

DELIVERING SUSTAINABLE DATA AND PRODUCT MANAGEMENT BUSINESS PROCESSES

The Landgate Approach

Dr Lesley Arnold
Manager Location Products and Services



Introduction

Strategy

Sustainability

Focus Areas

Delivery System

Map Production

Data Modelling

DSU

Validation

Conclusion

Introduction

Traditional Mapping

- Map production is resource intensive
- Information trapped in formats that can't be reused
- Multiple databases required for specific products
- Work flows are divided and difficult to manage
- Data maintenance is time consuming and costly
- Data currency is inconsistent across data





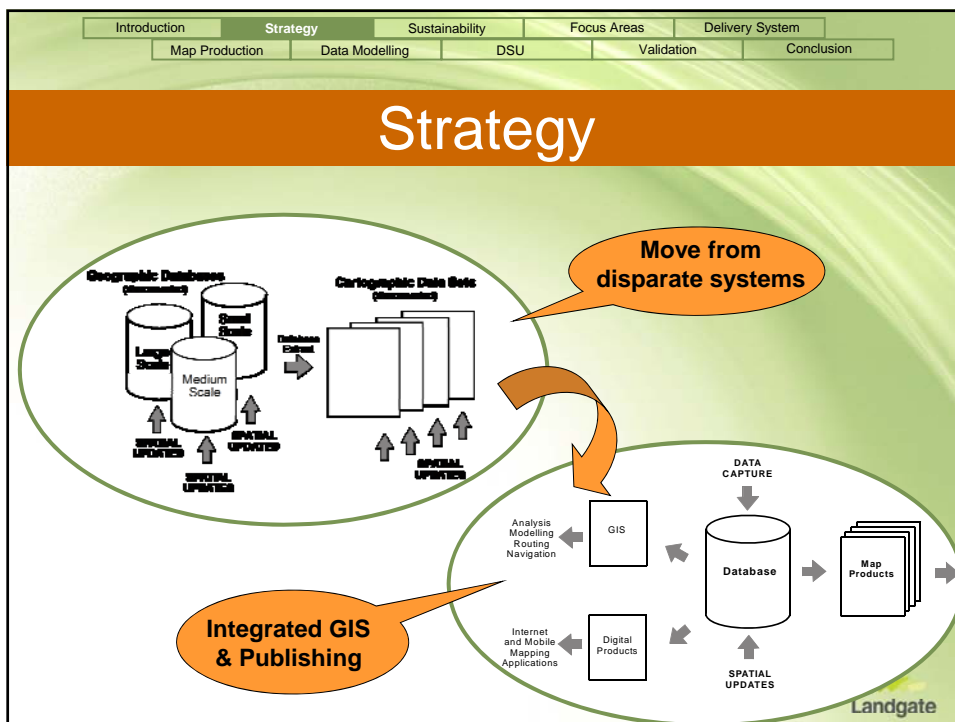
Introduction	Strategy	Sustainability	Focus Areas	Delivery System
Map Production	Data Modelling	DSU	Validation	Conclusion

Strategy

Vision

Achieve a sustainable data management and map production environment that will provide flexibility to create innovative products, in a timely and efficient manner, in order to support commercialisation well into the next decade.



Introduction	Strategy	Sustainability	Focus Areas	Delivery System
Map Production	Data Modelling	DSU	Validation	Conclusion

Sustainability

- Real time business processing and Integrated workflows
- Robust and flexible system
- Technology renewal - economical
- Reuse of data, processes and workflows;
- Task automation – address resource constraints
- Longevity and use of Landgate’s data and products
- Extensibility – Enterprise and WoG

Introduction	Strategy	Sustainability	Focus Areas	Delivery System
Map Production	Data Modelling	DSU	Validation	Conclusion

Focus Areas

Focus Areas

- Data Compilation and Capture
- Data Management
- Map Production and Revision
- Products
- Customers

Drivers

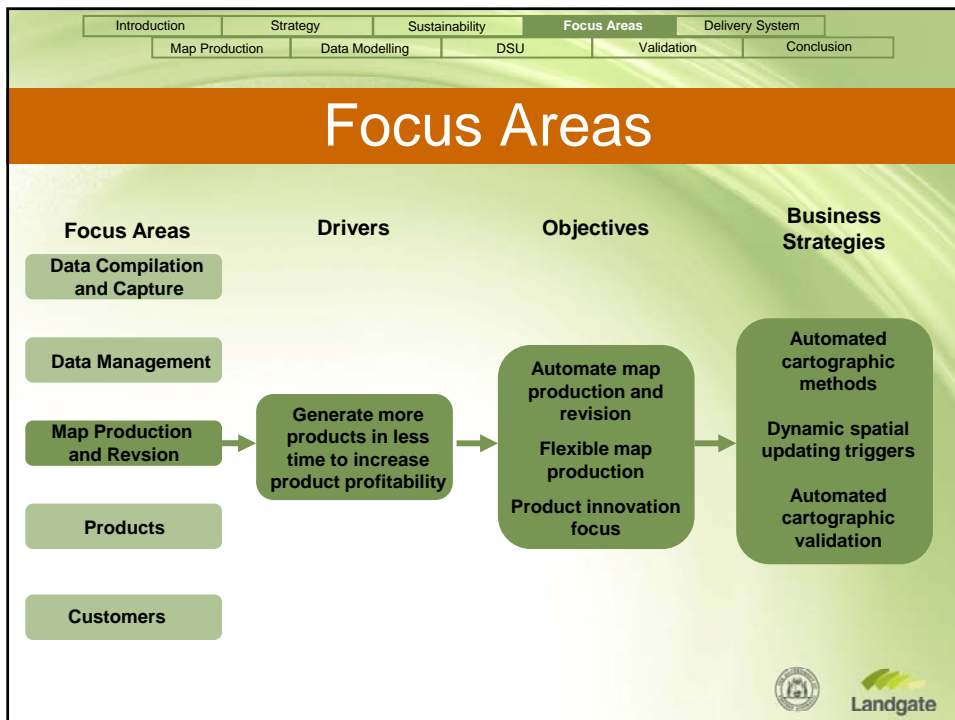
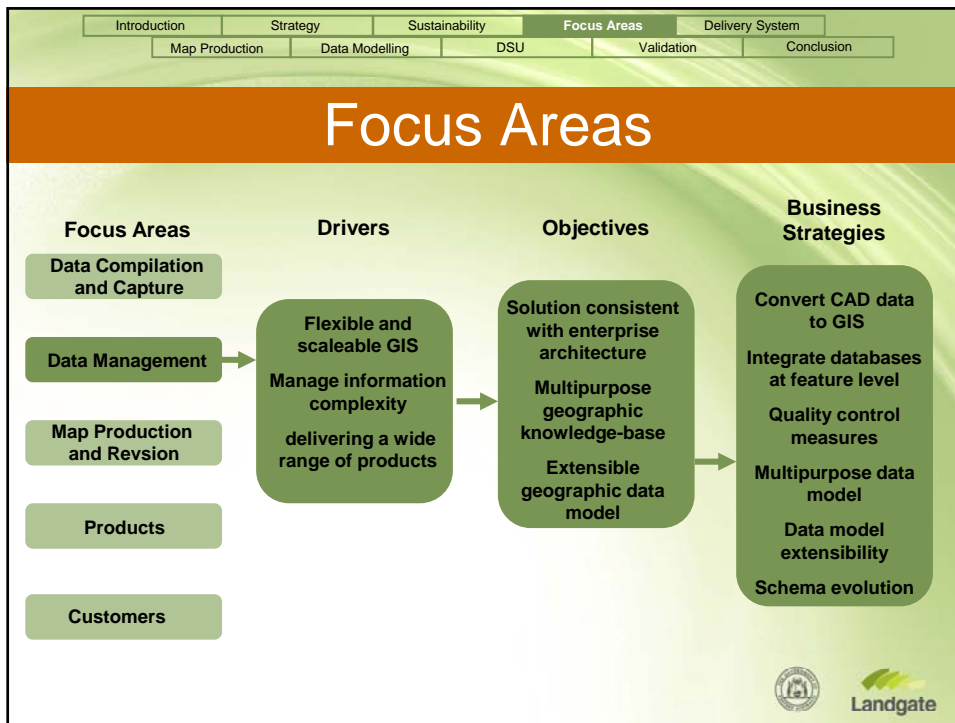
Accurate, current, complete and trusted geographic information

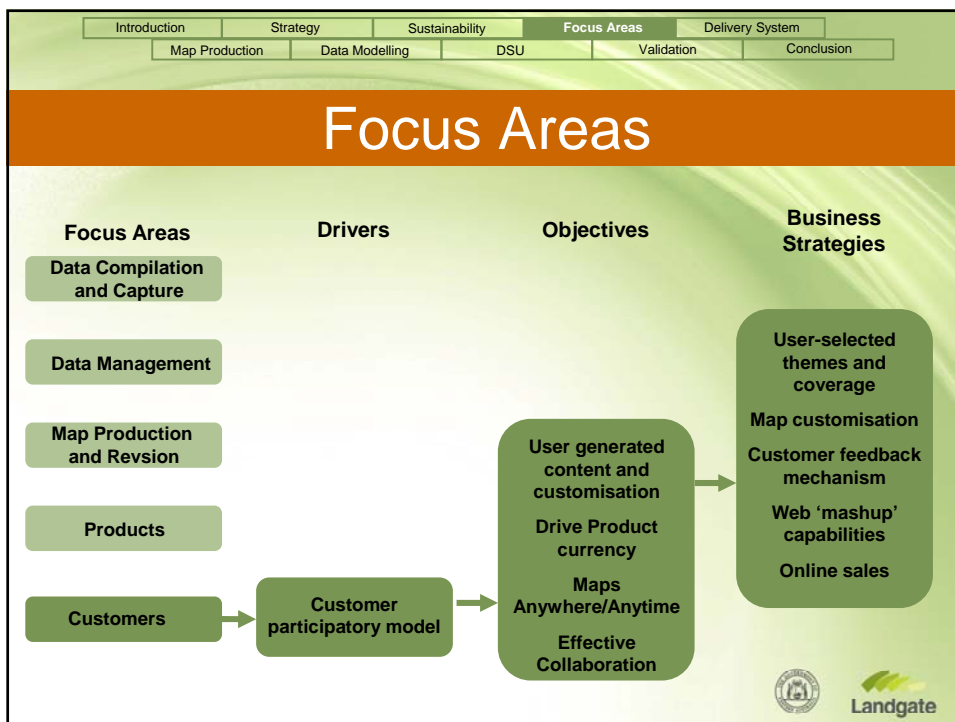
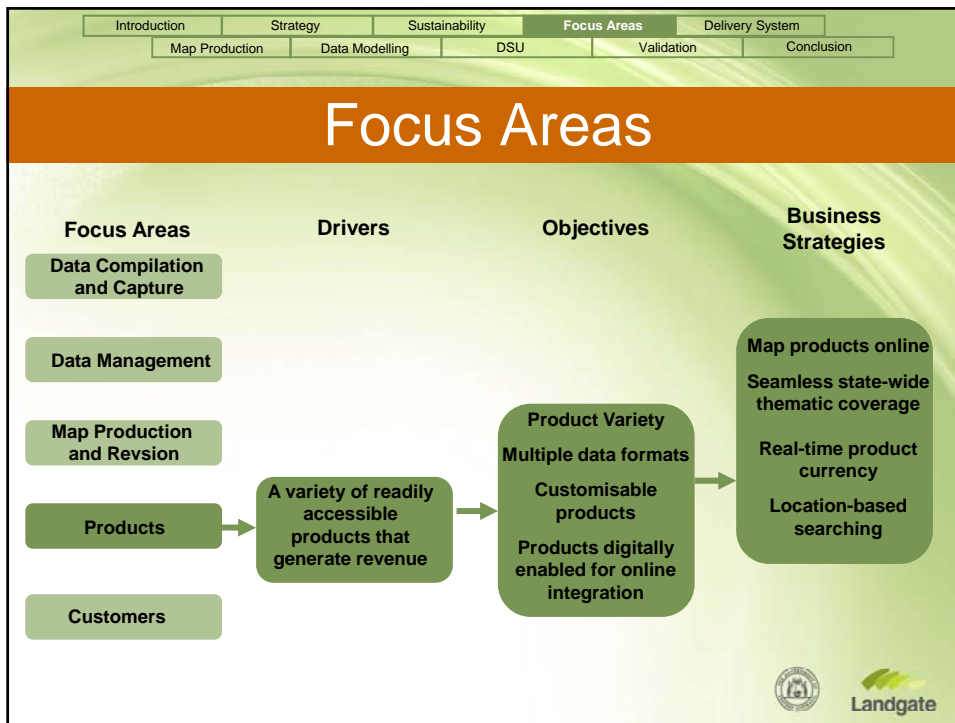
Objectives

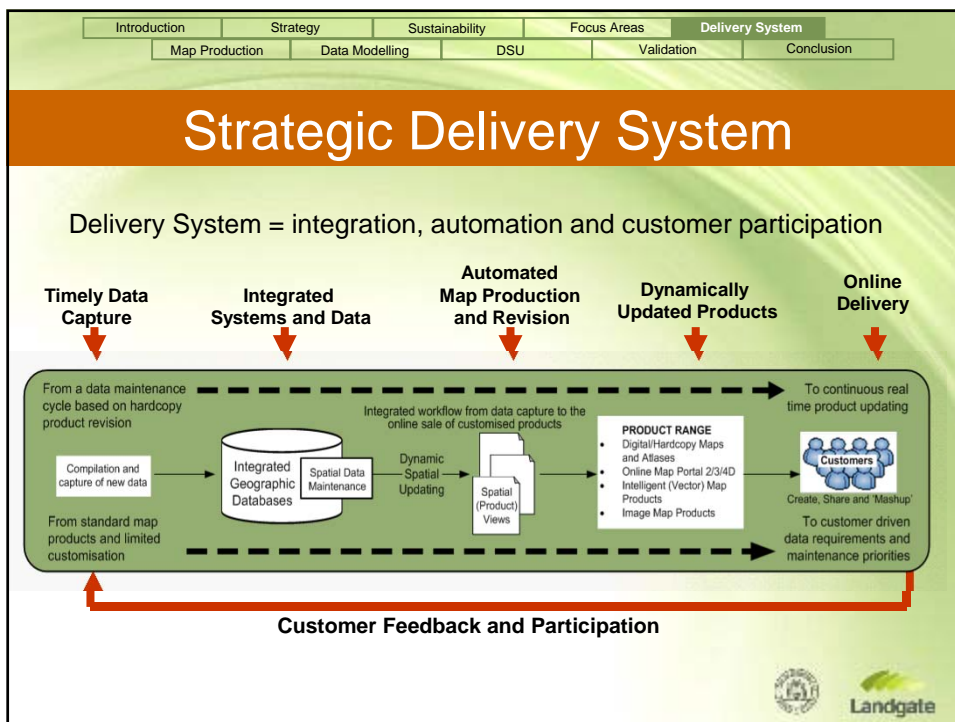
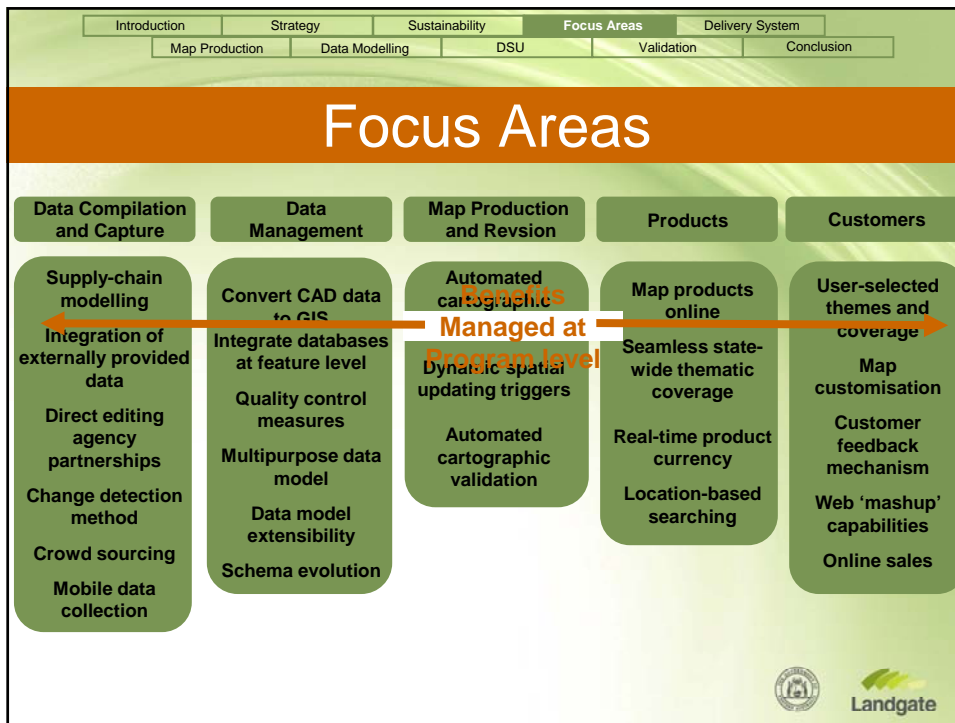
- Collect information efficiently
- Achieve 'capture once use many times'

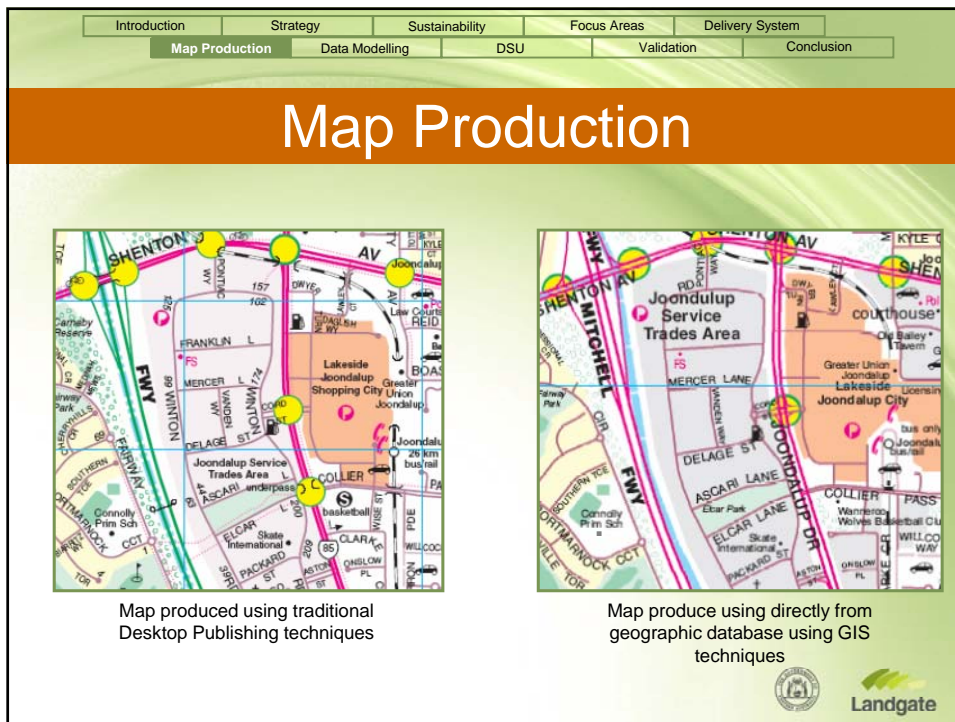
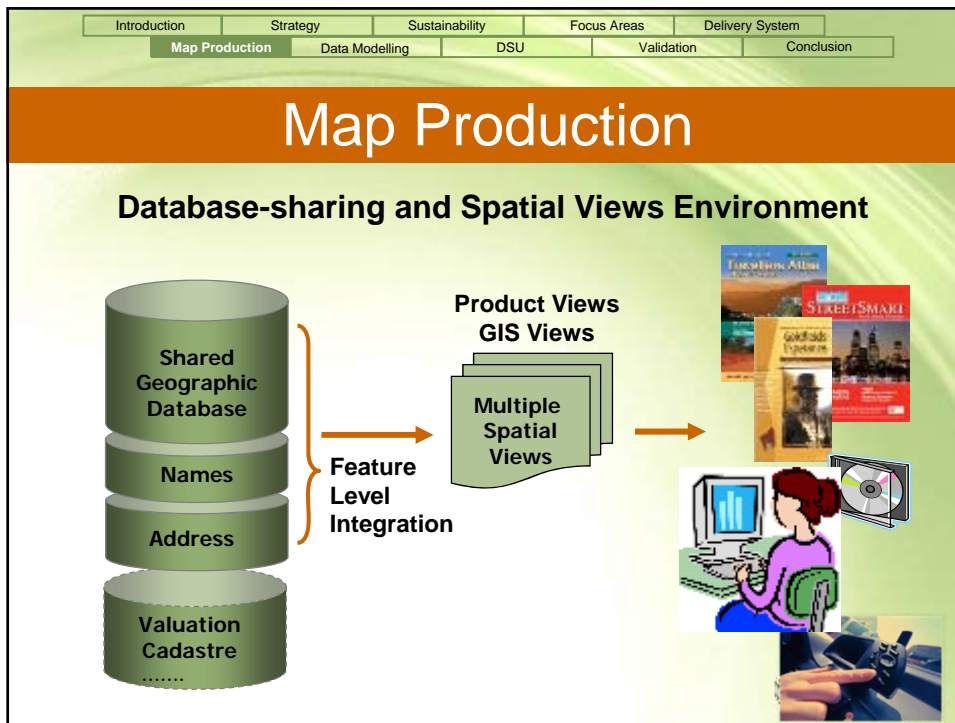
Business Strategies

- Supply-chain modelling
- Integration of externally provided data
- Direct editing agency partnerships
- Change detection method
- Crowd sourcing
- Mobile data collection
- Dynamic Modelling





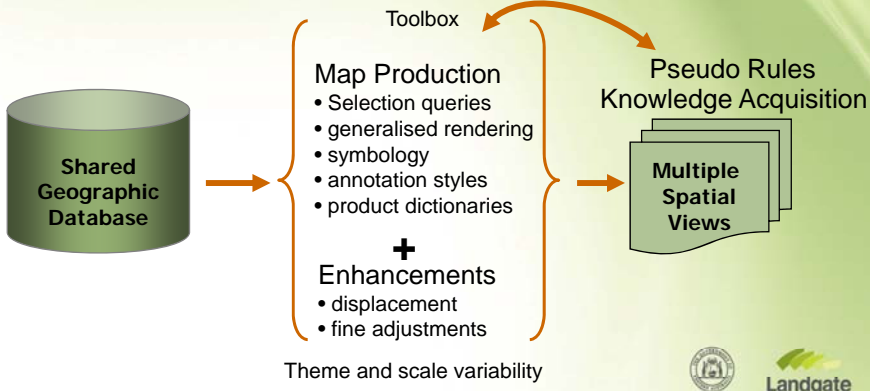




Introduction	Strategy	Sustainability	Focus Areas	Delivery System
Map Production	Data Modelling	DSU	Validation	Conclusion

Map Production


- Spatial views are created without changing the underlying data
- Rules are defined at the view level
- Tools allow user to change geometry, symbology and semantic



The diagram illustrates the Map Production process. It starts with a **Shared Geographic Database** (represented as a cylinder) which feeds into a **Map Production** stage. This stage is part of a **Toolbox** and includes:

- Map Production**
 - Selection queries
 - generalised rendering
 - symbology
 - annotation styles
 - product dictionaries
- Enhancements**
 - displacement
 - fine adjustments

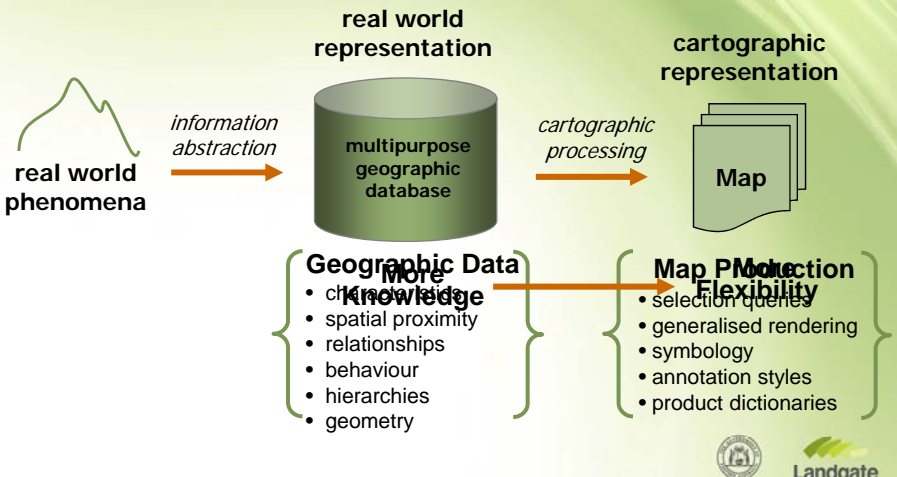
These elements are combined with **Theme and scale variability**. The process then leads to **Pseudo Rules Knowledge Acquisition**, which results in **Multiple Spatial Views** (represented as a stack of pages). A feedback arrow labeled **Toolbox** points from the Multiple Spatial Views back to the Map Production stage.



Introduction	Strategy	Sustainability	Focus Areas	Delivery System
Map Production	Data Modelling	DSU	Validation	Conclusion

Data Modelling

Map production rules based on geographic knowledge




The diagram illustrates the Data Modelling process. It starts with **real world phenomena** (represented by a mountain icon) which undergo **information abstraction** to be stored in a **multipurpose geographic database** (represented as a cylinder). This database then undergoes **cartographic processing** to produce a **Map** (represented as a stack of pages).

Below the database, **Geographic Data Knowledge** is detailed:

- change
- spatial proximity
- relationships
- behaviour
- hierarchies
- geometry

These are used to inform **Map Production Flexibility**, which includes:

- selection queries
- generalised rendering
- symbology
- annotation styles
- product dictionaries



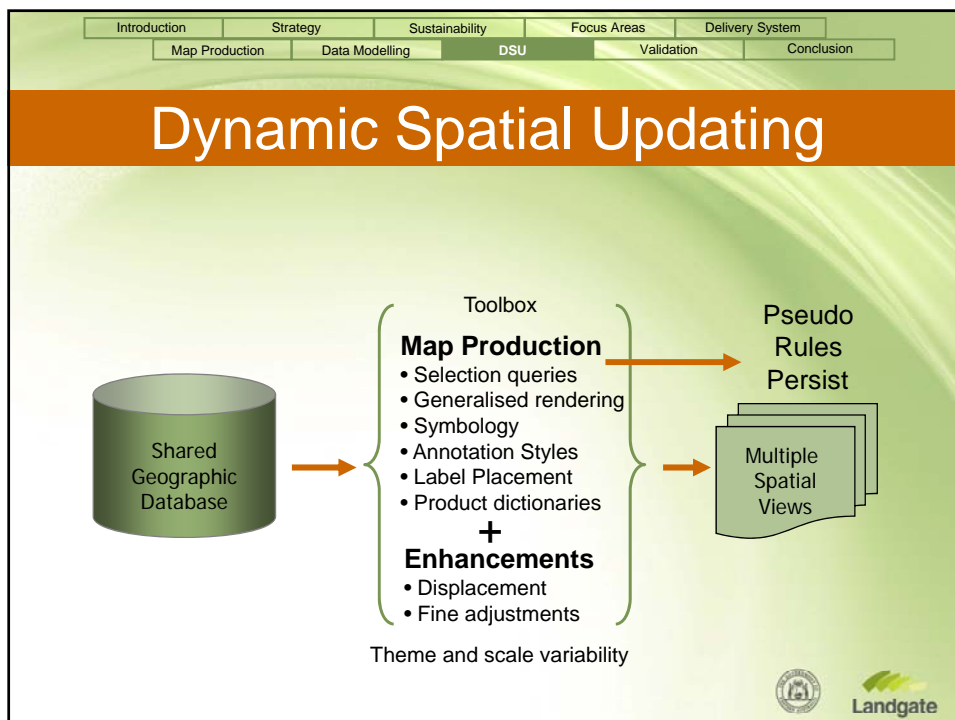
Introduction	Strategy	Sustainability	Focus Areas	Delivery System
Map Production	Data Modelling	DSU	Validation	Conclusion

Dynamic Spatial Updating

Pseudo Rules – Persist Representations

- [Selection and elimination queries](#)
- [Generalised rendering](#)
- [Symbology](#)
- [Annotation Styles and Label Placement](#)
- [Product dictionaries](#)



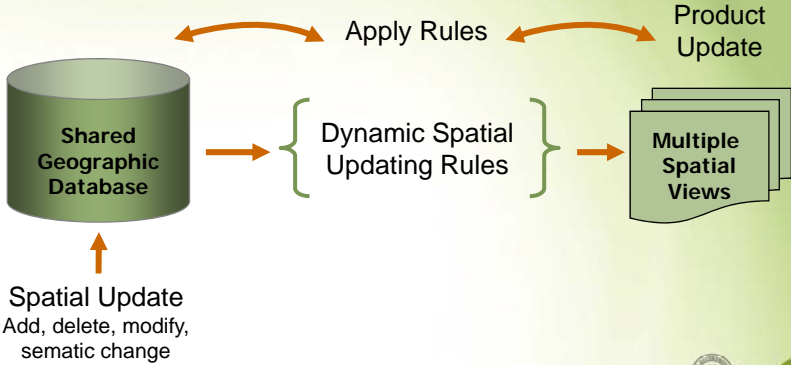





Introduction	Strategy	Sustainability	Focus Areas	Delivery System
Map Production	Data Modelling	DSU	Validation	Conclusion

Dynamic Spatial Updating

- Map Production processes = pseudo DSU rules
- Rules are defined at the view level

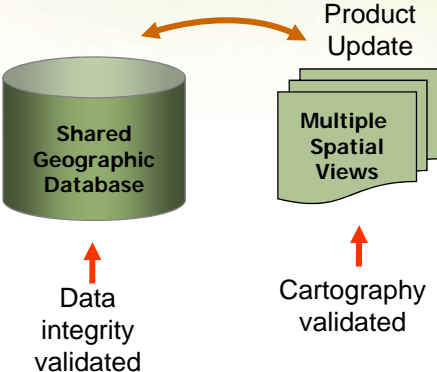


The diagram illustrates the Dynamic Spatial Updating process. It starts with a 'Shared Geographic Database' (represented by a cylinder) on the left. An orange arrow points from the database to a bracketed area labeled 'Dynamic Spatial Updating Rules'. From this bracketed area, an orange arrow points to a stack of three rectangles labeled 'Multiple Spatial Views'. Above the database, an orange arrow points to the text 'Apply Rules', which then points to 'Product Update'. Below the database, an orange arrow points up to the text 'Spatial Update' with sub-points: 'Add, delete, modify, semantic change'. In the bottom right corner, there are logos for a university and 'Landgate'.

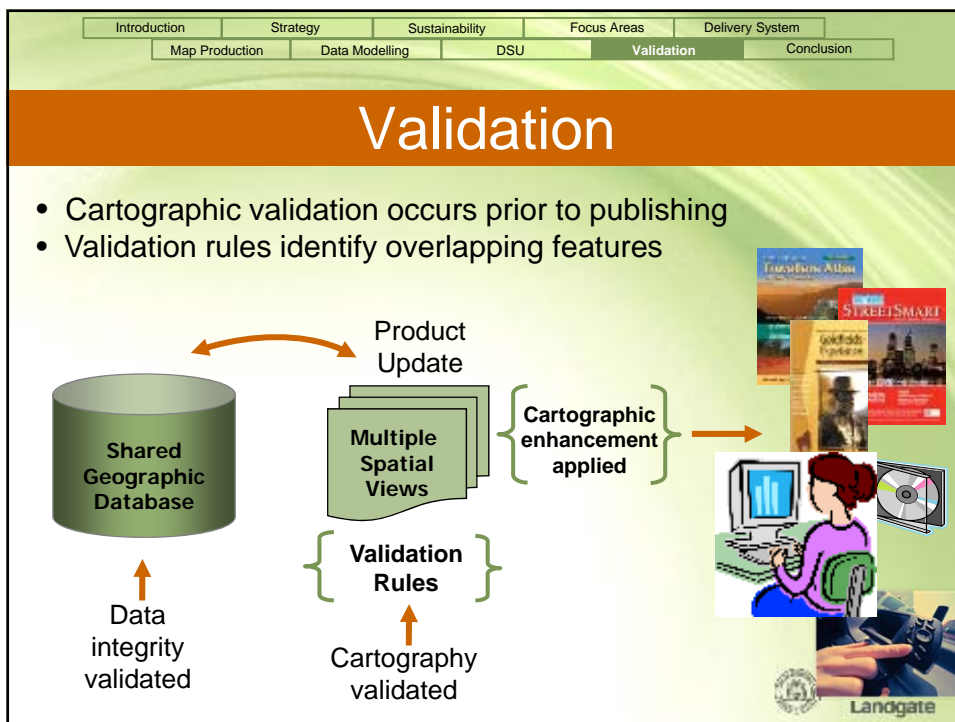
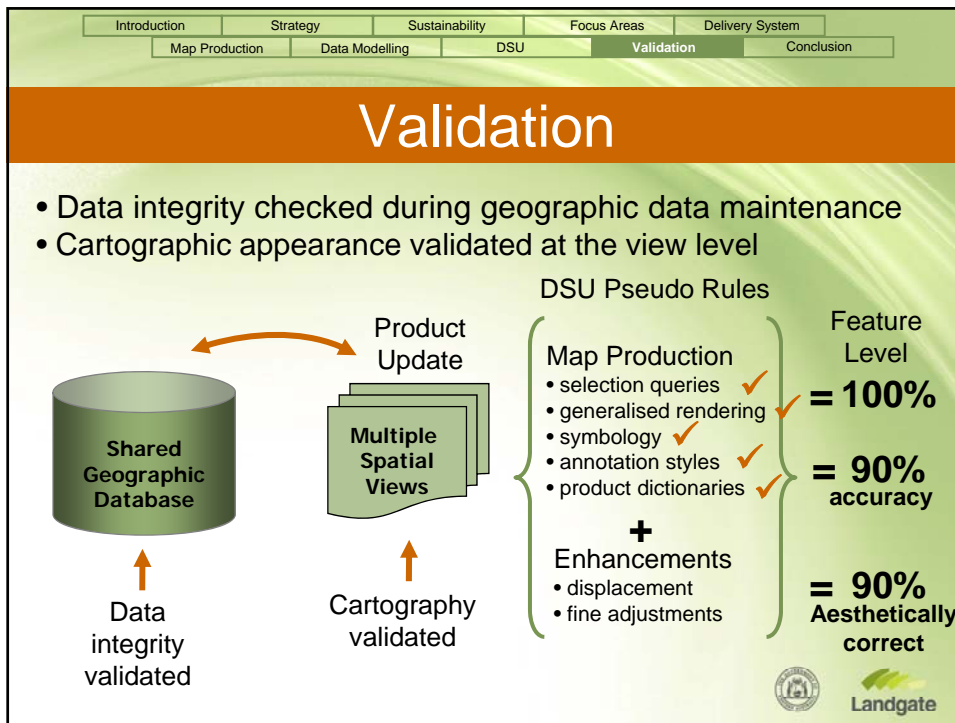
Introduction	Strategy	Sustainability	Focus Areas	Delivery System
Map Production	Data Modelling	DSU	Validation	Conclusion

Dynamic Spatial Updating

- Data integrity checked during geographic data maintenance
- Cartographic appearance validated at the view level




This diagram focuses on the validation aspects of Dynamic Spatial Updating. It features a 'Shared Geographic Database' (cylinder) on the left and 'Multiple Spatial Views' (stack of rectangles) on the right. An orange arrow points from the database to 'Product Update'. Below the database, a red arrow points up to the text 'Data integrity validated'. Below the views, a red arrow points up to the text 'Cartography validated'. In the bottom right corner, there are logos for a university and 'Landgate'.



Introduction	Strategy	Sustainability	Focus Areas	Delivery System
Map Production	Data Modelling	DSU	Validation	Conclusion

Conclusion


- Data Capture
 - Rich data store and enhanced data quality
 - Consistent data and product currency
 - Timely and sustainable data maintenance
- Data Management
 - Reuse of core data and streamlined workflows
 - Reduced data handling and risk of error
 - Better managed costs



Introduction	Strategy	Sustainability	Focus Areas	Delivery System
Map Production	Data Modelling	DSU	Validation	Conclusion

Conclusion

- Map Production and Revision
 - Improved time to market and real time product updating
 - Rewarding work environment
- Products
 - Increased commercial opportunities
 - Products accessible online
- Customers
 - Increased product availability, convenience and currency
 - Responsive to customer needs
 - Foster community innovation and partnerships




Introduction	Strategy	Sustainability	Focus Areas	Delivery System
Map Production	Data Modelling	DSU	Validation	Conclusion

Thank you


Lesley Arnold
Landgate
 Email lesley.arnold@landgate.wa.gov.au

Introduction	Strategy	Sustainability	Focus Areas	Delivery System
Map Production	Data Modelling	DSU	Validation	Conclusion

Selection/Elimination

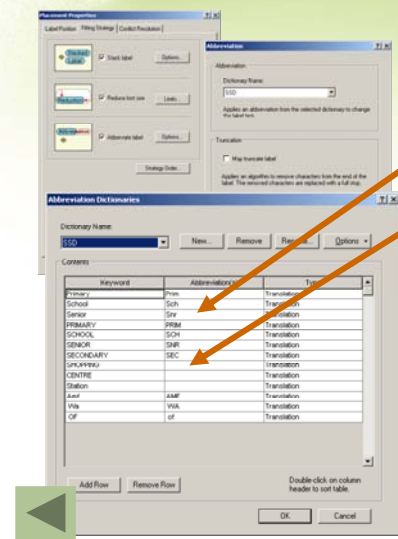


Kindergarten Selection Code
 FCSUBTYPE 1 = Education Facility &
 FACILITYTYPE 2 = Kindergarten

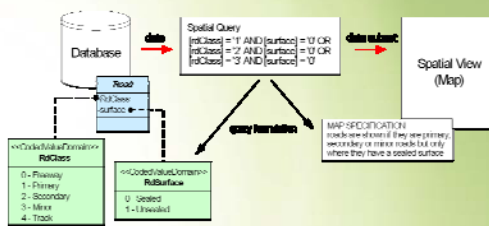


Dam Wall Selection Code
 FCSUBTYPE 10 = Dam Wall &
 INDUSTRIALFEATURETYPE -98 = not
 applicable & RELATIONSHIP TO GROUND
 3 = ON

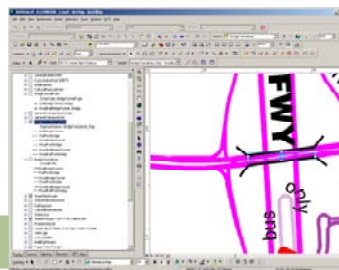
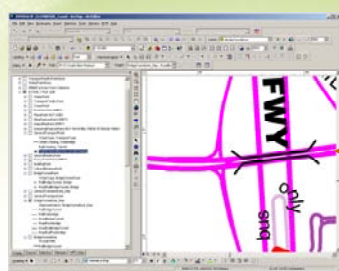
Product Dictionaries



- Official names in Database.
- School names are abbreviated – Prim Sch
- Shopping Centres only require name – to remove, abbreviation is blank



Symbolisation



Introduction	Strategy	Sustainability	Focus Areas	Delivery System
Map Production	Data Modelling	DSU	Validation	Conclusion

Label Placement

The screenshot shows several overlapping dialog boxes in a software interface. The 'Placement Properties' dialog is the most prominent, showing options for 'Label Position', 'Fitting Strategy', and 'Conflict Resolution'. Other visible dialogs include 'Label Offset' with a 'Preferred Offset' of 0.5, 'Street Placement' with options for horizontal placement and word spacing, and 'Label Reduction' with 'Font Size Reduction' settings (6 pts, Lower Limit: 3.5 pts, Step Interval: 0.3 pts). The Landgate logo is visible in the bottom right corner.

Introduction	Strategy	Sustainability	Focus Areas	Delivery System
Map Production	Data Modelling	DSU	Validation	Conclusion

Generalised Rendering

Generalised Polygon features

Polygon to Point transformation

Line to Point transformation

The 'Generalised Polygon features' map shows a park area with simplified shapes. The 'Polygon to Point transformation' map shows a street grid with buildings represented by small points. The 'Line to Point transformation' map shows a coastline with 'Marina' and 'Jetties' represented by points. The Landgate logo is visible in the bottom right corner.