ELSA Revealed: Philosophy and Purpose, Student-Led Design

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WHY

The Educational Labeling System at Atmospheres (ELSA) is a new web tool under development at the PDS Atmospheres Node (ATM) designed to help ***single-time*** or ***novice*** PDS4 data providers.

Many data providers underestimate or simply do not realize the full scope of archiving data with the PDS and the complexities of managing archival metadata for their work.

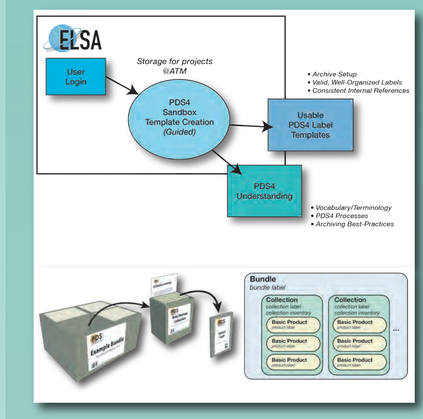
Increased archiving responsibilities through NASA ROSES-funded research requires more data providers to submit data to the PDS.

The learning curve for producing PDS4-compliant, archive ready data products can be steep and is being expanded to a wider range of potential data providers beyond mission support.

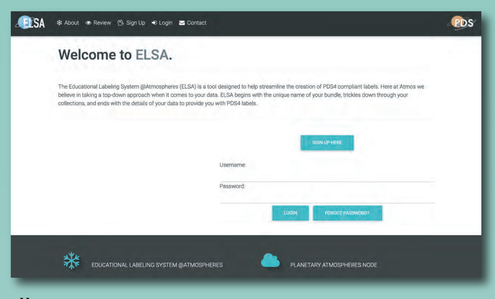
WHAT

ELSA is a web-based tool to allow newer data providers to build a complete set of ***viable PDS4 bundle templates*** by using a guided set of web forms and pull-downs.

The guided method builds bundles from the top down, ***educating*** the data provider on the various vocabulary and structures of the PDS4 archiving standard.



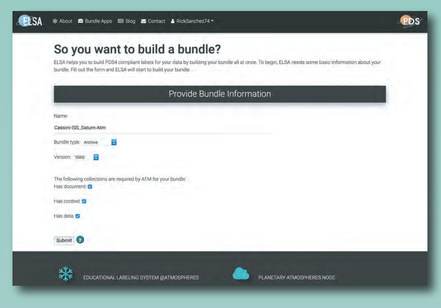
ELSA provides essentially a sandbox environment to allow data providers to experiment with constructing a cohesive, interconnected set of bundle templates via a free, persistent ATM account.

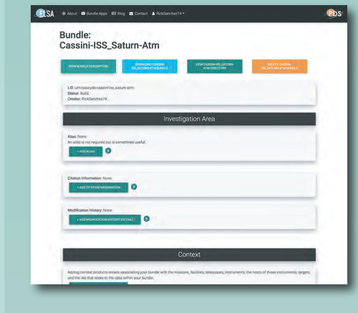


Building bundles from the ***top-down*** allows all internal references to be self-consistent due to the PDS4 hierarchy of

bundle-collection-product

When starting a new bundle, the data provider is prompted for some basic, starter information, that serves as the starting point for their bundle template system.



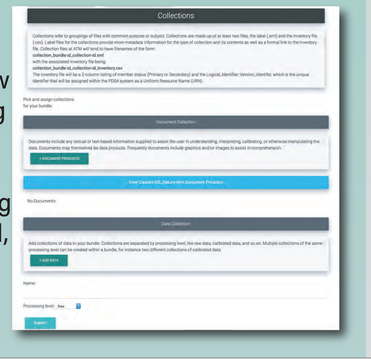


Once collected the bundle is generated in an online graphical format to allow editing of individual pieces of the bundle labels, allowing data providers to hard-code various pieces of metadata into each of their labels.

Context references can also be selected from the PDS repository so that internal logical identifiers (LIDs) are uniform throughout.

Collections are handled by collapsible sections that allow further tailoring of the collection label as well as adding product templates of various types.

ELSA provides user interfaces for product types including documents and simple data products (binary, delimited, fixed-width tables) allowing product specific metadata to be edited.



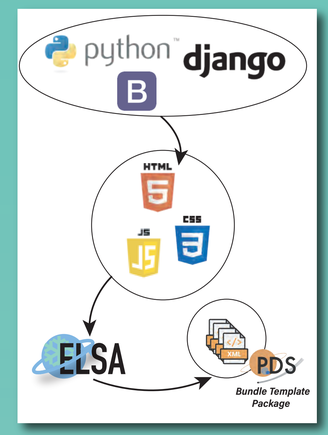
HOW

The entirety of the ELSA application has been constructed by undergraduate student research assistants at NMSU with oversight from an ATM staff member as Lead Developer. ELSA makes use of predominantly Python/Django web development together with Bootstrap.

Python allows quick and easy access for most students, and allows them to develop useful coding skills in a modern globally relevant language.

The Django framework together with standard publicly available Python libraries (e.g., LXML, etc.) allow easy manipulation of XML files including user input from web forms, through Bootstrap-aided HTML implementation.

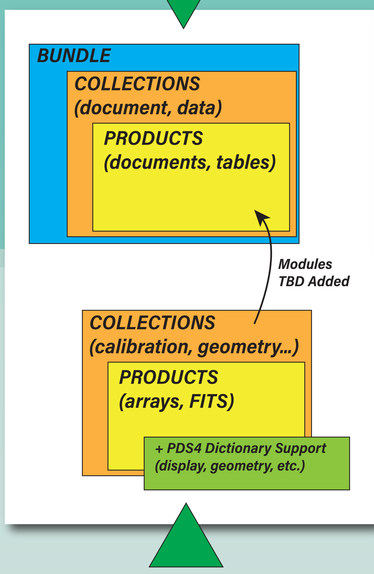
ELSA base code is uploaded onto the ATM GitHub account for development version management with plans to make the fully functional operational online code available through PDS GitHub after beta testing.



ELSA Design Principles

- **Educational** - Include instructional text to guide users and provide resources.
- **Plug & Play** - Allow a more tactile approach to input, user input values, pull-down menu selectors, visual cues.
- **Uniformity** - Uniform look and feel across the app, design rules for how new sections should look.
- **Modularity** - Allow subsections and new functionality to be added or modified moving forward.

MODULARITY



NEW FUNCTIONALITY

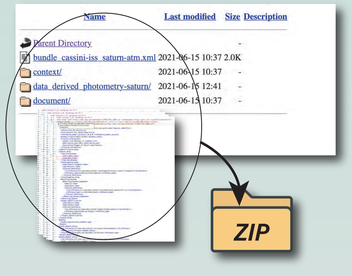
NEXT

ELSA is about to be open for internal closed beta at ATM (Summer 2021).

Pending further design refinement and internal review, ELSA is tentatively scheduled to be opened up for open beta testing Oct-Dec 2021, with full public roll-out happening shortly after.

Module design has begun on expanding data types to include simple arrays together with some local data dictionary support.

Inclusion of array data in ELSA's capabilities will lead to compositing tables and arrays for FITS file format, common to ATM data.



User interface augmentations are being developed as a result of the internal beta testing, including consolidation of user flow, and additional instructional and educational text.

At any point in the bundle building process, users can view and/or download the system of templates. Streamlining of this interface is currently underway with the hope of more useful and consistent end-products for the data provider.

The software development team is currently testing and editing the XML population scripts to ensure accurate population of values from user input, and making options more robust to handle a variety of user input options - translating to proper PDS4 syntax within the label templates.

ELSA currently relies on many offline databases that will be updated to more dynamic live interfaces making use of JSON interfaces with the PDS Central Registry for context and other connections.

BETA

For more information and/or interest in becoming a public beta tester for ELSA please contact the PDS Atmospheres Node. Public beta testing is tentatively scheduled to begin Fall 2021.

Contact PDS ATM to be notified of changes and sign up for ATM news in the quarterly node newsletter:

pds-atm@nmsu.edu OR *lneakras@nmsu.edu*

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