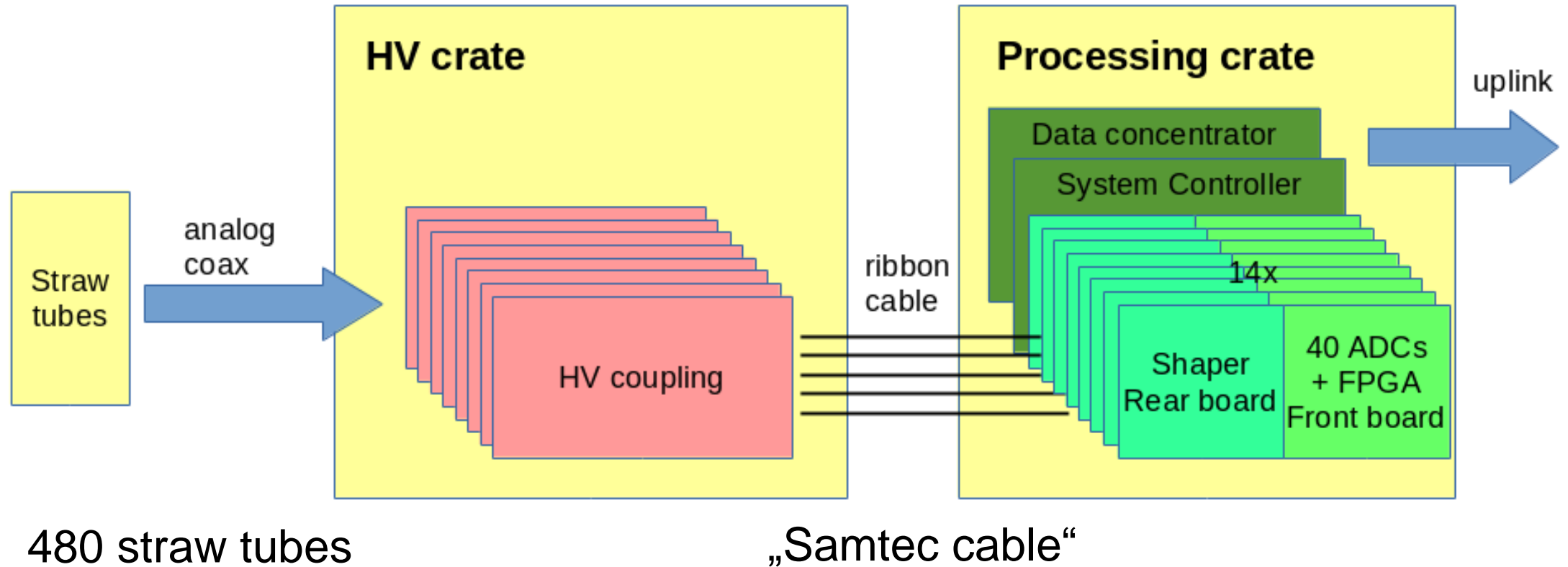


# STATUS OF ADC BASED DAQ FOR PANDA STT

## PANDA STT READOUT MEETING

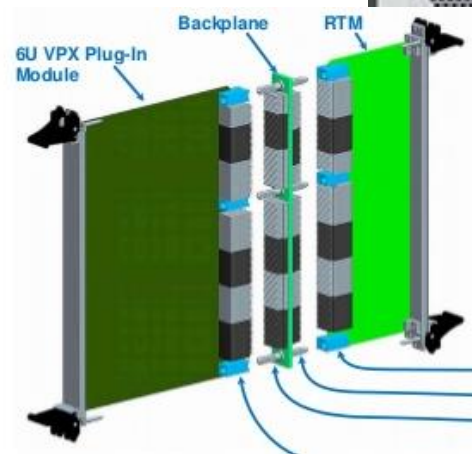
28. MAY 2018 | A. ERVEN, L. JOKHOVETS

# SYSTEM OVERVIEW



# CRATE

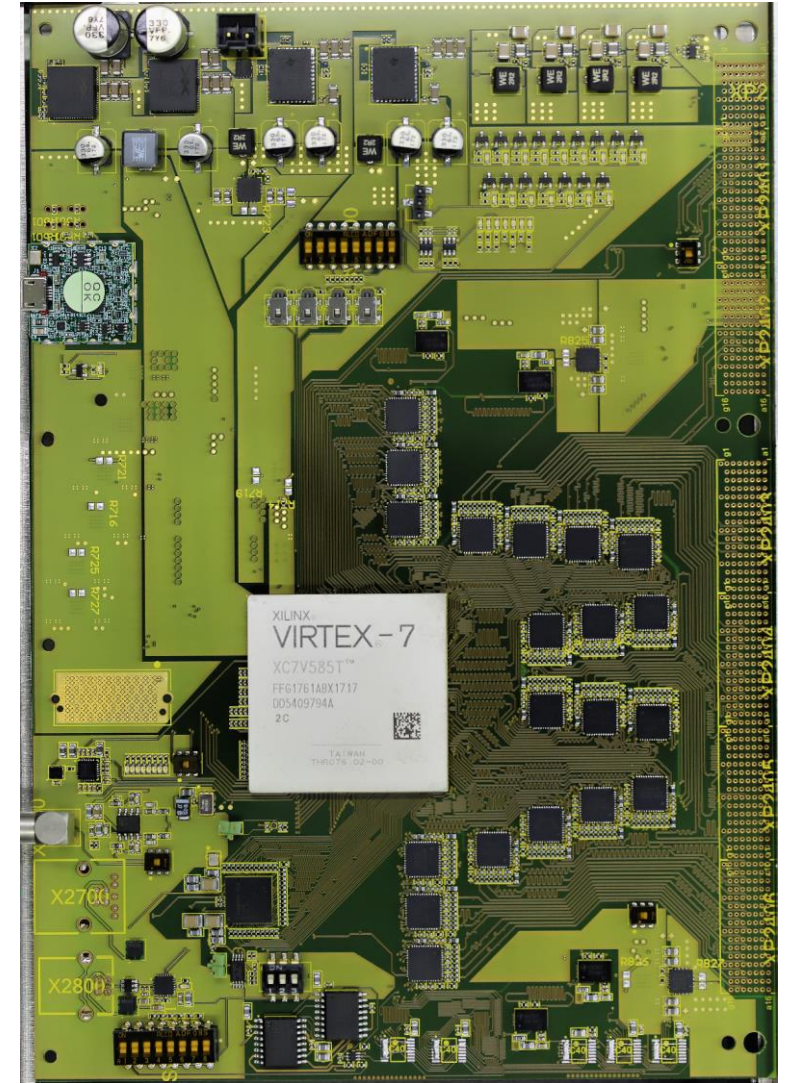
- Initial planning was based on ATCA standard, but changed to openVPX standard
- Advantages
  - Introduction of Rear Transition Module (RTM) allows separation of analog and digital part
    - independent development
  - Highspeed Board-to-Board and Controller-to-Board communication
  - Enough connections for RTM-communication
  - Compact boards for short signal lines to backplane and ADC
  - Backplane adapted to our needs and crates produced by ELMA (very smooth development)





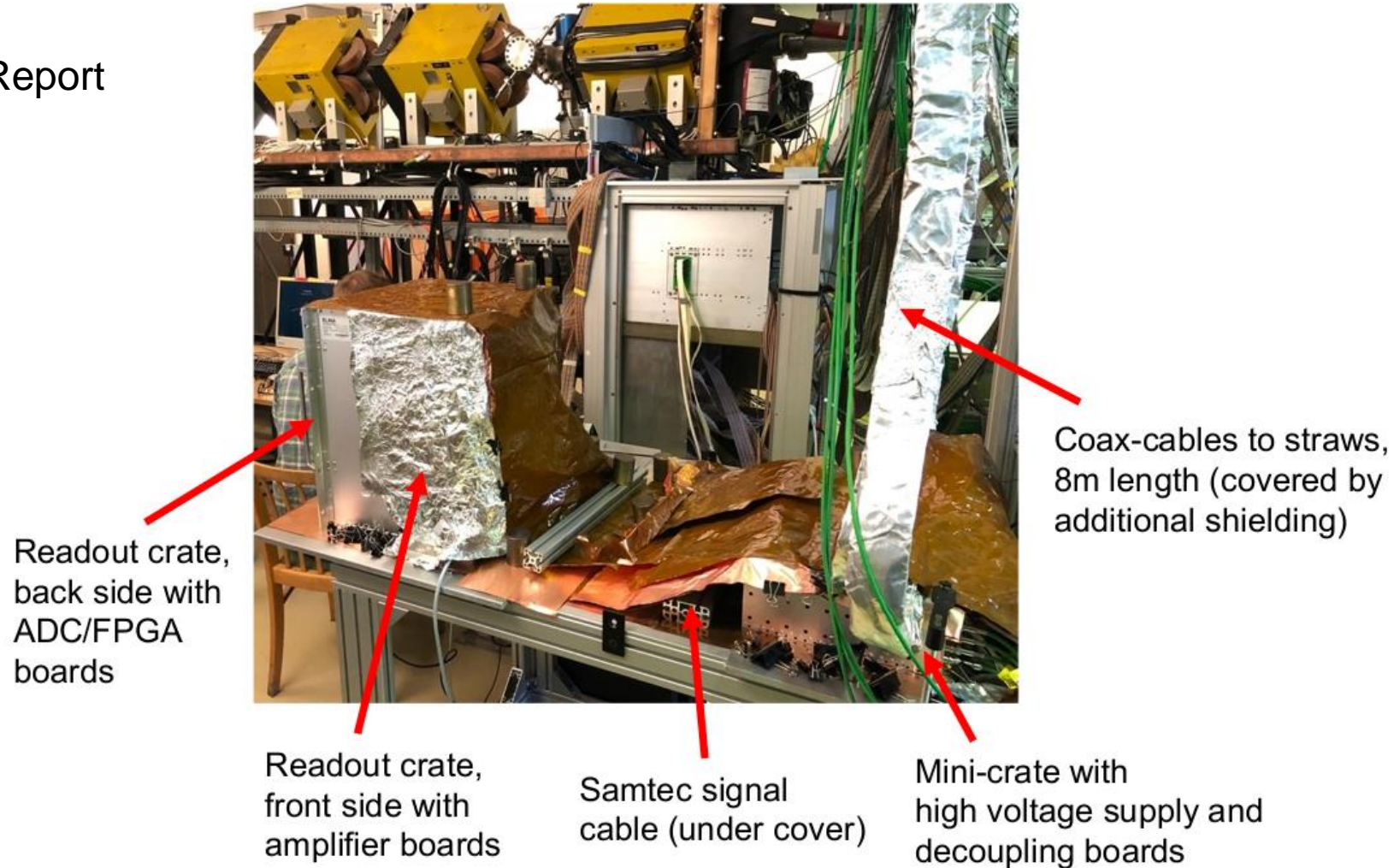
# PROCESSING BOARD

- Sampling for 160 channels, 40 4-channel ADC
- Signal processing in single FPGA
- Layout was done with high attention on length compensation of signal lines
- Modules were produced with high delay, but
- **Modules run very well**  
**(high complexity, first revision)**
- All 3 Modules produced run reliable during startup and beam time
- For further production, no extensive redesign is needed, just small modifications



# MEASUREMENT SETUP

Beamtest Report  
from Peter:

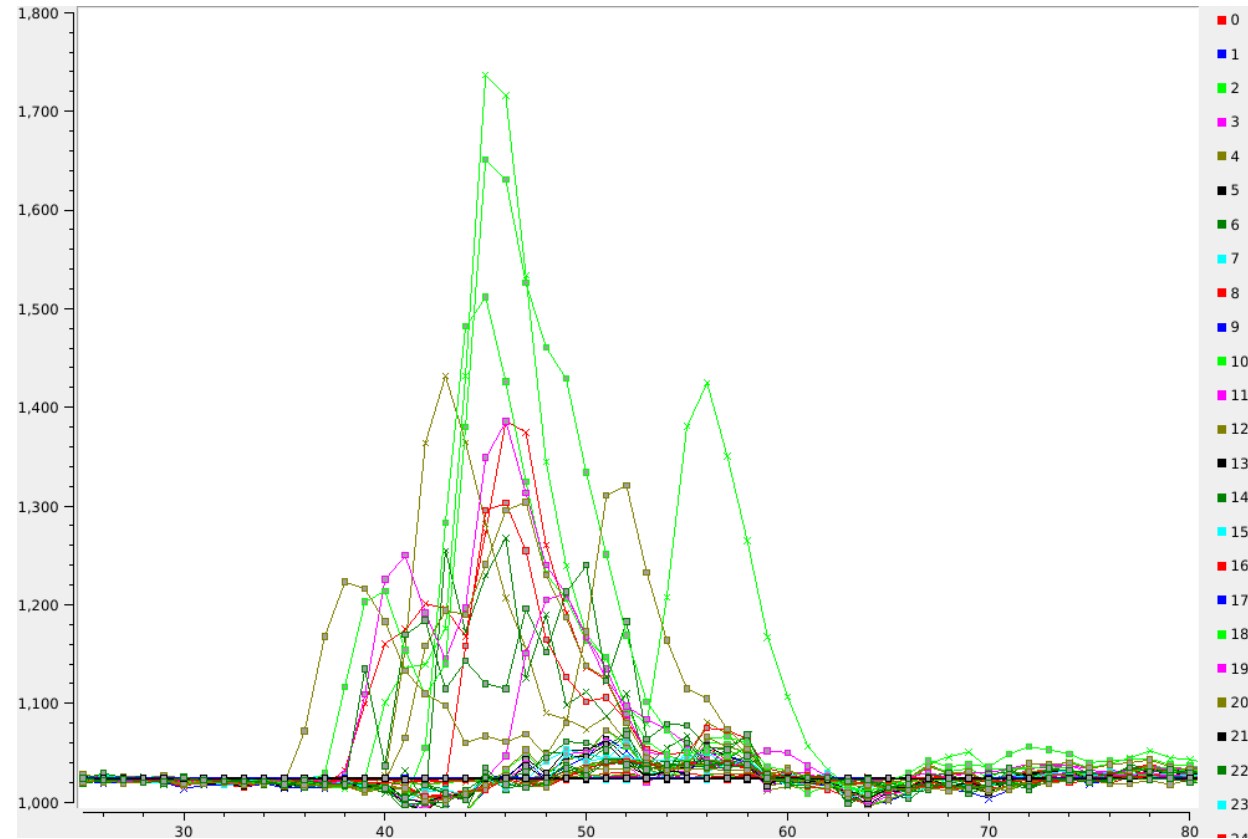


# BEAMTEST

Due to delays, setup with limited number of channels was used

- One RTM / One Processing Board
- Layout error on RTM: 20 channels were not connected to Processing Board
- Generation of firmware for all channels very time consuming → used firmware with readout of 64 channels
- Shielding of cables HV <-> Processing Crate mandatory

# BEAMTEST



- Sampling of Straw Pulses @ 100MHz



# SUMMARY

- Successful development of electronics for ADC based DAQ system:
  - Crate, Amplifier Board, Processing Board
- Functionality of system could be shown
- Modules are ready for production with minor changes

# OUTLOOK

## General tasks to do

- Firmware development
  - Processing (almost done), communication, integration of SODA
- Development of System Controller and Data Concentrator
- Second revision of both boards (minor changes), will be done by us, no risks and additional costs

Estimation for needed time  $\approx$  2 years