




# Highlights ARIES Year 1 Annual Meeting 2018 Riga, Latvia

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# Welcome to the first ARIES Annual Meeting

**ARIES** 22-25th May 2018  
Riga Technical University,  
Riga, Latvia  
1st Annual Meeting



The ARIES (Accelerator Research and Innovation for European Science and Society) Integrating Activity is organising its first Annual Meeting in Riga, Latvia, hosted by the Riga Technical University. The project as well as the activities of the different Work Packages will be presented.

ARIES is a project for coordinated R&D on particle accelerators. 41 partners across 18 European countries work toward the goal of improving the performance, availability, and sustainability of accelerators, transferring their technology to society, and further integrating the European accelerator community.



Organising Committee:

- Valerie Brasseur (CERN)
- Anžela Džafarova (RTU)
- Toms Torims (RTU & CERN)
- Maurizio Vretenar (CERN)

<https://indico.cern.ch/event/690219/>

## Welcome to Riga

Many thanks to:

- the Riga Technical University for hosting our meeting
- Toms Torims and Anžela Džafarova for the accurate local organisation !

This meeting follows in the line opened with EuCARD2 of moving out of the technological centre of Europe towards its dynamic periphery.

**Latvia 100** 

# What is ARIES ?

## Accelerator Research and innovation for European Science and Society

- Integrating Activity for Particle Accelerator R&D, co-funded by the European Commission under the Horizon 2020 programme.
- Pillar: Excellent Science, Support to Research Infrastructures.
- Duration: 4 years, 1 May 2017 – 30 April 2021.
- EC contribution 10 M€, total cost 24.9 M€, funding rate 40%.
- 41 beneficiaries from 18 EU countries (+CERN, ESS) plus 4 partner organisations.

More than budgets  
and paperwork,  
ARIES is science  
and people!



# The four ARIES pillars



excellence

Develop **key accelerator technologies** to make more performant, affordable, reliable and sustainable the present and future accelerators



Improve the European **accelerator infrastructure**



access

New scheme of Transnational Access opening **14 accelerator test facilities**

**Enlarged consortium** with **20 new partners** in accelerator projects and **6 new countries** in the East and South of Europe



innovation

Enhanced **industrial participation** (7 industries and 1 association)  
3 new **co-innovation programmes** with industry  
Development of **societal applications** (medicine, industry, environment)

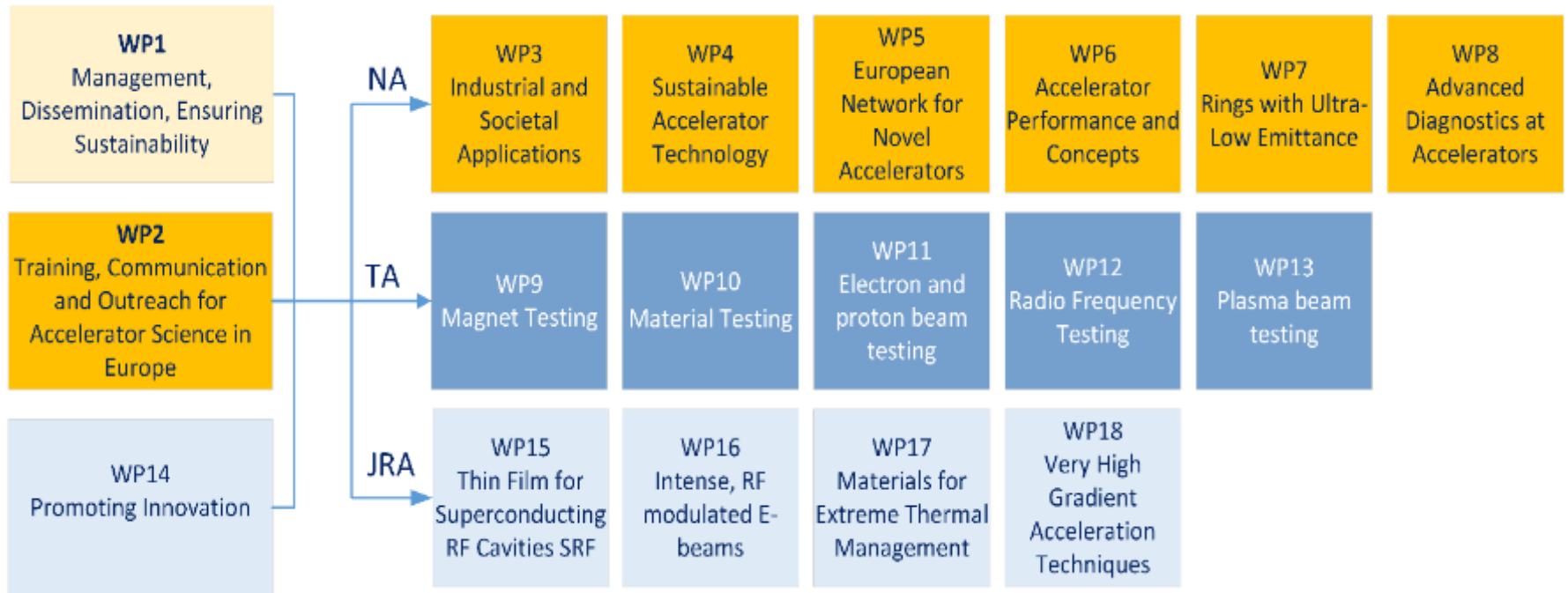


sustainability

Joint programme with TIARA to develop a **model for sustainable accelerator science** in Europe

**Training programme** for the new generations of accelerator scientists and engineers

# ARIES Structure



18 Workpackages:

8 **Networks** 5 **Transnational Access**, 5 **Joint Research Activities**.

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A few (personal) highlights from year 1

# 2018, an important year for particle physics

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- **December 2018 is the deadline** for sending written inputs (bottom-up approach) for the **Update of the European Strategy for Particle Physics** that will deliver its conclusions in May 2020: most of the proposal will concern new accelerators and the related R&D.
- Consequence: in 2018 accelerator studies are refining their proposals, and new original ideas are taking shape. **2018 is an year of creativity and vision** for particle accelerator science.
- In this context, ARIES wants to look at the far future. We do not interfere with large ongoing initiatives (ILC, CLIC, FCC, ...) but we are glad to support whenever possible new alternative ideas going in the direction of smaller footprint and lower cost, or of a better use of existing infrastructures (*see Friday morning session*).
- There are large hopes on the Strategy Update but it is unlikely that the final (political) document will send a message in favour of a construction project.
- We can expect that whatever the Strategy will be, it will ask for **more R&D**: and this is in the DNA of ARIES.

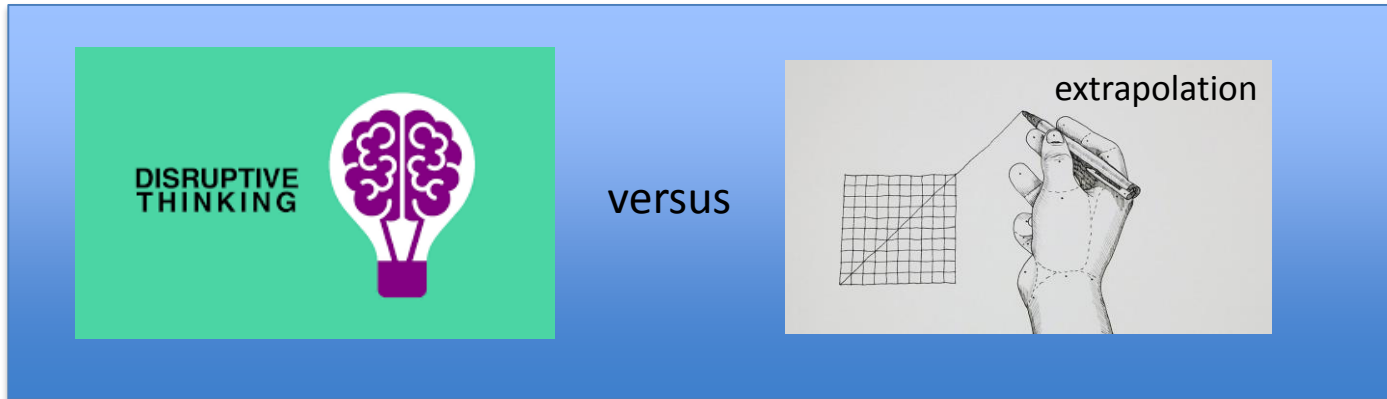
# Let's imagine a different future...

Session on Friday 25th morning:

08:30 The gamma factory, Mieczyslaw Krasny

09:00 The muon collider, Manuela Boscolo

09:30 The advanced linear collider study group, Patric Muggli

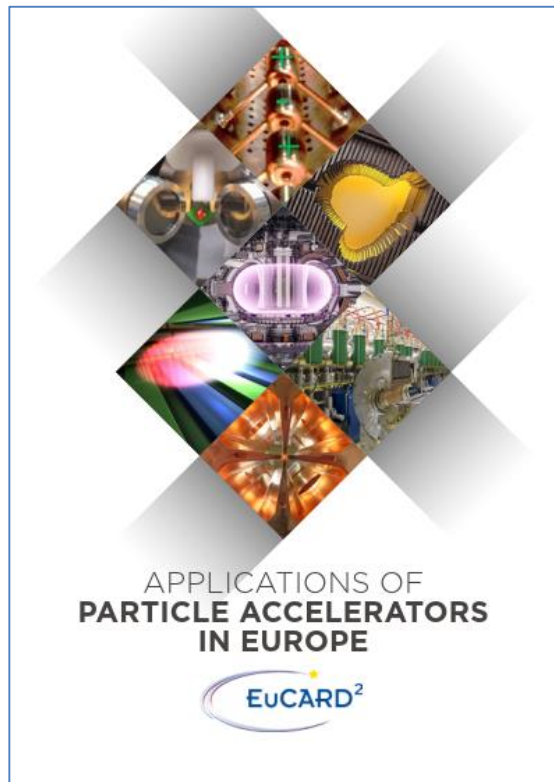


Advanced and Novel Accelerators  
for High Energy Physics Roadmap  
Workshop 2017





# Accelerator Applications



Enormous success of the **APAE Report**, a document describing current applications of accelerators, achievable improvements, possible new applications and actions necessary to achieve these applications.

Main chapters:

- Health (radiotherapy and radionuclides)
- Industry (analysis, ion implantation, welding, sterilisation, environment, etc.)
- Energy (controlled fission, fusion)
- Security (imaging, nuclear interrogation)
- Photon sources (present and future)
- Neutron sources

“It’s a brave new world of applications!”

## Applications of Particle Accelerators in Europe

115 page document prepared by EuCARD2 and printed and distributed by ARIES

Copies can be requested to the Secretariat (Valérie)

Or downloaded at <http://apae.ific.uv.es/apae/>

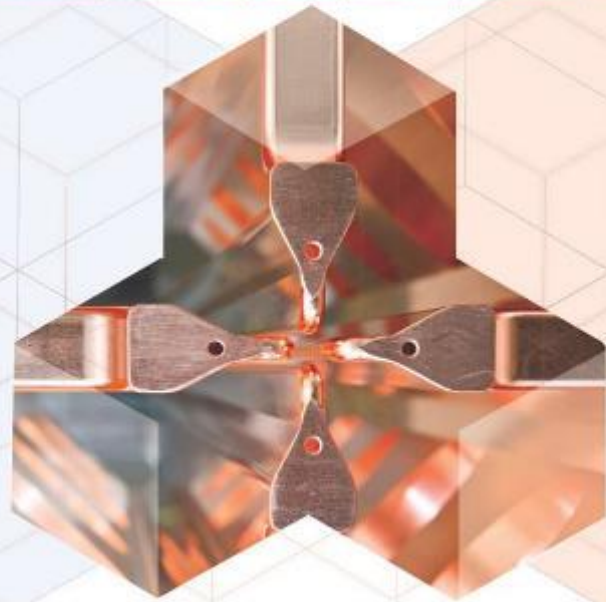


WP3 of ARIES is an outcome of the exploratory work done by APAE

# Accelerator-industry co-innovation workshop

## ACCELERATOR-INDUSTRY CO-INNOVATION WORKSHOP

Tools and strategies to enhance industry-academia cooperation in the particle accelerator community



**Organisers:**  
The TIARA Consortium of European Research Institutions, the AMICI Integrating Activity for particle accelerator R&D, the AMICI Coordinator and European Action for accelerated and elegant technological infrastructures.

**6-7th February 2018**  
**Crown Plaza Brussels**  
**Le Palace**  
**Brussels, Belgium**

**The Workshop may be of interest to:**

- Executives from European industry, including SMEs engaged in particle accelerator technologies, interested in learning about present funding schemes and in contributing to the definition of future schemes.
- Researchers and directors of research in European universities and laboratories engaged in R&D on particle accelerators aiming to contribute to the definition of common industry-academia projects.

**Organising & Programme Co-ordinators:**

Fey Aaldon (CEA)  
Valérie Bourcier (CEMRS)  
Jean-Luc Lardoux (CEMRS)  
Zeynep Lacey (CERN)  
Marcelo Leao (CERN)  
Stavros Mouskos (BESF)  
Markus Popp (CERN)  
Ulrich Raabe (ITP)  
Maurizio Vignati (CERN)

The Workshop is open to all, but attendance is limited. Advance registration is required.

Programme & registration:  
<https://indico.cern.ch/event/682611>

AMICI

TIARA

ARIES

ARIES

Co-organized with TIARA Committee and AMICI EU project on February 6-7 in Brussels

Part of the activity of **ARIES-TIARA Working Group on sustainable collaborative R&D.**

With the active support from the European Commission, accelerator laboratories and projects are joining efforts with industry to propel accelerator technology into the next decade.

This was the first in a series of events that aim to advance a rigorous collaboration with industry and consequently maximise the impact that accelerators have for science and society.

# Proof-of-Concept Fund



**CALL FOR PROPOSALS**

The ARIES Proof-of-Concept fund offers support to early-stage research to develop or study the commercial feasibility of novel concepts within accelerator science. Projects should aim to:

- Develop an idea
- Improve intellectual property position
- Gain market information on new product/concept

**Who can apply?**  
Lead applicants must be part of the ARIES Consortium (beneficiaries or partner organisations).  
Additional participants are not required to be connected to ARIES.

**Timeline**  
Call opens: December 1<sup>st</sup> 2017  
Deadline: 31<sup>st</sup> March 2018

**ARIES**

For information on how to apply, please visit: [www.aries.web.cern.ch/oc](http://www.aries.web.cern.ch/oc)

ARIES providing some financial support to small projects to study, develop and establish the commercial feasibility of novel concepts within accelerator science. **10 excellent proposals submitted at the end of March deadline.**

The evaluation is in progress (not easy because of the proposal quality) Evaluation milestones:

- Notification to the first 4 proposals June 15th.
- Recommendation for funding to the Steering Committee June 30th.

Field Confined Radiofrequency Ion Source for Medical and Industrial Applications (CIEMAT)

Fast closing UHV all-metal gate valve for use in particle accelerator systems (GSI)

Atomic Layer Deposition: an innovative approach for next generation particle accelerators (CEA)

Accelerator Diagnostics using Innovative Adaptive Optics (InnoAdo) (University of Liverpool)

Compact Hybrid Quadrupole for Diffraction Limited Storage Ring (SOLEIL)

Investigation of new methods for the manufacturing of Copper-Diamond Composites with tailored thermo-physical properties (RHP)

SRF Surfacing (CEA)

Eliminating the spread of antibiotics resistance thorough (University of Huddersfield)

Development of hybrid electron accelerator system for the treatment of marine diesel exhaust gases (Riga Technical University)

Laser plasma accelerators for industry (Strathclyde)

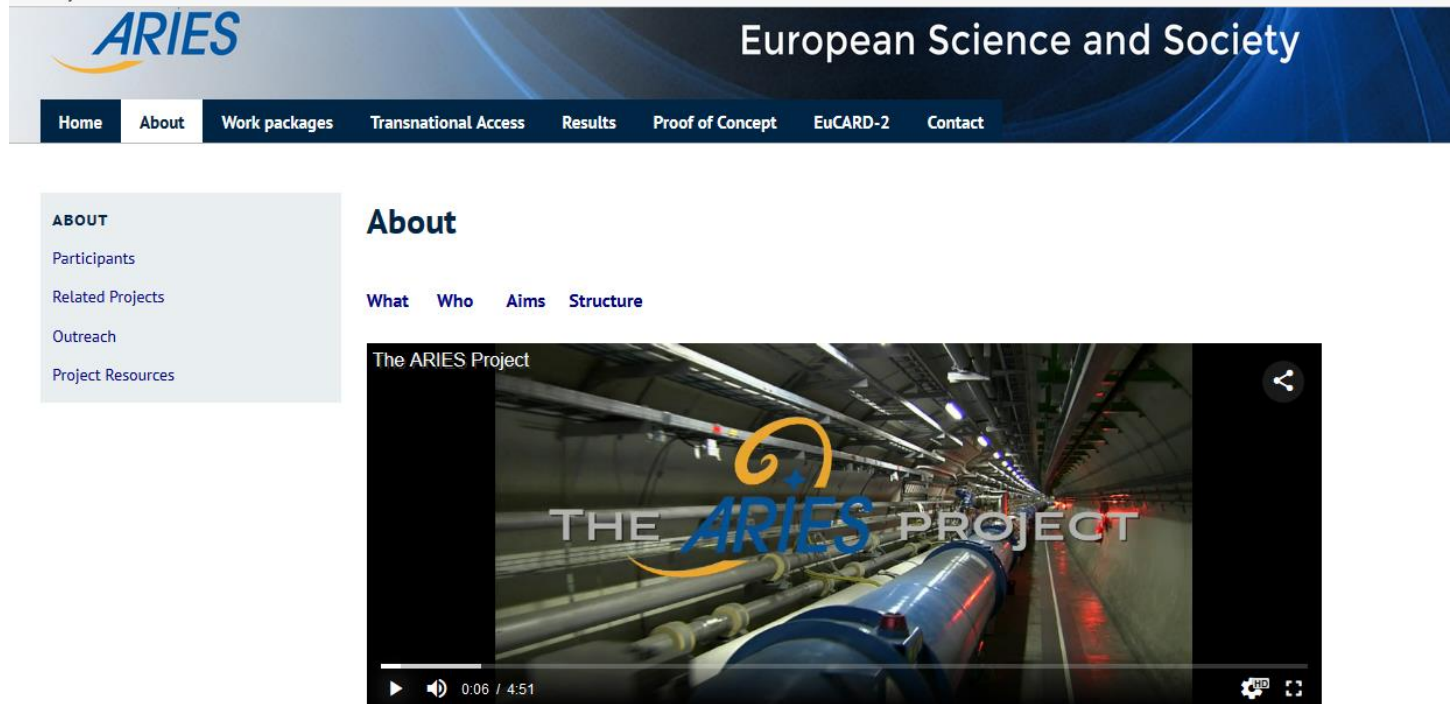
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# Life of the project

# ARIES Outreach - video

## New ARIES Introduction Video completed in January

2 versions, long for reference (4'51") and short for social media (2'13").



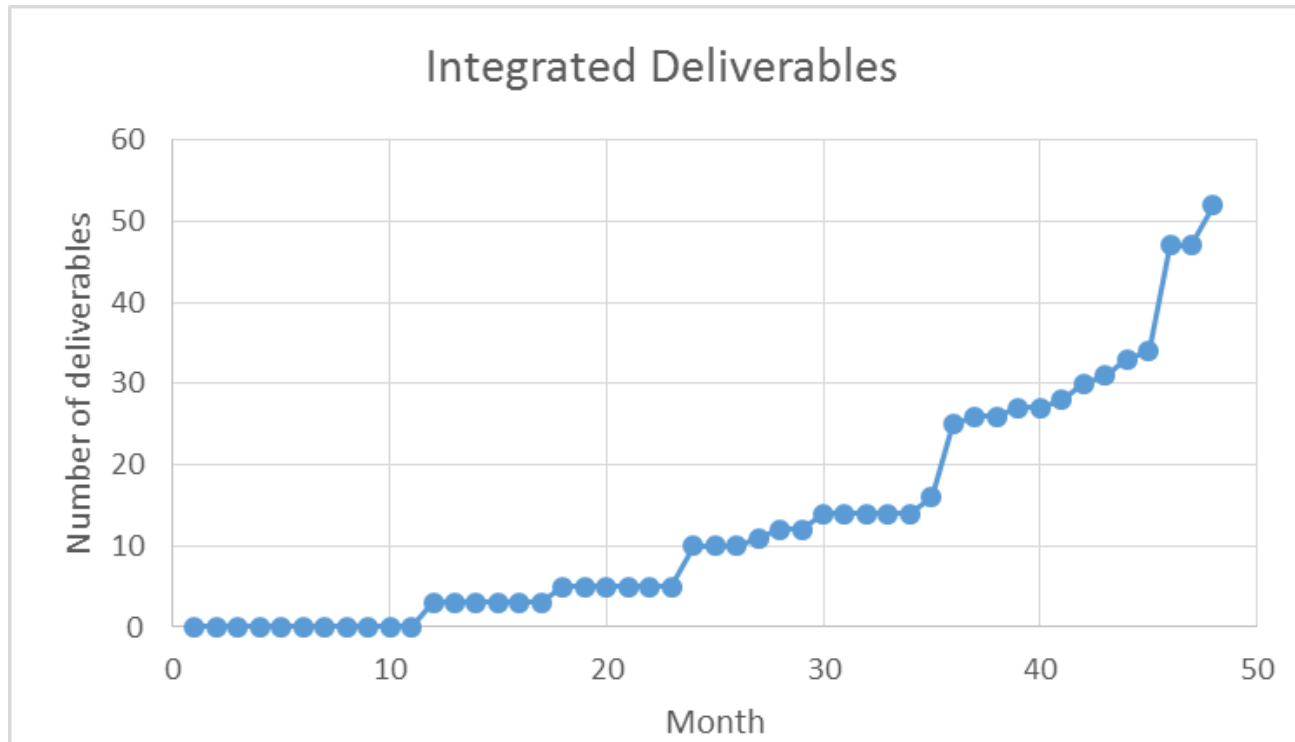
The screenshot shows the ARIES website interface. At the top, the ARIES logo is on the left and 'European Science and Society' is on the right. Below this is a navigation menu with links: Home, About, Work packages, Transnational Access, Results, Proof of Concept, EuCARD-2, and Contact. On the left side, there is a sidebar menu under the heading 'ABOUT' with links for Participants, Related Projects, Outreach, and Project Resources. The main content area is titled 'About' and has sub-links for What, Who, Aims, and Structure. A video player is embedded in the main content area, showing a video titled 'The ARIES Project'. The video frame displays the ARIES logo and the text 'THE ARIES PROJECT' over a background image of a particle accelerator tunnel. The video player controls at the bottom show a play button, a volume icon, a progress bar at 0:06 / 4:51, and icons for settings and full screen.

Posted on 15 February:

CERN Facebook and Twitter, YouTube, ARIES Facebook and website  
22'400 views from CERN FaceBook (!!!) with engagement rate 5.5%



# Deliverables



52 Deliverables over the project duration

2 out of the 3 Deliverable Reports due end of April (M12) were submitted on schedule, 1 is delayed by 2 months

D14.1	Set-up of the Proof-of-Concept innovation-funding scheme	WP14	Submitted
D15.1	Evaluation of cleaning process	WP15	Delayed 2 months waiting for exp. data
D17.1	Material characterization	WP17	Submitted

# Milestones

MS1	Kick-off meeting	WP1	1.1	M2	Jun-17	03/07/2017
MS2	Kick-off Meeting of ARIES-TIARA working-group	WP1	1.3	M3	Jul-17	28/03/2018
MS22	EuroNNAC3 Kick-Off Meeting	WP5	5.1	M3	Jul-17	22/12/2017
MS49	Organisation of WP-15 kick-off meeting	WP15	15.1	M3	Jul-17	30/08/2017
MS3	Forming all official bodies required by the governance	WP1	1.1	M6	Oct-17	29/03/2018
MS10	Project website launched	WP2	2.2	M6	Oct-17	20/10/2017
MS50	First sample substrates cleaned at INFN for depositing at partners	WP15	15.2	M6	Oct-17	20/10/2017
MS58	Organisation of PowerMat kick-off meeting	WP17	17.1	M6	Oct-17	20/10/2017
MS63	Setup simulation framework for acceleration and radiation generation in wakefields driven by lasers with orbital angular momentum	WP18	18.3	M6	Oct-17	20/10/2017
MS17	Contribute to Workshop on Energy for Sustainable Science	WP4	4.1	M7	Nov-17	22/12/2017
MS33	First general workshop of the RULE network	WP7	7.1	M9	Jan-18	28/03/2018

MS4	1st Annual Meeting	WP1	1.1	M12	Apr-18	
MS11	Meeting to agree MOOC platform and academic structure and content of e-learning course	WP2	2.4	M12	Apr-18	08/05/2018
MS13	Current applications of e-beam accelerators up to 10 MeV	WP3	3.2	M12	Apr-18	26/04/2018
MS23	EAAC and Yearly Meeting EuroNNac3 I	WP5	5.4	M12	Apr-18	26/04/2018
MS26	Report on 1st Annual workshops of all tasks	WP6	6.1	M12	Apr-18	16/05/2018
MS34	First topical meeting of the RULE network: injector	WP7	7.2	M12	Apr-18	16/05/2018
MS39	Report on 1st Annual workshops of all tasks	WP8	8.1	M12	Apr-18	18/05/2018
MS42	Appointing of an Industrial Advisory Board, (IAB)	WP14	14.3	M12	Apr-18	09/04/2018
MS47	Reviewed requirements document	WP14	14.6	M12	Apr-18	18/04/2018
MS64	Setup of experimental facilities for laser wakefield acceleration experiments using laser drivers with orbital angular momentum	WP18	18.3	M12	Apr-18	30/04/2018

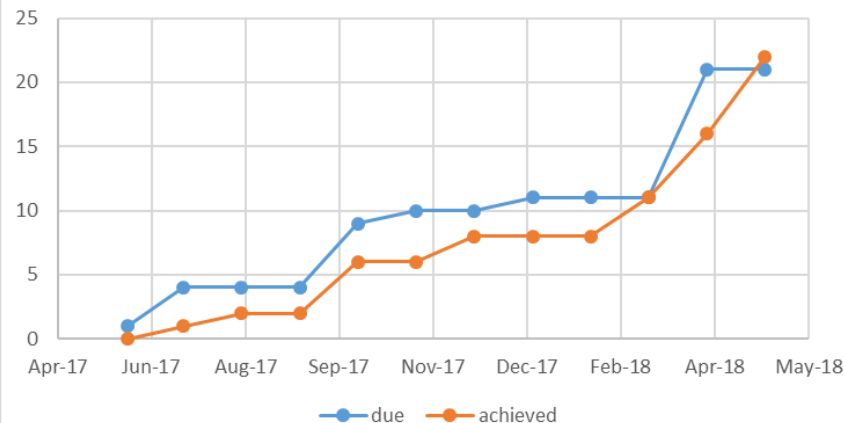
21 Milestones due in Year 1

**All achieved (+1 in advance)!**

Some initial delays but all contributors made an effort to complete milestones in time for the Annual Meeting.

66 Milestones in total, 45 left!

ARIES Milestones



# A note of sadness

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On March 16th passed away our friend and colleague Vincenzo Palmieri, professor at Padua University, Leader of the Superconductivity and Surface Treatment Laboratory of the Legnaro INFN Laboratory, and Task Leader in ARIES Workpackage 15.

He was a volcano of creativity, a born innovator and a mentor of young colleagues. The sympathy and comfort of all the ARIES community go to his family and his colleagues. We will deeply miss him.



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# The Annual Meeting

# Annual Meeting – Structure and Social Events

	Tuesday 22.5	Wednesday 23.5	Thursday 24.5	Friday 25.5
Morning	Parallel WP meetings	<b>Governing Board</b> TNA Meeting Visit of RTU	<b>Plenary 3,4</b>	<b>Plenary 7,8</b> IAB meeting SAC report
Afternoon	Parallel WP meetings	<b>Plenary 1,2</b>	<b>Plenary 5,6</b>	Steering Committee
Evening	WP dinners	Welcome drink	Banquet	



See you tonight at Koyas, on the river bank  
Address: Str. Andre Jostas 4.  
Meeting point: **18:30 at the University entrance**, Kalku 1 to take the river boat to the restaurant.

Banquet tomorrow 19:30 at the National Library building *Gaismas Pils* (Castle of Light), landmark across the Main Bridge.  
**Guided tour** starting from **University at 18:15** or directly at **Library at 19:30**

# Additional visit programme

For those staying in Riga for the weekend:

- Friday 25<sup>th</sup>, afternoon: visit to **Riga Motor-Museum**.
- Saturday 26<sup>th</sup>, all day trip to **Jurmala on the Baltic coast**, famous sea resort. Guided tour, visit of forest and ancient buildings, lunch, walk on the beach and/or village (10:00 to 17:00, 20 EUR).
- Sunday 27<sup>th</sup> morning, **guided tour of Riga**

Information and registration at the Meeting Secretariat



