



Coordination, management and visualization of monitoring data in the Avian Knowledge Network

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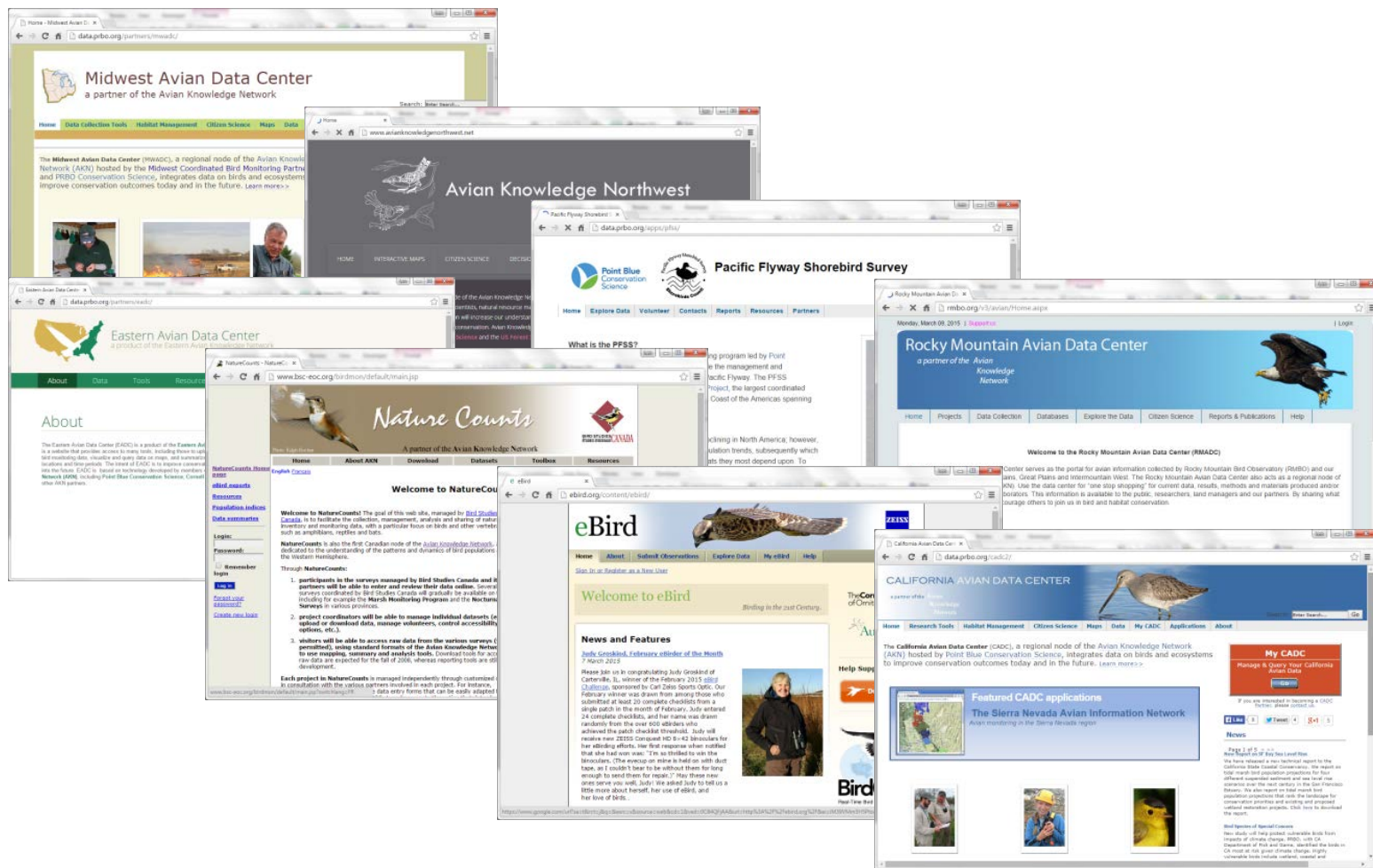


What I want you to leave with

- Better picture of the Avian Knowledge Network
- Understand our Approach to Data-intensive Management for conservation
 - Managing Data
 - Analyzing Data
 - Examples
- See how we share Data & Technology
- Ideas for how you can get involved

Avian Knowledge Network

A partnership supporting the conservation of birds and their habitats based on data, adaptive management, and best available science. AKN partners improve awareness, purpose, access to, and use of data and tools at multiple scales.





Advancing the **conservation** of birds, other wildlife, and ecosystems through science, **partnerships**, and outreach.

- Reduce the impacts of environmental threats while promoting nature-based solutions for wildlife and people, on land and at sea
- **Provide technology solutions** that support AKN nodes for data management, curation, visualization and analysis.
- Working in all 4 Flyways **across Western Hemisphere**



Managed Data	850 Projects	140K Locations	10M Observations	125M Birds
Warehoused Data			65M Observations	Over a Billion Birds

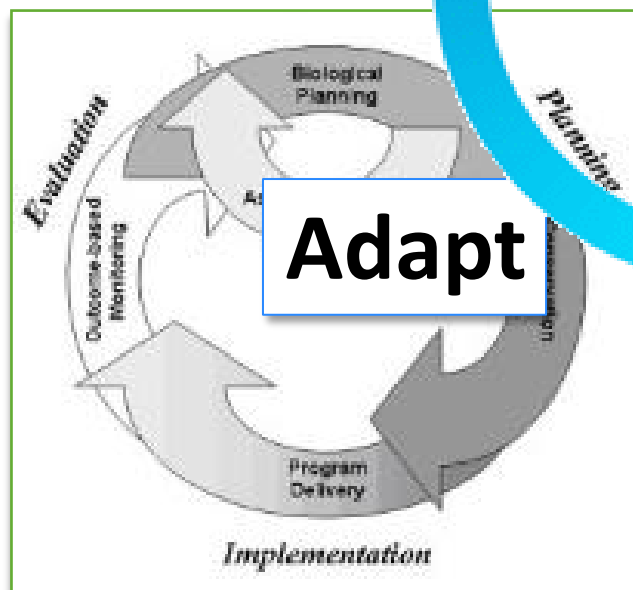
Data-intensive Management



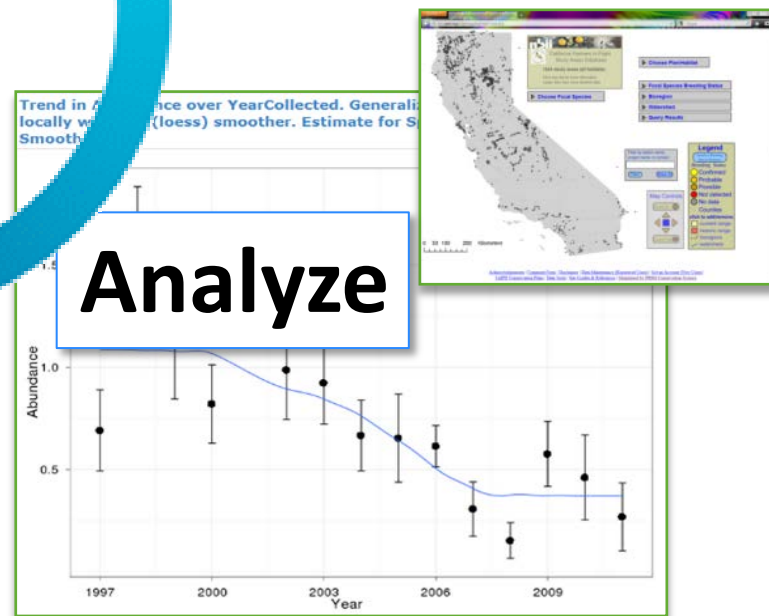
Collect

A screenshot of a data collection form titled 'Canadian Wildlife Service - Least Bittern Call Report'. The form includes fields for Site, Station #, Date, Time, Wind, Cloud cover, Precipitation, and Observer. It also has a section for 'Direction of bird' with a table for recording sightings by species and time. The form is used for collecting data on bird sightings.

Manage



Adapt



Analyze

Data-intensive Management

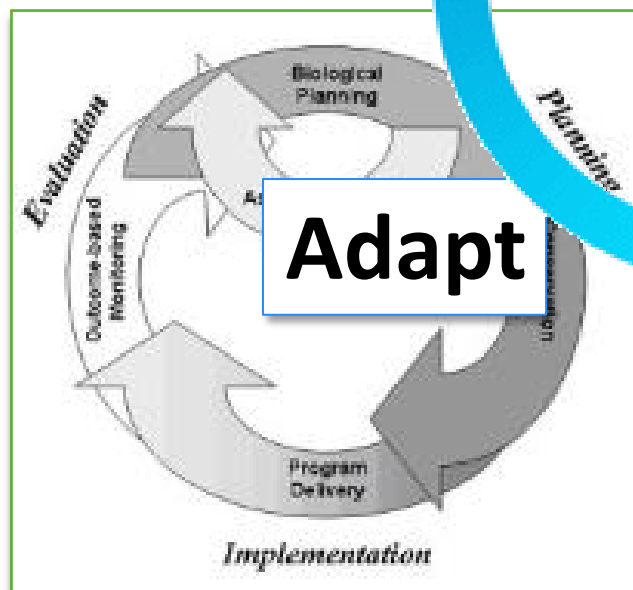


Collect

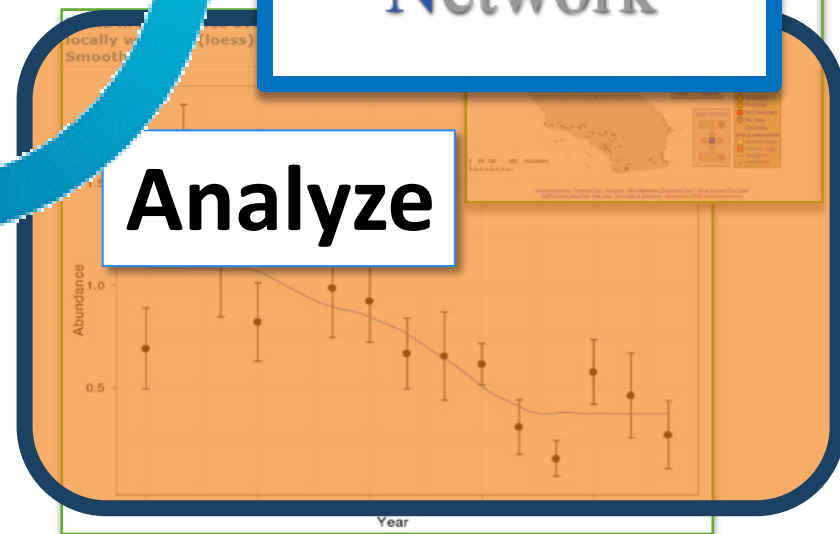
A screenshot of a data collection form titled "Canadian Wildlife Service - Least Bittern Call Re". The form includes fields for Site, Station #, Date, Time, Observer, and various environmental data points like Wind, Cloud cover, Precipitation, Temperature, Humidity, and Vegetation. It also has a section for "Species" and "Sex" with checkboxes for "before" and "after" observations.

Manage

**Avian
Knowledge
Network**



Adapt



Analyze

Managing Scientific Data

Your Data in Our Database



People				Locations				Protocols				Visits				Observations			

Who

Where

How

When

What

We describe your protocols
and study designs in detail

Non-avian taxa?

Your Data in Our Database



People				Locations				Protocols				Visits				Observations			

Recent additions:

- Vegetation Surveys (IWMM)
- Soil Surveys (Point Blue Rangeland Monitoring)

Structure and concepts are extensible for many types of scientific observations.

Steps for Managing

Your Data in Our Database



People

Locations

Protocols

Visits

Observations

Setup
People &
Roles

Enter
Study
Locations

Choose
Protocol
Definitions

Enter
Study Data

Proof &
Review
Data

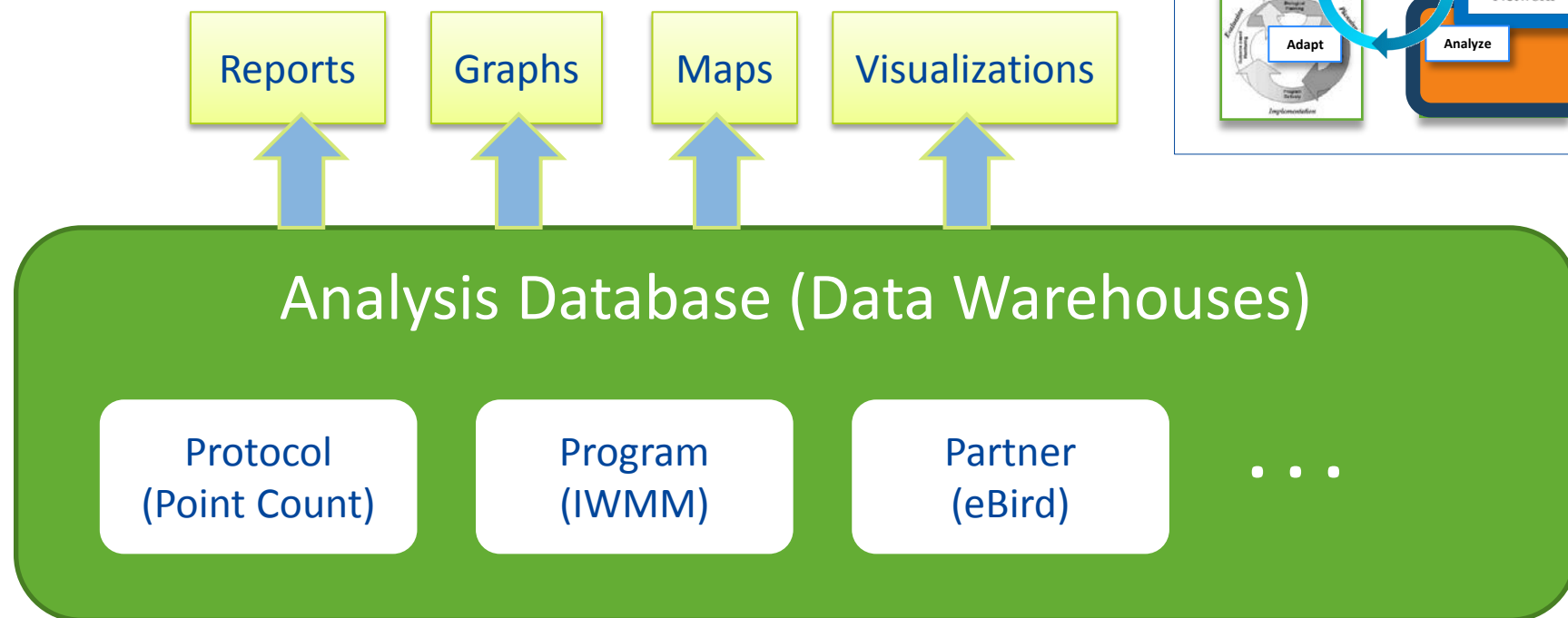
Assign
Data
Sharing
Levels

1. Set up

2. Collect

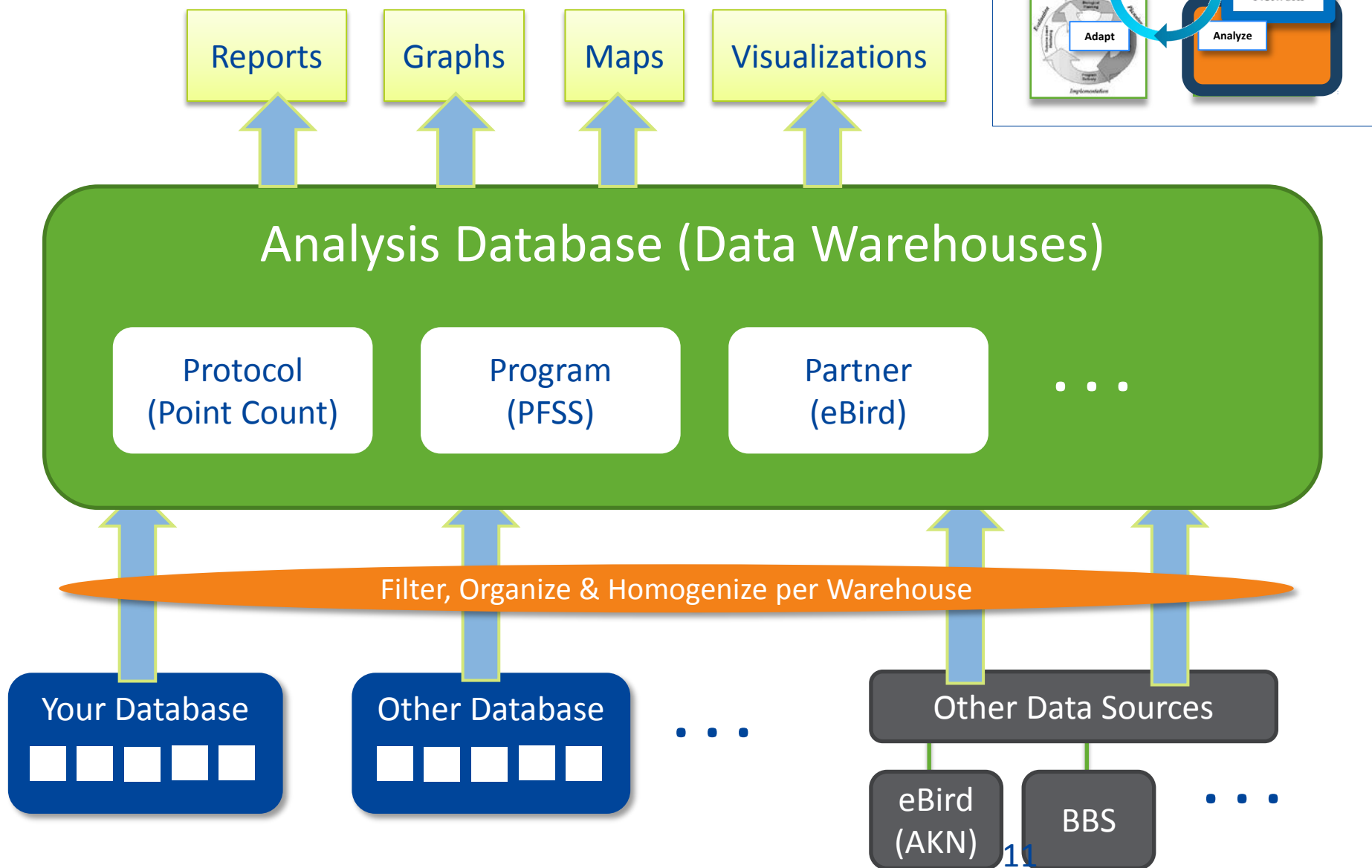
3. Share

Organizing for Analysis

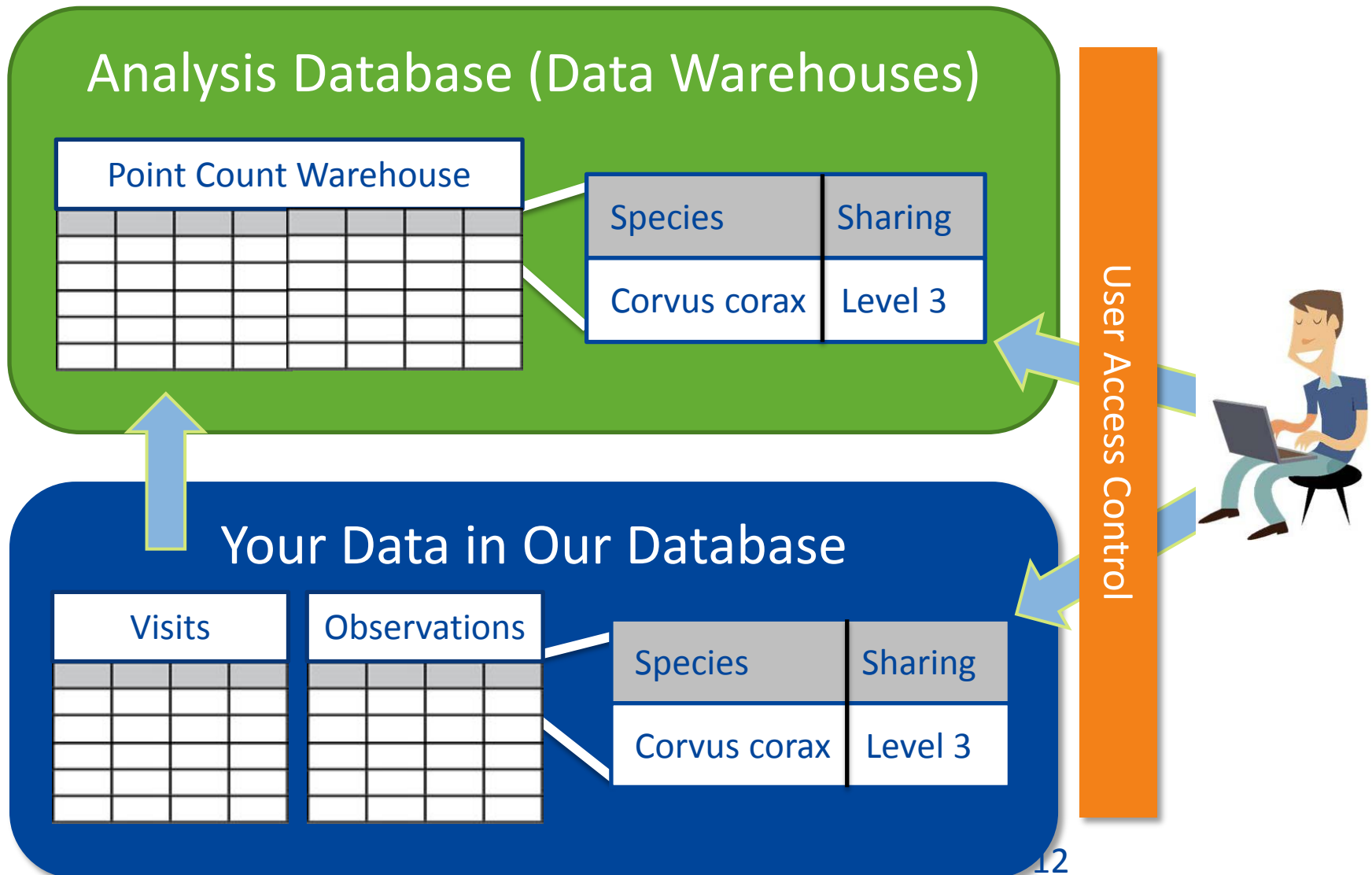


The shape of the warehouses are driven by the requirements of analyses and visualizations.

Managing to Flyway Analysis



Keeping Your Data Secure

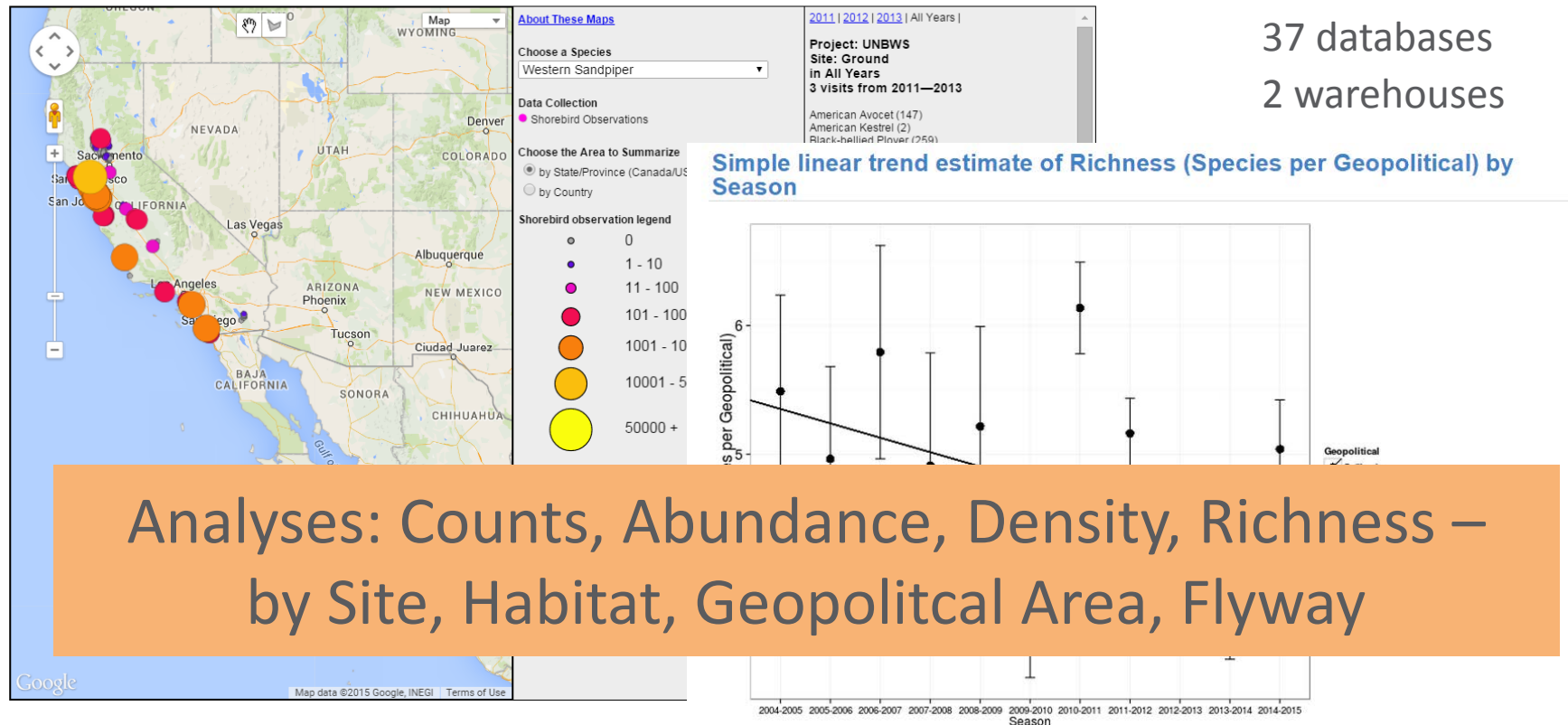


Example: Migratory Shorebird Project and Pacific Flyway Shorebird Survey

<http://www.migratoryshorebirdproject.org/>
<http://www.pointblue.org/pfss>

400 observers
5 years
2 protocols
150000 records
37 databases
2 warehouses

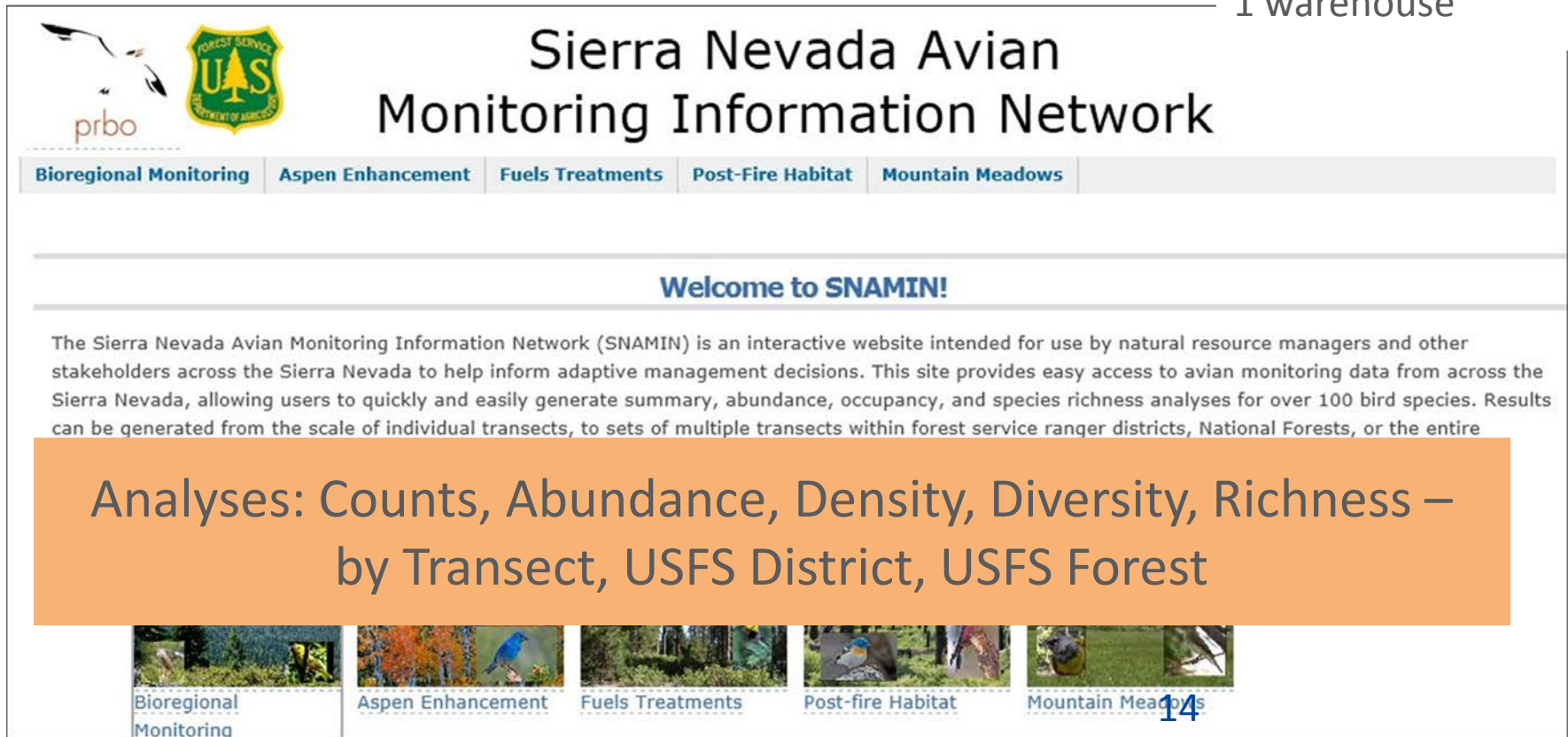
Pacific Flyway Shorebird Survey | Migratory Shorebird Project



Example: Sierra Nevada Avian Monitoring Information Network

<http://data.prbo.org/apps/snamin/>

75 observers
6 years
6 protocols
500000 records
5 databases
1 warehouse



The screenshot displays the SNAMIN website. At the top left, there are logos for 'prbo' (Point Blue Conservation Science) and the 'FOREST SERVICE US DEPARTMENT OF AGRICULTURE'. The main title 'Sierra Nevada Avian Monitoring Information Network' is centered. Below the title is a navigation bar with five tabs: 'Bioregional Monitoring', 'Aspen Enhancement', 'Fuels Treatments', 'Post-Fire Habitat', and 'Mountain Meadows'. A 'Welcome to SNAMIN!' message is followed by a paragraph describing the network's purpose. A large orange box contains the text: 'Analyses: Counts, Abundance, Density, Diversity, Richness – by Transect, USFS District, USFS Forest'. At the bottom, there are five small thumbnail images corresponding to the navigation tabs, with the first one labeled 'Bioregional Monitoring'.

prbo FOREST SERVICE US DEPARTMENT OF AGRICULTURE

Sierra Nevada Avian Monitoring Information Network

Bioregional Monitoring Aspen Enhancement Fuels Treatments Post-Fire Habitat Mountain Meadows

Welcome to SNAMIN!

The Sierra Nevada Avian Monitoring Information Network (SNAMIN) is an interactive website intended for use by natural resource managers and other stakeholders across the Sierra Nevada to help inform adaptive management decisions. This site provides easy access to avian monitoring data from across the Sierra Nevada, allowing users to quickly and easily generate summary, abundance, occupancy, and species richness analyses for over 100 bird species. Results can be generated from the scale of individual transects, to sets of multiple transects within forest service ranger districts, National Forests, or the entire

Analyses: Counts, Abundance, Density, Diversity, Richness – by Transect, USFS District, USFS Forest

Bioregional Monitoring Aspen Enhancement Fuels Treatments Post-fire Habitat Mountain Meadows

Example: Integrated Waterbird Management and Monitoring

In development

?? users

5 years (historical)

historical + new protocols

210000 records

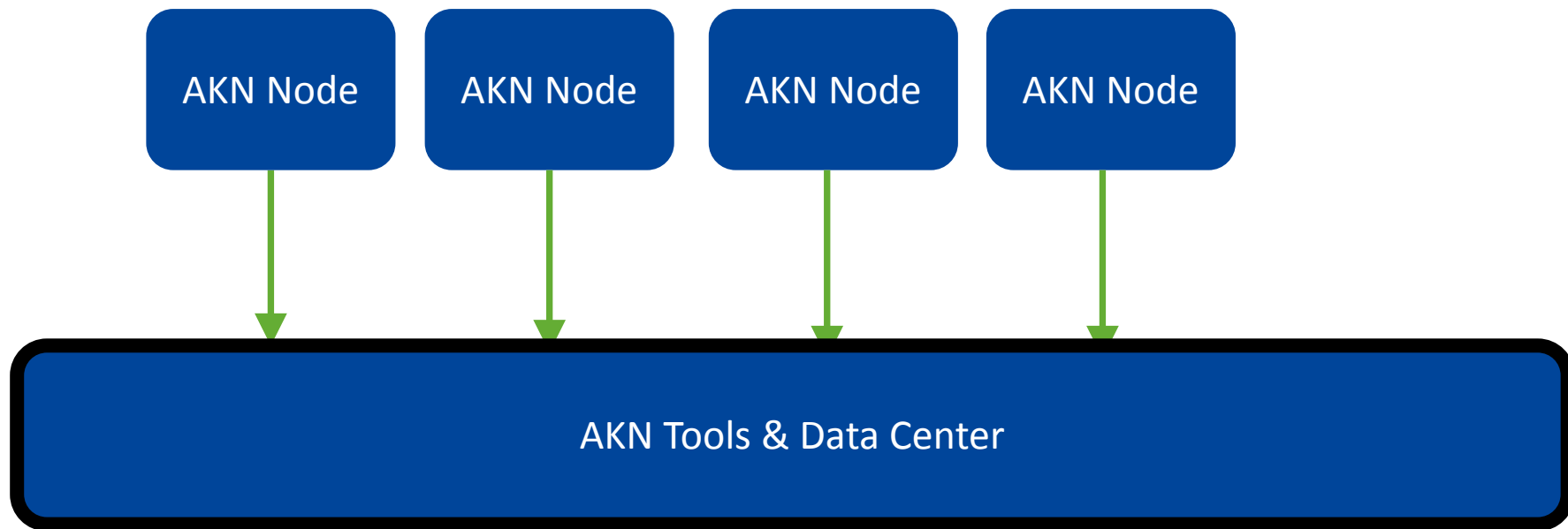
Database per refuge

4 warehouses

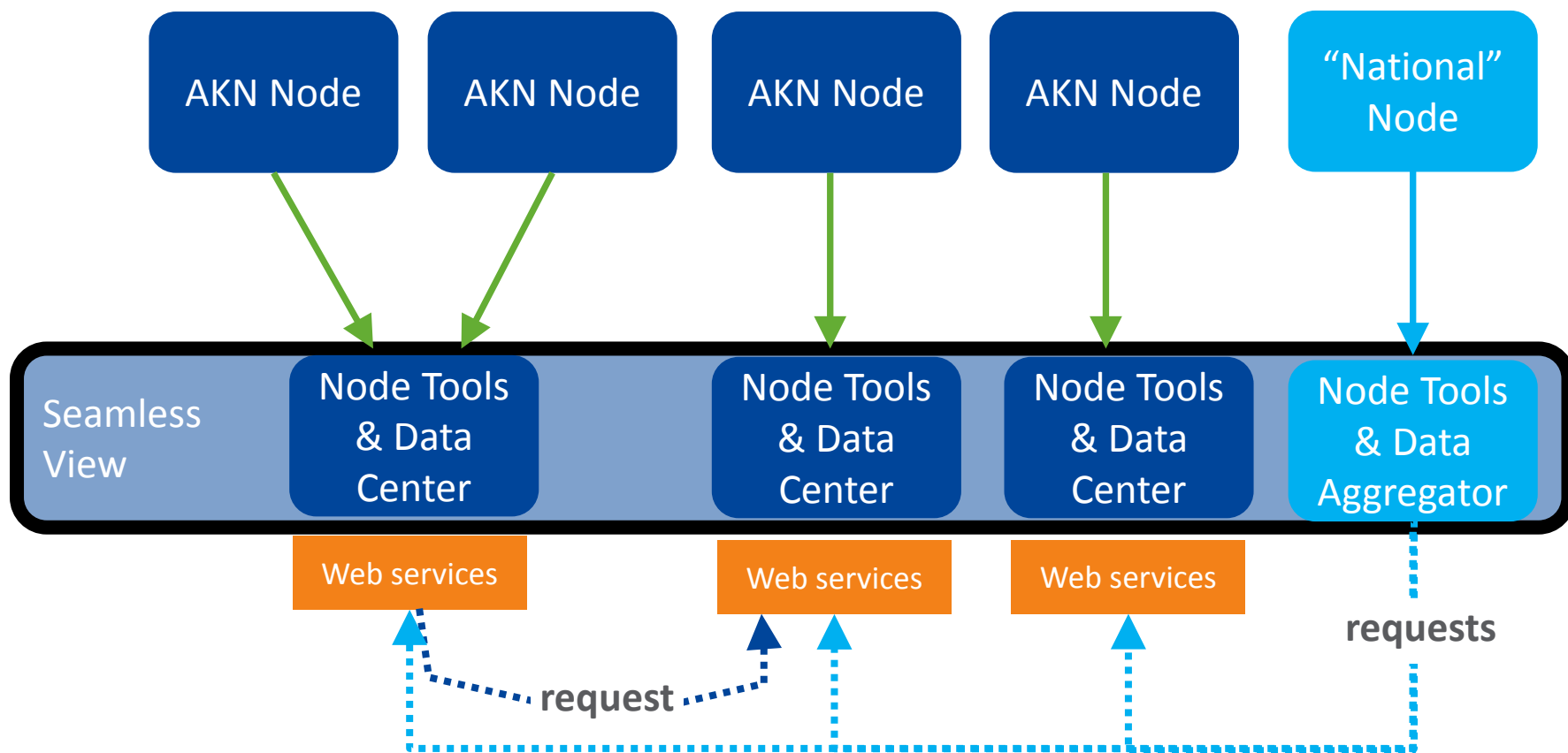


Analyses: Counts, Migration Curves, Bird Use Days, Habitat –
by Mgmt Unit, Site, Refuge, FWS Region, JV Boundary, BCR, Flyway

Sharing Data



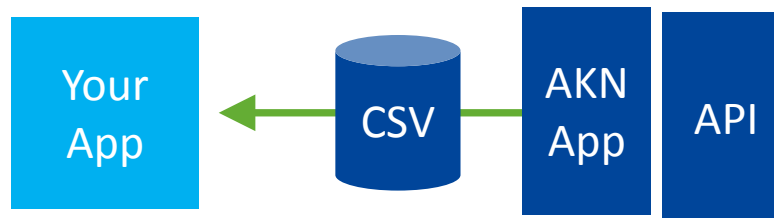
Vision for Sharing Data



Sharing data effectively in closer to real time
leads to better conservation decision.

Sharing Technology

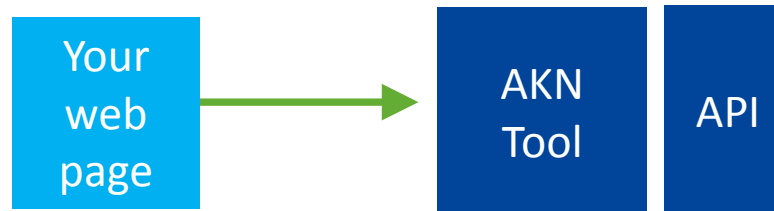
1. Get a copy of the data and bring it to your technology



2. Contribute your analysis to R-Avian for visualizations & reports



3. Embed an AKN tool (such as histograms) into your website



4. Build web or mobile app that uses our REST API for direct access



User Access Control

AKN Data

Sharing technology more broadly reduces friction and leads to better conservation.¹⁸

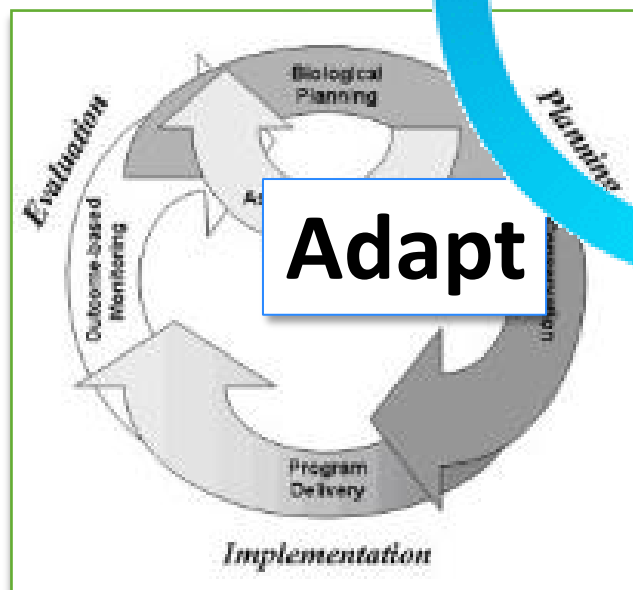
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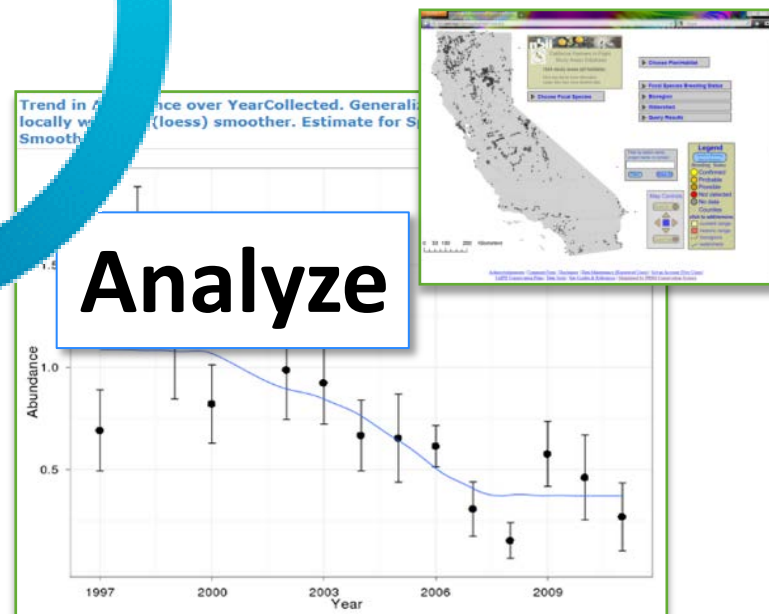
Collect

A screenshot of a data collection form titled 'Canadian Wildlife Service - Least Bittern Call Report'. The form includes fields for Site, Station #, Date, Time, Wind, Direction, Observer, and various environmental data points like Water depth, Live veg, and Dead veg. It also has a section for 'List species detected' and a 'Contact info of primary observer' field.

Manage



Adapt



Analyze

Collec

Avian
Knowledge
Network

Adapt

- Partners in all areas of this process
- Birds, wildlife and ecosystem conservation
- Tools to help manage and analyze data
- Regional, landscape, flyway scales
- Skills to translate data into conservation decisions
- In partnership with you



How do you get involved?

- Explore our website
 - <http://www.avianknowledge.net/>
- Contribute through an existing region or a theme
 - <http://www.avianknowledge.net/uploads/downloads/AKN%20Contacts%20March%202013.pdf>
- Become a new node
 - <http://www.avianknowledge.net/index.php?page=contact>

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Thank you!

