Allotrope.org | more.info@allotrope.org

# Data Models and Domains

**Allotrope Foundation** is a consortium of chemical & life sciences companies formed in 2013 to revolutionize the way we acquire, share and gain insights from scientific data through the application of community-derived data standards consistently delivered via an extensible technology framework.

Allotrope Foundation manages and enables a community-led effort to:

1. Standardize vocabularies commonly used in scientific data and experiments
2. Structure vocabularies into taxonomies and ontologies (Allotrope Foundation Ontologies – AFO) to add more context
3. Standardize schema (Allotrope Data Models – ADMs) using AFO terms to create unified descriptions of scientific domains (experiments, techniques, instruments, results, etc)
4. ADMs can be represented as:
   - Allotrope Simple Model (ASM) - standardized JSON files for text based tabular data
   - Allotrope Data Format (ADF) - standardize RDF graphs in an HDF5 container for semantically richer data

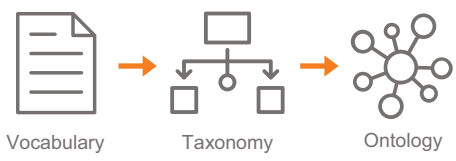
### VOCABULARY
Collection of terms with agreed upon definitions used to describe things

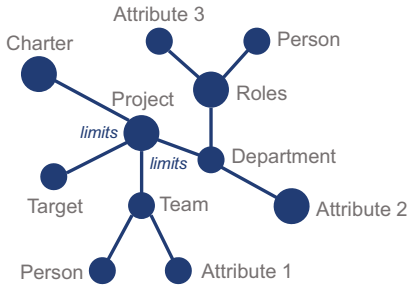
### TAXONOMY
Hierarchal classification of the vocabulary terms

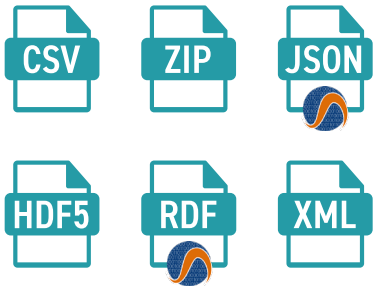
### ONTOLOGY
Formal categories, properties, and relationships across taxonomy terms

## The Allotrope Framework

The Allotrope Framework provides a complete toolkit for data standardization to meet a wide range of use cases ranging from consistent data labeling to advanced semantic exploration & data science.




### CONTEXT
Terminology defined & desired relationships established in well-structured ontologies.

### STRUCTURE
Use of ontologies to define data models that are blueprints to consistently describe things.

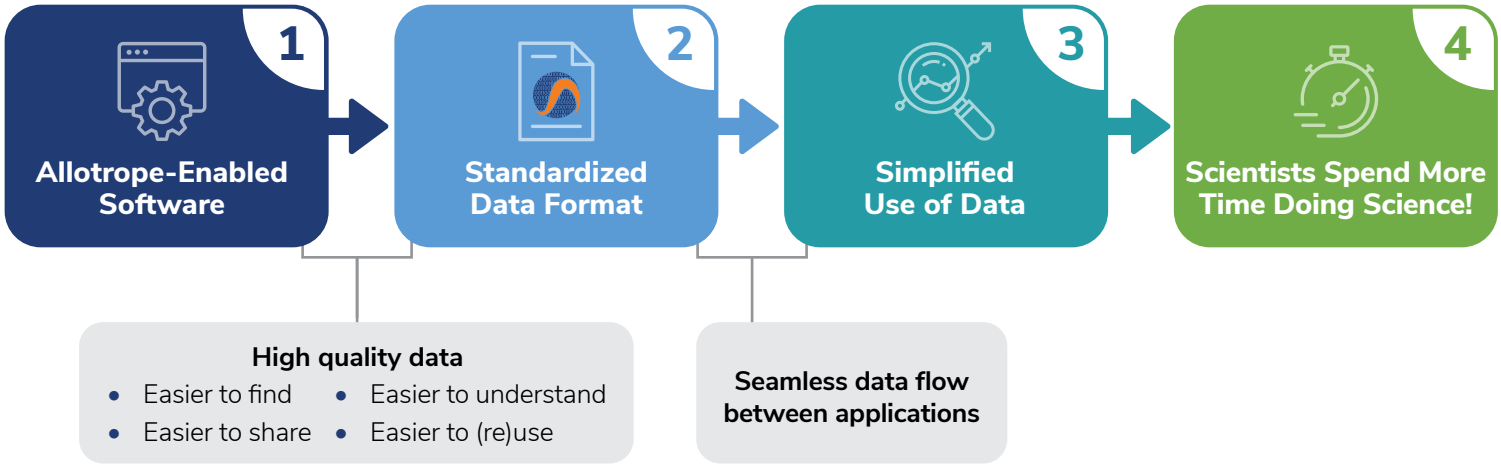
### FORMAT
Use data models to create final representation of data used in software applications.

## Domain Coverage

The Allotrope Foundation community has released approximately **50 interoperable data models** (as of August 2022) – **and growing**.

- Automated Reactors - PAT
- Balance
- Blood Gas Analyzer (BGA)
- Bulk Density
- Calibration
- Cell Counting
- Cell Culture Analyzer (Metabolite Analyzer)
- Code Reader
- Conductivity
- Differential Scanning Calorimetry (DSC)
- Disintegration
- Dynamic Vapor Sorption Analyzer (DVS)
- Fluorescence
- Foam Height
- Foam Qualification
- FPLC
- FTIR
- Gas Chromatography
- LC-MS
- LC-UV
- Light Obscuration (Liquid Particle Counter)
- Liquid Chromatography
- Loss on Drying
- Luminescence
- Mass Spectrometry
- Mass Spectrometry - Intact Mass
- Methods: LC-UV
- Nepholometry
- Optical Microscopy
- Osmolality
- Oven/Coulometric Karl Fischer (KF)
- Particle Size Distribution (PSD)
- pH
- qNMR
- qPCR
- Raman
- Scanning Electron Microscope (SEM)
- Single Quad-Mass Spec (SQD-MS)
- Specific Rotation
- Supercritical Fluid Chromatography (SFC)
- Surface Area Analysis
- Tablet Hardness (Hardness Tester)
- Tensile Testing
- Thermogravimetric Analysis
- Titration (inclusive of KF)
- Ultraviolet (UV) Absorbance
- X-Ray Powder Diffraction

## What Success Looks Like




## Join the Community

Allotrope.org | more.info@allotrope.org

Allotrope Foundation

Foundation membership is available to any company in the pharmaceutical, biotechnology, food, chemical, consumer products, or environmental industries which utilizes analytical or other laboratory methods.*

Allotrope Partner Network

APN membership is available to companies providing hardware, software, or consulting services, academic institutions, research institutions, and government agencies.*

Click here **for a list of our members and partners.**

* Please refer to **www.allotrope.org** for full membership details.