

**NISO RP-15-201x**

# **Recommended Practices for Online Supplemental Journal Article Materials**

Part A: Business Working Group Recommendations  
Draft for Public Comment  
January 30, 2012 – February 29, 2012

*A Recommended Practice of the  
National Information Standards Organization and the  
National Federation of Advanced Information Services*

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## Foreword

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### About These Recommended Practices

This project began with an informal survey conducted by Sasha Schwarzman of the American Geophysical Union in October 2009 on how publishers handle supporting materials in scientific journals. The survey results were distributed to the CrossRef and eXtyle mailing lists and generated quite a bit of interest and feedback. In recognition of the importance of this topic the National Information Standards Organization (NISO) and the National Federation of Advanced Information Services (NFAIS) co-sponsored a roundtable discussion in January 2010 to discuss the need for standardized bibliographic and publishing policies for supplemental material. (The previous year the National Federation of Advanced Information Systems (NFAIS) had published a related recommended practice on publishing journal articles.) More than 60 people in attendance participated in a very lively discussion; among the group's recommendations was the formation of a working group to develop recommended practices addressing the business, policy, and technical issues surrounding supplemental materials. The NISO-NFAIS Working Group on Supplemental Journal Materials was formally convened in August 2010, and this document is the result of their work.

In 2012, although the trend toward large numbers of Supplemental Materials being released with journal articles was continuing, no recognized set of practices existed to guide selection, delivery, aids to discovery, or preservation plans. With no commonly accepted guidelines, authors and readers encountered a confusing array of practices, and editors and publishers had no industry basis for decision-making. Related parties such as librarians, publishers of abstracting and indexing services, and repository administrators likewise dealt with disarray in what previously had been a relatively structured scholarly environment. In response to this growing problem, the members of a joint NISO-NFAIS Working Group developed this set of recommended practices. They are intended to help publishers and editors guide authors and peer reviewers in their work and to provide a common ground for delivery of supplemental materials. They are intended to be prospective, not to deal with previously published works.

Some caveats are in order. First, readers will find that the practices are directed mostly to primary publishers, who are the gatekeepers for publishing scholarly journals. However, working group members hope that other related parties will find the document informational. Second, some may find the connotation of Integral Content (see 1.4, *Definitions*) within Supplemental Materials contradictory; however, this seeming oxymoron reflects the situation in 2012. Publishers have sometimes put essential content that they cannot accommodate within the traditional article into a Supplemental Materials category out of necessity. Although technology will no doubt solve this problem in the future, working group members believed it was important to address the handling of Integral Content as Supplemental Materials as they are treated now. Finally, members have been cognizant of the differing cultures and practices across scholarly publishing and aware of the fact that different fields have different requirements. Consequently, the recommendations include many gray areas.

To work most efficiently and to take advantage of specialized skills and knowledge, the working group formed two subgroups: business and technical. This version of the Recommended Policies and Practices, a Draft for Public Comment, comprises the recommendations of the Business Working Group. The recommendations of the Technical Working Group will follow in the near future. These include recommendations for metadata, persistent identifiers, and granularity of markup needed to support the recommended practices; linking mechanisms and handling cited references in Supplementary Materials; considerations for archiving, preservation, and migration of various types of Supplemental Materials to ensure access as well as proper rendering into the future; and packaging, exchange and delivery of Supplemental Materials.

As Part A of these Recommended Practices makes clear, Integral Content and Additional Content are likely to be treated differently throughout the entire lifecycle of a scientific article: peer review, copy editing, markup, citation, and preservation. To enable this differentiation, recommendations in Part B will endeavor to make the functional distinction between essential and nonessential elements explicit, regardless of their physical location, by applying unambiguous metadata. Thus, what a reader of a print article could infer from the physical layout, the user of an electronic article, human or machine, will be able to ascertain explicitly through the metadata.

The Technical Working Group has created an overall model for metadata, and it is currently being refined in three subgroups focusing in detail on linking, archiving/preservation, and packaging. Once the groups have analyzed those areas in detail, suggested changes will be incorporated into the overall metadata model. That model, and the accompanying discussion, will form the technical recommendations, which will be released for public comment within the next few months.

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## NISO Topic Committee Members

The Content and Collections Topic Committee had the following members at the time it approved this Recommended Practice:

[to be added by NISO after approval]

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### 1 Introduction

#### 1.1 Purpose and Scope

These recommended practices are intended to help the scholarly publishing community develop a more standardized approach to publishing what has become known as Supplemental Materials for Journal Articles in a rapidly changing technology environment. The intent is to lessen the burden on all of the parties engaged in the publishing process, to ensure that Supplemental Materials delivered in connection with journal articles add substance to the scholarship, to make Supplemental Materials more discoverable, and to aid in preserving them.

Existing Supplemental Material may predate electronic publishing. For example, older journals, which have been digitized post-publication, may have had microfiche supplements. In an ideal world, all would be digitized; however, available resources may preclude applying these recommendations to older materials. Consequently, publishers may concentrate their efforts only on future articles.

#### 1.2 Background

Over the more than 350 years since scholarly journal publishing began, the basic protocols for writing and publishing journal articles became fairly standard across the many disciplines. In the past two decades, however, technology has enabled an increasing number of options for which there have been limited or no universal standards or best practices.

One such option entails offering authors the opportunity to expand or support their published articles with Supplemental Materials. In 2012, Supplemental Materials often include multimedia—or text, tables, and figures that would occupy too much space or would interrupt the flow of the narrative in a traditional print article—as well as data and computer programs. These vary in the level of importance to supporting the article’s conclusions. Some may be absolutely essential, whereas others may be useful, but not critical.

Traditionally, when the printed page was the medium, the functional distinction between essential and nonessential elements was unambiguously reflected in the article’s layout. Essential elements were incorporated into the body of the article, and nonessential items were placed in an appendix. There was an implicit understanding that anything in the appendix was nonessential. Often nonessential items were simply omitted because of page limits.

Electronic media changed the nature of what could be delivered and altered the implicit understandings. Publishers began including dynamic components, such as videos and 3-D materials that could not be printed, and elements that would be impractical to print, such as datasets and computer code, in online Supplemental Materials. As authors work with these new materials, their mix includes both items essential to the understanding of the work and nonessential ones. However, the clear intellectual distinction between the two is not neatly reflected physically. In 2012, it is not unusual to find both essential and nonessential content in the same files placed under the rubric Supplemental Materials.

From publisher to publisher and from journal to journal, Supplemental Materials can vary in both content and treatment. For many journals more supplemental content has been added over time, to the extent that it can be difficult for readers to understand what the information actually supplements. Further, content

that is a critical part of the evidence for the article's conclusions can be lost to future readers if it is indiscriminately grouped with other less crucial materials surrounding the core article. Thus, it is important for authors and editors to think carefully about Supplemental Materials.

This document was written in the context of the potential options available in 2012, but technology, readers' needs, and information overload are speeding the evolution of the journal article. The group believes that in the future articles are likely to be presented and used in modules, rather than in the linear fashion generally used in 2012. The various modules, which will likely include content that is considered supplemental today, collectively may be considered the article. As Emilie Marcus, *Cell's* Editor-in-Chief wrote when *Cell* changed its approach to supplemental Materials starting in 2010: "...over time, the concept of Supplemental Materials will gradually give way to a more modern concept of a hierarchical or layered presentation in which a reader can define which level of detail best fits their interests and needs."<sup>1</sup> The article is likely to be distributed, that is, not delivered in one linear document. This distributed model may apply to both location and who has curatorial responsibility for the various modules.

### 1.3 General Principles

In coming to agreement on recommended practices, the Working Group articulated a number of broad principles related to publishing and the technical environment.

- 1) Respectful of the wide variance in issues across disciplines and types of content, the recommendations are intended to be guides, not edicts.
- 2) Published articles constitute the scholarly record; therefore, practices must reflect the information future researchers will need to understand and build on articles published today.
- 3) Online Supplemental Materials are intended to provide useful and relevant content. Editors and their publishers should ensure that all Supplemental Materials are tightly pertinent to the article they accompany and should strive to avoid publishing redundant or extraneous content.
- 4) The determination of which materials should be considered supplemental to a core article should be the responsibility of the Journal<sup>2</sup>.
- 5) Readers of any single article and its Supplemental Materials may vary substantially in what portions of an article they consider necessary for their personal comprehension and use. Therefore, packaging the materials and providing clear signals about what it contains is a key concept.
- 6) These recommendations are intended to reflect best practice and to look to the future rather than being limited by paradigms from the past.
- 7) Technology continues to change rapidly; consequently, this set of recommended practices should be considered a living document that will need regular review and updates.
- 8) These recommended practices are primarily intended to address content owned, published, and hosted by the journal publisher (or the journal's contracted publisher or online platform host), although there are some references to content hosted by external repositories.
- 9) Business models are beyond the purview of these practices.

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1 Marcus, E. Taming Supplemental Material. *Cell*, 2 October 2009, 139(1): 11. doi:10.1016/j.cell.2009.09.021. <http://www.cell.com/retrieve/pii/S0092867409011817>

<sup>2</sup> Journal, when capitalized, is used throughout this document to substitute for the specific decision maker, who might be the editor or the publisher depending on the organization.

- 10) Publishers should provide the same level of accessibility to Supplemental Materials, in compliance with national laws governing access for persons with disabilities, as they do for their journal articles.
- 11) The focus of this set of recommendations is on Supplemental Materials at the article level, not at the issue or journal level.
- 12) Data constitute a unique emerging category of content. The scope of these recommendations does not extend to the management of data in general; instead they address the inclusion of data when they are published as Supplemental Materials.

## 1.4 Terms and Definitions

The following terms, as used in this Recommended Practice, have the meanings indicated.

### 1.4.1 General Definitions

article	An original publication that appears in a scholarly journal. An article is a complete, coherent work that provides all materials necessary for a reader to comprehend the scholarly work described.
data	Attributes of a variable or set of variables which may be qualitative or quantitative, may represent facts, figures, or ideas, and may be expressed in numbers, words, or images. Generally, data represent information gathered for analysis or decision-making. Raw data are attributes that have not been processed and analyzed.
metadata	Additional information or context about other data. For example, machine readable metadata headers tell what elements the document contains, when it was created, when it was changed, who created it, size of the file, title, author, type of content, and so on. (See Part 2 for more on metadata.)
multimedia	Multiple forms of media (or content) that may include any of the following: text, images, audio, and/or video, with or without interactivity between the user and the content. Previously used to distinguish print from other media, it is increasingly seen as a combination of multiple forms. Technology is now enabling the incorporation into the article of multimedia content that earlier was consigned to Supplemental Materials.

### 1.4.2 Definitions for Supplemental Materials

Supplemental Materials is a broad term that, in practice, has been applied to materials found outside the core article. In 2012, the materials can be separated into two types of content that differ in their functional relationship to the main article. However, the first type (Integral) is expected to be a temporary category that will disappear in time, as technology enables its better integration into the core article.

integral content	Material that is essential for the full understanding of the work by the general scientist or reader in the journal's discipline, but is placed outside the article for technical, business, or logistical reasons. Examples include descriptions of methods needed to evaluate a study, review, or technical report; detailed results required to comprehend a study, review, or technical report's outcomes; and tables, figures, or multimedia files that provide primary data or information
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required to verify the work or to fully understand the work. In general, the publisher maintains responsibility for hosting and curating this content in the same way the article itself is treated. (For some specialized journals, content held in an external repository may be considered integral.)

**additional content** Content that provides additional, relevant, and useful expansion of the article in the form of text, tables, figures, multimedia, or data, and that may aid any reader to achieve deeper understanding of the current work through added detail and context. Examples include expanded methods sections; extended bibliographies; additional supporting data or results; copies of instruments/surveys; and multimedia and interactive representations of additional, relevant, and useful information. Generally, the author has created this content and the publisher hosts it or places it on the open web.

Determining whether content is Integral or Additional is the purview of the Journal. Best practice is for publishers to ensure that authors and peer reviewers have instructions to guide them in submitting and reviewing content that may fall into either category.

### **1.4.3 Comment on Related Content**

The Working Group spent considerable time discussing other content the author wishes to make the reader aware of because it may add to the understanding of the work, or aid the replication or verification of the results. Examples include data, gene sequences, protein structures, digital recordings, 3-D images, and chemical compounds used, created, or deposited by authors and held in external repositories. This Related Content generally resides in an official data center or institutional repository. The author may or may not have been the creator, and the publisher has no responsibility or authority over this content and does not host it. Journals treat references to this content differently: many expect it to be listed as another cited reference, and others link to it outside the citation list. Because the publisher lacks any authority, no recommended practices are offered for Related Content. However, some recommendations on preservation plans and repositories are included in section 2.9, *Preserving Supplemental Materials*, and comments on linking are provided in Appendix B.

### **1.4.4 Comment on Evolving Ecosystem**

The world of scholarly publishing is changing rapidly along many dimensions. What is published outside the article as Supplemental Materials today may well be incorporated into a new type of article tomorrow. One example is how data are treated. Over the past decade, more funding bodies and more journal publishers have set forth an expectation that the data underlying a research report be made publicly accessible. In 2012, journals and scholarly articles devoted to data are emerging. Consequently, data, which have up to now been placed outside the core article, may be incorporated into some articles. Presenting datasets with an article requires that authors take the time to provide clear metadata and explanations of how the data were used in their study, such as special coding instructions. Another example is multimedia, which until recently, was of necessity placed in Supplemental Materials. It is possible that evolving technology will enable better integration of these materials into the core article.

## **2 Recommended Business Practices**

This section will cover a number of different issues concerning Supplemental Materials. These are treated here at a high level, and with a policy perspective in mind. A more detailed discussion of the technical and implementation considerations is included in Part B of this document, where consideration will be given to the information and metadata required to ensure that the context, linking, archiving, and preservation recommendations outlined in this section can be achieved.

## 2.1 Selecting Supplemental Materials

The costs of vetting, delivering, and maintaining Supplemental Materials can be considerable. Consequently, particular care in accepting content is warranted, and the publisher should provide written guidelines for accepting these materials. Careful editorial evaluation according to the Journal's practices is essential. In all cases, it is helpful to both authors and readers if the Journal sets forth clear expectations that Supplemental Materials be relevant to the article and useful additions to the scholarly record.

This section refers to editorial evaluation of manuscripts.

### **Integral Content**

Best practice is to review any materials deemed essential to the full understanding of the article, but treated as Supplemental Materials for other reasons, at the same level as the core article. The decision to publish Integral Content separately from the article may occur after the article is accepted; in that case the reviewer has seen the content within the manuscript. However, if it is submitted as a separate file, either at original submission or at request following editorial evaluation, reviewers should receive the full set of article and Integral Content and should be expected to review both at the same level.

### **Additional Content**

Ideally, these materials should be reviewed at the same level as the core article. However, Additional Content may be so voluminous that resources simply are not available for full review. In some instances, a reviewer may request these materials to allow a more thorough review of the article itself, and the request should be honored. The content may or may not be published at the discretion of the editor in coordination with the author.

## 2.2 Editing Supplemental Content

The level of technical or copy editing of content following acceptance may be determined by the type of content.

### **Integral Content**

Editing of Integral Content should be determined by the publisher and the editor. Best practice is to edit this content at the same level as the core article. If the Integral Content is not edited, the fact that it is included as the author provided it should be noted within the content or on the landing page that leads to the content.

### **Additional Content**

Editing of this content should be determined by the publisher and the editor. Although fully-edited content would be ideal, Journals may not have the resources to handle editing Additional Content. Many journals, in fact, note that the content is as the author provided it. If the Additional Content is not edited at the same level as the core article, the fact that it is included as the author provided it should be noted either within the content or on the landing page that leads to the content.

## 2.3 Managing and Hosting Supplemental Materials

In general, publishers both manage and host their Supplemental Materials. However, that is not universally the case, nor should it be. A publisher may assume responsibility for ensuring content viability without actually managing it. For example, many publishers do not host their own content. Publishers may, in fact, outsource any aspect of delivery or archiving. These arrangements are governed

by contractual agreements, which should be crafted to ensure the level of protection needed. If journal content is hosted by an aggregator or other host, that host should also deliver Supplemental Material.

Some Journals designate data that are hosted by an external repository as Integral Content. It is essential for a publisher who does not retain responsibility for hosting the content to preserve the link between the core article and the Integral Content. It should also be noted that repositories may not be stable. Even large, important repositories have moved, resulting in broken links. In those cases, the publisher will need to replace links with ones that work. Therefore, best practice calls for the use of persistent identifiers, preferably DOIs. An author's website should never be considered an appropriate place for the sole posting of Supplemental Materials, as no individual's website can be considered stable, nor can the publisher maintain it in any way.

## 2.4 Ensuring Discoverability and Findability

In early 2012, one of the biggest problems with Supplemental Materials for end users and librarians is finding them. Journals may provide indications of associated Supplemental Materials that are inconsistent or not easily seen. As a result, readers may miss important content, including Integral Content. One example is that librarians requesting or sending articles via interlibrary loan (ILL) may discover that the reader receives the core article, but not the Supplemental Materials, most likely because the Supplemental Materials were not readily visible to the sending librarian. The following guidelines address improved discoverability.

### 2.4.1 General Consistency

Standardization helps human readers and machines to find the content, and it is also an important aspect of ensuring that abstracting and indexing services will find the materials. Publishers should use consistent naming conventions for the Supplemental Materials both in the online table of contents and in the article. Likewise, the Supplemental Materials should consistently reference the core article. Finding content serendipitously is enhanced when pointers to the Supplemental Materials are always located in the same place. Streamlining the navigation also helps the reader return to where they started. Publishers should practice consistency from one article to others *and* from one issue to others as well as across all journals published by the same entity.

Consistency is important in three key areas of presentation:

- *Tables of Contents* – Best practice is to indicate the presence of Supplemental Materials for any article supported by Supplemental Materials in the online journal table of contents. The listing in the table of contents should include words such as “supplemental materials” or specific supplemental file names such as “supplemental methods” or “eMethods,” “supplemental table” or “eTable,” “video,” and so on, along with the article title and authors. Use of the naming convention should be easy to understand and consistent within all journals produced by the publisher.
- *Display in the Article* – Best practice is to locate links to the Additional Content “above the fold” on the first page of the article in all electronic versions. Placement should be consistent within all articles, across all issues of a journal, and across all journals from a publisher. As Integral Content is a component of the core article, best practice would be link to that content from within the article. Best practice calls for publishers to ensure that any links within their own content work. In addition, it is important to maintain a standardized approach so that the named content and the links are readable both by machines and by humans.

- *Display in the Supplemental Materials* – Best practice calls for the navigational elements within the Supplemental Materials to match those used at the article level. As much as possible, the elements should follow consistent locations and naming conventions.

## 2.4.2 Abstracting and Indexing Coverage

Good abstracting and indexing coverage is essential for optimal discovery. Even in these days of multiple discovery service engines, scholars still rely on abstracting and indexing services to ensure that their approach to discovery was comprehensive. Another reason for ensuring good abstracting and indexing coverage is preservation: the more evidence that content exists, the more likely the content will be used and preserved.

Standardization is also important for ensuring abstracting and indexing coverage. This is particularly true for abstracting and indexing services that ingest electronic feeds from the primary publisher. In addition to standardizing placement and naming conventions, best practice is to include descriptive metadata that indicate the purpose and file format of the Supplemental Materials and the link or links that will take the end user to them. For more detail, see section 2.8, *Providing Context*.

In 2012, many abstracting and indexing services do not indicate the presence of Supplemental Materials. The reason most reported is that they are difficult to find. Another reason for lack of coverage could be that abstracting and indexing services may not currently have fields in their databases for noting Supplemental Materials in journal articles. To encourage more coverage (and hence more use for the published content), journal publishers need to make it very easy to pick up the requisite information. Abstracting and indexing services should note the availability of Supplemental Materials if the journal publisher has indicated clearly that they exist. If the primary publisher supplies clearly identifiable metadata, including file types, it is recommended that notice of the content and formats be included in the abstracting and indexing record.

## 2.5 Referencing Supplemental Materials

In scholarly works, authors are expected to acknowledge the work of others and to provide accurate references to the published materials. The same expectation holds for use of Supplemental Materials. However, citing Supplemental Materials and handling cited references within Supplemental Materials can be confusing. A variety of systems for citation styles exist across disciplines. However, two common attributes are accurate representation of the content and a combination of elements sufficient to identify a unique document.

### 2.5.1 Reference within the Article

Best practices call for Supplemental Materials to be described (cited and linked) at the same level as a table or figure that is contained within the core article. Providing an in-text citation and link to Additional Content at the appropriate point in the text—rather than adding either or both only at the end of the article—offers the reader context and immediate access. Journals handle these references differently. Some add a prefix so that the reference is “eTable 1” or “Figure S2.” Some use a parenthetical statement such as “(supporting online text).” Others spell the reference out as in “Supplementary Figure 1.”

There should be no bibliographic citation to Integral Content in the reference list as it is considered part of the article.

## 2.5.2 Reference in Other Publications

**Integral Content** Any citation to Integral Content should cite the article as a whole. Citing the content separately is not good practice. Integral Content may be assigned a unique DOI to support linking from the article to the content. One approach might be to create a parent-child DOI structure by adding a suffix to the article DOI.

**Additional Content** Subsequent authors, who have used this content extensively in their own research study, may wish to cite the Additional Content specifically. In some style systems, authors are advised to include the words “Supplemental Material” in the citation.

## 2.5.3 Citations within Supplemental Materials

Often Supplemental Materials will include bibliographic references; examples are references in an extended methodology section, additional reading, and long bibliographies for literature reviews. Authors should ensure the accuracy of these references. If Journal resources and technology permit, references in Supplemental Materials should be tagged and linked to bibliographic databases.

References in Supplemental Materials should be treated differently depending on what they are supporting:

**Integral Content** If the style system permits, it is preferable to integrate references necessary for the support of Integral Content into the reference list of the article rather than create a separate list. However, in numbered reference systems, preparing a separate reference list may be less confusing for the reader.

**Additional Content** In contrast, references necessary for the support of Additional Content should be delivered in lists separate from the article reference list, and placed within the Additional Content files. Some citations may be found in both the article reference list and in the Additional Content reference list.

## 2.6 Metadata and Packaging

An article package comprises the core article, all Supplemental Materials—Integral and Additional if both exist—and descriptive metadata. The recommended best practice is to use a standardized packaging format designed to support disk-based or network-based storage and transfer of digital content. The packaging is particularly important for data transfers such as interlibrary loans.

Metadata required include the publication title, the article title, publication date, a persistent link such as a DOI to the article, a persistent link or links to the Supplemental Materials, and a manifest. The latter describes the objects contained in the package and the total file size of the package. Other elements in the manifest are file name and description, detailed copyright information, and any executable information.

## 2.7 Maintaining Links

In an electronic journal, links enable the reader to navigate seamlessly from one item to another; however, if a link breaks, the reader is left with little recourse for access. Any link in an article must work at the time of publication. If the link is to information owned, published, or contracted by the publisher, the publisher has an obligation to maintain link functionality. Links to external information over which the publisher has no control present more difficulties: best practice is for the publisher to maintain the link

and resolve broken links when discovered. Use of DOIs will minimize the problem of broken links. Best practice would also call for publishers to deactivate links to materials not under their control when they learn the links no longer work. If possible, the publisher should indicate where alternative access might be found.

Bidirectional linking is important for both Integral and Additional Content. The reader must be able to move back and forth between the core article and the Supplemental Materials with no difficulty, whether the link from the article goes directly to the content or it takes the reader first to a landing page. DOI registration for the content can ensure persistency and findability; consequently, it is recommended. It is important to provide separate DOIs for Integral and Additional Content as structurally distinct types of content to enable separate linking. Publishers should also update the DOI metadata when necessary to maintain the persistence of the DOI.

## 2.8 Providing Context

Within the article, an in-text citation provides context for the Supplemental Material. However, it is important to provide context within or attached to both Integral Content and Additional Content. Readers can find these materials without navigating to them from the core article. Even if readers navigate directly from the article to the content, they will benefit from a reminder about what they are seeing or hearing. Consequently, some indication of the nature of the content and its connection to the article to provide context are important. Including the following elements, either on a landing page or within the content itself, is recommended:

- Article citation and DOI
- Title of document and/or succinct statement about the content
- For multimedia files, a file extension and indication of size
- If there are multiple files, a list of all the relevant files
- Player information for multimedia
- DOIs or other identifiers for the Supplemental Materials if used.

Although these elements can be contained in a ReadMe file, experience has proven that readers generally ignore them. Simple lists, as noted above, are generally more useful.

## 2.9 Preserving Supplemental Materials

Recommendations for archiving and preserving Supplemental Materials are based on their importance and relationship to the scholarly record. There may be competing priorities between presenting innovation and cutting edge material and preserving content for future scholars. One option may be to deliver multiple views, in which one view presents preservable content, but perhaps is not fully functional, and one view offers fully functional content that may not be preservable. With archiving evolving from a purely library function to one that may be dependent on the publisher, preservation potential is now very important.

### **Integral Content**

Because the article is functionally incomplete without its Integral Content, preservation of the core article must include preservation of Integral Content at the same standard. Responsibility for this preservation lies with the publisher.

Consequently, best practice for these materials is that they receive the same metadata markup as the article does and are included in migration plans. For multimedia files, the accompanying text, which should include clear metadata, should be tagged appropriately.

### **Additional Content**

These materials can constitute a large and diverse set of content. Publishers should take preservation into consideration when accepting materials. If they are uncertain whether they can preserve the materials, a best practice would be to request that the author submit the content to a trusted repository so that the publisher can link to it there. To the extent possible, the Additional Content should receive the same tagging and markup the article does and should be included in migration plans. For multimedia files, the accompanying text, which should include clear metadata, should be tagged appropriately.

Supplemental Materials, if selected well, constitute an important part of the scholarly record, and their long-term viability is of concern. In developing a preservation plan, publishers may wish to consider distributed repositories, as redundancy can be a useful safeguard. As a best practice, publishers should either specify the repositories they deem acceptable for depositing data and other content or outline criteria by which a repository would be evaluated for acceptability. Some possible criteria would include accessibility (open to all scholars), commitment to and capability of archiving in perpetuity, and commitment to managing bi-directional linking with publications at the level of specific data sets.

## **2.10 Rights Management**

How publishers approach rights for the intellectual property of an article varies significantly. In general, publishers who ask for a copyright transfer or license as a condition of publication also expect the author to transfer rights for both Integral Content and Additional Content. Publishers who use some form of the Creative Commons document also generally treat Supplemental Materials as they do the core article. Best practice is to treat rights for Integral Content in the same manner that the publisher treats rights for the core article. Determination of rights for Additional Content may differ but should be transparent to users.

Another issue related to rights management is access. Anyone who has rights to have access to the online article should also be given access to the Integral Content. Of particular concern to librarians is the ability to get both the article and the Supplemental Materials through ILL. The recommended practice is for libraries to provide both the article and the Supplemental Materials for which the publisher is responsible in ILL.

## PART B: TECHNICAL CONSIDERATIONS AND IMPLEMENTATION RECOMMENDATIONS

Part B is still under development. Recommendations are being formed to help publishers implement the Recommendations for Business Policies and Practices. It is anticipated that Part B will be released for Public Comment in Summer 2012.

## Appendix A: Roles and Responsibilities

Many parties play a role in maintaining the record of scholarship. For convenience in this document, we have separated the parties into two segments: Primary Publishing and Related Parties, and described their responsibilities in the two tables below.

### Primary Publishing

Publisher	Editor	Peer Reviewer	Author
Educate other parties about requirements for posting and curating content.	Set editorial policy.	Follow journal guidelines for reviewing Supplemental Materials.	Be aware of Journal expectations and follow them to the best of their ability.
Provide appropriate resources for managing supplemental content.	Make final decisions on content.	Inform the editor in a timely fashion if unable to review any content.	Provide context and demonstrate that the Supplemental Materials add substance to scholarship in the field.
Provide systems to facilitate the decision-making process.	Determine whether supplemental content is integral to the core article.	Alert the editor to instances in which integral data are not provided, but are needed to understand the manuscript.	Be responsible for providing Supplemental Materials at the same level of quality as the core article.
Be clear about the level of delivery and preservation that can be provided.	Set expectations for acceptable content with an understanding of what is entailed in vetting, delivering, and preserving content.		Be aware of trusted repositories in the field.
Encourage authors to post Additional Content in endorsed archives that ensure good preservation and provide bidirectional linking to the journal.	Encourage authors to post Additional Content in endorsed archives that ensure good preservation and provide bidirectional linking to the journal.		Be aware of and adhere to policies of your institution and funder for sharing of research data.

## Related Parties

Libraries	Abstracting and Indexing Services	Repository Administrators
May serve as a repository for the research done by university researchers.	Indicate the availability of Supplemental Materials if the journal publisher has provided clear indication they exist.	Make deposited content accessible by assigning persistent identifiers, such as a DOI or another unique identifier.
Include Supplemental Materials with journal article interlibrary loan when the journal publisher has provided clear indication they exist.	Include the formats and file types of Supplemental Material if the publisher has provided identifiable metadata.	Include DOIs for any journal articles that link to content in their repository.
	Include the publisher-provided DOI or other identifier.	Manage bidirectional links between the deposited content and the article.

## Appendix B: Linking to Related Content

Related Content is other content the author wishes to make the reader aware of because it may add to the understanding of the work, or aid the replication or verification of the results. Examples include data, gene sequences, protein structures, digital recordings, 3-D images, and chemical compounds used, created, or deposited by authors and held in external repositories. Related Content generally resides in an official data center or institutional repository. The author may or may not have been the creator, and the publisher has no responsibility or authority over this content and does not host it.

Related Content is a separate entity and is referenced within the text in similar fashion to other cited references. Practices for linking to this content vary from journal to journal with some Journals requiring that citations to repositories be listed with their unique identifiers and accession numbers within the text and linked from there. Others include the reference and the link in the citation list. If the repository enables links to a specific item and such a citation fits within the style system the journal uses, listing the citation in the reference list would facilitate export to a reference management system. In 2012, we are seeing repositories take active steps to provide the necessary infrastructure for linking to “items” as opposed to just a general reference to the whole repository.

Generally, the repository provides a linking syntax for materials they maintain. In providing the citation, the author should include the identifier or accession number specified by the repository so that the publisher can include it. Bidirectional links are recommended, and authors should be encouraged to post their materials in repositories capable of accommodating the journal article DOI.

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