



## ROI Data Format and Frame Handler Status

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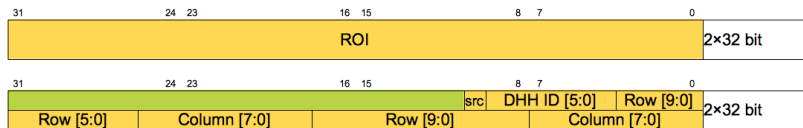
4<sup>th</sup> Belle II PXD/SVD Workshop

21.-23. October 2013, DESY, Hamburg, Germany

1 ROI Data Format

2 Frame Handler

- **ROI format now fixed**  
(proposal at Gemba meeting in July 2013)
- **In the actual format the DHH ID is included**
- The ROI format supports **arbitrary position and size** of ROIs
- spare bits are available for additional information  
(will not be processed in ROI core)
- **This ROI format is already used for ROI calculation**  
(HLT and DatCon)



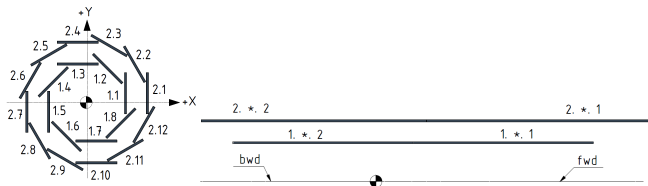
# ROI Data Format

- **DHH ID format now fixed**
- ascending order of DHH IDs for frame handler

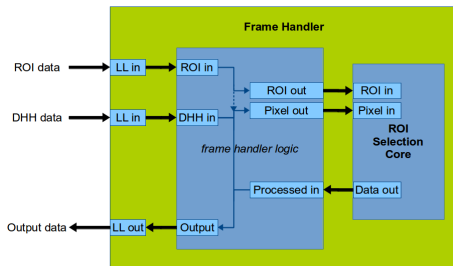


Consistent to Belle II Note about vertex detector numbering scheme:

- Layer and sensor use 0 and 1 instead of 1 and 2 as shown in the Belle II Note.
- DHHID[5]: layer (0 for inner, 1 for outer)
- DHHID[4-1]: ladder number (1-8 for inner, 1-12 for outer)
- DHHID[0]: sensor (0 for forward, 1 for backward)

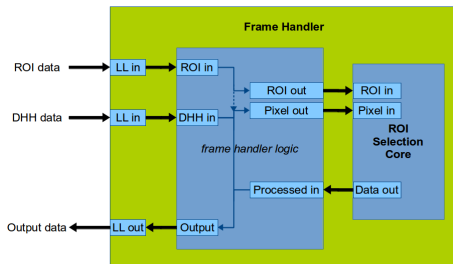


# Frame Handler Status



- Input and output of Frame Handler as LocalLink
- Decisions for data forwarding or processing by frame handler logic
- Needed because of multiple frames and frametypes per event
  - Several frametypes not to be processed (Start, End, Ghost, ...)
  - Multiple 0-suppressed DHH frames per event  
Jan 14: 2 half-ladder → 8 DHH frames
  - Needed because of multiple frames per event
- Sending out ROI frames (HLT+DatCon) for debugging

# Frame Handler Status



- **Frame handler is implemented to hardware**
- Forwarding of non-data frames without processing in ROI Selection Core
- Matching ROI data and DHH data frames by DHH ID
- All ROIs per event in one ROI frame
- Multiple DHH data frames per half ladder possible
- **DHH data frames without ROIs forwarded as empty frames (discard all pixel)**
- **If max. number of ROIs per ladder is reached, all pixel will be send out**
- Skip ROIs without DHH data

- ROI core implemented in the chain for the test
- Including data decoding and ROI processing
- Including ROI frame output
- This was not included to the may 13 test  
(then only data forwarding)

- ROI data format fixed
- DHH ID format fixed
- Frame handler to handle different frame types is implemented