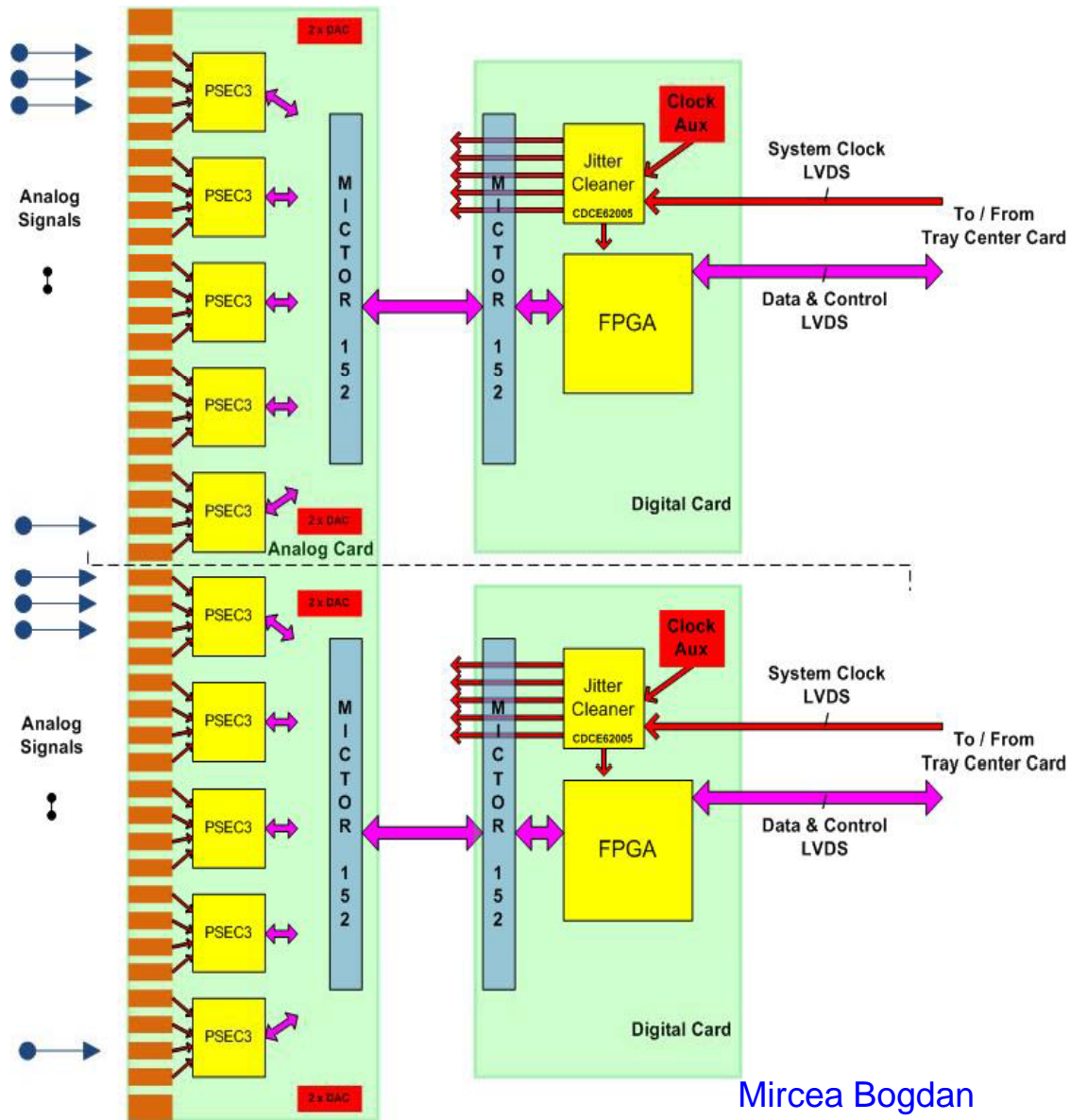


PSEC Beam Test Readout System

The University of Chicago

LAPPD Electronics and Integration Godparent Review
May 20, 2011

PSEC DAQ – Front End



Front End Electronics:

Analog Card

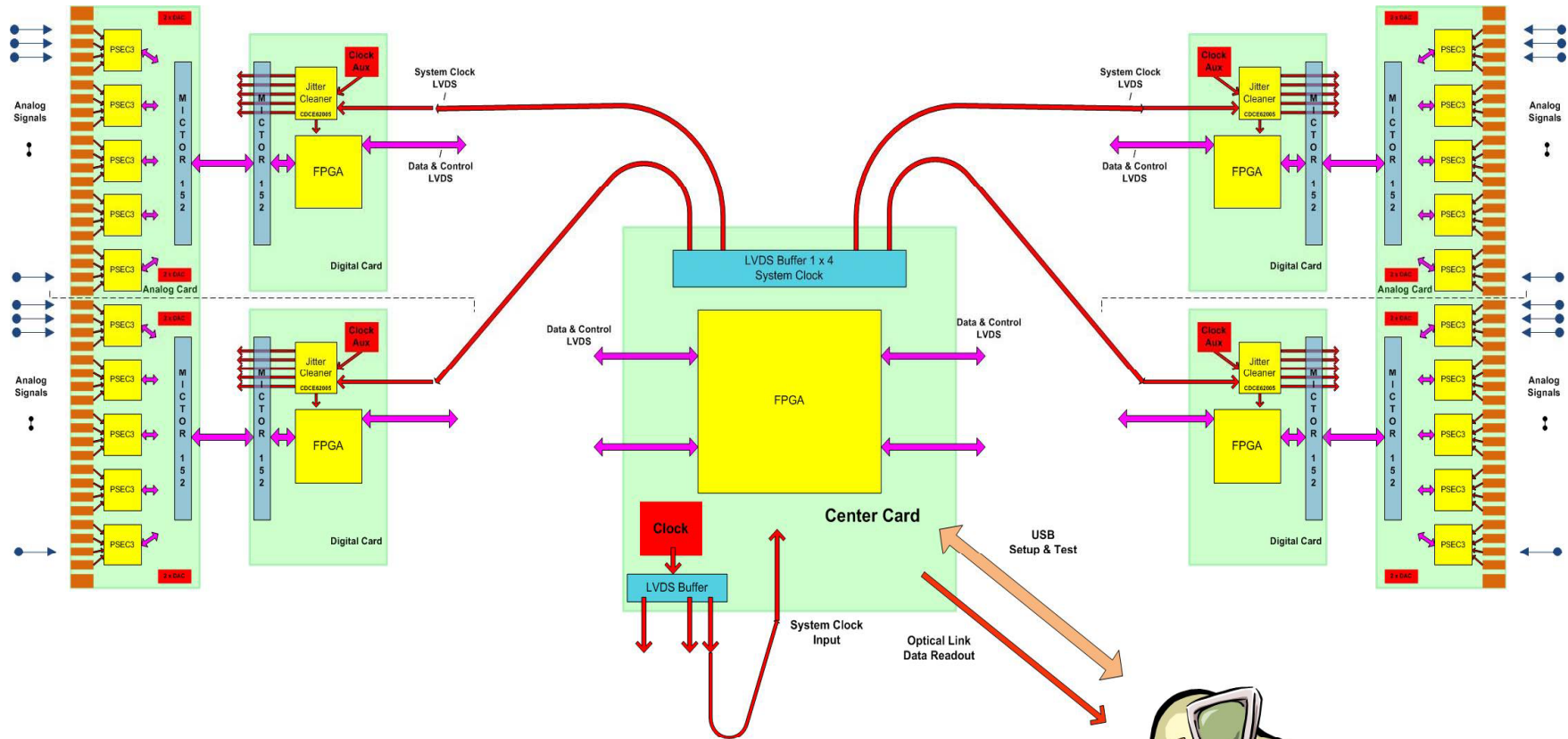
- Placed at Edge of Tile
- Receives 40 analog signals
- PSEC chips and DACs only
- Minimal width

-Digital Card

- Services 1/2 Analog Card
- System Clock - Clean/Fanout
- Interface between ASICs and Center Card

Mircea Bogdan

PSEC DAQ – Basic Readout Structure



Basic Structure: 2xAC + 4xDC + 1xCC.

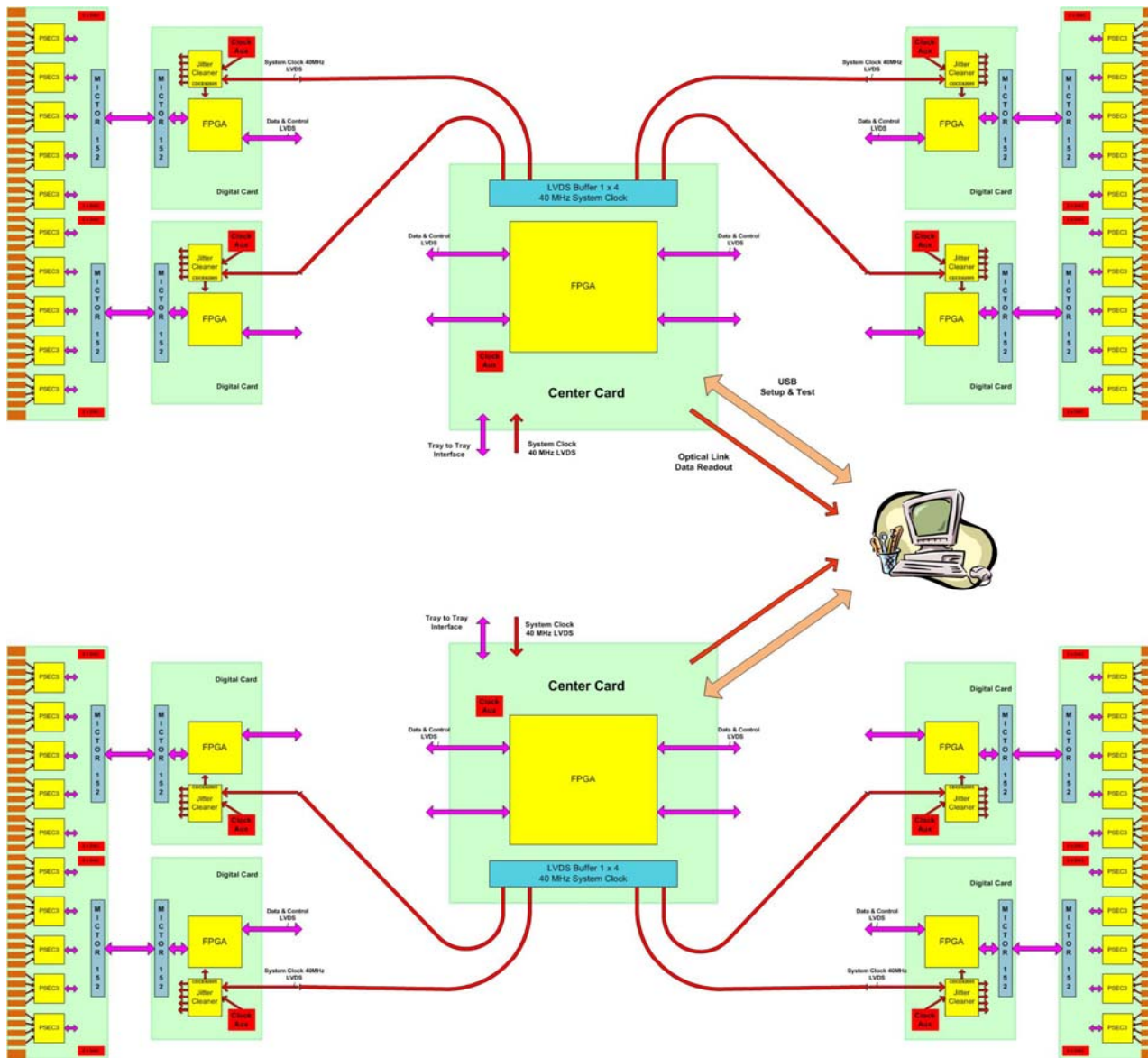
Center Card(CC):

- Can service 4 Digital Cards i.e. 2 Analog Cards placed at each end of the Tile;
- Runs on external system clock;
- Can generate system clock for other Center Cards and for itself.

Many such Basic Readout Structures can work in one system, on the same clock.

Mircea Bogdan

Beam Test Configuration

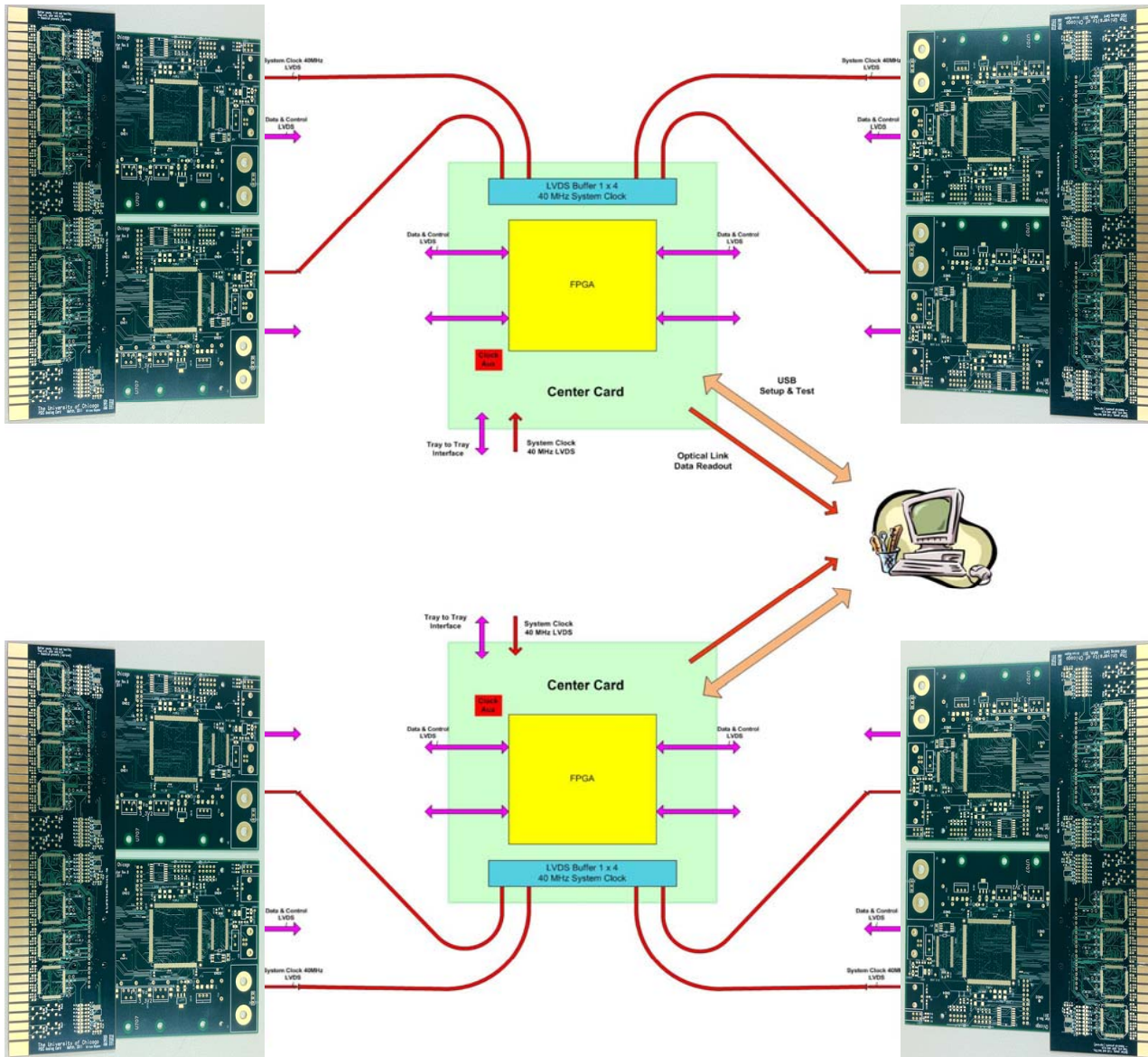


Custom Electronics:

- Analog Card
- Rev.A Design exists
- Digital Card
- Rev.A Design exists
- Center Card
- New Design required

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Beam Test Configuration



Existing modules:

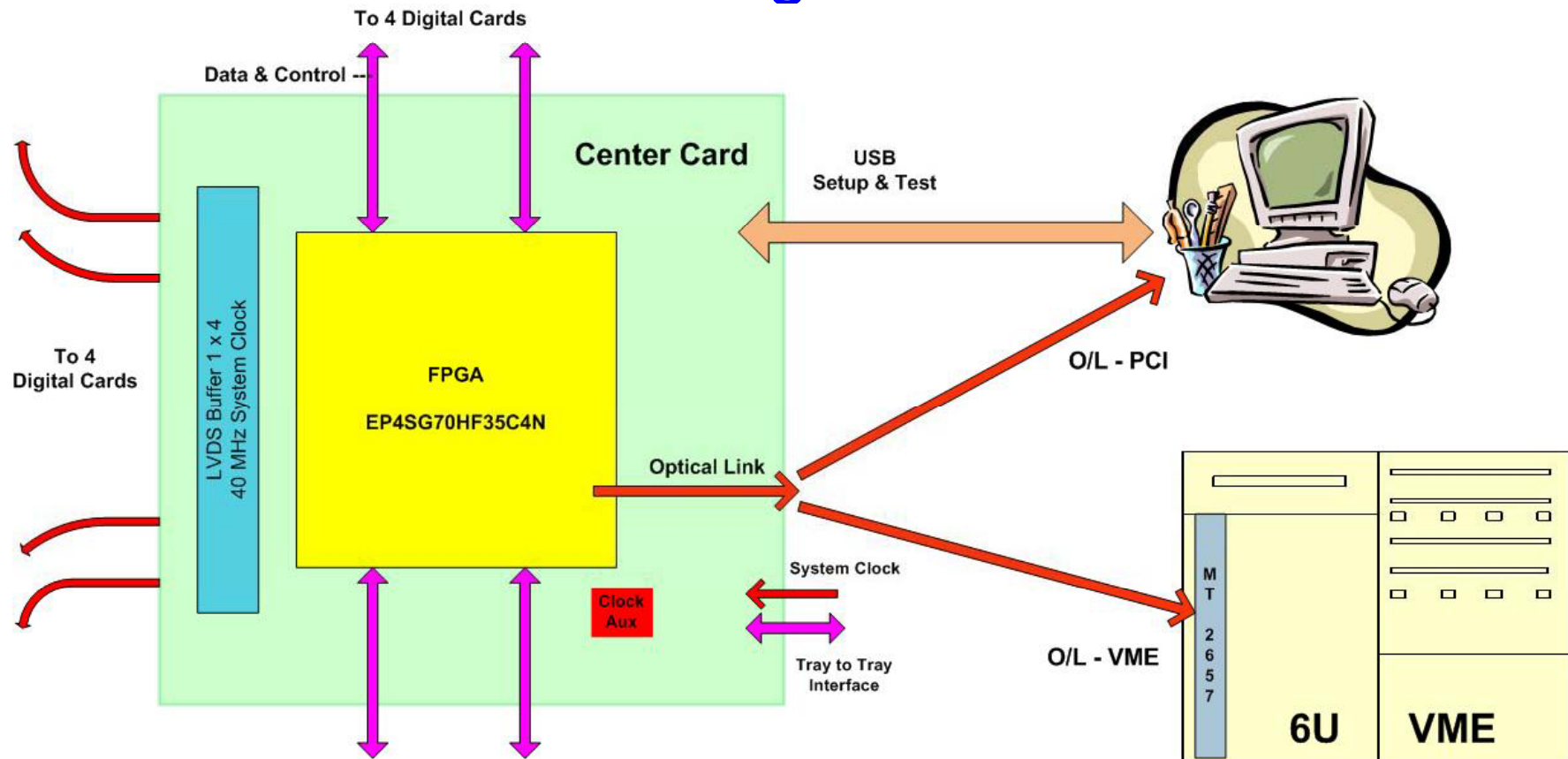
- Analog Card: Rev.A-PSEC3
- Digital Card: Rev.A-1 ASIC

New modules:

- Analog Card: Rev.B-PSEC3A
- Digital Card: Rev.B-5 ASICs
- Center Card: new design.

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Beam Test Configuration– Readout



- Readout Options:
- USB connection to Desktop
 - Optical Link connection to Desktop with CERN designed O/L-PCI interface
 - Optical Link connection to VME with existing Chicago MT2657 Card
(the MT2657 is a 6U VME Card with 2 x OL Transceivers TLK2501 and 1 Startix II FPGA)

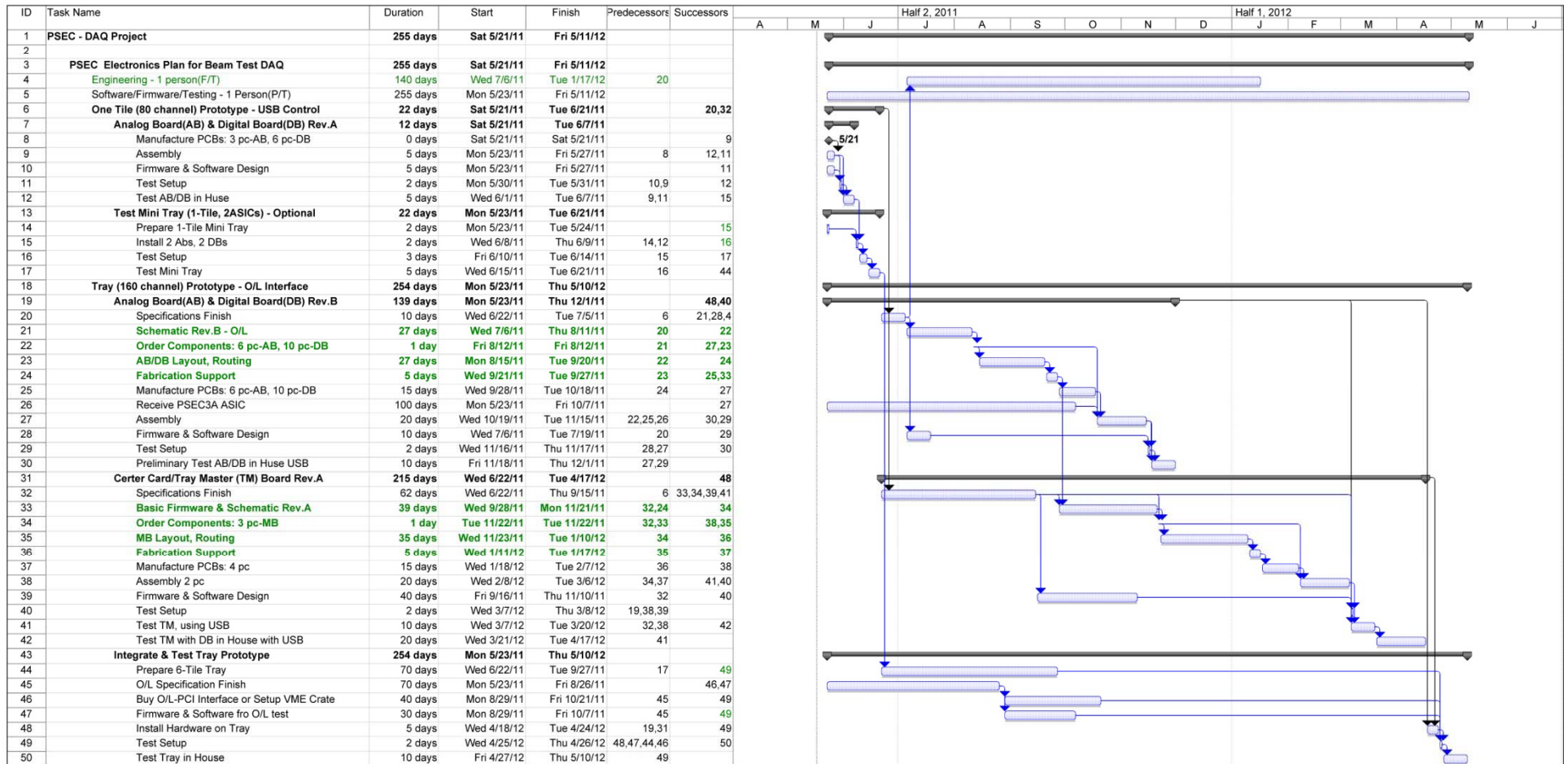
Obs. NO NEW CUSTOM HARDWARE IS REQUIRED FOR THE READOUT

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Beam Test DAQ System – Hardware Plans

- Install and test remaining PSEC3 QPF chips on current Analog and Digital Cards. We can do a preliminary Tray Operational Test with existing hardware and USB connection (2 or 4 Analog Cards, and only 2 pieces PSEC3 per Analog Card).
- Install and test PSEC3 dies on existing flip-chip mezzanine cards.
- Design and build Rev. B Mezzanine card for testing the new PSEC3A.
- Design and build Rev. B Analog Card to accommodate the new PSEC3A.
- Design and build Rev. B Digital Card to service 5 ASICs .
- Design and build new Center Card.

Beam Test DAQ System – Schedule



Project: PSEC_Beam_Test_Schedule2011.mpp
Date: Tue 5/17/11

Task Progress Summary External Tasks Split

Split Milestone Project Summary External MileTask

Mircea Bogdan