

## Innovations Seminar U.S. – Reinventing Innovation

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Technological innovation does improve the process of scientific research and publication, according to speakers at the International STM's Innovation Seminar last week in Washington, DC. Many examples of innovation highlight the value that publishers do add to the publication process.

The keynote address, 'How the Cloud and the Crowd are Changing How We Work,' was presented by Michael R. Nelson of the [CSC Leading Edge Forum](#) who said: 'The internet revolution is less than ten percent complete. It will be as disruptive as the printing press, but much faster, totally global and more unpredictable.' He pointed to the cloud as the basis for much of the innovation now occurring. 'Development costs are ten percent of what they were before the cloud. You can think big, build a prototype and then scale up. The cloud allows you to tie together unlimited data as accessible pieces. It will also allow you to have internet access where ever you go.'

Especially important to Nelson is the ability of customers and communities to self-govern and solve their own problems democratically. With large databases, open source tools and social media there are unlimited possibilities. He reported that by the end of 2011, there were 10 exabytes of data on the internet. This will go up dramatically, he predicted. Companies are more and more frequently under increasing imperative to open up confidential data. 'If you don't, you won't have a chance to engage and innovate,' he warned. 'This is the other side of our privacy policy.'

Howard Ratner of [Nature Publishing Group](#), head of the International [STM's Future Lab Committee](#), gave an overview of the important digital trends in the STM publishing space. He stressed that new user behavior and increased research productivity is the overarching theme. Discoverability used to be, but now publishers should be enabling readers to do something with their content. 'We want to turn passive readers into active ones,' he said. Among the trends the group sees are:

- API platforms which provide new ways to access content.
- Research data, repositories, supplemental files, and graphics representing data sets.
- Identity management expressed as the tension between authentication and discovery.
- New user behavior as captured by performance metrics for increased productivity.

He pointed attendees to the Future Lab Committee's Technology 2012 Trend Watch, which is available as a presentation from the [STM Document Library](#). (A summary also appeared in the [February 2012 STM News](#) ).

Additional speakers highlighted examples of innovative tools that can aid scientists in their research.

Marc A. Smith of [Connected Action Consulting Group](#) spoke about NodeXL, a product which measures and maps networks in social media. It can extract the patterns of connection among people using Twitter hash tags. These connections represent a network or community: a population with ties

together. 'Social media is about relationships. The patterns of these relationships are left behind and this is a bonanza for social scientists,' Smith said.

Thomas Rindflesch of [Semantic Medline](#) at the National Library of Medicine explained that search and retrieval on the web hasn't changed since the 1980's. It still only manipulates text strings. To effectively search in a scientific setting you need to know what the words really mean. 'Automatic semantic interpretation is needed and bridges the gap between language and meaning,' he said. Semantic relationships are submitted for automatic summarization, which produces a graphical summary with nodes and hubs. 'This gives enhanced access to biomedical research,' he said. Semantic Medline sits on top of PubMed where one biomedical metathesaurus concept is linked to another. Rindflesch estimates that Semantic Medline now returns responses that are '75 percent good.'

Victor Henning of [Mendeley](#) spoke about how he drives innovation at his company. He quoted Wikipedia in his definition: 'Innovation is the creation of better or more effective products, processes, services, technologies, or ideas that are accepted by markets, governments, and society.'

Mendeley is a case in point. He and his grad school colleagues needed a better way to manage the hundreds of documents on their hard drives in order to further their research. They created a structured database which extracts data and full text so the documents can be annotated and highlighted. The data can also be shared and discussed in research groups. Currently Mendeley has 1.6 million users and is growing by 130,000 per month. The site has 4 million visitors per month, and these users have uploaded 225 million documents to date.

The seminar ended with five examples of innovation introduced by STM publishers and their partners.

- [Elsevier](#)'s Article of the Future, an article format with tabs to get where you want to go. It presents research highlights and graphical abstracts in a three-paneled presentation, with the old PDF in the center and the highlights on the sides. As fewer and fewer people are using PDFs, the interactive aspects presented with this format will become more important.
- [River Valley](#)'s use of WordPress to manage authors and compose a scientific journal. The process takes an author submitted article, allows for peer review, editing, production and printing all in the same location. It can also be used for social networking.
- Plantwise: A 'big data' initiative from [CABI](#) which plots plant diseases by locale and time and integrates them with CABI abstracts data. Workflow tools include supplies and disease treatment, and also the ability to predict future outbreaks.
- The [American Chemical Society](#)'s automated production process which extends black box tools to create a custom layout, automatically producing complex tables and graphs without human input. A 20 percent reduction in production time was realized, as well as an 80 percent reduction in composition costs. Quality in lay-out was also achieved.
- Semantic targeting by [Temis](#) which adds enriched and annotated metadata to scientific content. Forty-six percent of scientific publishers already enrich their content. Knowledge can be inserted, along with linking and analytics. This benefits users by providing more compelling content that is more easily manageable, thus improving editorial productivity.

Presentations from STM Innovations Seminar U.S. are available for [viewing and download](#) from the STM website.