Dates in ABS

Rudi Schlatte, UiO

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http://www.sirius-labs.no
The Project

Assistance in a Statoil Equinor internal project for optimizing supply vessel route traffic.

We start by modeling existing historic operational data and visualizing the results.
Process

- Excel → CSV
- (cleanup phase)

"90% of the work of a data scientist is cleaning up data."

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Process

- Excel $\rightarrow$ CSV
- (cleanup phase)
- CSV $\rightarrow$ SQL
- (cleanup phase)

"90% of the work of a data scientist is cleaning up data."
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• Excel → CSV
• (cleanup phase)

• CSV → SQL
• (cleanup phase)

• SQL → ABS
• ABS → JSON
• JSON + Javascript + HTML → graphics

“90% of the work of a data scientist is cleaning up data.“
The voyage of a date

Excel

<table>
<thead>
<tr>
<th>Voyage number</th>
<th>Boat Name</th>
<th>Installation ID</th>
<th>ATA - Date</th>
<th>ATA: Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>97917</td>
<td>FAR SUN</td>
<td>FBS</td>
<td>04.09.2017</td>
<td>00:15:00</td>
</tr>
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Database

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<tr>
<th>voyage_nr</th>
<th>leg_nr</th>
<th>port</th>
<th>arrival_datetime</th>
</tr>
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<tbody>
<tr>
<td>97917</td>
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ABS

```python
def String startdate() = "2017-09-03";

def List<Route> routes() = list[
    Route(97917, "FAR SUN",
        list[Leg(7, Time("22369621/2147483648"),
            list[Leg(1483, Time("6922273")])
```
The voyage of a date (pt.2)

JSON (from Model API)

```
{ "port": "FBS", 
  "time": 1.0104166665114462, 
  "voyage_nr": 97917, 
}
```
The voyage of a date (pt.2)

JSON (from Model API)

```
"port": "FBS",
"time": 1.0104166665114462,
"voyage_nr": 97917,
```

Javascript

```
22:20~$ node
> function to_highchart_date(startdate, offset) {
...   var days = Math.floor(offset);
...   var time = offset - days;
...   var date = new Date(startdate);
...   date.setDate(date.getDate() + days);
...   date.setTime(date.getTime() + time * 24 * 60 * 60 * 1000);
...   return date.getTime();
... }
> to_highchart_date("2017-09-03", 1.0104166665114462)
1504484099999
> new Date(to_highchart_date("2017-09-03", 1.0104166665114462))
2017-09-04T00:14:59.999Z
> 13 at 23:39
unde
```
• Write a script that generates ABS code from the content of the database.
ABS to JSON

- http://docs.abs-models.org/#-the-model-api
• Find a (Gnuplot | Javascript | Python | R | ...) library that can create the type of graph you are interested in
  • I insert static HTML and Javascript libraries into the compiled model, view it via embedded Model API web server
• Reformat the obtained JSON data in the way the library expects it as input
• Graphics!