
Strategy for Migrating the LHCb Software to the GAUDI Framework

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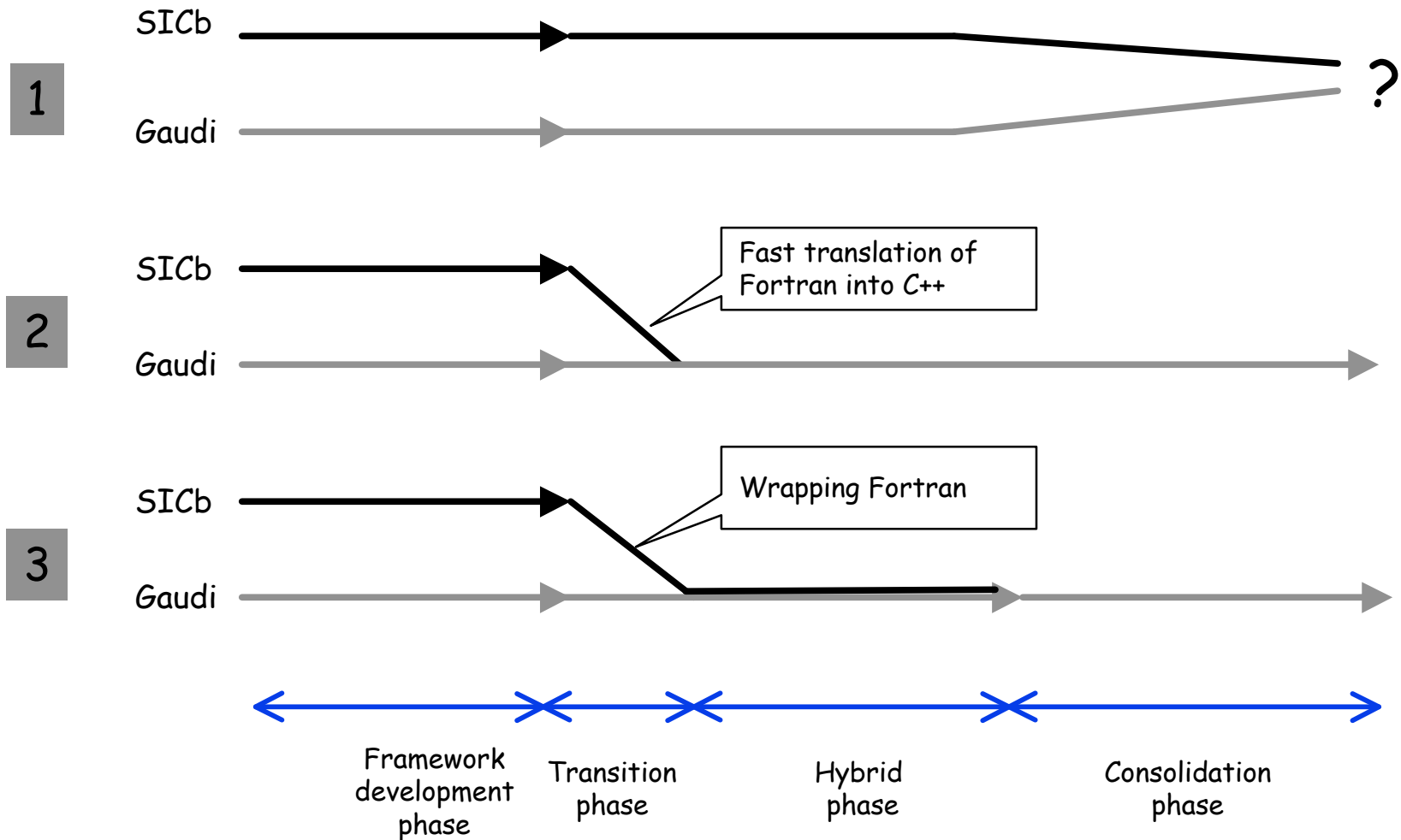


OO Migration Project

- ◆ Final objective:
 - **Produce a complete set of fully functional data processing applications using exclusively OO technology.**
- ◆ Sub-objectives:
 - Provide a fully functional framework (GAUDI)
 - Assemble new and old algorithms into a single and complete suit of data processing applications. Be able to run productions.
 - Convert all the existing FORTRAN code to C++

Possible strategies

C++ →
Fortran →



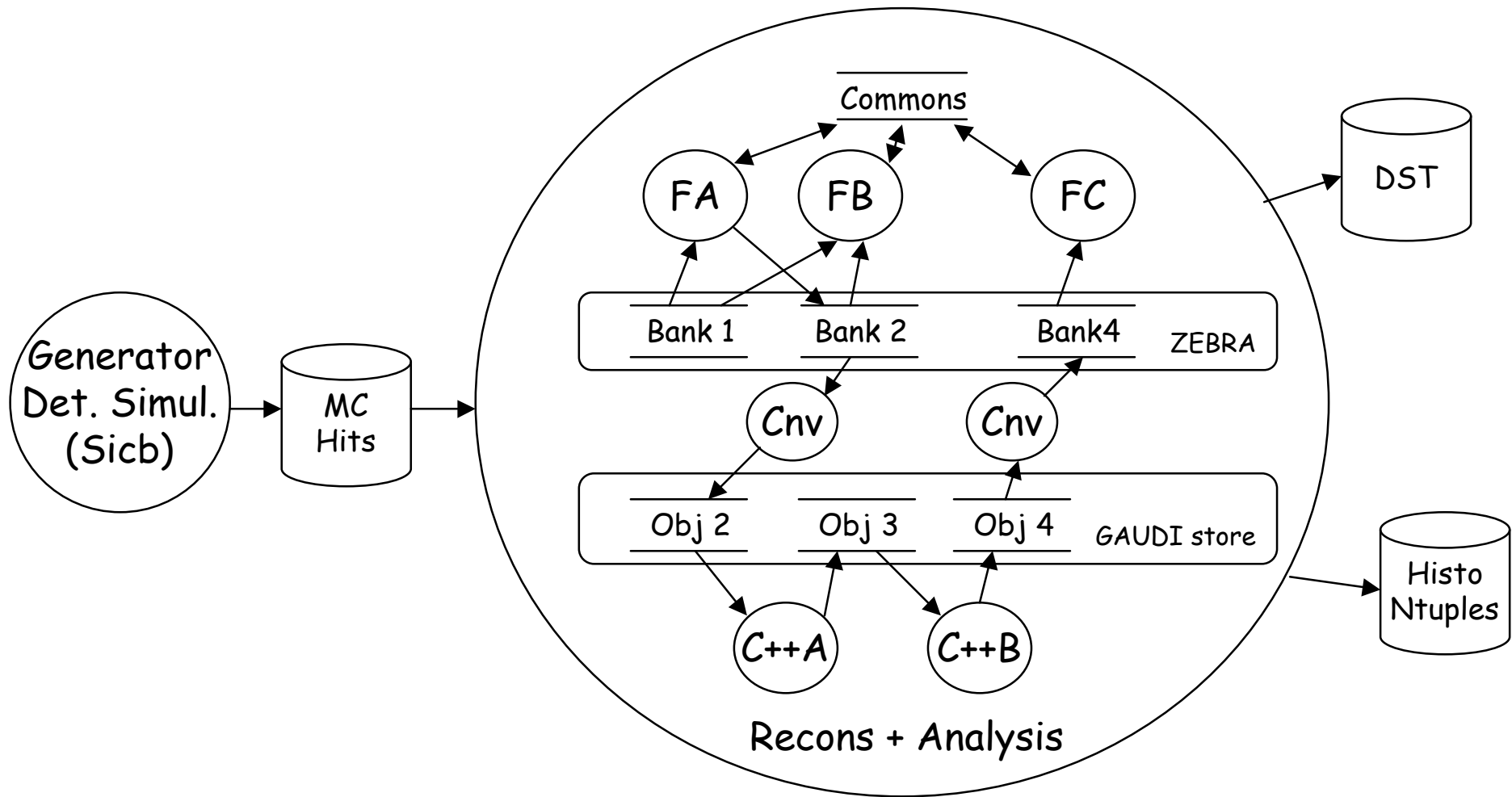
Framework development phase

- ◆ At the end of this phase the GAUDI framework should be functionally complete
 - Data access services
 - Generic event model
 - Generic detector description model
 - Data visualization
 - Basic set of services
- ◆ Develop some physics algorithms to prove architecture concept
- ◆ We started this phase one year ago
- ◆ We expect to be completed by middle of November

Transition phase

- ◆ **At the end of this phase we should be able to reconstruct and analyze simulated data within the GAUDI framework. The Monte Carlo data production will still be done using Sicb.**
- ◆ **Incorporate reconstruction and analysis parts of SICb in the GAUDI framework - wrap FORTRAN code**
 - Analyse SICb to identify all modules, their inputs and outputs
 - **Develop a complete OO event data model**
 - Write converters to allow access to data in both formats
- ◆ **Development of new algorithms can proceed within GAUDI**
- ◆ **Caveats**
 - lot of work to make converters in both directions
 - we could discover technical difficulties (size, commons, initialization,...)

Transition Phase (2)



Hybrid Phase

- ◆ One single program with FORTRAN and C++ cooperating to produce physics results.
- ◆ Replace wrapped FORTRAN code incrementally.
- ◆ At the end of this phase we should be able to retire the FORTRAN compiler and libraries
- ◆ Already known problems:
 - Two different detector descriptions. Difficult to maintain.
 - Output file format. Which one to choose?
 - Different set of input “card files”.
 - Huge memory needs for data and code.
- ◆ The hybrid phase should be as short as possible to minimize the pain.

Consolidation phase

- ◆ Complete the new detector description
- ◆ Re-iterate with the O-O Event Model
- ◆ Re-engineer some of algorithms
- ◆ Incorporate Geant4
- ◆ etc.

Planning

	1998		1999				2000			
	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4
Architecture Design	■									
Gaudi Development v1		■								
Gaudi Development v2			■							
Gaudi Development v3				■						
Framework Functional						◆				
Analysis Sicb						■				
Transition phase							■			
Production program								◆		
Hybrid phase								■		
Migration completed										◆