A Seamless Control System Upgrade

for a Continuously Running Accelerator Facility

at the Hahn-Meitner-Institut Berlin

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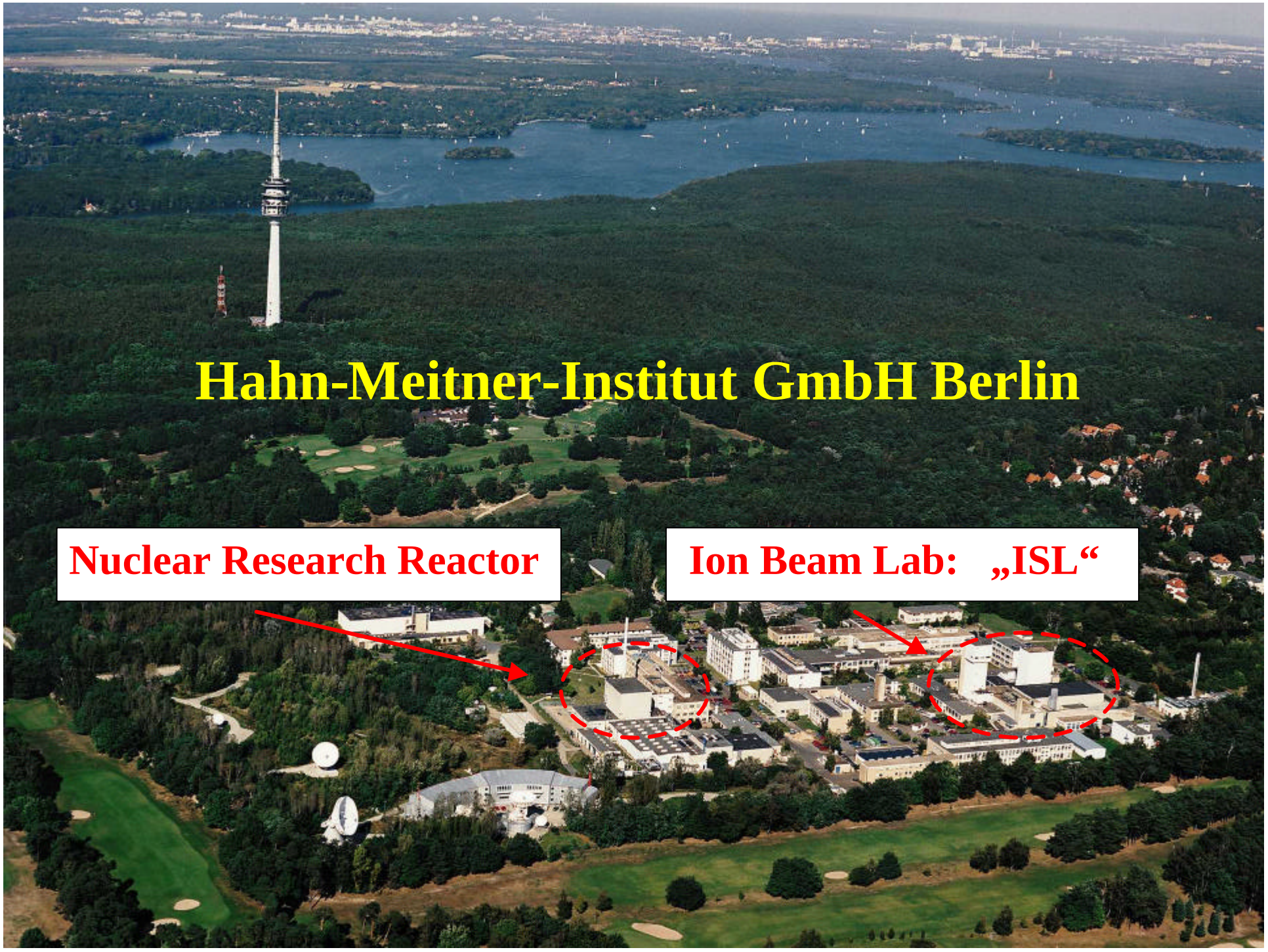
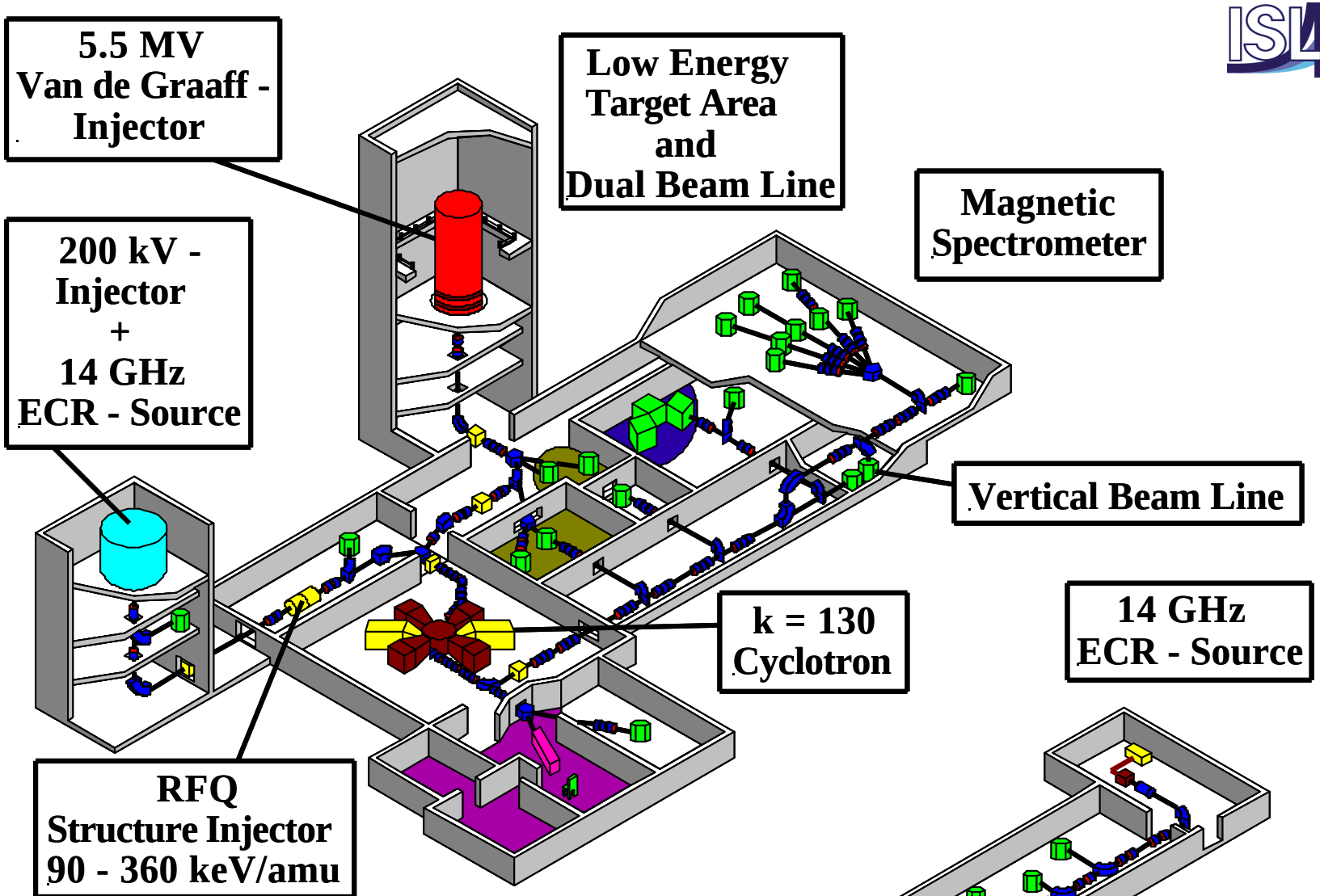
1. Ion Beam Lab 1975 - 2002 / VICKSI Control System (VCS)
2. Port /Upgrade & New Applications using commercial products
3. Summary


Hahn-Meitner-Institut GmbH Berlin
Nuclear Research Reactor
Ion Beam Lab: „ISL“

Hahn-Meitner-Institut Berlin



Our General Upgrade Problems:

Operation Time: ~ 5000 h /year

70 % guest users from outside !

Given Hardware Standards

CAMAC, cables, connections, devices

Low Manpower

group leader, 2 technicians, 2 programmers

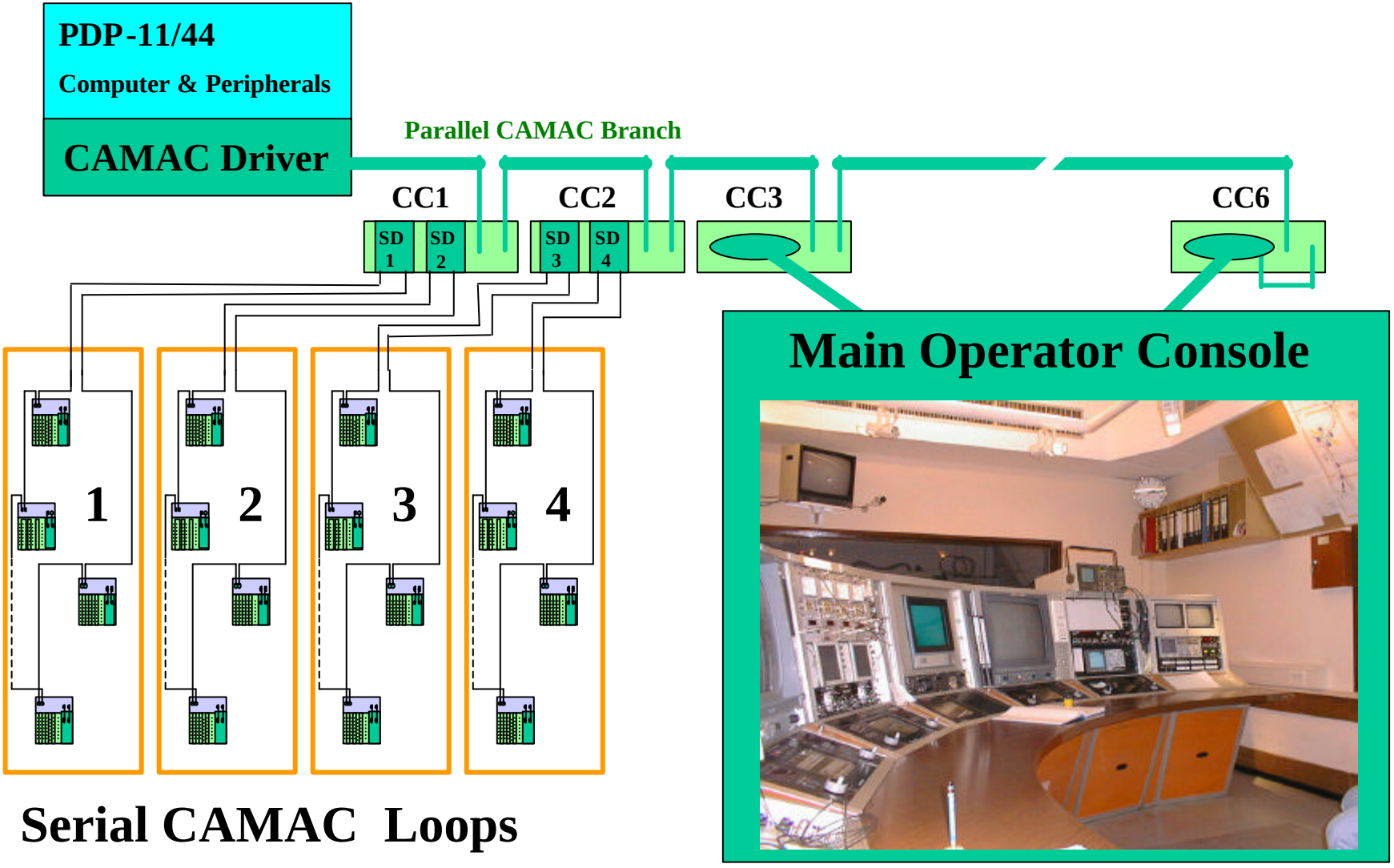
Limited Budget for all

2 large facilities struggling for the money

Our Conclusion

Use commercial products, such as “Vsystem”

Topology of the VICKSI Control System



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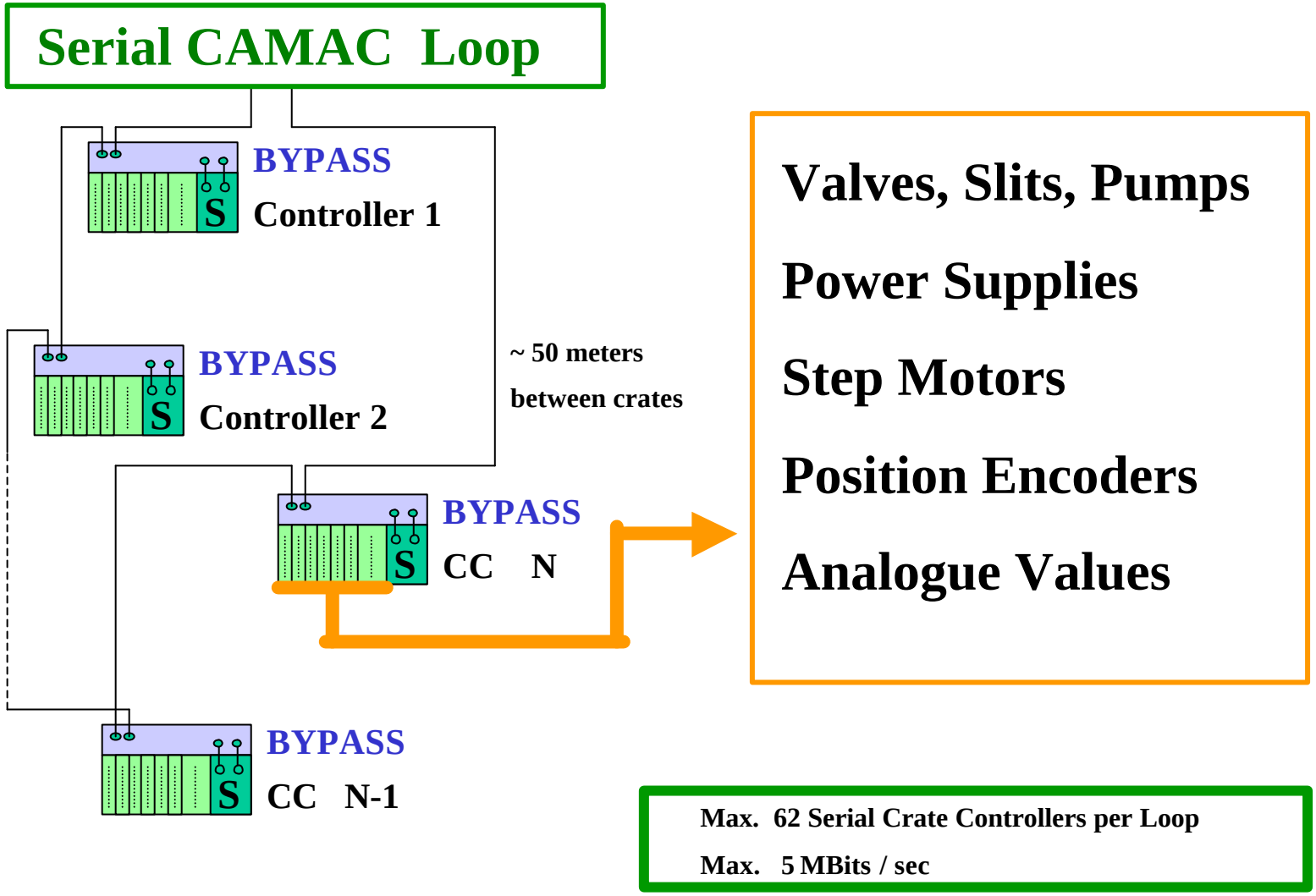


Our Choice: Vista Control System, Inc.

Los Alamos, New Mexico, USA

Vsystem: Networked Process Control Software:

OpenVMS, Windows NT/2000/XP, Solaris, Linux, Tru64 Unix, PowerMax

Scalability: 64.000 channels /database * 64.000 databases on any CPU

Speed: ~ 20 msec / channel access

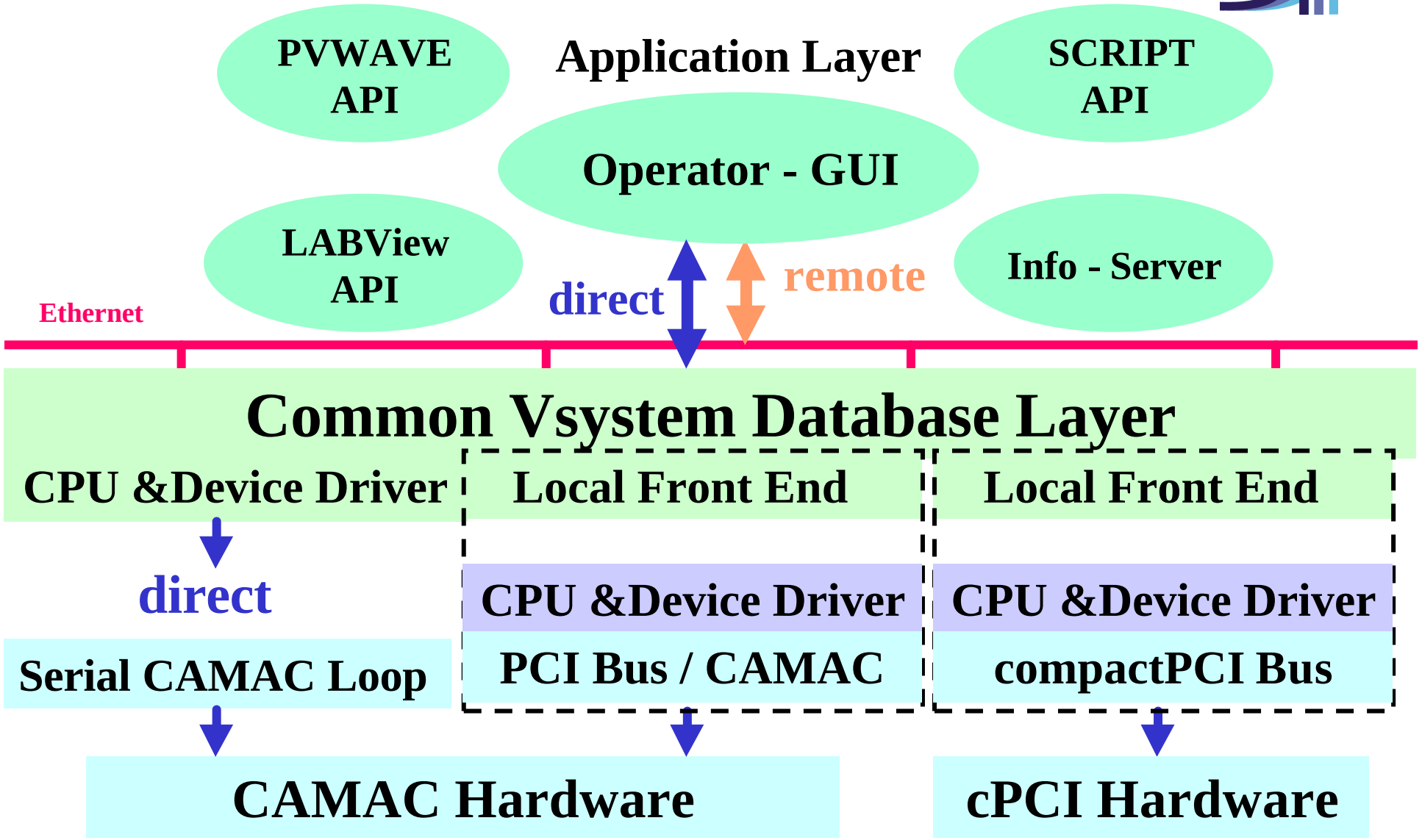
Manageability: Channels can be added dynamically and changed online

Further: Event-driven change notification, alarming and Timestamps for all channels

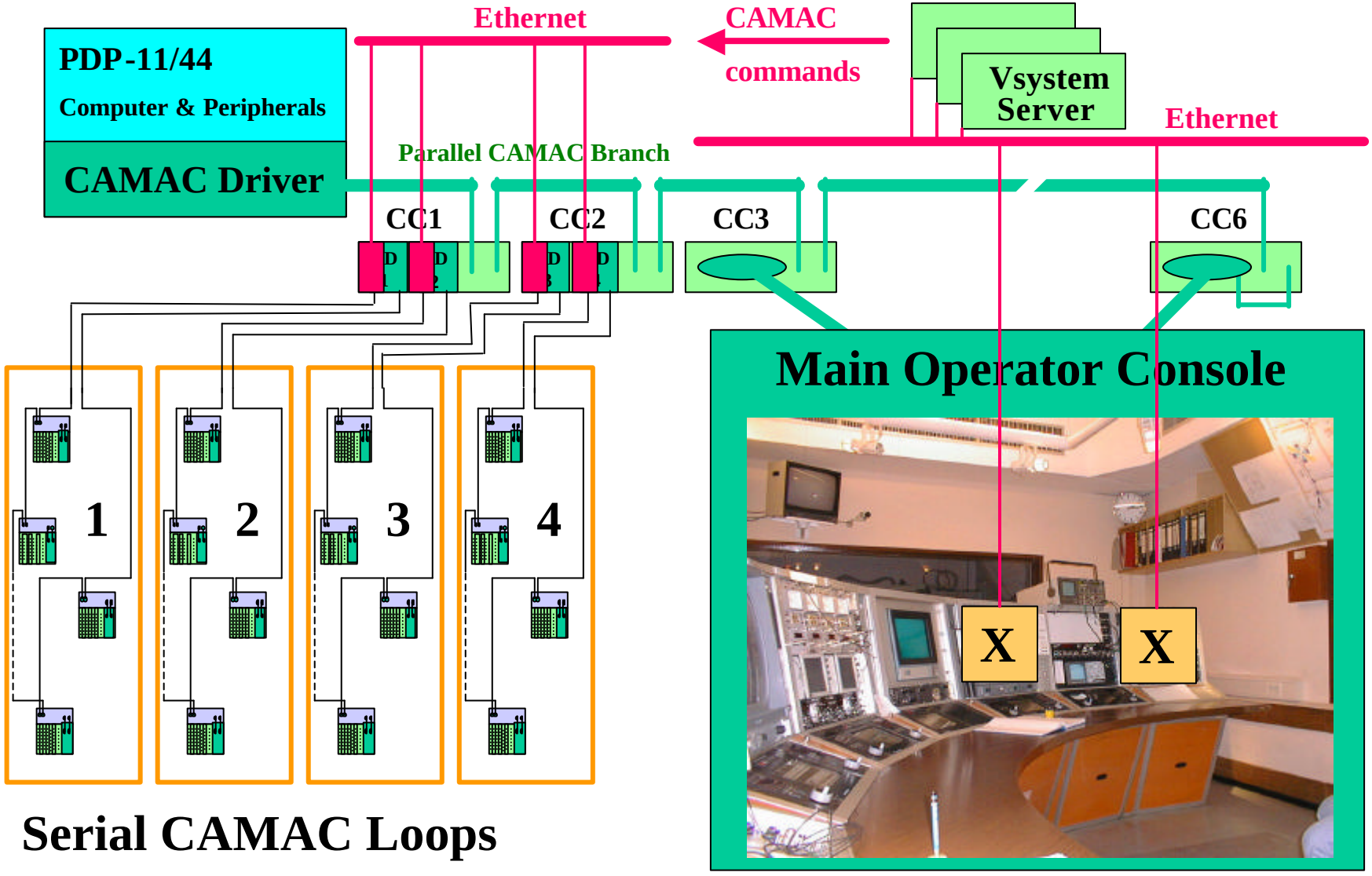
Full Graphic Support, including a lot of applications

FULL API: allows free programming of own applications in a heterogeneous network

FORTRAN, C, C++, JAVA

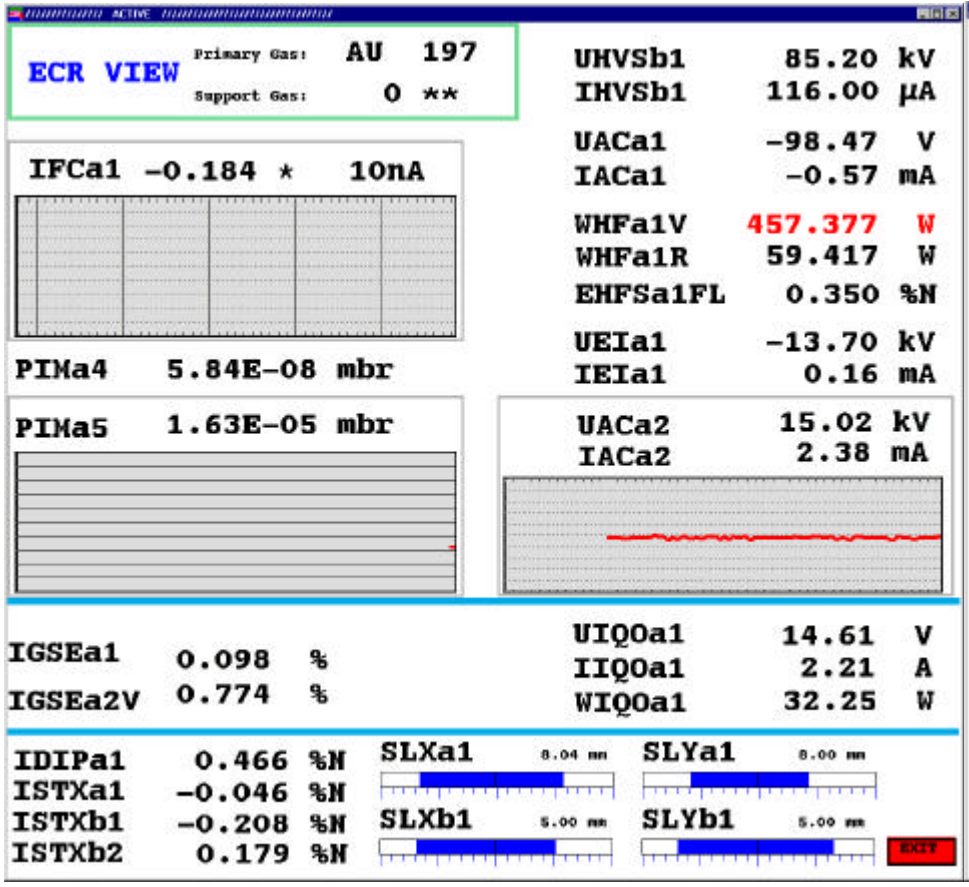

PVWAVE API
Application Layer
SCRIPT API
Operator - GUI
LABView API
direct
remote
Info - Server
Ethernet
Common Vsystem Database Layer
CPU &Device Driver
Local Front End
Local Front End
direct
CPU &Device Driver
CPU &Device Driver
Serial CAMAC Loop
PCI Bus / CAMAC
compactPCI Bus
CAMAC Hardware
cPCI Hardware

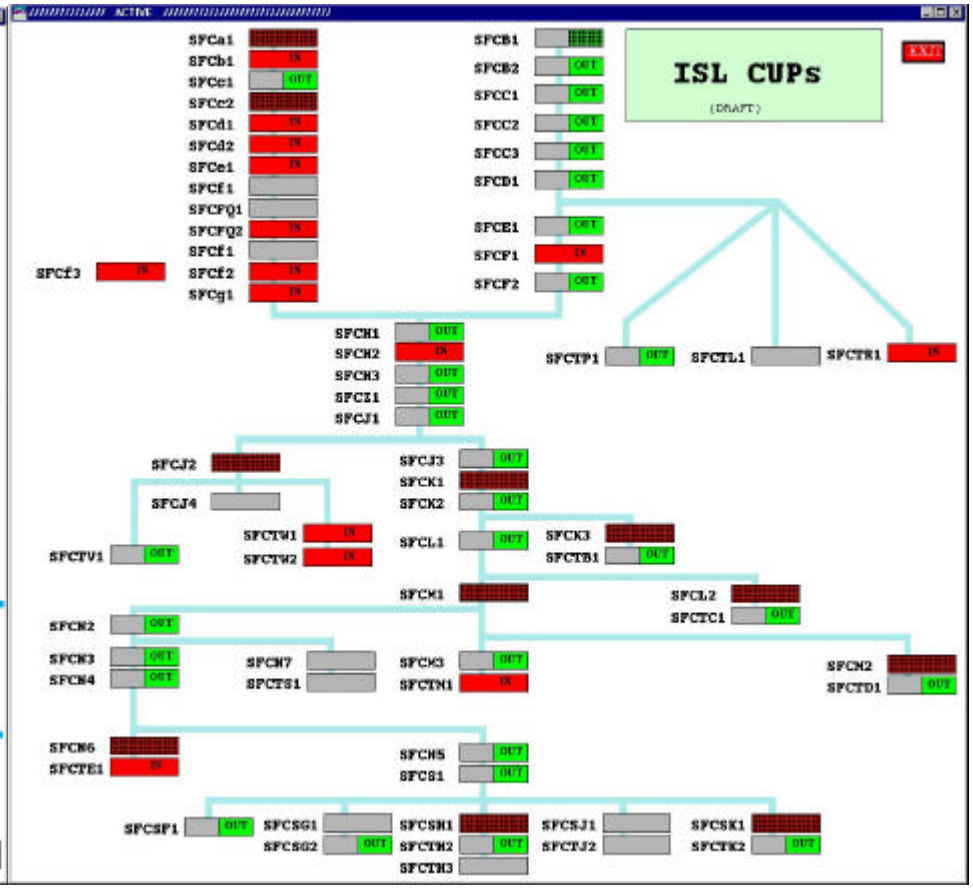
VICKSI Control System Upgrade Phase 1



VICKSI Control System Upgrade Phase 1

New Operator GUI's

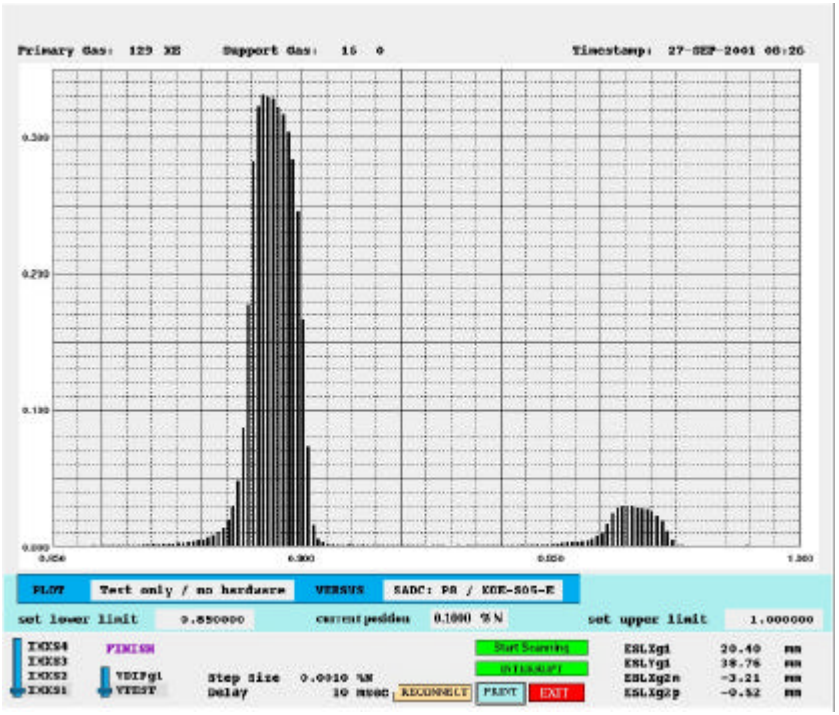




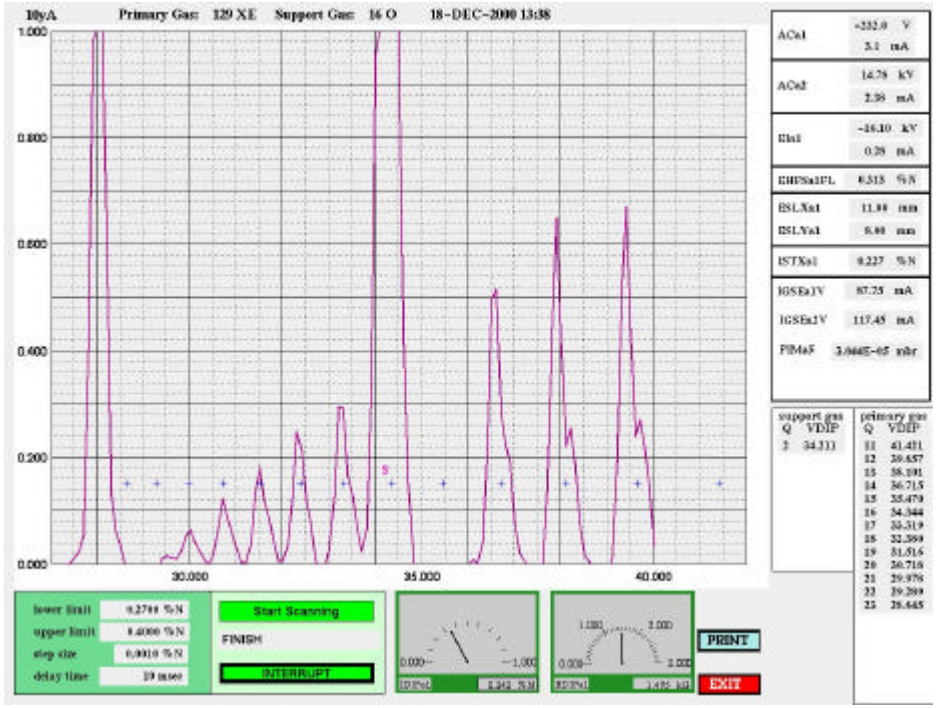
VICKSI Control System Upgrade Phase 1

New Analysis Tools for machine physicists

RFQ Energy Spectra

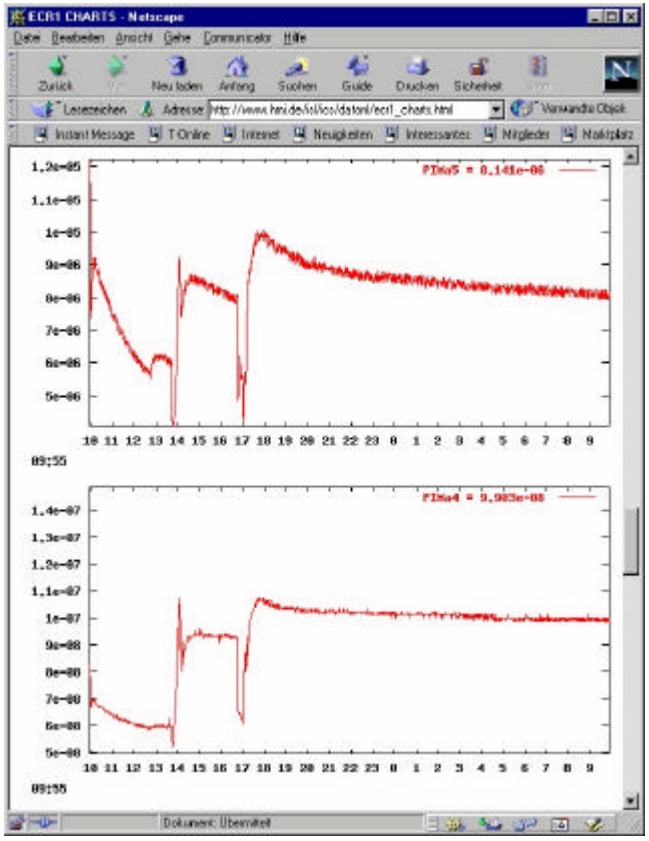


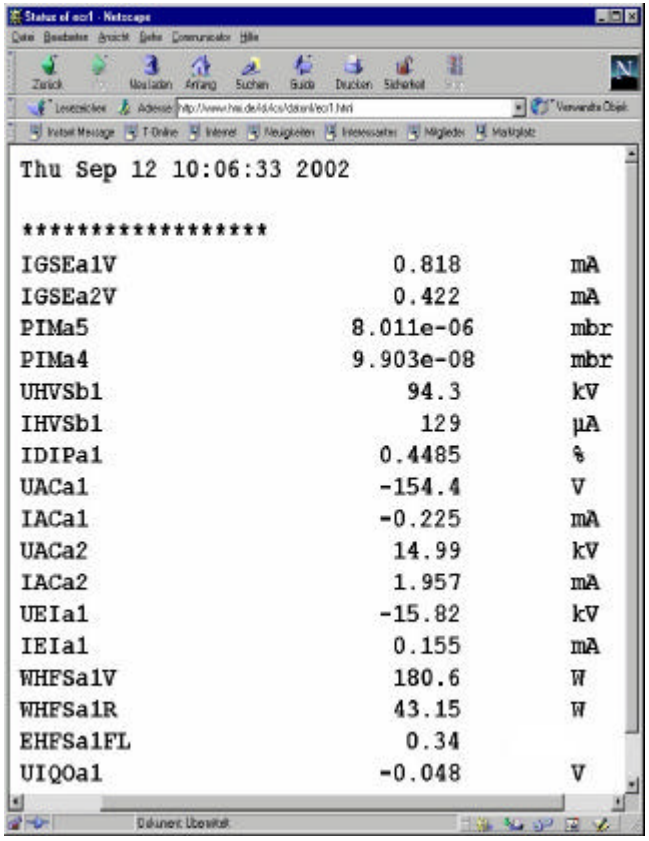
ECR Ion Spectra

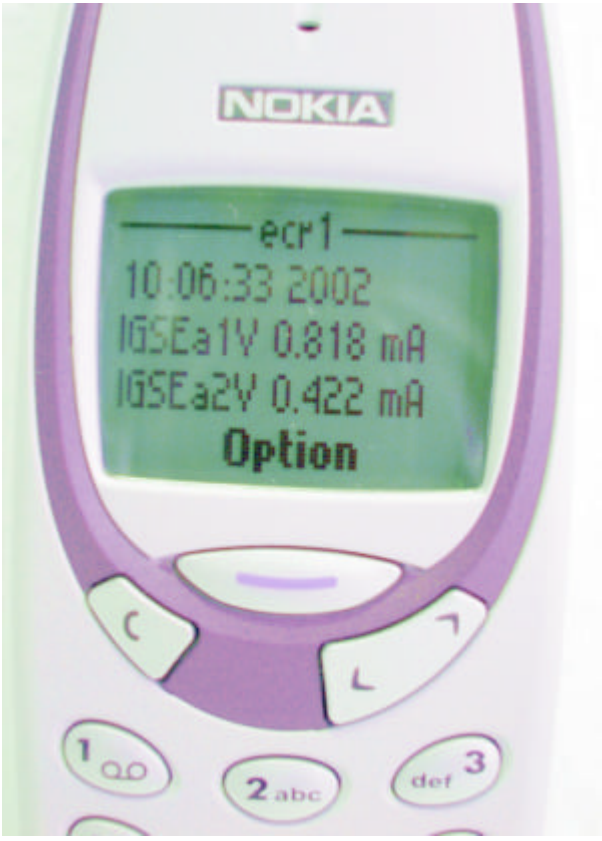


VICKSI Control System Upgrade Phase 1

Monitoring & Archiving Machine Parameters







24 h Charts **Current Data Report** **WAP-Access**

VICKSI Control System Upgrade Phase 1

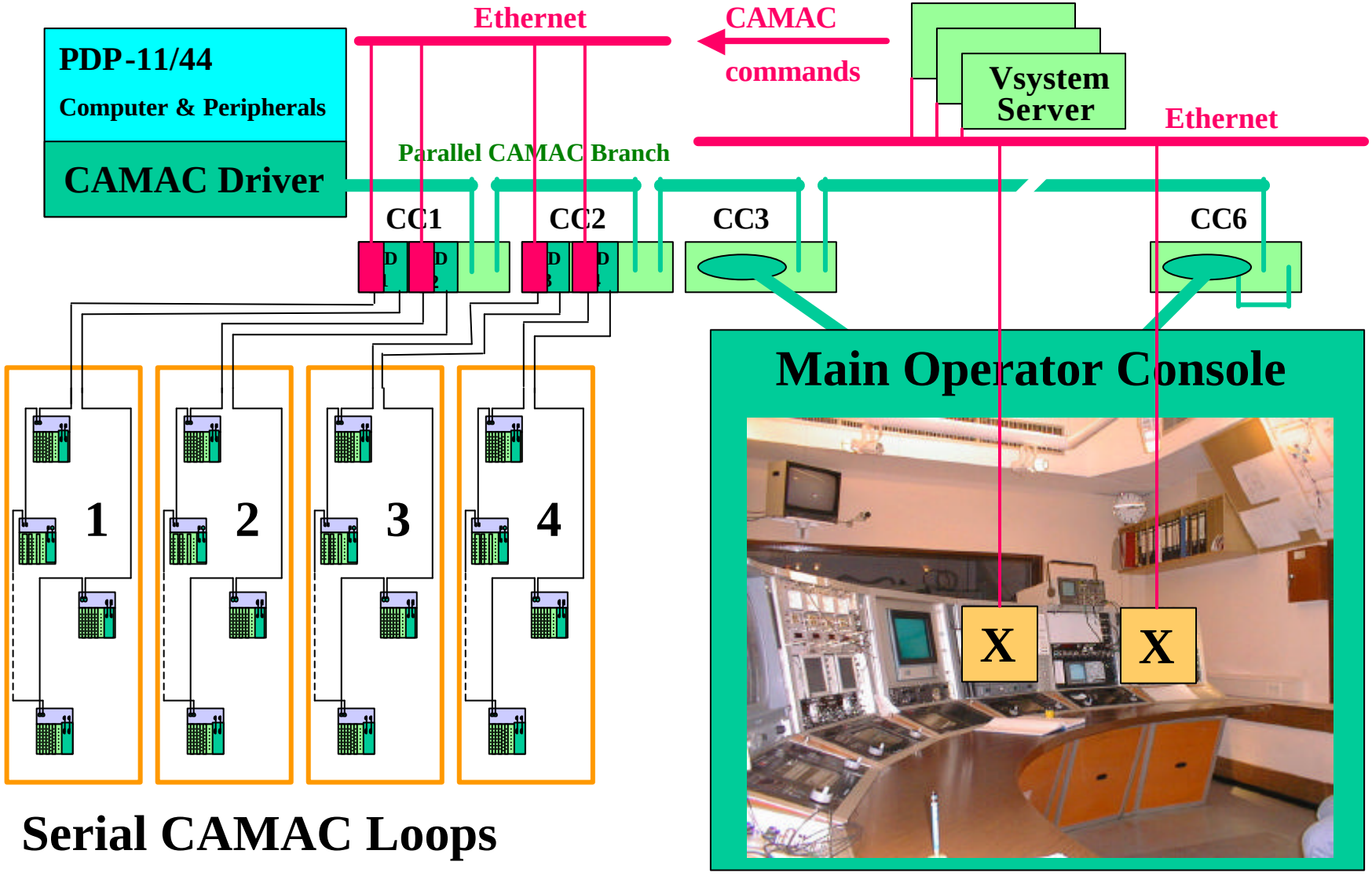
Remote Control and Access of Experiment Software

OS: Windows2000
LABView
local DAQ

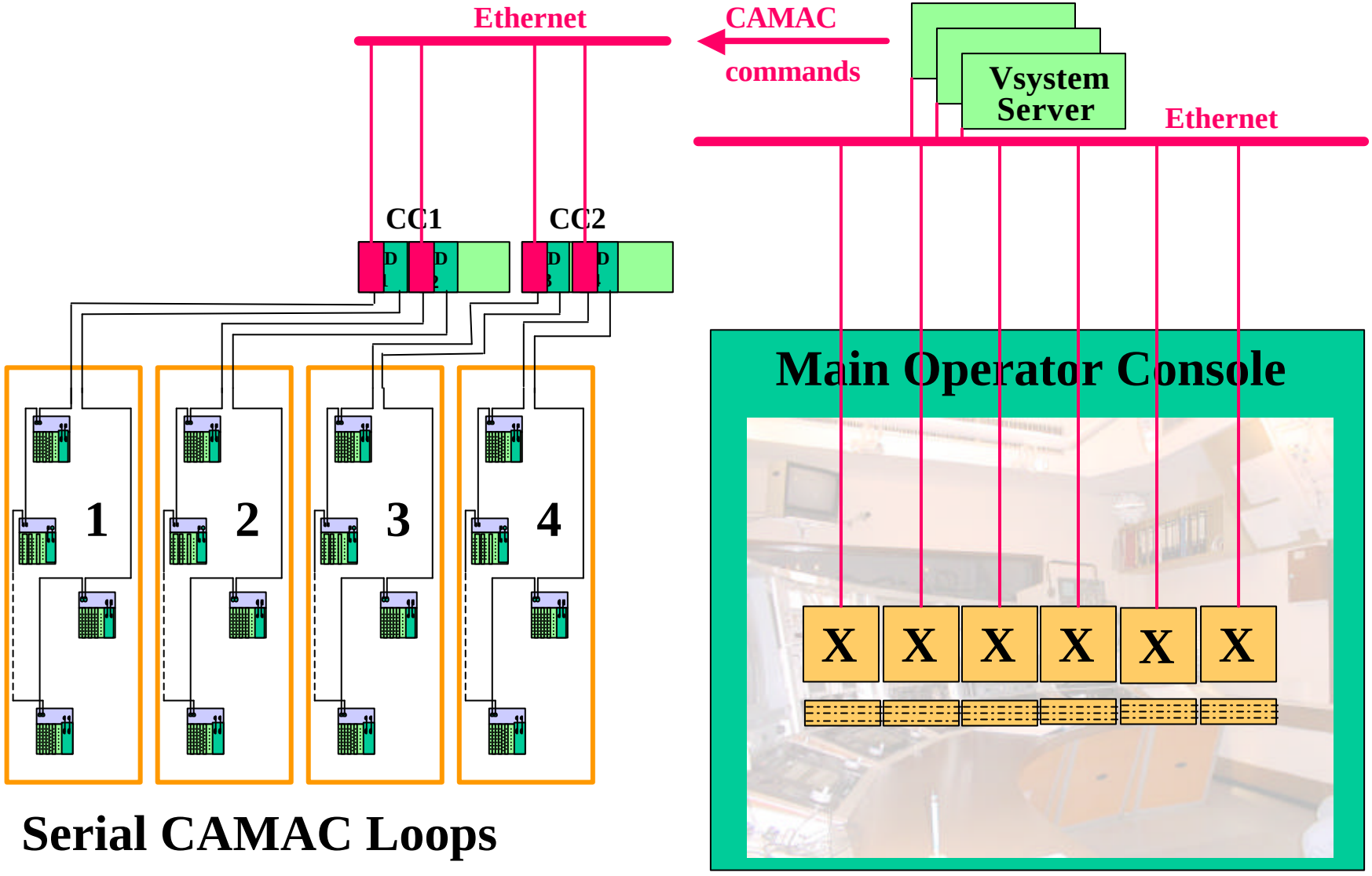
&

DLL provided for
Remote Access to
Control System
(i.e. step motors, etc.)

VICKSI Control System Upgrade Phase 1

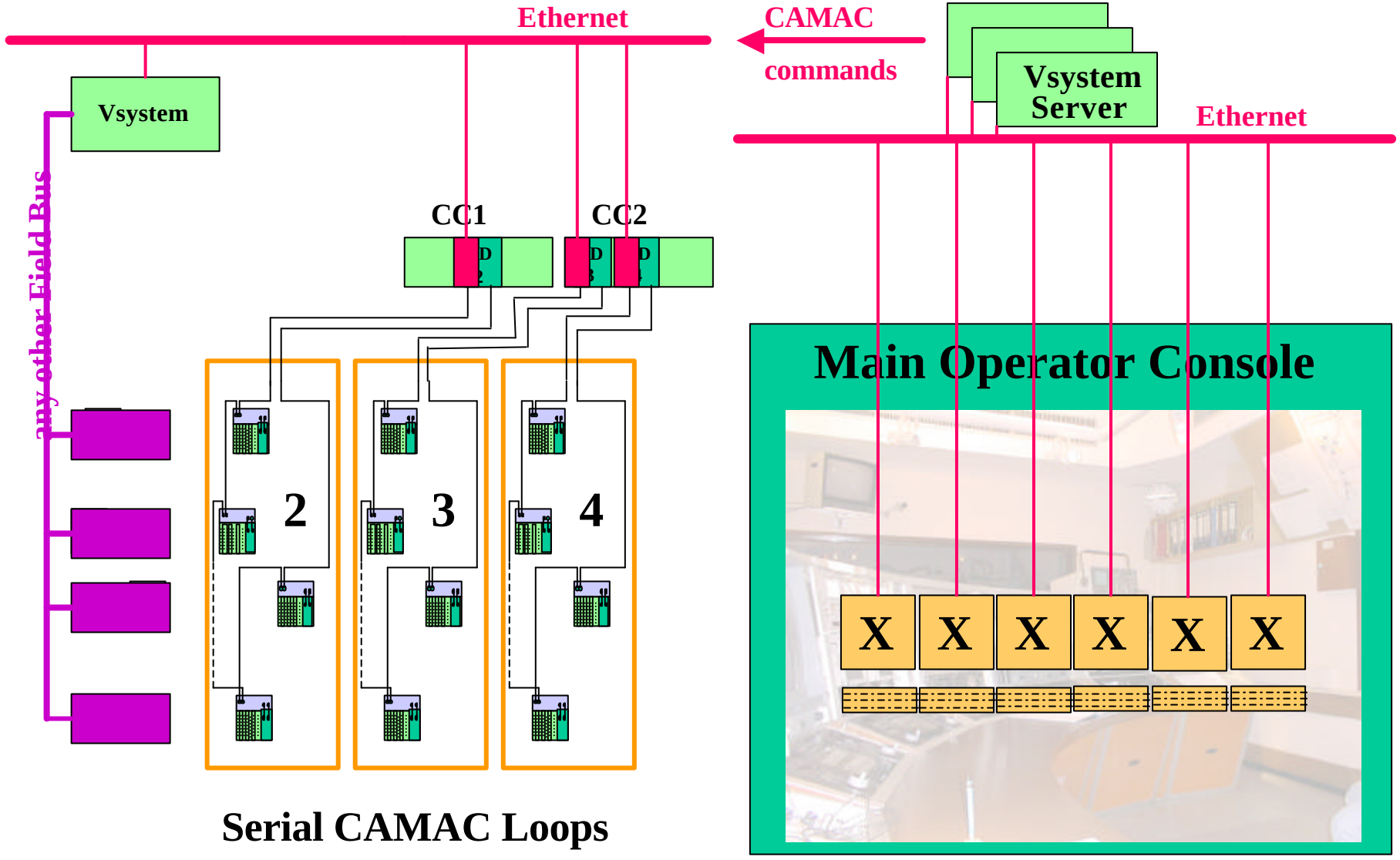


VICKSI Control System Upgrade Phase 2



Serial CAMAC Loops

VICKSI Control System Upgrade Phase 3



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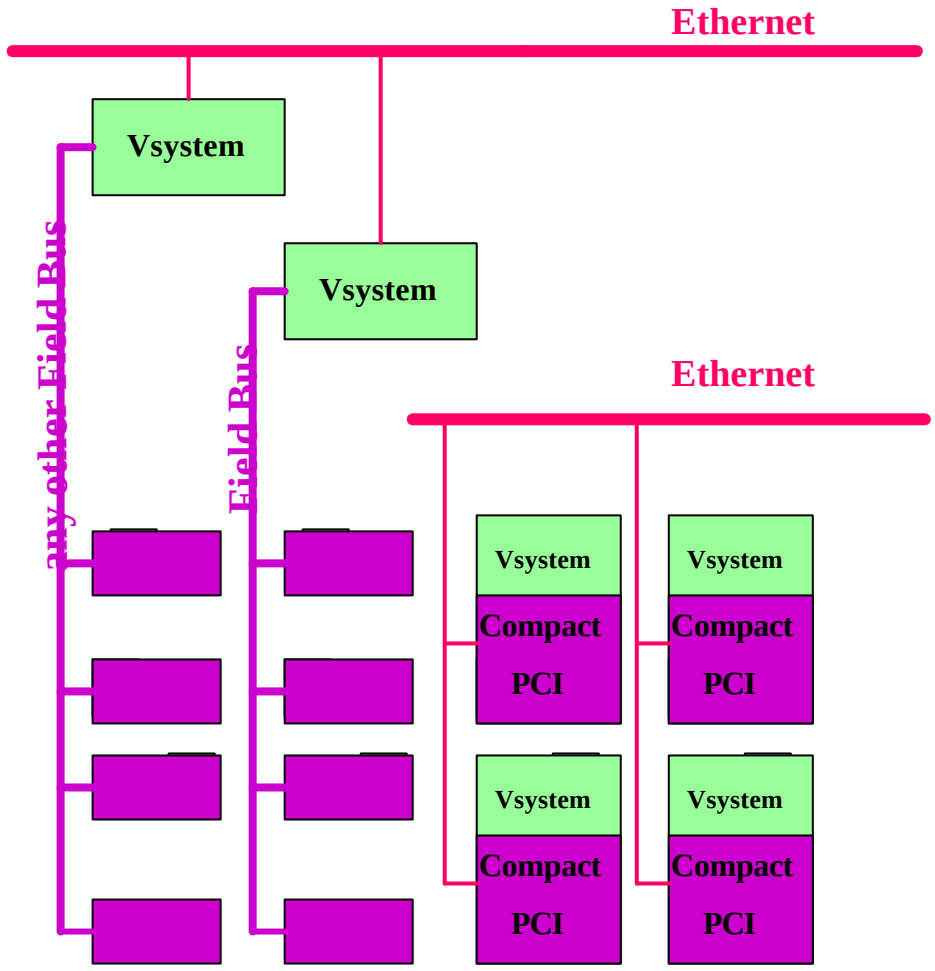
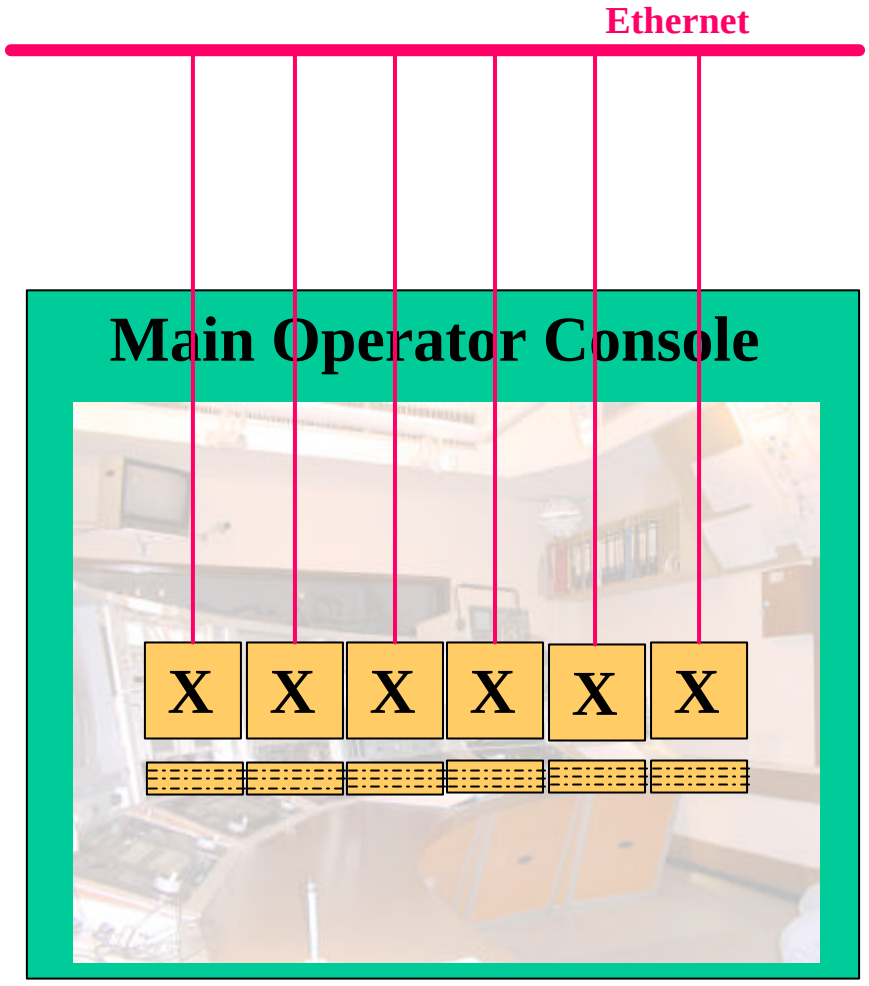
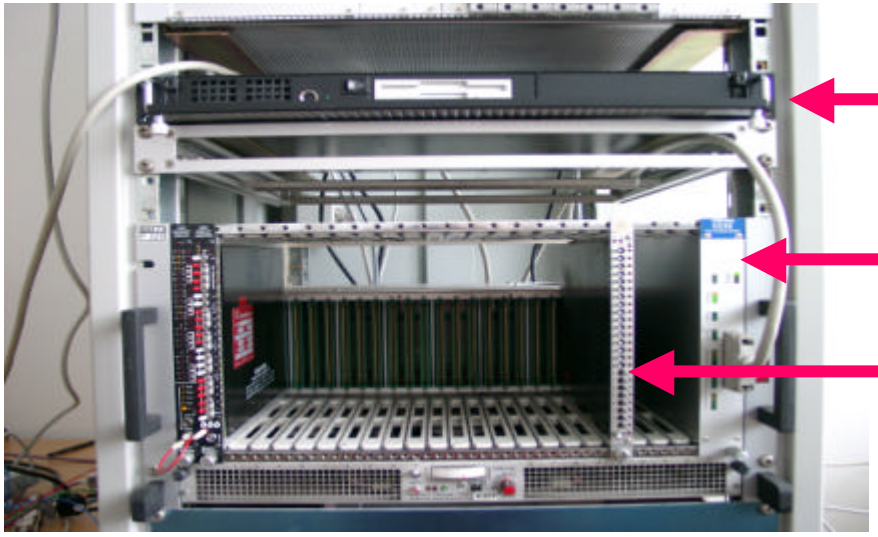
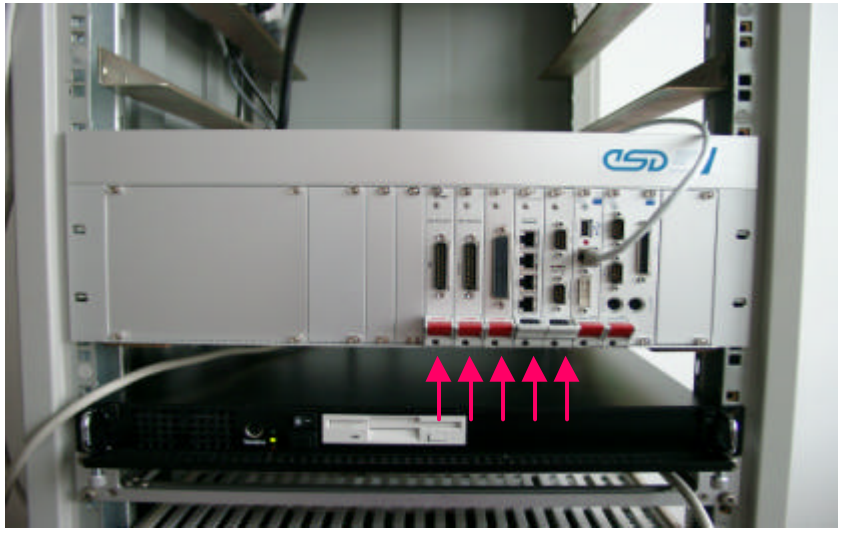




VICKSI Control System Upgrade Phase 3

Front End PC' s and Vsystem : Programmable Local Controller





Ethernet

Local PC / LINUX / PCI -ADA
running Vsystem DATABASE

CAMAC Controller
CAMAC Hardware

Ethernet

Local compactPCI CPU / LINUX
running Vsystem DATABASE
compactPCI Hardware

Summary

Under the given conditions:
The commercial solution is a good choice, because of:

- **Fast Starting-Up with narrow resources & little experience**
- **Free Programming of any application (transparent API's)**
- **Good experience with support on various OS-platforms**
  .... including compatibility and portability of source code and software releases
- **Good Customer Support and Documentation**