

Second Annual Meeting: Status Report

Felix Sefkow



LPNHE, Université P. et M. Curie, Paris, April 6, 2017



2nd ANNUAL MEETING

4-7 April 2017

CNRS-LPNHE, Jussieu Campus, Paris

134 participants
Thank you all
for coming!

Organising committee:

Giovanni Calderini (CNRS)
Laurence Marquet (CNRS)
Felix Sefkow (DESY)
Paolo Giacomelli (INFN)
Daniela Bortoletto (UOXF)
Svet Stavrev (CERN)
Livia Lapadatescu (CERN)
Sabrina El Yacoubi (CERN)

And thank you to
our host LPNHE!

Outline

- Overview
- Scientific Highlights
- Milestones, Deliverables, Publications
- Resources



ACADEMIA MEETS INDUSTRY

Medical imaging and image processing

3-4 April 2017

CNRS-LPNHE, Jussieu Campus, Paris

The AIDA-2020 project brings together the leading European research infrastructures in the field of detector development and testing and a number of institutes, universities and technological centers, thus assembling the necessary expertise for the ambitious programme of work.

The first Academia meets Industry hosted by **CNRS-LPNHE** at Université Pierre et Marie Curie in Paris will focus on **Medical Imaging and Image Processing**. This event aims at fostering synergies between detector R&D programmes of AIDA-2020 members and the industry, by creating awareness of strategic R&D topics in academia and of strategic industry needs for which industry-academia collaborations could be envisaged.

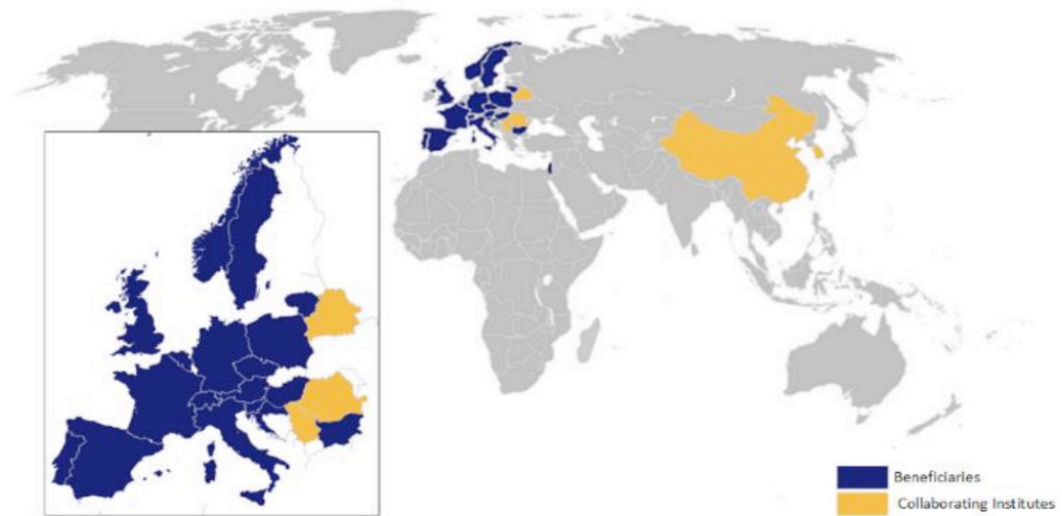
Organising committee:

Etiennette Auffray-Hillemanns (CERN)
David Brasse (CNRS)
Aurelie Pezous (CERN)
Giovanni Porcellana (CERN)

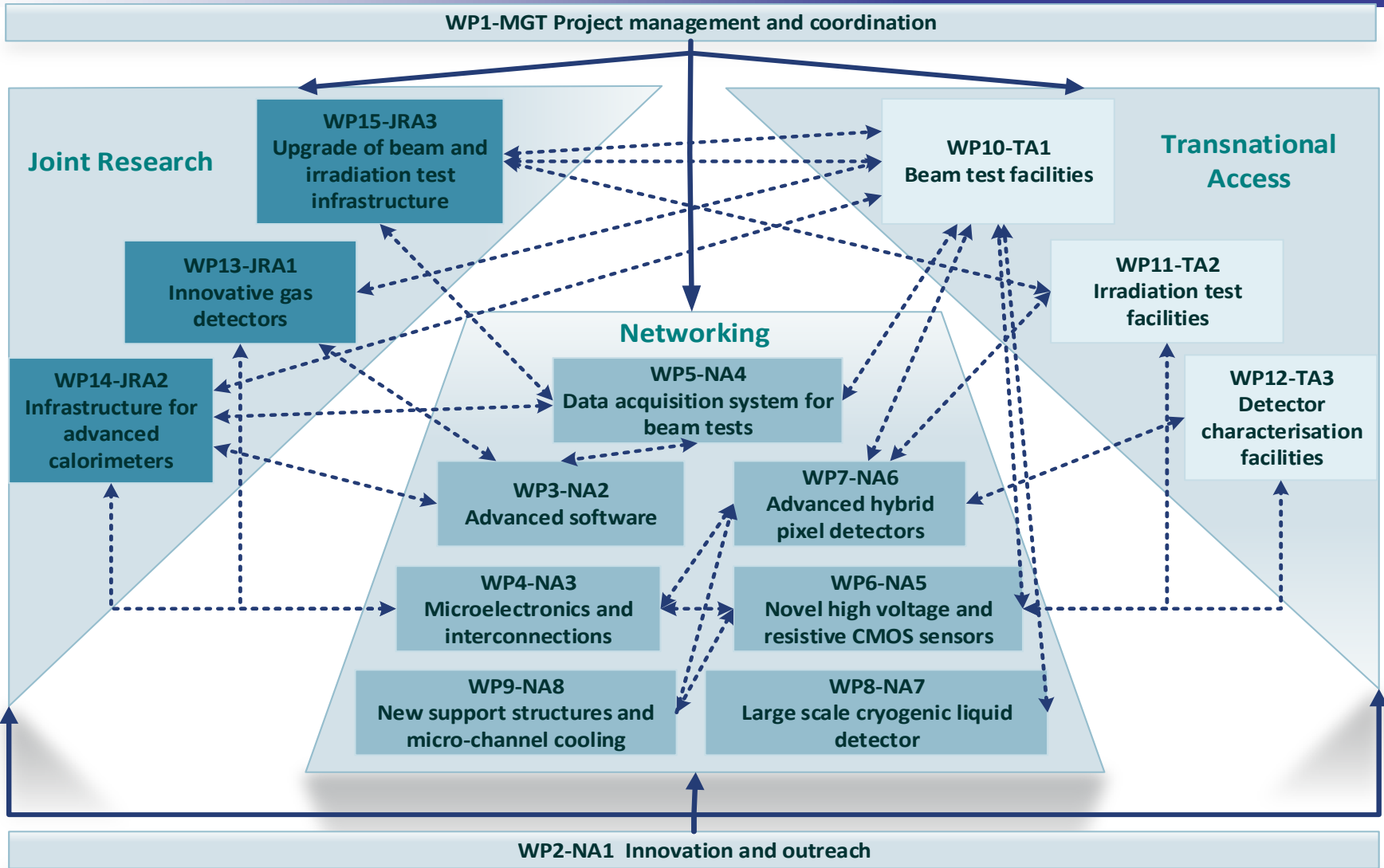
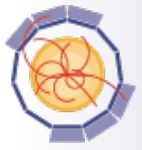
Satellite event

- 60 participants
- 5 exhibitors
- Very interesting presentations
- **Thanks to the organisers:**
 - Etiennette Auffray
 - David Brasse
 - **Aurelie Pezous**
 - Giovanni Porcellana
- Next Academia Industry event 2018
- 2019: Scientific workshop

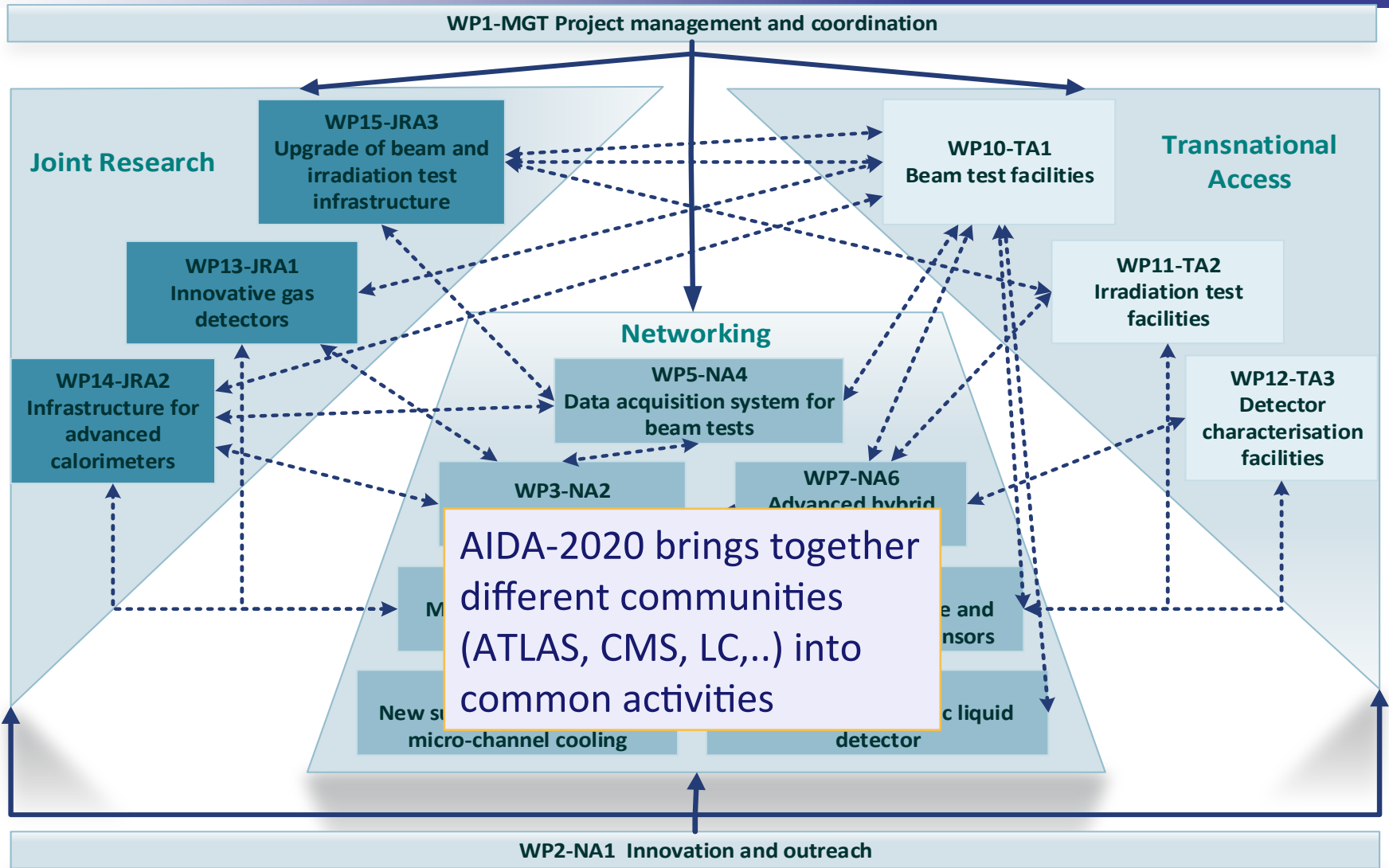
- Integrated infrastructure initiative in EU FP8 “Horizon 2020”
- “infrastructure” = common interest
- Duration: 1.5.2015 – 30.4.2019
- EC contribution 10 M€
- Total budget 29.7 M€
- 19 countries
- 38 beneficiaries
- Coordinating institute: CERN



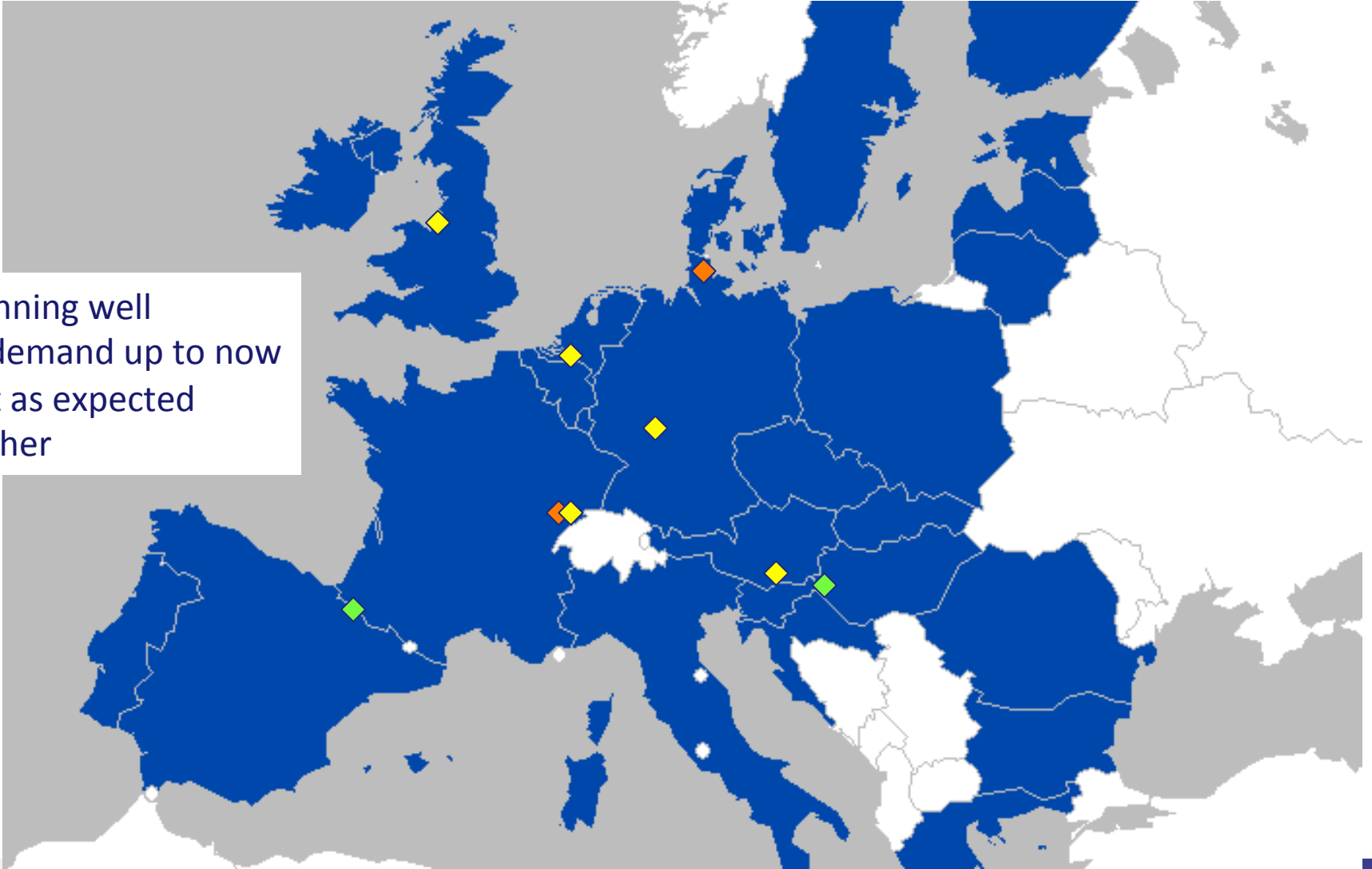
<https://aida2020.web.cern.ch>



Work packages



All running well
user demand up to now
about as expected
or higher



- Enhanced w.r.t. AIDA. 13.4% of total budget
- Travel support (and/or fees) for access to
 - WP 10 test beams at DESY and CERN (no fees)
 - WP 11: various irradiation facilities
 - WP 12: characterisation facilities
- Group leader and majority from foreign country
 - Also open for non-AIDA institutes
 - New: also non-Europeans (<20%)
 - Check web site for exact condition
- New infrastructures:
 - GIF++ @ CERN
 - Birmingham cyclotron
 - RBI (Ruđer Bošković Institute, Zagreb: ion beams)
 - ITAINNOVA, Zaragoza: EM compatibility

User Selection Panel

K.Einsweiler, LBL

D.Lazic, Boston

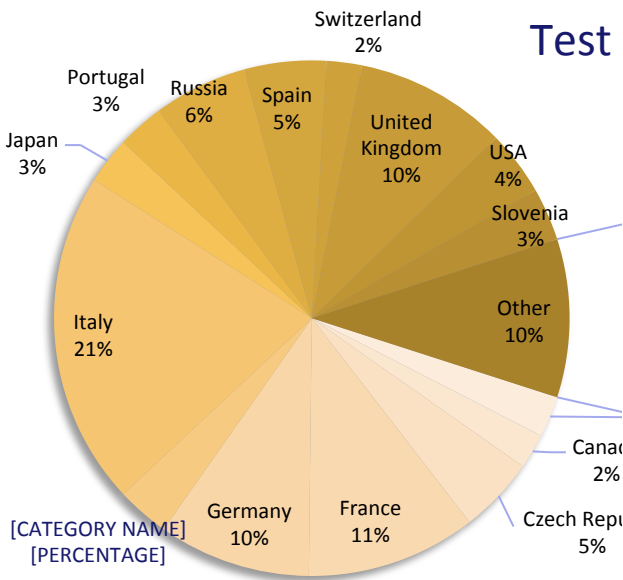
E.Garutti, Hamburg

H.Wilkens, CERN

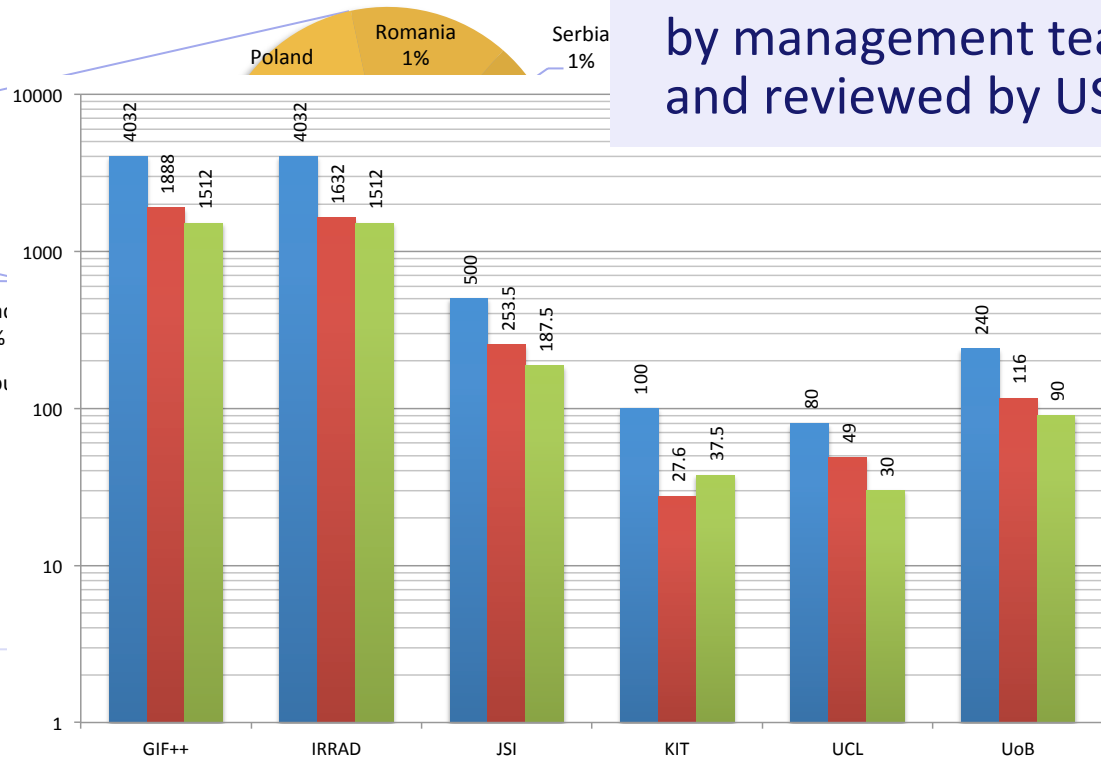
M.Mikuz, JSI

F.Arteche. ITINNOVA

Distribution of users by home institute country in WP10



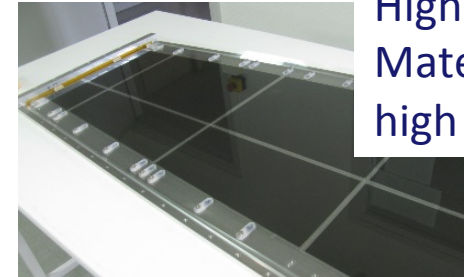
Test beam at CERN and DESY In P1



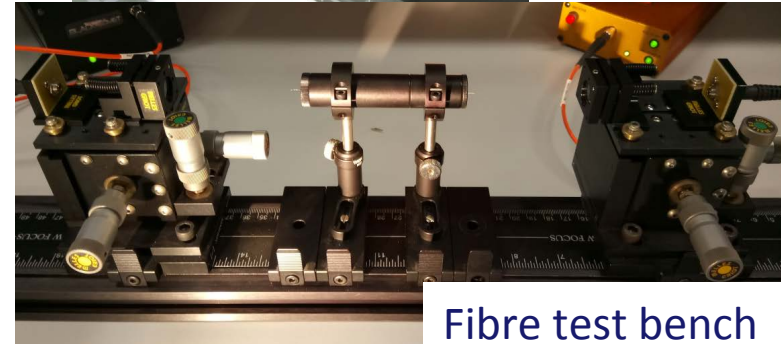
- Allocation of resources to countries and communities monitored by management team and reviewed by USP

Access units delivered by irradiation facilities in P1

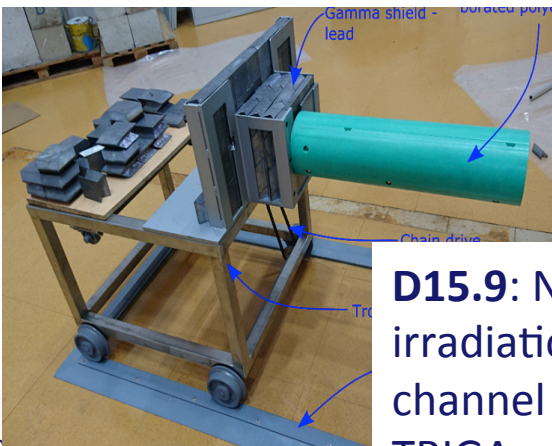
- WP 13: Gas detectors (CNRS, INFN)
 - RPCs, Micro-pattern gas detectors (GEMs, μ Ms) for muon systems, TPCs and calorimeters
 - Preparation for large area production
- WP 14: Calorimeters (CNRS, MPP)
 - Silicon and scintillator for LC and LHC
 - Close interaction CALICE CMS
 - Read-out and mechanics: DAQ, cooling,..
- WP 15: Test beam & Irrad upgrades (DESY, INFN)
 - Telescope support & a new one for CERN PS
 - Si reference tracker for TPC magnet
 - Irrad facility data base
 - Upgrades of LNF TB and irradi. facilities



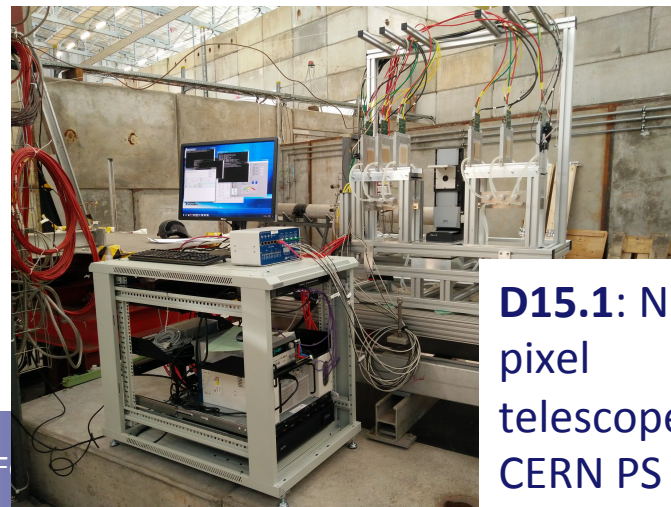
High-resistivity
Materials for
high rate RPCs



Fibre test bench
for irradiation



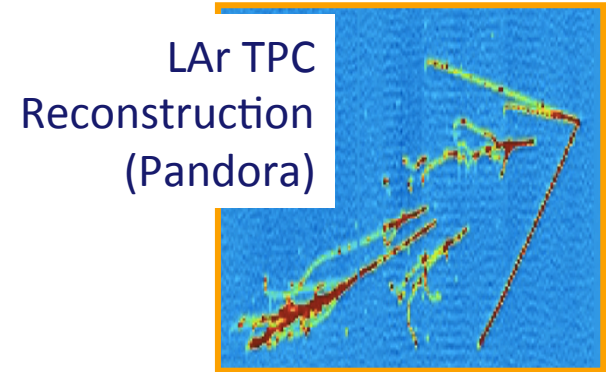
D15.9: New
irradiation
channel at JSI
TRIGA reactor



D15.1: New Si
pixel
telescope for
CERN PS

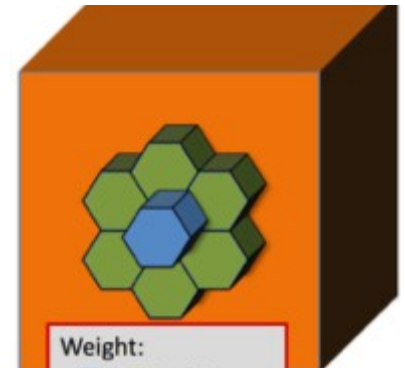
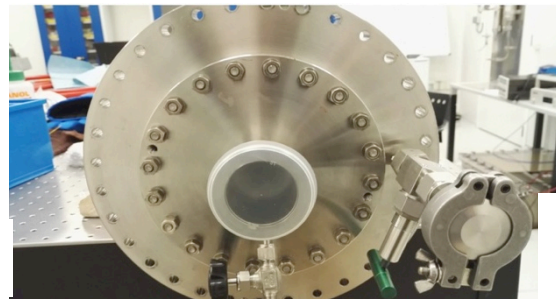
Network activities (1)

- WP 3: Software (CERN, DESY)
 - advanced simulation and reconstruction, vectorisation
 - Strong cooperation of LHC, LC, FCC and neutrinos
- WP 4: Micro-electronics (CNRS, INFN)
 - Chips and TSVs for detectors of other WPs
 - 65 nm for tracking, e.g. CLICpix
 - 130 nm for energy and time, SiPM and fast RPC r/o
- WP 5: Common DAQ for LC test beam (Bristol, UCL)
 - **D5.1**: Standards defined for synchronisation, DAQ software, run control, monitoring
 - Common beam tests LC and LHC (!) prototypes
- WP 8: Cryogenic detectors for neutrino exp's (CNRS)
 - Purity, readout, HV, magnetisation
 - Embedded in CERN neutrino platform



65nm pixel chip architecture

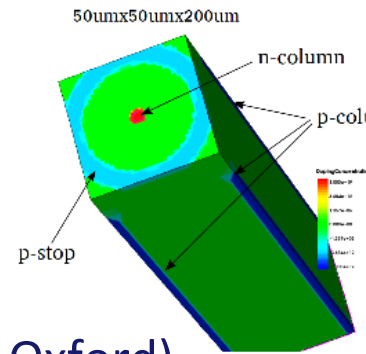
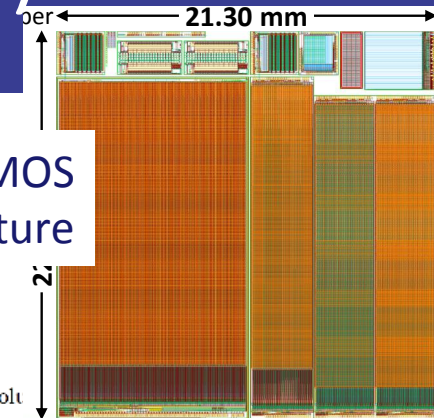
HV feed-through



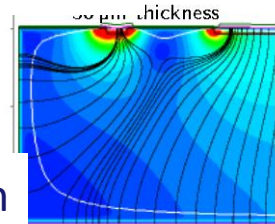
CMS HGCAL CALICE combined beam test

- WP 6: HV CMOS sensors (KIT, Liverpool)
 - TCAD process simulation, sensor design and test
 - Hybridisation, e.g. capacitively coupled (CLICpix)
- WP 7: Hybrid pixel detectors (MPP, CSIC)
 - **D7.1:** 3D pixel cell simulations
 - **D7.2:** Active edge sensor simulation
 - **D7.3:** LGAD simulation, optimisation
 - Links to WP4 (chip), WP6 (tools), WP9 (cooling)
- WP 9: Mechanics and μ -channel cooling (CERN, Oxford)
 - **D9.5** Mechanical facility requirements
 - Cooling prototypes, connectors, simulations, tests

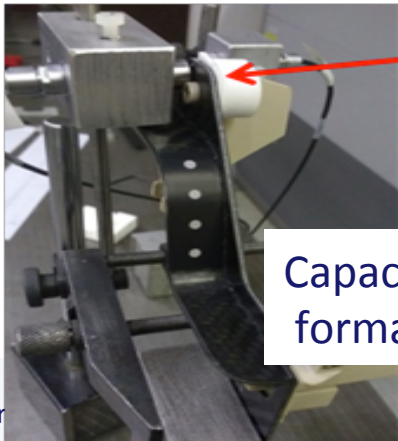
180 nm HV CMOS Test structure



3D pixel cell simulation

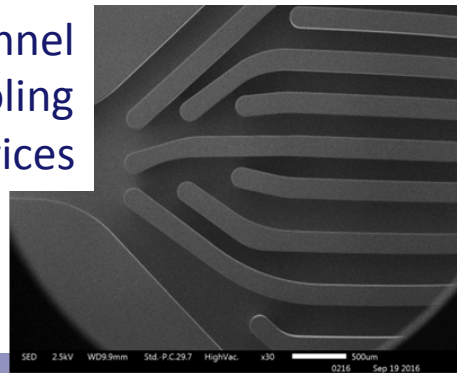


Electric field in active edge sensor

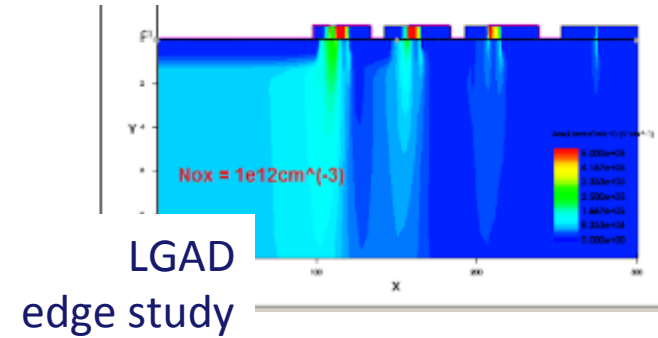


Capacitive formation sensor

μ -channel cooling devices

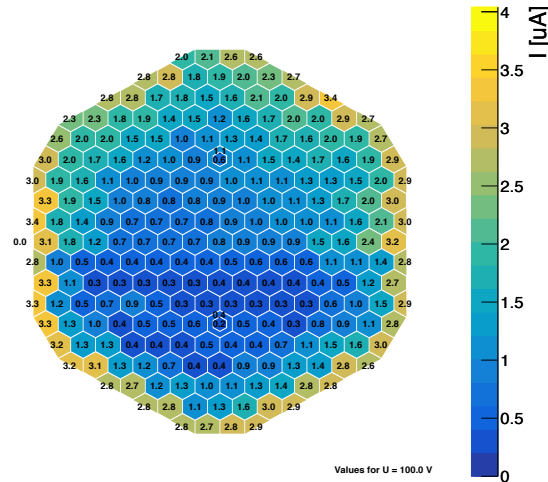
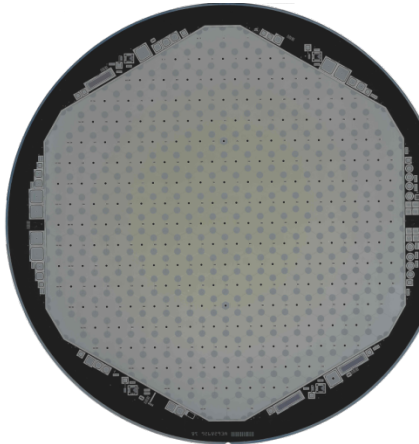


Felix Sefkow



LGAD edge study

- **D2.1:** report on key technology areas
- Industrialisation of large area silicon production



8" wafer from *Infineon* for high granularity calo

- “Academia meets industry” events
- Proof of Concept fund for spin-offs

Call for Proposals for AIDA-2020 Proof of Concept funding

AIDA-2020 is launching a call for proposals to support collaborative industry-oriented projects, originating within the general field of detector development and testing.

Projects will be selected on a competitive basis to implement actions financed by the Proof-of-Concept fund.

Who can apply?
AIDA-2020 beneficiaries with partners from collaborating institutes and / or industry

What kind of topics?
Innovative detector technologies with potential for societal and industrial applications

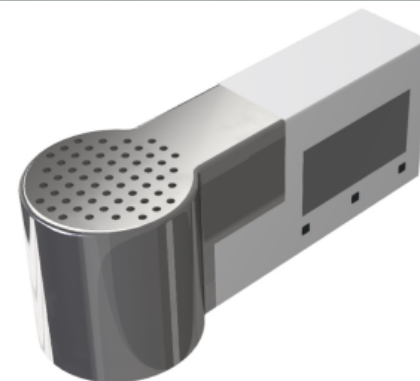
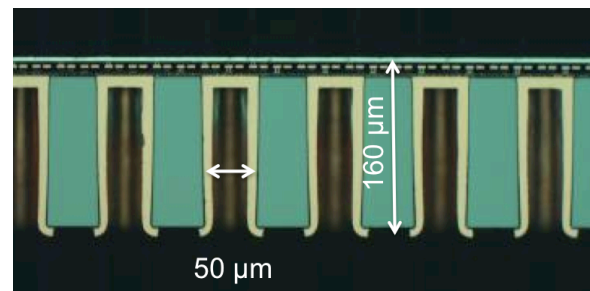
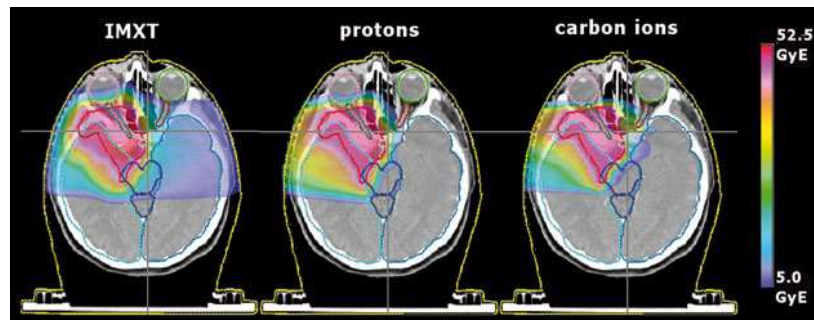
How to apply?
<http://aida2020.web.cern.ch/content/poc>

Closing date:
October 20, 2016, 17h00 (CET)

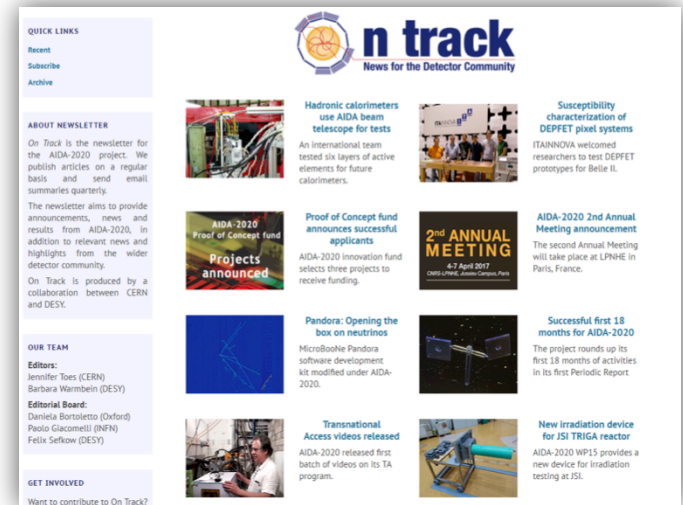
Contact:
AIDA-2020-PoC@cern.ch



- Demonstrate societal impact beyond HEP
- Call launched after 1st Annual meeting
 - Total budget 200 kCHF
- **D2.2:** selected 3 out of 11 eligible projects
 - Readiness level and impact
- The winners:
- Silicon-based Microdosimetry System for Advanced Radiation Therapies
 - Centro Nacional de Microelectrónica , Barcelona
- Advanced Through Silicon Vias for Pixel Detectors
 - University of Bonn, with IZM, Berlin
- RaDoM (Radon Dose Monitor)
 - CERN, with Politecnico di Milano and Mi.am (SME)



- Very useful and transparent web site
 - > 0.5 million hits
- On Track: a newsletter to the detector community
 - 4 issues published, more frequent now
 - ~500 subscribers
 - Contact Jennifer and Barbara to have your story told
- Publicising facilities for TA: video clips
 - 9 / 10 done, 1 in final post-production
- Posters
- To come: (your) educational resources



- External body, advice in technical and strategic matters related to the AIDA-2020 scientific programme
- Questions to WP coordinators
- Plenary presentation
- Statement for mid-term review
- Members:
 - **Marcel Demarteau, Argonne**
 - **Ariella Cattai, CERN**
 - **Peter Mättig, Wuppertal**
 - **Graeme Stewart, Glasgow,**
 - **Jim Strait, Fermilab**
 - **Isabelle Wingerter-Seez, CNRS**



- Project officer at Brussels changed several times:
 - M. Menna, B. Fabianek
 - Presently assigned: Mina Koleva (on leave)
 - Present contact: D.Karacic
- **Mid-term review:**
 - April 20 at CERN, 1 full day, 1 convenor per WP + MT
 - Reviewer: A Walenta
 - P1 report, milestones, deliverables
 - In preparation: Mid-term report, USP and SAP statements
 - **Important; please support us**
- GB Chair:
 - L.Serin's period ends this month
 - GB will elect new chair, candidate G.Calderini
- Next call for detectors in Horizon 2020:
 - Deadline spring 2018 or spring 2019



- Interim Report: M12
- **Periodic Reports: M18, M36, M48**
 - Due Mx+2, reimbursement of cost by EC only after validation
 - Delays by one affect all
- **Final Report: M48**
 - Last 15% of EC grant only after validation
- **Deliverables**
 - Contractual
 - Objects if any, + report
- **Milestones**
 - Not contractual, but being reported
 - Short report
 -
- **Publications**

Grant Agreement No: 654168

AIDA-2020

Advanced European Infrastructures for Detectors at Accelerators
Horizon 2020 Research Infrastructures project AIDA-2020

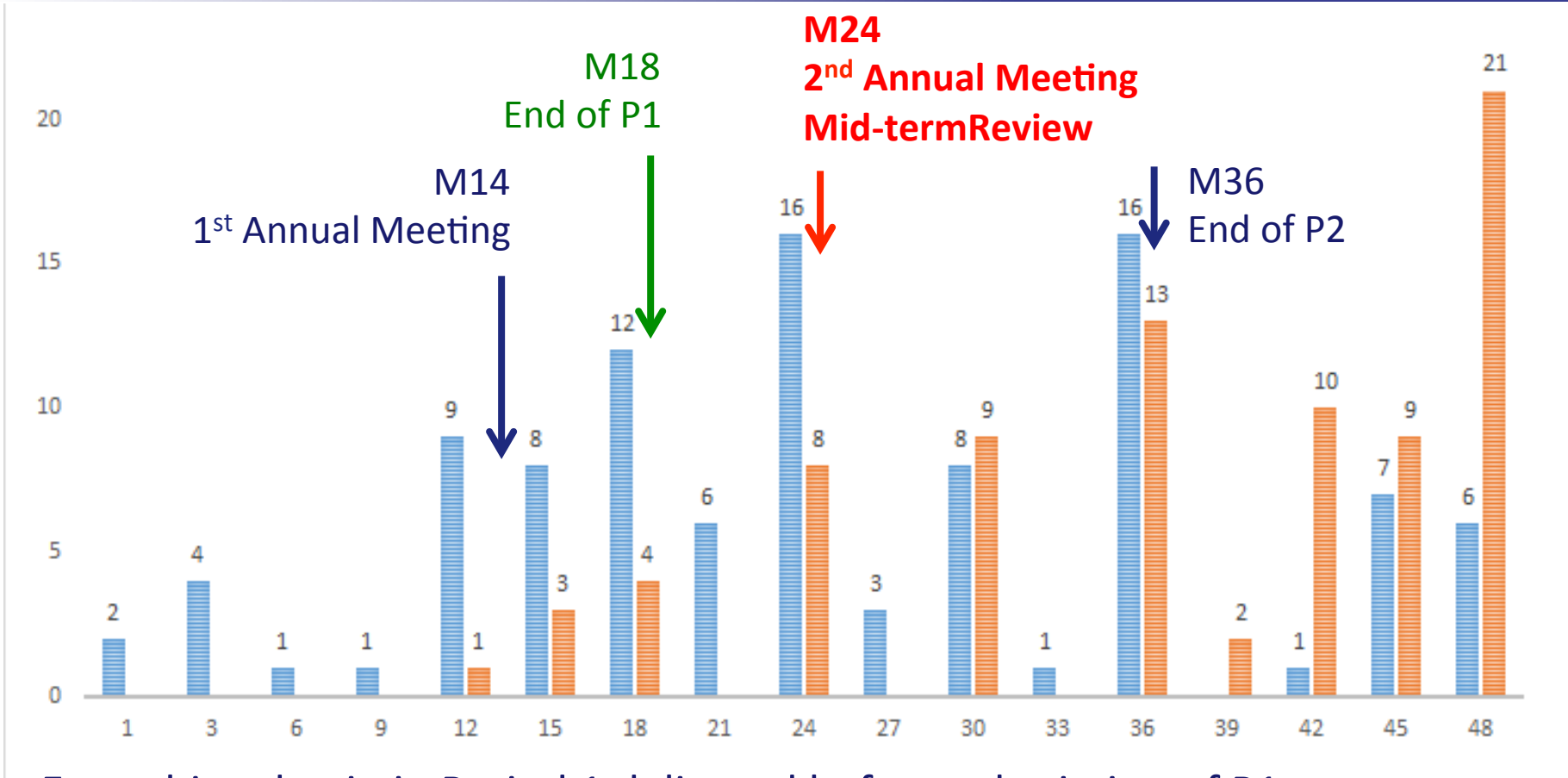
PERIODIC TECHNICAL REPORT

AIDA-2020: 1ST PERIODIC REPORT

Grant Agreement number:	654168
Project Acronym:	AIDA-2020
Project title:	Advanced European Infrastructures for Detectors at Accelerators
Start date of the project:	01/05/2015
Duration of the project:	48 months

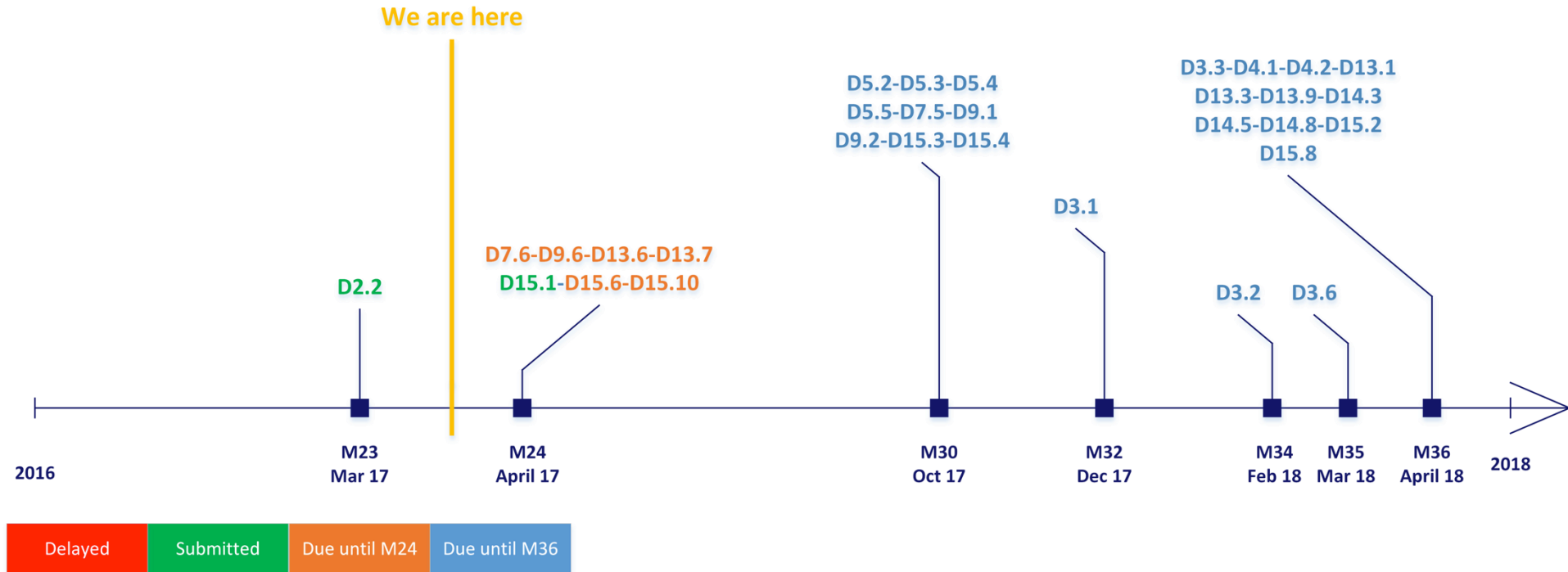
Period covered by the report:	from 1 May 2015 to 31 October 2016
Periodic report:	1 st Periodic Report (P1)
Date:	12/01/2017
Version:	Final

Period 1 report was delivered in time, and so will be the funding.



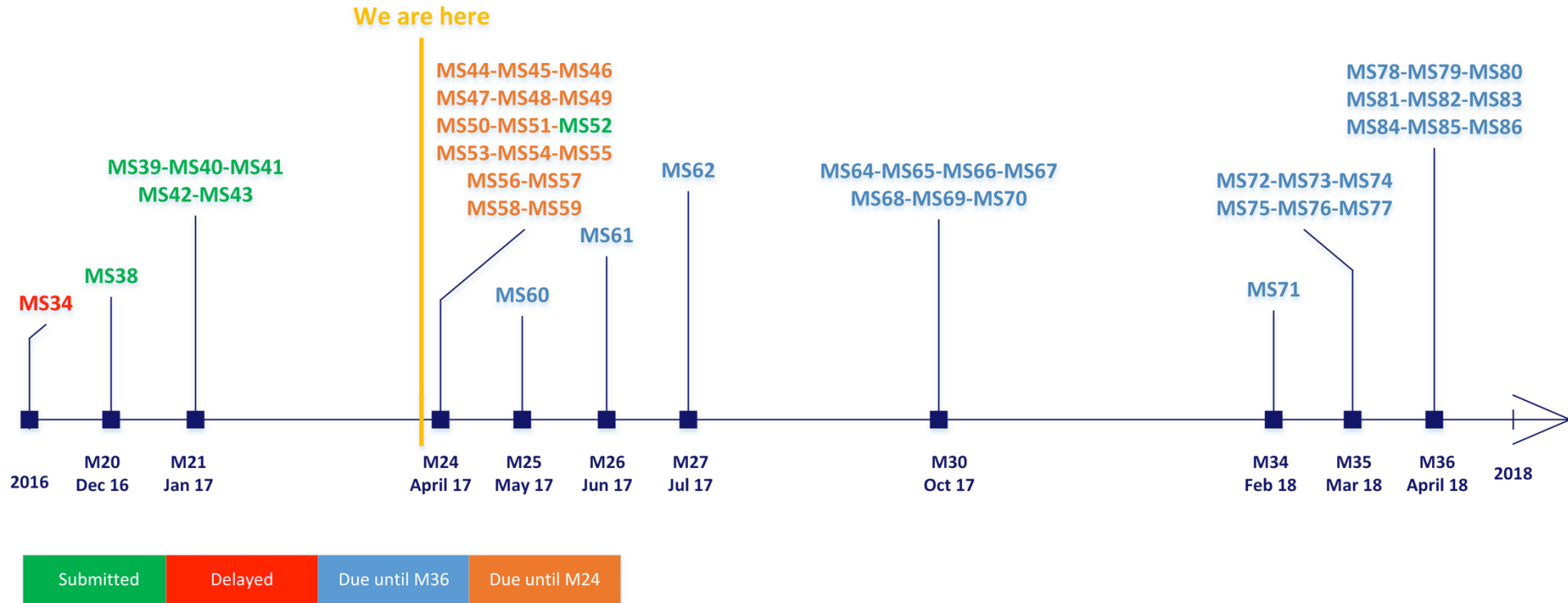
- Everything due in in Period 1 delivered before submission of P1 report
- 15 deliverables and 42 milestones to be achieved - and documented – since 1st Annual Meeting – and M24 is not yet over

Deliverables Timeline November 16- April 18



- 6 deliverables to come this month: WP 7, 9, 2x 13, 2x 15
- Next peaks in October 17 and April 18, at end of P2 / 3rd Annual Meeting

Milestones Timeline Nov 16- April 18



- MS34: Frascati beam line delayed due to re-scheduling of accelerator projects
- 16 milestones due this month, expect to meet almost all

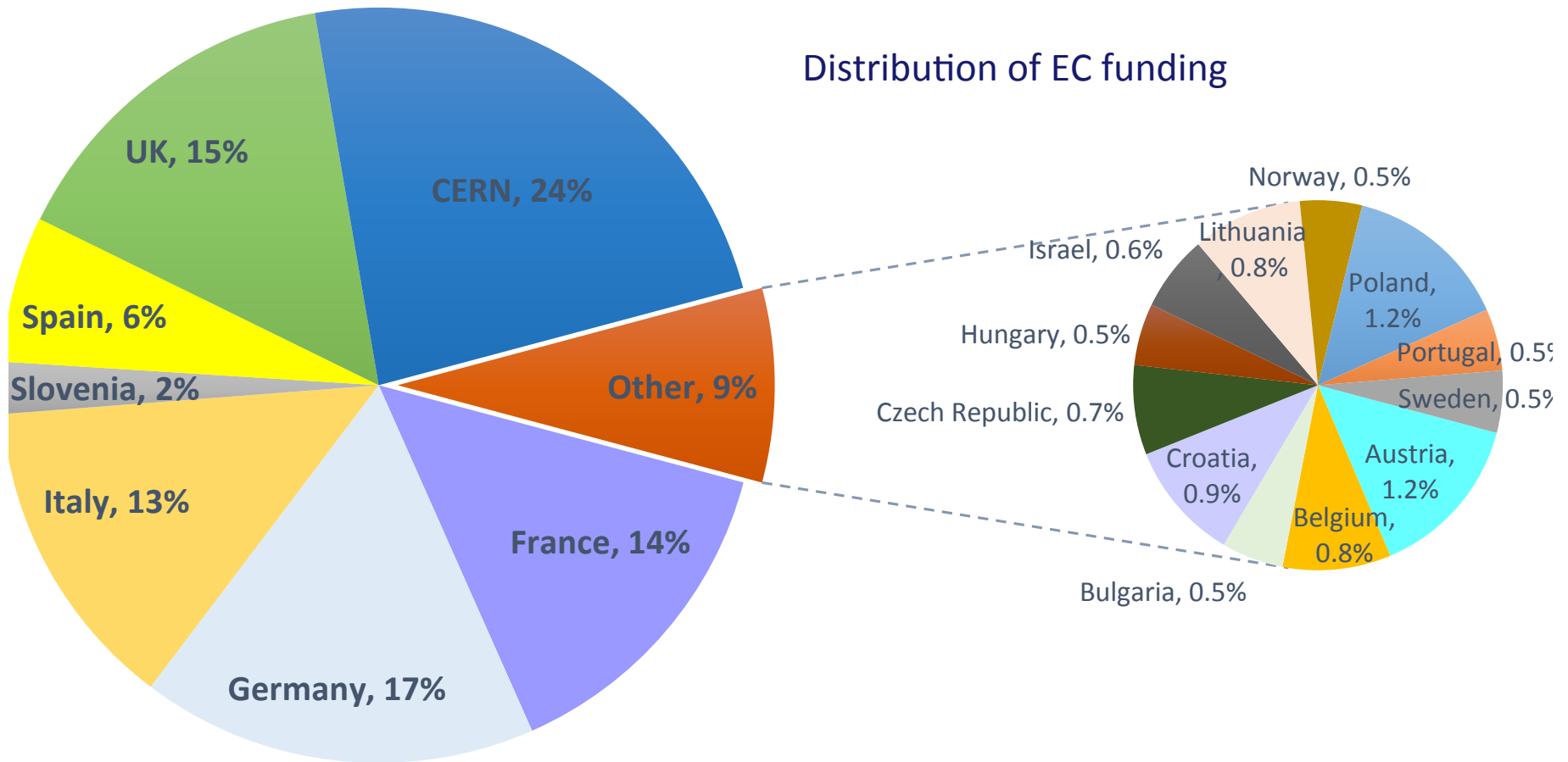
WP	No. of journal publications	No. of conference / workshop proceedings	Other publications
WP2 = 9 publications	0	0	5 press articles 4 "On track" newsletter issues
WP3 = 8 publications	0	0	5 presentations 3 scientific notes
WP5 = 3 publications	0	0	2 presentations 1 scientific note
WP6 = 2 publications	2	0	0
WP7 = 17 publications	8	5	2 presentations 2 posters
WP8 = 1 publication	1	0	0
WP9 = 6 publications	1	0	5 presentations
WP13 = 8 publications	2	2	1 presentation 3 posters
WP14 = 6 publications	3	2	1 scientific note
WP15 = 18 publications	0	3	5 presentations 5 scientific notes 5 posters
Total M24 = 78	17	12	49
% M24 vs. target (180) = 43%	Target = 60 28%	Target = 50 24%	-

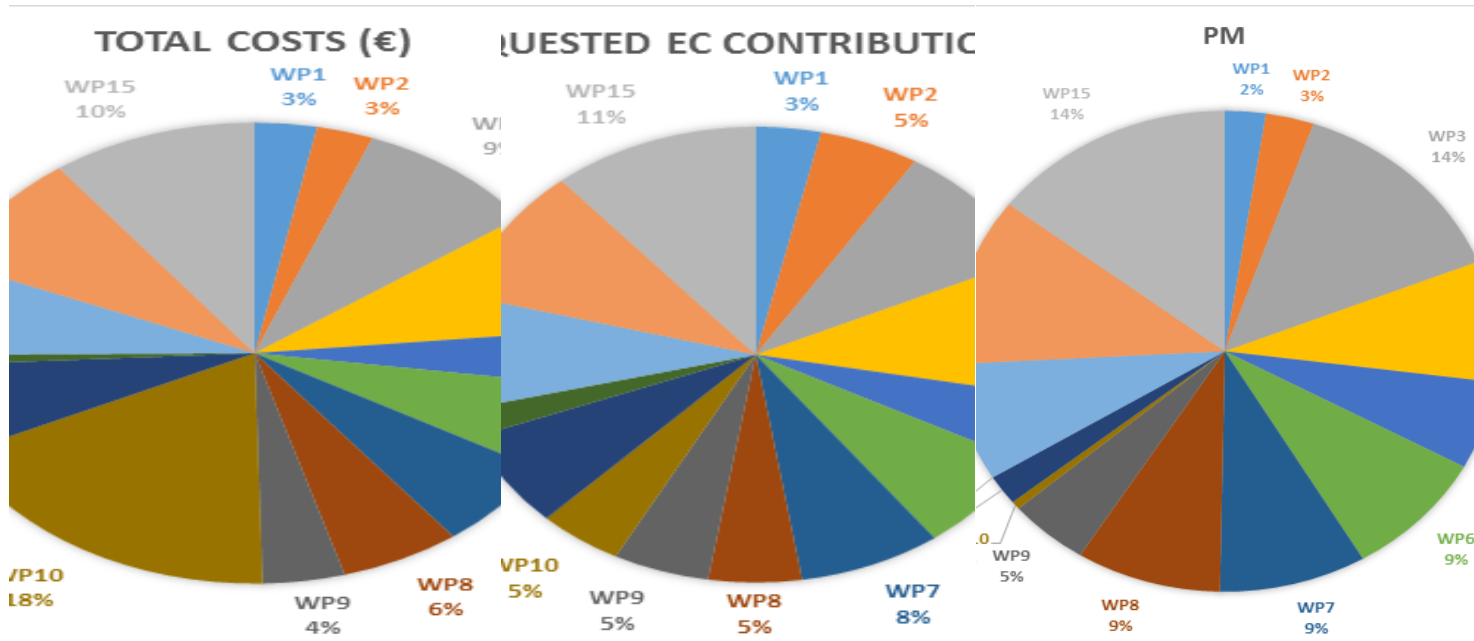
- We are **obliged** to report on dissemination of AIDA-2020 related knowledge, i.e. publications
- Only publications with proper **acknowledgement** are accepted



This project has received funding from the European Union's Horizon 2020 Research and Innovation programme under Grant Agreement no. 654168.

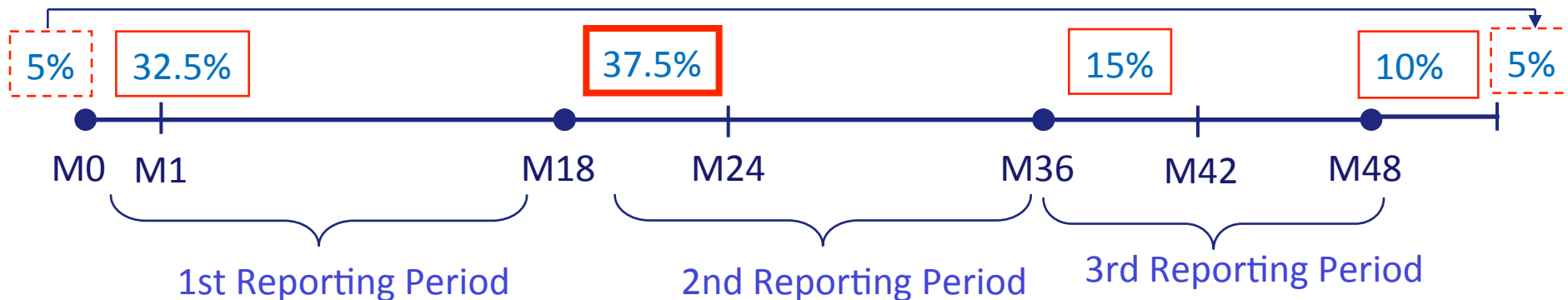
- Use it in your conference talks – and proceedings!
- Publications have to be in **Open Access**
- EU commission can ask us to recuperate funds from non-complying groups
- Users receiving **TA** support are required to acknowledge AIDA-2020 in their publications
 - This requirement is fulfilled only with poor efficiency
- Report publications to Livia and WP coordinators!

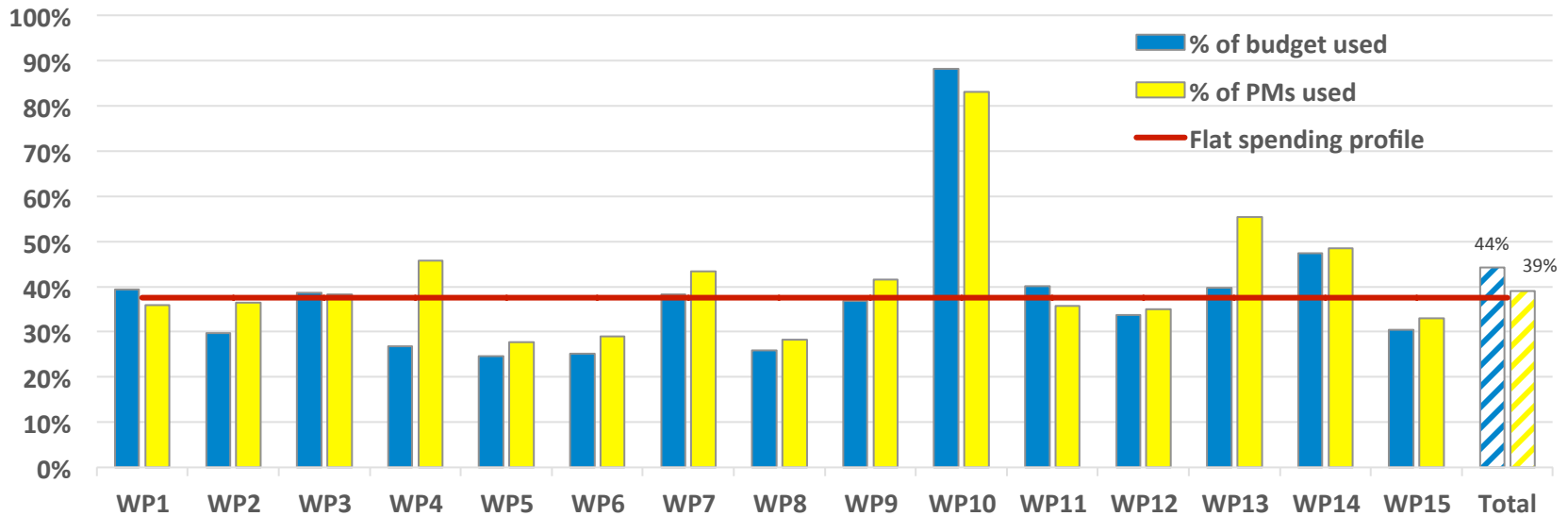




- Management 3.5%
- TA user support 14%

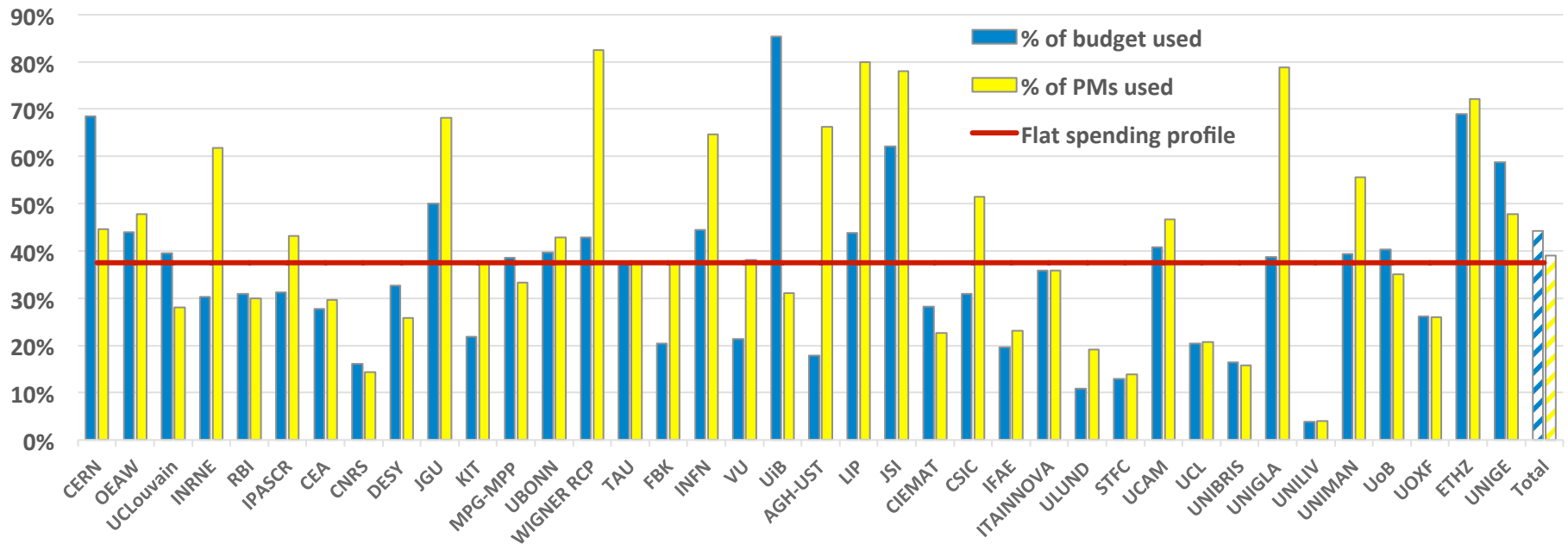
- Max. EC Grant = 10 M€
- Pre-financing = 37.5 %
 - including 5% withheld till the end, effective pre-financing received = 32.5%
- Second EC payment (imminent)
 - reimbursement of costs for the first Reporting Period
 - ~ 37.5% (18 / 48) assuming uniform spending profile
- Third EC payment (limited to 85% of the 10 M€) – at (M36+2+3) ~ 15%
- Final EC payment (10% + 5%) – after the Final Report is approved





- WP10: task 10.1 CERN test beam already completed
- Most other WPs still slightly under-spending

Use of resources per beneficiary in P1



- Full cost spending (only) on average on track
- Total sum of claims = 3.7 M€ approved by EC – however:
- Re-imburement transferred to participants will correspond to fraction of full cost spent in P1, but not exceed the claim
- Details in Svet’s presentation to the GB



5th EIROforum (ESI 2017) School on Instrumentation

19-23 June 2017 at European XFEL in Schenefeld, Germany.

ESI — A joint effort of the Instrumentation working group of the EIRO member organisations to teach basic principles of instrumentation to young researchers, scientists and engineers by covering:

- Principles of radiation detection and detector technologies
- Introduction to detector electronics and data acquisition
- Detector systems and techniques for high energy physics
- Experimental setups, lasers, optics and detectors for neutrons, free electron laser and synchrotron radiation applications
- Spaceborne and ground-based instrumentation for astronomy
- Measurement techniques for physics and control in fusion
- Highlight topic 2017: Gravitational Waves

Scientific Organising Committee: Markus Kuster (European XFEL, Chair), Mark Casali (SRF), Pablo Fajardo (SRF), Christian Joram (CFRN), Thomas Schneider (EMBL), David Lumb (ESA), Andrea Murari (EUVF, Istor), Paolo Mutti (ILL)

Local Organising Committee: Markus Kuster (European XFEL, Chair), Antonio Bonucci (European XFEL), Sandra Kniehl (European XFEL), Livia Lapadatescu (EIRO), Frédéric Le Pimpec (European XFEL)

Registration deadline: 1 May 2017
Max. No. of registrants: 70
Contact info: sandra.kniehl@xfel.eu
<http://www.eiroforum.org/esi2017>



- Organised by the *Instrumentation Working Group* of the EIROforum organizations
- ESI 2017 is organised by the European XFEL and will take place from **19-23 June 2017**. Venue of the school is DESY, Hamburg.
- Financial support from AIDA-2020 available for a limited number of students from the AIDA-2020 community. More info: <http://indico.cern.ch/event/588382/page/9011-financial-support>
- Registration deadline: **1 May 2017**
- <http://www.eiroforum.org/esi2017>

- AIDA-2020 advances the field of detectors for particle physics through catalysing the cooperation across different communities
 - LHC, e+e-, neutrino researchers within the same working group
 - Fostering the transfer of know-how and stimulating new ideas
- Unique in creating coherence across national funding mechanisms
- New instruments for cooperation with industry now in place
- AIDA-2020 is running well and is
- Outlook:
 - Mid-term review in 2 weeks
 - 2nd funding to be distributed to participants soon
 - Many milestones and deliverables due this month
 - The next call will come, possibly soon.

