Accessing Quality Open-Access Literature to Enable Teaching, Learning, and Industry

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ABSTRACT

Commercial control of the world’s published literature has grown to the point where costs are prohibitive for developing nations. This article describes a computer engineer’s response to this problem. The result is a publicly-accessible meta-search engine that focuses on open-access sources. With one set of keywords, this engine searches many engines at the same time. It has been used to help develop entire courses based solely on open-access literature. While there are excellent search capabilities for open-access literature that deliver full and searchable text, none of these cover the entire space. To examine a larger space, one must manually employ numerous engines. Herein is a discussion, background, vision, and top-level dataflow for the author’s publicly-accessible meta-search engine that evolves with the needs of education, training, and industry.

KEYWORDS
1. INTRODUCTION

For a developing nation’s economy to improve, it needs access to information that facilitates education, training, business development, economic growth, and solutions to difficult challenges. To create employment for citizens, entrepreneurs need to be facilitated. Students and researchers also require access to quality literature. One way a company can thrive is to provide unique and substantial services and products. A necessary foundation to this is awareness of, access to, and wise use of the world’s ever-growing knowledge.

Well-informed entrepreneurial effort, as well as up to date training and education, is greatly inhibited in developing nations due to commercial control of the world’s published literature. This issue has grown to the point where costs are prohibitive even in countries that have passed through their “developing nation” phase. (It is true that, in well-advanced nations, individuals can often gain access through university or community libraries, even if the cost is prohibitive on an individual basis.) In the introduction to his excellent report, Das (2013) puts the possibilities very well:

Scholars in developed, developing, and emerging countries are getting tuned to the open-access world day-by-day, as a free flow of knowledge helps in opening new opportunities and possibilities in addressing solutions to today’s societal problems and technological challenges. Open-access has shown new ways of disseminating research results to larger audiences and realization of outcomes of research. ... Open-access principles are handholding the openness of the whole knowledge ecosystem. Open standards and open innovation are also getting supported by the notion of open access in the knowledge communities.

Thus, this author is not the first to notice that an alternative to high-cost literature sources lies in open-access publications. However, those publishers are diverse and scattered, albeit in fairly large volume. (Vierkant’s visualizations (2012) give a stark sense of the vastness of the open-access world.) What is needed is an organized, user-directed, way to search this alternative literature base. Such a search would display a list of links to full text, accompanied by descriptions and origination for each. Hosting would be via a commercial or university-based cloud supporting a SaaS application (software as a service).

Successful SaaS applications require myriad skills. However, these skills exist within a nation’s most important asset, its people. The required skills to develop dynamic webpages, produce cloud-based implementations, manage software projects, employ distributed systems concepts, and to develop and implement business plans already exist within nations’ universities, entrepreneur centers, and for-profit businesses. The necessary implementation hardware often already exists. For instance, the University of Zimbabwe’s High-Performance Computer Center manages a China-donated machine fully capable of hosting such an application for public access.
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