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ATG Interviews Focus on the Scopus Design Process

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Beyond Email Paralysis

When email came on the scene, I was ecstatic. I figured I could use my favorite communication mode — the linear written narrative — and all my communications would be perfect. No more phone anxiety! No more drawing a blank over a key point, while trying to find just the right words! Well folks, those phone calls and meetings are looking fabulously productive — positively seductive — at this point. I yearn for more of the productivity of exchanging ideas in person, the surge of energy that comes from talking with someone else, the connection and camaraderie that comes from asking about someone's day before taking on the business at hand, together. In short, as unlikely as it might seem, email (along with a few other forces, like parenthood) has made me into an extrovert. I'd rather talk it through than type it out.

So here are a few recommendations which I think might help maximize the best of email and diminish the worst. I'm reminding myself as much as offering these thoughts for you readers:

- Please take time before using email to ask if there is a better means to communicate the issue at hand.
- Please don't use email to ask me about an extremely urgent problem that you want addressed immediately. Call me or come see me.
- Please don't email me about a problem any more complex than an address change. Call me or set up a meeting. Sure, use email to send a written summary we can refer to at the meeting if the issue requires that approach. But don't use email for the actual exchange about that text.
- Please don't use email to try to reach a group decision.
- If you do send email, keep it short. (I need to remember this rule.) If you must present a longer text, use layout, whitespace, and typography to highlight the key points and make the message readable, or send the longer text as an attachment with a clean, fully word-processed document.
- Please don't use email to ask me for a special personal favor, since I might miss the message and would feel terrible about the consequences of that. Come see me or call me.
- Please don't email invoices unless they require rush payment; certainly don't email them if you are also sending them by mail or fax.
- Please don't email renewal requests unless there are significant changes to relay. Send a simple renewal form by fax or in the regular mail.
- Please don't use email to ask me why I haven't responded to an earlier email. Call me.
- Please include a phone number in your email signature file.
- Please don't assume I've read your email.

If you have thoughts about the use of email in libraries, by all means, call me!

Column Editor's Note: I want to extend a special thanks to my **MIT Libraries** colleagues, most of whom really did not want to share disadvantages of email without also singing its praises, but who responded quickly and with typical insight and conciseness, over email, when I asked for their ideas: **Nina Davis-Millis, Jonah Jenkins, Michael Noga, Peter Munstedt, and Arnie Sheinfeld.** — EFD

ATG Interviews Focus on the Scopus Design Process

by **Judy Luther, MLS, MBA** (Informed Strategies; Phone: 610-645-7546) <judy.luther@informedstrategies.com>
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With the creation of **Scopus**, Elsevier has employed a user-centered approach to product development that engages the customer throughout the design process instead of approaching libraries to beta test a developed product. In their White Paper **Amy Knapp**, Assistant University Librarian at the **University of Pittsburgh**, and **Spencer de Groot**, User Interface Architect at **Elsevier**, describe how librarians, researchers, and designers are involved in an iterative process from conception, through development and then testing.

To understand how this process works and what was learned about user needs and their preferences, **ATG** interviewed **Harriet Bell**, Senior Marketing Manager at **Elsevier**, and two of the Development Partners for **Scopus**: **Warren Holder**, Electronic Resources Librarian at the **University of Toronto**, and **Amy Knapp**, Assistant University Librarian at the **University of Pittsburgh**. There were 21 institutions that collaborated with **Elsevier** on **Scopus** and more than 300 researchers were involved in the development of this large bibliographic search and navigation service.

The Product

ATG: How and when did **Scopus** get started? Where did the name "**Scopus**" come from?

HB: Elsevier has been developing bibliographic databases for 30 years. With the growth of the Internet and increasing amounts of scientific information available online, we were aware of the need for reliable navigation tools across the mass of potentially unstructured and disparate data. Web-savvy scientists are no longer prepared to learn specialist command language or search syntaxes — they want a tool that's as easy to use as any Web search engine. This was the background, but we didn't know exactly what the right type of service would be. We decided to partner with a group of 20 institutions to develop a vision for an all-science resource. We explored concepts through onsite focus groups, colloquia and intensive market research, looking at the main challenges and frustrations faced by both librarians and users.

Five main requirements emerged. We learned that navigation is the next big thing and that users want to find what they are looking for as well as experience the serendipity of finding relevant information that they hadn't been looking for. Librarians wanted the resource to be:

1. A single entry point to the world's scientific information that was not publisher specific
2. Simple and easy to use
3. A database of peer reviewed publications that are both fee based, combined with a search across freely available scientific information on the Web
4. Integrated with other library resources
5. One click away from full text.

WH: The **University of Toronto** has been a development partner with **Elsevier** since the inception of this project two years ago to develop an "uber" search engine on as much content as possible. Over the course of 2 years, **Elsevier** listened to what was said, sent us draft designs and was focused on "getting it right".

AK: Our work with **Scopus** began with a discussion focused on the user's need for information. It didn't begin with a discussion of product features.

HB: The origin of the name **Scopus** actually came from one of the very first brainstorming sessions in May 2002. At the end of the day we went on a nature walk and the forester pointed out a bird, the *Phylloscopus Collybita*, and noted that it has a better navigation system than a Boeing 747. The bird became the inspiration for the team to build an improved navigational tool and **Scopus** was used for both the project and the product name.

ATG: What is **Scopus**? Is **Scopus** designed to work with all disciplines or just the sciences?

HB: **Scopus** is a navigation tool that covers 14,000 peer reviewed titles from 4,000 scientific, technical, medical and social science publishers. Over half the titles are from Europe, Middle East & Africa, and there's a big chunk from Asia, as well as publications from the developing world. We aim for wide geographic coverage. Non English language peer reviewed titles are included as long as there are English language abstracts. **Scopus** covers electronic-only publications and over 400 are Open Access titles. **Scopus** is driven by user demand. We are actively assessing the need for coverage of other disciplines, and of other types of content.

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<<http://www.against-the-grain.com>>

WH: We want them to broaden it to include humanities and social sciences which they plan to do at some point in the future. Given the interdisciplinary nature of research, it's important. But they started with sciences which was a good place to start.

ATG: *What is the relation between Scopus and Scirus?*

HB: Scopus is a structured A&I database, covering abstracts, references, keywords, index terms, authors and bibliographic data from the peer-reviewed STM literature. Scirus is a science-specific Web search engine, which has indexed over 167 million pages of relevant scientific information on the Web, including author homepages, university sites, corporate information and other resources such as Preprint servers, CogPrints, ArXiv.org, and OAI compliant resources. Patents can be searched as Scirus indexes the US Patent and Trademark Office (USPTO), the European Patent Office (EPO), the Japan Patent Office (JPO) and the World Intellectual Property Organization (WIPO).

Scirus Web search is integrated with Scopus, so a single query on Scopus will return the peer-reviewed results, the Web results, or you can choose to view a combined list. It means your results will deliver a larger set of more relevant scientific information.

WH: Scirus is Elsevier's tool for searching selected Web content that has value and combining the results with the traditional scholarly literature.

AK: Not only are the citations included but also a reliable Web search. Often times research groups make supplemental information available on their project Website that isn't captured in the publications. This also allows for including data in institutional repositories.

ATG: *How is Scopus different from other Elsevier products? How will it interface with other Elsevier services and other products?*

WH: Scopus is more comprehensive. Compendex and EI Village are subsets of the whole, whereas Scopus is intended to be the largest A&I search engine in the world. We have some results from a search with one faculty showing more results than were found in Web of Knowledge. Resolvers allow us to link directly to the full text. Elsevier created a separate A&I layer over everything and redigitized as much citation content as possible. Market research indicated that 10 years of references fulfill 86% of actual use and citations go back to 1996 and abstracts go back to 1966. 85% of the records contain professional index terms.

HB: A useful way to look at Scopus' specific function in relation to other Elsevier products is to consider a scientist's task. Let's take the example of the drug that was known as Thalidomide. This was offered to expectant mothers to combat morning sickness in the late 60s, but proved to have tragic consequences when the babies were born with deformities. With

Scopus, you can search for the reports and literature covering this drug that have been published since it first hit the headlines decades ago. What you can't do with Scopus, however, is to do a specific drug or disease search — and you'd then turn to Embase for that specialist functionality. Equally, if you wanted to search on the chemical structure, you should use MDL's DiscoveryGate product. ScienceDirect is there to provide you with the full-text articles online, back to volume 1, issue 1 of every journal published by Elsevier. It's a complete package.

The Process

ATG: *Is there a Scopus team? Who was involved?*

WH: Although it's not a formal team because we're all doing other things as well, there are a few of us who have been more involved at the University of Toronto: the Director of Information Technology, Peter (Marshall) Clinton, myself as Electronic Resources Coordinator, and Alan Darnell, Scholar's Portal Administrator. We continue to coordinate with volunteer end users who are interested in participating in further market research.

AK: At the University of Pittsburgh I was the project liaison with a couple of people at Elsevier who were from the user centered design team that were translating what the librarians and users wanted for the technical people. Elsevier staff who are trained in how to observe the user to determine their needs came onsite to work with our faculty.

HB: Eefke Smit, Managing Director of ScienceDirect and Bibliographic Databases, is one of the driving forces behind Scopus. She was insistent on the value and prominence of user-centered design, to ensure we built a product in collaboration with users. Jaco Zijlstra, the Director of Scopus, is deeply committed to getting it right. He spends an enormous amount of time steering the development of Scopus to meet — and exceed — the demands of our users. I would say it's one of the first examples within Elsevier of evidence-based development. It's exciting to work on a project which is a first for the company in this regard. Internally the Scopus user-centered design team consists of five full-time designers and a psychologist who integrated feedback into the development of the interface based on cognitive models of search and retrieval. Scopus is built by developers in Dayton, Ohio, and the product is managed out of Amsterdam.

ATG: *How were library partners chosen? Are they only ARLs? Were there any smaller libraries?*

HB: We approached libraries for involvement based on their own visions and local developments in the field of resource navigation and user testing. We wanted to work with institutions that were able to devote quite some time and effort to developing and testing Scopus together with us. We've worked with very large, as well as smaller libraries, and also some corporations, across Europe, the Middle East, Asia, the United States and Canada.

ATG: *What has been learned about the end user as a result of this process?*

SdG: Through onsite interviews we had a chance to both observe users and to learn about their motivations. We then used functional prototypes to test both concepts (i.e., value and use of citations) and functionalities (searching for authors). The results pointed to 5 major tasks researchers conduct online: find new articles in a familiar field, find author-related information, stay current, get an overview in a new subject field, and to look for a known item.

HB: There's a difference between the kind of feedback you generally receive when you undertake market research — asking users what they do — and the kind of observations you can make about what users actually do when you sit and watch them work. Our team spent many hours with users, observing their behavior, the tools they used, the way they undertook their research. We also asked groups of faculty to record their research process in a diary. The results were very interesting. Functionality features need to be offered at exactly the moment that the user will think of that function in their workflow. For example users want to start with a very broad search, see the results, and only then drill down. Users are results focused; they're not spending time building an elegant and precise query. If you offer too many options too soon, they won't be used. Feedback on the content varies by discipline. Chemists and mathematicians tend to use deeper backfiles, researchers in the arts and humanities do less citation searching in journals and rely more on books.

WH: The results from this process are a HUGE advantage for Elsevier. Their staff have been coming to the campus and doing a lot of user studies. They came with an open mind and sat down with the end user. Then they came back with a draft, and asked again and again if they got it right. In our special libraries, such as chemistry and engineering, they came back on aspects of Scopus — search, relevancy — and asked if they are searching the right content. That to me has been the great strength of Scopus and we have learned an incredible amount about the end user and how they work.

AK: I expected to see differences between the disciplines that would affect system development — the way search works, the way that results are presented — however, users all wanted the same things. Although the sciences had more emphasis on current information, the arts and humanities responded really well to having easy access to citations. Arts & humanities focus almost exclusively on authors unlike scientists who use research and its results to find research. They were in essence doing what could be viewed as citation searching using books so it was an invisible process to them. They also value titles in the public domain that are visible through Scirus.

ATG: *What was your experience like in working on Scopus?*

WH: We've never had this level of involvement with our libraries and end users. We liked that Elsevier came to us and said "help us build it." Getting users at the right

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time was a lot of work but it is an exciting new product to be part of.

AK: The development process worked very well and users really appreciated being involved in the creation of a tool designed for their use. It was reminiscent of the early days of **Amazon** when users would send in suggestions and then see them implemented. We had one user who was convinced that **Elsevier** was implementing just what he had suggested. This gave him a sense of ownership and he loved the process.

ATG: Did you develop skills that you plan to continue to use?

WH: Yes, we didn't have this kind of 1-1 relationship with our user community that allowed us to see how they worked and conducted research. There is a lot of research money in our institutions. By continuing to work more closely with our researchers we hope to get their help with the indirect costs of research by getting them to help fund a database out of the research funds

ATG: What would you advise other libraries considering development partnerships?

WH: If you can possibly do it, go for it. It is a win/win/win for everyone — the library/users/vendors. It doesn't get much better than that.

The Outcome

ATG: Most people are trying to replicate/copy Google these days. How is Scopus like Google or different from it? How has the development of Google surprised the Scopus team?

HB: Google has a very strong brand and a lot of mindshare amongst students — because it does general searching very well and millions of people use it many times a day. What we haven't yet seen is whether Google is indeed the right kind of product for serious scientists, and our experiences with Scopus suggest that it isn't in that category. Scopus has been built to fulfill the needs of scientists, and it's a quite different offering to anything Google does right now. Google's new efforts may be a boon for example to students, for whom 'some content' may be 'enough', and for quick literature scans. However, from our own experience with users, we know that Web searches don't deliver the level of precision and recall from literature databases. We see this as the main reason why professional scientists prefer to use specialist databases and literature research tools that they can rely on to be comprehensive.

WH: Our perspective is that users begin their searches with Google. Elsevier to their credit has done a number of user surveys that include librarians and end users. They did another study in pharmacology at the university — undergrads, grads, senior faculty — that showed that they all start their searching with Google.

HB: I wouldn't say that the advent of Google Scholar has surprised the Scopus team — af-

ter all, Google has made public their strategy to develop verticals, and here we see an early version of this in our field. We're very interested to see how it will develop. But as far as scientists are concerned we know that trusted content, comprehensive coverage and literature search-specific functionality is critical to research. Another important point of course is that scientists don't want to be confronted with full-text articles they have to pay for every time they do a search. Unlike Google Scholar, Scopus can be configured and customized by librarians according to their own institutional requirements. Scopus can be implemented to only return full-text links for articles to which a user is entitled. Additionally, a subscription to Scopus ensures unlimited access to the whole database for everyone at an institution.

AK: I think users by and large are looking for a Google solution whether we like it or not. We get nervous about what they are finding and what they are missing. This is the perfect compromise as it's giving them Google in a defined environment. Elsevier included as an option some of the Boolean features that librarians like to use. We still feel the need to teach folks how to use a Boolean search. It's a safety net for the librarians. A few users in particular institutions who were trained in Boolean want to search that way but the younger generation prefers a simpler approach.

ATG: Who/and what libraries are Scopus' market? Is it for individuals (researchers?? laypersons??) or for libraries? And if for libraries what sort of libraries? Isn't the market limited?

WH: I understand that it is aimed at the library market — large research libraries worldwide and those libraries that have not bought Web of Science.

HB: Scopus is aimed at scientists and researchers — it's been built for, and with them. That's a market of some 10 million at the moment. The aim with Scopus is to offer a service that's free for researchers at the point of use. We have customized pricing for very large and very small libraries. We have subscription models for corporations as well as for academic and government libraries. We have models for libraries who wish to subscribe as part of a consortia, and we have an extremely wide range of payment options to suit the decision making process within an institution.

ATG: Who/what are Scopus' competitors? Is the main competitor ISI? Are there any plans to replicate the citation impact factor which is so trusted and feared?

WH: The main competitor obviously is Web of Science and potentially Scholar Google. I understand that Elsevier intends to create a comparable statistic and if they keep going they'll give ISI a run for their money. We did a search for one faculty member who was challenging another and found more citations on Scopus than ISI. It could be more popular with faculty for promotion and tenure.

HB: We haven't developed Scopus in response to other services. Our strategy is to provide the content and the tools that scientists need

for their tasks — including citations, which can be used to navigate the literature as well as for evaluation purposes. We have no plans to reproduce the ISI Journal Citation Reports. Scopus is a different beast, covering many journals that are not covered by ISI, and using very sophisticated matching software to correctly link cited references with the articles to which they refer. The citation counts that you see in Scopus are therefore of a different order and magnitude. Our strategy is to make the most of that, by putting powerful citation analysis tools into the hands of the users. We want to enable them to carry out their own on-the-spot analyses and comparisons of articles, authors, institutions, etc. Up until now this kind of analysis had to be carried out by a specialist, or by purchasing bulk data. Over time, we expect researchers to use Scopus data as an alternative — one that they can tailor on their own desktops to their own needs.

ATG: Now that you've built this capability, what's next?

HB: We are looking at how to integrate Scopus into the users' workflow. For example, if the user found a gene in a bank, they could then link directly to a data set from Scopus that would present all the literature that has been published on that gene.

We have an area called Scopus Labs where we explore new technologies and capabilities such as LiveInk created by the Walker Brothers which distributes words across a screen in a pattern that is easier to read, digest and retain. We're also working on visualization tools that enable the user to refine search results within a context by dates, citations or authors.

We want input on what to test and we want to understand the learning curve that other groups are going through. Elsevier can set up similar programs with Web developers, bibliometric studies, human computer interaction experts, to look at how behavior will change over time. We plan to continue and expand this new capability.

AK: This model is replicable with other publishers and given the positive faculty response, we would like to extend this process to other products.

Author's Note: Online resources are valued for their widespread accessibility but what makes them compelling compared to print is enhanced functionality for the user based on how they work. Gains in efficiency and effectiveness of information discovery and retrieval will deliver results that warrant the investment in development.

By involving users earlier in the process, user centered design can define how electronic resources can be integrated into workflow and save the user time or enable them to perform tasks they could not do in print. With much legacy content online, the industry is ready to advance from transitioning the print to transforming content into new and valuable tools. — JL