

DRAFT

FDSN Working Group 3: Coordination of Products, Tools and Services - Minutes

*IUGG/IASPEI Joint Scientific Meeting, Lisbon, Portugal
ISEL, Auditorium A.0.6, September 3, 2025*

Chair: Chad Trabant

Vice-Chair: Marcelo B. de Bianchi

Minutes: Nick Ackerley

These minutes record the discussion of the working group not covered by presentation material.

1. Review of proposed agenda

Chad gave an overview of the agenda. No new items were proposed, Chad pointed out that he will ask again at the end.

2. Ratification of 2023 minutes

Chair proposed a change to the process for the future, to review and approve minutes in the 2-3 months after the meeting, and use these meetings only to ratify that approval. There were no objections.

Minutes from the last meeting were ratified without exceptions.

3. Review and status of past action items

Action Item (2019): Quality of Service metrics

Chad notes that the effort is noble, if a platform were available for quality assurance it might be more readily achievable, but no progress has been made.

Chair recommends that actions to QoS standards be dropped. This was approved with no objections.

Action Item (2019): Standardization of required QA service API including request parameters

Coordinated between IRIS and EIDA. Partially developed, in progress, moving slowly. Chair recommends dropping or changing to reflect the reduction of scope to the "PSD/PDF harmonization" effort that will be highlighted later in the meeting.

Strollo - Suggest taking a pragmatic approach, prioritizing PSD PDF first, then implementing the rest.

Chad - agreed this was a friendly amendment.

Action Item (2019): QA service support in SeisComp3 assuming funding can be found

Chair recommends dropping; no objections.

Action Item (2019): Proposal related to authentication

When an EIDA proposal related to authentication is prepared, it should be distributed to WG3 for comments.

Chair reports that this is completed, and more that a proposal by combined group is currently under review.

Action Item (2021): Data center registry - How best to encourage registrations?

The Action is for the WG and FDSN Chairs to write an email to the membership encouraging registration of data centers. A follow-on action is to publish an article for broader reach.

Chair reports that this is not complete, and recommends that we keep this as an action item.

The Chair does not know of any software systems that use the registry currently, and notes that the IRIS/EarthScope Federator is not directly using it but will in the future. The Chair notes that a system that uses the Registry will illustrate the benefits of registration in terms of increasing data discovery and access.

Angelo Strollo - Strong interest from EIDA in this item, it is important.

Chad - reminder that this also allows non-FDSNWS services to be included and identifies datasets available from these services.

Javier Quinteros - confirmed that the registry serves multiple purposes. We should perhaps be less aggressive with the action item - wait on writing a full article, start with email to datacentres. Noted that there was a paper in Seismica, where Jonathan and Helle did automatic checks on citation completeness.

Angelo - Additional point about why this is important, we just need to add information to the manifest. Has tried a couple of times to figure out if he can find his way back from the data to the registry. If an email is sent to the datacentre to confirm information in the registry; also ask about the state to acknowledge the services.

Jerry Carter - Suggested addition of an ROR for institutional identification.

John Clinton - Recommend that if we're going to give examples of other agencies/investigators that have done this.

Carlo Cauzzi - if you have a DOI for the service, but not necessary.

Rob Casey - Starting to make links between data, institutions, funders, contributors. As we find that seismology is distributed and powerful it risks become a black box

Chad - At IRIS/EarthScope we have needed to continuously emphasize the differences between a datacentre service citation and a data citation.

Wen-Tzong Liang - There are three places we can add citations to papers: References, Electronic Resources, Acknowledgments

Chad - Acknowledgments are nice, but fuzzy. Recommends de-emphasize acknowledgments. Best is real citations with DOIs or other machine-discoverable identifiers.

Rob - Work has been underway to make citations more machine actionable, and letting researchers know how to write them. Research Data Alliance has a working group now on complex citations that combine citations of many different individual elements (i.e. many many data identifiers).

Peter Danacek - Multiple administrators are possible in the registry - how about multiple contacts?

Nick - Asked Ryan if better linkage between registry and EarthScope Federator will address the data (waveform) discovery issues at the ISC.

Ryan - Explained that the ISC is having to ad hoc establish links between agency codes and datacentres. The agency code is not 1:1 mapped to a datacentre.

Peter - If you have the full source identifier (all codes), you should be able to trace that back to a datacentre.

Javier - The registry contains priorities of datacentres for given data sets. In the case that there are multiple copies, the best one should be chosen.

Ryan - Where things break is in station files.

Peter - I guess part of the problem is that people are reporting picks on channels that aren't publicly available.

Ryan - Example: Egypt has set up their own network code that conflicts

Chad - need to cut this short, if FDSN can help to clarify how to use services, we can have that discussion later.

Action Item (2021/2023): Call for an ad hoc team for JSON output from fdsnws-event and fdsnws-station.

A joint Action between WGs 2 and 3. This was just re-initiated with a much smaller starting scope to focus on StationXML network information.

At some time now there will be a callout for more volunteers. For now we have enough.

Javier - We have 6 people meeting in 5 days.

Action Item (2023): Accumulated issues with service specifications

Need someone to champion this and carry it forward. Many are simple fixes for clarity and typos. No immediate volunteers, the Chair will call for volunteers on the mailing list.

Action Item (2023): Media Types for StationXML

The Chair reports this action item is completed. The details were sent by email to the WG mailing list.

4. Proposal for new authentication method for FDSN services (in review)

Javier presented a slide deck on the proposal currently in review.

Discussion

Chad - re-emphasize that this is not a special authentication mechanism that we came up with; everyone's phone is doing this. This is commonly how authentication is done in modern usage on the internet..

John - This is a lot more clear - can you share this with us to share with other technical staff?

Chad - it will be posted to the WG meeting page

John - So you're saying the queryauth method of fdsnws-dataselect will go?

Javier - No it will stay for backward compatibility, we're just recommending that it not be supported in new services.

John - Will it be obvious to users when a query fails because they need a token?

Chad - Yes, there are standard HTTP responses when authentication is required and/or does not succeed. Also, we cannot require that datacentres turn off queryauth.

Javier - There is not a single point of breakage relative to the current standard.

Nick - Maybe this relates to John's question, but I'm wondering if some datacentres will offer un-authenticated data that is throttled, but relax throttling with authentication.

Javier - Each datacentre can decide how to treat auth/non-auth separately.

John - What are the next steps?

Next steps are the review, in progress, there will be a recommendation and go to the working group, hopefully in 2026. Then the question will become how quickly can we implement it, for example at EarthScope, and in ObsPy.

Javier - at GFZ we have it already implemented in SeisComP, so for SeisComP datacentres it will be a trivial update

Wen-Tzong - points out that it is very useful in Taiwan, because we have many stations with restricted access. We had used queryauth, but last year we were warned that this is not safe enough.

Javier - In every country the requirements are different. The important thing is to make having the information possible.

Rob - One aspect is moving away from standard HTTP.

Angelo - The case of Taiwan shows how even though this seems like it's making the data more closed, it should enable the sharing of more data, in line with the goals of the FDSN.

5. Overview of PSD-PDF harmonization effort

Gillian Sharer presented the slide deck. She noted that SeedPSD is based on ObsPy. EarthScope is planning to recompute 12TB archive of PSD-PDFs - if they do, it will likely be with a smaller value for the smoothing parameter.

Questions for the Community

Repeated from [the presentation](#):

- Would there be value to you in an FDSN standard PSD/PDF web service?
- If a data center uses your data to create PSDs, what attributions do you need?
- As a data center creating PSDs, do you want to produce a PSD product DOI?
- Should the FDSN make a recommendation for a standard PSD processing method and/or computation parameters?

Discussion

Chad - Thanks, this is an excellent effort for the community.

Ludek Vecsey - When we send data to IRIS and ask that PDFs be computed, will there be information about what version of metadata was used?

Gillian - it can take up to a week for PSDs to be computed,

Angelo - We (EIDA) would like to adopt this. We hope that the dropped action item of developing standard API(s) for other quality assurance metrics will eventually be revived.

Chad - the definitions of these quality assurance related measurements was worked on previously, which is very valuable, what remains is the standardized API to request them.

Mark Chadwick - Is there going to be harmonization of the noise models? Quite often data goes into making an image - are the recommended colormaps?

Gillian - the current effort is focussed on the exchange of the raw data, there are many complexities to how to display them with colors, etc.

Peter [check] - Noticed a difference in comparing SQLX to ObsPy - that the removal of filters is handled differently by different packages

Nick - suggested that our recommendations should include which filters should be applied

General agreement that FIR filters should not be removed.

??? - What about strong motion channels?

??? - PSD/PDFs are used for strong motion too (at EarthScope and in ORFEUS) - not just broadband. Gillian - not for infrasound at EarthScope.

6. Data manifest concept for large and asynchronous data access

Chad presented the slides. A manifest does all the same things as a query, except deliver the data; there are many possible powerful applications, such as parallelized data access. Anecdote from EarthScope: a user recently requested and processed 17 PB of data in X hours.

Discussion

Ryan - What's the typical longevity of an endpoint?

Chad - the path might not change much, but the base URL could get moved around a lot? Maybe "expected longevity" should be part of the manifest.

Peter - Downside is you don't know how stable it is.

Chad - hesitant to add permalinks of specification. Manifests should be used relatively soon after being generated and not expected to be valid over long periods of time.

Javier - Migrating to another path or domain can be expensive so the object path might not change but even then gap-filling will cause the byte offset to change.

Javier - It would be nice to have a format for use to cite data used in a study or otherwise to support FAIR data principles, but this is a lot to add to this manifest concept. Chad agrees that this should not be a requirement of manifests, which should be focussed on data discovery and access.

Chad - This manifest concept is what's happening behind the new EarthScope dataselect; once there's an FDSN standard we'll probably adopt that. One possibility is that the dataselect query could return the manifest instead of the data. Another possibility is a new service API is created to return manifests.

Mark - Pointed out that helps to mitigate costs, specifically that egress of data is not required from an FDSN service but could be a storage service, like S3. This almost implies that if clients can handle this internally, then it will be less work for us to convince people to adopt it.

7. Review of outstanding web service specification issues

Chad presented slides summarizing his view of the issues (in the overview presentation), with most being non-controversial (e.g. typos, or easy clarifications) and only a few being challenging.

<https://github.com/FDSN/WebServiceSpecificationCommonalities>

<https://github.com/FDSN/fdsnws-dataselect>

<https://github.com/FDSN/fdsnws-station>

<https://github.com/FDSN/fdsnws-event>

<https://github.com/FDSN/fdsnws-availability>

Chair - For the action item to call for a team to review issuers and proposal web service specifications, input from this group would be very helpful in dealing with the few difficult issues.

OpenAPI as replacement for WADL

<https://github.com/FDSN/WebServiceSpecificationCommonalities/issues/4>

Javier - I think this is an easy one - Implement OpenAPI and deprecate WADL after it's implemented in ObsPy.

No objections to accepting this suggestion.

Generalize authentication to all services (e.g. fdsnws-event)

<https://github.com/FDSN/WebServiceSpecificationCommonalities/issues/6>

You cannot tell a datacentre not to use authentication; do we want to say this is the approved way to do this? We think this is the role of the FDSN.

Peter - could it be that the authorization is still up to the datacenter, it is only the authentication method that we are defining?

Chad - important because you don't want to cut off a whole department because of one bad user, and even more important for malicious users, such as DDoS attacks.

Nick - Free and open access. Enabling authentication is important, but shouldn't it still be a recommendation of the FDSN that un-authenticated access of some sort always be available?

Chad

Rob - Machine-to-machine authentication is an issue being addressed. For example, non-person entities can authenticate, such as a program, and permit casual access.

John - Will anyone be able to access a token - will authentication only be for academics?

Rob - Utrecht could have a token provider - as long as the token issuer is trusted, it can be accepted. There should be a lot of providers we can trust.

Peter - Why would we retrofit an existing standard?

Chad - Seems like a big lift for an old car. We will be putting as much of our data into the open data as we can, and to save money. But we don't know anything about IP addresses.

Peter - It's contradictory, we go to authentication to get more information about users, but

Javier - We've all gone through this, putting data on an FTP to cut down on requests.

Jerry - We went to the funders with this question; their answer was we'll leave it up to you to do the best thing for the taxpayers. It's like doing a poll; we can take the information not in the open data program as a sample and assume that it's representative

Extend the “format” request parameter

<https://github.com/FDSN/fdsnws-dataselect/issues/3>

format=miniseed (v2), format=miniseed3

Chad - An issue is that the current (default) value of “miniseed” likely means miniSEED v2 as that is what clients are expecting now. With the adoption of miniSEED v3 the meaning becomes more complex. What about mixed miniseed data?

Javier - 3rd format, “native”.

Chad - Would love for default to be “native” but this would lead to mixed miniSEED versions in the future.

Javier - argues for miniseed (v2) as default; people have to specify something else if they want something else

Chad - second challenge - if we accept miniseed (v2) as default, that forces conversion of a lot of data from v3 to v2 - this can be very inefficient with unfilled v2 records, and can be a lossy conversion, some things in v3 cannot be converted to v2. On the other hand, the conversion of v2 miniSEED to v3 is (nearly) lossless and relatively easy; my suggestion for clients of the future that cannot handle mixed-version miniSEED would be to request v3. Do we return nothing if the data is natively v3 but the user returns v2?

Peter - What's wrong with handling this case, so that to the user it seems as if the data is not there?

Javier - There are ways to communicate to users that the ...

Nick - From the user's perspective if no data are returned it looks like a gap, they might just believe that there is actually a gap, but if they get a file that they can't read, that seems like a more solvable problem. I'd rather that the default be “mixed” (“native”).

Chad - We should never have allowed a default for a parameter like this - we should have forced the user to specify.

Rob - Conversion utilities available will help users to prepare for the transition.

Chad - Give the user data that they might not be able to handle would prompt them to go find the tools.

Queries crossing dateline

<https://github.com/FDSN/fdsnws-event/issues/2>

<https://github.com/FDSN/fdsnws-station/issues/2>

Reference [discussion on WG mailing list](#)

Proposal south,north,east,west or GeoJSON bounding box.

Nick - Suggests polygons in [WKT format](#).

Peter - what is the GeoJSON convention? Chad - not sure.

No other discussion. Running short on time.

Clarify inclusion of picks, station magnitudes, amplitudes

<https://github.com/FDSN/fdsnws-event/issues/7>

Specification is underdefined in terms of which event parameters are included in responses.

John - Why not implement a switch for every type of object?

Chad - That's one end of the spectrum, for sure.

Ryan - We have to make a lot of these choices for the ISC bulletin - you're relying heavily on the user understanding what things mean.

Chad - Any objection to asking interested parties to continue to work on this?

John - It will be a complex discussion. One option is to just "include all".

Ryan - Even that needs definition.

Angelo - Suggested outsourcing work.

Ryan - Offered to reach out to interested parties.

Action Item: Ryan to request if ISC or a subgroup can propose additions to the fdsnws-event specification regarding parameters to control included details in a request.

8. Other business

Angelo - Suggests blocking off of time for Working Group meetings differently next year. 3h is adequate for some WGs, like ours, but too much for some other working groups. Maybe we should block the time in fixed blocks, say 2h, and divide it between.

9. Review of new action items

Four action items were retained from previous meetings a single new action item was generated:

Action Item (2025-1): Request if the ISC, or a working group from ISC, is willing to develop a proposal on how "include" parameters should work in fdsnws-event. Will reach out to interested parties as needed. This is regarding the fdsnws-event issue:

<https://github.com/FDSN/fdsnws-event/issues/7>

Responsible: Ryan Gallacher

Attendance

| Name - Institution | email |
|--------------------------------|--|
| Angelo Strollo - GEOFON/GFZ | strollo@gfz.de |
| Carlo Cauzzi - ORFEUS | |
| Chad Trabant - EarthScope | chad.trabant@earthscope.org |
| Gillian Sharer - EarthScope | |
| Javier Quinteros - GEOFON/GFZ | javier@gfz-potsdam.de |
| Jerome Salichon | |
| Jerry Carter - EarthScope | Jerry.carter@earthscope.org |
| John Clinton - ETH | |
| Jonathan Hanson - ESNZ | |
| Lucia Margheriti - INGV | |
| Mark Chadwick - GSNZ | |
| Nick Ackerly | |
| Peter Danecek - INGV | |
| Reinoud Sleeman - KNMI | |
| Rob Casey - EarthScope | rob.casey@earthscope.org |
| Ryan Gallacher - ISC | |
| Wayne Crawford - IPGP | |
| Yinshuang Ai - IGGCAS | |
| Wen-Tzong Liang - FESAS Taiwan | |