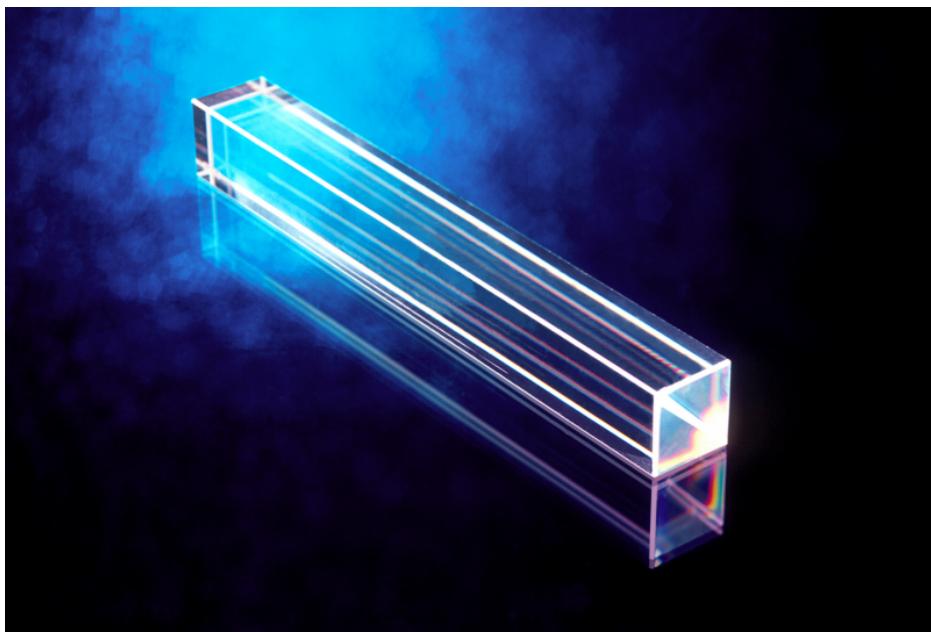


SUBMIT YOUR PROJECT TO THE CERN KNOWLEDGE TRANSFER FUND

Do you work for CERN and have a project with potential positive impact on society? Apply for funding from the CERN KT Fund before 12 November



Improving crystal detectors for Positron Emission Tomography (PET) scanners is one of the projects supported by the CERN Medical Applications Budget. (Image: Patrice Loiez)

With its leading position within fundamental research and high-energy physics, CERN employs some of the best engineers and scientists in the world. Although CERN's focus being on fundamental science, the high-end research and state-of-the-art engineering created by CERN personnel has the potential to benefit many fields in society, which the proud history of innovation at CERN has shown many times before. Now CERN would like to welcome all members of personnel to take part of this great tradition and take your projects from CERN to society.

The CERN Knowledge Transfer Fund is funding projects based on CERN technology made by the CERN community that have the potential to have a positive impact on society. Started in 2011, 41 projects have already been funded with each project receiving 15-220kCHF, with the projects usually running 1-4 years. The projects chosen for funding are selected by the KT Fund Selection Committee, composed of CERN's department heads, as well as members of the CERN Knowledge Transfer group.

(Continued on page 2)

A WORD FROM MARTIN STEINACHER

MOBILITY AT CERN – STATUS AND NEXT STEPS

Earlier this year, the Mobility Working Group launched the first part of a two-part survey about mobility at CERN. Some 43% of you took the time to give us your opinions, and I'd like to thank you for doing so. The fact that so many of you responded underlines the importance attached to this issue at CERN, and your input will be invaluable in helping us to make CERN mobility safer, greener, and more pleasurable for all.

(Continued on page 2)

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A WORD FROM MARTIN STEINACHER

MOBILITY AT CERN – STATUS AND NEXT STEPS

You can learn more about the results of the survey in an article in this week's *Bulletin*, but I'd nevertheless like to look at a few of the highlights here. First of all, a high response rate means that we can interpret the survey as a representative sample of the CERN population, giving an idea of the importance you attach to this issue, as well as making planning easier. Respondents included CERN-employed members of the personnel as well as users and contractors, with the highest response rate – 75% – being among staff. The survey confirmed that the majority of commutes are from France, and we learned which entrances to the CERN sites are the most heavily frequented. We learned about the peak times in the morning and the evening, and that our median commutes are short – just 8 km or 20 minutes – though there are some outliers, with a small number of people, including staff, commuting from countries beyond our Host States.

Unsurprisingly, the majority of commutes are made using individual motorised vehicles, though car sharing represents some 8% of commutes, and 13% of you come to work by bike. That's an impressive number for any enterprise. Among your major concerns are access at peak times, lack of adequate public transport, and safety and infrastructure matters for those choosing green forms of transport. Pressure on parking especially around the Main Building, was also flagged as an issue.

Once at work, we're also a very mobile workforce, with some three quarters of us moving around the site for our work on a regular basis. An overwhelming majority of us use cars for this. Among the reasons cited for doing so are lack of footpaths and traffic control. In short, we see CERN as being better adapted for cars than pedestrians. The survey shows that CERN's current transport offer – cars, bikes, shuttles and the mobil-

ity centre – is very widely used, though there is room for improved efficiency.

All this data confirms what we already suspected, but the data will help us to move forward. Furthermore, you have given us a wealth of excellent ideas for improvement. The Mobility Working Group has been busy analysing the results of the survey and producing a series of proposals based on your input. This will form the basis for the second part of the survey, to be launched towards the end of the year. This will be your opportunity to tell us what you think will work and what will not. Please take the time to complete the survey, helping us to improve mobility at CERN. Thank you in advance.

Read also the article presenting the results of the survey.

Martin Steinacher

Director for Finance and Human Resources

SUBMIT YOUR PROJECT TO THE CERN KNOWLEDGE TRANSFER FUND

Over the years since the start of the fund, the projects funded have spanned many technological fields and applications, from aerospace and superconductivity to cultural heritage. Recent projects funded by the CERN Knowledge Transfer Fund include a collaboration between CERN and the Italian Space Agency working on a compact magnet based on high temperature superconductivity to apply in space applications. Furthermore, a project selected for funding in 2017 have applied Radio-Frequency Quadrupoles to be used in art studies. Doing so, CERN technology now helps to evaluate, study and preserve classical works of art for future generations to enjoy.

If your technology has the potential for applications in medical or biomedical technologies, you should first apply for funding from the CERN Medical Applications Budget. Focusing solely on projects with potential medical applications, 25 projects have been funded since 2014, supporting the equivalent of 21 researchers.

All CERN personnel are welcome to submit their applications before 12 November 2018. Read more about how to apply for funding here:

- CERN KT Fund: <https://kt.cern/funding/kt-fund/selection-process>
- CERN Medical Applications Budget: <https://kt.cern/funding/medtech/ma-budget>

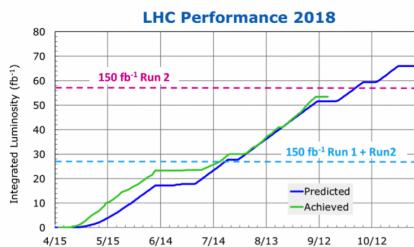


Some of CERN personnel who benefited from the CERN Knowledge Transfer Fund.

Simon Olofsson

LHC REPORT: THE FINAL DAYS OF RUN 2

At the end of October, the last protons for Run 2 will circulate inside the LHC. The next protons will be injected only in the spring of 2021!



Projected (blue) and delivered (green) integrated luminosity of ATLAS and CMS. The magenta line corresponds to a Run 2 total of 150 fb^{-1} .

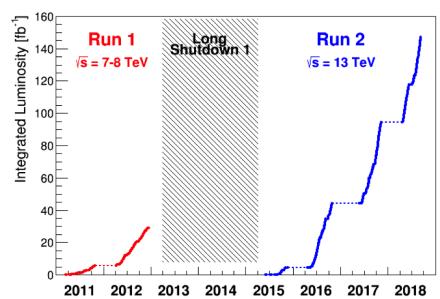
The LHC is entering the final days of the four-year-long Run 2. At the end of October, the last protons for Run 2 will circulate inside the LHC. The next protons will be injected only in the spring of 2021!

In the meantime, the LHC had a productive August and early September, bringing the integrated luminosity delivered to ATLAS and CMS to just above 53 fb^{-1} . This is a new yearly record for the LHC, surpassing the 2017 value of 50 fb^{-1} . The machine operated not very far from the maximum lu-

minosity that can be sustained by the cryogenic system that cools the quadrupoles installed around the experiments. With the remaining days of operation, over 60 fb^{-1} are within reach if the machine availability remains high. The Run 2 total is now at 147 fb^{-1} and another week of production after the upcoming technical stop should bring us to the Run 2 target of 150 fb^{-1} delivered to both ATLAS and CMS.

In parallel, the machine delivered 2 fb^{-1} to LHCb, which operates at a peak luminosity that is roughly five times lower than ATLAS or CMS. LHCb operates with levelled luminosity, meaning that the beams are separated deliberately to maintain a constant collision rate. For this reason, it is not the peak performance of the LHC that counts for LHCb but the amount of time spent with colliding beams. Within the remaining operation period with protons the final LHCb value will approach 2.5 fb^{-1} . ALICE, which operates in a similar mode than LHCb but at significantly lower luminosity, integrated 20 fb^{-1} so far.

The last month of Run 2 before long shutdown 2 (LS2) will be devoted to a lead-ion run. A few machine shifts were already devoted to setting up the ion optics. Since the ion run is very short, part of the setting up is traditionally performed during the preceding proton run.



Integrated luminosities of Run 1 and Run 2. The Run 2 total is just below 150 fb^{-1} .

Jorg Wenninger

GETTING MOBILITY ON THE RIGHT TRACK

4,300 of you have taken part in the mobility survey. Your answers will help proposals to be developed over the coming months

In June, the mobility working group launched a survey to understand CERN people's habits and needs concerning mobility. Here are the results.

• Who are you?

4,300 members of the personnel, of whom 48% were staff members and fellows, completed the questionnaire. Thank you! Almost 70% of those who took part live in France, which corresponds to the proportion of members of the personnel registered as resident in France. Most of you work on the Meyrin site (80%). Entrance B is used by 39% of you, and Entrance E by 33%.

• How do you commute to CERN?

On average, you travel 14 kilometres to get to CERN, but the commute is less than 10 kilometres for 66% of you.

Those who cycle to CERN make up 13% of the respondents and 4% arrive on foot. This is encouraging as it is a higher percentage than usually observed in cities. Slightly less than 60% of you are single car occupants.

Those who use their cars the most are staff members living in France. The reasons cited for single-occupancy car use were the

need for flexibility or the lack of alternative modes of transport.

• Are you ready to use other means of transport?

Yes, and this is very encouraging. More than 10% of those who travel alone by car indicated that they were ready to use a more environmentally friendly mode of transport (bike, public transport or car sharing). More than 40% said that they would change their travel habits under certain conditions: for car sharing, some said that they would like to be able to return home in the event of an emergency, for example, while for cycling, the conditions cited

included improved safety on the journey and alternatives in winter. Public transport would be more widely used if it were more accessible. Cyclists (who make up 13% of those who completed the survey) also mentioned that improvements to roads beyond the CERN site would make their journeys easier.

- What modes of transport do you use for professional travel?**

Some 44% of you said that you travel for professional reasons at least once per week and a large number of these journeys are on the Meyrin site. More than 80% of you use a car for these journeys and 47% use your own vehicle for flexibility. You said that you would like to see an improvement in pedestrian paths. Additionally, CERN's fleet of vehicles (rental cars and car sharing) is under-used, the reasons cited being complex procedures and collection points being too far away.

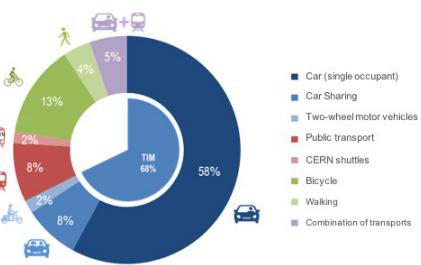
Of the users who took part in the survey, 41% said that they use the shuttle buses at least once a month, but users make up only 21% of the personnel. A desire for more frequent shuttle buses with extended operating hours emerged from the survey.

- What are the mobility initiatives at CERN?**

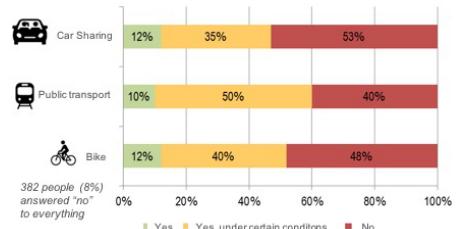
This survey will allow the SMB department to offer improvements and new solutions to you in the coming months. For example, plans with a view to improving access to the site and the shuttle bus service and optimising the use of the vehicle and bicycle fleets are under consideration. Another important initiative concerns alternatives to private vehicles: proposals designed to facilitate car sharing and make it easier to walk or cycle to work are being drawn up. These proposals will be the subject of another survey, which will be submitted to you before the end of the year. Watch this space!

You can see the results of the survey here (<http://home.cern/sites/home.web.cern.ch/files/file/cern-community/Enque%cc%82te-Mobilite%cc%81.pdf>) (in French).

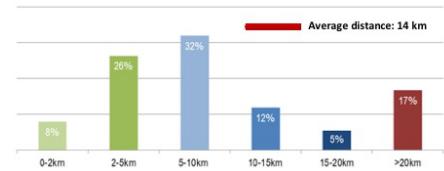
See also the Word from Martin Steinacher, Director for Finance and Human Resources.



Modes of transport for commuting – in % of the answers
– in % of the total number of answers



Possibility of changing from private car to another mode of transport (car sharing, public transport, bike) – in % of the total number of answers



Distance of commute – in % of the total number of answers

Corinne Pralavorio

SERBIA VISITS CERN

On 11 September, CERN received a visit from Ana Brnabić, Prime Minister of the Republic of Serbia



From left to right: Mladen Šarčević, Ana Brnabić, Fabiola Gianotti and Charlotte Warakaulle. (Image: Julien Ordan/CERN)

On 11 September, CERN received a visit from Ana Brnabić, Prime Minister of the Republic of Serbia, and Mladen Šarčević, Serbia's Minister of Education, Science and Technological Development. The Serbian delegation was welcomed in the Main Building by CERN's Director-General, Fabiola Gianotti, the Director

for International Relations, Charlotte Warakaulle, the Director for Accelerators and Technology, Frédéric Bordry, the Director for Finance and Human Resources, Martin Steinacher, the Head of Relations with Associate and non-Member States, Emmanuel Tsesmelis, and the principal adviser for relations with Serbia, Christoph Schäfer.

Following a tour and lunch with members of CERN's Serbian community, a collaboration agreement was signed between CERN and Serbia. The delegation was then taken to Point 5 of the LHC to visit the CMS experiment, then to the magnet assembly hall, the S'Cool LAB facility, and the Universe of Particles exhibition.

Serbia is an Associate Member State in the pre-stage to CERN membership and has

about thirty users who participate in several experiments including the two major LHC experiments, ATLAS and CMS.



Mladen Šarčević (left) and Ana Brnabić at IdeaSquare. (Image: Julien Ordan/CERN)

Anaïs Schaeffer

REGISTER FOR LHCREATE TO BRING CERN TO THE CLASSROOM

This year, IdeaSquare will welcome LHCreate's fourth edition on 18 and 19 October. Everyone at CERN is warmly invited to take part.



LHCreate is a hackathon that brings together creative people from CERN as well as students from IPAC Design Genève to work together. The 2018 edition is organised by the CMS, ATLAS and ALICE experiments and will challenge participants to build prototype exhibits that are fun, creative, and reproducible by students from

twelve to sixteen years old to give them a taste of what we do at CERN every day.

Four teams of contestants will have two days to design and build the prototypes. Participants will have the chance to collaborate with external actors, as teams will mix four CERN-affiliated people with two student designers from the Geneva IPAC design school. IdeaSquare's labs and workshops will be made available and a large supply of components and material will also be in place for the construction of the exhibits.

Professionals in the fields of physics, product design, communication and teaching will be there to advise the teams. A panel of four judges will then select the winning team according to the following criteria: scientific content: 30%, suitability for the

classroom (including size): 30%, product design: 30%, reproducibility: 10%.

After two days of fun, work and free pizza, the teams will present their prototypes during an evening public event at the Globe, in front of the panel of judges and members of the public. Prizes include ski passes, restaurant vouchers, spa treatments and tickets for the TEDxCERN 2018. The winning exhibit will be displayed at CERN for visitors. The specifications will be made available to all interested schools so they can build their own version.

If you have a creative mind, a taste for teamwork and challenges, join us!

Register at: <http://lhcreate.web.cern.ch/>. The application is open until 8 October.

ENJOY SCIENCE AT RESEARCHERS' NIGHT AT CERN

Invite your friends and neighbours to take part in Researchers' Night at CERN - a fun and free event



On Friday 28 September 2018, the curious of all ages will come together for Researchers' Night at CERN, a fun and free event in both French and English.

The world's biggest particle physics laboratory will once again open its doors for this great European celebration of science, now in its ninth year. From 5 p.m. un-

til 11 p.m., there will be plenty to see and do in the area around the brand new *Esplanade des Particules*, which will be hosting an event for the general public for the first time. Visitors will have the opportunity to take part in a wide range of activities, from robotics and cloud chamber workshops to Synchrocyclotron visits, virtual reality headsets, physics demonstrations and presentations of laboratory experiments.

In the Globe of Science and Innovation, you will be able to watch screenings of some of the latest scientific films, including *Science in Exile* and *Matière grise: recherches farfelues*. The screening of the most recent feature film about CERN, *Almost Nothing: CERN Experimental City*, will bring the evening to a close. This doc-

umentary was recently awarded a prize at the international documentary film festival "Visions du Réel" in Nyon and the film's director, Anna de Manincor, will be there to answer your questions.

Three Researchers' Night food trucks will be open for business from midday on the *Esplanade des Particules*. So, why not treat yourself to lunch!

Unable to come to CERN? Stream the event on *Facebook Live* as it happens and let CERN researchers make your night unforgettable.

The full programme and webcasts are available at <http://cern.ch/nuit>

CERN AT THE WOMAD: THE WORLD'S FESTIVAL

In July 2018, CERN took part in the WOMAD Festival near Bristol in the UK



For the third consecutive year, CERN and its partners Lancaster University and the Institute of Physics, ran their popular Physics Pavilion at Peter Gabriel's WOMAD Festival near Bristol (UK).

Since the huge success of the first year, WOMAD provided two additional new spaces – The Lab and the gazebo. The Lab offers hands-on ticketed workshops with new activities like the art of Science

Rap, Programming a Humanoid Robot and the Physics of Gin. The gazebo proposes all day drop-in activities, with girls from Badminton School serving up interactive fun, and CERN Virtual Reality proving extremely popular.

CERN's Thierry Stora, Jasper Kirkby and Simon Baird gave engaging talks about MEDICIS, CLOUD and CERN's Accelerator System. And this year, a NASA collaboration brought a live link to the Goddard Space Flight Centre in Maryland, where Hubble telescope operations were explained to the audience.

New this time: CERN had a 'Build an Accelerator' workshop where participants could build a brand new device created in collaboration with Devoxx4kids and the HIDeOT in the UK, allowing them to solder and program a mini accelerator which

shoots 'particles' around and even creates 'collisions'. Many thanks to the IT department for the loan of 16 laptops!

This year, the Physics Pavilion also hosted the first CERN Alumni event in the UK. Those present enjoyed talks from Mike Large, physics graduate and Chief Operating Officer of the Real World and WOMAD groups and CERN Alumnus Spyridon Papadopoulos (who launched the new CERN Alumni London group at the event). The talks were followed by a networking drink which allowed alumni to (re)connect, debate subjects brought up during the talks as well as provide their ideas for the CERN Alumni Network.

If you have any ideas for talks or workshops at WOMAD or would just like to hear more, please contact connie.potter@cern.ch.

COMPUTER SECURITY: THE EASY WAY TO LOSE PASSWORDS

Following up on some questions we received concerning our last Bulletin article, let us expand on the easiest way to lose your CERN password...

Following up on some questions we received concerning our last *Bulletin* article ("An old scam in a new disguise"), let us expand on the easiest way to lose your CERN password...just reuse it on insecure web services outside CERN!

Passwords are a necessary token for protecting your data in any web service: CERN INDICO, CERN EDH, Facebook, Twitter, Amazon, etc. During registration, passwords are usually stored in combination with an identifier (i.e. your e-mail address) for that web service, and later on requested during the login ("authentication") process in order to verify your identity. At CERN, this is managed through the CERN identity management system and CERN Single Sign-On ("CERN SSO"). This provides a handy way to get you logged into any CERN web and computing services. And as all CERN computing services are required to use this central solution, all you need to remember is just one password and not a plethora of unique passwords.

The CERN SSO portal then protects your password in accordance with best practice and converts it into a non-recoverable string (technically a "salted hash"). Of course, as the access possible with such a CERN password is wide-ranging, a number of due-diligence requirements are applied with respect to password length and complexity as well as expiry date (see our *Bulletin* article on "Brain Power vs. Password Managers"). In certain circumstances, e.g. when accessing critical services, the CERN SSO might even require you to provide a second authentication factor (besides the password you "know", a token you "have" – like the "calculator" used for some Internet banking services).

But it is not always guaranteed that other web service providers will apply similar due diligence... "Security" might not be their core business. Passwords might not be given the necessary attention but just be stored weakly encrypted or even in plain text without any further protection. If those

websites are infiltrated, all clear text passwords are exposed and the access protection to any other data is completely lost. From that moment, all data can be considered to be involuntarily public. This is happening more often than you might think. The reliable and trusty website haveibeen-pwned.com/ provides a long list of compromised websites that have already lost their data. Feel free to enter your private or CERN e-mail address. You might be surprised.

But you shouldn't be. The CERN Computer Security Team has subscribed to the " ;- have i been pwned?" web service as well as to several others. Through them, and through our network of peers from other computer security teams, from academia, industry and security companies, as well as from national authorities and law enforcement agencies, we usually learn in advance of newly published "password dumps" (i.e. lists of e-mail addresses and clear-text passwords linked to a particu-

lar web service). Our automatic mechanisms analyse those dumps and identify entries linked to your CERN e-mail address or any e-mail address you have registered with CERN (e.g. with your lightweight account, or an e-mail address used to forward mails to). This allows us to inform you in a timely manner that your external password has been disclosed. Time for you to change that password or to consider terminating that account completely. Similarly,

we process those password dumps in order to identify exposed passwords and e-mail addresses linked to sites of the Worldwide LHC Computing Grid (the WLCG), other affiliated universities and institutes, some of the Geneva-based international organisations, and even some Swiss companies. The corresponding computer security teams are informed of all necessary details. A partnership at its best...

Do you want to learn more about computer security incidents and issues at CERN? Follow our Monthly Report. For further information, questions or help, check our website or contact us at Computer.Security@cern.ch.

The Computer Security Team

Announcements

ACCESS BLDG 33 - JURA DOOR CLOSED - 19/9-21/9

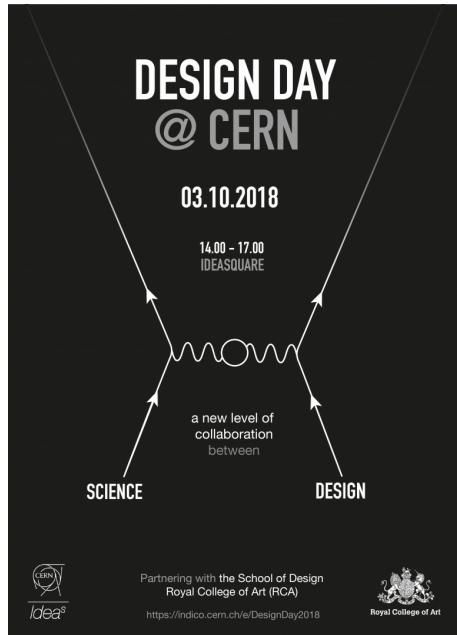
Please note that it will not be possible to enter or leave the site using the pedestrian door (the "Jura gate") next to the reception in building 33, between noon

on 19 September and the evening of 21 September, due to works.

You are requested to use Gates A or B outside the opening hours of the reception in building 33.

We apologise for any inconvenience.

3 OCTOBER: DESIGN DAY AT CERN



On 3 October, the School of Design of the Royal College of Art (RCA) in London partners with IdeaSquare at CERN to launch a new collaboration connecting science, technology and design.

RCA is one of the world's most highly ranked universities in Art and Design. It is the only one dedicated to postgraduate students in this domain, attracting people from a large variety of disciplines and backgrounds.

Bringing together leading scientists and creative talents, this collaboration will focus on addressing and tackling society's most intractable challenges. The partnership between CERN and RCA aims to challenge the 'silo mentality' of conventional disciplines and to create not only com-

pelling breakthrough proposals but also new paradigms regarding interdisciplinary collaborations.

Anyone interested is welcome to participate in the Design Day at CERN!

More information on the Indico page of the event .

2018 EDITION OF THE CERN ROAD RACE

The 2018 edition of the annual CERN Road Race will be held on 4 October (Thursday) at 18:15.

The 5.5-km race takes place over three laps of a 1.8-km circuit in the West Area of the Meyrin site, and is open to everyone working at CERN and their families. There are runners of all speeds, with times ranging from under 17 to over 34 minutes, and the race is run on a handicap basis, by staggering the starting times so that (in theory) all runners finish together.

Children (under 15 years) have their own race over one lap of 1.8 km and a mass start. As usual, there will be a "best family" challenge (judged on best parent + best child).

Trophies are awarded in the usual men's, women's and veterans' categories, and there is a challenge for the best age/performance. This year, we also introduce a team category. Teams must consist of at least 4 runners that have participated in the relay race together in 2018

and the times of the four best runners will be summed up for the result.

Every participant will receive a souvenir prize, financed by a registration fee of 10 CHF for adults. Children enter free (each child will receive a medal).

More information, and shortly the registration form, can be found at <http://runningclub.web.cern.ch/content/cern-road-race>

Ombud's corner

DIGGING DEEPER TO FIND THE REAL REASONS BEHIND A CONFLICT

Jane* is a discreet administrative assistant who has worked for the same group leader for more than ten years. She has an administrative secretarial background, knows all the ins and outs of CERN administration very well, and has built up a strong network within the Organization. As part of an expansion of the group's activities, Carlos*, a new administrative assistant and recent business school graduate, has joined the team. He has many ideas about doing things differently, especially more efficiently.

When Jane comes to see me, she is quite worried: "*This Carlos shows up with his gift of the gab, he wants to wow us and thinks he can turn everything upside down overnight. I don't know what to do.*" I suggest that I speak to Carlos to get his point of view, which she agrees to. Appointment made, Carlos expresses his disappointment to me: "*Jane certainly has a lot of experience at CERN and the group leader trusts her completely, but her methods are old-fashioned. She doesn't want to see that I can save her a lot of time and she with-*

holds information." In speaking to Jane and Carlos, I realised that their expectations were different, but not incompatible. Jane recognises that she can benefit from Carlos' in-depth knowledge of interactive web tools, but she would like him to better explain what he is trying to achieve. Carlos understands that Jane has valuable experience she can share with him, but he has the impression that she is taking advantage of her position to slow down his efforts at modernisation. My next meetings with Jane and Carlos give me the opportunity to correct some false perceptions with the two colleagues.

A number of personal issues also lie just below the surface. Jane feels threatened by Carlos' sudden arrival in the team. She fears a gradual loss of recognition, despite her good and loyal service. For his part, Carlos doesn't necessarily intend to stay in the team; what he's interested in is using his creativity and excellent technical knowledge to implement more efficient methods, even if it means frequently changing departments.

Fortunately, after my meetings with Jane and Carlos, they spoke to each other and were able to smooth things over.

When you find yourself in conflict with someone, ask yourself what might explain the other person's position and try to understand their deeper motivations. An obvious explanation might be concealing something more profound, and if you can identify it, you might just find the key to resolving the conflict. If you can't do it alone, ask for help, for example by contacting the Ombud.

Pierre Gildemyn

If you'd like to comment on any of my articles or suggest a topic that I could write about, please don't hesitate to e-mail me at Ombuds@cern.ch.

*Names have been changed