"TouchScreen" project

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Detailed Project Plan V0.2
written by Eduard Heidt

This documentation contains the Detailed Project Plan of the project "TouchScreen TI6"

V0.1	2006-11-1	Initial Release
V0.2	2006-11-13	Boot Loader
V0.2	2006-11-27	Final

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1 Detailed Project Plan

Each team member has a specific task:

FPGA programming: Alexander Irro

- Main Points: Debug-clocking-mode, ER ROM as RAM

ER1 programming: Jan Helber

- Main Points: ER programming, E.R.D.E. help

E.R.D.E. (ARM-Board): Albert Dorn

- Main Points: E.R.D.E. (ARM-Board)

E.R.D.E. (Host-Pc): Eduard Heidt

- Main Points: E.R.D.E. (Host-Pc)

Assembler: Cedric Pilot

- Main Points: Assembler console-application, syntax, error-messages, hex-dump-output, AND #0 Bug

2 Description of single jobs

2.1 ER Debug-clocking-mode

Description:

The current VHDL ER model have to be extended. It should be possible to disconnect the internal clock source of the ER to clock the ER by the ARM.

There should be 2 Registers, one for switching the debug-mode and one for clocking.

Depends on: nothing

Responsible: Alexander Irro

Resources: 10 hours

2.2 ER Rom as Ram

Description:

The current VHDL ER ROM Model have to be changed into a RAM. This change gives tho possibility to write ER machine code directly by ARM. The ER should work as before.

Depends on: nothing

Responsible: Alexander Irro

Resources: 30 hours

2.3 E.R.D.E. (Host Pc)

Description:

Development of a C# Windows application that is the main development tool for the ER. E.R.D.E. stays for Einfachst-Rechner-Development-Environment. It has an syntax-highlighting editor supporting the ER Assembler Code. It makes possible to debug the assembler-code by using the serial COM interface to communicate with the Debugger-Routines on the ARM-Board with a defined message protocol. It is executing the Assembler and is committing the current Assembler file (*.er1) as a parameter. It redirects the standard-output of the Assembler into the same GUI for showing the error messages. The hex-dump-output generated by the the Assembler should be sent to the Debugger on the ARM.

Depends on: E.R.D.E. (ARM-Board), Assembler

Responsible: Eduard Heidt

Resources: 40 hours

2.4 E.R.D.E. (ARM-Board)

Description:

The E.R.D.E. Debugger on the ARM-Board is triggered by serial COM interrupt. Depending on the message it disconnects the ER clock from its clock-Source and clocks it by self. The Debugger routines should be separated in extra source files, that can be easily be included, for example by the LCD-demo-program.

Depends on: E.R.D.E. (Host-Pc), FPGA programming

Responsible: Albert Dorn

Resources: 10 hours

2.5 ER machine-code-transfer

Description:

The Debugger is receiving machine code from E.R.D.E. This machine code should be buffered and transfered into the ER RAM. The Debugger Routines should be separated in extra source files, that can be easily be included, for example by the LCD demo program.

Depends on: E.R.D.E. (Host Pc), FPGA Programming, Assembler

Responsible: Albert Dorn

Resources: 30 hours

2.6 Assembler console-application

Description:

The current Assembler that has a GUI should be changed into a console-application. The console-application will be executed by the E.R.D.E (Host-Pc), the first parameter is the Assembler file (*.er1). The Assembler should create the output file in the same folder with the same name with a .vhd extension. The Assembler should be finally released as a .exe file.

Depends on: nothing

Responsible: Cedric Pilot

Resources: 10 hours

2.7 Assembler hex-dump-output

Description:

The output of the current Assembler is the VHDL ROM model as the *.vhd file. For transferring the translated machine code through the ARM we need the raw output. So there should be one more output as a *.hex file that contains the raw machine code.

Depends on: nothing

Responsible: Cedric Pilot

Resources: 5 hours

2.8 Assembler syntax

Description:

The Assembler should support comments (for example: LOAD #ONE ;comment) The Assembler should support HIGH/LOW case commands.

Depends on: nothing

Responsible: Cedric Pilot

Resources: 10 hours

2.9 Assembler error-messages

Description:

The Assembler should show errors in line-numbers and not in character-positions.

Depends on: nothing

Responsible: Cedric Pilot

Resources: 10 hours

2.10 AND #0 Bug

Description:

The task is to find out, what is behind the Assembler AND #0 Bug.

Depends on: Debugger (ARM Side)

Responsible: Cedric Pilot

Resources: 5 hours

2.11 ER programming (polling)

Description:

Developing the ER program on the E.R.D.E for polling the touch pad. This task also includes testing the whole system (Assembler, E.R.D.E).

Depends on: everything

Responsible: Jan Helber

Resources: 15 hours

2.12 ER programming (RAM copy)

Description:

Developing the ER program that copies the RAM from some inputpins to the ER RAM.

Depends on: everything

Responsible: Jan Helber

Resources: 15 hours

2.13 E.R.D.E. help

Description:

Documentation of the functionality of the E.R.D.E and the assembler syntax. It has to be a simple html file, that is opened by the E.R.D.E using the c:\windows\hh.exe. The hh.exe is distributed with MS Windows.

Depends on: E.R.D.E Application

Responsible: Jan Helber

Resources: 10 hours