An Intelligent Authoring Tool for Non-Programmers Using the Informedia Video Library

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Project Goals

- Make *using* digital video significantly easier
  - As easy as re-using textual material
- Create an integrated digital video tool
  - *Organize* video and other multi-media material
  - *Create* presentations of various kinds
    - Using pre-existing or new material
      - Start with a search
      - Start with a script

Goals, cont.

- Support the full process
  - Not just the final editing
  - Help with early creative design
    - Storyboards, sketches, etc.
  - Maybe built-in advice to help create *better* video
- Prototyping at every stage
  - Can always see the emerging production
  - Placeholders (e.g. drawings) for incomplete parts
  - Supports *iterative development*
- Aimed at novices

SILVER

Simplifying

I nteractive

Layout and

Video

Editing and

Reuse.

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Leverage Informedia

- Leverage significant prior work
- Informedia can find appropriate videos
  - Use its extensive search mechanisms
- Informedia processes and characterizes video
  - Create transcript of the speech
  - Label interesting features in the videos (e.g. faces)
  - Divide into segments (scene breaks)
  - Classify camera movements (pan, zoom, etc.)
  - *other image processing...*

Why is Video Editing Difficult?

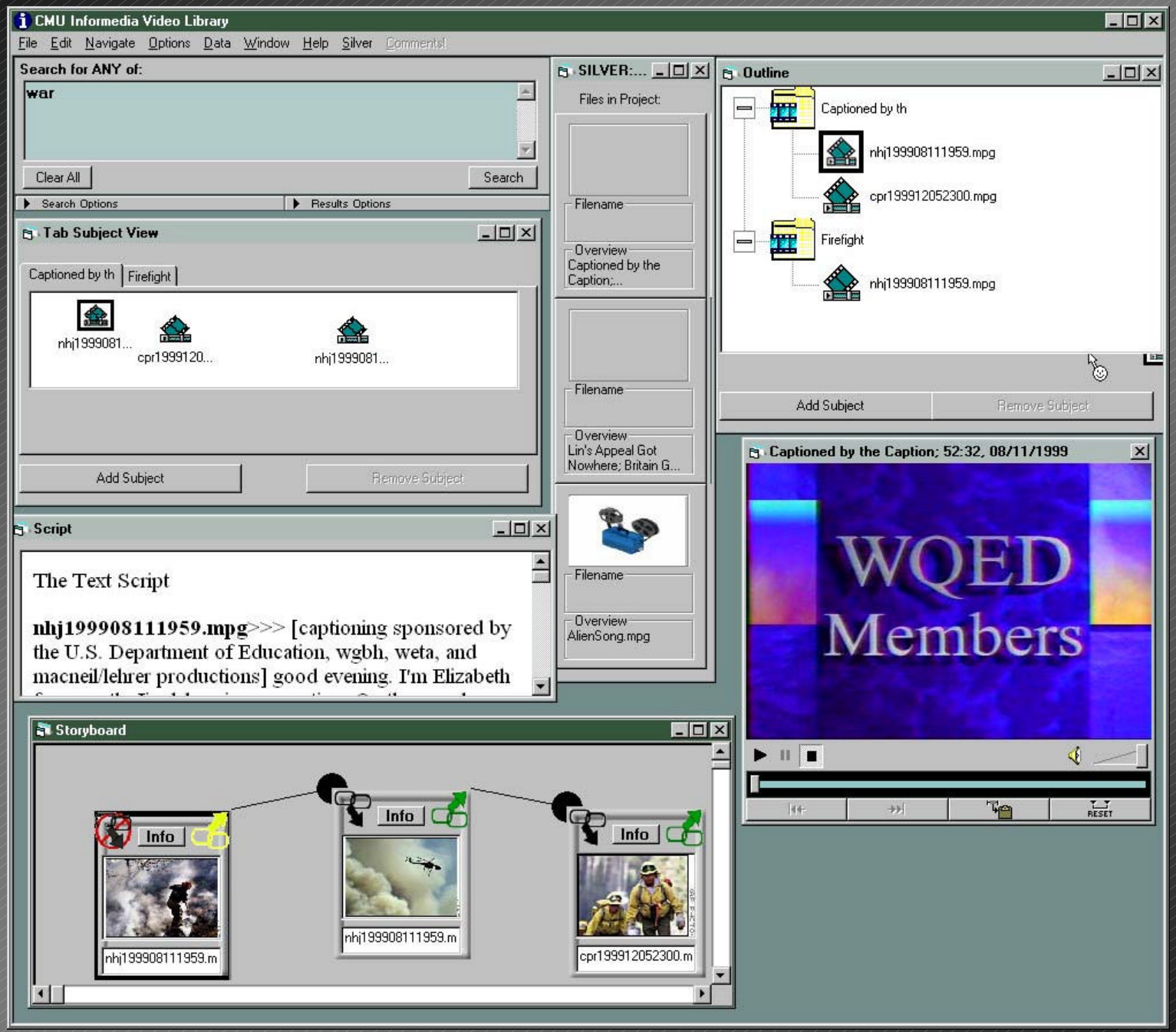
- Video editors make you work frame by frame
  - Timeline view
- Text editors have higher-level features
  - Select by character, word, line, sentence, …
  - Intelligent selection of spaces and punctuation
  - Search and replace
- Goal: provide high-level features for video editing
- People have no training in video
  - Provide automatic support

Progress in First 8 Months

- Acquired infrastructure and knowledge to use Media Toolkits and Informedia
  - *Two times!*
  - Complex to use today's tools

Developed Multiple Views

- Can organize and view source material and current production
  - Useful for different kinds of productions
  - Different working styles
  - As with creating textual material
- Inter-linked and kept consistent
  - Selection and editing in one affects all views
- Integrated with Informedia windows
- Can see multiple views *at same time*


CMU Informedia Video Library
File Edit Navigate Options Data Window Help Silver Comments!
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Files in Project:
Filename
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nhj199908111959.mpg
cpr199912052300.mpg
Firefight
nhj199908111959.mpg
Add Subject
Remove Subject
Captioned by the Caption; 52:32, 08/11/1999
WQED
Members
RESET
Script
The Text Script
nhj199908111959.mpg>>> [captioning sponsored by the U.S. Department of Education, wgbh, weta, and macneil/lehrer productions] good evening. I'm Elizabeth
Storyboard
Info
nhj199908111959.m
Info
nhj199908111959.m
Info
cpr199912052300.m

Project View

- List of all source material
- “Staging area” for material that might be useful

Subject View

- Tabbed forms
- Collect related material, such as all scenes at a certain location
- Same material can be in multiple places
  - Organized by topic, by location, by cast members, etc.
- Items as icons or lists
  - Sorted or put in piles
- Can drag-and-drop items from project view

Outline View

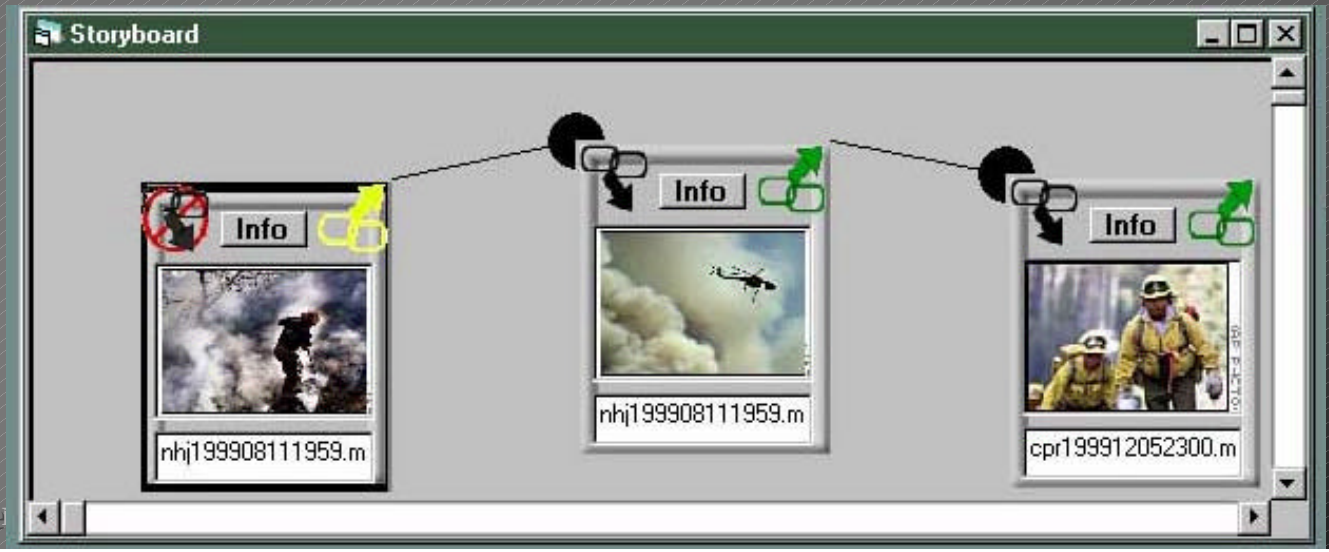
- Useful for organizing material
- Standard tree behaviors
  - Drag-and-drop, etc.

Script View

- For pre-existing video:
  - Informedia provides transcript
  - From closed-captioning or speech-recognition
- For new video:
  - Script can be entered
  - Copy and paste from other tools
- Future: time-correlated hyperlinks to other information
- Future: comments and director's notes

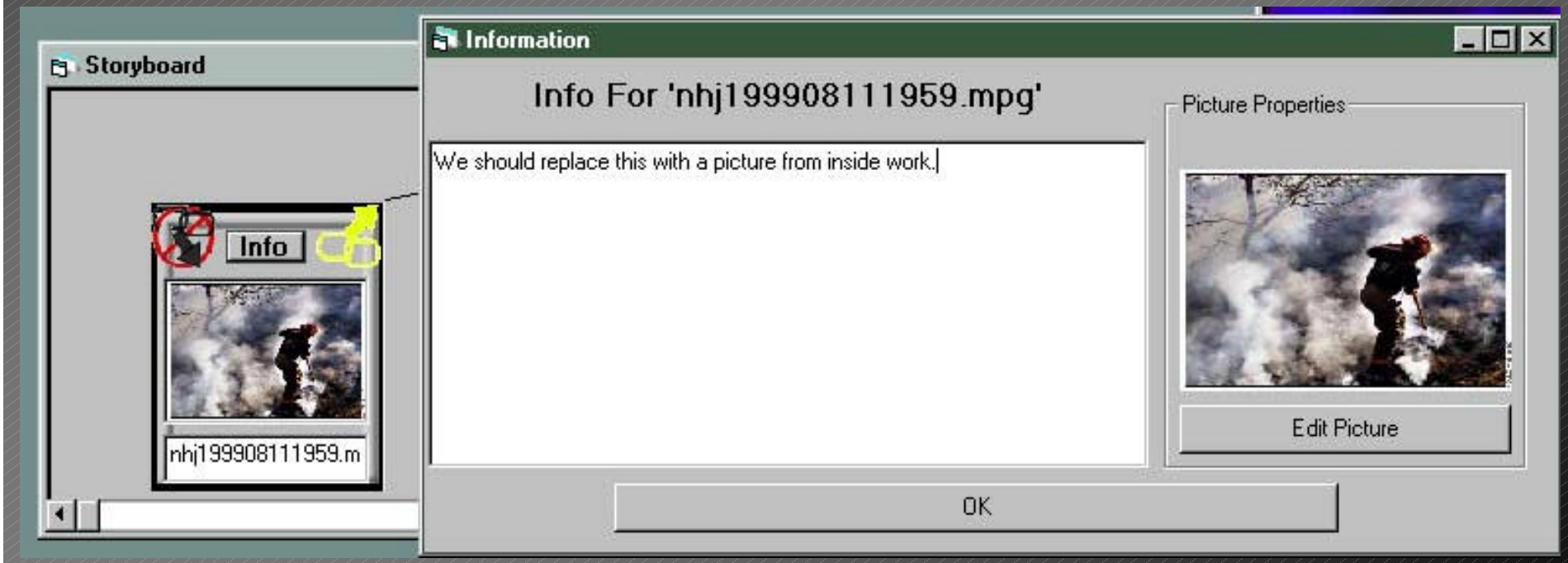
Storyboard View

- One icon per clip, scene or section
- Use a still from the video, or a hand-drawn picture for sections not filmed yet
- Can support forks for interactive stories
- Supports the early design phases



Storyboard Info

- Can edit the information, name and picture for each storyboard item.



Timeline View

- Second-by-second view
- Similar to timelines of other tools
- But many special features
  - Multiple, linked timelines at different resolutions
    - Enables detailed view and overview
    - Future: different views in each timeline
      - Thumbnail pictures, script, drawings, etc.
  - Future: independent timelines for interactive segments

TimeLine
2560.00
5120.00
7680.00
5769.00
6089.50
6410.00
7051.00
7371.50
6015.63
6093.75
6171.88
6250.00

Preview View

- See the actual video result
- Play, Pause, Stop, etc.

Future: Synthetic Graphics

- Overlay drawn graphical objects
- Point to or label items in the video
- Image processing will identify objects in the video
  - Graphics will stay attached if object moves

Future Views

- Lists, such as the people in each scene
- Programming
  - For specifying the behaviors of objects
  - Code partially created *by demonstration*
  - Will use a more *natural* scripting language
    - Design the language using HCI principles

Next: Intelligent Selection

- Selecting words in the transcript selects corresponding audio
- Intelligent expansion in video to a good breaking point
  - Scene, shot break, frame
  - Automatic removal of additional sound

Conclusions

- The job isn't necessarily over when the user *finds* the relevant material
- Support for *authoring* is also required
- Re-use and re-purposing of material
  - Reports, summaries, new compositions
- Easy-to-use multi-media editing is crucial

Pebbles

- Used to control this talk
  - See on Palm or PocketPC the Picture, Notes, Slide Titles, Timer
  - To be commercialized by Synergy Solutions

http://www.synsolutions.com/slideshowcommander

- Hand-helds used with PCs
- Completely independent project

http://www.cs.cmu.edu/~pebbles

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