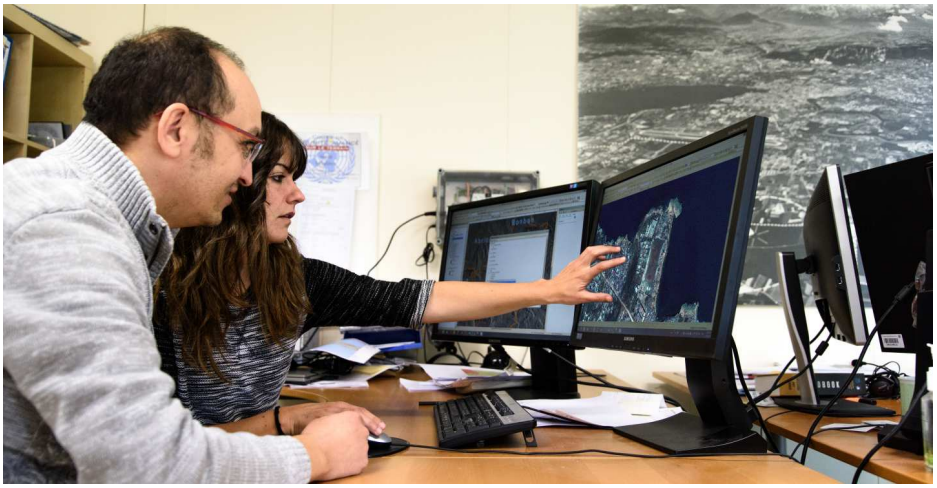
CERN Bulletin

Issue No. 42-43/2016-Monday 17 October 2016
More articles at http://home.cern/cern-people

UNOSAT: 15 YEARS OF HUMANITARIAN MAPPING



Members of UNOSAT work on satellite images of Haiti in October 2016 to assess the damage of Hurricane Matthew. (Image: Maximilien Brice/CERN)

UNOSAT (*http://www.unitar.org/unosat/*) has been hosted by CERN's IT department since its inception in 2001, and relies on the Laboratory's IT infrastructure to produce extremely precise maps of regions of the world affected or threatened by natural disaster or conflict. "The maps we produce are very high resolution, up to 30 cm," says Einar Bjorgo, who manages the UNOSAT programme. "They are an essential tool for teams in the field arranging aid and sustainable reconstruction." Thanks to these maps, UNOSAT has already helped guide emergency teams through various locations, such as in West Africa since 2014 in the fight against the Ebola epidemic, in Nepal after the series of earthquakes that hit the region in spring 2015, or at present in the context of the Syrian conflict or just this past week, in Haiti, to assess the damage of Hurricane Matthew.

To produce these maps, the UNOSAT team uses very high resolution satellite images made available by space agencies and public and private satellite data providers. These raw satellite images are stored on CERN's servers and, thanks to the technology of the Worldwide LHC Computing Grid, are then transformed into legible, downloadable maps. "CERN's support is essential," adds Einar Bjorgo. "Without its powerful IT infrastructure, we wouldn't be able to compile the satellite data we receive to make it usable."

Over the years, the programme's maps have become web-based and more and more dynamic thanks to daily updates and the addition of photographs taken in the field by UNOSAT agents and volunteers.

(Continued on page 2)

In this issue

Published by:
CERN-1211 Geneva 23, Switzerland tel. +41 22 767 35 86
Printed by: CERN Printshop
 Printed version: 2011-950X
Electronic Version: 2077-9518

UNOSAT: 15 YEARS OF HUMANITARIAN MAPPING

"We have developed a smartphone application called UN-ASIGN, which allows people to take photos, geo-locate them and share them with UNOSAT," explains Einar Bjorgo. "These images provide us with vital information and help us to evaluate the situation in the field."

UNOSAT is now also collaborating with UNESCO on the protection of cultural sites, particularly in conflict zones. "When there is an armed conflict, it is difficult for UNESCO agents to get to cultural sites and evaluate their condition," says Einar Bjorgo. "Our very high resolution maps allow them to get an initial overview of any damage." In the framework of this collaboration, UNOSAT has already published several reports, notably on the condition of Syrian cultural sites.

The programme also plays a fundamental role in training government officials. For over ten years, UNOSAT's four agencies, at CERN, N'Djamena (Chad), Nairobi (Kenya) and Bangkok (Thailand), have been providing training in the use of geospatial IT tools for various applications, such as risk management in the event of natural disasters, water management and town planning. "It is essential for every country in the world to be able to benefit from the tools developed by UNOSAT for development purposes," concludes Einar Bjorgo. "This is enshrined both in the new sustainable development goals adopted by the UN and in UNOSAT's own mission statement."

For all the latest news on UNOSAT, visit UNITAR's Facebook page (*https://www.facebook.com/UNITARHQ*) *or* follow UNOSAT on Twitter (*https://twitter.com/UNITAR*) *(@UNOSAT)*

A UNOSAT map to assess the damage caused by Hurricane Matthew on the town of Jeremie, south of Haiti. The map is prepared by comparing satellite images before and after the hurricane struck. The red dots represent buildings damaged by the storm. (7 October 2016-Pleiades-Copyright: CNES 2016-Distribution Astrium Services/Spot Image, Source: Airbus Defense and Space)

N_TOF PLAYS HIDE-AND-SEEK WITH COSMOLOGICAL LITHIUM

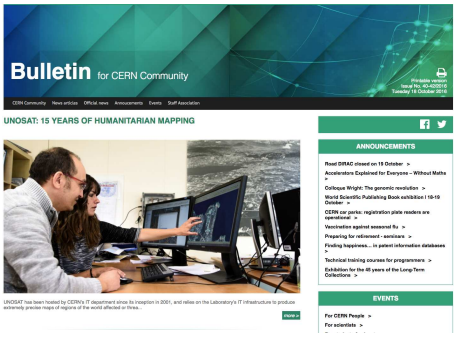
View of the recently constructed second experimental zone (EAR2) of the n_TOF facility. The neutron beam comes from beneath the picture to hit the beryllium target inside the black cube (Image: n_TOF Collaboration).

An experiment at the n_TOF facility at CERN filled in a missing piece of the cosmological lithium problem puzzle. The n_TOF collaboration published a study providing a precise new measurement of one of the processes involved in the cosmic production of lithium.

For more information, read the update published on the CERN Home page (*http://home.web.cern.ch/about/updates/2016/10/ntof-plays-hide-and-seek-cosmological-lithium*).

Stefania Pandolfi

THE NEW-LOOK BULLETIN HAS ARRIVED!



The new *Bulletin* has arrived in your inbox. Renamed *Bulletin for the CERN Community* , this new-style newsletter covers all of the news and announcements published on the CERN Community page (*http://home.cern/cern-people*).

From now on, the newsletter and the website will give you the same information:

- To keep up to date with news, official communications, events, training and other CERN announcements, check the CERN Community website, which is frequently updated.
- Like the old *Bulletin,* the *Bulletin for the CERN Community* will be automatically sent to you twice a month. It will contain links to the articles and announcements published on the CERN Community website over the past fortnight.

In short, find things out more quickly on the *CERN Community* website and receive a compilation in the newsletter every fortnight.

All articles published since March 2016 are on the *CERN Community* website. You can search the website using the search bar in the bottom right corner of the page. To search in English go to the English site (*http://home.cern/cern-people*) , or to search in French go to the French site (*http://home.cern/fr/cern-people*). For articles published before March 2016, consult the CDS archives. From now on, PDF versions of the *Bulletin* will also be archived in CDS.

If the newsletter is not correctly displayed when it arrives in your inbox, please be patient. Our team is all set to deal with the new system's teething problems.

The paper version of the *Bulletin for the CERN community* is automatically extracted from the website, there may be some (inevitable) layout issues. The list of seminars, events and training sessions no longer appear in the paper version, as the list is updated daily and may be out of date by the time the new Bulletin goes to print. For an up to date list of events please see the website.

If you have any questions, feel free to contact us at writing-team@cern.ch.

You can submit an idea for an article or announcement by completing this form (*http://communications.web.cern.ch/une-idee-darticle-pour-le-site-web-du-cern*).

Happy reading! *The Editorial Content Development Section, Education, Communication and Outreach group*

TOWARDS A BRIGHT HL-LHC

Studies relating to both the LHC and its luminosity upgrade, the HL-LHC, were carried out. Work has been done on a special setting of the focusing magnets in the LHC, which are required to keep the beams in the machine aperture and to focus them to very small sizes at the heart of the experiments. This configuration of the LHC optics (called Achromatic Telescopic Squeeze) is baseline for the HL-LHC and is being considered for operational use in 2017.

Detailed aperture measurements and collimator tests were performed. The results of these tests indicate that the LHC team can continue the annual reduction in beam size at the LHC high-luminosity interaction points in 2017 by bringing the collimators even closer to the beam core.

The battle with electron cloud is not over and it is currently unclear whether the LHC arcs will ever become electron-cloud free. In the quest to find a solution, the LHC was half-filled with the usual 25-ns beams and half-filled with a new bunch pattern consisting of eight bunches followed by four empty buckets. This configuration decreases the heat load to the cryogenics system from the electron cloud by about a factor of two. This approach could be an alternative for operating the high-intensity HL-LHC beams in the event of a persistent electron cloud.

Single bunches with HL-LHC-like brightness have been brought to 6.5 TeV and put in collision for a sufficient amount of time for the first time. The LHC beams are being made extremely stable using new techniques, and this is an important result as we look to the very high bunch population demanded by the HL-LHC.

The baseline operational mode of the radio frequency cavities in the

HL-LHC, known as Full Detuning, leaves some freedom to play with the bunches: the bunches are now located within the constraints of the RF system in a configuration that minimises the required RF power. This new way of running the radio frequency cavities has just been demonstrated for the first time at 6.5 TeV.

Finally, several studies took place with a view to optimising and further improving the beam instrumentation to measure beam sizes and other beam characteristics with high precision. All these studies will hopefully result in more collisions and more luminosity for the LHC experiments in the short- and long-term future.

The LHC exited the MD session into the year's final two weeks or so of proton physics, while the teams are already sneaking in some preparation for the upcoming proton-lead run.

Rogelio Tomas and Jan Uythoven

PAY FOR YOUR MEAL WITH YOUR SMARTPHONE

No cash for your meal? No longer a problem. From Tuesday, 18 October, you can pay with your smartphone!

In all of its restaurant facilities on the Meyrin site (Restaurants 1 and 2 and snack bars), Novae is installing an online payment system, the Mobino app. Using it is simple:

- Download the Mobino app (*http://mobino.com/app/*) (free of charge) and turn on your phone's Bluetooth
- Connect the app to your bank account (either euros or Swiss francs)
- Credit your account with the desired amount of money
- Pay for your food and drink at the till

The system is free to use, so you pay exactly the same amount as you would in cash. Using Bluetooth allows you to pay more quickly at the till, but if you can't activate it you can simply enter a number that is given to you at the till.

Mobino is an approved financial intermediary in Switzerland and works with all European banks debiting in Swiss francs or euros. For payments above €20 or 20 CHF, you will have to enter the password chosen when you first connected the app to your bank account.

Watch this short video (*http://cds.cern.ch/record/2225403*) for step-by-step instructions.

INAUGURATION OF THE ROUTE DE L'EUROPE CYCLE PATH

Hubert Bertrand, Mayor of Saint-Genis-Pouilly, Aurélie Charillon, Mayor of Prévessin-Moëns, Véronique Baude, Vice-President of the Conseil départemental de l'Ain with special responsibility for tourism and sustainable development, and Martin Steinacher, Director for Finance and Human Resources, during the inauguration ceremony for the cycle path. (Image: Sophia Bennett/CERN)

Cycling between Meyrin and Prévessin just got better. Since the new cycle path on the Route de l'Europe opened a few days ago, cyclists can now get from one site to the other in complete safety. Likewise, cyclists from Prévessin can get to CERN or the tram terminus more easily from their commune. The path was officially opened on Friday, 14 October, in the presence of local politicians as well as CERN representatives.

The new cycle path, which is 2.4 kilometres long, took seven months to complete. It was financed by CERN, the local authorities and also by funds from the CERN-Pays de Gex Consultation Committee. These funds, earned by renting CERN land to farmers, are used to finance projects benefiting the public, like cycle paths, as in this case.

For the moment, the path stops just before the traffic lights by the Prévessin site. However, a new crossroads, with traffic lights for cars and bikes, will be created in 2017. Work is due to begin next spring.

Whether you're on the path or on the road, don't forget to wear a helmet and reflective clothing, and obey the rules of the road.

Corinne Pralavorio

COMPUTER SECURITY: FLASH, AS BAD AS BAD CAN BE

Being flashed by a speed camera on the motorway is a nuisance but it's usually your fault, you were speeding, and it looks like using Adobe Flash on your computer nowadays can cause a similar blunder. This year, the Adobe Flash Player made it to number 1 in the charts of ways your PC or laptop could be compromised.

Just recently, another vulnerability for Flash was reported, affecting all operating systems: Windows, Mac, Linux and Chrome OS. One vulnerability to rule them all – the main reason why Flash topped the charts at number 1. The first exploits abusing this vulnerability have been already reported and it is now up to all of us to fix our operating systems ASAP. As usual, owners of CERN centrally managed Windows PCs don't need to worry. Their PCs will have this fix automatically deployed.

But more generally, why do we still stick with Flash? Its time has passed and it is being superseded by the more fancy and modern HTML5. The IT department is therefore actively eliminating any requirement for it in central services and considering dropping the installation of Flash from all of its centrally managed PCs. And since they are already at it, Adobe's Acrobat Reader, which is also a prominent member of the Top 10 vulnerabilities, might be phased out too. Of course there will be suitable alternatives offered for both. So, why would you still need Flash for professional purposes? Send us your opinion using the links below:

For further information, questions or help, check our website (*http://cern.ch/Computer.Security*) or contact us at Computer.Security@cern.ch.

Do you want to learn more about computer security incidents and issues at CERN? Follow our Monthly Report (*http://cern.ch/security/reports/en/monthly_reports.shtml*).

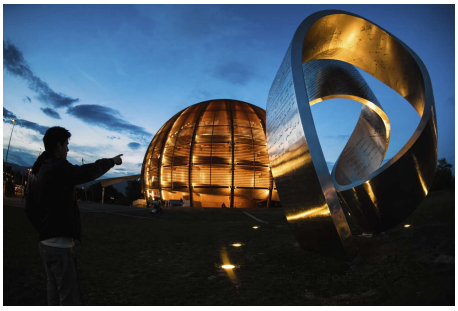
Access the entire collection of Computer Security articles here (http://cdsweb.cern.ch/search?p=Computer+Security+Team\&cc=Weekly+Bulletin\&submit=recherche).

The Computer Security Team

HIE-ISOLDE CELEBRATION FOR END OF PHASE 1 INSTALLATION

At the end of September HIE-ISOLDE celebrated the first physics experiment successfully started running using radioactive beams from the newly upgraded HIE-ISOLDE facility. The experiment was ready to go after the second of two cryomodules (containing the accelerating cavities) were installed – marking the end of the installation of phase one of HIE-ISOLDE. This new linear accelerator enables ISOLDE to reach higher energy. A celebration, hosted by Belgian State Secretary Ms Elke Sleurs, was held on 28 September 2016 to mark the occasion. You can see more images from the day here (*http://cds.cern.ch/record/2220958?ln=en*). (Image: Julien Ordan/ CERN)

EUROPEAN RESEARCHERS' NIGHT TOURS THE GLOBE



The lit-up Globe of Science and Innovation promises an evening full of discoveries. (Image: Maximilien Brice, Julien Ordan/CERN)

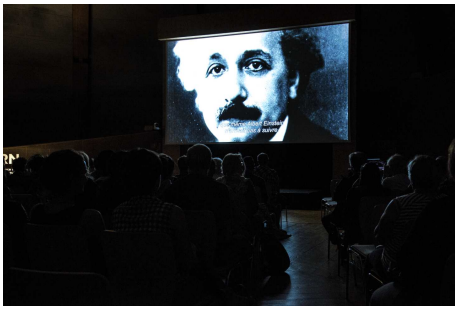
Around 600 visitors came to CERN for the 2016 *European Researchers' Night* held on 30 September of this year.

The programme of events on offer at the Globe of Science and Innovation between 6 p.m. and 11 p.m. included guided tours of the ATLAS Visitor Centre, which attracted 500 people, access to the *Universe of Particles* exhibition, and screenings of CineGlobe documentaries and short films, which were nearly all sold-out. The first floor of the Globe proved to be too small for the screening of the BBC Horizon documentary "Inside CERN".

CERN also offered web-based activities. These online events allowed European partner institutions (from Austria, England, Finland, Hungary, Italy, and Malta), as well as everybody else, to connect to the CCC, LHCb, Data Centre, ALICE and CMS websites for 45 minute-long virtual tours, with interactive question-and-answer sessions. Around 400 participants from institutions, as well as 950 others, from countries including the USA, Germany, Mexico and Spain, watched these virtual tours.

In total, almost 2000 people participated in the event, from near or far, making it a resounding success. See you next year!

A captive audience discovering the ATLAS Visitor Centre. The tour guides even continued the discussion with the most passionate members of the audience after the visit. Has the seed of science been planted?



Three of the four documentaries shown won awards at the 2015 European Science TV and New Media Festival. They proved to be equally popular during the screenings in the Globe. (Image: Maximilien Brice, Julien Ordan/CERN)

The Universe of Particles exhibition guides were asked numerous questions by curious visitors of all ages. (Image: Maximilien Brice, Julien Ordan/CERN)

Laurianne Trimoulla

Announcements

ACCELERATORS EXPLAINED FOR EVERYONE – WITHOUT MATHS

This seminar is intended for all persons at CERN, also those who do not have a background in physics, mathematics or engineering. It will explain the basic functioning of the CERN Accelerator Complex and more specifically how an accelerator works, what the different components are and some of the performance limitations, without diving into mathematical formulas and concepts. Towards the end it will also give a glimpse on what the LIU and HL-LHC projects are.

The attendance is limited to 100 persons per seminar to allow for questions and discussions. However, if necessary, more sessions will be organised both in French and English (slides in English).

Presently the following is organised:
• Friday 25 November at 15:00: Auditorium Prévessin (774-R-013) in English
• Friday 9 December at 15:00: Auditorium Meyrin (6-2-024) in French (slides in English)

The presentation will be 1 hour with an additional 15 minutes for questions and discussion.

The presenter is Rende Steerenberg, who works in the Operations group of the Beam Department. Among others he also lectures the yearly AXEL course which is a 10-lecture introductory course on basic accelerator physics, including the necessary maths.

For participation (free of charge), registration is required. Please sign-up via the following link: https://cern.ch/course/?169ACC01. (*https://cern.ch/course/?169ACC01*) *Organisers:*
Rende Steerenberg, BE-OP/79086/164518
Technical Training/HR-LD/72844

COLLOQUE WRIGHT: THE GENOMIC REVOLUTION

The 17th edition of the Wright Colloquium is centred on genomics, or the study of life at the genome level. This year, we will hear from specialists in areas that are profoundly transformed by the advent of genomics. There will be discussions about neurogenetics, personalised medicine, and the history of our species and of our cousins, the Neanderthals. The Colloquium will close with a reflection of a philosopher about how the genomic revolution is perceived in our societies, and what questions it raises.

From 7 to 11 November, Uni Dufour, Auditorium Piaget, Rue Général-Dufour 24, 1204 Genève, Free entry

- **Monday 7 November** Understanding the sense of smell **Linda Buck** Nobel Prize in Physiology or Medicine, 2004, Professor at the Fred Hutchinson Cancer Center
- **Tuesday 8 November** Personalised medicine: genomic sequencing and other profiling **Michael Snyder** Geneticist, Professor at Stanford, Director of the Center for Genomics and Personalised Medicine
- **Thursday 10 November** The Neanderthal and our origins **Svante Paabo** Biologist specialist in evolutionary genomics, Director of the Max Planck Institute Department of Genetics in Leipzig
- **Friday 11 November** The newly improvable man **Peter Sloterdijk** Philosopher and Essayist, Professor at the Hochshule für Gestaltung de Karlsruhe

Sound and light show

For a second year, a sound and light show will be organized in Parc des Bastions in addition to the public conferences.
Every evening from 2 to 20 November, Three shows of 20 minutes at 5.45 PM, 7 PM and 8.30 PM,Uni Bastions, park side

Younger public

On Wednesday 9 November, youth aged from 14 to 20 years old will be able to meet with the Colloquium's four scientists and talk with them during an informal gathering. The meeting will take place at the University Medical Center (CMU). In addition to the meeting with the lecturers, visits of genomic labs and the exhibition "Génome" will be organized. Information and subscription (*http://www.colloque.ch/2016/en/practical/*)

CERN CAR PARKS: REGISTRATION PLATE READERS ARE OPERATIONAL

As announced in Bulletin No. 22-23, the SMB Department has installed vehicle registration plate readers at the entrances and exits of the *Les Cèdres* car park and of the Building 4 and 5 car park, both on the Meyrin site (Routes Scherrer and Bohr). These registration plate readers are now operational and have already started to collect data.

We remind you that the goal of the study is to better understand users' traffic and parking habits so that we can elaborate suitable solutions and, eventually, inform drivers about the occupancy levels of car parks in real time.

SMB Department

VACCINATION AGAINST SEASONAL FLU

As is the case every autumn, the Medical Service suggests that you should get vaccinated against seasonal flu.

We would like to remind you that vaccination is the best method of protecting yourself and others against this contagious illness, which can have serious consequences for certain people, especially those suffering from chronic medical conditions (e.g. chronic pulmonary, cardiovascular or kidney disease, diabetes, cancer, etc.), pregnant women, babies and those over 65.

As the Medical Service does not supply the vaccine, you must purchase it from a pharmacy. From the beginning of October you can then bring your vaccine to the infirmary (Building 57-Ground floor) and have it administered without an appointment between 9 a.m. and 12 noon and between 2 p.m. and 4.30 p.m.

For the purposes of health insurance reimbursement, you can get a prescription made out by the Medical Service either on the day of the injection or in advance.

Reminder: the Medical Service **does not provide** this vaccination service for family members or retired members of the personnel.

For further information and new recommendations for 2016, please consult:

- The 'Seasonal Flu' website and flyer from the Medical Service
- The recommendations of the Swiss Federal Office of Public Health (OFSP): *http://www.vaccinateagainsttheflu.ch/en-us/*

CERN Medical Service

PREPARING FOR RETIREMENT-SEMINARS

If you are a staff member and considering retirement in the next one or two years, we encourage you to participate in two special seminars, organised by Human Resources Department.

1. **Leaving CERN** (half day seminar): short presentations by internal speakers, focusing on which options CERN offers at the end of your career.
    - organised once per year.
    - next session scheduled on **15 November 2016**, in the afternoon.
    - more info and enrolment via the CERN training catalogue.
1. **Preparation for retirement** (2-day seminar): interactive workshop (in small groups) delivered by external experts, focusing on how to prepare psychologically as well as practically to cope with all the changes retirement brings.
    - organised regularly, in English or French.
    - more info and enrolment via the CERN training catalogue.

Spouses/partners are also welcome – please enrol them in the same way as you enrol yourself.

Retirement marks the end of a career and the start of a new chapter in life. In all cases, being well-informed and prepared is necessary to successfully cope with this transition!

For more information, you can contact:
Erwin MOSSELMANS, HR-LD
your.career@cern.ch
Tel. 74125

FINDING HAPPINESS... IN PATENT INFORMATION DATABASES

Did you know that every single day around 7500 patent applications are published around the globe ? Did you know that this information is public and can be conveniently searched ? Did you know that only a fraction of the R D results in industry, described in patents, is also published in scientific journals ? Patent information databases can be a valuable source of literature for your research, in particular if your field of research involves a lot of industrial activity. For this reason, the Knowledge Transfer group is starting a regular 1-day course on searching patent information databases. It is aimed specifically at the research community at CERN and is focused on hands-on learning using tools available at CERN.

For more information:

https://cta.cern.ch/cta2/f?p=110:9:213680865814921::::X_STATUS,X_COURSE_CODE:D,16TM066PID01IX

TECHNICAL TRAINING COURSES FOR PROGRAMMERS

This autumn, two technical training courses have been launched for scientists and engineers at CERN who undertake programming tasks, particularly in C and C++. Both courses are taught by Andrzej Nowak; an expert in next-generation and cutting edge computing technology research.

The training courses are organised in cooperation with CERN openlab and are sponsored by the CERN IT department – there is only a nominal registration fee of 50 CHF. This is an opportunity not to be missed!

- **Computer architecture and hardware-software interaction (2 days, 1 Nov– 2 Nov)** The architecture course offers a comprehensive overview of current topics in computer architecture and their consequences for the programmer, from the basic Von Neumann schema to its modern-day expansions. Understanding hardware-software interaction allows the programmer to make better use of all features of available computer hardware and compilers. Specific architectural features are discussed (such as execution ports, branching algorithms, etc), as well as instruction sets, compilers, memory operation and architecture, fundamentals of floating point and acceleration. Lab exercises are included.

Participants can register via the training catalogue (*http://course.web.cern.ch/course/?153OPL01*).

- **Programming and environments for parallelism (4 days, 29 Nov – 2 Dec)** The parallelism course dives into a wide range of parallel programming techniques, whether data- or task-parallel. We start with an overview of patterns and look at trade-offs, pitfalls and available parallel programming environments – with a particular focus on OpenMP4, Threading Building Blocks and Cilk. The last day is an advanced class devoted to fine-tuning and balancing parallel programs using modern frameworks, runtimes and APIs. Lab exercises are included.

- Participants can register via the training catalogue (*http://course.web.cern.ch/course/?153OPL02*).

For more information, please contact Technical.Training@cern.ch.

Opinions

TOO MUCH DATA – A GOOD PROBLEM TO HAVE

Last week, the 22nd International Conference on Computing in High-Energy and Nuclear Physics, CHEP 2016, took place in San Francisco, attracting some 500 experts from all over the world. This gave the LHC experiments a great opportunity to showcase the impressive progress they have made in mastering the ever-increasing data volumes and to highlight their plans for the High-Luminosity period of the LHC.

The experiments have made a fantastic effort in optimising their code and minimising unnecessary copying of data. Triggering is becoming more sophisticated with the inclusion of track and vertex information allowing ATLAS and CMS to be more selective in what they record. Meanwhile, LHCb has introduced its turbo stream, which serves some 80% of LHCb analyses. It is based on a compact record containing all the information necessary for analyses. ALICE is adopting a similar approach, blurring the divisions between online and offline, recording data from all events without a trigger decision, while reducing the amount of data to be stored per event.

With the LHC performing as well as it is, this is welcome news; the availability has almost been doubled. As a consequence, the experiments are recording more events than anticipated so far in Run 2, so they still exceed the allocated resources. Too much high-quality data may be a challenge, but it is a good problem to have.

Progress like this keeps CERN in the vanguard of high-throughput computing (HTC). This is important, not only for us, but also because it enables us to share experience with other fields of science for which HTC is becoming increasingly important. The conference programme at CHEP was bustling with presentations of new software tools, machine learning and progress in effectively using multi-cores on modern computing platforms. Experiments are joining forces via the HEP Software Foundation. Key to LHC computing is, however, the development of the network itself, where the rate of progress has not slowed down. The issue of national and transcontinental networks thus figured highly at the conference. With sufficient bandwidth installed, the location of the computing resource becomes arbitrary.

And that brings me to another recent conference, the International Conference on Research Infrastructures, ICRI, held in Cape Town from 3-5 October. There's a good reason why ICRI was in South Africa this year. The country co-hosts an exciting new research infrastructure: the Square Kilometre Array, SKA, the world's largest radio telescope. A precursor to the SKA, MeerKAT, is up and running, but MeerKAT is only a small fraction of the final SKA configuration. Once complete in 2025, it will bring together dishes in South Africa and Australia with a surface area of one square kilometre. They will all be on stream all the time, producing data volumes that dwarf even those of the LHC.

South Africa already hosts a WLCG Tier 2 computing centre, and there was some discussion at ICRI on how to build on this to bring in other areas of science, such as the SKA. One way forward is for South Africa to build a Science Cloud – a public sector facility for scientific computing. Science Clouds are, I believe, the way forward for public sector science and an evolution of the WLCG. Such a facility would be a wonderful showcase for scientific cloud computing, and an asset for South African science.

It's been an interesting few weeks for scientific computing, leading me to conclude that CERN remains in the vanguard not simply because of our high data volumes, but because we're developing new tools to deal with them. The bottom line for me is that we have much to give, and we have much to learn from others. In scientific computing, interdisciplinary collaboration is the future.

Eckhard Elsen

From the CERN Community

THE OMBUD'S CLOCK TICKS ON. . .

Confidentiality, impartiality, informality and independence: these are the guiding principles of the Ombud role. However, in order to have the best possible chances of a positive outcome, another important ingredient is needed: early action. Do not wait until a situation has deteriorated so far that it becomes unbearable – set the Ombud clock ticking and enlist support as soon as you begin to feel that things are not going well. . .

Early intervention can make all the difference in dealing with conflict situations. If contacted in a timely manner, the Ombud can provide you with confidential support in identifying the various options by which you may address the situation, thereby enabling you to choose the strategy that you feel will give you the best chances of success.

So what actually goes on within the four walls of the Ombud's office? First and foremost, it is *a safe place to tell your story*, get another perspective on your situation and explore ways in which to deal with it. The role of the Ombud is to help you to clarify your own objectives and to identify the various ways in which you may choose to act. This may include some *coaching* by which you will be encouraged to consider alternatives and "think outside the box" to sound out your own individual resources in order to manage the issues that you face. Another form of support that you may opt for is *mediation*, which consists of a more structured framework within which the Ombud will facilitate a discussion between concerned parties who agree to take part in this process to reach a mutually acceptable outcome. Finally, the Ombud may also be called to intervene in certain situations, always on the understanding that any action taken will have been agreed with you beforehand.

A quick look at the history of CERN's Ombud Office shows that the function has been gradually integrated into the Organization's culture since its introduction in 2010, with the numbers of visitors to the Ombud growing steadily from around 80 to around 100 a year on average. Whilst the comparatively low number of visitors (around 2% of staff members compared to 4% or more in other international organisations) suggests that our workplace culture is generally supportive, it must be said that the consideration shown by the Organization cannot be measured by the well-being of its strongest members alone but rather by the way it treats its most vulnerable colleagues.

The experience of the CERN Ombud indicates that the overall distribution of issues across the years remains fairly constant, and as such it can be considered to be an accurate reflection of the concerns that would appear to be endemic to our organisational culture and environment. Indeed, the latest Ombud Annual Report shows that the largest proportion of issues raised systematically over the last five years relate to the supervisor-supervisee relationship, where "*it is not so much the actual outcome but rather the way in which the decision was reached or communicated that is the core complaint*". Issues within the peer relationship category stem mainly from abrasive communication exchanges both in person and via e-mail, whilst sexist remarks and other types of unwelcome behaviour of this nature also persist, with reference, in particular, to cultural and generational differences and apparent bystander indifference.

The creation of an Ombud Office in 2010 was a clear signal of CERN's commitment to the well-being of its personnel and of its wish to provide a respectful and supportive work environment for all concerned. As inter-personal issues emerge and our awareness of the difficulties faced by some of our colleagues grows, we also grow in our understanding of what makes for a healthy workplace that continually strives to promote fairness, trust and mutual respect in all our interactions. For this to remain an ongoing reality, we must all actively engage, management and other staff alike, in living our values with integrity, and in bringing issues to the surface as early as possible in order to manage them with courage, intelligence and empathy.