USING VOICE-OVER NARRATIONS TO BOOST LEARNING

IMPACT IN RAPID E-LEARNING, TRAINING AND WEB

PRESENTATIONS IN A FAST AND COST-EFFECTIVE WAY:

VOICE EFFECT MARSHALLING

WHITE PAPER

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Today's course development tools don't allow developers of rapid e-learning and training courses to take advantage of voice narration to boost learning impact in a fast and cost-effective way. Professional voice-over talents are costly and can delay production, audio editing of voice-over recordings is difficult, and synchronizing voice-overs with animations by time-line editing is time-consuming. The solution is Voice Effect Marshalling (VEM), a new technology that synchronizes voice-overs automatically, handles voice-over changes easily, and makes it simple to mix two or more voices on a slide. An additional solution is to generate voice narration with text-based computer voices. Eliminating recording and professional voice-overs, voice narration is added and maintained by text editing alone - cost-effectively and without production delays.

Background

Speed and ease of use are critical factors in today's world of ever new and changing knowledge and products that need to be taught and presented. It's less and less practical to spend time and money to produce a high-level training video only to find that it's out-of-date and hard to update.

Over the past few years, developers have begun using PowerPoint© presentations to rapidly develop education and training courses. These courses are brought to the learner's desktop for e-learning with PowerPoint to Flash conversion tools.

For effective results with e-learning it is desirable to simulate the classroom and a good teacher's voice makes a big difference. However, producing and maintaining high impact voice-over course narration in a rapid and cost-effective way is still a challenge.

Conversion tools can record or import a voice track and synchronize it with the visual animations with time-line editing. However, these tools are limited in their ability to produce professional voice narration efficiently.

There is a need for a new and more powerful technology for producing professional narration in e-learning and training courses cost-effectively and on time.

How Voice-Over Narration Increases Learning Impact

Learning expert Dr. Richard E. Mayer has formulated a set of principles for combining visual and verbal forms of presentations for more effective learning (see http://www.indezine.com/products/powerpoint/personality/richardmayer.html).

Guidelines on how to add voice-over narration to increase learning effectivity have been drawn from these principles and are listed below.

Principle	Explanation	Guideline for Adding Narration
Dual-Channel Information Processing	The human information processing system has separate information processing channels for visual material and verbal material	Add voice-over narration to the visual material because it significantly increases the amount of information that can be effectively learned from a slide
Contiguity	People learn better when corresponding words and pictures are presented at the same time or next to each other on the screen	Synchronize the voice-over narration with visual animations on a slide in order to better describe and explain text and graphic objects.
Modality	People learn better from animation with spoken text than animation with printed text	The text in balloons and call-outs should be spoken rather than written on the screen.
Personalization	People learn better from conversational style than formal style	Voice-over should be personal, interesting, and colloquial
Active Learning Processing	People understand the presented material when they pay attention to the relevant material, organize it into a coherent mental structure, and integrate it with their prior knowledge.	All the following categories of narration should be provided: • Organize and Orient – Provide introduction, thesis, summary topics • Explain in Detail – Provide detailed descriptions of slide objects • Integrate with Prior Knowledge – Provide concrete examples
Summary	Personalized voice-over narration that comprises general orientation topics and detailed object-synched topics significantly improves learning.	

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Challenges for Cost-Effective Voice-Over Narration

<u>Voice-Overs are Costly, Time-Consuming and Delay Production</u>: Quality voice-overs are studio-recorded by professional voice-over talents with attendant issues of cost and availability. Difficulties in scheduling a voice-over session can delay production.

<u>Editing Voice-Overs is Difficult</u>: A major challenge with recorded narrations is the need for audio editing and re-recording in case of changes and updates. Frequently, a narration is simply not updated because of the trouble and expense involved.

<u>Synchronizing Voice-Overs is Time-Consuming and Requires Expertise</u>: Synchronizing a voice recording by time-line editing is a time-consuming process that has to be repeated whenever changes are made. Because of this, developers are sometimes hesitant to add the animation required for effective learning.

<u>Mixing Multiple Voices on a Slide is Difficult</u>: Having more than one voice in a slide narration, for example, male and female voices speaking alternately, helps keep a learner's interest but mixing the voices requires audio editing and expertise.

Voice Effect Marshalling - A Solution for Rapid Cost-Effective Voice-Over Narration

To meet these challenges in a simple but effective way, Tuval's engineers developed the Voice Effect Marshalling (VEM) technology: instead of recording a single narration for an entire slide, the slide narration is built up from individual voice narration clips.

Individual Voice Narration Clips

The VEM technology defines two types of individual voice-over narration clips:

- <u>Object Voice Clips</u> – Narration clips that describe and explain specific screen text or graphic objects.

- <u>General Voice Clips</u> – Narration clips that convey general information about the slide such as introduction, thesis, and summary.

Narration clips are implemented as voice sound effects in the PowerPoint slide animation sequence in the Custom Animation panel.

Links Voice with Visual Animations

Objects that have voice effects are assigned visual animation effects. The visual animation effects help the learner connect a voice effect with its object by animating the object when the voice is played.

A simple analogy is a line of soldiers counting off. When the first soldier counts his number, the rest of the soldiers have their head and eyes turned to him. As each soldier counts his number, he turns his head and eyes to the front. By the "visual effect" of the soldier turning his head, the commander can identify the soldier's "voice effect" (count) with him.

The Voice Effect Marshalling Process

Voice Effect Marshalling is the process by which the individual voice effects and visual effects that were created are assembled and ordered in the slide animation sequence so that:

1.   Objects are animated one by one in the desired order

2.   An object's voice effect is heard with the object's animation

3.   General voice effects are integrated with the other effects in the desired order, for example, an introduction effect is played at the beginning of the sequence and the summary effect is played at the end.

The figure below shows individual visual effects and voice effects associated with text and graphic slide objects and an introductory voice effect associated with the slide. Male and female voice effects are used. The VEM process maps the visual and voice effects to the slide animation sequence in the desired order. The voice effects are heard during playback as a continuous slide narration as if they were spliced together.
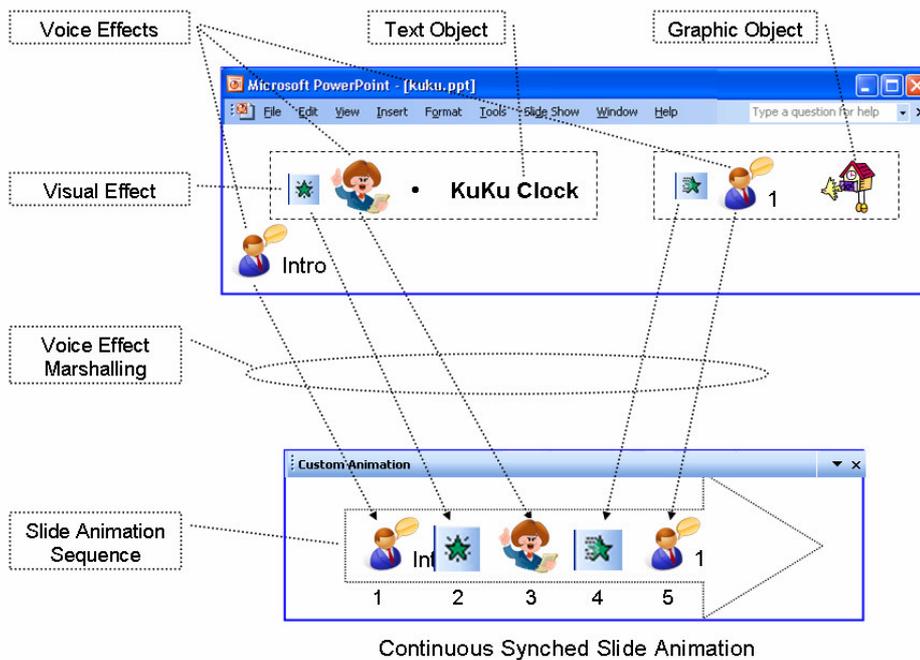
Voice Effect Marshalling Produces a Continuous Synchronized Slide Narration

Benefits of Voice Effect Marshalling

<u>Automatic Voice Synchronization</u>: By adjoining the voice effect for an object to its visual effect in the animation sequence, VEM automatically synchronizes the voice with the object's animation. In addition, the voice effect can be triggered to play just before, just after, or simultaneously with the visual animation.

<u>Handles Changes Easily</u>: Because it builds the slide narration from individual audio clips, VEM lets the user make many changes in the slide narration by just rearranging the component clips: removing clips, re-ordering clips and inserting clips. When re-recording is necessary, only the relevant clips are re-recorded.

<u>Mixes Multiple Voices Automatically</u>: Multiple voices are automatically mixed by recording them on separate clips and they are heard in the slide narration one after the other as if they were on the same voice track.

<u>Supports Learning Principles</u>: Voice-over narration can comprise both general orientation topics and detailed, object-synched topics to significantly improve learning.

Using Text-Based Voices – A Solution That Eliminates Professional Voice-Overs

Text-based computer voices, otherwise known as text-to-speech or TTS, let developers produce professional voice narration fast by eliminating microphone recording and professional voice-overs. Modern TTS voices, which are remarkably clear and effective, read the narration script instead of the professional voice-overs. This solution is used in combination with the VEM solution.

Benefits of Using Text-Based Speech

Using text-based speech in combination with VEM helps provide rapid cost-effective voice narration in the following ways:

<u>Professional Voice-Over Talents Eliminated</u>: By eliminating professional voice-over talents, voice narration can be produced and updated anywhere at any time by script authors, eliminating production delays. This supports distributed courseware development.

<u>Rapid Voice-Over Editing</u>: Voice-over narrations are updated with a text editor. After changing the narration script the narration refreshes automatically.

<u>Use Different Languages</u>: With text-based voices available in all major languages, multiple voices in different languages can be easily combined in a presentation.

<u>Store and Publish Verbal Content in Text</u>: The verbal text information entered by the user is stored in a database. This text is organized and structured in both general and object-specific sections, forming a valuable document for preserving important verbal content and publishing as speaker notes.

<u>Use as Subtitles</u>: The text can also be used as subtitles to accompany the narration.

Use Scenarios

VEM empowers the desktop user to produce professional quality narrations easily and using text-based voices makes it even faster and more flexible. There are many applications for this technology:

Web-Based Training: A multi-national company needs to provide frequent training to employees that work all over the globe; new and updated courses are constantly being prepared. To be able to serve all these employees at their place of work in a timely fashion, the company's training executives have decided to use rapid web-based training courses. In order to create and maintain the courses within the cost and time restrictions, they have decided to produce the training voice narrations with the VEM method.

On-Line Academic Courses: Today's university professors and high school teachers have classroom web sites to post their courses for student learning and review. Having an accompanying narration will improve the learning, but the teaching load doesn't allow much time to prepare one. VEM is the method of choice to produce effective voice narrations efficiently while saving teacher's valuable time.

Business Presentations on the Web: Today many small and medium businesses maintain web sites where they post presentations that describe their company, products and services. These presentations are more effective with a professional narration. VEM is an affordable way for an ordinary business people to produce quality narrations for their business presentations.

Speech-Over Professional^{TM} - Tuval Software Industries Solution for Rapid Cost-Effective Voice-Over Narration

The Speech-Over Professional software product implement the Voice Effect Marshalling technology to let course developers produce professional-quality, perfectly-synchronized voice narration for e-learning and training presentations that is easy to update. In addition, the Speech-Over product lets developers use text-based voices for added speed and flexibility.

Adds Voice Clips for Individual Objects: Developers use the simple dialog below to add voice narration clips to individual selected text or graphic screen objects. Separate dashboards are available for microphone recording, importing pre-recorded files, and generating text-based speech, as shown. General voice clips are added by selecting the screen.
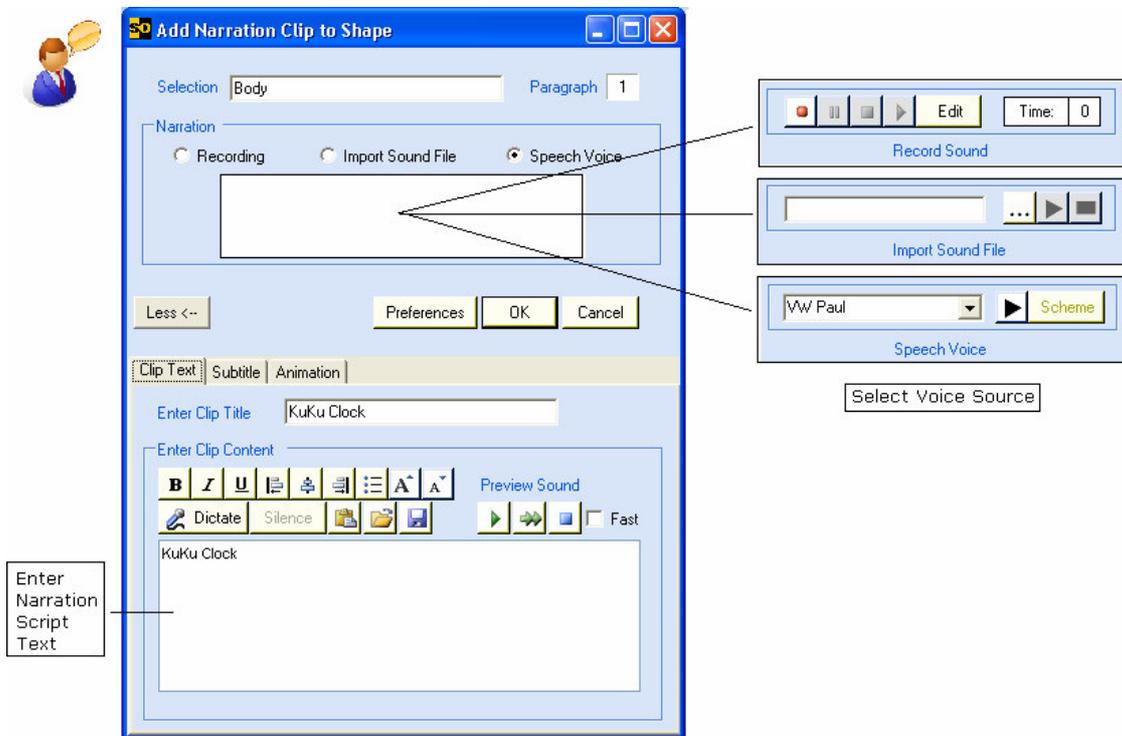

Dialog for Adding a Voice Narration Clip

<u>Synchronizes Voice-Over with Visual Animations</u>: The same dialog adds a visual animation to the object when none exists. The voice effect is automatically inserted with the object's visual effect in the slide animation sequence, synchronizing the voice with the animation. The voice effect can be set to trigger before, after, or with the visual effect.
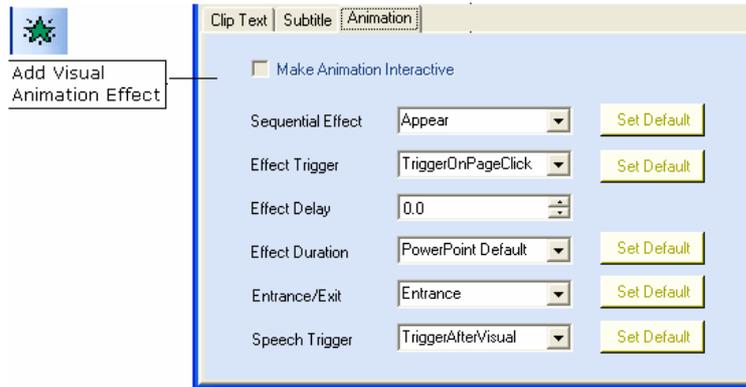
Dialog for Adding a Visual Animation Effect

<u>Handles Changes Easily</u>: The narration clips on a slide are displayed as rows on a matrix in the Clip Organizer. The figure below shows the correspondence between the narration clips and the visual and voice effects in the Custom Animation screen.
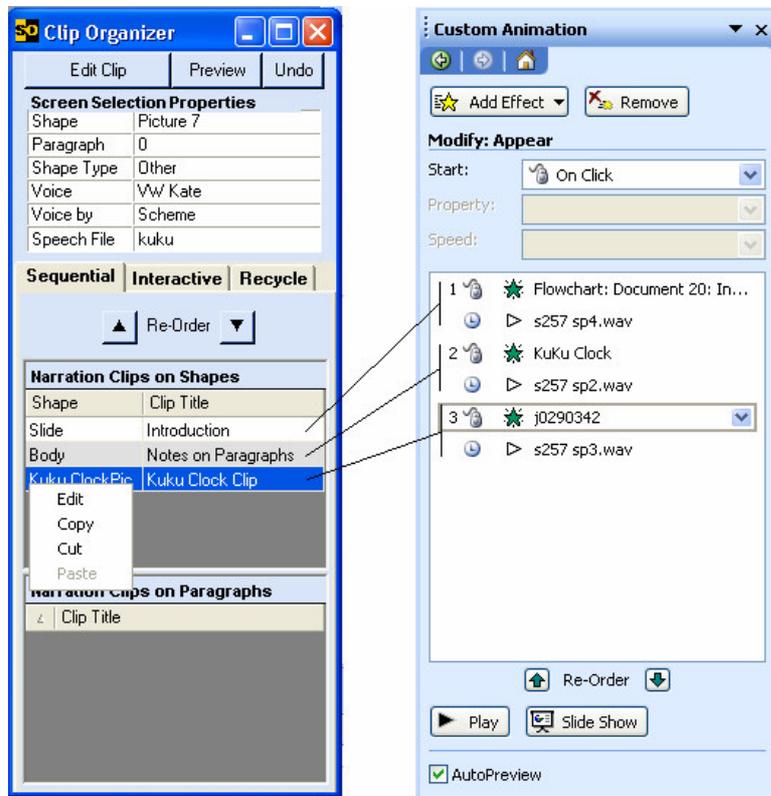
Narration Clips on the Clip Organizer

Speech-Over can make many changes in the slide narration without re-recording by re-arranging the component narration clips and re-marshalling them:

- The slide narration order can be changed by re-ordering the clip sequence on the Clip Organizer.

- Clips can be copied or moved from one object to another and they can be deleted.

- Individual clips can be edited. When re-recording is necessary, only the relevant clips are re-recorded.

Eliminate Recording with Text-Based Voices: The Speech-Over product can utilize text-based voices in combination with VEM to produce voice narration cost-effectively without any production delays. Narration script text is entered or dictated and is stored in a database.

Speaker Notes: Narration script text can be automatically written on the PowerPoint notes pane as very effective formatted speaker notes.

In the resulting slide show, objects are animated one by one, and their voice-overs join together to create a continuous synched narration for the slide, producing a very effective synched talking presentation.

Conclusion

Developers of rapid e-learning and training courses can take full advantage of voice narration for more effective learning in a fast and cost-effective way with Tuval Software Industries' Speech-Professional product. Tuval's Voice Effect Marshalling technology synchronizes voice-overs automatically, handles voice-over changes easily, and makes it simple to mix multiple voices on a slide. The Speech-Over product can combine text-based voices with VEM to eliminate recording and professional voice-overs. Voice narration is produced and updated by text editing any place, any time – cost-effectively and without production delays. To find out more about the Speech-Over Professional product, visit www.speechover.com.