

# IDENTITY DOCUMENT ELECTRONIC MANAGEMENT SYSTEM

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## Abstract

This project contains a brief description of an electronic system that deals with the management of identity documents of a certain state. We first showed an introduction to what are the problems related to certain documents in the country where we live and how the development of technology affects the search for new methods of carrying out procedures. Then we explained the problem which has been taken into consideration and the purpose of the project, in a word the solution of the problem posed. We have shown the requirements of the functional system which the system is required to perform as well as the non-functional ones. And as a conclusion of the first part, we have shown the spaces where modifications can be made in the future depending on several different factors whether external or internal. In the second part we mainly showed the structure of the application through UML diagrams as well as images and explanations from the Web and Mobile application.

*Keywords:* identity documents, electronic system, management application

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## 1. Introduction

Technology is constantly evolving and everything is slowly becoming dependent on technology. The various procedures that were once traditionally performed today are performed electronically or gradually shift from the traditional to the electronic way. Today many procedures such as sending postal letters, paying telephone tariffs, ordering products, paying for electricity and many other processes can be accomplished with a few clicks through various applications created by different companies, which enable people not to get tired and waste time going to the location where they are but perform the proper procedure yourself with a few clicks no matter the time and place where they are [1-4].

One of the problems that foresees not only this project but also most people is the procedure that must be followed before we go to the police administration and the procedure in the administration to realize the application and obtaining identity documents which include documents such as identity card, passport, birth certificate, driver's license, etc.

If we look at how the procedure takes place in the traditional way without starting with the content and purpose of the project we will see that at the same time we have to make a payment to fill out an application form in the premises located in front of the administration (which procedure we always forget as occurs and for filling a simple letter we make unnecessary payment), sending the application and waiting for its processing (where sometimes this process can be delayed not several hours but even days), after processing waiting for photography, signing and some other procedures for completing the application, waiting 14 days or more until the document is released and again going to the administration waiting to receive released document[5-7].

Why this process that requires a lot of time, wrestling, fatigue and waiting is not realized as a payment of phone, electricity or any other procedure with just a few clicks.

This was in terms of the problem from the point of view of the population. We can look at this problem from the point of view of the administration, where the main problem is the management of these documents which is quite difficult as the number of applications especially during the summer months (in terms of where we

live) is quite large, not to mention other countries where the population is several times larger than here. Where by management we mean the processing of applications (checking, filling certain positions, passing them electronically in case of need, evidence and many other processes), receiving applications, completing procedures with the client, etc. In some cases, the system may malfunction or the equipment may malfunction, which may cause difficulties for the police administration [8-9].

So from the problems defined above we can conclude that the main goal of the project is to create a system consisting of two subsystems:

- Mobile application that will enable people to apply independently from anyone else, from any place and any time for the documents, as well as the current documents of the person (client) in addition to the traditional form to be in possession of electronically.
- Web application that will enable administration to manage these applications online and enable the release of documents electronically in addition to the traditional form.

## **2. Problem definition**

This project should facilitate the work of all people within a state regarding identity documents. Society needs and project opportunities for these related needs with these documents are:

- Today many processes that were once carried out manually such as payment of electricity, payment of telephone and many other processes are carried out in electronic form. Therefore one of the needs or problems of society that is seen is the realization of the process of application for identity documents to be done electronically. Therefore this project provides for the realization of the application through an application that will enable the procedure that is done manually to be done electronically in just a few seconds.
- Since they are documents that may be needed in unexpected moments, most of people have the problem of possessing these documents all the time when they are found out. The project therefore envisages the creation of an electronic form of these documents so that people in addition to the traditional form can also have them with them electronically via mobile phones.
- Checking the expiration date is a process that is forgotten by most people.
- With this project the documents will be in electronic form and can be freely checked in any place and any time for as long as we have the phone with us.
- A compact system that will enable administration with a minimum number of administrators to manage these documents as easily as possible. This project will create flexible application that will enable the management, processing of applications as well and managing released documents in the easiest form.

## **3. The purpose of the project**

The project has two main purposes, one of which is to create a mobile application for clients (society) as well as another web application for police administration.

The purposes of the application for clients are:

- Electronic application for identity documents (identity card, passport, driver's license), carrying out a procedure that will not take more than a few seconds.
- Possession of identity documents in electronic form, which will be valid as well the physical documents we have now. So one day people will own the documents in both traditional and electronic formats but slowly can only be passed on to them.

Purposes of the application for administration:

- Management of realized applications which include activities such as: acceptance, rejection, note-taking, printing in traditional form, issuance in electronic form, etc.

In general the goals of the project are:

- Possibility to apply (for identity documents) at any time and from any place only through the phone that lasts up to a few seconds.
- Possession of documents in electronic form.
- Avoiding punishments for citizens that occur due to lack of possession of separate documents or expiration date.
- Avoidance of various forgeries that occur with documents physical (traditional).
- A more secure and efficient document and application management system.
- Reducing the likelihood of administrative errors compared to errors that occur in applications and documents of physical form.

#### 4. Functional requirements

It is also very important to consider the functional requirements of a project during the development of an application. These requirements are the basic requirements that the system must possess. In the identity document management system we can define some functional requirements and they are:

- Citizens can not use the documents and apply for them until they are not logged in to the application with the e-mail provided during the creation of the first electronic document.
- Citizens who do not have an electronic document must create an account and the first document of that type in the police administration. Which means if you have an electronic identity card but do not have a passport, you will not be able to apply from the passport application as long as you do not have an electronic passport.
- For security reasons, citizens will not be able to change their profile from the telephone application. To change the e-mail or password will require their presence in the police administration.
- The application will not be able to be realized if the preliminary document has a deadline of more than 30 days and if the citizen has an unprocessed or accepted application.
- Administrators will be able to process unprocessed applications and applications that he has processed himself.

The application has 4 conditions(status):

- *Pending* - unprocessed and can be viewed and manipulated by any administrator.
- *Accepted* - accepted which means expected for the applicant's presence to complete the process. Applications in this state can only be viewed by the administrator who has switched from pending state to accepted.
- *Rejected* - rejected for any X reason. Applications in this state can also only be viewed by the administrator who has switched from pending state to rejected.
- *Finished* – the final processed application, which means that the document has been released for use.
- For citizens who do not have any electronic document, administrators will be able to create an account for it and issue the appropriate document. Which means you can not create an account without creating an electronic document.
- Although the application can be made by the citizen, this does not mean that administrators can not create documents without the existence of the application. This is needed in case certain people do not own a mobile phone or do not know how to use the application.

- Citizens can only be fully edited by senior administrators, while administrators can only edit phone, e-mail and password attributes.
- Web Application users can only be added and edited by a senior administrator.

## 5. Nonfunctional requirements

Non-functional requirements describe the constraints that must be met during development. These are also like system attributes or system features:

- Application size - it is not preferable for the application to take up too much memory space. Mobile App is not a complicated application so it does not take up much space on the mobile, where the same applies to the Web. But in terms of the amount of data depends on the number of population.
- Ease of use, command learning time - the application should be easy to use as well as easy to remember how to use. This application as far as the citizen is concerned is very easy to use because he can only see the documents and apply for them with just a few clicks, but also it is not very complicated from the administrative point of view, but it has more functions than as part of the Mobile App.
- Hardware-related constraints and hardware performance - where Mobile App and Web App is created with cross-platform support which means it works regardless of operating system and browser (Web App).
- Quality
- System modification
- Security

## 6. System modification

Due to changing requirements, needs, new ideas, and further technology development, modifications that may be introduced to the system are:

- Change in application design as a result of user demand
- Changing the structure and construction of the application (adapting to new technology equipment and software). Expanding the mobile application by adding new operations such as:
  - That the user validation is done with MFA (Multi Factor Authentication) or with any code sent by e-mail or phone that is valid for a certain time
  - The citizen is notified with a notification for a time before the expiration of the specified document
  - Setting up barcodes and creating a system for validation of these documents by relevant persons such as street police, etc.
  - Notify the application when the change of application status is made
  - Accepted application fee, maybe even photography but with some face-recognition artificial intelligence system because it is a very sensitive attribute.

Expanding the web application by adding new operations such as:

- The system should be further expanded in terms of documents (to have more types of documents such as birth certificate, citizenship, etc.)
- Different report types
- Integratin of photography and payment in the system.

## 7. UML Diagrams

The below text covers different types of diagrams, including use case diagram, class diagram, activity diagram as well as state and deployment diagram.

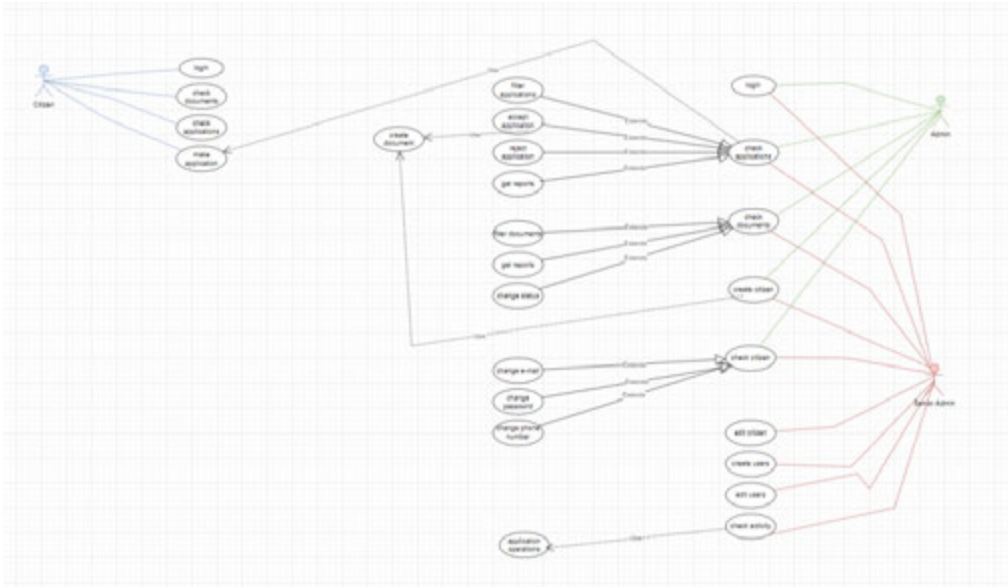


Fig 1. System Use Case Diagram

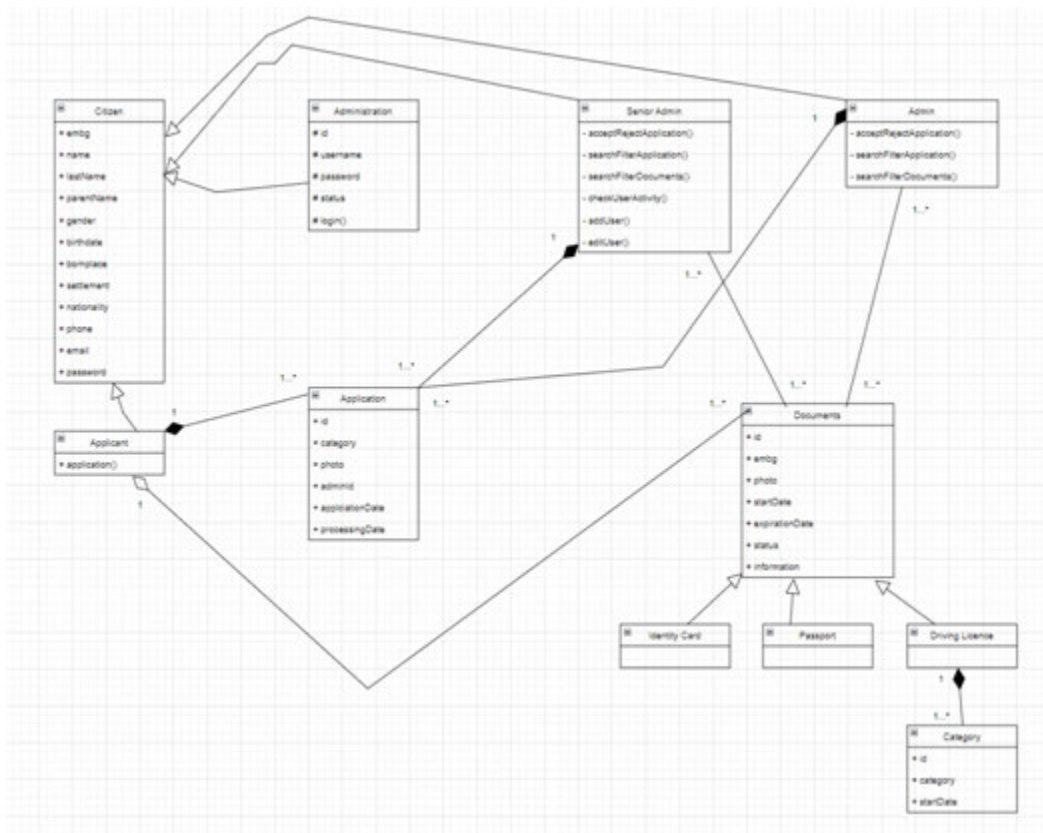


Fig 2. System Class Diagram

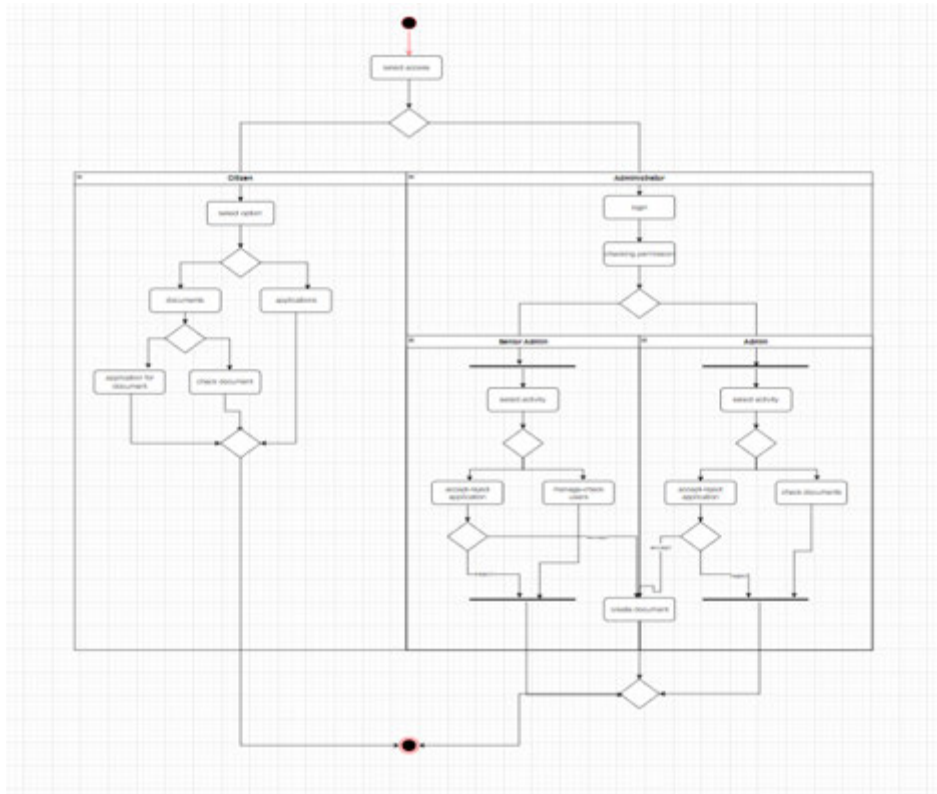


Fig 3. System Activity Diagram

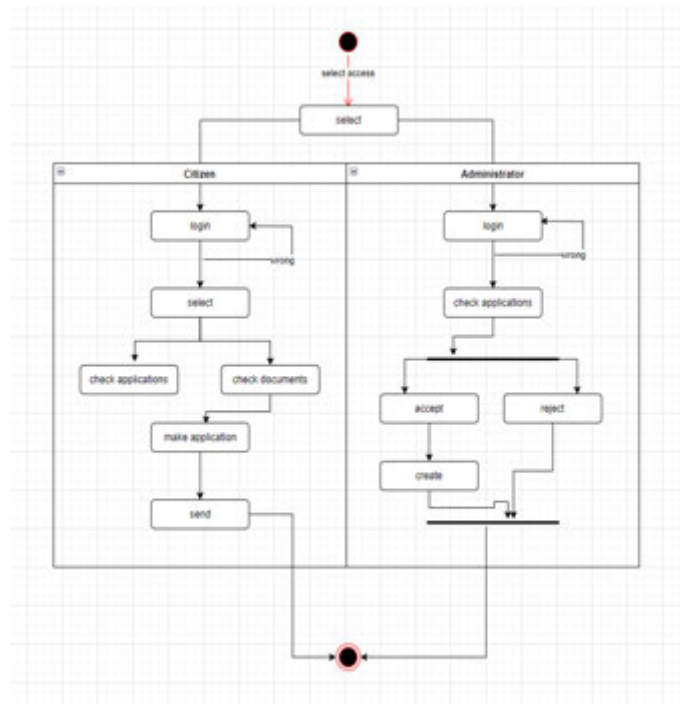


Fig 4. System State Diagram

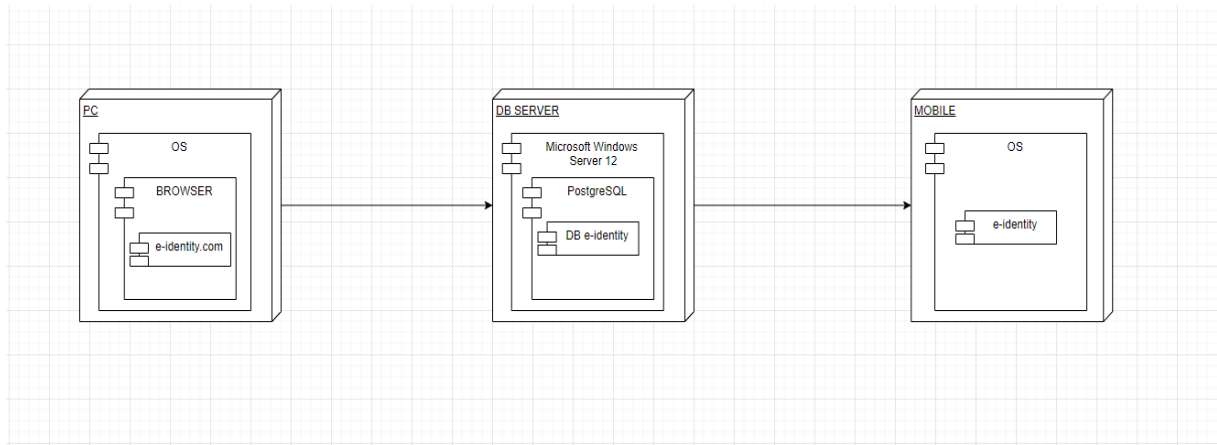


Fig 5. System Deployment Diagram

## 8. Mobile Application

The mobile application which is also called e-identity-mobile consists of several interfaces which are:

- **Login** – is the first interface that the user is faced with, which is otherwise one of the most used interfaces, with a standard word of each application. The login requires two user authentication information: *e-mail* and *password*.
- **Documents** – is the interface in which the user can view his current valid and invalid documents. Where valid documents are with a green indicator and invalid ones with red. By clicking on a document, the clicked document can be viewed in detail.

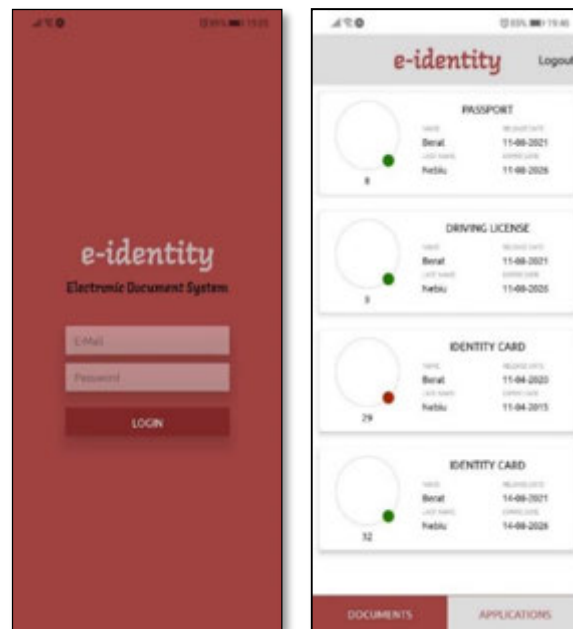


Fig 6. Mobile App – Login and Documents

- **Document details and Application** – if we click on a document to see the details and if this document is valid then next to the picture an icon with the + symbol appears which enables us to apply for the issuance of a new document. If the current document has a deadline of more than 1 month, or if you have an unprocessed or currently accepted application for the type of document in question, a message will appear stating that you will not be able to apply.

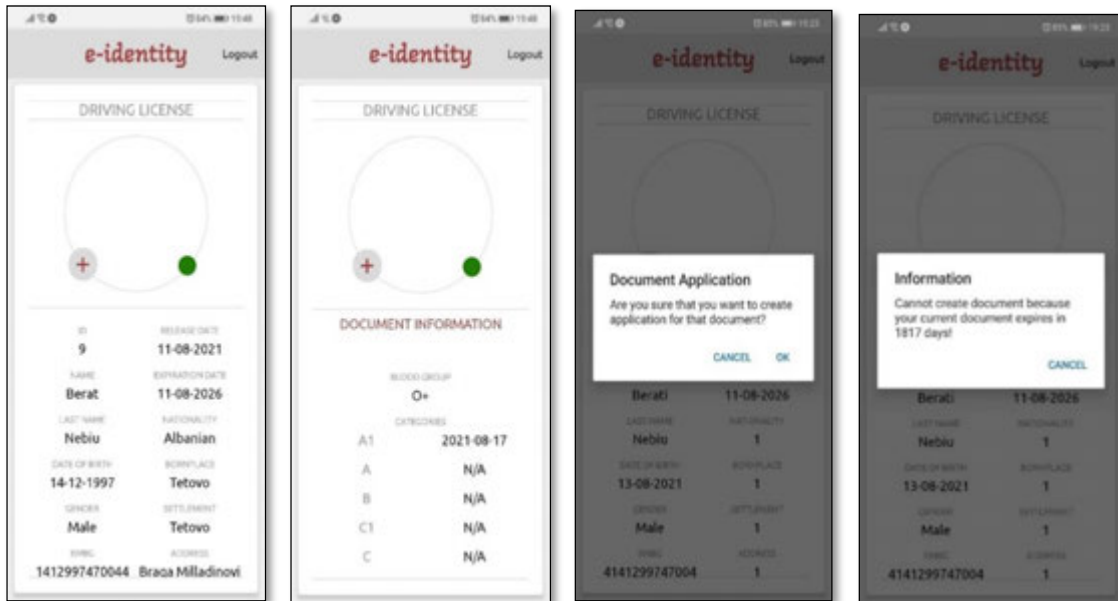


Fig 7. Mobile App – Document details and Application

- **Applications** – presents the interface in which the user can see the applications he has made, their status and if the application is accepted go to the administration to complete the process.

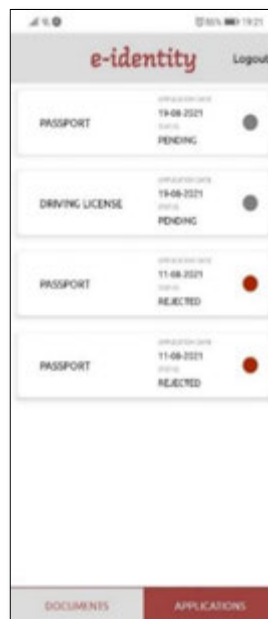


Fig 8. Mobile App – Applications

## 9. Web Application

The web application which is also called as e-identity consists of several interfaces which are divided into two types of permissions:

- *admin*
- *senior admin*

The senior administrator can see all the admin interfaces, but he also has additional operations for both documents and applications as well as for changing and managing admins.



- **Login** – as mentioned above, login is an integral part of an application. Here on the web again validation is done by email and password. But if the user profile has permissions for high role then he in the interface will have these additional operations:
  - To see which admin has processed the particular application
  - Make a document invalid for any x specific reason
  - Change any kind of data of any particular citizen
  - View, add, and edit other admins.

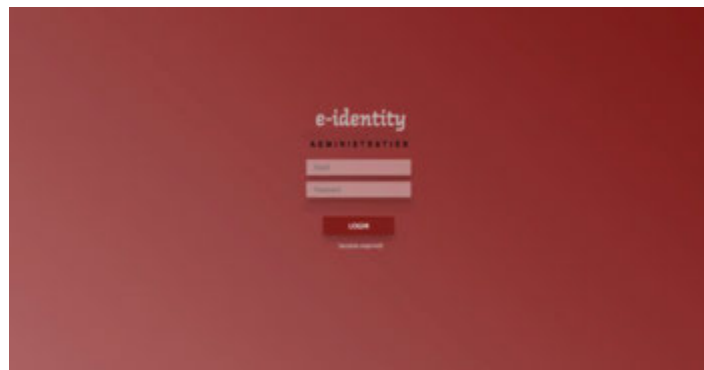


Fig 9. Web App – Login

- **Applications** – where you can see applications which have PENDING status and those processed by you. Clicking on the application bar will open the application in detail in which you can change the status of the application. If you accept it you will also need to upload the photograph of the document.
- **Documents** – the part where you can view the archive of valid and invalid documents as well as click on them to see the details (senior admin can change the status from valid to invalid).
- **New Document** – the part where you can create your own document without the citizen's application or in case the citizen does not have an electronic document of that type, includes the creation of both the citizen and the document.
- **Citizens** – the part where you can search for citizens and edit them if any errors occurred during creation or admins in case the citizen requests a change of password or phone number.
- **Users** – the part which can only be seen by the senior role administrator. From here he can add, search and edit users or otherwise the admin of the e-identity platform.

NR	ID	EMRG	TYPE	APPLICATION DATE	STATUS	ADMIN ID
1	15	4141299747004	Passport	2021-08-19	PENDING	
2	16	4141299747004	Driving License	2021-08-19	PENDING	

Fig 10. Web App – Applications

**APPLICATION DETAILS**

CITIZEN		APPLICATION	
ID	1	ID	16
EMBC	1412997470044	TYPE	Driving License
NAME	Berat	APPLICATION DATE	2021-08-19
PARENT NAME	Selim	STATUS	PENDING
LAST NAME	Nebiu		
GENDER	Male		

Fig 11. Web App – Application details

**IDENTITY CARD DOCUMENTS**

NR	ID	EMBC	TYPE	RELEASE DATE	EXPIRE DATE	STATUS
2	13	1412997470044	Identity Card	2021-08-11	2026-08-11	INACTIVE

Fig 12. Web App – Documents

**DOCUMENT DETAILS**

CITIZEN		DOCUMENT	
ID	1	PHOTO	
EMBC	1412997470044	ID	8
NAME	Berat	TYPE	Passport
PARENT NAME	Selim	RELEASE DATE	2021-08-11
LAST NAME	Nebiu	EXPIRE DATE	2026-08-11
GENDER	Male	STATUS	ACTIVE
BIRTHDATE	1997-12-04		
ADDRESS	Braga Hillside Road 111		
BORNPLACE	Tbilisi		

Fig 13. Web App – Document details



Fig 14. Web App – Citizen selection/creation

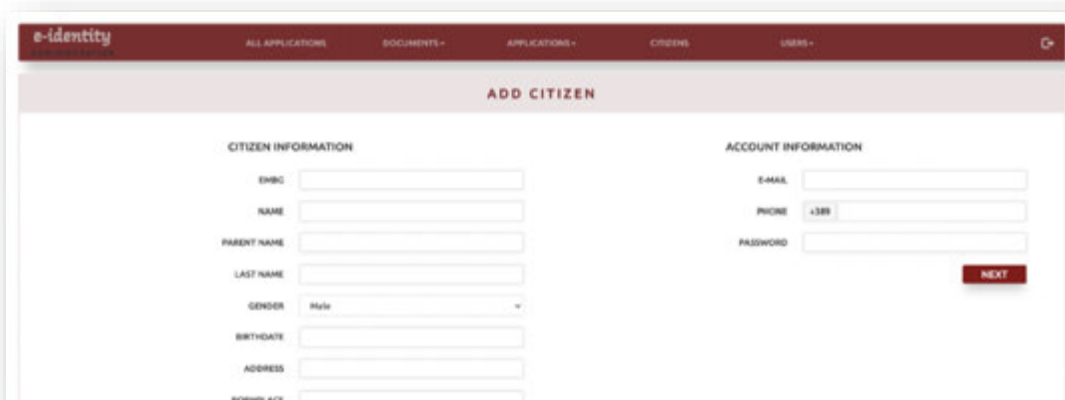


Fig 15. Web App – Citizen creation

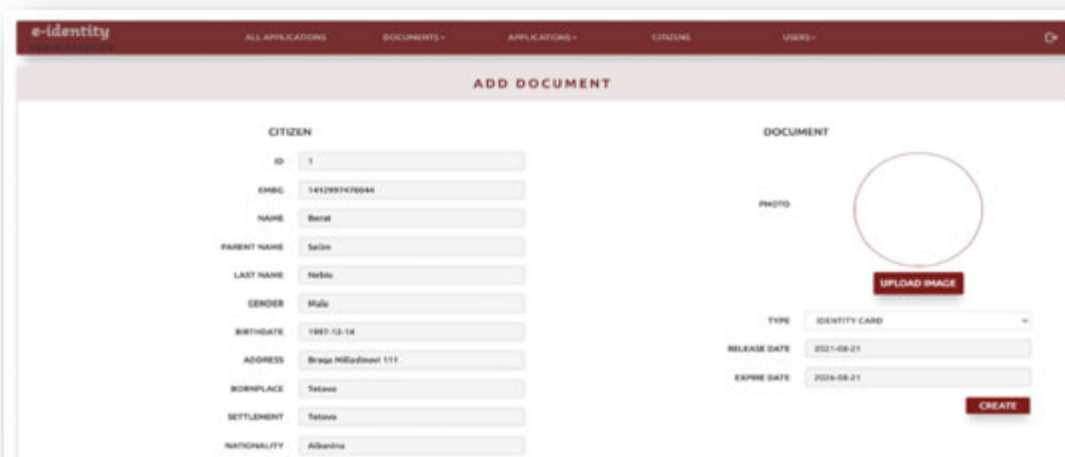


Fig 16. Web App – Document creation

## 10. Conclusions

Technology is constantly advancing and every system that was once realized in a traditional or manual way, gradually switches to an electronic system that enables people to more efficiently and without wasting time realize their responsibilities.

So, as mentioned earlier, this system, in addition to enabling a system and easier management with these

documents, will also facilitate the work of citizens in relation to the documents in question. This project envisages an efficient management system, reduction of administrative errors, avoidance of misuse of these documents, avoidance of problems that occur to citizens with these documents and facilitation for their application and management, regardless of place and time.

Technology is constantly advancing, so we must always be in step with technology otherwise we will lag far behind others and we will continue to do things manually.

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