

Applying FRBR to a complex learning resource: A lecture, transcript, recordings and supporting materials.

Author: Phil Barker, <http://www.icbl.hw.ac.uk/~phil/> (with help from John Robertson)
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The example shows the application of the FRBR model to a course unit (a lecture, plus supporting material such as power point slides and problem sheet). The example is based on a module of an Open Yale course¹ with the modification that whereas in the original the overhead notes were written and displayed on the blackboard during the lecture delivery in the example they are envisaged as being PowerPoint slides and made available separately.

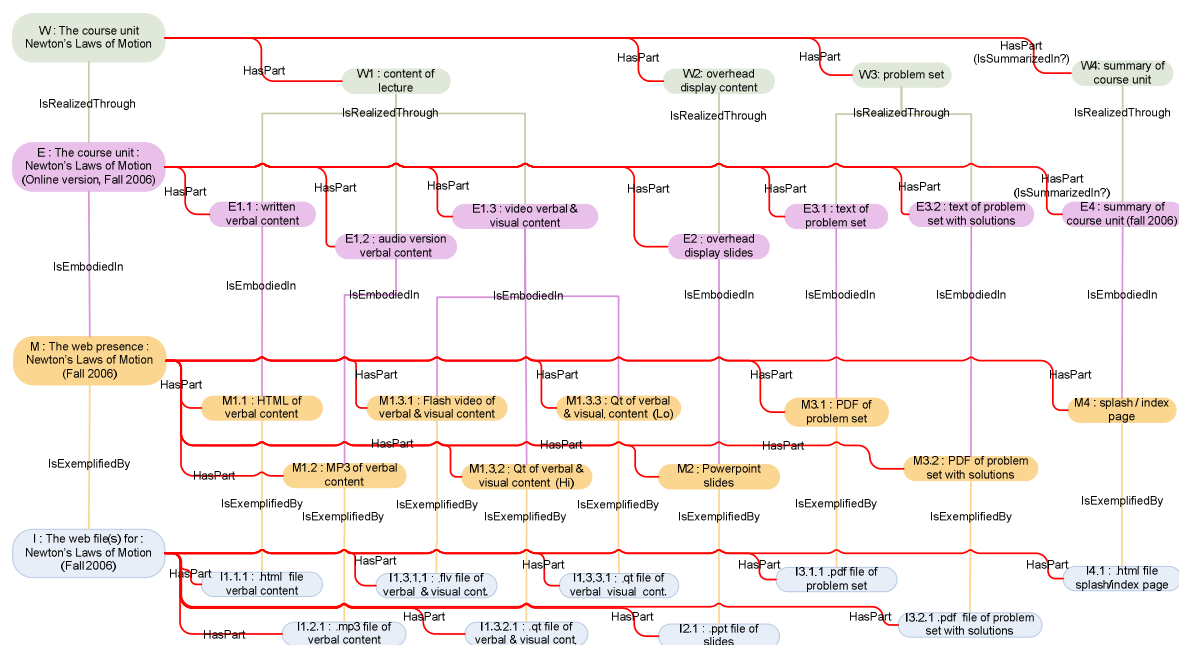


Figure 1: a graphical representation of the breakdown of an online course module into FRBR components.

Works

The course unit is treated as an aggregate work, W, comprising: W1, the content of the lecture; W2, the overhead display content; W3, the problem set; and W4, a summary of the course unit.

W: The course unit "Newton's Laws of Motion"
 has part W1: content of lecture
 has part W2: overhead display content
 has part W3: problem set
 has part W4: summary of course unit

Discussion:

The reason for treating this collection of works as being aggregated into a single work is that the works collectively seem to have a single objective (to explain Newton's laws of motion) and it is likely that the component works were conceived as being complementary

¹ available at <http://oyc.yale.edu/physics/fundamentals-of-physics/content/sessions/lecture03.html>



to each other in achieving this aim. So, while the lecture, problem set and overhead display content each stand in their own right as independent endeavours, the aggregation of them aims to achieve something that cannot be achieved by those works independently. The course summary is modelled as a part of the aggregate work, though it could also be a separate work summarizing the course unit (indeed it might even be a version of the metadata for the course).

Some relationships are not modelled here. The course unit is a part of a larger work (the course) and has a sequential relationship with other parts of that course. Also, in certain circumstances the problem set might be an aggregation of individual problems which are themselves independent works.

The reading assignment is modelled here as a related work (at expression level since it might change year on year, see below). In other courses the reading list may have a similar role to the problem set here, the creation of which represents enough intellectual effort to justify it being considered a work.

The overhead display content is envisaged as being an independent work, in some cases it may be no more than a summary of the lecture content, or even just an expression of that content.

Expressions

One of the expressions through which the main aggregate work realized is the online version of the course unit from Fall 2006, E, which comprises expressions of the component works. The content of the lecture is realized through a written transcript (which is assumed to be edited), an audio recording, and a video recording (which includes sound). The overhead display content is conceived as being realized through a set of slides. The problem set has two expressions as text, with and without solutions. The summary of the course unit is realized through text, graphical layout and the expression of relationships (as hyperlinks).

W: The course unit "Newton Laws of Motion"

E: The course unit "Newton Laws of Motion" (Online version, Fall 2006)

W1: content of lecture

E1.1: written verbal content

E1.2: audio version of verbal content

E1.3: video of verbal and visual content

W2: overhead display content

E2: overhead display slides

W3: problem set

E3.1: text of problem set without solutions

E3.2: text of problem set with solutions

W4: summary of course unit

E4: summary of course unit (Fall 2006)

E: The course unit "Newton Laws of Motion" (Online version, Fall 2006)

has part E1.1: written verbal content

has part E1.2: audio version of verbal content

has part E1.3: video of verbal and visual content

has part E2: overhead display slides

has part E3.1: text of problem set without solutions

has part E3.2: text of problem set with solutions
has part E4: summary of course unit (Fall 2006)

Discussion

The realization of the main aggregate work modelled here is just one of its possible expressions. Others would include the "real-life" expressions, i.e. the lecturer in the classroom with handouts etc., which apparently occur twice a year. Treating these as expressions parallels the treatment of performances of a musical work by the composer as an expression in the FRBR report (assuming that the content of the lecture does not change significantly between course offerings).

It seems natural that the realization of an aggregate work should result in an aggregate expression comprising relevant expressions of the component works. There would certainly be value in thus showing the sibling relationships between the various expressions in order to facilitate discovery of a suitable record of, say, the lecture content.

The reading assignment is not shown, but would be modelled as a related manifestation of an independent work at the level of manifestation since the assignment may change without significantly affecting the nature of the course unit. This parallels the inclusion of "references" as an attribute of an expression in the Scholarly Works Application Profile².

The video recording of the lecture performance is not modelled as a distinct work. The content of the video recording is not significantly different to that of the other recordings: it contains some hand waving and some notes on the blackboard but the omission of these from the other recordings was more the result of limitations in the media used for these recordings than any intellectual effort (alternatively the inclusion of, say, overhead display content may signify that the video recording comprises manifestations of two works). Secondly it is assumed that the creation of this recording does not involved any significant cinematography. Thus the video recording is treated as on a par with the recordings in other media, and follows examples of audio books as being expressions of the same work as printed books in modelling these³. Showing the relationship of these different formats to the same work may have accessibility benefits, for example when needing to provide a version suitable for students with hearing difficulties.

Manifestations

The online version of the course unit from Fall 2006 is embodied in a section of the Open Yale course website. The entry point for this section is the "splash" page, and the parts of it are manifestations embodying the expressions described above; again these are modelled as component parts of an aggregate object. The only expression embodied in more than one manifestation is the video of the lecture which has manifestations in different formats and quality.

E: The course unit "Newton Laws of Motion" (Online version, Fall 2006)

M: The web presence for "Newton Laws of Motion" (Online, Fall 2006)

E1.1: written verbal content

M1.1: HTML version of verbal content

² <http://www.ukoln.ac.uk/repositories/digirep/index/Model>

³ See the treatment of "Harry Potter and the Goblet of Fire" by William Denton at <http://www.frbr.org/eg/hp-goblet-1.html>.

- E1.2: audio version of verbal content
 - M1.2: MP3 version of verbal content
- E1.3: video of verbal and visual content
 - M1.3.1: Flash video version of verbal and visual content
 - M1.3.2: QuickTime version for high bandwidth of verbal and visual content
 - M1.3.2: QuickTime version for low bandwidth of verbal and visual content
- E2: overhead display slides
 - M2: PowerPoint version of display slides
- E3.1: text of problem set without solutions
 - M3.1 PDF version of problem set without solutions
- E3.2: text of problem set with solutions
 - M3.2.1 PDF version of problem set with solutions
- E4: summary of course unit (Fall 2006)
 - M4 HTML "splash" page
- M: The web presence for "Newton Laws of Motion" (Online, Fall 2006)
 - has part M1.1: HTML version of verbal content
 - has part M1.2: MP3 version of verbal content
 - has part M1.3.1: Flash video version of verbal and visual content
 - has part M1.3.2: high bandwidth QuickTime version of verbal and visual content
 - has part M1.3.2: low bandwidth QuickTime version of verbal and visual content
 - has part M2: PowerPoint version of display slides
 - has part M3.1 PDF version of problem set without solutions
 - has part M3.2.1 PDF version of problem set without solutions
 - has part M4 HTML "splash" page

Discussion

The possibility of one of the component expressions relating to two of the component works is raised above (the video recording might capture the lecture and the overhead display); a similar possibility might occur if one or more of the recordings were to be packaged with the overhead content in a single manifestation. This might well occur if the slides were made available as a "slidecast", a set of slides streamed with automatic transitions synchronized with an audio recording⁴.

Showing the relationships between alternative manifestations may have accessibility benefits, for example allowing a user to obtain the material in a format compatible with their requirements.

Items

Individual files are considered here to be the relevant items for each manifestation⁵. There will be multiple items for each manifestation (the files on the server, the files downloaded to client machines for viewing, copies of files kept elsewhere), although this is not shown in the diagram, and there is no particular interest in enumerating the items here.

⁴ <http://www.slideshare.net/faqs/slidecast>

⁵ For a discussion of this see I. R. Floyd and A. H. Renear, "What exactly is an item in the digital world?" in *The American Society for Information Science & Technology Annual Meeting 2007, Milwaukee, Wisconsin.*, October 2007. [Online]. Available: <http://hdl.handle.net/2142/5254>

Discussion

It's not really clear what the item of the aggregation actually is, except as a notional entity (i.e. the collection of files on the server); however it seems clear that not all copies of the component items will be part of a complete copy of a complete aggregation item. One case where there could clearly be seen to be a complete copy of the aggregation item would be where the whole thing were available in a single archive file, e.g. a .zip file, or in a similarly packaged format (e.g. an IMS Content Package—although this case may be considered a different manifestation from the website).

Knowledge of the whereabouts of items exemplifying particular manifestations and how these items relate to expressions may be useful in activities related to digital curation.