WP12: Software for Future Detectors

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WP12 Session at the 2nd Annual meeting, 2023-04-24

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101004761.

Welcome

- Welcome to the AIDAinnova Second Annual Meeting, Software for Future Detectors session
- We are really happy that we can be here in person in Valencia
  - This is the first in person annual meeting that we have managed to have
- We look forward to a great meeting and a productive time together with colleagues during our hackathon sessions

Project Progress

- In the last year we have contributed to the 1st Annual Report
- The project also successfully passed it's first EU external review
- All milestone documents were submitted on time and had positive feedback from the management review

Milestone	Title	Due Date	Task
MS47	LC reconstruction prototype in Key4hep	December 2022	Turnkey 12.2
MS48	Prototype of ML based shower simulation	January 2023	Simulation 12.3
MS49	Acts tracking algorithm prototypes	February 2023	Tracking 12.4
MS50	New PFA prototypes	February 2023	PFA 12.5

Thank you!

Next Steps

- We are now half way through the project
- Successful milestone reports indicate that we are on track with respect of our goals
- ~~Second annual report will be due soon~~
  - ~~Expect the same format as last time~~
  - ~~About 1 page per WP~~
- Update – no 2nd year report is foreseen

Next Steps

- Although they seem far away, the deliverables should be kept in mind as our strategic final objectives

Deliverable	Title	Objective	Due
D12.1	Turnkey software stack (Key4hep)	Fully functional turnkey software stack (Key4hep) with simulation, track reconstruction and particle flow algorithms running for the linear colliders and the FCC, using the common event data model (EDM4hep), with documentation and examples	M46 Jan 2025
D12.2	Fast shower simulation in Geant4	Fast shower simulation based on parameterisations and based on machine learning techniques fully integrated in Geant4, released with documentation and examples	M45 Dec 2024
D12.3	Acts tracking algorithms	Track reconstruction algorithms incorporated into Acts, and fully documented, that manage the full tracking chain on CPU and non-CPU devices, with optional machine learning based algorithms available, also supporting MPGD detectors	M43 Oct 2024
D12.4	PFA reconstruction algorithms	Improved and documented particle flow algorithms, including machine learning based algorithms, available in the PandoraPFA toolkit, suitable for detectors using new readout technology	M45 Dec 2024

Publication and Conferences

- CHEP is happening just a few weeks after this meeting
- Therefore a timely reminder about an acknowledgement of AIDAinnova funding:

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Today's Meeting

	Introduction	*Frank-Dieter Gaede et al.*	
	https://cern.zoom.us/j/61522320218?pwd=ZGpWT3F6YXk0ZmRYT1dFTSswRkpmQT09, Aula 2.3	14:30 - 14:40	
	Task 12.2 Turnkey Software	*Thomas Madlener*	
15:00	*https://cern.zoom.us/j/61522320218?pwd=ZGpWT3F6YXk0ZmRYT1dFTSswRkpmQT09, Aula 2.3*	14:40 - 15:10	
	Task 12.3 Simulation	*Anna Zaborowska*	
	https://cern.zoom.us/j/61522320218?pwd=ZGpWT3F6YXk0ZmRYT1dFTSswRkpmQT09, Aula 2.3	15:10 - 15:40	
	Coffee Break		
16:00	*https://cern.zoom.us/j/61522320218?pwd=ZGpWT3F6YXk0ZmRYT1dFTSswRkpmQT09, Aula 2.3*	15:40 - 16:10	
	Task 12.4 Tracking	*Hadrien GRASLAND*	
	https://cern.zoom.us/j/61522320218?pwd=ZGpWT3F6YXk0ZmRYT1dFTSswRkpmQT09, Aula 2.3	16:10 - 16:40	
	Task 12.5 Particle Flow	*John James Back*	
17:00	*https://cern.zoom.us/j/61522320218?pwd=ZGpWT3F6YXk0ZmRYT1dFTSswRkpmQT09, Aula 2.3*	16:40 - 17:10	
	Discussion and Wrap-up		
	https://cern.zoom.us/j/61522320218?pwd=ZGpWT3F6YXk0ZmRYT1dFTSswRkpmQT09, Aula 2.3	17:10 - 17:30	

- We have a live notes document
- Plenary summary will be *Wednesday at 19h15*

Hackathon Days

- We have official hackathon time all day tomorrow and Wednesday morning
  - We believe we have Aula 1.5 and Aula 2.5
- Given the attendance and interests, mainly we anticipate working on Turnkey and Simulation topics
- Anticipate a quick discussion tomorrow morning to decide on how to focus our attention