Experiences with Video Streaming of Norwegian Local Government Meetings

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Abstract: Video streaming of local government meetings offers transparency. After an experimental phase, video streaming has now become a regular service in several Norwegian municipalities. This paper describes the design, development and implementation of one such video streaming service for a consortium of twelve municipalities. One important goal of this project was to deliver rich user experience without putting additional workload on municipal administrators. Our solution is able to deliver multiple video streams originating from different video sources (cameras), and the user may choose which video streams to view. Video streams are stored and made available for later viewing. An administrative application facilitates linking items on the agenda to relevant video content. A search engine makes it possible to search for video content across municipal borders. The paper also reports on a recent survey conducted among initial users of the video streaming service. The results are discussed, and some areas of future research are proposed.

Keywords: transparency, accountability, e-democracy, video streaming, webcasting

1. Introduction

The recent declaration made by the EU Ministerial Meeting, held in Manchester on November 24th 2005, expressed the following ambition: "By 2010 European administrations will have significantly increased transparency and accountability wherever possible and relevant through innovative use of ICT". This paper describes one innovative use of ICT to increase transparency and accountability through video streaming of local council meetings. In 1992 a new Local Government Act (Local Government Act 1992) was passed by the Norwegian Parliament. Before 1992 local council meetings were open to the public, but committee meetings were not. The new act introduced a principal rule that meetings of popular bodies shall be open to the public. The committee writing the proposal for the new act used the following reasoning for more openness (NOU1990:13): "Meetings open to the public contribute to create better insight, and better understanding of what happens within local and regional government".

Even more important, was the introduction of a right for the public to record proceedings of open meetings to magnetic tape, video tape, etc. or broadcast proceedings by radio or television as long as recording or broadcasting does not have a disturbing effect on the meeting. Video streaming or web-casting (Stolarz 2004) through Internet has given new opportunities for transparency in governments. By using video streaming, citizens get an unfiltered view of the decision-making process independent of time and geographical distance. The current increase in broadband penetration makes the use of video streaming of local government meetings feasible. A recent study performed by the consulting company Teleplan (Teleplan 2005) for the Norwegian Ministry of Modernization estimates that more than 45% of all Norwegian households now have broadband installed. More than 90% of the households are in areas with broadband coverage. The concept of video streaming is not new, and there have been several trial projects during the last years both in Norway (Salten Regionråd 2003) (Fallmyr 2003) and other countries. Several Norwegian municipalities have been transferring their meetings for some time, but we now see a growing interest for video streaming among municipalities, probably based on the current increase in use of broadband connections among ordinary citizens.

2. Transparency

Many municipalities have introduced tools to improve transparency. By publishing agendas, case documents and minutes of political meetings, the citizens have the opportunity to retrieve documents and get information. By providing access to the register of letters received and sent, citizens may find out what government is working on. Some authors early identified video streaming as one example of technologies to be used for e-democracy, e.g. (Bannister 2002). The video streaming of local government meetings is the obvious extension of document publishing. Video streaming gives the possibility to follow the political decision making process in detail. Local newspapers cover local government meetings, but they normally provide only a very condensed version of what was said throughout the meetings. By watching the actual meeting online, citizens get an unfiltered view of the discussion taking part within the local council.

Transparency is crucial to the functioning of democratic governments, since without the ability of the electorate to evaluate the performance of politicians there is no way to reward or punish them for their performance. Therefore, we must have transparency in order to choose amongst politicians and policy choices.

2.1.1 Independence of time and distance

Municipal meetings are open to the public; still few are using this opportunity. Citizens are more mobile than ever, and some work at odd hours. This is a new challenge for democracy; how to include modern citizens in the political decision-making? Video streaming and archived video content improves transparency for the public independent of time and distance.

2.1.2 Accountability

Since video clips are stored, politicians will, to greater extent, have to answer for what they have said in political meetings. Video clips show exactly what has been said, and it will not be easy to use explanations like "the press misquoted me". As mentioned earlier, the Local Government Act has established a right to record public meetings. Video archives on the web make such information more accessible. The actual impact on the political decision-making is a matter for further research.

2.1.3 Participation

Video streaming is primarily a mechanism for informing citizens. Since decisions are made in the meeting, citizens have limited possibilities to influence decision-making. In Norway committees prepare most decisions. Video streaming of committee meetings will give the citizens the possibility to submit their views to representatives before final decisions are made. Therefore, video streaming may also fill a role as a participatory tool.

3. The video streaming project

In 1997, seven municipalities of Vestfold County formed a consortium to work together on strategic and practical issues. Today, the consortium consists of twelve municipalities with a total of 206.000 inhabitants, and is the largest Norwegian collaborative network of municipalities based on the number of inhabitants. The office of the administrative coordinator is located on the campus of Vestfold University College, and this ensures a close relationship between the consortium and the academic staff.

The consortium aims to improve municipal services, and collaborate on planning issues. The consortium initiates projects, and each municipality is free to choose whether or not they want to take part in each project. Projects encompass all aspects of municipal service provision, from health care to schools, from road maintenance to regional planning. Information technology is one field where the municipalities have found several opportunities of collaboration. Examples of information technology projects have been the establishment of a fiber based communication network, a joint geographic information system and a joint facility for secure data processing. In 2004, Tønsberg, one of the municipalities, decided to implement video streaming of their city council meetings. Since other municipalities had similar interests, the consortium discussed the idea, and established a collaborative project. Vestfold University College was asked to undertake a preliminary study. A reference group with representatives from three municipalities was established to give input on requirements. The municipality of Tønsberg, with a population of approximately 37.000 inhabitants, was chosen as the pilot.

Part of the study was to collect information from commercial actors providing this kind of services. The costs turned out to be rather high, and the administrative workload was also considered a problem. It was therefore decided to let a group of students try out different technologies and produce a working prototype as part of their third year B.Sc. project based on a set of requirements proposed by the author as a result of discussion with the reference group, municipal political leadership, senior municipal administrators and municipal ICT- managers (Berntzen 2004).

4. Requirements

In our early consultations with municipal political leadership and senior municipal administrators, the requirement for minimal administrative workload was stressed. At the same time, it was considered important to have multiple camera positions in order to get a rich user experience. Some existing solutions were based on one camera locked on the rostrum. This gives viewers limited possibilities to see what is going on at the mayor table and among the representatives. This is especially disadvantageous when a vote is held. Other municipalities have therefore adopted solutions that require one person to position the camera throughout the meeting. This alternative was considered to be too expensive. Therefore, we came up with the idea of using multiple cameras and to let the users choose which camera to watch. We also decided to look into the

possibility of letting users watch several video streams at the same time, if the user has the necessary broadband capacity. Another important point brought forward by the municipal leadership and administrators was the need for a common search engine to cover video clips from all municipalities. Often items on the agenda are relevant across municipal borders, and it will be of interest to users to find out how neighboring municipalities have handled cases of mutual interest.

Another area of concern was the administrative work of linking agenda items to video content. We decided to look for a solution that makes it possible to store the whole meeting in a single file, but with the possibility to start video transfer at any point given the relative time from the start of the meeting. This would make it easy for the administrator to connect the different items on the agenda to the video stream. It would also make adjustments easy. The administrator thus has to make a note of the time each item is discussed. Other solutions evaluated used markers in the video stream, and the process of correcting such markers requires technical competence. We also found examples of solutions were the meeting was split into separate video clips by using video

editing software. Again this would require technical competence and extensive work.

5. Implementation

The group of students experimented with different technologies, and finally decided to use Windows Media Server for streaming. The first prototype was demonstrated in June 2005, and used web cameras connected to a PC. We experienced some problems with using web cameras. Even if we used web cameras of decent quality, we found both lighting and distance to be problems. We did several experiments to find a cost-effective solution. The final solution selected was based on low cost video cameras with interchangeable optics. Each camera is connected to a low cost PC with a TV card. The PC's are running Windows Media Encoder, and communicates with the central media server. Audio equipment was already installed, and audio signals are fed from the mixer to each encoder PC. An overview of the architecture is shown in figure 1. The interchangeable optics makes it possible to use camera positions at distances not obtainable with most web cameras. The total cost of each camera position is approximately one thousand Euros.
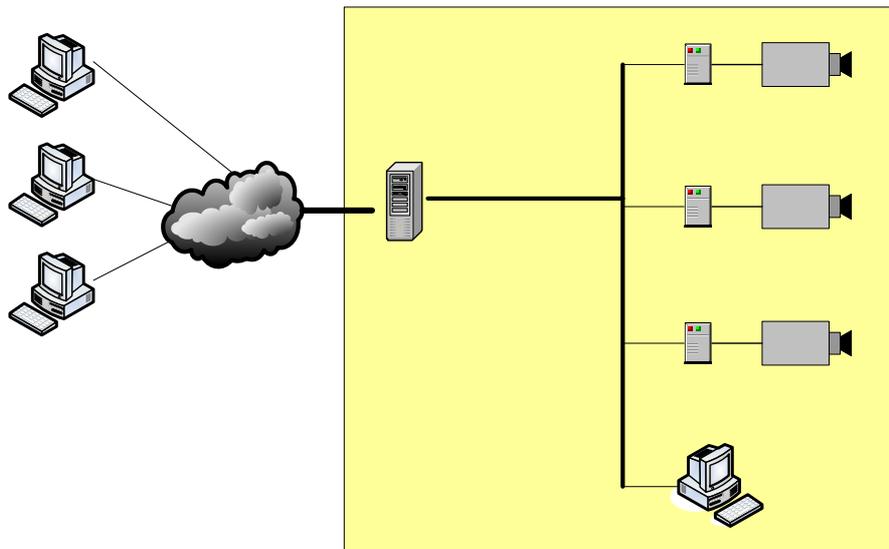

Figure 1: Architecture

The solution was put into production on November 9th 2005. In the first meetings we had two camera positions, one aimed at the rostrum, the other at the mayors table. A third camera is now overlooking the city council representatives. The same solution is now installed in the municipal council meeting room in the municipality of Andebu. Two municipalities: Stokke and Tjøme are waiting for a final decision by their respective local councils, and two other municipalities have indicated their participation later this year.

6. The user interface

The initial web page is shown in figure 2. The dropdown list is used to select municipality. The top menu is used to choose between video archive, direct transmission and search engine. The default view is the video archive. In this case the pane to the left displays a hierarchical menu showing available meetings. After a meeting is selected, it is possible to select a camera position and an item on the agenda.
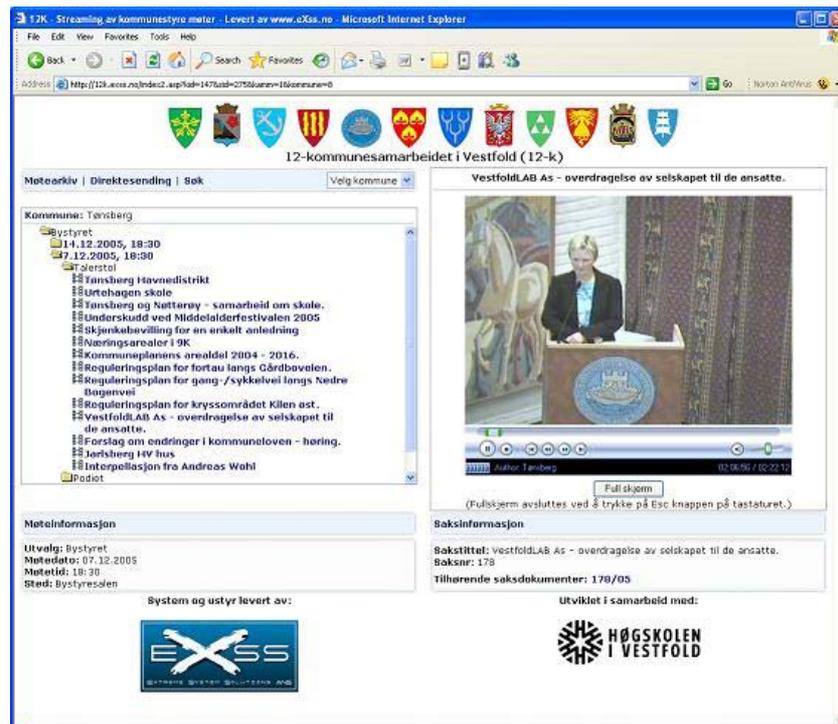
Figure 2: The user interface

The video content is shown in an embedded media player control on the right. The button just below the video content selects full screen view. Further below is information about the current item on the agenda, including a link to relevant case documents. If direct transmission is selected, the pane on the left side gives the possibility to select camera position or multiple camera positions (not shown). If more than one camera position is selected, a new web page is opened containing the appropriate number of embedded media player controls. An example showing two simultaneous video transmissions is shown in figure 3.

Figure 3: User interface (continued)

7. User survey

Citizens who watched the direct transmission or accessed the video archive of the four first meetings of the Tønsberg city council were asked to leave their e-mail address so they could later take part in a web-based survey. Users registered a total of 98 e-mail addresses. Based on the media server logs, we expect this to be

approximately 40% of users accessing the service. The last meeting was accessed by 207 individual IP-addresses. The survey was conducted in January and February 2006, and the main purpose was to find out more about who used the service, and reasons for using it. The survey consisted of 17 multiple-choice questions and two open-ended questions. 62 users answered the questionnaire. Information about the service was posted on the municipal web page. The local newspaper also linked to the service from their web site. No additional marketing efforts were done, except for a newspaper story the day after the first meeting. The story told how a property owner had followed a debate related to his property from his own living room. 25 respondents pointed to the municipal web site as their source, while 26 pointed to the local newspaper website. 10 respondents said they had received information from other users.

The most important reason for implementing the video streaming service was to improve transparency of the political decision making process. It was therefore relevant to ask if users would you have attended the meeting as a visitor, if the video streaming service did not exist. 46 out of 62 answered no. This clearly shows that the video streaming service is attracting new user groups that may not be able to, or are not interested in visiting meetings in person. We also wanted to find out if the service attracted citizens living in other municipalities. 26 out of 62 were not residents of Tønsberg. Future research will try to discover if this is a permanent phenomena, and what relations such users have to the municipality, since they are watching the local council meetings. Possible explanations may be that some of these citizens work in Tønsberg but live outside, and that some citizens have moved from Tønsberg to a new municipality, and still want to keep track of what is happening there. We had a presumption that the service would attract citizens with considerable political interest or appetite for political news. The following questions were designed to uncover such interest:

Table 1: Behaviour indicating political interests

	Yes	No	-
Have accessed case documents/minutes on the municipal web site	40	18	4
Have attended local council meeting as visitor	28	32	2
Member of political party	27	34	1
Elected official of political party	15	44	3

Only 11 out of 62 answered no to all these questions. Our conclusion is that most of the initial users became users because of their interest in

political matters, not out of general curiosity. We finally asked the participants for information on sex, age and level of education. The response shows a male dominance of 44 against 17 females. The age distribution (shown in figure 4) shows that users around 50 are most active.
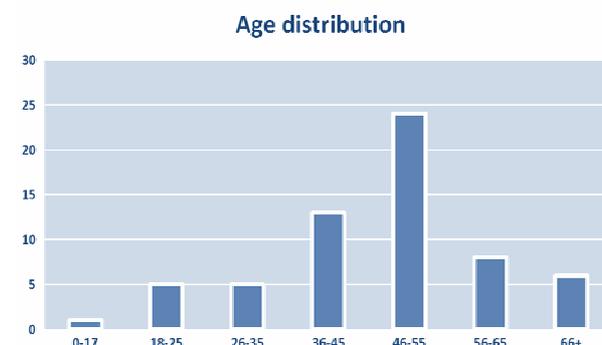

Figure 4: Age distribution

When asked about the education level of the respondents, we received the following answers:

Table 2: Education levels

Primary school	5
Secondary school	18
University/college	38

This shows that there is a dominance of users with university/college education. One conclusion that can be drawn at this time is that we have to discuss with the municipalities if there are anything we can do on the marketing side to attract more females, youth, older people, and how we can bridge a possible digital divide related to these groups. This will also be an area for further research.

8. Open-ended questions

We asked the users for suggestions and other comments. Several users gave positive feedback, and indicated that they would continue to use this service. Five users wanted more cameras. The third camera facing the representatives was not installed at that time, and will probably accommodate this. Two users reported technical problems. One suggestion was to show the name of the current speaker. We will look into this suggestion and see if we can find a way to handle this. Another suggestion is to put a link to case documents on the page used for direct transmissions. One user put forward the idea of sending comments to the party groups throughout the meeting. As mentioned earlier, we are currently implementing a module with such functionality. One citation taken from the comments: "Reside abroad parts of the year. Am retired. Former city council member." This is exactly what the kind of people we thought would use the service.

9. Future plans and research

We are currently developing a dialogue module that makes it possible for citizens to send comments to be displayed on a projector screen. Citizens are not normally allowed to take part in debates, but some municipalities have a separate item on the agenda where citizens may ask questions or raise issues. A dialogue module would make it possible for citizens to interact with politicians online (Thomas 2004). The dialogue module may also be used to facilitate other kinds of interaction, e.g. between municipal executives and employees. Another planned module will make it possible to download a video clip for later viewing. The module may also support separate audio clips (podcasts). A database giving short biographies and pictures of representatives will give the users additional background when using the service. Future research will focus on usage patterns, and how to overcome the initial digital divide seen from the current user survey results. Another open research issue is whether or not video streaming of political meetings changes the behavior of politicians and the political decision making process. Future research will also try to uncover if there are such impacts.

10. Conclusion

This paper has described the design, development, implementation and early experiences related to web casting of local government meetings. Specific innovative features of our solution are minimal workload on municipal administrative personnel and user configurable viewer experience. We also implemented a search engine to facilitate searches across municipal borders. The results of a recent survey have been reported, and future research has been outlined.

11. Acknowledgements

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