

# i-STUTE: WP1

Management Meeting #5, Advisory Board #3

2<sup>nd</sup> October 2014

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# WP1: Economics, Policy and Behaviour

- ◎ Support the Centre by aiding development of solutions that:
  - Appeal to people who would buy and use them (Behavioural Science)
  - Have business models likely to succeed in the market (Strategy with elements of Policy)
- ◎ Work in these areas combines:
  - Taking what other WPs are looking at and considering these factors for your solutions in your target markets
  - Analysing what's happened and happening in the market where similar products/propositions have been introduced

# WP1's Work Packages

- ◎ **WP1.1: Review and synthesis of existing activities.**
  - A review of how economic, policy and behavioural factors influence the adoption of new technologies relevant to heating/cooling technologies.
- ◎ **WP1.2: Business model typology.**
  - What are the existing business models adopted by energy service providers in the UK? What are the new alternatives are under consideration? How do they match the requirements for successful introduction identified in our review?
- ◎ **WP1.3: Behavioural Insights – Case studies.**
  - Case studies analysis of where business models succeed or fail to build their understanding of customer needs and behaviours, develop relationships with those customers and provide propositions that customers adopt.
- ◎ **WP1.4: Behavioural Insights – Experiments and focus groups.**
  - Focus groups & to provide converging evidence on a range of value propositions, zeroing in on features likely to lead to success or failure.

# Staffing

## ◎ Staff

- David Elmes, WBS
- Daniel Read, WBS
- Victoria Haynes, Loughborough

## ◎ PDRAs

- Clare Lawton, Loughborough
- Rebecca Hafner, WBS

## ◎ PhDs supported by WBS:

- Hala El Bilbaisi started October 2013
- Second candidate postponed from Oct 2014 to Oct 2015

# WP1.1: Review and synthesis of existing activities

## ◎ Reviews completed:

- Review of the scope of thermal energy in the UK's energy system, the policy frameworks in place and the technologies involved - internal report Dec 2013.
- Review of the current understanding of how psychological barriers influence behavioural change in the energy retail market – internal report Aug 2014.
- Review of planned behaviour and norm activation in the context of information displayed to encourage efficient energy use – internal report June 2014 (PhD Upgrade paper)
- Review panel for of ETI's Smart Systems & Heat Project's Value Management work area that carried out qualitative and quantitative assessments of new business models in smart heat applications – final report Aug 2014.
- Review of academic perspectives on business models and their use in the energy industry. Presentation given to industry managers as part of the WBS Global Energy MBA, July 2014.

# Ten psychological barriers....

**Behaviour Change Knowledge Review Report:  
Synthesising What We Know about Psychological  
Barriers to Behaviour Change in the Context of the  
Energy Retail Market**

By Dr Rebecca J Hafner\*, Professor David Elmes, and Professor  
Daniel Read

Warwick Business School, University of Warwick



- ⦿ Status Quo/Action Inertia Bias
- ⦿ Social Norms
- ⦿ Choice Overload
- ⦿ Messenger Influence
- ⦿ Priming
- ⦿ Ego and image
- ⦿ Perceived control
- ⦿ Time inconsistency/temporal discounting
- ⦿ Habit
- ⦿ Emotion

Reviewed with:

- A focus on heating/cooling systems i-Stute is seeking people to choose
- Consideration of how psychological barriers can counteract or supersede rational economic choices.

# Status & Actions ahead

- ⦿ Activities above reflect completion of work during the period planned.
- ⦿ Further work of this type will form part of the other work packages.
  - Where possible, we will seek to turn the internal papers produced into publically available white papers, submissions to journals, dissemination information for policy-holders and companies, etc.
- ⦿ Summarising comments:
  - Mainly completed according to plan. Some review work on business models is likely in Q3 2015 when second PhD student starts in that area, postponed from an October 2015 start.

# WP1.2: Business model typology

## ⦿ Activities

- Biz model concepts (Q4 13) – completed through ETI collaboration
- Initial view of H&C market (Q1/2 14) – postponed until PhD start

## ⦿ Early Outputs

- External review “ETI Smart Systems and Heat Programme Value Management Work Area Development Review – final report” ETI (July 2014)
- Presentation to industry managers “Business Models in the Energy Industry” Dahlmann, F (July 2014)

## ⦿ Actions

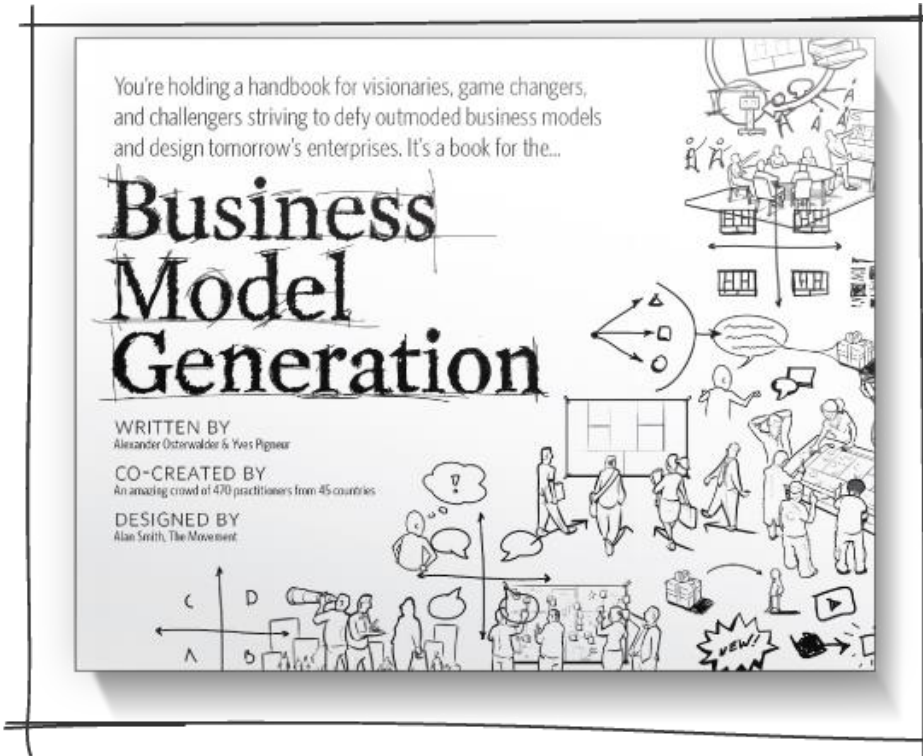
- Recruit PhD student for this area. Q1/2 2015 for Oct 2015 start
- Continue background gathering of business model examples and literature

## ⦿ Summarising comments on progress

- Delayed progress as our initial team members have a more behavioural science focus and so pulled forward work in other WPs, especially 1.4.



# Business Models: Fad, fashion, or a genuinely new approach towards strategic thinking?



“Everyone in the tech world talks about business models. But I’ll bet that if you quizzed a random sample of these people, you’d find that they really don’t know what a business model is. . . . The reality is that a business model is like the old saying about teenage sex: everyone talks about it all the time; everyone boasts about how well he or she is doing it; everyone thinks everyone else is doing it; almost no one really is; and the few who are are fumbling their way through it incompetently”. (Wadhwa 2011)

# We do have a view of what a business model is....

- ◎ A business model articulates how a firm's intended strategic positioning and competitive advantage delivers performance
  - It articulates the value proposition
  - It identifies a market segment
  - It defines the structure of the value chain
  - It estimates the cost structure and profit potential
  - It describes the firm's position within the supply chain
  - It formulates the strategic logic by which the firm will gain and hold advantage
- Chesborough & Rosenbloom (2002)

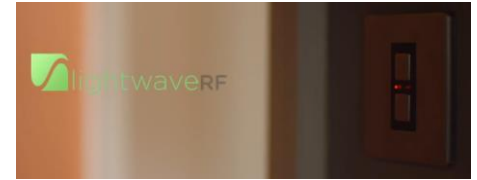
# Business Models in the energy sector

	Utility-side business model	Customer-side business model
Value proposition	Bulk generation of electricity fed into the grid	Customized solutions Energy related services
Customer interface	Electricity as commodity  Customer pays per unit	Customer is involved in energy generation by hosting the generation system and sharing benefits with the utility  Long-term customer relationship
Infrastructure	Small number of large-scale assets  Centralized generation	Large number of small-scale assets  Generation close to point of consumption
Revenue model	Revenues through feed-in of electricity  Economies of scale from large projects and project portfolios	Revenue from direct use, feed-in and/or from services  High transaction costs

# WP1.3: Behavioural Insights - Case studies.

- ◎ Work package started September 2014, as scheduled
- ◎ Activities
  - Case Study 1: Focus on domestic heat pumps *with storage*, to determine the added benefits of thermal storage in the system and any barriers to this approach:
    - Qualitative survey of domestic heat pump users to determine how storage can meet user needs and what user requirements there are for the design of storage within a heat pump system. This is likely to include requirements for boost heating, radiant heat, hot water on demand, easy control and display information, etc.
  - Case Study 2: Display information used with Room control units in Warwick's Sociology building
    - Collaboration with Lightwave RF and WMG (separate TSB Funding)
    - Planned behaviour and norm activation in the design of display choices

# Lightwave RF & the home



LightwaveRF

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LightwaveRF is affordable  
smart home technology

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# Status & Actions ahead

- ⦿ Activities started as planned
  - Focus on Heat Pump + Energy Storage
  - Focus on display information
  
- ⦿ Summarising comments:
  - Started as per schedule

# WP1.4: Behavioural Insights

## ◎ Activities

- While this WP was not due to start until July 2015, the focus of RH on the behavioural science side and delay in recruiting the PhD on the business model side means we are moving ahead on initial experimental research in the behavioural side
- A series of experiments:
  - Aiming to explore the theoretical choice processes underpinning decisions made in the energy retail market
- Experiment 1.4.1: Aligned & non-aligned information
  - Boiler versus heat pump plus popcorn control
  - We aim to begin data collection within the next 2 – 3 weeks
- Experiments 1.4.2 onwards
  - Experiments to understand the *relative* importance of the ten behavioural factors identified for decisions relevant to i-Stute

# Status & Actions ahead

- ◎ Activities started early due to staff recruited.
  - Experiment 1.4.1 completed for discussion Q4 2014
  - Further experiments ongoing; plan to be finalised based on initial testing
- ◎ Summarising comments:
  - Started early and initial experiments will assess the ease or complexity of the experimental designs in driving insight




# Summary

- ◎ **WP1.1: Review and synthesis of existing activities.**
  - Completed – further work within packages
- ◎ **WP1.2: Business model typology.**
  - Early start halted by delay in recruiting PhD and other staff having a behavioural science focus
- ◎ **WP1.3: Behavioural Insights – Case studies.**
  - Started as per schedule
- ◎ **WP1.4: Behavioural Insights – Experiments and focus groups.**
  - Started earlier than plan (July 2015) as staff recruited are more focused in this area

# Proposal Workplan

TASK		DURATION																				HUMAN RESOURCES				PhD students (given by partners)																									
		Year 1				Year 2				Year 3				Year 4				Year 5				PDRA / Admin Man Months comitted																													
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	UW	LU	UU	LSBU																										
Management		50% full time project manager																				30																													
WP0.1	SIRACH Network	10 MM Admin support + academics																																									10								
WP0.2	Policy briefings, BIT roadmaps	2 MM Admin support + academics																																										2							
WP1.1	Review & Synthesis of existing activities																					6																						UW #1							
WP1.2	Business Model Typology	Build																				8																						UW #1,2							
WP1.3	Behavioural Insights - Case Studies	Observe / Review																				2																						UW #1,2							
WP1.4	Behavioural Insights - Experimental Research	Revise																				2																						UW #2							
		Wave																																																	
WP2.1	Retail chilling and freezing	1																					2																												
WP2.2	Retail chilling and freezing	2																					2																												
WP2.3	Integration cooling, heating storage	1/2																																								LSBU #1									
WP2.4	Data centres	1																					3																												
WP2.5	Refrigerated transport	1																					3																			LSBU #2									
WP3.1	Latent heat store	1																																								LU #1									
WP3.2	Chemical heat store	2																																																	
WP3.3	Advanced electric heat pump	1																																								UU #1,2,3									
WP3.4	Next generation gas/heat powered heat pump	2																					30																			UW #3									
WP4.1	High temprature heat pump	2																					6																			UW#4									
WP4.2	Thermal transformer	2																					12																			UW #5									
WP4.3	High temperature store	2																					2																			LU #2,3									
																									48	30	30	48	18	0	48	0	0	48	0	0	48	0	12												13
																									Technical	EPB	Admin	Technical	EPB	Admin	Technical	EPB	Admin	Technical	EPB	Admin	Technical	EPB	Admin	Technical	EPB	Admin	Technical	EPB	Admin						

 - Initial comittment

 - Possible future project - not comitted

## DIAGRAMMATIC WORK PLAN

Note that 50% of each partners MM are committed above.

This is broken down by type: Technical PDRA's, Economic/Policy/Business PDRA's, Administration.