
PIDs 101

A Beginners' Guide to
Persistent Identifiers

What is a persistent identifier?

persistent identifier



an organization
made a promise
to keep it alive

globally unique
string of
characters

(known as PIDs to their friends)

PIDs for people, places, and things in the research community

PIDs for people (researchers) include ISNIs and ORCID iDs



PIDs for places (research organizations) include GRID and ROR

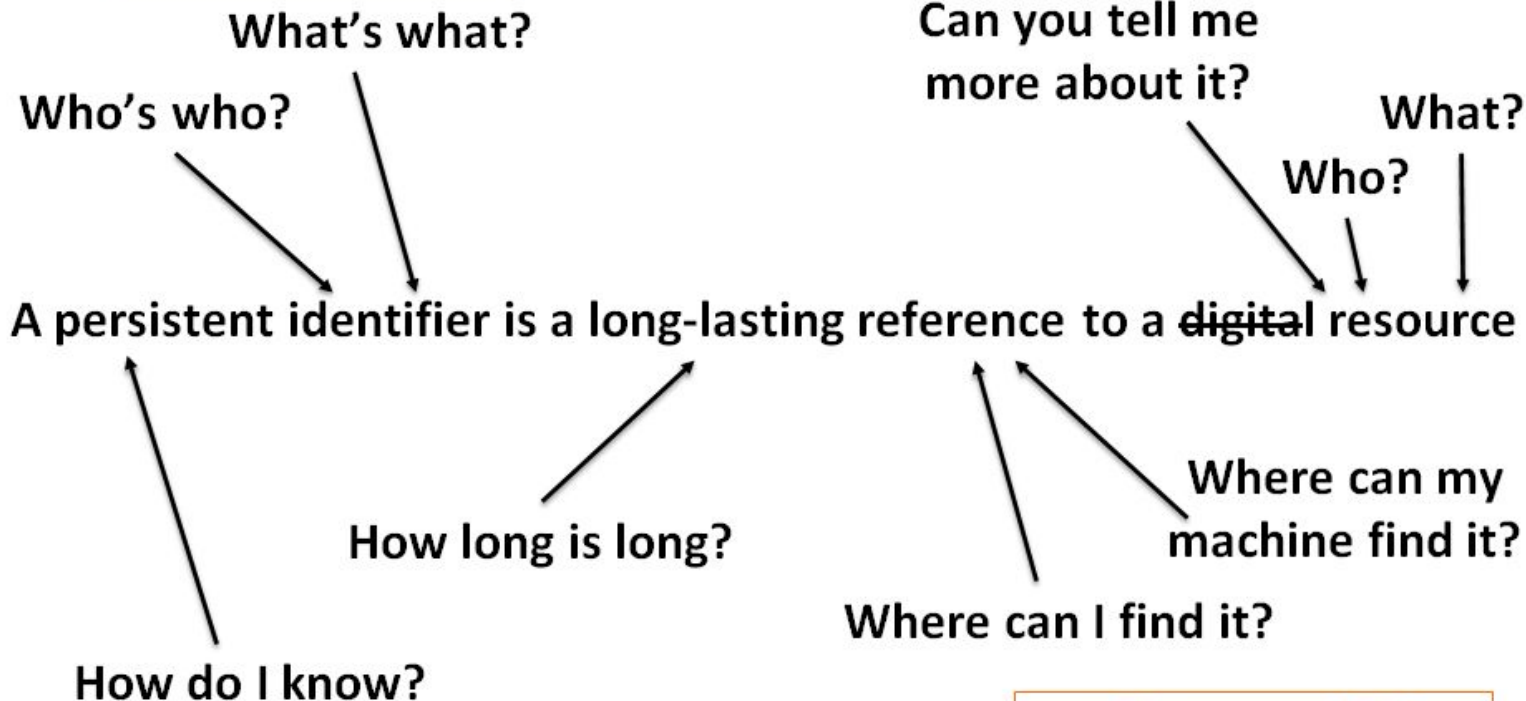


PIDs for things (research outputs/inputs like grants, reviews, preprints, projects, etc.) include Crossref and DataCite DOIs, IGSNs, RAiDs, and more



Provenance

Metadata



**Policies and
Guarantees**

Machine-readability

**What can PIDs *do* and why
are they important?**

PIDs disambiguate

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 [Print view](#) 

Also known as


RH Dasler, RL Dasler, RL Howard,
Robin Howard

Other IDs

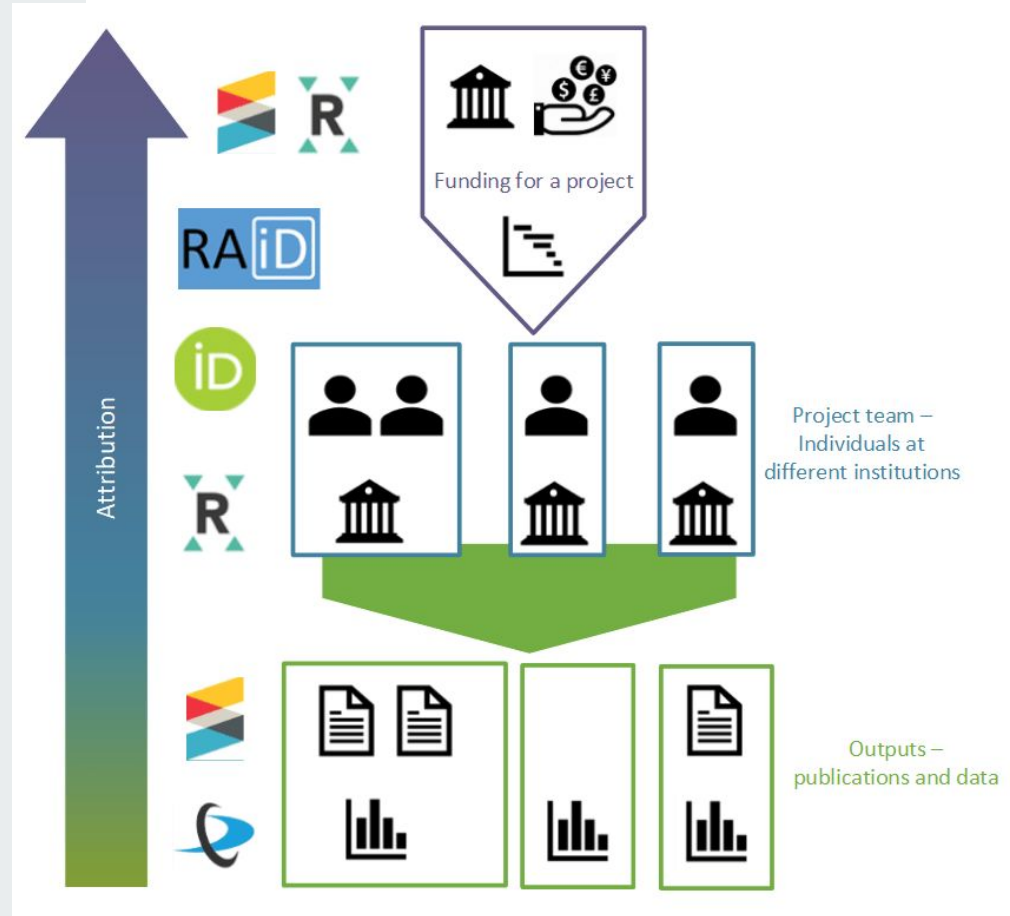
[ResearcherID: N-9035-2013](#)

PIDs support linking

References

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Biosynthesis of gold nanoparticles: a green approach
J. Photochem. Photobiol. B: Biol., 161 (2016), pp. 141-153,
[10.1016/j.jphotobiol.2016.04.034](https://doi.org/10.1016/j.jphotobiol.2016.04.034)
[Article](#)  [Download PDF](#) [View Record in Scopus](#)
[Google Scholar](#)
- [Akhavan et al., 2011](#) O. Akhavan, R. Azimirad, S. Safa, E. Hasani
S. G. S. (2011) **Linking of polymeric nanoparticles with**

PIDs enable interoperability



PIDs help make research FAIR

Data should be Findable	F1. (meta)data are assigned a globally unique and persistent identifier (DOI) F2. data are described with rich metadata F3. metadata clearly and explicitly include the identifier of the data it describes F4. (meta)data are registered or indexed in a searchable resource
Data should be Accessible	A1. (meta)data are retrievable by their identifier using a standardized communications protocol A1.1 the protocol is open, free, and universally implementable A1.2 the protocol allows for an authentication and authorization procedure, where necessary A2. metadata are accessible, even when the data are no longer available
Data should be Interoperable	I1. (meta)data use a formal, accessible, shared, and broadly applicable language for knowledge representation. I2. (meta)data use vocabularies that follow FAIR principles I3. (meta)data include qualified references to other (meta)data
Data should be Reusable	R1. meta(data) are richly described with a plurality of accurate and relevant attributes R1.1. (meta)data are released with a clear and accessible data usage license R1.2. (meta)data are associated with detailed provenance R1.3. (meta)data meet domain-relevant community standards

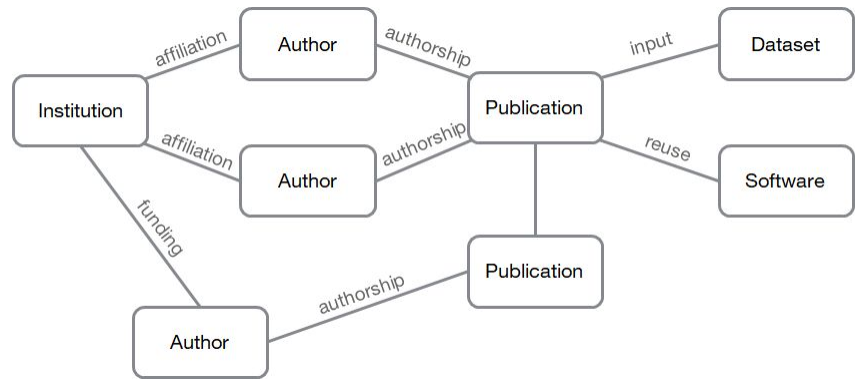
PIDs support a trustworthy research infrastructure



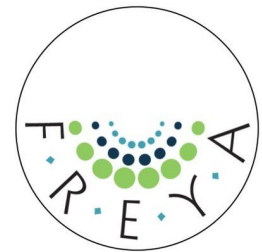
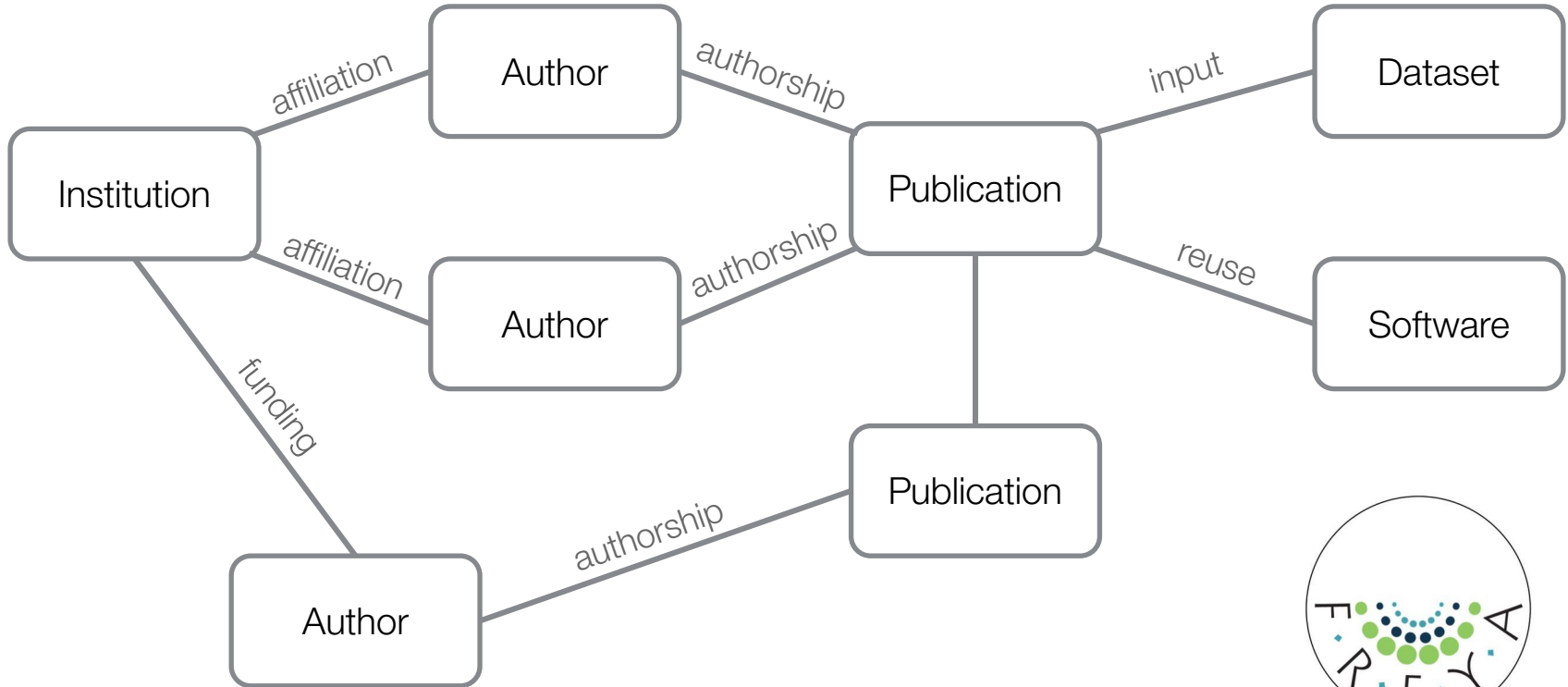
Image: University of Washington Office of Research

Good start, but we want more

Connecting everything
reveals the true power of
PIDs

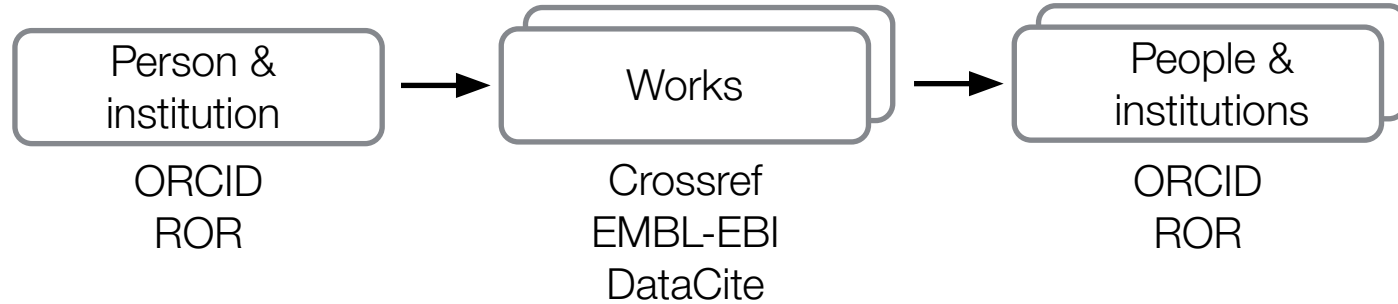


<https://doi.org/10.1016/j.patter.2020.100180>

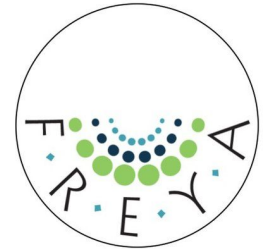
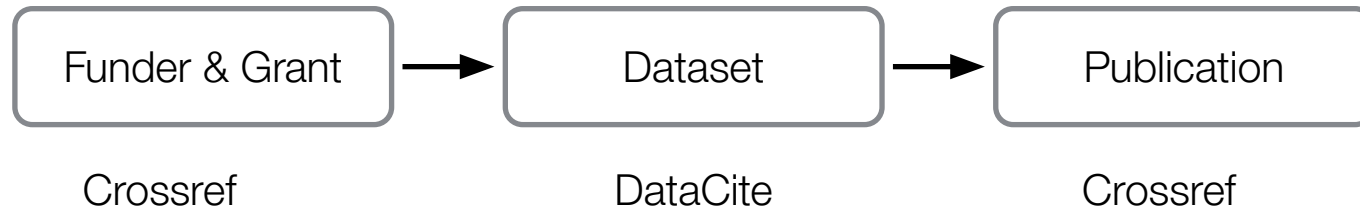


Connected PIDs form a graph...

Who are all the co-authors of a given researcher?



Show all datasets funded by the European Commission that have been cited by a journal article



...which can be used to ask (and answer) new questions

PIDs for (almost) everything



Connecting Research
and Researchers

ORCID's mission is to enable transparent and trustworthy connections between researchers, their contributions, and their affiliations. ORCID provides a unique, persistent identifier for individuals to use as they engage in research, scholarship, and innovation activities throughout their careers.

ORCID also provides:

- ORCID records connected to ORCID iDs. Containing works, affiliations, funding, peer reviews, and other biographical information
- A set of Application Programming Interfaces (APIs), as well as the services and support of communities of practice that enable interoperability between an ORCID record and member organizations so researchers can choose to allow connection of their iD with their affiliations and contributions



Registering DataCite DOIs makes your research outputs discoverable.

- A DOI makes your research outputs uniquely identifiable.
- Metadata that you register with DataCite is in a central location, harvestable by anyone.
- Metadata for our Members' research outputs appear in other search engines.

DataCite services make it easy to follow best practices.

- We make research data management easy: you register your first DOI in less than 1 minute.
- DataCite DOIs and metadata help you make your research FAIR.
- We connect you to the DataCite Member community, which is full of passionate people who share experience and continue to support best practice.
- Our metadata schema is extensive and has been adopted by other PID service providers globally.

DataCite services help you track and report on your research.

- A DOI enables easy tracking of your research outputs through simple user interfaces.
- DataCite services make institutional reporting simple.
- DataCite services support data citation and usage analytics

ROR



ROR is a **community-led project** to develop an **open**, sustainable, usable, and unique identifier for every **research organization** in the world.

ror.org

 <https://ror.org/03yrm5c26>

California Digital Library
CDL

WEBSITE
<http://www.cdlib.org/>

OTHER IDENTIFIERS
GRID [grid.463323.3](#)
ISNI [0000000119575136](#)
Wikidata [Q5020447](#)

UNITED STATES ARCHIVE



- ~~PID provider~~ Open foundational scholarly infrastructure: openscholarlyinfrastructure.org.
- SIMA: storage; identifiers; metadata; assertions (relationships).
- Metadata and services make research outputs easy to find, cite, link, assess, and reuse.
- Crossref DOIs are citation identifiers: [grants](#), [preprints](#), [articles](#), [chapters](#), [proceedings](#), [standards](#), [reports](#), [protocols](#), [dissertations](#), [reviews](#), [comments](#) (conferences, video, blogs soon).
- Open data and APIs to retrieve metadata from >120 million records.



How to be a PID person!

Step 1: Get and use PIDs

Get an ORCID iD for yourself → <https://orcid.org>

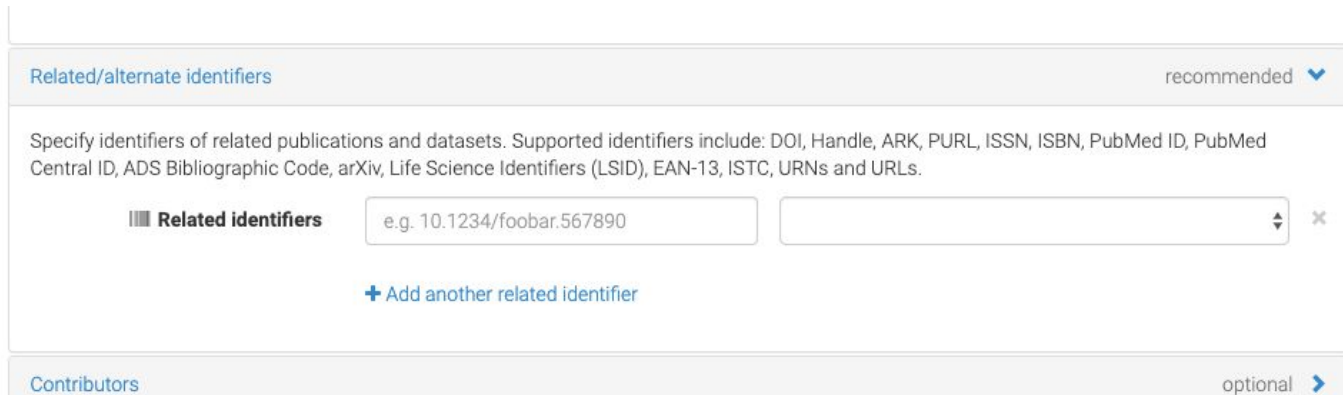
Give DOIs to your data and software → <https://datacite.org>,
<https://guides.github.com/activities/citable-code/>

Put your reports and white papers into a repository that gives out PIDs →
<https://repositoryfinder.datacite.org> or your institutional repository

Step 2: Tell your PIDs about your other PIDs

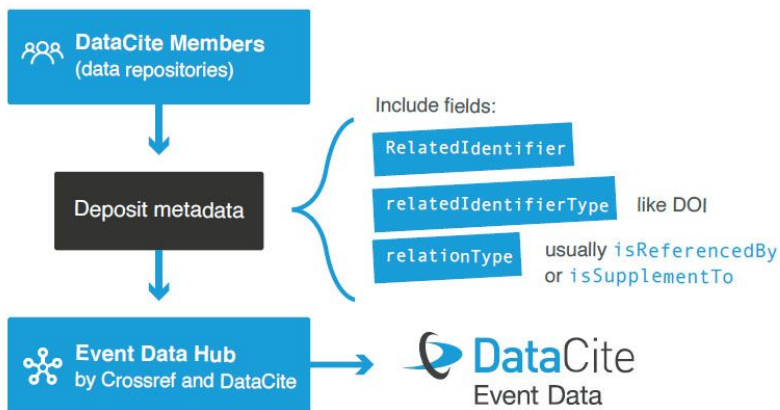
Include relevant related PIDs in the metadata for your software, dataset, and paper PIDs, even if your repository says they're optional.

In Zenodo (for example), it looks like this:



The screenshot shows a form section titled "Related/alternate identifiers" with a "recommended" status and a dropdown arrow. Below the title is a descriptive text: "Specify identifiers of related publications and datasets. Supported identifiers include: DOI, Handle, ARK, PURL, ISSN, ISBN, PubMed ID, PubMed Central ID, ADS Bibliographic Code, arXiv, Life Science Identifiers (LSID), EAN-13, ISTC, URNs and URLs." There is a list of "Related identifiers" with one entry: "e.g. 10.1234/foobar.567890". To the right of this entry is a dropdown arrow and an "x" icon. Below the list is a blue link: "+ Add another related identifier". At the bottom of the form, there is a section titled "Contributors" with an "optional" status and a right-pointing arrow.

Step 3: Share your PIDs with the community









Interested in using this information? Find out more at: <https://support.datacite.org/docs/eventdata-guide>

Step 4: Join the PID Forum!

the **PID** Forum

[Sign Up](#) [Log In](#)

all categories ▾ **Categories** Latest Top

Category	Topics	Latest
General Topics that don't need a category, or don't fit into any other existing category.	22	 Welcome to the PID Forum!
PID Best Practices A category to bring together information (papers, guidelines etc) and ideas on PID best practices for different communities and disciplines.	16	 Where can I find an overview of all active PIDs? Questions
PID News & Blogs Share interesting PID news & blogs here	35	 Share your PID slides! PIDapalooza
PID Graph Persistent identifiers and associated metadata describe resources such as datasets, software, publications, people, research organizations, funders, and grants. An important part of this metadata is the description of connections between these resources. Together these resources and their connection...	32	 Survey on PIDs in academic assessment systems
PID Services Post anything related to PID Services here.	4	 Is there a PID that is designed for or robustly supports metadata for music scores/manuscripts? Questions
PID-related events	40	 Organizational Identifier Adoption in DataCite Metadata PID News & Blogs datacite, ror

<https://pidforum.org>

- Share best practices
- Hear about events
- Ask questions
- Engage in PID chatter
- And more!

Questions?