



ELI-ALPS status

Lajos Fülöp
ELI-HU Non-Profit Ltd. (ELI-ALPS)
Data Acquisition and Integration Group

29th TANGO Collaboration Meeting
20.05.2015, Kraków, SOLARIS

SZÉCHENYI 



HUNGARIAN
GOVERNMENT

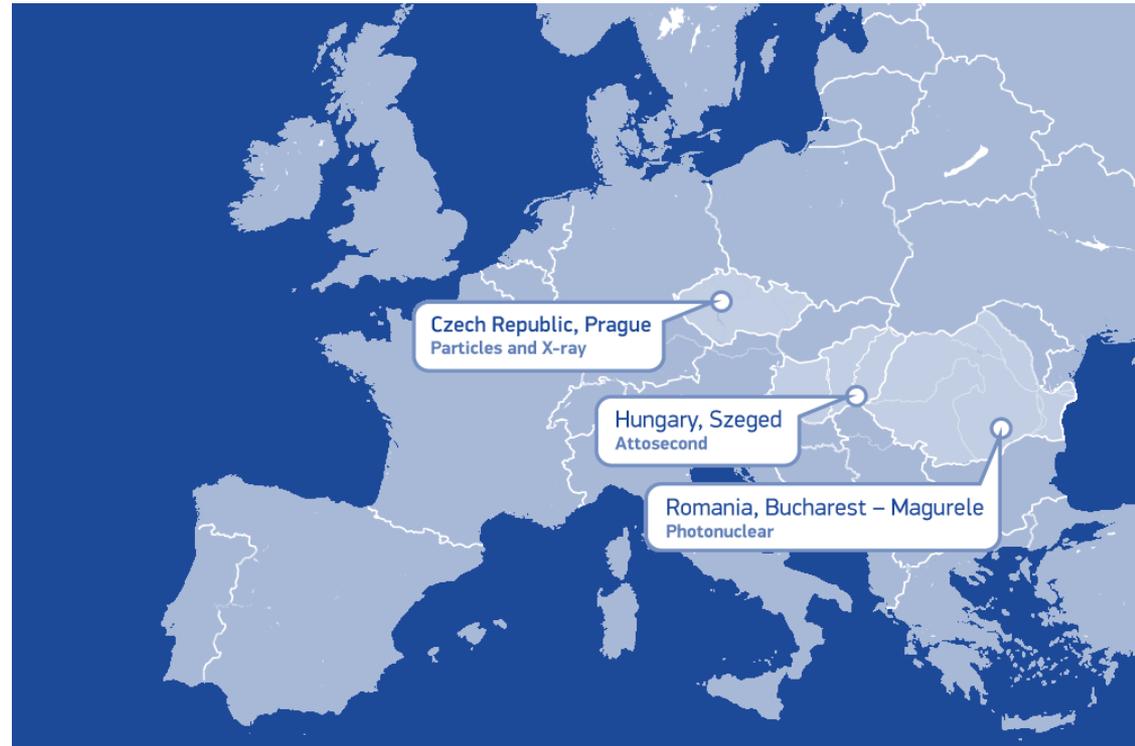
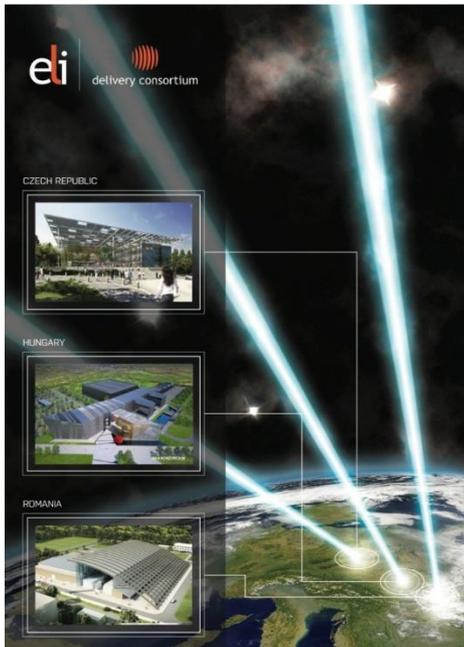
European Union
European Regional
Development Fund



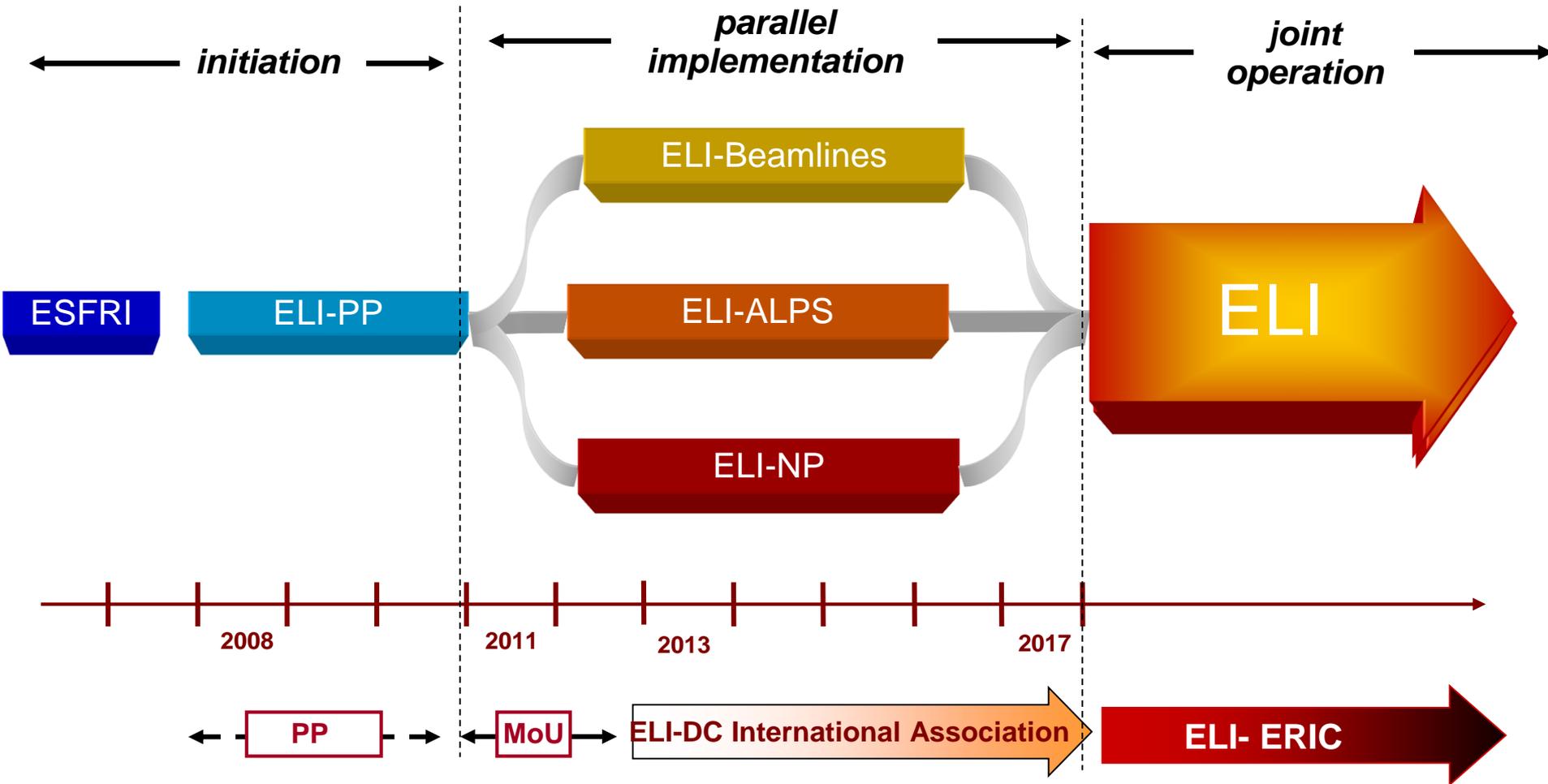
INVESTING IN YOUR FUTURE

Extreme Light Infrastructure (ELI)

- the world's **first international laser research infrastructure**
- providing unique science and research "*The CERN of laser research*"
- **distributed research infrastructure** in CZ, HU and RO

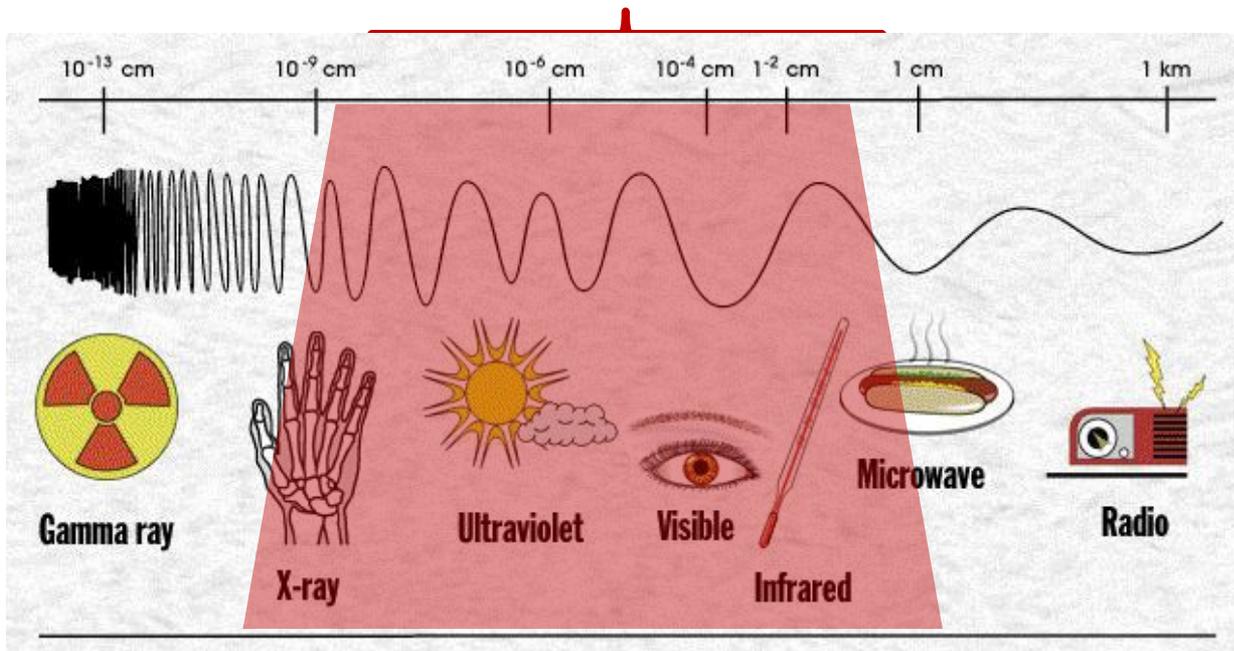


Roadmap and governance



ELI-ALPS LIGHT SOURCES

The **shortest** pulse durations at the **widest** spectral range ...
 ... at the **highest** repetition rate.



Building „A”

(lasers + target areas):

Net area - **6209 m²**

Building „B”

(scientific labs and machinery):

Net area - **7936 m²**

Building „C”

(Reception, auditorium):

Net area - **7391 m²**

Building „D”

(maintenance, storage):

Net area - **2926 m²**

Total – 24 462 m²



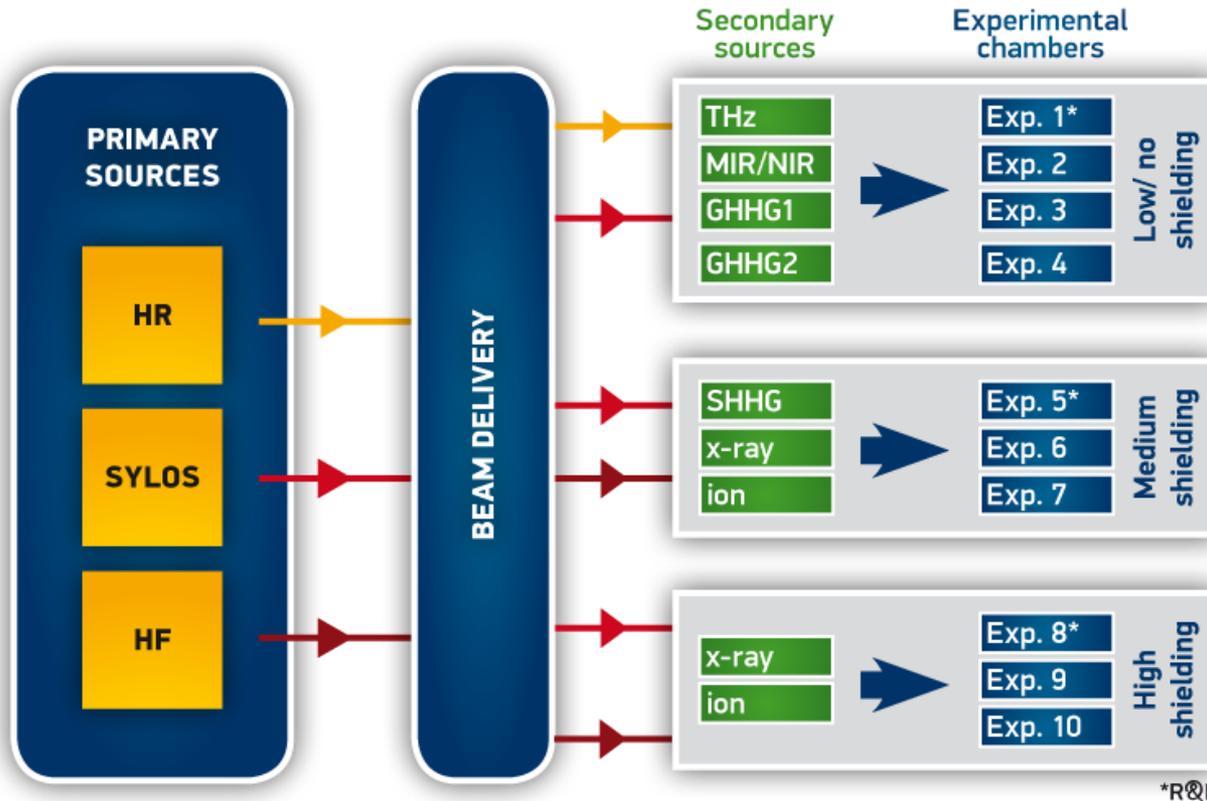
BUILDING MODEL



STATUS OF THE BUILDING



SCHEMATICS OF ELI-ALPS

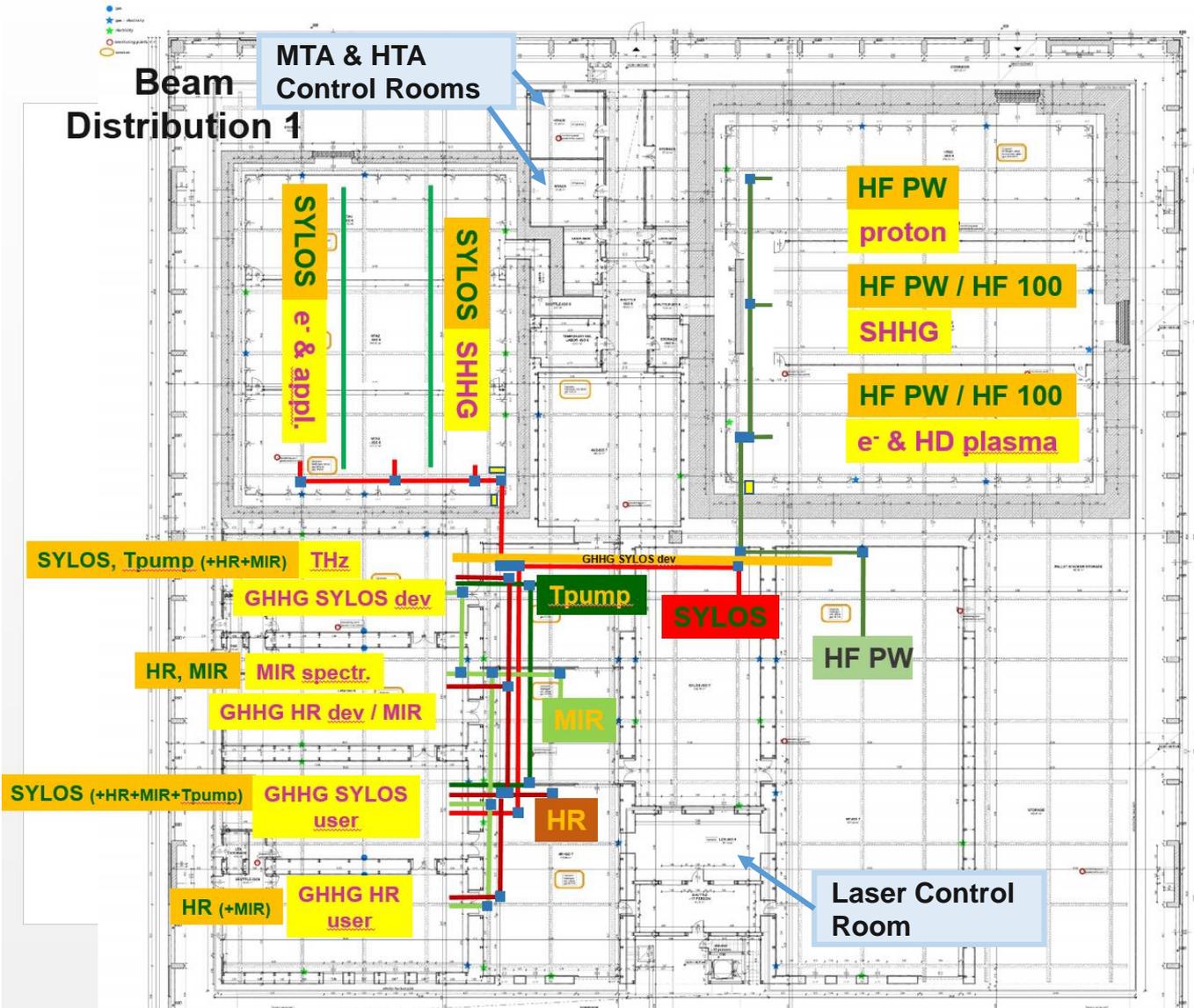


Computer Network

Control Computers

Personal Safety

Machine Protection

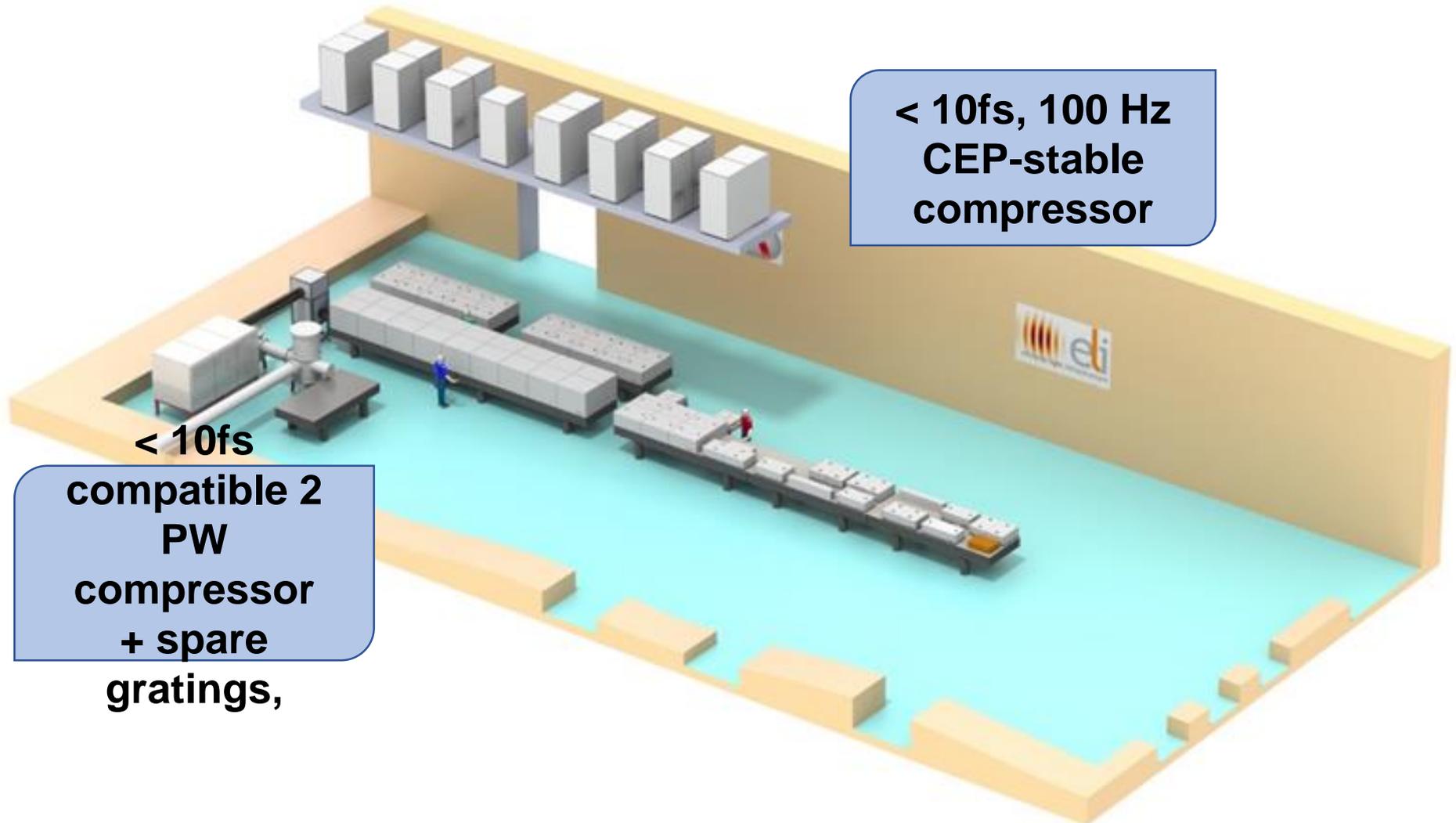


Vacuum System

Building Information System

Timing System

HF system layout



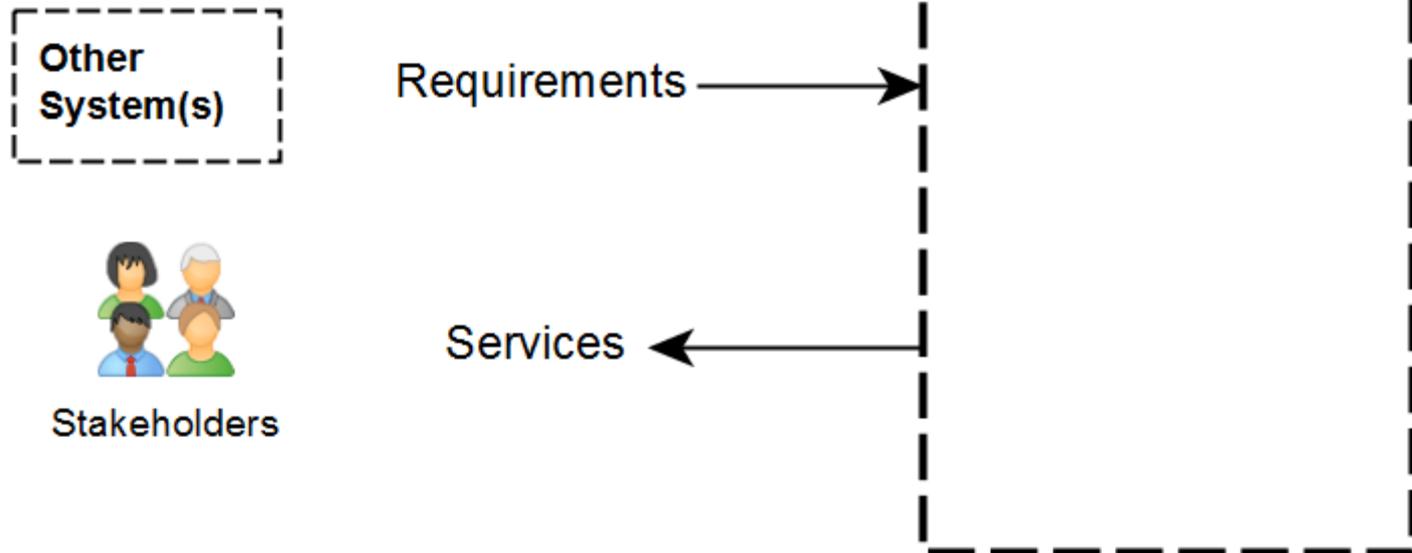
**< 10fs, 100 Hz
CEP-stable
compressor**

**< 10fs
compatible 2
PW
compressor
+ spare
gratings,**

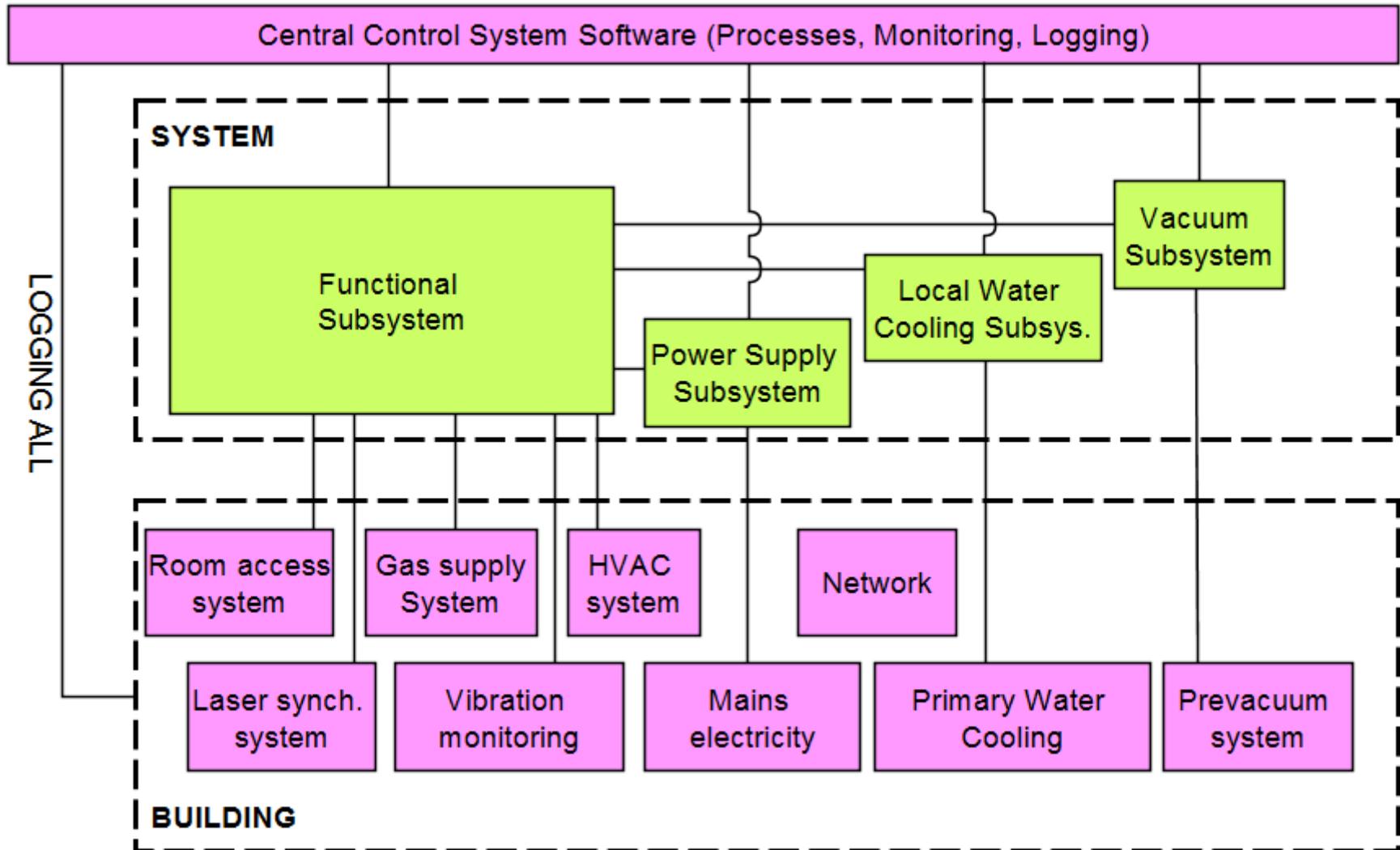
DESIGN MODELS

(Sub)Systems – Environment

- (Sub)Systems are considered as autonomous units
 - Laser Sources (5)
 - Beam Transport (4)
 - Secondary Sources (10)
 - End Stations / Experiments
 - Building Information System
 - Central Control System
 - Timing, Data Collection,
 - ...

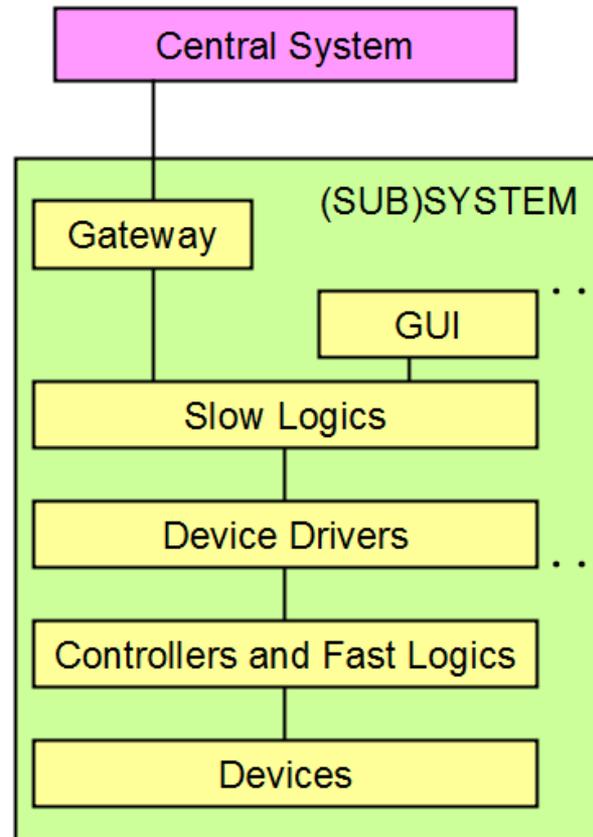


System Level Model



(Sub)System model - Layers

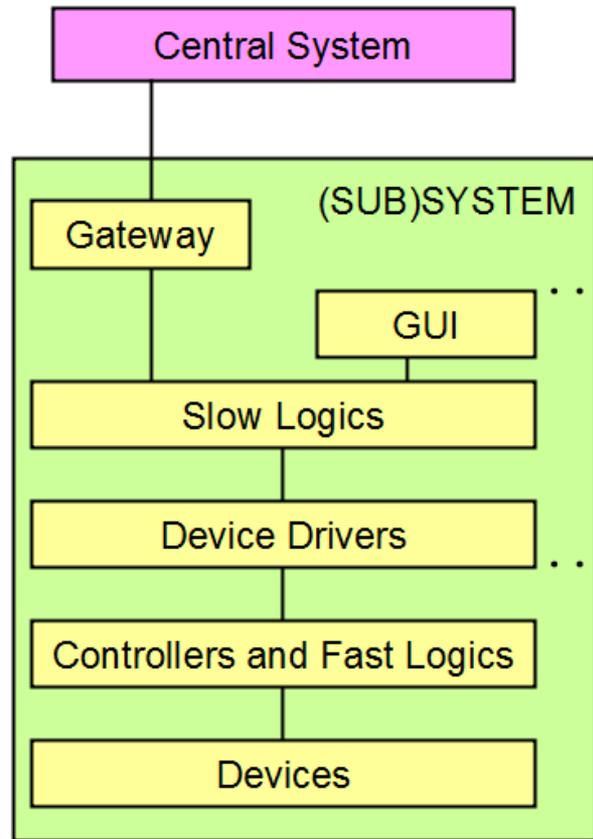
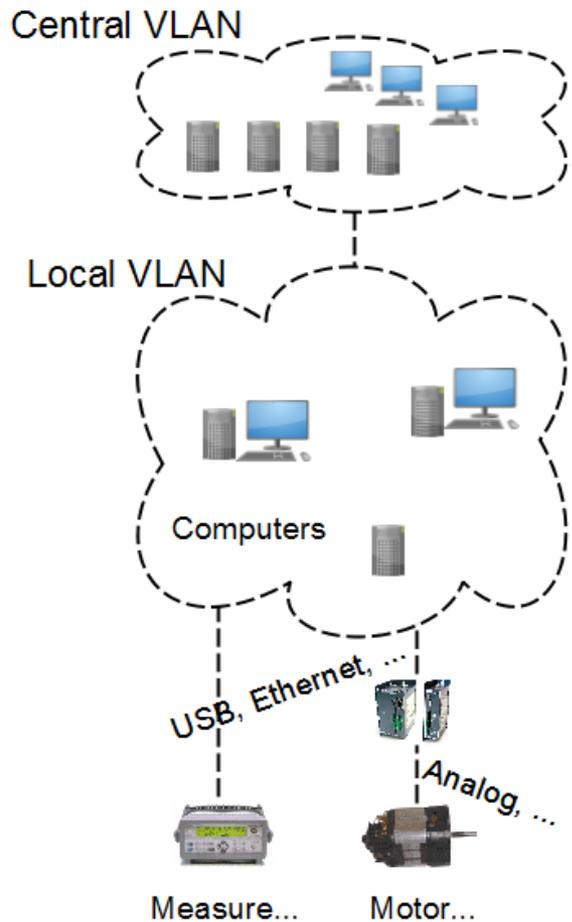
Layers



(Sub)System model - Hardware

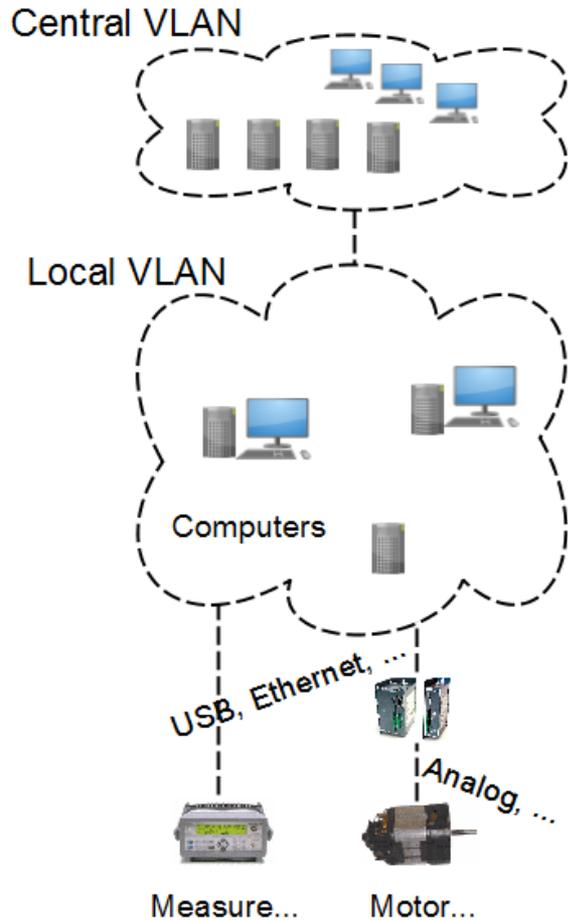
Hardware

Layers

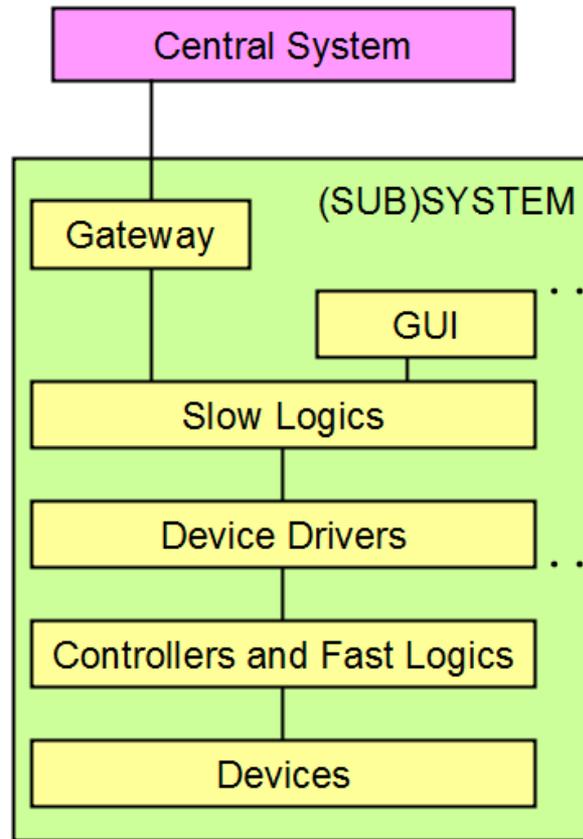


(Sub)System model - Software

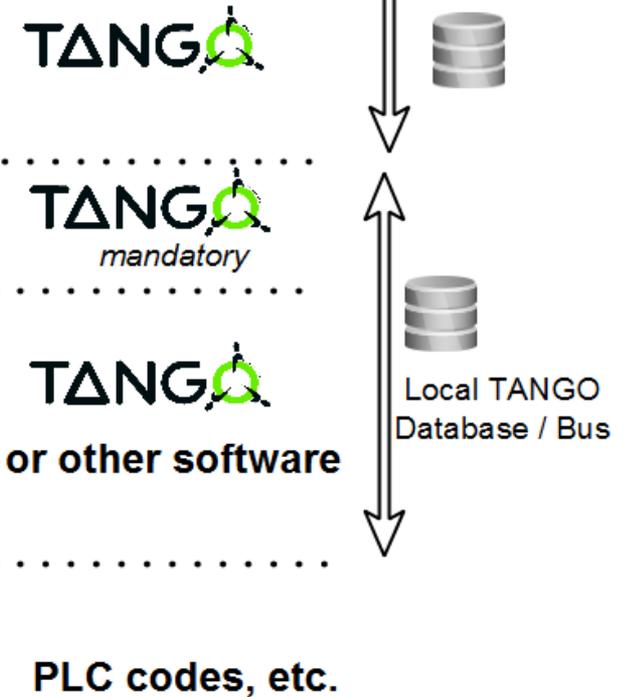
Hardware



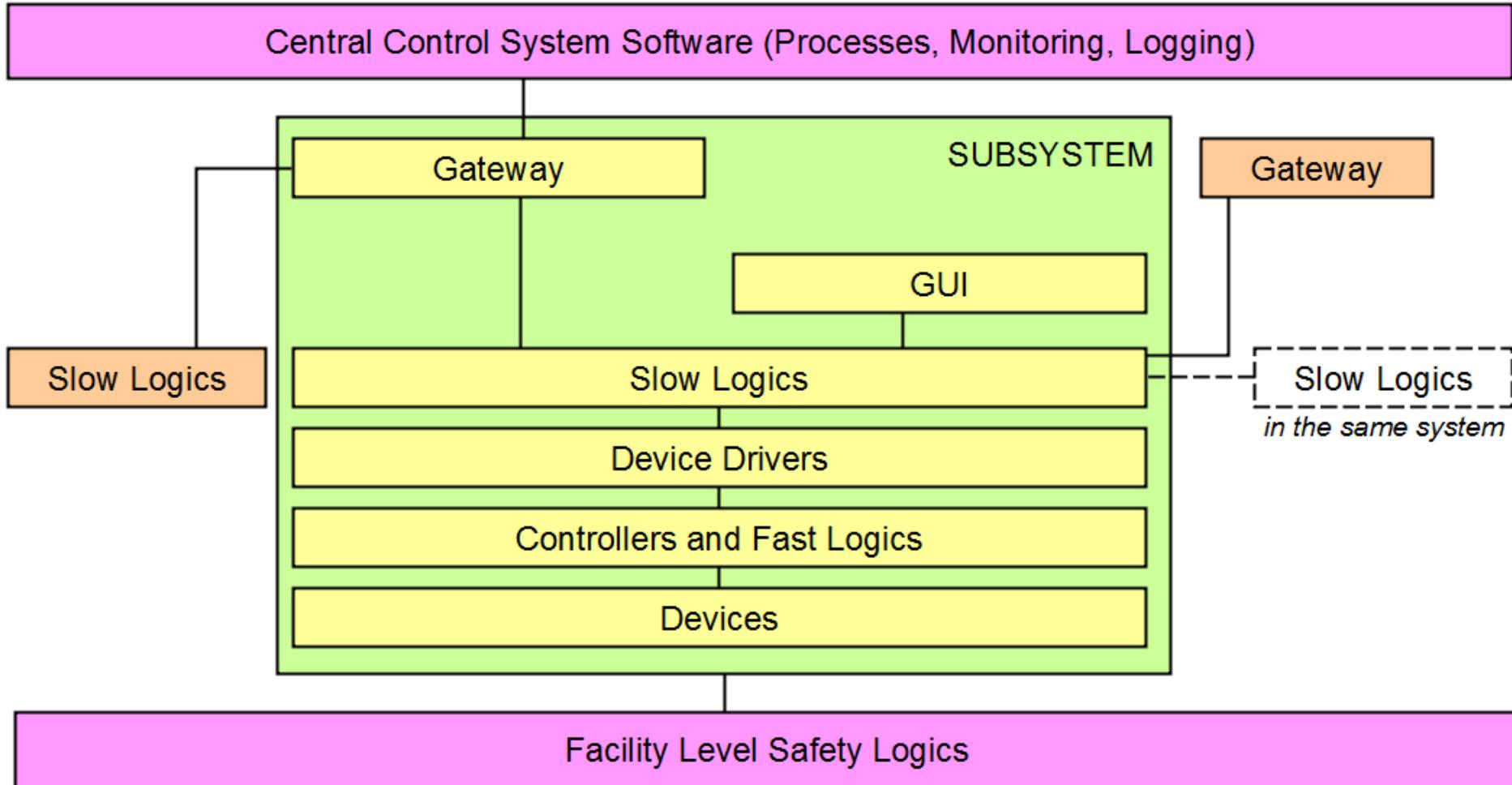
Layers



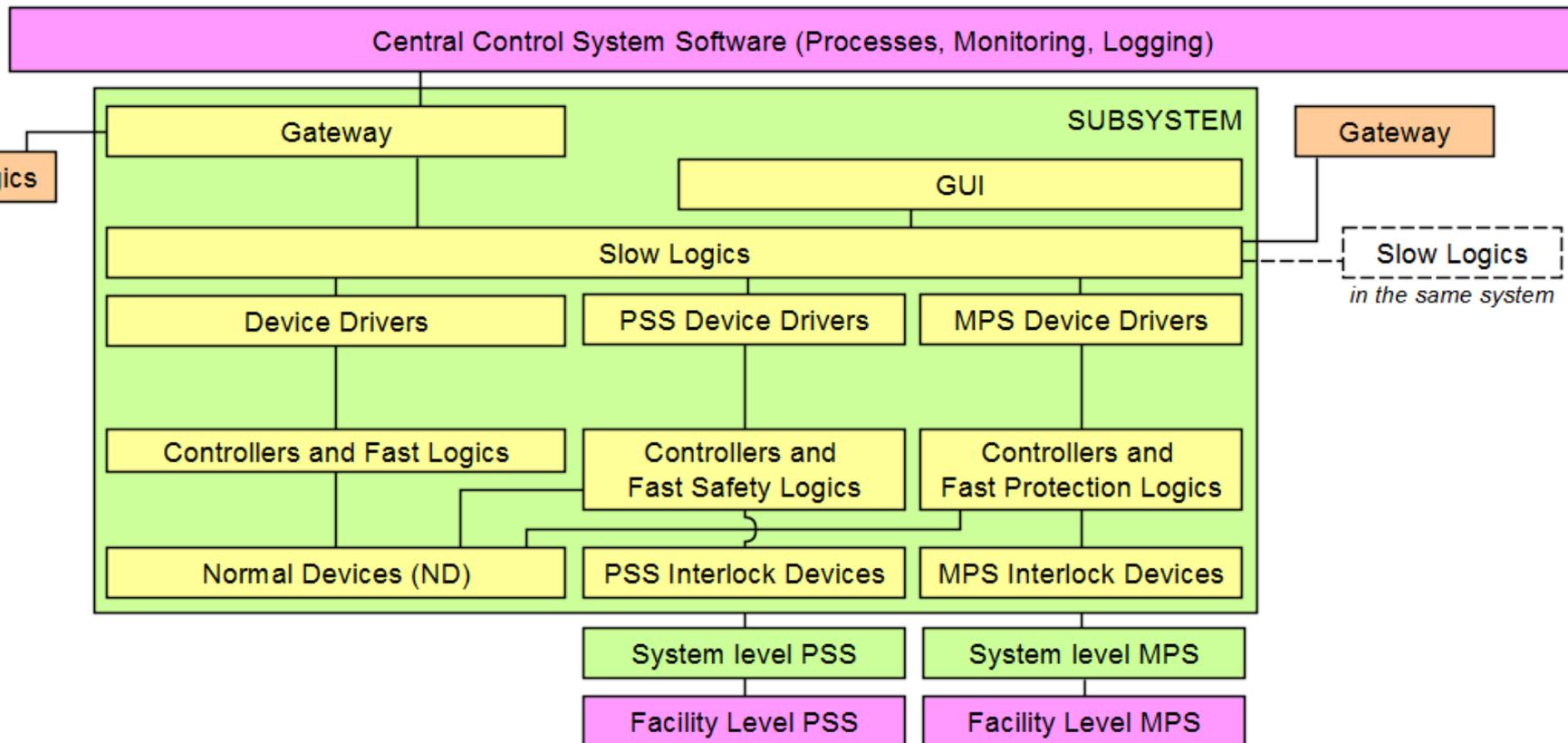
Software



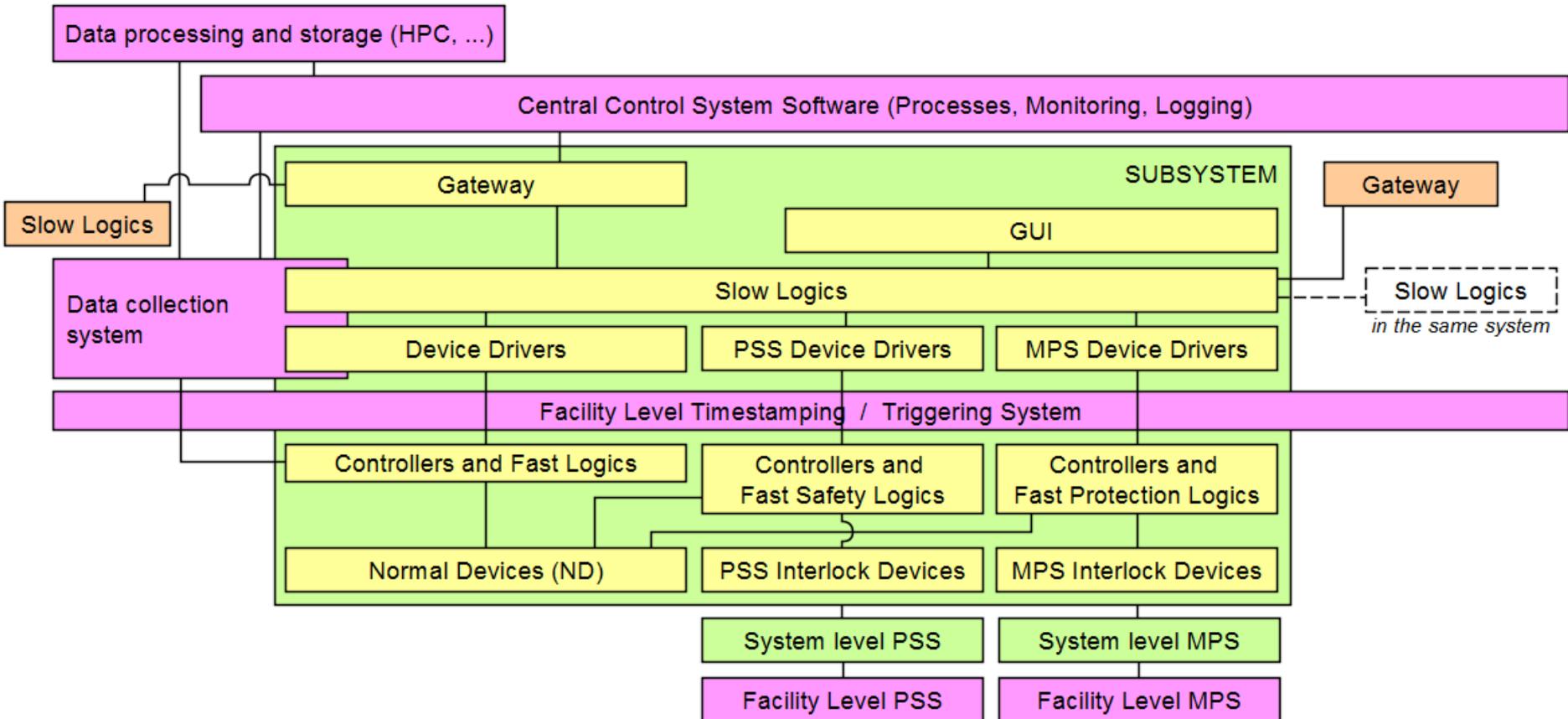
Subsystem model - Integration



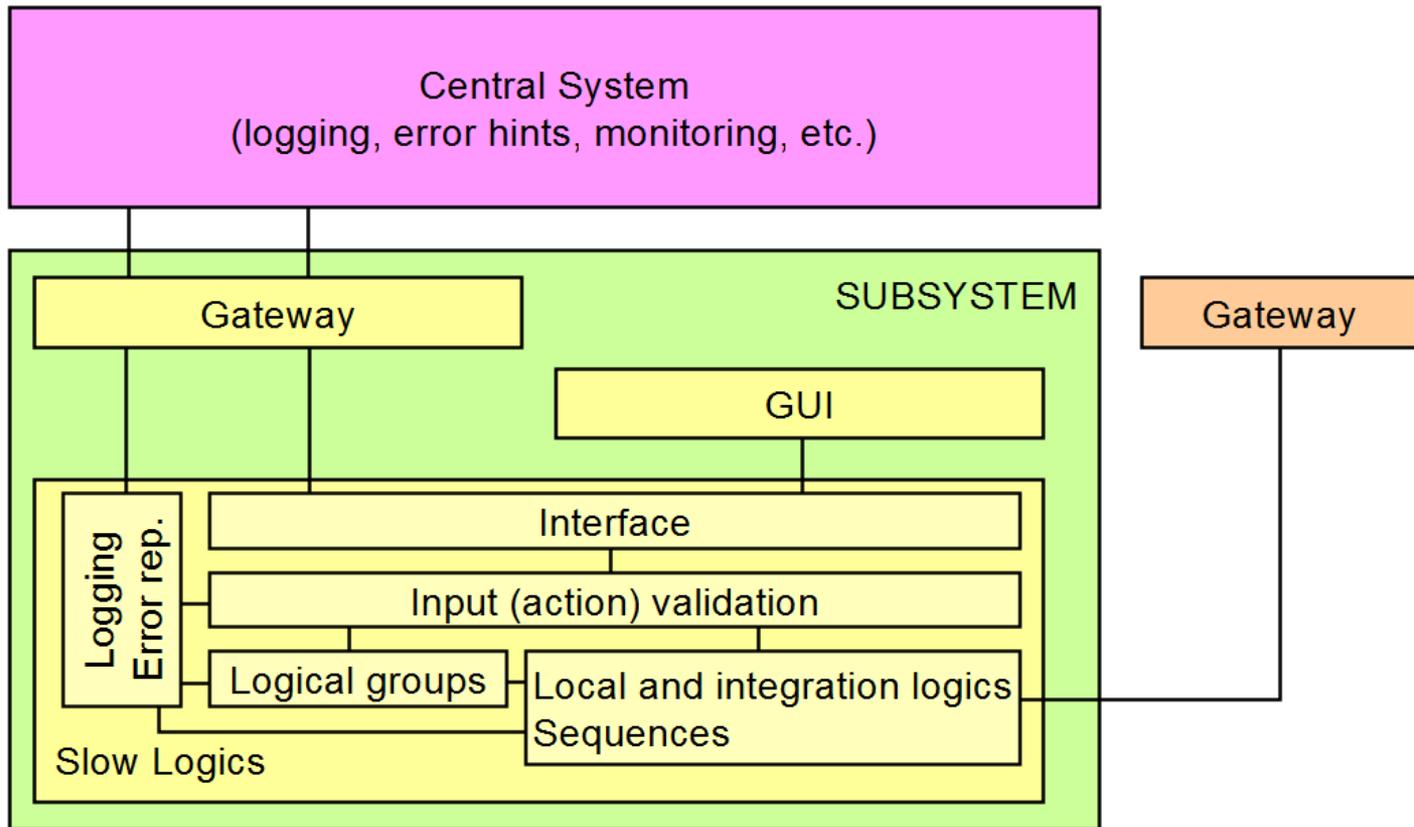
Normal / PSS / MPS stacks



Complete model



Slow logics vs. Gateway/GUI



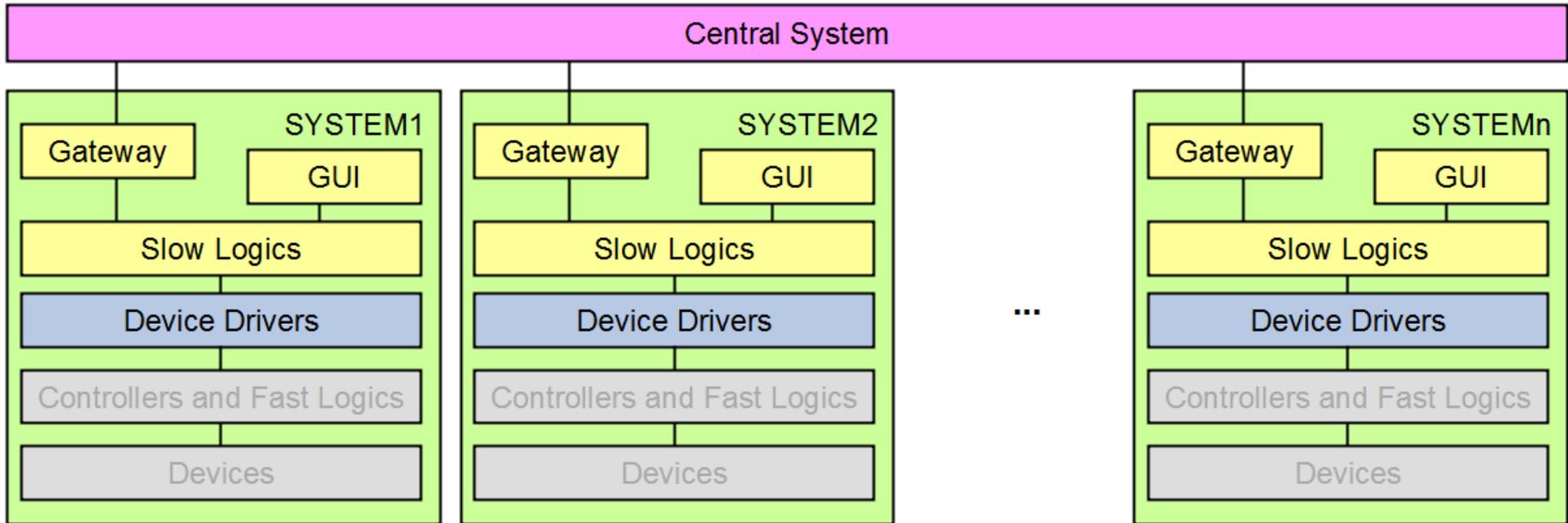
PROTOTYPES: TESTING THE DESIGN MODELS

Horizontal prototype: System skeleton

Prototyping

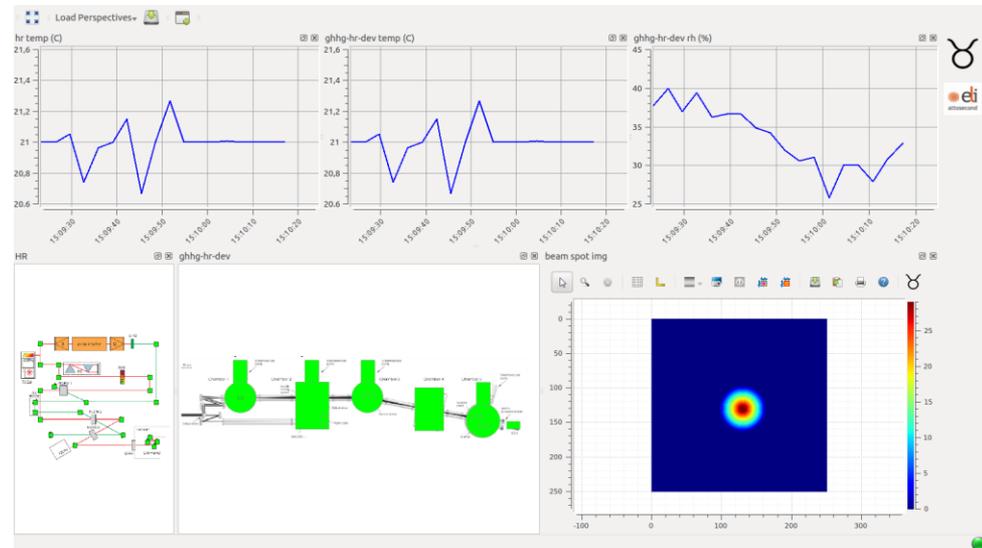
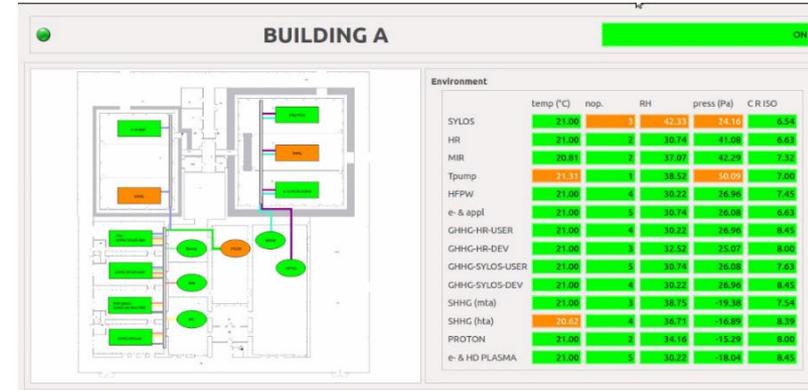
Software Simulation

NOT AVAILABLE

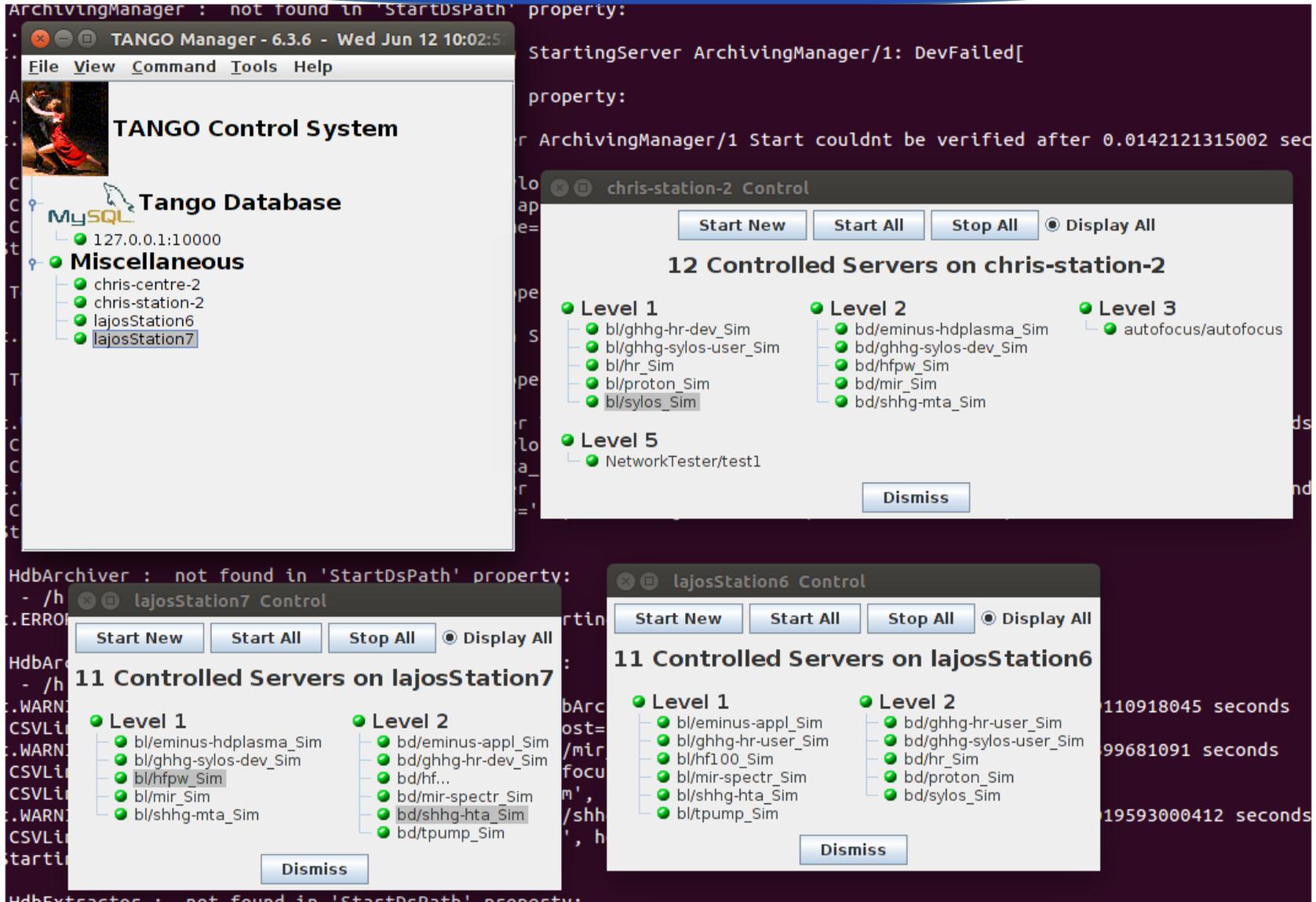


System skeleton prototype:

5 lasers, 10 secondaries, 700 simulated devices



System skeleton prototype: Astor



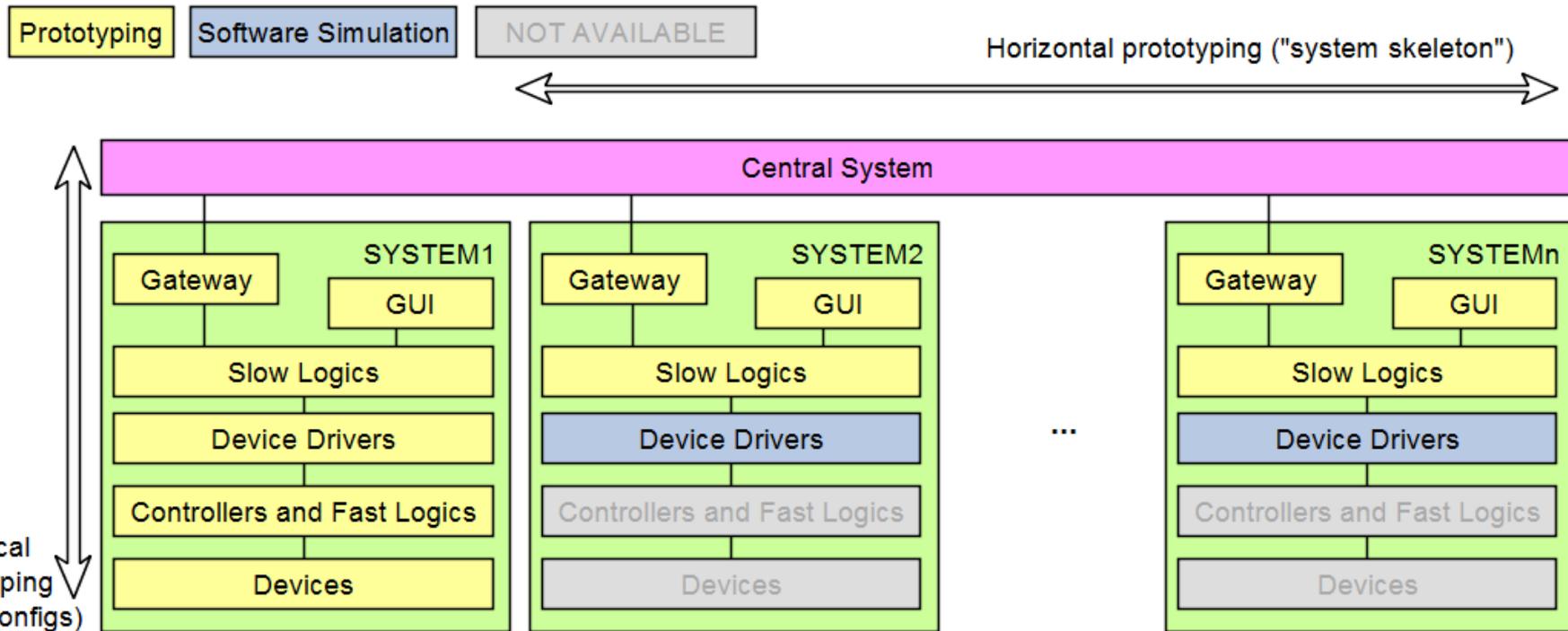
The screenshot displays the TANGO Manager interface (version 6.3.6) on a Linux system. The main window, titled "TANGO Control System", shows a tree view of the "Tango Database" with a MySQL connection at 127.0.0.1:10000. Under the "Miscellaneous" category, several stations are listed, including "chris-centre-2", "chris-station-2", "lajosStation6", and "lajosStation7".

Three control panels are overlaid on the main window, each showing a list of servers under different levels:

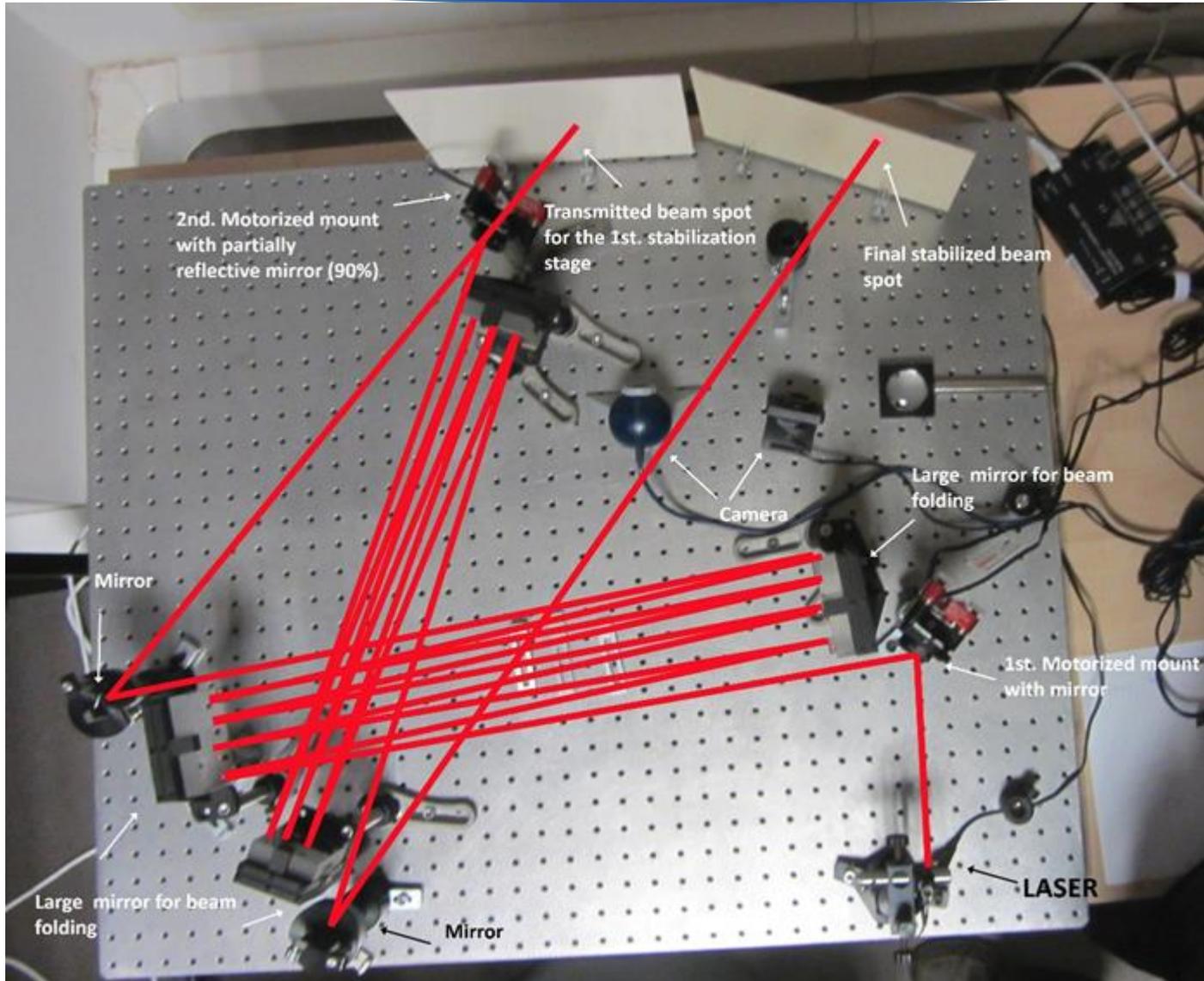
- chris-station-2 Control:** Shows 12 controlled servers. Level 1 includes bl/ghhg-hr-dev_Sim, bl/ghhg-sylos-user_Sim, bl/hr_Sim, bl/proton_Sim, and bl/sylos_Sim. Level 2 includes bd/eminus-hdplasma_Sim, bd/ghhg-sylos-dev_Sim, bd/hfpw_Sim, bd/mir_Sim, and bd/shhg-mta_Sim. Level 3 includes autofocus/autofocus. Level 5 includes NetworkTester/test1.
- lajosStation7 Control:** Shows 11 controlled servers. Level 1 includes bl/eminus-hdplasma_Sim, bl/ghhg-sylos-dev_Sim, bl/hfpw_Sim, bl/mir_Sim, and bl/shhg-mta_Sim. Level 2 includes bd/eminus-appl_Sim, bd/ghhg-hr-dev_Sim, bd/hf..., bd/mir-spectr_Sim, bd/shhg-hta_Sim, and bd/tpump_Sim.
- lajosStation6 Control:** Shows 11 controlled servers. Level 1 includes bl/eminus-appl_Sim, bl/ghhg-hr-user_Sim, bl/hf1.00_Sim, bl/mir-spectr_Sim, bl/shhg-hta_Sim, and bl/tpump_Sim. Level 2 includes bd/ghhg-hr-user_Sim, bd/ghhg-sylos-user_Sim, bd/hr_Sim, bd/proton_Sim, and bd/sylos_Sim.

The background shows a terminal window with error messages related to "ArchivingManager" and "StartingServer".

Horizontal/Vertical prototypes



Vertical Prototype: *Optical Table – Beam Alignment*

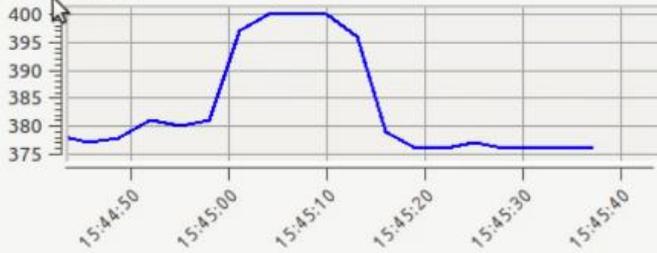


Vertical Prototype: *Final stabilized beam spot*

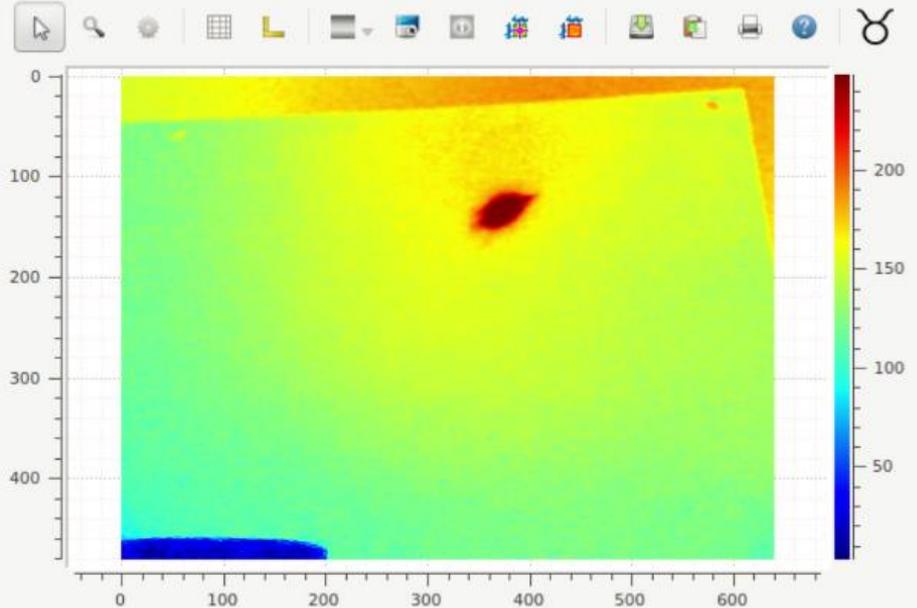
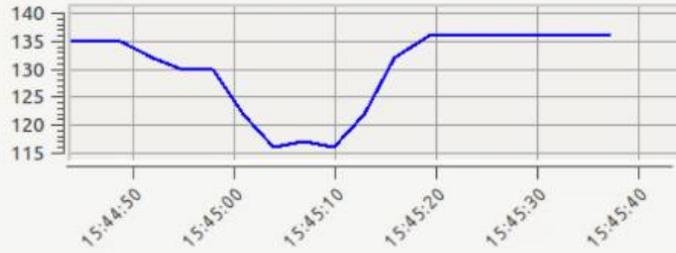
Control loop1 Control loop2



Beam Position X



Beam Position Y



Global

controller2Aligned controller2Aligned

Controller1

Target Threshold
 X Target
 Y Target
 Status ●

Controller2

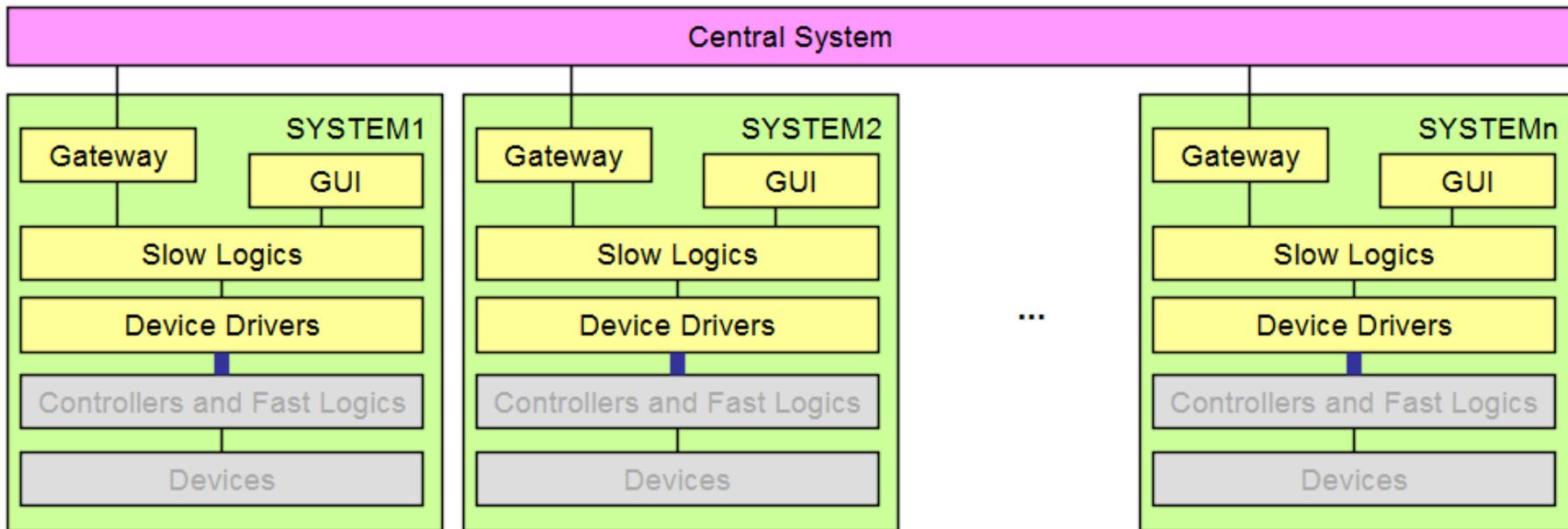
Target Threshold
 X Target
 Y Target
 Status ●

„Deployable” prototypes

Prototyping

Software Simulation

NOT AVAILABLE



„Deployable” prototypes

Development / Testing

Production

Development/Testing
TANGO Database / Bus

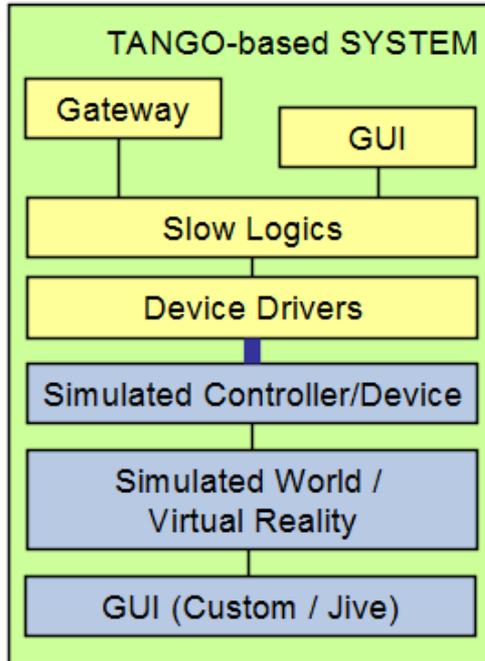


TANGO

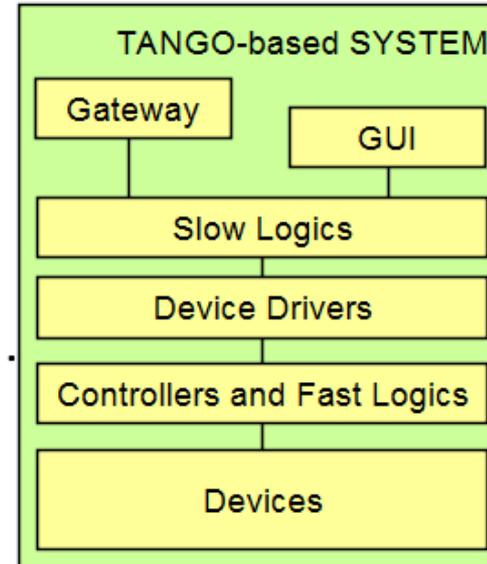
TANGO



Simulation TANGO
Database / Bus



Deployment



Production
TANGO Database / Bus



TANGO

- TANGO interactive HTML map (tooltips + links)
- Questions
 - TANGO = devices (servers) + communication + clients (?)
 - Slow logic? So called „Software Middleware”
 - E.g. state handling may not applicable in all cases (?)
 - Terminology: Devices vs. Components vs. Objects
 - Some other ideas... as everybody has some 😊

- Deployable prototypes
 - Beam Transport System, Optical Table Prototype
- Industrial day on 2nd of June
- Procurement
- ...



THANK YOU FOR YOUR ATTENTION!

SZÉCHENYI 



HUNGARIAN
GOVERNMENT

European Union
European Regional
Development Fund



INVESTING IN YOUR FUTURE