

ATLAS Trigger & DAQ Plans

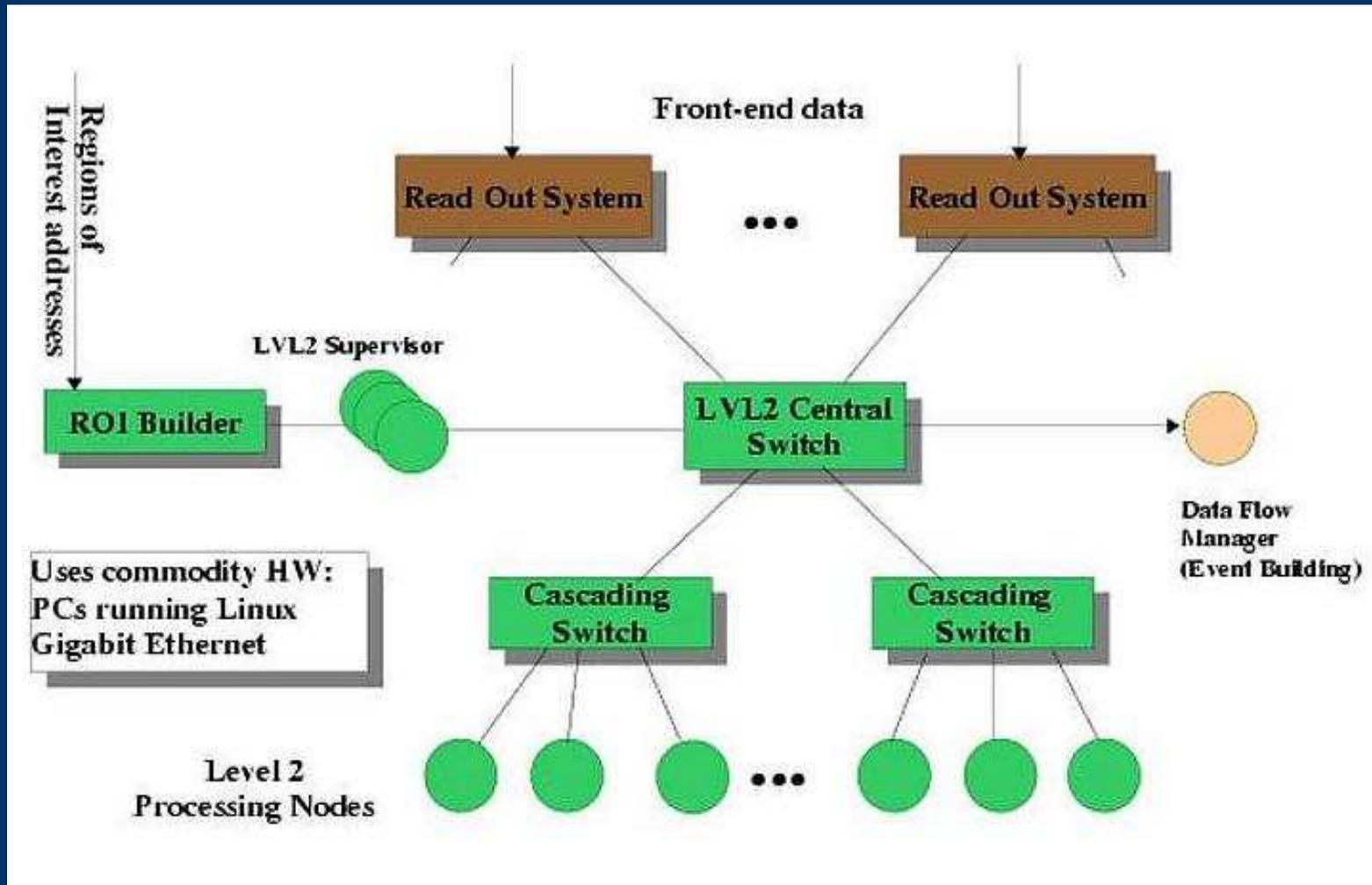
ANL HEP



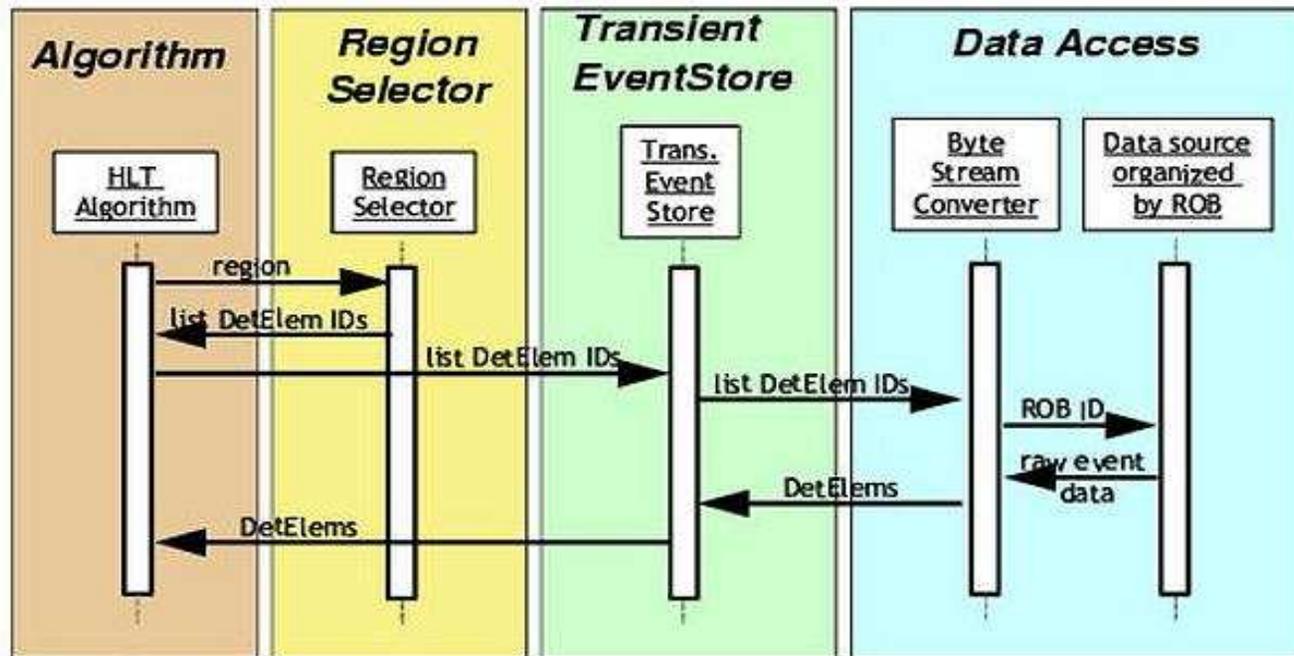
Overview

- Division personnel currently involved
 - R. Blair, **John Dawson & Jim Schlereth**
 - In collaboration with:
 - Michigan State University
 - Maris Abolins, Bernard Pope, **Reiner Hauser, Y. Ermollin**
 - University of Wisconsin
 - Sau Lan Wu, **Werner Weidenmann**
 - University of California at Irvine
 - Andy Lankford, R. Mommsen, **G. Unel, S. Kolos**
 - Current project status
 - ANL & Michigan State University
 - Production of Region of Interest Builder ~next 2 months
 - Software work on core “dataflow software”
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System Overview



Offline Model for Software



In the case of Event Filter, the full event is available in memory.

In the case of Level 2, the data is read from the Read Out Buffers via the network.

US ATLAS Program (M&O)

- LVL2 Software
 - Software/hardware reliability requires continuous upgrade cycle
 - Labor not included in ATLAS common costs (except for farm management). CERN covers farm management – day to day operating of L2/L3/offline computer farms
- Primary M&O responsibilities
 - TDAQ support for testbeams comes from research program in early years (before '04) {PreOps}
 - TDAQ software revisions, bug fixes and improvement {Operations}
 - Network engineering for diagnosis and resolution of network related problems {Operations}

M&O (cont.)

- Base program expected in addition (ANL)
 - 1 postdoc for operations in '06 and beyond (expect this to be $\frac{1}{2} \times 2$ postdocs – the other $\frac{1}{2}$ of each doing physics)
 - 0.4 Senior researchers for management of TDAQ operations in '06 and beyond (+0.5 physics & 0.1 other)
 - ATLAS Common Costs Include (CERN costs - not included in any of this)
 - 4 year rollover of computing systems
 - 10-13 year rollover of network
 - Video and phone costs for support
 - Lab for evaluation and repair of TDAQ electronics
 - 5% per year replacement rate on electronics (other than CPU' s and network)
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ATLAS Project and Research Program (no base funds here)

	2004	2005	2006	2007	TOTAL
ANL	330.11	323.16	374.23	326.65	1354.16
ANL Proj. Total	306.63	287.02	202.89	164.44	960.98
SRB M&S	35.25	135.25	35.25	3	208.75
DAQ software M&S	0	5	9.95	3.75	18.7
ESS M&S	0	0	1.98	1.98	3.96
Network & Farm M&S	124.62	0	0	0	124.62
M&O M&S	3	12.25	17.75	42.75	75.75
Labor	1.2	1.3	2.3	2.0	6.8
Proj. Labor	1.1	1.1	1.1	1.1	4.4
M&O Profile (funding source is ATLAS research program NOT ATLAS construction)					
PreOps					
Manpower	0.1	0.1	0.25	0	0.45
Operations					
Manpower	0	0.1	1	1	2.1

Manpower breakdown

- 04-05
 - .5 FTE (Jim Schlereth)
 - .5 FTE (mainly John Dawson but a little of other Electronics shop personnel)
 - 06-07
 - .5 FTE (mainly John Dawson but a little of other Electronics shop personnel)
 - ~1.5 FTE (Jim plus more software prof. - one at CERN?)
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Long-term goal

- Begin to integrate more physicist effort in trigger
 - What cool new things might we look for?
 - How do we get the data samples to discover these cool new things?
 - Fully implement (and later refine) and review the algorithms for triggers so we have reliable data sets with known efficiency
 - So far the trigger work has been narrowly focused on technical issues (how to handle the expected data rates and with what hardware)
 - As data taking nears our work should open up to include
 - What datasets do we want to explore
 - Are they right and if not how do we make them right
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Physicist Manpower

- Looking at previous profiles
 - 3 Physicists (2 postdocs & 1 senior level) + 2 Software Prof. (in 2007 dropping to 1 after things reach equilibrium in 2008 and beyond)
 - Room for more – important area and connects well with offline analysis
 - Upgrades: Pushing tracking down into lower levels of the trigger
 - UC (Shochet) interested in bringing Fast Tracker (FTK) son of CDF Si Vertex Tracker (SVT) to provide ATLAS tracks at level 1.5
 - Maybe more far reaching trigger upgrades to remedy the trackingless nature of level 1 in ATLAS
 - Critical to begin integrating new people soon (slow turn on in complex environment at least begin by 2005 better earlier to begin claiming territory)
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