secure(UA)ll

Security Exposure Sentinel

Licenciatura em Engenharia Informática - PI

Grupo 4 - Projeto 6

Milestone 2

Context

The **University of Aveiro** has a **very high** exposure to the outside world, through webpages/machines that export services.

The number of public domains of this institution exceeds **1500**, each of which can potentially **disseminate** information or even allow **exploitation** of flaws in its software.

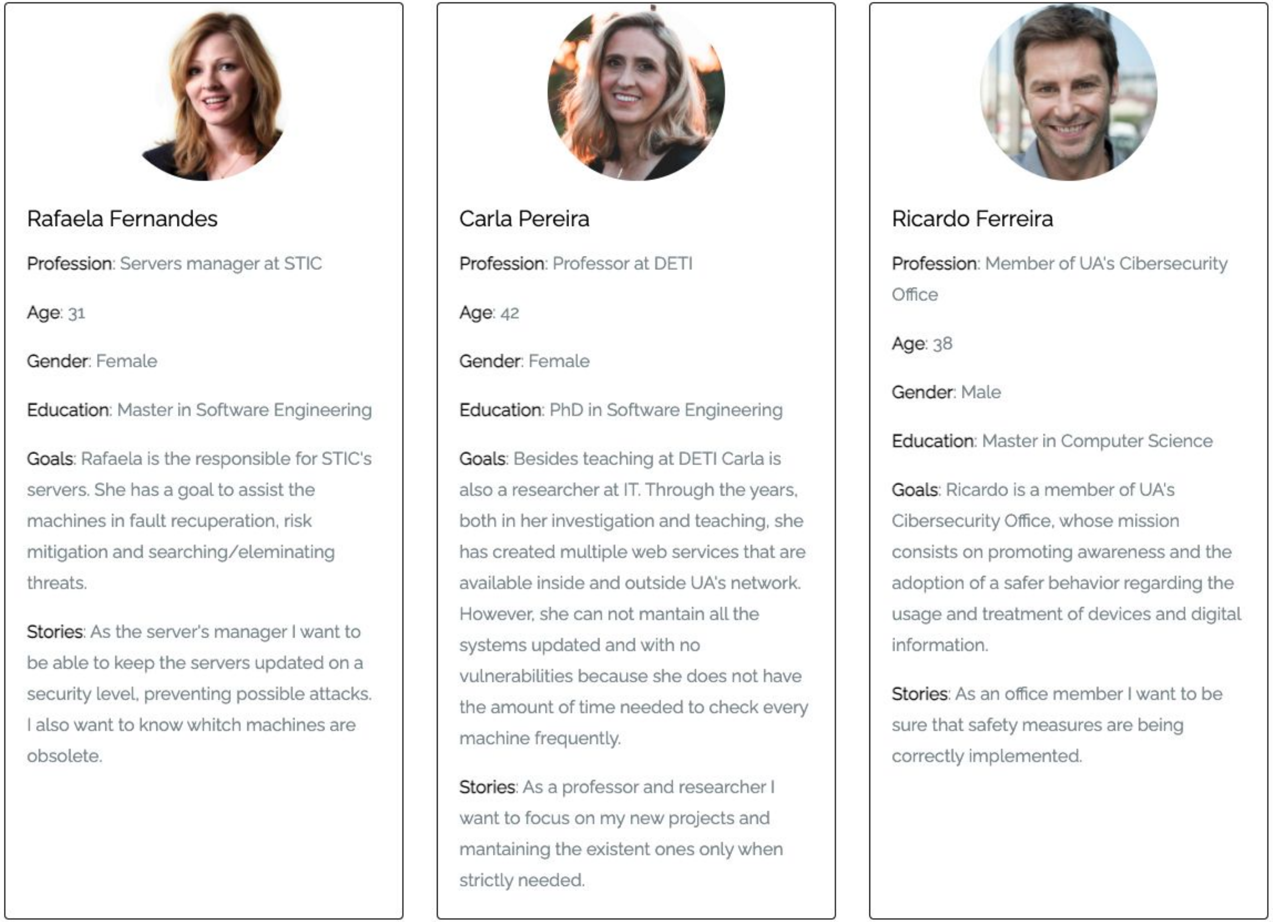
This domains provide services that need to be checked periodically to prevent malfunction and/or not working at all.

State-of-art

There are applications that allow us to scan URLs, IP addresses, Domains and Files to find potential malwares and exposures

Our application must be focused on scanning for potential vulnerabilities, services, subdomains in the services available on the campus.

Personas



Rafaela Fernandes

Profession: Servers manager at STIC

Age: 31

Gender: Female

Education: Master in Software Engineering

Goals: Rafaela is the responsible for STIC's servers. She has a goal to assist the machines in fault recuperation, risk mitigation and searching/eleminating threats.

Stories: As the server's manager I want to be able to keep the servers updated on a security level, preventing possible attacks. I also want to know whitch machines are obsolete.

Carla Pereira

Profession: Professor at DETI

Age: 42

Gender: Female

Education: PhD in Software Engineering

Goals: Besides teaching at DETI Carla is also a researcher at IT. Through the years, both in her investigation and teaching, she has created multiple web services that are available inside and outside UA's network. However, she can not mantain all the systems updated and with no vulnerabilities because she does not have the amount of time needed to check every machine frequently.

Stories: As a professor and researcher I want to focus on my new projects and mantaining the existent ones only when strictly needed.

Ricardo Ferreira

Profession: Member of UA's Cibersecurity Office

Age: 38

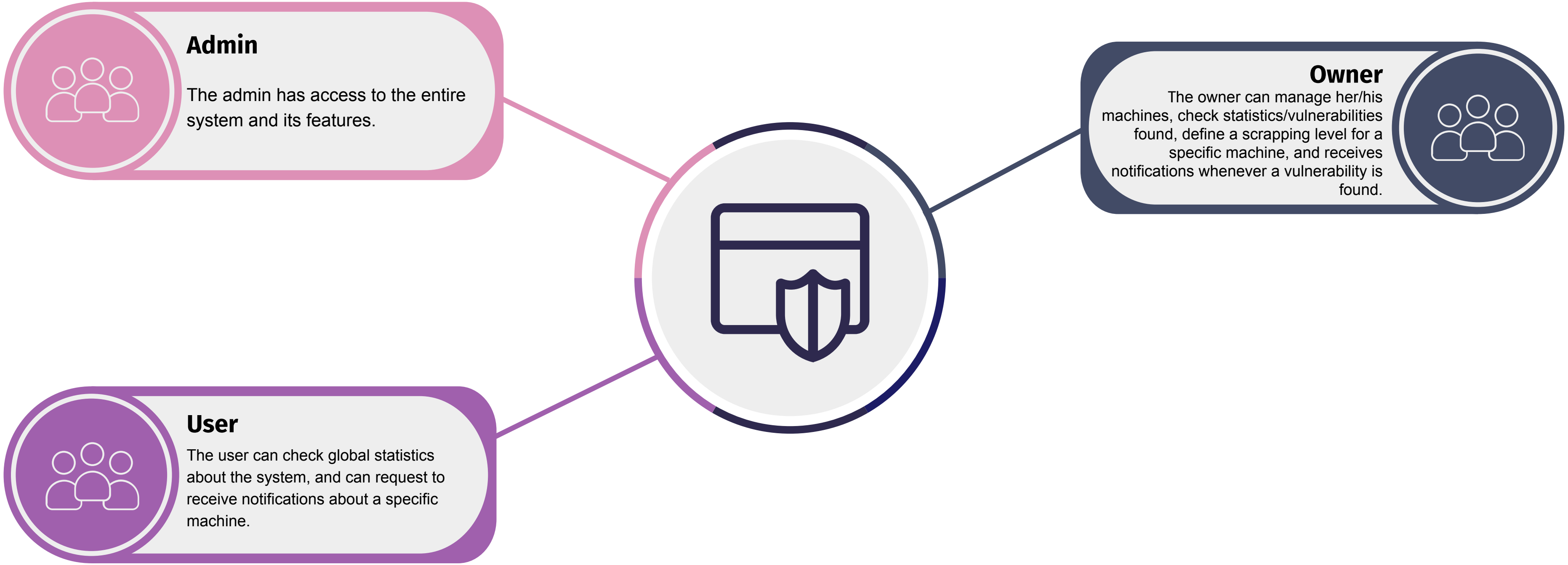
Gender: Male

Education: Master in Computer Science

Goals: Ricardo is a member of UA's Cibersecurity Office, whose mission consists on promoting awareness and the adoption of a safer behavior regarding the usage and treatment of devices and digital information.

Stories: As an office member I want to be sure that safety measures are being correctly implemented.

Actors



Admin

The admin has access to the entire system and its features.

Owner

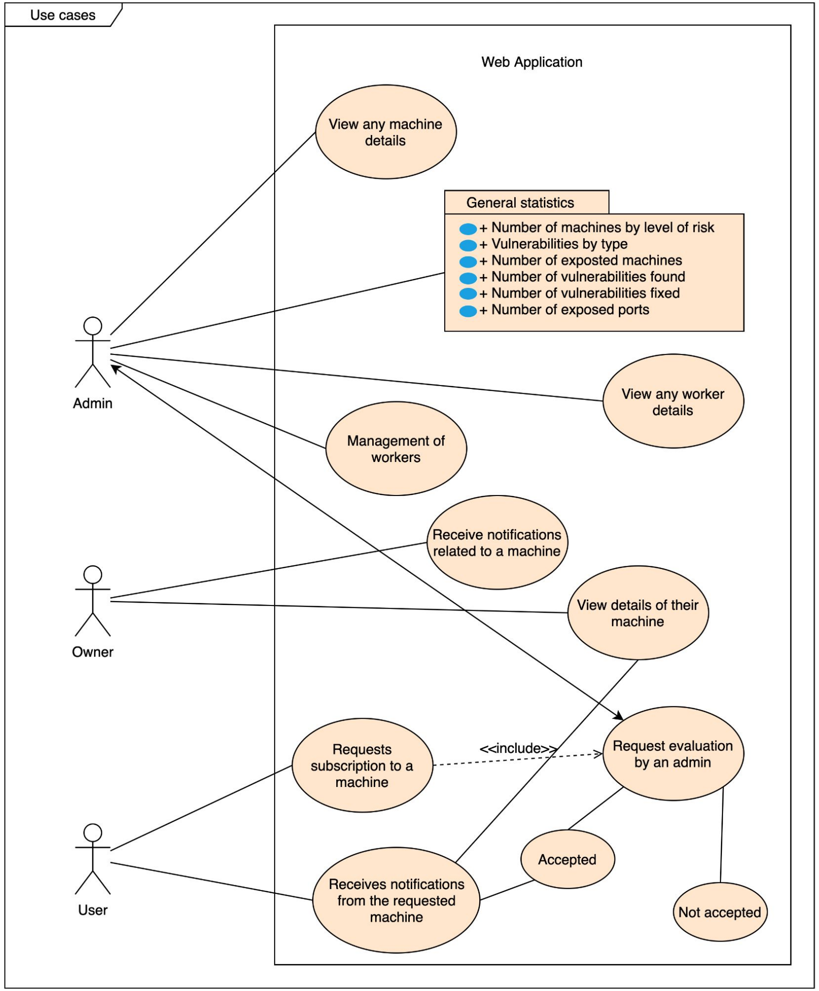
The owner can manage her/his machines, check statistics/vulnerabilities found, define a scrapping level for a specific machine, and receives notifications whenever a vulnerability is found.

User

The user can check global statistics about the system, and can request to receive notifications about a specific machine.

Core use cases

- Machine details
- General statistics
- Notifications
- Machine subscription
- Worker details
- Workers management


Use cases
Web Application
View any machine details
General statistics
+ Number of machines by level of risk
+ Vulnerabilities by type
+ Number of exposted machines
+ Number of vulnerabilities found
+ Number of vulnerabilities fixed
+ Number of exposed ports
Admin
View any worker details
Management of workers
Receive notifications related to a machine
Owner
View details of their machine
Requests subscription to a machine
<<include>>
Request evaluation by an admin
User
Accepted
Receives notifications from the requested machine
Not accepted

Functional Requirements

Dashboard

Web platform available 24/7 using UA IDP access that allows the system management and vulnerability monitoring

Alerts

Email sent periodically, after a vulnerability is detected. It informs the manager of its existence and suggests possible corrections

Scrapping

With a configurable periodicity and with several levels (from the less to the most evasive), it makes use of external pluggable tools

Vulnerability Analysis

Based on the data gathered by scraping tools, the risk is computed based on CVSS and the vulnerability scan

Non-Functional Requirements

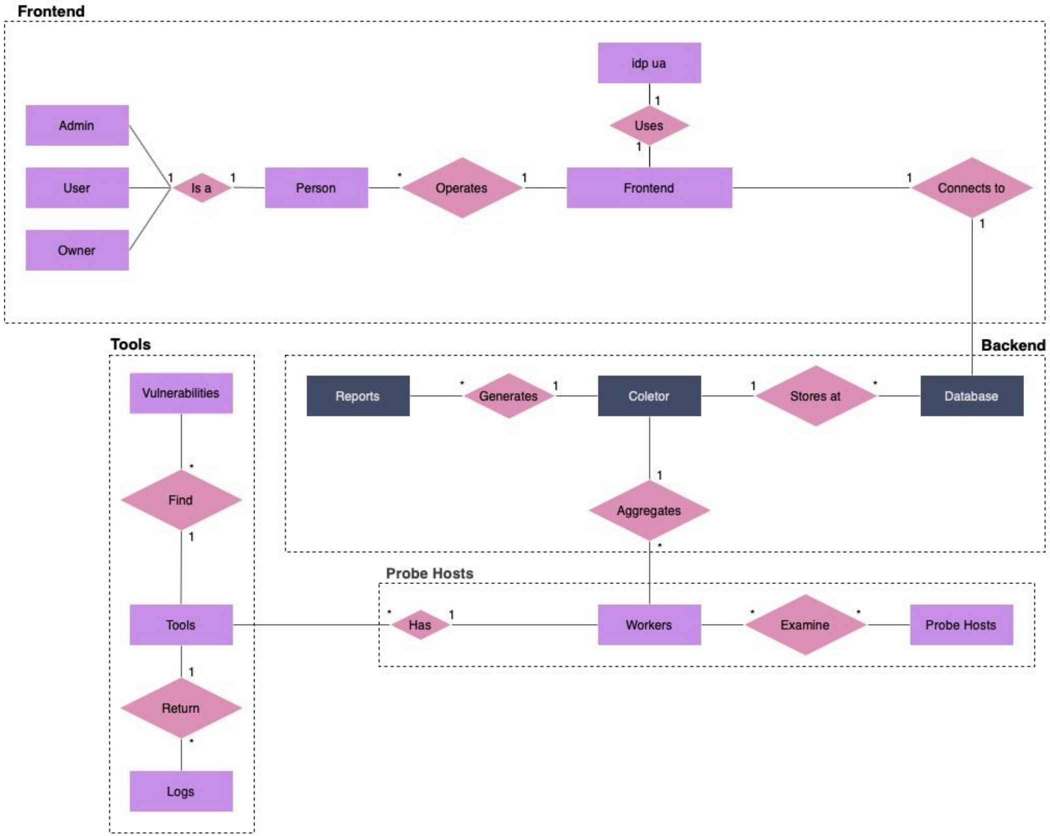
Requirement	Description	Priority
Portability	Containerization allows simple implementations in simple execution environments.	Low
Scalability	Distribution of work between several workers in order to respond to high workloads.	Medium
Usability	Intuitive management and control interface creates a good user experience.	Medium
Privacy	Ensure that any sensitive or personal data retrieved during scans is not stored.	Maximum
Security	Only authorized users (administrators and subscribers) have access to the data and vulnerability reports for each machine.	Maximum

Assumptions & Dependencies

In order for the application to work as expected, the following assumptions are made:

- Stable internet connection
- Web browser
- Active UA account

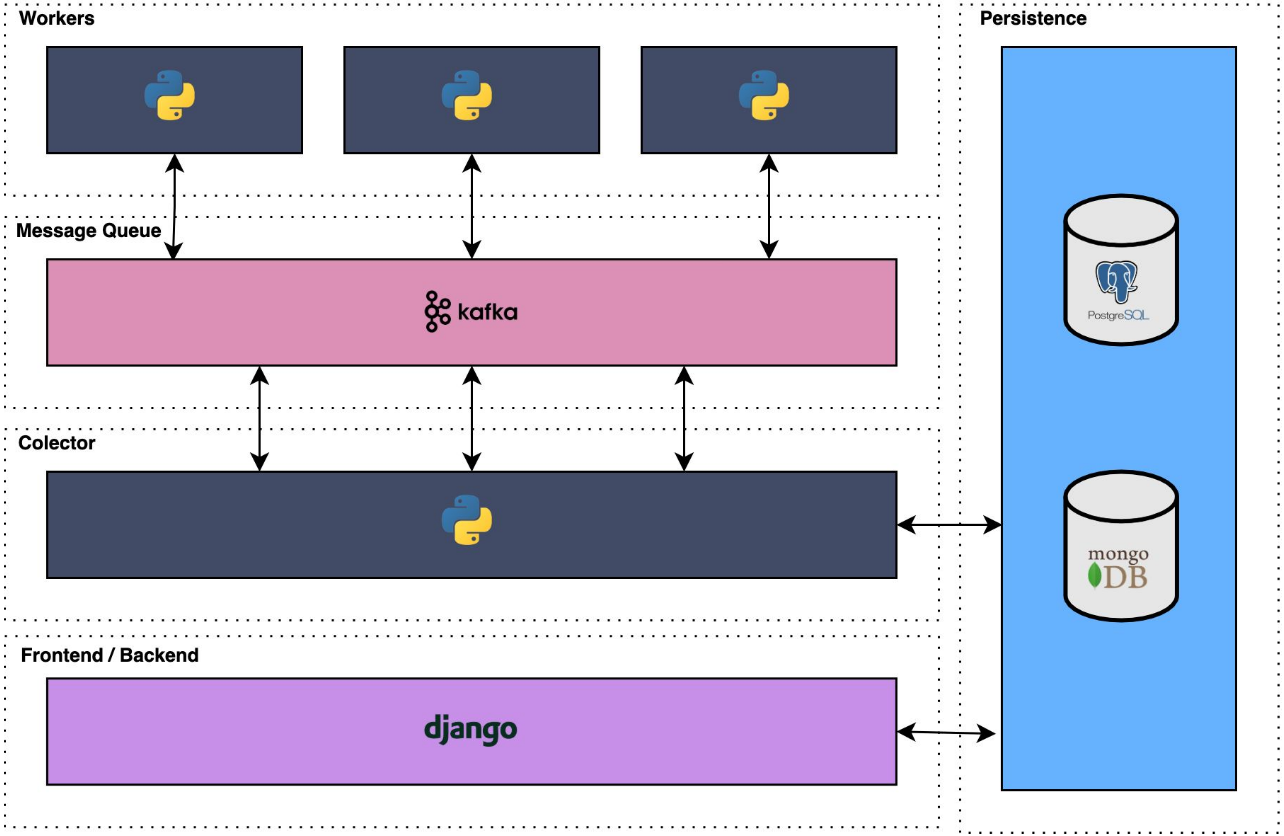
Domain Model



Entities:

1. Person
   a. Admin
   b. User
   c. Owner
2. Frontend
3. Colector
4. Reports
5. Database
6. Workers
7. Vulnerabilities
8. Tools
9. Logs
10. Probe Hosts

Architecture



Mock-ups

For the mockups, we used a prototyping tool called Figma