EPIKOS

Training

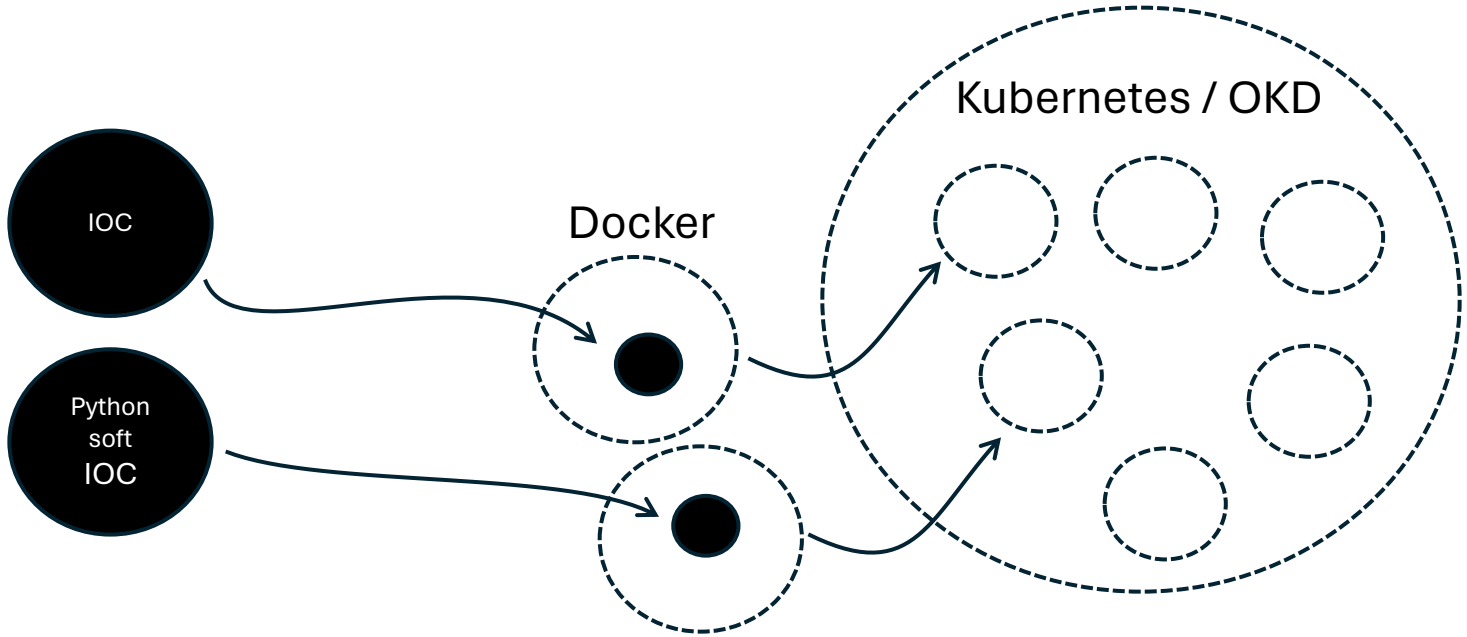
About EPICS

EPICS

- is an **outdated** system compared to the technologies and methods we are accustomed to (abstraction, objects, event streaming, etc.);
- **configuration and control processes management are demanding**.

On the other hand

- the valuable experience of !CHAOS, allows us to **complement EPICS with cutting-edge technologies** for systems management (dockerization and orchestration, even on the cloud).



EPIKS

EPIK8S keywords & Benefits

- Everything on **GIT**
  - ✓ Traceability
  - ✓ Reproducibility
  - ✓ Continuous Integration
- **ArgoCD**
  - Single Source Of Truth (keep the cluster aligned with GIT)
  - Convenient GUI to manage applications(ioc,services,ui) lifecycle
  - super easy cluster disaster recovery and rollback (create/recreate everything from GIT)

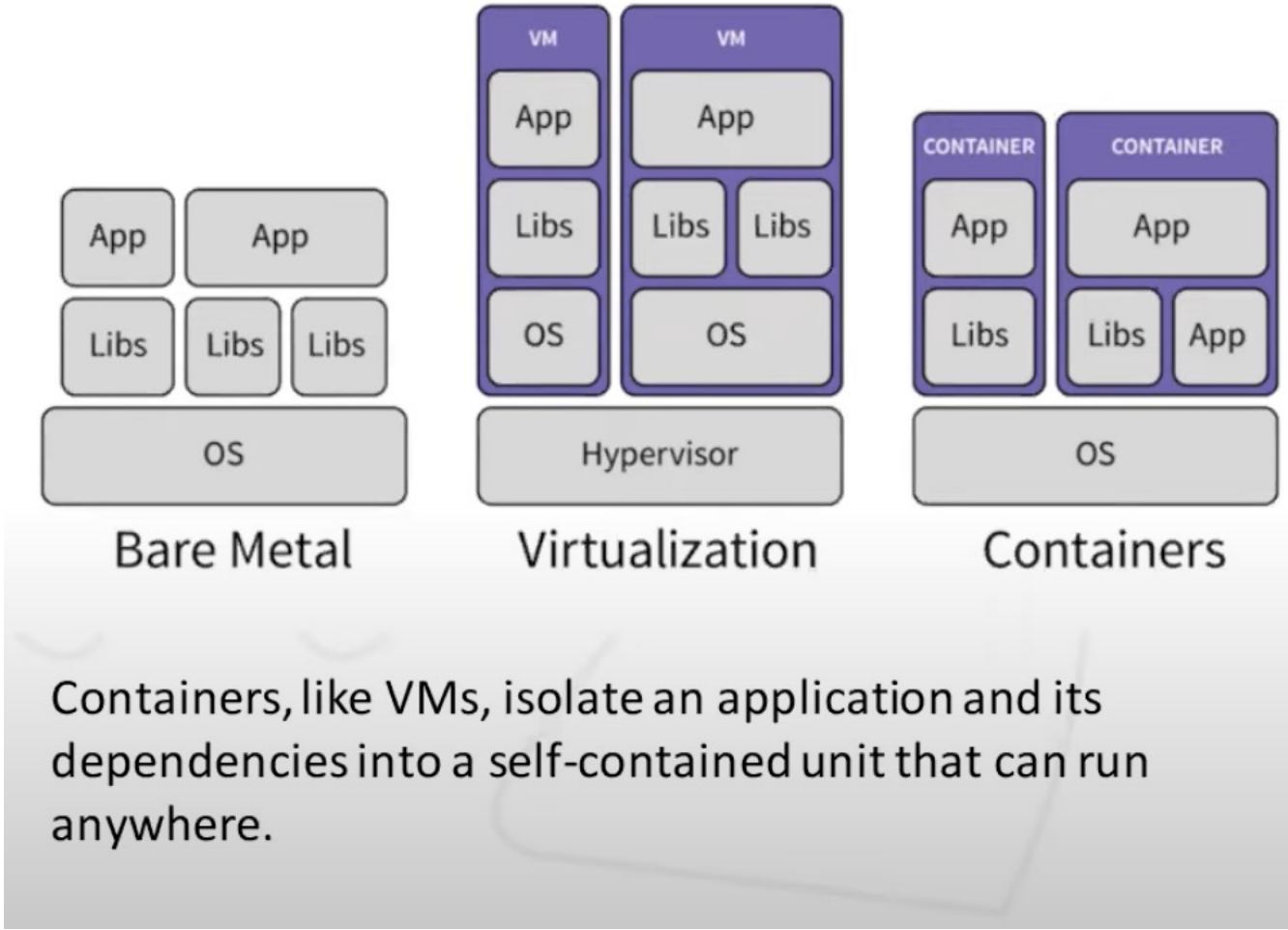
- **K8s** and Dockerized Infrastructure
  - Containers are decoupled from the host OS and each other.
  - Isolation protects against most security vulnerabilities
  - Run anywhere: develop, test, demo on a laptop or home machine
  - Kubernetes provides economy of scale through centralized:
    - Software deployment and management
    - Logging and Monitoring
    - Resource management: Disk, CPU, Memory
    - Remove maintenance of internal management tools
    - Remove need for shared filesystem
    - Remove the need to build a binary for every IOC

EPIK8S

EPIK8S benefits

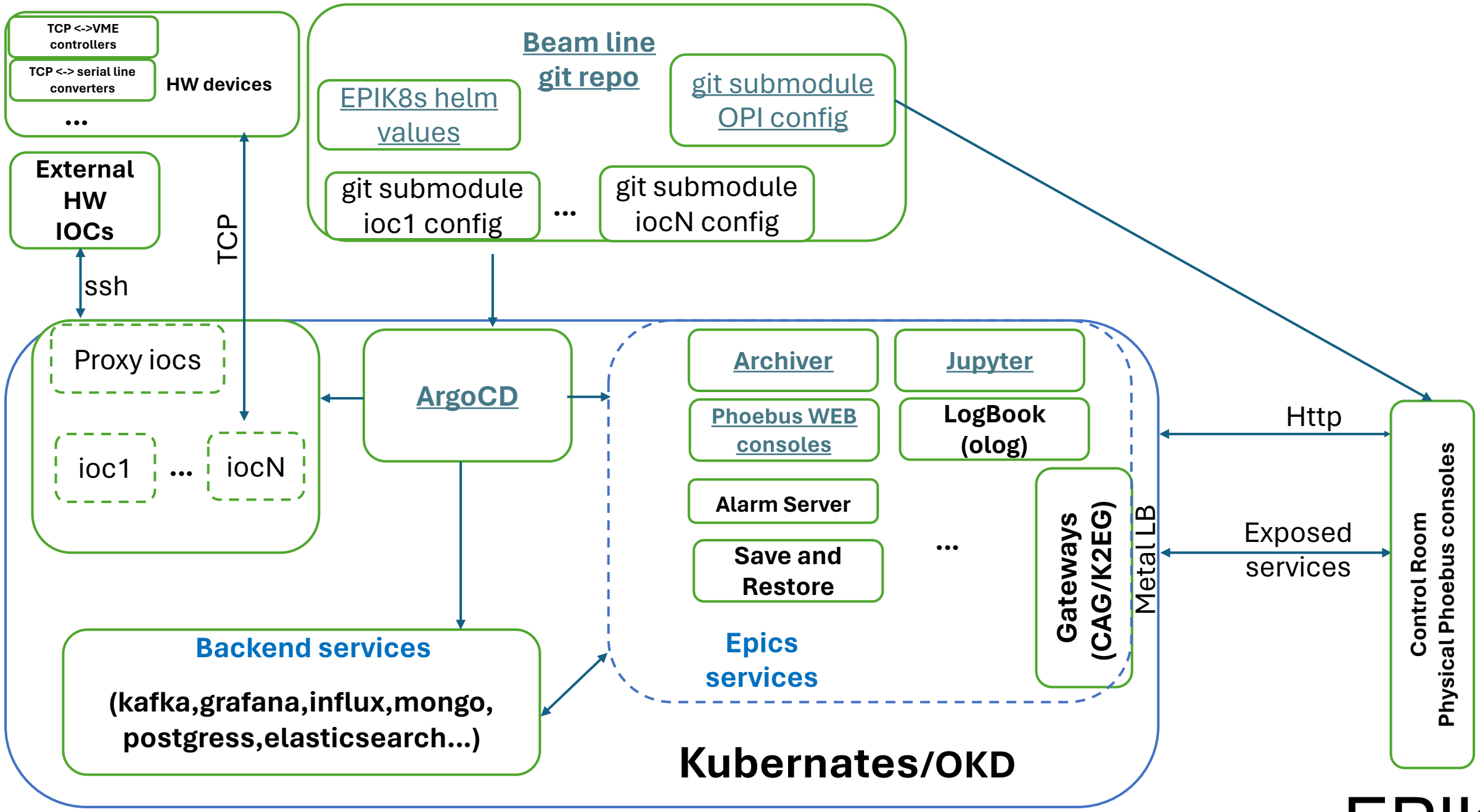
- ❑ Auto start IOCs when servers come up
- ❑ Restart crashed IOCs
- ❑ Manually Start and Stop IOCs
- ❑ Allocate the server which runs an IOC
- ❑ Move IOCs if a server fails
- ❑ Throttle IOCs that exceed CPU limit
- ❑ Restart IOCs that exceed Memory limit

- ❑ Deploy versioned IOCs to the beamline
- ❑ Track historical IOC versions
- ❑ Rollback to a previous IOC version
- ❑ Monitor IOC status and versions
- ❑ View the current log
- ❑ Connect to an IOC and interact with its shell



Courtesy of Giles Knap (Diamond)

EPIK8S


TCP <->VME controllers
TCP <-> serial line converters
HW devices
...
External HW IOCs
ssh
TCP
Beam line git repo
EPIK8s helm values
git submodule OPI config
git submodule ioc1 config
...
git submodule iocN config
Proxy iocs
ioc1
...
iocN
ArgoCD
Archiver
Jupyter
Phoebus WEB consoles
LogBook (olog)
Alarm Server
Save and Restore
...
Epics services
Gateways (CAG/K2EG)
Metal LB
Http
Exposed services
Control Room Physical Phoebus consoles
Backend services
(kafka,grafana,influx,mongo, postgress,elasticsearch...)
Kubernates/OKD
EPIK8S

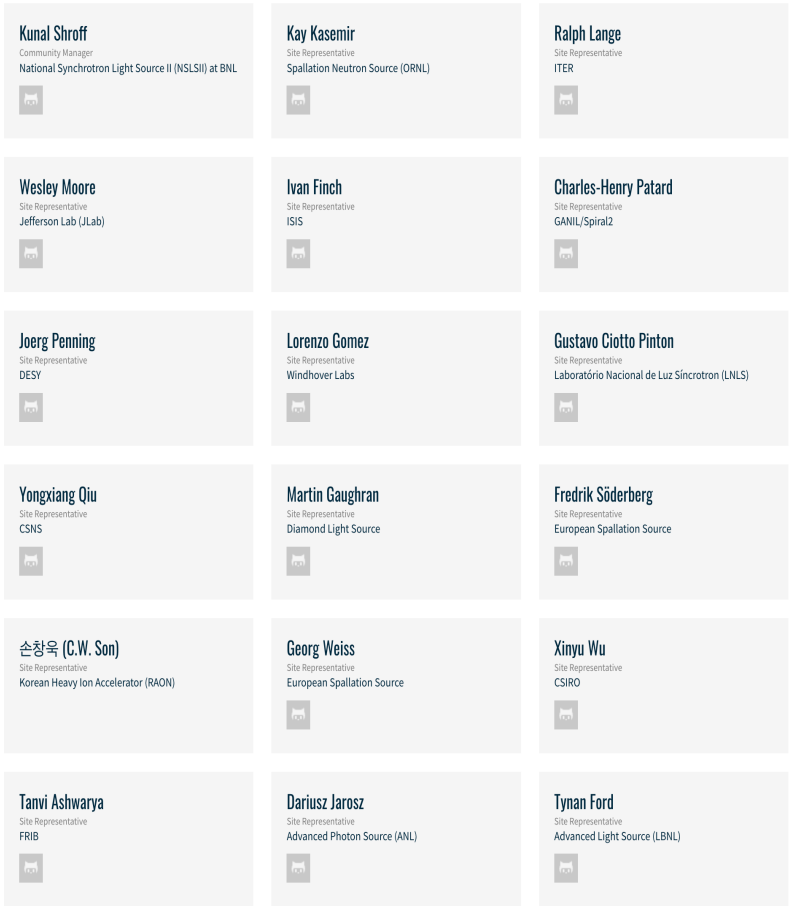
CSS/PHOEBUS

- reuse;
- support
- collaborations

Institutions contributions
NSLS2
SNS
ESS
FRIB
ALS
ITER
DLS
ISIS
CEA
NSRCC
KEK
FZB
DESY
CSNS
LNLS
ROAN
JLAB

17+ facilities just use it including:
INFN-LNL
INFN-LNF
STAR
SSRIP (AKA ELI 2)

People



EPICS

LINKS

- SPARC Documentation (punto dove far convergere documentazione SPARC)
- EPICS Training Course (Per saperne di piu' su EPICS)
- Epics Meetings (Meetings annuali EPICS dove capire le tecnologie e trends)

- Phoebus page
- Phoebus Online Help
- EPIK8S SPARC entrypoints
- GIT REPOSITORY

- Subscribe Epics Tech Talk

DISPLAY BUILDER TRAINING

EPIK8S