



Status of TSF Debugging

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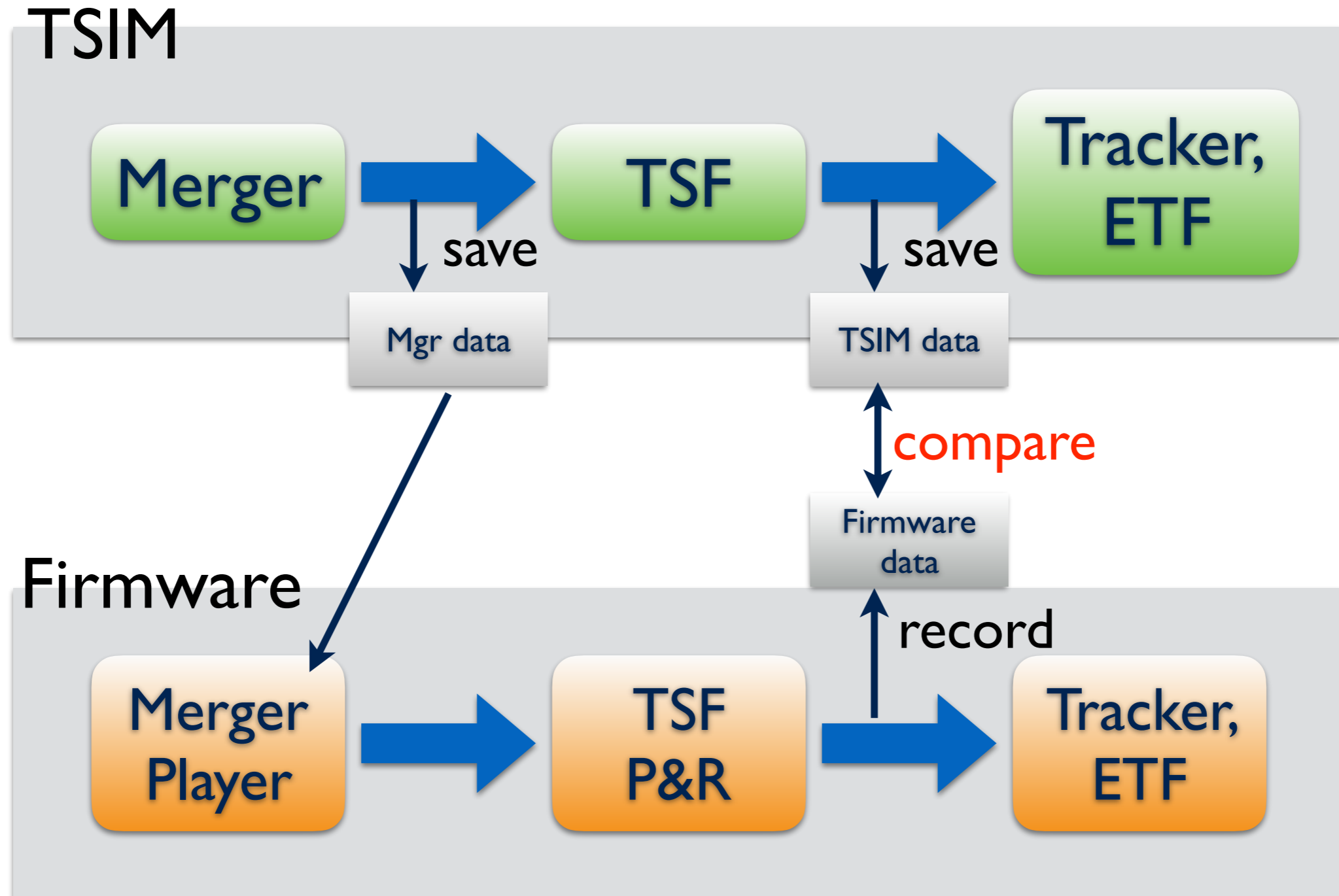
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TRG/DAQ Workshop

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Review



Setup for Debugging

- 2 mergers(merger 0 and 1) for SL2 is used for debugging.
- 1000 pGun TSIM data is used.
 - For small phi range due to P&R.
- If there's difference between outputs, I checked input & outputs.

Output for Tracker

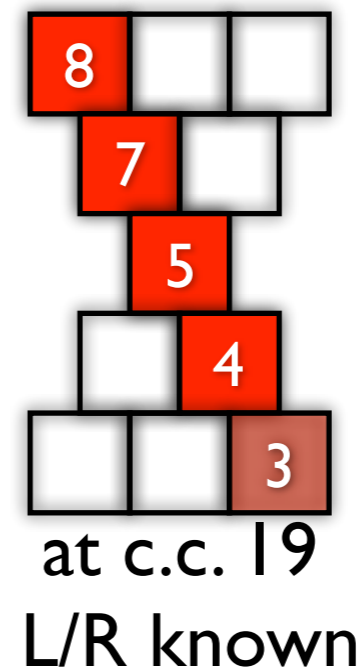
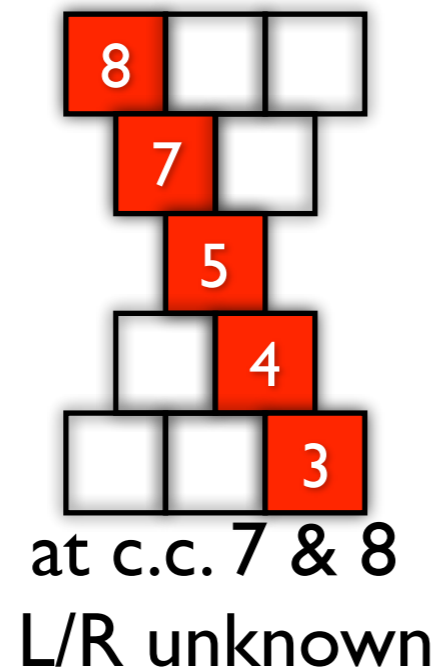
- At first, only 279 events have same output between TSIM and firmware.
- Found bugs.
 - Falling edge problem at firmware
 - Wrong merger edge information
 - Double output at TSIM
 - ...

Falling Edge Problem

- To make coincidence, each wire hit is widen for 16 data clocks.
- 1 TSHit can have multiple output when detail information has updated.
- 2nd priority => 1st priority hit
- L/R unknown => known.

Falling Edge Problem

- Updated information at falling edge is not sent from TSF firmware.



- This happened due to sync between data clk(31.75MHz) and system clk(127MHz)

Merger Edge

- For TS0 and I5, some of corresponding data come from neighbor mergers.

		95	94	93	92	91	90	89	88	87	86	85	84	83	82	81	80					
			79	78	77	76	75	74	73	72	71	70	69	68	67	66	65	64				
				63	62	61	60	59	58	57	56	55	54	53	52	51	50	49	48			
					47	46	45	44	43	42	41	40	39	38	37	36	35	34	33	32		
						31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	
							15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0

- There were bugs for using neighbor data for both TSIM and firmware.

Output for Tracker

- All bugs are fixed.
 - The outputs from both TSIM and firmware are same.
- Only output for tracker0 has checked.
 - Core logic is same for other trackers.
- Inner most super layer TSF should be checked.

Output for ETF

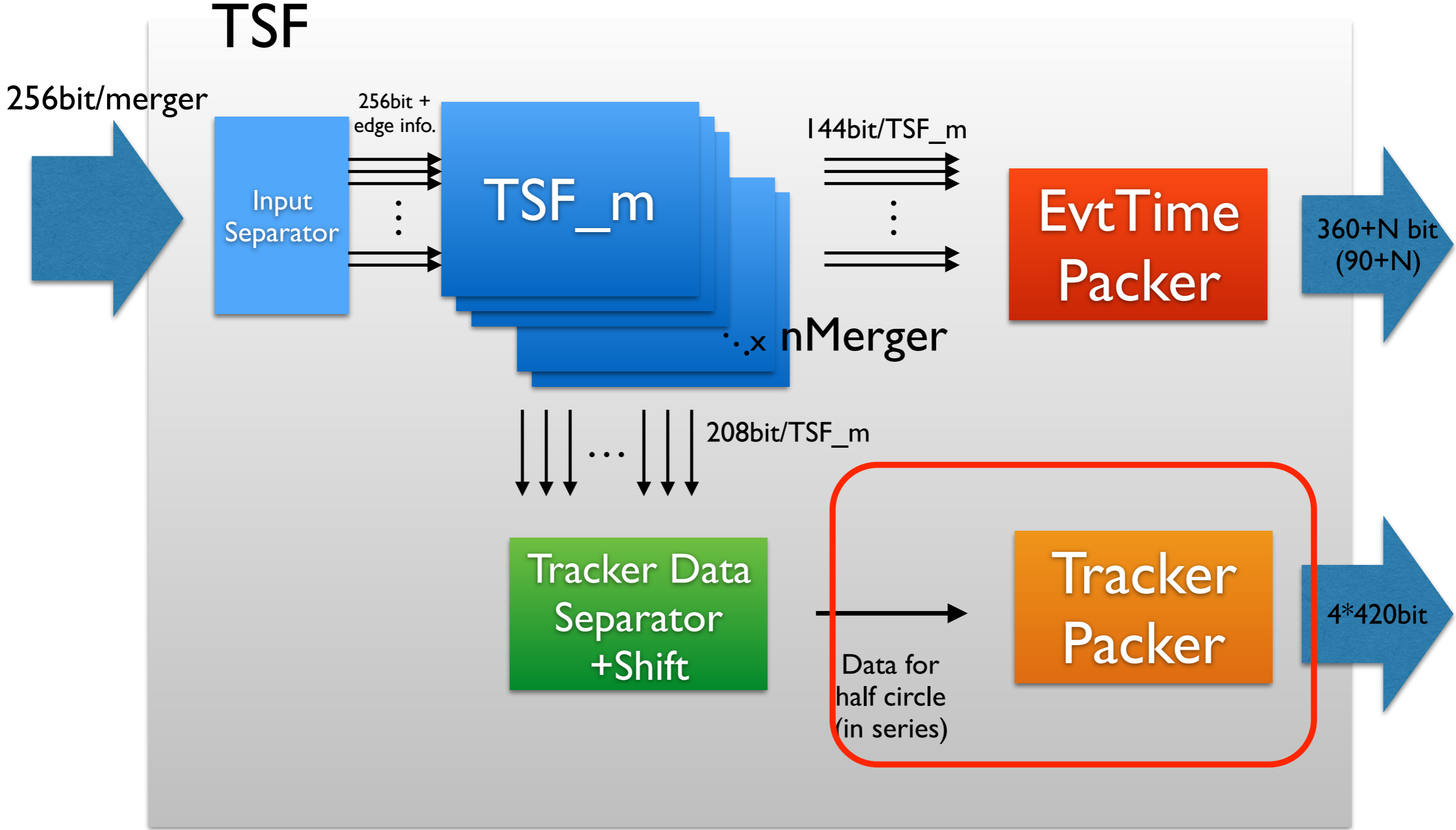
- Debugging of output for ETF is on going.
 - Same method with output for tracker.
- For now, 579 events have same results.
- Found bugs.
 - Falling edge..?
 - And others...

Summary & To Do

- Part of output for tracker is checked.
 - All bugs are fixed.
 - Output for tracker 1~3 should be checked.
- Debugging of output for ETF is on going.

Backup

TSF Logic



Double Output and Others

- When both cells of 2nd priority layer have hits, same output comes out from TSIM.
- Minor bugs
 - Some typos at TSIM.
 - Packer at firmware with multiple merger board hit.