*Project Brief*

*Power saving of screens through user interaction*

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# Introduction

CTOUCH is a manufacturer of dynamic and innovative, large sized touchscreen displays for education and business. CTOUCH drives interactivity, productivity, and engagement in meetings and classrooms by providing the best possible experience and customer value. The goal is to always be present where people work together and learn and give customers a lasting smile.

In addition to creating an optimal user experience, CTOUCH has the intrinsic motivation to conduct business in a responsible and sustainable manner. With an eye on people, the environment and climate. The goal is to implement concrete and feasible actions in the short term that contribute to our sustainability vision. In this context, CTOUCH continuously researches the sustainability impacts of its own business operations and products. Part of this research is a Life-Cycle Analysis (LCA) into the CO2 impact of our products. The results have shown that about 60% of the CO2-emissions of our products are generated during the production process of the touchscreens. The remaining 40% of emissions are due to energy consumption in the user phase of the screen. The life cycle analysis shows that between 23 and 73% of these CO2-emissions can be saved during the lifespan of our products by optimizing the use of the screens (normal mode/energy saving mode/backlight-off mode). This means that end users can make a significant contribution to reducing CO2 emissions!

# Project goal

The goal of CTOUCH is to optimally stimulate energy saving during the use-phase of the screens on the long term. During this project the possibilities to realize this goal will be inventoried and implemented by means of an app/widget/data-driven application. The main goal is that the energy saving app/widget/data-driven application will provide a fun, interactive and potentially educating incentive to use the screen in a more sustainable way. In addition, it is crucial that the app/widget/data-driven application does not get in the way during normal use of the screens, and that it will contribute to a positive user experience. To achieve this, it is important that input from end-users is actively incorporated into the design process. Active involvement from end-user simultaneously contributes to a positive relationship between CTOUCH and her customers, which in turn helps CTOUCH in its mission to enthuse customers to use the screen more sustainably.

Ideally, the app that CTOUCH will develop together with Fontys will take into account at least the following four aspects:

* The app must use data about users' behavior and energy usage
* The app should provide suggestions or incentives for more sustainable use of the screen in a fun, interactive and perhaps educative way
* User involvement should be actively included in the design process
* The app/tool must actually be implementable in a CTOUCH screen

The desired end result for this project is a working prototype of the app/widget/data-driven application.

# Design process

In the design process, CTOUCH will take the role of customer and product-owner. The students then "work" for CTOUCH and strive to meet the wishes and requirements of the product owner. This is done on the basis of Scrum Sprints. Every week students will talk to the product owner during a sprint review meeting and the delivered aspects will be discussed/assessed/adjusted etc.

This informal meeting is intended to look back at what has been achieved and to determine where adjustments may be required. The lead time is short to avoid confusion and risks. Furthermore, short sprints provide more opportunities for feedback for the product-owner, allowing the mutual expectations to be managed optimally and increasing the predictability of the ultimate goal.

# Sub-questions and Challenges

In order to achieve the desired end result, a number of sub-questions and challenges will have to be addressed. This assignment can roughly be divided into three interrelated challenges: 1) a technical challenge, 2) a challenge in the field of app design and user interaction, and 3) a social engineering challenge. An explanation is given below. When weighing up the challenges, the learning goals and interests of the students, together with the freedom and creativity to make their own choices, come first, together with the customer demands (CTOUCH). In the end, they are the experts who have to get the client's wish as clear as possible in order to translate it into a desired solution.

## Technical Challenge

In order to create an app that influences a screen user’s behavior and accompanied energy consumption, it is important to have access to user data. This data provides insight into the current energy consumption of a screen. In addition, this data can be used to measure the effects of the energy saving app. However, the availability of this data is not self-evident. CTOUCH screens do not explicitly register their own energy consumption. There are however possibilities to unlock this data and translate it into a usage profile, which can be saved at the start of the project. It is up to the students themselves to choose how they deal with this during the project: do they program an app that extracts user data from the screen and translates it into energy consumption? Or do they create their own datasets, for example based on literature or interviews with end users?

The second technical challenge is related to the integration of the app with the touch screen. Will the app be integrated in the Windows environment of the touch screen or in the Android environment? In order to answer this question, students will have to talk to software experts from CTOUCH. It is crucial to know this to ensure that the app is actually usable in one of the CTOUCH screens. CTOUCH will make sure that the students get in touch with the right people.

## Social Design Challenge

When developing an app for our users, it is important that the user experience remains optimal. It is therefore important that students gain insight into who exactly the end user is, and what his or her wishes/needs are in terms of an energy-saving app: what do end users find fun/interesting/useful? And what do end users find boring/disruptive/unnecessary.

Both CTOUCH and Fontys will use their network to provide students with contacts with (potential) end users. It is up to the students themselves to choose how they want to obtain relevant input from end users and how they want to take this into account in the design process.

## App design & User Interface Challenge

The most important and creative challenge in this project is to ensure that the app does eventually lead to a more sustainable use of the screens, and thereby to less energy consumption of the screen during the use-phase. It is important that user interaction is stimulated and that the design is attractive and easy to use. Important aspects within the app could be playful interaction and gamification, depending on the opportunities, needs and wishes expressed by the end users. It is therefore important to find a good balance between coming up with fun/creative solutions, the technical feasibility of the ideas, and the needs/wishes of the end user.