

WP2 -Common Software Session

Introduction

AIDA 1st Annual Meeting, 28-30 March 2012, DESY

28/03/2012

Goals - “Common Software”

- ❖ Develop core software tools that are useful for the HEP community at large and in particular for the next big planned projects: sLHC and Linear Collider (ILC/CLIC)

Objectives

Task 2.1: Coordination and communication

- Monitor the progress of the work in the work package
- Coordinate and schedule the execution of the tasks and subtasks
- Prepare progress reports – internal and on deliverables

Task 2.2: Geometry toolkit for HEP

- Allow the description of complex geometrical shapes, materials and sensitive detectors
- Provide interfaces to full simulation programs (Geant4), fast simulations, visualization tools and reconstruction algorithms
- Allow for the misalignment of detector components
- Provide an interface to calibration constants and conditions data

Task 2.3: Reconstruction toolkit for HEP

- Tracking toolkit based on best practice tracking and pattern recognition algorithms
- Provide alignment tools
- Allow for pile up of hadronic events
- Calorimeter reconstruction toolkit for highly granular calorimeters based on Particle Flow algorithms

Work Package Organization









- ❖ WP Coordinators: Pere Mato, CERN Frank Gaede, DESY
- ❖ Subtask coordinators
 - ❖ Geometry: Gabriele Cosmo, CERN
 - ❖ Tracking: Steven Aplin, DESY
 - ❖ Particle Flow: Mark Thomson, UCam
 - ❖ Alignment: Chris Parkes, UniGla
 - ❖ Algorithms in Pile-up Environments: Lucia Silvestris, INFN

Overall Strategy - Reminder

- ❖ We committed ourselves to **write re-usable and generic code** that can be used later by the HEP community
- ❖ All partner are involved in ongoing projects and develop their code in the corresponding context (ILC, sLHC)
- ❖ We need to make sure that the developments are designed such that we address the current needs in these activities, while at the same time we pay attention to **provide the toolkits in a standalone and well documented** manner
- ❖ Often the developments will be done to address an immediate need for a given experiment/ project but the intention is to **deliver later a 'standalone' packaging** of it fully reusable

Adding code to the Repository

- ❖ So far very few packages added into the WP2 SVN repository

File ▲	Rev.	Age	Author	Last log entry
 ATest/	77	9 months	engels	made gcc 4.4.3 compliant
 DD4hep/	260	3 days	muennich	Extracted ILDExTPC class from xml reader code. Extension to Facto
 USolids/	256	2 weeks	marek.gayer	Works
 aidaExample/	212	5 months	engels	changed hello_world for using streamlog
 aidaNightly/	78	9 months	engels	changed CDash submission type from Experimental to Nightly
 cmake4hep/	76	9 months	engels	bug fix: macro input argument immutable
 eUtil/	75	9 months	engels	fixed doc links
 streamlog/	79	9 months	engels	added some simple tests to check hello world example with different

- ❖ It is not urgent but packages are already in 'working' state, they should be put already into the repository
 - ❖ Good indication of progress
 - ❖ Ensuring generality and independence

Adding Content to the Web

<https://aidasoft.web.cern.ch>

- ❖ So far very few pages has been added into the WP2 web
 - ❖ Some exceptions: Alignment links and references, Geometry packages
- ❖ Based on Drupal 7 and hosted by CERN-IT service
- ❖ Everybody (with a CERN account) can create and edit content using a normal Web browser.
- ❖ Current permissions
 - ❖ Anonymous users can read published content (pages, articles, forum topic)
 - ❖ Registered users can create new content and edit pages but deletion allowed
 - ❖ Administrators can do basically anything

1st Year Challenges - Reminder

- ❖ Make a coherent program of work out of these apparently disconnected plans
- ❖ Ensure the adequate connections between WP2 / WP9 / WPx
- ❖ Coding standards & conventions that we wish to enforce across the collaboration
- ❖ Many technical details still to be defined
 - ❖ Standalone tools without large duplications
 - ❖ Dependency of a framework?
 - ❖ Languages supported
 - ❖ ...

WP2 Deliverables

Deliverable Number ⁶¹	Deliverable Title	Partners (lead beneficiary)	Cost ⁶²	Effort ⁶³	Dissemination level ⁶³	Delivery date ⁶⁴
D2.1	Project web infrastructure to document software packages	CERN	5.00	O	PU	3
D2.2	Central code repositories and other infrastructure required for the software development	DESY	5.00	O	PP	4
D2.3	Software design for geometry toolkit including the interfaces for the reconstruction toolkits	CERN, DESY, LLR, UniGla, STFC			PU	12
D2.4	Software design for tracking toolkit	DESY, CERN, OeAW, KFKI				12
D2.5	Software design for PFA tools	Ucam, LLR, CERN,			PU	12
D2.6	Design for handling the pile-up in sLHC	INFN, NTU, KFKI			PU	17
D2.7	Software toolkit for detector geometry, materials and detection technologies	CERN, DESY, LLR, UniGla, STFC			PU	38
D2.8	Software toolkit with tracking algorithms	DESY, CERN, OeAW, KFKI				38
D2.9	Particle Flow software tools	Ucam, LLR, CERN,			PU	38
D2.10	Alignment tools software tools	UniGla	30.00	O	PU	38
D2.11	Trigger simulation software tool	STFC	20.00	O	PU	38
		Total	350.00			

done

done

ongoing

ongoing

done

next

WP2 Milestones

Milestone number ⁵⁹	Milestone name	Partners (lead beneficiary)		Comments
MS10	Running first prototype of the particle flow algorithm.	Ucam,LLR,CERN	10	Application to LC detector (Task 2.3)
MS11	Running prototype of tracking toolkit including some algorithms	DESY	18	Application to ILD-TPC simulation (Task 2.2)
MS12	Running prototype of the geometry toolkit	CERN, DESY, LLR	26	Application to ILD detector simulation (Task 2.2)
MS13	Running prototype of the tracking code for the pile-up	INFN, NTU, KFKI	26	Application to sLHC simulation (Task 2.3)
MS14	Integration of tracking toolkit into LC software framework	DESY, CERN, OeAW	44	Validation of physics performance (Task 2.3)
MS15	Application of PFA tools to sLHC detectors	Ucam, LLR	44	Demonstration of concept (Task 2.3)
MS16	Application of alignment tools to sLHC	UniGla	44	Validation of performance (Task 2.3)
MS17	Integration of pile-up tracking code in sLHC software frameworks	INFN, NTU, KFKI		Validation of tracking efficiency (Task 2.3)

done

next

Today's Agenda

11:00	Introduction <i>Sem 3, DESY</i>	<i>MATO VILA, Pere et al.</i> 11:00 - 11:20
	Status of Geometry - USolids <i>Sem 3, DESY</i>	<i>GAYER, Marek</i> 11:20 - 11:40
	Status of Geometry: DD4Hep <i>Sem 3, DESY</i>	<i>MATO VILA, Pere</i> 11:40 - 12:00
12:00	Status of Tracking Task <i>Sem 3, DESY</i>	<i>APLIN, Steven</i> 12:00 - 12:20
	Status of Alignment Task <i>Sem 3, DESY</i>	<i>PARKES, Chris</i> 12:20 - 12:40
	Timing of hadronic showers in geant4 <i>Sem 3, DESY</i>	<i>RAMILLI, Marco</i> 12:40 - 13:00
13:00	Lunch <i>DESY</i>	13:00 - 14:00
14:00	WP2 Common Software	
15:00		