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Patrick Kelleher
Central Statistics Office (CSO) Ireland

Session 3: Integrated Statistical Register Systems

**Redevelopment of Irelands Central Business Register – A Centre for Business Statistics
Transformation**

Abstract

The CSOs Statement of Strategy 2016 – 2019 outlines 5 strategy goals which encourage the enabling of delivery and building of capacity centered around the GSBPM model. The strategic goals focus on Process and Technology developments which state the following “embed a standardised, cost effective, efficient business statistical model to deliver consistent, high quality statistics” and to “build an adaptive data and services platform that enhances the collection and production process”. At the core of this strategic programme is the development of a Central Business Register to make it the backbone of business statistics and create new linkages to macroeconomic statistics in the form of National Accounts, Balance of Payments and the CSOs Large Cases Unit (LCU).

The paper aims to describe the CSOs approach to the development of a new BR IT application, issues with previous models of register integration, access and use of administrative sources and the roadmap ahead for development. This project is in its infancy but hopes to eliminate the use and reliance on multiple local registers in existence within the office which has made coherency and common workflow processes difficult to implement.

The current Business Register has been in existence since the 1990s and functions perfectly as a system that makes extensive use of the administrative sources that are available as well as a birthing source for administrative units. However, the application is not adaptable to statistical unit structures outside of the enterprise and local unit, cannot be readily amended to deal with structural changes in the administrative data that is used, cannot be linked to the satellite registers that exist locally, provides no detail on respondent burden or enterprise groups and provides no linkages to statistics or units used at a macroeconomic level.

A business statistics transformation project has been ongoing for the last two years in which the CSO has examined workflow processes, administrative sources, sampling, validation edits, statistical outputs and staff resources. The BR development is the final phase of this project, which will assist the BR in playing a central role in statistical production and analysis. The objective of the new BR IT application is to provide a statistical unit basis for all survey area requirements, encourage a one system approach to use of administrative data and the updating of statistical unit characteristics and

overall, provide an integrated system that satisfies all business and technical requirements and eliminates current weaknesses in the performance of the BR as a backbone for business statistics.

Business Register User Needs Analysis and System Specification

The Business Register User Needs Analysis and System Specification project was undertaken in the latter half of 2017 with the stated problem to be addressed (as per the Project Concept) as follows;

“While the Office has a “Central Business Register”, local registers at section level are still in use throughout the Office. The existences of these local registers contribute to a lack of data coherency by having different views of enterprises within the office. Multiple registers also can result in different primary keys for the same enterprise (EN identity numbers (Irish CBR identifiers) in use for the same enterprises), which make attempts to transform enterprise statistics data collection via a data collection portal solution impossible.

In addition to the issue of local registers, there is currently a lack of full understanding of user needs by CBR section, and a lack of clarity concerning future CBR functionality.”

As a part of the project process the following areas were examined (in project “scope”) to address issues that may be in place with the current BR;

- All surveys areas which have an enterprise local register
- Examination of future BR system needs under FRIBS regulation
- Examination of current user needs regarding the CBR
- Examination of BR and survey area non-coherent set of enterprise structures
- Respondent data portal and CBR linkages as a follow on from a coherent set of enterprise structures

To keep the project focused on the stated targets, IT programming and development of a new IT system were not in “scope” as a full assessment of needs was first required as well as the actual elimination of any local registers.

Table 1 outlines the main functions of a reliable Business Register (as indicated by the Business Register team), performance indicators that measure current BR performance and areas in which IT assistance is required to fulfil these obligations. These obligations will be further discussed throughout this document.

Table 1: Main Functions of a BR and Current BR Status:

Main Functions of a BR	BR Performance Indicators, How Good Are We?	IT Assistance	Business Process Changes	Possible IT Change Outcomes
Maintain the population of economically active enterprises for	•Frame over/under coverage?	✓	✓	Frames provided as per survey needs with the same enterprise views across surveys
-Surveys	•Accuracy – NACE, legal form, geo, etc?	✗	✓	N/A
-Business demography statistics	•Statistical Units – the “Unit problem”?	✓	✓	Statistical Unit flow from Legal Unit birth at a micro level to divisional output at a macro level (LCU, BOP)
	•Timeliness of the register updates	✓	✓	Sampling criteria based on survey’s needs. Employment, Turnover, NACE Codes from timely sources
	•Relevance – could our BR be more relevant?	✓	✓	Statistical Unit Models, Sampling, Revenue and Survey Updates
Facilitate use of admin data for statistics production	Big leap forwards the last 10 years or so – is there more to do?	✗	✓	N/A
Globalisation statistics / international profiling	Information on MNEs and their group structures?	✓	✓	As per "Statistical Units"
Provide that one, consistent, coherent view of an enterprise – the “backbone” role	•Do we have different views of some enterprises?	✓	✓	Elimination of "dummy" enterprises. One register, one view of an entire enterprise and its related units.
	•How good is our chain management of enterprises? Many CSO (& non-CSO) sources: how ‘joined up’ is our picture of an enterprise?	✓	✓	Legal Unit to Enterprise to Group Structures to Reporting Units Views. One stop source for enterprise updates.
Survey production – backbone role for centralised, joined up sampling, survey management, burden, data collection	•Linkages to DMS and other systems?	✓	✗	Linkages from Bus Reg to the DMS to a possible Respondent Portal. Editing can be done in the Bus Reg rather than multiple local registers and in turn the DMS.
	•Local registers?	✓	✓	Elimination of local registers. All updates conducted on the one register with survey specific tabs and variables available for survey needs.
	•Data Portal needs?	✓	✓	Respondent Burden, Coherent set of Enterprise Views.

This report attempts to address issues with the current BR and possibly provide a direction for the BR by addressing Unit Structures, Survey Area requirements for a new BR, Sampling, GDPR and a Respondent Data Portal. Recommendations and conclusions will also be provided.

Statistical Unit Structure Requirements

Under the Business Register (BR) Regulations, the BR is required to maintain certain types of units in the national SBRs which include local units, legal units, enterprise and enterprise groups. These units are to form the backbone of the BR and provide the basis by which administrative units (legal units) can be translated from an administrative environment (birth process from Revenue data) into a statistical environment (enterprise and enterprise groups and beyond) in which we operate. Each unit required is also required to have a separate identifier to distinguish each unit. For example, the current BR has an identifier for an enterprise which is randomly generated with an “EN” prefix, i.e. ENxxxxxxx. This can be distinguished from a local unit which has a “GE” prefix, i.e. GExxxxxx.

The current BR does not fully provide the required statistical units model as outlined by the BR Regulations and in turn by the BR Recommendations Manual¹ or the UNECE Guidelines on Statistical Business Registers². Certain aspects of the units do meet the required statistical unit’s models and will need certain improvements to enhance the conceptual models required. Each statistical unit is outlined below with reference given to how the current BR meets the requirements for each unit and where improvements can be made.

1) Local Units:

The local unit is an enterprise or part thereof (e. g. a workshop, factory, warehouse, office, mine or depot) situated in a geographically identified place. At or from this place economic activity is carried out for which - save for certain exceptions - one or more persons work (even if only part-time) for one and the same enterprise. The current BR does implement this local unit definition with information sourced from Revenue, BR manual investigation processes and updates received from survey areas. The BR also has an individual identifier for each local unit (GExxxxxx) with all local units linked to the enterprise.

2) Legal Units:

Legal Units are recognised by law or society, independently of the persons or institutions that own them. The characteristics of a legal unit include, owning their own assets, ability to incur liabilities and the ability to enter into transactions with other entities. Legal units should be the starting point for the definition of an enterprise. In other words, the legal units could correspond to an administrative unit received from Revenue in the form of a single Revenue Customer number with linked Revenue numbers (i.e. VAT, PREM, CT or IT). In the majority of cases the legal unit will equal an enterprise (as they will not be a large enough unit to expand beyond a single legal unit), however in some cases (usually large enterprises), although legal units may be independent in a legal sense, they may not have independent decision-making autonomy which would require legal units to be linked to form an enterprise.

The current BR does not have an identifier to separate Legal Units from enterprises. The birthing process for administrative data means once a new Revenue Customer number (Legal identifier for

¹ BR Recommendations Manual: <http://ec.europa.eu/eurostat/ramon/statmanuals/files/KS-32-10-216-EN-C-EN.pdf>

² UNECE Guidelines on Statistical Business Registers: https://www.unece.org/fileadmin/DAM/stats/publications/2015/ECE_CES_39_WEB.pdf

Irish legal units) is received this is birthed as an enterprise and not as a legal unit. In most of cases as mentioned, the legal unit will always equal the enterprise, but in larger organisations where there is no autonomy in decision making, legal units should be grouped together to form an enterprise. As a result of no current separate identifiers this makes it impossible for BR to do this. As a result, the Business Register struggles to cope with items such as Eurostat's yearly returns via a Quality Report which separates Legal Units from Enterprises by NACE Rev 2. BR is currently unable to provide separate tables for this.

Therefore, to meet to statistical unit's model as specified by the Regulation, the BR should be birthing admin units as legal units and not as an enterprise with a new identifier to be established for a legal unit, i.e. LUxxxxxxx.

3) Enterprise

The enterprise is the smallest combination of legal units that is an organizational unit producing goods or services, which benefits from a certain degree of autonomy in decision-making, especially for the allocation of its current resources. An enterprise carries out one or more activities at one or more locations. An enterprise may be a sole legal unit.

As described previously, the current BR births new Revenue customer numbers as an enterprise on the BR with an "EN" identifier. This enterprise initially equates to a legal unit and will not change unless BR staff makes amendments to it based on instructions from survey areas or enterprise checks conducted within the section. These changes are usually minimal unless instructed from LCU (Large Cases Unit, who instruct on all LCU cases on the BR) and usually result in the enterprises equating to legal units on the BR (aside from LCU cases and exception lists maintained by BR). This is the case because BR does not currently conduct large scale profiling of enterprises to investigate instances of autonomy in decision making which would separate legal units from an enterprise. As legal units are also not distinguished from an enterprise on the BR, the BR application does not have the facility to maintain any required separation between the two.

To fully implement the enterprise unit model (which is probably required for a small amount of enterprises that are outside of the scope of LCU but have a significant impact on SBS & STS data) two things need to be developed.

a) A Profiling unit established. This unit called the Medium Cases Units (MCU) is currently in development and will be in place by Q3 2018. The MCU will establish and maintain the differences between legal units and enterprises that may exist in larger enterprises that impact SBS & STS data. It will also look at and maintain enterprise group structures in relation to the 200 or so enterprises that have a significant impact on SBS & STS data.

b) A BR application needs to be in place that distinguishes between legal units and enterprises (as per the BR Regulation). In most cases as the legal unit will equate to the enterprise, the BR should birth Revenue units as a legal unit which in turn automatically become an enterprise. This is an IT issue as BR birth based on admin files but need a register that is capable of a birthing process that distinguishes between legal units and enterprises. Where required, these enterprises could then be amended by the MCU to create enterprises comprised of various legal units that have been consolidated on the basis of a common decision-making linkage.

4) Enterprise Group

An enterprise group is an association of enterprises bound together by legal and/or financial links. A group of enterprises can have more than one decision-making center, especially for policy on production, sales and profits. It may centralize certain aspects of financial management and taxation. It constitutes an economic entity which is empowered to make choices, particularly concerning the units which it comprises.

To distinguish an enterprise from an enterprise group, the BR Recommendations Manual states that *“Whereas the enterprise is an actor in the economy at the level of the production process, with relative autonomy with respect to the allocation and use of its current resources, the enterprise group is an actor at a more strategic level taking strategic decisions on behalf of its constituent enterprises (e.g. on product policies, on major expansions, etc.).”*

The current BR does maintain a tree structure view of enterprise groups but does not maintain separate identifiers for these groups. All enterprises within a group system are linked via the structure with percentage ownership indicators. This current tree structure is very limited in its views (the larger the structure the more difficult it is to see the full enterprise group view). This can be seen in Figures 1 & 2 below. In Figure 1 a simple group structure is available where all child/parent relationships are viewable. However, in Figure 2 the group structure is more complex and contains many child/parent relationships. This is not all viewable in one screen.

Figure 1: Business Register Simple Group Structure

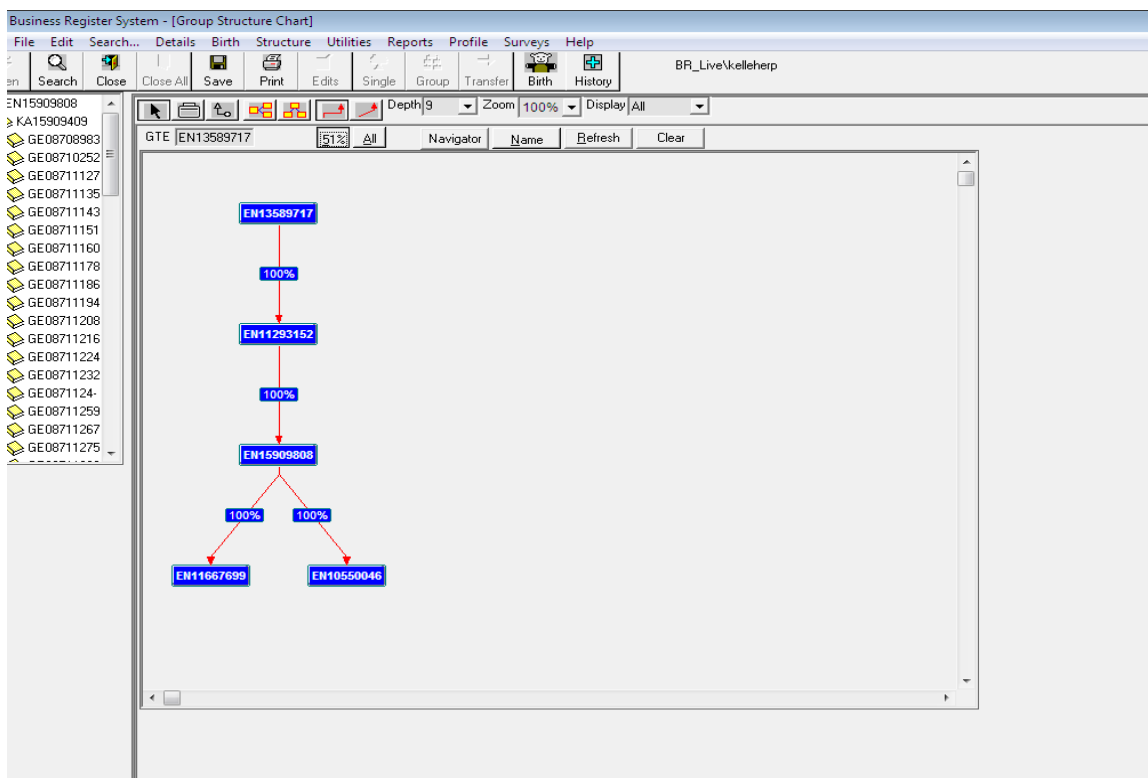
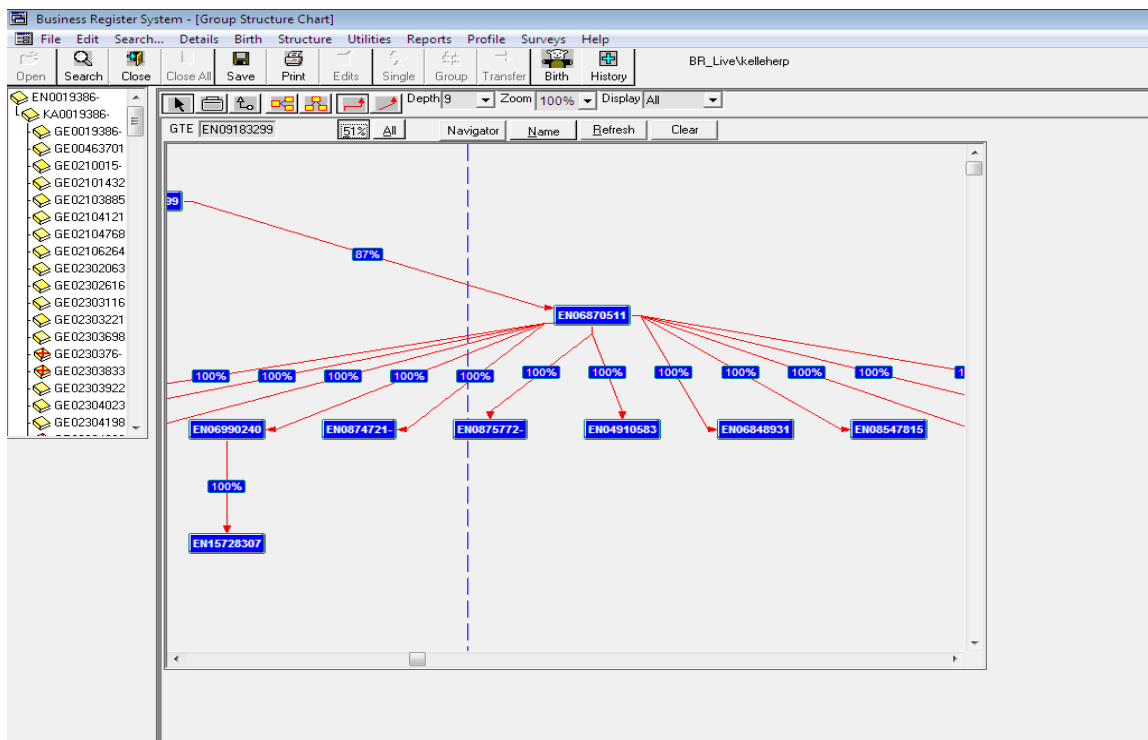


Figure 2: Business Register Complex Group Structure



In addition, the large-scale enterprise groups are created solely based on admin data and are rarely amended unless a section edit comes up with a change or BR are instructed by LCU to create amendments. The implementation of the enterprise groups therefore would depend on amendments along the lines of those for the enterprise, i.e. establishment of the MCU to maintain the linkages and the creation of a BR application that contains separate identifiers and a more user-friendly view of such groups.

The establishment of the 4 units outlined as per the BR Regulation will also assist in the work of European Profiling and the Euro Groups Register (EGR) as the national parts of enterprise groups will be readily identifiable for the creation of linkages to truncated or national part of multinational enterprises that are required to conduct elements of the European Profiling work or to match EGR identifiers back to a BR IT application. European Profiling requires us to profile large and complex multi-national enterprises and create the Irish BR view of an Irish enterprise or the Irish based part of a foreign multinational enterprise. To do this, we need IT development of the 4 units mentioned.

In addition to the required statistical units, a BR application (which the current system does not) should also be adaptable to be able to hold additional units such as the kind of activity unit (KAU), reporting units and observation units. Reporting and observation units will be described in the next section “Survey Area Requirements for a new BR IT application” as they are essential to the work of some survey areas and their ability to link to the BR. The KAU is outlined in the upcoming FRIBS Basic and Implementing Acts as a key unit required for STS purposes. The KAU is described as follows;

Kind of Activity Unit (KAU):

The kind of activity unit (KAU) groups all the parts of an enterprise contributing to the performance of an activity at class level (four digits) and corresponds to one or more operational subdivisions of the enterprise. The enterprise's information system must be capable of indicating or calculating for each KAU at least the value of production, intermediate consumption, manpower costs, the operating surplus and employment and gross fixed capital formation. Each enterprise must consist of one or more KAUs.

The implementation of the KAU would be required for very few enterprises that have an impact on STS data and that also have the information systems available to actually be able to separate an enterprise into a KAU.

Survey Area Requirements for a new BR IT Application

Currently various registers exist within the office because the current BR does not meet survey area needs which means the BR is not a register upon which they can fully rely. As well as the Business Register, there exists various registers within the DMS (Data Management System) and outside that make the coherent view of enterprises and statistical output very difficult as there is not a common view in many areas on what an enterprise is as well as a lack in common linkage between the statistical units used in some survey areas compared to what the BR views as its statistical units.

The survey area requirements for a new BR IT Application and a description of how the current BR does not meet the daily requirements of some survey areas can be split into three distinct groups;

(1) Structural Business Statistics (SBS)

Since the Coherency Project was conducted in 2013 – 2015 (Project that look at SBS, STS, and BR to align processes, outputs and use of administrative data), SBS are consistent in data outputs with Business Demography. As a result, SBS and BR are using the same set of enterprises as a coherent database on which to base their samples. If BR states that an enterprise is active, then SBS take that enterprise as indicated from BR and use it as the basis for all output, i.e. SBS persons engaged and number of enterprises will always equal Business Demography.

If SBS and BR operate under a coherent set of enterprises, then why does the BR application not meet the needs of SBS? For SBS, the answer lies with survey specific variables that SBS require that the current BR is unable to provide. This problem exists throughout SBS and can be seen with CIS, BEU, ICT, CIP, Prodcom, ASI, BERD, IFATS etc.

Prime examples of survey specific variables are contact names and survey specific addresses which may differ between SBS and BR. Every year BR release sampling frames on which survey areas pick their samples from. These frames contain contact names and addresses which are specific to the BR (as the BR can only hold one contact name and the registered addresses associated with an enterprise) and which may differ from SBS in that survey areas require contact names and addresses that are associated with respondents to a particular survey, i.e. BR may have a name and address birthed based on Revenue registration files while SBS require a name and address that deals with their survey return

such as the accountant of an enterprise that may not be located onsite. Once BR release frames, SBS survey areas must create their own frame, which is then manipulated and loaded to a separate DMS register (in general SBS survey areas have a separate register each in the DMS). This involves weeks of work at the beginning of each year where addresses are checked by sections and amended on the DMS to suit SBS surveys (which can result in addresses being updated in the DMS and not in the BR).

How can this gap between survey areas specific variables needs and the provision of data from BR be overcome? The current BR IT application is not capable of supplying the information required as multiple address details are not possible on the system and the addition of any variables to the BR is a drawn-out process where everything on the application must be shifted to incorporate a new field. A common register between SBS & BR that has the capability of holding multiple address fields (a contact name and address per survey) needs to be in place if both areas are to operate as one and eliminate some of the waste processes in place such as the updating of the DMS on a yearly basis. A new BR IT system that opens with a BR view of an enterprise and which then can be changed to a survey specific view of an enterprise which contains that surveys extra variables or amended contact details could be put in place to force survey areas to work off the one register. This system could be operated on a rolling basis, so once changes are made they are stored and continuous rather than a new register update for survey areas having to be created year on year (i.e. if SBS amend a survey specific address, that is then rolled over to the following year without that survey area having to take a cut of the BR sample frame address and amend as required on a yearly basis). A quick basic illustration of what is required is as follows;

Figure 3: Screen 1: BR view of an enterprise is opened on the application via the input of an enterprise number:



Figure 4: Screen 2: SBS Survey area view of an enterprise is accessed within the BR view of an enterprise by clicking a drop-down menu that displays all CSO surveys, relevant survey is clicked and displays the same enterprise but this time with survey specific details.



Each required variable for survey areas could be displayed via this screen and need not appear on the original BR view of an enterprise. Both screens could visually be the same, with the difference being the various fields populated with different data as required.

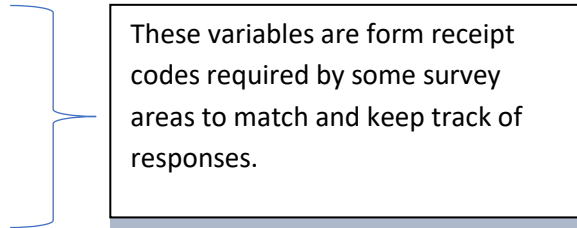
Aside from survey specific contact details, examples of extra variables required by SBS survey areas include;

- No survey flag per survey area rather than a no survey flag applied across the entire BR

- Forms issued

- Allocation ID

- Form Type



- EHECS Employment: Employment figure from EHECS may be more up to date for STS requirements rather than the P35 (Revenue employment returns) employment figure currently given on the BR.

(2) Short Term Statistics (STS)

STS has the same survey specific variable issues as SBS as discussed in Section 1 above. Each survey requires specific contact names and addresses as per SBS, issues as outlined above, that could be rectified via a BR IT application that caters for such requirements. In addition to this however, STS also requires more timely data to be held on the register. As with SBS, STS also use the BR Sampling frame, however these frames often contain information that could be 18 months old by the time it is provided (due to the constraints in the timelines of Revenue data receipting in ADC). As a result, variables such as Turnover or Employment need to be sourced and updated onto a common register more often than what is currently happening via the BR and its Revenue receipting model. If STS had a register that could store sources of information from survey areas that provided this information (e.g. EHECS Employment) they could use these sources as more accurate up to date information than the current BR is able to provide.

Another area that parts of STS have different register requirements to SBS is in relation to a common view of an enterprise. EHECS for example must set up many dummy enterprises to cope with payroll information for various companies. This could occur in an instance where a BR enterprise returns two payroll returns to EHECS (i.e. one for management and one for staff). In these cases, EHECS sets up a dummy enterprise linked to the BR enterprise so that it has two enterprises in existence to deal with the two sources of information. This leads to a gap between the STS register (for EHECS) and the BR. This issue could be dealt with the implementation of Reporting and Observational Units which will be dealt with in the next section.

(3) Trade, National Accounts, BOP and LCU.

The survey specific variables requirements as with SBS & STS also stand for National Accounts, Trade, Balance of Payments (BOP) and LCU. Identifiers such as BOP, LCU identifiers would need to be part of a BR IT application for it to act as a basis for these areas. Some issues that these areas have with Business Register however go beyond a BR IT application, e.g. Trade issue with the use of VAT numbers on the BR, Nationality of Ownership files for Trade or National Accounts and the implementation and provision of Institutional Sector files by Business Register. These are issues that are currently being worked on by Business Register closely with survey areas concerned and do not come under the scope of a BR IT project.

The main issue with these survey areas and BR come down to what BR view statistical units as and what LCU etc view statistical units as. As outlined in the Unit Structure section of this document, BR is mainly concerned with local units, legal units, enterprises and enterprise groups. This differs slightly in some cases to what BOP, LCU or National Accounts may require as the unit that they are observing may be a collection of what BR sees as enterprises or legal units or in fact may be a division of an enterprise that BR is observing. In these cases a BOP or LCU number may refer to multiple identifiers on the BR or a split in an identifier on the BR and may make the coherence between these areas and the BR very difficult to ascertain. The following example is a simple case which tries to illustrate the difference between the two.

Figure 5: BR view of 2 enterprises: 2 legal units attached to enterprise 1 with 1 legal unit associated with enterprise 2. Both enterprises could be part of one enterprise group.

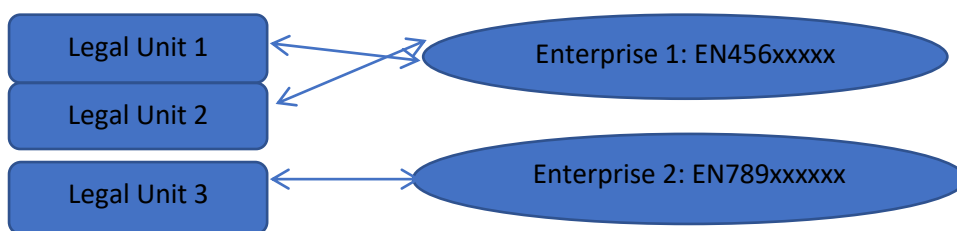
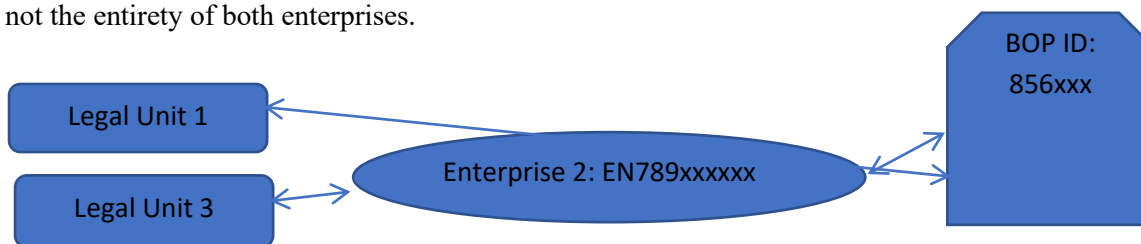


Figure 6: BOP view of a statistical unit: BOP reference number refers to one legal unit from enterprise 1 as well as the whole of Enterprise 2. BOP is only concerned with the units involved and not the entirety of both enterprises.



This miss-match between observed units leads to a BR that does not meet the needs of these survey areas as well as the creation of dummy enterprises similar to what is experienced in EHECS (dummy enterprises created to allow LCU etc. to have an observed unit on the BR). This issue could be resolved by implementing statistical units on the BR that are outside the regulated requirements of local Units, legal Units, enterprises and enterprise groups. Two such units which could be developed are Observation Units and Reporting Units.

Observation Units:

As per the UNECE Guidelines on Statistical Business Registers an Observation Unit is a unit, usually a statistical unit, about which data are obtained during a survey. If a target statistical unit is not directly observable, the corresponding observation unit may be a legal unit or administrative unit linked to the statistical unit. Mostly observation units are legal or administrative units, but they may also be observational units.

Reporting Units:

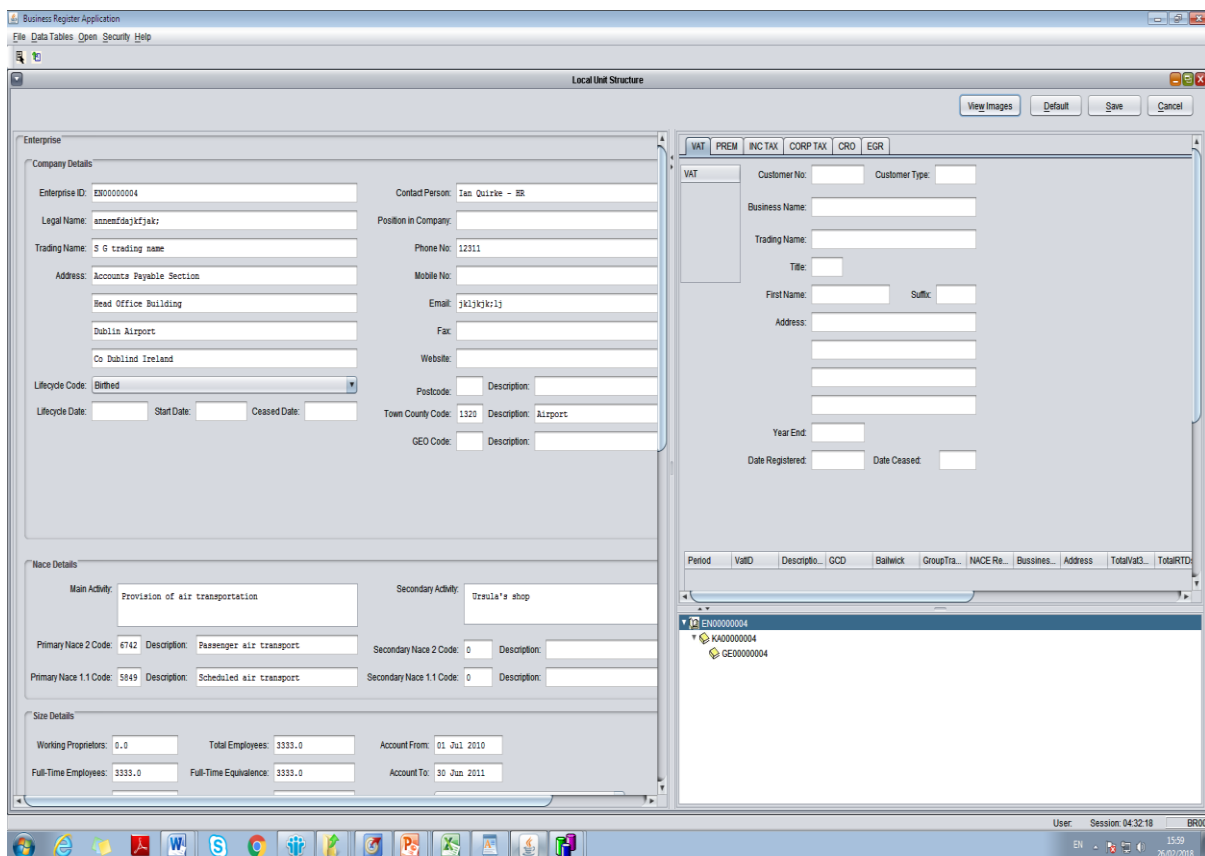
As per the UNECE Guidelines on Statistical Business Registers a Reporting Unit is a unit from which data about an observation unit are obtained during a survey

Either of these units could be maintained to construct a unit that is linked directly to either enterprises or part there in of existing enterprises. These units would have to be managed on a regular basis by the survey areas responsible or a Profiling Unit, but would provide a means in which survey areas could construct units that meet the criteria for what they deem to be observed units which have clear and direct linkages to regulated statistical units on the BR. From Figure 6, the observed or reporting unit in question would be the BOP ID: 856xxx.

Past BR IT Developments

In 2012/2013 IT conducted some initial specifications for a new BR IT application in conjunction with Business Register. Although this project did not undertake a fully user needs analysis, it did deal with some major requirements from a BR perspective. Issues dealt with issues such as the loading of admin files, BR variable requirements and a more user-friendly screen view approach of unit data. This work is work that can be used again in future IT developments and was agreed upon by BR at the time. Examples of the work done at the time and which met with user needs approval within BR are explained in Figure 7 and Figure 8;

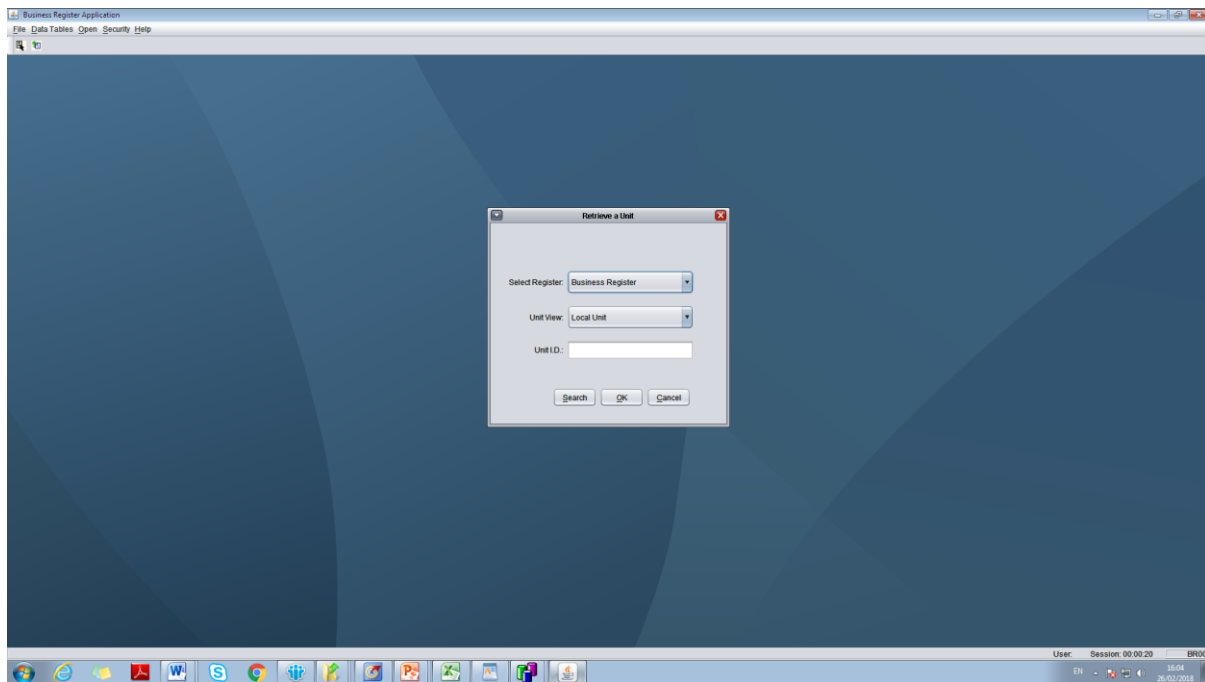
Figure 7: Screen View:



The main BR screen was split into 3 sections. On the left-hand side there was the unit view, top right gave the admin data view and bottom left gave the enterprise link to all its child/parent enterprises. Each section was adjustable and could be maximised or minimised based on what the user was

looking at. The full screen view was very user friendly and contained all variables in one screen as opposed to clicking into various tabs on the current BR.

Figure 8: Opening a Unit:



The opening screen allowed the user to open whatever type of unit they were looking at. A drop-down menu contain local unit, legal unit etc. which help to distinguish the various statistical units as well as allow the user to view the data that they required. This is what is required for a new BR IT application if it is to provide the statistical unit function that BR requires.

Sampling

One of the main issues SBS & STS have with the BR is in relation to the quality of sampling it provides, and the variables provided in the sampling process (i.e. address fields). Each year the BR provides (in SAS format and not a direct output from the BR application) a sampling frame in November/ December (based on P35 returns for the preceding calendar year) and a final frame the following March/April (based on CT/IT returns for the same year as the P35 data in the sampling frame). These frames indicate activity for all enterprises in relation to the year of the Revenue data included in the frames. Survey areas then proceed to take a cut of these frames and update their own registers in the DMS or otherwise.

One issue with these frames is that they do not contain survey specific variables such as contact names and addresses. When these cuts are taken, survey areas then must upload to the DMS which can result in previous address updates being overwritten or previous updates not being carried across to the new register (for those survey areas that create a new register year on year and do not roll over).

This issue can be resolved by having one central system that all survey users update and can pull from. If it was in place, survey areas would be pulling from the same identifiers, the same unit structures and getting whatever survey specific variables that they have outlined to be required. Also,

any changes they make will be stored within the common IT application and rolled over on a continuous basis. These changes in turn will feedback to the BR and not be contained in the DMS separate to the BR. The issue of address fields with newly birthed BR enterprises will always be an issue requiring editing as these addresses will be received from Revenue and will not be tested or amended until surveys post out to the various newly birthed enterprises.

The timing of the sampling frames is also an issue that a new BR IT application could assist with. The current process of a once a year sample, in general suits SBS as they are yearly surveys. However, in the case of most STS surveys, they are quarterly or monthly surveys. The question needs to be asked why STS are taking their samples from a frame that could contain activity and Revenue data that is over 15 months out of date by the time they fully utilise the sampling frames. Would a frame taken monthly or quarterly not be a more appropriate model? To facilitate this, a system should be in place with appropriate time stamps, survey specific variables and a coherent and useable set of unit structures.

Sampling could be facilitated to a large extent by common unit structures and the ability for survey areas to have responsibility for updates in relation to their own BR requirements. The current BR does not have these facilities, which means a sample cannot be directly pulled from it and results in weeks of amendment work by survey areas to create a final usable sample for their area. All survey areas should be able to clearly state their sample requirements (timeliness, variables etc.) and have a BR application that is flexible enough to have these requirements coded and embedded in its structure which enables surveys to pull samples from the BR (whether it be survey areas themselves or a Methodology unit) when agreed upon. A BR application that has all the sample variables required by a survey area, that has data uploaded from relevant sources at a relevant time and works on a consistent unit structure basis that can be linked to an enterprise has all the key components at hand to act as a system where a sample can be pulled directly from it.

General Data Protection Regulation (GDPR)

GDPR³ is a key component of any database or process that deals with sensitive personal information. With its implementation in May 2018 and the sensitive nature of some of the data contained within a BR application it is worth noting during this report.

In relation to the BR, GDPR is mainly concerned with personal identifiable data, i.e. IT (Income Tax) numbers linked to sole traders and partnerships on the BR. The current BR has access controls to certain parts and can limit the Revenue data that is viewable by certain survey areas. In general, the BR provides access to its data via the Centura application or via various datasets which contain BR information such as the sampling frames. This data is generally in SAS dataset form and is not tailored to specific surveys, i.e. surveys have access to all enterprises and not just the enterprises that come under their specific survey.

To adhere to GDPR, BR will need to change the way it provides sampling frames and the way access is provided on the IT application. Personal identifiable information such as IT numbers need to be restricted at a legal form level corresponding to sole traders and partnerships. A new IT system could help with this process by implementing various access controls at a legal form level, thereby

³ <https://www.dataprotection.ie/docs/GDPR/1623.htm>

restricting access to personal information to those that strictly need it. In addition, the provision of sampling frames via an IT application would tailor frames to specific survey needs (i.e. certain NACE codes, employment levels, legal form) and restrict the overall availability of information held within the BR.

Data Respondent Portal

The Roadmap for Modernisation of Data Collection Report of March 2017 (CSO in house report) offers as one of its recommendations that “*the initial version of the new register structure/system implemented into live*” in order for work to begin on a Data Collection Portal. The main issue with the current implementation of a respondent portal would be the different use of identifiers and unit structures throughout the CSO. These issues were outlined previously and deal with the lack of current ability to link certain unit structures for example in BOP with what the BR recognises as an enterprise. As outlined, the implementation of the various regulated required statistical units in conjunction with various reporting or observation units would help to create a basic set of enterprises and coherent identifiers on which to base a respondent portal on.

This means enterprises could be set up on the portal under the one identifier and linked to the various surveys that it is involved in. In turn, this would lead to synergies in collected and reported data and synergies in the way survey information is used and distributed among enterprise groups and survey areas. This all could occur in turn with a net result of easing respondent burden.

Conclusions and Recommendations

Outlined in the document are how the unit’s structures should be implemented, survey area issues and requirements of a BR IT application, sampling issues, GDPR and how the BR is being developed in an international context. This analysis leaves us with various elements that need to be addressed by both IT resources and the development of a new BR IT application or a change in work processes among business areas within the CSO. Table 1 in the introduction is again outlined below and shows how IT can assist BR with achieving its core functionalities.

Table 1: Main Functions of a BR and Current BR Status:

Main Functions of a BR	BR Performance Indicators, How Good Are We?	IT Assistance	Business Process Changes	Possible IT Change Outcomes
Maintain the population of economically active enterprises for	•Frame over/under coverage?	✓	✓	Frames provided as per survey needs with the same enterprise views across surveys
-Surveys	•Accuracy – NACE, legal form, geo, etc.?	✗	✓	N/A
-Business demography statistics	•Statistical Units – the “Unit problem”?	✓	✓	Statistical Unit flow from Legal Unit birth at a micro level to divisional output at a macro level (LCU, BOP)
	•Timeliness of the register updates	✓	✓	Sampling criteria based on survey’s needs. Employment, Turnover, NACE Codes from timely sources
	•Relevance – could our BR be more relevant?	✓	✓	Statistical Unit Models, Sampling, Revenue and Survey Updates
Facilitate use of admin data for statistics production	Big leap forward the last 10 years or so – is there more to do?	✗	✓	N/A
Globalisation statistics / international profiling	Information on MNEs and their group structures?	✓	✓	As per "Statistical Units"
Provide that one, consistent, coherent view of an enterprise – the “backbone” role	•Do we have different views of some enterprises?	✓	✓	Elimination of "dummy" enterprises. One register, one view of an entire enterprise and its related units.
	•How good is our chain management of enterprises? Many CSO (& non-CSO) sources: how ‘joined up’ is our picture of an enterprise?	✓	✓	Legal Unit to Enterprise to Group Structures to Reporting Units Views. One stop source for enterprise updates.
Survey production – backbone role for centralised, joined up sampling, survey management, burden, data collection	•Linkages to DMS and other systems?	✓	✗	Linkages from Bus Reg to the DMS to a possible Respondent Portal. Editing can be done in the Bus Reg rather than multiple local registers and in turn the DMS.
	•Local registers?	✓	✓	Elimination of local registers. All updates conducted on the one register with survey specific tabs and variables available for survey needs.
	•Data Portal needs?	✓	✓	Respondent Burden, Coherent set of Enterprise Views.

Of the performance indicators outlined in Table 1, 10 require IT assistance. Although work on statistical units or accuracy of NACE Rev 2 codes needs to be conducted by the BR and survey areas, IT need to put a system in place that enables the BR to function in a correct manner. These

functionalities and how to achieve them are outlined in the document along with international examples.

In addition to Table 1, the following recommendations are offered in conjunction with an outline of the resources required to implement these changes.

- Regulated unit structures including local units, legal units, enterprise and enterprise groups need to be implemented, with separate identifiers. This may require a certain change in the way we currently view our enterprises within the office. Local units will not change, but we need to reclassify what we currently view an enterprise to be and view it as a legal unit. Enterprises and enterprise groups will follow on from this implementation. This is a survey process change and a change in survey mind-set but can only be fully implemented with IT resources and the development of a new application. IT development needs to be conducted by IT but working closely with BR teams and survey areas.
- As a follow on from unit structure implementation, non-regulated units such as reporting and observation units needs to be developed for all survey areas to be able to use a BR and set in place a chain of linkages where BR can act as the base and be linked to all surveys and all outputs. This again needs to be an IT development in close conjunction with survey areas.
- The work of the new Medium Cases Unit (MCU) will greatly enhance enterprise group structures on the BR and as a result will improve the data provided by survey areas. To implement this work over time and enforce the structures put in place by the unit, it needs a BR IT application to do this. This again needs IT resources.
- GDPR requirements need to come firstly from BR and the data office and then dealt with in terms of the current SAS outputs BR provides but also with IT if any development is to take place.
- IT development of the BR could provide a solid basis for the development of a Respondent Portal as per the recommendations of The Roadmap for Modernisation of Data Collection Report. It would also assist in the overall implementation of GDPR guidelines.
- Sampling can be greatly enhanced with IT developments. It would result in saving man hours in the office dedicated to the maintenance of various registers and the on-going work within survey areas to update and create their own registers. The change in mind-set as to how sampling is conducted needs to be addressed outside IT involvement and then specified to IT to see if it can be implemented within an IT application. Who does this is outside the scope of this project but could involve Methodology or a working group within business statistics. If other NSIs are doing it, why can't we?

Where do we Begin

To begin to implement these recommendations we need to create a plan of action. This plan needs to involve input from Business Register, IT as well as all survey areas connected to the BR. We propose the following roadmap:

- Improve the Business Register IT system to make it a stronger backbone for the production of business and macro-economic statistics. With the availability of IT resources in Q3, a multi-annual budgeted programme of IT improvements to be developed by end 2018, addressing as its first project the so-called "local registers" issue. Create that one consistent view of an enterprise. What conditions are needed to enable this? We will meet with Business areas throughout Q2/Q3 to determine what

improvements can be made in this area independent of IT changes, with a focus on benefits that our users will see (e.g. an improved family of business and Trade statistics leading to better outputs over time)

- Creation of the Medium Cases Unit this year with a focus on data consistency and enterprise examination
- Agree on a Project Plan and Project Scope for all the above. Impact assessment of benefits and effort required.
- Key point – this isn't a "Business Register" project or even a "Business Statistics" project. It goes way deeper than this. It's really an office wide project, which will bring its own opportunities (enterprise wide benefits) & challenges (scale!).
- IT Vision: Application to be developed using C Sharpe and Web Technologies which are corporate toolsets, in house and not in the cloud (to be reviewed in future years). Sql server is the database environment all applications are to be developed on.