2) from:
   - https://www.facebook.com/yourcitynews/videos/1546071489025386/

2. Use the storyboard diagram on the right:
   - Capture important shots to tell the key message of the video story
   - Describe the message of each scene
   - Write down the transition effects

3. Post your work to course Facebook by TOMORROW NOON

Shot: Framing:

Time:_____ Angle: TBC
Transition:_____
Audio 1:_____
Audio 2:_____
Messages:_____

Welcome our guest speaker

Victor Kam New Sight (目養計劃)

Technology & Media Contributor

- The story of New Sight
- Get the message of the story for your coming lab activity

- End of Lecture 7 -