

# STREAM 3<sup>rd</sup> Annual Meeting

*University of Geneva, 23-25 January 2019*

## Work Package 7 –Training

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STREAM Coordination Team at CERN



*Smart Sensor Technologies and Training for Radiation Enhanced Applications and Measurements (STREAM) is a project funded by the European Commission under the Horizon2020 Framework Program (Grant Agreement No 675587). STREAM began in January 2016 and will run for 4 years.*



“One never notices what has been done; one can only see what remains to be done.”

Marie Skłodowska Curie





# Agenda

## **I. STREAM Work Package 7 - Training**

- Objectives and building blocks

## **II. Scientific and Individual Research projects**

## **III. Network wide events and Training**

- Training Topics and Duration, Learning Achievements

## **IV. Summary**



**STREAM**



# I. STREAM Work Package 7 – Training Objectives

The WP7 embraces a **vast Learning & Development program (L&D) to assist and monitor** the preparation of the ESRs:

- ✓ **Collaborate to the definition of the Learning Objectives** together with:
  - ESRs Individual and Academic Supervisors
  - Experts from WU Wien (WP6)
  - Specialists in Learning & Development from CERN
  - External Training Consultants
- ✓ **Design and Organise Network Wide Training Events,**
- ✓ **Monitor the ESRs L&D Achievements** as defined in the CDPs:
  - Participation to the Network Wide Training events
  - Participation to Conference and Outreach Activities
  - Collaborative research (i. e. secondment)





# I. Milestone and Deliverable Reports of WP7

## Objectives achieved:

- ✓ Milestone **MS 11- ESR Introduction Workshop (1<sup>st</sup> intake)**, achieved on 31.06.2016
- ✓ Milestone **MS 12 – Annual Meeting 2016**, achieved on 12.12.2016
- ✓ Milestone **MS 13 – MTR and Annual Meeting 2017**, achieved on 24.01.2019
- ✓ Milestone **MS 14 – Annual Meeting 2018**, due on 31.12.2018
  
- ✓ Deliverable report **D7.1 STREAM Summer School, Public**, delivered and approved

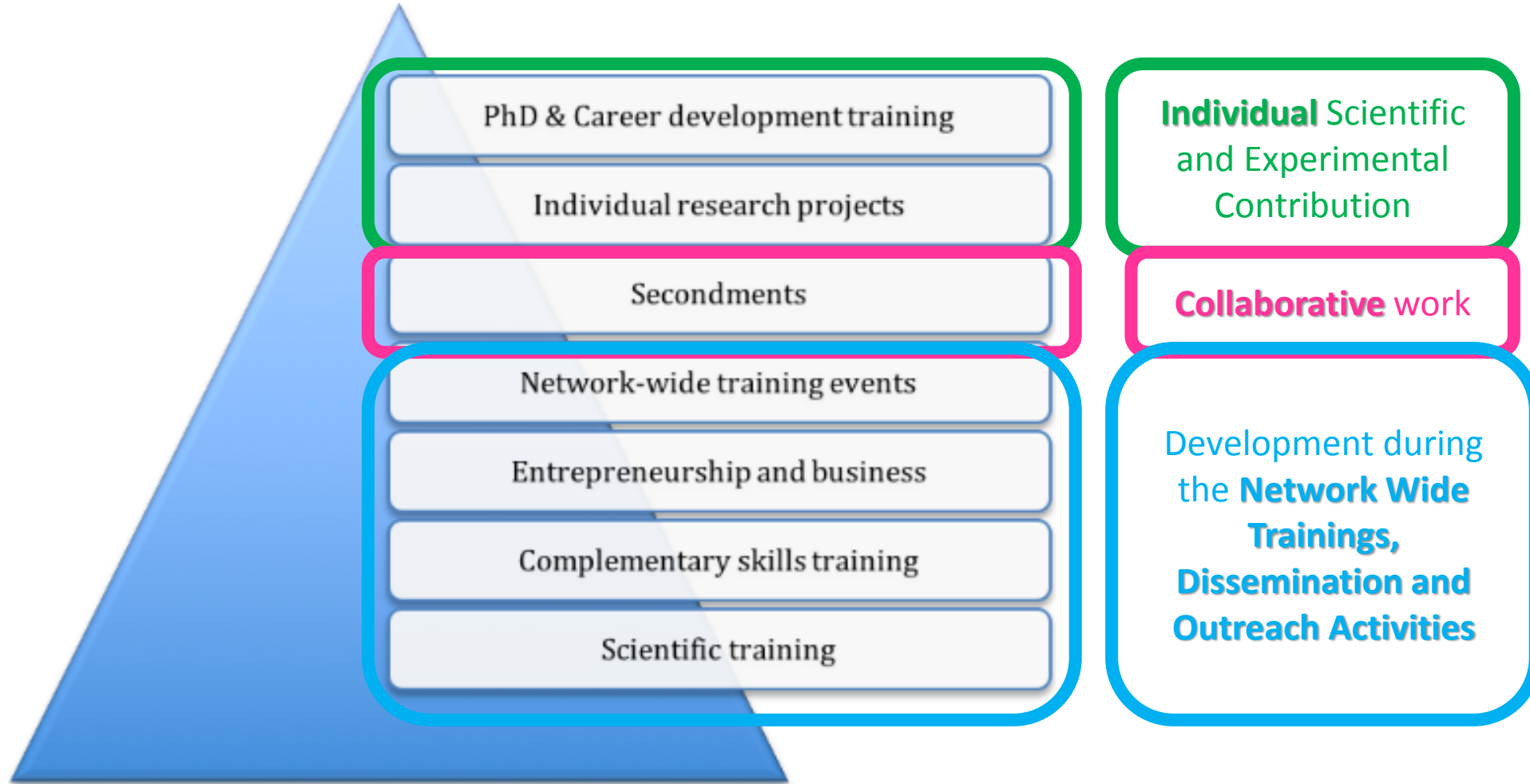
## Planned in 2019

- **D7.2 STREAM Final Conference, Public**, due on 31.12.2019





# I. The building blocks of WP7 Training





# II. The STREAM Scientific Research Projects

- [CIVIDEC Instr](#)
- [INFN Milano](#)
- [University of Oslo](#)
- [University of Liverpool,](#)
- [Technical University Berlin](#)
- [University of Zagreb](#)
- [FH Dortmund](#)



## WP 2 CMOS Technologies Assessment

- [CPPM](#) - ESR#1 and ESR#2
- [Karlsruher Institut für Technologie](#) ESR#4

## WP 3 Smart Sensor Design and Layout and WP 4 Validation and Qualification

- [Universität Bonn](#) ESR#5 and ESR#6 (WP3)
- [CERN](#) - ESR#8, ESR#9, ESR#12 (WP3 and 4)
- [AMS AG](#) - ESR#3 and ESR#15 (WP3 and 4)
- [University of Glasgow](#) ESR#11 (WP4)
- [Université de Genève](#) - ESR#10 (WP4)

## WP 5 Technology Integration

- [Thermo Fisher Scientific](#) – ESR#13
- [Fraunhofer IZM](#) – ESR#14
- [CiS GmbH](#) - ESR#7

## WP 6 Technology Valorisation

- [WU Vienna](#) –ESR#16 and ESR#17





## II. ESRs Individual research projects

ESR	Beneficiary (Supervisor)	Academic program (Supervisor)
CHEN, Zongde	CPPM / AMU (Prof. M Barbero)	PhD (Prof M Barbero)
BHAT, Siddharth	CPPM / AMU (Prof. M. Barbero)	PhD (Prof A. Rozanov)
VINCENZI, Tommaso	ams AG (MsC. J. Fellner )	PhD at Technical University of Graz (Prof B. Deutschmann)
MATEOS Horacio	KIT (Prof I.Peric)	PhD (Prof I. Peric)
MOUSTAKAS Konstantinos	uBonn (Prof N.Wermes)	PhD (Prof N. Wermes)
CAICEDO S., Ivan	uBonn (Prof. N.Wermes )	PhD (Prof J. Dingfelder)
WOOD Callum	CIS GmbH – R. Röder Career building training through PM certification	
BERDALOVIC Ivan	CERN (Dr. H.Pernegger)	PhD at Uni Zagreb (Prof T. Suligoj)
CARDELLA Roberto	CERN (Dr. P. Riedler )	PhD at Uni Oslo (Prof H.Sandaker)
ZAFFARONI Ettore	UniGe (Prof. S.Gonzalez Sevilla)	PhD (Prof G.Iacobucci )
SIMON-ARGEMI Lluis	Glasgow (Prof. C.Buttar)	PhD (Prof C.Buttar)
PIRO Francesco	CERN (Dr H. Pernegger)	---
FERRETTI Andrea	ThermoFisher Scientific A.F. Jong and L. Mele Training on Embedded System	
BUSEF Sarah	IZM (Dr T. Fritzsch)	---
SEGMANOVIC Filip	ams AG (I. Jonak-Auer)	PhD at Uni Zagreb (Prof T. Suligoj)
ESR 16	WU Wien	---
MEHNER, Barbara	WU Wien Prof. P.Keinz	PhD (Prof. N.Franke)







# III. STREAM Network Wide Events

- i. Stream Introduction Workshop and 3 Annual Meetings**
  - Occasions for the STREAM consortium to share the scientific project advances
  - Supervisory Board Meetings to adjust the training and scientific program
  - Presentation from Expert Lecturers and Networking
  - Possibility for the **ESRs to present their research project** and achievements
- ii. Joint training courses and workshops ([WP6](#))**
  - Knowledge Transfer and Innovation Management (1 week training in June 2017)
  - Entrepreneurship and Business Modelling (3 days training in June 2018)
  - Real Life Knowledge Transfer Project (3 days training during Winter School in November 2017) and collaboration between Partners Organisation and ESRs and student of the Business School
- iii. Winter school (~3 weeks in November 2017)**
  - Complementary skills training and Technical Seminars
  - Completion of the Joint Training Course
- iv. Prince<sup>®</sup> 2 Fast Track Training and Certifications (1 week in January 2019)**
- v. Workshop in CV writing and Job interview (1 day in January)**
- vi. Final STREAM Conference (September 2019)**





# III. Network Wide Events – Annual Meetings

Event	Objectives
<a href="#">STREAM Introduction workshop, CERN</a> , 31 Aug. - 1 Sept. 2016	<ul style="list-style-type: none"><li>• Kick-off of the project, overview of the objectives of the STREAM WPs.</li></ul>
<a href="#">STREAM 1<sup>st</sup> Annual meeting, uBonn</a> , 12 - 13 December 2016	<ul style="list-style-type: none"><li>• Introduction of the ESRs enrolled</li><li>• Expert presentation on CMOS design and testing</li><li>• First results of the STREAM Work Packages</li></ul>
<a href="#">STREAM 2nd Annual Meeting, ams AG</a> (Graz, AT), 23 - 24 January 2018	<ul style="list-style-type: none"><li>• Technology valorisation and Commercial Applications</li><li>• Work Package and ESRs project status presentations</li></ul>
<a href="#">STREAM 3rd Annual Meeting, UniGe</a> , 24-25 January 2019	<ul style="list-style-type: none"><li>• ESRs Research Project Achievements and Professional Development for the ESRs</li></ul>





# III. STREAM “Winter” School - Deliverable D-7.1

Almost **3 weeks Multi-Site Continuous Training** ([6-23 November 2017](#))

## ☐ 2 days at CERN - **TECHNICAL**

- Technical seminars on state of the art and future trends in sensor design and silicon detectors, radiation effects, frontiers in electron microscopy, etc.
- Round table and panel discussion: challenges for future trackers

## ☐ 3 days at CERN – **COMPLEMENTARY SKILLS**

Workshops on scientific presentations, public speaking, team building and individual research valorisation

## ☐ 1 week at CERN - **ATLAS Upgrade week**

## ☐ 3 days at WU-Wien – **BUSINESS AND TECHNOLOGY TRANSFER**

- Completion of the Joint Training event on Innovation Management
- Training for the Real Life KT project in collaboration with Partner Organisations.





# III. Complementary skills trainings

**Specialised Lecturers and Workshops** have been dedicated to complementary skills

- ✓ ESRs Individual Training Program: graduate and post-graduate courses at Universities, Language skills, Ethics and Research, ...
- ✓ 4 day workshop in Innovation Management Techniques, Public speaking for outreach and dissemination purposes (P Keinz and B. Weingartner, Wu Wien, June 2017)
- ✓ 2 day Workshop in convincing in scientific presentation (J. Clark from VivaTalent, CERN , Nov 2017 )
- ✓ 0.5 day Training in dissemination and outreach via new digital channels (CERN Communication Officers, CERN, Nov 2017)
- ✓ 0.5 day Workshop in Personal Branding and Marketing Yourself (J. Clark from VivaTalent, CERN, Nov 2017)
- ✓ 1 day Course in Knowledge and Technology Transfer and Participation to the Real Life KT Project (P Keinz, WP6)
- ✓ 0.5 day Workshop on «From high-tech to real added value» (Dr H. Dols, CERN KT Team, **This PM**)





## III. Project Management Training - Prince2®

- The ESRs requested training in Project Management.
- The Prince2® Fast Track Training was held in Eindhoven on 14 -17 January 2019
- 13 ESRs attended the training and were tested for the Certification:
  - Prince2® Foundation (all ESRs succeeded the Certification)
  - Prince2® Practitioner (results on Friday 25<sup>th</sup>, 2019)





## III. Collaborative research: secondments

### ☐ The ESRs:

- ✓ Develop an individual PhD/ research project collaborating with other fellows
- ✓ Are integrated in an international and recognized collaboration

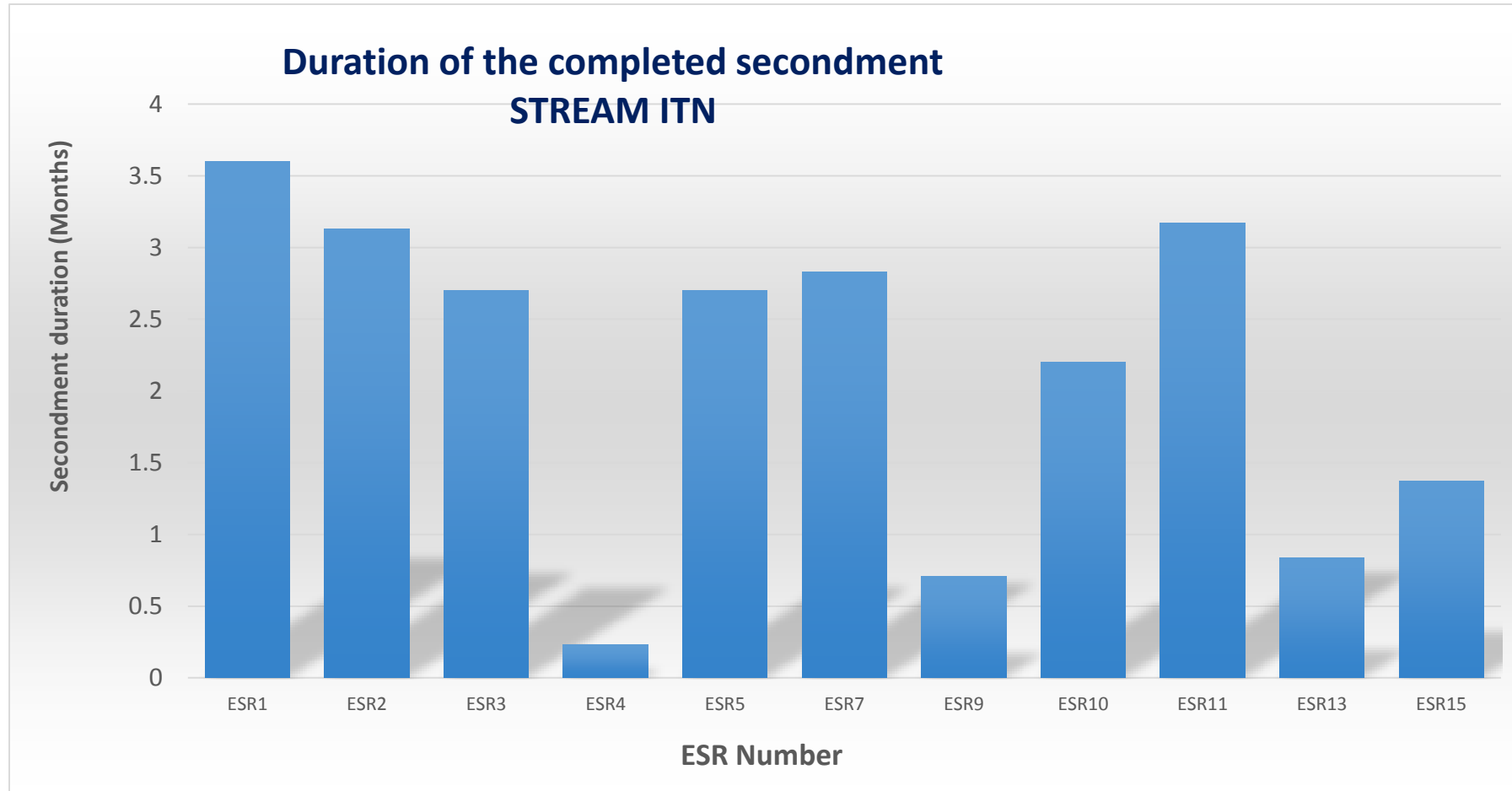
### ☐ Secondments are an important part for the ESR technical and professional development (rule: <30% contract time)

- ✓ A total of **25 secondments periods** has been done in STREAM ITN (in total of 35-40 foreseen for the 17 ESRs)
- ✓ Average period of past **secondment is 23.5 months** (some ESRs still have to complete the 1<sup>st</sup> secondment period)
- ✓ Great exchange between academic and non academic partners. Mainly secondment have been done for **experimental purposes.**





# III. Collaborative research: secondments

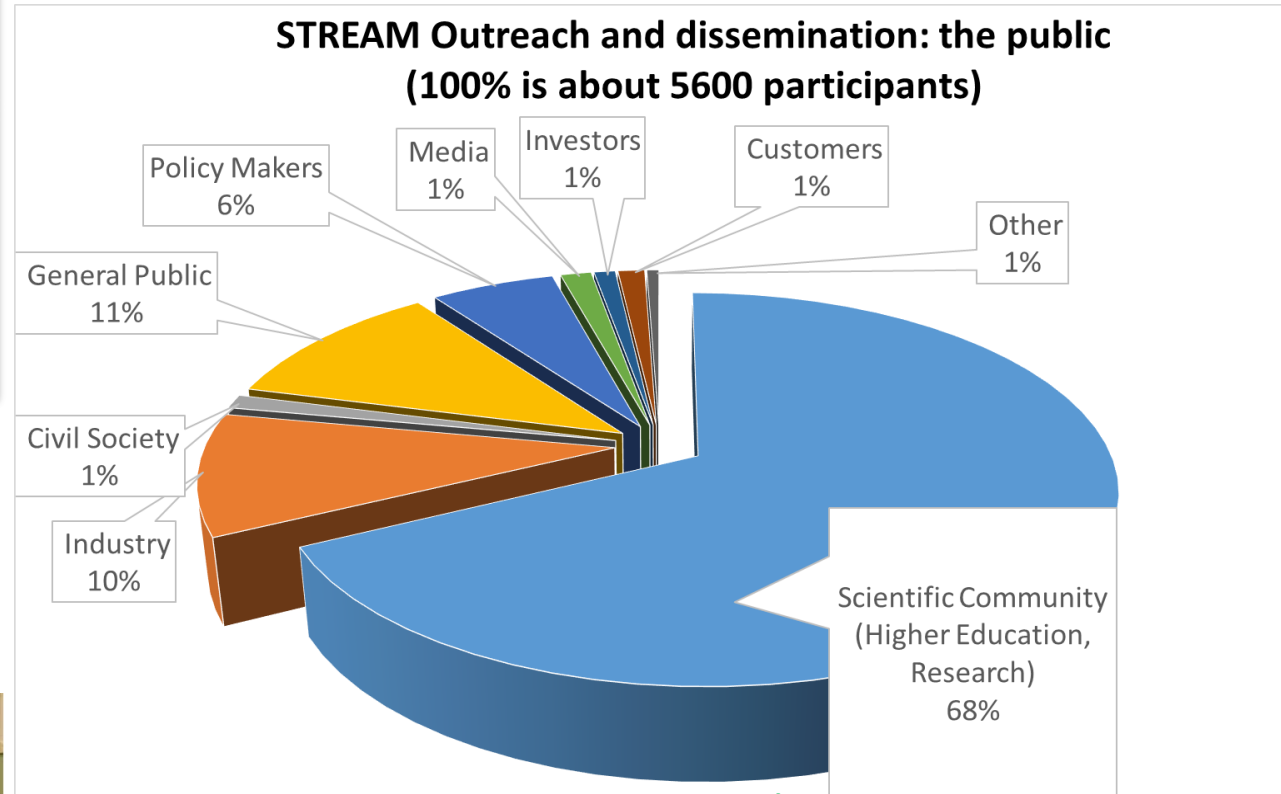
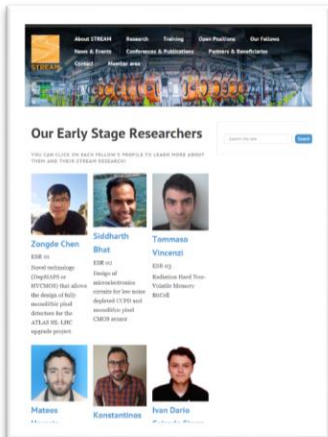






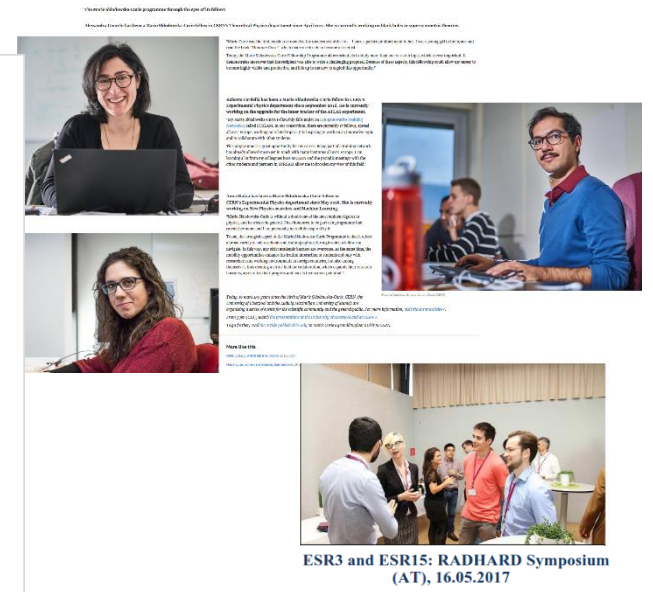
# III. Outreach and dissemination activities

## STREAM ESRs have been participating to several outreach and dissemination events



(Extracted from 2<sup>nd</sup> Year Report)

S.Allegretti







## III. Outreach and dissemination activities

- ✓ The ESRs have been publishing more than 20 papers in International Journals and Conference Proceedings/Workshops!
- ✓ Articles and conference proceedings listed to date in the STREAM SharePoint and Participant Portal (NEED TO BE UPDATED!)





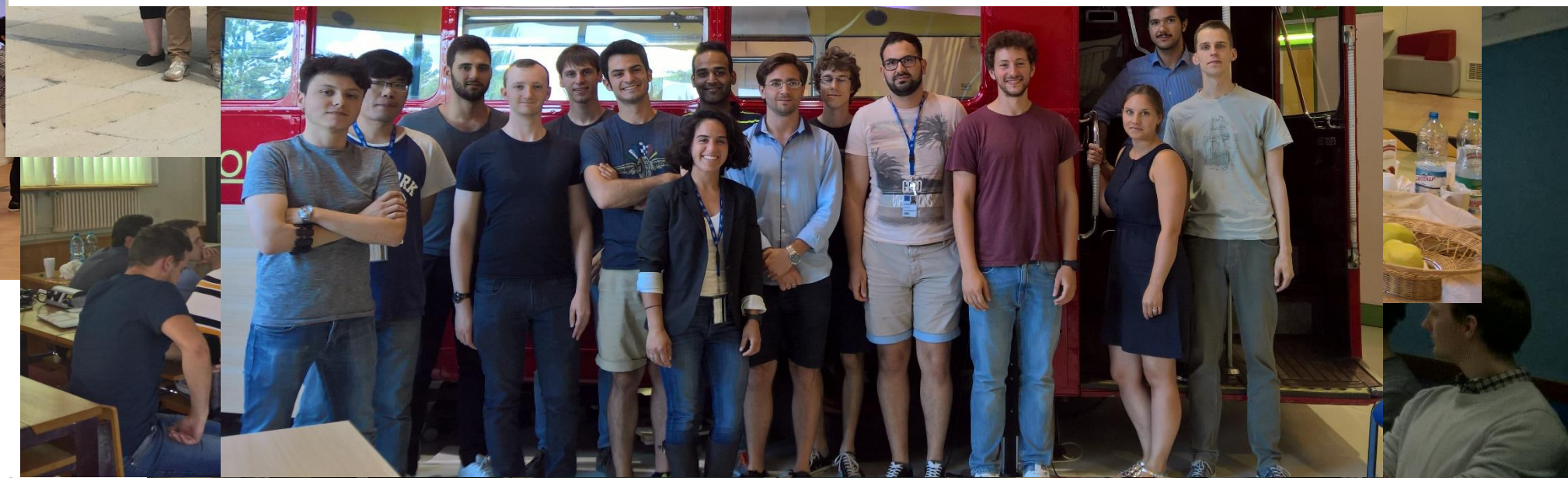
## IV. Summary

- ❑ The STREAM ITN granted 17 Early Stage Researchers Positions
  - In total 20 fellows have enrolled in this unique programme
  
- ❑ The STREAM ESRs have already :
  - ❑ Participated in more than 33 full days of network-wide training in various disciplines
  - ❑ Had ~23.5 months of experimental and academic secondments
  - ❑ Contributed to leading edge scientific research, resulting in PhDs for most ESRs
  - ❑ Developed an International Professional Network
  - ❑ Shadowed professionals in the fields of detector technologies and sensor design and experienced working in large International Collaborations





**This could not happen without your attentive participation and your engagement!**  
**In the name of the STREAM Coordination Team,**  
**I would like to thank you!**





**Thank you for your attention!**





# III. Entrepreneurship and Management Training

Joint trainings conceived by Prof. P. Keinz in the framework of WP6

Event	Topics
<a href="#"><u>Joint Training Course on Innovation Management and Technological Competence Leveraging</u></a> , Wu Wien, 20 - 23 June 2017	Specialized lectures and workshops in: <ul style="list-style-type: none"><li>- Technology Transfer and Innovation Management (Prof. P Keinz),</li><li>- Business modelling (Dr T. Lambertus from Fraunhofer Venture)</li><li>- Presentation skills with focus on technological background (B. Weingartner from Wu Wien)</li></ul>
<a href="#"><u>STREAM Winter School</u></a> , CERN, 20 - 22 November 2017	Specialized lectures and workshops in: <ul style="list-style-type: none"><li>- Being in the high performance zone, U. Schweiger and B. Riedenbauer from WU Wien.</li><li>- Design Thinking, J. Bauer from Fraunhofer Ventures</li><li>- KT Real-Life project, Prof. P. Keinz and Student of the Vienna Business School</li></ul>
<a href="#"><u>Joint Training Course on Entrepreneurship (Business Planning and Modelling)</u></a> , CERN, 19 - 20 June 2018	Workshop organised by T. Lambertus from Fraunhofer Venture on: <ul style="list-style-type: none"><li>- Market Analysis, Business Models and Plans and Entrepreneurial Teams</li><li>- Financial planning, and Business pitches development</li></ul>
<a href="#"><u>STREAM Final Conference</u></a> , CERN on 16-20 Sept 2019	<ul style="list-style-type: none"><li>- Hackathon - STREAM Technology Promotion (3days)</li><li>- Expert Lectures on Technology Development, Testing and Data Analysis (2 days)</li></ul>





## II. ESRs Individual Training

- ❑ Individual Program defined together with Supervisor in the Career Development Program
  - ✓ Technical seminar/ Courses at University (Particle Physics, detector technology, ...)
  - ✓ Professional Development Skills (3D CAD and IC design, Safety Courses, Special equipment training, data analysis, )
  - ✓ Attending and/or presenting in International Conferences
  - ✓ Complementary: Language Courses, Ethics in research, public speaking, ...
- ❑ Lectures and seminars during the STREAM Winter School





# I. Stream Network wide Training - list

<a href="#">STREAM Introduction workshop</a> , CERN (Geneva, CH)	31 Aug. - 1 Sept. 2016
<a href="#">STREAM 1<sup>st</sup> Annual meeting</a> , Physikalisches Institute Bonn (DE)	12 - 13 December 2016
<a href="#">Joint Training Course on Innovation Management and Technological Competence Leveraging</a> , Vienna Business School (AT)	20 - 23 June 2017
<a href="#">STREAM Winter School</a> , CERN ( Geneva,CH)	06 - 22 November 2017
<a href="#">STREAM 2nd Annual Meeting</a> , ams AG (Graz, AT)	23 - 24 January 2018
<a href="#">Joint Training Course on Entrepreneurship (Business Planning and Modelling), organised by Vienna Business School at CERN (CH)</a>	19 - 20 June 2018
<a href="#">PRINCE 2<sup>©</sup> Fast Track Course and Certification</a> , Eindhoven (NL)	14-18 January 2019
<a href="#">Workshop on CV writing and job interviews</a> , University of Geneva (CH)	23 January 2019
<a href="#">STREAM 3rd Annual Meeting</a> , University of Geneva (CH) ITk week (Compulsory for the STREAM ESRs), CERN (CH)	24-25 January 2019 28 January -1 February 2019
<a href="#">KT Workshop</a> , Lead by the KT group at CERN, University of Geneva (CH)	25 January 2019
<a href="#">Final Stream Conference</a> , Lead by WU-Wien (Hackathon) and CERN	CERN, 16 - 20 September 2019







# III. STREAM ESRs secondment plan (updated dec 2018)

1/2

ESR	ESR name	Secondment host	Expected secondment period	Secondment topic
1	Zongde	CERN	31.7.2017 - 26.8.2017	Involvement in irradiation
	CHEN	CERN	21/05/2018 -11.06.2018	Proton beam Irradiation test
		CERN	26/10/2018 -14/11/2018	HV-CMOS sensor Irradiation test
2	Siddharth BHAT	CERN	31.7.2017 - 26.8.2017	Involvement in irradiation
		CERN	2.10-8.12. 2017	Common submission work
		CERN	2-3 weeks in winter 2018	Involvement in the cmos design of the new protot. for Atlas upgrade
3	Tommaso VINCENZI	CERN	23.10.2017 - 03.11.2017	Irradiation of first stage prototypes
		NSCore (JP)	05.02.2018 - 13.04.2018	Design & Testing of a full memory IP
4	Horacio MATEOS	ThermoFisher Scient.	09.04.18 - 13.04.18	Gathering sensor requirements
		ThermoFisher Scient.	2 weeks in 2019	Testing prototypes in collaboration with end users
		UNI GE	4 weeks in 2018-2019	Test beam and laboratory measurements
5	Konstantinos MOUSTAKAS		02.03 -13.04.2017	
		CERN	08.05.2017-16.06.2017	Design of a CMOS monolithic active pixel sensor IC
6	Ivan CAICEDO	CERN	4-6 weeks in Winter 2018	Training in IC design
		Glasgow	2-3 weeks in Sept. 2018	Training on sensor testing and TCT measurements
7	Callum WOOD	Glasgow	8.1.2018 - 30.03.2018	General experience with detector systems and data analysis
		CERN	3 months in Winter 2018	Integrating sensor readout



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# III. STREAM ESRs secondment plan (updated Dec 2018)

2/2

ESR	ESR name	Second. host	Secondment period	Secondment topic
8	Ivan BERDALOVIC	Univ. of Zagreb	1.2.2019 - 31.2.2019	PhD coursework
9	Roberto CARDELLA	University of Oslo	21-31.05.2017	Science ethics course
		Univ. Glasgow	19-23/07/ 2017	Design of testboard of LAPA chip for high-speed data transmission
		Uni Bonn ELSA	25- 29/03/2018	Test beam measurement on MALTA
		Univ. of Glasgow	10 days in June 2018	Test of LAPA chip for high-speed data transmission and MALTA
10	Ettore ZAFFARONI	Liverpool	02/07/17 to 16/07/17	Characterization of LFoundry sensors
		Univ. of Milan	01/10/17 to 31/10/17	X-ray irradiation, first test of module flex
		Univ. of Milan	23/04/18 to 13/05/18	Module assembly and flex design
11	Lluís SIMON-ARGEMI	CERN	05/10/2017 - 15/11/2017	Learn and work on FPGA
		CERN	29/01/2018 -12/03/2018	Testbeam and sensor characterisation
		Bonn	17/04/2018 - 24/04/2018	Detector design
12	Francesco PIRO	uBonn	Autumn 2018	Detector Design
13	Andrea FERRETTI	KIT	29/10/2017 - 05/11/2017	HPIXEL HV-CMOS sensor: operation
		CERN	28/08/2018 - 14/09/2018	Radiation hardness test procedures
14	Sarah BUSEF	uBonn	2-3 months in 2018	Testing prototype assemblies
		CiS	2-3 months in 2019	Collaborative research on electronic packaging
15	Filip SEGMANOVIC	CERN	14.8.2017 - 8.9.2017	TCAD simulations
		R. Boskovic Institute	1.6.2018 - 15.6.2018	DLTS measurements
17	Barbara MEHNER	MIT	4-28.02.2019	Exchange with research community on technology and knowledge transfer
		Fraunhofer	1-19.04.2019	Practical exploration of innovation processes at Fraunhofer Venture and discussion of strategies for innovations

