Picking the low-hanging fruits to close the energy efficiency gap: a successful consumer empowerment by submetering

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Contents

- From Metering to Submetering
- Success Factors of Submetering
- Further Energy Saving Potentials

Contents

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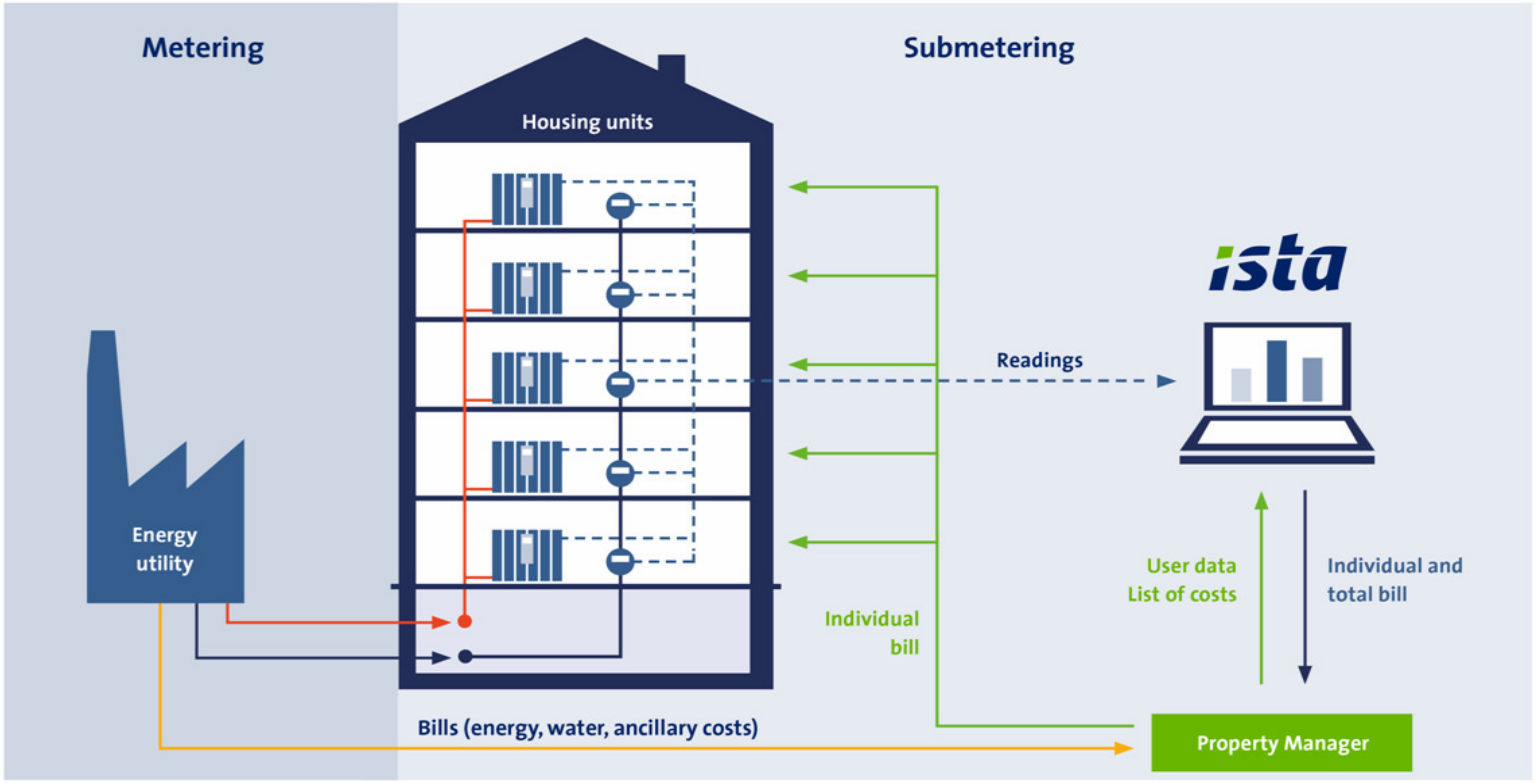
- Success Factors of Submetering
- Further Energy Saving Potentials

From Metering to Submetering: commonalities and differentiations



The submetering and billing of individual consumptions saves 20% of heating and hot water energy / costs every year !

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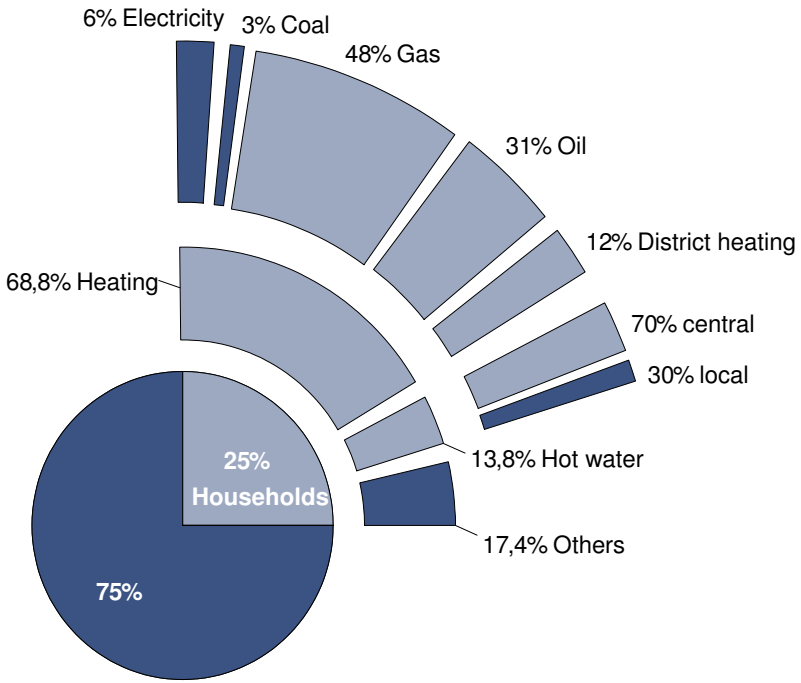
From Metering to Submetering: relevance and assignment of submetering

Domestic homes use > 80% of their energy for heating and hot water

- Domestic homes are responsible for 25% of the overall EU energy consumption[1]
- Ca. 80% of the energy used in domestic homes are due to heating and hot water[2]
- Sub-metering addresses ca. 72% of the overall energy consumption of domestic homes



Segmentation energy consumption EU27

We need to empower consumers to impact on energy savings !

[1] Source: eurostat 2009
[2] Source: UK Department for Business, Innovation and Skills

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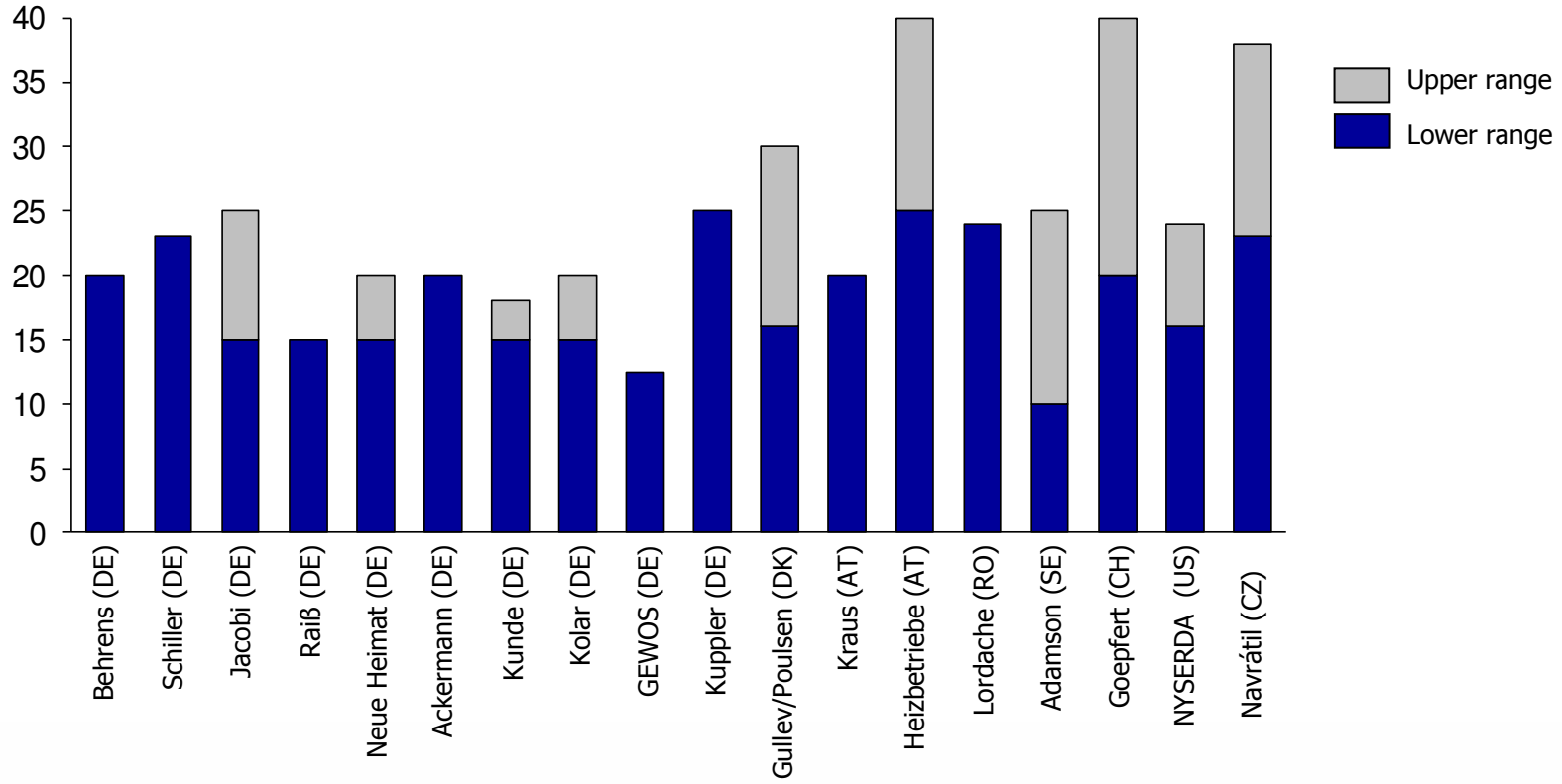
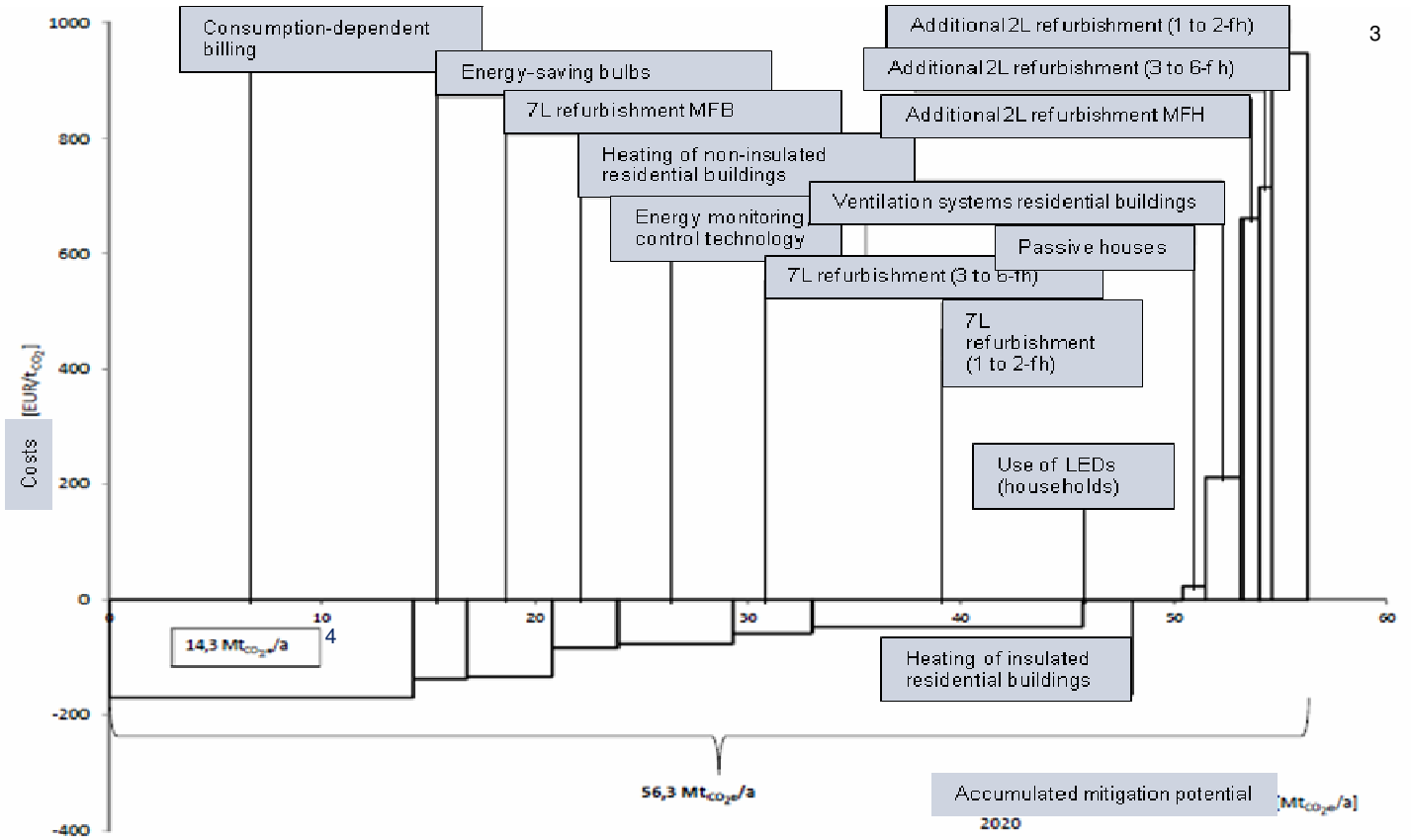
From Metering to Submetering: savings through submetering

Studies on energy savings through heat submetering (in %)



Studies show energy savings of 20% on average !

From Metering to Submetering: effectiveness and efficiency of submetering in CO_2-reduction



Outstanding potential of submetering compared to other saving measures in households !

[3] Source: Kosten und Potenziale der Vermeidung von Treibhausgasemissionen in Deutschland. *McKinsey Company Inc., 2007.*

[4] Source: Auswirkungen der verbrauchsabhängigen Abrechnung in Abhängigkeit von der energetischen Gebäudequalität, C*lemens Felsmann, Juliane Schmidt, 2013*

Contents

- From Metering to Submetering
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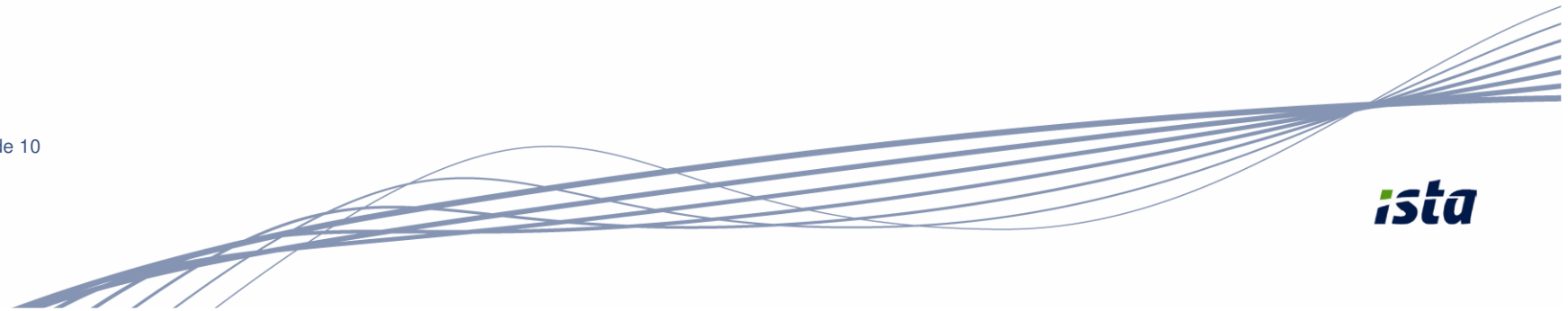
Success Factors of Submetering: level(s) of governance

	to define / to do !	to avoid !
EU	- binding measures - benchmarks and reviews - follow ups - implications	- restriction to frames and targets
Member State	-„open variables“ - exceptions - clear responsibilities - consequences	- divergence from „best practice“ - creating effort in individual case
On Location	- promotion / campaigns - individual compliance - detection of violations - surveillance	- ignorance - „laissez aller“

Success Factors of Submetering: financing the submetering effort

Pay for use	**tenant / user is the main beneficiary of submetering:** - fair distribution of costs - transparency and control over one's own consumption - savings outweigh the costs incurred, direct rewards for further energy saving behaviour - existing financing models allow tenants / users for benefits from 1st year - no public financial involvement necessary

⇒ Pass through of costs to tenants / users guarantees
maximum energy saving incentive and overcomes investor / user dilemma !



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Success Factors of Submetering: „ideal“ legal transposition

Mandatory Legislation	**Countries with mandatory legislation show higher submetering penetration rates, resulting in higher energy savings levels** - take over of the defined measures from the EED (e.g. equipment with submeters, yearly billing, subannual informations) - proactive national clarification of the “open variables” on legislation level (e.g. “cost efficiency”, “technical feasibility”, “national guidelines”) - appreciation of submetering as “low invest measure” (e.g. avoid special assessment effort on location but decide centrally) - consider measures as mandatory and allow for individual exceptions (e.g. energy demand < 15kWh/m^{2}a, renewables >50%, disproportions)

⇒ Mandatory legislation allows to seize submetering’s energy saving potential !

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Success Factors of Submetering: strengthening legitimate interests

Enforcement	**MS with strong submetering legislation perform much easier on achieving EU 2020 energy efficiency goals**[5] - allow stakeholders to enforce the law (e.g. reduction of payment by 25% in case of non compliant bills) - define tools to ensure effective implementation (e.g. regulatory breaches, penalties)

⇒ Enforcement tools including sanctions ensure effective implementation !

[5] Source: EEA Report “Trends and projections in Europe 2013”, 10/2013

Contents

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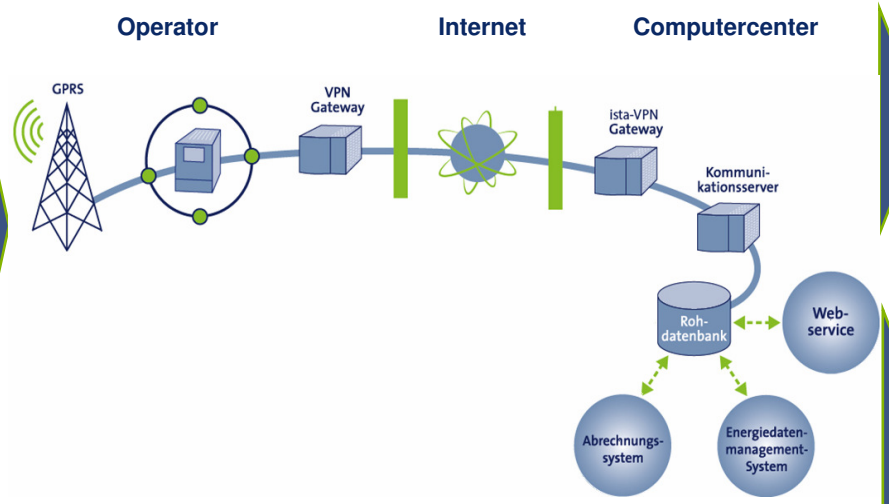
Further Energy Saving Potentials: fully automated, highly integrated self-contained system

Non-smart metering but nevertheless modern and forward-looking basis



Billing

Subannual Consumption Information

Submetering infrastructure offers further potentials apart from annual billing

Further Energy Saving Potentials: next steps - with more transparency to less consumption

Greater energy efficiency by stronger involvement of consumers

Challenge

- Low refurbishment rates
- Modest willingness to invest
- Lack of tenants' involvement

Strategy

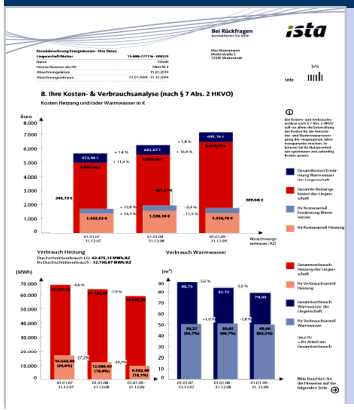
- Simple services
  - affordable, no loss of comfort
  - placed on existing infrastructure
  - economically and politically reasonable

"People who know where energy is being lost can make changes":
Monthly billing information to consumers leads to add-on savings of about 7-12% [6-8] !

[6] Source: Subannual Billing Information for Heating and Water Costs, FCN Project Study, *Reinhard Madlener et al., June 2014*
[7] Source: Wirkungs- und Akzeptanzanalyse von EDMpremium, IWU, *Ulrike Hacke and Rolf Born, Feb. 2011*
[8] Source: Saving money through clever heating, dena, *1st press release, Aug. 2014*

Further Energy Saving Potentials: example - consumption information - Energy Data Management

Consumption-Analysis



1st step towards a professional EDM

relevant comparisons at a glance with the billing

EDM classic

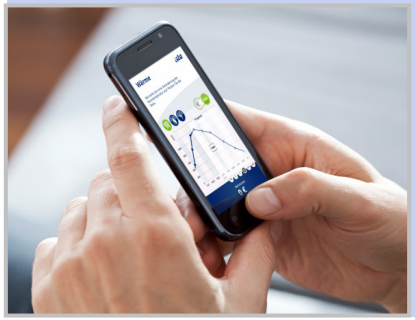
Energy- analysis online

Discover Potentials of Efficiency-Increase

EDM

EDM mobile

Being informed on your way

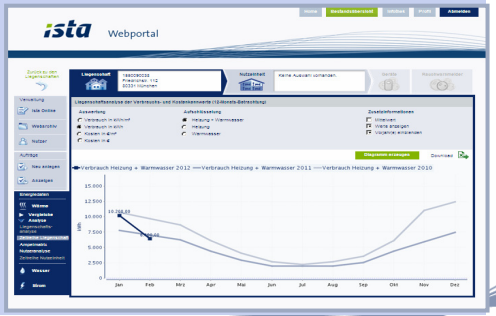


Mobile access for house administration and tenants to consumption and costs

EDM premium

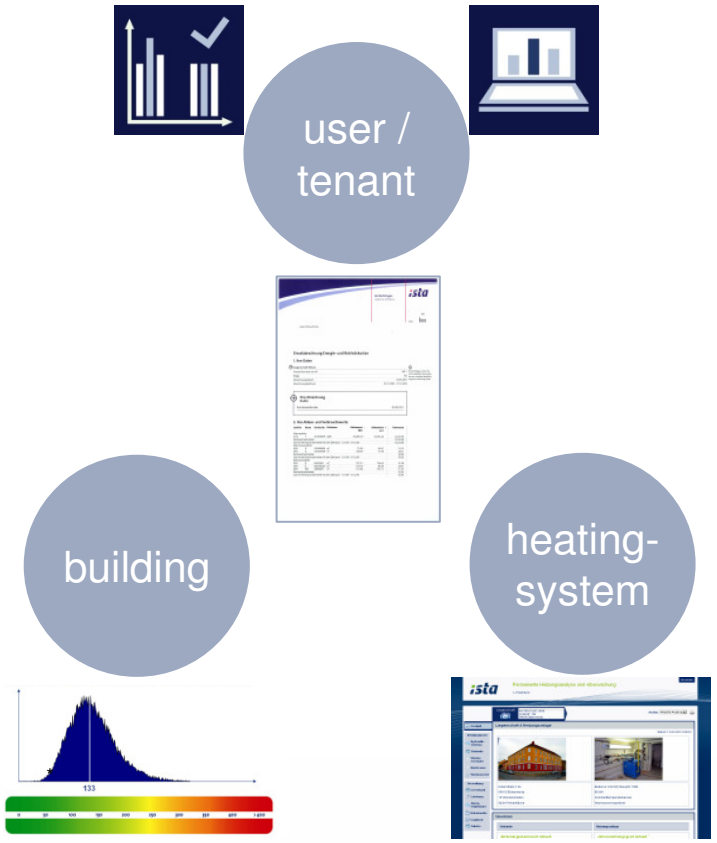
The „Premier League“ Analysis

Subannual data-evaluation on the basis of modern radio-technology



Further Energy Saving Potential: align the focus from user to building and heating system

Submetering infrastructure might be the platform for further analyses



Focus on user / tenant:
- yearly consumption based billing (energy savings of 15-25%)
- monthly billing information (add. energy savings of up to 7-12%)

Focus on building:
- Consumption based energy pass
- Prioritisation for investment decisions (e.g. refurbishment, insulation)

Focus on heating system:
- Efficiency analysis (e.g. efficiency factors, annual use efficiency)

Submetering infrastructure offers further potentials apart from annual billing !

Thank you very much !

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