

Linnaeus University

Computer Security

Assignment 2

Threat Modelling document

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# 1. Introduction

*This chapter should provide an overview of the entire document. For example, this document describes a structured approach to application threat modeling that identify and address the security risks associated with e-voting system.*

## 2. List of Assets and DFD Elements

*This section describes the list of assets i.e., items or areas that the attacker would be interested in. Identifying entry points to see where a potential attacker could interact with the application.*

1. *Entry point: log-in page*
2. *External entities: voters, and administrators*
3. …

## 2.1 DFD Diagram

*This section presents the DFD (Data Flow Diagram) for the e-voting system.*

*The voter (external entity) is connected by electoral details (data flow) to voter registering (process) contained within the polling booth (trust boundary) and the data flow passes across the boundary, as shown in* Figure 1*.*

A diagram of voting process

Description automatically generated

Figure 1 Example DFD

*Either create one diagram or more. For example, one for the voting website and the other one for the DRE voter process, etc. OR create one DFD.*

***Hint:*** *The data store (database) is used to represent locations where data is stored. Data stores do not modify the data, they only store data.*

## 3. STRIDE per element of DFD

*This section presents the STRIDE threats and mapping to elements of DFD. Also, the reasoning of mapping. Table 2 shows the mapping table and Figure 2 shows the STRIDE threats mapping of some elements for example DFD.*

***Hint:*** *Use previously created DFD(s) and add STRIDE elements as shown in the lecture slide (Apply STRIDE Threats to Each Element of DFD) and the below figure. OR create a table.*

***Note:*** *All STRIDE cannot be mapped on each DFD element*

*Threats should be related to your previous DFD.*

A screenshot of a computer

Description automatically generated

Table 2 Mapping of STRIDE per DFD Element

A diagram of voting process

Description automatically generated

Figure 2 Example Apply STRIDE Threats to some elements of example DFD

**Reasoning of Mapping**

1. ***Voter****: external entity,* ***Threats:****Spoofing, Repudiation*

***Reasoning***

***Spoofing*** *is "Pretending to be something or someone you’re not ". In the e-voting system, an attacker spoofs the identity of the voter and provides a false address and date of birth/personal number to the registration process.*

**Repudiation***is "Claiming you didn’t do something, whether or not you did". A plausible threat might be based on repudiating an action such as "An attacker claims that they never registered to vote, someone else must have done it and used their details to cast a false ballot in their name".*

#### 2. **Electoral details:** data flow, **Threats:** Tampering, information disclosure and denial-of-service

# 4. Risks and Controls

*This section describes the top risks (consequences) associated with your created DFD and mapping of STRIDE in the previous section. What mechanisms does the Law company apply to prevent, accept, and reduce the impact of the risks?*

1. ***Consequence of Spoofing:*** *The consequence of spoofing is to allow attackers to later cast a false ballot because they will be sent the voter's authentication details rather than the real voter.*

***Suggested Control:*** *Appropriate authentication techniques, strong password*

1. ***Consequence of* Denial-of-service: *…***

# Reference