

# IDAES

Institute for the Design of  
Advanced Energy Systems

## Making IDAES Product Available

*Open Source Release Approach and Plans*

*IDAES Stakeholders Meeting*

Keith Beattie • May 2018



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# Overview

## IDAES Software Development, Release Approach and Plans

- Open Source: What it is, Myths and Why
- Product Feedback & Prioritizing Changes
- Change Control
- Release Roadmap
- Development and Support



# What Open Source is

*A long term product development philosophy based on access to a product's internals, collaborative support and public redistribution.*

- **Open: Free as in Freedom**
  - Not as in “Free Beer”
- **Open: Access**
  - Design, implementation, testing, support, documentation, roadmap
- **Open: Over Time**
  - Not dependent on vendor or funder
- **Open: To Reuse and Change**
  - Access to Internals
- **Open: For All**
  - Collaborative work



# Myths about Open Source

- **OS is Free:**
  - Time is still money
- **OS is not reliable or supported:**
  - Strong community => Solid Support
- **Unchecked changes:**
  - Maintainer, approvers & community
- **OS license are “viral”:**
  - Some are, not BSD
  - BSD is the “non license, license”



# Why Open Source?

*Insight, Influence and Access*

- **Wider audience:**
  - More testers, bugs fixed, feedback
- **Greater exchange of ideas**
  - Collaboration, community-oriented development
- **Research, Academic & Industry Friendly**
  - Use and results not restricted by license, no obligation
  - Enhanced Trust: can understand and validate methodology
- **Longer lived**
  - Not tied to one vendor/funder
- **Potentially more feature rich and stable**



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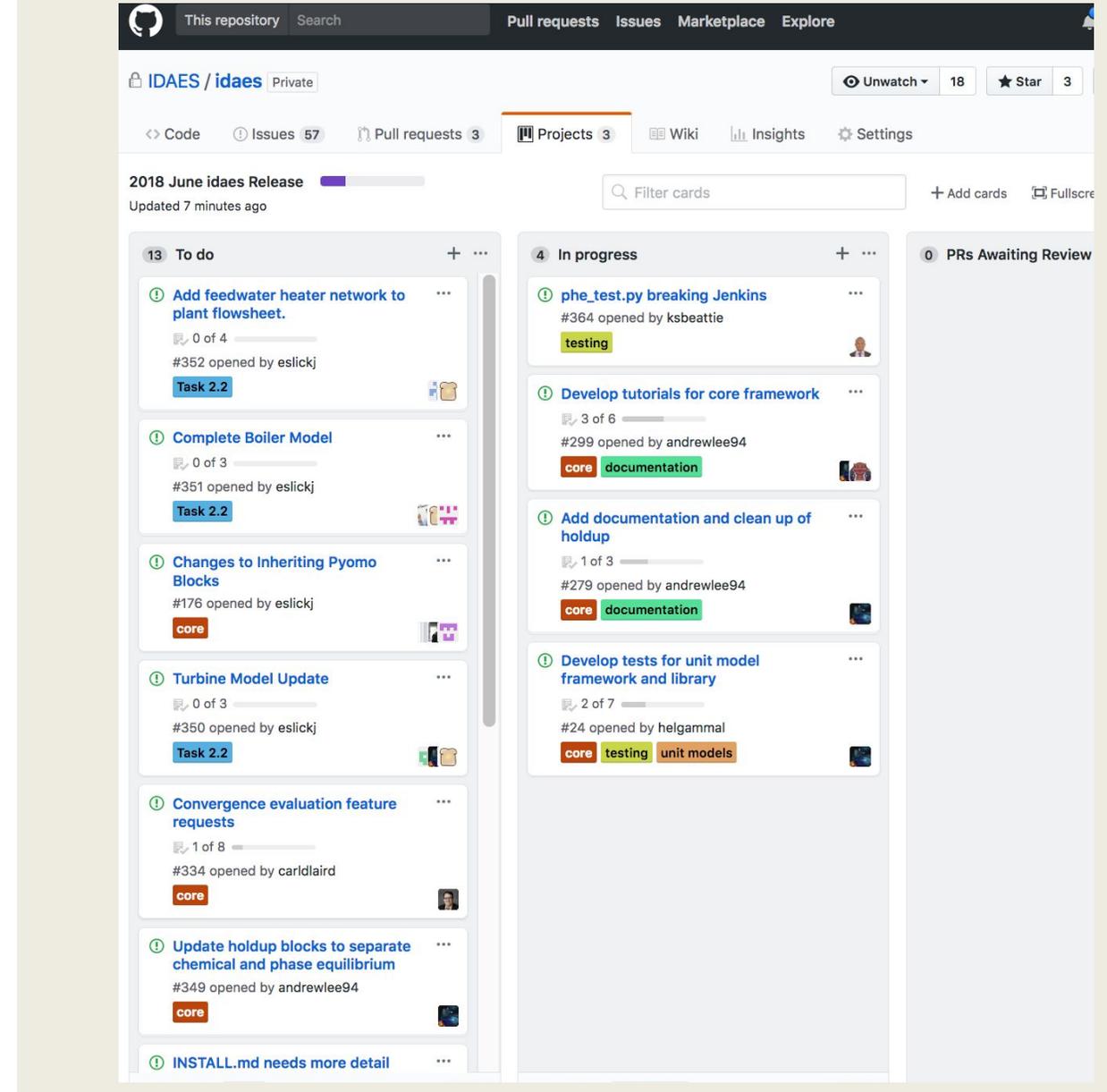
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# GitHub

- **Cloud-based service for managing software projects**
  - Free for open source projects
- **Provides tool for:**
  - Version Control: git
  - Issue, Milestone & project management
  - Automate build & test systems
  - Community, user, team management
- **Interested Users can view and influence development**



# Change Control

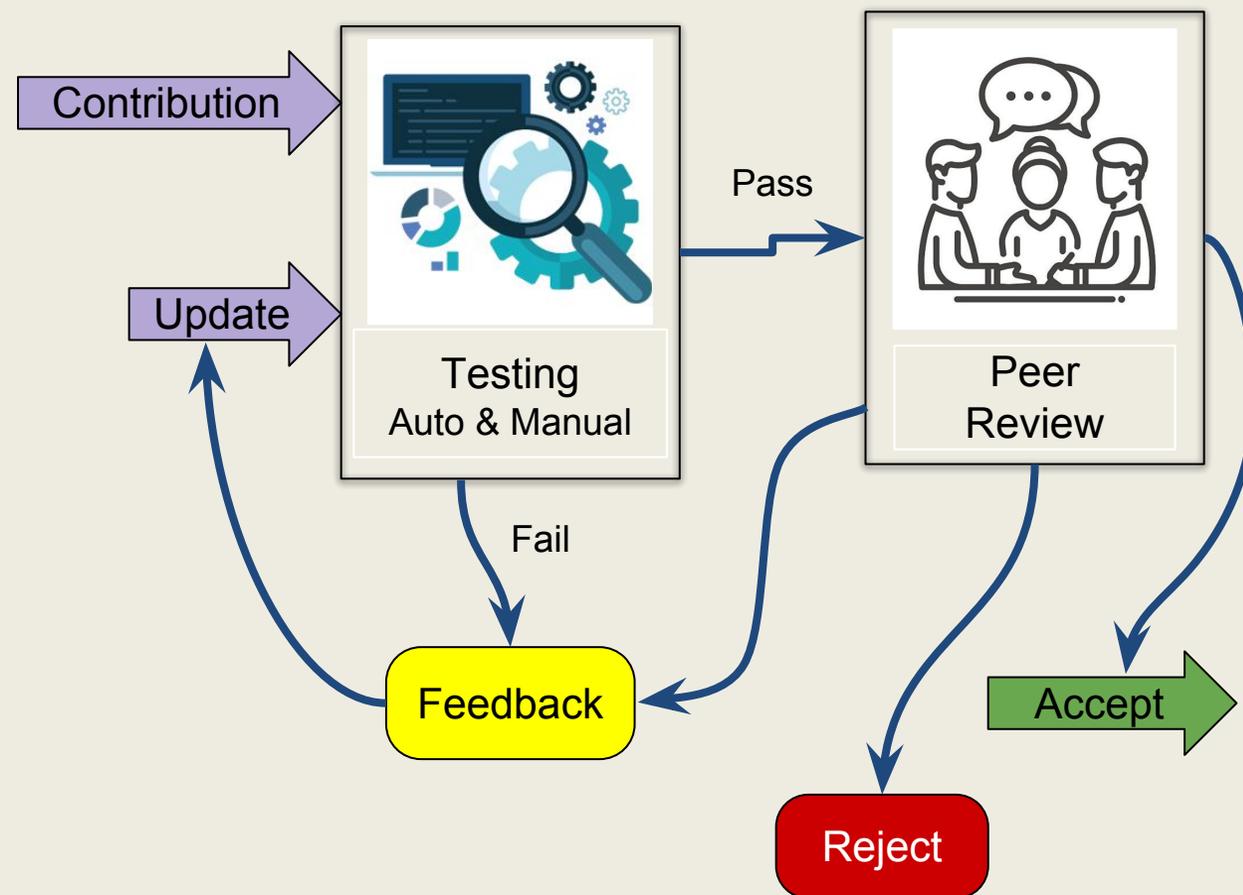
## All Changes Tested and Reviewed

- Currently being used by dev team

## 2 Tiers within IDAES (idea stolen from Pyomo)

- `idaes/contrib/`
  - Starting place for contributions & experimental ideas
  - When mature, moves into `core`
- `idaes/core/`
  - The heart of IDAES
  - Higher bar for accepting contributions
  - More complete testing, etc.

## Two-Stage Review Process



# Development and Support

## Release Schedule

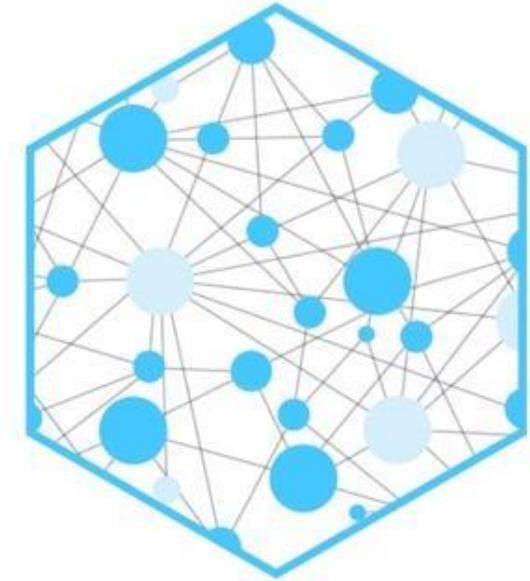
- Weekly internal developer telecons
- Monthly internal releases
- Public releases starting end of year
- Date driven now, feature driven later

## IDAES/Pyomo

- IDAES builds on Pyomo
- Separate projects, teams overlap
- Coordinated development
- IDAES driving new Pyomo features

## Engagement

- Students, post-docs, faculty, researchers, stakeholders
- **Industry** feedback!



# Release Roadmap

## Limited Distribution: June 2018

- Core Framework (*Andrew Lee*)
- Modular flowsheeting framework, Process systems engineering
- Unit Modeling Library (*Andrew Lee*)
- Data Management Framework (*Dan Gunter*)
- Thermo-Physical Properties, General Cubic Equations of State (*Andrew Lee*)
- Coupled to Pyomo's model transformation tools
- Initial alamopy aka ddm-learning (*Zach & Marissa*)
- Tutorial on using basic framework
- No need for proprietary solvers to start. Ipopt, initially.

## Open Source Public: Dec 2018

- Improved documentation & tutorials
- Improved model initialization
- Initial implementation of parallel models (*Dan, Carl & Qi*)
- Initial steady-state plant model (*Anthony Burgard*)

## Future

- **Your** feedback and suggestions!



# IDAES Web Site <https://idaes.org>

***Central location for  
IDAES project news and  
software***

No Fees  
No Signatures  
Your Feedback!

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ABOUT RESEARCH SOFTWARE TEAM PUBLICATIONS NEWS & EVENTS

Exploring new concepts

Improving efficiency, reliability, and life expectancy of existing plants

Accelerating innovation

## Next Generation Multi-Scale Modeling & Optimization Framework to Support the US Power Industry

The **National Energy Technology Laboratory's** (NETL's) Institute for the Design of Advanced Energy Systems (IDAES) was formed in 2016 to develop new advanced Process Systems Engineering (PSE) capabilities to improve the efficiency and reliability of the existing fleet of coal-fired power plants while accelerating the development of a broad range of advanced fossil energy systems.

Continue Reading



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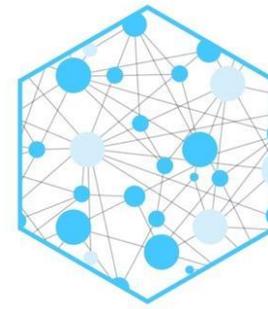


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# Thank you!

***IDAES Stakeholders Meeting***

Keith Beattie • May 2018

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