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Further Benefits of an Open National Address Dataset

ODUG (Open Data User Group)

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This paper represents the views of the Open Data User Group, on behalf of the Open Data Community. The views contained are independent of government bodies.

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1. Executive Summary

Estimating the potential economic value of Open Data to the economy is notoriously challenging. The analysis provided here considers some basic factors around the current producers and users of national addressing data, without attempting to quantify in detail the wider social benefits arising from improved transparency and efficiency in public service delivery, the benefit citizens will derive from these improved services and the potential for business growth and increased employment were this data to be made open. Although many of our benefit estimates are approximate when combined we believe that the benefits calculated could easily exceed **£1bn** per annum.

We have received much anecdotal and some hard evidence that the status quo of restricting the supply of national address data to commercial products exclusively sourced from the Royal Mail Ltd and Ordnance Survey fails to maximise the potential usage and potential financial benefits which could accrue from currently available, publicly funded, high quality address data to the wider economy including delivering direct benefits to all citizens and businesses in the UK.

We are faced with limitations in available hard evidence and detailed costing information about Royal Mail and Ordnance Survey's operational activities. But whichever way the basic analysis is undertaken **it is a certainty that the benefits of releasing an Open National Address Dataset will significantly outweigh the costs of doing so.**

2. Previous Evidence

National addresses, including the postcode, are the single most fundamental set of core-reference data we can identify. There is a strong case that a National Address Dataset should be delivered under government's Open Data policy. The opening up of one common National Address Dataset supports the three key elements of this policy: *holding government to account through transparency, driving choice and improvements in public services and inspiring innovation and enterprise that spurs social and economic growth.*

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ODUG has published two previous papers on the benefits of releasing a National Address Dataset as open data; in November 2012 The Case for an Open National Address Dataset¹ set out that economic benefit will be gained through:

- improved transparency;
- public sector efficiencies - arising through all service delivery being tied to the same address dataset;
- increased potential for growth and innovation in data-driven markets - where addresses underpin product generation opportunities and their commercial exploitation;
- providing a level playing field for the private sector – many public sector bodies can already access this data for free;
- efficiency, innovation and enterprise in the delivery of this data – by reducing the overhead and complexity of complex licensing regimes and generating efficiencies within the infrastructure to deliver this data.

A further benefits case was published in January 2013² refining the overall landscape for these benefits and asking data community members to provide additional evidence on where benefit might be derived from an Open National Address Dataset. This paper sets out more detail on the benefits this dataset could deliver.

3. Economic benefit estimates

This area of economic analysis is notoriously challenging. Several sources of economic benefit analysis have been set out in previous ODUG papers, including:

- 3.1. The Office of Fair Trading (OfT): 2006³ – estimated the net value of Public Sector Information to the UK economy as **£590m** annually reporting that it was constrained by unduly high pricing, restrictions in downstream pricing and failures of wider commercial exploitation which, if resolved, could generate a total net value of **£1.1bn** a year.
- 3.2. The Government's own estimate of the value of public sector information to the UK economy: 2011 is reported as being **£16bn**.⁴

¹ The Case for an Open National Address Dataset – ODUG, November 2012

² <http://data.gov.uk/benefits-of-national-address-data>

³ http://www.oft.gov.uk/shared_oft/reports/consumer_protection/oft861.pdf

⁴ http://www.nao.org.uk/publications/1012/implementing_transparency.aspx

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- 3.3. The PAF Advisory Board Study - 2011^{5,6} - estimated benefits to the UK economy of the Postcode Address File (PAF) alone at between **£992m** and **£1.38bn** per annum.
- 3.4. Danish estimate of free-of-charge address data – 2010⁷ - estimating €14m of economic benefit to the Danish economy with 70% in the private sector. As the UK economy (GDP) is approximately 9x⁸ larger than the Danish economy this can be broadly scaled up to indicate €126m (**£107m**) of directly comparable annual benefit to the UK.
- 3.5. A European Union project, EURADIN⁹, when adding all the benefits of an open addressing system estimated that, across Europe, the benefits could be as much as **half a percentage point of total GDP**.
- 3.6. Gridlock is estimated to cost £4.3bn per annum, reducing this by 3% through more accurate identification of journey destinations would save **£129m** a year (5.1).
- 3.7. **If a single National Address Dataset** resulted in a 1% increase in fraud detection this would save the UK more than **£700m** a year (5.4).

Economic benefit analysis of an open PAF

As ODUG has previously stated there are two necessary components of a National Address Dataset – the Postcode Address File (PAF) and the National Address Gazetteer (NAG), currently marketed by Ordnance Survey as AddressBase.

Further work has been carried out, by Cabinet Office economists, to estimate the value of benefits that an Open PAF would deliver to the UK economy. This models the impact on demand of reducing the price of PAF to zero and releasing it as open data. The model has been calibrated using the increases in demand identified in a number of other studies, mainly in Europe, where the effect of releasing geospatial data sets as open data has been measured. This study shows a substantial benefit of releasing PAF as open data indicating a 10-year Net Present Value to the UK economy of **£360m**.

⁵

[www.pafboard.org.uk/documents/PAF\(12\)24%20Estimating%20the%20Economic%20Value%20of%20PAF.pdf](http://www.pafboard.org.uk/documents/PAF(12)24%20Estimating%20the%20Economic%20Value%20of%20PAF.pdf)

⁶ See also Annex A

⁷ www.adresse-info.dk/Portals/2/Benefit/Value_Assessment_Danish_Address_Data_UK_2010-07-07b.pdf

⁸ <http://www.nationmaster.com/compare/Denmark/United-Kingdom/Economy>

⁹ http://ec.europa.eu/information_society/apps/projects/factsheet/index.cfm?project_ref=ECP-2007-GEO-317002

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The analysis does not ascribe any value to the economy of removing the PAF licensing mechanism, reported to ODUG by existing and potential new PAF Users as over complex and costly to resource and administer (for Royal Mail, for re-sellers and for end-users of PAF data) or the counterfactual that the market for this data, and products and services derived from it, is competitively limited as a consequence of these licensing regimes

Expert opinion¹⁰ places the true ‘reasonable cost’ of maintaining the PAF dataset between £1m and £10m per annum. This implies that, currently, a minimum of £15m of costs are consumed by marketing, licensing, audit and other activities all of which would be unnecessary if PAF was open data.

Applying these estimates to value PAF across, say four years, yields the following benefit: cost analysis.

Year	Estimated Benefits (£m)	Estimated Costs (£m – low)	Estimated Costs (£m – high)
2013	23	1	10
2014	29	1	10
2015	35	1	10
2016	41	1	10
Total	128	4	40
	Benefit/Cost Ratio	32 : 1	3.2 : 1

4. Stakeholder feedback

Current PAF re-sellers

ODUG has interviewed representatives of three major PAF re-sellers who were all in favour of PAF being released as open data even though they are long standing business partners of Royal Mail. All three asserted that PAF maintenance costs as levied by Royal Mail are unjustifiable and do not represent a true cost of post-coding a national address dataset. All three also identified the PAF licensing regime and Royal Mail policy on auditing licensing as major constraints on their market.

Whilst they all felt it was unlikely that their profits would increase if PAF became open, they all felt that they would be able to provide more licences for their own value added

¹⁰ See Annex A

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products for the same licence fees as at present, indicating that they felt the market would open up which would increase beneficial use of address data. They believed that their profits may be constrained by the entry of new competitors into the market; but were confident that their experience and the added value they are able to provide would protect their individual businesses.

Potential new users of addressing data

ODUG has also sought to identify potential new users and re-users of open address data; these include additional users within organisations that currently licence limited copies of PAF because of cost and those who do not access national address data products at all at present.

Larger businesses

The Demographics Users Group (DUG) has already made representations to government on behalf of its members which include blue chip companies such as Tesco, Sainsbury's and Boots, because, whilst willing to pay for address data, the licensing complications and restrictions make it impractical for them to use PAF and/or AddressBase for deliveries and for market analysis. The group has no confidence that any alternative pricing and licensing regime would provide them with the level of access and freedom of use that they require. All the major supermarkets with delivery services identify delivery errors and address location as problems – this in itself is a huge inefficiency for these businesses and more importantly for wider society since customers and consumers continue to suffer incorrect or missed deliveries of goods.

We have heard, anecdotally, that GeoPlace have had no success with marketing a per/vehicle licence to such companies which suggests that even the largest companies find the current licensing and pricing excessive.

SMEs and start-ups

There is a genuine private sector market demand for addressing and other open data by SMEs and start-ups. Globally and in the UK several hundred SMEs and NGOs have developed products using OpenStreetMap¹¹, a crowd-sourced world street map, available free and with a liberal licence which facilitates re-use. Similarly a significant number of SMEs are developing businesses around open real-time transport data. Data request forms on data.gov.uk have included a substantial number of requests for data which would include a subset of PAF and National Address Gazetteer

¹¹ <http://www.openstreetmap.org>

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(NAG)/AddressBase data e.g. all schools, or all social housing, as well as address lists that include an attribute such as VOA Council Tax Band, or Non Domestic Rates rateable value. It is clear that there are substantial opportunities for SMEs wishing to develop, maintain and market products, or provide services based on, attributed subsets of PAF.

However, it is difficult to identify individual new users of address data, partly because of the current lack of faith within the SME and start-up communities that the government will actually deliver the data of adequate quality for their businesses to rely on. This perception stifles the potential for growth and innovation and is a considerable barrier to the adoption of open data by potential high-growth businesses. However, the address data already available is regularly updated and continuously supplied, as it needs to be to serve existing public service functions. The release of an open national address dataset would do much to generate new faith in the potential for the commercial use of Public Sector Information to help drive private sector growth. As ODUG has already set out¹² this data is fully funded and, we believe, could be delivered within existing public sector funding constraints.

Utilities and the not-for-profit sector

Current arrangements are that use of addressing data within the Public Sector is centrally funded, via the Public Sector Mapping Agreement (PSMA)¹³ and free for public sector organisations to use. They can also make it available to their direct contractors. Meanwhile private sector users need to purchase expensive licences and comply with use audits; this does not deliver a level playing field for private sector businesses and completely undermines the core-reference data and public sector information principles.

A further complexity is the artificial distinction made between the public and private sectors in the use of address data. For example not-for-profit Housing Associations and Trusts, which are substantially publicly funded, are expected to pay for address data. Also, utility companies, even though they are regulated and have some universal service obligations which are more similar to public sector bodies than to private sector companies, are currently required to license the data. In both cases many organisations do not licence current addressing products, due to the costs and complexity of doing so,

¹² The Case for an Open National Address Dataset – ODUG, November 2012

¹³ <http://www.ordnancesurvey.co.uk/oswebsite/public-sector/mapping-agreement/index.html>

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choosing to tolerate the resulting inefficiencies in their operations which results in further inefficiencies for wider society.

These examples illustrate the considerable additional benefits public, private and pseudo-private organisations would derive from an open national address dataset. They also illustrate the risks and inefficiencies inherent in not maintaining high quality, fully publicly owned national address data.

5. Case studies

5.1. Address to address navigation

Enabling reliable address to address rather than postcode to postcode navigation

Additional use of PAF will bring benefits in reduced congestion, reduced wasted driving time, reduced fuel consumption and reduced CO2 Emissions. London taxi drivers report that they often struggle with navigation systems directing them to the centre of a postcode, rather than a pick-up or destination address. The potential to unlock address to address navigation rather than postcode to postcode navigation using vehicle based satellite navigation equipment will deliver huge economic benefits. Whilst it is difficult to assess how quickly satellite navigation manufacturers and internet mapping companies will disseminate a point referenced version of PAF to motorists and what the take-up would be, the proportion of GDP used for motoring is so high that the resulting savings will be substantial. The RAC Foundation stated in a report¹⁴ that at any point in time 15% of drivers in urban areas are 'lost' and the cost of vehicle of congestion in the UK is estimated in the CEBR Report: The Economic Cost of Gridlock as **£4.3bn** per annum¹⁵. Take up of the current GeoPlace point referenced products for navigation has been low because the per-vehicle licensing offered is still seen as prohibitively expensive and the end user audit requirements onerous.

5.2. Central government delivery projects

Acting as a core reference tool, enabling data sharing and reuse

Two recent government data management projects one for the ONS National Address Register required for the 2011 Census, and one for DECC needed to bring together PAF

¹⁴ <http://www.which.co.uk/news/2006/02/road-sign-overload-59845/>

¹⁵ <http://www.transportworks.org/news/cebrinrix-gridlock-uk-roads-costs-economy-%C2%A343-billion>

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with address data from 4 or 5 other sources in order to generate an address register suitable for identifying all dwellings, or all energy meter points. In each case the data sets were matched and improved at considerable public cost - £12m paid by ONS and probably a similar sum for DECC.

Because of the requirements of the licenses under which PAF and other address datasets were provided to these projects both these databases had to be destroyed after use. Most of the opportunity to learn from the projects or to re-use the higher quality data was lost.

We estimate that an Open National Address Dataset including PAF should generate national savings of the order of **£100m** in reduced duplication and better fit for purpose address subsets.

5.3. Market research and statistical work

Acting as a core reference tool, enabling data sharing and integration

The recent availability of the ONS Postcode Directory as an open data product makes it possible to relate every postcode to a current or historic administrative or statistical area making the comparison of statistics straightforward. However this is dependent on having correct postcodes for every address in the datasets being aggregated. PAF remains essential to map the correct postcodes to individual postal addresses in a more cost effective way. Making PAF available for this work would generate national statistical benefit of **tens of £ms** per annum.

5.4. Identification and authentication tools

Robust verification of addresses to avoid and detect fraud

An address added to a business or personal name is usually essential to disambiguate and identify the organisation or individual uniquely. Many public sector and private bodies need to verify addresses to avoid fraud and prevent false addresses being used by fraudulent individuals.

Frequently addresses from utility bills, or provided by respondents, are used to prove identity. This causes great difficulty in identifying individuals, avoiding fraud and sharing data when security or safety is involved. Often addresses from alternative sources for the same individual cannot be matched because there is no single definitive set of address data to check against.

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It is estimated that the use of a National Address Dataset for address verification could have a value of **hundreds of £ms** per annum because of increased usage and reliability over current multiple address sources. For example, fraud is estimated to cost the UK economy £73bn per annum¹⁶, so even a 1% decrease would net over £700m of annual benefit to the economy.

It is for similar reasons that most Scandinavian countries, the Netherlands and many other countries around the world are legislating to create and maintain a single mandatory buildings and addresses register which must, by law, be referred to when using addresses for official or identity purposes.

5.5. Public services planning

Re-charging data producers for their own data

The importance of individual definitive addresses for public service provision led, from about 1999, to the data in PAF and derived Ordnance Survey data as well as Ordnance Survey street data being re-captured by almost every local authority to avoid OS and Royal Mail royalties, licences and derived data restrictions. The effort required to create and maintain a full NLPG which was free of OS and Royal Mail royalty claims eventually overwhelmed local authorities to the great frustration of the local land and property gazetteer custodians who had worked enthusiastically and tirelessly to build their own independent National Land and Property Gazetteer (NLPG).

We have been told by Local Authorities that they do not feel that the availability of a new national address data set built on their work but subject to Royal Mail and Ordnance Survey royalties is satisfying the demand that originally led to them creating their own gazetteers. There is a fear that a new commercial address monopoly is being created with all the problems of previous arrangements which exploits the efforts of local authorities without rewarding them for their work and then charges them to buy their own intelligence back as data. An example of this is the remission of only £250k to local authorities for address intelligence - £1 per new address sourced from LA's by Royal Mail (compared to Royal Mail's address revenues of £27m). These addresses account for over 80% of the 330,000 or so newly built properties.

We believe that Local Authorities could produce a benefit for residents and local businesses of at least **£100m** per annum if they had open access to a national address

¹⁶ <http://www.homeoffice.gov.uk/publications/agencies-public-bodies/nfa/annual-fraud-indicator/annual-fraud-indicator-2012>

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dataset, data which they regard as fundamentally their responsibility to capture and maintain in the first place. A large proportion of these savings would be the result of a single core-reference dataset.

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Annex A – PAF Advisory Board (PAFAB) – the Benefits of Releasing PAF as Open Data

PAFAB 2011 Study – estimates between £992m - £1.32bn for the UK Economy for an investment of £27 million (£24.5 million cost £2.6 m profit).

Evidence

The PAFAB report identifies the following major uses of PAF:

- in postal services and goods distribution
- address data capture software
- database cleansing, and data quality management
- market research and statistical work
- geo-location products and services e.g. in-vehicle navigation
- identification and authentication tools
- direct marketing and location based marketing services
- public services planning and provision
- acting as a core reference tool, enabling data sharing and integration

PAF has been commercially available through re-sellers since 1994 yet there are currently only 37,000 end user licenses (1,200 provided directly; the remainder through 250 resellers). This compares to approximately 3 million VAT registered businesses almost all of which could take advantage of PAF data. Given the wide range of benefits cited for PAF it is almost inconceivable that only 1.2% of businesses currently benefit from access to this data, its use being highly restricted by the PAF licence.

All other address products currently available in the UK include PAF and a full PAF licence is required to use them. PAF has no competition (confirmed in the PAFAB report) and is a weakly regulated monopoly.

The cost of producing, distributing and licensing PAF has risen eight-fold since 1986, this compares to Ordnance Survey's costs having only doubled in that period from about £60m to £120m, while producing a much larger portfolio of much larger and more complex products and services. PAF as a dataset has hardly changed during this period so data collection, maintenance and storage costs cannot account for the increase in revenues.

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ODUG has received many allegations that PAF pricing cannot be regarded as 'reasonable' as is demanded by the Postal Services Act 2000. Many large potential users of PAF, while citing price as a consideration also state that the onerous and restrictive licensing of PAF and auditing of PAF usage is also an important factor in preventing take up.

Expert opinion places the true 'reasonable cost' of maintaining the PAF dataset between £1m and £10m per annum. This implies that a minimum of £15m of costs are consumed by marketing, licensing, audit and other activities all of which would be unnecessary if PAF was open data.