WESTERN POWER DISTRIBUTION

OPENLV

OPENING UP THE SMART GRID

METHOD 3: OPENLV EXTENSIBILITY

ESTABLISHING THE MARKET

ea technology

RIIO NIC NETWORK INNOVATION COMPETITION

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Contents

Glossary

Term	Definition
LV-CAP	Low Voltage Common Application Platform
RTTR	Real Time Thermal Rating
SDRC	Successful Delivery Reward Criterion

1 Executive Summary

Method 3 of the OpenLV project will work with 3rd party organisations across the WPD network area. Ten LV-CAP™ platforms will be installed in substations and apps will be developed in partnership with participating 3rd party organisations. The aim is to demonstrate that the overall OpenLV solution can be utilised to provide benefits to end customers, networks operators and the wider industry.

This report covers the work completed between September 2017 and November 2017 to establish and report on the initial level of interest from 3rd parties to utilise LV network data and/or develop apps to be deployed on the OpenLV platform.

Methodology

The aim of the work completed to date has been to:

- Promote the existence of the project as widely as possible;
- Establish the extent of interest in developing apps for the project amongst the full range of sectors investigated;
- Establish how best to encourage participation in the trial; and
- Identify barriers to participation to enable the potential barriers to be addressed.

The project team has engaged with potential trial participants through three communication channels: 1) Direct email, 2) Telephone market research and 3) Face to face meetings.

Findings

In total 51 organisations have shown interest in participating in the OpenLV project Method 3 trials to develop and deploy apps from the OpenLV platform or utilise LV network data provided from the OpenLV platform. This has resulted in a total of 59 potential app ideas.

Conclusions and Recommendations

The level of interest shown from testing the market is sufficient to allow the project team to continue to promote the Method 3 project trials and seek interest from further potential trial participants in line with the following timescales:

- Ideas will continue to be sought for apps until the end of March 2018 with a view to selecting app ideas to take forward by the end of April 2018;
- Apps will need to be developed by the end of August 2018; and
- The Method 3 project trials are scheduled to run from September 2018 to July 2019.

The results from the full market selection for Method 3 trials will be provided in a project report at the end of May 2018.

2 Introduction

2.1 Purpose

The purpose of this document is to outline the initial results from assessing the market potential for 3rd parties to utilise data from and develop apps for the OpenLV project as part of the trials for Method 3: OpenLV Extensibility. The results of the market assessment will indicate whether there is enough interest from 3rd parties to participate in project trials.

Further information on the platform can be found in the following report, SDRC-1: Specification, Design & Factory Testing of the overall OpenLV Solution [Ref. 1]. Further information on the overall project can be found on the OpenLV website: https://openlv.net/.

2.2 Background

The OpenLV Project is an Ofgem NIC Project, managed on behalf of Western Power Distribution by EA Technology. OpenLV aims to trial and demonstrate an open, flexible platform (LV-CAP™) that could ultimately be deployed to every LV substation in Great Britain, replacing a wide range of proprietary systems that deliver a range of highly specialised substation management solutions with a single piece of hardware that could run a range of different substation management software applications. The OpenLV project is split into three trial approaches (Methods 1, 2 and 3).

2.2.1 Method 1: Network Capacity Uplift

This method forms the bulk of the investment in time and equipment and aims to demonstrate the capacity of the OpenLV platform to perform measurements and control from within the LV substation. The innovation in Method 1 lies in the fact that it will test the ability for control signals to be sent via a highly distributed architecture. It will also be the first NIC project to implement automated meshing of LV networks in conjunction with RTTR (Real Time Thermal Rating) of the local LV transformer. Sixty paired substations will be fitted with LV-CAP™ units for Method 1, of which 5 pairs (10 substations) will also have ALVIN reclose units fitted, while the remainder will carry out simulated meshing operations only.

2.2.2 Method 2: Community Engagement

The OpenLV platform can be used to provide data to groups of customers who live in the same community and wish to understand more about their community's electricity consumption. Method 2 is designed to test whether there is interest from community members in accessing this data (establish the market), and to support them to develop ideas for app production and other data uses that would benefit the wider community, and the DNO. Data security will be provided through a secure third-party hosted service.

2.2.3 Method 3: OpenLV Extensibility

In a similar way to Method 2, this Method will make LV-CAP™ units available to other individuals or organisations who may wish to access LV data for commercial or academic uses. This method will test whether there is interest from the wider commercial and academic market, and support the development of app ideas.

2.3 Report Structure

The structure of this report is as follows;

- **Section 3, OpenLV Extensibility, The Offer:** Outlines the offer that is being made to 3rd party organisations to be participate in project trials;
- **Section 4, Methodology:** Provides an overview of the approach that has been taken to establish the level of interest from 3rd parties to participate in the OpenLV project trials;
- **Section 5, Findings:** Outlines the results from the market engagement that has been completed to date; and
- **Section 6, Summary:** Provides a summary of the results from testing the market and an overview of the next steps that will be taken to sign up trial participants, for Method 3: OpenLV Extensibility, as part of the OpenLV project.

3 Method 3: OpenLV Extensibility, "The Offer"

3.1 The Offer

In order to test/prove the overall OpenLV solution the project team are seeking to recruit 3rd parties to utilise LV network data and/or develop new apps to be deployed on the OpenLV platform as part of technology trials. To enable 3rd parties to develop and deploy apps the project team will provide the following:

- Ten OpenLV platforms to test new ways of utilising LV network data and/or apps to be deployed on the LV network;
- Cover for the costs of installing and maintaining the OpenLV platforms for the duration of the project;
- The central infrastructure required to manage the devices installed on the LV network and deploy new apps;
- The central infrastructure required to access LV data extracted from the OpenLV platform(s);
- The ability to keep any Intellectual Property (IP) for the apps that are developed and deployed;
- Documentation outlining the data that is collected by each OpenLV platform [Ref. 2]
- Documentation outlining the Application Programming Interface (API) to support the development of apps [Ref. 3];
- A 'skeleton app' including base code that can be utilised to develop bespoke apps; and
- A testing environment to test each app ahead of deployment.

The project will **not** cover any costs associated with app development. The development costs for new apps to be deployed as part of the project trials must be covered by 3rd parties as outlined in the full Bid Submission [Ref. 4].

Further information on the OpenLV project can be found on the project website: https://openlv.net/.

3.2 Timescales

The timescales for the selection of 3rd parties to develop apps and take part in project trials is as follows:

- Ideas for apps to be selected by the end of April 2018;
- Apps to be developed by the end of August 2018; and
- Trial runs from September 2018 to July 2019.

4 Methodology

4.1 Identification of market sectors

The market sectors that may be interested in participating in the trials to prove the OpenLV platform are shown in Figure 1. This shows that, many market sectors, some with direct links to the energy industry but others who have less established links, were identified as potentially being interested in LV network data or the services that could be provided by apps manipulating LV network data. This Figure suggests that the market for the OpenLV Platform is broad.

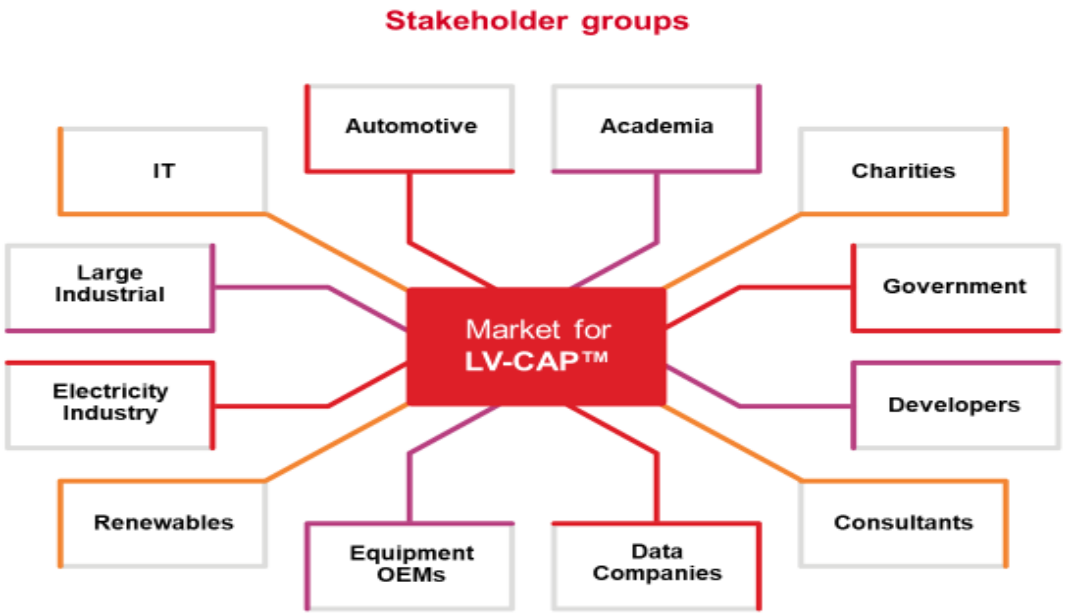

Figure 1: Method 3 Stakeholder Groups

4.2 Market engagement

In order to establish the level of interest from potential stakeholders an online survey was utilised. This survey was published on the OpenLV website: https://openlv.net/ and is still open for potential trial participants to register their interest. Further information on the survey is provided in Sections 4.4, 4.5 and Appendix A.

Three communication channels were utilised to target potential trial participants. These were:

- **Direct email:** The EA Technology marketing contact list was utilised to identify potential contacts and a link to the survey was sent to a subset of this contact list;
- **Telephone Market Research:** A telephone market research company was utilised to contact relevant companies within the stakeholder groups. This market research company targeted stakeholder groups that were not well represented on the EA Technology marketing list; and
- **Face to face meetings:** Face to face meetings were held with a number of organisations to provide further information on the project.

Further information on the communication channels utilised is provided in the following sub-sections.

4.2.1 Direct email

EA Technology has an extensive email marketing contacts list. This was interrogated to select contacts who fitted into the sectors highlighted in Figure 3-1. These selected contacts were sent information about the OpenLV project, highlighting the Method 3 survey. Emails were also sent to a select group of contacts from UK Distribution Network Operators and contacts who had requesting information about the project.

Email recipients were provided with background information about the OpenLV project, the LV CAP™ technology and specifically Method 3. Emails contained links to the project website, an animation produced by the project to explain the need for the project, and the survey. They were also provided with the project email address in case of any queries.

In total, around 900 emails were sent inviting recipients to complete the Method 3 survey.

4.2.2 Telephone market research

Telephone market research was completed to contact representatives of sectors that were either under-represented amongst the email mailing list contacts, or early survey responses. This research company contacted over 3,000 organisations and carried out 160 telephone interviews, each taking approximately five minutes, with representative of charities, government organisations, equipment OEMs, software developers, data companies, consultancies and emergency services. The companies targeted were based within the Western Power Distribution licence areas. Initially, contacts were sourced from Experian, a business list provider, and from internet searches. The survey was intended to gauge whether the level of interest among the survey population in the project and whether organisations would be interested in participating in the project.

A summary of the methodology, questions asked, and the output of the market research can be found in Appendix B.

4.2.3 Face-to-face discussions

In certain cases, it was highlighted that LV-CAP™ may be of particular interest to specific organisations who had not responded to the survey at an early stage. In these instances, face-to-face meetings were arranged with contacts from these organisations to explain the purpose of the OpenLV project, and Method 3 especially. The contact was asked to complete the survey verbally at the meeting. Written records were kept of these meetings and the survey responses received in this manner.

4.3 Project promotion

4.3.1 Promotion via Press Releases

To reach market sectors not covered by the mailing lists detailed in Section 3.2 a wider PR campaign was launched. This targeted publications that would be read by employees in specific sectors or professionals with skills relating to these sectors. Publications targeted were traditional printed magazines, and on-line media. A press release was produced introducing the project and its aims and signposting interested parties to the survey. This was sent to 181 media contacts by the projects Marketing, PR and Dissemination contractor.

Subsequently, further press releases were created that targeted specific sectors as identified in Figure 3-1. This approach was taken to assist journalists and editors to understand the relevance of the project, and the LV CAP™ platform, to their readership. These sector targeted press releases were more successful than the initial, broader press releases because they allowed specific explanations of how relevant LV CAP™ may be to a publications readership to be included. This helped overcome some of the challenges of communicating the LV CAP™ concept, and its relevance, to an audience outside the energy industry. The importance of inclusive, jargon and acronym free language was highlighted by these exercises.

4.3.2 Use of social media

Social media is a powerful tool to reach a disparate and diverse audience. By accessing the associates and connections that can be reached through social media the OpenLV project and the Method 3 survey was publicised to a wider group of potentially interested parties. The survey was publicised in the following ways:

- The OpenLV project twitter feed;
- The EA Technology company twitter feed;
- Project partners twitter feeds;
- EA Technology staff twitter feeds;
- The EA Technology company LinkedIn account; and
- EA Technology staff LinkedIn accounts.

4.3.3 Promotion of survey by project partners

The Method 3 survey was promoted by project partners who included links to the survey on their web sites and via social media. This helped extend the reach of the survey to a more diverse audience.

4.3.4 Collateral publicity via the project launch event and attendance at other events

The OpenLV project was officially launched at 'Balancing Act' on Thursday 5th October 2017. This audience for this event was drawn from various market sectors including equipment manufacturers, consultants, government, the renewables sector, energy suppliers, charities, IT, academia and energy storage.

The Method 3 survey was mentioned in a presentation during the event and delegates were encouraged to complete the survey. Delegates were also provided with a link to the survey in a post-event email sent by WPD.

Information about this part of the project and the Method 3 survey was also disseminated via the project being represented at the following events:

- Vulnerable Customers Workshop, Birmingham, 12th September 2017;
- Vulnerable Customers Workshop, Cardiff, 13th September 2017
- Peer Power Feast, Dorset, 28th September 2017;
- Smart Community Energy Systems, Nottingham, 11th October 2017;
- Smart Community Energy Systems, Cardiff, 18th October 2017;
- Electricity Network Innovation, Coin Street Neighbourhood Centre, 1 November
- Electricity Network Innovation, Discovery Museum, Newcastle, 7 November
- UN Climate Change Conference (COP23), Bonn, 9th November
- Peer Power Arts Energy Event, Dorset, 9th November 2017;
- Taking the power back, an energy jamboree about social justice and making our energy system smarter, Plymouth, 15th November 2017;
- EWiRE A smart decentralised system, London, 16th November 2017; and
- Renewable Futures and Green Energy Awards, Bath, 28th November 2017.

4.4 Survey timings and promotion

The survey was uploaded onto the OpenLV project website on Friday 15th September 2017. Email recipients were initially told that the survey would close, providing recipients with a four-week window to complete it. This four-week window has enabled EA Technology to collate the responses to date and analyse them to complete an initial market assessment as required in the Full Bid submission [Ref. 4]. This survey is still live on the project website which will allow the project team to keep promoting the project and allow further stakeholders to register their interest in the project.

4.5 Survey Design

The survey was designed to:

- Be quick to complete;
- Not require any industry knowledge to aid its completion; and
- Gather as much information as possible about the idea to allow basic processing of the response.

The full survey questions are presented in Appendix A. There are eight questions, some needed a yes/no/maybe response, while others required free text responses. The survey gives respondents the opportunity to provide information about up to three different app ideas.

The length and content of the survey was designed to gather as much information as possible without being intimidating to the respondent. It may have been possible to ask more questions or ask for more detailed cost benefit analysis of the app however this may have reduced the number of respondents, and would have been inappropriate at this early stage of market assessment. The OpenLV team were also very aware that the language of the survey may dissuade respondents from outside the energy industry from coming forward so efforts were made to make the language used as accessible as possible.

Where extra information was required, the survey respondent was subsequently contacted by a member of the project team.

5 Findings

5.1 Survey response

A total of 197 organisations completed the survey, 36 via the projects survey (either face-to face or on the internet) and 160 from the telephone market research communication channel.

5.1.1 Project online survey

To date, between 15th September 2017 and 10th November 2017, a total of 34 organisations have responded to the internet survey (as shown in Figure 2).

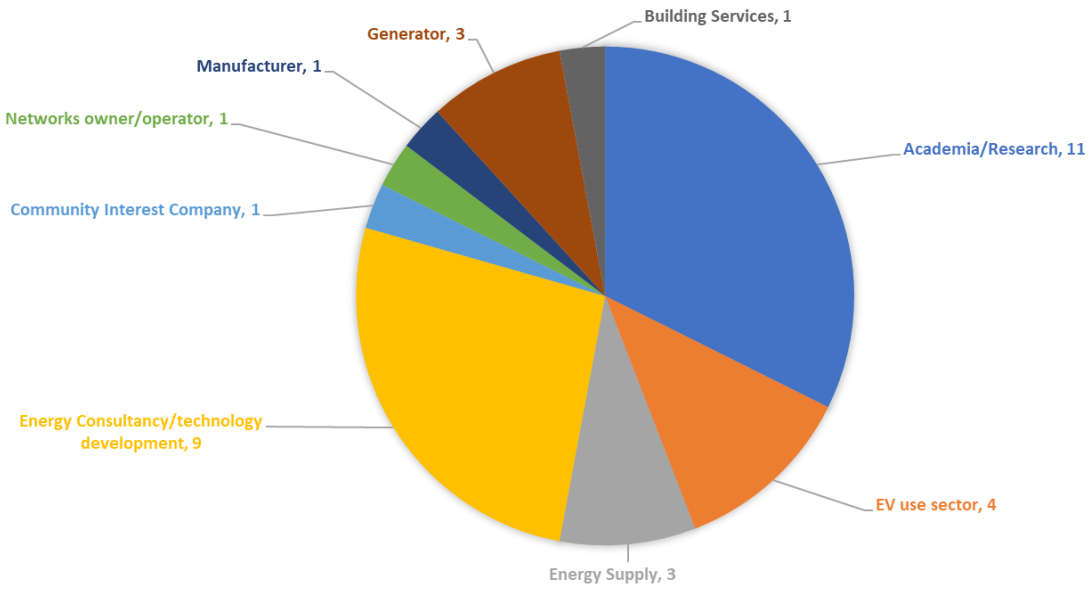

Figure 2: Breakdown of web survey respondents by sector

5.1.2 Survey response telephone market research

A telephone survey was also conducted. This telephone survey replicated the web survey. In total, the telephone survey contacted 160 organisations. The breakdown of respondents by sector to the telephone survey is summarised in Figure 3.

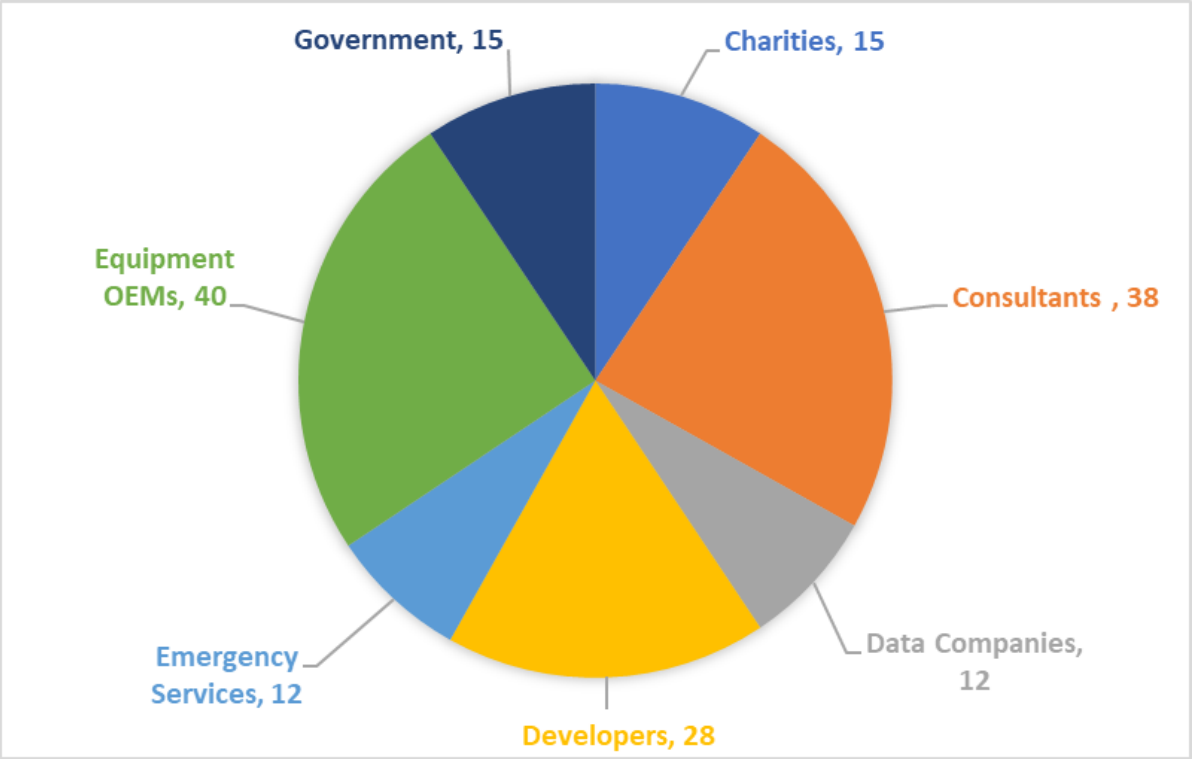

Figure 3: Breakdown of telephone survey respondents by sector

Of the 160 organisations that took part in the telephone survey a total of 63 expressed an interest in the project (39%). Of the 63 organisations that showed an interest in the project 44 agreed to pass on their contact details to the project team (28% of the 160 respondents). The analysis from this point in this report includes the results from the 44 organisations that agreed to pass on their contact details.

5.2 Did respondents want to develop an app?

The key factor, in terms of OpenLV project trials is whether organisations are interested in developing apps. Table 1 shows that, to date, 51 organisations are potentially interested in developing apps and trialling them as part of the OpenLV project (Yes=24 and Maybe=27).

Table 1: Did respondents want to develop an app?

	Yes	Maybe	No	Sub-Total
Direct email	15	18	2	35
Telephone Market Research	9	9	26	44
Total(s)	24	27	28	79

To understand whether the motivations behind a “maybe” response had a positive or negative attitude towards app development, where possible, the project team spoke to representatives in the organisations that responded to the surveys.

The reasons why respondents were not able to say “yes” to whether you would like to develop an app in the OpenLV project can be grouped into the following categories:

- **Internal resourcing:** This group reflected situations where respondents wished to indicate that staff such as software developers were currently being directed to focus upon tasks directed by the business plan. In many cases, respondents expressed the view that should an internal investment case be identified, then the resource issues may be resolved (35%, 7 respondents);
- **Internal Investment Case:** This grouping reflected situations where respondents wished to indicate that they would like to examine the business case for committing company resource to the trial (30%, 6 respondents);
- **Further information required:** This grouping recorded respondents who wished to gather more information on LV-CAP and the OpenLV trial before committing (10%, 2 respondents);
- **Insufficient internal skill set:** This grouping recorded respondents who considered that their internal skill set would limit their ability to develop apps (10%, 2 respondents);
- **What are WPD's plans for roll out?** To understand the potential scale and security of their investment, a number of respondents sought further insight as to how and when OpenLV technology wold be rolled out (10%, 2 respondents); and
- **Insufficient authority to commit:** This grouping recorded situations where respondents did not feel like they had the authority to express a view on behalf of the company (5%, 1 respondent).

In general business terms, organisations have finite development budgets and manpower. It is therefore to be expected that before making any form of investment into a new product, service or capability, organisations will wish to understand the magnitude and risk of the development effort and also what effect the outputs from the project will have on the company performance.

Moving forward the project team will seek to overcome the above issues to maximise the number of potential candidates to trial new apps as part of the OpenLV project trials.

5.3 Categorisation of app ideas

In total 59 use cases were captured. Most respondents volunteered more than one use case.

The apps proposed by potential trial candidates are wide ranging and have been categorised in descending order of number of times the use case was referred to, as follows:

- **Forecasting (demand or Generation):** Apps within this proposition group sought to use the LV-CAP™ platform to enable better load or new types of load or generation forecasting. This was quoted in 13% of the use cases discussed (8 respondents).
- **Network Capacity/Resilience/Quality:** This proposition group used the LV-CAP™ platform to help improve CML or CI availability network capacity or quality indices. This was quoted in 12% of the use cases (7 respondents).
- **Easier Connection development:** Apps within this proposition sought to provide users hoping to make connection with better information prior to connection or faster connection by helping to mitigate or postpone reinforcement. This was quoted in 12% of the use cases discussed (7 respondents).
- **Active Generation Dispatch:** This proposition group included value propositions which controlled the set point of generation to meet criteria set by the app. This was quoted in 10% of responses (6 respondents).
- **Headroom measurement:** This proposition group included value propositions which utilized the LV cap platform to obtain insight into network capacity headroom at a location. This was quoted in 10% of responses (6 respondents).
- **Smart Buildings:** This proposition group included value propositions which controlled energy consumption within buildings to meet a goal set by the app. This was quoted in 10% of responses (6 respondents).
- **Network USE Tariff:** This group of propositions sought to use the LV-CAP™ platform to enable some form of use of system tariff. This was quoted in 9% of responses (5 respondents).
- **Energy Market/Flexibility Market:** Use of the LV-CAP™ platform to enable a flexibility or energy trading platform. This was quoted in 9% of responses (5 respondents).
- **EV charging:** Apps within this proposition sought to manage car charging within the constraints of the network. This was quoted in 7% of use cases (4 respondents).
- **Asset Health Management/Predictive Maintenance:** Apps within this proposition group sought to use the LV-CAP™ platform to improve products associated with maintenance planning or condition monitoring of electrical equipment. This was quoted in 5% of use cases (3 respondents).
- **Flooding Mitigation:** This group of propositions was focussed upon managing flood risk by controlling generation. This was quoted in 2% of use cases (1 respondent).
- **Consumer Care:** This group of propositions was focussed upon using LV-CAP™ to disseminate power cut information and to create alerts regarding socially vulnerable customers who are experiencing some form of supply difficulty. This was quoted in 2% of use cases discussed (1 respondent).

6 Summary

The purpose of this report was to outline the initial results from assessing the market potential for 3rd parties to utilise data from and develop apps for the OpenLV project as part of the trials for Method 3: OpenLV Extensibility.

In total, to meet the requirements in the Full Bid submission [Ref. 1], the project team needs to sign up 10 organisations to take part on the OpenLV project trials. The results from the initial market assessment show that there is potential interest from a total of 51 different organisations. This level of interest is sufficient to allow the project team to continue to promote the Method 3 project trials and seek interest from further potential trial participants in line with the following timescales:

- Ideas will continue to be sought for apps until the end of March 2018 with a view to selecting app ideas to take forward by the end of April 2018;
- Apps will need to be developed by the end of August 2018; and
- The Method 3 project trials are scheduled to run from September 2018 to July 2019.

The results from the full market selection for Method 3 trials will be provided in a project report at the end of May 2018.

References

1. OpenLV SDRC-1: Specification, Design & Factory Testing of the overall OpenLV Solution, https://openlv.net/wp-content/uploads/2017/08/OpenLV-SDRC1-Specification-Design-Testing-Version-1.1_With-Appendices.pdf
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Appendix A Method 3 Email Survey

OpenLV Survey for Business and Academia

OpenLV is a groundbreaking project that's making local electricity data openly available – whether you're part of a community, involved in the energy industry, or an app developer.

The OpenLV project team is looking for ideas for new apps that can utilise low voltage (LV) network data to provide benefits to community groups, industry, academia, Distribution Network Operators, and, of course, customers. The project has the budget to deploy 10 intelligent substation devices (the LV-CAP™ platform) in Western Power Distribution's (WPD's) licence areas to test new apps on the LV network. The LV-CAP™ platform will provide access to voltage, current, demand and transformer temperature data.

If you have an idea that you would like to share with us, or if you are interested in developing an app as part of the OpenLV project, making use of this data, please complete this survey to register your interest. The project team is really interested to hear about your ideas even if you don't want to be involved in the OpenLV project. You do not have to be based in the WPD licence area to take part.

Before completing the survey, please take two minutes to view the OpenLV video, for an explanation of what the project is all about. For more general information about the project, please visit our website.

* **1.** What is your name?

First Name

Last Name

* **2.** Contact details

E-mail address

Phone number

Company

Address line 1

Address line 2

Address line 3

County

Postcode

* **3**. What sector do you work in?

* **4**. Do you or your organisation have software writing capabilities?

Yes

No

* **5**. Would you or your organisation be interested in developing an app in conjunction with the OpenLV project?

Yes

No

Maybe

If you answered 'No' or 'Maybe' to the previous question, please tell us why.

* **6**. Please tell us about your ideas for apps that could use and manipulate data from your local electricity network.

We would like to hear about as many ideas as possible. We have provided space for up to three ideas in this survey. Please rank in order of priority.

Please note, we do require you to describe a short summary of what your idea will do. We will use this information to report on the general trends observed in responses, but we will not put the specific mechanism of your proposal into the public domain.

6a. Idea 1

Please provide a short description of your idea

What benefit(s) would be provided by this app?

Who would benefit from this app? (e.g. charity, local community, Government, equipment manufacturer, network operator, energy industry, renewables industry, energy storage, academia, industry, EV industry, other, individual)

If cost savings could be made through your app, who would benefit from this cost saving?

6b. Idea 2

Please provide a short description of your idea

What benefit(s) would be provided by this app?

Who would benefit from this app? (e.g. charity, local community, Government, equipment manufacturer, network operator, energy industry, renewables industry, energy storage, academia, industry, EV industry, other, individual)

If cost savings could be made through your app, who would benefit from this cost saving?

6c. Idea 3

Please provide a short description of your idea

What benefit(s) would be provided by this app?

Who would benefit from this app? (e.g. charity, local community, Government, equipment manufacturer, network operator, energy industry, renewables industry, energy storage, academia, industry, EV industry, other, individual)

If cost savings could be made through your app, who would benefit from this cost saving?

7. Do you have any additional comments?

* **8.** Would you like to receive news and updates about the OpenLV project?

Yes

No

Many thanks for completing our survey.

We will be in touch soon.

Appendix B Method 3 Telephone Survey

Background & Objectives

- OpenLV is a project (being managed by EA Technology), on behalf of Western Power Distribution and sponsored by Ofgem (the electricity industry regulator).
- The project concerns installing equipment within electricity sub-stations to monitor and record all kinds of data, relating to electricity use, temperatures, demand, etc. and making this freely available to anyone, open source via the Internet.
  - Businesses, organisations and relevant communities could then potentially make use of this data for a wide range of purposes (not just limited to examining electricity use/efficiency).
- This survey concerns establishing levels of interest amongst certain specific business/commercial sectors within the WPD area.
  - i.e. in the overall OpenLV idea; in using the data and potentially developing (or being involved in the development of) apps. to harness and make this sub-station data more accessible/usable.

2

Research Method

- A total of **160 telephone interviews** carried out between 13th October – 3rd November 2017
  - Interview length of around 5 minutes (including initial explanation of the OpenLV project)
- Targets for the research were businesses across several sectors/categories and some public sector services or charity organisations:
  - Respondents were screened for involvement in technical, operational, IT/data or general management aspects of the company/organisation.
- All were within the WPD area of operation, i.e. Midlands, South West, Wales (i.e. having at least some operations within these areas, even if the company headquarters may be elsewhere).

3

Research Method (contd.)

- Initial contact lists for all sectors were sourced from Experian (a business list provider) defined by either 2003 and/or 2007 UK SICs
  - NB: the detailed SIC codes relating to each target group are provided as a separate (Excel) file
- This list was further supplemented by Internet searches to obtain additional contacts for some groups for some groups (e.g. data companies, Local Authorities, etc.); and a 'sense check' for other groups (e.g. charities) to remove any obviously unlikely to be interested in OpenLV.

4

Sample / Target Sectors

- Targets for the research were businesses across several sectors/categories and some public sector services or charity organisations:

Sectors	No. of Intvs	%
Charities (in UK, mainly concerned with social deprivation, housing, etc.)	15	9%
Consultants (engineering, energy, architectural)	38	24%
Data Companies (data storage, servers, etc.)	12	8%
Developers (of software and apps.)	28	17%
Emergency Services (police, fire, ambulance/hospitals)	12	8%
Equipment OEMs (technical, electrical, electronic, communications, monitoring, testing, scientific, metering, etc.)	40	25%
Government (Local Authorities, City Councils, etc. targeting departments such as Estates Management, Housing, IT management, or similar)	15	9%
Total	**160**	**100%**

5

Explanation of the OpenLV Project

- The interview commenced with an explanation of the OpenLV project.

- **OpenLV is a groundbreaking development project that is being undertaken on behalf of the electricity network operator, Western Power Distribution, with funding from Ofgem (the electricity industry regulator).**
- **It concerns monitoring and recording all kinds of data within electricity sub-stations and making this freely available to anyone, open source via the Internet (e.g. looking at voltage levels, electricity current, electricity demand and transformer temperature data, etc. over time).**
- **Businesses, academic institutions, public service organisations and relevant community or electricity customer groups could then potentially make use of this data for a wide range of purposes (not just limited to examining electricity usage or efficiency, but potential extending to lots of other areas as well).**
- **The OpenLV project team is also looking for ideas for new smartphone apps. that can utilise the low voltage (LV) network data, in order to provide benefits to community groups, industry, academia, the electricity industry generally and esp. electricity customers.**

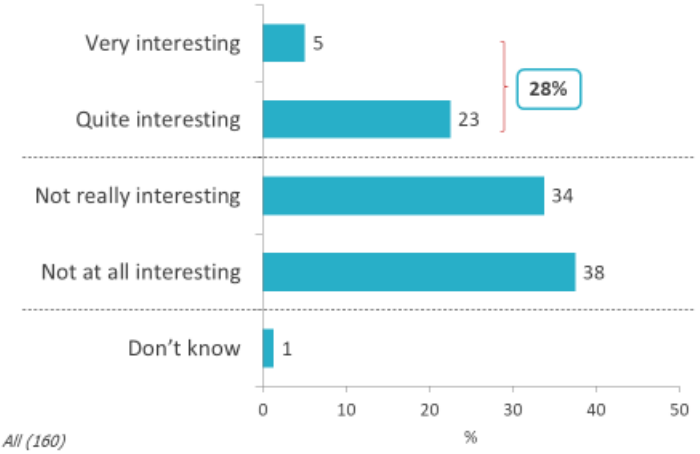
**NB: Respondents were also directed to www.openlv.net for more information and an explanatory video*

6

Overall Interest in OpenLV

Q: How interesting or relevant would you say this OpenLV project might be for your company/organisation?

- Just over a quarter show a general interest in the OpenLV project (albeit mainly 'Quite' rather than 'Very' interested)...



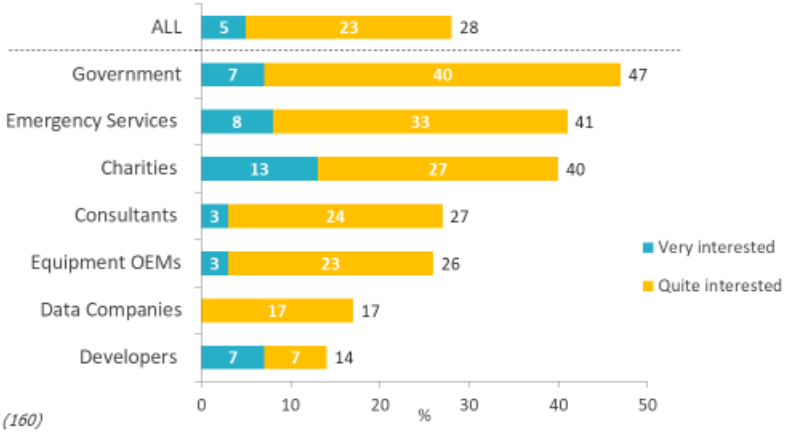
Base: All (160)

7

Overall Interest in OpenLV (by Sector)

Q: How interesting or relevant would you say this OpenLV project might be for your company/organisation?

- Some variations in general interest by industry sector; Notably, lower proportions of data companies and software/app. developers are interested based on the initial description of OpenLV...



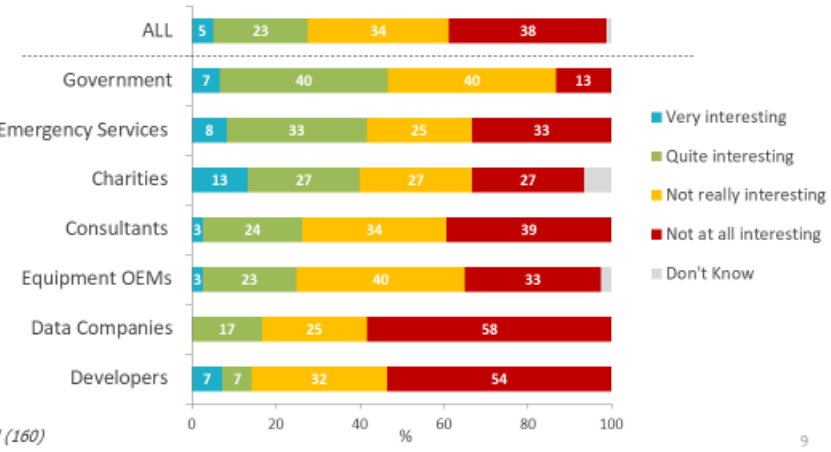
Base: All (160)

8

Overall Interest in OpenLV (by Sector)

Q: How interesting or relevant would you say this OpenLV project might be for your company/organisation?

- Some variations in general interest by industry sector; Notably, lower proportions of data companies and software/app. developers are interested based on the initial description of OpenLV...



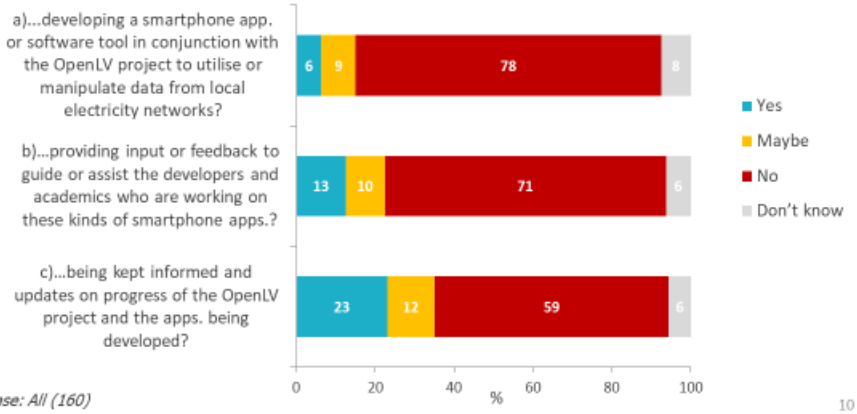
Base: All (160)

9

Interest in Potential Involvement in OpenLV?

Q: Would your company/organisation be interested in...? READ OUT

- Over a third (35%) are interested in at least being kept informed on the OpenLV project's progress; Whilst only a minority could get involved directly in app. development, around a quarter (23%) are interested in supporting or assisting with this.



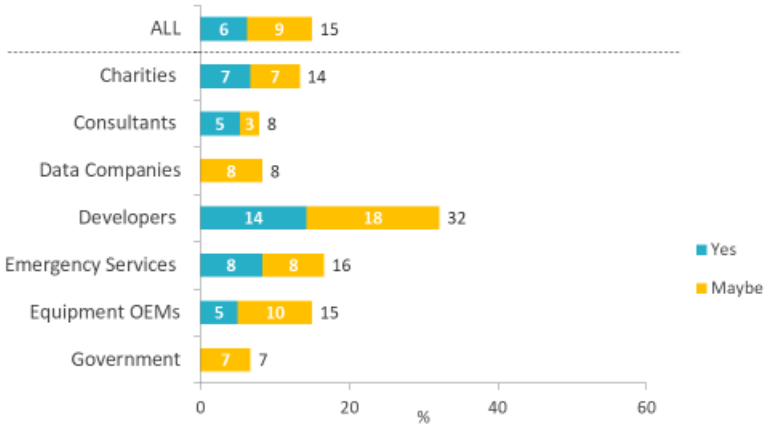
Base: All (160)

10

Potential Involvement (% by Sector)

Q: Would your company/organisation be interested in...? READ OUT

a)...developing a smartphone app. or software tool in conjunction with the OpenLV project to utilise or manipulate data from local electricity networks



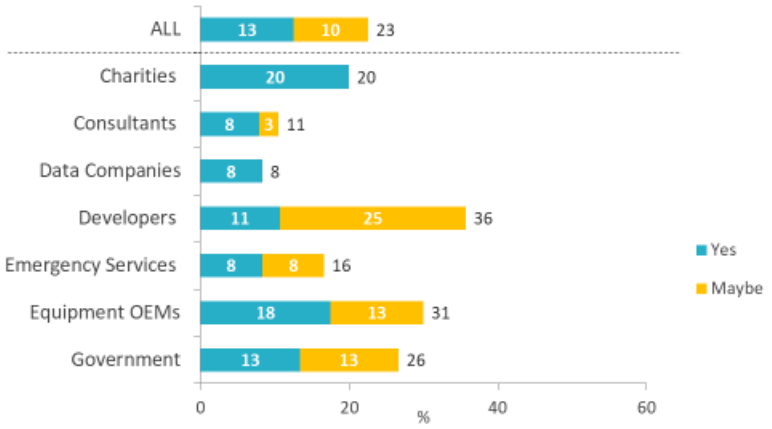
Base: All (160)

11

Potential Involvement (% by Sector)

Q: Would your company/organisation be interested in...? READ OUT

b)...providing input or feedback to guide or assist the developers and academics who are working on these kinds of smartphone apps.



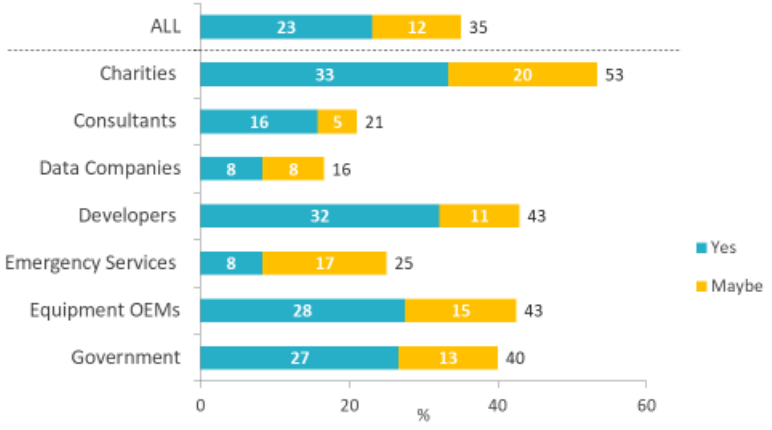
Base: All (160)

12

Potential Involvement (% by Sector)

Q: Would your company/organisation be interested in...? READ OUT

c)...being kept informed and updates on progress of the OpenLV project and the apps. being developed



Base: All (160)

13

Potential Involvement (Total No. of Respondents)

Q: Would your company/organisation be interested in...? READ OUT

Sectors	a) developing a smartphone app. or software tool in conjunction with the OpenLV project to utilise or manipulate data from local electricity networks		b) providing input or feedback to guide or assist the developers and academics who are working on these kinds of smartphone apps.		c) being kept informed and updates on progress of the OpenLV project and the apps. being developed		Any of these
	Yes	Maybe	Yes	Maybe	Yes	Maybe	Yes / Maybe
Charities	1	1	3	-	5	3	8
Consultants	2	1	3	1	6	2	10
Data Companies	-	1	1	-	1	1	3
Developers	4	5	3	7	9	3	13
Emergency Services	1	1	1	1	1	2	4
Equipment OEMs	2	4	7	5	11	6	19
Government	-	1	2	2	4	2	6
Total	**10**	**14**	**20**	**16**	**37**	**19**	**63**

14

Potential Involvement (Filtered: Respondents Agreeing to Follow-Up Contact)

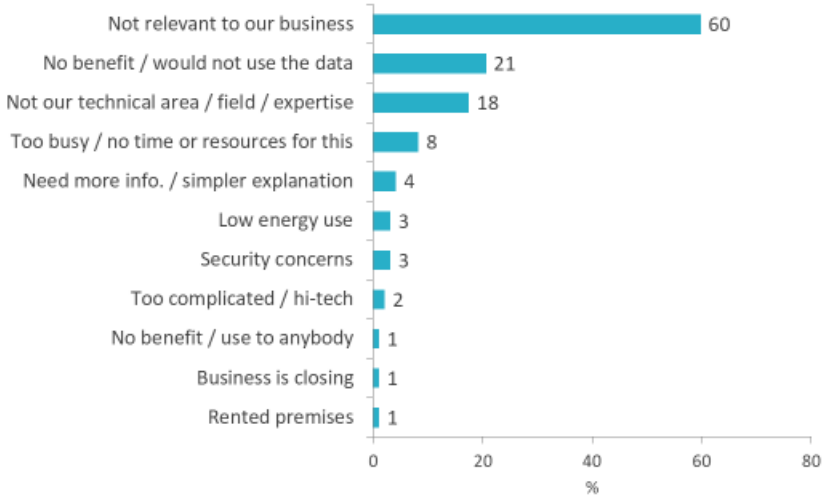
Q: Would your company/organisation be interested in...? READ OUT

Sectors	a) developing a smartphone app. or software tool in conjunction with the OpenLV project to utilise or manipulate data from local electricity networks		b) providing input or feedback to guide or assist the developers and academics who are working on these kinds of smartphone apps.		c) being kept informed and updates on progress of the OpenLV project and the apps. being developed		Any of these
	Yes	Maybe	Yes	Maybe	Yes	Maybe	Yes / Maybe
Charities	1	1	3	0	5	3	8
Consultants	1	0	0	1	2	1	4
Data Companies	0	0	1	0	1	1	2
Developers	4	3	3	4	7	1	7
Emergency Services	1	1	1	1	1	2	5
Equipment OEMs	2	3	7	3	10	3	14
Government	0	1	1	2	3	2	4
Total	**9**	**9**	**16**	**11**	**29**	**13**	**44**

15

Reasons Not Interested

Q: Why are you not interested in this project?



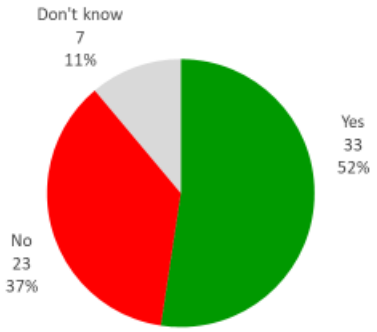
Base: Those not interested in being involved or kept informed on OpenLV (97)

16

Software Writing Capabilities

Q: Do you have internal software writing/development capabilities in your company/organisation?

- Half of those who are interested in getting involved / being kept informed on OpenLV have in-house software writing capability...



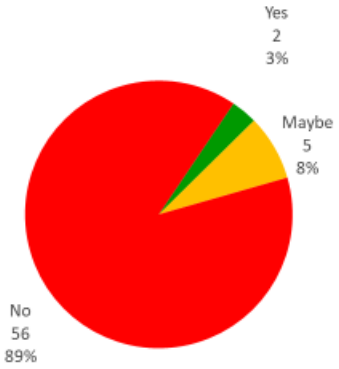
Base: Those interested in getting involved / being kept informed on OpenLV (63)

18

Any Ideas for Apps.?

Q: Do you have any broad ideas about the kinds of smartphone apps. that could use and manipulate data available from local electricity networks/sub-stations?

- Only a minority (**7 respondents**) have potential apps. in mind at this point...

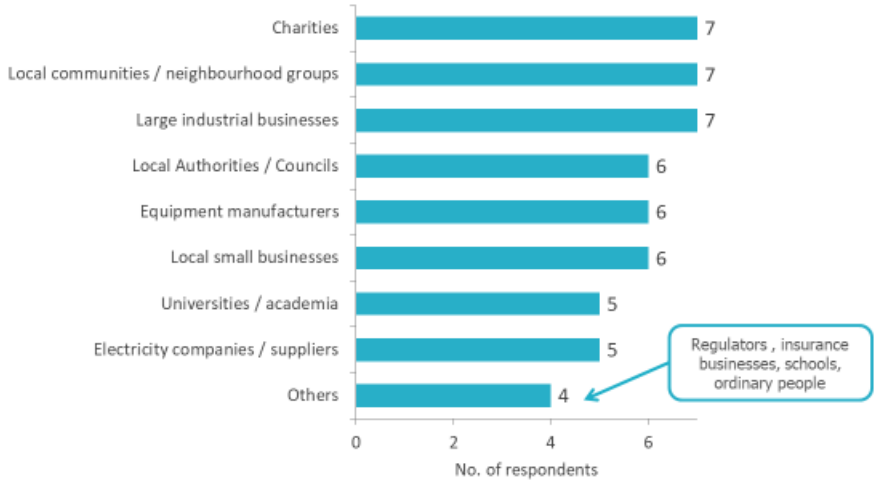


Base: Those interested in getting involved / being kept informed on OpenLV (63)

19

Who Benefits?

Q: Who do you think could benefit from this kind of app?



Base: Any with ideas for potential apps. (7)

21

Follow-Up Contact

Q: Are you okay for us to pass your details on to EA Technology who is managing the OpenLV project for Western Power Distribution & Ofgem? (i.e. so they can possibly send info. or contact you again in future)

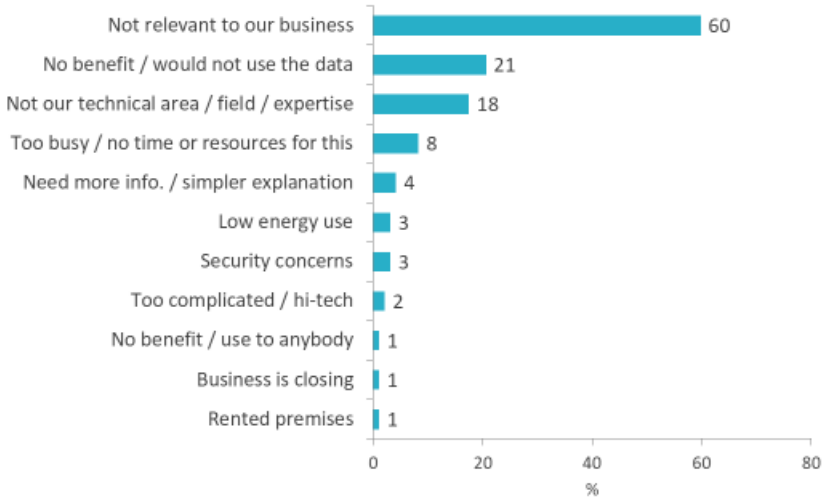
- 63 respondents were interested getting involved in OpenLV, either in supporting app. development; or at least being kept informed
- Of these, **44 respondents** gave permission to pass on details to EA Technology for follow-up contact and more information, etc.

Sectors	Any interest?	Permission to follow-up / re-contact?
Charities	8	8
Consultants	10	4
Data Companies	3	2
Developers	13	7
Emergency Services	4	5
Equipment OEMs	19	14
Government	6	4
Total	**63**	**44**

22

Reasons Not Interested

Q: Why are you not interested in this project?



Base: Those not interested in being involved or kept informed on OpenLV (97)

16