

Summative behaviour change evaluation of up-to-date metered energy feedback in European public buildings

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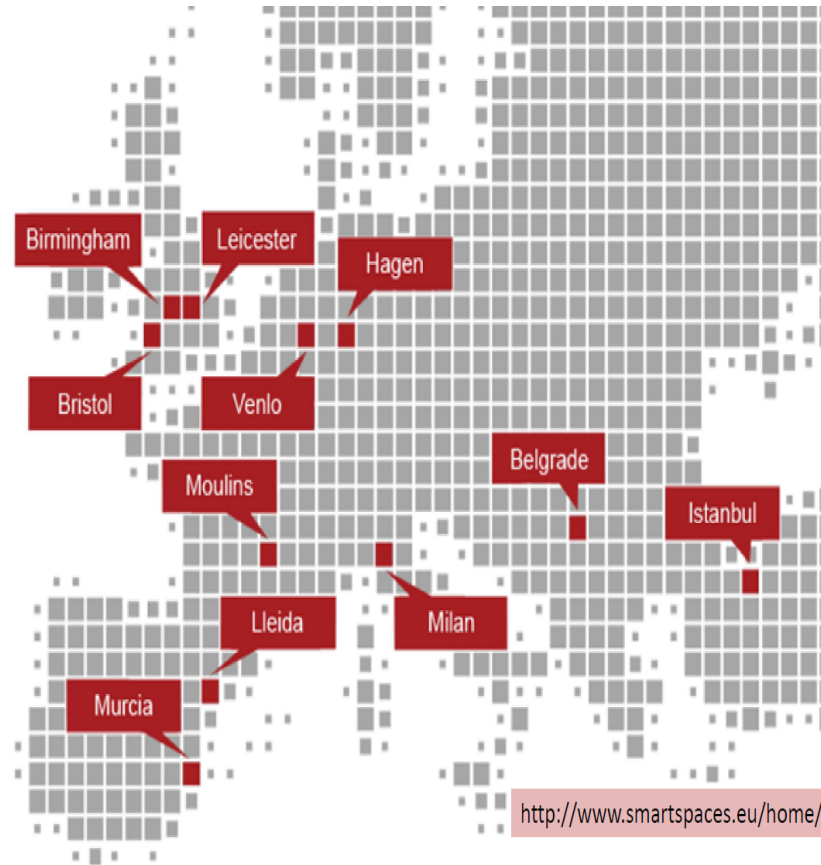
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Energy feedback

Communication-based energy efficiency intervention



- Energy feedback
- Awareness

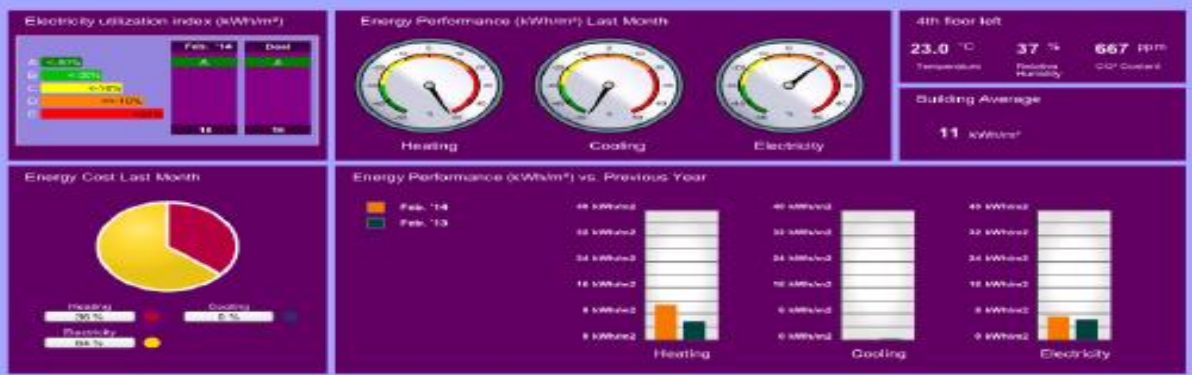
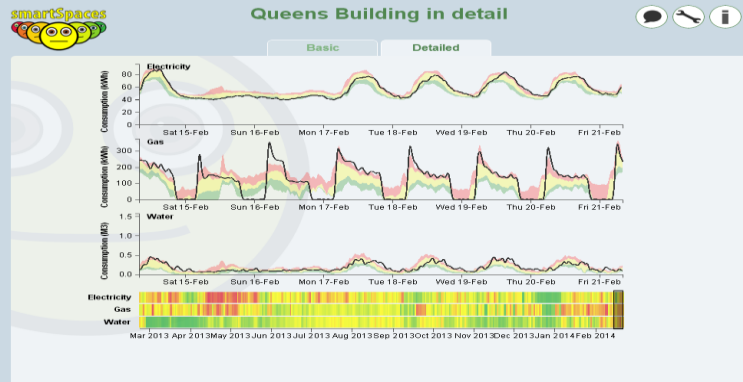
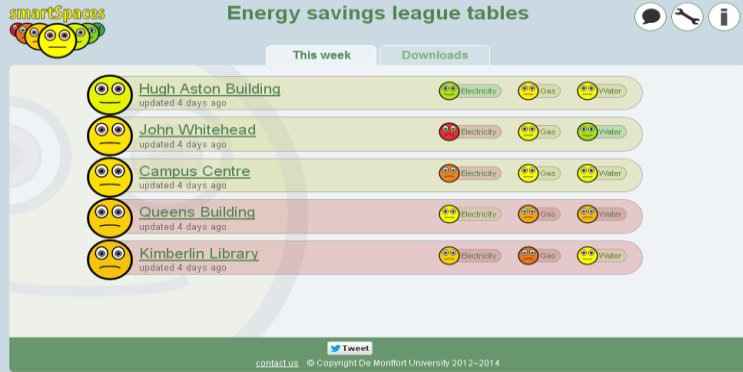



- Analysis
- Visualisation

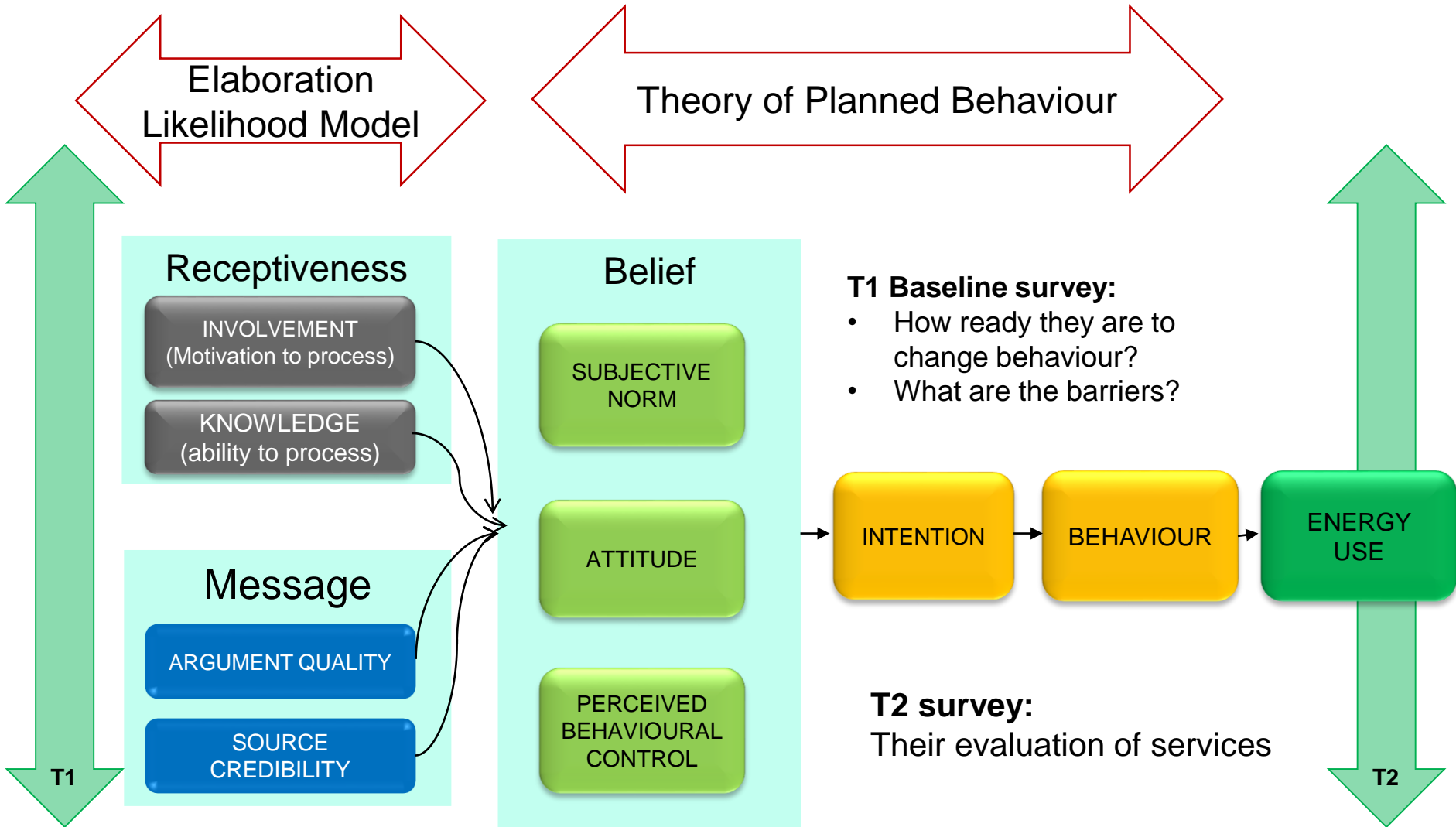
- User engagement
- Behaviour change

Energy consumption metered data

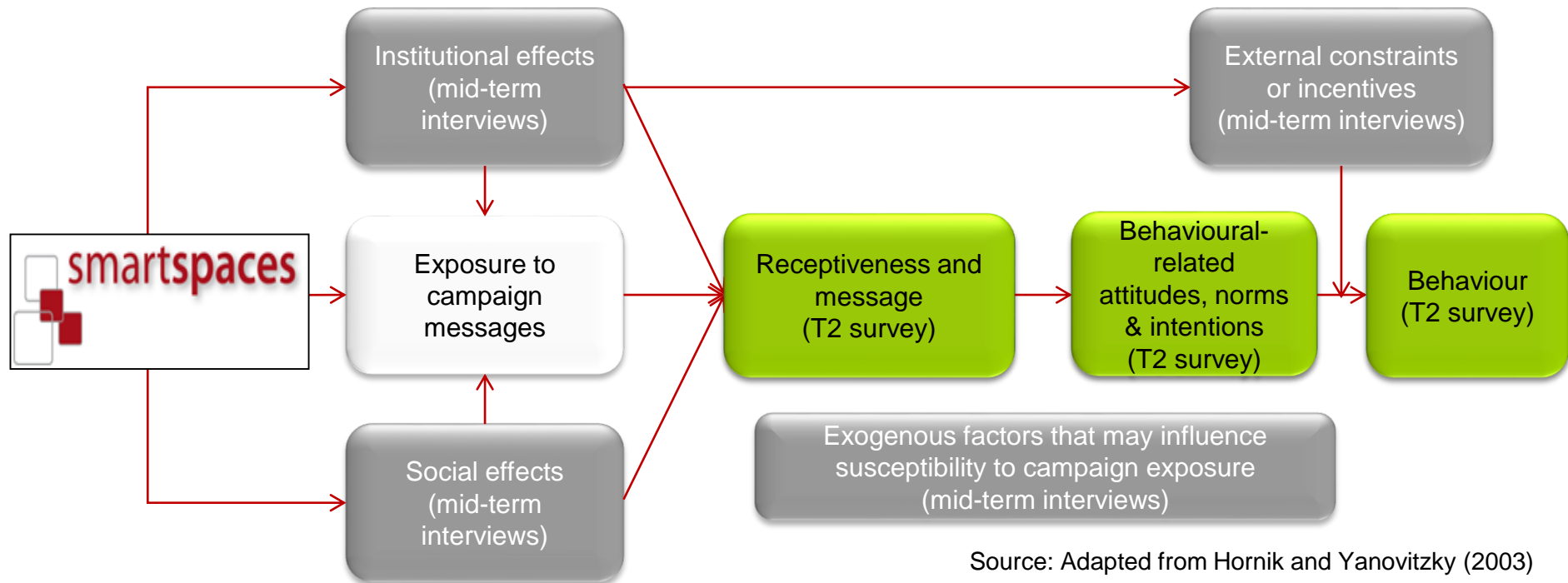
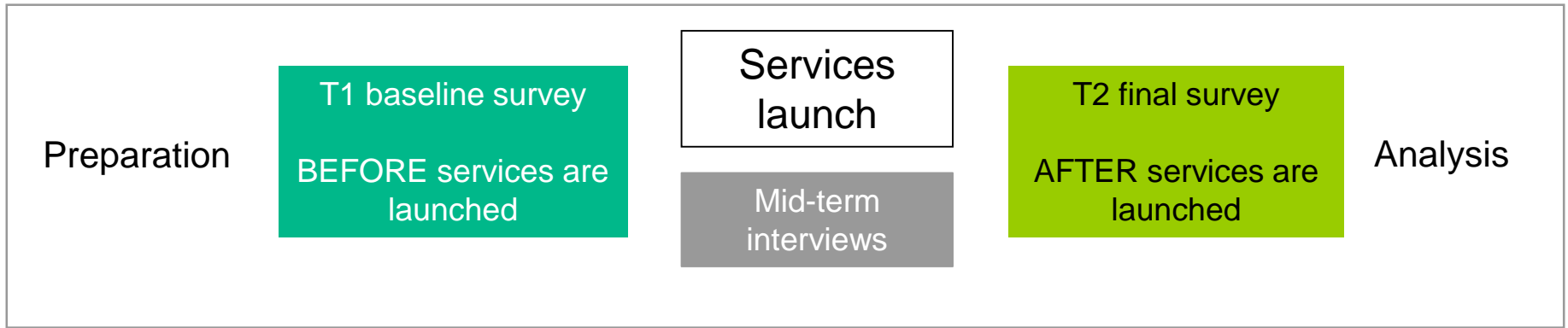




SMARTSPACES theory of change



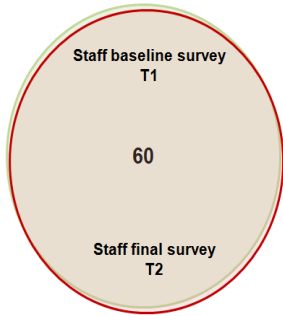
Overall methodology



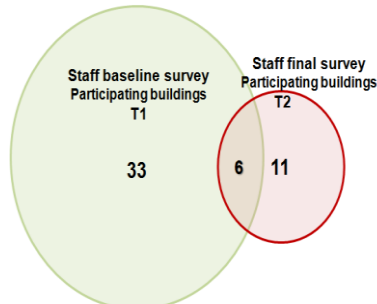
Source: Adapted from Hornik and Yanovitzky (2003)

T1 & T2 surveys' responses

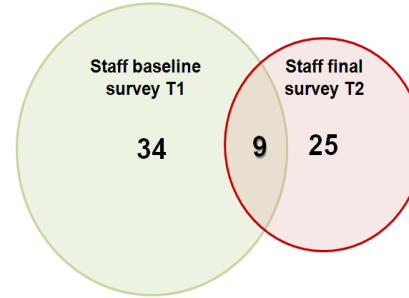
Belgrade



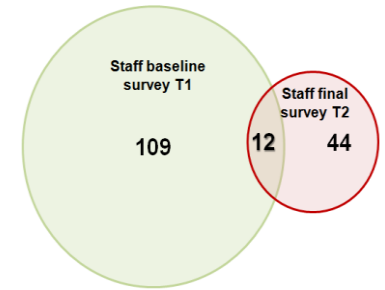
Birmingham



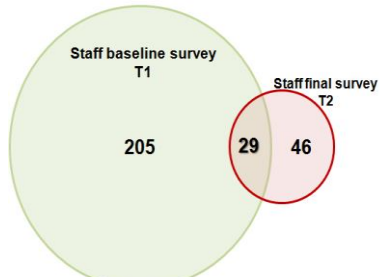
Hagen



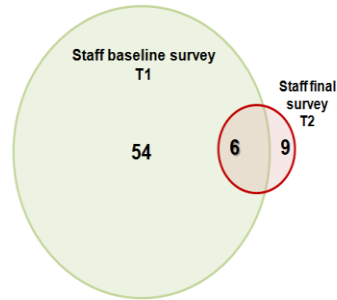
Lleida



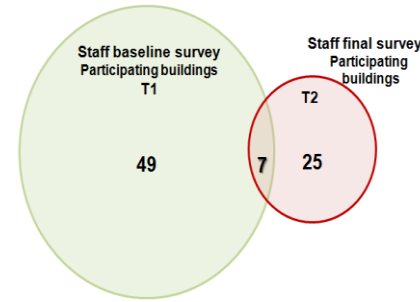
Bristol



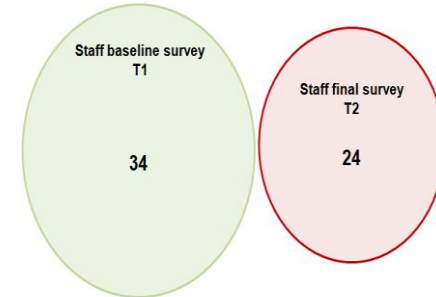
Istanbul



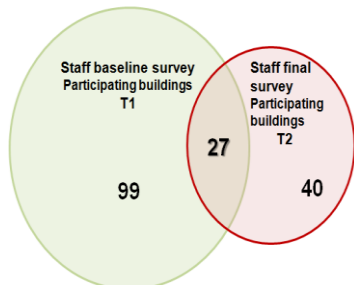
Milan



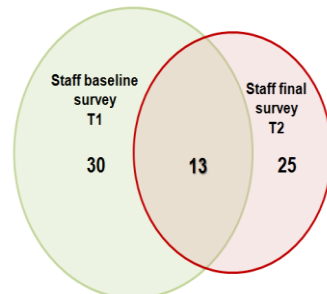
Moulins



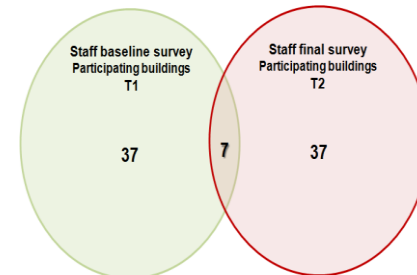
Leicester



Venlo



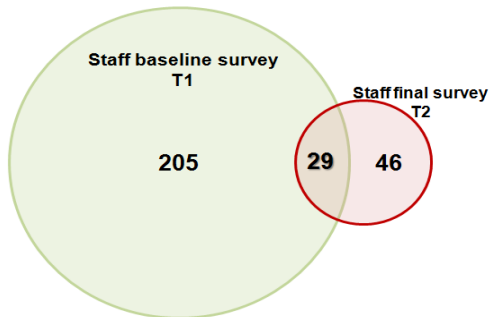
Murcia



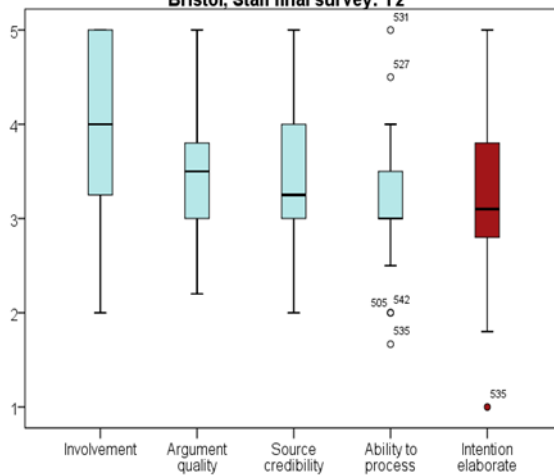
Selected cities

How services communicated with staff

Bristol

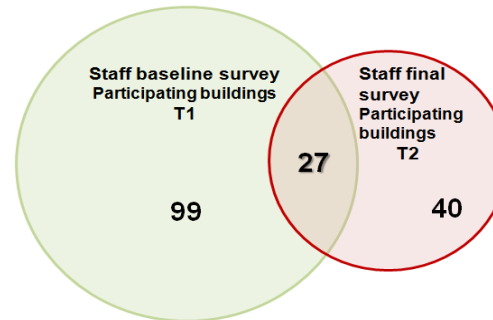


Bristol, Staff final survey: T2

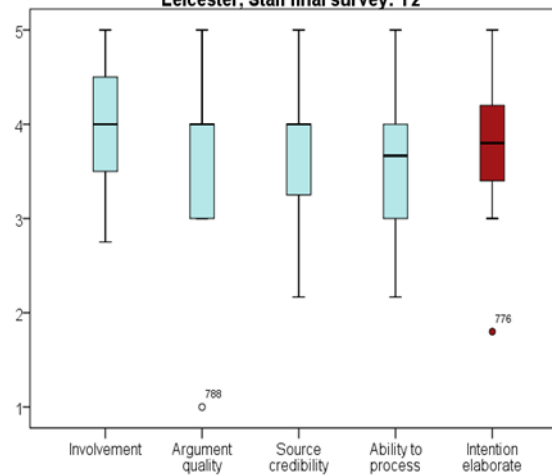


n = 46

Leicester

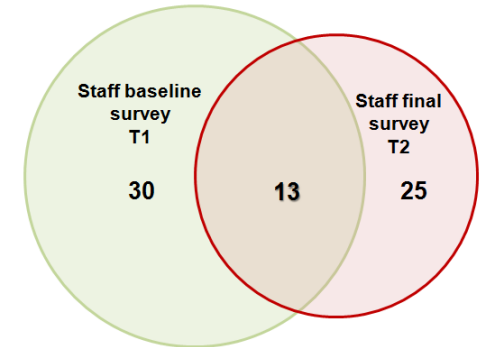


Leicester, Staff final survey: T2

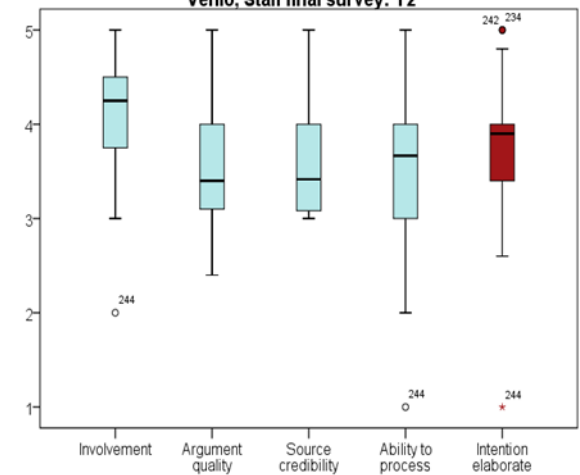


n = 40

Venlo



Venlo, Staff final survey: T2



n = 25

Selected cities

Did attitudes and intentions changed?

Variable	City	N	Mean difference (T2-T1)	Z score	Sig.
Attitude	Bristol	29	0.204	-2.080	0.019
	Leicester	27	-0.037	-0.259	0.402
	Venlo	13	0.250	-1.222	0.124
Subjective norm	Bristol	29	-0.071	-0.577	0.387
	Leicester	27	-0.185	-1.147	0.181
	Venlo	13	-0.077	-0.632	0.383
Perceived control	Bristol	29	-0.143	-0.809	0.223
	Leicester	27	-0.111	-0.720	0.253
	Venlo	13	0.654	-2.399	0.010
Intention to reduce energy	Bristol	29	-0.052	-0.186	0.430
	Leicester	27	-0.252	-1.555	0.062
	Venlo	13	0.185	-0.490	0.327

Lessons learned

Energy feedback

- Effectiveness of the services:
 - Large benefits for facilities' managers to improve energy performance of buildings
 - Limited observed impact on staff's levels of awareness, attitudes and intentions to reduce energy use
- User engagement:
 - Energy feedback on its own may have limited impact
 - Integration of visualised metered data with advice and training (energy coaches, energy campaigns)
 - Worth exploring enhanced gamified incentivisation models (e.g. competitive approaches)

- Mid-term interviews were a valuable instrument to:
 - Identify difference on how services were implemented
 - Offer explanation of survey's results
 - Identify external factors affecting energy use
- As a result of lack of strong quantitative findings, behavioural change attribution to energy savings was not possible
 - Would it be advisable to conduct randomised control trial in this type of programmes?
 - What incentives can help to reduce participants' attrition?

Thank you for your attention!



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