Physics tools overview

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2nd SuperB Collaboration Meeting

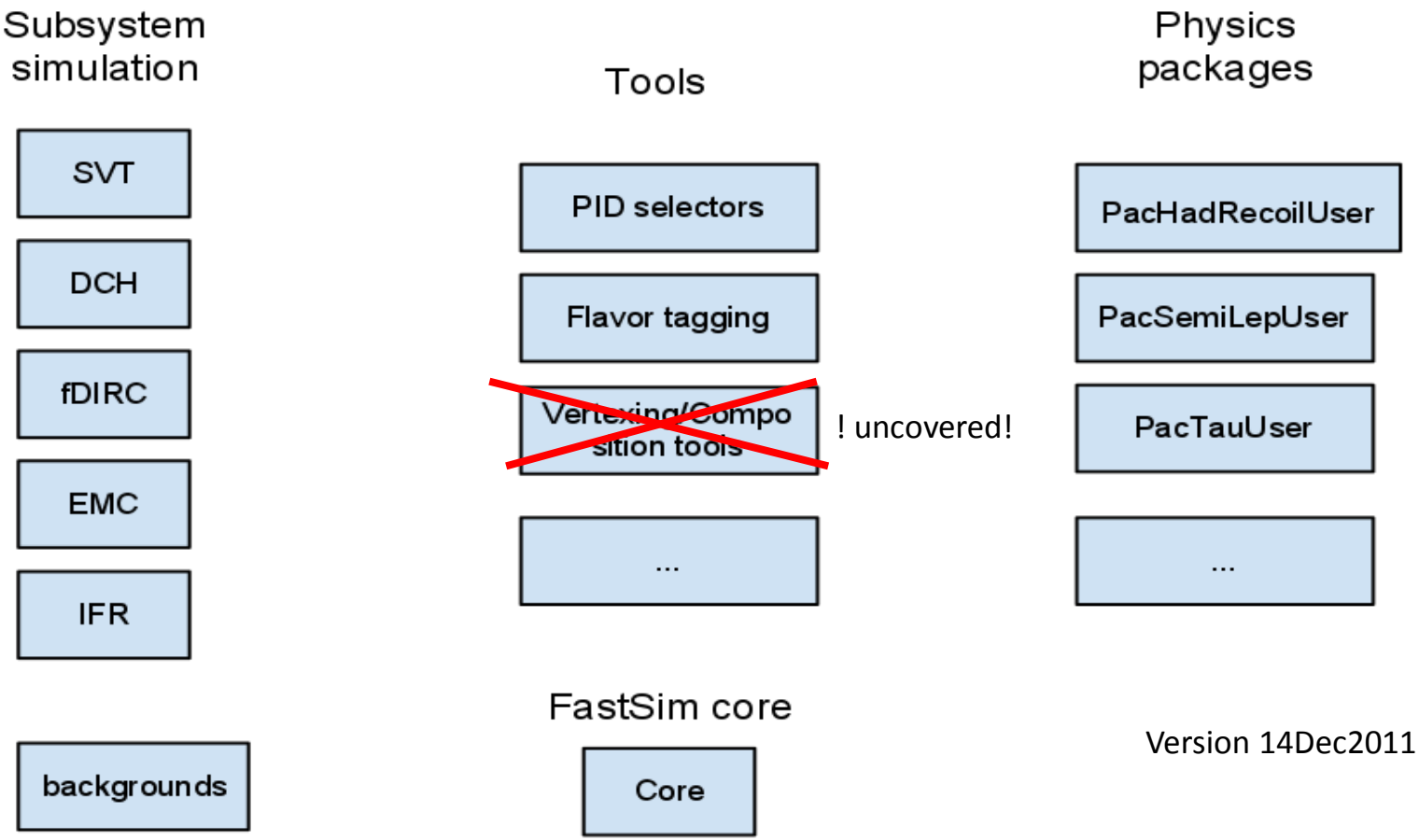
Frascati, 15 December 2011

Physics tools working group

- Established after the SuperB meeting in Elba (June 2011). It inherits from the FastSim group, with a wider scope.
- Main goal: development of the physics and simulation tools necessary to perform the physics studies (and part of detector studies) at SuperB
- Discussions
  - Mailing list: FastSim ML superb-fastsimu@lists.infn.it
  - Phone meetings: tentatively every 2 weeks. Announced in the FastSim ML. Agenda in Indico

  http://agenda.infn.it/categoryDisplay.py?categId=491

Physics tools WG structure



Most items have one person responsible for it.
More manpower needed. Several possibilities to contribute and take responsibilities.

Next Fastsim production

- Major effort involving many people

- Timeline still under discussion but
  - The physics group has started collecting feedback from potential analysts
  - Tentative goal: analysis ntuples available for Summer 2012

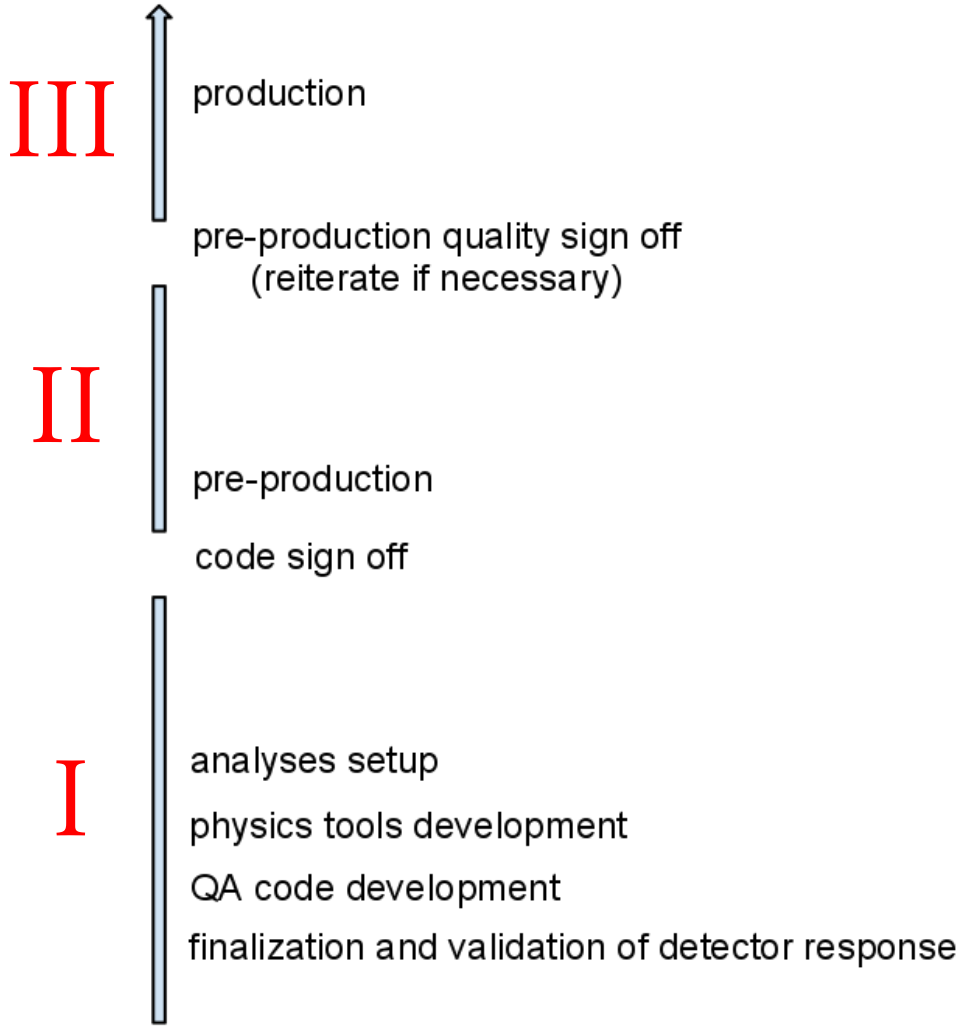
Current picture of analyses entering the 2012 production

Proposed analyses to date

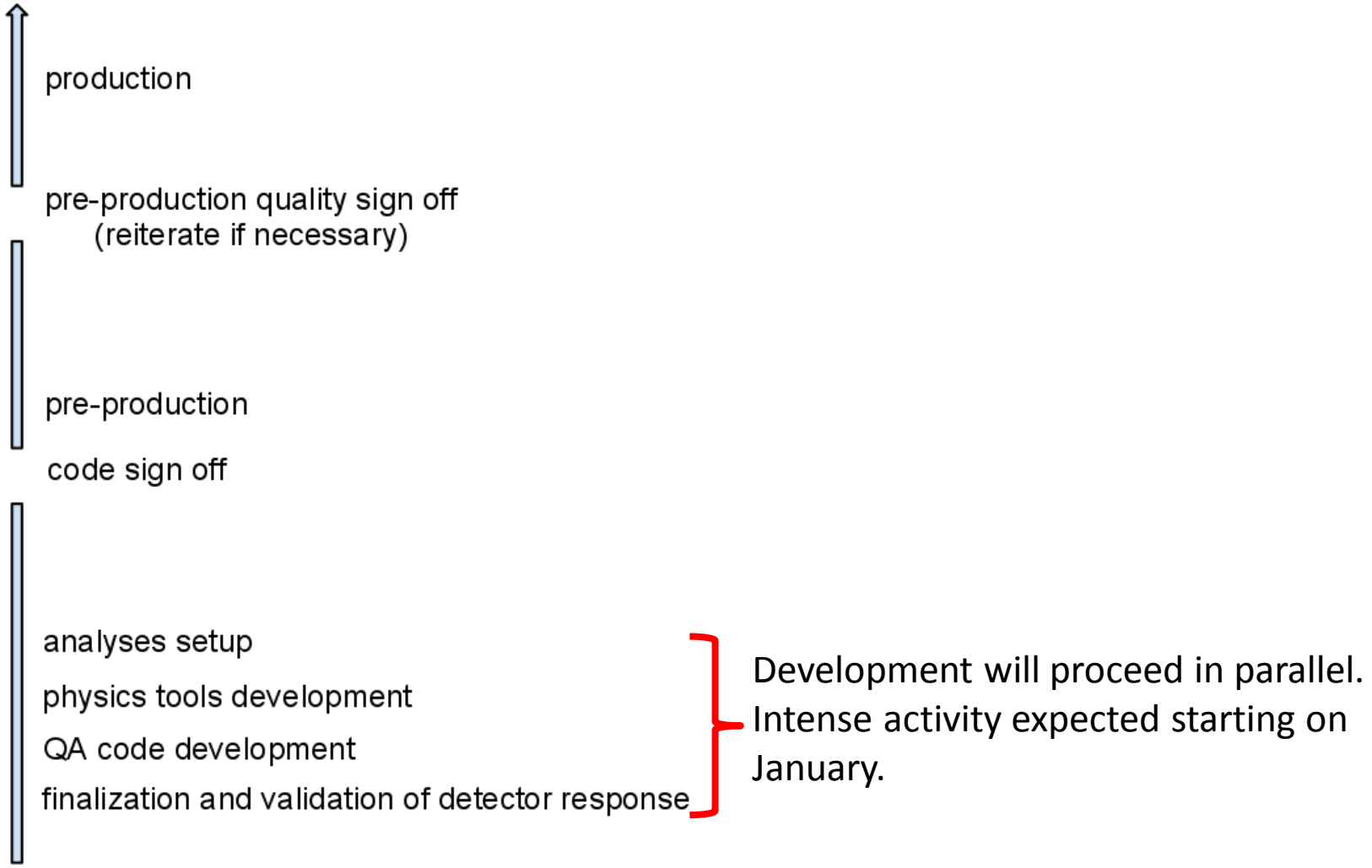
from John Walsh's talk at Parallel V: Physics

Name	Channel(s)	Hadronic tags	SL tags	Notes	WG
Elisa Manoni	K(*)nunu	yes			Rare
Steve Robertson	B->Xs l+l-	yes			Rare
Wenfeng Wang	B->Xs gamma	?	?		Rare
Alejandro Perez			yes	support for SL tags	Rare
Marcello Rotondo, Valentina Santoro	B-> mu nu, e nu	yes			Rare
Guglielmo De Nardo	B-> tau nu	yes			Rare
Alberto Cervelli	tau -> mu gamma				tau
Marcin Chrzaszcz	B -> K phi phi				CPV & mixing

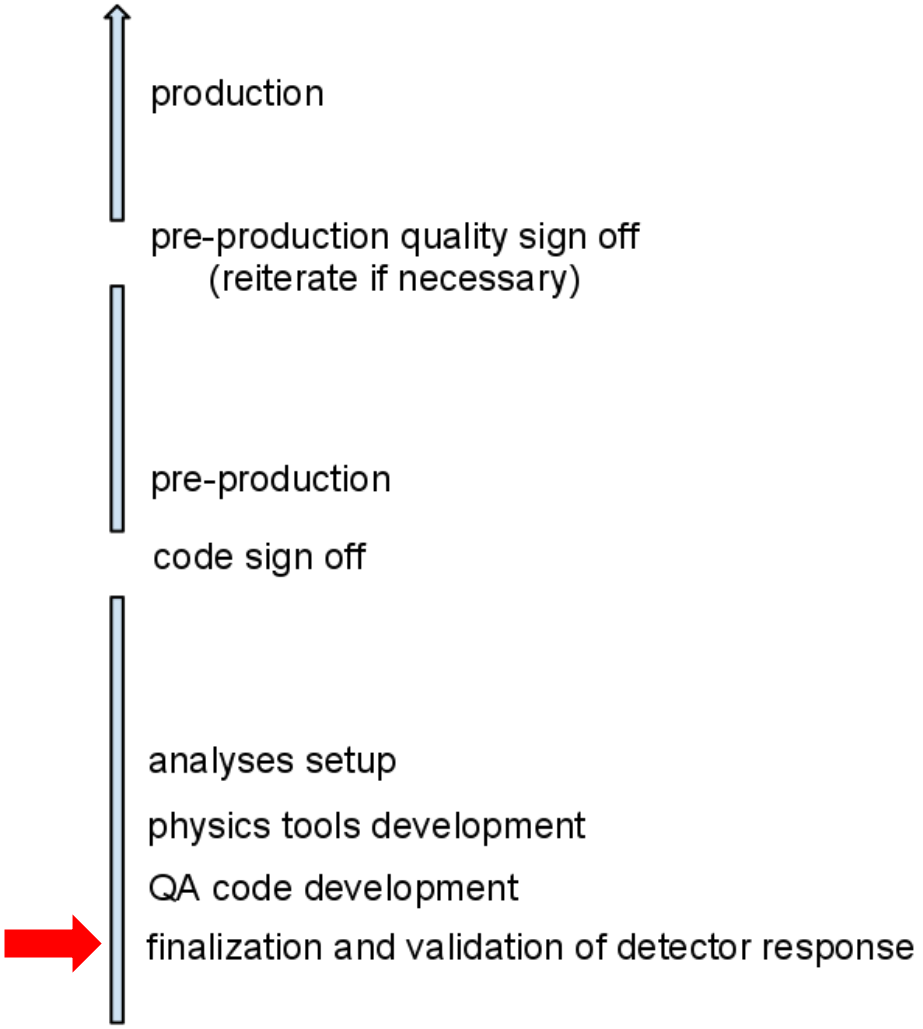
the way towards the production



the way towards the production

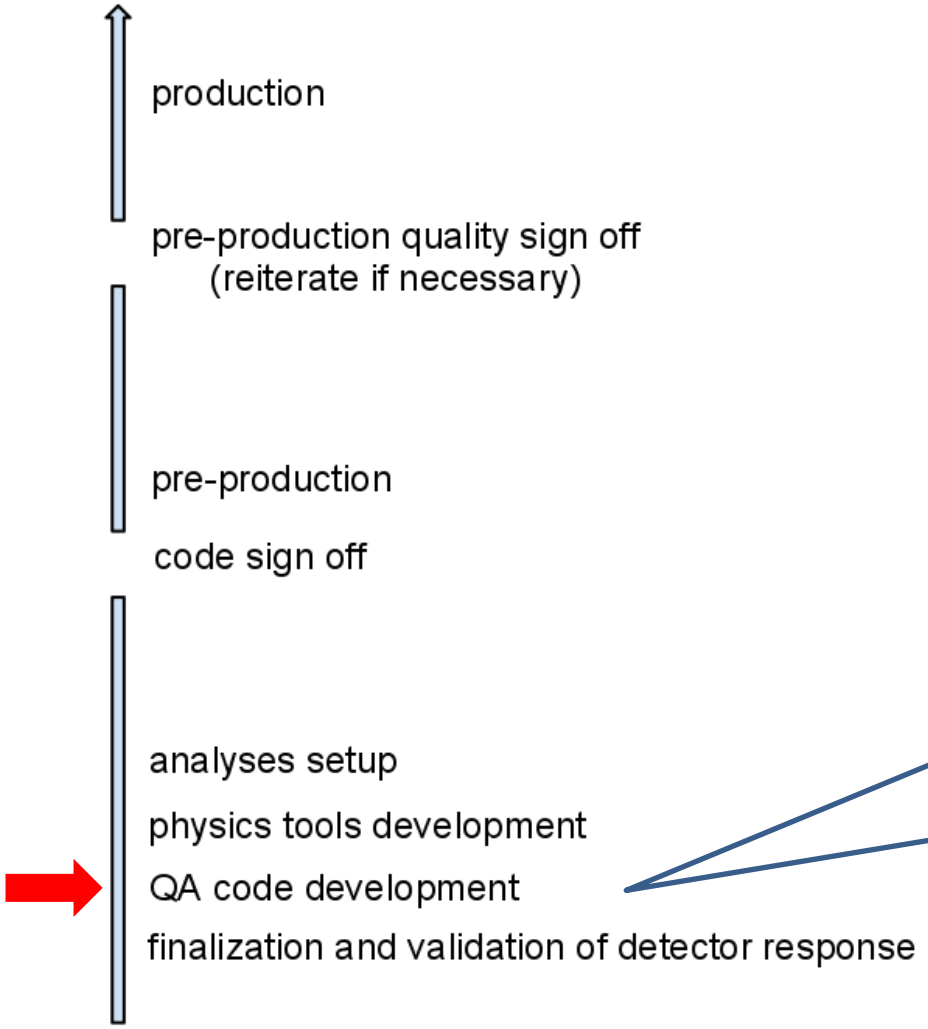


the way towards the production



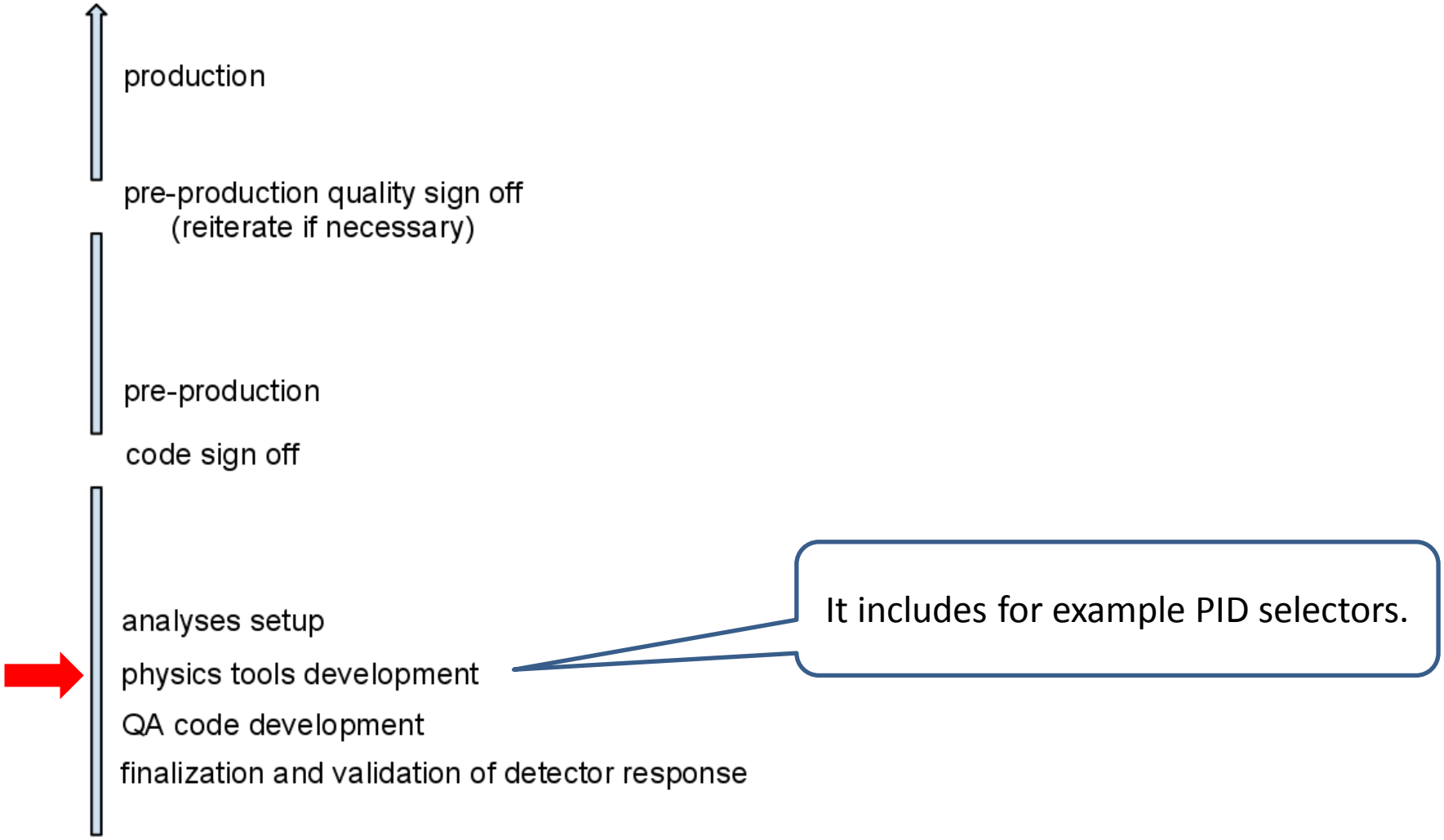
Updates from fDIRC, EMC, IFR discussed today. The current goal is to have all detectors response finalized and validated by the end of Jan 2012

the way towards the production

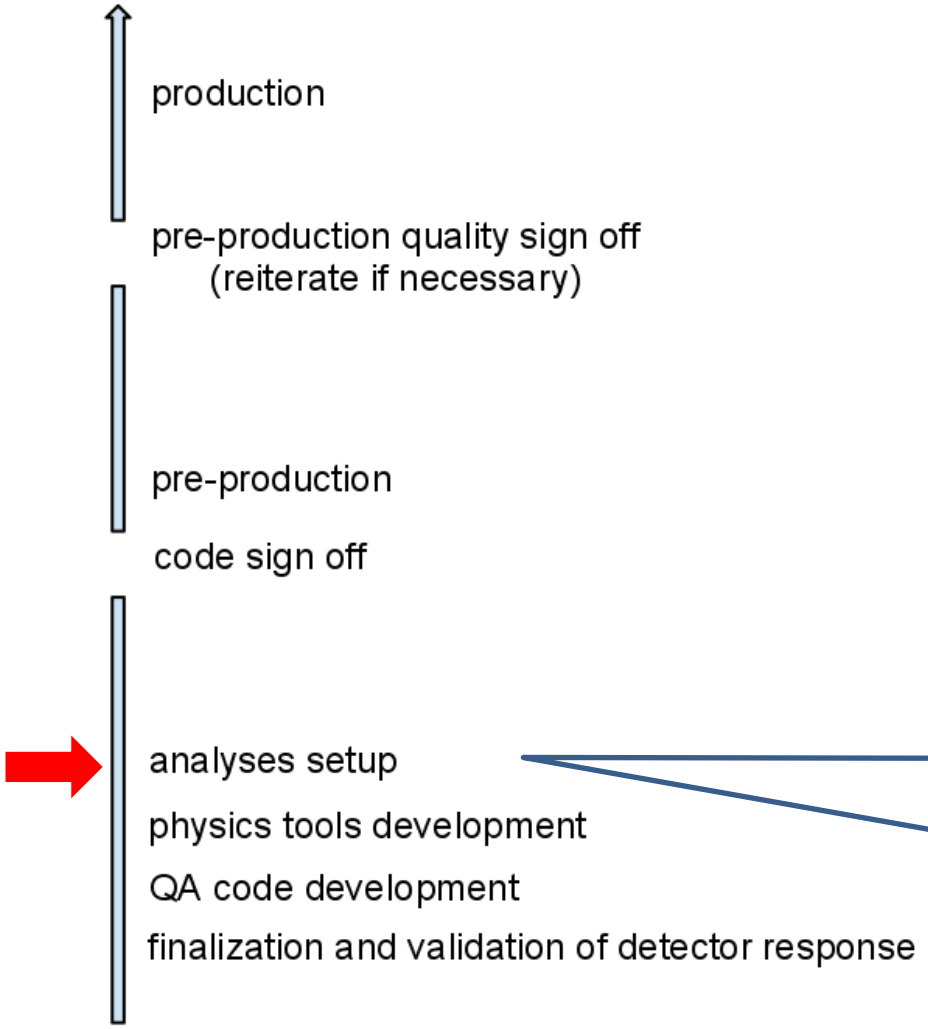


A module which stores QA information in ROOT files for quality monitoring is required from <u>all</u> subsystems and <u>all</u> analyses.
A template will be circulated.

the way towards the production

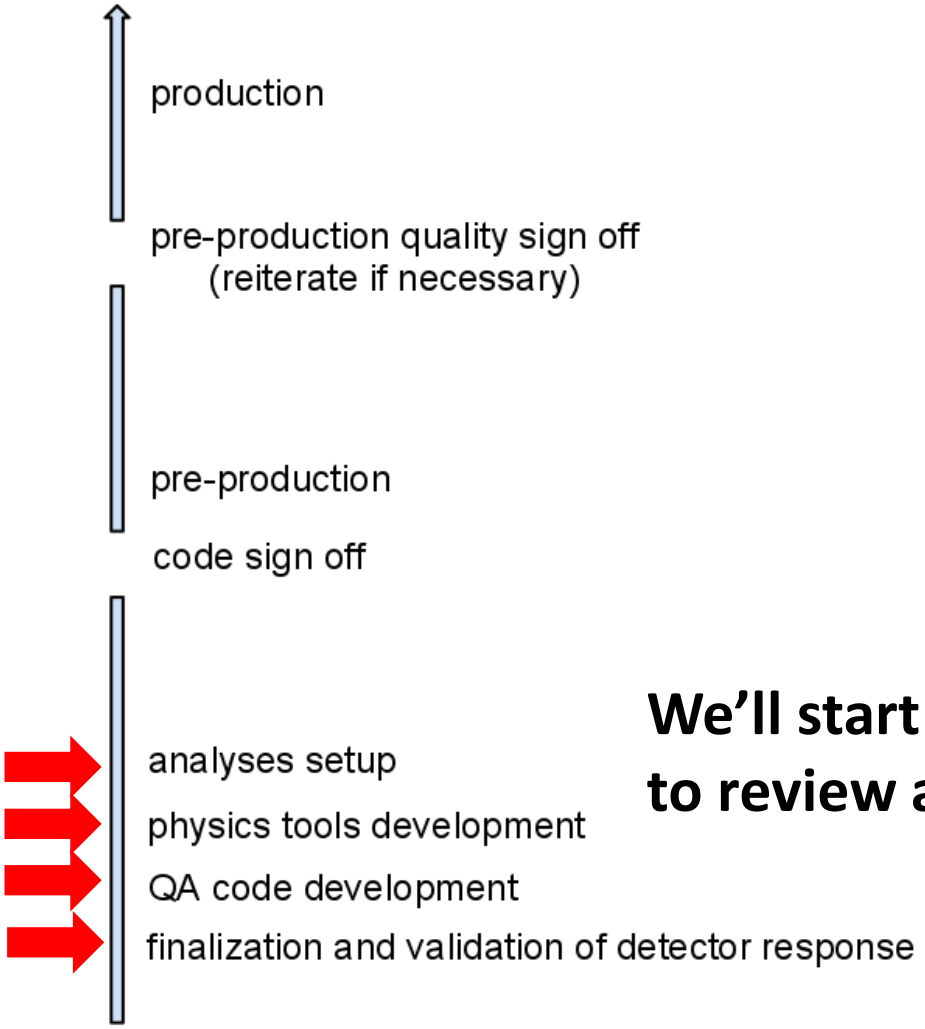


the way towards the production



The proponents of each analysis are expected to setup the selection code and validate it. With centralized support.

the way towards the production



We'll start a series of meetings in January to review all these activities

Documentation

- It must be improved
  - fill the holes
  - update it where needed
- Migration of Babar tools documentation started but a lot of work still needed
  - help from Babar colleagues will be very much appreciated

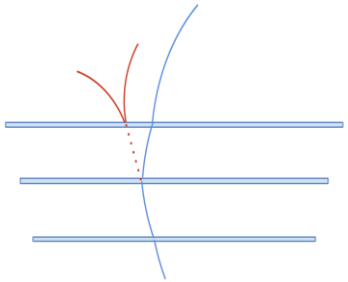
Please document in wiki the part you're developing

wiki fastsim guide:

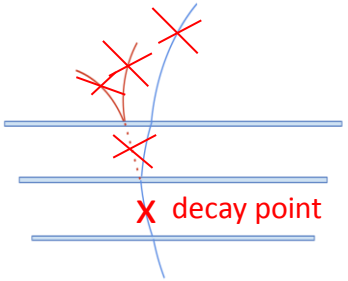
http://mailman.fe.infn.it/superbwiki/index.php/SuperB_fast_simulation_User_Guide

recent bug fixes

- in PmcSimulate::simulateGTrkList(...). When a particle decayed, the previously generated PacSimHits placed after the decay point were deleted, but NOT the daughters that might have been generated at those hits



fastsim first propates the particle with the decay in flight switched off.



Then it checks if the particle has decayed along its trajectory. If so, the PacSimHits and GTracks from possible subsequent interactions are deleted. But GTracks were not deleted. Fixed starting on rev. 2700 (It affects V0.2.7, Ok in V0.3.0)

- Bug in PmcWriteParticles module (PacMC). A TParticle for each PacSimHit was stored, not just the first one. It hasn't affected the past production. Fixed in rev 2730