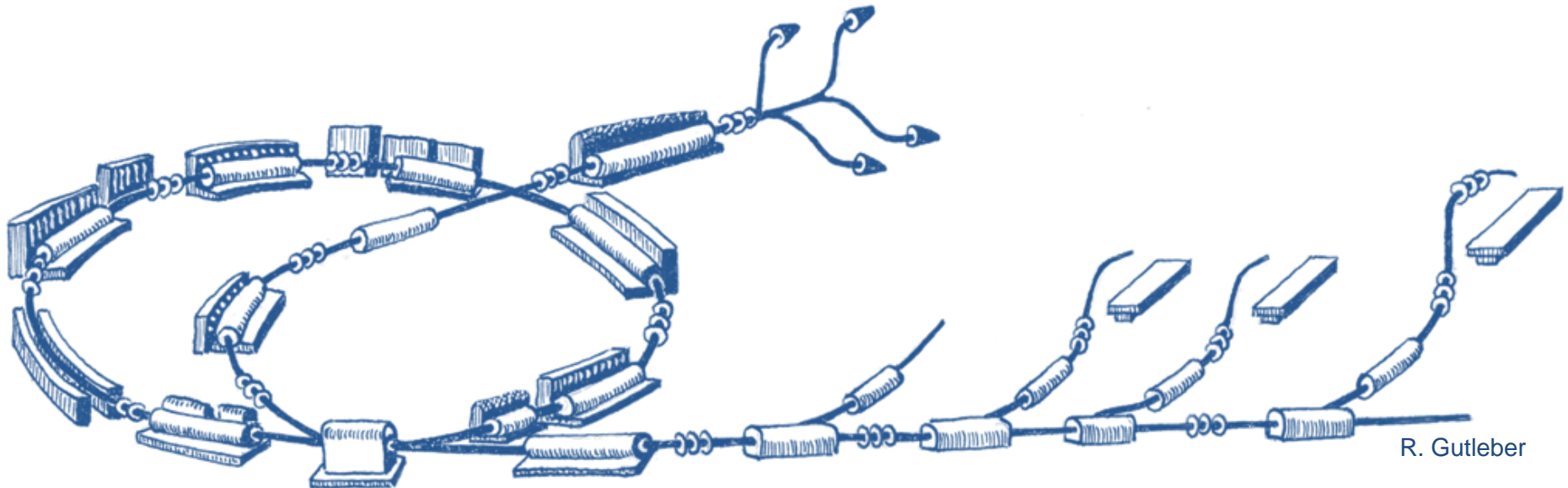


WP CO

Column Status and Progress

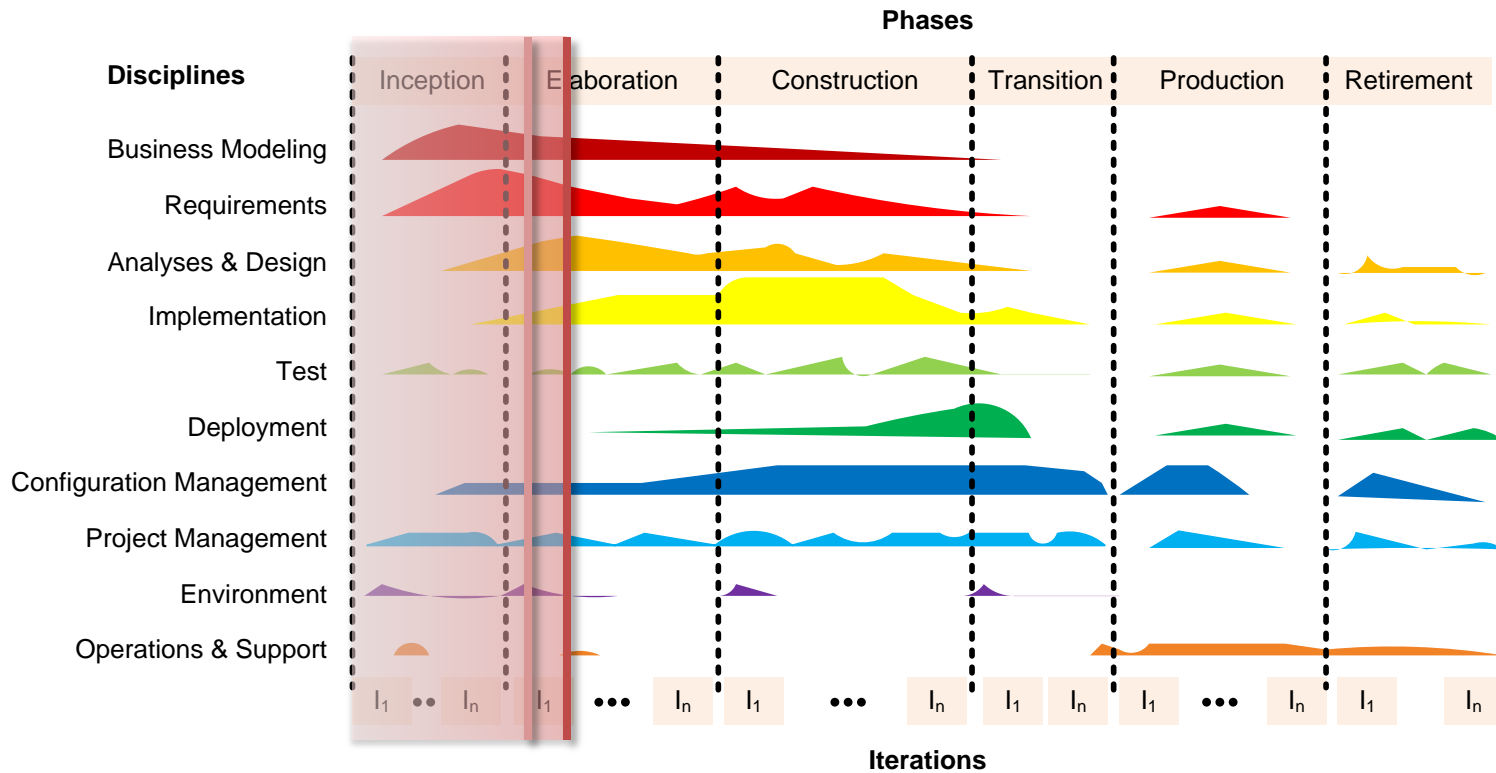
October 7th, 2010

Johannes Gutleber



R. Gutleber

Current Phase (Elaboration)



- Focus on **requirements, architecture, design**
- **Prototype** implementation and technology evaluation
- Prepare **development setup**



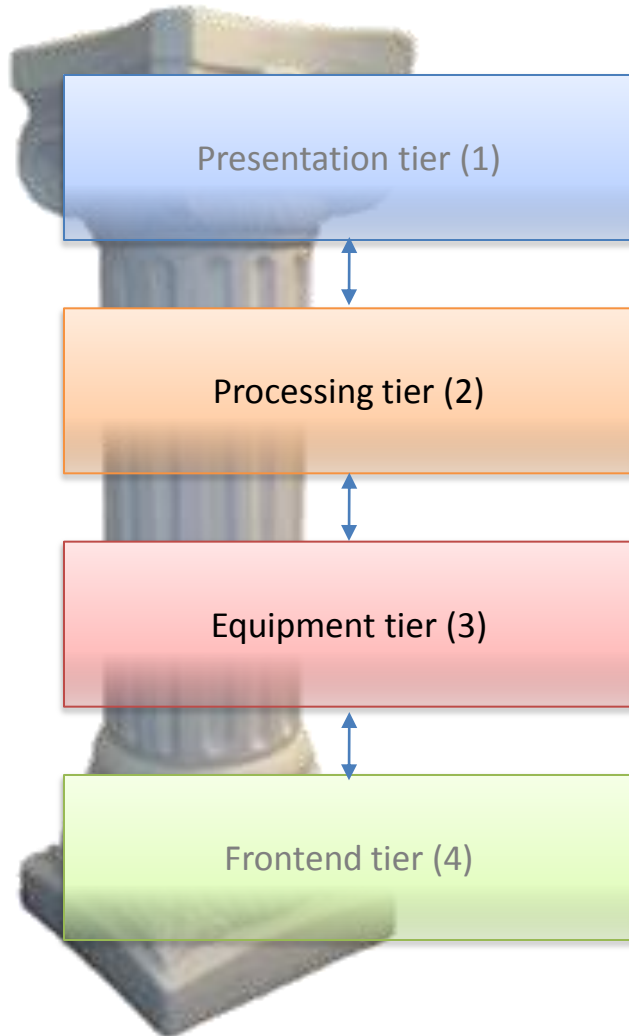
Goals for 2010 (Reminder)

- Complete **architecture** and **implementing** first **components**
- Complete and **MTS** design and demo core functionality
- Complete **PCC** design and demo core functionality
- Make PCO **FED** ready for production
- Elaborate **ProShell** design and API skeleton
- Demonstrate **use of RMS**, database filler, PVSS filler
- Have development infrastructure (HW, SW) operational



MACS COLUMN 2010

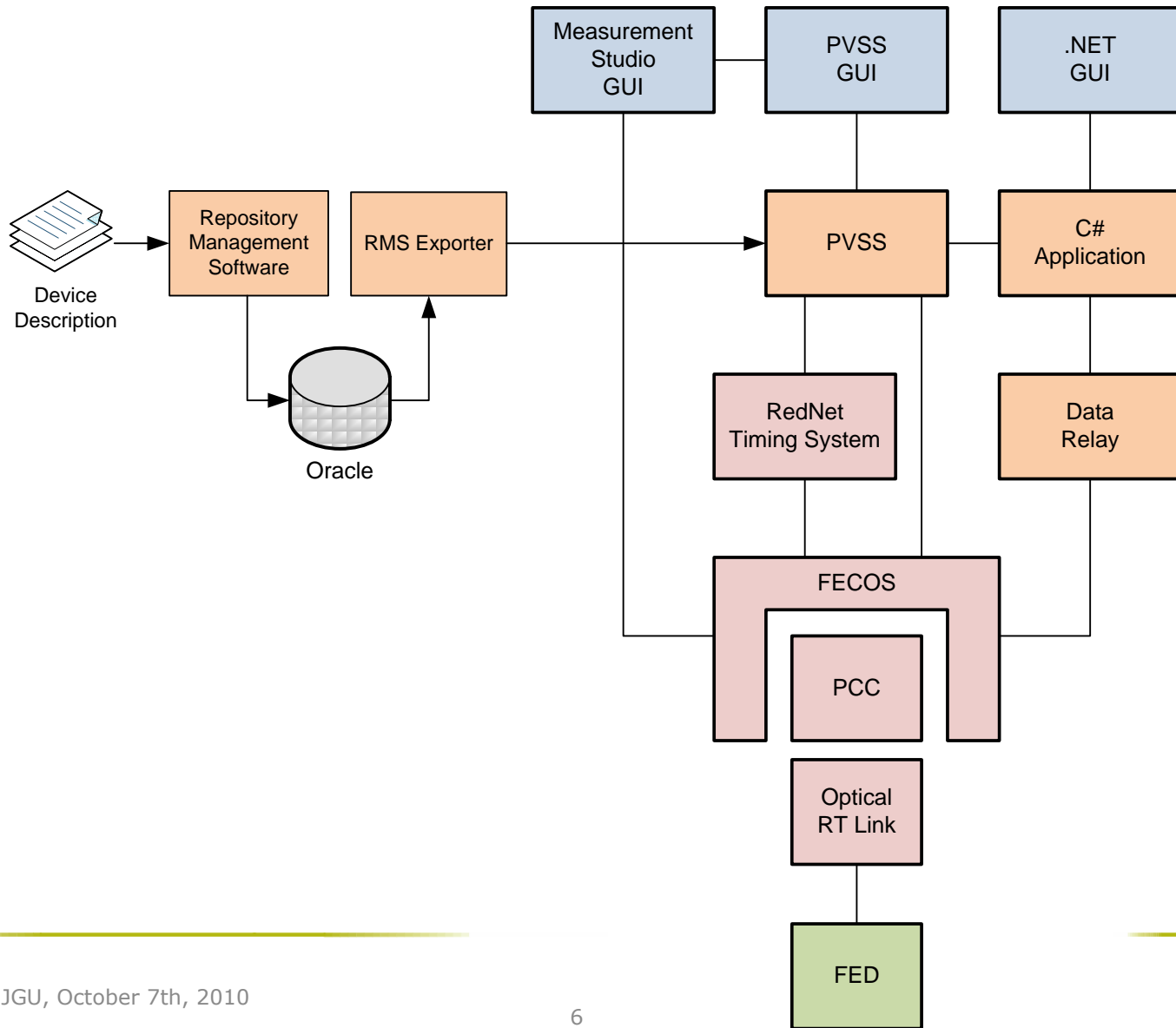
Column Overview



- Functional **vertical cut** through the control system architecture for
 - confirming technology choices
 - Refining the design
 - Improving project cost/time estimate
 - Providing users with a working infrastructure skeleton
- To be **replicated** for each subsystem
- Leads to a **scalable** system
 - In terms of performance
 - In terms of management

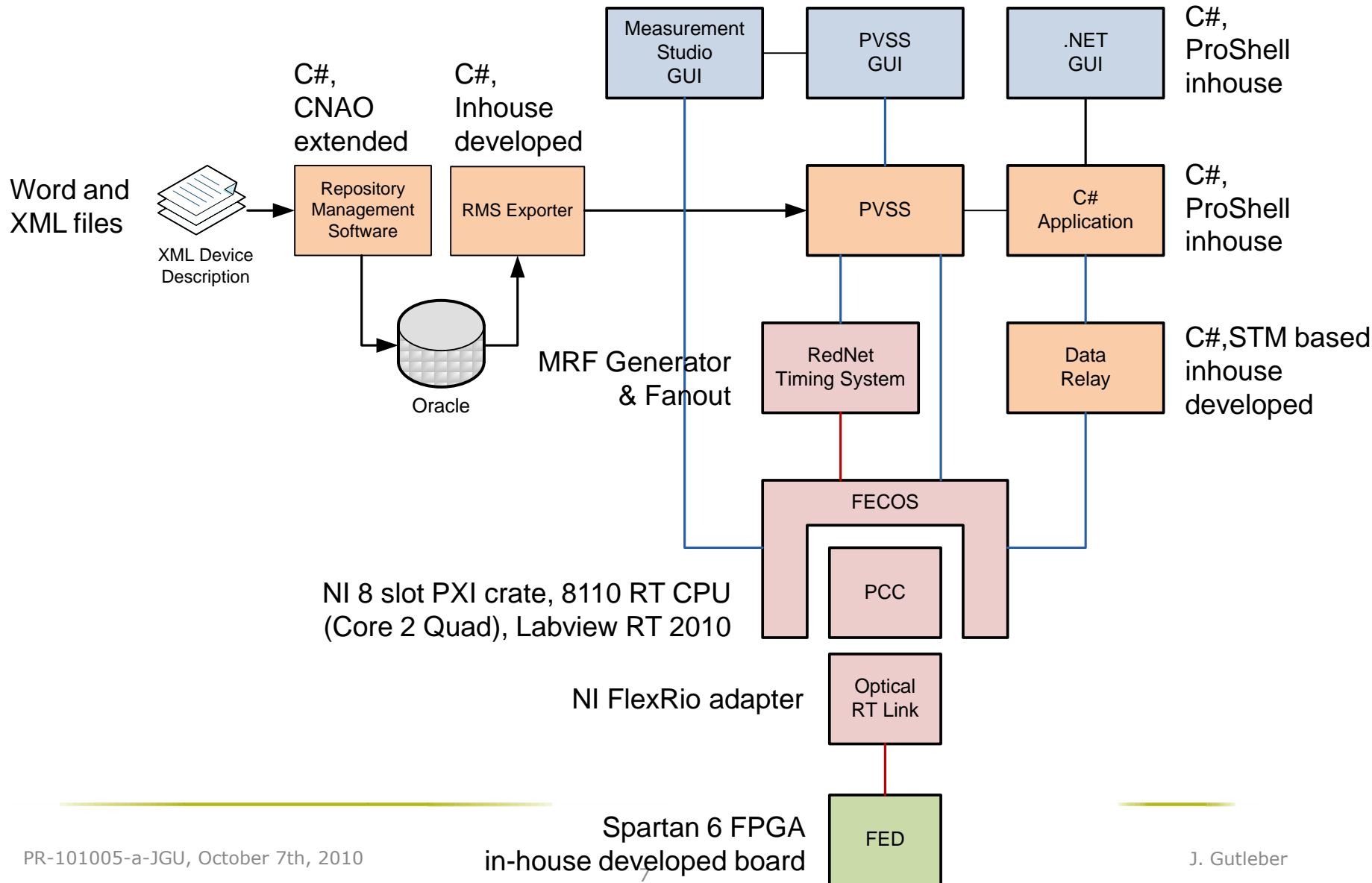


Column Scope





Column Scope



STATUS REPORT





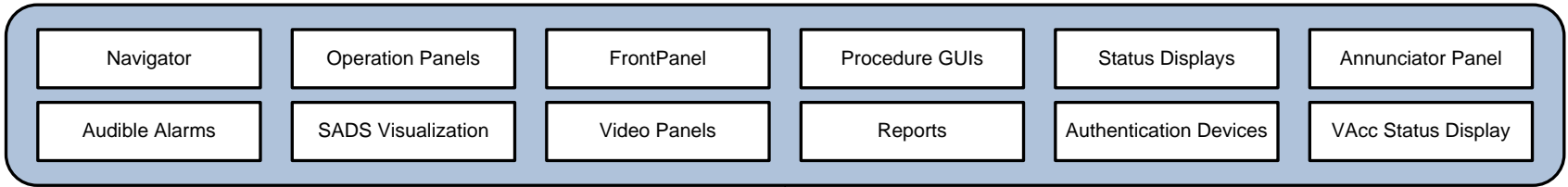
Plan Adaptations

- Provide **FECOS earlier than foreseen** (January 2011)
 - Beam Diagnostics and Instrumentation
 - Suppliers to implement with FECs with the framework
- SADS postponed
 - lack of manpower
- **ProShell**
 - Provide showcase earlier than foreseen (January 2011)
 - ProShell design slowed down due to lack of manpower
- Beam Interlock System technology evaluation
 - slowed down due to lack of manpower



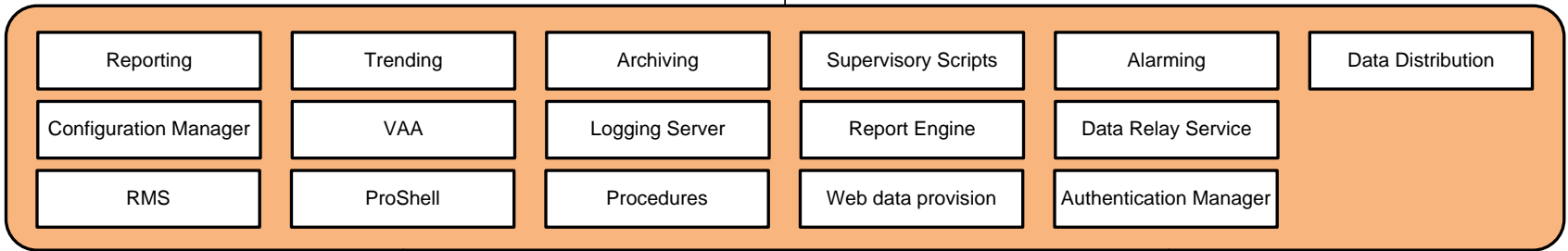
Architecture Overview

Tier 1



Technical Network

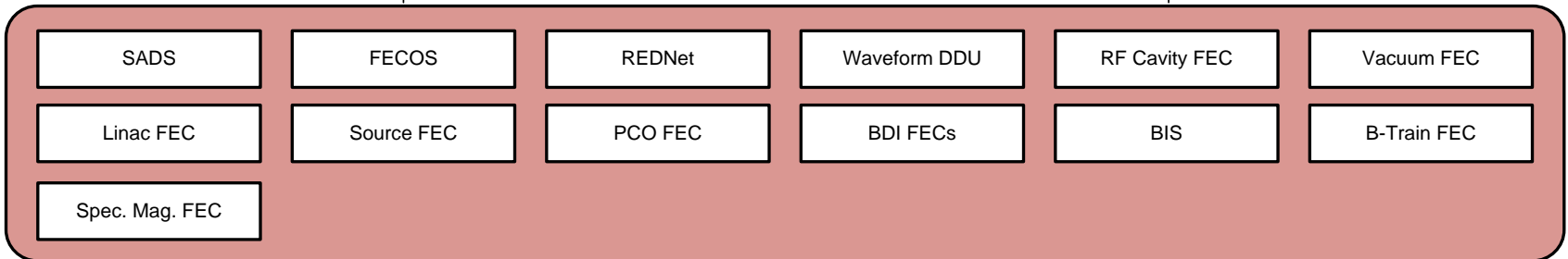
Tier 2



Technical Network Slow Control

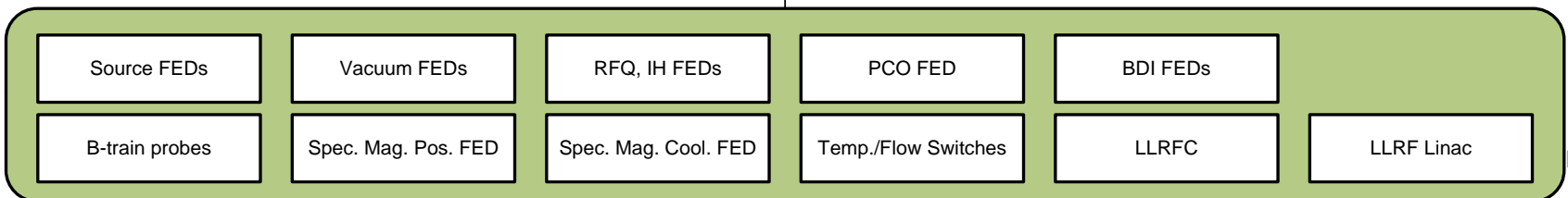
Technical Network Fast Control

Tier 3



Tier 4

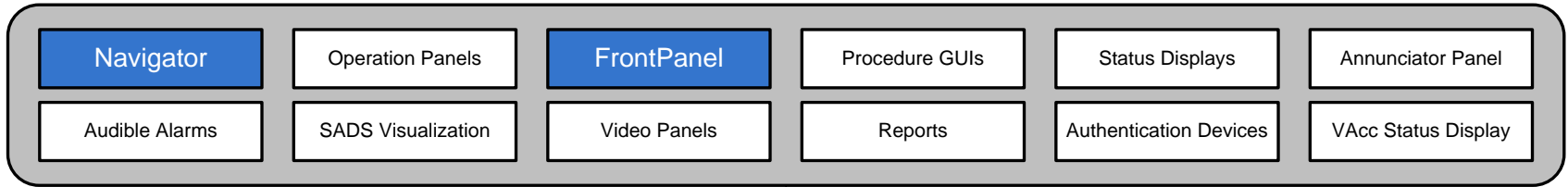
Fieldbus Links





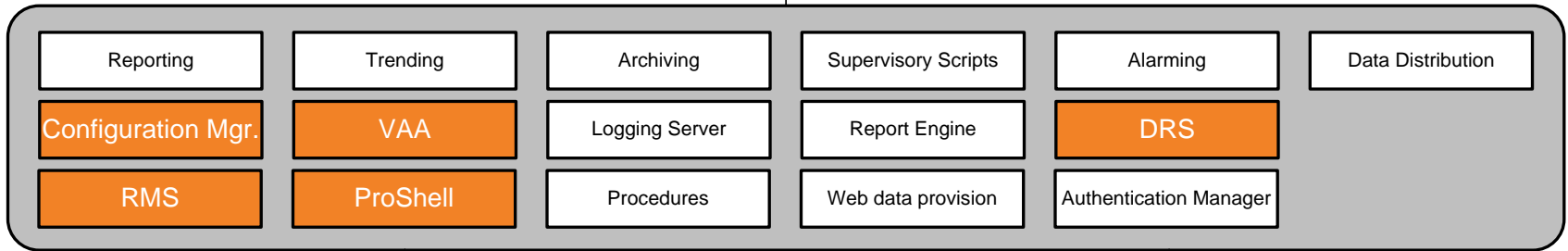
Current Activities

Tier 1



Technical Network

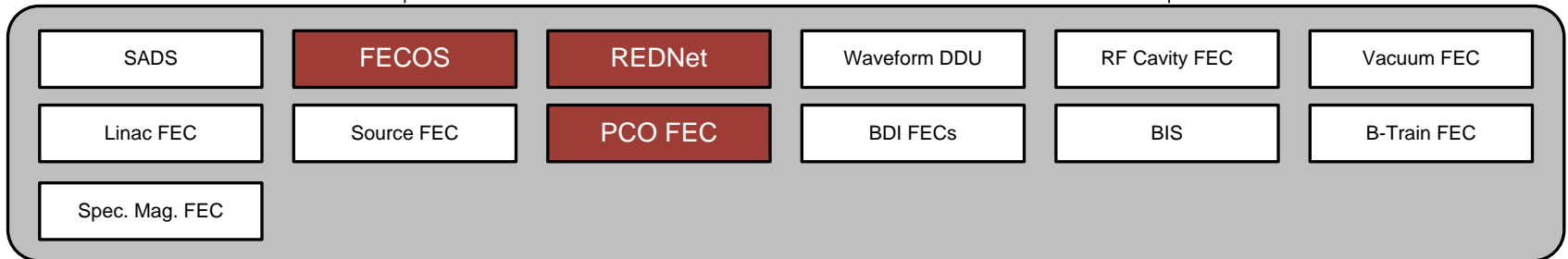
Tier 2



Technical Network
Slow Control

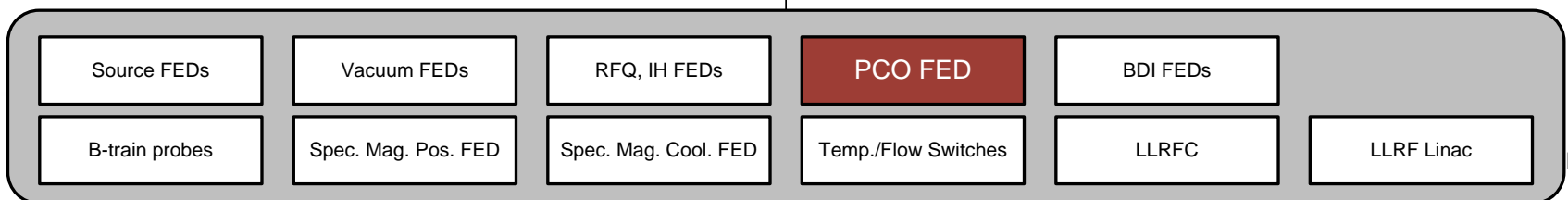
Technical Network
Fast Control

Tier 3



Tier 4

Fieldbus Links

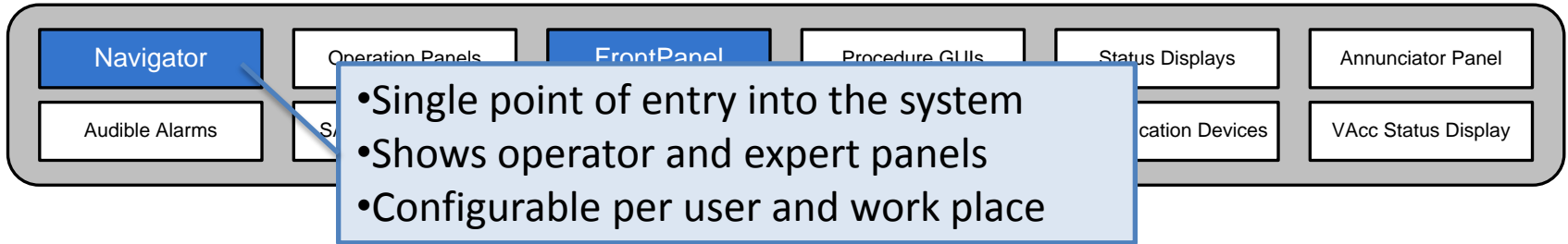


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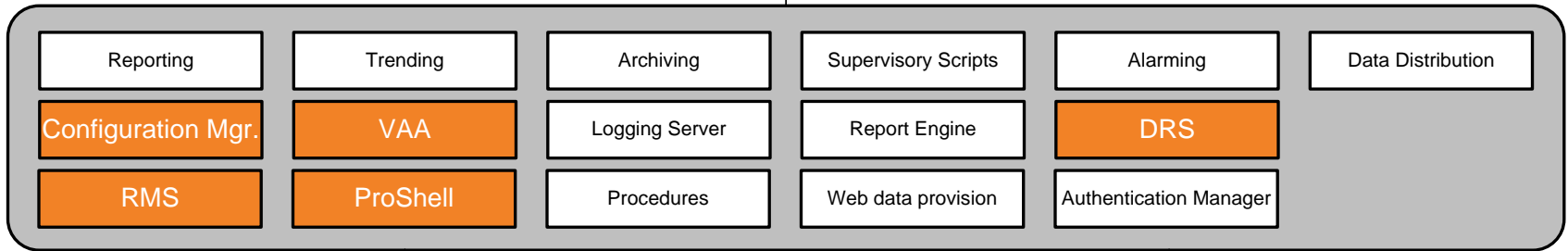


Current Activities

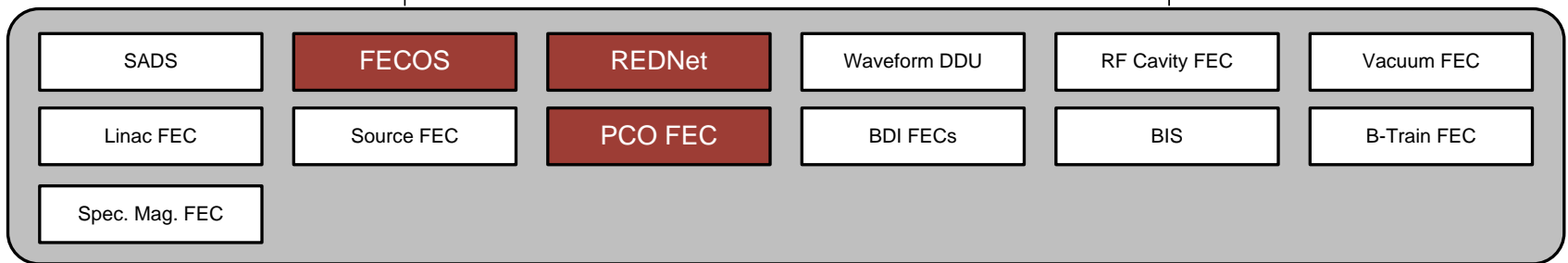
Tier 1



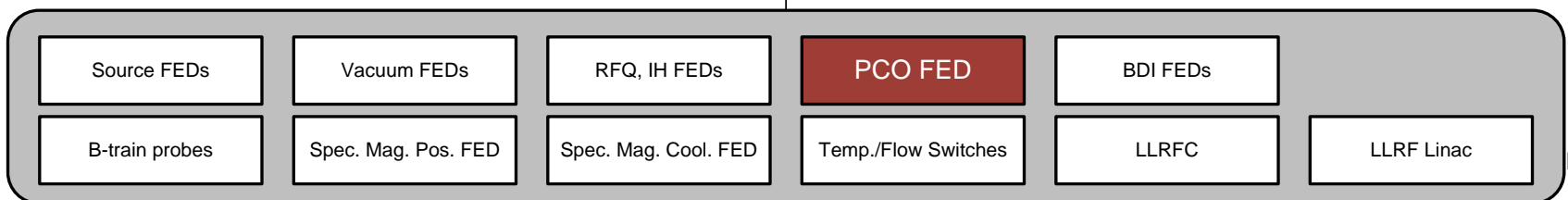
Tier 2



Tier 3



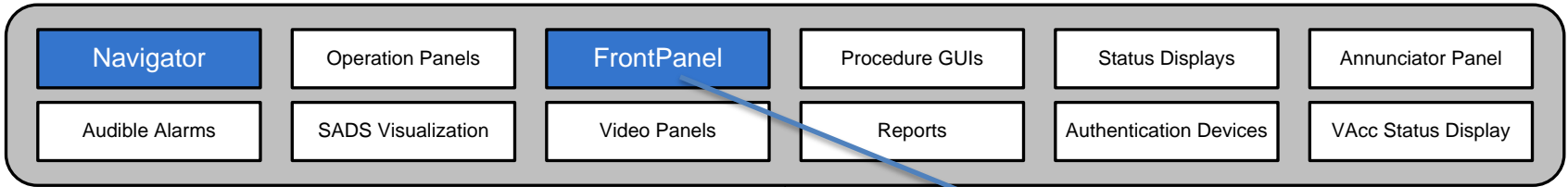
Tier 4





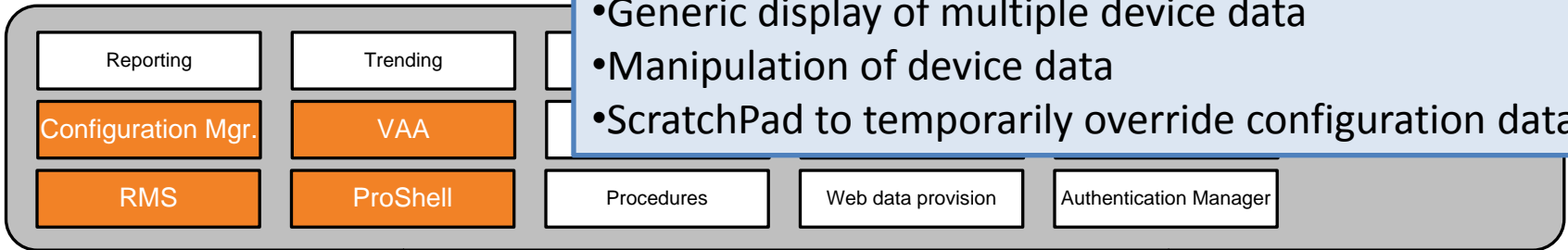
Current Activities

Tier 1



Technical Network

Tier 2

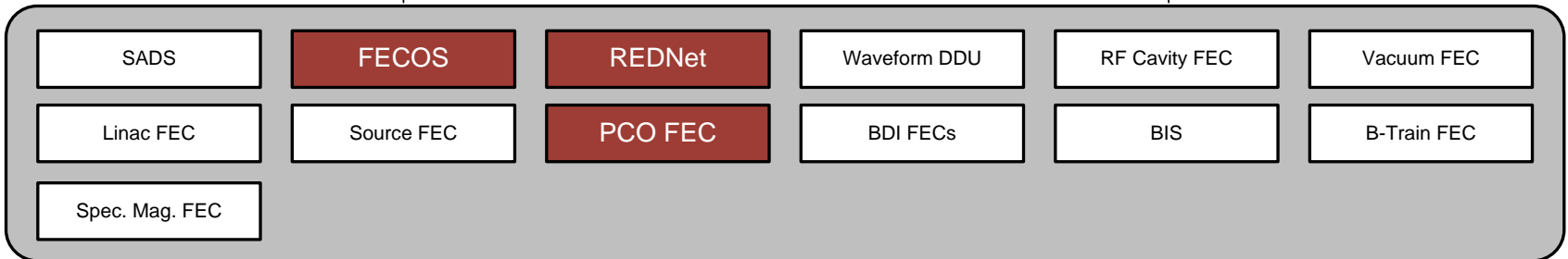


- Generic display of multiple device data
- Manipulation of device data
- ScratchPad to temporarily override configuration data

Technical Network Slow Control

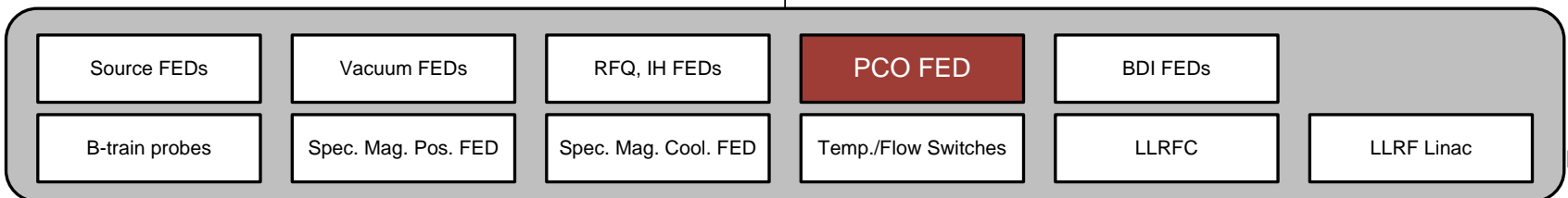
Technical Network Fast Control

Tier 3



Fieldbus Links

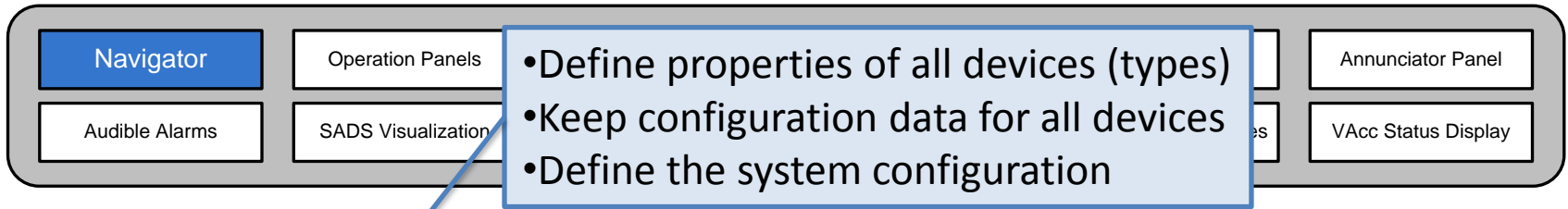
Tier 4



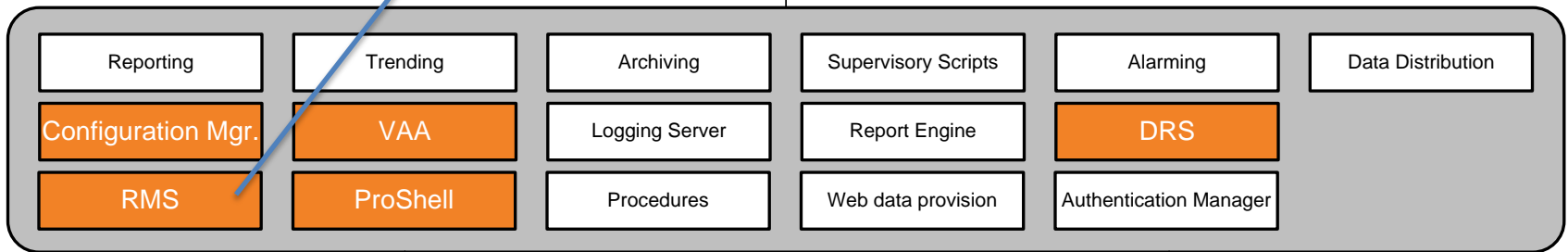


Current Activities

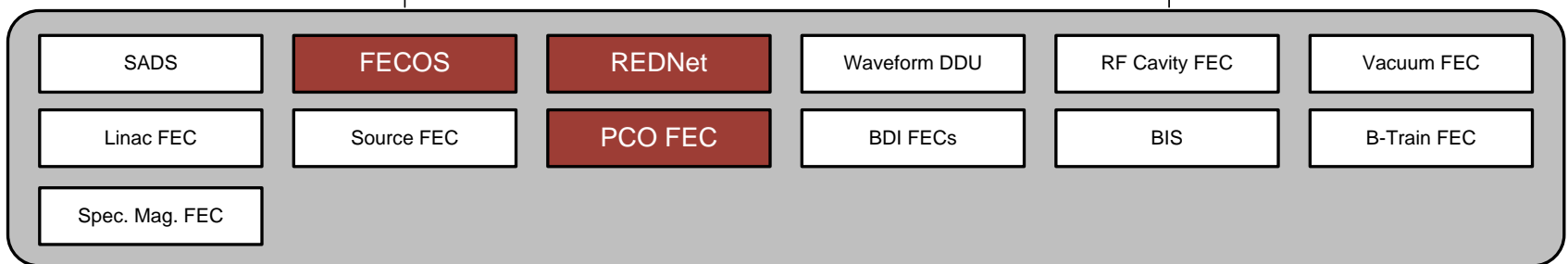
Tier 1



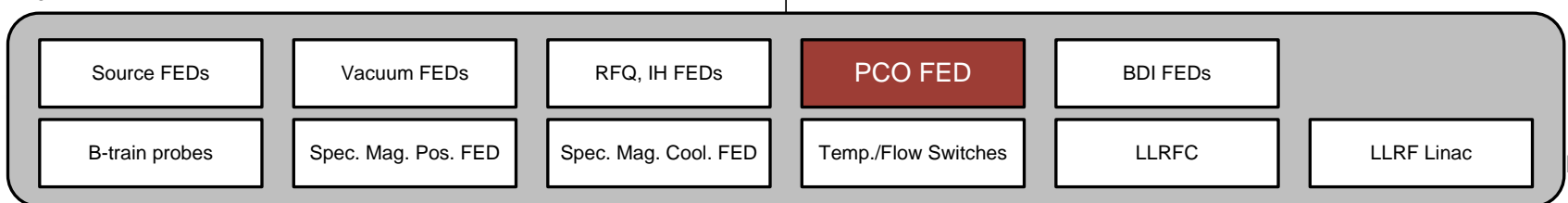
Tier 2



Tier 3



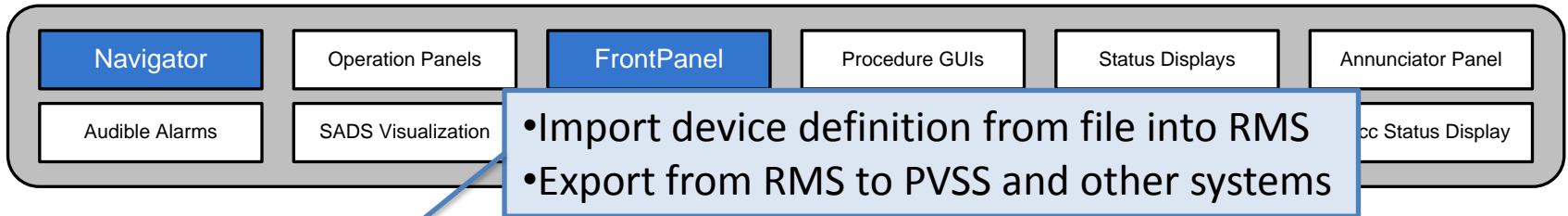
Tier 4



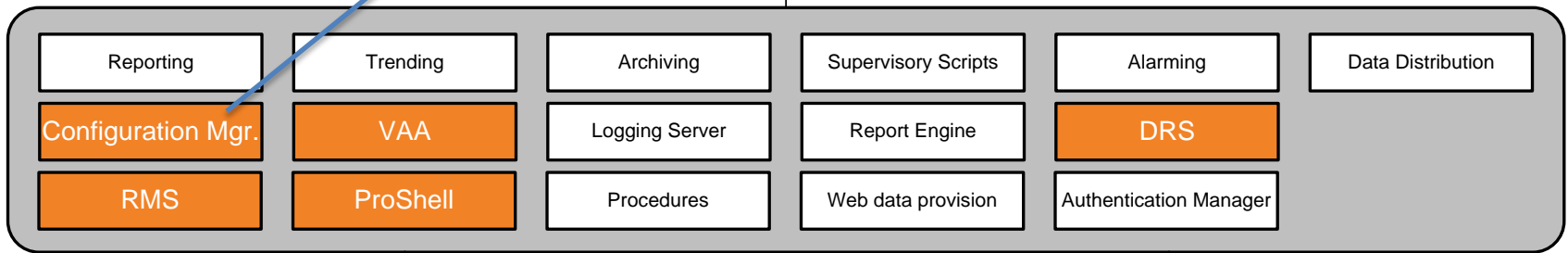


Current Activities

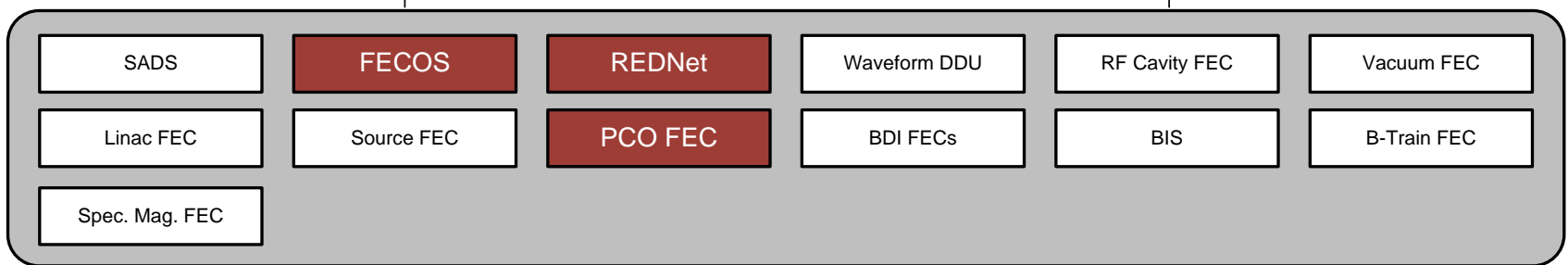
Tier 1



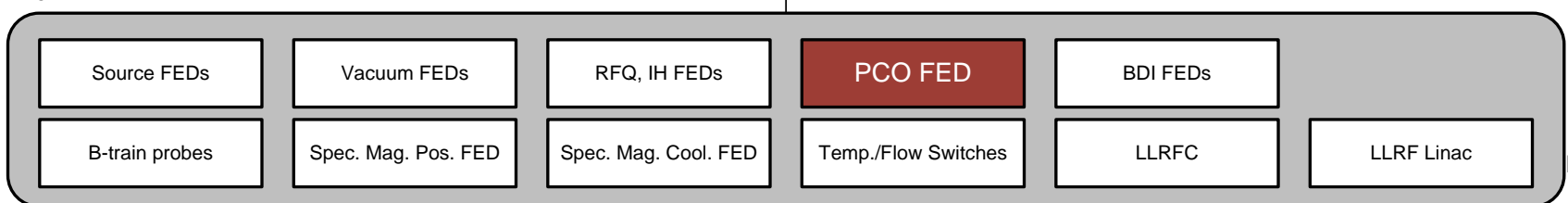
Tier 2



Tier 3



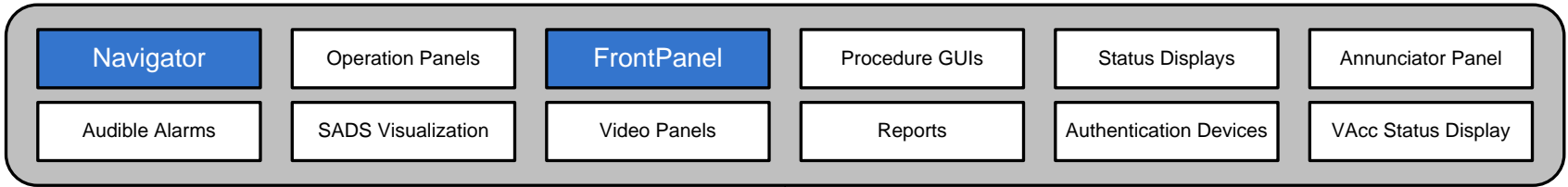
Tier 4





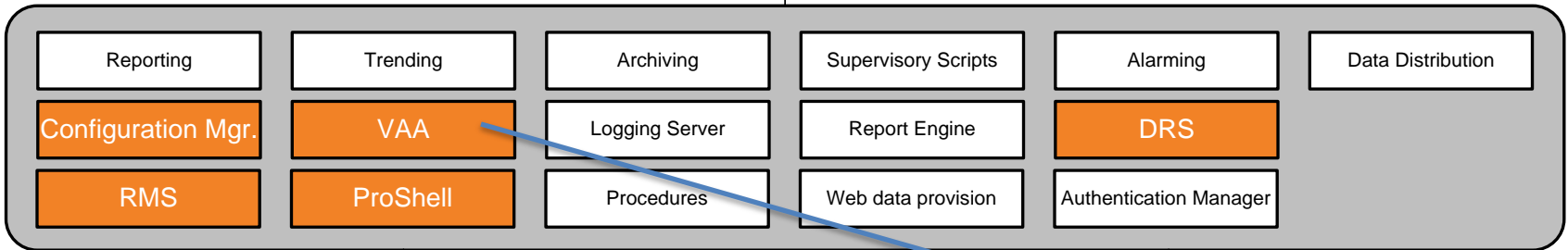
Current Activities

Tier 1



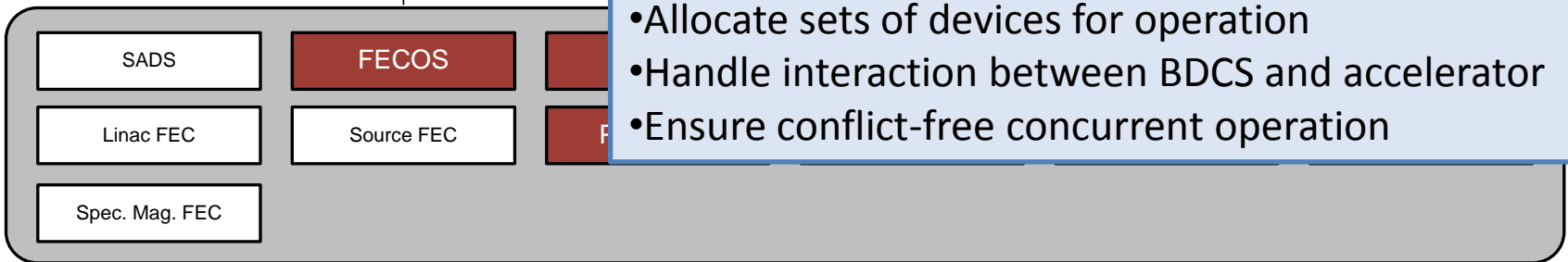
Technical Network

Tier 2



Technical Network Slow Control

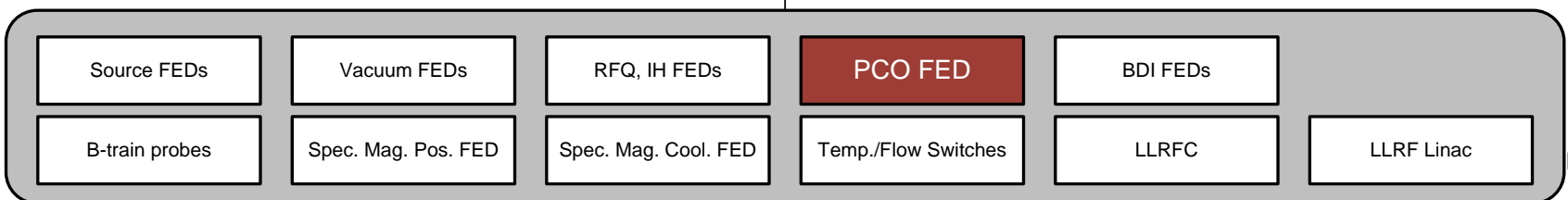
Tier 3



- Allocate sets of devices for operation
- Handle interaction between BDCS and accelerator
- Ensure conflict-free concurrent operation

Technical Network East Control

Tier 4

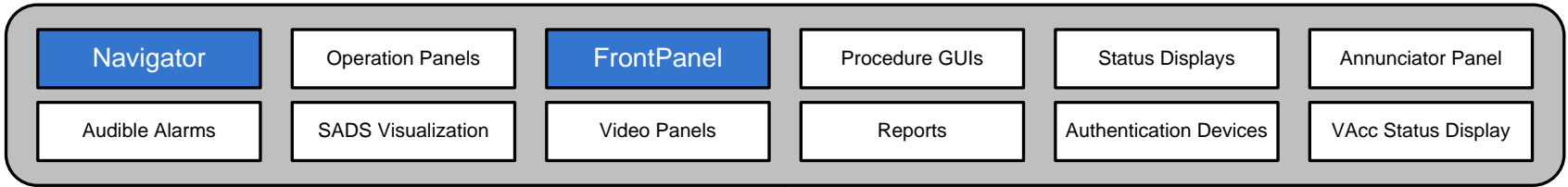


Fieldbus Links



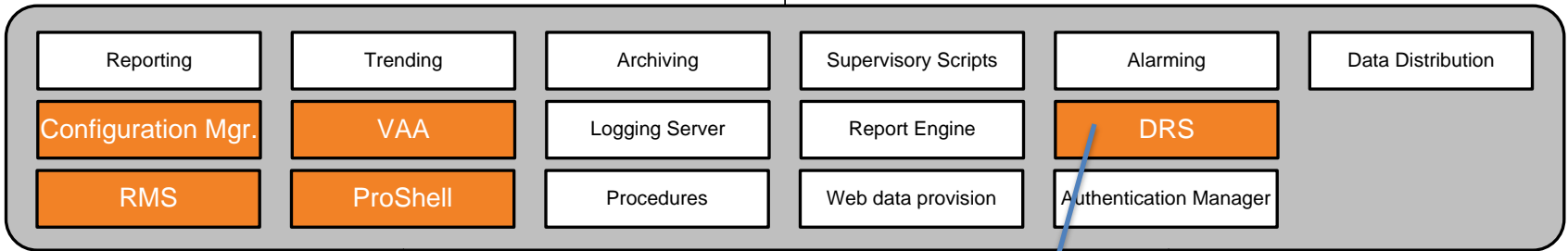
Current Activities

Tier 1



Technical Network

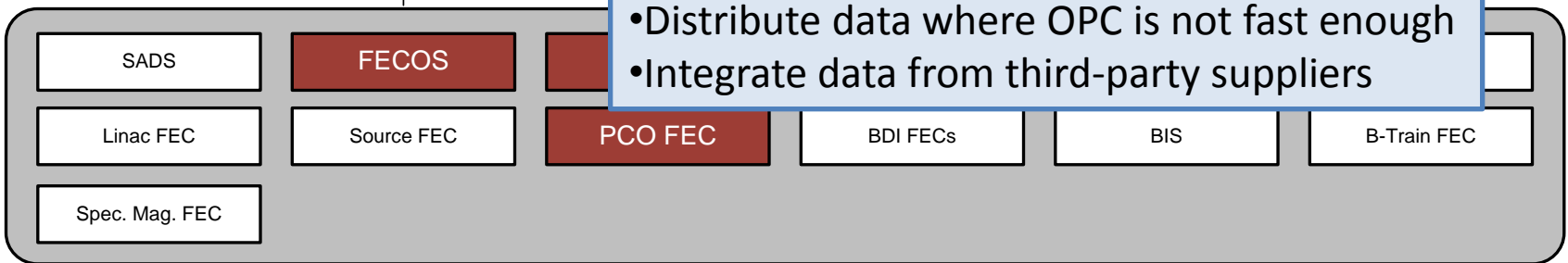
Tier 2



Technical Network
Slow Control

Technical Network
Fast Control

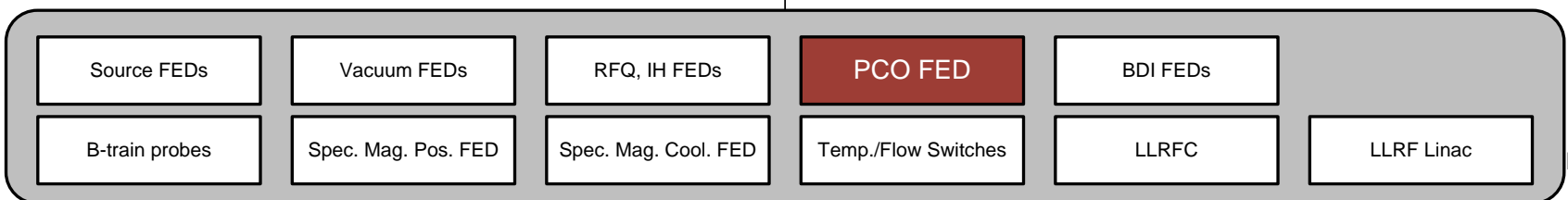
Tier 3



- Distribute data where OPC is not fast enough
- Integrate data from third-party suppliers

Tier 4

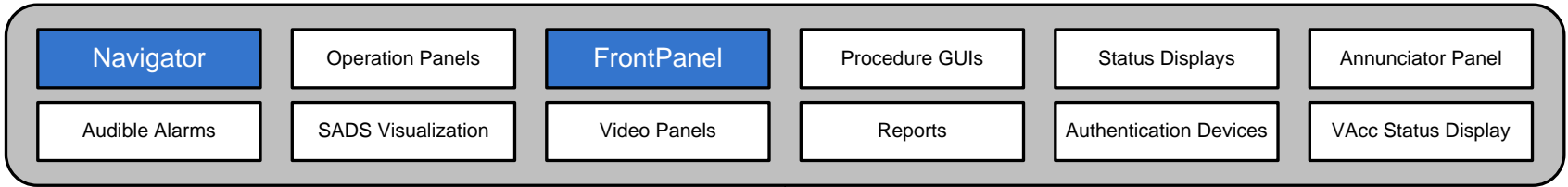
Fieldbus Links



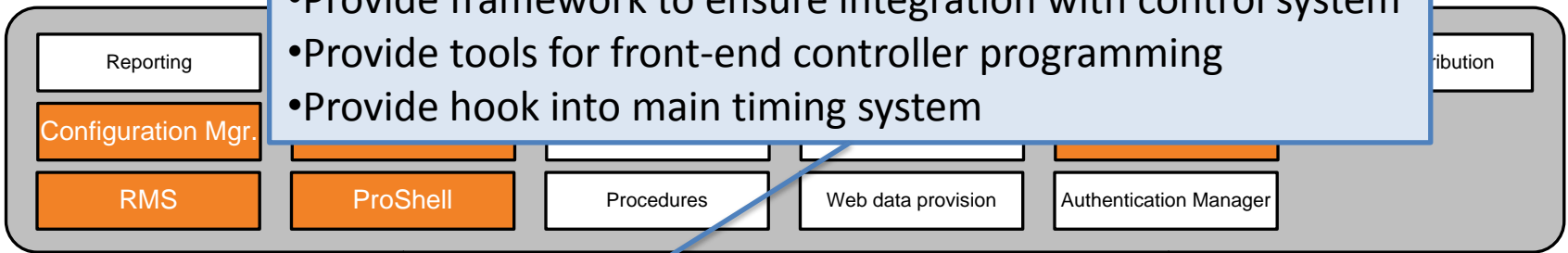


Current Activities

Tier 1

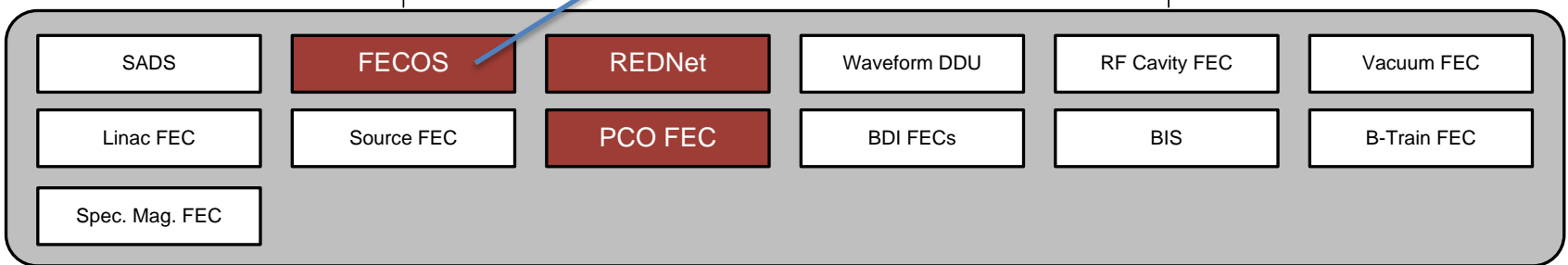


Tier 2

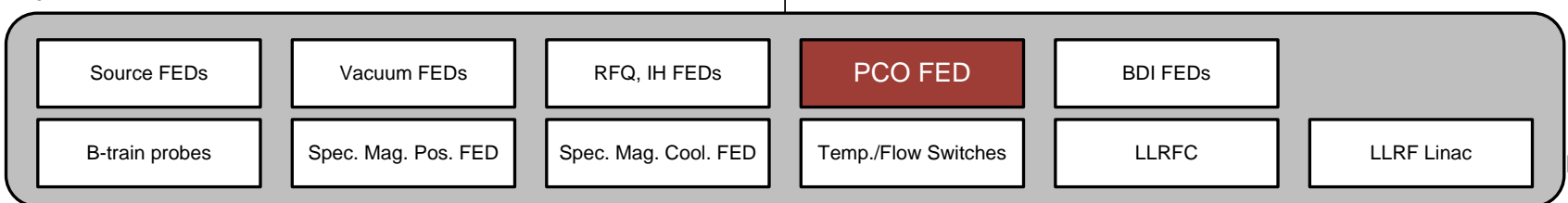


- Provide framework to ensure integration with control system
- Provide tools for front-end controller programming
- Provide hook into main timing system

Tier 3



Tier 4



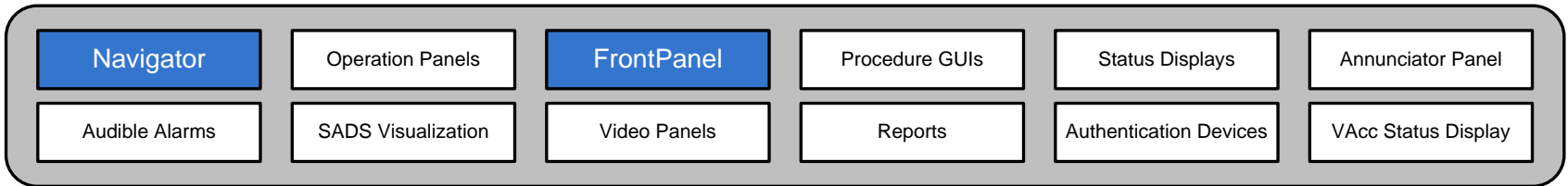
Technical Network Slow Control Technical Network Fast Control

Fieldbus Links

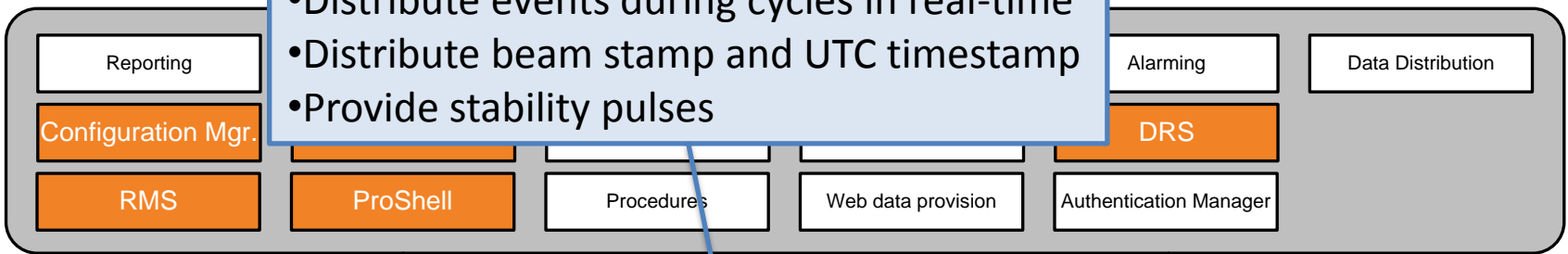


Current Activities

Tier 1

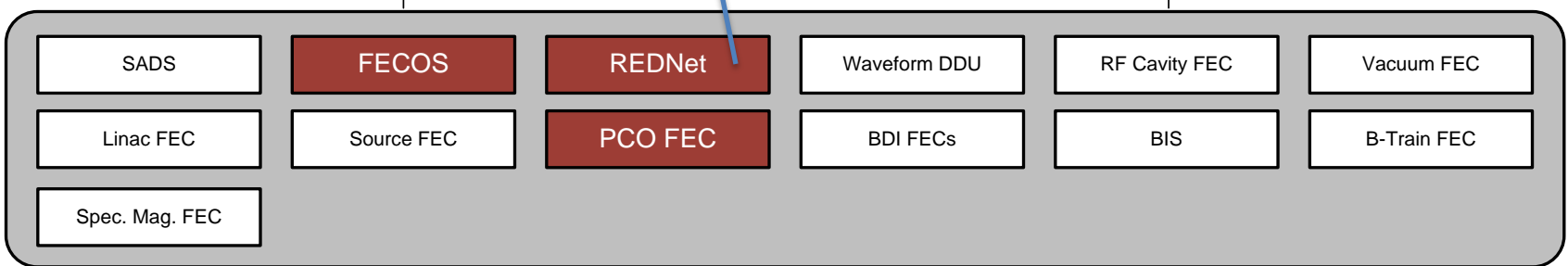


Tier 2

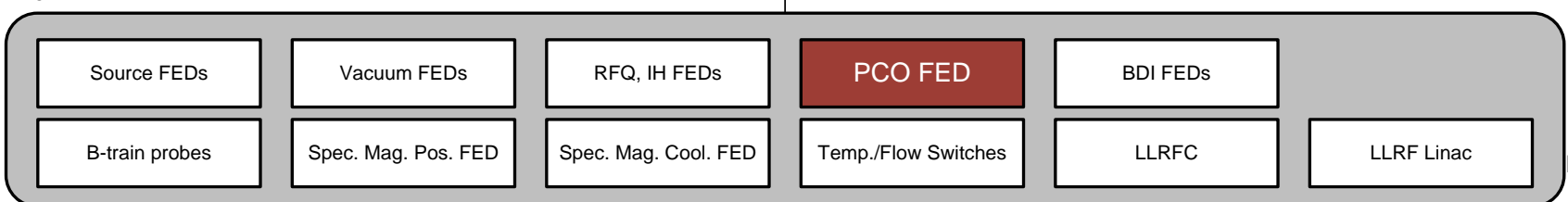


- Distribute events during cycles in real-time
- Distribute beam stamp and UTC timestamp
- Provide stability pulses

Tier 3



Tier 4

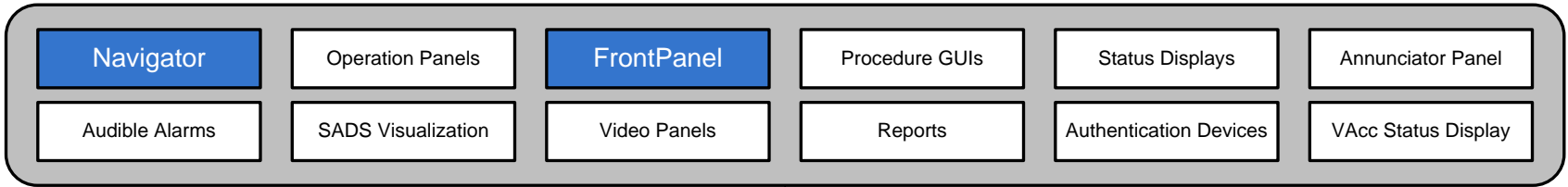


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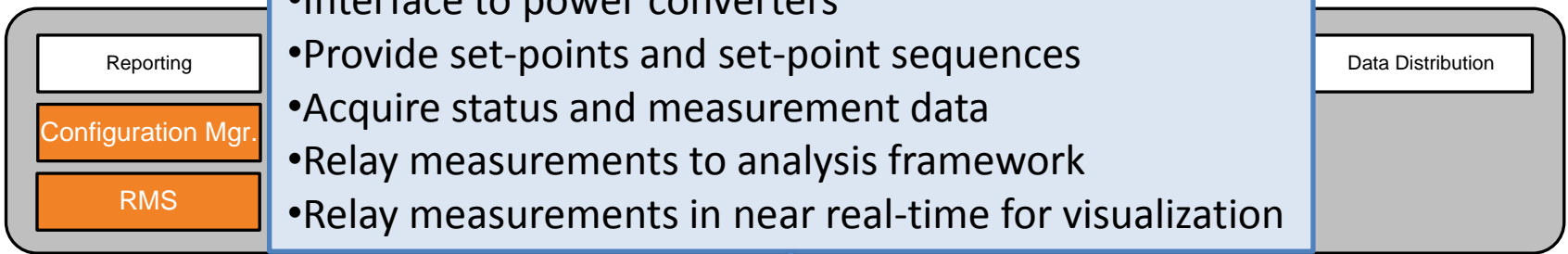


Current Activities

Tier 1

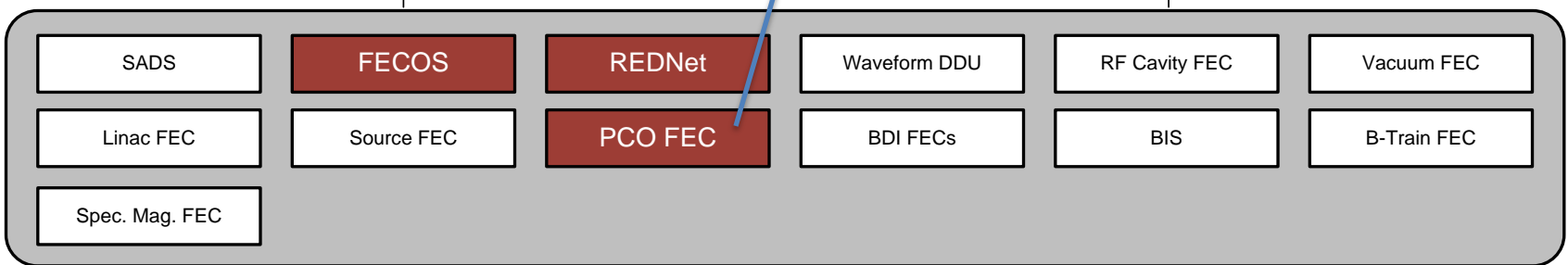


Tier 2

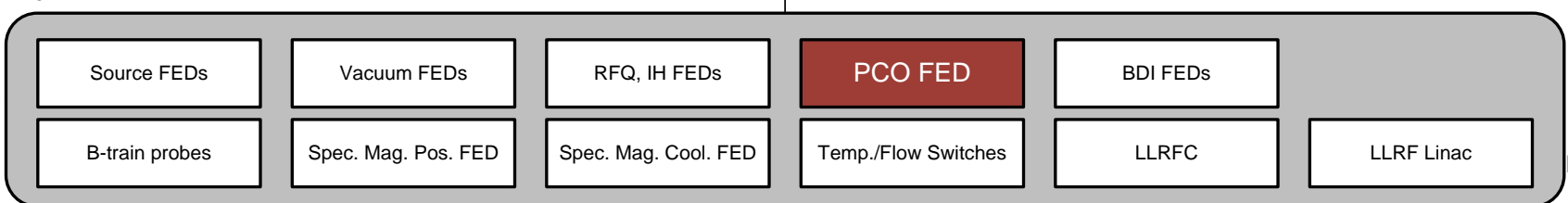


- Interface to power converters
- Provide set-points and set-point sequences
- Acquire status and measurement data
- Relay measurements to analysis framework
- Relay measurements in near real-time for visualization

Tier 3



Tier 4

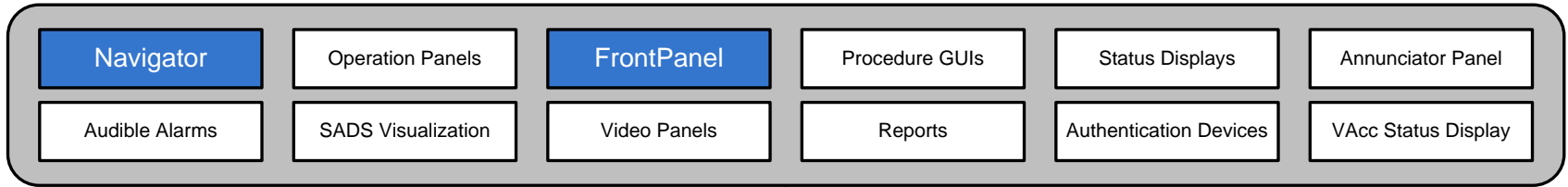


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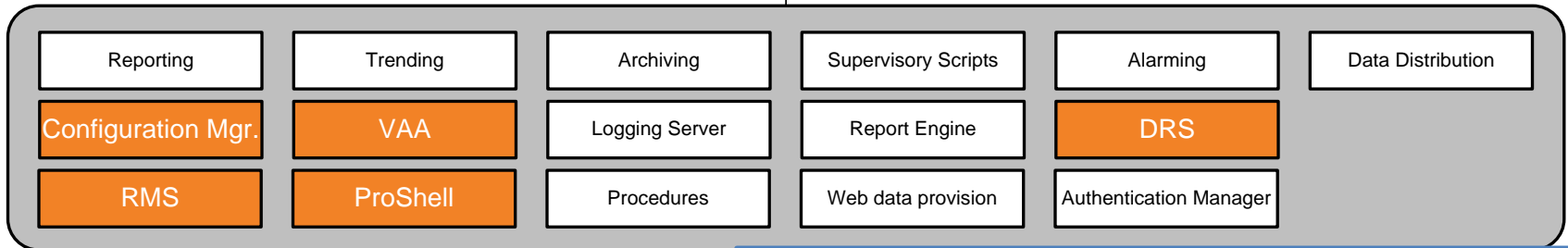
Current Activities

Tier 1



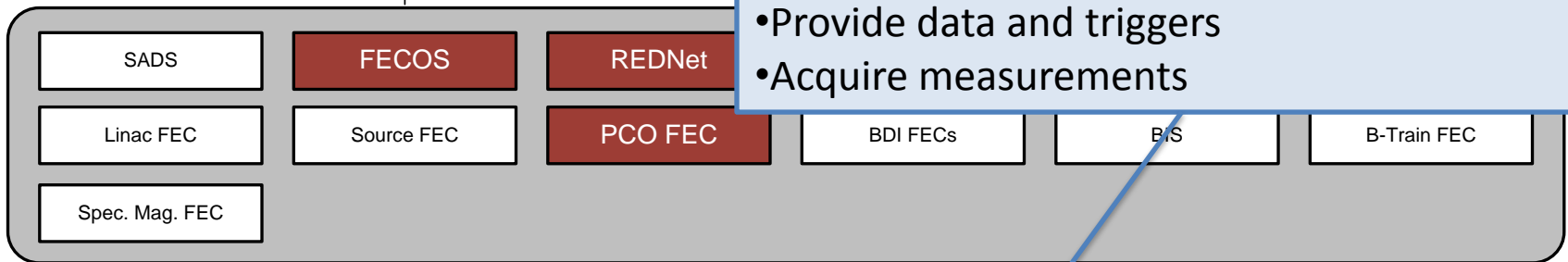
Technical Network

Tier 2



Technical Network
Slow Control

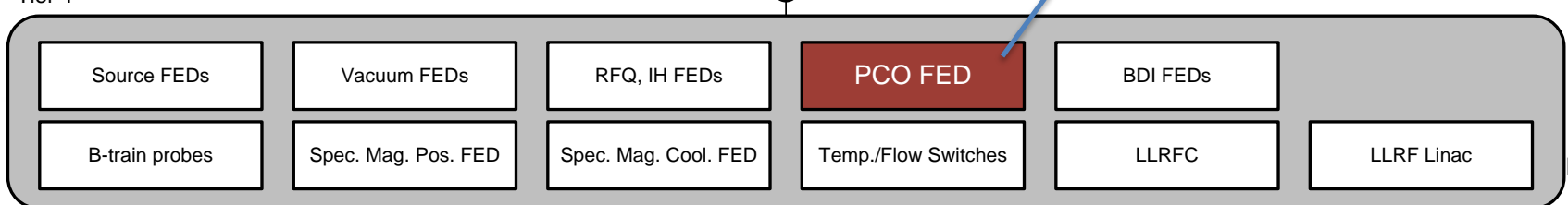
Tier 3



- Interface power converter with PCC (PCO FEC)
- Provide data and triggers
- Acquire measurements

Tier 4

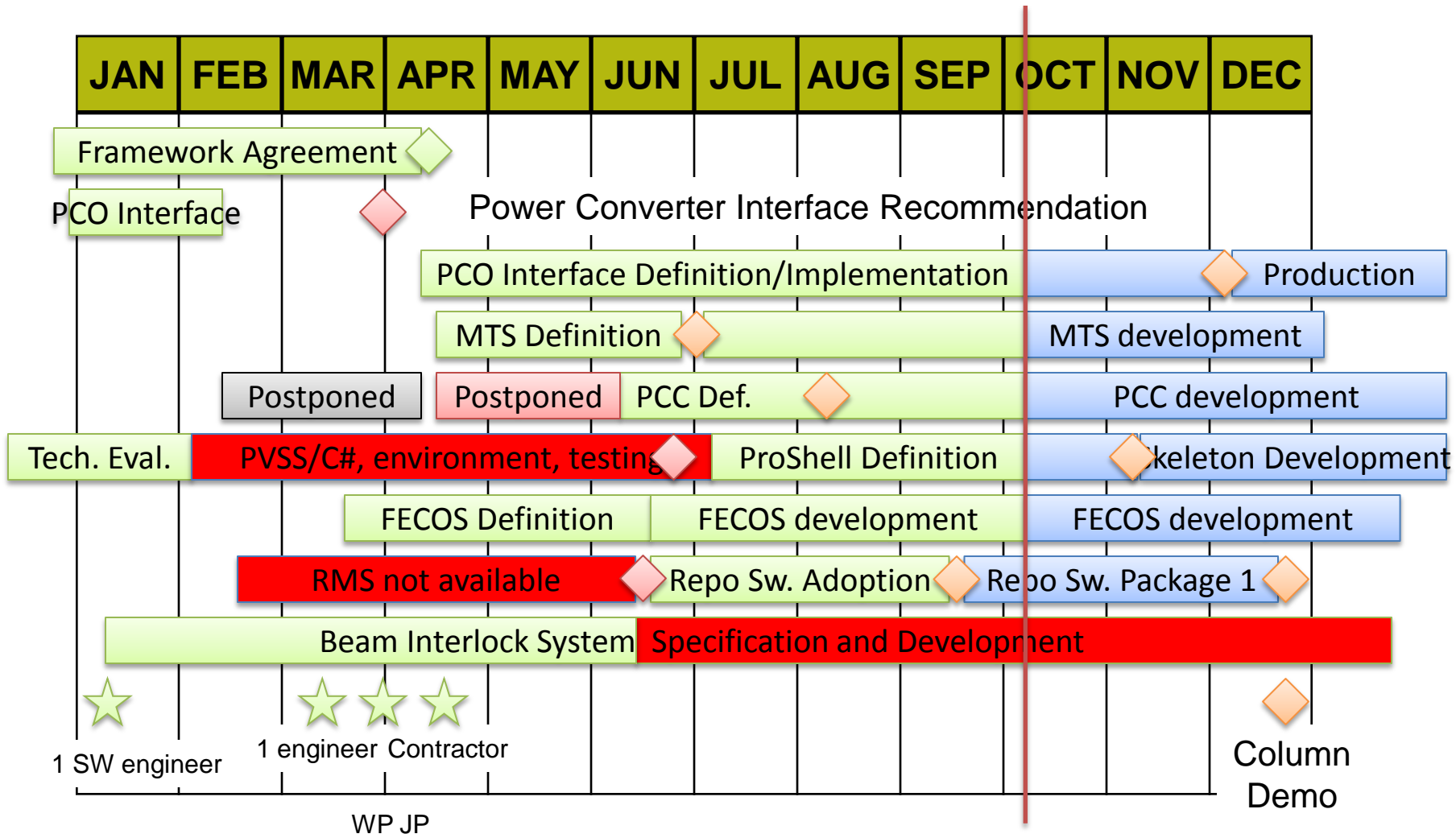
Fieldbus Links



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Column Time Frame 2010





SUMMARY AND OUTLOOK



Summary

- **Ahead of Time**
 - FECOS development and documentation
- **In Time**
 - Main Timing System
 - Power Converter Controller
 - Power Converter Controller real-time link
 - ProShell development
- **Behind Schedule**
 - Beam Interlock System
 - Using RMS (database entry, integration of GUI in PVSS)
 - ProShell design



Outlook

- Presentations should clarify where we are
 - Identify showstoppers
 - Where do we lag behind
 - Where are we in time
 - Where are we doing well!
- Identify synchronization points with other WPs
 - What are WP plans
 - Where do they stand
 - Need to elaborate common schedule