



#REMforum 2018

The Convergence of Electric Mobility and Power Markets: V2G Business Models

Workshop

University of St. Gallen, June 1st, 2018



Rooftop of a parking garage Beijing

1. Key driver: China

Seven trillion dollar market

AUTONOMOUS VEHICLES

4,000 GB

PER DAY... EACH DAY

RADAR
~10-100 KB
PER SECOND

SONAR
~10-100 KB
PER SECOND

GPS
~50KB
PER SECOND

CAMERAS
~20-40 MB
PER SECOND

LIDAR
~10-70 MB
PER SECOND

intel

2. Key driver: Silicon Valley

**E-mobility will be a major
game changer**

The Ultimate
Driving Machine®

BMW CHARGEFORWARD

GET UP TO \$900 FOR CHARGING YOUR BMW.



Make money charging your car!



V2G – Where are the cars?



7.5 MWh energy
18 MW power

INNOVATION

**HÜTERIN DER GRÖSSTEN
BATTERIE**

Why not use car batteries?

What is SAK doing?



SAK Strategy for E-Mobility

Phase 1



Charging stations

Phase 2



Prosumer

Phase 3



Microgrid

Phase 4



swissgrid

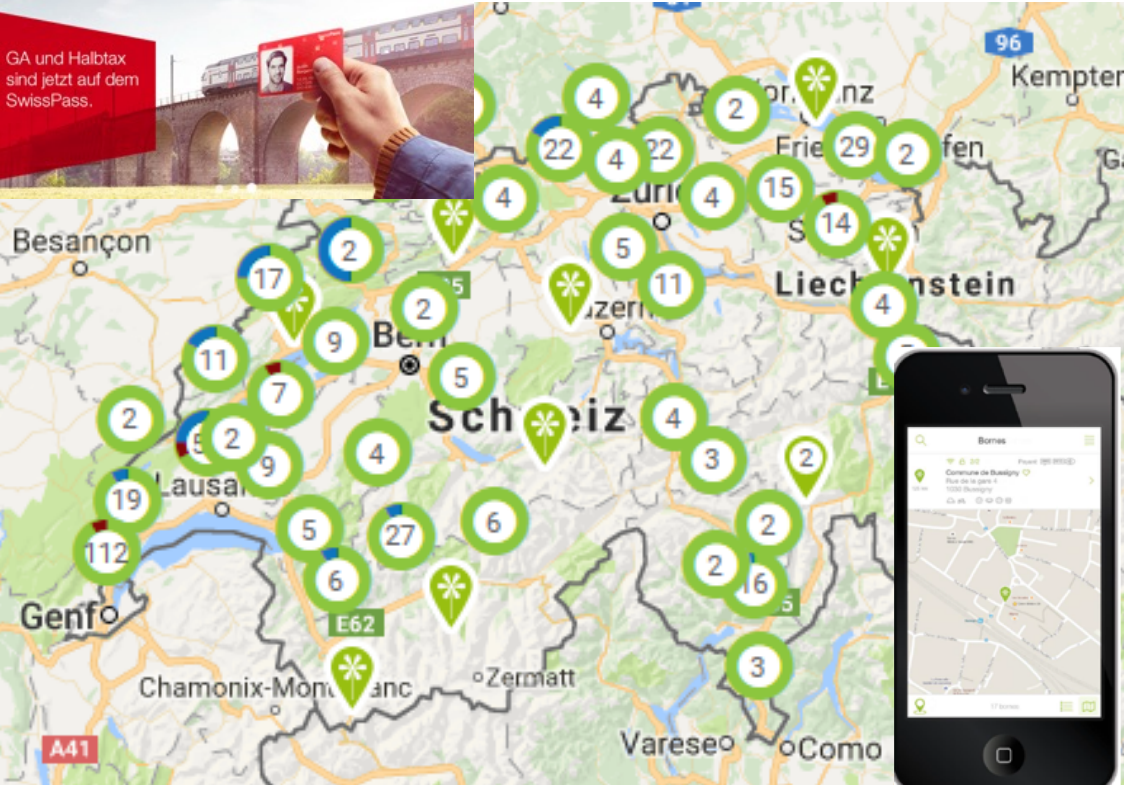
Eypass – largest charging network in Switzerland



Migros Ostschweiz



Agrola, Eschenbach



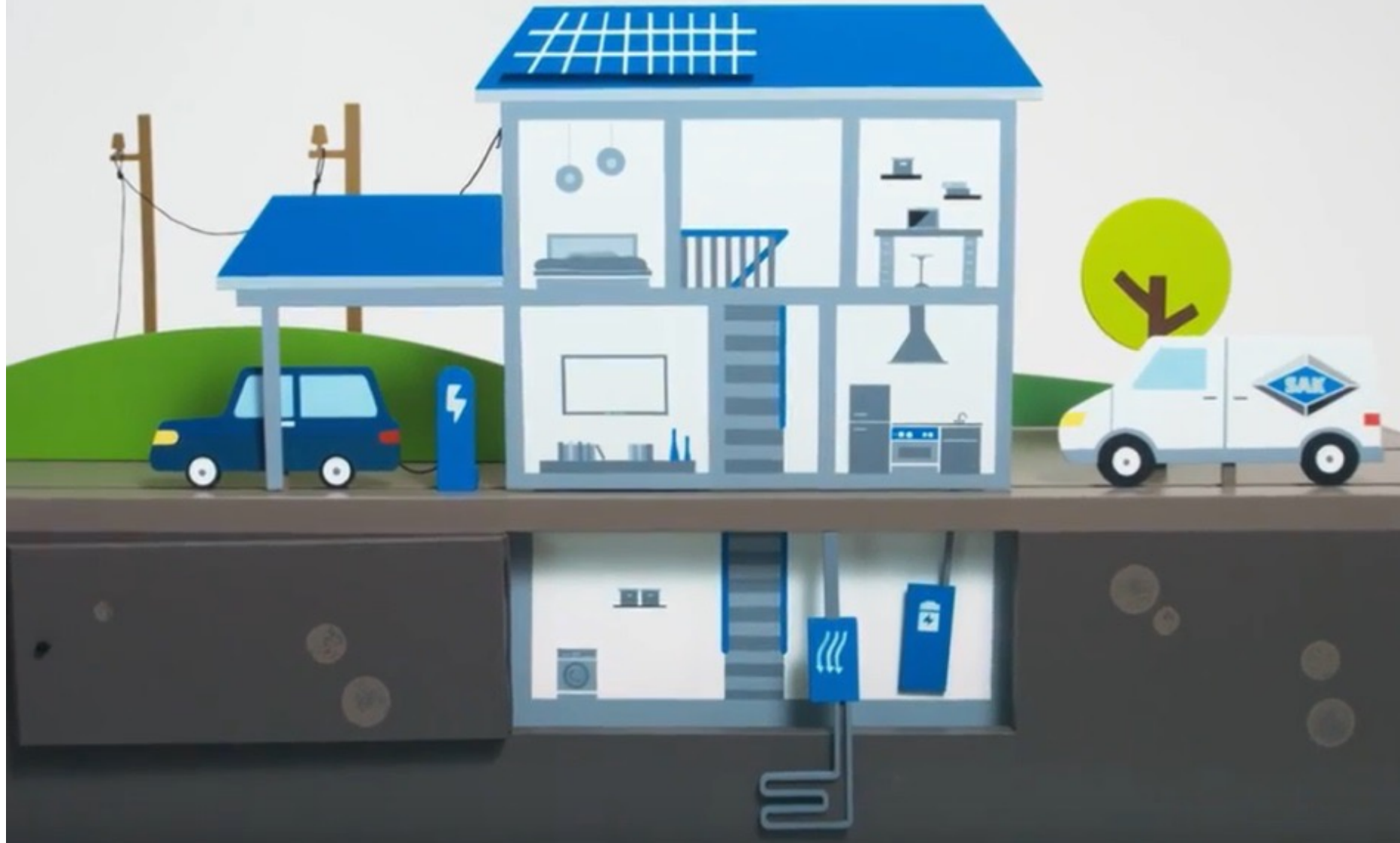
University of Zurich, Campus Irchel



Parkhaus Opéra, Zürich

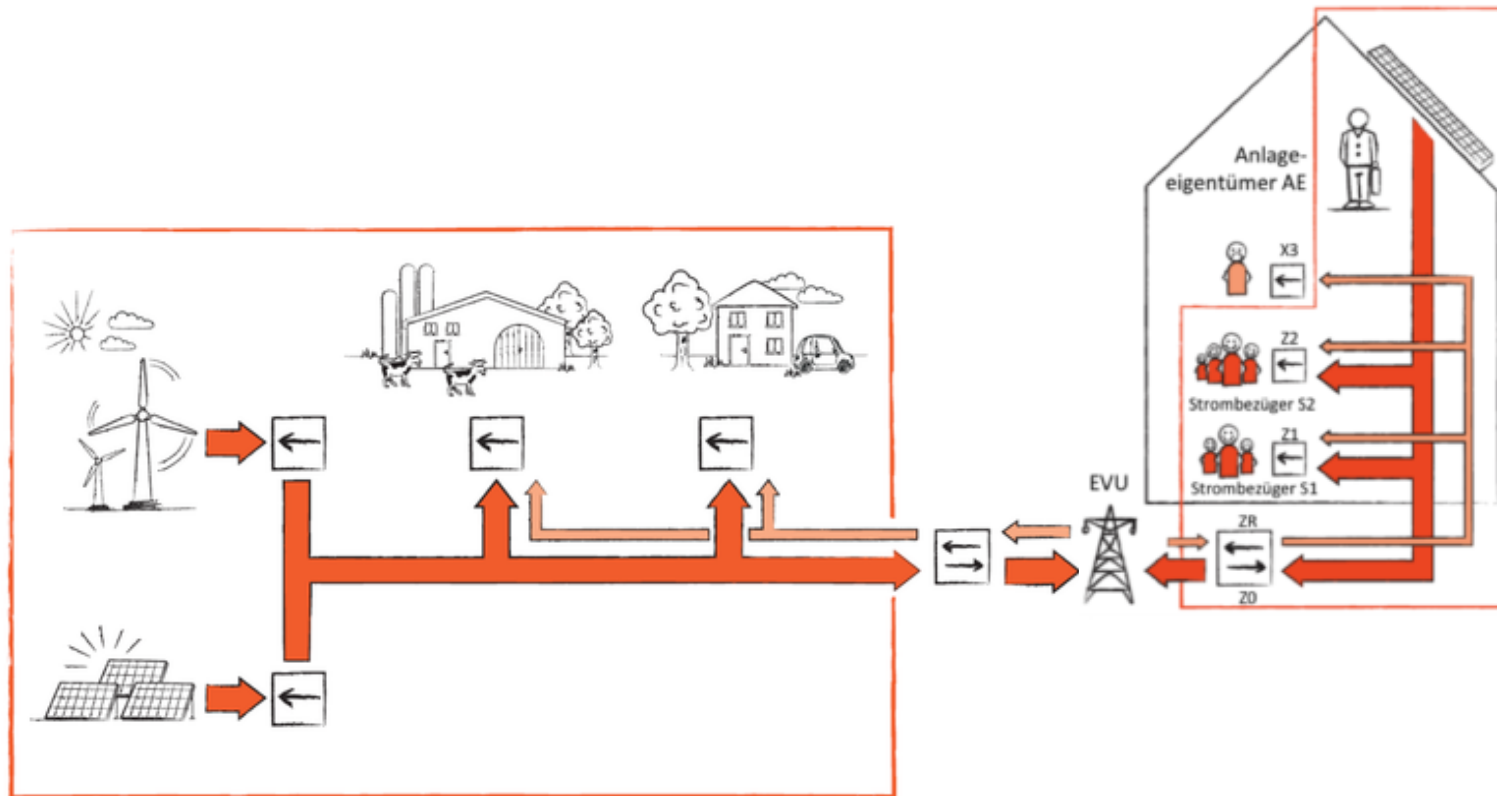
SAK Prosumer:

Photovoltaik, heat pump, charging station & battery



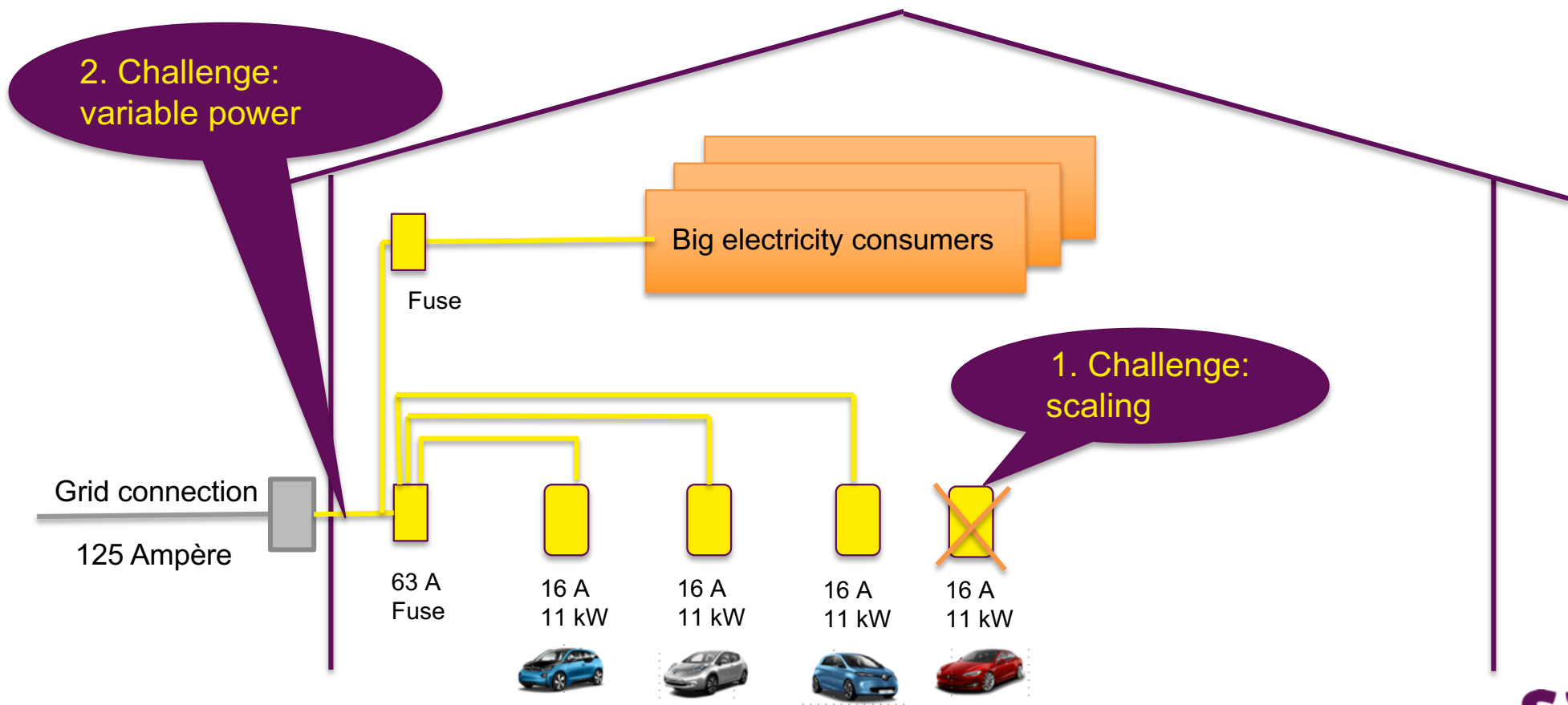
SAK

Self-consumption cooperative

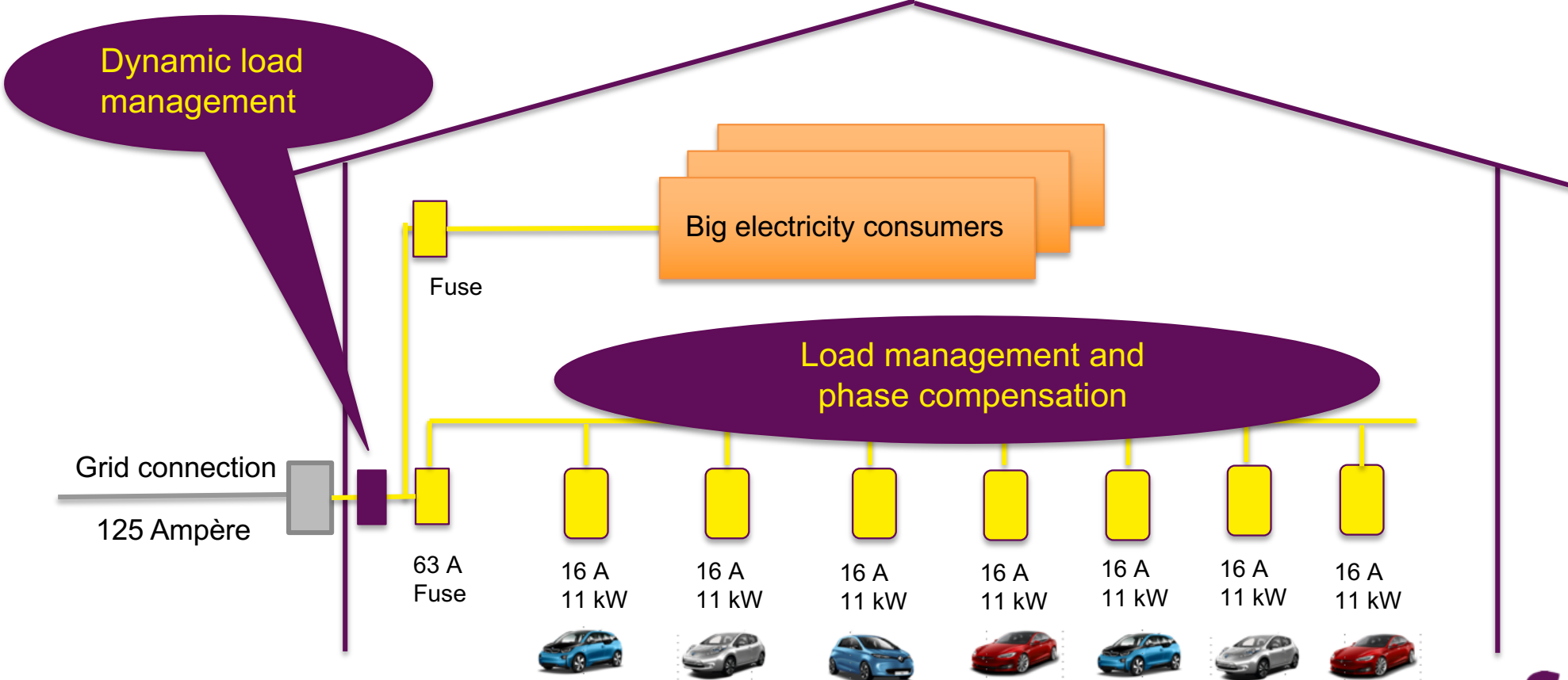


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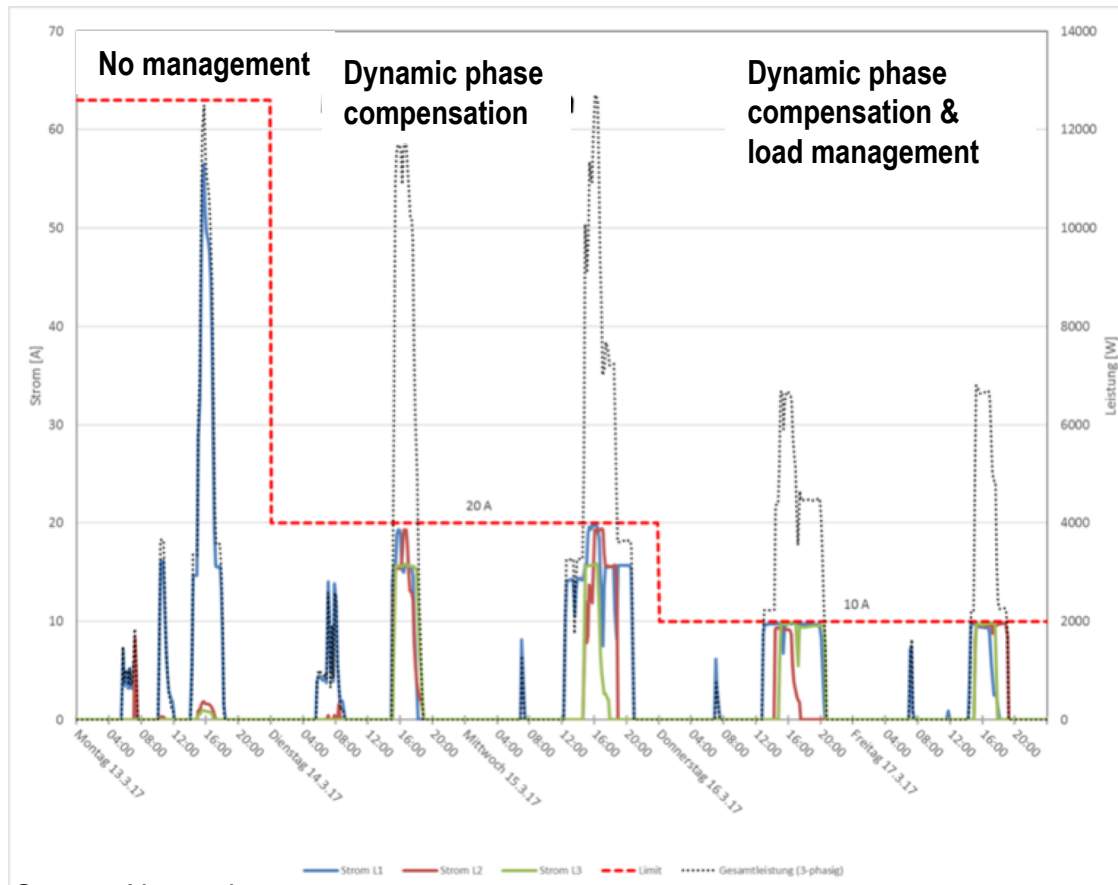
Challenge: scaling and variable power



Optimal solution without increasing grid connection



Grid connection optimally used

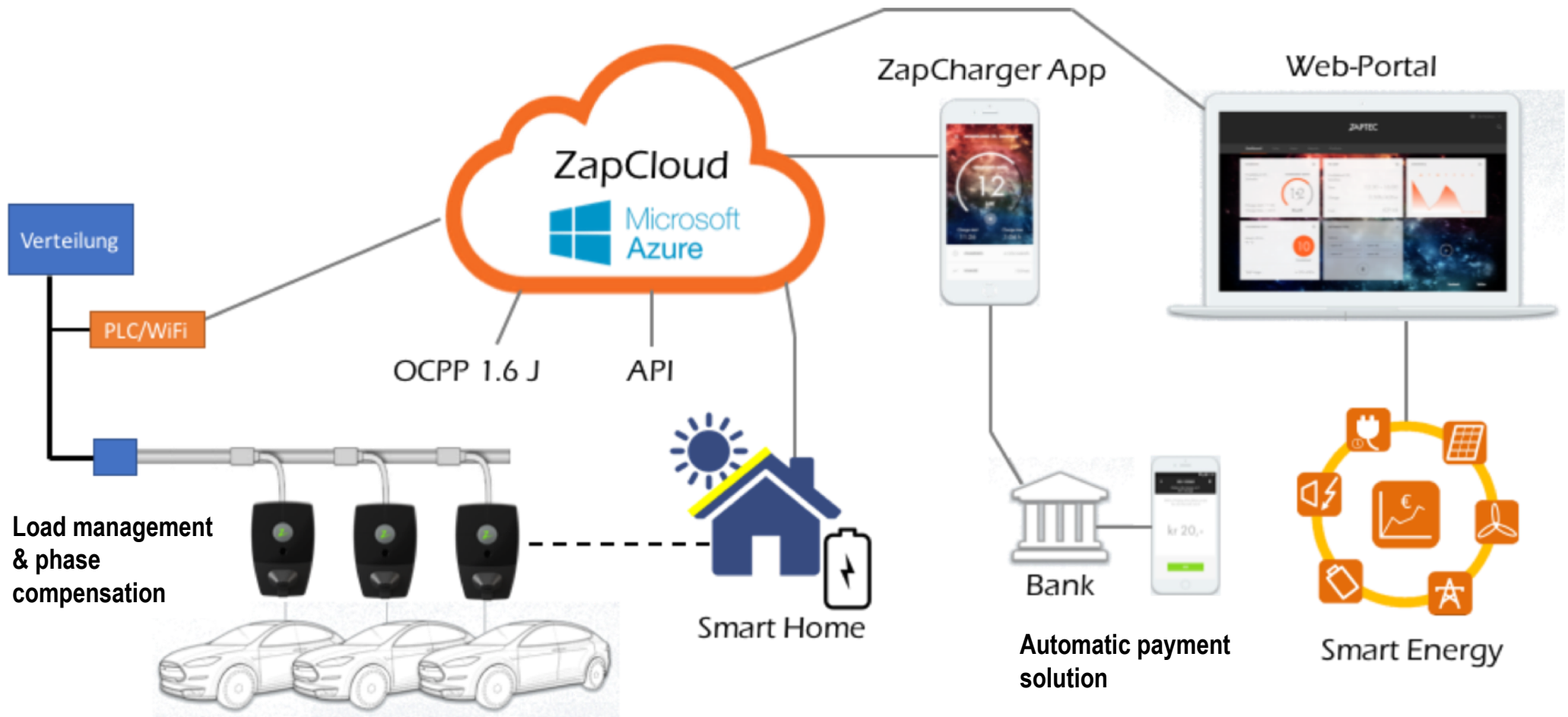


Source: Novavolt

ewz Pilot project:

- 8 charging stations
- 8 one-phase e-cars
- Stations attached to 63 A fuse and 3-phase connected

Cloud solution enables integration



Source: Novavolt



V2G-ready charging station

Source: Green Motion

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sak

A look into the crystal ball:

If you'd been asked in the 80s how a camera would look like in a telephone ...

What would you have imagined?



Danke

For your attention!

Alexandra Asfour

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