Extract from Demo Programm Data Formats

RoIR and RoIRSF:

Item:	Length (bits):	Comments:
* Tech Dependent Preamble		
Record Header	32	e.g. - F00FA55A
* Standars Record Header (SRH)		
Record Type	16	????
Record Length (bytes)	16 OR EF	SRH + Body
* Event ID	24	
* RoI data		
RoI eta-phi index	12	0.1 x 0.1
RoI Type	4	e.g. 1 = e/γ
RoI Threshold	3	8(HITs) or 1(P/S)
* Tech Dependent Postamble		
Record Terminator	32	e.g. - DEADDEAD

Body

Word #	Content	
1	Record Header	
2	Record Type	Record Length
3	Event ID	00
4	RoI data	

N+4	Record Terminator

N - number of electron/photon RoIs

Ref.: F.Wickens, Proposed Data Formats..., Draft 1.3

LVL1 CTP RoI Builder Data Formats

Item:	Length (bits):	Comments:
* Start of Event (Header)	32	
* L1ID	32	24 bits
* BCID	32	12 bits
* 128 input bits	32 * 4	after alignment
* 96 L1A candidates	32 * 3	after prescalers
* Status Word 1	32	
* Status Word 2	32	
* End of Event (Trailer)	32	

Word #	Content	
1	Header	
2	L1ID	00
3	BCID	00000
4	Input bits word 1	
5	Input bits word 2	
6	Input bits word 3	
7	Input bits word 4	
8	L1A candidates word 1	
9	L1A candidates word 2	
10	L1A candidates word 3	
11	Status Word 1	
12	Status Word 2	
13	Trailer	

Ref.: Ph.Farthouat, ATLAS LVL2 Meeting, May 1997

LVL1 Muon RoI Builder Data Formats

Item:	Length (bits):	Comments:
* Start of Event (Header)	32	
* L1ID	32	24 bits
* BCID	32	12 bits
* RoI data (16 candidates maximum)		
Sector number	8	224 sectors
Sub-sector number	5	
Pt value	3	
* Error Word 1	32	
* Error Word 2	32	
* End of Event (Trailer)	32	

Word #	Content	
1	Header	
2	L1ID	00
3	BCID	00000
4	RoI data	

N+4	Error Word 1
N+5	Error Word 2
N+6	Trailer

N - number of muon RoIs

Ref.: Ph.Farthouat, ATLAS LVL2 Meeting, May 1997

LVL1 e/γ RoI Builder Output Data

Input: 8 16x16 1-bit maps (Trigger HITs)

1 64x64 1-bit map (RoI flags)

Output: 1 (12+8)-bit list (RoI coordinates + Trigger HITs) (1)

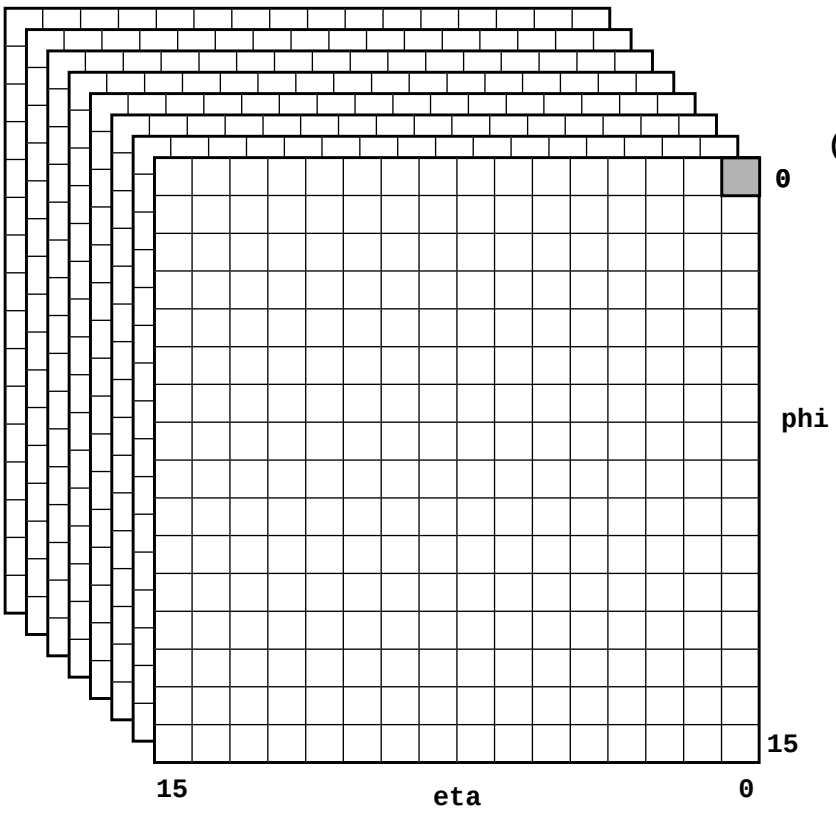
CTP decision word after mask and prescaler

CTP decision table (thresholds and multiplicity)

Output: 1 (12+1)-bit list (RoI coordinates + P/S flag) (2)

LVL1 e/γ Trigger HITs and RoI Flags Numbering

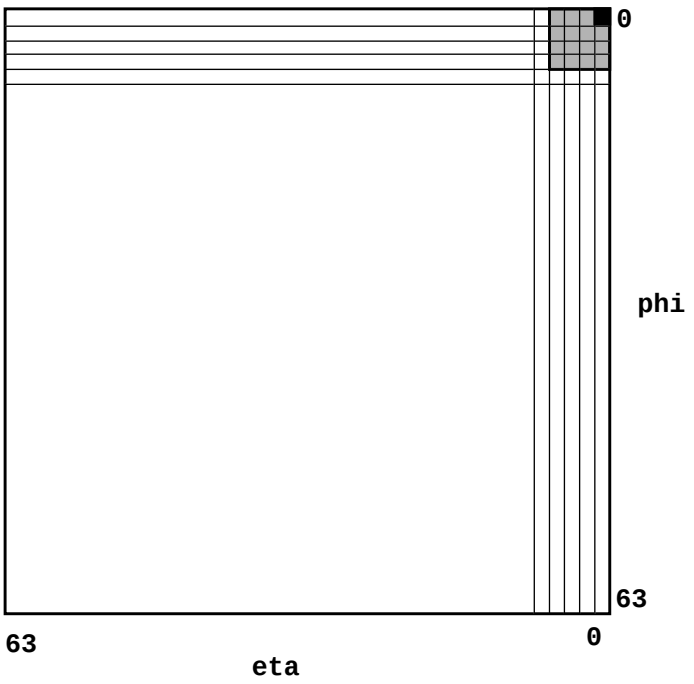
Complete system (4096 towers, 256 ASICs):



Trigger HIT maps:

8 16x16 1-bit maps
(1 16x16 8-bit map)

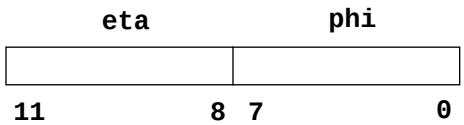
0.4 x 0.4



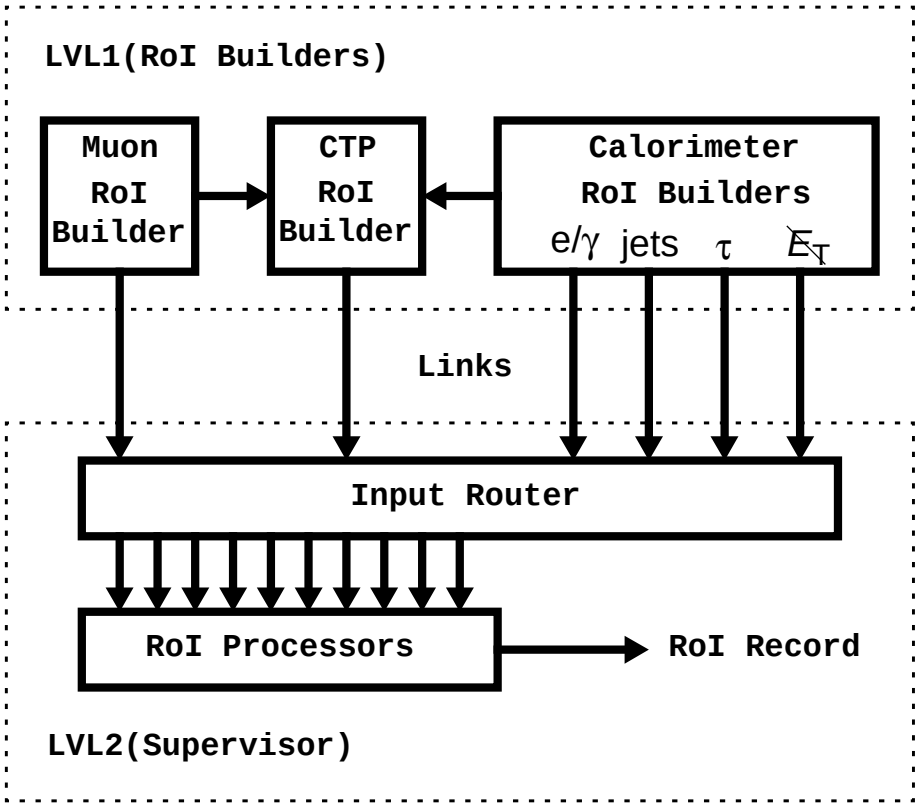
RoI Flag's map:

1 64x64 1-bit map

0.1 x 0.1



LVL1/LVL2 Data



6 sources:

- **Muon trigger to CTP interface**
- **Central Trigger Processor (CTP)**
- **Electron/photon trigger**
- **Jets trigger**
- **Hadron trigger**
- **Missing E_T trigger**