Multimedia

Jump Start

DEVELOPERS CONFERENCE

Start

Multimedia

Jump Start

Steve Banfield
Multimedia Tools Evangelist
Multimedia Developer Relations

Welcome!

- Why you are here
- Today's objectives
- Materials
- Next steps

Who are we?

- Multimedia Developer Relations (aka Multimedia Evangelism)
  - 6 Technical Evangelists
  - 2 Software Development Engineers
  - 1 Marketing Manager
- Our Mission

Why are we here?

- Pump you up about Multimedia
- Give you tools and knowledge
- Give you free stuff

Agenda

8:30 - 9:00	*Introductions*
9:00 - 10:00	*Media Options*
10:00 -10:25	Break
10:25 - 11:00	*Storyboarding*
11:00 - Noon	*Media Creation*
Noon - 1:00	Lunch
1:00 - 2:30	*Build It: Multimedia Viewer™*
2:30 - 2:55	Break
2:55 - 4:00	*Build It: Visual Basic™*
4:00 - 4:30	*More Tools You Can Use*
4:30 - 6:00	*Wrap Up/Q&A*

Multimedia Update

Token marketing slime follows:

What's Happening Out There

- Growing demand for consumer titles
- Windows™-based PCs: The standard for consumer multimedia
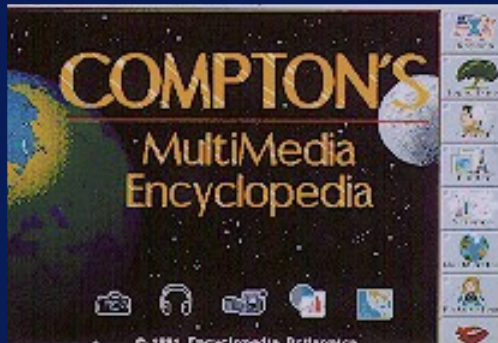- New tools for easier multimedia production
- More platform choices

Consumer Demand

- Record sales for consumer titles vendors
- Strong growth of sales of consumer titles in the reseller channel
- Microsoft$_®$ licenses of MSCDEX tripled in Q3 '92 and continue to grow
- Existing title selection won't satisfy growing consumer demand

Approximately 155 Titles Shipping

COMPTON'S MultiMedia Encyclopedia

AmandaStories©

Microsoft Multimedia Beethoven

We went to the beach, just Grandma and me.

Great Cities OF THE WORLD Volume 2 — InterOptica's Multimedia Travel Guide
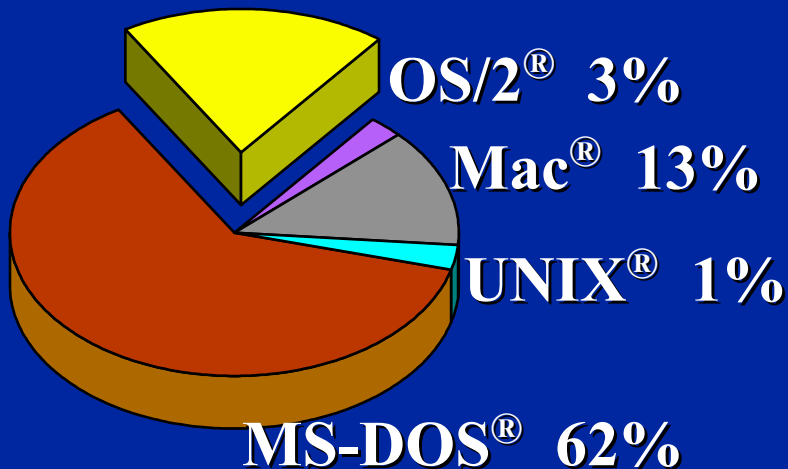
MIXED-UP MOTHER GOOSE

Yours?

Windows-based PCs: The standard for consumer multimedia

Windows Application Momentum

$811 million
Jan. - Oct. 1991

$1.72 billion
Jan. - Oct 1992

Windows™ 20%
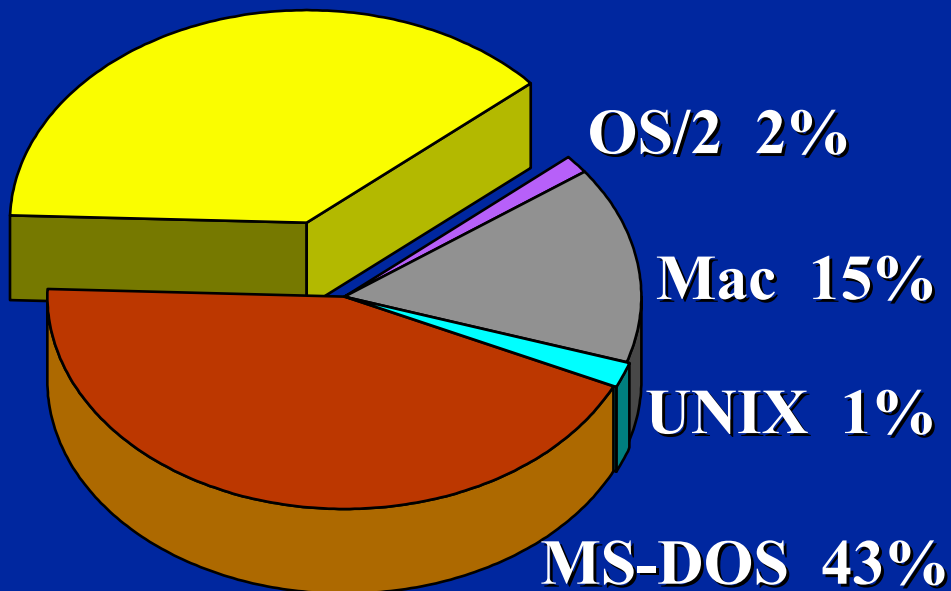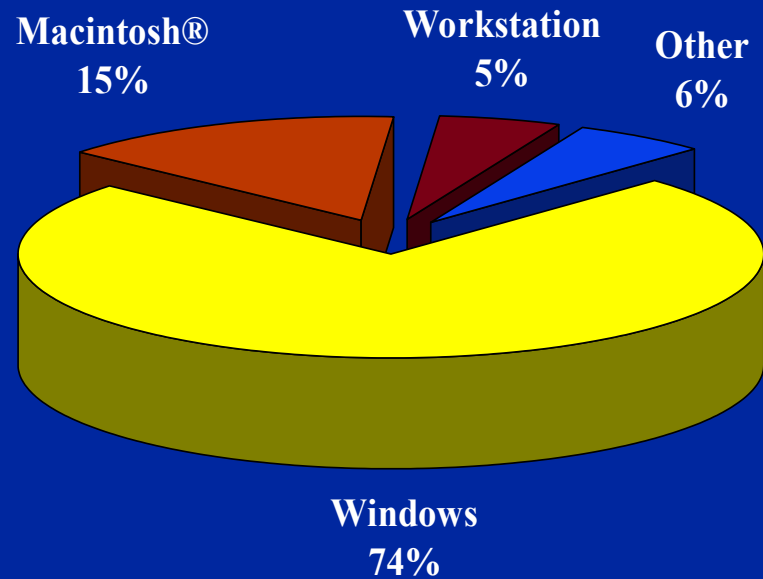
OS/2® 3%

Mac® 13%

UNIX® 1%

MS-DOS® 62%

Windows 38%

OS/2 2%

Mac 15%

UNIX 1%

MS-DOS 43%
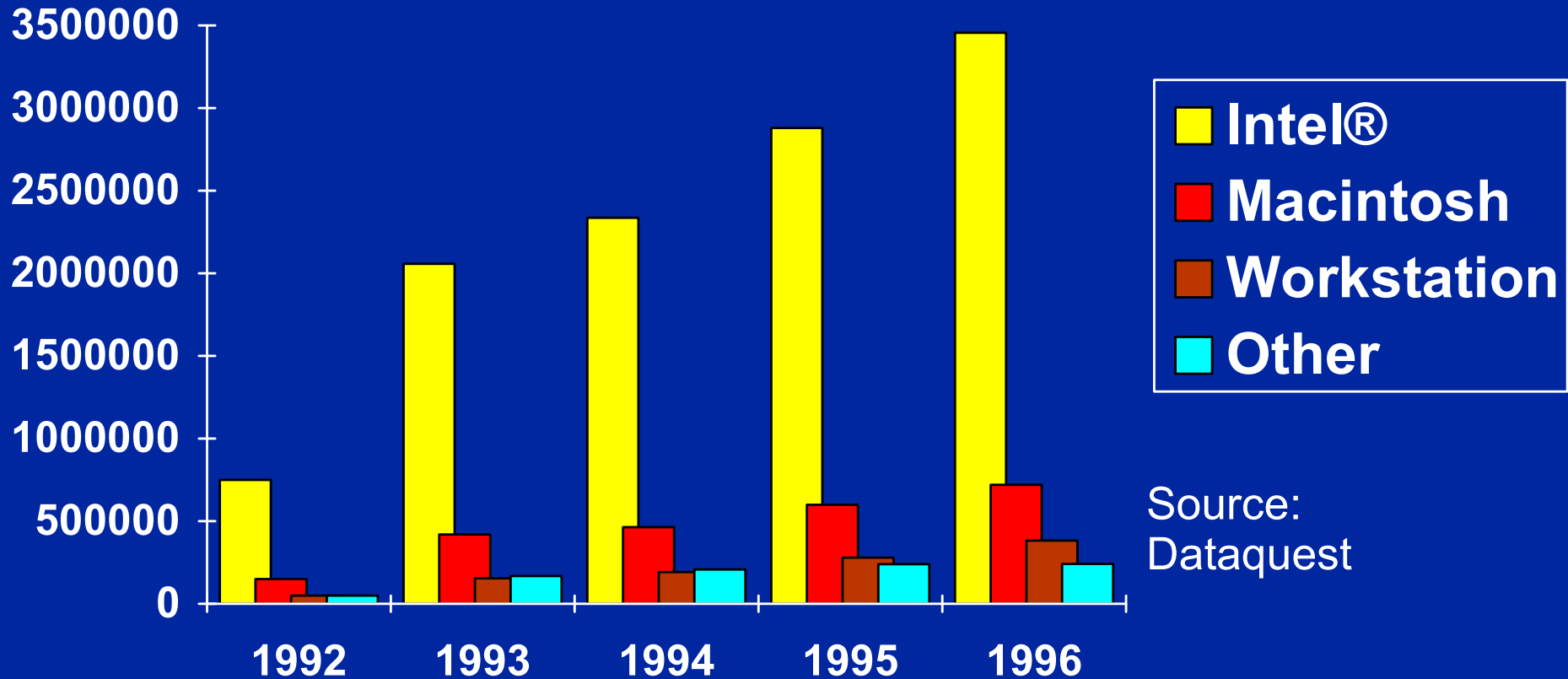
New Tools for Easier Multimedia Production

New Tools From Microsoft

- Visual Basic™ 3.0
- Visual C++™ 1.0
- Viewer 2.0
- Video for Windows™

Viewer 2.0 Multimedia Publishing System

- The million-dollar technology that made possible Microsoft's encyclopedia in a shrink-wrapped box for < $250
- For anyone who has programmed in Basic or written macros
- Royalty-free engine license

Video For Windows

- Full motion video on any Windows-based Multimedia PC
- Great new data type for titles for Windows
- Available today
- Included in all future version of Windows
- Royalty-free runtime
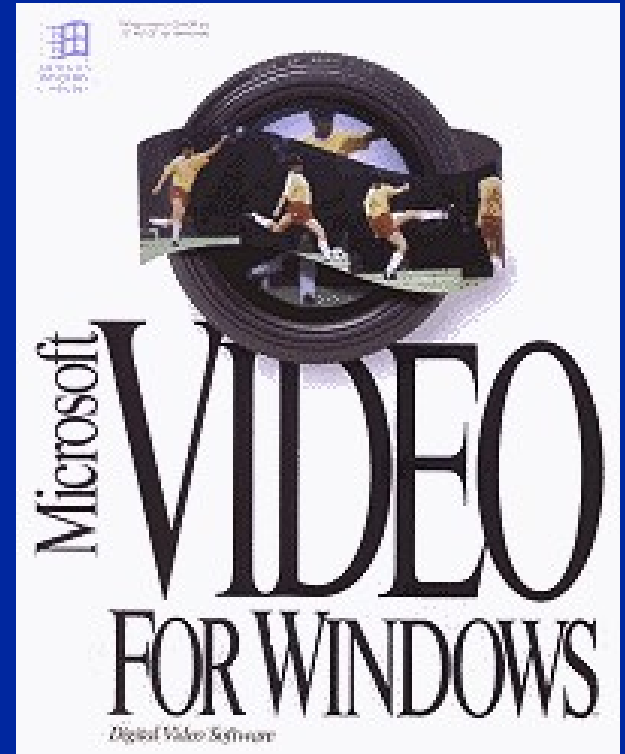
Your Targets

Windows Multimedia Opportunities

| 1993 | 1994 | 1995 |

Home
Business
School

- **Windows 3.1**
- **Multimedia PC**
  - **750,000 end of '92**
  - **2.8 million end of '93**
- **Windows-based multimedia titles**
  - **Over 125 shipping**

Multimedia:
New Faces And New Places

Personal computer hardware and software

Homes

Multimedia PC
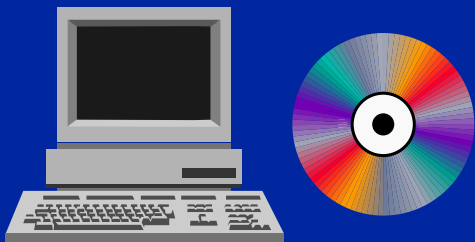
Consumer electronics
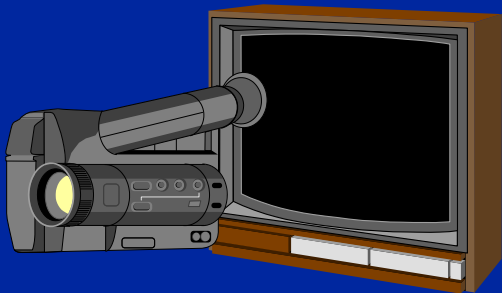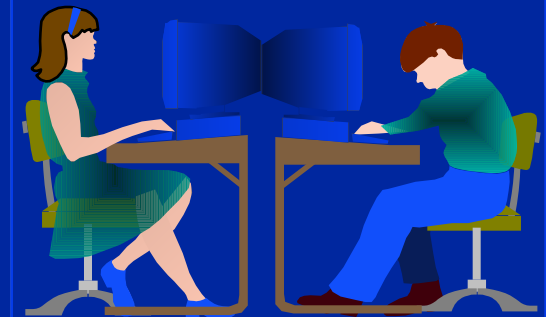
Schools
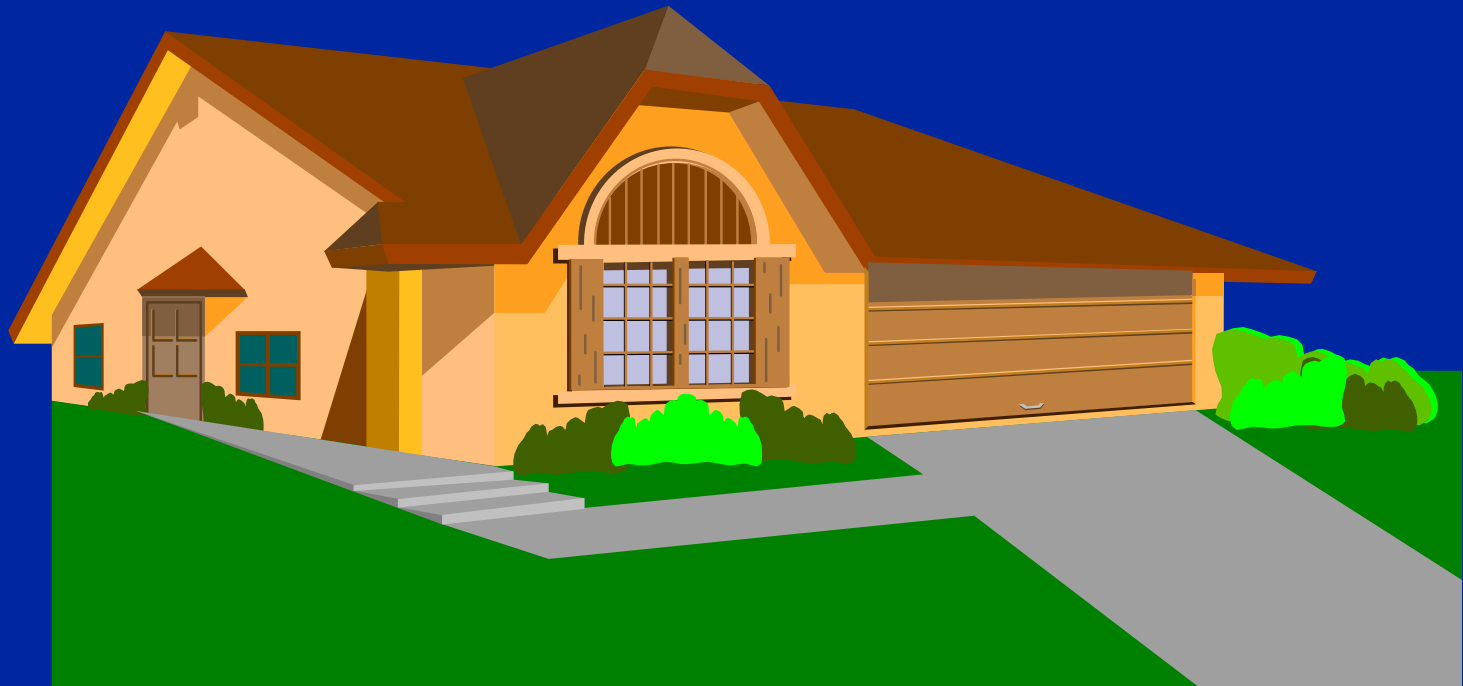
Key Title Categories

- **Children's titles**
  - Point and click stories with animation and narration to entertain and teach
- **Leisure and self-improvement**
  - Entertainment, how-to, etc.
- **Reference**
  - Academic, legal, medical, general interest
  - Encyclopedias and atlases

Multiple Title Strategies For High Return

- Leverage design, development, and brand awareness
- Spinoff
- Update
- Series

Spinoff Strategy

- Develop comprehensive reference, then use selected content enhanced with greater interactivity to make new titles
- Direct market to initial purchaser

Regular Update Strategy

- Sell periodic updates as essential upgrades
- High quality products will build a valuable longterm customer base
  - ex: Bookshelf '92, Bookshelf '93 ...
  - ex: Cinemania, Cinemania '93

Series "Template" Strategy

- Create design and technology "template" for first title

- Use template with new content for subsequent titles

  - ex: Broderbund Living Book series, Microsoft "Discover" series

Media Options

Steve Banfield
Multimedia Tools Evangelist

Where to Begin?

- *"Multiple Media"*
- **Sound**
  - **Digital Audio**
  - **MIDI**
- **Images**
  - **Still Images**
  - **Animation**
  - **Digital Video**
  - **Text**

Different Tasks Require Different Configurations

- Basic organization
  - Video Editing Station
  - Audio Editing Station
  - Image Editing Station
  - Programmer's Station
  - Server Station
- Can all be one station or split off, depending on the size of team, budget, deliverables, etc.

Basic MPC Level II Spec

- Requirements
  - 486sx CPU, 25 mhz
  - 4 MB
  - 160 MB HD
  - 16 bit sound card
  - 640 x 480 x 65,536 VGA
  - Double Speed CD-ROM, multi session ready (SCSI)

Basic MPC Level II Spec

- Recommendations
  - 8 MB
  - 640 x 480 x 65,536 VGA accelerated
  - Double Speed CD-ROM with XA audio

MPC Development Station

- **Practical Minimums**
  - 486 CPU, 33 mhz
  - 8 MB
  - 200+ MB HD
  - 16 bit Sound Card
  - 640 x 480 x 256 VGA, 14" Monitor
  - Double Speed CD-ROM, multi-session Photo CD capable

Enhanced Station

- Recommended
  - 486 CPU, 66 mhz
  - 16 MB
  - 500 MB HD
  - 16 bit sound card
  - 800 x 600 x 256 VGA, 17" Monitor
  - Double Speed CD-ROM (SCSI)
  - Video capture board
- Windows NT™ capable

Working with Multimedia

- Media type determines
  - Storage requirements
  - Development hardware
  - Delivery medium
  - Playback requirements
- Intended audience determines media limitations

Digital Audio

- Samples sound many times a second
- Converts to a digital value
- Digital data stored in WAV file
- Playback: convert digital values back to sounds

Sampling

- Sample rate is how often the incoming sound wave is measured
- Most common sampling rates are multiples:
  - 11 khz (voice only - telephone quality)
  - 22 khz (Most frequently used rate)
  - 44.1 khz (CD quality — Potentially)
- Sampling rates are very important to the quality of the sound

Bit Depth

- The bit depth also influences sound quality
- An 8 bit sample = 256 values
- A 16 bit sample can store 65,536 values — A huge difference!
- 16 bit sampling gives a cleaner waveform with fewer steps

The Tradeoff

- **Mono, 8 bit, 11 khz audio**
  - 1 byte x 11,000 x 1 sec = 11 K per sec
  - 11 K per sec x 60 sec = 660 K per minute
- **Mono, 16 bit, 22 khz audio**
  - 2 bytes x 22,000 x 1 sec = 44 K per sec
  - 44 K per sec x 60 sec = 2.6 M per minute
- **Stereo, 16 bit, 44 khz audio**
  - 2 bytes x 44,100 x 1 sec x 2 = 176 K per sec
  - 176 K per sec x 60 sec = 10.5 MB per min

Windows and Digital Audio

- Sound card drivers are shipped with Windows 3.1
- Windows defines the WAV file type as the default waveform audio data type
- Windows supplies high and low level API's to manipulate WAV files

What is MIDI & What is it for?

- <u>M</u>usical <u>I</u>nstrument <u>D</u>igital <u>I</u>nterface
- Stores notes and their attributes instead of waveforms
- Much smaller storage requirements than WAV format
- Each note is interpreted and synthesized
- Often used as theme or background music in titles

General MIDI Interface

- Designed as a standard set of codes between various MIDI devices
- Defines 128 "program numbers" which describe a specific instrument
- Specifies which instrument is on which of the 16 MIDI channels, one sound per channel

Windows and MIDI

- The MIDI Mapper is a Windows Control Panel applet for managing the configuration of MIDI devices

- You can control how MIDI data is sent to channels, instrument keys and instrument patches

Digital Audio/MIDI Station

- 16 bit sound board
- Audio sources
    - Quality microphone
    - Tape deck (DAT or cassette)
    - CD Audio
    - Mixer
- Fast hard drive to handle large file sizes
- MIDI Keyboard (optional)

Bitmaps, Metafiles & You

- **Bitmaps**
  - Stores the color value of each pixel in an image
  - Windows defines the BMP and DIB data types
- **Metafiles**
  - Windows defines the WMF data type
  - Stores the instructions for drawing each part of an image

Bit Depth for Images

- 8 bit images = 256 possible colors
- 24 bit images = 16 million colors but takes up 3 times the storage
- Limit images to 8 bits, since 256 color video adapters are most popular
- Image Compression
  - RLE
  - JPEG
  - Fractal Compression

Image Editing Station

- Large monitor (17")
- Pressure sensitive tablet
- Video tape deck
- Photo CD compatible CD ROM
- Large, fast hard drive to handle large file sizes
- Scanner
- Still image video capture device

Video for Windows

- Released Version 1.0 in November 1992
- New version currently in beta
- Provides the standard for adding digital video to Windows applications

Microsoft VIDEO FOR WINDOWS — Digital Video Software
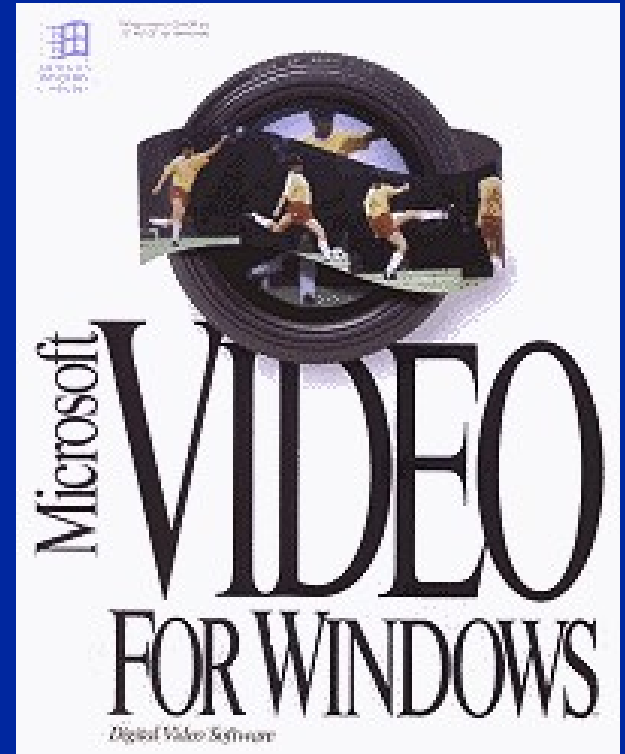
Digital Video Characteristics

- 320 pixels x 240 pixels x 3 bytes x 15 frames per second (fps) = 3 MB per second without audio
- Compression is a must
- Algorithms
  - Indeo 3.0
  - Cinepak
  - MS Video 1

Digital Video Station

- Video capture board
- Large, fast hard disk
- VISCA compatible VTR or other video source
- 16 bit Sound card

How Do You Make It Work?

- **<u>M</u>edia <u>C</u>ontrol <u>I</u>nterface to the rescue!**
- **Industry standard command set for controlling media devices**
- **Extensible command set**
- **Simple "Command String" and "Command Message" interfaces**
- **Provides a uniform interface to many types of devices**

MCI Command Interfaces

- **Command Message**
  - Windows messages
  - Used in low level languages like Visual C++
- **Command String**
  - English like character strings
  - Used in high level languages like Visual Basic and Toolbook
- **Identical functionality in each set**

Command Strings

- To play a digital audio file
  - open tada.wav type waveaudio alias sound
  - play sound
  - close sound
- To play a digital video file
  - open film.avi type avivideo alias film
  - play film
  - close film

Windows Multimedia Components

- Audio services: Digital audio and MIDI
- Standard file formats (RIFF)
- Timing and I/O services
- Media Control Interface
- Multimedia APIs

Multimedia Architecture

Windows application

Windows system software

GDI | Kernel | User

MMSYSTEM.DLL

Low-level functions | Media control interface

Media control interface drivers

Windows device drivers

Multimedia device drivers

Videodisc

Sequencer

Windows device

Waveform device | MIDI device

CD - Audio | Digital video
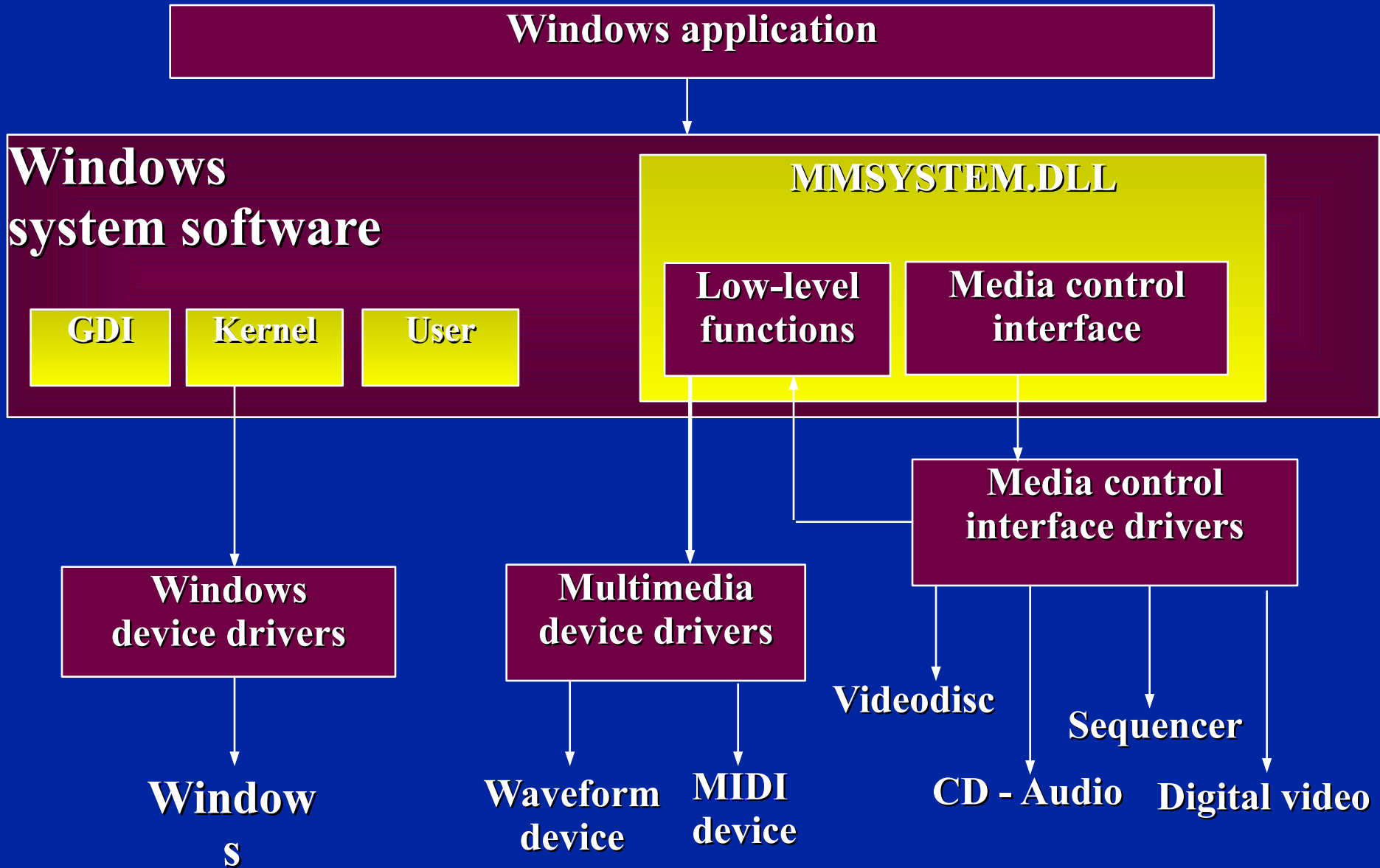
Video for Windows Architecture

Basic Windows architecture

Windows 3.1		
MCI	RIFF	OLE

Video components

DV-MCI MCIAVI.drv	AVI file format	Media Player

New open interfaces for video

Video capture interface	Codec interface	Editing interface

Video For Windows Architecture

- Video playback available to all Windows applications via OLE
- Full video control accessible via MCI
- Editing APIs also available (important for tools)
- Cross-platform: Modular Windows, Windows 3.1, Windows NT™, Macintosh®, ...

Programmer's Station

- Needs to be able to play all the media types in the project
- Will also need disk space for
  - source code
  - DLL's, VBX's
  - Media
  - Software Development Tools & Documentation

Server Station

- Depending on the size of the project, you may need a common media server
- Large hard disk
- CD "burner"
- Tape drive (DAT, Exabyte)

Swiss Army Knife Station

- Large, fast hard disk
- Video capture board
- 16 bit sound board
- 8 MB of memory
- Fastest CPU you can afford
- Biggest monitor you can afford

Questions?

Multimedia *Storyboarding*

Michael Winser
Technical Evangelist
Multimedia Developer Relations

THE STORYBOARD:
"What is it really?"

- A particular view of the specification
- View is different for each project
- Each project has it's own quirks and constraints
- Graphical representation of a project plan
- "Micro Design"
- "Macro Design"

IDEA

↓

Storyboard

↓

BANK

IDEA

No Storyboard

BANKRUPTCY

Extending the Storyboard

- Where did the Storyboard concept come from?
- Some problems when creating titles
- Alternatives?
- A journey from a concept through to product
- Define the Storyboard as we go
- "The Storycube"
- Specifications - critical to project success

Alternatives to the Storyboard

- Project management tools for directors
- Spreadsheets
- Critical path analysis applications
- Simple presentation packages
- Multimedia Authoring applications

File   Edit   View   Text   Object   Arrange   Slide   Window   Help

No Transition   25%

1   2   3   4   5   6   7   8

9   10   11   12   13   14   15   16

17   18   19   20   21   22   23   24

25   26   27   28   29   30   31
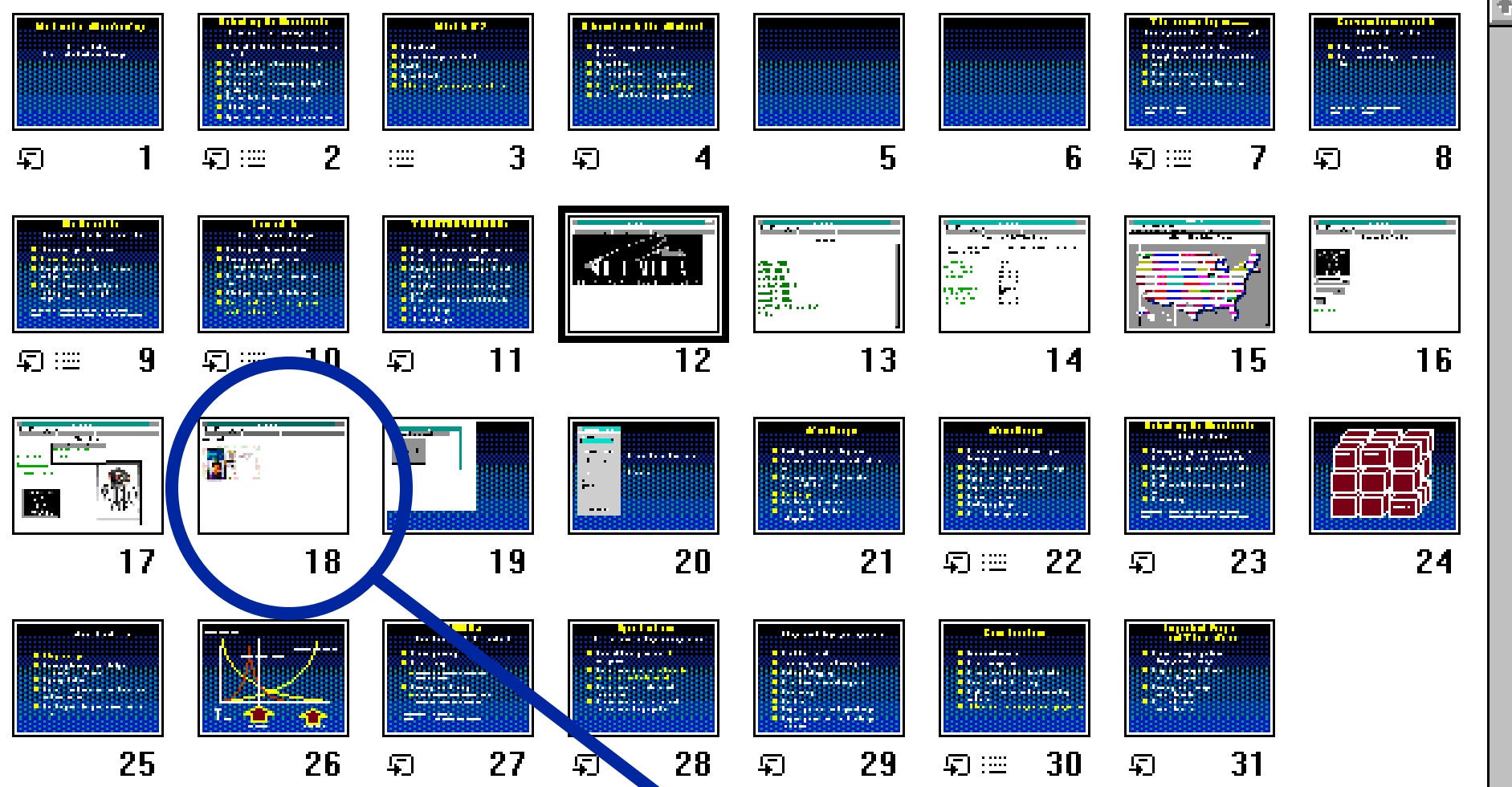
Assets need to be scanned

Slide Sorter

Scan Assets: Here we take each
member's cardkey and scan.
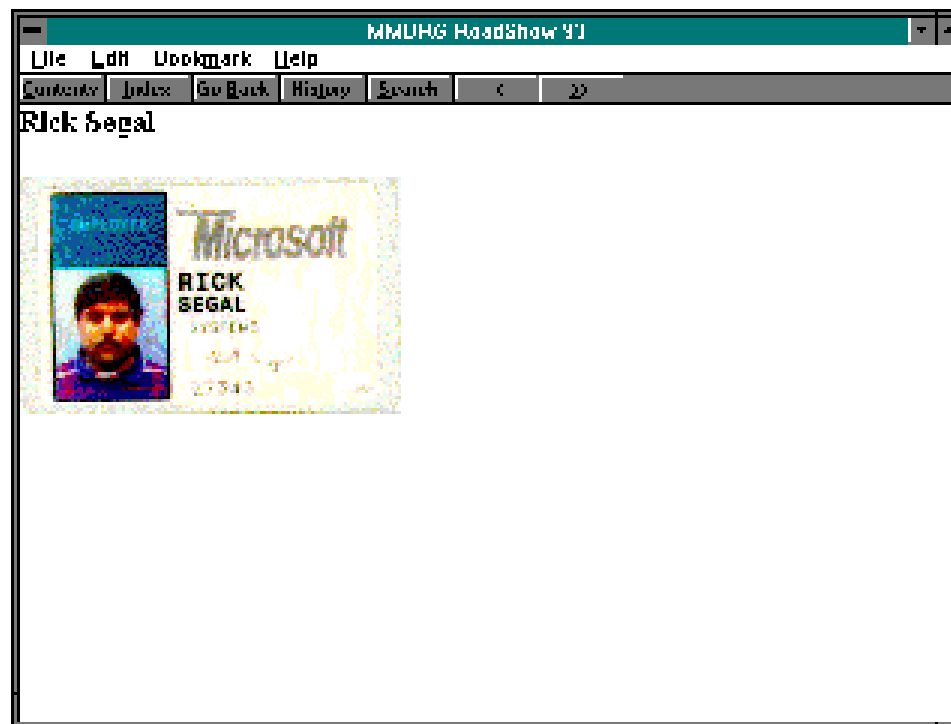Each cardkey bitmap used as
an individual Screen.

File   Edit   Formula   Format   Data   Options   Macro   Window   Help

Normal

A5

Roadshow Spreadsheet

	A	B	C	D	E	F	Moo
1							
2	Name	Screen	Type	Extn.	Size	Location	Moo
3	Startup.bmp	1	bitmap	.bmp	300	C:\roadshow	10/14
4	audio.mid	1	audio	.mid	20	c:\roadshow\	10/14
5							
6	agenda.wav	2	audio	.wav	100	c:\roadshow\	10/14
7	agenda.rtf	2	text	.rtf	20	c:\roadshow\	10/14
8							
9	people.rtf	3	text	.rtf	20	c:\roadshow\	10/14
10	people.wav	3	audio	.wav	100	c:\roadshow\	10/14
11	michaelw.bmp	3	bitmap	.bmp	50	c:\roadshow\	10/14
12	stevemo.bmp	3	bitmap	.bmp	50	c:\roadshow\	10/14
13	williamv.bmp	3	bitmap	.bmp	50	c:\roadshow\	10/14

Ready

The Journey Begins

- Talk to people, look for ideas
- Rough idea of the concept
- Want to create a title
- How to communicate ideas correctly

Deliverables: none
Spec: none

Geo-synchronous orbit:
"The Earth is visible"

- What a great idea!
- Communication begins —
  free flow of ideas

Deliverables: jottings on a napkin
Spec: napkin

Shuttle orbit:
"Continents/Markets are visible"

- **"You won't get there alone"**
- **Project has a name**
- **Rough idea of Market, timescales and partners**
- **Players have names and are talking (first steps to rights acquisition)**

Deliverables: Mission Statement, letters of intent
Spec: Mission statement & partner definitions

Low orbit:
"Homing in on the target"
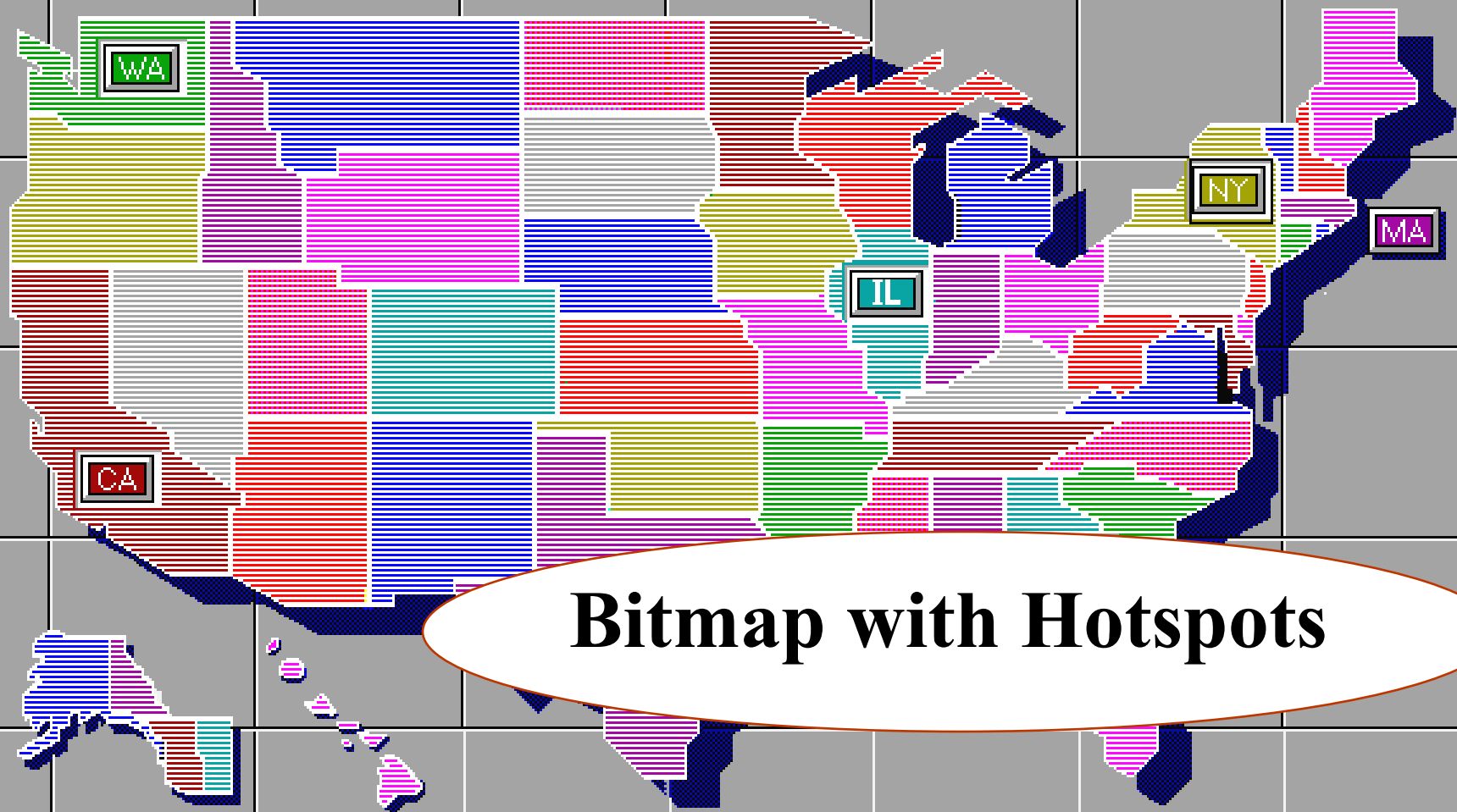
- Flushing out the look and feel
- Loose project organization (manpower and assets)
- Fire up those project management tools
- The Specification *IS* the document
- Let's look at a small project and make a start

Demo

File   Edit   Bookmark   Help

Contents | Index | Go Back | History | Search | << | >>

Bitmap retouched using Adobe Photoshop

Embedded Media

Microsoft Video for Windows

Embedded Video Sequence
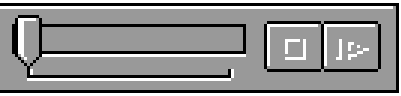
Wave File player

Midi player

Press to hear a wave

Hotspot to play Wave file

Real Life

The Cool Secondary Window
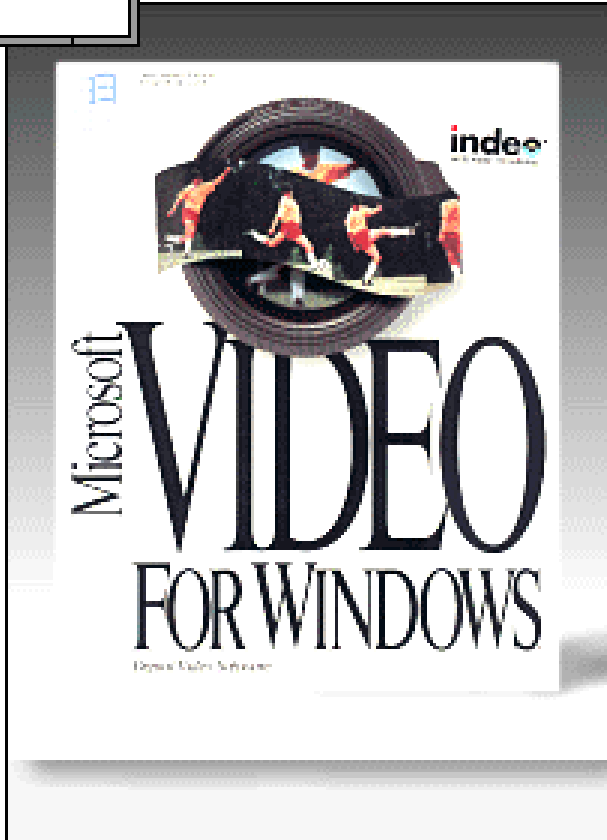
Jump Back to Media Options

Jump Ahead to Real Life

Show The Video

Show Popup Window

Show the Secondary Window

TV Control Needed

Buttons

Scroll box

Controlling Viewer

Agenda:

People   Index

Sites   Search

<<   >>

Main
People
Sites

Hidden Video...

Visual Basic Controller

Browse

Micro Design

- Looking inwards at the project
- Define asset interactions and links to cells
- Define granularity by available assets and their type
- Cell design
- Hardware implications
- (storyboard is hardware independent)

Macro Design

- External factors which can impact development
- Correct staffing levels at each stage
- Equipment requirements
- Capture of video/audio assets
- Project milestones
- Packaging design
- Distribution operations

Extending the Storyboard:
"The StoryCube"

- Conceptual representation of cells to Assets and their links to each other
- Each layer represents a multimedia group
- Links can be between groups and cells
- Tree analogy

Deliverables: *Spec for Prototype, Project Org Document*
Spec: *Covers enough look and feel to build Prototype*

Real Life

The Cool Secondary Window

Jump Back to Media Options
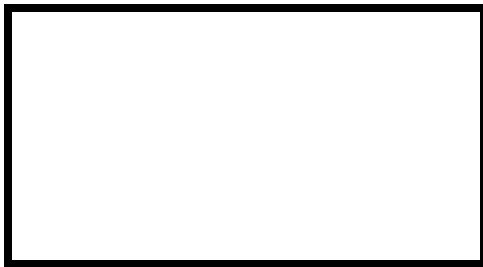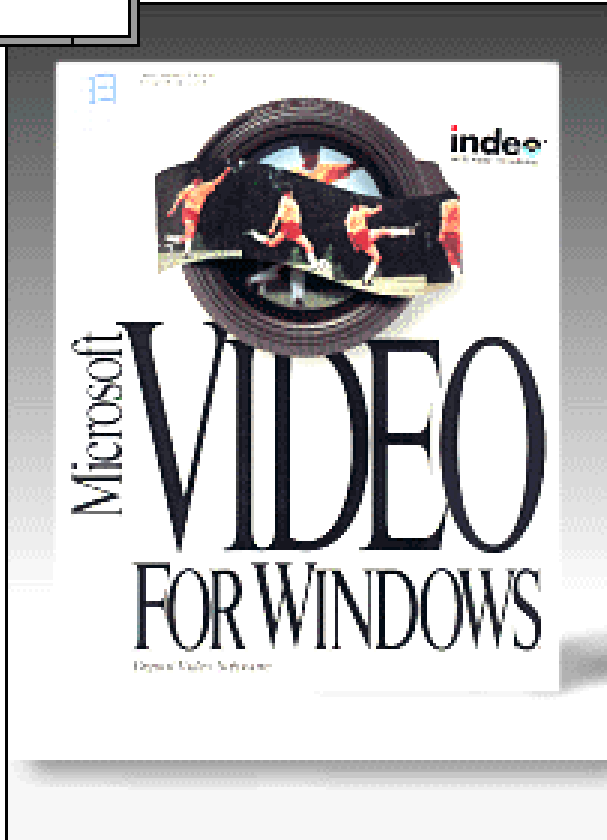
Jump Ahead to Real Life

Show The Video

Show Popup Window

Show the Secondary Window

Microsoft Video for Windows

File   Edit   Bookmark   Help

Contents | Index | Go Back | History | Search | << | >>

Real Life

Show The Video

Show Popup Window

Show the Secondary Window

3D View of project

Text
Video
Audio
Graphics

y

z (assets)

x (screens)
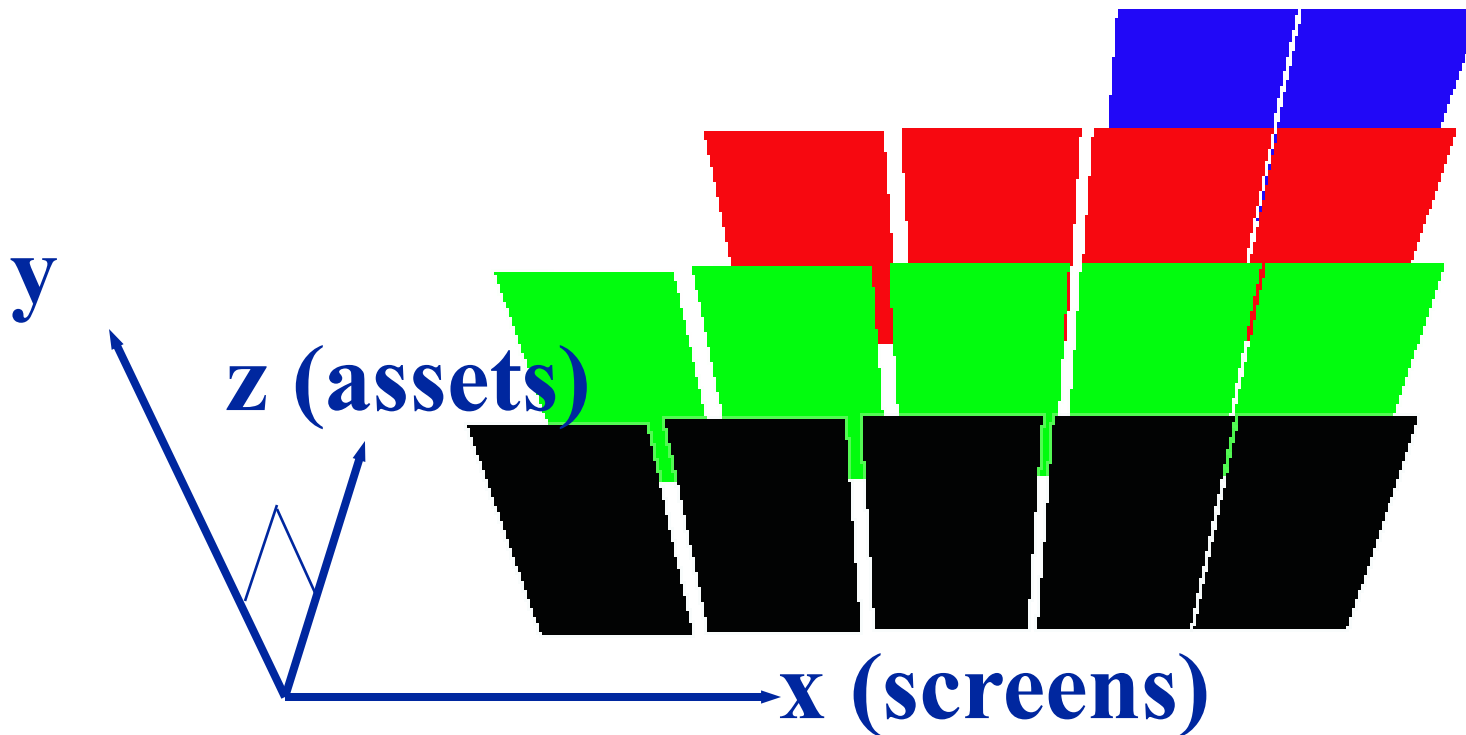
Make or Break Time

- The prototype
- Planning development: budget, timescales, milestones
- Signing the deals
- Platform and environment definition and evaluation
- Flushing out the spec to cover entire title
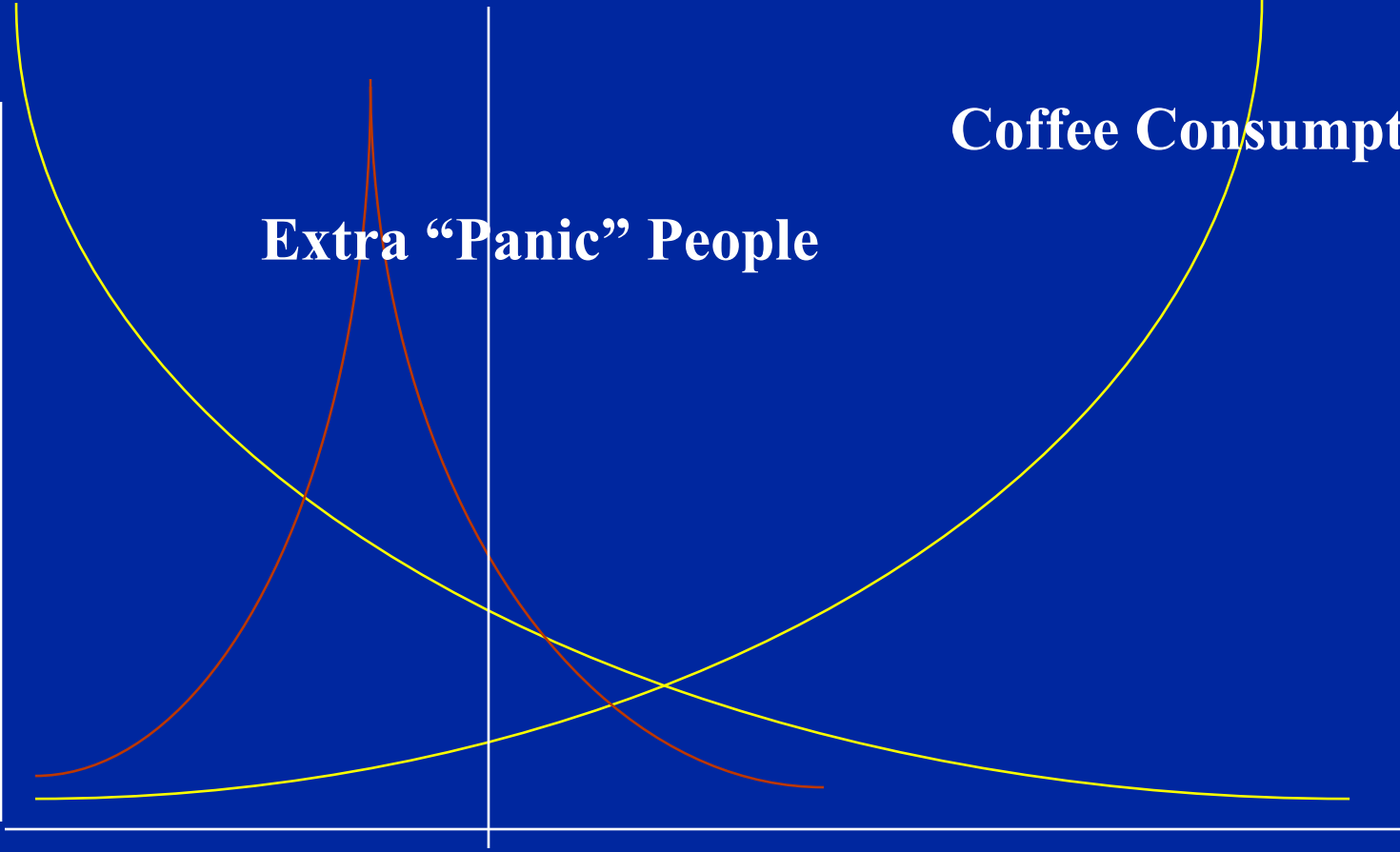
50,000 ft.:
"How do we land this sucker?"

- **Project planning**
- **Asset strategy:**
  - **Storage, Capture, Generation, Manipulation**
- **Development Strategy**
  - **Tools, source code control, bug tracking, staffing, workflow**

Deliverables: Project plan
Spec: finer granularity, more detail

Specification:
"A milestone in the planning cycle"

- Detailed description of all UI components
- Definition of all assets, where they come from and where used
- Definition of all modules and interactions
- Allocation of effort (assets and software working together)

The Ground Is Getting Closer

- Work has started
- Iterative process of development
- Coding/Debugging
- Asset Generation and capture
- Fine tuning
- Build/test
- Bug assignments and spec changes
- Repeat process until within design tolerances

Considerations

- Source code control
- Asset management
- Structure of the Storyboard/cube
- Automated builds, testing
- Tight communication between coding and assets
- *These roles may collapse to a single person*

Important People and Their *Roles*

- Project manager/producer
  (keeps project moving)
- Program manager/director
  (writes the spec)
- Development manager
  (owns the code)
- Artistic director
  (owns the assets)

Questions?

Media Creation

Steve Banfield
Multimedia Tools Guy

Reminder for the Class

- Audio
  - Digital Audio
  - MIDI
- Video
  - Still Images
  - Animation
  - Digital Video
  - Text

OK, Fine —
Where Do I Get It?

- Create it yourself
- Copy it from another source
- Buy rights from stock media house

Create or Copy?

- If you <u>create</u>, you own it
- If you <u>copy</u>, you don't own it but you may or may not be able to use it
- Copyrights must be satisfied on
  - Images
  - Video
  - Audio

Rules of Thumb: Copyrights
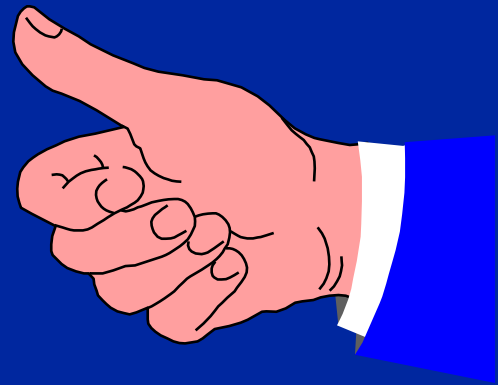
- When in Doubt, *Don't Copy*
- "Fair Use"
    - Purpose of Use
    - Nature of Copied Work
    - Amount of Use
    - Economic Impact
- Don't ask me, ask an attorney

So Where Can I Get Media?

- Stock film and music houses are beginning to sell their product on CD
- Midisoft, Aris, Jasmine are selling CD with AVI clips, WAV clips, bitmaps, MIDI
- Video for Windows Sample Disk
- Compuserve, AOL, BBS's

So What Do I Use
To Manipulate Media?

- Text Editor
- Digital Audio Editor
- Image Editor
- Digital Video Editor

You Have the Tools today

- Sound Recorder
- Paintbrush
- Write
- VidEdit
- VidCap
- ScreenCap

Complex Projects, Powerful Tools

- Midisoft Sound Impression™, Turtle Beach Wave™
- Adobe Photoshop™, Fractal Painter™, Micrographix Picture Publisher™
- Microsoft Word™
- Adobe Premiere™, DMI Splice™, ATI MediaMerge™
- VidCap
- ScreenCap

Creating Digital Audio

- For quick & dirty, use SoundRec
- Demo of audio recording using Turtle Beach Wave

Rules of Thumb: Digital Audio

- Use the lowest resolution that gives the required results
    - "CD quality" stereo is 16 bit 44 khz
        - 16 x 44.1 x 1 sec x 2 = 172 K per sec !
    - Not all sound cards can handle the fidelity properly
- Test your content at various sampling resolutions

Editing MIDI Files

- Demo of MIDI sequencing using MIDI Studio

Rules of Thumb: MIDI

- MIDI is great for background music and other "mood" pieces
- Beware the MIDI Mapper!
  - Be sure your MIDI setup includes the proper instruments
- Stick to General MIDI unless composing music for other devices

Still Images

- Bitmap file types
  - DIB, BMP
  - TIFF, JFIF
- Vector file types
  - WMF
  - AI
  - EPS

Editing Still Images

- For photo retouching or image editing, use tools like Photoshop
- For image effects, use tools like Fractal Painter 2.0

Rules of Thumb: Still Images

- Vector images are smaller on disk but aren't always most efficient
- Compression is great but beware of artifacts — you aren't Indiana Jones!
- For cross platform development try some test conversions of your bitmaps to make sure they look right
- Use 8 bit images but check your palettes for conflicts between images and your digital video files

Animation

- Our "sprite engine" uses DIBs which you can create any way you want
- DIB sequences can also be converted into AVI files for playback and editing as "video" data
- Great animation can enhance a title

Animation Demo

- Demo of animation creation using Gold Disk Animation Works

Rules of Thumb: Animation

- **Keep it simple**
- **Test out your animation, the type of motion and the art will determine the number of frames that look good**
- **Convert your frame based animation to AVI to take advantage of the compression and editing tools**

Digital Video

- VidCap is great for capture — simple process, simple tool
- VidEdit is fine for small or quick jobs, i.e. "cuts only video"
- More professional results require more professional tools
- Good video editors can pull in various media types for overlay, sound f/x, etc.

Digital Video Demo

- Demo of digital video editing using Adobe Premiere

Rules of Thumb: Digital Video
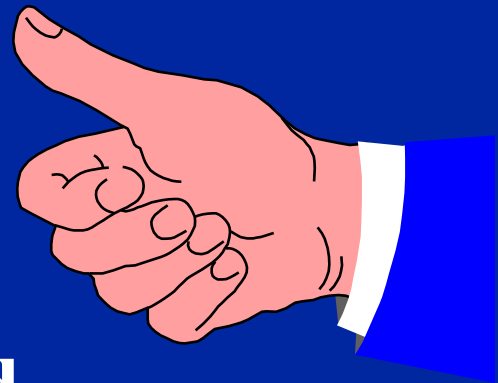
- Don't go crazy with overlay and transitions — simple things are beautiful too
- Audio sampling size issues apply to digital video too
- If possible, test step frame capture at 24 bit at larger screen sizes and compress to lower bit depth and resolution
- Manage palettes with bitmaps

Multimedia Elements in Viewer

- Convert pictures to bitmap (DIB or BMP) or metafile (WMF) format
- Convert multimedia to formats supported by media control interface (MCI)
- Fine-tune palettes

"Pinkie" Rules

- Use the lowest resolution that can give you the best results
- Try out different compression ratios, sampling rates, bit depths
- Plan ahead for cross platform
- Just cause you can capture it or edit it, doesn't mean you can use it

Questions?

Multimedia in Viewer

Michael Winser

&

Steve Molstad

Multimedia Software Engineers
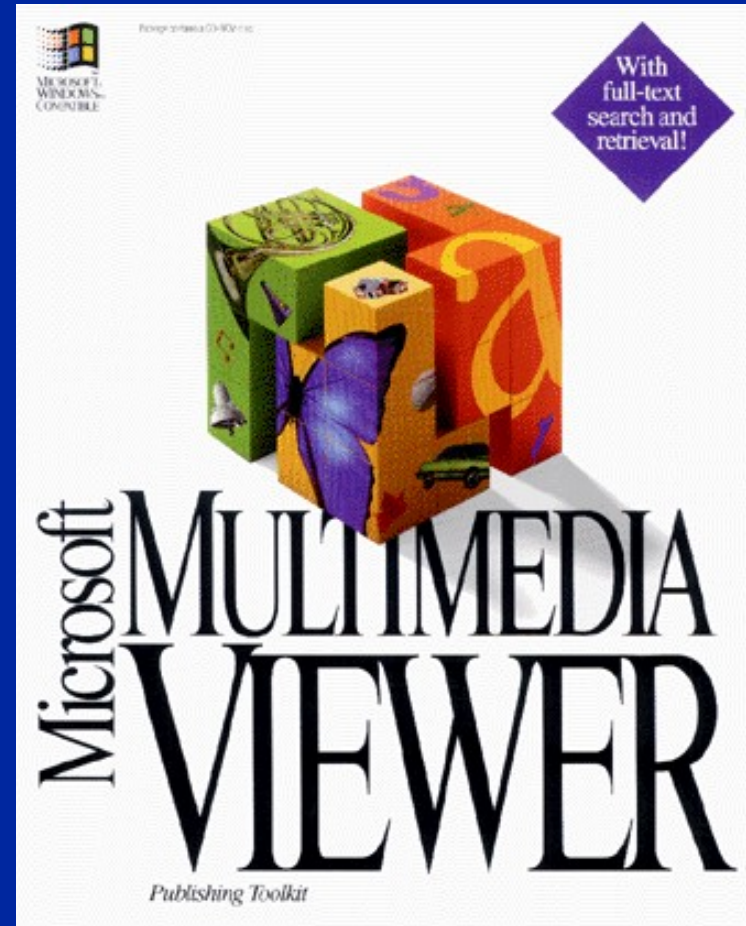
Overview

- **Hypertext (Hyper Book)**
  - **Browsing (for linear search)**
  - **Hotspots (for non linear search)**
  - **Search Engine (search for a specific word)**
- **Topics**
  - **Table of Contents**
  - **Chapters of a book**

Overview (con't.)

- Display
  - Popups
  - Secondary Windows
  - Multiple Panes
  - Text formatting and layout
- Multimedia Support
- Customization

Viewer: an Overview

Tools, etc. to author and display a Viewer title
- Multimedia Viewer / MVB
- Viewer Project Editor / MVP
- Viewer Topic Editor
- Viewer Compiler / MVB
- Word / RTF
- BitEdit / DIB
- WaveEdit / WAV
- Convert

Title Authoring: The Basics

- Project Editor
- Using the Topic Editor
- Using the Viewer compiler
- Using the HotSpot Editor
- Panes and Windows
- Adding a Keyword Index
- Adding Full Text Search

Title Authoring: Down Under

JumpContents

JumpTopic

PositionWindow

RegisterRoutine

ExecProgram

HideButtonBar

HideMenuBar

IfThen/IfThenElse

KeyIndex

Title Authoring: Down Under

- Using Viewer Commands
  - Topic Entry
  - Buttons
  - HotSpots

Title Authoring: Down Under

Using Viewer's Multimedia Control
- Wave
- AVI
- MIDI
- CDAUDIO

Title Authoring: Down Under

- Nuking the Title Bar
  - SetWindowLong
- Displaying a title in different RES
  - scres.dll
- Using sndPlaySound
- MCICommand strings
  - MCICommand

Title Authoring: Down Under

- Calling Viewer from VB
  - Viewer.h
  - VwrCommand

Adding a Bitmap

Contents Page

Using the bitmap command

{bmx stuff.bmp}

x = c,l,r

How it is Done the Easy Way

- Using the Topic Editor to add the {bmx} command
- Loading the RTF file from the Project Editor
- Using the keyboard short cut to envoke the Topic Editor
    - Choosing the {bmx} command from the list box.
- Make sure to load the RTF file from the Project Editor if you want to use the Topic Editor.

Basic Hotspots

- Creating jumps to other topics
  - Double Underline followed by Hidden Text (Context String)
- Creating jumps to topics within topics
  - Define context strings within a topic with the # footnote and no manual page break
- Hiding paragraph marks

Auto-generating RTF Files

- Do not need Word to create the RTF files
- Embedd RTF commands using the Technical Reference, Chapter 2
- Topic Editor will not work in this configuration

Sprites & Pop-ups

- Implementing the Sprites DLL
    - Using RegisterRoutine
    - Double clicking on sprites in the sprites embedded pane invoke popups
- Creating the popups
- Creating a browse sequence for the popups
    - Using the + footnote reference
    - topicgroup:001

Embedding Media

- **Using the ewx "ViewerMCI" control**
  - **{ewc MVMCI2, ViewerMCI, [device AVIVideo][stdcontrol][autostart] [looping][share AVI]stuff.avi}**
  - **Inserting command with the Topic Editor**
  - **Other media types: CDAudio, WaveAudio, Sequencer**
  - **Playback Option: looping, Auto-Start, Share-As**
  - **Range: Start, End, Play Entire File**
  - **Show Controller/Edit Controller**
  - **Layout**

Embedding Media

- AVI Hotspots
  - Using the AVI hotspot editor
  - Jump to description of person
  - Adding the Hotspot playback DLL to Viewer

SHED & External Media

Using the HotSpot Editor

- Loading a bitmap
- Adding a hotspot
- Adding commands to the hotspots

Finishing Touch

- Removing the Title Bar
  - Taking out Std20Menus, Std20Buttons
  - SetWindowLong
    - RegisterRoutine("user","SetWindowLong","UiU")
    - SetWindowLong(hWndApp,-16, 369557504)

Finishing Touch

- PositionTopic to force redraw
  - PositionTopic("main",0,0,1023,1000,0,0)
  - PositionTopic("main",0,0,1023,1023,0,1)

Multimedia in Visual Basic

Michael Winser

&

Steve Molstad

Multimedia Evangelists

Visual Basic Screen Tour

- Form1 - the application
- Toolbox
- Toolbar
- Menu bar
- Properties window
- Code window
- Menu design window
- Project window

Microsoft Visual Basic [design]

File   Edit   View   Run   Debug   Options   Window   Help

Form1

Project1

View Form   **View Code**

📁 **Form1.frm**   Form1
🗂 **GRID.VBX**
🗂 **THREED.VBX**

Properties

Form1 Form

❌ ✔ Form1

AutoRedraw	False
BackColor	&H80000005&
BorderStyle	2 - Sizable
Caption	Form1
ClipControls	True
ControlBox	True
DrawMode	13 - Copy Pen
DrawStyle	0 - Solid
DrawWidth	1
Enabled	True
FillColor	&H00000000&
FillStyle	1 - Transparent
FontBold	True
FontItalic	False
FontName	MS Sans Serif
FontSize	8.25
FontStrikethru	False
FontTransparent	True

Visual Basic Programming System

Building with objects: assemble components into solutions

3270 Emulation

Electronic mail

Multimedia

Data access

Components

"Glue"

Premier Transportation

| Version 1.0 | Thursday, November 21, 1991 | Stock data as of 2:18 PM |

PERSONAL QUOTES

AAPL	15074	55.250	52.750	53.125	- 1.375
BORL	5044	49.500	48.000	49.000	+ 0.500
FMAGX	0	70.710	68.590	68.590	
HRB	1884	35.500	34.625	35.500	+ 0.750
IBM	15786	98.750	97.250	98.500	unchanged
LOTS	6079	28.250	27.500	27.750	- 0.500
MSFT	7649	92.000	89.750	90.250	- 1.125

HISTORICAL PRICING FOR MSFT

Oct 18	7884	91.250	89.750	90.000	+ 0.750
Oct 22	6750	92.750	91.250	91.375	+ 0.375
Oct 23	7649	92.000	89.750	90.250	- 1.125

MSFT

INDEX

Stock Data	. . . .	1
AAPL	. . . .	2
BORL	. . . .	12
IBM	. . . .	13
LOTS	. . . .	30
MSFT	. . . .	34

| Micro Zoom | Archive | Print | Graph | History | Prev | Next | Help |

Fast, flexible custom solutions

Visual Basic 3.0

- Access to latest Windows™ features
  - MAPI
  - OLE 2.0
  - ODBC
  - Pen and multimedia
- Improved debugging, project management, and capacity

Applications Programmability "Automation"

Visual Basic family	App. macro language

Other program engines

OLE command interface

OLE command interface
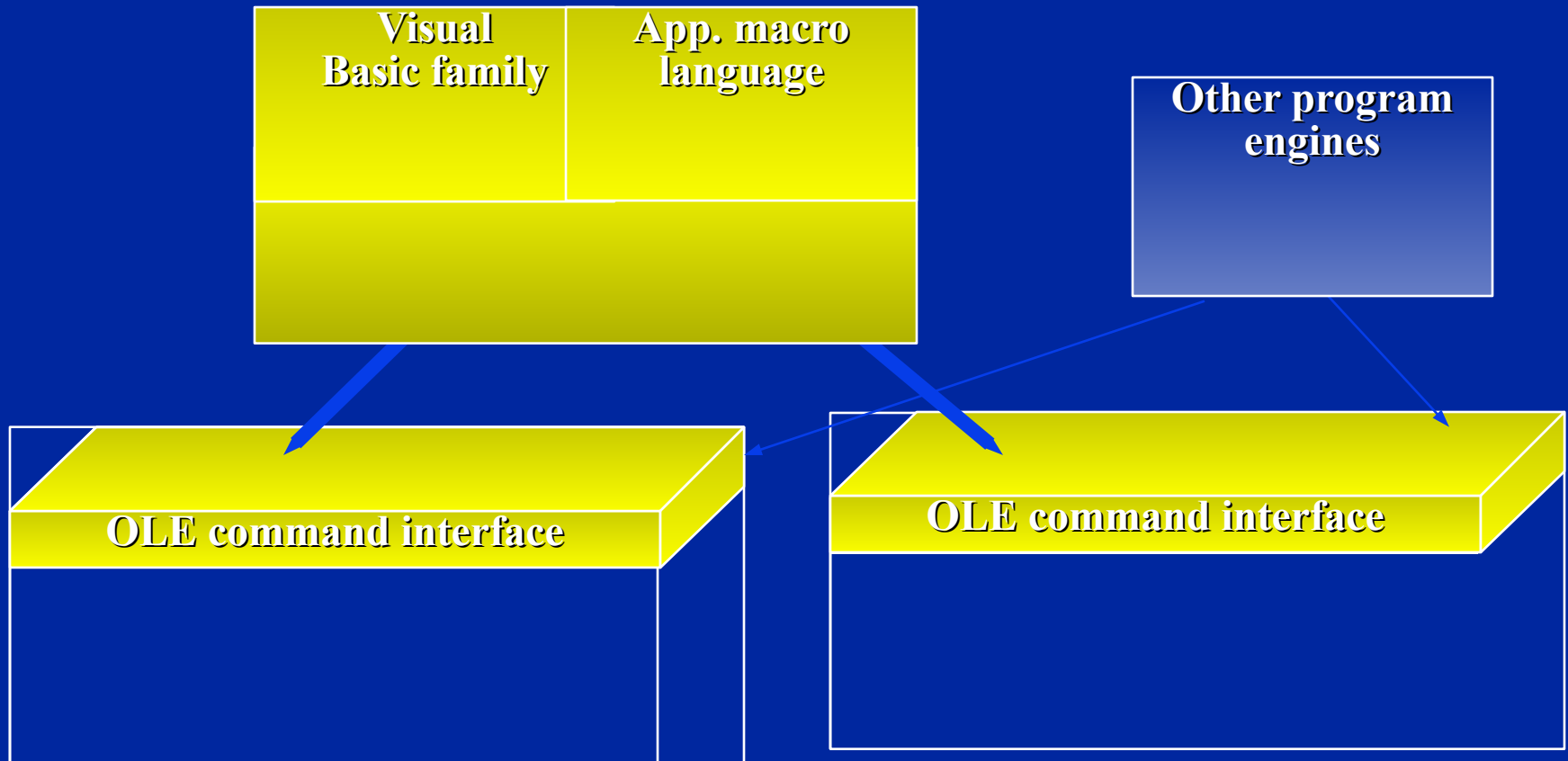
Application Design

- Main form
  - Background and sprites
  - Buttons and hotspots
- Viewer control form
  - Keyword Index
  - Full text searching
  - Browsing
- Totally hidden video form
  - Surprise!

Starting Viewer

- VwrFromMVB
- HwndFromVwr
- Getting fancy

Making Viewer Jump

- VwrCommand
- JumpID(context)

Search, Browse and Index

- KeyIndex, JumpKeyword, WordWheelOpen
- FTSearch, TopicListFromQuery
- Browsing: Next() and Prev()

External Media

- WinExec and ShellExecute
- Calling MMSYSTEM.DLL
- The MCI Control
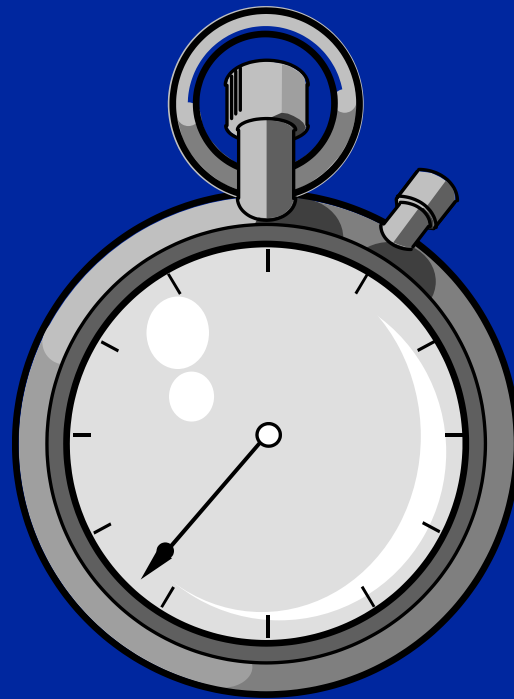
Bigger Than a Breadbox

- Over 100 multimedia development tools are available today
- Media preparation tools are the largest category
- Presentation Tools for simpler jobs and less rigorous requirements have widest audience
- *Growing market opportunity for innovative tools*

What About Cross-platform Development?

- Sharing Content Between Platforms
- Sharing Development (Code) Between Platforms

Can I Share Content?

- Conversion Artist™ from North Coast Software can convert most image formats
- AVI files can be converted to a Mac compatible format and QuickTime files can be converted to AVI
- Digital Audio/MIDI can also be converted
- Watch out for differences in video and audio subsystems

Can I Share Development?

- Absolutely!!
- Viewer & Altura Software
- Authorware, Director
- "Wings"

Top Tool Tips for Tomorrow

- Win32
  - Windows NT will be a primary multimedia development platform
  - Chicago will become the delivery platform of choice
- OLE 2.0
  - Key to future Microsoft operating systems
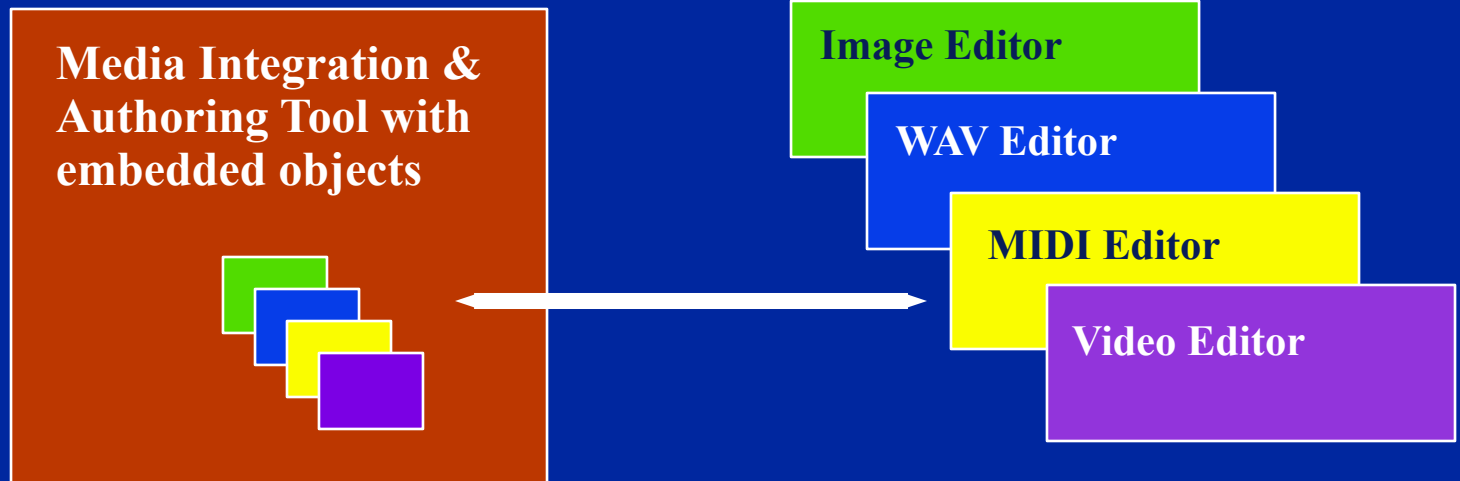 - Can develop OLE 2.0 code today for Windows 3.1 and Windows NT

OLE 2.0 & Multimedia

- "Stupid" Applications — apps can use multimedia without knowing anything about the media
- OLE Automation provides scripting capabilities
- VfW 1.1 AVIFile API's make use of OLE 2.0 Clipboard functions for handling editing digital video

OLE 2.0 & Multimedia

- OLE enabled media tools provide better integration during development
- Client Authoring Tools & Server Media Tools

Media Integration & Authoring Tool with embedded objects

Image Editor

WAV Editor

MIDI Editor

Video Editor

How Do You Choose Multimedia Tools?

- Pick right tool for job
  - Simple tools might be all you need
- Plan for cross platform development
- Many video shops, graphics bureaus, music shops can give you information

Visual Basic Add-ons

- Motion Works
- Media Architects

More Audio Tools!

- Passport Designs Master Trax™
- Turtle Beach Wave™

More Image Editors!

- Micrographix Picture Publisher™
- Aldus Photostyler™

More Animation Tools!

- Hash Enterprises Playmation™
- Gold Disk Animation Works Interactive™
- Motion Works Animotion™
- Azeena Animation Paintbox™

More Video Editors!

- Adobe Premiere™
- ATI MediaMerge™
- Digital Media International Splice™

Video Effects

- **Gryphon Morph™**
- **North Coast Software PhotoMorph™**
- **HSC Digital Morph™**
- **ImageWare MorphWizard™**

More Authoring Tools!

- AimTech IconAuthor™
- Macromedia Authorware™, Director™
- Asymetrix Multimedia Toolbook™
- Pacific Gold Coast Take/1™

OLE Servers

- Add multimedia functionality to existing OLE compatibly applications
- Media Player
- Asymetrix MediaBlitz™
- Lenel Systems Multimedia Works™

Presentation Tools

- Microsoft Powerpoint™
- Asymetrix Compel™
- Lotus Freelance™
- Harvard Graphics™
- Q/Media Q/Media™

Questions?

Multimedia Programs
(life after the roadshow)

? **Virtual Reality** ? **Digital Future** ?

? ? **Interactive Media**

Information Highway

? ?

- It's all MULTIMEDIA
- Wave of the Future
- Technology is Accessible NOW
- Make lots of $$$'s!!!

Technical Resources

- **Multimedia Developer Relations**
- **E-Mail Bulletins (mmdinfo@microsoft.com)**
- **Compuserve Forum & FTP Server**
- **MS Developer Network and Developer Solutions Team**

Multimedia Publishers Program

- Jumpstart CD-ROM
- Hardware & Software Discounts
- Multimedium! Magazine
- Marketing Programs
  (Samplers, show space)

PRODUCTS	REGULARLY	SHOW SPECIAL!
Adobe Systems Premiere & Photoshop	$1000+	$299
Altec Lansing ACS300 Speakers	$400	$200
Altura Software Inc. Quickview	$995/$2500	50% off
Digital Media Int'l Splice 2.0	$295	$249
Macromedia Action!	$495	$99
Macromedia CLIPMedia 2.0	$295	$99
Macromedia CLIPMedia 3.0	$195	$99
Macromedia MacroModel	$1795	$1295
Macromedia Authorware		Year of Free Upgrades ($400 value)
Media Architects ImageKnife Pro	$299	$250
Micrografx Picture Publisher		Not Available at showtime
Midisoft Sound Impression	$79.95	25% off
Midisoft MidiStudio	$249.95	25% off
Midisoft Multimedia Music Library	$79.95	25% off
Motion Works Multimedia Enabler	n/a	$199
North Coast Software PhotoMorph	$149.95	$99.95
Q/Media Software Q/Media	$99	$79
Sony Electronics 900-E CD-R	$6495/$7295	$5495/$6495
Videologic Captivator	$349	40% off
Videologic MediaSpace	$2995	40% off
Videologic Mediator LC	$599	40% off