

Evaluating collaborative technologies – a simple method

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Collaborative technologies are complex and multi-faceted, and evaluating them (understanding how effective they are in use) is difficult. This is partly because they are complicated technical systems, comprising software, hardware and communications components; but also because they have effects upon individuals, groups and organisations. Thus to evaluate collaborative technologies in use requires us to take into account all of these different aspects.

In research I carried out on evaluation (Ramage 1999), I presented a simple method for doing this. The method starts by observing that the main issues to be considered in evaluation are not just interconnected but also occur as a series of layers. It doesn't make sense to ask about the usability of a piece of software if it perpetually crashes, and it doesn't make sense to ask about the effects on an organisation if the technology is unusable.

The kind of evaluation I am considering here is not solely technical, but crosses a range of different issues, and draws on a number of different academic disciplines (including computer science, psychology, management and sociology). This approach is applicable both to technologies in a particular context of use (e.g. implemented in a given organisation) and to a technology considered for any context.

It is worth observing that before any evaluation can be carried out, those performing it need to be clear as to what its *purpose* is. Each of the following activities can legitimately be called evaluation (as can others): studying the impact of an existing collaborative system in use in an organisation; developing a new piece of software and trying it out with potential users as part of the development process; examining a potential purchase of a piece of off-the-shelf software to be used in an organisation; a comparison of a series of different tools to look at their strengths and weaknesses. Which of these types of evaluation is being followed will make a big difference as to the way in which the evaluation is carried out, and how its results are used. However this method will help in a range of different types of evaluation.

The layers that I use are illustrated in figure 7.1 below (updated slightly from my original work). These layers are very blurred, and various issues could appear in more than one layer, but they serve as a way to make sense of the wide range of issues involved. The layers can be described as follows:

- *Efficiency*: This layer is concerned with technical issues – whether the technology works as planned without crashing, whether the software is fast enough on the hardware used, etc.
- *Effectiveness*: Even if the technology works well technically, it may not be doing what users and other key stakeholders actually need. This is the distinction sometimes drawn, originally by Peter Drucker (1974, p.45), between 'doing things right' (efficiency) and 'doing the right things' (effectiveness).
- *Usability*: Issues here are concerned with how easy the technology is to use. In the first place this is to do with the user interface design, but it also relates to accessibility issues for people with disabilities, and its use across a range of devices (such as mobile phones).
- *Standards*: In many situations, technology has to comply with standards set by government agencies (for example on accessibility issues or on interference by wireless devices). These will differ from one country to another, and their nature will depend on the application domain.

- *Individual effects*: What impact does the technology have on the individuals using it? What does it do to their work?
- *Group effects*: What effect does the technology have on the group in which its users work (e.g. the cohesion of the group)? Does it make the group more or less effective?
- *Organisational effects*: If the group using the technology is based in a particular organisation (whether private or public sector), what effect does the technology have on the organisation? Is it positive or negative?
- *Societal effects*: Does the technology have an impact on the wider society? If so, what kind of impact, and is it positive or negative?

The issues can be represented as a set of concentric circles or layers, rather like an onion (hence I have often referred to this as the onion model of evaluation):

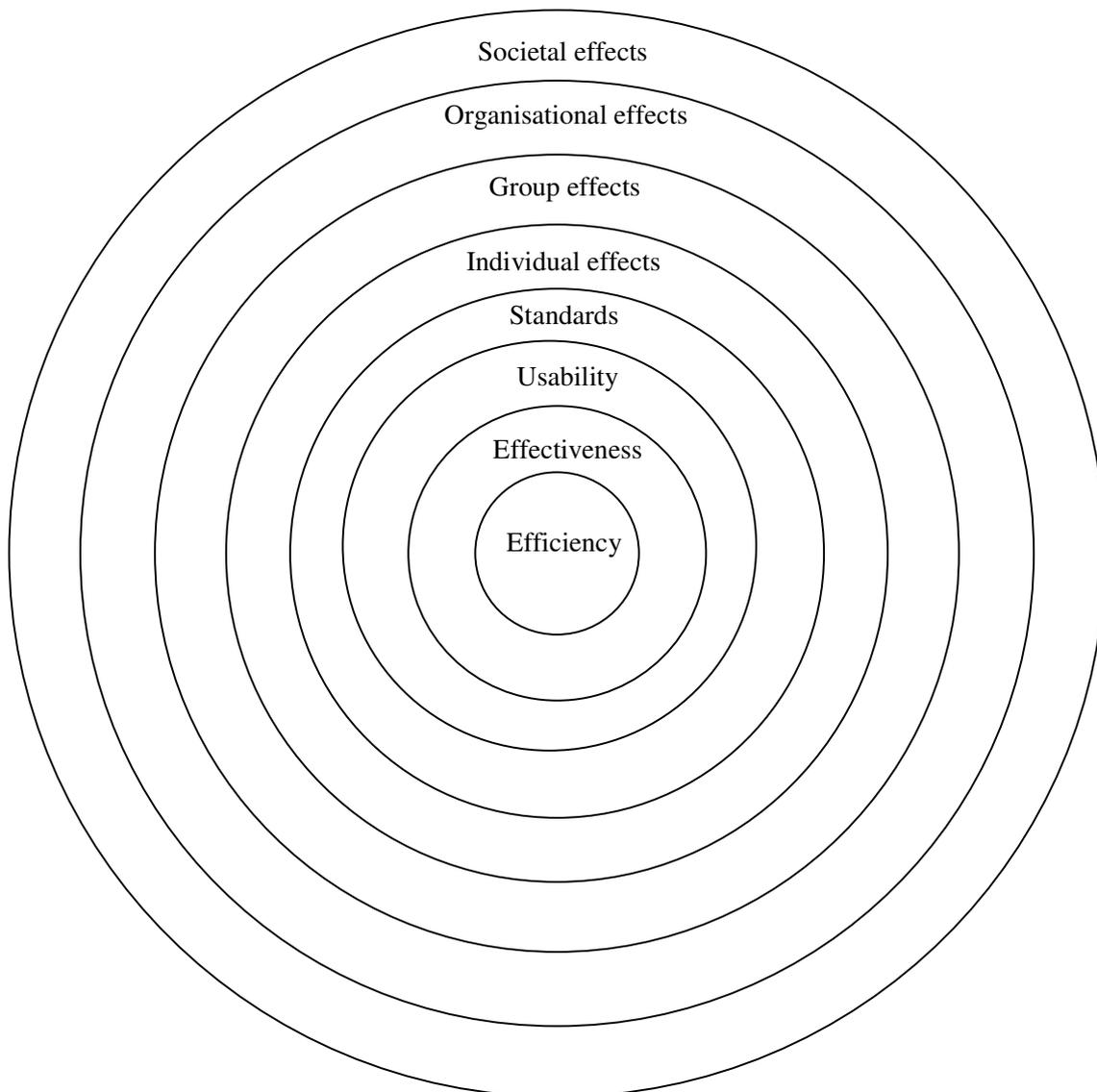


Figure 7.1: Layers of evaluation

It's worth noting that although this implies an order in which we might consider the issues, it doesn't mean that the inner layers are more important than the outer ones. However, we can also say that in moving out through the layers, we are looking at wider (and progressively less technical) issues.

The method in practice

As an example of this method in practice, consider the comparison between two currently popular collaborative technologies – blogs and wikis. They are designed for slightly different situations – blogs tend to be more individually focused, and wikis more collectively focused. However, both enable collaborative working in their different ways. The results of my example are shown in Table 1.

Table 1: Example of the method in use

Criterion	Blogs	Wikis
Efficiency	Low resource; can be hosted on own server or via third-party websites. Need to have moderately good internet connection.	Low resource; can be hosted on own server or via third-party websites. Need access to a PC with a moderately good internet connection.
Effectiveness	Editing sometimes possible with mobile devices, though commenting sometimes not. It is often better for one person to start a blog and others to comment, though some collective blogs exist and these blend into discussion forums.	An easy way for a group to create a collective website and share their ideas. Wiki tools typically store the revision history well and allow for discussion of pages as well as their creation.
Usability	Generally easy to use, well-designed interfaces. Can sometimes be difficult to find particular messages or threads.	Requires a higher level of technical ability than blogs, with use of formatting codes. Sites are usually well laid-out with plenty of documentation available.
Standards	Few relevant standards exist, though some countries have accessibility standards. Generally blogs, being text-based, work well with screen readers.	Accessibility standards will be the main relevant ones. Editing may not always be entirely accessible, although finished sites are often simple and consistent in appearance.
Individual effects	Individuals who have their own blog and post messages regularly often have a good outlet for their ideas and opinions, though need to take care about expectations (will anyone read them?) and how widely they tell people about their personal ideas.	Contributing to a large wiki can be satisfying for an individual, who is able to have an effect upon a larger project. The fact that anyone can edit entries means that individuals' work can be lost (regularly an issue on public wikis such as Wikipedia).
Group effects	Can be an excellent way for individuals in a group to share their ideas with others and to get comments. If just a few people in a group are blogging, it could make them out as unusual in a way that may or not be good for them.	Wikis are an easy way for a group to work together, but they need to agree a way of working to reduce the potential for conflicts.

Organisational effects	Similar to group effects on a larger scale. Some organizations have been quite hostile to their staff revealing things about them in their blogs; others find them an extremely useful piece of public relations.	Wikis can be a useful organisational tool, especially in small organisations, for easy creation of websites. The results are less flexible than some organisations may wish, and the finished websites may seem too alike.
Societal effects	Blogs are often said to have widened the range of people able to publish ideas, especially on political matters, and to have narrowed the gap between politicians and the public. However, they can lead to self-reinforcing debates (the so-called 'echo chamber').	Wikis as a general technology have had little societal effect, but Wikipedia in particular has had considerable effect. It is the subject of some debate as to whether it democratises knowledge or trivialises it, and the quality of the entries is likewise widely debated.

Conclusion

Evaluating collaborative technologies is not easy. There are many different kinds of issues to be taken into account. Ultimately this kind of evaluation is not so much about establishing that a particular technology is right or wrong, but how useful it is in a particular situation. I have found that the evaluation *process* is as important as the outcome of the evaluation, and that the different stakeholders involved learn many different things from that process. The method given here is a simple way of beginning that evaluation process.

References

Drucker, P. (1974) *Management: tasks, responsibilities, practices*, New York: Harper & Row.

Ramage, M. (1999) *The Learning Way: Evaluating Co-operative Systems*, unpublished PhD thesis, University of Lancaster, UK.