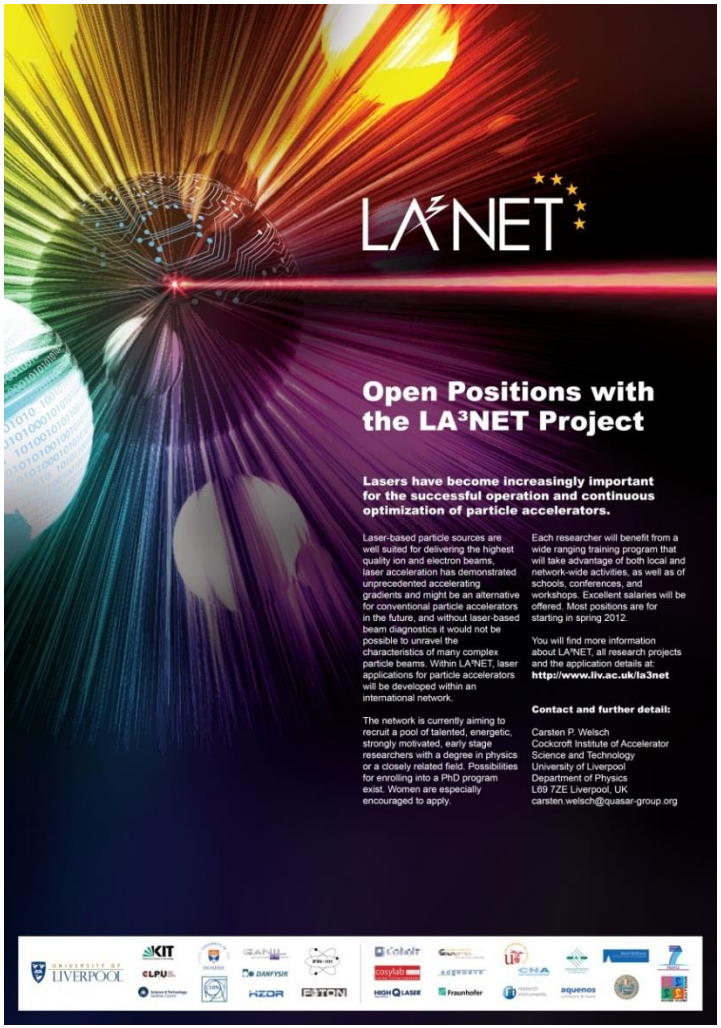
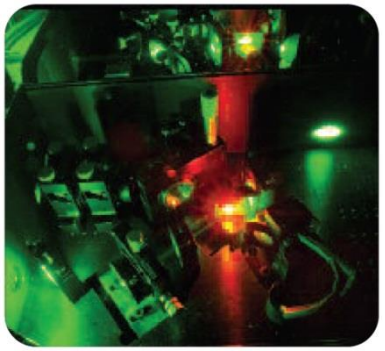

LA³NET
WELCOME !
to the LA³NET Conference
Carsten P. Welsch



- Laser Applications for Accelerators – A Marie Curie Network
  - 19 ESRs
  - 36 Partner Institutions
  - 4.6 M€

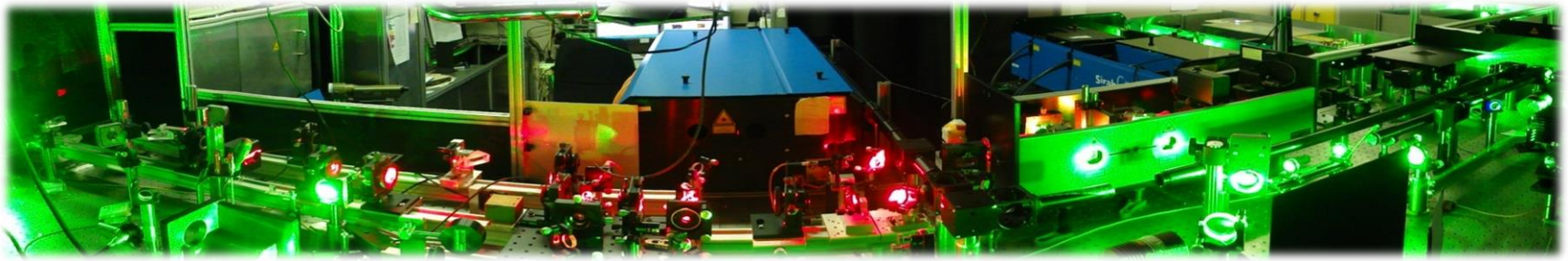
LAser Applications at Accelerators a european NETwork

- More than 30,000 accelerators in the world;
- Lasers are becoming increasingly important
  - Beam generation;
  - Acceleration;
  - Characterization, etc.
- Few experts trained in both fields;
- Large scale facilities: International collaboration is key !

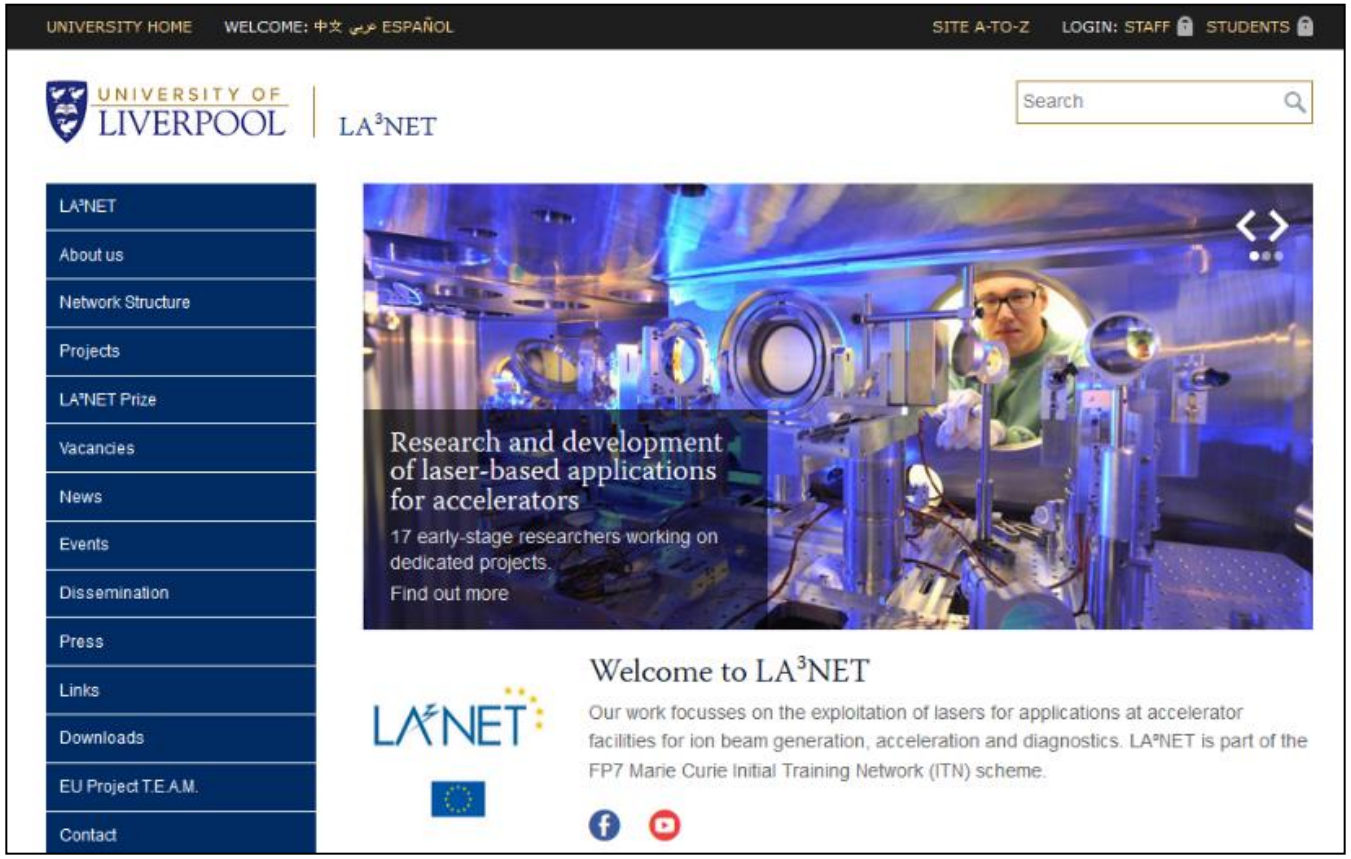


Research Program

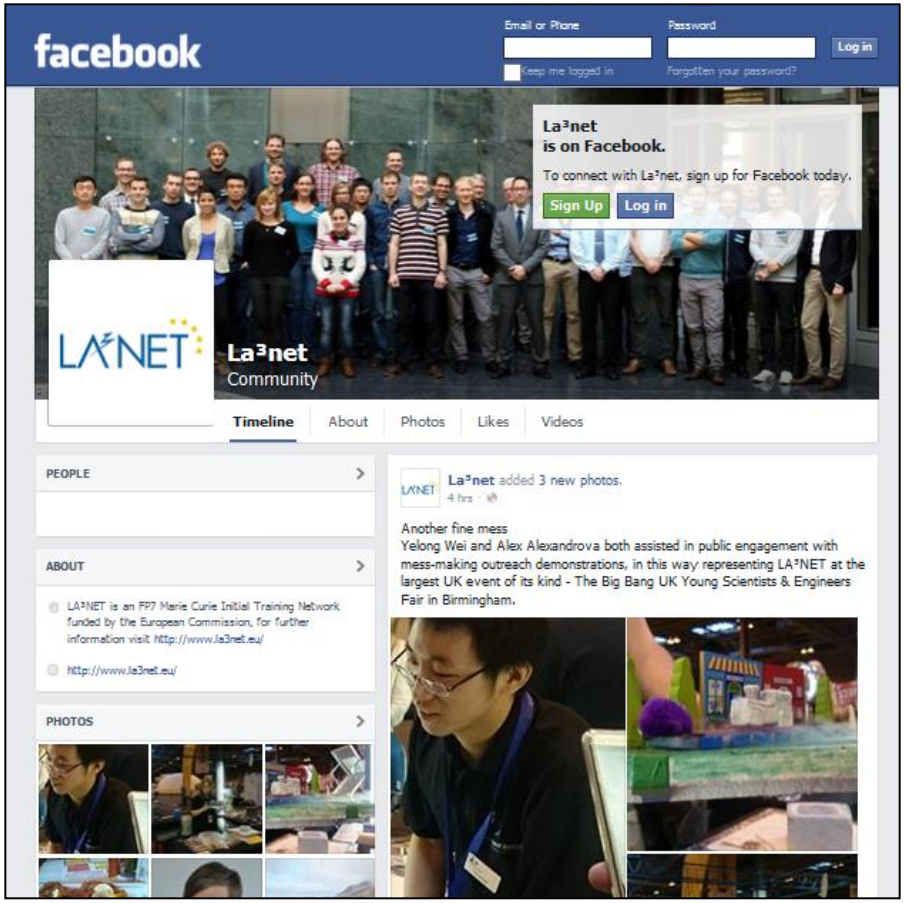
- Main areas:
  - Particle Sources (WP2);
  - Particle Beam Acceleration Schemes (WP3);
  - Beam Diagnostics (WP4);
  - System Integration (WP5);
  - Laser and Photon Detector Technology (WP6).



LA³NET Web Site



(http://www.)la3net.eu



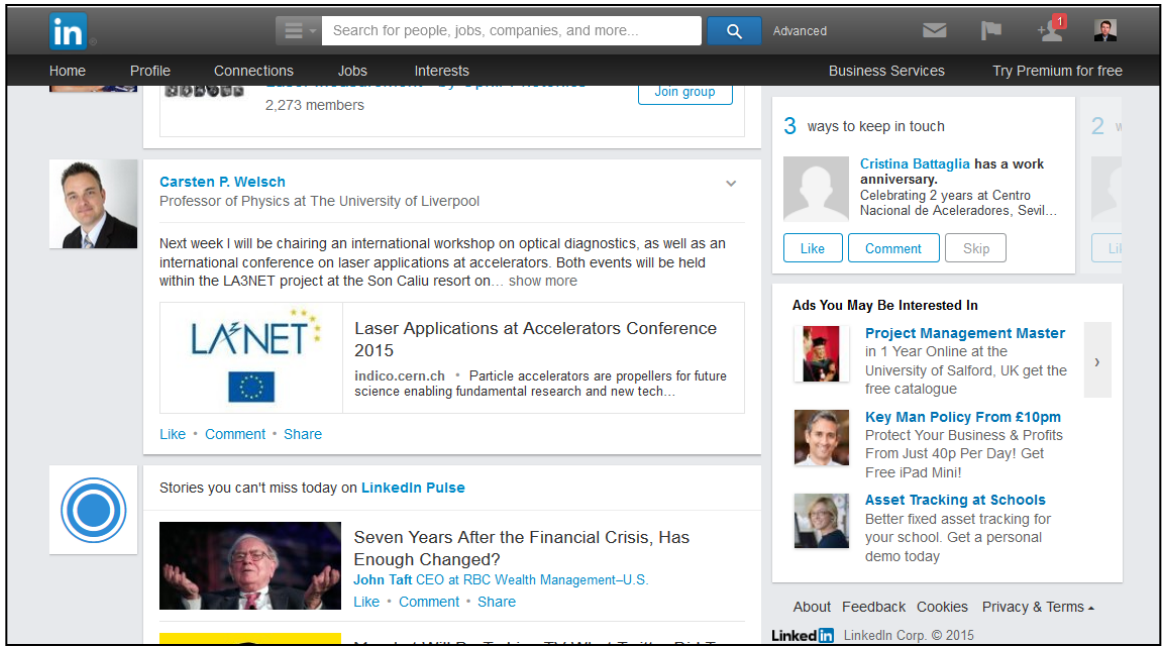
Like us.

Future: The Cockcroft Institute FB.

LinkedIn

+1,000 followers via personal profile

+ targeted discussion groups



Quarterly Newsletter

- Part of the dissemination strategy
- Contribution from all network partners
- Announcement and review of activities
- > 500 recipients, growing
  - All available via home page.

Conference contributions

- Conferences 2012
  - IPAC stand
  - BIW, LAP, etc.
- Conferences 2013
  - FEL, IPAC, IBIC, HEA L&T, etc.
  - IBIC stand
- Conferences 2014
  - IPAC stand, ESOF
  - IBIC, IPAC
- IPAC, IBIC, Symposium

Events

International Schools

Topical Workshops

EU Project administration training

Conference

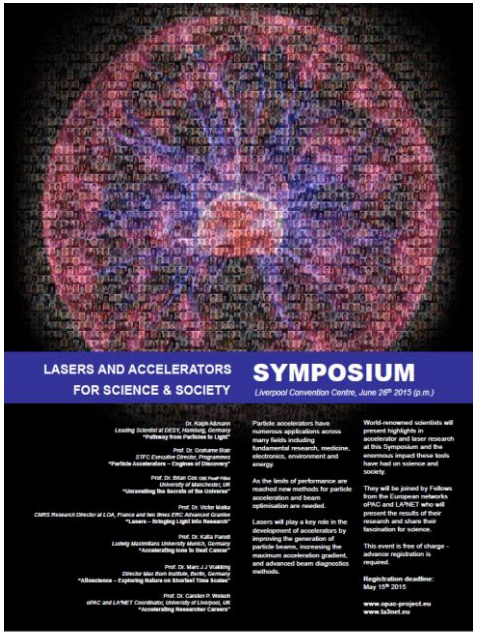
Outreach & sharing best practice

ESOF 2014 COPENHAGEN EUROSCIENCE OPEN FORUM

- **Complementary skills training**
  - Communication, project management, IPR
- **Administrator training**
- **HEA seminar, Teaching & Learning**

Public engagement

- Fairs & conferences
- Project videos
- Symposium on Accelerators & Lasers for Science and Society, Liverpool Convention Centre, 26 June 2015



LA³NET Prize

- Annual prize of 1 k€ for E(S)R;
  - Within first 5 years of career;
  - Original contribution;
  - Letters of recommendation.
- Not limited to LA³NET partners.
- Application deadline: 30 June.

Administrative Support

- Promotes LA³NET research, training and administration internationally
- Contributions to IPAC, HEASTEM, IBIC, etc.
- ‚Best practice' in Europe *(EC)*






International Partnership




LA³NET
Accelerators & Lasers
Drivers of Innovation
Prof. Carsten P. Welsch

Where do we want/need to go ?

TIARA
ACCELERATING KNOWLEDGE AND INNOVATION

- EU capacity: infrastructure and human ‚capital'

Grand Challenges

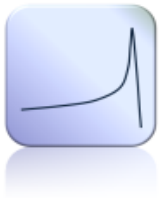
- oPAC Workshop @ CERN
- IndicoID: 243 336

Accelerator Optimization

- Particle tracking codes: beam-plasma interaction, dynamic handling of input data, inclusion of time-dependent processes
- Physical effects modeling: Include beam, signal and detector physics in comprehensive toolkit; move towards real-time simulations
- Beam analysis and control: Interface diagnostics to beam physics codes, feed into control system

Medical Accelerators

- (online) beam monitors
- Improved calorimeters and Si detectors



- Enhanced Monte Carlo codes (FLUKA)
- Systematic studies into e.g. ion effects

- Common software bus
- Improved beam delivery schemes

Beam Diagnostics

- Profile: Sub 100 nm resolution, increased DR, non-invasive, real-time
- Particle Detectors: Diamond, EO crystals, Si pixels, neutron detectors
- Emittance: Space charge dominated beams, high energy frontier, high current electron accelerators
- Position: Resolution and sensitivity, tune measurement automation for LC and FELs.

Novel Accelerators

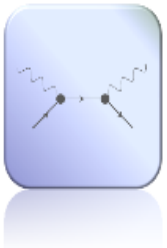
- Dielectric Laser Accelerators
- Particle-driven laser plasma acceleration
- Laser plasma acceleration

...all require improved simulation studies, better understanding of beam/field/plasma interaction and a coordinated R&D effort.

Antimatter Facilities

- Better facility design
- New beam handling techniques

- Online diagnostics
- Improved detectors



- Experiments: Novel cooling schemes
- Spectroscopy on antihydrogen.

Summary

- LA³NET is a world-wide unique training effort that has yielded very good R&D results
- Cohort of 19 Fellows successfully trained
- Role model: Enhanced training program to improve career perspectives
- A number of large-scale accelerator and laser projects are in the planning – but where are the experts !?

Many more initiatives are urgently required !