CICADA Note #5
Basic iMPACT Guide
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This guide contains:
1. Instructions for using iMPACT to load designs directly into the FPGA.
2. Instructions for using iMPACT to load designs onto the iBOB's flash memory.
3. Instructions for creating MCS files. MCS files are the files iMPACT uses for loading designs into flash memory.
4. A listing of ready to use designs located in the c:\shared\impacted directory.

Loading designs directly into the FPGA does not take as long as loading them into flash. However designs loaded into flash will automatically start when the iBOB is restarted.

You can find several designs ready to be loaded in the c:\shared\impacted directory on ECHO.

The knowledge in this guide was gained partly through trial and error, but mostly from the CASPER guide: http://seti.berkeley.edu/casper/memos/ibob_prom_proc.pdf.

This document can also be found at:

https://wikio.nrao.edu/bin/viewfile/CICADA/CicadaNotes?rev=1;filename=ibob_prom_proc.pdf

1. Steps for programming a design directly into the FPGA:

--> Start iMPACT.

> --> When asked whether you would like to "load most recent project" or "create a new project" choose "Cancel".

> --> Right-click on the white area where it says "Right click to Add Device or Initialize JTAG chain".

>> --> Click "Initialize Chain".

> --> Two devices will be found, the first device is the FLASH and the second device is the iBOB's Virtex II chip.

>> --> Click "OK" on the Boundary-Scan Summary dialog.

>> --> When prompted to "Assign New Configuration File" for the FLASH, choose "Bypass".

>> --> When prompted to "Assign New Configuration File" for the Virtex II, navigate to and select the BIT file for your design.
>> NOTE: bit files are located in \<xsg project directory>\bit_files

>> --> Click "OK" when prompted to add object files.

> --> Right-click on the symbol which represents the FPGA. (This is the symbol on the right which says xc2vp50 underneath it.)

>> --> Choose "Program".

>> --> Click "OK" on program options.

>> --> When programming has succeeded, exit iMPACT and choose not to save changes to the project file.

2. Steps for programming a design into the iBOB's FLASH:

Before loading a design you will need a MCS file for the design. If you do not have an MCS file for your design you will find instructions for making such a file in the section titled "Steps for creating MCS files"

--> On the iBOB.
> --> Move the jumper for header pins J15 to the middle set of pins.
> > (pins 3 & 4)
>
> --> Make sure iBOB is on.

--> Start iMPACT.
> --> When asked whether you would like to "load most recent project" or "create a new project" choose "Cancel".
>
> --> Right-click on the white area where it says "Right click to Add Device or Initialize JTAG chain".
>
> > --> Choose "Initialize Chain".
>
> --> Two devices will be found, the first device is the FLASH and the second device is the iBOB's Virtex II chip.
> > --> Click "OK" on the Boundary-Scan Summary dialog.
> >
> > --> When prompted to "Assign New Configuration File" for the FLASH, navigate to the design you want and choose "Open".
> >
> > --> When prompted to "Assign New Configuration File" for the Virtex II, choose "Bypass".
>
> --> Right-click on the symbol which represents the FLASH. (This is the symbol on the left which says xcf32p underneath it.)
> > --> Make sure "Erase before Programming", "Verify", "Load FPGA", and "Parallel Mode" are all checked.
> >
> > --> Choose "Program".
> >
> > --> Click "OK" on program options.
> >
> > --> Wait a few minutes while the design is programmed.

--> Once the programming is successful.
> --> Exit Impact. Enter "No" when asked to save.
>
> --> Turn the iBOB off.
>
> --> Move the jumper for header pins J15 to the bottom set of pins.
> > (pins 5 & 6)
>
> --> Turn the iBOB back on and your design should be loaded.

3. Steps for creating MCS files:

These steps take a BIT file and create a PROM file.

--> Start iMPACT.

    --> Choose to "create a new project" and select the location and name for your new project.

        --> Click "OK".

    --> Choose "Prepare Configuration Files" and click "Next".

    --> Choose "PROM File" and click "Next".

    --> Choose a name for the PROM file and click "Next".

    --> Choose "xcf32p" from the drop-down list next to the "Add" button.

        --> Click the "Add" button.

        --> Click "Next".

    --> Click "Next".

    --> Click "Add File...".

        --> Navigate to your bit file and choose it.
          NOTE: bit files are located in <xsg project directory>\bit_files

        --> If you are prompted with:
          "WARNING:iMPACT: - Startup Clock has been changed to 'Cclk' in the bitstream
          stored in memory, but the original bitstream file remains unchanged."
          Just click "OK".

    --> When asked "Would you like to add another design file" choose "No".

    --> Click "Finish".

    --> Click "Yes" to generate file.

    --> Now save the project and exit iMPACT.