

ESIP 2019 Winter Meeting

Assessing and Representing Maturity Information on Usability of Data Products and Services

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Session: Maturing the Operational Readiness Level - ORL Framework for Disasters

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ESIP/AHC Operational Readiness Levels



(Moe et al. 2018)



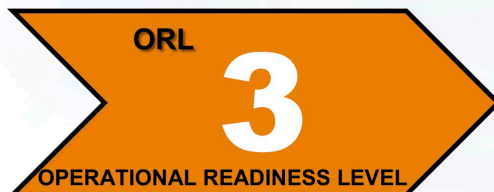
Operational Readiness Levels



- Data available NOW 24/7 & Secure (SSL / HTTPS)
- Immediate SA & Decision Making DM [30 sec decisions]
- No Down Time – Operational Data is Critical to Decision Making
- Person available to contact (Fix link or service, report issues for open ticket)



- Data available regularly, SA & DM [30 sec decisions]
- Event-driven, may be delayed due to acquisition and processing time required
- Likely very useful for Situational Awareness (SA) & Decision Making (DM)
- Person available to contact



- Emerging operational data and/or mature testing phase
- Data not guaranteed
- Potential to improve SA and DM
- Target operations in 6-12 months



- 'New' emerging datasets, applications testing phase, training available
- Being evaluated for accuracy, validated, usefulness
- Target for operations 12+ months
- Not likely to be immediately useful for operations but could be

Important aspects: Ready, Available, Secure, Validated and Useful



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Help Identify & Integrate Potential Data Products

Which data products are best to use by disaster community in operations?

- Many factors may impact the use decision,
- If and when a data product is available is important,
- Upfront cost could be an important factor,
- With many stakeholders/systems involved, capability of being integrated across different systems could be another important factor in use decision.

Help Identify & Integrate Potential Data Products

Aspects to be touched on in this presentation:

- How easy is it for them to be understood and utilized?
- How easy is it for them to be integrated?

Why important?

- manage upfront investment cost and application risk

➡ Usability Maturity Levels for individual data products or services

➡ More likely to impact new data products/services that are at Levels 3-4 using the ESIP/AHC ORLs

Factors Affecting Data Product Usability

- **Data portability**
- **Measure:** How easy it is for users to use and integrate the data product into their systems

Data Usability	Data Portability
Level 1 (Ad Hoc)	Non-machine readable
Level 2 (Minimal)	Basic machine readable
Level 3 (Intermediate)	Standards-based machine readable
Level 4 (Advanced)	Machine independent, self-describing, interoperable format
Level 5 (Optimal)	Level 4 + capability of providing user required format

(The WMO SMM-CD Working Group, 2018)

Factors Affecting Data Product Usability

- **Metadata**
- **Measure:** How easy it is for users to discover and get the data product?

Data Usability	Metadata
Level 1 (Ad Hoc)	Metadata may exist but not searchable or discoverable
Level 2 (Minimal)	Basic metadata publicly available and searchable (e.g., title, lat/lon), conforming to community standards
Level 3 (Intermediate)	Comprehensive metadata available and searchable, conforming to international standards
Level 4 (Advanced)	Fully compliant with international standards with rich metadata content available and searchable, supporting dataset provenance
Level 5 (Optimal)	Level 4 + Complete granule-level metadata

(The WMO SMM-CD Working Group, 2018)

Factors Affecting Data Product Usability

- **Data Product Documentation**
- **Measure:** How easy it is for users to get and understand the product information to use and integrate the data product into their systems

Data Usability	Documentation
Level 1 (Ad Hoc)	Product information may exist but not publicly available
Level 2 (Minimal)	Basic product information publicly available online (e.g., Readme, User Guide)
Level 3 (Intermediate)	Comprehensive product information available online (e.g., Algorithm Theoretical Basis Document (ATBD), Source code)
Level 4 (Advanced)	Full documentation based on a standard template available online
Level 5 (Optimal)	Level 4 + Complete production system information available online

(The WMO SMM-CD Working Group, 2018)



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Factors Affecting Services Usability

- **Data Services Usability**
- **Measure:** How easy it is for users to use the data services

Data Usability	Services Usability
Level 1 (Ad Hoc)	Information about the service is not publicly available
Level 2 (Minimal)	Basic service description is available on local system; but may be highly technical; Ad hoc internal usability evaluation conducted
Level 3 (Intermediate)	Complete service description has been written for novice, perhaps not technical users; Routine internal usability evaluation conducted
Level 4 (Advanced)	Level 3 + services provide standards-based service descriptions; External usability evaluation conducted
Level 5 (Optimal)	Level 4 + services provide self-help, easy navigation, auto-complete prompting, etc. to help users actually using the service; Formal external usability evaluation conducted

(The NCEI/ESIP-DSC MM-Serv Working Group, 2018)



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Summary

- Brief description of maturity levels for usability of data products and services,
- Comments and suggestions are welcome,
- Question: Any missing important aspect?
- Maturity assessment models email list – subscribe for contributing or receiving updates

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Take Away Messages

“Knowledge is power!”

- Usability maturity information of data products and services could be beneficial to users for disasters applications,
- Consistently assessing and representing quality information of data products and services will help improve data usability, interoperability, and trustworthiness.

References

Moe, K et al 2018 Operational Readiness Levels – A Trust Metric for Operational Data. *AGU 2018 Fall Meeting, IN52B-08. 14 December 2018.*

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Contact Information

Questions?

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