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## **Easy access to open access: Integration of open access publications into the EZB Linking Service**

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# EASY ACCESS TO OPEN ACCESS: INTEGRATION OF OPEN ACCESS PUBLICATIONS INTO THE EZB LINKING SERVICE

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## ABSTRACT

Fast and easy access to electronic resources plays a key role in academic library services. Since 1997 the University Library of Regensburg has been providing the Electronic Journals Library (EZB, <http://ezb.ur.de>), a database for academic electronic journals, which is used and collaboratively maintained by more than 600 libraries. The bibliographic metadata and holdings information for e-journals of the EZB build the basis for the EZB Linking Service, a link resolver to check the availability of full texts of electronic journals and to offer links to journal contents in accordance with existing access rights. For several thousand journals of about 45 different publishers a direct link to the articles of e-journals with respect to permissions can be offered in such a way. The EZB Linking Service is involved in over 40 third-party systems, like library portals, internet portals, virtual libraries or specialized databases. With about 70 million requests in 2014, the EZB Linking Service is an intensively used service of the information infrastructure in Germany.

However, research articles in institutional repositories, which are simultaneously published in scientific journals, are often not included in existing link resolvers. As part of a project, funded by the German Research Foundation (DFG), the extension of the EZB Linking Service to open access publications in different institutional repositories is planned to make the access to these publications easier for end users. As a result of the project, journal articles which are published parallel in institutional repositories will be integrated in the EZB Linking Service and offered to end users as alternative article links.

## KEYWORDS

Electronic Journals Library, Open Access, EZB Linking Service, link resolver, repositories

## INTRODUCTION

Fast and easy access to electronic resources is an important prerequisite for an efficient search of existing research results and thus for a fruitful exchange of knowledge in science and research. The Electronic Journals Library (EZB – in German Elektronische Zeitschriftenbibliothek, <http://ezb.ur.de>) offers fast, structured and standardized access to scientific and academic journals publishing full-text articles in the internet. Since 1997 the University Library of Regensburg has been running the EZB, which currently contains 80,800 electronic journals from all areas of research, among them 15,400 journals available online only. In addition, 83,400 journals, which are provided by aggregators, are listed. About 50,000 journals can be read free of charge. Furthermore, the more than 600 participating libraries offer full-text access to the journals they subscribe to. All participating libraries are able to provide their holding and access information in the EZB. In Germany this service is used in almost all universities and research institutions. At the same time the EZB finds strong international distribution [Panzera & Hutzler, 2004]. The 125 international institutions, including the Library of Congress as the world's largest library, are spread over 9 countries. The metadata of the EZB journals are collaboratively gathered and maintained by all participating libraries. At the same time, the EZB has extensive administrative functions for managing holding and access information. With 11.8 million clicks on journals titles in 2014, the EZB is a very intensively used system.

Since 2004 the University Library of Regensburg has been providing additionally the EZB Linking Service [Hutzler, 2010; Hutzler, Scheuplein & Schröder, 2006]. The EZB Linking Service is a link resolver that checks the availability of full texts in electronic journals, considering the holding information stored in the EZB, and offers a link to the journal's content. The knowledge base of this service includes the holding information of licensed journals of all participating libraries as well as access information of freely available journals listed in the EZB. For several thousand journals of about 45 different publishers a link to the journals' full texts can be offered considering the local access rights of the participating libraries.

## FUNCTIONALITY OF THE EZB LINKING SERVICE

The EZB Linking Service is incorporated in more than 40 third-party systems, such as in library portals, internet portals, virtual libraries or specialized databases. When a user starts a search in one of the participating systems, a result list with e-resources containing the search text will be generated. Via the EZB Linking Service the user can see in this result list whether the founded articles are available to her or him. This is illustrated by small traffic lights. A green traffic light means that an article is freely available, a yellow one means that the article is licensed at her or his library. A red light means that the article is not accessible, because the user's library has no subscription for it. If there is no traffic light, the e-resource is not listed in the EZB (e.g. e-books).

One example of a successful integration of the EZB Linking Service in third-party systems can be shown in LIVIVO, a research portal for Life Sciences (www.livivo.de). Here users can look for research results in medicine, health care, nutritional, environmental or agricultural sciences. Figure 1 shows an example in LIVIVO, where a user of the University Library of Regensburg searches within the IP range of the University of Regensburg for 'pregnancy'. In the result list, the first hit has a green traffic light, which means, it is an article that is freely available. The second hit has a yellow traffic light, which leads to an article, which is licensed in the University Library of Regensburg. In addition to the information about the availability of the article the user also gets the direct link to the full text.

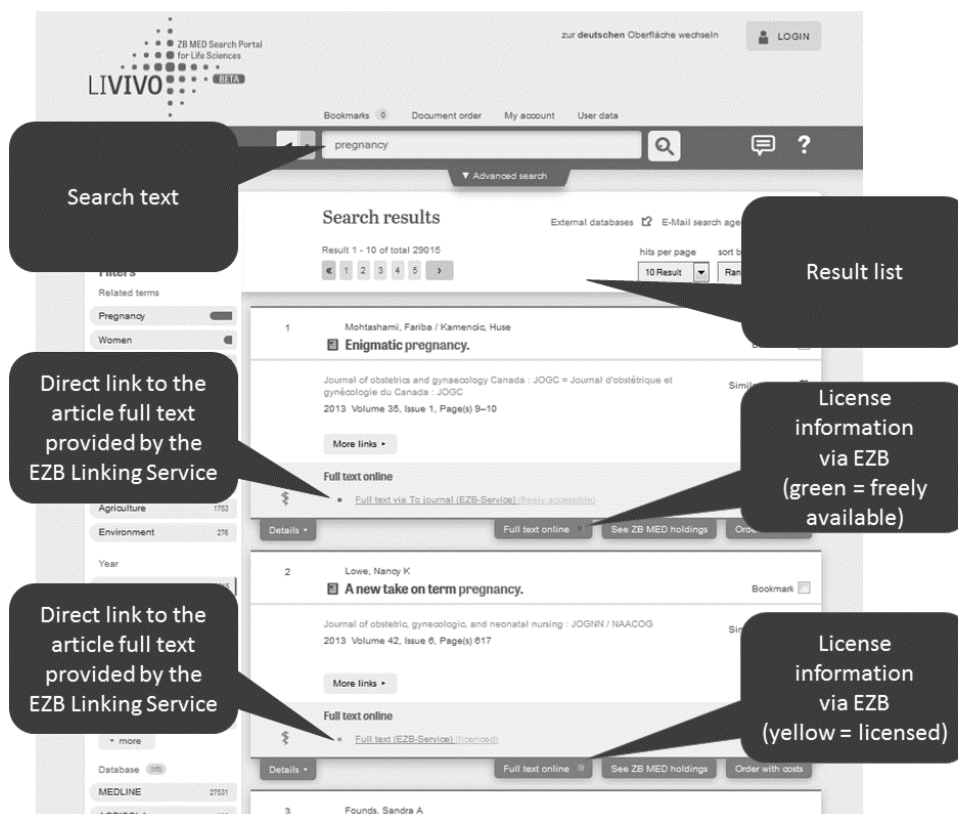


Figure 1: Integration of the EZB Linking Service into the LIVIVO portal

In the background, LIVIVO uses the EZB Linking Service, which is based on OpenURL. The OpenURL technology enables the generation of an URL to an electronic document based on its metadata. The functionality of the EZB Linking Service will be explained in the following four steps. Figure 2 shows a schematic illustration of these steps.

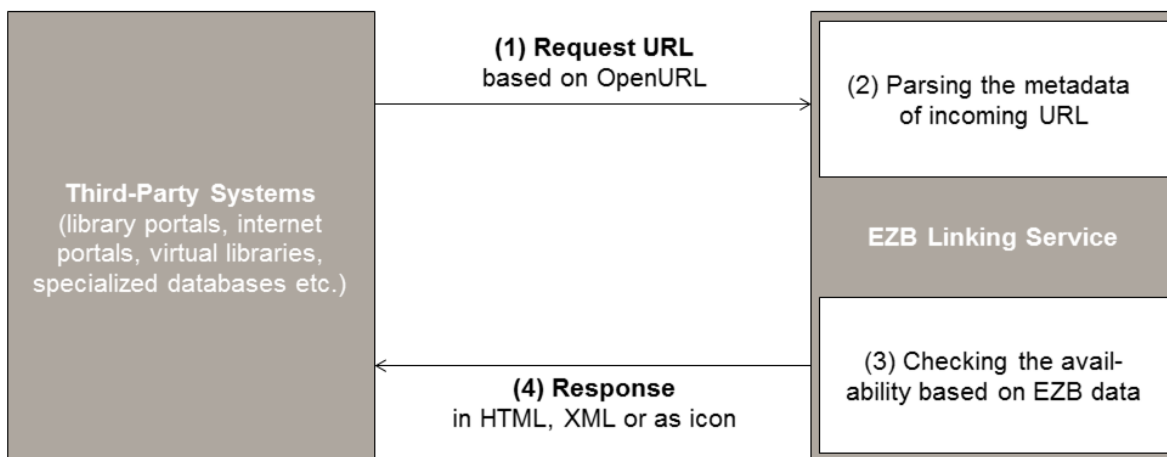


Figure 2: Schematic illustration of the functionality of the EZB Linking Service

### 1. Building the request URL

After the user has entered a search keyword into the search box of a research portal, where the EZB Linking Service is integrated, a result list will be generated. For every article hit of this result list a request to the EZB Linking Service will be carried out. The request URL is based on OpenURL technology and includes the metadata of the particular electronic resource. The structure of request URLs depends on the desired output form. The output can be offered as a HTML page, as XML or as an icon. The following links show the structure of the request URLs for the three output options.

#### Request URL for the HTML output:

```
http://ezb.uni-
regensburg.de/ezeit/vascoda/openURL.phtml?bibid=UBR&issn=0884-
2175&date=2013&volume=42&issue=6&spage=617&genre=article&lang=en
```

#### Request URL for the XML output:

```
http://ezb.uni-
regensburg.de/ezeit/vascoda/openURL.phtml?pid=format%3Dxml&
genre=article&mlink=1&issn=0884-
2175&volume=42&issue=6&date=2013&spage=617
```

#### Request URL for the output as an icon:

```
http://ezb.uni-regensburg.de/ezeit/vascoda/get_image.php?issn=0884-
2175&date=2013&volume=42&issue=6&spage=617&genre=article
```

For the implementation of the EZB Linking Service into the LIVIVO portal the XML output is used. This allows the display of the availability information and the links given by the EZB Linking Service in the layout of LIVIVO.

### 2. Parsing the metadata of incoming URL

After receiving the request the EZB Linking Service parses the elements of the incoming URL. In the example above the metadata of the requested electronic resource would be like this:

```
ISSN: 0884-2175
Year: 2013
Volume: 42
Issue: 6
1. Page: 617
```

### 3. Checking the availability based on EZB data

The EZB Linking Service now checks the availability of the requested electronic resource through the user's library based on the existing holding information in the EZB. The user's library is either determined by the user's IP address or an additional parameter, the bibid. In our example the full text article is available for the University Library of Regensburg's users.

### 4. Providing the Response

Depending on the delivered metadata the access privileges a link ideally to the full text or a corresponding traffic light icon will be generated, respectively. But the EZB Linking Service can do more, especially if not all the metadata are present. It can also generate a link to the table of contents, the table of issues, the table of volumes or the journal website.

Figure 4 illustrates the HTML output and the XML output for our example. Both contain the link to the article, which looks like this:

<http://www3.interscience.wiley.com/resolve/openurl?genre=article&issn=0884-2175&volume=42&issue=6&spage=617>

**HTML output**

Electronic Journals Library  
University Library of Regensburg

Databases UR Publications VPN-Client Administration

The article you have chosen is accessible via an online subscription in your library.  
Please respect the terms of use.

Published in: Journal of Obstetric, Gynecologic and Neonatal Nursing (2013)  
Volume 42, Issue 6, p. 617

[view full text](#)

[Help for access problems](#)

**XML output**

```
<OpenURLResponse status="ok">
  <OpenURLQueryInfo>
    <bibid>UBR</bibid>
    <lang>de</lang>
    <source_identifier></source_identifier>
  </OpenURLQueryInfo>
  <OpenURLIssuesInEZB>
    <issn>0884-2175</issn>
    <issn>1552-6909</issn>
  </OpenURLIssuesInEZB>
  <OpenURLBibliography>
    <year>2013</year>
  </OpenURLBibliography>
  <title>
    Journal of Obstetric, Gynecologic and Neonatal Nursing
  </title>
  <volume>42</volume>
  <issue>6</issue>
  <page>617</page>
  <OpenURLBibliography>
  </OpenURLBibliography>
  <OpenURLResult>
    <found>
      <available status="sure" color="2" level="fulltext"/>
      <LinkToEZB_openURLpage>
        http://ezb.uni-regensburg.de/vasocoda/openURL.phtml?genre=article&link=1&issn=0884-2175&volume=42&issue=6&date=2
      </LinkToEZB_openURLpage>
    </Result>
  </OpenURLResult>
  <access status="sure" color="2"/>
  <LinkToJournal>
    http://www.onlinelibrary.wiley.com/journal/10.1111/(ISSN)1552-6909
  </LinkToJournal>
  <LinkToEZB_Frontpage>
    http://ezb.uni-regensburg.de/ezeii/detail.phtml?bibid=UBR&colors=7&lang=de&jour_id=64114
  </LinkToEZB_Frontpage>
  <LinkToArticle level="fulltext">
    http://www3.interscience.wiley.com/resolve/openurl?genre=article&issn=0884-2175&volume=42&issue=6&spage=617
  </LinkToArticle level="fulltext">
  </OpenURLResult>
</OpenURLResponse>
```

Figure 4: Output options of the EZB Linking Service

## USAGE OF THE EZB LINKING SERVICE

With more than 70 million requests in 2014, the EZB Linking Service is an intensively used service of the information infrastructure in Germany. The portals DIPF, MEDPILOT, GREENPILOT and ReDI are among the providers with the most requests. For almost half of the incoming requests the resource availability could be checked. The other requests were either incorrect (5 %) or concerned resources which are not listed in the EZB, like ebooks, newspapers etc., (43 %) or which are not available online (8 %).

In 2014 for more than 30 million requests the EZB Linking Service could response with the availability of the inquired resources on the basis of the existing data in the EZB. Thereof over 11 million links in all could be offered to freely available (green) or licensed (yellow) journals. Figure 5 shows the distribution of the results of the availability checks in 2014. As you can see, the green journals have a percentage of about 25 percent. This means that freely available articles are an important information source for scientific research.

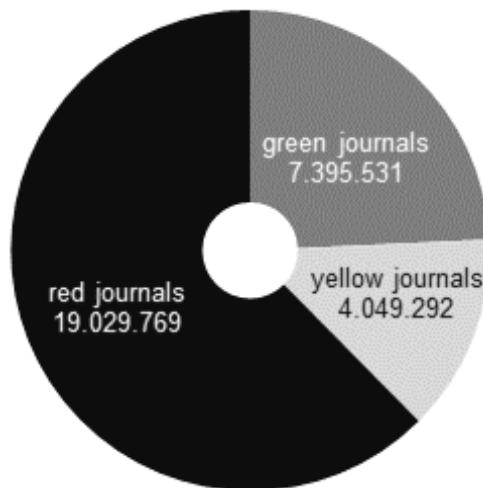


Figure 5: Distribution of the results of the availability checks in 2014

The EZB Linking Service tries to offer links to the users, which lead as directly as possible to the desired resource. Depending on the specified metadata in the request URL and depending on the available linking rules the EZB Linking Service offers ideally full text links or else links to the table of contents, to the table of issues, to the table of volumes or the journal website. Out of the total 11 million links to yellow or green journals about 4 million article links to full texts were generated. Around 7 million links lead to the journal website. Figure 6 shows the distribution of the offered links to yellow and green journals. More than 70 percent of the yellow journal requests lead to full texts and 26 percent to the journal website. Compared with the green journals the picture is different. Only less than 10 percent of the requests lead to the full text. Most of the requests to freely available journals lead to the journal website. Particularly here alternative linking methods have to be found in the future to give easier access to full texts to the users.

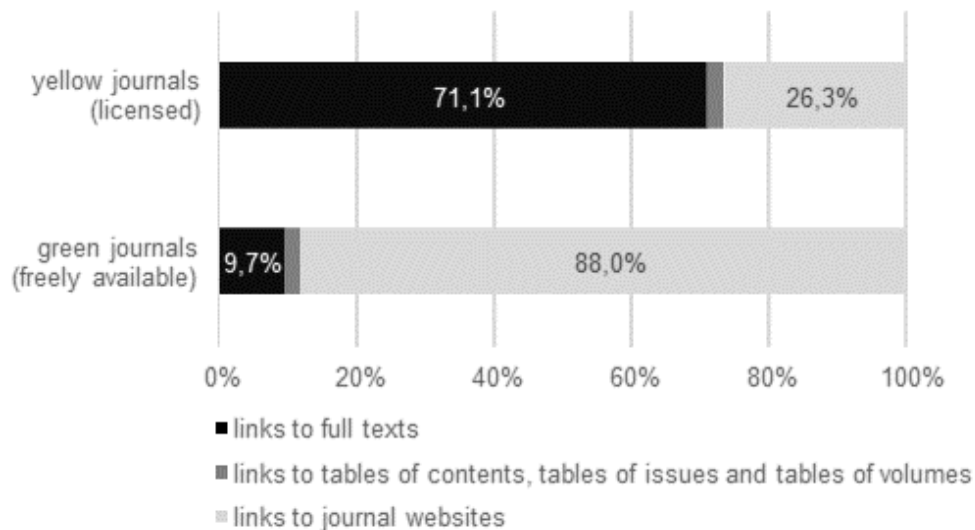


Figure 6: Distribution of the offered links for licensed and freely available journals in 2014

For almost 20 million requests in 2014, there was no license available and the users received a red traffic light without a link to the inquired resource. Especially in these cases a better user support could be offered by referring alternatively to Open Access publications in repositories. This is the aim of the University Library with its new project, which contains the extension of the EZB Linking Service to open access publications.



## INTEGRATION OF OPEN ACCESS PUBLICATIONS INTO THE EZB LINKING SERVICE

The extension of the EZB Linking Service is part of a project, funded by the German Research Foundation (DFG – in German Deutsche Forschungsgemeinschaft). As a result of the project, different publication types of full texts in academic journals and institutional repositories will be merged into one service and offered to end users as alternative article links. In this project, the University Library of Regensburg cooperates with the Bielefeld University Library by using BASE (Bielefeld Academic Search Engine, [www.base-search.net](http://www.base-search.net)), a search engine specifically for Open Access publications. BASE collected the metadata of Open Access documents from over 2,900 sources and indexed them to provide a centralized search. For the extension of the EZB Linking Service the metadata from BASE will be used.

With the extension of the EZB Linking Service a web-based service will be created that shows the availability of full texts in electronic journals with a comfortable direct access to parallel publications from various repositories. As the Linking Service is integrated in various established third-party systems, a multiplier effect will be created that substantially supports the visibility of Open Access publications. Figure 7 shows the higher range of Open Access publications by the extension of the EZB Linking Service graphically. The integration is carried out without any input of the third-party systems that are using the EZB Linking Service now and in the future. In this way a service-oriented integration into the existing search processes of the end user (e.g. via virtual libraries, specialized databases) will be offered.

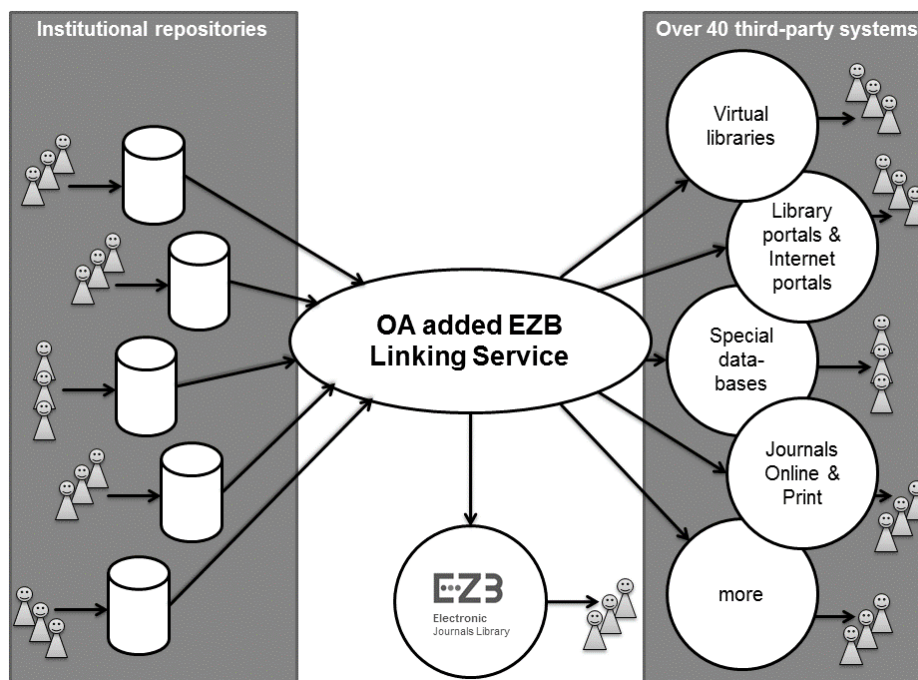


Figure 7: Result of the OA added EZB Linking is a higher range of parallel publications

Further information to the project mentioned above:  
<http://www.uni-regensburg.de/library/projects/oa-ezb/>

## CONCLUSION

The EZB Linking Service, an actively used service provided by the University Library of Regensburg, determines the availability of full texts in scientific journals and offers links to journal contents in accordance with local access rights. The EZB Linking Service is based on the data of the EZB, a database for academic electronic journals. To find open access publications easily and free of cost in different institutional repositories, the integration of open access publications into the EZB Linking Service is planned. The linking will be implemented for the full texts that are stored in repositories. As a result different publication types of full texts in

scientific journals are merged in one service and offered to the end user as alternative article links. The goal is to improve the acceptance and the usage of open access publications, provided by institutional repositories, for end users as well as authors.

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