“The important thing is not to stop questioning. Curiosity has its own reason for existing.” - Albert Einstein
Configurable ADF generator solution

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Current Challenges for Allotrope Adoption
Current Challenges

Lab Landscape

- Large number of instruments model/make
- Variety of data formats
- Several Vendors not supporting ADF format directly yet

Challenges in understanding and developing the Ontology and implementing the same ontology across multiple vendor instruments effectively.

Need to combine data from multiple applications/instruments in the analytical workflow to generate the metadata to be stored in ADF – Data Description.
Complex Lab Landscape

HIST  PLM  ELN  STATS  BIOBANK  INSTR  VIS  SCHED
EDC  MES  LIMS  IMG  CHEM REG  CUSTOM  MONIT  FITTING  SOPS
ML/AI  BPM  LES  CDS  BIO REG  FORM REG  CALCs  EXCEL
NGS  MASS SPEC  HPLC  CYTO  UV/IR  BAL  VISCO
NMR  BIOREACT  CRYOEM  MICRO  FLOW  COND  OSMO  pH
Variety of Data Formats

PDF
XPS
CSV
XLS
JSON
TXT
mzML
Uphill Task
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Introducing....
Zifo’s Solution...Cuttle

- A solution built on standard platform technologies with an open framework for adoption
- Supports tabular and graph models in data description
- Plug & Play, convert your instrument and application data to ADF format through the following approach
  - Set of libraries to be built and maintained for the widely used instruments. Converts to unified data model
  - If library component not available, quickly build a new instrument drivers using a standard tool with widely available skillset and generate the unified data model
  - Reference Ontology mapping library to be built and maintained for the various instrument types
  - Ability to build/ modify Ontology mapping quickly
- Scalable solution to manage large dataset conversion and manage the workload across locations
- GxP compliant solution
Demonstration
High-Level Architecture

- Instruments
- Instrument Software
- Scientific Applications

Cuttle Solution

- Data extraction
- Data transformation
- Intermediate data format
- Pre-defined mapping
- External/ Internal ontologies

ADF

- Meta data
- Data Cube
- Payload (RAW data etc)

Data Store

- Storage
- Triple store
- ADF Viewer

Querying

Data visualization

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Key Features
CUTTLE
• Well-maintained library of connectors/parsers for various instruments

DATA SOURCE
- Instruments
- Instrument Software
- Scientific Applications

INTEGRATION MODES
- Data transfer through API
- Extract from shared location
- Retrieval from database
- Manual upload

Data extraction processes:
- Manual upload
- Extract from shared location
- Retrieval from database
- Data transfer through API

Unified internal data format

Data conversion
RDF Transformation

MAPPING PROCESS

Standard Ontology

Standard Ontology with modifications

Custom Ontology

Contextualization of data

Mapping with Zifo libraries

Unified internal data format

Linked data
ADF Transformation

RDF Triples

Grouping and Categorizing

Metadata

Raw Results

Supporting documents and additional files (input files, graphs etc.)

Data Output

Allotrope Data Format

Data Description

Data Cube

Data Package

Subject

Predicate

Object

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Agile Allotrope ADF Adoption

Q&A
Appendix
Zifo’s Solution Service Offering

- Available for On-premise (One-time + Annual Maintenance Service charges per instrument data format) and SaaS (Annual Service charges per instrument data format)
- Maintenance releases for latest core platform version and Allotrope product version support and Ontology mapping improvements
- Evolving Libraries (One-time parser fee for each parser) – Currently available for Chromeleon and other instruments like UV, IR, Coulometer, KF, Dissolution. Empower in process.
  » Additional instruments in progress
- Application connectors for IDBS BioBook and Labware LIMS available for request / sample / instrument and other related metadata.
  » Additional connectors in progress
- Professional services offered to build connectors, parsers and do ontology mapping
- Guidelines provided for self-service parser build and ontology mapping activities
- Managed Support services offered for Hosted and On-premise environments
- Quarterly releases planned. Major releases validated by Zifo’s regulatory compliance team
Frequently Asked Questions

- Q: How much time does it take to build a typical parser/connector?
  
  A: We can build the parsers in a day or within weeks based on the source data complexity.

- Q: Are we able to build the parsers on need basis?
  
  A: The parser is built on a widely used toolset named Talend Open Studio and anyone with this skillset will be able to build and deploy new parser meaning you can develop the system without external help.

- Q: Do we need to build the Ontology mapping for each instrument?
  
  A: Our recommendation is to parse the instrument to the unified data model that is standardized for instrument types so there is no need to redo the mapping. However, Zifo mapper tool allows mapping to be done quickly for any new data format.

- Q: What is the size of the current connectors/parsers' library?
  
  A: We have started building this library and have capacity to ramp delivery up as required. Some of the existing ones are mentioned earlier. We are open to collaborate with customers to prioritize and build the library to support widely used instruments/applications.