

REQUEST FOR CONSULTANCY SERVICES Service Contract (SC)

“Development of internal Career Services Management System for public universities.

Project Unit: RisiAlbania – Partner for Growth
Swiss Agency for Development and Cooperation SDC
Implemented by: Helvetas Swiss Intercooperation and Partners Albania
Location: Tirana
Estimated duration: 1 August 2025 – 30 September 2025

1. Background

RisiAlbania is a project of the Swiss Agency for Development and Cooperation (SDC) and implemented by a consortium consisting of HELVETAS Swiss Intercooperation and Partners Albania. The overall goal of the project is to contribute to the creation of more and better employment opportunities for young women and men (age 15-29) in Albania, in a socially inclusive and sustainable manner. This goal will be achieved through: (i) enhanced growth and job creation by the private sector in three selected subsectors (agribusiness, tourism, and ICT), (ii) improved access to job opportunities and labor market information and services (intermediation), and (iii) improved skills of young women and men by improving the offer of private training providers in the three selected sectors (labor supply).

Under the second pillar, for the purpose of improving access to job opportunities and labor market information and services, since the second phase RisiAlbania had a strong focus on development of career guidance system. The main institutional layers where the project has supported are establishing the career services delivery as community services offered by municipalities; introducing/improving career services at universities, private intermediaries and training providers. Project has cooperated with 4 municipalities and with four of the biggest public universities in Albania. Currently the project is focused on consolidation and scalability of the career services intervention.

The project has supported the Career office of Municipality of Tirana, as the first community center of Career services to establish the first web platform totally dedicated to career services. The platform includes details on professions, qualifications, training programs, labor market trends, and evaluation tools—all aimed at helping young people navigate viable opportunities for their professional development. The career platform, karriera.tirana.al, serves as a self-service resource for youth, career advisors, teachers, parents, and career counselors.

This platform also serves to support municipal career service professionals to manage various career services and activities and to input dynamic data.

In partnership with:



Implemented by:



Currently university-level career centers operate without a centralized digital career services management system and instead rely on disparate Excel and Word documents stored locally on individual staff computers. This fragmented approach leads to inconsistencies in data formats across faculties and a lack of accessible, standardized information on career services. To address this, the introduction of a comprehensive internal career management system aims to streamline the work of career counselors, ensure secure and centralized data storage, and improve performance of career centers. The internal system will manage student records, counseling appointments, staff accounts, and service activities.

The implementation of this system will initially be developed at “Aleksandër Moisiu” University in Durrës, serving as a testing ground for its functionality and adaptability in a university setting. Based on the insights and improvements gathered during this process, the platform should be installed in two other universities. The system will be based on the actual solution of Tirana career office that is operational since 2020, with some adaptation for university settings.

2. Objective of the assignment

In view of the above, RisiAlbania is looking to engage an IT consultant/company with relevant expertise to develop an internal career services management system for the career office of “Aleksandër Moisiu” University of Durrës. The aim is to develop a reliable, safe, user-friendly system which supports the career services delivery for the students of UAMD as described in Annex 1 – “Technical Specification Document for the Development of University Career Management System” attached to these TORs. The use of the already built platform LMS that fulfils most of the needs of the career office (already functioning in Tirana Municipality) is the best option. For this purpose, an upgrade is required to be scalable and deployable for more than one entity.

LMS management system is developed for the same purpose as the career office for the Municipality of Tirana. After a careful review of the platform, it is composed of two parts the Backoffice, build using CodeIgniter Framework and the Website build using WordPress. The Backoffice solution has more than 80% of the required information and the processes required for the University Career Office. This platform provides the career office with the necessary tools for student records, meetings, activities, testing, training from university or outside providers, internship vacancies, registration forms etc.

RisiAlbania shall provide the Source Code and related user manual for the LMS system, and the provider shall use these materials to analyze/modify/upgrade/implement/configure it as required and specified in this document.

3. Project phases and expected outputs

Development of the career management system will undergo the following phases and will produce these respective outputs:

3.1. Design and Implementation phase (one month, during August)

During this phase, the consultant is expected to develop the solution to cater to the functionalities of the career service of UAMD, as described in Annex “Technical Specification Document for the Development of University Career Management System”

Output of this phase includes:

- Development of the IT career management system that should fulfil the requirements of the ToRs.
- Creation of users and respective levels of access, through implementation of access control.

3.2. Testing phase (Two weeks, September)

During this phase all functionalities must be tested before complete handover. These tests are to be conducted by the contracted consultant in cooperation with the staff assigned by UAMD. Testing must include, but not be limited to:

- Functionality and performance testing.
- Compliance and error handling testing.
- Load testing, both in volume and performance.
- Security/safety testing.

Output of this phase includes:

- Testing report for all required functionalities

3.3. Training phase (Two weeks, September)

A training session will be organized in order to hand over the career management system to career centre staff and IT staff of UAMD to use and maintain it.

Output of this phase includes:

- Training session
- Manual for system users - documentation of procedures for the Back-Office
- Technical documentation that describes backup procedures, including incremental and full backups, data consistency and data validation among others.

3.4. Formal handover phase (End of September)

For the final handover of the career services management solution, the contracted consultant must provide the following documentation:

- Source code of the finalized product
- Source code documentation
- Installation of the solution at the selected server

The contracted consultant is expected to provide the warranty for a period of 1 one month (October) after formal handover. This period should be used to solve any potential bugs which were not identified during implementation phase. The contracted consultant shall provide Help Desk support (phone & email), available min during working hours during the Warranty period.

4. Deliverables

The contracted consultant should deliver the following:

- The final product, fully compliant with all the functional and technical requirements as specified in Annex 1, after completing all phases.
- User manual.
- Technical manual for the technical staff to manage technical aspects of the web application
- All outputs delivered during project rollout.

5. Consultant profile:

The ideal consultant for this position will be assessed according to the following requirements:

- The team composition proposed by the consultant should be able to offer:
 - Proven experience and solid knowledge in developing integrated web applications.
 - Expertise in the back-office solution
- User orientation, ability to understand user needs and to effectively meet their requirements
- Good communication skills, both spoken and written, including the ability to explain technical information and prepare written documentation in a clear, concise manner.

6. Management and reporting:

For the duration of the contract, the consultant will be working together with Component Team Leader (CTL) and Intervention Manager (IM) for Career and Intermediation of RisiAlbania and with assigned person from UAMD, for reporting and accountability. The IM may accompany the consultant in several meetings with stakeholders and will be kept informed during work implementation.

- The scope of the work of the Consultant does not foresee using the premises of the project but does not exclude the possibility when the need arises.
- Besides the expected outputs mentioned, the Consultant is expected to biweekly communicate online with the IM informing, updating on the timetable of next activities and when possible, coordinating joint ones.

7. Offer submission:

Interested applicants should submit their proposals in hard copy and soft (USB stick), in closed and stamped envelope to the address given below, by **31 July 2025, at 14:00 o'clock**. Only proposals handed in within the indicated timeline will be considered.

RisiAlbania,
Rr. Ismail Qemali, P.18, H.3, Ap.15,
Tirana, Albania
Tel.: +355 4 2248527

For any questions you might have related to the application, please contact by email: info@risialbania.al

The offer must comprise:

- The technical proposal outlining the proposed methodology and the activities and timeline to successfully complete the assignment.
- The reasons why you are the best candidate to successfully complete the assignment including a portfolio of relevant past experiences.
- Company Profile / CVs of the proposed team members and their proposed role in the assignment (maximum 2 pages each CV)
- Financial proposal disaggregated according to the working days of each expert involved. The fees must be inclusive of VAT.

8. Assessment and selection

The selection of the Consultant will be evaluated based on a cumulative analysis of the fulfilment of the evaluation criteria. The contract will be awarded to the Consultant getting the best technical-economic combination based on the evaluation criteria below:

Evaluation criteria	Maximum score per requirement
Proven experience and expertise in conducting similar work, complementary team proposal	30 %
Financial offer	30 %
Proposed Methodology and accuracy and reliability of plan and activities suggested completing the assignment	40 %
Total	100 %

9. Annexes

Annex 1 – “Technical Specification Document for the Development of University Career Management System”

ANNEX-1

Technical Specification Document

for the Development

of

University Career Services Management

System

Version 1.0

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1. List of Acronyms

UCMS	University Career Management System
The System	Backoffice Portal (UCMS) and the Website
API	Application Programming Interface
BI	Business Intelligence
BO	Back Office
CRM	Customer Relationship Management
DBMS	Database Management System
FRC	Functional Requirement
CO	Career Office
GDPR	General Data Protection Regulation
GUI	Graphical User Interface
ICT / IT	Information Communication Technology / Information Technology
CLIENT	Students at the university, other students from other universities, guests
TSD	Technical Specification Document
RFP	Request for Proposal
SRS	Software Requirements Specification
ToR	Term of References
UAT	User Acceptance test
UML	Unified Modelling Language
UI	User Interface
UX	User Experience

2. INTRODUCTION

Career centre at university level, currently do not rely on an IT management system to track their services, rather they rely on excel and word documents, usually saved locally in the computer of each staff. The overall data storage is not standardized and there are cases where career counsellors of the same university, because they work in different faculties, have different data storage formats. In addition, due to the lack of a common, reliable system, the information on career services is not always saved and accessible.

The purpose of using a career management system is to standardize the work of career counsellors and enable for the data to be stored and used in a secure way according to the recommendations of Information and Data Protection Commissioner (<https://www.idp.al>) for *storing, processing and managing personal data according to the Law No 9887 dated 10.03.2008 "On Protection of Personal Data", amended by the Law No. 48/2012, date 26.04.2012, amended by the Law No.120/2014*. This information should be easily traced and can be used to generate ad-hoc reports according to the need of the universities. This way the day-to-day work of career counsellors should get easier, and the reporting line of the career centre should be updated in real time.

3. SYSTEM ANALYSIS

System analysis aims at establishing requests for the system to be acquired, developed and installed. It involves studying and analysing the ways of an organization currently processing the data to produce information. Analysing the problem thoroughly forms the vital part of the system study. In system analysis, prevailing situation of problem carefully examined by breaking them into sub problems. Problematic areas are identified, and information is collected. Data gathering is essential to any analysis of requests. It is necessary that this analysis familiarizes the designer with objectives, activities and the function of the organization in which the system is to be implemented.

3.2 PROJECT IDENTIFICATION OF NEED

As the strength of the students is increasing at a tremendous speed, manual maintenance of Career Office centre information data is very difficult. Hence, the need for online University Career Management System is inevitable. In case of manual system, they need a lot of time, manpower, unsynchronised data and documents, loss of work in case of staff replacement etc. Therefore, by using an UCMS almost all work is computerized not only that but also standardized to the scale that can be used for reports and statistics. So, the

accuracy of the information is maintained, updated and used for follow-up and enquiries. Maintaining backup should be very easy, standard and automated and by using UCMS user guide staff can be self-trained and start the work where the work is left by the co-worker.

3.2 PRELIMINARY INVESTIGATION

3.2.1 STUDY OF EXISTING SYSTEM

Today in university student's details are collected manually from the career office staff. The student details in separate records are tedious task. Referring to all these records and updating is needed. There is a considerable chance for more manual and human errors while processing these data and producing non standardized reports.

The following steps are noted in the existing process:

1. When the student comes in the career office.
 - a. First, he/she checks whether there is an available counsellor or otherwise ask to schedule a meeting accordingly.
 - b. Second, he/she takes all the necessary hardcopy forms available from reception to be filled. There are different forms for different purpose and between them there are duplicated and overlapping information.
2. Fills it and submits it into office for further manual processing form the office staff.
3. Filled form is first checked with documents like merit list a detail came from university and verified by an official person, if there is any mistake then it is corrected, or further enquiry is needed from the student.
4. At the time of submission of it the appropriate fees are deposited by the candidate in the case of a training that is from a third party that requires a registration fee.
5. More forms and details are added and processed during the scheduled meeting that is done manually without any automated calendar or reminder.

Disadvantages of Present System:

1. Require more manpower i.e., efforts, nonstandard data and hard to store, process and maintain the information.
2. Since, all the work is done in papers therefore, it is extremely hard to locate a particular student record when it is required.

3.2.2 PROPOSED SYSTEM

The main goal of the system is to automate the process conducted in the universities with improved performance and realize the vision of paperless admission. Some of the goals of the system are listed below:

- ☐ Manage considerable number of student details.
- ☐ Manage all details of student who have registered for the counselling or have requested an appointment.
- ☐ Create staff accounts and maintain the data effectively for each student.
- ☐ View all the details of the students and their information.
- ☐ Reduce the workload in interview the students for selection
- ☐ Activities like updating, modification, deletion of records should be easier.
- ☐ Easy to maintain and replicate for all the universities in separate entity.
- ☐ Well defined installation, maintenance of the framework, automated daily backup in more than one storage.
- ☐ Use of firewall to protect unauthorised access from country, IP and other rules using Cloudflare CDN
- ☐ Use of Bitbucket tools to update and deploy the system for more than one entity in separate environment.

For such achievement, the use of an already build platform LMS that fulfil most of the needs of the career office is the best option. For this purpose, an upgrade is required to be scalable and deployable for more than one entity.

LMS management system is developed for the same purpose as the career office for the Municipality of Tirana. After a careful review of the platform, it is composed of two parts the Backoffice, build using CodeIgniter Framework and the Website build using WordPress. The Backoffice solution has more than 80% of the required information and the processes required for the University Career Office. This platform provides the career office with the necessary tools for student records, meetings, activities, testing, trainings from university or outside providers, internship vacancies, registration forms etc.

Moreover, the LMS platform is property of RisiAlbania and has all the necessary rights to reuse/modify/replicate the platform as it is necessary to achieve the scope.

RisiAlbania shall provide the Source Code and related user manual for the LMS system, and the provider shall use these materials to analyse/modify/upgrade/implement/configure it as required and specified in this document.

Existing LMS has the following:

3.2.2.1 Backoffice administration system

1. **User and roles management module** - this module manage's all the staff user rights as follows:

- a. *Administrators* of the system – has full rights to manage and control all the modules without any restrictions, to view/create/edit/store all the details for all modules included in the LMS system including adding other user or removing as needed.
- b. *Centre manager* of the office - this role has rights to modify/add/delete meetings, tests, activities, third party activities, schools, universities, professions, trainings and internships positions. He also has the right to add/modify clients and users in the role of career counsellor and psychologist/teacher/social worker/intern, but he does not have the right to add other users in the role of centre manager or administrator. A user in this role can add participants to internal office activities from the list of clients/visitors as well as add other participants. You can become a follower in one of the internal activities of the office and you can schedule the activities on the Google calendar as desired. Another functionality to which it has access is the management of requests for services. The central management role can see all clients registered in the system, regardless of which career counsellor they are assigned, can change a client from one career counsellor to another, and can generate the reports configured in the system.
- c. *Career Counsellor* - this role has rights to modify/add/delete appointments, tests, activities, third party activities, schools, universities, professions, training and work placements. It also has the right to add/modify clients, but it does not have the right to add/modify users. A user in this role can add participants to internal office activities from the list of clients/visitors as well as add other participants. He can become a follower in one of the internal activities of the office and you can schedule the activities on the Google calendar as desired. Another functionality to which it has access is the management of requests for services. Each career counsellor has the right to manage only the clients he/she is following, but not the clients of another user.
- d. *Psychologist/Teacher/Social Worker/Intern* - this role has rights to modify/add/delete meetings and tests of the clients they follow. A user in this role can become a follower in one of the internal activities of the office and can

schedule the activities in the Google calendar as desired. He also has the right to manage only the clients he is following, but not the clients of another user.

2. **Client/Student Module** – this module has all the detailed information of a student Curriculum Vitae that includes the following:

a. *Personal Information:*

Field name	Input Type
Name	Text
Surname	Text
Education status	Predefined select list
*Education status other	Text
DoB	Date
Place of birth	Text
*Address	Text
Email	Text
Personal id	Text
Gender	Radio button
Legal representative	Text
Phone No	Text
Phone No 2	Text
Civil status	Predefined select list
*Children	Radio button
Father name	Text
Mother's name	Text
Spouse name	Text
*Profession	Text
Siblings	Radio button

b. *Education:*

Field name	Input Type
Education level	Predefined select list
Name of school	Text
*Field of study	Text
Year of graduation	Date
*Subject taken	Text

c. *Professional Activity:*

Field name	Input Type
Status	Predefined select list
Years of employment	Number

d. *Work Experience:*

Field name	Input Type
Name of employer	Text
Position held	Text
Start date	Date
End date	Date

e. *Upload Documents section:*

Field name	Input Type
Title of document	Text
Date of upload	Date
Browse file location	Input field

f. *Conference attendance:*

Field name	Input Type
Subject	Text
Organizer	Text
Date	Date
Place of event	Text

g. *Trainings:*

Field name	Input Type
Title of training	Checkbox
Provider	Text
Start date	Date

End date	Text
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h. *Other:*

Field name	Input Type
References	Checkbox
References from professor	Text
Interests	Text
Hobbies	Text
Availability	Text

3. ***Client/Student module*** – has all the information related to the activities undertaken from the career office and contains the following:

a. *Individual meetings* that contain:

Field name	Input Type
Id	Number
Name of Student	Text
Meeting number	Number
Start date	Datetime
End date	Datetime
Counsellor	Select list
Notes	Text area
*Attachment	Multiple upload

Also, it contains section for previous meetings held and notes.

b. *Test taken* – this section shows a list of tests if taken from a predefined tests that configured in the system. Each test as a list of questions and provided with options to select the answers. The list of the test will be available with the source code

c. *Activities* – this section is made of two sections:

i. Organised by the career office which has the following fields:

Field name	Input Type
ID	Number
Created from	User Select list
Title of the activity	Text

Category	Predefined select list
Name of the provider	Text
Description	Text area
Date of creation	Date
Deadline	Date
*Who can apply	Text
Start date	Datetime
End date	Datetime
Place of activity	Text
Max number of participants	Number
*Description	Text area
*Photo	Input file
*Attachments	Multiple upload

It has the option to make this activity public by publishing it online to the website. It can be assigned to a counsellor and has the option to add students to the activity that are already in the system or it can be filled using the online form from the website from participants that are not in the system.

- ii. *Third party activities* – other providers can request to publish their activities to the website of the Career Office by filling the request form online with the following details:

Field name	Input Type
Title of the activity	Text
Category	predefined list select
*Name of the provider	Text
Description	text area
* Address of provider	Text
Contact person	Text
*Published by	Text
Moderator	Text
Publication date	Date
Deadline	Date
Who can apply	Text
Start date	Datetime

End date	Datetime
Place of activity	Text
Max number of participants	Number
Guest speaker	Text
Description	Textarea
Application methos	Textarea
Photo	Input file
*Attachments	Multiple upload

4. ***Universities and college list module*** – this section will be used to add all the universities and schools to be used as a predefined list of option in other forms in the system.

- a. *High School* has the following fields:

Field name	Input Type
Name of the school	Text
Type of the school	predefined list select
Private or public	predefined list select
*Administrative area	Text
*Address	Text
Contact	Text
Published	Radio button
*Attachments materials	Multiple upload

- b. *University* has the following fields:

Field name	Input Type
Name of the university	Text
Private or public	predefined list select
*Address	Text
Contact	Text
Published	Radio button
*Attachments materials	Multiple upload

5. **Professions List** – This will contain the predefined list of standardized professions as known by state. The list should be updated continuously to include the wide range of professions added every day.

Field name	Input Type
Name	Texarea
Code	Texarea
Professional field	Texarea
Economic field	predefined select list
Keywords	Texarea
Description	Texarea
Main duties	Texarea
Knowledges	Texarea
Professional requirements	Texarea
Legal requirements	Texarea
Requirements for entry	Texarea
Qualifications	Texarea
Providers for these qualifications	Texarea
Job postings for this profession	Texarea
*Salary range	Texarea
Education level	predefined select list
Career possibilities	Texarea
Address information	Texarea
Video	URL
Published	Radio button

6. ***Trainings module** – this module is for the management of the trainings available for the students to be enrolled.

Field name	Input Type
Trainer code	Number
*Professional Field	Text
Title of the training	Text
Subject of the training	predefined select list
Level of the training	Checkbox
Materials needed	Checkbox
Certification	Checkbox

Description	Texarea
Subjects	Texarea
Length of session	Text
Requirements for entry	Texarea
*Recurring (nr/week)	Text
*Recurring (Year/month/days)	Text
*Starting	Predefined select list
Starting month	Checkbox
*Age	Text
Education	predefined select list
Level for registration	Checkbox
Other	Text
No. of participants	Checkbox
No of groups for class	Checkbox
Trained in the last 2 years	predefined select list
Other information	Text
Training level	Checkbox
Certification recognition	Checkbox
Facilities	Checkbox
Other facilities	Checkbox
*Payment fee	Text
Currency	predefined select list
Discount options	predefined select list
Payment installation	Checkbox
Offers	Checkbox
Other offers	Text
Information	Textarea
Published	Checkbox
*Attachment of the training materials	Multi upload

7. **Training centre** – this module is dedicated to the population of all providers for the trainings.

Field name	Input Type
Code	Varchar
Name of the provider	Text

Type	predefined select list
NIPT	Text
Registration date	Date
Licence	predefined select list
Licence number	Text
QKB registration	predefined select list
*Address	Text
Phone	Text
Email	Text
*Web	URL
*Social media	URL

8. ***Internship vacancies module*** – this module serves as a notification board for all the vacancies that are available from companies/organisations/institutions that accept students. It contains the following sections:

- a. *Economic field of internships* to populate the predefined select list when a new vacancy is registered.

Field name	Input Type
Id	Number
Name	Text

- b. *Internship vacancy registration* – this section fills all the details for the vacancy available. There should be available a form where the interested party can create the request to publish such a vacancy.

Field name	Input Type
Economic field	predefined select list
*Title of the vacancy	Text
Vacancy description	Text
No of positions available	Number
Starting date	Date
Length of the internship	Number
Paid	Radio
Required skills	Textarea
Method of application	Textarea

Name of the company/organization/institution	Text
Company description	Textarea
*Web	URL
Email	Text
Phone	Text
Contact person	Text
Show contact person details	Radio
Other information	Textarea
Publish	Checkbox
*Attachments materials	Multiple upload

9. **Activity calendar module** – this is a google calendar integration that shows all the scheduled meetings from all the counsellors.
10. **Registration form for meeting** – the form enables the client to request an appointment with the career office.

Field name	Input Type
Id	Number
*Appointment type	predefined select list
Name	Text
Surname	Text
Gender	Number
Age	Number
Email	Text
*Date of request	Date
Date of appointment	Date
Status	Automated if a response is issued

11. **Reporting module** – this module contains a list of predefined statistics tables using a date range:
 - a. Counsellor performance – this predefined report

Field name	Input Type
Category	predefined list
Total number for each category	Number

No of participants for each category	Number
---	--------

- b. Activities report – this predefined report produces statistic data according the fields below:

Field name	Input Type
Category	predefined list
Total no for each category	Number
Total no for registered students	Number
Total no for guest participants	Number
Total no for others	Number
Total participants	Number accumulative
Average participations	Number

2.2.2.2 Website for public access.

The existing website is developed using Open-Source CMS WordPress and configured to be populated by the Backoffice in some sections. For the university career office, we do not recommend using WordPress but a custom frontend developed as an extension of the existing Backoffice platform using CodeIgniter in case of upgrading the existing solution or any other framework if developed as a separate solution for both parts, preferred CodeIgniter/Laravel.

This is to lower the cost of the maintenance of having two different platforms that might require two different environments of hosting therefore, adding more security issues. Moreover, it requires API to connect each-other adding to the cost of the maintenance.

The structure of the website should include the following:

1. Header

- a. *Toolbar* - that contains links and main info such as contact us, phone number, email, login link. This toolbar should be customizable from settings for the following properties:
 - i. Background-colour, height, font-type, font-colour, links and icons, social media links with icons option.
- b. *Main menu* – Main menu should have:

- i. At least two types one that could be placed in the header position or in the sidebar. This option would give the universities to customize the look of their career office website.
 - ii. Option to change background-colour, logo, logo position, menu item font-type and font-colour.
 - iii. For the population of the Main menu, it should be configured that when a page is added to the website the admin should be able to select if the link should show in the menu and if it is a parent or a child of an existing parent. It should expand at least 3 levels deep.
- c. *Main slider* – The main slider should contain:
 - i. Featured articles that the administrator decides to display.
 - ii. The slider should be composed of a background photo and title linked to the article.
 - iii. The slider should be in form of a carousel with automated loop show and arrow in both sides to go back and forward.

2. Latest articles and news

This section should contain the following features:

- a) At least 4 different types of carousels to choose from
- b) Automated loop with manual option to navigate.
- c) Administrator should have the control of which article should be displayed
- d) Should contain a photo, title and the link to read the full article.

3. Main Services

This section should display the main services that career office offers that leads to a page with general information and instructions or to a registration form. The section should contain the following features:

- a. Administrator can choose what to display by linking the article or page with the section widget.
- b. Should display at least 6 widgets.
- c. Should contain a photo or icon, a title and a short description

4. Partners section

This section should contain all the partners logos with the option of carousel with loop function in case of more than 4 logos.

5. Footer

This section should have the following:

- a. Divided in more than one section where each section can be composed of a section title, list of links and icons. The links should be able to be connected to a page or article as needed.
- b. Copyrights toolbar – placed at the bottom of the website should contain the copyrights text, Privacy policy link and terms of use of the website.

Article creation should be a general page that should be composed of:

1. Main photo or multiple photos. It should have the option to be placed on the top or on the sidebar
2. Title of the page
3. Breadcrumbs bar that shows the path of the page.
4. Body text should be able to be inserted via an editor that has the toolbar for the text options, inline pictures, links, embedded video and other customizations.
5. Other related articles carousel should display latest news articles that are composed of Photo, Title, Link to the full article.

3.2.3 CHANGES OF PROPOSED SYSTEM

The aim of the changes in the proposed system is to address the limitations of the current proposed system. The requirements for the system have been gathered from the business analyst meetings with the university career office staff and based on the feedback from university staff. Following are the objectives of the changes in proposed system:

- ☐ *Reducing time in activities.* Reduce the time taken in manual process the appointment schedules of students, meeting notes and information, conducting examination, verify student information by having the option to connect part of the student data with the university data by using Personal ID to fetch or simply verify the information given such as personal information section, and send email notification to selected students by automatization.
- ☐ *Centralized data handling.* Transfer the data smoothly to all the counsellors involved and handle the data centralized way.
- ☐ *Paperless process* with reduced manpower. Reduce the manpower needed to perform all the appointments, information gathering, information spreading and administration task by reducing the paper works needed.
- ☐ *Cost cutting.* Reduce the cost involved in the career office by optimizing the solution and reusing the same solution for different universities.
- ☐ *Operational efficiency.* Improve the operational efficiency by improving the quality of the process.

□ *Review all the forms.* Improve the standardisation of the data by adding more predefined list and avoiding text fields. By using predefined list where possible increases the use of ad-hoc report generation. This will enable the career office to foresee the needs of the clients in trainings, internships and other use that is required by data analysing.

□ *predefined list section.* In the section of proposed system for each module are given the data that are used and the type. With * are marked the data that should be reviewed but not limited to be included and used in the ad-hoc reports.

Such predefined list should be accessible from the settings menu in the Backoffice where staff can view edit or add/import as necessary.

□ *Online registration.* For each module, such as student information, trainings, meetings, internships, activities etc., the client should be able to enrol online from the website as an already registered student or a new student and the administration should be able to review the user data and approve or deny his/her enrolment and be notified by email automatically with a predefined text response that can be modified before sent as required.

Before registration is completed the student should be able to read terms of use and privacy policy and agree to them before proceeding according to the use of private information law in Albania. Email should also contain all the required information and links refereeing to the store/process/use of the private information, the right to be forgotten, the length period that this data is held by career office and later destroyed according to law in power. In the case of a registered student the enrolment should be added to his/her records and in the case of a new student that belongs to the university the system should create a new record file for the student with a minimum data collected from the registration form and the enrolment to be added at his records. The registration for each activity or internship should be closed for applications once the max. number of participants allowed, stated when the activity is published, is achieved.

4. FEASIBILITY STUDY

4.1 TECHNICAL FEASIBILITY

Technical feasibility centres on the existing manual system and the proposed system of the career office management process and to what extent it can support the system. According to business analysis procedure the technical feasibility of the system is analysed and the technical requirements such as software facilities, procedure, inputs are identified. It is also one of the important phases of the system development activities. It is technically feasible, since the whole system is designed into the latest technologies PHP using opensource CodeIgniter framework and MySQL an open-source database which are the most recent

technologies to develop a web-based systems and design databases for small and medium enterprise.

The proposed system should offer a great level of user friendliness combined with greater processing speed. Moreover, it can be deployed and replicated using docker technology therefore, the cost to reproduce the solution can be reduced. Since, the development of the proposed solution is a high standard it should reduce the work from developing a new solution from the scratch if the contractor decides so.

5. SOFTWARE AND HARDWARE REQUIREMENT SPECIFICATION

5.1 REQUIREMENT SPECIFICATION

One of the deliverables in the first stage is the requirements specification document (SRS). For smaller problems or problems that can easily be comprehended; the specification activity might come after the entire analysis is complete. However, it is more likely that problem analysis and specification are done concurrently. All the information for specification activity as following the analysis activity. The transition from analysis to specification is not to be expected to be straightforward, even if some formal modelling is used during analysis. Essentially, what passes from requirements analysis activity to the specification activity is the knowledge acquired about the system. The modelling is a tool to help obtain a thorough and complete knowledge about the proposed system and changes be applied.

5.1.1 ANALYSIS OF FACTUAL DATA

Analysis of data is a process of inspecting, cleaning, transforming, and modelling data with the goal of highlighting useful information, suggesting conclusions, and supporting decision making. Data analysis has multiple facts and approaches, encompassing diverse techniques under a variety of names, in different business, science, and social science domains.

Data mining is a particular data analysis technique that focuses on modelling and knowledge discovery for predictive rather than purely descriptive purposes.

In the annex 1 is the ER diagram of the database where all the data is stored. These tables should be revised and propose changes to be applied in achieving the final solution in the SRS document.

5.1.2 IDENTIFICATION OF ESSENTIAL REQUIREMENT

Identification of essential requirement is an important task in developing the project. In this system the essential requirements are identified through surveying and meetings with the key actors. By surveying, the important needs of the users of the system in the whole process of career office management. By exploring the proposed system that is online at Municipality Career Office, the source code and database schema and user manuals it should be clear to

what is needed to be changed and the workload to achieve the University Career Management System.

5.1.3 DEFINITION OF PROCESSING REQUIREMENTS

The user interface for this system will have to be simple and clear. Most importantly, the pages must be easy to read, easy to understand and accessible. The colour schemes should be customizable to provide familiarity with the university and there should be no contrast issues. There are many functions the system can perform, and these must be logically grouped or displayed in an intuitive order to allow the user to perform tasks quickly and efficiently, without getting lost in excessive amounts of text. The system must also display a large amount of information and to avoid confusion this must be displayed in categories or in different pages. Furthermore, a small amount of information may be displayed initially, for example with a certain limit on date or amount, and the ability to view more in-depth information on the subject should be apparent.

The different information displays, and functionality objects should be individually distinguishable, allowing the user to navigate through recognition, rather than recall. In addition, each function must provide the ability to cancel, leaving the user with the ability to rectify mistakes, and every page should include the ability to return to a central location of the system, ensuring that the user do not get lost within the system with no convenient way to navigate.

The system will provide different views for different users, allowing multiple access levels. For example, a councillor will only be able to see their own records and details of their applications, whereas an administrator will be able to view all users, applications and statistics and will have many more privileges. Being an online system, it will naturally be viewable from any computer with an internet connection, allowing access from home.

5.1.4 OBJECTIVE OF SRS

The objective of this SRS document is to specify software requirements of the Online Career Office for four (4) Universities it is intended to be a complete specification of what functionality need to be upgraded in the proposed system and integrate, test accordingly. The main purpose of the system is to automate the task conducted by different peoples in the organization to perform as data storage and reporting tool.

5.1.5 OVERVIEW OF SRS

SRS shall include two sections.

Overall Description will describe major components of the system, interconnection, and external interfaces with the required changes.

Specific Requirements will describe the functions of actors, their role in the system and constraints.

5.1.6 OVERALL DESCRIPTION

The SRS document will give further details on the overall product description, including the hardware, software, and communications interfaces, product functions, user characteristics, and any assumptions that will be made.

5.1.7 SPECIFIC REQUIREMENTS

The SRS document will also include the specific requirements needed to be upgraded. These will include the functions, performance, design, and software attributes. This document should be organized in a logical manner and easy to follow. Readers should refer to the table of contents, appendices, or index if looking for something in specific. Otherwise, reading the document from start to finish will start with a vague description and get more specific and detailed as changing sections and reading further.

5.2 FUNCTIONAL REQUIREMENTS

On top of the functionalities that are in the existing Municipality Career office the following must be added or upgraded:

1. In the case of using the proposed solution in 2.3.2 all the necessary changes have to be made to review all the input fields type to include more predefined list in order to be used in ad-hoc reports that combines these fields together to produce dynamic reports. Fields marked * must be converted to predefined list.
2. Adding to all the necessary forms in the UCMS the upload attachment section. This should be a multiple file upload feature.
3. A new setting section must be introduced to view/edit/add items for the predefined list for all the system.
4. The website should be managed through the UCMS and a user role must be configured to manage the pages that are not automatically populated from UCMS.
5. A new ad-hoc dynamic reporting section must be developed to produce dynamic reports that takes as inputs values from predefined list used in the registration forms, activities, meeting records, vacancies, and other usable information. The results must be displayed in form of a table and includes totals where applicable and have the option to export in the following formats: pdf, excel and print.
6. Easy import option for the predefined list through settings section of predefined list.
7. Import option for migration of existing data through predefined template to be used.

8. If a training is added from the university a participation certificate must be generated with QR code verification option and by including more than one template to choose as design.
9. UCMS should be integrated with mailgun API or any other similar mail service provider for each university in order to send all the email notification via automated process in the system. The sender address must be in the form of no-reply@career-office.universityname.edu.al

5.3 Non-functional Requirements

The non-functional requirements for the UCMS are presented below:

5.3.1 Reliability

- The system should be able to recover after a software failure (operating system, application server or database) within 30 minutes.
- The master code should be uploaded to **Bitbucket** and 4 different branches should be made available to be used each from the universities. Furthermore, each branch must have its own dev branch access where it can be used for testing changes and upgrades if necessary. All the changes must leave a trace for audit purpose.
- If a UCMS has a problem, it should not affect any other UCMS therefore each university deploys its code from its own branch and have a separate hosting server configured and the application including database should be deployed using **Docker** in this way it will be easier to recuperate in case of a disaster and easy to replicate.
- The main system should still respond in case a subsystem is unavailable buy displaying the error code and leaves a trace in audit log for further analysis.
- In case of a system failure, no data should be lost.
- Data should be retrievable in the event of a system disaster via backups. Each system must have three backup procedures:
 - Within the server itself by using a module in the application or cronjobs and the backups are stored inside the server. This option can be used when the application has errors that cannot be fixed, and the option is the retrieve data from backup. The periodicity of the database and files (excluding the source code if git is used) backup should be every day and keep last month records before being replaced.
 - Outside the server on a separate storage box in case of major disaster where the server can not recuperate. The periodicity of the backup should be every day should keep the last month records before replacing to save space.

- The availability and reliability of the system should be ensured during a state of reduced functionality.
- It should be possible to diagnose problems at an early stage with the use of monitoring tools as of audit logs in the application.
- The entire system design, the source code and the user and administration manuals should be sufficiently documented with the latest changes implemented.

5.3.2 Security

- The system should allow all the users to connect to it in a secure manner by using HTTPS only.
- The system should be accessible only from Albania and not outside of country therefore restrictions must be enforced.
- All the traffic should pass through Cloudflare CDN and appropriate configuration must be made to stop DDoS attacks, malicious scripts, unauthorized activities, Cache, Challenges via JavaScript, HTTPS rules, blocking other countries that pose a threat.
- When navigating within the system and updating the system's data, all users should be authenticated.
- Different user roles and access rights should be supported. Users should have the appropriate rights depending on the task they need to perform.
- The system should not allow one or more users to successfully use a denial of service (DoS) attack to flood it with legitimate requests of service.
- Encryption protocols should be used for the server-to-server communication (TLS version 1.1 or higher).
- All the private data in the system's database layer should be encrypted and the administrators should not have direct access to them. Meaning information of the clients such as Personal ID, DoB, Place of Birth, Address, Name, Surname, Mothers' Name, Father's Name and any other information that can identify the client must be encrypted and stored in the database. When this information is required to be accessed it should then be retrieved by the application decrypted and then displayed.
- All databases in the system should authenticate the users and control the type of privileges they possess (modify, read-only, etc.). Data consistency should also be ensured during the update process of the databases.
- The system should not violate its security requirements because of the upgrading of a data, hardware, or software component.
- The system should support information approval before it is deleted on the database. Meaning that when a record is deleted with the request of the client by using the right to be forgotten it should be approved by the manager.

- When the data from the application is exported via any format and it includes private information there should be a privacy layer before printed or exported. For example, personal ID should not be shown in full but should display only the first letter and the last one or two letters. The same should be applied to the rest of the information and only one data might be left for the staff to identify such as the last name or the UCMS reference code.
- All actions in the system should be logged to identify potential problems.

5.3.3 Data Protection

- The system should be compliant with the requirements specified in the *Information and Data Protection Commissioner (<https://www.idp.al>) for storing, processing and managing personal data according to the Law No 9887 dated 10.03.2008 "On Protection of Personal Data", amended by the Law No. 48/2012, date 26.04.2012, amended by the Law No.120/2014*. This recommendation not only should be applied but also be visible in every section that is clear to the users and understandable. This should include the Website, Email sent from the system, records that are printed or exported by including the right information as a footnote.

5.3.4 Performance

- The system should be available 24 hours a day/seven days a week.
- The system should be able to support all the categories of users (internal and external) without any delays. The system should respond in less than 3 seconds performance (worst-case scenario) for the presentation of data, ad-hoc reports and dashboards already stored in the system and the pages from the website.
- The system should respond in less than 10 seconds (worst-case scenario) for the generation of new ad-hoc reports and dashboards based on the available data.
- The system should be able to process large volumes of data (GBs).

5.3.5 Operating Environment

- The inexperienced internal users should be able to use the system in a short period of time (two weeks of training) and additional help should be implemented in every step of the process marked clearly with help icons that explain what each field should contain. Also, there should be a section with the link to the user manual and guide.
- System administrators should be able to use all system functions after their training (two weeks of training).
- The overall system administration Backoffice should be able to be performed remotely in a secure manner via the Web interface.

5.3.6 Extensibility

- The system should be easily expanded into new parts if needed and easily change part of its functionality.
- The system should be open to the integration of new products (new versions and updates of software etc.) or new services.
- There should be no limit to the volume of data that can be stored in the system.
- The process of changing servers (physical or virtual) to meet the organization's increased needs should be easy and well defined and documented in the instructions on how to migrate to a new host or server.
- It should be possible to create reliable backups without affecting the server's operation and performance.
- The expansion of the system should be done without affecting its operation and being opaque to the user by using bitbucket methods to create branches and push and pull changes to the dev or master and merge branches as required.
- Scaling up the number of users (internal and external) should be made possible without any changes to the system's software. The system for its initial operation should support:
 - Two (2) administrators in the UCMS who will be responsible for the overall system well-being, the user management and the UCMS;
 - Two (2) counsellor internal users in the UCMS.

5.3.7 Sizing

- The system should be able to store up to 5TBs of data during the next five years to suit the need of storing attachments form registrations and client files.

5.3.8 Interoperability

- The system should provide secure mechanisms to communicate with the organization's existing systems and possible systems that will be developed in the future.
- The system should provide secure mechanisms to communicate with external information systems via API for connection with the Universities or other parties as required.

5.4 Maintainability

5.4.1 System Maintenance Requirements

- The system should be open to the integration of new products (new versions of programs, etc.) or new services without having to shut down. The tests should be done in the dev branch via bitbucket.
- Diagnostics should be supported by the system to automatically try to determine the proximate cause of internally generated failures by using logs from the application and server.
- The system should generate and save log information when errors are generated. These logs shall be versioned to ensure that subsequent errors do not erase potentially useful data. Logs shall contain the diagnostic information generated in the previous requirement.

5.4.2 Backups

- There should be a scheduled backup procedure and well-defined instructions in the documentation.
- The system should be able to create backups at regular intervals as specified in the [4.3.1](#).
- Appropriate and timely backup procedures, including incremental and full copies, should be supported at predetermined intervals for the IT infrastructure (physical servers or VMs).
- The ability to perform trial recoveries from backups should be supported and instruction must be documented.

5.4.3 Recovery after Failure

- In the event of a system failure, there should be a backup system that will replace the master information system having all the data updated. And should redirect the traffic via Cloudflare by changing the destination IP pointing to the new server.
- The system should provide mechanisms for recovery and communication with the users during a hardware, or software failure.

5.4.4 Accessibility

- Access to the system should be made available for all the user categories through a secured Web interface, or by mobile devices.
- In this case the system is accessed through a Web browser therefore it should be responsive.

- The UCMS Portal should be accessible from all known Web browsers that support TLS 1.1 and above.
- There should be a Site Map in the Website Portal with the available navigation options.
- The implementation of the Web pages should be done in accordance with the latest standards of W3Consortium¹.
- There should be uniformity and compliance to the principles of the W3Consortium / Web Accessibility Initiative².
- Care should be taken to minimize the size of the Web pages (volume and length). The minimization of scrolling is preferable.
- There should be effective navigation support across the full range of the system. Users should know where they are.
- Produced reports need to have a high level of visualization and not only be in the form of tables.
- Internal users should be able to easily produce simple and easy-to-use reports over the system's data by ad-hoc, meaning that different predefined data should be able to be selected and results must show and able to be exported if needed.

5.4.5 User Interface

- The user interface should be clean, simple and easy to use.
- The system should follow the corporate identity of each University by having the possibility to change the main features of design as mentioned in the structure of the website including Header, Logo, Background colour, Background image, Menu style etc.

5.4.6 Content & Reports

- The UCMS Portal should distribute hypermedia in accordance with modern standards and techniques (HTML5).
- The communication and public outreach functionality of the system should be integrated with each University Portal. There should be an interaction between the systems and the university portals for all the services provided. Such interactions are mostly achieved through API and Webservices depending on the technology that each university systems are using.
- The Website should highlight the importance of the services provided for the clients.

¹ <https://www.w3.org/>

² <http://www.w3.org/WAI/>

- The website should constitute the career office one-stop-shop as regards the provision of services to its clients via registrations form, enrolment forms etc.

5.4.7 Hosting – Platform Requirements

- The Website as well as the UCMS will be deployed and hosted on the Career office purchased servers and/or hosts and the specification will be given by the provider to cover all the requirements and the needs.

5.4.8 Service Requirements

To enable the timely and effective implementation of the system, several service requirements must be in place. These are:

5.4.9 Initial Setup of the UCMS and Website Infrastructure

For the effective deployment of the UCMS as well as the website within the Server and hosting infrastructure, the following list of requirements must be in place before its operation:

- **Detailed User Requirements Analysis & System Design:** Having as a starting point the technical requirements described in this document, a detailed user requirements analysis for both the proposed UCMS and the Website should be performed. The outcome of this analysis should be a detailed user requirements analysis document, along with the initial system design (complemented with the system architecture). To this end, extensive consultations with the involved users should take place. This process should be repeated throughout the project.
- **Data Design (DB schema):** Based on the system design, a detailed design of the database schemas to support the upgrades required should be provided.
- **Initial development and setup of the UCMS core functionality:** During this process the necessary functionality for the support of the career office core processes should be developed and setup in the server infrastructure:
 - Client registration.
 - Meeting/activities registration.
 - User Registration for staff, Profiling.
 - Main pages of the career office website such as home page, about us, what we do, contact us, vacancies for internships, activities, and news.
- **Initial development and setup of the UCMS portal:** Development and setup of a new portal for the Universities, which among other should:
 - Interoperate with the university website and systems.
 - Provide web access for career office staff.
 - Facilitate the service providers during their interaction with the career office.

- Facilitate the interaction of all third-party actors with the UCMS through a ticket system.
- **Interoperability with external information systems:** Development of permanent and fully automated interoperability mechanisms between external information systems and the UCMS should be realized (minimum modes of interconnection include REST or SOAP Web-Services and direct database interconnection).
- **Data Migration and Production System:** Data migration of all the data available within the office hardcopies into the UCMS.
- **Testing of the UCMS and website:** During this process the necessary system, integration, performance, interoperability, failover, regression, and user acceptance testing should be realized based on the requirements defined in the performance requirements section. Prior to the testing process the necessary test plans (scope of each test, tools, test dataset, test conditions, etc.) should be prepared and submitted. For the testing purposes representatives of all the user categories should be involved.
- **Knowledge Transfer:** Knowledge transfer to the Career Office administrators to take over the maintenance and further adjustments and development of the UCMS. The knowledge transfer process must be performed on a live version of the UCMS and all training material used, as well as the system's user manual, have to be updated and delivered in both electronic and paper format to the trainees before the start of the training sessions.

5.4.10 Software Licenses

The software licenses in relation to the UCMS databases, application servers, the corresponding operating system and other necessary applications if needed must be acquired and provided by the career office infrastructure.

5.4.11 Warranty, User Support and Maintenance

The supplier of the systems (the UCMS and the website) shall provide warranty service to the Career Office, starting immediately after the approval of the operational acceptance certificate by the Career Office. During warranty period the supplier shall solve all problems with the systems' functioning without any charge. The free warranty should cover a period of 3 months.

Within the warranty service, the supplier will resolve all critical issues related to the operability of the systems and data corruption, in not more than 2 hours for critical issues and not more than 2 days for non-critical issues.

The warranty service will include the following categories of services:

- Corrections of errors in the system.

- Help the Career Office to correct all problems with data, arising because of mistaken function of the UCMS.
- Technical support in the configuration of the UCMS, or adjustment by changing default parameters; and
- Provision of necessary technical assistance to trained staff and re-train, if disclosed that they cannot solve all problems after received training.

The UCMS as well as the website should be supported after their delivery in terms of maintenance and user support by an external contractor.

5.4.12 Training

According to the [extensibility requirements](#) of the UCMS, at least two (2) administrators in each Career Office are needed, and they will be responsible for the overall UCMS well-being, the user management and the website. Moreover, a minimum of two (2) counsellors must be registered and operational.

Training services should be provided to enable both the administrators and the internal users to manage, operate and effectively use all the UCMS features, and create reports. (A period of ten working days per user category is sufficient to effectively cover the educational process.). Training must be performed on a live version of the UCMS and all training material used, as well as the system's user manual, has to be delivered in both electronic and paper format to the trainees before the start of the training sessions. Moreover, an online link to the training materials should be available in the UCMS.

6. Project Management Requirements

The contractor to develop the UCMS as well the website is required to propose a detailed project plan covering the design, development, testing and deployment of both the systems on their target hosting environments. The plan must cover at least the following stages and deliverables.

Table 1: deliverables

Stage	Deliverables
Contracting	Signed Agreement.
Planning	- Project management Plan (report). - Risk Management Plan (report).
Analysis	Detailed User Requirements Analysis for the system (report).
Design	- Technical Architecture and Detailed System Design for the upgrade of the proposed solution. - Detailed data design after changes (database schemas and report). - UI design changes (report and mock-ups). - Test plans & Test Cases (report).
Development	- Initial setup of the core functionality - UCMS interoperating with the external information systems (software). - Web services (software).
Testing	- System, integration, performance, interoperability, failover, regression, and user acceptance test plans (report). - Testing of the UCMS (report). - Testing of the Website (report).
Data Migration & Production System	- UCMS and the website Implementation Plan - Go-live Readiness Checklists (report). - Migrated Data Quality Assurance (report) in case of importing data from excels and other forms. - Production system interoperating with the UCMS and external information systems (software).
Knowledge Transfer	UCMS and Website documentation and training material delivered in both electronic and paper format to the trainees before the start of the training sessions.
Documentation	- User Manual - Online User Guide

	• System Administration Manual • Data Integration Manual • Disaster Recovery Manual
Technical Support	• Technical Support Agreement • Quality of Service Agreement • Technical Support System/Tool

The project management requirements for the listed stages/activities are the following:

6.7 Planning

- The contractor must propose a project plan covering the major stages and activities of the project, the names of resources allocated and the start and end dates of each of them.
- The contractor must include a resourcing plan with the names of resources assigned to the project, the start and end date and the number of person-days expected from each resource. An indicative but not limiting list of roles to be covered is the following:
 - Project Manager
 - Business Analyst
 - Systems Analyst
 - Software/Technical Architect
 - Systems Integration Expert
 - DB Architect/Data Modeler
 - Senior/Junior Software Developer
 - Web Developer
 - UI Designer
 - Web Designer
 - DB/System/Network Admin
 - SW Tester
- The contractor's proposal must include the CVs of all the resources assigned and allocated to the project. The CVs should follow a standard format that includes at least the following information (the CV should not exceed 5 pages for senior staff and 2 pages for juniors):
 - Name, date of birth and city of residence,
 - University degrees, name of institution and year of award,
 - Number of years of experience including number of months/years with current company,

- Work experience listed from current role including name of employer, role, start and end dates and brief description of projects they have participated in with the name of their role in each of them.
- Only 20% of the proposed named resources can be changed after the contract is signed and only after proper review and approval of changed resources.
- The contractor's proposal must describe at least 3 relevant enterprise projects similar (in terms of complexity, number of users to be supported, technologies used, and architecture paradigm) to this one completed by the company in the past 5 years. The company must include contact details of the client for each project for possible due diligence contact.
- The contractor's proposal must include the URL to at least 3 web sites/portals developed for similar clients. RisiAlbania may request a demonstration of some of these portals during the assessment stage.

6.8 Analysis

- The contractor must indicate their acceptance of all mandatory requirements in this document and the optional requirements they are committed to deliver as part of their proposal.
- The contractor must describe their understanding of the scope and details of the requirements and any issues that need clarification by the client or further analysis by the company.
- The contractor must describe the requirements that would necessitate further clarifications, information or input by the client during the analysis phase. It is expected that this analysis will be limited in duration and scope.
- The contractor must describe their proposed analysis and design methodology. Companies are advised not to use boilerplate cut-and-paste methodologies but the actual method to be used by their assigned analyst and designer to analyse and design the system.
- The contractor should use a web-page design tool to facilitate the analysis and capture of user interface requirements and design decisions.
- The contractor must submit an analysis report containing clarifications on the scope and details of the requirements in this TSD.

6.9 Design

- The contractor proposal must describe the technology, programming environments and design tools to be used to design and develop the UCMS and the Website if different from the proposed solution.

- The contractor must explain how their choice of tools and platforms meets the current and future needs of the system. In particular, the following required functional components should be highlighted: database, portal, content management, data analysis and reporting, workflow management, business process management, data integration, matching, appointments management, notification management, and communication management.
- The contractor must describe their design and development methodology. Prototyping and agile methodologies are encouraged as the company is expected to deliver visible working prototypes of the system on a monthly basis after the design is approved. The system implementation approach should include at least the following stages:
 - Knowledge capture
 - System Requirements
 - System Architecture
 - Data Architecture/Data Model/Database
 - Interoperability
 - Data Access
 - Deployment
- The contractor must deliver a design specifications document that defines the core functional components of the system, the data model, the final web page and system UI designs and system integration interface designs.
- The contractor must also deliver a technical architecture specifications document describing the required infrastructure systems and tools to be used to host, operate and manage the live and DR systems taking into account the availability of host. The architecture document must include detailed specifications of hardware, virtual machines, operating systems, application servers and other systems and software with versions, licenses and costs, including annual support and maintenance costs.

6.10 Development

- The contractor's proposal must describe the development frameworks, programming languages and tools, including versions, to be used in developing the system. The company should indicate the number of man-years of experience they have had using the proposed frameworks, languages and tools. We recommend using modern development frameworks and tools and avoiding where possible old technologies and tools that have been superseded by newer versions or that are going out of use in the local and international market. Companies should, however, avoid using beta

releases of new development tools and frameworks. Where possible to use Open source is highly recommended

- The contractor must briefly describe the code version control system to be used in managing the system code during development and the release policies and procedures for new versions of the code towards its target environments.
- The contractor must describe the development methodology they will use, especially the controls and tests used at each stage to check the quality of developed code/components. System test cases and test results of developed components performed for the client during development will be required for auditing by the client.
- The contractor must describe both how the integration of the UCMS and website into one system/prototype will take place and the integration testing to be performed after each such integration.
- The contractor will be required to deliver visible outputs of their development effort during the development phase on a monthly basis to demonstrate progress. If a prototyping or agile methodology is used, the outputs will be linked to prototypes proposed to and agreed upon by the client.
- The contractor will be required to ensure the documentation of the source code produced during development, as the source code will be owned by the client; RisiAlbania has the right to inspect any produced code to ensure this documentation requirement.
- The contractor will give the RisiAlbania full rights that covers all the components, executable codes, scripts, configurations and data base model and schema developed/prepared by the contractor as part of this project. This does not include third party software.
- The contractor will agree to provide the RisiAlbania with all the portal source code developed as part of this project together with the code and the design, including the data model and the data dictionary, and the documentation. The final acceptance of the System will be conditional on the delivery of the source code and its documentation.

6.11 Testing

- The contractor proposal must describe its quality assurance methodology covering the key resources, tools and steps to be used to ensure acceptable quality of the delivered system. Quality is simply understood as delivering a working software system that meets the functional and performance requirements of the client.

- The contractor proposal must describe the testing stages the system will undergo from its initial development to a final acceptance by the client. At least the following tests should be covered:
 - System testing (including component and system tests) at the company before release to the client.
 - Integration testing (of system-to-system interfaces) between the UCMS and the Website.
 - Performance testing (to meet the anticipated usage volumes).
 - User acceptance testing (for the final system to be accepted by the client) performed by the client users at target testing environment.
 - Failover and DR testing (to ensure graceful recovery from failures and disasters) performed by the company in close coordination and support by the client IT staff.
 - Regression testing (following changes to code previously tested) to ensure new code does not break the functional and data integrity of a previously tested code.
- The requirements for these tests are described in the Quality Assurance Requirements section below.
- The contractor will be required to submit test plans for all the planned tests, describing the scope of each test, the test tools and test data to be used, as well as who will carry out the test, when and how.
- The contractor will be required to prepare and submit test cases for all the planned tests specified in the test plans. Test cases describe the instructions, data and results forms to be used during tests.
- The contractor will be required to prepare the test environment for each planned test, install a test system with the correct version, upload the necessary test data and configure the system for testing.
- The contractor will be required to train and prepare the test users who will participate in the test before the scheduled testing starts.
- The contractor will be required to record test results on prepared forms to be filled in by test users or configure the testing tool to produce readable test results in spreadsheet/report format.
- The contractor is required to prepare test-correction-release procedures to be used by testers and developers to record, track and fix problems encountered during testing. Regression testing must be incorporated after each test-correction-release cycle to ensure software fixes do not inadvertently break the working functionality of the system.

- The contractor is required to track the status of problems encountered during testing using an incident ticketing system accessible to client test users and managers.
- The client must be notified of any changes to the times of scheduled tests well in advance. The client may arrange for a representative to visit, observe and oversee the testing activity on location.

6.12 Data Migration & Production System

- The contractor is required to prepare a detailed plan covering all the activities, environments, components, stakeholder responsibilities and conditions for implementing the UCMS and the Website.
- The implementation plan must cover the following key activities:
 - Testing (performance, UAT and DR).
 - Training (of business and technical users).
 - Documentation (production of all required procedures manuals).
 - Environment setup (for testing, training, live and DR operations).
 - Installation and configuration (of UCMS, Website and components).
 - Data integration (integration of data from the other Platform and all the necessary and available data sources); and
 - Technical support (for all user activities on the UCMS and the Website whether for testing, training or live operation)
- The implementation plan must effectively coordinate different activities to ensure smooth execution of sequential dependent activities and the parallel execution of independent activities.
- The implementation plan must identify the key stakeholders involved in each activity and define their responsibilities in relation to its successful implementation.
- The implementation plan must identify critical dependencies and conditions and clearly allocate responsibility for their resolution to appropriate owners. In particular, activities and outputs expected from the client, or their partners should be clearly defined, allocated and managed.
- The plan must identify, and the contractor must ensure the availability of resources allocated to different implementation activities at the proper times as defined in the plan.
- The implementation plan must take delays that may ensue from testing activities into account; more specifically, time and resources must be pre-allocated for bug fixing, regression testing and technical support after major test cycles.
- The implementation plan must use readiness checklists before the start of key activities or phases like testing (to ensure test cases and test environment are

properly setup), training (to ensure training materials and environment is ready), system deployment (to check infrastructure is ready), going-live (to ensure all users are trained and the system is installed and tested), DR testing (to ensure the system is installed and configured in both primary and DR sites).

- The contractor must prepare a data migration strategy and plan during the initial planning and analysis stage which defines which data to migrate from the external information systems to the UCMS, when how and who will do it. The contractor will be given controlled authorized access to the existing proposed solution and its database and their documentation for this purpose, with support from the RisiAlbania technical staff.
- The contractor must identify and define the data quality checks, cleansing and transformations required for the data from the various data sources as they are migrated to the UCMS. This will naturally depend on the new data model and how it implements various data quality checks during the data migration process.
- The project plan must include data migration testing as an essential and necessary step before going live with the UCMS and the Website.

6.13 Knowledge Transfer

- The contractor's proposal must include a summary training plan that covers all users of the UCMS and the Website and the training that will be given to each group.
- Training will be limited to the UCMS users. The training will be tailored for the users in each institutional group.
- Training will cover technical aspects of managing and operating the System, including data migration training, data modelling training, reporting training, system administrator training, DR and failover recovery training, and enhancements/upgrades training.
- The contractor will also be required to present up to 2 training workshops for selected partners with a shadow trainer from the RisiAlbania in order to become proficient in training future institution users.
- Training must cover training test users as well as final system users.
- The contractor will be required to have the user manuals for the system in print and electronic formats and deliver copies of the relevant manuals to all trainees before the training sessions start.
- Training must cover all functionality related to the target user group. Training should use pre-prepared functional scenarios that demonstrate the end-to-end functionality of the UCMS and the Website for the target user group.

- Training must be performed on a live training version of the system with user workstations configured and linked to the system to enable trainees to learn how to use the system in practice (presentations maybe used as aids but they do not constitute training).
- Training must have an evaluation form to be filled in and signed by each user at the end of the training sessions. Evaluation forms must be submitted to the client for approval. Acceptance of training delivered by the company will be based on trainee evaluations.
- All training material used in user training must be delivered in electronic and paper format to the client before the beginning of training sessions. Acceptance of training delivered by the company will depend on the delivery of such material.

6.14 Documentation

- All required documentation, except for project documents, must be delivered in both Albanian and English, in print and PDF/Word formats.
- All documentation outputs must be reviewed and approved by the client. Reviews may result in comments and changes that need to be made to the submitted documents. Final approval and acceptance of submitted documentation may take up to one month from the time of submission depending on the type and size of any document delivered.
- Documents must be delivered within 2 weeks of the scheduled time of delivery as agreed in the project plan. Delayed delivery may result in knock-on delays to project activities that depend on them.
- Documents must be presented in a professional format/style/structure acceptable to the client. The format and style of manuals must be prepared by the contractor and accepted by the client prior to the actual production of the manuals.
- All produced documents must be version controlled, with clear major and minor version numbers. The final version of delivered documents with the system will be of version 1.0.
- Documents must have editable versions in Word format and read-only versions in PDF format. Only read-only versions will be printed.
- The editable version of a document must have a publishing history section recording reviewers and approvers' names and comments for each published version of the document. This section is not to be included in the printed and read-only versions.

6.15 Warranty and Technical Support

- The free warranty will cover a period of 3 months from the go-live date during which the company will provide technical support and maintenance upgrades, bug fixes and enhancements to the system free of charge.
- The contractor must provide a technical support and maintenance agreement to be reviewed and agreed upon with the client for providing ongoing technical support services for the UCMS, the Website and its users for the warranty period.
- The contractor must include a level of service agreement (SLA) as a conditional attachment to the technical support agreement to be signed with the client for both the free warranty and the technical support period.
- The contractor will provide first line technical support services to the Career office users and second line technical support to all other users of the system.
- The contractor must provide technical support services for the project to users of the system during the implementation, testing, training stages.

6.16 Project Management

- The contractor must assign and maintain a project manager to manage the project, its plan and resources on the company side and to coordinate project activities and make regular progress reports to the client.
- The project manager will participate in all regular project meetings with the client and any other meetings called by the client or the sponsor for purposes of monitoring and updates on project status.
- The project manager will be responsible for preparing and finalizing a detailed project plan which is to be delivered to the client at the end of the planning stage.
- The manager will be responsible to the client for the delivery of outputs and execution of activities specified in the agreed plan on schedule and according to agreed quality criteria.
- The manager will monitor the progress of all activities and report project progress in a graded colour code with green representing progress according to plan and red representing serious delivery risks that require senior action/intervention.
- The manager will deliver and discuss a monthly project progress report with the client. The report shall include four sections: project plan status, what has been completed, what is being planned for the coming month and the risks status.
- The manager will be responsible for preparing, updating and monitoring a project risk register. The register will include potential risks, their probability rating, their impact on project delivery and the mitigation measures planned as well as who will be responsible for mitigating the risk. The manager will report the status of registered

risks in the periodic progress report and highlight them during the monthly meeting with the client.

- The manager will be responsible for preparing presentations and participating in workshops organized by the client, or sponsor, or partners, as and when necessary, at key stages during the project delivery.
- The manager will be responsible for all communications between the contractor and its team and the client and their partners. All such communications, whether written or electronic, must go through the counter party manager on the client side.
- The manager will be responsible for coordinating all project activities and resources required with the client team, for all activities that involve the participation of the client or its partners.
- The manager will be responsible for controlling the project scope and managing the change management process based on the baseline requirements included in the ToR and clarified during the analysis phase.

7. Quality Assurance Requirements

The UCMS and the Website should be tested thoroughly. The client acceptance of the systems will be based on the delivery of working and performing systems installed on the main live hosting environment, integrated (in terms of data acquisition) with scoped external systems and including all associated documentation and code artefacts. Acceptance will therefore be based on meeting all the mandatory functional and performance requirements specified in this document to the satisfaction of the client and its users.

7.7 User Acceptance Testing - UAT

- Client acceptance of the delivered UCMS and the Website will be based on acceptance criteria covering the following categories:
 - Delivery of all functional requirements and supporting documents.
 - Meeting all non-functional and project requirements.
 - Passing all the tests defined in the requirements and detailed in test plans and test cases to the satisfaction of the client.
 - Delivering an installed and configured operational system on the live environment.
 - Delivery of working data integration interfaces with external systems and data sources as required and supporting documents.
 - Delivery of all associated source codes, design documents, user manuals etc. related to the systems and the project.
- User acceptance test plans, test cases and test data must be finalized and submitted to the client at least 3 weeks before the scheduled UAT. The client may request changes, additions and updates to submitted UAT test plans and test cases to ensure their completeness. At minimum, the test cases should cover all the functional requirements specified in this document as implemented in the system design submitted by the contractor.
- At least two UATs will be planned, one for the Career office staff and one for the RisiAlbania.
- A UAT may be repeated more than once with regression testing to ensure problems and bugs encountered in a previous UAT have been resolved. The final acceptance of the system will be based on success of 99% of the mandatory functionality of the system excluding critical functions.
- The contractor must agree and coordinate the number and types of users required for each UAT with the client. The list of test users will be included in the UAT test plans presented and approved by the client.

- The contractor must provide the necessary training for the UAT test users to enable them to perform the prepared tests cases. The training should be completed satisfactorily before the UAT tests start.
- The contractor must ensure that the UAT test environment, systems and test data are prepared, configured and ready to use before the UAT starts.
- The contractor must prepare clear instructions for test users to enable them to carry out the test cases systematically, and to record the results and problems encountered in a clear and efficient manner.
- The contractor must prepare test results forms to record the UAT results by each test user. The test cases must be clearly numbered to enable users to report success or failure (and problems encountered) in each test. Each form must have the date of the test, the location, the name of the tester and their signature.
- The contractor must prepare bug report forms to enable test users to record problems/bugs encountered during testing. The forms must enable users to take screen shots of failing functionality. Each form must have the date and number of the test, location, name of the tester and their signature.
- The contractor must prepare a UAT results report that includes an introduction to the UAT (test cases and test users) and a statistical summary of the UAT results. Test reports filled in by test users must be included as attachments to this report.
- The contractor must prepare a numbered list of all the problems/bugs reported by the test users in each UAT test cycle and submit the list with the reports filled in by test users as attachments to the client. The list will be used by the client and the company project managers to ensure problems encountered in testing are fixed by the contractor before the next regression test.
- If UAT fails the acceptance criteria, the client may request a repetition of the UAT after the problems/bugs are fixed: the contractor must follow the same procedures used in the first UAT to conduct regression tests.

7.8 System Testing

- System testing ensures that the software installed for client use/testing/training is fit for the purpose and meets the functional, performance and quality requirements of the client. It is the responsibility of the contractor to subject the system to extensive and systematic unit and component testing before it is released for acceptance testing or other client use of the software.
- System testing must be done appropriately at the end of each development cycle as defined in the methodology of the contractor.

- System testing must follow clearly defined and documented test cases prepared by QA/testing staff of the contractor based on the requirements for the system; these test cases may be used later as the starting point for any UAT test cases.
- System testing of functional components must be done by staff not involved in the development/programming of those components.
- System testing includes regression testing after the integration of all components the previously tested to ensure that the new or updated code did not adversely affect the functionality/ performance of other components.
- System test results must be recorded and documented together with the test cases used. The client may request to view/review system test cases and test results before any software is installed on the client environment for client testing/training/use.

7.9 Migration Testing

- Migration testing ensures the data migrated from the external data sources is fully integrated in the new data model and works correctly with the processes and business rules of the Career Office. The contractor must plan and perform the necessary tests to ensure this before the UCMS and the Website go live.
- Migration tests must simulate and test the migration of all the external data sources as defined in section 5.3.8 (Interoperability).
- Migration test cases and test data must be prepared and documented for each migration test scenario/process by the contractor in close collaboration with the RisiAlbania.
- The contractor is responsible for preparing the migration test environment and installing the necessary tools and data before the migration test starts.
- Migration test results must be recorded along with the test scenarios and test cases used. The final data migration report must summarize the results of these tests before migrated data is approved for use on the UCMS and the Website.

7.10 Performance Testing

- Performance testing ensures the systems installed on their target infrastructure perform well under user loads that simulate real life use of the systems. The contractor must simulate such loads and perform the necessary tests to ensure the performance levels required are met.
- Performance tests must simulate and test the following user load scenarios:
 - Normal usage scenario: average number of concurrent users performing a typical combination of user activities on the system e.g., UCMS users and clients on normal working day.

- Peak usage scenario: maximum number of concurrent users performing typical combination of user activities on the system e.g., UCMS users, clients and partner institution users during the end of month or the end of year processing.
- Maximum load scenario: maximum number of users performing a bandwidth or processor intensive activity (e.g., downloading/uploading documents at the same time).
- Test cases and test data must be prepared and documented for each performance test scenario.
- Performance testing should use automated tools to simulate the number of users and data sources required in each scenario. The contractor is responsible for preparing the test environment and installing the necessary tools and data before the performance test starts.
- Performance testing must be performed on a target live installation environment or similar specification environments for accurate results. This includes user access environment, network connectivity and portal server environment.
- Performance tests must include monitoring of key infrastructure and application performance parameters including but not limited to:
 - Database server sessions and query performance.
 - Processor and memory utilization.
 - Network bandwidth utilization.
 - Web server user response times.
 - Webserver user sessions and threads utilization.
- Performance results must be recorded along with the test scenarios, test cases and test data used. The final performance results report must summarize performance indicators relative to the number of concurrent users and data sources of the system and extrapolate the results for future loads.
- The client may request to monitor and observe the execution of performance tests. The contractor must provide the client with test plans and test schedules in advance of such tests.

7.11 Failover and Disaster Recovery Testing

- The UCMS and the Website must recover gracefully from a variety of errors and failures. Examples of potential failures include:
 - User level failures
 - Network failure (network connection lost)
 - User session (user browser or portal freezes/hangs)
 - Portal server failure

- Hardware device failure (processor, memory, hard disk)
 - Base system failure (operating system hangs/critical error)
 - Web/Application/Database critical system failure
- The contractor must prepare a disaster recovery (DR) plan that describes the expected failures that can affect the availability and performance of the System with detailed instructions on how to recover from each.
- The contractor must test the redundancy and failover measures implemented in the architecture to mitigate failures at the device, server and network levels (hardware recovery).
- The contractor must test the redundancy and failover measures implemented in the architecture to recover from system and application failures (software recovery).
- The contractor must test the redundancy and failover measures implemented in the architecture to recover data lost or corrupted in a failure or disaster event (data recovery).
- The contractor must test a complete re-installation of the System and their data from archived data/system configurations at the last total archive checkpoint. This “total system and data restore” procedure must be documented and timed, to be repeated by the system administrator(s) on a periodic basis.

7.12 Regression Testing

- Regression testing must be performed whenever the system code changes due to enhancements, upgrades, or bug fixing. The regression test repeats previously prepared test cases to ensure the problems/bugs/failures are fixed and to ensure the changes/updates/ upgrades made to the system did not introduce problems/bugs/failures into the system.
- Regressions tests must be prepared, monitored and reported like a UAT on the functionality or performance they relate to.

7.13 Integration Testing

- The contractor must prepare test plans, test cases and test data for all external data interfaces of the UCMS, whether they are input (data coming from an external source in particular format) or output (data requested and delivered from the system to an external requesting system/destination - & UCMS data integration).
- For Web Service integration interfaces, the contractor must ensure that both ends of the Web Service (the calling system, the called service) are configured and operational before the test.

- Web Service integration tests must cover message format as well as data validations, security checks to validate the authenticity of the caller and called service, and any subsequent system or database updates resulting from the execution of the Web Service.
- Data file import interfaces from formatted files must test file format as well as data format errors, and any resulting updates on the system/database. If the data file is uploaded through the portal over an internet link, the reliability of the upload must also be tested.
- Data file export interfaces, producing data from the database in specific format must be tested for correct file and data format.
- All integration tests must have multiple test data messages/files prepared by the contractor in close coordination and collaboration with the client.

Integration testing must test the error and exception management functionality of the interface, especially the error messages reported in error files or communicated to the system administrators of both systems.