Article

Dynamically updated alive publication date

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Abstract: The scientific work posted on the Internet, which its author constantly keeps up to date, will be called an alive publication. The genre of alive publishing has many attractive features. However, it requires a certain expansion of the composition of the meta-attributes of the publication: along with the traditional attributes, the date of the appearance of the new, fresh revision is brought to the fore here. Such date is placed in a prominent place in the text of the publication. Along with this, it becomes highly desirable to include such a dynamically ("on the fly") generated date in a bibliographic reference to an alive publication. The currently used methods of dynamic extraction of this date are considered for a simple online publication, for a publication that has received a DOI through Crossref, and for a publication posted in arXiv.org. Thanks to adding this meta-attribute, references to alive publications will beautify any bibliographic list.

Keywords: alive publication; dynamic component of bibliographic reference; latest revision date; Crossref; arXiv.org

1. Introduction

Until recently, the proverb "Littera scripta manet" ("The written word endures", [Lat.]) prevailed everywhere, including in the world of science. The mistake made in the published article was almost impossible to correct, it haunted the author for the rest of his life and confused his readers. In addition, obtaining any new results in the field under study each time required the author to issue a new article, where he was forced to devote a very significant part of the text to repeating previously published information, without which a fresh reader could not perceive this new.

The advent of the Internet and the subsequent transition of the mass reader of scientific publications to online make it possible to leave these annoying circumstances in the past. Now any article posted online in a couple of minutes can be replaced with its corrected and/or expanded version. The author, who does not take advantage of this happy opportunity, not only deprives his reader of the chance to find out the latest news from the area that interests him, but also by his inaction often forces reader to deal with a text containing errors discovered after previously performed posting.

2. Materials and Methods

The scientific work posted on the Internet, which its author constantly keeps up to date, will be called an alive publication [1]. Due to its obvious advantages, alive publications are gaining more and more supporters every year.

• An author who has abandoned a traditional, static publication in favor of an alive one finds himself in a new, significantly more comfortable and productive environment. The mistakes and typos made are no longer fatal; they can be easily corrected. The circle of readers of an alive publication is much wider. Interest in it often even increases over time: many readers return to their favorite text over and over again, not only to refresh their memory of the most significant moments, but also to find out how the author's views are transformed and what new things he suggested or noticed from others in field under consideration.

- • For the reader, an alive publication is undoubtedly preferable to a static one. In fact, how much more confident do you feel when you know that the text in front of your eyes is un-der the vigilant control of the author; that all inaccuracies and errors noticed since the first posting of the work online have been carefully corrected in it; that the text constantly re-flects the changes taking place in the branch of science under consideration.

Of course, it would be utopian to imagine the life of the author of an alive publication cloudless. In particular, serious difficulties arise here in connection with the usual official requirements of reporting on publications. Scientific reporting is often calculated exclusively in pieces, and in this case, in the eyes of an official, an alive publication seems to be a reckless challenge, an emphatically irrational expenditure of creative efforts.

The use of the term "alive" publication is not conventional practice. The terms "living" [2, 3], "evolving" [4] "dynamic" [5], "liquid" [6, 7], "propelled", "movable", "progressing", "developing", and "advancing" are used more often. To our regret, most of these terms generally mean that the publication contains multimedia and/or interactivity rather than alive content.

3. Results

3.1. Date of last update

How can a reader distinguish an alive publication from a static one? Simply adding a special "Publication declared alive" icon to its representation is obviously not enough. After all, the author could once put this icon and safely forget about it and about his online text. Therefore, the only reliable evidence of an alive publication is the fresh date of its last update. This date is certainly shown in a prominent place in the main text, for example, in the form of a conspicuous banner (Figure 1).

This section may be divided by subheadings. It should provide a concise and precise description of the experimental results, their interpretation, as well as the experimental conclusions that can be drawn.

≈ Alive

Posted on 2011-06-02
Updated on ≈ 2022-07-03 ≈

Figure 1. Banner of the alive publication. The date of the first placement and the date of the current (fresh) revision are indicated.

The banner containing the date serves as a reliable guide for the reader of the alive publication. Such information is undoubtedly useful. But it is equally important to inform the reader that the publication is alive, in another common situation — when viewing a link to it in the bibliographic list.

In bibliographic references to online materials, such dates as "last modified" or "accessed" are often found. These dates are static and therefore unsuitable for serving an alive publication. Their appearance is because that the author foresees a change in the material to which he refers. Such a date only tells the reader that at a certain moment the quoted material was contained at the specified address, and the author is not responsible for what happened to it afterwards.

3.2. Dynamically updated date

The reader looking through bibliographic references is not indifferent about which of the listed publications are alive and which are "dead", static, i.e. they have not changed since their first appearance. At the same time, marking a publication in the bibliographic list as "alive" is not enough here either: the author could have forgotten many years ago about his intention to turn to this genre. Then such a mark would lose its meaning, it

would simply disorient the reader. And here the only reliable evidence of the "aliveliness" of the publication is the presentation to the online reader of the fresh date of its last edition.

To implement such a presentation, the HTML format is desirable. If relatively recently the aging PDF format was the main and practically the only means of online presentation of scientific publications, now HTML, thanks to its numerous advantages, is gradually gaining a stable position in this area. One of the advantages of HTML is the ability to include dynamically generated elements in the publication text relatively easily.

So, in order to attract the attention of the reader of the bibliographic list to alive publications, software tools were developed for HTML [4, 5]. These tools implement cross-domain relations and allow them to dynamically supplement the usual text of the bibliographic record with a new important component — the fresh date of the last edition of the publication.

To do this, a special construction is added to the source HTML text of the bibliographic reference, serving the formation of the final text of the reference presented to the online reader with the update date. By means of this construction, when forming the text of the reference, the file of the alive publication is accessed, which, generally speaking, is hosted in another, external domain. The update date has contained there in a certain format in the attributes of the alive publication, extracted from there "on the fly" and included in the text of the bibliographic reference presented to the online reader.

Thus, the online reader of the bibliographic list always sees the date of appearance of the new version of the alive publication, which is really the latest at the moment. For presentation in the bibliographic reference of the dynamic date of appearance, we will use the prefix "Updated on", and surround the date itself with the characters "≈", for example

> M. Gorbunov-Posadov. Alive publication // Open systems. 2011, № 4. P. 48–49. (In Russian). Updated on ≈ 2022-07-03 ≈ https://keldysh.ru/gorbunov/live.htm

The hyperlink included in the bibliographic record here leads precisely to the latest revision of the publication.

3.3. Crossref

The hyperlink included in the bibliographic record, due to well-known technological considerations, now increasingly leads not directly to the publication file, but turns to the DOI (Digital Object Identifier). In most cases, the DOI is supplied by the Crossref agency. For a long time, Crossref has held a tough position towards alive publications: it was written in the agency's rules that no changes can be made to a publication that has received a DOI.

However, over time, alive publications in Crossref were fully legalized. On the one hand, the requirement of the immutability of the received DOI material was excluded from the rules. On the other hand, the Crossmark mechanism was implemented, assuming that all newly appearing versions of an alive publication coexist with their predecessors, and each of them receives its own DOI. In each of these versions, the "Check for updates" icon serving the alive publication (Figure 2) is placed in a prominent place.

Figure 2. Crossmark icon serving alive publication in Crossref.

Crossmark does not allow us to include directly in the bibliographic reference a permanent hyperlink to the latest version of an alive publication. Instead, it is proposed to include a DOI hyperlink to the current version at hand in the bibliographic reference. However, a reader who has somehow wandered into such possibly outdated version, by clicking on Crossmark icon, can find out if and where a more recent version of an alive

publication exists and is located, as well as whether this publication has been retracted by the editors.

The Crossref's proposed mechanism for serving alive publication by Crossmark seems irrational. Access to the latest version through an outdated one is unnatural. In addition, the reader may simply not pay attention to the Crossmark icon and thus not guess the existence of a more recent version of the publication. Finally, even if it were somehow possible to find out the date of the revision of the latest version, it is impossible to include this date in the bibliographic reference to the outdated version because the reader may mistake it for the updating date of the old version. However, without specifying a fresh date, a link to a live publication is boring, and in a certain sense even incorrect.

At the same time, Crossref does not insist on the uniqueness of Crossmark's approach to version maintenance. It is allowed not only its own DOI for each version (as in Crossmark), but also one DOI for all versions, which in this case replace each other under this address. Both of the approaches, according to Crossref [9], has its advantages and disadvantages.

In our opinion, preference should be given to the approach with a single DOI. It is more productive and more comfortable for the reader to put the case in such a way that an external link, in this case a DOI hyperlink, always leads directly to the latest, most fresh version of the material. In other words, let the subsequent versions of the alive publication replace each other under the same DOI. However, for a lover of antiquity on the page of the alive publication, you can provide a link to the protocol of changes in the alive publication that is being formed and stored somewhere aside.

With such a service organization, the corresponding bibliographic reference can and should be supplemented with a dynamically updated date of the last revision of the alive publication [10]. This is reliable evidence that the author does not forget about the constant support of his creation. For example

> M. Gorbunov-Posadov. Online bibliographic reference //
> Keldysh institute preprints. 2020. № 11. Updated on ≈ 2022-07-19 ≈
> https://doi.org/10.20948/prepr-2020-11

If the author plans to re-index each new version of a live publication (of course, under the same DOI) in Crossref, then he may not announce the date in the alive publication file. If the date in this file is not announced, the date of the last indexing of the publication in Crossref will be inserted as the update date.

At the same time, if the changes made only affected the main text, i.e. neither the location of the file, nor the bibliography, nor the abstract, nor other metaattributes have changed, then, generally speaking, you can save a little effort - post the next version, but not index it in Crossref again. In this case, to serve the dynamic date included in the bibliographic reference, the publication file will need to explicitly specify the date of the last revision, as in the case of a direct (without DOI) link to an alive publication.

3.4. *arXiv*

arXiv [7] is the oldest and largest archive of scientific preprints placed in the public domain. It has been operating since 1991, and by 2022 more than two million preprints were placed in arXiv.

arXiv supports hosting alive publications. The author has the right to place new and new versions of his alive preprint in arXiv at any time, the files of which receive addresses (URLs) with suffixes v1, v2, v3, ... (Figure 3).

Submission history

From: LVC Publications [view email] [via Lvc Publications as proxy]
[v1] Thu, 5 Oct 2017 19:18:51 UTC (4,609 KB)
[v2] Wed, 11 Oct 2017 16:26:26 UTC (4,608 KB)
[v3] Tue, 7 Nov 2017 22:45:22 UTC (4,608 KB)
[v4] Tue, 8 Oct 2019 13:29:33 UTC (4,507 KB)

Figure 3. Four versions of the alive publication presented on the page https://arxiv.org/abs/1710.02185.

To access the latest (fresh) version of an alive publication in arXiv, a URL without a suffix is used, for example, https://arxiv.org/abs/2103.10761. A bibliographic reference using such a shortened URL can be supplemented with a dynamically updated posting date in the arXiv of the latest version [11], for example

Gorbunov-Posadov M.M. Alive publication.
Revision from ≈ 2021-03-19 ≈
https://arxiv.org/abs/2103.10761

In this case, it is not necessary to declare the date of the last revision in the publication file: the date is extracted from the arXiv system data.

4. Discussion

Alive publication, due to its obvious advantages, is steadily gaining new and new positions in the scientific community. When the officials making organizational decisions finally recognize as a significant scientific merit of the author not only the publication of an article in an authoritative publication, but also the up-to-date support of an alive publication, then the distribution of alive publications will acquire a massive character, which will undoubtedly benefit modern science.

The inclusion in the bibliographic reference of the dynamic date of the last revision of an alive publication requires relatively little effort from the author. For the reader, such a date turns out to be extremely useful, transitions from the bibliographic list to recently updated alive publications are usually performed many times more often than to static ones that are not provided with a dynamic date.

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Conflicts of Interest

The author declare no conflict of interest.

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