Knowledge exchange through online political networks

Chris Aalberts and Maurits Kreijveld

Abstract

Web 2.0 offers citizens and politicians new opportunities for exchanging information and knowledge. For citizens it has become much easier to inform politicians about their wishes, questions, complaints and ideas, while it has also become easier for politicians to reach their constituents. Despite these new opportunities, the extent to which Web 2.0 is actually used for knowledge sharing is unclear, as is the question of what kind of knowledge is shared with whom. In this chapter, we look at the contribution of the Dutch online social network Hyves to knowledge exchange. Twelve Hyves profile pages ('hyves') initiated by politicians and nine initiated by citizens were analysed. Our analysis shows that in practice interaction between initiators and members of Hyves pages remains limited and can be characterised as very informal. Although the primary purpose of these networks appears to be to give citizens an opportunity to voice their opinions, in a large majority of the cases analysed there was no interaction, dialogue or knowledge exchange.

Introduction

Over the past decade, the internet has developed into a social web. Whereas traditional media are characterised by one-way communications between the sender and receiver of information, the social web has made it possible for everyone to send and receive information. Citizens are increasingly using the web to create and exchange knowledge and information. Examples include the online encyclopaedia Wikipedia, to which anyone who wants to can contribute; YouTube, a website where people can upload their own videos; the microblogging service Twitter, where people can tell other people what they are doing and discuss topics of interest, and social networks such as MySpace, LinkedIn, Facebook and Hyves, where members can create their own personal pages and fill them with pictures, videos and stories.

Dutch politicians as well as citizens are experimenting more and more with the opportunities that Web 2.0 offers. An independent Member of Parliament wanting to establish her own party asked her supporters to co-write her political manifesto through a wiki, while several political parties have their own channel on YouTube to showcase party events, some politicians, including the Minister of Foreign Affairs, are active on Twitter and many politicians have profile pages on social networking sites. A number of citizens' movements, societal organisations and protest groups have also discovered Web 2.0 and have their own pages on social networks, post videos on YouTube and blog about current affairs. In these ways, Web 2.0 is enabling politicians and citizens to get in touch with each other more easily and exchange knowledge and information. A relevant question, however, is how effective this knowledge exchange is and what the value of these experiments is.

ICT experts such as Frissen (2008) and Harfoush (2009) consider Barack Obama's campaign for the US presidential elections in 2008 to be one of the most successful examples of the use of Web 2.0 in politics. Obama used a combination of Web 2.0 applications, including social networks (Facebook), instant messaging platforms and YouTube, and brought these applications

together on his own social network: MyBarackObama.com. Experts claim these applications not only helped Obama to reach his supporters, but also activated those supporters to spread his message and raise new funds. Web 2.0 is said to have mobilised the masses to create an impressive result. In other words, the largest campaign fund raised in history and a landslide victory. In the eyes of these experts, Obama is an inspiring example of how Web 2.0 can engage citizens in politics and lead to greater exchange of knowledge between politicians and citizens. But these positive evaluations also raise important questions. Was Obama's success really dependent on his use of Web 2.0, or were other factors equally important for the outcome of the elections? What effect does knowledge and information exchange through Web 2.0 have on politics? Will it close a gap? What kind of interaction is needed? Is an example such as Obama's relevant to the Dutch situation, with its coalitions and the smaller role played by fundraising? There has so far been little academic research into these questions.

The belief that Web 2.0 will have a major impact seems to contradict the Dutch political reality. According to De Beus (2001) and Aalberts (2006), the Netherlands has developed into an audience democracy, where a majority of citizens are politically inactive and vote only when elections are held. They follow politics through the media and have no direct contact or interaction with their political representatives. This audience democracy makes politics into a profession of a small group of experts. And it seems unlikely that the new technical opportunities created by Web 2.0 will change this. Research also shows that politicians do not currently use the internet very interactively: most political parties' websites very much resemble printed, offline folders: although they provide citizens with lots of information, they offer very few opportunities for interaction. Most websites provide information that was already available offline. Only a small minority of these websites use the potential of new applications that could result in interaction and encourage knowledge exchange (Gibson et al., 2003; Jackson, 2007; Jackson & Lilleker, 2004; Schneider & Foot, 2006). There is not much information available from research into websites of protest groups and citizens' movements, and we are not aware of any examples of such groups that have established a prominent role in the political debate through the internet. In general, it seems highly unlikely that Web 2.0 will have any great impact on Dutch politics.

In the exploratory research presented in this paper, we made an inventory of how Dutch citizens use Web 2.0 at present and whether they use it to exchange knowledge and information with politicians and other citizens. We looked at the Dutch social network Hyves, which is by far the most prominent online social network in the Netherlands. More than half the Dutch population now has a profile on Hyves, which can be seen as the Dutch equivalent of Facebook or MySpace. Many politicians also have a profile on Hyves, as do many protest groups and other citizens' initiatives. Hyves integrates functions: blogging, messaging, uploading movies and pictures. In theory, this kind of social network can create new forms of interaction between politicians and citizens. Politicians are no longer dependent on news media alone to create their supporter base. Instead they can interact with these supporters directly through Hyves, receive direct feedback on their work and get input for new policy measures. Citizens, too, are no longer dependent on the work of journalists: they can spread the word about their cause themselves online, create a group of supporters and catch the attention of politicians. Online social networks have made all these forms of interaction easier than ever. But are these networks really used in these ways? What kind of knowledge exchange takes place on online social networks such as Hyves?

Method

The research question for this paper concerned the role that social networks play in the exchange of knowledge between politicians and citizens, and among groups of citizens? This study analysed two types of political Hyves pages, some initiated by citizens and some by politicians.

Nine of these profile pages were started by citizens and focused on a specific political issue. Some concerned topics that were in the news during the research, for example the law requiring secondary school children in the Netherlands to receive at least 1040 hours of education a year. Many young people were against this law because they believed it would have an adverse impact on the quality of their education. Another hyve was about hallucinogenic drugs derived from 'magic mushrooms' and was started in response to the Dutch government's plan in 2008 to ban these types of drugs. Other hyves analysed discussed a law designed to reduce global warming, earlier closing hours for cafes, abortion, parents who refused to pay child maintenance, animal testing and a law banning squatters. Some hyves were created by organisations in civil society, such as the climate hyve initiated by a youth environmental organisation, while another was of a more playful nature: a group of students protesting that they had had to send in their photographs several times in order to get a new electronic public transport card.

Twelve Dutch politicians' hyves were analysed: six of leaders of a parliamentary party (Rita Verdonk, Geert Wilders, Mark Rutte, Femke Halsema, Alexander Pechtold and Marianne Thieme), five of Members of Parliament (Boris van der Ham, Tofik Dibi, Mei Li Vos, Fatma Koser-Kaya and Hero Brinkman) and one of a minister (André Rouvoet).

All the citizens' groups and politicians mentioned were asked by e-mail about their reasons for starting their hyves. Six of the nine citizens' groups contacted responded to our e-mail, while the initiators of the hyves on abortion, drugs and 1040 school hours did not reply. The politicians were contacted by e-mail and telephone. Despite several attempts, five of them (Geert Wilders, André Rouvoet, Femke Halsema, Fatma Koser-Kaya and Tofik Dibi) could not be contacted. On four occasions we had an interview with the politician, while on three occasions it was with one of their employees. The questions asked in all the interviews were why they had started their hyve, what information they put on it and why and whether they thought there was an exchange of knowledge with other relevant people.

The content on all the hyves was analysed, as were the most important applications available: blogging (such as discussions and articles that others can comment on) and the ability to upload pictures and videos. In the case of the citizens' hyves, we also checked whether there was a calendar of events related to the cause, and online polls that would enable members to voice their opinions. In the case of the politicians' hyves, we looked at the advice they gave to their members. To assess the extent of interaction on these hyves, we counted the number of members in May 2009. In the case of the politicians' hyves, we also counted how many messages ('krabbels') were posted on these hyves, how many short funny messages ('tikken') were posted and how many times members reported that they had spotted the politician in real life.

We then contacted the hyves' members by sending them a personal message. We kept asking new members until we had eighteen respondents for each hyve. The total response from members of the citizens' hyves was 23%, while the score for the politicians' hyves was 21%. For each hyve, we approached at least five members who were active on the hyve. In other words, members who had posted at least one message. In addition, we tried to reach at least five members who had never posted a message. In this way, we sought to reach a range of active and

non-active members. We asked these members why they became a member of the hyve, what they did most frequently on it and what significance it had for them. In this way we gained insight into their reasons for becoming a member and into how hyves could be relevant for exchanging knowledge with politicians and other citizens.

Results: Citizens' hyves

The contents of the citizens' hyves were analysed on 3 May 2009. We looked at the applications used and the frequency of their use. Table 15.1 shows the amount of content for each application. There are great differences between the hyves in terms of the content offered and the frequency of their use. In some cases, there seems to be a considerable amount of knowledge and information exchange, while in other cases there is almost none.

Table 1: Content and members of citizens' hyves								
Нуче	Established	Blogs	Video					

Нуче	Established	Blogs	Videos	Pictures	Calendar items	Polls	Members
1040 hours	20-11-2007	Unknown	0	87	29	127	55776
Animal testing	02-03-2006	61	31	266	1	29	13040
Abortion	23-12-2006	34	18	39	0	11	2113
Child maintenance	20-03-2008	46	9	16	0	1	1240
Pictures	22-04-2008	0	4	3	0	3	987
Squatters	29-07-2008	20	4	39	1	8	1027
Climate	12-12-2007	77	3	62	1	2	616
Drugs	13-10-2007	5	3	4	0	0	387
Cafes	14-12-2007	0	0	0	0	0	103

Our research found that many initiators had been involved in the topic of their hyve for years. They wanted to draw more attention to their cause and had a clear view about how the issue should be approached. Their aim was to voice their opinions and create awareness among citizens. In the case, for example, of the hyve about animal testing, the aim was to make other citizens aware of the initiator's view that animal testing was unethical and a form of animal maltreatment and that measures should be taken. The initiators of the hyve on child maintenance payments sought to draw more attention to the problem caused by some divorced fathers' refusal to pay their ex-wives maintenance for their children. For all these groups, Hyves was a way of getting attention for their goals and arguments.

In most cases the initiators also had a second goal: they wanted to raise more political attention for and discussion about their cause. They believed this would create more support for their cause and so tried to limit the discussion on their hyve: the initiators of the climate change hyve, for example, wanted to discuss what kind of law should be used to protect the climate, not whether such a law was needed at all. Most of the initiators did not have any expectations of what would happen after they started the hyve. Most of them were satisfied because they got more members than expected, had lively discussions or received positive reactions. In general, they got fewer negative reactions than expected. They did not spread the word about their hyve

because they were afraid that people would consider it to be spam. They preferred people to invite others to join. In some cases, this did not happen and so the hyve did not attract many members, while in other cases the hyve attracted far more members than the initiator had ever imagined, and this seemed to have happened 'automatically'.

Table 15.1 also shows the number of members that these hyves have. The hyve on 1040 hours in secondary education and the animal tests hyve had more members than all the other hyves put together. Just like the initiators, many members had a personal link with the topic of the hyve, as in the case of the magic mushrooms hyve, where most members used these drugs themselves. Most members of the abortion hyve were women with personal experience of abortion. But the degree of engagement was not always strong and personal: some members, for example, did not have personal experience of abortion or child maintenance problems, but knew someone who did. In some cases the engagement was even less strong, for example in the case of the new public transport card. Almost all the members had a certain political interest, but only some were involved in political activities. These members were active in political movements or political parties striving for the same goal as the hyve, although often there was no formal connection between the two.

More than 75% of the members were 'sleeping' members and claimed they never visited the hyve. A majority of our respondents had posted no more than one message on the hyve, while a majority of the total population on the hyve had never even posted one message. This meant our respondents were slightly more active than the total population on the hyves, although calling this behaviour 'active' would be misleading. The most important 'activity' of these members was enrolling as a member, even in the case of those with a strong personal connection to the subject of the hyve, such as women whose former husbands refused to pay maintenance for their children. The limited activity on these hyves was all the more surprising, given that many members said that they used the hyves medium very often. Most of their activity would appear to be on other hyves. Generally, members discovered the hyve through their other contacts on hyves. Only a minority explicitly searched for a hyve about the particular topic. For a majority, their interest in the topic was not great enough to take such initiative: it was the cause that interested them, not the hyve about the cause.

Some hyve members had personal reasons for becoming a member. However this was only the case in a few hyves, such as the hyves on maintenance payments and abortion. These hyves had developed into online meeting places where people exchanged their experience and gave each other advice on maintenance payments and abortion. These hyves did not provide much formal information about the topics: our interviews found that traditional media were a more important means of informing members about legislation and other regulations. Nevertheless, the hyves were an important source of information about personal stories and experience that could not be found in the traditional media. Members could speak to fellow-sufferers, exchange experience, give advice and offer support. For these members it was the exchange of experience that was the most important aspect.

The members of the hyves on abortion and child maintenance payments were also seeking to change public policies. This goal was shared by many members of all the Hyves in this study. Members who visited the hyve to discuss the particular topic were often disappointed by the quality of the debate, mainly because there was often very little variation in the opinions of the people wanting to discuss these issues: in most cases they simply agreed with each other. This made it difficult to engage in a meaningful debate about the issue because members could not influence each other's views. They became a member to make a political statement and to show others what they thought about the cause. According to many members, Hyves was the

only way in which citizens could show other people what they thought about such issues and where they could make themselves heard. Attention from the mass media should lead to a further spreading of the message and thus result in more members of the hyve and more attention for the topic in the political arena. Members were sceptical, however, about whether more people would actually be reached: they thought that people would not become a member of a hyve on a topic in which they had no strong interest and so concluded that the hyve was unlikely to have much effect

Results: Politicians' hyves

The politicians' hyves were also analysed on 3 May 2009. We analysed which applications these politicians used and how frequently they were used. Table 2 gives an overview of the content. All the data are from 3 May, except the blogs. Some politicians have so many blogs on Hyves that only the April 2009 blogs were included.

There were major differences in the information offered on Hyves. Although all the politicians used the blog application, the numbers are sometimes misleading because the interviews revealed that the politicians who seemed to be the most frequent bloggers did not write the blogs themselves and simply posted general news items as blogs. The use of other applications on Hyves was less frequent. Only three politicians posted high numbers of pictures on their profiles, mostly of political meetings where they appeared. Tips and videos were also scarce. Tips often focused on politicians' own books and websites. Blogs would seem to be the most important application: all the politicians used this application and posted new content there on a more or less regular basis.

Table 2: Content and interaction on politicians' hyves

Politician	Established	Members	Blogs	Videos	Pictu- res	Tips	Messages	Short messages	Spotted
Verdonk	08-10-2006	68009	23	10	82	3	Unknown	2704	108
Wilders	14-02-2007	67700	4	0	0	0	Unknown	5108	126
Halsema	17-10-2006	16306	1	10	6	4	577	427	39
Rutte	02-10-2006	11713	3	13	111	14	58	280	52
Rouvoet	16-10-2006	8921	8	9	9	0	33	Unknown	41
Pechtold	02-04-2006	4971	34	5	18	1	243	92	6
Thieme	13-10-2006	4448	12	2	23	0	91	177	9
Van der Ham	21-02-2006	4139	6	0	290	1	22	51	18
Dibi	15-10-2006	2564	1	0	0	1	48	138	10
Vos	03-02-2005	2106	12	0	7	0	37	67	8
Koser Kaya	22-02-2006	1150	2	3	35	5	15	25	3
Brinkman	25-07-2008	465	1	2	1	0	123	46	1

The interviews showed that politicians made a profile on Hyves because they wanted to bridge the gap between citizens and politics. This was their main and often only motive. They believed that Hyves would enable them to reach target groups other than those who visited the party website or went to political meetings. Hyves is a quick and direct way of communicating with citizens because the medium is easy to use. One politician did not really have much of a choice: all her colleagues had started a profile

on Hyves and so she felt obliged to do the same. Another politician already had a profile before she became a Member of Parliament. Although she still saw it as a network of her friends, it now also included people she knew only through Hyves. In some cases, politicians' staff made the updates on Hyves, often because the politician did not have enough time to update it. Citizens sending a message to a politician did not always get an answer. If they simply expressed support, they would not get a reply, whereas citizens asking questions about policy issues or coming up with suggestions did get an answer most of the time. Some of the politicians mentioned that once or twice they had used these suggestions in political debates.

Table 2 shows substantial differences in the number of members of these hyves, with well-known, right-wing politicians (Rita Verdonk and Geert Wilders) having the largest number of members. Other prominent politicians' hyves have fewer members. The forms of interaction were counted on 3 May 2009. Because of the large numbers of messages, only the messages sent in April 2009 were included. It appears that the more members politicians' hyves have, the more messages they receive. The number of messages for Femke Halsema, however, is misleading because on 25 April she received 345 messages wishing her a happy birthday.

Many Hyves' members analysed were politically active and some even had responsibilities in politics, usually in local politics, while others were planning to become politically active. Although many members sympathised with the politician's party, many of them also sympathised with other parties. The members of a left-wing liberal politician's hyve, for example, also included people with right-wing, Christian Democratic and Social Democratic sympathies. These citizens were often members of more than one politician's hyve, with most of these politicians having similar ideologies. However, there were two hyves whose members were different from this general profile. The members of the hyve created by the leader of the animal rights party did not want to be politically active, but simply wanted to achieve better treatment of animals, while the members of the right-wing Geert Wilders' hyve described themselves as politically inactive.

The members did not remember how they discovered the hyve that they are a member of. Either they did not have a specific reason for joining or they had forgotten it. Some members said that they 'just did it' or that it was out of curiosity. Many members never used or visited these hyves. Their limited use of these hyves made it difficult for these members to give an opinion on them. These answers point to a lack of engagement among a majority of the members. According to these members, the hyves did not produce any results, but this was not considered a problem because they did not invest any significant amounts of time in them. They thought it was positive that a politician could be found on Hyves because it showed that the politician was trying to keep in touch with citizens. In addition, Hyves was seen as a good way of attracting young people into politics. The appreciation for Hyves was related to the content found on the page: politicians who did not regularly post new content on hyves were criticised, while politicians who posted content were appreciated. There seemed to be no other criteria for evaluating their use of Hyves.

The members' reactions showed that there were three reasons for becoming a member. Firstly if you were looking for information about politicians and their views and current

activities? Respondents said that they sometimes read the blogs, watched a video or followed the news. In this way, they got an idea of what the politician stood for. Some mentioned that it was an advantage that the information came directly from the politician and not from the media or from journalists. What was more important was what other citizens thought about politics. Members were interested in messages from other citizens because they showed what these citizens thought about political issues. Some members complained that there was not enough information or alternatively too much nonsense information on the hyve. Members said that the hyve did not have an effect on their admiration of the politician: they already admired the politician before they became a member. The only difference was that they now got a more informed image of the politician than before.

A second reason for joining was that members could send messages to their politician. Although a majority of members had never sent a message, a majority of the respondents had. Nevertheless, interaction remained limited. The distinction between 'active' and 'inactive' members is difficult because more than half had only sent a message once. Around half of the members sent a politician a public message, with only a minority sending a private one. Some of these messages lacked content: citizens wishing politicians a happy birthday or good luck in the elections or something similar. Other messages were about policy issues, asking questions or giving advice. These messages were about issues close to the respondents' everyday life, such as problems in their neighbourhood. These members did not expect a reply. They would prefer interaction, but did not think it was always necessary. They believed that politicians did not have enough time for Hyves and said they understood this. They thought that the politicians read the messages and sometimes acted on them. Only a small group said that if politicians were on an interactive forum, they should also interact with the members. The fact that politicians were on Hyves obliged them to respond to citizens' messages. These members were disappointed when they did not get a message in reply.

A third reason for becoming a member was to show support to others. This was mostly a matter of agreeing with the policies advocated by the politician's political party or with the ideas of the politician as an individual. Sometimes, members agreed only with specific policy issues that the politician had raised in the past. Some opponents of abortion, for example, felt close to the Christian Conservatives, but did not have detailed views on all the policy issues that that party advocates. Their virtual membership served as a public display of support, showing that the politician and the politician's ideas had support among citizens. This kind of virtual support is not superficial because members had clear preferences as to which politicians should get their support and which should not.

Conclusion

Internet has become a social web where citizens can produce their own content and information and exchange it with others, allowing for a two-way exchange of knowledge between citizens and politicians. Barack Obama's campaign showed that using Web 2.0 could be a highly successful way of mobilising citizens into campaigning. These ideas, however, seem to contradict trends in Dutch politics, where citizens are relatively passive and the internet is used more for broadcasting information than for building relationships between citizens and politicians. Politicians are increasingly present on online social networks, and groups of citizens wanting more political attention for their causes have also discovered these social networks. The question arises as to what role social networks play in the exchange of knowledge between politicians and citizens, and among groups of citizens? This question was answered on the basis of an analysis of 21 political hyves: nine initiated by citizens and twelve by politicians.

This exploratory study showed that the initiators of political hyves found the exchange of knowledge and information important. This was particularly true in the case of citizens who initiated a political hyve: their ambition was to make citizens and politicians more aware of their cause and they saw Hyves as a good way of doing this. To them, their hyve was not only about sending out information about the cause, but also about exchanging political views. Politicians had different intentions: they wanted to bridge the gap between politics and citizens, but knowledge and information exchange played a small role on their hyves. These politicians said that – to them – their presence on Hyves was designed to show that they took citizens seriously. However, there were no interactive discussions on their hyves, while the exchange of views was also very limited: citizens sometimes sent messages to politicians, but these messages were mostly personal and informal and not about political content. In some cases citizens did not get an answer. Politicians were not so focused on interaction with citizens as we had expected.

The members of the citizens' hyves considered it important to spread information about and create more awareness of their causes. In this way, their ideas were largely the same as those of the initiators. However, the members played only a limited role; their prime motivation was to show the world around them that they thought the issue to be important. Their role was largely passive and generally involved not much more than adding a hyve to their own profile. The same held true for members of the politicians' hyves: these members added a politician's hyve to their profile in order to make a statement, but this was their only activity. Only in a very few cases did citizens look for information on the hyve, and mainly they looked at content posted by other citizens rather than information posted by the politician. Members did not think that they had a personal role in the discussions on the site and saw little need for discussions as most members shared the same opinions. In some cases there were discussions, but these mostly involved personal advice on specific issues from the everyday life of a member rather than a political discussion about public policy or a different view on the subject. From this it can be concluded that Hyves is not used as a platform for exchanging knowledge.

This study found that citizens and politicians used Hyves largely as a medium for sending messages, not for interaction or knowledge exchange. This is consistent with earlier findings that politicians used their websites purely as a tool for spreading information (Gibson et al., 2003; Jackson, 2007; Jackson & Lilleker, 2004; Schneider & Foot, 2006). In theory, social networks provide a great platform for knowledge exchange and interaction among citizens and between politicians and citizens, as examples such as Wikipedia and the Obama campaign show. But in practice this does not happen automatically. When it is left to non-professional citizens and individual politicians, the quality of the discussions and interaction is shown to be very limited. These communications can be characterised as informal 'small talk'. Nevertheless, they seem to meet a need among citizens to feel a link with politicians and to support political causes and the people striving to achieve them. More is needed, however, for a knowledge democracy to become reality. We can see from Obama and other examples that online discussions need active stimulation, focus and moderation. These conditions are not met in the variety of political hyves analysed in this study. This raises the question of whether this lack of knowledge exchange is dependent on the specific platform or the applications used, or whether it is dependent on cultural factors.

References

Aalberts, C. (2006). Aantrekkelijke politiek? Een onderzoek naar jongeren en popularisering van politiek. Apeldoorn: Spinhuis.

- Beus, J. de (2001). *Een primaat van politiek (inaugural lecture on 29 June)*. Amsterdam: Vossiuspers.
- Frissen, V. (2008). Interview on the television programme 'Boeken' on 28 December about the book *De draagbare lichtheid van het bestaan*. Hilversum: VPRO.
- Gibson, R.K., Margolis, M., Resnick, D. & Ward, S.J. (2003). *Election campaigning on the WWW in the USA and UK: a comparative analysis*. Party Politics 9: pp. 47-75.
- Harfoush, R. (2009). Yes we did: an inside look at how social media built the Obama brand. Berkeley, CA: New Riders.
- Jackson, N. (2007). *Political parties, the Internet and the 2005 General Election: third time lucky?* Internet Research 17 (3): pp. 249-271.
- Jackson, N. & Lilleker, D.G. (2004). *Just public relations or an attempt at interaction? British MPs in the press, on the web and 'in your face'*. European Journal of Communication 19 (4): pp. 507-533.
- Schneider, S.M. & Foot, K.A. (2006). Web campaigning by US presidential primary candidates in 2000 and 2004. In: Williams, A.P. & Tedesco, J.C. (eds.). The internet election: perspectives on the web in campaign 2004, pp. 21-36. Lanham: Rowman & Littlefield.