From: Bill Schiefelbein

Sent: Tuesday, February 25, 2003 6:48 PM

To: Chad Gibson; Michael Patten; Windows Media Foundation PM; See-Mong Tan

Subject: RE: Codec format change in ASF for MF

Attachments: FW: Extending the ASF file format

Michael, you and Bill are on the same page here with this scenario (see attached thread). Indeed as Chad indicates, this is one scenario that Opus is being defined to address. See-Mong should be able to point you to their latest thinking on Opus

---- Original Message ----

From: Chad Gibson
Sent: Tuesday, February 25, 2003 6:29 PM
To: Michael Patten; Windows Media Foundation PM
Subject: RE: Codec format change in ASF for MF

Someday, maybe. I'm not an Opus expert.

From: Michael Patten
Sent: Tuesday, February 25, 2003 5:39 PM
To: Chad Gibson; Windows Media Foundation PM

Maybe, can you stream Opus files?

From: Chad Gibson
Sent: Tuesday, February 25, 2003 5:31 PM
To: Michael Patten; Windows Media Foundation PM

If Opus gets shipped w/ Longhorn, this definitely looks like an Opus scenario. You would just have each different codec/stream contained within the Opus file, and the master playlist portion that sets the timeline of the various entries contained within... You can then use WMP to play it back just like it's one big ASF file.

-chad

From: Michael Patten
Sent: Tuesday, February 25, 2003 5:25 PM
To: Windows Media Foundation PM

One end-to-end feature I believe we need to support for MF is the ability to support codec changes within a stream. One of the main drivers for this is the PPT scenario where the user wants to switch between recording/broadcasting the video talking head and then switch to recording/broadcasting the user's screen. With the Corona encoder there was no way to accomplish this. From today's server, the player can seamlessly switch between content in multiple formats using a server side play list. It is this type of functionally I would like to extend in MF, but enable switching during a live broadcast and enabling a single ASF file to support multiple codec formats. I currently have this listed as a key CER requirement, but obviously this requires support end-to-end. Thoughts?

Michael

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From:	Bill Schiefelbein
Sent:	Tuesday, February 25, 2003 6:44 PM
To:	Bill Schiefelbein
Subject:	FW: Extending the ASF file format
Importance:	High

From: Mike Beckerman
Sent: Wednesday, January 15, 2003 1:28 PM
To: Amir Majidimehr
Cc: Chadd Knowlton
Chadd and his team have had extensive interaction with Anoop on some of this. He or his delegate should take point.

-----Original Message-----
From: Amir Majidimehr
Sent: Wednesday, January 15, 2003 12:46 PM
To: Mike Beckerman
Subject: FW: Extending the ASF file format

FYI. This came up in the "big ideas" meeting. I spoke to Anoop and he likes to meet on this in Feb. We should figure out who we want to be involved in this to follow up. I will probably attend the first meeting to make sure it is scoped right, etc....

Amir

-----Original Message-----
From: Anoop Gupta (RESEARCH)
Sent: Tuesday, January 14, 2003 10:54 PM
To: Amir Majidimehr; Bill Gates
Cc: Dave Fester; Ted Peters; Kavi Singh; Rick Rashid; Jim Kajiya; Will Poole; Anoop Gupta (RESEARCH); Gurdeep Singh Pall
Subject: RE: Extending the ASF file format

Given the criticality of this format to the conferencing archive scenarios, I will be happy to take the lead, and work with other interested teams to drive this to conclusion.

-- Anoop.

-----Original Message-----
From: Amir Majidimehr
Sent: Tuesday, January 14, 2003 5:40 PM
To: Bill Gates; Anoop Gupta (RESEARCH)
Cc: Dave Fester; Ted Peters; Kavi Singh; Rick Rashid; Jim Kajiya; Will Poole
Subject: RE: Extending the ASF file format

The scenarios that you describe do indeed, go beyond the core capabilities of ASF (which is the same thing used for WMV). In-place editing (to add the annotations that you describe) requires a more flexible format that doesn't require re-writing the entire file on every change. We have one other format which we helped create a while back called AAF (a spin-off of the Avid OMF interchange format). AAF uses structured storage so it can easily accept edits on the core content. Its primary purpose is to hold the project for an audio/video edit session so it is quite

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rich. We have to look closely to see if AAF meets these needs fully. It may also turn out that it does too much AAF is an open industry format BTW.

There is a virtual team looking at future file formats but are not currently fully focused on the (nice) list below. Who do you suggest to lead in this area?

Amir

-----Original Message-----
From: Bill Gates
Sent: Monday, January 13, 2003 9:13 AM
To: Anoop Gupta (RESEARCH); Amir Majidimehr
Cc: Dave Fester; Ted Peters; Kavi Singh; Rick Rashid; Jim Kajiya; Will Poole
Subject: Extending the ASF file format

I am focusing the discussion here on the "ASF issue".

We want a format that lets you record action – WMV format, screen recording format (the WMV form of this or the WTS form of it?) and later go back in and do annotation and indexing and then have a user tool that lets you browse through these things

Its unclear what this top level application should be since it needs to understand the various type of indexes into the stream – time, slide number etc..

One scenario I have laid out several times is – a meeting is recorded – the meeting includes both screen capture and motion video. Someone wants to annotate the meeting adding text bubbles with links in them and then wants to send out the video for people to view. The people who want to view it may want to see some kind of "index" to guide them through the presentation or may want to give search commands.

Another scenario is the one that came out of the peer-peer discussion. Two girls are doing a real time chat During the chat they put up various photos and send messages to each other. The session was so great they want to save it so they can look at it later or they can have a friend look at it. What format is this file? One proposal was that the format be different for each kind of peer to peer interaction so that you can have the right UI for navigating through the session. However there must be an architectural solution better than that.

When I told the Office group about the WMV format for screen recording their response was that they have to have the ability to annotate before they can use this for demos and tutorials so for now they are stuck in their own world.

I remember also the mistake we made of thinking that Powerpoint was on top for meeting type scenarios instead of creating a generic container that could store netmeeting session playbacks and motion video and powerpoint slides. Because of this many people in the meetings and elearning markets built their own tools.

I think the answer is that there has to be some kind of player that can see and present the various indices into the material and there has to be some kind of editor that knows the top level structure so it can invoke the various specific editors underneath.

I have no idea if ASF is an interesting starting point for this or if the annotation work we have done at various times is the right thing for this.

-----Original Message-----
From: Anoop Gupta (RESEARCH)
Sent: Monday, January 13, 2003 8:53 AM
To: Amir Majidimehr; Bill Gates; Will Poole
Cc: Dave Fester; Ted Peters; Kavi Singh; Anoop Gupta (RESEARCH)
Subject: RE: Telluride Photo Story

Bill, it would be great to get your thoughts on the file format issues during our next 1-1. I remember the issues you raised during the peer-to-peer session. It is a big deal for me when I think of recorded meetings, but as you

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say the need is quite universal. Here are some thoughts/notes from an earlier time when we had discussed this need:

– Ability to have independent indices with each stream and to have random access capability to each independent stream at the same time (e.g. I am browsing through slides independently of the audio stream that is playing, and yet the accesses are efficient on client/server)

– Ability to send streams to independent applications/controls, but with a fair bit of flexibility in binding (e.g. if I have two ticker streams, flexibility by appln to decide which stream binds to which ticker control). We need both app-to-stream and stream-to-app control in binding.

– In recording situations, ability to dynamically create/terminate new streams in the middle (e.g. a dynamic chat session created in the middle of a meeting).

– Ability to efficiently handle a large number of streams and indices within a single file. The right way to store on physical media might be quite dependent on access patterns for the individual streams inside (e g chunk based on stream, or interleave based on the timeline).

-- If you think of the audio notebook scenario (audio is being recorded while you are taking notes on the TabletPC), what is primary – the ink strokes as primary representation with audio clips as annotations or the audio timeline as primary with ink strokes as annotations (what granularity for audio or ink notes when used as annotations). Or is this just scenario dependent? How do we make it symmetric, so that at access time it is just as easy to go from ink stroke to audio or vice versa?

– How do we deal with streams where the timeline is implicit, as may be in Sparkle animations? Does it have it be somehow made explicit? How do we handle cases where the timeline is parameter/program driven

– Ability to stream over limited bandwidth links with dynamic bandwidth management using priority across streams

-- Tools that allow you to edit/view such collections of streams.

Anoop.

-----Original Message-----
From: Amir Majidimehr
Sent: Sunday, January 12, 2003 9:52 PM
To: Bill Gates; Will Poole
Cc: Dave Fester; Anoop Gupta (RESEARCH); Ted Peters; Kavi Singh
Subject: RE: Telluride Photo Story

...
As to your final comment, it is a very good point The binary streams in ASF can indeed be used for any temporal data. And doing so allows us to stream them like any A/V content. Unfortunately, the type association in Windows is weak when it comes to such application. Today, the asf extension is associated with the media player. It would be odd for the media player to get invoked on these binary streams just to hand off the execution to some other app. Instead, we need to extend the file association in Windows to go beyond the simple extension and look at the content of ASF to determine which app needs to get invoked (though a registry of sorts). I think this is what you mean by "type" below.

Amir

-----Original Message-----
From: Bill Gates
Sent: Friday, January 10, 2003 5:45 PM
To: Amir Majidimehr; Will Poole
Cc: Dave Fester; Anoop Gupta (RESEARCH); Ted Peters; Kavi Singh

12/16/2004

Subject: FW: Telluride Photo Story

...

At some point we need to unify our "playing" formats so that you can read in things like screen recording sessions and do annotiations on the screen and effects with those just like with stills and motion. We got into this discussion today in a review of Sparkle where it was confusing what formats Sparkle should read (like screen recording sessions or meeting sessions) to edit on top of those, how its format should relate to ASF and how whatever it outputs should be streamable rather than just have to download as a file before you can play back any part of the animation. I got confused in this part of the meeting – they were asking for guidance from me and I couldn't give it. Anoop – we should discuss this so at least I make this question coherent so that the various groups can figure out what their piece in it is. Its similar to the discussion we had during the peer to peer discussion where they wanted to create their own recorded format for a peer to peer session discussing photos and I said we should have a generic format for that. The discussion about how the ASF binary stream thing might fit into this confused me since it would have to be typed.

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