

The **IS****BANK** Project

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What is IsoBank?

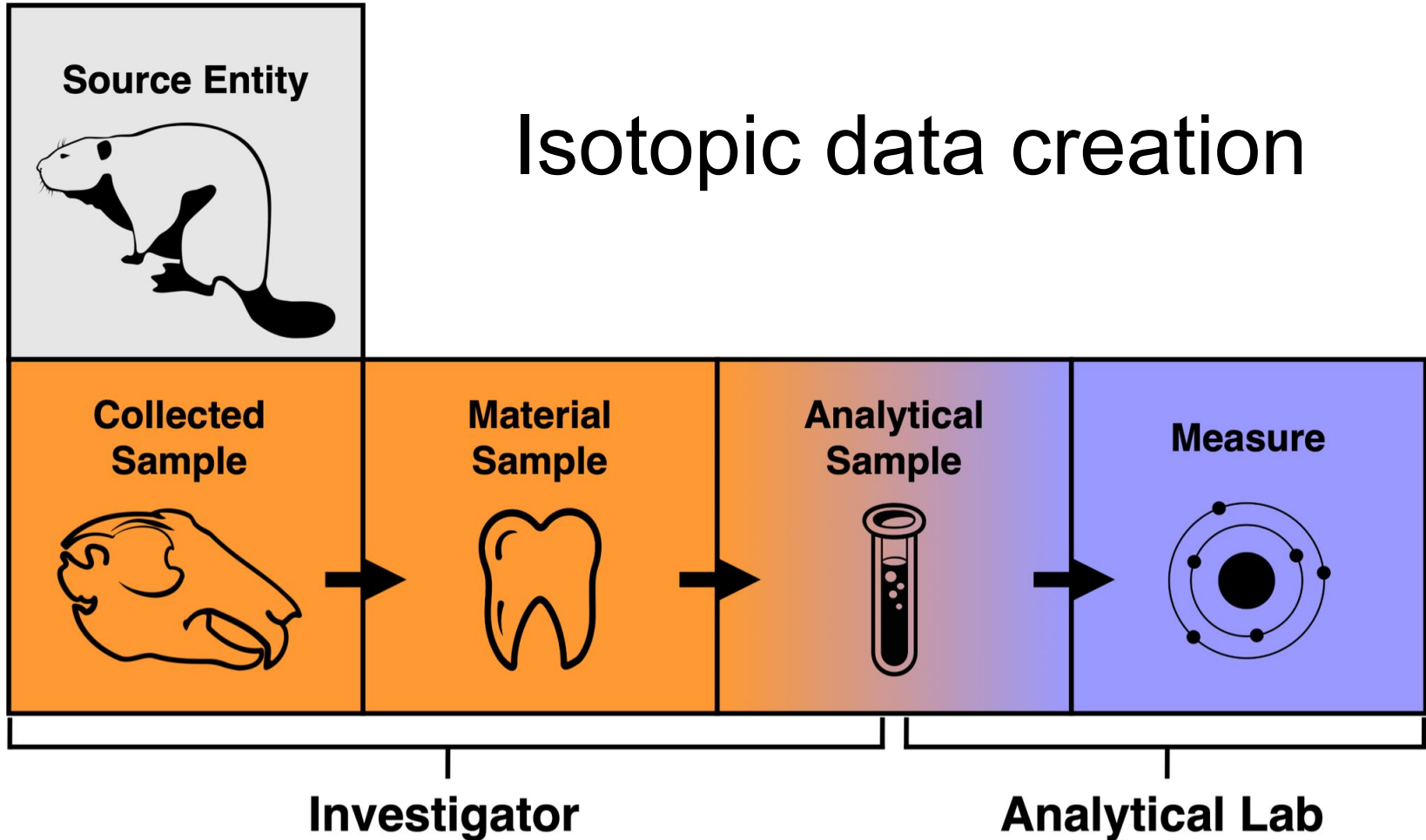
- The result of a long process of community discussion and workshops.
- Stable Isotope data generators and users felt that a common infrastructure was needed to preserve and organize historical and future analysis data.
- National Science Foundation-funded, 3-year project.
- A multi-disciplinary, community focused effort to build infrastructure enabling common storage, search, and access to stable isotope data.
- Major disciplines producing and consuming stable isotope data:
 - Ecology, Paleo/Archeology, Organismal Biology, Environmental Sciences;
 - Separate focus on analytical laboratories, understanding data quality issues.



Working with the community

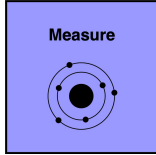
- Early decision to lead a process of community metadata standards development.
- Quarterly workshops with committees made of working researchers.
- Asked committee members to focus on metadata to make data findable and to make preliminary decisions on usability.
- Full description of samples/sample context not possible given the range of sample sources and research interests.
- Roughly 1 year of building out metadata fields, 1 year of vocabulary definition and metadata refinement.
- Never “finished”, just “close enough” — everyone has competing desires for metadata.

Isotopic data creation

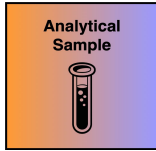




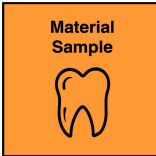
Designing an IsoBank metadata schema



Data produced by a mass spectrometer, such as a Carbon 13/12 measurement.



Information about the "Analyte" or "Compound" destructively analyzed and quality assurance/control information associated with the analysis.



Information about the material prepared for submission to an analytical lab and the preparation process.



Information about the object or substance collected by an investigator, its collection and storage context.



Controlling what, when, and how

- Required, Optional, Conditional fields
- Dependencies across fields
- Lists and hierarchies of terms
- Repeatability of fields
- Additional validation and lookups

Material Type	"inorganic-organic composite" > "sediment"	Sediment Particle Class	"silt"
	"organism" > "animal" > "animal tissue" > "tooth"	Dental Element	"incisor"



django administration

Home / Metadata / Metadata fields / Material Type

Change metadata field

Name:

Column name:

Hidden: ☐

Value type:

Subject group:

Metadata group:

Cardinality:

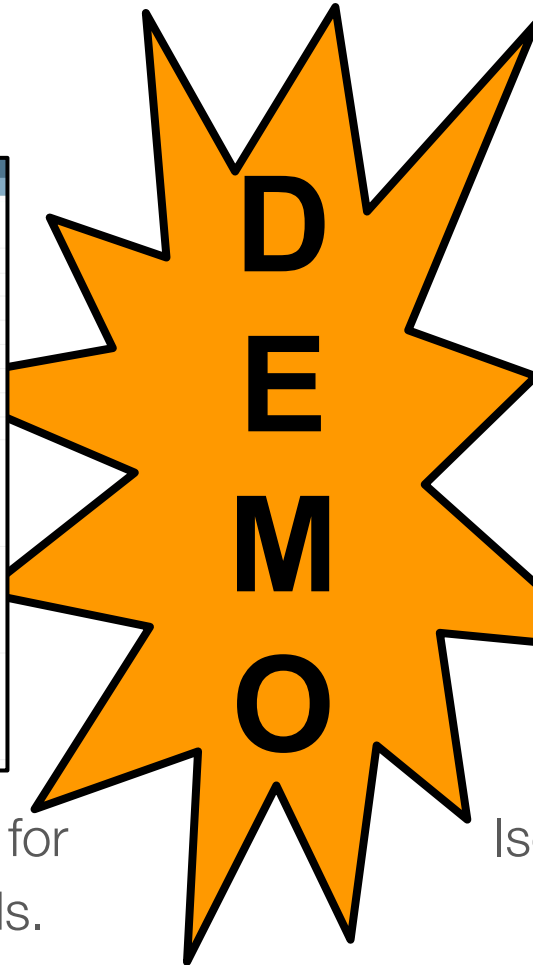
Deonticity:

Special: ☐

Description:

Examples:

Detailed description:



ISOBANK

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[Core Analysis Information](#)

[Measurement Types](#)

[Quality Assurance and Control](#)

[Material Sample](#)

[Material-specific Information](#)

[Collected Sample](#)

[Collection Context](#)

[Collection Location](#)

[Investigator Information](#)

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[Selected Measurement Types](#)

[Selected Metadata Fields](#)

Analysis Date	Analysis Type	Analytical Matrix or Compound
Analytical Run Identifier	Client Identifier	Measurement Scale
Measurement Unit	Normalization	Primary Reference Material
Quality Control Material	Quality Control Material Accuracy	Quality Control Material Precision
Secondary Reference Material	Material Sample Identifier	Material Type
Preparation Description	Preparation Protocol	Preparation Step
Collected Sample Mass	Collected Sample Source	Collection Date
Investigator Email	Investigator Name	Investigator ORCID Identifier

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Administrative interface for
defining metadata fields.

IsoBank upload template
generator for users.



Continued metadata challenges

- How much description enables data reuse for this community?
- Reaching cross-disciplinary and broader community agreements.
- Accommodating information from investigators and analytical labs.
- Accommodating new and legacy data.
- Community engagement and updating the metadata schema over time.



Continued IsoBank development

- Refining the metadata schema — adjusting without constant change.
- Approaching FAIR and data publication features.
- Making preservation considerations.
- Automating data ingest from labs and data analysis tools.
- Metadata quality assessment.



Lessons for Digital Research Data Infrastructure

- Understand the goals of your infrastructure and metadata — Balancing:
 - Preservation;
 - Findability;
 - Access/Usability/Reusability;
 - Differing disciplinary approaches and definitions.
- Address publication requirements early.
 - Are DOIs needed and which "objects" get DOIs? What costs are associated?
- Understand external sources of contextual information, and define a relationship to them.
- Get, and keep, the community on side.

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