"Beyond the photocopy machine" revisited: document delivery in a digital library environment

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Abstract

Purpose – To discuss the recent strategic developments of Library at TU Delft.

Design/methodology/approach – Developments at TU Delft are contrasted with the five key requirements for document delivery identified in an earlier article in 2001.

Findings – That the strategy in most libraries is to evolve rapidly to a digital library as far as possible. That there is still an important role for libraries as document suppliers. That much discussion between libraries and suppliers will be necessary in order to give document delivery a stable position within the digital library.

Originality/value – Gives an insight into the working and thinking of a major European document supplier operating from the Technical University in Delft.

Keywords Electronic document delivery, Digital libraries, Interlending, University libraries

Paper type Research paper

Five requirements for document delivery revisited

The five requirements for document delivery are revisited in the following sub-sections.

Requirement 1

> The customer of document delivery should not have the bother of having to use specific tools (software, hardware, etc.) that are not already available in their existing professional environment. From this we derive our first requirement: our document delivery products should be made available to our customer without specific requirements on their side (Dekker and Waaijers, 2001).

This requirement still holds. At the time this requirement was formulated this was not a self-evident issue. This was mainly caused by the dominant position of the Ariel document delivery software package that required specific software on the customer's desktop. Now we are pleased to observe that most document delivery systems are able to deliver their content in a standard user environment (internet connection, browser, mail program, PDF viewer).

Requirement 2

> Document delivery customers will increasingly be members of the "global village". This means that they will expect us to deliver anywhere, at any time, in any format. So: document delivery methods must comply with the increasing mobility of our customers (Dekker and Waaijers, 2001).

This requirement, we feel, is also still relevant. It is even underlined by the proliferation of mobile telecommunication in combination with increased band width (UMTS) and the integration of PDAs and mobile telephones, making access to information anywhere anytime a reality. In 2004 we conducted an experiment together with a large mobile telecom operator. A UMTS infrastructure was installed and using this we delivered document to UMTS enabled telephones. The experiment was a success from a technological perspective, but there was much to be desired from a quality of service perspective. Reading from the mobiles screen was not a pleasure. And even integrating the UMTS device with a PDA led only to a slight improvement of the usability. We will expand on this issue later while discussing the quality of service aspects of document delivery.

Requirement 3

> Document delivery is solely about getting the document there. It is not about searching and finding information, nor is it about providing advanced information retrieval solutions. Document delivery starts after our customers have used our fancy catalogues, subject guides, databases, full-text retrieval systems etc. This gives us our third requirement: document delivery must fit seamlessly to the "search and find" process (Dekker and Waaijers, 2001).

This requirement has not been self-evident until today. In our DocUTrans concept the scanning on demand and delivery system provides a "back end" service that we can connect seamlessly to our resource discovery and information retrieval (IR) systems. This is not always self evident in other document delivery solutions. The Subito system (used in Germany) for instance combines resource discovery and document delivery in one, IR and document delivery software are fully integrated. To a lesser extent this is the case with the products offered by Relais International that are in use at the British Library. The company offers a suite of products covering the whole range from (Z39.50 based) resource discovery to delivery. The different components are coupled using (de facto) standards offering a high level of integration without the draw-backs of a fully integrated system.

There is still ample need to stress the difference between integration of services (provided by systems) and fully

integrated systems. In the first case optimal functional integration is provided by connecting specific functional units (or system components) by using standards. This approach provides the opportunity to choose the best available system solution for a desired functionality. This is known as the "best of breed" approach. Fully integrated systems do not provide this. All functionality is provided by one system solution and offered by one provider.

The above can be illustrated by the following story. This parable is called Piccolo and was inspired by an exhibition at the Delft University Science Museum. The exhibition was about inventions that failed. Piccolo was invented in the second half of the last century. It had it's roots in the notion that all types of household chores were rapidly being automated, or at least supported by a form of automation like the vacuum cleaner, the washing machine etc. The idea behind Piccolo was that the motor forms the heart of almost every automated household appliance. So, "Hey presto … Piccolo!". A sturdy motor drives a plethora of appliances. There was an appliance for pruning your roses but as easily Piccolo could be transformed into a paint sprayer or a tool to polish your floor. After the hard work was done one could take Piccolo to the kitchen and use it to prepare drinks with the blender, cut vegetables with the cutter, whip cream with the whipper. Despite the fact that so many useful functions were integrated in Piccolo it was not a success. Partly this maybe because most people shun using the same tool (or at least major parts of it) to paint their door and whip their cream. But more importantly, Piccolo was able to perform many functions reasonably well but very few of them very well. The specific quality of a function was always the result of a compromise between quality and multi-functionality. In our vision the same holds for systems. Fully integrated systems always suffer from this compromise. So we very strongly believe that the lessons learned from Piccolo should be applied when thinking about the difference between integrating functions and fully integrated systems.

Requirement 4

For our customers document delivery should be a transparent service. Where the interaction between customers and "search and find" systems is high, there should be as little as possible (preferably no) interaction with document delivery systems. This means: document delivery is about quality of service, not about systems (Dekker and Waaijers, 2001).

Quality of service is in the eye of the beholder, in this case our customer. And although our customers are satisfied with the service quality we provide, as will be explained later on, a new problem arises. As mentioned we experimented with wireless delivery based on UMTS technology. Although the service was a success from a technological viewpoint, it wasn't from a usability perspective. While document delivery to the desktop is a much appreciated service, the "consumption" of the information is most often been done after printing the article, i.e. from paper. From our observation we concluded that there is an age dependency. The younger our customers the more they are willing to read from screen instead of paper, so given time, this may gradually become a minor issue. Things get more complicated when no printer is at hand or the screen available is inadequate for reading larger parts of text as was the case in our experiment. The emergence of electronic paper (provided for instance by Philips) may, as it becomes less expensive, offer a solution to overcome this impediment.

We would like to share some recent observations about quality of service in our document delivery practice. An inquiry amongst our customers in 2002 and a Dutch study (van der Graaf, 2003) showed that the factors for customers to choose a library for document delivery are:

- *Speed of delivery*. PDF files are now usually sent within 24 hours of placing a request. DocUTrans send an e-mail to our Helpdesk if a request has not changed status within 48 hours. The average time for all the requests in 2004 was 26 hours, including those requests that needed bibliographic search.
- *Price*. In 2003 a study into the direct costs of document delivery took place in The Netherlands (van der Graaf, 2003). This study concluded that where the direct costs of document delivery (without the costs for the collection) were included at libraries in The Netherlands, the USA and the UK (British Library), the costs for document delivery is between 15 and 20 Euros per document. As a result of that the prices of all large document suppliers in The Netherlands were raised slightly for non-profit organisations and to a more cost-recovery level to for-profit organisations. See Table I below for some details of the customer breakdown.
- *Quality*. From the start of DocUTrans we installed a Helpdesk which helps to maintain and improve the quality of delivery, to handle complaints and the logistical settlement of requests. Performance measures and indicators such as delivery time and fulfilment rate are main features in our quality control system. The percentage of complaints must be under 1 per cent of total delivery. All kind of complaints from incomplete articles to bad quality copies etc. are handled and analyzed to improve delivery.

The Help Desk also handles obstacles that inhibit the successful transfer of PDFs. In such cases the Helpdesk is notified automatically by e-mail and the article is delivered by post with a minimum of work: three clicks in the DocUTrans system.

Table I ILL copy requests via DocUTrans in 2004 classified at customer level

ILL copy requests from TU Delft staff members via DocUTrans in 2004	
Number of requests	5,626
Number of customers	599
Number of copies	48,977

ILL copy requests from external Dutch customers via DocUTrans in 2004	
Number of requests	81,571
Number of customers	3,581
Number of copies	659,281

ILL copy requests from external foreign customers via DocUTrans in 2004	
Number of requests	22,882
Number of customers	193
Number of copies	196,522

Requirement 5

Last but not least, paper is going to be with us for a while. Although increasing amounts of scientific publications appear in electronic form, paper, and the necessity to deliver from paper holdings, will have to be dealt with by document delivery organisations for some years. Although there is no exact information about the number of copies of articles that are processed on a global scale that number must be immense. Processing copies from paper originals is a major operation for many libraries. If we assume that this number will not significantly decrease within the next five years, it seems more than worthwhile to improve the organisation of this process. From this we derive our last requirement: there is a need for rationalisation (Dekker and Waaijers, 2001).

A lot of content has become available in electronic form. But there is still is a lot of paper to handle. And here we observe a strange anomaly: although almost all libraries are confronted with shrinking budgets, are forced to reorganise their operation and sometimes being obliged to dramatically reduce staffing, very little attention is being given to improving the efficiency of the document delivery process where gains can be made very easily.

The initial goal in 1997 of the DocUTrans system was to develop an integrated document delivery system for PDF delivery with minimal intervention and possibilities for total control thus reducing costs. After the implementation we worked on increasing efficiency. This has led to a staff reduction due to efficiency in the period from 2000-2005 of 10 per cent or 2.7 fte (full time equivalent) in spite of the fact that document supply has decreased and we could not count on economies of scale. The total reduction was 9.5 fte of which 6.8 fte is due to the downward trend in demand (see Figure 1).

DocUTrans permits requestors to choose from a number of methods to request documents. Most of these requests are transferred automatically to DocUTrans. But old-fashioned requests in paper form or by unstructured email, e.g. post, an open e-mail address, telephone (only for urgent requests), fax,

are still accepted. However, this has been reduced to 6 per cent in the last four years.

We have tried to reduce these requests even further, for instance by developing an email format for heavy users to transform their internal email requests into our email standard.

As a conclusion we feel that although the context has changed, the five requirements for document delivery still hold and could be used as a guideline for analysing and improving document delivery.

DocUTrans as a commercial product

Before we move to sharing our view with you about licensing and copyright just a few words about how DocUTrans is being used outside our own organisation.

Since 1997 DocUTrans has been implemented in three libraries in Zürich, Utrecht and Trondheim. Given the fact that we are a library and not a systems vendor we sought cooperation with other parties who could provide maintenance and first- and second-level support. We started negotiations with library system vendors, ICT service organisations and a Dutch national library association. But without result, mainly because of what we already mentioned when discussing the fifth requirements.

When building a business case for the selling of DocUTrans it became clear that libraries do not intend to invest in the enhancement of their document delivery organisation. Apart from a few specialized organizations like the British Library who invested heavily in the implementation of their scanning-on-demand system, the average librarian seems to look away when document delivery is at stake. It seems to be perceived as an unavoidable necessity and rapidly becomes the unloved stepchild of the library. From this we concluded that no valid business case could be constructed to continue our

Figure 1 ILL copy request orders
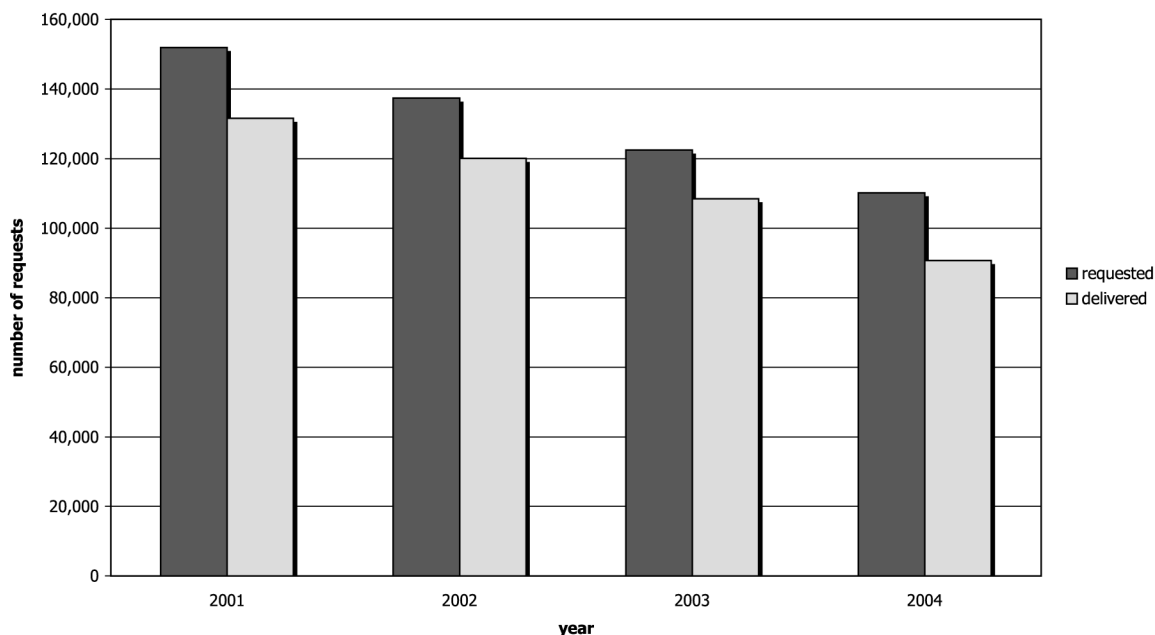
commercial DocUTrans operation and we decided to stop our external sales activities. So DocUTrans became again what it was when we started: a scanning on demand system to enhance our own document delivery operation. Utrecht is still our customer. They are very satisfied with DocUTrans and looking forward to the implementation of the new release this summer; ETH (Zürich) joined the Subito consortium, and in Trondheim electronic document delivery was stopped altogether to avoid possible complications with copyrights and licenses.

Below we give a sneak preview of some new features of DocUTrans version 2I:

- Customers can follow their requests and they can derive from the system all kinds of statistics and edit these.
- The system is web orientated with maximum flexibility and is easy to configure.
- If multiple holdings are available there is an automatic system for priority, especially important if the central library and faculty libraries are document suppliers.
- Data exchange is done through XML format.
- Advanced routing facilities are provided to distributed stocks.
- There is an automatic report of answers, concerning the dispatch to other systems such as Impala (the Belgian document system) and NCC (the Dutch National Catalogue).
- Our so-called One-Stop-Shop service has been further automated and is linked with other catalogues and document suppliers. Major advantage for users is that they receive only one invoice: there is no individual invoicing and they do not have to bother about searching in catalogues, they just send all their requests to one address.

Recent developments towards a digital library

Until recently, the Library TU Delft (www.library.tudelft.nl), founded in 1842, was a traditional library which successfully integrated ICT as part of its services. The library had all the characteristics of a hybrid institution; physical services and "virtual" desks were both available and at times overlapped. Recently a vision has emerged of how our library should evolve. The main question was whether we should maintain the characteristics of a hybrid model or would radical changes be needed. A hybrid library means that daily maintenance is costly. In the future, and as far as possible, the content in our digital library will be completely digital. Customer service will be independent from physical restrictions and will run via virtual front offices (channels).

Due to budgetary considerations and the need for optimal services for clients, the profile of the library will change radically. In this new model, the client is interacting with the "search and finding" and "delivery services"; for example, the catalogue, alerting services, search engines, etc. are almost completely integrated digitally.

This recent transition is characterised by a few essential facts. In TU Delft's February 2005 catalogue there were 3,100 electronic titles out of a total of 4,500 (including print). With this trend, online titles have increased dramatically (see Figure 2).

More dramatic is the growth of online only titles within the digital collection, to almost 38 per cent at the end of 2004. Intense negotiations over favourable licensing agreements

Figure 2 Online journals in the Delft Library
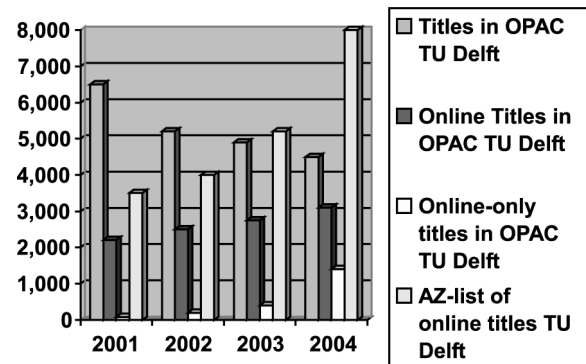
with publishers such as ACS, Wiley, Kluwer Academic, Springer, Elsevier and IEEE, are now paying off.

Central to the finalized contracts is the maintenance of document delivery and the preservation of the content for a longer period of time in digital form. These negotiations with publishers will be important concerns in the future. , The ultimate goal is to have 90 per cent of the journals online by the end of 2007, with most of them available online only. Although this is our goal, publishers can frustrate these ambitions by supplying paper based subscriptions or by offering unfavourable licensing agreements. Along with the increase in the online titles in the catalogue, there is an enormous increase of titles in the electronic journals list. This growth is due to an increase in the adoption of free journals and journal titles coming with package deals. The number of free journals in February 2005 was 2,900, and the number of package deal titles was 700 making around 8,000 e-journal titles available in all. The number of document types such as e-monographs (1,000), e-reference works (423), e-conference paper proceedings (513), and e-dissertations (200) in the catalogue are still modest, but growing at a rapid rate.

Licensing, perpetual access and ILL

Perpetual access
Licensing electronic content is a major topic of collection management, especially as more and more of our journals are available only in digital format. The decision to opt for online only made the ongoing access to previously licensed content essential. In the recent past licenses were often based on a digital journal with the print version. Perpetual access was not an issue. The print journals formed part of our print archives even after the license to the digital content expired.

TU Delft's depository function inherently means that accessibility of the once purchased content shall always be guaranteed. In this respect, the information which is stored electronically at the supplier should meet the same demands as the paper documents which are managed by TU Delft itself.

In reality, different license-agreements deal with perpetual access in different ways. Some licenses, mostly from small publishers, do not address the issue at all. Some publishers will provide continuing access at their discretion. Some publishers provide access to licensed content "for as long is practicable" (Harris, 2002). In our view the only satisfying result should be an agreement which regulates either the supplier's obligation to archive or to archive the already purchased information at TU

Figure 3 Growth of pdf delivery 1999-2004
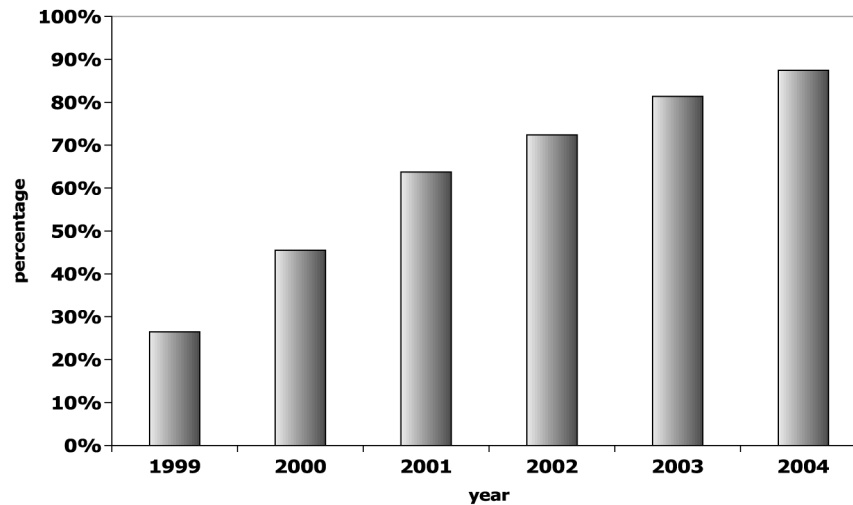
Delft. Additionally, when the contract is terminated, the supplier shall guarantee perpetual access of the purchased information in one way or another; a paper copy, a digital copy on CD-ROM, or a specified part of the suppliers server. The last option is by far the most favourable. Achieving perpetual access has been difficult but quite successful.

Document delivery
Along with perpetual access the transition to electronic document delivery is vital. The contracted information resource should, in principle, be employable for document delivery in the same way as for paper. As with perpetual access, this inclusion of document delivery is controversial and agreements vary on whether or not to include it. In our daily practice certain publishers will definitely not agree to an electronic document delivery provision because they believe distribution and circulation is out of their hands and too easily multiplied and distributed. "What we are concerned about is if individual articles can be distributed more widely than to the individual requesting them" as it is expressed by one of our suppliers.

Although this might be true, it is also easy to scan print articles and distribute them around the world in seconds. Another obstacle is the feeling that copying by Library TU Delft negatively impacts the supplier's legitimate business. By "legitimate business", suppliers mean that potential customers could be lost if Library TU Delft supplies libraries or organizations with copied material. "It is our position that for-payment document delivery activities by subscribing clients erode our own business opportunities and potential market, thus undermining the financial stability for the future", according to an important publisher. More obstacles arise if document delivery is limited within a one-year period to no more than a few (four to six) articles. The use of papers or articles from the licensed material that exceeds these limits must be accompanied by payment directly to the publisher or the copyright clearance centres. All these obstacles make direct delivery from electronic sources impossible.

In future, these obstacles could be resolved by technology safeguards that made the distribution impossible or, at minimum, unlikely and difficult (Braid, 2004).

For the moment we print out and send a copy of an individual article, chapter or entry from the licensed electronic products by mail or fax to our clients, or download, print and scan the requested item (to convert it to a PDF-file) and transmit it on DocUTrans to the requesting library. The scanned material will be deleted within 48 hours of scanning. See Figure 3 for the growth in the demand for PDF delivery.

Conclusion

The strategy in most libraries is to evolve rapidly to a digital library as far as possible.

We should make clear and visible that there is still an important role for libraries as document suppliers.

Much dialogue between libraries and suppliers will be necessary in order to give document delivery a stable position within our digital library.

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