

Experiences with PVSS II @ ANKA

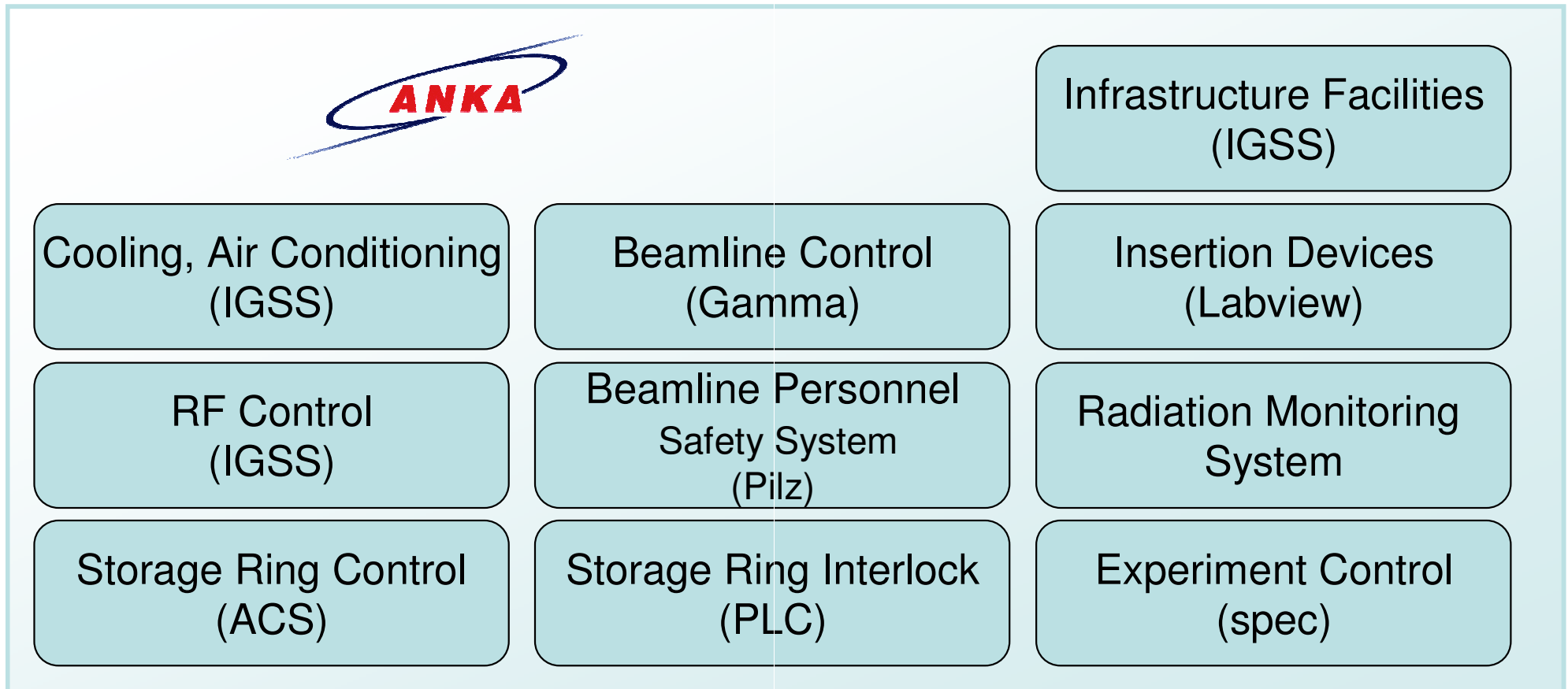



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W. Mexner
K. Cerff
T. Spangenberg

5 GeV storage ring in south germany

- ANKA control systems until 2006
- Selection criterias for a SCADA system
- What is PVSS II
- Integration of PVSS II at ANKA
- Constraints of PVSS II at ANKA
- Open issues
- Summary



Diversity of autonomous control systems in 2006

Selection criterias for a SCADA System

- available commercial support
- scalability of hard- and software
- open architecture
- object oriented development approach
- distributed development
- running under windows and linux
- easy to handle alarming features

=> PVSS II is fitting all criterias

What is PVSS II?

The Supervisory Control And Data Acquisition (SCADA) system.

Commercial product from ETM, Austria

PVSS is a TOOL to develop a control system!



What is PVSS II?

PVSS II has capabilities for:

- Device Description
 - Data points, and data point items
- Device Access
 - OPC, ProfiBus, TCP/IP in scripts, own drivers and APIs,...
- Alarms
 - Generation, masking, display, filtering, summarizing
- Archiving, Trending, Logging
- User Interface Builder
- Access Control

Control Script

- C like interpreted language
- Procedural
- System independent
- Access to PVSS II[®] structure

In GUI

- Special value conversion
- user interface functions

Standalone

- APIs
- specific alarm handling
- ...

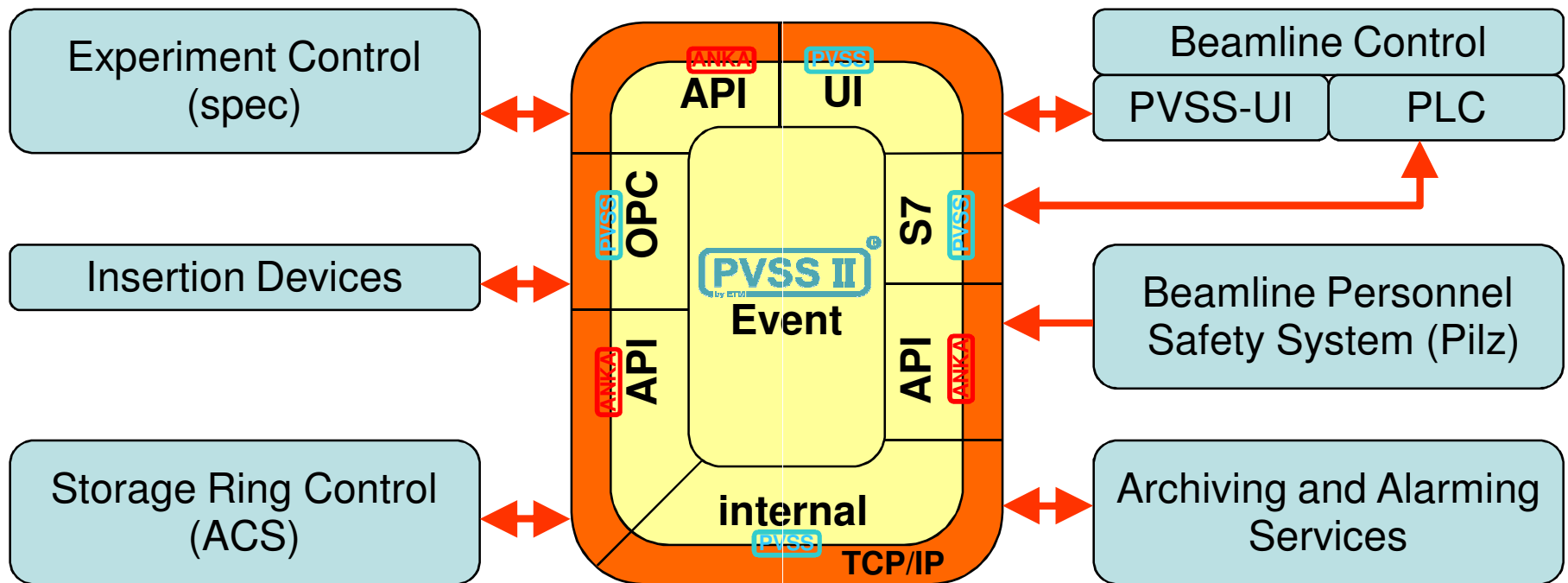
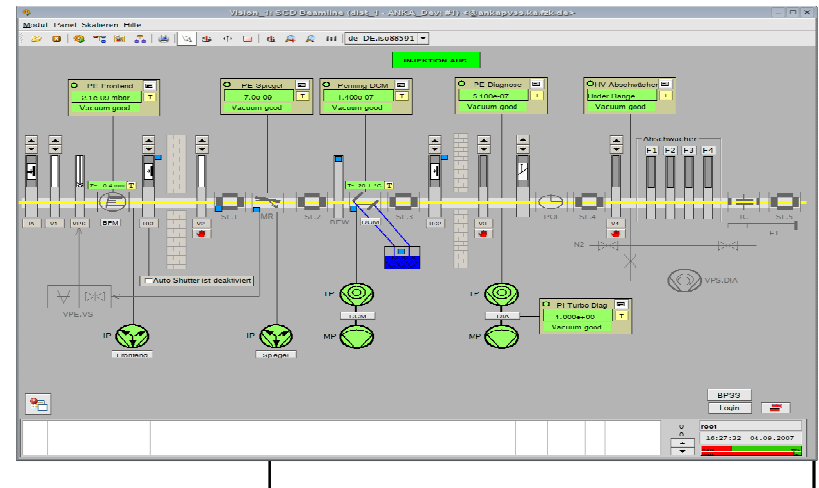
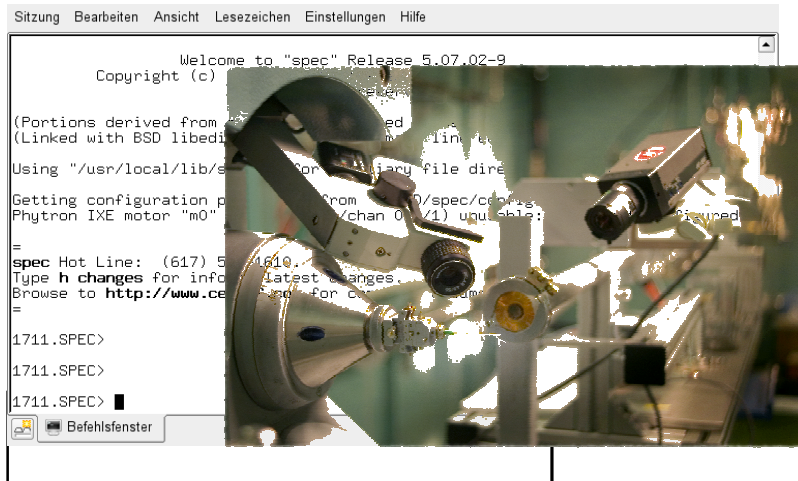
API-Manager

- C++ based programs
- Object orientated
- System independent class library
- Access to PVSS II[®] structure

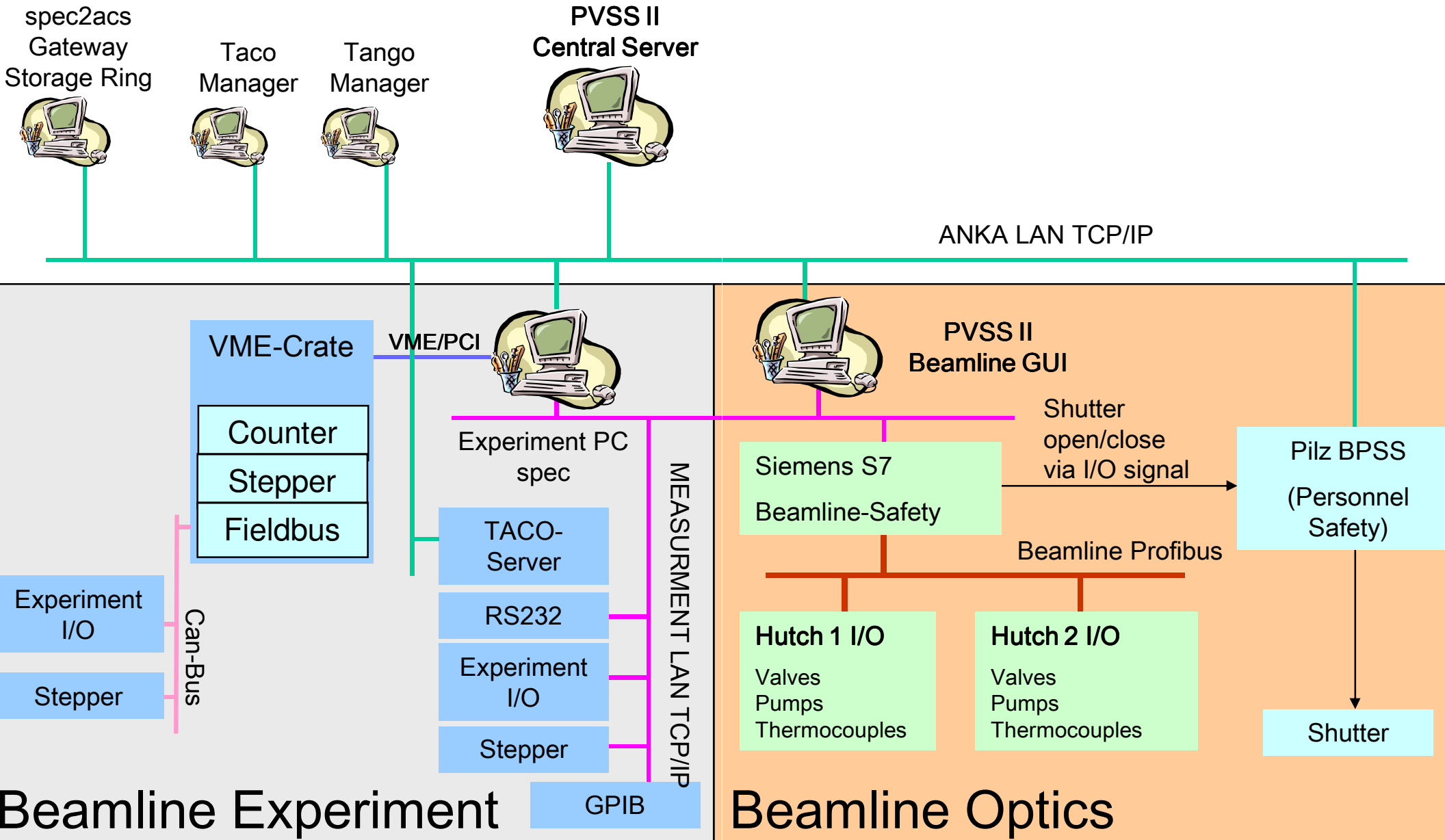
Communication to not natively supported devices

- Beamline safety
- Vacuum controller
- Storage Ring Control
- Experiment Control

Integration of PVSS II



Integration of PVSS II – Beamline View



Beamline Experiment

Beamline Optics

Integration of PVSS II – Beamline GUI

SUL_Main: SUL Beamline <@ankasul1>

Life Sign PLC | Motor Temperature | Thalheim Light Contr. | Experiment Vac. Control | Ioni Chambers | **injection on** | BPSS | Login | 2. part beamline

PE BPM1: 3.6e-10 mbar, Vacuum good

PE MR1: 1.0e-09, Vacuum good

PE wall: 4.200e-10, Vacuum good

PE Ant01: 1.100e-09, Vacuum good

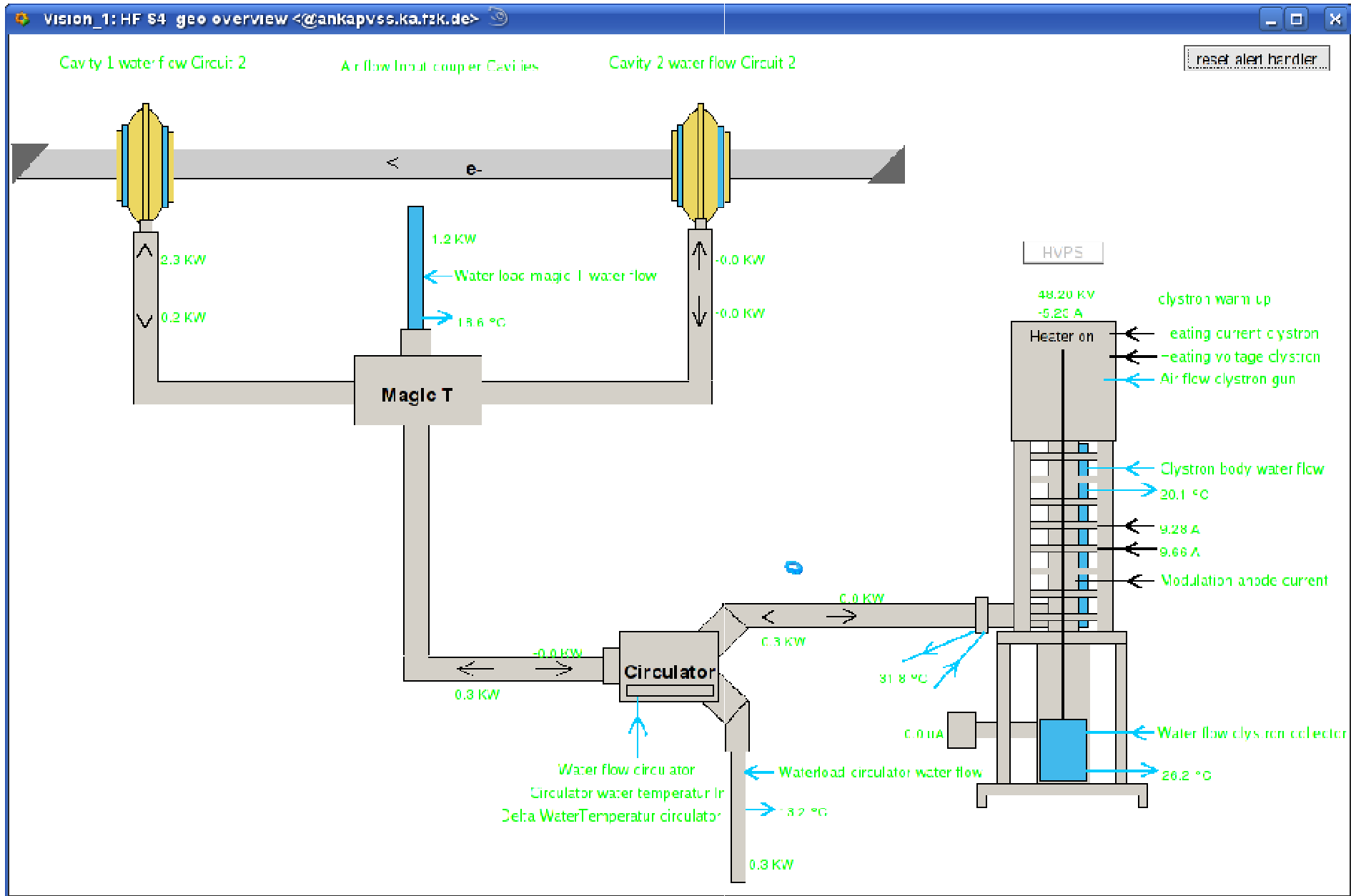
Vacuum levels: Z= -0.7 μm, X= 4.3 μm; Z= 166.7 μm, X= -239.1 μm

Warning: Mirror 1a break not fixed

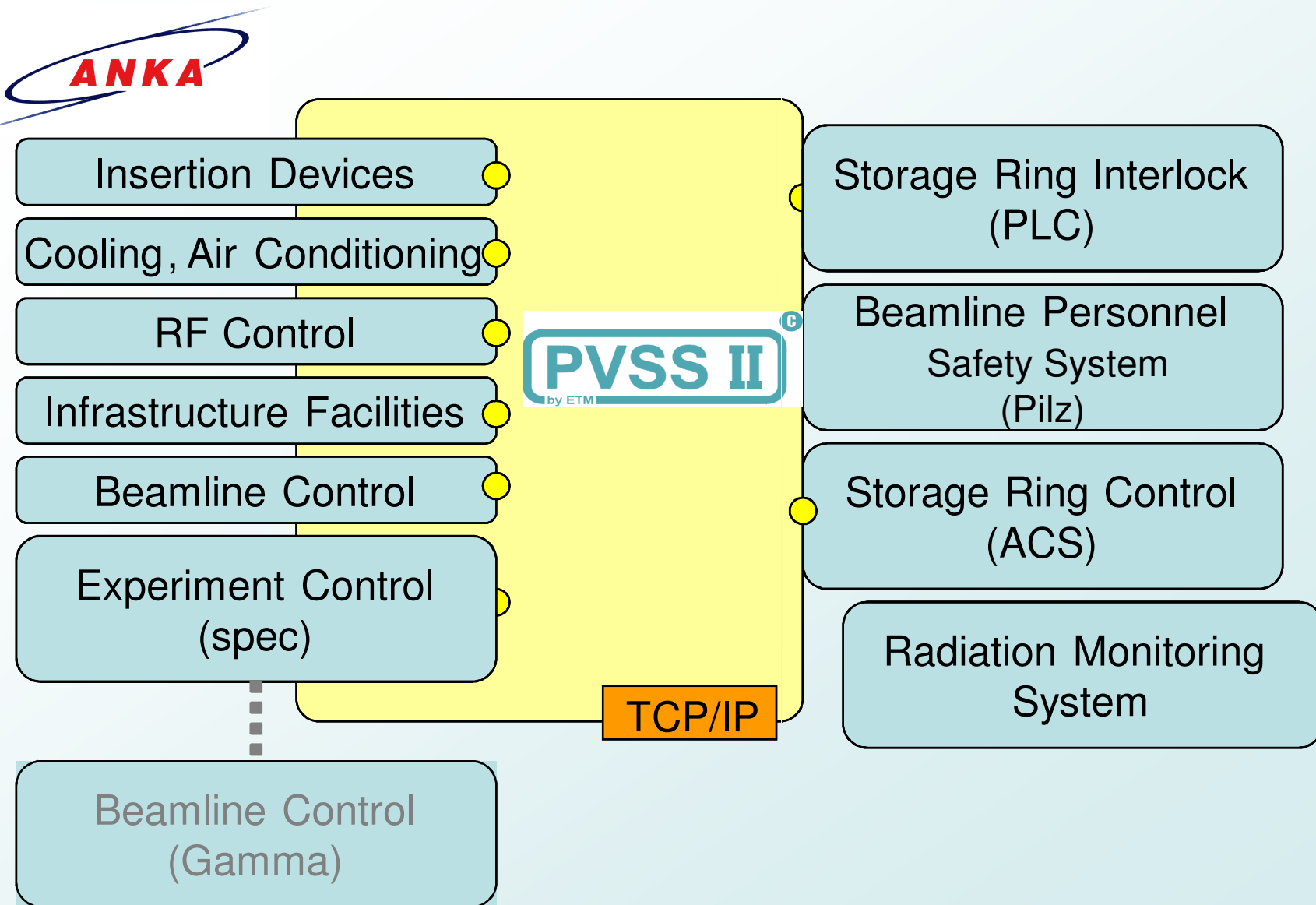
Shutter status: auto shutter activated / deactivated

Thu 17 Oct 2008 09:36:58 AM CE	Interlock BS1 by injection storage ring	CAME	TRUE		1	usersul 04:10:01 PM 10/17/08
Mon 29 Sep 2008 09:27:07 AM CE	No clearance Frontend valves from control room.	CAME	FALSE	x	4	
Tue 14 Oct 2008 11:58:05 AM CE	SUL: S7 driver not running	CAME	TRUE	!!!		

Integration of PVSS II – Storage Ring GUI



Integration of PVSS II – Status 2008



Problem for all SCADA systems

- High flexibility => Risk of too high complexity
- Bad script design could slow down total system
- Bad parameterisation of data point addresses could crash drivers (automatical restart)

PVSS II specific

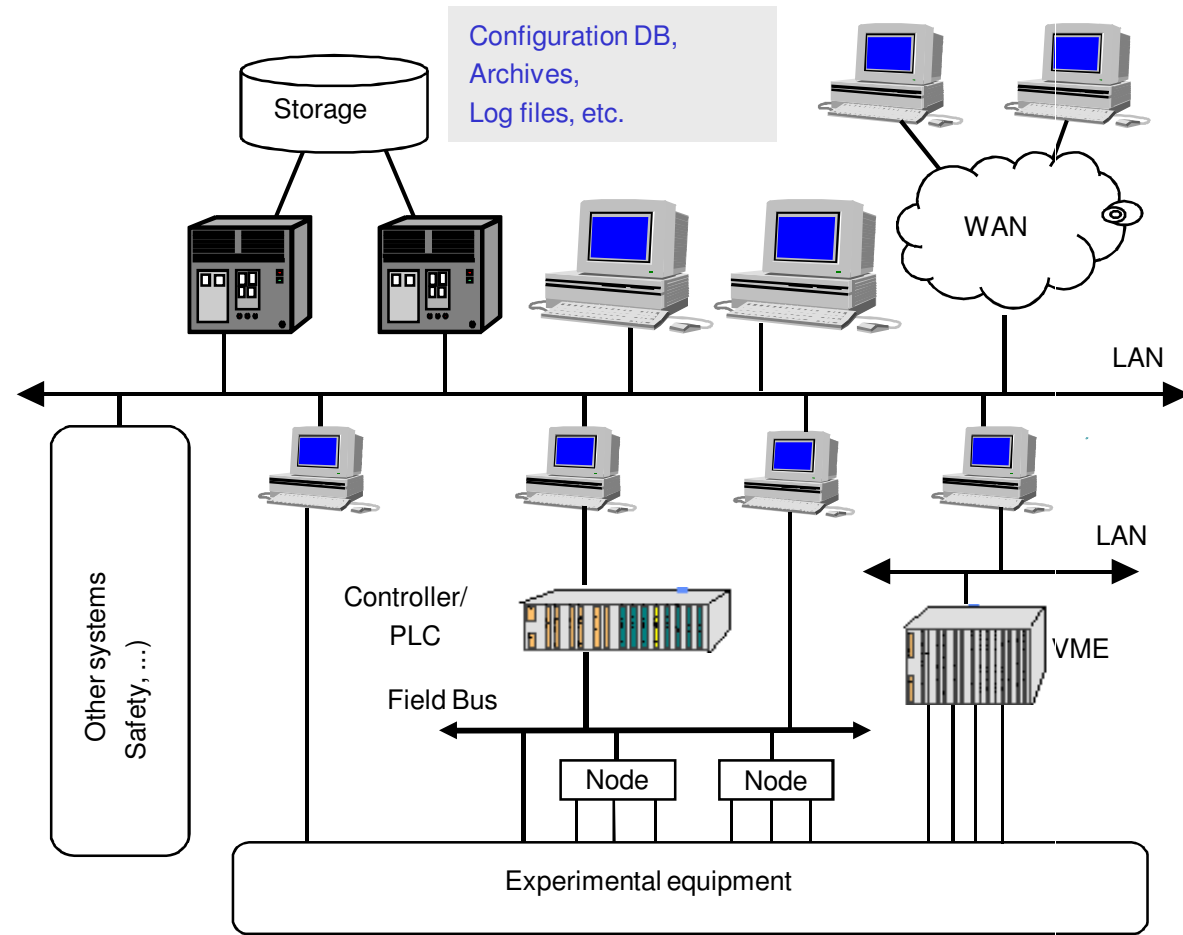
- Slight panel differences windows/linux
- Avoid windows features for linux panels
- Its a SCADA System – 10 Hz update rate is „high speed“

- Upgrade of all beamlines will be finished in 2010
- Operators are using only a few percent of the capabilities => Training required
- Optimising alarm handling is a continuous process

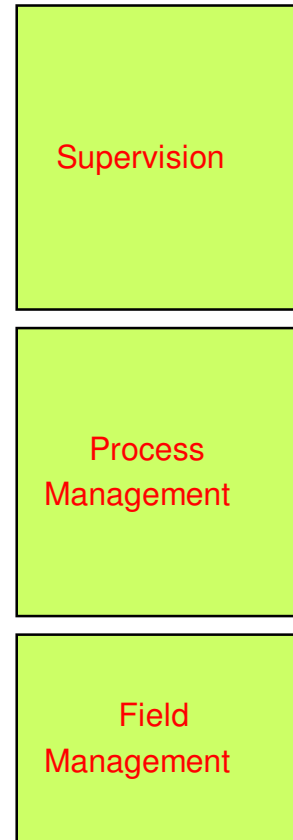
- PVSS II is a useful tool to develop a manageable SCADA system
- Suitable for accelerator and beamline control.
- Open structure allows a straightforward integration of the different autonomous systems at ANKA.
- The new alarming and warning features allow preventive maintenance measures
- new system is in high acceptance by the ANKA operational staff

Thank You

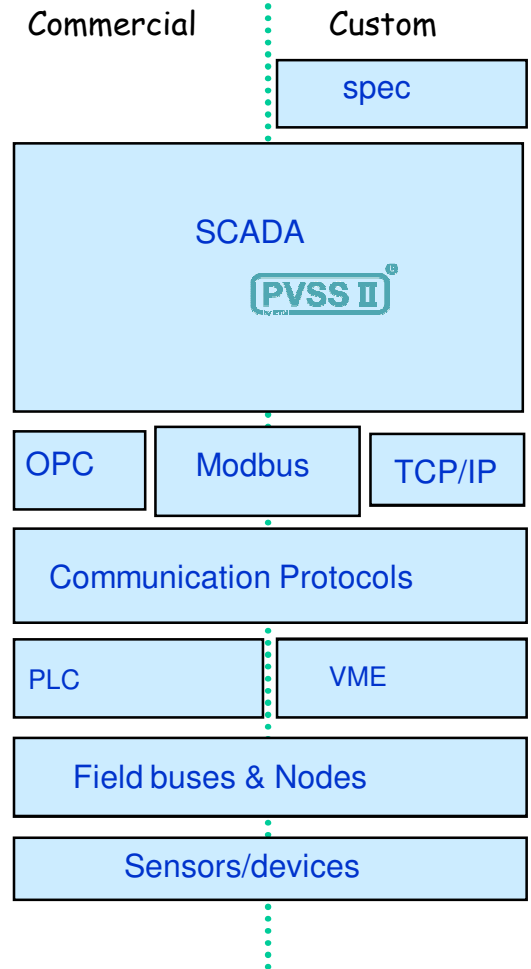
What is PVSS II?



Layer Structure



Technologies



Based on an original idea from LHCb, CERN