OPYL and Preconfigured Optimization Files

OASIS allows for only the project configuration data to be read and exported to an easily read and hand-written document called an OASIS Project YAML document (OPYL). An OPYL document is divided into six sections:

- `inputs` – the input variables and their bounding values
- `objectives` – the objective(s) to be optimized
- `constraints` – one or more constraints that must be passed for any solution
- `invocations` – describes how to invoke any particular simulation
- `simulations` – the specifics of any simulations and their execution
- `settings` – the criteria that will cause the optimization to halt

An OPYL document configuration can be imported by selecting `File`, `Import OPYL file` and once a problem setup has been configured an OPYL document can be generated from that configuration by selecting `File`, `Export OPYL file`.

Anatomy of an OPYL

An OPYL document is easy for a human to write and OASIS to read, given that the document follows some guidelines. OPYL files are sensitive to indentation, and a single level of indentation can be represented with two spaces (‘ ‘) or a literal tab. Keep in mind that you cannot mix double space and tab indents within a single file.

Note that OPYL accepts some variation on the spelling of keywords. In some places you might se “lower bound”, in others, simply the word “lower”. The user may choose between a more terse or more verbose spelling of each token.

```
inputs:
  input-name: { lower: value, upper: value [, step: positive-value]? }
  [line repeated for as many input variables as needed]

objectives:
  objective-name: expression
  objective-name:
    invoke: invocation-name

  [repeated for as many objectives as are part of the problem]

constraints:
  [same format as objectives]
```

```
invocations:
  invocation-name:
    run: simulation-name
    map:
      input-name: simulation-input-name
      [repeated for every oasis-variable to simulation-input mapping]
      simulation-output-name: [objective-name [OR] constraint-name]
      [repeated for every objective or constraint generated by the simulation]

simulations:
  simulation-name:
    exe: path
    input file: path
    output file: path
    inputs:
      simulation-input-name:
      - { row: integer-value column: integer-value length: integer-value }
      [repeated for every input value required by the simulation]
    outputs:
      simulation-output-name:
      - { anchor: "[text sequence]" [ occurance: integer-value ]? }
      [repeated as many times as there are nested text relevant to the output location]
      [- row: integer-value]?
      [- column: integer-value]?
    [timeout: value [ONE-OF ms sec min hrs days ] ]?
    [style: [ at each evaluation [OR] once and watch files ] ]?
    [timeout: value [ONE-OF ms sec min hrs days ] ]?
    [options:
      "option-name": ("[argument]")?
      [line repeated for any options general to all users of this tool]
settings:
  [runs: value]?
  [evaluation_cap: value]?
  [time: value [ONE-OF ms sec min hrs days]]?
  [target: value]?
```

Legend

Sequence as in above description	Correct interpretation
Literal [bold] character sequence	to be written exactly as they appear here
interpreted [italics] characters	to be changed by the person using the document, as appropriate. *value* might become 9.876, *path* might be C:\Users\usr\Documents\File.txt, and *flag* might be `-Wait`
[X *[OR]* Y *]*	either X or Y but not both
[ONE-OF X Y Z *]*	a selection of one of X, Y, or Z, but only one.

`[ X ]?`	optionally X, meaning it can be left blank or can be supplied according to the format of X
`[ X ]...`	X repeated zero, one, or many times.

OPYL documents are a specialized form of YAML document, meaning that any YAML equivalent document will also be recognized by OASIS.

Sample OPYL Document

Sample OPYL documents can be found in the `…[user-home]/OASIS/Samples` directory.

OPYL Import Screen

Importing configurations from OPYL gives you more control during an import. For example, a user could simply import an opyl file normally and bring the entire configuration into OASIS, or could choose to take an additional integration from an OPYL file and add it to the current OASIS configuration.

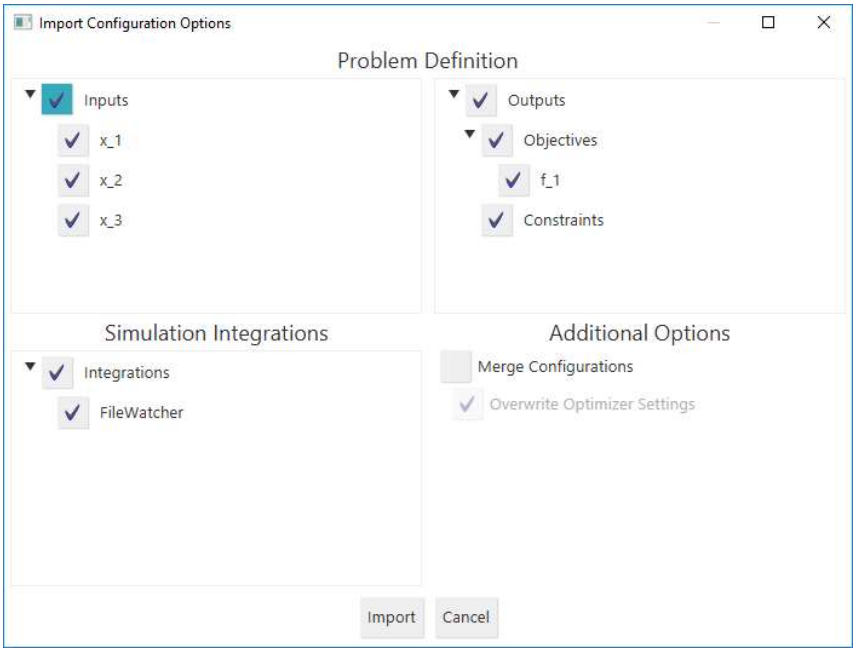

Figure 1: OPYL Import Screen

Only the selected components will be imported when the import button is pressed. By default, importing options will clear any configuration that currently exists in OASIS, but by selecting *Merge Configurations*, OASIS will merge the selected imported configuration and the current configuration by adding new variables and new simulations. When *Merge Configurations* is not selected, OASIS will overwrite (delete) the existing configuration.