# Introduction

Why you need e-voting?

A sentence for each heading

# Literature

The Australian federal and state government developed a communication system to connect people with the institutions through the internet, this was part of the transition plan to digital services that was adopted early in 2006[2]. As result, is now possible to exchange money, services, goods, permissions, licences or information between services’ users and the government using the internet. For example, the Australian Taxation Office (ATO), provides a way to complete tax returns online or the immigration Department (IMMI) allows people from a different country to apply for a visa remotely[2]. By 2010 most Australians reach out to the government via the internet[1]. The digital government and services development plan is part of an overreaching vision to become a top digital economy and society by 2030 [2]. The Australian digital economy plan has set the ambitious goal to provide 100% of government services online[2]. One of the milestones for democratic governments is to successfully implement an electronic voting system that complies with the needs of both citizens and parties. Trials have been conducted by many governments in the past however, only 3 countries have implemented an electronic voting system.

|  |  |  |  |
| --- | --- | --- | --- |
| Country | Year of introduction | challenges | strengths |
| Estonia | 2005 | Security and Data Integrity  Comply with cyber attacks | A growing percentage of Internet voters  Voters can vote from any location using a computer  Counting speed |
| Netherland | 1965 | Comply with cyber security basic measures | Public opinion |
| Brazil | 1996 | State corruption | Counting speed  Comply with the Brazilian election system’s complexity |

*Table 1*

As reported by The National Democrat Institute, Estonia was the first nation to implement an electronic voting system for all electorate nationwide, in fact, Estonians can now vote for parliamentary, Presidential and European elections using the internet[4]. Their first online balloting for local elections was in 2005, in 2007 people were able to vote for parliamentary elections, in 2009 for European elections and in 2011 for the presidential election. Estonian citizens can cast their vote using the electronic system as well as using conventional methods. However, the number of people who vote online has increased over the years [5]. Internet voting is available a week before the election and voters can vote multiple times, but only the last cast is counted. Voting from the polling station invalidates all internet votes. The innovative system allows voters to download a voting form. Next, they need to authenticate themself by providing the Estonian ID or its mobile version. Once these steps are completed, they can see the candidates’ list, express their preference, encrypt, and verify the vote using the digital signature[5]. Each ID card has two cryptographic keys and its digital certificate that provides message integrity, confidentiality, and non-repudiation factors. In 2017 the Estonian authority become aware of the ID-card chip vulnerability and promptly develop an update that resolve the issue without changing the affected cards[6]. A survey conducted internally in 2020 shows that the e-voting system is not only widely used but trusted by the public[8].

Another country that has implemented an electronic voting system is Brazil. In 2000 the Brazilian government developed and implemented an electronic voting system mainly to reduce fraud in the results tabulation process. The electronic system consists of an e-voting machine that allows voters to express their preferences using a device. The device is supported by a screen that shows pictures of the candidates, the users can vote by pressing the numeric value that corresponds to the picture on the monitor[2]. By implementing the electronic system, the Brazilians’ elections authority has managed to increment the number of participants in the election, reduced the complexity of their balloting and mitigated the frauds in the tabulation processes[9].

The Netherlands also used an e-voting system for a long time, however, they struggled to comply with standard security measures and failed[2].

Main problems implementing voting systems?????

Pros/cons (<https://www.sciencedirect.com/science/article/pii/S0740624X2200051X>)

# Scope of work

This project aims to provide a more efficient and secure way for the parliament and voters to undertake the elections. The users will be able to log in using unique credentials, select their candidates and submit their votes which will be counted in the final tally.

The table below shows both functional and non-functional requirements and security obligations for implementing the internet-based e-voting solution.

|  |  |
| --- | --- |
| Functional | Non-functional |
| Ensure only eligible people can cast their vote | Accuracy |
| Ensure each person can only vote once | Democracy |
| Ensure the vote is secret | Privacy |
| Ensure each valid vote is counted | Robustness |
| Provide required services for establishing a voting process | Verifiability |
| Define operational framework between the stakeholders | fairness |
| Ensure the e-voting system is trusted by voters | declarativity |
| Authorise actor in the e-voting information system |  |
| Provide Authentication |  |
| Ensure the votes can be counted including the invalid ones |  |
| Ensure that the integrity of the votes |  |

*Table 2*

The functional requirements are instructions that need to be performed by the systems. The system will ensure that eligible people can vote secretly for their candidates. The vote can be cast only once, and it is counted in the final tally. Additionally, the votes can be verified in case of dubious results upon request. Furthermore, the system will be accurate in a way that can be trusted by the parties in the Next Australian election. The e-voting must comply with democratic principles described in the Commonwealth Electoral Act. Those principles are listed in the table above under non-functional requirements. Whereas the following table outlines the main deliverables of the project.

|  |  |  |
| --- | --- | --- |
| Deliverables | resources | aim |
| Establish a Private partnership between the Federal public service and the four major banks  (Commonwealth Bank, N.A.B., Westpac, and ANZ Bank) | Mediation and communications tools | Banks will provide support with their existing services (The Banks are to be involved both jointly and severally.) |
| Use of app banking to allow voters to cast their vote | Native app  Web app | Verify the identity of the voters  avoid identity fraud  use of a pre-existing system (time and quality)  Provide verification and authentication during the election using the internet-based e-voting system  SSH certificate  public and private key distribution method  SHA 256 hashing method  Encryption |
| Enforce compulsory voting rules in the system | e-banking | Comply with the compulsory voting system |
| Provide a fully internet-based solution with accessibility futures | Public libraries and banks | Make the vote available online for each person |
| Define a physical location for data storing | Data storage protocol | Define a secure location to store data election |
| Define a physical place for the operations | Project management | Centralise the operation |

*Table 3*

In the first stage, mediation and communication between stakeholders will serve to define the term and conditions of the partnership. Ideally, the banks will have jointly and severally responsibilities. Additionally, pre-existing technologies such as user Identification, verifications, integrity, and data transmissions for instance encryption and hashing method are to be integrated into the e-voting system. The proposed solution will be entirely internet-based, and voters can cast their vote from home as well as public libraries and banks on election day. A physical location for data storage and operations will be clarified with stakeholders which are defined in table 4.

|  |  |
| --- | --- |
| Stakeholders | sector |
| Australian Electoral Commission | Public |
| Department of Finance & Deregulation | Public |
| Abstract | Public |
| Australian Federal Police | Public |
| Commonwealth Bank | Private |
| N.A.B | Private |
| Westpac | Private |
| ANZ Bank | Private |

*Table 4*

The stakeholders for this project are represented by both private and public sectors and include the 4 major banks in Australia, the Australian Electoral Commission, the department of finance, Abstract and the federal police. All parties will cooperate to ensure the best result possible. The table below identifies the milestone for this project.

|  |  |  |  |
| --- | --- | --- | --- |
| Milestone | Action | Results | Phase |
| The Graphic User Interface is intuitive, robust, and accessible for the broadest audience possible | UX UI development with accessibility in mind | People from every background can vote | Development stage |
| voters’ engagement | e-voting campaigns  advertisement  social media campaigns | More people participate in the election | Election stage |
| Positive feedback from public opinion | Hostile voters | Public opinion perception metrics | Post-election |
| The project is completed successfully 15 days before the end date | Bonuses | Project completion | Pre-election |
| Budget and quality are well optimized | Project management | optimization | During all stages |
| The system is secure and reliable | testing | Public trust | At all times |

*Table 5*

In the development, stage steps are taken to offer to the broadest audience an accessible e-voting system that includes accessibility features. Voter engagement is to be considered and boosted for example by running targeted campaigns that focus on a specific audience such as hostile people who needs to be properly educated about the new system. Tests will be conducted for every stage to ensure the reliability of the system. Ideally, the project is to be completed 15 days before the end date maintaining the quality standards. In that case, bonuses will be guaranteed.

|  |  |  |  |
| --- | --- | --- | --- |
| Rule | Name | Bonus | Conditions |
| Project Manager | David COOK | $150,00 | The e-voting system is fully functional  The budget is optimised  A full version of the system is delivered 15 days before the end date |
| Team leader | Matthew TRIEU | $130,000 | The e-voting system is fully functional  The budget is optimised  A full version of the system is delivered 15 days before the end date |
| Team Members | Maddison WHITE, Marco CAVANI, Colter JONES | $100,000 each | The e-voting system is fully functional  The budget is optimised  A full version of the system is delivered 15 days before the end date |

*Table 6*

The bonuses are to incentivize the project manager and his team and they can be redeemed by completing the project in advance. The constraints of the project are as followed

|  |  |  |
| --- | --- | --- |
| Time | Quality | costs |
| 6 months | ISO 27002 , ISO 9000, ISO/PRF TR 3242 , ISO/TS 54001, ISO/IEC 27040, ISO/IEC 38500, ISO/IEC 20889, ISO/IEC 17799,  ISO 20252, ISO 11131, ISO/TC 68, ISO 21500, ISO 31000,  ISO 37001, ISO/IEC 30071 | $400 million |

*Table 7*

The project must be fully operational on the 30th of January 2023 which means the system would be appointed on the 1st of August 2022. The quality must reflect the cited standard in table 6. The budget required will be $400 million, however, a $10 fee will be subtracted from the total as commission for every single valid vote to the banks.

Criteria from assignment brief

|  |  |  |
| --- | --- | --- |
| Key Knowledge Areas | Focus | Processes |
| Communication | Ensure that all people affected by the project have a positive conception of it | Develop a communication plan that allows the distribution of project information and new task assignments |
| Cost | Managing the financial resources dedicated to the project | Allocate costs of financial effort for each implementation |
| Human resources | Managing the workforce committed to the project | Allocate workers to tasks, develop training programs |
| Integration | Define the steps to the implementation of new measurements | Developing, planning, and executing project change control |
| Quality | Ensure the quality standards set for the projects ISO 27000 | Measuring the deliverables against the quality specification |
| Risk | minimise the occurrence and severity of identified risks and monitor and control risks in the future | Identify, isolate, eliminate and control risks |
| Scope | Identification of what needs to be done | Identifying management intent |
| Stakeholders | Identify and maintain relationships with entities involved in the project | Planning stakeholders’ management |
| Time | Value the time and effort | Work breaks down estimate resources |

Survey to know what is the perception of the people

Communication plan for hostile stakeholder’s radio newspaper media social media aboriginal people

Communication channels must be maintained open between

Communication establishes a communication strategy which is for the public to

Human resources teamwork

Stakeholders

hostile stakeholders’ old people => training

Project charter initial plan:

Objectives

high level project scope

Detail project stakeholder

Risks identified

Overview of the budgets

Benefit of having e-voting

Your trusted electronic solution/ proposal

Use of project management

Key knowledge area

Risk assessment

Cost evaluation

Communication strategy

Lessons learned from previous (similar) projects

Recommendation and conclusion

TABLE THAT SHOWS THE COUNTRIES THAT HAVE TRIED IN THE PAST

In fact, Estonia and, Brazil have successfully implemented an electronic voting system that complies with their needs. This report is to provide an electronic vote implementation solution which complies with the functional and non-functional requirements of the Australian elections.

Project charter initial plan

functional and the functional requirements.

**10 Knowledge Areas of Project Management**

Having a strong [communication channel](https://www.knowledgehut.com/tutorials/project-management/communication-channels) and [conflict management](https://www.knowledgehut.com/tutorials/project-management/conflict-management)

<https://www.knowledgehut.com/_next/image?url=https%3A%2F%2Fd2o2utebsixu4k.cloudfront.net%2Fmedia%2Fimages%2F1539169332093-image6.jpg&w=1080&q=75>

which is good enough to be implemented. The aim of this report is to come out with a potential solution for the government to switch from the conventional voting system to a fully automated electronic voting system. However, the implementation of the e-voting system has been challenging has it complied with many challenges.

has been adopted successfully in two coutries discussed over the year by

many technology switch can be implemented in Australia

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(<https://www.sciencedirect.com/science/article/pii/S0740624X2200051X>) pro and cons

<https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3644664> id card issues

<https://www.forbes.com/sites/stephaniefillion/2020/08/24/if-estonia-figured-out-online-voting-15-years-ago-why-cant-the-us/?sh=178ed82d15ab> if Estonia did it why other cant?

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