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# The Croatian national open access journal platform

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## Abstract

Until recently, Croatian scientific journals were accessible only in print form and only to a relatively small audience. A national online journals platform was therefore planned to offer publishers a simple tool for building online versions of their journals and to make them open access (OA). The platform, named *Hrčak*, was launched in 2006, and its development and maintenance are supported by governmental funds. It currently includes 170 open access journals. Most journals include backfiles from 2006 onwards, but 19 journals have archived all back issues. The average archived period is 6.3 years and 56.5% of the journals come from the fields of social sciences and humanities. Metadata from the *Hrčak* platform are regularly harvested by OA repositories like OAIster, Base etc. and search engines like Google Scholar. In order to increase the number of Croatian journals covered by relevant interdisciplinary and subject oriented databases and to speed up their indexing process, *Hrčak* also established cooperation with Elsevier (*Scopus*), Thomson Reuters (*Web of Science*) and EBSCO (Academic Search Premier). So far, the *Hrčak* platform's main achievements include assisting publishers of small scientific journals in the process of electronic publishing, together with improved accessibility of the output of the Croatian scientific community.

## Introduction

The differences between scientifically peripheral and mainstream countries are widely discussed in the literature (1, 2, 3). Scientist from the periphery, especially those active in scientific, technical and medicine (STM) disciplines, occasionally publish high-quality reports in internationally prominent journals. But most of their scientific production is reported in local journals. These journals may publish important results but they often cannot reach the scientific community for technical reasons (e.g., language barrier or distribution) or simply

because of their “invisibility” (2). The national character of these journals, particularly if they are published in non-English languages, minimizes their international readership (subscriptions) and influence.

However, local journals remain, for many reasons, a mandatory component of local scientific infrastructure and policy (4). They connect their authors and readers more closely, and can focus on topics and subjects of local character but of international significance (5). The editorial staff of these journals can work very closely with authors and reviewers. Their editors may have a dual role as educators and scientific mentors (6). Local journals can develop an author-friendly policy that improves the quality of scientific publishing, and serves as an important educational and training platform. Their readership is better defined, and the content can offer more practical and applicable information for the local community. Additionally, papers published in the local language may contribute to development of discipline-based vocabularies, especially in fields where the English language is globally dominant, such as the sciences and biomedicine.

Even large publishers such as Thomson Reuters have recognized the importance of ‘regional scholarship’. More than 700 regional journal titles have been recently added to the list of journals indexed in *Web of Science*. James Testa, the Senior Director, Editorial Development & Publisher Relations of Thomson Reuters, claimed that ‘bringing the best of these regional titles into the *Web of Science* will illuminate regional studies that would not otherwise have been visible to the broader international community of researchers’ (7). Inclusion in a subject oriented and/or interdisciplinary database may significantly improve the visibility of a local journal.

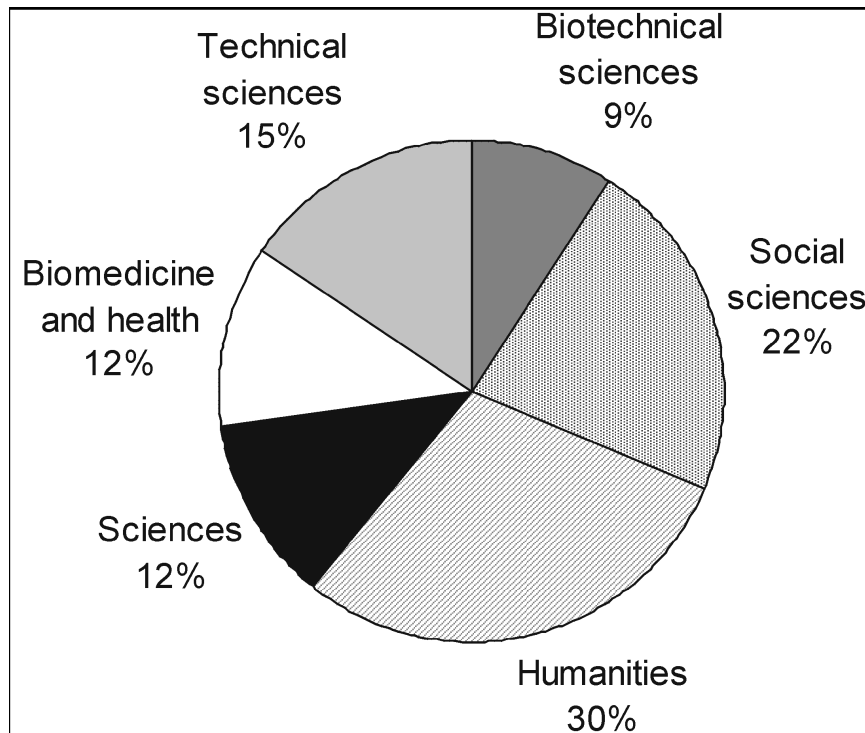
A strategy of choice for making scholarly information more visible and accessible could include ensuring their permanent open access (8). The Budapest Open Access Initiative (BOAI) defines open access as the “world-wide electronic distribution of the peer-reviewed journal literature and completely free and unrestricted access to it by all scientist, scholars, teacher, students, and other curious minds” and recommends help to existing journals that elect to make the transition to open access. Among methods for covering the expenses, BOAI mentions “the foundations and governments that fund research” (9).

## **The Croatian scientific landscape**

Croatia is an EU candidate country; its Gross Domestic Product (GDP) per capita in 2006 was \$ 9,661 and the annual growth rate in GDP was 4.8% (10). Total investment in research and development (R&D) reached 1% of GDP (approximately €316.5m.) in 2005, of which 58% came from the government and 41% from the business sector (10). In a strategic document issued in 2006, the government announced plans to increase the R&D allocation to 3% of GDP by 2010, 2/3 of which should come from the private sector (11); however, at present R&D is to a large extent concentrated in institutions of higher education and public institutes. The Ministry of Science, Education, and Sports (MSES) retains overall responsibility for the science and educational system; it is the main policy-making body and holds budgetary responsibility and control. The MSES in 2005 allocated approximately €102m for research equipment, publishing activities, conferences, subsidy for the special programs for recruitment of junior researchers and other service activities necessary for R&D (12). The heading 'publishing activities' includes financial support to scientific journals and books, mainly university textbooks. During 2007 MSES provided approximately €2m in support of 220 scientific, professional and popular science journals (13). In a document supporting the financing criteria, the MSES explained that only journals of cultural, national or regional importance would receive financial support. Besides, all subsidized journals should be non-profit journals. These journals should fulfill the basic publishing standards: regularity, peer review, and coverage by at least one international indexing and abstracting service. In addition, they should have a web-site containing, at a minimum, journal information and the Table of Contents of the latest issue (14); however, a full-text online version is not a prerequisite for obtaining government subsidies.

The founders and owners of Croatian scientific journals are mainly academic and research institutions or learned and professional societies. As Figure 1 shows, over half of the journals are in the social sciences and humanities (13). In these disciplines the 'national publication model' as defined by Zitt et al. (15) plays an important role. But, outcomes of genuine scholarly research, even those primarily related to national aspects, deserve to be communicated - in an appropriate form - to scholars in other countries (16).

Figure 1. Discipline distribution of journals financially supported by the Croatian Ministry of Science, Education and Sports in 2007.



Until recently, almost all Croatian scientific journals were accessible only in print form and to a relatively small audience. The recent governmental initiative to stimulate research activity also addresses: a) better visibility of local journals to the international scientific community; b) their role in preserving cultural identity; and c) their role in raising public awareness and confidence in science and technology. In its document on the science and technology (S&T) policy for 2006-2010, MSES specified that ‘the S&T system, which is financed by public resources, should be open to the public ... and ... results of R&D financed by public resources must be accessible to the public in the form of open publications or databases’ (11). This initiative aroused ideas of a centralized journal repository that could provide technical support for electronic publishing and archiving, together with introduction of international standards, and single access platform. Further developments could then enable a transition to a distributed model based on the collaborative partnerships.

## Online platform for Croatian scientific journals

Croatian scientific journals share many problems with other non-mainstream journals, including low visibility, difficulties in distribution, small number of subscribers (mainly domestic), low citation rate, insufficient funding, poor technical infrastructure, lack of expertise in online publishing, etc. (17). All of these problems are particularly acute for journals in the fields of humanities and social sciences. The idea of establishing a common online publishing platform for Croatian scientific journals originated from a small team of information specialists and librarians from the Croatian Information and Documentation Society (HID). The Society brings together professionals interested in the improvement of information and documentation services, some of whom have been engaged in promotion of the Open Access (OA) movement in Croatia. The project proposal was written in cooperation with Zagreb University Computer Center (SRCE), and focused primarily on improving web-accessibility of Croatian scientific journals by helping the editorial offices to create online versions of their journals (Figure 2). From the very beginning, full attention was paid to enabling completely free and unrestricted access to all journals included. The project was named after the hamster (*hrčak* in Croatian), a small rodent which stores food in pouches in its cheeks, to bring it back to the colony to be eaten later; the Croatian word is often used to denote a hoarder. The project's four main objectives were:

- a single common portal;
- central repository for journals' metadata records;
- central repository for full-text journal articles freely available online;
- to share data about Croatian scholarly publications among different interdisciplinary and subject oriented repositories and databases.

The timeline and financial plans were approved by the MSES in 2005, and since then MSES covers all financial costs of the portal development and maintenance together with other projects included in the so called Croatian Scientific Portal (18). Beside *Hrčak* Croatian Scientific Portal includes the Croatian Scientific Bibliography (CROSBI), Who's Who in Science in Croatia, and A Pair of Compasses – inventory of the scientific equipment procured by the MSES *Hrčak* (19) was publicly launched in February 2006. It provides:

- a simple, for publishers free-of-charge interface for the production of online versions of the journals.
- technical support for e-publishing, including development, maintenance and data protection and security;
- Dublin Core (DC) metadata schema for bibliographic control;
- Open Archives Initiative – Protocol for Metadata Harvesting (OAI-PMH) protocol for metadata exchange and interoperability;
- a single interface for readers;
- long-term archival and preservation functions.

Figure 2. Home page of a journal (*Croatica et Slavica Iadertina*) on the *Hrčak* platform.

The screenshot shows the Hrčak portal interface. At the top, the Hrčak logo and 'Portal of scientific journals of Croatia' are displayed. The journal 'Croatica et Slavica Iadertina' is featured prominently with its cover image, which includes the title 'PLANINE' and 'CROATICAE ET SLAVICAE IADERTINA'. To the right of the cover, contact information for the publisher, University of Zadar, is provided, including ISSN 1845-6839 and contact details for the Department of Croatian and Slavonic Studies. Below the cover, a brief description of the journal's content is given, along with its scientific areas (Humanities, Languages, Literature science) and a note on copyright. An archive section at the bottom lists past issues: Vol. 3 No. 3 (2007) and Vol. 2 No. 2 (2006). On the left side, there are navigation links for 'Home' and 'Journals alphabetically', and a list of journals by scientific areas. On the right side, there is an 'Article search' section with a search bar and buttons for 'search', 'Advanced search', and 'Search instructions'. Below the search section is a 'My profile' section with a 'Register' button and a 'login' button. The page also features logos for Open Archives, OAIster, Scientific Commons, and BASE.

Publishers are responsible for:

- regular uploading of the published issues and accuracy of the provided content;
- metadata input on the journal, issue and article levels;
- uploading of the full texts of the articles.

From the very beginning, *Hrčak* was oriented to various groups of users:

- Publishers have a free, simple and fast tool for the production of online versions of their journals. Special attention has been given to multilingual support because many journals publish articles not only in Croatian and English, but also in 17 other languages (e.g. German, French, Italian, Latin, Hungarian, etc.);
- Authors can easily see how many times their articles are accessed and downloaded;
- Higher education and research institutions expand dissemination of their research results when these are published in OA local journals;
- Readers can search, browse, download, print, copy and redistribute the journal items (thanks to the widespread OA policy). The user interface is available in Croatian and English language;
- The general public can easily access the results funded by public money;
- A special 'user' category – web robot software which automatically harvests metadata – disseminates information about articles from Croatian journals to the international scientific community.

### **Impact of the *Hrčak* platform**

A 2003 analysis showed 21 Croatian scientific journals (less than 10%) had online versions (20). Therefore, *Hrčak* was initially planned to offer publishers a simple tool for building online versions of their journals. To attract as many publishers as possible, the repository was designed in cooperation with them and according to their needs. In order to facilitate the efficient dissemination of the content, the OAI-PMH was implemented at the very beginning. Although OA was not a basic condition to join the *Hrčak* platform, after considering advantages and disadvantages of the OA, almost all journals adopted it. The number of journals included on the platform exceeded all expectations: within two months of launch there were 50, within 1 year there were more than 120, and today, after 3 years, there are 170 (Figure 3).



Figure 3. Journals joining the *Hrčak* platform between 1 February 2006 and 25 January 2009.

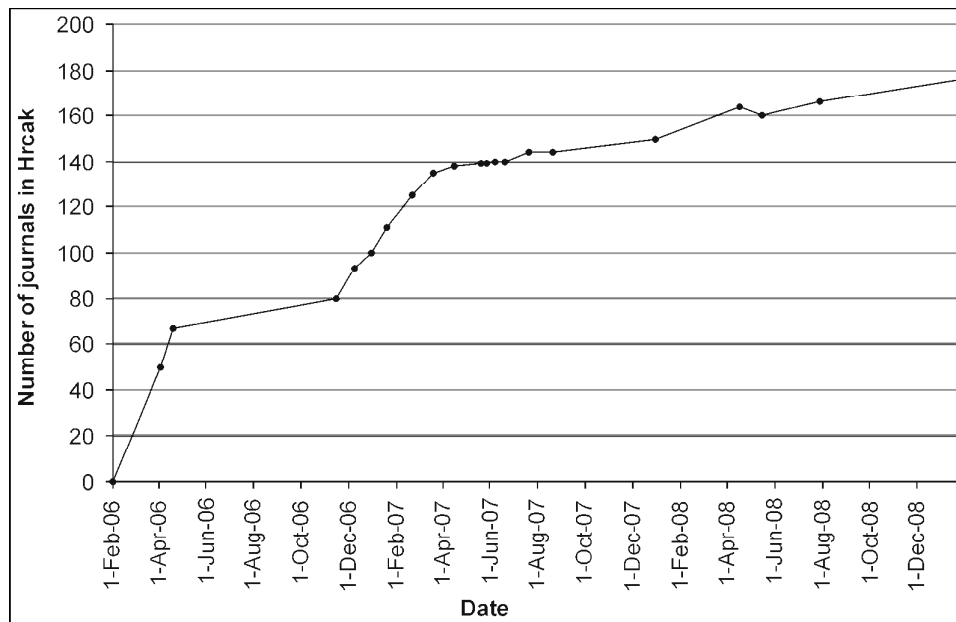
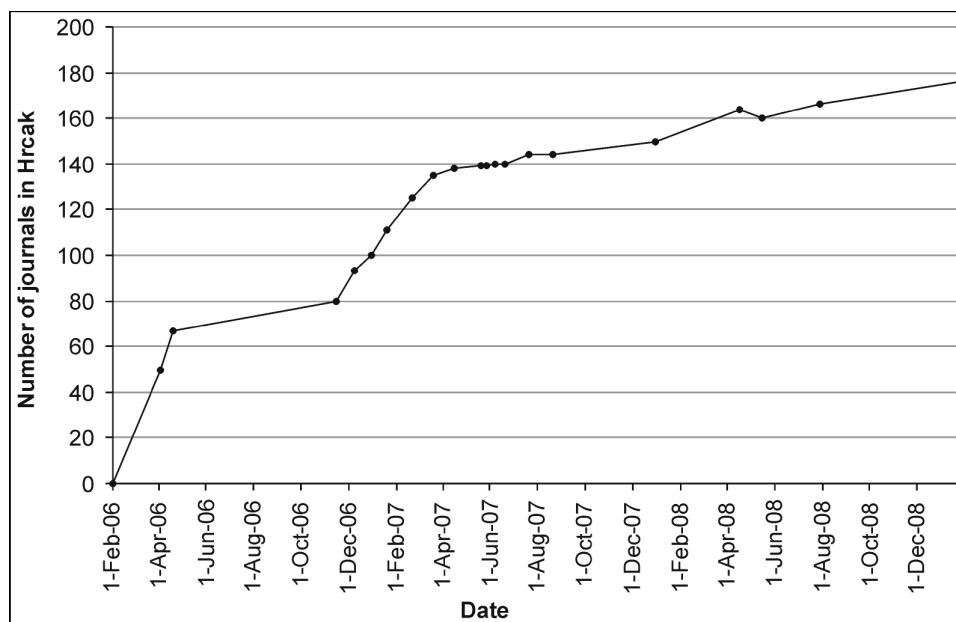


Figure 4. Full-text articles added to the *Hrčak* platform between 1 February 2006 and 25 January 2009.

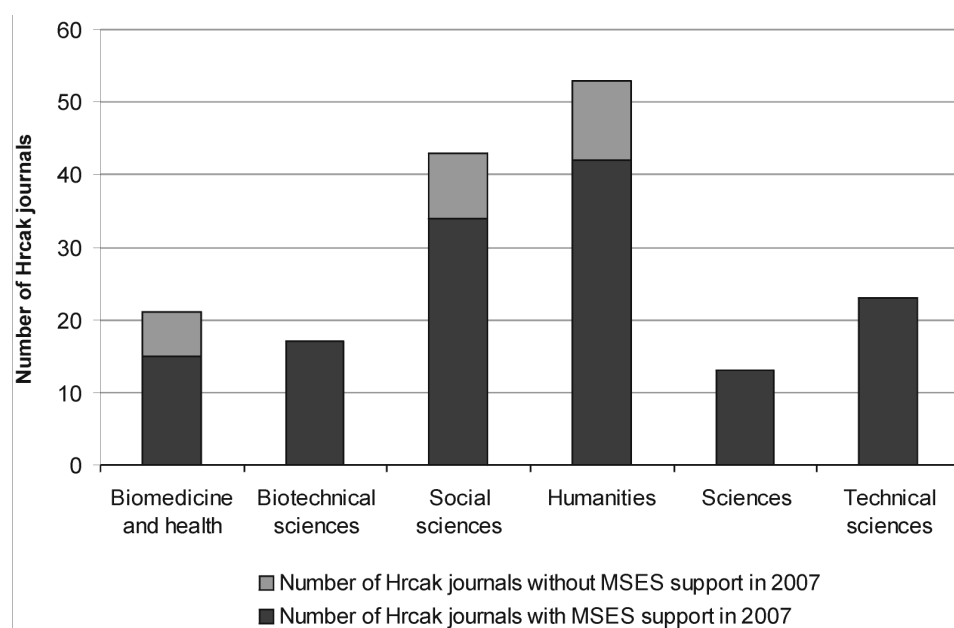


The growth in the number of full-text articles is shown in Figure 4.

As of 25 January 2009, *Hrčak* included 170 full-text journals, all of which provided OA; of these 144 were financially supported by the MSES in 2007 and 26 were not (Figure 5); the overall majority of these 26 journals were supported by other government departments (e.g. Ministry of Culture); only three were published on a commercial basis. The platform also

included 6 journals which provided only bibliographic data on published issues these have been excluded from our analysis. In 2007, MSES also supported 76 other journals not included in *Hrčak*, of which 16 (21%) are accessible online using different platforms, 12 of them offering OA.

Figure 5. MSES support for *Hrčak* journals in 2007, by discipline.



Most of the journals started archiving from issues published in 2006; however, some of them archived their entire publication backfile. So far, 19 journals have archived all their back issues, ranging from 3 to 37 years. The average archived period is 6.29 years, and a total of 28,388 full text articles have been archived at 25 January 2009 and all of them are in OA (Table 1). The distribution of journals by discipline shows that the majority were in the fields of social sciences and humanities.

Scientific field	No. of journals in <i>Hrčak</i>	No. of issues	No. of articles
Biomedicine and health	21	327	5575
Biotechnical sciences	17	301	2651
Social sciences	43	563	5947
Humanities	53	525	7729
Sciences	13	208	1948
Technical sciences	23	443	4538
<b>TOTAL</b>	<b>170</b>	<b>2367</b>	<b>28388</b>

Table 1. Discipline and number of archived items of journals included in *Hrčak*

The impact of *Hrčak* on Croatian scientific publishing is shown by the rapid growth in the number of journals in the *Hrčak* repository. This shows that Croatian publishers needed a simple and easy-to-use publishing platform.

Metadata from *Hrčak* are harvested not only by free repositories and databases (such as OAIster, Base, Google Scholar etc.), but also by commercial databases. For example, cooperation with Elsevier and Thomson Reuters has been established in order to increase the number of Croatian journals covered by their services, and to speed up the indexing process. Data from *Hrčak* are regularly harvested by *Scopus*, without their publishers needing to provide printed copies. Cooperation with Thomson Reuters resulted in an increased number of Croatian journals being indexed in *Web of Science* (from 16 in 2007 to over 40 in 2008); a metadata harvesting procedure is in the testing phase. The replication of *Hrčak* metadata in other repositories and databases has significantly improved the visibility of Croatian journals. The usage statistics showing that readers come from institutions not formerly subscribed to the journals' printed versions might be the best evidence.

The *Hrčak* platform has an average of 10400 unique visits and 34500 page views per day. Approximately half of visitors are from Croatia, and the rest from other countries (e.g. Bosnia and Herzegovina, USA, Czech Republic, Serbia, Germany etc.). The statistics show that *Rasprave Instituta za hrvatski jezik i jezikoslovlje* (*Treatises of the Institute of Croatian Language and Linguistics*), a journal in the field of humanities, has had the greatest number of visits at a journal level – 44,957 (from February 2008 to 25 January 2009).

*Hrčak* serves also as a platform for enhanced cooperation and communication between the publishers and editorial offices of Croatian scientific journals. Its e-mail discussion list provides for information exchange, asking and answering questions, and sharing experiences and expertise. The *Hrčak* Development Team (HDT) regularly organizes meetings and lectures covering topics of interest to publishers, editors and authors. These attempts to improve communication between publishers and authors have raised their awareness of new trends in scientific publishing such as accessibility, sustainability, digital preservation, open peer review, post-publication review and comment, etc.

## Future perspectives

Despite of Hrčak's success and popularity, a few issues wait to be solved in the nearest future. First of all, the financing matter. The project has been financed by the government on an annual base (€20.000 per year). A complicated administrative procedure makes sometimes the renewal process too long resulting primarily in delay of regular technical routines. In the next period we plan to make better arguments on the role Hrčak plays in the process of scholarly publishing. The second important issue lies in editorial offices, not accurate enough in providing metadata and uploading full-texts of the articles. Some improvements could be done also at OAI-PMH level reducing the inconsistencies of the harvested data. Some harvesters have their own rules and formats which demand adjustments at the *Hrčak* side.

In the near future HDT will support editorial offices in the implementation of the Open Journals System (OJS), a tool for facilitating their editorial work (21). A few editorial offices, which already use OJS and which have even built a customized version in Croatian, are ready to help others learn how to use it and then how to make the necessary changes in their management systems. HDT already developed data exchange interface between local OJS systems and the *Hrčak* platform.

The most important planned future improvements and functionalities are:

- harvesting of OAI-PMH compatible (and other) metadata from the Croatian journals outside *Hrčak*;
- attracting additional journals;
- standardizing archived PDF documents among different publishers, and implementing a standard XML schema;
- providing more data to editors about usage statistics;
- enabling editors to receive feedback from their users;
- improve *Hrčak* input interface for more simple, and less time-consuming data input and control;
- offering continuous technical support for OJS, as well as training.

Close cooperation with publishers and authors, as well as user feedback, will help HDT to develop *Hrčak* into a comprehensive, primarily OA national journals platform. *Hrčak* may act as an example of an efficient solution for improved international and/or local visibility of the scientific information produced by small, peripheral scientific communities.

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