



PowerMatcherSuite
Transactive Smart Energy

Electrification of Everything!





How can we Integrate More Renewables?



Without causing Massive Congestion in our Grids



2023 the Lights will Go Out!



More Copper?



Or more Information?



How to leverage Flexibility?

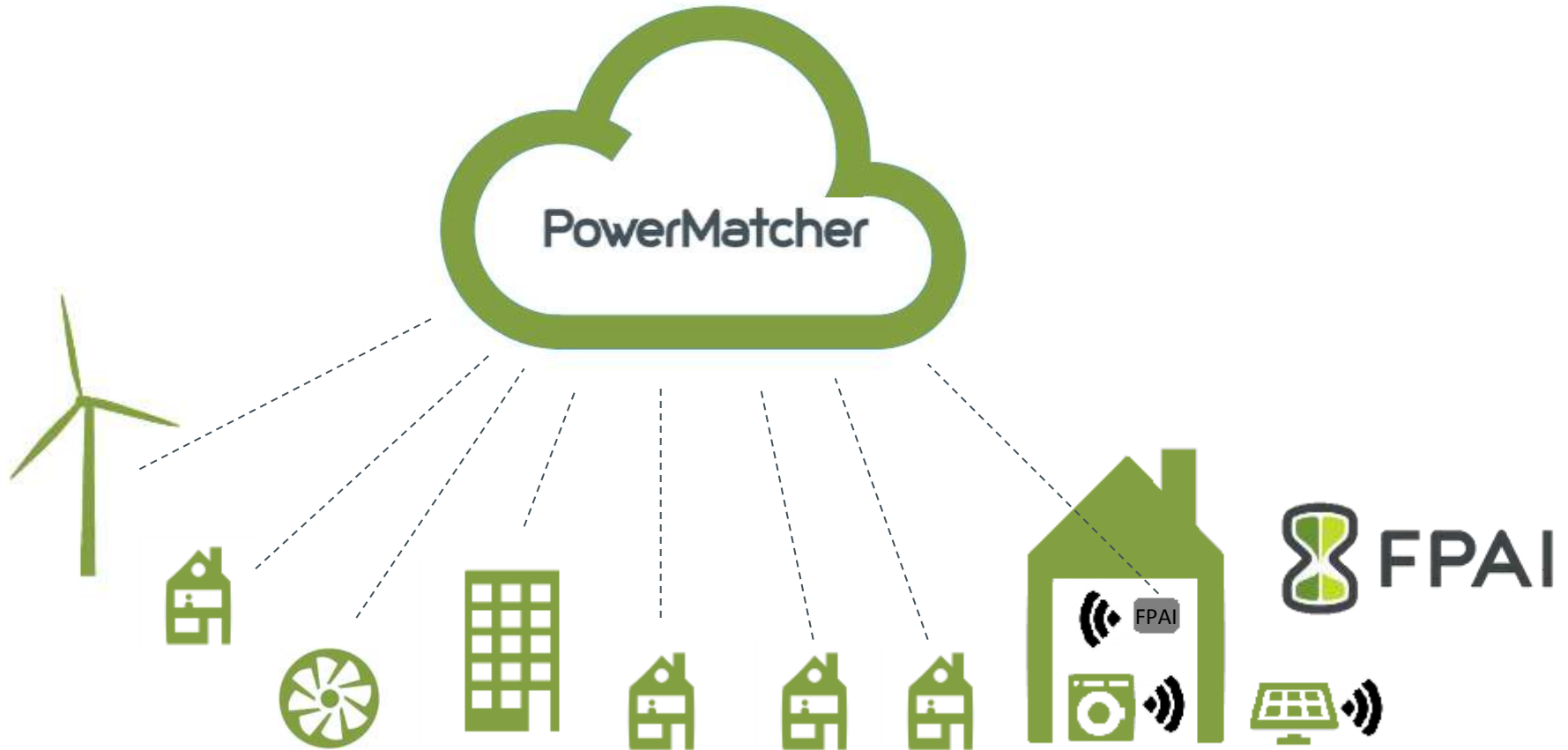


The PowerMatcher Suite is The Solution



PowerMatcherSuite
Transactive Smart Energy

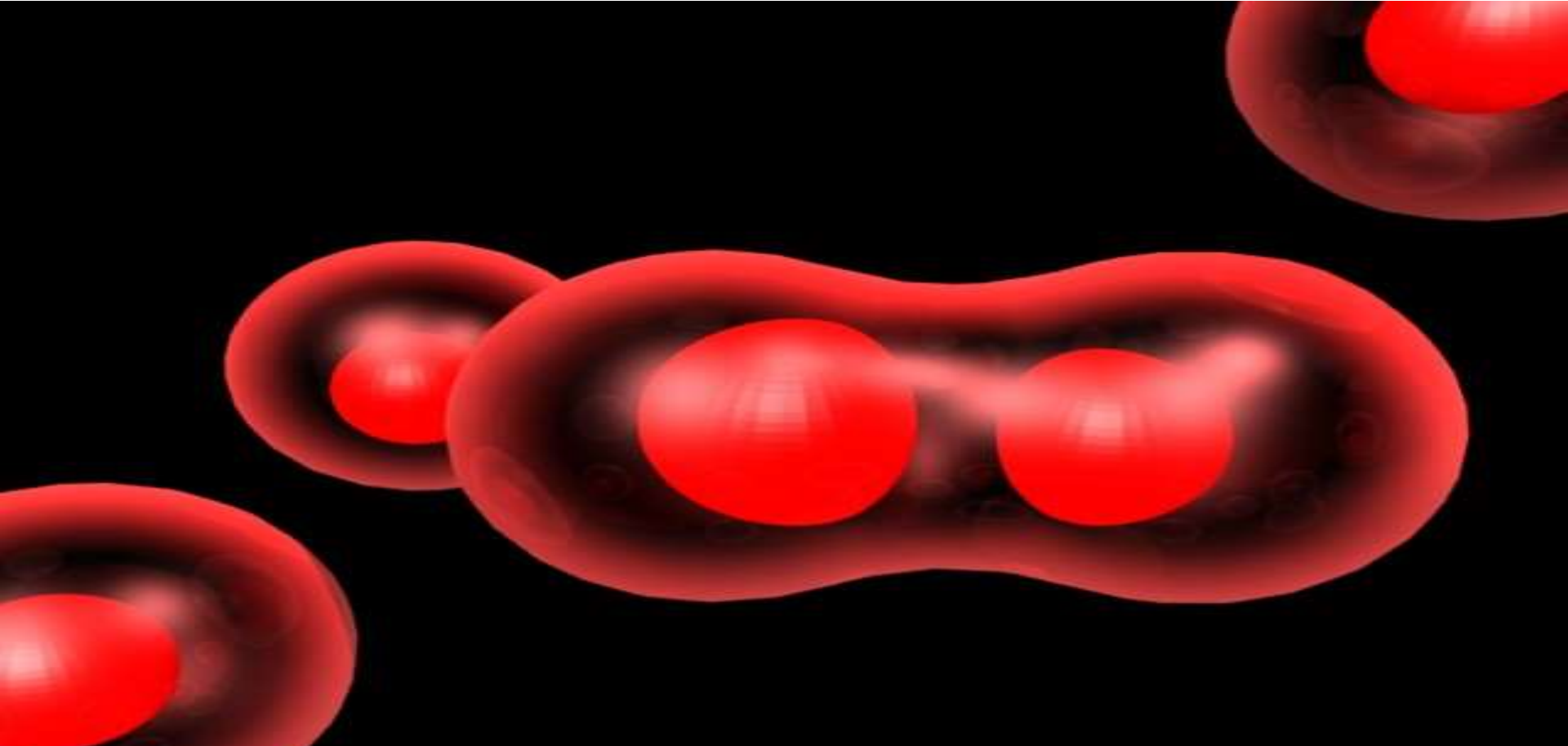
The Suite comprises 2 Technologies



Customer in Control!



Highly Scalable!



Localized Congestion Management



Cost Effective






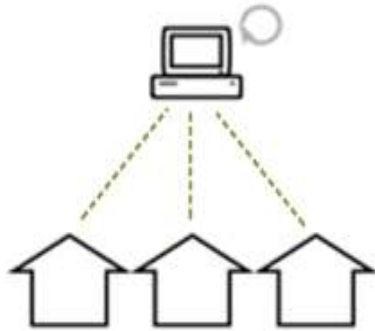
Transactive Smart Energy

Equilibrium

The background image shows a sunset over a body of water with mountains in the distance. In the foreground, there are three stacks of dark rocks on a beach. The stacks are of varying heights and are silhouetted against the bright orange and yellow sky. The word 'Equilibrium' is written in white text on the left side of the image.

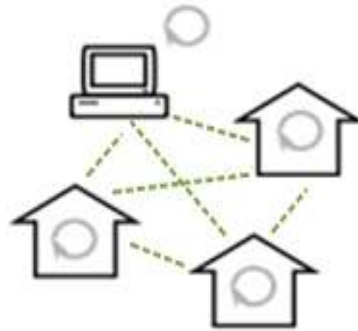
Agent Based Solution

-  Aggregator
-  Local DR device
-  Optimization



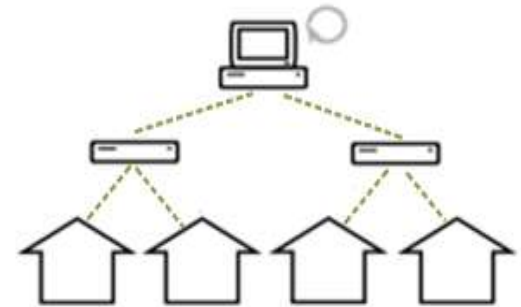
Centralized Optimization

- Limited scalable
- Centrally imposed
- Not cost effective



De-centralized Optimization

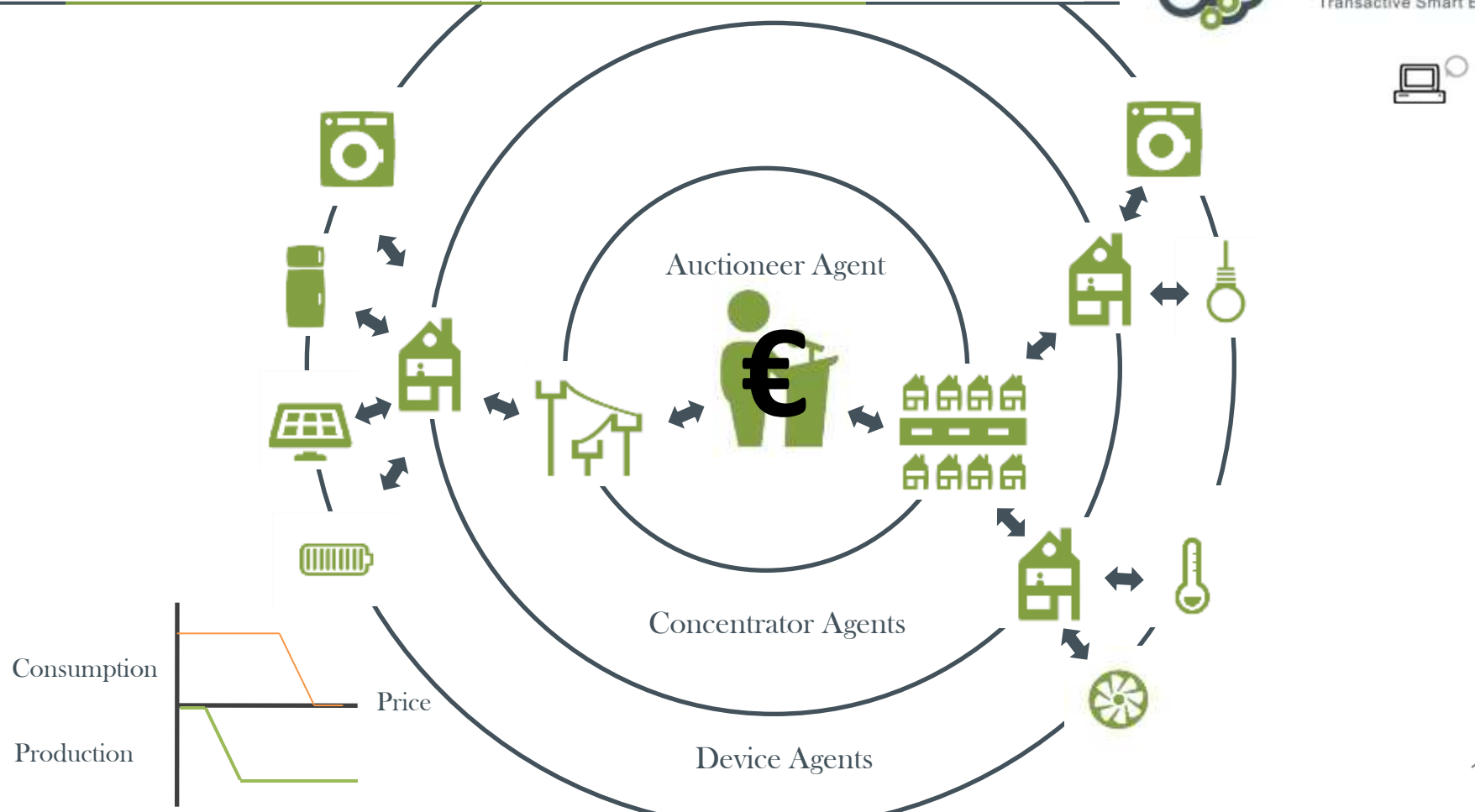
- A lot of communication
- Locally “complex”



Agent Optimization

- Subset aggregation
- Simple optimisation
- Very scalable

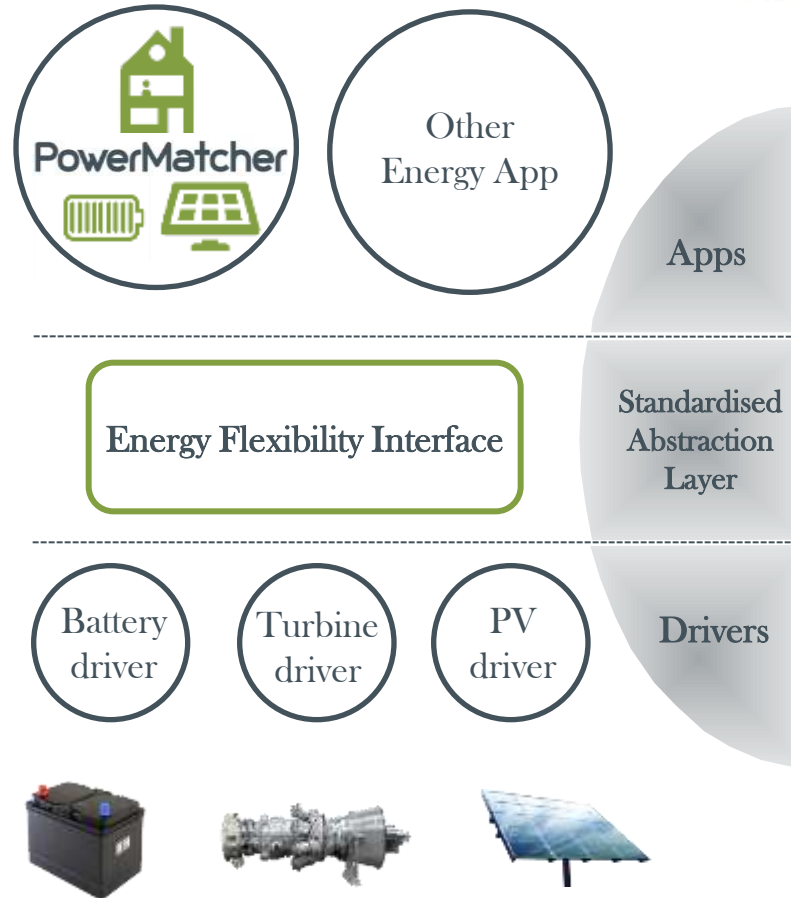
How PowerMatcher Works



Households, Commercial and Industries



Flexible Power Application Infrastructure



client

In more detail: FPAI User Interface

DEMONSTRATION SCENARIO

2. Timeshifter

Loaded scenario [2. Timeshifter]

SMARTPV PANEL

Supply at 12:04:29
Power Output 0 Watt



TIME SHIFTER SIMULATION

Program No Program Selected
Start Before None
Mode Idle



POWERMATCHER CONTROLLER

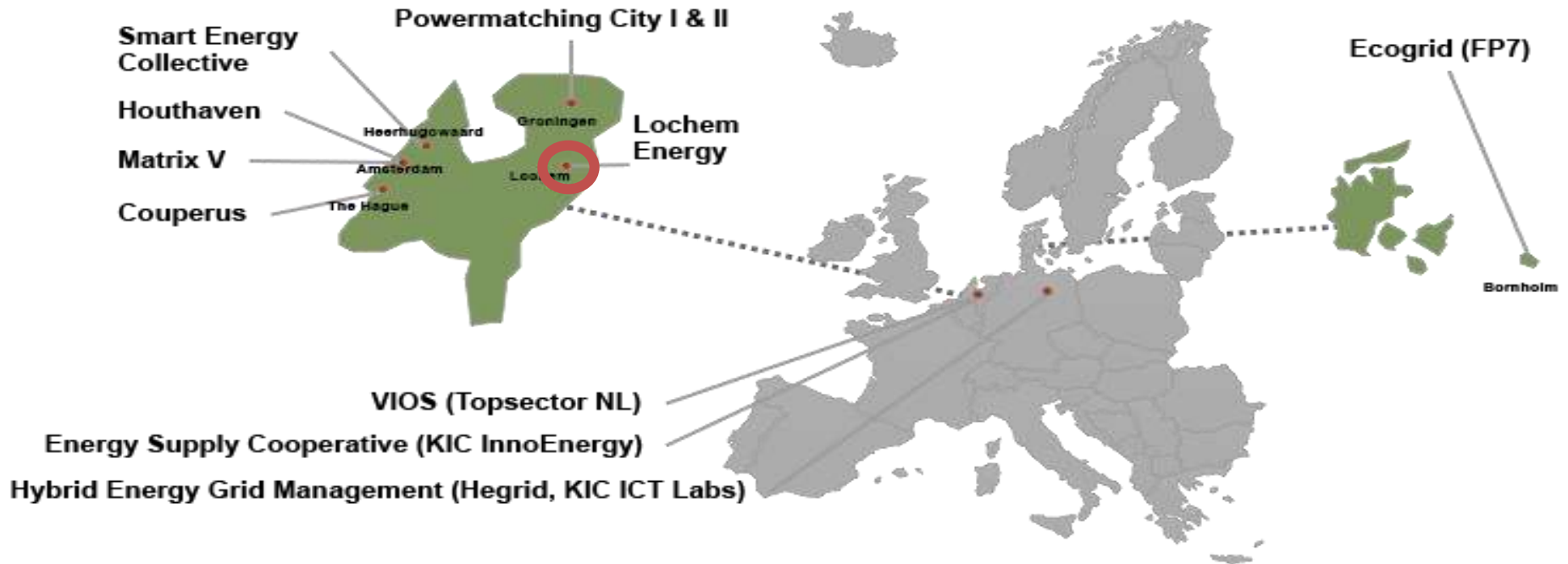
Market Price € 0,25
Updated on 12:04:29 PM CEST
Uncontrolled Agent [0.01] W
Timeshifter Agent [0.0] W



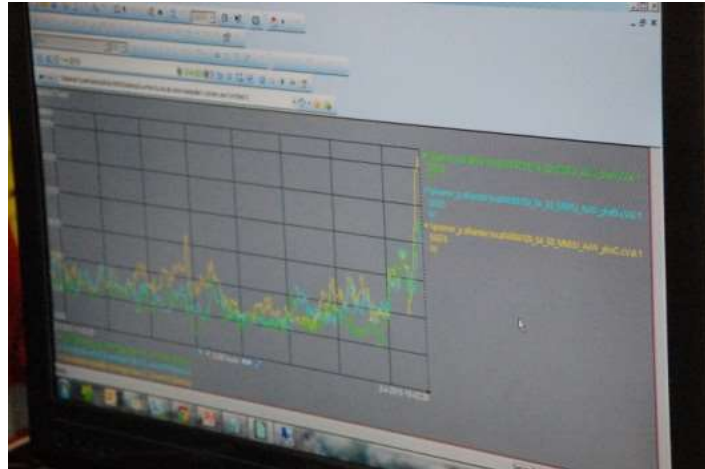
Dashboard



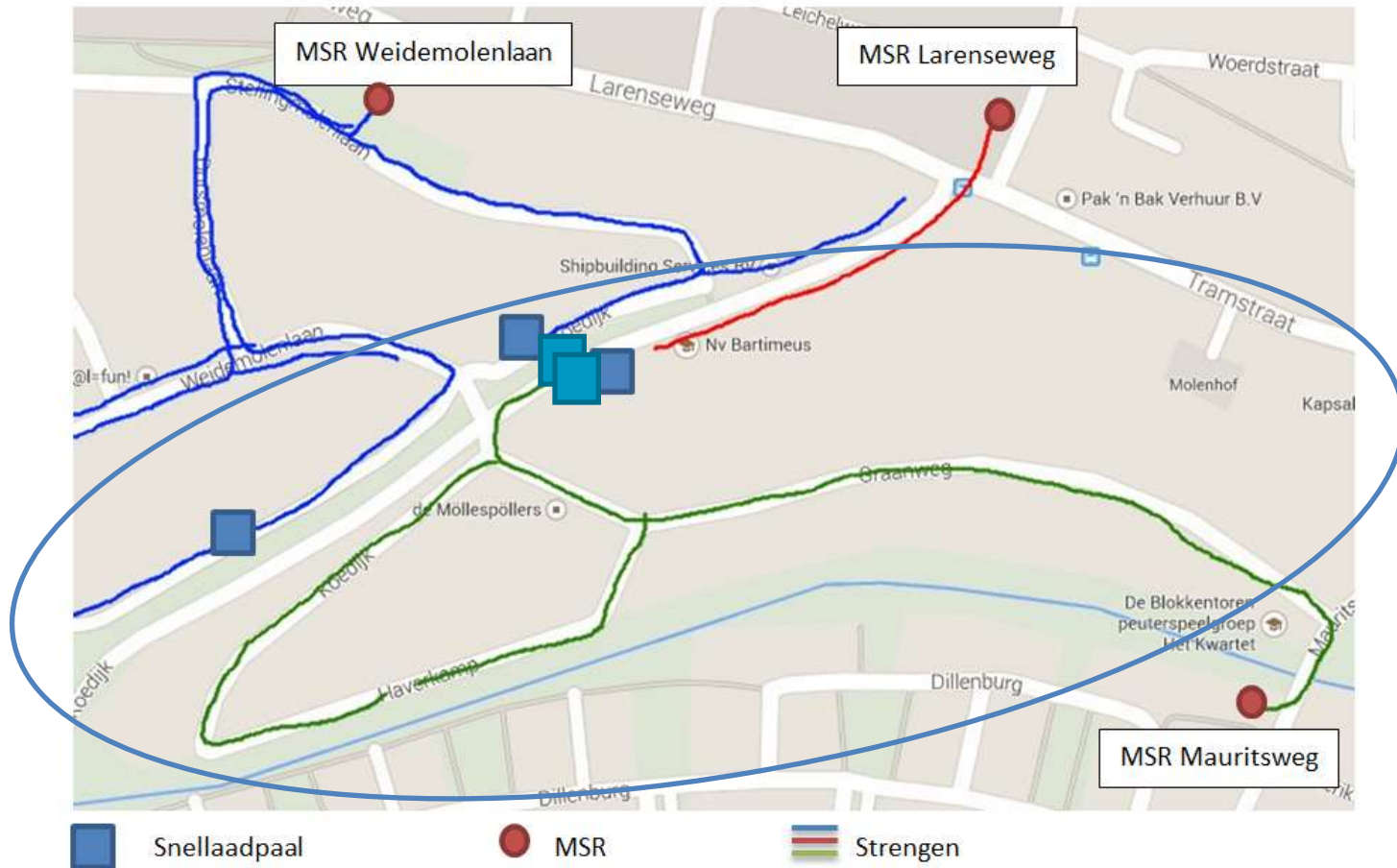
Resource Info



Lochem Stresstest (1)



Lochem Stresstest (2)



Lochem Stresstest (3)

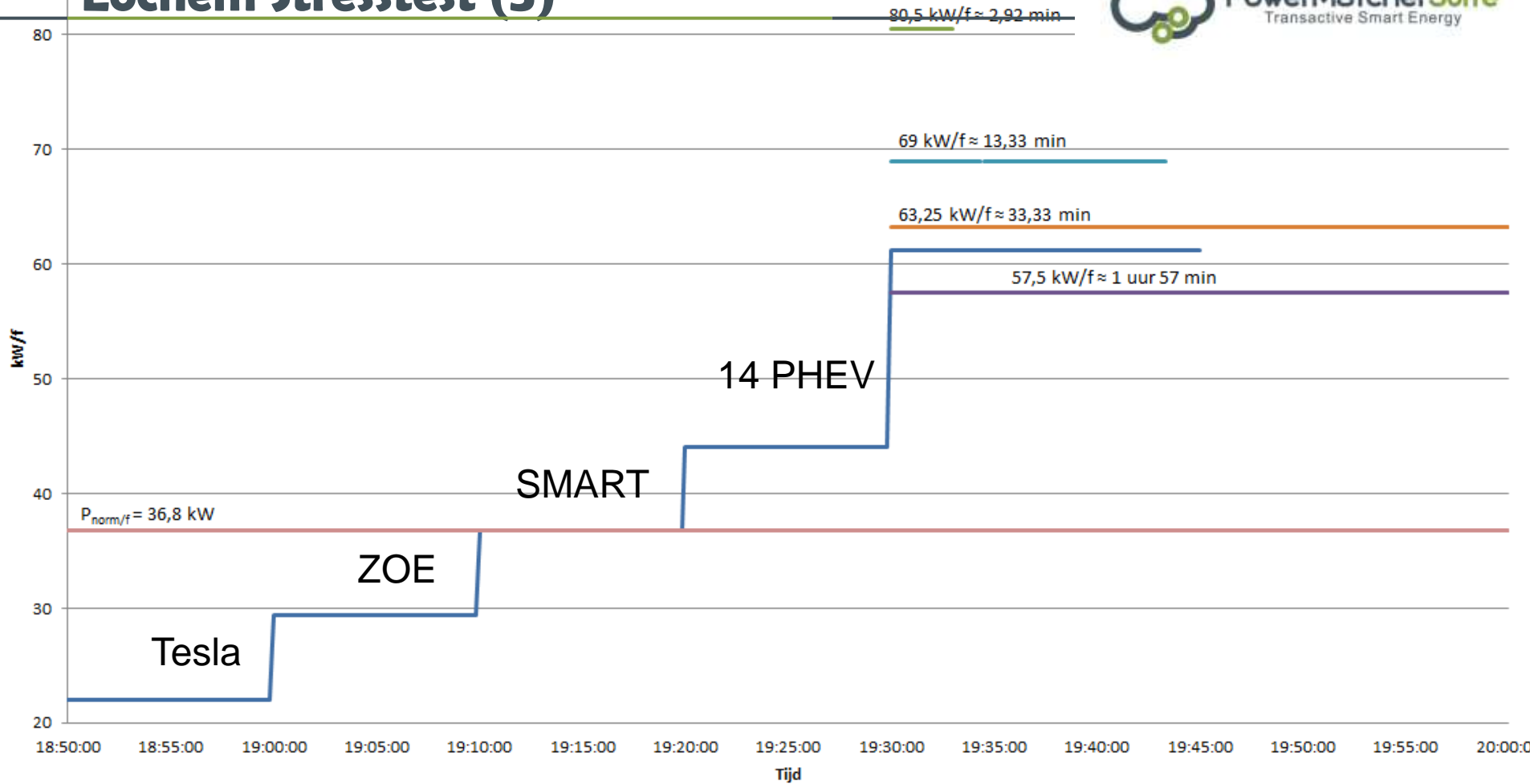
	5e	12e	19 ^e	Gem.
L1 18:00	13,9 kW	12,1 kW	9,9 kW	12 kW
L1 19:00	16,2 kW	17,1 kW	14,1 kW	15,8 kW
L1 20:00	16,5 kW	17,7 kW	16,1 kW	16,8 kW
L2 18:00	14 kW	17,3 kW	14 kW	15,1 kW
L2 19:00	19,2 kW	20,9 kW	17,4 kW	19,1 kW
L2 20:00	19,4 kW	21,6 kW	17,2 kW	19,4 kW
L3 18:00	13,7 kW	13,5 kW	15,7 kW	14,3 kW
L3 19:00	19,9 kW	18,9 kW	22 kW	20,2 kW
L3 20:00	22,6 kW	19,7 kW	22,7 kW	21,7 kW

Tijd	Onderdeel	per fase
18:45	Zero case	+/- 20 kW

Situation in 2025 source: RVO

19:00	Belasting naar 22 kW/f brengen	22 kW
19:00 – 19:10	Tesla à 7,36 kW/f	29,36 kW/f
19:10 – 19:20	ZOE à 7,36 kW/f	36,72 kW/f ≈ 36,8 kW
19:20 – 19:30	Smart à 7,36 kW/f	44,08 kW/f
19:30 – 19:45	14 PHEV's ≈ 17,17 kW/f	61,25 kW/f

Lochem Stresstest (5)



Lochem Stresstest (6)



STRESSTEST

steeds 24-7-2017

Buigen of barsten voor stroomnet Lochem

Voor test zetten bewoners in Lochem zoveel mogelijk elektrische apparaten tegelijk aan.

door Martin Vink

“Als elektriciteitsnet een black-out krijgt, is de champagne voor ons”

Thomas Veldersburg

“De stresstest heeft plaats in een buurt. Dat is voor hen uniek, maar wel vaak naar Nederland”

Thomas Veldersburg

© Thomas Veldersburg. Het aan elektrische auto van Lochem Energie aangesloten bij een opgesteld aan de hoofdlijn in Lochem. Foto: Jan Feenstra

‘Gebruik energie zien te spreiden’

“Gebruik energie zien te spreiden”

LOCHEM - De coronacrisis die begon april in Lochem wordt geleidelijk maar wel steeds meer een lokale crisis. Het is niet alleen de coronacrisis die de productie van elektriciteit aan het knippen is, maar ook de productie van gas. De productie van elektriciteit aan het knippen is, maar ook de productie van gas. De productie van elektriciteit aan het knippen is, maar ook de productie van gas.

Open Source: github.com/flexiblepower

Open source is good for me. I will fully embrace it.
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github.com/flexiblepower

github
SOCIAL CODING





[Explore](#) [Gist](#) [Blog](#) [Help](#)

 alex254



FlexiblePower Alliance Network

FAN is open standard and implementation that connects devices with energy management services.

 Amsterdam, Netherlands

 <http://www.flexiblepower...>

 info@flexiblepower.org

Filters ▾

+ New repository

powermatcher

Java ★ 6 📄 1

PowerMatcher - The Java implementation of the PowerMatcher, including the core, the auctioneer, a couple of agents and the simulation tool.

Updated an hour ago



fpai-devices

Java ★ 0 📄 0

FlexiblePower Application Infrastructure - The open device drivers and resource managers (both for simulated devices and for real ones). The main purpose of these bundles is for demonstration purposes.

Updated 2 days ago

People

24 >



Invite someone

Teams

5 >

Open Source: Waffle Scrum Board

flexiblepower/powermatcher

Filter Board

Backlog 19

- 149 Bug: from PricePoint to Demand Array results in incorrect demand array
impediment
- 146 refactor Freezer example to extend the baseDeviceAgent
- 144 Smart DSO Concentrator: events implementation
PRIO 2
- 142 approve oscillation code
sprint 3 1 SP
- 141 java version compliance - only Java 7+
- 128 Fraud detection observer
sprint 3 PM showcase DSO PRIO 3 security

To Do 16

- 125 Add missing information to wiki
sprint 3 5 SP community PRIO 1
- 131 implement JSON / Elastic Search logger to PM Extensions package
sprint 3 2 SP PRIO 3
- 132 implement JDBC logger in PM Extensions package
- 123 Clean up wiki
sprint 3 1 SP community
- 124 Update wiki with changes and feedback sprints
sprint 3 1 SP community PRIO 1
- 122 QA - Uniform code style
sprint 3 0.5 SP PRIO 1 quality assurance

In Progress 10

- 150 Development thijl
- 135 SessionManager: agent whitelist implementation
sprint 3 PM showcase DSO PRIO 1
- 84 Visualize powermatcher logging with Elastic Search - Logstash - Kibana
sprint 3 5 SP tracking
- 121 QA - 90% code coverage
sprint 3 8 SP quality assurance
- 68 Implement remote communication over HTTP REST (split in proxy task and REST implementation)
sprint 3 8 SP PRIO 1
- 134 Smart DSO Concentrator: remote settable limit
sprint 3 PM showcase DSO PRIO 1

Done 11

- 133 Smart DSO Concentrator: port Peakshaving capability
sprint 3 PM showcase DSO PRIO 1
- 145 Development bjorn
- 147 Bug: bid toString geeft incorrecte informatie!
impediment
- 148 Bug: What is the function of toPrice!?!
impediment
- 143 Fix for failing unit test in build
- 140 Fix public methods Auctioneer and Concentrator
- 138



SEARCH HERE



NEWS

WHY PM?

FEATURES

IN PRACTICE

TECHNOLOGY

GET STARTED

GET INVOLVED

ABOUT



HELP US

CHANGE THE WORLD

WITH THIS PROVEN
**DISRUPTIVE SUSTAINABLE
TECHNOLOGY.**

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