Using the TOM Toolkit to Upgrade the Supernova Exchange

-Jamison Burke
Background: the Supernova Exchange (SNEx)

- Proto-TOM used by the SN group
  - Written by former post-doc
  - Web interface ([https://supernova.exchange](https://supernova.exchange))
  - Manages targets and observations
Background: the Supernova Exchange (SNEx)

Pros:

- SN group could not function without it
- Front-end ease-of-use facilitates international collaboration
- Battle-tested and working
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Cons:

- Lead developer left and (almost) all development stopped
- Intuitive front-end but un-intuitive back-end with no documentation
  - 868,310 lines of code in 2,256 files 😞
  - From-scratch mixture of Python, Javascript, and HTML
  - I still don’t know how it actually works
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Upgrade SNEx using the TOM Toolkit!
Present: SNEx 2 Video Walkthrough

https://www.youtube.com/watch?time_continue=1&v=scNkmQBjsgE
Future: Lines of Code Comparison

Old SNEx:

- 2,256 files
- 868,130 lines of code
## Future: Lines of Code Comparison

<table>
<thead>
<tr>
<th>Old SNEx:</th>
<th>SNEx 2.0:</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2,256 files</td>
<td>-45 files</td>
</tr>
<tr>
<td>-868,130 lines of code</td>
<td>-2,421 lines of code</td>
</tr>
</tbody>
</table>

[github.com/jfrostburke/snex2](https://github.com/jfrostburke/snex2)
Future: Assessment of TOM Toolkit/SNEx 2.0

Pros:
- Can start a new project extremely quickly
- Documentation (TOM + Django) helps a lot

Cons:
- Tough to interface with existing databases
- Missing some key features (but still in development)
  - No support for cadenced observations (yet)
  - Can’t plot spectral lines to ID supernovae (yet)

Old SNEx:
- 2,256 files
- 868,130 lines of code

SNEx 2.0:
- 45 files
- 2,421 lines of code
Interested in making your own TOM?
David is leading a hack session **Thursday, 2:00 PM**.

Thanks! Questions?
Contact: jburke@lco.global
Present: Development Journey

- Start with TOM documentation
- Weekly meetings with developers (David + Austin)
- Resources
  - TOM documentation is extremely useful and time-saving
  - Should've read the Django tutorial better before starting
  - Googlable problems
Present: Customization (TNS Targets)

- Asked for Austin’s help to add new page

<table>
<thead>
<tr>
<th>File modified</th>
<th>Purpose:</th>
</tr>
</thead>
<tbody>
<tr>
<td>custom_code/urls.py</td>
<td>Specify URL for new page</td>
</tr>
<tr>
<td>snex2/urls.py</td>
<td>Include custom urls</td>
</tr>
<tr>
<td>base.html</td>
<td>Add page tab to main navbar</td>
</tr>
<tr>
<td>custom_code/views.py</td>
<td>Filler text for new page</td>
</tr>
</tbody>
</table>
Present: Customization (TNS Targets)

- Asked for the internet’s help to get page to do what I want

<table>
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<tr>
<th>File modified:</th>
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</tr>
</thead>
<tbody>
<tr>
<td>models.py</td>
<td>Generate table in database to store TNS Targets</td>
</tr>
<tr>
<td>views.py</td>
<td>Mostly helper functions to output table entries cleanly</td>
</tr>
<tr>
<td>filters.py</td>
<td>Specify what and how to filter, also format the form</td>
</tr>
<tr>
<td>templates/tns_targets.html</td>
<td>Django magic python/html to fill in form and table</td>
</tr>
<tr>
<td>+sqlalchemy ingestion cronjob</td>
<td>Ingest targets into database</td>
</tr>
</tbody>
</table>
Present: Customization (TNS Targets)

Github: https://github.com/jfrostburke/snex2

def __init__(self, *args, **kwargs):
    super().__init__(*args, **kwargs)
    self.helper = FormHelper()
    self.helper.add_input(Submit('submit', 'Filter'))
    self.helper.layout = Layout(
        Div(
            Div(PrependedText('name', 'Name like'), css_class='col-md-4'),
            Div(PrependedText('source_group', 'Discovered by'), css_class='col-md-4'),
            Div('in_tess', css_class='col-md-4'),
            css_class='form-row'
        ),
        Div(
            Div(PrependedText('disc_mag', 'Discovery mag brighter than'),
                 placeholder='19'), css_class='col-md-6'),
            Div(PrependedAppendedText('last_non-detect within the last',
                                         'days', placeholder='5'), css_class='col-md-6'),
            css_class='form-row'
        ),
    )

Webpage output: