

# Helping Industry with State of the Art Technologies utilizing Augmented Reality (AR) & Machine Learning (ML).

## 1. Introduction

At Beamex, we design, manufacture, and deliver calibration equipment and software to help our customers achieve safer and less uncertain world. Our products are trusted by many global brands, ranging from Google, NASA, Nestle to F1 teams. Beamex bMobile is our multi-platform mobile application for guided execution and documentation of field calibrations.



Beamex bMobile is an everyday tool for numerous calibration technicians all over the world. One use case for bMobile is to document the calibration results from the calibration. In many cases, this means manually reading values from instrument display and retyping them in bMobile. This type of manual data transfer is a tedious and error-prone process that the calibration technicians wish not to do.

We are currently exploring new ways to insert calibration data into bMobile. As a result of our previous product concepting project, we have tested using mobile device camera and machine vision to recognize and insert data to bMobile. After a successful Proof-of-Concept, we are planning to raise the bar to make scanning of results even more effortless for the calibration technicians.



With this project, our aim is to help and guide the field technician with AR-based assistance so that work in the field would be more efficient, safe, and error-free.

We had a successful project with Aalto University students 2022-2023. This proposal will be a continuity to that. Please look at the attached

poster and video made by students. Link to video: <https://youtu.be/2EsHioqU4jY>

## 2. Project goals

The main goal is to design and implement an augmented reality software module that can be used with smart glasses or mobile devices to guide and help with the practical steps of industrial calibration. Calibrated instruments can include temperature sensors & gauges, pressure sensors & gauges or weighing scales. Practical steps should include recognition

of the instrument to be calibrated, preparations and connections to the calibrator and the instrument to be calibrated and the practical steps needed for the execution of the calibration. Reading of gauges & displays of instruments with machine vision can be included in the steps. This project should demonstrate selected capabilities on how to guide the calibration technician through complex calibration procedures. Excellent user experience is an important part of the solution, and this is the part where we wish new and innovative ideas from the team.

### 3. Technologies

Required technology:

- Software module must be implemented with react-native, but may utilize native mobile capabilities, such as platform-specific APIs and SDKs. We deliver software to three platforms (Android, iOS and Windows/.NET) and reaching cross-platform solutions is of high importance to us.
- bMobile and/or our smart glass app can be used as a base for this project.
- We can provide support with react-native.

### 4. Requirements for the students

Familiarity with some degree to given technologies in chapter 3. Difficulty of the topic would be moderate.

### 5. Legal Issues

*Intellectual Property Rights (IPR):* The client gets all IPRs to the results.

*Non-disclosure agreement (NDA):* Standard Aalto university and/or client NDA.

*Confidentiality:* The client will share some confidential information with the students.

### 6. Client

Since its founding in 1975, Beamex has been a trusted partner for calibration excellence, helping its customers to continuously improve efficiency, ensure compliance, and increase safety in their operations. Beamex sets the industry standard with its way of working, its expertise and its innovative calibration technology that provides accurate measurements, reliable data, and traceability.

Beamex has a comprehensive ecosystem of calibration solutions that covers everything from field calibration to workshop calibration, calibration management, and services. Through the company's global reach, its products and services are helping to create a safer and less uncertain world for customers across more than 90 countries.

In this project, you will be working with our bMobile and product management teams. Sami and Lasse will be your primary contacts at Beamex. Sami will help you with the business and customer views, and Lasse with technical requirements and questions. We can assist the students a few hours per week.

Beamex has dedicated working space at campus area in A-Grid building. This working space works for 8 people. Additionally, we can utilize various meeting spaces in A-Grid building. Beamex will provide necessary equipment like monitors to connect laptops, the smart glasses and test mobile devices.

### **Client representatives**

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