Time intervals in URIs

<draft-pfeiffer-temporal-fragments-02>

S. Pfeiffer, C.Parker, A. Pang
CSIRO Australia

IETF-59, Seoul

annodex.net/uri

안 녕 하 세 요

Linking to time points and regions

- This draft has come from the Annodex.net project, and has had discussion and input from MPEG-4/MPEG-7 people, SMPTE and the W3C uri-review. It currently focusses on implementation for HTTP.

- More discussion needed on RTSP mechanisms:

```
rtsp://seang.sun/nemo#t=100

rtsp://seang.sun/nemo?t=npt:10:13-30:28

rtsp://seang.sun/nemo?t=0-10,0:30-1:08
```

annodex.net/uri

안 녕 하 세 요

Motivation

- Other sites and users can link directly to a point of interest in a media resource.

- A common format for this allows tools to generate the correct URI to retrieve the given playback time, without the author of the referenced content explicitly naming it.

- The point of interest can be linked to from web pages, email and other media resources.

annodex.net/uri   안 녕 하 세 요

?query and #fragment
in rfc2396bis (URI)

- "query component ... serves to identify a resource within the scope of the URI's scheme and naming authority"

- "interpretation of the fragment identifier during a retrieval action is performed solely by the user agent; the fragment identifier is not passed to other systems during the process of retrieval"

annodex.net/uri

안 녕 하 세 요

Handling time intervals over HTTP

- simple: rfc2396 maps well to download protocols.

- queries are interpreted by the HTTP server, which serves only the requested interval of content. It may need to regenerate codec headers to provide a valid media file.

- fragments are handled by the HTTP client, which buffers the entire resource and presents only the requested portion.

annodex.net/uri   안 녕 하 세 요

`?query` **and** `#fragment` interpretation over RTSP

- RFC2326: "Note that fragment and query identifiers do not have a well-defined meaning at this time, with the interpretation left to the RTSP server."

- This may conflict with rfc2396bis, which requires that the fragment is interpreted "solely by the user agent". (This language is more restrictive than RFC2396).

- RTSP is more flexible than HTTP: the client has session-based control of the server and is capable of solely interpreting the fragment without buffering the entire resource.

annodex.net/uri   안 녕 하 세 요

Handling time intervals over RTSP with URI `?query`

- Queries must be interpreted by the RTSP server. The server thus presents a view of the original content. How should an RTSP client navigate relative times in such a resource?

  ```
  rtsp://seang.sun/nemo?t=0-10,0:30-1:08
  ```

- Can the server always provide an SDP description of the required ranges on the canonical (query-less) content-base? Translating to a canonical content-base has caching advantages.

annodex.net/uri   안 녕 하 세 요

Handling time intervals over RTSP with URI `#fragment`

- Client issues direct PLAY requests:

  ```
  rtsp://seang.sun/nemo#t=10
  ```

    is interpreted by the client as:

  ```
  PLAY rtsp://seang.sun/nemo RTSP/1.0
  CSeq: 2
  Session: 12345678
  Range: smpte=0:10:00-
  ```

- Multiple time ranges in the URI are easily queued by separate PLAY requests.

annodex.net/uri

안 녕 하 세 요

Open issues

- Responsibility for URI fragment interpretation needs clarification in RTSP.

- Relative time issues: what happens when both client and server provide views on the original data? What play time should the client show?

- Are the methods outlined for handling time intervals given in URIs viable for RTSP? How can these be improved?

- Can these mechanisms be extended to support named anchors and chapter URIs over RTSP? Can these names be allowed in RTSP PLAY requests? ...

annodex.net/uri   안 녕 하 세 요