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# From e-government to we-government: Defining a typology for citizen coproduction in the age of social media

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## ABSTRACT

This paper examines the evolution of citizen coproduction in the age of social media, web 2.0 interactivity, and ubiquitous connectivity. The paper first discusses the re-emergence of citizen coproduction – whereby citizens perform the role of partner rather than customer in the delivery of public services – as a fashionable policy option in the face of persistent budget deficits and the advent of new channels for mass collaboration. Finding a plethora of competing labels, models, and concepts for coproduction in the age of social media, the paper proposes a unified typology to support systematic analysis based on the overarching categories of “Citizen Sourcing,” “Government as a Platform,” and “Do-It-Yourself Government.” To demonstrate its use, the typology is applied to leading U.S. government implementations. The paper concludes with a discussion of the potential implications for public administration, the remaining limitations and rising social concerns, and the possible emergence of a new social contract that empowers the public to play a far more active role in the functioning of their government.

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## 1. Introduction

With the scale of society's ever-evolving challenges increasingly outstripping the capacity of the public sector, budget-strapped governments have had to look for innovative new ways to deliver public value. Much hope is placed on the advent of social media, ubiquitous mobile connectivity, and web 2.0 interactivity, which for the first time provide channels not just for mass dissemination but also for mass production and collaboration (Benkler, 2006)—thereby unlocking for citizens “unimagined opportunities to do more for themselves” (Johnston & Hansen, 2011).

Driven by rising citizen expectations and the need for government innovation, social media has become “a central component of e-government in a very short period of time” (Bertot, Jaeger, & Hansen, 2012). Scholars see in these new interactive channels the potential to “rethink traditional boundaries between individuals, the public, communities, and levels of government” in ways that “dramatically alter how the public and government interact, develop solutions, and deliver services” (Bertot, Jaeger, Munson, & Glaisyer, 2010).

### 1.1. Re-emergence of Citizen Coproduction

The resulting evolution of the government-citizen relationship centers in large part on a reimagining of the concept of “citizen coproduction,” as this becomes both “more relevant and viable with advances in technology” (Johnston & Hansen, 2011). In such

arrangements, government treats the public not as customers but as partners, expanding the role of the citizen from one of “mere passive consumption of public services to one of active involvement to jointly tackle social problems” (Mattson, 1986). In the resulting joint production, citizens contribute more resources in the form of “time, expertise, and effort” to achieve “an outcome, share more responsibility, and manage more risk in return for much greater control over resources and decisions” (Horne & Shirley, 2009).

Coproduction, of course, has long taken the form of neighborhood watches, teacher's aides, school crossing guards, and auxiliary policemen which have complemented and, indeed, substituted for government staff in delivering public services (Levine & Fisher, 1984). But whereas coproduction in the past was constrained by the limited ability of government to effectively coordinate citizen actions and the difficulty of ordinary citizens to self-organize, the advent of the Internet's unique many-to-many interactivity and of ubiquitous communications promises to enable coproduction on an unprecedented scale.

While these emerging trends and concepts have not been the subject of extensive scholarly analysis, they have moved well beyond theory into experimentation and full-blown government implementation, prominent examples of which range from the Obama administration's Open Government Initiative with its emphasis not just on transparency but also on participation and collaboration (Linders & Wilson, 2011); to the British government's Big Society program which aims to do “more with less” by dramatically decentralizing and devolving power to the “nano” level — i.e. into people's hands (Cameron, 2010a); to Singapore's “Government-with-You” e-government strategy that

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seeks to “facilitate a collaborative government that co-creates and connects with the people” (The Gov Monitor, 2010).

### 1.2. Research question

Social media and online collaboration platforms today offer a number of advantages for fostering collective action over its “off-line” variants, including the fact that it is much easier to: discover and attract members with shared interests; exchange information; make group decisions at a larger scale; integrate individual contributions; supervise a group with less need for hierarchy; and manage group logistics due to elimination of time and space constraints (Amichai-Hamburger, 2008). The question at the center of this paper’s investigation is whether and how these advantages are able to impact the **government-citizen relationship**.

Answers to this question are important, as these new concepts and initiatives are not without controversy. From the start, coproduction initiatives have had a reputation as a “gimmick” — labeled by one scholar as “the ultimate excuse for bad government” (Brudney & England, 1983). Echoes of this criticism frequently greet **Britain’s new citizen coproduction initiatives**, which the opposition labels a cynical attempt to “dignify [the government’s] cuts agenda, by dressing up the withdrawal of support with the language of reinvigorating civic society” (Prince, 2010a). Yet a lack of systematic evaluation constrains this debate to ideology, presumptions, and hyperbole rather than reasoned policy analysis. Clearly, then, as governments begin to experiment with new forms of Internet-facilitated citizen coproduction, it is increasingly important that scholars and practitioners have an analytical framework for analyzing such initiatives so as to properly evaluate their impact and identify emerging best practices and appropriate applications (Nam, 2011). In building such a framework, a concrete typology — meaning a classification scheme that groups items with shared characteristics into a finite set of types — is essential for determining where observed phenomena fit within “the sprawling spectrum of models for structuring collective action” (Donahue, 2004).

Yet while the literature — both academic and popular — is rife with preliminary explorations and propositions, it has yet to come together in a coherent and cohesive fashion. Indeed, the emerging phenomenon of **Internet-facilitated coproduction has not been systematically studied even if its observers have begun to assign a number of often competing labels—some old, some new: crowdsourcing, “citizen sourcing” (Torres, 2007), “collaborative government” (McGuire, 2006), “Wiki Government” (Noveck, 2009), “open government,” “do-it-yourself government” (Dunleavy & Margetts, 2010), “government as a platform” (O’Reilly, 2010), and much else besides.**

This diffusion of terms and conceptualizations is highly counterproductive as it constrains systematic evaluations. In particular, it limits the ability of scholars to build from one another’s work and risks applying results and lessons learned from one form to another, even when they may be of an entirely different nature or effect. What is needed, as a first step, is a common typology for understanding, comparing, and guiding implementations that recognizes the varying degrees and typologies for coproduction in the age of social media. With this goal in mind, this paper attempts to bring order to, and make sense of, the various terminologies in use today by identifying a structured classification scheme for ICT-facilitated citizen coproduction initiatives.

## 2. Developing a Typology for ICT-Facilitated Coproduction

A robust typology must properly account for the spectrum of variability across citizen coproduction initiatives. A review of the scholarly literature on citizen coproduction, collaborative governance, public-private partnerships, collective action, and other relevant domains identified over a dozen applicable classification schemes. Table 1 summarizes the variables most directly relevant to defining the spectrum of (a) the

**Table 1**

Variables defining the spectrum of coproduction in literature.

A. Defining the spectrum of the government-citizen relationship	B. Defining the spectrum of public service delivery partnerships
Actor vs. Beneficiary: What is the division of labor — who is leveraging whom? (Donahue, 2004; Whitaker, 1980)	Stage of Service Delivery Cycle: At which phase of the service/policy cycle is the activity occurring? (Bovaird & Downe, 2008; Brandsen & Pestoff, 2006)
Citizen Power and Responsibility: How much control do citizens have vis-à-vis the government? (Arnstein, 1969; Gazley, 2008)	Problem vs. Opportunity Driven: Is the effort defensive or offensive in nature? (Donahue, 2004)
Embeddedness: To what degree is government staff embedded within the community and its processes? (Ostrom, 1996)	Single-Purpose vs. Broad: How focused is the initiative? (Cooper, Bryer, & Meek, 2006; Donahue, 2004)

**government-citizen relationship and of (b) public service delivery partnerships.<sup>1</sup>**

The author consolidated the variables from Table 1A to derive a “**provider versus beneficiary**” dimension, of which there are two primary types: government-to-citizen and citizen-to-government collaborations. To this the author adds the citizen-to-citizen permutation in line with the British government’s “Big Society” vision of services outsourced entirely to the community. The resulting dimension captures the distribution of power and responsibility, with the government’s role progressively decreasing in favor of the people. The author leaves out the government-to-government dimension that is commonly found in the e-government literature as citizen coproduction by definition must include the involvement of citizens.

**The resulting categories are defined as follows:**

- *Citizen Sourcing (Citizens to Government)*. In citizen sourcing, the public helps government be more responsive and effective. Government holds primary responsibility, but citizens influence direction and outcomes, improve the government’s situational awareness, and may even help execute government services on a day-to-day basis.
- *Government as a Platform (Government to Citizen)*. The near zero marginal cost of digital data dissemination and computer-based services enables government to make its knowledge and IT infrastructure available to the public that paid for their development. In so doing, the state can help citizens improve their day-to-day productivity, decision-making, and well-being. Government is not responsible for the resulting activity, but can leverage its platform and influence to foster greater public value.
- *Do it Yourself Government (Citizen to Citizen)*. The ease by which wired citizens can effectively self-organize today has opened up new opportunities for citizen-to-citizen coproduction, potentially presenting a substitute for traditional government responsibilities. In this informal arrangement, the government plays no active role in day-to-day activities but may provide a facilitating framework.

To further break down the varying forms of coproduction, the author examined the factors explaining the variance across public service delivery partnerships (Table 1B). Among these, one dimension best distinguishes among the varying types of ICT-facilitated coproduction: the stages of the service **delivery lifecycle** (not to be confused with the policy lifecycle) — **i.e. a service is first designed; then executed /**

<sup>1</sup> This review of the literature also identified a number of secondary variables, including: *Entrepreneurial vs. Prescribed* (Flanagin, Stohl, & Bimber, 2006); *Organization vs. Individual-Level* (Brandsen & Pestoff, 2006); *Personal vs. Impersonal Interactions* (Flanagin et al., 2006; Huxham, Vangen, Huxham, & Eden, 2000); *Physical vs. Virtual* (Amichai-Hamburger, 2008); *Level of Formality* (Donahue, 2004; Gazley, 2008); *Diversity/ Representativeness of Actors* (Donahue, 2004; Huxham et al., 2000); *Clarity of Boundaries and Actors* (Huxham et al., 2000); and *Stability vs. Volatility* (Donahue, 2004; Huxham et al., 2000).

delivered; and, finally, monitored and evaluated for performance. Accordingly, this second dimension consists of the following three groupings:

1. *Design*. In the planning and design phase, administrators design government programs and services and plan for its execution; most important strategic decisions occur at this stage.
2. *Day-to-Day Execution*. The delivery and execution phase covers day-to-day operations. This may take the form of a transaction, or it may mean persistent collaboration and negotiation towards the production of a public good.
3. *Monitoring*. The monitoring and evaluation phase involves identifying – and correcting – operational deficiencies as well as evaluating program effectiveness with the goal of identifying opportunities for improvement.

Placing this “stages of service delivery” dimension against the “provider versus beneficiary” dimension results in a matrix-like classification scheme that is presented by Table 2. This table includes definitions as well as illustrative examples—both of the traditional and of the social media-enabled variants.

### 3. Examining the types of ICT-facilitated Co-production

To investigate the evolving citizen-government relationship in the age of social media and the implications for public administration, the paper will analyze the promise and real-world implementations of each of the ICT-facilitated coproduction types identified in the typology above.

#### 3.1. “Citizen-Sourcing” (Citizen-to-Government)

##### 3.1.1. Service Design: Consultation and Ideation

Governments have increasingly turned to online citizen consultations through “e-participation” and “e-rulemaking” initiatives to collect input from the public. e-Rulemaking not only makes it easier for citizens to provide comments by eliminating the constraints of time and space, but also enables participants to view, support, build from, and collaborate with the comments of others, resulting in a far more interactive process that significantly deepens and enriches stakeholder dialog (Carlitz & Gunn, 2002) – enabling government to collect citizen preferences with far greater levels of sophistication than periodic, binary votes.

Accordingly, politicians increasingly rely on Facebook, Twitter, and other social media channels to not only interact with the electorate during political campaigns but also to consult the public while in office. For instance, President-Elect Obama launched the innovative Change.gov site to collect input from citizens to set the agenda for his presidency. Agencies across all levels of government have since used such “ideation” tools for everything from gathering citizen comments on the National Broadband Plan (at broadband.gov) to seeking online suggestions for cost efficiencies in the city of San Francisco (at SFideas.org). Scotland and England have gone even further by institutionalizing “e-Petition” systems that allow citizens to bring bills to a parliamentary vote, while Chile has introduced a “virtual senator” mechanism that enables citizens to contribute to the making of laws (Padgett, 2005). Taking this to the next level, Sweden has given rise to “e-Democracy” political parties whose representatives’ votes are bound by the outcomes of online polls of its members (Boyd, 2008).

##### 3.1.2. Service Delivery and Execution: Crowdsourcing and Co-Delivery

The institutional adoption of government-to-citizen online interactivity also opens up a powerful new problem-solving mechanism that invites everyday citizens to use their skills and expertise to solve government challenges. In so doing, governments can import innovation from social entrepreneurs and from experimentation outside of – but sponsored and/or enabled by – government. Online platforms also allow for far closer, deeper, and more frequent collaboration between governments and citizens. For instance, the Patent Office’s PeerToPatent platform allows participants from industry, academia, and the general

public to provide patent examiners with relevant insights and artifacts to help determine the validity of patent applications (Noveck, 2009). Similarly, NASA uses a “micro-tasking platform” to coordinate the activities of 85,000 volunteer participants (such as via smart phones) to sift through vast amounts of satellite imagery to map craters on Mars at virtually no cost and at hundreds of times the speed (Shirky, 2010). Likewise, the Department of State has launched an innovative digital internship program known as the Virtual Student Foreign Services that connects students with embassies abroad to help improve their social media presence and promote interactions between American and foreign youths.

The Obama administration has made a significant push to replicate and scale up this early experimentation, particularly by emphasizing the use of “challenges” whereby the government posts a problem that citizens then attempt to solve with a prize awarded to the best solution, such as via the “challenge.gov” platform. Congress has since passed laws to remove regulatory obstacles to their use via the America Competes Act.

#### 3.1.3. Service Monitoring: Citizen Reporting

The Internet presents a powerful new channel for improving the government’s situational awareness by enabling citizens to efficiently and conveniently share knowledge with government. Such systems can facilitate deep collaboration between citizens and government – even anonymously, to promote participation from those who would fear retribution. Shneiderman et al. argue that such platforms may well “revolutionize the way community members and law enforcement interact to prevent crime” (2009). Such channels are most effectively exploited at the local level via citizen reporting systems that are often tied to 311 government information services. For instance, vendors such as SeeClickFix provide mobile and online reporting platforms that give citizens the ability to report things like potholes and crime using their mobile phones, such as by snapping a picture of graffiti and then sending this to the government for action. Crucially, these systems issue a tracking number that enables the citizen to track progress and hold the government accountable for a well-timed response.

Similar mechanisms have delivered unprecedented situational awareness during periods of crisis by allowing commercial news providers to tap into citizen eyewitnesses on the ground. Likewise, citizen groups such as the US-based CrisisCommons have used online tools to great effect to improve the situational awareness of government first responders after natural disasters by collecting and efficiently aggregating information from affected citizens. Similarly, in the Philippines, citizens assist the state in identifying smoke-belching vehicles via SMS and in uncovering tax cheating vendors by uploading retail receipts that can then be matched against official tax records (Lallana, 2004).

#### 3.2. “Government as a Platform” (Government to Citizen)

##### 3.2.1. Service Design: Informing & Nudging

The advent of digitized information and web-connected databases enables the government to deliver highly personalized information to help inform citizens’ personal decisions. Government data mining, for instance, could notify users of relevant health risks, useful government programs for which they qualify, and neighborhood crime. Such personalized information can be particularly effective in “nudging” citizens to make socially-beneficial choices. For instance, citizens can be notified of how their real-time energy consumption compares to their neighbors, “shaming” citizens into more responsible behaviors while promoting a friendly competition to the top (Cameron, 2010b). Such data mining and dissemination helps citizens make more informed, socially responsible decisions – while reducing the need for government intervention. Examples include healthindicators.gov to help citizens evaluate hyper-local health statistics; hospitalcompare.hhs.gov to enable citizens to compare hospital ratings (now conveniently integrated within Bing search); and the Department of Education’s extensive publication of data on public schools to help parents make decisions and hold schools accountable.



**Table 2**

Classifying citizen co-production initiatives in the age of social media.

	"Citizen sourcing" (C2G)	"Government as platform" (G2C)	"Do It Yourself Government" (C2C)
<b>Design</b>	<b>Consultation and ideation</b> Citizen consultation enables citizens to share their opinions with government, often in an attempt to improve representation and responsiveness and to help governments best select from among the policy and design alternatives.  <i>Traditional:</i> Town halls, letters, election board <i>ICT-Facilitated:</i> eRulemaking, IdeaScale, eDemocracy party	<b>Informing and nudging</b> In informing, governments equip citizens with data needed to make informed decisions. In "nudging," government uses behavior economics to design policies and services in such a way that they preserve freedom of choice but encourage the "socially optimal" option (ex: changing "opt ins" to "opt outs").  <i>Traditional:</i> Brochure, health label <i>ICT-Facilitated:</i> Crime mapping, data mining	<b>Self-organization</b> Citizen to citizen "self-organization" occurs when communities govern themselves with little or no interference from the government.  <i>Traditional:</i> Neighborhood council <i>ICT-Facilitated:</i> "Smart mob", community portal, virtual world
<b>Execution</b>	<b>Crowd-sourcing and co-delivery</b> In "crowd-sourcing", government turns over a problem or activity for resolution or (co-)execution by citizens so as to tap into the unique skills, talents, and knowledge among the public. At the individual level, this could take the form of personalization whereby the citizen chooses or tailors the service to best fit their needs. At the level of society, this can take the form of funneling public services through social enterprises and volunteer groups.  <i>Traditional:</i> Crossing guard, park volunteer, charter school <i>ICT-Facilitated:</i> CrisisCommons, Challenge.gov, PeerToPatent, government-run wikis	<b>Ecosystem embedding</b> Government can create an environment more conducive to private (and peer) production via greater "embeddedness" whereby government agents become a part of the community through informal contributions that create public value and build trust, often outside of official mandates (Ostrom, 1996). More widely, this can take the form of openly sharing government knowledge, infrastructure, and other assets for use by the public that originally paid for them.  <i>Traditional:</i> Academic alliance, embedded community health workers <i>ICT-Facilitated:</i> GPS, Gov Open Sourcing	<b>Self-service</b> Self-service occurs when government expects citizens to essentially provide a "public" service themselves, sometimes within a facilitating framework provided by government. Examples include turning parks over to community volunteers or neighborhood watches. Self-service can also take a collaborative form whereby citizens help one another, as with car-pooling—the 2 <sup>nd</sup> largest commuter transportation system in the US.  <i>Traditional:</i> Private school, carpool <i>ICT-Facilitated:</i> Open Source, SETI@Home
<b>Monitoring</b>	<b>Citizen reporting</b> In citizen reporting, citizens provide information (i.e. intelligence) to government. Examples include feedback on government services (user satisfaction, etc.); reporting of crimes and potholes; and corruption monitoring.  <i>Traditional:</i> 311/911, survey, office visit <i>ICT-Facilitated:</i> SeeClickFix, FixMyStreet	<b>Open book government</b> Governments are increasingly moving towards "open book government" (Dunleavy & Margetts, 2010) whereby requests for information regimes are replaced by proactive information dissemination and a presumption of open publication. The goal is to make open and public the inner workings and performance of government to empower citizens to hold their government to account.  <i>Traditional:</i> FOIA, Fed Register, Bulletin <i>ICT-Facilitated:</i> Data.gov, Recovery.gov	<b>Self-monitoring</b> Self-monitoring takes the form of "online citizen testimonial systems" whereby online customer feedback mechanisms replace "top-down, central controls over and regulation of local delivery in hospitals, schools, and local governments" (Dunleavy & Margetts, 2010).  <i>Traditional:</i> Word of Mouth <i>ICT-Facilitated:</i> Yelp, NHS Choice

### 3.2.2. Service Delivery and Execution: Ecosystem Embedding

Tim O'Reilly argues that the Internet enables government to become "a stronger part of the social ecosystem" (2010). While governments are not normally in the business of co-developing personal or private goods, they can nevertheless create an environment more conducive to private, peer, and personal production by 'embedding' their capabilities into the wider ecosystem. The fact that digital information and computerized services can often be shared at near zero marginal costs means that the government can open such resources to the public for their own use at little or no additional cost, promising interesting new social uses of existing government resources. The Internet also opens up a range of opportunities for civil servant entrepreneurship, be it by contributing to an online community of practice or by correcting misperceptions on self-help health discussion boards. Indeed, government possesses vast stores of knowledge, talent, and infrastructure that could be leveraged to advance the public interest outside of narrow official mandates and responsibilities.

Examples include making the Global Position System (GPS) open to commercial and private use – spawning an entirely new industry – to sharing massive government datasets via data.gov that the citizenry and private sector can then mine for their own purposes. The Open Government Directive has given renewed attention to such initiatives. U.S. Health and Human Services, for instance, has launched health.data.gov to expose its massive, high-value datasets and explicitly promotes the creation of a new health 2.0 industry, including via sponsorships like the Health Apps Expo.

### 3.2.3. Service Monitoring: Open Book Government

Advancements in data management, dissemination, and analysis have equipped individual citizens and civil society organizations with the capability to sift through vast amounts of government data. This has enabled a new level of open and transparent government, whereby agencies make their datasets available for public scrutiny and reuse – bringing fully "open book" government within grasp of reality (Dunleavy & Margetts, 2010). Recovery.gov, for instance, tracks and makes transparent every one of the billions of dollars spent through the Recovery Act, allowing citizens and NGO's to mine and audit government spending data. Likewise, city governments have begun to adopt open "CityStat" programs providing full access to agency performance data, such as via New York's vast Agency Performance Reporting System (nyc.gov/html/ops/cpr).

### 3.3. "Do It Yourself Government" (Citizen to Citizen)

#### 3.3.1. Service Design: Self-Organization

Social media and online collaboration platforms enable communities to more easily and effectively self-organize. Flanagan, et al. note that the Information Age has reduced citizens' reliance on formal, professionalized institutions of collective action – political parties, interest groups, mass media, etc. – as instantaneous, many-to-many communication and ubiquitous information increasingly mean that "coordination costs are not only lower but less necessary, centralized leadership

is being displaced, and hierarchies are minimized" (2006). The Internet, for instance, makes it far easier for groups to make collective decisions by collapsing time, space, and hierarchy. Accordingly, community organizations are increasingly deploying community portals to enable collaborative decision-making.

### 3.3.2. Service Execution and Delivery: Self-Service

These same platforms also offer new channels for coordinating community-based collective action with IT replacing government as the intermediary by facilitating direct citizen to citizen assistance. In so doing, mass coordination via social media provides a vehicle for citizens to self-perform functions of government that the state has refused or is unable to provide on its own.

Carpooling, for instance, has taken new heights in Northern Virginia in the form of "slugging" in which drivers "snatch" perfect strangers at established spots advertised online to meet the DC Beltway's particularly stringent carpool lane requirements – and, in the process, creating an enormous public good available to all that is organized and operated not by government but by the public itself. Likewise, it is the actions of loosely coupled individual citizens rather than a large scale government program that created among the world's most powerful supercomputers by enabling citizens to pool their commodity PC's idle cycles into a vast network of 4.5 million machines to form the well-known SETI@Home project (Shirky, 2010).

Self-service has particular appeal in jurisdictions suffering from shortcomings in government service provision as citizens can take matters into their own hand by using social media to coordinate their actions when government fails to act. For instance, in China, citizens conduct "flesh searches" to uncover the identity of criminals or corrupt officials and collaborate to locate lost children which have been forgotten by the state (see, for instance, baobeihuijia.com).

### 3.3.3. Service Monitoring: Self-Monitoring

Data analysis and mobile connectivity equip citizens with the means to provide feedback on the quality of services offered by a particular office or official in real time. Emerging "crowdsourced" evaluation systems already inform citizens' private decisions on a daily basis, whether it is selecting a good restaurant from Yelp.com, reading the most popular news article on Reddit.com, or avoiding a poorly rated book on Amazon.com. The Digital Era Governance literature advocates governments to adopt similar real-time, citizen-based evaluation systems to augment or substitute government-led ones, both to save costs and to speed up the evaluation process. Government offices, for instance, could have public online profiles with aggregated reputation scores to inform the public of the quality of a service. Britain is very much at the forefront of this movement, such as with its health services-focused NHS Choices system. The UK even took the unusual step of abolishing its key regulator of local governments, instead requiring local councils to publish their financial books. The assumption is that nonprofit organizations and individual citizens will assume the responsibility of monitoring local councils using "open source-type approaches to process the resulting mountains of information" (Dunleavy & Margetts, 2010).

Social media also provides an alternative to government censored media as well as alternative channels of redress for citizen complaints. Again using China as an example, social media has provided a platform for whistleblowers on the SARS epidemic; raising awareness of contaminated milk; and aggregating lists of children names killed during the Sichuan Earthquake due to rampant building code violations (Yongnian & Wu, 2005). Similarly, ipaidabribe.com offers a venue for citizens to exchange information on corrupt officials in India, generating a treasure trove of data on bribery in the aggregate to support evidence-based arguments for improvements in governance. These citizen-organized activities can often spur official action to correct government failure.

## 4. Applying the Typology

### 4.1. Sample Application 1 (Program-level): Examining the Link to Open Government

The paper will now apply the typology outlined in Section 3 to classify a list of prominent U.S. open government initiatives, thereby exploring the role and form of citizen coproduction in the America's Open Government movement while also providing a demonstration of how the typology can be applied.

The White House's Open Government Innovation Gallery (whitehouse.gov/open/innovations) features open government initiatives self-elected by federal agencies to present the projects that government personnel have deemed most innovative and important. From this list, the author excluded those that focus only on intra-governmental collaboration, i.e. internal ideation (3x) and internal collaboration platforms (3x). Classifying the remaining initiatives using the citizen coproduction typology results in a fairly balanced distribution as indicated in Table 3 (which, given the focus on government programs, does not include citizen-to-citizen coproduction). Discussions with individuals possessing government and public policy backgrounds indicated a high degree of consensus and precision in applying the typology, with deviations only for such multifaceted initiatives as data.gov that sprawl across multiple categories. While citizen reporting initiatives are noticeably absent, this is likely due to the fact that citizen reporting mechanisms – such as for crime – are most valuable at the level of local government rather than at the federal level from which the Gallery's initiatives originate.

Further analysis demonstrates strong uniformity and commonality in the tools adopted *within* each category but with significant differences *across* categories. Consultation initiatives exclusively rely on ideation, remote participation, and commenting platforms; both Informing and Open Book Government initiatives are based on data and information dissemination platforms; and Crowdsourcing initiatives are highly reliant on competition platforms or groupware tools such as wikis and collaboration platforms. Given their inherent complexities, Ecosystem Embedding initiatives rely on a rather more diverse range of tools, often using multiple combinations such as data platforms, online communities, and competitions. Moving forward, future research would do well to compare, supplement, and integrate the policy-driven typology presented in this paper with the tools-focused typologies available in the literature (Nam, 2011).

**Table 3**  
Innovation gallery initiatives grouped by category.

	"Citizen sourcing" (C2G)	"Government as platform" (G2C)
Planning	Consultation and ideation ■ GSA OpenGov Dialogs ■ HHS HealthReform.gov ■ NARA Federal Register 2.0 ■ NCLB Listening & Learning Tour ■ NRC Web Conferencing for Meetings ■ OIRA/EPA Regulations.gov	Informing and nudging ■ Open Energy Information (Energy) ■ SBA Business.gov ■ VA Blue Button
Delivery	Crowdsourcing and co-delivery ■ DODTechipedia ■ GSA Challenge.gov ■ HHS Flu Prevention PSA Contest ■ NASA Open Innovation Service Providers ■ PTO Peer-to-Patent ■ USAID Development 2.0 Challenge	Ecosystem embedding ■ Community Health Data Initiative ■ Data.gov (OMB and CIO Council) ■ NARA Collaborate: A Virtual Community for Educators ■ NARA Our Archives Wiki ■ Nat'l Lab Day (NIH, NSF, Energy) ■ ScienceEducation.gov (Energy)
Monitoring	Citizen reporting <none>	Open book government ■ IT Dashboard (Federal CIO, OMB) ■ MCC Results Online ■ Open for Questions (White House)

**Table 4**  
ChicagoShovels.org's holistic approach.

	Citizen sourcing	Government as a platform
Design	Consultation and ideation Citizens can provide suggestions and ideas via the snow portal's Facebook and Twitter accounts.	Informing and nudging Citizens can track the weather, sign up for SMS alerts, and track real-time progress of snow removal to plan their commute.
Delivery	Crowdsourcing and co-delivery Citizens can "claim" streets for cleaning and volunteer for a "Snow Corps" to help the disadvantaged.	Ecosystem embedding The site offers a public platform for citizens to share shovels and other equipment.
Monitor	Citizen reporting Citizens can place a 311 service request or Tweet to inform the government and other citizens in real-time on the state of their streets and well-being.	Open book government The city provides full access to the location and functioning of its snow cleaning operations, enabling citizens to hold them to full account.

#### 4.2. Sample Application 2 (Individual Project): Tying it All Together – The Holistic Example of Chicago's Snow Portal

A new initiative by the City of Chicago, the ChicagoShovels.org "snow portal," well-demonstrates how the new channels and methods of ICT-facilitated citizen coproduction for public service delivery can holistically come together into a new way of doing business that significantly changes the way the government operates, while improving service quality (Rich, 2012) (Table 4).

With 9000 lane miles to preserve, the demands of Chicago's unforgiving snow storms place a tremendous burden on the government's finite resources. But by tapping into the citizenry at the community level, Chicago's new platform successfully leverages the full range of citizen coproduction approaches to augment governmental capacity to improve speed, responsiveness, and community engagement.

### 5. Discussion: Implications for Public Administration

While more systematic and empirical analysis is necessary, the review of the coproduction landscape above suggests that the advent of social media and web 2.0 interactivity indeed appear to enhance and expand the viability of and capacity for citizen coproduction, not only in traditional citizen-to-government arrangements ("citizen sourcing"), but also in arrangements whereby the government informs, assists, and enables private actions ("government as a platform") or whereby citizens assist one another, with IT replacing government as vehicle for collective action ("do-it-yourself government"). Advancements in ICT, principally in the form of social media, has enabled these trends by offering promising new vehicles for (a) collective action as always-on connectivity and open government provide an unprecedented mechanism for real-time, community-wide coordination and (b) collective intelligence as mobile-equipped citizens can today complement digital sensors for real-time reporting and comprehensive situational awareness, presenting tremendous opportunities for data-driven decision making, improved performance management, and heightened accountability.

In each of these cases, the boundaries between the government and the public both shift and fade. This trend was observed and predicted by Castells, who noted the fading of sectorial boundaries and the rise of what he terms the "Network State," "characterized by shared sovereignty and responsibility...and greater diversity in the relationship between governments and citizens" (Castells, 2008) as collective action and government activity is increasingly performed through amorphous networks. These trends, when taken together, could significantly impact the practice of public administration – and may offer among the few opportunities for addressing the critical challenges faced by government administrators (ranging from constrained budgets to low public confidence in institutions of government) – even as they introduce new challenges of their own.

At the end of the day, the fundamental question facing society is: what public value must be created, and how can its production be assured in the most effective and efficient way. Government is typically the default choice, but the new tools of the Information Age have begun to empower non-state actors with enhanced capabilities for self-organization and value creation (Benkler, 2006). In fact, the black-or-white question of "government or not" presents a false dichotomy; rather, it is about how responsibilities can be best shared.

#### 5.1. Evolving Public Administration Paradigms

Tim O'Reilly, the well-known publisher and technologist, argues that social media's empowerment of the individual may well force a re-interpretation of the role of government – and with it the responsibilities of the citizen. Tapping the spirit of the Free Open Source Software (FOSS) movement, he sees in the tools of the Information Age the potential to open up government's "formerly closed processes to broader input and innovation." In so doing, he envisions the rise of Government as Platform (as described in the typology's G2C category) whereby government "provides resources, sets rules, and mediates disputes, but allows citizens, nonprofits, and the private sector to do most of the heavy lifting," thereby empowering the people, unleashing social innovation, and reinvigorating American democracy (O'Reilly, 2010).

This re-emergence of citizen coproduction as a critical policy option challenges the prevailing public administration paradigm of the New Public Management (NPM) (Nam, 2011), which seeks to adopt a market-driven, transaction-oriented approach to the management of public services – leaving little room for active citizen participation. Having adopted NPM as the dominant framework, governments today tend to treat citizens first and foremost as "customers" rather than partners, "obscuring the significance of citizen action and participation through overstressing the (important) idea of responsiveness" (Vigoda, 2002). Some argue that citizens have largely grown accustomed to this, favoring the "easy chair of customer over the seat and turmoil of participatory involvement" (Ibid). This may have made sense before the advent of social media, when ordinary citizens could not easily self-organize and collaborate. But technological advancements have changed this picture tremendously.

In response, scholars and government strategists have begun to propose a number of successors to NPM that seek to take greater advantage of modern ICT infrastructure, e-government, and the newly empowered citizenry through the adoption of what Johnston & Hansen call "smart governance systems" (Johnston & Hansen, 2011). Among these, the emerging "Digital Era Governance" (DEG) and "Transformational Government" (t-gov) paradigms are most prominent and developed. DEG holds as one of its core assumptions that "citizens and businesses will increasingly co-produce most individual outputs using electronic processes, leaving agencies to provide only a *facilitating framework*" (Dunleavy, Margetts, Bastow, & Tickler, 2005). Likewise, the Transformational Government model strongly emphasizes citizen empowerment, calling on government to provide the public with the "technology tools that enable them to create public value themselves" (CS Transform, 2010). In both paradigms, government remains a mechanism for collective action, but often, in the words of Tim O'Reilly, as "a convener and enabler rather than the first mover of civic action" (2010).

#### 5.2. Government's New Role and Responsibilities

The policy options these new developments enable could be truly transformational. But taking such concepts from theory to practice requires dramatic changes to the systems of government and, indeed, the social contract. While social media-enabled citizen coproduction initiatives remain at their earliest stages, the existing literature on traditional co-production, collaborative governance, and public-private



partnerships offers insights into the new role and responsibilities that government will need to perform:

- *Framer*. In traditional coproduction efforts, governments play the lead role in “setting the tone” and defining how actions should be conducted; this is done not only by “promulgating ideas” but also by actively carrying out activities “that promote and sustain them” (Lam, 1996). Work could include setting rules, monitoring performance, and enforcing compliance to ensure fair participation and boost participants’ confidence in one other to promote reciprocity. In so doing, government-derived authority improves coordination, lowers transaction costs, and better extracts contributions from participants.
- *Sponsor*. Government sponsorship – financial and otherwise – will often mean the difference between success and a failure. Coproduction efforts, for instance, may depend on inputs which participants cannot supply on their own – whether in the form of physical infrastructure or the rule of law (Evans, 1996). For instance, Government resources may be necessary in completing the less glamorous tasks, such as integrating contributions. Government support, if only nominal, is also essential for ensuring popular legitimacy (Ackerman, 2004).
- *Mobilizer*. When coproduction is not mandated, it must be motivated. The primary challenge, of course, is that citizens “cannot be ordered around like employees” (Benkler, 2006). Fortunately, government has unparalleled mobilization capabilities. Time and again, Ostrom finds that “direct involvement of public officials played a critical role in organizing citizen efforts and sustaining citizen involvement” (Wang, 1999). This is particularly important in ensuring that “the unorganized get their act together” as the Internet’s “democratic potential cannot be realized without a guiding hand from government” (Rethemeyer, 2007).
- *Monitor*. Governments will almost certainly continue to hold ultimate accountability for the public wellbeing. In civil society-led co-production, this has the interesting implication of turning the table on their respective responsibilities as government must now hold civil society to account rather than the reverse (Ackerman, 2004).
- *Provider of Last Resort*. Government must also continue to serve as the actor/provider of last resort and step in when third party alternatives “do not satisfactorily emerge” (Robinson, Yu, Zeller, & Felten, 2009). This role need not occur only in cases of failure; more proactively, government can develop protective boundaries whereby problems which cannot be dealt with effectively at the lower, non-governmental level are transmitted up for government action (Lam, 1996). Yet government must to an extent also make a credible commitment *not* to undertake actions: if citizens come to believe that a government agency will bail them out ...citizens will be more likely to break the promises they make (Ostrom, 1996).

### 5.3. Risks and Limitations: Is this Evolution a Good Thing?

Proponents argue that the benefits of coproduction go beyond government cost-savings and that it has been shown to: foster social capital and strengthen civil society (Torres, 2007); produce positive spillovers by fostering local activism in other areas (Ostrom, 1996); promote innovation; better differentiate services “in response to heterogeneous preferences in the community” (Goldsmith & Kettl, 2009); and engage the poor and disadvantaged more effectively than general civic participation (Bovaird, 2007). In emerging economies, marked by governments with limited resources, there is often no alternative.

Yet Internet-facilitated coproduction efforts will remain experimental – and controversial – as long as scholars and practitioners have only limited insight into their impact and viability. As Ostrom cautions, “designing institutional arrangements that help induce successful co-productive strategies is far more daunting than demonstrating their theoretical existence” (1996). Indeed, while the potential impact of social media technologies on the functioning of government is “profound,” they come with “challenges in the areas of policy development, governance, process

design, and conceptions of democratic engagement” (Bertot, Jaeger, Munson, & Glaisyer, 2010).

The popular maxim that “power comes with responsibility” would suggest new responsibilities for the newly empowered citizen. But this reworking of the social contract is not without controversy. Certainly, while the various examples above provide some evidence that citizen coproduction is today more viable, effective, and widely applicable in the age of social media, the literature makes equally clear that a wide range of questions and social concerns remain unanswered. First, services based on Internet-facilitated volunteerism replace planning with probability – i.e. no one is “scheduled” to be available, but someone will “probably” be there to help. Yet, as a vocal critic of Britain’s Big Society program argues, “public services must be based on the certainty that they are there when you need them, not when a volunteer can be found to help you” (Prince, 2010b).

Moreover, surveys show that less than 10% of the U.S. population are active online content contributors. Such reliance on a small (and potentially unrepresentative) segment of the population risks both a loss of legitimacy and the “burn-out” of participants (Bovaird, 2007). Worse, it suggests that a large segment of the population either does not have access to or does not feel comfortable making use of emerging social media and online collaboration tools – i.e. that these tools risk empowering only the empowered. Certainly, the benefits brought by the Internet “have not been uniformly distributed” and are not “equally available to all” (Jaeger & Bertot, 2010); rather, studies find that the Internet reinforces “well-known SES stratification” (Schlozman, Verba, & Brady, 2010). In particular, active online content contributors appear to represent a “homogeneous demographic and psychographic of highly-educated, well-connected and well-paid professionals” (van Dijck & Nieborg, 2009), reinforcing the traditional “civic engagement gap” (Jennings & Zeitner, 2003) and risking the marginalization of disadvantaged service users (Dutil, Howards, Langford, & Roy, 2007). The implications are troubling and should inspire caution and proactive counterbalancing by government.

Scholars express particular concern when coproduction becomes expected or even mandatory: “it is hardly progressive to distribute responsibilities to the powerless” (Bovaird, 2007). Indeed, few would support citizen coproduction if it was simply about “offloading” government functions to the public. Instead, Lam argues that coproduction should be less about “trying to get rid of government agencies” and more about redesigning government to “perform effectively, and complement citizen’s efforts in broader institutional settings” (1996), with each interdependent stakeholder bringing something essential to the table that would otherwise be lacking. Yet it is clear that citizen coproduction’s primary appeal is first and foremost about providing a shortcut to cash-strapped governments for addressing budgetary pressures rather than any attempt to “empower” citizens or improve performance.

Unfortunately, a lack of a robust theoretical foundation and of systematic evaluation handicaps repeatable success in practice. Indeed, it is not yet clear what conditions need to be in place for Internet-facilitated coproduction to be successful and sustainable. Do Ostrom’s famed design principles for effective management of “the commons” (1990) apply to the Internet-facilitated variety? Will Benkler’s criteria for viable “peer production” (2002)—namely small, granular modularization and low-cost integration—hold for citizen coproduction? What system designs best promote contributions? Such questions have been “vastly understudied” and have only just begun to be answered in the literature (Shneiderman, 2009). Without complete answers to these questions, one cannot with certainty identify appropriate contexts and applications or ensure effective institutionalization.

## 6. Conclusions

Continued advancements in ICT have revolutionized “fields as diverse and important as medicine, astronomy, biochemistry, economics, and ecology” (Parikh, 2009). These forces have not left government untouched; far

from it: “the advent of the digital era is now the most general, pervasive, and structurally distinctive influence on how governance arrangements are changing in advanced industrial states” (Dunleavy et al., 2005). Where these influences will take government remains an open question. But the direction is clear, as government moves towards a steer rather than row, facilitate rather than act arrangement.

To help build a foundation for analyzing this transition, this paper has provided a basic typology for categorizing citizen coproduction initiatives so as to bring order to the diffusion of loose terms currently in use in both the popular and academic literature. The intent of this typology is to help public administrators and researchers better understand, compare, and guide implementations by recognizing the variability and appropriate applications of different coproduction designs. Future empirical research will further examine the validity and precision of this typology, which is based on young, emerging initiatives and so subject to further improvement as best practices emerge and programs mature. More work is also needed in aligning and integrating this paper's typology into the literature's broader analytical frameworks, including on appropriate ICT tools and design, sequencing and maturity models, contributor motivation, social safeguards, and beyond.

In the transition from e-Government (citizen as customer) to We-Government (citizen as partner), we may well witness the emergence of “a new kind of social contract” (Long, 2002) in which society places greater trust in – and empowers – the public to play a far more active role in the functioning of their government. In this new arrangement, government will continue to provide the rules, platforms, and access while citizens and communities take on more responsibility in exchange for a greater say. The resulting environment will be one of greater complexity and confusion. But there is inherent value in rejuvenating civil society and shifting the focus away from unsustainable entitlements to personal responsibility and solidarity.

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