PEER TO POLICY

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Draft For Yale-Oslo Conference On Epistemic Democracy in Practice, October 2011

Innovation in Governance

Network technology has irrevocably changed campaigning and elections. It has the potential to transform governance and the workings of our democracy for the better. These improvements, however, have been slow in coming. Innovations in governance have been thwarted by politics as usual and resistance to devolution of power away from hierarchical bureaucracy to networks of diverse, public participants. People are disgruntled by the lack of opportunity to participate save in elections once every two or four years. Whether in Tripoli, Tottenham or Wall Street people have been demonstrating in the streets. Most simply want a state that works but they have lost faith in government and other centralized institutions of power. For example, just a quarter of Americans polled express optimism about the future of the United States government. Churchill was fond of saying that democracy is the worst form of government except all the others, but by democracy he surely meant something better than this.

There is no viable justification for a democratic system in which public participation is limited to voting in elections. Instead, we now have the opportunity and the imperative to go beyond what the Founding Fathers' could have imagined possible in their day and create government truly of, for, and with the people. As historian of democracy Robert Wiebe writes, we too readily rein in our values for the political process, instead of shunting aside the political process because it threatens our values. Now we can use technology to achieve an entirely new vision of non-hierarchical and collaborative democracy, where the state shares power and decision making authority with the public.

In this paper, I build on earlier work that articulates the theory of collaborative democracy and the distinctions between it and other forms of participatory democracy (see *Wiki Government: How Technology Can Make Government Better, Democracy Stronger, and Citizens More Powerful*) to outline a two-stage trajectory towards realizing collaborative democratic culture. The first phase focuses on making government smarter through better information exchange between government and governed. The second focuses on devolving power from bureaucracy to networked groups outside of government. After explaining the theory, I describe an experiment called "Peer to Policy," a system for crowdsourcing public participation in policymaking, designed to realize the vision of the first phase. Even if crowdsourcing expertise perpetuates a power asymmetry, we need such interim solutions to help us develop mental models for how government can give up and the public can step up to exercise greater power and control.

The Theory of Collaborative Governance: What We Are Working Towards

Collaborative government changes our expectations of what government can accomplish and, ultimately, how we as citizens relate to the state. It starts from the hypothesis that network technology -- specifically the rise of big data and online collaboration -- holds the promise of enabling us to do better at governing ourselves.

There are two big ways in which network technology is revolutionizing governance and allowing us to realize a new vision of collaborative democracy.

First, networks make institutions smarter by overcoming the limits of their intelligence. As Joi Ito writes, "organizations were born...to compensate for our limited social skills." Richard Hackman and Stephen Kosslyn refer to the "group brain" as helping to overcome our individual

cognitive deficit. We are smarter working together than alone. But one organization is not as smart as a network of them. By using technology, we make it possible for groups outside government to participate actively and share expertise and know-how, thereby upending the orthodoxy that government professionals know best. By "connecting the network" to the institution, we may be able to overcome the deficit of expertise from which our political institutions suffer

Second, and more important, networks dethrone the privileged status of bureaucracies as the exclusive, legitimate decision maker and pave the way for new, collaborative forms of governance between the state, individuals, groups and markets. Networks make it possible for new groupings of individuals working together to solve problems at scale. Whereas the state sets the baseline rules of engagement in order to catalyze and coordinate participation, there is no reason why it should possess sole authority over spending, decision making or problem solving. In the networked state of the future, it is easy to imagine a world where the state collects taxes and then individuals receive small grants to undertake projects of their choosing whether as individuals or through collective action. Given the diversity (i.e., the "long tail" of people's interests), there is every reason to assume they will tackle everything from improving schools to repairing bridges. Recipients then report back to the public on the success of their work, rather than exclusively to the institution. Citizen juries, not unlike the twelfth-century innovation of our criminal juries, decide if the financing should be renewed and enlarged, avoiding today's problem of often unaccountable corporate contracting or bogus bridges to nowhere. The ultimate goal is to empower ourselves to take power away from hierarchical, closed government and instead to create a new kind of the state that erodes the barriers between government and governed.

Phase 1: Smarter Institutions: Open Government

Networks enable institutions to share and obtain information. This is what is commonly called open government. By integrating ostensibly anarchic technologies within ostensibly authoritarian bureaucracies to connect professionals and data within the institution to people with good ideas and information on the outside, an open government can access the wealth of creativity and insight that is out there in the wider society. As President Obama expressed it in the Open Government Memorandum: "Our commitment to openness means more than simply informing the American people about how decisions are made. It means recognizing that government does not have all the answers and that public officials need to draw on what citizens know. And, that's why as of today I'm directing members of my Administration to find new ways of tapping the knowledge and experience of ordinary Americans…Because the way to solve the problems of our time as one nation is by involving the American people in the policies that affect their lives."

Latvia, Estonia and the United Kingdom have all been experimenting with turning citizen petitions into laws. The Palestinian Prime Minister used Facebook to solicit names for his new cabinet picks. The Icelandic government turned to a brainstorming platform – Agora – to invite strategies for rebuilding after the financial collapse and for redrafting its constitution. Across Kenya, Tanzania and Uganda, Uwezo – a citizen led survey of almost 200,000 households – has revealed that children still lack basic literacy and numeracy skills. These findings are now helping governments and citizens improve learning outcomes in education.

When we ask the right questions and supply the necessary background information, particularly when we enable deliberating groups not just disconnected individuals to participate,

networks can help make institutions, whether companies or governments, smarter and citizens more powerful, As Rakesh Rajani of the Tanazanian civil society group Twaweza explains: "As important as dollars saved are, the true power of open government may be its effect on the public imagination. When citizens monitor what's going on, make comparisons and act, they gain a sense of purpose and control; a sense not only that things happen to us, but that we can make things happen; a poignant affirmation that we are part of the narrative of history."

Consider this example. In 2005, well before Facebook or Twitter, my students and I designed and built the first "social network" for government. Peer to Patent connects volunteer scientists and technologists to supply information to national patent offices in the United States, Japan, Australia, and the UK via an open website with clear directions that instruct participants how to research, rate and rank each other's submissions for relevance and accuracy and supply the institution with a manageable quantity of vetted information at the end of a limited time window. Time after time, the public is able to dig up quickly the expertise the official needs and can't find, enabling her to make the final determination informed by citizen participation but subject to the independent law and rules of the patent process. Peer to Patent requires individuals to come together and form teams, working together in groups, to vet the research. As then-CEO of Google Eric Schmidt said of Peer to Patent, "Why is it not true of every branch of government?" In the new Patent Act, passed with near unanimity, Peer to Patent citizen engagement, once an experimental pilot undertaken only with the applying inventor's consent**,** is now enshrined in law.

We want -- we need -- to realize Woodrow Wilson's century-old dream of public administration capable of discovering "first, what government can properly and successfully do, and, secondly, how it can do these proper things with the utmost possible efficiency and at the

least possible cost either of money or of energy." The last great revolution in the way that government governs was the nineteenth-century rise of a new class of professional, government experts, bounded by laws and rules designed to prevent corruption and safeguard the public interest. When the rise of the corporation and the railroad gave birth to the need for more organized ways to govern in an increasingly large and complex society, we created the systematized processes of government information collection, which we think of today as modern bureaucracy.

Whether elected or appointed, however, our public officials have limited access to the best information and flexible opportunities for innovation. Using experimental survey evidence, award-winning organizational psychologist Philip Tetlock demonstrates that today's policy wonks are no more accurate at predicting the future than monkeys. Sociologist Duncan Watts explains, "Policymakers can always persuade themselves that all they need to do is to design the correct incentive scheme" and they can fix every problem. But, he writes, "our impressive ability to make sense of behavior we have observed" does not imply a corresponding ability to predict it.

Phase Two: Collaborative Democracy

In 1945, Friedrich Hayek wrote "the knowledge of the circumstances of which we must make use never exists in concentrated or integrated form." The networked state has the potential to organize dispersed knowledge for the betterment of governance and society. But the networked state goes beyond getting better information to government officials. The networked state ultimately decentralizes power from a handful of government professionals to self-organizing groups. Disaster preparedness is a concrete example of the devolution of power enabled by

networks. Once the domain of professional first responders, network technologies like social media are making ordinary citizens part of the permanent infrastructure of crisis management. The Red Cross has been training volunteers and Twitter supplying them with verification badges to enable ordinary people to coordinate relief during hurricanes and other natural disasters as a complement to or even in place of FEMA. The institution and the network are part of a common collaborative community. As technology enables us to evolve away from representative institutions and toward networked ones, we will start to see more and more examples like the new experiment of the City Council in New York, which has ceded responsibility to the public to spend six million taxpayer dollars. Through a process of neighborhood assemblies, citizens will be able to propose and vote on local infrastructure projects.

Today the City of Chicago is analyzing citizen tweets to improve the delivery of services. One tweet about a sofa in a sinkhole is interesting, possibly a joke. Five of them, geolocated, trigger a 311 service call that the city can prioritize, enabling the city to respond to the affected people immediately. But in the future, there is no reason the state needs to repair the potholes itself if there are communities of citizens, organizations and companies who can do better. In a collaborative democracy, the public can do more than talk; it can take action.

In Chennai, India, a city of 4 million people, for example, there are over 5,000 separate bus routes. The official bus map was incomplete and incomprehensible and had been "under construction" for six years. So in 2010, Arun Ganesh, a student at the National Institute of Design in Bangalore – not a bureaucrat -- decided to design a new map, and he turned to the web to ask his fellow bus passengers to help him. Commuters contributed timetables and bus details, and in just three days he had compiled enough data to create a fresh map for mobile

phones with a clean, comprehensible design. Using the data, he then developed a visualization of where the bus network was failing to provide adequate service. Similarly, after the UK released public data about bike accidents in England, it took one week for a creative designer to develop a free route planning tool that enables cyclists to map the safest route to get to a destination -- no new traffic lights, road works, or costly and contentious legislation.

This vision of governance is not a return to a mythical democracy of the Founding Fathers, who, while they believed in popular elections, vigorously argued in the Federalist Papers that only educated men of a certain class should or could run the affairs of state. "The Federalists," writes the famous historian of government Leonard D. White, "accepted the philosophy of government for the people, but not government by the people." It also does not fixate on the size of government. In the networked state, who is government and who is governed will become an increasingly irrelevant distinction.

Put another way, the state is becoming more like Twitter. Twitter works so well because it provides governance rules necessary to connect people for short-form conversation. On top of that basic platform of 140-character communiqués, people do what they like. Twitter opens up its application programming interface (known as an API) to enable others to build tools that work within the Twitter environment. As a result, 60,000 third-party tools interoperate with Twitter, from the New York Times' widget that allows a reader to tweet a story, to those who create more attractive ways to read Twitter on a Blackberry or iPhone. The same principle is true for Facebook, whose popularity has as much to do with the user-created programs for playing Scrabble as for the underlying network that connects people in affinity groups based on university affiliation.

In order to encourage people to build innovative "applications," such as improved ways of

delivering services, solving problems, and making policy, institutions must behave more like networks and offer open access to data together with the communication infrastructure and rules. (We might nickname this the "Public API.") Contrast this process for democratizing power with the fact that until I got there in 2009, the White House had never asked the public for comment on a policy proposal. It had never solicited the input of rank and file government employees at all. Government doesn't have all the answers, and innovative approaches will only come from collaboration across networks and experimenting with novel techniques.

From India to England, institutions and networks are working together in exciting and experimental ways (two adjectives not generally associated with government) to ask for help and implement the answers. Using technology, we are able, as Jefferson hoped, to "mak[e] every citizen an acting member of the government, and in the offices nearest and most interesting to him." This, in turn, Jefferson went on, "attaches him by his strongest feelings to the independence of the country, and its republican constitution."

Why Now

There are two technological developments catalyzing the rise of the collaborative governance and, by the same token, giving rise to new research questions about the future of democratic institutions: open data and social networking. Until their recent emergence, we couldn't have proposed this initiative.

In May, 2011, McKinsey released a report highlighting the role of "big data" in enabling "a new wave of innovation, accelerating productivity and economic growth." Thanks to cheap storage capacity and expanded computational power, every 1.2 years more human-driven socioeconomic data are produced than during all preceding human history combined. Now we

also have policies producing the massive availability of public sector data, too. Governments around the world, and throughout the US, have been releasing an unprecedented amount of data in raw data forms. In the US alone, the Federal government has released over 300,000 datasets, and 16 states, over 20 cities, and several tribal entities also are releasing large numbers of datasets yielding terabytes of new information. Big data is key to the creation of more participatory governance in that it provides the raw material for people to use in developing workable solutions to social and economic problems collaboratively.

President Obama's "Day 1" Memorandum on Open Government (disclosure: I was the founder and head of the Obama Administration's Open Government Initiative in the White House) says that "information maintained by the federal government is a national asset." Subsequent policy statements including the Open Government Directive and statements from the Attorney General reinforce the goal of making public data freely available, online and in open formats. Platforms like data.gov in the United States and data.gov.uk in England paved the way for translating principle into practice by making it possible for agencies to publish and the public to find government data on the web. Over the last two years, twenty nations and dozens of states and cities have created data portals. Legislatures and administrative departments have begun to mandate open data requirements.

Together, the policy and the technology are giving rise to a new era of data-driven policymaking that could give us the means to avoid the risk of economic meltdown and develop more effective policies whose impact and effectiveness we can measure. As David Lazer points out, "cities collect data at fine geographic and temporal granularity on health, transportation, crime, and residential mobility. This facilitates the examination, for example, of the impact of changes to transportation infrastructure and how such changes affect particular types of

individuals and behavioral patterns." Todd Park, CTO of Health and Human Services, is making available thousands of free government data sets. He uses this data to entice entrepreneurs and "citizen coders" to build tools that will empower people to make better decisions about their care and wellness and to inform the work of policy makers.

The second significant trend is the rise of social (sometimes known as expert) networks because they enable people to work across a distance. Three unique characteristics of networks enhance collective action: they make expertise discoverable; aid in divvying up tasks and roles; and enable democratic social practices.

First, digital network technologies can make it easier to find one's inner "expert" and to connect with other such experts. Networks – from social networks like Facebook to professional networks like VIVO that connect scientists across a dozen universities to interactive videogames – are designed to showcase what their members know. Facebook shows off your social connections. LinkedIn touts your professional contacts. Twitter advertises how many "followers" you have. Videogames display your skills at healing, slaying and mastering other tasks. Much of the appeal lies in the fact that people with otherwise undistinguished "real" lives can demonstrate significant expertise and mastery by power-selling on e-Bay, leading a guild in World of Warcraft, or becoming a frequent contributor to Wikipedia. Imagine if Congress or the White House, when considering a pending bill on farm subsidies, had the ability to target questions and receive manageable, relevant responses from agronomists, economists, farmers and others with expertise and experience. Instead of having to rely exclusively on a select group of professionals who sit in Washington or Brussels, people with every imaginable skill and passion could augment their intelligence.

Second, we work hard when we have the right work. Highly graphical and visual interfaces in our desktops, laptops, iPads and smart phones make it possible to display the breakdown of larger goals into manageable roles and tasks so that people can join in and collaborate. Now we have tools that allow us to find those specific and important jobs in other domains. More voters than ever before participated in the presidential campaigns of 2008, in part, because the campaigns provided tools to enable people to go beyond merely voting and "do stuff" from phone banking to driving people to the polls best suited to their available time, talents and enthusiasm. Imagine if the White House website offered a simple graphic illustrating each step involved in the process of writing a policy memo for the President's consideration or drafting a rule for a federal agency or signing up to offer to implement a solution to a problem. We'd be opening up a window and shining light on the otherwise opaque and mysterious governing process and nudging people to contribute relevant information and opinions.

Third, and most important, these social and visual technologies can be programmed to enforce participatory ways of working, deciding and doing. In other words we can design for democracy. Design matters. We can create new tools quickly that guide people through novel and potentially complex practices that may be unfamiliar to them, like public participation in a democratic process. And we can use what we know about Farmville and World of Warcraft to make participation in real world problem solving more fun and engaging like solving a problem in a game. We can iterate new versions of the institutional "operating system" and strive to create democracy 2.0.

Peer to Policy Information Sharing Experiment on Citizen Participation in Policymaking

The traditional model for citizen consultation borne out of the Administrative Procedure Act of 1946 typically either elicits postcard responses from interest group members or extensive briefings from professional lawyers and lobbyists but not high rates of useful participation from non-professionals. The rule making process asks for input after a policy is already drafted, which decreases the relevance of citizen engagement and, in turn, dampens enthusiasm for participation. Government officials have expanded the use of social media, such as Facebook and Twiiter, to ask the public how it feels about a given issue (ie. What is your opinion on abc?) despite the fact that factual information rather than popular opinion is needed to drive regulatory and policymaking activities. Social media are also used to enable the public to ask questions of government but not the other way around.

The Citizens Briefing Book, an initiative of the Obama-Biden Presidential transition team (on which I served), that invited the public to submit policy suggestions to proto-government officials planning the first hundred days of the administration. Tens of thousands responded. But the program was so slapdash in execution that no one on the receiving end was prepared to read the submissions. Similarly, in May 2009, as head of the Open Government Initiative in the White House I invited people to contribute policy proposals for open government policy using online brainstorming tools. Not surprisingly, this initially (we adjusted the process) resulted in queries about the whereabouts of the President's birth certificate. The tools and the process were not optimal for receiving useful, relevant input.

From that point forward in 2009, however, the open government movement spawned a new wave of action-oriented citizen engagement that upended the assumption that people are limited to supplicating the state in favor of viewing citizens as co-creators of democracy who can

engage in collective action. In this paradigm, public institutions use open data to create the opportunity and incentive for a new class of geeky citizens to participate in democratic life. The typical example of the new style of engagement was when a local transportation authority would make public data available for free in machine readable format and then invite tech savvy citizens -- civic coders -- to create iPhone apps that tell commuters when their bus or train is coming. In some cases, this new style of participation has been rewarded with a monetary or status prize.

Similarly, new web-based and mobile tools have been enlisted by government innovators to help non-geeks to take action. These online tools facilitate coordination of off-line action from protests on Wall Street to Get out the Vote drives to reporting potholes to the municipality to help government deliver services better or photograph instances of human rights abuses to demand greater accountability of government.

Despite this proliferation of new action-oriented engagement opportunities, however, there has not been much success nor much effort to enable non-professionals to participate in policymaking-making processes (such as rulemaking) or what we typically call citizen consultation. The assumption is that people are too busy, too ignorant about how government works, too motivated by self interest , or too undisciplined to play a meaningful role in complex decision making about the economy, environment, defense, health or other issues of governance especially online.

Now contrast these disheartening experiences with an online community like Stack Exchange where every day over a million people ask 2.4 million questions, supply 5.4 million responses that are read by another 2.7 million people who are not members of their 65 question

and answer websites but come across the answers via google. In 2002, the software giant SAP created an online community where participants ask and answer each other's questions to accelerate enhancements to one of its products. The forum grew from one hundred thousand to 1.4 million users in six years. While membership increased 10-fold during that time, participation rates increased 100-fold. On average, from the time someone posts a question to the time a response is posted is 17 minutes, with an additional 2 or 3 clarifying responses within 24 hours. Of questions posed, 85% receive a response. This participatory community has spawned cross-border collaborations leading to the development of important new tools. (FN – John Seely Brown) Nothing like this exists (yet) to make our democracy smarter and more participatory.

As part of its newly published (September 2011) National Open Government Plan, the White House has committed to implement a new Question and Answer system for obtaining expert input from the public in policymaking processes. What we called the ExpertNet project (I was involved in the initial project development) builds upon the lessons of the Peer to Patent system, created to connect volunteer scientists and technologists to the United States Patent and Trademark Office and provide manageable quantities of peer-vetted information. Peer to Patent is a working example of one way to use technology in the context of a hierarchical, bureaucratic institution to cultivate practices of citizen engagement and begin to experience more collaborative ways of working. Now we want to explore how we might expand Peer to Patent beyond the intellectual property realm to other areas of policymaking. Hence I'll nickname this the "Peer to Policy" experiment.

Designing the technical, social and legal attributes of a pilot implementation of a system to make government decision makers smarter and, at the same time, enabling new people to participate in governance will strengthen collaborative democracy in practice. At the same time, it address important theoretical questions about who participates and why and we will want to study any such pilot to understand if and it improves the quality of decisions and enhances the flow of information across institutional boundaries; how it affects the culture of the bureaucrats who participated; and under what conditions such a system can successfully be deployed. We will also have to anticipate the ways in which such a process can be subverted and how it can be evolved and improved.

What is the Problem a Q&A System Is Designed to Solve?

A Q&A system is useful for asking smaller, factual questions with objective, concrete answers on an ongoing basis. It does not substitute for brainstorming, citizen deliberation, polls, or prediction markets, nor does it address ways of authoring reports, conducting challenges, or soliciting feedback on long documents, such as draft rules. Peer to Policy is not meant to substitute for all the ways that public officials and the public want to exchange information but it is one modality that, if it works, might go a long way to foster a culture of participation by enabling experience with participation in practice. It is a possible solution to the problem that, on any given day, the civil service at the federal, state and local level in every country must devise workable strategies for reducing homelessness among Veterans, develop plans for increasing entrepreneurship among women, write legislation to improve the quality of issued patents, conduct cost-benefit analyses to back up regulatory rulemakings on fuel efficiency standards, investigate a dangerous drug or product, write a budget to fund cutting-edge science, negotiate a

trade agreement, or deliver benefits and services to the public. In their day-to-day work officials must solve countless social and economic problems in the public interest.

In order to identify innovations such as creative policies, cost-saving technologies, and scientific advances that will enable government to function most effectively, public officials need to have access to a diverse array of information about an unlimited number of issues. This is no different than anyone whether in the public or private sector with a large project to accomplish. He or she has a thousand small questions to answer in order to arrive at the best end result.

While the topics confronting a public servant are usually of vast and enduring scope (the economy, education, climate change, etc), an official still needs answers to granular, factual questions. For example, in seeking to design a policy for reducing homelessness among Veterans, an official might be looking for a single statistic about homelessness rates in Detroit on Tuesday and for names of experts in homelessness prevention among the population on Wednesday and for examples of tools in use to track mental illness in the Veteran population on Thursday.

Government professionals do not have all the answers or access to unlimited informational resources or time to conduct research. Creating smarter government and more collaborative democracy depends upon input from those with expertise and experience outside of government – upon connecting the institution to the network to supply better information faster.

Whereas the modern enterprise has experience with using new technology to solicit expertise, the public sector does not have the knowhow or the tools for eliciting what the public knows in manageable and relevant ways. Officials don't know how to ask, and the public knows even less how to answer. Public consultation is generally a slow process where a policy is first

formulated internally as a large-scale report and then subjected to several months of formal commentary.

With today's technologies, we have the opportunity to identify distributed experts, inform them of the opportunity to participate, solicit their input by posing granular questions, and provide the opportunity for people with expertise (whether experiential or educational) to answer in formats that respond to the question supported by evidence.

We start from the assumption that everyone is an expert in something and so many would be willing to share their know-how constructively if given an opportunity to bring talents, skills, expertise and enthusiasm to bear for the public good.

What We Learned From Peer to Patent

In 2007, New York Law School with the cooperation of the United States Patent and Trademark Office, launched the Peer-to-Patent pilot project, the federal government's first expert network, which continues in operation at the USPTO today. The Patent Offices in Japan, Australia, and the UK also run Peer-to-Patent pilot programs.

As part of the process by which the patent examiner determines whether a patent application meets the legal standards set forth by the Patent Act, the Peer-to-Patent website invites the public to submit information—known in patent parlance as prior art—relevant to evaluating a pending application. Peer-to-Patent does not crowdsource the decision about patentability; it crowdsources the information gathering to inform the decision thereby combining the best of the institution (independence and impartiality) with the best of the network (lots of minds sharing information).

Like every government official faced with the task of making important decisions with too little time and access to too little information, patent examiners have only between 18-20 hours to read, research and write up the determination of which applications deserve to become a patent that receives a twenty year grant of powerful monopoly rights to exclude competitors from making, using, or selling the same invention. With almost a million applications in backlog and half a million new applications arriving each year, the problem shows no sign of abating.

With the consent of the inventor and the USPTO, the Peer-to-Patent project posts a pending application online for three months during which time the volunteer public can read the application, discuss it with others, submit suggested avenues for research, submit prior art, and rate the submissions of others for relevance to the pending application. At the end of the three month process, the website automatically sends the Top 10 items of prior art as rated by the participating public to the USPTO for review for the application's examiner. In this way, public officials are not overwhelmed by excessive information.

Initial results show that patent examiners use over 1/3 of public submissions in making the determination of patentability.

Those who respond to the Peer-to-Patent invitation are self-selecting volunteers. Anyone can join but because participating in this process requires enthusiasm and expertise, only an expert would. Instead of the "usual suspects," such as patent lawyers and patent agents, however, these experts hale from diverse backgrounds across disciplines and across professions and include industry and academic professionals.

Participation in Peer-to-Patent is a community activity. People sign up to join the team working on an application. Several members might research the application, uploading relevant publications and suggestions for further research for use by the patent examiner. Others might comment on the relevance of submitted pieces of prior art. Following online discussion, each team vets the submissions made by its members. In this way, the public provides assistance to and a check on one another's work.

Designing Peer-to-Patent provided some valuable insights about what works and what doesn't work that we draw upon in thinking about strategies for designing Peer to Policy. Here are a few of them:

Who will participate?

- With clear directions about how to participate people with expertise, experience and enthusiasm will engage. Peer-to-Patent has both a visual process map and a description of what to do. Wikipedia, too, offers outlines of articles so contributors know where to put their comments. This is in contrast to most citizen participation processes today such as Notice-and-Comment rulemaking where the layperson has no idea how to play a role.

What is the incentive for such a system?

- For the government institution, such a system promises to bring in more relevant information in manageable ways faster and at no cost. For the inventor, public participation identifies information to strengthen the quality of the resulting patent and render it more litigation-proof. For the public, Peer-to-Patent presents an opportunity to ferret out undeserving applications and to do public service.

Why do they participate?

- People will share their knowledge without financial incentive. Public service is only one among many rationales that motivate participation. Survey data from Peer-to-Patent shows that there are a multiplicity of reasons why people volunteer without remuneration to do the hard work of submitting information in response to a patent application. Some are eager to help improve the quality of issued patents by performing this public service. Others want to defeat any patent application. Yet others want to show off their expertise in the hope that they will get noticed and hired by the inventor, the USPTO or other participants. They participate in order to add it to their resume. If asked, people will join in for a variety of reasons especially when engagement aligns with their own interests.

What about competitive self-interest?

- If correctly designed, self-interest can be an excellent way to create incentives for ongoing participation without manipulation. If an IBM employee signs up and submits prior art solely for the purpose of demonstrating that an HP application doesn't deserve a patent or if an open source advocate searches for prior art for the sake of attacking a Microsoft patent application that's fine so long as the system is open. By enabling all participants to rate one another's work and to see who have been the productive contributors, this ensures that the community is policing itself and ferreting out malicious submissions before they get to the patent examiner.

What prevents manipulation and abuse in this kind of crowdsourcing project?

- Peer-to-Patent does not crowdsource government decisionmaking; it crowdsources information gathering. The final decision remains with the public official who possesses the best knowledge of the legal standards of patentability while the work of finding the scientific and technical information is distributed widely to volunteers. Also the website provides tools for flagging abusive or irrelevant content.

What prevents the public from overwhelming the public official with too much information?

- EBay, Amazon, Netflix as well as Peer-to-Patent all enable members of the public to rate and rank content. For Peer-to-Patent this makes it possible for the system to automate the creation of a "Top 10" list of submissions. The patent examiner is free to go to the website to read more than the top 10 but he only gets ten pieces of information as evaluated by the public.

What ensures that the information will be relevant?

- Peer-to-Patent provides a structured form for submitting prior art. Contributors are required to post the name, date, and a summary of the relevance of the submission. They must check the number of the claims of the patent application to which the art applies and explain why. At their option, they can also add keywords ("tags") to describe the patent application. In this way, the software itself can automatically reject any submissions that don't predate the patent application (a legal requirement). Requiring people to fill out a limited number of obligatory fields and offering optional fields ensures that the information provided is easy to read.

What is the core difference between Peer-to-Patent and other ways in which government obtains expertise?

- The group. Most commenting systems in use in government are oriented to individual participation. Government officials are deluged by hundreds or thousands of individual submissions. Peer-to-Patent is designed to encourage a group of people to work together on honing information for use by government officials.

Designing for Democracy: Conceptualizing Peer to Policy

No good socio-technical system can be fully designed up front. Over-engineering constrains behavior and fails to account for unanticipated needs. However, we can draw from the lessons of successful existing systems like Peer to Patent and private sector Q &A communities such as Quora and Stack Exchange to offer some principles to inform the design of a new citizen participation platform and process.

Creating a Participatory Culture - The greatest impediment to creating a system for regular, ongoing citizen engagement in the form of questions and answers is lack of experience. Nowhere in government today is it yet acceptable to say "I don't know" or to tip one's hand as to policy projects under development that aren't fully formulated. Typically, government organizations reward their employees for solving problems while presenting the impression of a problem-free existence to the world. The notion of being open about an issue and inviting help from outside has been frowned upon in a government (and large-organization) culture that shields its work from public view under the rubric of “deliberative” and “pre-decisional” secrecy. These traditions of secrecy, in turn, give rise to a gotcha game of cat-and-mouse with journalists

hoping to score headlines and opposition politicians hoping to score big in elections, which, in turn, reinforces a closed door culture. Hence a pilot project must be established with clear statements from those in leadership that being open; saying I don't know; and participating actively in the online community are sanctioned. In Peer to Patent, for example, patent examiners tasked with reviewing public feedback received a financial bonus in order to overcome any doubt that openness might produce adverse job consequences.

Proliferating Opportunities for Participation - Peer to Patent is not a mass participation process of equal interest to all but, instead, appeals to the handful of people with knowledge about and passion for specific technological domains. The goal of Peer to Patent was never to create a single engagement opportunity in the way voting attracts lots of participants but, instead, to create the "long tail" of participation and proliferate many, small and more diverse ways to participate. It went against the grain of patent culture, which normally attracts engagement from the patent bar, who are those with expertise and interest in the domain of patents (horizontal) rather than in the specific technical subject matter, which might vary from battery storage to cloud computing (vertical). Similarly, StackExchange brings together communities of experts on different topics in distinct rather than in the same online spaces. The essence of a Q&A experiment would be to test out processes and tools whereby we can create many micro-consultations on an array of topics that appeal to people's specific interests.

Asking Frequent Questions - One of the reasons voting works well as a modality of engagement is that it does not require a long time commitment. New vote by mail and Internet voting initiatives further seek to shorten the time horizon. One factor depressing participation in policymaking are the long time horizons. Serving on a Federal Advisory Committee demands

years of service and frequent travel. A regulatory rule making notice and comment procedure generally runs three to four months from the publication of the request for comment in the Federal Register. In Peer to Patent, we had to contend with a statutory three month window as well. The software sent notices every time something new went up on the site relating to an application to which a volunteer chose to subscribe as a way of constantly refreshing attention. Manual reminders supplemented automated prompts to keep up the level of interest. It was for this reason that when we set up the public input process at the start of the White House Open Government initiative we gave people 2 weeks to respond to each phase of engagement (brainstorming, discussion, drafting). The appeal of a Q&A system is that it shortens the time required to participate to mere minutes and accelerates the time for responses. On SAP's system it is an average of 17 minutes. As Joel Spolsky, CEO of Stack Exchange, describes it, the purpose of a Q&A system is to "get through the afternoon" not to supply grandiloquent essays or voluminous legal briefs. If the quality of responses is high, speed creates an incentive for government officials to ask questions early and often. If the questions are relevant and capable of being answered, this creates an incentive for the public to respond quickly.

Asking Effective Questions - Creating a participatory culture demands practice at asking and answering questions. For example, one cannot set up a Q&A community using the StackExchange software until one learns this. StackExchange wants to avoid the "empty restaurant" phenomenon of opening up a place in cyberspace that no one frequents or that people only visit for a few days but never come back. The trick to that, according to them, is to ensure that those asking ask only questions that are capable of being answered. Before people are allowed to create a new StackExchange community, they first need to set up a practice site in a staging area affectionately called Area 51. One of the goals for Area 51 is to practice asking

questions: "We design these communities by proposing hypothetical questions, and then voting whether or not they are good questions for the site. Questions can be upvoted if you think they'll be interesting, downvoted if you think they won't be, and closed if you think they are a poor fit for the community. Propose questions you might ask or want to see answered on the site and comment and vote on those already proposed. The goal is to come up with at least ten questions that embody the topic's scope. When at least ten questions have a score of at least ten net votes (up minus down), then the proposal is considered 'defined.'" Similarly, the success of the Peer to Patent pilot rests in large part on the questions it asked of participants. It was not designed to query people's opinions about a particular patent application or applicant. It didn't ask for opinions but, rather, requested factual information about bibliographic literature (known in patent parlance as prior art) that could shed light on an application's novelty and non-obviousness. If the goal is to create a culture of open, iterative participation then we need to be sure officials are asking questions that elicit information they can use. This means we should be very specific about how we define what questions are appropriate for the space and then use technology to encourage users to practice asking and answering.

Granular Responses - One reason that citizen engagement has proven so unsuccessful is that non-government professionals do not know what is expected of them. Campaigns galvanize participation because there are concrete tasks to perform such as driving people to the polls. Social innovation projects like kickstarter or kiva guide people through the process of investing in causes or giving micro loans. The attraction of Peer to Policy over traditional e- rulemaking practices is that it could provide structure using tools like web-based forms to make it just as simple for people to participate in policymaking. Peer to Patent, for example, seeks to maximize information quality and relevance by providing fields through which people type in their

responses. On the system, a user is required to input the date of publication for the bibliographic material he is citing. If it post-dates the patent application, the system rejects the submission for failure to comply with statutory requirements. This spares the official the work of reading irrelevant information and teaches the public what kind of information is useful. Similarly, the Peer to Patent participant must share a bibliographic reference and explain its relevance to the patent application. This focuses participation and reinforces the question being asked. In Peer to Policy, the goal is not to constrain answers with drop down menus or "select from the following" lists except where necessary. Instead, the design of the system should provide loose guidance to foster good habits.

Create Groups and Teams - Another lesson of Peer to Patent is to eschew individual in favor of group-based feedback mechanisms. In other words, rulemaking like social media based engagement leads to the multiplication of dozens or even thousands of comments from a single person or organization. While software like QDAP, developed by political and computer scientists at University of Massachusetts, can recognize identical or close to identical comments, enabling the rule writer to isolate unique contributions, citizen engagement still produces too much volume for beleaguered officials. It also fails to connect citizens to one another to exchange ideas and realize the benefits of deliberative dialogue. While Q&A systems still allow an individual to ask and answer a question, well-designed processes enable people to work together, refining, annotating and improving upon each other's work. On StackExchanges, members of a community can edit each other's questions and responses. The Indian government incorporates this feature into its complaint website. Instead of allowing every individual to file a unique complaint, people are invited to endorse other submissions before submitting a new complaint. In Peer to Patent, people subscribe to a team responsible for reviewing a patent and have the

ability both to comment upon in words and to rate with stars each other's contributions. Hence the patent examiner at the end of the day gets to see information as evaluating by the group. Peer to Policy should be designed with an emphasis on group-based work in mind.

Rating and Reputation - Peer to Patent encourages participants to use a thumbs up or thumbs down rating scheme to evaluate each other's submissions and signal to the USPTO if the posting was relevant enough for consideration. At the end of the consultation process, the software automatically tabulates the ratings and ranks the submissions. Only the top ten are delivered to the agency. The power of the community to evaluate itself openly encourages members to police themselves and avoids abuse. At the same time, it cuts down on the quantity of informational inputs. It also rewards good participation thereby educating volunteers and encouraging people to come back. Rating and reputation techniques are widely deployed in the private sector from rating people like sellers on eBay or Amazon to rating content like movies on Netflix or IMDB. Rating is sometimes combined with collaborative filtering and recommender techniques to make suggestions, ie people who like x also liked y. On StackExchange, users rate the answers and the highest rated responses rise to the top. For Peer to Policy, we could do something similar whereby users rate the best answers on the basis of relevance and, in so doing create incentives for people to participate actively and repeatedly.

Make Answers Searchable - Peer to Patent offers user generated tagging of patent applications and other content elements to make the knowledge base searchable via search engines. Stack Exchange goes even further by optimizing its design to help people who are not members nor the original asker but who are looking for answers to similar questions to find the answers and potentially join the community. The nugget of insight that has proven so successful

for them and for Twitter, which uses "hashtags" to the same effect, is to recognize that the audience extends far beyond the boundaries of the existing community to encompass the far bigger world of search engine users. This overcomes the "findability" problem. Whereas it doesn't take many people to answer a question well, finding those with expertise and alerting them to the opportunity is extremely difficult. If I have a question about homelessness policy, neither Facebook nor LinkedIn are optimized around identifying expertise. Searching for people on Google is a very blunt instrument for a very fine-grained task. Whereas there are new academic expert networks, they reach only those with formal expertise rather than equally valuable informal knowledge. Also searching for experts, as opposed to making questions findable, requires knowing a priori what kinds of expertise are needed. If one is interested, for example, in green building techniques, the impulse would be to search for architects. But entomologists who study the design of African termite mounds know a great deal about techniques for maintaining consistent dwelling temperatures and could contribute, if made aware of the opportunity. Furthermore, it is even harder for government, which is prohibited from choosing among different speakers to communicate selectively with certain participants lest it risk running afoul of viewpoint neutrality requirements of American First Amendment law and universal free speech values.

Build From Successful Communities to Create New Communities - Participants who submitted prior art used by the patent examiner in determining the fate of an application received the designation of "prior artiste" (and a free t-shirt). These were always repeat players. Once they successfully helped with one application, they signed up to help with another. Similarly, StackExchange populates new communities from the members of existing ones, spinning off sites about photography or gardening from initial discussions about java and c++.

The insight here is that it is important to grow communities organically from people's interests rather than trying to architect and roll out a government-wide program. For example, one can imagine piloting a Peer to Policy community on electronic health care records, which would attract those knowledgeable about healthcare, information technology, identity management, privacy law, and eventually launching a new space in which to ask and answer questions about student information systems in education. This would attract some of the same people in addition to those with expertise in education and children's issues.

Pilot with A Technical Topic - To the end of fostering a participatory culture of ongoing and productive engagement between government professionals and the public designed to make government smarter, Peer to Policy should not stray far from a specialized domain like patents but should focus on a single, technical topic area to start. First, experience with running successful Q&A communities has been pioneered in the technology field. Second, technical subjects attract enthusiasts while creating a high barrier to entry for "flamers" and unproductive participants. Third, technical topics are more likely to lend themselves to writing focused questions and answers. Finally, technical topics such as health IT, food safety, and solar energy policy are not necessarily arcane. The financial stakes may be high. But we can benefit from the experience of projects like Stack Exchange while evolving practices that work for the public sector. This is not dissimilar to the adoption of the lessons of collaborative ways of working in open source software development by non-technical communities (where it is called Open Innovation) and, eventually, by government (where it is called Open Government). The point is to avoid general or ill-defined topics or topics where questions are likely to elicit opinions rather than evidentiary responses. The former is simply too hard to do well yet and we should start with the latter. Approximately thirty federal agencies have tried brainstorming websites to generate

creative ideas with varying degrees of success. Where brainstorming has not been successful is in instilling participatory habits on a day to day basis because these are one offs rather than helping to "get through the afternoon."

Be Collaborative - In order to strengthen the practices of democracy with government officials and among the public, any system must create incentives for both sides to get and stay involved. It is not enough to focus only on the citizen side of the equation. Peer to Patent "worked" above all because we identified a pain point for officials, namely getting access to accurate and manageable information in a specific form quickly and then designed a process to overcome that obstacle. Because the information was relevant and the public could see their input being put to use, this created an incentive for the public to stay involved. Legally, examiners were not permitted to interject in the online discussions, which would presumably have created an even greater incentive. Similarly, selecting an arena in which to pilot Peer to Policy should seek to overcome a problem. Counterintuitively, the object is not to try it with people excited about citizen engagement or who have faith in it's salutary benefits. Rather, by looking for an area of informational deficit, we might be able to stimulate practices of active participation; evaluate progress; and enlarge the scope based on empirical success.