Making People More Efficient and Increasing Public Participation through E-Government

Honours Project Proposal
M.Ashiq Khan, Morilha Madisha, Hilja Angula
Contents

1. Project Title: Making People More Efficient and Increasing Public Participation through E-Government

2. Problem description:

Information Communication Technologies (ICT) have rapidly been implemented in businesses and other organizations. It has transformed the way we access services such as online banking, shopping and paying of bills. This is evidence of the transforming effect that ICT can have on people.

The use of ICT in government is commonly known as e-Government. It proposes to change the way people access government services such as paying tax online, online voting, and paying water bills online. These services, through the use of ICT can be delivered in a manner that is easily accessed by the public.

Some of the objectives of e-government are listed below:

- To spread the delivery of government services
- To increase the public access to these services
- To increase the quality of these services i.e. more accuracy, shorter waiting times fewer errors etc
Another major objective of e-government is to strengthen the relationship between government and citizens by increasing public participation in decision making of public matters, motivating collaboration between public and government and thereby create more transparency and building trust between citizens and government.

E-Government also has the potential to transform the way people behave by creating awareness of various issues such as crime, electricity stability, the status of water usage and cholera infections, current developments etc.

3. Problem Statement:

E-Government has the potential to solve many problems as described above. We chose to investigate two of these solutions to see if what special implications they will have in a South African context.

The two aspects we chose to investigate are:

3.1 The role of e-government as a tool for public transformation

We will investigate the transformative effects of e-government by creating awareness and giving insight into the usage of resources such as water and electricity. Detailed water bills in which information of how monthly usage of water is calculated and charged has resulted in a large increase in the number of people who pay their water bills on time. This can be taken further by allowing people to see what the effects of decreasing their usage of water and electricity will have on bills and on the environment. The idea is that this sort of feedback may cause people to become more environmentally conscious and adopt a more efficient lifestyle.

Why is this important?

Given the current financial situation and the relatively unstable supply of electricity, it is useful to have a system that allows citizens to track their usage of these resources. This also has further positive implications for the environment. The prospect of global warming has become a worldwide concern. More and more people are looking for a way to do their part in conserving the environment. This system is a means for the government to take the initiative to change the way people use resources so they can become more efficient.

Research Question: What are the effects of providing information about water and electricity usage to the public and allowing them to see the benefits of decreasing consumption of these resources?

3.2 The role of e-government as a catalyst for public participation and collaboration
The public generally see the government as the enemy. Many people believe that the government is not being fair to them. One of the reasons for this may be that there is a fog of bureaucracy that hides government issues from the public. This causes isolation between citizens and government.

The government often host meetings to address public matters. Numerous meetings take place, however attendance by the public is low. This is because people are not aware of these meetings. This project aims to improve the communication medium between the public and the government. The public will be able to send in complaints or any issue affecting them that they think the government is not addressing. A record of complains or issues sent from the public and any feedback given from government officials regarding complaints received will be publicly displayed. Meetings held and any points that arise during meetings will be made available on the website. This will cater for people who were not able to attend a meeting so that they are not left out, the public will also be able to send in their points of view on a specific meeting held. Often the public is not aware of what is going on in the government and therefore there is a need to create a platform for the public to communicate openly to the government. There is also a need for online forms of government advertised jobs, it is not just enough to let the people read adverts about jobs but it is also necessary to allow them to fill in forms on line.

Why is this important?

It is important to keep the public involved into government matters and to make sure that their voice is heard. Often the public is not happy with the government and for the government to be successful it needs to make sure that it listens to the nation and keep a record of complaints. The public knows best of the problems affecting them and therefore there is a need for a platform where the public can complain to the government openly. In this way the public will also be able to raise their voice and to say to the government what it is that people need in different areas.

There is a need to encourage people to use e-government and in this way they will be able to find out about what other e-government services are offered. There is a need for a platform for the public to speak out their angers to the government openly. This is very important to have a safer and easily accessible way for people to complain to the government, in a way that gives everyone equal opportunities. People normally have growing burning issues concerning the government and they release them through strikes and some people get violent during strikes and hurt others

Research question: Will creating a platform for the discussion of public matters be utilized effectively to increase participation?
4. Procedures and Methods

4.1.1 Design features
The final system will be a government website that offers two distinct services. The first of these services is the Resource Monitoring Tool (RMT), which allows users to monitor and track their usage of water and electricity and secondly the Public Participation Platform (PPP), that will act as a medium for the communication between the citizens and the government. The design features for each of these systems as well as the overall system is summarized below:

**Overall System**
- The final system should be web based
- The system should be usable to both novice and experienced users
- The interface should be interactive, efficient and effortless to use
- The web system should run on any browser of any platform
- The system should be present information in a well structured format – by use of graphics and information statistics i.e. graphs

**Resource Monitoring Tool**
- Water and electricity rates change from time to time and this should be either automatically updated via integration with the City of Cape Town (CoCT) system or should be effortlessly updated by an administrator.
- Must allow users to compare resource usage with neighborhood average to see where they fit in
- The system must allow users to tweak parameters such as the usage of a particular appliance
- The results of the adjusted usage must be simulated and displayed on screen so that the user can compare differences in costs and CO2 emissions

**Public Participation Platform**
- Uploading and viewing complaints of current issues must be implemented
- These complaints must be stored in a database
- Must allow people to upload photos of the problems they are facing
- People will be able to fill out forms online to apply for government advertised jobs
- The system should notify the public about meetings (place, time and topic)
- summarise main points discussed in these meetings on the website
- the public will be able to comment on the proceedings of these meetings

4.1.2 Development platform
The development platform is not yet decided because the team is looking for the best platform for the project. The platform will be decided later in the project (see Gantt chart). This will depend on the team’s brief research outcome. The research outcome will take about one week. The research outcome will look at the best platform for the project, the integration of the system and the experience of team members using the
platform. The research will look at this programming languages Java, JSP, PHP, ASP, C# .NET and some database such as MySQL, ORACLE and Microsoft SQL.

4.1.3 Implementation strategy
The final project deliverable will be the integration of a number of subsections. Each member will have their own subsystem to build. As mentioned earlier the project will be separated into the Public Participation Platform and the Resources Monitoring Tool. The Resource Monitoring Tool will be broken down further into the user interface and the back end functionality. These two subsystems have high dependency on each other as it relies on the two individual subsystems functioning properly on their own and also as an integrated system. The Public Participation Platform is a system by itself with minimal dependency on the other subsystems.

Development of all subsystems will be in parallel. The Resource Management Tool has high dependency on the integration of its subsystems thus will require a well structured and disciplined methodology. This methodology is to have a well designed integrated system that every member has to follow strictly. This means that each subsystem expects specific input in a specific format from each subsystem for example, the interface can expect a “Person” object from the back end system to return a “toString()” and the toString() could be in the order name and last name.

A test environment will be made available during the development process. When ever a team member changes certain sections a log or documentation of the changes should be recorded. This will help identify integration problems early.

Regular meetings and individual progress updates will ensure transparent co-operation between team members. Also peer review of individual work will take place to ensure that everyone is on track.

4.1.4 Expected challenges
Integration of these subsystems will be a great challenge since it is likely that there may be some compatibility issues as these systems will be developed individually.

User interface design is complicated since the system must accommodate a wide range of users and take into account cultural barriers and people with disabilities.

Learning the new programming languages and unfamiliarity with the new development platforms will result in team members undergoing a learning curve and this will require some dedication.

4.2 Test plan

4.2.1 Individual roles and responsibilities
<table>
<thead>
<tr>
<th>Test case</th>
<th>Test Case Creator and Resolver</th>
<th>Testers</th>
</tr>
</thead>
<tbody>
<tr>
<td>PPP</td>
<td>Hilja</td>
<td>Team, Hilja</td>
</tr>
<tr>
<td>RMT Front end</td>
<td>Ashiq</td>
<td>Ashiq, Team</td>
</tr>
<tr>
<td>RMT Back end</td>
<td>Moritlha</td>
<td>Moritlha, Team</td>
</tr>
<tr>
<td>Integration between backend and front-end</td>
<td>Moritlha and Ashiq</td>
<td>Moritlha and Ashiq</td>
</tr>
<tr>
<td>System integration</td>
<td>Team</td>
<td>Team</td>
</tr>
<tr>
<td>Client satisfaction</td>
<td>Team</td>
<td>Clients (coCT)</td>
</tr>
<tr>
<td>Usability</td>
<td>Team (especially Ashiq and Hilja)</td>
<td>Diverse users ranging from students, lectures and anyone who might use system</td>
</tr>
<tr>
<td>Performance measurements</td>
<td>Team</td>
<td>Team</td>
</tr>
</tbody>
</table>

**4.2.2 Acceptance criteria**

- **Integration**
  The different subsystems should integrate without any compatibility issues. If they do not integrate an alternative to test each subsystem must be made functional.

- **Scope**
  The project should have met scope agreed upon with project supervisors and clients. All functionality must be implemented.

- **Usability**
  The system should be easy to use by the average citizen. Users of the system should find the interface intuitive, easy to use and effortless to perform tasks.

- **Performance**
  The system should be able to perform reasonably well on average under good and worst case conditions.

- **Security and privacy**
  The citizen’s information should be kept confidential and secure from anyone who is not authorized to view information.
4.3 Calculations

Estimation of Carbon footprints, water and electricity bill will be calculated using the information from the CoCT and the information entered by the users. Reasonable complex calculations will be done in the background. The results from the calculations will be given in measuring standards that most users can understand and are familiar with, i.e. Metric units. The Carbon footprints, water and electricity bill will be the estimated based on the input from the user estimates and CoCT information. This is illustrated in the figure below:

![Diagram](image)

Figure 1: The interaction process

5. Ethical professional and legal issues

Specific household information regarding water and electricity usage may be considered private information. We may need to protect the identities of people to whom these statistics applies. This information belongs to the city thus we may have to sign a privacy statement.

Since we are representing the city we may have to follow some standards and regulations with regard to creating the website. We must also make sure that all users have equal access to these services and consider language barriers and the disabled as well.

6. Related work

Many governments around the world are moving towards the use of the internet to allow people to access government information and services on websites. E-government however cannot be successful if the public does not benefit from it or make use of it, so it is important to look at some of the aspects that will get the public involved when moving towards e-government [1]. A lot of awareness needs to be created to increase the citizens’ chances of
using e-government services [2]. There are many e-government projects which use Information Communication Technologies to deliver information and services to the public which transforms access of information to the public [1]. One of such projects is the Electronic Polling Systems for Remote Voting Operation (ePoll) which aims at implementing polling system remotely to simplify the voting process to make it more accessible to everyone importantly to disabled people and blind people [3]. Xiong JA says that some government tend to focus on technical aspects and little on the people, based on his research that he did in China he concluded that very little is done to increase awareness of e-government to people.

There exists a project from UK government that allows citizen to enter specific information about the way they live their lives and it calculates the carbon footprint. Clients enter how, on average, they use electricity, travel (car, public transportation, air travel), where they live (urban, non-urban areas), and in they live in a house or apartment in a building. This informs them how much CO2 emission they make on average in a year. [4]

7. Anticipated Outcomes:

7.1 Resource Monitoring Tool:

We expect the final system to be a web application that is Easy to access and utilize with a user friendly interface. The system will allow individual users to track their monthly water and electricity usage and see what impact it has on the environment and their pockets. This will be achieved displaying the corresponding CO2 emissions based on the usage of Water and electricity. The application will allow users to tweak certain parameters to see how much money they will save and how much less CO2 they produce if they cut down on the usage of a particular appliance such as the geyser. The system will also predict future usage based on historic trends for a particular household. Finally users will be able to compare their usage with the average usage of their neighborhood to see where they fall in.

We anticipate that this website will change people’s attitude towards the environment by allowing them to track their usage and realize the impact they have on the environment. Perhaps by comparing with the neighborhood average usage competition amongst people will arise in becoming more efficient and eventually amongst neighborhoods.

One of the reasons people do not cut down on usage of particular appliances may be that they do not believe that it will make much difference whether they overuse it or not. This system allows them to see the difference that saving electricity and water has on their pockets and their environment and this may encourage them to cut down on their usage further.

To evaluate our final product we will need to see if users are able to use the system effectively and utilize built in features. This will be done by using techniques such as constructive user testing to see if the system is being used for the intended purpose.
We will also need to check the output of the system to see if it produced accurate output. The system should handle errors elegantly and be robust enough for the average user. This may be done via a number of white box and black box tests.

In the long term we will need to see if the system is continually being utilized by the public and whether or not it has the desired impact by looking at neighborhood averages of usage to see if there are any changes.

### 7.2 Public Participation Platform:

The anticipated outcome will be a website that encourages public participation. It will have options to allow people to upload photos of their problems or send in complaints. Complaints will be stored in a database and any feedback can be viewed by anyone. If there is a job available people would also be able to fill in forms online instead of just reading an advert. There will be a notification of meetings that are happening in different areas. A short summary of meetings that took place will also be displayed and the public can also send in their point of views regarding a meeting held.

The impact of the project will be to get the public more involved, to make their voice heard and to be notified of meetings that are taking place. We expect that there would be more public participation and people will not miss out on meetings, as they will be notified and a short summary of the proceedings of these meetings will be displayed. We expect that people will know more about what is happening in the government and that there will be more transparency between the government and the people.

### 8. Project Plan

#### 8.1 Analysis of Risks

**Table 1 Risk Management**

<table>
<thead>
<tr>
<th>Risk identifier</th>
<th>Risk description</th>
<th>Consequence</th>
<th>Mitigation strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Client loses interest in the project</td>
<td>Lose support from the client</td>
<td>Ensure that the project has a project champion. The project champion will have ownership and accountability of the project.</td>
</tr>
<tr>
<td>B</td>
<td>The new system does not meet the clients requirements</td>
<td>Client evaluation will be bad</td>
<td>Ensure that requirements gathering are thoroughly done and confirm with supervisor and client</td>
</tr>
<tr>
<td>C</td>
<td>Member of development team may fall sick</td>
<td>Progress delay</td>
<td>Ensure that one member of the team does not have exclusive knowledge about any part of the project</td>
</tr>
<tr>
<td>D</td>
<td>Conflicts within the development team may arise</td>
<td>Team members fighting thus delaying progress</td>
<td>Ensure that conflicts are addressed fully as soon as they arise, thus negating any lingering resentment</td>
</tr>
<tr>
<td>E</td>
<td>Lack of</td>
<td>Resources(time) wasted</td>
<td>Ensure that regular meetings are</td>
</tr>
</tbody>
</table>
Table 2 Risk Analysis

<table>
<thead>
<tr>
<th>Risk identifier</th>
<th>Potential impact on project</th>
<th>Likelihood of occurrence</th>
<th>Difficulty of timely anticipation</th>
<th>Overall threat</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Medium</td>
<td>Medium</td>
<td>High</td>
<td>Medium</td>
</tr>
<tr>
<td>B</td>
<td>High</td>
<td>Medium</td>
<td>Medium</td>
<td>High</td>
</tr>
<tr>
<td>C</td>
<td>Medium</td>
<td>High</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>D</td>
<td>High</td>
<td>Medium</td>
<td>Medium</td>
<td>High</td>
</tr>
<tr>
<td>E</td>
<td>Medium</td>
<td>Medium</td>
<td>High</td>
<td>Medium</td>
</tr>
<tr>
<td>F</td>
<td>Medium</td>
<td>Medium</td>
<td>Medium</td>
<td>Medium</td>
</tr>
<tr>
<td>G</td>
<td>High</td>
<td>High</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>H</td>
<td>High</td>
<td>High</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>I</td>
<td>High</td>
<td>High</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>J</td>
<td>High</td>
<td>Low</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>K</td>
<td>High</td>
<td>Medium</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>L</td>
<td>High</td>
<td>High</td>
<td>High</td>
<td>High</td>
</tr>
</tbody>
</table>
8.2 Gantt Chart

Please refer to appendix.

8.3 Resources Required

The team would require “dummy data” from City of Cape Town (CoCT) to use for the project. The team would need volunteer testers for testing the system. Money might be required as incentive for the volunteers to ensure efficient and effective testing. The team would need money to finance phone calls to CoCT and for travelling to CoCT offices if required.

8.4 Timeline

Please refer to appendix.

8.5 Milestones

<table>
<thead>
<tr>
<th>Milestone</th>
<th>Due date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Completion of Work break down for team</td>
<td>17-Apr-09</td>
</tr>
<tr>
<td>Completion of Literature Survey</td>
<td>08-May-09</td>
</tr>
<tr>
<td>Completion of Project proposal</td>
<td>18-May-09</td>
</tr>
<tr>
<td>Proposal presentation</td>
<td>22-May-09</td>
</tr>
<tr>
<td>Completion of Development platform research</td>
<td>11-Jun-09</td>
</tr>
<tr>
<td>Completion of Requirements</td>
<td>31-Jul-09</td>
</tr>
<tr>
<td>Prototype demo</td>
<td>21-Aug-09</td>
</tr>
<tr>
<td>Project design report</td>
<td>04-Sep-09</td>
</tr>
<tr>
<td>Completion of software implementation</td>
<td>16-Oct-09</td>
</tr>
<tr>
<td>Completion of user evaluations</td>
<td>21-Oct-09</td>
</tr>
<tr>
<td>Completion of Implementation, testing report</td>
<td>23-Oct-09</td>
</tr>
<tr>
<td>Completion of Report</td>
<td>06-Nov-09</td>
</tr>
<tr>
<td>Completion of Poster</td>
<td>13-Nov-09</td>
</tr>
<tr>
<td>Completion of Web page</td>
<td>13-Nov-09</td>
</tr>
<tr>
<td>Final project Presentation</td>
<td>23 Nov 09 &amp; 24 Nov 09</td>
</tr>
</tbody>
</table>

8.6 Deliverables

- Project Proposal Document
- Proposal Presentation
- Individual Literature Surveys
- Complete Software System
- Individual Reports
- Team Website
- Poster
- Final presentation
- Reflection
8.5 Work allocation

Ashiq Khan:
- User Interface for Resource Management Tool
- Ensure usability of Resource Management Tool subsystem

Moritha Madisha:
- Functionality and calculations of Resource Management Tool

Hilja Angula:
- Public Participation Platform
- Ensure usability of subsystem

All team members will collaborate on integrating these subsystems into one system. Managing any compatibility issues will be done by the members whose systems are having these problems.

9. References

[1] LearningSpace: ICTs e-government
Visited: 4/16/2009

[2] Title: Current status and needs of Chinese e-government users
Author(s): Xiong JA
Source: ELECTRONIC LIBRARY Volume: 24 Issues: 6 Pages: 747-762
Published: 2006

[3] Title: Document-Based Inter-Organizational Information
Author(s): Reidl R
Department for Information Technology, University
Winterthurerstasse 1900, CH-8057 Switzerland
