



→ **Persuasive Computing im Dienste der  
Energieeffizienz: Wie neue IT helfen kann, das  
Konumentenverhalten zu beeinflussen**

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1. St. Galler Forum für Management Erneuerbarer Energien

12. März 2010, Einstein, St. Gallen



# Agenda



- **Predictably irrational consumers**
- **Technology development**
- **Some consumer apps**
- **Resource efficiency apps**
- **Summary**



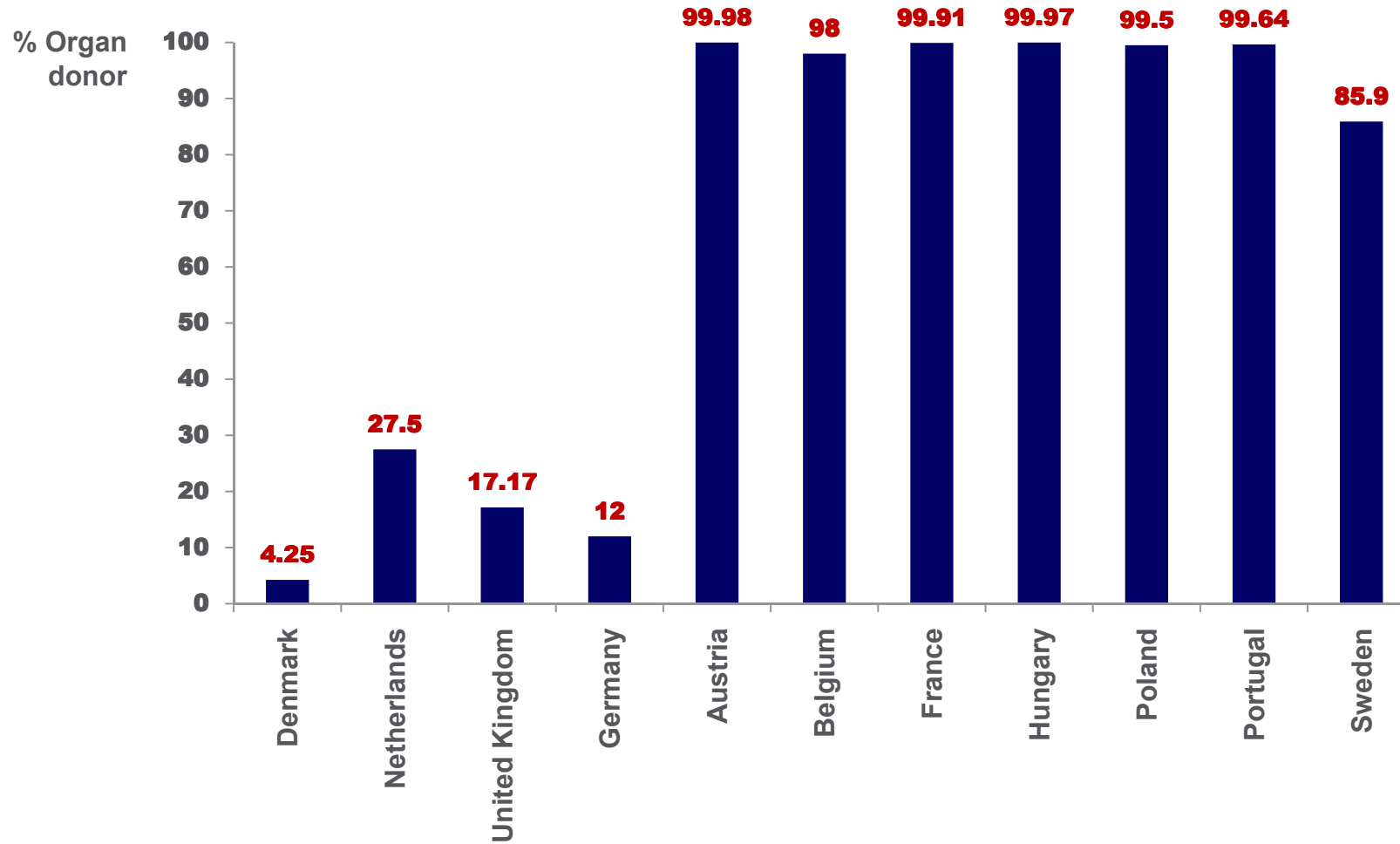
# Agenda



## Predictably irrational consumers Lessons from behavioral economics



# The power of defaults



Source: Prof. A. Herrmann




# The power of defaults



Audi Konfigurator - Motor - Google Chrome

http://konfigurator.audi.de/controller?next=model-page&mandant=accs-de



Vorsprung durch Technik Audi

**Q7**  
3.0 TDI clean diesel quattro

**Gesamtpreis** Rate  
54.700,00 EUR  
Sonderausstattung 0,00 EUR  
**z. B. mtl. 761,60 EUR**  
(mit Geschäftsfahrzeugleasing)

- Gewählte Ausstattung
- Finanzdienstleistungen
- Speicherplätze
- Audi Code eingeben **B**
- Heute konfigurieren

Vollbild / Abmessungen Innenraum

**Motoren und Antrieb**

Benzin  
 Diesel

**Motoren 3 von 4** Motor- und Ausstattungsvergleich

Kraftstoffverbrauch kombiniert: 8,9 l / CO<sub>2</sub>-Emission kombiniert: 234 g/km (EU6)  
Verbrauch innerorts: 11,2 l / Verbrauch außerorts: 7,6 l

Motor	KW/PS	Getriebe	Antrieb	Preis (EUR)	
<b>Diesel</b>					
<input type="radio"/> 3.0 TDI	176(240)	tiptronic	quattro	52.700,00	<b>B</b>
<input checked="" type="radio"/> 3.0 TDI clean diesel	176(240)	tiptronic	quattro	54.700,00	<b>B</b>
<input type="radio"/> 4.2 TDI	250(340)	tiptronic	quattro	72.700,00	<b>B</b>

Auswahl zurücksetzen

1 Modell 2 **Motor** 3 Exterieur 4 Interieur 5 Sonderausstattung 6 Audi (Original Zubehör) 7 Bei Audi



# The power of defaults



Bits to Energy Lab



# The power of framing



## Focus on profit

If you reduce the temperature by 1 °C you save X Euro per year

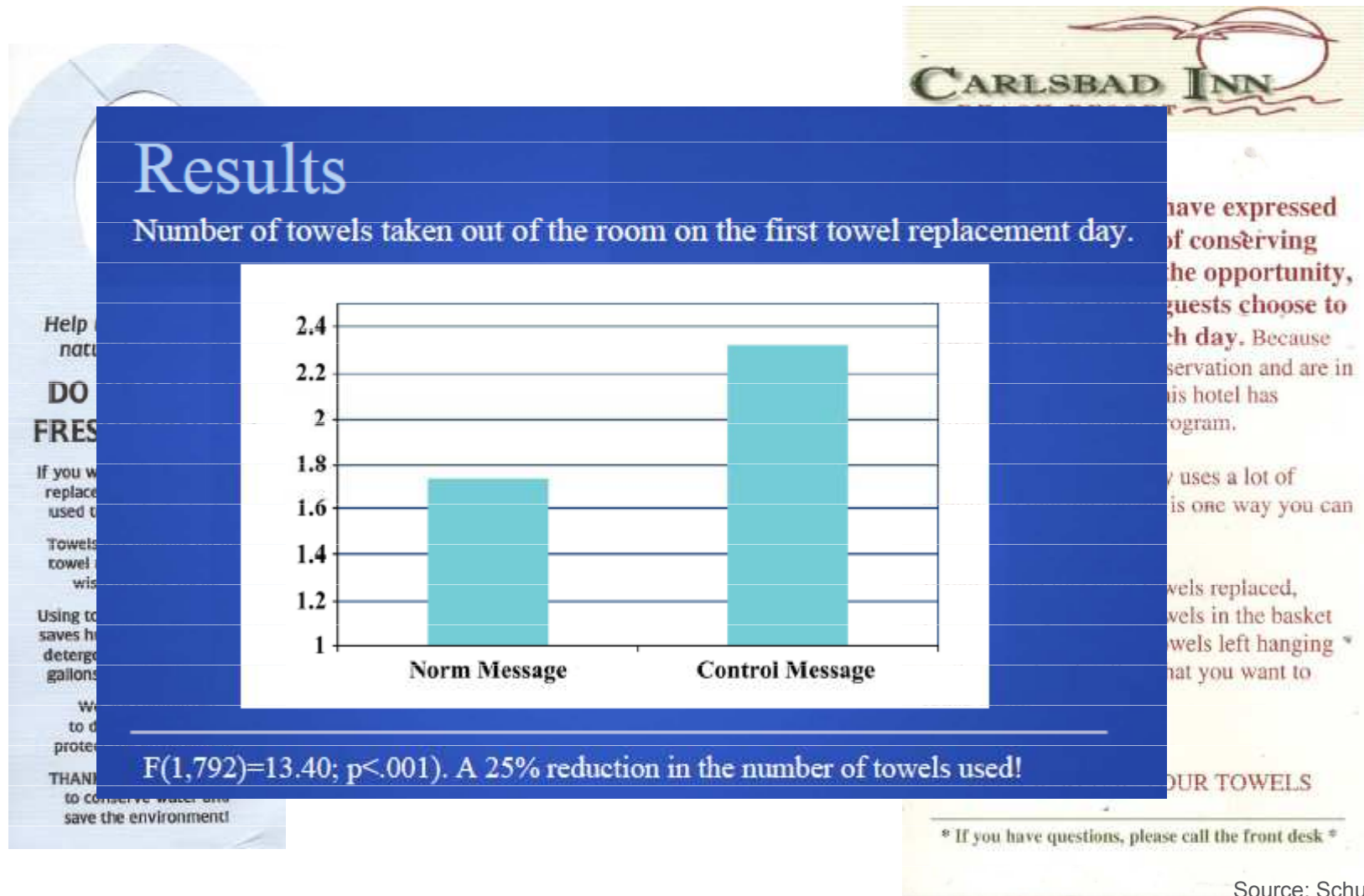


## Focus on loss

If you do not reduce the temperature by 1 °C you waste X Euro per year to much



# Social norms







# The power of framing



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68

32

Source: Prof. Dan Ariely



# The power of framing



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0

84

Source: Prof. Dan Ariely



# The power of anchors



Prof. Elgar Fleisch

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- **Goals should be high but realistic, specific, and set by oneself**
- **The Washing machine experiment**
  - 100 participants do 20 washing runs each
  - Up to 21% more economical when goals are set by oneself and feedback given



Source: Prof. A. Herrmann



# The power of the physical world





# The power of identity signaling





# Agenda

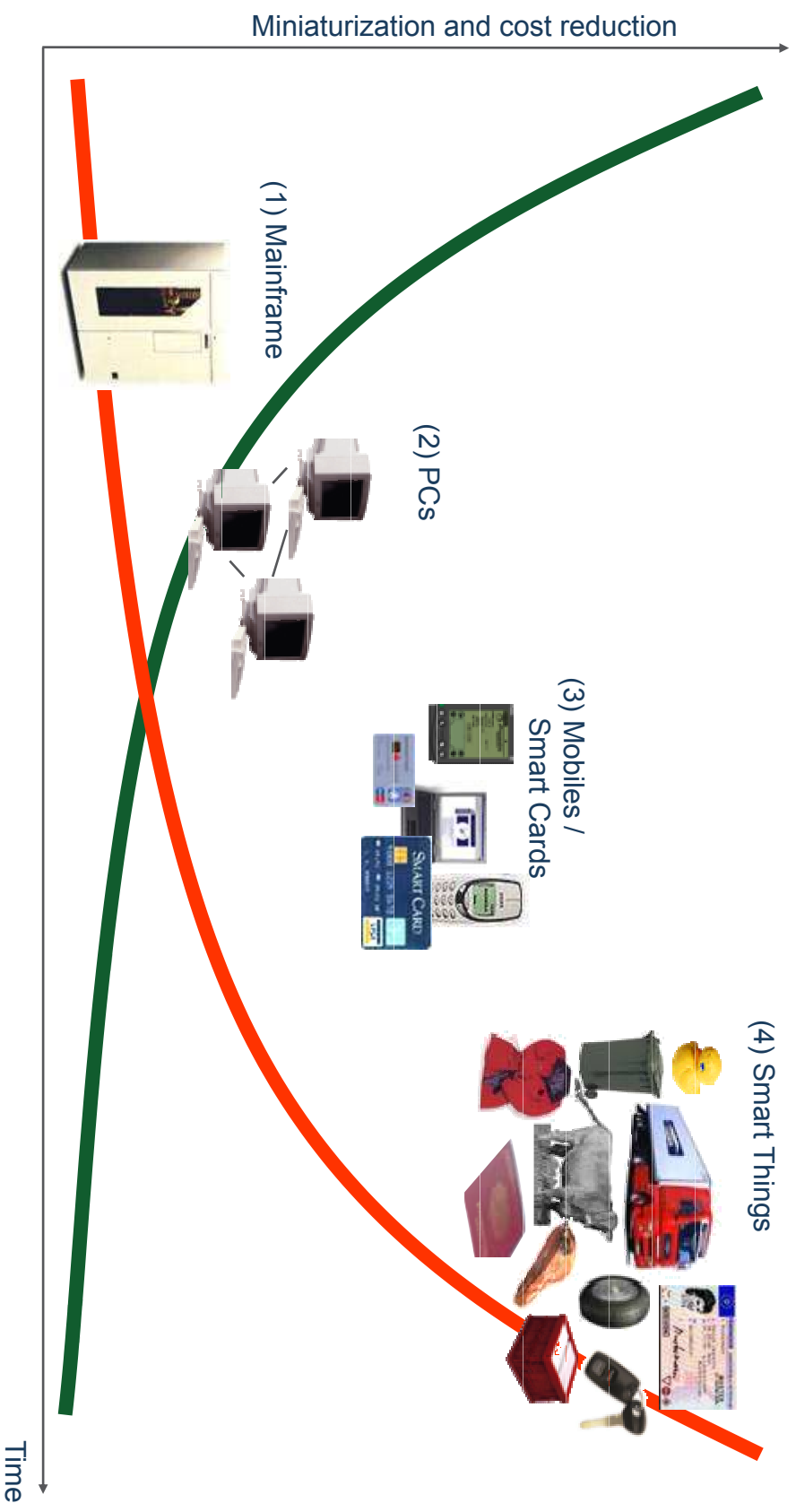


## Technology development





# Megatrend miniaturization



Bits to Energy Lab





# ... link real world objects automatically with the Internet



Virtual world



Real world





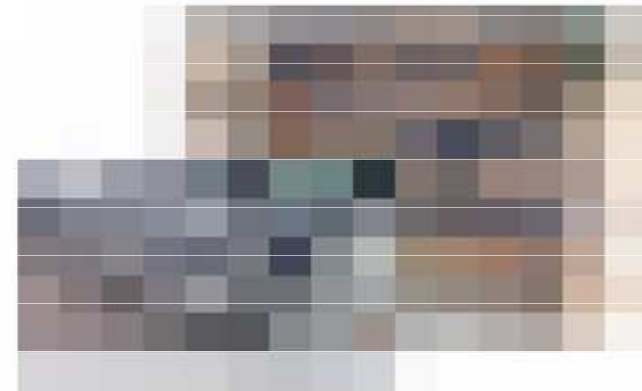
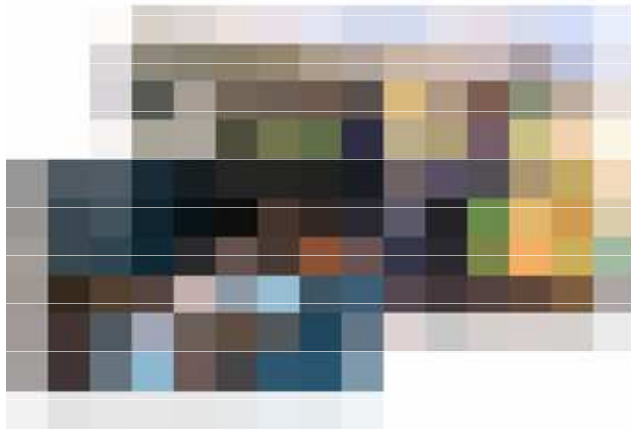
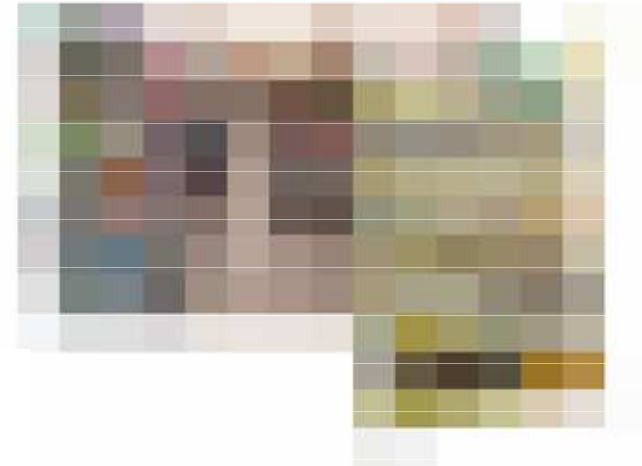
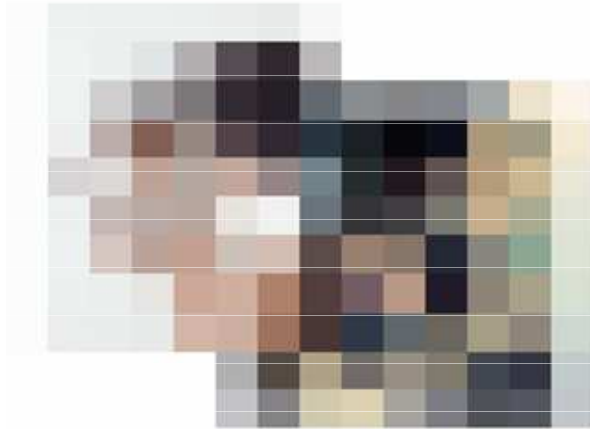
# Agenda



## Consumer apps

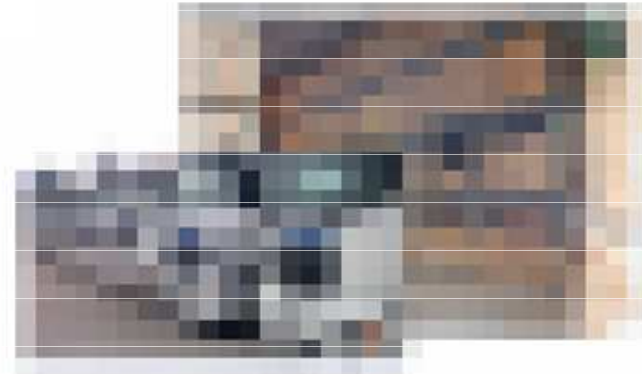
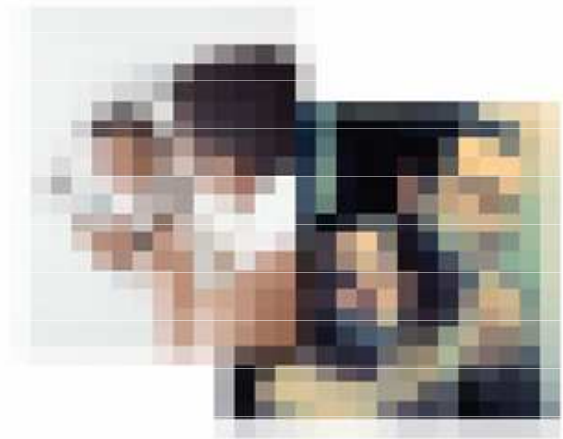
→

Today's computers have no eyes and ears and thus a rather blurred, low resolution mapping of the physical world they are supposed to manage





# Better measuring instruments change the way we see, understand and influence the world



→

Just as X-Rays and ultrasound advanced medicine, and as microscopes changed physics, biology, material sciences etc ...





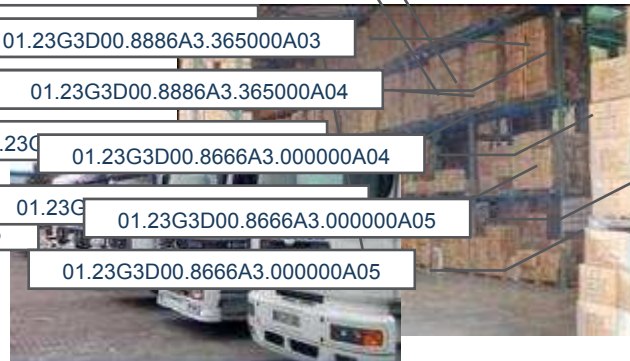
# ... machine sensing advances the way ...







# ... we do business





### Oral-B® Triumph™ with SmartGuide

- Approved by the British Dental Health Foundation
- 3D cleaning technology with up to 40,000 pulsations per minute
- Wireless SmartGuide unit encourages dentist-recommended brushing
- Wireless visual pressure sensor notifies you if you're brushing too hard
- 4 brushing modes (clean, soft, massage and polish)
- Choice of FlossAction™ and ProBright brush heads for cleaner and whiter teeth
- Rechargeable handle lasts up to 14 days between charges\*
- 30 day challenge - satisfaction or your money back!\*\*

\*Cleaning twice a day for two minutes each session  
\*\*This does not affect your statutory rights





# Who helps us explaining this world? The new role of the mobile phone



- Allergy Assistant
- Political Shopping
- Product Rating
- Price Comparison



Source: Courtesy of Robert Adelman, ETH Zurich



# Agenda



## Resource efficiency apps



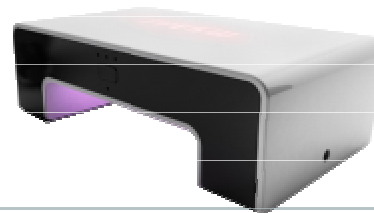
# Innovation drivers



- Deregulation / unbundling
- Energy efficiency mandate
- Smart meter mandate
- Growing demand for „green“ products and services
- Making money from new services
- New market players
- Brand value becomes crucial!
- New technologies



better place



Static!



However, most smart metering installations lack behind the expectations on savings and customer satisfaction.



- Saving potential often below 3%
- Web applications with marginal user base
- Expensive equipment only used by a small consumer segment
- Hardly any psychological cues to make engagement worthwhile
- Poor motivational approaches
- ...but some players have proven that efficiency gains and user satisfaction can be achieved

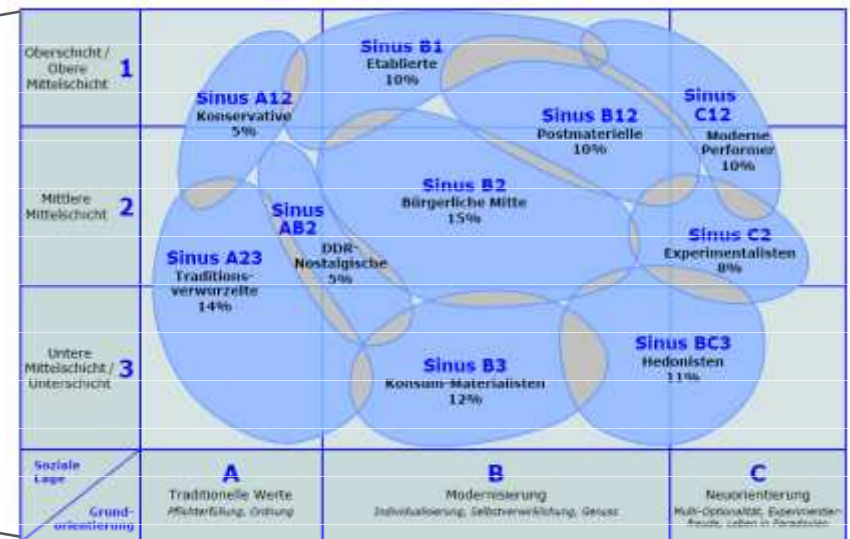




# A solid customer segmentation and thorough customer insights is essential...



- How to get users involved?
- How to help them understand?
- How to induce changes in behavior?
- Or, to start with, who is my customer?



Source: Sinus Sociovision



... when all the little details are thought of.



- **Counting up or down?** → Virtual budgets can lead to considerable savings over normal data representations
- **A day or a year?** → Suitable projections (Hochrechnungen) can much better motivate changes in behavior
- **What's my goal again?** → Goal selection can turn saving into a game
- **Do it in public?** → Social pressure & rewards can be powerful, and even fun to deal with if done right



yello





## And there are many details to consider!



- **Choice is painful!** → Many techniques exist to convince users to set themselves ambiguous saving targets
- **Whom to match with?** → Choice of reference group is crucial to foster participation
- **How to say it?** → Metaphors lead to different conclusions among consumers



kWh



## Users

- Receive rewards for self reading
- Get personalized feedback
- Compete with others, show effort in social networks, collect bonus points, etc.

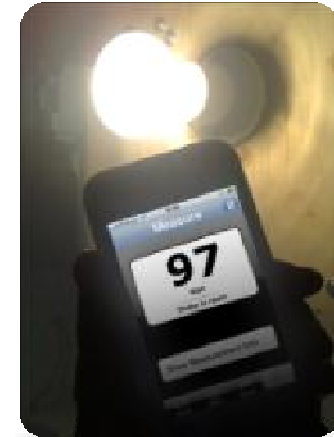
## Utilities

- Gear up for SM
- Generate user base
- Market energy services
- Use the CRM toolbox





- **MeasureIT** combines the most promising features of energy feedback:
  - Convenient & timely
  - Integrated in the user's daily live
  - At hand when needed
  - With a low usage barrier
  - Ready for a further break-down of the energy consumption to single devices



© 2009  
Bits to Energy Lab / ETHZ / HSG



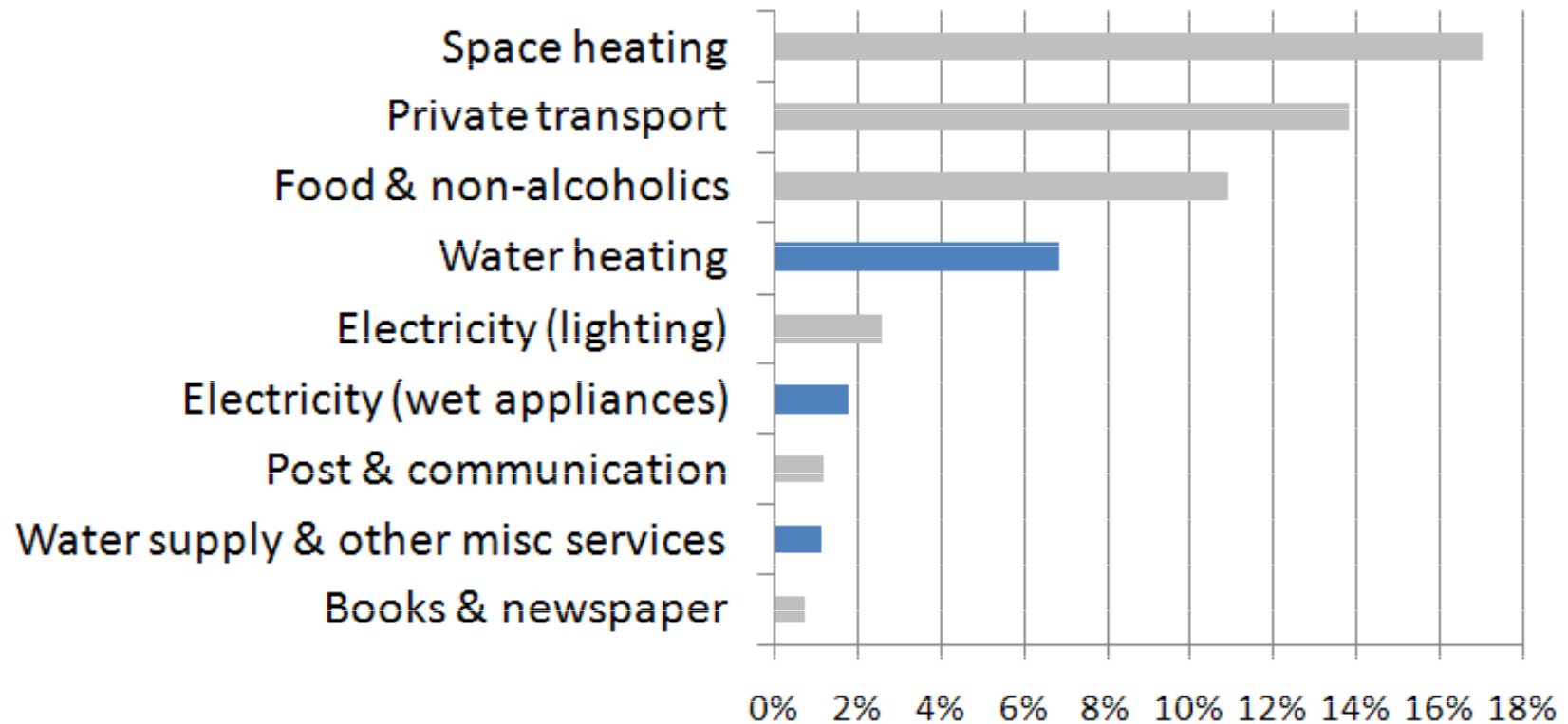
# Handy energy feedback - connecting smart meters with mobile phones



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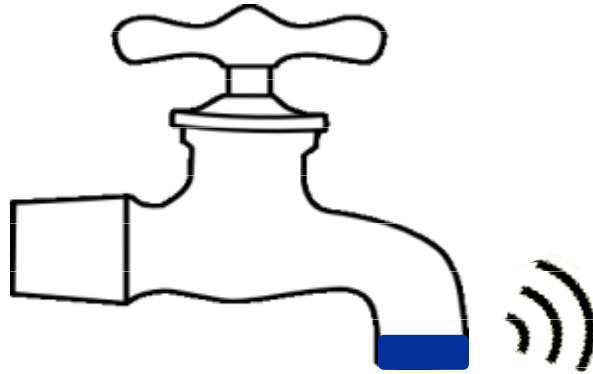
## The carbon footprint of warm water is larger than expected (10% of CO2 emissions)



Source: UK Carbon Attribution Model, Centre for Environmental Strategy, University of Surrey, 2005



With Amphiro, your tap becomes smart.



Source: Amphiro



# Why don't they talk to us?





# Agenda



## Summary



## Summary



- **Try to understand what drives the behaviour of your consumers**
- **Use technology to leverage behavioral phenomena around defaults, framing, goal setting, and social norms etc.**
- **The technology is there. Do not start with technology, but with emotional engineering**
- **First learn what your consumers like to know and do, only then automate via technology**
- **At the same time increase your customer-knowledge**