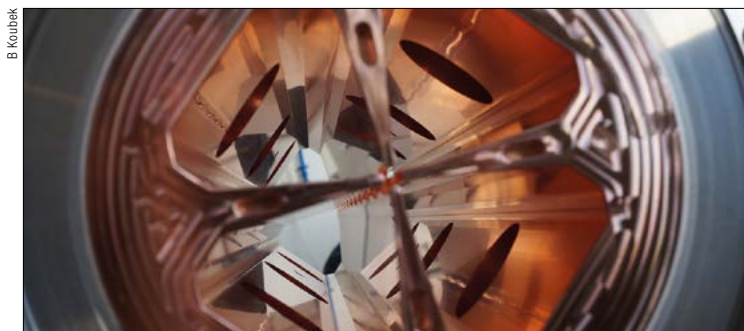


Viewpoint

CERN's recipe for knowledge transfer

Since 1997, CERN has enhanced its efforts to put its technology and know-how to the greater good.



B. Koubek

CERN has developed a radio-frequency quadrupole for a miniature linear accelerator ideal for medical and industrial applications, with the technology licensed to a spin-off company.

By Giovanni Anelli

Understanding what the universe is made of and how it started are the fundamental questions behind CERN's existence. This quest alone makes CERN a unique knowledge-focused organisation and an incredible human feat. To achieve its core mission, CERN naturally creates new opportunities for innovation. A myriad of engineers, technicians and scientists develop novel technology and know-how that can be transferred to industry for the benefit of society. Twenty years ago, with the support of CERN Council, a reinforced structure for knowledge and technology transfer was established to strengthen these activities.

Advances in fields including accelerators, detectors and computing have had a positive impact outside of CERN. Although fundamental physics might not seem the most obvious discipline in which to find technologies with marketable applications, the many examples of applications of CERN's technology and know-how – whether in medical technology, aerospace, safety, the environment and “industry 4.0” – constitute concrete evidence that high-energy physics is a fertile ground for innovation. That CERN's expertise finds applications in multinational companies, small and medium enterprises and start-ups alike is further proof of CERN's broader impact (see p17).

As an international organisation, CERN has access to a wealth of diverse viewpoints, skills and expertise. But what makes CERN different from other organisations in other fields of research? Sociologists have long studied the structure of scientific organisations, several using CERN as a basis, and they find that particle-physics collaborations uniquely engage in “participatory collaboration” that brings added value in knowledge generation, technology development and innovation. This type of collaboration, along with the global nature of the

experiments hosted by CERN, adds high value to the laboratory's knowledge-transfer activities.

Despite its achievements in knowledge transfer internationally, CERN is seldom listed in international innovation rankings; when it is present, it is never at the top. This is mainly a selection effect due to methodology. For example, the Reuters “Top 25 Global Innovators – Government” ranking relies on patents as a proxy for innovation (of the 10 innovation criteria used, seven are based on patents). CERN's strategy is to focus on open innovation and to maximise the dissemination of our technologies and know-how, rather than focus on revenue. Although there is a wide range of intellectual-property tools useful for knowledge transfer, patent volume is not a relevant measure of successful intellectual-property management at CERN.

Instead, the CERN Knowledge Transfer group measures the number of new technology disclosures (91 in 2016), and the number of contracts and agreements signed with external partners and industry (42 in 2016, and totalling 251 since 2011). We also monitor spin-off and start-up companies – there are currently 18 using CERN technology, some of which are hosted directly in CERN's network of business incubation centres. Together with the impressive breadth of application fields of CERN technologies, we believe these are clearer measures of impact.

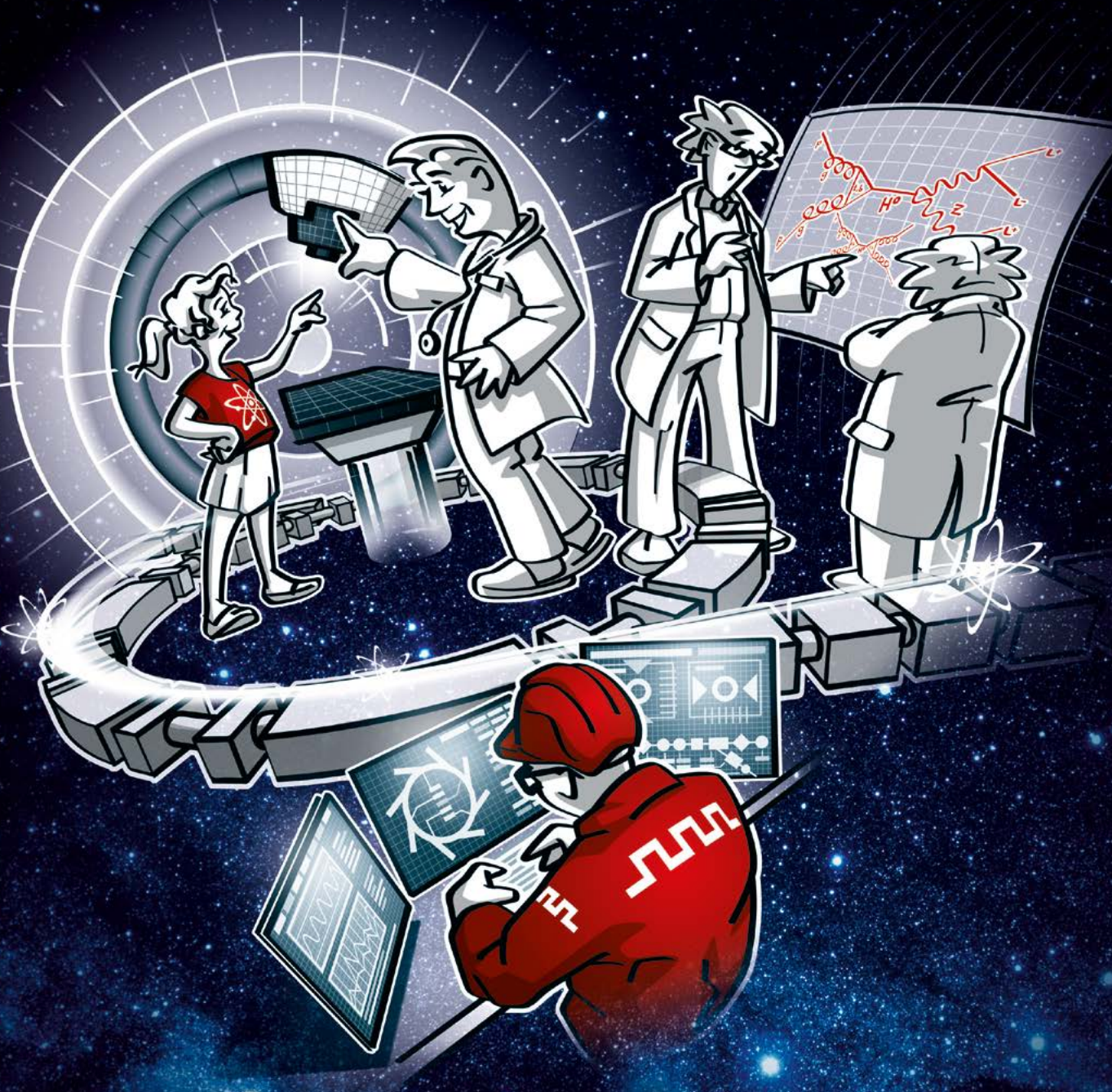
In the future, CERN will continue to pursue and promote open innovation. We want to build a culture of entrepreneurship whereby more people leaving CERN consider starting a business based on CERN technologies, and use a wide range of metrics to quantify our innovation. Strong links with industry are important to help reinforce a market-pull rather than technology-push approach. The Knowledge Transfer group will also continue to provide a service to the CERN community through advice, support, training, networks and infrastructure for those who wish to engage with industry through our activities.

Human capital is vital in our equation, since knowledge transfer cannot happen without CERN's engineers, technicians and physicists. Our role is to facilitate their participation, which could start with a visit to our new website, an Entrepreneurship Meet-Up (EM-U), or a visit to one of our seminars. Since they were launched roughly two years ago, EM-Us and knowledge-transfer seminars have together attracted more than 2000 people. Whether you want to tell us about an idea you have, or are curious about the impact of our technologies on society, we hope to hear from you soon.

● Find out more at kt.cern.



Giovanni Anelli is head of the CERN Knowledge Transfer group.



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