



Why Michael Jackson Squeaks

Tips and Tools for Digital Audio

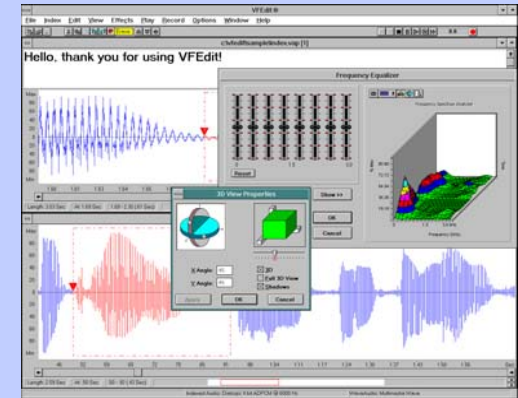
Andrew Michalik, Voice Information Systems, Inc.



Customers Ask Us



- About Digital Audio
- Best Ways to Record
- File Formats & Fidelity
- Ways to Do it Fast
- How to Choose Tools



```
C:\TOOLS Yes? pncvt *.wav *.u04 -vn
Voice Information Systems (1-800-234-UISI) PCM Conversion Utility
v3.00a.0 (C) Copyright A.J. Michalik 1987-1996 U.S. Pat. Pending

Ikh2at5.wav 100.0% (convert)
bevele1p.wav 100.0% (convert)
beve1ike.wav 100.0% (convert)
bnhchene.wav 100.0% (convert)
changit.wav 100.0% (convert)
chikahuy.wav 100.0% (convert)
chines1.wav 100.0% (convert)
chines2.wav 100.0% (convert)
chorco1.wav 100.0% (convert)
ding.wav 100.0% (convert)
dostack.wav 100.0% (convert)
getabuzr.wav 100.0% (convert)
hapjog1.wav 100.0% (convert)
netool1.wav 100.0% (convert)
neway1.wav 100.0% (convert)
ringin1.wav 100.0% (convert)
ringout1.wav 100.0% (convert)
stiffie1.wav 7.8% (convert)
```

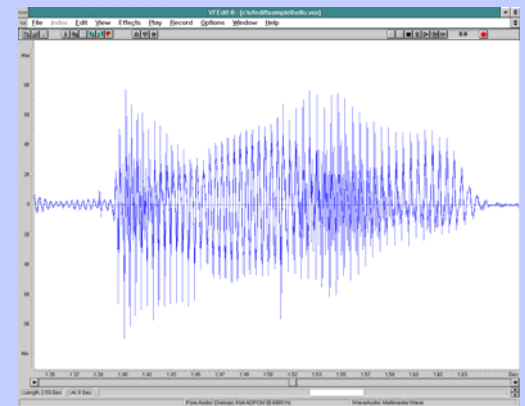
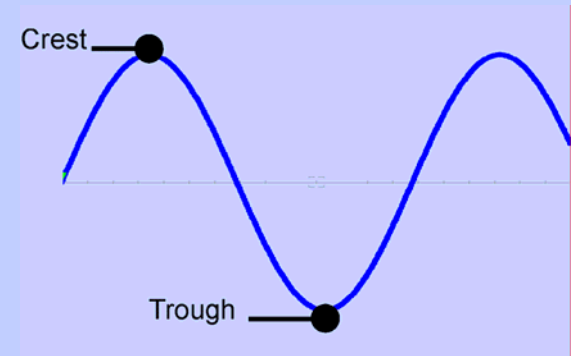




Perception of Sound

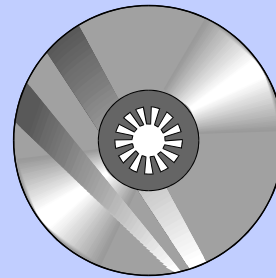


- Amplitude (binary number)
- Frequency (sample rate)
- Duration (file length)
- Complex: a Squeak



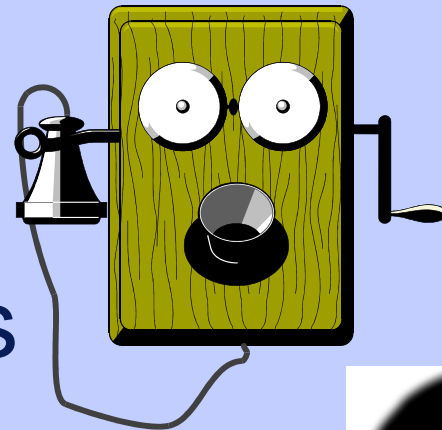
CD Fidelity

- 16 bit amplitude (0 - 65,535)
- 44,100 Hz sample rate
- 5.3 million bytes/minute



Telephone Fidelity

- 12-14 bit amplitude range (0 - 4,095)
- Compressed 4 / 8 bits
- 8,000 Hz sample rate
- 0.24 million bytes/minute



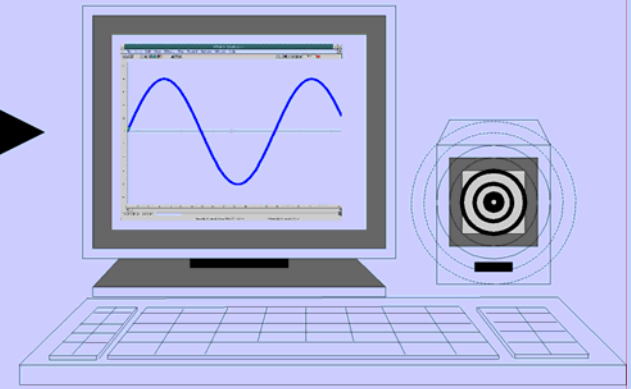
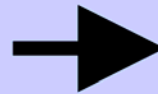
Digitizing: Sound => Disk

- Basic Configurations

- ◆ Direct to Disk



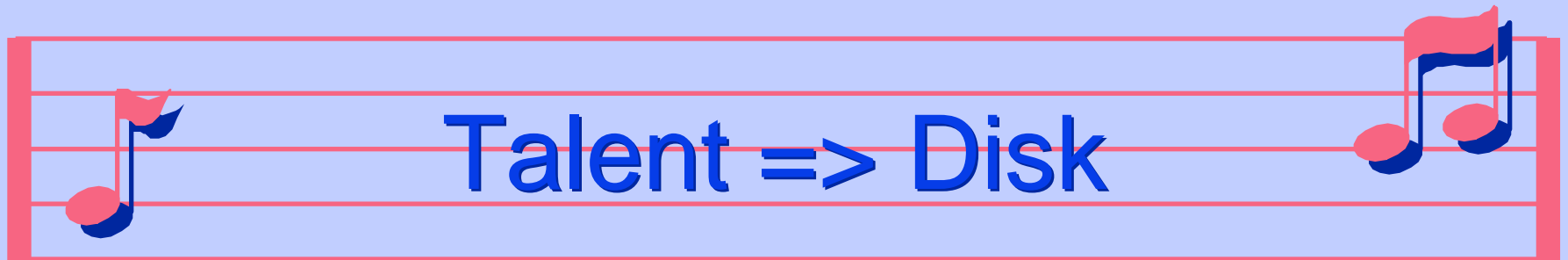
- ◆ Tape to Disk



 Talent => Tape => Disk 

- More Equipment
- Reduces some noise
- Awkward mechanics
- 2 Step Process





- Simple
- Single Step
- Instant Feedback
- First Take = Final Take
- Fast Turn-around

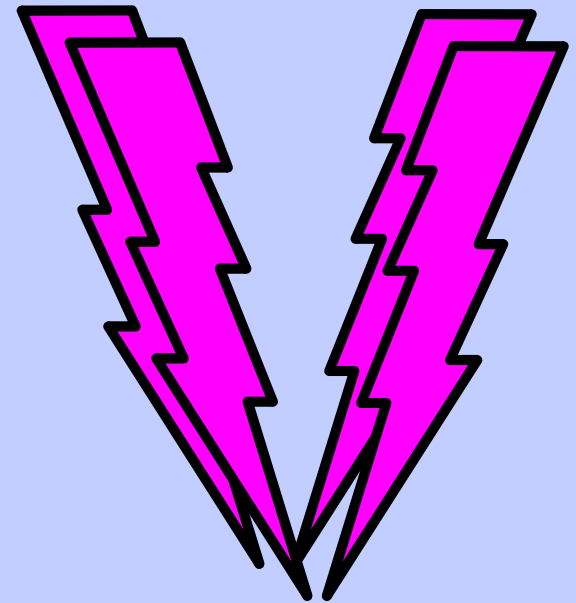




Some Noise Sources



- Good Power Supply
- Bus Noise
 - ◆ Move Audio Board near PS
 - ◆ Move other boards away
- Fan Noise
- Fluorescent Lights



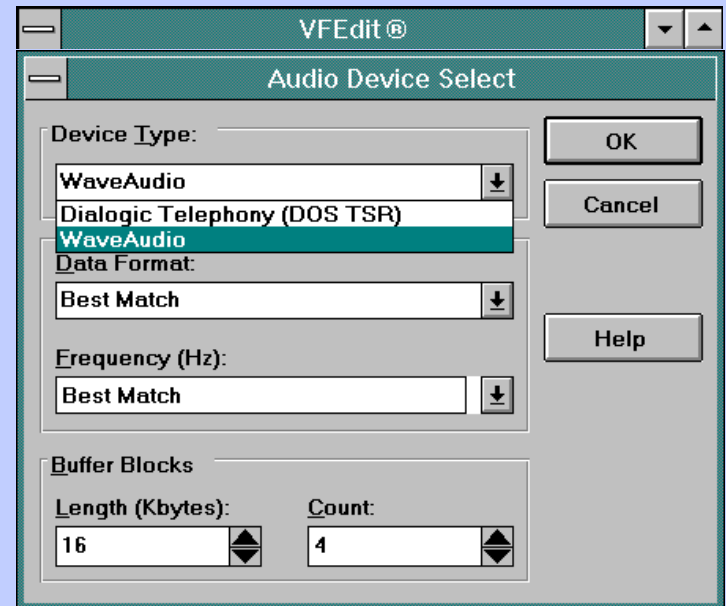
Digitizing Boards

- Telephony Boards

- ◆ No extra steps
- ◆ “WYHIWYG”
- ◆ Dialogic ProLine

- Non-Telephony

- ◆ Avoid 8-bit
- ◆ Sample Rates?

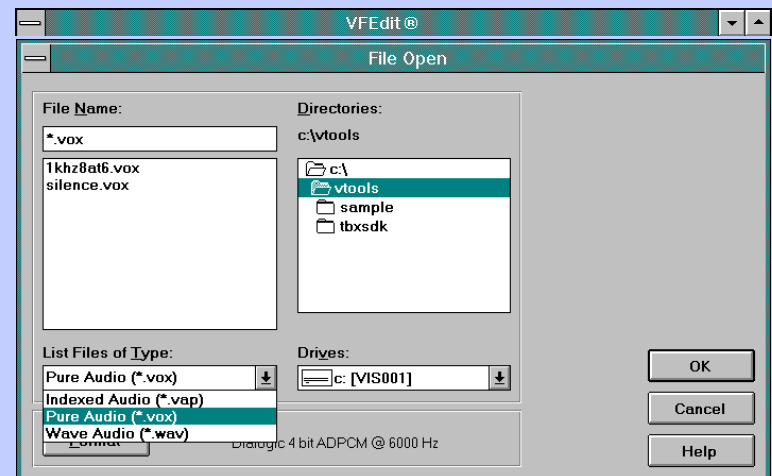




Graphical Editing Tools

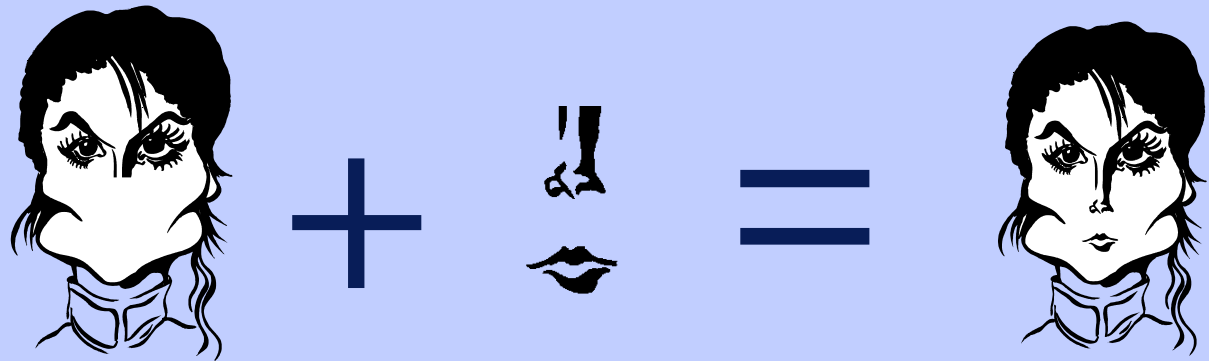


- Telephony Audio & Files
- Multiple Board Support
- On-the-fly Conversion
- Native Mode Editing



A Lossy Little Secret

- Compression Not Like “.Zip” File
- Native Editing Prevents Losses
- Cut, paste - Bit for bit Match

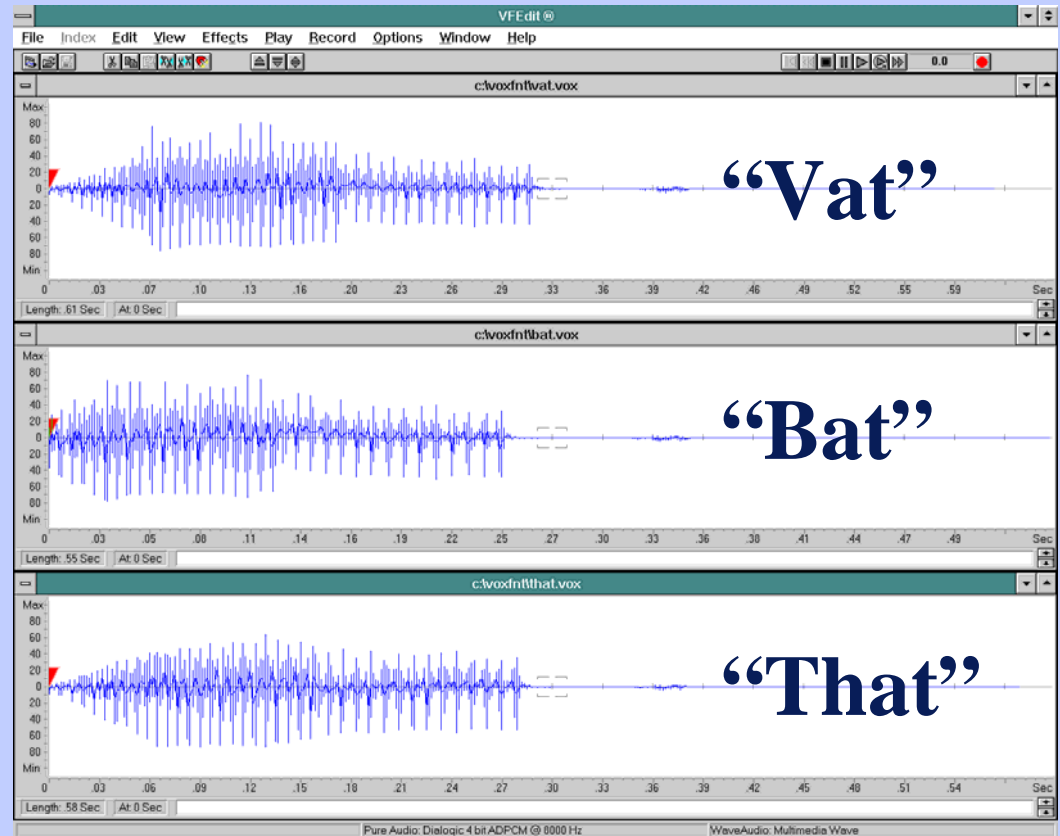




Native Mode Editing



- Best Intelligibility
- “WYHIWYG”

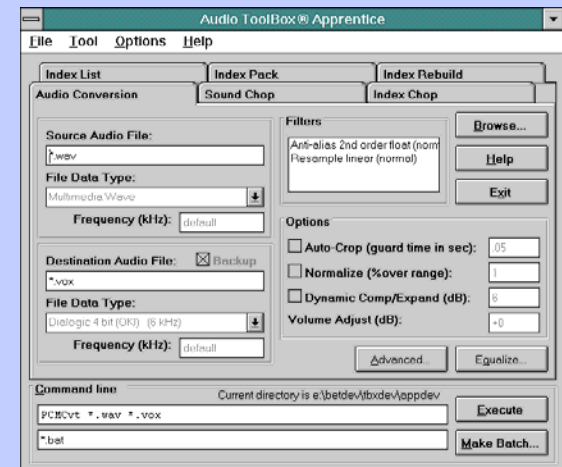




Batch Processing



- GUI for Ease of Use
- Batch Record & Chop
 - ◆ Pack into indexed
 - ◆ Coughs, takes
- DOS for 20% faster
 - ◆ Windows 80x87 switch



```
G:\TOOLS Yes? pcmcut *.wav *.vo4 -un
Voice Information Systems (1-800-234-0181) PCM Conversion Utility
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1khs8at6.wav 100.0% (convert)
beevhlp.wav 100.0% (convert)
beevlike.wav 100.0% (convert)
bnkchene.wav 100.0% (convert)
changit.wav 100.0% (convert)
chikahoy.wav 100.0% (convert)
chines.wav 100.0% (convert)
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chorca.wav 100.0% (convert)
ding.wav 100.0% (convert)
dosntack.wav 100.0% (convert)
getabuzz.wav 100.0% (convert)
hoploxi.wav 100.0% (convert)
notcool.wav 100.0% (convert)
nosky.wav 100.0% (convert)
ringin.wav 100.0% (convert)
ringout.wav 100.0% (convert)
stiffie.wav 7.0% (convert)
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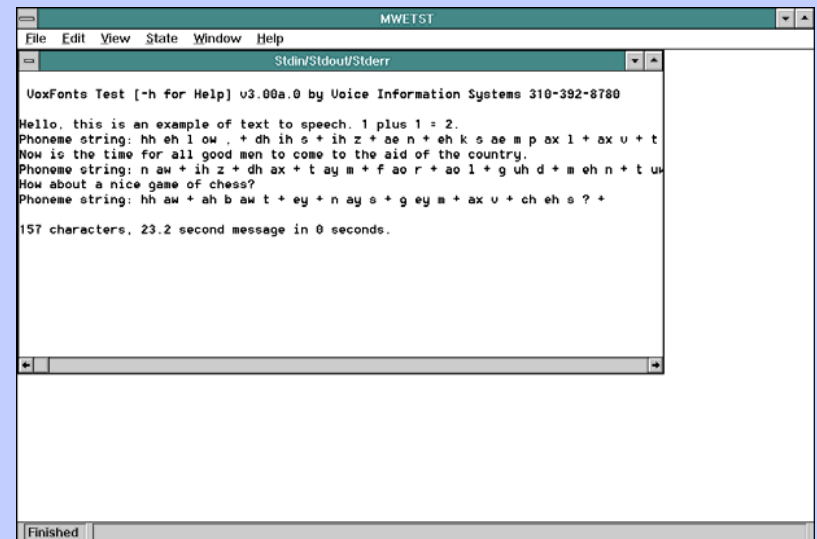
Batch Converting



- Master at Higher Fidelity
 - ◆ Archival Purposes
 - ◆ Better Fidelity in Future
- Review on Final System
 - ◆ CD not= Telephony

Text-to-Speech Prototype

- Batch convert scripts
- Re-record for final



```
MWETST
File Edit View State Window Help
Stdin/Stdout/Stderr

VoxFonts Test [-h for Help] v3.00a.0 by Voice Information Systems 310-392-8780
Hello, this is an example of text to speech. 1 plus 1 = 2.
Phoneme string: hh eh l ow . + dh ih s + ih z + ae n + eh k s ae m p ax l + ax u + t
Now is the time for all good men to come to the aid of the country.
Phoneme string: n aw + ih z + dh ax + t ay m + f ao r + ao l + g uh d + m eh n + t u
How about a nice game of chess?
Phoneme string: hh aw + ah b aw t + ey + n ay s + g ey m + ax u + ch eh s ? +

157 characters, 23.2 second message in 0 seconds.

Finished
```



Final Edits: Max Impact



- Adjust Pauses
- Review Alternatives
- Review Final Cut
- Graphical Interface

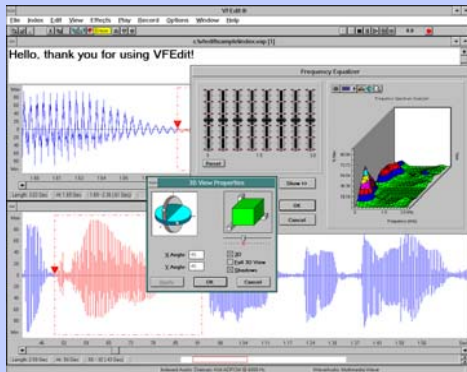
A graphic of a musical staff with five red lines. On the left and right ends of the staff are red and blue musical notes. The word "Summary" is written in blue text across the middle of the staff.

Summary

- Tools are Important, but...
- Pen vs Penmanship
- CD-ROM Sampler & Recording Tips at Booth

Voice Information Systems

- Telephony Audio Products & Services
- See Michael Jackson at our Booth #1113
- Visit our Website at www.vinfo.com



VFEdit® Prompt Editor

```
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Audio ToolBox Batch Processor