

# SoniClear

## Digital Recording Technology

### Introduction

Trio Systems has introduced SoniClear, patent pending software technology, to more efficiently and effectively gather, organize, and share verbal information. SoniClear software turns any Windows computer into an intelligent recording system for transforming verbal information into usable knowledge.

This paper discusses the market for audio recording, and illustrates how SoniClear enhances the recording process for applications in business, government, and education.

*“Information from the beginning of time has been passed from one person to the next, via the spoken word. Every day, millions of people encounter verbal information in the form of meetings, lectures, instructions, dictation, and commands. There is a pressing need for tools to help retain and utilize as much of this valuable information as possible.”*

*Alan Bartholomew  
President  
Trio Systems LLC*

### Contents

Introduction .....	Page 1
Recording Market.....	2
Technical Advances .....	3
SoniClear Technology .....	4
Example Applications .....	5
Government Meetings .....	6
Enterprise Knowledge Management ....	7
Higher Education.....	7
Conclusion .....	8

## Recording Market

The recording of audio information is currently a very large business and is used in a wide variety of applications, including:

- Business Dictation
- Medical and Legal Dictation
- Meeting Recording
- Music Recording
- Books on Tape
- Entertainment

The variety and depth of applications for recording illustrates the importance of audio information in our society. Following are three quantitative examples: sales of audio recording equipment, transcription services, and estimates for the meetings held every day.

### Audio Recording Equipment

The market for audio recording and playback devices is substantial, approaching half a billion dollars per year at the factory level. Retail sales of these devices exceeds \$1 billion dollars per year.

2000 Actual Audio Sales outlook  
(units in 1000's), based on study by  
Consumer Electronics Association.

	Unit Sales	Average Price (Factory \$)	Factory \$ Value
Tape Recorders	8,304	\$25	\$208M
Tape Players	8,612	\$20	\$217M
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<b>Total</b>	<b>16,916</b>		<b>\$425M</b>

### Transcription Services

Another example of the importance of audio information is the market for medical transcription services. According to a study by the Medical Transcription Industry Alliance ([www.mtia.com](http://www.mtia.com)), medical transcription in the United States is a \$22.3 billion annual market. This does not include the use of dictation in legal professions, or the increased use of dictation and transcription by law enforcement agencies. Transcription services are expected by many observers to be a growth industry, with the majority of new business in the form of digitally recorded dictation that is electronically transmitted to outsource transcription services.

### Daily Meetings

An estimated 10 million meetings are held every day. Of the meetings held by the 87,000 public entities in the United States, nearly all are recorded using cassette tape systems. In business, a significant number of meetings held with clients are recorded using conventional cassette and newer digital hand-held recorders.



## Technical Advances

Technical advances in computer hardware and software have made it possible to use off-the-shelf computers to function as audio recording devices.

**Miniaturization** – Computers are shrinking in size and power consumption, making portable operation practical for everyone. Examples include laptop and tablet computers, Pocket PC, cellphones, PDA and entertainment devices.

**Processors** - Raw computing power has increased more than 10 fold in the past several years, with desktop computers going from typical processing speed of 200 MHz to over 3 GHz today. This trend will continue into the foreseeable future. Faster processing time makes it possible to capture audio reliably, while using the computer for other activities, such as running PowerPoint presentations or typing notes in a word processor. The processing power also makes it possible to perform digital signal processing to enhance the sound quality.

**Data Storage** - Disk storage capacity and speed has made it easy to store and manipulate the large files created by audio recording. A typical 30 Gigabyte drive has capacity for 180 hours of continuous recording. With the availability of inexpensive CD writers and media, large audio files can be duplicated and archived with ease.

**Encoding** – The ability to reduce audio to very small files makes it possible to distribute audio information over the Internet. This technology is a spinoff of the efforts to distribute music through the Internet, as well as encoding voice for digital cellphones. Even dial-up Internet access is fast enough for real-time streaming playback of high-quality voice recordings. The inclusion of a standard encoder benefits SoniClear users in a number of ways, such as the MP3 encoder. MP3 compatible players can play downloaded audio files, and virtually all new CD players include the ability to play MP3 files from computer generated CDROMs. Over 30 hours of audio can be saved on CDROM in MP3 format, encoded at 44kbps (22 Megabytes per hour).

All of these advances have converged to make it possible for commonly available computers to replace the functionality of dedicated recording devices. What has been missing, until now, is the integration of these technological advances into a practical and simple program that anyone can use. This is the mission of SoniClear, digital audio recording on 21st century computing platforms.



## **SoniClear Technology**

SoniClear uses the standard sound processing capability in computers to record and play back audio signals. SoniClear includes a number of innovations that set it apart from all other products.

### **Simple User Interface**

A significant aspect of the product development involved simplifying the user interface to a minimal set of controls displayed when the program starts. Based on 6 years of research and feedback from customers, all technical details were removed from the interface. As a result, the user experience is as simple as operating a typical tape recorder. Create a new recording with the New button, start recording with the red Record button, stop recording with the black, square Stop button, and so forth. These are all standard operations and icons that most people are familiar with. As a result, users require little or no training to start using the program.

### **Recording Technology**

SoniClear goes a step beyond ordinary recording software by performing proprietary VoiceBoost signal enhancement as it writes the audio to disk. VoiceBoost uses Digital Signal Processing to ensure that the recorded sound is of optimal clarity. This involves a number of processes, including volume control, “presence” boost, peak limiting, and a “de esser” (which removes annoying sibilant sounds that are present in many speaking voices). This all occurs automatically during recording. The benefit of VoiceBoost is that the sound quality is excellent, even on computer speakers of limited fidelity. This can be important for mobile applications where high quality speakers are not available. It is also important for playback from encoded files delivered over the Internet, since the compression process can significantly reduce the fidelity of the audio, when using low bitrates. SoniClear can be used with multiple applications running simultaneously.

### **Annotation Technology**

SoniClear makes it easy to manually annotate recordings, for applications such as recording meetings, lectures, and interviews. With a single click of the mouse or a single press of a key on the keyboard, annotations (“notes”) can be entered with automatic timestamps indicating when the note was entered. These notes can be edited while recording, or at a later time. The process is very streamlined, so as to be as intuitive and efficient as possible while the user is focused on the activity being recorded. With the notes entered into SoniClear, it is extremely efficient to locate portions of the recording for review and transcription. Unlike tape recording, this digitally recorded audio information with notes turns hours of recordings into usable information that can be accessed directly with ease.



### **Sharing Technology**

SoniClear makes it easy to share recordings with others. The recording files can be posted to a shared disk drive on the local area network, posted to the Internet, or saved on CDROM for playback on other computers and MP3-compatible CD players.

### **Portability**

The current release of SoniClear is developed to support Microsoft Windows operating systems (XP/TabletXP/Vista). The SoniClear code is written entirely in C and C++, allowing it to be ported to any computing platform, such as Windows CE, Palm OS V, Symbian and Linux.

### **Configurability**

SoniClear is packaged as several distinct products. Each product includes the core digital recording technology, with the features tailored to meet specific application requirements. The SoniClear product line is continuously updated with new features and product variations to provide a solutions-oriented approach to targeted markets.

## **Example Applications**

SoniClear can be used in a wide variety of applications in business, government and education. Following are just a few examples of how SoniClear technology can enhance these activities. The program can be used as a stand-alone productivity application, or integrated into vertical market applications.

## Government Meetings

From the federal government down to the smallest municipality in the United States, it is a legal requirement that every public meeting must be recorded and made available to the public and maintained as a public record. Most of these systems that exist today are analog tape systems that cost government millions of dollars every year to replace and maintain.

SoniClear Gov products provide a complete recording solution for government that allows them to use their existing computer technology infrastructure. SoniClear Gov allows the user to record, annotate, and share meetings with officials, staff, and the public.

SoniClear Gov technology provides a return on investment that can easily be demonstrated using a typical government worker situation.

### **Labor Cost Savings using SoniClear Gov Recorder**

Every city in the United States has a City Clerk whose job is to record public meetings, and make them available to the public. Using SoniClear Gov Recorder can save an estimated \$6,654 per year, per clerk, based on the following assumptions:

- City Clerk avg. salary \$7000 per month.
- Hourly Rate (assuming 160 hr/month) = \$43.75Avg.
- Number of Public Meetings per month per clerk = 10
- Labor Savings using SoniClear for each meeting:
  - ✓ Transcription time = 30 minutes
  - ✓ Researching action items = 30 minutes
  - ✓ Tape duplication time = 15 minutes

<u>Savings per Meeting</u>		
Transcription .....	\$21.88	(.5hr * \$43.75/hr)
Researching.....	\$21.88	(.5hr * \$43.75/hr)
Duplication .....	\$10.94	(.25hr * \$43.75/hr)
 Savings per meeting .....	 54.70	
Savings per month.....	547.00	
Savings per year, 1 user .....	6,654.00	
Savings per year, 2 users .....	13,308.00	
 <b>ROI* .....</b>	 <b>1,673% per year (16 times)</b>	 <b>(\$13,308 / \$795)</b>

\*This is only labor savings and does not include savings from reduced supply and storage costs from eliminating tape.



## **Enterprise Knowledge Management**

Business today is becoming more and more mobile. “Road Warrior” sales professionals are on the go, meeting face to face with customers having one verbal information exchange after another. Back at the office, the “Corridor Warrior” executives are running from one meeting to the next developing ideas and exchanging action items.

SoniClear provides tools for mobile professionals to keep track of the verbal information that they deal with constantly. SoniClear can be used to:

- Record customer interviews and phone conversations for management
- Record dictation for electronic delivery to secretary
- Record verbal notes for later reference
- Record voice tracks for self-running PowerPoint presentations
- Record continuing education lectures and conferences

## **Higher Education**

The verbal transfer of information from professor to student is a centuries-long tradition. Software has been developed to help the educational process, with email access to professors, online coursework, and computerized testing. However, lectures remain the primary teaching tool in higher education.

Now SoniClear enhances learning with the ability to record and annotate lectures. Students can record and outline lectures for efficient study and sharing with other students. With notes taken during the lecture, students can, in effect, highlight the spoken word of the professor

Professors can also use SoniClear to record lectures. Use the built-in microphone or attach a lavalier microphone to a laptop to make a high-quality recording. Once the recording is made, it can be posted to the Internet for student review.



## Conclusion

In conclusion, SoniClear digital recording technology offers real-world solutions to today's digital audio needs. SoniClear captures every word, and makes it easy to play back, transcribe, and share the information with others. Several product versions are available to meet a wide variety of applications requirements, running on Windows computer systems. Trio Systems can also create custom solutions, combining the various SoniClear features to meet specific application needs. In addition, SoniClear can be ported to any computing platform, including cellphones, PDA's, and other Internet and wireless devices to create hardware-specific devices for digital recording.

SoniClear is available directly from Trio Systems. Visit us at [www.soniclear.com](http://www.soniclear.com) or call Trio Systems for a consultation about how SoniClear technology can enhance your business.

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