

# InCA

## Injector Control Architecture

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ATC/ABOC days

# Agenda

- PS Complex Control Software Renovation WG
- Requirements - What Services?
- Solution Evaluation – LSA, PS system.
- Injector Control Architecture
  - ↳ Component View
  - ↳ 3-tier Architecture
  - ↳ Deployment View
- Dependencies with AB groups
- Project Planning
- Risks & Solutions
- Conclusions

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# Working Group Objectives

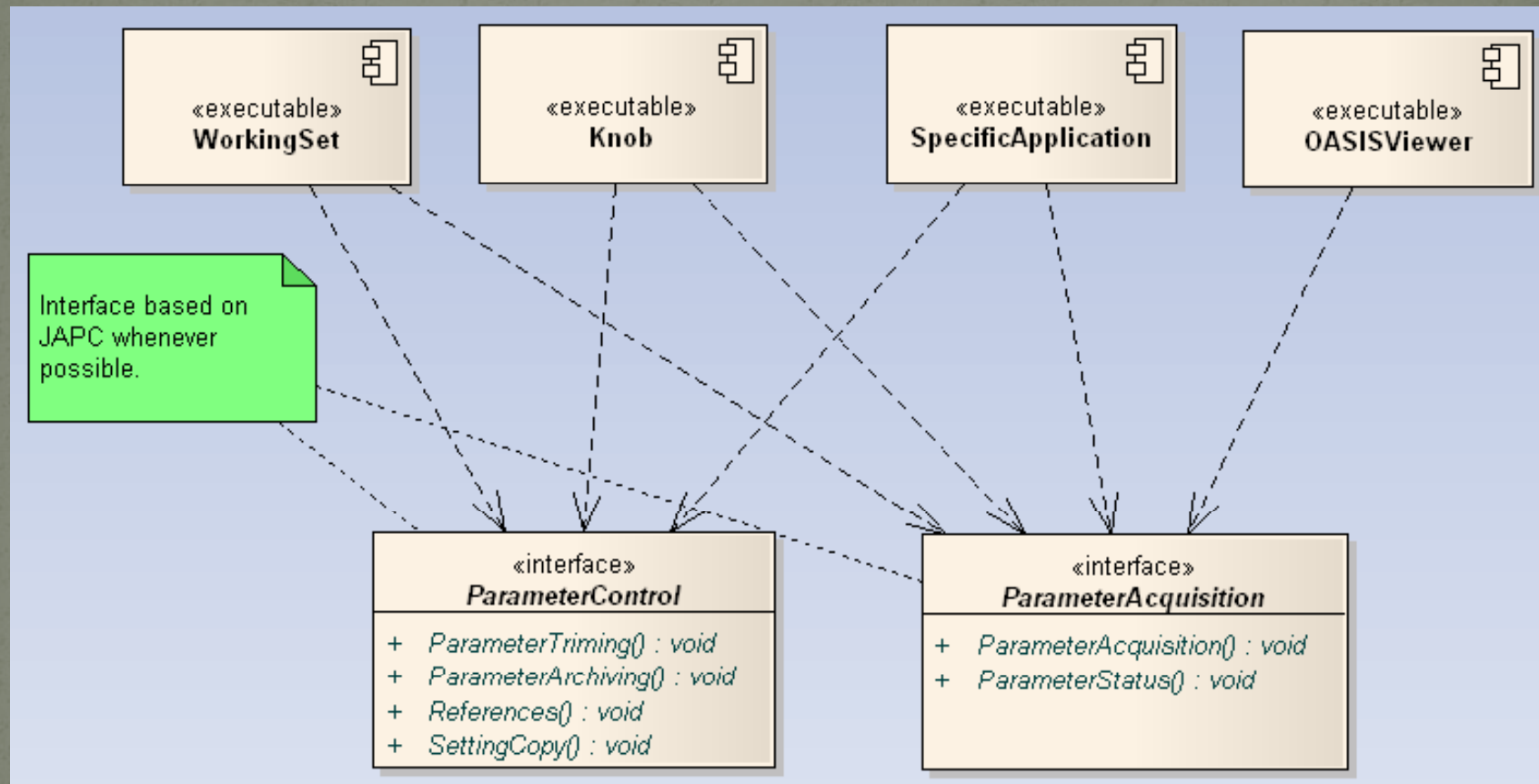
From *Strategy for PS complex control software renovation Working Group Mandate*, M. Benedikt, E. Hatziangeli, R. Steerenberg.

1. Summarise the PS complex requirements for Core control software.
2. Evaluate the application of the present LHC Software Architecture (LSA).
3. Draft a proposal for an adaptation of LSA to comply with the requirements.
4. Develop an alternative proposal based on the existing PS control philosophy.
5. Compare both solutions.

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# What Services?



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# Solution Evaluation - LSA

- Presentation of LSA
  - Current features of LSA core
  - Standard applications (Trim editor, EquipState...)
- 😊 Good basis for parameter control
- 😐 Needs modifications (top-down & bottom-up)
- 😞 GUI philosophy not suitable  
(choose action → select GUI → select device)
- 😞 Lack of acquisition & statuses



# Solution Evaluation - PS

- Presentation of Java/XMotif PS system
  - Generic applications
  - Configuration tools
- 😊 GUIs fit user requirements (acquisitions...)
- 😐 Some parts have become obscure
- 😞 Performance & Scalability problems
- 😞 Low-level services only and difficult to extend

# Solution Evaluation - Conclusions

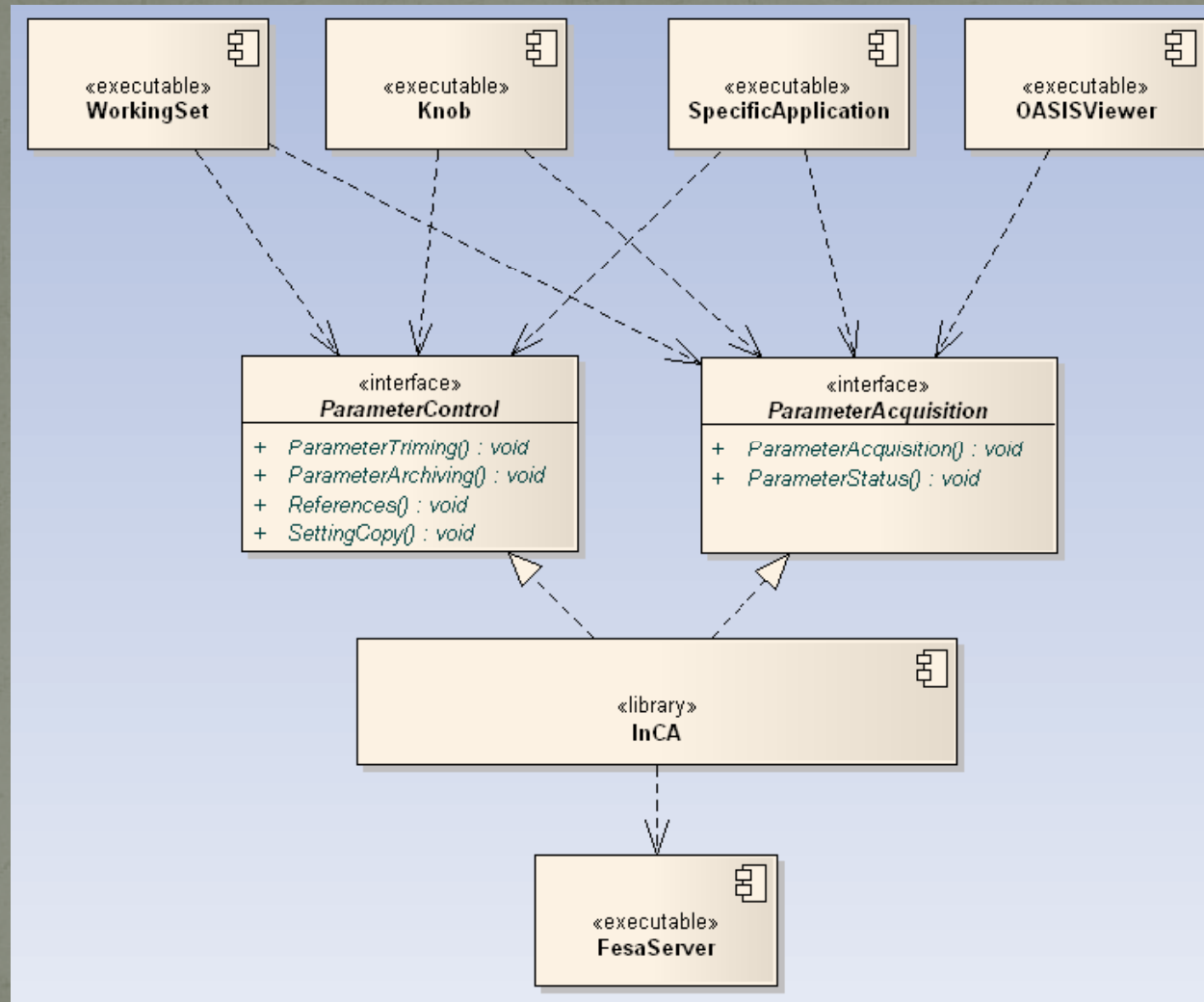
- ✓ LSA: good basis but modifications needed.
- ✗ LSA: Big area of requirements not covered.
- ✓ PSA: Look & feel fit the needs.
- ✗ PSA: performance & scalability problems
- ✗ PSA: obscure & obsolete parts

⇒ Injector Control Architecture

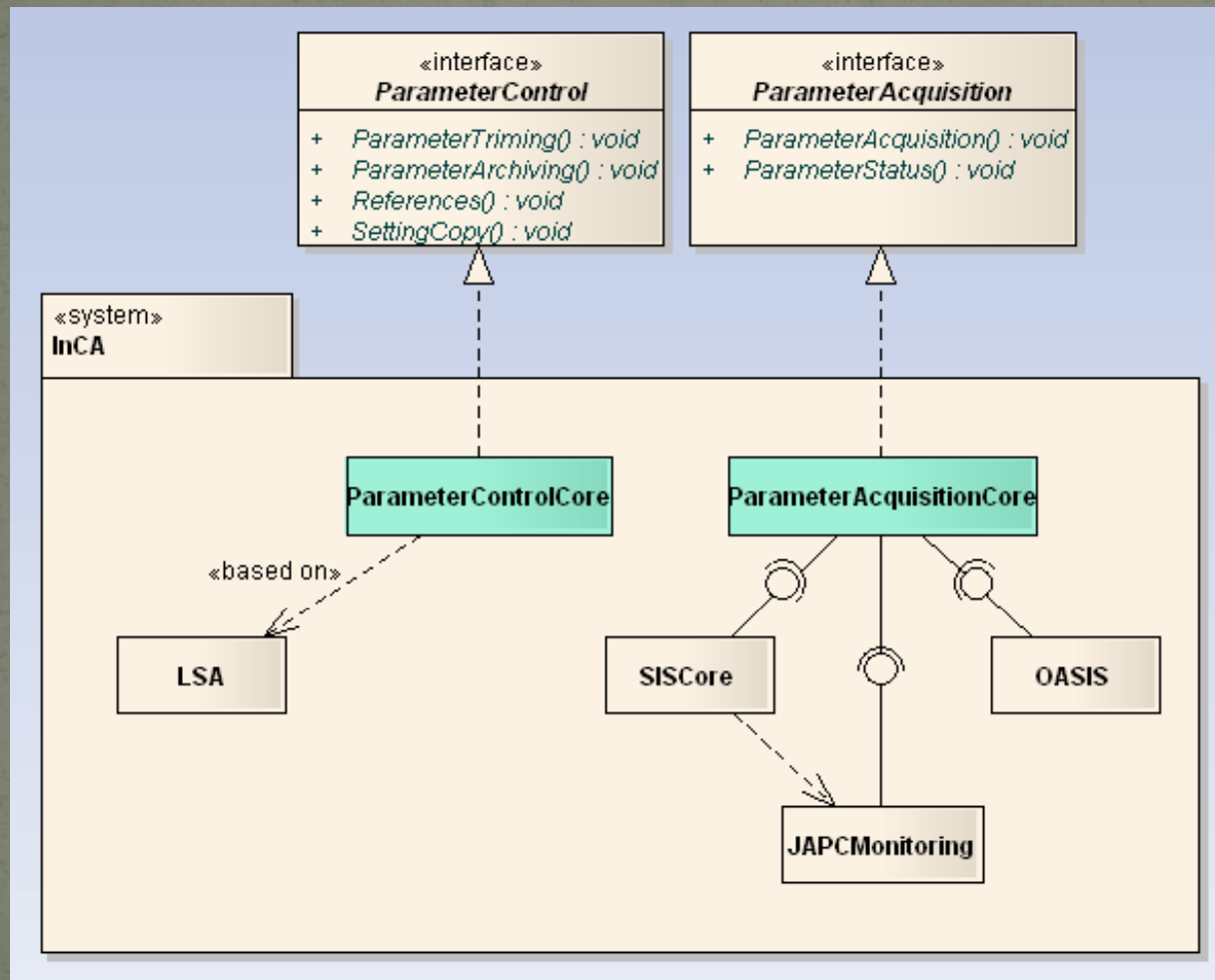
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# Injector Control Architecture

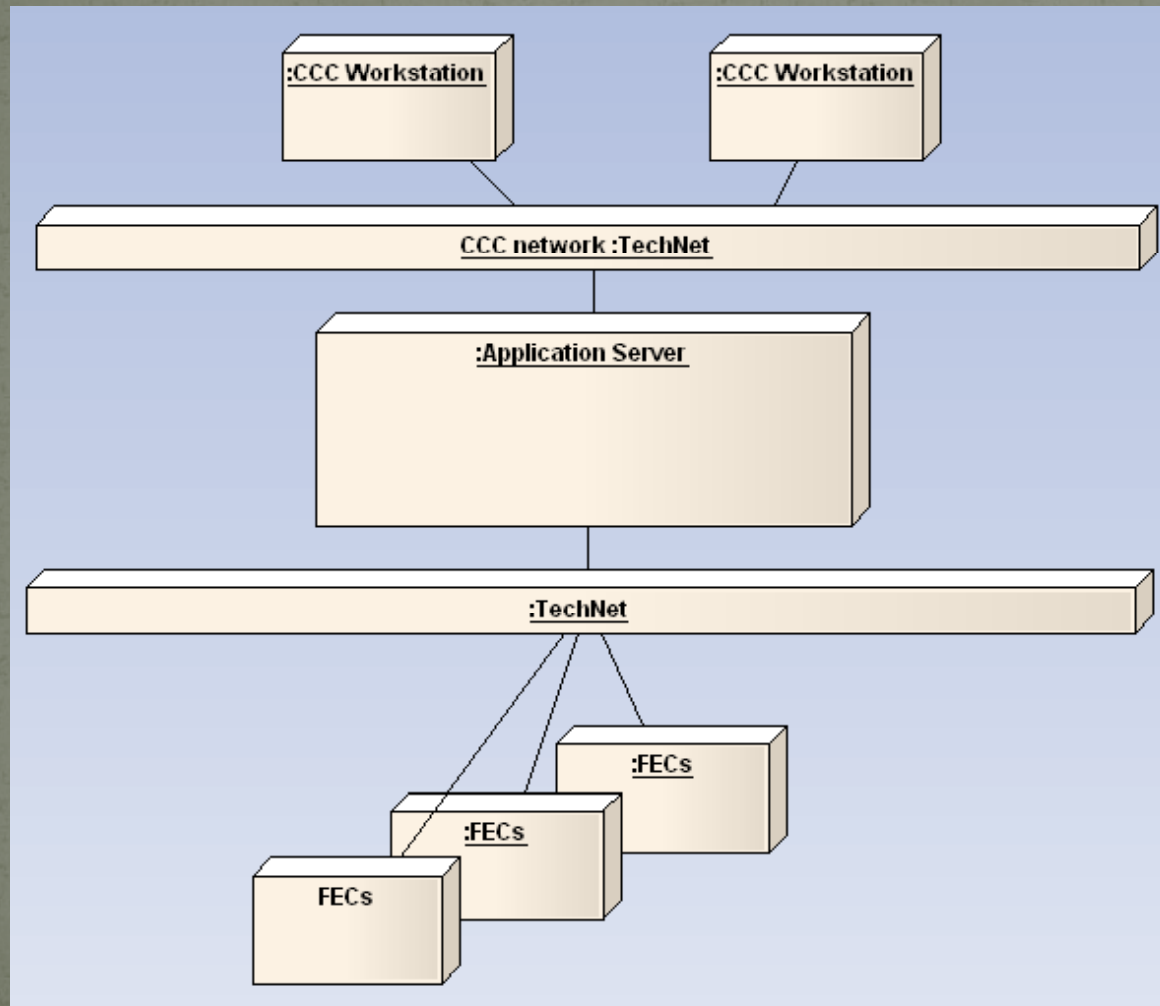


# Component View



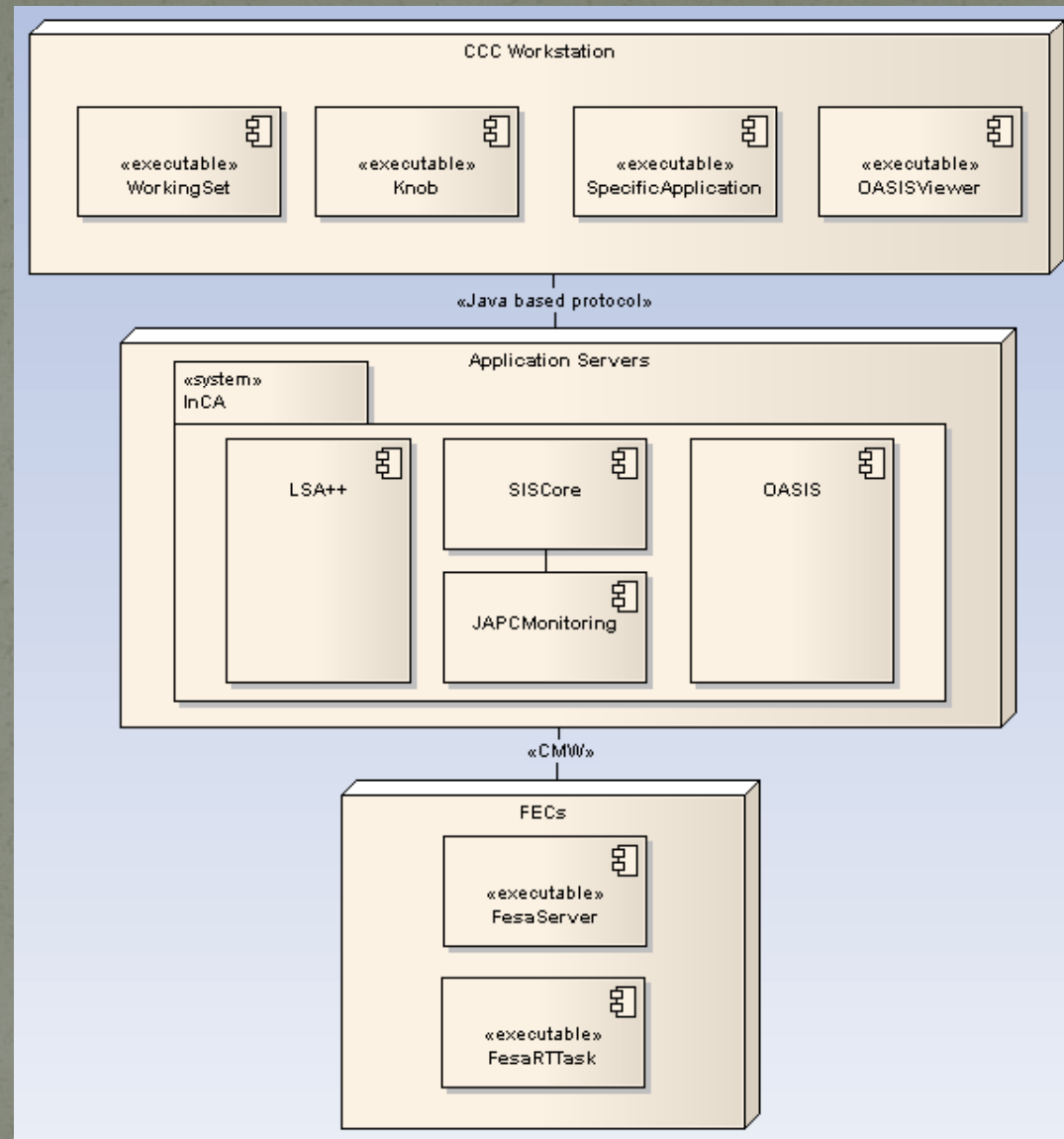
- ✓ Reuse CO components
- ✓ Modif. to fit Injector needs

# 3-tier Architecture



- ✓ Performance
- ✓ Scalability
- ✓ Flexibility
- ✓ Security

# Deployment View



# Agenda

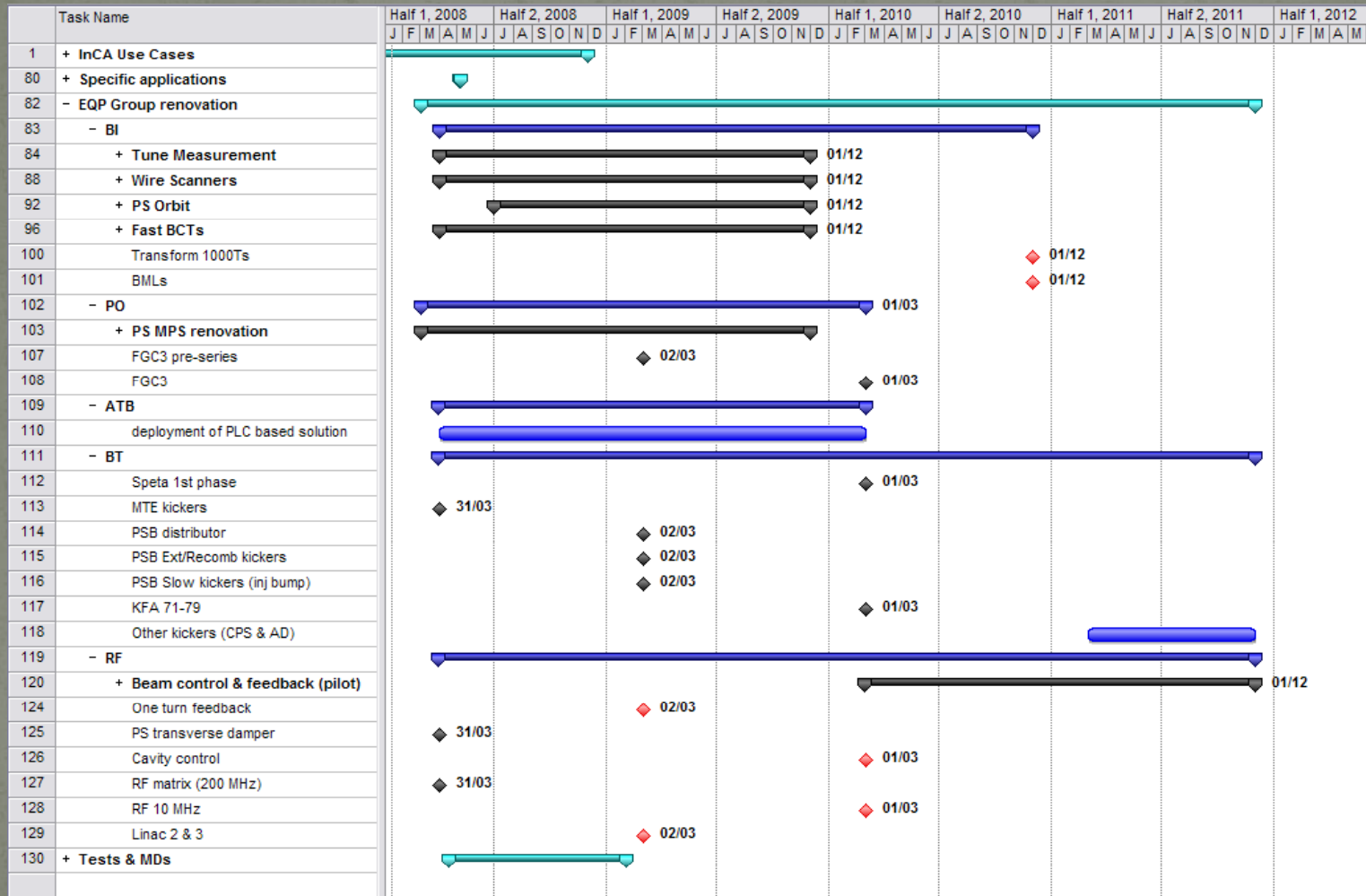
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# Dependencies with AB groups

- Need to synchronise with eqp group renovation programs
  - Ready with high-level controls when they go PRO
  - Not too early to avoid unnecessary development
  - Slow down or speed up their renovation to minimise temporary solutions.
- Close contact with CO<sub>3</sub>
- 1<sup>st</sup> round of discussion with eqp groups done

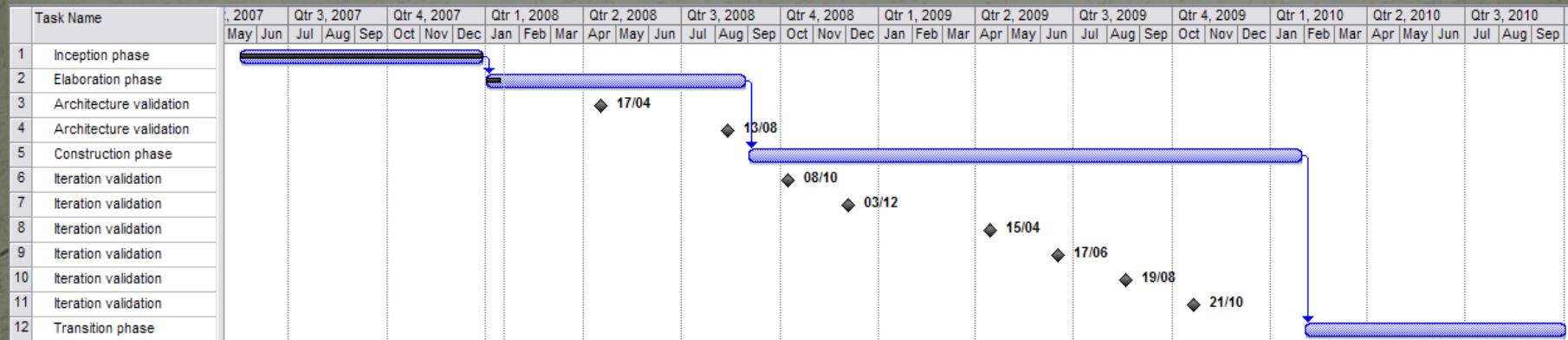
# Dependencies with AB groups



# Agenda

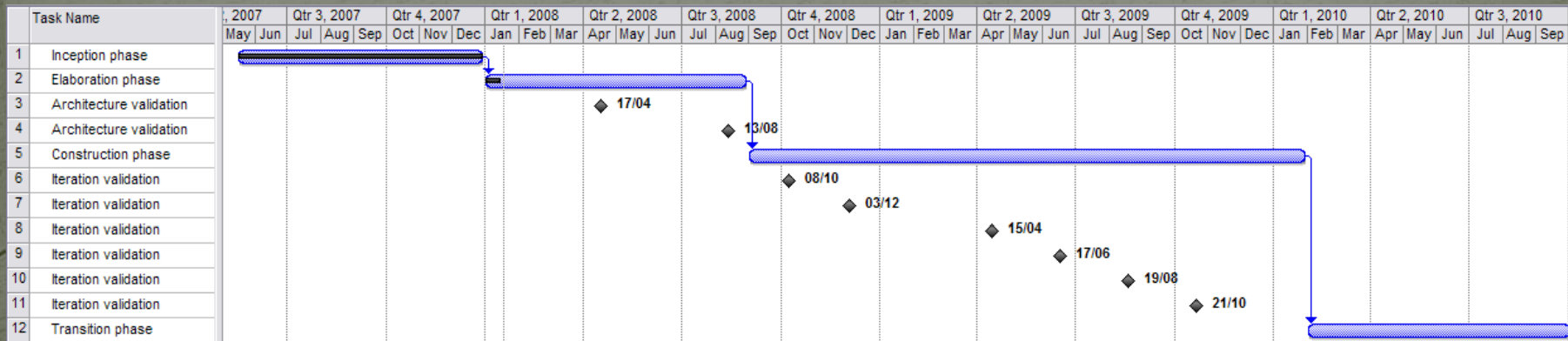
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# Project Planning (1/3)



- **Inception:** Vision & 1<sup>st</sup> version Use Case model done.
- **Elaboration:** Validation of the architecture with critical Use Cases implemented:
  - Parameter acquisition.
  - Parameter hierarchy refactoring
  - ABS (hardware renovation)

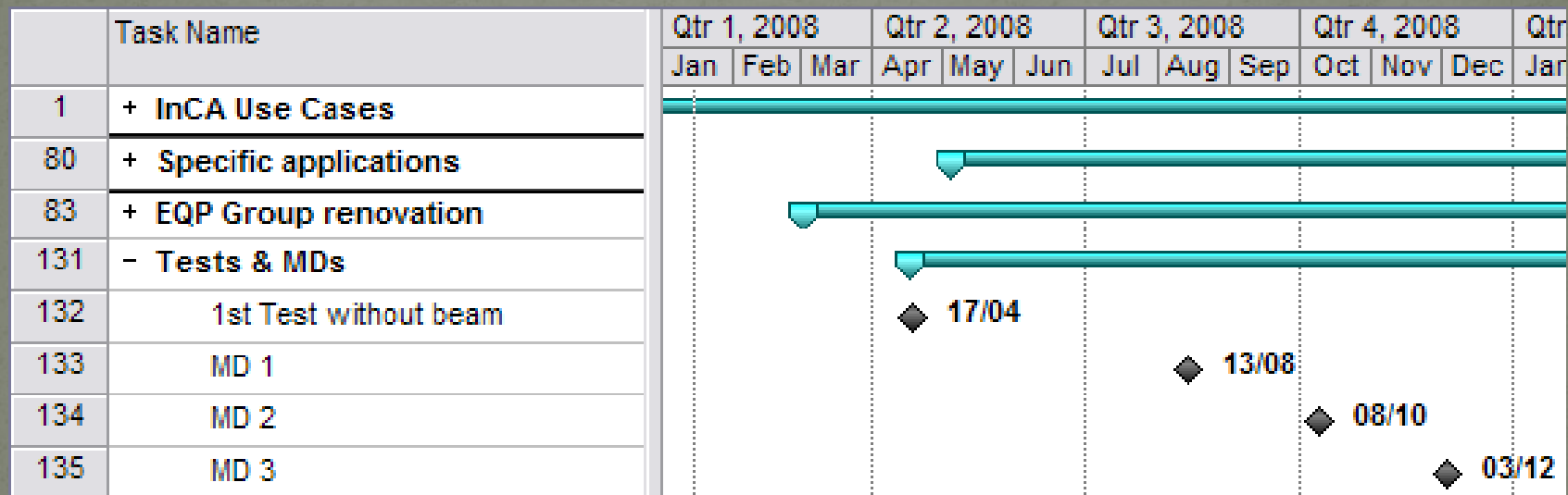
# Project Planning (2/3)



- **Construction:** Implementation of the other Use Cases & Periodic MDs to validate the developments
- **Transition:** InCA in production. Low-priority Use Case development & bug fixes

# Project Planning 2008(3/3)

- The system is put in production after few iterations to validate the developments → *Machine time needed !*
- Tests foreseen in 2008 (4 \* 1/2 day)



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# Risks & Solutions

- Parameter acquisition scalability
  - ✓ To be tackled in 1<sup>st</sup> prio (elaboration phase).
  - ✓ Need to work in the FEC part as well (vertical picture)
- Changes in the parameter hierarchy model (↓ & ↑)
  - ✓ To be tackled in 1<sup>st</sup> prio (elaboration phase).
- GM classes owned by eqp groups
  - ✓ Close contact with CO<sub>3</sub>.
- Component-based
  - ✓ Needs work & support from the teams in charge (LSA, SIS, OASIS...).
  - ☞ LHC is still 1<sup>st</sup> prio but InCA work must be included in plannings.
- Teething problems
  - ✓ Unavoidable! Reduced effect by periodic MDs.



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# Conclusions

- PS Renovation Working Group
  - Summary of the PS complex requirements. Vision & Glossary in EDMS (doc no 863516 & 860974)
  - Evaluation of LSA & PS systems
    - ↳ InCA proposal
- InCA
  - ✓ 3-tier system based on AB/CO modules
  - ✓ Keeps WorkingSet/Know view in the CCC PS bay.
  - 👉 New components & modifications of the existing ones needed to fulfil injector needs.
  - 👉 Close contact with the eqp groups.
  - 👉 Machine time to validate

# Questions ?!?

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Thank you for your attention!