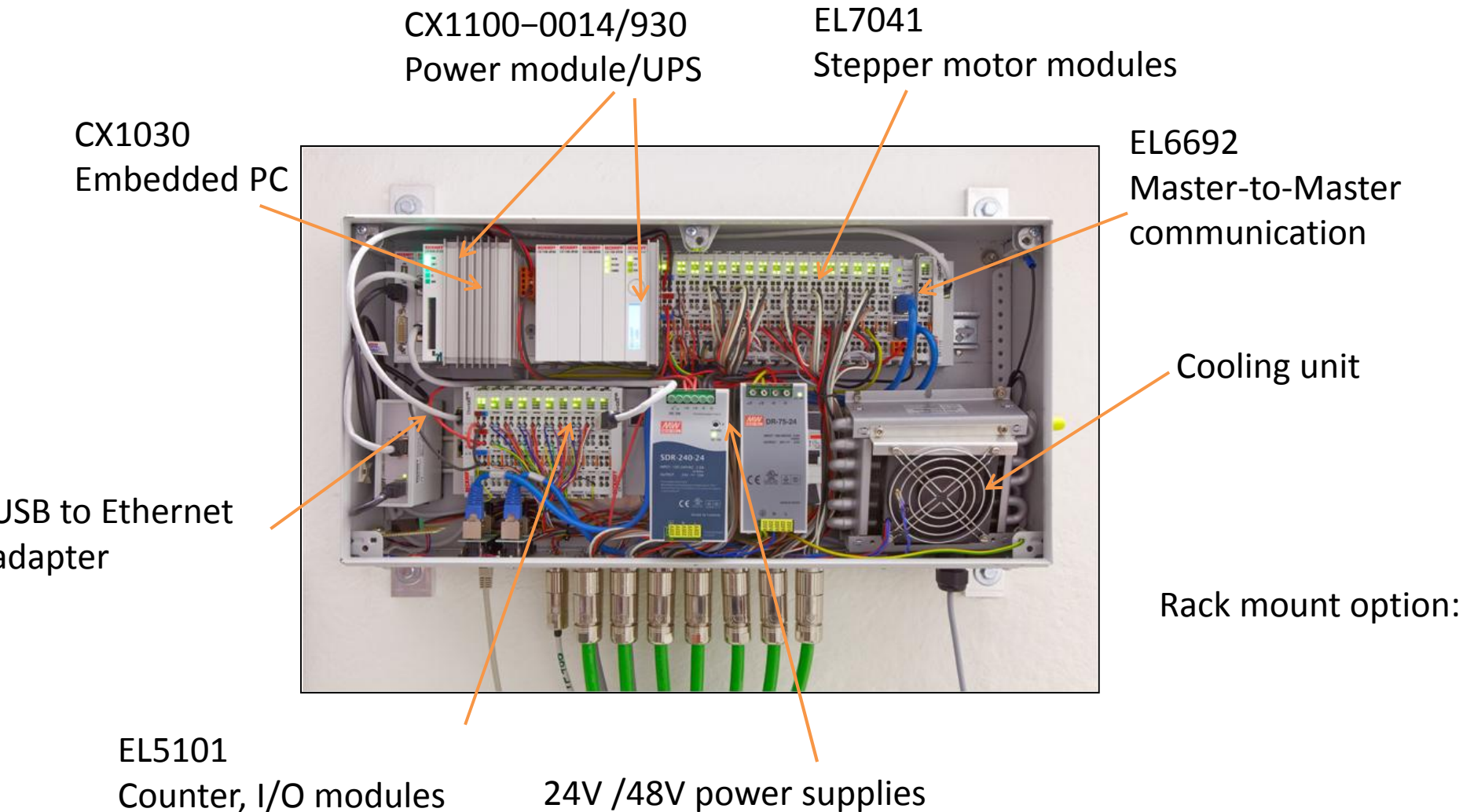


Realtime Motion Control -Update

Uwe Ristau



Distributed control units: current configuration



Distributed control units: current configuration

Electronic to for one component like:

DCM
Mirror
Exp Tbl
BPM, Collimator

EL7041

Stepper motor modules

EL6692

Master-to-Master
communication

Cooling unit

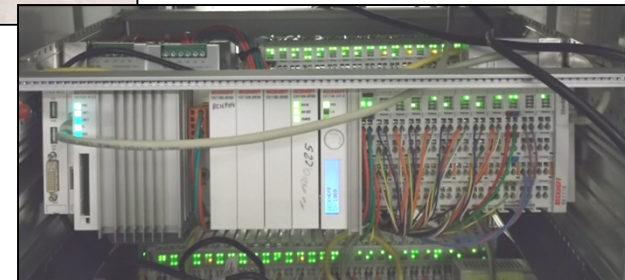
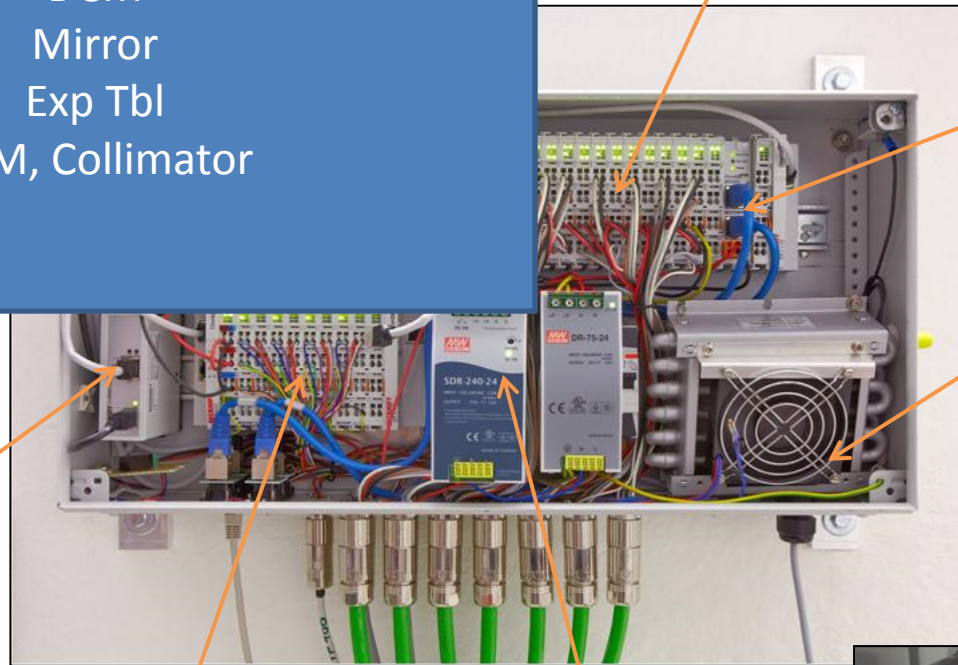
USB to Ethernet
adapter

Rack mount option:

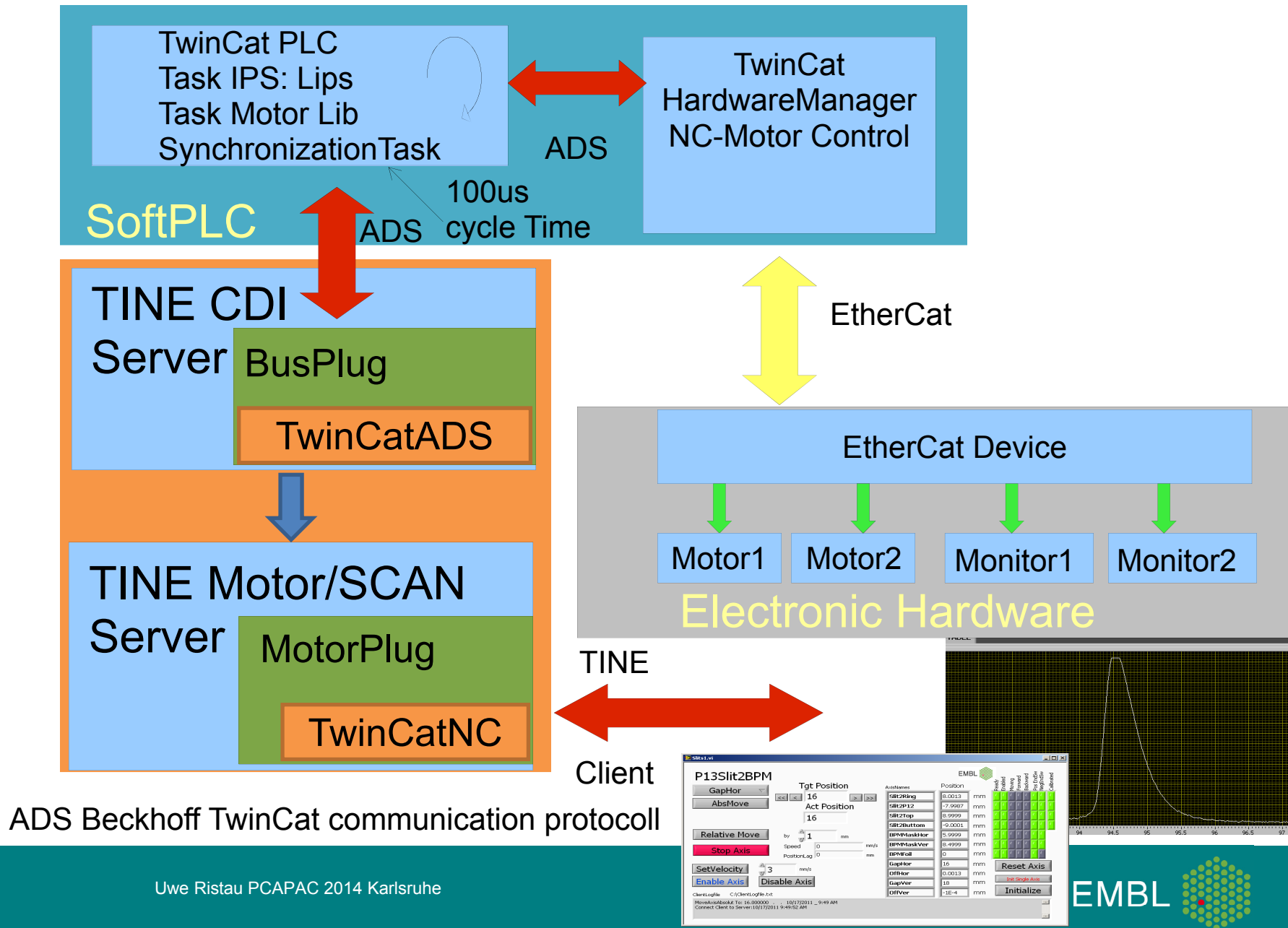
EL5101

Counter, I/O modules

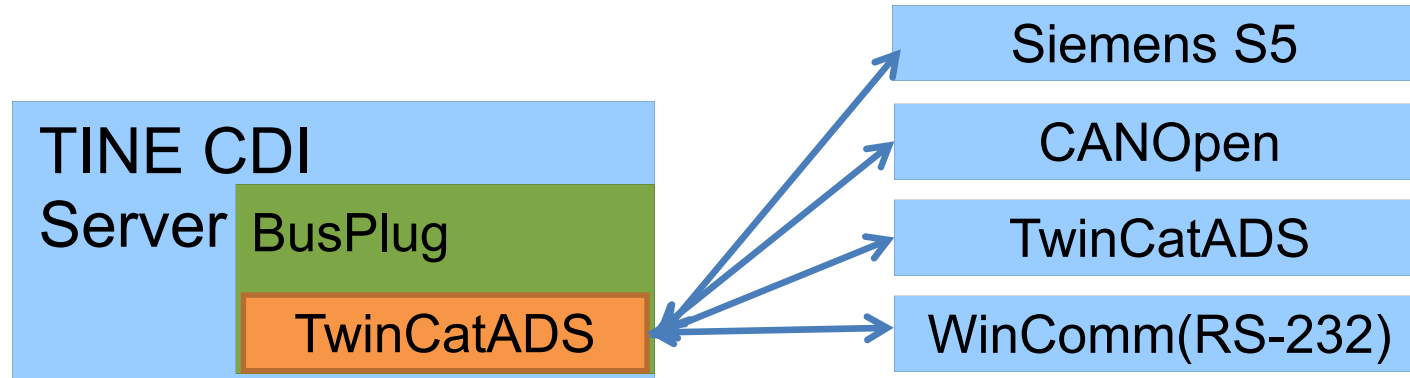
24V /48V power supplies



Motion control → Motor to Client

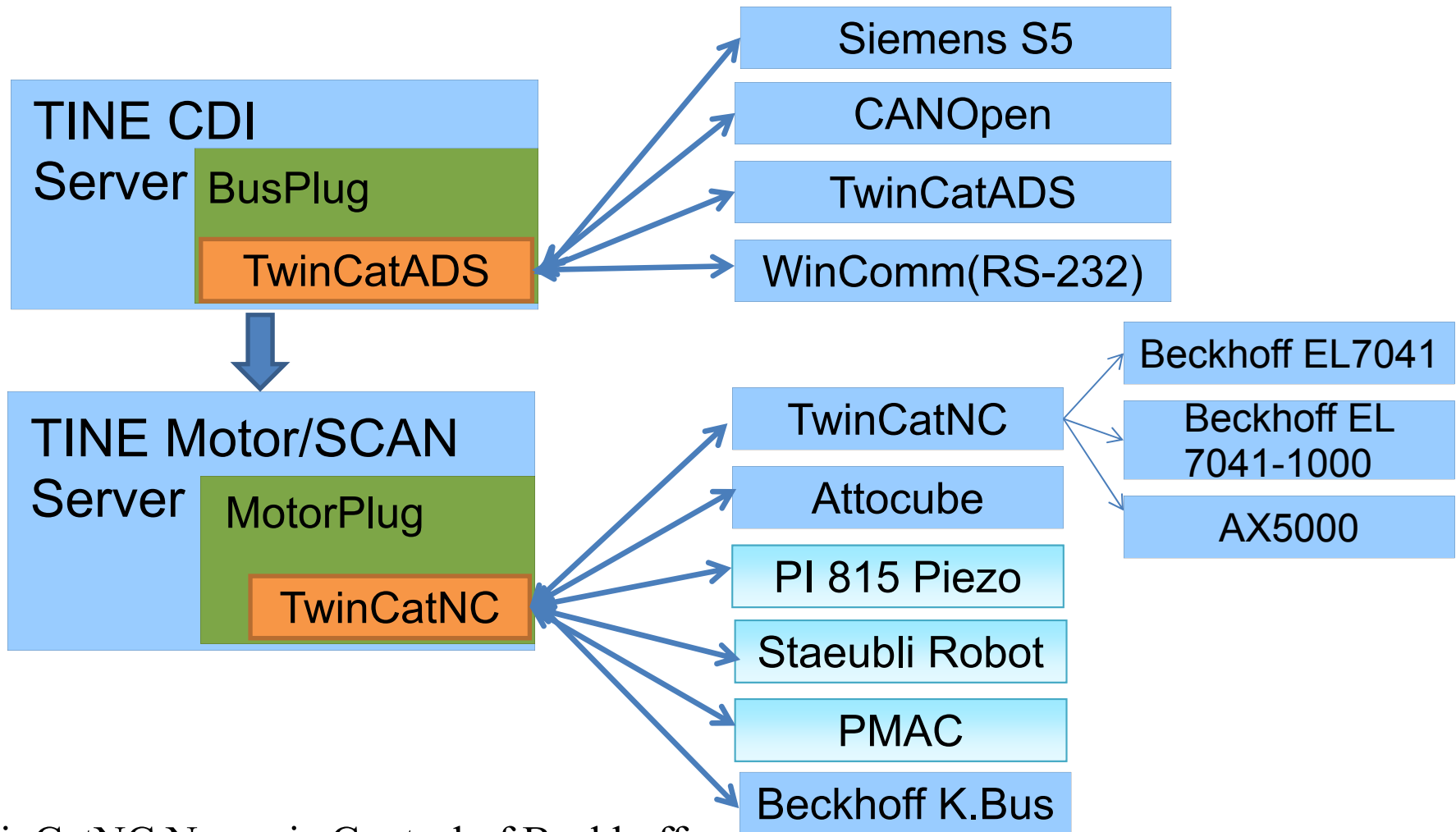


TINE Common Device Interface Server



- Low level server to access hardware
- Exports device api to tine
- Hides device specific protocols
- Connection to the central services Archiver and Alarms
- Example TwinCat:
 - Motor functionality (properties)
 - Access to all variables of the twincat plc

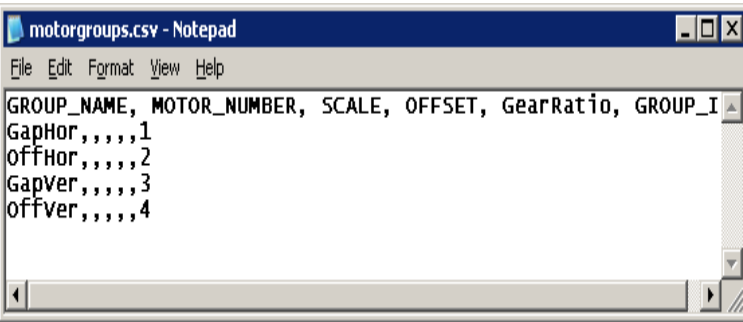
Motor Server Architecture



TwinCatNC Numeric Control of Beckhoff
TwinCat ADS Beckhoff Communication Protocol

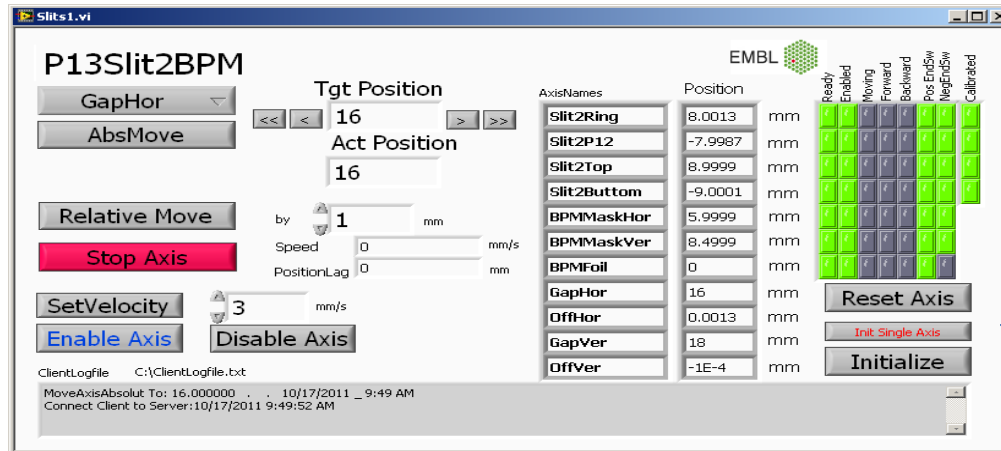
TINE Motor Server Group moves

- On the fly defined group moves
- Move.Start -> Mot1,Mot2,Mot3,10,10,20
- Pseudo axis move: Pseudo axis defined in
- motorgroups.csv.



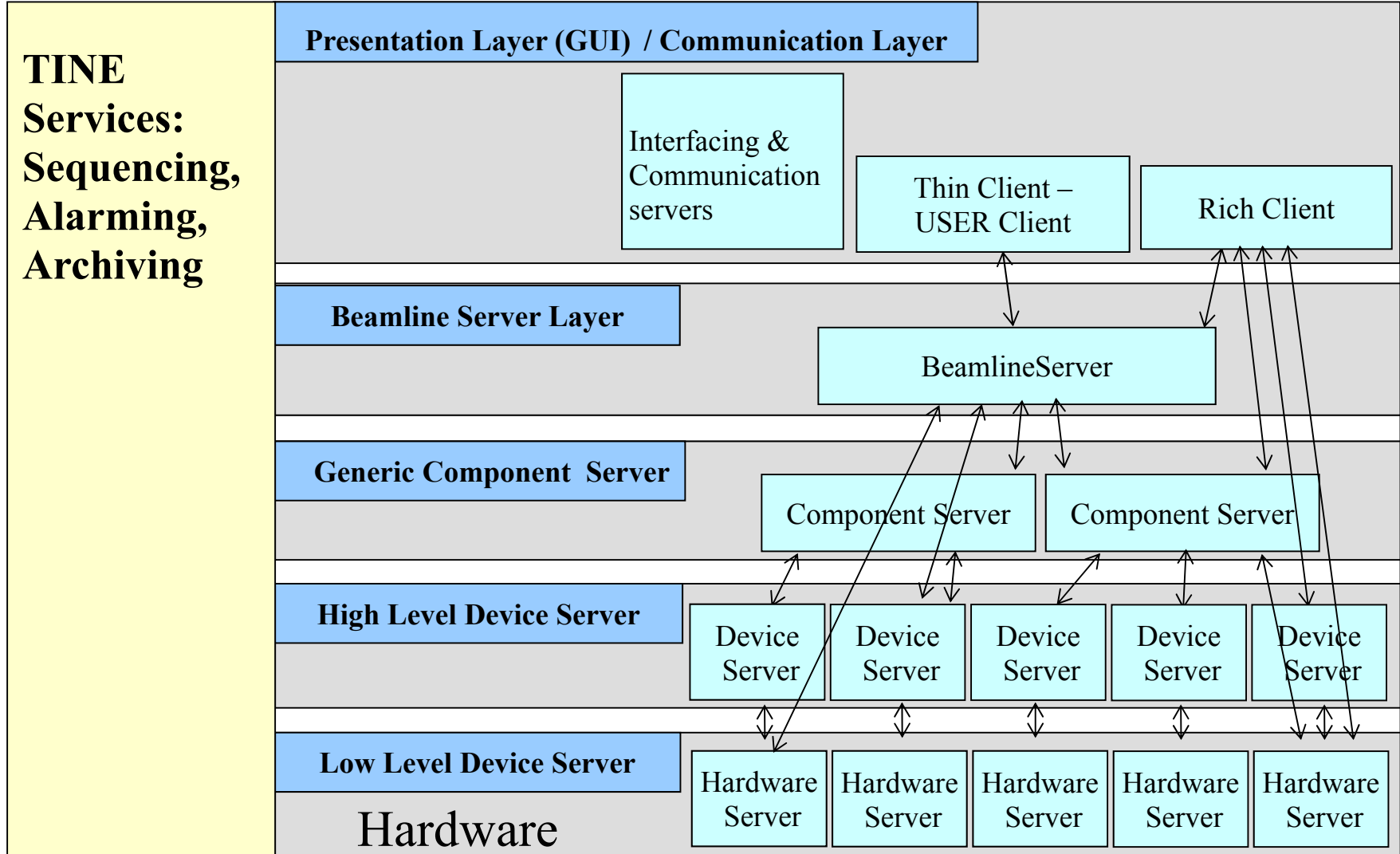
```
GROUP_NAME, MOTOR_NUMBER, SCALE, OFFSET, GearRatio, GROUP_I
GapHor,,,,,1
OffHor,,,,,2
GapVer,,,,,3
OffVer,,,,,4
```

In use: ExpTable, Slits, Mono, Detector stage

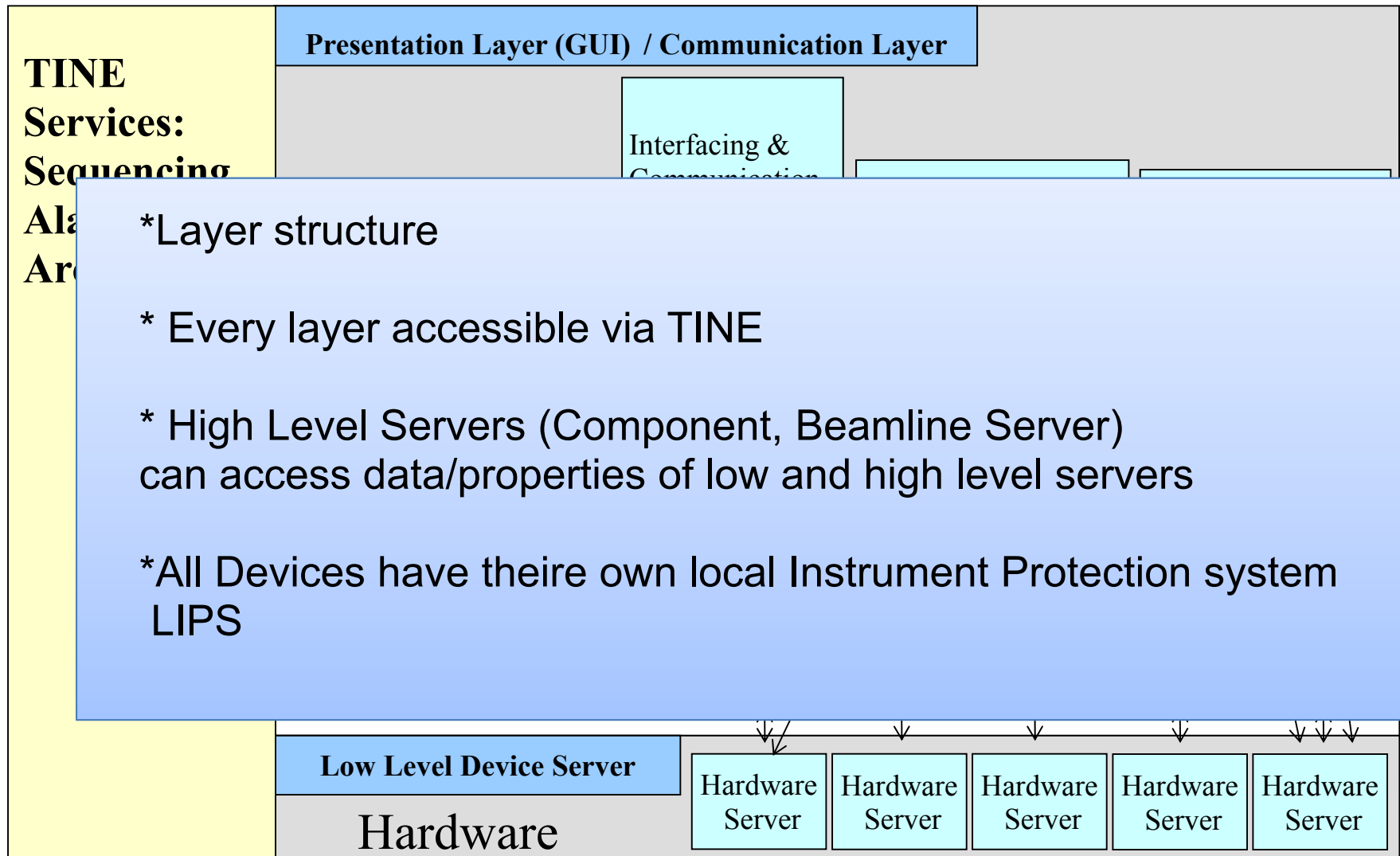


Initialization at the pos Limit switch or at the referenz position for all axis

Architecture of the EMBL PetraIII Beamline control



Architecture of the EMBL PetraIII Beamline control



Standard Motor Client

1. Connect toTINE .csv file
2. Load the Devices via TINE call
3. Start Client

```
ClientConfig.txt - Notepad
File Edit Format View Help
Context:P14
DeviceServer:P14Slit2BPM
ProgramName: P14Slit2
CDIServer:P14Slit2BPM.CDI
DeviceName:#0
Coarse Incremental Move: +:0.1
Coarse Incremental Move: -:0.1
Fine Incremental Move: -:0.01
Fine Incremental Move: +:0.01
NumberOfMotors: 7
```

Instant Client

Print... Options... Debug Tools... Monitor... Show Globals! Input Panel!

Device Context: P13 Device Subsystem: ALL Show Stock Properties: ☒

Device Server: P13Slit2BPM Device Name: Slit2n Device Property: de

Data Size: 0 Data Type: NULL Description: lock type/lock duration

DEBUGLEVEL
DELIPNET
DELUSER
DENIEDUSERS
DEVDDESCRIPTION
DEVICES
DEVLOCATION
DEVMASK

draw mode
Histogram
transport
udp (default)

Config files
Logging
Initialization of axis
Variable speed

Slits1.vi

P13Slit2BPM

GapHor AbsMove

Tgt Position 16 Act Position 16

Relative Move by 1 mm

Stop Axis

SetVelocity 3 mm/s

Enable Axis Disable Axis

AxisNames Position

Slit2Ring	8.0013	mm
Slit2P12	-7.9987	mm
Slit2Top	8.9999	mm
Slit2Bottom	-9.0001	mm
BPMMaskHor	5.9999	mm
BPMMaskVer	8.4999	mm
BPMFoil	0	mm
GapHor	16	mm
OffHor	0.0013	mm
GapVer	18	mm
OffVer	-1E-4	mm

EMBL

Ready Enabled Moving Forward Backward Pos EndSw NegEndSw Calibrated

Reset Axis

Init Single Axis

Initialize

ClientLogfile C:\ClientLogfile.txt

MoveAxisAbsolut To: 16.000000 . . 10/17/2011 _ 9:49 AM

Connect Client to Server:10/17/2011 9:49:52 AM

BICFROC Container Interface

