New Developments in BOPTEST

IBPSA Project 1 Expert Meeting Montreal (Virtual)

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Updates Since Rome

- **Test Case Repository**
  - Three Project 1 test cases merged to master and improved summary documentation in testcases/README.md
  - Specify dependent library commit for unit testing
- **Specify Start Time with Warmup Period**
  - Allows starting a test at arbitrary time and improved state warm-up (*API change:* "/reset" → "/initialize")
- **Quick-Start Documentation**
  - Repo root README.md updated to recent changes
- **Added CO2 to KPI Calculator**
  - IAQ discomfort calculated in ppmh
- **Zone Operative Temperature in Thermal Comfort KPI**
  - Allows for radiant systems to use operative temperature

Updates Since Rome

- **Specific Zone Designation in Signal Read Block**
  - Allows for multi-zone thermal comfort and IAQ KPI calculation and internal gain and occupancy forecasting
- **Unused Columns in CSV Data Omitted**
  - Allows test case developers to only have to provide data for columns needed in test case
- **Header Lines in CSV Data**
  - Test case developers can add documentation comments to CSV data files
- **Demonstrate Customized KPI Calculation**
  - Process illustrated for customized KPI calculation
- **BOPTEST-Service Development Branch**
  - For development of service architecture from NREL/Alfalfa

New/Outstanding Issues

- **Reported large memory usage (#240):**
  - Over time of running simulation
  - When calling `/results` API, which returns measurement trajectory
  - Running simulations in sequence without restarting docker container
- **Python3 and JModelica (#146)**
  - JModelica no longer supported open-source by Modelon
  - Latest version requires Python 2
  - Testing with open-source PyFMI (Python 3) package has issues related to ‘SuperLU’ dependency for some FMU models

New/Outstanding Issues

- Price scenario API (#240)
- Weather station (#234)
- Forecasts after one year (#239)
- Normalize energy KPI by floor area (#237)
- Signal exchange blocks as arrays (#190) and combine read/write (#193)
- Error handling, logging, and user messaging (#73)
- Users Guide and Tutorial, Test Case Development Guide, Test Case Documentation (#214, #245)
- KPI measuring actuator travel
- Enhanced documentation for test cases, particularly system schematics and embedded control documentation

Future Thinking (FY21)

- **Meta-Data**
  - Provide controllers with input/out tagging and meta-data schemes such as Haystack
  - Prototype the needed implementation in Modelica models and pass-through to BOPTEST API
- **BOPTEST-Service**
  - Architecture for proposed web-hosted instance of BOPTEST
  - Leveraging development for previous NREL/Alfalfa project
  - Development on “boptest-service” branch