Introduction

1.   In February 2012, the National Statistical Service (NSS)[1] Board approved the establishment of a project to develop a Statistical Spatial Framework (SSF) for Australia. The SSF aims to provide a consistent and common approach to geospatially-enabling statistical and administrative data. The SSF provides the overarching framework and main coordination point through which the Australian Bureau of Statistics (ABS) is seeking to enable statistical information to be integrated with location information.

2.   In support of the SSF, the ABS Business Register Unit (BRU) is developing a geospatial strategy to include location data on the ABS Business Register. This will also support the ABS transformation agenda, under which the ABS Business Register is envisaged to provide the infrastructure for compiling small area statistical products.

3.   The ABS Business Register geospatial unit is the "location". A location, as defined in the Standard Economic Sector Classifications of Australia (SESCA) publication, refers to "a single, unbroken physical area, occupied by an organisation, at which or from which, the organisation is engaged in productive activity on a relatively permanent basis, or at which the organisation is undertaking capital expenditure with the intention of commencing productive activity on a relatively permanent basis at some time in the future". The main exception to this definition is the agricultural location unit, where land parcels operated as a single property are treated as a single location within a shire.

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[1] The NSS is a community of Australian government agencies, led by the ABS as Australia's national statistical organisation, building a rich statistical picture for a better informed Australia. It aims to develop and improve the statistical system to ensure providers and users of statistics have the confidence to trust the statistics produced within it. *(source: http://nss.gov.au/nss/home.NSF/)*

4.   This paper outlines the benefits of a geospatially enabled ABS Business Register, current progress, challenges, and the longer term strategy.

Benefits of geospatially enabling the ABS Business Register

5.   One of the aims of the ABS transformation agenda is to develop an expanded and more outwardly focussed ABS Business Register. The vision is that a re-developed ABS Business Register will:

a. Become the integrating spine for all firm level data, providing a common link to all data about a particular firm to which the ABS has access.

b. Provide the infrastructure for unit and small area statistical products

c. Become a data source in its own right, as a tool for unit level analysis for ABS analysts, and available to non-ABS analysts for purposes such as unit level analysis and micro-simulation.

6.   This vision is partly driven by the demand for regional data by Australian Government policy analysts. To better support Australian policy needs, holding geospatial data on the ABS Business Register will:

a. Improve the availability and quality of regional economic business counts.

b. Enable a broader range of regional economic data to become available via modelling and data linkage.

c. Enable site level business activity from a number of sources to be linked, which will assist initiatives such as the Longitudinal Linked Employer Employee Dataset Project.

d. In the longer term, enable coherent approaches to the production of regional statistics to be developed, by facilitating and supporting future migration of location based economic collections to the ABS Business Register.

e. Provide a framework to support the production of gross regional product estimates.

f. Exploit relationships with the ABS Address Register.

7.   Internally within the ABS, there will also be some benefits to statistical processes. Holding geospatial data on the ABS Business Register will also:

g. Increase the potential to reduce provider load.

h. Enable inclusion of geography in the scoping of survey frames.

i. Facilitate future statistical processes based on data linkage techniques.

Current progress

8.   The ABS has been working on a range of initiatives to progress the goal of geospatially enabling the ABS Business Register. These include:

a.   A location statistical unit has been added to the ABS Economic Units Model (EUM). The ABS EUM is the conceptual framework that underpins the ABS Business Register *(See Attachment 1, Diagram 1)*.

b.   Although the official EUM location unit has not yet been added to the ABS Business Register, geospatial functionality to hold location data has been added. This location functionality has the capability to hold address and geography information at the Enterprise Group (EG), Type of Activity (TAU) and Australian Business Number[2] (ABN) levels within the EUM.

c.   Main business address data was added to the ABS Business Register using Australian Tax Office (ATO) sourced addresses and geocoded using the ABS address coder. This was done for legal entities (ABNs) and identifies main business address. Locations for a multi-location business have not yet been added.

d.   The Australian Business Register (ABR) is the main source of data for the ABS Business Register. The ABR stores details about businesses and organisations when they register for an ABN. The ABR is recognised nationally as a valuable asset and is used by the community and government to identify and verify business information. ABR responsibilities include the registration and maintenance of ABNs. Due to broader interest in regional economic statistics within government, the ABR commenced a program to introduce a location component to its register. Work on loading ABR locations data to the ABS Information Data Warehouse (IDW) is nearly complete. Loading the locations data to IDW will then enable the locations data to be loaded to the ABS Business Register in the future, at the production unit level.

Australia Business Register Initiatives

9.   Currently, ABR data are the most complete source available to populate location data on the ABS Business Register.

10.   In 2012, the ABR embarked on a four year program called 'Towards a Better Business Future' (TBBF) – an Australian Government initiative to improve the accuracy and usability of data held on the ABR. As part of this expansion program, the ABR commenced the capture of branching (location) information for businesses. Subsequently, this data began flowing through to the ABS Business Register in 2014.

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[2] The Australian Business Number (ABN) is a unique 11 digit identifier issued to all entities registered in the Australian Business Register (ABR). The ABR is a whole of government resource located within the Australian Taxation Office.

11.   From December 2013, the ABN registration process was changed to collect address information on all locations. This means branching (multi-location) information is now available for all new ABN registrations. The onus to update this information will remain with the business itself. Although this change in registration process should lead to the ongoing maintenance of location information, the quality and timeliness rests with the businesses themselves.

12.   There are approximately 7 million active ABNs on the ABR. Over 99% of these have a single place of business operation. For private sector organisations that have multiple locations (branches) the ABR are working towards collecting locations data from some of the top multi-location businesses via personal contact and other tailored communications. The remaining multi-location businesses will be populated as the opportunity arises. The ABR verifies addresses provided in the registration process at the point of entry with proprietary geocoding software.

13.   The following data items are available from the ABR:
    a. Primary identifier (PID) – this is unique to an ABN, not per location.
    b. Location type
    c. Location start date
    d. Address
    e. Latitude
    f. Longitude
    g. Mesh Block[3]
    h. Geocoded National Address File (GNAF) PID
    i. Geocode Reliability Code
    j. Phone numbers (landline and mobile)
    k. Email
    l. Location industry class (4 digit ANZSIC[4] code)
    m. Location industry class description (4 digit ANZSIC code description)

ABS is currently exploring uses of the above data items in geospatially enabling the ABS Business Register.

Challenges

14.   The biggest challenge currently facing the ABS in geospatially enabling the ABS Business Register is the availability of up to date, high quality, location data and the lack of current resource commitment around the maintenance of this data going forward.

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[3] Mesh Blocks are the smallest geographic region in the Australian Statistical Geography Standard (ASGS) 2011.
[4] The Australian and New Zealand Standard Industrial Classification (ANZSIC) is a classification that provides a framework for organising data about businesses by grouping business units carrying out similar productive activities.

15.   There is currently no ongoing maintenance strategy for multi-location businesses, to maintain an up-to-date, geospatially enabled ABS Business Register. As part of its long term geospatial strategy, the ABS is working with the ABR to improve the coverage and quality of the ABR locations data to better meet ongoing ABS Business Register requirements. The ABR will be the primary source for locations on the ABS Business Register, with other sources used by ABS where data gaps are identified. Work on identifying potential other sources and assessing their quality and coverage is currently underway.

16.   In analysing ABR locations data, the ABS has also come across industry specific quality issues, as the quality of addresses differs across industries. For example, providing the name of an entity (eg. a Hospital name) instead of its actual/full address.

17.   There are also some conceptual challenges that still need to be addressed. These include handling business locations that are not described by an address (eg. mining locations that do not have roads or offshore exploration locations) or service based businesses where it does not make sense to describe them geographically.

Future Work and Long Term Strategy

18.   The ABS long term strategy to geospatially enable the ABS Business Register includes the following work streams:

    a.   Developing an ongoing and overarching geospatial maintenance strategy for the ABS Business Register (including for cases where ABR data are not updated after initial registration).

    b.   Continuing to work with the ABR towards a long term, high quality and up to date location data set. This includes ensuring the ABS BRU is also working closely with the relevant internal stakeholders (e.g. the Geography Section, Address Register Unit and ABS Transformation teams) for the formulation of a consistent, effective and efficient long term approach that is consistent with the ABS transformation goals.

    c.   Developing a conceptual model for linking the ABS Business Register and the ABS Address Register. Over the next few months, the ABS will be working on creating a systems link between locations data sourced from the ABR and the data held on the ABS Address Register. In most cases the GNAF PID is expected to be the key to "physically" link the ABS Business Register and the ABS Address Register. Metadata storage and management are also important considerations in this work.

    d.   Exploring alternate and additional data sources to supplement ABR locations data and developing an integration strategy to combine geospatial data from the ABR with other data sources.

e.   Continuing to work on the application of the location unit definition to meet the specific requirements for location data, such as for agriculture mining, forestry and fishing.

f.   Refining a data visualisation tool for use by ABS Business Register clients. Some development work has been undertaken on a visualisation tool (ArcGIS) that will enable the ABS Business Register to be interrogated and viewed geographically. Interrogation options are likely to include: geography unit, industry, employment or a combination of these. The geography options that are likely to be available will include mesh block level that can be aggregated to different levels of geography within the Australian Statistical Geography Standard (ASGS).

Conclusion

19.   Geospatially enabling the ABS Business Register has commenced, but is in its early stages.

20.   Both conceptual and systems development is expected into the foreseeable future, as additional sources, uses and users come on board and further location links and functionality are described, created and maintained.

21.   Long term work and benefits are expected to be enhanced through whole of government initiatives.

22.   In geospatially enabling the ABS Business Register, the ABS will be working closely with the ABR to ensure the long term availability of a data source that is fit for purpose.

23.   The work to geospatially enable the ABS Business Register is partly driven by the demand for regional data by Australian Government policy analysts. The ABS's goal is to improve upon its ability to respond to requests for information to support the development and assessment of Government policy at the regional level.

Attachment 1: ABS Economic Units Model

The ABS Economic Units Model (ABS EUM) consists of four types of statistical units. It is consistent with the Australian Corporations Act (2001) and with the definition of institutional units recommended by the System of National Accounts (SNA) 2008.

Units can be described as statistical or real world units:

(a) statistical units
 i. Enterprise Group (EG)
 ii. type of activity (TAU) unit, i.e. the production units

(b) real world units
 i. location units i.e. the operating addresses
 ii. legal units (LE), i.e. the legal entity, represented in most cases by a single ABN (Australian Business Number)

Diagram 1 below depicts the relationships between these unit types.

Diagram 1: ABS Economic Units Model