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Closing the Data Collection Circle

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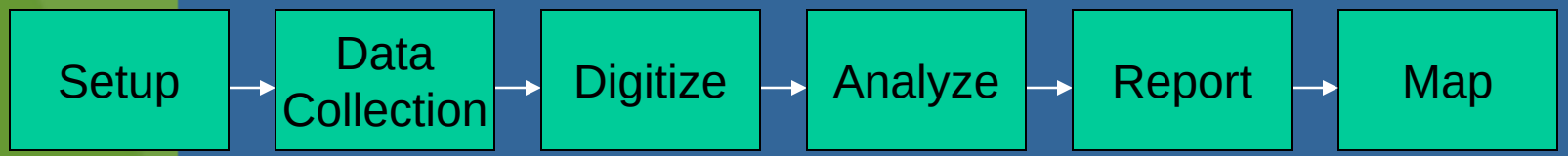
Traditional Data Collection Method

- Bulky
  - Land use maps
  - Photographs
- Draw features on paper maps
- Collect attribute information in field notebook
- Digitize features and data entry in the office
- Numerous QA/QC iterations



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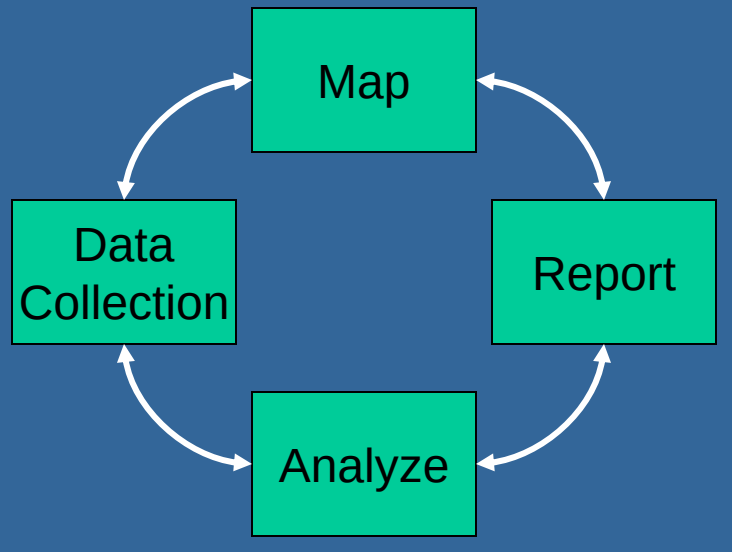
Re-Engineered Data Collection Method

- Streamlined
- All data is stored electronically in a common format used for collection, analysis and report
- Digitize features and data entry while in the field minimizing transcription errors
- Minimizes time from data collection to analysis and reporting



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Project Objectives

- Develop an ArcPad application for Vegetation Monitoring
- The Application must be relevant to various regions in the U.S.
- Encourage the use of technology in data collection to leverage decision making

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Project Requirements

- Collect Vegetation Areas
  - Grid Tool
- Many-to-One relationships
- Quick sort through large list of species
- Add new species to list
- Large Forms with large font
- Large Buttons on the Toolbar

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Project Requirements, Cont.

- Calculations on the Fly:
  - Total % Cover
  - Relative % Cover for a species
  - Wetland Affinity Score

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Project Tasks

- Client Interactions
- Functional Specification
- Design
- Implementation
- In-Field Use

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Client Interactions

- Client must understand technology
  - Benefits
  - Apply to methodologies
- Developers must understand the kind of data to be collected
- Developers must understand the complex feature-attribute relationships

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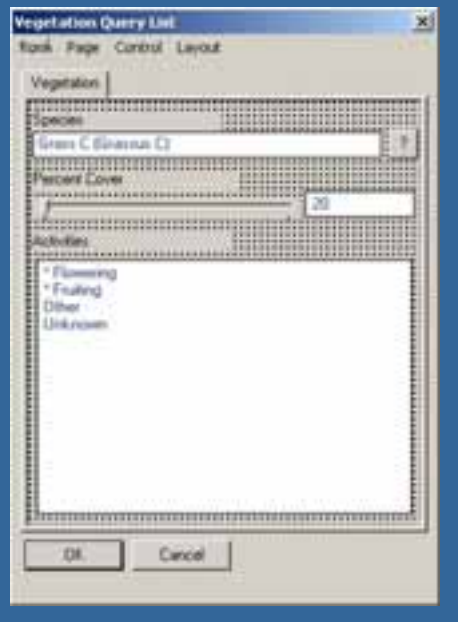
Functional Specification

- Outlined every detail of the application
- Used ArcPad Application Builder & Excel to create mock-up diagrams and organize requirements
- Required client approval before application development began

Attribute	Method	Comments	Required?	Lookup Table	Default Value	Validation
PAGE 1 – VEGETATION						
Species	Textbox	User clicks '?' button to select Species from list. Once Species is selected from Species Form the value is populated in this textbox.	Yes	None		Validation to ensure this textbox is not blank
Percent Cover	Slider / Textbox	These two controls are linked so the user can type in a Percent Cover value or move the slider to the appropriate value and the other control will be set appropriately.	No	None		
Activities	Multi-Select Listbox	The user will be allowed to select as many types of activities associated with the particular species and also be allowed to add new activities to the list.	No	Vegetation Species Activities	None	



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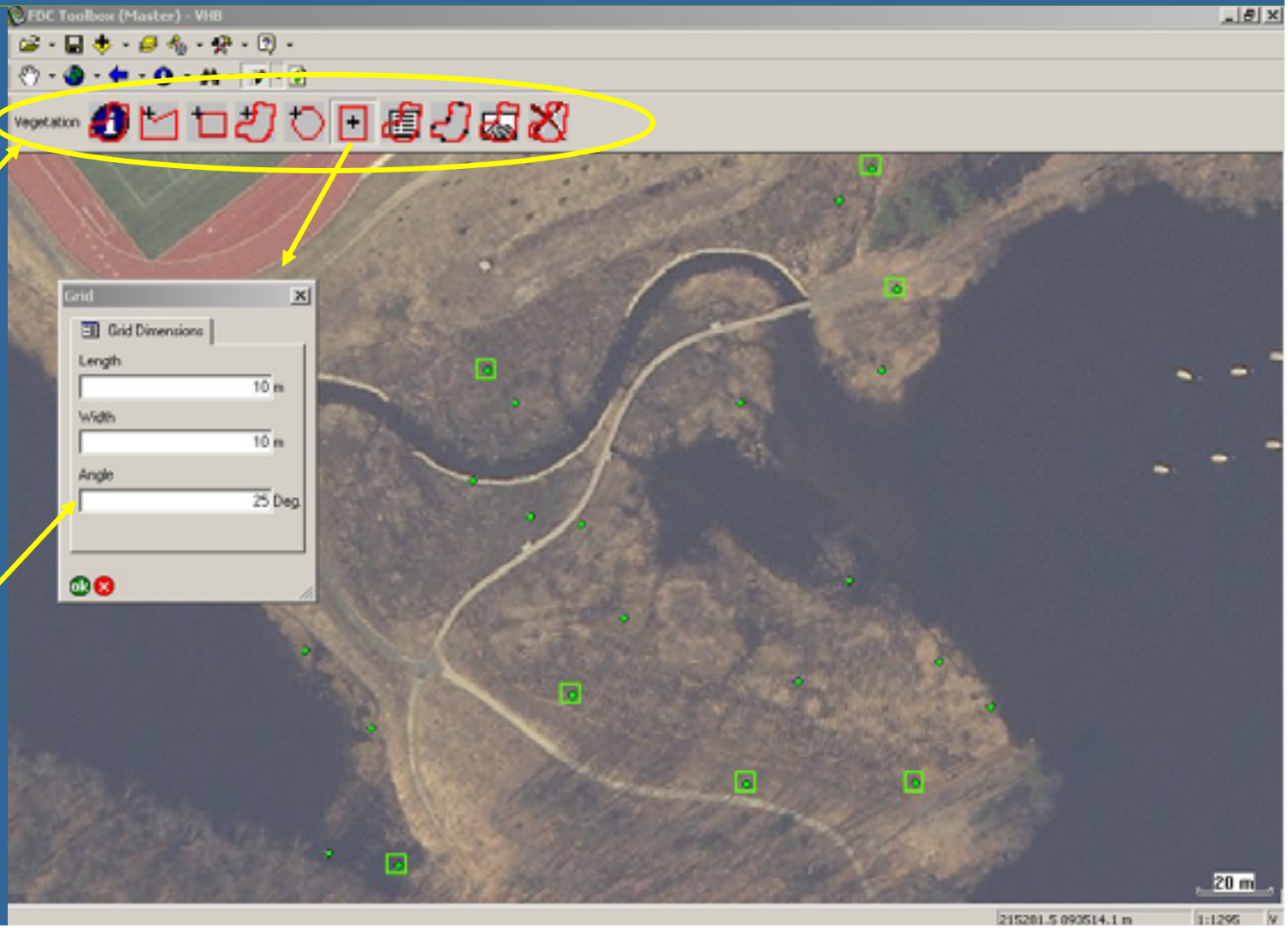
Implementation



Large Toolbar Buttons

GRID Tool

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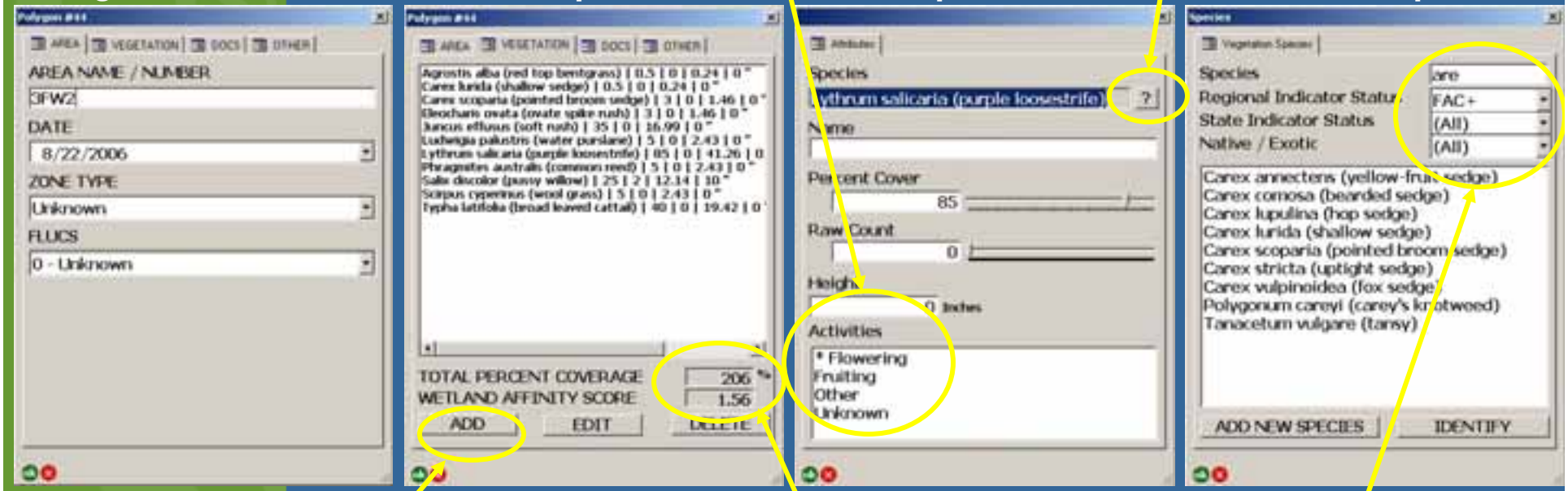
Implementation

Many-to-one relationship

Click to pick the species

Assign Area Attributes | Add Species | Select Species Attributes | Find Species



On-the-fly calculations

Narrow down list

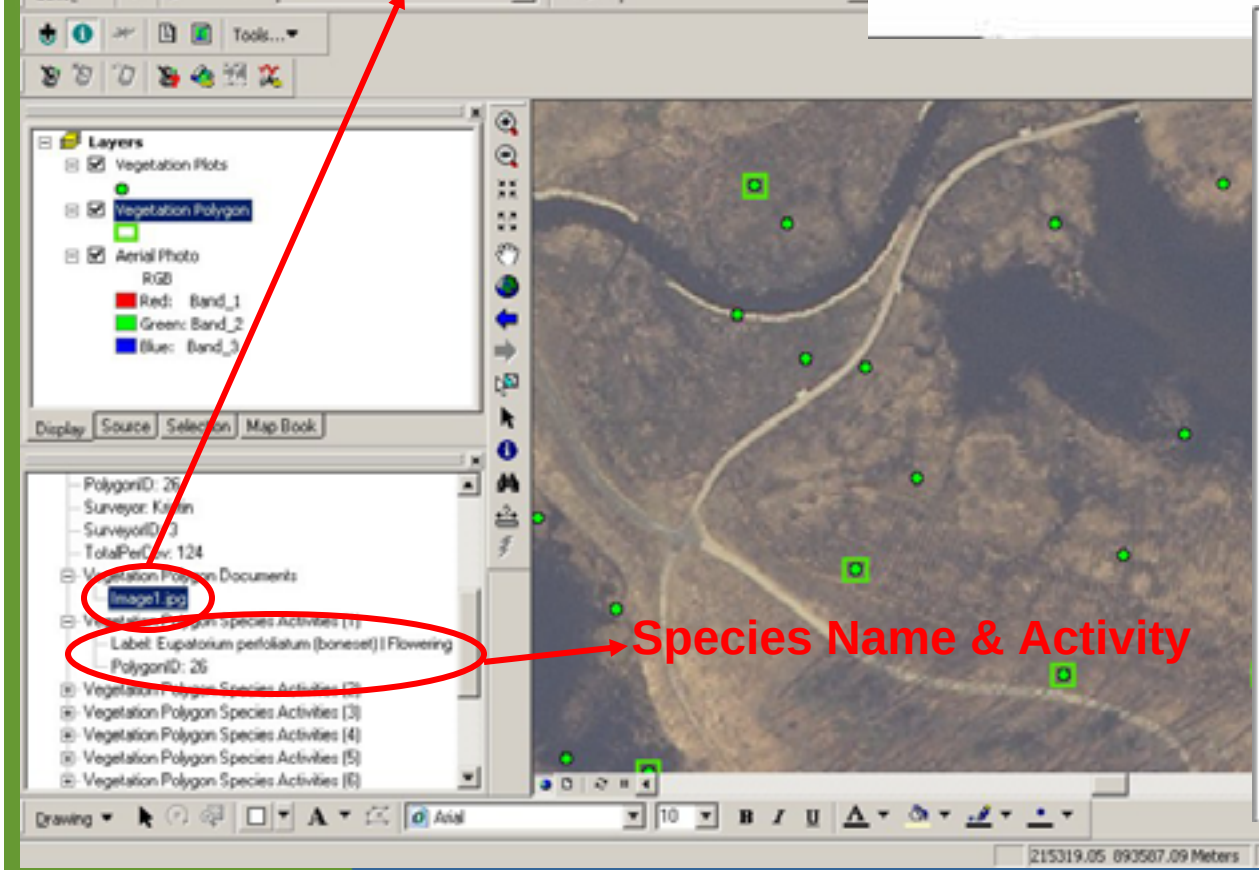
Build list of Species associated with this Vegetation Area (Many-to-one relationship)

Report

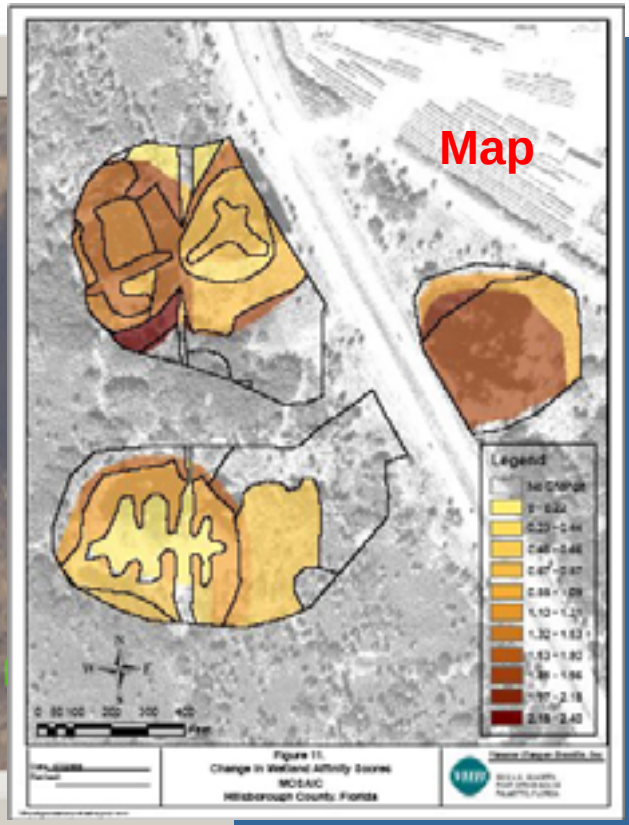
Wetland Mitigation Area
2006 Annual Monitoring Data

Plot	WP2
Date	8/22/2006
Photo	
Latitude	42 17'35.3"
Longitude	071 18'59.7"

	Species	*Indicator Status*	*Nativity*	*% Cover*	*Rel. Dom*	*Dominant*	*# Woody*	*Height (ft.)*
Woody	Ilex verticillata (Winterberry)	FACW+	N	10	100%	N	1	3
	Total			10			1	3.0
Herbaceous	Lysimachia nummularia (Creeping Jenny)	OBL	N	50	33%	N		
	Lythrum salicaria (Purple loosestrife)	FACW+	I	100	67%	Y		
	Total			150				
	Total Cover			160				
	Native Species	3						
	Introduced Species	1						
	Total Species	4						
	Wetland Species	3			*Dominance*	200%		
	Invasive Relative Dominance					67%		



Species Name & Activity



Map

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Reporting, Analysis & Mapping

- Generated all Reports in Microsoft Access
- Mapping and Analysis performed in ArcMap
- VHB Toolbar for ArcGIS
  - Display data
  - Identify features
  - Create maps with templates

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Conclusion

- Well received by the VHB Environmental Scientists
- Functional Specification was an invaluable resource
- Has already been used in multiple states
- Significantly reduced overall length of data collection projects especially in analysis and reporting
- Improving the quality of the product delivered

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Testimonial

"You've eliminated a lot of materials or bulk you would need, and sped up the process by not having to go back and forth from the field to collect and analyze the data."

Warren Reuschel, VHB Environmental Scientist