Software Upgrades of Beam and Irradiation Test Infrastructures in AIDA-2020

Blerina Gkotse$^{1,2}$, Georgi Gorine$^1$, Pierre Jouvelot$^2$, Isidre Mateu$^2$, Giuseppe Pezzullo$^1$, Federico Ravotti$^1$

$^1$ CERN, Geneva, Switzerland
$^2$ MINES ParisTech, PSL University, Paris, France

Blerina.Gkotse@cern.ch

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Advanced European Infrastructures for Detectors at Accelerators (AIDA-2020) is an EU-funded project that unites important European research infrastructures in the field of detector development and testing.
What is AIDA-2020?

• 24 countries and CERN (the European Organization for Particle Physics);
• Coordinated program, in line with the priorities of the European Strategy for Particle Physics (URL: https://europeanstrategy.cern/european-strategy-for-particle-physics):
  • Networking Activities (NAs);
  • Transnational Access (TAs);
  • Joint Research Activities (JRAs).
• 15 different Work Packages (WPs);
• On track newsletter:

URL: http://aida2020.web.cern.ch/content/newsletter
AIDA-2020 Activities

AIDA-2020 is divided into 15 Work Packages. A Work Package (WP) is a unit of work within the project. The WPs are theoretically independent, but they were defined in order to foster synergies in AIDA-2020:

- **Management and Coordination**
  - WP1 (MGT): Project management and coordination

- **Networking Activities**
  - WP2 (NA1): Innovation and Outreach
  - WP3 (NA2): Advanced Software
  - WP4 (NA3): Micro-electronics and interconnections
  - WP5 (NA4): Data acquisition system for beam tests
  - WP6 (NA5): Novel high voltage and resistive CMOS sensors
  - WP7 (NA6): Advanced hybrid pixel detectors
  - WP8 (NA7): Large scale cryogenic liquid detectors
  - WP9 (NA8): New support structures and micro-channel cooling

- **Transnational Access**
  - WP10 (TA1): Beam test facilities
  - WP11 (TA2): Irradiation test facilities
  - WP12 (TA3): Detector characterisation facilities

- **Joint Research Activities**
  - WP13 (JRA1): Innovative gas detectors
  - WP14 (JRA2): Infrastructure for advanced calorimeters
  - WP15 (JRA3): Upgrade of beam and irradiation test infrastructure
WP15 Activities

• **Beam and irradiation test facilities**: Infrastructures for the qualification of particle detectors, material, and components prior to their installation in High-Energy Physics (HEP) experiments such as those performed at CERN.

• WP15 is involved in the improvement of the beam and irradiation test facilities infrastructures.
- **Database of irradiation and test beam facilities**: Online web application containing information about irradiation and test beam facilities;

- **URL**: [http://cern.ch/irradiation-facilities](http://cern.ch/irradiation-facilities);

- 211 entries;

- **Data**:
  - Facility coordinator
  - Institute
  - Facility information
  - Safety
  - Accessibility
  - Additional comments

- **Test beam facilities database under development**
• Proton beam of **24 GeV/c**

• Testing inner detector components of the HEP experiments
81 experiments completed in 2018:

- 92 users
- 792 objects tested in 2018
IRRAD Data Manager (IDM): A data management web application used in the Proton Irradiation Facility at CERN (IRRAD):

- Experiments, samples, users and dosimeters registration
- Real-time follow-up of irradiation experiments
- Computation of proton interaction parameters
- Display and archive of dosimetry result
- User Interface preferences customization
- History and details of past experiments (with user permission)

URL: https://cern.ch/irrad-data-manager
Irradiation Experiments Data Management ontology (IEDM)*: IEDM includes concepts of data management of irradiation experiments extending classes from the Ontology of Scientific Experiments (EXPO), the Units of Measure ontology (OM) and the Friend-of-a-Friend ontology (FOAF).

*B. Gkotse, P. Jouvelot and F. Ravotti, “IEDM: An Ontology for Irradiation Experiments Data Management”. Accepted at the ESWC2019 Posters and Demos session
AIDA-2020 URL: http://cern.ch/aida2020

AIDA-2020 contact form: http://aida2020.web.cern.ch/contact

AIDA-2020 WP15 coordinators: Federico.Ravotti@cern.ch, Marcel.Stanitzki@desy.de