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The benefit of the European User Community from transnational access to national radiation facilities

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Transnational access (TNA) to national radiation sources is presently provided *via* programmes of the European Commission by BIOSTRUCT-X and CALIPSO with a major benefit for scientists from European countries. Entirely based on scientific merit, TNA allows all European scientists to realise synchrotron radiation experiments for addressing the Societal Challenges promoted in HORIZON2020. In addition, by TNA all European users directly take part in the development of the research infrastructure of facilities. The mutual interconnection of users and facilities is a strong prerequisite for future development of the research infrastructure of photon science. Taking into account the present programme structure of HORIZON2020, the European Synchrotron User Organization (ESUO) sees considerable dangers for the continuation of this successful collaboration in the future.

Keywords: European Synchrotron User Organization (ESUO); transnational access (TNA); HORIZON2020.

Over the past decades many national radiation sources (synchrotrons, free-electron lasers, neutron sources) have come into operation in the European research area. The European Commission (EC) has been quite efficient and generous in promoting access to these sources, with major benefits particularly for scientists from those European countries where no such national facilities exist. Programmes that provide this so-called transnational access (TNA), like ELISA (European Light Sources Activities), to name just one example from the 7th Framework Programme (FP7), have ascertained that Europe has been able to compete in terms of scientific progress, innovation and technology with areas of comparable critical mass like USA or Japan, whose research infrastructures appear to be more centrally and efficiently organized. Entirely based on the scientific merit of proposals, this TNA allows all European scientists to realise synchrotron radiation experiments to address scientifically as well as socially important topics, including the Grand and Societal Challenges of the EU programmes FP7 and HORIZON2020, respectively. On top of the 'immediate' scientific results, users from European nations other than where the facilities are based contribute to the development of the European research infrastructure of facilities by actively collaborating with them in terms of new techniques, upgrades and new instruments. This transnational interconnection of users and facilities is a strong prerequisite for the future development of the European infrastructure of photon science.

The European Synchrotron Users Organization (ESUO; http://www.esuo.org), established in 2010 (Pietsch & Cooper, 2010), represented by the authors of this *Letter*, is composed of national user delegates and completed by representatives of the European facility users' organizations. It has as its most important aims to be the platform of European users, a community of about 25000 scientists, and to facilitate user access to European national accelerator-based radiation sources (including synchrotrons and lasers; hereafter for brevity collectively referred to as SR sources). ESUO promotes that synchrotron radiation access throughout programmes of the European Union should be provided solely on the basis of scientific merit, and that an integrated approach throughout Europe to the use of SR sources shall be pursued.

We, ESUO, are writing to draw the attention of the scientific community as much as that of the decision makers to the importance of access for *all* scientists in the European Union and associated states to *all* SR sources. Although it looks as if calls for development of research infrastructures are again among the top priorities in HORIZON2020, ESUO sees some dangers for TNA in the future considering the information provided by the EC on the HORIZON2020 work programme 2014–2015 (see http://ec.europa.eu/research/participants/portal/desktop/en/funding/reference_docs.html):

(i) Owing to the announced limitations in the maximum budget for a single programme, there is a tendency towards further fragmentation of TNA initiatives. As a succession to ELISA, which was then one programme that included all users, today there are already two programmes providing access to SR facilities: one in the area of the most important techniques in structural biology, BIOSTRUCT-X, and the other, CALIPSO, for all other experiments. The current call structure of HORIZON2020 would require users and facilities to apply for even more than two programmes in order to maintain the current quality and quantity of TNA. The existence of multiple programmes for the same purpose is expected to lead to an undue amount of bureaucracy for both facilities and users. Furthermore, if not all applications will receive funding, a large part of the European user community would be excluded from SR access. This is not acceptable for ESUO because whether or not a user group gains access should not depend on the existence of a programme for access in a very specific area of research but only on the scientific merit of the project.

(ii) Announced programmes like e-Infrastructure are very important for users of synchrotron sources and free-electron lasers for handling the enormous amounts of data that can be recorded using theses photon sources by means of advanced detectors. However, such actions are meaningless if not all users have access to the facilities. Therefore, from the point of view of the user community, programmes like e-Infrastructure should have a lower priority than access programmes. Photon facilities cannot serve user experiments without user access.

(iii) Finally, high-ranking experiments often require very special beam conditions and a particular research infrastructure which may be provided by only one national facility. In this context, actions such as requests for a single entry point, *i.e.* proposals for beam time to all European SR sources have to be requested through a single entry form as required by EC management, do not automatically guarantee an optimum match between scientist and experiment. The development towards a single entry point for beam time applications should allow for sufficient flexibility for each user to make their choice of the appropriate experimental station.

In addition, care should be taken to avoid the necessity of 'double applications', *i.e.* an application for beam time on the facility of choice in parallel with or subsequent to an application for support of TNA.

The facilitation of TNA to SR sources is of a scale too large to be dealt with by programmes with budgets of no more than approximately EUR 10 million, or to be left to a system of bilateral agreements between European countries that have SR sources and those that have not. Both approaches would limit the aforementioned freedom of choice for an optimum match between experiment and facility, and lead to an unnecessary bureaucratic burden. The EC must continue to play a central role in the support of TNA.

In summary, ESUO calls on the European Union to continue to support TNA to research infrastructures between member and associated states in a practical way.

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