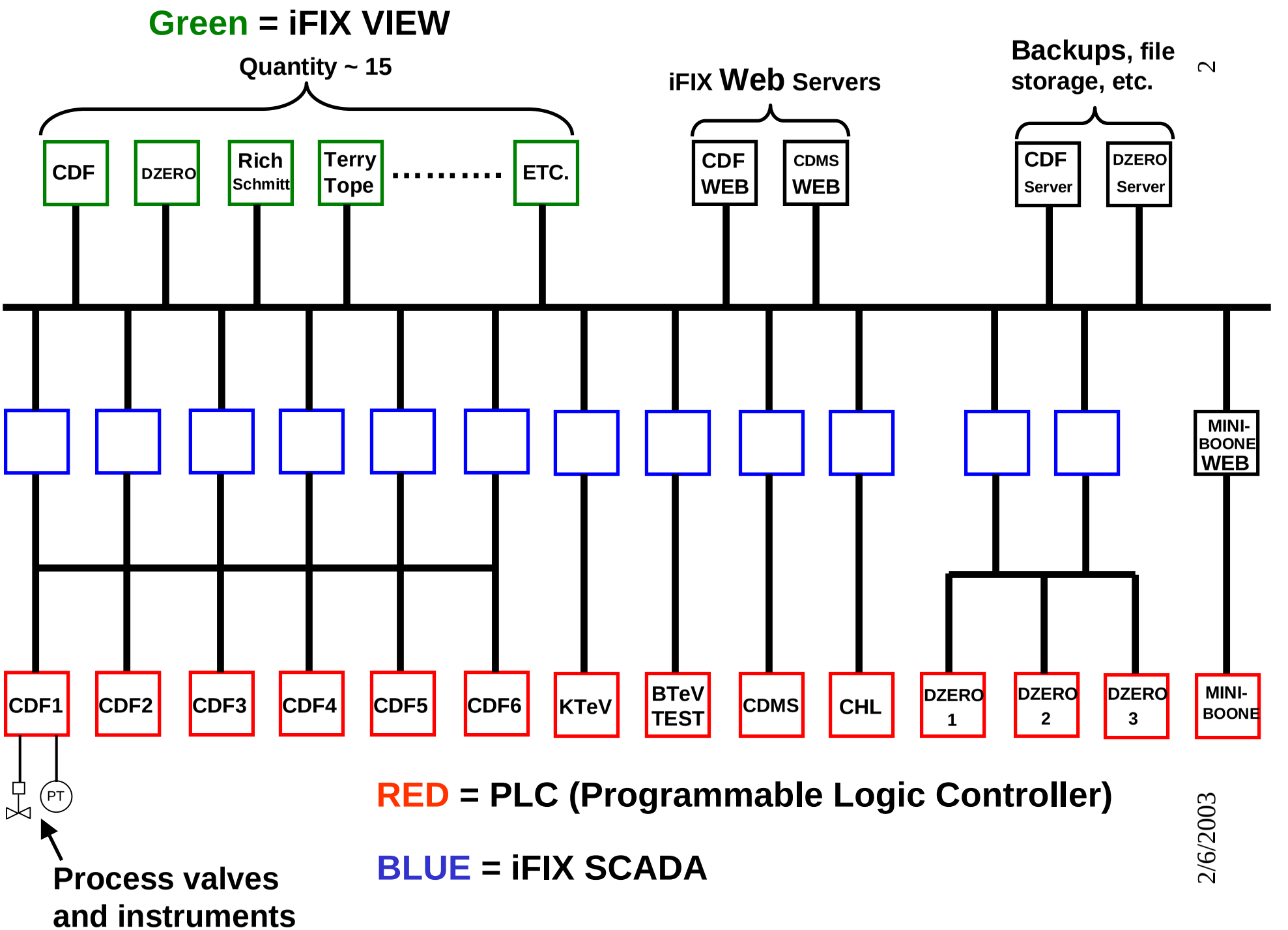
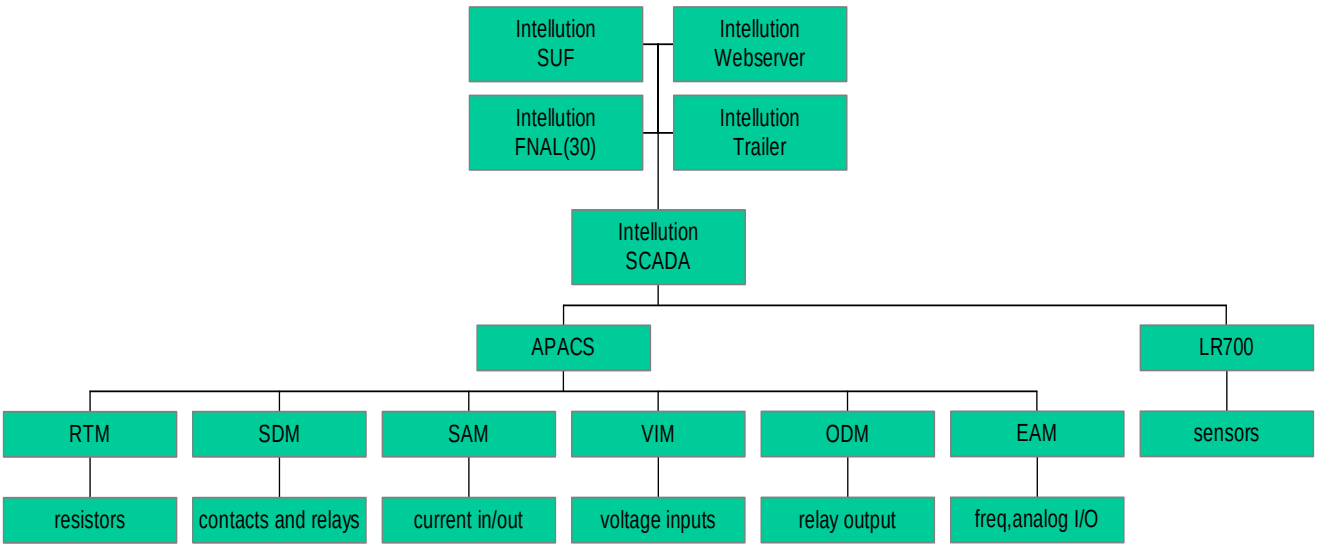
APACS & iFIX Description
02/05/2003

Topics

PPD/MD General Automation Architecture
CDMS Architecture Example
Description of APACS
Description of Intellution


Green = iFIX VIEW
Quantity ~ 15
CDF
DZERO
Rich Schmitt
Terry Tope
.....
ETC.
iFIX Web Servers
CDF WEB
CDMS WEB
Backups, file storage, etc.
CDF Server
DZERO Server
MINI-BOONE WEB
CDF1
CDF2
CDF3
CDF4
CDF5
CDF6
KTeV
BTeV TEST
CDMS
CHL
DZERO 1
DZERO 2
DZERO 3
MINI-BOONE
PT
Process valves and instruments
RED = PLC (Programmable Logic Controller)
BLUE = iFIX SCADA

CDMS Architecture



APACS Hardware

Hardware
1. ACM reliability 30 years MTBF
2. Conformal coated
3. Thermally shocked
4. Experience excellent
5. Redundant power supplies

Module Types
1. ACM, Advanced Control Module, processor, battery, memory
2. RTM, Resistance Temperature Module, three wire resistance for industrial RTD's
3. SAM, Standard Analog Module, 4-20 mA input or output
4. VIM, Voltage Input Module, +/- 10 VDC to 0.1 VDC ranges
5. SDM, Standard Discrete Module, 24 VDC input or output
6. ODM, Output Discrete Module, 120 VAC output
7. EAM, Enhanced Analog Module, freq, mA, Volts, input or output

E907 Gas Hardware needs
1. SAM, exists at BTEV Test
2. VIM, one needed
3. SDM, half of one needed, Btev Test needs half as well
4. RTM, one needed

APACS Software

IEC 1131-3 languages

1. Ladder
2. Sequential Function Blocks
3. Structured Text
4. Function Blocks
5. Safety Matrix (not available at Btev Test)

Edited on line, real time results

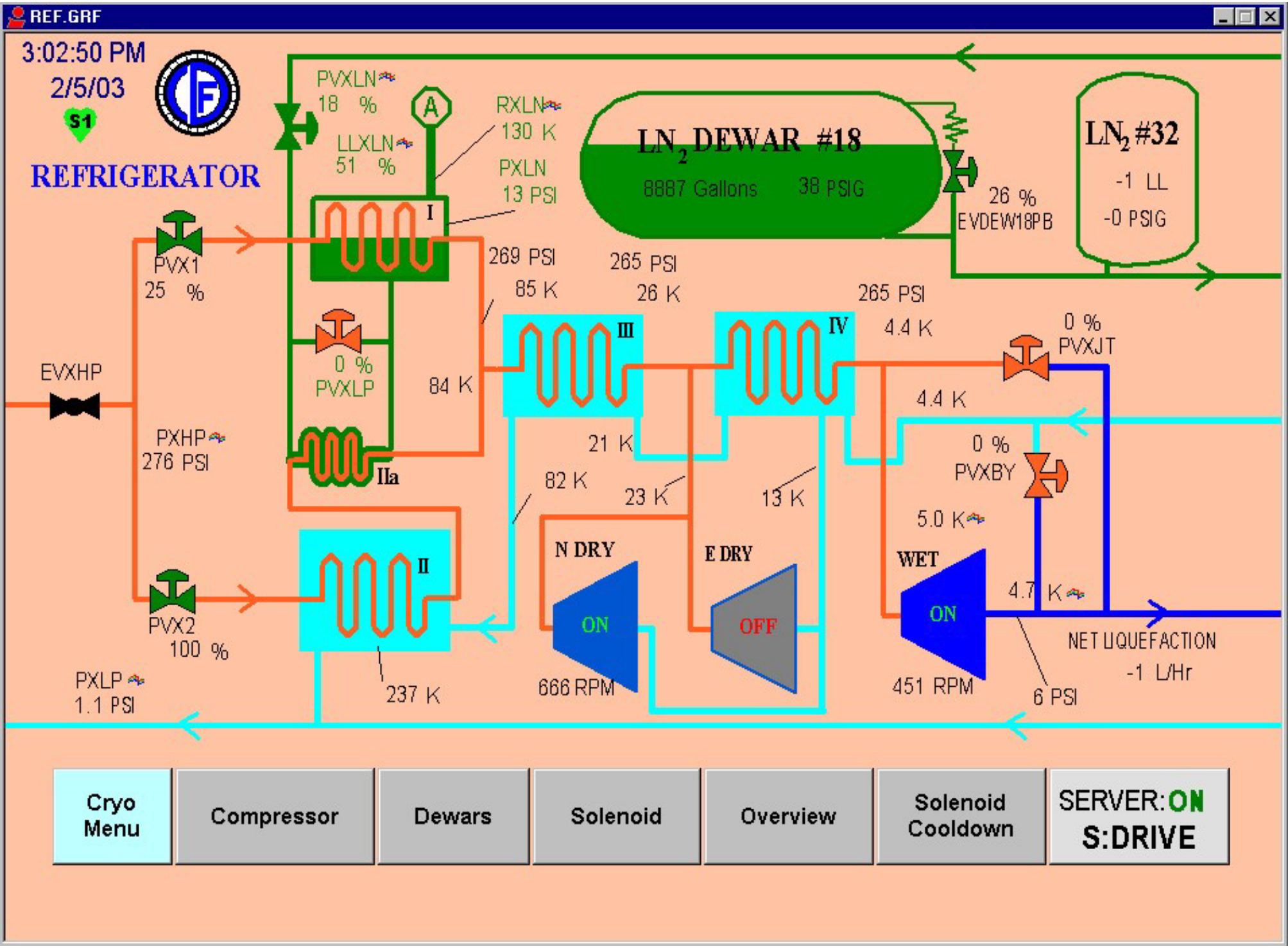
Self-Saving

Constant speed execution

Intellution

1. SCADA, Supervisory Control and Data Acquisition
a. Connects to controller via proprietary card, GPIB, OPC
b. Can share real time data via DDE, ODBC, or custom file transfers
c. Full operator interaction
2. VIEW
a. Full operator interaction
b. Can collect historical data
3. CLIENT
a. Read only
4. WEBSERVER
a. Converts pictures to JPG
b. Does not support historical data
c. Example, http://131.225.236.20:3000/fixpics/CDMS/nitrogen.htm
5. HISTORIAN
a. not presently purchased
b. could be used for faster data rates and a variety of output formats

Goals
1. Convey data to people quickly
2. Collect historical data
3. Send commands to the controller
4. Unit conversions
5. Same look from any location


REF.GRF
3:02:50 PM
2/5/03
S1
REFRIGERATOR
PVXLN
18 %
LLXLN
51 %
A
RXLN
130 K
PXLN
13 PSI
LN2 DEWAR #18
8887 Gallons
38 PSIG
26 %
EVDEW18PB
LN2 #32
-1 LL
-0 PSIG
I
PVX1
25 %
269 PSI
85 K
265 PSI
26 K
265 PSI
4.4 K
0 %
PVXJT
III
IV
0 %
PVXLP
84 K
EVXHP
4.4 K
PXHP
276 PSI
21 K
0 %
PVXBY
IIa
82 K
23 K
13 K
5.0 K
N DRY
E DRY
WET
II
ON
OFF
ON
4.7 K
PVX2
100 %
NET LIQUEFACTION
-1 L/Hr
PXLP
1.1 PSI
237 K
666 RPM
451 RPM
6 PSI
Cryo Menu
Compressor
Dewars
Solenoid
Overview
Solenoid Cooldown
SERVER: ON
S:DRIVE

End Plug Rack Picture