

Optimising the Geodatabase

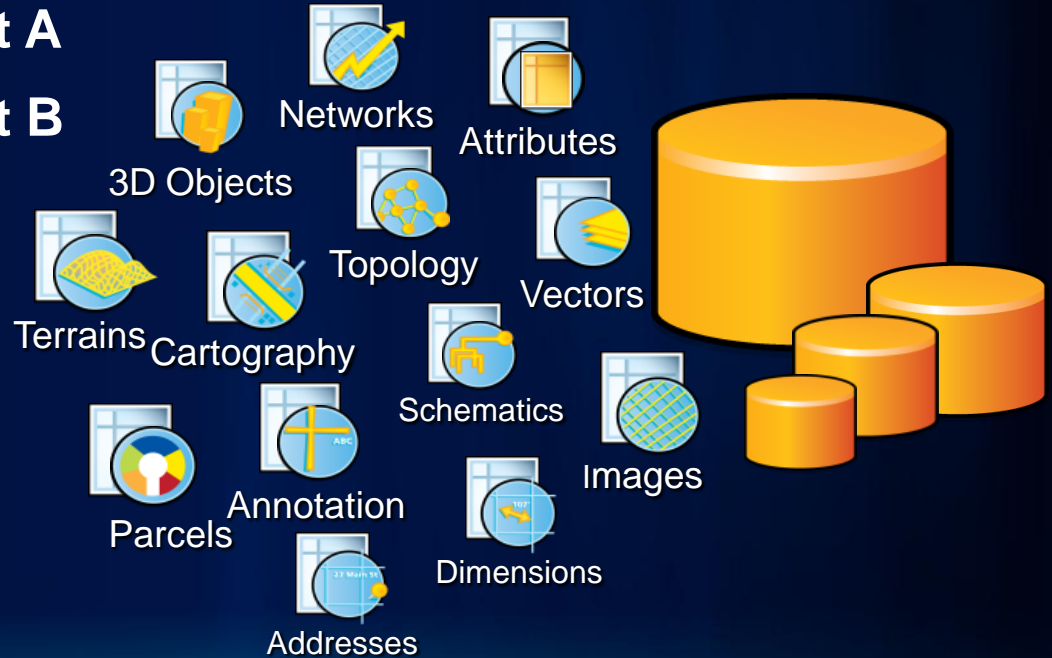
Chris Graves & James Mackay

Key Messages

- **Optimising the Geodatabase is ongoing**
- **Every little bit helps**

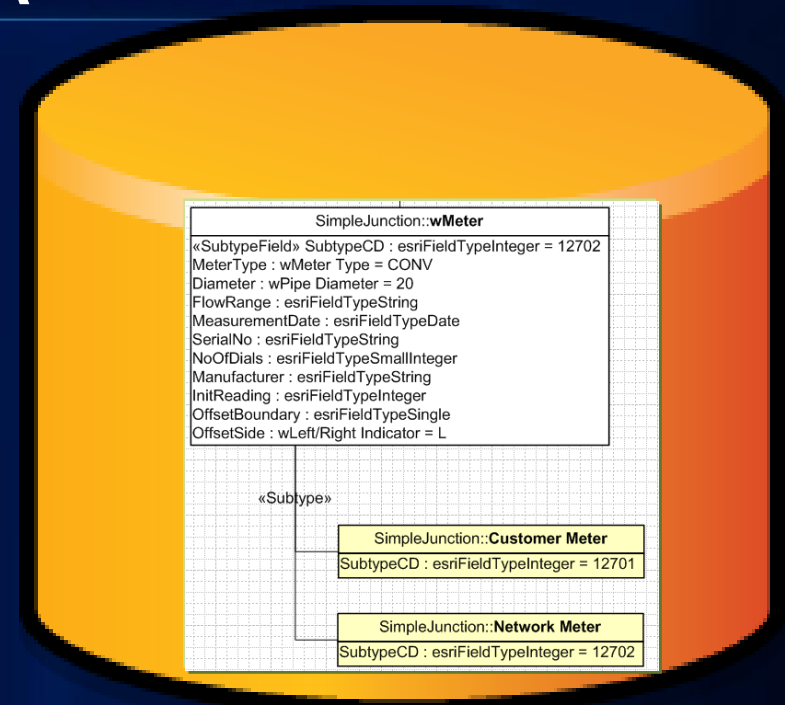
Overview

- Design & Creation Part A
- Design & Creation Part B
- Production



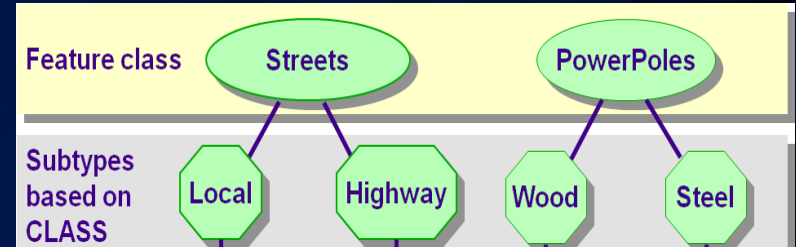
Designing & Creation Part A

- Schema Design Considerations
- Configuration Keywords
- Data Models



Schema Design Considerations

- Subtypes vs. Feature Classes
- Domains
- Field types
- Wide tables vs. relationship classes



Coded value domain

Property	Value
OBJECTID	1649
Farming_Type	Orchards
Crop_Type	Apricot
Source of Water	<Null>
SHAPE_Length	Almond
SHAPE_Area	Lemon
Council	Orange
	Apricot
	Peach

Schema Design Considerations

- Relationship classes
 - Simple vs. composite

Selected Attributes of R2VEG

OBJECTID *	VEG_LINK *	ACRES	Shape *	MODIFIED_BY	MODIFIED_D
43404	475	168.85976	Polygon	<Null>	<Null>

Selected Attributes of R2VEG_SPECIES

OBJECTID *	VEG_LINK *	PARTITION_TYPE	PARTITION	POLY_ID
390357	475	Watershed	DEVLXX	475
390403	475	Watershed	DEVLXX	475
390594	475	Watershed	DEVLXX	475
390693	475	Watershed	DEVLXX	475
390804	475	Watershed	DEVLXX	475

Origin

Destination

Configuration Keywords

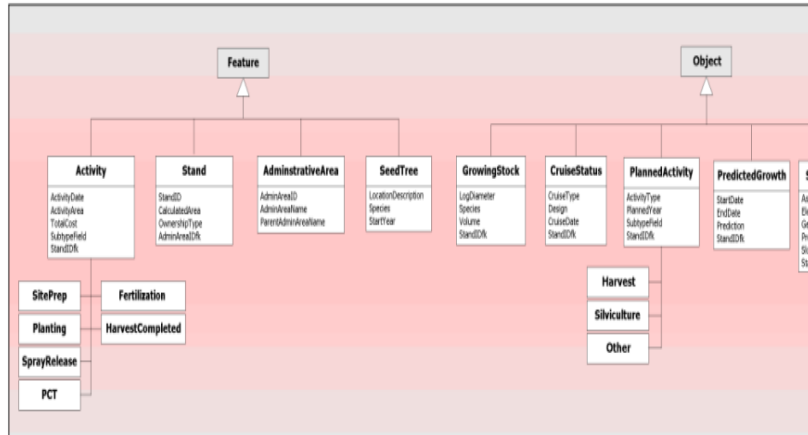
- **Collections of configuration parameters**
- **Parameters allow schema creators to modify underlying DBMS storage**
- **Different parameters and keywords for different DBMSs**
- **Some parameters provide better performance under certain conditions**

Data Models

- Designed for your industry
- Optimised Schema
- Can 'tweak' if required

Forestry Data Model

April 29, 2001



Design & Creation Part B

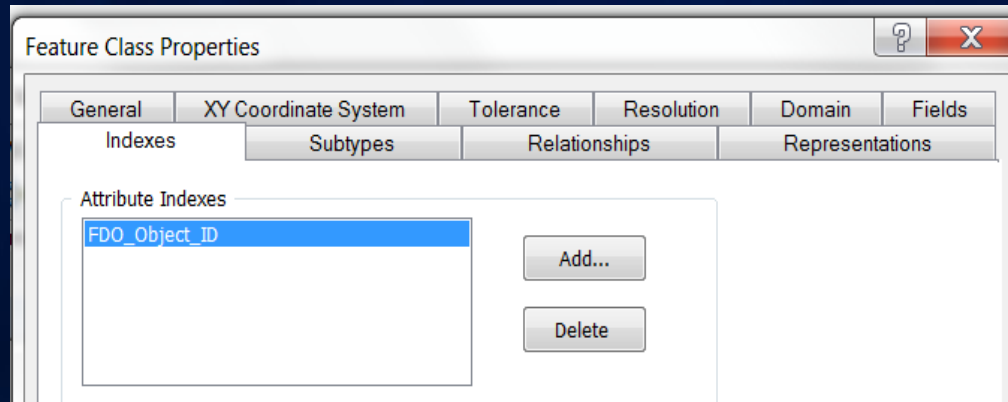
- Data Loading
- Attribute Indexing

Data Loading

- Postpone the creation of GDB elements such as geometric networks & topologies
- Postpone the creation of versioning & attribute indexes
- Delete spatial indexes prior to load

Attribute Indexing

- Analogous to the index of a book
- Data structure that improves queries

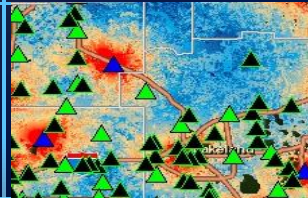
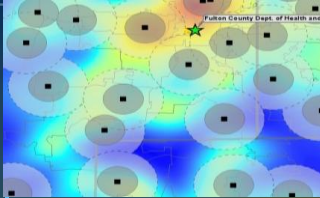


Attribute Indexing

- **When to use**
 - **Frequently-queried fields**
 - **Frequently-sorted fields**
 - **Fields used in joins**
- **Don't index every field**
 - **Write performance**
 - **Physical space**

Geodatabase Creation

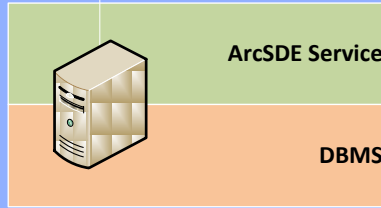
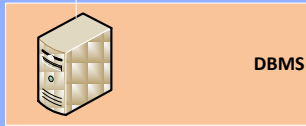
Index attribute Fields



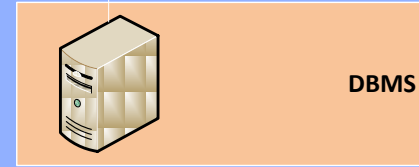
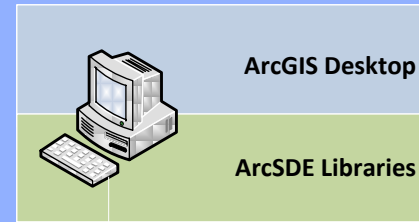
Production

- **Three-tier vs. Two-tier connections**
- **Versioning**
- **Attribute Indexing re-evaluated**
- **Geodatabase Maintenance**
- **Rebuilding Spatial Indexes**

3-Tier vs. 2-Tier Connections

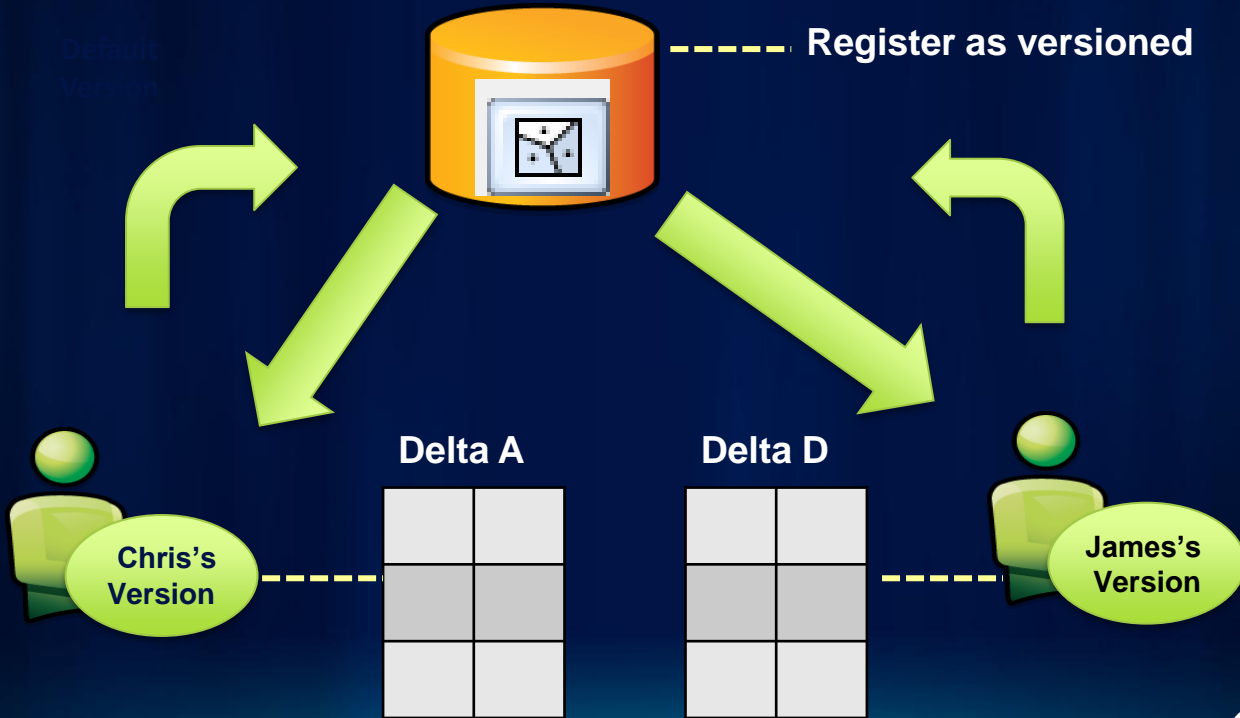


Three-Tier

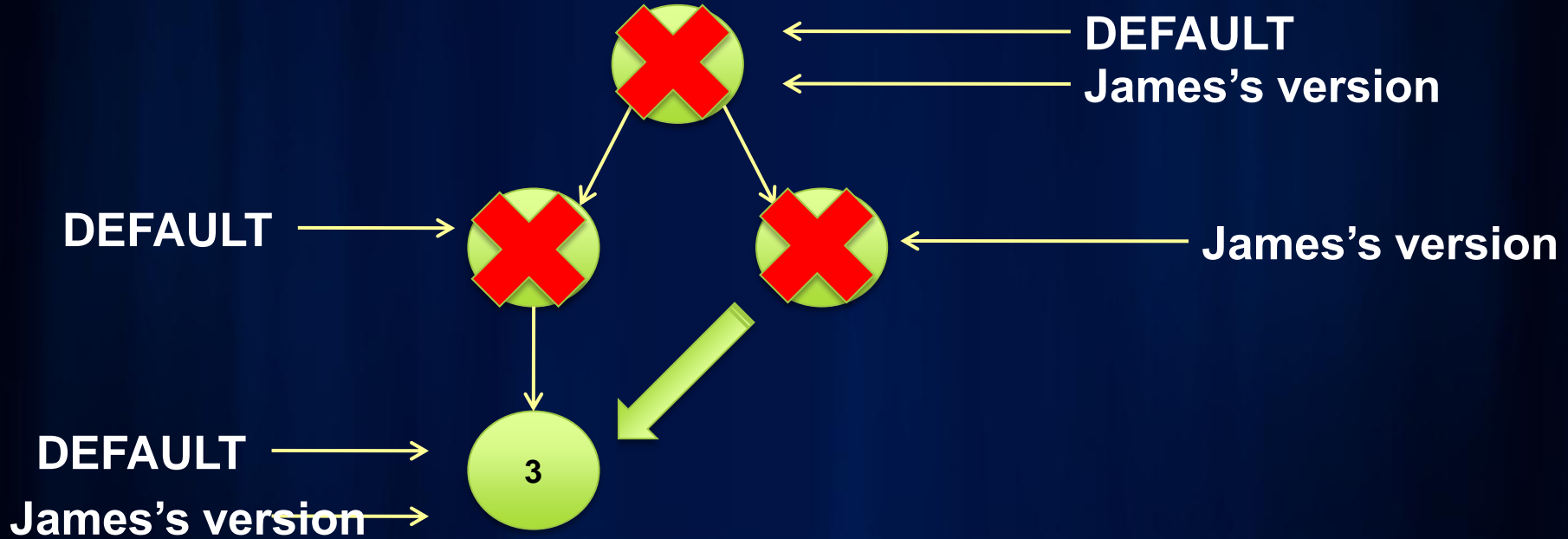


Two-Tier (Direct Connect)

Versioning what does it mean?



Versioned State Tree

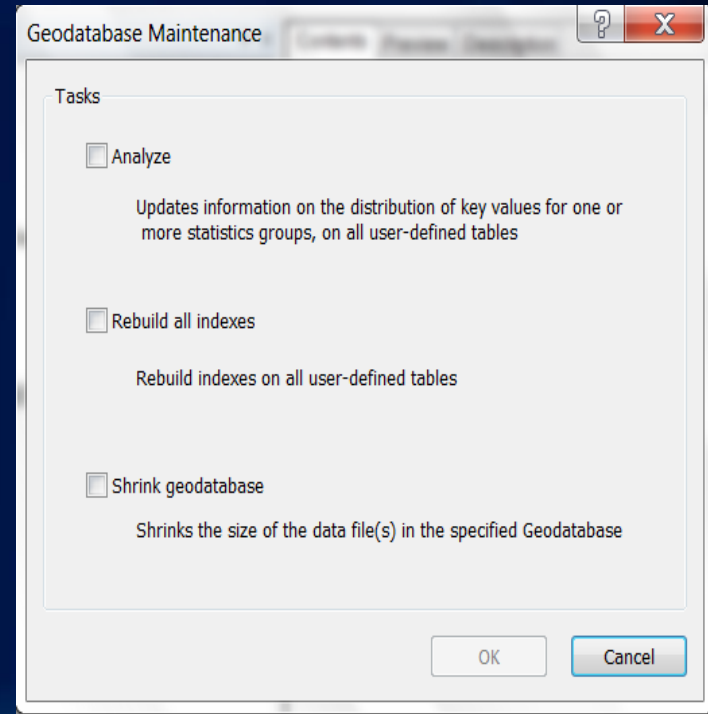


Attribute Indexing Re-evaluated

- **Talk to the people using the data**
 - **What fields are they processing selections, joins, sorts & definition queries**
- **DBMS full table scan logging**
 - **See DBMS documentation**

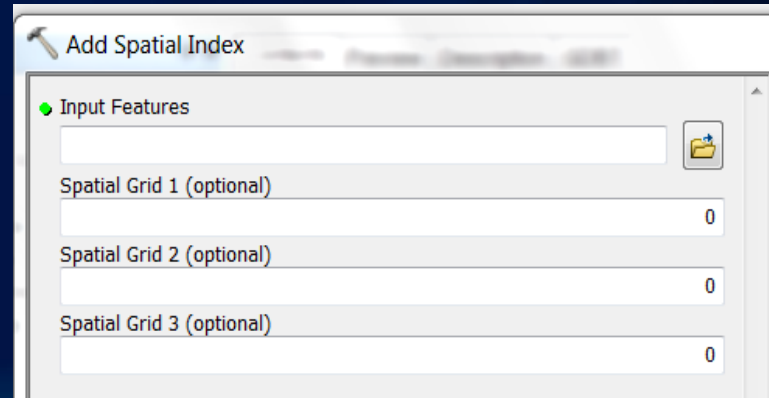
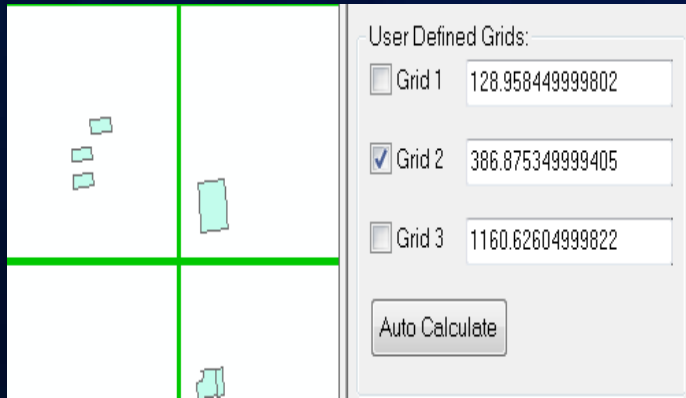
Geodatabase Maintenance

- **Enterprise GDB**
 - **Analyze table tool**
- **Personal/workgroup**
 - **Analyze, rebuild, & shrink**
- **File GDB**
 - **Compact**



Spatial Index

- Grid based spatial indexes have optimal grid sizes
- Changes to data require a recalculation of grid sizes

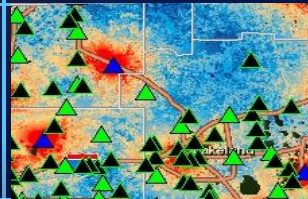
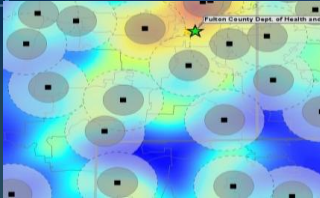


Geodatabase Maintenance

Compress ArcSDE states

Personal / Workgroup ArcSDE maintenance

Rebuilding spatial indices



Road Ahead for the Geodatabase 10.1

- **Improve Enterprise geodatabase administration**
 - **GUI for ArcSDE Command Line Tools**
 - **New Tools for maintenance**
- **Make geodatabase schema management easier**
 - **Networks & Topologies**
 - **Rename & sort domains**
 - **Rename fields & change 'nullability'**

Wrap Up

- **Optimising the Geodatabase is ongoing**
- **Every little bit helps**

Training Courses

- **Building Geodatabases**
- **Managing Editing Workflows in the the Multiuser Geodatabase**
- **Intro to Multiuser Geodatabase**

- **Esri Australia Training Schedule**
- **<http://www.esriaustralia.com.au/esri/3019.html>**

Links

- [Esri Support – Data Models](#)
- [UML to XMI Export Facility Installation](#)
- [2-tier \(Direct Connect\) vs. 3-tier](#)
- [Versioning](#)
- [Geodatabase Toolset \(GDBT\)](#)

Thank you

Questions?



esri Australia