

Chapter 2

Join The Board: A New Way of Collaborative Learning

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ABSTRACT

This chapter presents an application, Join the Board (JTB), which provides shared and collaborative work environments between digital iPhone and iPad devices through a Network of Local Area (LAN) over a Wi-Fi connection. JTB allows using two connection types in the board: an off-line board (the user has a local and individualized work) and an on-line board (the user can create sessions that each one gives a collaborative board. All the devices that are interesting to work in this collaborative board must be joining to this session with a specific role system and start working on it). All the workflow in a collaborative board is through a turn management that is controlled by a moderator device. JTB has only been developed for the family of iPad and iPhone version equal or higher than 5.1 operating system and behind using more than six design patterns and implementation. It has been developed three types of different and specific protocols that form the core of JTB application and it has been used for the encoding messages and managing the entire dialog between devices. This chapter shows a full case study that shows the potential of the functionalities.

INTRODUCTION

Information and Communication Technologies (ICT) are an essential part of today's Society and have impact on almost all aspects of life. The rapid advance of ICT is flooding the modern world with implications for each of the branches of modern society by providing worldwide more and more

advanced and powerful technological devices that open up new fields of innovation, provide opportunities to achieve higher development levels and reduce many traditional obstacles, especially those related to the time and distance.

The generation of smart mobile phones, which has flooded the technological consumer market in recent years, has given way to the tablets and

DOI: 10.4018/978-1-4666-8803-2.ch002

touch tablets. These tablets are equipped with much more capacity for processing, communication and size than smartphones (Conde, Álvarez Rosado, & García Peñalvo, 2011; Conde, García-Peñalvo, Alier, & Piguillem, 2013; Conde, García-Peñalvo, Alier, Casany, & Piguillem, 2013).

The impact these technological devices have caused, with so good acceptance by the users, has led to the development of applications for this type of device to trip because that was considered a great success from the point of view of their marketing.

On the other hand, Computer Supported Collaborative Learning (CSCL) (Bruffee, 1999) is a strategy of teaching and learning that builds knowledge through a collaborative work supported by technological resources (Alonso de Castro, 2014; Sánchez Prieto, Olmos Migueláñez, & García-Peñalvo, 2014a, 2014b).

It is precisely in this context of technology and collaborative learning where the project Join the Board (JTB) merges (Álvarez Rosado, García-Peñalvo, Bravo Martín & Álvarez Rosado, 2013), an application developed for the families of iPad and iPhone devices that pretends to be a real technological platform that provides shared work spaces shared by a group of people in which to develop activities in a collaborative way.

Although JTB was born from the will to integrate the use of new technologies in teaching practice, it is not limited exclusively to this environment, but has a place in many and different areas of society, from the field of education, passing through the business world and reaching any task (whatever type that is) that needs interaction and collaboration among different people.

The application has been developed in the framework of a project of the degree course of Engineering in Computer Science at the University of Salamanca.

Following sections of this paper will explain in detail a complete description about the functional application. Also will present the Join The Board graphic user interface and then present a simple and complete case study. Finally, paper explains

all the important aspects of JTB development like planning, design pattern, communication protocol, etc.

FUNCTIONAL DESCRIPTION

JTB is based on simulate digital boards that offer participatory workspaces to all devices that are connected. Each board is managed by one of the participants who has the role of moderator and that arbitrates access to the same for scripture through a shift system.

This functionality is achieved through the development of a complex protocol of communications and synchronization among devices. This protocol consists of a dialogue based on the passage of messages that are exchanged by all the users of each board on the basis of a Wi-Fi connection required for the operation of the application in collaborative mode (online).

JTB also allows the option of using a board locally based (offline), used as a single device and keeping all its functionality without the need for Wi-Fi connection. This allows local and individualized work to the user where there is no moderator. This operating mode is always available in the tool.

In the Figure 1 shows a general overview of the operating modes that presents the app JTB.

From a general point of view devices can create two types of boards:

- **Public Boards:** The same access is permitted to all users.
- **Private Boards:** Access to them is restricted by the use of a password.

Each device can only create a board at the same time or join one of the available boards, already created by other devices. The list of accessible boards, together with its characteristics, is shown in the main session of each device, as shown in Figure 2.

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