Grid Optimization (GO) Competition

Challenge 1 Conclusion and Outreach Event

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Overview

- ARPA-E Intro (Lane Genatowski and Kory Hedman)
- GO Team Speakers (Steve Elbert, PNNL; Carleton Coffrin, LANL)
- External Speakers
  - Kwok Cheung, GE
  - Ed Rothberg, Gurobi
  - Patrick Panciatici, RTE-France
- Invited Entrant Presentation and Panel
  - Cosmin Petra, LLNL; Andres Wachter, Northwestern; Andy Sun, GaTech; Kyri Baker, CU-Boulder
- Future of GO (ARPA-E Richard O’Neill)
- Poster Session and Networking
GO Competition Challenge 1 Sponsors

- Software Sponsors:

- Industry Data Sponsor
Beginning...

• Need: open access data
  • ARPA-E GRID DATA
  • 2016 - Present
  • Repositories: PNNL DR POWER: GridBright’s BetterPlace
  • Dataset Teams: PNNL, NREL, UIUC/TAMU, UMich, Wisc

• Need: better ways to compare approaches
  • ARPA-E GO Competition
  • Fall 2018 - Present
  • Proposal Entrants: ANL, Bigwood, Case Western, Clemson, CU Boulder, GERS, GaTech (Meliopoulos), GaTech (Sun), LBNL, Lehigh, LLNL, Northwestern, NREL, The Optimization Firm, Pearl Street, Penn State, UC Berkeley, Utah, UT Arlington
  • Open Entrants: BAT, Global Optimal Tech, GravityX, MSU/Yong Fu, Nebraska, OKReactors, SDSU
Need...

- Software vendors
- Additional entrants
- More industry collaboration
Future…

• Dr. Richard P. O’Neill taking over the GO Competition
  • Real Time Markets(?)

• Goal: more industry entities willing to provide data for evaluation

• Goal: heavy industry engagement, partnerships, testing, then deployment
Competition Divisions

Challenge 1: Final Event

- **Division 1** (Real-Time, 10 Min): Lowest Cost, Top 10: $100k
- **Division 2** (Offline, 45 Min): Lowest Cost, Top 10: $100k
- **Division 3** (Real-Time, 10 Min): Performance Profiles, Top 10: $100k
- **Division 4** (Offline, 45 Min): Performance Profiles, Top 10: $100k

$100k per top ten placement for eligible entrants
Prize/Grant Winners

- Lawrence Livermore National Laboratory (UC Merced) $400k
- Lehigh University (Northwestern and Georgia Tech) $400k
- Georgia Tech-Andy Sun $400k
- BAT – Individual: Andrew Telyatnik (not prize eligible)
- GravityX – Individuals: Nathan Lemons, Hassan Hijazi $400k
- University of Colorado, Boulder (Carnegie Mellon) $400k
- Northwestern University (Artelys, Columbia University) $400k
- Pearl Street Technologies, Inc. $400k
- Mississippi State University $300k
- ARPA-E Benchmark: LANL (not prize eligible)
- Global Optimal Technologies, Inc. $200k
- Penn State University $100k
Summary

• Legacy grid software systems inhibit emerging technologies, innovative solutions

• The GO Competition provides a platform for open and fair evaluation of innovative grid software

• The competition starts with an existing problem that is core to most grid software -- SCOPF
  • ARPA-E Hard
  • Could save beyond $10B in costs per year

• Mission: start here and continue to break ground to bring innovative grid software solutions to practice

• Be an enabler for emerging grid technologies
Questions? Feedback?

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