Using Tango for the LIA-20 project and at Budker institute accelerators

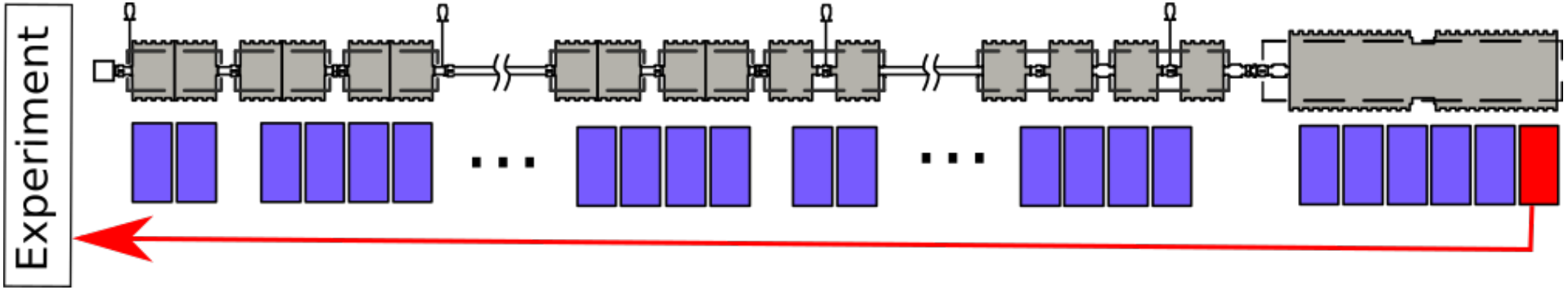
BINP

BINP

BINP:accelerators

- VEPP-5
- VEPP-4
- VEPP-3
- VEPP-2000
- FEL

LIA-20



20 MeV, 2 kA
3 pulses: 60ns
Length: 140m

LIA-20

Fast (< 10 us)	594
Slow (> 10 us)	1485
Timing	1485
Interlock	1485
Technological control	1000
Total	6000

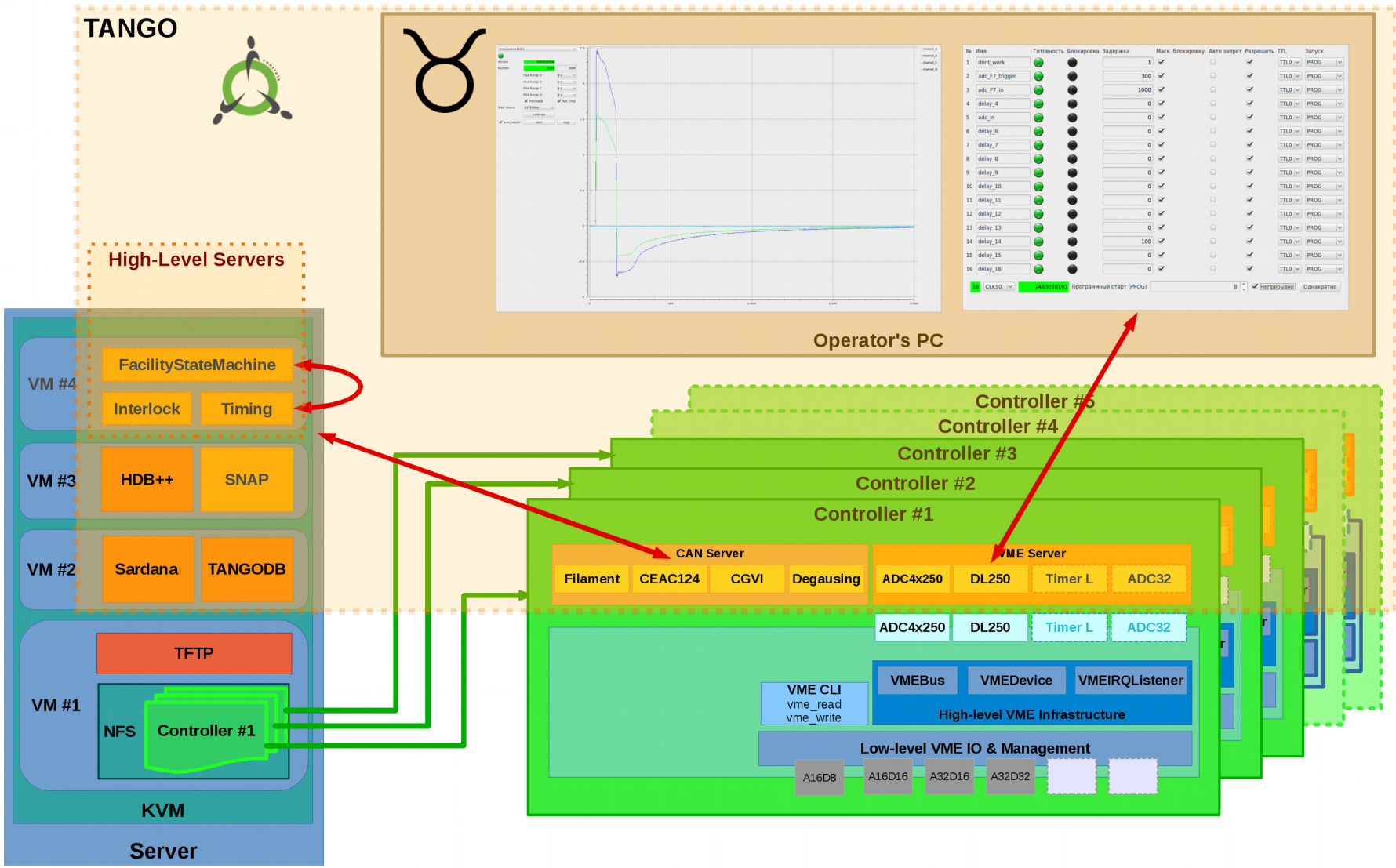
LIA-20

- TANGO
- EPICS
- In-house(CX, VCAS, etc)

BINP:accelerators

- VEPP-5 (in-house,CX)
- VEPP-4 (in-house, EPICS)
- VEPP-3
- VEPP-2000 (in-house, VCAS, CX)
- FEL (in-house, EPICS)

LIA-20

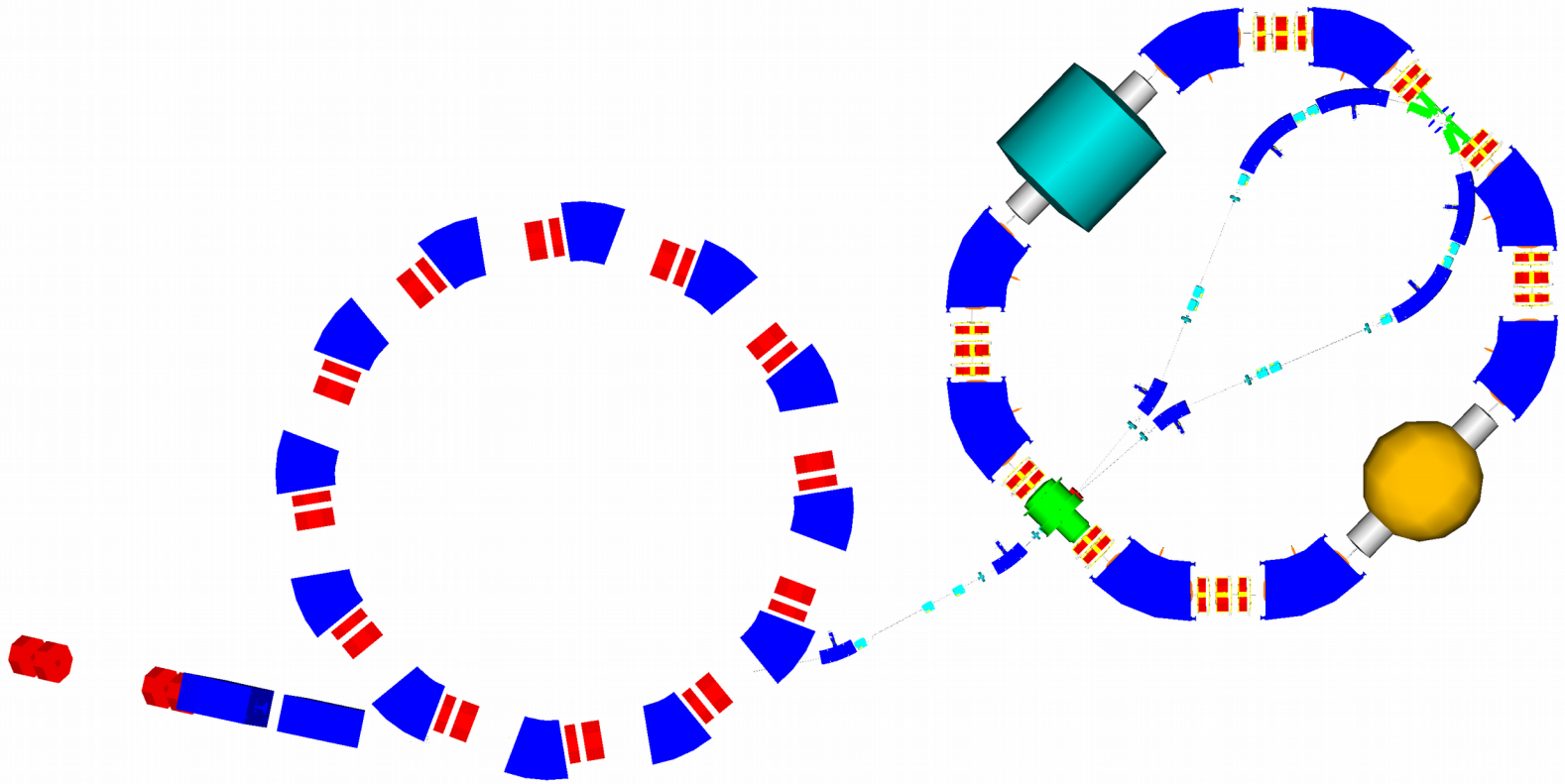

TANGO
High-Level Servers
VM #4
FacilityStateMachine
Interlock
Timing
VM #3
HDB++
SNAP
VM #2
Sardana
TANGODB
VM #1
TFTP
NFS
Controller #1
KVM
Server
Operator's PC
Controller #5
Controller #4
Controller #3
Controller #2
Controller #1
CAN Server
Filament
CEAC124
CGVI
Degausing
VME Server
ADC4x250
DL250
Timer L
ADC32
VME CLI
vme_read
vme_write
VMEBus
VMEDevice
VMEIRQListener
High-level VME Infrastructure
Low-level VME IO & Management
A16D8
A16D16
A32D16
A32D32

LIA-20

Fast (< 10 us)	594	2500
Slow (> 10 us)	1485	2300

- One measurement — one record
- Postgresql HDB++ ??

VEPP-2000

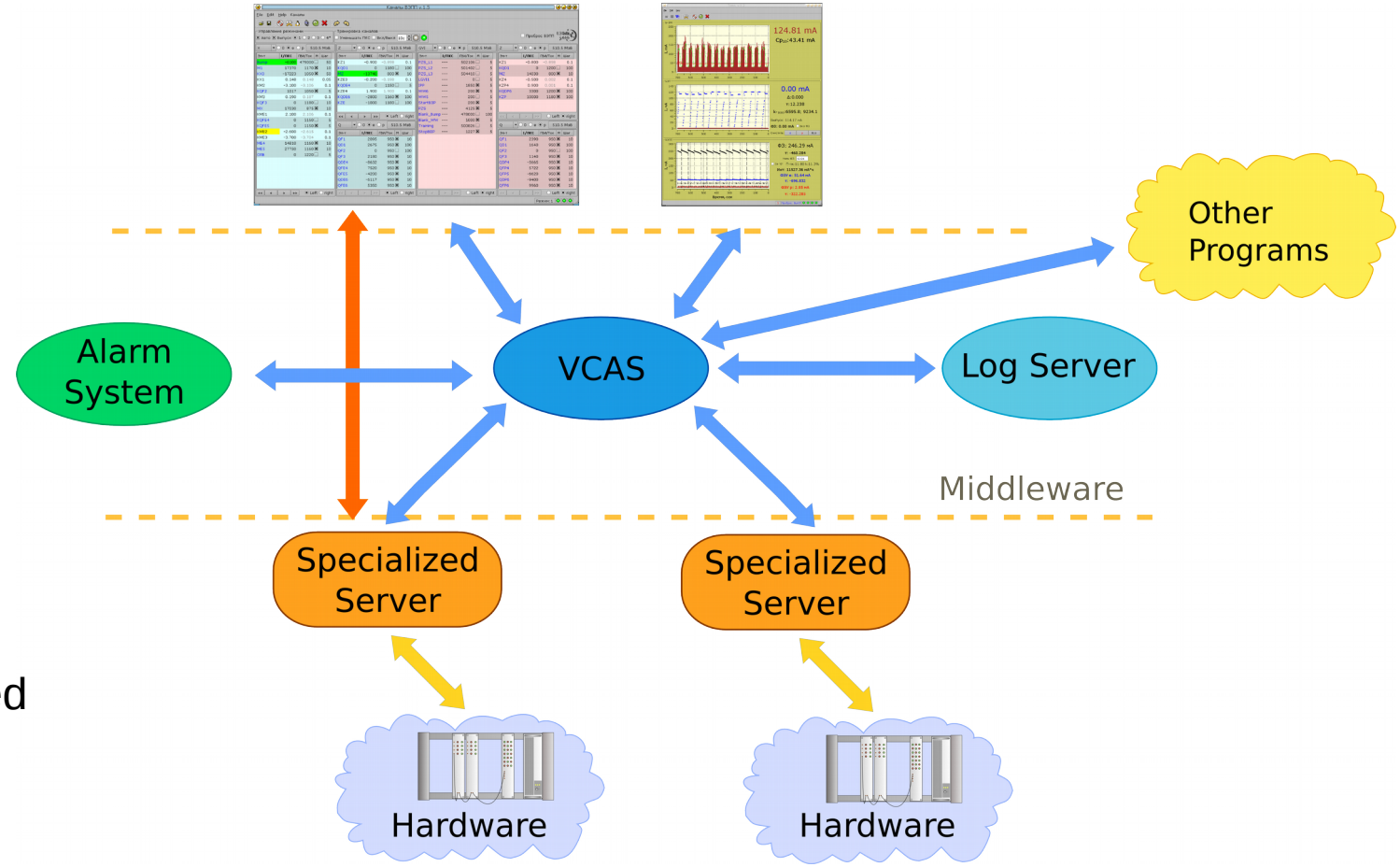


Circumference	24.388 m	Energy range	150 ÷ 1000 MeV
Number of bunches	1	Number of particles	1×10^{11}
Betatron tunes	4.1/2.1	Beta-functions @ IP	8.5 cm
Beam-beam parameter	0.1	Luminosity	1×10^{32} $cm^{-2}s^{-1}$

VEPP-2000

- **Hardware**
  - CAMAC (legacy system, fast ADC, BPM)
  - CAN-Bus (Control and slow monitoring)
  - VME
  - Ethernet

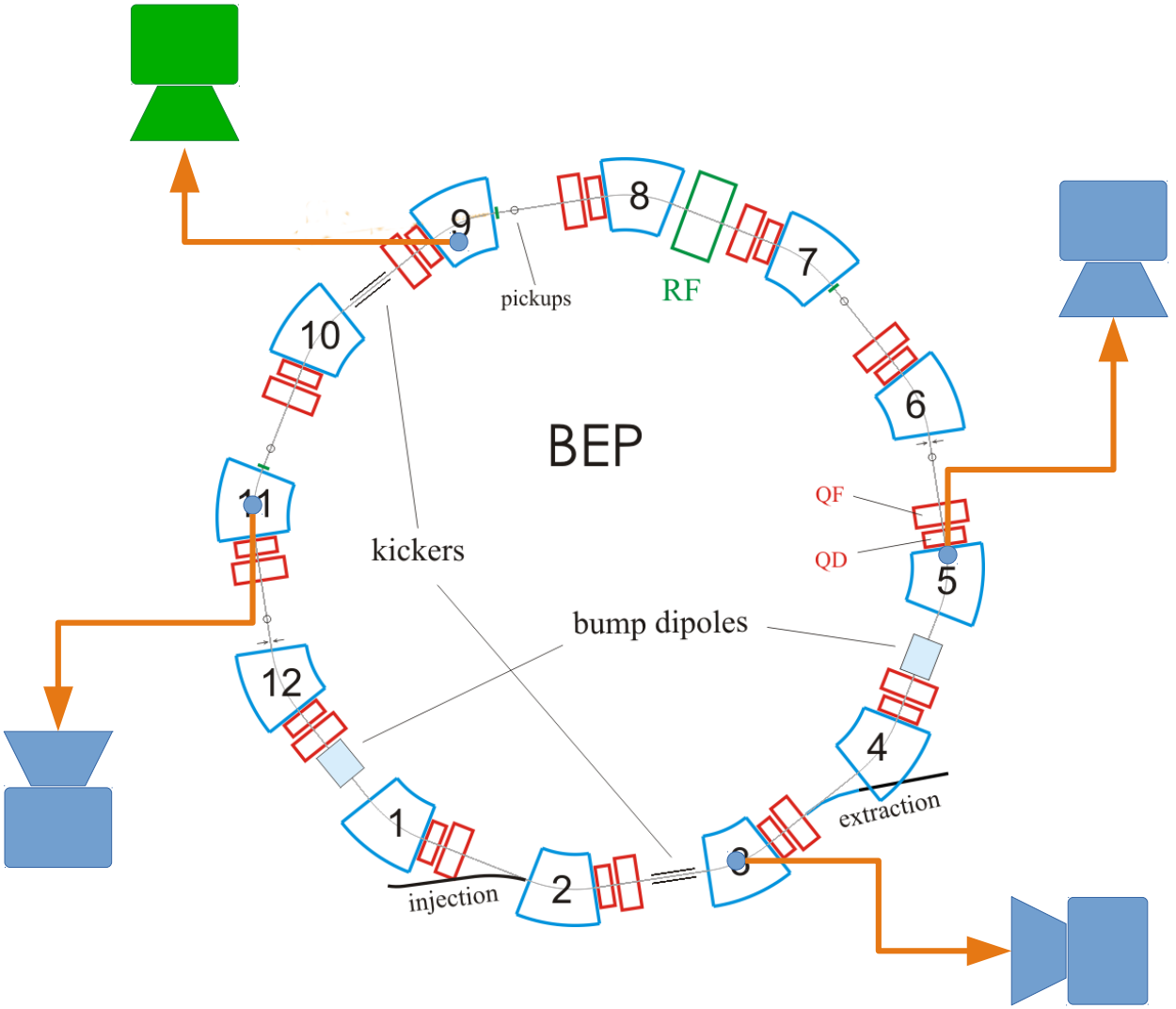
VEPP-2000



- In-house
- RPC – based
- Message - based

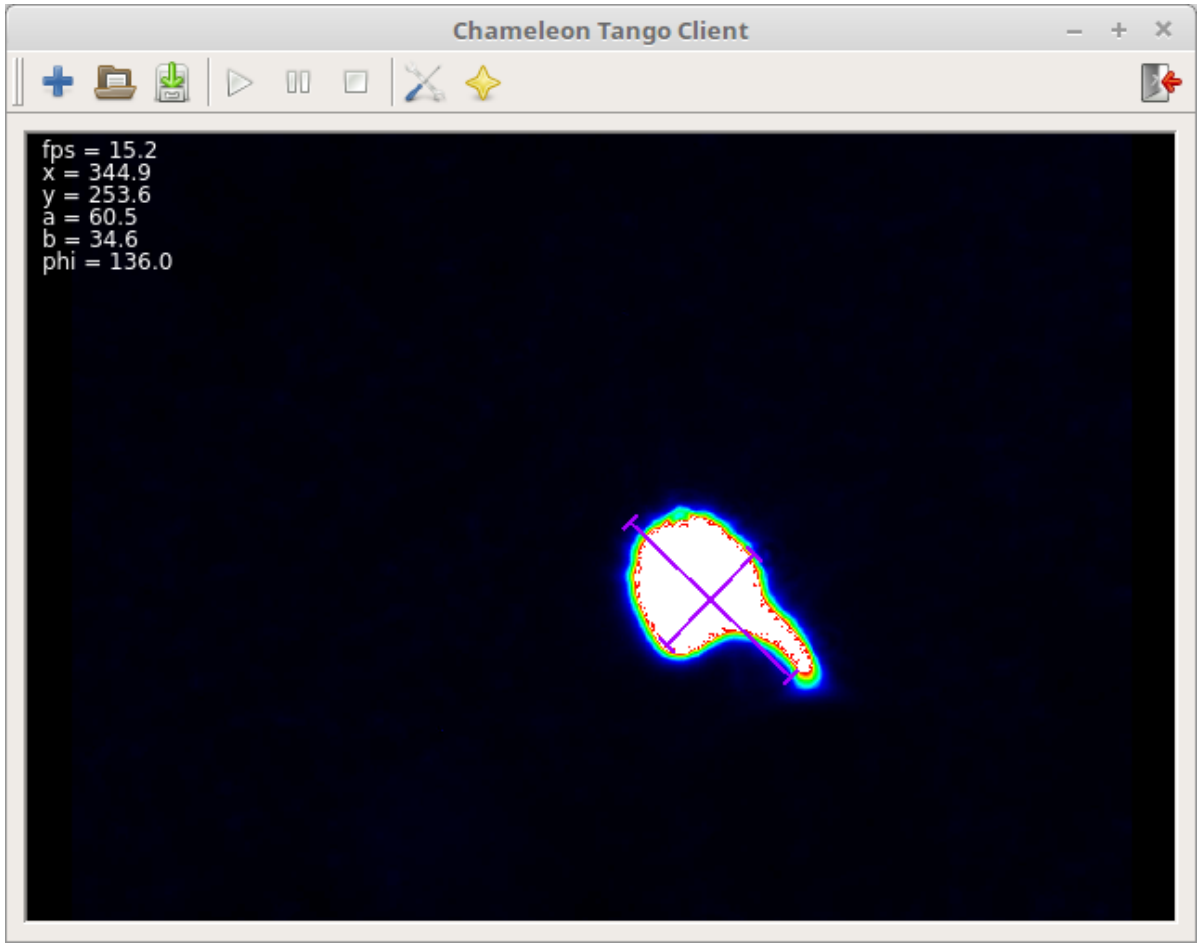
VEPP-2000:BEP CCD

- 4 Ethernet CCD
- USB CCD



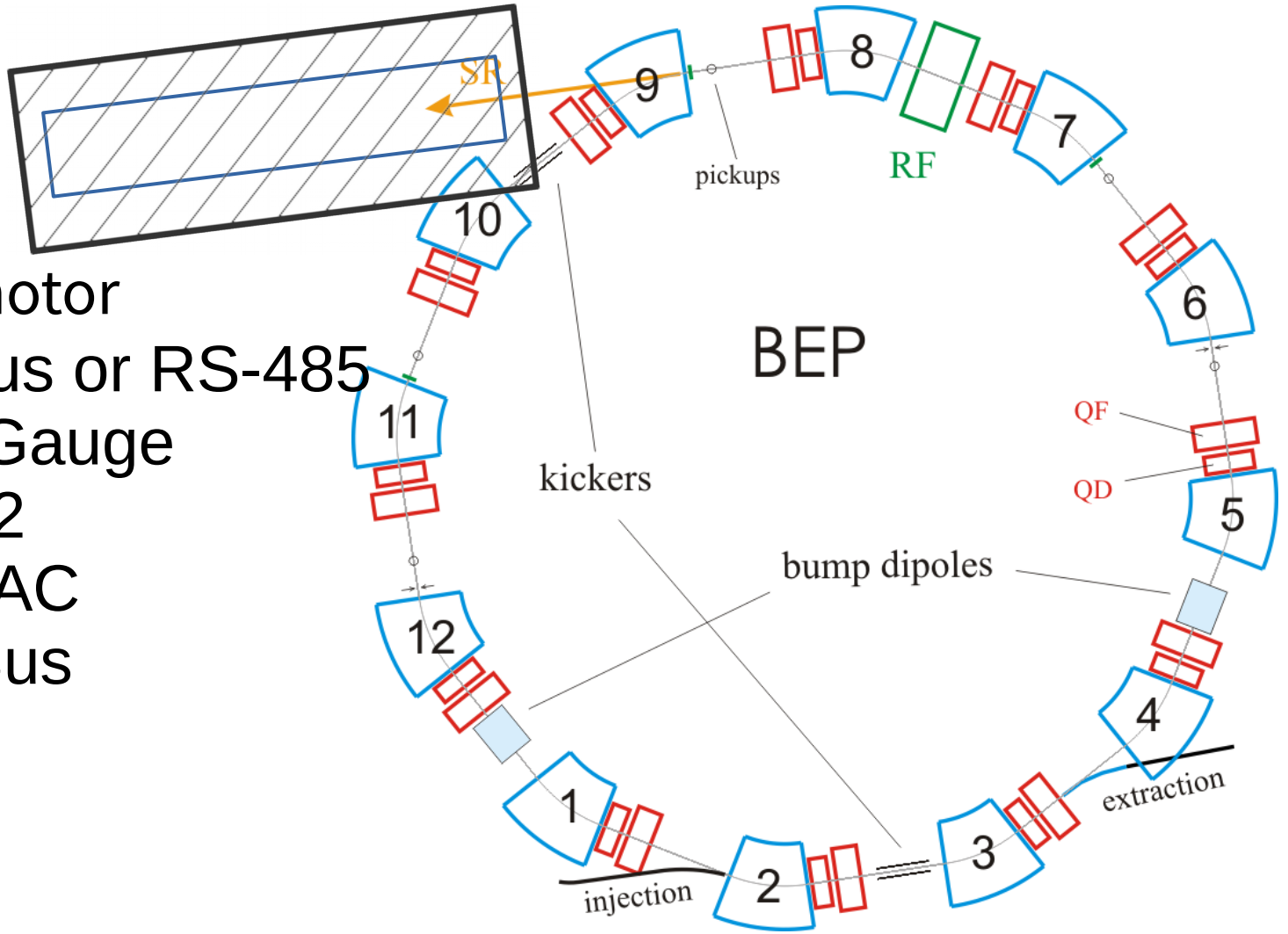
VEPP-2000:BEP CCD

- X, Y
- σ_a σ_b
- Phi
- Raw
- Jpeg

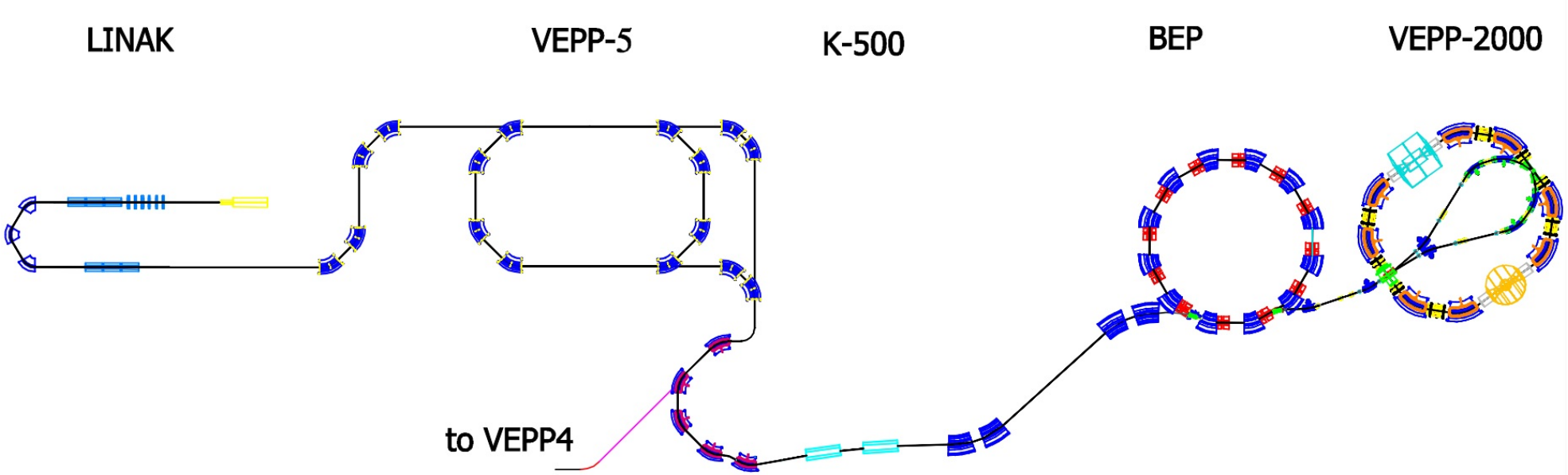


VEPP-2000: Vacuum stand

- Stepper motor
  - CANBus or RS-485
- Vacuum Gauge
  - RS-232
- ADC & DAC
  - CAN Bus

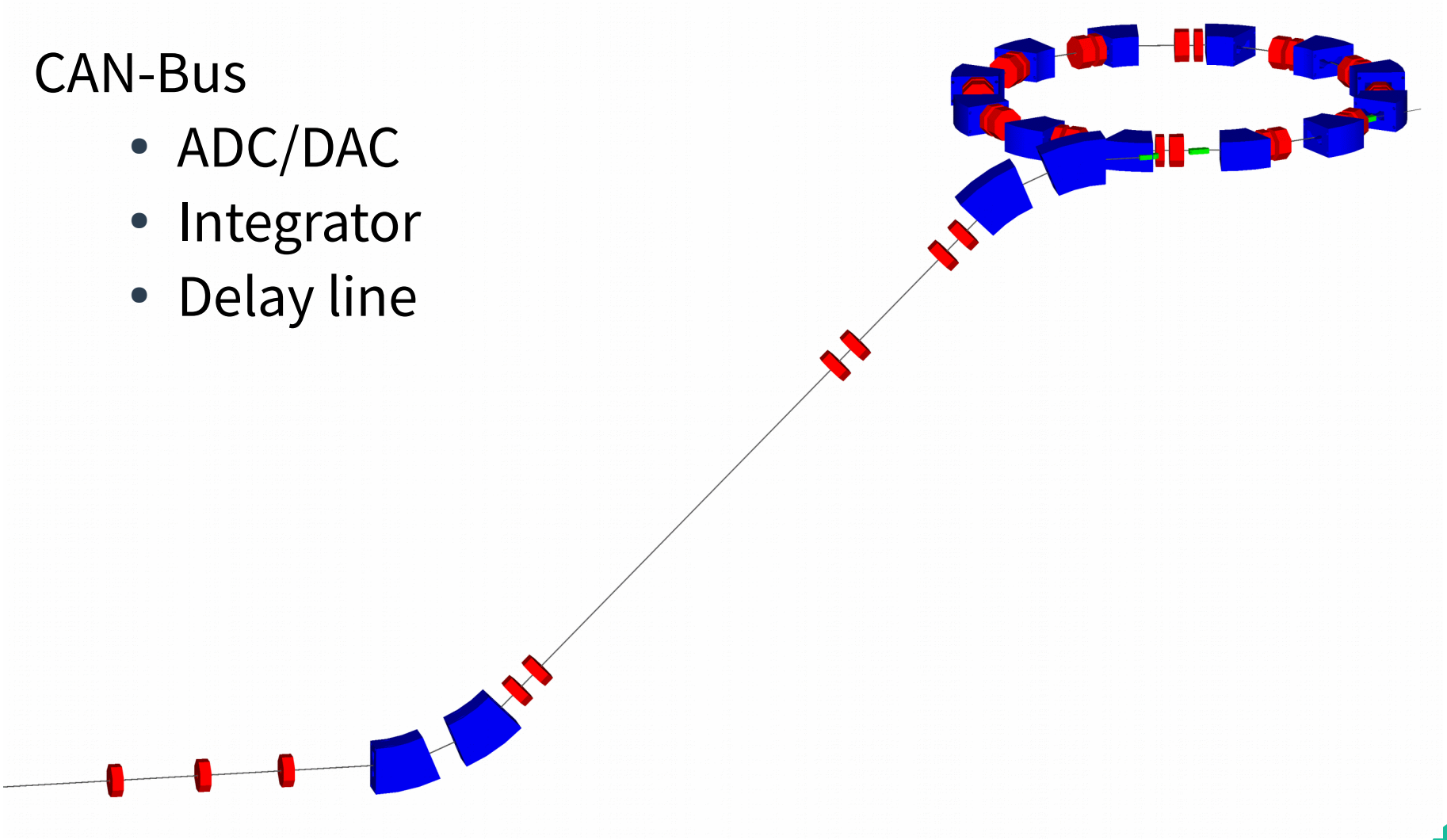


VEPP-2000



VEPP-2000: K-500

- CAN-Bus
  - ADC/DAC
  - Integrator
  - Delay line



TANGO training

- **Technical experts**
  - Hardware developers
  - Control System experts
- **Physicists**
  - Data acquisition
  - Sophisticated controls

TANGO training

- NSU – BINP Workshop
- National Instruments
  - NI-PXI-6251
  - ADC
  - DAC
  - I/O Port