Custom Energy Analytics, Or How I Stopped Worrying and Learned to Love Big Data

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VEIC

Vermont Energy Investment Corporation

Vermont Energy Investment Corporation

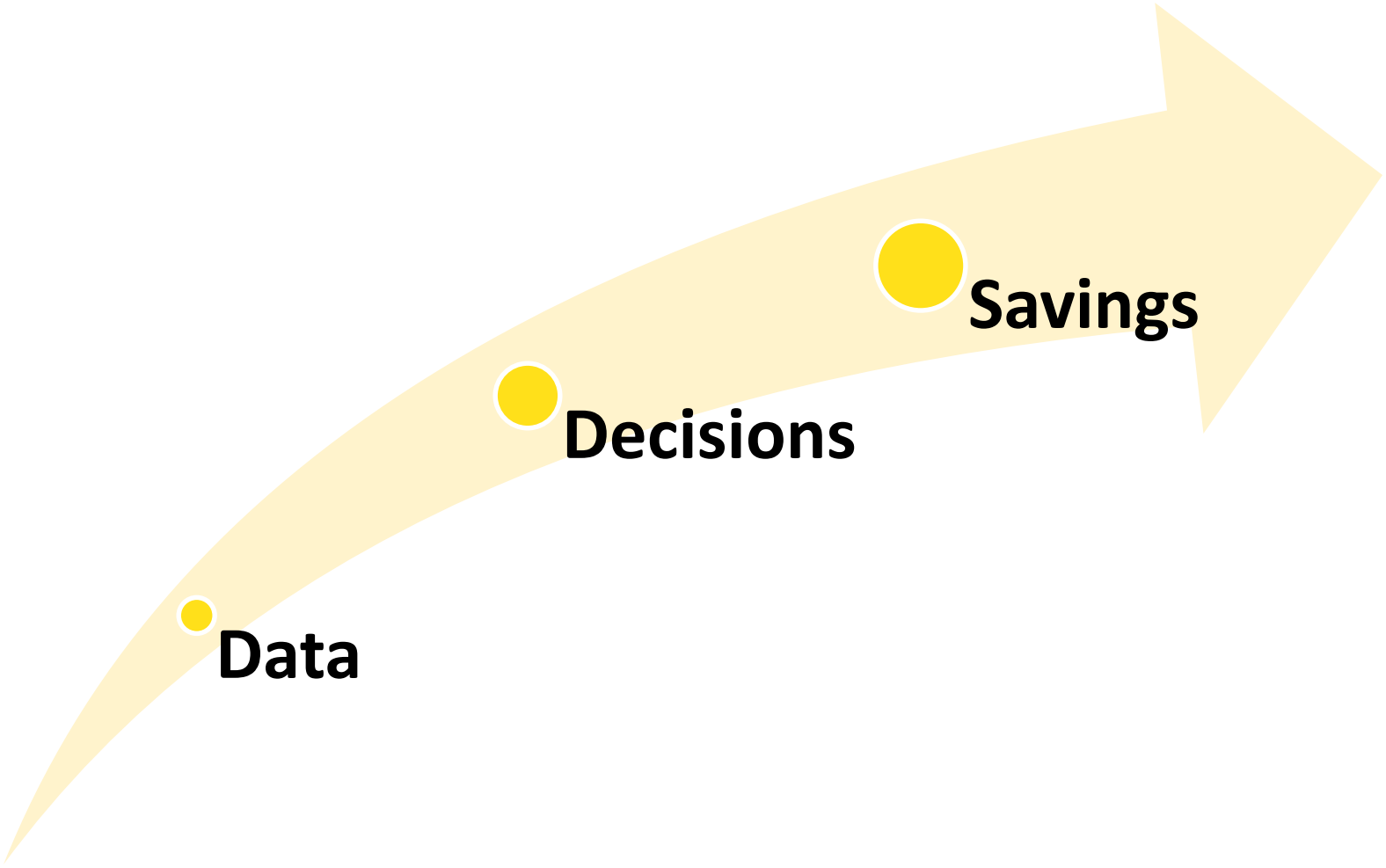
- Mission-driven nonprofit
- Over 25 years reducing economic, environmental costs of energy
- Energy efficiency, renewable energy & transportation
- Consulting & implementation
- 3 energy efficiency utilities

Efficiency Vermont

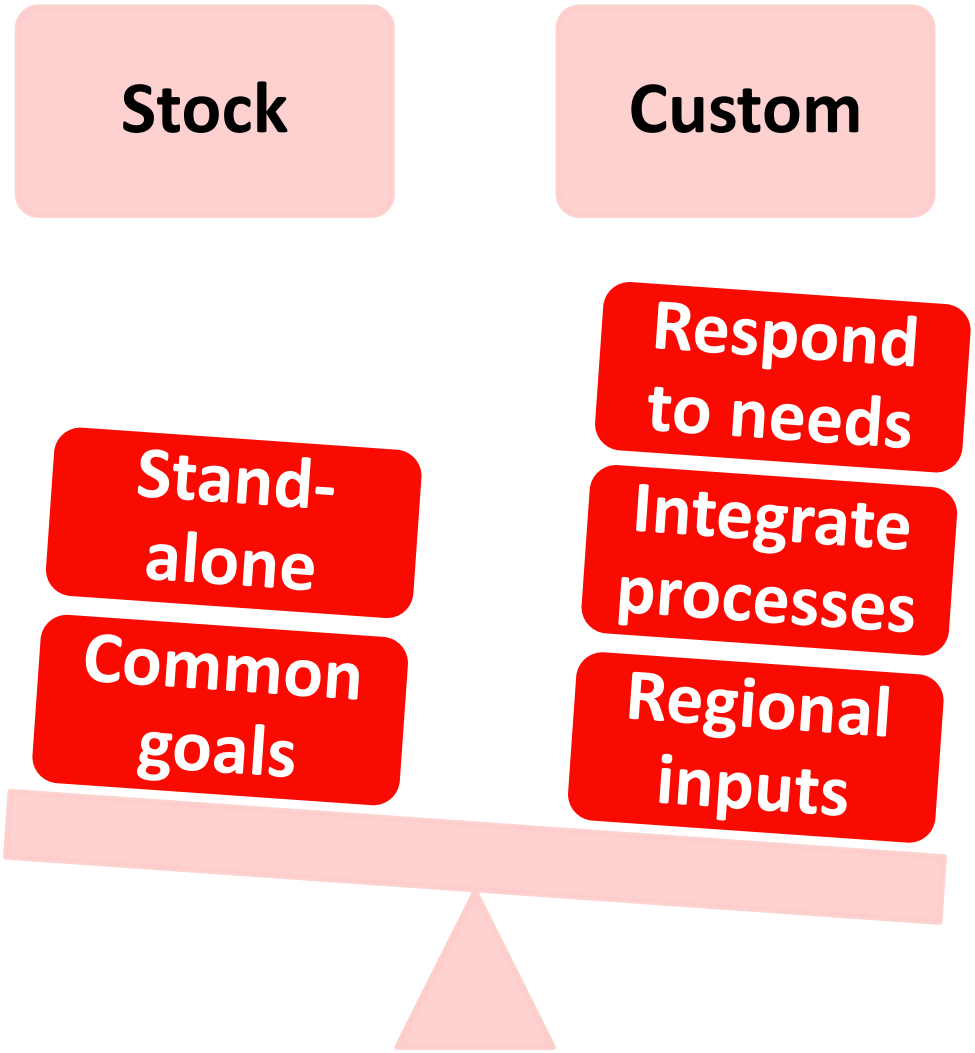
EFFICIENCY$MART

DC SUSTAINABLE ENERGY UTILITY

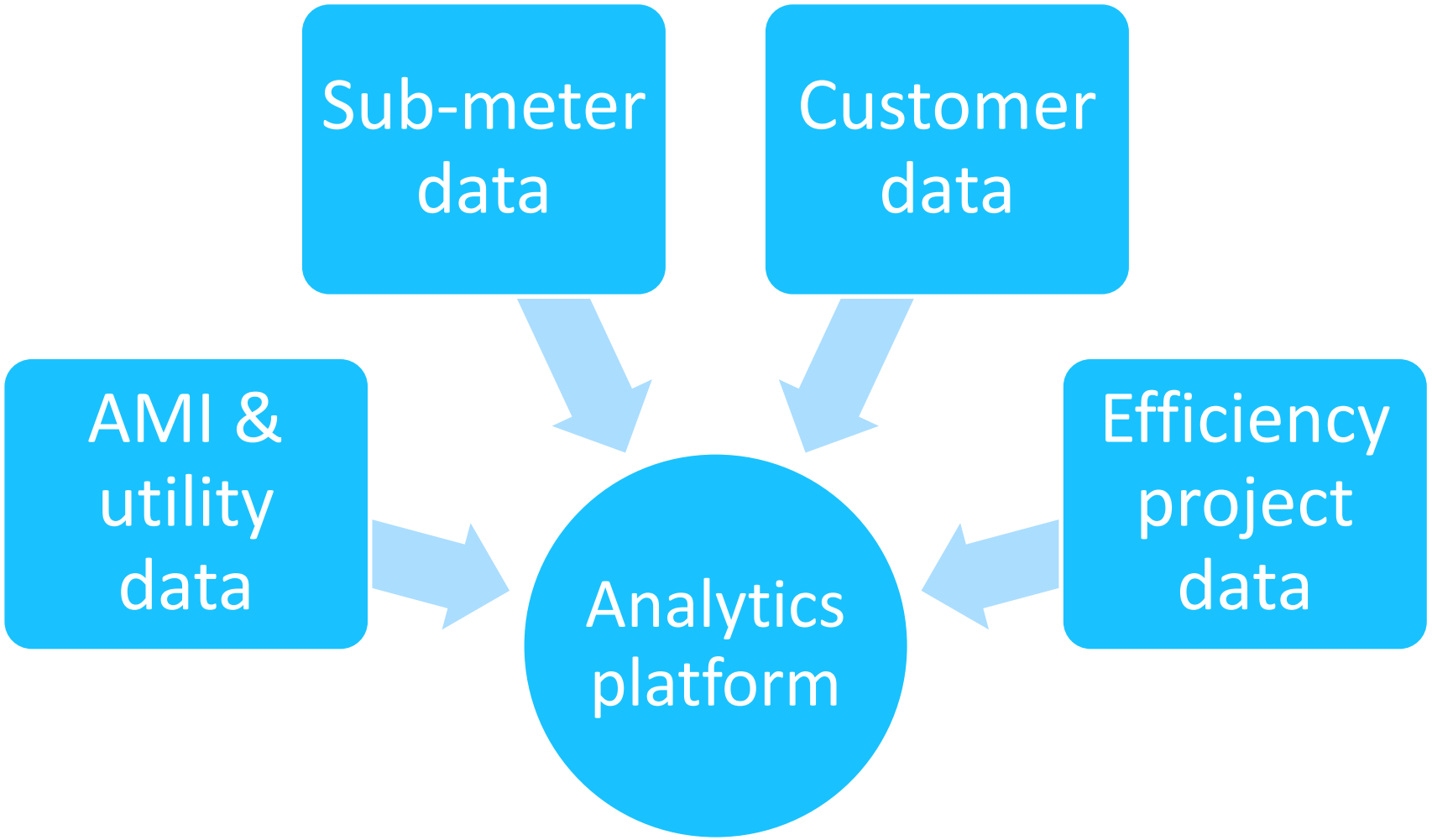
Data Strategy



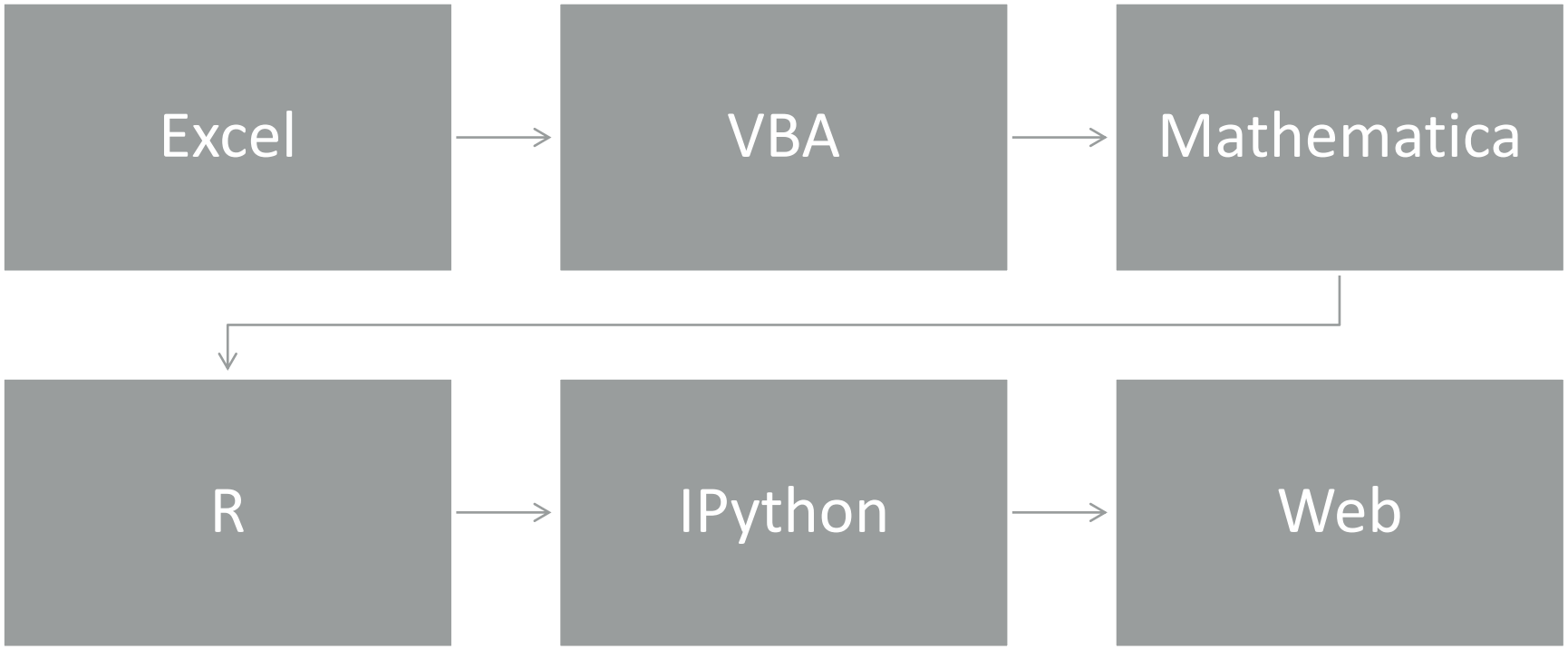
Build or Buy?


Stock
Custom
Respond to needs
Stand-alone
Integrate processes
Common goals
Regional inputs

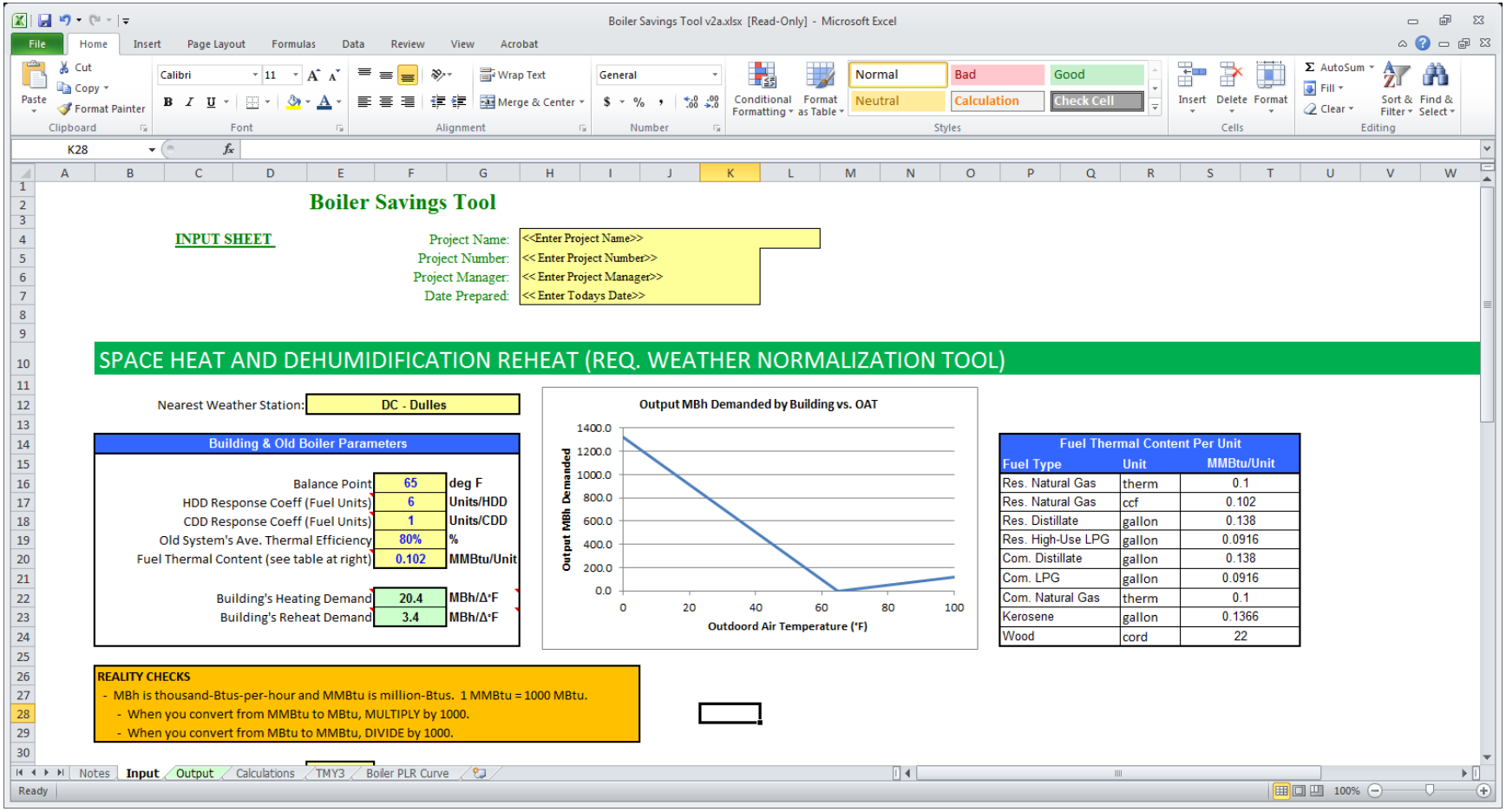
Connecting All the Data



History of VEIC Analysis Tools



What Can't Excel Do?



What Can't Excel Do?

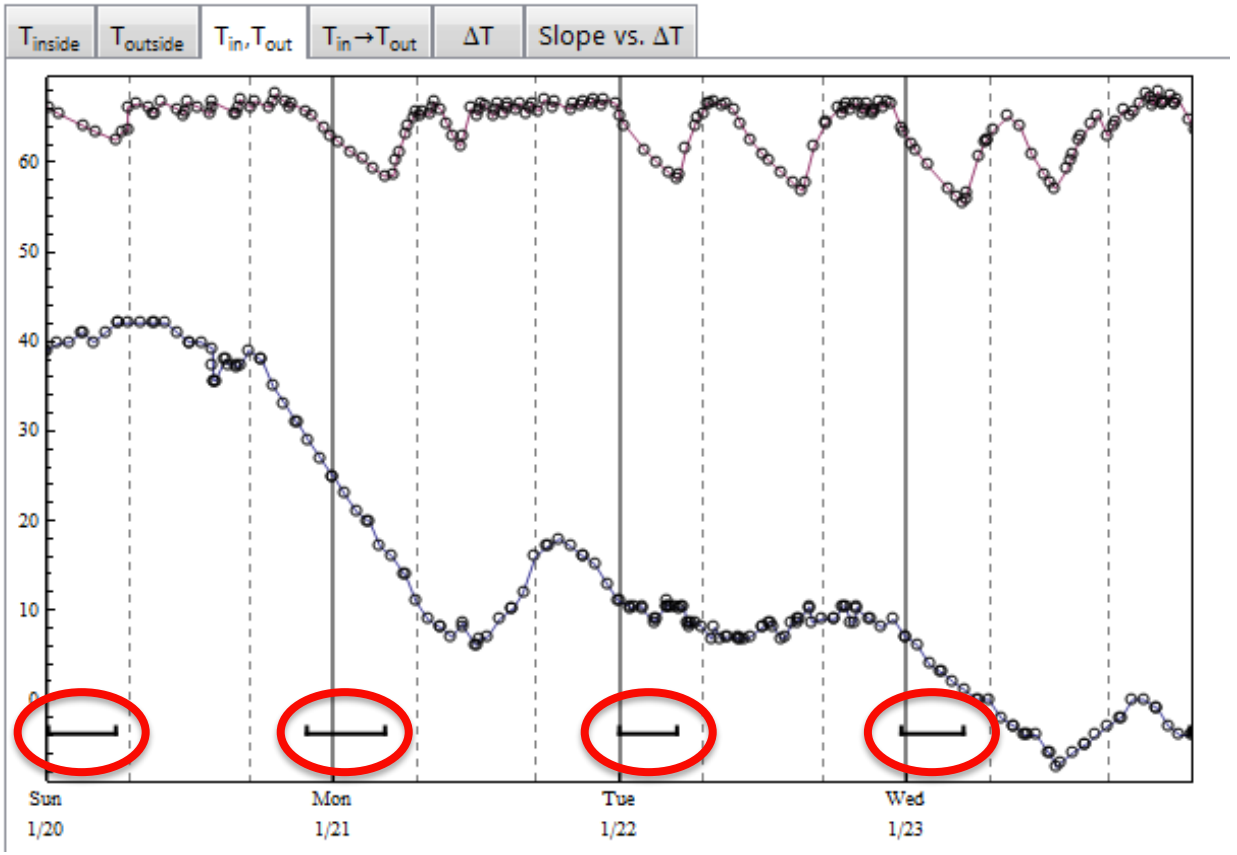
Pattern detection

Repeatable tasks – data flow integration

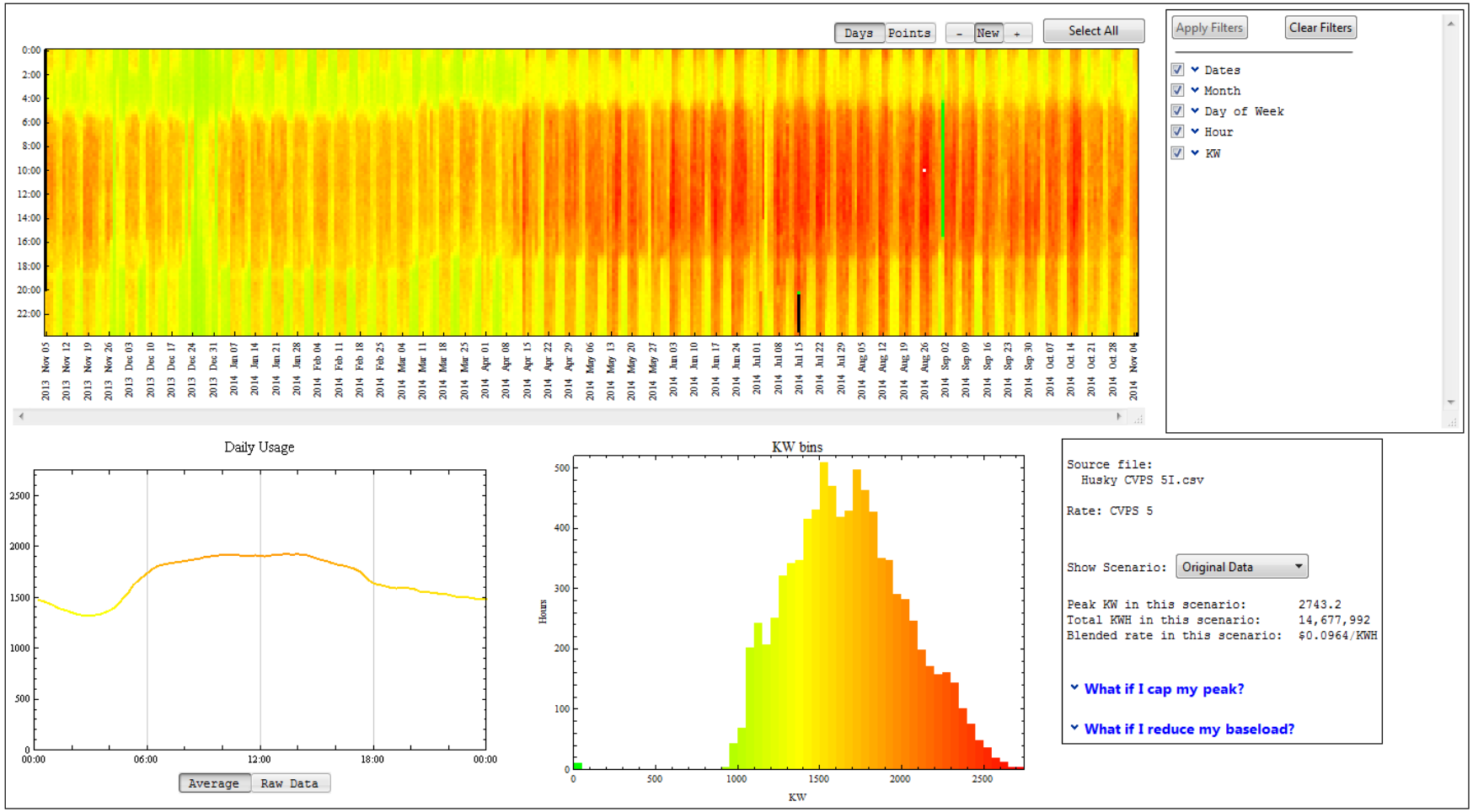
Modular code

Usable interfaces

Pattern Detection



Mathematica and the Great Leap Forward



IPython Notebooks

IP[y]: Notebook Data Warehouse chart export Last Checkpoint: Jul 02 14:42 (unsaved changes)

File Edit View Insert Cell Kernel Help

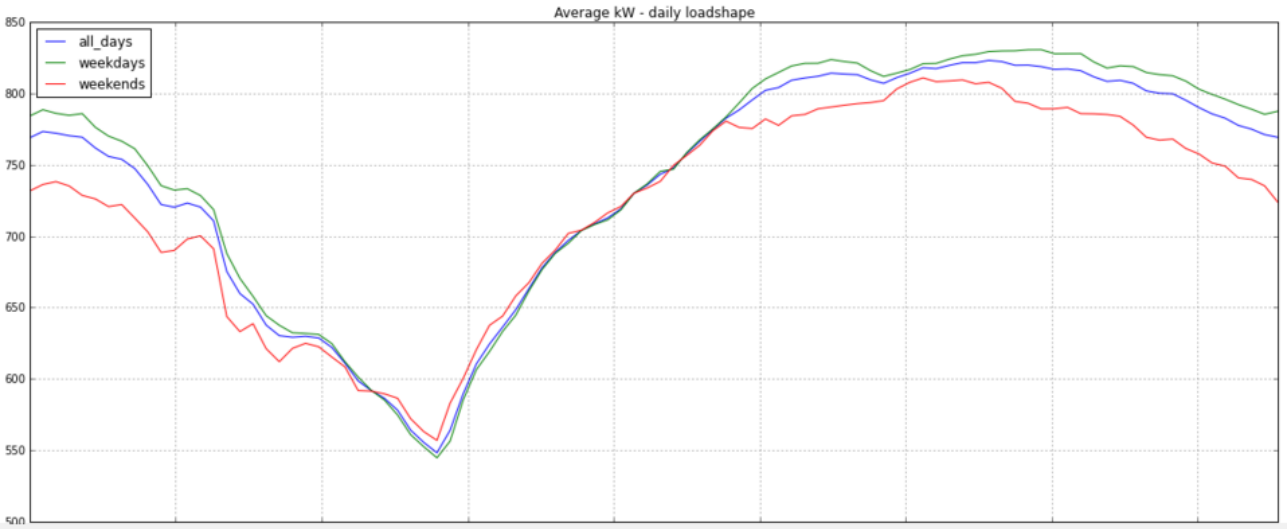
Code Cell Toolbar: None

In [43]:
```
usage_list.head()
```

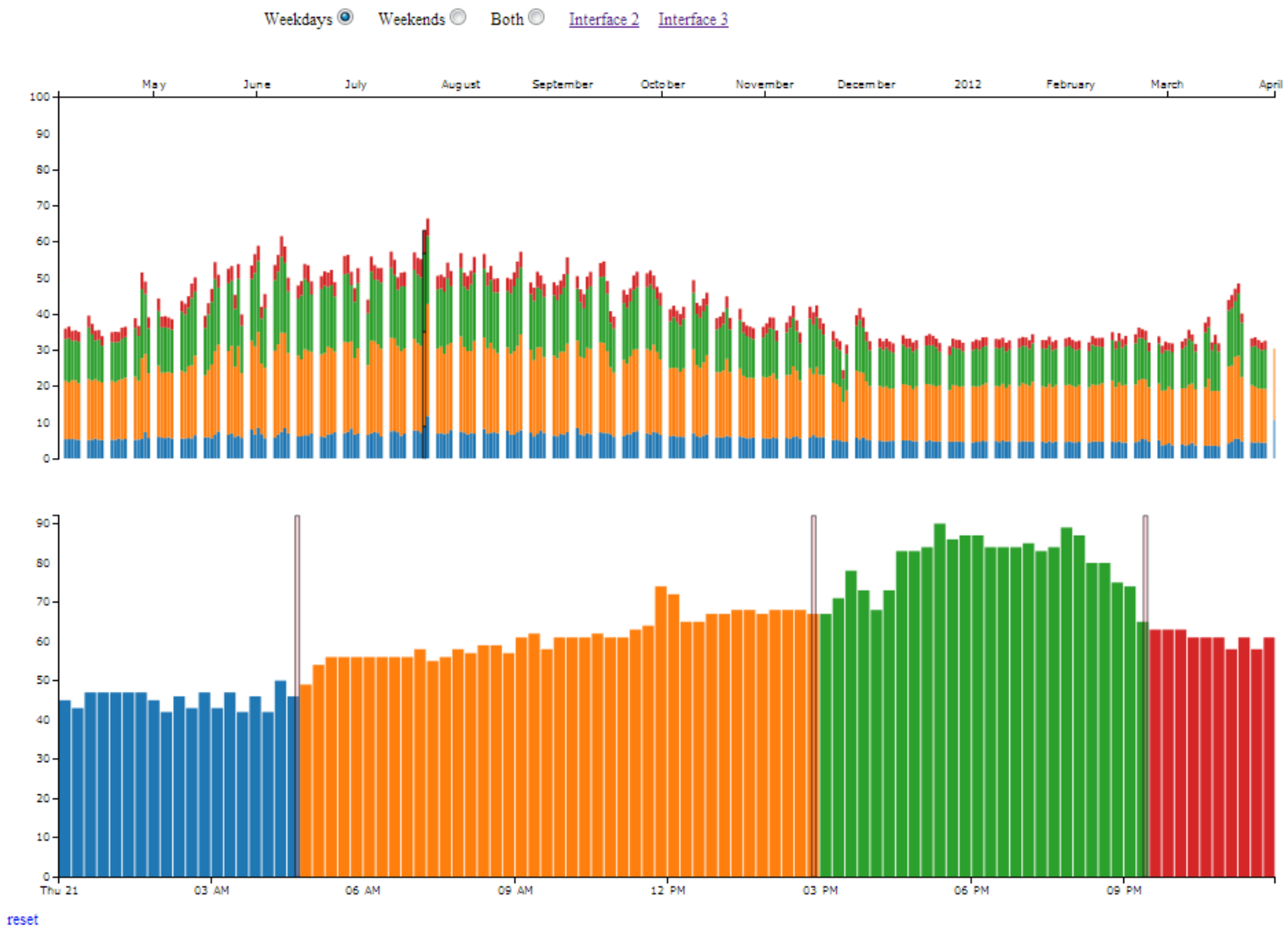
Out[43]:

		kWh	weekday_val	beginning_datetime	avg_kW
date_value					
2015-02-07	**23:45:00**	137.97	5	2015-02-07 23:45:00	551.88
2015-02-08	**00:00:00**	140.85	6	2015-02-08 00:00:00	563.40
	00:15:00	142.56	6	2015-02-08 00:15:00	570.24
	00:30:00	143.01	6	2015-02-08 00:30:00	572.04
	00:45:00	145.44	6	2015-02-08 00:45:00	581.76

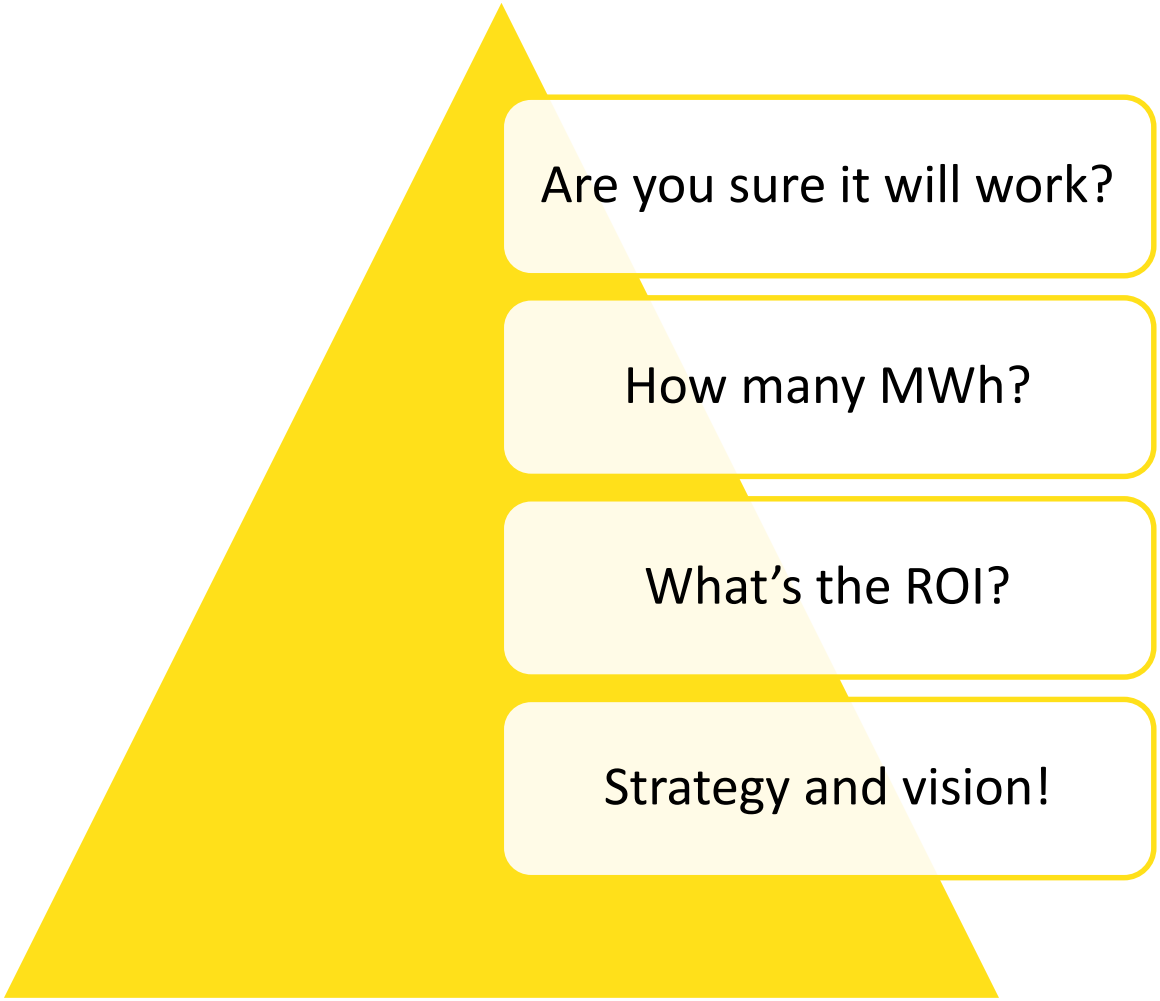
In [38]:
```
loadshapes.plot(figsize=[20,8], title = 'Average kW - daily loadshape')
plt.savefig(output_path + 'kW_loadshape_plot.png')
```



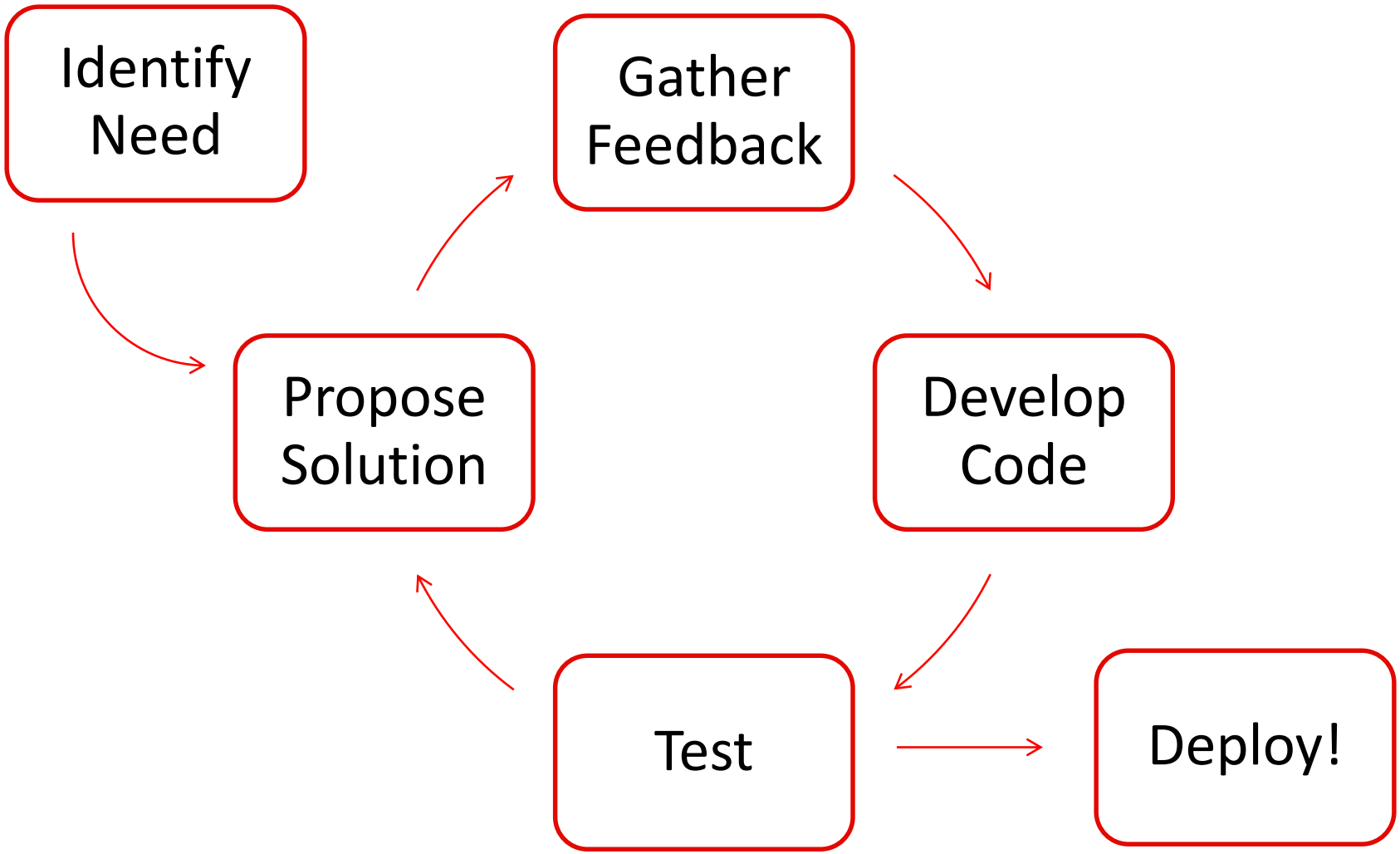
Taking Python to the Web



Selling It

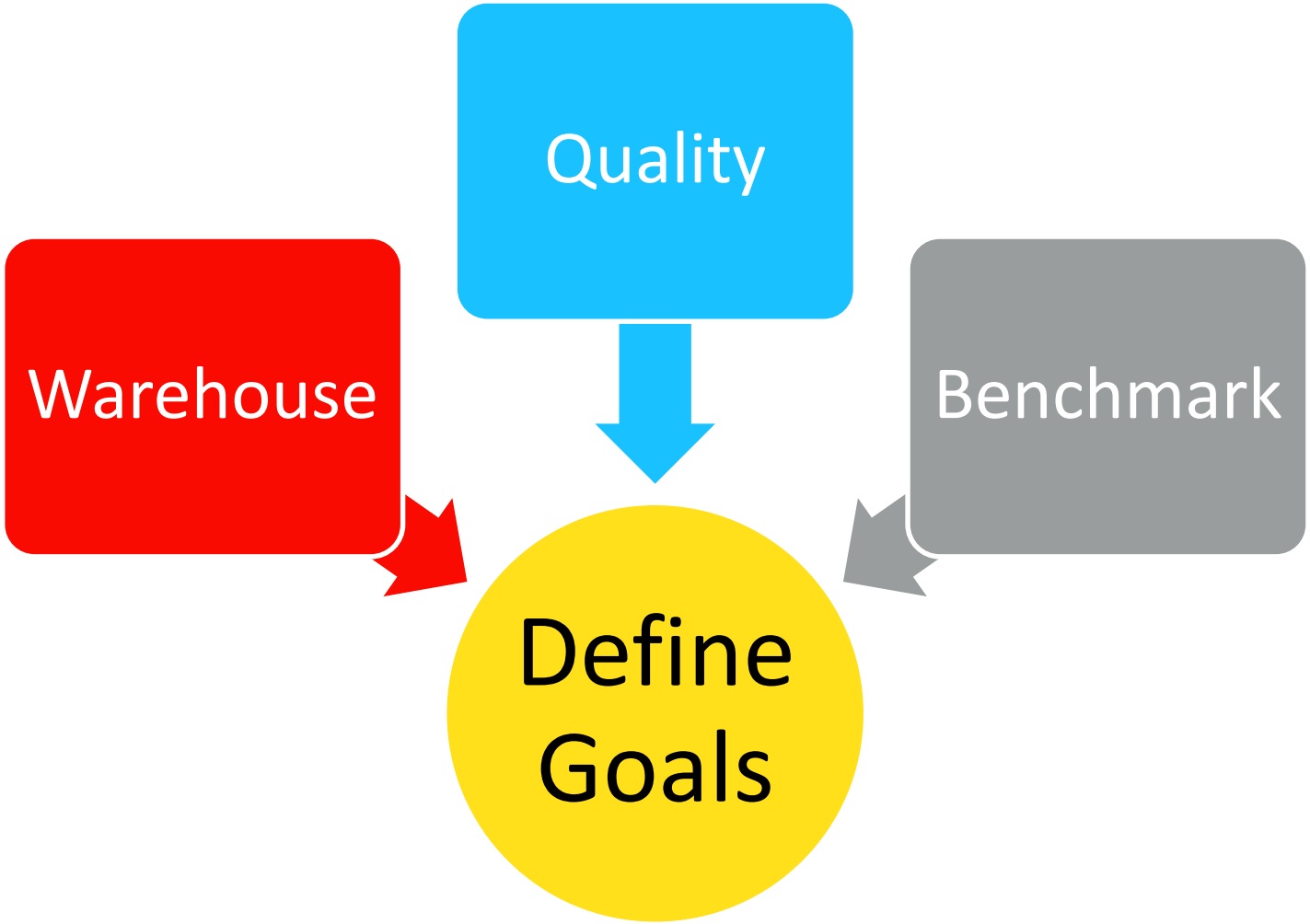

Are you sure it will work?
How many MWh?
What's the ROI?
Strategy and vision!

Getting It Done

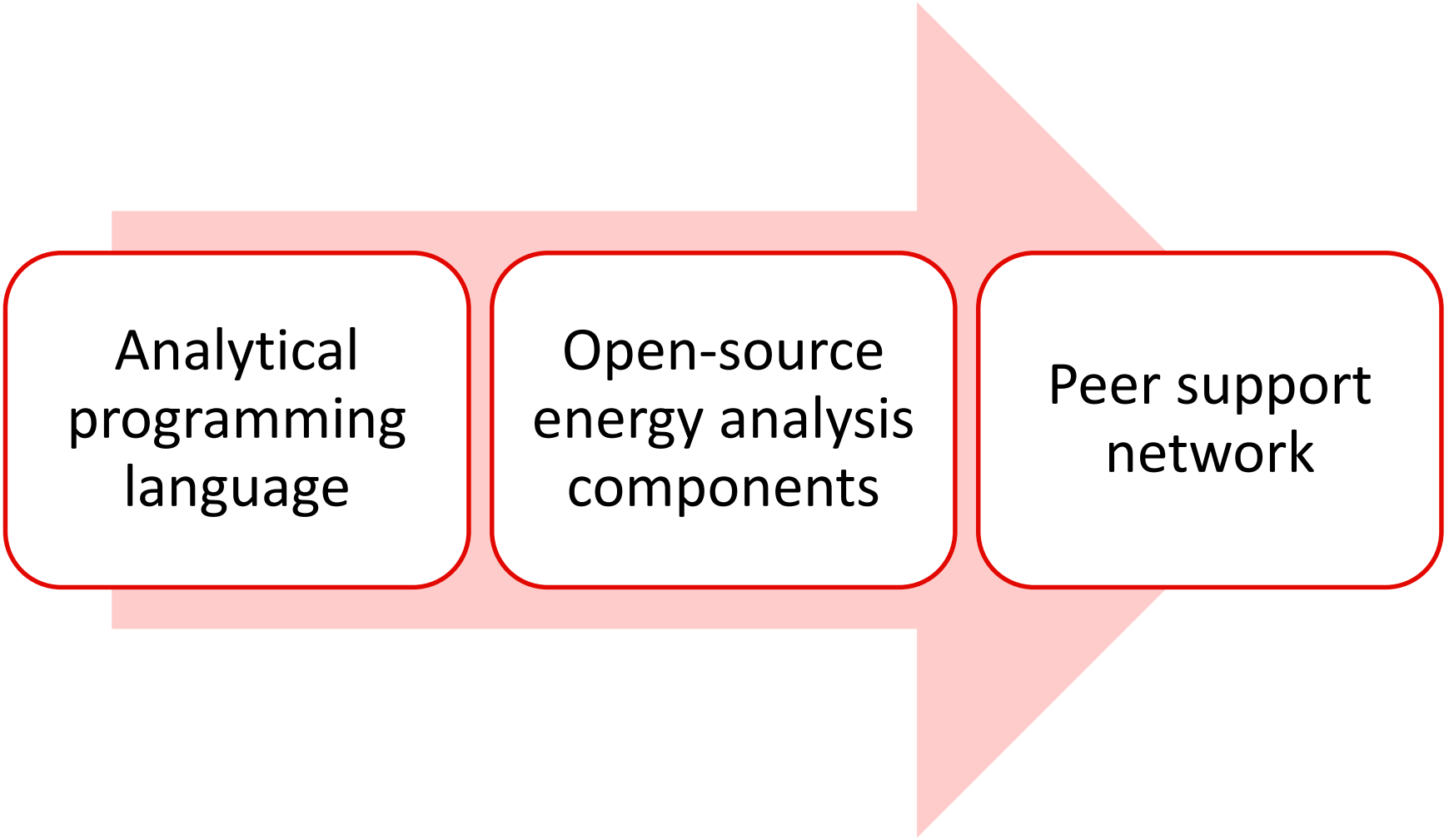


How to Deal With Big Data

How to Deal With Medium-sized Data

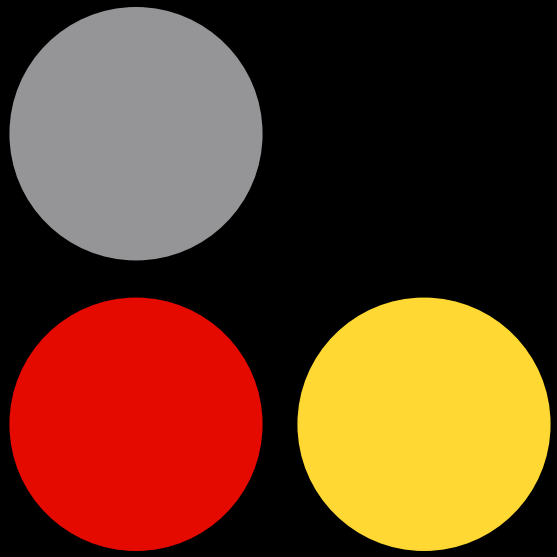


Your New Toolbox



Energy Data Geeks
of the World, Unite!

You have nothing to
lose but your chains!



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Vermont
Energy Investment
Corporation