## **EDUSPARK**

Project specifications University Student Monitoring Dashboard

## To “light the spark” in students and motivate them to improve their performance.

### 19th November 2024



### The present document describes the project specifications for EduSpark AI app, as part of the collaboration between University (the client) and Consulting Corp (provider).

### The specifications were revised by the following stakeholders.

**University**

| **Name** | **Fonction** | **Date** | **Signature** |
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| Tarik Aoun | Technical Lead | 19th November 2024 |  |
| Abdel Le Grand | Business Owner | 20th November 2024 |  |

**Consulting Corp**

| **Name** | **Fonction** | **Date** | **Signature** |
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| Tatiana Nino | Project director | 19th November 2024 |  |
| Myriam Genety | Data Scientist/Analytics Specialist | 19th November 2024 |  |
| Sol Fonseca | Software Developer/Technical Lead | 19th November 2024 |  |
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## **1. Project’s context and needs**

### **Overview**

A university aims to implement a data-driven dashboard to monitor and improve student performance and retention. By analyzing key metrics (such as attendance, assignment completion rates, and grades), the university seeks to provide personalized support and resources to students. Given the sensitivity of educational records, this project must comply with GDPR and educational data privacy standards.

### **End-users**

* **University Administrators**: Oversee performance trends and use the dashboard for strategic decision-making related to retention and student success.
* **Faculty/Professors**: Monitor student performance, identify at-risk students, and provide interventions based on data insights.
* **Students**: Access their own performance data and receive personalized recommendations to improve academic outcomes.
* **Compliance Officers**: Ensure the dashboard complies with GDPR and educational data privacy standards, maintaining data security and user access protocols.

### **Business and technical goals**

* **Business goal:** Improve student retention and success by using data-driven insights to identify at-risk students early and provide personalized interventions.
* **Technical goal:** Develop a secure, scalable dashboard that integrates real-time student performance data and ensures compliance with data privacy regulations like GDPR.

### **Deadlines and Constraints**

* **MVP deadline:** 8 months
* **Budget:**$504,000
  + Personnel Costs: $370,000
  + Technology Costs: $48,000
  + GDPR Compliance & Legal Fees: $25,000
  + Training & Support: $20,000
  + Contingency Fund: $41,000
* **Constraints:**
  + **Data Privacy Compliance**
  + **Limited Resources**
  + **Integration with Existing Systems**
  + **User Adoption**

## **2. Project objectives**

### **SMART Objectives**

**Objective:**By the end of the first academic year after the dashboard's implementation, increase student retention by 5% and improve the accuracy of identifying at-risk students to 85%, while ensuring 90% faculty adoption of the dashboard for monitoring student performance, and achieving a 15% increase in student satisfaction with academic support services, through personalized interventions and recommendations based on the dashboard’s analytics.

1. **Specific:** Increase student retention, improve risk identification, enhance faculty adoption, and boost student satisfaction with support services.
2. **Measurable:**
   1. 5% increase in retention for at-risk students
   2. 85% accuracy in identifying at-risk students
   3. 90% faculty adoption rate
   4. 15% increase in student satisfaction with support services
3. **Achievable:** The dashboard will provide timely alerts, personalized support recommendations, and data-driven insights for faculty and students.
4. **Relevant:** These outcomes directly support the university’s goals of improving retention, student performance, and faculty engagement.
5. **Time-bound:** Achieve all objectives by the end of the first academic year following dashboard implementation.

## **3. Project Specification**

### **Project Overview**

**Name:** EduSpark APP

**Purpose:**

* Monitor and improve student performance and retention through a data-driven dashboard.
* Provide early identification of at-risk students for personalized interventions.
* Improve student engagement by tracking key performance metrics.
* Ensure data privacy and compliance with GDPR and educational data standards.

**Scope:**

* **Inclusions**:
  + Tracking and analyzing key metrics (attendance, grades, assignment completion).
  + Personalized support recommendations for at-risk students.
  + Dashboard development for faculty, administrators, and students.
  + Adherence to GDPR and educational data privacy standards.
* **Exclusions**:
  + Any personal counseling or intervention services beyond the dashboard scope.
  + Integration with non-academic systems (e.g., student housing).
* **Timeframe**: Start-to-finish project timeline (include milestones for each phase, e.g., design, development, deployment).
* **Budget**: Estimated costs for infrastructure, personnel, and compliance audits.

### **Functional Requirements:**

* **Dashboard for Monitoring**: Real-time tracking of student performance metrics (attendance, grades, assignments).
* **Risk Identification System**: Early alerts for students at risk based on predefined thresholds.
* **Personalized Recommendations**: Provide actionable insights (e.g., study tips, counseling referrals).
* **User Role Management**: Different access levels for administrators, faculty, and students to maintain data privacy.
* **Data Export & Reporting**: Allow for the generation of detailed reports on student performance.

### **Technical Requirements:**

* **Data Security**: Compliance with GDPR; encrypted data storage and anonymization where necessary.
* **Analytics Tools**: Use of advanced data processing and visualization tools (e.g., Power BI, Python-based analysis).
* **User Interface**: Intuitive, accessible interface for ease of use by faculty, administrators, and students.
* **Integration**: Ability to integrate with existing academic systems (e.g., learning management systems, student databases).
* **Scalability**: System must be scalable to accommodate growing student data over time.
* **Cloud Infrastructure**: Hosting the system on a secure, scalable cloud platform for reliability and flexibility.

#### **Success Criteria:**

1. **Improvement in Retention Rates**: At least a 5% increase in student retention over the first academic year after dashboard implementation.
2. **Accuracy of Risk Identification**: At least 90% accuracy in identifying at-risk students based on early performance indicators.
3. **User Adoption**: Achieve a 75% adoption rate of the dashboard by faculty and staff within the first semester.

## **4. Project planning**

### **Work Breakdown Structure (WBS)**

1. **Initiation:**
   * Define project charter and stakeholder roles :

* Establish project objectives
* Assign roles to stakeholders (university administration, T staff, etc)
  + Conduct initial compliance assessments and regulatory consultations.
* Review GDPR and educational data privacy requirements specific to the university context.

1. **Planning:**
   * Gather detailed user requirements and document functional specifications.

* Organize workshops with students, academic staff, and IT personnel to gather insights.
* Define key features of the dashboard
  + Develop project schedule, milestones, and resource allocation plans.
* Draft a roadmap aligning

1. **Design Phase:**
   * Create wireframes and UI/UX prototypes tailored to user experience in Educational dashboard.

* Develop mockups
* Ensure the design is intuitive and meets accessibility standards.
  + Outline the technical architecture to support scalability and compliance.
* Design a secure infrastructure for storing and processing sensitive student data.

1. **Development Phase:**
   * Frontend and Backend development following Agile methodologies.

* Implement the frontend interface with interactive charts and performance indicators.
  + Continuous integration of AI features with iterative testing.
* Test and refine functionality in iterative development cycles.

1. **Testing and Compliance Review:**
   * Conduct comprehensive functional testing, including performance and security assessments.

* Perform end-to-end testing of key dashboard features to ensure usability.
  + Perform regulatory compliance audits to ensure adherence to GDPR and educational standards
* Ensure mechanisms for user consent and data anonymization are in place.

6. **Launch and Review:**

* + Deploy the MVP to targeted user segments.
* Introduce the dashboard to a pilot group of students and academic advisors
  + Gather user feedback, conduct post-launch analysis, and implement necessary adjustments.
* Analyze user input to identify gaps or improvement areas.

### **Deliverables**

* A fully functional mobile application (iOS and Android).
* An AI-driven insights engine with tested algorithms.
* Documentation for GDPR compliance and CE marking.
* User-friendly monthly health reports and dashboards.

## **5. Choosing the Project Management Methodology**

### **Selected Methodology: Agile**

Agile methodology will be used to ensure development flexibility, allowing for iterative feedback and improvements. This approach is particularly essential for this project, given the changing educational needs and the need to adapt quickly to feedback from users (students, teachers and administration).

Agile will make it possible to incorporate regular adjustments based on analyses of student performance data. For example, if a data visualization feature doesn't meet teachers' expectations, adjustments can be made quickly in successive sprints. In addition, Agile will facilitate the integration of new regulatory requirements, such as GDPR-related changes, which can be added continuously without interrupting overall development.

The iterative approach will also guarantee progressive improvement of the algorithms for analyzing performance and detecting at-risk students, based on cycles of feedback from end-users. Agile methodology will be used to guarantee development flexibility, enabling iterative feedback and improvements. This approach is essential given the dynamic nature of educational needs and the need to adapt effectively to user feedback.

## **6. Resource Allocation and Tracking**

### **Resource Allocation**

* **Human Resources:**
  + Project Manager, Data Analysts, Data Engineers, Developers (Frontend & Backend), Compliance Officers.
* **Technical Resources:**
  + **Data Integration and Processing: ETL Tools:** Apache Airflow**, Data Storage:** PostgreSQL or MySQL**.**
  + **Visualization Tools**:

**Dashboard Software**: Tableau or Power BI for rapid prototyping.

* + **Cloud Services**: **Hosting**: AWS or Microsoft Azure , **Storage**: AWS S3 or Azure Blob Storage for secure and compliant data storage.

### **Tracking Progress**

* Use an **Agile methodology** to break the project into smaller, manageable tasks and sprints (e.g., 2-week intervals).
* Conduct regular **Scrum meetings** (daily stand-ups, sprint planning, sprint reviews, and retrospectives) to monitor progress and address blockers. Assign specific deliverables and deadlines

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