In the goldfish bowl: science and technology policy dialogues in a digital world

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Executive summary

Public opinion is increasingly driven by information obtained through digital means and policy makers are shifting the bulk of engagement exercises and public opinion-gathering online.

Even where policy makers use offline tools such as focus groups or deliberative dialogue, these activities take place against a background of digitally-mediated understanding.

Digital engagement, if used well, can:

- Amplify the impact of offline engagement and create better starting conditions for offline events
- Help to build a baseline of technical knowledge to inform discussion
- Widen access and increase transparency

On the negative side, digital routes can quickly spread misinformation that distorts or oversimplifies information, thereby undermining related policy debate. Similarly, digital media can exacerbate the problem of over-simplifying complex technological points, and can also be used to present a baseline of opinion rather than knowledge.

We have developed a typology for digital engagement that illustrates how two key considerations, topic and method, can be used to group different digital communication tools, so that policy makers can match technique to need.

Reviewing current engagement with science-based policy[1], several key themes emerge as critical success factors: utilising existing networks; harnessing multiple digital channels; using trusted experts to engage directly with participants in engagement; looking to citizen-led participation; ensuring transparency and openness throughout; enabling the public to have a key role in setting the agenda for discussion; bringing dissenters/sceptics into the debate; informing how opinions have been taken on board; ensuring sufficient accessibility of technical information for those wishing to 'mine into the data'; and honesty during controversy.

Looking to the future, digital methods are increasingly likely to dominate engagement in science-based policy, perhaps even becoming the primary portal for debate.

[1] We use the term "science-based policy" as a convenient shorthand for those policies that have a significant scientific or technological element. These are not only policies *about* science, they could also be policies on health, agriculture, trade or many other areas.

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1 Introduction

"If you do not care about networks, the networks will care about you, anyway. For as long as you want to live in society, at this time and in this place, you will have to deal with the network society". – Manuel Castells, the Internet Galaxy[2]

Technology is changing the way that all engagement between institutions and citizens is undertaken. The first generation of digital engagement often just replicated paper forms on a website, but second-generation models are more social, more flexible and more conversational.

Government institutions are beginning to adapt to this shift. The Government's Civil Service Reform Plan, departmental digital strategies and social media guidelines are encouraging openness. The Government's Open Policymaking programme is seeking to open up policy conversations in Whitehall and beyond[3]. Digital engagement is becoming the norm around the world, as can be seen in such diverse examples as local participation networks in Germany[4] and Australia[5], the EU's Digital Agenda[6], the global Open Government Partnership[7], and the White House's *We the People* e-petition site[8].

This report considers how digital engagement methods can support good dialogue on policies that have a significant scientific or technological element (for example, genetic modification of food, climate change, or embryology). For simplicity, we refer to these as "science-based policies" throughout, but this is not to imply that policies on, say, welfare spending are not based on science or evidence. Many of the methods we describe are, of course, applicable across a whole range of policy fields.

We believe that a digital approach can support good dialogue in two ways: firstly, online engagement around science-based policy will increase the ability of the public to participate in democratic discussion. Secondly, where specific exercises are planned, digital methods can expand the footprint of dialogue, involving more people and broadening the conversation.

Traditionally, dialogue exercises have been some of the most involving and direct forms of engagement, in which groups of participants in a physical space learn about and discuss complex issues. However, these physical spaces are private and closed to external scrutiny or participation. New technology offers an opportunity to put those discussions in a 'goldfish bowl', maintaining the privacy and focus of the dialogue, but allowing outsiders to watch and discuss the deliberation and evidence presented.

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[2] Internet Galaxy: Reflections on the Internet, Business and Society. Manuel Castells (2002) pg 282 paperback ed, OUP
[3] www.civilservice.gov.uk/reform/part-2-improving-policy-making-capability
[4] www.nexthamburg.de/
[5] http://2029andbeyond.com.au/deliberative_democracy.php
[6] http://ec.europa.eu/digital-agenda/en/digital-life/government
[7] www.opengovpartnership.org/
[8] https://petitions.whitehouse.gov/

As the use of digital technology increases, its potential grows – approximately 73% of the British population currently use the Internet[9]. Research by the Oxford Internet Institute shows there have been rapidly increasing and linked trends for portable access to the Internet and access from multiple devices (e.g. mobile phones and tablets); 59% of Internet users have access on at least one other device as well as on a personal computer, and 49% of mobile phone users access the Internet through apps, as compared with 19% and 24% in 2009 respectively[9]. It is impossible to ignore the trends that the internet is becoming central to all of our lives but particularly those under the age of 25 where two thirds have a smart phone, 80% use social media at least once a week and lives are lived simultaneously on and offline[10].

In this report, we focus on engagement that creates and supports dialogue between policy makers and the public around science-based policy, and where expertise from scientific institutions and technical experts may further enhance online debate.

[9] Data are taken from a survey conducted in 2011 unless otherwise stated. Source: Dutton WH and Blank G (2011) *Next Generation Users: the Internet in Britain 2011*, Oxford Internet Institute University of Oxford, accessed at http://microsites.oii.ox.ac.uk/oxis/publications

[10] http://www.ipsos-mori.com/technologyresearch/newsletter/technologynewslettertheyouthoftoday.aspx

2 Digital engagement is an approach, not a delivery mechanism

Understanding how best to use digital tools requires an understanding of the difference between digital and offline audiences. The essential point is that digital engagement is much more than an alternative delivery mechanism; it is a culture and an approach.

Primarily, the speed of communication means that good digital engagement is more active and more conversational than many offline methods, as shown in Steph Gray's description[11]:

"Digital engagement is using digital tools and channels to find, listen to and mobilise a community around an issue, maybe getting them to talk about it, give you their views or take action in pursuit of a cause they care about".

Using digital methods well can create or strengthen networks that exist around places or issues, though it can disadvantage non-users and unconfident users. It can make building support around community causes easier – but the ease of switching from one network to another makes it difficult to build diverse spaces. The flexibility of the digital approach encourages people to talk about issues outside of the spaces and environments that the engager controls.

If engagement activity is planned so that it goes with the grain of digital culture, it can magnify its impact. Using digital methods around an offline exercise can stimulate debate, harness the creative potential of online tools and engage public interest (see online case study 1).

A mark of poor practice in digital engagement is trying to replicate offline dynamics and materials online (e.g. using downloadable leaflets and hundred-plus page PDFs with an email address to receive comments). In effect, poor digital engagement creates a continuation of paper by other means.

2.1 Showing a better way: Big City Plan

Digitally-savvy communities will challenge attempts at engagement that don't meet their expectations – but often with positive action rather than complaint alone. In 2008, Birmingham City Council published 'Big City Plan: Work in Progress', a 2.6MB, 41-page consultation document provided in PDF only, with comment possible through a portal or by email[12].

A group of local activists created an 'unofficial plain English version', called 'Big City Plan Talk', which took the technical language of the plan and

[11] Digital Engagement Guide: www.digitalengagement.info/. This website has a wealth of information and case studies on the use of digital and social media by the public sector. Quote comes from http://www.helpfultechnology.com/helpful-blog/2010/09/some-definitions/

[12] Information about the original consultation and latest version of the plan can be accessed here: http://bigcityplan.birmingham.gov.uk

translated it into informal English, and provided the facility to comment on specific sections rather than just the plan as a whole[13].

The site generated 275 comments during the consultation period, which were delivered to the Council. More than a third of the website comments generated by the document came from the Big City Plan Talk site[14].

2.2 Pressure in both directions

The shift to more open and more digital engagement is driven from both sides. Spending review restrictions make cheap digital tools seem attractive (though good engagement design is still a cost). Digital strategies and "digital by default" require even reluctant policymakers to consider digital approaches. The world that the public – and dialogue designers – live in is increasingly using digital tools, and so expectations of a "standard communications" approach develop alongside. Some Departments and employers restrict social media access, but it is hard to see such restrictions persisting for long.

Increasingly, digital engagement has ceased to be a matter of choice for policy makers. On any issue, people are already talking about policy, sharing experiences and anecdotes, and spreading information of varying quality. Every dialogue exercise, whether digital or not, is undertaken against a background of digitally-mediated information and conversation.

[13] http://bigcitytalk.org.uk/
[14] www.whatdotheyknow.com/request/8405/

3 The benefits and risks of digital methods

With digital tools and conversations commonplace, policy makers who are designing dialogue exercises should make themselves aware of the benefits and risks of digital engagement on scientific and technology policy areas. They should design processes that, as far as possible, take advantage of digital methods to obtain their benefits, while addressing and mitigating risks.

Benefit: Digital engagement fits with the way science works today

The computerised systems necessary to monitor, record and perform statistical analyses have required scientists to evolve digital fluency as a prerequisite for research. The world of science is one in which novel digital tools adapt conventional communication methods, driven by the need for international dialogue.

Benefit: Digital methods allow time-shifting

Digital methods can help people find time to participate when and where they want. Rather than invite you to 'a public exhibition at 7:30pm in the village hall', digital engagement can ask for 'ten minutes of your time, when you want, where you want'. Webcasting of committee meetings in local Government, for example, allows those with an interest in a particular item to jump straight to the discussion of it, at a time and in a place that suits them, with no need to sit through irrelevant material[15].

Benefit: Digital information can be infinitely deep

Particularly relevant for complex issues, digital tools such as websites can use links to allow participants and audiences to mine deeper into issues beyond the scope of a public meeting or engagement. This provides the potential for self-guided education and exploration on core issues. For example, online cancer information is often presented as a simple introduction, but links to more detailed information[16]. The Government's new 'Inside Government' site is similarly intended to provide a brief introduction to an area of Government with many links through which people can drill down to additional information, including off-site[17].

Benefit: Digital methods are more direct and personalise complex issues

Using digital channels, policy makers can communicate directly with the public without the two-way filter of TV producers, journalists or politicians. Celebrity scientists who tweet, researchers who blog, and academics who develop outreach projects are all disseminating directly to the public; this makes research personalised and personal. By directly joining these existing conversations, policy makers can mine an already rich field of material during engagement. The ethical implications of Government monitoring are complex, but the general principles of transparency, respect and sensitivity are the same as for more established consultation methods.

[15] for example: www.brighton-hove.public-i.tv/core/portal/webcast_interactive/93795
[16] www.macmillan.org.uk
[17] www.gov.uk/government

Benefit: Digital tools can allow you to understand your participants better

Well-designed digital engagement can give greater insights into participants, particularly where policy makers listen to and engage with conversations in existing online networks. Using digital media can make informal conversations around an issue visible, and understanding the participants can allow the representativeness of the conversation to be measured. Network mapping tools can show how interconnected a network is, while social media profiling tools such as Klout and PeerIndex are crude but improving means of assessing the influence and authority of social media users.

Benefit: Digital engagement can open the conference centre doors

Digital engagement can also make expert conversations more visible, creating broader links that increase openness, approachability and transparency. Digital tools can spread accessible information about events and research, opening the conference doors to create an environment where potential participants feel that they have a reason to become involved, rather than feeling that a conversation is 'not for people like me'. The high-level Davos meeting of the World Economic Forum, for instance, now streams a number of public sessions online[18], improving the spread of the information it generates but more importantly challenging its reputation for secrecy and elitism.

Risk: Information quality

The principal characteristic of the digital environment is that it has made the flow of information faster and less hierarchical. Messages flow from multiple sources, not just from traditional communications and media. This means that information can easily go 'viral' – particularly where inaccurate information has a strong simple story, and the reality is complex. The provision of good information before and during a public engagement exercise needs to work harder to drive out myths and bias.

Risk: Translating complexity into public debate

Simplifying complex findings without losing accuracy is fundamental to supporting open debate. On topical issues, the media plays a significant role in translating complex material, but they have incentives to maximise impact – what has been called 'community enragement rather than community engagement' – with significant repercussions to public understanding[19]. Even where issues are less controversial, or materials are being prepared by policy makers or experts, there is a particular skill in reducing complex arguments to simple content that can be quickly consumed.

Risk: Creating a ready audience

Much engagement on scientific policy targeting the public occurs in an educational framework mediated by Government, NGOs or professional bodies. This creates a risk that information will steer people towards a perceived 'right answer' rather than set out the background, context and

[18] www.weforum.org/node/111075/programme?date=2013-01-23
[19] http://charman-anderson.com/2010/10/05/a-comment-on-comments/

options to enable a balanced debate. Enhancing dialogue with digital tools should aim to give participants a baseline of knowledge, not a baseline of opinion.

Risk: Building trust, online and offline

Public acceptance of information depends on trust, and we have seen a dramatic fall in trust in authority figures in our society. Individuals may feel a stronger sense of trust in communities of 'people like them', created through the immediacy of online interaction and shared interests or experiences. When discussing complex issues, the views of a trusted member of a chat-room, online group or social network may command more weight than that of an official spokesperson or expert scientist. Conversely, research highlighting the credulity of young Internet users found a willingness to trust unverified sources[20].

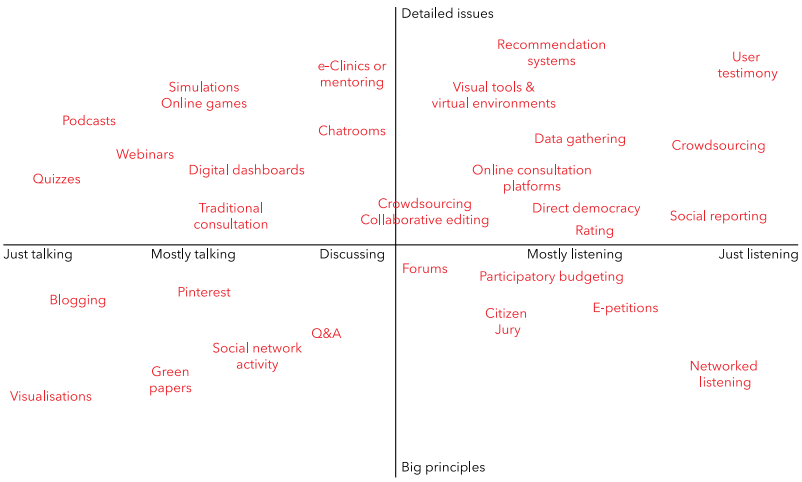
[20] truth, lies and the internet a report into young people's digital fluency. Jamie Bartlett and Carl Miller, 2011. Accessed at: www.demos.co.uk/publications/truth-lies-and-the-internet

4 Methods you can use: a typology

The number of ways in which people engage with each other online is almost infinite, from social media and advertising through to formal deliberations and discussion.

In this context, it is useful to think about different types of digital engagement grouped by how the engaging organisation is communicating, as this will ultimately influence the best tool for the exercise. This ranges from engagement that is 'just talking', through two-way discussion, to 'just listening', where the organisation watches sentiment and comments from networks. The chart below shows a number of different engagement routes (also detailed in the table of methods online[21]) arranged by how the organisation is communicating, and the level of detail to which the method is best suited.

Figure 1: A typology of digital engagement methods



Methods that are 'just talking' are good for raising awareness of issues. A good background level of knowledge about a particular area enhances dialogue exercises and the public conversation around them. Digital engagement can increase the flexibility and range of ways in which people find out information (e.g. websites can be more interactive than leaflets, and podcasts or video clips can personalise an issue and make a more direct

[21] http://www.sciencewise-erc.org.uk/cms/assets/Uploads/Diagram.pdf

impression). Good communication in advance can improve technical literacy in an area that may become politically important in the future[22], such as commercial applications for space research[23]. In the digital sphere, websites are the most obvious vehicle, but podcasts, videos and apps can all be useful to broaden awareness and knowledge of an issue.

Methods that are 'mostly talking' look for comments on content created by the engaging organisation, with the most successful online models allowing for creative collaboration around draft policy. The UK Government's Public Reading Stage[24] enables members of the public to review, consider and comment upon draft legislation; the majority of the plan is decided (the Government is in charge of most of the content) but there remains scope for public input.

Methods that are 'discussing' look for two-way conversation between the engaging organisation and the public. This often, but not always, focuses on a smaller participant group so that the voices of the engaging organisation are not overwhelmed. Topics where the technological elements require a baseline of detailed knowledge may be best handled this way, such as discussions regarding energy storage[25] (see appendix 1).

Methods that are 'mostly listening' frame a challenge or question and look for free-form or game-type answers from the public. For these, as for the 'mostly talking' activities, larger groups of participants are better. The management of 'big data', for example, may ironically be best explored through open debate; extending the reach of offline, specialist-driven events into the public domain to broaden input[26, 27].

Methods that are 'just listening' follow conversations in spaces that the engaging organisation does not control (e.g. on social media, in dedicated communities, or in patient forums)[28]. Network listening at its most basic may be orientated to taking a 'gauge' of public opinion, and novel tools exist to achieve this. These might be on the basis of an existing campaign or engagement (for example, using a Twitter hashtag such as #arseniclife)[29]. Listening should also involve a conceptual shift in which communicators recognise the value of non-expert input – the historic limitation here has been a presupposition of a low level of scientific interest and literacy. This cannot be assumed to be universally true.

Understanding the typology of the digital world enables policy makers to identify the most effective tool with which to communicate at that moment in the policy process, on that issue – see the companion table online.

[22] www.bis.gov.uk/ukspaceagency/who-we-are
[23] www.ukspacedirectory.com/uk-space-innovation-and-growth-strategy/
[24] http://publicreadingstage.cabinetoffice.gov.uk/
[25] www.decc.gov.uk/en/content/cms/about/science/activities/future_sys/future_sys.aspx
[26] www.bigdatarev.com/
[27] www.bigdatasummit.co.uk/
[28] The Centre for the Analysis of Social Media at DEMOS have a research programme on this issue: www.demos.co.uk/projects/casm
[29] On the #arseniclife hashtag: www.slate.com/articles/health_and_science/science/2011/05/the_discovery_of_arsenicbased_twitter.html

5 What does success look like?

Digital engagement around a policy dialogue means not seeing dialogues as events in themselves, but as a centrepiece around which a wider process of discussion and information can be built. While each situation calls for a unique combination of on and offline tools, there are several success factors for using the digital environment to augment face-to-face activities.

Before:
Identify Key Players and influencers: An audit of digital space to analyse interest relevant to the project through conventional organisations and also social media (e.g. bloggers, community websites, and news coverage) can identify members of the public with a high level of baseline technical knowledge and a strong online voice. This type of exercise can provide individual names (as well as organisations) for focus groups, steering groups, project teams and offline events. It creates a network that can be listened to, as well as involved in dialogue. Establishing a strong base of contributors to kick-start the debate can also be used to create a strong network in which to build, maintain and extend dialogue (on or offline).
Increase Background Knowledge: A digital presence designed for a specific science-based policy should involve using a variety of digital tools and channels for online engagement, but there is value in providing a 'backgrounder' area to ensure that those new to the technology are able to participate fully in offline discussions – by adding that web address to an invitation, pre-meeting materials can ensure participants get the most out of an offline discussion. Shareable content, such as issue summaries, animated clips to visualise the science and learning tools may help to increase knowledge and can also be used as an ongoing resource or look-up tool as the debate continues.
Event Preparation, Design by Digital: Seeking input on the design of the project research starts the process from a more open perspective – where technology brings issues that are ethically tricky or adversarial, an open 'user-led' approach to engagement can encourage greater collaboration. In effect, this means seeking online input to help design offline activities, and in doing so, starting the debate sooner. Offline engagement may involve events, locations, schedules, people, questions, workshops and agendas that digital networks may be able to advise upon. A (cost-effective) digital pilot may improve the visibility, precision and impact of offline events.

During
Prepare a digital platform for transparent technology: Using a digital platform as an educational resource enables us to aim beyond baseline understanding; the inclusion of open raw data, links to source academic publications, and, where the political context is challenging, an overview of the policy history, may all improve transparency and trust. This platform can be used during an engagement exercise as a reference tool, or later as a resource during an evolving discussion.
Open digital doors: Through streaming meetings or liveblogging, using webinars and satellite linkups, digital tools enable individuals, or groups, to watch an event live and, when used with audience participation tools online, to join in.

After
Show the dialogue, disseminate the discussion: A single, shared online space can act not only as a portal for 'live' debate, but a constantly changing digital library to record an evolving discussion. Collating offline contributions (either through video/sound clips or text) means that highlights of an event can be circulated later, widening access. Encouraging offline participants to continue the conversation online stimulates debate, extending the lifespan of a meeting. Where an event has shaped the resultant policy, contributors should be able to see from the online record how their views have been acknowledged.
Meet the experts (online and offline): Ensure those leading the discussion or bringing complex information can communicate effectively across audiences with different levels of knowledge; in some cases, this may involve using scientific communication experts as well as leading scientists to share information. Experts include the policy makers, all of whom should be accessible and part of the conversation rather than sporadic 'listeners' or 'dictators'. Where the project team is respected and trusted, effective negotiation becomes more likely between consulted parties. To make experts more accessible, YouTube clips of their views and podcasts of their role can be provided at offline events.
Offer a choice of digital methods of communication for feedback: Participants should be invited to feed in their thoughts through Facebook and Twitter, blogs, RSS feed and through submitting recorded views electronically. Common trends, well-phrased arguments and key statements should be visibly recorded online.
Listening to conversations and analysing sentiment Capturing traffic from social networks (e.g. wikis, blogs, SNS, media-sharing

sites) using analysis tools (e.g. Siena, SoNIA) enables policy makers to monitor public opinion. They can then use this to address misunderstandings, or to augment existing engagement exercises.

Publicly-posted information can also be analysed to understand sentiment and the representativeness of the network. 'Infoveillance systems' (e.g. Infovigil) tracking which websites surfers accept sufficiently to re-post on social network sites, acting as a better marker of trust/acceptance than site hits alone.

Since 'emotional status mediates behavioural response[30]', analysis of public comment may show how far a policy has been accepted. For example, on issues of medical science, where the Internet is often the first port of call for members of the public seeking reassurance about their health– online analysis of debate around the swine flu pandemic revealed how the UK Government's health policy, designed and disseminated under extreme pressure, was received by the public.

[30] Jones and Salathe 2010 = *Jones JH, Salathé M. Early assessment of anxiety and behavioral response to novel swine-origin influenza A(H1N1). PLoS One. 2009 Dec 3;4(12):e8032. doi: 10.1371/journal.pone.0008032.*

6 In the goldfish bowl

The core benefit of digital engagement as an enhancement to dialogue is that it allows dialogue to take place in a 'goldfish bowl' – visible to the outside world but separate from it. In the world outside the fishbowl, separate discussions and communications take place that boost the impact of the exercise.

This has parallels with a common offline discussion technique called 'fishbowl deliberation', where a small group of people discuss an issue in the centre of the room, surrounded by an audience who have the opportunity to step up and join the circle[31].

Any policy dialogue takes place against the background of existing networked discussions. It is better to engage with and learn from these conversations than to ignore them; furthermore, an existing, enthused network may provide a valuable resource for policy evolution.

How might a hypothetical dialogue exercise be constructed so as to take best advantage of digital tools?

Our final online case study, 'Organ donation: the science of the future', starts from the idea that in 2020, ground-breaking research has enabled scientists to pioneer a new technique for organ transplants using genetically modified pigs. By then, the number of people online, the speed of connection, and the availability of technology will mean that deep engagement online is possible in a way in which it is not today.

The 2020 engagement uses digital technology in many ways:

- The policy team uses infoveillance tools to monitor initial social network response to the breaking story and news channels as a 'temperature test' of public opinion, and to identify key themes/issues/misperceptions that engagement will need to address
- Key groups likely to have a strong 'online voice' are identified so that engagement will start with an already-established online community, and dialogue can evolve organically through this group
- Contact is made with expert scientists and science communication officers who are able to draft web-based material explaining the technical elements – this uses infographic tools to illustrate the organ shortage relative to the benefits of artificial organogenesis; 'mode of action' animations showing how the genetic engineering works; a conventional text document; slide-presentations that can be downloaded as explanatory materials; and a series of sound-bite clips from experts
- Links are made with the annual conference at which the scientists are presenting the next tranche of data, and a Government portal is

[31] The fishbowl method is described in full at Knowledge Sharing Toolkit (www.kstoolkit.org/Fish+Bowl). See also UN International Labour Organisation Collaborative Meeting Techniques list (www.ilo.org/public/english/support/lib/knowledgesharing/meetings.htm)

established so that members of the public can access, understand and engage with the scientific community

- A web-channel allows for two-way traffic so that members of the public can access the policy debate and also mine deeper into the scientific community debate on the portal from either direction. This landing site offers background material and several different options for dialogue, while functioning as an ongoing record of the evolving debate

7 Conclusion:

In the future, scientific policy makers will need to navigate the same issues of public opinion, ethical concerns and practical implementation, but increased access to the Internet will shift the primary audience for engagement online. This trend, already in progress, will stimulate an increased familiarity with digital tools both by users and policy makers, broadening the scope for engagement.

Will expanding Internet access make offline dialogue redundant? Probably not. The unique environment of a policy dialogue, and the benefits of face-to-face contact, are considerable. Similarly, universal access to the Internet does not mean universal use or familiarity, and current research suggests[8] that even with broader access those over 65 years, and of lower socio-economic status, may be excluded from exclusively online engagement for many years to come.

These two factors suggest that building online dialogue exercises, to expand the audience and increase the knowledge of the issue, should be the focus of engagement activities in the coming years.

Appendix 1: Case study: CRIF – putting online and offline discussions together

Background:

The Cambridge Renewables Infrastructure Framework (CRIF) sought to provide a structure for developing and implementing renewable energy projects in Cambridgeshire. The scope included encouraging dialogue to inform and execute planning policies, and a combination of digital tools augmenting planned, local events was used. The success of the project led to it being used as a reference point for the document Planning for Climate Change – Guidance For Local Authorities[32].

Challenges:

- High level of technical information needed for engagement
- Online and offline engagements needed to work together
- Historical antagonism between participating groups, many of whom had a strong emotional investment in outcomes
- Needed to include influential dissenters and those who were actively hostile/disengaged from authoritarian groups
- Needed to involve the wider community, fostering interest and possible direct engagement (i.e. through implementing the policies, once agreed)

The program both offline and online needed to be:

Transparent, inspiring of trust, participant-led, technologically precise and dynamic.

Putting together a digital program to support the engagement process

A research exercise was undertaken to identify members of the public, representative councillors and organisations who were already interested in the debate to ensure their involvement. Open-space meetings were shared in a digital space, with a strong emphasis on continued digital communication through a variety of means (e.g. blogs, Twitter, YouTube posts) to grow the conversation more widely. A high level of transparency was maintained throughout the process, with difficult discussions and political limitations being aired honestly. Importantly, both on and offline meetings were led by the community, who set the agenda and topics for discussion.

[32] Planning for Climate Change – Guidance For Local Authorities can be found at this website: http://www.tcpa.org.uk/pages/planning-for-climate-change-guidance-for-local-authorities-2012.html

Crucial to the project was the ability of participants to provide informed comments about the energy strategy for Cambridgeshire. Sharing a technical baseline document online was therefore a necessary prerequisite, giving all participants a shared body of knowledge from which they could build. This technical report was developed through dialogue between researchers, policy makers, the public, experts and the commercial sector, and commentaries on significant points were posted as clips. The blog[33] and main website[34] provided an archive of research, meetings and key documents that all participants could refer to[35].

[33] http://crif.wordpress.com/
[34] www.crif.citizenscape.net/core/
[35] A more detailed case study report for the CRIF project can be found here www.sustainabilityeast.org.uk

Appendix 2: Table of methods

	Tool	Details	Works well for	Risks/Challenges	Examples	Uses for Science-based policy makers
Just Talking	**Websites/ podcasts**	Websites used for giving out information only (no discussion)	• Creating interesting, interactive and engaging content quickly, cheaply and controlling the message exactly • Being able to see audience data about who is accessing the site • Including a wide range of media and link to other web content • Creating an easy searchable information resource/ library	• Need to keep up to date and interesting to keep audience • Getting visitors to come to your site • Security needed on site to prevent hacking, particularly if content is contentious • Be prepared for people to interact, whether you want them to or not	Many organisational and corporate websites are like this Cambridge University scientists website and podcasts on 'bare essentials' of science (does include some interactive content e.g. a forum) www.thenakedscientists.com/	Broadcasting information and offering and information resource Use to refer to in other more engaging media
	Debate/ argument visualisation	Showing details in a visual/ interactive way – allowing user to interrogate data and information	• Making complex information easier to understand, particularly figures • Getting people to engage with data and ideas	• Can require extra knowledge for users to interpret the data correctly	http://wheredoesmymoneygo.org/ http://debategraph.org www.barackobama.com/life-of-julia (political example)	Present complex data sets and ideas in an engaging way to draw people into discussions and debate

	Tool	Details	Works well for	Risks/Challenges	Examples	Uses for Science-based policy makers
	Quizzes	Pre-programmed quizzes to allow people to engage and learn about a subject	• Drawing people in to engage with issues • Getting people to compete against each other • Good for children and young people	• Difficult to create right/wrong answers to complex subjects • Lack of conversation and discussion leads to frustration or disengagement	www.britishscienceassociation.org/national-science-engineering-week/download-activities-competitions-and-quizzes/quizzes	Dispelling myths, grabbing attention and getting people involved and wanting more

	Tool	Details	Works well for	Risks/Challenges	Examples	Uses for Science-based policy makers
Mainly Talking	**Virtual meetings/webinar**	Webcasting of meetings with variable levels of interaction from 'viewers'. Can include a digital back channel of discussion from viewers	• Making information available across time and in different locations • Creating a digital archive of meetings, which can be searchable and easy to access	• It can need expensive equipment • Requires a good internet connection to access • Technology issues/breakdown can disrupt real-time discussion	www.public-i.info/connect.php Google Hangouts such as www.youtube.com/watch?v=cajSgjz9luE	Show discussions that are taking place and allowing more people to get involved
	Blogging	Weblog/ online diary, with or without option to leave comments	• Letting professionals seem more human, accessible and explain things in their own words • Letting ideas develop and emerge • Getting comments from others • Linking to other ideas, media and content	• Blogging is a skill which needs to be learned • Has all the same legal risks as publishing in other formats (e.g. defamation, plagiarism etc)	www.sciencebasedmedicine.org/ http://scienceblogs.com/ http://blogs.bbsrc.ac.uk/ www.insight.mrc.ac.uk/ http://blogs.food.gov.uk	Showing developing policy direction, telling the story of this is how we got here Thoughtful development of arguments and presentation of evidence which can be openly challenged

	Video Views/photo sharing sites	Post pre-recorded film or photos online with option for viewers to leave comments	• Younger audiences • Presenting information in a range of formats and media • storytelling and for using images and diagrams	• Original content it can be more expensive to produce and edit requiring specialist skills. (but is easier than ever to do it yourself) • Can require a good internet connection to view	YouTube www.youtube.com/watch?v=cv2xQ68HLD0 Stories about climate change www.projectaspect.org/home Monmouthshire budget consultation http://digitalmon.wordpress.com/category/digital-projects/ Flickr for photos for example HMRC most wanted www.flickr.com/photos/hmrcgovuk/sets/72157631087785530/detail/	Personally presenting complex ideas to a wider audience
	Simulations/ games	Allows testing of different scenarios	• Engaging people in the realities of rare or unlikely issues (e.g. disaster preparation) • Allowing people to make decisions which can be used to model public reactions	• Expensive to develop • Difficult to create a realistic scenario	Reduce carbon emissions http://my2050.decc.gov.uk/ Be in charge of UK Flood policy http://floodsim.com/ Guide to sentencing with change to pass sentence http://ybtj.justice.gov.uk/	Testing ideas and policy in a safe environment. Letting people see the realities and extremes

	Digital Dashboards	Collect together content in one place	• Telling stories • Showing range of discussion and coverage of an issue • Managing online presence/reviewing online issues	• Requires oversight and management	pinterest for pictures for example Dept of Health Pinterest on Dementia http://pinterest.com/dhgovuk/dementia-25-oct-12/ NetVibes, e.g. www.netvibes.com/bisgovuk Wisbech community site http://wisbech.shapeyourplace.org/	Giving a an over view and summary and making things look interesting
	Public Q&As	People ask questions and answers are public either formally (e.g. through FoI requests) or informally	• Engaging the way that people want and being responsive • Reducing the need to answer the same questions repeatedly	• Reactive and can appear defensive • Can be acrimonious • Needs moderation and timely, accurate responses Requires credible, trusted and accessible expert for technical questions	www.whatdotheyknow.com/	Accountability and not getting tied up answering repeated similar Freedom of Information requests

	Tool	Details	Works well for	Risks/Challenges	Examples	Uses for Science-based policy makers
Discussing	**Online Forums**	Post and interact with others around an issue	• Building sense of community or accessing a particular community to engage with • Allowing anonymous contribution (helps if subject is sensitive e.g. mental health) • Providing a searchable archive of contributions around a topic. Deals well with frequently asked questions • Approach can be used to utilise existing, relevant networks and to incorporate existing debate	• Needs clear rules and requires moderation which can be onerous • Can be dominated by the loudest voices • Needs to populate community before it gets interesting	Science forum www.thenakedscientists.com/forum/ HMRC engaging through money saving expert forum http://forums.moneysavingexpert.com/showthread.php?t=3872743 Mental health forum www.bigwhitewall.com/my-account/login.aspx?ReturnUrl=%2f	Finding existing communities interested in an issue. Understanding or scoping a problem or finding innovative ideas or solutions

	Collaborative editing/working/ ideasourcing	Working together on an online on documents/ problems/ issues	• Gathering a wide range of information and data • Allows knowledge to evolve and keeps a record of changes • being easy to scale up • more reliable – no single point of failure • Innovation, imaginative, creative and radical solutions • Getting help from many others	• No responsibility and accountability • Needs effective coordination and quality control • Disappointment/ disengagement from people whose ideas are not used • Important to have feedback loops (and this can be difficult) • New ideas are in the public domain and so vulnerable.	Wikipedia www.wikipedia.org/ investigative journalism website asks for and offers help http://helpmeinvestigate.com/ Suggest US policy www.policypitch.com/ Crowdsourcing of Icelandic constitution www.guardian.co.uk/world/2011/jun/09/iceland-crowdsourcing-constitution-facebook Ideas for health maps and apps http://departmentofhealth.ideascale.com/	Bringing extra resource and contributions Getting a wide range of people involved and feeling like they are actively contributing

	eClinics/ eMentoring	Online, secure two way conversation	• Provide a transcript of conversation • Providing convenient and cost effective access to experts	• Hard to get reliable input without paying • Risks of bad advice the same as in offline environment • Hard to communicate and read emotions online • Requires reliable internet connection • Privacy issues	online bullying support www.cybermentors.org.uk/	Access to expert advisors (for policy makers or for the public) to keep decision making moving
	Instant Messaging/ Online Chat	Online conversation in real time (with or without attachments)	• When Immediate answer/discussion needed • Providing a record of conversation • Knowledge that the person has received the message • Holding multiple conversations at the same time	• Word based – needs good literacy and typing • Difficult to convey emotions and easy to misunderstand • Limited length of message and may be costs involved • Difficult to verify who you are chatting with	www.sciencechatforum.com/chat.php www.nasa.gov/connect/chat/index.html	Quick and easy contact

	Participatory Budgeting	Discussion about how to spend budgets and allocate money	• Allocating grant funding/ small budgets • Providing clear and direct accountability • Increasing awareness of issues	• Raised expectations and limited options • Needs good information and feedback	Lots of examples here www.participatorybudgeting.org.uk/models	Engagement on grant disbursement and where priorities should lie
	Citizens juries/ ePanels	A group of people who can listen to issues, discuss and give an opinion	• High engagement and deep participation • Complex issues where knowledge and in depth consideration is needed	• Recruiting enough committed people • Need representative panels • Requires considerable input to maintain • Only loudest voiced get heard	Report on public perceptions of industrial biotech www.berr.gov.uk/files/file51238.pdf report on Stem Cell Dialogue www.bbsrc.ac.uk/web/FILES/Workshops/stem_cell_final_report.pdf	To build a group of informed lay people to make complex decisions
	Social Networking	Connect with others and build relationships	• Accessing large, existing audiences • Connecting to those with a common interest • Create groups and networks • Cost effective, quick and easy to set up	• New skills which need to be learnt • Liabilities similar to offline – defamation etc • Unmoderated, so vulnerable to trolling, bullying, spam etc • Privacy and identity issues	https://twitter.com/bisgovuk/innovation-research is a list of innovation and research twitter accounts	

	Online Consultations	Asking people about views to influence policy and strategies	• Cost effective consultations • Easier to feedback results • Reaching a wider group of people than offline consultations	• Difficult to link online and offline • Complex to set up well • Can get small number of responses • Online not a magic bullet – it still needs to be a well-designed and managed engagement	Closed consultation on mitochondria replacement www.hfea.gov.uk/6896.html	Gathering views from a wide range of people
	Direct Democracy	People vote directly on issues	• Can be powerful as people see immediate effects of engagement	• Can get unexpected or extreme results • Needs strict and transparent rules to ensure fairness and trust • Need system of verifying identity	My farm http://myfarmnt.com/2012/09/06/myfarm-comes-to-an-end/	Engage a group and get them to vote for options
	Visualisations/ virtual environments	More or less immersed in a virtual environment with the possibility of interacting or adding comments to maps /pictures	• Creating a more complex, immersive experience • Not relying too heavily on words • Linking well to place	• Can be expensive and complex to set up • Needs good internet connection and hi spec tech to use • Needs skill to use and interact	http://slider360.stickyworld.com/ http://overmorgen.nl	Getting people to imagine policy in other places for example in the Amazon

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Mostly Listening	**E Petitions**	Petitions online can be part of the reaction to policy making	• Ease of set up, access, search • Information richness • More transparent than offline petition • Ease of feedback	• Hard to verify identity of those signing the petition • So easy that signing can be done by the uninformed • Care needed in drafting of the petition (problems with lots of similar petitions)	E.g. http://epetitions.direct.gov.uk/ Badger culling http://epetitions.direct.gov.uk/petitions/38257	Science-based policy makers will need to engage different interest groups and anticipate petitions
	Data gathering	Collecting data and openly sharing	• Access to a much wider data set and more resources (often volunteer) • Easily searchable	• Variable quality and veracity • Need to think about how to keep contributors inspired (e.g. access to feedback, reports etc)	Naturewatch/ astronomy/ archaeology/health sites www.bigbutterflycount.org/	Can gather far more data than any study could hope to do. And gather supporters at the same time

	Ratings	Allowing users to score experience	• Driving competition and raising standards • Providing feedback to service providers	• Can be skewed or used maliciously • Can be subjective • Structure can provide more useful feedback (e.g. if broken down into aspects)	Amazon http://uk.ratemyteachers.com/ localism ideas and ratings http://whatnextforlocalism.org/category/idea/	Policy makers can invite site users to rate documents/materials that they have used If the social trend to 'rate' people extends, they may provide a useful tool for identifying public-preferred experts to get involved in science-based policy discussion may

	Tool	Details	Works well for	Risks/Challenges	Examples	Uses for Science-based policy makers
Just Listening	**Recommendation systems**	Recommendations based on past choices e.g. you liked X so may like Y and Z	• Can help people discover new things	• Can be invasive and irritating • Can be wrong when based on incorrect or small amounts of data	e.g. Amazon, www.last.fm/	Enables those who have expressed an interest in a particular area to be directed to engagement opportunities in related areas, ensuring that engagement is not restricted to those with the strongest opinions
	Social reporting	Reporting things to authorities	• Immediacy • Increasing Transparency/ accountability • Reducing duplication	• Problems with compatibility of systems • Users can have high expectations • Need service providers to agree to engage – too many duplicate systems	e.g. www.fixmystreet.com/ www.fixmytransport.com/	Useful for highlighting problems for example when something is not working E.g. highlights good and bad practice examples, and raise concerns

	Social media monitoring	Using technological tools to listen in to conversations taking place online	• Understanding the 'chatter' about an issue or area • Learning what common misconceptions are running in public debate • Understanding what areas people feel uncertain or uninformed about	• Perception of 'spying' particularly around sensitive issues • Profile of active social media users different from mainstream of public	Citizenscape RebelMouse	Understanding the network conversation on an issue, and adapting engagement accordingly