Transforming the relationship between citizens and local councils using Web 2.0 technologies

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Abstract

Australian local government organisations (LGOs) are unique in terms of the variety and diversity of services that they provide to their communities. These include traditional functions like maintaining local roads, managing property information, regulating real estate development, and collecting and disposing of waste. LGO service portfolios have expanded as a result of federal and state governments devolving their traditional responsibilities to local governments. LGOs have also raised community expectations by delivering a vast array of community and commercial services in addition to their traditional services. For example, the commercial services operated by Wollongong City Council (2002) include facilities such as tourist parks, leisure facilities, tourist information centres, and cultural and performing arts centres; and they also deliver community services such as community transport, coordinating volunteering, operating libraries and providing information to the public in the form of community directories. Making these services available has increased the number of independent information systems used in localised parts of the organisation to manage these functions. How councils develop, manage and implement these independent systems, coupled with budgetary and time constraints and community expectations, has a significant impact on future systems development requirements. This paper examines the changing demands and expectations that the implementation and use of Web 2.0 technologies has on both the information systems development and integration that many government service providers face today, as well as on the shifting nature of the relationships between government service providers and the citizens that use these services.

CHAPTER 12

Transforming the relationship between citizens and local councils using Web 2.0 technologies

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Abstract
Australian local government organisations (LGOs) are unique in terms of the variety and diversity of services that they provide to their communities. These include traditional functions like maintaining local roads, managing property information, regulating real estate development, and collecting and disposing of waste. LGO service portfolios have expanded as a result of federal and state governments devolving their traditional responsibilities to local governments. LGOs have also raised community expectations by delivering a vast array of community and commercial services in addition to their traditional services. For example, the commercial services operated by Wollongong City Council (2002) include facilities such as tourist parks, leisure facilities, tourist information centres, and cultural and performing arts centres; and they also deliver community services such as community transport, coordinating volunteering, operating libraries and providing information to the public in the form of community directories.

Making these services available has increased the number of independent information systems used in localised parts of the organisation to manage these functions. How councils develop, manage and implement these independent systems, coupled with budgetary and time constraints and community expectations, has a significant impact on future systems development requirements. This paper examines the changing demands and expectations that the implementation and use of Web 2.0 technologies has on both the information systems development and integration that many government service providers face today, as well as on the shifting nature of the relationships between government service providers and the citizens that use these services.

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Introduction
Local councils (also known as local government organisations or LGOs) are under pressure to take on additional responsibilities and to continuously implement and deliver more social services (Hawker 2003). As a consequence, these services have led to the implementation of

many customised and independent information systems which help staff to manage specific functions. These systems tend to be domain specific and are often provided by vendors who target particular niche markets. While vendors of larger systems have adapted versions of their products for use in local government, the choices are limited, and fully integrated single vendor solutions are not readily available. The combination and mix of systems is unique to each LGO, and the level of integration between the chosen systems also varies. This project addresses some of the information systems issues that local governments face today, especially when combined with the drive to engage online with citizens and to provide an increasing number of valuable interactive services (Web 2.0).

We believe that the development of new interactive online services should be carried out in a socially innovative manner that enables the users (staff and citizens), line managers, and other stakeholders of the system to both contribute value to the system and also participate in its ongoing development and direction-setting. This can be achieved by embracing participation and including research and feedback mechanisms in the development process. In order for LGOs to be able to develop and deploy new web-based services, the adoption of specific practices – a development methodology – that can assist in the creation of new Web 2.0 services for citizens needs to be introduced, tailored and refined within the specific organisational setting. Enhancing engagement and changing the nature of the relationship between citizens and their local council results in greater access to and inclusion of the web in the lives of citizens.

This paper initially explores LGOs and how Web 2.0 technologies are used to create new web-based services, and what organisations can gain by using this practice. We then consider some of the issues surrounding Web 2.0 services deployment with an emphasis on LGOs, and provide details of the progress made by Wollongong City Council (WCC). We show that the experiences gained in developing WCC's Web 2.0 services have helped to create new development approaches. Finally, we describe these experiences, present our interim conclusions and discuss the relationship between the changing nature of LGO service provision and citizens.

Local government organisations (LGOs)
LGOs are the tier of government closest to the community; providing local services which have traditionally been property-based, or performing a regulatory authority role (Dollery, Wallis & Allan 2006). Australian LGOs are unique in terms of the variety and diversity of services that they provide to their community (Gardiner 2005). The services offered include traditional functions such as maintaining local roads, managing property information and development and the management of waste disposal. The mix of services and the emphasis on the types of services provided varies with the size and resourcing (staffing and budget) of the LGO, and this is influenced by the absence of state and federal agencies in the area, the levels of infrastructure, and the amount of property development occurring in the region (Dollery, Wallis & Allan 2006).

The income of LGOs is sourced from land rates, fees and charges for service, grants from other levels of government (state and federal), joint ventures with private sector companies, and community-generated funding for community projects (Dollery, Wallis & Allan 2006). Many services are not directly chargeable to the service receiver and some of these are often capped or regulated by higher levels of government. There are increasing pressures to grow and develop new social/human services, and to develop new commercial operations coming from both the community and other levels of government. According to Hawker (2003),

LGOs are fighting a losing battle to reduce their costs and remain sustainable while trying to be all things to all people!

In order to meet budgetary constraints (Dollery, Wallis & Allan 2006; Hawker 2003), many LGOs have increased their emphasis on outsourcing the delivery of specific services such as the collection of waste, since private service providers can achieve economies of scale by servicing more than one local government area. Technology services are of a fluid nature and will most likely remain as an internal service. The Internet provides LGOs with a way of delivering digital services to citizens. Increasing computer and web literacy in the community enables citizens to interact with LGOs, and provides them with the opportunity to engage and contribute to the development and implementation of services that best support the broader community. Perhaps more profoundly, the Web 2.0 technologies that drive many social networking sites also provide citizens with the opportunity to help build these websites. Citizens can do this in several ways, including: interacting with existing digital services (collective intelligence); and assembling new services from existing digital services (so called mash-ups). We will briefly explore the first of these.

Service provision and Web 2.0
Previously we mentioned that Web 2.0 technologies can provide LGOs with new possibilities for service development (digital services). In this section we consider the orientation to service provision at WCC using Web 2.0. The development and use of Web 2.0 technologies is changing the World Wide Web from being a place where you read published information to a place where you can contribute content and actively influence the shape of websites. Web 2.0 is about two-way interactive communications, and it is characterised by a philosophy of functionality and services that distinguishes it from other approaches (O'Reilly 2005). Users of Web 2.0 systems are not limited by what they can find, but by how they can interact, combine, remix, upload, change and customise the content and services for themselves. These possibilities are aided by the use of Web 2.0 technologies (such as *feeds*) which allow content to be pushed from one website to another using automatic content syndication. Creating Web 2.0 services requires a more flexible and fluid development approach than traditional systems development. Web 2.0 services can be continuously improved when the developers and users engage and interact with each other online.

Web 2.0 is already having a levelling impact on barriers to entry in many fields. This makes it easy for non-trained professionals to contribute. For example, blogging enables many citizens to publish their views on particular issues, while YouTube and other services enable anyone with a video camera to broadcast their own video content. This impact also lowers the barriers for readers and viewers to comment publicly on the content that they consume. Leadbeater (2009) uses an analogy of boulders and pebbles to illustrate how the world is changing. His boulders are the media organisations of the 1980s and the pebbles are the ordinary people with their blog posts or comments on services like YouTube. He foresees a time when the boulders will be almost covered up by the rising tide of pebbles and this will affect all currently established players. He presents examples of what he refers to as "We-Think" where online communities have self-organised in order to collaborate and innovate. One example of this is the online magazine *FastCompany.com*, a community site in which member-created content is featured alongside the work of staff writers. Members create value by contributing stories, networking with each other and by collaborating and organising live online events (FastCompany 2009).

The two major characteristics that make Web 2.0 technologies of interest are the *network effects* and the resulting *collective intelligence*. Web 2.0 efforts are multiplied rather than added (O'Reilly 2005). A positive network effect refers to an increase in the uptake of a good or service as more people use or adopt it. O'Reilly (2005) argues that managing online network effects is a key to success for organisations wishing to use Web 2.0. Online networks can also experience a bandwagon effect as more and more members sign up to a service through the influence of others (O'Reilly 2005). Web 2.0 content is shaped using various voting, rating and moderation strategies, referred to as *collective intelligence* (O'Reilly 2005).

There has been a great deal of experience when it comes to applying Web 2.0 to commercial activity. How can we apply this to LGOs? How will the relationships between citizens and their local councils be transformed? LGOs have vast repositories of public information that they are required to provide to the public on request. The provision of this information to the public over the counter or telephone is quite costly, and therefore it is attractive for LGOs to provide as much of this information as possible via the web for the public to 'self serve' their specific informational needs. There are a range of factors that need to be considered when dealing with Web 2.0 based services, regardless of whether these are deployed by companies or LGOs. We organise the factors relevant to developing Web 2.0 services into the following groups (see Figure 1):

- *Converting potential users/citizens to actual users*: This includes attracting potential users, retaining these users, and providing the means for users to recommend these sites to others.

- *User/citizens utilising Web 2.0 services:* This includes the freedom of expression of users/citizens on websites, the type of user experience available and the types of modalities in which information is provided to users, the relevance of available services for specific user groups, the degree to which user participation is possible, the types of support provided to users, the mechanisms for eliciting and handling user requests, and whether user collaboration is available.

- *Deployment of Web 2.0 services:* Web 2.0 services can be directly provided from an LGO or corporation via its web presence, storefront or website deployment, but increasing web services can also be achieved from an external service provider – by either free or fee-based service arrangements. Using external services reduces development time, costs and deployment difficulties, and enables service providers to concentrate on integration issues which are usually less problematic for organisations.

- *Organisational and development issues:* This includes appropriate skill sets, development practices, and reasoning processes, which are applied or created for use in the development unit, as well as the appropriate tools to create requested or needed services. On the other hand, the organisation – whether it is an LGO or a corporation – must create appropriate strategies and policies for using and developing Web 2.0 Services. Of particular importance for organisations are strategies concerning licensing and retaining information, and the possible future monetary gain from these services (so called service monitisation). Of particular importance to developers is whether the deployed sites provide for user tagging, annotation, multimodality support, and site adaptability to user activity, as well as the provision of support for publicly available access to data via an *Applications Programmer Interface* (API) or more widely-used forms of content syndication, such as RSS feeds.

This research project explores how best to develop Web 2.0 systems from both social and technical perspectives. These Web 2.0 systems promise to provide emerging web applications which will lower barriers to communication between citizens and LGOs and therefore promote empowerment for citizens. In the following section we describe how WCC is utilising Web 2.0 technologies to engage in conversations with its communities, and how this in turn is changing how citizens are engaging with the government.
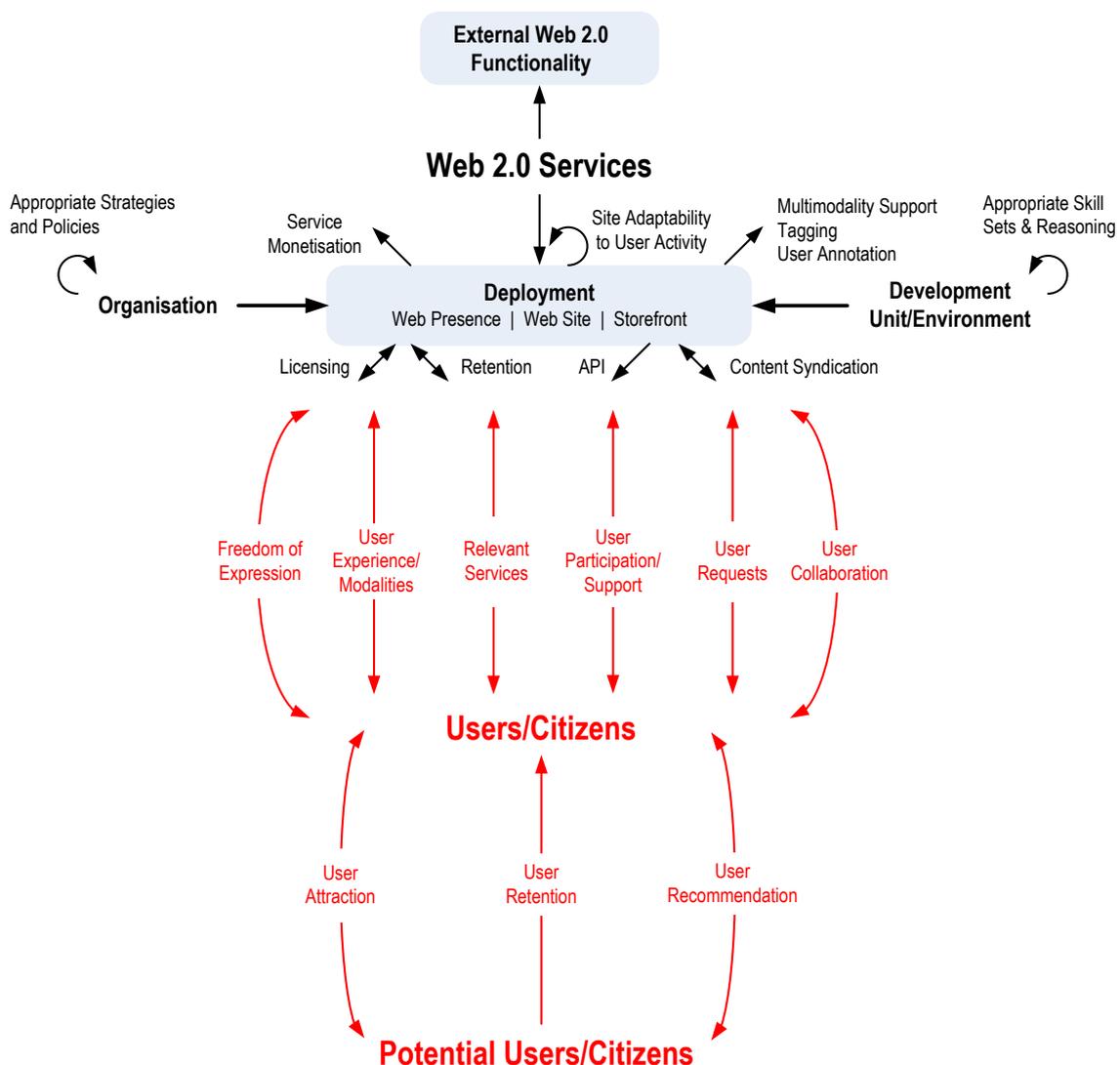
Figure 1: **Factors to consider in developing Web 2.0 sites**

Wollongong City Council and Web 2.0
Our study of digital service development is based on Wollongong City Council (WCC) – a large LGO by national standards. Not only has WCC had to deal with substantial growth along with other Australian LGOs (Dixon 1996) as described in section 2, but it has also recently endured the turmoil of having an elected council dismissed following an Independent Commission Against Corruption (ICAC) investigation into planning processes. This investigation found that systemic corruption existed within five levels of the organisation and

some property developers (Cripps 2008). The ICAC has recommended changes, as well as a push for a more sustainable financial footing, and this has driven internal efficiencies.

The changes at WCC create many additional demands and opportunities for web systems development, to help improve both the efficiency and effectiveness within the organisation. External pressures are also contributing to making the business environment become more like a private sector corporation than the traditional LGOs of the past. These external pressures place increased demands on outward-facing websites as a communication channel to external stakeholders, and as a result it is becoming imperative for these websites to be kept up-to-date and problem free. The ambiguity caused by this complex management environment is compounded by the increasingly emergent nature of the organisation.

Wollongong City Council is beginning to use Web 2.0 by establishing feeds to enable LGO information to be used by others. The Council provides a wide range of information services through different feeds (45 as at July 2009) in categories including: interactive content, advertising, online community engagement, online customer services, online information services, event updates, feedback mechanisms and online tendering. These categories are broadly described below:

- *Websites and affiliated organisations*: From a citizen's point of view, council services are not only to be found on the WCC website. WCC operates many commercial services including ventures such as tourist parks, leisure facilities, a tourist information centre, an art gallery and a performing arts centre. It is also active in the delivery of community services such as community transport, coordinating volunteering, operating libraries and providing information to the public in the form of community directories (Wollongong City Council 2002). Not only are citizens the beneficiaries of this information, but other organisations can also use these feeds to add value to their own sites. This can raise interesting issues about liability and currency of information, since at times these RSS feeds could be used by those who have not asked for permission to do so, or who might not necessarily have the same agenda as that of the council itself.

- *Interactive content and advertising*: These categories involve a page providing lists of WCC RSS feeds for interested parties to use and advertising for WCC in the form of online videos.

- *Online community engagement*: This category covers terms traditionally associated with consultation, communication, and public participation, and may involve one-way communication, information provision, and collaboration of various kinds. WCC provides a range of community engagement services which can be found at the 'haveyoursay' page. From 2006, the council spent a year developing a community engagement policy and framework in order to provide relevant community involvement and to establish relationships between the council and the community. No doubt such a policy assisted in identifying the approach taken for prioritising and selecting online community engagement functions to develop for the website. The available links include those to development applications on exhibition – in which development applications that are lodged at the council are listed and the procedural status and judgements about these applications are described.

- *Online customer services*: This category provides links to a range of more specific features which generally involve a workflow unlike the more general category of

"Feedback mechanisms" described later. Links include general service requests (such as notifying the council of an abandoned car, food safety concerns, or a noise issue), online name and address updates, rate payments (including online payments), tourist park booking enquiries, and lodging and tracking development applications, building certificates and applications to remove trees (tree management orders).

- *Online information services*: This category includes links to WCC's community profile which describes the characteristics, history, and demographics of the city including a community atlas showing the key socio-demographic characteristics of the city in map form such as population, ethnicity, education, households, income, labour force, housing, internet access, and socio-economic indexes (SEIFA). Links also provide weekly community updates, an events calendar, a community directory, a business directory, a mapping service, a library database search, local historical pictures, and lists of related web links.

- *Event updates*: This category provides information on the availability of council papers, a calendar of events, media releases, road maintenance work, emergency information and the availability of sportsgrounds. The sportsground service provides a list of open and closed sports grounds. The list is created from information provided by staff who are responsible for opening or closing the grounds. This page is particularly useful to parents of young children who play sport on weekends, especially in the wetter winter months. Since its inception a couple of years ago this page has been one of the top ten pages on the site. This page has been established as an internal intranet list updated by grounds staff and synchronised with a copy on the external website every five minutes. Recently an announcement list was also added enabling operational staff to communicate their intentions about when the list will be next updated.

- *Feedback mechanisms*: General website feedback and customer service feedback provide channels of communication from the citizens to WCC. In general there are very few explicit requests from users to provide or modify content, and this allows each request to be handled as a development priority. As a result there is a high degree of institutional responsiveness to requests from citizens at the present low levels of feedback.

- *Tendering*: WCC is involved in online engagement with its suppliers for tenders, quotations, and expressions of interest through the use of a third party portal called Tenderlink which is shared with other paying councils.

The eCommerce literature often classifies information and transactional flows based on the entities involved: Government, Business or Citizen/Customer. Almost all of the current Web 2.0 based services developed by WCC to date are targeted at information provision to citizens (G2C), for example: interactive content, advertising, online community engagement, online customer services, online information services, and event updates. Of particular importance to service development are feedback mechanisms and this is likely to be an area that the development team will want to streamline in the near future. Growth areas are likely to be G2B services of which only online certificates, development applications submission and tendering for supply have received attention so far. The key to timely information provision for WCC websites and affiliated organisations will be harnessing their own knowledge workers, signalling a shift from reactive and external-facing development to the creation of services that can harness the current workforce to create fresh content as a consequence of their activities, and to engage them in such participative service development.

New development practices: from social innovation to technical innovation
Although we believe that social innovation can be achieved via technical improvements and innovations we do not advocate technological determinism – for us the latter does not guarantee the former. In the context of developing new services this means creating new development practices that enable Web 2.0 services to be rapidly built while at the same time effectively utilising the human and technical resources both within and outside the organisation. According to Brooks (1995), the most time-consuming aspects of developing systems are not the technology and coding but rather the creativity required, especially during analysis, planning and testing. Rather than creating a methodology around project management practices (the usual way of doing this), Jacobson (2008) argues that it is important to use what you have, keep what is working and integrate new and simple practices and tools. The work of these authors confirms our own studies at WCC. Considerable experience has been gained in developing a large number of Web 2.0 services for WCC over the last four years. We can characterise some of the important features of a methodology for LGO web service development. These features include using action research, studying communication and collaboration during the development, deployment and use of Web 2.0 services, and adopting industry best practices in service development.

Action research: Our best practice approach emphasises the need to act but also to reflect. We therefore unusually have action research as the foundation of our development practices. Action research is about taking initial stock of where the current situation is, formulating an action plan based on what needs to be changed, implementing this plan, and then reflecting on the changed situation. This paper forms the basis of an initial reflection on the current situation, identifies opportunities and begins the planning process of action to take. By applying action research, this project focuses on the co-evolution of business processes and the systems that support them within the context of both the organisation and its changing environment. Action research is also used to build continuous improvement into development practices. Our approach concentrates on the evaluation of the evolutionary development of requirements and systems development, sharing some features with approaches described by Hasan (2003) and Rose (2000). The community of users and content editors of the LGO's web system comprises the development team, systems administrators, general staff users of the web systems, as well as the general public when providing feedback. It is particularly important to include staff in the website development process and content provision process. These stakeholders will be treated as co-researchers as per the participative action research tradition (Coghlan & Brannick 2001).

Communication and collaboration: Our development practices emphasise communication and collaboration between the development team and the customers and clients. Client involvement will be encouraged in the form of collating requirements and monitoring incremental development. There will be opportunities to gather data through Joint Application Development workshops and formal and informal meetings. Tools will be used to support communication and collaboration using a series of electronic forms and collaboration spaces using the existing WCC development environment (Microsoft SharePoint). These forms include development requests and requests to change services. At the completion of each request there will be a need to reflect on how the implementation proceeded as well as how well the business problem was resolved. Comments from clients and end users will be encouraged especially where aspects of the business problem remain.

These comments will then be used in further development iterations and to complete the action research cycle. Blogging on the intranet by the development team will be used to communicate development progress and new functionality that is introduced. Staff comments and feedback will be encouraged and an online discussion board will used.

Service development approach: Users add value to Web 2.0 systems. The service development approach being created at WCC leverages customer self-service and uses algorithmic data management to understand how users are using existing services. The service automatically improves the more that people use it. When services are developed, inclusive defaults are set for aggregating user data and building value as a side-effect of ordinary use of the application. In our experience the most successful web services are those that have been the easiest to move in new directions unimagined by their creators. The development of these services as well as the ongoing maintenance and adaptation of existing services to new situations involves many small changes being made over time – a strategy that has been variously referred to as "evolutionary prototyping" or "agile development". Another characteristic of this approach is that it is a bottom-up development of services and processes. Small problems are attacked before they can grow into larger ones. This places special demands on how services are built and so lightweight programming models are used that allow for loosely-coupled systems and components including lightweight user interfaces, development models and business models. Lightweight programming models enable flexible design to be more easily achieved. . In fact using Web 2.0 technologies like Ajax enables users to change the look and feel of the web services, while the underlying approach used to develop the services themselves is designed for "hackability" and "remixability". Another key aspect of service development for WCC is the purposeful use of in-house development of services blended with outsourced freely available services. This means that the emphasis is more about high-level configuration of systems and environments than coding.

Discussion and conclusions
In Australia, legislative reforms in the 1990s served to empower local governments with greater flexibility in the way that they operate and the range of services that they provide. At the same time community expectations have increased and higher tiers of government have simultaneously devolved various new functions to local authorities. As a result, Australian local authorities have changed their focus by default rather than by design (Dollery, Wallis & Allan 2006). At WCC efforts have been directed at creating systems development practices that can be used to create new services quickly and economically.

There are a range of development issues that have occurred in the creation of feeds for WCC. Developers no longer need to think about developing their own software and solutions, rather it is now more important to think in terms of services that are being provided and of taking advantage of the mass market of freely available services. WCC has used a range of external Web 2.0 functionality providers of 'software as a service', such as using Google Maps on the sportsground pages and using YouTube video hosting for WCC advertising. In the case of web-based mapping, this service provides a common user interface and many additional built-in features such as getting directions to locations. Other external Web 2.0 functionality providers include: Survey Monkey (for online survey hosting), Tenderlink (for online supply), Card Pay (for online rates and payments), and Google Groups (for inter-organisational collaboration). In general LGOs should be looking to take advantage of available services that provide free software services. Interestingly, the use of external Web 2.0 services within LGO's systems can reduce development difficulties, and simplify service provision by transforming development into systems integration tasks, while removing or

reducing maintenance and housekeeping. Along with the benefits of using these free external service providers come risks. There is a real risk for LGOs relying on the continued existence of free Web 2.0 functionality. There is also a lack of control on media hosted on these sites as there is in media hosted on social networking sites – customers of these externally provided services including LGOs have to agree to specific terms and conditions. There are legal issues concerning information republished by others including those who would utilise content provided in feeds. Who owns the content and does it matter? If the content is created by a third party, posting it to an external provider may not be possible or it may infringe the rights of content creators.

There is no doubt that as these services migrate to the web, expand in sophistication, and proliferate in number, the role of the citizen is changing – for better or worse – from a passive resident to an active, and engaged netizen (see Turban et al 2006, p.332). Our notion of what constitutes a service and how LGOs create them will also need to change. Perhaps some of the most interesting social dimensions of the application of Web 2.0 technologies to LGO service provision involve the changing nature of citizenship when it comes to local government, the change in how these kinds of services are developed, who actually develops them, and what 'development' now means. These questions were easy to address in the past but the collaboration that is now involved in proposing, developing, and using these Web 2.0-based services problematises the ownership, rights, responsibilities, and obligations associated with them. The development of these new services is also transforming the relationship between citizens and local councils – and this shift can be explored and documented through the technologies and methodologies that we use and privilege.

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