Outcome from the joint CALIPSO-NMI3 Industrial Advisory Board meeting
Frankfurt, 3/4 December 2013

Industry Advisory Board members

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The summary below is based on the IAB feedback and also extracted from the notes made by Miriam Forster (NMI3) and Ed Mitchell (CALIPSO).

Summary of major points raised during meeting and to be addressed by RIs to provide a high quality access, service and collaboration for and with industry:

Access to research infrastructures / legal issues

- Specific beamtime slots could be kept fixed for Industry. Such a system is already in operation in some facilities and some beamlines, but not in all. It would seem wise to share learning and experience to implement the system in those facilities willing to increase their industrial use.

Cost/benefit - Communication of techniques

- The cost of beam time is often highlighted as a hurdle for Industry, but what really matters is the cost-benefit ratio. Consequently, benefits need to be clearly communicated in a form that is appealing (and comprehensible!) to industry.
- "Scientific translation" is a two-way process. It is necessary for scientific RI staff to successfully translate new scientific opportunities to a language that make the opportunities understandable and appeal to industry. However, it is also highly beneficial if industry demonstrates that many of its challenges contain a core of interesting and challenging science.

Service / Collaboration / Training of industry staff

- Whenever possible for practical reasons and necessary for scientific reasons, industry should have the option to purchase beam time along with a skilled beam line scientist.
- The increased industrial focus on precompetitive collaboration opens new possibilities to build industrial-academic consortia around scientific areas of interest to several partners. This distributes costs to address unfavourable cost-benefit ratios.
- Poor or non-existent harmonisation of software is a concern. Data processing software (in particular on-the-fly processing of raw data) should be user-friendly, standardised and transparent in order to benefit industrial use, whereas this aspect is far less critical for software used for further, more complex and specialised, data analysis.

Accurateness and timeliness vs publishable science

- Validation of experimental methods and techniques is not always strictly necessary for industrial use. This is particularly true for methods designed to provide scientific understanding (rather than actual testing and analytical work). Increasing industrial focus on quality by design (rather than quality by inspection) increases interest of non-validated and more explorative methods.

Incentive for instrument scientists/ group – Management issues

- Part of the income from industrial projects should go back to the instrument or beamline for their scientific use, rather than all being put into a general overhead account. This would create additional incentives for the beamline team to spend time and effort on industrial projects.

NEEDS	Potential ACTIONS
Access	
1. Short access time to beamlines (2-4 weeks) 2. Preferably at short distance from home laboratories	- Increase flexibility/ rapid access - Remote access - Joint networks of RI to provide rapid access for specific techniques
3. Technical back-up 24hrs/24hrs	-
4. Minimal bureaucracy (IPR and legal issues)	-
5. Quality control, apply standards where required	- Guarantee reproducibility
6. Fast results, robust methods, online analysis with automation 7. Harmonisation of data formats 8. Analysis of raw data results	-
9. Support for "answering the right question"	-
Advertise techniques and benefit	
10. Advertise the potential of the techniques offered by N & X facilities 11. Promote case studies ("problem driven entry point")	- Possibly offer a reduced rate (70 %) for beamtime if a report is written within 3 weeks - Report explains in general terms the aims of the experiments and the types of results that were obtained - Publish all these reports
12. Get in touch with industry	- Host conferences on subjects slightly upstream of the interests of industry
13. Inexperienced users intimidated by facility and physicists, need an opportunity to ask apparently stupid questions	- Local conferences, workshops, follow up workshops - Training for industrial users
14. Long term: raise technique awareness in companies	- Increase the number of PhD students in areas such as materials science, soft matter and physical chemistry whom later may take positions in industry and will then see the potential of techniques offered by X&N for solving industrial research problems
Service/ staff/ equipment	
15. Professional and reliable operation of beamlines and instruments 16. State-of-the-art beamline equipment 17. State of the art laboratories for sample preparation and data analysis 18. On-the-fly processing of data to be improved and data storage/transportability	- Beamline staff on long term contracts to improve/assure competent service - Re-invest in related services (data, sample environments…) - Provide simulation tools to prepare industrial users or illustrate possibilities - Provide on-line real-time processing - Harmonisation of data treatment software and formats - Online accessibility
19. Lack of experienced staff and 24hrs support during experiment	
20. Preparation laboratories not always available	

Coordination	
21. Coordination of industrial beamtime applications by an "industrial user office" to ensure use of the proper beamlines + scientific support 22. Specialisation of research facilities	- Joint networks of RI to provide rapid access for specific techniques - Limit number of intermediaries (confidentiality) - A "science link" model type platform on European/regional level - Promote specialisation and complementarity across the European RI portfolio
Collaboration	
23. Increase confidence and cross-cultural experience 24. Establish relationship of trust	- Exchange of RI staff the possibility of taking a sabbatical period to take a temporary position in industry - Offer to industrial researchers the possibility of similar position at RIs. - Problem: confidentiality
25. Train good students (in companies) that can provide solutions in future	- Create joint academia – industry research teams. This has been done already, and it has been successful but without emphasis on the use of large scale infrastructures
26. Use academic consultants 27. Facilitator companies	Create a network of reactive service companies and academics that: - are experienced with the use of large scale infrastructures - have a record of having successfully solved industrial problems - are registered with certification agency where needed by industry (not a huge demand in this direction to date)
Management	
28. Facility commitment 29. Incentives and industrial income re-invested 30. New metrics for evaluation	- Create an environment where industrial collaboration is welcome and accounted for, particularly for staff involvement - Provide the time frame for scientists to finish the experiment (avoid hang over)