



Periodical Training Activities Report (1/3)

**Deliverable 2.4 - PUBLIC**

**Authors:**

Manus Hayne (ULANC, SB, AAB Head)

Benito Alén (CSIC, Network Coordinator)

Cecilia Cotero (Project Manager)

**Date:** May 5<sup>th</sup>, 2022

## Content Table

Content Table.....	2
Executive Summary.....	3
I. ESRs PhD Enrolment.....	4
II. Secondment Plan execution.....	6
III. Personal Career Development Plans (PCDP).....	7
IV. Training Activities.....	8
1. Training Activities organised by the consortium.....	8
2. External Training activities.....	12

## Executive Summary

The Report on Periodic Training Activities is Deliverable 2.4 of the Quantimony project. In our Work Plan, it is described in the Work Package 2: “Training and Supervision” as one of the three reports on scientific and transferable skills training activities to be uploaded in M16, M28 and M40.

This Deliverable has been drafted by the Head of the Academic Advisory Board and Leader of Work Package 2, Manus Hayne (ULANC) and the Network Coordination Office of the project.

This document contains a report on the completed PhD Programme enrolment of the fourteen ESRs, the current status of execution of the secondment plan, the status of the PCDPs’ progress, and a report on the training activities organised by the consortium, as well as of the external training activities attended and reported by the ESRs.

## I. ESRs PhD Enrolment

During this first training period (Dec 2021-April 2022), ESRs have enrolled and started their doctorate journey as described below.

ESR	Giulio Barbieri –ESR 1
University & Department	Universidad Politécnica de Madrid, Department of Electronics Engineering (DIE) at the Higher Technical School of Telecommunications Engineering (ETSIT)
Enrolment date	October 20, 2021
PhD Programme name	Doctorate Electronic Systems Engineering

ESR	Fernanda Malato – ESR 2
University & Department	Universidad Politécnica de Madrid, UPM
Enrolment date	September 22, 2021
PhD Programme name	Doctoral Programme in Electronic Systems Engineering

ESR	Malte Schwarz - ESR 3
University & Department	Universidad Politécnica de Madrid (UPM), Department of Electronics Engineering (DIE) at the Higher Technical School of Telecommunications Engineering (ETSIT)
Enrolment date	November 1 <sup>st</sup> , 2021
PhD Programme name	Doctorate in Electronic Systems Engineering

ESR	Xiuxin Xia (ESR 4)
University & Department	Lancaster University, Department of Physics,
Enrolment date	August 1 <sup>st</sup> , 2021
PhD Programme name	PhD Physics

ESR	Gizem Acar, ESR5
University & Department	Lancaster University; Physics Department
Enrolment date	July 1 <sup>st</sup> , 2021
PhD Programme name	PhD in Physics

ESR	Francisco Alvarado – ESR 6
University & Department	University of Warwick, Department of Physics.
Enrolment date	October 1 <sup>st</sup> , 2021
PhD Programme name	PhD in Physics

ESR	Aurelia Trevisan – ESR 7
University & Department	Eindhoven University of Technology, Department of Applied Physics
Enrolment date	August 1 <sup>st</sup> , 2021
PhD Programme name	PhD in Applied Physics

ESR	Julian Zanon –ESR 8
University & Department	Eindhoven University of Technology (TU/e), Department of Applied Physics

Enrolment date	October 18 <sup>th</sup> , 2021
PhD Programme name	PhD in Applied Physics

ESR	Lucie Leguay – ESR 9
University & Department	Technical University of Berlin (TUB), Institute for solid-state physics, Department of Semiconductor Nanophononics and Nanophotonics.
Enrolment date	November 22 <sup>nd</sup> , 2021
PhD Programme name	PhD in Physics

ESR	Borislav Petrovic – ESR 10
University & Department	Würzburg University, Technische Physik Dept.
Enrolment date	March, 4 <sup>th</sup> , 2021
PhD Programme name	PhD in Applied Physics

ESR	Ahn Luan Phan – ESR 11
University & Department	University of Rome Tor Vergata, Department of Electronic Engineering
Enrolment date	November 1 <sup>st</sup> , 2021
PhD Programme name	Doctorate (PhD) in Electronic Engineering

ESR	Hajrudin Husejini- ESR 12
University & Department	RWTH Aachen University, Faculty of Electrical Engineering and Information Technology, Institute of Compound Semiconductor Technology.
Enrolment date	February, 12 <sup>th</sup> , 2022
PhD Programme name	PhD in Micro- and Nano Electronics

ESR	Chen Liu – ESR 13
University & Department	Cardiff University, School of Physics and Astronomy, Condensed Matter and Photonics Group
Enrolment date	January 4 <sup>th</sup> , 2022
PhD Programme name	Doctorate of Philosophy (Physics & Astronomy)

ESR	Takuma Sato – ESR 14
University & Department	Technical University Munich, Department of Electrical and Computer Engineering
Enrolment date	March 17 <sup>th</sup> , 2022
PhD Programme name	Doctorate in Electrical and Computer Engineering

## II. Secondment Plan execution

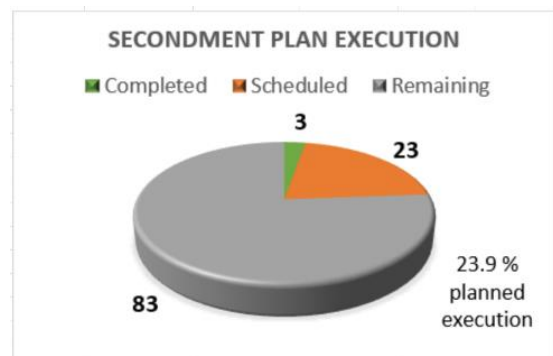
Each ESR will go on secondment **to the laboratory of other beneficiaries or partners for a total period of 7 to 9 months**. We have carefully designed this aspect to allow all ESRs benefit from the complementary expertise of diverse participants in different countries.

The table below shows the progress of secondments at the current date. Two ESRs are ongoing or have completed their first secondments (in green), and all but one of the others have planned secondments for the second half of 2022 (orange):

Table 1- Secondment plan execution status (May, 2022)

		Secondment status											Change	Completion
		M1	M2	M3	M4	M5	M6	M7	M8	M9				
ESR1 - CSIC	Giulio Barbieri	nextnano	Tiberlab	ULANC			TUE						7%	
ESR2 - CSIC	Fernanda Malato	ESRF		UOW (new)	Bruker		MAX IV		TPS		Pending		11%	
ESR3 - UPM	Malte Schwarz	ESRF (new)	Fluxim		UWUE		ULANC		UOW		Yes		6%	
ESR4 - ULANC	XiuXin Xia	CSIC/LSF		UWUE		UOW		IQE					13%	
ESR5 - ULANC	Gizem Acar	nextnano	TUE		CSIC		TUB						14%	
ESR6 - UOW	Francisco C. Alvarado	CSIC/LSF		UCA		TUE		LMA					13%	
ESR7 - TUE	Aurelia Trevisan	ULANC		CSIC/LSF		UOW		AIXTRON					38%	
ESR8 - TUE	Julian Zanon	QuantCAD		UWUE		UNITOV		TUB					13%	
ESR9 - TUB	Lucie Leguay	UNITOV		ULANC		TUE		Nextnano (new)				Yes	11%	
ESR10 - UWUE	Borislav Petrovic	nanoplus			nextnano		UPM		CSIC/LSF					21%
ESR11 - UNITOV	Ahn-Luan Phan	nextnano	TUE		TUB								7%	
ESR12 - AIXTRON	Husejni Hajrudin	IQE		TUB		Ucardiff							21%	
ESR13 - IQE	Chen Liu	nextnano	UWUE		Ucardiff		UOW						0%	
ESR14 - nextnano	Takuma Sato	UNITOV		ULANC		UWUE		TUB					13%	

23.9% of the secondments planned have been completed or are scheduled for the upcoming months. There is one secondment change request pending approval and two has already been approved by the REA officer (in yellow). The procedure agreed with the EC is to try to follow the secondment plan as written in the proposal and, if some change is needed, to ask for permission using a dedicated secondment change request form.



### III. Personal Career Development Plans (PCDP)

ESRs are required to have a personal career development plan (PCDP) to guide and also to document their research and training in order to help achieve career goals.

The PCDP is a core aspect of MSCA-ITNs like QUANTIMONY, and the EC provides a template for it, which was included as Attachment 4 of the QUANTIMONY Consortium Agreement. The PCDP template used in Quantimony is based on the EC model, with some adaptations, and has been approved by the Academic Advisory Board (AAB).

There are three templates, one for the initial PCDP, one for reviews and one for the final PCDP. The idea is that the initial PCDP is appended by the reviews and the final PCDP to document the ESR career goals and plans, how these are progressing, and to create a dossier of the activity of an ESR. The review template has fields where seminars, conferences, courses etc. can be added. The intention is that it will be a resource when preparing a CV, completing a job questionnaire or writing a fellowship application etc.

At the moment of submitting this report, the 14 Quantimony ESRs had submitted their initial Personal Career Development Plan (PCDP) (December 2021) and their first review, which has been discussed by the AAB for the first time on May 5<sup>th</sup>, 2022.

*Table 2- PCDP review processes for project duration*

	Y1		Y2		Y3	
	Initial PCPD	Review PCDP	Review PCDP	Review PCDP	Review PCDP	Final PCDP
PC+SB Review	DONE	DONE	PENDING			
AAB Review		DONE				

## IV. Training Activities

The table below shows the current status of participation of ESRs and beneficiaries members to both consortium and external training activities. All ESRs have attended all the consortium events organised since their recruitment, and ESRs 2 (CSIC-ICMM), 3 (UPM), 10 (UWUE) and 11 (UNITOV) have attended external training activities as well.

Table 3- Participation to training activities of ESRs and Beneficiaries

		Participation to training activities												
		CSIC1	CSIC2	UPM	ULANC	UOW	TUE	TUB	UWUE	UNITOV	AIXTRON	IQE	nextnano	total/cat
Quantimony event	KickOff Meeting	2	2	2	3	1	3	1	3	1	1	2	2	23
	1st II-Sb W. ESR Checkpoint	1	2	1	2	2	2	1	3	2	2	2	3	23
	Industry Day - AIXTRON	4	3	4	11	1	4	1	1	2	3	2	7	43
	Transf. Skills Training & AAB I -ULANC	3	2	2	5	2	2	1	2	2	2	2	4	29
	Summer School I -UPM													
	2nd III-Sb W. & ESR CheckPoint -TUE													
	Winter School -TUB													
	Transf. Skills Training & AAB II -ULANC													
	Open School -CSIC													
	3rd III-Sb W, & ESR Checkpoint - UNITOV													
	Industry & Career Day - IQE													
Final Workshop -OUW														
External	training activity/course		1	1						1				3
	conference/Workshop-attendance/networking		4	1			2		2					9
	other													
Total/node		10	14	11	21	6	13	4	11	8	8	8	16	TOTAL 130

### 1. Training Activities organised by the consortium

During this first period there had taken place five training events organised by the consortium, distributed in three different events.

Table 4- Training activities organised by the consortium

Title	Date & Duration	Status	Type of Skills imparted	N. ESRs	Total attendants
1 <sup>st</sup> Annual III Sb Workshop	9 December 2021/ 1d	Celebrated	Technical research skills – III-Sb semiconductors; fabrication aspects.	14	31
1 <sup>st</sup> ESR Checkpoint	7-8 December 2021/ 1.5d	Celebrated	Career development, general knowledge in the research field of III Sb semiconductors, technical research skills, scientific communication.	14	31
Industry Day @AIXTRON	18 March 2022/ 1d	Celebrated	Entrepreneurship, commercialisation of research outputs, technical research skills.	14	57
Transferable Skills Training	20-21 April 2022/1.5d	Celebrated	Transferable Skills: Project management, research ethics, impact communication	14	16
AAB review Meeting	21-22 April 2022/1.5 d	Celebrated	Annual AAB meeting	14	34
Summer School	11-15 July 2022	Upcoming	Technical research skills: multidisciplinary aspects of modern III-Sb technology. Characterization techniques with focus on optical properties and methods		

- [The 1<sup>st</sup> III-Sb Annual Workshop & ESR Checkpoint](#) (7-9 December 2021), were organised by Jülius-Maximilian University in Würzburg and hosted as a hybrid online/onsite event due to covid restrictions.

This was the first of a series of four annual training events for our doctorate students, each providing hands-on training in different aspects of the QUANTIMONY research programme. Their objective was to broaden general knowledge on III-Sb science and technology among our doctorate students, facilitating their understanding of the state-of-the-art and of technical challenges, and to encourage multidisciplinary collaboration within the network.

This first training event was an introduction to the field, and included lectures about past and present III -Sb technologies and the challenges posed by their fabrication, as well as presentations by the 14 doctoral students of the network on their research topics.

List of speakers:

- Prof. Dr. Michael Heuken (Vice President Advanced Technologies at AIXTRON)
- Dr. Martin Kamp (Würzburg University)
- Dr. Stefan Birner (nextnano GmbH)



Figure 1- Lab visits at Würzburg U.

The event attendees went to practical demonstrations and lab visits at the nanofabrication facilities available at Würzburg University and nearby consortium members nextnano GmbH and nanoplus GmbH.

- **The Industry Day at AIXTRON** (18 March, 2022), organised by AIXTRON as an online event due to COVID restrictions in place at the company's premises. This event brought representatives of our project partners' spin-offs, SMES and large companies, as well as external companies to share with our PhD students their experience in diverse application fields. The discussions gave great insights on the opportunities and challenges of modern semiconductors industry and what is demanded in High-level Tech positions.

List of speakers:

- Dr. Bernd Schineller (AIXTRON SE)
  - Dr. Lutz Bruegemann (Bruker AXS GmbH)
  - Dr. Robert Weih (nanoplus Nanosystems and Technologies GmbH)
  - Dr. Zhi Gang Yu (QuantCAD LLC.)
  - Dr. Urs Aeberhard (Fluxim AG)
  - Dr. Alex Robson (Lancaster Material Analysis Ltd.)
  - Dr. Thomas Grange (nextnano Lab SAS)
  - Dr. Joachim Rest (Laytec AG)
  - Dr. Martin Strassburg (ams OSRAM)
- **The Transferable Skills Training & AAB meeting** (20 -22 April, 2022) took place as a hybrid online – onsite event hosted by Lancaster University.  
The first Transferable Skills Trainings (20 to 21<sup>st</sup> April) consisted of three half-day training modules on Research Project Management, Impact communication and Research Ethics. They were imparted by

Dr. Katy Mahoney, an expert Researcher Coach from Vitae (CRAC Ltd.). Online and onsite attending ESRs listened to presentations, discussed, debated and worked on collaborative online/ paper tools.

The AAB meeting gave the change to ESRs to present their research work and their training plans up until date to the consortium, in a series of 30 minute presentations. The meeting also included the following guest speakers:

- Prof Mike Wale (Department of Electronic and Electrical Engineering, UCL)
- Prof Tao Wang (Department of Electronic and Electrical Engineering, U. Sheffield)
- Dr Andy Marshall (Department of Physics, Lancaster University)



*Figure 2- Onsite attendants to the AAB meeting at Lancaster University*

**Participation of Partner Organisations and external organisations in consortium events**

The following tables show that, so far, there is a good level of participation of partner and external organisations in the events organised by the consortium, both as speakers (S) and as attendants (A)

Table 5- Participation of PO members in consortium events

	Partner Organisations Participation													
	Bruker	nanoplus	LMA	Tiberlab	QuantCAD	Fluxim	Max IV	ESRF	NSRRC	Ucardiff	UCA	UFSCAR	nextnanoLab	TUM
KickOff Meeting			S	S	S	S		S		S	S	S		
1st IISb W. ESR Checkpoint		S						A		A		A	A	
Industry Day - AIXTRON	S	S	S		S	S		A		A	A		S	
Transf. Skills Training & AAB I -ULANC	A			A		A		A		A	A			
Summer School I -UPM														
2nd III-Sb W. & ESR CheckPoint -TUE														
Winter School -TUB														
Transf. Skills Training & AAB II -ULANC														
Open School -CSIC														
3rd III-Sb W, & ESR Checkpoint - UNITOV														
Industry & Career Day - IQE														
Final Workshop -OUW														

Table 6- Participation of external organisations in consortium events

	External Organisations Participation												
	KickOff	1 III-Sb W	Ind Day 1	transf Skills I	AAB meeting	Summer Sc.	2 III Sb W.	Winter S.	trasnf Skills II	Open S.	3 III Sb W	Ind Day 2	Final W.
OSRAM (EAB)			S										
Laytec			S										
Vitae				S									
University College London					S								
University of Sheffield					S								

## 2. External Training activities

ESRs are encouraged to attend external training events, workshops and seminars, either organised by their hosting institution or externally organised activities. Participation is reported to the Network Coordination Office via online report forms.

The next table contains the attended external training activities, be it conferences (if the ESR attends for networking, not presenting), workshops or trainings, reported by ESRs since their enrolment until the end of March, 2022

Table 7- Reported participation in external training activities

Name and Last name	Institution	Type of event	Type of attendance	QUantimony or external event	Name of activity	Date and duration of the activity	Description	Link	attendants to the event	type of public	budget spent
Anh-Luan Phan	UNITOV	Participation to an outreach activity (i.e. European Researchers Night, Pint of Science, Science Week, 3MT, MSCA Ambassadors, Women and girls in science)	Attendance/networking;	External activity	European Researchers Showcase	24/09/21-2 days	European Research Showcase, which was one of the activities of the European Researchers Night, by submitting a short video with funny in the European	<a href="https://ernintersections.org/">https://ernintersections.org/</a>	40	General public;	0
Xiuxin Xia	ULANC	Participation to an outreach activity (i.e. European Researchers Night, Pint of Science, Science Week, 3MT, MSCA Ambassadors, Women and girls in science)	Poster	External activity	2021 European Researchers' Night	9/24/2021 - 1 day	Researchers' Night is a Europe-wide public event, which displays the diversity of science and its impact on citizens' daily lives in fun, inspiring ways.	<a href="https://ec.europa.eu/research/mariecurieactions/evening/2021-european-researchers-night">https://ec.europa.eu/research/mariecurieactions/evening/2021-european-researchers-night</a>	N/A	General public;	N/A
Borislav Petrovic	UWUE	Participation to an outreach activity (i.e. European Researchers Night, Pint of Science, Science Week, 3MT, MSCA Ambassadors, Women and girls in science)	Oral	External activity	European Research Night- Intersections	09/24/21 - 2 days	Participating, giving short broad public oriented video about my research. Uploaded to Instagram page.	<a href="https://www.instagram.com/ern_intersections">instagram.com/ern_intersections</a>	70	General public;	0
Borislav Petrovic	UWUE	Participation to an outreach activity (i.e. European Researchers Night, Pint of Science, Science Week, 3MT, MSCA Ambassadors, Women and girls in science)	Attendance/networking	External activity	IPO Live Lectures 2022	24.02.2022, 1 day	Lecture on Intellectual Property for Researchers	<a href="https://www.vita.ac.uk/events/ip-for-research-events-2022/booking-form-ipo-live-lectures-2022">https://www.vita.ac.uk/events/ip-for-research-events-2022/booking-form-ipo-live-lectures-2022</a>	30	Scientific Comm	0
Borislav Petrovic	UWUE	Participation to an outreach activity (i.e. European Researchers Night, Pint of Science, Science Week, 3MT, MSCA Ambassadors, Women and girls in science)	Attendance/networking	External activity	MCAA Around the World Webinar Series	11.02.2022, 1 day	Webinar about post doctoral careers of former MSCA fellows from Western Balkans aiming to help in getting to know possible prospective opportunities	<a href="https://www.mariecuriealumni.eu/news/mcaa-around-world-webinar-3">https://www.mariecuriealumni.eu/news/mcaa-around-world-webinar-3</a>	20	General public;	0
Malte Schwarz	UPM	Contribution to ESR Blog							0	General public;	0