



Civic open data at a crossroads: Dominant models and current challenges



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ABSTRACT

As open data becomes more widely provided by government, it is important to ask questions about the future possibilities and forms that government open data may take. We present four models of open data as they relate to changing relations between citizens and government. These models include; a status quo 'data over the wall' form of government data publishing, a form of 'code exchange', with government acting as an open data activist, open data as a civic issue tracker, and participatory open data. These models represent multiple end points that can be currently viewed from the unfolding landscape of government open data. We position open data at a crossroads, with significant concerns of the conflicting motivations driving open data, the shifting role of government as a service provider, and the fragile nature of open data within the government space. We emphasize that the future of open data will be driven by the negotiation of the ethical-economic tension that exists between provisioning governments, citizens, and private sector data users.

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1. Introduction

Many argue that citizen–government interactions are facilitated through, and indeed depend upon, the opening up of data generated by government and by governments' willingness to accept citizen feedback in the context of service provision (e.g., Goldstein, Dyson, & Nemani, 2013; Nath, 2011). For example, through the provision of real-time transit and route schedules delivered through an open interface and with non-restrictive licenses, governments have enabled the production of consumer-oriented applications that seek to improve service to citizens. Open data provision also provides a conduit through which citizen feedback can be used to improve service delivery as well as constitute a form of citizen participation (Johnson & Robinson, 2014).

Understanding the ways that governments provide open data is a rapidly emerging area of research, with direct implications for the relationship between government and citizen. Governments have long collected information, including geospatial data, with which to support planning, decision-making, and service provision (Janssen, Charalabidis, & Zuiderwijk, 2012; Tinati, Carr, Halford, & Pope, 2012). Traditionally this data was kept internal to the organization and only made public in a distilled, generalized format, if at all. The widespread availability of public sector data on the Internet represents a shift towards opening and distributing datasets for general public and private sector use (Yu & Robinson, 2012). More fundamentally, it represents a transformation

over time in the value of government data, from a means to an end in policy deliberations, to an end in itself (Onsrud, 1992), and even as an exercise in state power (Bates, 2014). Open data is argued to facilitate access to government data and improve service delivery but we argue that, through provision of data, increased participation in government functioning and decision-support can result.

Open data is fuelled by Internet technology that allows for easy sharing and use of data (Linders, 2012). A typical approach has been to release data for download or access via a web portal (Halonon, 2012; Tinati et al., 2012). Indeed, most open data provision focuses on "just getting the data out there," that is, surmounting the technical, legal, and organizational barriers to placing data on a website. There also are more proactive and interactive approaches, such as government hosting or sponsoring of civic hackathons – user/developer events designed to drive use of open data with a focus on return benefit to government and citizens (Johnson & Robinson, 2014; Longo, 2011). These two forms of open data provision represent the current state of open data and narrow the view of open data to a commodity and provision of data as an end unto itself, as opposed to data provision as an end to improving citizen engagement, government transparency, and improving decision-making around government services. We argue that this customer-centric view of open data is unidirectional and transactional, missing much of the potential for data to act as a conduit for citizen engagement with government and direct input to decision-making.

Preliminary research with open data innovators in Canada suggests that open data stands at a crossroads (Johnson & Robinson, 2014), with the focus on the innovators—the original adopters of open data.

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Additional studies point to a continuum of adoption by government of open government, including capabilities to provide open data and to accept direct public feedback whether from social media or other conduits (Lee & Kwak, 2012). We follow Rogers (2003) here in our choice of the term ‘innovator’, the earliest adopting organizations that are willing to take risks and can tolerate the failure of initiatives. Open data now is positioned at the next phase—the early adopter stage. Even as open data moves to more widespread provision, early adopters must contend with continuing innovations in civic technology.

This paper outlines four conceptual models for open data that can occur at the early adopter stage. We describe what has become a traditional model of open data, which is the simple provision of data. Open data will likely move on from this first model, but how will it evolve? How will governments at various levels (municipal, state/provincial, federal) challenge, combine, extend, or dissolve aspects of each model? We propose conceptual models, such as government as open data advocate; civic issue tracker; and open data as a participatory realization of open government principles, present divergent models from the current open data publishing paradigm. We argue that the provision of open data requires a transformation from treating open data as an end in itself—openness for the sake of openness—towards open data as a means for accomplishing a broader open government agenda of citizen inclusion and participation in decision-making. These conceptual models are presented as a framework for the open data research community to consider, challenge with empirical results, and use as a way to continue tracking how open data provision unfolds in ‘real time’.

2. Origins of open data

Government collects data for program and service development, provision, evaluation, and justification (Gurstein, 2011; Meijer, Curtin, & Hillebrandt, 2012). Historically, this data was maintained by governments for internal use and only shared with citizens in heavily digested forms. The freedom of information (FOI) movement of the 1960s began to make a compelling case for public disclosure of government data, leading to the passage in the United States of several key FOI bills (Jaeger, 2005; Relly & Sabharwal, 2009). Open data also draws from the concept of e-government, which seeks to make government documents and services widely available online (Bertot, Jaeger, & Grimes, 2010; Piotrowski & Van Ryzin, 2007). In the modern era, FOI and e-government are partially re-envisioned as open data, with governments publishing datasets online for public access. Here, raw government data placed online, typically for free download and use according to a permissible license (Janssen et al., 2012). Open data differs from e-government in that open data is expected to enable a variety of uses, as opposed to how e-government provides specific information or services for broad citizen access. The Open Knowledge Foundation provides a general definition of open data: it should be freely available to everyone to use, re-purposable and re-publishable as users wish, and absent mechanisms of control like restrictive licenses, with the key aspect to this definition is the reusability of data (Open Knowledge Foundation, 2014).

We underpin our conceptual models of open data provision with recent literature that presents the main motivations that drive government provision of open data: ethics (i.e., a collection of democratic enhancements that are dominated by calls for transparency and increased citizen participation in decision making), efficiency, effectiveness, and economic development (Zuiderwijk & Janssen, 2014). The ethical motivation for the release of open data aligns with what have long been considered essential elements in a democracy: broadened citizen participation, social inclusion in governance, and citizen empowerment. Pateman (1970) stresses the importance of civil society in a participatory democracy to perform an essential check on government activities. The motivation here is that government has a desire and a responsibility in a democracy to be transparent about its data and that the public has a basic competence to use that data to make government

accountable. We group the normative goals of citizen participation, data transparency and government accountability together into ethics.

Ethics have emerged recently in the concept of open government as a guiding and continuously evolving set of principles for governance (Ganapati & Reddick, 2012; McDermott, 2010; Meijer et al., 2012). Open government is not an endpoint or singular achievement, but rather should encompass a process that includes open data as only one component. For example, open government could include open information (e.g., procedural information about government), and open dialogue (i.e., two-way public consultation). Open data has typically been seen as both a product of, and a way to achieve the open government goals of transparency and accountability, though this relationship is ambiguous at times (Florini, 2008; Willinsky, 2005; Yu & Robinson, 2012). A government can release many different types of data on service provision or indicators but this data does not necessarily ensure transparency or citizen inclusion. The hope is that with open data, via open government, civil society can monitor government activities, assessing accuracy in expenditures or sourcing data that underlies decision-making (Bates, 2012; McClean, 2011). Advancing a transparency agenda is one way that open data may achieve civic participatory goals of open government, with the hope it leads to continuous invigoration of democratic governance.

Government data providers may be motivated by arguments that open data offers efficiencies, for example, the act of submitting data to a portal potentially revealing overlaps, thus eliminating redundancies and paperwork in data delivery and collection. Sharing of government data as a form of collaboration between levels or government departments is shown to decrease human resource and time costs associated with, for example, filling freedom of information requests from citizens (Janssen et al., 2012; Nam, 2012). It also may simply lower the cost of service provision; for example, having individuals utilize smartphones and text messaging systems for notification of the next bus instead of electronic signage atop each bus stop (Nath, 2011). Budgetary pressures often drive calls for efficiency; governments may no longer be able to afford certain kinds of service provision and therefore look to citizens to assume the costs of those services. For example, pothole reporting could reduce the need for public works employees; a report from the EU (Linders, 2012) mentions car-pooling as a way to reduce the need for transit. The efficiency motive for open data is well-publicized (Gurstein, 2011; Halonen, 2012), though the exact metrics underpinning these ‘value’ propositions are often contingent on assumptions made by the data providers (Harrison et al., 2012).

Associated with efficiency is the effectiveness motivation for the development and delivery of open data. Similar to the early years of GIS implementation in local governments (Budic, 1994), the promise of open data is in improving decision making as both citizens and policy makers, for example in other units of government, can access a wider range of information. Here open data can standardize the way staff collect and publish data. Open data functions as an in-house data warehouse and its users include the government’s own employees who use it to provide business intelligence. Past empirical work has found that new digital technologies allow for decisions that policy makers could not even anticipate when the technology was first introduced (e.g., the comparison of road networks to wildlife movements in assessing habitat impacts) (*ibid.*).

A final motivation for the delivery of open data is to spur innovation-driven economic development. This potential of open data is often touted by politicians, for example, senior Canadian cabinet minister The Honourable Tony Clement likens government data to a natural resource, which can and should be exploited (Treasury Board of Canada, 2013). The economic benefit derived from open data results from the development of systems and standards for access and exploitation of open data. Much like third party mapping services (e.g., MapQuest) arising from the development and release of US Census Bureau data (Haklay, Singleton, & Parker, 2008), the release of various public data presumably should encourage small and large entrepreneurs to develop

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