

## FEASIBILITY FINAL REPORT

The Smart University Project was developed within the scenario of establishing the cyber-physical system with optimum cost. This project was designed to make significant contributions to the social and economic structure of the university. The smart campus project, which consists of three phases, aims to develop a system that includes improvements in various application areas for the efficient consumption of public resources. The first stage includes "Single Facility" and the second stage includes smart applications based on the Internet of Things to be built within the scope of "Extended Facility and Outdoor".

The primary purpose of smart universities is to facilitate campus life and reduce consumption through technology, thus making the use of scarce resources more effectively. The benefits of a smart university project will be of great importance for the university administration, academics, students and all stakeholders.

The project has sub-objectives that serve primary purpose, such as:

- ✓ reduce energy consumption (energy domain),
- ✓ reducing waiting times to take advantage of campus facilities (availability domain),
- ✓ increase staff productivity (environment domain),
- ✓ increase the quality of classroom education (classroom domain),
- ✓ accelerate the development of students and staff (training domain),
- ✓ ensure that all individuals on campus contribute to problem identification and resolution (administration domain),
- ✓ speed up communication between people (contact domain),
- ✓ analyze the use of public resources by analyzing the data collected from these areas (real-time data analytics, monitoring, reporting and performance measurement domain).

Within the scope of the project, the current demand is to

- ✓ reduce energy consumption,
- ✓ increase staff efficiency,
- ✓ improve the quality of in-class education,
- ✓ reduce waiting times to benefit from campus facilities,
- ✓ accelerate the development of students and staff,
- ✓ contribute to the identification and solution of problems by all individuals on campus,
- ✓ accelerate communication between people and
- ✓ data collected from all these areas will be analyzed.

In the current situation, it has been determined that the reason for unknown (out-of-hours consumption) electricity expenditures is 32% per month, and it has been seen that this rate can be significantly reduced with the studies carried out in this area. “

Some preliminary studies and evaluations have been conducted in order to assess the environmental consequences of the smart university project's implementation. According to these studies; a total of 317,438 KWH savings are expected comparing to electricity consumption in 2019. This value represents a savings of 18%. According to the data obtained in the same study; If the project is implemented, a total energy efficiency of 10,974,501 KWH is expected within 10 years. When it is estimated that 80% of the energy efficiency potential has been saved between 2019-2029, it is expected that a total of 20,908,213 ₺ savings will be

achieved. Considering all these, the project aims at a university model that contributes to the environment and is self-sufficient. At this point, the biggest economic benefit of the project is that it will reduce the operating and operational expenses, which are among the biggest expense items of the university. Thanks to the reduced costs, public resources will be used more efficiently, resulting in significant savings.

According to extensive analyses of many different scenarios, the investment will be amortized in 3-4 years in the best case (with 100% efficiency rates) and in 4-6 years in the worst scenario (with 60% efficiency rates). These times are acceptable for a project investment of this scale. In addition to the much more effective use of public resources in material terms, the project's social impacts make it more beneficial. While carrying out the feasibility study, many universities of a similar scale were examined. Suppose this project is carried out in other universities. In that case, it will provide the same returns to all universities of a similar scale under equal conditions, making severe contributions to the country's economy and education. As a result of the economic, financial, and social analysis, risk analysis, and scenario development, it was determined that this project is a valuable and feasible study.

In the later stages of the project, software system analysis will be carried out in the first place. After the system analysis phase, the necessary infrastructure installation works for the project will be started. After the infrastructure installation, software design and supply will be carried out. After the software integration with the established infrastructure is ensured, the project, which will be put into the testing process, is planned to be fully ready for use in 2023. After all the design, infrastructure, software, and testing processes are completed and used, the project will be in a dynamic structure that can be continuously improved by processing, analyzing, and reporting the data collected from sensors and applications. Moreover, the information that these reports will present to the senior management will contribute to the decision-making process for the future projection of the university.