

Quindi Meeting Companion: A Personal Meeting-Capture Tool

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ABSTRACT

In this paper, we describe the Quindi Meeting Companion, a personal software tool for documenting content-rich meetings. We examine the principal motivations for the system, key design decisions, and new practices enabled by the technology.

Categories and Subject Descriptors

H.5.1 [Information Interfaces and Presentation (e.g., HCI)]: Multimedia Information Systems – *audio input/output, hypertext navigation and maps, video.*

General Terms

Human Factors.

Keywords

Meeting capture, knowledge capture, annotation, indexed recording, collaboration, synchronized capture

1. INTRODUCTION

The case for recording certain content-rich business meetings is easily made. Recording creates a complete and accurate representation of the meeting at low cost and minimal effort. It produces an artifact that can refresh the memories of attendees and convey valuable information to non-attendees. It adds new forms of asynchrony to the communications mix and helps overcome scheduling challenges. Naturally, there are meetings where recording produces no incremental value or is inappropriate for reasons of security or confidentiality. Still, even after taking these into account, there remain an extremely large number of working meetings that could usefully be recorded today.

2. RELATED WORK

While the value of recording meetings has long been appreciated in the research community, it has also been understood that for meeting capture to enter the mainstream, many challenging design problems must be solved. Primary among these is how to balance the needs of different individuals along the chain from capture to viewing. Meeting participants want to minimize effort and disruption during the meeting. Meeting content owners want to streamline dissemination of material to stakeholders while maintaining managerial control. Consumers of meeting content

want an experience comparable to authored multimedia, with excellent audiovisual fidelity, indexed playback, and full access to display data. These requirements give rise to natural trade-offs which system designers have resolved in different ways. To date, apart from linear archiving systems, most meeting capture systems have been built in research labs and have relied heavily on instrumented environments [2,3], advanced hardware concepts [1,3,4], deep but cutting-edge indexing techniques (e.g., visual tracking, speech recognition) [3,4], and elaborate server-based content-distribution systems [3] to deliver indexed recordings in ways that address one or more of the dimensions of user benefit.

3. QUINDI MEETING COMPANION

Quindi Corporation has developed the Quindi Meeting Companion, a commercial meeting capture product that shares with these research systems the aim of automatically or semi-automatically constructing an indexed meeting document as a natural byproduct of holding a meeting. However it differs from these systems in several significant ways.

As a commercial product, it is aimed at a broad cross-section of users who may hold meetings at a variety of onsite and offsite locations, not necessarily in pre-configured conference rooms. It was not assumed that these users would have access to special hardware beyond a laptop, nor was it assumed that they would be attached to a server during the meeting.

The Quindi product was designed as a lightweight, easy-to-use personal software system. The activity of meeting capture can be carried out by more than one individual at the meeting. The result of a meeting capture is a file compact enough that several years' worth of meetings can be stored on the hard drive of a laptop and substantial meeting segments can be forwarded by email.

The canonical model of use is as follows: An individual attends a meeting with his laptop or tablet PC. He may use the built-in microphone for audio capture, or he may use an external microphone, and optionally a webcam. (In certain situations he may even use two.) He launches the Quindi application and begins recording. If he makes a presentation, the slides are captured and indexed automatically. Screenshots can be inserted with a hotkey, as can time-stamped "bookmarks." None of these operations require direct manipulation of the Quindi graphical interface. Note-taking is optional, but if notes are entered they too are time-stamped, synchronized, displayed as icons on the timeline, and made searchable.

At the end of the meeting the file is immediately available for playback, though the word "playback" does not quite capture the

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non-linear post-meeting experience with Quindi. As with other multimedia systems, the interface makes it easy to navigate by keyword, extract highlights, add personal comments, and so on. Thus natural interaction with the meeting content after the meeting itself adds value for the viewer and his team-mates. This feature of the product has led to new modes of collaboration that exploit the hybrid nature of a Quindi capture – part recorded meeting, part screen images, part blog.

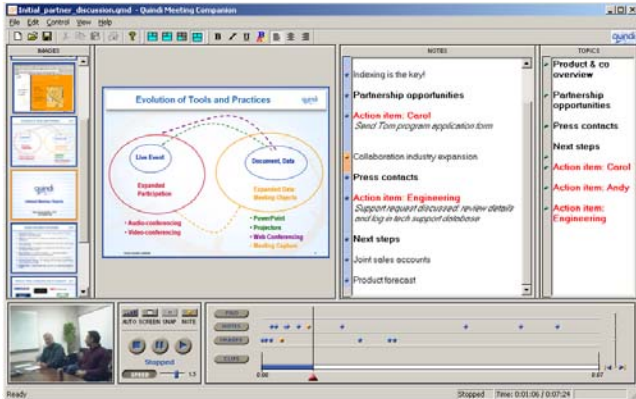


Figure 1. Quindi Meeting Companion Interface

To allow users to control file size, Quindi offers three file formats for storing and sharing meeting content: audio-only, storyboard (slide show, with a still image every few seconds), and full motion. Storyboard format is generated automatically and is only marginally larger than audio-only. If USB video was used at capture time, file size would not ordinarily prevent the user from preserving the visual experience of the meeting.

The file-based paradigm also introduces considerable flexibility in how meeting content is managed and shared. On the one hand, an individual's meeting files can contain personal annotations reflecting his own unique perspective on the meeting. In addition, however, a common version can be shared by the group. Individual captures of the same meeting can be synchronized, either during the meeting or afterwards, and several differently annotated versions of the same meeting can be easily derived from a single capture, leading to something like a meeting thread, grounded in the original capture. These properties open up a variety of new collaborative practices, which are only beginning to be explored. An illustrative example is discussed briefly in Section 4.

A central design decision in the Quindi Meeting Companion was to take advantage of naturally occurring sources of digital data in the meeting environment as a primary source of indexing, rather than relying on automatic detection of audiovisual events. This coincides with trends in the workplace towards digital note-taking, web-conferencing, extensive use of presentation data, whiteboard capture, and the like. The availability of so much temporally-indexed data that is also semantically meaningful to the user vastly simplifies the indexing problem and is arguably more useful for content-based search than generic visual or auditory events.

4. NEW MODES OF COLLABORATION

One example of a new mode of collaboration is the virtual design review. Here a core technical team assembles to hear semi-formal presentations of a technical nature. Someone in the group takes light notes on his laptop, and the presenter captures his talk with the slides automatically indexed. After the meeting the two Quindi files are merged (using the SyncPoint feature). The merged file is then sent out to a group of subject-matter experts, who review short segments of the meeting related to their specialties. This can be done quickly using indexed, accelerated playback. The experts add their comments, distinctively color-coded, and relay the results to the meeting organizer. These comments are merged into a consolidated file, emailed to the technical lead and posted on the website for reference by the team. All this can be done asynchronously and time-effectively, since individuals are free to commit varying amounts of time depending on interest and need.

Tools like the Quindi Meeting Companion do not aim to eliminate real-time interaction; if they did, there would be no meetings to capture! Still, in many situations information can be absorbed and feedback generated offline, without the need for in-the-moment participation. Besides, in live meetings, the idea of contributing comments is often more hypothetical than actual. In reality, there is often not enough time for all good ideas to be articulated, and certain team members may not be assertive enough to contribute even if there is time. By taking personal notes in the Quindi system during the meeting, they can be included afterwards, completely synched to the flow of the meeting, without requiring in-meeting intervention.

The Quindi Meeting Companion and other similar tools will stimulate experimentation with novel forms of collaboration that combine synchronous and asynchronous interaction.

5. ACKNOWLEDGMENTS

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