

# GÖRLITZ

## Energy system change towards renewable market integration

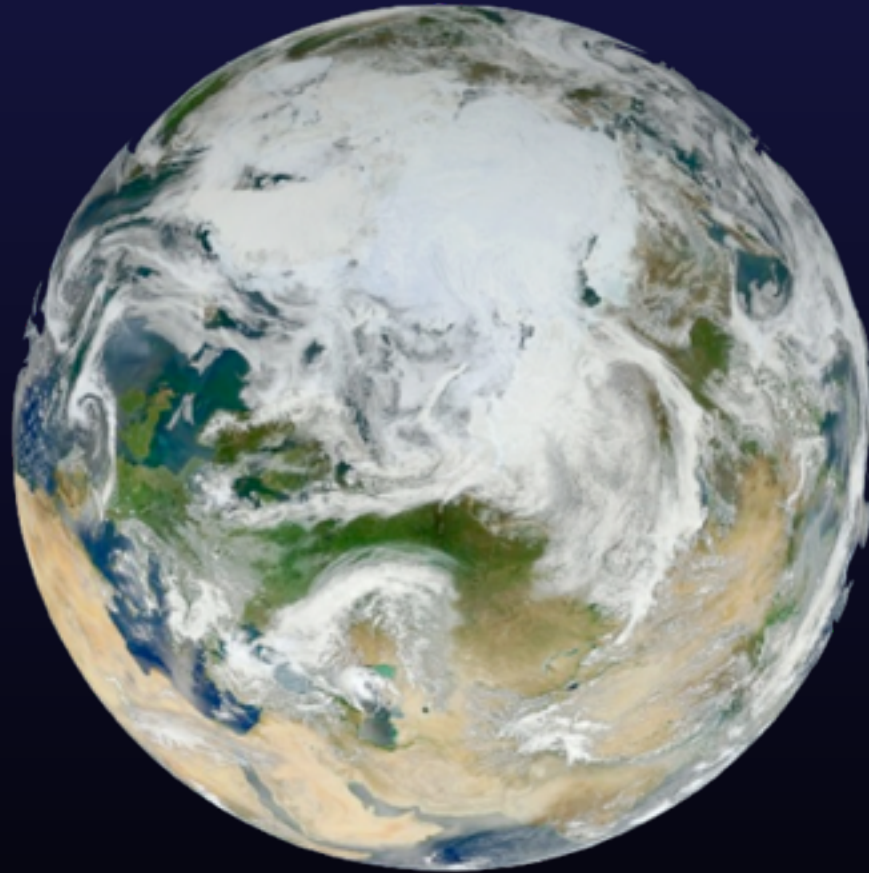
Ralf Hoffmann

CEO GÖRLITZ AG  
2014



# MOTHER **NATURE** IS DECENTRALIZED

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For the sake of agility and stability, there is  
no single centralized control unit.

# DECENTRALIZED ENERGY SOURCES

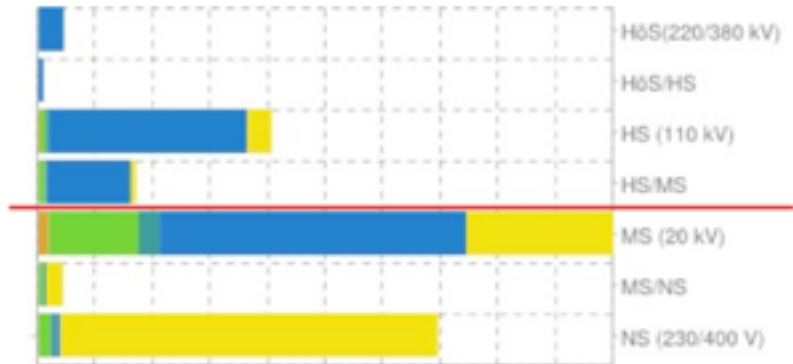
GW renewable capacity in Germany



**+10 GW/y**

- Extremely fast uptake
- Central planning impossible

GW renewable capacity in Germany



**70% up to 20 kV**

- Dominant at MV and LV grid levels
- 95% PV, 85% Biomass,
- Wind dominates HV and MV grids



# LEARNING FROM **POUSADA DO PARQUE**



Extreme circumstances should **not** disrupt the entire (electric) system

# LEARNING FROM FUKUSHIMA



Extreme circumstances should **not** disrupt the entire (electric) system



# LEARNING FROM FUKUSHIMA

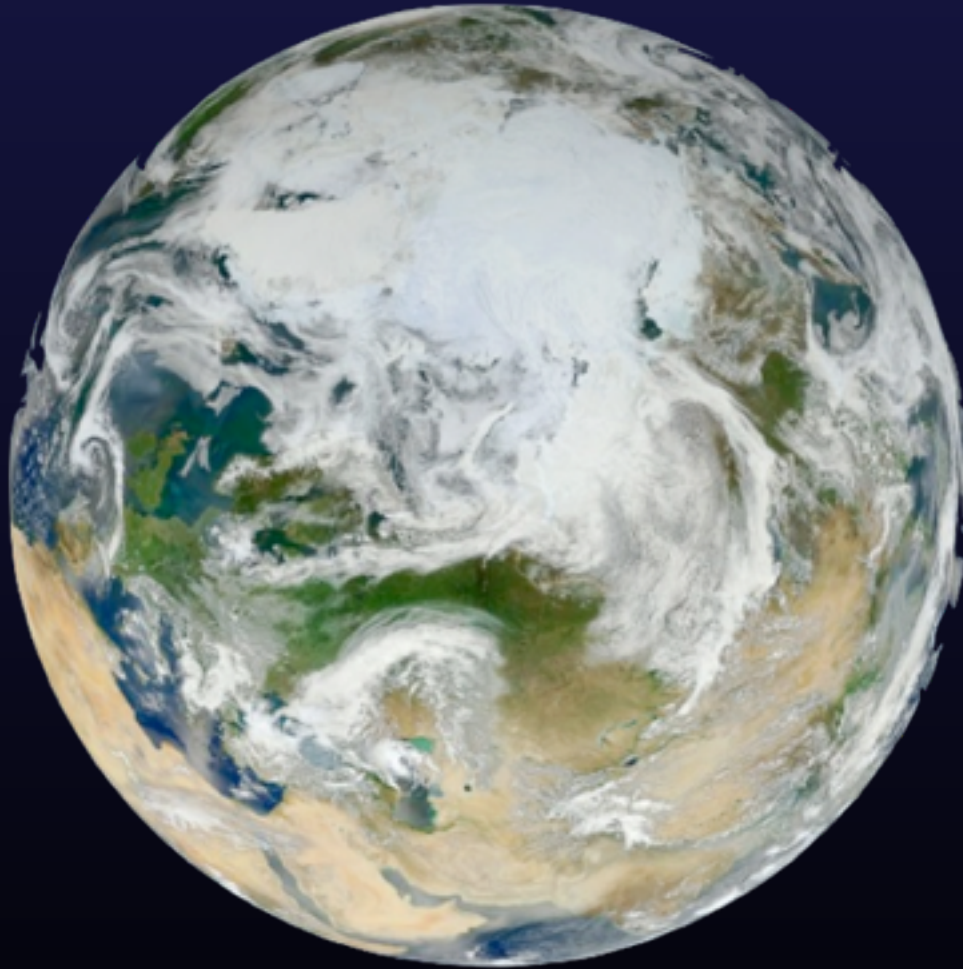


We need high tech solutions that work even under low tech circumstances

Extreme circumstances should **not** disrupt the entire (electric) system

# MOTHER **NATURE** DOES NOT NEGOTIATE

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# MOTHER **NATURE** DOES NOT NEGOTIATE

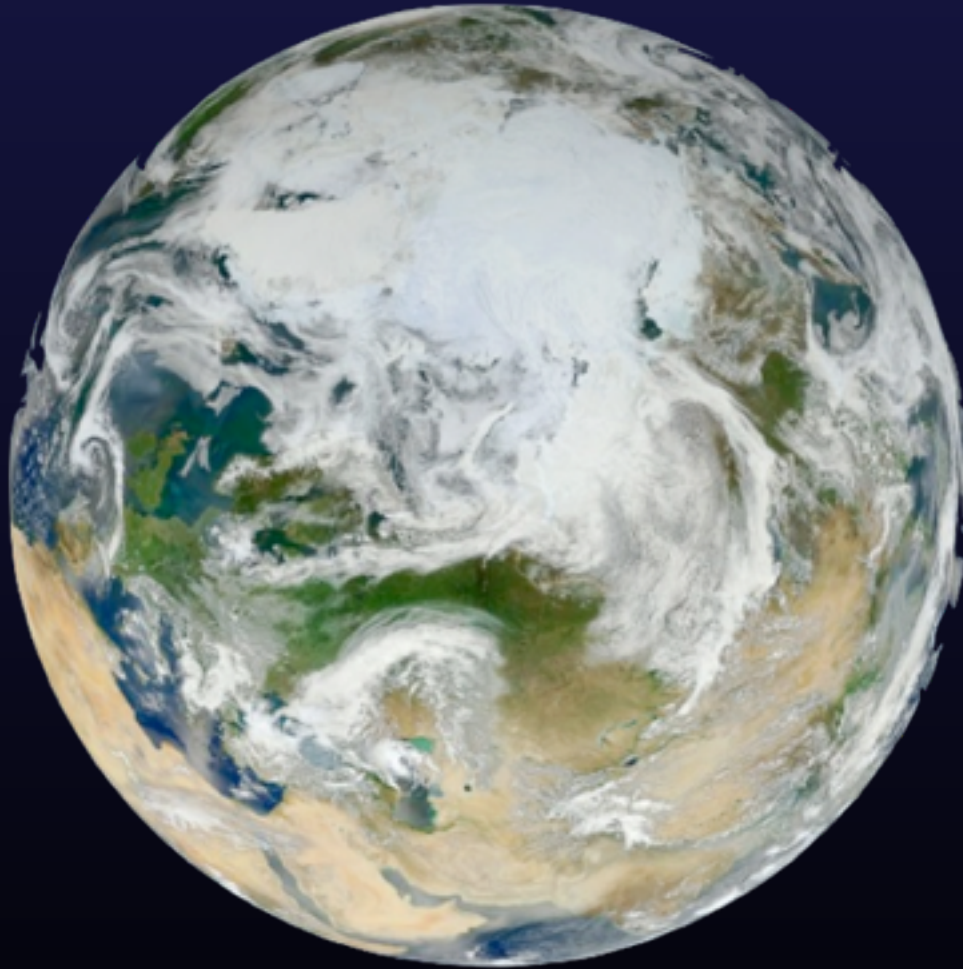
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You cannot fool  
the laws of physics!

# MOTHER **NATURE** LOVES COMPETITION

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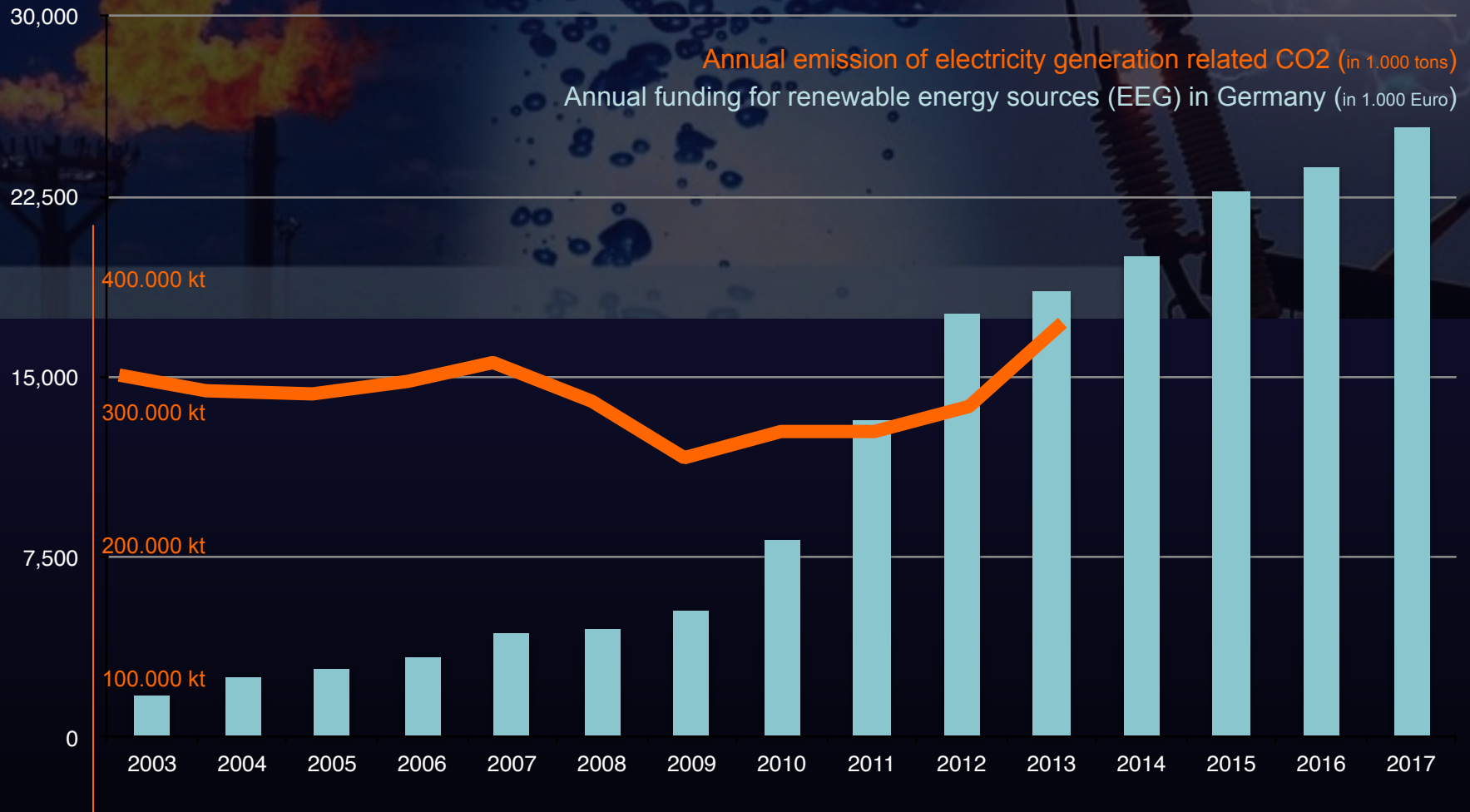
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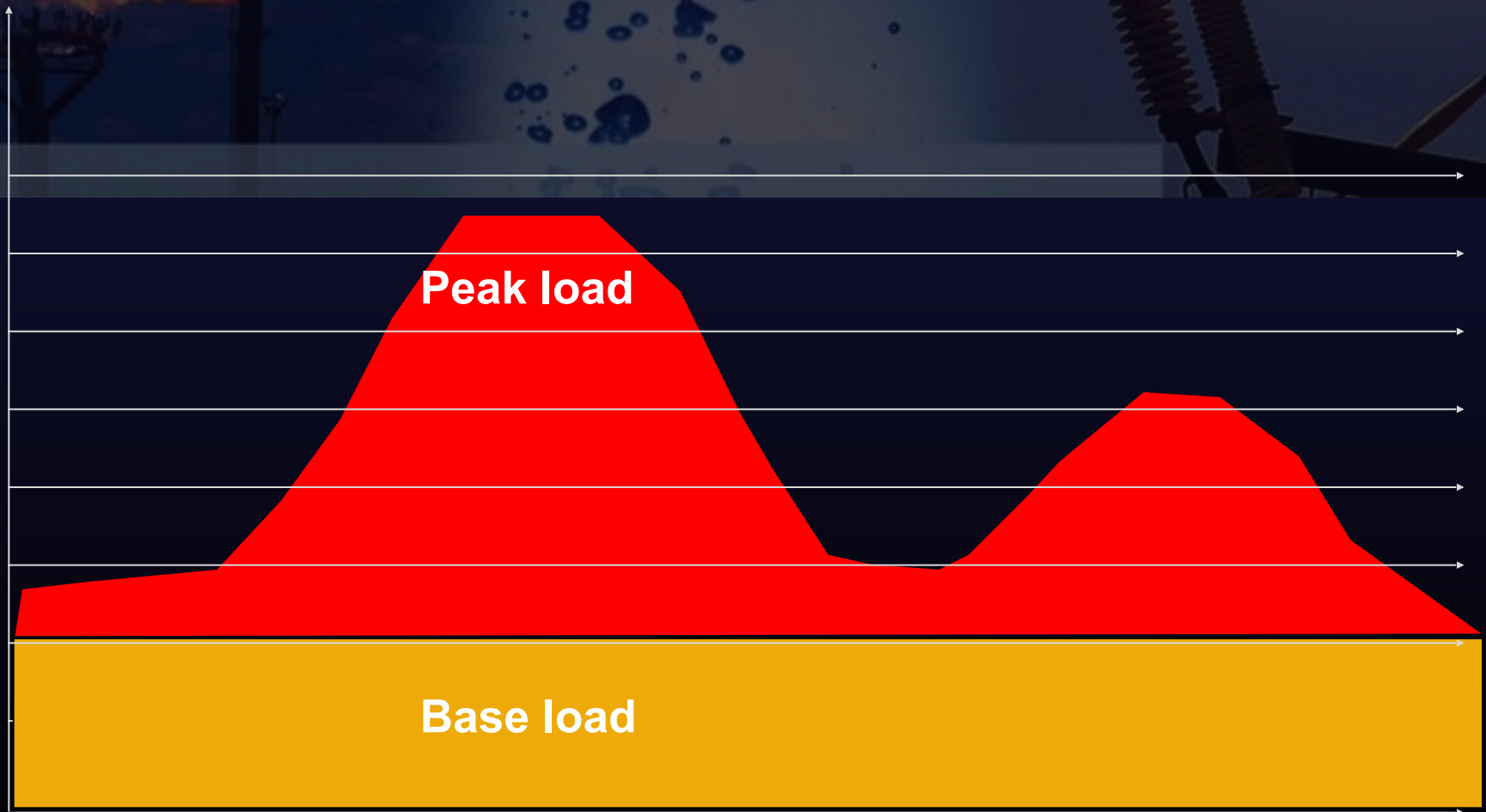
Millions of species  
compete in the cooperative  
effort to sustain and advance one shared ecosystem



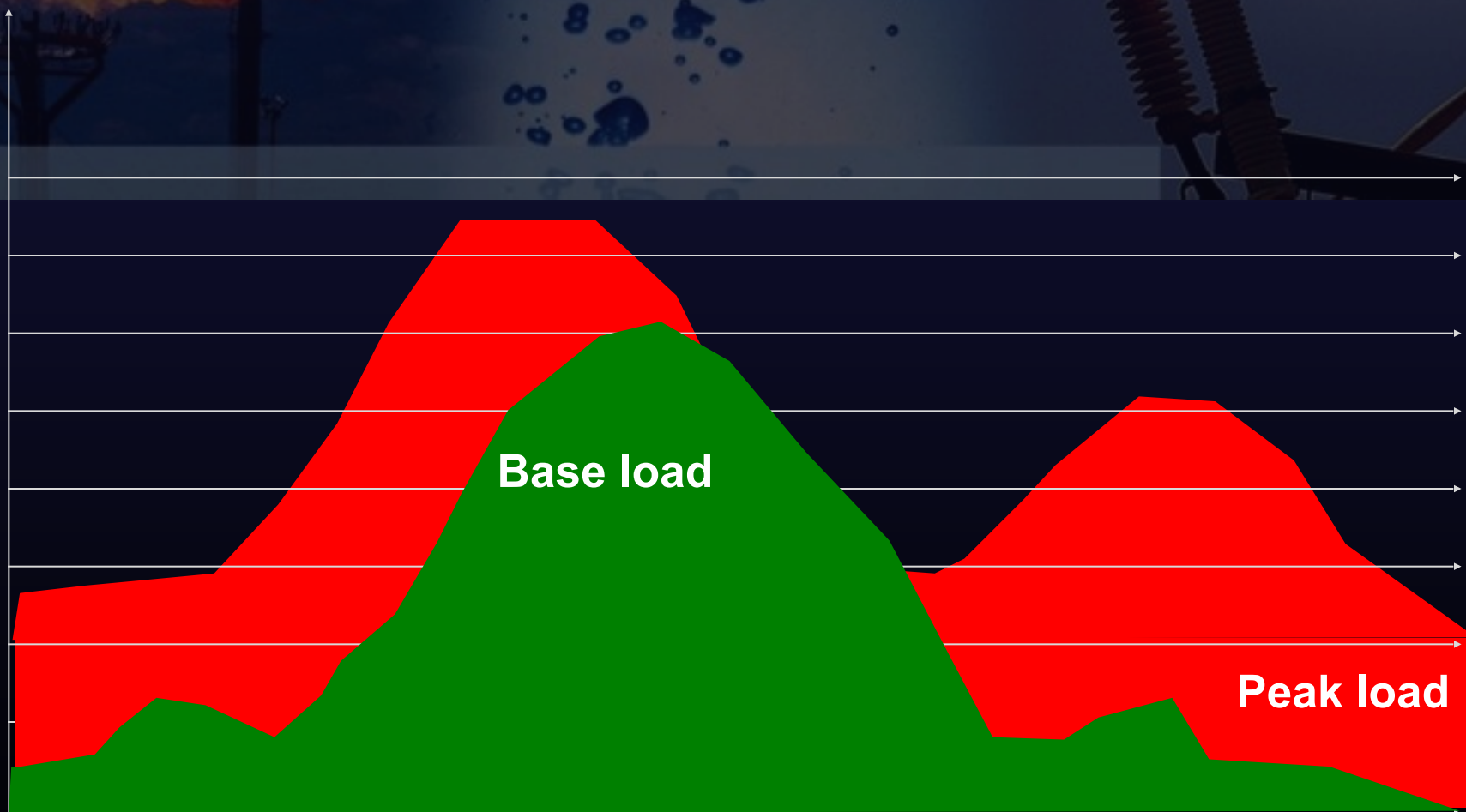
# MISTAKES DONE: INVESTMENTS AND RESULTS



# OLDSCHOOL VIEW



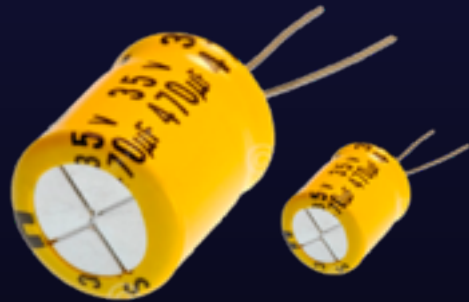
# FUTURE BASE LOAD PEAK LOAD VIEW





# MARKET DESIGN ...

Electrical energy is a  
**capacity** product



- consumption MUST always align with production
- storage has low efficiency
- control of consumption (DSM) is easier
- We'll lack in capacities

But handled in the market  
like **stock bulkware**



- We usually talk about energy savings, not capacity savings
- Most incentives offered on production quantities
- We'll get flooded by electrical energy

# ENERGY SYSTEMIC CHANGE



Significant systemic change:  
flexibility through market-based solutions is needed

## Trends

centralised - decentralised



conventional - renewable



fixed - flexible



## Obstacles

grid instability



grid congestion

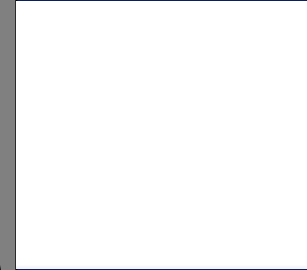


volatile markets



## Solutions

Smart  
Grids



Intelligent  
Markets

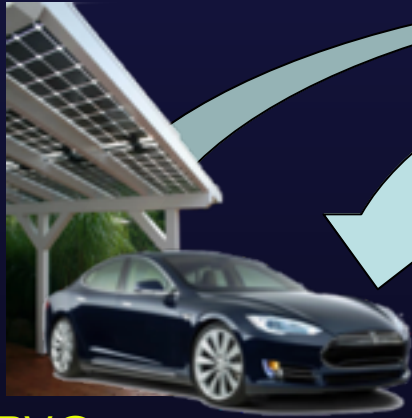


## Key

Flexibility



# SMART ELECTROMOBILITY



PV@company



PV@home

- PV with 5 KW is sufficient for 800.000 KM in 20 years
- 25% of a Tesla S capacity (85KWH) is good for 3 days of electrical operation @home
- Cars stand still 23 hours a day
- Motion is easy to predict
- Electric cars are perfect energy storages and load balancers

**Dear grid operator, please bring my electricity to and from my car, anytime, anywhere, that's your future challenge!**



Company (@work)



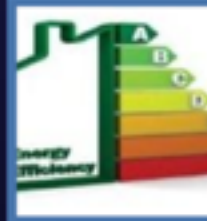
Home (@work)



# CONSUMER ORIENTATION



Energy savings



Energy efficiency



Innovative services



Consumer empowerment



Environmental protection



Distribution network efficiency

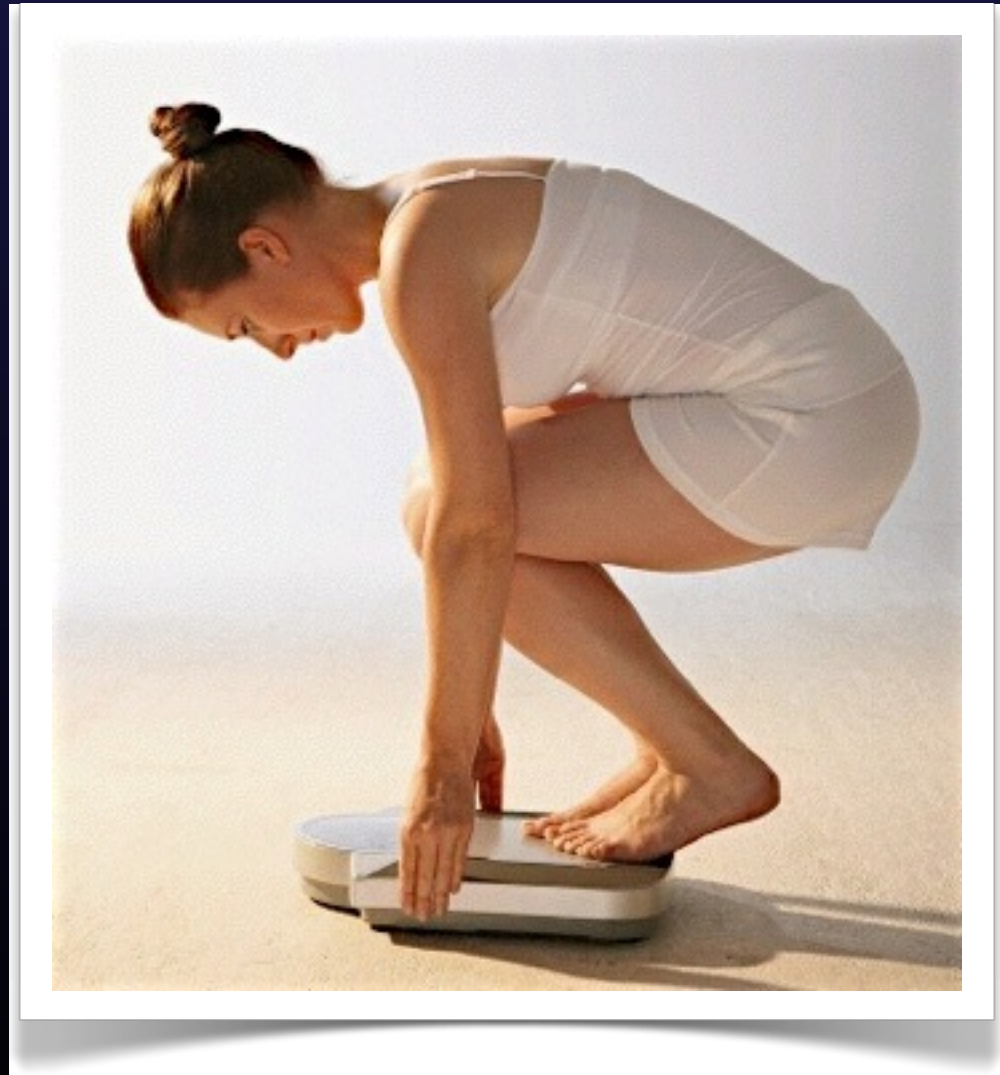
# YOUR WEIGHT ON DIET ...

Could a diet work out fine  
without weighing regularly?

What if your balance just shows  
your total summary of all weights  
in a year only?

Compared to the function of a  
dumb meter, it may answer you  
a weigh of 73 tons and 675  
kilogram an march 16<sup>th</sup>.

Great stuff!



# YOUR ENERGY ON DIET IS ...

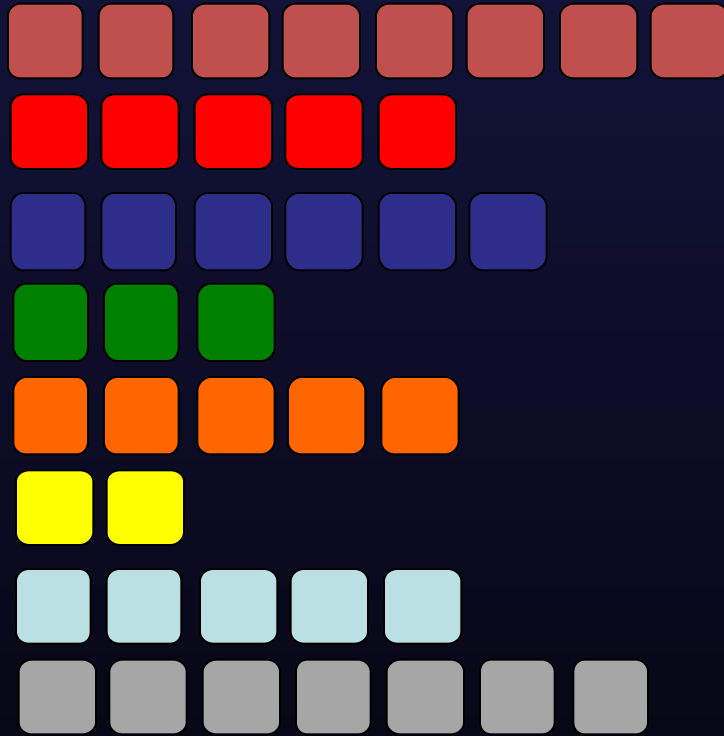
How could one have the energy demand under control without regular “weights”?

Previous dumb meters are precise and solid devices, but they just display the “total weight” of a consumer, nothing else.

You may try to become energy efficient on such information level ...



# MORE INFORMATION REQUIRED?

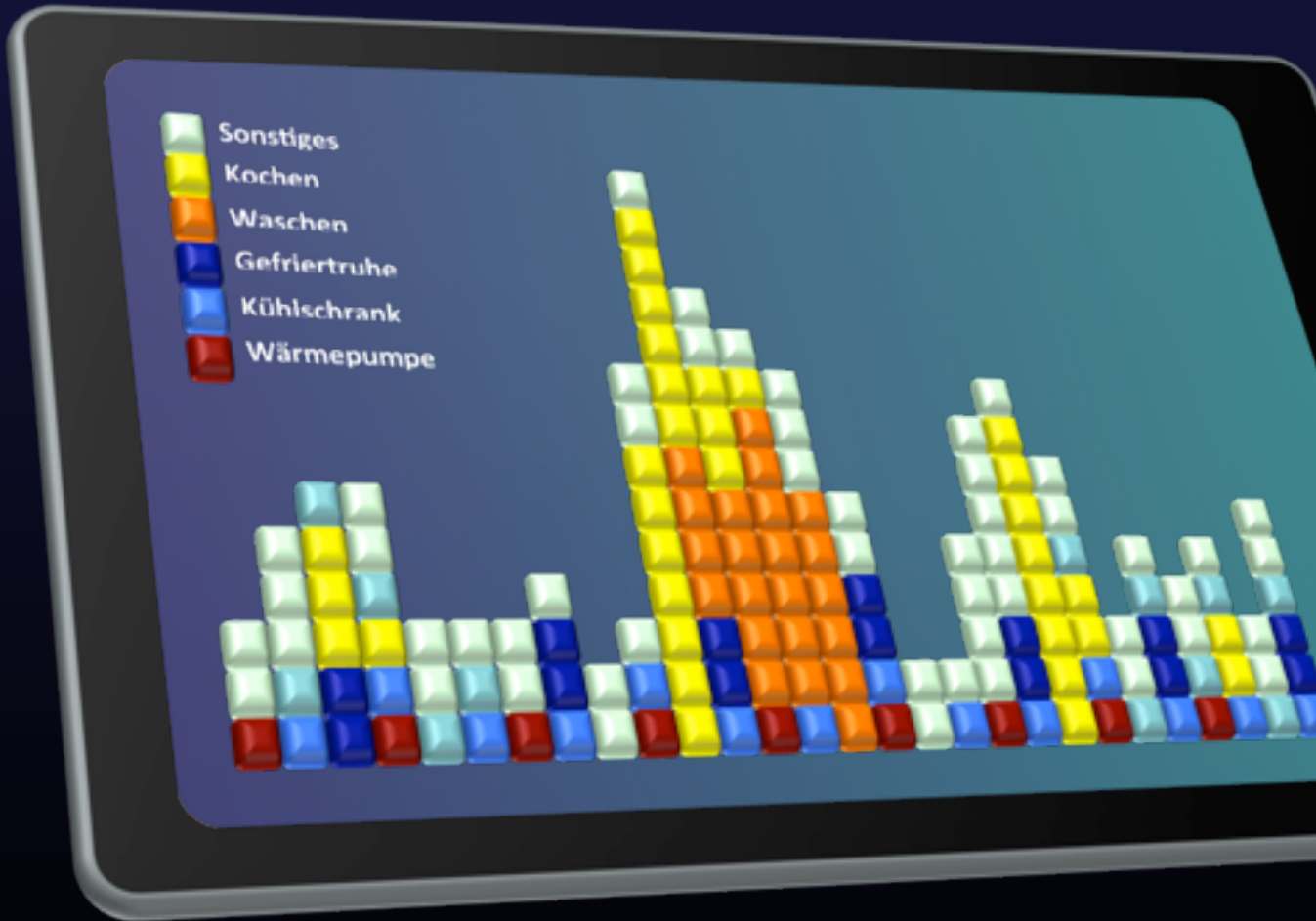


Boilers	53,4 kWh
Cooking	32,8 kWh
Washing	38,2 kWh
Fridges	22,9 kWh
Heat pump	34,3 kWh
Illumination	12,2 kWh
Media	34,6 kWh
Other	44,9 kWh

... plus some more simple statistical information,  
tachometers, graphs and easy to understand hints ..



# ENVIEW ANALYTICS

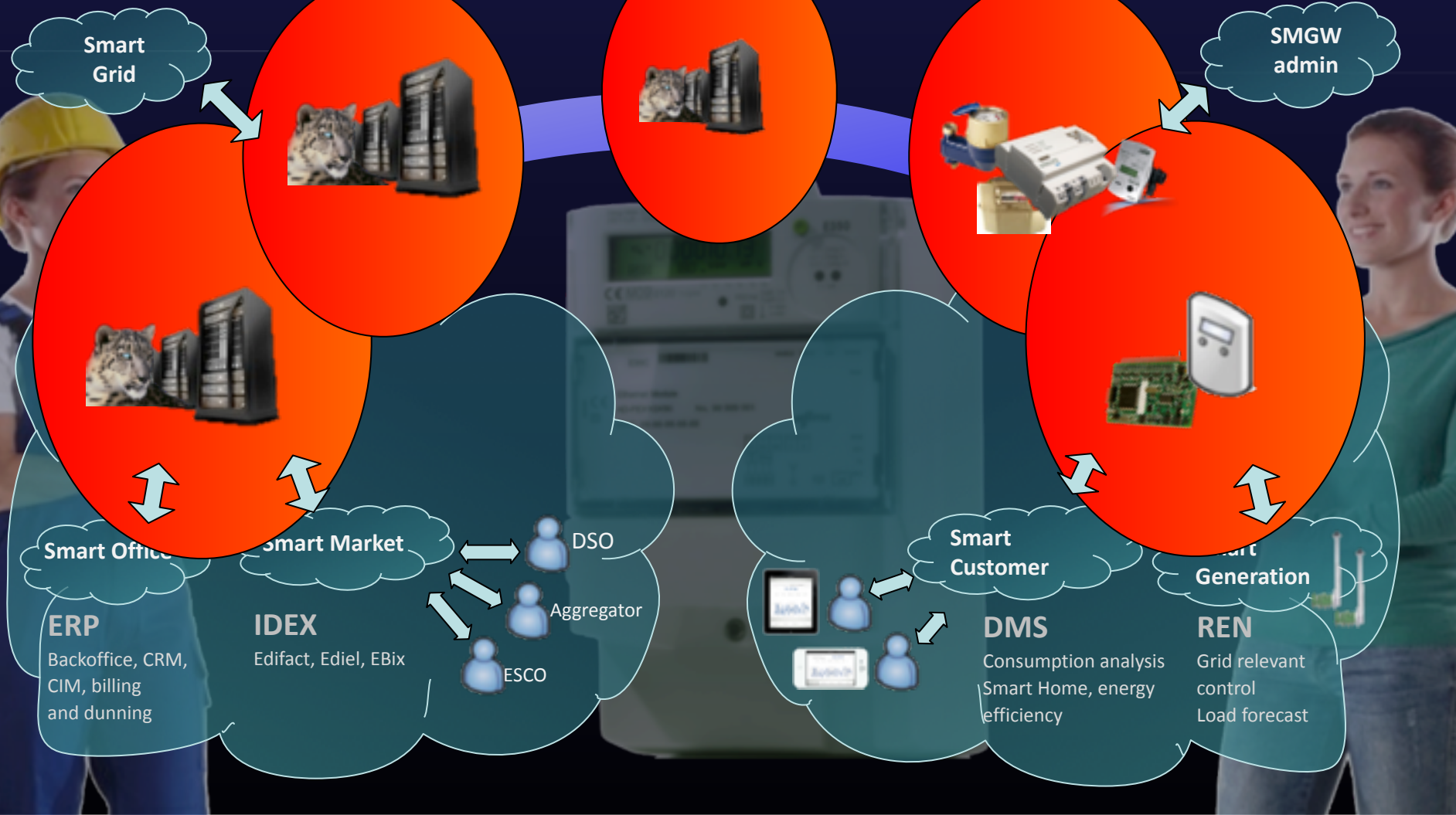


# METERING TECHNOLOGY BRIDGE

Generation Management  
Compensation Management

Meter reading  
Workforce Management

Smart Meter Communication  
Head-End System



# WHO WE ARE



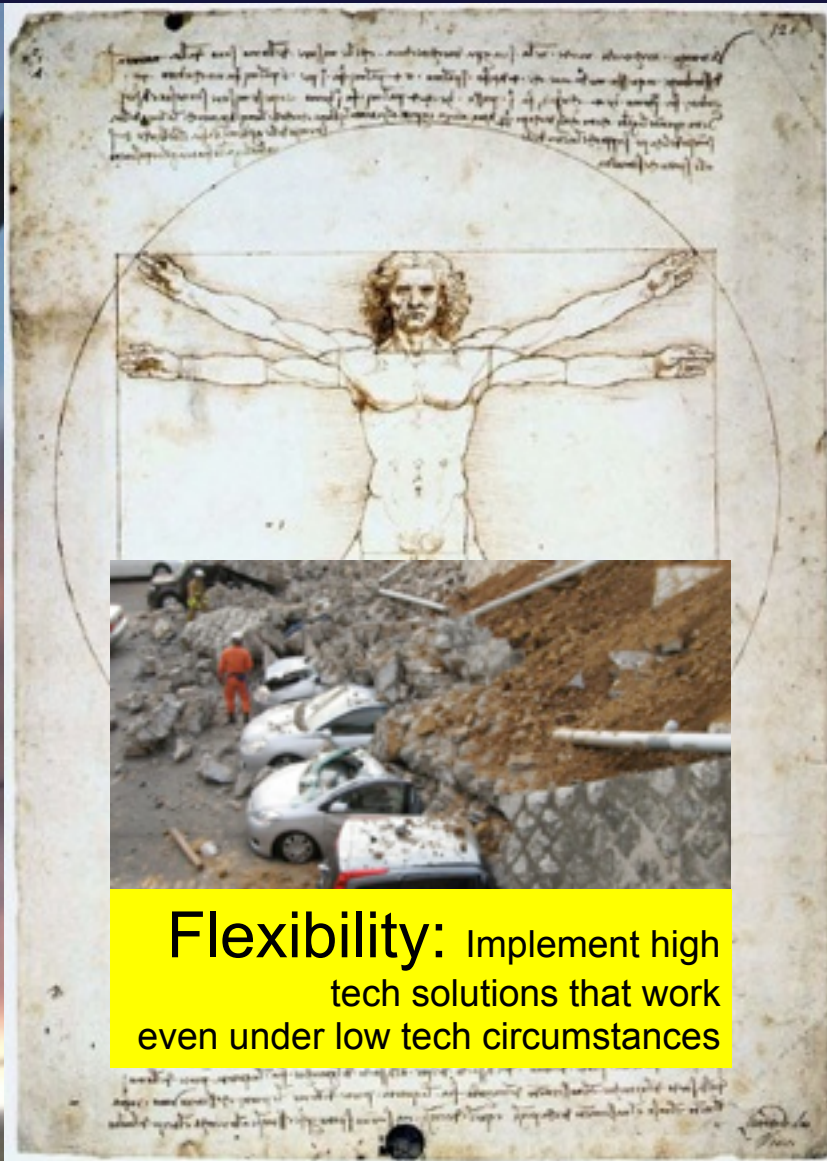
# A POWERFUL TECHNOLOGY BRIDGE

- **IDSpecto SMDM** System with state-of-the-art software design
- 400+ different meter drivers for electricity, gas, water and heat
- Workflow engine for automatic monitoring of all data collection, aggregation and processing functions
- **Unlimited** scaling of performance and database storage by physical expansion of basic IT-platform only
- Open interfacing to **ERP** and **billing** IT





# CONCLUSION – FLEXIBILITY MATTERS



**Flexibility:** Implement high tech solutions that work even under low tech circumstances

- You shouldn't finance what you can't measure
- The balance of renewable energy generation requires DSM
- Capacity tariffs and smart meters give the framework for a proper market design
- Link incentives to grid compliant customer behaviour
- The rest of the story is just about technology; ready to use