



Configuration Database

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LHCb week, May 25

Part I

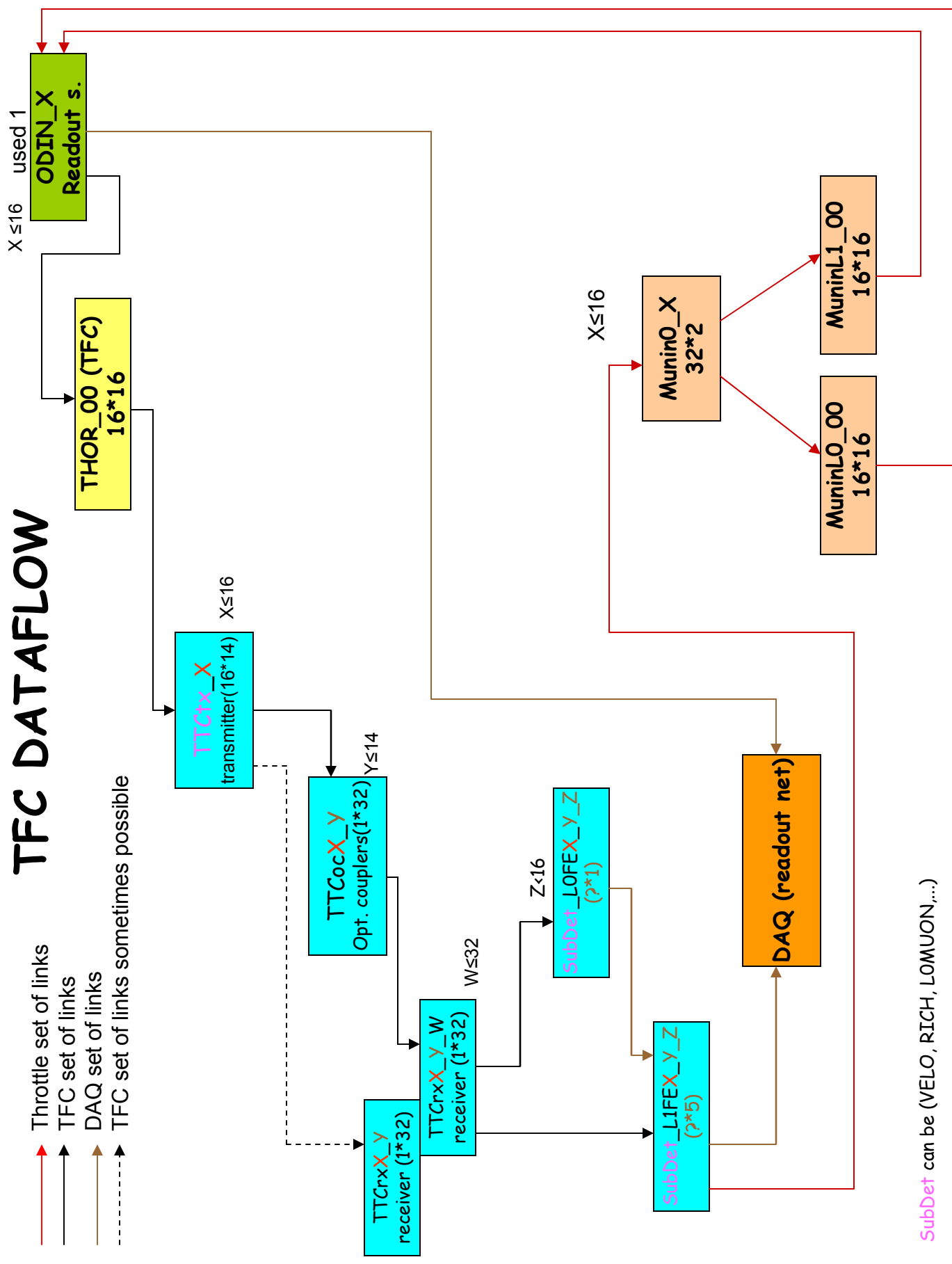
- The configuration database
- *DB Design Methodology (ex: the TFC system)*
 - TFC dataflow
 - TFC system : use cases
 - Entity relation model & Table design

The configuration database

- **Storage of all controllable devices with**
 - their properties
 - the links between them
 - their hierarchy
- **The control system can be bootstrapped from the configuration database.**

TFC DATAFLOW

- Throttle set of links
- TFC set of links
- DAQ set of links
- - - TFC set of links sometimes possible



SubDet can be (VELO, RICH, LOMUON,...)



TFC system : use cases

- List of possible scenarios (2 examples)
 - Find all the connection paths between 2 devices
 - configure the connectivity of the TFC switch

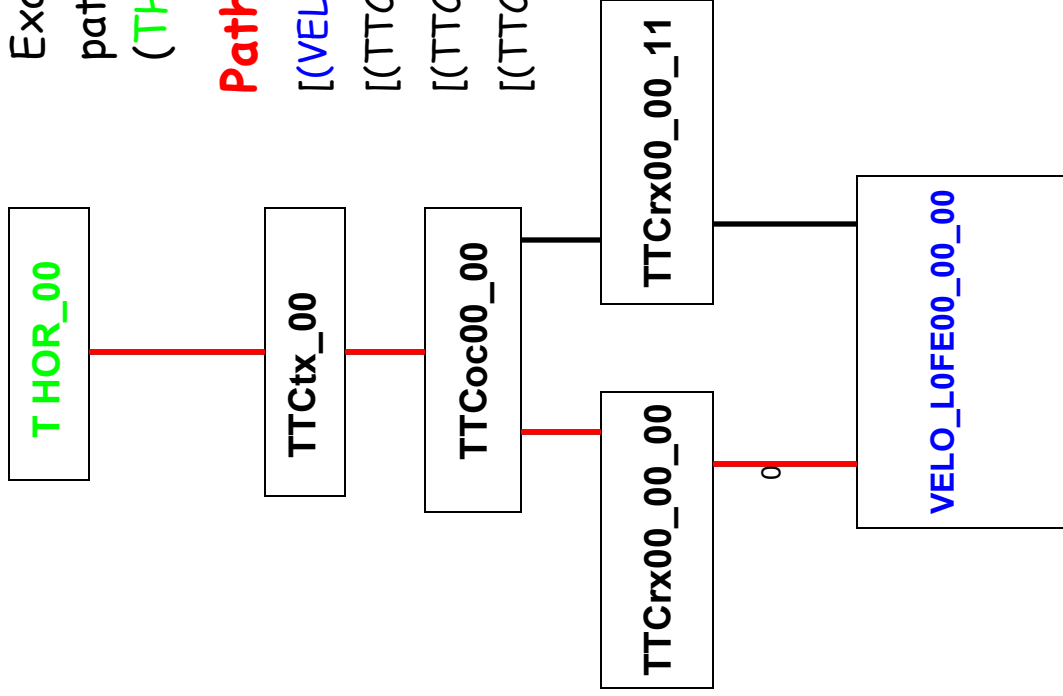


Path concept

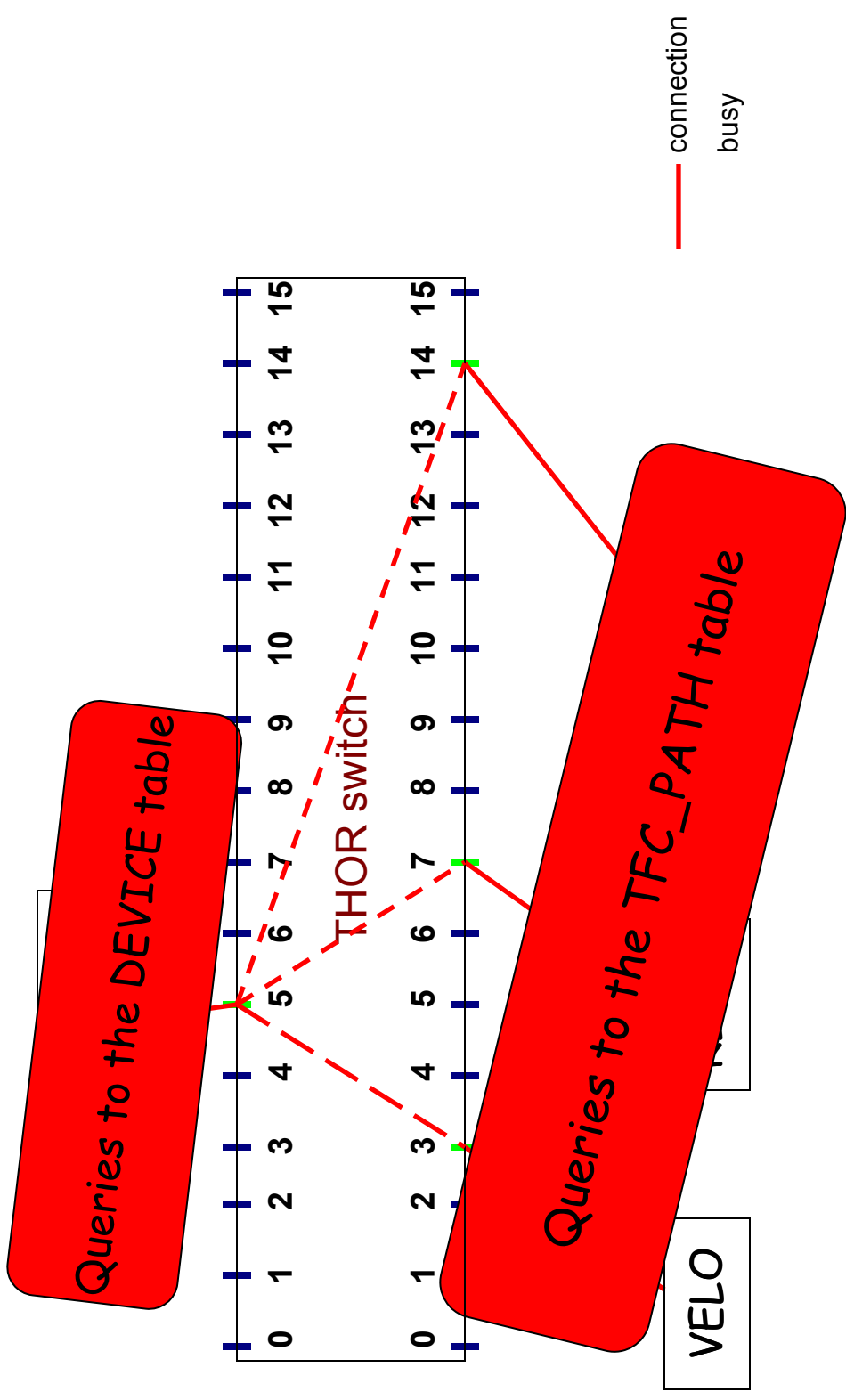
Example: I want to know **all** the possible paths **between** VELO_LOFE00_00_00 and TFC switch (THOR)

Path :

- [(VELO_LOFE00_00_00,0), (TTCrx00_00_00, 0), TFC] → 1st link
- [(TTCrx00_00_00,0) , (TTCoc00_00,0),TFC] → 2nd link
- [(TTCoc00_00,0),(TTCtx_00,0),TFC] → 3rd link
- [(TTCtx_00,0),(THOR_00,0)] → 4th link



Configuring the connectivity of the TFC switch





Entity relation model

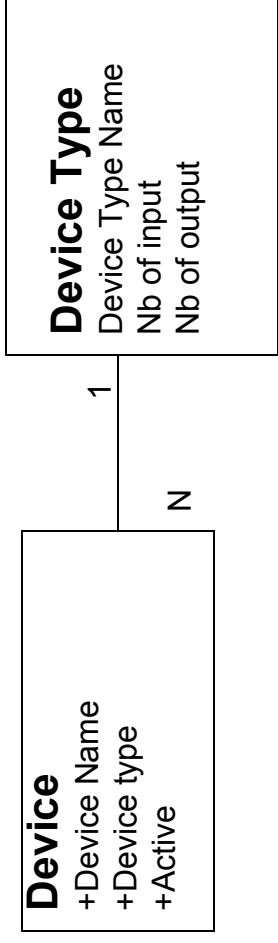
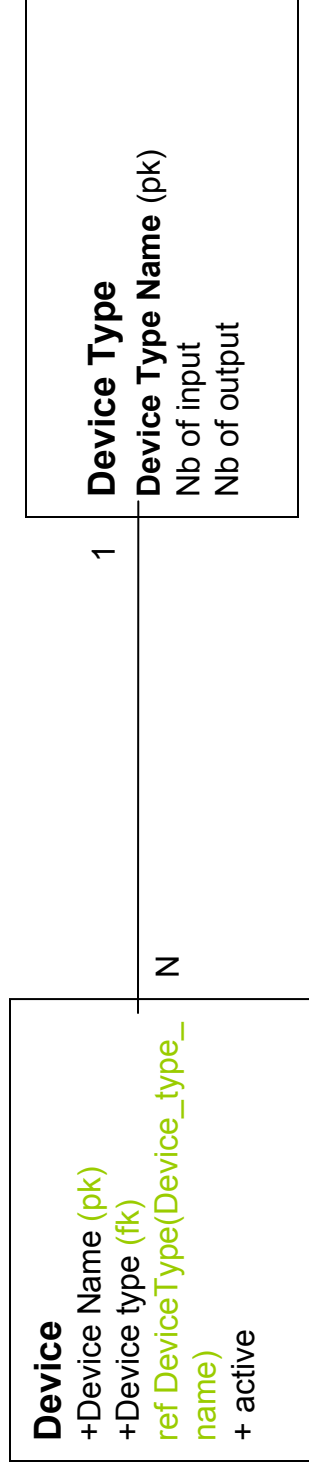


Table design



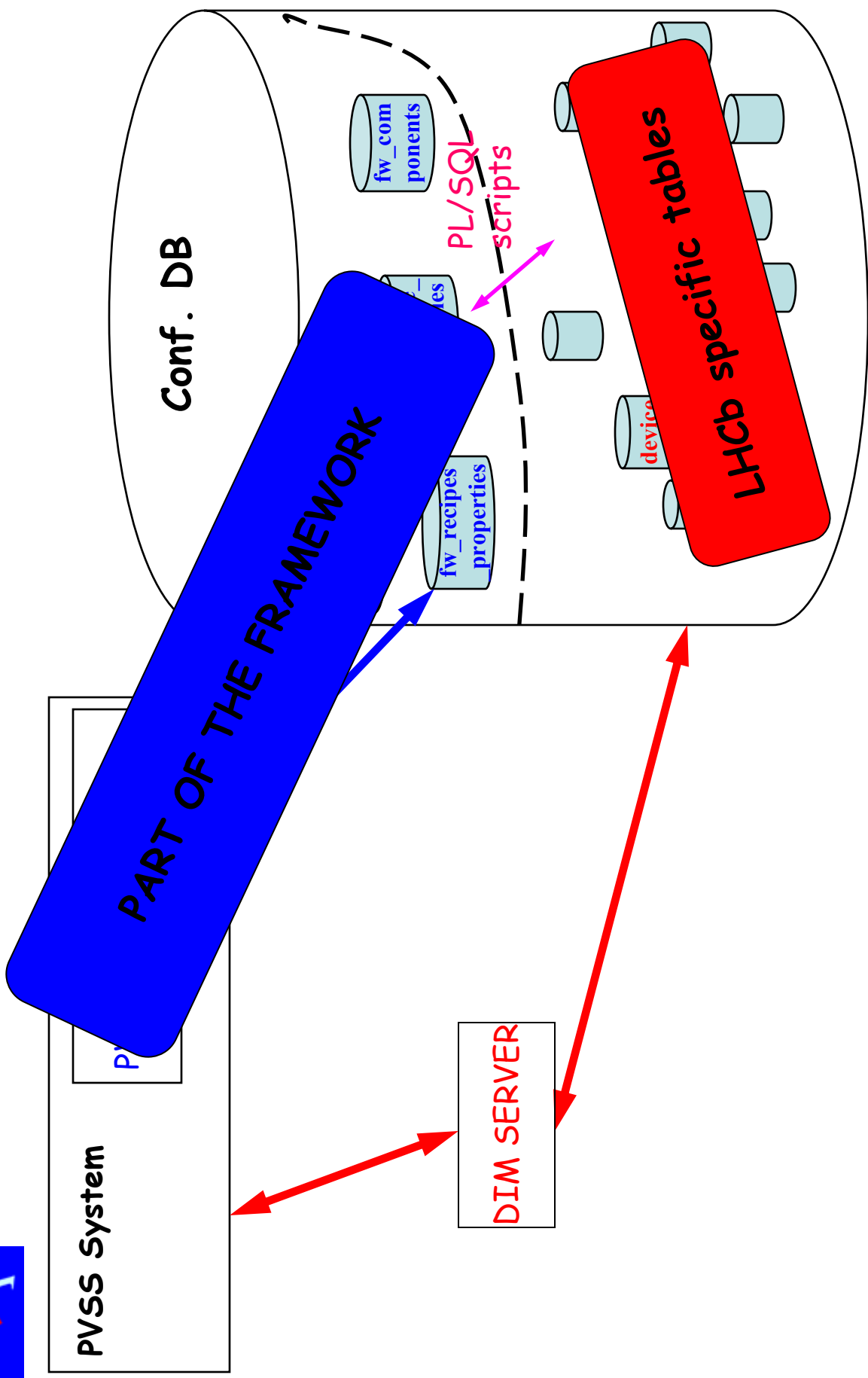


Part II

- **Configuration database & PVSS**
 - Structure of the Configuration database
 - Presentation of the DEMO
- **Conclusion**

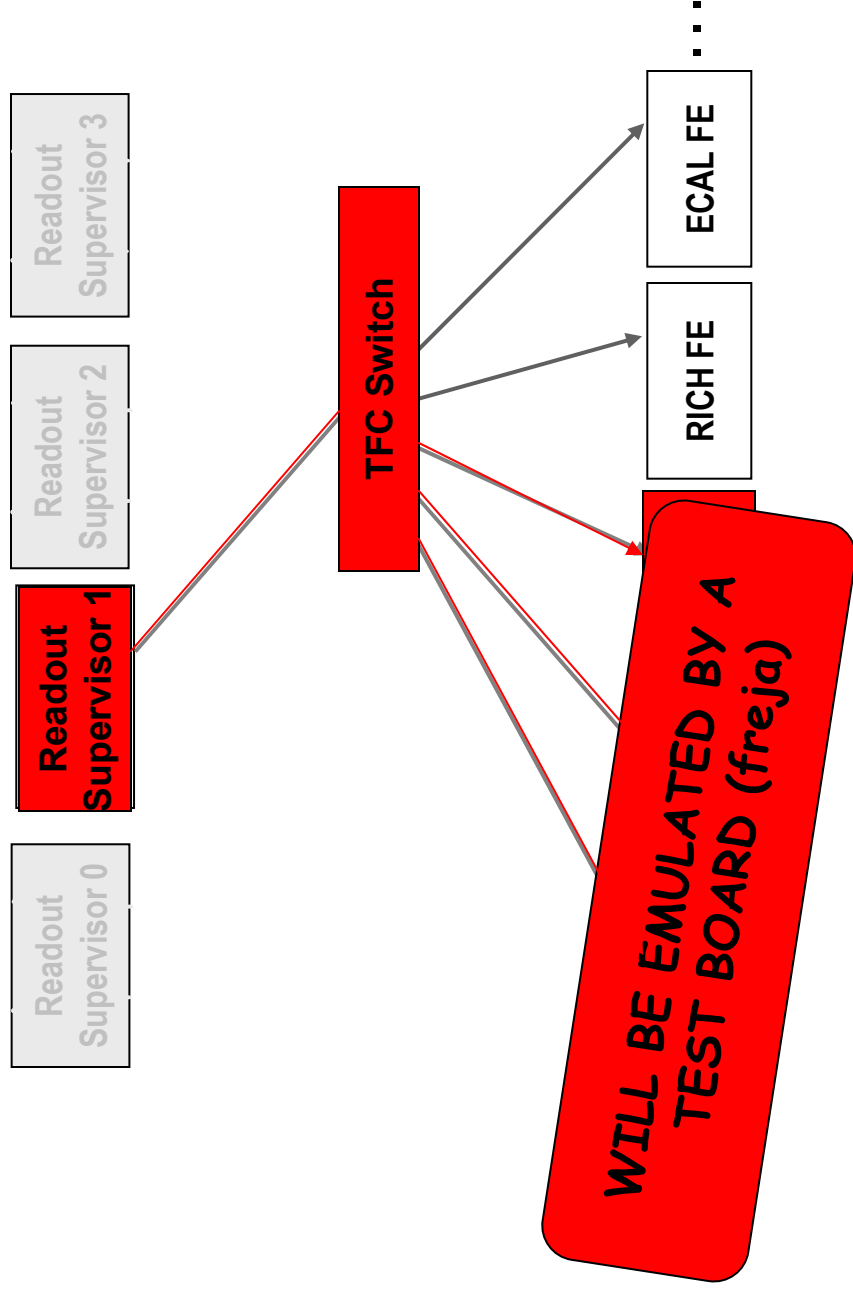


Structure of the Conf. DB



Presentation of the demo (1/2)

- Get the **connectivity** between selected subsystems and TFC switch
- Get a **free** readout supervisor and **update** its status





Presentation of the demo (2/2)

- Creation of the different devices (TFC switch, Readout supervisor...) in PVSS
- Storage in the **fw_tables** via PVSS framework
- Storage of the connectivity between devices in **LHCb tables**
- Links to other existing panels to set up the configuration
- Connection to the hardware (from the TFC system) via PVSS and DIM



Conclusion

- Design of TFC and Read Out Network system tables completed
- First prototype built to show possible queries to the Configuration database via PVSS
- **Future work:**
 - Design of other subsystem tables (connectivity)
 - Optimization of performance
 - Design of a generic API

Thank you for your attention
QUESTIONS?

Extract of the fw_device_properties

How the datapoint called TFC:Odin/ODIN_00 is stored in the Conf.DB ?

DEVICE_DPNAME	DEVICE_VERSION	PROPERTY_NAME	PROPERTY_VALUE
TFC:Odin/ODIN_00	2	.Parameter.Settings.L1trigger	0
TFC:Odin/ODIN_00	2	.Parameter.Settings.Random.P_	0
TFC:Odin/ODIN_00	2	.Parameter.Settings.Random.P_	0
TFC:Odin/ODIN_00	2	.Parameter.Settings.Random.P_	0
TFC:Odin/ODIN_00	2	.Parameter.Settings.Random.P_	0
TFC:Odin/ODIN_00	2	.Parameter.Settings.TriggerSM	0
TFC:Odin/ODIN_00	2	.Parameter.Settings.TriggerSM	0
TFC:Odin/ODIN_00	2	.Parameter.Settings.Emulator.	0
TFC:Odin/ODIN_00	2	.Parameter.Settings.Emulator.	0
TFC:Odin/ODIN_00	2	.Parameter.Settings.Emulator.	0
TFC:Odin/ODIN_00	2	.Parameter.Settings.Emulator.	0
TFC:Odin/ODIN_00	2	.Parameter.Settings.Emulator.	0
TFC:Odin/ODIN_00	2	.Parameter.Settings.Inhibit.R	FALSE
TFC:Odin/ODIN_00	2	.Parameter.Settings.Inhibit.R	FALSE
TFC:Odin/ODIN_00	2	.Parameter.Settings.Inhibit.R	FALSE
TFC:Odin/ODIN_00	2	.Parameter.Settings.Inhibit.R	FALSE
TFC:Odin/ODIN_00	2	.Parameter.Settings.Inhibit.P	0
TFC:Odin/ODIN_00	2	.Parameter.Settings.Apply	0
TFC:Odin/ODIN_00	2	.Register.Readings.Q1.R000	00000000000000000000000000000000

One attribute and its value per line are stored



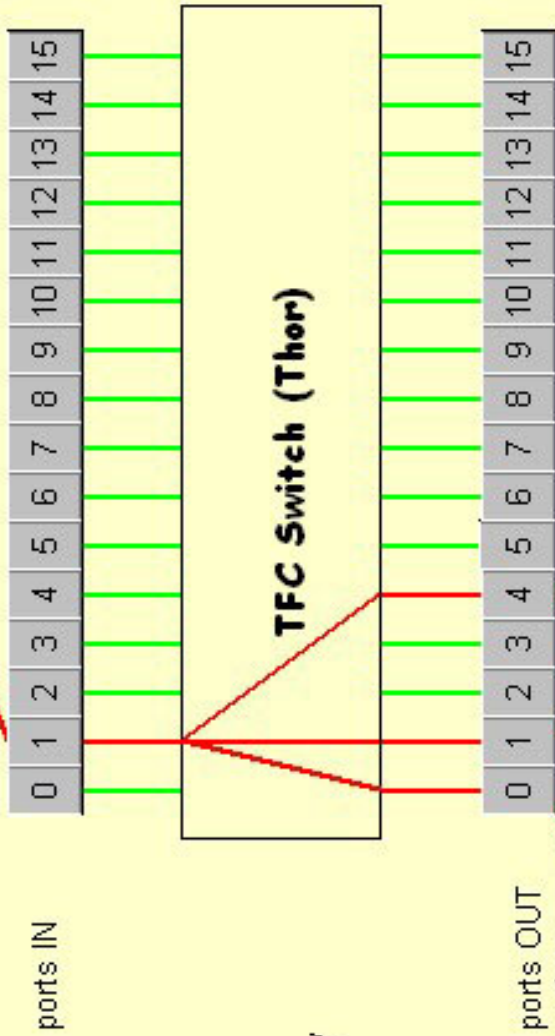
TFC Startup Panel

7:51:06 PM 5/24/2004

Read Out Supervisor:

Select one activity

- Physics
- Calibrations
- Cosmics



— = free
 — = busy

Select a subsystem:

- Velo
- Silicon Tracker
- Outer Tracker
- RICH1
- RICH2
- PS/SPD
- ECAL
- HCAL
- Muon

Configure THOR

Find ODIN

Exit

TFC Local Run Control

7:52:47 PM 5/24/2004

Controlling Odin/ODIN_01

Running physics

Orbits	104790720
Bunch IDs	0x831890
Total L0 Triggers	1787551549
Gated L0 Triggers	1421242124
L1 Triggers	1421241332
L1 Rejects	1020721079
L1 Accepts	400520253
L1 IP destinations	1001117672
HLT IP destinations	80104051

- L0 trigger**
- L0 external trigger
 - Random L0 trigger
 - Always force random L0
 - Periodic trigger A
 - Calibration trigger A
 - Auxiliary trigger
 - Always force auxiliary
 - Timing trigger

- L1 trigger**
- L1 external trigger
 - L1 trigger via GbE
 - L1 internal trigger
 - Random L1 trigger

- Commands**
- LOE FE reset
 - L0+L1E FE reset
 - Periodic command
 - IP assignments

Expert panel

Address I2C

Value (R)

Value (W) **Write**

Mask (W) **Read**

Counter Reset **System Reset**

Counter Update **Subscribe Cnts**

Status

FREJA Monitoring

7:54:11 PM 5/24/2004

Monitoring Freja/FREJA_1

Control buttons:

- Counter Reset
- System Reset
- Subscribe Counters
- Counter Update

Channel B Decoder

Channel B Decoder

Commands		L1 triggers	
L0 el rst	0	Rejects	2587732112
L0/L1 el rst	0	Physics	0
Calibration	5524940	Random	465838196
Others	-857448640	Periodic	131072
L1 triggers	-1241199641	Calibration	66275
		Others	0

General monitor

General monitor

BCR	383751001
ECR	1493194
L0 Accepts	3056808669
L0 Sent	0
L1 Sent	8686024

Channel B long-broadcasts monitor

Channel B long-broadcasts monitor

Destinations		MEP flush
L1	0	0
HLT	0	0
Full IP broadcast	0x0	

Expert panel

Expert panel

I2C

0xCA00

Write

Read

Address

Value (R)

Value (W)

Mask (W)

Exit