PBMD
Public Broadcasting Metadata Dictionary Project

Request for Comments Phase

Summary Report

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Executive Summary

Beginning in January 2002 a team of public broadcasting station and national network representatives and invited guest experts worked to develop a draft metadata dictionary for public broadcasting. This effort, managed by WGBH/Boston under a grant from the Corporation for Public Broadcasting, resulted in a draft “Public Broadcasting Core Metadata Elements Dictionary” completed by the project's "Dictionary Team" in January of 2004. Controlled vocabulary “refinements” for each of the metadata elements were completed on February 27th and 28th.

Immediately following this activity, a Request for Comments (RFC) process was started. The RFC activities consisted of three data-collection rounds:

1. A preliminary survey of the “usefulness” of each of the PBCore Dictionary element definitions and refinements/vocabularies was conducted from February 4-10, 2004. Seventeen (17) members of the PBCore Dictionary Working Group were invited to participate; three (3) reviewed the survey questions and made general comments, and ten (10) members completed the full survey.
2. A larger group of thirty-two (32) invited respondents and five (5) additional Working Group members (37 total) took the full survey between February 16 and March 1st; and
3. A small group of nine (9) “metadata experts” from the library science, national standards, and media indexing and archivist communities extended their comments via an “open-ended” survey. They were also asked a number of questions relating to the “philosophy” of metadata schemas that could inform the work of the team asked to update and maintain the “PBCore.”

Including the Working Group invitees, a total of 47 respondents fully completed the survey process; nine “experts” took the extra hours to complete the follow-up questionnaire. Their responses are NOT to be construed as a statistically valid “random sample” of either the community of potential users of PBCore, or of the range of opinion of all of the outside experts in the metadata field. What they do provide is an “indicator of acceptance” of the various PBCore elements and their associated refinements/controlled vocabularies – and a preview of the issues that will confront public broadcasting as it promotes PBCore as an emerging standard.

The RFC panelists worked with metadata as archivists and librarians, content distributors and/or traffic/operations managers, engineers or systems vendors. They were drawn from public radio and television stations, PBS, NPR, national distributors, educational institutions and private-sector organizations that either partner with public broadcasting or supply metadata-related services to it.

Highlights of their responses include the following:

- It is no surprise that as a self-selected, "metadata-savvy" group, **ninety-six (96) percent of the respondents "strongly" or "very strongly" agreed** (4.7 mean on a 1.0 to 5.0 scale) **that "public broadcasting needs a core metadata dictionary.**

- More importantly, *after completing the survey* **the same percentage "strongly" or "very strongly" agreed that the proposed PBCore met this need** (with a 4.3 mean score).

- **Eighty-percent of the respondents indicated that PBCore would be a useful tool for marking-up and searching on public broadcast content assets** (with a 4.0 mean score on markup, and 4.1 on usefulness and searching value).

- A warning that more work needs to be done however, is that after reviewing all the elements and their vocabularies and refinement options, **one-quarter (24%) of the respondents could *not* say that they "strongly" or "very strongly" agreed with the statement "I feel I understand the PBCore Metadata Dictionary**."

    - **Of the 116 metadata elements and refinements evaluated by the respondents, 70% of these elements scored at least a 4 on a 1-5 scale in terms of "usefulness." Only one element scored below a 3.5.**
    - **Thirteen (13) elements (11%) however, were scored below a 3.0 by the "experts panel" of reviewers.** None was scored lower than a 2.5 by any subset of reviewers.

The experts gave generous advice about these "troubling" elements. In some cases they tended to agree on a recommendation. In others, the experts were as divided as our Dictionary Team. In more general terms, the "expert" respondents agreed on the following suggestions:

- **Keep It Simple** – develop a core set of questions for each workflow area, decide what is truly "mandatory" versus "desired," eliminate terms that don't apply in the broadcast/media environment. "Remember, this is to be a real-world tool, not an arcane philosophical model." Develop a "lay-person's guide."

- **Don't Do It Alone.** Continue to test your definitions with vendors and other broadcast organizations. SMPTE (MXF, RP210), MPEG (MPEG7), and the Library of Congress (METS, MODS) can all offer some guidance. The U.S. Department of Education's "Gateway to Educational Materials"™ (GEM) metadata initiative can provide a useful "extension" for educational data elements.

- **Rights Management will require its own full schema**. PBCore can keep its classifications simple, but link to a more complex set of rules (such as MPEG21) being developed by media owners and distributors.

- **PBCore need not follow Dublin Core's "one record per item" rule.** While two experts said, "stay with DC's approach," six said that in the world of computer searches and multiple formats of media content, DC was "too cumbersome."

There seems to be a true desire to have a "core" set of metadata terms and vocabularies available to public broadcasting as soon as possible:

- **Almost one-half (44%) of the RFC respondents planned to implement some form of metadata-based project within the next year.**

- **Three-quarters (74%) planned a metadata project within the next two years.**

- **Twenty-seven upcoming projects were referenced** by nineteen stations/network organizations.

The respondents agreed that the use of PBCore would provide public broadcasting with a necessary tool for increasing station and network efficiencies, inter-station resource sharing, and to some degree, revenues.

Fifty percent (50%) of the respondents scored the likelihood "that the use of PBCore could afford new service or revenue opportunities for your organization or for those with whom you work" with either a 4 or 5 score. Thirty percent (30%) rated the "likelihood" a 3, and only twenty percent (20%) scored this question with a 1 or 2.

> *As more and more assets become or are born digital, with a standardized descriptive language, we will be able to make certain collections of material available to new users or more affordably make them available to existing partners. This means that the costs associated with providing material to our partners drops, and makes the barrier to entry lower for any new venture*.

The good news about the acceptance of PBCore by the RFC respondents – a metadata savvy group, is tempered by the fact that **two-thirds (69%) of the respondents felt that implementing PBCore in their organizations would "require significant organizational changes."** As one respondent noted:

> *Metadata creators would need training in how to use the standard properly and consistently. People would need to be educated first about the business benefits of undertaking the extra work otherwise they will find "work-arounds", refuse to use it, etc.*

In the end of course, this positive vision for PBCore depends, like so many initiatives in public broadcasting, on local acceptance – and funding for the training of local users.

Despite these concerns, many respondents indicated in the open "final comments" field how excited they were to see public broadcasting move ahead on this critical work. As one outside reviewer wrote:

> *The PBCore is a significant step forward for the professional television production and distribution community. The PBMI has done us all a great service in creating this very thoughtful set of 58 or so elements. The PBCore will become the lingua franca by which Public Broadcasters can make their tape liabilities into digital assets that can be easily located by all end users… Congratulation and thanks are due to you folks…*

The RFC Process:

Beginning in January of 2002 a team of public broadcasting station and national network representatives and invited guest experts worked to develop a draft metadata dictionary for public broadcasting. This effort, managed by WGBH/Boston under a grant from the Corporation for Public Broadcasting, resulted in a draft "Public Broadcasting Core Metadata Elements Dictionary" completed by the project's "Dictionary Team" in January of 2004. Controlled vocabulary "refinements" for each of the metadata elements were completed on February 27th and 28th.

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3. A small group of nine (9) "metadata experts" from the library science, national standards, and media indexing and archivist communities extended their comments via an "open-ended" survey. They were also asked a number of questions relating to the "philosophy" of metadata schemas that could inform the work of the team asked to update and maintain the "PBCore."

The RFC Participants

The RFC participants were drawn from a number of sources: members of the PBCore Metadata Dictionary Working Group suggested individuals or organizations or vendors that worked with metadata – in production, operations, network program delivery, archiving, web content development, or member services; the WGBH project manager compiled a list of metadata experts that interacted with the project during its various phases; and technologists within WGBH, PBS and NPR also suggested possible "commentators."

Based on this process, a list of seventy-four (74) "outside" (non-Working Group) names was generated. Each person on the list was contacted via email and invited to participate. Most of those contacted agreed to participate. In some cases they identified an alternative person with more direct metadata responsibilities within their organization; others volunteered the names of additional experts in *other organizations.* The project's RFC consultant also contacted these new names and invited their participation.

In the end, a total of sixty-four (64) Round Two respondents were sent the *url* to the online survey; and 37 started, and 33 significantly completed) the survey – a fifty-two percent (52%) completion rate. Five Working Group members took (and three fully completed) the survey during this second round. Added to the twelve surveys (10 fully, 2 partial) completed in the first round, a total of forty-nine (49) responses were collected (43 of them, almost 2/3rds, were significantly completed).

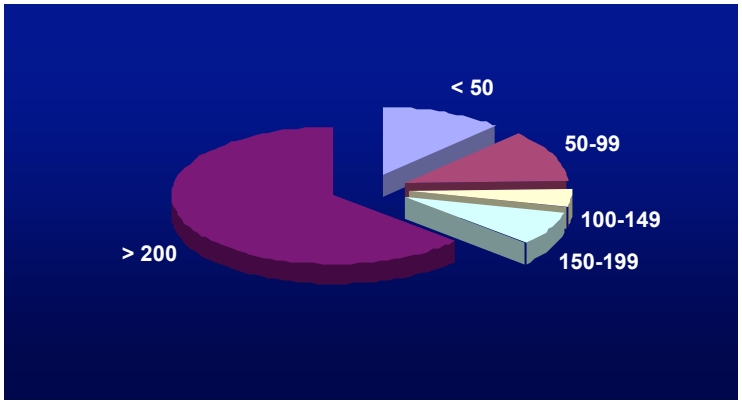

Chart 1: Distribution of RFC Responders by Number of Questions Answered (of 235 Evaluation Items)

These RFC panelists worked with metadata as archivists and librarians, content distributors and/or traffic/operations managers, engineers or systems vendors. They were drawn from public radio and television stations, PBS, NPR, national distributors, educational institutions and private-sector organizations that either partner with public broadcasting or supply metadata-related services to it.

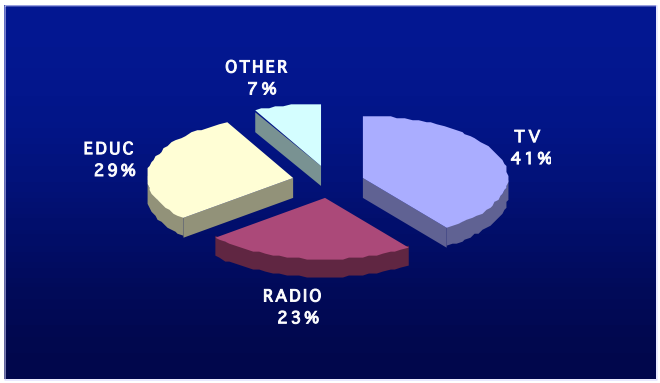

Chart 2: Distribution of RFC Responders by Organization

While television organizations were more represented in the RFC panel, the panel was equally divided between those working in organizations with national (40%) and those with a local (44%) focus.

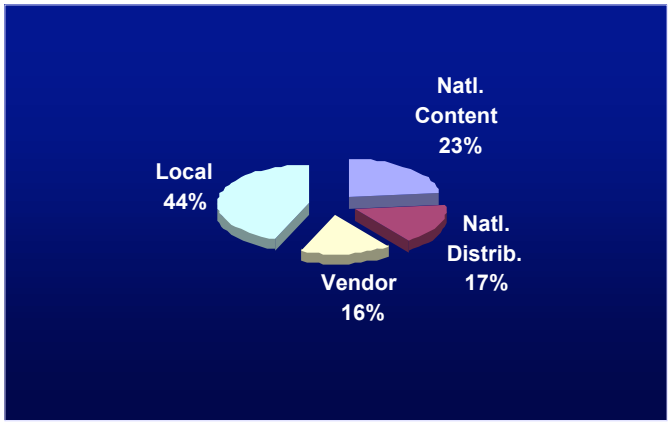

Chart 3: Distribution of RFC Responders by Org. Focus

Overall Responses to the PBCore

As a panel recruited from those working with metadata, and willing to review a proposed public broadcasting metadata dictionary and vocabulary lists, it is no surprise that everyone agreed that public broadcasting needs a standardized core of metadata descriptors. On a 1-5 scale asking, "how strongly do you agree that public broadcasting needs a standardized "core" metadata dictionary?" no respondent gave an answer lower than a "3." In fact, 96 percent responded with either a "4" or "5."

Response	Count	Percent
1	0	0.0%
2	0	0.0%
3	2	4.1%
4	12	24.5%
5	35	71.4%

Mean = 4.67, Standard Deviation = 0.55

Table 1: Agree that PB Needs a Core Metadata Dictionary

After reviewing each of the 59 metadata elements and its associated "refinements" (such as a controlled vocabulary, external referenced authority source, or suggestions for free-form text entry), eighty-percent (80%) of the respondents indicated that PBCore would be a useful or very useful tool for "describing media assets" held by their organization or shared with other media organizations.

Response	Count	Percent
1	1	2.3%
2	0	0.0%
3	8	18.2%
4	21	47.7%
5	14	31.8%

Mean = 4.07, Standard Deviation = 0.85

Table 2: Usefulness of PBCore to Describe Media Assets

The same percentage responded with a "4" or "5" to the questions asking how effective PBCore would be as an organization's "original, complete, markup descriptions for the rich media assets" and as a tool for "facilitating the search and discovery of media assets by your customers or constituents."

Response	Count	Percent
1	0	0.0%
2	3	6.7%
3	6	13.3%
4	22	48.9%
5	14	31.1%

Mean = 4.04, Standard Deviation = 0.85

Table 3: Rate "Original Markup Effectiveness" of PBCore

Response	Count	Percent
1	0	0.0%
2	0	0.0%
3	10	22.2%
4	20	44.4%
5	15	33.3%

Mean = 4.11, Standard Deviation = 0.75

Table 4: "Search And Discovery Effectiveness" of PBCore

A warning that more work needs to be done however, is that after reviewing all the elements and their vocabularies and refinement options, one-quarter (24%) of the respondents could *not* say that they "strongly" or "very strongly" agreed with the statement "I feel I understand the PBCore Metadata Dictionary."

Response	Count	Percent
1	0	0.0%
2	3	6.1%
3	8	16.3%
4	26	53.1%
5	12	24.5%

Mean = 3.96, Standard Deviation = 0.82

Table 5: Feel I Understand PBCore

The main concerns expressed by the respondents centered on the following:

- Collections-level versus individual item metadata, and the unresolved challenge of defining program, series and episode titles and alternative/working titles into an "element domain;"

- The problem with Dublin Core's "flat" 1:1 model versus a more hierarchical data architecture;

- The limited nature of PBCore's "rights" elements;

- The need to create metadata for images and sounds that take place over time, as opposed to Dublin Core's original focus on still images and text; and

- A fear that PBCore was not fully integrated with – or sufficiently mapped to – other emerging standards such as the US Department of Education's "Gateway to Educational Materials (GEM) Consortium housed at Syracuse University[1], the Motion Picture Experts Group's MPEG7 and MPEG21 (for rights and instantiation metadata)[2], the Digital Library Foundation's Metadata Encoding Standard (METS)[3]

[1] GEM is a set of metadata standards used by several Consortium members to organize and improve access to their own educational materials. Sites "Powered by GEM" include AskERIC, Canadian Heritage Information Network's Learning with Museums, MCI WorldCom Foundation's MarcoPolo Project, NASA Space Science Education Resource Directory, and the U.S. Department of Education's Federal Resources for Educational Excellence (FREE). See: http://www.geminfo.org/index.html

[2] To enable the resource discovery of audiovisual documents over the WWW, it will be necessary to define content description standards or metadata standards for complex, multi-layered, time-dependent information-rich audiovisual data streams. In particular, this is the primary goal of the emerging MPEG-7 standard, the "Multimedia Content Description Interface" under development by the MPEG group. See: http://xml.coverpages.org/mpeg7.html

[3] The METS schema is a standard for encoding descriptive, administrative, and structural metadata regarding objects within a digital library, expressed using the XML schema language of the World Wide Web Consortium. The standard is maintained in the Network Development and MARC Standards Office of the Library of Congress, and is being developed as an initiative of the Digital Library Federation. See: http://www.loc.gov/standards/mets/

and the 1200 items in the Society of Motion Picture and Television Engineers' (SMPTE RP-210) Metadata Registry for broadcast content.[4]

Despite these concerns, the overwhelming sense of the RFC panelists was the PBCore was a great start. Ninety-six percent (96%) "strongly" or "very strongly" agreed that, "PBCore appears to meet the Public Broadcasting need for a standardized 'core' metadata dictionary." They recognized that while other schemas offered certain advantages, none was focused on public broadcasting.

Response	Count	Percent
1	0	0.0%
2	0	0.0%
3	2	4.2%
4	32	66.7%
5	14	29.2%

Mean = 4.25, Standard Deviation = 0.53

Table 6: Agree that PBCore Meets the Need for Dictionary

The biggest split amongst all the respondents, and even the "experts" enlisted to review the dictionary, was how closely PBCore should or should not follow Dublin Core. Some applauded this effort, others questioned the reliance on an "old" standard that was designed for card catalogs and "flat" databases.

The most contentious issue within this "Dublin Core or not" debate as whether PBCore should require *a new record for every version of an electronic asset*. Supporters of Dublin Core argued that this was the traditional practice, making cataloging easier and clearer. Opponents felt equally strong that in the electronic domain, there would be dozens of versions of a digital product, and that all the versions should be linked to a master record.

[4] This metadata dictionary contents practice defines a registry of metadata element descriptions for association with essence or other metadata. A full explanation is contained in SMPTE 335M. The metadata dictionary structure defined in SMPTE 335M covers the use of metadata for all types of essence (video, audio, and data in their various forms). See: http://www.smpte-ra.org/mdd/

Individual Element Evaluations

Despite these overarching philosophical differences, the overwhelming majority of PBCore elements and associated controlled vocabularies were individually ranked as useful. Of the 116 metadata elements and refinements evaluated by the respondents, 70% of these elements scored at least a "4" on a 1-5 scale in terms of "usefulness." Only one element scored below a 3.5. Thirteen (13) elements (11%) however, were scored below a 3.0 by the "experts panel" of reviewers. None was scored lower than a 2.5 by any subset of reviewers.

Of the twenty (20) content-related metadata elements and their associated refinements – 40 items altogether: 20 scored a 4.0 or higher, 19 scored 3.5 or higher, and 1 item scored a 3.4.

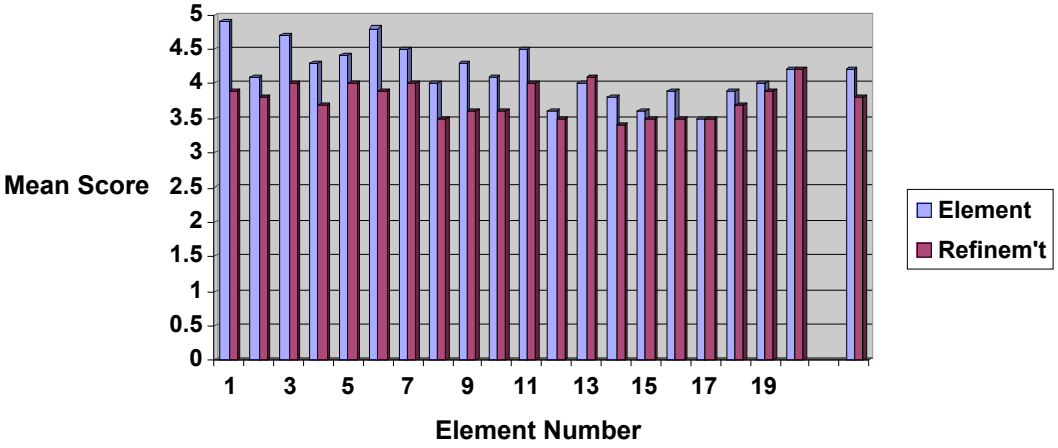

Chart 4: Content Elements and Refinements

Of the nine (9) rights/access-related metadata elements and their associated refinements – 18 items altogether: 12 scored a 4.0 or higher, and 6 scored a 3.7 or higher.

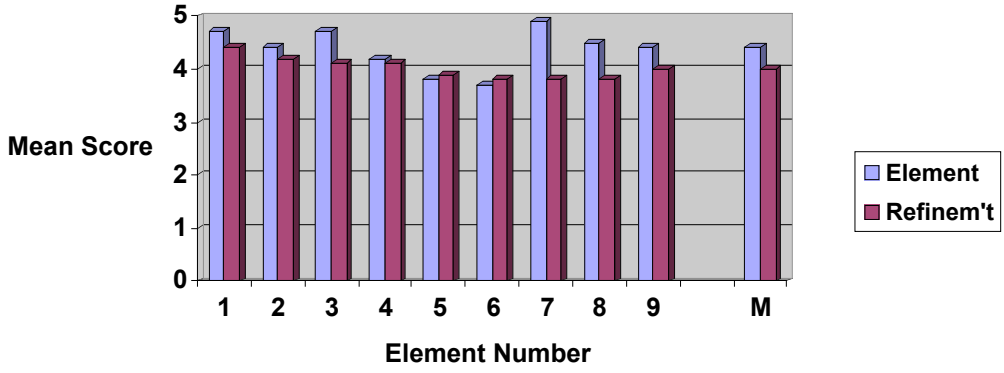

Chart 5: IP/Rights Elements and Refinements

Of the twenty-nine (29) instantiation-related (formats, copies, locations) metadata elements and their associated refinements – 58 items altogether: 49 scored a 4.0 or higher, and 10 scored 3.5 or higher.

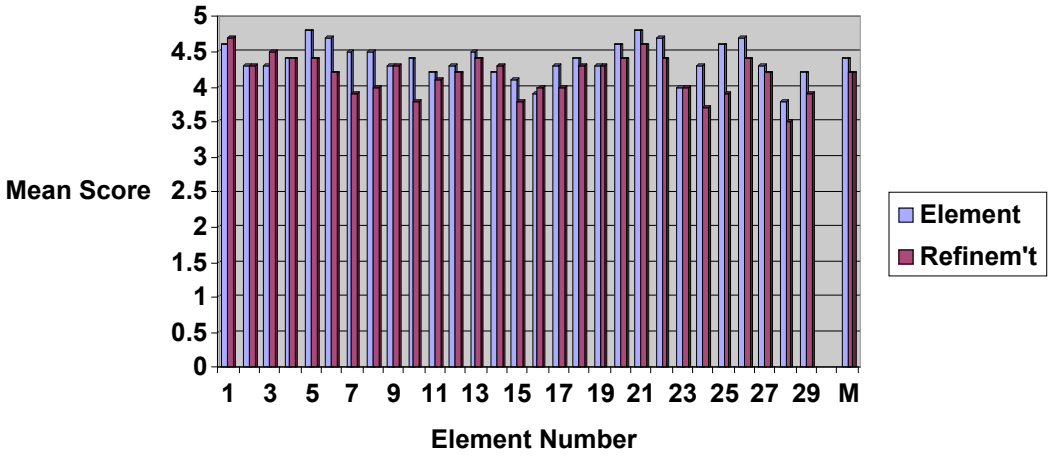

Chart 6: Instantiation Elements and Refinements, Mean Scores (1-5) Overall Mean (on right) 4.3

In most cases, the element ratings were consistent across all respondents. Elements that had wider differences between scores (higher standard deviations) with a significantly lower rating from our "experts" panel are discussed below.

Content Elements/Refinements with Lower Ratings

Of the 20 content-related elements and refinements, only one scored below a 3.5 mean across all respondents. Three content elements and nine element refinements however, had a higher than average standard deviation (with a high number of respondents scoring them a "1" or "2" in usefulness), or a large number of respondents indicating that the element description or refinement choices were "confusing."

Following are all of the Content Element and Refinement means, along with their Standard Deviation, the number of respondents scoring below a "3" in "usefulness", and the number of respondents indicating that the element or refinement was too confusing to fully score. Higher differences are indicated in red.

CONTENT Element	NAME	ALL MEAN	ST DEV	No. <3	No. Confuse
2.01.1.1	Title	4.9	0.4	0	4
2.01.2.1	Title Refinements	3.9	1.1	**4**	**5**
2.02.1.1	Title.Alternative	4.1	0.9	2	3

2.02.2.1	Title.Alternative Refinements	3.8	1.2	**4**	2
2.03.1.1	Title.Series	4.7	0.6	0	2
2.03.2.1	Title.Series Refinements	4.0	1.2	**4**	3
2.04.1.1	Title.Program	4.3	0.9	1	**8**
2.04.2.1	Title.Program Refinements	3.7	1.3	**6**	4
2.05.1.1	Title.Episode	4.4	0.8	1	1
2.05.2.1	Title.Episode Refinements	4.0	1	3	1
2.06.1.1	Subject	4.8	0.5	0	3
2.06.2.1	Subject Refinements	3.9	1.2	**6**	2
2.07.1.1	Description	4.5	0.7	0	1
2.07.2.1	Description Refinements	4.0	1	3	1
2.08.1.1	Description.Abstract	4.0	1	3	3
2.08.2.1	Description.Abstract Refinements	3.5	1.1	**6**	3
2.09.1.1	Description.TableOfContents	4.3	0.9	1	3
2.09.2.1	Description.TableOfContents Refinements	3.6	1.2	**6**	4
2.10.1.1	Description.ProgramRelatedText	4.1	1.1	3	4
2.10.2.1	Description.ProgramRelatedText Refinements	3.6	1.3	**8**	**6**
2.11.1.1	Type	4.5	0.8	2	3
2.11.2.1	Type Refinements	4.0	0.9	2	3
2.12.1.1	Type.Form	3.6	1.3	**9**	**6**
2.12.2.1	Type.Form Refinements	3.5	1.4	**9**	**6**
2.13.1.1	Type.Genre	4.0	1.2	**7**	4
2.13.2.1	Type.Genre Refinements	4.1	1	**4**	3
2.14.1.1	Source	3.8	1.1	**5**	**6**
2.14.2.1	Source Refinements	3.4	1.3	**7**	**7**
2.15.1.1	Relation.Type	3.6	1.1	3	**6**
2.15.2.1	Relation.Type Refinements	3.5	1.2	**6**	**9**
2.16.1.1	Relation.Identifier	3.9	1	2	5
2.16.2.1	Relation.Identifier Refinements	3.5	1.2	**7**	5
2.17.1.1	Coverage.Spatial	3.5	1.2	**8**	3
2.17.2.1	Coverage.Spatial Refinements	3.5	1.3	**7**	4
2.18.1.1	Coverage.Temporal	3.9	1.2	**5**	2
2.18.2.1	Coverage.Temporal Refinements	3.7	1.3	**6**	1
2.19.1.1	Audience.Level	4.0	1	3	1
2.19.2.1	Audience.Level Refinements	3.9	1	3	1
2.20.1.1	Audience. Rating	4.2	1	2	0
2.20.2.1	Audience.Rating Refinements	4.2	1.1	3	2

Table 7: Content Element and Refinement Scores

The greatest "spread" between the overall mean and the scores of any subset of reviewers were associated with six Content Element Refinements:

Element	Name	All Mean	Low Mean	Low-Scoring Subset
2.10.2.1	Description.ProgramRelatedText Refinements	3.6	2.5	CONTENT ROLE
2.08.2.1	Description.Abstract Refinements	3.5	2.7	CONTENT ROLE
2.14.2.1	Source Refinements	3.4	2.8	CONTENT ROLE
2.16.2.1	Relation.Identifier Refinements	3.5	2.8	CONTENT ROLE/EXPERTS
2.17.2.1	Coverage.Spatial Refinements	3.5	2.9	DISTRIBUTION/OPS ROLES
2.18.2.1	Coverage.Temporal Refinements	3.7	2.9	DAM EXPERTS/EDUCATION

Table 8: Content Element Refinements With Lowest Scores by Sub-Group

IP/Rights Elements and Refinements with Lower Ratings

Of the 18 Intellectual Property (Rights-related) elements and refinements, none scored below a 3.5 mean across all respondents. Seven of the refinements and two elements however, had a higher than average standard deviation. *Three element refinements had a significant number of respondents scoring them a "1" or "2" in usefulness*.

Following are all of the IP/Rights element and refinement means, along with their Standard Deviation, the number of respondents scoring below a "3" in "usefulness", and the number of respondents indicating that the element or refinement was too confusing to fully score. Higher differences are indicated in red.

RIGHTS Element	NAME	ALL MEAN	ST DEV	No. <3	No. Confuse
3.01.1.1	Creator	4.7	0.5	0	1
3.01.2.1	Creator Refinements	4.4	1	1	0
3.02.1.1	Creator.Role	4.4	0.8	2	0
3.02.2.1	Creator.Role Refinements	4.2	1	**3**	0
3.03.1.1	Publisher	4.7	0.5	0	2
3.03.2.1	Publisher Refinements	4.1	**1.1**	**3**	1
3.04.1.1	Publisher.Role	4.2	1	**4**	1
3.04.2.1	Publisher.Role Refinements	4.1	**1.1**	**4**	0
3.05.1.1	Contributor	3.8	**1.1**	**5**	1

3.05.2.1	Contributor Refinements	3.9	**1.2**	**5**	0
3.06.1.1	Contributor.Role	3.7	**1.1**	**3**	2
3.06.2.1	Contributor.Role Refinements	3.8	**1.2**	**6**	0
3.07.1.1	Rights.Usage	4.9	0.4	0	1
3.07.2.1	Rights.Usage Refinements	3.8	**1.4**	**5**	1
3.08.1.1	Rights.Reproduction	4.5	0.8	1	**3**
3.08.2.1	Rights.Reproduction Refinements	3.8	**1.3**	**6**	**3**
3.09.1.1	Rights.Access	4.4	0.8	1	1
3.09.2.1	Rights.Access Refinements	4	**1.3**	**6**	2

Table 9: IP/Rights Element Scores

The IP/Rights Elements with the greatest “spread” between the overall mean and the scores of any subset of reviewers were:

Element	Name	All Mean	Low Mean	Low-Scoring Subset
3.07.2.1	Rights.Usage Refinements	3.8	2.8	EXPERTS
3.08.2.1	Rights.Reproduction Refinements	3.8	3.0	EDUCATION
3.06.2.1	Contributor.Role Refinements	3.8	3.1	EDUCATION
3.09.2.1	Rights.Access Refinements	4.0	3.4	EDUCATION

Table 10: IP/Rights Element With Lowest Scores by Sub-Group

Instantiation Elements and Refinements with Lower Ratings

Of the 58 Instantiation elements, only two elements and six refinements (8 in total) scored below a 4.0 mean across all respondents; Four (4) of these elements and ten (10) of their refinements (14 total) however, had a higher than average standard deviation. Four (4) elements and three (3) refinements (7 in total) had a significant number of respondents scoring them a “1” or “2” in usefulness, and/or “confusing.”

Following are all the instantiation element and refinement means, along with their Standard Deviation, the number of respondents scoring below a “3” in “usefulness”, and the number of respondents indicating that the element or refinement was too confusing to fully score. Higher differences are indicated in red.

INSTANTN. Element	NAME	ALL MEAN	ST DEV	No. <3	No. Confuse
4.01.1.1	Date.Created	4.6	0.7	0	0
4.01.2.1	Date.Created Refinements	4.7	0.7	0	0
4.02.1.1	Date.Issued	4.3	1.0	2	1
4.02.2.1	Date.Issued Refinements	4.3	**1.1**	3	3
4.03.1.1	Date.AvailableStart	4.3	1.0	1	**4**
4.03.2.1	Date.AvailableStart Refinements	4.5	0.8	1	1
4.04.1.1	Date.AvailableEnd	4.4	1.0	1	0
4.04.2.1	Date.AvailableEnd Refinements	4.4	0.9	1	2
4.05.1.1	Format.Physical	4.8	0.7	1	0
4.05.2.1	Format.Physical Refinements	4.4	1.0	3	1
4.06.1.1	Format.Digital	4.7	0.7	1	0
4.06.2.1	Format.Digital Refinements	4.2	**1.1**	3	0
4.07.1.1	Format.Identifier	4.5	1.0	2	2
4.07.2.1	Format.Identifier Refinements	3.9	1.0	2	1
4.08.1.1	Format.FileSize	4.5	0.7	0	0
4.08.2.1	Format.FileSize Refinements	4.0	1.0	**4**	0
4.09.1.1	Format.AudioBitDepth	4.3	0.9	2	0
4.09.2.1	Format.AudioBitDepth Refinements	4.3	0.9	1	0
4.10.1.1	Format.AudioChannelConfiguration	4.4	0.9	2	3
4.10.2.1	Format.AudioChannelConfiguration Refinements	3.8	**1.2**	**4**	0
4.11.1.1	Format.AudioDataRate	4.2	0.9	2	3
4.11.2.1	Format.AudioDataRate Refinements	4.1	1.0	2	2
4.12.1.1	Format.AudioSamplingRate	4.3	1.0	2	**4**
4.12.2.1	Format.AudioSamplingRate Refinements	4.2	0.9	0	1
4.13.1.1	Format.ImageAspectRatio	4.5	0.9	1	2
4.13.2.1	Format.ImageAspectRatio Refinements	4.4	0.8	1	1
4.14.1.1	Format.ImageBitDepth	4.2	1.0	2	2
4.14.2.1	Format.ImageBitDepth Refinements	4.3	0.9	1	1
4.15.1.1	Format.ImageChannelConfiguration	4.1	0.9	2	**5**
4.15.2.1	Format.ImageChannelConfiguration Refinements	3.8	**1.1**	**5**	**8**
4.16.1.1	Format.ImageColorCode	3.9	**1.2**	**4**	1
4.16.2.1	Format.ImageColorCode Refinements	4.0	**1.2**	**4**	1
4.17.1.1	Format.ImageDataRate	4.3	1.0	3	2
4.17.2.1	Format.ImageDataRate Refinements	4.0	**1.1**	**4**	0
4.18.1.1	Format.ImageFrameRate	4.4	0.8	2	1
4.18.2.1	Format.ImageFrameRate Refinements	4.3	0.8	1	0
4.19.1.1	Format.ImageFrameSize	4.3	1.0	3	1

4.19.2.1	Format.ImageFrameSize Refinements	4.3	0.9	2	0
4.20.1.1	Format.TimeStart	4.6	0.8	1	2
4.20.2.1	Format.TimeStart Refinements	4.4	0.8	1	0
4.21.1.1	Format.Duration	4.8	0.6	1	1
4.21.2.1	Format.Duration Refinements	4.6	0.5	0	0
4.22.1.1	Format.Standard	4.7	0.5	0	2
4.22.2.1	Format.Standard Refinements	4.4	0.7	0	0
4.23.1.1	Format.Type	4.0	**1.1**	**4**	**5**
4.23.2.1	Format.Type Refinements	4.0	**1.2**	**4**	3
4.24.1.1	Format.Encoding	4.3	0.9	1	**5**
4.24.2.1	Format.Encoding Refinements	3.7	**1.3**	**7**	**4**
4.25.1.1	Identifier	4.6	0.7	0	3
4.25.2.1	Identifier Refinements	3.9	**1.1**	**4**	**5**
4.26.1.1	Language	4.7	0.6	0	2
4.26.2.1	Language Refinements	4.4	0.8	0	1
4.27.1.1	Language.Usage	4.3	0.9	2	1
4.27.2.1	Language.Usage Refinements	4.2	1.0	**4**	2
4.28.1.1	Annotation	3.8	**1.1**	**4**	2
4.28.2.1	Annotation Refinements	3.5	**1.4**	**7**	0
4.29.1.1	Location	4.2	**1.1**	3	2
4.29.2.1	Location Refinements	3.9	**1.2**	3	1

Table 11: Instantiation Element Scores

The greatest “spreads” between the overall mean and the scores of any subset of reviewers were associated with the following four refinements:

Element	Name	All Mean	Low Mean	Low-Scoring Subset
4.28.2.1	Annotation Refinements	3.5	**2.5**	EXPERTS
4.24.2.1	Format.Encoding Refinements	3.7	**2.9**	EXPERTS
4.25.2.1	Identifier Refinements	3.9	**2.7**	EXPERTS
4.29.2.1	Location Refinements	3.9	**2.8**	EXPERTS

Table 12: Instantiation Element Refinements With Lowest Scores by Sub-Group

Implementation Plans and Issues

Developing a metadata dictionary for public broadcasting is not an academic exercise, but a response to a real world need.

Almost eighty percent (80%) of the respondents agreed that that the use of PBCore would provide public broadcasting with a necessary tool for increasing station and network efficiencies, inter-station resource sharing, and to some degree, revenues.

Response	Count	Percent
1	1	2.3%
2	8	18.2%
3	13	29.5%
4	17	38.6%
5	5	11.4%

Mean = 3.39, Standard Deviation = 0.99

Table 14: Likelihood of Revenue Or Service Enhancement

Most respondents cited the benefits of sharing and exchanging assets between and within organizations, generating revenue from making assets available to the public or other media organizations, and the resulting impact in efficiencies and service (both nationally and locally) as the main reasons for a standard dictionary of metadata terms. Archiving, document and program retrieval, distribution automation, and “ways to infuse local content into national programs and websites” via automated XML feeds, were some cited applications.

Of the 43 respondents to the question on “how likely is it that you will implement a project using PBCore,” three-quarters planned to implement a project within the next two years, seven respondents (16%) said that their organization had a project either underway or planned within the next six months.

Response	Count	Percent
1. The next 6 months	7	16.3%
2. 6 months to a year	12	27.9%
3. 1-2 years	13	30.2%
4. 2-3 years	3	7.0%
5. Not likely within the next 3 years	8	18.6%

Mean = 2.84, Standard Deviation = 1.33

Table 13: Likelihood Implement PBCore

Nineteen respondents indicated a project within the next year, 32 within the next two years. The 27 projects planned within the next year were equally divided between those “mapping existing data elements” to PBCore” (11), mapping an existing asset

management system's database to the PBCore dictionary" (7), and/or "mapping new assets" directly to PBCore" (8).

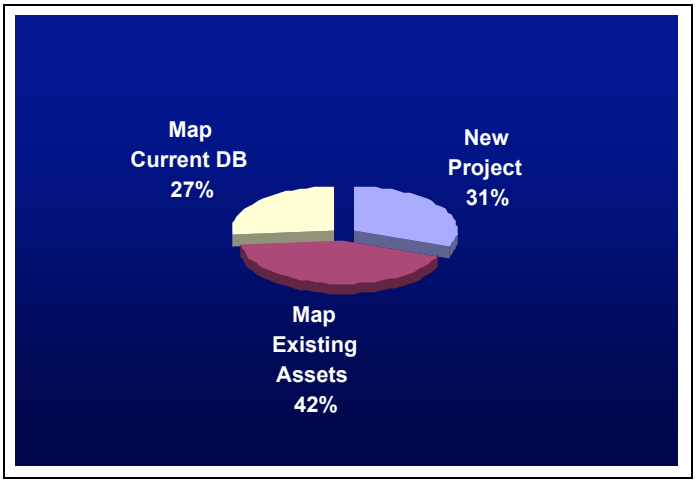

Chart 7: Projects Using PBCore in Next Year

The good news about the acceptance of PBCore by the RFC respondents is tempered by the fact that two-thirds (69%) of the respondents felt that implementing PBCore in their organizations would "require significant organizational changes."

All respondents agreed that training would be a critical requirement. Anyone who does coding, support, training, documentation, etc. would need to be able to work with the proposed PBCore. Staff in all areas – pre production, production, post production, traffic, broadcast, public information, engineering and operations – all would need some form of training:

Providing PBCore in multiple formats for use was also recommended. In addition to the choices offered in the survey, a number of respondents added "XML" versions and style sheets (in the "other" category field) as a preferred option.

Response	Count	Percent
Application Profile in PDF	27	55.1%
Website Utility Tool	32	65.3%
Database or GUI template	31	63.3%
Other	14	28.6%

Table 14: Most Valuable Form Of PBCore

Almost everyone involved with the survey supported the publication and distribution of the draft Dictionary.

Finally, a number of experts suggested that the next step was to actually *test* the viability of PBCore at a number of stations and network operational work units.