"TouchScreen" project

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VisionDocument
written by Jan Helber

This documentation contains the visiondocument of the project "TouchScreen TI6"

V0.1	2006-10-16	Initial Release
V0.2	2006-10-23	additional contraints
V0.3	2006-10-30	corrections after meeting

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1   Introduction

We are a team of five students, named Albert Dorn, Eduard Heidt, Jan Helber, Alexander Irro and Cedric Pilot in the course "Project". We are going to finalize the "TouchScreen" project based on the "Einfachstrechner".

2   Product

One of the main goals is to find a universal debug solution for the ER.

Another goal of the project is to improve an existing LCD-touchscreen which is controlled by an ARM mounted on a given board. On the Board, there is also a FPGA, which already contains an Einfachstrechner, that manages the interaction between the ARM-CPU and the touchscreen. That "Einfachstrechner" has an additional task : it has to probe which field is pressed (polling) on the touchscreen, save that information into a register and send an interrupt to the ARM. The ARM CPU reads the register of the "Einfachstrechner", containing the index of the pressed touch panel field.

The already existing assembler will be realised as a console program (JAVA) executeable with parameters that is able to handle comments. So the user is able to use a professional editor with lots of enhanced features. The current assembler with editor does not even provide common functions like undo (Strg+Z).

We will implement an all-in-one solution. A GUI that contains a good editor, which provides the interface to assemble source code and a single-step-mode for a better debugging of the device.

3   Requirements

- Development Board with touchscreen

- PC with USB interface for the connection with the ARM CPU (uLink)

- PC with parallel port for the connection with the "Einfachsrechner" (ByteBlaster II)

- serial cable for debugging

- VHDL Software for development of the "Einfachstrechner"

- Assembler for the "Einfachstrechner"

- Development Board (with FPGA Chip and EEPROM)

4   Features

- The features of the previous project, which affect the function of the LCD-Display are maintained.

- The Editor (GUI) is the central controller for the assembler and debugger. It contains such features like syntax-highlighting and undo. From the editor the user is able to assemble (F5) or to walk through the program by single-step-mode (F10). The GUI therefore displays the source code and some registers (PC and instruction register). The current by the Einfachstrechner processed line is marked.

- The logic for polling the touchscreen is integrated into the existing "Einfachstrechner" inside the FPGA.
  The "Einfachstrechner" is able to poll the touchscreen, save the inputs to a register and sends an interrupt to the ARM-CPU.

- The assembler software translates programs into machine language. The assembler software supports predefined values, symbolic variables.

- Demo program for demonstrating the features of the product.

5   Constraints

The end of the elaboration phase is planed for november the 6th 2006.

The system and all manuals, datasheets must be done before the 8th of december 2006.

Customer Release is planed for december the 11th 2006.

Presentation is planed for december the 18th 2006.