

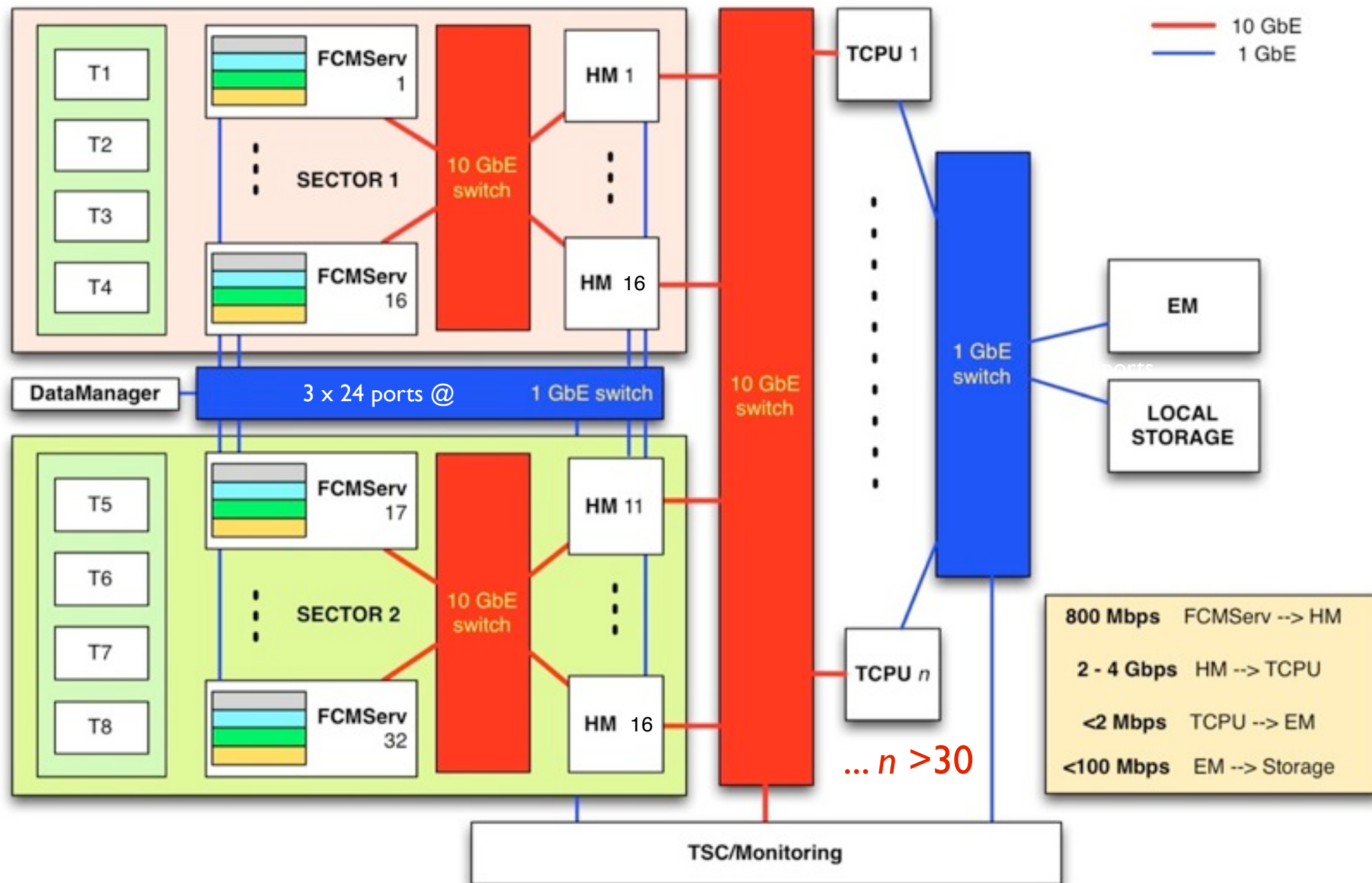
Composition, costs and max power consumption previsions for the *KM3NeT - 8 Towers* computing infrastructure at Capo Passero

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et al.

for the *Shore Station Working Group*

On shore DAQ networking PART I

TriDAS Configuration



Server Reference Models

Reference typologies:

FCMServers - Supermicro *1027GR-TRFT+*.

(Part Number: ???)

HitManagers - 128 GB RAM/node, E4 mod E9230: Twin 2U – 4x nodes dual socket CPU 4-core, 2 x 10 Gb eth ports (Part Number: RS720Q-E7/RS12-1A)

TriggerCPUs - 32 GB RAM/node, E4 mod E9230: Twin 2U – 4x nodes dual socket CPU 8-core, 2 x 10 Gb eth ports (Part Number: RS720Q-E7/RS12-B1)

Solution I

NOT EXPANDABLE TriDAS breakdown list: System limited to 8 Towers only

COMPUTING	n. node	n. node / server	n. server	cost / server (€)	sub total (€)	Power/server (W)	Power subtotal (W)		btu/h (~W * 3.41)
FCMServer	32	1	32	2500	80000	800	25600		87296
HM (16) + TSC + EM + 2 spare	20	4	5	12598	62990	1420	7100		24211
TCPU	32	4	8	13555	108440	1290	10320		35191.2
					251430				
ASIC	n. ASIC	n. ASIC/server		cost/ ASIC (€)	sub total (€)				
Terasic	32	1		3000	96000				
					96000				
SWITCH	n. switch			cost/ switch (€)	sub total (€)				
Dell z4810 10 GbE	2			17200	34400	350	700		2387
Dell z9000 10 GbE	1			42500	42500	790	790		2693.9
Switch 1 GbE 48 port manag.	1			1000	1000	600	600		2046
Switch 1 GbE 24 port	3			300	900	500	1500		5115
					78800				
Cables	n. connection	n. nodes/cable		cost/cable (€)	sub total (€)				
direct 10 Gb with SFP+ (2 m)	52	1		150	7800				
Breakd. 10 Gb with SFP+ (5m)	52	4		800	10400				
1 Gb cat 6	87	1		10	870				
					19070				
GRAND TOTAL				Costs - NO IVA (€)	445300	Power (W)	46610	BTU/h	158940.1

**MISSING
DECISION**

Solution 2

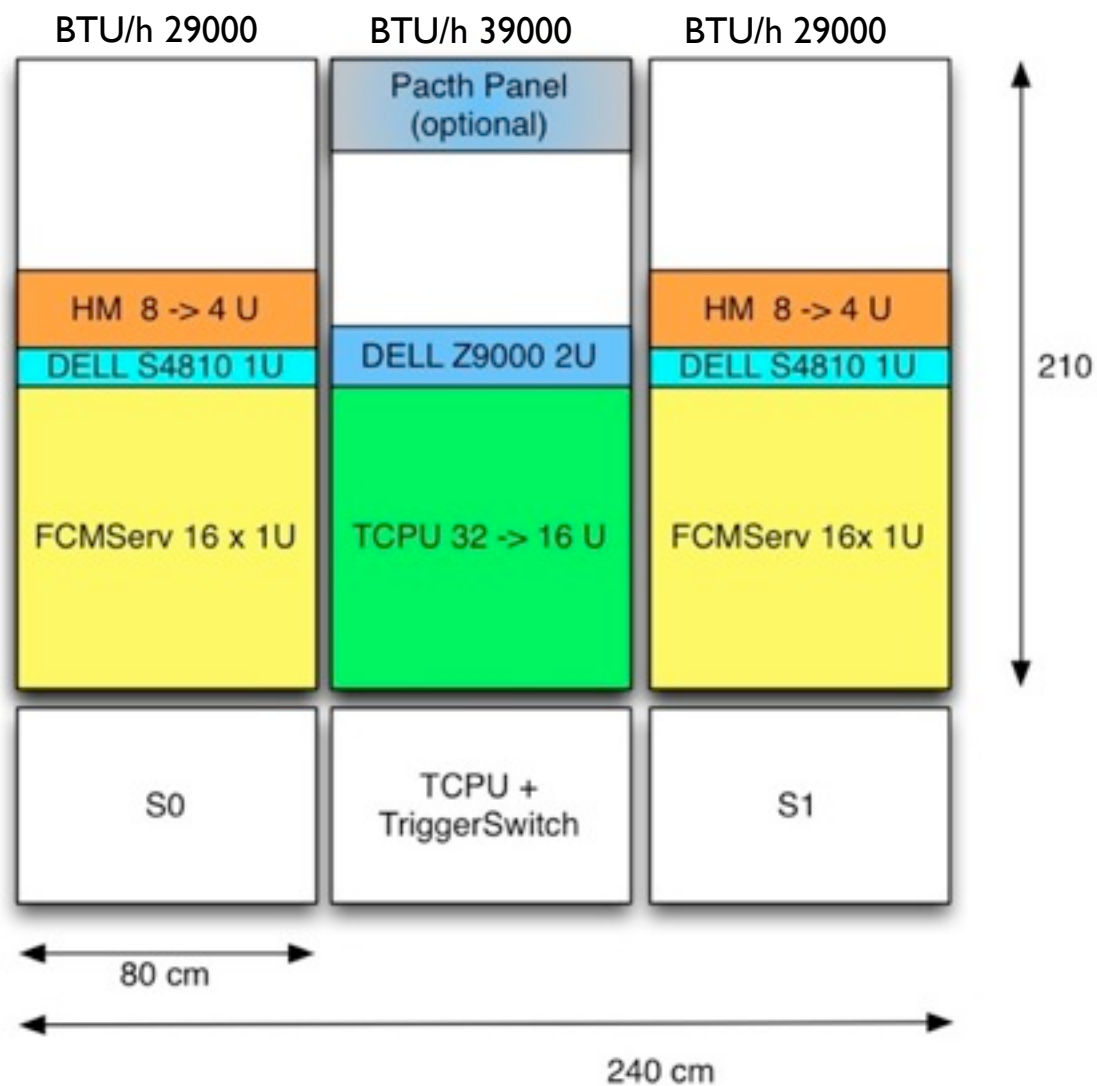
System dimensioned to serve 8 Towers ,
with network configuration EXPANDABLE
to connect also the KM3NeT Phase I TriDAS

COMPUTING	n. node	n. node / server	n. server	cost / server (€)	sub total (€)	Power/server (W)	Power subtotal (W)		btu/h (~W * 3.41)
FCMServer	32	1	32	2500	80000	800	25600		87296
HM (16) + TSC + EM + 2 spare	24	4	6	12598	75588	1420	8520		29053.2
TCPU	32	4	8	13555	108440	1290	10320		35191.2
					264028				
ASIC	n. ASIC	n. ASIC/server		ASIC cost (€)	sub total (€)				
Terasic	32	1		3000	96000				
					96000				
SWITCH	n. switch			switch cost (€)	sub total (€)				
CISCO Nexus 5548	2			30000	60000	600	1200		4092
CISCO Nexus 7009	1			80000	80000	7500	7500		25575
Switch 1 GbE 48 port manag.	1			1000	1000	600	600		2046
Switch 1 GbE 24 port	3			300	900	500	1500		5115
					141900				
Cables	n. connections	n. nodes/cable		cost / cable (€)	sub total (€)				
direct 10 Gb with SFP+ (2 m)	56	1		300	16800				
direct 10 Gb with SFP+ (5 m)	56	1		500	28000				
1 Gb cat 6	91	1		10	910				
					45710				
GRAND TOTAL				Costs - NO IVA (€)	547638	Power (W)	55240		188368.4

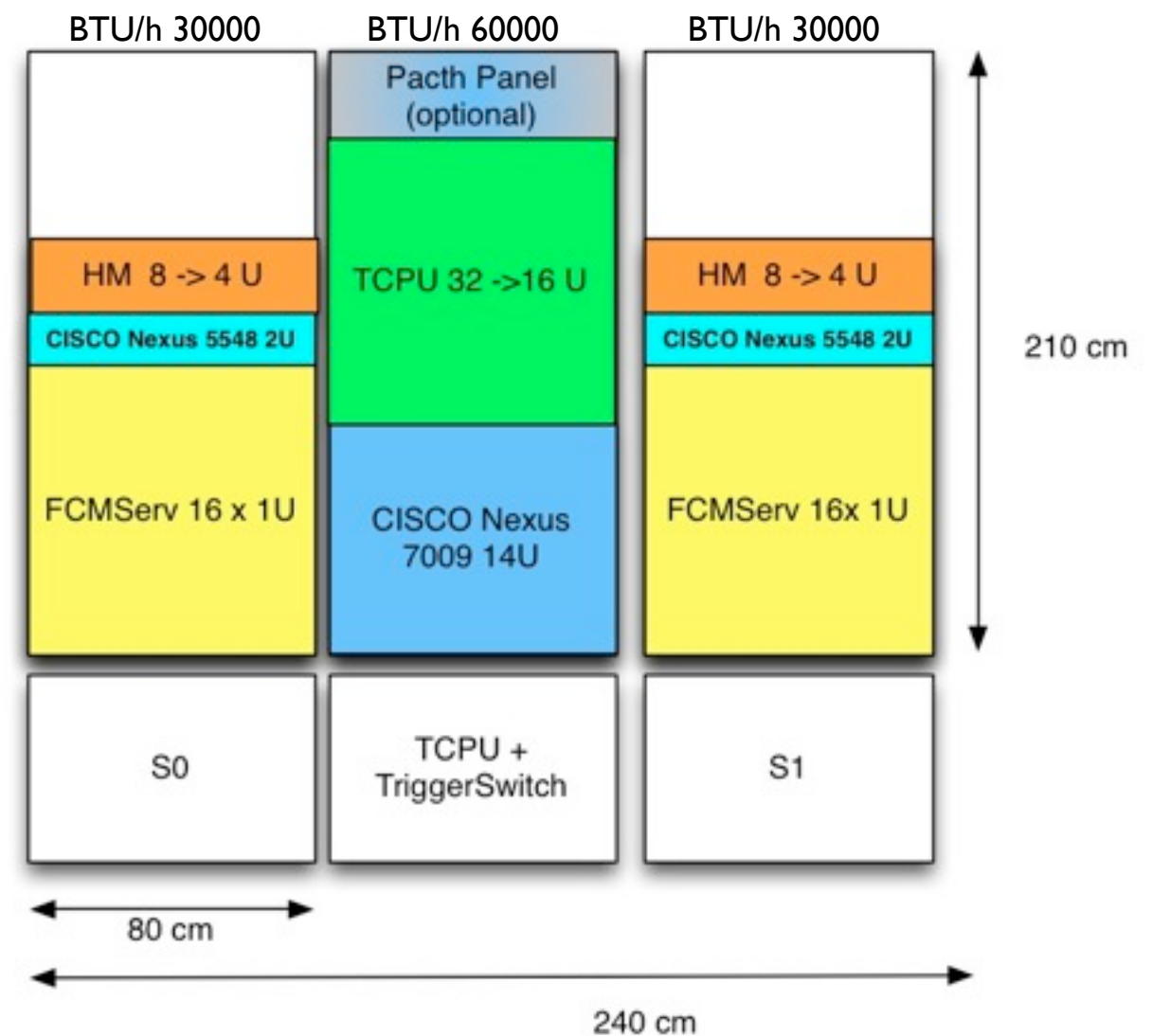
TriDAS rack assembling

(minimal configuration)

Option 1
(limited to 8 Towers only)



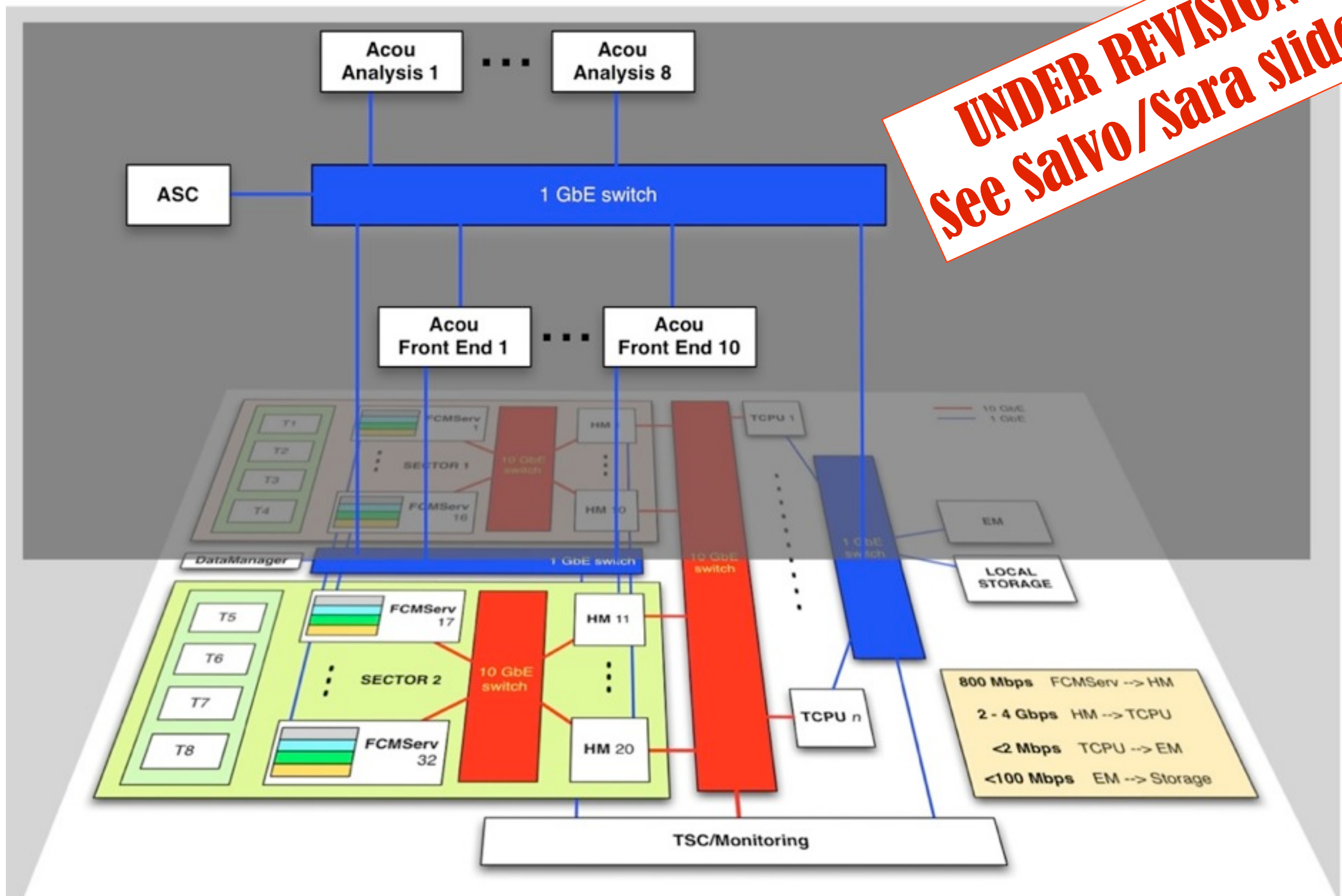
Option 2
(expandable)



On shore DAQ networking PART II

Acoustic Configuration

UNDER REVISION
See Salvo / Sara slides



Costs for Acoustics

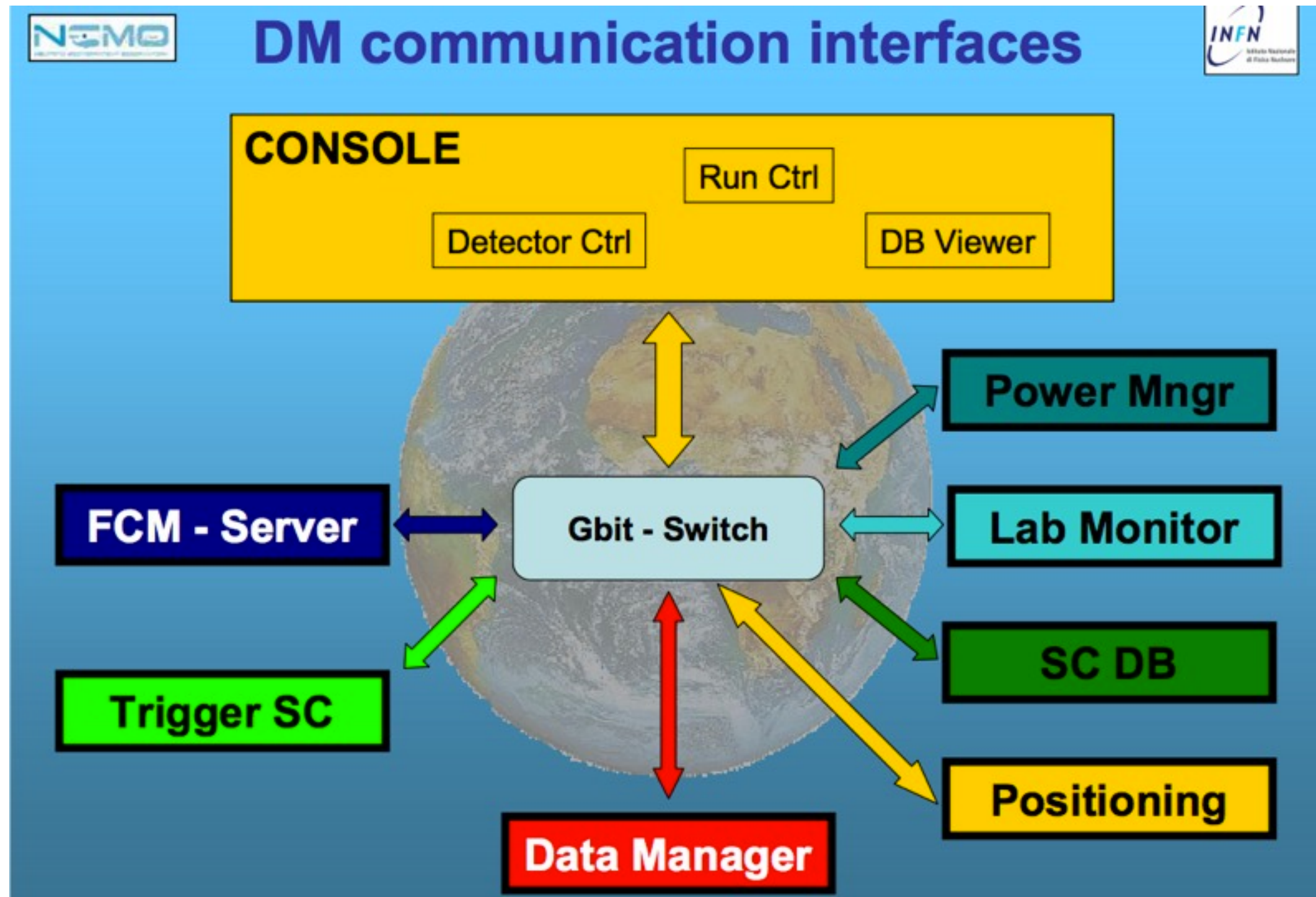
System limited to 8 Towers

COMPUTING	<i>n. node</i>	<i>n. node / server</i>	<i>n. server</i>	<i>cost / server (€)</i>	<i>sub total (€)</i>	<i>Power / server (W)</i>	<i>Power subtotal (W)</i>
Acou Front end	10	1	10	1300	13000	220	2200
Analysis	8	1	8	1300	10400	220	1760
ASC (Acoustic System Control)	1	1	1	1300	1300	220	220
Spare	2	1	2	1300	2600	220	440
					27300		
SWITCH	<i>n. switch</i>			<i>cost/ switch (€)</i>	<i>sub total (€)</i>		
Switch 1 GbE 48 port	1			1000	1000	600	600
					1000		
Cables	<i>n. connections</i>	<i>n. nodes/cable</i>		<i>cost/cable (€)</i>	<i>sub total (€)</i>		
1 Gb cat 6	22	1		10	220		
					220		
GRAND TOTAL				Costs - NO IVA (€)	28520	Power (W)	5220

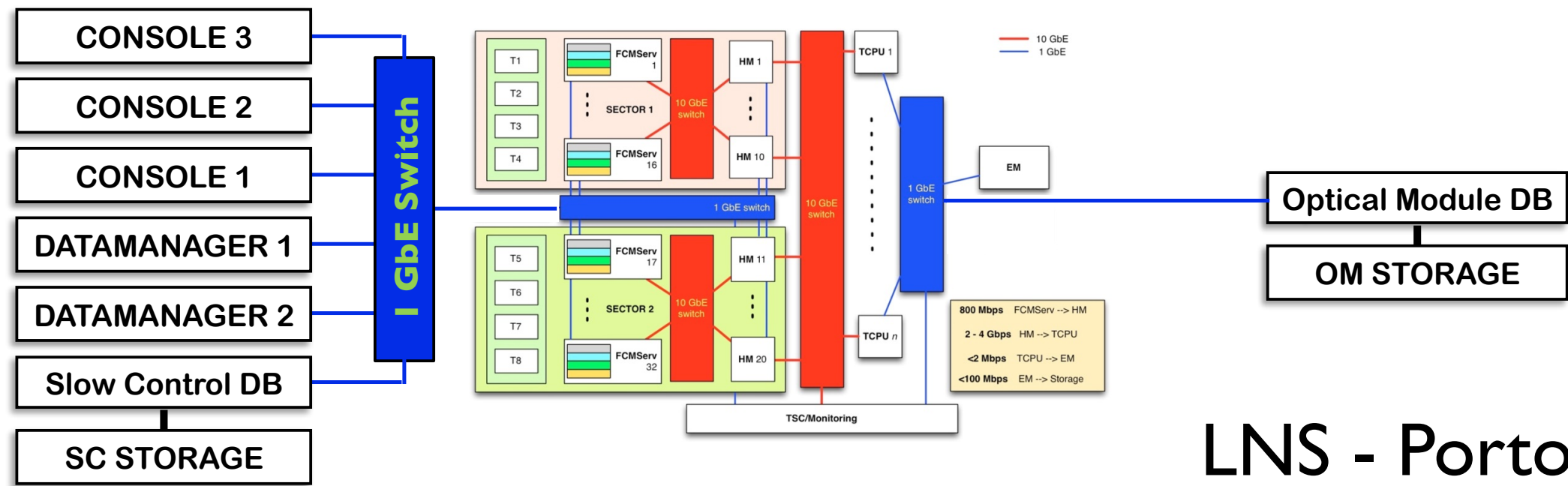
UNDER REVISION
See Salvo/Sara slides

On shore DAQ networking PART III

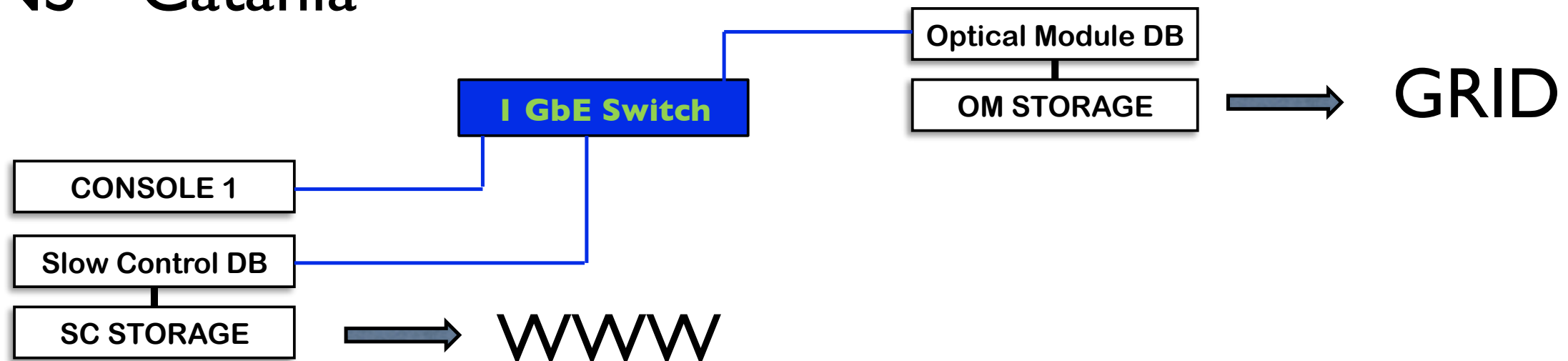
Slow Control + Power + monitoring



On-Shore Slow Control Equipment's



LNS - Catania



Costs for Slow Control and Power

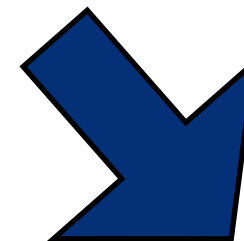
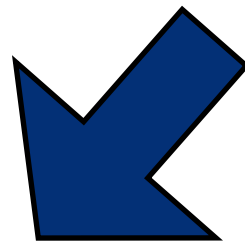
System limited to 8 Towers

COMPUTING	<i>n. node</i>	<i>n. node / server</i>	<i>n. server</i>	<i>cost / server (€)</i>	<i>sub total (€)</i>	<i>Power / server (W)</i>	<i>Power subtotal (W)</i>
Data Manager	4	1	4	1500	6000	400	1600
Storage (SC + OM)	4	1	4	1500	6000	400	1600
Console	5	1	5	1200	6000	400	2000
Monitoring TriDAS + Acou	8	1	8	1200	9600	400	3200
Power Control	1	1	1	1200	1200	400	400
24 TB Array (SC + OM)	4	1	4	3125	12500	400	1600
KVM system	5	1	5	2000	10000		0
					51300		
SWITCH	<i>n. switch</i>			<i>cost/ switch (€)</i>	<i>sub total (€)</i>		
24 ports 1 GbE (in addition to those 1 GbE listed for TriDAS)	4			300	1200		0
					1200		
Cables	<i>n. connection</i>	<i>n. nodes/cable</i>		<i>cost/cable (€)</i>	<i>sub total (€)</i>		
STP Cat 6 (2 m)	28	1		10	280		
STP Cat 6 (3 m)	28	1		10	280		
STP Cat 6 (5 m)	28	1		10	280		
					280		
GRAND TOTAL (NO IVA)				Costs - NO IVA (€)	52780	Power (W)	10400

Global Grand Total

TO BE UPDATED

2 options



	Costs NO IVA (€)	Power (W)
TriDAS 8 Tower only	443435	46610
Acoustics	28520	5220
Slow Control	63000	10400
GRAND TOTAL	534,955	62230

	Costs NO IVA (€)	Power (W)
TriDAS expandable	529935	55240
Acoustics	28520	5220
Slow Control	63000	10400
GRAND TOTAL	621,455	70860