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Confédération suisse
Confederazione Svizzera
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Bundesamt für Energie BFE
Office fédéral de l'énergie OFEN
Ufficio federale dell'energia UFE
Swiss Federal Office of Energy SFOE

DIGITALIZATION OF THE SWISS ENERGY SECTOR – AN OUTLOOK

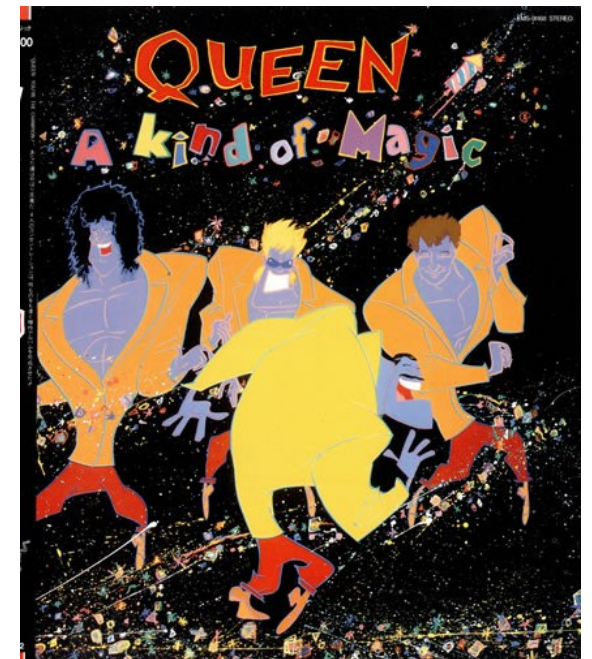


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DATA AND DIGITAL- ENABLER OF INNOVATION IT'S A KIND OF MAGIC...

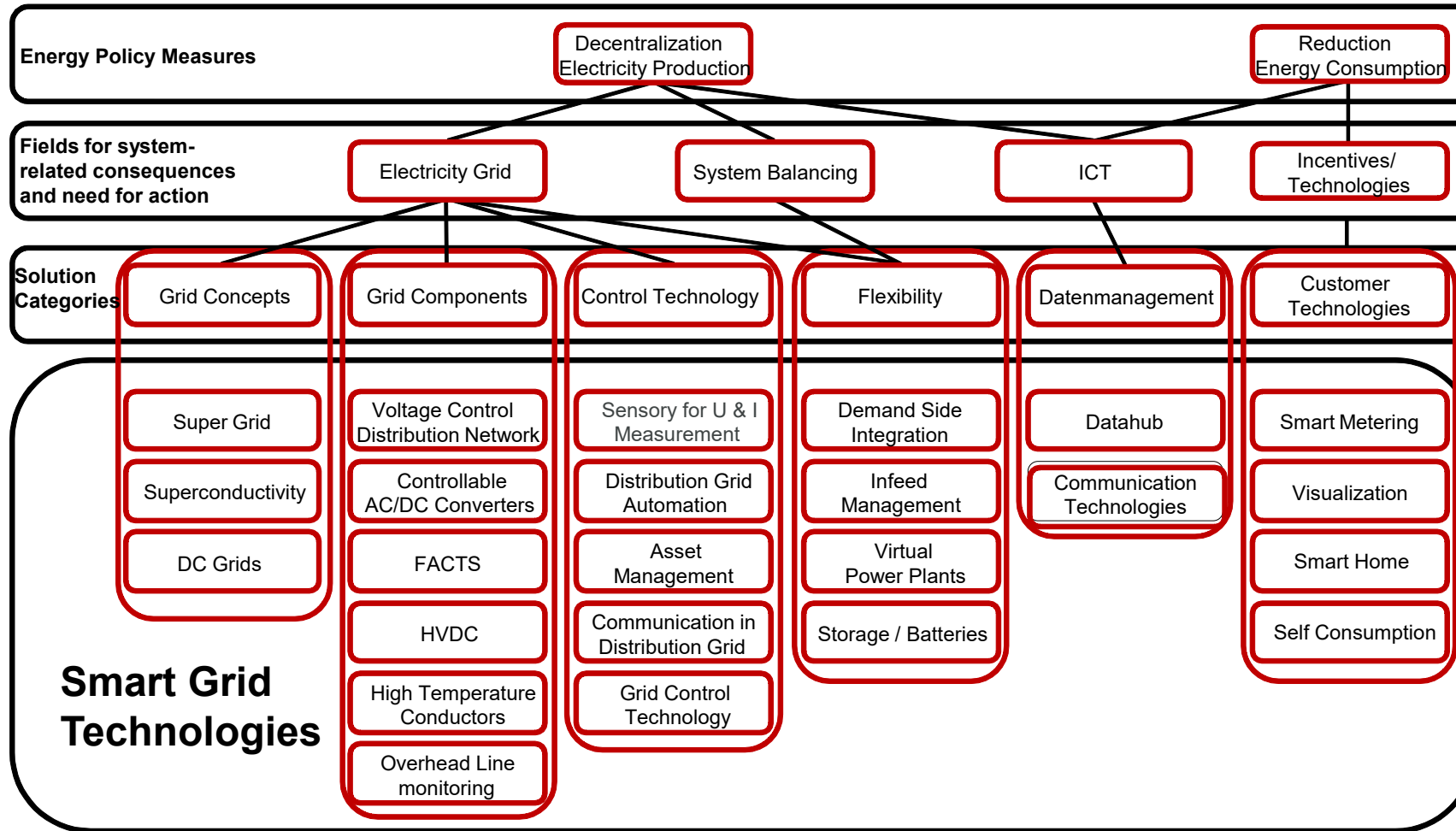
How can data / digital enable the transformation of the energy supply system?



What is being pushed forward to digitalize the energy system?



DIGITALIZATION «OLD SCHOOL» ON THE CONCEPT OF SMART GRIDS



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Eidgenössisches Departement für
Umwelt, Verkehr, Energie und Kommunikation UVEK
Bundesamt für Energie BFE
Abteilung Energiewirtschaft

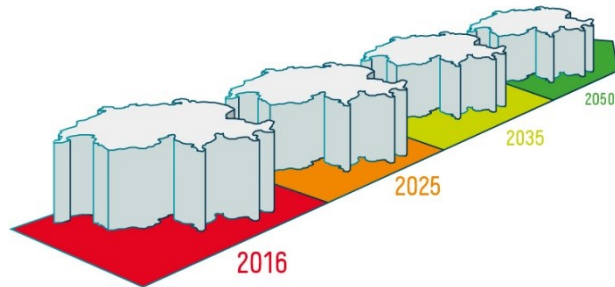
AG Technologie 27. März 2015

Smart Grid Roadmap Schweiz

Wege in die Zukunft der Schweizer Elektrizitätsnetze



ENERGY STRATEGY 2050 CONTRIBUTING TO DIGITAL TRANSFORMATION



Measures for increasing data availability and -security

- Smart Metering
- IT-Security
- Data Access

Measures for Smart Grids

- Flexibility belongs to Flexibility Owner
- Utilization of Flexibility for Networks
- First Opening of Flexibility Market

Decentralized Approaches

- Self Consumption Associations
- Requirements for Decentralized Storages in Self Consumption Associations



ENERGY STRATEGY 2050

DIGITALIZATION 1.0 AKA SMART METER

- Introduction of smart meters in Switzerland by the **end of 2027** with at least 80% coverage.
- Measuring and provisioning of 15-minute **load profile values** at least daily.
- Open **customer interface** with **real-time data** for smart homes.
- **Downloadable data** accessed and downloaded by consumers for free.



Coverage of Smart Meters 2022 ~30%



DIGITALIZATION 1.0 AKA SMART METER BENEFITS AND SPLIT INCENTIVES

Benefits of data increasingly visible in..

Energy:

- Promoting **energy efficiency** through presentation and analysis of consumption. Raising **Awareness**.
- Business models and **customer retention**.
- Reduction of balancing energy.

Grid:

- Cost savings **change of tenants** / end customer.
- Cost savings manual **meter reading**.
- Improved **network planning** through more data.
- **Documentation, simulation & monitoring** network.
- Basis for the introduction of **dynamic tariffs / flexibility**.
- Uptake of **predictive maintenance**.

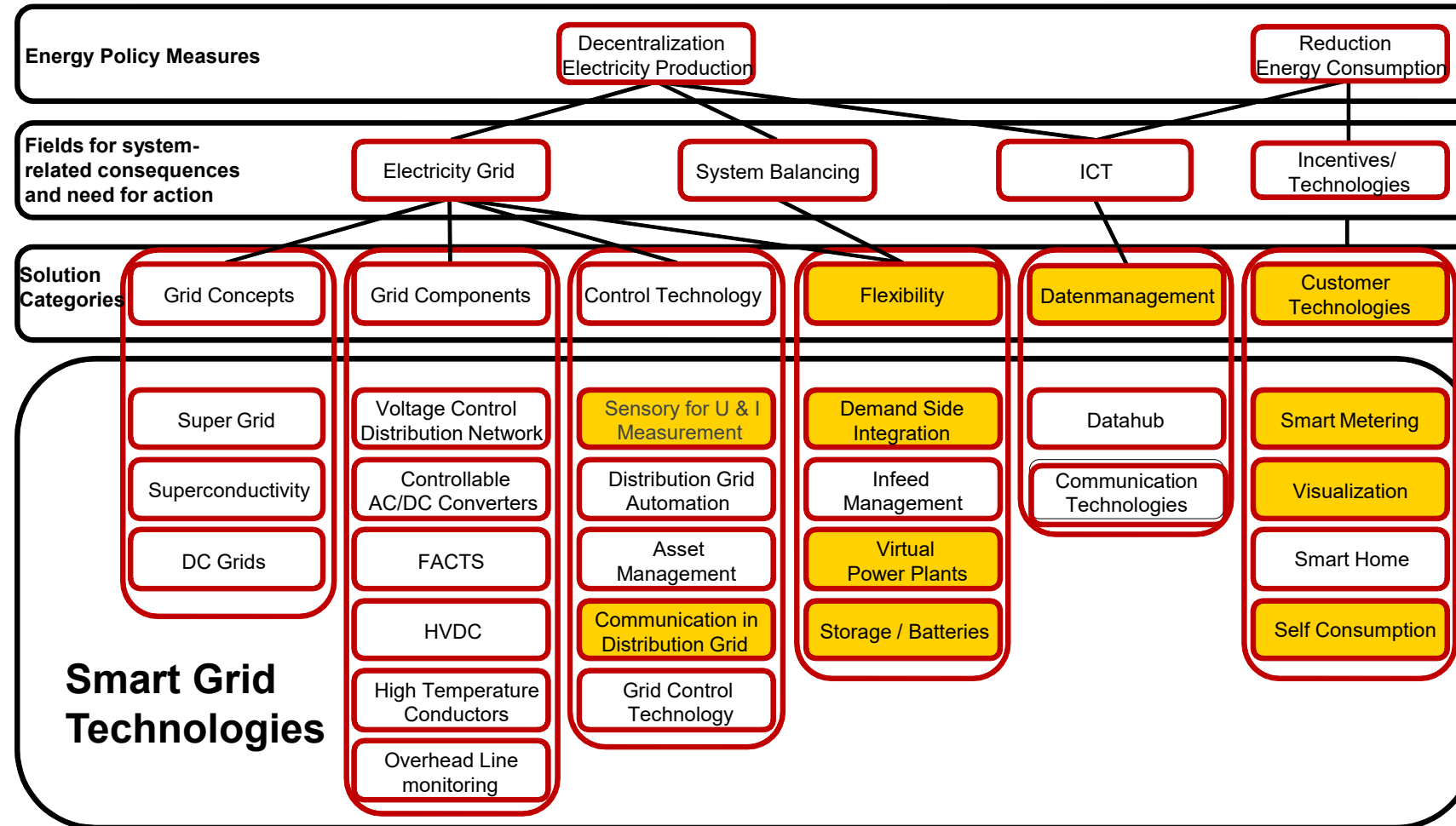


Learning curve since 2018.

More and more DSOs see the
benefits for themselves
(and their customers)



ENERGY STRATEGY 2050 CONTRIBUTING TO DIGITAL TRANSFORMATION



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WINTER CRISIS 2022: DRIVER FOR INNOVATION ENERGY DATA NOT AVAILABLE

Blick

🏠 | SonntagsBlick | Dem Bund fehlen Zahlen zum Energieverbrauch der Schweiz

Energiepolitik im Blindflug

Dem Bund fehlen Zahlen zum Strom- und Gasverbrauch

Wirken die Spar-Appelle? Bern weiss es nicht. Der Bund hat keine Daten zum Energieverbrauch der letzten Monate. Ein neues Monitoring soll Abhilfe schaffen.

Publiziert: 17.09.2022 um 17:28 Uhr | Aktualisiert: 22.11.2022 um 16:09 Uhr



Bund hat keine Ahnung von aktuellem Stromverbrauch

Der Bund hat die Schweizer Bevölkerung zum Stromsparen aufgerufen. Ob der Appell Wirkung zeigt, ist unklar. Die aktuellsten Daten zum Verbrauch sind vom Mai.



Neue Zürcher Zeitung

KOMMENTAR

Jetzt fehlen aktuelle Stromdaten. Die nächste Panne des Bundes kommt mit Ankündigung

Die geringe Bereitschaft, sich um eine zeitige Verarbeitung der Stromdaten zu kümmern, zeigt: Die Berner Behörden haben aus der Corona-Pandemie nichts gelernt.



CONSTRUCTION OF ENERGY DASHBOARD A PUSH FOR DIGITAL TRANSFORMATION

Goals for winter 2022/23

- (1) Create transparency and provide real-time data on Switzerland's energy supply (electricity/gas)
- (2) Raise awareness on current energy consumption
- (3) Visualize the energy supply situation with regard to the current crisis

**BFE**Füllstand Speicherseen
Strom-/Gasverbrauch**BFS**Durchschnittliche
Endkundenpreise**MeteoSchweiz**Temperatur
Niederschläge**BWL / WL / VSG**Gasverbrauch
CH-Anteil EU-Gasspeicher**BWL / WL / SwissG**Stromproduktion
Landesverbrauch Strom**VNB / OSTRAL**Stromkontingentierungen
Stromeinsparungen**AGSI+**

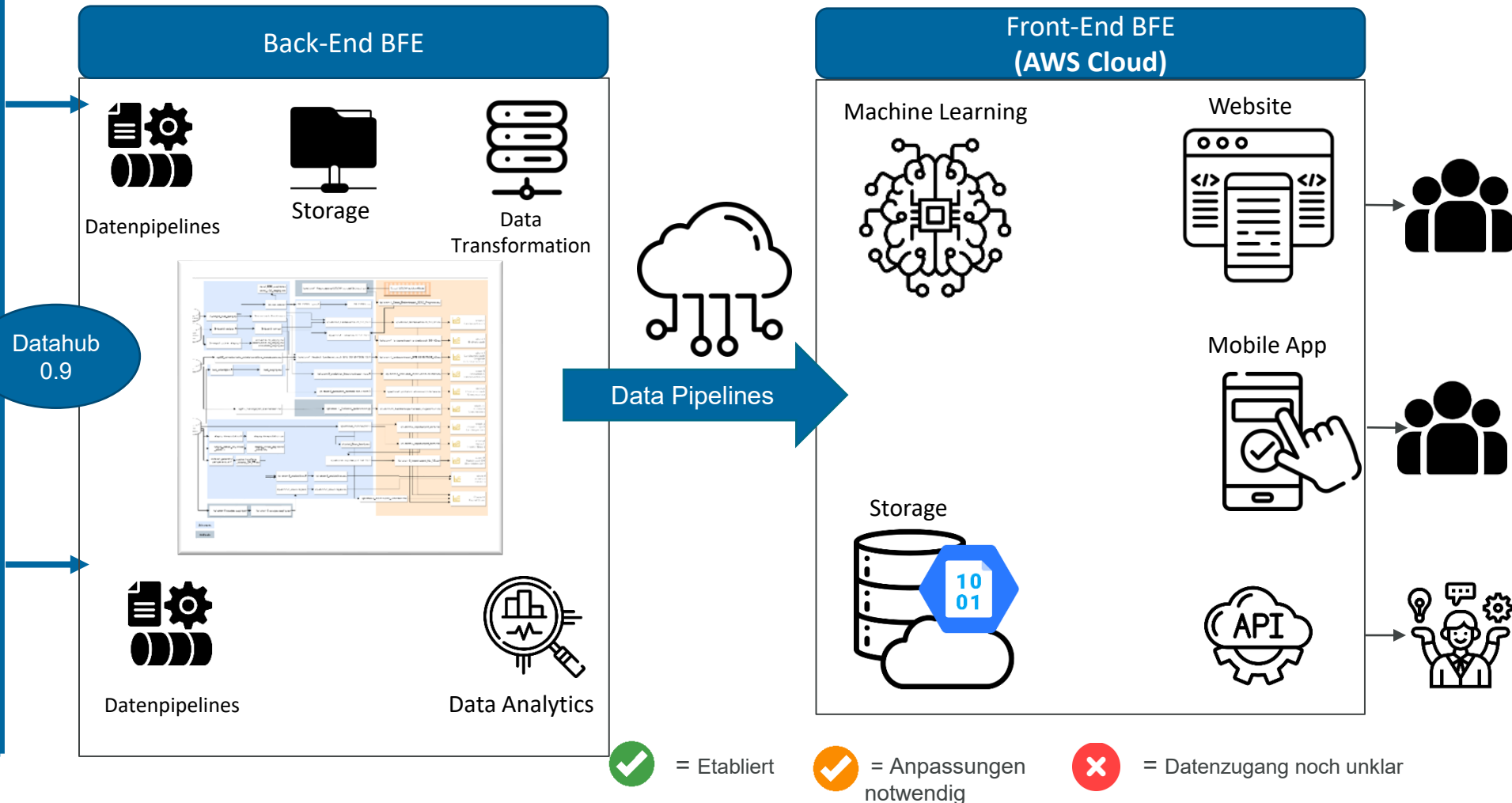
Füllstand Gasspeicher

**EEX**

Terminpreise Gas und Strom

**ENTSO-G**Gas-Nettoimporte,
Gasexporte nach Russland**ENTSO-E**Stromimport und -export,
Stromproduktion DE und FR

ENERGY DASHBOARD SFOE CLOUD TRANSFORMATION



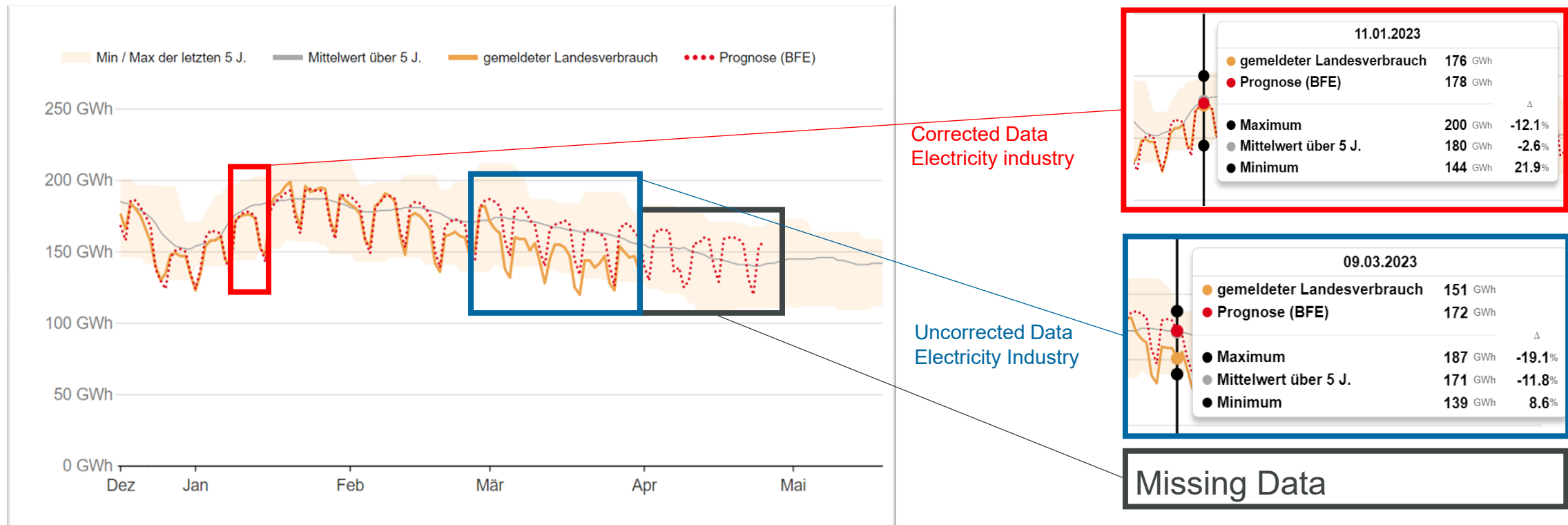


ENERGY DASHBOARD

RISE OF DATA SCIENCE & MACHINE LEARNING

- Electricity industry unable to provide current reliable data on consumption

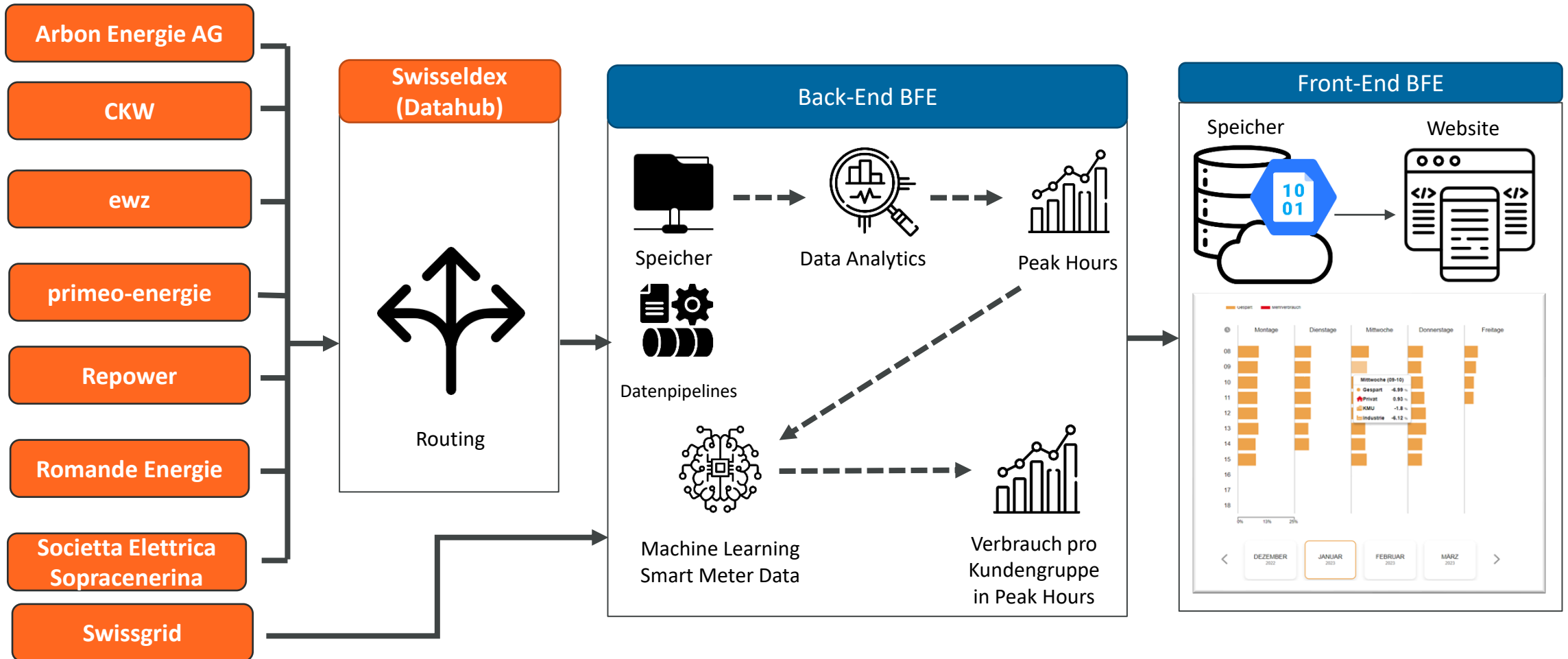
➔ Data science model with machine learning provides accurate forecasts



Real-time Estimation of Swiss Electricity Savings using Smart Mete Data. Mari, et al. 2024. Submitted.

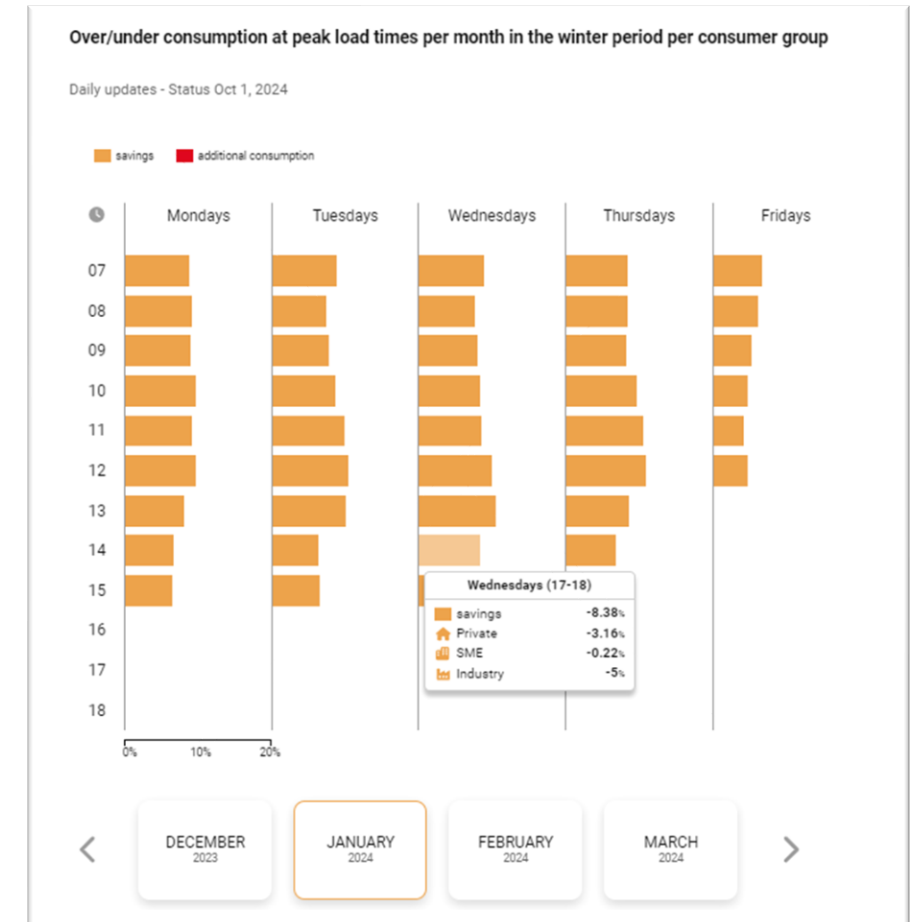
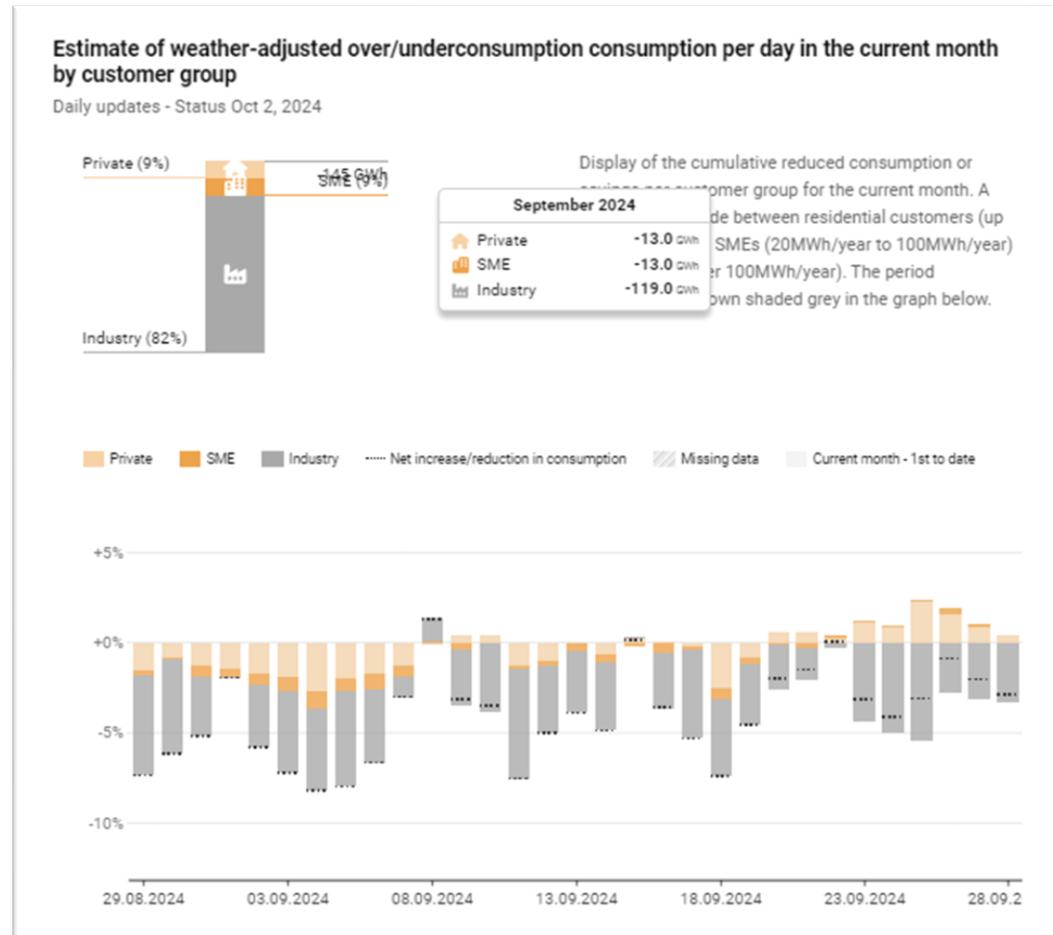


DATA SCIENCE FOR ENERGY DASHBOARD USING SMART METER DATA FOR ANALYSIS





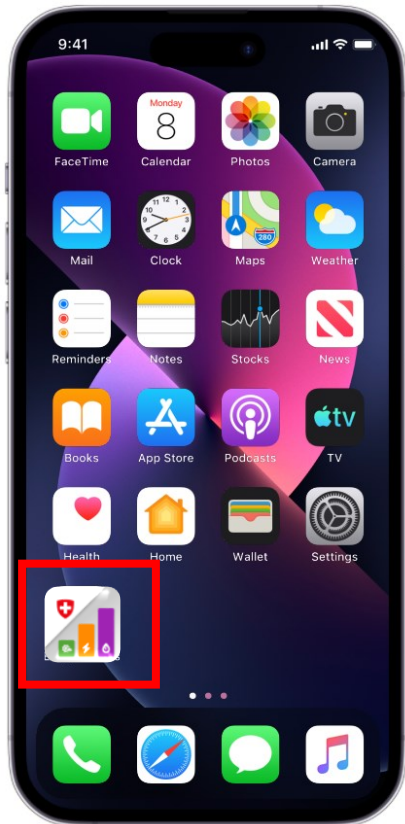
DATA SCIENCE FOR ENERGY DASHBOARD CONSUMPTION SAVINGS OF CONSUMER GROUP





THE MOBILE APP: ENERGY DASHBOARD NEW NORMAL DIGITALIZATION

App available in
App Store and
Google Play



Optional registration
for additional
features

1:42

EnergyInfoSwiss

Registrieren Sie sich, um in Zukunft personalisierte Informationen zur Energieversorgung zu erhalten.

E-Mail

Passwort

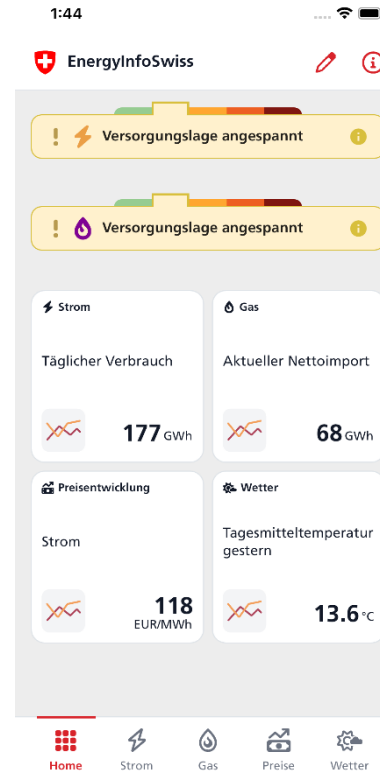
[Passwort vergessen?](#)

[Anmelden](#)

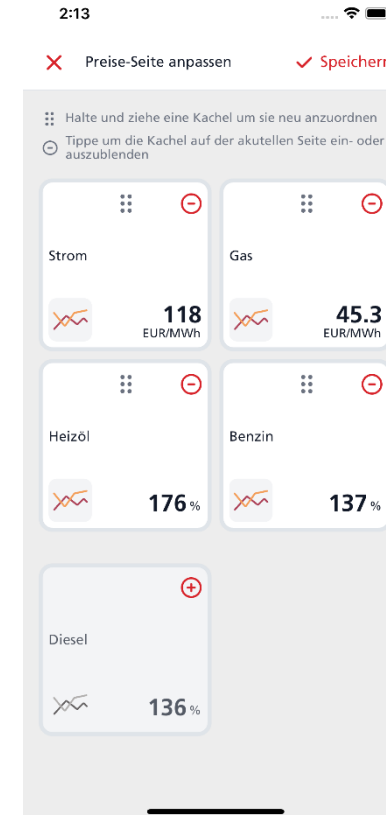
[Registrieren](#)

[Als Gast fortfahren](#)

Easy to use with
important information
at a glance.



Customizable
content



Notification of
important events



App Store



Play Store



DATA SCIENCE & ENERGY EFFICIENCY THE PROMISE OF DIGITALIZATION COMING TRUE



PERLAS

DE | FR | IT [Einloggen](#)

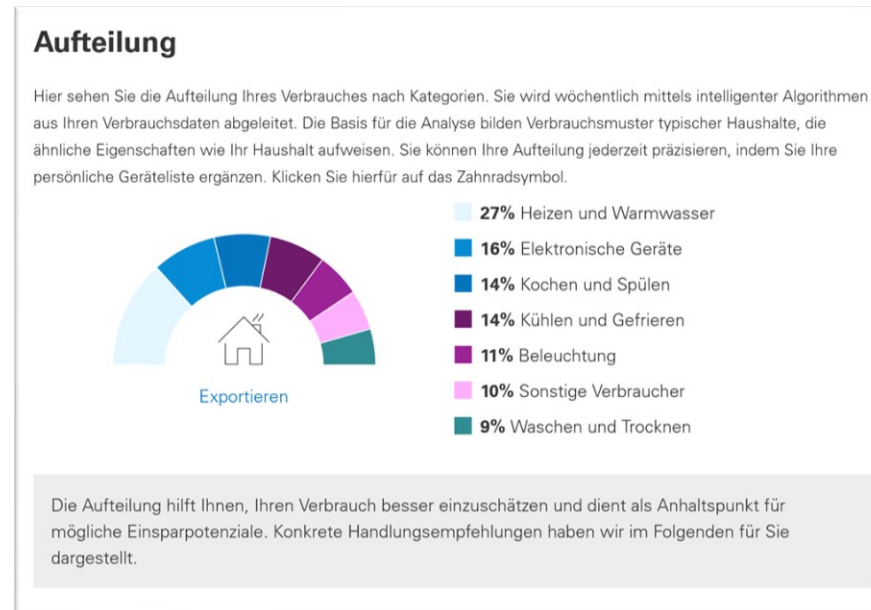


**Die digitale Energieberatung
für alle Schweizer Haushalte**

[Registrieren](#) [Einloggen](#)

Ihre digitale Energieberatung

PERLAS ist ein durch [EnergieSchweiz](#) und das [Bundesamt für Energie \(BFE\)](#) unterstütztes Angebot, welches Schweizer Haushalten eine Energie-Erstberatung ermöglicht – vollständig kostenlos und unverbindlich. Die Beratung basiert auf der Analyse der persönlichen Stromverbrauchsdaten und wird vom Schweizer Unternehmen BEN Energy AG bereitgestellt.



- PERLAS – free platform for analyzing smart meter data
- Enables personalized savings tips and comparisons with households
- Potential savings of **5-10% for end customers**

www.perlas.ch



AN OUTLOOK FOR (MORE) DIGITALIZATION FEDERAL ACT ON SECURE ELECTRICITY SUPPLY



Virtual
Self-Consumption
Communities

Datahub

Flexibility

Metering

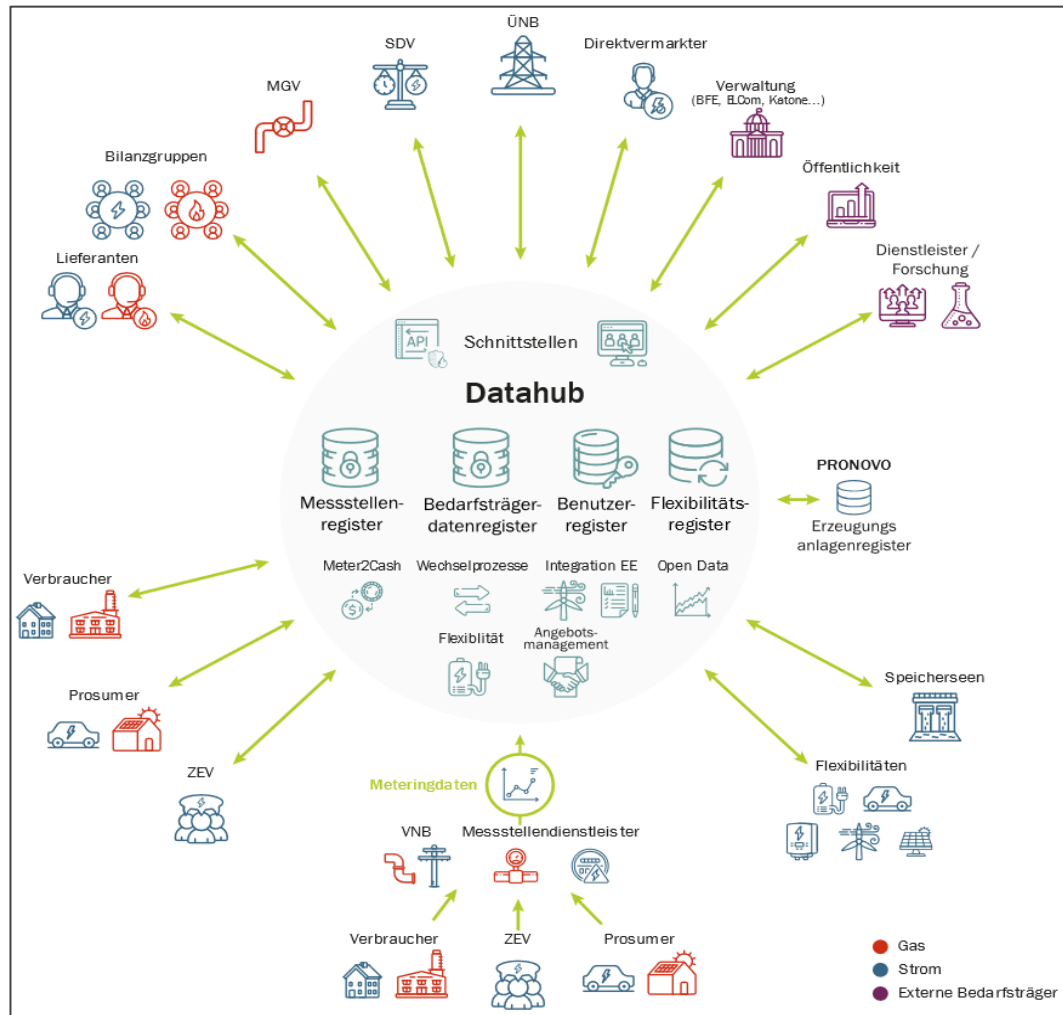
Local
Energy
Communities

Open Data

Refunding
Grid-Charges
Storage



(R)EVOLUTION OF ELECTRICITY DATA EXCHANGE NATIONAL DATA PLATFORM

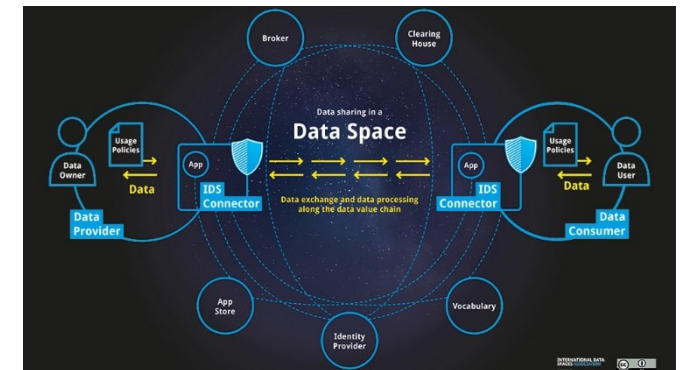
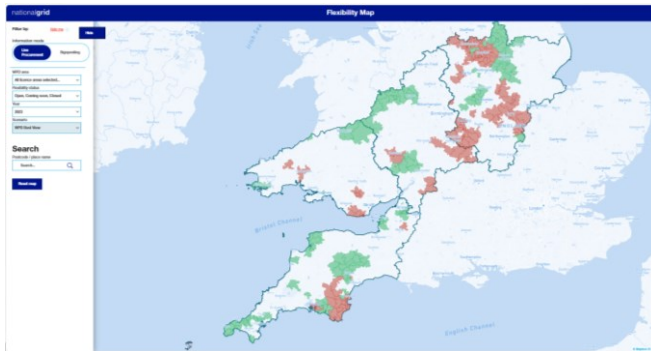
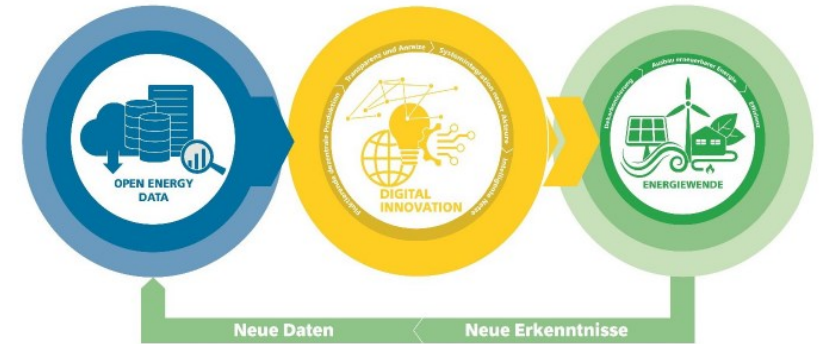


- **Data & processes:** Centralized. Master data and aggregated data for statistics/open data. Processes for changing service providers and data quality.
- **Digital networking of decentralized data silos** (DNO, market data logger, Pronovo, balance groups, reservoir).
- **Data quality & process analysis** as a basis for regulations, range of services or specifications.
- **Data portability and third-party access.** Enables authorized service providers (energy supply companies and others) and interested parties to make new data products available (open data).
- **Other energy sources (gas).** Gas datahub possible via electricity datahub. Separate solution shows slightly negative cost-benefit ratio.



TRANSPARENCY AND DIGITAL INNOVATION RISE OF OPEN ENERGY DATA & DATA SPACES

- Open energy Data spurs digital innovation.
- Currently “toxic cocktail” in Swiss Energy Industry.
 - Missing guidelines
 - Missing incentives
 - Unclear responsibility
 - Diffuse fears, e.g. data protection
 - Lack of coordination / centralization
- European Commission and other EU countries are pioneers in Open Energy Data and Data Spaces





TAKE HOME MESSAGES DIGITAL AS ENABLER FOR TRANSFORMATION

- (1) Digitalization is an enabler for the transformation of the energy system
- (2) Digital data and its use contribute to the integration and expansion of RES
- (3) Digital helps to activate consumers being at the heart of the transformation
- (4) Data science & AI help to increase energy and operational efficiency
- (5) Further contributions in energy informatics ever push forward digital frontiers enabling transformation



YOUR CONTRIBUTION COUNTS



QUESTIONS?

