

# ORCID UNDERSTANDING THE API

SUNET WORKSHOP DAY 2 | SEPTEMBER 28, 2017

ORCID

Connecting Research  
and Researchers

MATT BUYS

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@mjbuys  
@ORCID\_Org

## Imagine a world where:

You could search the internet and find all of a researcher's work with a single query – in any browser

You could auto-populate standard publication and grant forms – any platform, any country

You could in near real time see what your researchers or grantees are publishing – and also know their current affiliation and other funding

# Let's start by defining some common phrases

- API
- OAuth2
- RESTful service
- Persistent identifier
- Unique identifier

# API

An application programming interface (API) is a set of routines, protocols, and tools for building software and applications.

## **Translation:**

**If your software gives my software one of these instructions I've defined, it will perform this action, or return this information.**

# OAuth2

OAuth is an open standard for authorization, commonly used as a way for Internet users to log in to third party websites using their Microsoft, Google, Facebook, Twitter, One Network etc. accounts without exposing their password. Generally, OAuth provides to clients a "secure delegated access" to server resources on behalf of a resource owner. It specifies a process for resource owners to authorize third-party access to their server resources without sharing their credentials. Designed specifically to work with Hypertext Transfer Protocol (HTTP), OAuth essentially allows access tokens to be issued to third-party clients by an authorization server, with the approval of the resource owner. The third party then uses the access token to access the protected resources hosted by the resource server.

OAuth 2.0 is the next evolution of the OAuth protocol and is not backwards compatible with OAuth 1.0. OAuth 2.0 focuses on client developer simplicity while providing specific authorization flows for web applications, desktop applications, mobile phones, and living room devices. The specification and associated RFCs are developed by the IETF OAuth WG; the main framework was published in October 2012.

## Translation:

**A standard set of rules which resource owners (commonly users) to grant access to APIs SECURELY.**

# RESTful Service

In computing, representational state transfer (REST) is the software architectural style of the World Wide Web. More precisely, REST is an architectural style consisting of a coordinated set of architectural constraints applied to components, connectors, and data elements, within a distributed hypermedia system. REST ignores the details of component implementation and protocol syntax in order to focus on the roles of components, the constraints upon their interaction with other components, and their interpretation of significant data elements. Through the application of REST architectural constraints certain architectural properties are induced: Performance, Scalability, Simplicity, Modifiability, Visibility, Portability, and Reliability.....

.....To the extent that systems conform to the constraints of REST they can be called RESTful. RESTful systems typically, but not always, communicate over Hypertext Transfer Protocol (HTTP) with the same HTTP verbs (GET, POST, PUT, DELETE, etc.) that web browsers use to retrieve web pages and to send data to remote servers. REST systems interface with external systems as web resources identified by Uniform Resource Identifiers (URIs), for example /people/tom, which can be operated upon using standard verbs such as DELETE /people/tom.

## Translation:

**A web API that implements a popular and simple set of instructions in the same way as a whole bunch of other web APIs do.**

# Persistent Identifier

A persistent identifier (PID) is a long-lasting reference to a digital object—a single file or set of files. Noted persistent identifier systems include: Archival Resource Keys (ARKs), Digital Object Identifiers (DOIs), the Handle System, Persistent Uniform Resource Locators (PURLs), Uniform Resource Names (URNs), and Extensible Resource Identifiers (XRIs).

## **Translation:**

**An identifier that exists for a long long long time and points at data.**

# Unique Identifier

With reference to a given (possibly implicit) set of objects, a unique identifier (UID) is any identifier which is guaranteed to be unique among all identifiers used for those objects and for a specific purpose.

## Translation:

**Being the only one of its kind, a set of letters and numbers that identifies one thing and only that thing.**



# Great! To review:

**API** - If your software gives my software one of these instructions I've defined, it will perform this action, or return this information.

**OAuth2** - A standard set of rules which resource owners (commonly users) to grant access to APIs SECURELY.

**RESTful Service** - A web API that implements a popular and simple set of instructions in the same way as a whole bunch of other web APIs do.

**Persistent Identifier** - An identifier that exists for a long long long time and points at data.

**Unique Identifier** - Being the only one of its kind, a set of letters and numbers that identifies one thing and only that thing.

# WHAT IS ORCID?

- An identifier for researchers
- A registry
- A set of standard procedures for connecting researchers to their affiliations and activities
- A committed community building connectors
- An international-scale open research effort

# ORCID IS OPEN

- Non-profit and platform-neutral
- International service that integrates with other researcher identifiers
- Registry use is free for individuals
- Independent non-profit membership organization
- Open data, software, APIs, and documentation



- Documenting impact through research performance frameworks
- Reducing researcher burden

... but these two goals seem at cross purposes?

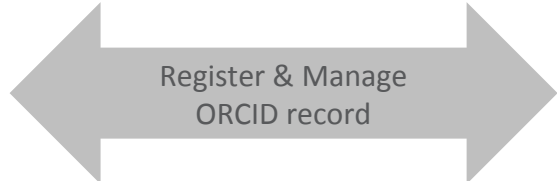
# ORCID PUTS THE RESEARCHER IN CONTROL

Researchers sign in to their ORCID account to:

- Connect their iD to research systems
- Control who can access their information
- Choose what information to make public



Researcher



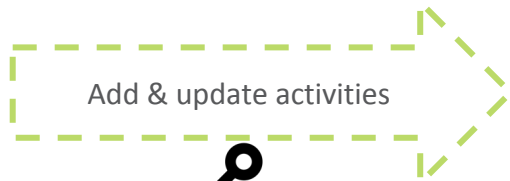
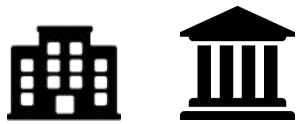
ORCID record



XXXX-XXXX-XXXX-XXXX

- Name(s)
- Email addresses
- Biography
- Affiliation
- Research activities

Permissions to use  
ORCID data



ORCID member organizations

# AUTHENTICATION

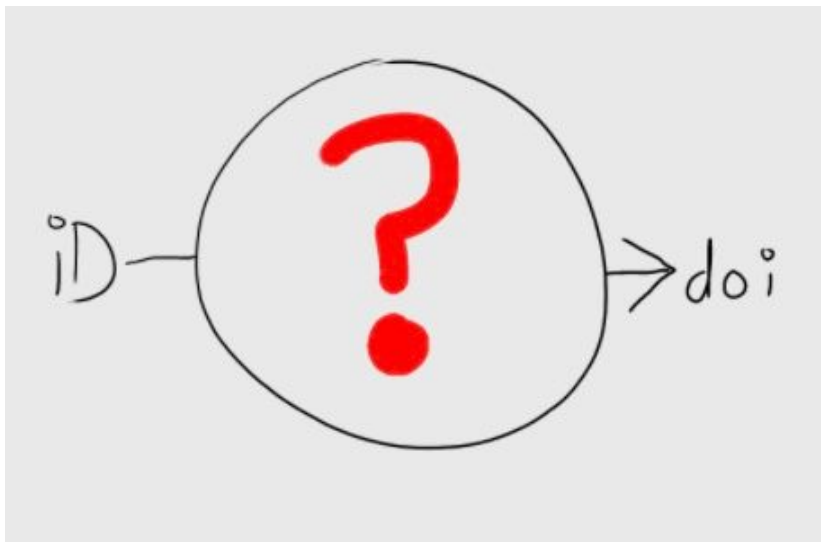


**Collect iD using an authenticated API** to ensure:

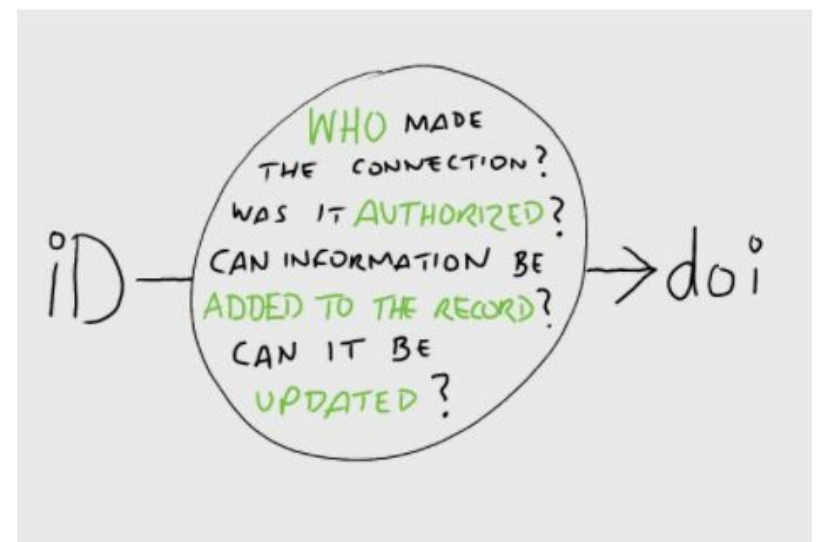
- the person and the iD belong together
- the iD is correctly entered
- privacy is respected

For more info on membership, visit <http://orcid.org/about/membership>

.... and also, authentication provides ORGANISATIONS the opportunity to ask for permissions to read/write/update ORCID records.



No authentication

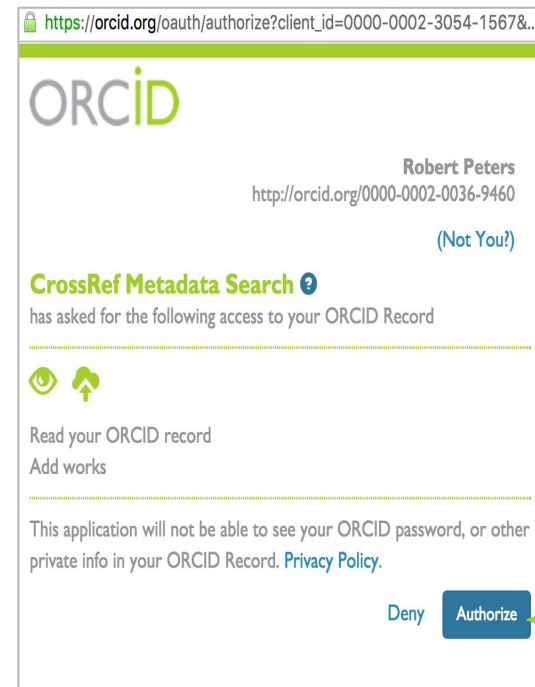
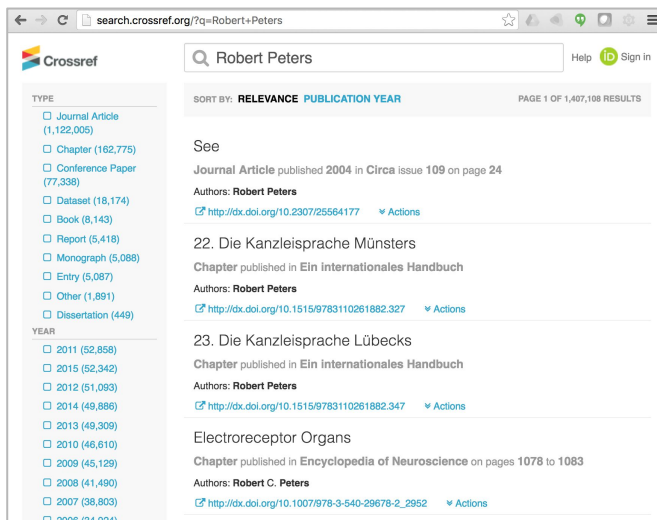


With authentication



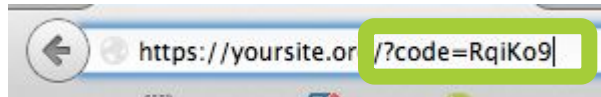
# Sample OAuth2 flow and API calls

1. User is sent from your website to ORCID's authorization page. URL specifies permission your application is requesting from the user.



2. User approves and is sent to a URL you specify (redirect\_url); ORCID API attaches an authorization code to the end of this URL

### 3. Your site checks the redirect url for the authorization code



### 4. Your site exchanges the authorization code (using your API client ID and secret) for the user's authenticated ORCID iD, name and an API access token

```
curl -X POST -H 'Accept: application/json' --data  
'code=RqiKo9&client_id=0000-0002-9189-9909&client_secret=719b5c31-5681-4dce-a317-ff1bc1e94277&grant_type=authorization_c  
ode&redirect_uri=https://developers.google.com/oauthplayground' 'https://api.qa.orcid.org/oauth/token' -k
```

HTTP/1.1 200 OK

```
{"access_token": "0a3ac65f-f8a7-4257-b605-aff0ab37d464", "token_type": "bearer", "refresh_token": "16d75d2d-bb75-4087-8a01-6  
85e5f03faf8", "expires_in": 631138518, "scope": "/orcid-profile/read-limited", "orcid": "0000-0003-4153-0078"}
```

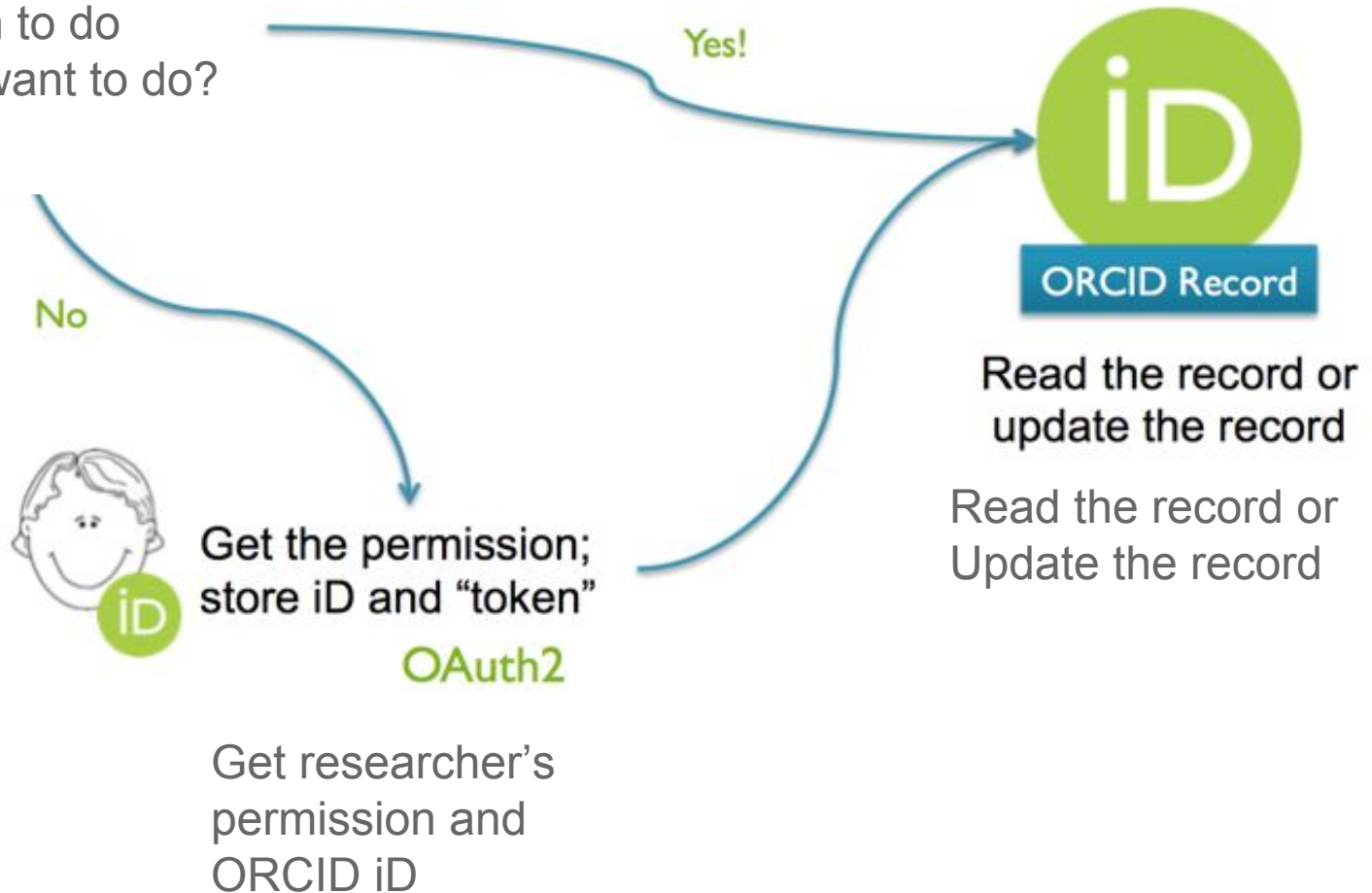
### 5. Token can used to make API calls, per the permissions that you requested

```
curl -Sk -H 'Content-Type: application/json' -H 'Authorization: Bearer 0a3ac65f-f8a7-4257-b605-aff0ab37d464'  
https://api.qa.orcid.org/v1.2_rc6/0000-0001-6356-0580
```

```
{"message-version": "1.2_rc6", "orcid-profile": {"orcid": null, "orcid-id": null, "orcid-identifier": {"value": null, "uri": "http://qa.orcid.org/0000-0001-6356-0580", "p  
ath": "0000-0001-6356-0580", "host": "qa.orcid.org"}, "orcid-deprecated": null, "orcid-preferences": {"locale": "EN"}, "orcid-history": {"creation-method": "WEB  
SITE", "completion-date": {"value": 1358374706031}, "submission-date": {"value": 1357936637938}, "last-modified-date": {"value": 1463177638836}, "claim  
ed": {"value": true}, "source": null, "deactivation-date": .....
```

# Let's simplify:

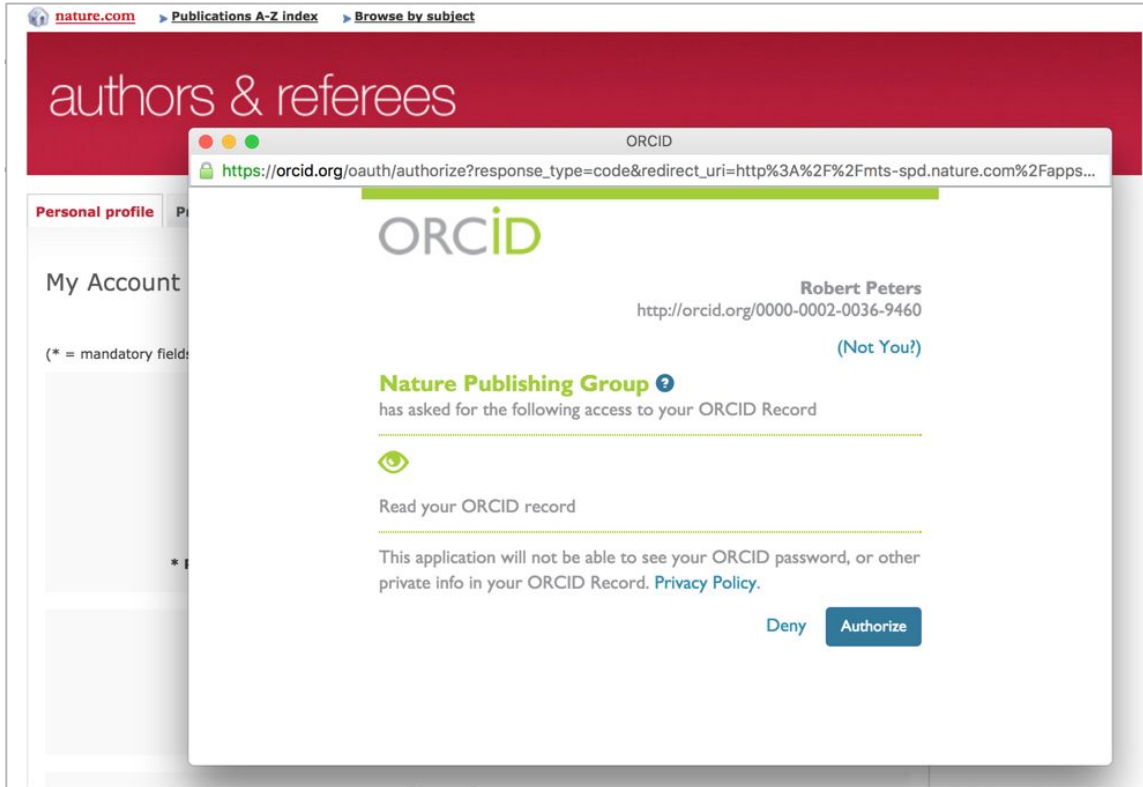
Do you have permission to do what you want to do?



# What can you do & build using the ORCID APIs?

- Authenticate a user's ORCID iD
- Push a person identifier to ORCID
- Add or update affiliation
- Push work metadata or other activity to the API
- Insights into researcher impact

# Authenticating a user's ORCID iD (Nature)



Nature Journal uses ORCID's OAuth2 flow to authenticate a researcher's ORCID iD. This prevents user-driven errors such as typos.

# Pushing a person identifier to ORCID (Loop)

ORCID  
Connecting Research and Researchers

FOR RESEARCHERS FOR ORGANIZATIONS ABOUT HELP SIGN OUT

MY ORCID RECORD INBOX ACCOUNT SETTINGS DEVELOPER TOOLS MANAGE MEMBERS ADMIN PAGE LEARN MORE

2,204,025 ORCID iDs and counting. [See more...](#)

**Robert Peters** Biography

**ORCID ID**  
orcid.org/0000-0002-0036-9460  
View public version

Get a QR Code for your iD

Also known as  
Rob Peters,  
r.peters,  
rcpeters

Other IDs  
Scopus Author ID 56661183500  
Loop profile 287431

**Education (2)** + Add education | Sort

California Polytechnic State University: San Luis Obispo, CA, United States  
1996-06 to 1999-06(Computer Science)  
Source: Rob app 2 Created: 2013-12-06

Reedley College: Reedley, CA, United States  
1993-09 to 1996-05  
Associates in Mathematics  
Source: Rob app 2 Created: 2013-12-06

**Employment (2)** + Add employm

loop

Search for articles, people, events and more.

frontiers Robert Peters

**Robert Christain Peters** [FOLLOW](#)

ORCID  
USA


Overview Bio Network Publications Topics Impact

66 Total Views  
66 Profile Views  
1 Total Publications  
0 Publication Views  
0 Publications Downloads  
[View Full Impact](#)


1 Co-Authors  
**Rebecca Bryant** [Follow](#)  
University of Illinois at Urbana-Champaign USA  
1 publications in common

Loop pushes their identifier to ORCID via the API, and a link to Loop is shown.

# Add or update affiliation (Oxford)



IT Services  
ORCID at Oxford



UNIVERSITY OF  
OXFORD

v1.68  
13-Aug-2015  
© University of Oxford

Search  
Feedback  
Registration  
IT Services

Self-Registration  
User info  
Software  
TSM Backup  
Nexus options  
ITSS Index

Logged in as:

Get an Oxford-linked ORCID or link an existing ORCID. *Why would I want to do this?*

- [I already have an ORCID and I'd like to link it to my Oxford account](#)
- [I don't yet have an ORCID; create one for me and link it to my Oxford account](#)

Self-Registration Home Page ORCID

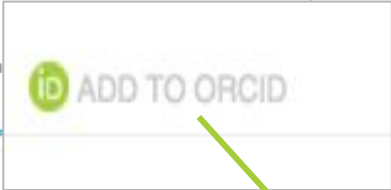
▼ Employment (1) + Add employment IT Sort

University of Oxford: Oxford, Oxfordshire, United Kingdom  
(Bodleian Radcliffe Science Library)

Source: ORCID Integration at the University of Oxford Created: 2015-08-24

# Pushing a work citation to the API (Crossref)

The screenshot shows the Crossref search results for 'Robert Peters'. The search bar at the top contains 'Robert Peters'. Below the search bar, there are filters for 'TYPE' and 'YEAR'. The 'TYPE' filter includes options like 'Journal Article (1,121,821)', 'Chapter (162,760)', 'Conference Paper (77,303)', 'Dataset (18,174)', 'Book (8,142)', 'Report (5,416)', 'Entry (5,085)', 'Monograph (5,084)', 'Other (1,891)', and 'Dissertation (449)'. The 'YEAR' filter includes options from 2011 to 2006. The main content area shows three search results, each with a title, publication information, authors, and a DOI link. The first result is 'See Journal Article published 2004 in Circa issue 109 on page 24' by Robert Peters, with DOI <http://dx.doi.org/10.2307/25564177>. The second result is '22. Die Kanzleisprache Münsters Chapter published in Ein internationales Handbuch' by Robert Peters, with DOI <http://dx.doi.org/10.1515/9783110261882.327>. The third result is '23. Die Kanzleisprache Lübecks Chapter published in Ein internationales Handbuch' by Robert Peters, with DOI <http://dx.doi.org/10.1515/9783110261882.347>. Each result has an 'ADD TO ORCID' button.

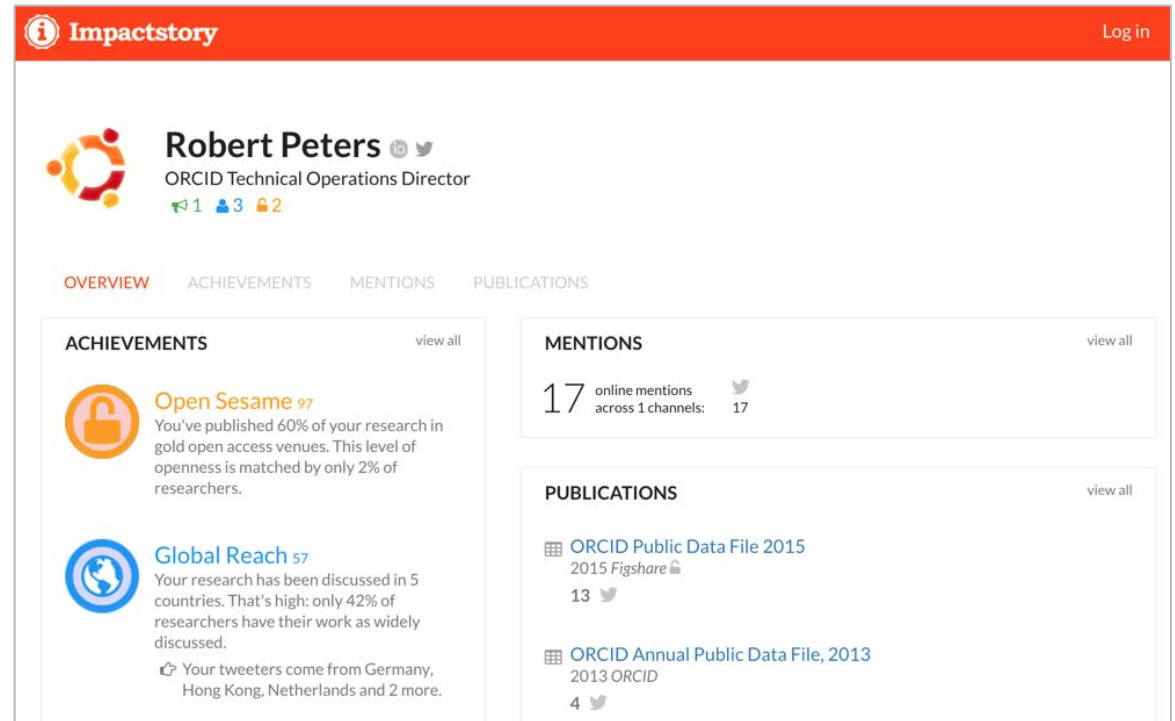


The screenshot shows the ORCID profile page for Robert Peters. The page has a green and blue header with the ORCID logo and navigation links: 'FOR RESEARCHERS', 'FOR ORGANIZATIONS', 'ABOUT', 'HELP', and 'SIGN IN'. The profile information includes: 'Robert Peters', 'ORCID ID: [orcid.org/0000-0002-0036-9460](https://orcid.org/0000-0002-0036-9460)', 'Education (2)', 'Employment (2)', 'Also known as: Rob Peters, r.peters, rcpeters', 'Country: Argentina', 'Keywords: test', 'Websites: Impact Story [0002-0036-9460](https://orcid.org/0002-0036-9460), LinkedIn - RCPETERS, Github - RCPETERS', 'Email: info@rcpeters.com, r.peters@orcid.org', 'ORCID: Bethesda, MD, United States (2016-01 to present) (Technology)', 'Technical Operations Director (Source: Rob app 2, Created: 2016-04-18)', 'ORCID.org: Bethesda, Maryland, United States (2012-11 to 2015-12) (Technology)', 'Lead Developer (Source: Rob app 2, Created: 2014-06-05)', 'Works (9)', and 'The ugly child of research: Software Citations! (Figshare, 2016 | data-set, DOI: [10.6084/M9.FIGSHARE.7243924.V1](https://doi.org/10.6084/M9.FIGSHARE.7243924.V1))'.








# Insights into researcher impact (Impactstory)

ORCID serves as the infrastructure for Impactstory provide insights into researcher impact.





The screenshot displays the Impactstory profile for Robert Peters, ORCID Technical Operations Director. The profile includes a navigation menu with 'OVERVIEW', 'ACHIEVEMENTS', 'MENTIONS', and 'PUBLICATIONS'. The 'ACHIEVEMENTS' section highlights 'Open Sesame 97' (60% gold open access venues) and 'Global Reach 57' (discussed in 5 countries). The 'MENTIONS' section shows 17 online mentions across 1 channel. The 'PUBLICATIONS' section lists 'ORCID Public Data File 2015' (2015 Figshare) and 'ORCID Annual Public Data File, 2013' (2013 ORCID).

**Robert Peters**    
ORCID Technical Operations Director  
 1  3  2


**OVERVIEW** ACHIEVEMENTS MENTIONS PUBLICATIONS

**ACHIEVEMENTS** [view all](#)




 **Open Sesame 97**  
You've published 60% of your research in gold open access venues. This level of openness is matched by only 2% of researchers.



 **Global Reach 57**  
Your research has been discussed in 5 countries. That's high: only 42% of researchers have their work as widely discussed.  
📍 Your tweeters come from Germany, Hong Kong, Netherlands and 2 more.

**MENTIONS** [view all](#)

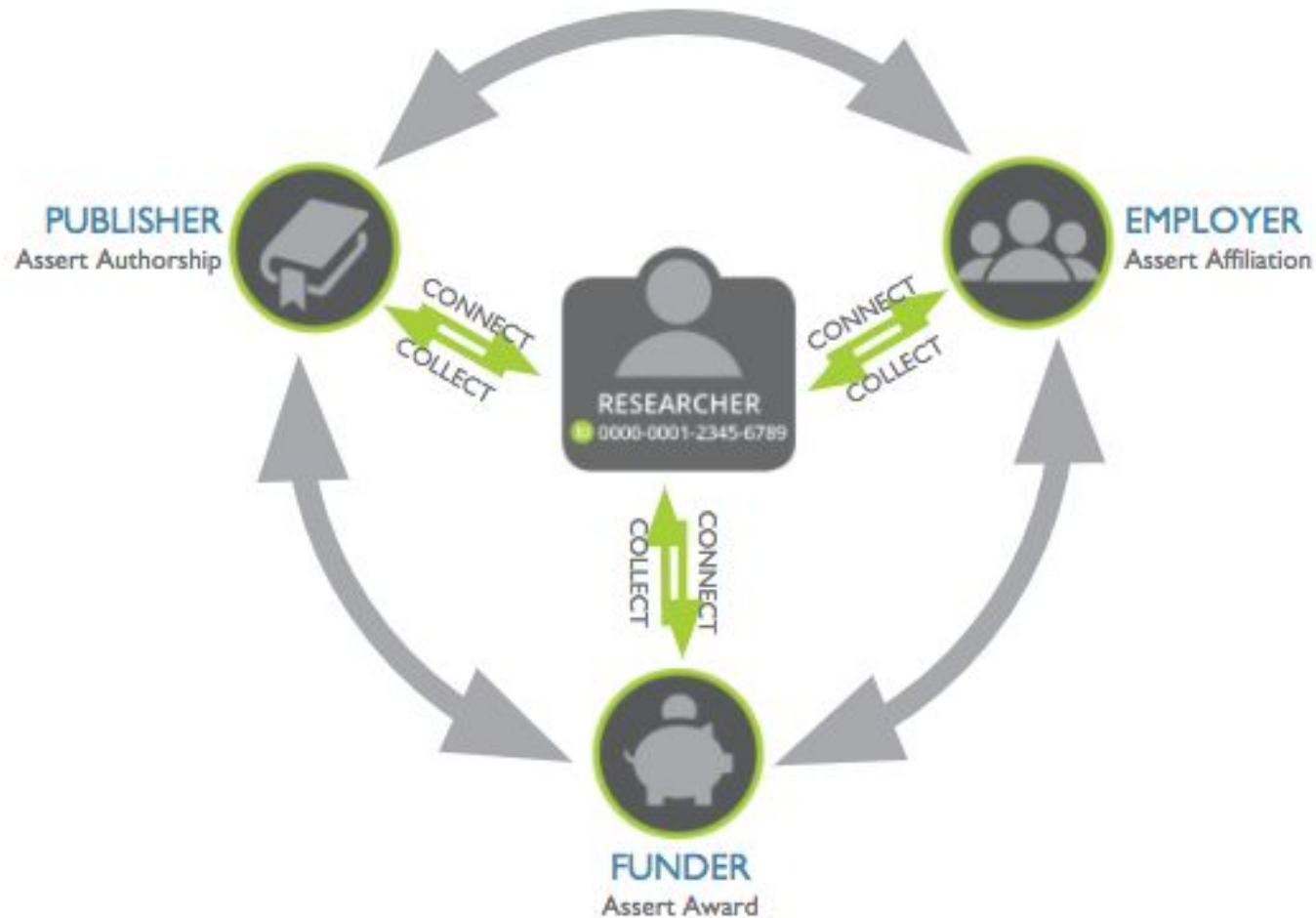
17 online mentions across 1 channels:  17

**PUBLICATIONS** [view all](#)

 **ORCID Public Data File 2015**  
2015 Figshare   
13 

 **ORCID Annual Public Data File, 2013**  
2013 ORCID  
4 

# INTEROPERABILITY—ENTER ONCE REUSE OFTEN



# THERE ARE MANY USEFUL IDENTIFIERS



# THE COMMUNITY OF INTEGRATORS

- 
- A world map with several countries highlighted in light green and light blue. The highlighted countries include the United Kingdom, Denmark, Finland, Sweden, Netherlands, Belgium, Germany, Italy, South Africa, Taiwan, Australia, New Zealand, Canada, and the United States. The rest of the world is shown in light grey.
- 713 members from 41 countries, consortia in the UK, Denmark, Finland, Sweden, Netherlands, Belgium, Germany, Italy, South Africa, Taiwan, Australia, New Zealand, Canada and the US
  - 3.7m researchers, 1.4m records with at least one connection: 20m works, 328K grants, 147K reviews, 1.8m education and 1.4m employment items
  - Over 550 integrations across sectors of the research community

THE TRUE POWER OF OUR API IS THE FLEXIBILITY TO USE IT  
IN WAYS WE HAVEN'T EVEN DREAMED OF!



# ORCID GOOGLE PLAYGROUND DEMONSTRATION

SUNET WORKSHOP DAY 2 | SEPTEMBER 27, 2017

ORCID

Connecting Research  
and Researchers

MATT BUYS

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@mjbuys  
@ORCID\_Org

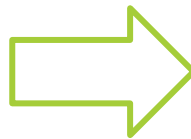
# ADDING OR UPDATING

INSTITUTION  
SYSTEM

Affiliation

Funding

Works



## ORCID RECORD

**▼ Employment (1)** + Add employment ⇅ Sort

University of Oslo: Oslo, Eastern Norway, Norway  
2012-04 to present 👤 🔑 🔒

Researcher (Academic) (Department of Psychology)

Source: University of Oslo Created: 2017-03-03 🗑️

**▼ Funding (1)** + Add funding ⇅ Sort

Funding example 📄 👤 🔑 🔒

Funding Agency Name (Oslo, Eastern Norway, Norway)  
2017-09 to 2019-08 | Award  
Award: 1234  
Alternate URL: [www.orcid.org](http://www.orcid.org)

Source: University of Oslo ☑ Preferred source 🔗 🗑️

**▼ Works (1)** + Add works 📄 Export works ⇅ Sort

ORCID in a world where machines read 📄 👤 🔑 🔒

CERES presentation  
2017-03 | other  
DOI: [10.1087/20120404](https://doi.org/10.1087/20120404)

Source: University of Oslo ☑ Preferred source 🔗 🗑️

## ORCID RECORD

### ▼ Employment (1)

⇅ Sort

ORCID, Inc: Johannesburg, South Africa

2015-05 to present

Regional Director: EMEA

Source: ORCID

Created: 2015-11-04

### ▼ Funding (4)

⇅ Sort

ADVANCE Leadership Award: Women in Science and Engineering: A Guide to Maximizing their Potential

National Science Foundation - Directorate for Education and Human Resources (n/a, United States)

2006-04 to 2007-03 | Grant

Grant: [0536999](#)

Grant: [0536999](#)

Source: ÜberWizard for ORCID

Preferred source

### ▼ Works (101)

⇅ Sort

What are ORCID identifiers and how should we be using them? HRA Webinar 20161208

Figshare

2016 | other

DOI: [10.6084/M9.FIGSHARE.4296308.V1](#)

Source: DataCite

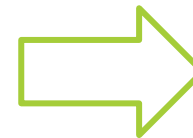
Preferred source

## INSTITUTION SYSTEM

Affiliation

Funding

Works





# AFFILIATION EXAMPLE

Google playground link: <https://goo.gl/JgQknk>

Scopes: <https://members.orcid.org/api/oauth/orcid-scopes/activities/update/read-limited>

Headers: application/vnd.orcid+xml

<https://api.sandbox.orcid.org/v2.0/0000-0002-8257-0167/reCORD>



# THANK YOU!



- Find out more at <http://orcid.org>
- Register at <http://orcid.org/register>
- Twitter @ORCID\_Org / @mjbuys

**Matt Buys**

ORCID Regional Director, EMEA

[m.buys@orcid.org](mailto:m.buys@orcid.org)

<http://orcid.org/0000-0001-7234-3684>