FlexMeasures Technical Steering Committee

February 16th 2023

Agenda
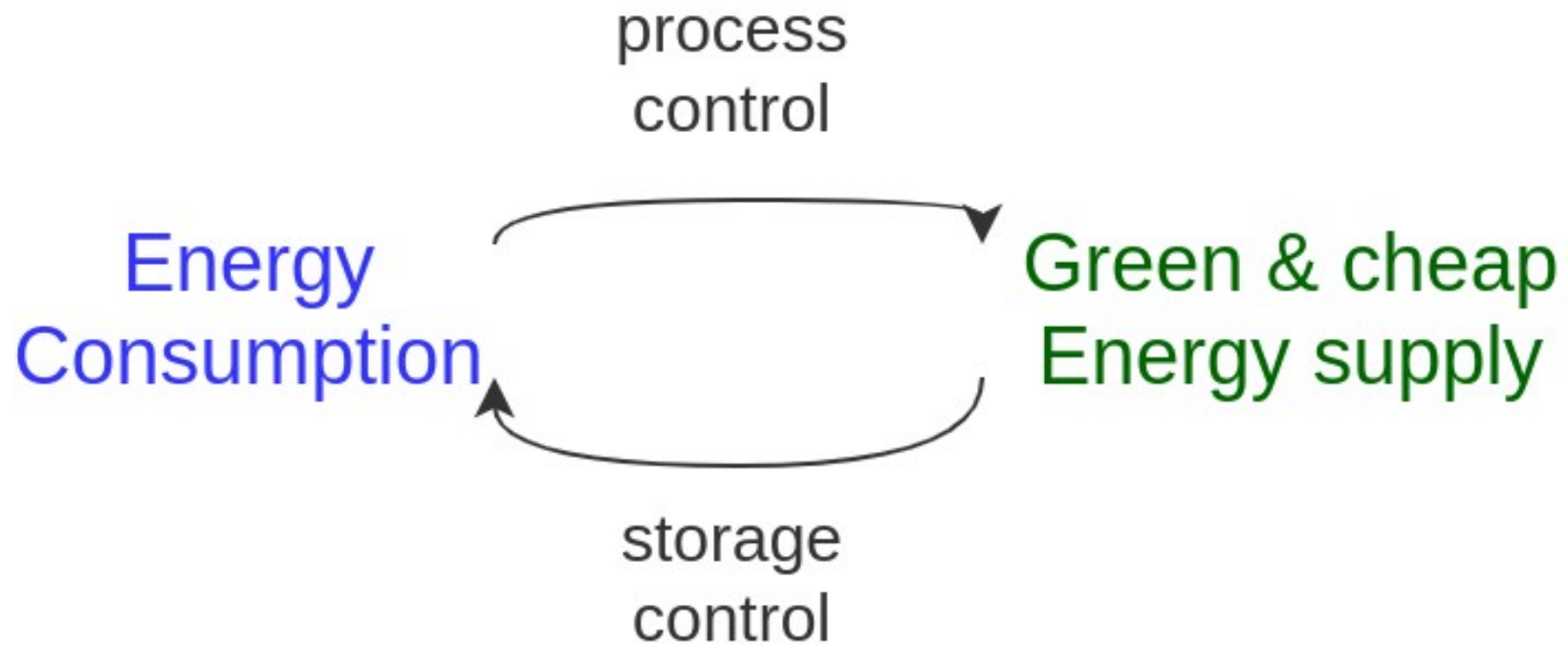
- Welcome & Short introduction to FlexMeasures

- Heat optimization

- Roadmap

- Q&A

FlexMeasures is the intelligent & developer-friendly EMS to support <u>real-time energy flexibility apps</u>.

Go green in daily operations, stay in control.

- Smart industry
- Smart city

The matching challenge

FlexMeasures - simple

Use case: SteerOnCO₂ at Rijnland Water Board

We help water board Rijnland to only run their centrifuges for sludge dehydration when the CO_2 footprint in the grid is low.

Use case: SteerOnPrice & SteerOnSolar at V2G@Home

We optimize (dis)charging of Nissan Leaf cars with Wallbox chargers to save costs and use solar power, with zero user interaction needed.

Heat optimization

On the roadmap due to ongoing Seita projects:

- A first buffering algorithm

- Support for the S2 Flex Standards (by TNO)

- HomeAssistant integration

Roadmap – Big goals

- [2022 - mature] Model & pilot e-mobility optimization (price-based, V2G)
- [2023 - started] Model & pilot heating optimization (price-based, also with heat buffers)
- [2023] Congestion support (e.g. for DSOs in GOPACS)
- [2023] Sector coupling (optimize e-mobility and heating in one site)
- [2024] VPP (optimize multiple sites towards one market)

https://flexmeasures.io/roadmap/

Roadmap – projects

- [Q1 2023] **More powerful algorithm configurations**, to support more use cases and more custom situations (e.g. research). For scheduling, as well as for forecasting. [work has started in Q4 2022]
- [Q2 2023] **KPIs support** (e.g. reporting of daily totals), customizable
- [Q2 2023] **Scheduling algorithm for heat buffering**
- [Q2 2023] Allow for **annotations on time series**, e.g. to model processes and operator feedback. [work has started in 2022]
- [Q4 2023] **Build out the flexibility modelling,** by supporting Fraunhofers Energy Flexibility Data Model (EDFM) and TNO's S2

- [tbd] **Authorization model for allowing "super-accounts"** to manage other accounts (e.g. for ESCos) or add data to them (e.g. meter data companies).
- [tbd] **Smarter monitoring.**
- [tbd] **Scheduler compatible with ShapeShifter** (based on USEF flex trading protocol)
- [tbd] **Better plotting support** (via API/vega-lite), for plugins to define their own plots which are then made available in the FlexMeasures API (usable in custom frontends).
- [tbd] Better tooling to **work well at scale** (e.g. support load balancing, db sharding etc). Also using Docker to scale up more flexibly (e.g. in Kubernetes).

Q&A

- What are you working on?

- What is unclear?

Resources – do get in touch!

- https://github.com/FlexMeasures/flexmeasures/
- https://www.flexmeasures.io
- https://lists.lfenergy.org/g/flexmeasures
- https://twitter.com/flexmeasures
- LF Energy Slack: #flexmeasures

Developer support

- I need help with <u>integrating real-time data</u> and continuously <u>computing new data</u>

- It's hard to <u>correctly model data</u> with different sources, resolutions, horizons and even uncertainties

- I want to <u>build new features quickly</u>, not spend days solving basic problems

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Architecture vision: Out-of-the-box use cases vs power users

Out of the box – the 90 % cases

- Battery/EV + solar (self-consumption)
- Battery/EV + solar + congestion (also grid support)
- Solar + Heat pump (self-consumption & comfort)
- ...
- FM: Pre-made schedulers, Setup wizard, excellent tutorials

Power users – bring your own

- Simulations (researchers, investment decision moments)
- New services (e.g. startups) with custom scheduling
- Microgrids
- Industry
- FM: Examples, support

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FlexMeasures - integration