



# Welsh Government Smart Living Collaborative Workshops

## Post-Workshop Report

AD Research and Analysis Ltd with the Centre for Sustainable Energy for the Welsh Government

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AD Research and Analysis Ltd  
Weavers House  
Gardens Road  
Clevedon  
Somerset  
BS21 7QQ

Tel 01275 343285  
Email [info@adranda.co.uk](mailto:info@adranda.co.uk)  
Web: [www.adranda.co.uk](http://www.adranda.co.uk)

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Prepared By	Andrew Darnton
Checked By	Karen Darnton, Eleanor Knight
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# 1 Introductory Notes

This report presents participant feedback from, and the research team's reflections on, two workshops on Smart Living convened for the Welsh Government in February 2015. This report was authored by AD Research & Analysis with the Centre for Sustainable Energy; it is not a statement of the Welsh Government's position.

ADR&A and CSE were commissioned by the Welsh Government to provide critique, and support the development, of WG's Smart Living programme. Their initial task was a critical review of the draft Framework elements developed by WG to date. That work was followed by a second phase which involved convening two workshops – reported here – designed to develop and consult on the best ways for WG to carry the Smart Living agenda forward.

This workshop report is in three parts:

i) Recommendations

These are conclusions written by the research team encapsulating their reflections on the critical review and workshop findings. They are intended as our contribution to an internal debate in WG on next steps.

ii) Findings

This is an objective report on the workshops' findings, presented under the three main questions which were used to structure the groupwork and plenary discussion with participants.

iii) Annexes

Methodological details on the workshop structure and venues, plus full lists of attendees and presenters, and scanned photos of all the flipcharts produced by participants in both workshops. All the presentations from both workshops are available on [www.adranda.co.uk/workshops](http://www.adranda.co.uk/workshops)

## 2 Recommendations for Ways Forward

WG speakers introduced both workshops by setting out two alternative scenarios: that the development of Smart Living be left to “market forces” and other actors, or that WG would have an active role in directing and co-ordinating the development and roll out of Smart Living. The clear conclusion from both workshops was that the second scenario was the right one: that WG has a fundamental role to play in enabling Smart developments and ensuring that they deliver for the people of Wales.

The remaining debate concerns what kind of Smart Living the Welsh Government wants to encourage, and the practical ways in which it selects projects and supports other actors, especially the Local Authorities who will lead on them. The workshops were shaped to address these questions, and participants’ views on them are set out in the findings which follow. This section of recommendations presents the research team’s conclusions on what is needed. These are a considered response to the critical review and workshop findings, but they are open to debate: indeed, we hope they will be used as an input into a debate which we feel is needed in WG in order to build consensus around the Smart Living programme, in order to ensure it can best deliver for the people and Government of Wales, and is supported for the medium to long term.

The recommendations are presented as three steps, as follows, with each designed to answer a particular need which is apparent from the workshop findings:

i) A Smart Living Framework

...to set out the Government’s vision of the kind of Smart Living that it would like to see, and will encourage. This will mostly be expressed as a set of principles and processes, recognising that Smart Living will be different in each place where it is achieved. Such a Framework document would answer the core questions of participants as expressed in the workshops (see eg. the flipcharts from Exercise 1).

ii) An Technical Group

...to provide practical advice, connections and resources for making Smart Living happen. This recommendation responds to the emergent nature of Smart Living and the necessity for co-production (eg. no one organisation holds all the answers, and Government cannot do it alone – even if it had infinite budgets).

iii) A Smart Living Roadmap

...to act as a tool for reporting on progress and pointing the way ahead. This rolling report would demonstrate progress and impacts achieved to date, respond to calls for co-ordination across Smart Living activities occurring in different places across Wales, and begin to answer questions about what a Smart Wales will look like in the future.

We would suggest that before the Smart Living team can move these recommendations forward that they undertake internal discussion with colleagues. Many WG policymakers and colleagues attended the workshops as participants, and will have developed an increased sense of co-ownership of the Smart Living agenda. It is critical that this sense is fostered, and that the ways forward for the Smart Living area of work fit well with the views expressed and heard by participants in the two workshops. Accordingly we suggest the first step is to open these findings and recommendations up for discussion internally – for instance with the members of the Project Board – to agree WG’s position on the three questions posed at the workshops, and the answers presented under ‘Findings’ below.

In order to shape these conversations, we can sketch out the potential contents of each of the three ways forward we are recommending, as below:

## **i. A Smart Living Framework**

A Smart Living Framework should include the following:

- A definition of Smart
- The rationale for WG's involvement
- A definition of WG's Smart Living programme, and the 'Vision' or Principles that underpin it
- The potential roles played by WG (alongside eg. Local Authorities, UK Government, regulators, business, and third sector/community groups)
- WG's Criteria for supporting Demonstrator projects (and potentially for measuring the success of those projects, and the progress of Smart Living overall)
- The governance structure of WG's Smart Living programme

We would suggest that many of the sections above adhere closely to the conclusions reached by the workshop participants and expressed in the findings below (for example, the sections on definitions and principles). It is notable that the findings on Criteria for supporting Demonstrators are less clear, as each table responded in detail and in places contradicted others. However, the differences are often those of approach, and a clear sense of what is required emerged from the two workshops, which enables us to suggest a revised set of Criteria which we sketch out below (rather than in the Findings section, as this is our subjective take on participants' comments). These Criteria can be seen as the sharp end of the Framework, encapsulating what versions of Smart the Welsh Government will encourage. As such, our revised Criteria below are intended as a contribution to an internal discussion in WG, in which the Smart Living team and key colleagues share ownership of the Criteria and agree on their final shape. This is not just a question of scope and wording, but also how the Criteria would be scored and applied to Demonstrator proposals, and by whom (eg. by the Technical Group recommended below).

Figure 1 Revised WG Criteria for Demonstrator Support (by ADR&A/CSE)

1.	Delivers on WG's Smart Living agenda (see Principles above, including: 'for the benefit of people and places in Wales; led by local needs; of value to people's wellbeing (not just their energy bills); fits with other WG policy eg. on Resource Efficiency, Environment, and Future Generations')
2.	Highlights opportunities to reduce inequalities and/or tackle fuel poverty
3.	Demonstrably incorporates local public opinion and stakeholder views
4.	Features third sector partners and local community groups wherever relevant
5.	Fills gaps in Smart developments by supporting work which the private sector alone would not or could not undertake
6.	Represents good value for WG: economically, socially and environmentally – for instance through being replicable and/or scalable
7.	Has the potential to reduce costs and/or generate income for the public sector – and in the latter cases, by allowing WG, local government and community sector bodies to take a share of any profits or a stake in any IP or data generated

## ii A Smart Living Technical Group

The Group would be designed to provide challenge and support to WG in carrying the Smart Living agenda forward. They would ensure that WG's position was credible and kept up to speed with wider sector developments. In a material sense they could also help identify priority areas for Demonstrators, judge proposals, or even help design and develop Demonstrators once identified (including using their own networks to support the partnering up process, and tap into potential external funding streams). It is vital that the Group is action orientated, and does not represent an additional (empty) layer of governance.

In recognition of the iterative nature of Smart, and that the transformational changes it entails will require the involvement of a whole society, we recommend that the Group membership resemble a similar cross-section to that of the workshop participants: academics, energy companies, DNOs, local authorities, consultants and think tanks. In addition we would recommend including representatives of the community sector and energy groups in Wales, plus those from sectors which are seen potentially to benefit from the Smart agenda such as those in the Health and Social Care sectors; these groups' absence from the workshops was noted by other participants.

### iii. A Smart Living Roadmap

A rolling report (ie. with annual updates) from the Smart Living team and Technical Group describing:

- The current state of Smart Living in Wales (baseline – dimensions tbc)
- Completed Smart Living Demonstrators (and their outcomes)
- Current Smart Living Demonstrators
- Forthcoming Smart Living Demonstrators (short term)
- Potential Areas of Interest for Demonstrators (medium and long term)

...all this expressed on a ten year timeline, in keeping with the projected duration of the Smart Living programme.

...and each demonstrator mapped against Smart Living's Principles or Criteria, to show what aspects have been addressed to date by the programme as a whole, and where the remaining gaps are.

Finally, the strength of support expressed by workshop participants for WG to take a leading role in steering Smart Living in Wales comes across strongly in the findings which follow, and the Recommendations above make clear that this is a substantial task, and one which will run over a number of years (hence, we suggest a ten year commitment). The implication is that WG will need to move its Smart Living capability onto a firmer footing, in order that it can pursue its core tasks of convening stakeholders, supporting Demonstrators (and their partners, especially Local Authorities), and engaging the public. We would recommend that the WG Smart Living team is empowered with adequate resourcing, capacity and reporting lines to fulfil the roles outlined below.



## 3 Findings

### 3.1 What is Smart / Smart Living? ...and other questions

The first section of the workshops introduced participants to the concept of Smart, and WG's approach to Smart Living as a programme of work. The presentations were followed by a groupwork exercise in which participants were asked what questions they had about Smart and Smart Living. The findings below blend participants' pooled responses with substantive inputs from speakers (eg. key definitions, with references cited in brackets).

#### 3.1.1 What is Smart?

**Smart** is hard to define, in isolation from different technologies and practices.

Nonetheless some participants at both workshops wanted a definition.

One table defined it as "Interactive Connected Intelligent"

One DNO defined it as joining together the units of his business eg. Wires plus Renewables.

Another DNO defined it as the process of "managing demand" (in turn by: peak lopping; load shifting; energy efficiency).

One speaker summed it up as "flexibility" (eg. in managing supply/demand).

Firm definitions are more available at the level of different technologies, practices or themes, for example:

#### **Smart Homes:**

More than a hi-tech home, a home where devices communicate with one another [speaker]. Smart Homes can in turn be defined by the level of control or proaction allotted to the householder (smart user): Consumer Mediated; Consumer Consented; Consumer Driven (to maximise Smart and its benefits, we need to empower/propel householders into the last of these roles) [speaker]. Meanwhile, the connectivity within and between smart homes and the wider networks in which the smart home is embedded can either serve the needs of the householder individually (eg. through technologies such as internet enabled heating control) or serve the needs of the grid (eg. through various demand side management technologies and market innovations such as time of use tariffing).

#### **Smart Cities:**

There are a number of possibly conflicting definitions of a Smart City. Some focus on technocratic solutions to managing city infrastructure with the resident simply a better served consumer of infrastructure services. Others present Smart Cities as a means to enable greater citizenship, human creativity, social connectedness and resilience [speaker]. The

current UK Government definition is closer to the latter, and goes beyond the energy domain to promote the image of a smart citizen who consumes and contributes to democratic 'services':

*"Smart city is about enabling and encouraging the citizen to become a more active and participative member of the community, for example, providing feedback on the quality of services or the state of roads and the built environment, adopting a more sustainable and healthy lifestyle, volunteering for social activities or supporting minority groups. Furthermore, citizens need employment and 'Smart Cities' are often attractive locations to live, work and visit." [BIS Smart Cities paper (October 2013)]*

### **Smart Grid:**

*"A smarter network will make use of real-time information on network performance and energy consumption, to respond to and manage demand to maintain a more efficient, affordable and low-carbon flow of energy. By doing so, a smarter network will also enable new technologies such as electric vehicles, renewable generation, heat pumps, amongst others technologies." [Energy Networks Association – NB the ENA's use of "smarter" triggered discussion that the Grid is somewhat smart already (by the 'interactive connected intelligent' rule – albeit the intelligence is currently more human than in future) and does not fail substantially often)].*

Smart Grid was also defined as 'building interactivity around the existing hard grid' – on the basis that we won't be paying to replace the entire infrastructure any time soon, and that "people don't like new lines" [DNO]. Similarly, the same speaker said "the Smart part is not the wire, but how we monitor the performance of the wire". In a related example, the energy supply market innovation known as sleeving can be defined as "connecting the consumer to the producer but without new wires" [speaker].

### **3.1.2 What is Smart Living?**

Defining Smart Living is critical, especially if other elements of the WG Strategy or Framework are to refer to it (eg. Demonstrator Criteria #2 'Delivers on Smart Living Agenda').

There is no one definition, partly because Smart Living appears to have been a phrase newly coined by WG (they had apparently considered other options – WG attendee). The ambiguity is also because it involves collaborative working between Government and many other actors/sectors. Hence a number of tables argued it is indefinable, one saying: "There are multiple definitions of Smart Living depending on who is asking the question."

Participants concluded that the task for WG is to define a set of principles or attributes which clearly underpin the kind of Smart Living they want to see, to advance the interests of the people of Wales. These principles can then go on to inform all other aspects of delivering Smart Living, including the roles that WG should play, and the Criteria used to determine which Demonstrator projects they should support. Note that, for this reason, there is some overlap between points made under this first question (what is SL?) and the two later questions (on WG's role, and the Demonstrator Criteria).

A coherent picture of Smart Living can be built from the principles and definitions suggested by participants – albeit there is an inherent tension between the 'business of government as usual (but smart)' and the 'total transformation' perspectives. Suggestions include:

- o Because Smart Living is a strategic approach defined by the Welsh Government, it should inherently be for the benefit of Welsh people, and start from where Wales is at (in terms of natural resources, the Grid, housing stock, social capital, community capacity...).
- o Smart Living is a version of Smart that starts from the bottom up, and is citizen focussed. It is about how we live as a society with smart. This is a corrective to traditional energy systems (eg. the Grid itself) which are top down. Instead of being technocratic, Smart Living is user led. It is concerned with outcomes for citizens, not inputs by business. It should consider the value added to citizens' lives in many dimensions, and not just money saved ("bill reduction may not be the most important thing" – WG participant). Some participants argued that it was urgent that WG take a public stance on Smart Living, as other sectors (notably energy businesses including DNOs and retailers, and other consultants and financiers) are already active in this space. It was also stressed by many that the third sector, especially community energy groups, appear to be missing from the agenda to date; it was felt their inclusion would further redress the balance of power towards the people of Wales.
- o Smart Living continues the business of governing Wales, and asks the same governance questions of WG as ever but "seen through the lens of Smart" (eg. the role of Government, when to intervene/legislate, responsibility for engaging/influencing citizens etc).
- o Smart Living requires collaboration, with the Welsh Government convening actors from diverse sectors inc UK Government, Regulators, Local Authorities, DNOs etc. One table commented "Smart Living is not business as usual with a small change – a huge step change is required. It needs the collaboration of many actors in a departure from standard policy to make something happen." It was also remarked that the transition to Smart Living is not optional: it is essential in order to ensure the grid keeps working as new stresses are placed upon it (such as heating and transport becoming electrified, and increasing quantities of intermittent and distributed generation coming on stream).
- o Smart Living joins together all aspects of the energy system: homes – distribution – generation (NB this maps onto WG's current three themes: Smart Users; Connected Assets; Smart Grid. That structure was widely accepted and adopted by participants).
- o Smart Living should join up different functions of the Welsh Government, joining Energy with Resource Efficiency and Transport, and eg. both with Health and Social Care, to introduce innovations and benefits in governance and service delivery.
- o Smart Living should enact a learning process, based on trial and error, and the spreading of best practice. It should be advanced via demonstration projects that represent safe spaces for innovation (or "experimental zones").
- o Smart Living should follow a place-based and needs-led approach: applications should answer real needs in particular places. This is also consistent with the technical need to match demand and supply, which lends itself to a localist and place-based agenda. For this reason, Smart Living activity in communities requires Local Authority leadership. LAs can bring together actors and partners across sectors and, critically, face fewer barriers to engagement with householders (being more trusted than business and central government).
- o Smart Living should ensure that the rollout of smart technologies narrows inequalities, rather than widens them, and that tackling fuel poverty via Smart is prioritised.
- o Smart Living needs to be long term and tactical: fixed for a minimum 10 year term.

### 3.1.3 Other Questions

The following questions were also gathered in the first table exercise; many of them run at a tangent from the definitions of Smart / Smart Living, and some are unlikely to be answerable definitively, at this stage or indeed over time. These questions include:

- o Who pays?
- o What is the role of the Big 6?
- o Can Smart Living be achieved in homes through retrofitting? Will it ever be fully attainable for the existing housing stock?
- o Will we need to discuss/revise data protection and privacy laws?
- o Do we have a baseline for where Smart is at now, specifically in Wales?
- o How to engage and inspire the whole public?
- o Timescales for achieving Smart (inc paybacks on investments)?
- o Impacts on social inclusion?
- o Current and future capacity and expertise in society (inc LAs)?
- o The role of the community sector (is it being overlooked)?
- o More information on: sleeving; virtual power plants; the role of Electric Vehicles

## 3.2 What roles should WG play in supporting Smart Living?

Following a further round of presentations featuring current Smart case studies, and discussed the choices and assumptions inherent in different visions of Smart, participants were asked to work in small groups and advise on the different roles and tasks which WG should play in supporting partners in advancing Smart. The following suggestions from participants follow on from the definitions and principles above – Smart Living being an approach to advancing Smart in Wales co-ordinated by the Welsh Government. Some of the roles are clear functions, others are more like ways of working, and could be further unpacked, or linked to other tasks.

### - Set out the vision for Smart Living, prioritise action and monitor progress

The top priority according to most participants was for WG to hold the vision for Smart Living and govern for the good of Wales (hence the definitions of SL in Q2.1 above). Furthermore it was felt that WG should also set the priorities in terms of actions and projects, and set the success measures against which progress should be made – again, these tasks require a clear definition and vision.

- **Support LAs to lead on delivering Smart Living**

Welsh Government and other participants agreed that LAs should lead on the delivery of Smart Living on the ground. However, it was felt that they might lack: funds; energy expertise; stakeholder networks; a focus on climate change. It was seen to be WG's role to make up for these shortfalls, including providing funds or access to funds, and making expertise available. One LA speaker underlined that SL would need selling in to each LA's cabinet, and that to do so will need an emphasis on the 'value added' by Smart, not the energy/technocratic aspects per se. The speaker's ranking of LA Cabinets' priorities which could be used as hooks for Smart Living included (from top to bottom): job creation; fuel poverty; cost saving (or revenue generation); skills training; health impacts; and carbon cutting (notably last of all the priorities). While it was felt that WG should be tactical in framing Smart Living messages for LAs, it should also ensure it does not let important dimensions of Smart Living slip (see also 'Fill gaps' below).

- **Support a programme of Demonstrator projects**

It was agreed by all that showing how Smart Living would happen on the ground and in people's homes was the best way to deliver Smart Living in Wales. This was seen by some to be as much a process of discovery as demonstration, given the emergent nature of Smart Living. For example, demonstrators would involve negotiating compromises between the three points of the energy trilemma, or balancing costs and benefits across the triple bottom line of Sustainable Development. Demonstrators were conceived of as socio-technical experiments, or safe spaces for innovation; one role of WG would be to 'de-risk' these situations, enabling safe failure if needs be. There were a number of open questions about what Demonstrators should be supported, and these are summarised under Question 2.3 below on Criteria. There was however some agreement that Demonstrators should explore the inter-relationships between smart technologies and people, and that they should also include innovative mechanisms such as ownership models or tariffing arrangements. There was also a call for Demonstrators to develop 'value propositions' such as new applications for Smart (see eg. David Shipworth's presentation including 'Ghost Guard' and 'Welcome Home' services) rather than concentrating solely on savings in energy bills. The criteria for selecting and supporting Demonstrators should also fit with other funding schemes' requirements (eg. Ofgem's Low Carbon Networks) to facilitate the drawing in, or matching, of external funds.

- **Fill gaps left by the market**

There was some agreement that WG should step in to support applications of Smart Living which could be of value to Wales, but which would otherwise not thrive if left to the market. This role flows from the principle that WG's Smart Living should in part be a corrective to other visions already in play. This role is as much a principle as a function, but participants identified a number of gaps which WG could fill including: ensuring inequalities are reduced; injecting a strong sense of positive values into the vision; maintaining a consistent emphasis on resource efficient and low carbon solutions; building community capacity; focusing downstream on the household end of Smart (where the savings are likely to be smallest and the costs highest); and funding those projects which could deliver value for Wales but not sufficient value for money for private sector actors to be leading on them.

- **Lead on public engagement and consultation**

It has already been mentioned that for Smart to work at its optimal level, it will require fully empowered consumers (see 2.1 above). That task at the moment is being undertaken piecemeal – if at all – in relation to specific developments; participants felt that lessons from past such efforts have yet to be learnt (eg. roll out of the Green Deal, or windfarm developments in mid Wales). At the basic level, there are issues of public acceptability (as one speaker said “if the public don’t want Smart it’s dead in the water”). These discussions went on to note that citizens live in homes not houses, and that the appeal of Smart Living is in the value it can add to daily life (eg. in terms of comfort and convenience); these ‘human’ concerns are missing from current (technocratic) framings. Then there is the more nuanced question of negotiating between conflicting priorities in the attempt of reaching a compromise that works for a whole community. On a practical level, there is the need for education and behaviour change, so the householder can at least operate their Smart appliances correctly (“Smart data needs Smart users”, said one speaker). More fully, householders could become active prosumers, and advocate for more Smart solutions in their communities. Finally, a number of participants highlighted the importance of the social dimension in this engagement: encouraging people to come together as communities, to build a sense of common purpose, and establish community groups to ensure the community would benefit.

- **Set market standards (including regulation) in support of Smart Living**

It is one role of Government to establish the operating conditions which allow markets to flourish to the benefit of their citizens. In the case of Smart Living, participants commented that WG should “interpret” existing regulation set in Whitehall to ensure it responded to Welsh circumstances. Specifically, there were also calls for them to lobby DECC to allow non-traditional business models.

- **Ensure demonstrators aim to provide social, environmental and economic benefits**

Speakers were clear that the technologies and social innovations associated with Smart Living represent a substantial opportunity for revenue generation. This is one reason for the interest and resources being committed by the private sector (as evidenced by the input from a number of businesses to these Smart Living workshops). It was in this context that participants emphasised the need to ensure that resulting profits were at least in part safeguarded for the benefit of people and communities in Wales, including reducing inequalities. It was highlighted that WG could oversee the proposals of demonstrator projects to ensure they provide such benefits.

Some table discussions considered how demonstrators should show the potential to be economically self-sustaining beyond the period of demonstration and support by Welsh Government. There was a recognition that demonstrators should be able to cross the innovation “valley of death” from pilot project to replicable and scalable scheme without recourse to ongoing government subsidy. This is both for practical reasons of limited government resources but also so that projects come forward which have their own energy and dynamism by virtue of being financially viable. It was also noted that changes to the law such as those allowing Local Authorities to become energy suppliers mean that the commercial benefits of rolling out Smart Living initiatives can return to the public sector as well as to businesses. Economic benefits from Smart Living were highlighted by one Local Authority speaker who succinctly stated the priorities found in local authority decision making regarding energy at present. Currently top of the list is activity leading to job creation, then tackling fuel poverty followed by cost saving or revenue generation (see “support LAs to deliver on smart metering”). Hence demonstrators that align with this agenda are more likely to gain the support of Local Authorities.



Virtually all the presentations made reference to possible economic benefits flowing to householders from embracing Smart Living technologies with an implicit assumption that this would be an important element in their social acceptance and adoption. However, both the presentations and the table discussions also touched on the fact that householders do not think of their living places as houses to be managed as optimally or as frugally as possible, a framing of the home that leads to a policy conclusion that householders are primarily concerned with making “savings”. Social research reported in the workshops suggests a different perspective: householders think of their houses as places of entertainment, security, comfort and social status i.e. as “homes”. Table discussions also suggested that in fact the savings to householders from some forms of smart living technological systems (for example appliances that are able to modulate their energy demand in response to price signals from time of use tariffing), are likely to be quite small and therefore of little interest to householders. These factors led one speaker to propose that the offer of smart living must be made from a much wider basis – for instance in providing opportunities for telecare or home security measures (see “support a programme of demonstrator projects”).

Other smart living technologies discussed in the workshops offer some other possible mechanisms by which the value of energy savings can be captured in a way which could be more compelling to householders. For example, aggregation of energy demand reduction on an area basis realises energy savings to householders, potentially monetisable value to energy suppliers and distributors (which could be recycled to householders or local authorities) and could build a sense of energy citizenship or community. Similarly, opportunities to sell distributed energy generation through aggregators to energy suppliers or on a peer to peer basis (one household to another) could boost the value of household level micro generation, create greater resilience to fluctuations in energy prices and foster a greater sense of community.

- **Link Smart Living to existing policies and embed across Government**

As with the calls for influencing Whitehall, there was also support for WG to co-ordinate better across diverse policies in Wales, and set the frameworks for eg. Planning and Environment to ensure they were supportive of, and drew on, Smart Living approaches. In this way, Smart Living at community level would not be achieved (just) by retrofit, but through it being designed in to new developments from the outset.

- **Act as a ‘value aggregator’ for Wales**

A substantial number of participants felt that this was the number one role that WG should play: adopting a wide definition of value, then applying it to the selection, support and evaluation of Smart Living activities across Wales. Again, this role was seen as a corrective to the narrow ‘value for money’ priorities and definitions of private sector actors. As well as £ savings, ‘goods’ to be valued in such a calculation could include IP generated (and owned for Wales) big data mobilised (“the new oil” said one participant), community assets and capacity created, ecosystem services sustained/ environmental impacts minimised, and so forth.

- **Co-ordinate a process of ongoing learning and feedback**

Smart Living is an emergent process involving a collaboration between multiple actors. As well as supporting the action, it was felt that WG should co-ordinate the learning, in order to bring together and share a body of best practice, and be able to report regularly on progress made.

### 3.3 What Criteria should be set for WG Smart Living Demonstrators?

In the final exercise, participants were asked to review the draft set of Criteria for supporting Demonstrators proposed by WG, and reproduced below (with numbering added).

WG Draft 'Demonstrator' Selection Criteria	
1	ALIGNS WITH GOVERNMENT/LOCAL AUTHORITY POLICIES
2	DELIVERS ON SMART LIVING AGENDA
3	WALES WILL BENEFIT
4	INCORPORATES VALUE FOR MONEY PRINCIPLES
5	HAS AN INNOVATIVE/NOVEL SCOPE
6	FLEXIBLY SCALEABLE AND OPEN ENDED CONSTRUCTION TO ENSURE ROLL OUT POTENTIAL
7	ADDRESSES ISSUES/NEEDS
8	POTENTIAL FUNDING SOURCES CAN BE HIGHLIGHTED
9	POTENTIAL RESULTS CAN BE HIGHLIGHTED
10	BLENDS ACADEMIC, PRIVATE AND PUBLIC RESOURCES AND EXPERTISE
11	INTEREST IN ROLL OUT IF SUCCESSFUL FROM MULTIPLE PLAYERS WILLING TO EMBED IN OPERATIONAL PRACTICE AS NORM IF SUCCESSFUL

The results of the exercise are presented below, in the same way as they were asked of participants: which Criteria would they keep/unpack; merge; drop; or add?

Across all participants it was felt there were too many criteria, and that they were too generic. A comparison was made to Ofgem's criteria for the Low Carbon Networks Fund, which has six criteria (albeit they have extensive layers of detail beneath each). The point has also been made above that the WG Criteria should dovetail with those of other funders including Ofgem, to maximise the chances of leveraging in funds to projects based in Wales.

The changes recommended by participants are summarised as follows; note there is sometimes divergence or contradiction between views, as the exercise was conducted in small groups, and each fed back their findings separately. For an integrated 'solution' to the task, see the research teams suggested revised Criteria, set out in the 'Recommendations' section above.



- **Keep/Unpack**

- o #2 Fitting with the aims and principles of Smart Living was felt to be non-negotiable; many felt that little more detail would need supplying if Smart Living were defined in a Framework which included the Criteria.
- o #3 'Wales will benefit' was felt to be the top priority for WG-supported Demonstrators; again this could be implicit in the definition of Smart Living, set out elsewhere. Some participants felt 'Wales' was not specific and would also wish Demonstrator plans to specify who and where in Wales, and when.
- o #4 'Incorporates Value for Money principles' attracted the most attention of the Criteria, with nearly all participants calling for the "broadest possible definition of value" – which would incorporate value for money as one of many dimensions, and would include other aspects of service delivery (eg. impact on health and social care costs) within their cost/benefit calculations. Participants' suggestions related to 'showing potential added value' rather than demonstrating savings through eg. reduced energy bills. It was also argued that the value should be shown to flow to the people of Wales – especially the currently disadvantaged and those who might suffer further inequality through the development of Smart. Discussions on this point also revolved around the principle of 'filling the gap' (set out in Q2.2 above): if Demonstrators were designed to generate significant revenue or cost savings, it was felt that the private sector should be keen to develop them without WG support (if they weren't doing so already). This implies it is more cost-marginal projects, which deliver wider and non-monetary benefits to particular groups in Wales, which should be supported through WG's Demonstrators: what one set of participants described as "loss leaders".
- o #6 'Flexibly Scaleable... with Roll-out Potential' was deemed important by a number of participants, in order both to justify costs of support, and to speed the rate of adoption and roll out of Smart Living. However, there were also some cautions that it is "impossible to pick winners": that part of the point of Demonstrators should be to explore roll out potential, and how to best achieve it.

- **Merge**

- o #1, #2 and #3 were described as "the crux" of the Smart Living offer. If Smart Living were clearly defined alongside the Criteria, then it would simply be sufficient to reference Smart Living, with a criterion saying the Demonstrators should fit well with its aims and principles (which would include being for the benefit of people and places in Wales, and being aligned with other WG policy).
- o #1, #5, #7, and #9 were felt by some participants to form a "banal" cluster. These participants argued that these Criteria needed spelling out a lot more clearly, or should simply be deleted.

- **Drop**

- o #1 'Aligns with policies' was felt by some to be too vague; again, a definition of Smart Living could help, by situating the programme in its policy context. Some participants also worried that demanding a fit with existing policy could "stifle innovation"; others suggested that existing policy should be refined to ensure it supported Smart Living activities.

- o #2 'Delivers on Smart Living' was felt by some to be circular, and therefore redundant.
  - o #5 'Innovative scope' was felt to be too vague, while others perceived an overlap with #2. Some argued it would need qualifying if it were to be used: some projects could be 'new here' and the innovation would be in adapting them to a new context. It was felt that as they stood the Criteria might be privileging technological innovations over social innovations, or new applications and 'value propositions'.
  - o #7 'Issues and Needs' had to be unpacked or should be deleted (as also described above). Clear referencing of Smart Living principles alongside the Criteria could achieve this. Alternatives suggested by other groups of participants included "Address local issues", "Be needs driven", and "Start from local needs".
- **Add**
- o WG should take a share or stake in the IP and data generated through each Demonstrator (consistent with 'to the benefit of Wales').
  - o Spell out the values underpinning Smart Living (see also the Principles in Q2.2 above)
  - o Many participants noted there was "nothing on environmental sustainability". Suggestions here included that Demonstrators should "enact the principles of resource efficiency" or "not increase environmental harms" or "contribute to reducing dependency on fossil fuels".
  - o Demonstrators should lead to social and environmental as well as economic benefits.
  - o Demonstrators must show that they have been developed through public engagement and consultation, and include community involvement throughout their lifespan where possible.
  - o Demonstrators should address current inequalities including fuel poverty.
  - o WG should co-ordinate across the suite of live and upcoming Demonstrators, to ensure they function as a coherent programme, and contribute to the understanding and advancement of Smart Living as a whole.

## 4 Annexes

### 4.1 Methods

Two six hour workshops were convened in February 2015. They were held in North and South Wales as follows:

- North: Wrexham – Glyndwr University (4th February)
- South: Cardiff – Park Inn Hotel (10th February)

The workshops were a pair and followed the same design. The logic behind convening both North and South was to make it easier for those working in locations in the North to attend (not least LAs, who are under pressure to keep travel costs down), and to test variations in thinking and progress on Smart Living in the two different regions. The Wrexham workshop also provided a chance to trial the format and content before the Cardiff workshop, which had the greater number of attendees (including senior WG colleagues).

The workshops were designed by the research team, in collaboration with the WG Smart Living team. They involved a mixture of presentations and group work. The presentations were given by a wide range of speakers, including WG staff, members of the research team, academic experts, LA colleagues, and energy industry partners (including the DNOs). Both sets of presentations are available to download from <http://www.adranda.co.uk/workshops>. The group work was undertaken on six tables, each facilitated by a member of the research team or academic colleagues [full lists of attendees are given below].

The approximate structure of each workshop was set out to attendees as follows:

## Shape of the Day

[time]	[topic]	[aims]
10:00 – 10:30	Introducing Smart Living Wales	Define what's in scope for SL
10:30 – 11:05	What's in the Box? [plus Exercise #1]	Wider definitions of 'Smart' – with table questions
11:05	BREAK	
11:15 – 12:00	SL Case Studies	Examples of SL in the real world
12:00 – 1:00	Plotting Smart Futures [plus Exercise #2]	Visioning what SL could be, and what SL WG should support
1:00	LUNCH	
1:45 – 3:00	SL 'Demonstrators'	Cases of SL work in Wales to date
3:00 – 3:50	WG Support & Criteria [plus Exercise #3]	Identifying what and how WG should support SL
3:50 – 4:00	Next Steps	A framework for supporting SL
4:00	CLOSE	

## 4.2 Participants

### 4.2.1 Wrexham

[\* = speakers]

[Research Team]	[WG Smart Living Team]
Andrew Darnton, AD Research & Analysis (chair)	Ron Loveland (WG Energy Advisor)*
Karen Darnton, AD Research & Analysis (logistics; facilitator)	Eleanor Knight (Smart Living Co-ordinator)
Simon Roberts, CSE (facilitator)*	Jon Oates (Head of Energy Wales)*
Nick Banks, CSE (facilitator)*	
Zoe Redgrove, CSE (facilitator)*	
Kate Simpson, CSE (facilitator)*	
Mike Fell, UCL (facilitator)*	

Attendees (n = 26)

[Organisation]	[Person]
Anglesey Energy Island	Liz A Davies
Anglesey Energy Island	Gareth Hall*
Bridgend Council	Michael Jenkins*
Conwy	Stuart Whitfield
Denbighshire	Robert Jones
Energy Innovation Centre	Tony Knowles
ETI	Tim German*
Flintshire	Leanna Jones
Glyndwr University: Principal Lecturer in Engineering	Dr Richard J Grant
Glyndwr University: Professor in Aerospace Technology	Professor Alison McMillan
Glyndwr University: Professor of Computing Futures	Professor Vic Grout
Gwynedd	Dewi Wyn Jones
Scottish Power	Alan Collinson*
Scottish Power	Rachel Shorney
WEFO	Karl James
WEFO	Helen Edwards
Western Power Distribution	Steven Gough*
WG Business Development: construction sector	Dewi Williams
WG Business Development: construction sector	Dai Roberts
WG Energy Efficiency	Lucy Thomas
WG Innovation EST	Marcia Jones
WG North Wales Energy & Marine	Wendy Boddington
WG Resource Efficient Wales & Distributed Generation	Jennifer Pride
Wrexham	Michael Cantwell
Wrexham: Carbon Reduction Manager	Renia Kotynia
Wrexham: Cynefin Place Co-ordinator	Dave Gittins

#### 4.2.2 Cardiff

[\* = speakers]

[Research Team]	[WG Smart Living Team]
Andrew Darnton, AD Research & Analysis (chair)	Ron Loveland (WG Energy Advisor)*
Karen Darnton, AD Research & Analysis (logistics; facilitator)	Eleanor Knight (Smart Living Co-ordinator)
Simon Roberts, CSE (facilitator)*	Jon Oates (Head of Energy Wales)*
Nick Banks, CSE (facilitator)*	
Zoe Redgrove, CSE (facilitator)*	
Kate Simpson, CSE (facilitator)*	
Mike Fell, UCL (facilitator)	
David Shipworth, UCL (facilitator)*	

Attendees (n = 58)

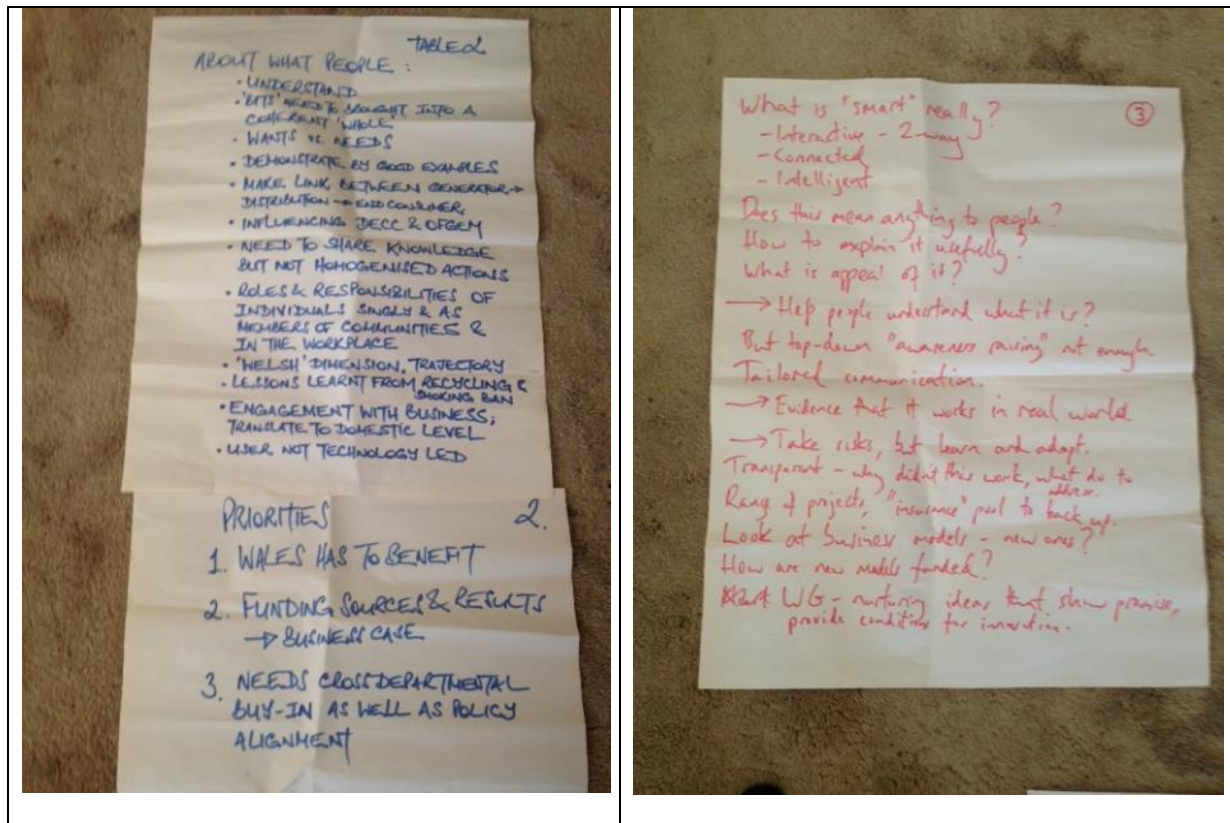
[Organisation]	[Person]
Aston University	Louise Knight
Bangor University	Chris Hillier
Blaenau Gwent	Amy Taylor
Blaenau Gwent	Paul Colston
Blaenau Gwent	Peter Morgan
Blaenau Gwent	Sue John*
Bridgend Council	Michael Jenkins*
Carbon Trust Client Service manager Public Sector	Flora Davies
Cardiff City - Consultant	Hywel Lloyd
Cardiff Council	Gareth Harcombe
Cardiff University	Chris Groves
Cardiff University	Dimitrios Xenias
Cardiff University	Joanne Patterson
Cardiff University	Liana Cipcigan
Carmarthenshire	Kendal Davies
Ceredigion	Bethan Lloyd Davies
Community Housing Cymru	Shea Jones
CREW Regeneration Wales	Jemma Bere
Cynnal Cymru	Rita Singh
Energy Saving Trust	Duncan McCombie
Energy Saving Trust	Nick Lomax
ETI	John Baterbee*

IBM	Laurence Carpanini*
Imperial College	Simon Cran-McGreehin
Melin Homes	Lee Pickett or Allison Cawley
Natural Resource Wales	Gideon Carpenter
Neath Port Talbot	Christopher Jones
Newport	Nia Lewis
Pembrokeshire	Gwyn Davies
Pembrokeshire	Steve Keating
RCT	Lisa Lloyd
RCT Homes	Lauren Tait
SP Energy Networks	Alan Collinson*
Swansea	Suzy Richards
Swansea University	Joanna Morgan
the Environment Centre, Swansea	Jenny Edwards
Torfaen Council	Rachael O'Shaughnessy
Vale of Glamorgan	Mark Biernacki
Wales & West Housing	Owen Jones
Western Power Distribution	Roger Hey*
WG Construction Centre	Leanne Kyte
WG Director: Energy Waste and Flood	Prys Davies
WG Distributed Generation	Charlotte Gibson
WG Distributed Generation	David Eccles
WG Energy & Environment	Louise Brown
WG Energy & Environment	Cheryl Whitaker
WG Energy & Environment	Helen Donovan
WG Energy Efficiency	Kate Hearnden
WG Energy Efficiency	Lucy Thomas
WG Health Innovation	Abi Phillips
WG Innovation EST	Alastair Davies
WG Innovation EST	Marcia Jones
WG Local Government	Daniel Jones
WG North Wales Energy & Marine	Wendy Boddington
WG People and Places	Usha Ladwa-Thomas
WG Resource Efficient Wales & Distributed Generation	Jennifer Pride
WLGA	Neville Rookes
WWUtilities	Steve Edwards

## 4.3 Flipchart Outputs

### 4.3.1 Wrexham

[Exercise 1: Questions about Smart / Smart Living – not completed]





[Exercise 2: What kinds of Smart Living should WG support?]

What kinds of smart living should WG support?

- Link up with other opportunities - where what is EU funding focused on?
- Cultural aspects - e.g. education, awareness raising
- Belief in community - stronger in Wales than e.g. in England
- Leading by example - public sector
  - businesses
  - other non profit orgs - alternative business models?
- Demonstrators - replicability, scale → e.g. applying to island - easy to measure
  - can then be applied in other countries
  - e.g. higher water no grid connections → community gain → FIT more control
- Cities - CEB last yr Smart city agenda - managed?
  - non options w/ traffic than energy
- Economically attractive, social benefit e.g. fuel poverty → getting w/ agenda of LA chief execs
  - better use of resources
- Can smart help fuel poverty? People don't like to be told they're poor.
  - package of smart solutions? Or e.g. more generally like smartness all we can give.
- LAs can use their position of trust + make things relevant to their area
  - also in charge of spatial planning
  - problem with expertise + cross-organisational working
  - working @ city region level? Sharing expertise

What kinds of smart living should W.G. be supporting???

1. Home automation - make it easy <sup>some groups more engaged than others</sup>
2. Savings small from T.O.U.T?
  - too small to motivate behaviour change?
  - hugely increase peak (blue tariff)?
    - problems with this - knowledge needed to change behaviour
  - explore other methods for motivating engagement with smart meters.
3. Make more use of the I.H.D. to raise awareness of technology / S.M. opportunities
  - also other platforms - smart ~~phones~~ <sup>phones</sup> digital T.V.
  - make use of existing tech in the house.
4. Capitalise on interest in robotics / IT.
  - e.g. Raspberry Pi - <sup>gamification?</sup>
  - de-mystify smart meter. - community involve ment.

[Exercise 3: Review of WG Demonstrator Draft Criteria]

Table 1

- \* Aligns with gov/local policy — what is there? ①
- \* Delivers on smart living agenda? — need one ①
- \* Wales will benefit? — Regions will benefit ② ③
- \* Incorporating value for money principles
- \* Has an innovative/novel scope — ③
- \* Flexibly scalable — roll out potential ①
- \* Addresses issues/needs
- \* Potential funding sources can be highlighted
- \* Potential results can be highlighted
- \* Blends academic, private + public resources
- \* Roll out from multiple players

- ✓ Unpack 'Wales will benefit' — community? ③
- ✓ Should align with policy obj.
- ✓ Value for money, not just cash.
- Nothing on social/environmental sustainability.
- "Addresses issues/needs" — vague. Is it need-driven, or have we found a need?
- Innovation — just because done before, could be novel in new situation/context.
- the for it
- Demonstrable replicability — where expression of intent built it up.
- Built in strategy for sharing learning — better success or failure
- Is there gap in market.

Private sector housing — not in control of ③  
 LAs... role for WG?  
 — But what/how?  
 Can't pick winners.  
 Being in control of own destiny.  
 WG to see where benefits could be that may not be achieved through entrepreneurship.  
 How take pilots to next level?

Criteria

- Some vagueness — be more precise — "issues/needs" to be addressed
- Some be specific — "Ministerial objectives" might be more "strategic objectives" — so as not to stifle innovation by existing policies
- Who in Wales will benefit over what areas?
- Lack of "community engagement/end-user participation/social sector"
- Addresses inequality?
- WG share in IP & data (public open access as well as results)
- Long-term value in public interest
- "Values for money" — "total place" long-term in widest sense across full chain/system. (Table 6)
- Drives cost reduction? (diversifying & reducing)

WG find where difficult to find otherwise.  
 — strong focus on end user... existing participation, addressing acquisition?  
 — set smart targets for housing/buildings (beyond the core)

Smart assets  
 Connected assets  
 Smart assets

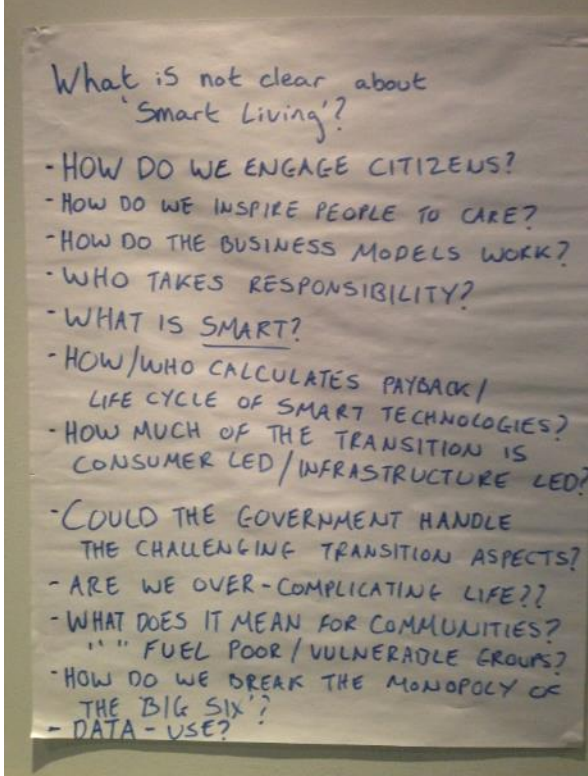
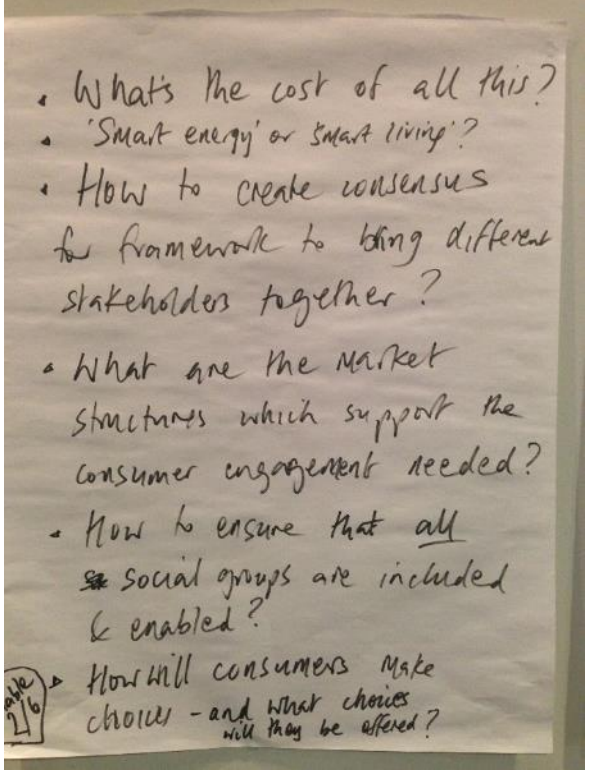
Determine values to apply?

- local energy masterplanning — not demand side.
- Integration
- Core boxes — link together —
- capacity building

Table 6

### 4.3.2 Cardiff

[Exercise 1: Questions about Smart / Smart Living]

 <p>What is not clear about 'Smart Living'?</p> <ul style="list-style-type: none"><li>- HOW DO WE ENGAGE CITIZENS?</li><li>- HOW DO WE INSPIRE PEOPLE TO CARE?</li><li>- HOW DO THE BUSINESS MODELS WORK?</li><li>- WHO TAKES RESPONSIBILITY?</li><li>- WHAT IS SMART?</li><li>- HOW/WHO CALCULATES PAYBACK/ LIFE CYCLE OF SMART TECHNOLOGIES?</li><li>- HOW MUCH OF THE TRANSITION IS CONSUMER LED/INFRASTRUCTURE LED?</li><li>- COULD THE GOVERNMENT HANDLE THE CHALLENGING TRANSITION ASPECTS?</li><li>- ARE WE OVER-COMPLICATING LIFE??</li><li>- WHAT DOES IT MEAN FOR COMMUNITIES?</li><li>- " " FUEL POOR/ VULNERABLE GROUPS?</li><li>- HOW DO WE BREAK THE MONOPOLY OF THE 'BIG SIX'?</li><li>- DATA - USE?</li></ul>	 <ul style="list-style-type: none"><li>• What's the cost of all this?</li><li>• 'Smart energy' or 'Smart living'?</li><li>• How to create consensus for framework to bring different stakeholders together?</li><li>• What are the market structures which support the consumer engagement needed?</li><li>• How to ensure that <u>all</u> <del>the</del> social groups are included &amp; enabled?</li><li>• How will consumers make choices - and what choices will they be offered?</li></ul>
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## TERMINOLOGY - 'house': 'home'

Where's the money coming from?

How does this fit with what we're planning for buildings/e.g. design-stage? (i.e. use as designed?)

PRIVACY! Trust: data issues...?

- COST AND THE ECONOMICS OF COST
- VALUE GENERATED FOR HOUSEHOLDERS.
- HOW DO WE MAKE IT RELEVANT, ACCESSIBLE AND EQUITABLE
- WHAT'S THE SKILLS GAP AND BUSINESS DEV. PERSPECTIVE.
- ROLE OF LOCAL AUTHORITIES
- IMPACT OF MARKET ARRANGEMENTS ON LOCAL AUTHORITIES.
- HOW DO YOU MAKE IT SAFE TO LA? TO SHARE DATA.
- COORDINATION & COMMUNICATION OF ALL PARTIES CONCERNED
- PROTECT MANAGING VESTED INTERESTS.
- FUTURE PRICING SYSTEMS.

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- Affordability: who will pay for it?
- Standardisation
- What are outcomes rather than inputs?
- Acceptability
- Better understanding of what's available - what exists now? What is tried + tested?
- Who will help manage relationships? ownership?
- Capacity (people) - current roles, new roles?
- How to make sure buildings are efficient etc.
- How to overcome stop people getting bored of gadgets
- How to keep data secure
- How can we link with other initiatives in health + wellbeing?
- Importance of community relationships, which are better than in place

× There are multiple definitions of Smart Living depending on who asks the question

× What is a 'smart person'?

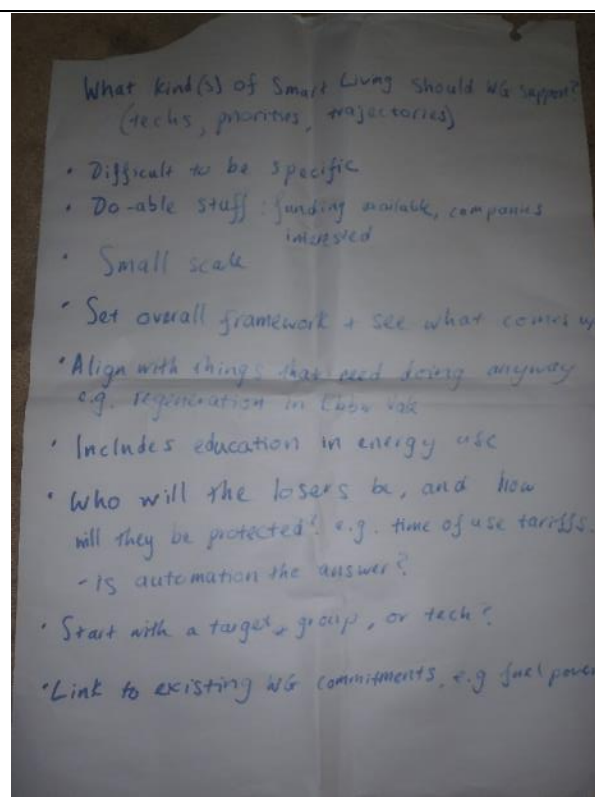
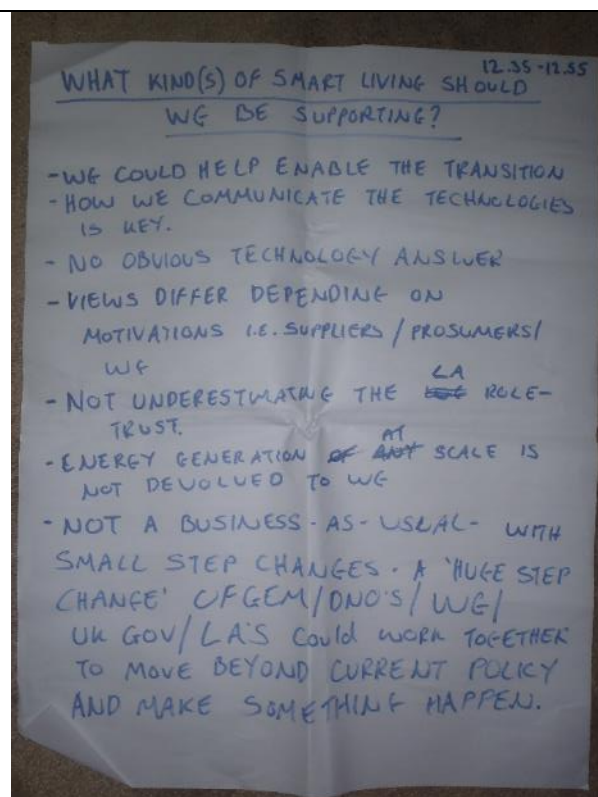
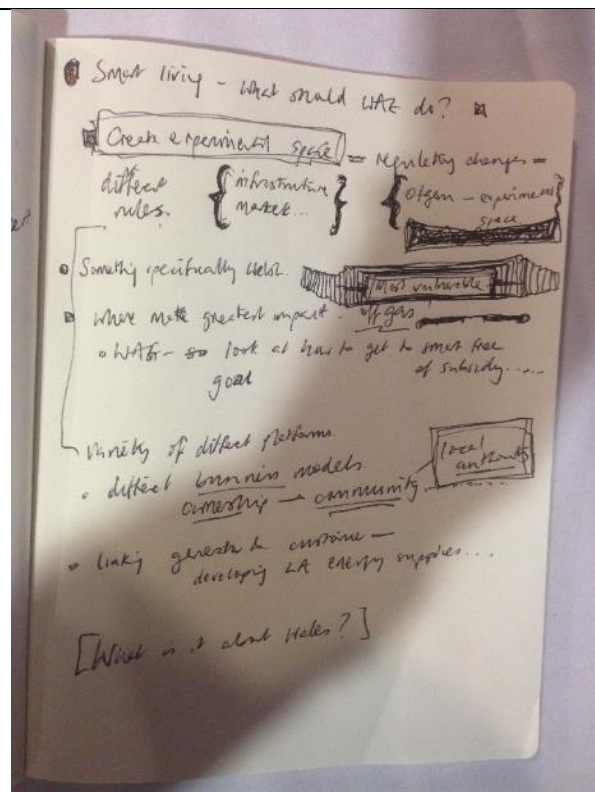
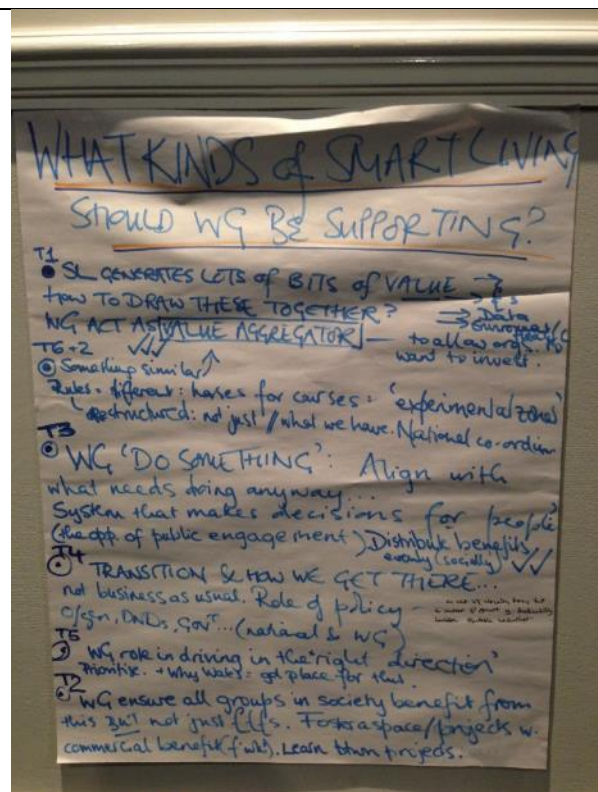
× How do we bring this all together and advance it in a way that benefits the people of Wales - where do we start. Sweet spot? Start somewhere

× Equity? Everyone taking advantage

× How do we make the tech. accessible and engaging

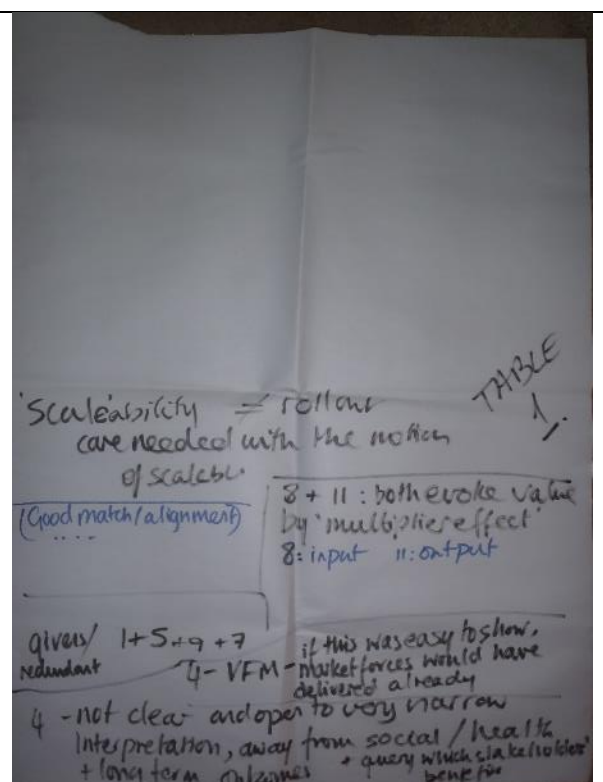
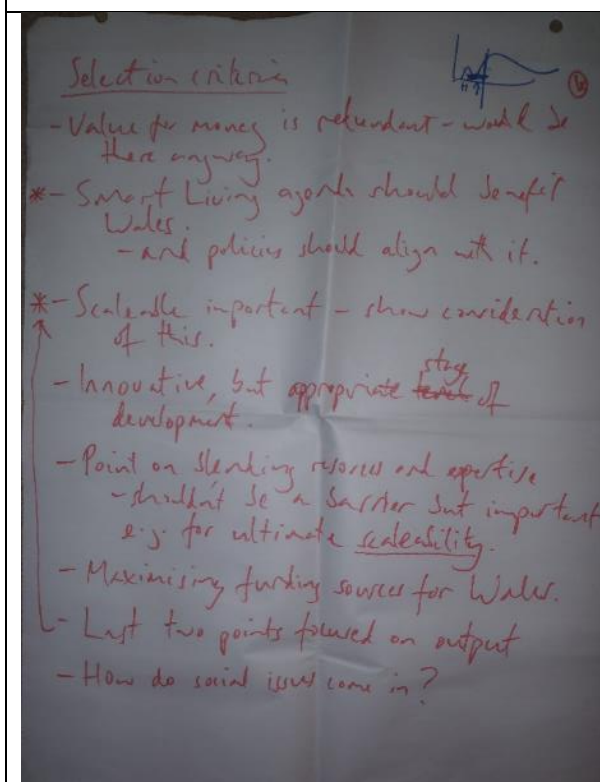
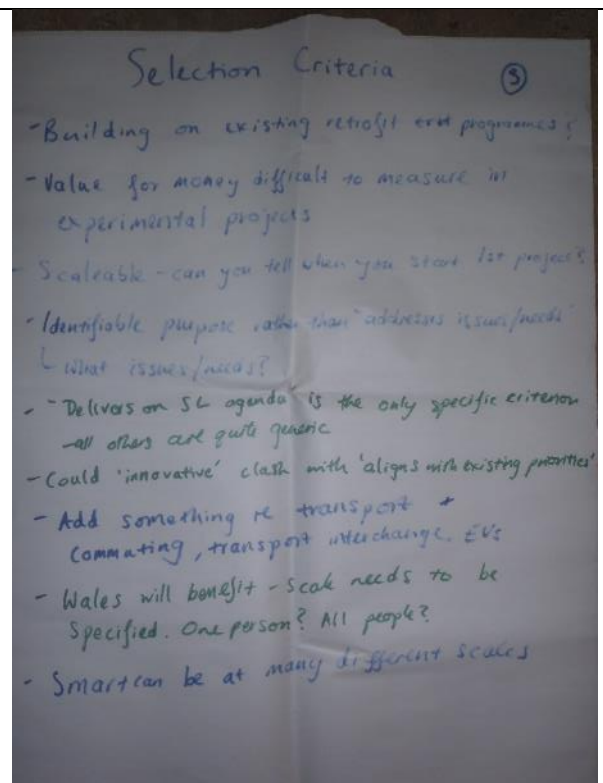
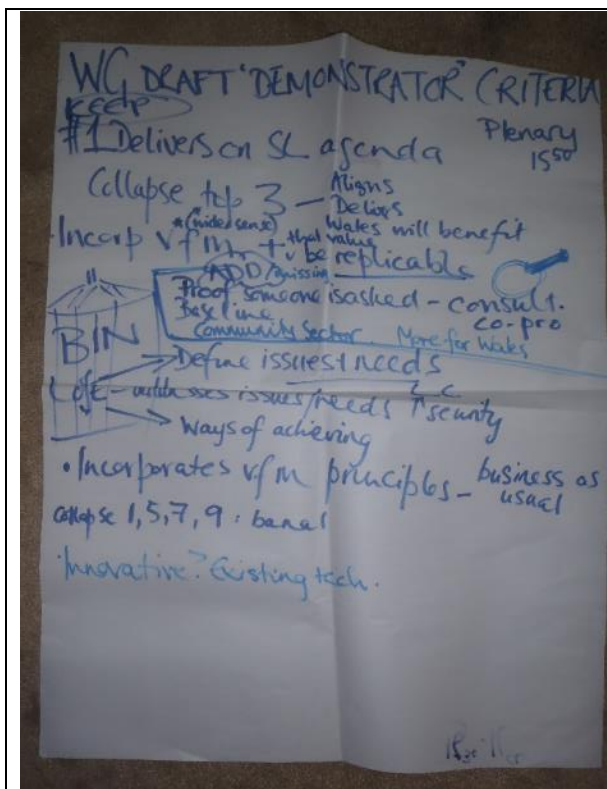
× What is the role for U.G.

[Exercise 2: What kinds of Smart Living should WG support?]





[Exercise 3: Review of WG Demonstrator Draft Criteria]



## Content

(7)

replicable

Here's too many!

value for money? — to whom?

value? — social value

longer term values

who does the value flows too

— demonstrator needs to lead to value for money

### Scrap

delivers s.c. agenda — too obvious?  
(covered by narrative)

— redefining 'innovative' — existing ideas  
but re-introducing in a new context