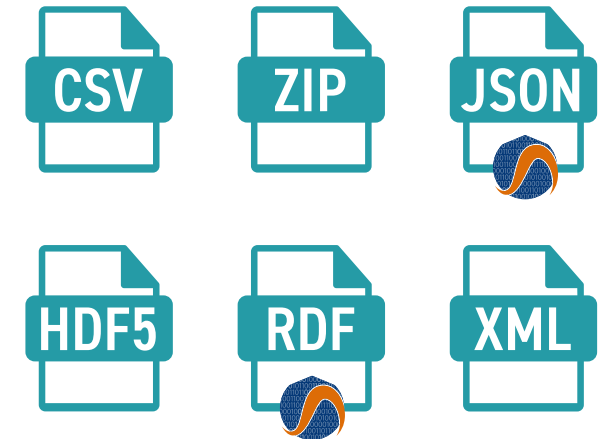
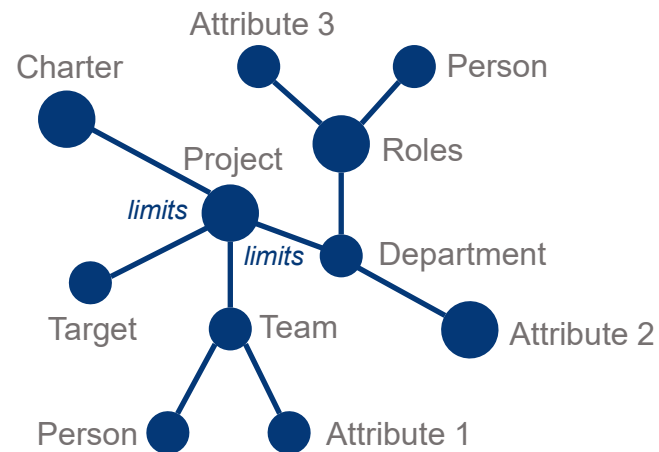
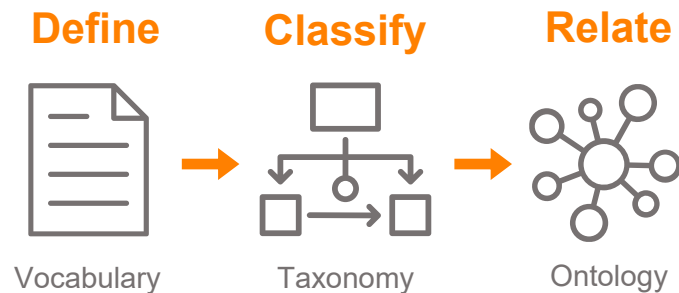




Use of AFO and ASM

Data Standard Components Needed to Achieve the FAIRest Data



Context

Consistent use of preferred terms across lab data adds uniform context.

Structure

Data models are blueprints for use of preferred terms to describe lab items.

Format

Final standardized representation of structured data in software applications.



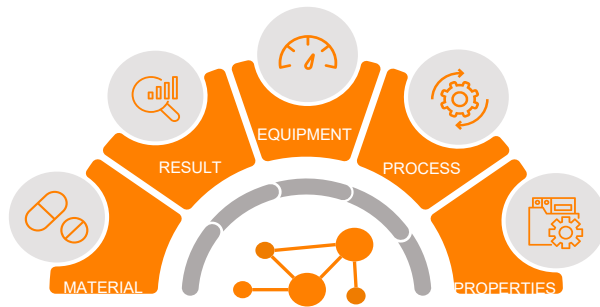
Allotrope Framework Products

AFO

Allotrope Foundation Ontologies

Provides consistent term definitions & relationships for consistent context across laboratory techniques & domains

- Defines & classifies terms in domains, and links them across domains for deeper context
- Assigns unique identifiers to terms so software can unambiguously track use
- Available through public web portals to browse ontologies
- Can be used to transform data or enrich existing data sets

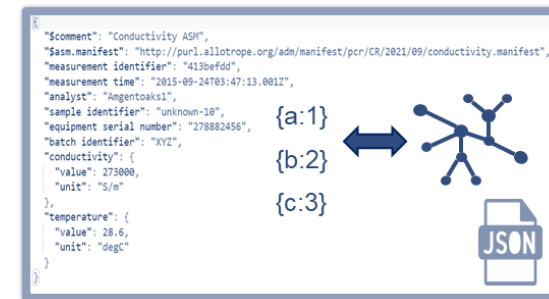


ASM

Allotrope Simple Model

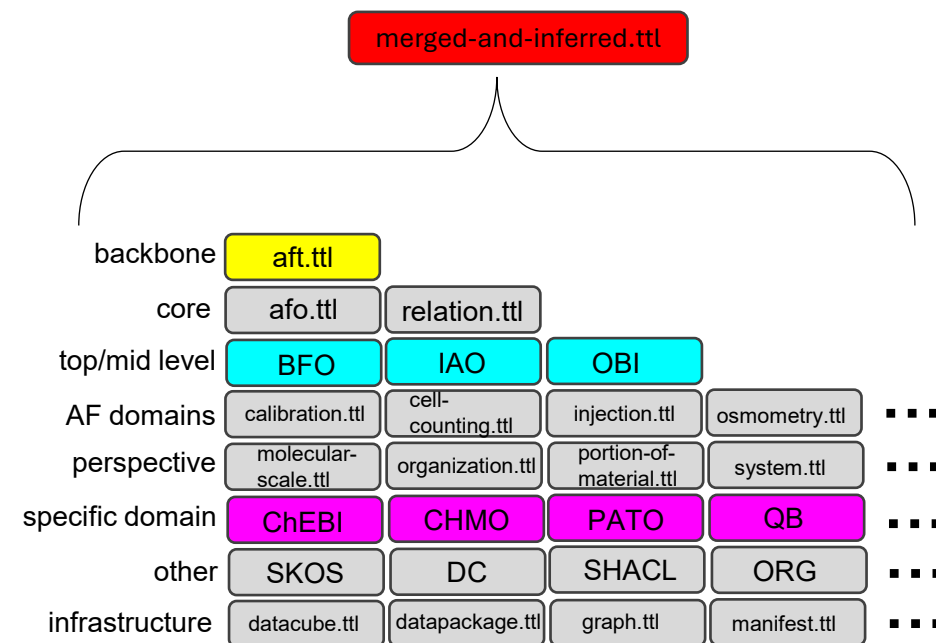
Provides consistent text-based representations (JSON) of data across laboratory techniques and domains using AFO

- Leverages JSON, a preferred data format of data scientists, that works with any programming language and has many publicly-available software tools to support its use
- Both human and machine readable
- Easy to directly apply to use cases where simple data structures are sufficient (e.g., associate parameter with result)



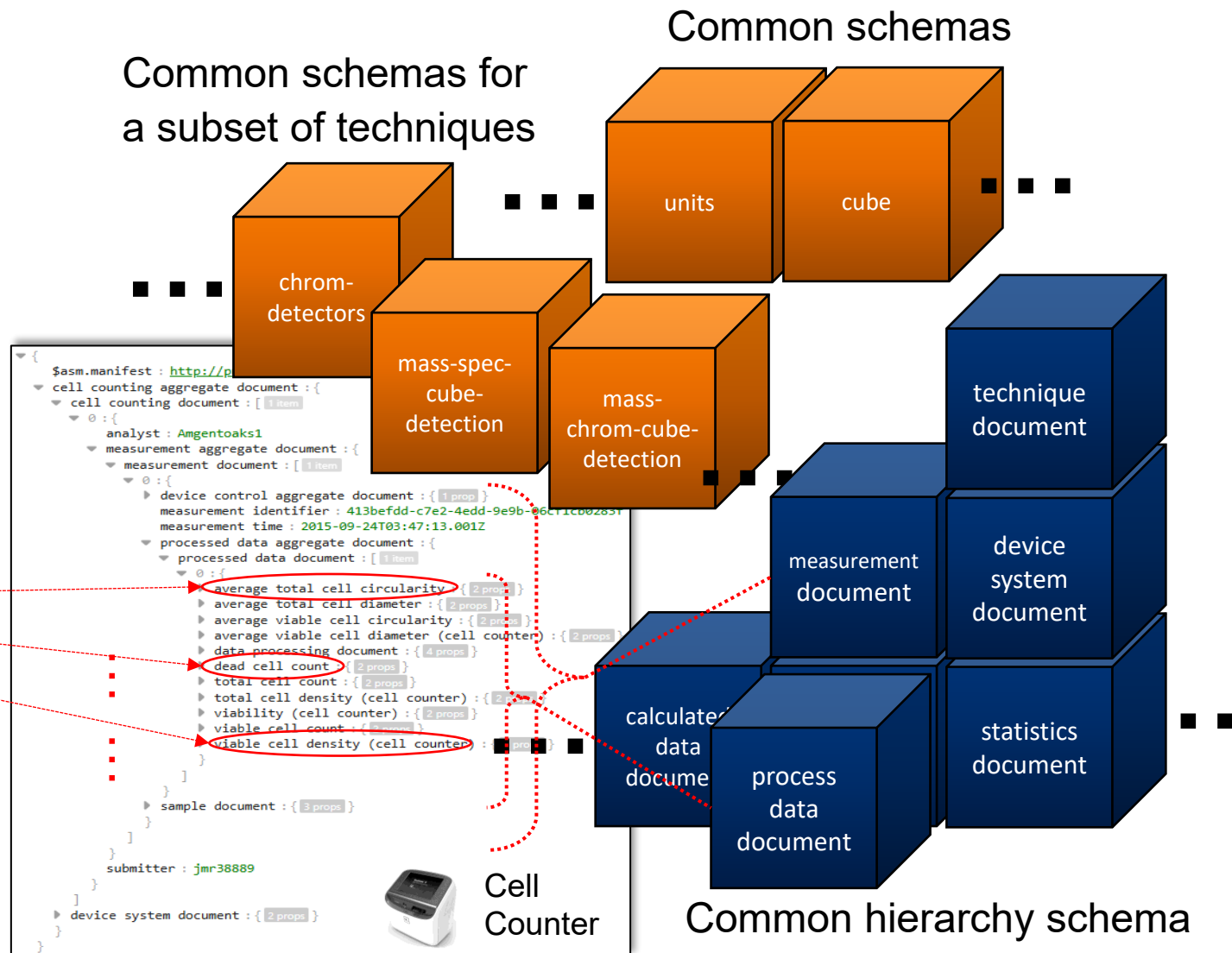
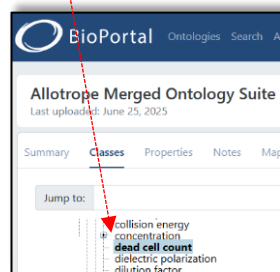
AFO Design: Federated, Modular, Extensible

- AFO delivers the most comprehensive vocabulary available today for the analytical laboratory — and continues to expand!
- Aligned with BFO, a **top-level** standard that serves as a neutral hierarchical hub, enabling a structured, modular, and extensible federation of categorized **mid-level** and **domain-specific** ontologies
- **AFT** (Taxonomy) serves as the backbone of the AFO
 - It provides a **hierarchical structure of linked terms** organized by subtype relationships
- **"merged-and-inferred.ttl"** is the file that contains the AFO suite of ontologies
- Developed and published using open, public tools (Protégé, BioPortal, etc..)

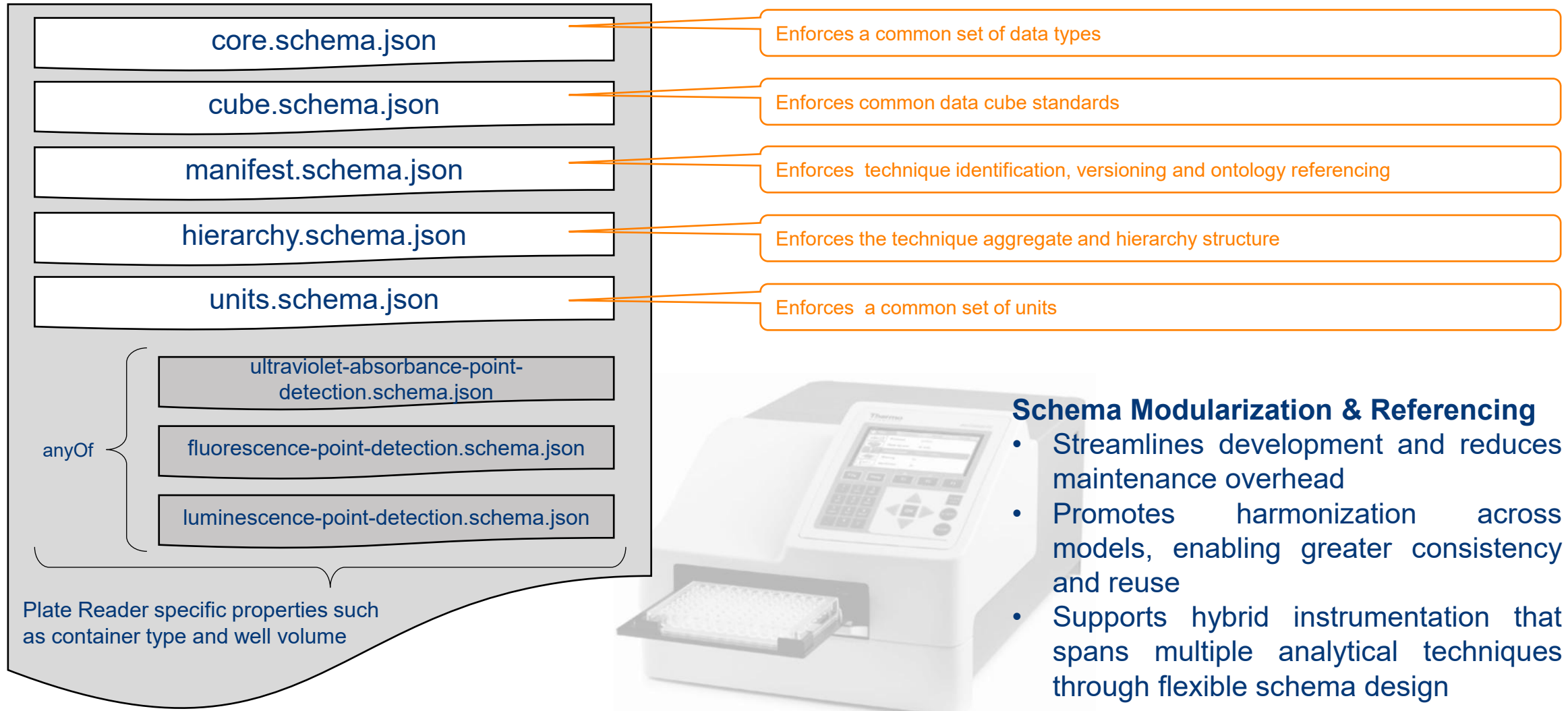


ASM Design: Modular, Consistent, Scalable

- **Modular and reusable schema blocks** that enable creation of consistent JSON structures to model any analytical technique at scale
- **Interoperable by design**, allowing data from diverse techniques to integrate and operate seamlessly together
- **Driven by AFO key terms**, ensuring semantic consistency across all schema elements



ASM Design: Plate Reader Example



Data Flow in Laboratories with AFO and ASM

