

Software Architecture and Design

Electronic voting systems

A number of countries currently offer some level of electronic voting system. With improvements in technology and worries over issues such as access to polling stations, voter identification and audit trails for voting there is a growing interest in the possibilities offered by e-voting.

In this case study, your team are bidding to an engineering systems company, for the contract to develop their core software for an e-voting system that could be sold around the world.

The first stage of bidding is to develop a design for your software that offers both the functionality to support in-person and online voting using a range of voting systems, as well as providing high levels of usability for administrators, auditors and voters.

In this first phase, you are required to demonstrate your understanding of the domain by creating a solution architecture and software functional design.

About the case study:

Electronic voting systems offer a number of potential benefits during elections. They can improve the speed of vote counting, reduce the cost of running elections, improve accessibility and potentially offer improvements in security and auditing over existing paper-based voting systems. However, they also raise issues around voter identification, privacy and security. The company wishes to create an e-voting system which they can sell to countries around the world.

From research and discussions with existing providers of voting services, the company has determined that they require a system that is flexible enough to support a variety of voting mechanisms/electoral systems (such as single transferable vote, first-past-the-post, preferential voting, etc.), as there is no international standard method for voting.

They also want the system to allow for both in-person (voting booth) and remote (online) voting, as it is felt that this will extend the possible markets for the system.

Due to worries about issues such as privacy and security, they require a system that is robust and ideally follows existing standards and/or meets legislation around these issues (such as GDPR).

They must also be able to demonstrate that the system is usable by a variety of users, in different countries and with different languages.

Note that this description of the desired system is not exhaustive, and part of this stage of bidding includes researching potential requirements and features of e-voting systems to maximise the utility of the system around the world. Your choice of features (and the justification of these choices) is an integral part of the design process.