

!CHAOS

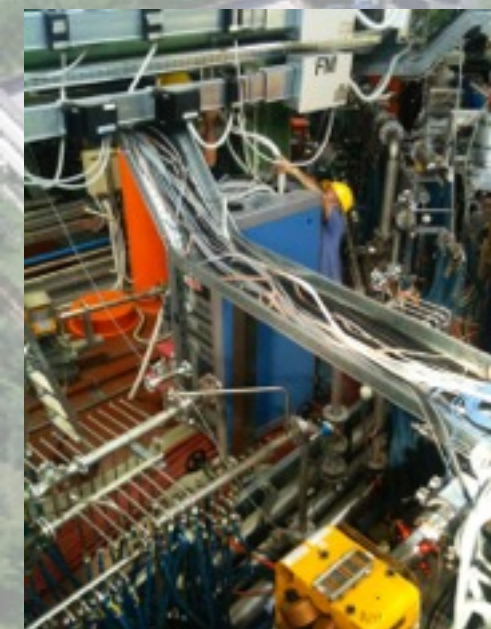
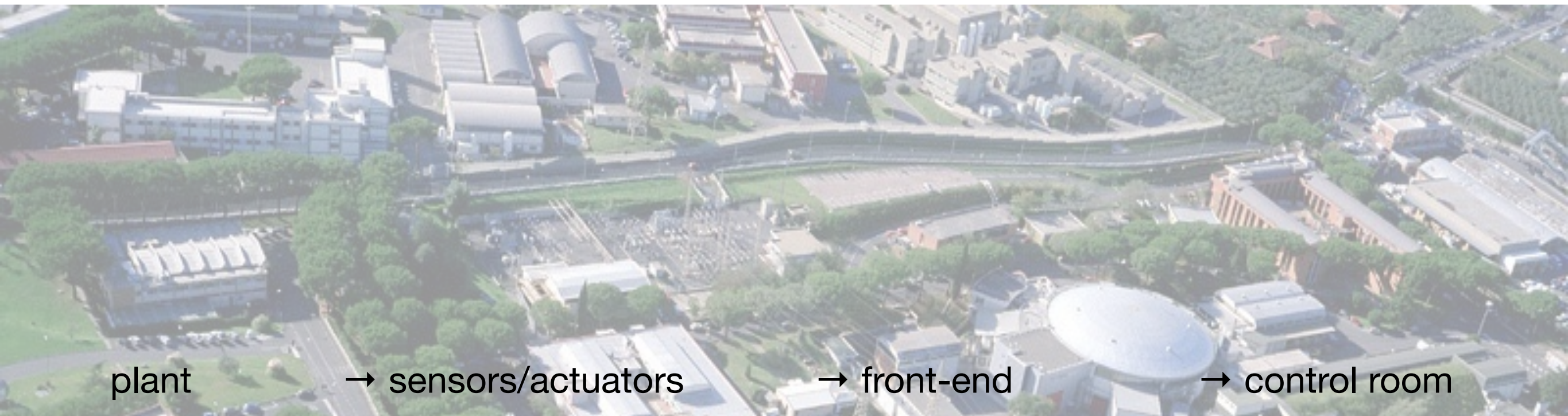
!CHAOS: A Cloud of Controls

“!CHAOS: a cloud of controls” is an open source project funded by MIUR (Italian Ministry of University and Research) to develop a national infrastructure prototype of high performing services devoted to devices and polyfunctional sensors distributed on LAN and WAN.

The !CHAOS project has evolved from a candidate of the Distributed Control Systems (DCS) & Data Acquisition (DAQ) for the SuperB HEP collider to a prototype of a national cloud infrastructure that offers monitor and control services to society and to industries.

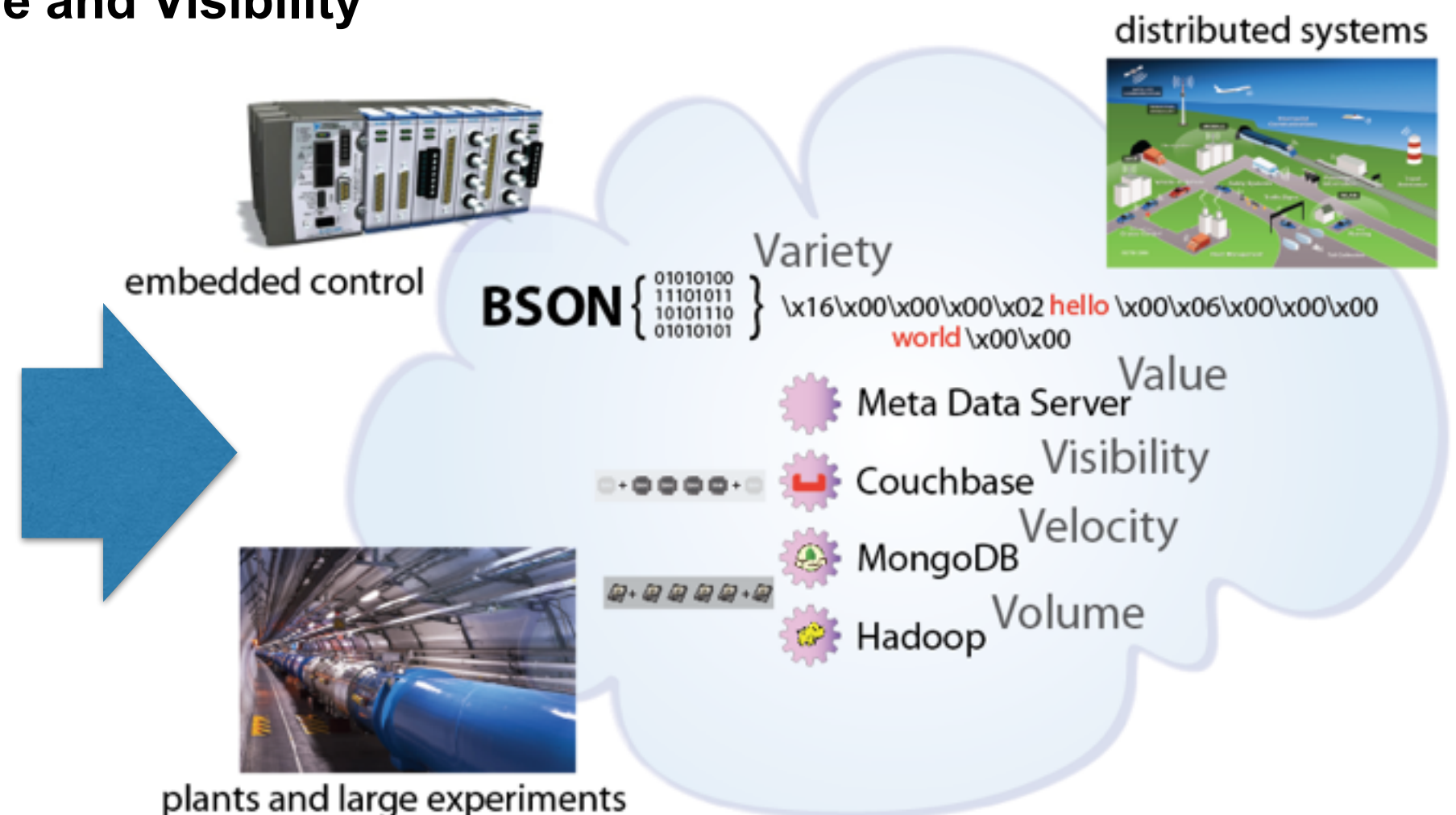
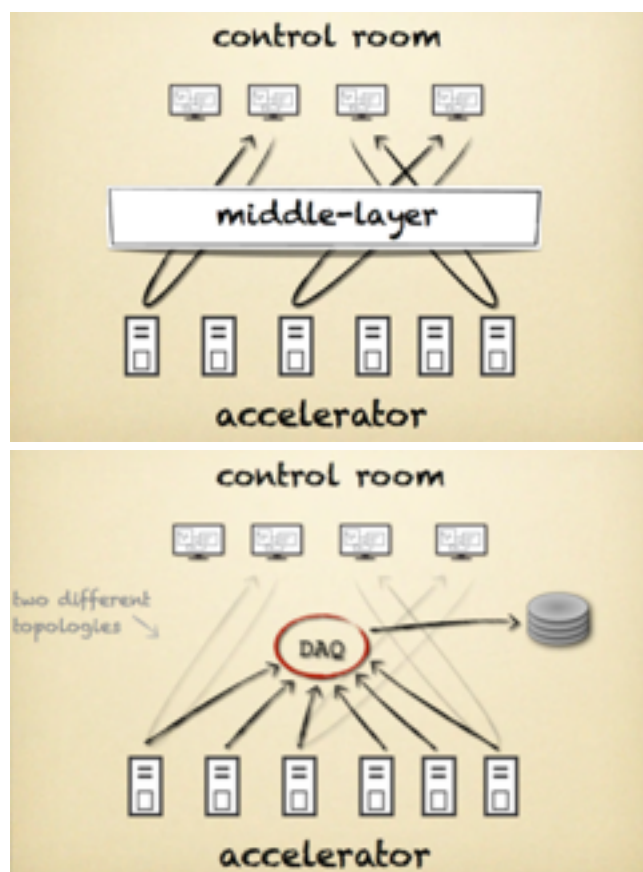
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Why, when & where the project started: Distributed Control Systems (DCS)



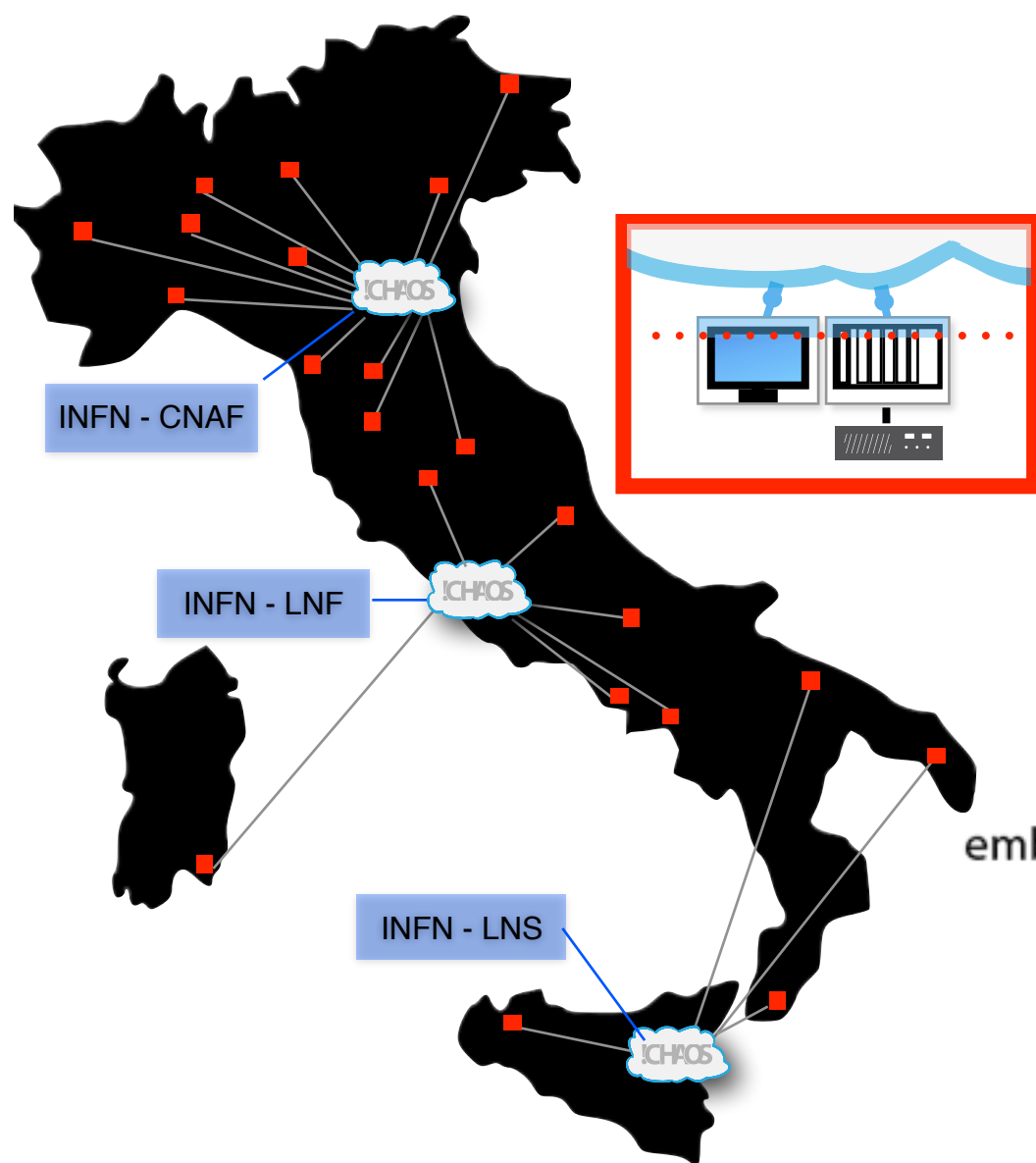
!CHAOS project objectives

- ◆ !CHAOS project started as **Distributed Control Systems (DCS)** and **Slow Control** of the SuperB accelerator and detector.
- ◆ !CHAOS exploits the new **high performance web technologies** that strongly increase control systems performances and services, preserving **scalability, redundancy and reliability**.
- ◆ the !CHAOS DCS architecture embeds by design the **DAQ topology** and **object data** concepts which make the project able to handle **Big Analog Data** and their **Variety, Volume, Velocity, Value and Visibility**



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!CHAOS ambition: DCS and more..



INFN-LNF (Laboratori Nazionali di Frascati)
 INFN-TV (Sezione di Tor Vergata)
 INFN-PG (Sezione di Perugia)
 INFN-CNAF (Centro Nazionale Tecnologie Informatiche)
 INFN-PD (Padova)
 INFN-LNS (Laboratori Nazionali di Catania)



embedded control



distributed systems

BSON { 01010100
 11101011
 10101110
 01010101 } \x16\x00\x00\x00\x02 hello \x00\x06\x00\x00\x00
 world \x00\x00

Variety

Value
 Visibility
 Velocity
 Volume

- Meta Data Server
- Couchbase
- MongoDB
- Hadoop



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plants and large experiments

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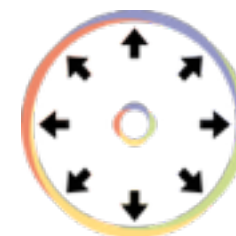
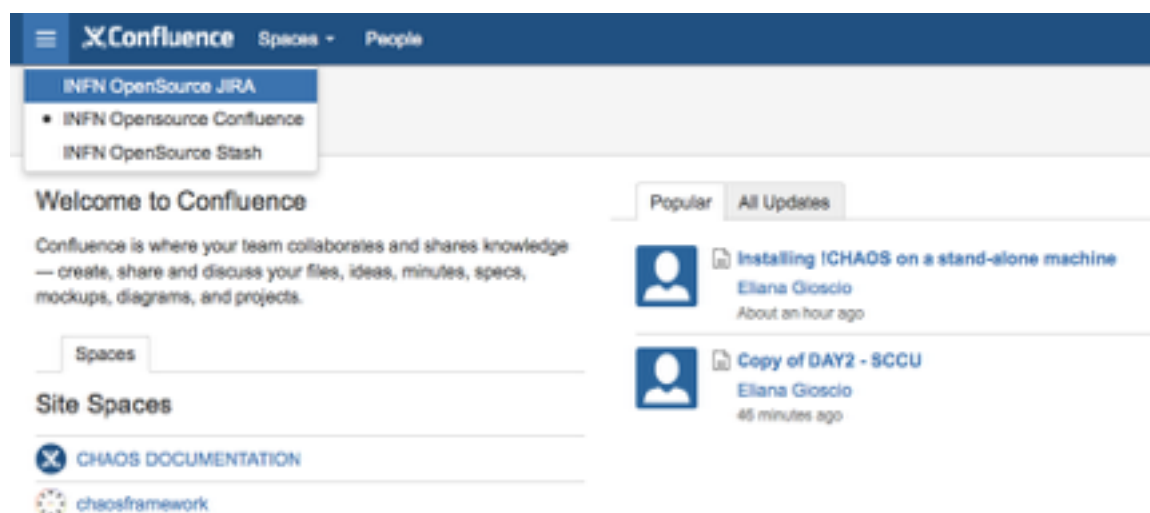
strengths and needs

what we could share:

- 20 years experience on DCS & DAQ
- a beta release of !CHAOS DCS architecture
- an alpha platform of !CHAOS: control as a services
- skills on noSQL DB

what we would like to build & share with the community:

- knowledge and solutions on **web/ user interfaces**
- code and documentation on HEP **DCS & DAQ devices**
- requirements, benchmarks and standards on the DCS & DAQ **frameworks**
- experience on HEP DCS & DAQ **community use-cases**



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