

mySmartGrid

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founded 1996

staff: 425

budget: 14M Euro

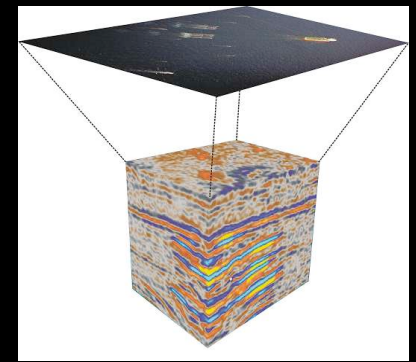
Service oriented
computing



Herkules
(Woodcrest)



Parallelization &
Benchmarking



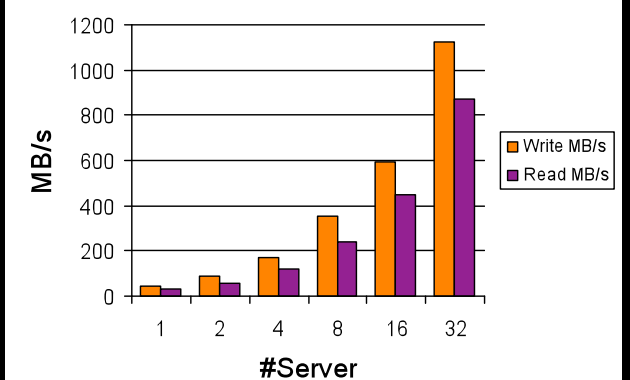
Visualization



Pegasus
(QS22)

HPC Tools

FhG-FS Scalability (128
Clients)

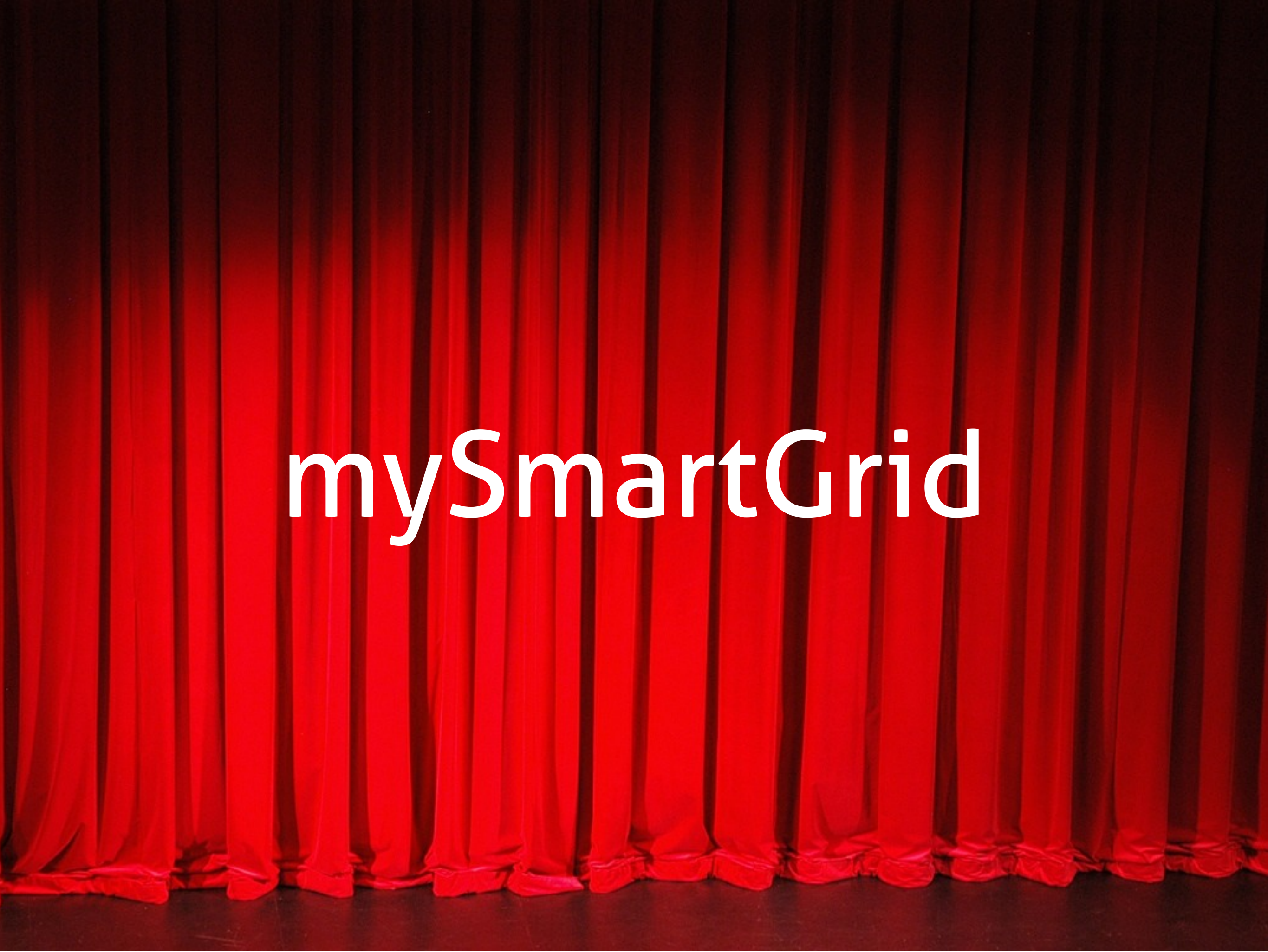


CC HPC

Competence Center for High-Performance Computing

Pegasus: 9.3 TFlop/s Linpack (#464, June 08) -> #1 in Green 500 (<20kW)

Herkules: 8.137 TFlop/s Linpack, 75,6 kW

A background of red curtains with vertical folds, creating a stage-like atmosphere. The curtains are a deep red color and are lit from the front, casting soft shadows.

mySmartGrid

Was ist Strom?

240 / 117 / 170



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Naiv: Strom kommt aus der Steckdose
Elektrische Energie spezifiziert nicht, wie ich sie benutze

- > Licht
- > Wärme
- > Bewegung
- > Komplexe Geräte: Waschmaschine



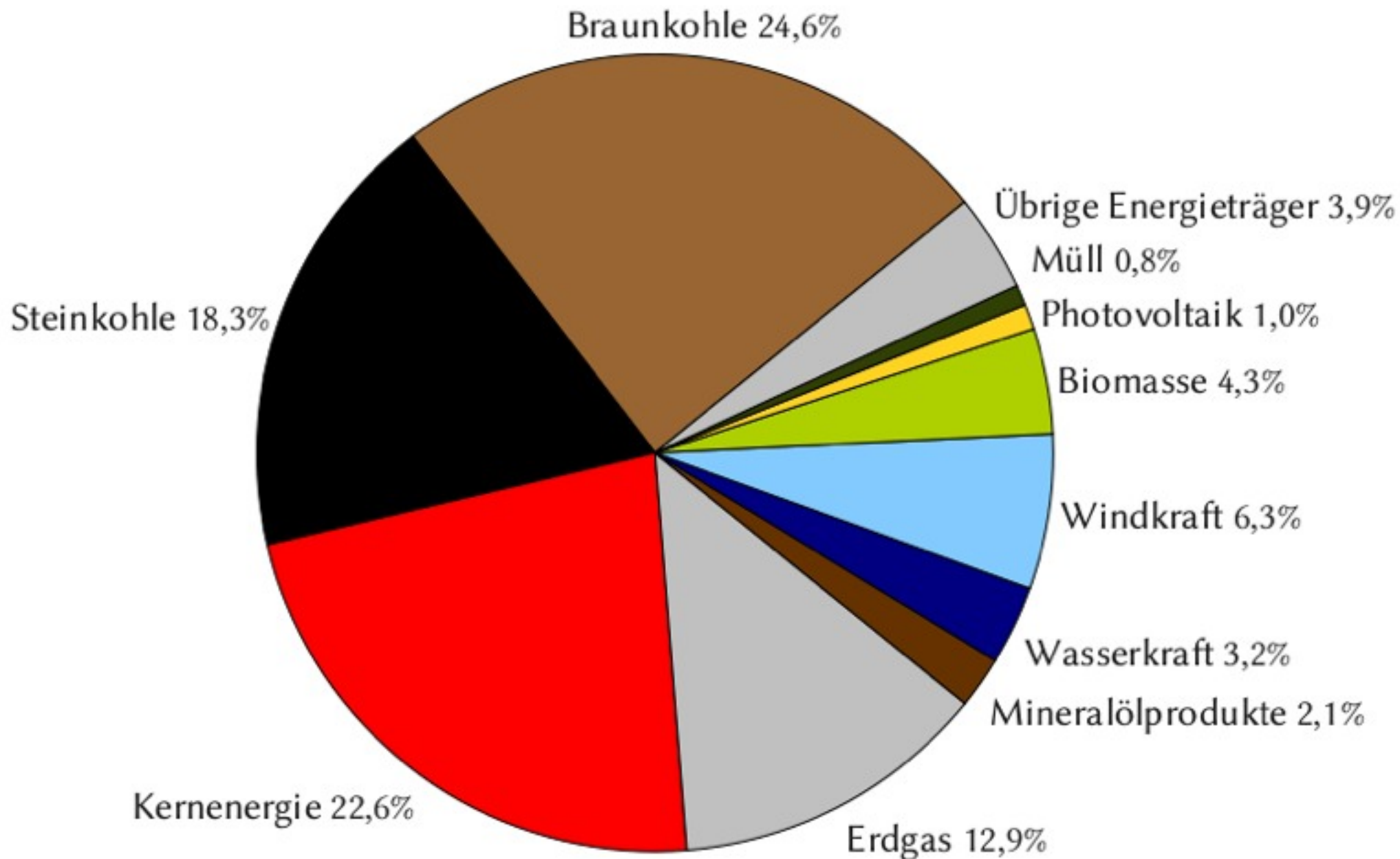
Woher?

Wahl des Energielieferanten flexibel
→ z.B. gezielter Einkauf von “grünem” Strom

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Strommix in Deutschland

Bruttostromerzeugung nach Energieträgern 2009



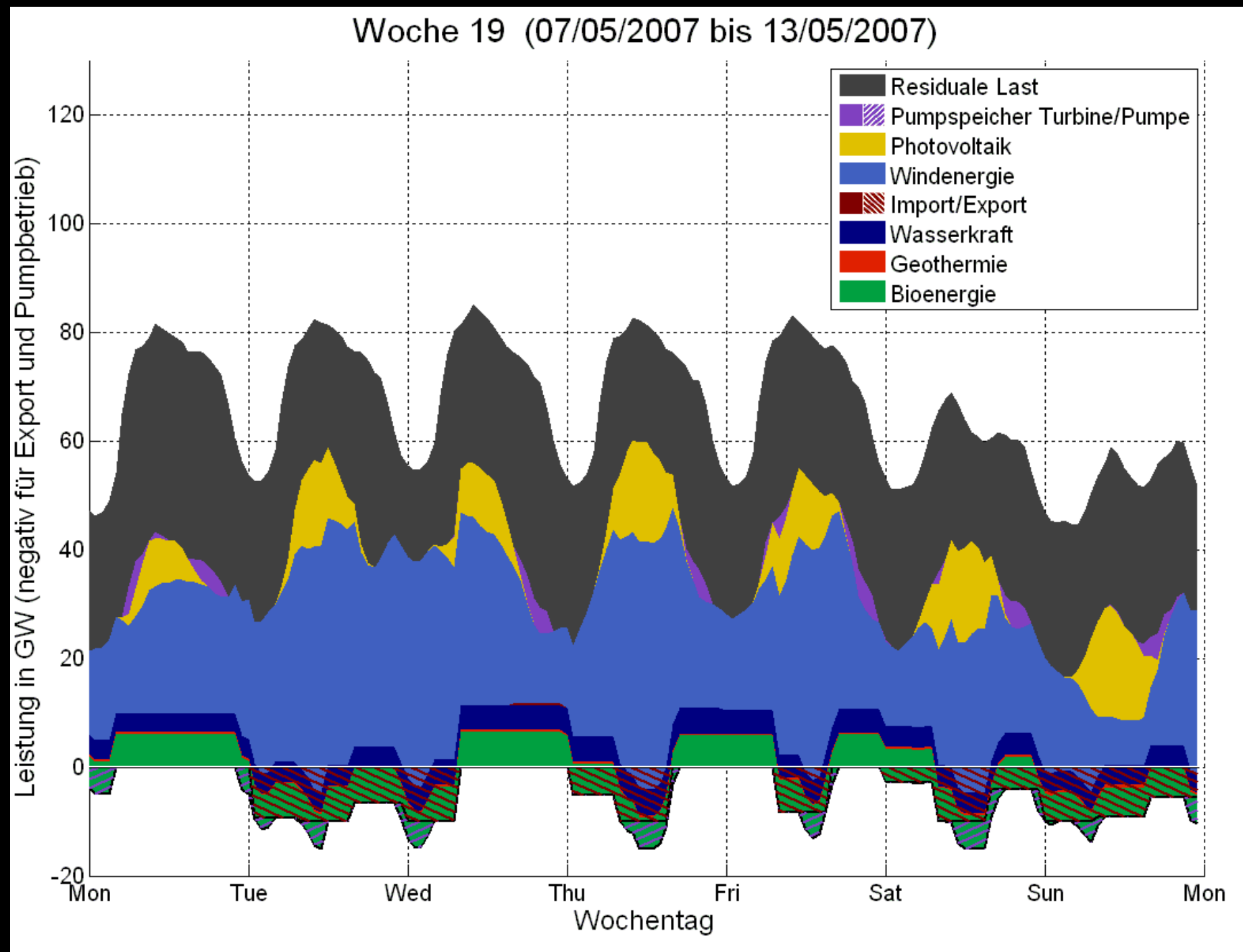
14,8 %
EE

A photograph of several wind turbines on a snowy hill during sunset. The sky is a mix of orange, yellow, and blue. The turbines are silhouetted against the bright sky. The foreground shows a snow-covered slope.

2020: 47 % Erneuerbare Energien

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Wind- bzw. Sonnenenergie sind die ökologisch sinnvolle Alternative
Problem: Stromaufkommen nicht planbar



Prognose: Max. EE 2020

Quelle: Bundesverband Erneuerbare Energien e.V. (BEE)

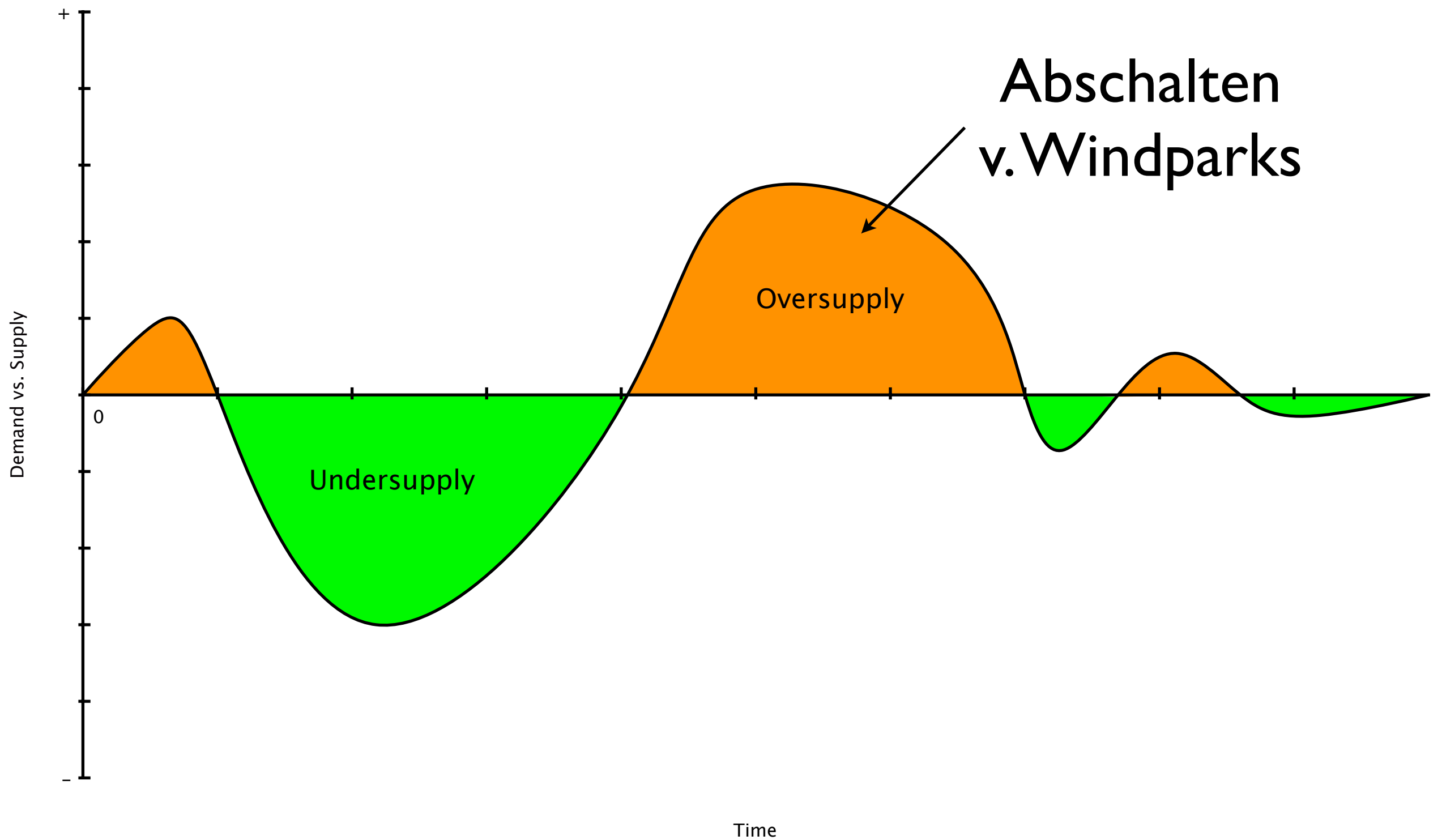
Branchenprognose "Stromversorgung 2020" (Fraunhofer IWES)

- Es gibt keine Stromlücke! Atomkraftwerke können abgeschaltet, Kohle- & Öl-Kraftwerke reduziert werden!
- Simulation der Lastkurven unter realen Wetterbedingungen
- Residuale Last: Restleistung, die konventionell erzeugt werden muss
- Kernaussage: Bedarf an konventionellen Kraftwerken halbiert bis 2020, mehr Flexibilität nötig.

Erzeugung = Verbrauch

1. Speicherung von EE-Strom

2. Verlagerung der Nachfrage

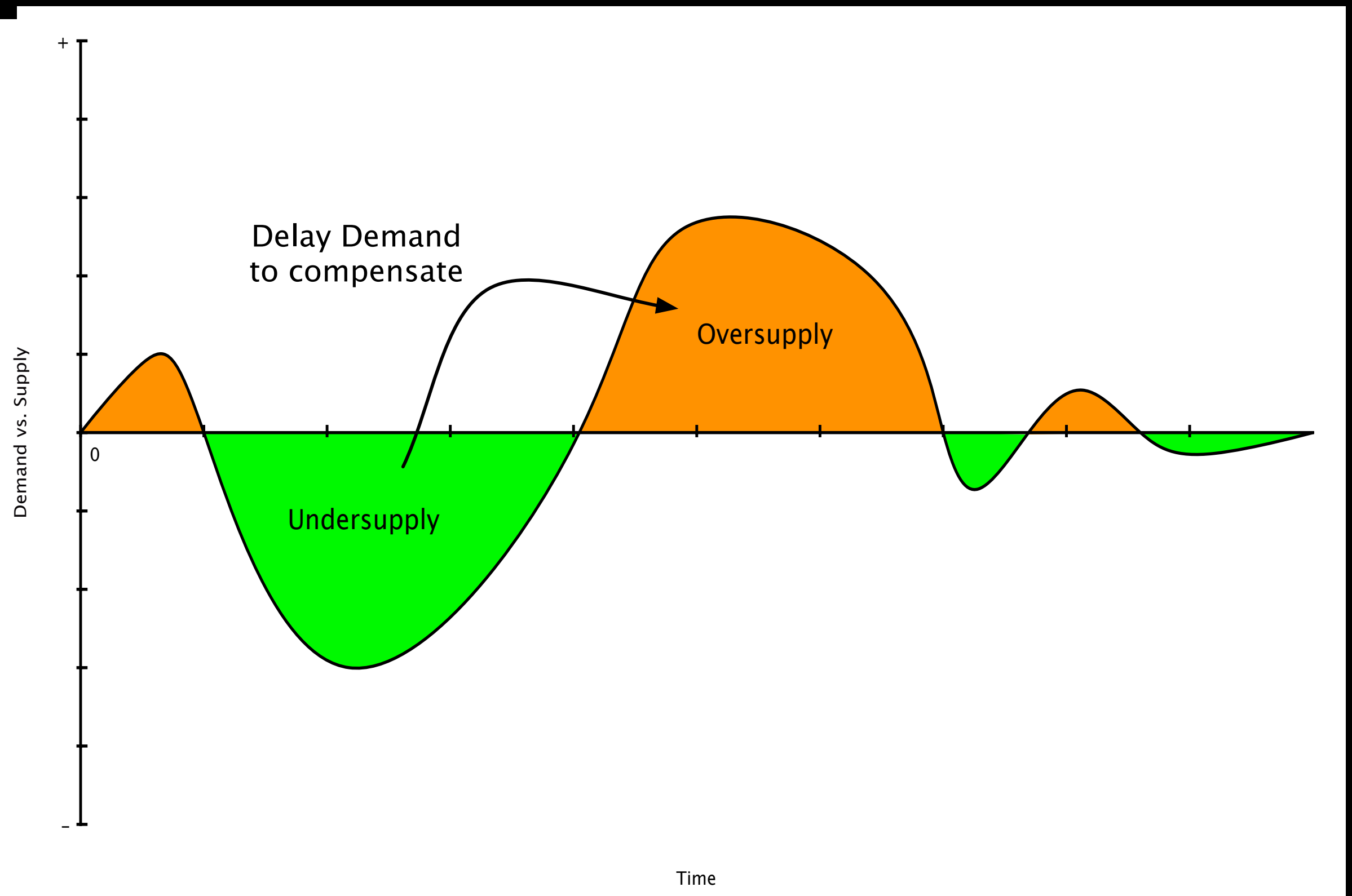


Time

Variabilität



Windprognosen etc.

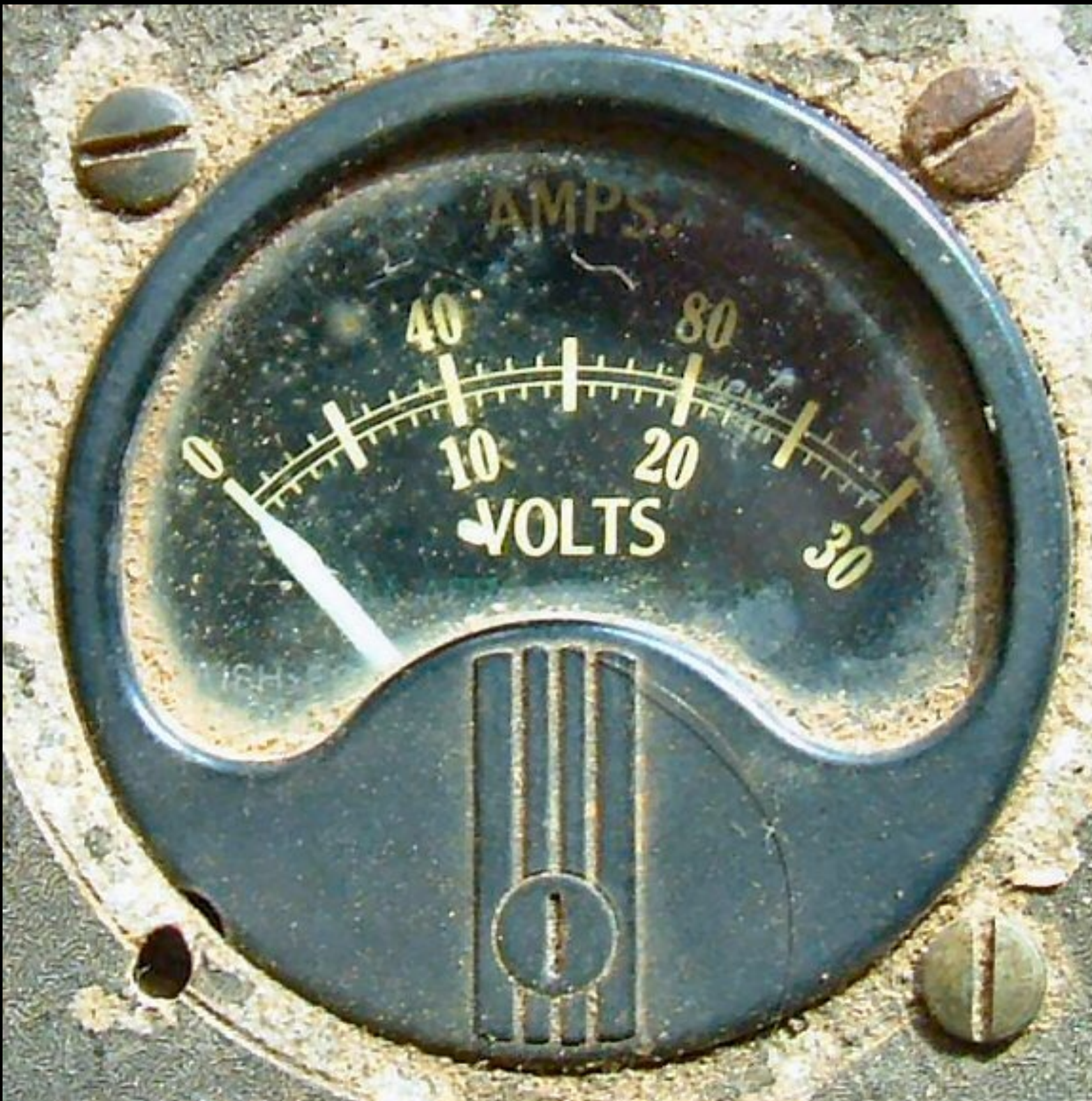


Demand Side Mgmt.

Projekt mySmartGrid

1. Messen & Verstehen
2. Regelung v. Geräten
3. Mgmt. Virtueller Verbraucher

Schritt 1: Messen



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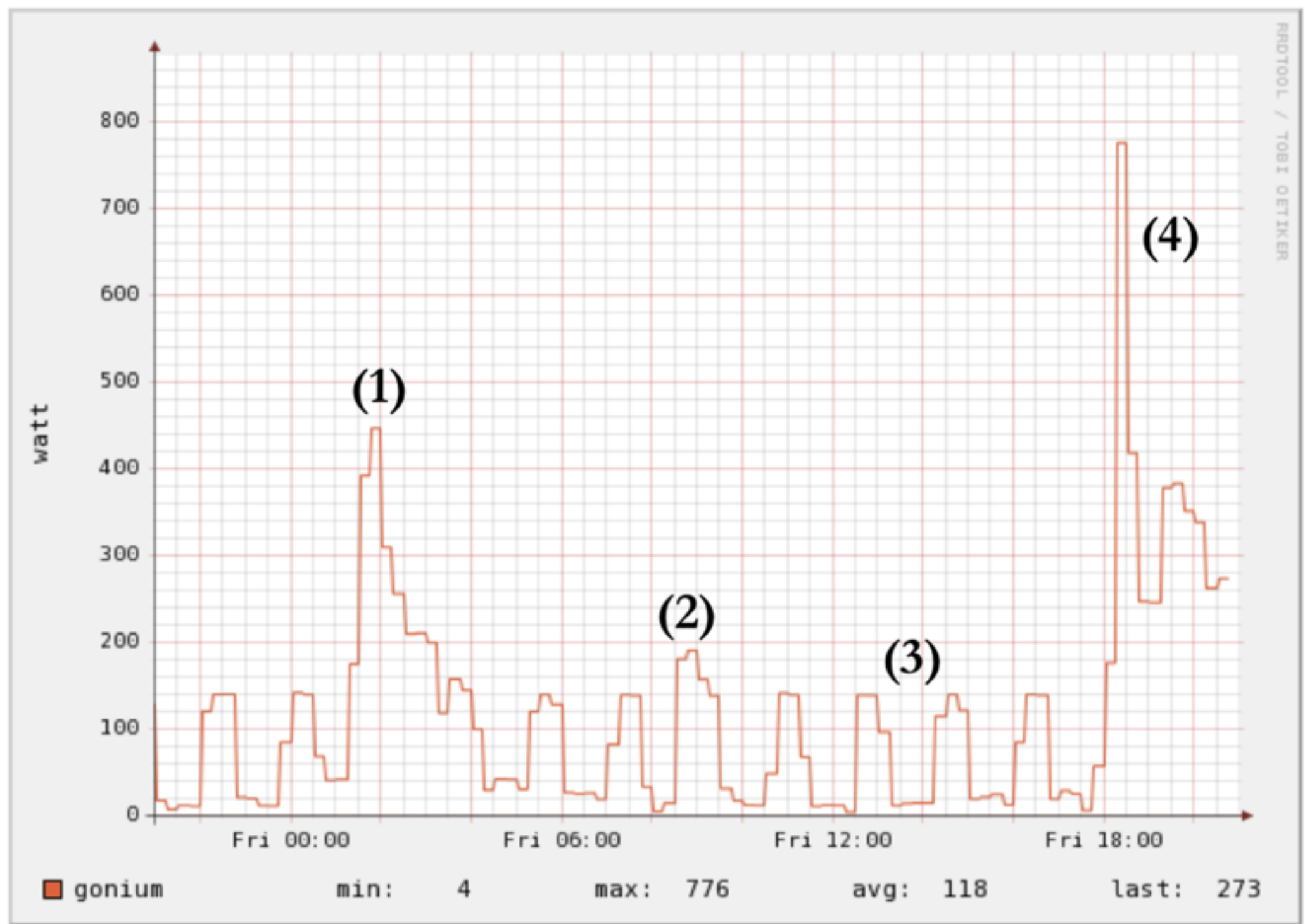
Man kann nur verbessern was man auch misst.



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HW zeigen!





Community Metering

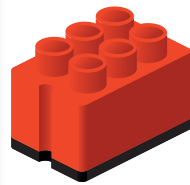
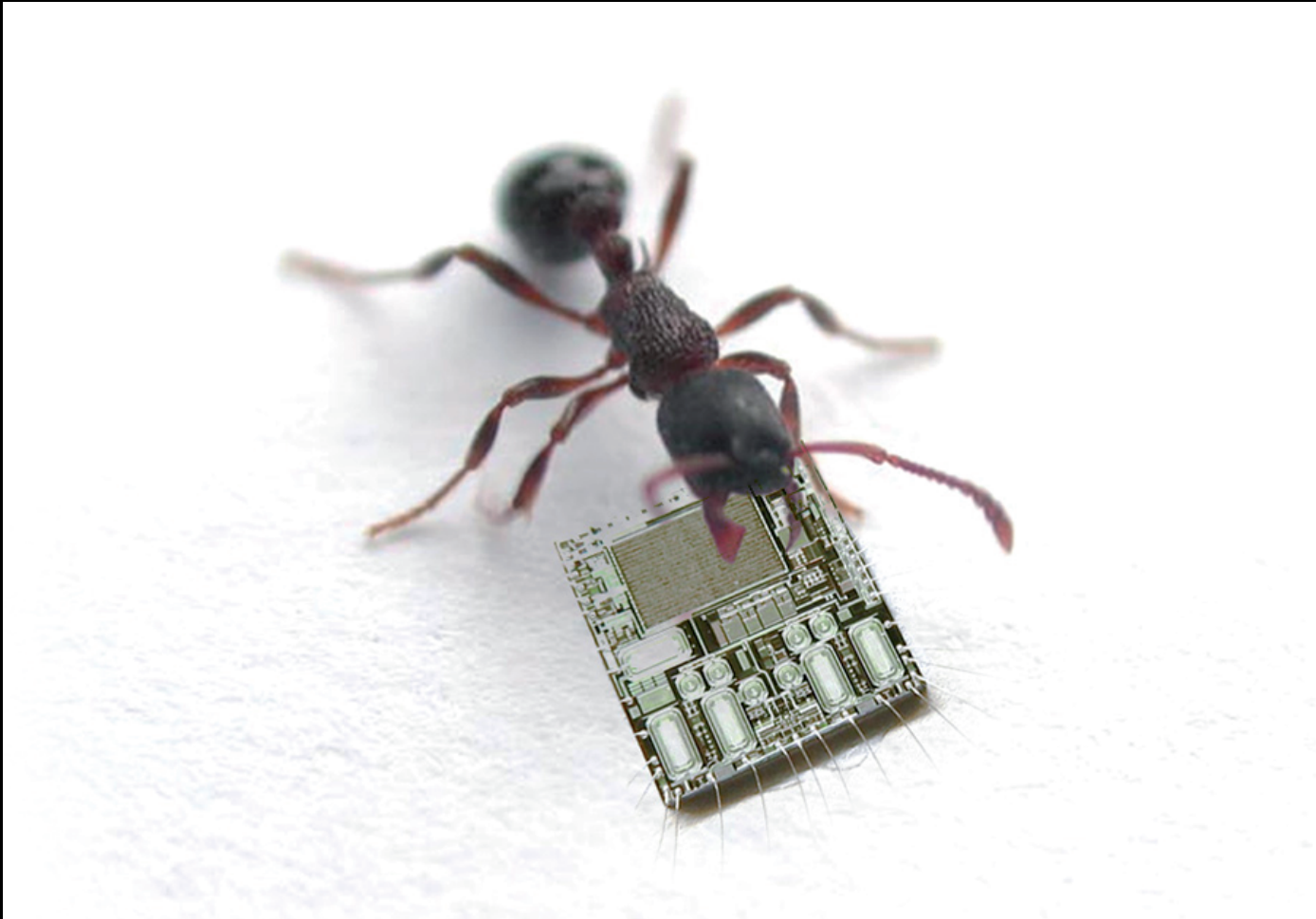
Website zeigen!

Datenschutz

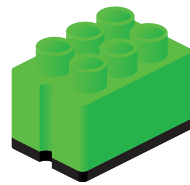
- Privacy wichtig
- Alle Komponenten sind Open-Source
- Lokal!

Schritt 2: Regelung

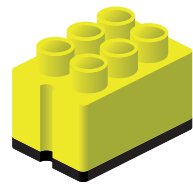




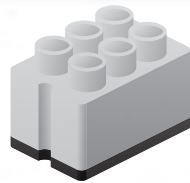
security



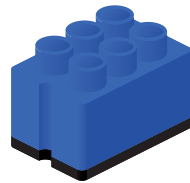
access



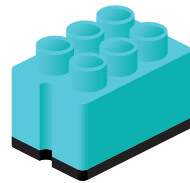
light



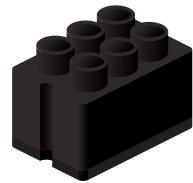
shade



air conditioning



audio



joker

digitalStrom





Kontrolle

CC-BY curiouslee

Chumby One



Andere Geräte

CC-BY-SA-NC blog.imz.bz

A close-up, low-angle shot of solar panels. The panels are dark blue with a grid of thin white lines. They are tilted upwards towards the top left. In the background, a bright orange and yellow sun is setting behind a dark silhouette of trees. The sky is a mix of orange and blue. The overall mood is serene and hopeful, representing clean energy.

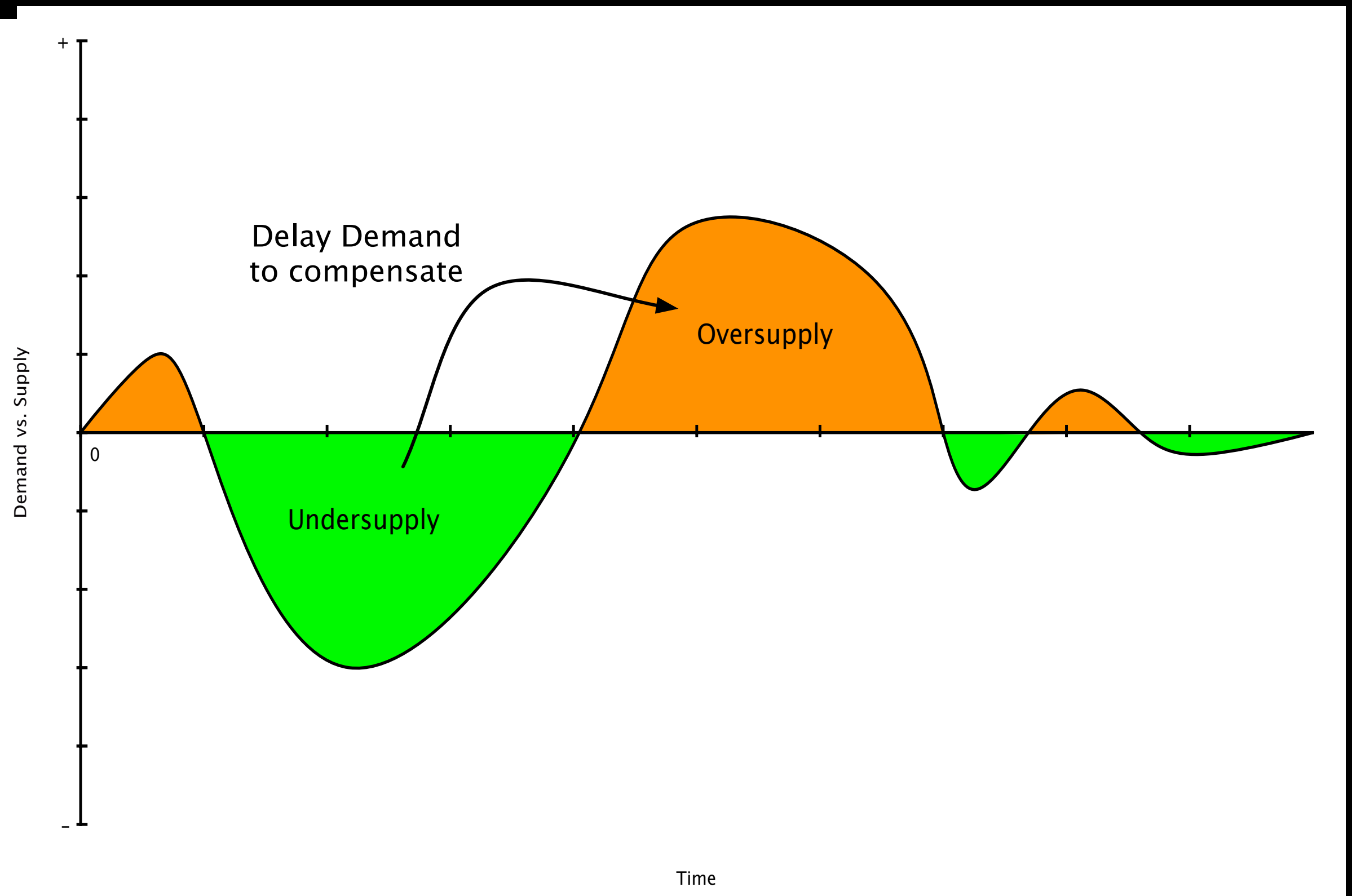
Höhere Eigennutzung

CC-BY-SA Pink Dispatcher

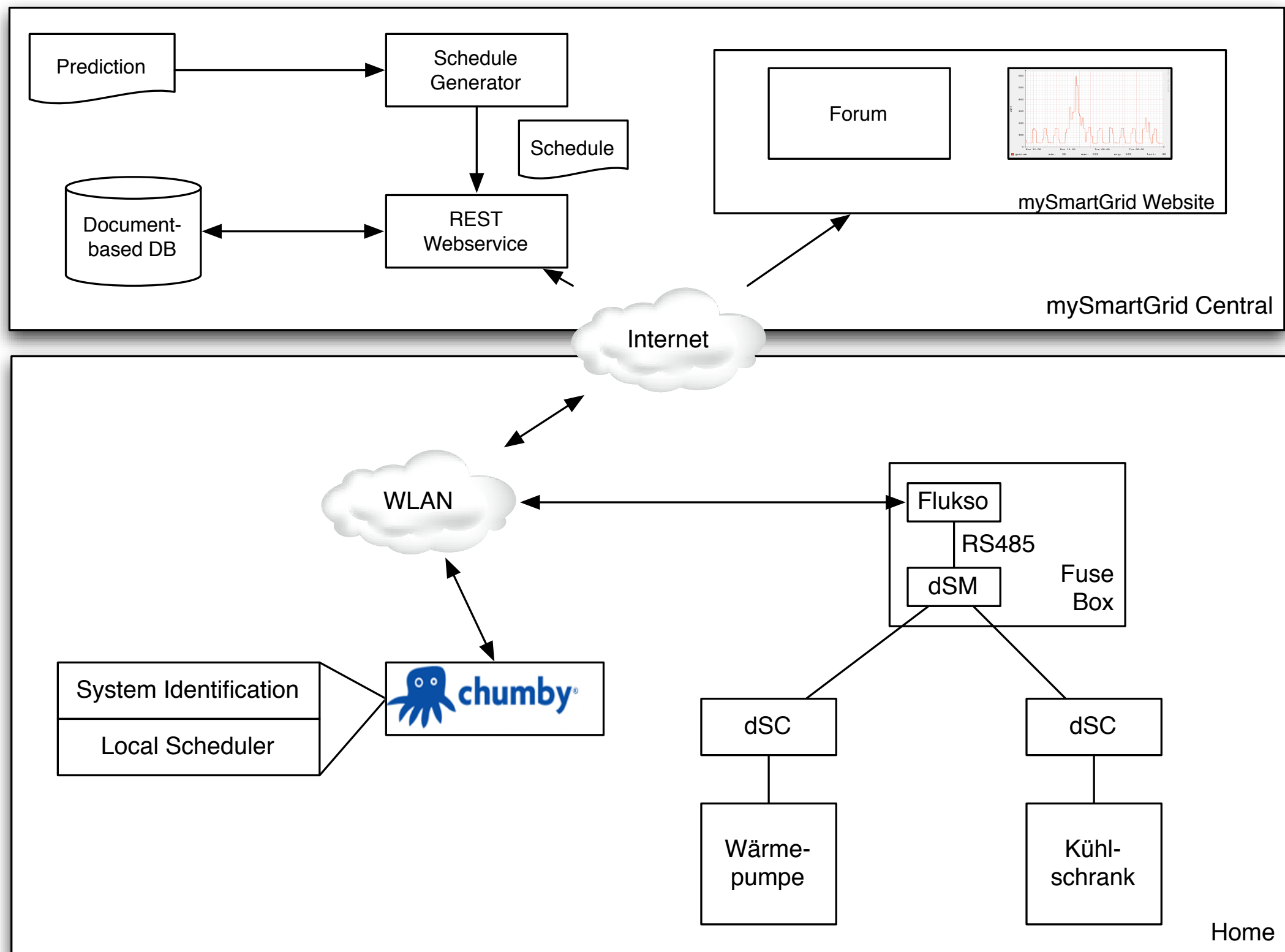


Phase 3: Management des virtuellen Verbrauchers

CC-BY-SA-NC Joe Shlabotnik



Demand Side Mgmt.



Architecture

Virtueller Verbraucher

- positive & negative Regelenenergie
- Gründung einer Genossenschaft
- Entwicklung des Geschäftsmodells

Andere Projekte

- Div. E-Energy Projekte
- EON SmartMeter
- Problem:
Datenaggregation



www.mySmartGrid.de

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Vertrauen schaffen
-> Interessierte können sich anmelden

Mitmachen!

- Fragen stellen!
- Testen & spielen!
- Mitarbeiter werden!

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Fraunhofer
ITWM



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