Terms of Reference

NARIC Kosova Database Software

1. Project Overview

The NARIC Kosova Database is an internal software solution designed for NARIC Kosova. It serves as a centralized platform to streamline the management and evaluation of diploma verification and recognition data. This system stores and manages records of diplomas obtained both within Kosovo and internationally, ensuring comprehensive and organized documentation of academic qualifications.

2. Project Vision

The NARIC Kosova Database Software envisions becoming the cornerstone of diploma recognition efforts, providing stakeholders with a reliable, accessible, and comprehensive platform for verifying academic qualifications. Grounded in the principles of integrity, transparency, and innovation, the software aims to achieve the following product vision:

Efficiency: The software will streamline diploma recognition processes, reducing administrative concern and improving turnaround times for recognition decisions.

Accuracy: With robust data recording and validation mechanisms, the software will ensure the accuracy and reliability of diploma-related information, minimizing errors and discrepancies.

Accessibility: The software will be internal and accessible exclusively to NARIC staff, who will digitize all diploma data in this database software. By fostering transparency and facilitating informed decision-making, the software will also ensure that a wide range of users, including academic institutions, employers, government agencies, and individuals, can rely on the integrity and accuracy of the digitized information.

Compliance: Built-in compliance features will ensure adherence to data protection regulations and standards, safeguarding the privacy and security of sensitive information.

3. Project Functions

The NARIC Kosova Database Software will encompass a comprehensive set of functions tailored to support the diverse requirements of NARIC and its stakeholders:

Record Management: Storing, and managing detailed data on diplomas, including personal information, educational institutions, program specifics, and recognition decisions.

Data Entry and Retrieval: Providing intuitive interfaces for efficient data entry, retrieval, and updating of diploma records, enabling users to access relevant information quickly and easily.

Diploma Evaluation: Enabling NARIC staff to evaluate and process diploma recognition requests efficiently, employing customizable workflows and decision-making tools to ensure consistency and accuracy in the evaluation process.

Reporting and Analytics: Generating comprehensive reports and analytics to track recognition trends, monitor performance metrics, and gain insights into the recognition status of diplomas and the effectiveness of NARIC's operations.

Security and Compliance: Implementation of robust security measures to protect sensitive data, including encryption, access controls, audit trails, and compliance with data protection.

User Management: Administer user accounts, roles, and permissions to control access to the system, ensuring that only authorized NARIC staff can view, edit, or approve diploma records.
Access Control: Additionally, the software will support two types of users: A Super Admin user from NARIC with full access rights, including the ability to create and manage user accounts for their staff. These staff accounts will have restricted access based on privileges set by the Super Admin user, ensuring controlled management of data entry and database contributions while maintaining security and integrity standards. This hierarchical user structure will enhance operational efficiency and data management within the recognition center.

Integration and Interoperability: Support seamless integration with external systems and databases to facilitate data exchange and interoperability with academic institutions, government agencies, and international organizations.

Scalability and Flexibility: Design of the software architecture to scale seamlessly to accommodate growing data volumes and user demands, ensuring adaptability to changing requirements and environments.

The NARIC Kosova Database Software will encompass a comprehensive set of functions tailored to support the diverse requirements of NARIC and its stakeholders across two distinct modules:

Module 1: Kosova Diplomas

Record Management: Storing, and managing detailed data on diplomas obtained within Kosovo, including personal information, educational institutions, program specifics, and recognition decisions.

Data Entry and Retrieval: Providing intuitive interfaces for efficient data entry, retrieval, and updating of Kosovo diploma records.

Diploma Evaluation: Enabling NARIC staff to evaluate and process recognition requests for Kosovo diplomas efficiently, employing customizable workflows and decision-making tools.

Reporting and Analytics: Generating comprehensive reports and analytics specific to Kosovo diploma recognition trends and performance metrics.

Reset Password via Email: Allowing Super admin and admin users to reset their passwords securely through email verification.

API Integration: Retrieving user data from the National ID API (ARC) using the personal number, automatically populating personal data fields when entering the user's personal number.

Export Data: Enabling Super admin and admin users to export diploma records and associated data to Excel (.csv) or PDF files for further analysis and reporting.

Module 2: Foreign Diplomas

Record Management: Storing, and managing detailed data on diplomas obtained abroad, including personal information, educational institutions, program specifics, and recognition decisions.

Data Entry and Retrieval: Providing intuitive interfaces for efficient data entry, retrieval, and updating of foreign diploma records.

Diploma Evaluation: Enabling NARIC staff to evaluate and process recognition requests for foreign diplomas efficiently, employing customizable workflows and decision-making tools.

Reporting and Analytics: Generating comprehensive reports and analytics specific to foreign diploma recognition trends and performance metrics.

Reset Password via Email: Allow Super admin and admin users to reset their passwords securely through email verification.

API Integration: Retrieving user data from the National ID API (ARC) using the personal number, automatically populating personal data fields when entering the user's personal number.

Export Data: Enabling Super admin and admin users to export diploma records and associated data to Excel (.csv) or PDF files for further analysis and reporting.

4. Software Database Fields

The software database will include the following fields to accommodate the recording of diploma-related data:

Kosova Diplomas:

1. Personal Data:

- Personal Number
- Name
- Surname
- Birthday
- Gender
- Nationality
- Municipality
- State/Country

2. Education Data:

- Number of the Line
- University/Institution
- Faculty
- Study Program
- Branch
- Specialization
- Registration Date

- Transfers (Bachelor, Masters, PhD, Vocational High School)
- The filter should be by city, University, year of studies, month of studies and filter for Year of Graduation

Foreign Diplomas:

3. Recognition Decision:

- Name and surname
- State of study
- Personal Number
- Study level – BSc, MSc, Dr
- Number of application and data
- Scan Diploma pdf file
- Date of Recognition or Non-Recognition of the Degree
- Decision – not required field
- Meeting Minutes
- The filter should be for year and month of studies
- Filter for Year of Graduation
- Folder selection based on the number of applications
- Adding folder filter for start of studies year and end of year studies based in University or College
- The filter should be by city, University, year of studies, month of studies and filter for Year of Graduation
- Open field for adding the Graduation date

By incorporating these fields, the software database will provide a comprehensive framework for recording and managing diploma-related information efficiently and effectively.

- Scanned Diploma Photo: Allow uploading and storing scanned photos of diplomas.
- Diploma PDF: Provide the capability to generate and download diplomas as PDF documents.
- Search Bar: Implement a search functionality within the software for easy retrieval of diploma records. Provide filter options to refine search results based on specific criteria

such as name, surname, personal number, educational institution, program specifics, recognition decisions, etc.

- User Authentication: Implement a secure authentication mechanism with the option for admin users to reset their passwords via email.
- API Integration: Integrate with the National ID API (ARC) to retrieve user data using personal numbers, enabling automatic population of personal data fields.
- Export Functionality: Develop functionality to export diploma records and associated data to Excel (.csv) and PDF files for convenient data analysis and reporting.

User interface Design:

- User-Friendly Interface: Designing an intuitive and user-friendly interface that facilitates easy navigation and access to functionalities.
- Photo Upload Feature: Include an option for NARIC Staff to enter the users diploma photo / scanned diploma photos during data entry.
- PDF Download Button: Incorporate a button or link for each Diploma user in order to download diplomas as PDF documents.
- Search Bar Integration: Integrate a search bar prominently within the software interface for quick and efficient retrieval of diploma records.

Project Structure/Implementation and Design

1.1 Project Structure:

The NARIC Kosova Database Software project will follow a structured approach to ensure clarity, efficiency, and effectiveness in its development and implementation. The project structure will consist of the following key components:

Project Management: A dedicated project management team will oversee all aspects of the project, including planning, execution, monitoring, and control. Project manager will coordinate activities, allocate resources, and ensure adherence to timelines and budgets.

Development Team: A multidisciplinary development team comprising software engineers, database administrators, UI/UX designers, and quality assurance professionals should be responsible for designing, developing, testing, and deploying the software.

Stakeholder Engagement: Regular communication and collaboration with stakeholders, including NARIC staff, HEI25 Project staff, and regulatory authorities, will be maintained throughout the project lifecycle to gather requirements, solicit feedback, and ensure alignment with stakeholder needs and expectations.

Documentation and Reporting: Comprehensive documentation, including requirements specifications, design documents, test plans, and **User Manual**, should be generated to facilitate understanding, communication, and maintenance of the software. Regular progress reports will be provided to stakeholders to track project milestones and performance metrics.

2.1 Use Case Modeling:

Use case modeling will be employed to define the functional requirements and interactions of the NARIC Kosova Database Software. The following types of use cases will be utilized:

Primary Use Cases: These represent the core functionalities of the software, such as recording diploma data, processing recognition decisions, and generating reports.

Supporting Use Cases: These represent auxiliary functionalities that support the primary use cases, such as user authentication, data validation, and error handling.

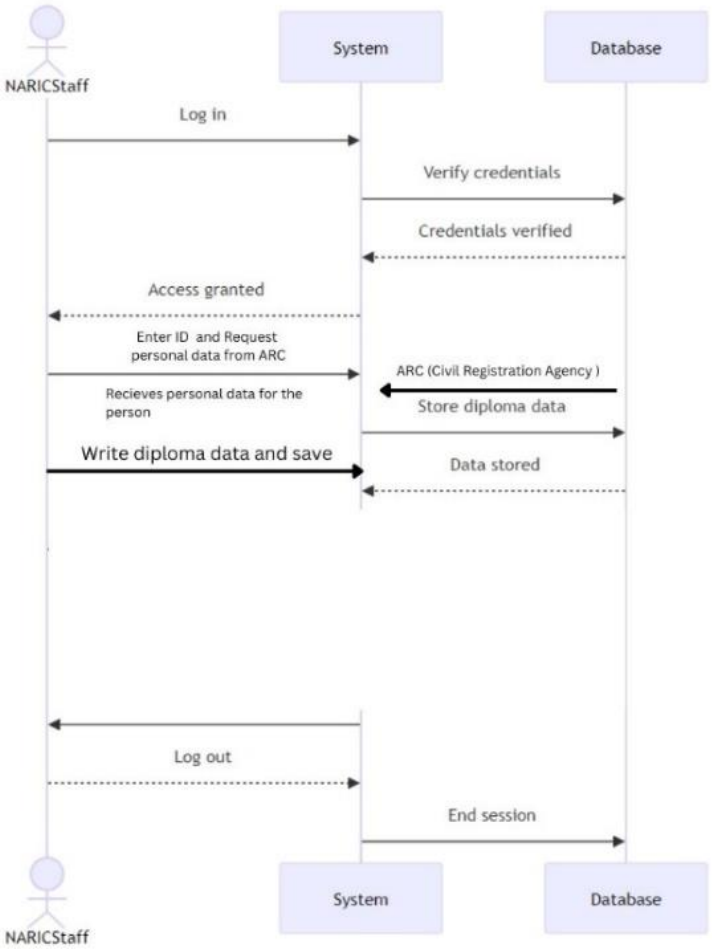
Extension Use Cases: These represent variations or alternate scenarios of the primary use cases, such as handling exceptions, escalations, or special cases in the recognition process.

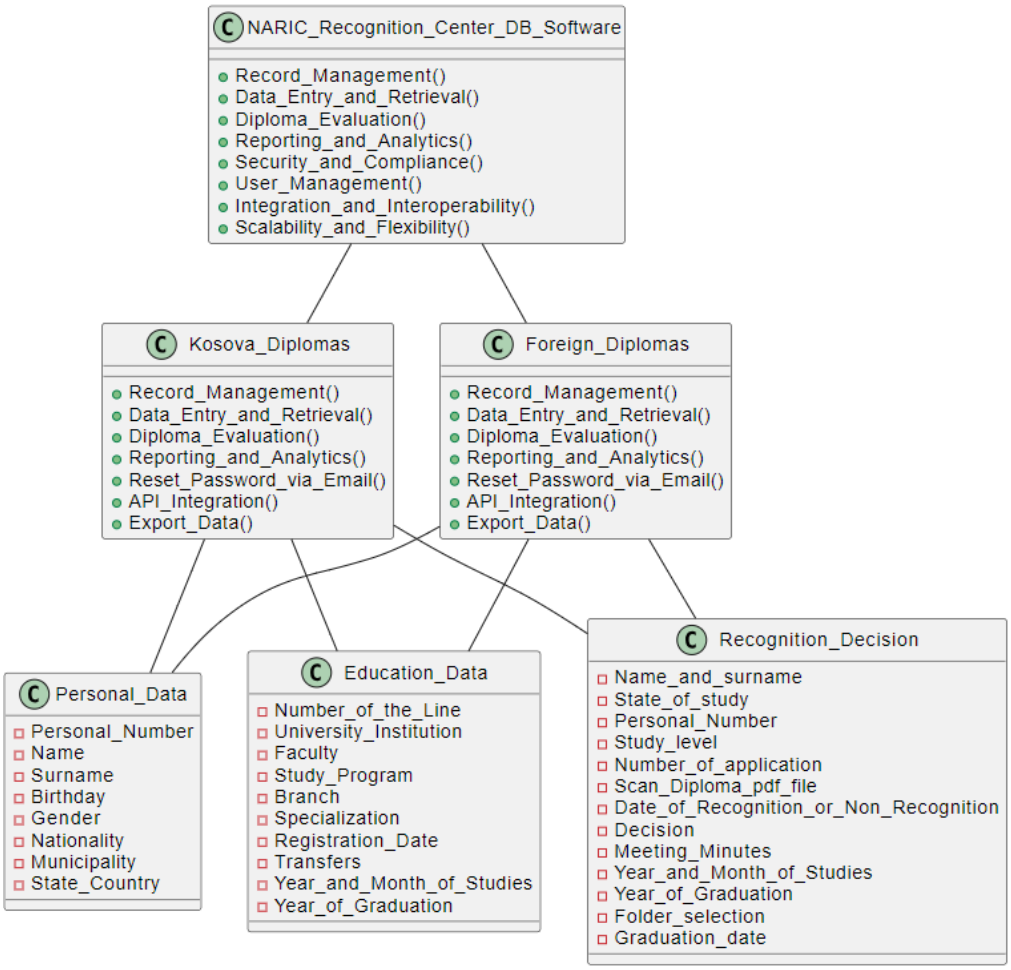
3.1 Diagrams:

Various types of diagrams will be utilized to visualize and communicate different aspects of the software design and architecture. The following diagrams include: Sequence Case Diagram: This diagram will illustrate the relationships between actors (e.g., NARIC staff, admin users) and use cases, providing an overview of the software's functional requirements.

Class Diagram: This diagram will depict the static structure of the software, including classes, attributes, relationships, and associations, facilitating understanding of the data model and database schema.

Sequence Diagram: This diagram will illustrate the dynamic interactions between objects or components during specific scenarios or use cases, helping to visualize the flow of activities and communication between system elements.


NARICStaff
System
Database
Log in
Verify credentials
Credentials verified
Access granted
Enter ID and Request personal data from ARC
ARC (Civil Registration Agency)
Recieves personal data for the person
Store diploma data
Write diploma data and save
Data stored
Log out
End session
System
Database
NARICStaff



4. Recommended Programming Languages and Technologies:

To ensure the development of a robust, scalable, and secure NARIC Kosova Database Software, the following programming languages and technologies are recommended:

- **Backend Development**:
  - **Java**: Known for its portability, security, and scalability, Java is suitable for developing enterprise-level applications.
  - **Python**: Offers simplicity and readability, and is well-suited for data-intensive applications and integrations.
  - **Node.js**: Provides a fast and scalable environment for building efficient network applications, particularly useful for real-time data handling.

- **Frontend Development**:
  - **React.js**: A popular JavaScript library for building user interfaces, known for its flexibility and performance.
  - **Angular**: A robust framework for developing dynamic web applications, providing comprehensive tooling and a modular approach.
- **Database Management**:
  - **PostgreSQL**: An advanced open-source relational database system known for its robustness and extensibility.
  - **MySQL**: A widely-used open-source database known for its reliability and performance.
- **Security and Compliance**:
  - **OAuth2.0**: For secure user authentication and authorization.
  - **JWT (JSON Web Tokens)**: For secure transmission of information between parties as a JSON object.
- **API Integration**:
  - **RESTful APIs**: For designing networked applications and ensuring smooth communication between client and server.
  - **GraphQL**: For more efficient data retrieval and flexibility in API queries.
- **Additional Technologies**:
  - **Docker**: For containerization, ensuring consistency across different development and production environments.
  - **Kubernetes**: For container orchestration, providing automated deployment, scaling, and management of applications.

5. Conclusion:

By employing a structured approach to project design and visualization, the NARIC Kosova Database Software project will ensure that stakeholders have a clear understanding of the software's requirements, functionality, and architecture. Visual representation through use case modeling and diagrams will facilitate effective communication, collaboration, and decision-making throughout the project lifecycle, ultimately contributing to the successful development and deployment of the software.

Appendix: Hardware Specifications

Server:

Processor: Quad-core Intel Xeon or equivalent

Memory: Minimum 8GB RAM (16GB or higher recommended for optimal performance)

Storage: Solid-state drive (SSD) with at least 100GB of available storage space

Network: Gigabit Ethernet interface for connectivity

Database Server:

Database Management System: PostgreSQL, MySQL, or equivalent

Processor: Quad-core Intel Xeon or equivalent

Memory: Minimum 16GB RAM (32GB or higher recommended for optimal performance)

Storage: RAID-configured SSDs or high-speed HDDs with sufficient storage capacity for database files and logs

Backup and Redundancy:

Storage: Backup storage with sufficient capacity to store regular backups of the database and software configurations

Redundancy: Implement redundancy measures such as RAID configurations, redundant power supplies, and failover clustering to ensure high availability and data integrity