# CERN Proton Synchrotron Complex High-Level Controls Renovation

S. Deghaye, M. Arruat, D. Garcia Quintas, M. Gourber-Pace, G. Kruk, O. Kulikova, V. Lezhebokov, S. Pasinelli, M. Peryt, C. Roderick, E. Roux, M. Sobczak, R. R. Steerenberg, J. P. Wozniak, Z. Zaharieva

CERN, Geneva, Switzerland.

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Agenda

- Geographical scope

- Why a renovation project?

- Injector Controls Architecture

- Project planning

- Conclusions

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Geographical scope

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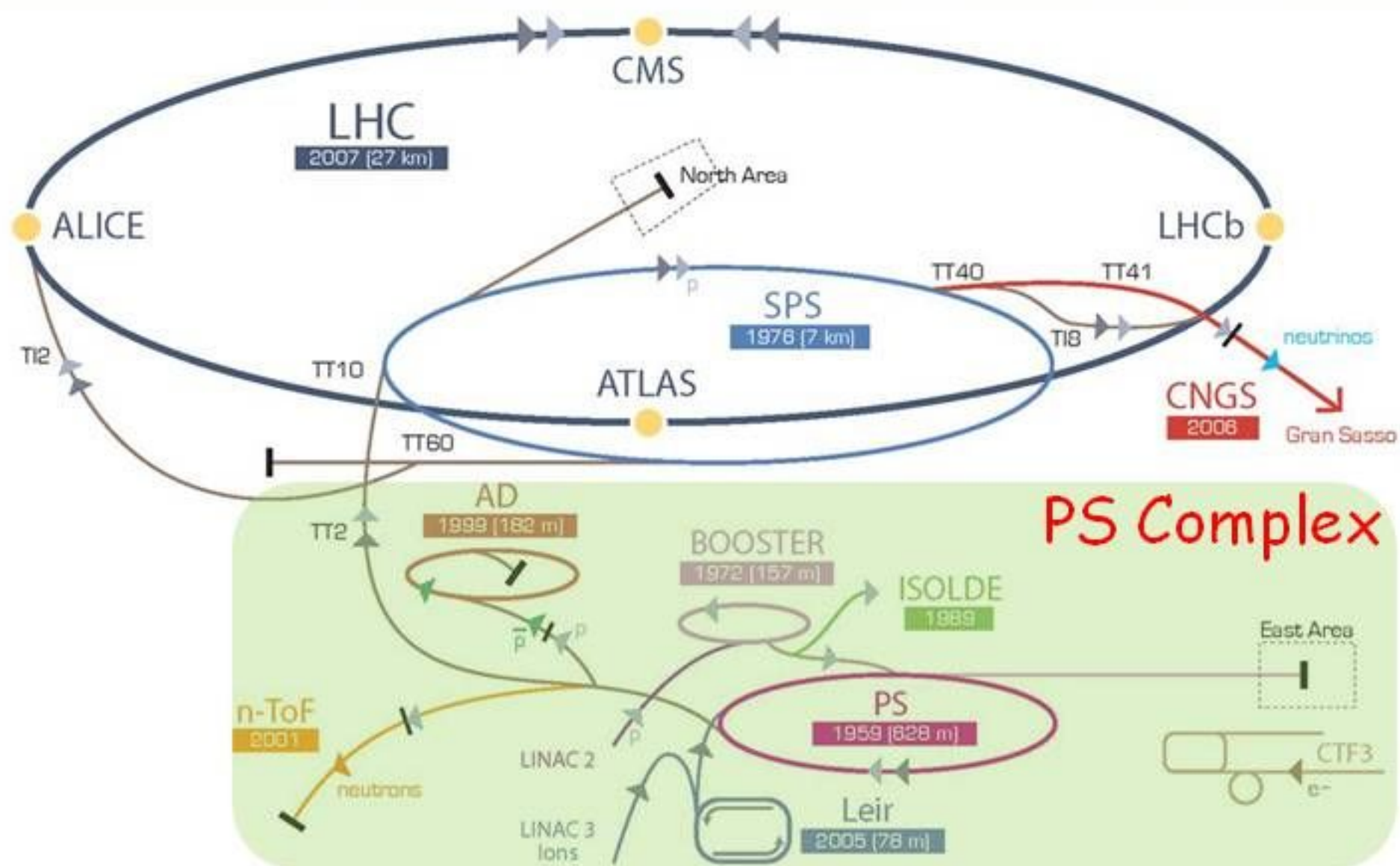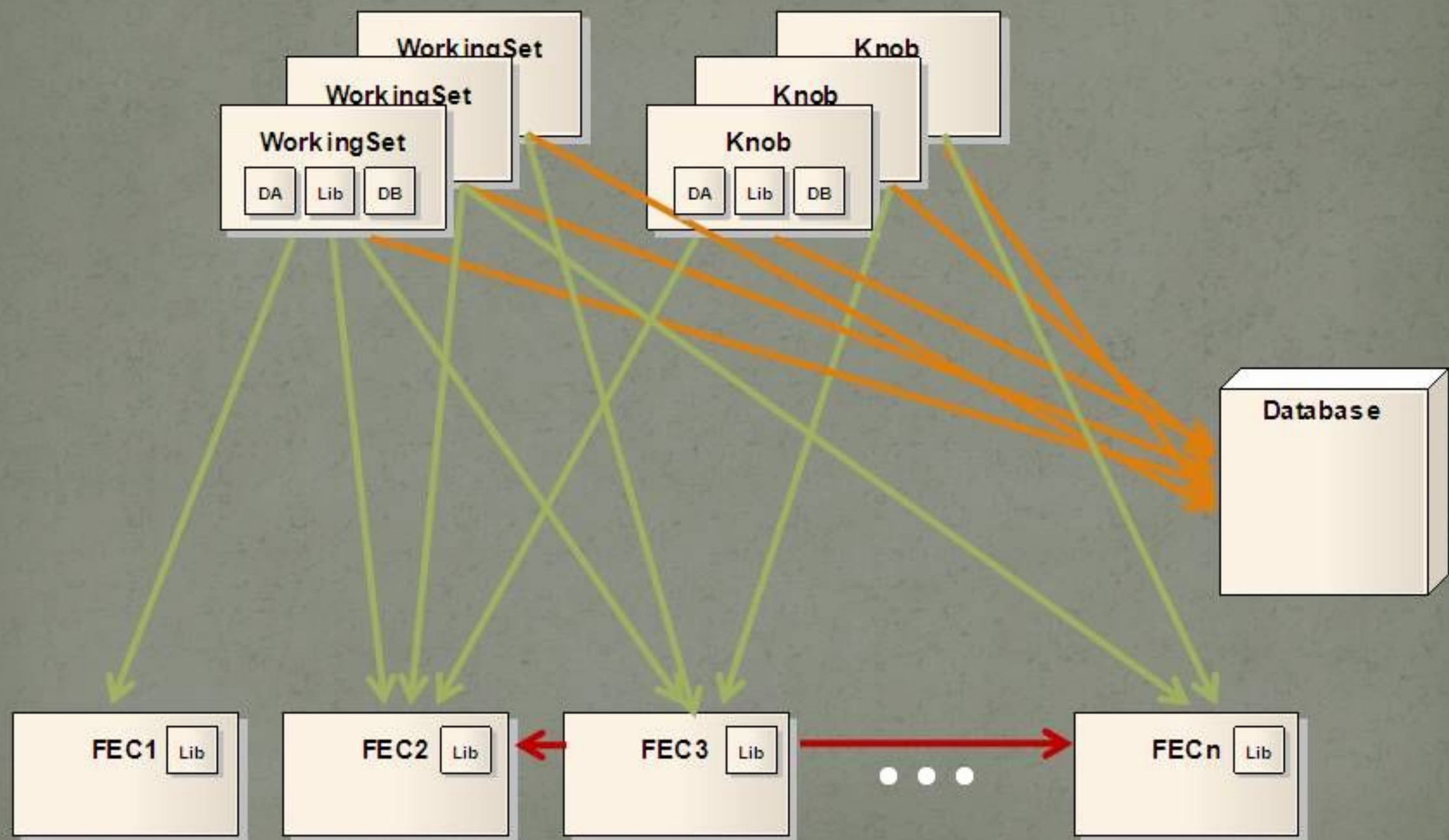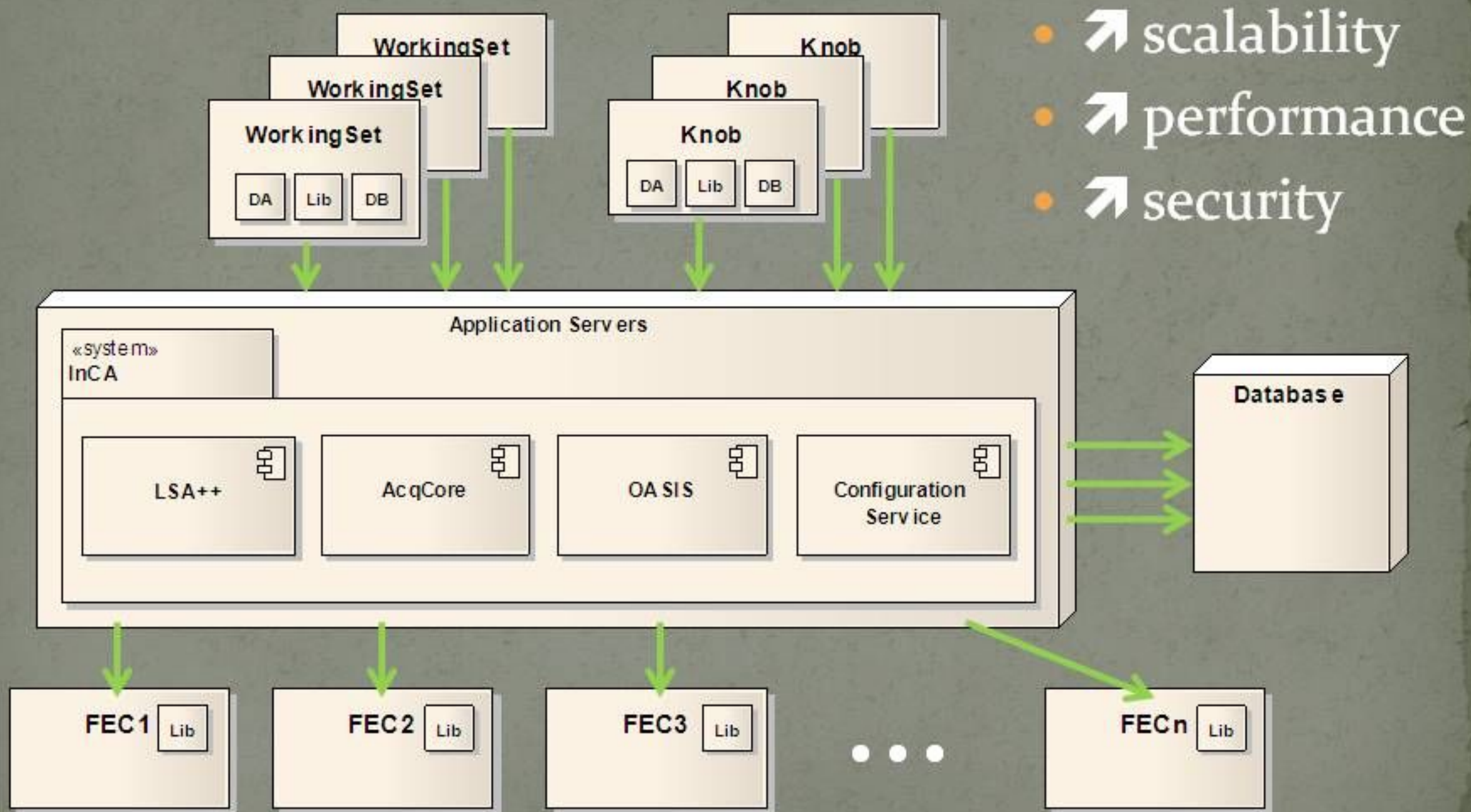
Why a renovation project?

- No resources to maintain two parallel control systems
  - → Homogenisation needed!
- 30+ applications for the complex - Many still in X/Motif
  - → Who can hire a X/Motif developer?
- Recent developments focused on LHC
  - → New features difficult to integrate in the PS complex
- PS built in 1959 & can produce a different beam every 1.2 seconds
  - → Different requirements

Previous PS control system

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Injector Controls Architecture

scalability

performance

security

WorkingSet

WorkingSet

WorkingSet

DA Lib DB

Knob

Knob

Knob

DA Lib DB

Application Servers

«system»
InCA

LSA++

AcqCore

OASIS

Configuration Service

Database

FEC1 Lib

FEC2 Lib

FEC3 Lib

FECn Lib

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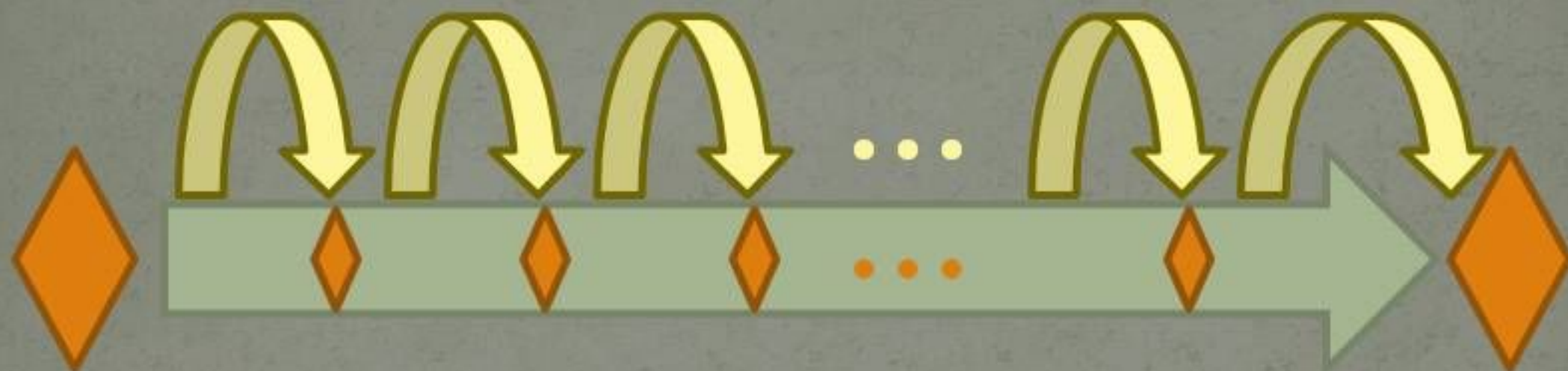
Goals & Challenges

- Reduction and stabilisation of the traffic between FECs and high-level control system
  - Distribution of acquired values to the GUIs, up to 12'000 every 1.2 seconds
- Compute once, use everywhere
  - Redesign of the applications, not just rewrite them in Java
- Work at a higher level as in LHC (machine model)
  - PS is old (1959) and difficult to model
  - Operations crew works close to the hardware

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Planning

- **2007: Study the requirements => Vision**
- **2008: InCA project in place, architecture validation**
- **2009: Development phase + LEIR deployment**
- **2010: First deployment on the PS machine**
- **Regular milestones: coherent set of features & operational validation.**

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Iterative developments

- Planning approach: iterative developments + regular operational validation.
- Demo in front of the team and the user representatives
- Machine Development ➜ replace the current controls system for few hours (full scale tests)

Conclusions

- InCA: homogenisation of the High-Level Controls
  - Reuse of LHC components/systems
  - Keep the specificities of the PS Complex
- Project well on the way
  - Several successful validations on the PS machine
  - Successful deployment for LEIR 2009 run (simplified version)
  - First target in the PS: Q3 2010
- Iterative planning approach
  - Operational validation every 3-4 months
  - 3-4 weeks development sprint ended with demo

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Questions ?!?

Thank you for your attention!

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