



Geographic Prime Time



Infrastructure Mapping & Inventory & Geographic Information Systems in Rural Oklahoma

October 25, 2011





Topics

- Initiative
- Response
- History
- Partners
- Participants
- Enhancements
- Modernization
- GDB Model
- Benefits
- Challenges



State Capital Improvement Planning Act: 1992 (HB 2375)

- “There is hereby created a *Long-Range Capital Planning Commission* to advise & assist the Legislature in providing for capital facilities in this state....”
 - Oklahoma legislative request
 - Commerce administers CDBG
 - CDBG funds are highly flexible
 - Planning was an eligible activity
 - CDBG helps improve rural communities
 - Improvements begin with planning



Response

Geographical Information Systems (Geo) & Capital Improvement Planning (CIP)

GeoCIP® is a standardized process for creating a GIS based inventory of local government assets to be used in annually evaluating asset conditions, setting improvement priorities for assets & updating the local government capital budget.

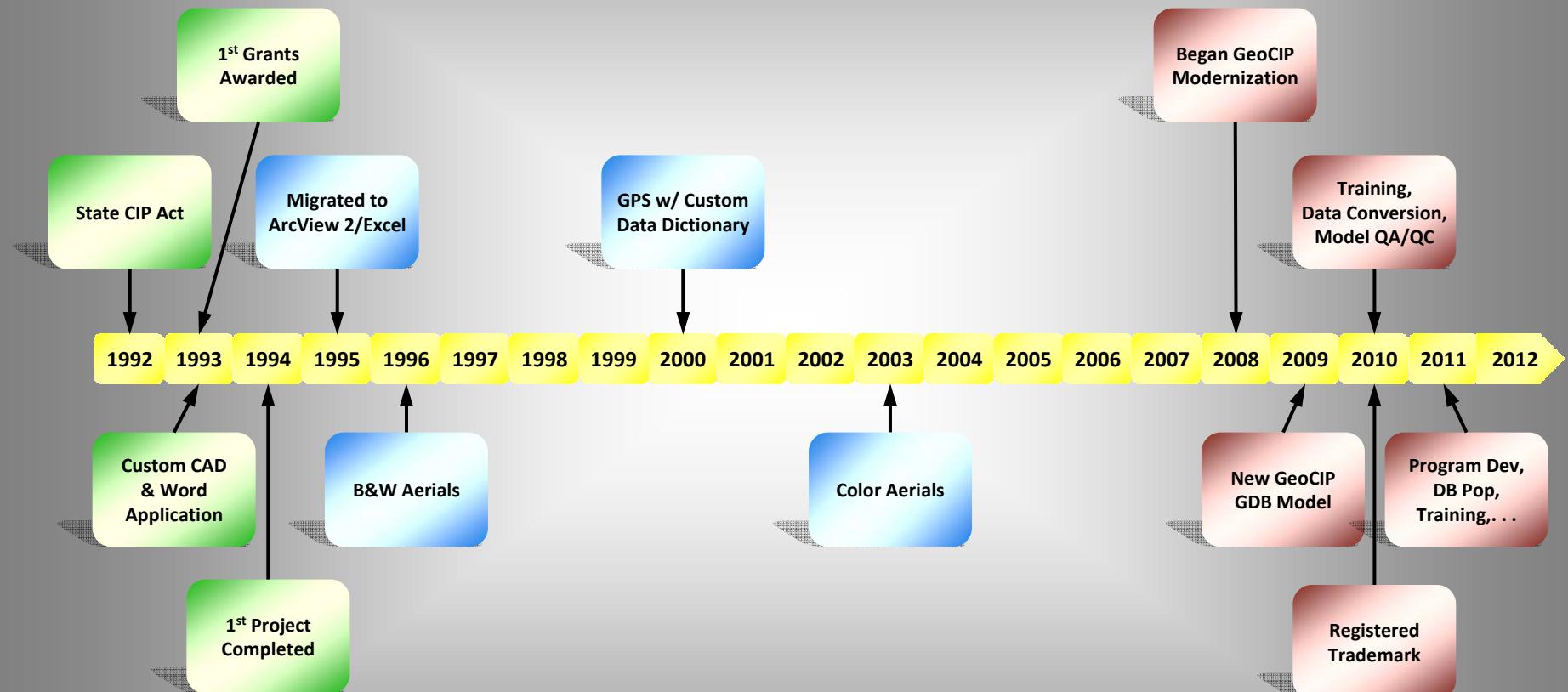


Common Rural Scenarios

- No Information Exists
- Existing Information Old & Outdated
- Few Persons Know About the Infrastructure
- Knowledge/Information Lost or Forgotten
- Crisis Management Mode
- Do Nothing

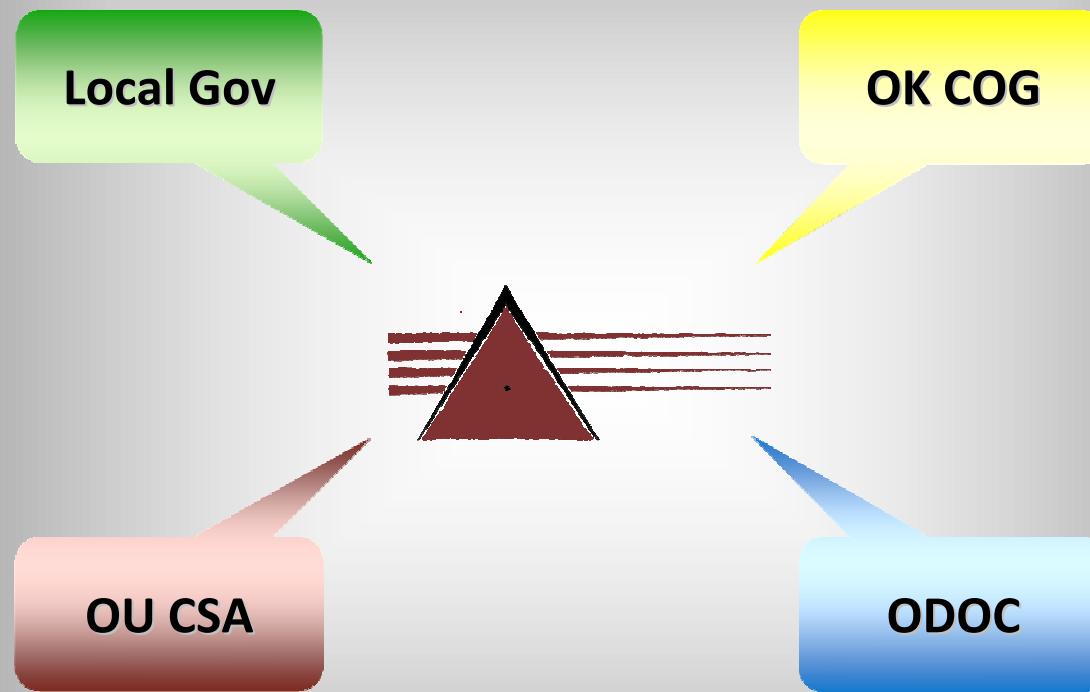


History





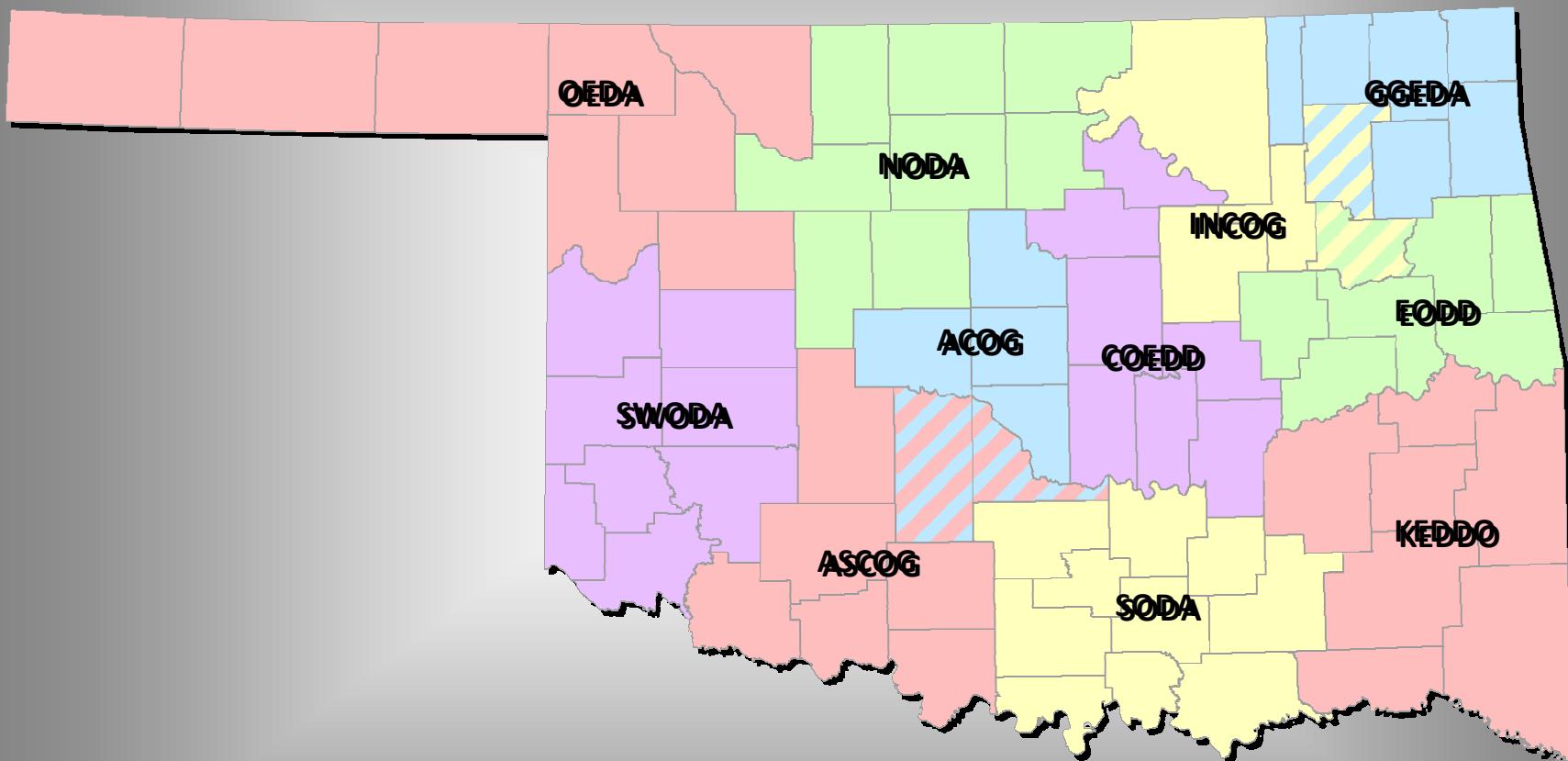
Partners



Local Governments
University of Oklahoma Center for Spatial Analysis

Oklahoma COG
Oklahoma Department of Commerce

COG

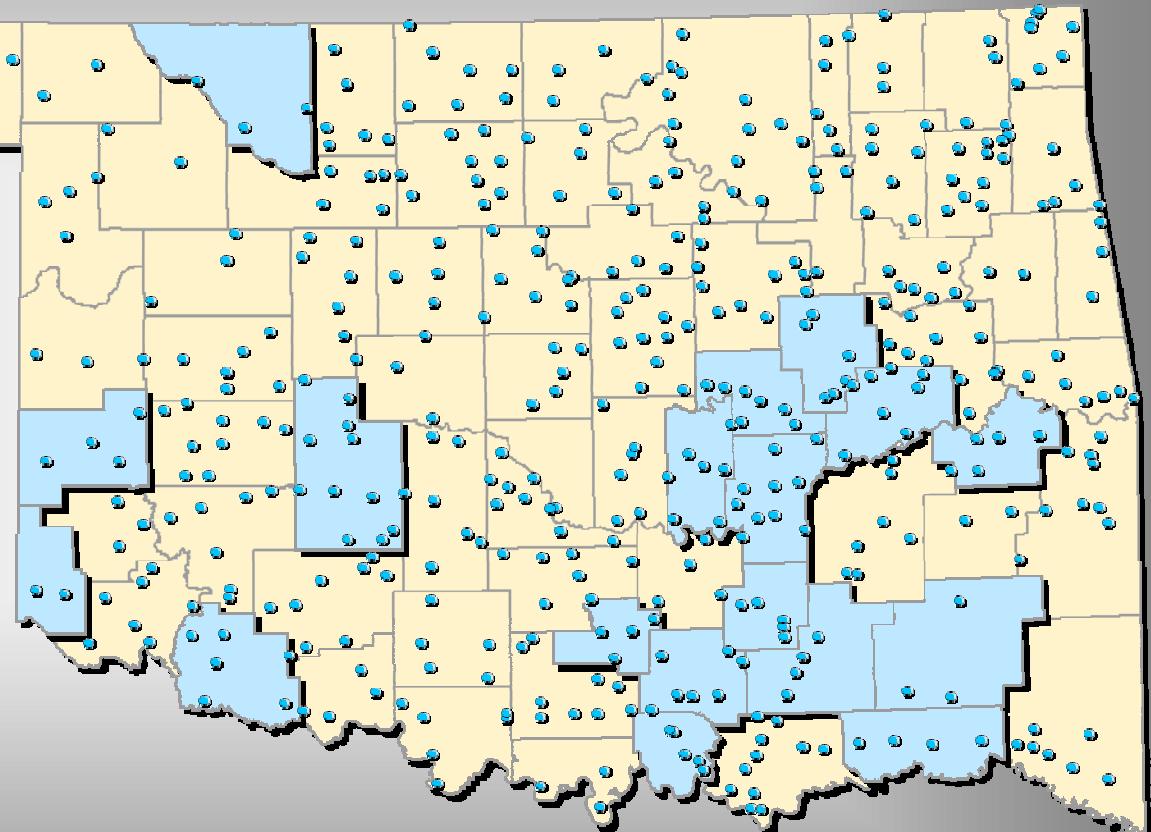


11 Regional Partners



Participants

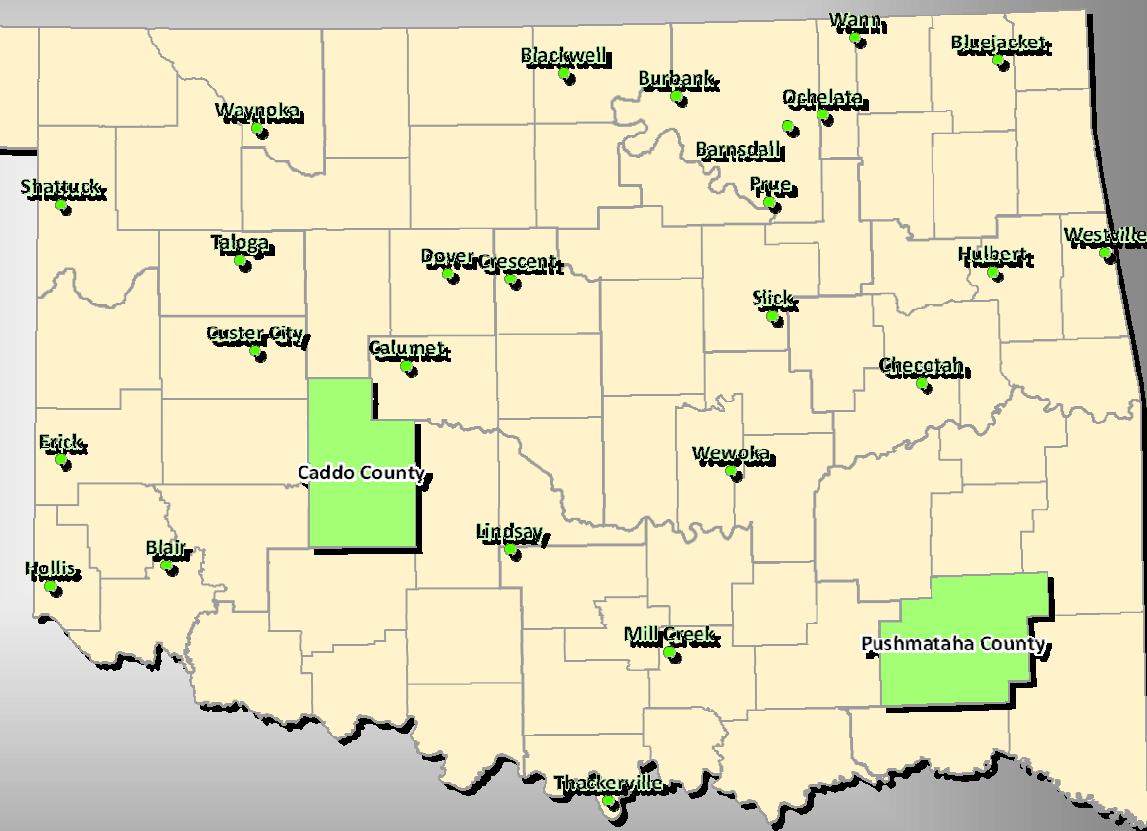
**445 Local
Governments**



(local governments that have participated in the CIP program at least once)

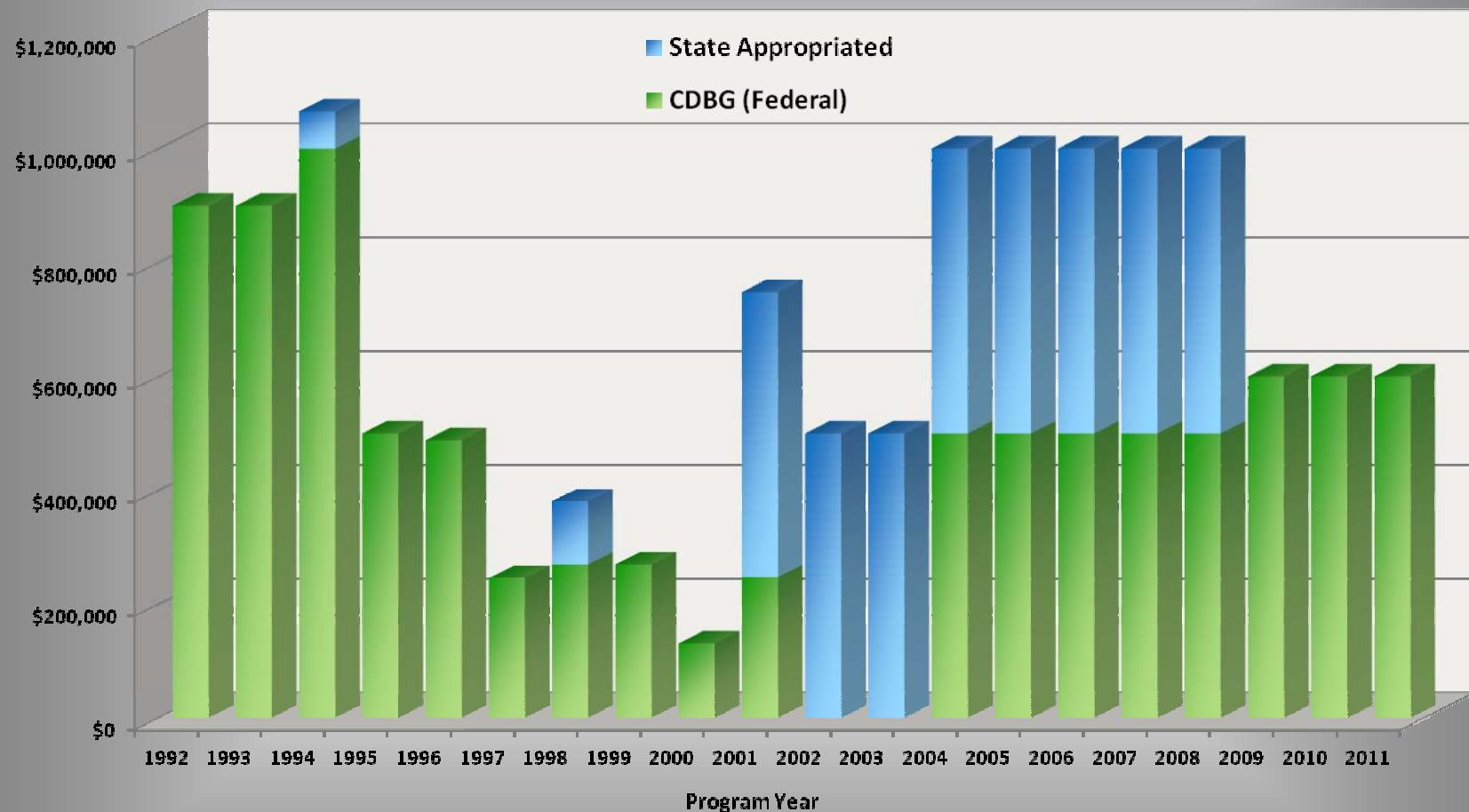
2011 Program

**27 Local
Governments**



**25 Communities
2 Counties**

Funding



\$9,253,062
+ \$4,179,000
\$13,429,062

GPS

GeoCIP Data Dictionary

10 Asset Categories

63 Features



GeoCIP_v1.3.ddf - Data Dictionary Editor

Name: GeoCIP_v1.3
Comment: Data dictionary for GeoCIP Geodatabase
Version: TerraSync V4.1x and prior

Features:

- wwAccess
- wwAnode
- wwCasing
- wwFitting
- wwLateralPoint
- wwLine
- wwMeter
- wwPlant
- wwPlantJunction
- wwPump
- wwStation
- wwStorage
- wwThrustProtection
- wwUndergrndEnclosure
- wwValve
- wAnode
- wCasing
- wFitting
- wHydrant
- wLateralPoint
- wLine
- wMeter
- wPlant
- wPlantJunction
- wPump
- wStation
- wSupplyOrStorage
- wThrustProtection
- wUndergroundEnclosur
- wValve

Attributes:

- SegmentID
- LocationDescription
- Type
- Subtype
- LifecycleStatus
- Enabled
- WaterType
- Material
- GroundSurfaceType
- PressureRating
- CrossSectionShape
- Length
- LineDepth
- LineDiameter
- Hydrants
- Meters
- Valves
- Comments
- Condition
- RemainingUsefulLife
- Cost
- InitialPriority

Menu

- Combined
- Effluent
- Potable
- Raw
- Reclaimed
- SaltWater
- StormRunoff
- Treated
- Wastewater
- Other
- Unspecified*

* = Default Value

On Creation: Normal
On Update: Normal

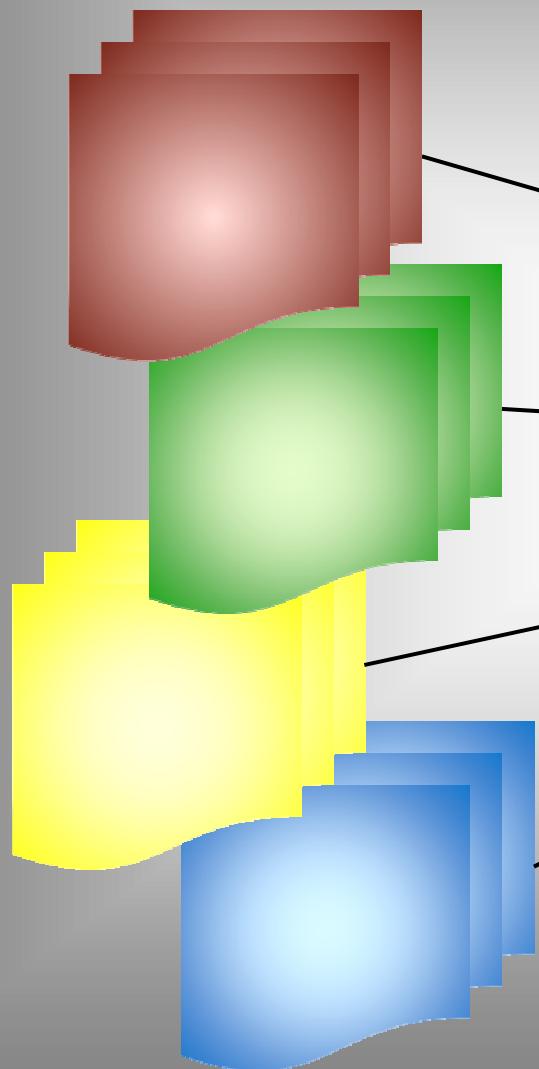
New Feature... F3
Edit Feature... F4
Delete Feature F5

New Attribute... F7
Edit Attribute... F8
Delete Attribute F9

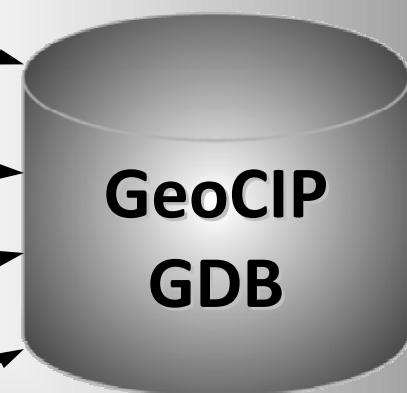
Default Feature Settings:
Offset: Right 0.00m 0.00m
Accuracy: Code
Log Interval: 5 seconds
Label 1: LocationDescription
Label 2: Type

Program Modernization

Unconnected Data

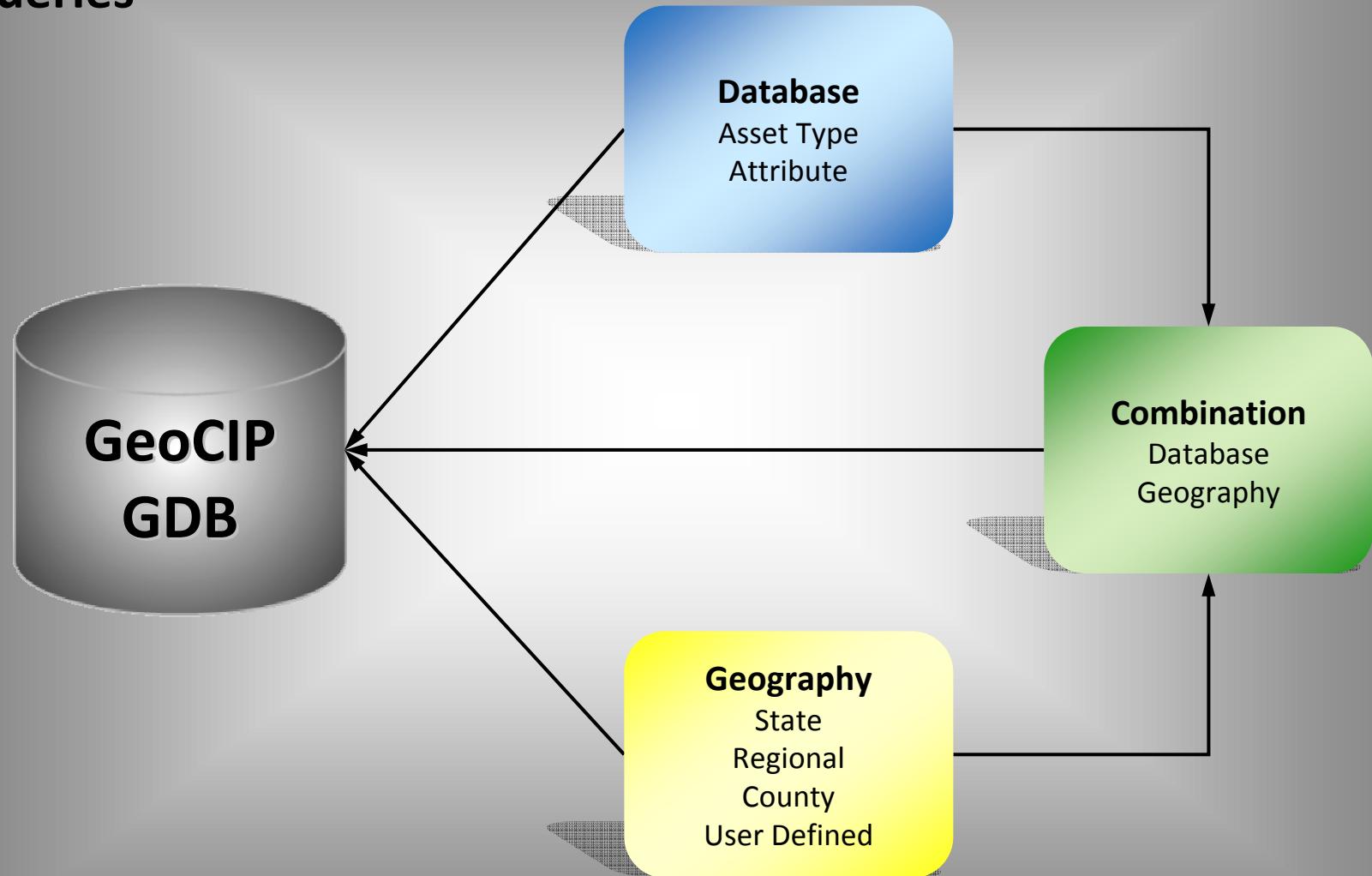


Relational Data



Relational Database

Queries



Asset Categories

- Electric
 - Gas
 - Parks
 - Public Safety
 - Solid Waste
 - Storm Drainage
 - Transportation
 - Wastewater
 - Water
 - Structure
 - Equipment
 - Rolling Stock
 - Space Use
- 13 Asset Categories
 - 63 Features
 - 1071 Attributes

GeoCIP Systems

<ul style="list-style-type: none">• Electric<ul style="list-style-type: none">• Line 16• Meter 10• Substation 10• Support Structure 16• Gas<ul style="list-style-type: none">• Anode 9• Line 16• Meter 13• Regulator 10• Valve 12• Parks<ul style="list-style-type: none">• Boundary 11• Usage 9• Public Safety<ul style="list-style-type: none">• Storm Shelter 15• Storm Siren 17• Solid Waste<ul style="list-style-type: none">• Landfill 24• Solid Waste Station 6• Storm Drainage<ul style="list-style-type: none">• Access 23• Basin 17• Flow Mgt Device 19• Inlet 19• Line 20• Obstacle Bypass 24• Spillway 19	<ul style="list-style-type: none">• Transportation<ul style="list-style-type: none">• Airport Area 16• Bridge 15• Runway/Taxiway 12• Street 18• Street Lighting 14• Traffic Light 13• Traffic Sign 11• Wastewater<ul style="list-style-type: none">• Access 25• Anode 12• Casing 13• Fitting 25• Lateral Point 18• Line 22• Meter 21• Plant 14• Plant Junction 7• Pump 24• Station 20• Supply/Storage 21• Thrust Protection 10• Underground Enclosure 18• Valve 24	<ul style="list-style-type: none">• Water<ul style="list-style-type: none">• Anode 25• Casing 13• Fitting 25• Hydrant 25• Lateral Point 18• Line 22• Meter 21• Plant 14• Plant Junction 7• Pump 24• Station 20• Supply/Storage 21• Thrust Protection 10• Underground Enclosure 18• Valve 24
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Water Line Attributes

- **SegmentID**
 - (text)
- **LocationDescription**
 - (text)
- **Type**
 - Lateral
 - Main
 - Other
 - Unspecified*
- **Subtype**
 - (numeric)
- **LifecycleStatus**
 - Abandoned
 - Active*
 - Inactive
 - Proposed
 - Removed
- **Enabled**
 - Yes
 - No
- **WaterType**
 - Combined
 - Effluent
 - Potable
 - Raw
 - Reclaimed
 - SaltWater
 - StormRunoff
 - Treated
 - Wastewater
 - Other
 - Unspecified*
- **Material**
 - AsbestosConcrete
 - CastIron
 - Clay
 - DuctileIron
 - PVC
 - Wood
 - Other
 - Unspecified*
- **GroundSurfaceType**
 - (text)
- **PressureRating**
 - (text)
- **CrossSectionShape**
 - Circular
 - Horseshoe
 - Oblong
 - Other
 - Unspecified*
- **Length**
 - (numeric)
- **LineDepth**
 - (numeric)
- **LineDiameter**
 - (numeric)
- **Hydrants**
 - (numeric)
- **Meters**
 - (numeric)
- **Valves**
 - (numeric)
- **Comments**
 - (text)
- **Condition**
 - Satisfactory
 - NotSatisfactory
- **RemainingUsefulLife**
 - (numeric)
- **Cost**
 - (numeric)
- **InitialPriority**
 - Mandatory
 - Essential
 - Desirable
 - Deferrable

Structure Attributes

- **StructureID**
 - (text)
- **TreatmentPlantID**
 - (text)
- **StructureName**
 - (text)
- **StructureType**
 - Building
 - Facility
 - Other
 - Unspecified*
- **AssetType**
 - Airport
 - Bridge
 - Electric
 - Fire
 - Gas
 - Hospital
 - Library
 - Municipal
 - Park
 - Police
 - RunwayTaxiway
 - SolidWaste
 - StormDrainage
 - Street
 - StreetLight
 - StormShelter
 - StormSiren
 - TrafficLight
 - TrafficSign
 - Wastewater
 - Water
- **AssetCategory**
 - Administration
 - Parks
 - PublicSafety
 - Transportation
 - Utilities
- **SquareFeet**
 - (numeric)
- **SiteArea**
 - (numeric)
- **YearConstructed**
 - (numeric)
- **CurrentValue**
 - (numeric)
- **StructureComments**
 - (text)
- **StructureCondition**
 - Satisfactory
 - NotSatisfactory
- **StructureRUL**
 - (numeric)
- **StructureCost**
 - (numeric)
- **StructureInitialPriority**
 - Mandatory
 - Essential
 - Desirable
 - Deferrable
- **ParkingSpaces**
 - (numeric)
- **ParkingComments**
 - (text)
- **ParkingCondition**
 - Satisfactory
 - NotSatisfactory
- **ParkingRUL**
 - (numeric)
- **ParkingCost**
 - (numeric)
- **ParkingInitialPriority**
 - Mandatory
 - Essential
 - Desirable
 - Deferrable
- **RoofComments**
 - (text)
- **RoofCondition**
 - Satisfactory
 - NotSatisfactory
- **RoofRUL**
 - (numeric)
- **RoofCost**
 - (numeric)
- **RoofInitialPriority**
 - Mandatory
 - Essential
 - Desirable
 - Deferrable
- **HeatAirComments**
 - (text)
- **HeatAirCondition**
 - Satisfactory
 - NotSatisfactory
- **HeatAirRUL**
 - (numeric)
- **HeatAirCost**
 - (numeric)
- **HeatAirInitialPriority**
 - Mandatory
 - Essential
 - Desirable
 - Deferrable

Bridge Attributes

- **NBISN**
 - (text)
- **SegmentID**
 - (text)
- **Ownership**
 - LocalGovernment
 - Other
 - Unspecified
- **Location**
 - (text)
- **FacilityCarried**
 - (text)
- **FeatureInteresected**
 - (text)
- **TypeServiceOn**
 - 4thLevelInterchange
 - 3rdLevelInterchange
 - BuildingPlaza
 - Hwy
 - HwyPedestrain
 - HwyRailroad
 - InterchangeOverpass
 - PedestrainBicycle
 - Railroad
 - Other
 - Unspecified
- **TypeServiceUnder**
 - Hwy
 - HwyRailroad
 - HwyWaterway
 - HwyWaterwayRailroad
 - PedestrainBicycle
 - Railroad
 - RailroadWaterway
 - ReliefForWaterway
 - Other
 - Unspecified
- **BridgeDesignConstruct**
 - Hwy
 - HwyRailroad
 - ArchDeck
 - ArchThru
 - BoxBeamGirderMulti
 - BoxBeamGirderSingle
 - ChannelBeam
 - Culvert
 - Frame
 - GirderFloorbeam
 - MixedTypes
 - MovableBascule
 - MovableLift
 - MovableSwing
 - Orthotropic
 - SegmentBoxGirder
 - Slab
 - StayedGirder
 - StringerMultbeamGird
 - Suspension
 - TeeBeam
 - TrussDeck
 - TrussThru
 - Tunnel
 - Other
 - Unspecified
- **Comments**
 - (text)
- **Condition**
 - Satisfactory
 - NotSatisfactory
- **RemainingUsefulLife**
 - (numeric)
- **Cost**
 - (numeric)
- **InitialPriority**
 - Mandatory
 - Essential
 - Desirable
 - Deferrable

Benefits

- **Partnerships**

- Different Perspectives
- Mutual Encouragement
- Share Work Load
- Broaden “Brain Pool”

- **Integrated GIS Shop**

- GeoCIP Good Foundation
- Launch Other Programs
- Initiate Additional Projects
- Common Program Element

- **Standardized Process**

- Necessary for Statewide
- All Doing Same
- Uniform Training
- Costs Savings

- **Intelligent Budgeting**

- Identify Needs
- Encourage Planning
- Target Documented Needs
- Better Decision Making

Challenges

- **Differences**

- Environmental
- Political
- Personnel
- Philosophical

- **Funding**

- Limited
- Competitive
- Uncertain
- Planning

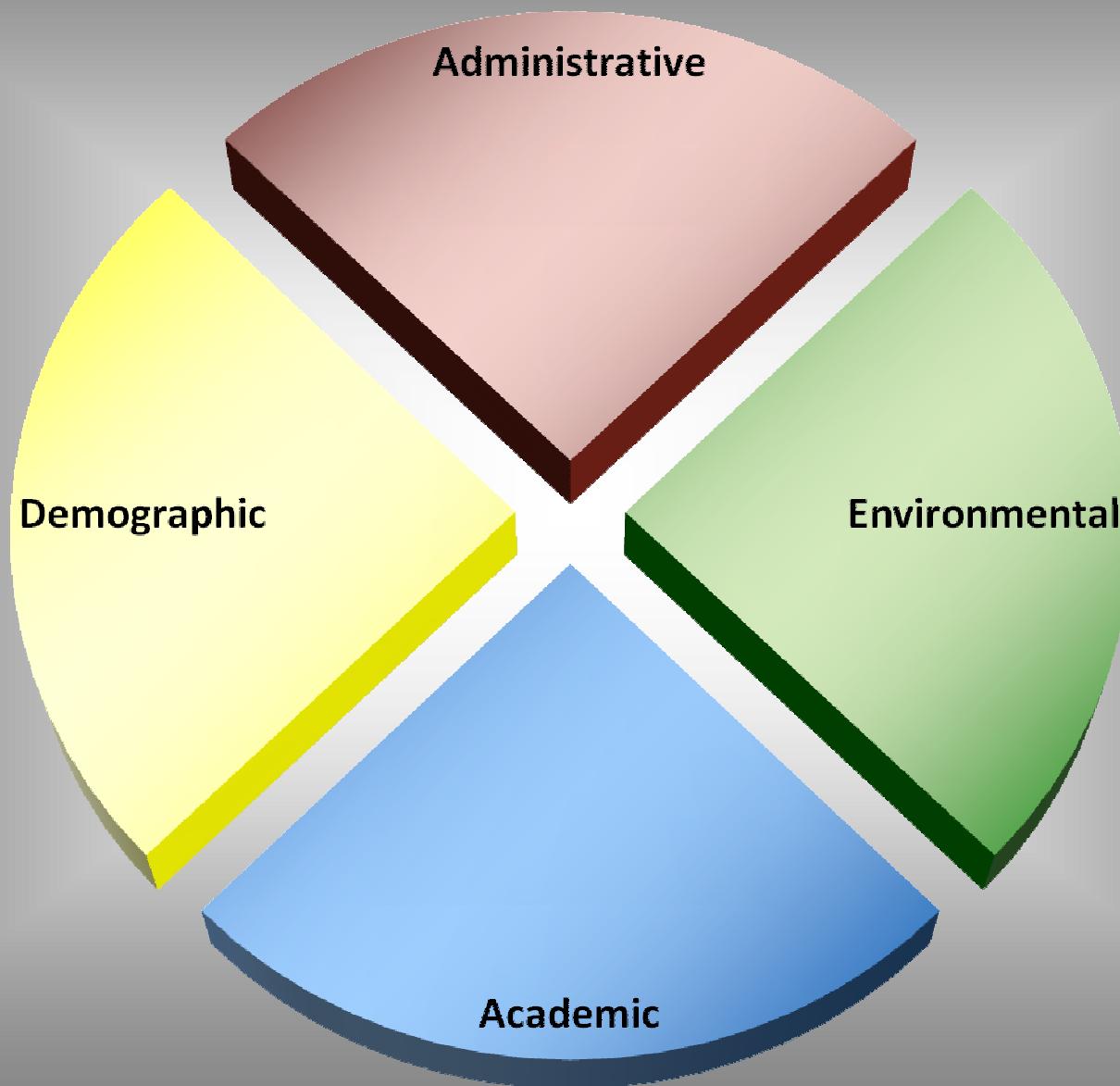
- **Technology**

- What To Embrace
- Justify Costs
- Is It An Improvement
- When to Upgrade

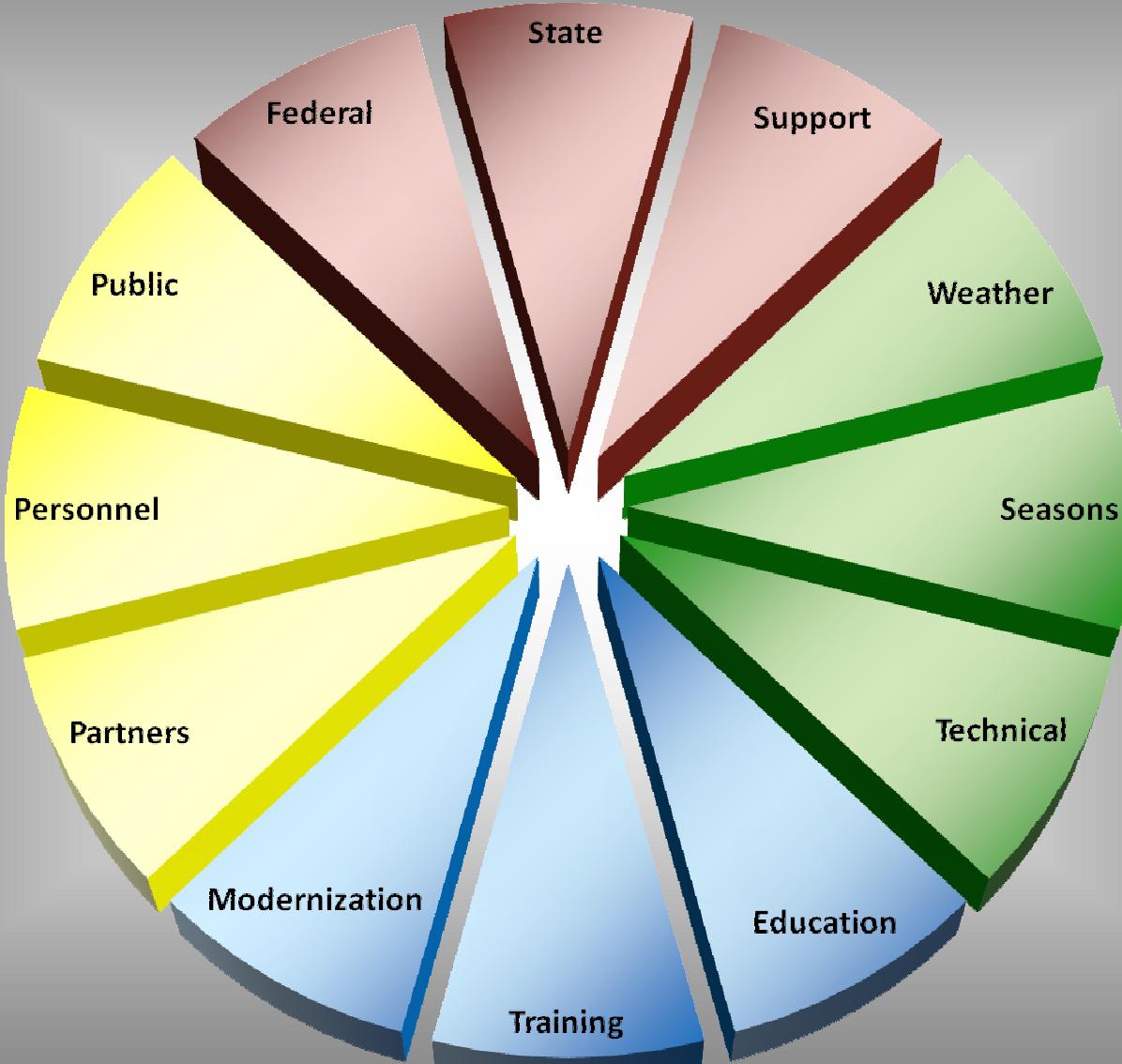
- **Training/Education**

- Who
- What
- When
- Where

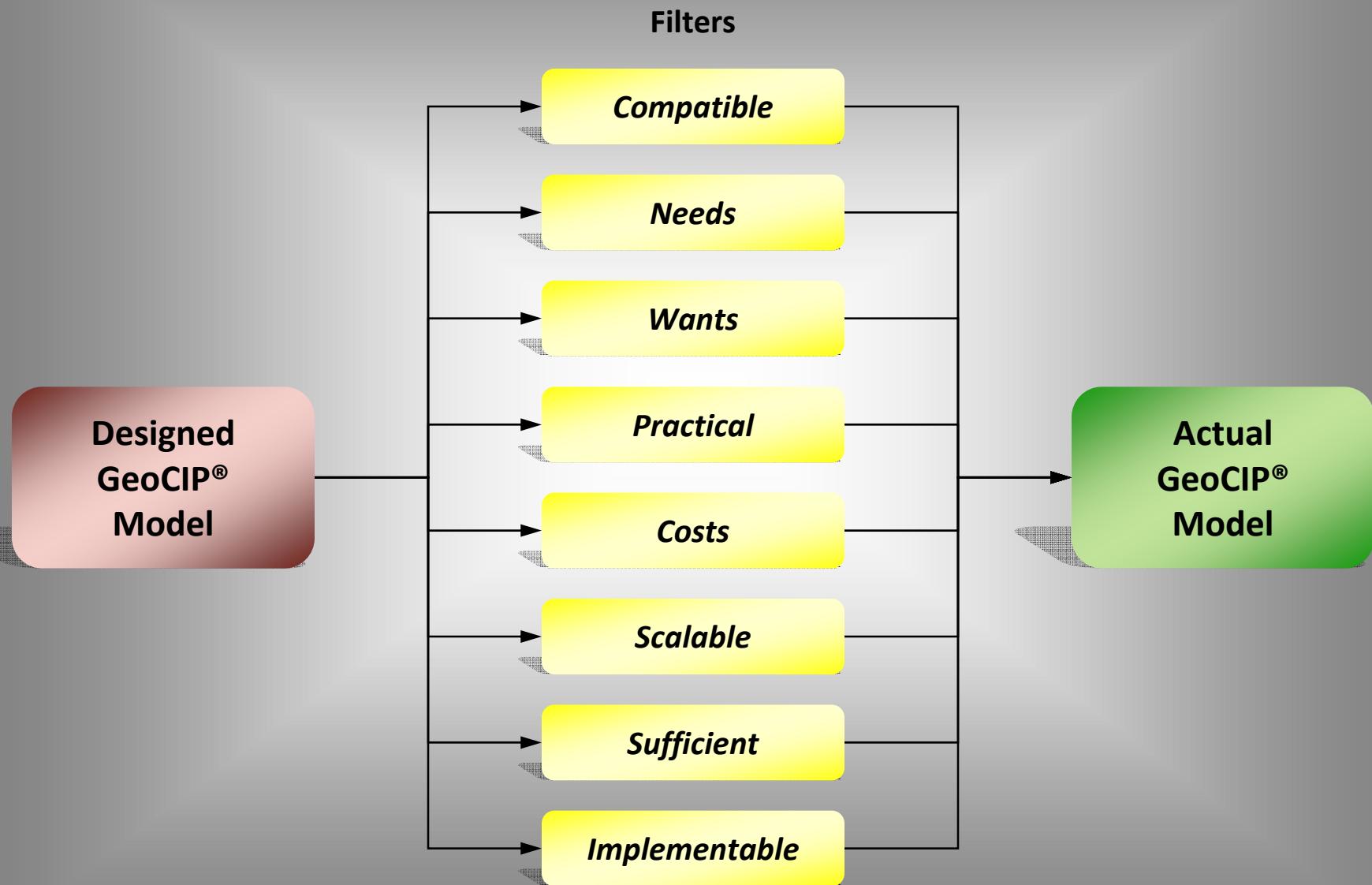
Program Aspects



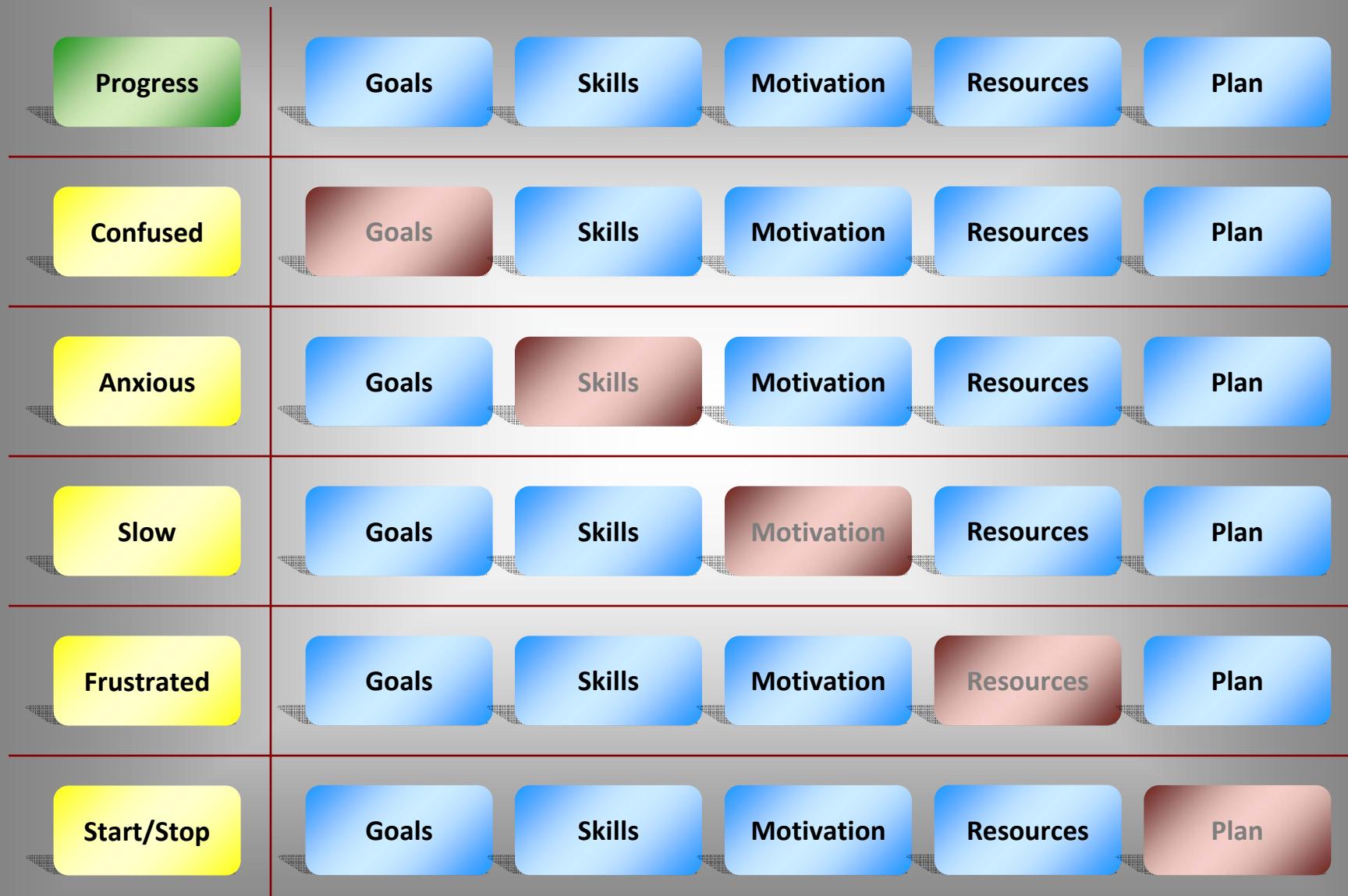
Program Aspects



Theory vs Real World



Managing Programs & Projects



Based on 'Managing Complex Change' by Germain Ludwig, Ed.D. Florida Atlantic University

GIS Applications

- Asset Inventory Control
- Capital Asset Management
- Cemetery Mapping
- Census Mapping
- Disaster Management
- E911
- Environment Quality Management
- Floodplain Management
- Grant & Project Tracking
- Hazard Area Identification
- Hazard Mitigation (Project Impact)
- Housing
- Infrastructure Planning (CIP)
- Natural Resources Conservation
- Property Inventory
- Redistricting
- Residential & Commercial Evaluation
- Rezoning
- Urban/Incorporated Area Planning
- Rural/Unincorporated Area Planning
- Site Location/Business Location
- Soil Conservation
- Park Management
- Wildlife Management

Contact Information

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