



Technical Collaborations Under WP3

Oiling the Wheels for Scientists and Engineers

G Hirst - STFC

- WP3 – Coordination and Consolidation of Joint Technical Developments (JTDs) - is a **Non-Technical** work package !
- Approach – Approve a number of Expert Groups to work jointly on technical issues important to EuroFEL then **support** them and **learn about** the JTD process
- Deliverables:



D3.1 List of prioritised technical issues

D3.2 Web-based tools for Expert Groups

D3.3 Intermediate presentation on progress



D3.4 Intermediate report on progress & effectiveness

D3.5 Final presentation on progress

D3.6 Final report on progress & effectiveness

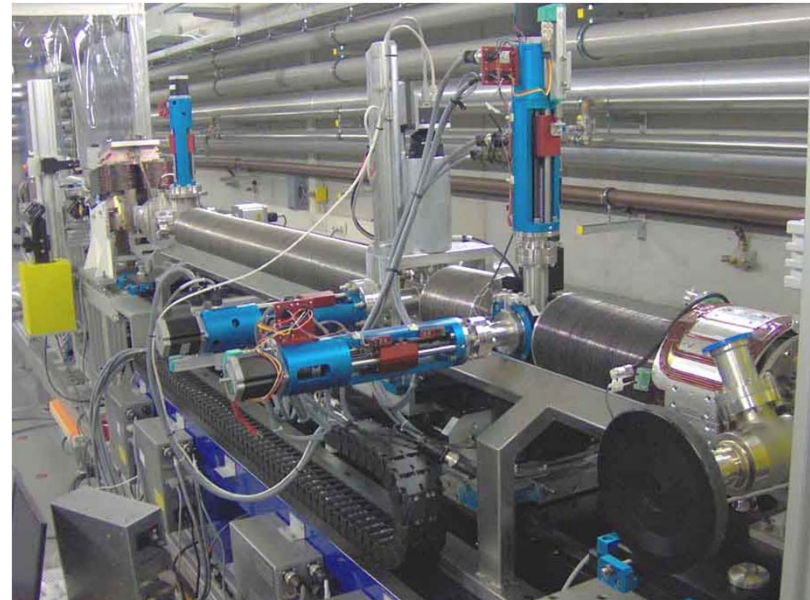
■ Groups and spokespersons:

EG1 FEL injector commissioning	M Ferrario
EG2 Transverse beam diagnostics	G-L Orlandi
EG3 Longitudinal beam diagnostics	M Veronese
EG4 Metrology for FEL optics	F Siewert
EG5 Photon beam transport and diagnostics	M Zangrando
EG6 FEL seeding	M Ferrario

- Funds were limited to covering **joint** activities, primarily travel, subsistence, meeting/workshop support and occasionally equipment
- Management was “light-touch” and programs were self-organised and self-propelled

EG1 – Sharing Equipment

- When a specialised piece of equipment has been developed and characterised it makes sense to share it, especially if the need for it is transient
- Large items will raise issues including insurance, transport, safety, training, maintenance and the offsetting of development and depreciation costs
- If sharing on this scale becomes commonplace it will make sense to standardise procedures for it
- The late accession of INFN and PSI to IRUVX-PP delayed this process but despite this the SPARC emittance meter has been shared
- *Sharing large pieces of equipment raises significant issues whose resolution can be time-consuming and difficult, but the benefits can still outweigh the costs*



EG2 – Large Facility Access

- A lot of collaborative activity can be carried out ‘off-line’. It does not need access to large experimental facilities
- But some, unavoidably, does
- Assignment of the highest-priority activities to the EG programs has been rare. Lower-priority activities find it harder to get beamtime
- Chances are better during machine development and commissioning. But *collaborative* activities are hard to carry out if dates and experimental conditions are uncertain. Careful task-definition/planning seems to raise the success rate.
- *Should collaborative beamtime be prioritised/ring-fenced like user beamtime ? Should collaborators be involved in planning, analysis etc but local staff carry out experiments ?*



EG3 – Help Wanted

- Collaboration can be technically very effective but comes with overhead costs, both financial and administrative
- Financial support for travel, workshops etc is relatively inexpensive and seems to be disproportionately productive



- Management, policy and strategy need careful attention in the preparatory stages of a project
- Practical support *really* helps JTD make progress



- *Practical support is vital, a single point of contact simplifies processes, allowing real expertise to grow and lowering barriers to collaboration*

EG4 – Do You See What I See ?

- Transporting short-wavelength FEL beams without degrading them is *extremely* challenging
- Metrology of transport optics is vital, but instrument calibration is *also* challenging
- “Round-robin” cross-calibration is an effective approach but requires common test pieces

- A clear candidate for JTD, EG support:

enabled an activity which could not have happened otherwise

delivered significant overall cost savings

improved the community’s understanding of one another’s capabilities

by establishing a truly common standard opened up the possibility of closer working in the future



Excellent quality !!	Zeiss	HZB
Radius (mm)	9318	9312
Residual slope (μ rad rms)	0.2	0.17

EG5 – Meetings of Minds

- Wavefront Propagation Workshop
- 19 attendees focusing on 3 codes
- Presentations, hands-on training, Q&A, feedback to developers
- A forum to discuss development, hosting and support
- Community building



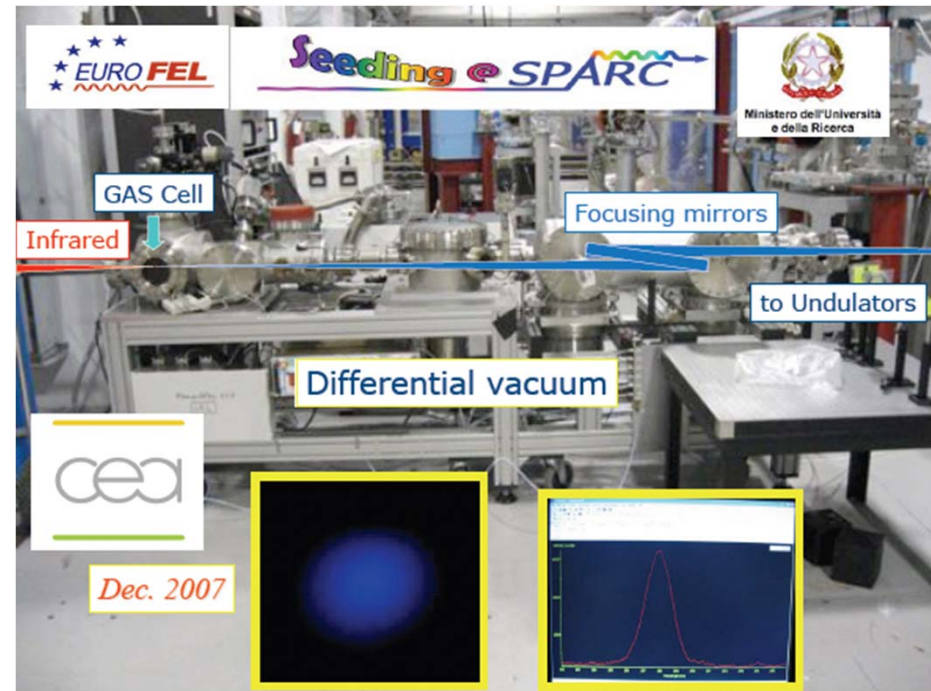
- Photon Beamlines & Diagnostics Workshop
- Run with EG4 & WP7, a large community
- 85 attendees, 13 invited speakers
- Full-scale conference with talks, posters & proceedings in a special NIMA supplement
- First in 'EuroFEL Workshop' series
- *EGs can be large & well-organised*

enough to make real progress with training & dissemination



EG6 – We're All In This Together

- FEL seeding is an area of rapidly growing interest requiring expertise in lasers, HHG, photon and electron beam transport and FEL science
- Assembling such a multi-skilled team will almost inevitably involve JTD and is very well suited to the WP3 remit
- Collaborations have existed for some years including one involving INFN and SOLEIL
- WP3 was able to support *all* the participants in this activity even though one was not a full IRUVX-PP member
- *Bringing experts into an activity, from wherever they are based, maximises the benefits delivered by JTD*



- Some of the EG activities involved only small numbers of people and/or institutes. Though vulnerable to individuals' circumstances they could still be very effective
- Intangible results e.g. relationship/community building were hard to measure but often mentioned. EGs are 'not like conference encounters'
- There can be a trade-off between program flexibility, which is popular, and delivery
- EGs which have lived for longer work more effectively
- Communication is an issue which the Wiki did not completely solve
- Relatively small barriers can inhibit joint working (the corollary of the effectiveness of small amounts of support)
- The immediate future of the EGs will depend on the support available. Some will almost certainly continue, others may not ...
- *Thank you for your attention !*

