Overview of the Monitoring

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Zeuthen 13.10.2006

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1.My diploma thesis

- Histograms for monitoring the HLT Steering (The Steering drives the HLT Data Flow)

- Rate Calculation

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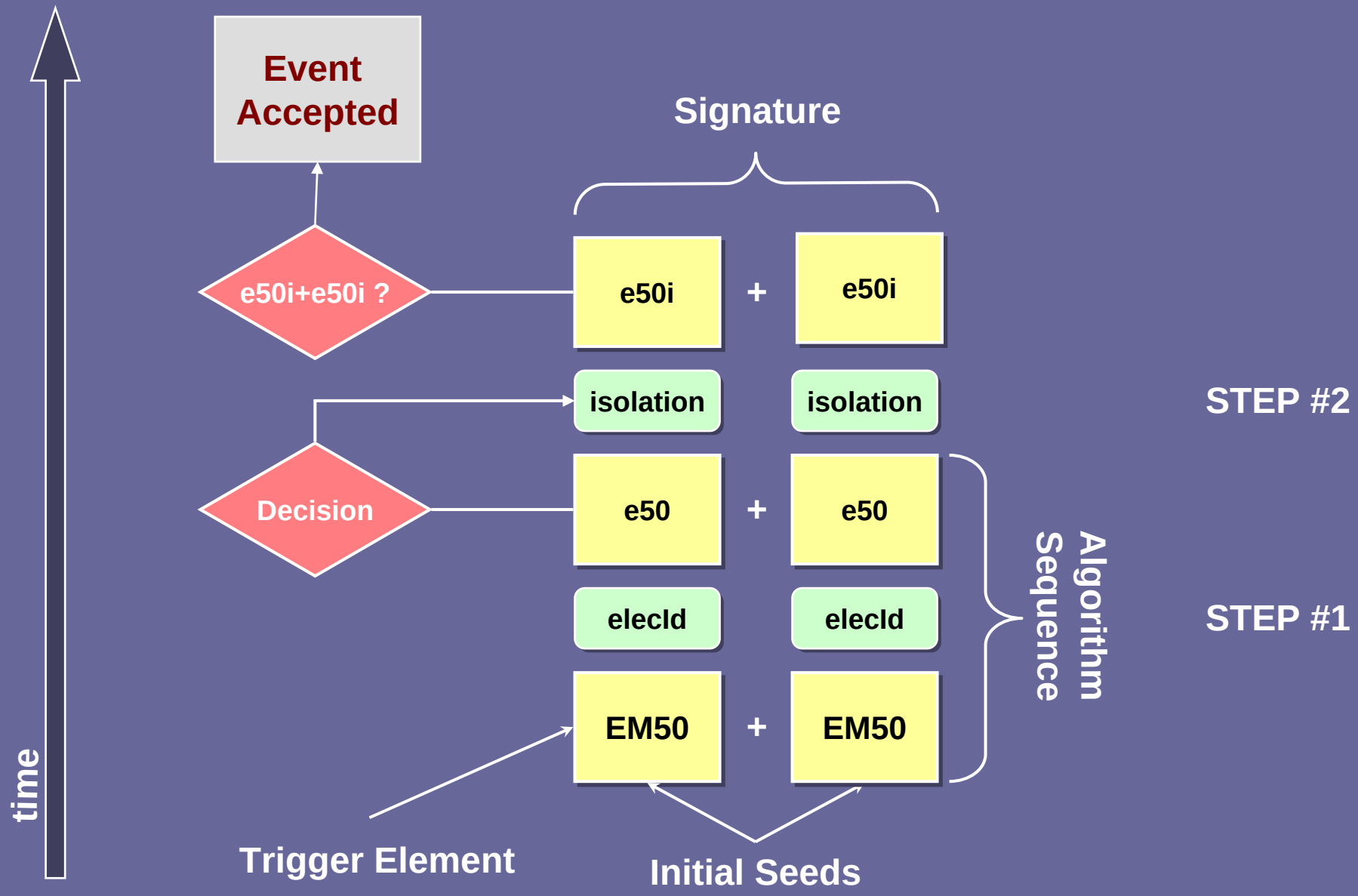
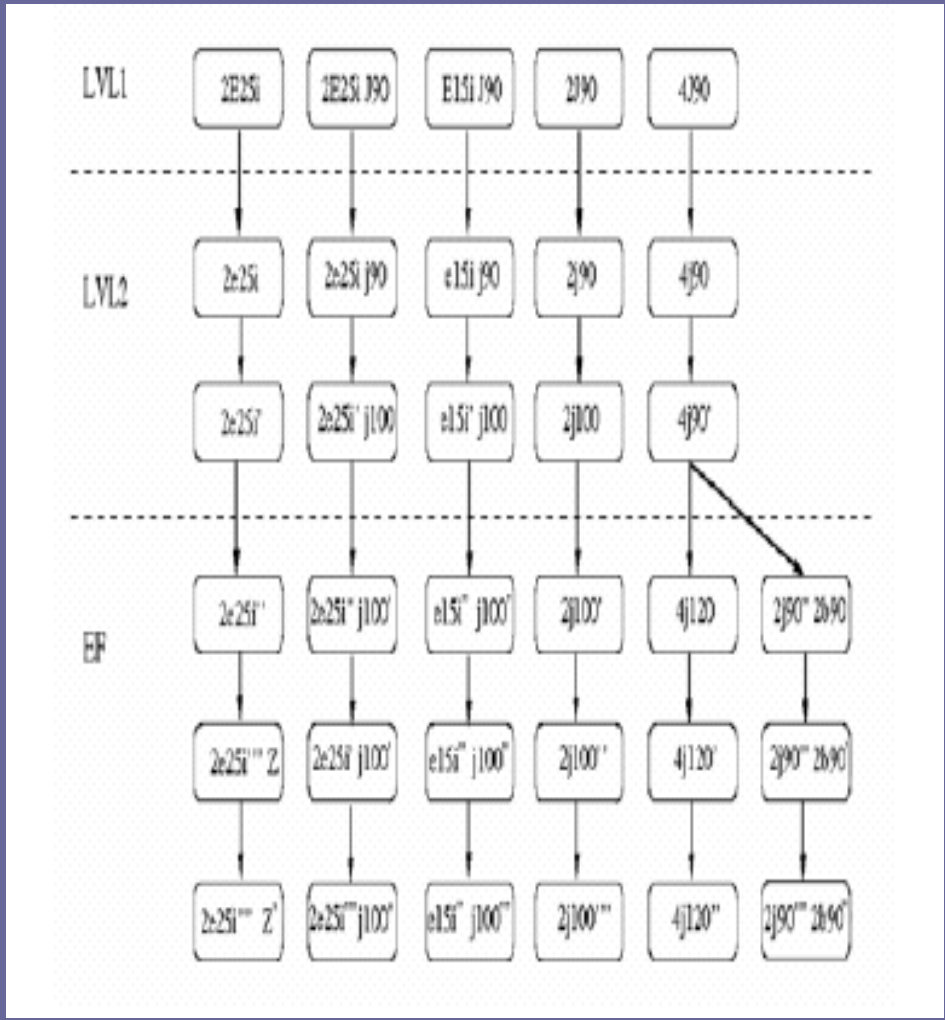
1.Trigger Steering



1.Signatures

- HLT is divided in two parts (level2 & EF)

- To split the Chain within one level is forbidden (only between two levels)



2.For the Control Room

- LVL1, LVL2 and EF summary output rates

- LVL1 RoI rates (sum of EM, JET and MUON)

- Event Size

- Number of active chains per Event

2.Rate

-Input LVL2 is 75 kHz for ~1000 processors

-for each processor ~75 events per sec

-Histo are filled for each processor individually (we have time information from the Event Header)

-after a certain time (e.g. 10 sec) the gatherer collects all Histo and added them up to one Histo

	chain 1	chain 2	...	chain n
step 1	R_{11}	R_{12}	...	R_{1n}
step 2	R_{21}	R_{22}	...	R_{2n}
...	...	...	...	...
step i	R_{i1}	R_{i2}	...	R_{in}
step i+1	-1	$R_{(i+1)2}$	...	$R_{(i+1)n}$
...	...	...	...	...
step m	-1	R_{m2}	...	R_{mn}

$$R_{kl} = \frac{N^{\mathrm{acc}}(\text{at step k from chain l})}{t_{\text{first ev.}+1000} - t_{\text{first ev.}}}$$

3.Code Implementation

- All Informations needed for rate monitoring are available Trigger/TrigSteer/TrigSteering and Trigger/TrigEvent/TrigNavigation

- A new class including all rate information and histograming code is needed

- I copied ResultBuilder.cxx and ResultBuilder.h and created my own class SteerMoni.cxx and SteerMoni.h

Implementation

- The idea is to look which bit is seeded for a certain signature (0=rejected,1=successful)

- We need the “chainword” which is a Hexa-code to identified a certain chain

- So you can count the number of events fulfilling a certain signature

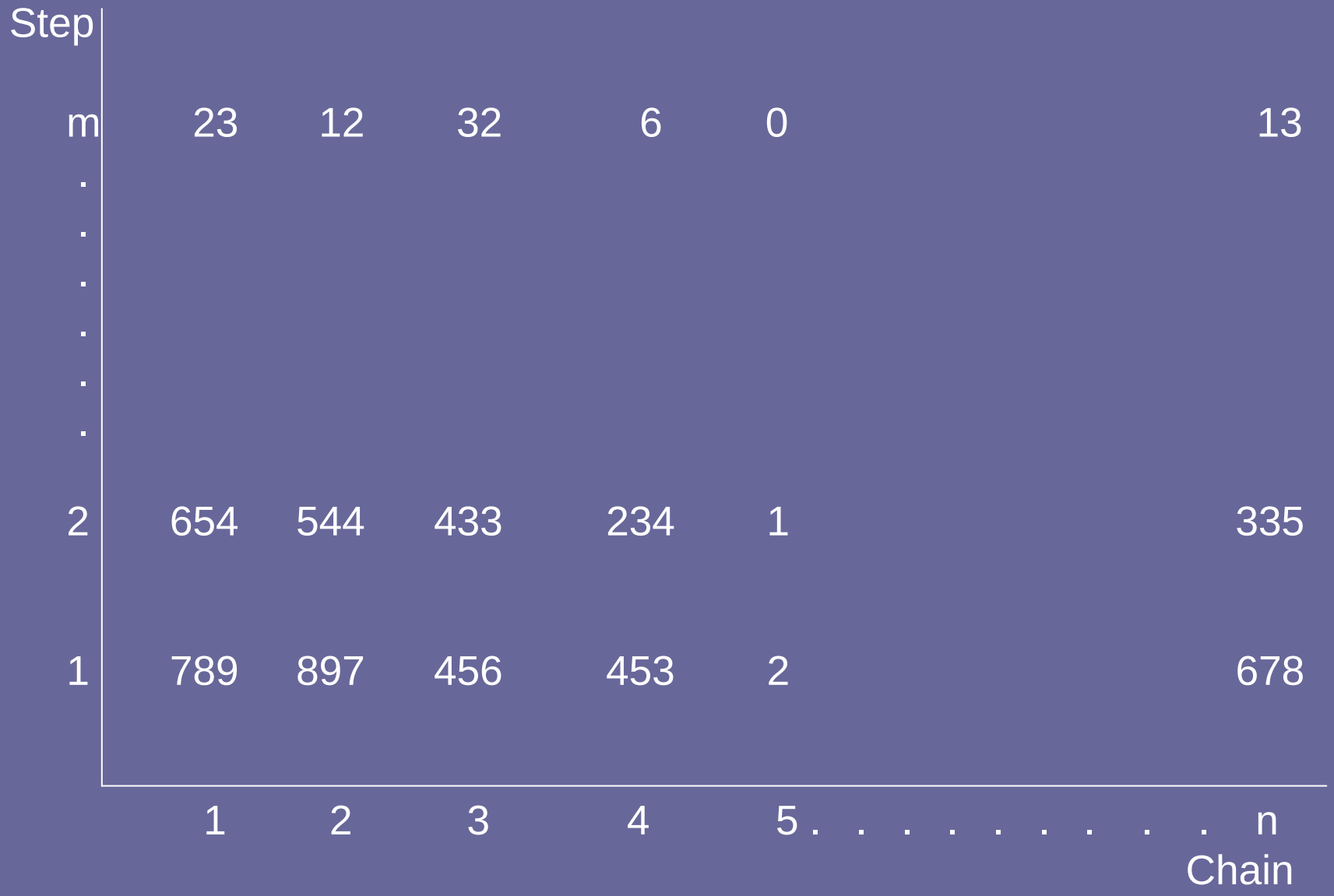
-Here you can see an example for **ONE** step (e.gStep n)

-Each Box is a signature as a part of one chain for this step

	em25i	j200	2em30	j20em15	mu25i	em15i	mu25	futuron
Event 1	1	0	1	1	1	0	1	0
Event 2	1	1	1	1	0	1	1	0
Sum after Event 2 (for step n)	2	1	2	2	1	1	2	0

Error ?

After 1000 Events…



Conclusion

- I am in the main part of my thesis
- I started with writing the SteerMoni code
- The first Histograms are needed until the end of October, because the next Release 13.0.0 will come