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HEALTH & SAFETY LABORATORY

Evaluation report of data sharing through the Intelligent Regulatory Information System (IRIS)

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HSL Project Number:	**PE06327**

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EXECUTIVE SUMMARY

The Better Regulation and Delivery office (BRDO) has a responsibility to work towards a regulatory environment that protects communities and provides confidence to business to invest and grow in Great Britain. As part of this objective BRDO has a remit to help facilitate the sharing of data across regulators. BRDO commissioned the Health and Safety Laboratory (HSL) to undertake a project that would act as a demonstrator of the possibilities and benefits of sharing compliance and risk data across government. The project team collaborated with a number of regulatory stakeholders within Leicestershire to obtain data and gain a better understanding of the benefits of data sharing.

Objectives

The main objectives of the project were to:

- Examine and obtain access to compliance and business data.
- Identify legal gateways to sharing data across the stakeholders
- Link company data together to provide one view of multiple datasets
- Create a tool to query the data and pilot its use over a 6 month period with the stakeholders.

Main Findings

A key aspect of the Intelligent Regulatory Information System (IRIS) project was the understanding of numerous components required to undertake a data sharing project. The requirement to understand and address items such as data sharing agreements, data requirements, data integration, IT security and application development was an achievement and has enhanced the knowledge base for future work.

The IRIS project was successful at identifying legal gateways to sharing data and providing a tool to help match and expose shared data to the stakeholders. The general consensus through the stakeholder trial, evaluation survey and results is that given the limited data within the trial, the experience of sharing data for regulatory purposes was beneficial. The regulatory outcomes related to using shared data in the trial varied between stakeholders. The stakeholder that used the tool the most was able to prioritise inspection based on data within IRIS with positive outcomes. Positive outcomes from the pilot included identification of a number of sites which were in need of regulatory actions, which also led to the delivery of seminars to a group of poor performers within Leicestershire.

The limited flexibility of other areas of regulation and the timing of the trial did limit some of the quantifiable outcomes. Although the quantifiable outcome from some of the stakeholders were not large, the feedback from the evaluation survey on the content of the data and how it could be used in practice showed that data sharing would have a beneficial impact on local inspection if effectively implemented.

Recommendations

The work undertaken has shown an appetite to share and use data in more intelligent ways to improve efficiency within government. To scale up and progress the work undertaken within the IRIS pilot additional work will now have to take place to fully understand how IRIS could be used successfully within government.

To progress IRIS it would be beneficial to solve some of the current IT barriers associated with local authority data whilst being aware of national issues that could benefit and demonstrate the value of a data sharing system such as IRIS.

1 INTRODUCTION

1.1 BACKGROUND

The Better Regulation and Delivery office (BRDO) has a responsibility to work towards a regulatory environment that protects communities and provides confidence to business to invest and grow in Great Britain. As part of its recent work the Regulators Code was developed by Better Regulation Delivery Office (2014) that promotes the sharing of data between regulators where appropriate. The points in Table 1 are adapted from the Regulators Code and show that in future regulators are expected to proactively share data where appropriate.

• Regulators should share information about compliance and risk.
• Regulators should collectively follow the principle of "collect once, use many times" when requesting information from those they regulate.
• When the law allows, regulators should agree secure mechanisms to share information with each other about businesses and other bodies.

Table 1: Extract on data sharing from the Regulators code Better Regulation Delivery Office (2014)

BRDO has a remit to help facilitate the sharing of data across regulators and commissioned the Health and Safety Laboratory (HSL) to undertake a project that would act as a demonstrator of the possibilities and benefits of sharing compliance and risk data across government.

1.2 AIM & SCOPE

The aim of the Intelligent Regulatory Information System (IRIS) project is to explore data sharing between regulators in GB. Before the project started it was identified that there would be a number of barriers to delivering a full national system incorporating all areas of regulation, so an achievable phased approach was chosen. The approach taken in this phase of the project was to concentrate on the benefits of data sharing by working with a small number of regulators in a defined geographic region. The stakeholders involved in the pilot were all based in Leicestershire and had the regulatory remit set out in Table 2.

Geography	Regulator	Regulation
City & County	Leicestershire Fire & Rescue (LFRS)	Fire Protection
County	Leicestershire County Council (LCC)	Food Standards
District	Charnwood Borough Council (CBC)	Health and Safety, and Food Hygiene
	North West Leicestershire District Council (NWLDC)	

Table 2: Stakeholders involved in the IRIS pilot

Although additional datasets were included in the work the table highlights the areas against which the benefits of sharing the data would be set.

1.3 HIGH LEVEL APPROACH

The IRIS project has four work areas that were addressed to allow the stakeholders to access each other's data for data sharing purposes as outlined below:

1.3.1 Data acquisition

The project looked into and acquired data on business risk and compliance that is available from the stakeholders as well as data that is within the public domain. Within this work the project team had to understand what data was required as well as creating data sharing agreements to make sure that the data could be legally shared.

1.3.2 Combining datasets

Data acquired from multiple sources within the project held no common identifiers to allow the data to be easily linked across datasets. This meant that probabilistic matching algorithms needed to be developed to allow the company data to be joined based on company names to bring together compliance data about individual sites.

1.3.3 Tools to extract and exploit data

A desktop tool was developed to allow stakeholders to query and exploit the data on company compliance that had been combined through the data acquisition and linking stages. This tool was developed knowing that it would serve a purpose for this project, and although not necessarily directly scalable it would enable an understanding of the issues around sharing of company data to be developed.

1.3.4 Regulators using the data for statutory purposes

The regulators that were involved in the project had different aspirations and potential uses for company and compliance information. This meant that a flexible approach was taken to how the regulators would use and evaluate the utility of the IRIS tool. The regulators were given 6 months to use the data in line with their business requirements which meant that the tool could be used for anything from risk based inspection to improved intelligence for reactive visits. After the 6 month trial period stakeholders then took part in a survey of the tool and provided data on the usefulness of the tool to feed into an overall evaluation of data sharing.

2 PROCEDURE / METHODOLOGY

2.1 DATA SHARING AGREEMENT

Drivers within government have placed an emphasis on data sharing and the “collect once, use many times” principal. It was a key objective of the work to make sure that data could be shared in a lawful way between the stakeholders. A template agreement was set up and then circulated with the stakeholders and their legal teams to obtain all the required input at an early stage of the project. Through ongoing discussion with the stakeholders a data sharing agreement was put in place to make sure that all data that was being shared was handled and used lawfully. The legal acts that were used to share the data were the Health and Safety at Work Act (1974) and the Localism Act (2011) allowing for data to be processed and used in line with each organisation’s statutory functions. The ability to set up an overarching data sharing agreement between the regulators is considered a key success to this project as it had to deal with cultural as well as legal barriers and can now be built upon in future projects.

2.2 DATA ACQUISITION

The initial stage of the project identified what data would be available and useful to the stakeholders to improve efficiency and help with risk based inspections. Stakeholder meetings established the datasets to be used in the work and these can be seen in Table 3.

Involvement	**Data Provider**	**Data Type**
Open Data Provider	HSE	Health and Safety
Open Data Provider	Care Quality Commission	Care Quality
Open Data Provider	Food Standards Agency	Food Hygiene
Open Data Provider	Companies House	Administrative
Third Party Data Provider	Landmark	Administrative
Stakeholder	Leicestershire Fire &Rescue	Fire Protection
Stakeholder	Leicestershire County Council	Food Standards
Stakeholder	Charnwood District Council	Health and Safety & Food Hygiene
Stakeholder	North West Leicestershire District Council	Health and Safety & Food Hygiene

Table 3: Data providers in the IRIS project

Stakeholder engagement identified the information that would be needed from each regulator to make the data as usable and interoperable as possible. Table 4 shows the data that was requested from each stakeholder involved in the work:

Area of Regulation	**Data Requested**
All	Unique property reference number
	Unique Identifiers
	Company Names including information on trading as or previously known as.
	Full Site Address
	Contact Details
	Number of Employees
	Business types
	Date of last visit
	Date of next planned inspection
	Current Management Rating
Health and Safety	Improvement Notices
	Prohibition Notices
	Simple Cautions
	Completed Prosecutions
Food Hygiene	Hygiene Improvement Notices
	Hygiene Emergency Prohibition Notices
	Remedial Action Notices
	Simple Cautions
	Completed Prosecutions
Trading Standards	Completed Prosecutions
Fire & Rescue	Enforcement Notices
	Prohibition Notices
	Simple Cautions
	Completed Prosecutions

Table 4: An overview of data requested from regulatory stakeholders

2.3 COMBINING DATASETS

The data acquired from the sources detailed in Table 3 were brought together to allow users to query aggregated information and to be able to view all data in one dataset rather than across several. To create a master dataset from several, data linking algorithms were used. The datasets that contained companies and associated data did not hold a common identifier to allow the datasets to be brought together easily which meant that HSL had to assess how likely it was that a company within one dataset was the same as a company within another dataset. The algorithms that were used to create relationships between the same companies across multiple datasets had a

number of ways to score a 'match'. Table 5 outlines some of the key concepts that were used when linking companies between datasets.

Concept	Brief Detail
Edit Distance	The number of text changes required to make the company names of two candidate records match.
Location	All records are given an exact geographical location based on address and the distance between two candidate records is calculated.
Word Distance	The number of words shared between the name of two candidate records
Word Uniqueness	Where two candidate records have matching words a uniqueness value is applied to the matching words to allow frequently occurring words to be removed from the matching process.
Associated Names	Names that represent aliases or previous names of the company are used to create relationships.

Table 5: Key concepts of organisation matching

The concepts in Table 5 were used to score each potential match. Scoring each potential match allowed for an accepted match score to be put in place. The accepted match score determined whether a match could be treated as identifying the same company across datasets and when applicable a common identifier was given. The ability to create a common identifier allows different types of compliance data to be held against one company or address in contrast to its original format, where each area of compliance was held in separate datasets against separate company identifiers.

2.4 EXPLOITATION & SOFTWARE

There were a number of areas that had to be addressed to make sure that each stakeholder could access and understand data from the IRIS project.

2.4.1 Understanding data between regulators

To make it feasible for users to understand and query data from different regulators' information, some data were converted to common scales and descriptions.

2.4.2 Confidence in Management

The data provided by the stakeholders consisted of numerous rating systems that were applied to companies after an inspection had taken place. The rating information holds a lot of intelligence on what other inspectors could expect to find when visiting the sites, but the information was originally very regulator specific which meant that although the data was of high value, it was held in a scoring system that may have been hard to navigate for users from other areas of regulation. To make the data more accessible

the project team built on work already undertake on a common approach to risk assessment by the Better Regulation Delivery Office (2012). The original paper looks into how a ‘likelihood of compliance’ scale can be created based on a number of known facts about a company. This work was adapted with the help of BRDO representatives to work on a “Confidence in Management” (CIM) score. The CIM was a five point scale ranging from Very High to Very Low and enabled data to be visualised and queried in a common format without detailed knowledge of all areas of regulation. Table 6 shows how the CIM rating was put together for the trial.

	Confidence in Management (CIM)					
Regulator		**LA- Food Hygiene**	**LA-Health and Safety**	**Leicester County Council - Food Standards**	**Leicestershire Fire and Rescue**	**Care Quality Commission**
Data Used		Hygiene Score + Structural Score + Confidence in Management	H&S Risk Rating System	Level of Confidence / LOC Approach	Fire Safety Audit Outcome	Quality and Suitability of Management
	Very High	0-16	Cat C and B4	High	Educate and Inform	N/A
	High	17-32	Cat B2 and B3	Medium	Notification of Deficiencies	Standards Met
	Medium	33-48	Cat B1	Some	Action Plan	N/A
	Low	49-64	N/A	Little	Enforcement Notice	Improvement Required
	Very Low	65-80	Cat A	No	Prohibition or Restriction Notice	Enforcement Required

Table 6: How confidence in management was calculated in the IRIS tool.

A mapping exercise was also undertaken that took all regulatory actions recorded by the stakeholders and mapped them across to one of the following: prosecution, notice and simple caution. This mapping process helped to standardise the data so that it could be interpreted by the end user and queried through the IRIS tool.

2.4.3 Site Functions

Data that had been provided within the trial had a number of inconsistencies when referring to the functions taking place on a site. The data highlighted the fact that across the regulatory environment the level of detail collected on the site function varied greatly depending on the regulator collecting the data. An example of this can be seen in the description of a local shop. In the area of fire regulation just knowing that there is a shop present is enough detail for inspection purposes, whereas within licensing and trading standards the type of shop and whether it holds any licenses is important. It was decided that functions should be kept to allow detail when required but standardisation on the data was also performed to try and improve understanding across datasets. This meant within the project all functions were mapped onto the Office for National Statistics (2007) Standard Industry Classification (SIC) allowing multiple ways to query a site based on function classifications.

2.4.4 IRIS Tool

A tool was required to allow users to access the shared data in a format that had the flexibility to be used in a number of ways, from proactive to reactive inspection and other uses that may not have been known at the start of the pilot. A decision was made early on in the project that the work would not look to solve IT barriers and would not over-design the pilot IRIS tool. The decision not to overcomplicate the project with issues such as large scale deployment and connections to live systems was made to make sure that the aim of understanding the benefits of data sharing was achievable within the timescale.

The tool provided a flexible interface for querying the shared data through a map view by linking to a proprietary geographical information systems (GIS) software application.

The query interface allowed the users to apply a number of filters from a set of tabs to build up a complex query. Figure 1 show the query interface with a simple filter applied to the compliance information.

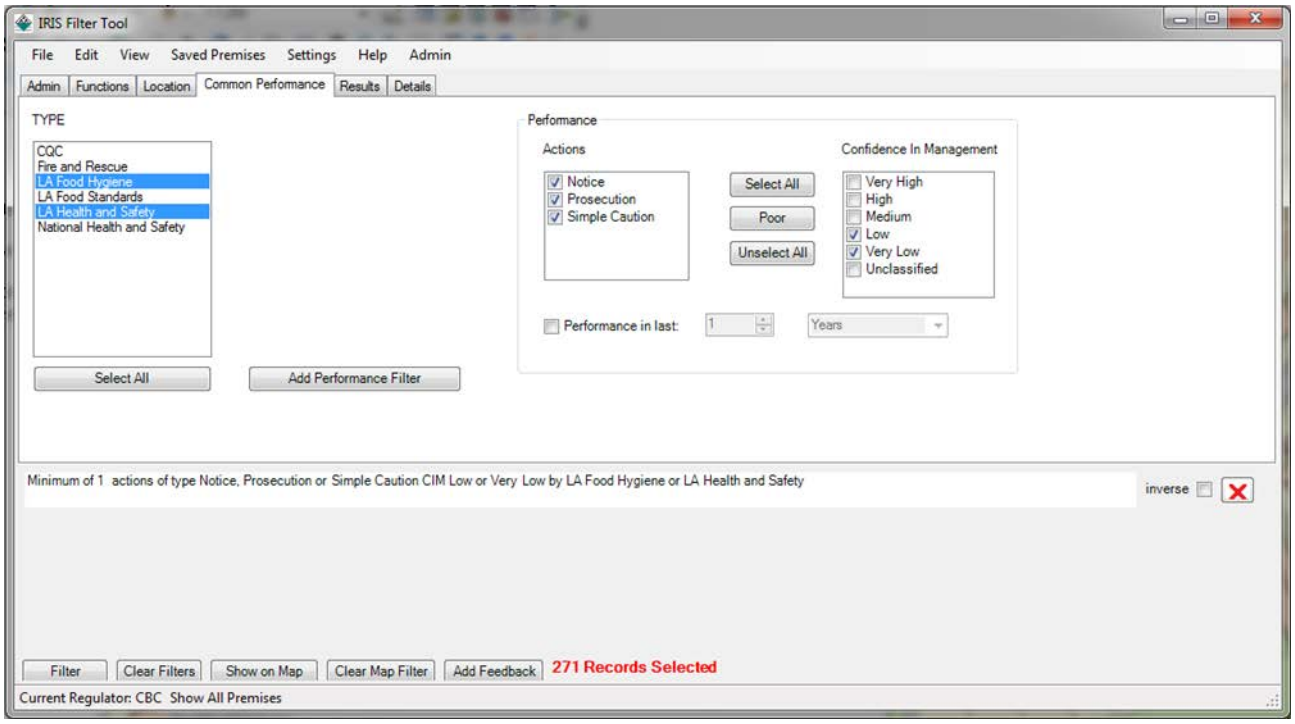

Figure 1: A screen shot of the IRIS dashboard that allows users to create complex queries

The design of the query tool allows a user to create different lines on the lower part of the screen by dragging and dropping selections from available options in the top half of the tab. A separate line on the lower half of the tool means that the query is executed as an “AND” query whereas if the user drops the options on top of one another the line is concatenated and executes as an “OR” query. The ability to easily create complex queries allows the user to be very specific or broad with the data they are looking to extract.

The tool has a number of different ways to query the data. The main options are to query the data through compliance history, site functions, address, organisation name and location using the map view.

Figure 2 below shows the map view with the gazetteer options to help navigate the map.

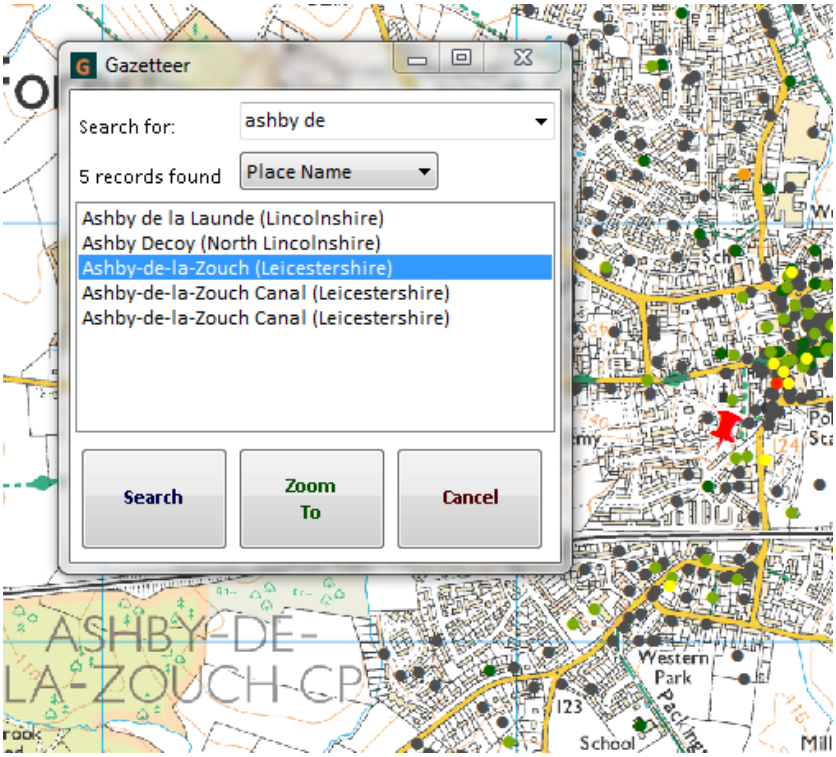

Figure 3: A screenshot of the map view of the IRIS tool

The tool was deployed on standalone laptops for each stakeholder as an achievable IT solution for serving up data across a number of government networks.

2.5 PILOT

After discussion with the stakeholders it was decided that the pilot would take place over a six month period to allow the stakeholders to use the data and tool in line with their current work. Through discussions it was understood that the tool would be used in a variety of ways and that capturing all possible uses of the tool at the outset for the purposes of the evaluation may have been impossible. The stakeholders provided a general overview of how they thought they could use the tool which allowed them to record some of the outcomes though the project. The following bullet points show some of the main benefits that the stakeholders were hoping to realise through the project:

- Help prioritise inspection activity
- Identification of new businesses
- The ability to identify poor performers / non-compliant premises
- Identify business that are no longer trading

- Joint inspection initiatives.
- Assist in the categorisation of risk

There were a number of other possible benefits that came up through consultation with the stakeholders that were outside the remit of this project. The additional benefits that were highlighted could have been explored with the inclusion of additional third party information for example: health, complaints and insurance data. It is expected that these datasets may be included and evaluated in further phases of the IRIS work.

2.6 EVALUATION

The evaluation assessed a number of aspects to try and better understand the benefits of sharing data across regulation.

1. Stakeholders were asked to collect any outcomes and statistics related to the IRIS tool that could be reported at the end of the trial. This data, where provided, would help understand regulatory outcomes associated with using a data sharing tool like IRIS
2. Log files were created to monitor the types of queries being run on the IRIS tool throughout the trial. It was expected that this information would enable the project team to understand the type of information that the stakeholders wanted from IRIS.
3. An evaluation survey was created to obtain feedback from the stakeholders on IRIS and data sharing.

2.6.1 Survey Methodology

Consultations took place between a HSL social researcher and the IRIS team to identify the key evaluation issues. These key issues were used to construct a feedback questionnaire for completion by the IRIS pilot participants. The questionnaire contained both quantitative and qualitative items, the latter consisting of open questions using free text boxes. Using Snap Surveys software, an online version of the questionnaire was created and made accessible to IRIS pilot participants for approximately two weeks.

3 RESULTS

3.1 STAKEHOLDER RESULTS

The pilot was undertaken by the stakeholders in a flexible manner due to the variety of regulatory areas included. All the stakeholders were acting voluntarily and therefore the amount the tool was used and how it was used varied depending on time available and utility of the tool. As the tool was used in a number of ways the analysis will initially look at the results from each stakeholder independently and the approach they took to piloting IRIS.

3.1.1 Leicestershire Fire and Rescue Service (LFRS)

The approach LFRS took within the pilot was to use the tool along with in house intelligence to target a number of sites for fire safety audits. Using the IRIS tool to identify sites with a low confidence in management score LFRS identified 79 sites that could be inspected for compliance under the fire safety order. Of the 79 sites that were identified for a fire safety audit 34 were sites that were unknown to LFRS. Table 7 shows a breakdown of the sites by type.

Functions of new premises identified through IRIS	Count
Club House Not Licensed	1
Club Social Licensed	1
Factory	7
Guest House	7
Nightclub	1
Restaurant Licensed	3
Restaurant Unlicensed	2
Take Away Unlicensed	12
Total	34

Table 7: A count of IRIS based fire and safety audit inspections by sector

Of the 79 fire safety audits that had been planned 49 had been investigated by the end of the pilot period. Of the 49 sites investigated 7 were identified as inappropriate for a visit due to issues such as vacant sites, incorrect descriptions of the premises or through professional judgements. The outcomes of the remaining 42 sites can be seen in the Table 8:

	Educate & Inform	Deficiency Notice	Action Plan	Interim Measures	Enforcement Notice	Prohibition Notice	
Action Severity	Very low	Low	Medium	Medium	High	Very High	
Action Type	Informal	Informal	Informal	Informal	Formal	Formal	
Premise Type							**Total Completed Audits**
Care Home Older People	6	2	2	0	0	0	10
Care Home 18-65	2	0	0	0	0	0	2
Club House Not Licensed	1	0	0	0	0	0	1
Factory	6	2	1	0	0	0	9
Guest House	0	0	6	3	0	0	7
Nightclub	1	0	0	0	0	0	1
Restaurant Licensed	1	3	1	0	0	0	5
Restaurant Unlicensed	1	1	0	0	0	0	2
Takeaway Unlicensed	4	2	0	0	0	0	4
Warehouse	1	0	0	0	0	0	1
Total	**23**	**10**	**10**	**3**	**0**	**0**	**42**

Table 8: A count of actions following an IRIS based Fire Safety Audit inspection

As part of the pilot LFRS visited a number of guest houses. The outcomes of the fire safety audits at guest houses raised issues over compliance within LFRS as well as causing worry among the guest house sector. Looking at Table 8 it can be seen that among the premise types visited guest houses had a high number of action plans and interim measures that could highlight a broader issue within the sector. The increased activity within the guest house sector by LFRS caused a number of questions to be asked of the local council and tourist boards. The guest house sector felt that the interventions seemed like a targeted strategy and in some cases were unhappy about the burden of such visits on their time. The intelligence gathered by visiting a number of guest houses identified through IRIS and communications with local councils and tourism boards led LFRS to organise and deliver seminars to the guest house sector. It was hoped that through seminars LFRS will be able to reduce the burden of inspection to businesses that are or should be compliant within the guest house sector.

3.1.2 Leicestershire County Council (LCC)

LCC approached the pilot with a mind to better understand how a tool like IRIS could be used within current practices. LCC decided that after using the tool it would have been very useful in planning risk based inspection into the upcoming financial year for

food standards. Unfortunately due to the pilot period not being at the start of the financial year, this meant that planning cycle risk based prioritisation of sites for food standards purposes could not be undertaken. This meant that some data comparisons were undertaken to understand the suitability of the data provided through IRIS.

LCC were able to confirm that confidence in management scores broadly agreed with expected values from their own databases. This indicates that if IRIS was to be used it would help risk based inspection using confidence in management scores.

The IRIS tool also allowed LCC to confirm that the information passed to them through the process of food business registration was capturing all new food premises as no new food sites were identified through IRIS.

LCC were able to identity that a number of sites that will be coming into scope for inspection due to legal changes within food standards regulation could be identified using IRIS. This means that sites such as care homes, village halls and nurseries that are not currently on food standards databases could be easily identified with compliance history using IRIS which would be useful for risk based inspection.

The users within LCC were also able to identify three sites that were noted as closed on the IRIS system. This avoided any unnecessary visits to sites that were already closed by using the IRIS tool.

3.1.3 Charnwood Borough Council (CBC)

Charnwood used the IRIS tool in line with current work priorities as well as looking to investigate overlapping poor performance and how this could be addressed. Table 9 highlights records that Charnwood extracted using the IRIS tool.

Charnwood Site Selection	Count
Sites Identified with poor performance	50
Active suitable sites with poor performance	38/50
Closed / Duplicate / HSE enforced sites	12/50
Already Known Poor Performers	4/50
Sites identified for further electrical safety checks	7/50

Records not known to Charnwood	238

Table 9: Charnwood Council's use of IRIS in the pilot period

Results shown in Table 9 CBC were able to identify that 4 of the poor performers that were identified through the tool also had poor performance history with CBC. This has helped CBC to think about how they may be able to provide more detailed or ongoing support to the businesses that seem to have a number of compliance issues. This approach may help to make sure that companies that are in greater need of government support to be a compliant receive the appropriate help.

The regulatory environment that CBC is working in meant that the ability to undertake risk based inspection based on IRIS data was limited. Current proactive Health and Safety work within CBC was based around warehousing. In the area of warehousing there was limited compliance information within the IRIS data due to the current data providers remit. This meant that IRIS was not very useful given the current health and safety priorities and the data provided in the system. In food hygiene regulation CBC also had a number of required visits so strictly undertaking food hygiene visits based on IRIS was not achievable. This is why there were a number of suitable active sites that were identified within the pilot that could not be acted upon. To try and utilise the data within the current bounds of regulation CBC identified a number of poor performers within their upcoming inspection regime. Data from 7 sites with poor performance history with upcoming visits were shared with inspectors to enhance inspector knowledge prior to inspection. Using the information from the tool where poor fire safety had been identified the 7 sites would have further electrical safety checks as the sites may be in greater need of government support.

3.1.4 North West Leicestershire District Council (NWLDC)

Unfortunately through the life of the project there were secondments and changes of staff within North West Leicestershire which hindered the time that could be committed to the IRIS project. The information received from NWLDC noted that the tool was used to identify premises suitable for targeting in relation to health and safety related projects.

3.2 STAKEHOLDER USAGE STATISTICS

During the trial a log file was kept on the laptops provided to the stakeholders. The log files were extracted to gain a better understanding of how the tool was used during the trial period. This data was deemed as useful as there were a number of way in which a user could query and extract the data. Figure 4 shows an overview of the number of queries run by the different stakeholders. The stakeholder that used the tool the most was LFRS who ran around double the number of queries in comparison to the other regulators.

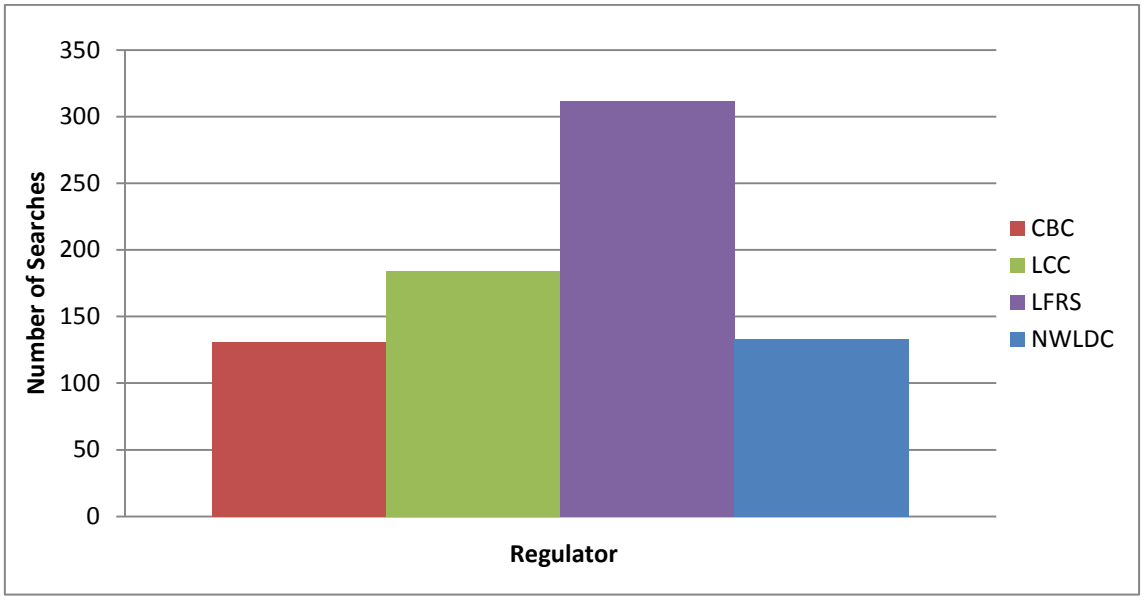

Figure 4: Number of searches on IRIS by regulator

The larger geographical extent of regulation may have underpinned the greater number of searches undertaken by LCC and LFRS as shown in Figure 5. The larger geographical areas that LFRS and LCC are responsible for also meant that there was more information and data that could be extracted from IRIS.

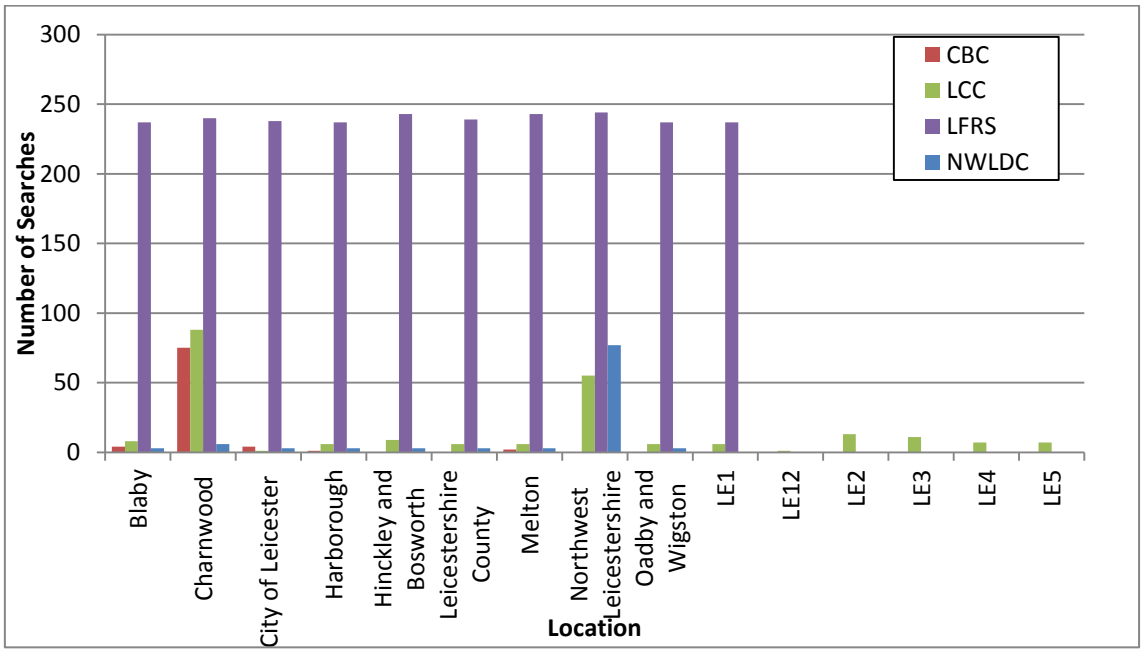

Figure 5: Number of location filters used in IRIS by the stakeholders

The IRIS tool has the ability to query data by location; these locations include all postcode districts and local authorities in the Leicestershire area. The chart in Figure 5 shows how the local authorities involved in the pilot predominantly focused their

searches within their own local authorities. Searches by LCC are shown to be across the whole of Leicestershire with a focus on the local authorities involved in the project where there is greater compliance data. LFRS have a responsibility for the whole of Leicestershire and the log files show that their searches were across the whole of Leicestershire.

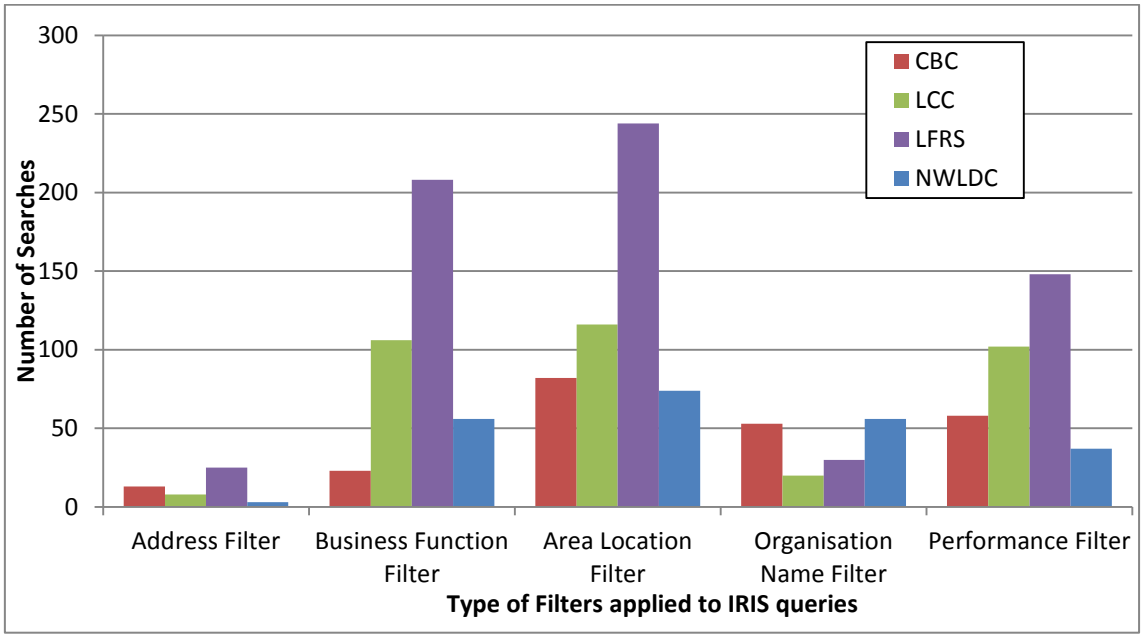

Figure 6: Filter types used in the IRIS tool by the stakeholders

Figure 6 gives an insight into the different filters the stakeholders were using when building up a query in the IRIS tool. The log files show that some of the stakeholders were querying data with different intended outcomes. LFRS filter options shown in Figure 6 indicate that business function was used more often than performance filters. This gives the impression that LFRS used IRIS not only to target intervention but also to identify new sites that they did not know about. Figure 6 also shows an interesting trend of use by the local authorities CBC and NWLDC. The local authorities used the organisation name filter on around 40% of queries. The higher proportion of organisation filters used by local authorities than the other stakeholders suggests that the local authorities are using IRIS to gain a better understanding of sites they were already aware of. This trend is more prevalent in CBC where, along with a high proportion of searches using the organisation name filter, there is also only 18% of searches that use a business function filter. This low number of business function filters indicates that searches by CBC are more likely to be focusing on known business names than business sectors.

The information shown in Figure 7 shows that across the stakeholders the performance options used were similar. The only stakeholder to use the performance options in a different way was LFRS. LFRS have undertaken more filters on CIM scores than on formal regulatory actions whilst they are also the only stakeholder to significantly use the medium CIM score.

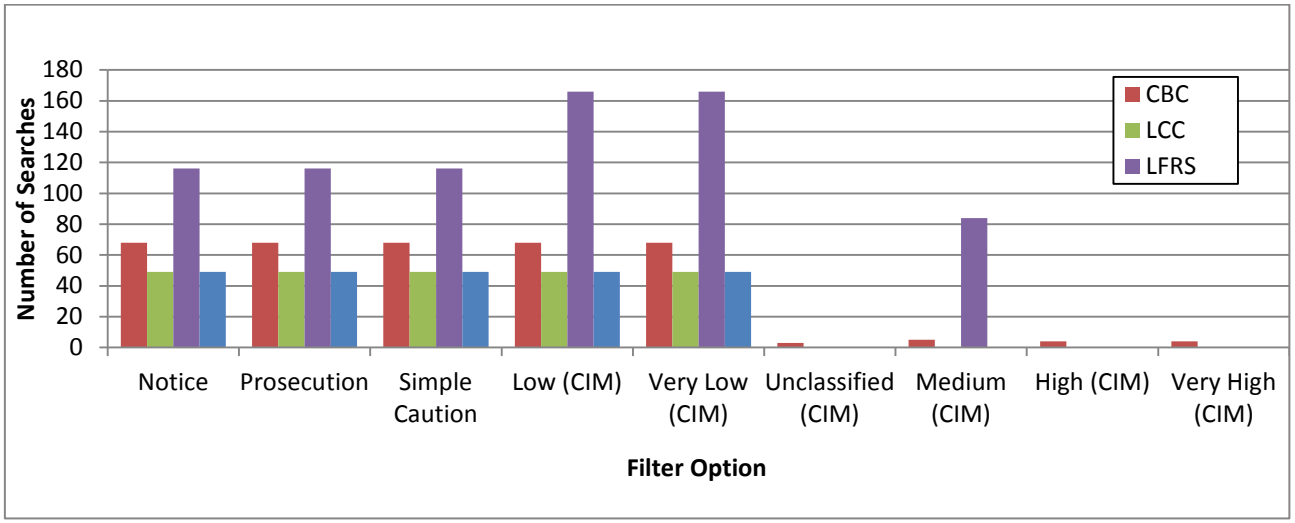

Figure 7: Chart indicating performance filter options used by the stakeholders

It is noteworthy to see that all stakeholders did not use the high and very high CIM with any significance as shown in Figure 7. High and very high CIM scores could have been used to help organise risk based inspection by gaining a better understanding of sites that have a good rather than bad performance history.

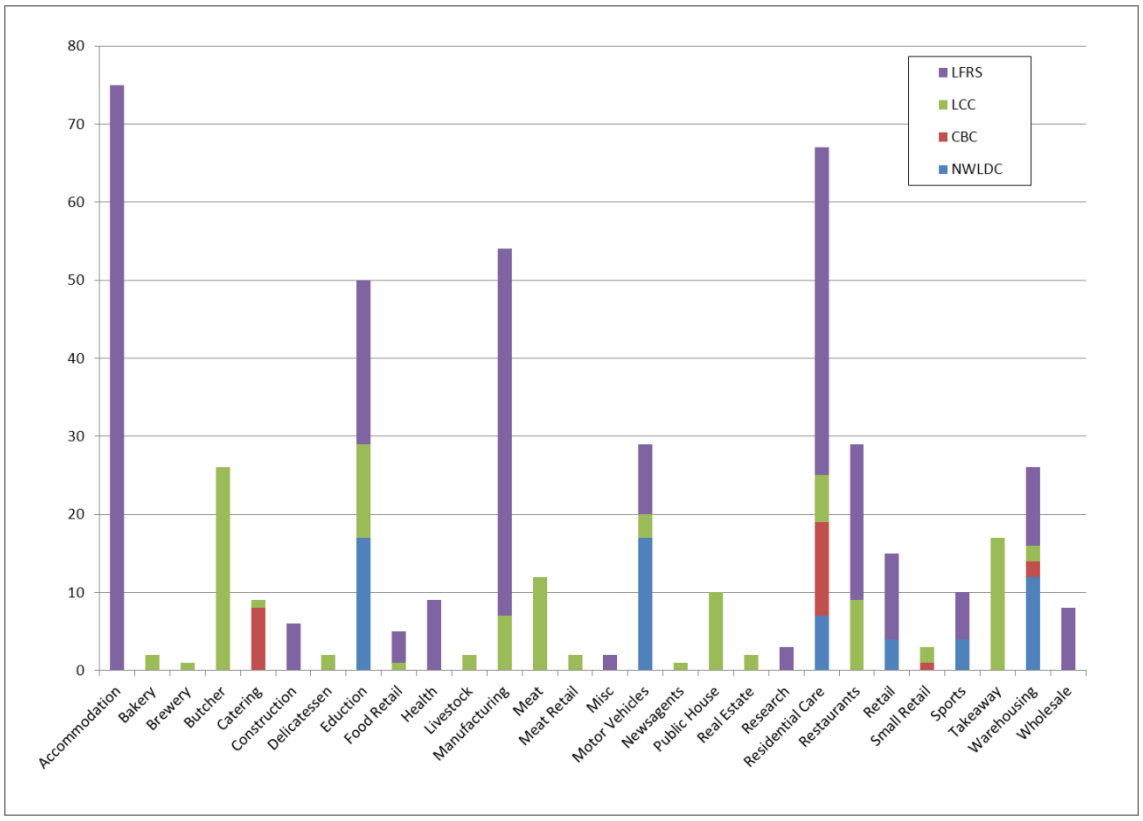

Figure 8: Queries made by stakeholder broken down by business function

Figure 8 shows the business areas that stakeholders were looking at within the trial. The information in Figure 8 shows that in many cases the stakeholders are interested in different types of business. There are a few cases where the stakeholders have an overlapping interest in business types such as education, residential care and warehousing. The areas of overlap shown in Figure 8 could be used to identify additional datasets that would enhance IRIS in the future. In areas such as education and residential care there is additional data available from OFSTED and the care quality commission that could improve intelligence for risk based inspections.

3.3 SURVEY RESULTS

The participants were given around two weeks to complete the end of pilot questionnaire and the results are displayed and analysed below. Table 10 shows a breakdown of the survey participants.

Organisation type	Count	Job role	Count
Local authority	9	Officer	7
Fire service	1	Environmental health officer	1
		Manager	1
		Group submission by project team	1
Total	10		10

Table 10: A count of the organisations and roles that took part in the survey

The information in Table 10 shows that there were ten entries to the end of pilot survey with involvement ranging from officers to managers. It is key to use Table 10 when interpreting the survey results as we can see that across CBC, NWLDC and LCCC there are 9 responses while for LFRS there is one group return. When looking at Table 10 alongside the results from LFRS in Table 8 it can be seen that IRIS was well utilised by LFRS but their survey results are represented by one response which may be seen as an underrepresentation within the survey.

3.3.1 How IRIS was used during the pilot?

Figure 9 shows the responses to a multiple choice question asking how IRIS was used during the pilot.

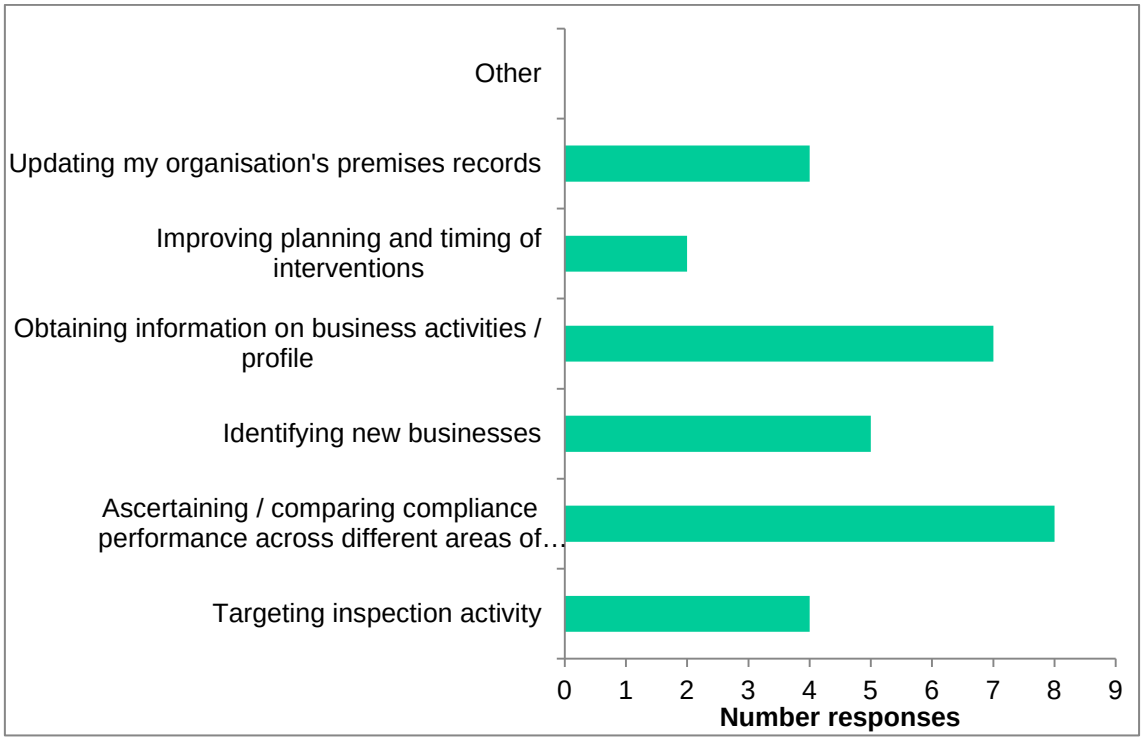

Figure 9: Chart representing responses to the question: For what purposes have you used the IRIS tool?

The data contained in Figure 9 shows that IRIS was used in a number of ways across the stakeholders. The survey highlights that the main purpose for which IRIS was used was to be able to compare and profile businesses. A free text box was supplied in the question “For what purposes have you used the IRIS tool?” and a response was given that highlighted that the time constraints on the project affected the purpose for which IRIS was used. The comments made reflect that planning and timing of interventions could be a purpose of the tool, but the pilot would need to be run in conjunction with the visit planning cycles at the beginning of the year.

3.3.2 What was the perceived usefulness of IRIS?

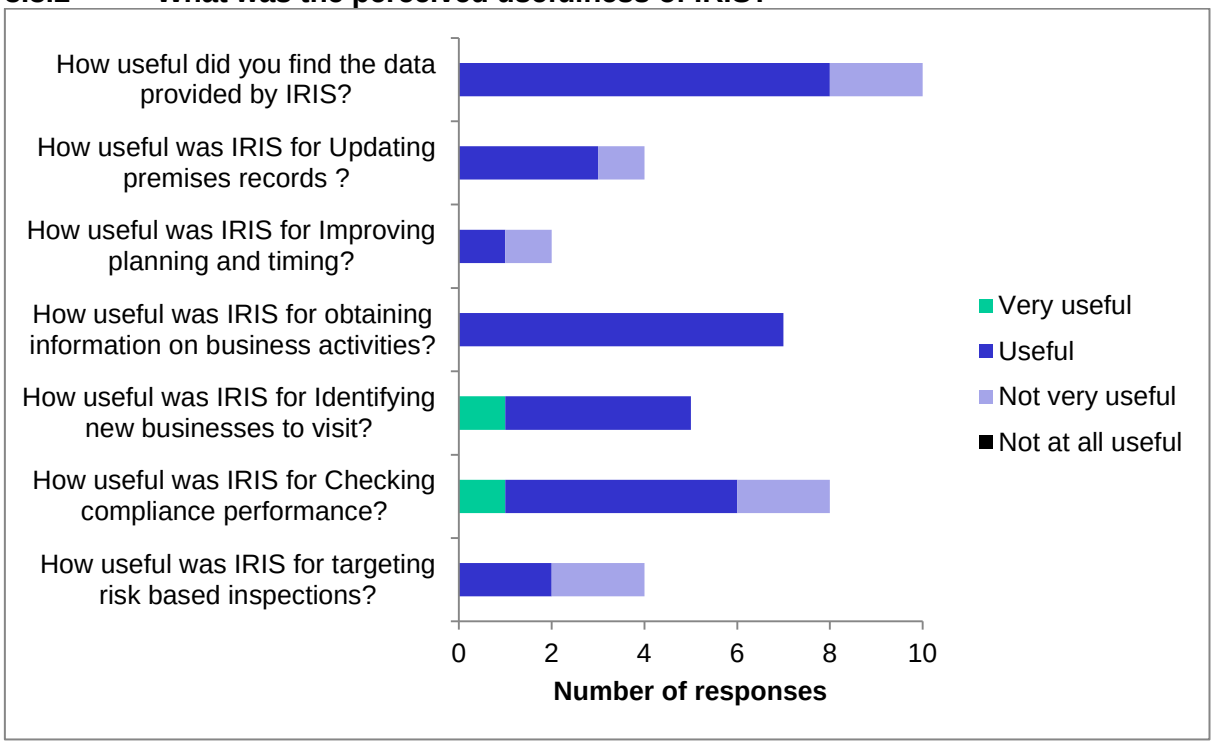

Figure 10: Chart representing perceived usefulness of IRIS after responses shown in Figure 8

The information displayed in Figure 10 shows that respondents felt that when using IRIS for their defined purpose, in most cases the data in IRIS was useful. This category came with a free text box for the respondents to expand on their decisions made about the utility of the data. The information contained in the free text from the respondents confirmed that access to other regulators' data was useful and that the ability to map a common indicator for management was valuable. The consensus as to why the utility of IRIS data was not higher was around the detail, currency and volume of the data. Feedback highlighted that additional data providers would help identify poor performers whilst in some cases more detail on compliance history was needed to make meaningful decisions on possible business compliance issues. Improved currency of data was also highlighted as something that would need to be addressed to make information more usable on a day to day basis rather than a yearly planning tool if data was based on a grouping of static datasets.

3.3.3 What was the most useful data?

The data in IRIS that survey participants found useful can be seen in Figure 11. In the survey the participants were only permitted to submit one answer.

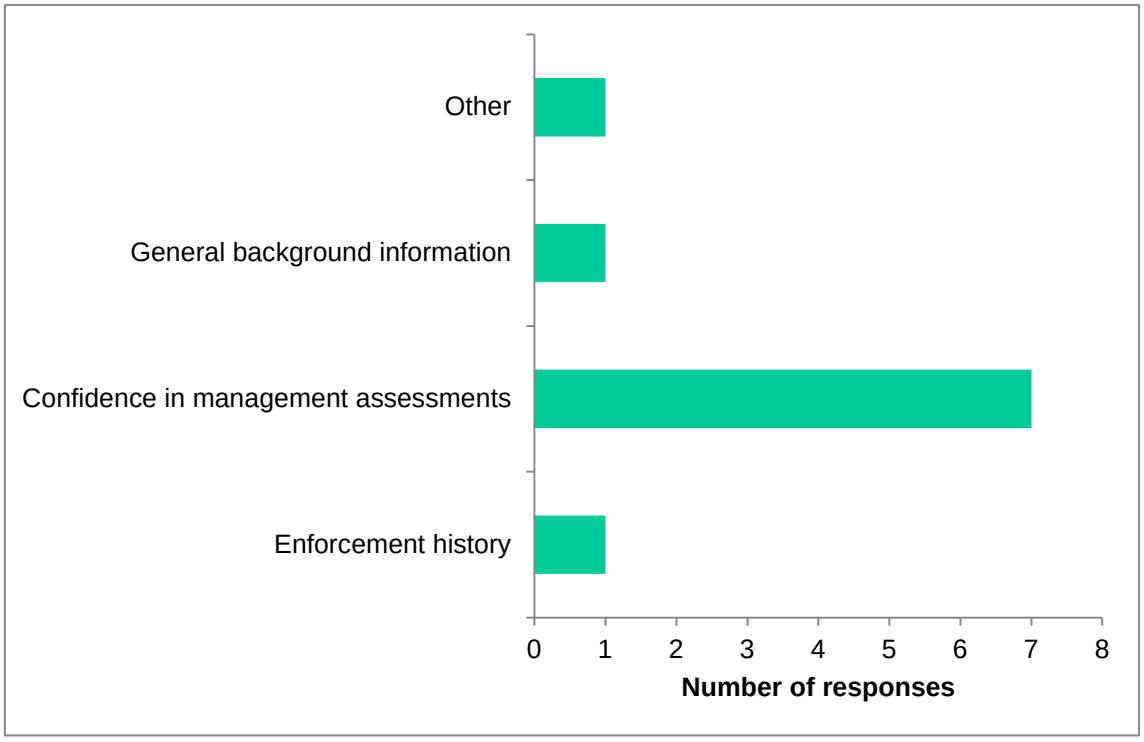

Figure 11: Chart showing what type of data generated by IRIS survey participants found the most useful

It can be seen from the information in Figure 11 that across the survey participants the most useful data within IRIS was the CIM information. The “Other” selection in Figure 11 related to the identification of new businesses which seems to fit into “General Background Information” on companies and their locations. Free text information on the question associated with Figure 11 once again picked up that that CIM scores provided a previously unknown and easy to understand score for a business. There was also mention of the fact that enforcement history could have been more useful with additional detail.

3.3.4 How useful was CIM data?

It was expected that the CIM score would be heavily used within the trial so specific questions were aimed at better understanding its utility. Figure 12 shows that over half the survey participants used the confidence in management scale. The numbers of participants voting for CIM in Figure 11 as the most useful data within IRIS differs from the number of people who used it as shown in Figure 12. It is expected that this due to the job roles of the participants and that survey participants in a managerial role may comment on the benefits without using the data. For those that used the tool the survey prompted the participant to expand on how it was used. The main emerging themes from this were the ability to help identify poor performing organisations and to prioritise inspection.

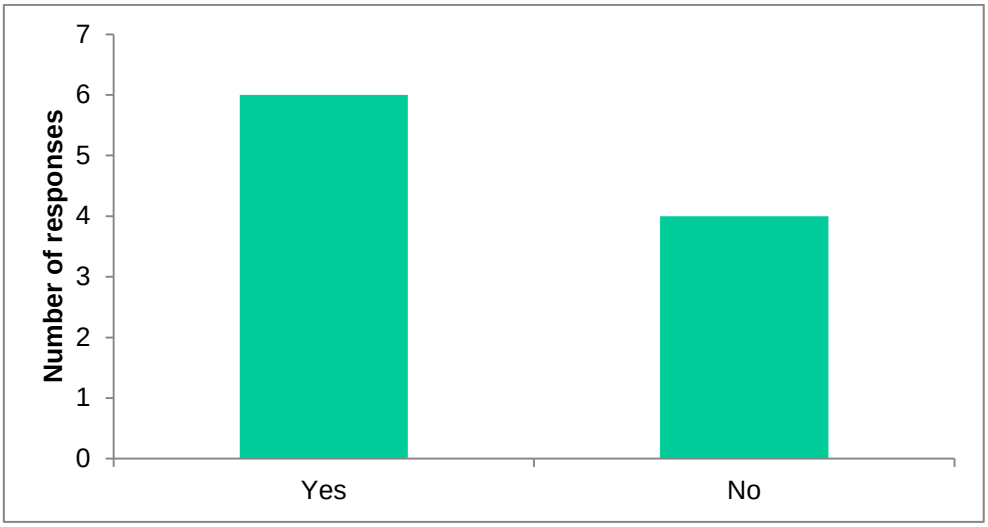

Figure 12: Respondents that used the common scale relating to confidence in management

Figure 13 shows how useful the survey participants using the CIM score found it. The survey participants were also invited to explain their reasoning for how helpful the CIM scores were.

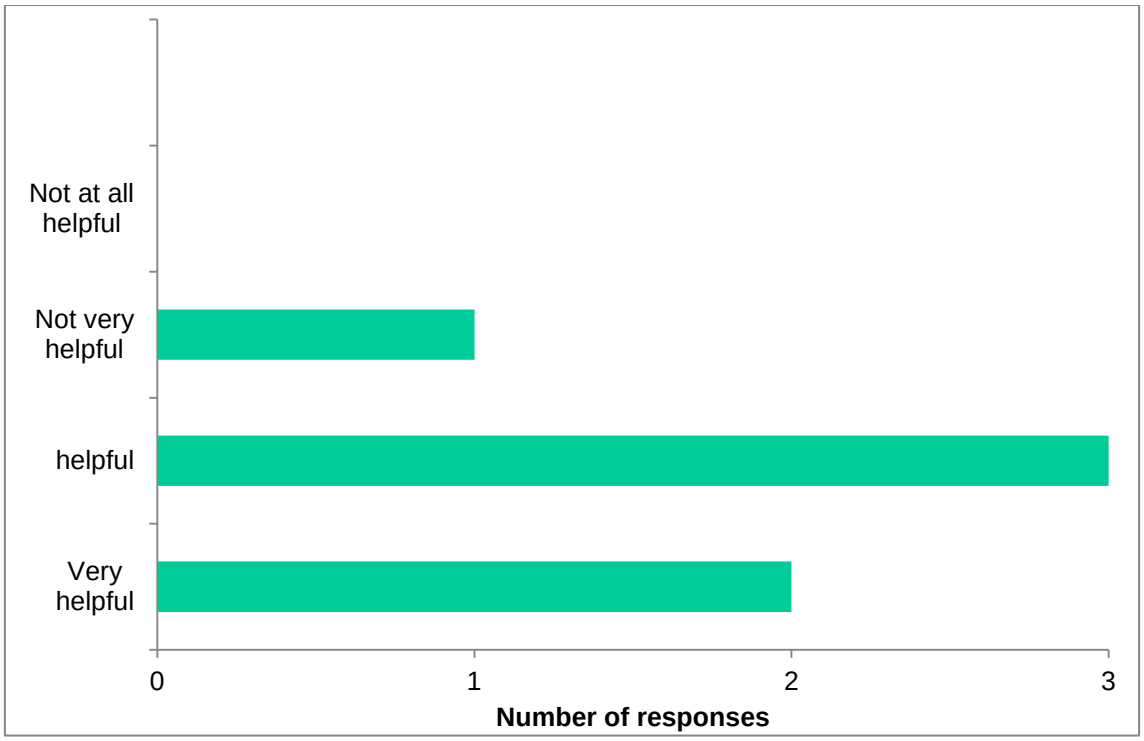

Figure 13: Chart showing the perceived helpfulness of the confidence in management score

It can be seen from the results in Figure 13 that overall for those that used the CIM scores it was a helpful source of information. The explanations on how useful the CIM scores were tended to describe how CIM could help easily build a picture of a company's overall performance without having to access complex individual risk assessments. Some feedback mentioned that outcomes of inspections that were targeted using CIM scores show that those places with poor CIM were in need of regulatory advice. Issues were also raised around the limitation of the data and that although inspectors may know that a site has a poor CIM they did not know why. Survey responses also mentioned that in certain sectors the volume of data relating to CIM was not large enough for it to be useful.

3.3.5 What were the main benefits to using IRIS?

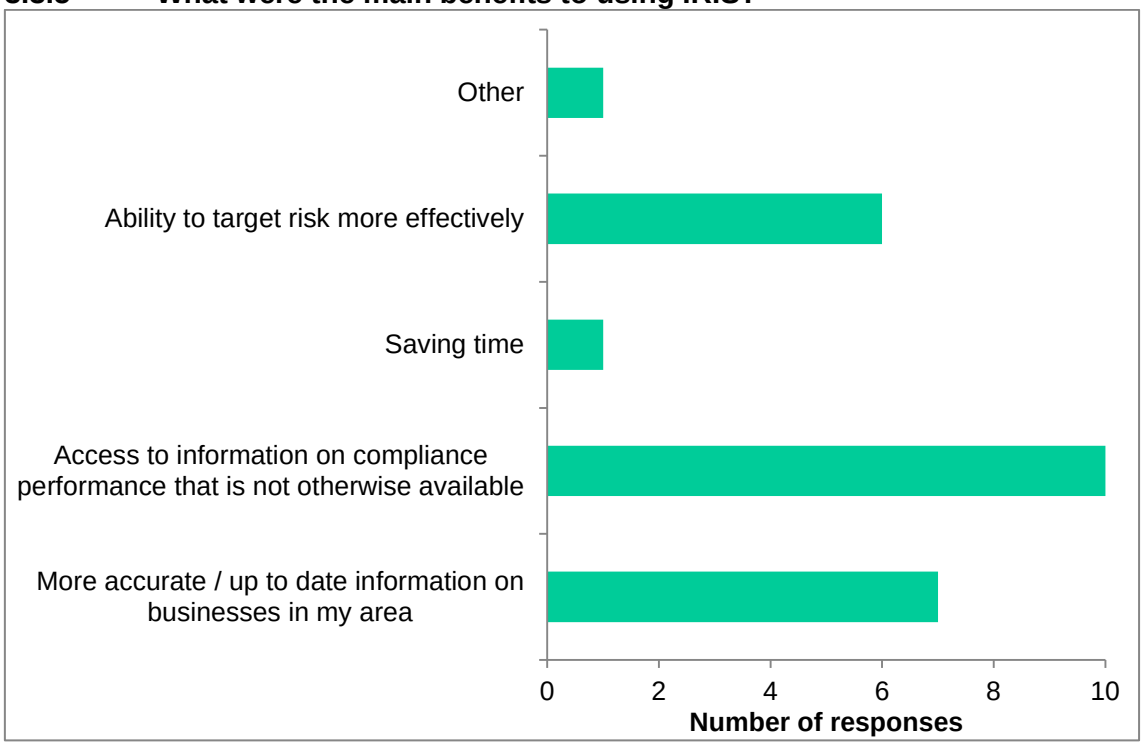

Figure 14: Chart detailing the response to the question "What, if any, were the main benefits of using IRIS?"

The responses shown in Figure 14 outline the main areas where the survey participants found IRIS useful. The general feedback around the time saving element of the IRIS work was that the current pilot had a number of low technology solutions to current IT and security issues. This meant that the IRIS tool and data was held on standalone laptops and network access was disabled and hence using the tool alongside current networked applications was onerous as the laptop had to be booted up alongside the user's current workstation. The "Other" response in Figure 14 relates to IRIS helping regulators and other government bodies to build a more collaborative response to poor performing or fraudulent businesses.

3.3.6 How useful was the IRIS software?

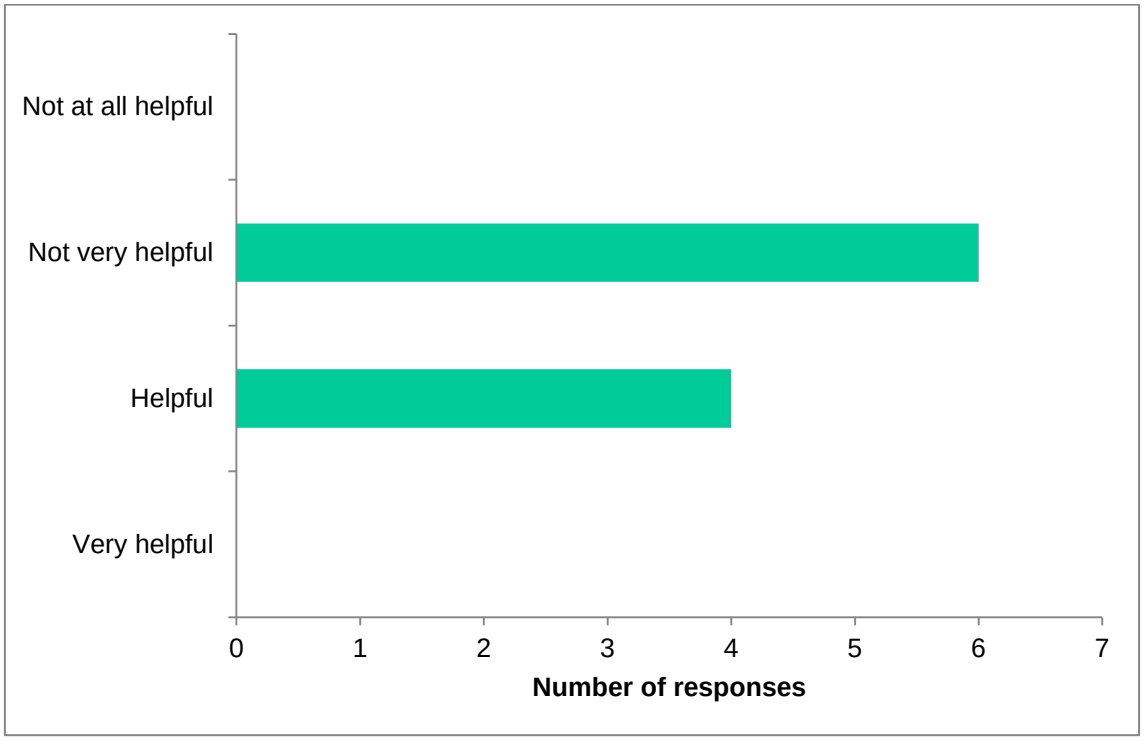

Figure 15: Chart detailing responses to the question "How helpful did you find IRIS's functionality, including usability of the interface and ease of data extraction?"

Figure 15 shows that the tool being used to expose the shared data could have been more user friendly and a number of comments related to ways in which the tool could be improved. Comments in the survey ranged from a generally clearer and more user-friendly interface to a better display of premise data. There was a range of responses on the subject of the IRIS tool's usability. One user documented "I did find IRIS easy to use" which is in contrast to other users that noted "I found it hard to navigate without guidance from a colleague". It was also mentioned that the tool usability improved with changes made to it within the pilot.

There were some areas noted within the survey results to Figure 15 that could be attributed to miscommunication within the pilot. Issues around the provision of user guides and the standalone nature of the laptops provided in the pilot were mentioned. The pilot provided brief user guides and the standalone nature of the tool was a short term fix allowing the pilot to focus on the benefits of data sharing rather than the interoperability of government data systems.

3.3.7 How IRIS could be improved?

The final question in the survey was "How could IRIS be improved, particularly with regard to functionality or the types of data held?" The survey participants had a free text box to answer the question and the answers to this question broadly agreed across three main areas.

- Improved detail. The feedback identified that the users felt that more detailed data would improve IRIS. The feeling was that in a number of cases the information on compliance and performance was in the tool but no additional detail allowing the users to understand the context was included. The detail of data was not restricted to the performance data but also the information about the business. The users felt that employee counts, responsible persons and head office information would improve the benefit of IRIS to the users.

- Additional Datasets. This was a common theme throughout the survey and an area that the participants felt could improve future use of IRIS. The general perception was that more datasets within IRIS would allow for more intelligent decision making. Some of the additional datasets that were mentioned that could be included in IRIS were:
    - Adverse Insurance Reports
    - Health data
    - Primary Authority
    - Simple cautions
    - Complaints

- Improved Functionality. The respondents felt that a more user friendly interface alongside the ability to access IRIS from their office computers would improve the IRIS tool. This improved integration and user interface would allow for a quick and easy way to view company data. The other two themes around the question on IRIS improvements allude to the benefits of sharing additional data on individuals, head offices and possibly holding companies. If this data were to be included in an improved IRIS the tool would also require functionality improvements to easily query, link and extract different entities in the system.

4 CONCLUSIONS

The IRIS project was a success at identifying legal gateways to sharing data and providing a tool to help match and expose shared data to the stakeholders. The ability to set up an overarching data sharing agreement between the regulators is considered a key success to this project as it had to deal with cultural as well as legal barriers and is something that can be built on in future projects.

At the outset of the project it was identified that combining a number of compliance datasets from disparate databases would be problematic. It is therefore an achievement and success of the project that a number of datasets without common identifiers could be brought together to provide compliance information to the stakeholders.

The main aim of the IRIS work was to better understand how useful data sharing would be between a small set of regulators. The general consensus through the survey and results is that given the limited data within the trial the experience of sharing data for regulatory purposes was a beneficial one. The regulatory outcomes resulting from use of shared data in the trial varied between stakeholders. LFRS used the tool the most and were able to prioritise inspections based on data within IRIS and their results show positive value in data sharing. The sites selected by LFRS using IRIS were inspected and a number of regulatory actions were undertaken by some of the visiting officers. LFRS targeted interventions also led to the delivery of seminars to a group of poor performers within Leicestershire.

The flexibility of other areas of regulation and the timing of the trial did limit some of the quantifiable outcomes. Although the quantifiable outcomes were not large for some of the stakeholders, the feedback from the survey on the content of the data and how it could be used in practice show that data sharing would have a beneficial impact on local inspection if properly implemented.

The survey results clearly show that the common approach to CIM was a useful way of interpreting data and a good indicator of performance. The common approach to CIM was regarded as useful as it enabled easy understanding of other regulatory data without the need to know the complexities of numerous risk assessments. Through initial stakeholder engagement the same approach was taken for formal actions issued by regulators, this common scale being intended to help interpret the severity of any regulatory actions. The conclusions that can be drawn from both the common approach to risk assessment and regulatory outcomes is that although it is useful in most cases, the stakeholders felt more information would add a beneficial context to the business performance.

The main feedback and conclusions that can be drawn from the work is that more data and detail is required to make sure that data sharing is as beneficial as possible. A trend in the feedback among local authorities involved in the work was that to make IRIS and data sharing more useful, more government and private sector data is required. This is very pertinent to the local authorities as they have a relatively small number of sites to regulate and need greater volumes of intelligence than could be supplied through the limited stakeholders involved in this stage of IRIS. In contrast the volume of data provided by the local authorities to LCC and LFRS provided a more complete view of the businesses that were operating and their levels of compliance than was previously known. This highlights that within data sharing there will need to

be a balance or understanding of net contributors and net beneficiaries and how this can be managed or changed. In this pilot the net contributors were the local authorities and they felt that the data sharing could be improved in future by the addition of data such as health information, primary authority data and adverse insurance reports.

It is also clear to see that if a data sharing project such as IRIS was to be rolled out nationally there would need to be an improved user experience with better functionality and access to the tool.

5 RECOMMENDATIONS

The work undertaken has shown an appetite to share and use data in more intelligent ways to improve efficiency within government. To scale up and progress the work undertaken within the IRIS pilot some additional work will have to take place to fully understand how IRIS could be used successfully within government. Figure 16 shows a simple representation of the different aspects related to a national scale version of IRIS. Figure 16 intends to communicate that the IRIS project is made up of a number of inter-related aspects. All these aspects will need further consideration if IRIS is to be taken forward to a more mature national system. An example of what Figure 16 aims to communicate is that the value of IRIS is dependent on the data that is available and the access to it and that these two dependencies also have a number of areas that need further investigation. It is recommended that a more comprehensive road map is developed to better understand the dependencies of a project such as IRIS and how it could be scaled up.

It would also makes sense at this stage of the work to take forward some of the current IT barriers associated with local authority data whilst being aware of national issues that could benefit and show the value of a data sharing system such as IRIS. Addressing some of the IT issues associated with IRIS would allow a clearer picture of how high data currency of local datasets could be achieved. The added value aspect of IRIS also requires further work to not only address some national problems with data sharing but also improving knowledge of where regulation and data overlap to ensure beneficial and appropriate data sharing.

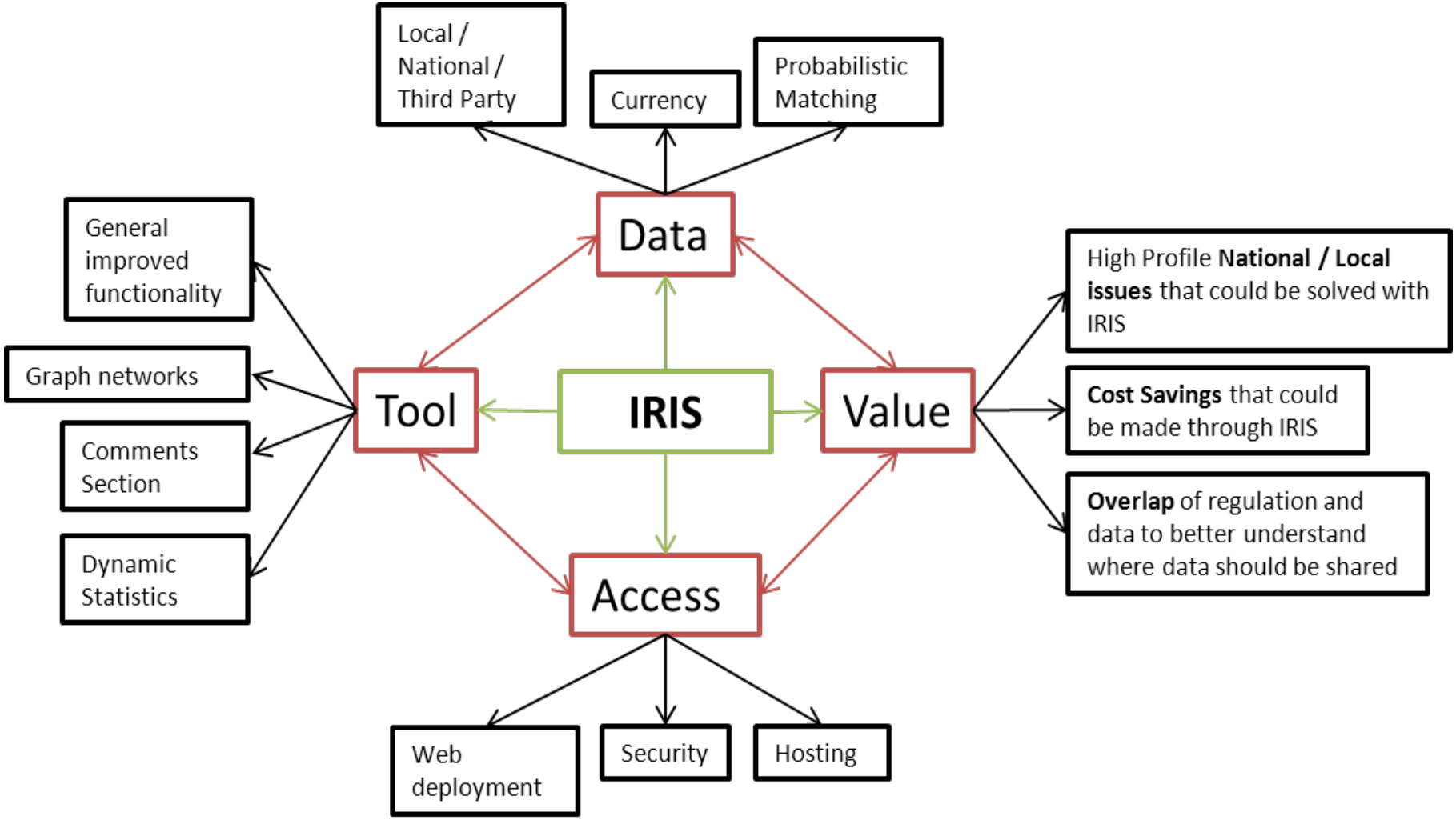

Figure 16: Simple outline of IRIS components

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