



# Benefits, Drawbacks and Challenges during a **Collaborative Development** of a Settings Management System for **CERN and GSI**

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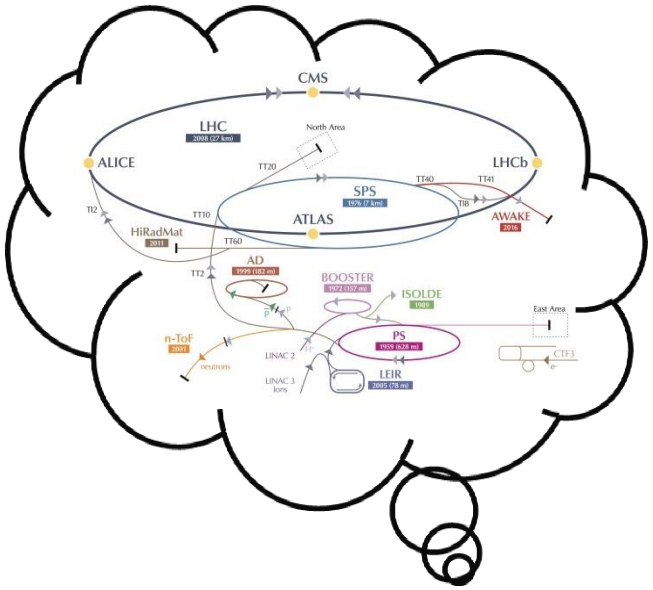
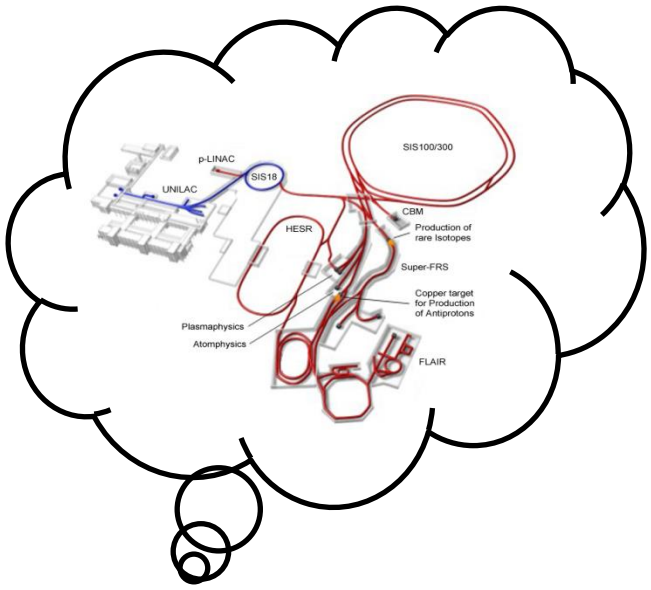
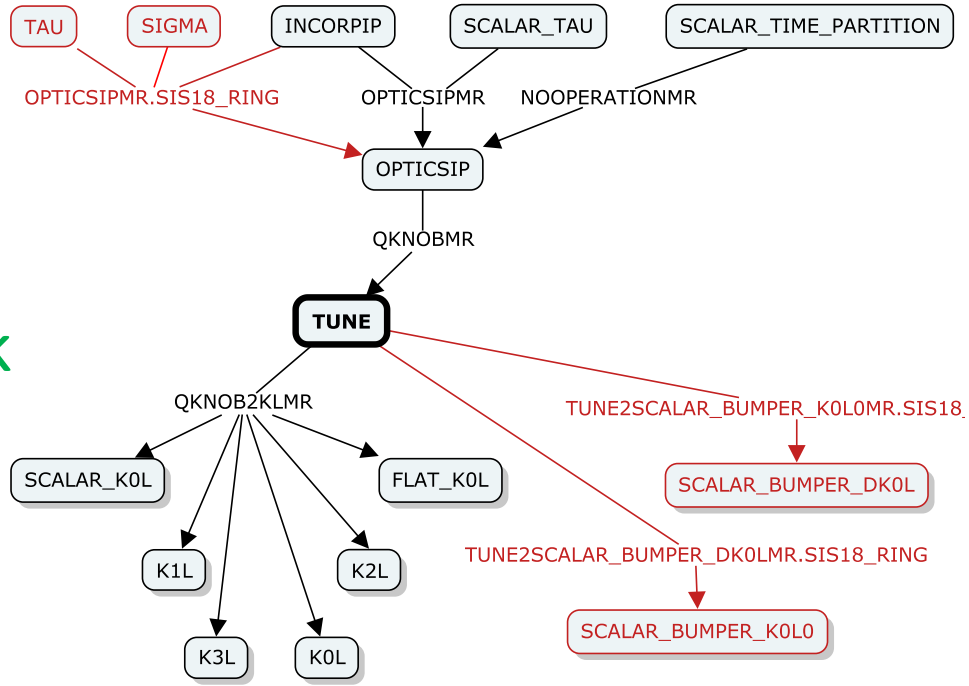
# 2006: First ideas about collaboration




# Why CERN Settings Management?

- Model accelerators as hierarchies of parameters and calculation rules
  - Based on optics, twiss and machine layout
- Separation of framework and physics logic




- Working with high-level parameters
  - System calculates hardware settings

# CERN Settings Management

- Started in 2001
- **Used operationally from 2005**
- ~ 4-6 CERN developers involved
- ~ 1 000 000 lines of code
- ~ 150 database tables
- ~ 20 GUI applications

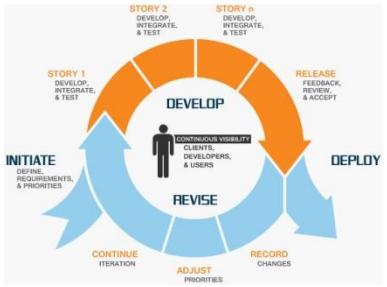
**A core component of the CERN's control system!**

# Collaboration Challenges

- **A mission-critical project for both CERN and GSI**
  - No option for failure
- **Different accelerators and users**
  - Different requirements
- **Different time schedules**
  - GSI: Development
  - CERN: Stable operation
- **Stakeholders confusion**
  - Collaborative vs institute-specific priorities
- **Remote Collaboration**

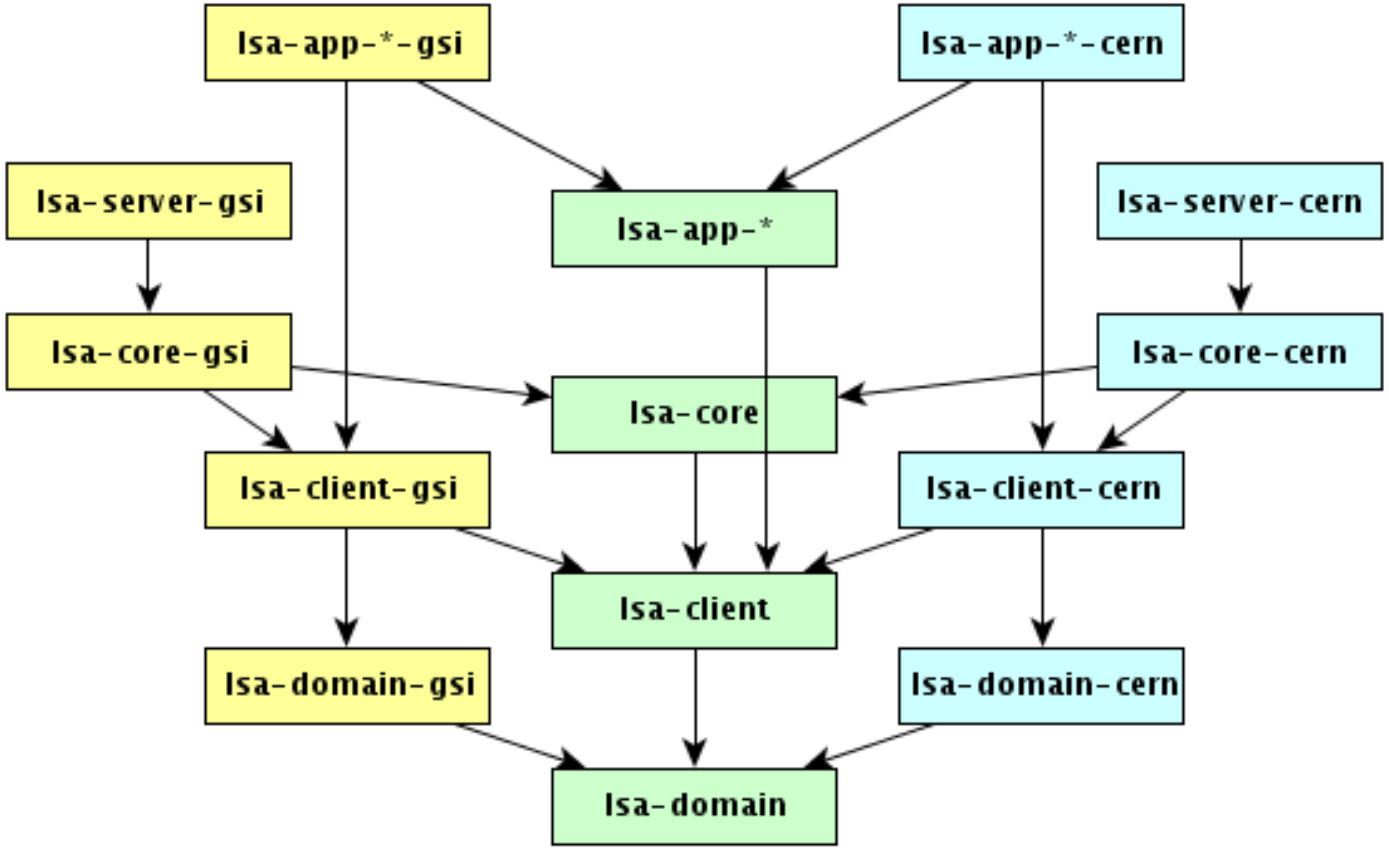
# Technical Aspects

- Common source code repository?
- Architecture allowing collaboration?
- Development process?
- Commit procedure, patching?
- Build systems and release?
- Effective communication?



# Architectural Grounds

## Split into generic and institute-specific modules



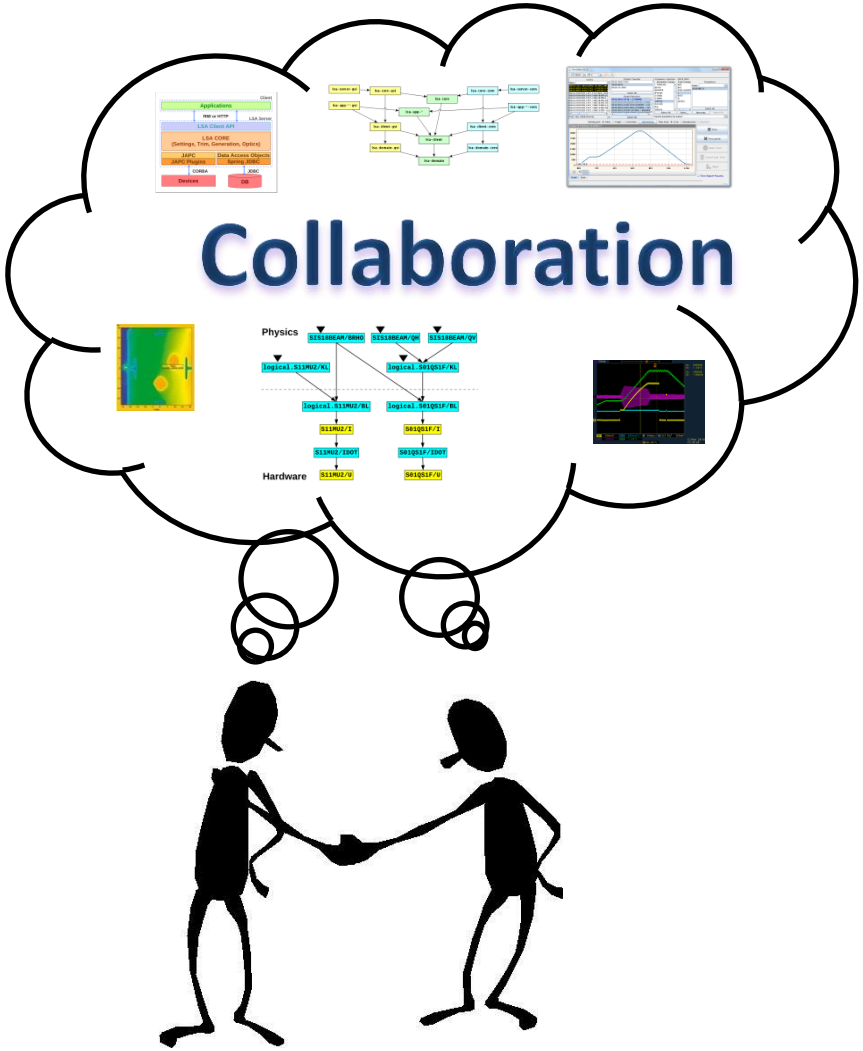
# Common Development

- Single code repository for the generic modules
- Commit procedure
  - Non-significant change
  - Significant change
  - Major change
- Independent release at each institute
- Regular contact via email and phone
- Visits: 2 per year
  - Decisions about major changes
  - Split of work and responsibilities
  - Planning deliverables

# It’s also about people

They must:

- Be convinced and see benefits
- Trust each other
- Feel as a team, even if working remotely
- Have mutual respect of requirements and priorities
- Accept compromises



# Solid Foundation

## 2 GSI developers @ CERN for 18 months

For CERN:

- Reinforcement of the team
- Fresh view on the system

For GSI:

- Learn about the project and gain experience
- Evaluate for possible use at GSI

- Learning about both control systems and their requirements
- Familiarizing with work process, priorities and constraints
- Gaining trust in each other

# Formalizing the collaboration

- **Developers agreed early on basic rules**
  - Roles and Responsibilities
  - Ownership of modules
  - Categorization of changes
  - Decision taking process

- Formal agreement document is being established
  - Addendum to existing CERN-GSI high-level agreement

# Benefits and Drawbacks

- Drawbacks
  - Collaboration requires time and resources
  - Loss of flexibility in working practices

- Benefits
  - Joined man power
  - Knowledge and good practice sharing
  - Better overall product

**For our collaboration**
**the benefits definitely overweigh the drawbacks!**

# CERN – GSI Collaboration Summary

- **Building the team via co-located development**
- Collaboration-friendly architecture
- Common development workflow
- Well-defined decision-taking process
- Clear responsibilities

# Conclusions

**Technical aspects are important…**

**…but the key to a successful collaboration is the HUMAN FACTOR**

All the technical obstacles can be addressed/agreed as long as people feel as a team and want to work together.