Final Report on the ORCID Login improvements project

Project from February 2023 to January 2024, funded by ORCID Inc.

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Image 1: Illustration of confusion in context with the ORCID login on DSpace; image created by Ines Rettmer, CC-BY

From February 2023 to February 2024 the University Library of Hamburg University of Technology conducted a project to address the login function of DSpace-CRIS via ORCID.

Main project goal was to implement functions on DSpace-CRIS to improve the login process via ORCID. One key problem with the existing login process was, that it was impossible to login with a private email address on ORCID side, unless the ORCID ID on DSpace side was authenticated against ORCID before login. It was also not possible to use different email addresses on ORCID/DSpace-side. If the user fell under such a scenario, they saw a pretty vague and potentially confusing error message (401 unauthorized).

Developments and functions

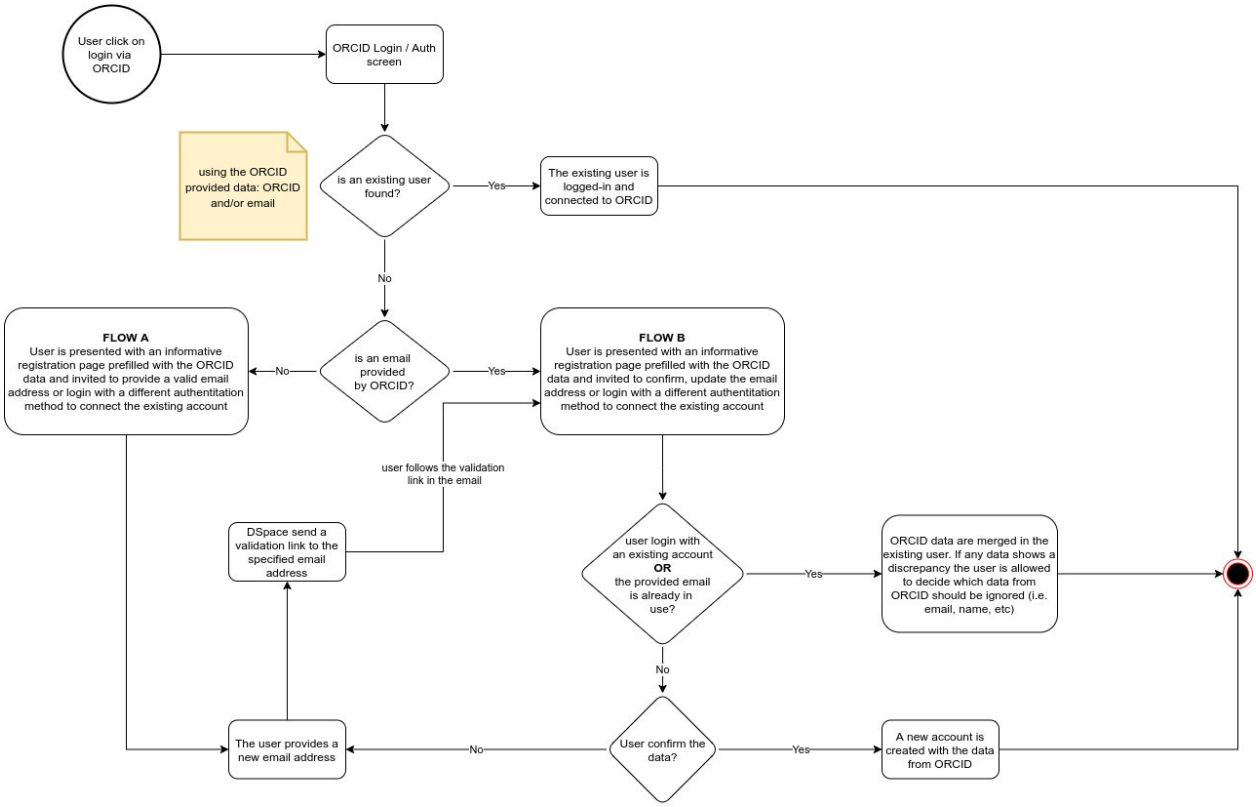

Image 2: Flow Chart of the improved login process; Source: 4Science
https://wiki.lyrasis.org/display/DSPACECRIS/Improvements+to+the+Login+Flow

The basic idea to improve the login process was to ask the user for an email, if they logged in via ORCID and there was no email address provided in the ORCID response. The same happens, if the user after login has no matching account on DSpace-side. This procedure addresses the problem of potentially different email addresses on ORCID and DSpace side. The technical idea is illustrated in the flow chart diagram in Image 2.

Login scenarios

To illustrate that a little bit further, let's look at some scenarios, which are describing possible use cases in context with the login via ORCID (see Table 1).

Scenario	ORCID	DSpace
1	EMail visible (trusted parties or public)	EMail matches an existing user on DSpace side
2	EMail visible (trusted parties or public)	EMail not matching an existing user on DSpace side
3	EMail visible (trusted parties or public)	EMail not matching an existing user on DSpace side, but user exists (with a different EMail address)
4	EMail invisible (private)	User exists on DSpace side
5	EMail invisible (private)	User does not exist on DSpace side

Table 1: Scenarios for ORCID login

Scenario 1 was already covered before the project started. In that scenario it's not necessary to ask the user for an email address and the login will just work.

In **scenarios 2 and 3** an email address is provided by ORCID, but it's not matching a user on DSpace side. There are two potential reasons for that:

- The user has really no account on DSpace: **Scenario 2**
- The user already has a DSpace-account (but with a different email address): **Scenario 3**

With the improved Login process DSpace will show a dialog now to ask for the email, which should be used for the new account (**scenario 2**) or to connect the login to an existing user with a different email address on DSpace (**scenario 3**).

In **scenario 2** the user has to approve the email address provided by ORCID, which is set prefilled in the field for the email address in Image 3. If it is confirmed, the new account will be created with this email address, after the user has clicked the „Confirm this email" button. It is possible to change the email address in that field and to use a different email address for the user on DSpace side. In this event, DSpace will send an email for confirmation to that address. This email includes a verification link. This link leads to the verification page, which has the changed email address in the appropriate field and the user has to confirm that again. After confirmation a new account with this email address will be created on DSpace side.

If the user already has an account with a different email address on TORE (**scenario 3**), the button „Connect to an existing user“ can be used and the user needs to log in with that account to connect it to ORCID.

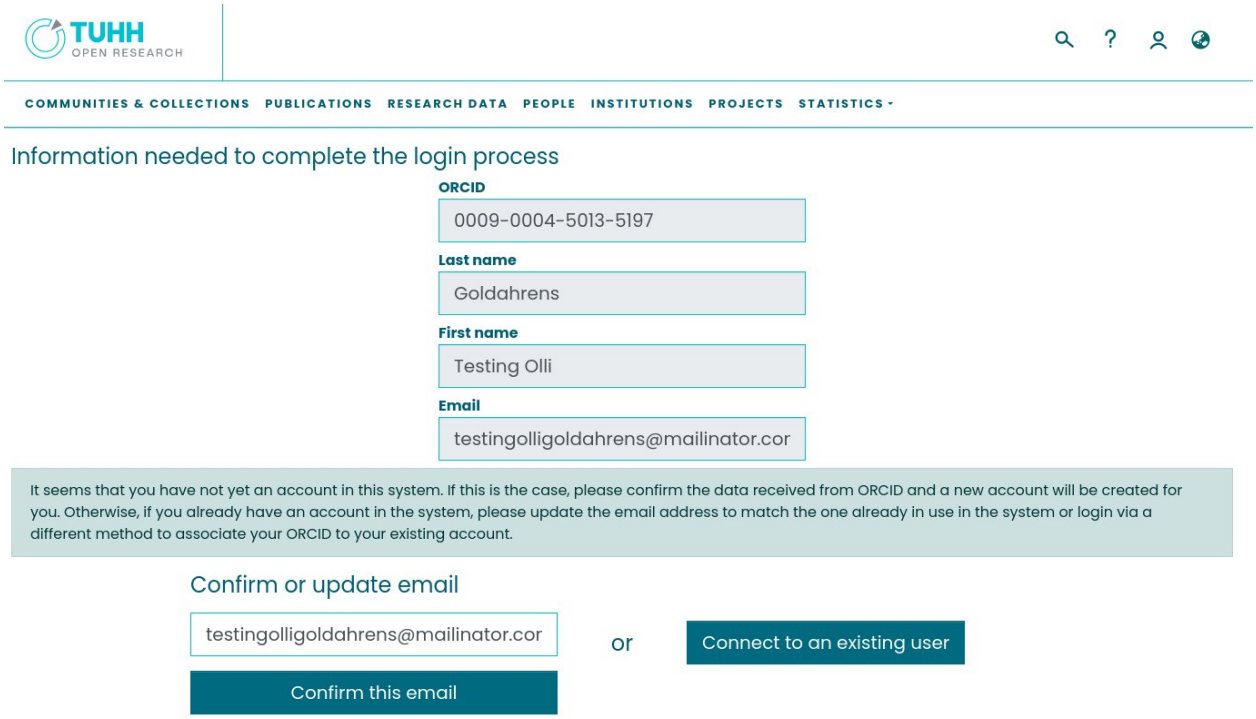

Image 3: Screenshot of a new user with an eMail address via ORCID login on TORE

In **scenarios 4 and 5** the email address on ORCID side is not visible to DSpace. For these scenarios see Image 4, where the user is asked to enter an email address or to connect to an existing user. If a user already exists on DSpace side (**scenario 4**) it‘s possible to connect to an existing user as described for scenario 3, just by using the „Connect to an existing user“ button. For **scenario 5** the user has to provide an email address, click the „Send Verification link“ button and follow the instructions in the verification email (see scenario 2). After confirmation of the address on DSpace side the new account will be generated with that email address.

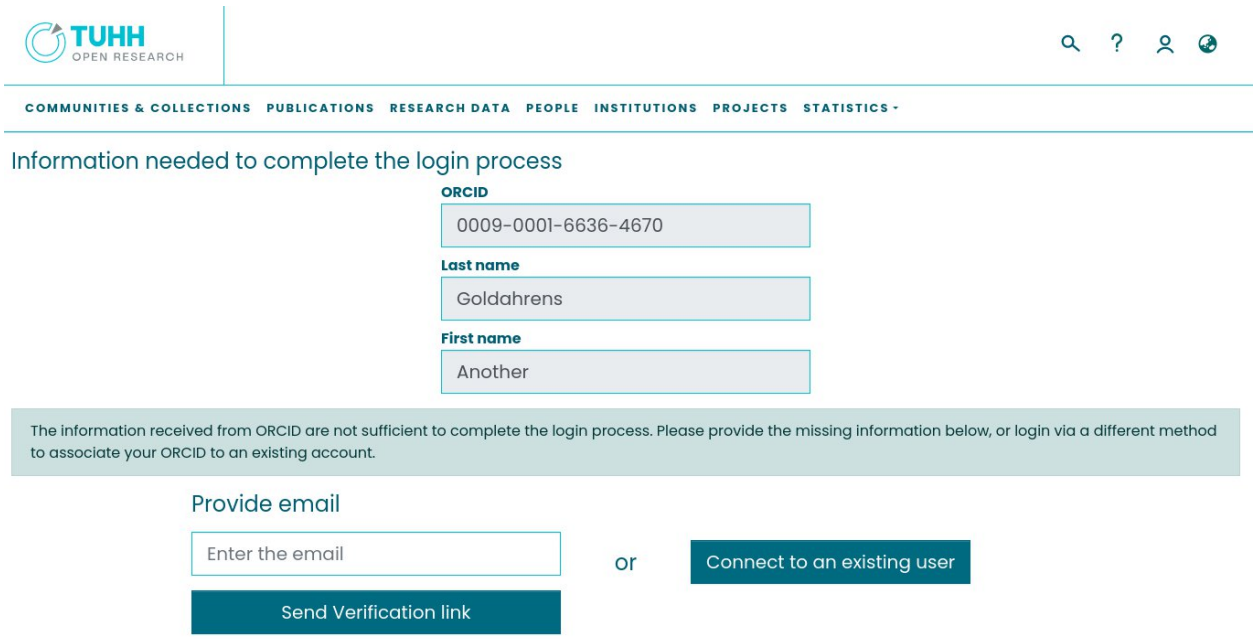

Image 4: Screenshot of a new user without an email address provided by ORCID

The different scenarios are illustrated a little bit more in the presentation https://doi.org/10.15480/882.8935, which was held on Dec 14, 2023 for ORCID.

Summary: Provide email address

In scenarios 2 to 5 a request for the email address is shown to complete the login process (see Image 3 and Image 4). The email address in that field is prefilled, if the address was provided by ORCID (scenarios 2 and 3, Image 3). In these scenarios, if the email address should be used on ORCID side, it's always enough to click the „Confirm this email" button and the account will be created on DSpace side. If the user wants to use a different email address (compared to the one provided by ORCID), this is possible, but a verification email will be sent out to that address asking the user to confirm this address.

The same routine applies to the scenarios, in that the address was not provided by ORCID (which may happen, if it is set to private on ORCID side in scenarios 4 and 5). In those cases the field is initially empty and the user has to provide the email address on their own (see Image 4). A verification email will be sent to that email address to ensure, that the request is correct and to keep this routine secure.

Summary: Connect to an existing user

The „Connect to an existing user" button (which appears in all of the scenarios except for scenario 1, see Image 3 and Image 4) shows a login window, as described

above. In that context it may happen, that different information about the person is available on DSpace side vs. on ORCID side. With the new developments, DSpace will show a dialog table comparing what's stored on DSpace side and what ORCID provided. The user can compare the information and choose, which information should be used for the DSpace account (see Image 5).

If „Override" is checked for values, which are different in both of the sources, the recieved value from ORCID will be used to replace the originally stored value on DSpace side.

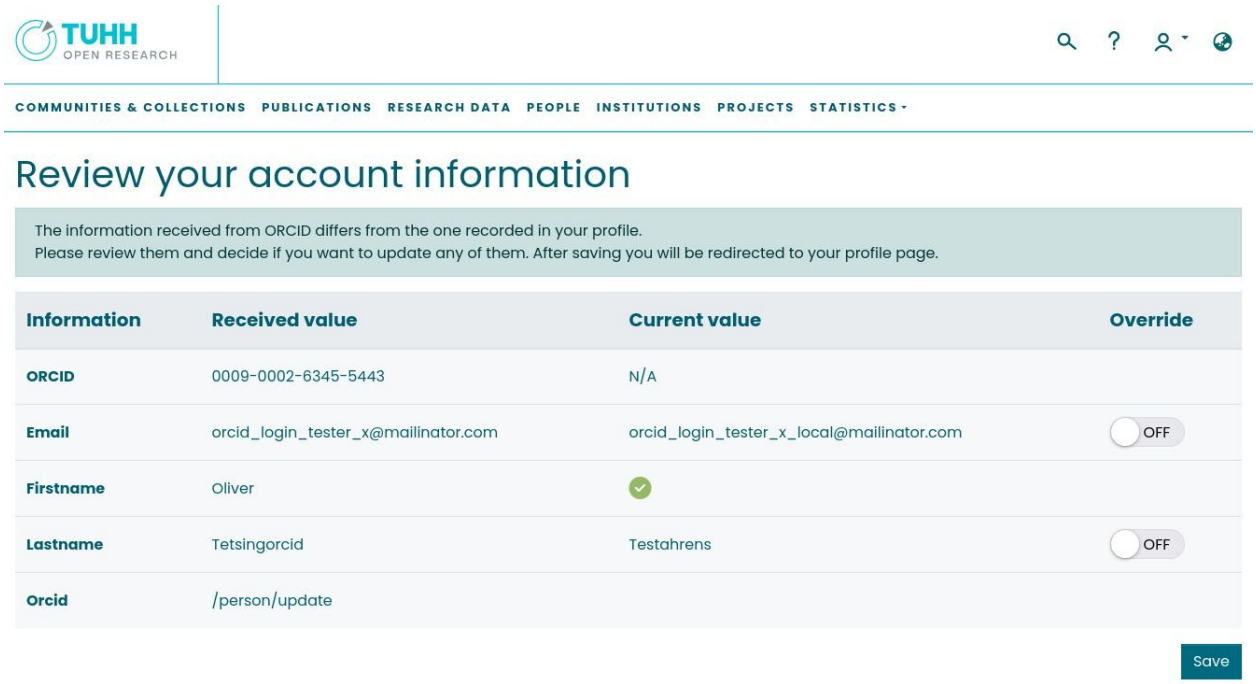

Image 5: Review account information when connecting an existing account to ORCID

Using the developments

The new functions are integrated into DSpace-CRIS since version 2023.02.00 (https://github.com/4Science/DSpace/releases/tag/dspace-cris-2023.02.00), which was released on Nov 30, 2023. Starting with this version the feature is available to any DSpace-CRIS user, who is using that version, without any extra costs or extra effort. They are active automatically, when the DSpace-CRIS instance has enabled login via ORCID. TUHH Open Research TORE (https://tore.tuhh.de) was updated to DSpace-CRIS 2023.02.00 on Dec 18, 2023 and contains the improvements since that point in time.

What comes next?

The developments were conducted under DSpace-CRIS instead of normal DSpace. The reason for that decision was, that at the TUHH we are using DSpace-CRIS since 2017. Testing the developments on generic DSpace would have produced a lot of extra effort for testing and also a lot of more overhead to discuss the developments with the DSpace community. Another effect of that would have been, that we wouldn't have been able to benefit from the developments immidiately, as we would have had to wait for the developments to be ported to DSpace-CRIS (it would have been the opposite way compared to the chosen one).

The downside of it is, that only the DSpace-CRIS community benefits from this development immidiately and the rest of the DSpace-community has to wait for it. 4Science plans to port this development to generic DSpace as soon as they can, but without further funding it may take some time and thus the worst case is, that it can only get it into DSpace 9. There are probably some adjustments necessary to get it ported and there will be some discussion in the DSpace community.

Project schedule

Table 2 illustrates the project timeframe, to show, what we have done in project context and when we did that. Most of the activities have been described in the Grantee calls accompanying the project.

Activity	**Description**	**Expected Outcome**	**Date**
Contracting	Contacting 4Science with the development of the project	Having an implementation partner	2023 Mar
Definition	Definition of the design of new function for DSpace by 4Science and TUHH	Getting prepared for the implementation of the new functions	2023 Jun-Aug

Presentation	Presentation of the function with the wireframe and mockups within the DSpace developer meeting on Aug 31 by 4Science - cf. https://wiki.lyrasis.org/x/0oDxEQ	Inform the DSpace Community about the new function	2023 Aug 31
Implementation	Implementation of the new function in DSpace by 4Science	Implement the new function and integrate them into the development branch for DSpace-CRIS 2023.02.00	2023 Aug/Sep
Testing	Testing of the implementation at TUHH	Find bugs and approve, that the function is doing what we expect it to do	2023 Oct
Implementation	Adjustments based on test results (4Science)	Adjustments to the function for inclusion if necessary	2023 Oct/Nov
Implementation	Merge developments into DSpace-CRIS 2023.02.00 (4Science)	Provided successful tests from TUHH, the function will be included in DSpace-CRIS 2023.02.00	2023 Nov
Presentation	Delivery and presentation to ORCID (TUHH)	Show the project results and ask for feedback	2023 Dec 14
Organization / Presentation	Project Closure and Reporting (TUHH)	Wrap up the project, analyse its outcome and start using the new function	2024 Jan/Feb

Table 2: Timeframe of the project