



Visualising waste failure demand data, benefits and business case

North East Lincolnshire and Leeds City Council

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Background

All local authorities are facing significant financial challenges and as a result their core resources are getting smaller. They have difficult decisions to make about how this is achieved and are continually re-assessing their strategic priorities and direction. This is largely political but one key service which is very visible to communities is their waste collection, very much seen as what residents pay their council tax for.

This means that when we fail to collect a bin, it creates a very emotive response and creates more demand in responding to the service request or complaint. Ultimately, this starts with a phone call, submission of a missed bin report online which can lead to an investigation, escalation to a further complaint stage and rework by revisiting the property. All of this means we are not doing what we planned to do and the quality of service elsewhere is suffering as a result.

We felt that reducing failure, understanding where we were failing and being able to understand why so that we could improve, was a great opportunity to help us with our challenge of doing more with less and getting it right first time more often.

Missed bin reports are a problem to all LAs that have responsibility for them. The impact is customer contact through whatever channel, some of which is genuine and some through residents not observing the terms and conditions of the service. Understanding the true picture is difficult and makes informative action complex.

As part of the NELC failure demand project we undertook discovery work to understand the problem. User research included working with the waste management team, waste crews, business support, customer services, councillors and residents. We collated the results of the discovery research work and identified data, along with four other areas (covered later, under other options considered), as a key opportunity to reduce failure demand.

Legacy systems make it difficult to extract information and it is not easy to drill down to see problem areas on a daily/weekly basis. It is also not easy to share information with front line services and to keep customers informed. As part of discovery work we realised there were gaps in the data collected which left us unable to determine if and why bins were genuinely missed.

A more robust, user centred view of data and intelligence was required to allow waste team leaders and managers to access visual, up-to-date business intelligence which would enable more effective and efficient service delivery. This would in turn through effective intervention enable the service to improve the service received by residents and reduce failure demand.

Why we think this is a viable and important approach

We conducted some intensive research, listening and talking to residents, drivers, loaders and managers in the services in our earlier discovery. The overwhelming message from the research was that access to and use of data was difficult and customers could not be updated correctly in a timely manner. Nor could we give a reason as to why the bin was missed or if it had in fact been missed.

We looked at the processes, systems and workflow to understand the challenges, pitfalls and where things could be improved.

We found some real surprises that 70% of all reported missed bins are withdrawn as they were in fact not presented. We also found out we didn't record outcomes of the investigations of the missed bin reports in enough detail to give us that business intelligence to drive service improvement and reduce failure demand.

Data it appeared was the key issue, how we collect it, what we collect and how we use it and

share it was a problem.

We looked at the costs in time, money and the additional resources that this needed and it was alarming that a missed bin costs £2.55 on average and can be as much as £24.10 at a stage 1 complaint and £67.19 when this has been raised as a complaint and further escalated to a stage 2 with a revisit. These costs are based on NELC research but is also reflective of Leeds CC costs.

However it is important to note the costs across both councils cannot directly be compared as local policy differs where NELC does revisit and LCC does not unless the report is the third consecutive occurrence or if it is a missed street, which has a significant effect.

How did we define the problem we were looking to solve?

Clearly with 70% of all missed bin reports being withdrawn there is a problem with the process or not knowing if there is a problem with the round i.e. broken down wagon, poor parking or no access for other reasons.

We identified a number of opportunities for improvement as below:

1. Data - how we capture data to identify the root causes of missed bin reports and ability to share it
2. Improving internal processes providing a consistent message to residents
3. Improving communication between the teams to provide a better resident experience
4. Improving ways of working within the waste service to meet customer expectations
5. Use of mobile technology to communicate more effectively

Applying clear criteria about what we could deliver:

- Does it align to our strategic priorities
- Does it deliver real savings or efficiencies
- Does it meet the political need
- Does it deliver real benefit for users
- Is it a good news story for the council
- Is the timing right for delivery
- Is the service on board and empowered to make decisions

Our decision was that the biggest difference in a timely manner could be achieved through addressing our data issues.

The vision agreed as part of the 'Agile for Teams training at the start of the MHCLG funded project was:

'Provide a waste dashboard with accurate up to date information about missed containers to support service improvement.'

What will be different if we succeed (Critical Success Factors)?

- We will understand where we fail, why and be empowered to examine our options and solutions.
- We will be able to proactively advise customers and prevent incorrect reports when we know we have missed bins
- We will deliver a better user experience and a consistent message to customers
- We will reduce the number of complaints
- We will reduce rework and be able to focus on what we plan to do
- We will have less councillor enquiries further reducing pressure on the service
- We will save money and release capacity in our resources across customer services, waste services, complaint investigators, complaints and FOI team and business support
- We will deliver increased customer satisfaction

How we agreed to work together

At our initial contact and kick off meeting in London, in December, we agreed to utilise common tools and a collaborative approach.

Key tools were Trello and Slack to engage and collaborate. Also Google docs to ensure that we could share and disseminate the outputs for assessment.

As part of signing up to the local digital declaration was to adopt and sign up to the local government service standards this also meant we would deliver using agile methodology.

Part of the MHCLG offer was to provide an agile for teams course for each successful project, we identified the core team from Leeds and self hosted the training event which enabled us to come together early and do the visioning work around the project. To practise working in an agile way and do some early scoping of what success would look like.

We agreed to have regular weekly contact by phone, 2 weekly sprints and retros, also the show and tells to be live streamed using Google hangouts via Youtube. To all of us a very different way of working but exciting and great to keep focus and manage progress. We've also had reciprocal visits to demonstrate and share our working practices, ways of working and meet the wider teams across our respective waste operations.

Project outline and scope

The scope of the alpha was agreed as using existing technologies in situ and available to many

councils, To replicate and iterate early work NELC have started. To develop visualised data around failure in waste collection rounds. Furthermore, enabling the sharing of code and method to achieve a successful useful output for many councils to deliver service improvement in waste collections. Intended as a largely internal tool to meet different users needs across waste management, team leaders, customer services and councillors but with the potential longer term to be used more directly with customers via integrations to a range of CRM systems.

In scope:

- Mapping of data visualisation
- Common data and taking forward earlier data standards work by DCLG
- Data by authority
- Data by round
- Data by ward
- Data by waste type
- Data by collection type (assisted and unassisted)
- Data by household
- Data look-up by household

Out of scope:

- Missed streets (for the alpha but a definite long term aspiration)
- New technologies (for the alpha but longer term has implications around procurement)
- Production code for future beta development
- Use externally with customers
- Pilot waste collection schemes such as hessian sacks for recycling (NELC) and food waste (LCC)
- Change of service processes (the alpha product providing the evidence base for investigation and analysis to support the service changes)

User research and what we've heard

To develop the business case, we undertook significant further research adding to the research we undertook in the discovery. This is detailed in our [user research plan and report](#).

Who we have spoken to?

- Customer services
- Waste management
- Team leaders
- Loaders/crews
- Business support
- Senior managers
- Councillors

Summary of our research findings

Our further research beyond the discovery phase has revealed the following:

- Highest volume of failure demand and customer contact at both Leeds CC and NELC
- Current lack of timely data to support service improvement
- Different systems used and container types but common service issues
- That processes and common language across teams is essential
- Clarity about why bins are missed is essential
- Common data can be adopted however data on missed bins reasons might not be currently collected by councils
- That using data needs to be in unison with reviewing back office and other procedures
- Data needs to be robust and of a high quality with all reports logged to ensure that dashboard is accurate and can inform decision making
- The view of all user groups is vital to successful delivery ensuring access to the right data and view
- Prototype can be replicated across both APEX and PowerBI

Our survey promoted across MHCLG newsletter, Yorkshire and Humber peer group and GDS where 18 councils participated revealed:

- Only 3 out of 18 councils have outsourced their waste collection operations
- There is a large amount of duplication of effort happening across participating councils to achieve the same objective of making the best use of their data
- Levels of maturity and ability to access and process the data seems low at 40% on average across respondents and demonstrates potential to share learning and skills
- 52% of participating councils said that this approach would be a priority to improving service delivery
- There are also some strong commonalities in the systems used across local authorities which mean good potential to share and scale the approach

Raw data for the survey via Survey Monkey is available [here](#).

Strategic case

Our strategic priorities are 'stronger economy, stronger communities' and more specifically that we deliver a sustainable environment.

As stated above in the background, waste services are very visible and when we fail to meet customer expectations, this has a significant impact on the reputation of councils and triggers potential reaction with councillors and senior leaders. The Local Government Ombudsman has also focussed on this subject, carried out separate research and produced a [report](#) in 2017.

Furthermore with reducing resources in all councils, our capacity and resilience to go back and

do rework is becoming increasingly difficult. This means we move from a proactive planned approach to a reactive way of working where we are in effect fire fighting.

At national scale this is evident from [the press](#) where on a city scale the wider impacts on public health can be disastrous and damaging at a central government level, not to mention the massive cost of dealing with a backlog and rebuilding the relationship with communities.

Options could include procuring off the shelf new innovative environmental management solutions able to deliver the outputs of this proposal but at what cost? Waste and environmental systems are some of the biggest, high cost systems that councils run and the disruption to implement can invariably run beyond the budget scope for transition both in cash resources and time (compounded by new skill requirements, user training and system development to localise and integrate with other key systems where required). The national research (by DCLG) showed that due to these factors the average re-procurement cycle is 7 years. This means nationally that on average only 15% of councils would or could adopt a new systems route each year.

Our proposal and approach in the alpha is based on using existing technologies widely available and used across local authorities but not necessarily to their full potential. By taking this approach we mitigate a number of barriers to progress, cost, skills development and having to run multiple systems while development is taking place when reprocurring. Where technologies are the same, replication is more easily achieved by reusing code. Where they are different, there will be more development work required to replicate the desired outcome but will ultimately make the approach more adoptable and at reducing costs where a clear framework from the alpha is used.

By reducing our failure in waste services we create less rework and therefore reduce our carbon footprint. We further release capacity in the service to do higher quality work to maintain the quality of our environment, enhancing the brand and reputation of the council with communities. This fosters a sense of pride and ownership and is therefore a 'win win'. Enhancing the area also makes investment more attractive further driving our strategic aspiration of stronger economy.

From an ICT strategic view we are looking to cloud first solutions and our current arrangements are hosted in house. So, for resilience and future proofing, adoption of new technologies supported by cloud are a preference but the business case still needs to assess the cost of change and the relative payback period. If the latter is exceeded beyond 7 years there are significant questions to be raised in relation to value for money and it is one aspect we regularly test.

Making data available means transparency and engenders trust and openness with communities. This will enable a move to open publication reducing further demand in FOI requests and releasing capacity across wider government.

Alternative delivery models

This case is looking at self developed ways to handle data, using existing systems and tools to their best. Beyond this there are other alternatives:

1. Procuring systems with the capability included in the specification
2. Using technology in the field such as 'in cab'
3. Bin tags and smart measuring devices

Each has differing costs, risks and challenges to their adoption, considering each in turn with a clear set of criteria helps us understand why we have evaluated our approach as the optimum.

Difficulty, Impact and cost assessment of different delivery models

Proposal	Cost Score Bigger is better / lower (10)	Disruption Bigger is better / lesser (10)	Difficulty of implementation Bigger is better / easier (10)	Impact Bigger is better (10)	Extra workload caused across teams Bigger is better / lesser (10)	Speed to implement Bigger is better / quicker (10)
Data visualisation (53)	Small or nil 9	Small or nil 9	Medium 7	High 9	Small or nil 10	Quick 9
Procuring new back office waste systems (16)	Large 1	Large 1	Large 2	High 10	Large 1	Slow 1
Implementing in cab (36)	Medium 5	Medium 5	Large 9	High 10	Medium 4	Slow 3
Tagging bins (38)	Medium 5	Medium 5	Large 9	High 10	Medium 4	Medium 5

Informed by this assessment and mindful of the spending gap across local government, low cost, high impact options are a favoured course but the costs need to be tempered against the longer term procurement approach.

Doing nothing

Leaves the status quo and change nationally would therefore only be influenced by the procurement approach of each council. Whilst new products have such capability included, costs to implement may not be palatable and strategically many councils are considering alternative levels of quality for the delivery of services, many opting to deliver only what they need to with a basic offer. The earlier press article stated that investment in waste collection has reduced from £1Bn in 2010/11 to £888M in 2017/18, reaffirming the disinvestment despite increasing staff costs, transport costs and insurance costs.

The option of doing nothing will also continue to challenge councils with reducing capacity and resilience and mean that wider services are likely to be affected such as grass cutting, fly tipping and other aspects of street scene where resources may need to be reallocated.

Economic case

The proposal

Our submission case set out the resources needed to deliver the outputs from the project proposal as below.

Resources required to deliver project

Resource	Quantity required	Total cost/value for this application	Who will pay
NELC Delivery Manager*	48 days	£10,992	LDF
Service/Content Design*	24 days	£4,848	LDF
2 x Developer *	24 days	£8,208	LDF
2 x User researcher*	24 days	£8,208	LDF
Digital Programme Manager - (Relationship/collaboration Manager)	24 days	£5,496	LDF
Graphics Design	5 days	£780	LDF
Technology lead	24 days	£4,848	LDF
Business Analyst	5 days	£780	LDF
Service Management collaboration	24 days	£6,432	NELC
Data Analyst	20 days	£3,120	LDF

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Communications	24 days	£3,144	NELC
Project Support	24 days	£3,744	LDF
Information Governance	2 days	£404	NELC
Web Developer	5 days	£730	NELC
Finance Support - administering the fund	3 days	£555	NELC
Engagement Officer	12 days	£1,572	NELC
Business Analyst LCC	3 days - £60 per hour	£1,260	LDF
ICT Specialist Developer LCC	12 days - £60 per hour	£5,040	LDF
User Researcher LCC	8 days - £60 per hour	£3,360	LDF
Financial support LCC	1 day - £60 per hour	£420	LCC
Travel training		£1000	LDF

As the aim of the work is to deliver a shareable common service pattern usable by many councils, the investment and resultant return on investment (ROI) needs to be evaluated against the bigger picture.

Whilst this was work that NELC had planned and in the backlog, access to funding and resources to deliver the work was a challenge. The Local Digital Innovation Programme via MHCLG has enabled this proposal to be brought forward, accelerated and delivered a targeted minimum viable product, tested and shared with a partner council (Leeds City Council), drawing on the earlier [common data standards work](#) and proving the potential benefits from this proposal.

The collaboration has been a very positive experience where a joint vision and a common prototype has been agreed which meets the needs of both councils. The ideas, views and collaboration have further developed an approach started by NELC and created a relationship where further collaboration across other ideas has been discussed.

As part of the Local Digital offer, the 'Agile for Teams' GDS training has enabled both councils

to have a common language and approach, using collaborative tools and to work in the open enhancing the brand, culture and ways of working across this agile project.

Reflections from both councils

NELC Service Design Sponsor 'For us, there have been definite unintended benefits of this project that we'll use and develop in our other work. The opportunity to collaborate and build a focussed relationship with another council has been really beneficial for this work, but has also created conversations about ways of working common to us both. The show and tells have been a new experience for us with our MHCLG projects and they've really worked! Getting a wider perspective on our challenges has helped to shape our future direction.'

Leeds CC project lead 'Overall, Leeds user research found the prototype does meet waste management needs for identifying missed bin collections and for performance management as it will help the service to improve service delivery by targeting resources more effectively and allocating capacity to priority areas. It helps to identify any recurring challenge or issues so that resources can be deployed and investigations into recurring missed bin collections can be managed'

The benefits

We (NELC) feel as a result of the work and operational services making targeted interventions to address failings or locality issues that a reduction of 25% of missed bin reports and associated costs of actions such as complaints, revisits and demand on our contact centres is feasible. Leeds CC have confirmed their agreement that this is a realistic objective and target given the range on interventions we can take to improve the service..

From LCC's perspective, this is their longer term vision but there is work in progress to address issues with data access, quality and consistency as part of service development. This needs to be undertaken first but the view is that the benefits will be as described above.

It would be overly optimistic to expect to eradicate all missed bins as there is always a human factor in our staff and residents will continue to lock gates, park poorly or create other obstructions. Hence our approach is cautious and does not set overly burdensome expectations on other councils that choose to adopt the common service pattern and is realistic given our range of interventions to improve the service.

Locally

Costs/LA	2018/19	2019/20	2020/21	2021/22	2022/23
Capital	£77K				

NELC (predicted target savings)		£20K	£20K	£20K	£20K
LCC (predicted target savings)		£98K	£98K	£98K	£98K

This means a potential recurrent £20K per annum costs saving for NELC and £98* for LCC upon implementation, meaning payback within 4 years. (Please refer to [costs spreadsheet](#)). It is difficult to assess inflationary increases in costs of salaries versus the reducing cost of demand as we address the reasons for service failure. However one would expect the increases to be reasonably cancelled out by the corresponding reductions.

* Please note that the estimated savings are based on the NELC research and investigation into the costs covering the whole system and differing complexities. Factored by a per capita calculation.

Full costs lifecycle however in relation to procurement would need to look at a number of other factors:

- Procurement costs
- Implementation costs of new systems
- Disruption costs and if new and old need to run simultaneously
- Costs of reengineering integrations with other dependent systems such as the CRM and any visualisation tools
- Customer journey redesign
- Training
- Development and implementation of additional modules opted for as part of the specification i.e. in cab, data visualisation, data development
- Consultancy
- Maintenance
- And, support

Nationally

Part of our user research was to engage with local authorities nationally and more locally on a regional basis as stated in the user research plan and report.

We undertook a survey to look at:

- Current ICT infrastructure across councils
- Data analysis maturity across councils
- Interest in our proposal and if this approach would be a priority

Responses have been collated as part of the research report and this shows that there is potential for a number of LAs to engage in a regional or invitation to beta replicating and implementing the prototype solution, further ratifying the benefits and supporting the business case if adopted nationally.

The wider additional savings across a regional or national adoption at scale are potentially £310k pa regionally and £4m nationally. (Regionally there are 21 LAs in Yorkshire and Humber, assumption is 50% of remaining may agree to participate). Important to note that 52% of participants to our survey said that this would be important to them so reflects good potential.

At a national level adoption of a common service pattern and ways of working, where the research costs have been largely borne by an alpha project, becomes attractive where further implementation/adoption becomes cheaper in cash terms (see costing model below), based on a common service pattern and robust modular blocks (Government as a Platform - GaaP) approach. It is important however that ongoing maintenance and potential future procurement costs are accounted for when looking at the economic case. It is these new costs when considered at scale which strategically can derail its value.

Non Cashable Additional Benefits

However there are other important benefits that cannot be quantified so simply (the non-cashable savings/benefits as follows):

- Releasing capacity in the service from not doing reactive work
- Able to target resources where they are most needed
- Less contact in our customer services enabling them to focus on delivering better service to residents
- Enhancing the reputation of the council
- Increasing customer satisfaction
- Reduced complaints
- Reduced demand on senior management from councillors
- Increasing councillor satisfaction
- Increasing staff satisfaction
- Reducing sickness in the service due to reduced abuse and harassment
- Improved street scene
- Reduced anti-social behaviour
- Increased inward business investment
- Likely less fly tipping as bins are emptied and additional side waste does not build up
- Strong professional collaborative relationship established as an output of this project with LCC
- Shared artifacts and assets available across all local authorities
- A growing community of practice with more members willing to share iterative ideas

What other options were considered?

We identified 5 opportunities to deliver better waste collection performance as identified below with the reasons why we did or did not immediately proceed:

1. Data - how we capture data to identify the root causes of missed bins reports and be able to share it - something in our gift and we could progress immediately
2. Improving internal processes providing a consistent message to customers - delayed due to significant transformation already underway in the service
3. Improving communication between the teams to provide a better customer experience - linked to the data but not possible to immediately progress without insight into the data
4. Improving ways of working within the waste service to meet customer expectations - requires a combination of point 2 and 5
5. Use of mobile technology to communicate more effectively - requires point 2, 3 and 4

What if we do nothing?

Doing nothing will largely maintain the status quo and will rely on change in the market place across an extended procurement timescale and unless the approach is specified as part of the procurement, may not be purchased or taken forward.

What would it cost for other councils to adopt the service pattern?

The systems model sets out the relevant system linkages and how data needs to flow and costs could be incurred in developing the API's or procuring an analytics tool such as Power BI. Where councils use Oracle databases and SQL, the APEX module is an integral part and therefore cost free but there are overheads in development resources and capability that are required. However some of this is clearly mitigated with [open code](#) being available from the alpha development work which will enable other LAs to replicate the process. The coding examples attached are a direct extract from the Oracle Apex code which when applied with the data structure as shown in the data structure workbook enable users with less skills or knowledge to replicate and use the approach.

The infrastructure and tools available in house will be different over the many councils and as such each would need to approach firstly by researching the feasibility based on their ICT estate. However assumptions could be made that the following steps need to be assessed:

- Are we collecting the right data - any costs for system development to do so?
- Does the CRM system integrate? - any cost to purchase/implement/develop the necessary API?
- Do systems link directly to the LLPG - is there any value to this and what would it cost if not?
- Can data be extracted from the waste system? - any costs for a nightly extract and into what data form?
- What data analytic tool do we use? - any costs to procure or upskilling required? (Note any code available as a result of the alpha/beta would be readily available and therefore

technically free)

For NELC this has been delivered with in house resources and expertise based on the amount as specified in the original proposal. There has been no separate procurement or licensing costs incurred.

For LCC, this has been delivered with in house resources, using the expertise we already have internal to the council. Our forward plan which looks to integrate directly with our waste system would also be delivered in house.

To test the potential in the market, we shared across the Yorkshire and Humber region a snapshot of the prototype with the context of what we were aiming to achieve. As part of sharing the proposal, we also asked for councils to complete a [brief survey](#) to understand appetite and potential to scale the work. The outputs of this survey are included in the user research report including a snapshot of the relevant systems used in each LA.

Critically important from the survey responses is the infrastructure differences and therefore an analysis of the costs to implement can only be by a generic estimate. Clearly from the responses there is duplicated effort happening on a national scale and therefore a working exemplar to be shared makes good sense, pulling together the earlier work including the common data standards by DCLG.

Estimated costing model

Using existing available technologies eliminates the need to procure, drastically reducing costs and where existing skills are being reused/repurposed, training costs are also mitigated. This means the desired and preferred deployment of the alpha proposal across many LAs is the recommended approach.

Below is an indicative cost model based on the alpha development and the dependencies that are involved.

Item	Duration	Capital or Revenue	Dependency	Cost
Data extract	N/A	Revenue	Access to system extract*	£?
Analysis tool	N/A	Revenue and Capital	Access to existing tool**	£?
Developer resource	70 hrs over 2 weeks***	Revenue or Capital if a project proposal	Skills being available	£3,500
Data	Research****	Revenue or	Cost and	£0 - 2,000

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development		Capital if a project proposal	capacity to develop additional data items in waste back office systems	
Management and delivery overheads	3 months	Revenue or Capital	Management of delivery may vary depending on any participating council structure and priority and whether the work is a capially funded project	£3,000
User research	2 months	Revenue or Capital	Dependent on whether funded as a project	£4,000
Total				£12,500

* Most systems are accessible to obtain the necessary extract and our survey showed that of 18 councils participating, 15 said this was easy and 2 said no, confirming the potential to scale the approach.

** A range of analytical tools are available and our survey showed that 5 participating councils are already using Microsoft Power BI and other were using Excel and SQL databases, again reaffirming the potential to scale the approach.

*** costed at £50 per hour and with access to code and relevant skills to understand queries and string syntax.

**** Councils choosing to deploy the proposal may either follow the suggested data structure or in conjunction with the research phase develop their own to localise. There may be some local admin and capability that in the NELC example was but a few minutes to add additional outcome or reason codes for missed bins. However if the vendor needs to make amendments on behalf of councils this may carry a service and maintenance cost, a typical costing as shown.

Given that the alpha has established an approach and model to deliver the outputs with clear guidance about how [data standards](#) can be applied, shared service pattern and code where common systems are user or available, costs are substantially reduced through being able to use existing evidence from research.

Any participating council looking to deploy the approach would need as indicated earlier to look at available infrastructure and ensure viability.

Whilst costs could appear low at £12,500 per authority, there are some key points of learning from the alpha project that would need councils to undertake some of their own discovery and research to verify feasibility. There are some unknown costs which depend on individual councils ICT estate but likely given the outputs of the survey, can be minimised:

- The licensing model for Microsoft Power BI does not lend itself to wider deployment at NELC (cost per user for self serve requires everyone to be licensed)
- Systems access and the complication of wider business intelligence and data development work is preventing taking the approach to the next level at LCC
- Modules of the LCC waste management system (Collective by Bartec) has the potential for visual data but has not been exploited and this may be mirrored across other LAs due to costs and/or complexity.

What key risks are there?

1. As all LAs are subject to procurement rules and NELC and LCC having signed up to the local digital declaration, government service standards and the technology code of practice, there is an expectation that major systems and the ICT estate will evolve over time and any developments around integrations will need to be redeveloped.

This is something to consider in the procurement to minimise impact or ensure is explicit in any specification for:

- Waste system
 - Customer records management system
 - And, analytics tools
2. Developing in house products and integrations require maintenance and support. Invariably they are established by a development and transformation team, but in the longer term need to be supported by core resources and this adds overheads to ICT services that may become unsustainable. This needs to be tempered with the cost of support and maintenance by external suppliers where this could easily be a contractual requirement.

For the purposes of this proposal, clear documentation in the form of open code will support core resources to manage the product. This mitigates the level of development skills and any absence of reference material. For the NELC Service Design Team, this is an approach we have taken to any service developments taken to date and proving to be a successful model giving us more control over the design and delivery of the products to meet user needs. An approach we would recommend to any other LAs wishing to test our alpha proposal.

How can we demonstrate success?

Success metrics are documented in our approach and would be common across all authorities that choose to implement the proposal.

Final summary of the minimum viable product

The proposed minimum viable product aims to deliver intelligence graphically in a way that service performance can be analysed and enable the service to take restorative action to deliver a better customer experience.

We have set out our proposal to manage data in a common replicable way for many authorities to adopt a common service pattern and support the delivery of improved collection rates, understanding the common failures and developing best practice and an approach to serving the community with good value for money.

The links below set out the shape of the common service pattern, data and what is collected, how a common approach needs to be taken and what the research told us with a clear recommendation for what a beta proposal looks like.

The prototype is based on a defined 3 month data set with full active queries, based on test code, some of which is shared as examples below in the shared code.

[Systems model and map](#)

[Data and common standards - what we collect and how it is enriched](#)

[The prototype](#)

[Shared code](#)

[User research plan and report](#)

[Business Case for Beta](#)

Additional raw outputs and artifacts are attached in the appendices of the user research report.

What does this look like at scale?

Extrapolating the savings and efficiencies as identified above to a regional beta, this could mean potentially £230k, many hours of resources saved and a tangible support to local government as a whole. This is an estimate based on the Yorkshire & Humber population of 5,284,000 with 50% of council's participating extrapolated from the NELC population of 159,800 and excluding

NELC.

Nationally for all councils that are responsible for collecting waste this offers a real insight into best practice in delivering data in a usable intelligent form to manage and deliver service change. Moreover is a good news story for central government dealing with local issues by facilitating national level change and sharing of intelligence and solutions.

Overall we recommend this is exploited, promoted and shared as a best practice approach (please refer to the link - business case for Beta above).

The big prize however, we see as understanding and proactively using missed street data to integrate with our CRM system to prevent reports where we already know we have failed. We feel making this publicly available and linked to our CRM has the potential to remove 15% of the 70% of the total reports with correct message and response to the community, please see the [business case for Beta](#) and saving £2.55 per report. The earlier press article stated at national scale there were 1.8m missed bins, rising by a third since 2014, which means current costs are £4.55m and that there are substantial savings to be made. Likely savings potential could be higher dependent on the complexity and extreme nature of some complaints.

We further feel the potential across many high volume services could be replicated and value gained where failure creates the same cyclical pressure and distraction from the planned work.

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- Arun District Council
- Colchester Borough Council
- Teignbridge District Council
- North Kesteven District Council
- Blackburn with Darwen Borough Council
- City of Wolverhampton Council
- Ryedale District Council
- Richmondshire District Council
- South Tyneside Council
- East Riding Council
- NLBC
- Harrogate Borough Council
- North Lincolnshire Council
- Publica Group (Forest of Dean DC, Cotswold DC, West Oxfordshire DC)

Waste data visualisation business case for Ministry of Housing, Communities and Local Government

- Derby City Council
- Calderdale MBC
- Runnymede Borough Council
- North East Lincolnshire Council

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Also the commitment of wider services in developing the business case and conducting the detailed user research needed including the earlier discovery at NELC and during this project at LCC:

- Customer Services
- Waste Management
- Team Leaders
- Loaders/Crews
- Business Support
- Senior Managers
- Councillors
- Residents