Prototyping e-Government Applications

Richard Heeks
IDPM, University of Manchester, UK
2001

How can you improve the success rate of e-government projects? By turning to prototyping; a technique increasingly on the e-government agenda. Prototyping - the creation of a small, live working model of a technology project ahead of full-scale development - is particularly suitable for e-government projects, where public money is at stake and efficiency is paramount. Technological changes have made prototyping quicker and easier. Benefits are readily apparent in creating a working model of e-government that users can see, comment on and have revised.

The physical presence of the model e-government system enables stakeholders to express requirements or objectives they would otherwise find hard to state. Such requirements may be quite general (e.g. about the overall objectives sought from the e-government application) or may be quite specific (e.g. a comment on the nature of the system interface). The presence of a system helps focus stakeholders' attention, envisage what they need from e-government, and point out what they do not like.

There are different kinds of prototyping, and one kind may suit a particular situation more than another. For example disposable prototyping builds a very small-scale model very early on that is not intended to be kept; whereas 'incremental prototyping' works gradually towards the final system. But whichever kind is used, prototyping means that:

- the final e-government application is more likely to match stakeholder objectives;
- stakeholders are more realistic in what they expect from the final system;
- the final system may be produced more quickly;
- major problems are spotted earlier, and can therefore be addressed at lower cost.

There may also be additional benefits. New York State's Office for the Aging introduced e-government to support coordinated delivery of client services. Through use of prototyping, they found not just application improvements but also greater levels of interest and commitment from management. As the Center for Technology in Government reports, "The prototyping method produced positive results. … early demonstrations of the system created an enthusiastic response among local governments and generated positive interest in the system among the user community" (see http://www.ctg.albany.edu/resources/abstract/iis1.html).

Systems development methodologies that incorporate prototyping have been around for many years. For example, prototyping has been successfully incorporated into the Dynamic Systems Development Method (http://www.dsdm.org). This provides a standard, non-proprietary approach to systems development that combines both rapid and joint application development methods.

Such combinations of prototyping and active participation can be particularly effective for e-government projects. The Royal Netherlands Air Force, for example, used both techniques through a management game involving the simulation of a 'whole-organisation' digital system for a planned air base. Not only did this create a shared vision for change among participants, it also facilitated discussion of key issues, and created a sense of unity between those involved. As a result, this has been recommended as a standard approach to e-government projects.

As with any project management technique, prototyping of e-government projects can have its drawbacks. Time pressures may force premature acceptance of the prototype before all requirements are fully analysed, before non-technical components of the system are designed, or before the system is properly tested and documented. Prototyping may encourage corners to be cut, yet it does not substitute for techniques to create consensus or for good communications between IT staff and users.

Nevertheless, prototyping is increasingly used in e-government and will increasingly be seen as a critical success factor in the development process.