Using automatically generated scripts in higher level optimization problem definitions

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MOBO with IDA

- Optimization program which can be coupled with any simulation program that uses ASCII input and output files.
- An IDA ICE model can be simulated and altered using IDA's own script language, where MOBO places numerical parameter values.
- MOBO reads output data from ida_lisp.end and gives new input values.

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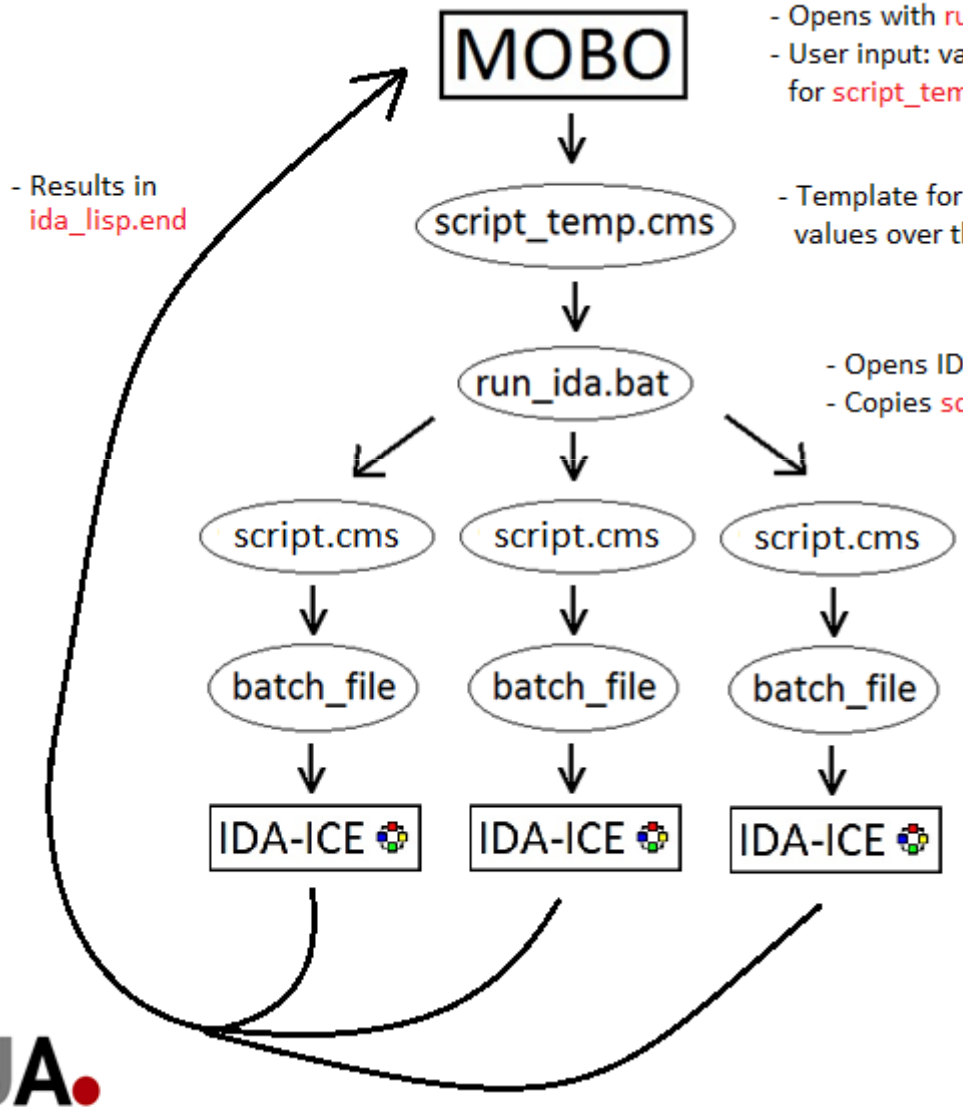
Optimization process



- Opens with run_mobo.bat
- User input: variables, objectives, algorithm, file paths for script_temp.cms and run_ida.bat

- Template for input variables, MOBO places numeric values over the delimiters and copies it as script.cms(s)

- Opens IDA-ICE.exe together with batch_file(s)
- Copies script.cms for every batch_file

- Executes the changes in the IDA model and runs simulations.

- Has the file path to IDA model and command for running script.cms
- Amount of batch_files depends on CPU

- Simulation and results

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Traditional way

- Add delimeters into an input file
  - Single zone default ICE case =>
    - *3727 lines*
    - *Total no of variables 4315*
  - Change of an overhang depth makes multiple changes
    - *For example*

TRANSTOT 0.0 0.0 0.0 0.9599 0.8317 0.73479 0.71152 0.73479 0.8317 0.9599 0.0 0.0 0.0 0.0 0.0 0.88848 0.73214 0.52418 0.36855 0.34197 0.36855 0.52418 0.73214 0.88848 0.0 0.0 0.98076 0.86016 0.71868 0.5232 0.23496 0.02662 0.0 0.02662 0.23496 0.5232 0.71868 0.86016 0.98076 0.0 0.70894 0.54889 0.32188 0.12159 0.00275 0.0 0.00275 0.12159 0.32188 0.54889 0.70894 0.0 0.0 0.54411 0.36453 0.18926 0.0591 0.0 0.0 0.0 0.0591 0.18926 0.36453 0.54411 0.0

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ICE script

```
(:UPDATE [@]
  ((EXTERNAL_SHADING :N "External shading 1")
   ((SIMPLE-SCREEN :N "Screen")
    (:PAR :N VERTICES :S '(:DEFAULT #S(MS-SPARSE DEFAULT-VALUE NIL DIMENSION 2 VALUE NIL) 2))
    (:PAR :N (VERTICES 2 1) :V 1)))
  (:ADD (AGGREGATE :N THREE-D-MODEL :T THREE-D-PLAN)
   ((AGGREGATE :N VIEWPT :T VIEWPOINT)
    (:PAR :N POSITION :V #(71.2372535551286 -60.3583827748382 18.5095801927414))
    (:PAR :N FOCALPOINT :V #(25.0 8.99749946594238 2.5)))))
```

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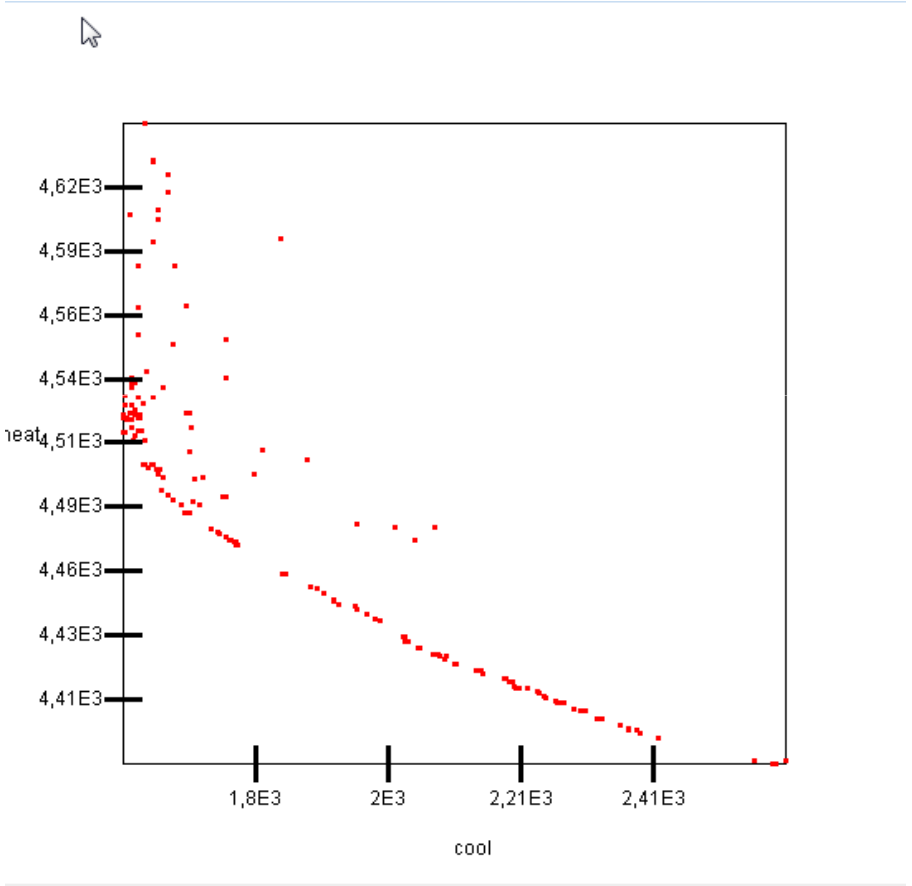
Example



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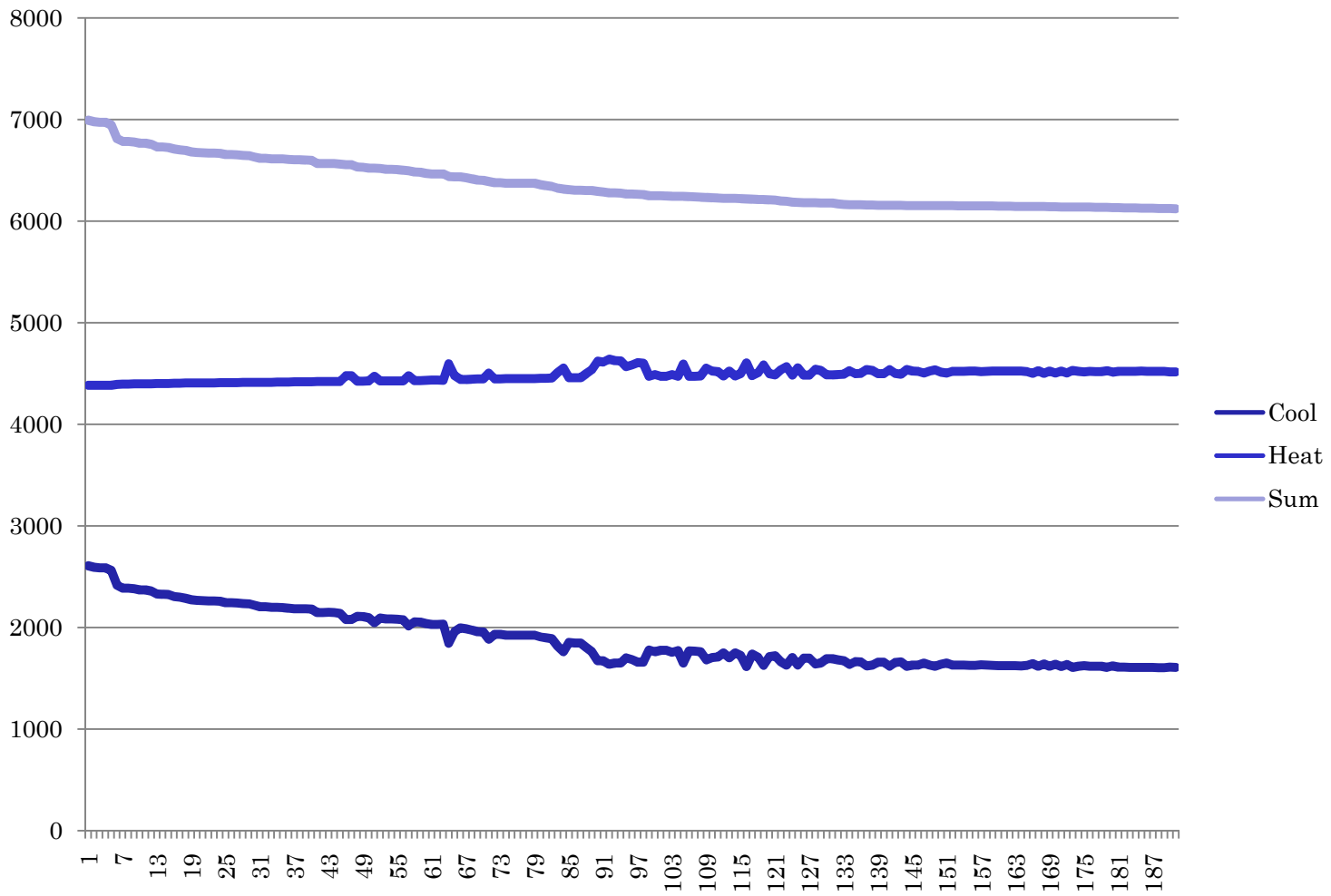
Example



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