Designing modular software for template fitting photo-z estimation

Presentation by Nikolaos Apostolakos
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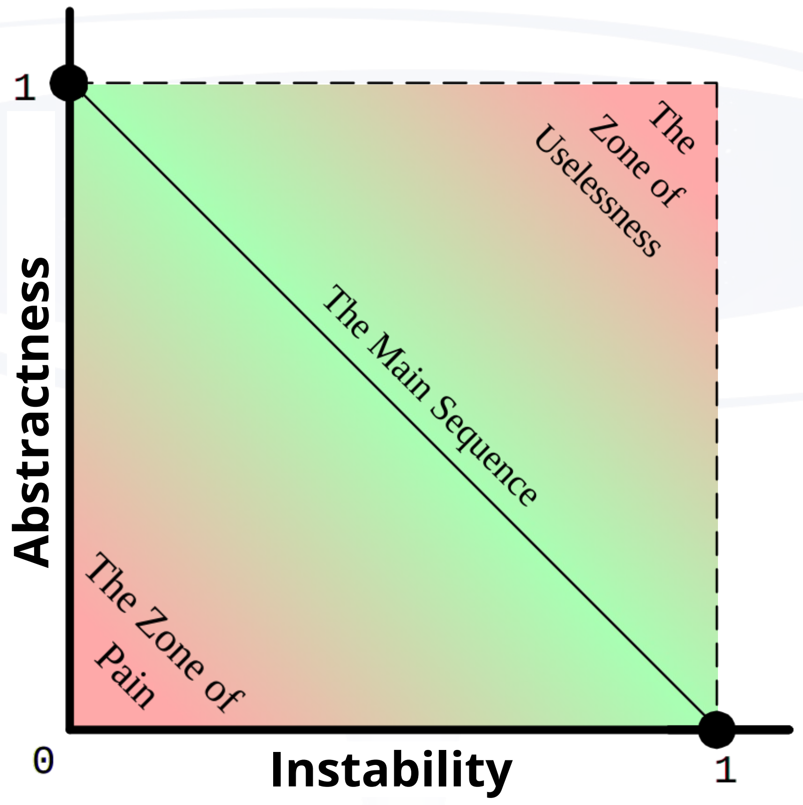
- It is designed to be:
    - Modular
    - Flexible
    - Robust
    - Reusable
- Follows the SOLID design principles
- Can be used as a generic photo-z tool

Project Organization



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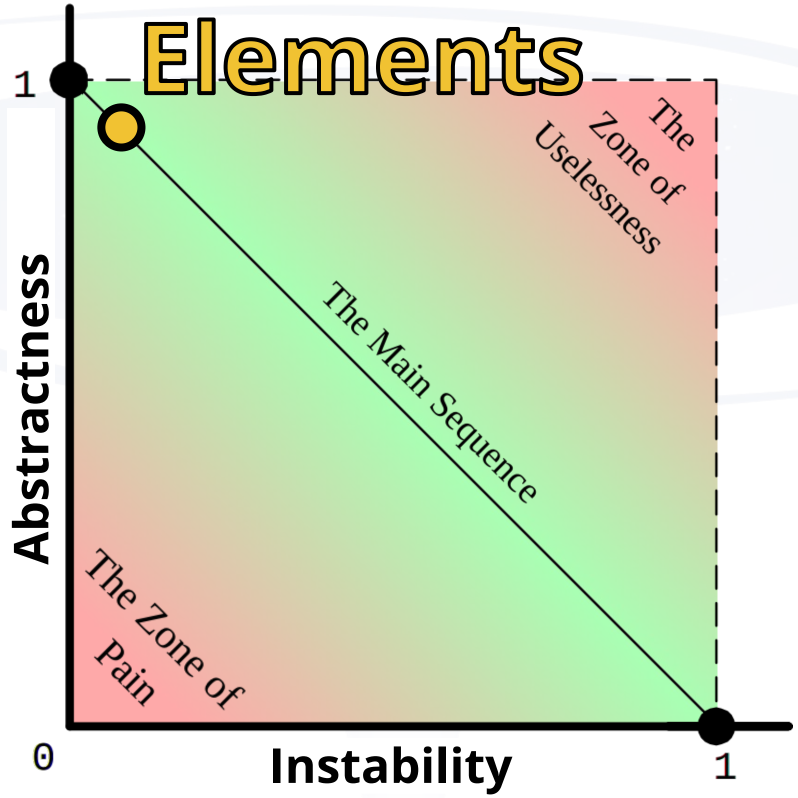
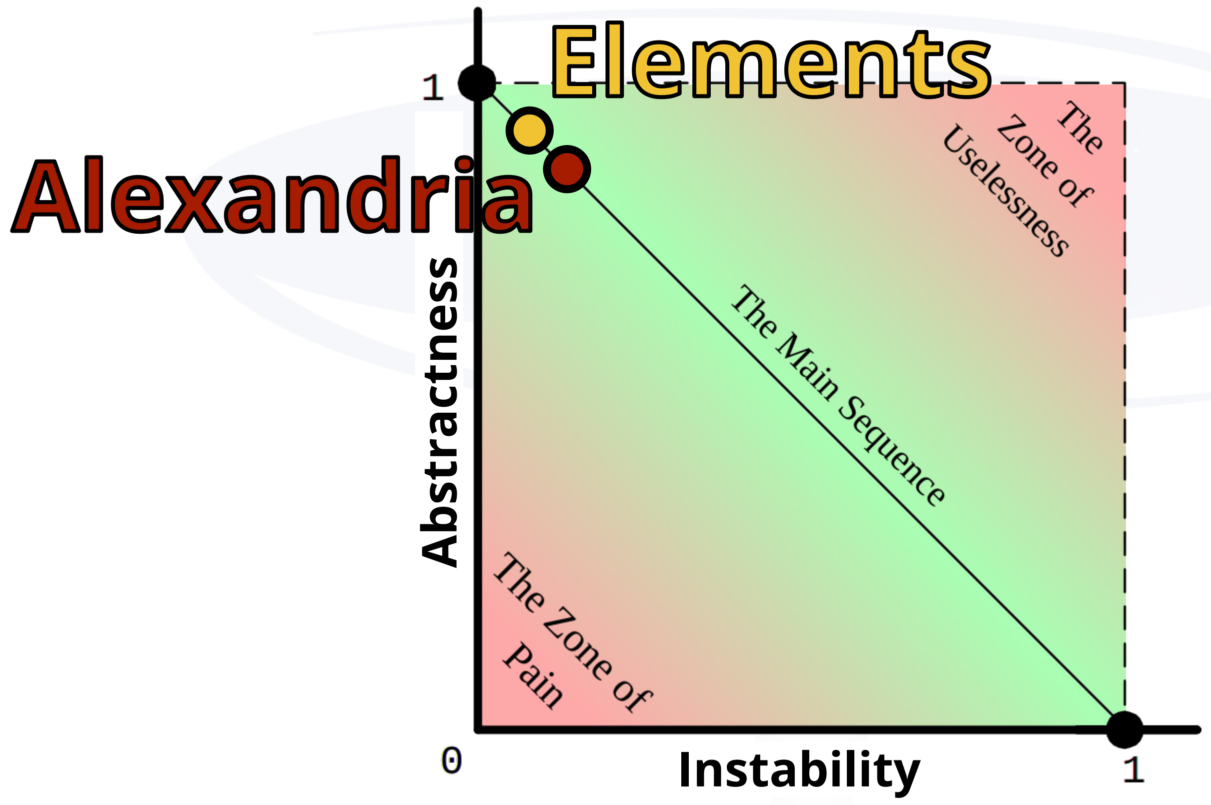


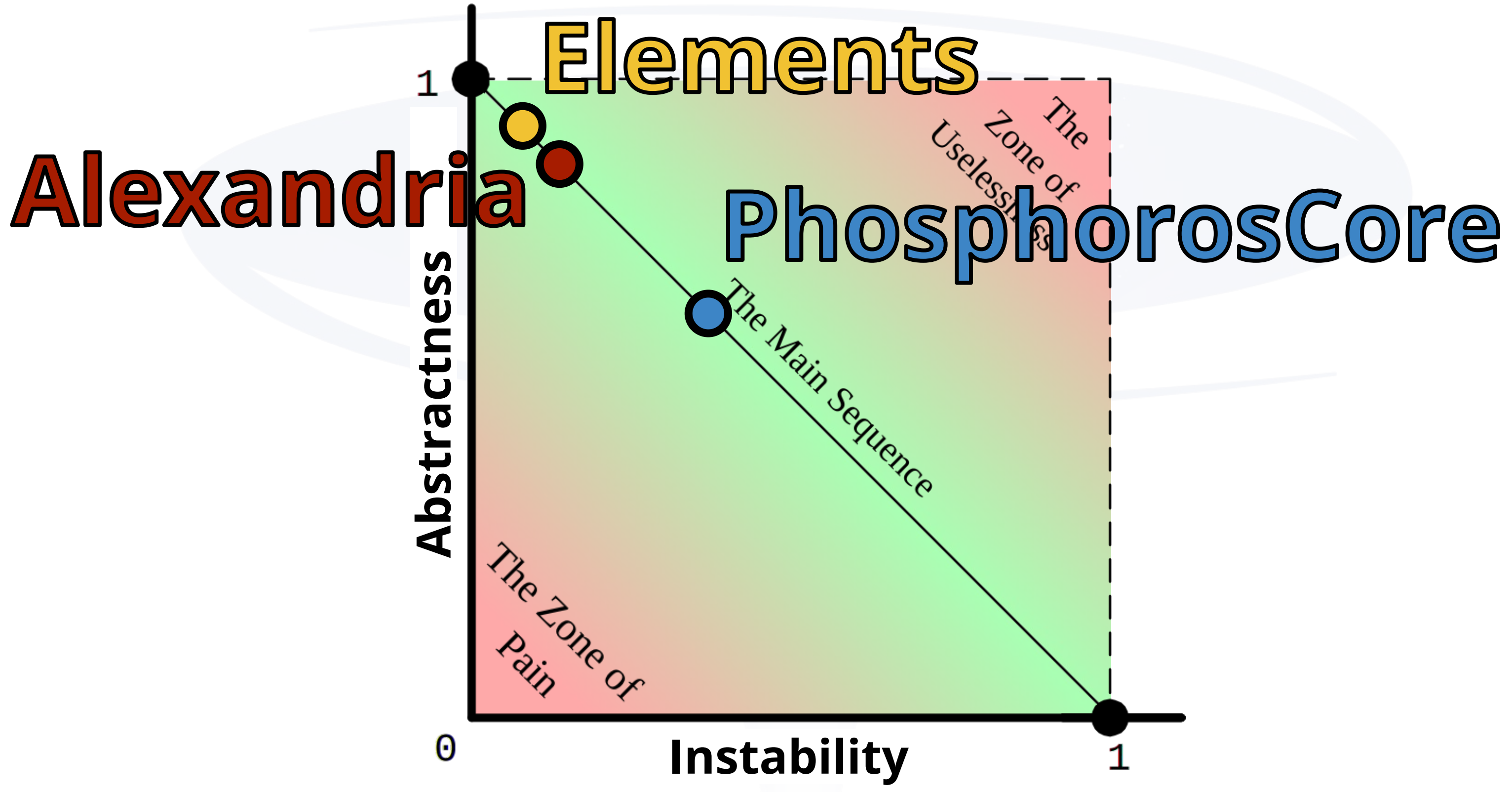
Elements: C++/Python Build and Application Framework for the Euclid mission

Project Organization



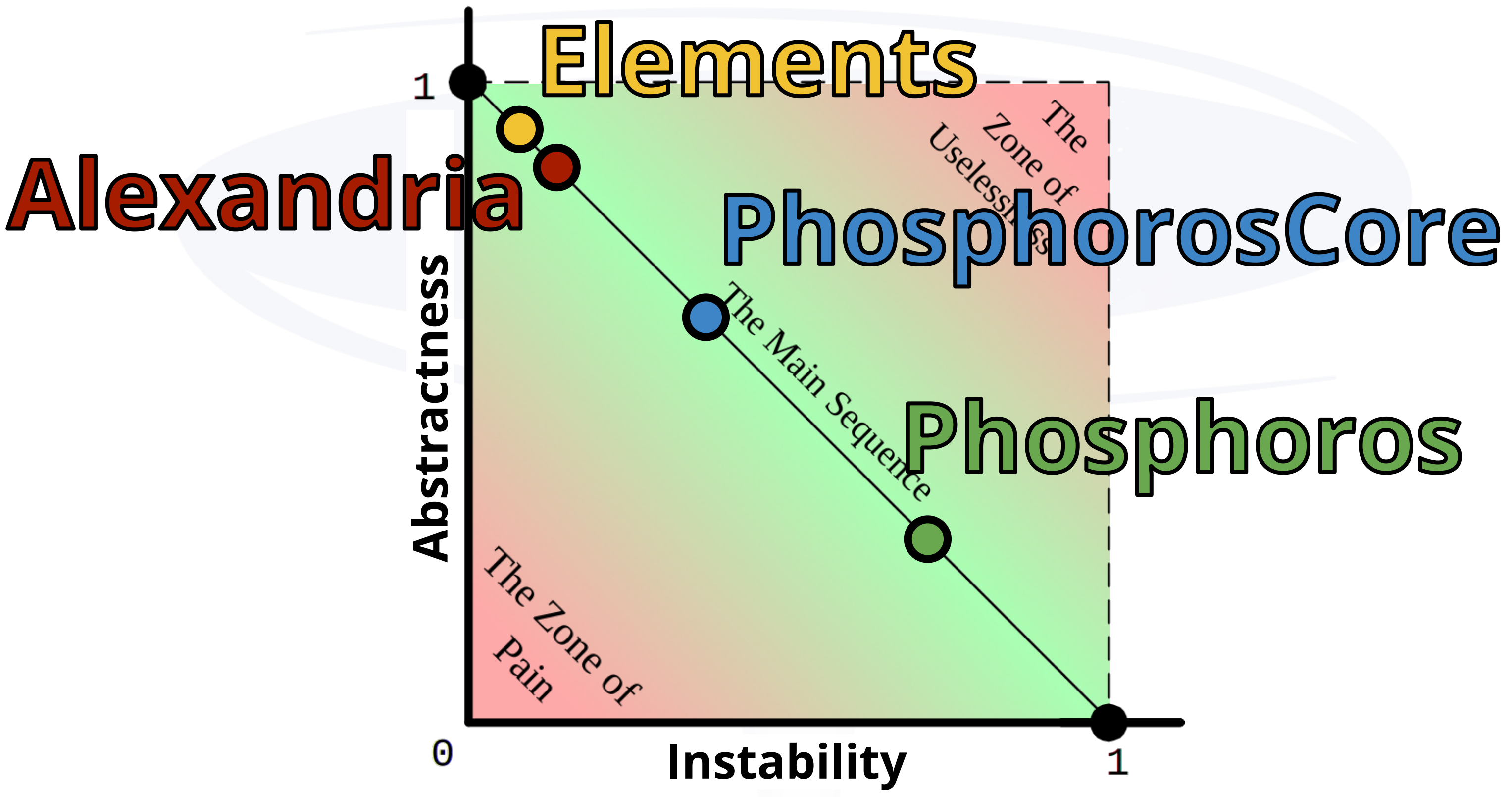
Alexandria: SDC-CH core library, generic modules to be reused with other projects

Project Organization



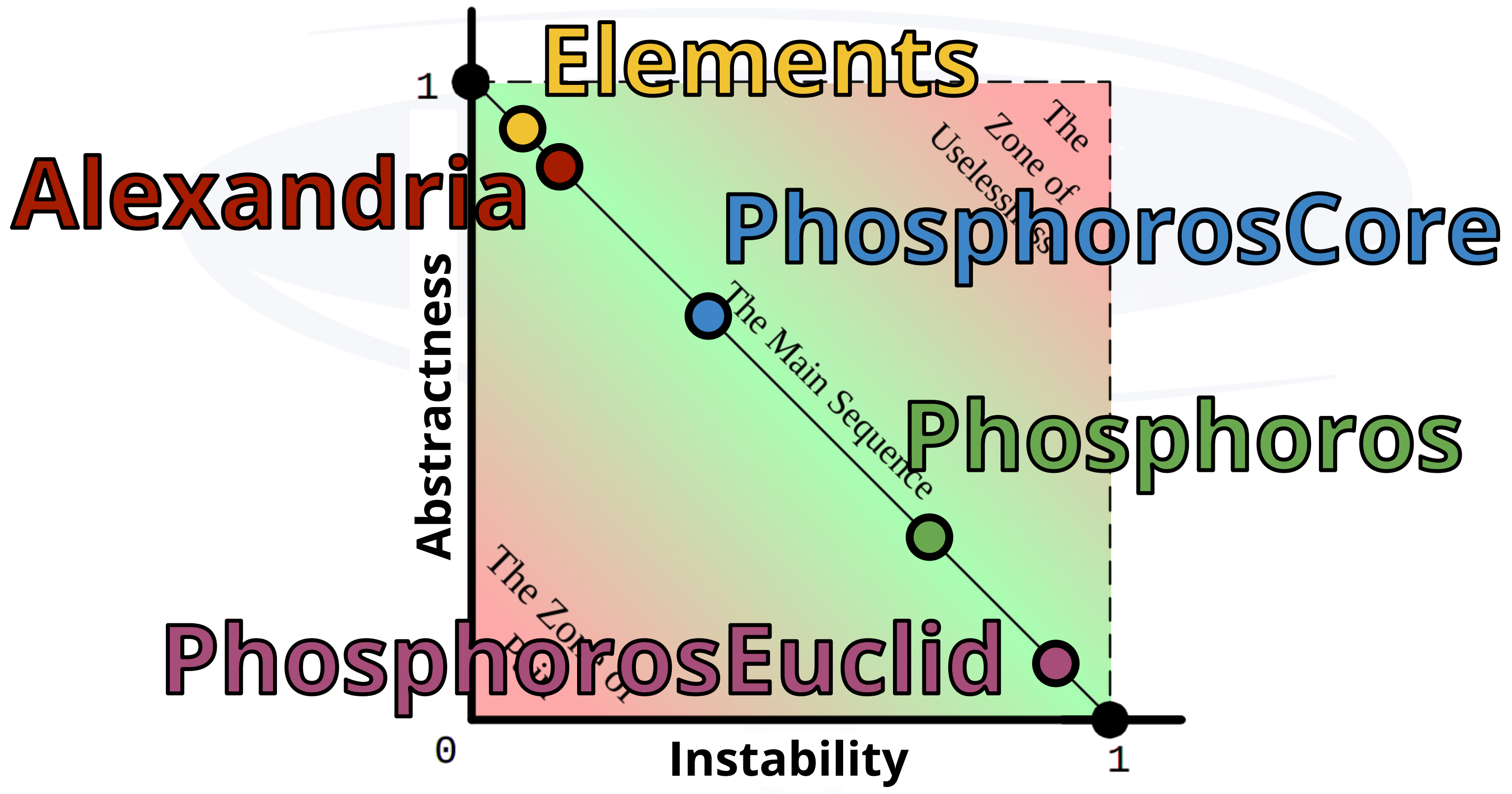
PhosphorosCore: Core template fitting code (including basic executables)

Project Organization



Phosphoros: PHZ post-processing, GUI, utility tools (constitutes Phosphoros product)

Project Organization



PhosphorosEuclid: PhosphorosCore wrapper for execution in Euclid ecosystem (see poster P3.5)

Software stack

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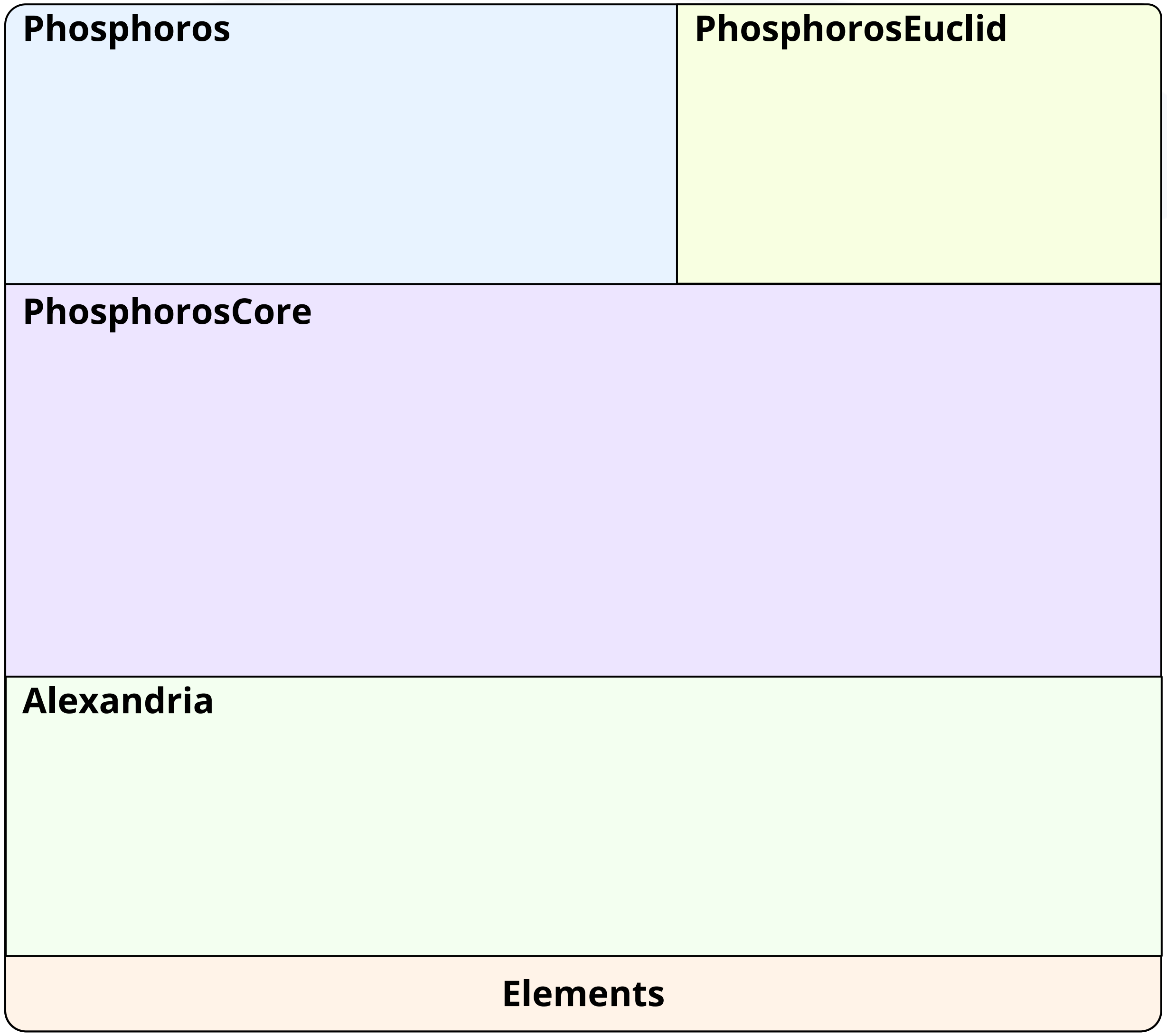
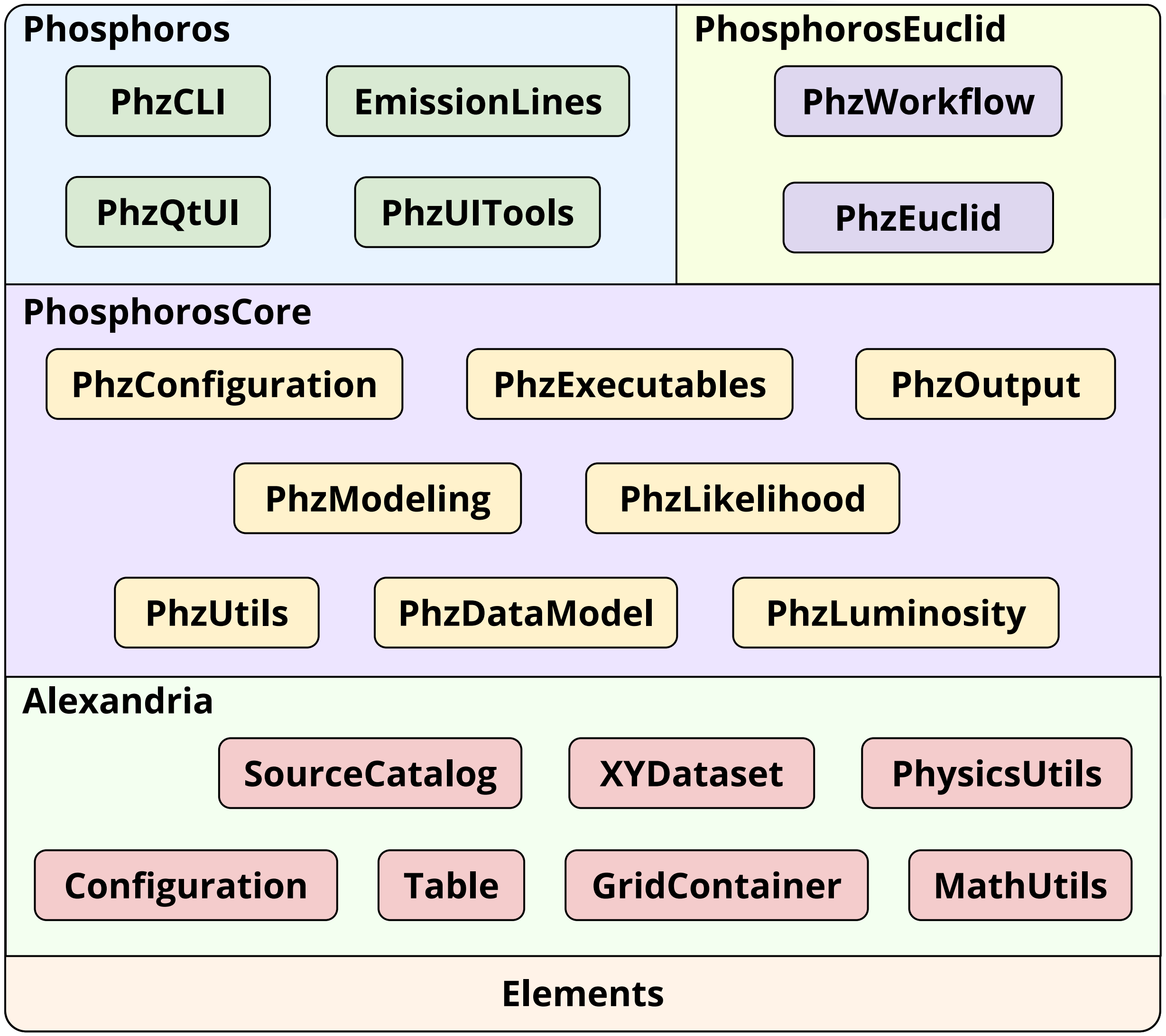


Software stack



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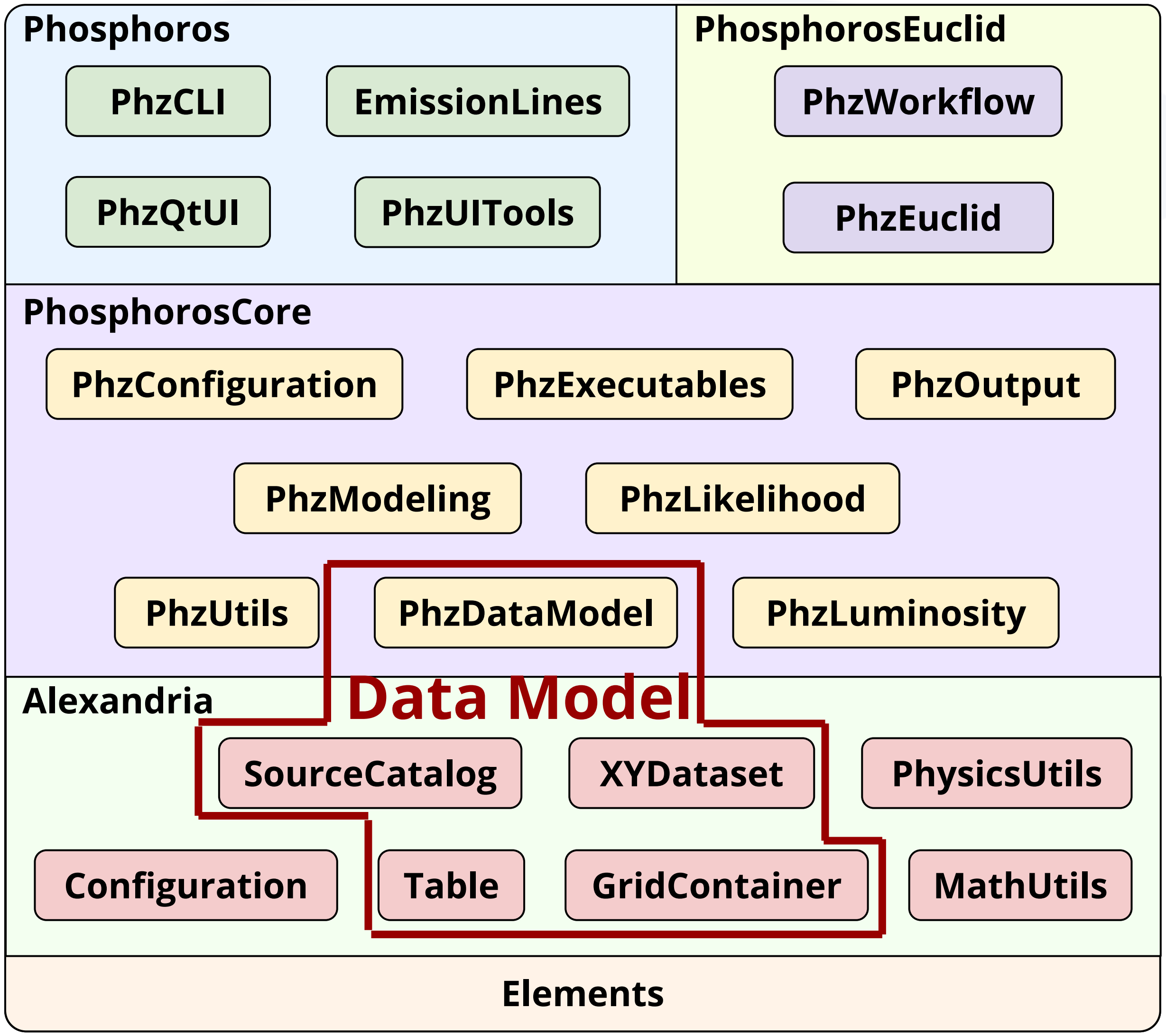

Data Model modules

Data Model modules

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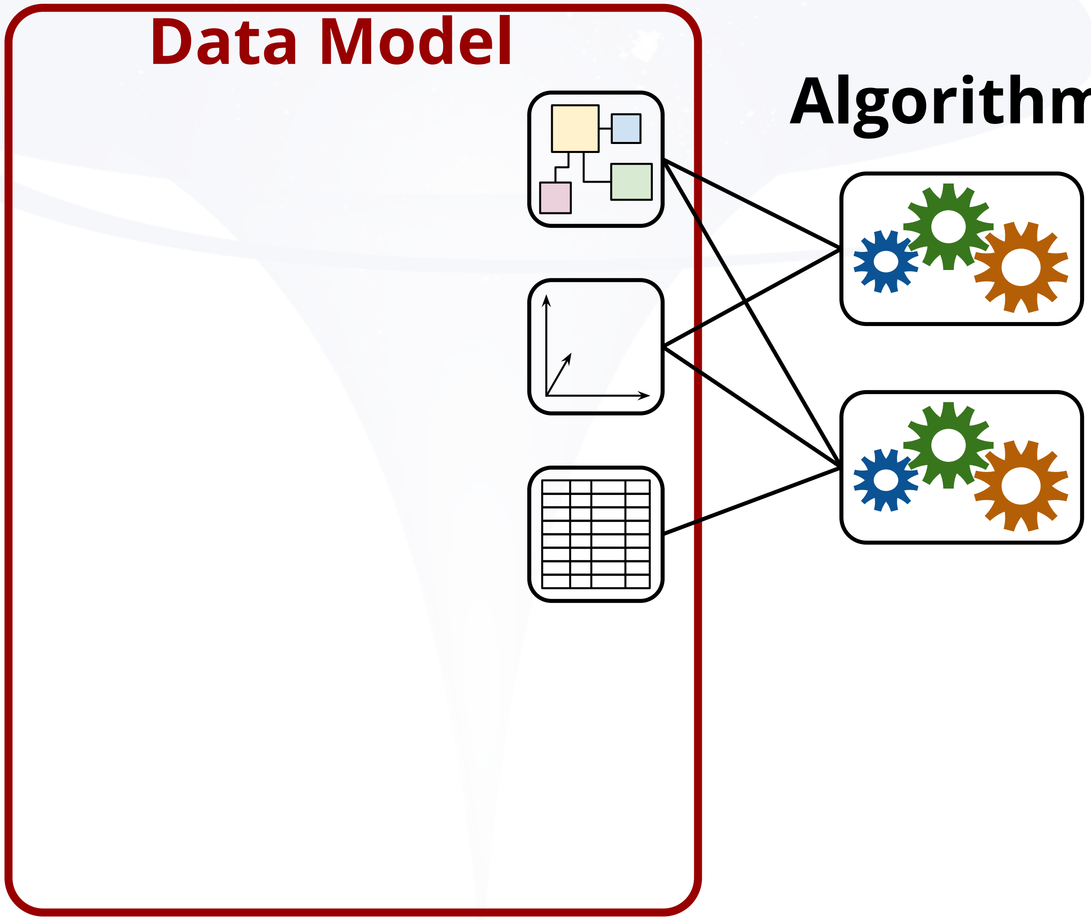
Define the data structures the algorithms use



Data Model modules

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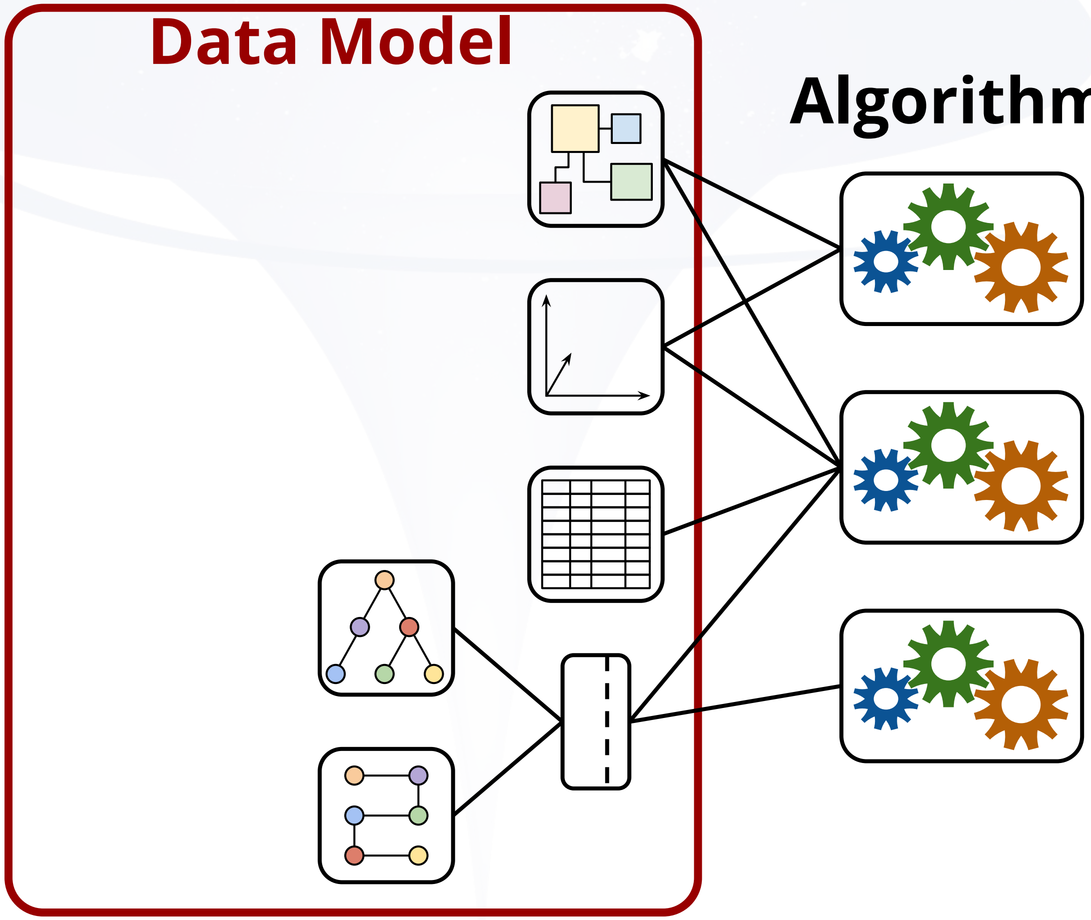
Hide specific implementations via interfaces



Data Model modules

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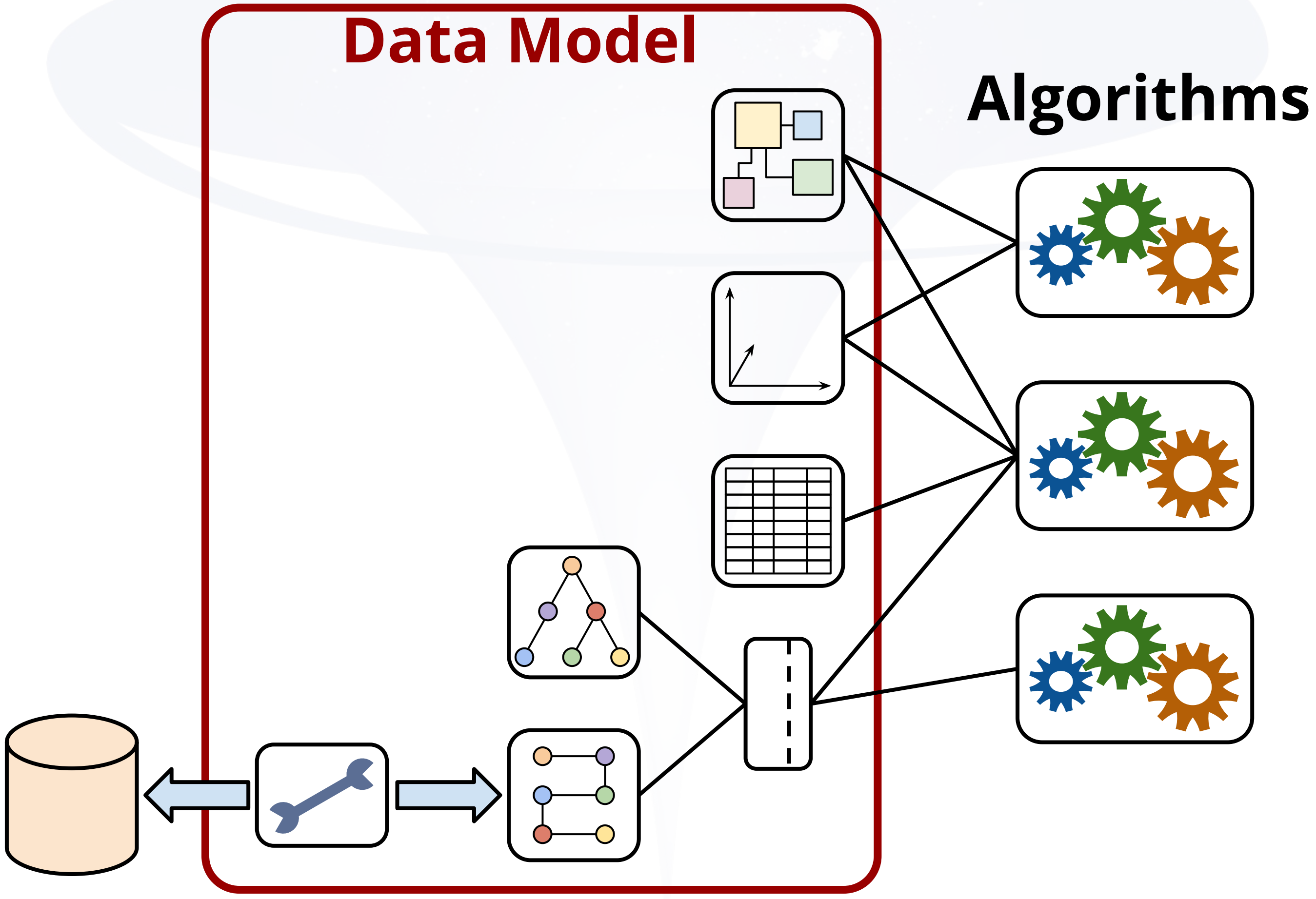
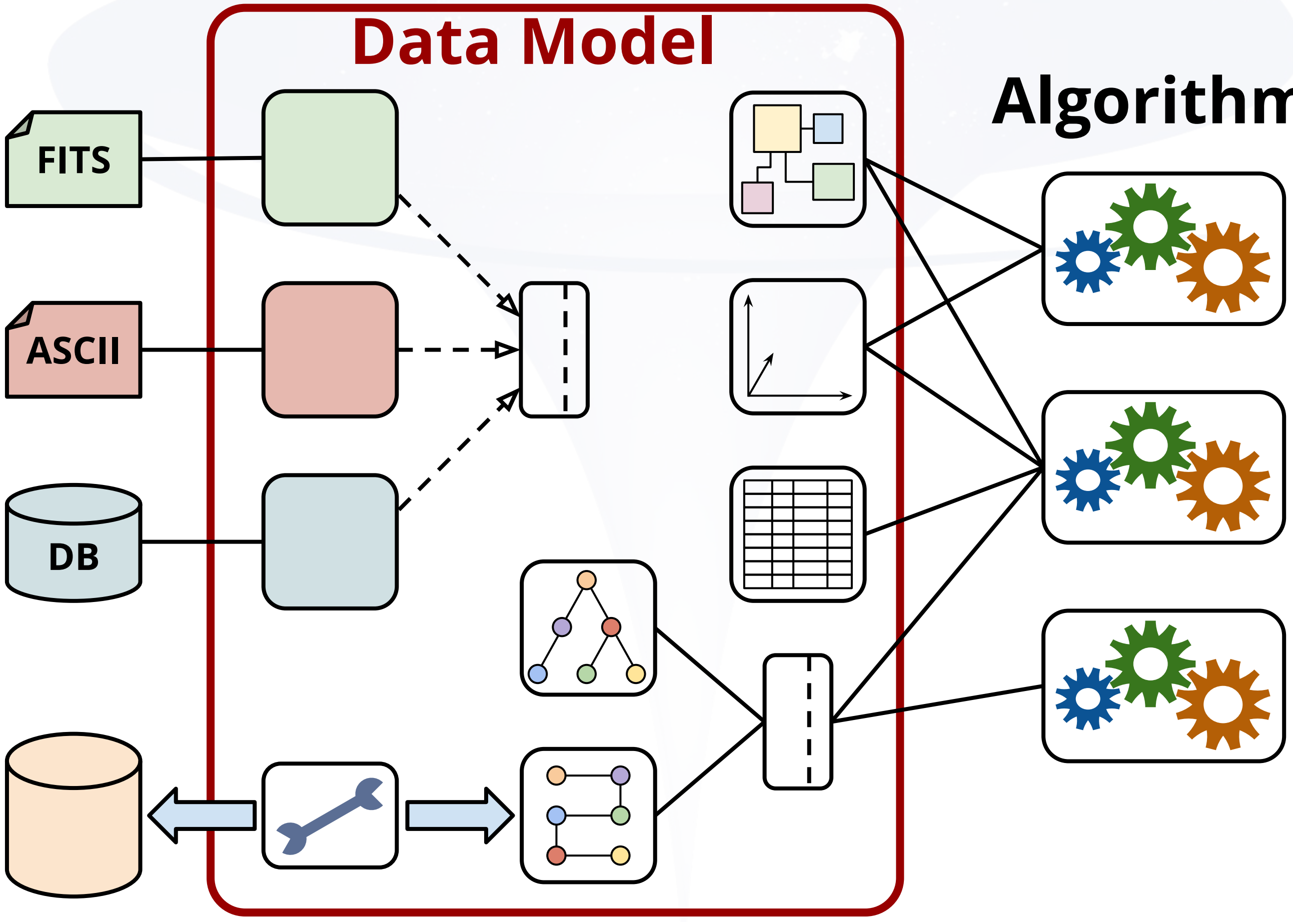
Provide tools for serialization



Data Model modules

Hide specific formats via abstraction



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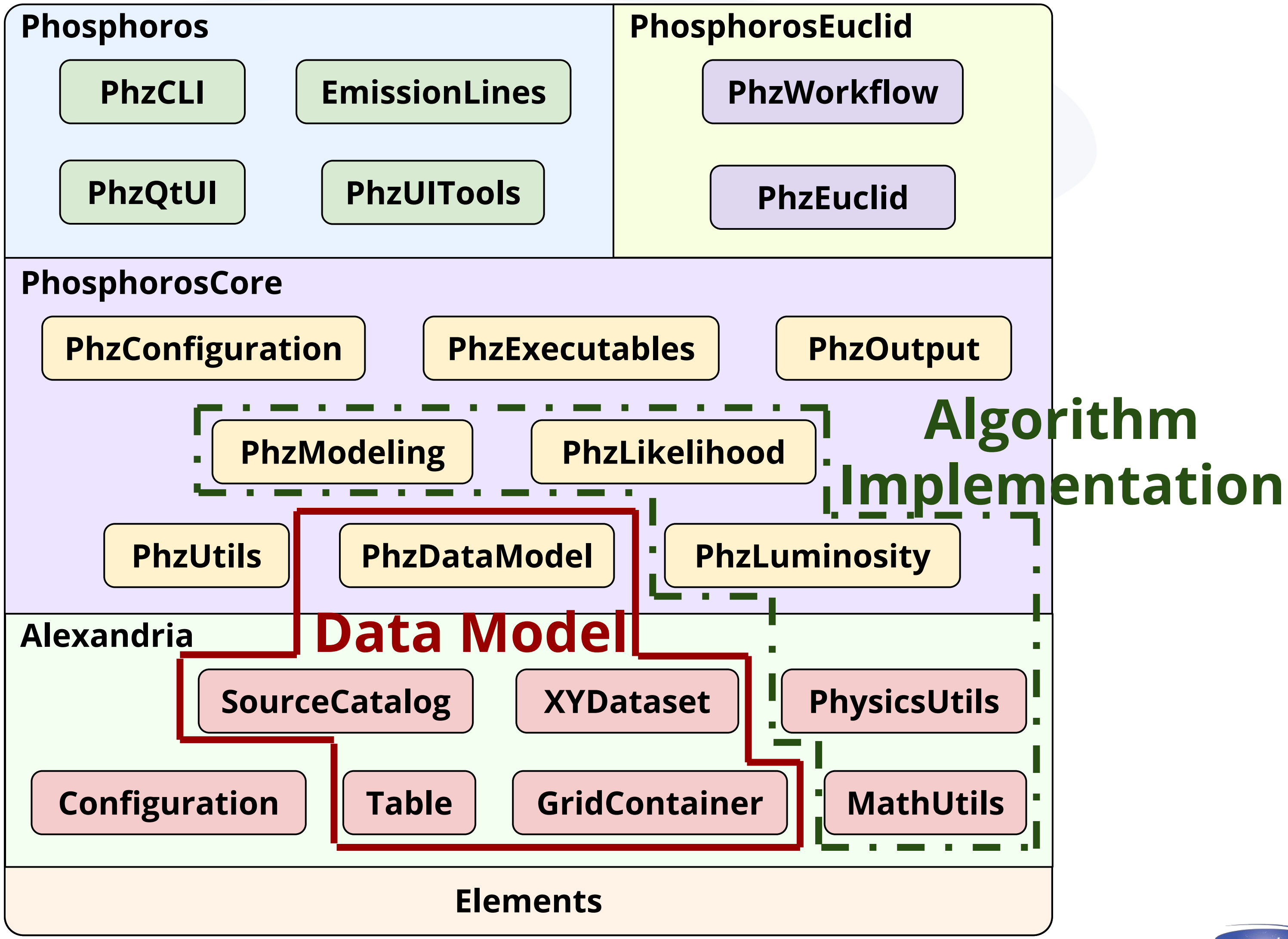

Algorithm Impl modules

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Algorithm Implementation

Algorithm Impl modules

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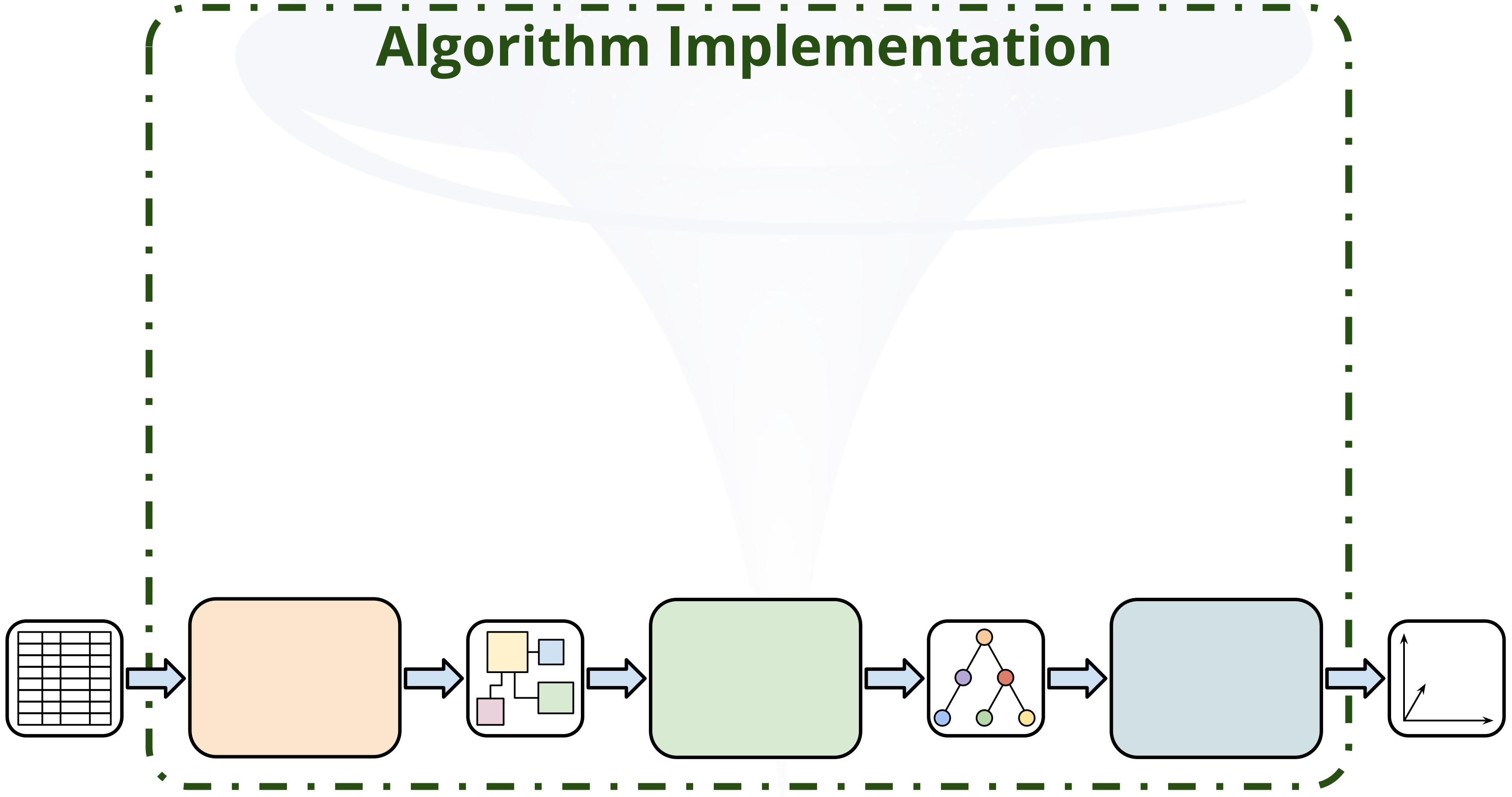
Organize the photo-z pipeline execution



Algorithm Impl modules

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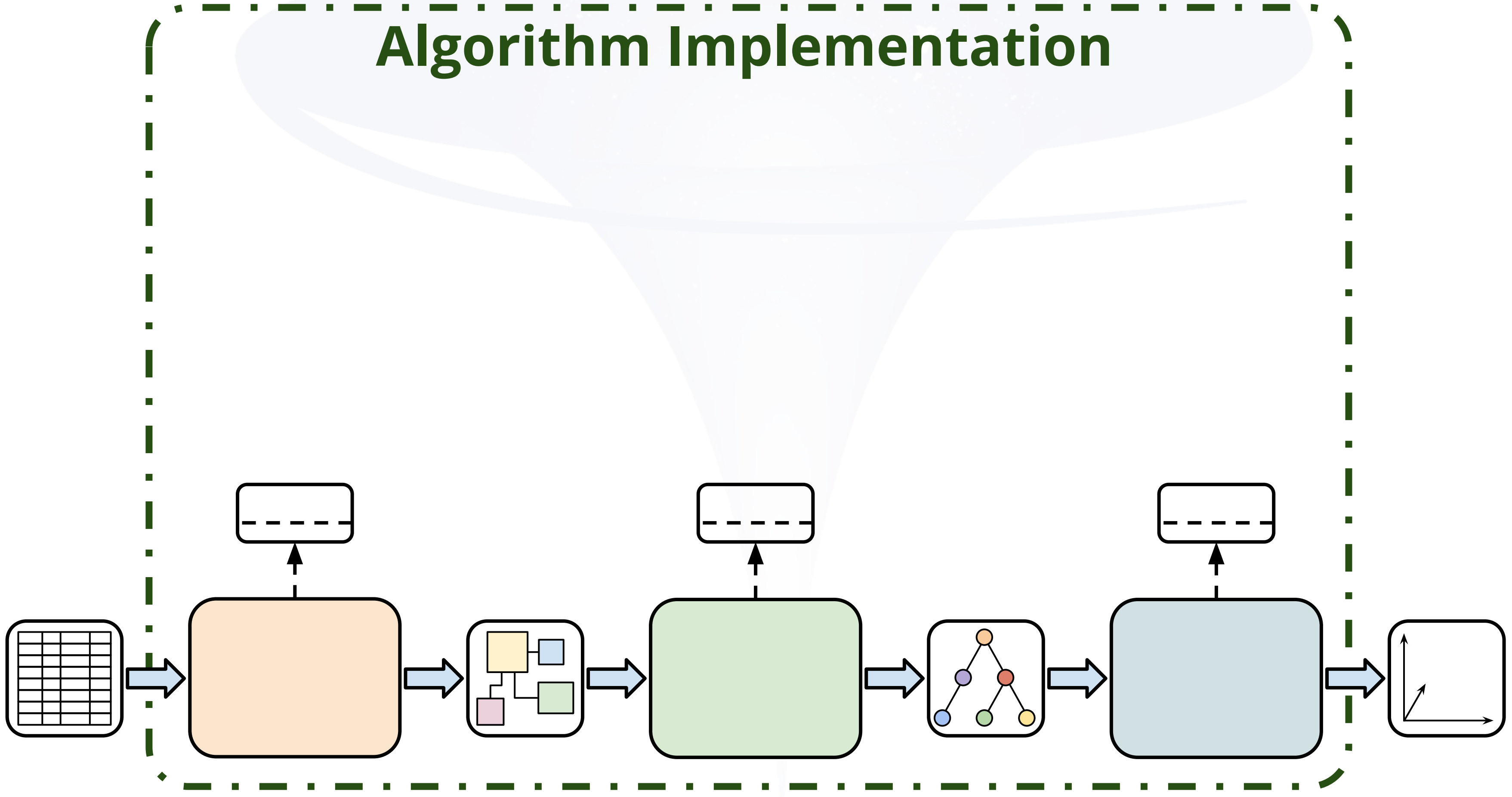
Abstracted steps as interfaces (std::function)



Algorithm Impl modules

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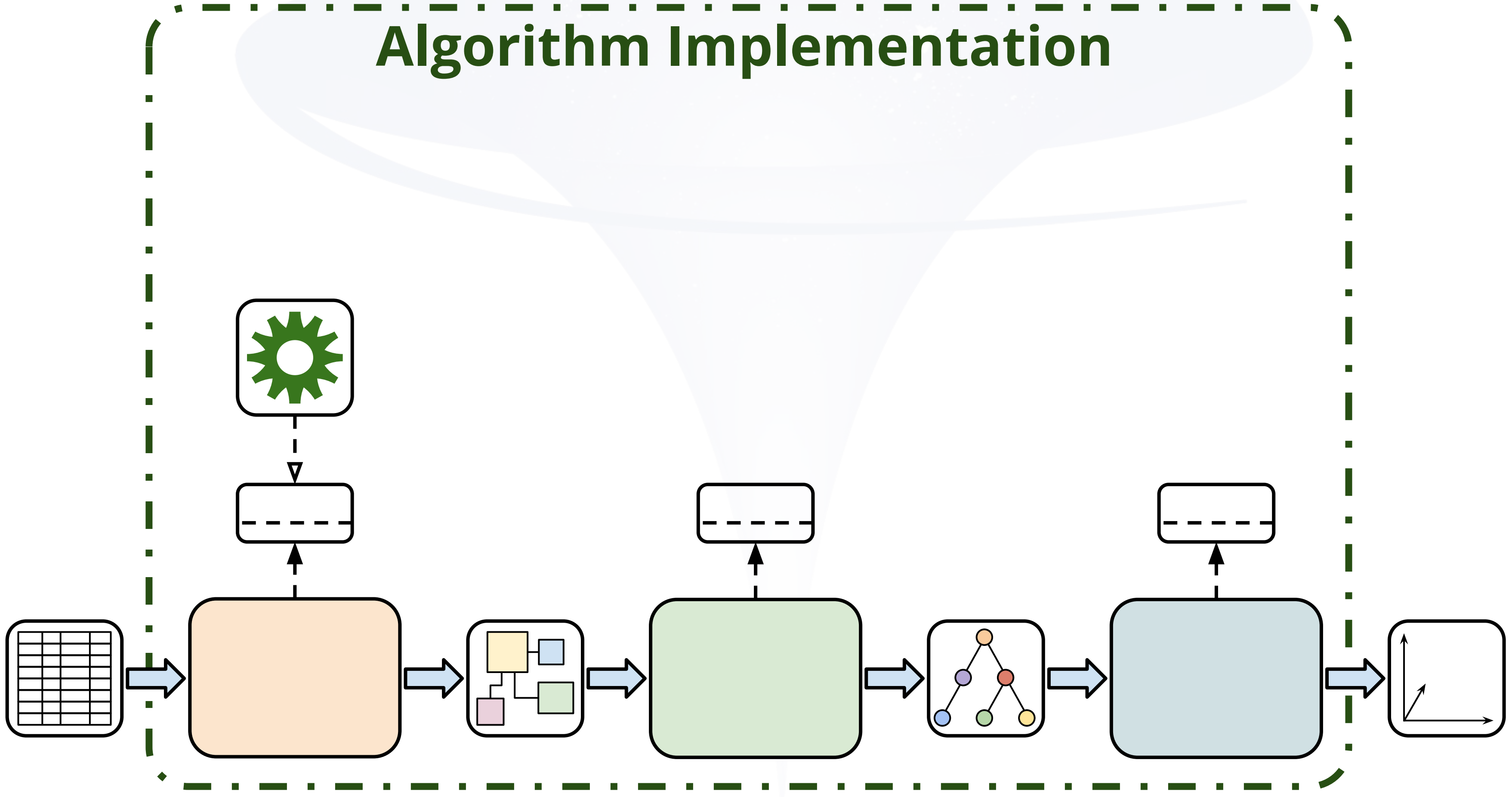
Logic implemented as reusable functors



Algorithm Impl modules

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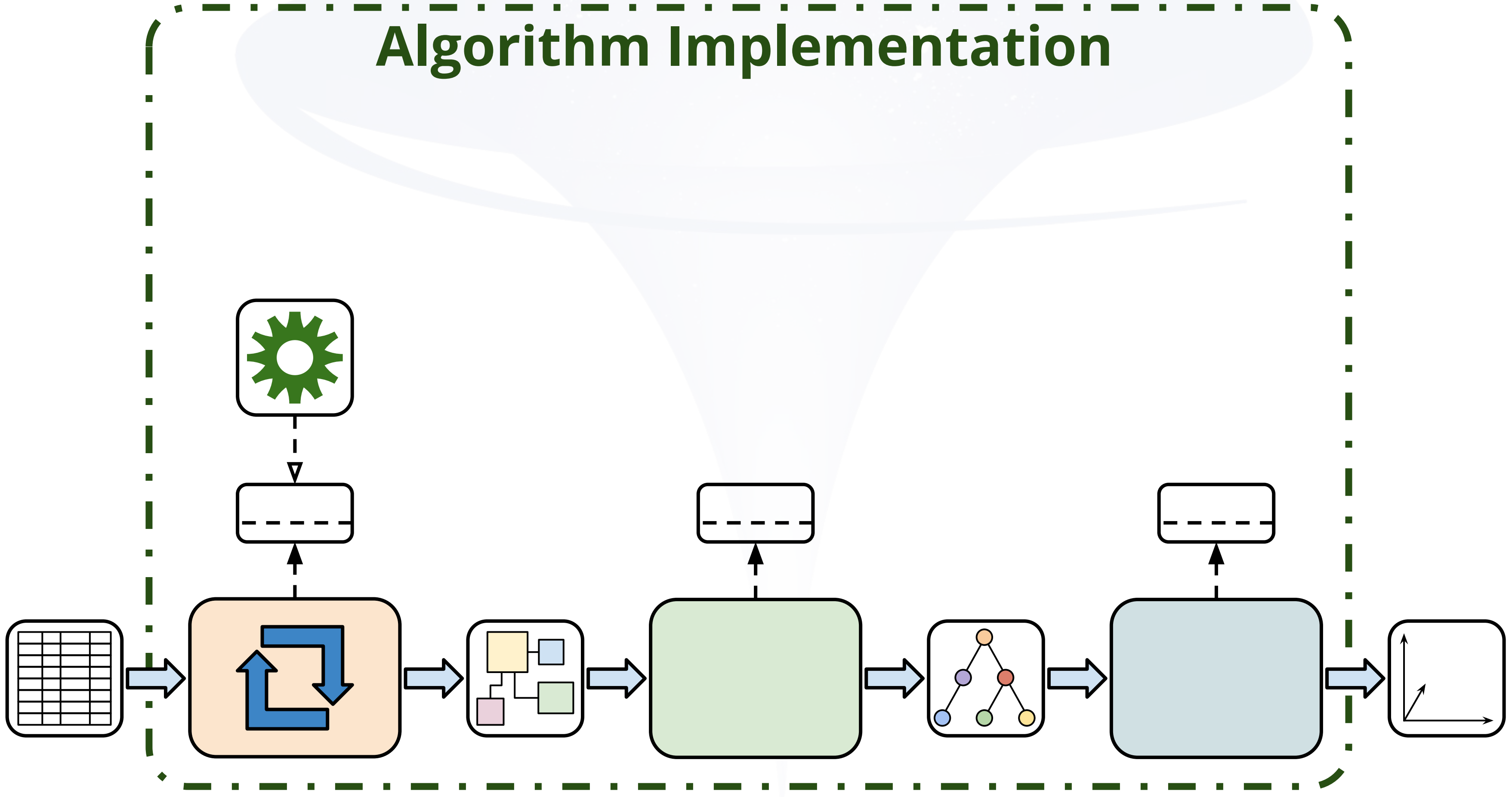
Loops are generalized using STL iterators



Algorithm Impl modules

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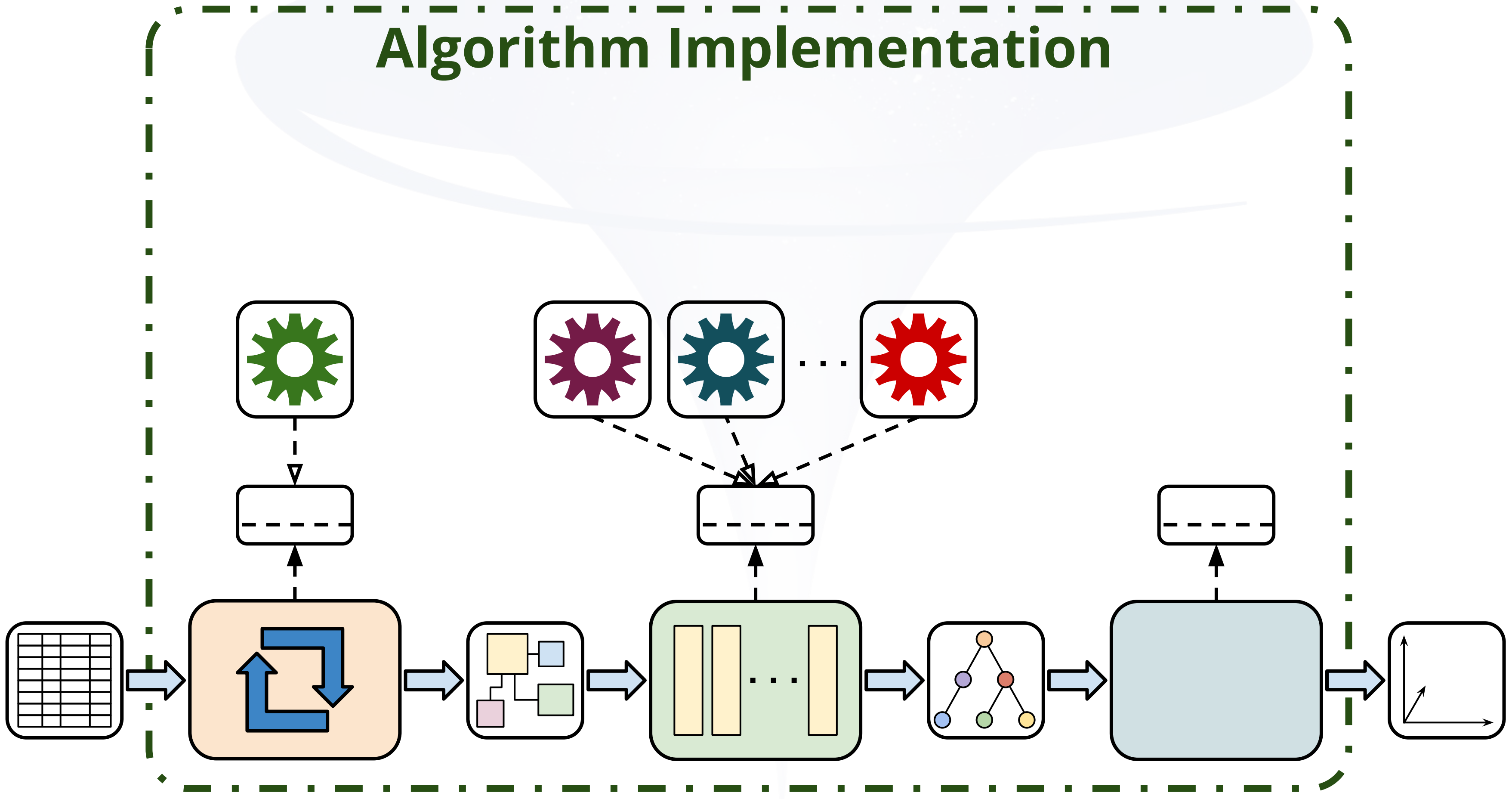
Composition is used to provide extensibility



Algorithm Impl modules

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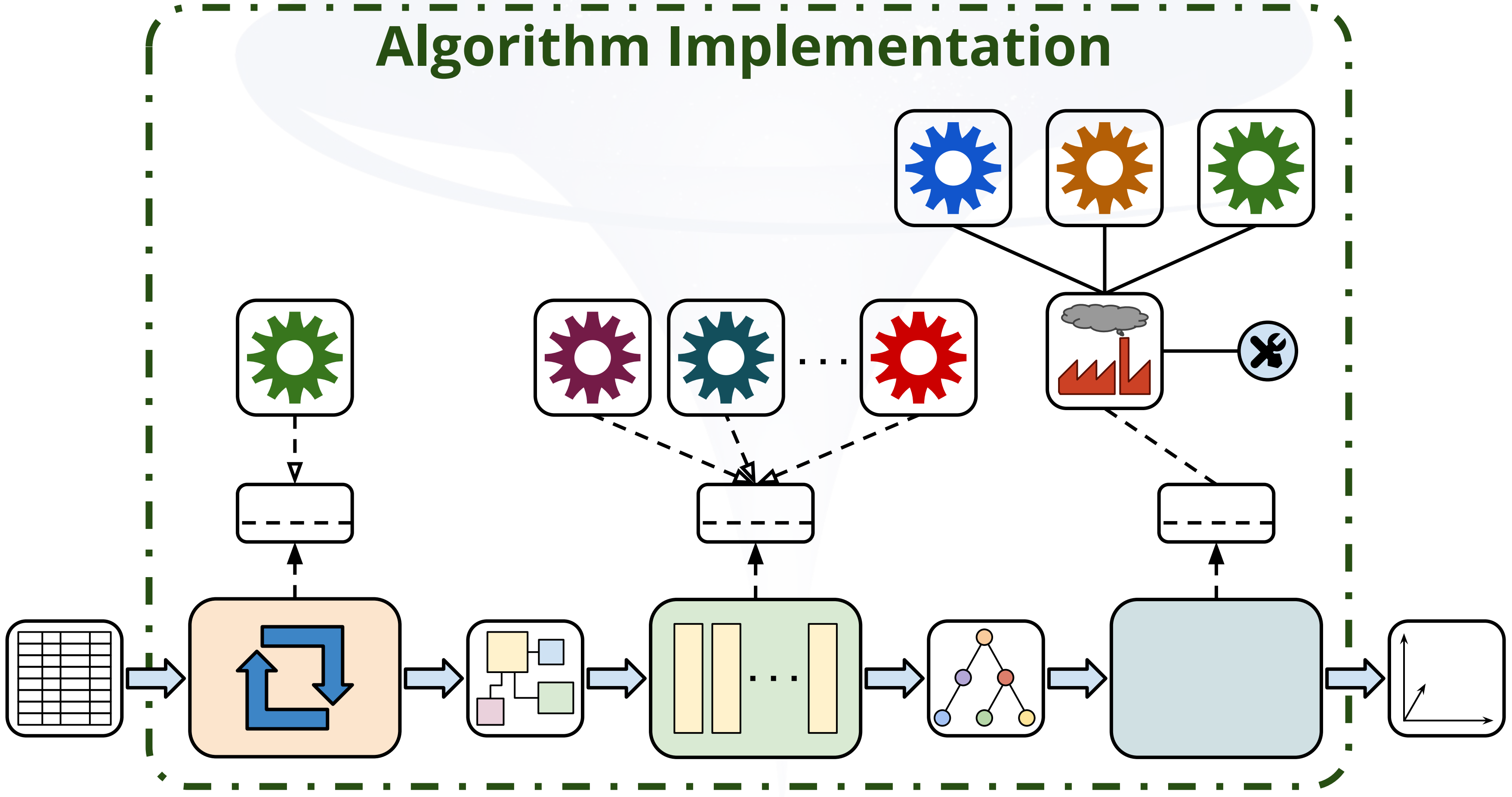
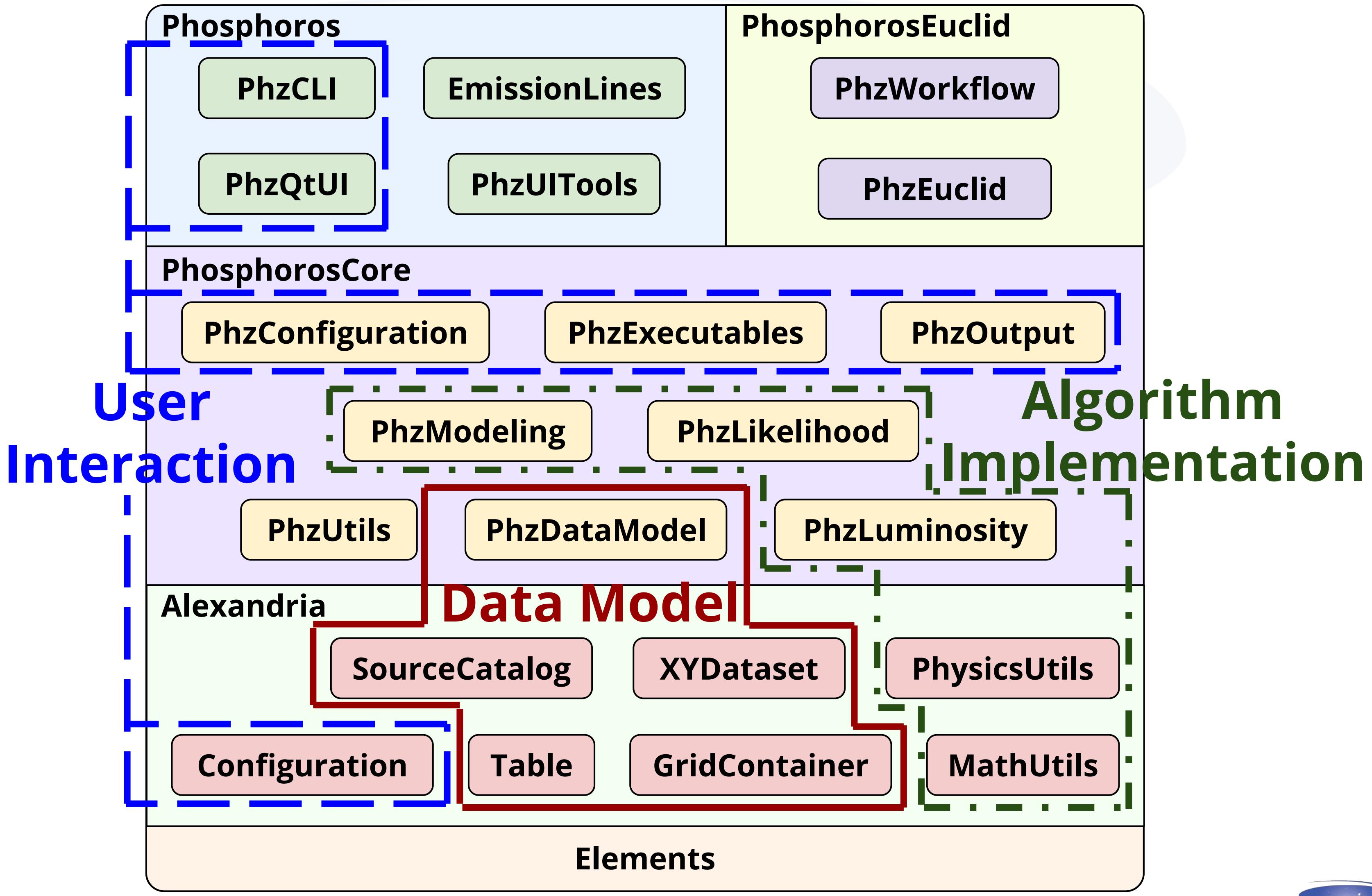
Factories are used for algorithm selection



Software stack



User Interaction modules

User Interaction modules

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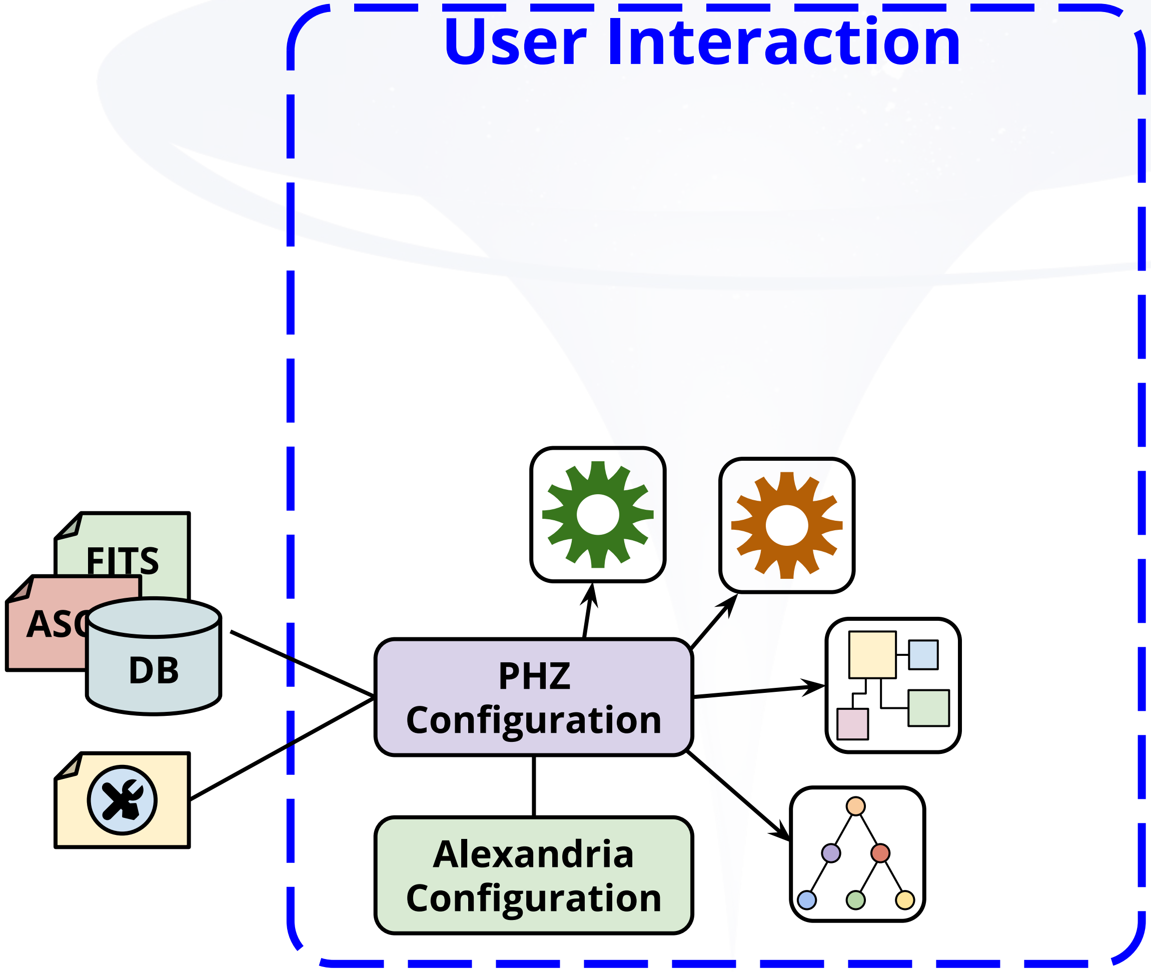
Configuration framework handles user input



User Interaction modules

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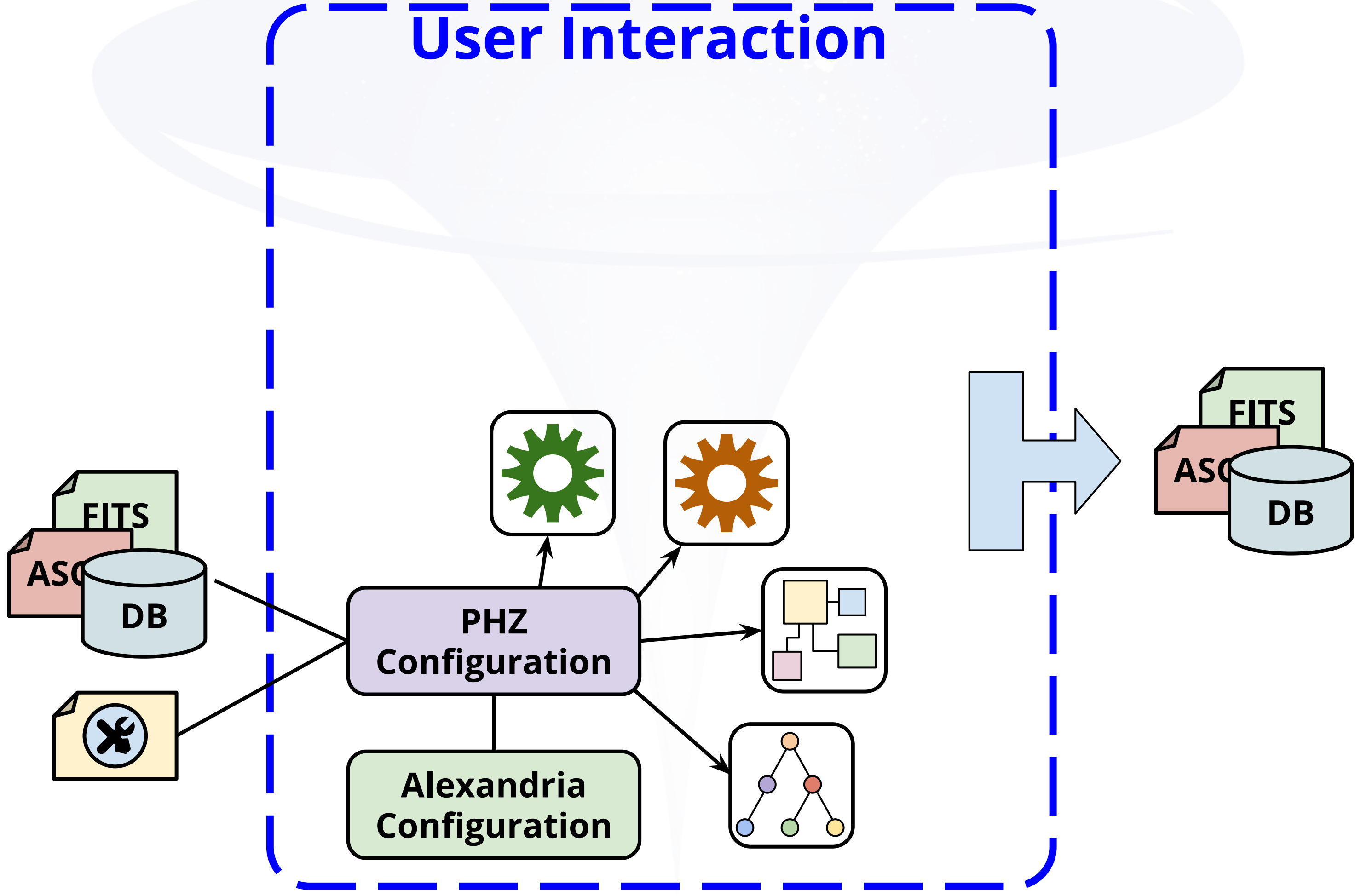
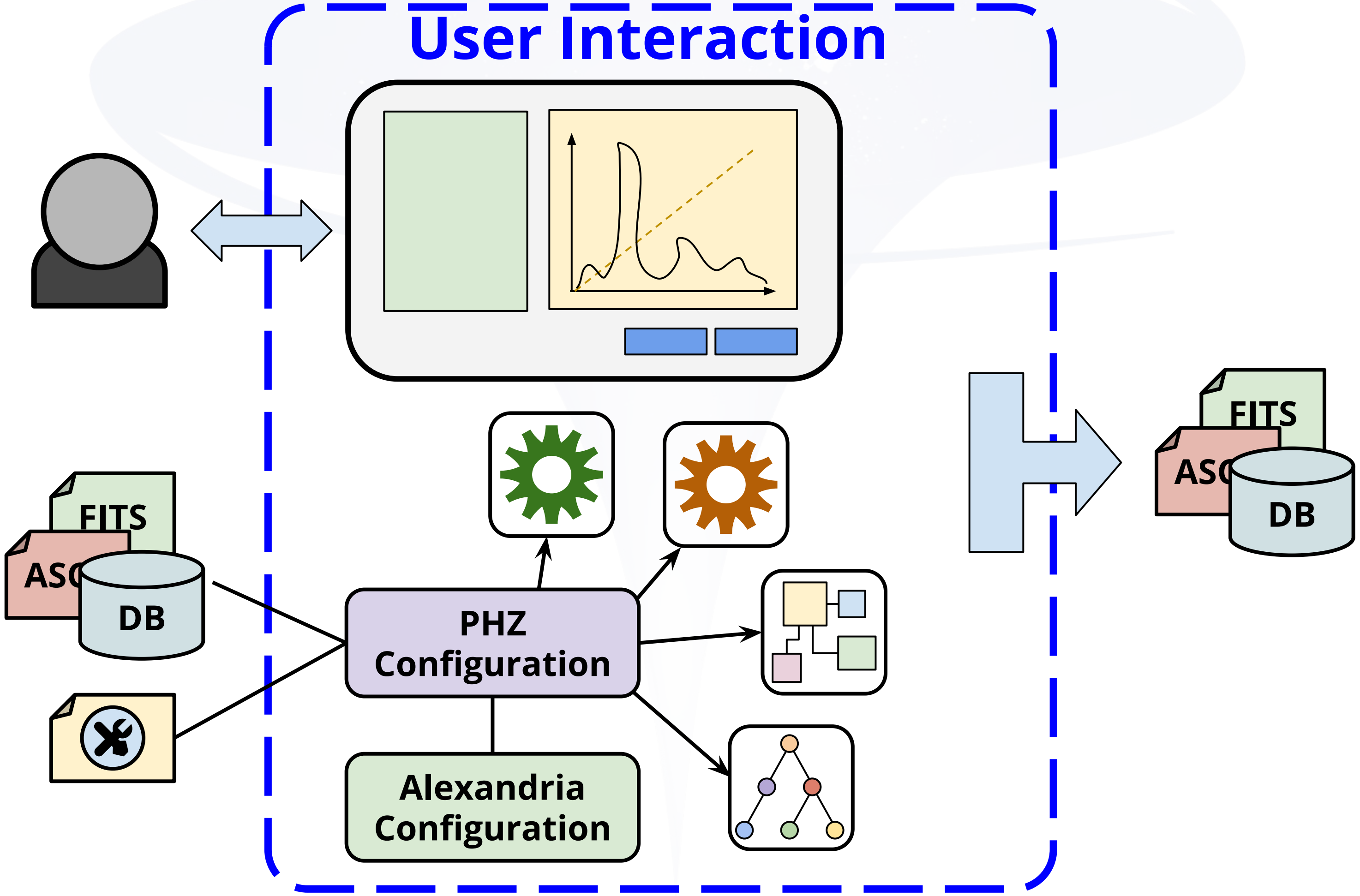
Output generation

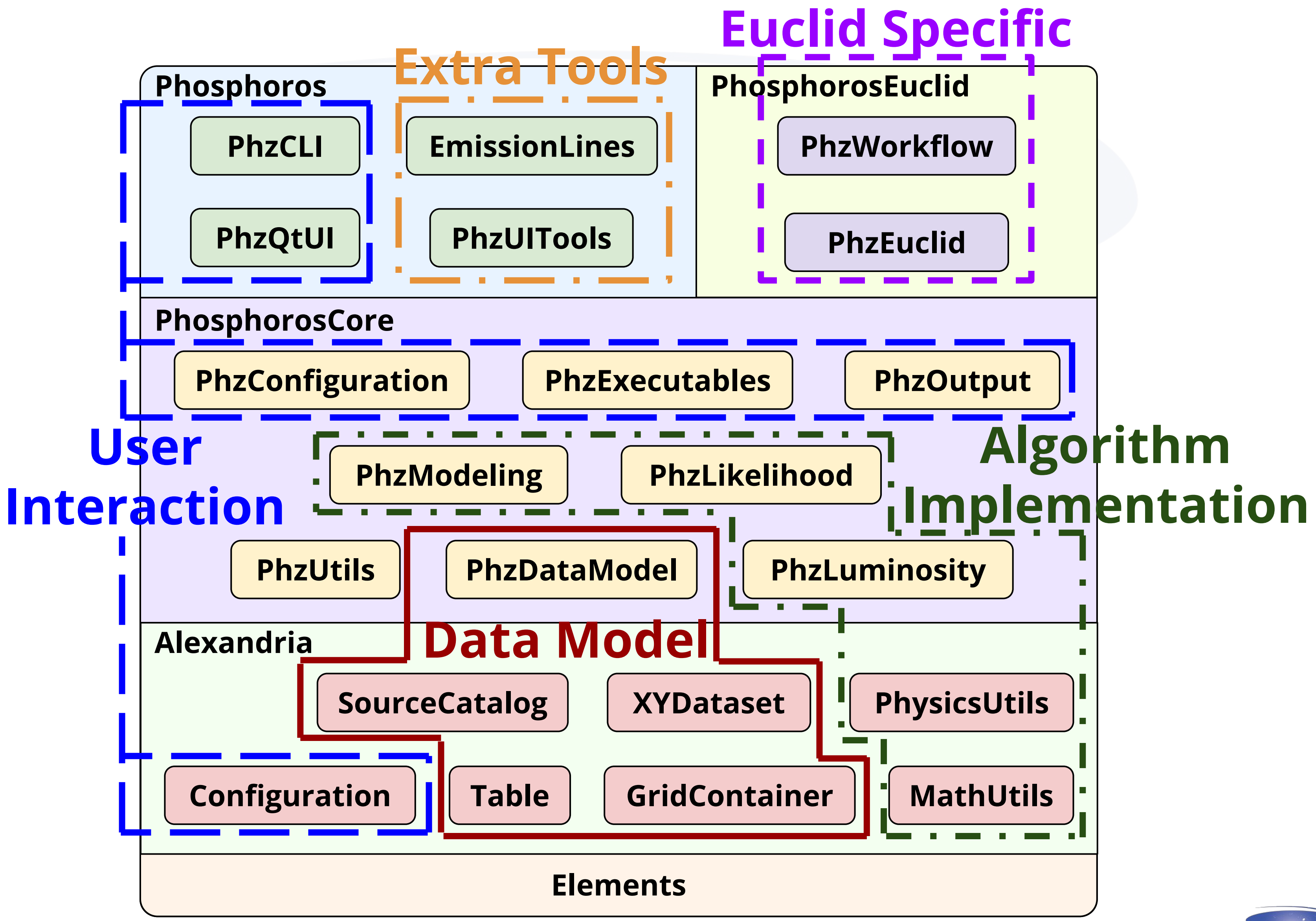


User Interaction modules

Graphical User Interface



Software stack



Current status

- Used for Euclid photo-z challenges
- Open source - licensed under LGPL
- Currently available only to Euclid Consortium
- Make public soon (Alexandria in 2016)
- Contacts for more info:
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    - Pierre.Dubath@unige.ch