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

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Point Blue
Conservation science for a healthy planet.

Avian Knowledge Network

Rocky Mountain Bird Observatory

U.S. Fish & Wildlife Service

CONNECTING CONSERVATION

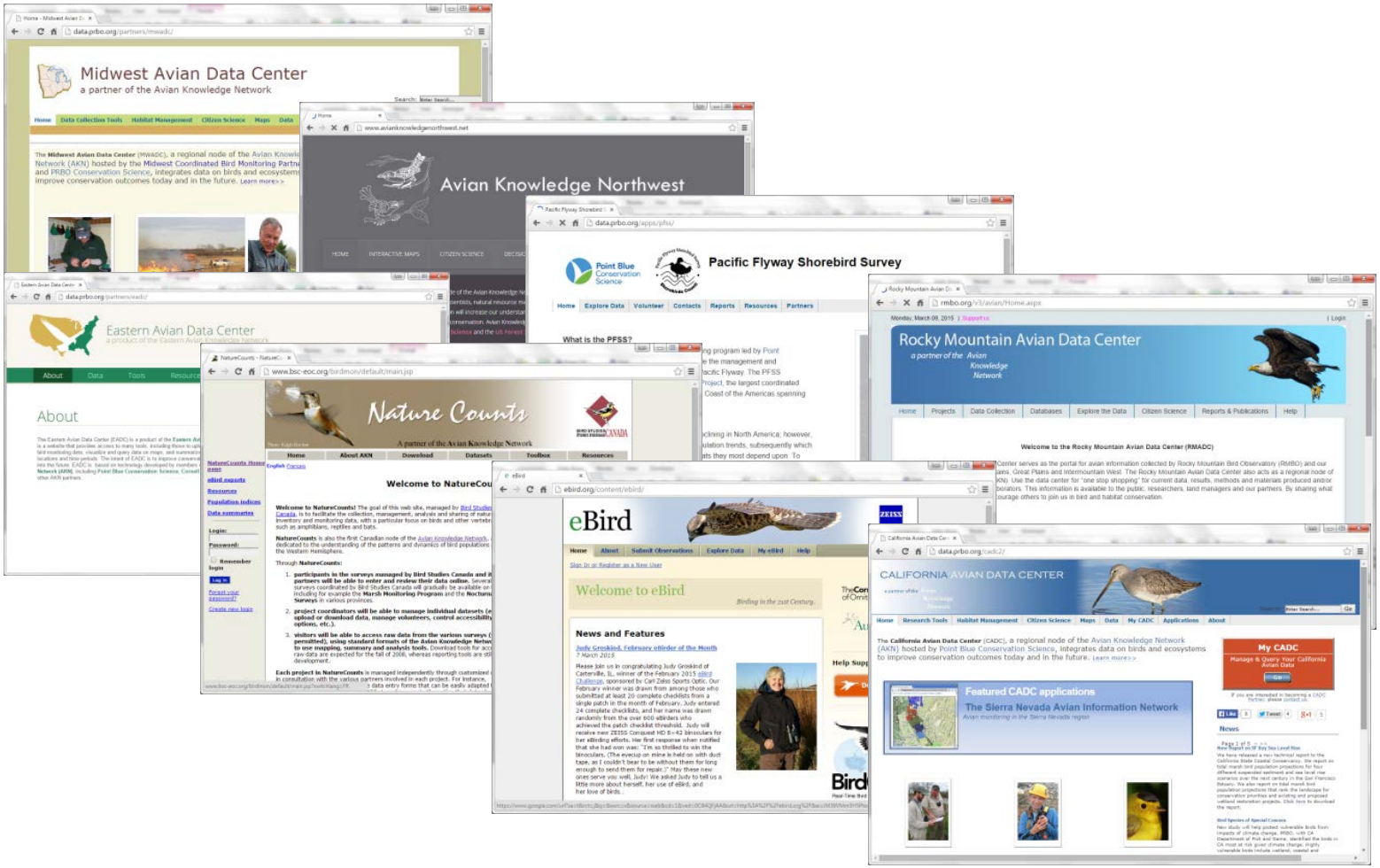
Klamath Bird Observatory

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**.



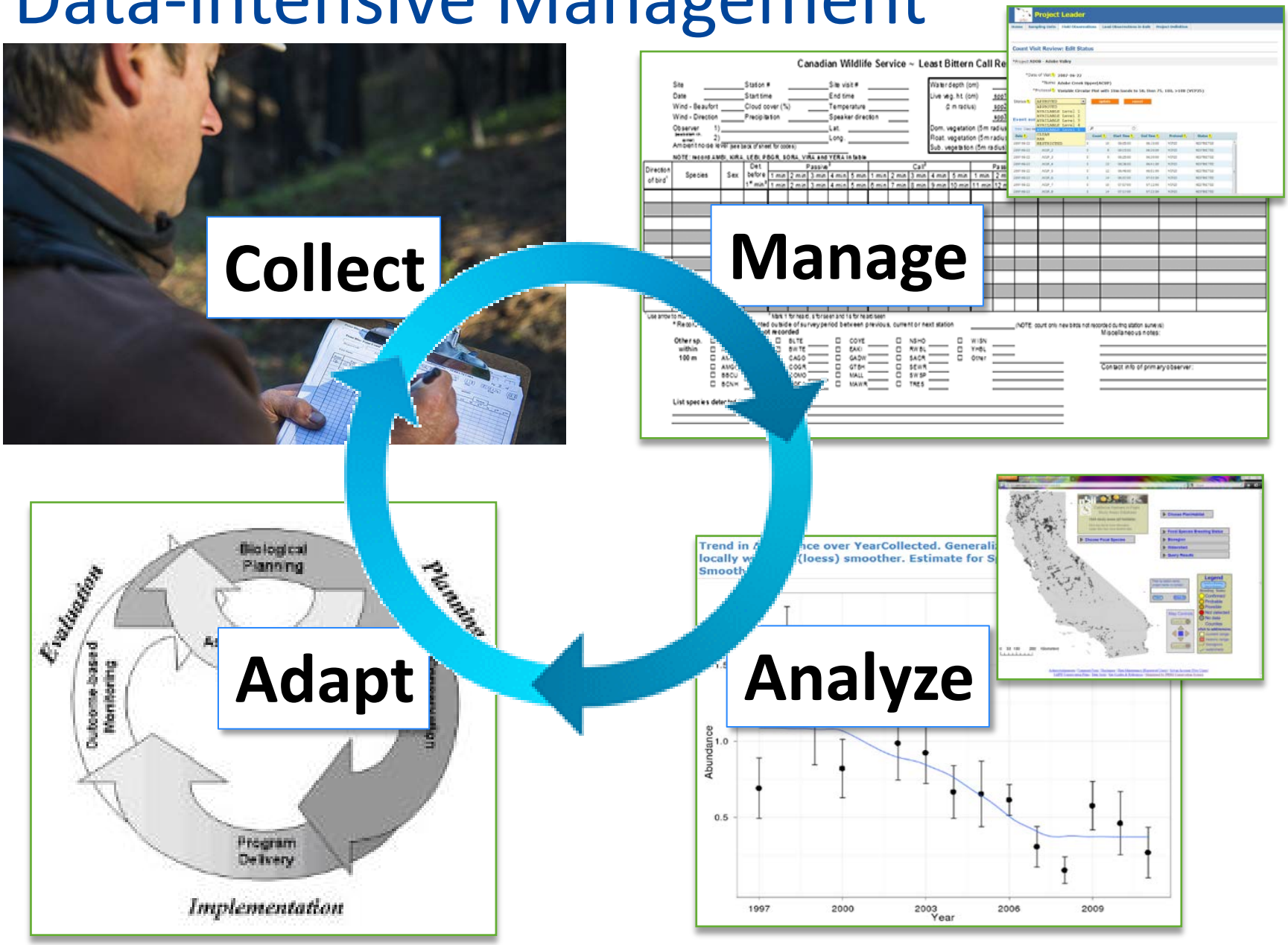
Point Blue
Conservation science for a healthy planet.

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

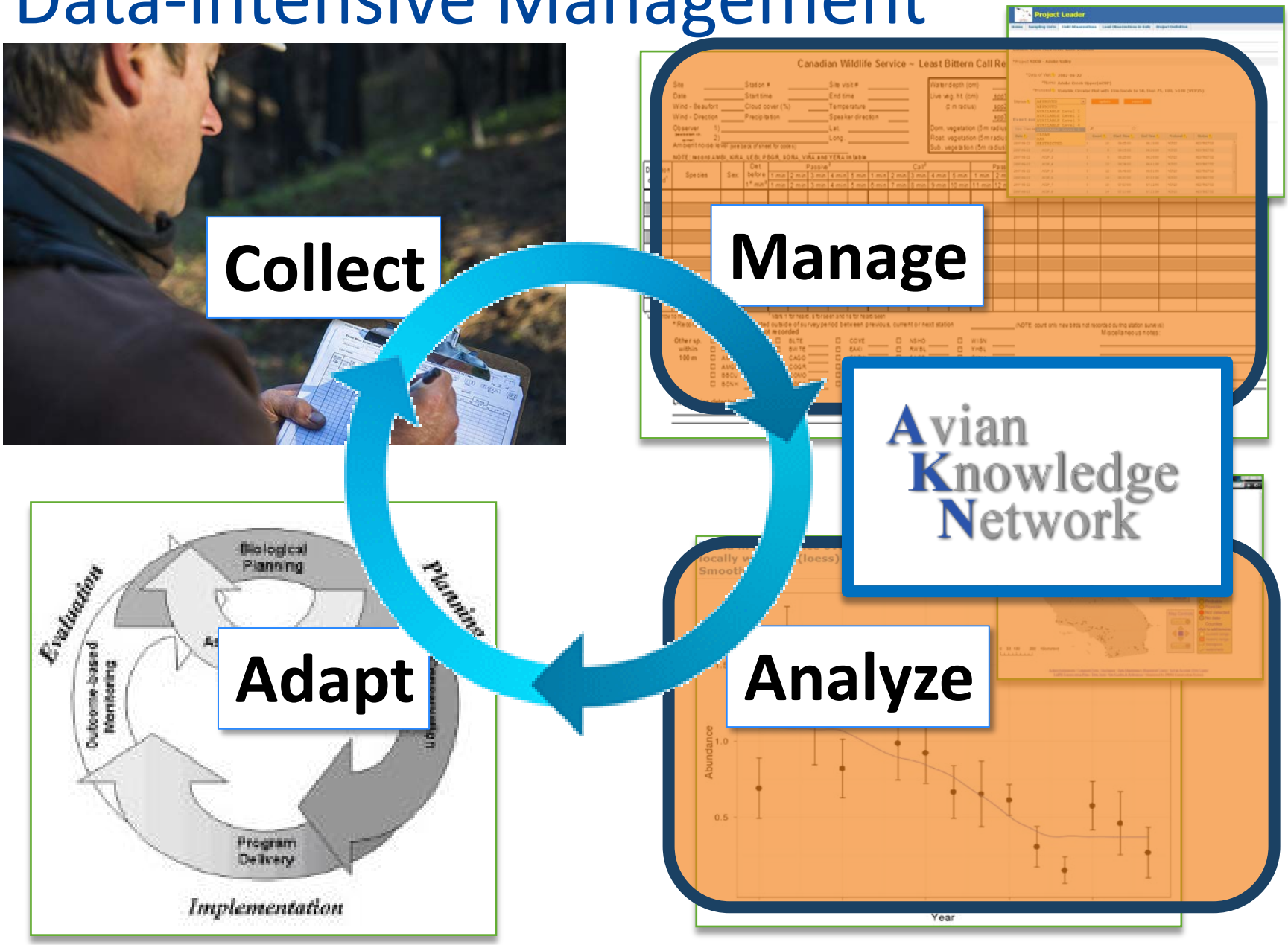
- Reduce the impacts of environmental threats while promoting nature-based solutions for wildlife and people, on land and at sea
- **Provide technology solutions** that support AKN nodes for data management, curation, visualization and analysis.
- Working in all 4 Flyways **across Western Hemisphere**

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

Data-intensive Management



Data-intensive Management



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

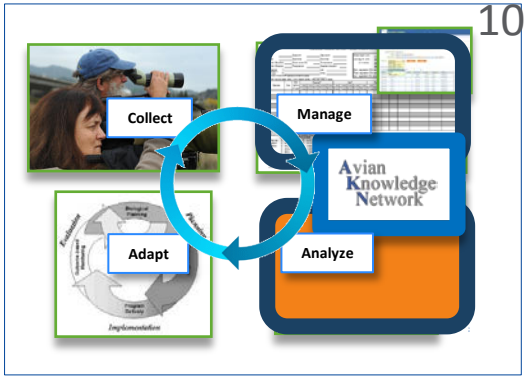
Assign Data Sharing Levels

1. Set up

2. Collect

3. Share

Organizing for Analysis



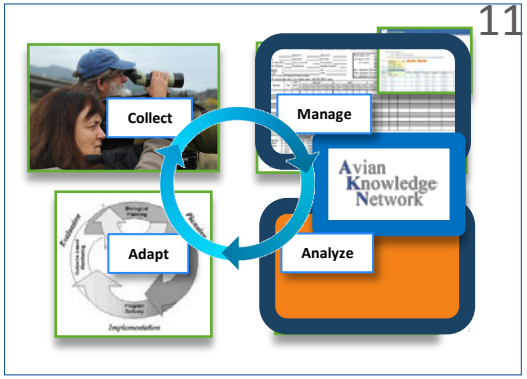
Reports | Graphs | Maps | Visualizations

Analysis Database (Data Warehouses)

- Protocol (Point Count)
- Program (IWMM)
- Partner (eBird)
- . . .

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

Managing to Flyway Analysis



Reports | Graphs | Maps | Visualizations

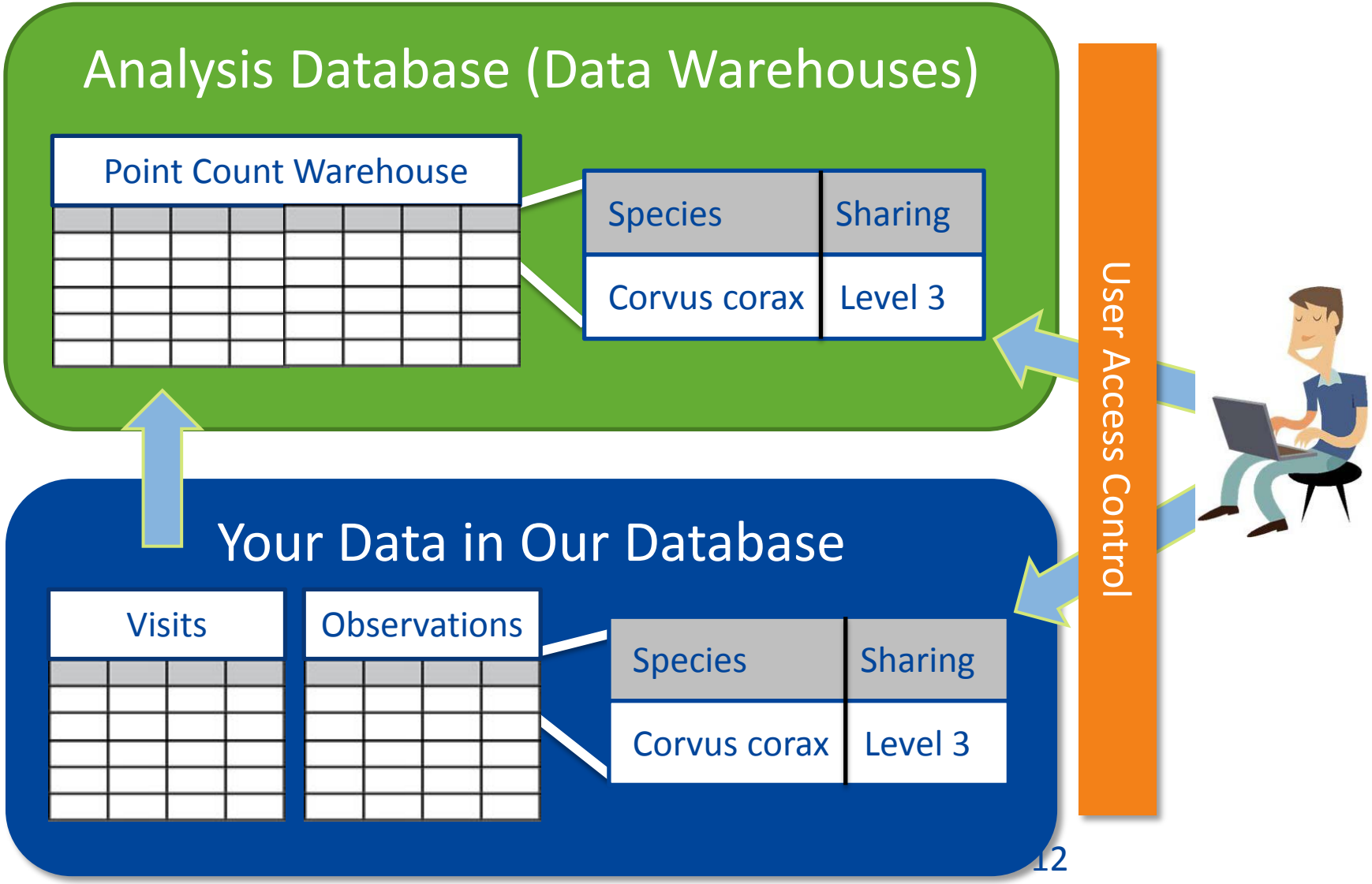
Analysis Database (Data Warehouses)

- Protocol (Point Count)
- Program (PFSS)
- Partner (eBird)
- . . .

Filter, Organize & Homogenize per Warehouse

- Your Database
- Other Database
- . . .
- Other Data Sources
  - eBird (AKN)
  - BBS
  - . . .

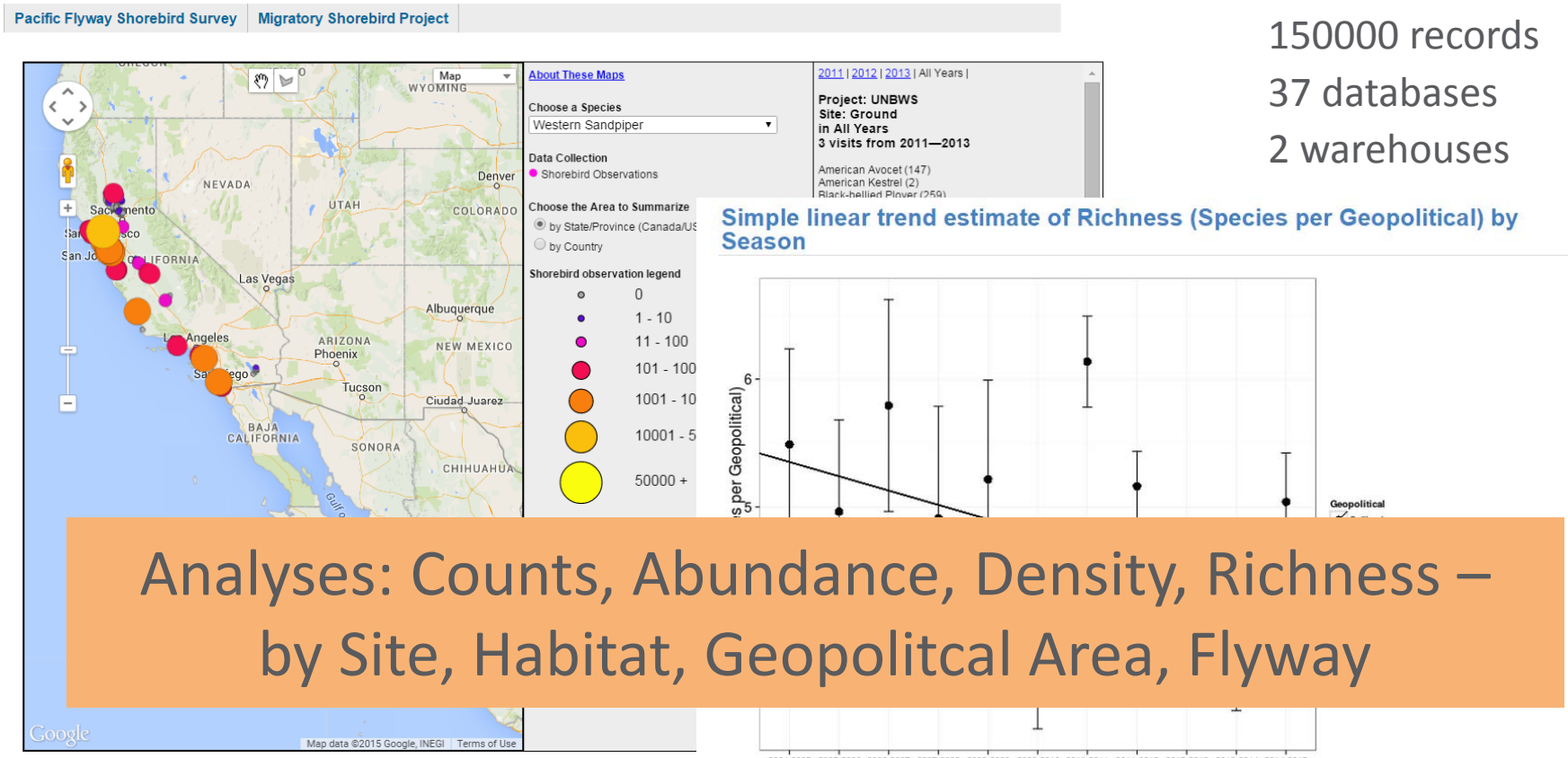
Keeping Your Data Secure



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

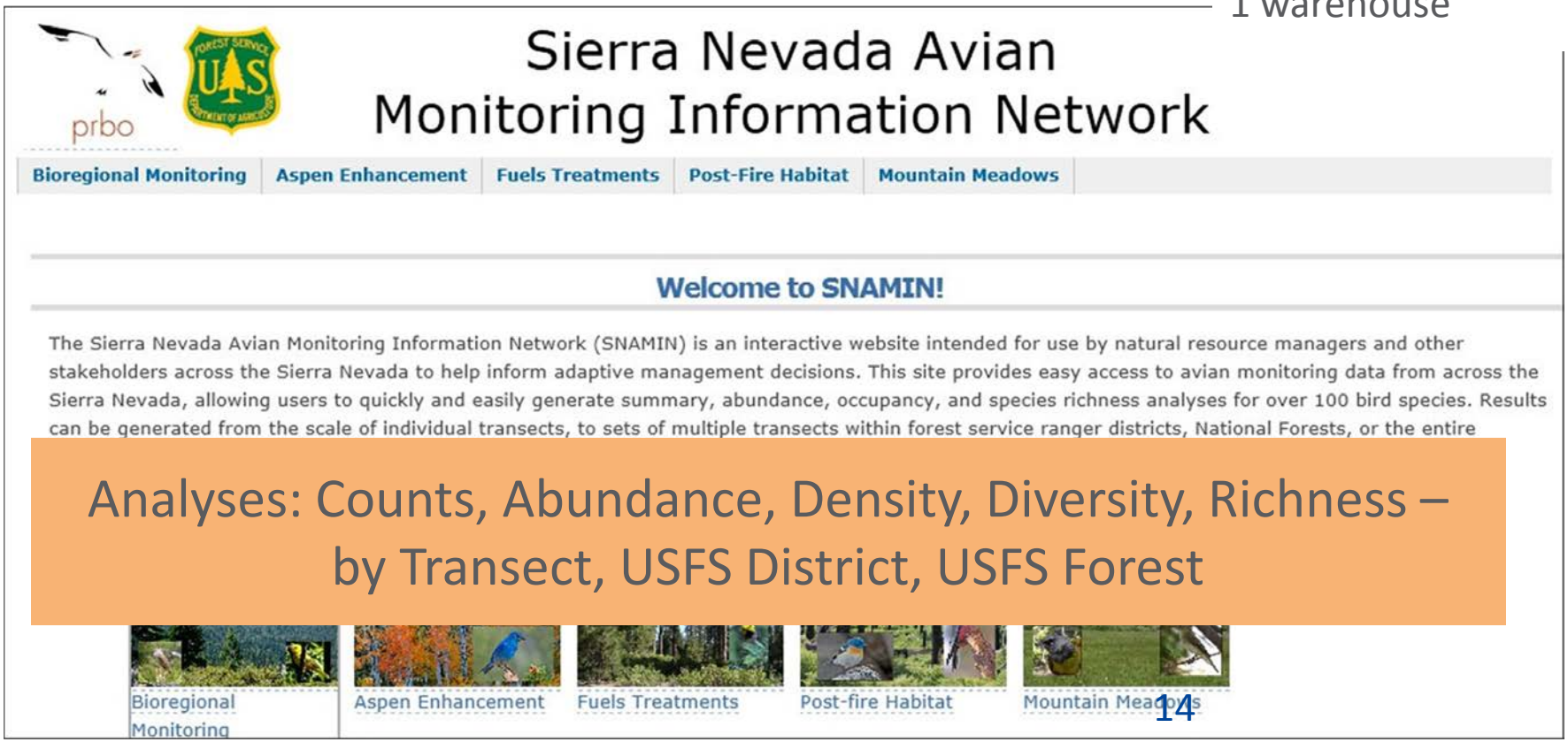


Analyses: Counts, Abundance, Density, Richness – by Site, Habitat, Geopolitcal Area, Flyway

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



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

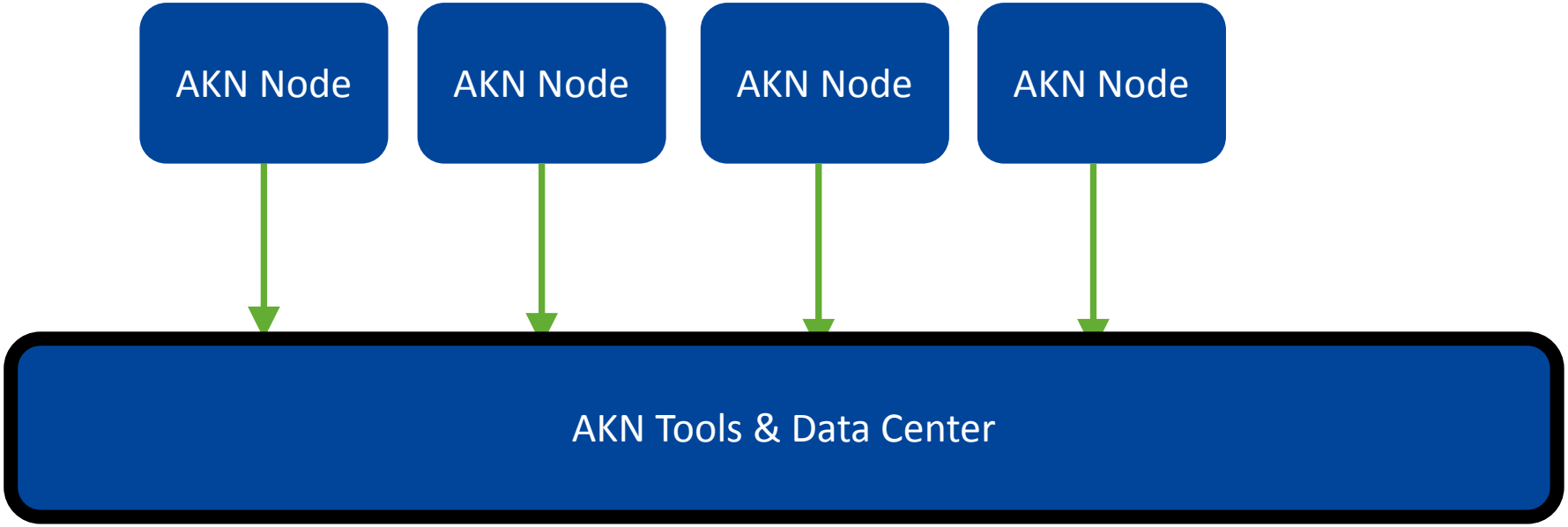
Example: Integrated Waterbird Management and Monitoring

In development

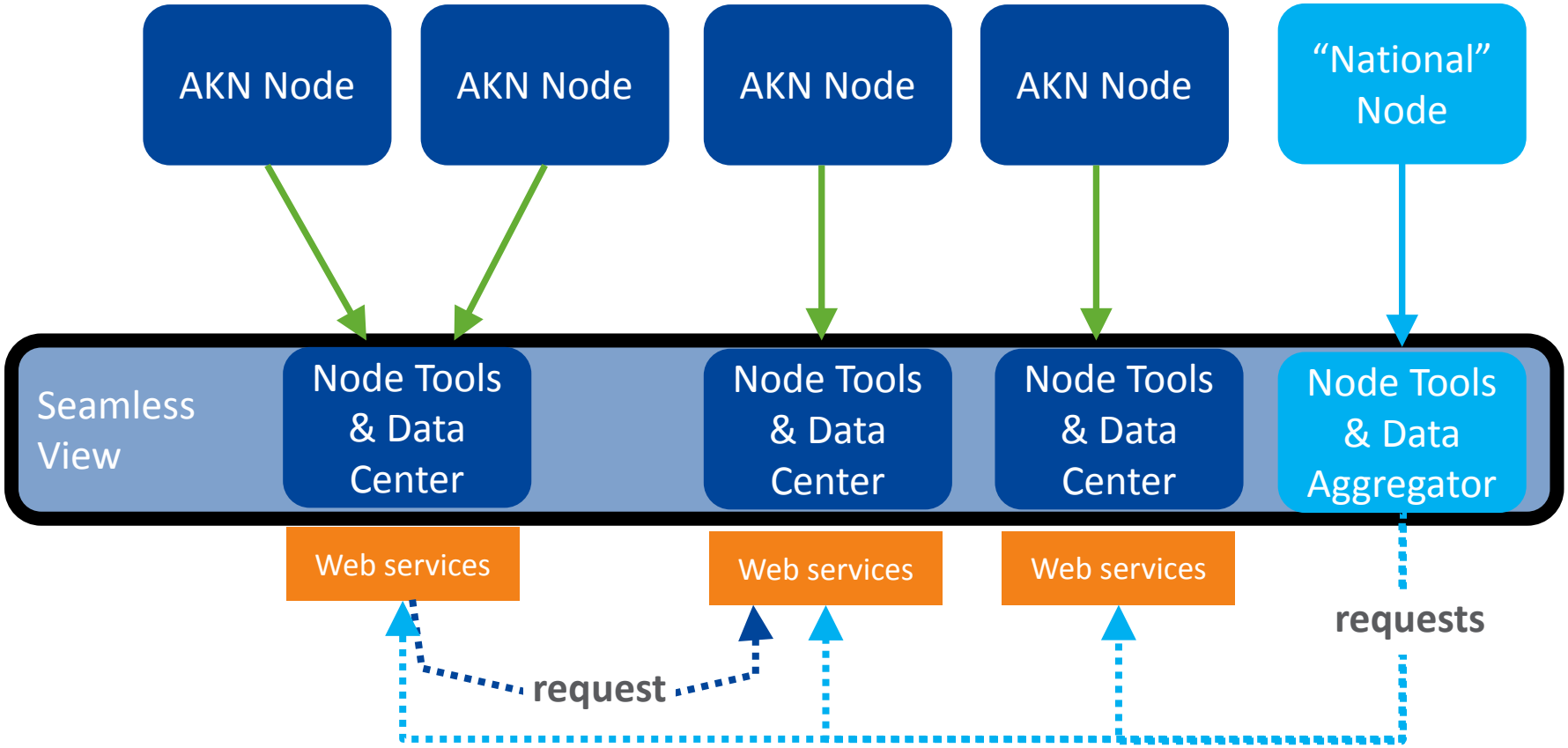
?? users
5 years (historical)
historical + new protocols
210000 records
Database per refuge
4 warehouses

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.

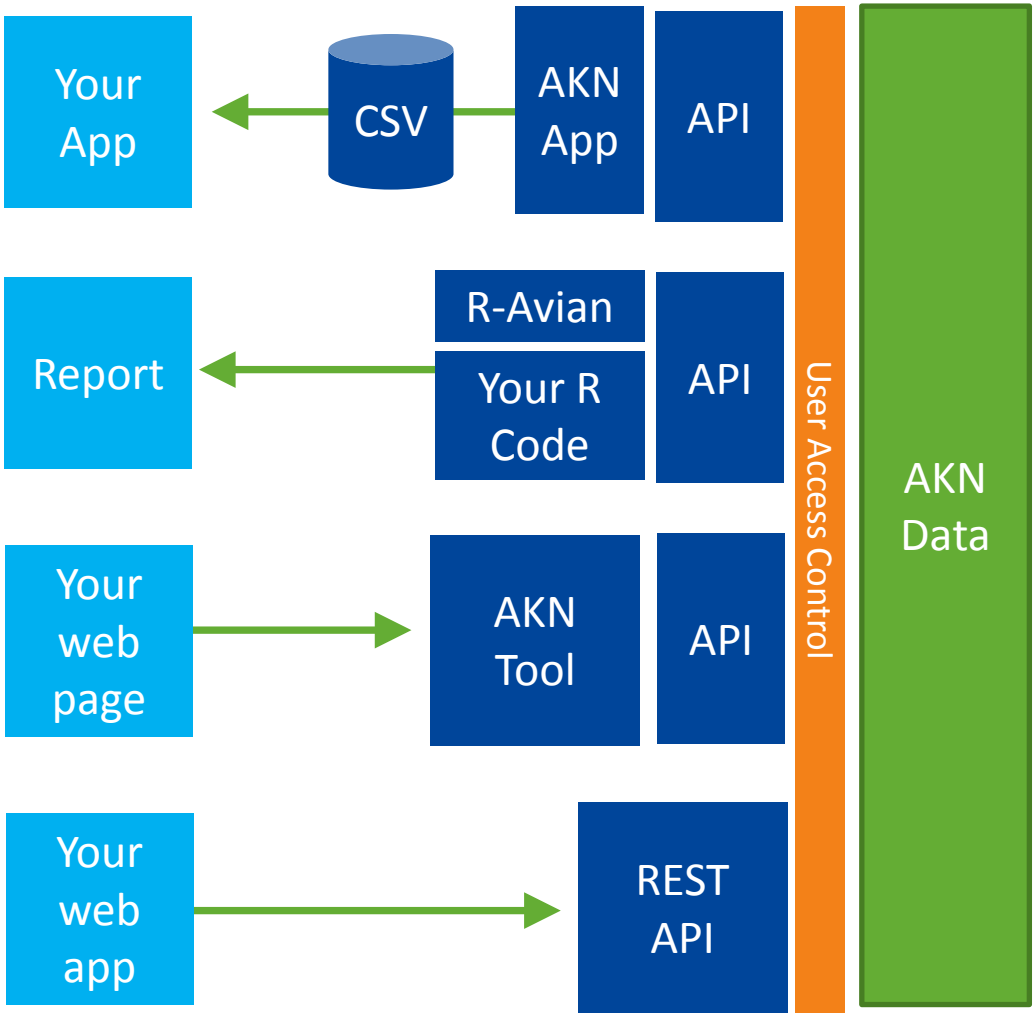
Sharing Technology

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

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

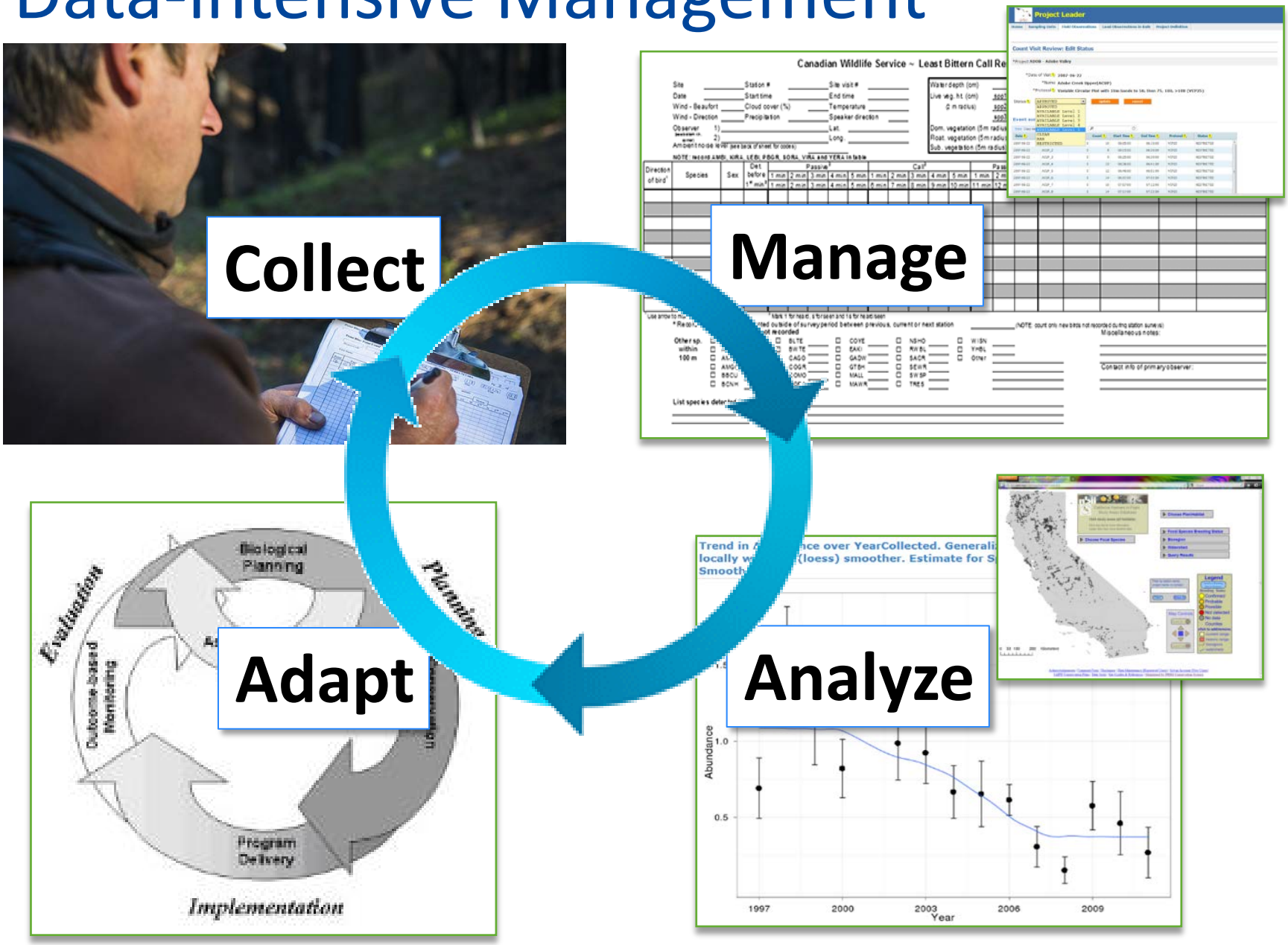
3. Embed an AKN tool (such as histograms) into your website

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



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

Data-intensive Management



Data-intensive Management

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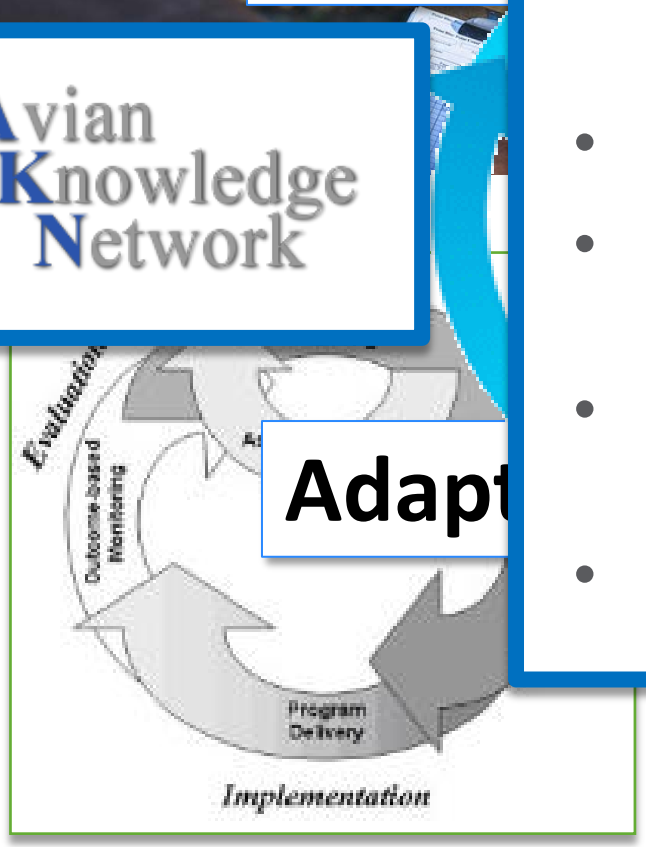
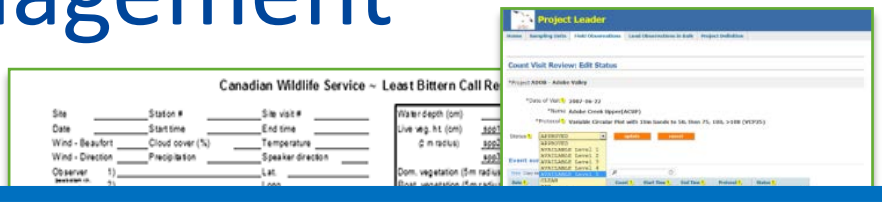
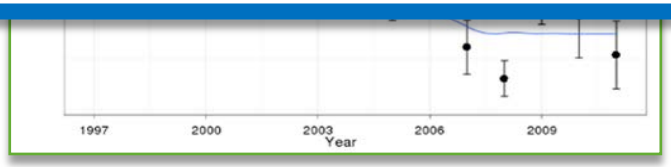
Avian Knowledge Network



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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