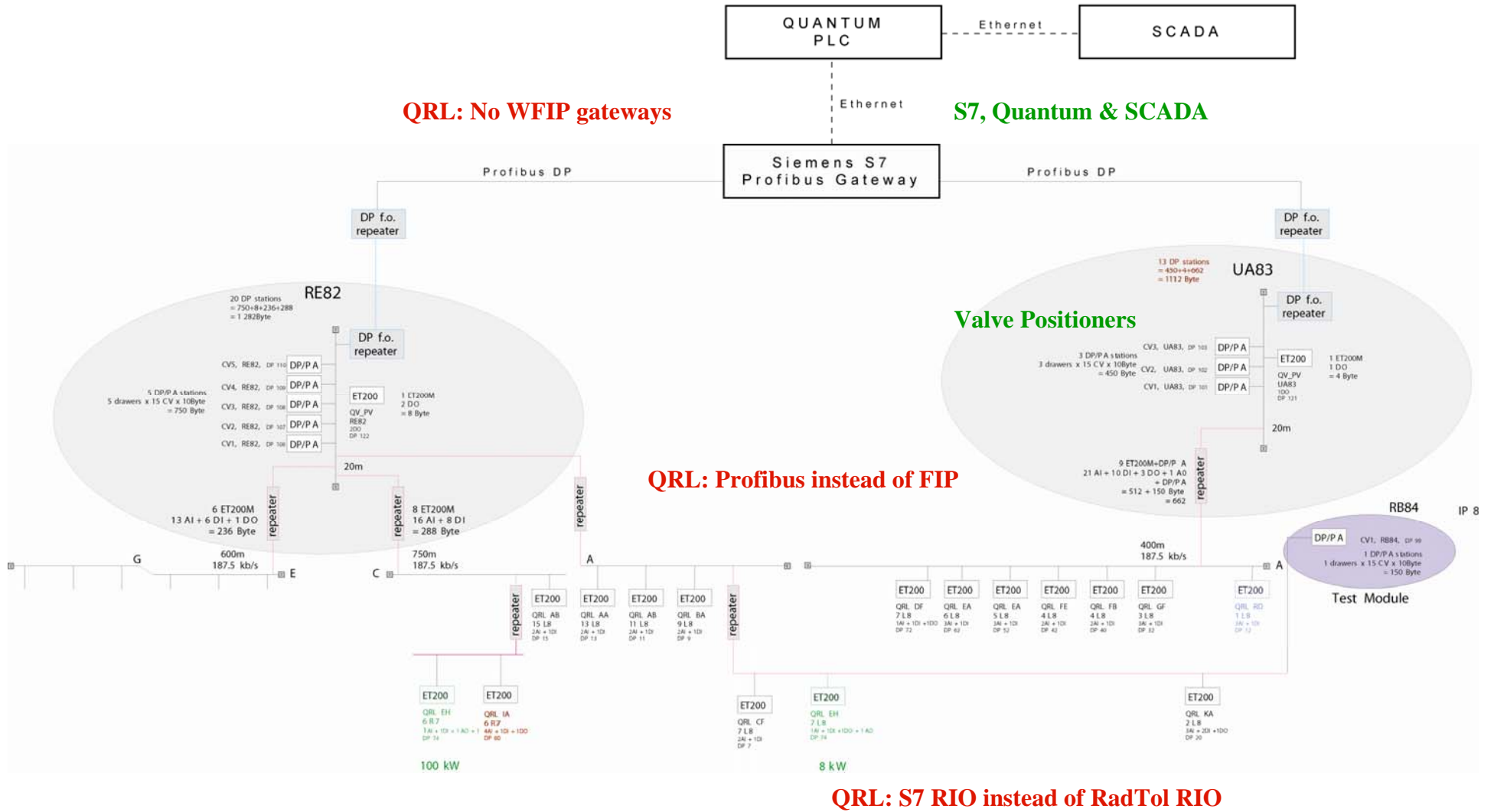# Cryogenic Instrumentation & Controls Commissioning for the LHC tunnel
AB/CO deliverables

AB/CO Review

Juan CASAS

QRL for LSS8L

QRL & LHC Hardware

Present Strategy is to test QRL LSS8L (Initiated) & QRL sector 8-1 (delayed to? End 2005?)
LHC sectors commissioning will impose parallel commissioning of hardware

	Procurement	Installation
SCADA	AB/CO	AB/CO
QUANTUM	AB/CO	AB/CO
FIP Gateway	AB/CO	AB/CO
S7 Gateway	AB/CO	AB/CO
Profibus from protected areas to S7 Gateways	AB/CO	AB/CO
S7 RIO protected areas	AB/CO	AT/ACR
S7 RIO QRL specific	AT/ACR	AT/ACR
Fieldbus couplers (optical, DP/PA, etc…)	AB/CO	AB/CO & AT/ACR
Intelligent Valve Actuators	AT/ACR	AT/ACR
QRL Profibus Repeaters	AT/ACR	AT/ACR
FIP network conversion to Profibus	-	AT/ACR
FIP network conversion to LHC spec	-	AT/ACR
LHC RadTol tunnel RIO	AT/ACR	AT/ACR

Hardware Issues

RadTol RIO

• Series Production

  – Contractor has been selected & contract has to be signed.

  – Too late for LSS8L test

• LSS8L

  – Small series production at CERN

  – FPGAs delivery has been delayed from end of July to mid-end September

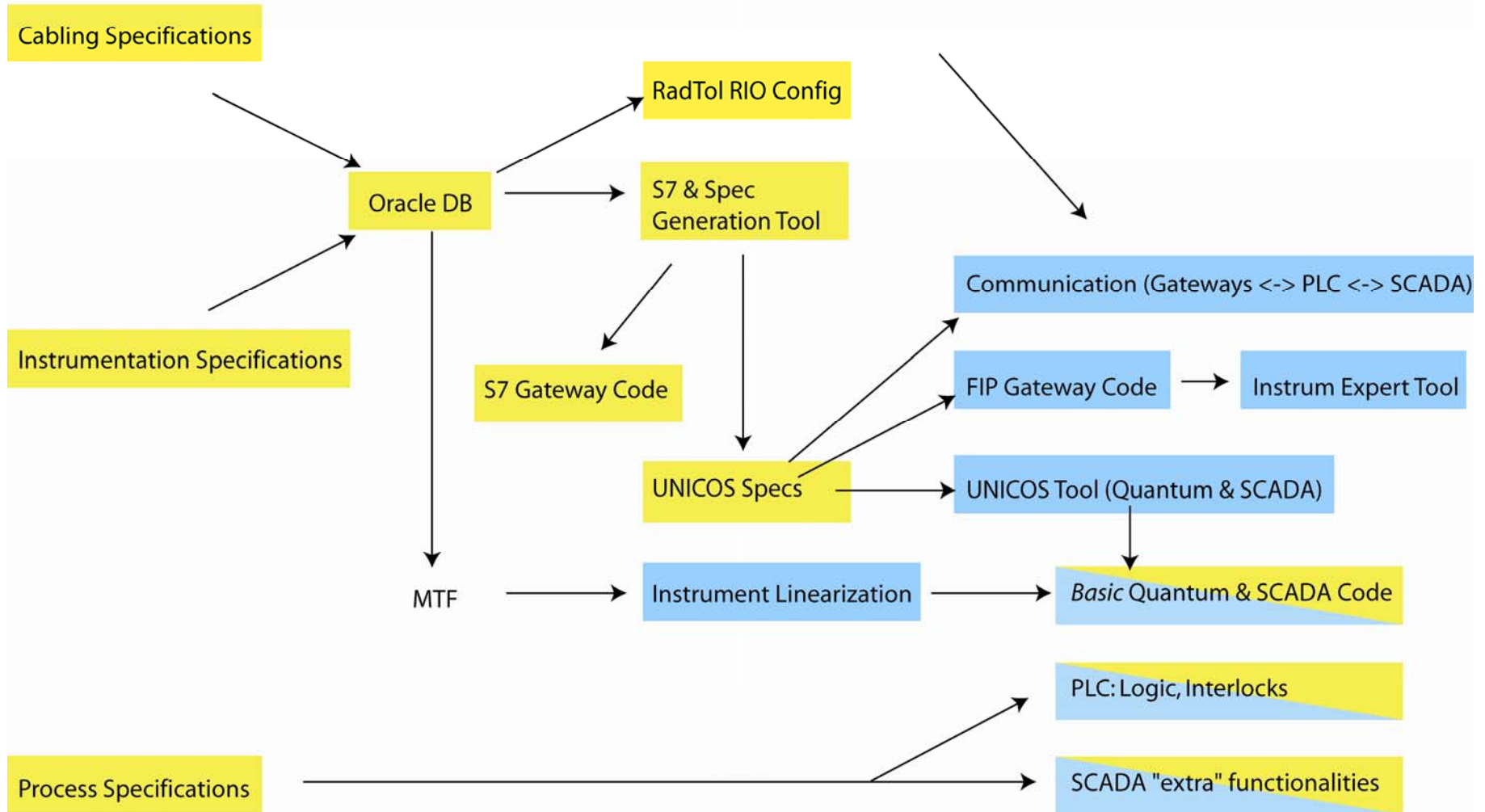 – Crash program for installation & commissioning required

WFIP fieldbus network

• LSS8L & 8-1

  – Network need to be re-commissioned after QRL reception test

  – Time available may be short

Return module <-> QUI

• Selection of RIO need to be finalized

  – Would it be FIP? Or Profibus? => Cost comparison

LHC Software: sharing between AB/CO & AT/ACR

Software Issues

Fieldbus configuration

•FIP

— 1st deployment to be done in LSS8L

— Are all the network configuration tools ready?

PLC Software

•Logic Software for the

— 1st deployment to be done in LSS8L (QRL logic software is very "thin")

•Tools are assumed to be bug-free & operational

Data Base

•ACR/IN: Oracle is temporarilly an orphan activity

— New recruit need to take over at a very critical moment

• Design for FIP electrical fan-in cards not finalized

• Coherence for field data is OK for all sources?

— How to advance? Support from AB/CO?

Instrument Expert Tool

•RadTol RIO (e.g. Fip hardware) requires a "SCADA" for diagnostics & maintenance

SCADA & Logging

•Historical configuration (e.g. PID parameters, thresholds, …): is it implemented?

•Historical RadTol RIO flags: is it possible to record date of change?

AB/CO Review: Conclusions

Parallel Sector Commissioning

• Schedule -> extra teams

- Polish collaboration will provide <u>one</u> extra team for cryo-tunnel commissioning
- How much support will this team require from both AB/CO & AT/ACR?

- A 2nd supplementary team is probably required
  - Additional risk due to training & professional profile adequacy

One sector at a time: seem compatible with present CERN staff available.

All additional work carries additional risk extremely difficult to quantify