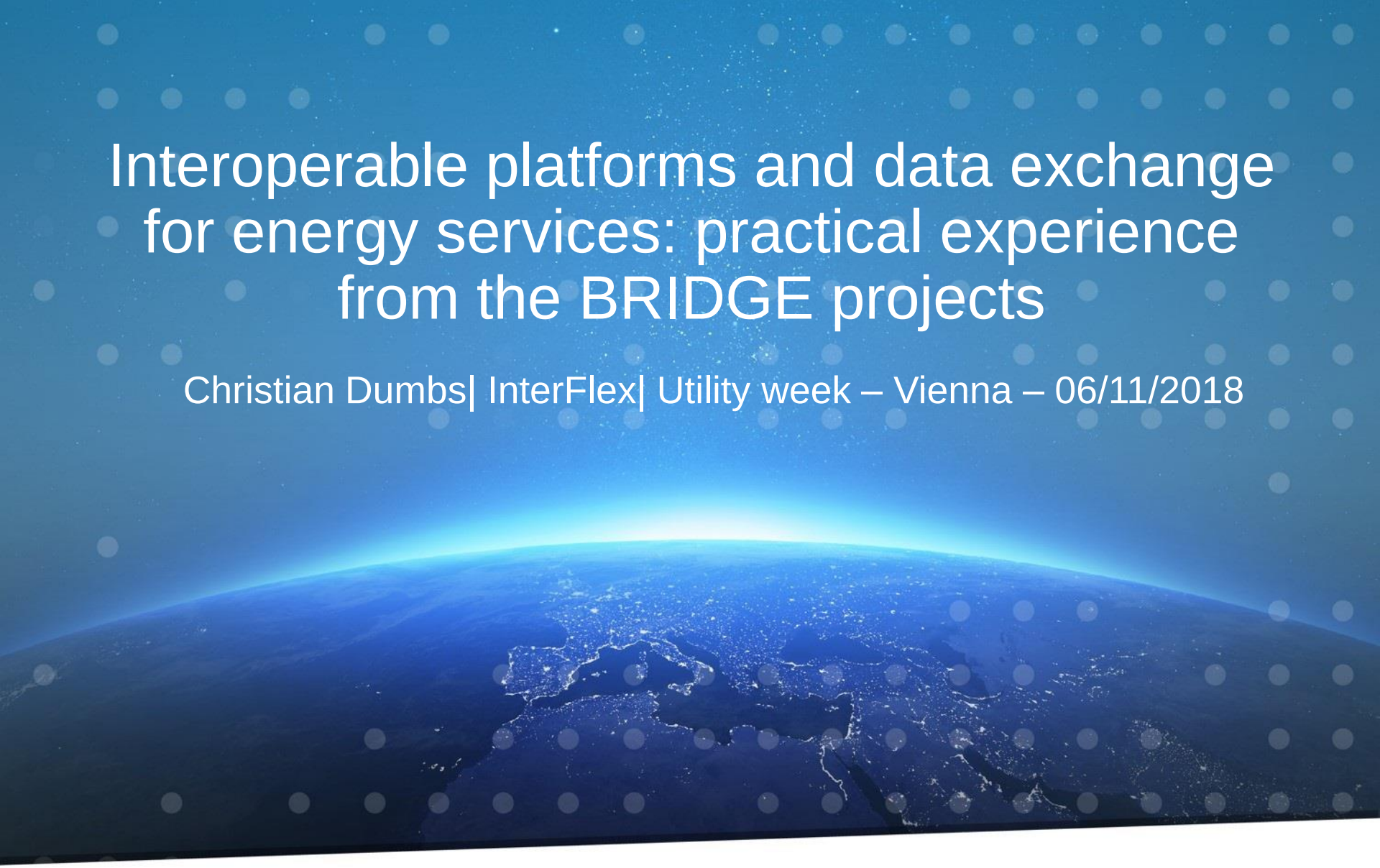
Interoperable platforms and data exchange for energy services: practical experience from the BRIDGE projects

Christian Dumbs| InterFlex| Utility week – Vienna – 06/11/2018



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InterFLEX

InterFLEX

3-years project duration

2017
2019

with a total budget of

22,8M€

fostering collaboration among

20 project partners, thereof 5 major DSOs

Technical Director

DISTRIBUCE

Project Coordinator

ENEDIS
L'ELECTRICITE EN RESEAU

Chairman of the General Assembly

e·on

ENEXIS GROEP

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6 Real-scale demonstrators in 5 European countries

RWTH AACHEN UNIVERSITY
e·on
ENEXIS GROEP
TNO innovation for life
Elaadnl
TRIALOG
accenture
RWTH AACHEN UNIVERSITY
ENEDIS L'ELECTRICITE EN RESEAU
avacon
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InterFlex demos with platforms

Architectures and platforms

Platforms are **specifically developed for the InterFlex project** to meet DSO and/or aggregator's needs

Data and communication model based on the **smart meter framework in Germany**

- **Architecture inspired by SGAM** and generic methods
- **Market platform "Nordpool"** used to calculate Flexibility Prices

- **Platform developed by DSO (Enexis)**
- 2 aggregators adapted their platform and implemented open protocols and open interface to connect DSO platform
- 1 aggregator developed a complete new platform to connect to the local assets

- **Platform developed by DSO (Enedis)**
- IT adaptations from both aggregators and gas DSO to interact with the DSO platform

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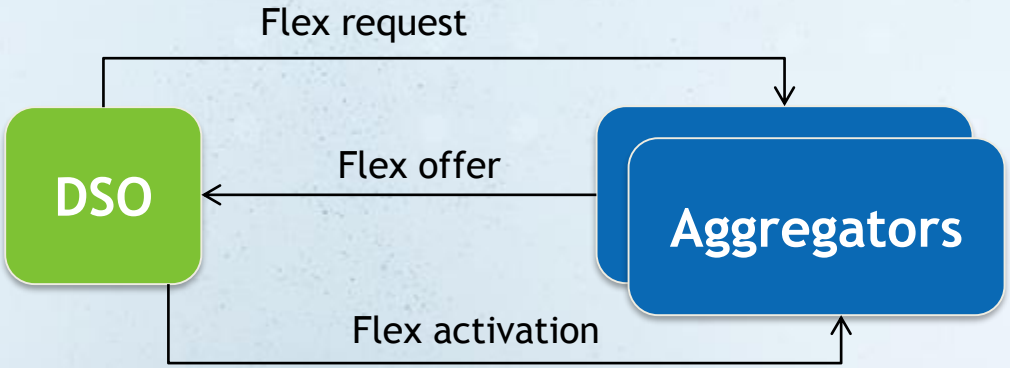
Data shared among different parties

Data is shared between **DSO** and **aggregators**

Flex specifications (technical & financial)
Flex activations



DSO directly steers flexible assets from **consumers** and **producers**

Consumption and production data
Flex activations

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Business Models

Studied **NOW**

- **Optimization of DSO operations:** reduced curtailments, improved quality of supply, optimization of balancing circle
- **Flexibility market for DSO needs at local scale** (French and Dutch demo)
- **Ordering flex on a DSO market in relation with the TSO market**

Foreseen in the **FUTURE**

- Optimization of the DSO **grid investment & operation**
- Provision of switching **access for aggregators to provide small scale flex**, Offering of **energy services to customers**, **Aggregation of flexibility for TSO** (German demo)
- Coordination (market-regulation) between **national scale** offer for TSO and/or market, and **local scale** offers

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Consumer involvement and benefit

INVOLVEMENT

Passive involvement

- Steering of residential assets for demand response (heat pumps, water boiler, night storage space heating,…)
- EV charging

Involvement for service definition

- Predefine comfort or constraint boundaries

Active involvement

- Behaviour based flexibility (B2C)
- Managed flexibilities (B2B)

BENEFITS

- **Better quality** of distributed energy**, greater hosting capacity** of distributed generation
- **Energy efficiency and comfort control** devices with custom/local control functions
- **Reduction of energy bill** due to reduction of investment need for DSO
- **Financial compensation** if the regulation offers a suitable commercial mechanism

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Regulation challenges

- **Implementation of Market rules :** merit order, type of offers authorized, aggregation rules, aggregators and DSO role
- Need for commercial model to **provide financial compensations to flex providers**
- **Inclusion of assets such as batteries in the regulatory asset base** to recover cost
- **Coordination between national markets and local market**
- **Smart meter data privacy regulation (Netherlands**) to get alternatives to written permission of costumers and get more accurate data for flexibility forecasts

Next frontier

Exponential solutions for flexibility **need market design and regulation**

CONTEXT

- **Large and heterogeneous set of flexibilities:**
  - Residential, commercial, industrial
  - Uni-, bi-directional
  - Part-time, full-time
  - Single revenue, multi revenue models
- **Competition between different market players** (TSO, DSO, Retail, Wholesale, New Players, Aggregators)
- **Development of technical solutions** via IoT and AI that foster grid autonomy, autarky, capacity, peer-to-peer energy exchange, etc

CHALLENGE

How to set up a regulation that fosters distributed renewable energy meanwhile protecting consumers, personal data, collective interest…?

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