Persistent Identifiers Implementation in EOSDIS

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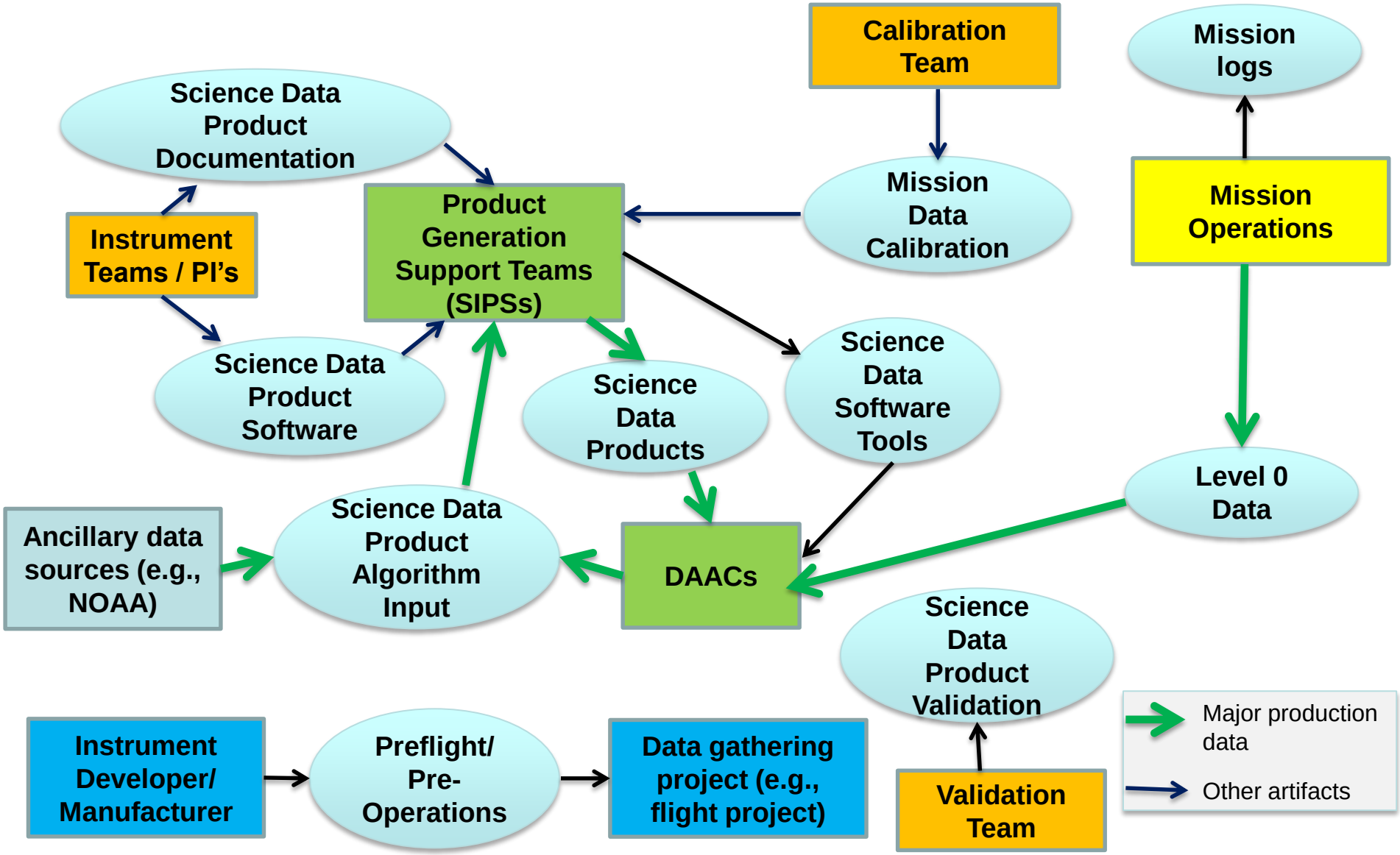
Topics

- Ideal State
- Preservation Challenge
- Preservation Content
- DOI Implementation

Ideal State

- Traceability of everything related to a dataset to be able to answer all possible questions that user may raise, e.g.,
  - What were the inputs?
  - How was the dataset generated – software, algorithm, computer, operating system, etc.?
  - Who were the authors of algorithm?
  - What instrument(s) did data come from?
  - What satellite did it (they) fly on?
  - Who funded the development?
  - What is the quality of data? What are the limitations?
  - What can the dataset be used for?
  - What publications have used the dataset?
- Unambiguous references important for scientific understanding and reproducibility
- Long-term assumption – authors of datasets and related items not available for answering questions

Preservation Challenge



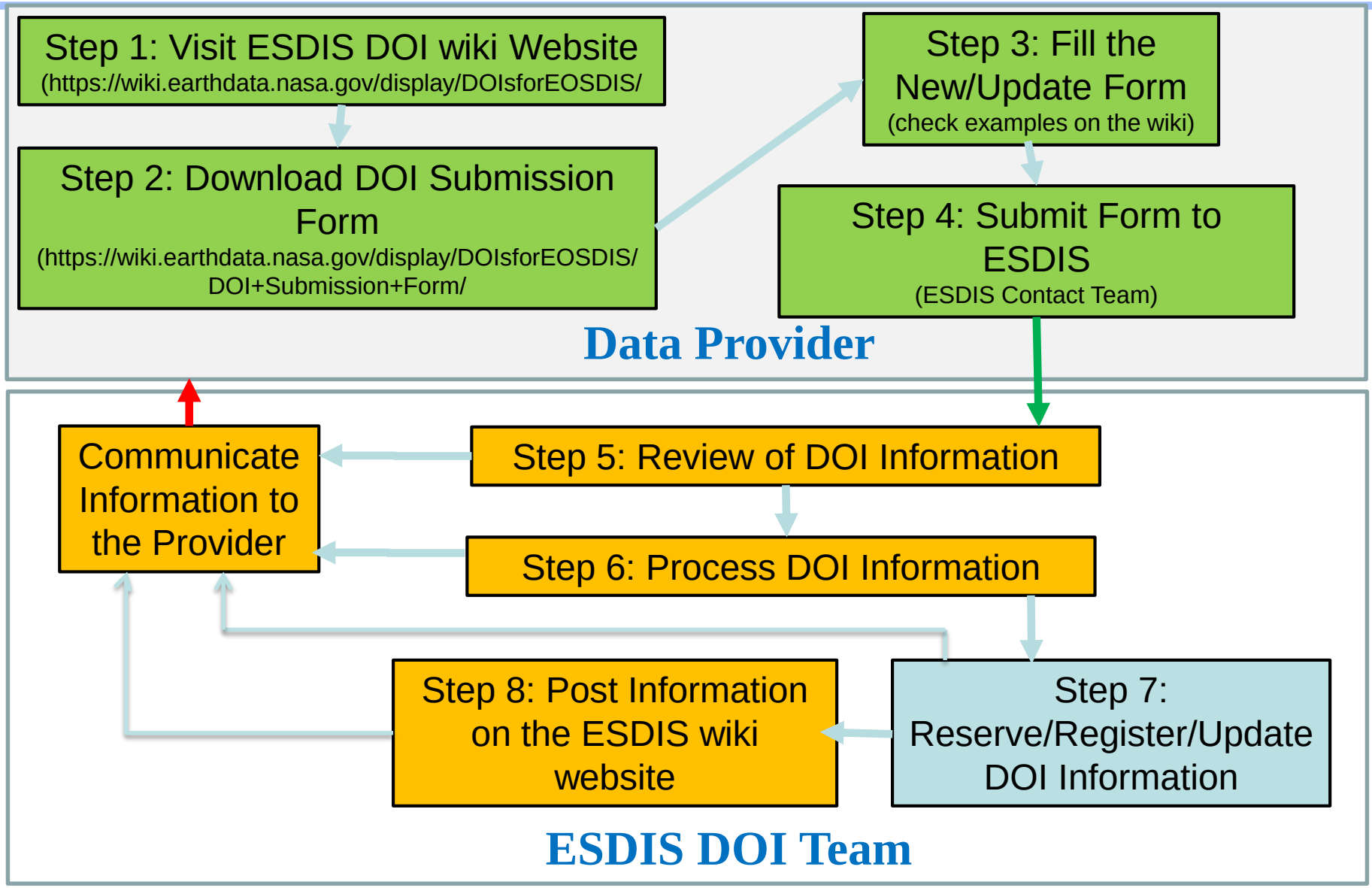
Preservation Content Categories

1. **Preflight/Pre-Operations:** Instrument/Sensor characteristics including pre-flight/pre-operations performance measurements; calibration method; radiometric and spectral response; noise characteristics; detector offsets
2. **Science Data Products:** Raw instrument data, Level 0 through Level 4 data products and associated metadata
3. **Science Data Product Documentation:** Structure and format with definitions of all parameters and metadata fields; algorithm theoretical basis; processing history and product version history; quality assessment information
4. **Mission Data Calibration:** Instrument/sensor calibration method (in operation) and data; calibration software used to generate lookup tables; instrument and platform events and maneuvers
5. **Science Data Product Software:** Product generation software and software documentation
6. **Science Data Product Algorithm Input:** Any ancillary data or other data sets used in generation or calibration of the data or derived product; ancillary data description and documentation
7. **Science Data Product Validation:** Records, publications and data sets
8. **Science Data Software Tools:** product access (reader) tools.
9. **Checklist:** “metadata” about the above 8 categories showing how and where items in each category are preserved

DOI for datasets - Implementation

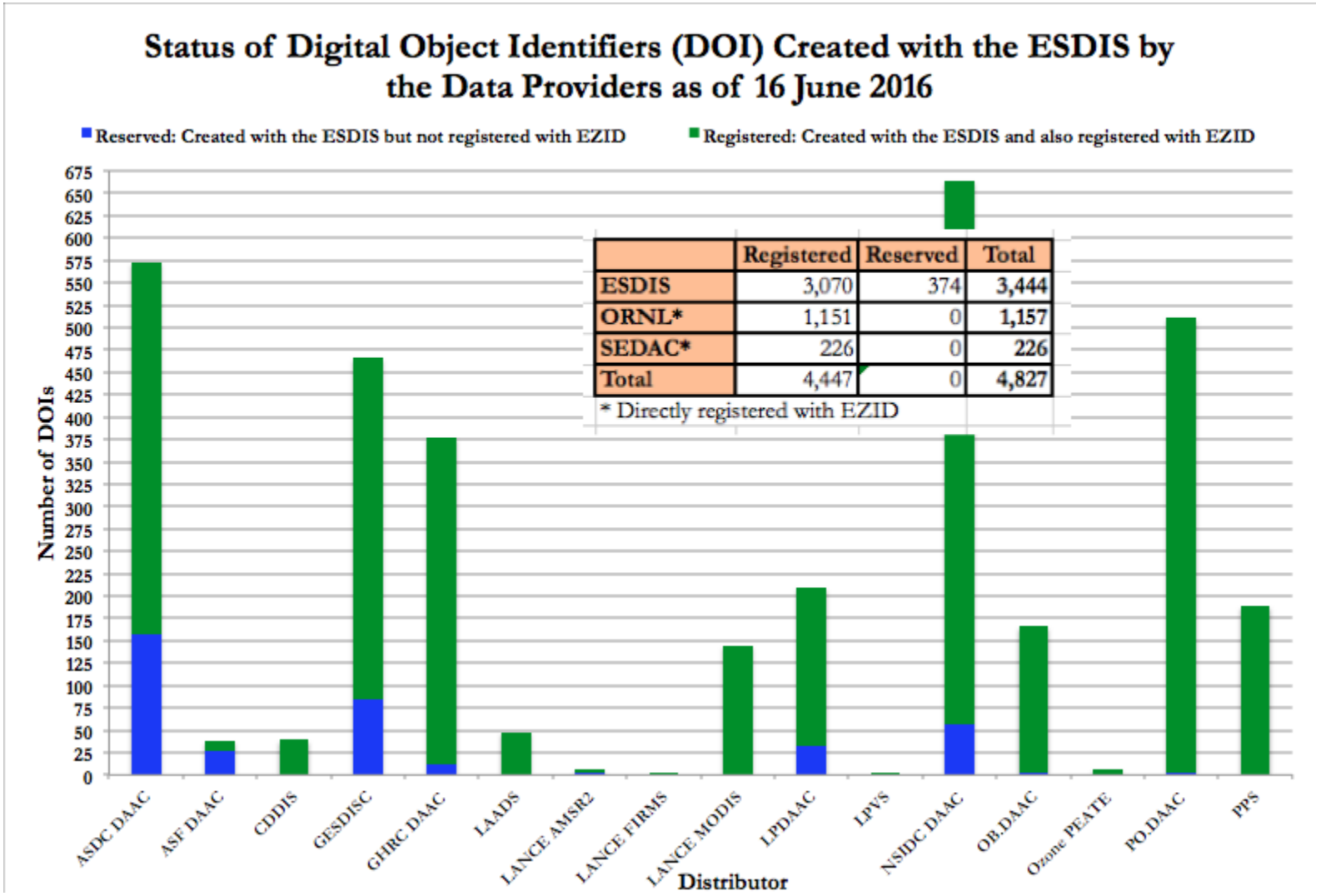
- **Duerr et al (2011) "On the utility of identification schemes for digital earth science data: an assessment and recommendations" -** DOI: 10.1007/s12145-011-0083-6
- **ESDIS Project started implementing DOIs in 2011 for datasets held in EOSDIS – goal is to assign DOIs to all datasets**
  - ESDIS is DOI issuing authority for datasets at most DAACs – prefix 10.5067
  - Exceptions are ORNL and SEDAC - preceded ESDIS in DOI implementation

DOI for datasets - Implementation



Credit: Lalit Wanchoo, ADNet/ESDIS

DOI for Datasets –Status



Earth Science Data System Working Groups Related to Identifiers

- Under the umbrella of NASA's ESDSWG, identifiers and citations have been themes of WG's since 2012
  - Data Stewardship WG
  - DOI WG
  - Citations and Identifiers WG
- Topics considered:
  - Past: DOI Syntax, Assignment Process, Landing Page Contents, DOI Field Formatting, Citations Reformatting, Citation Policy
  - Current: Identifiers for Non-Dataset Objects (focus on software right now)

Citations and Acknowledgements

- **Open Data and the Importance of Data Citations: The NASA EOSDIS Perspective**
- **Data Citations and Acknowledgements**
  - **ASDC** - https://eosweb.larc.nasa.gov/citing-asdc-data
  - **ASF DAAC** - https://www.asf.alaska.edu/about/how-to-cite-data/
  - **CDDIS** - http://cddis.gsfc.nasa.gov/About/Citing_our_data.html
  - **GES DAAC** - http://daac.gsfc.nasa.gov/additional/citing-our-data/data_citation.shtml
  - **GHRC DAAC** - https://ghrc.nsstc.nasa.gov/home/about-ghrc/citing-ghrc-daac-data
  - **LAADS** - http://modaps.nascom.nasa.gov/services/faq/LAADS_Data-Use_Citation_Policies.pdf
  - **LP DAAC** - https://lpdaac.usgs.gov/citing_our_data
  - **NSIDC DAAC** - http://nsidc.org/data/citations.html
  - **OB.DAAC** - http://oceancolor.gsfc.nasa.gov/cms/citations
  - **ORNL DAAC** - http://daac.ornl.gov/citation_policy.html
  - **PO.DAAC** - http://podaac.jpl.nasa.gov/CitingPODAAC
  - **SEDAC** - http://sedac.ciesin.columbia.edu/citations

Challenges

- Takes time to implement DOI's for all datasets
- Identifiers for non-dataset objects still being considered
- Provenance implementation – establishing links among different objects - still in experimental stage

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