"The Roquade project: Towards new models in scientific communication"

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Abstract
Due to a number of problems the traditional scientific journal has become an obstacle for efficient scientific communication. Several initiatives have been started to realise other ways of scientific publishing, using modern information technology. In several disciplines, however, a relatively large number of scientists still are reluctant to make use of completely new ways of publishing.
The extraordinary aspect of the *Roquade* project is marked by the fact that it offers a variety of possibilities, which together constitute an expeditious way for gradually changing the publication behaviour of scientists. This project, initiated by the university libraries of the Dutch universities of Delft and Utrecht, aims at creating an infrastructure that conglomerates the swiftness of publication which hitherto could only be realised by grey publishing, with quality judgement without the serious delay of the traditional review procedures.
Roquade offers a wide number of facilities to a broad audience, based on a common organisational and technical infrastructure.
In the paper the philosophy and organisation of the project are described, as well as the first results.

1.   The breakdown of scientific communication

In order to make clear the historic perspective of academic publishing we must go back more than 330 years. In 1665 the first issue of *Journal des Savants*, the first scientific magazine is published. A year later it is followed by a second journal, *Philosophical Transactions*. Both appear not in Latin but in the vernacular language, a quite unusual phenomenon during those days.
What were the reasons to start these endeavours?
A major factor was the rising number of researchers. Similarly important was the influence of Francis Bacon who had been successfully advocating the use of systematic and empirical scientific inquiry and who had emphasised the significance of exploring written sources. In order to stimulate the process of building on each other's findings as well as to avoid duplication of efforts scientists needed to be informed on the results achieved and collected by their colleagues. Bacon aimed at comprising library, laboratory and fieldwork.

Of course, there were books. But as a carrier for scientific information they had some disadvantages. Their main drawback — an aspect related to their volume — was their slugishness, due to precious time lost in producing them. Books also featured a definite character. Therefore, they tended to be less suitable for discourses on detailed investigations. Especially if the facility of additions, comments and reply was useful.
It was these aspects that were of great significance to Bacon and his colleagues.
Objections to the book as an inflexible medium for distributing concise, relevant information were first expressed by physicists, physicians and technicians. Increasing international contacts among scientists required a platform on which the results of their research could be revealed and discussed. What these scientists basically wanted was to trust their rather unstructured correspondence to a medium that was neither a book nor a letter.
The answer was the scientific journal. At first, the *Journal des Savants* was even a weekly magazine. The ensuing growth in various scientific periodicals was indicative for their need.

As such, this very need for communication among scholars has always been the very raison d'être of the scientific magazine. Editors were appointed to judge the quality of the contributions and their results. Due to differences in evaluations, a hierarchy was gradually emerging. Some editors proved te be more

critical than others since they had decided to introduce stricter selecting conditions. Thus, a number of journals were acquiring a better reputation than others.

Consequently, scientists started deriving their stature from the reputation of the journal to which they contributed. Increasingly, readers were becoming aware of the difference in quality. This difference even led to ascension of a ranking system. Finally, the ranking system resulted in playing a significant role in the evaluation of scientific papers and articles. A role that is now firmly established. So-called quotation indexes are important tools in the evaluation of articles. These indexes refer to the quotation frequency of articles as well as to the reputation of the magazines in which the articles are cited. The composition of the indexes even evolved into a new discipline, bibliometry, in which these indexes constitute a basic element.

As a result, scientific journals have become a distinct factor in evaluating academic research programs. Oddly enough, the same people who favour the current scientific journal consider this factor as the main argument for continuing its existence. But do we really have any reason to be satisfied with its present form?

'Publish or perish' is an adage that we are all familiar with. It is mirrored by the growth in the number of scientific papers. As a consequence of this growth, the existing publishing system is troubled by considerable problems.

1. Publishing is sluggish: it takes at least six months, sometimes up to a year and a half, before a submitted paper actually appears in print.
2. There is growing doubt about the system's reliability, particularly since reviewers may take advantage of their prior knowledge.
3. The system is becoming unaffordable because of vast price increases, which are often higher than the general price index. These rises lead to the cancelling of subscriptions, which in turn cause new increases, eventually evolving in almost monopoly-like situations held by the publishers.
4. Furthermore, we must be aware of the fact that, in addition to these price increases, universities have to pay for these publications more than once, since they also pay:
   - the salary of university staff members who write the articles and papers;
   - the salary of the reviewer who, at the request of the publisher, judges whether the articles are suitable for publication;
   - the publication's purchase price;
   - the archiving of the publications.

We can no longer deny it: the current scientific magazine can hardly be called a communication medium if we consider the amount of time between submission and publication of an article. Fortunately, scientists are also beginning to acknowledge this. They have started publishing their pre-prints on the Internet. In fact, their article's eventual publication in a magazine has become more of a formality, a procedure in which a quality certificate is assigned *afterwards*. Our conclusion must be therefore that the scientific journal in its conventional form can no longer play an essential rol in the process of scientific communication. Moreover, this fact undermines its very raison d'être.

2. New initiatives in scholarly publishing

Currently, an author who wants to publish his article sees himself confronted with a dilemma. If he is after speedy publication, he has to seek refuge into so-called grey literature. On the other hand, if quality is more important he must address a traditional publisher, thereby accepting a lingering publication process. Modern information and communication technology can solve this dilemma.

There is a variety of initiatives within the academic community all over the world which try to innovate academic publishing with the help of modern technology.

These initiatives and projects can roughly be divided into three lines:

- Business to business.
  The most important example of this line is co-publishing: helping existing publishing organisations or learned societies in making their paper journals also electronically available. This is the core business of HighWire, for instance.

- Archives.
  Three kinds of archives can be distinguished:

- institutional archives: research institutions and universities archive the scientific output of their academics and make them accessible for the outside world (Savenije & Grygierczyk, 2000).
- subject-oriented archives: organisations or individuals set up a facility for scientists within one discipline to submit their publications which are the made accessible for everyone. The first of these archives was started by high-energy physicists, the Los Alamos arXiv (http://arXiv/org).
- personal archives: individual scientist archive their own publications and make the accessible through their personal homepage (Harnad, 2001).

An overview of different archive initiatives can be found in Dekeyser & Van de Sompel (2001).

- Projects that stimulate new models for academic publishing without a role for traditional publishers. These initiatives mostly are concerned with new e-journals or the organisation of publication sites with peer review, previous to publication, or after the publication. The Roquade project is an example of a general initiative in this field. A more specific example is Electronic Transactions on Artificial Intelligence (ETAI) http://www.ida.liu.se/ext/ep/ej/etai/, published by the Linköping University Electronic Press.

In my opinion it is a good thing that different lines and strategies are pursued by different organisations. It is impossible to predict what the future of academic publishing will look like and it is rather shortsighted to declare a standard for what the future should look like. We should facilitate a new order in scientific information processes and in this phase this implies that one should not be afraid of a certain degree of chaos.

However, many scientists seem to be a little squeamish when it comes to publishing their results. Naturally, this is partly understandable, because of the crucial role traditional journals play in quality assessment procedures. To a large extent, scientists derive their reputation from the journal's reputation. Nevertheless, their reservations towards alternatives cannot only be explained by this aspect. As strange as it appears, scientists are reluctant to participate in innovative experiments which in their eyes are risky. They tend to be more interested in projects that have a certain resemblance to the traditional publishing process, like an electronic version of a traditional journal.

Unsurprisingly, the traditional commercial publisher is not anxious to stimulate certain innovations that could change the established process of scientific communication. Traditionally, the publisher has been engaged in core activities like gathering, quality certification, registration and distribution. In the value chain spanning between information producer to information consumer, the publisher's added value is mainly in certification and distribution.

The distribution of electronic documents is a process that is fairly similar to the library's function of providing access to information, especcially if this task is combined with conservation and storage. In the past, the distribution of information was not considered a task of the library. It pressuposed a marketing-orientated view, a requirement which libraries could only meet to limited extent. Moreover, it was thought of as an uncertain business, an aspect which subsidy funders tended to dislike. However, the distribution of information in digital form, though, is regarded as a different matter. From a financial point of view, it is seen as a less hazardous operation, because it makes use of an existing infrastructure, i.e the academic community's electronic network.

As to quality certification, the peer review is now done by academics and organised by publishers. There are two obvious organisational alternatives to this process:

- It could be organised by publishers who do not act as information owners but as service providers hired by the university;
- It could be organised by libraries.

One of the advantages of the latter alternative is the possibility of immediate contact between library and scholars and their personal networks.

For the present we may therefore safely conclude that in future the publisher's added value may no longer be self-evident.

3. The Roquade project: its philosophy and organisation

Two years ago the university libraries of Utrecht and Delft, joined forces with the library of the Royal Netherlands Academy of Arts and Sciences to change this situation. It was the starting point for the *Roquade* project (http://www.roquade.nl).

The project aims at setting up an infrastructure for electronic publishing. Its mission is the enhancement of scientific communication by offering scientists a wide variety of facilities and organisational structures, helping them to gradually change their publishing manner. The project is directed towards all disciplines and concerns Dutch publications as well as international initiatives.

Roquade is distinguished by two aspects of electronic publishing support.
The first involves suppporting institutional open archives. Its priorities are storing, conservation and providing access to the university's scientific output (e.g. its own publications). If every academic institution were to organise the scientific information it produces, this would result in a world-wide network of servers making full-text scientific information accessible on-line to everyone. The next step would be to order the information by subject within various knowledge domains.
The essential objective of these tasks is creating a digital archive that contains the scientific output of the university, as well as preserving this information and making it accessible to the academic community.
The second aspect is more discipline-oriented. It emphasises the necessity of new publishing models that stimulate scientific communication, accelerate the exchange of research results and organise open discussions within knowledge domains. Researchers can place their papers on the website of their department or set-up electronic journals. Furthermore, they are provided with facilities for publication servers and new peer-review models.
The initiative for these activities, of course, comes directly from researchers within departments, from research institutes and learned societies. But in realising them they are supported by back-office processes and facilities, including the organisational and technological capacities.

For both aspects of electronic publishing *Roquade* provides a flexible infrastructure. The scientists and research institutions can use the type of publishing process they prefer: one that entirely meets their actual needs or the one that they are up to.
The reason for offering extensive and limited options is that many scientists are not yet ready to use fully new ways of publishing in order to make the issuing of their research results independent from the monopoly of commercial publishers. These scholars are provided with an infrastructure that facilitates a gradual transition from traditional publishing to highly sophisticated models.

The main structure of the project

The general idea behind the *Roquade* project is that it consists of a set of basic components, i.e. services to scientists. For instance an editorial board can select not only a certain type of service but also one, two or all the components of the publishing process depending on his wishes or his computer literacy. Naturally, the selected components also depend on the publication type.
This general idea is reflected in the project structure and its activities.

The main structure of *Roquade* project consists of:
- Satellites: a number of subsidiary projects with a variety of possibilities:
    1. electronic substitution for traditional publishing
    2. a publication site with experimental peer review systems
    3. open archives facilities:
- a moderated pre-print service
- re-print service
- Generic Roquade infrastructure: a subsidiary project aiming at a technical and organisational infrastructure that is common for all satellite projects.

Roquade's satellites and infrastructure form an undivided entity. On the one hand, these satellites use the (intermediate) results of the *Roquade* infrastructure projects. On the other hand, these results are tested, refined and further developed within the satellites projects.

In the first type of satellites, which can be described as electronic substitution for traditional publishing, two categories of publications can be distinguished:
- dissertations and conference collections
- scientific journals
Two subsidiary project types are concerned with scientific journals:
- Publishing new and existing electronic journals: this involves supporting editors who prefer the traditional form of electronic publishing. In this case, the electronic journal is an electronic 'copy' of

the traditional paper journal (even when the journal is e-only: it should have the look-and-feel of an existing paper journal).
- Co-publishing: setting up a series of digital publication services for publishers, e.g. for electronic versions of existing paper journals.

Similar to many scientists most editors who are interested in setting-up an electronic journal also want to start in a more or less traditional way mainly involving text and pictures. The concept of volumes and issues – typical of the paper journal – is maintained during the start-up phase and, as in the case of traditional paper journals, peer review takes place before publication.
In the case of traditional paper journals, peer-reviewing takes place before publication.
Gradually, an broad range of additions, modifications and alternatives is possible:
- the concept of separate issues will eventually become obsolete. Articles are published as soon as they are ready for publication;
- research data can be appended;
- communication and discussion facilities can be added;
- multimedia can be used to enrich the publication.

The second type is a publication site with peer-reviewing. Its main feature is a series of pre- and post-publication peer reviewing processes. They are based on experience and knowledge gathered in traditional and digital academic publishing processes.
Subsequently, the traditional process of peer-reviewing is transformed into several new types preserving the traditional advantages as much as possible. In this variant it is possible to achieve speed without omitting the time-consuming peer review process by delaying peer reviews until after publication. This variant also offers the possibility of experimenting with different forms of quality assessment, e.g. an open and public (not anonymous) peer-review discussion.

The third type consists of pre-print and re-print open archive service. There are two functions which are particularly useful from the authors' point of view in this respect:
♦ Long-term preservation, including guarantees for permanent accessibility, readability, integrity and authenticity (with respect to the transition from one medium and/or format to another).
♦ Broadening of the readership by making the publications traceable via various Internet channels. Here, advanced methods of archiving and indexing play a crucial role, as do the options for self-ordering and ordering in knowledge domains. The use of the publications is further promoted by employing usual library tools in modernised form (such as user-friendly and accurate search engines, alerting and filtering systems and well-organised presentation of the publications on the web).

These types contain the main objective of the *Roquade* project: a gradual transition from less to more innovative solutions.

The generic part of the project is a subsidiary project that aims at a technical and organisational infrastructure common for all satellite projects. This core project generates for all the different types of publications the tools, services and know-how. They all have a modular structure, so it is not necessary to use the whole range of services and tools.

4. Roquade: the phases of the project and its first results

In the project the following phases can be distinguished.

1. The preparation phase (May 1999– July 2000)

2. The start-up phase (September 2000 – December 2001)
    a. Setting up the generic infrastructure for various publication variants
    b. Satellite for each publication variant
    c. Financing
    d. Evaluation

3. The development phase (January – July 2002)

The objective of this phase is to adapt and further expand the organisation on the basis of the experience acquired in the satellite projects.

4. Expansion phase (July – December 2002)
   The objective of this phase is scale enlargement of available publications and the audience.

At this moment the project is in its start-up phase, in which the infrastructure is being built and tested in satellite projects.

The current *Roquade* satellites are:

- Electronic substitution for traditional publishing:
  - Scientific Journals:
    - *International Journal of Integrated Care*
    - *International Shipbuilding Progress*
    - *European Journal of Transport and Infrastructure Research*
    - *Kronos - Journal of Cape History*
    - *Veterinary Sciences Tomorrow*
    - *Ars Disputandi*
    - *Ancient Narrative*
    - *Neerlandistiek.nl (Dutch Philology)*
    - *Cahiers voor Geschiedenis en Informatica (Journal of History and Computer Sciences)*
  - Journals in co-publishing
    - *Pedagogiek* (*Pedagogy*)
    - *Tijdschrift voor Hoger Onderwijs (Journal for Higher Education)*
    - *The Veterinary Quarterly*
  - Dissertations:
    - *LOT Dissertations (PhDs from The Netherlands Graduate School of Linguistics)*
  - Grey Literature:
    - *Newsletter Historia & Informatica*
    - *Unitwin Series for Namibia*

- Publication site with experimental peer review systems:
  - *Design Research Internet Magazine*
  - *Interactive Publication: European Journal of Transport and Infrastructure Research*
  - *Syntactic Microvariation*

- Open archives:
  - *Institutional open archive in Law (Utrecht University)*

5. The business model of Roquade

As has become obvious, it is *Roquade*'s mission to facilitate e-publishing within the academic community without the traditional intermediary role of the publisher. It should be clear, however, that it is not *Roquade*'s ambition to evolve into a publisher. In other words, *Roquade* helps the academic community, its members and its institutes to become publishers themselves. They can make use of all the *Roquade* facilities or only part of the available modules.
Its ultimate goal is that all the facilities and tools are used by the academic community with a minimum of intermediary support.
This is an essential point of departure for *Roquade*'s business model. It implies that *Roquade* must not evolve into a strong intermediary organisation, because such an organisation sooner or later will have its own existence and future viability as an important goal. There is a danger that, instead of facilitating, it would then deteriorate into an obstacle for "self-publishing".

The Roquade project is managed by a steering group, which consists of the library directors of the Dutch Royal Academy, and the Universities of Delft and Utrecht, plus a general project manager. After the project phase, the Steering Group is transformed into a *Managing Board*, responsible for *Roquade's* facilities and exploitation. They form the *Roquade Consortium*.
Roquade makes a clear distinction between back office and front office.

The *back office* consists of the technical infrastructure: soft- and hardware, as well as maintenance, expansion, upgrading and innovation. The back office is managed by a co-ordinator with the help of a specialist team recruted from the consortium libraries.

The users of these facilities are so-called *satellites* of Roquade: these are autonomous publishing initiatives and projects. However, they do not make a direct use of these technical facilities, but do so with the support of the front offices of Roquade.

The *front offices* are franchise holders of the *Roquade* brand. These front offices can also use the Roquade facilities (for example Delft University Press) or support other organisations who want to make use of the facilities. The consortium members form front offices themselves, but other front offices will also be recruited, especially in other countries.

Thus, the satellites form in fact the clients of the front offices.

The front offices are co-ordinated by a *coordinating front office*, which is the central contact point of *Roquade* and which directs new satellites to the front offices.

The support given by the front offices can vary depending on the organisation's or project's request for support. This support can cover all technical facilities, as well as project management for setting-up new publications and implementing the project results. However, it can also be limited to a simple helpdesk function.

On the basis of their experiences, the front offices play an important role in the feed-back and evaluation of the tools that are offered by *Roquade*.

The coordinating front office also controls the fulfilment by the front offices of a number of constraints that are necessary conditions for the franchise of the *Roquade* brand. Among these constraints are:

- requirements concerning the quality (control) of the publication's content;
- requirements as to the quality of support given by the front office;
- principles concerning cost calculation for using the infrastructure and the front office services;
- the way the *Roquade* brand is mentioned in the publications.

Co-ordinating the exchange of information, experiences and feed-back is the task of the coordinating front office. The front offices collaboration could be seen as a network organisation.

The organisational structure can be represented as follows.

Client	Client	Client

Coordinating Front Office

Front offices

Helpdesk **Helpdesk**

**Back office
Infrastructure**
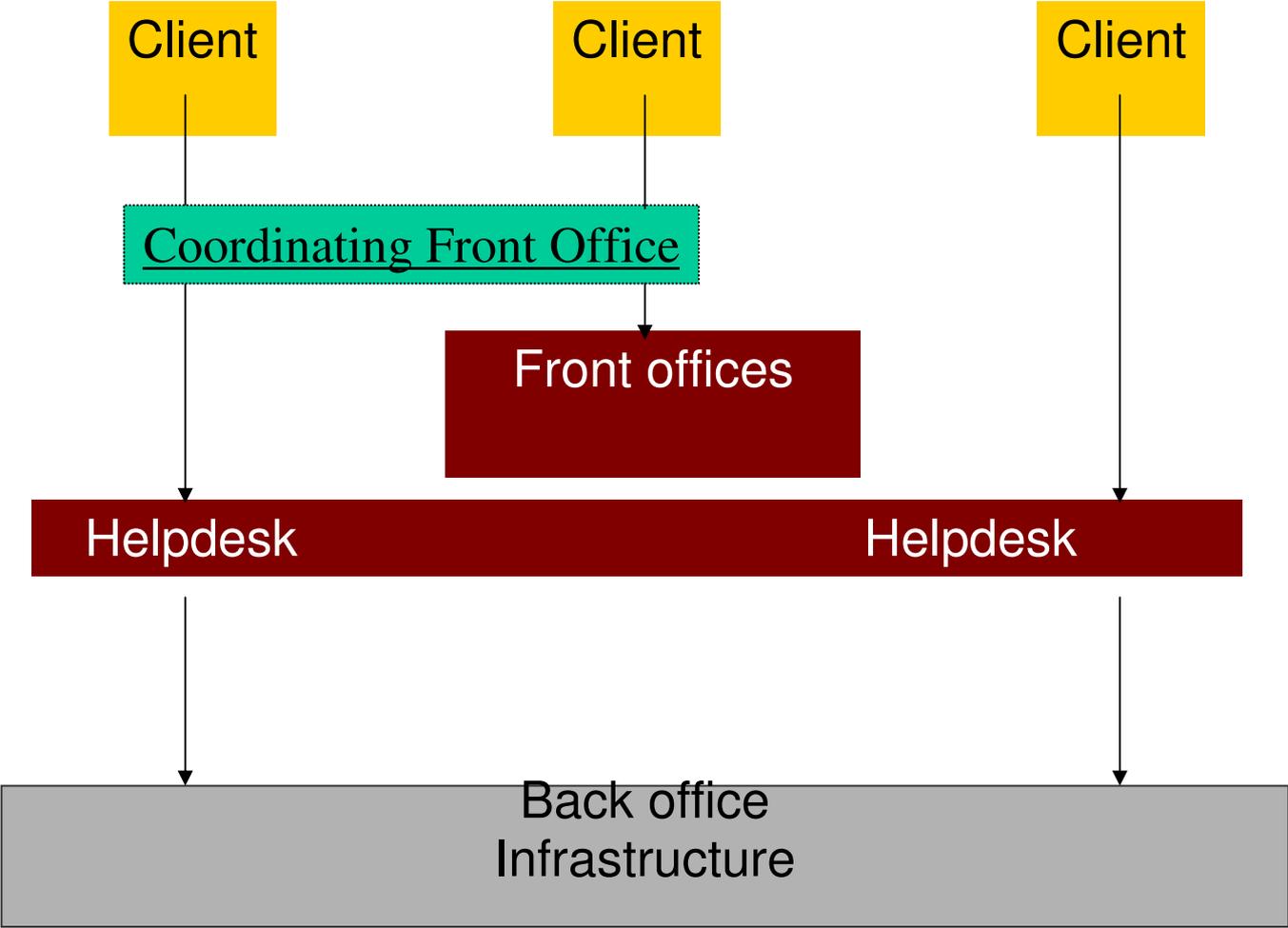
6. European co-operation: Signal Hill

Signal Hill is a recent initiative of the University Libraries of Utrecht and Delft (initiators of the Roquade project) and Firenze University Press to stimulate interaction, communication and co-operation between academic e-press initiatives (http://www.signal-hill.org).

Mission

Signal Hill is a European partnership for academic publishing. The aim of the partnership is to create a community of practice for organisations engaged in electronic academic publishing to enable them to combine forces and share their experiences.
Initiatives have been introduced in several countries in Europe to support academic publishing without involving traditional commercial publishers. Information technology is being used to create an infrastructure to facilitate and promote academic publishing by scientists and scientific communities, with an emphasis on communication. The main objective of some of the initiatives is to promote new models of academic publishing; others have as their core objective to make the scientific output of their own institution or of a well-defined group of scientists widely available. If this kind of publishing is not free, at least it is less expensive and user-friendlier than traditional forms of publishing. New business models are still being developed and elaborated.

Signal Hill targets university presses, libraries and research organisations that are involved in electronic academic publishing.
The objectives of the partnership are:
- to create awareness of innovations in academic publishing;
- to share experiences with new methods of (supporting) academic publishing;
- to share support software for academic publishing;
- to share access to publications;
- to present linking facilities;
- to set up a network of facilities for printing on demand.

Signal Hill will evolve into a Europe-wide community of practice for electronic academic publishing. Relationships will be established with comparable networks and organisations outside Europe, such as SPARC, and organisations such as LIBER have been asked to lend support.

Activities

The following activities are currently being pursued:
- a survey of European activities related to electronic academic publishing;
- the organisation of an intranet for participating organisations to facilitate the exchange of experiences;
- the organisation of a European conference to promote the aims of the partnership (May 2002 in Utrecht);
- a project investigating new business models;
- an active search for new partners.

Members

Membership of Signal Hill is open for organisations such as university presses, libraries and research organisations that are involved in electronic academic publishing. Their missions should have at least the following elements in common:
- They are part of (an organisation within) the academic community.
- They concentrate on electronic publishing, possibly offering the option of printing on demand.
- They are non-profit.
- Their publications are offered at the lowest possible price, and preferably free of charge.
- The copyright remains with the authors.

Membership is free of charge. Members of Signal Hill are expected to provide information about their activities, their plans and their experiences. This information is only available to the other members of the partnership on the intranet.

7. Concluding remarks

The experiences with the *Roquade* project thus far show that there is a new and real challenge for university libraries to become engaged in the support of electronic publishing. It is a true challenge because projects like *Roquade* are not initiated solely on the basis of a strategic analysis by the library management. They have reason for existence because scientists within our universities appeal to the library asking for support and assistance in making a successful transition to electronic publishing and new publishing models.

It is difficult to predict the future for academic publishing. Furthermore, we would be short-sighted if we were to prescribe a standard for for what the future should look like. Therefore, it would be unmindful to impose a preferred model onto scientific communication. The academic community should initiate the flexible facilitation of new structures in scientific information processes that are advantageous to the academic community itself. *Roquade* is an initiative that has this ambition. It holds benefits for the academic community as well as for the libraries that take the initiative.

Its benefits for the academics (both authors and readers) can be summarised as follows:
- Rapidity
- Quality
- Transparency of the reviewing and publishing process
- Positive attitude of scientists towards digital publishing
- Technological innovation
- Fair price
- Usage statistics

The benefits for the library are:
- Opportunities for applying gained experience of digital publishing and for exploiting the existing infrastructure in order to support the information and communication requirements of researchers.
- Better position in negotiations with publishers active in all fields in order to slow down the rising of subscription rates as well as improving financial benefits for the academic community in the long run.
- International co-operation.

References

- Dekeyser, R. & Van de Sompel, H. (2001). Report on the Workshop on the Open Archives Initiative (OAI) and Peer Review Journals in Europe. Paper presented at the LIBER Conference, London, July 2001. (http://documents.cern.ch/AGE/current/fullAgenda.php?ida=a01193).
- Harnad, S. (2001) For Whom the Gate Tolls? How and Why to Free the Refereed Research Literature Online Through Author/Institution Self-Archiving, Now. Paper presented at the Workshop on the Open Archive Initiative and peer review journals in Europe. Geneva, 22-24 March 2001: http://www.cogsci.soton.ac.uk/~harnad/Tp/resolution.htm
- Savenije, J.S.M. & Grygierczyk, N.J. (2000). The role and responsibility of the university library in publishing in a university. LIBER Quarterly 10(3), pp 312-325. See also http://www.library.uu.nl/staff/savenije/publicaties/publishing.htm.