Introduction of ORCID in Finland

Study by CSC on behalf of the Ministry of Education and Culture

10 April 2015
Contents
1 Introduction ................................................................................................................................................. 4
2 What is ORCID? ........................................................................................................................................... 6
   2.1 Background and objectives ................................................................................................................ 6
   2.2 ORCID as an organisation ................................................................................................................ 6
   2.3 Creating an ORCID .......................................................................................................................... 6
   2.4 Types of membership and licences ................................................................................................. 8
   2.5 Other international ID systems and their links to ORCID ................................................................. 9
3 Potential of ORCID in Finland ................................................................................................................... 11
   3.1 Current situation ............................................................................................................................ 11
   3.2 Benefits and potential of ORCID in Finland .................................................................................. 11
4 Linking ORCIDs to researchers’ home organisations .............................................................................. 16
   4.1 Linking ORCIDs to CRIS systems ................................................................................................. 16
   4.2 Linking ORCIDs to HR systems .................................................................................................... 17
   4.3 Linking ORCIDs to IdM systems .................................................................................................... 17
5 Introduction of ORCID in other countries ............................................................................................. 19
   5.1 Denmark ....................................................................................................................................... 19
   5.2 Sweden ....................................................................................................................................... 19
   5.3 United Kingdom ........................................................................................................................... 20
   5.4 Netherlands ................................................................................................................................. 20
   5.5 Portugal ....................................................................................................................................... 21
6 ORCID and Personal Data Act ................................................................................................................... 22
   6.1 Application of the Finnish Personal Data Act ............................................................................... 22
   6.2 Controllers .................................................................................................................................... 22
   6.3 Home organisations as controllers ............................................................................................... 23
7 Risks ............................................................................................................................................................ 27
8 Proposed actions for the introduction of ORCID in Finland .................................................................. 29
   8.1 National ORCID coordinator ........................................................................................................ 29
   8.2 ORCID group membership ............................................................................................................ 29
   8.3 Communications ............................................................................................................................ 30
9 Summary of recommendations and proposed actions .................................................................33

9.1 General recommendations ...........................................................................................................33

9.2 Proposed actions ..........................................................................................................................34

9.3 Roadmap ...................................................................................................................................35

Annex 1. National ORCID connect service .......................................................................................36

Annex 2. Comparisons of alternative operating models for organising the introduction of ORCID in
Finland ..................................................................................................................................................38

Annex 3. Costs involved in introducing ORCID ..............................................................................41
1 Introduction
This report stems from an assignment given by the Ministry of Education and Culture to CSC – IT Center for Science to evaluate the possibility of introducing ORCID in Finland.

Background
Linking academic papers to the correct individuals and organisations is important both for researchers themselves and for parties responsible for evaluating their research. The growing trend of uploading publications, research data and other research documentation to the internet and the development of electronic systems have created new opportunities for transferring and combining information. Distinguishing researchers from each other in a reliable manner on the basis of individuals’ names alone, however, is impossible. Names are given in different formats in different contexts, and there are several people with the same name. This is why reliable identification of researchers requires a common identification system.

Previous systems designed for identifying researchers were built nationally or by individual publishers, but creating a comprehensive system that also appeals to researchers requires extensive international cooperation. As researchers work in international environments, publish their findings on international publication channels to reach the international academic community, form international research teams, and move from country to country, the need for identifying researchers is a global one.

From the perspective of giving merit where merit is due, the international visibility of researchers’ work is vital. Thanks to a common international system of identification, researchers can lay claim to their own work and therefore increase their work’s visibility in different services. Researcher identification also makes it easier for researchers to distinguish themselves from other researchers with the same name. Moreover, the use of researcher identification facilitates automated data transfer, saving researchers the trouble of having to enter the same information into several systems.

Apart from international systems of identification developed for researchers, the need for identifying researchers on a national level is being contemplated in many countries. In Finland, the Act on the Coordination of Public Sector Information Management obligates the Ministry of Education and Culture to develop the overall architecture in its administrative sector so as to improve the interoperability of data. One condition for interoperability is the ability to recognise which data relate to each other, and an identifiable person is one of the key common denominators in public-sector data architecture. Among the primary objectives of the identification of researchers are developing the electronic services available for researchers and reducing the amount of time spent entering data by improving conditions for data transfer between different systems. The Ministry of Education and Culture has also called attention to the need to identify researchers on a national level so that publications can be linked to identified people. The identification of researchers improves conditions for compiling statistics on research activity and the reliability of data used in the performance based funding model of higher education institutions.

Preliminary study on the identification of researchers
The Ministry of Education and Culture commissioned CSC – IT Center for Science to draw up a preliminary study on the alternative solutions for identifying and distinguishing between the authors of publica-
tions. The preliminary study was published on 16 December 2013. The report concluded that, of the international and national identification systems available, the international ORCID system provides the best opportunities on a national level as well, as the IDs are easy to create, the system is the most widely used by organisations worldwide, and, as the system becomes more widespread, it presents potential for a variety of applications.

The majority of parties who submitted opinions in response to the preliminary study reacted positively to the policies and recommendations of the report and supported the proposed steps to introduce a system of researcher identification. The opinions nevertheless called attention to several issues relating to the introduction of ORCID that still require closer examination. A meeting held on 22 August 2014 between representatives of higher education institutions (HEIs), research institutes and university hospitals who convened to discuss the opinions also concluded unanimously that the proposal needed further investigation.

Objectives of the ORCID study
CSC has been commissioned by the Ministry of Education and Culture to draw up reports on the ORCID system and its introduction. This report discusses different approaches to introducing ORCID and promoting its use in Finland. The report also discusses privacy issues and potential risks associated with the introduction of the system. In addition, the report portrays the launch of ORCID in other countries.

The implementation period for the assignment ran from 1 September 2014 to 31 March 2015.

The Ministry of Education and Culture appointed a steering group to coordinate the study:

- Olli Poropudas, Ministry of Education and Culture, chairman
- Immo Aakkula, Ministry of Education and Culture
- Jukka Haapamäki, Ministry of Education and Culture
- Juha Haataja, Ministry of Education and Culture
- Matti Hartikainen, Tampere University of Applied Sciences
- Ilmari Hyvönen, Ministry of Education and Culture
- Jyrki Ilva, National Library of Finland
- Aija Kaitera, University of Helsinki
- Panu Kalliokoski, CSC – IT Center for Science
- Pekka Kähkipuro, Aalto University
- Jukka Lindeman, National Institute for Health and Welfare
- Mikael Linden, CSC – IT Center for Science
- Ari Lindqvist, Hospital District of Helsinki and Uusimaa
- Antti Mäki, CSC – IT Center for Science
- Anu Nuutinen, Academy of Finland
- Irma Pasanen, Aalto University
- Jussi-Pekka Pispa, Tampere University of Technology
- Hanna-Mari Puuska, CSC – IT Center for Science
- Tuija Raaska, CSC – IT Center for Science
2 What is ORCID?

2.1 Background and objectives

ORCID (http://orcid.org) aims to establish an international database of researcher IDs for the academic publication and research administration community. ORCID is an open, non-profit, community-driven effort to create and maintain a registry of unique researcher IDs and a transparent method of linking research activities and outputs to these IDs. ORCID is unique in its ability to reach across disciplines, research sectors and national boundaries. The community that maintains ORCID is registered in Delaware, US. ORCID was born out of an initiative of large academic publishers, but the community also includes system suppliers and research administration organisations. Approximately 300 different organisations contributed to the launch of ORCID.

ORCID was launched in October 2012. ORCID works in cooperation with the research community and strives to integrate with key workflows, such as research profile maintenance, manuscript submissions and grant and patent applications. Researchers can create and manage their accounts and IDs in the ORCID registry themselves. For a sample of a researcher’s ORCID, see http://orcid.org/0000-0001-5532-9274. There are currently (on 10 April 2015) almost 1.3 million registered ORCIDs worldwide.

2.2 ORCID as an organisation

ORCID is a non-profit organisation that accepts as its members higher education institutions, non-profit organisations and public research funding organisations around the world. Creating IDs, browsing public records and managing personal accounts is free for individual users. The services are funded by organisations’ membership fees. The sponsor organisation also provides funding.

Members include research organisations, publishers and research funding agencies, and they currently number approximately 200 (see http://orcid.org/organizations/integrators/integration-chart).

ORCID’s operations are managed and its key principles decided by a Board of Directors consisting of elected representatives of the member organisations. Several steering groups and working groups also contribute to ORCID’s development. The steering groups are appointed by the Executive Director, and their role is to support the Executive Director. For example, they draw up proposals for the Board of Directors. Steering groups can set up working groups to oversee specific development tasks.

2.3 Creating an ORCID

Anyone can log into the online service, create an ORCID for themselves, and edit and manage their personal data. When creating an ID, users must enter at least their first name and email address into the system (see Figure 1). Users are also asked to create a password for their ID. Users can also add other information, such as their surname, other names, a description of themselves, their educational background, their organisational ties, and information about funding. In addition, users can link their own publications to their ID, which can be either entered manually or uploaded from other sources (e.g. Scopus, Web of Science, CrossRef). ORCIDs can also be linked to Thomson Reuters’ ResearcherID and to the
Scopus Author ID. All IDs and researchers’ names are public in ORCID, but users can restrict the publicity of their other details. As registration of an ORCID is not restricted, researchers can create several IDs for themselves, whether deliberately or by accident. Duplicates may also be created if organisations create IDs for their researchers on their behalf. ORCID nevertheless strives to prevent the creation of duplicate IDs by stipulating that only one ID can be created per email address.

Figure 1. Registering for an ORCID (source: https://orcid.org/register)
In ORCID, researchers’ details are stored in a centralised database and can be used according to the rights stipulated by the researcher concerned via an API for the needs of publishers, research organisations and funding agencies. In addition to researchers themselves, ORCID’s member organisations can also create IDs for their researchers and manage these IDs and records. If an organisation creates an ID for a researcher, the researcher can either manage the ID personally or let the organisation manage the account.¹

However, ORCID no longer recommends that organisations create IDs on behalf of their researchers but encourage organisations to apply for a so-called trusted party licence instead. The premise of the trusted party licence is that each researcher creates their own ID and decides which organisation to trust with the rights to access and manage the account in the ORCID system and link the ID to their own systems.

2.4 Types of membership and licences

ORCID’s public API allows anyone to access the public information contained in the ORCID system free of charge, and organisations can also use it to integrate ORCID into various services. Paid membership gives organisations access to a member API and allows them to create and manage their researchers’ IDs and records and download their researchers’ non-public information from ORCID into their own systems. Researchers can make some of their information only available to trusted parties and also authorise these parties to edit their records. Organisations with a paid membership also get other benefits, such as better technical support for integration.

ORCID offers organisations a number of alternative licences and types of membership. The former national membership and consortium membership were replaced in the autumn of 2014 by a new membership model and pricing principles. The new model comes with two options: single membership and group membership.

Individual organisations can opt for either a basic membership (USD 5 000 / year) or a premium membership (USD 10 000–25 000 / year²). Both types of membership give organisations access to an API³ for accessing and editing records. Premium membership nevertheless comes with better technical support as well as APIs for five of organisations’ own systems, while basic membership only entitles organisations to one. Organisations can choose between a trusted party licence and a creator licence. The trusted party licence gives member organisations the right to access and manage their researchers’ records subject to their consent. The creator licence gives organisations the right to create IDs on behalf of their researchers.

¹ To create IDs, organisations must submit their employees’ details to ORCID via an API. The information to be submitted include each individual’s name and email address. The researcher is then sent an email asking for verification, after which their ID is activated. To create IDs on behalf of researchers, research organisations must have a so-called creator licence as part of their membership.
² Premium membership costs USD 10 000 / year for small organisations and USD 25 000 / year for large organisations (with annual income in excess of USD 200 000). Of Finnish research organisations, at least the University of Helsinki has an annual income in excess of the threshold for large organisations.
³ The interface is called “member API”, and it is based on the OAuth 2 standard.
Group memberships are available for groups of at least five organisations. All the participating organisations must be non-profit organisations and/or public organisations, and all must be from the same country. Group members are automatically given a trusted party licence and premium membership. Each of the organisations in the group is given their own member API for transferring records from ORCID to five systems. The annual fee is determined as shown in Table 1.

Table 1. Pricing of ORCID group membership

<table>
<thead>
<tr>
<th>Group Size</th>
<th>Fee</th>
<th>Fee Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 to 9</td>
<td>US $6000</td>
<td>Per member</td>
</tr>
<tr>
<td>10-19</td>
<td>US $5000</td>
<td>Per member</td>
</tr>
<tr>
<td>20-29</td>
<td>US $4000</td>
<td>Per member</td>
</tr>
<tr>
<td>30-99</td>
<td>US $135,000</td>
<td>Per group</td>
</tr>
<tr>
<td>100-250</td>
<td>US $200,000</td>
<td>Per group</td>
</tr>
</tbody>
</table>

To qualify for group membership, each group must appoint a lead organisation to coordinate the group and provide local support for the group’s members. The lead organisation signs the contract on behalf of all the participating organisations, or alternatively each organisation can sign its own membership contract. In addition to premium membership, ORCID offers group members a variety of webinars and an electronic platform for coordinating the group. ORCID provides technical support for groups and their members, but the lead organisation acts as the first point of contact for technical support for its members in their native language. The lead organisation is responsible for providing answers to the most common technical problems and for referring other queries to ORCID.

2.5 Other international ID systems and their links to ORCID

Among the most notable other international ID systems are the International Standard Name Identifier (ISNI) and commercial vendors’ own IDs: Thomson Reuters’ ResearcherID and Elsevier’s Scopus Author ID. Compared to these systems, ORCID offers a wider range of applications. ISNI IDs are created and managed in a centralised manner, and researchers may not even know that they have one. ResearcherID and Scopus Author ID, on the other hand, are tied to specific reference databases (Web of Science and Scopus).

Many researchers also actively manage their research profiles in various kinds of open international research community services (e.g. ResearchGate, Academia.edu, Mendeley), but these services do not provide unique IDs for more widespread use.

ISNI

ISNI (International Standard Name Identifier) is an ID developed by the International Organisation for Standardisation (ISO) for uniquely identifying the “public identities of parties”. The system is limited to individuals and organisations that are “involved in the creative process in one way or another”. IDs are issued by the ISNI International Agency, and local ISNI contact points are responsible for requesting and
verifying data. Finland’s local ISNI contact point is the National Library of Finland. Author information and publications are linked to each in a centralised manner on the basis of records contained in different databases. Authors are not notified, and they often do not know that they have been issued an ISNI. ISNIs are especially well-suited for the bibliographical purposes of libraries, and they can be used to store and distribute authority information, to maintain combined catalogues and to produce linked data.

ISNI is not designed for identifying researchers, and instead the system is broad-based and generic. The premises and operating principles of ISNI and ORCID are very different, but the two communities work together, and some of the parties behind the systems are the same.

ORCID and ISNI serve different audiences and different users, and their privacy rules and business models are different. ORCID is nevertheless committed to being interoperable with other ID schemes, including ISNI (see http://support.orcid.org/knowledgebase/articles/115265-what-is-the-relationship-between-isni-and-orcid). ORCID and ISNI strive to coordinate their efforts where they overlap. ORCID and ISNI are structured similarly. ISNI has reserved a block of IDs for use by ORCID to prevent overlaps.

**ResearcherID and Scopus Author ID**

Thomson Reuters has developed an ID called ResearcherID, which researchers can create for themselves to link their names to publications appearing in Thomson Reuters’ Web of Science databases. Elsevier’s Scopus reference database, on the other hand, uses an algorithm to identify authors of publications and issue them with Scopus Author IDs. Researchers can also create Scopus Author IDs for themselves.

The use of the IDs is limited by the fact that only publications contained in the aforementioned databases can be linked to them, while ORCID allows researchers to link any publication to their IDs. Both Thomson Reuters and Elsevier are nevertheless also among the organisations that contributed to the development of the ORCID system, and researchers can therefore link both their ResearcherID and their Scopus Author ID to their ORCID.
3 Potential of ORCID in Finland

Extensive use of ORCID would facilitate the automation of transferring information about researchers’ publications and other details between different systems and services both internationally and in Finland. As it has not been possible to reliably distinguish between researchers sharing the same name or to identify different spellings of names, only researchers themselves have in practice been able to know for certain which publications are theirs. The use of ORCID would mean, among other things, that researchers would no longer need to manually enter their information into multiple systems, as the information could be retrieved automatically using researchers' ORCIDs.

To harness the benefits of ORCID, it is critical that the system becomes better known among researchers and that some researchers begin to use it. This would allow different services that benefit both researchers and service providers to be linked to the IDs. A considerable percentage of research findings are published via international publication channels, and much of research is carried out in cooperation with international partners. This is why international journals and publishers as well as research community services and reference databases in which researchers’ records are kept play a central role in promoting the use and benefits of ORCID. In addition to the efforts of international service providers, the use of ORCID can also be promoted nationally, which would help to increase researchers’ use of electronic services and improve interoperability between systems.

3.1 Current situation

The number of ORCIDs in use among Finnish researchers is impossible to estimate, as ORCID does not keep records of the number of users by the individual’s home country. So far, no Finnish organisation has become a member of ORCID, although the current CRIS systems of some universities already support the use of ORCID.

On a national level, the Ministry of Education and Culture collects information about HEIs’ publications and research staff for statistical purposes and in order to be able to steer science policy. The ministry’s annual data collection produce comprehensive information about HEIs’ staff and their publications, but it is not yet possible to link publications to the personnel information gathered, as only the names of authors are reported with regard to publications.\(^4\)

3.2 Benefits and potential of ORCID in Finland

Figure 2 lists parties and services that currently use ORCID and that could use ORCID in the future. More details are provided below.

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\(^4\) For more information, see the preliminary study on researcher identification (2013) at [https://confluence.csc.fi/display/tutki/Tutkijan+identifiointi+-+esiselvitys](https://confluence.csc.fi/display/tutki/Tutkijan+identifiointi+-+esiselvitys).
Figure 2. Services currently linked to ORCID and services that could be linked to ORCID in the future

Academic journals and publishers
ORCID benefits publishers by allowing them to list the authors of their publications more reliably in their own services and to improve the search and browse functions of their systems. Several international academic publishers (e.g. Elsevier, IEEE, Nature, Oxford University Press, PLOS, PNAS, ProQuest, Springer, Taylor & Francis, Wiley) already use ORCID to submit manuscripts, which means that researchers’ IDs travel with their publications’ metadata from one system to another. ORCID also benefits publishers by helping them to find suitable reviewers for manuscripts, as ORCID makes it easier to link researchers’ publications to the correct individuals.

ORCID promotes a publisher-based approach to creating IDs. Researchers are encouraged to join ORCID before they submit their manuscript to a publisher. The aim is to link the information systems used by publishers to the ORCID system via an API and for researchers who do not yet have an ORCID to create one when uploading their manuscripts.

National reference databases
Finnish reference databases of publication details (e.g. ARTO, Melinda) do not yet include authors’ ORCIDs. In the future, however, ORCIDs could be added to the ARTO database by including them in the ARTIVA template when entering publications’ bibliographic data. HEIs and other research organisations
as well as their researchers could search the ARTO database for information about specific researchers’ publications using the researchers’ ORCIDs. However, in order for it to be able to show ORCIDs in national articles and to report them into the ARTO database, national academic journals must begin to request ORCIDs in connection with accepting researchers’ manuscript submissions.

**International reference databases**

Of international databases that catalogue reference data on academic publications, at least Thomson Reuters’ Web of Science (WoS) and Elsevier’s Scopus already support the use of ORCID. In the future, more and more IDs will be entered into the WoS and Scopus databases with publication data after the publication of articles, and universities and other research organisations can then use these to import their own researchers’ publications into their own CRIS systems. At the moment, authors’ ORCIDs are included in these databases only if the researcher concerned has linked their personal ORCID to their ResearcherID or Scopus Author ID. One of ORCID’s greatest benefits for both researchers and research organisations is the fact that by using an ORCID, researchers would no longer need to transfer their data themselves, as this could be done in a centralised manner.

**Publication repositories**

Most HEIs and research institutes have their own publication repositories in which publications’ full texts can be made publicly available. Publications can also be accessed via international publication repositories (e.g. ZENODO, OpenAIRE, repositories specific to individual branches of science). Finnish research organisations at least do not yet use ORCID in their publication repositories, but the introduction of ORCID would facilitate author-specific searches.

**Research data management**

Research data and their metadata are increasingly stored in various national and international services. A report on the Ministry of Education and Culture’s National Research Data Initiative (TTA, 2011–2013) recommended that all parties relating to research data (rights holders, funding agencies, distributors, producers and background organisations of all of the above) be defined in the metadata by using an ID such as ISNI or ORCID. Being able to identify researchers unambiguously would make it easier to find materials produced by individual researchers. Of national services, the research data search engine Etsin (https://etsin.avointiede.fi/), which contains metadata, already supports the linking of ORCIDs to data records, although it does not link to ORCID by an API and instead IDs need to be entered manually.

**Reporting to funding agencies**

At the moment, researchers must, when applying for funding and when reporting on their projects to funding agencies, enter publication data that are already stored in other sources of information. Integrating ORCIDs into funding agencies’ application and reporting systems (e.g. the Academy of Finland, Tekes, foundations) would make it possible to retrieve researchers’ information automatically from different sources – such as from the VIRTA publication information service.

**CRIS systems**
ORCID enables publication data to be imported from reference databases into the CRIS systems of researchers’ home organisations and other data to be combined as long as researchers’ ORCIDs are linked to their data in the organisations’ own research information and other systems. Integrating ORCIDs into organisations’ own systems would make it possible to also use the IDs for other purposes inside organisations and for the Ministry of Education and Culture’s data collection, for example, as well as for reporting to other parties. Of the most common CRISes in Finland, at least Converis and Pure⁵ already support the recording of ORCIDs. Alternative ways of incorporating ORCIDs into HEIs’ own systems are discussed in more detail in Chapter 4.

Ministry of Education and Culture’s data collection

The Ministry of Education and Culture’s annual data collections are designed to compile a comprehensive set of data on HEIs’ research personnel and their publications, but publications are currently not linked to the individuals identified at the reporting stage. It is therefore not possible, for example, to compare the number of employees to the number of publications within a specific branch of science or a specific institution. As a temporary solution, it has been suggested that HEIs would provide a separate legend in which the authors’ personal identity codes or other IDs would be reported for each publication. In the future, however, extensive use of ORCID among Finnish researchers would make personal IDs (personal identity code, university-specific personal number) redundant in the Ministry of Education and Culture’s data collection.

VIRTA publication information service

Steps are being taken to develop HEIs’ publication data collection procedures so as to abandon annual data collections and instead allow for data to be transferred automatically and in real time from the systems of HEIs and other research organizations. The goal is to make the collected data more extensively usable as part of different services and other processes. If authors’ ORCIDs were collected as part of data collection in the future, national publication data could be used in a multitude of services, such as in producing researchers’ CVs and reporting to research funding agencies.

Incorporating ORCIDs into the Ministry of Education and Culture’s data collection of HEIs’ research staff would also make it easier to link personnel data to publication data and open up new opportunities for producing statistics on HEIs’ research activities.

JUULI publication information portal

The publication reference data collected by the Ministry of Education and Culture from HEIs are published in the JUULI publication information portal (www.juuli.fi). JUULI is an online search engine and browser for the reference data of HEIs’ publications. JUULI can be used to perform searches using authors’ names. As unique IDs are currently not in use, author searches can bring up publications by several people with the same name, or authors’ names can have several different spellings.

⁵ Converis is a commercial product developed by Thomson Reuters and Pure Elsevier for research organisations for the purpose of research data management.
JUULI’s primarily purpose is not to enable searches for specific researchers’ records, but, in practice, it is relatively common for individual researchers to use the service to check how data relating to their publications have been reported nationally. If researchers’ ORCIDs were to be collected in connection with publication data collection, the IDs could also be incorporated into the author data contained in JUULI, as ORCIDs are usually public. ORCIDs would make it easier to search for individual researchers’ publications, as it would be possible to distinguish between researchers with the same name and to combine different spellings of an individual’s name.

Figure 3 shows a diagram of how researchers’ ORCIDs would travel with publication data from the moment a manuscript is submitted.

**Figure 3.** Transmission of ORCIDs as part of publication and personal data
4 Linking ORCIDs to researchers’ home organisations

Linking researchers’ ORCIDs to their home organisations would facilitate automated data transfer and allow researchers’ publications to be retrieved from different sources of information. ORCIDs could be linked to organisations’ systems via their 1) CRIS system, 2) HR information system, or 3) identity management system (IdM), or so that 4) HEIs created IDs in a centralised manner on behalf of their researchers and imported them into their chosen systems. The last of the aforementioned options is not recommended at least for now, as it would require employees’ information to be submitted to the ORCID community in the United States (the implications of the Finnish Personal Data Act and privacy questions are discussed in more detail in Chapter 6). However, the first three options would require researchers to submit their ORCIDs to their home organisations’ systems themselves, via a function incorporated into the systems or a separate service designed for this purpose.

Research organisations’ own system architectures would determine the systems into which it would make sense to integrate ORCID and how ORCIDs should be transferred between different systems. Organisations’ own needs and processes would also determine whether they needed membership or whether they could make do with the public API. Some of the scenarios discussed in this report would require organisations to have either group or organisation-specific ORCID membership in order to be able to transfer data.

In addition to system updates, the incorporation of ORCIDs into research organisations’ systems would require organisations to instruct their researchers on how to upload their IDs into the organisations’ systems (e.g. via the connect service or CRIS).

4.1 Linking ORCIDs to CRIS systems

Of the CRIS systems currently used by Finnish research organisations, Thomson Reuters’ Converis and Elsevier’s Pure already support ORCID. Pure is currently used by five and Converis by three Finnish universities. These systems have a field into which researchers’ ORCIDs can be entered. The systems also prompt researchers to create an ORCID if they do not already have one. However, the systems do not currently enable the verification of ORCIDs in connection with login (see Figure 4), which would help to prevent abuse and mistakes when entering ORCIDs.

Integrating ORCIDs into CRIS systems benefits researchers by making it easier to import publications automatically from one system to another. For example, the Converis system allows researchers to import their own publications from the WoS and Scopus databases into ORCID. The system also has a function that allows researchers to authorise any publications uploaded into Converis to be automatically added to their ORCID profile.

These CRIS systems allow ORCIDs to be entered into researchers’ profiles even if their home organisation is not a member of ORCID. Some of the functions available in the systems nevertheless require that the organisation has ORCID membership. For example, Pure allows ORCIDs to be created via the system only if the organisation is a member of ORCID.
4.2 Linking ORCIDs to HR systems

Researchers’ ORCIDs can also be linked to HEIs via HR systems. For example, Chalmers University of Technology in Sweden and the Technical University of Denmark (DTU) have created their own services that allow researchers to either 1) create an ORCID and link it to the university’s HR system or 2) link their existing ORCID to the university’s HR system.

4.3 Linking ORCIDs to IdM systems

In Finland, linking ORCIDs to identity management systems could be enabled on a national scale at least for HEIs via the Haka authentication system\(^6\). Introducing a single national connect service for all participating organisations would make it unnecessary for each organisation to set up their own service.

The proposed national connect service would be an online service independent of the ORCID register, in which researchers could link their ORCIDs to the Haka ePPN (eduPersonPrincipalName) attribute, after which the connect service would notify the relevant university of the linkage.

The proposed connect service would be accessed by means of Haka IDs (Figure 4). Users would select the home organisation to which their ORCID should be linked in connection with the Haka login. Users could repeat the linkage separately for each organisation for which they have a Haka ID. The connect service would retrieve users’ ORCIDs from the ORCID register. This would give the connect service the users’ home organisation, their ID in the home organisation (ePPN) as well as their ORCID. The connect service could then notify the home organisation of the ORCID/ePPN linkage. The service is described in more detail in Annex 1.

The connect service could also be built to notify not only HEIs but all services that rely on Haka, such as services provided by funding agencies, of any ORCIDs that researchers have linked to their Haka IDs.

A national connect service would be especially beneficial for research organisations that do not have a CRIS that supports ORCID. Organisations would not need to be members of ORCID in order to link ORCIDs to their own systems via the connect service.

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\(^6\) Haka is a universal user authentication system for Finnish HEIs and research institutes, which is operated by CSC – IT Center for Science. The Haka network is available for universities, university hospitals, research institutes and organisations supporting the above. The personnel and students of organisations belonging to the Haka network can use their home organisations’ user names to log into online services governed by Haka. Users’ personal details can be transferred in connection with login. Haka currently covers the research and teaching staff of all Finnish academic universities and most universities of applied sciences.
Figure 4. Linking ORCIDs to researchers’ home organisations via a national connect service
5 Introduction of ORCID in other countries

This chapter discusses the use of ORCID in the European countries in which its introduction has progressed the furthest.

5.1 Denmark

Denmark began to prepare for the launch of ORCID through a pilot project of three universities, which ended in 2013. The aim of the project was to canvass the opinions of different parties and to examine different technological solutions for integrating ORCID into universities' own systems. As a result of the project, a simple functionality was added to the Pure CRIS system, which now allows ORCIDs to be added to researchers' profiles. The Technical University of Denmark (DTU) also introduced a function that allows researchers to link their ORCIDs to the university's HR system.

A follow-up project launched in 2014 aims to build a national consortium, cooperation and a support service. The project is funded by Denmark's Electronic Research Library (DEFF). The goal of the project is for 80 per cent of the staff of Danish universities to have an ORCID by 2016. The project distributes small-scale monetary incentives to the pilot organisations when 40 per cent, 60 per cent and 80 per cent of their staff have acquired an ORCID.

The premise of the project is for researchers to create their own IDs. Different universities have introduced different solutions for promoting the adoption of ORCID: for example, newsletters, promotional videos, university newspapers, the intranet and departmental contact persons to disseminate information about the adoption and benefits of ORCID to researchers. The project has also produced a website in Danish and English at http://orcid.dk/, which contains information, instructions and tools as well as various brochures for researchers and research organisations.

Six Danish universities and two consortia (research institutes operating under the Danish Ministry of Culture and Danish universities of applied sciences) signed a consortium membership agreement with ORCID in September 2014. The consortium is headed by DTU. In Denmark, neither the ministry nor research funding agencies have yet begun to finance the adoption of ORCID, but one of the objectives of the project is to secure centralised funding for the consortium.

Sources:

https://infoshare.dtv.dk/twiki/bin/view/DeffORCID/WebHome

https://orcid.org/blog/2014/09/03/denmark-adopts-orcid-consortium-approach-orcid-implementation

5.2 Sweden

A report commissioned by the National Library of Sweden in January 2013, titled “Author identification and publication databases – scenarios and development”, includes recommendations on the choice of

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7 There are a total of eight universities in Denmark, all of which use Elsevier’s Pure CRIS system. Publication data are reported annually.
an identification system and information about different systems’ compatibility with Swedish publication systems. The report proposes to base the identification of researchers in SwePub and publication registers on ORCID.

Some Swedish universities have their own solutions for linking researchers’ ORCIDs: for example, Chalmers University of Technology (https://orcid.chalmers.se/) has introduced a service in which researchers can create or link their existing ORCIDs to the university via an authentication system called SWAMID SAML2 (the Swedish equivalent of Haka). Information about researchers’ ORCIDs is transferred into Chalmers’ HR system, which is used to manage IDs. Data can also be linked to other systems, such as the university’s publication database. Karolinska Institutet has also introduced ORCID in its bibliometric database (https://bibliometrics.ki.se/), in which researchers must verify their own publications. Researchers can also link their ORCIDs to their profile in the database.

On a national level, efforts to promote the use of ORCID include a stipulation by one of the biggest national research funding agency, the Swedish Research Council, that anyone seeking funding must have an ORCID. In order to apply for research funding, researchers must have a profile in the Prisma application system, and to create a profile, researchers must have an ORCID and link it to their profile. http://www.vr.se/inenglish/researchfunding/applyforgrants/applyhereprisma.html

5.3 United Kingdom

In the UK, a pilot project launched by Jisc and ARMA in 2013 aimed to develop best practices and to disseminate case studies, instructions and recommendations to promote the adoption of ORCID in British universities. The pilot project ended in January 2015. Eight universities took part and experimented with different solutions. Each pilot university drew up a report on their experiences and plans concerning ORCID: http://orcidpilot.jiscinvolve.org/wp/hei-based-projects/.

According to the reports, most of the pilot universities are in the planning stage. The plans include, among other things, linking ORCID to CRISes, publication repositories, recruitment processes and researcher training.

The idea is for Jisc to ultimately coordinate the UK’s consortium membership. The next step is to continue promoting the adoption of ORCID and to canvass for potential consortium members.

http://orcidpilot.jiscinvolve.org/wp/2015/02/03/next-steps-for-orcid-adoptive-orcid-consortium-membership-for-the-uk/

5.4 Netherlands

The Netherlands introduced a national researcher ID called DAI (Digital Author Identifier) in 2005, which is used to identify researchers in universities’ CRIS systems. Researchers’ data are also harvested from local systems into the national publication search portal, NARCIS. Approximately 80 per cent of Dutch

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8 Jisc is a public organisation funded by British higher education funding councils, which is tasked with supporting ICT in higher education and research. ARMA is the UK’s professional association for research managers and administrators.
researchers have a DAI ID. However, researchers do not create or manage their own DAI IDs. The Netherlands is looking into the possibility of linking DAI IDs to both ORCID and ISNI.

SURF is also planning to launch a connect service similar to the one described in the previous chapter of this report, which would nevertheless not notify researchers’ home universities of their ORCIDs but would store them on a centralised server, which would be permanently linked to the Netherlands’ academic sector network, the Dutch equivalent of Haka. The proposed service would retrieve Dutch researchers’ ORCIDs from the connect service at the time of login.


5.5 Portugal

In Portugal, ORCID was introduced in connection with a research assessment exercise coordinated by the national funding agency for science research and technology, FCT (Fundação para a Ciência e a Tecnologia). In order to be included in the bibliometric analysis, researchers needed to create an ORCID for themselves and link it to their publications in the Scopus database via the Scopus Author ID. Within a period of three weeks, approximately 40 000 Portuguese researchers had created ORCIDs for themselves.

Portugal is also planning to introduce a national CRIS system called PT-CRIS (http://ptcris.pt/), which is to incorporate ORCID.


https://orcid.org/blog/2014/02/19/link-your-orcid-record-your-funding

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9 SURF is a public organisation that provides ICT services to the higher education and research sector in the Netherlands.
6 ORCID and Personal Data Act

This chapter discusses the implications of the Finnish Personal Data Act, which must be taken into consideration when contemplating the introduction of ORCID. The European Parliament and the Council are in the process of drafting a General Data Protection Regulation, which, if enacted, would supersede the Finnish Personal Data Act. The exact contents of the regulation have not yet been finalised.

6.1 Application of the Finnish Personal Data Act

Definition of ‘personal data’ (Section 3)

Personal data means any information on a private individual and any information on his/her personal characteristics or personal circumstances, where these are identifiable as concerning him/her or the members of his/her family or household.

It is clear that ORCIDs are ‘personal data’.

Personal data file (Section 3)

Personal data file means a set of personal data, connected by a common use and processed fully or partially automatically or sorted into a card index, directory or other manually accessible form so that the data pertaining to a given person can be retrieved easily and at reasonable cost.

Based on the definition, a database comprised of ORCIDs is a ‘personal data file’.

6.2 Controllers

Controller means a person, corporation, institution or foundation, or a number of them, for the use of whom a personal data file is set up and who is entitled to determine the use of the file, or who has been designated as a controller by an Act.

Controller of the ORCID database

Researchers’ ORCIDs are stored in an ORCID database, which is controlled by the ORCID community. As the ORCID community is registered in the United States, it is not governed by the current European laws on processing personal data.

The European Commission proposed in January 2012 that the European Parliament adopt a regulation on the protection of individuals with regard to the processing of personal data, which would govern not just controllers established within the European Union but also controllers established elsewhere when they process personal data of individuals residing within the EU in order to provide them with goods or services. If enacted, the General Data Protection Regulation would also govern the ORCID community, and it could have implications on the disclosure of data to the community as described below. The General Data Protection Regulation is expected to enter into force in 2017.

Home organisations’ role in creating ORCIDs

Researchers can create ORCIDs for themselves by filling in a personal details form at http://orcid.org/register. If researchers created their own ORCIDs, their home organisations could be deemed not to be involved in the creation of ORCIDs and they would therefore not be controllers that...
disclose researchers’ personal data to the ORCID community. The creation of ORCIDs should consequently carry no legal risks to researchers’ home organisations in these circumstances.

However, home organisations that

- created ORCIDs for researchers on their behalf, or
- stipulated that researchers must create ORCIDs for themselves (employers’ right to give directions to their staff),

could be deemed to act as controllers that disclose researchers’ personal data to the ORCID community. The Finnish Union of University Researchers and Teachers has challenged the right of employers to stipulate that researchers must create ORCIDs for themselves.

The latter scenario could also materialise over time: if ORCIDs gradually become more widespread across different kinds of electronic services for researchers (publication of research findings, research funding applications), researchers may find themselves in a situation where they can no longer perform their work without creating ORCIDs for themselves.

**Home organisations’ role in entering ORCIDs in their information systems**

Regardless of the above, researchers’ home organisations would be deemed to act as controllers if they (later) entered researchers’ ORCIDs into their information systems or disclosed them to the Ministry of Education and Culture in the course of the ministry’s research personnel and publication data collection from the HEIs. These actions in themselves would not differ materially from the normal controller tasks that home organisations carry out when processing researchers’ employment information in their HR systems, IdM systems and CRISes. In practice, ORCIDs would just be a new element of personal data that would be added to researchers’ records in the aforementioned systems. These actions could be deemed to be legal on the basis of several of the grounds listed in Section 8 of the Personal Data Act (e.g. consent, connection requirement, statutory duties).

The Personal Data Act nevertheless imposes certain requirements on home organisations, which are discussed in more detail below.

### 6.3 Home organisations as controllers

This chapter discusses the provisions of the Personal Data Act that would apply if researchers’ home organisations created ORCIDs on their behalf or processed ORCIDs created by researchers for themselves.

**General prerequisites for the processing of personal data (Section 8)**

The same conditions that home organisations must meet when processing other personal data would also need to be satisfied when processing ORCIDs. These conditions are listed in Section 8 of the Personal Data Act. The prerequisites listed in Section 8, subsections 1, 4 and 5, in particular, would need to be satisfied when processing ORCIDs:

*Personal data shall be processed only if:*
1) the data subject has unambiguously consented to the same;

4) processing is based on the provisions of an Act or it is necessary for compliance with a task or obligation to which the controller is bound by virtue of an Act or an order issued on the basis of an Act;

5) there is a relevant connection between the data subject and the operations of the controller, based on the data subject being a client or member of, or in the service of, the controller or on a comparable relationship between the two (connection requirement);

The most reliable way to ensure the legality of data processing would be to obtain unambiguous consent from the data subject as per Section 8(1).

If home organisations decided to pass on researchers' ORCIDs, they would also need to satisfy the prerequisite laid down in Section 8(2). It reads as follows: Personal data may be disclosed on the basis of paragraph (1)(5) only if such disclosure is a regular feature of the operations concerned and if the purpose for which the data is disclosed is not incompatible with the purposes of the processing and if it can be assumed that the data subject is aware of such disclosure.

Disclosure of personal data to the ORCID community (Section 23)

Home organisations that disclosed their researchers' personal data to the ORCID community would be disclosing personal data to a country outside the EEA where legislation does not guarantee a sufficient level of data protection. As ORCID is legally set up as an association, it does not currently qualify for the so-called Safe Harbour system established between the European Commission and the United States.

Grounds for the disclosure of personal data can be derived from the exemptions listed in Section 23 of the Personal Data Act, according to which personal data may nevertheless be transferred if

1) the data subject has unambiguously consented to the transfer;

Transferring data with the subject's consent is nevertheless legally dubious, as, according to Section 3 of the Personal Data Act, consent means any voluntary, detailed and conscious expression of will, whereby the data subject approves the processing of his/her personal data. The European data protection authorities' working party (Article 29 Working Party) takes the view (Opinion 15/2011 on the definition of consent, page 13) that any consent given in the context of employment rarely satisfies the legal definition of "free consent", as workers may fear that their employer will treat them differently if they refuse to give consent. This approach is therefore not recommended.

2) the data subject has given an assignment for the transfer, or this is necessary in order to perform a contract to which the data subject is a party or in order to take steps at the request of the data subject before entering into a contract.

This amounts to the execution of an employment contract between a worker and an employer. For this interpretation to be valid, it must be seen as employers' responsibility to arrange for their researchers all the tools that they need to perform their work, including researcher IDs. Special attention would need to be given to ensuring that researchers who are not employed by their home organisations (e.g.
researchers on a grant) also had contracts the execution of which would require that a researcher ID be created for them.

The aforementioned alternative carries a legal risk, as some experts maintain that issuing researchers with ORCIDs is not "necessary" for the execution of researchers’ employment contracts. The aforementioned provision has previously been used as grounds for disclosing personal data in the context of employment in situations where workers are seconded to countries for which a visa is required. In such situations, employers apply for visas on behalf of their workers.

**Informing users of the processing of data (Section 24)**

Researchers could be informed of the processing of their ORCIDs at the same time as they are informed of other instances in which their home organisations process their personal data. In practice, ORCIDs would need to be incorporated into the description of the file of home organisations’ HR registers, which staff could access via their home organisations’ intranet, for example.

If home organisations began to disclose researchers’ personal data to the ORCID community, new ways of informing users would also become available:

- If researchers triggered the process of creating and registering their ORCIDs with their home organisations by visiting a so-called registration service via their browser, they could be informed of the creation of their ORCID at the same time.
- The ORCID organisation sends researchers an email asking them to verify their registration as part of the researcher ID creation process.

**Necessity requirement and accuracy requirement (Section 9)**

*The personal data processed must be necessary for the declared purpose of the processing (necessity requirement).*

If organisations began to disclose their researchers' personal data to the ORCID community, the necessity requirement would stipulate that only details that are necessary could be disclosed: the only necessary details would be each researcher’s name and email address. Researchers could then add more information to their profiles in the ORCID service and control which of their details would be published from the ORCID server to the internet.

*The controller shall see to that no erroneous, incomplete or obsolete data are processed (accuracy requirement). This duty of the controller shall be assessed in the light of the purpose of the personal data and the effect of the processing on the protection of the privacy of the data subject.*

In order to satisfy the accuracy requirement, home organisations would need to pay attention to the method by which researchers’ ORCIDs would be registered in their home organisations’ information systems. Leaving researchers to enter their ORCIDs into their home organisations’ systems themselves would make them susceptible to errors, mistakes and abuse. This is why ORCIDs should be entered into home organisations’ information systems using the ORCID information system’s APIs.
At the end of an employment contract, researchers' ORCIDs would need to be removed from HR registers and CRISes as part of the normal process.

Other responsibilities of controllers and rights of data subjects

Controllers would also have a duty to process researchers' ORCIDs with care and in compliance with good processing practice (Section 5). The processing of personal data would need to be appropriate and justified as well as defined in advance (Section 6), and personal data could not be processed for any other purpose (Section 7). This privacy study goes some way to ensure compliance with these provisions.

Home organisations could ensure the right of data subjects to access their own records (Section 26) and make amendments to their own personal data (Section 29) using the same channels that data subjects use to access and amend their other personal data. ORCID provides data subjects access to data contained in the ORCID community's database and an opportunity to amend the data as needed.

Conclusion

The provisions of the Personal Data Act do not appear to preclude the introduction of ORCIDs in Finland. In any case, the uncertainties relating to the processing of personal data (and potential risks arising from complications presented by the Personal Data Act) would be mitigated if employers did not create ORCIDs for their workers ex officio or stipulate that their workers must create ORCIDs for themselves. Problems arising from the fact that the ORCID community is based in the United States are likely to be mitigated in 2017, when the EU’s General Data Protection Regulation is due to enter into force.
7 Risks

Even if researchers were left to create their own ORCIDs, attention would need to be given to the fact that promoting the use of ORCIDs would also promote the importing of Finnish researchers' personal data into an American database. For example, the Patriot Act gives US authorities the right to obtain data from various systems and databases.

However, ORCID does not collect sensitive information from researchers. Most of the data collected by ORCID are public. Researchers' names and ORCIDs are shown on their public profiles, and anyone can download ORCID's database of public data off the internet. In addition, the minimum data requested by ORCID (researchers' names and email addresses) are in any case publicly available in researchers' academic publications. Researchers can add more information about themselves and their research activities into the database (such as their other names, and information about their affiliations, publications and educational background), but these data too are often such that are already public in other sources. In most areas of research, international visibility is essential for researchers getting merit for their publications and a basic premise for conducting research.

Most researchers submit their manuscripts by logging into publishers' electronic systems to enter their details. Information about authors of academic publications, including researchers' affiliations and email addresses, is already stored in a variety of reference databases (e.g. Web of Science, Scopus, PubMed, library databases, Google Scholar), from which anyone can request, free of charge or against payment, a comprehensive list of publication authors and their details.

Compared to current scientific publication practices, ORCID generates more information by allowing researchers with the same name who work in the same organisation to be distinguished from each other. In addition to the information entered by researchers themselves into their profiles, the ORCID community may obtain information such as the IP addresses of the devices that researchers use to log into the service, which it can use to identify the businesses in which researchers are employed and find out which services researchers access with their ORCIDs. For example, if a researcher uses an ORCID to log into a publisher's system, ORCID may become aware of the researcher's manuscript even before it is published. Researchers can also log into the system as publication reviewers, and the identities of reviewers are confidential information under the most common peer review practices. On the other hand, similar records are also created in publishers' systems, which may be located anywhere in the world.

If ORCIDs were created *ex officio* on behalf of researchers, ORCID would also gain access to information about researchers who have not published anything and whose details are therefore not in public databases. The records would only become public if the researcher in question authorised their publication, but the data would be contained in the ORCID database nonetheless. This problem could be avoided by leaving researchers to create their own ORCIDs without imposing on them an obligation to do so.

Attention must also be given to the fact that disclosing details of foreign researchers who work in Finland would be problematic if the laws of the researchers' home countries prohibited the disclosure of their citizens' personal data to foreign authorities. This problem could nevertheless be avoided if re-
searchers were to disclose their personal details voluntarily without their employers stipulating that they must do so.

Table 1. Potential risks associated with promoting the introduction of ORCID

<table>
<thead>
<tr>
<th>Risk</th>
<th>Probability</th>
<th>Consequence</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>US authorities and businesses gain access to details of Finnish researchers via the database.</td>
<td>Possible</td>
<td>Minor It would be easier to compile profiles of individual researchers. The additional risk arising from ORCID is minor, as most of the data contained in the database are already public or available via publishers' databases.</td>
<td>Researchers and organisations are advised not to enter sensitive information into ORCID.</td>
</tr>
<tr>
<td>Researchers' data are entered into ORCID without their consent.</td>
<td>Possible</td>
<td>Severe Researchers may have reasons for not wanting their details to be transferred.</td>
<td>It is recommended that researchers be left to create their own ORCIDs without their employers stipulating that they must do so.</td>
</tr>
<tr>
<td>ORCID receives information about the services used by researchers and passes that information on.</td>
<td>Possible</td>
<td>Minor The information is usually not sensitive. These kinds of data are already stored in publishers' databases.</td>
<td>Researchers are educated about the risks involved in using their ORCID logins.</td>
</tr>
<tr>
<td>Foreign researchers' personal details are disclosed to foreign authorities against the laws of their home countries.</td>
<td>Possible</td>
<td>Moderate Researchers' data are disclosed against the laws of their home countries.</td>
<td>It is recommended that researchers be left to create their own ORCIDs without their employers stipulating that they must do so.</td>
</tr>
<tr>
<td>ORCID fails to become widespread or the scheme is discontinued.</td>
<td>Possible</td>
<td>Minor Old IDs can remain in use. Old ORCIDs can, if needed, be incorporated into a new, different ID.</td>
<td>The development of both ORCID and other researcher identification schemes is monitored continuously.</td>
</tr>
</tbody>
</table>
8 Proposed actions for the introduction of ORCID in Finland
More and more of the potential benefits of ORCID would be unleashed if researchers’ awareness of the scheme was to increase and more researchers adopted it, and if research organisations and service providers introduced ORCID in their own processes.

8.1 National ORCID coordinator
Widespread use of ORCID and the accumulation of know-how in Finland would be best promoted by assigning an organisation to act as a national ORCID coordinator. The coordinator would, among other things,

- Provide support and training to research organisations
- Participate in international ORCID cooperation
- Promote implementation, support piloting and provide technical support to service providers (e.g. funding agencies, publishers) in the integration of ORCID into systems
- Maintain a Finnish-language orcid.fi website and other information and communication channels
- Compile presentation and training materials for the use of research organisations and service providers, and organise joint events
- Coordinate national ORCID group membership (if applicable)
- Implement and maintain the national connect service, and support organisations in its deployment

The estimated total workload amounts to 12 person-months during the launch year and to seven person-months during subsequent years. The workload estimate is discussed in more detail in Annex 3, which also discusses the resources required of research organisations and service providers to introduce ORCID.

8.2 ORCID group membership
Researchers can create ORCIDs for themselves and use them to access international and national services without their home organisations being members of ORCID. Organisations can retrieve certain data from ORCID via the public API without membership. However, organisations that wish to edit or update their researchers’ records or create IDs on behalf of their researchers need to have membership. In addition, research organisations and other potential service providers, such as research funding agencies, academic publishers or administrators of publication and research data repositories, may need membership if they wish to integrate ORCID login into their services via the member API. In most cases, integration is also possible via the public API, but membership brings certain additional functionalities for CRISes.

There are three ways in which Finnish organisations could acquire ORCID membership:

1. Each organisation could acquire its own membership
2. Interested organisations could form a consortium and then acquire group membership
3. Group membership could be acquired nationally for all interested organisations
Potential participants in Finland include the following (the number of organisations in 2015 is given in brackets):

- Universities (14)
- Universities of applied sciences (24)
- Research institutes (13)
- Hospital districts (university hospitals x 5)
- Funding agencies (Academy of Finland, Tekes, foundations)
- Learned societies
- Academic publishers
- CSC
- Administrators of publication and research data repositories

If a decision was made to acquire group membership nationally for all interested organisations, costs would be incurred from ORCID membership fees and the expenses of the national lead organisation. The costs of introducing ORCID would depend on the chosen organisational model and the number of organisations adopting the system. Group membership requires a consortium of at least five organisations. For organisations that choose premium partnership, group membership is always cheaper than individual memberships regardless of the number of participants. For organisations that only need basic membership, group membership is cheaper than individual memberships if at least 10 organisations take part (see prices in Table 1).

Group membership requires that one organisation is designated as a lead organisation. If Finland were to adopt national group membership, it would be natural for the national ORCID coordinator to act as the lead organisation. When estimating the costs of group membership, the workload of the lead organisation must be taken into account. The lead organisation would be responsible for coordinating the consortium’s memberships and acting as the first point of contact for technical support locally.

The costs involved in different types of membership are discussed in more detail in Annex 3.

8.3 Communications

Promoting the use of ORCID on a national level in Finland would require disseminating information to researchers, researchers’ home organisations and various parties that provide services for research information management (see Figure 5).

**Communications targeted at researchers** should primarily focus on disseminating information about the aforementioned benefits of ORCID in research work:

- ORCID improves the visibility of researchers and their work, as researchers who share the same name can be distinguished from each other and can more effectively ensure that they receive credit for their own publications.
ORCID automates the transfer of data between systems. This saves researchers’ time, as the
same information does not need to be entered into several systems, as well as improving the
correctness of data.

Potential information channels that could be set up and coordinated in a centralised manner include a
Finnish-language ORCID website as well as websites in various social media services that could contain
up-to-date information about ORCID and instructions for creating and managing IDs (such as the Danish
http://orcid.dk/ website). Different kinds of press release templates and other Finnish-language promotion-
tional and training materials could be produced to support research organisations and service providers
(which has been done in, for example, Denmark and the UK). Research organisations would also need to
publish internal newsletters to disseminate information and instructions to researchers concerning the
use of ORCID and its benefits, by email or via their intranets, for example. Research organisations would
also need to educate their researchers about the process of linking ORCIDs to their home organisations
(e.g. via a connect service or CRIS systems).

Figure 5. Proposal for a communications organisation for promoting the use and benefits of ORCID

However, communications and marketing would inevitably only reach a small percentage of research-
ers, and, on the other hand, researchers would quickly lose interest in their IDs if they did not have regu-
lar use for them. Making ORCIDs mandatory in funding applications (such as is the case with the Swedish Research Council) or publication data collection s, for example, would naturally increase researchers' awareness considerably, but this solution would create problems from the perspective of the disclosure of personal data (see Chapter 6).

The best way to promote the adoption of ORCID would be to make researchers see its benefits in the context of various services. As research findings are often targeted at the international scientific community and the majority of publications published on international forums, international parties play major roles in this respect: the fact that many academic publishers, reference databases and researcher community services were involved in the development of ORCID is likely to promote the adoption of the scheme. The use of ORCID could also be promoted on a national scale in Finland by integrating it into services offered to researchers (see Chapter 3), which would make the IDs a tangible benefit for researchers especially by preventing the need to enter the same information into several systems.
9  **Summary of recommendations and proposed actions**

This chapter summarises the general principles and recommendations and proposed actions. The alternative ways in which ORCID could be introduced are discussed in more detail in Annex 2, and cost estimates can be found in Annex 3.

9.1  **General recommendations**

1.  **The use of ORCID should be promoted by integrating the scheme into a variety of services and processes**

The use of ORCID should be promoted nationally by integrating it into a variety of services (academic publishers, publication and research data repositories, CRIS systems, the JUULI publication portal, research funding agencies, etc.) to accelerate automated data transfer and reduce the need to enter the same data into several systems. Efforts should also be made to increase researchers' awareness of the benefits of ORCIDs by means of communications and marketing.

2.  **Researchers should create their own ORCIDs**

Researchers should create their own personal IDs and decide whether to give their home organisations the right to access and edit their records in the ORCID system. CSC does not recommend that organisations create IDs on behalf of their researchers or make the use of ORCIDs mandatory.

3.  **A national ORCID coordinator should be appointed to promote and support the introduction of ORCID**

The Ministry of Education and Culture should appoint and allocate resources to a national ORCID coordinator, which would provide support and training for research organisations and service providers in the introduction of ORCID as well as participate in international ORCID development.

4.  **A national connect service should be set up to link ORCIDs to research organisations**

The Ministry of Education and Culture should allocate resources to a national connect service that would enable researchers to link their ORCIDs to research organisations. Each organisation should be able to choose a method of linkage that best suits its own system architecture, be that the connect service or the organisation’s own CRIS system.

5.  **National ORCID group membership should be acquired if necessary**

A survey should be conducted to establish whether research organisations and service providers would require ORCID membership. The benefits provided by membership should be piloted across several organisations. If a sufficient number of participating organisations require membership, the Ministry of Education and Culture should acquire group membership and appoint a national ORCID coordinator to head the group.
9.2 Proposed actions

Ministry of Education and Culture

1. Circulate this report for comments and assess whether Finnish organisations require ORCID membership and a national connect service

2. Appoint and allocate resources to a national ORCID coordinator to promote the introduction of ORCID in Finland

✓ The workload is estimated to amount to five person-months during the first year and to four person-months in subsequent years.

3. Allocate resources for the implementation and maintenance of a national connect service

✓ The workload is estimated to amount to seven person-months during the first year and to three person-months in subsequent years.

4. Introduce the ORCID as a voluntary field in forms when collecting publication and research personnel data from the HEIs, and promote its use via the VIRTA publication information service

5. Acquire group membership if a sufficient number of organisations require it and appoint an ORCID coordinator to head the group

ORCID coordinator

1. Provide support and training to research organisations

2. Participate in international ORCID cooperation

3. Promote implementation, support piloting and provide technical support to service providers (e.g. funding agencies, publishers) in the integration of ORCID into systems

4. Maintain a Finnish-language orcid.fi website and other information and communication channels

5. Compile presentation and training materials for the use of research organisations and service providers, and organise joint events

6. Coordinate national ORCID group membership (if applicable)

7. Implement and maintain the national connect service, and support organisations in its deployment

Higher education institutions and other research organisations

1. Inform and provide guidelines to their researchers on the introduction of ORCID and the opportunities it presents

2. Deploy a connect service or a similar process that enables researchers to link their ORCIDs to their home organisations

3. Implement a process for administering and managing researchers’ ORCIDs in the organisations’ systems (e.g. user administration, HR and CRISes, library systems, websites, intranet)

4. Incorporate ORCIDs into publication and HR data collection

✓ The workload is estimated to amount to 2–11 person-months/organisation depending on the organisation’s size and system solutions.
Other service providers

Research funding agencies
Integrate ORCID into research funding application and reporting systems so as to enable automated transfers of researcher publication and other data from different systems

Academic publishers
Integrate ORCID logins into publication processes so that ORCIDs are linked to publications from the point that manuscripts are submitted, thus allowing the IDs to travel with publications' reference data

Libraries
Enable the incorporation of authors' ORCIDs into reference data in domestic publication reference databases (e.g. ARTO, Melinda)

Publication repositories, research data services, etc.
Integrate the possibility of ORCID logins into their systems and enable storing ORCIDs in the reference data of publications, research data, etc.

✓ The workload is estimated to amount to 3–11 person-months/organisation.

9.3 Roadmap
Table 2. Roadmap for implementing the proposed actions

<table>
<thead>
<tr>
<th></th>
<th>2015</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Q3</td>
<td>Q4</td>
</tr>
<tr>
<td>Appointing a national ORCID coordinator and assigning resources to it</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Producing Finnish-language communications websites and promotional materials</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Promoting and supporting the adoption of ORCID s across research organisations and various services (ORCID coordinator)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Educating and instructing researchers in the adoption of ORCID (research organisations)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Piloting*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Launching a national connect service</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acquiring national ORCID membership, if applicable</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Introducing ORCID as an optional field in the Ministry of Education and Culture’s publication and research personnel data collection s from the HEIs</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Piloting of the connect service and other solutions in order to promote the introduction of ORCID across organisations, the incorporation of ORCID into services (e.g. research funding agencies, academic publishers) and the acquisition of ORCID memberships
Annex 1. National ORCID connect service
The proposed national connect service would be a local online service separate from the official ORCID register. Finnish HEIs generally base their user IDs on the so-called eduPersonPrincipalName (ePPN) attribute from the eduPerson schema on which the Haka system is based.

Users would log into the connect service using their Haka IDs. Users would need to select their home organisation in connection with login, or, in the case that they belong to several organisations, the organisation with which they want their ORCID to be associated. Users could repeat the connect process separately for each organisation to which they belong.

The login process would give the connect service the user’s home organisation and ePPN. From the connect service, users would be redirected to the ORCID register via the ORCID OAuth API, where they would authorise the connect service to retrieve their ORCIDs. At this stage, users who had several accounts, or identities, in the ORCID register would need to select which user account’s ORCIDs they want to link to their Finnish home organisation’s identity.

When using the connect service, users would not enter their ORCIDs themselves, and instead the IDs would be retrieved by means of the OAuth interface provided by the ORCID register. This would prevent mistakes in data entry.

The process would give the connect service the user’s home organisation, their ID in the home organisation (ePPN) as well as their ORCID. The connect service could then notify the home organisation of the ePPN/ORCID linkage by a method to be configured separately.

HEIs’ IdM systems differ from each other. It would therefore not be possible to introduce a single interface for HEIs, and instead the connect service would need to incorporate multiple different interfaces.

The idea is that ID linkages would not be stored in the connect service but sent directly to users’ home organisations at the last stage of the connect process. The connect service would therefore not incorporate a personal data register. Storing ID linkages in the connect service from where they could be retrieved at a later stage would require a personal data register to be established, which would make the service more complex not just from a technological perspective but especially in terms of administration and the processing of personal data.

HEIs’ views on the alternative data transfer solutions were canvassed through the so-called IAM network, which operates in connection with Haka. Only a few responses were received, but the views expressed were very detailed. The respondents raised concerns over whether the workload and other resources needed for the connect service would ultimately benefit HEIs’ researchers.

The respondents suspected that the connect service would not attract many users and that it would be cheaper to enter data into HEIs’ systems manually than to build the technology needed for the connect service. However, a technological solution would certainly provide a higher level of data integrity than a manual approach.
The HEIs that contributed to the IAM network’s debate felt that, considering their respective systems, it would be easier to retrieve ID linkages from a register incorporated into the connect service than to build an interface into which the connect service could upload the data in connection with each connect process in real time.

The results of the canvassing exercise clearly demonstrate that it would be easier to promote a technological solution among HEIs on the basis of empirical evidence. It would therefore be useful to enlist a number of pilot HEIs to introduce the first interfaces between the connect service and the HEIs and to then add more organisations on the basis of the lessons learned. There are numerous data transfer technologies available.

**Connecting users from organisations that do not use Haka**

So far, the question of the technology to be used in the connect service has been approached from the perspective of the Haka network. Although all Finnish research institutes could be members of Haka, some have chosen not to join\(^\text{10}\) and make their identification servers available online. The Haka user identification network is based on SAML technology. Technologically speaking, the connect service would not need to be limited to the Haka network, and other user identification networks could also be used to link IDs.

In addition to the Haka network, central government organisations in Finland use a single sign-on solution called Virtu, which is also based on SAML technology\(^\text{11}\). The connect service could also be linked to the Virtu network, which would allow organisations that have not made their identification servers available via Haka to also make use of the universal connect service.

In order to use the connect service, organisations would need to have an authentication service that allowed users to log in and submit their IDs within their home organisations. Organisations that do not want to or that cannot join either of the aforementioned identification networks but that nevertheless have a SAML identification server or the ability to set one up could also be linked to the connect service via a local trusted connection from their identification server.

The steering group set up for the purposes of the study called particular attention to the question of how IDs of researchers employed by university hospitals could be imported into hospitals’ IdM systems. There are several obstacles to university hospitals becoming members of the Haka network. Although the Haka service contract states that university hospitals can join the network, there is no detailed definition of the term. University hospitals are not independent organisations but governed by hospital districts, which in turn are owned by local authorities. From a technological perspective it is nevertheless possible for local authorities, joint authorities or hospital districts either alone or together to set up a network similar to Haka or Virtu that would allow these organisations to use the connect service.

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\(^{10}\) An up-to-date list of organisations that are members of the Haka network can be found at [https://confluence.csc.fi/x/ZwnuAQ](https://confluence.csc.fi/x/ZwnuAQ).

\(^{11}\) Virtu is a single sign-on solution provided by the Government ICT Centre for central government organisations, which enables access to the central government administration’s shared browser-based system services through single sign-on. An up-to-date list of organisations that use the Virtu sign-on solution can be found at [https://confluence.csc.fi/x/lJQUAg](https://confluence.csc.fi/x/lJQUAg).
Annex 2. Comparisons of alternative operating models for organising the introduction of ORCID in Finland

Promoting the use of ORCID

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Having an ORCID is made mandatory for researchers, for example, by requesting the ID in research funding applications or in connection with the Ministry of Education and Culture’s publication and HR data collection s.</td>
<td>- A high number of users could be reached relatively quickly.</td>
<td>- Researchers could end up making little use of their IDs or forgetting that they have them if the impetus to create the IDs did not come from the researchers themselves or if they could not see a regular purpose for their IDs. - Creating an ORCID would be necessary for researchers to be able to carry out their work, and the disclosure of data would therefore be subject to the provisions of the Personal Data Act.</td>
</tr>
<tr>
<td>2. Creating IDs is not mandatory for researchers, and instead the use of the scheme is promoted by making it as beneficial as possible for researchers in the use of various services.</td>
<td>- The use of ORCID would become a genuine element of research work and researcher identity. - Researchers’ own data would be more visible if IDs were linked to publications from the point of manuscript submission. - This scenario would promote the interoperability of data and the automation of data transfer. - As long as creating IDs stemmed from researchers’ own wishes and was voluntary for researchers, organisations would not need to disclose personal data to ORCID.</td>
<td>- This scenario would not achieve 100% coverage.</td>
</tr>
<tr>
<td>3. The use of ORCID is promoted by means of disseminating information and marketing (without precluding the other alternatives).</td>
<td>- Awareness of the benefits of ORCID s would increase.</td>
<td>- Only a fraction of researchers would be reached.</td>
</tr>
</tbody>
</table>

Creating ORCIDs

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Researchers create their own ORCID s.</td>
<td>- The use of ORCID s would become a genuine element of research work and researcher identity. - As long as creating IDs stemmed from researchers’ own wishes and was voluntary for researchers, organisations</td>
<td>- This scenario would not achieve 100% coverage.</td>
</tr>
</tbody>
</table>
would not need to disclose personal data to ORCID.

2. **Organisations create ORCIDs for their researchers on their behalf.**
   - A high number of users could be reached relatively quickly.
   - Researchers could forget that they have ORCIDs if they had not created them themselves.
   - ORCID could appear as an additional administrative system to researchers.
   - Organisations would need to disclose researchers’ personal data to the ORCID community, and the disclosure of data would therefore be subject to the provisions of the Personal Data Act.
   - Not all researchers want their data to be disclosed.

---

### Organisation and funding

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Costs per year</th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
</table>
| 1. **Each organisation signs a separate contract with ORCID and pays for its own membership.** | USD 5 000–25 000 per organisation | - Organisations would be able to decide their operating models independently.  
- Technical support would be provided directly by ORCID. | - Operating models would be inconsistent.  
- This scenario would be expensive if there were at least five participating organisations.  
- This scenario would not promote the coverage of ORCID on a national level.  
- This scenario would not give organisations the benefit of economies of scale or cumulative localised know-how. |
| 2. **Interested organisations form a consortium and split the cost of group membership.** | USD 2 000–6 000 per organisation + costs of the lead organisation | - There would be no need for investment on a national scale.  
- This scenario would be cheaper than each organisation acquiring its own membership. | - Operating models would be inconsistent.  
- The splitting of the costs of the lead organisation could be problematic.  
- This scenario would not promote the coverage of ORCID on a national level.  
- This scenario could result in the creation of several different consortia. |
| 3. **The Ministry of Education and Culture pays for the membership on behalf of all interested organisations.** | Total USD 135 000 + costs of the national coordinator | - Harmonised operating models could be agreed on a national level.  
- The participating organisations would benefit from economies of scale and national accumulation of | - This scenario would require a national coordinator. |
know-how.
- All interested organisations could join without there being a considerable increase in costs.
- Providing technical support and other support in a centralised manner nationally would be more cost-effective.

Managing ORCIDs within researchers' home organisations

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
</table>
| 1. Researchers create their own IDs or link their existing IDs to their Haka identities and their home organisations' identity management (IdM) systems via a national connect service. | - Individual organisations would not need to provide a separate service, and instead a national solution could be introduced.  
- Individual organisations would not need to have an existing publication information system. | - Resources would need to be allocated to building and maintaining a connect service. |
| 2. Researchers link their IDs to their home organisations' CRIS systems. | - IDs would be imported directly into researchers' profiles in CRIS systems. | - Not all organisations have a CRIS system that supports creating and linking ORCIDs. |
| 3. Researchers' home organisations create ORCIDs on behalf of their researchers, whereby the data are transferred into the organisations' systems. | - A high number of users could be reached relatively quickly. | - Researchers could forget that they have ORCIDs if they had not created them themselves.  
- ORCID could appear as an additional administrative system to researchers.  
- Organisations would need to disclose researchers' personal data to the ORCID community, and the disclosure of data would therefore be subject to the provisions of the Personal Data Act.  
- Not all researchers want their data to be disclosed. |
Annex 3. Costs involved in introducing ORCID

Costs of promoting the introduction of ORCID (estimate/year) on the basis of the proposed actions

<table>
<thead>
<tr>
<th>Costs per year</th>
<th>Costs during the first year (estimate)</th>
<th>Costs during subsequent years (estimate)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ORCID coordinator</td>
<td>Total 12 person-months</td>
<td>Total 7 person-months</td>
</tr>
<tr>
<td>• Promoting the use of ORCID and building know-how on a national level</td>
<td>4 person-months</td>
<td>3 person-months</td>
</tr>
<tr>
<td>o Participating in international ORCID cooperation</td>
<td>1 person-month</td>
<td>1 person-month</td>
</tr>
<tr>
<td>o Promoting the introduction of ORCID and providing technical support for integrating ORCID with services in Finland (e.g. academic publishers, research funding agencies)</td>
<td>7 person-months</td>
<td>3 person-months</td>
</tr>
<tr>
<td>o Training and retraining personnel</td>
<td>1 person-month</td>
<td>1 person-month</td>
</tr>
<tr>
<td>• Communications</td>
<td>1 person-month</td>
<td>1 person-month</td>
</tr>
<tr>
<td>o Building and maintaining a Finnish-language ORCID website (&quot;orcid.fi&quot;) and other communications forums and promotional materials</td>
<td>7 person-months</td>
<td>3 person-months</td>
</tr>
<tr>
<td>o Organising joint events</td>
<td>1 person-month</td>
<td>1 person-month</td>
</tr>
<tr>
<td>• Connect service</td>
<td>1 person-month</td>
<td>1 person-month</td>
</tr>
<tr>
<td>o Building and maintaining a national connect service</td>
<td>1 person-month</td>
<td>1 person-month</td>
</tr>
<tr>
<td>o Providing connect service integration support for organisations</td>
<td>1 person-month</td>
<td>1 person-month</td>
</tr>
</tbody>
</table>

Research organisations

<table>
<thead>
<tr>
<th>Costs per year</th>
<th>Costs during the first year (estimate)</th>
<th>Costs during subsequent years (estimate)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research organisations</td>
<td>Total 2–10 person-months</td>
<td>Total 1 person-month</td>
</tr>
<tr>
<td>• Communicating with researchers</td>
<td>1 person-month</td>
<td>1 person-month</td>
</tr>
<tr>
<td>• Introducing and using the connect service</td>
<td>0–2 person-months</td>
<td>1 person-month</td>
</tr>
<tr>
<td>• Integrating ORCID into other systems and processes and maintaining the same</td>
<td>0–6 person-months</td>
<td>1 person-month</td>
</tr>
<tr>
<td>• Training and retraining personnel</td>
<td>1 person-month</td>
<td>1 person-month</td>
</tr>
</tbody>
</table>

Service providers (e.g. academic publishers, research funding agencies)

<table>
<thead>
<tr>
<th>Costs per year</th>
<th>Costs during the first year (estimate)</th>
<th>Costs during subsequent years (estimate)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Service providers (e.g. academic publishers, research funding agencies)</td>
<td>Total 1–4 person-months</td>
<td>Total 1 person-month</td>
</tr>
<tr>
<td>• Integrating ORCID into other systems and processes and maintaining the same</td>
<td>1–4 person-months</td>
<td>1 person-month</td>
</tr>
</tbody>
</table>

Cost of ORCID membership by organisational model (estimate per year)

<table>
<thead>
<tr>
<th>Membership fee</th>
<th>Single membership</th>
<th>Group membership</th>
</tr>
</thead>
<tbody>
<tr>
<td>Per organisation</td>
<td>EUR 4 400–20 000*</td>
<td>EUR 2 400–5 300**</td>
</tr>
<tr>
<td>5 member organisations, total</td>
<td>EUR 49 000</td>
<td>EUR 27 000</td>
</tr>
<tr>
<td>10 member organisations, total</td>
<td>EUR 82 000</td>
<td>EUR 44 000</td>
</tr>
<tr>
<td>20 member organisations, total</td>
<td>EUR 148 000</td>
<td>EUR 71 000</td>
</tr>
<tr>
<td>40 member organisations, total</td>
<td>EUR 280 000</td>
<td>EUR 120 000</td>
</tr>
<tr>
<td>Individual member organisations</td>
<td>Total 2 person-months</td>
<td>Total 0.5 person-months</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>-----------------------</td>
<td>-------------------------</td>
</tr>
<tr>
<td>• Negotiating and concluding contracts</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Attending to technical issues</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Liaising with ORCID</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lead organisation</td>
<td></td>
<td>Total 3 person-months</td>
</tr>
<tr>
<td>• Coordinating the consortium</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Negotiating and concluding contracts</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Recruiting new members</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Providing technical support</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Liaising with ORCID</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*) This depends on the size of the organisation and the type of membership. The cost of basic membership per organisation is USD 5 000 / year. Premium membership costs USD 10 000 / year for small organisations and USD 25 000 / year for large organisations (with annual income in excess of USD 200 000). Of Finnish research organisations, at least the University of Helsinki has an annual income in excess of the threshold for large organisations. The “totals” are based on the assumption that the University of Helsinki is involved and that half of all organisations opt for premium membership and the other half for basic membership.

**) Depending on the number of members

Please note: the calculations do not take account of the amount of time spent by researchers on creating their own ORCIDs, as the assumption is that the integration of ORCID into various services would, in the future, facilitate data transfer and reduce the need to enter data manually, thereby lowering costs.