FOX and Mappings

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- Progress (or lack of)

Recent Progress

- FOX PDR deadline inspired some progress
  - A few diagrams already shown at these meetings
  - Worked through high level mapping of eFEX EM inputs
  - No objections raised so far…
- Since then: no deadlines, not much development
  - LAr have nominated George Aad to work on their mappings
    - Met briefly at TDAQ week Calo+Trigger meeting
    - Need to set up further detailed discussion
    - Check that work originally done by Stefan Simion is continued
    - Produce a document
      - All in between Run 2 commissioning
  - Vague agreement that meetings of engineers would be good
    - But nothing happened there so far either?

Backup: PDR Diagrams & Tables

Fibre Counts at 6.4 Gbit/s

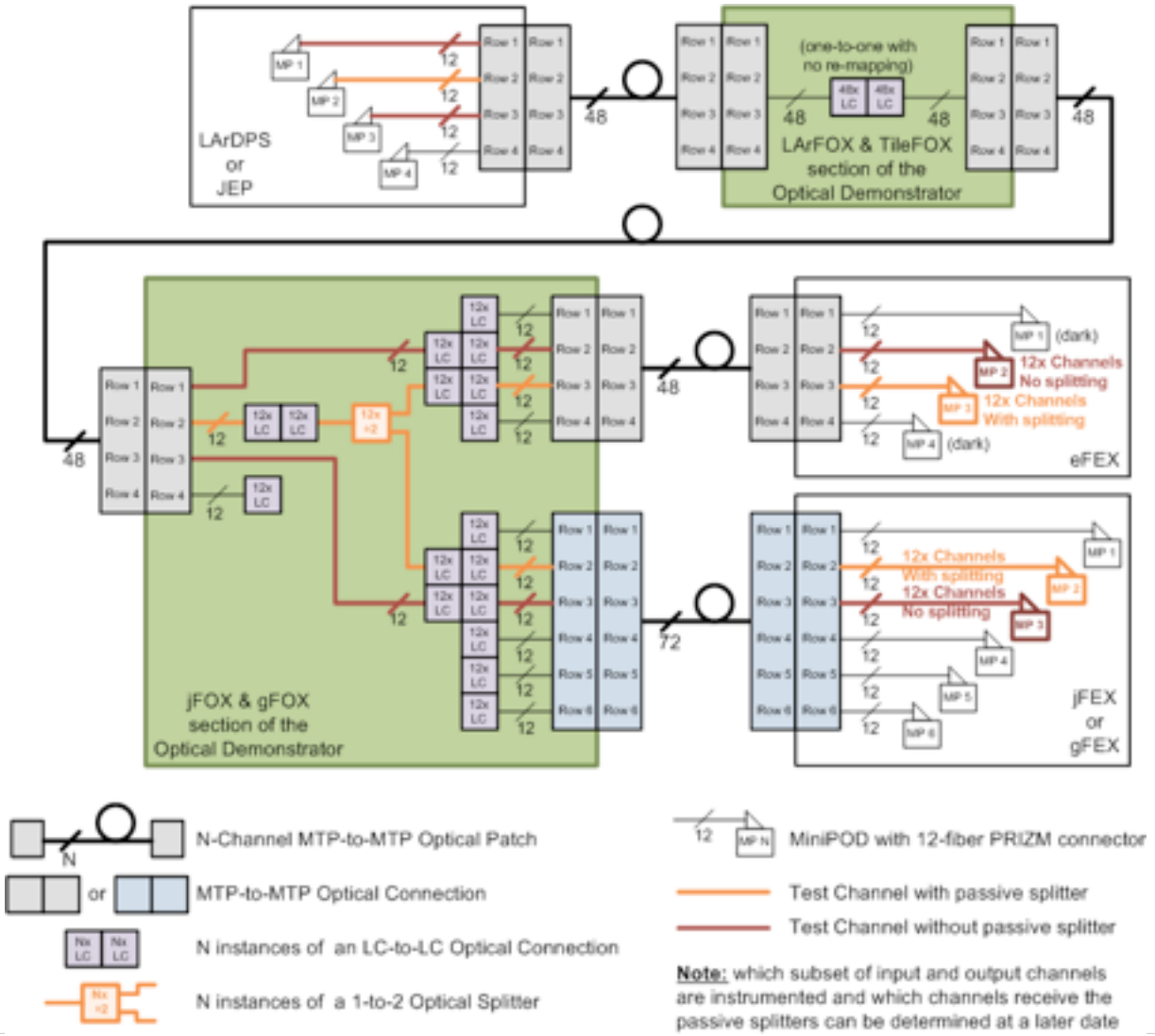
Calo Region vs N.Fibers to FEXes at 6.4 Gbit/s	EM Barrel	EM Endcap	Special Crate		FCAL	Tile (PPM) min/max	Tile (sROD)
			EM Fwd	HEC			
N.AMC/PPM/ROD	*64*	*32*	*16*		*4*	*32*	*32*
eFEX (direct)	25	20	6	6	0	12/0	18
eFEX (via 1:2 f/o)	0	0	2	6	0	0/12	0
eFEX (after f/o)	0	0	4	12	0	0/24	0
jFEX (direct)	12	12	0	9	24	16	0
jFEX (via 1:2 f/o)	0	0	2	11	0	4	12
jFEX (after f/o)	0	0	4	22	0	8	24
gFEX (direct)	1	1	2	3	3	2	2
Direct/AMC	38	33	8	18	27	30/18	20
To Fanout/AMC	0	0	4	17	0	4/16	12
After Fanout/AMC	0	0	8	34	0	8/32	24
Total direct	2434	1056	416		108	768	640
Total fanouts	0	0	336		0	320	384
Total from AMCs	2434	1056	752		108	1088	1024
Total to FEXes	2434	1056	1088		108	1408	1408

Fibre Counts at ~10 Gbit/s

Calo Region vs N.Fibers to FEXes at ~10 Gbit/s	EM Barrel min/max	EM Endcap min/max	Special Crate		FCAL	Tile (PPM) min/max	Tile (sROD) min/max
			EM Fwd	HEC			
N.AMC/PPM/ROD	*64*	*32*	*16*		*4*	*32*	*32*
eFEX (direct)	20/30	16/24	10	9	0	6/12	6/12
eFEX (via 1:2 f/o)	0	0	0	0	0	0	0
eFEX (after f/o)	0	0	0	0	0	0	0
jFEX (direct)	6	6	4	17	16	12	12
jFEX (via 1:2 f/o)	0	0	0	0	0	0	0
jFEX (after f/o)	0	0	0	0	0	0	0
gFEX (direct)	1	1	2	3	3	2	2
Direct/AMC	27/37	23/31	16	29	19	20/26	20/26
To Fanout/AMC	0	0	0	0	0	0	0
After Fanout/AMC	0	0	0	0	0	0	0
Total direct	2048	864	720		76	736	736
Total fanouts	0	0	0		0	0	0
Total from AMCs	2048	864	0		76	736	736
Total to FEXes	2048	864	720		76	736	736

FOX Demonstrator

- Lots of optical connections…

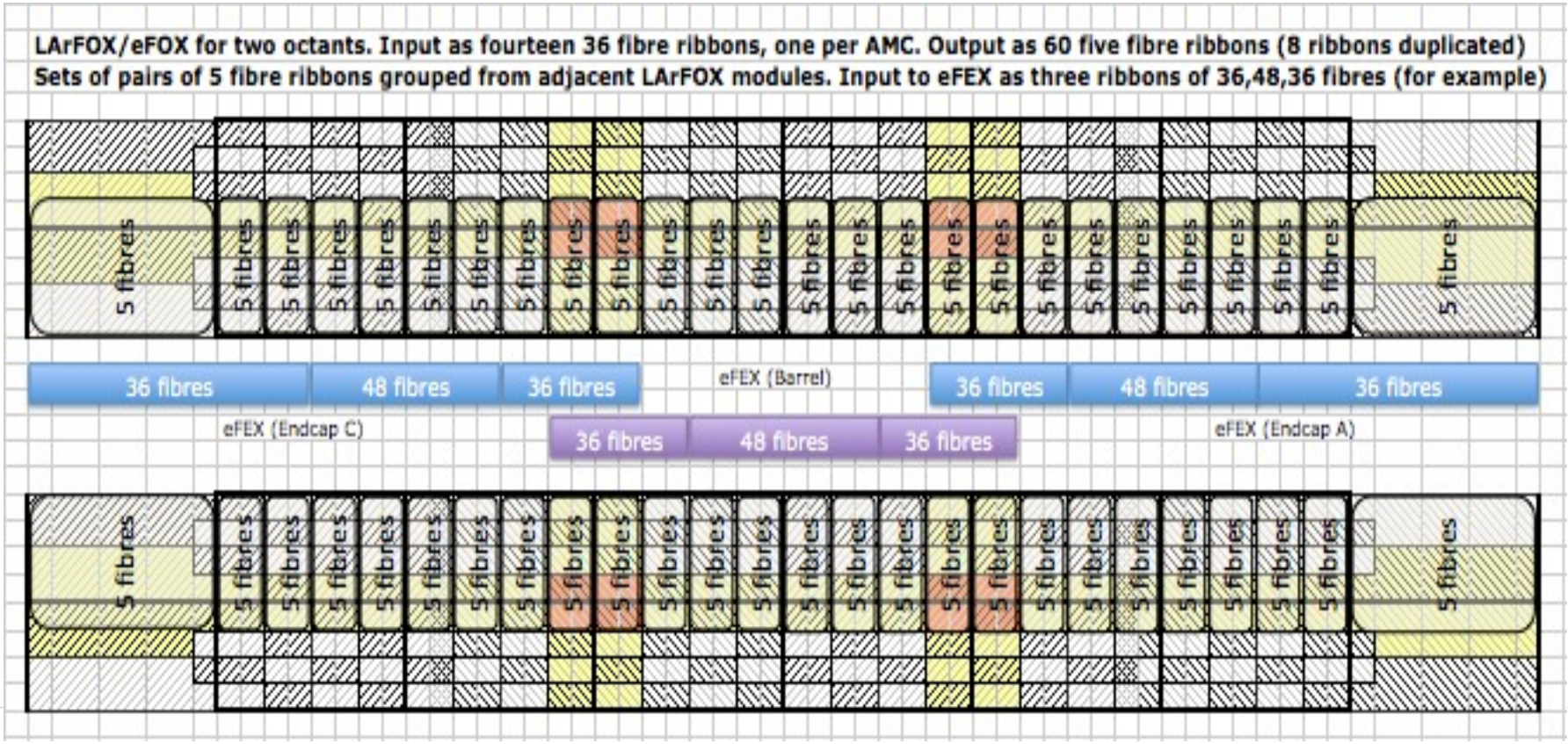


Diagrams: Fanout to eFEX

- Corners in eFEX design require additional copies at particular eta,phi locations - these diagrams show layout for 6.4 Gbit/s
  - At ~10 Gbit/s the optimal pattern is shifted by 0.2 in phi
  - PPMs (and sRODs at 10 Gbit/s) are different at different locations

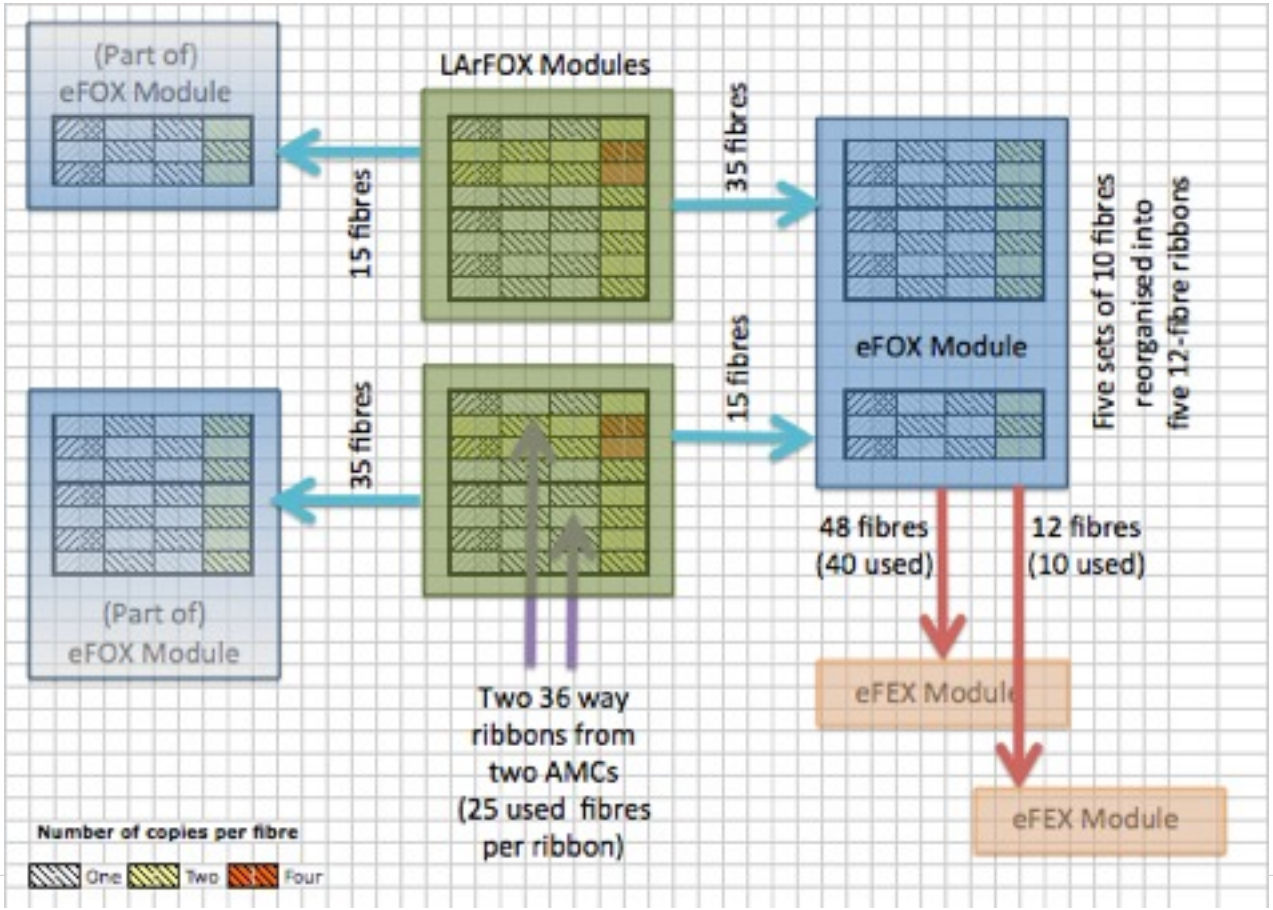
FOX Module Examples (1)

- EM to eFEX (NB hadronic not shown)
  - LArFOX & eFOX modules each cover octant in phi * 0.8 eta
    - But eFOX octants offset by 0.4 in phi compared to LArFOX
  - Regroup sets of 5 + 5 fibres into 10 fibre ribbons
    - At ~10 Gbit/s the optimal pattern would (probably) be 7+3 fibres



FOX Module Examples (2)

- EM to eFEX (~ 10 Gbit/s)
  - Two LArFOX outputs regrouped into one eFOX module
  - Two outputs from eFOX module to two eFEX modules
    - One for core inputs (48 fibres), one for environment (12 fibres)



FOX Module Examples (3)

- EM to eFEX full phi ring (for 0.8 in eta)
  - LArFOX and eFOX modules aligned with phi offset