



Statistical Spatial Framework



Integration of Statistical and Geospatial Information – A Statistical Spatial Framework

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Australian Bureau of Statistics

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Statistical Spatial Framework



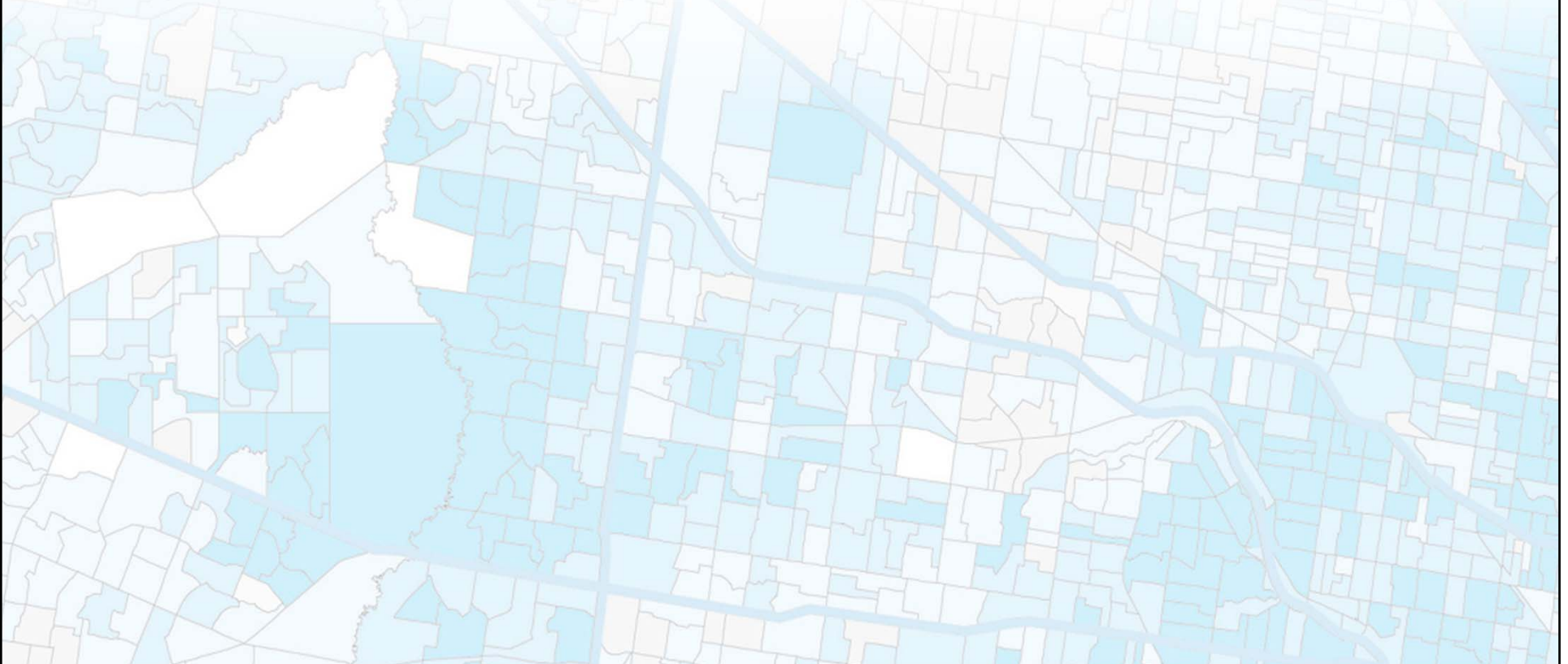
1. Evolution of the Framework in Australia
2. The Australian application of the Framework and linkage to other country systems



Statistical Spatial Framework



1. Evolution of the Framework in Australia





Statistical Spatial Framework



ABS - a strong geospatial history

Population Census – collect, process and disseminate

National Regional Profile

Land Account

Australian Statistical Geography Standard (ASGS)










2. Rateable value and land use

2.1 Land use and rateable land value

	Data item	Value	Unit
	Area of this SA1 region	10,340.8	Ha
	Rateable value	37.1	\$m
	Agriculture	52.6	%
	Retail/Wholesale	-	%
	Transport storage	0.2	%
	Industrial	0.1	%
	Sport, recreation, accommodation	-	%
	Community services	0	%
	Residential	7.1	%
	Vacant land - urban	8.1	%
	Vacant land - rural	2.1	%
	Other	4.7	%
	Total rateable area	75	%

Source: [Queensland Department of Environment and Resource Management \(DERM\)](#)

2.2 Land use

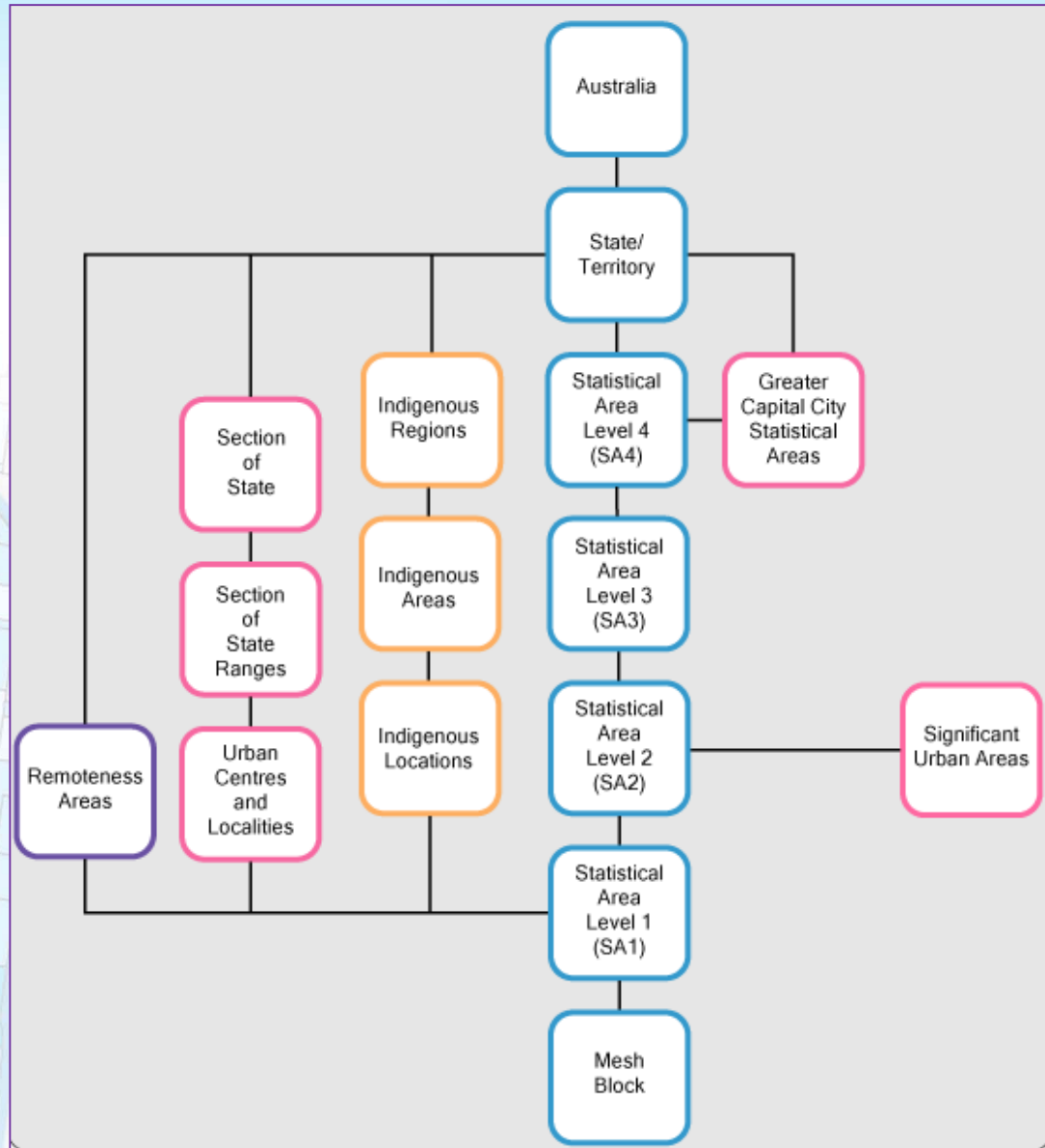
	Data item	Value	Unit
	Area of this SA1 region	10,340.8	HA
	Conservation and natural environments	13.4	%
	Production from relatively natural environments	34.4	%
	Production from dryland agriculture and plantations	0.0	%
	Production from irrigated agriculture and plantations	47.4	%
	Intensive uses	2.7	%
	Water	2.1	%

Source: [Australian Bureau of Agricultural and Resources Economics and Sciences \(ABARES\)](#)



Statistical Spatial Framework

Australian Statistical Geography Standard (ASGS)





Statistical Spatial Framework

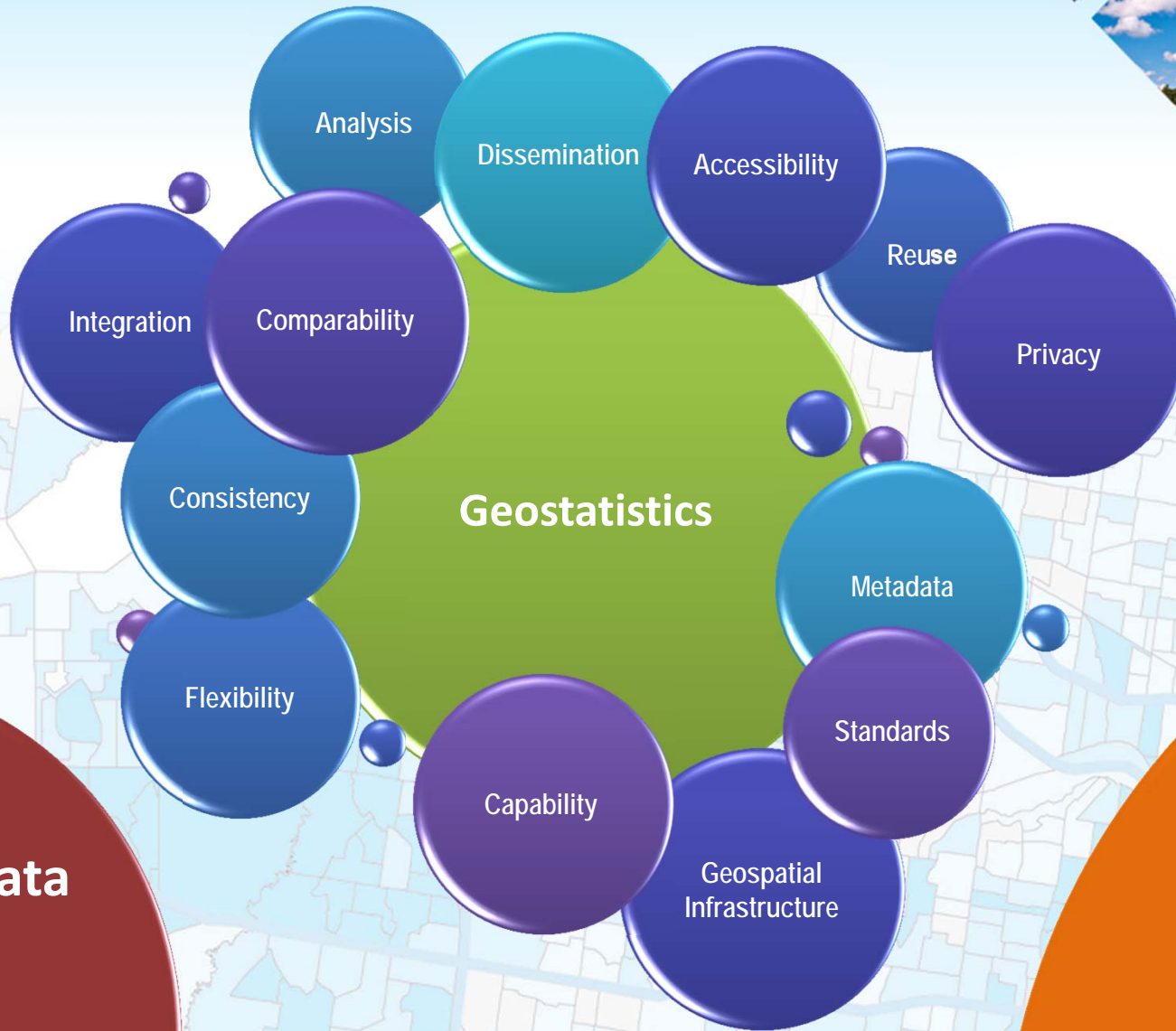


Changing information environment

- Growing demand for geostatistics
 - for smaller, more flexible regions
 - from administrative data
 - opportunities from big data & open data
- Maturing geospatial data infrastructure
- National statistical leadership role in geostatistics
- Statistical architecture modernisation
 - changes within Australian Bureau of Statistics
 - international collaboration



Statistical Spatial Framework

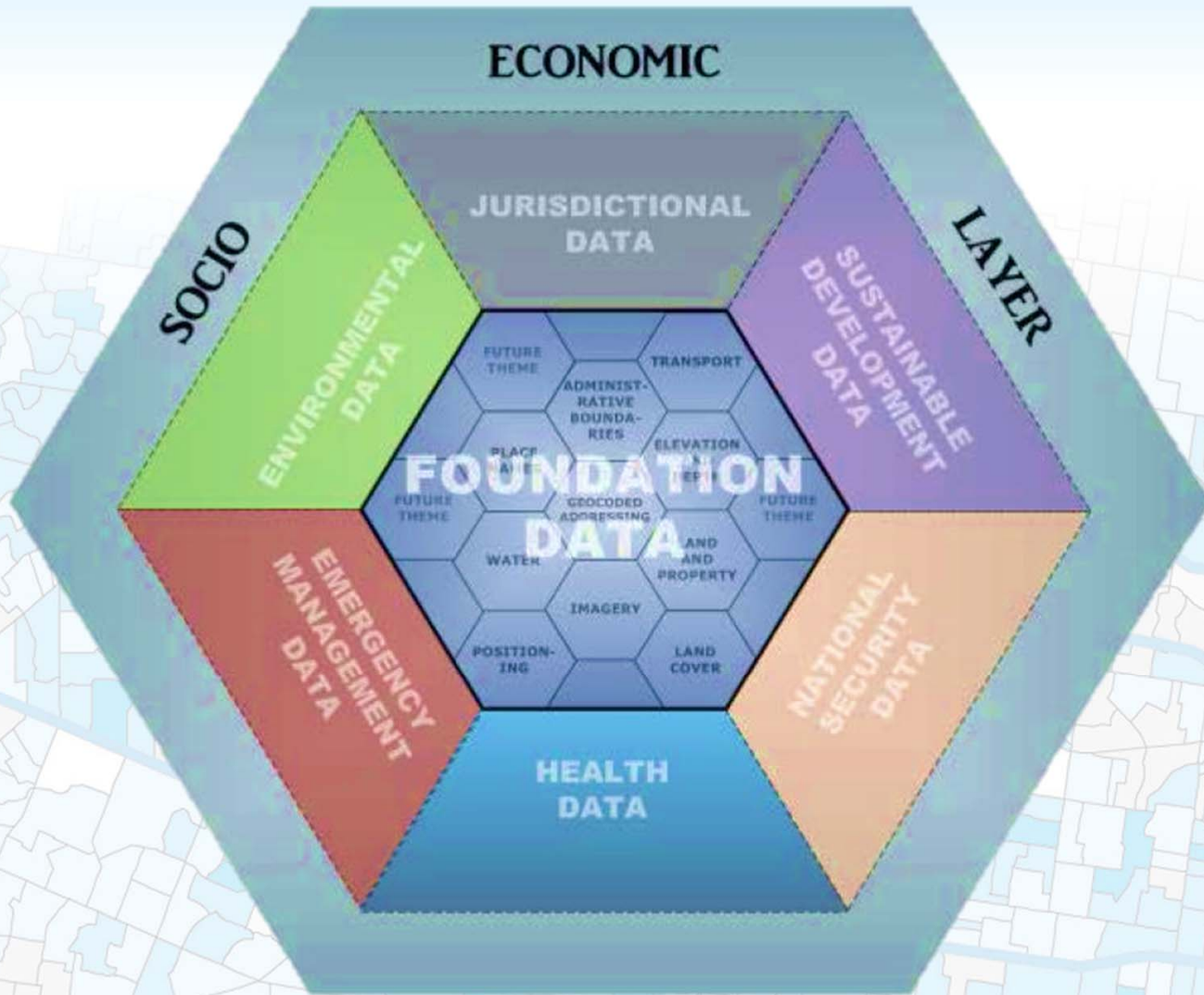


Open data

Big Data



Statistical Spatial Framework

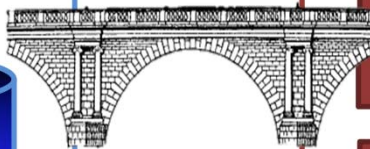
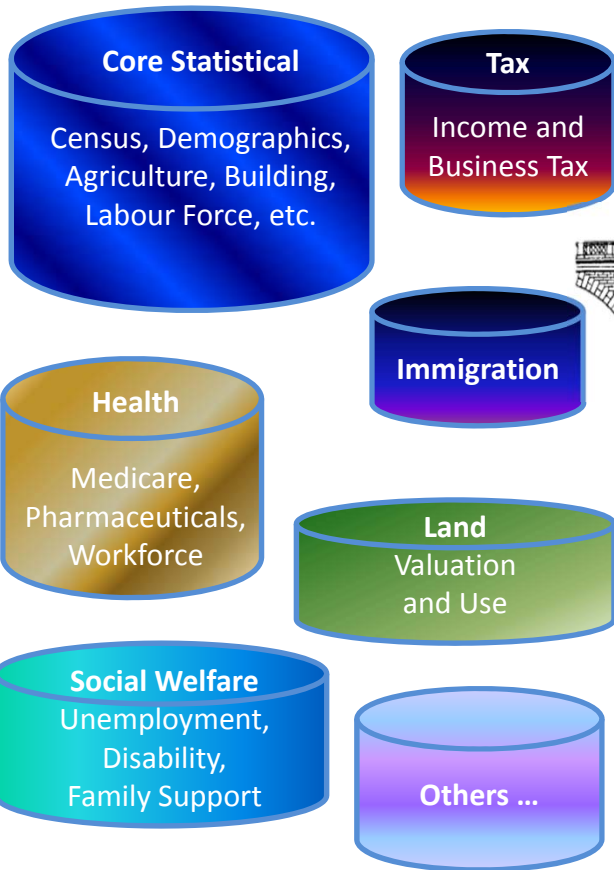


ANZLIC - Foundation Spatial Data Framework



Statistical Community

NSS Socio-Economic Datasets



**SSF
bridge**

Spatial Community

Foundation Spatial Data Frameworks – Fundamental Elements

Data layers:

Admin. & statistical boundaries

Addressing, Place Names

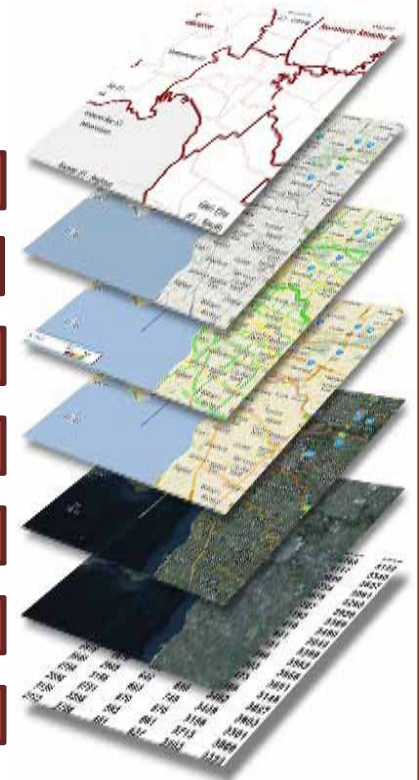
Transport, Water

Land and Property

Elevation and Depth

Imagery

Positioning

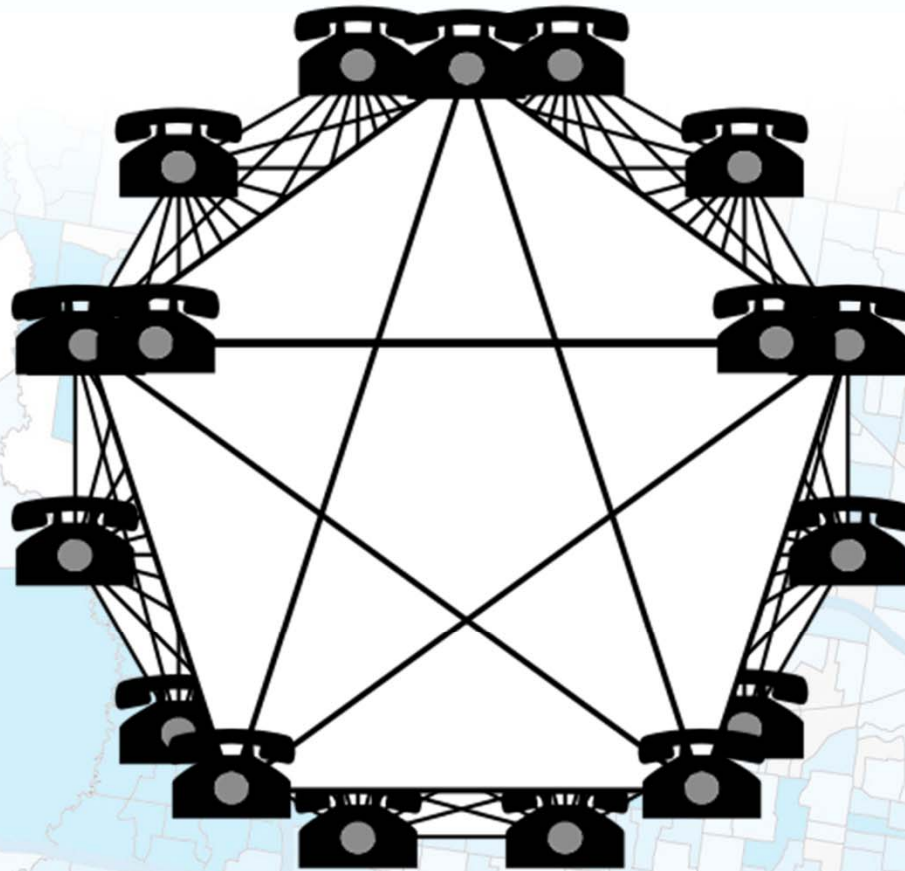




Statistical Spatial Framework



Metcalf's law

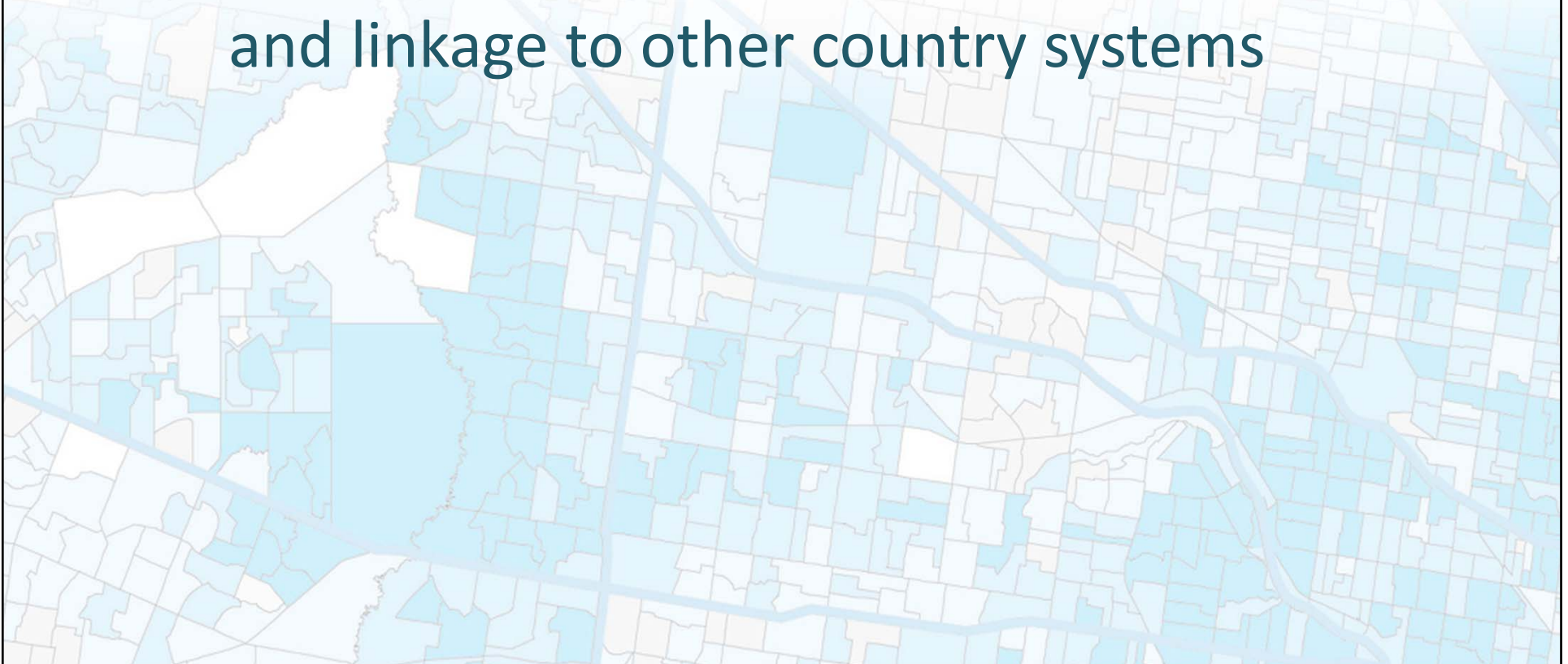




Statistical Spatial Framework



2. The Australian application of the Framework and linkage to other country systems





Statistical Spatial Framework



Vision

Informed decision making is enhanced by using location in a common framework to allow seamless integration of administrative, statistical and geospatial information resources.



Statistical Spatial Framework



The General Framework

**Standards
& Guidelines**

**Metadata
interoperability**

Common geographic boundaries

**Data management:
geocoded unit record data**

Authoritative geospatial infrastructure and geocoding



Statistical Spatial Framework

SSF Principle

Authoritative geospatial infrastructure and geocoding

Aust. SSF

Use Foundation Spatial Data as geospatial inputs.
Undertake geocoding using relevant National Address Management Framework (NAMF) protocols.

Aust. SSF - core standards, infra. and processes

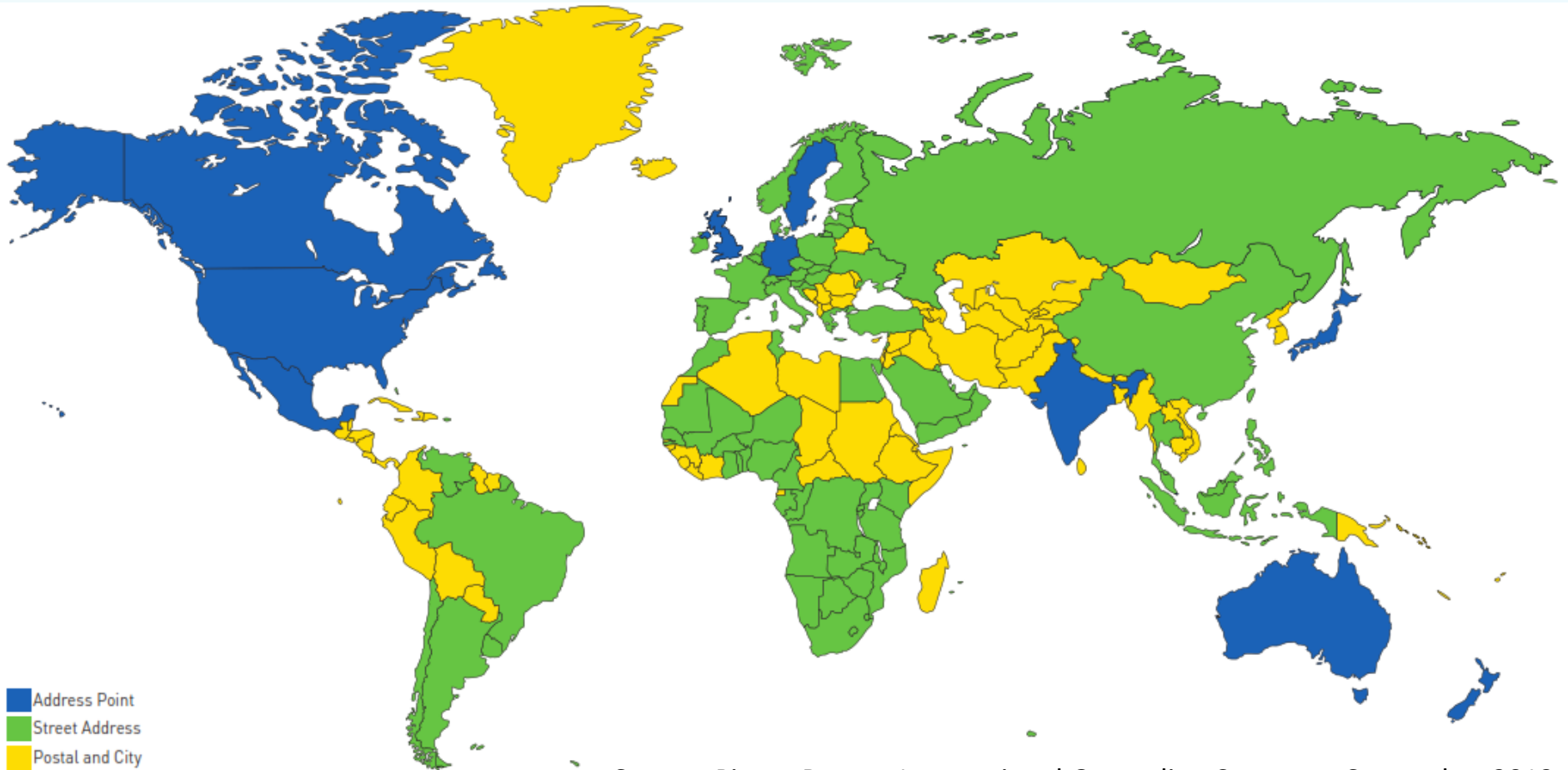
- PSMA G-NAF (geocoded address file), basemap and cadastre
- National Address Management Framework (NAMF)
- National addressing standards – AS 4590:2006
- Geocoding guidance material
- Point-of-entry address validation

SSF Outcomes

- Consistent address/location information
- Consistent geocoding
- Consistent management of geocoding and geocoding issues



Statistical Spatial Framework



Source: Pitney Bowes, International Geocoding Coverage, September 2013





Statistical Spatial Framework

SSF Principle

Data management – geocoded unit record data

Aust. SSF

Geocodes stored on unit records are location coordinates and ASGS Mesh Blocks.
Use statistical data management frameworks.

Aust. SSF - core standards, infra. and processes

- Latitude and longitude data
- ASGS Mesh Blocks
- Geocode metadata*
- Mesh Block allocation tables
- Geographic correspondences

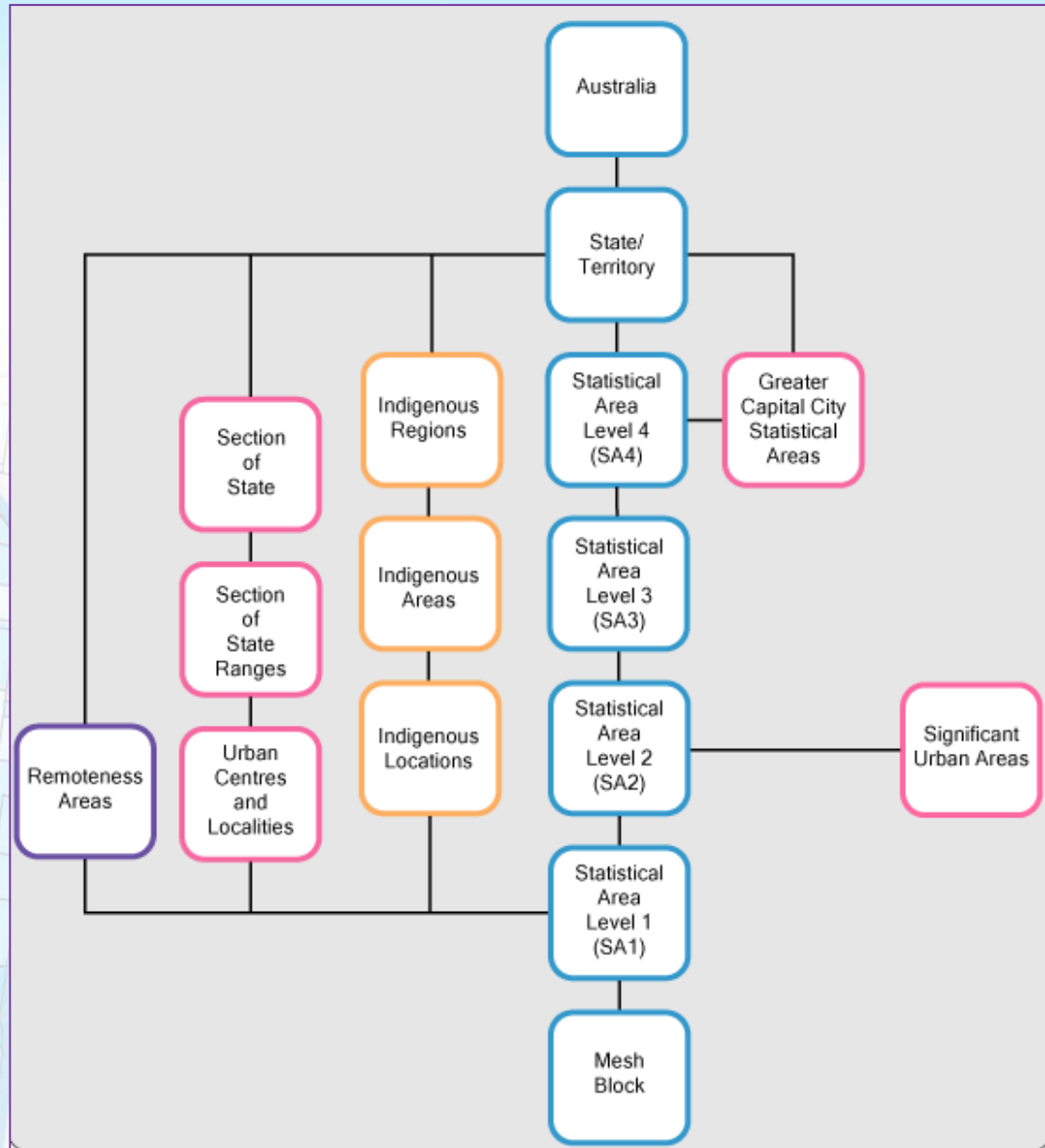
SSF Outcomes

- Consistent and interpretable geocode information
- Flexibility in production of regionalised data into the future
- Effective data management to ensure privacy and metadata management
- Simplified aggregation of data to regions or conversion between regions



Statistical Spatial Framework

Australian Statistical Geography Standard (ASGS)





Statistical Spatial Framework

SSF Principle

Common geographic boundaries

Aust. SSF

Data is released for Australian Statistical Geography Standard (ASGS) Statistical Area structure regions – as a minimum

Aust. SSF - core standards, infra. and processes

- ASGS classifications and boundaries
- Guidance material on the use of regions (geographies) in statistics
- Metadata to support dissemination regions*

SSF Outcomes

- Data from disparate sources are integrated using common geography
- Metadata for dissemination regions supports data integration and use
- Use of population-based functional geography simplifies visualisation and analysis



Statistical Spatial Framework

**SSF
Principle**

Interoperable Metadata

**Aust.
SSF**

Use international statistical and geospatial metadata standards*

**Aust. SSF
- core
standards,
infra. and
processes**

- Statistical frameworks* - SDMX and DDI, GSBP and GSIM
- Geospatial standard - ISO19115 Metadata Profile
- Semantic web – the near future*

**SSF
Outcomes**

- Discovery, use and integration of information is supported by statistical and geospatial metadata frameworks
- Semantic web enables machine to machine access and dynamic linkage



Common Statistical Production Architecture

Business Architecture

- General Statistical Business Process Model – GSBPM

Information Architecture

- General Statistical Information Model – GSIM

Application Architecture

- Data Documentation Initiative – DDI
- Statistical Data and Metadata Exchange – SDMX

Technology Architecture

- National Statistical Office - NSO

**Geospatial Data
and Metadata**



Statistical Spatial Framework

**SSF
Principle**

Guidance material

**Aust.
SSF**

Policies, standards and guidelines support the creation and use of geospatially enabled information*

**Aust. SSF
- core
standards,
infra. and
processes**

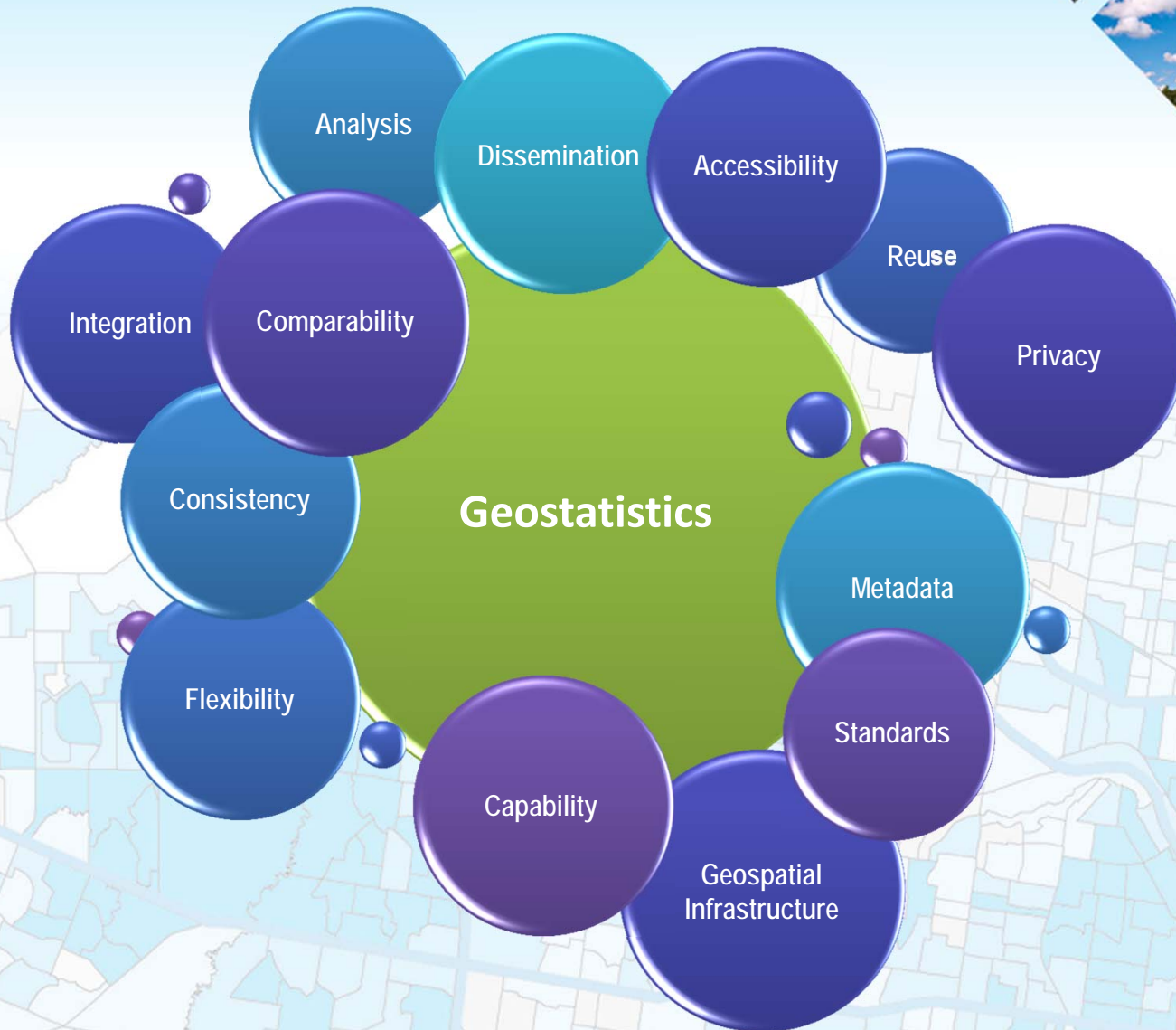
- Guidance on the SSF content
- Guidance on other topics: Privacy, Dissemination*, Visualisation*, Analysis*

**SSF
Outcomes**

- Statistical practitioners have resources to assist them in implementing the SSF
- Experienced and novice data users have resources to assist them using geospatial information



Statistical Spatial Framework





Statistical Spatial Framework



Vision

Informed decision making is enhanced by using location in a common framework to allow seamless integration of administrative, statistical and geospatial information resources.



Statistical Spatial Framework

For more information

E-mail: geography@abs.gov.au

Visit: www.nss.gov.au