Project Communication

XLS WP1

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Outline

Communication:

1. Within the project
2. To the accelerator community
3. To the greater public

List of publications and presence at conferences:

- Presentations
- Posters
- Open Datasets
- Ongoing activities

Workshops

No.	Year	Participants	Event
1	2018	XLS Partners	CLIC Project Meeting 2018, 25 January 2018, Geneva, Switzerland
2	2018	Gerardo D'Auria	2. LEAPS General Assembly, Triest, 12th-13th March 2018
3	2018	Gerardo D'Auria	FELs of Europe Steering Committee Meeting, Triest 13th-14th March 2018
4	2018	Gerardo D'Auria	11th International Workshop on Breakdown Science and High Gradient Technology HG2018, 4th-8th June 2018, Shanghai, China
5	2018	Francis Perez	LEAPS 1st Plenary Meeting, 12th-13th November 2018, DESY, Hamburg, Germany
6	2018	XLS Partners	XLS Users' Workshop, 27.-28. November 2018, CERN, Geneva, Switzerland
7	2019	Gerardo D'Auria	12th Meeting of the TIARA Collaboration Council, 20th February 2019, CERN, Geneva, Switzerland
8	2019	Andrea Latina	CLIC Project Meeting 2019, 07 May 2019, Geneva, Switzerland
9	2019	Gerardo D'Auria, T. G. Lucas	12th International Workshop on Breakdown Science and High Gradient Technology HG2019 , 11 – 14 June 2019, Le Refuge des Aiglons, France
10	2019	Massimo Ferrario?	4th European Advanced Accelerator Concepts Workshop EAAC 2019, 15th-20th September 2019, ELBA, Italy
11	2019	Daniel Gonzales Iglesias	XIII Iberian Meeting on Computational Electromagnetics EIEC 2019, 15th-18th October 2019, Potes Cantabria, Spain
12	2019	Gerardo D'Auria	EUV Sources for Lithography, 4th-6th November 2019, Amsterdam, Netherlands, invited talk

Presentations

No.	Year	Presentation Title	Speaker	Event	Attendants (ca.)	Scientific	Popularised
1	2018		All WP leaders	CLIC Project Meeting 2018, 25 January 2018, Geneva, Switzerland	227	yes	no
2	2018	**The CompactLight Project (XLS)**	Gerardo D'Auria	Future Light Sources 2018 (FLS 2018), Shanghai, China, 05-09 March 2018	151	yes	no
3	2018	**The CompactLight Design Study (XLS)**	Andrea Latina	Future Light Sources 2018 (FLS 2018), Shanghai, China, 05-09 March 2018	151	yes	no
4	2018	**EU Projects: CompactLight**	Gerardo D'Auria	FELs of Europe Steering Committee Meeting, Triest 13th-14th March 2018	42	yes	no
5	2018	**Status of the CompactLight Project (XLS)**	Gerardo D'Auria	11th International Workshop on Breakdown Science and High Gradient Technology HG2018, 4th-8th June 2018, Shanghai, China	99	yes	no
6	2019	**The CompactLight Project**	Gerardo D'Auria	Towards An Ultra-Compact X-Ray Free-Electron Laser, 22nd-25th January 2019, UCLA, Los Angeles, USA			
7	2019	**CompactLight Progress and Status**	Gerardo D'Auria	12th International Workshop onThe CompactLight Project (XLS) Breakdown Science and High Gradient Technology HG2019 , 11 – 14 June 2019, Le Refuge des Aiglons, France	77	yes	no
8	2019	**CompactLight (XLS) Report**	Andrea Latina	CLIC Project Meeting 2019, 07 May 2019, Geneva, Switzerland		yes	no
9	2019	**FEL gain length in the presence of beam collective effects**	Simone Di Mitri	ENEA, invited talk	15	yes	no
10	2019	**The CompactLight Design Study (XLS)**	Xingguang Liu	CERN, BE-ABP Information meeting	50	yes	no
11	2019	**CompactLight**	Gerardo D'Auria	12th Meeting of the TIARA Collaboration Council, 20th February 2019, CERN, Geneva, Switzerland	20	yes	no
12	2019	**Intense EUV sources for nanolithography**	R. Hoekstra	First year's symposium, University of Groningen, June 24, 2019	150	no	yes

No.	Year	Poster Title	Presenter	Conference	
1	2018	**The CompactLight | XLS Project**	Gerardo D'Auria	2. LEAPS General Assembly, Triest, 12th-13th March 2018	
2	2018	**The CompactLight Project (XLS)**	Francis Perez	LEAPS 1st Plenary Meeting, 12th-13th November 2018, DESY, Hamburg, Germany	https://www.leaps-initiative.eu/news/first_leaps_plenary_meeting/
3	2019	**CompactLight Design Study**	Jim Clarke	10th International Particle Accelerator Conference IPAC 2019, 19th-24th May 2019, Melbourne, Australia	https://ipac19.org/program/
4	2019	**Start-to-End Simulations of the Compact Light Project Based on an S-Band Injector and an X-Band LINAC**	Edu Marin	10th International Particle Accelerator Conference IPAC 2019, 19th-24th May 2019, Melbourne, Australia, TUPRB074	https://ipac19.org/program/
6	2019	**Progress in the design of an X-band linac-driven x-ray FEL for the CompactLight collaboration**	Massimo Ferrario	High Brightness Beams HBB, 8th-12th April 2019, Rethimno, Crete	https://conferences.pa.ucla.edu/hbb-2019/organizational-information.html
7	2019	**Ka-Band Linearizer Studies for a Compact Light Source**	Alejandro Castilla	10th International Particle Accelerator Conference IPAC 2019, 19th-24th May 2019, Melbourne, Australia	https://ipac19.org/program/
8	2019	**Design of an X-Band Constant Impedance LINAC for Compact Light Project**	Andrea Mostacci	10th International Particle Accelerator Conference IPAC 2019, 19th-24th May 2019, Melbourne, Australia	https://ipac19.org/program/
9	2019	**Smart*Light: A Tunable Inverse Compton Scattering X-Ray Source for Imaging and Analysis TUPGW074**	P.H.A. Mutsaers TU/e	10th International Particle Accelerator Conference IPAC 2019, 19th-24th May 2019, Melbourne, Australia	https://ipac19.org/program/
10					
11					
12	2019			4th European Advanced Accelerator Concepts Workshop EAAC 2019, 15th-20th September 2019, ELBA, Italy	https://agenda.infn.it/event/17304/

Open Datasets

No.	Name of Dataset	Data Storage / Repository	XLS Reference Person
1	**D1.2: XLS Data Management Plan v1.0**	https://www.compactlight.eu/Main/Publications	Evangelos Gazis
2	**D2.1: XLS Science Requirements and Performance Specification**	https://www.compactlight.eu/Main/Publications	Jim Clarke

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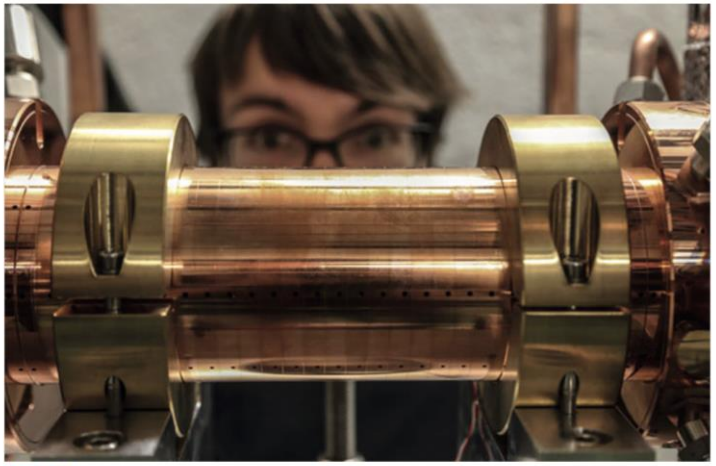
NEWS

EU project lights up X-band technology

10 November 2017



CLIC X-band

Advanced linear-accelerator (linac) technology developed at CERN and elsewhere will be used to develop a new generation of compact X-ray free-electron lasers (XFELs), thanks to a €3 million project funded by the European Commission's Horizon 2020 programme. Beginning in January 2018, "CompactLight" aims to design the first hard XFEL based on 12 GHz X-band technology, which originated from research for a high-energy linear collider. A consortium of 21 leading European institutions, including Elettra, CERN, PSI, KIT and INFN, in addition to seven universities and two industry partners (Kyma and VDL), are partnering to achieve this ambitious goal within the three-year duration of the recently awarded grant.

X-band technology, which provides accelerating-gradients of 100 MV/m and above in a highly compact device, is now a reality. This is the result of many years of intense R&D carried out at SLAC (US) and KEK (Japan), for the former NLC and JLC projects, and at CERN in the context of the Compact Linear Collider (CLIC). This pioneering technology also withstood validation at the Elettra and PSI laboratories.

XFELs, the latest generation of light sources based on linacs, are particularly suitable applications for high-gradient X-band technology. Following decades of growth in the use of synchrotron X-ray facilities to study materials across a wide spectrum of sciences, technologies and applications, XFELs (as opposed to circular light sources) are capable of

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Section

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Accelerating NEWS

CLIC

ISSUE 24

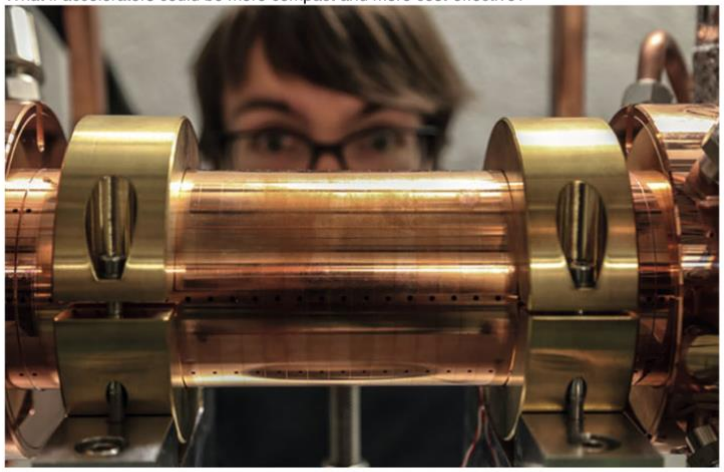
05 Mar 2018

CLIC technology lights the way to compact accelerators

by Several authors

CLIC linear accelerators CompactLight X-band technology X-ray free-electron lasers

What if accelerators could be more compact and more cost-effective?



What if accelerators could be more compact and more cost-effective? It would make their use in research, industry and medicine more affordable and more accessible. This is where the CompactLight project steps in. This new European project, which kicked off on 25 January at CERN, aims to use advanced linear-accelerator (linac) technology, developed at CERN and elsewhere, to develop a new generation of compact X-ray free-

An article about CompactLight will appear on "**Platinum**", an international magazine on European Entrepreneurship, Research & Innovation, Industry.

research&innovation

Small and powerful lasers

They are key elements of a project aiming at industrialising plasma accelerators

EuPRAXIA

Accelerators producing high energy particle beams are exceptional devices, though having remarkable dimensions and being extremely expensive. For this reason, an H2020 project named "EuPRAXIA" aims at studying the feasibility of an infrastructure able to "compact" accelerators through a technological leap, thanks to a new plasma technology whose purpose is that of using very high power lasers, generating a "pre-industrial" product that will then be industrialised by future projects. Within the European consortium EuPRAXIA - led by the DESY laboratory in Hamburg - The National Institute of Opites of CNR in Pisa, for years at the forefront in the research with high power lasers and plasmas, coordinates the design of the EuPRAXIA laser system in collaboration with research centres and industrial partners in the sectors of lasers and high technology. "In fact, laser is considered as the innovative element supplying energy to the system we are currently designing - explains Leonida Gizzi of CNR -: for this reason we need to build a compact and powerful laser system. Our aim is that of creating, for the first time, a machine that could work based on this principle: plasma technology is currently studied in the main laboratories in the world, CERN included and in Italy also at the INFN Laboratories in Frascati, a leading partner in the project. Our aim is to make such technology industrially accessible, creating a prototype meant for the future users". The technology employed by CNR for the new laser is called CPA (from the English Chirped Pulse Amplification): and was developed by Gérard Mourou and Donna Strickland, winners of the Nobel Prize for Physics 2018. "This technology allows to build very powerful lasers that, - unlike the huge lasers existing in the US and France - present compact dimensions as they exploit the short duration of the emission and the repetition of the process". In practice, an extreme peak power and high average power system that can be contained in a room: a true revolution for future industrial, environmental and biomedical applications of particle accelerators. For further information concerning the project visit www.eupraxia-project.eu, and CNR of Pisa www.ihl.ino.it. ■

THE LASER SYSTEM AT THE NATIONAL OPTICS INSTITUTE AT CNR OF PISA

110 PLATINUM - November 2018

ISSN 2038-2596

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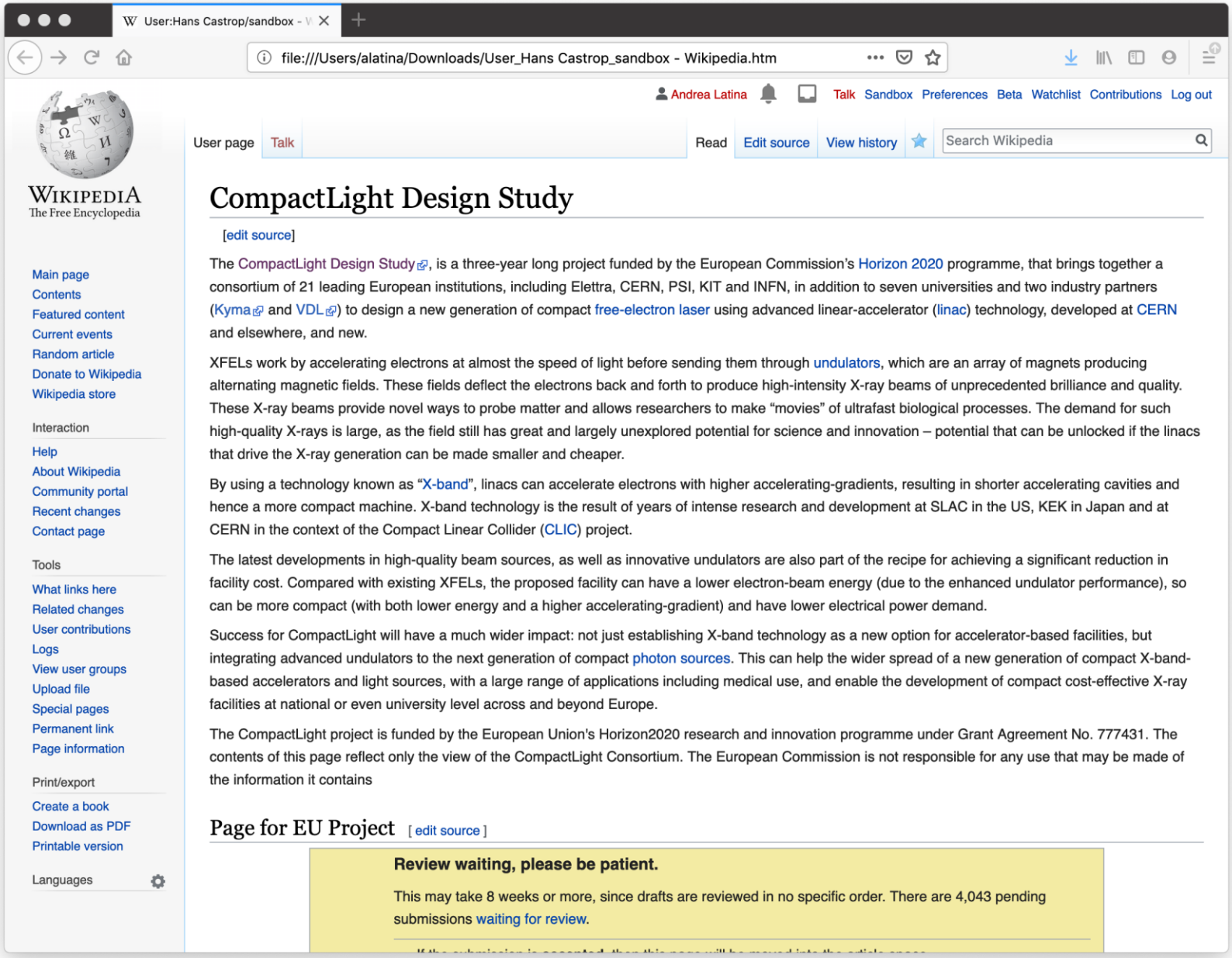
Publisher: New Business Media – Via Eritrea, 21 - 20157 Milano – Four-monthly year 11 issue 32 – November 2018 Complimentary copy with today's 'Il Sole 24 Ore' – Nation. Conv/30/2006 of 1 June 2006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CompactLight Design Study
[edit source]
The CompactLight Design Study, is a three-year long project funded by the European Commission's Horizon 2020 programme, that brings together a consortium of 21 leading European institutions, including Elettra, CERN, PSI, KIT and INFN, in addition to seven universities and two industry partners (Kyma and VDL) to design a new generation of compact free-electron laser using advanced linear-accelerator (linac) technology, developed at CERN and elsewhere, and new.
XFELs work by accelerating electrons at almost the speed of light before sending them through undulators, which are an array of magnets producing alternating magnetic fields. These fields deflect the electrons back and forth to produce high-intensity X-ray beams of unprecedented brilliance and quality. These X-ray beams provide novel ways to probe matter and allows researchers to make "movies" of ultrafast biological processes. The demand for such high-quality X-rays is large, as the field still has great and largely unexplored potential for science and innovation – potential that can be unlocked if the linacs that drive the X-ray generation can be made smaller and cheaper.
By using a technology known as "X-band", linacs can accelerate electrons with higher accelerating-gradients, resulting in shorter accelerating cavities and hence a more compact machine. X-band technology is the result of years of intense research and development at SLAC in the US, KEK in Japan and at CERN in the context of the Compact Linear Collider (CLIC) project.
The latest developments in high-quality beam sources, as well as innovative undulators are also part of the recipe for achieving a significant reduction in facility cost. Compared with existing XFELs, the proposed facility can have a lower electron-beam energy (due to the enhanced undulator performance), so can be more compact (with both lower energy and a higher accelerating-gradient) and have lower electrical power demand.
Success for CompactLight will have a much wider impact: not just establishing X-band technology as a new option for accelerator-based facilities, but integrating advanced undulators to the next generation of compact photon sources. This can help the wider spread of a new generation of compact X-band-based accelerators and light sources, with a large range of applications including medical use, and enable the development of compact cost-effective X-ray facilities at national or even university level across and beyond Europe.
The CompactLight project is funded by the European Union's Horizon2020 research and innovation programme under Grant Agreement No. 777431. The contents of this page reflect only the view of the CompactLight Consortium. The European Commission is not responsible for any use that may be made of the information it contains
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In the context of R&D, open access typically focuses on access to 'scientific information' or 'research results', which refers to two main categories:

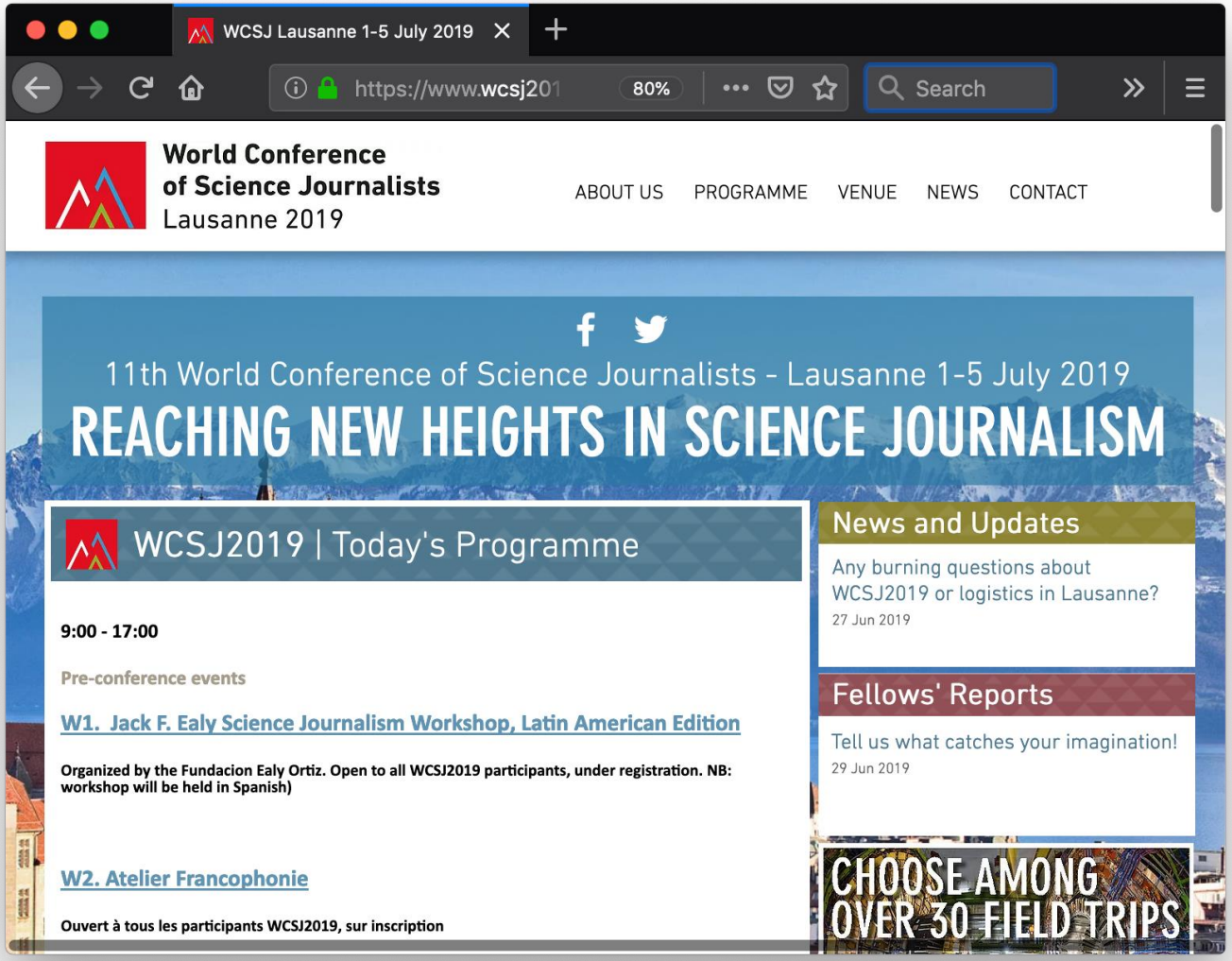
- Publications: peer-reviewed scientific research articles (primarily published in academic journals)

- Research data (reports, numbers, technical drawings)

Costs associated with open access to research data, including the creation of the data management plan, can be claimed as eligible costs of any Horizon 2020 grant.

Ongoing activity

Taking contact with scientific journalists from the major newspapers to present CompactLight.



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Thank you!

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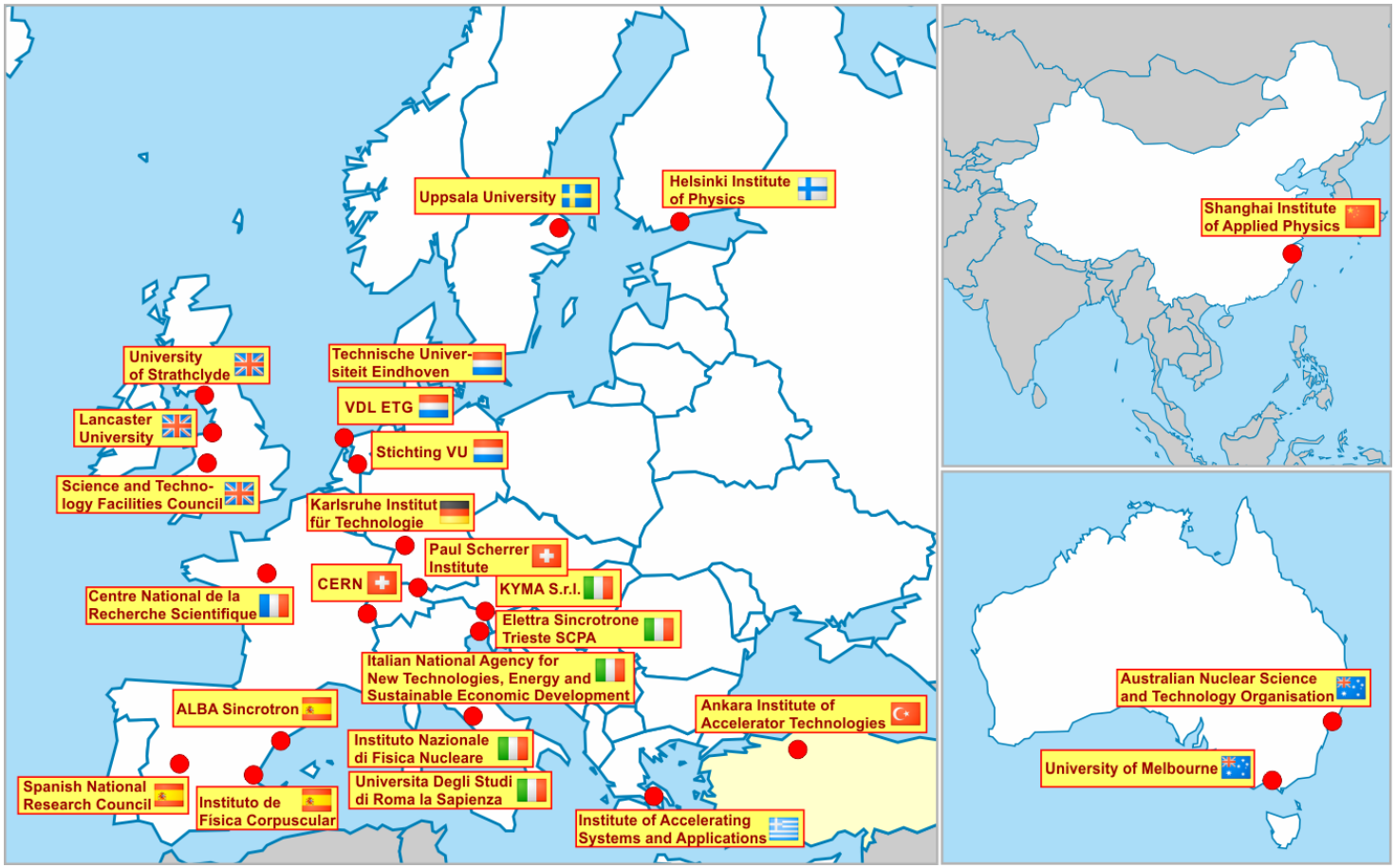

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