

ARMプロセッサ搭載FPGAによる 新しい読み出しシステムの開発

Development of new readout system using FPGA
coexisting with ARM processor

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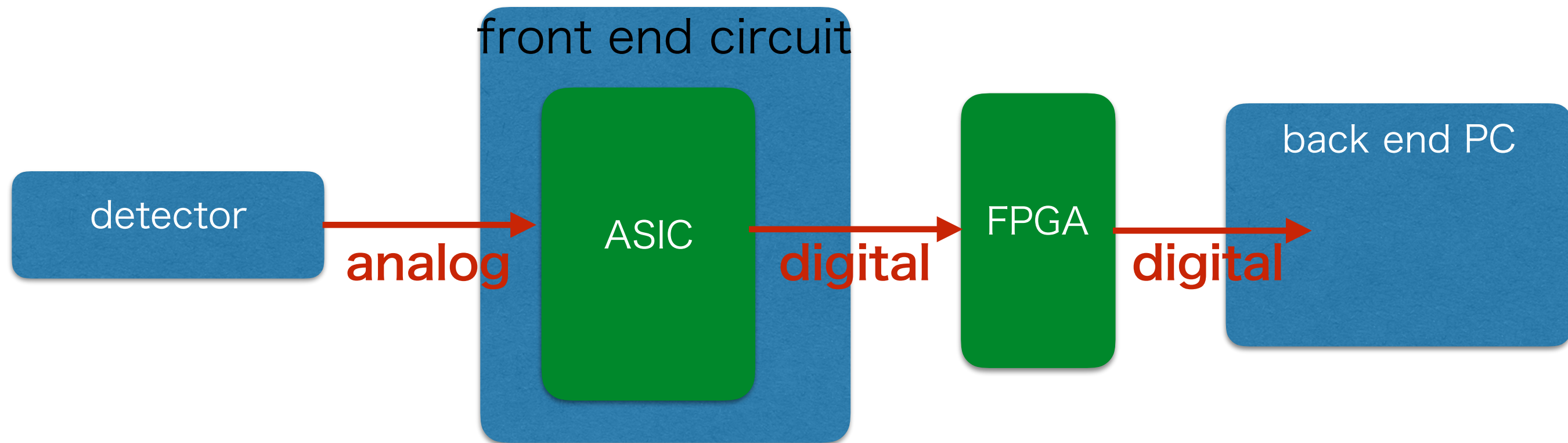
MENU

- Introduction
- Status
- Prospects

Introduction

- **FPGA(Field-Programmable Gate Array)**

We can arbitrarily design the **digital circuit** on FPGA.
It is used as media between frontend and backend.



ASIC (**A**pplication **S**pecific **IC**) :
analog and digital circuit, high cost

Introduction

- Zynq (FPGA coexisting with ARM processor)

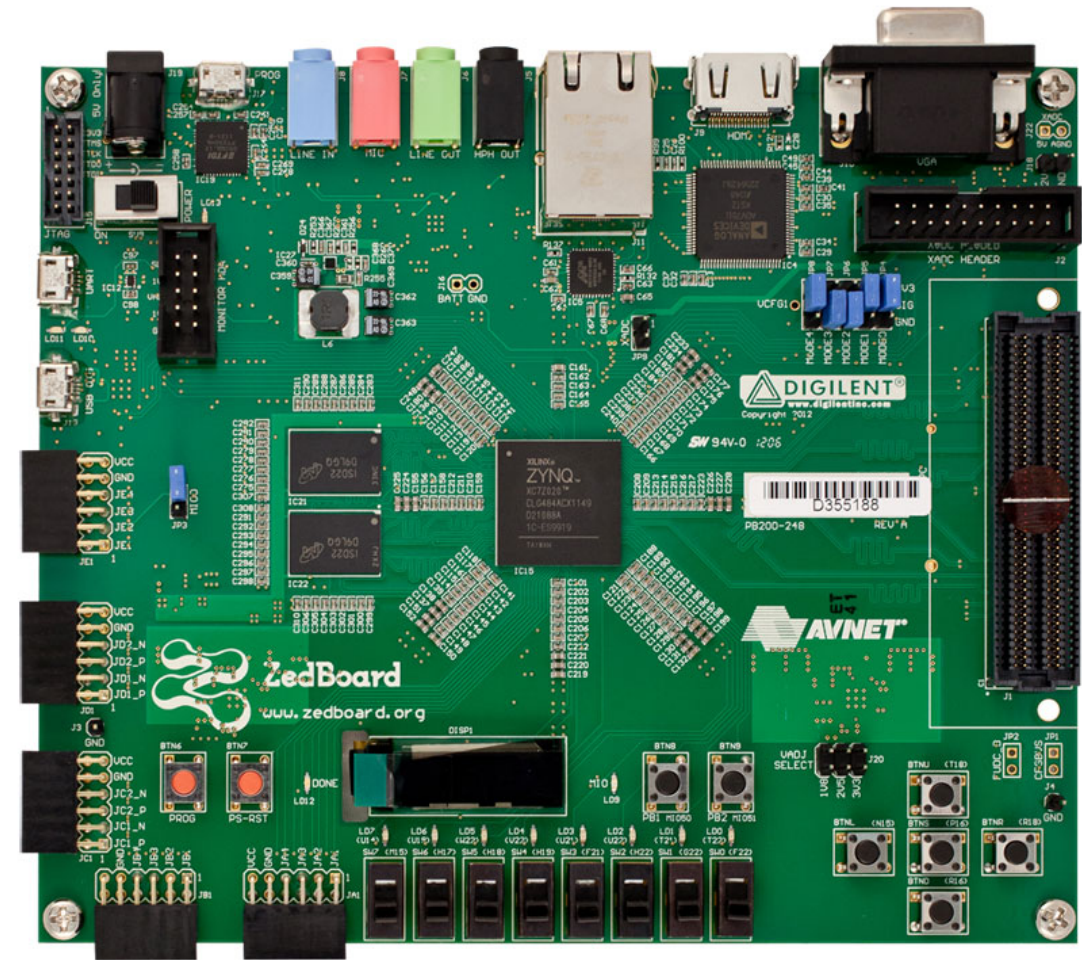
- Zynq = FPGA + ARM CPU

- Merit

we **can monitor** the data by on board CPU

we can use the software resources like OS

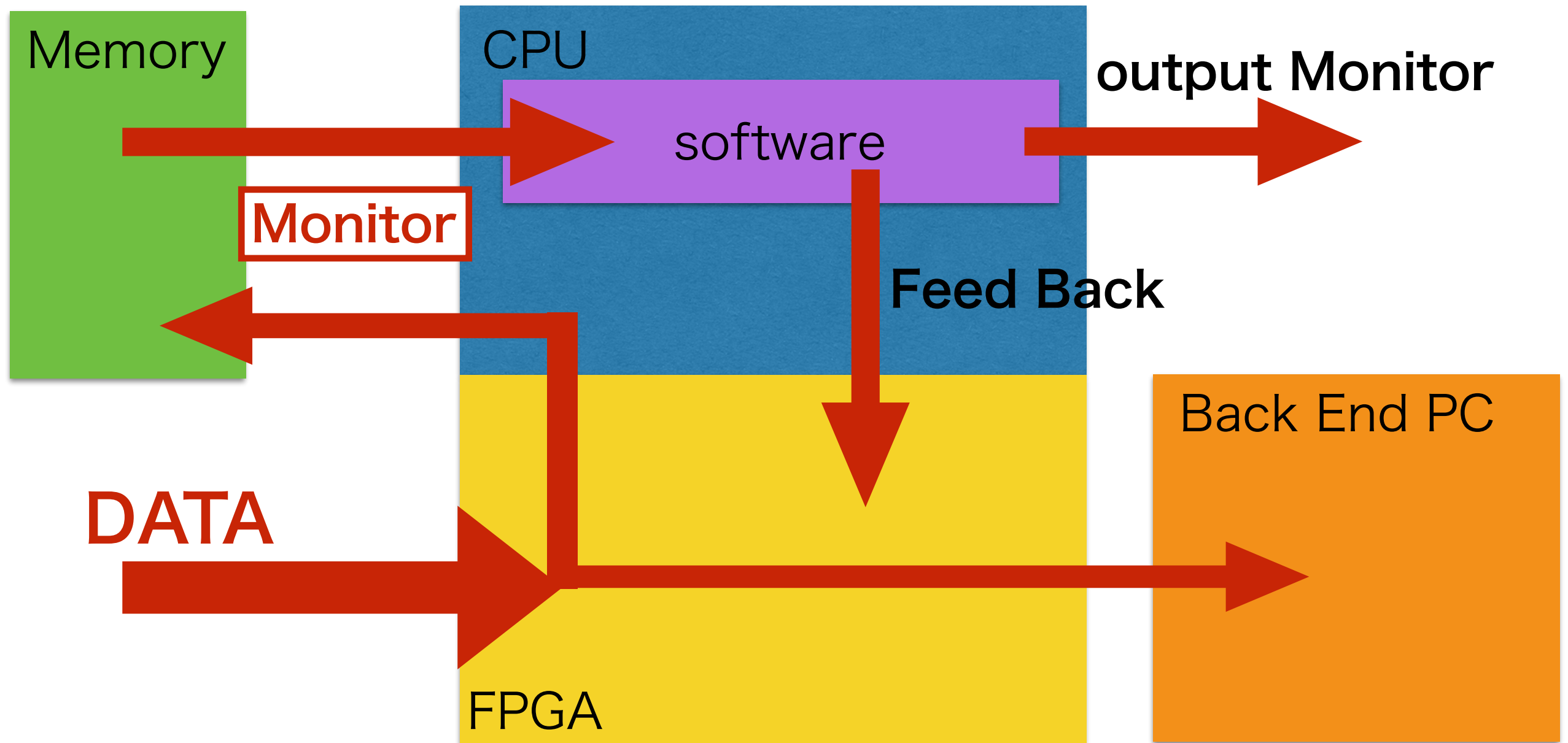
- > • easy deal of DATA
- easy data transmission for low traffic



ZedBoard

Introduction

looking ahead to



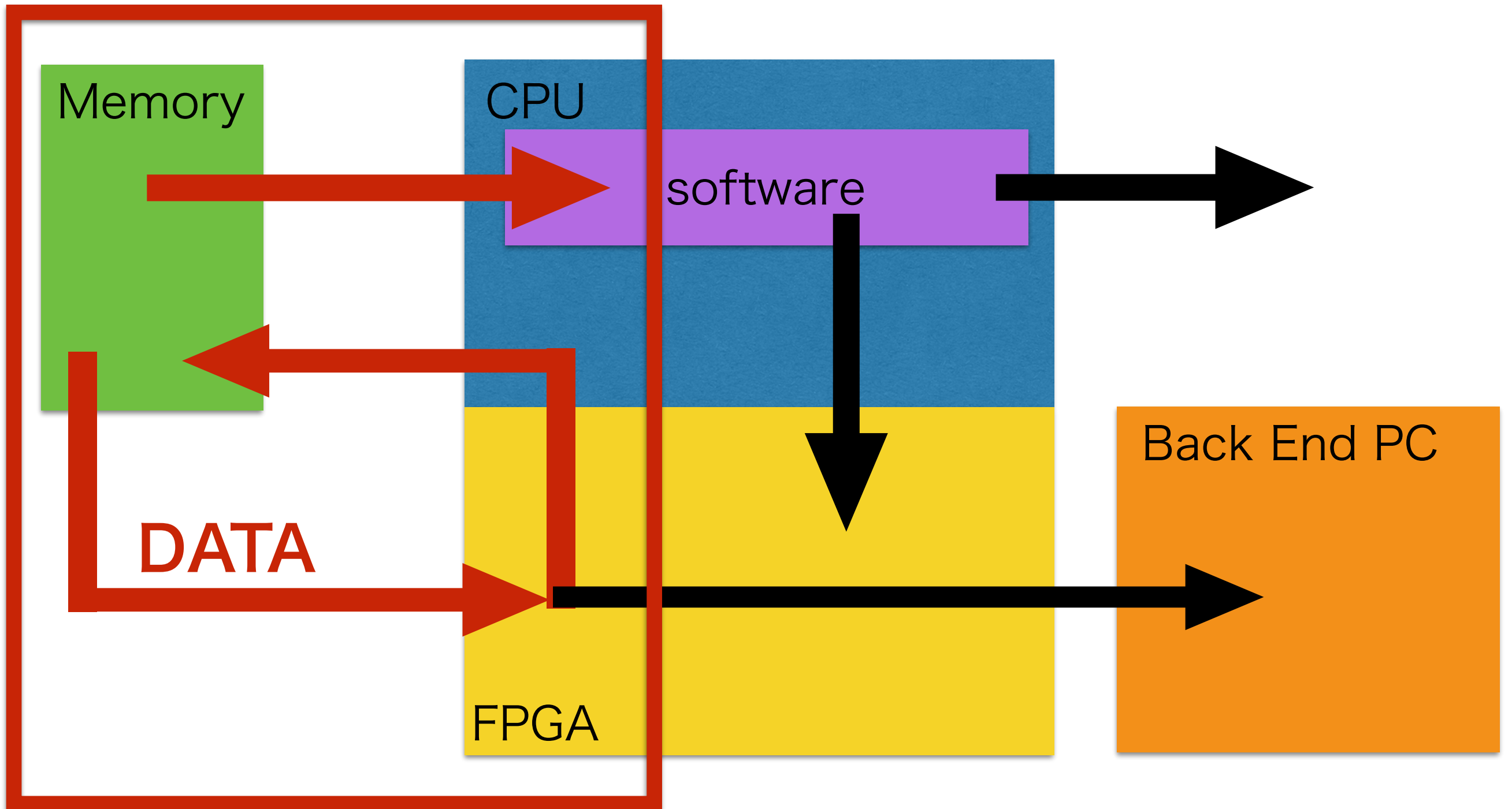
Status

I tested

- the communication between CPU and FPGA
CPU read FPGA register
- direct memory access
**move the data from region in DDR3 memory to
other region in same memory**

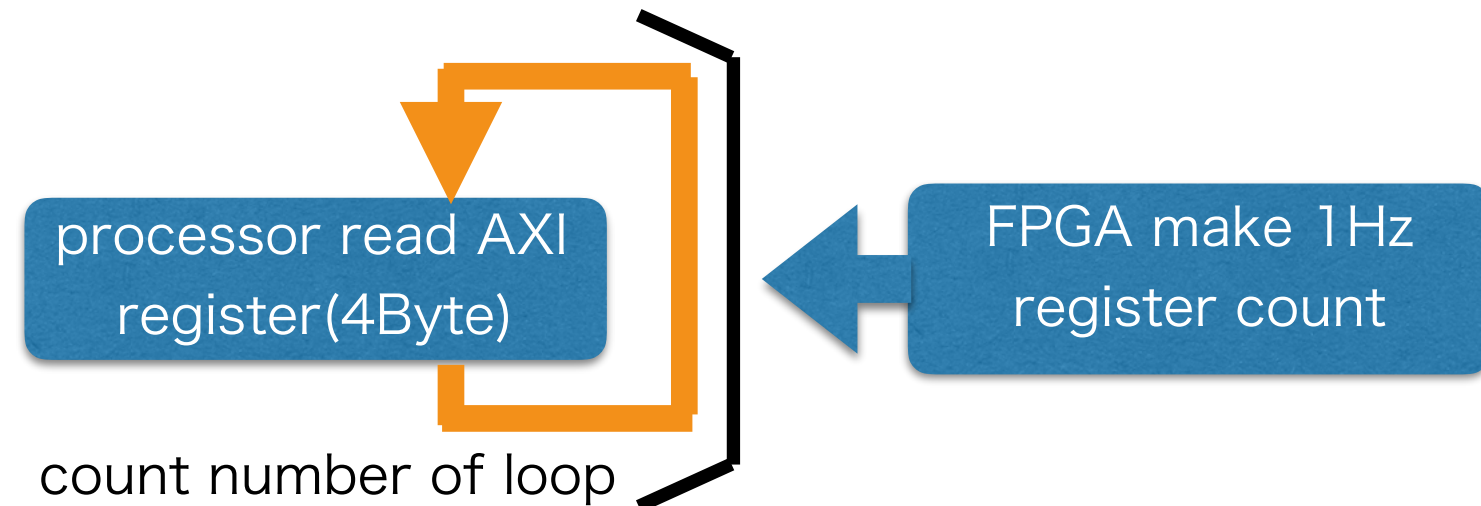
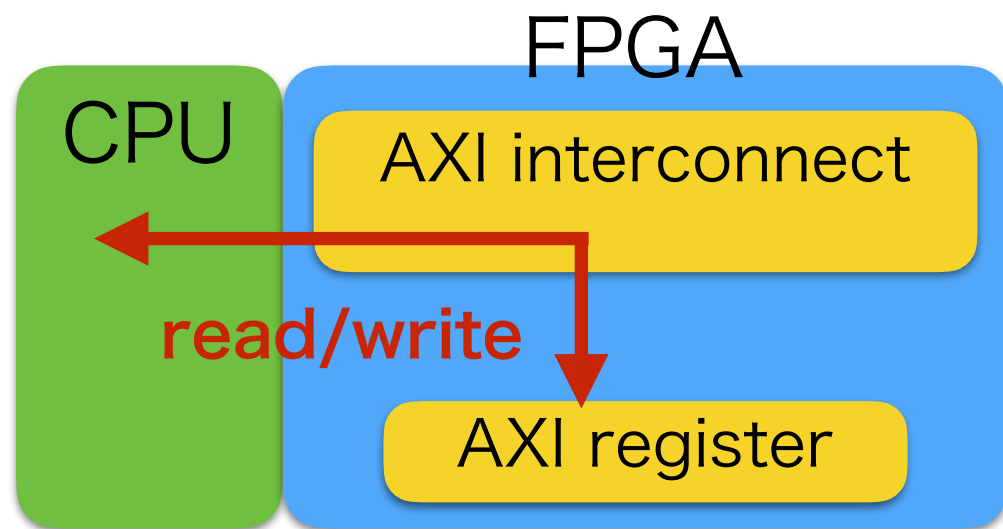
Introduction

I tested

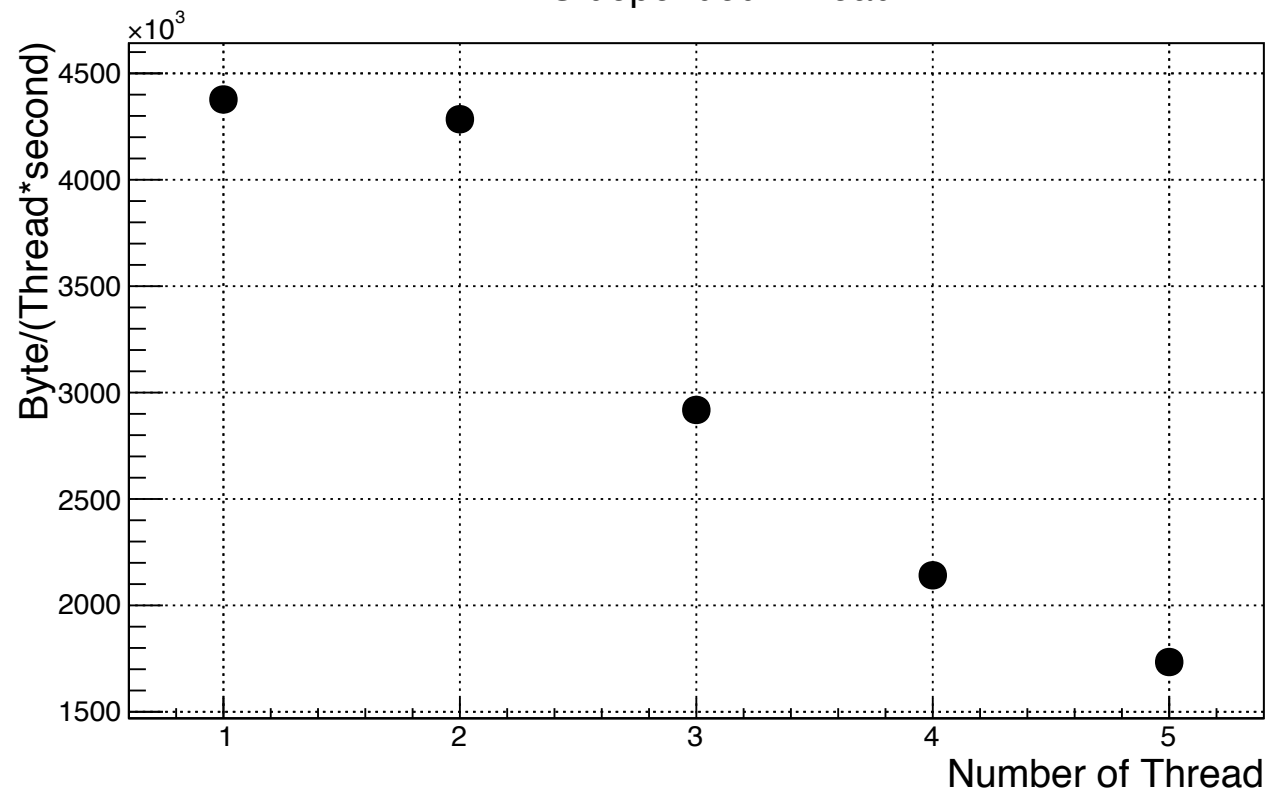


Status

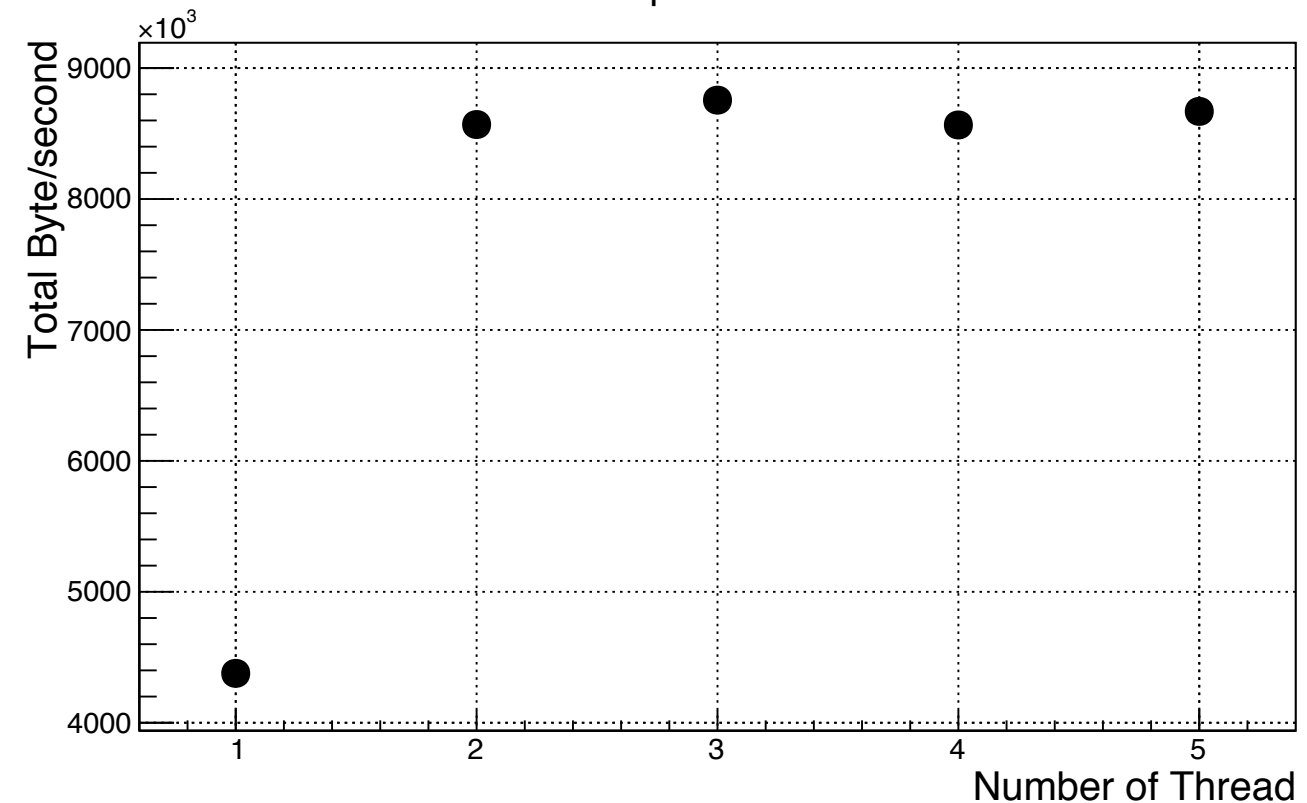
Test that CPU read FPGA register



BPS depended Thread



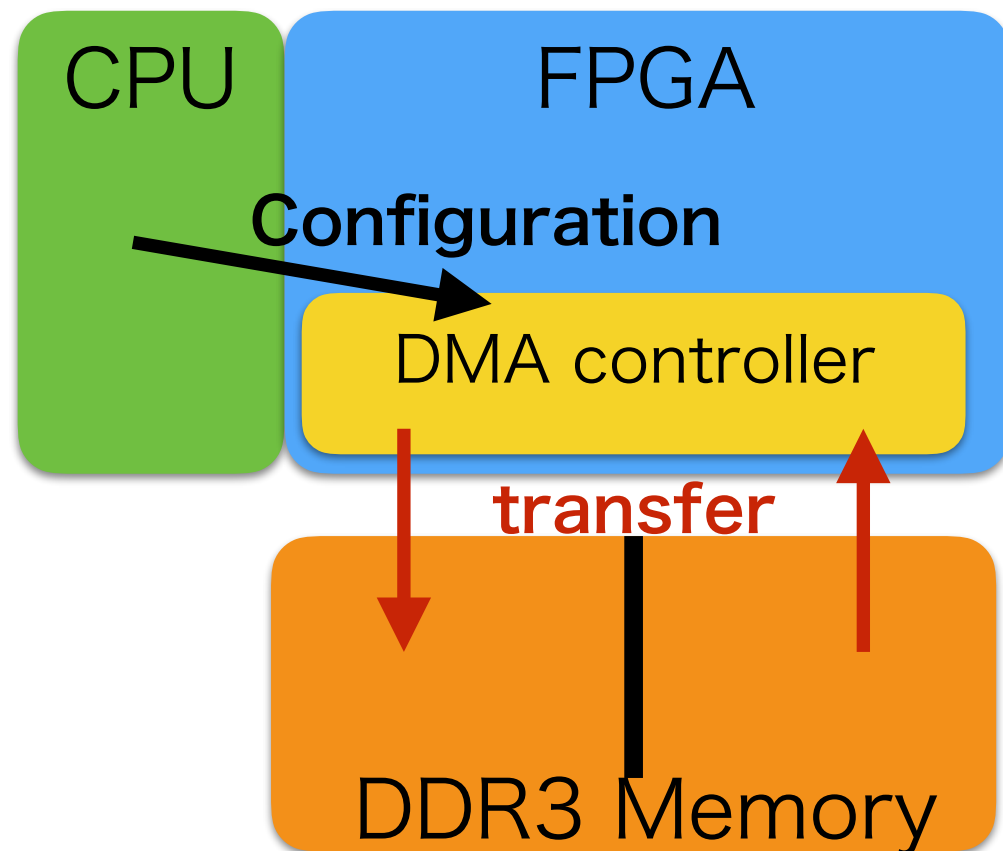
BPS depended Thread



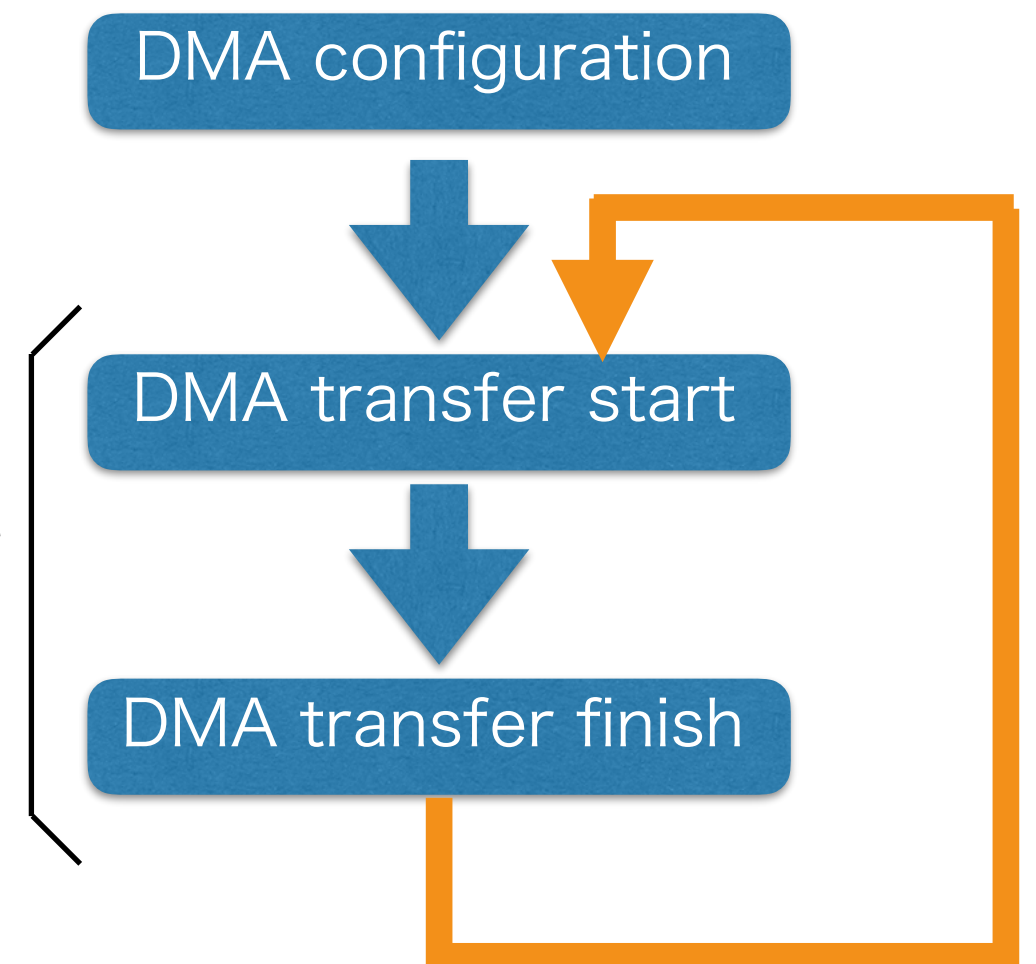
Status

Test that DMA transfer

data transfer from a region in DDR to other region



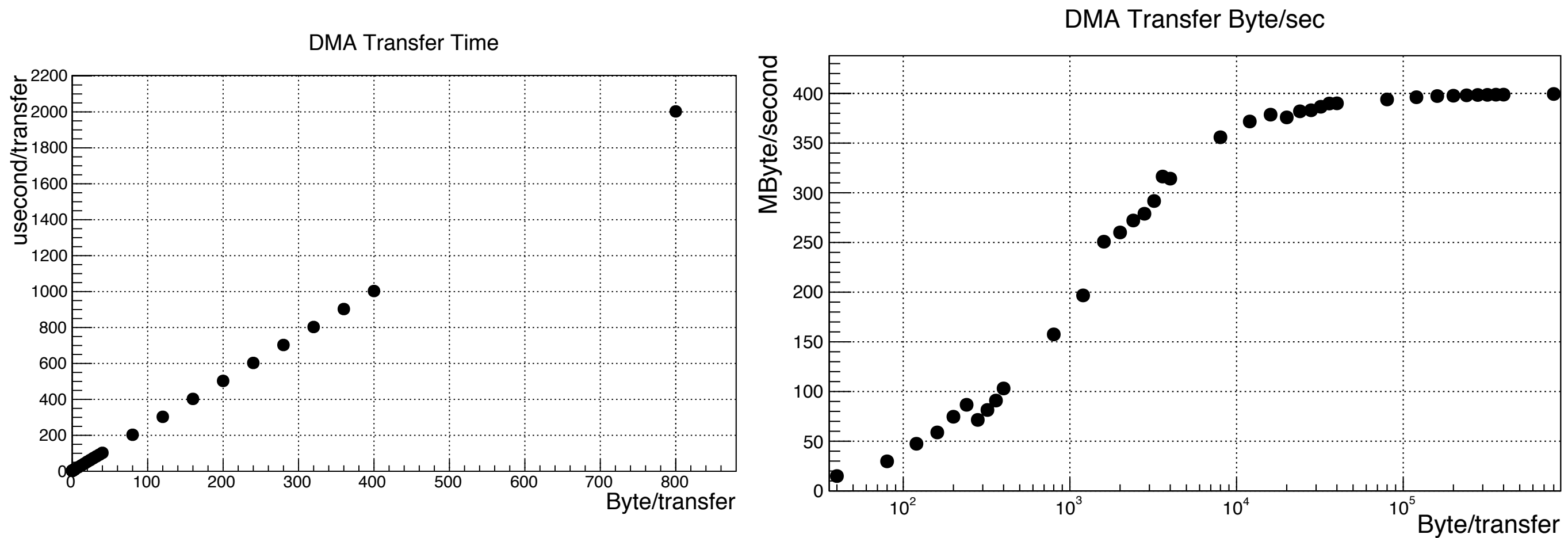
measure
time



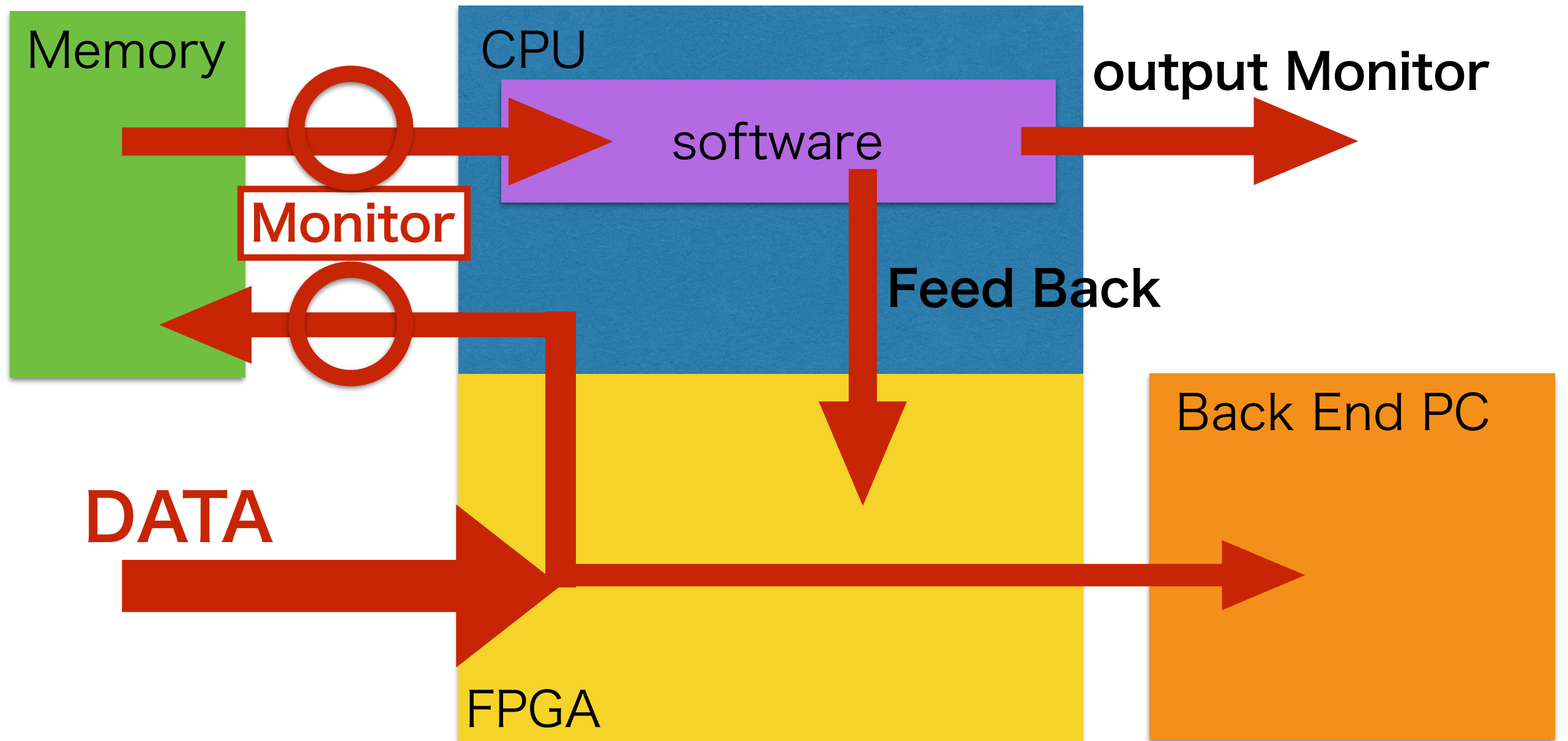
Status

Test that DMA transfer

300~400MB/s transfer is optimal in this range



Prospects



Prospects

On demand

