

Role of industry in advanced researcher training

Driver for Innovation
Dr A. Alexandrova



Background

- University of Liverpool has initiated & coordinated 5 Marie Curie Research & Training Networks:



(*Beam Diagnostics, Physics*, www.liv.ac.uk/ditanet)
4.2 M€, 32 partners



(*Laser Applications, Engineering*, www.la3net.eu)
4.6 M€, 38 partners



(*Optimization, Physics*, www.opac-project.eu)
6 M€, 35 partners



(*Medical, Life Sciences*, www.oma-project.eu)
3.9 M€, 31 partners



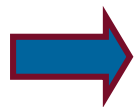
(*Antimatter R&D, Physics*, www.ava-project.eu)
4.0 M€, 24 partners



Largest Marie Curie networks in any research community

Training Concept

- Local training through cutting edge research project
- Embed Fellow project into wider work package challenges
- Organize intra-network secondment and training scheme
- Each Fellow benefits from cross-sector exposure and international collaboration



Broad skills set, boosting employability.

Training Events

- **International Schools** on interdisciplinary topics - delivered by speakers from both sectors;
- **Topical Workshops** on focused research topics;
- **Final Conference and Symposium** to present project results and product innovations.



Collaboration is Key !



Training for Broad(er) Skills

Time	Monday	Tuesday	Wednesday	Thursday	Friday
8.30 – 9.30	Introduction <i>Paired Introductions: Participants generate flip chart poster of interview partner then present them to whole group.</i>	Career Prospects in Industry & Academia Independent Teamwork Dreamer, Realist, Critic <i>Teams to come up with a response to the challenge Teams choose their project topic and plan the team-working process.</i> <i>Target Setting Milestones & deliverables session – assessment of targets for the project</i>	Presentation skills <i>Introduction</i> <i>Participants will give 5 minute presentation in small groups about their PhD projects</i> <i>All presentations will be video recorded</i> <i>Feedback by:</i> (1) presenter, (2) fellow students, (3) Tutor	Advanced Project Management Independent Team Work <i>Teams work on the project according to their plan</i> Chairs meeting <i>Present summary of report structure Teams review project following feedback</i>	Introduction to Peer Review The Presentation <i>(Followed by Questions)</i> Peer Review preparation Peer Review <i>Teams present assessment and feedback</i>
9.30 – 10.30					
10.30 - Break	Presentation skills <i>Basics of research presentations – an introduction to the Do's and Don'ts of conference presentation</i>			International collaboration	Peer Review <i>Teams present assessment and feedback</i>
11.00 – 12.30					
12.30 – 13.30	Lunch				
13.30 – 15.00	Introduction to Project Management <i>Theoretical Background</i> <i>Action: Plan PhD project Update description Stakeholder analysis Milestones Deliverables</i>	Scientific Writing <i>Focus on writing research papers.</i> <ul style="list-style-type: none"> The writing process and structure Thinking about the audience Target journals Tips <i>Writing for the general public.</i>	Visit to Cockcroft Institute <i>Introduction</i> <i>Tour of facilities</i>	Network diagrams <i>(Understanding dependencies)</i> Independent Team Work <i>Teams continue collaborating on project.</i> <ul style="list-style-type: none"> Produce report Create presentation 	
15.00 – Break					
15.30 – 16.30					
16.30 – 17.30					

The best research only gets done if
industry and academia work closely
together



But Why? Core missions?

- Academia

to educate highly trained, independent scientists and to carefully align and integrate their education with ground-breaking fundamental research

- Industry

to generate profit for shareholders, often through innovation and practical use of advanced technologies.

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Failure to recognize and accommodate these different objectives will, at best, cause friction and wasted time. At worst, it may result in a complete failure to meet objectives and withdrawal from further collaboration

- Industry

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Pros and cons

Industry

- Access to world-leading specialist and resources
- New talents for hire
- Cost-effectiveness
- Out-of-the-box thinking
- Training in fundamentals
- Extended network

Academia

- Inspiration by application-driven questions
- Career for students
- Funding
- Launch for young academics
- Awareness of trends in industry
- Centres and consortia
- Lack of IP protection
- Incompatible priorities

- Partners at different location with different cultures
- Typical lengths of work reduces flexibilities and restricted abilities to collaborate with other partners

Industry - Academia Collaboration

- **Coordination of R&D agendas and avoid duplications**
 - **Additional private R&D investment and funding**
- **Complementarities of scientific and technological capabilities**
 - **New products and new technologies**
- **Personal trained to think out-of-the-box for both parts**

Funding

- **R&D research grants**
 - **Matching grants**
 - **Innovation vouchers**
- **Science parks, spin-offs, business incubators**

What Industry can and should do?

- Academia: Consultancy; Contract research; Public-private partnership
- get involved in definition of training program. *What does industry need? what are current graduates missing?*
- contribute to events (workshops and conferences, etc) to support knowledge exchange
- offer internship for early career researchers. get in touch with possible partners to get joined funding
- engage in joint R&D with academia as it is best platform for innovation

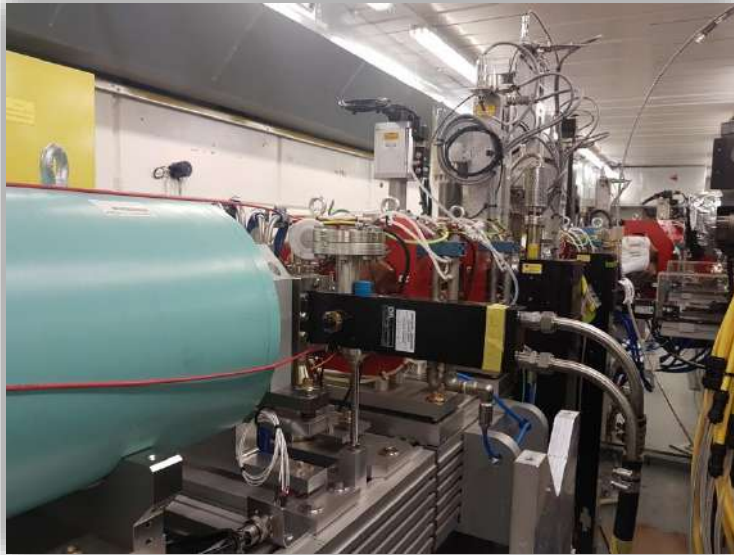
***ADVANCED
DIAGNOSTICS FOR
CHARGED PARTICLE
BEAMS***

A visualization of a particle beam, showing a dense horizontal line of blue streaks on the left that transitions into a fan-like spread of individual blue lines with small white dots at their ends on the right, set against a dark blue background.

Optical RF cavity monitor



+ Fibre-based BLM for online beam loss detection along entire beam lines and storage rings.



+ Dark current measurement
(*RF cavity conditioning and control*)
+ Superior time and spatial resolution



 **D-Beam**

GET IN TOUCH

<http://www.d-beam.co.uk>

STFC-CERN Business Incubation Centre

GET IN TOUCH! QUESTIONS?

LIV.

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**Liverpool Big Data Science
Centre for Doctoral Training**

www.livdat.org

*Libera workshop, 31 May – 2 June 2017
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