

Social Media:

A guide for researchers

February 2011



Acknowledgements

This guide has been produced by Alan Cann of the Department of Biology at the University of Leicester, and Konstantia Dimitriou and Tristram Hooley of the International Centre for Guidance Studies, and published by the Research Information Network, to provide researchers with an understanding of social media, and its possible uses within the research process.

The International Centre for Guidance Studies, University of Leicester and the RIN wish to thank the peer reviewers involved with this publication; Christina Mendes-Da-Costa, Neil Witt and Martin Hawksey.

Contents

1.	Introduction: Why pick up this guide?	Page 5
2.	What are social media?	Page 7
	What social tools are available?	Page 7
	Consuming social media	Page 9
	Producing social media	Page 10
	Criticisms of social media	Page 11
	Answering the criticisms	Page 12
3.	What do social media mean for researchers?	Page 15
	Identification of knowledge	Page 17
	Creation of knowledge	Page 18
	Quality assurance of knowledge	Page 19
	Dissemination of knowledge	Page 21
4.	Social media tools for researchers	Page 23
	Social and professional networking tools	Page 23
	Social bookmarking	Page 25
	Tools for social-citation sharing	Page 26
	Blogging	Page 27
	Microblogging	Page 28
	Research and writing collaboration tools	Page 29
	Project management, meeting and collaboration tools	Page 31
5.	Managing information overload	Page 35
	Approaches to reading	Page 35
	Tools for filtering	Page 36
	Creating the right network	Page 37
6.	Final thoughts	Page 40
7.	Further reading	Page 41
8.	References	Page 42
	Web materials 1: Links and Resources	Page 43
	Web materials 2: Researcher case studies	Page 43
9.	Glossary of key terms	Page 44



1. Introduction: Why pick up this guide?

This guide will show you how you can use social media to help your research and your career. Social media have big implications for how researchers (and people in general) communicate and collaborate. Researchers have much to gain from engaging with social media in various aspects of their work. This guide will provide you with information to make an informed decision about using social media and enable you to select wisely from the vast range of tools that are available.

Given the buzz in the media, you may feel that social media are aimed at teenagers and mainly used to discuss celebrity culture. But this guide will show you how social media offer researchers an opportunity to improve the way they work. One of the most important things that researchers do is to find, use and disseminate information, and social media offer a range of tools which can facilitate these activities. The guide discusses the use of social media for research and academic purposes, rather than the many other uses that they are put to across society.

This guide will show how social media can change the ways in which you undertake research, and open up new forms of communication and dissemination. The researchers we interviewed in the development of this guide are using social media to bridge disciplinary boundaries, to engage in knowledge exchange with industry and policy makers, and to provide a channel for the public communication of their research.

The guide is rooted in the practical experience of its authors and of the ten social media users we interviewed as part of the project. We are not trying to present social media as the answer to every problem a researcher might experience; rather, we want to give a 'warts and all' picture. Social media have downsides as well as upsides, but on balance we hope that you will agree with us that there is real value for researchers.



2. What are social media?

This guide uses the term 'social media' to refer to Internet services where the online content is generated by the users of the service. Although there are other, largely synonymous terms for such services (Web 2.0, participatory media, etc), for consistency this guide will use the terms social media (to describe the phenomenon) or social tools (to describe the technologies). Social media rely on Web-based technologies to turn discrete, usually rather short, user contributions such as status updates or comments into an activity stream. Examining social media therefore requires us to think about how social tools facilitate the production and dissemination of information, and how they enable people to discuss and consume this information.

We focus in this guide on how social media can be used by researchers. We examine a range of different tools and discuss how they might be employed. Throughout the guide we have also included quotations from interviews with ten researchers who are already using social media in their research. However, before we begin to look in detail at how you can use social media for research, it is important to gain an overview of what is meant by the term.

What social tools are available?

Even if you are not familiar with the term 'social media' it is likely that you have heard of, or even used, many of the social tools themselves. They can be divided into a number of categories and we describe examples of many of them in this guide.¹ To begin with, some commonly-used tools are mentioned below. There is a full glossary at the back of this guide, which you can use if these terms are unfamiliar.

Communication:	Blogging:	Blogger, LiveJournal, TypePad, WordPress
	Microblogging:	Twitter, Yammer, Google Buzz
	Location:	Foursquare, Gowalla, Facebook Places
	Social networking:	Facebook, LinkedIn, MySpace
	Aggregators:	Google Reader, Netvibes, Pageflakes, iGoogle

Collaboration:	Conferencing:	Adobe Connect, GoToMeeting, Skype
	Wikis:	PBworks, Wetpaint, Wikia
	Social bookmarking:	Delicious, Diigo, BibSonomy
	Social bibliography:	CiteULike, Mendeley
	Social news:	Digg, Reddit, Newsvine
	Social documents:	Google Docs, Dropbox, Zoho
	Project management:	Bamboo, Basecamp, Huddle

Multimedia:	Photographs:	Flickr, Picasa, SmugMug
	Video:	Viddler, Vimeo, YouTube
	Live streaming:	Justin.tv, Livestream, Ustream
	Presentation sharing:	Scribd, SlideShare, Slidrocket
	Virtual worlds:	OpenSim, Second Life, World of Warcraft

1. Adapted from http://en.wikipedia.org/wiki/Social_media

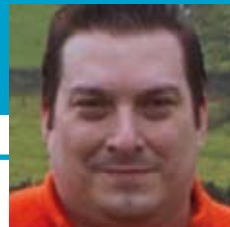
‘ I prefer to use blogging, microblogging like Twitter, social bookmarking, social citation like Zotero, writing tools, social/professional networking tools like Facebook and LinkedIn and aggregators and dashboards like Netvibes. I think all of them are integral in my everyday and professional life but for different reasons. ’

Elena Golovuskina (PhD student, Education)



‘ I prefer to discover information for my job by using social media like Twitter and to a lesser extent Facebook and in face-to-face talks with people from the University of Leicester. For research it tends to be through skimming the journals and talking with people through email. Ancient History/Archaeology is still strong on email lists and isn't yet happy about the ideas of weblogs. ’

Alun Salt (Archaeoastronomist)



‘ I access information mainly by using social media. I use Twitter and I read a lot of blogs. I like to keep up to date directly with the people involved in the research. I use blogging, microblogging, online writing tools, social/professional networking tools and iGoogle quite extensively. The first thing I started using was Facebook in 2005. ’

Alexander Davenport (Research Assistant, Hemato-oncology)



Consuming social media

The social tools mentioned above all provide channels through which new information is being produced every day. For some people this can be overwhelming and lead to a feeling of information overload. However, people typically use social media in a way which uses their social or professional networks to filter the vast array of information down to something that is manageable. Once you have built a network of people with interests similar to yours, you can use them to identify resources that you are likely to be interested in.

Unlike traditional search technologies, which only return results related to the search terms that you input, social tools harness your network to inform you about issues and developments you may not be aware of. They can even provide alternative strategies and approaches to questions based on collective experience. In other words, 'search' can provide you with answers only to the questions you ask, whereas social media can also provide you with intelligently-filtered information that helps to stimulate new questions, in the same way that a conversation with a colleague might.

Building up a network that can provide you with this kind of information takes time. The process of building, curating and filtering useful networks is a skill which needs to be practised. Most tools offer you ways to find people who might share your interests however, and once you have started building a network it becomes useful very quickly.

“ I think social media made me a better researcher because I find stuff out a lot quicker. I now have a network of individuals I respect and am confident in their work. The network discovers and filters and discusses. I have connected my research to the real world in a way that would not have been so easy before and maybe not possible. For curriculum development and teaching this has connected with real issues that interest and engage students and has helped them become student researchers in their own right with a broader and more critical take on issues. ”

Terry Wassall (Principal Teaching Fellow, Sociology)



Producing social media

Gathering information from a diverse range of people can be very useful. However, it is when you move from merely consuming to producing social media that you are likely to notice some of the biggest changes. The idea of being a participant in a community is very important in social media (and also in academic discourse). Social media theorist Clay Shirky (2010) said:

"Participants are different. To participate is to act as if your presence matters, as if, when you see something or hear something, your response is part of the event."

Participating in social media does not necessarily mean that you have to be a major producer of content. Your participation could be limited to tagging or 'liking' a resource, or responding to someone else via a microblog (such as Twitter) or social networking tool (such as Facebook). At the other end of the scale, some of the most active users of social media produce large amounts of content every day, including posting datasets, writing analyses or comments, or sharing bibliographic data.

As long as your engagement with social media is limited to consuming what other people post it is not that different from any other web content. Once you begin to produce your own content, you will start to participate in conversations on issues that interest you. This is why social media are different from the many other forms of communication that have come before. Whereas a television channel implies a strong distinction between programme makers and viewers, social media do not make such sharp distinctions. This is sometimes described as moving from a one-to-many approach to a many-to-many approach.

“I first started using social media because it was clear to me that as researchers we needed to publish more effectively to support better development of theory around what were very empirical areas. So it was initially about effective data sharing. Then I got interested in the more general ideas of effective communication on the web and found there was a community already out there. I wanted both to be able to record my own ideas in this space in a way that was 'native' to it and to engage with that community, so blogging was a natural course to take.”

Cameron Neylon (Senior Scientist, Biophysics)



Criticisms of social media

Not everyone is positive about social media and it is important to consider some of the main criticisms. Some of the criticisms are made by researchers and academics who fear that the quality of public and academic discussion and debate is being undermined. Susan Greenfield said:

"For me, this is almost as important as climate change. Whilst of course it doesn't threaten the existence of the planet like climate change, I think the quality of our existence is threatened – and the kind of people we might be in the future."²

Andrew Keen (2007) and Nicholas Carr (2010) have produced book-length critiques of social media and the ubiquitous use of the Internet, claiming that they are potentially damaging to our thinking, our culture and our society in general. Such claims have been challenged, but the idea that social media are likely to change both individuals and society is one also made by enthusiasts for these technologies. Broadly speaking, concerns are focused on:

- **Growth of technology** – some people feel that the encroachment of technology into every aspect of life has potentially damaging implications.
- **Privacy** – social media are built on a culture of active personal and professional disclosure. There are concerns about how this is changing the interface between public and private spaces, and about misuse of our data. For researchers, putting your professional life online can feel exposing, particularly if you express opinions and ideas that have not been subject to the normal process of peer review.
- **Banality** – many social media tools are based on the exchange of many small bits of information such as status updates or the sharing of links. These short-form individual contributions have led to the charge that social media are trivial in nature and suitable only for entertainment rather than professional research.
- **Peripherality** – many researchers stress that social media are still peripheral in research, and this leads some to argue that it is therefore not worth engaging.
- **Loss of an authoritative perspective** – traditional publishing aims to provide a filter for quality whereas social media allow everyone to publish anything that they have to say. This inevitably means that it is more difficult to identify which contributions are valuable or authoritative.
- **Information overload** – social media have dramatically increased the amount of publicly-available information: 24 hours of video are added to YouTube each minute.³
- **Work/life balance** – social media has the potential to extend your working day and blur the distinction between work and other aspects of your life. Researchers may need to think carefully about boundaries, particularly if they are using mobile devices.

2. <http://www.dailymail.co.uk/sciencetech/article-1318772/Are-Facebook-Twitter-obsession-Then-life-offline--52-minutes.html>

3. The Official YouTube Blog, 17th March 2010

<http://youtube-global.blogspot.com/2010/03/oops-pow-surprise24-hours-of-video-all.html>

‘The thing that discouraged me from using social media in the first place was the rumours that my exposure would have negative effects. Those rumours were not entirely unfounded, and I feel very vulnerable sometimes. I guess that always happens when you are on the spotlight.’

Constantina Katsari (Lecturer, Ancient History)



Answering the criticisms

The criticisms may be valid in some cases but not necessarily in all. ‘Social media’ covers a wide range of tools and different ways of using them. It is important to be precise in making and responding to these kinds of criticisms. So, for example, a group of teenagers using Facebook to swap celebrity information presents a very different proposition from an academic network using a social citation tool to share referencing information. Both have advantages and disadvantages, but they are likely to be very different.

It is important to engage with some of the criticisms as part of the practice in using social media. For example, concerns about privacy mean that users of social media need to take care in their approach to disclosure and to understand the legal and policy frameworks which govern the ownership and use of information. The purpose of this guide is not to argue that social media are an absolute good, but rather that they offer tools which, if used carefully, are likely to be beneficial to the research community and to facilitate positive connections with other communities e.g. the industrial research and development and policy communities.

‘Probably to a certain extent social media have affected my work-life balance in a negative way. Being able to be always connected isn’t always healthy.’

Cameron Neylon (Senior Scientist, Biophysics)



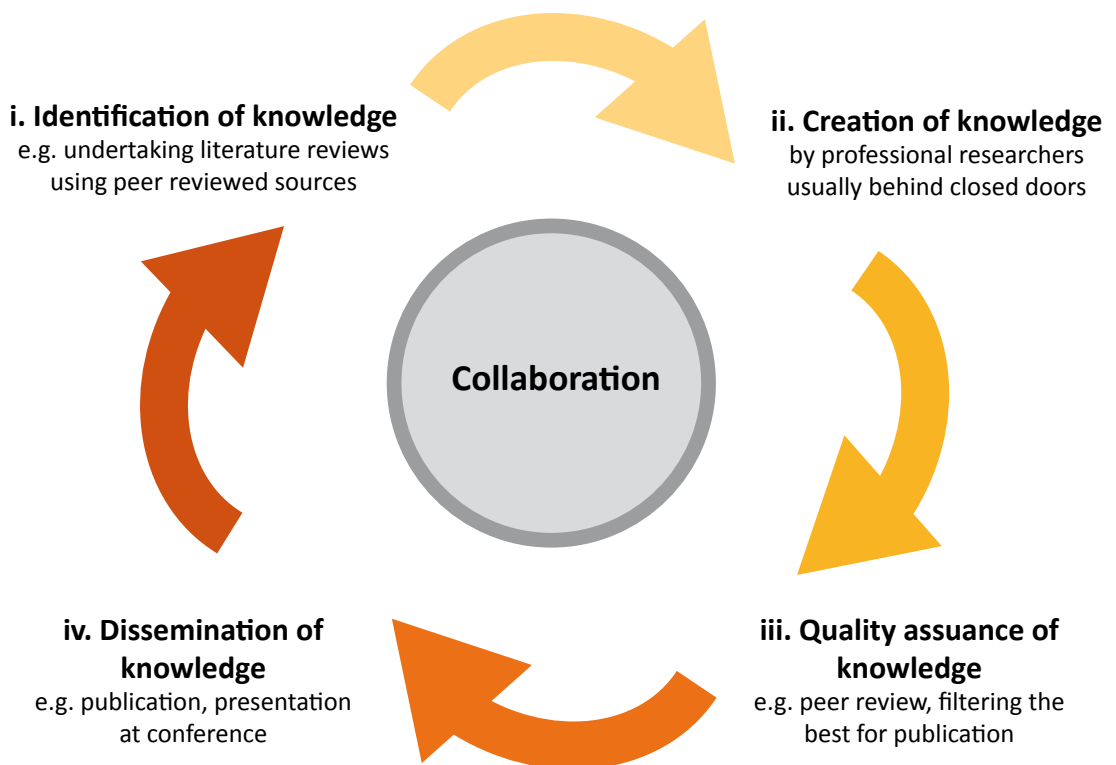


3

3. What do social media mean for researchers?

Research involves the production, use and consumption of information and knowledge. The research world has evolved a number of mechanisms designed to facilitate the transfer of knowledge between researchers. These include scholarly journals and conferences, and quality assurance mechanisms like appointment committees, peer review, publication and review. We might represent this in a diagrammatic form as follows:

Figure 1: The academic research cycle



In this model we have four stages (identification, creation, quality assurance and dissemination) which are underpinned by a variety of social interactions and forms of collaboration. Collaboration is defined broadly here to include the work of all the people who might be involved in research including researchers, librarians, funders and the general public. Each stage is important to the research community's ability to produce knowledge and learn from the work of others. Social tools have the potential to contribute something to each of these stages. But they also have the potential to challenge the ways in which research is done. We therefore discuss each of these stages in turn and examine how social media can challenge and enhance current ideas and practice.

There is no single 'right way' for researchers to use social media. How you use them will depend on you, your discipline, those around you and the research you are doing. This guide should, however, provide you with the information and ideas to make an informed decision about what to use and how.

‘Without social media connections I simply wouldn’t have been able to be in a research community like someone campus-based.’

Alun Salt (Archaeoastronomist)



Collaboration and social interaction run through all aspects of the academic research cycle. The research community has traditionally used a variety of mechanisms to facilitate collaboration between researchers: researchers are organised into departments and research groups; they meet at conferences and meetings; and they come together to organise journals and edit books and so on. These forms of collaboration require researchers to be located in the same place at the same time. Some funders have recognised the problems this can cause, and have provided specific funding to encourage research groups to work together across departmental, institutional and national boundaries. Social media, however, open up new forms of collaboration that are not so bounded by time, place and access to funding.

The opportunity to identify and then communicate with other researchers in your area(s) of interest can be highly valuable. This kind of academic correspondence has always happened but it has been energised with the development of the Internet. Maintaining one-to-one correspondence with everyone who might be useful to you however, quickly results in information overload. The many-to-many forms of communication that characterise social media offer a more manageable way to stay in touch with a wide variety of researchers with whom you share interests.

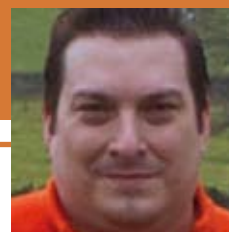
i. Identification of knowledge

Finding information is a key aspect of research. Researchers use a range of professional filters to help them to narrow down what to look at. These filters come in different forms, but include focusing on a particular set of peer-reviewed journals, using bibliographic databases and information portals, drawing on the help of librarians, and attending meetings and conferences to see who else is presenting and who they are talking about. All of these techniques remain useful, but can still leave you with a feeling of information overload. Social media can help you both to discover more and to filter more effectively.

Social media can help to enhance your research capacity within the time limits and workload constraints academic researchers usually face. They can help because they enable you to harness your network to help with both discovery and filter. If your network includes ten researchers in your discipline who tell you what they are reading and flag anything that is particularly valuable you are likely to save a lot of time. The social citation and social bookmarking tools discussed in Section 2 are particularly useful for this function.

‘The reasons that made me start using social media are because it allowed me to make connections with people I couldn’t realistically meet physically. It’s not practical from where I live to go down to London for an hour’s seminar at 4pm.’

Alun Salt (Archaeoastronomist)



‘I often get information about my job and research from online sources, blogs, twitter, comments, which might point me towards more traditional pieces that I should read.’

Cameron Neylon (Senior Scientist, Biophysics)



ii. Creation of knowledge

Social media are entering the world of research slowly but with some surprising results. For some researchers, the idea that social media and tools might have a value in research may come as a surprise. The generation of data, whether in the laboratory or the library, is often seen as the main aspect of the job. Literature searches, publication and dissemination are important, but why would you need social media, especially when there are real risks in communicating what you are doing while you are doing it? Moving findings into the public domain before they are ready can endanger your ability to publish and potentially provide people with ammunition that they can use against you. Why make your mistakes in public? Despite the risks however, there can be real benefits for researchers who feel able to share ideas and to draw on others for advice. As ever, it is a question of balance and of building positive relationships with your collaborators.

Researchers are right to have concerns about online disclosure of unpublished materials. But the benefits can include:

- more effective collaboration
- opportunities to forge new collaborations and benefit from the experience of others
- drawing in expertise to help with research processes (use of techniques, methods and analysis)
- receiving feedback as you go rather than waiting until you reach high stakes moments like submitting to journals and presenting conference papers
- raising the profile of your work more rapidly than conventional academic publishing allows.

‘ Last week, I needed to know why my cells were dying in culture. For some reason they just weren’t growing. So I posted my question on Facebook asking if someone knew how to look after a certain set of cells. A friend got back to me and told me to double the use of my foetal calf serum in my media. Once I did that, it worked a treat. ’

Alexander Davenport (Research Assistant, Hemato-oncology)



Managing the balance between openness and disclosure requires you to think carefully about how you work and what you are trying to achieve. There is no right or wrong answer here.

iii. Quality assurance of knowledge

There are strong traditions of quality assurance in research. Mechanisms that regulate and improve research quality include:

- competitive funding mechanisms
- ethical approval
- academic line-management
- peer scrutiny at conferences
- peer review
- publication
- post-publication review
- citation

Before a piece of research is undertaken, published and gains influence, many people must give their approval. This should provide an effective filter so that researchers read and use research outputs that are of high quality and utility. There is always more information than one researcher can read; and the filtering processes can be slow, bureaucratic and challenging for newer researchers and newer ideas.

‘ I am attempting to get a paper published in an academic journal, but the really long lead time from first draft to publication is very off-putting as is the completely opaque process and the lack of any useful guidelines. I think traditional academic journals are really difficult to access for the first time because they tend to come across as more of ‘who you know’ than ‘what you know’. ’

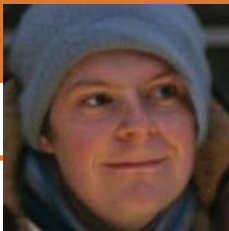
Ruth Fillery-Travis (PhD, Archaeology)

This guide is not the place to discuss the value and shortcomings of conventional scholarly quality assurance.⁴ The contrast with social media is notable however, since they offer anyone the opportunity to publish anything without regard for existing notions of quality and authority. Social tools such as blogs are freely available, and enable anyone with access to a computer to offer information and opinions to the world without any filtering at all. Inevitably, this means that the immense amounts of information available on the web range in quality from the sublime to the awful or ridiculous. Ironically, the high-quality scholarly research that has been carefully prepared and passed through so many quality filters is often unavailable to general web users, since it is owned by publishers who need to charge for access.

4. For more information on this debate, see the Research Information Network publications *Quality assurance and assessment of scholarly research: A guide for researchers, academic administrators and librarians (2010)* and *Peer review: A guide for researchers (2010)*

But social media are not just about an explosion of information. They also provide users with tools to filter, recommend and comment on quality. Social bookmarking and social citation tools provide researchers with the opportunity to share recommendations. Some are also capable of aggregating the collective recommendations of a disciplinary community so you can gain an overview about where value might lie. Moreover, tools such as blogs, microblogs and social networks can provide an informal space where new ideas and research can be reviewed and discussed in a way similar to conventional academic conferences, but unbounded by time and place. But these recommendations and critical commentaries are conducted openly and in public. You therefore need to be careful not to make comments about people or their work that you wouldn't be prepared to make in public.

‘I believe that social media have made me a better researcher because I think a good researcher needs to be able not only to do the research but needs to be able to communicate, and formulate ideas and arguments with other people from the same field or people they know. For example, a lot of my work uses clinical trial samples and if I hadn't read about the importance of blinding my results I would have analysed my data un-blinded as suggested by one of my supervisors, and this could have skewed my results.’



Alexander Davenport (Research Assistant, Hemato-oncology)

In an information-rich world, filtering is probably as important as traditional approaches to quality assurance. Researchers need a way to assess what has been done that meets basic standards, but also to establish a priority list for what is worth reading. An effective network can be used to filter resources by drawing on information and opinions from a range of people. This process is known as ‘crowdsourcing’, a concept discussed in detail in *The Wisdom of Crowds* (Surowiecki, 2005). Sourcing information, designs and other things of value in this way works only when a network of appropriate size and expertise is in place, and this does not start as soon as users sign up to any particular service. The importance of network building and curation is discussed in more detail later in this guide.

iv. Dissemination of knowledge

Social media are particularly useful in disseminating information. Whatever you feel about changing the way you do your research or about the challenges to scholarly quality assurance processes, the idea of disseminating your research more widely and more effectively is probably appealing. Social media are above all about communication and are therefore ideal for researchers who wish to make their research more widely available.

‘ I first started using social media because I believe in science communication; I think it is important that as a scientist you engage with the public so as to not seem arrogant when discussing controversial issues. ’

Alexander Davenport (Research Assistant, Hemato-oncology)



When considering how best to share your research however, there are a number of questions that you are likely to want to think about. These include:

- What is the appropriate tone for publication of scholarly ideas via social media? Do I write as if I were producing a conventional academic article or do I need a different approach?
- What should I publish and when? Do I wait for things to be published in academic journals or can I start dissemination earlier?
- Are there intellectual property and copyright implications if I make ideas and results available using social media?
- Who is my audience? Social media can generally be read by anyone and so it is possible that your Head of Department, your peers, your research subjects and the general public may all read what you write.

The answers to these questions are likely to be personal and depend on the nature of your research.

‘ At this early stage in my career my primary method of dissemination is through my blog, along with rarer opportunities to present at conferences or give posters. ’

Ruth Fillery-Travis (PhD, Archaeology)

4

4. Social media tools for researchers

There are a wide range of social tools available for individuals to use. Section 2 included a lengthy list of social tools grouped into key categories. This section will examine seven types of social tool that may have particular applications for researchers.

We have provided examples of each type of tool with some commentary. The lists are not definitive and there are many more tools out there; with a little research you will be able to turn up others which may be as good or better.

Social and professional networking tools

Social networking services such as Facebook are probably what most people think of when they think about social media. Social networking tools enable groups of people to communicate, store details about each other, and publish information about themselves. Typical functionality provided by social networking services includes options to:

- post information about yourself in the form of a profile
- post short snippets of information as status updates
- post photos and files
- comment on other people's content
- engage in one-to-one and many-to-many conversations
- create private or public spaces for themed discussions

Social networking services draw together a variety of tools and provide spaces for a range of different groups to interact and so it can be difficult to generalise about how they work. Each service is different, offers different functionality and perhaps most importantly has its own culture. Such cultures are largely the product of the people who are active participants. For example, many users of Facebook feel that the site should be used exclusively for social purposes. On the other hand, LinkedIn is used mainly for professional networking. But cultures grow and change in response to how participants use the service.

There have been a number of attempts to launch social networks focused on the needs of researchers. To date, none has become an obvious market leader, and researchers remain scattered across a range of social networking services.

Social and professional networking tools nevertheless offer a range of opportunities to researchers. Perhaps first and foremost they provide a way to keep track of people connected to you professionally. If you become an active user they can also offer opportunities to build and maintain professional relations and provide a forum for collaboration.

Social networking services include:

- **Facebook** (www.facebook.com) is still the market leader. Many people use it mainly for social rather than professional activity.
- **LinkedIn** (www.linkedin.com) is a professional networking site. It is more popular in business than in academia but offers a range of functionality that suggests it may be useful for researchers.
- **Friendfeed** (<http://friendfeed.com>) is designed as an aggregator of other social media tools, but it shares many features with other social networking services. Friendfeed was bought by Facebook in 2009, so the future of the two services is likely to be tied together.

Researcher-specific social networking services include:

- **ResearchGate** (www.researchgate.net) is a social networking service aimed at scientists and other researchers. It offers a range of functionality including a semantic search engine that browses academic databases.
- **Graduate Junction** (www.graduatejunction.net) is a social networking service aimed at postgraduates and postdoctoral researchers.
- **MethodSpace** (www.methodspace.com) is a social network service for social scientists run by the publisher Sage.
- **Nature Network** (<http://network.nature.com>) is a science-focused social network service run by Nature Publishing Group.

Which social networking service is the best for you is likely to depend on personal preference, your research topic, your location and probably most of all on your discipline. It is worth experimenting with more than one to see which one offers you the most value.

‘Friendfeed allows me to access a network of colleagues rapidly, and get insight and opinions on a convenient schedule, because active topics are constantly highlighted. It is much more convenient than email.’

Anna Croft (Lecturer, Organic Chemistry)



Social bookmarking

Social bookmarking sites allow users to store, tag, organise, share and search for bookmarks (links) to resources online. Tagging bookmarks with appropriate terms means that they can easily be found again without the need to search for precise words. Unlike file sharing, the resources themselves are not redistributed, only bookmarks which point to their location. Such websites are an extension of bookmark files in web browsers but have many advantages over browser-linked information. The information is available from any browser and is automatically backed up for security. Many web sites offer the opportunity to tag pages to social bookmarking services by clicking on icons at the bottom of the page. Most social bookmarking tools also allow you to insert a button directly into your browser for easy tagging.

The social element of these services means that users can see all items which share the same tag(s) irrespective of who stored the information. By sharing tags, users discover resources they might not otherwise have seen, and benefit from the knowledge of other people – sometimes strangers – who share their research interests.

Folksonomies

Creating and sharing tags enables an individual or a community to draw together their tags and examine what is most popular and which tags relate to each other. These collections of tags are sometimes described as a 'folksonomy' to distinguish them from conventional ordered, official and hierarchical taxonomies of information. The advantage of a folksonomy is that it is dynamic and highly flexible and can be created 'as you go' in a way that suits a particular purpose. Because folksonomies are created in an open and social way, users can define tags specific to their needs and see how other users cross-file information under multiple tags, leading to serendipitous discovery of links they would not otherwise have seen.

Tools for social bookmarking include:

- **delicious** (www.delicious.com) one of the older and more popular services. Although numerous features have been added to the user interface in recent years, it remains one of the simpler and more effective bookmarking tools. Yahoo, which owns delicious, recently announced an intention to sell the service, so its future is presently unclear.
- **diigo** (www.diigo.com) is a more complex service which, in addition to bookmarking sites, allows users to highlight content from marked pages, either directly via the site or via a toolbar which users must install in their browser.
- **BibSonomy** (www.bibsonomy.org) is an academically-orientated service with many of the features of delicious plus the metadata gathering capabilities of a social citation service such as CiteULike (see overleaf). This is useful since it allows all resources – from informal Web sources to formal published resources – to be stored and accessed in a single location.

Social citation-sharing

Social citation-sharing tools are designed specifically to enable researchers to manage their references and to share information about what they are reading. They are first and foremost reference management systems, and share many features with social bookmarking tools. But they are specifically designed to be used by researchers and other information professionals.

They allow you to store, organise and retrieve references and notes about literature you have read or seen. In addition to a traditional reference management tool however, they also offer the ability to connect and share with others.

It is useful to share with other researchers because you are likely to identify more relevant literature as a group than as a single individual. Furthermore, you are likely to connect to people whose interests are similar to but different from yours. You can't be a specialist in all aspects of your discipline, but you can follow someone else whose interests overlap with yours.

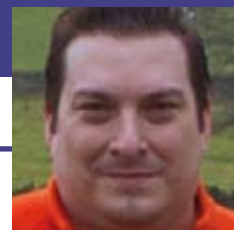
Tools for social citation sharing include:

- **CiteULike** (www.citeulike.com) enables you to store, tag and retrieve bibliographic information. CiteULike emphasises the social elements of citation sharing and encourages you to make 'connections' with other researchers and to 'watch' what other people are adding to their library.
- **Mendeley** (www.mendeley.com) describes itself as a reference manager and academic social network. It integrates with Word and a range of other applications (including CiteULike).
- **Zotero** (www.zotero.org) is another bibliographic service which contains some social/collaboration elements.

‘ I’m happy to have people see what I’m reading. It means they’re following what I’m doing. People copying references doesn’t bother me. If my work could be reconstructed simply by reading the bibliography then I doubt it would be worth doing anyway.

It’s not the 99% of work you already know about that gives an online bibliography its value. It’s the 1% added by someone working on the same problem in another field that changes your work. Tags can do the hard work of finding relevant research in other disciplines. ’

Alun Salt (Archeoastronomist)



Blogging

A blog is a type of website, or part of one. Usually a blog is maintained by an individual or small group and presents a mix of opinion, news and other types of content. The posts on a blog are usually organised in reverse chronological order so that the first entries that you see are the most recent ones.

Blogs can be used for a wide variety of purposes. At their most basic they can provide you with an easy way to make some of your data or writing available on the web. Most blogs also offer a comment feature and they frequently become temporary forums for discussions prompted by an original post.

Blogs can be useful to build your profile as a researcher, provide a vehicle for collaboration and to get ideas.

Blogging tools include:

- **Blogger** (www.blogger.com)
- **Wordpress** (www.wordpress.org)
- **Posterous** (www.posterous.com)

In the past there were substantial differences in functionality between different blogging tools; but as the tools develop the differences are becoming less obvious. Wordpress is probably the most popular and offers a wide range of functions, while Posterous is designed to be simple and quick to use. But in practice the differences are small. It is what you write rather than the tool that you use that is most significant.

Almost all the researchers interviewed for this project maintain a blog of some kind. They are listed below to provide some examples of different approaches to research blogging.

- **alunsalt.com** (<http://alunsalt.com>) – a personal and eclectic academic blog maintained by an archaeoastromist.
- **Finds and Features** (<http://findsandfeatures.wordpress.com>) – archaeology blog.
- **Fresh and Crispy** (<http://blog.cpjobling.org>) – e-learning blog.
- **Love of History** (<http://constantinakatsari.wordpress.com>) – history, ancient history and archaeology blog.
- **My exciting PhD journey!** (<http://elenaphd.wordpress.com>) – a blog about one woman's experience of doing a PhD and the education-focused research she is undertaking.
- **PhD Blog (dot) Net** (<http://phdblog.net>) – education blog which discusses student learning, higher education and social media.
- **Science in the Open** (<http://cameronneylon.net>) – science blog which focuses on the technical and social issues involved with open research.
- **Starting out in Science** (<http://begsci.wordpress.com>) – science blog aimed at undergraduates and new graduates.

‘ The one thing which is most important to my professional life is my blog, because it is the most constructive and it gets good traffic because of the resources I post. I feel it is good because it gives enquirers a good idea of who I am, allows me to publicise myself in a way I control, and I enjoy being able to help others. ’

Ruth Filery-Travis (PhD Student, Archaeology)

Microblogging

Microblogs offer a way to make small pieces of writing or data available online. They usually include features that enable you to build up a network of followers or friends. Typically, people provide a single sentence or image as part of a microblog post. As with blogs, however, people can comment on what you have posted, and so microblogs can provide a forum for extended interactions.

Microblogs encourage conversations that would not take place in any other medium. Whereas email generally offers one-to-one communication, microblogs are a many-to-many form of communication. This can create a web of interactions that can initially be confusing to follow.

The challenge with microblogs is getting past the simplicity. Since a microblog will often allow you to share only a sentence or so, it can feel that you can't express yourself in a meaningful way. However, microblogs are frequently used to share links that point towards more substantial resources. Conversation on microblogs is made up of short exchanges, fast flowing and multi-faceted. They often become very busy when news is breaking that matters to your network.

Microblogging tools include:

- **Twitter** (www.twitter.com) is the clear market leader, a general tool used for a wide range of purposes. The discussion that you participate in will vary depending on who you are following and how you engage with them.
- Other microblogs include **Tumblr** (www.tumblr.com) and **Plurk** (www.plurk.com) which offers a stranded structure for the microblog conversations.

‘Microblogging allows me to reach a wider and broader audience quickly and helps in interactive problem solving, especially for topics at the margins of my speciality.’

Anna Croft (Lecturer, Organic Chemistry)



‘There is a significant portion of the research and development that I do that would simply be impossible without Friendfeed and Twitter.’

Cameron Neylon (Senior Scientist, Biophysics)



Research and writing collaboration tools

There is a range of tools which enable researchers to collaborate in writing and research tasks. Wikis are websites which allow easy creation and editing of interlinked web pages via a web browser. They are extremely flexible, and so they have been put to a wide range of uses, including community websites, personal note taking, corporate intranets and knowledge management systems. Most wikis allow administrators to adjust access rights to the site or to individual pages, so that they can choose who is allowed to add to or modify the content on the site.

Wikipedia

Many academics have probably come across wikis through the influence of Wikipedia, the world's most successful online encyclopaedia, now containing over 3.3 million English language articles. Wikipedia is built using open source software called Wikimedia; this software can also be used to underpin other kinds of wiki.

Its amateur and community-based nature has led some researchers (as professional information users) to be highly sceptical of it as an information resource. Obviously an open wiki, which anyone is free to edit, cannot make absolute claims about reliability. But some research indicates that Wikipedia is equal to, or even outperforms, comparable conventionally-edited encyclopaedias in terms of accuracy (Giles, 2005; Besiki et al. 2008; Rajagopalan et al., 2010).

As well as text, many wikis accept multimedia input, thus increasing the range of possible uses. In the academic sphere, wikis are used by some individual researchers as flexible online notebooks. But the true strength of the technology is shown when such sites are used collaboratively by teams, for example as laboratory notebooks, or for creating, maintaining and publishing documentation on a project or team activity.

Wiki collaborative tools include:

- **PBworks** (<http://pbworks.com>) is a commercial service which operates on a 'freemium' basis, with basic features being offered for free and more advanced features for a fee. Content can be created or edited via a WYSIWYG ('what you see is what you get') interface, or by editing the HTML source of the page.
- **Wikispaces** (www.wikispaces.com) is a similar hosted wiki site which offers a choice of public or private wikis and currently offers free hosting for education projects.
- **Wikia** (www.wikia.com) is a free wiki hosting service, deriving most of its income from advertising. In this model, all user-provided content is public with no option to choose a private site.
- Wiki facilities are also available within many virtual learning environments such as Moodle or Blackboard.

In addition to wikis, other collaborative writing tools are available. Google Docs (<http://docs.google.com>) is a free, Web-based service from Google, with word processor, spreadsheet, presentation, online data collection forms, and data storage. The Document part of the service allows multiple authors to collaborate in producing and editing documents in a format similar to Microsoft Word (the most recent versions of Microsoft Office now also offer an online facility for licence holders). As with most wiki sites, each document has a full revision history, enabling editors to track back and restore previous versions if desired. Apart from eliminating the need for email circulation of drafts, online authoring also means that all contributors can be sure they are working on the current version of the document.

The Zoho Office Suite (www.zoho.com) is a Web-based commercial service which offers an even wider range of facilities which are free to use at the entry-level but charge fees for more extensive or professional use.

Another useful collaboration tool is Dropbox (www.dropbox.com), a Web-based file hosting service which enables users to store and share files and folders with others across the Internet. If users install Dropbox on their computer or mobile internet device, the service provides an easy-to-use interface via a virtual shared folder on the desktop; there is also a Web-based service if local client is not installed.

‘ I recently used a wiki with a couple of colleagues to put together a funding proposal. Even though we met up face-to-face, it was useful for collaborative editing of texts, sharing and discussing ideas generally. ’

Andrew Coverdale, (PhD Student, Education)



Project management, meeting and collaboration tools

As mentioned earlier, wikis are often used as project management tools, enabling members of a team to contribute to and receive updates on documentation and progress. Blogs are also sometimes used for this purpose, even if only to document team meetings and disseminate outcomes. There are many more specialised tools however, which can be grouped under two broad headings; communication tools and more specialised project management tools.

One of the best known Internet-based communication tools is Skype (www.skype.com). In addition to person-to-person IP telephony, Skype also provides screen-sharing and group conferences for up to 25 people, with additional features including instant messaging (useful for sharing links), file transfer and video conferencing. The basic computer-based service is free for calls over the Internet, but calls to phones incur small charges. These features make Skype a cheap but powerful tool for collaborators working at a distance from each other, or for gathering research data (for example through interviews) without the need to travel.

Adobe Connect (www.adobe.com) is a commercial product which provides web conferencing, online presentations, and user desktop sharing. The service is based on Adobe Flash, and licensing costs are based on the number of users. There are many similar tools available such as Citrix GotoMeeting (www.gotomeeting.com), Elluminate (www.elluminate.com) and DimDim (www.dimdim.com), which provides online meetings for up to 10 users.

‘ Skype is very useful for collaborative contacts...Most of my colleagues are international so when I want to contact them I use Skype quite extensively. ’

Anna Croft (Lecturer of Organic Chemistry)



Specialist project management tools also provide conferencing facilities, but also a range of other attributes such as calendars, file sharing, document management and discussion boards. Huddle (www.huddle.com) offers one basic free workspace with rising charges for increasing numbers of projects and users. Basecamp (<http://basecamphq.com>) also offers a basic free workspace option but with no file sharing, and a range of charges for other options. These tools are valuable in eliminating or reducing travel associated with project management, thereby reducing the carbon footprints of research projects.

‘ Skype is a critical tool for me. It must save me hundreds of pounds in call fees and video conferencing setups. I probably use it at least twice a week. ’

Cameron Neylon (Senior Scientist, Biophysics)





5

5. Managing information overload

You don't have to use social media to feel overwhelmed by information. The development of the Internet means that we have all grown accustomed to being able to consult a vast array of scholarly and other resources from the comfort of our desks. Most newspapers and journals are available online and an increasing number of books are also available in digital format. Our email inboxes are also frequently full to bursting and the number of TV and radio channels continues to grow. Information is everywhere, even before you begin to move into the world of social media.

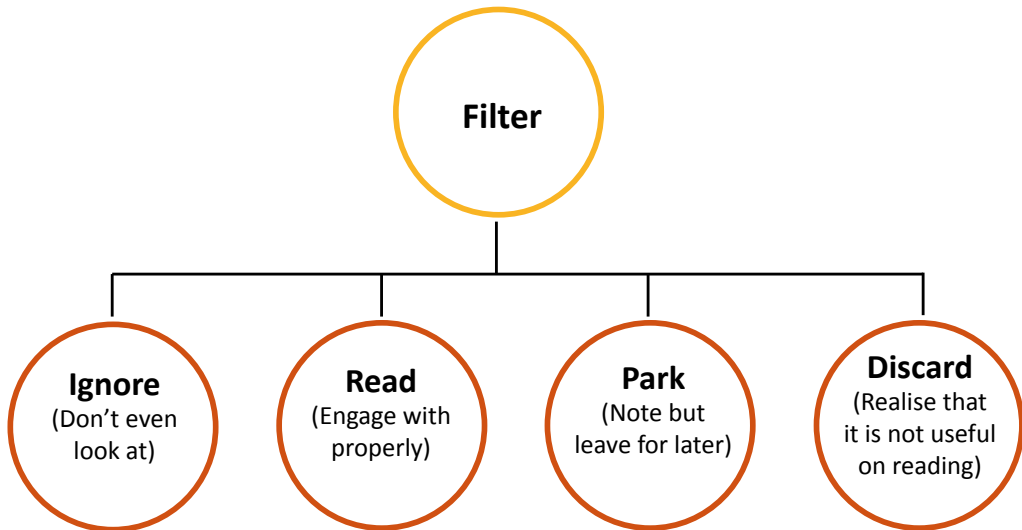
Many researchers may feel that the idea of opening up yet another source of information is unappealing. If you feel that you have fallen behind in reading the core peer reviewed journals in your area, why would you want to start looking for new sources like blogs which are, by their nature, less reliable in quality? But while social media have resulted in a vast amount of additional content, they also provide a mechanism through which information overload can be managed. This section discusses how to use a mix of time management, technical skills and social media techniques for that purpose.

Approaches to reading

As a researcher your time is limited and only some of it can be dedicated to resource discovery and reading. But social media can help to use your time effectively. Information and knowledge is your currency, but you are routinely surrounded by people who have read things that you have not even heard of. It is therefore easy to feel under pressure to read more. But researchers have to accept that there are limits to what they can read. Often this means that when undertaking a literature search you need to decide whether to read, park or discard a particular resource.

Social media are usually a many-to-many form of communication, and it can therefore be overwhelming to treat them in the same way as email, more typically a one-to-one form where you read everything (or at least try to). In order to draw value from a social tool you will need to develop a network that is large, diverse and active. If you try to read everything that everyone mentions you will quickly be overwhelmed. Successful users of social media are comfortable with the idea that they will miss some interesting things that are being discussed by their network. The model of engagement perhaps looks more like Figure 2 (overleaf).

Figure 2: Managing what you read



Social tools can filter content using both technical and social techniques. They can also be useful in helping you to park things easily-retrievable way. For example, social bookmarking or social citation tools allow you to park and retrieve content that you believe to be useful, but which you haven't had time to examine.

Tools for filtering

As can be seen from the diagram above, the quality of your filter is critical, since as it enables you to focus on the most interesting resources and help you decide whether to ignore, read, park or discard. A range of tools can support you in doing this. A frequent complaint about social media is that the volume of information – noise – is overwhelming. The appropriate response is to develop a better approach to filtering the signal. You need to get good at filtering out the background noise so you can focus on what is important to you.

Among the most powerful filtering tools is RSS, a format used to publish frequently updated works such as blog entries, news headlines, audio or video. An RSS document (called a 'feed') includes full or summarised text, plus metadata such as publishing dates and authorship. RSS feeds benefit readers who can subscribe (usually for free) to timely updates from favoured sources, and also aggregate feeds from many sites into one place using software called an 'RSS reader', 'feed reader', or 'aggregator'. If you are a content producer (e.g. publisher or blogger), RSS offers a convenient way of bringing your content to the attention of many readers.

RSS enables information from many different sources and types of sources to be read efficiently without the need to remember and visit many different sites. RSS readers may be text-based like Google Reader (www.google.com/reader), or may take a more visual approach to presenting information while still following the same principle of aggregation. This is normally referred to as a 'dashboard', which consists of a grid of user-chosen 'widgets'. Examples include tools such as iGoogle (www.google.com/ig), Google's visual 'landing page', or Netvibes (<http://www.netvibes.com>). Although aggregation will allow you to process information more efficiently, discovery of relevant information is still a vital skill for researchers. This is where having an appropriate network can be extremely valuable.

Creating the right network

Tools can help you to manage or avoid information overload, but it is even better to combine tools with the knowledge and expertise possessed by your network. Social tools are designed to help you to harness the power of your networks for a range of purposes, including the identification of useful research information. However, new users face a challenge in building a network that will enable them to enjoy this kind of value.

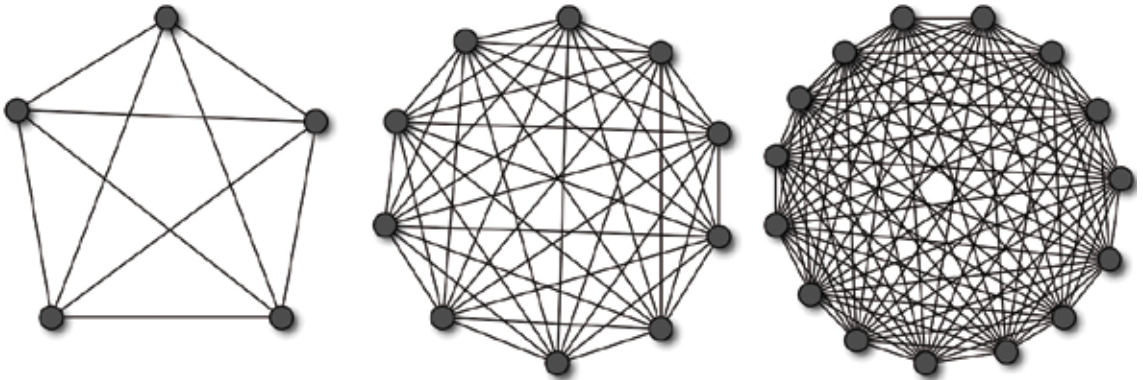
Watching others does not always help, since you see their networks and information about things that they are interested in rather than what's important to you. However, when you start to build your own network it will begin to channel the kinds of things that you are interested in.

Social media therefore require you to build a network for yourself; and you probably need to build your network fairly quickly to keep your motivation going. Services such as Facebook are successful because they automatically recommend connections based on shared interests or shared contacts. However, you probably shouldn't leave the creation of your network to a machine. It is important that you actively go looking for the right people to add to your network.

There are benefits in having large and diverse networks, but over-complexity is the enemy of efficient communication, leading to noise rather than information. At some point you reach information overload and find that you are missing most of the interesting stuff. The key question for researchers is: at what point does a useful network become too big? Here, some network theory may help you to understand how successful networks work, and also to develop your own use of social media.

Network theory tells us that networks increase in complexity faster than they increase in size. So a network with 5 members has 10 connections, one with 10 members has 45 connections, and one with 15 members has 105 connections.

Figure 3: How networks increase in complexity



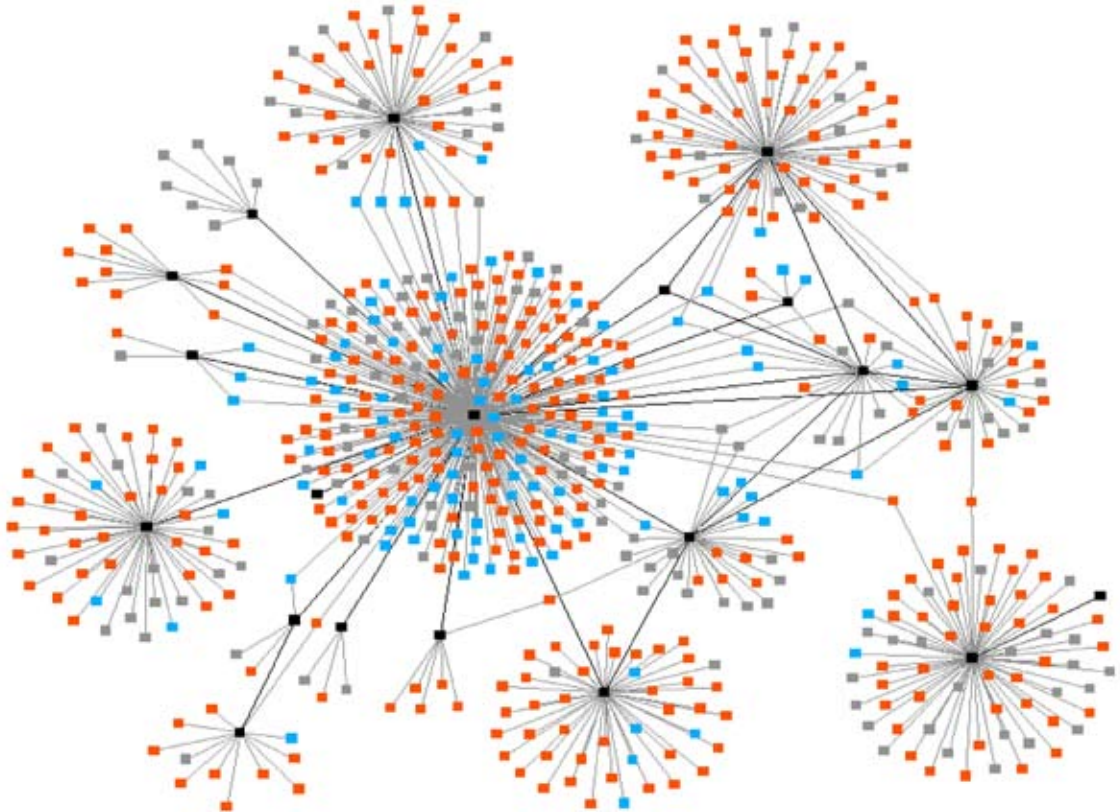
A solution to the problem of over-complexity is to organise large networks as smaller tightly-connected clusters which are joined together by a few connectors. In the tightly-connected local clusters, information spreads quickly and without much discrimination, while the long-range interactions with fewer connections act as a filter which allows a limited amount of information to flow from one local cluster to another (Montanari & Saberi, 2010). In practice, local clusters are associated with shared interests, such as academic disciplines, or are geographical, such as institutions. Connectors are individuals who serve a vital role in the network by spanning what would otherwise be isolated communities.

‘ My network is comprised of people I know, people I know from their blogs or online presence who I haven’t met in person. ’

Chris Jobling (Lecturer, Engineering)



Figure 4: The structure of social networks



Given what we have learned about the structure of networks, you may wish to consider carefully where you sit in your networks. Being a connector between two networks can be invaluable, but being a connector between twenty can be exhausting. Therefore, thinking about the shape of your network, and how you manage your place in it, is vital.

‘ I now have a network of individuals who I respect and am confident in their work. The network discovers and filters and discusses. I have connected my research to the real world in a way that would not have been so easy before and maybe not possible. ’

Terry Wassall (Principal Teaching Fellow, Sociology)



6. Final thoughts

This guide has shown you how researchers can use social media. We began by clarifying what is meant by the term social media before exploring how social tools can be used as part of the traditional cycle of academic research and publication. We then moved on to examine social tools that may be useful for researchers. Finally we examined a range of strategies that researchers can use to deal with information overload.

Social media are not presented here as a panacea for either the research community in general or individual researchers. However, researchers who are active users of social media feel they offer them benefits in their professional life. By speeding up communication and enabling new forms of collaboration, social media also have the potential to spark exciting new research, and to increase productivity.

Whether the promise of social media is realised will depend on how the research community engages with them. If they remain on the periphery of research culture their impact will stay limited. The social nature of these tools means that they become more useful with every researcher who starts to use them.

We hope this guide has answered some basic questions. But if you really want to understand what social media can do for you and your research, you need to start experimenting.

7. Further reading

You do not have to become a 'social media expert' to use social media as part of your research practice. However, if you are interested in the conceptual foundations of some of the discussions in this guide you may be interested in the following books.

Weinberger, D. (2008). *Everything is Miscellaneous: The Power of the New Digital Disorder*. Henry Holt.

Shirky, C. (2008). *Here Comes Everybody: The Power of Organizing Without Organizations*. Penguin Press HC.

Surowiecki, J. (2005) *The Wisdom of Crowds*. Anchor Books, 2005. ISBN-10: 0385721706).

8. References

- Besiki S.; Twidale, M. B.; Smith, L. C.; Gasser, L. (April 2008). Information Quality Work Organization in Wikipedia. *Journal of the American Society for Information Science and Technology* 59: 983–1001. doi:10.1002/asi.20813;
- Carr, Nicholas. (2010) *The Shallows: What the Internet Is Doing to Our Brains*. W.W. Norton, ISBN 978-0-393-07222-8
- Keen, Andrew. (2007) *The Cult of the Amateur: How the Democratization of the Digital World is Assaulting Our Economy, Our Culture, and Our Values*. Doubleday Currency, ISBN 978-0385520805.
- Gewin, V. (2010) Collaboration: Social networking seeks critical mass. *Nature* 468(7326): 993–994.
- Giles J. (2005) Internet encyclopaedias go head to head. *Nature* 438: 900–901.
- Darren W. Logan, Massimo Sandal, Paul P. Gardner, Magnus Manske, Alex Bateman. Ten Simple Rules for Editing Wikipedia. *PLoS Comput Biol*, Vol. 6, No. 9. (2010), e1000941. doi: <http://dx.doi.org/10.1371/journal.pcbi.1000941>
- Montanari, A., Saberi, A. (2010) The spread of innovations in social networks. *Proceedings of the National Academy of Sciences USA*. 107(47):
- Procter, R., Williams, R., & Stewart, J. (2010). *If you build it, will they come? How researchers perceive and use web 2.0*. London: Research Information Network. www.rin.ac.uk/system/files/attachments/web_2.0_screen.pdf
- Rajagopalan et al. (2010). Accuracy of cancer information on the Internet: A comparison of a Wiki with a professionally maintained database. *Journal of Clinical Oncology* 28:7s, 2010. Retrieved 2010-06-05).
- Shirky, C. (2010) *Cognitive Surplus: Creativity and Generosity in a Connected Age*. Allen Lane. ISBN 978-1594202537
- Surowiecki, J. (2005) *The Wisdom of Crowds*. Anchor Books, 2005. ISBN-10: 0385721706).

The full list of resources outlined below are available online at www.rin.ac.uk/social-media-guide

Web materials 1: Links and Resources

- Audio and video tools
- Blogging and Microblogging tools
- Examples of academic and research blogs
- Social networking services
- Location based tools
- Social bookmarking, news and social citation tools
- Research and writing collaboration tools
- Presentation sharing tools
- Project management, meeting and collaboration tools
- Information management tools
- Virtual worlds

Web materials 2: Researcher case studies

- Andrew Coverdale (*PhD student, Education*)
- Anna Croft (*Lecturer, Organic Chemistry*)
- Alexander Davenport (*Research Assistant, Hemato-oncology*)
- Elena Golovuskina (*PhD student, Education*)
- Pat Heslop (*Professor, Molecular Cytogenetics and Cell biology*)
- Chris Jobling (*Lecturer, Engineering*)
- Constantina Katsari (*Lecturer, Ancient History*)
- Cameron Neylon (*Senior Scientist, Biophysics*)
- Alun Salt (*Archaeoastronomist*)
- Ruth Filery Travis (*PhD, Archaeology*)
- Terry Wassall (*Principal Teaching Fellow, Sociology*)

9. Glossary of key terms

Activity stream – an activity stream is an aggregated list of recent activities performed by an individual and their contacts, typically on a single website. For example, Facebook’s News Feed is an activity stream which filters attention by bringing update activity to the top of the user’s ‘wall’ – the home page they see when they enter the site.

Aggregators – refers to a web site or computer software that aggregates information distributed across multiple online sources into a single location.

Blogging – short for ‘Web log’, blogs are websites composed of serial short or medium-length entries. Entries are commonly displayed in reverse-chronological order. Most blogs are interactive, allowing visitors to leave comments and even message each other via widgets on the blogs and it is this interactivity that distinguishes them from other static websites. Blogs may be maintained by an individual or collaborating group.

Browser – short for ‘Web browser’. Software which can access and display text, images and multimedia information from the Internet, e.g. Internet Explorer, Firefox, Google Chrome, Safari, etc. As browsers become more powerful and sophisticated they increasingly do away with the need for free-standing software to access online materials and services.

Cloud computing – Internet-based computing where shared resources, software and information are provided to computers and other devices on demand. Access to the distributed services, hosted at a remote location, is most often via a Web browser, but sometimes requires specialised clients for certain applications.

Collaborative writing – projects where written works are created by multiple people together (collaboratively) rather than individually. Some projects are overseen by an ‘editor’ or editorial team, but many grow without any of this top-down oversight.

Content – the information encountered as part of the user experience on the Internet. This may include, among other formats: text, images, sounds, videos and animations.

Crowd sourcing – a distributed problem-solving and production model. Problems are broadcast to an unknown group of solvers in the form of an open call for solutions. Users – known as the crowd – typically form into online communities, and the crowd submits solutions. Many social technologies can be used in this way, for example blogging, microblogging, social bookmarking, etc.

Folksonomy – flexible, informal user-generated categories (metadata tags). These kinds of collections of tags are described as a ‘folksonomy’ to distinguish them from conventional ordered, official and hierarchical taxonomies of information. This deceptively simple innovation hides a powerful and dynamic approach to information processing which relies on crowdsourced metadata.

Likes – deceptively trivial, Like buttons or links attached to items on social media sites serve the important function of transmitting the item across networks by bringing it to the top of the activity stream.

Live streaming – multimedia content that is viewed while being delivered by a streaming provider. This can mean live broadcasting of video or audio over the Internet, or can be used to allow the viewer to consume the content without waiting for large files to download.

Many-to-many – a term that describes a communication paradigm and associated media forms such as file sharing, blogs, wikis and tagging. This is the third of three major Internet computing paradigms (see also one-to-one and one-to-many).

Metadata – data about data. By describing the contents and context of data files, the utility of the data referred to is greatly increased. An analogue example of this is a library catalogue, the digital equivalent is the metadata contained in the header of an Internet file such as a Web page or email message.

Microblogging – a medium which allows users to broadcast short entries (typically 140 characters or less) in the form of text, a picture or a very short video clip to other users of the service.

One-to-one – a term that describes a communication paradigm and associated media forms such as e-mail, FTP, and Telnet. This is the first of three major Internet computing paradigms (see also one-to-many and many-to-many).

One-to-many – a term that describes a communication paradigm and associated media forms such as websites. This is the second of three major Internet computing paradigms (see also one-to-one and many-to-many).

Open source – computer software which the source code and other rights normally reserved for copyright holders are provided under a license that permits users to examine, change, modify and sometimes to distribute the software. Such software is often developed in a public, collaborative manner.

Participatory media – include (but are not limited to) community media, blogs, wikis, tagging and social bookmarking, music-photo-video sharing, podcasts, participatory video projects and video blogs.

Post – an individual contribution to an Internet site such as a single article on a blog, or a status update on a social network.

Social bibliography – dynamic reference lists created collaboratively by multiple contributors, e.g. by sharing a common tag on a social bookmarking or social citation service.

Social bookmarking – services which allow users to store, tag, organise, share and search for bookmarks (links) to resources online. Unlike file sharing, the resources themselves are not shared, only the bookmarks which point to them.

Social citation sharing – specialised social bookmarking services which allow users to store, tag, organise, share and search for bibliographic information. Dedicated social citation websites have the capacity to automatically locate and store metadata associated with individual references (e.g. authors, journal, date, pages, etc).

Social documents – shared documents hosted on a site such as Google Docs, etc, which allows multiple authors to contribute to and to edit a document.

Social media – describes the online technologies and practices that people use to share opinions, insights, experiences, and perspectives. Social media can take many different forms, including text, images, audio, and video. These sites typically use technologies such as blogs, message boards, podcasts, wikis, and vlogs to allow users to interact.

Social networking – the process of building online communities, often accomplished both through ‘groups’ and ‘friends lists’ that allow greater interaction on websites.

Social news – websites where users can both submit links and vote them up or down. These sites are generally designed so the content that gets voted up the most is rewarded with more exposure on the site.

Syndication – protocols which allow data published on one site to be made available to and utilised by other sites and services. Web syndication formats such as RSS (Really Simple Syndication) and Atom allow other services to aggregate and reuse content.

Tagging – a type of metadata in the form of a descriptive keyword or term associated with or assigned to a piece of information.

Virtual worlds – online communities in the form of a computer-based simulated environment, through which users can interact with one another and use and create objects.

Vlog – a video blog. Also known as vidding and vid-blogging. A vlog usually contains very similar types of content to a traditional blog but uses the medium of video/film. It is common for people to post video content to traditional blogs.

Web 2.0 – a term used to describe a new generation of Web services and applications with an increasing emphasis on human collaboration.

Web Conferencing – services used to conduct live meetings, training, or presentations via the Internet.

Wikis – collaborative websites which can be directly edited by anyone with appropriate permission.



