Data Automation and Visualization to Support Fisheries Management at High-Head Dams

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Data to Support Improved Fish Passage

- Monitoring is essential to improving the performance of fish passage facilities
- Effective data collection, management, and analysis can enable rapid diagnostics and adaptive management to improve fish passage

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Data Management Process

Fish Counts

Mark & Recapture

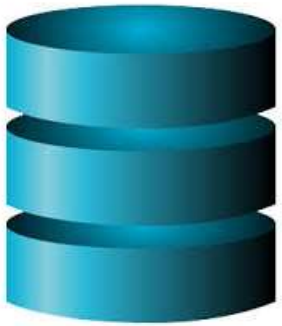
Antennas

Release & Recover

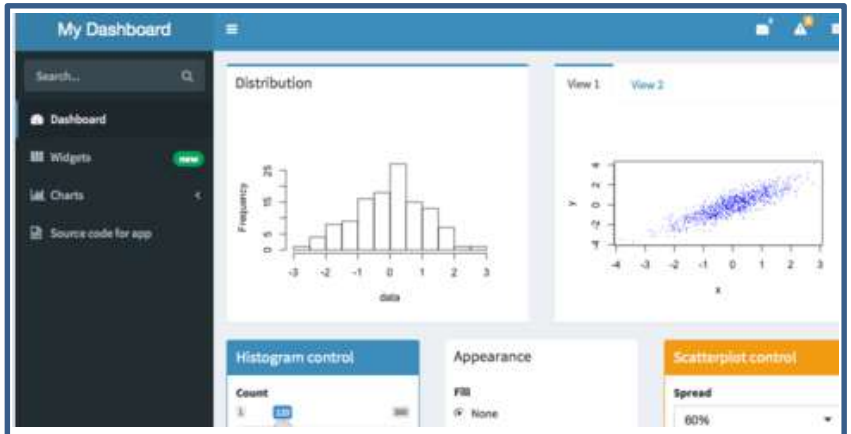
Environment & Operations

Water Quality & Flow

Dam Operations



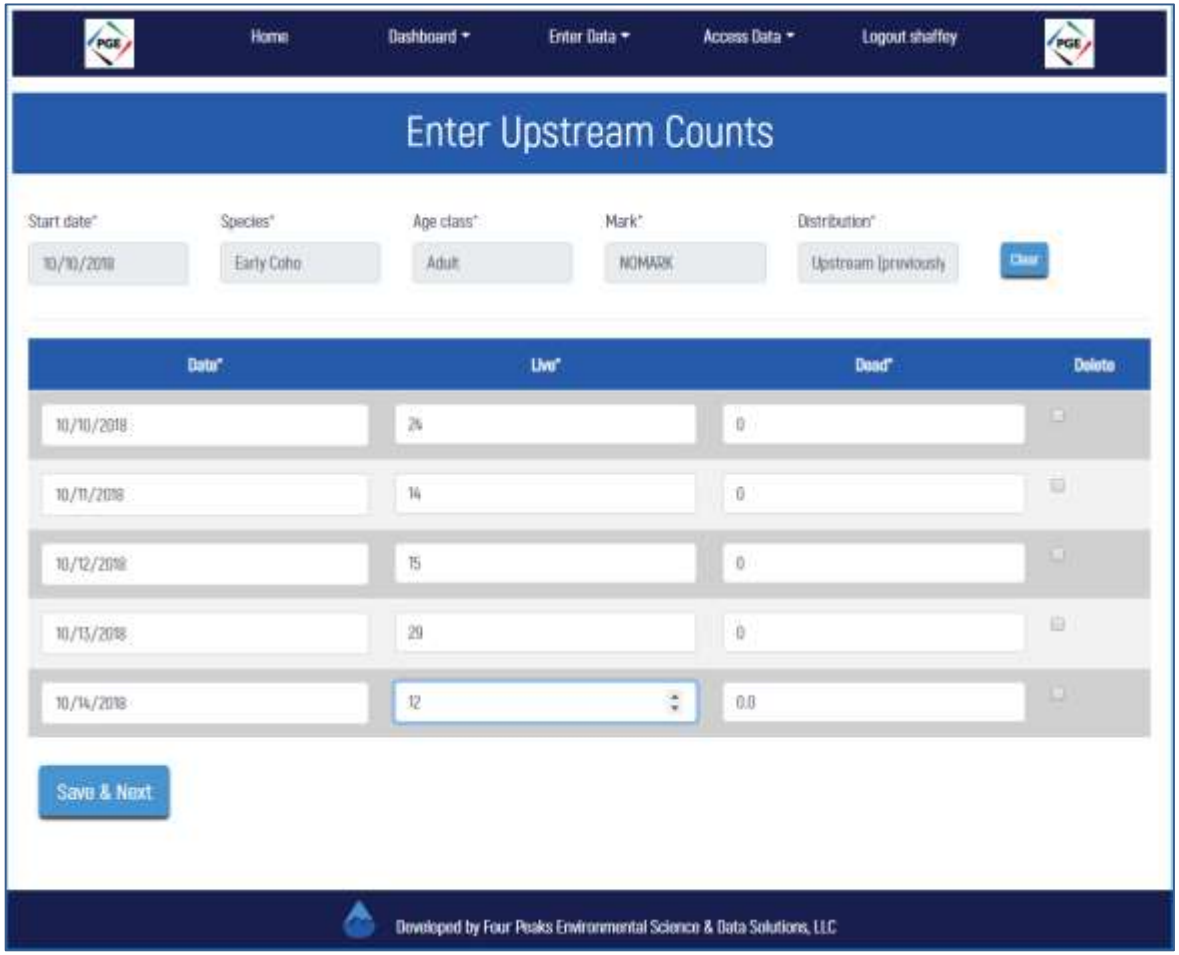
Database



Dashboards, Analyses

Monitoring & Evaluation,
Adaptive Management,
Quality Assurance/Quality Control

Efficient Data Acquisition



- Automate when feasible
- Streamline data entry
  - Collaborate on design
- Integrate quality control
  - Encode validation in forms and loaders
  - Enforce data integrity

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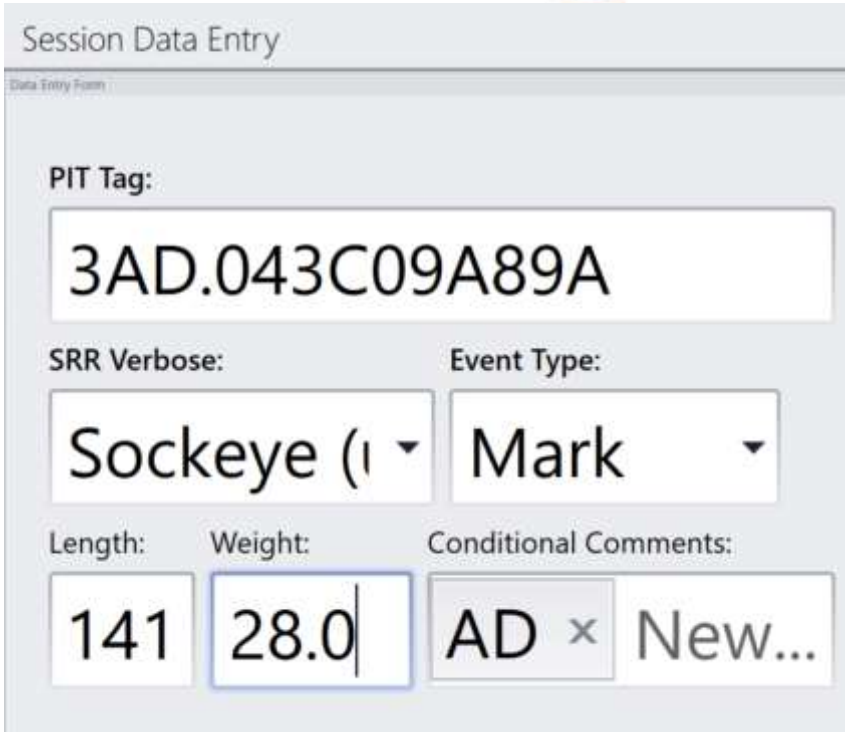
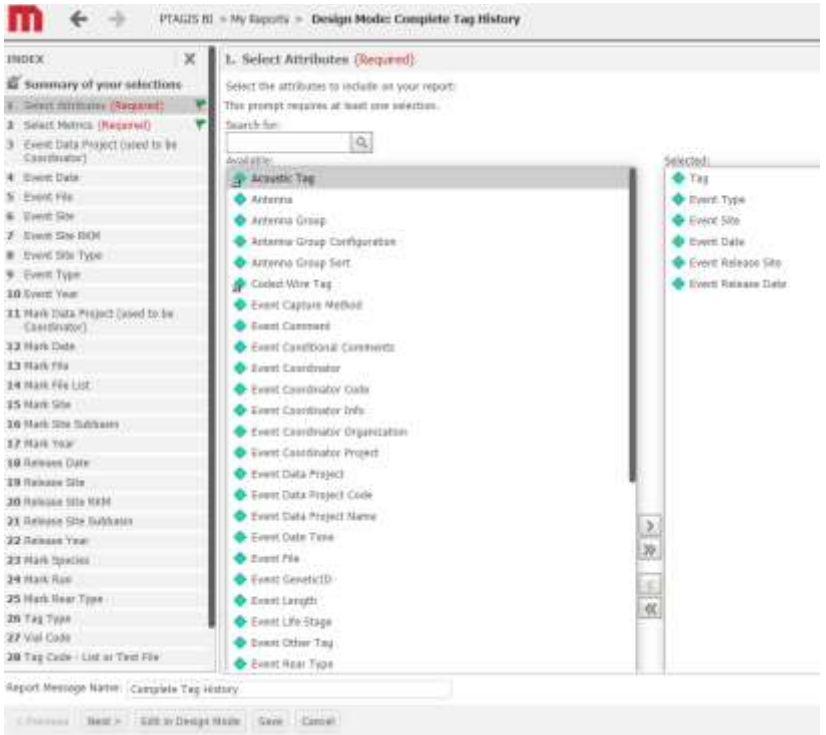
Leveraging Existing Systems

PTAGIS

PIT Tag Information System

Columbia Basin | ptagis.org





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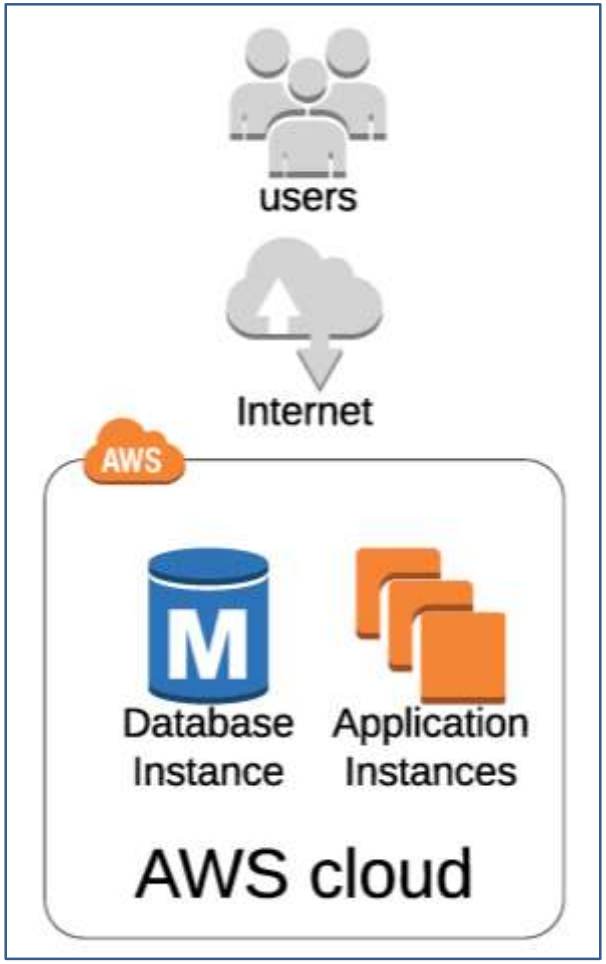
Database

- Limits data loss and versioning errors while improving data access
- Cloud-based allows access anywhere with internet
- Many options
  - Access, MySQL, SQL Server



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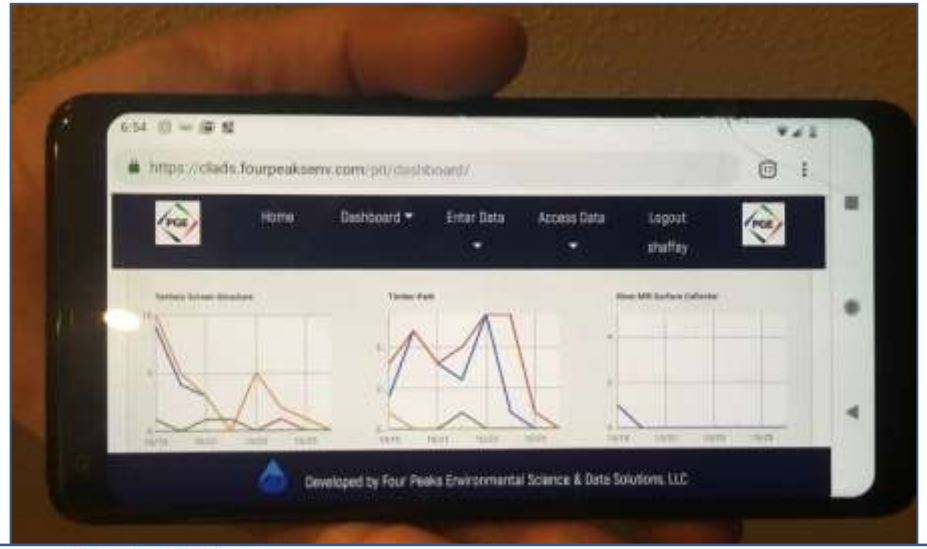
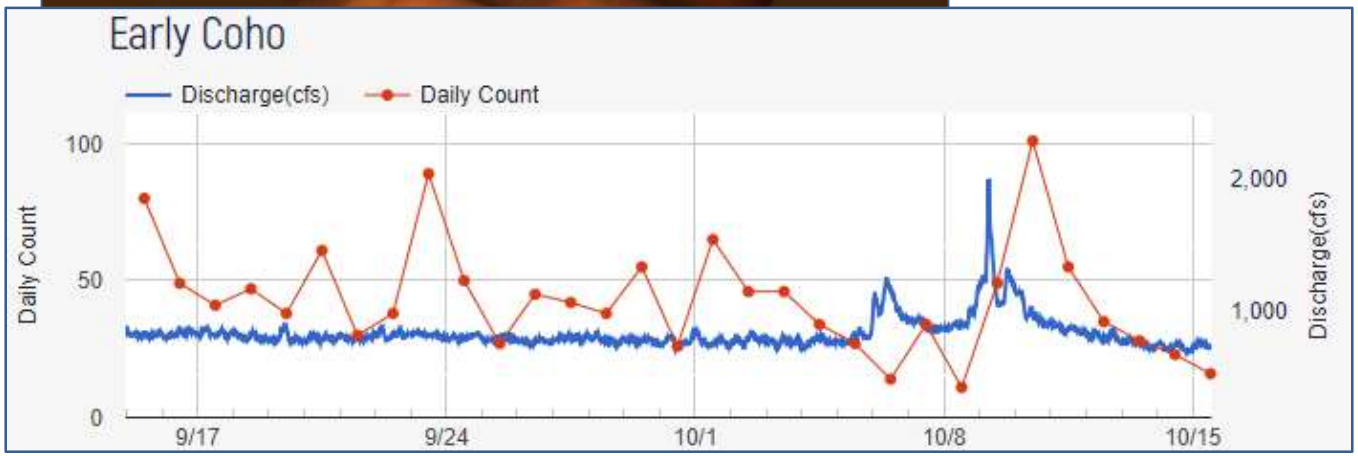
Visualization and Analysis



- Visualization of key metrics
- Identify issues early



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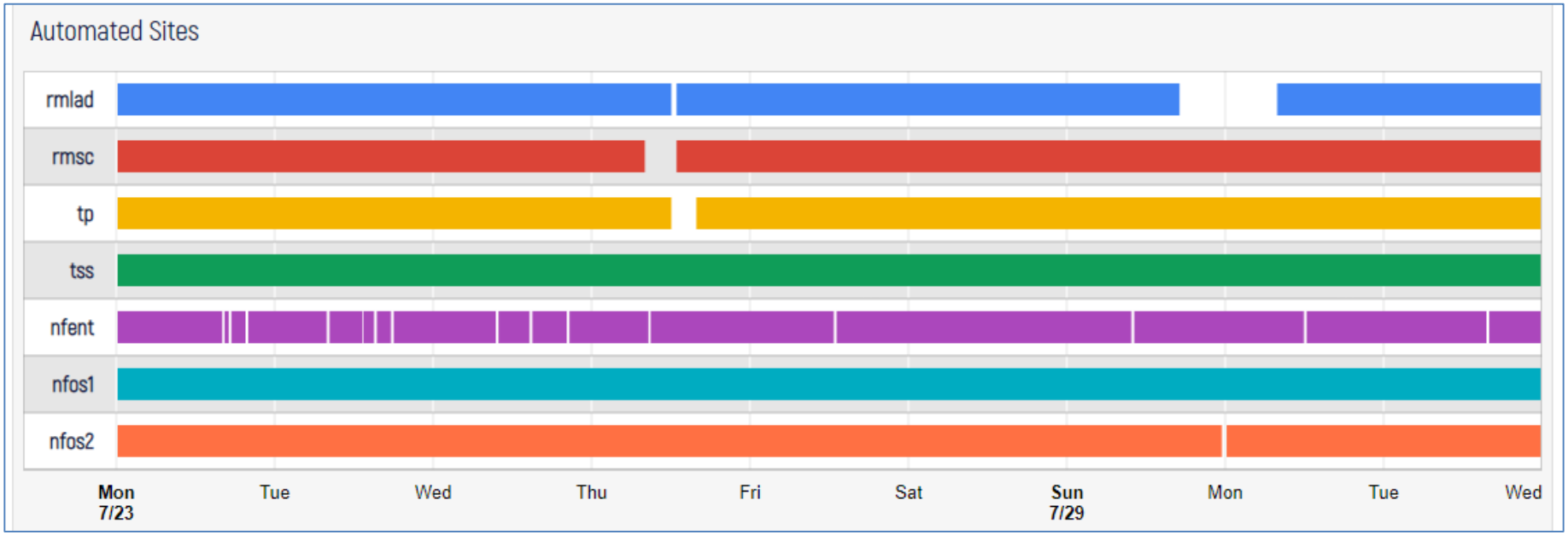
Diagnostic Visualization Example

- PIT antenna performance diagnostics
  - Solid lines indicate normal operation
  - Gaps indicate times when antennas were not functioning



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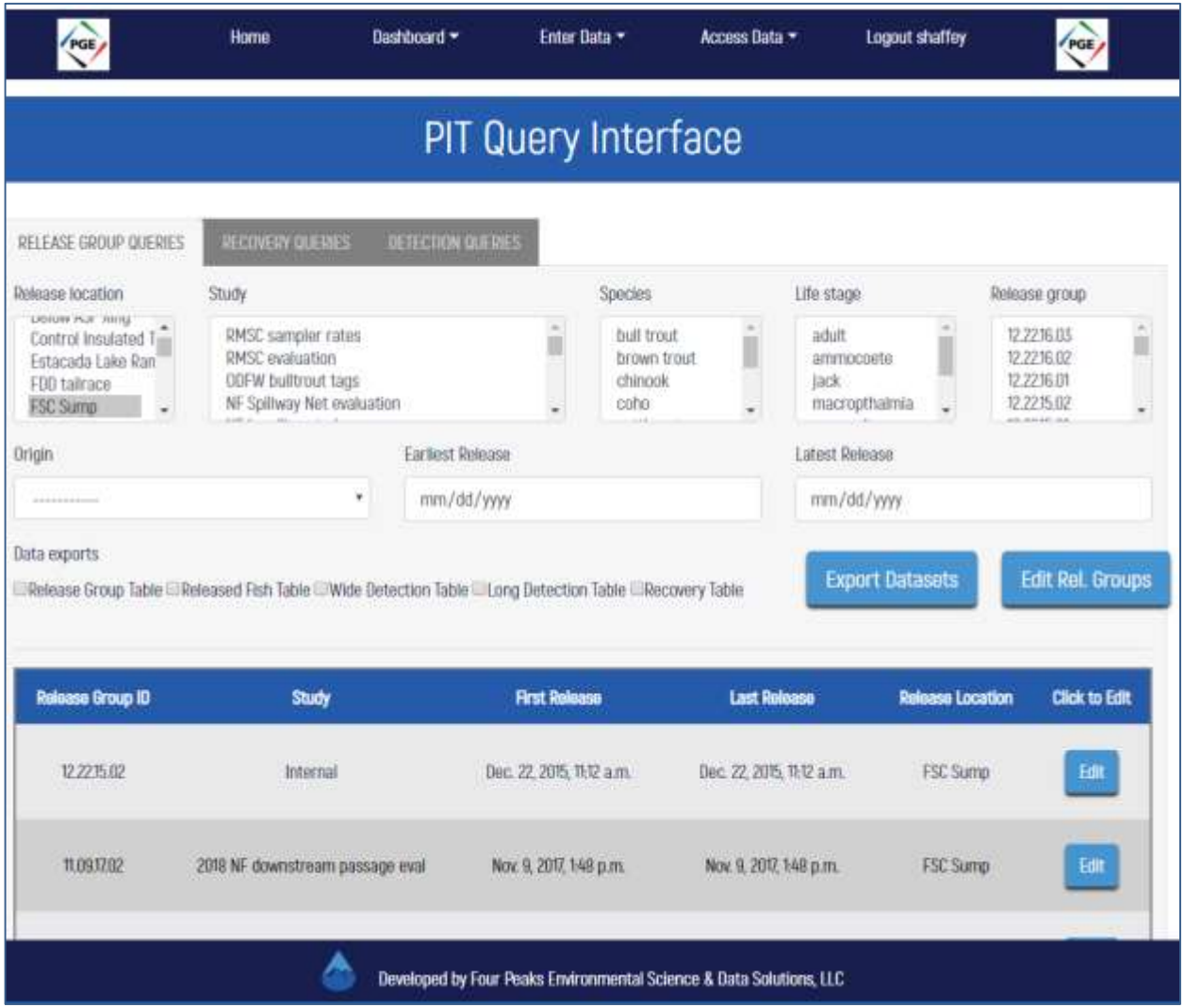
Convenient Data Reporting

- On-demand reports
  - Report ready spreadsheets and figures
- Online data access
  - Powerful query interface exports data in analysis ready formats



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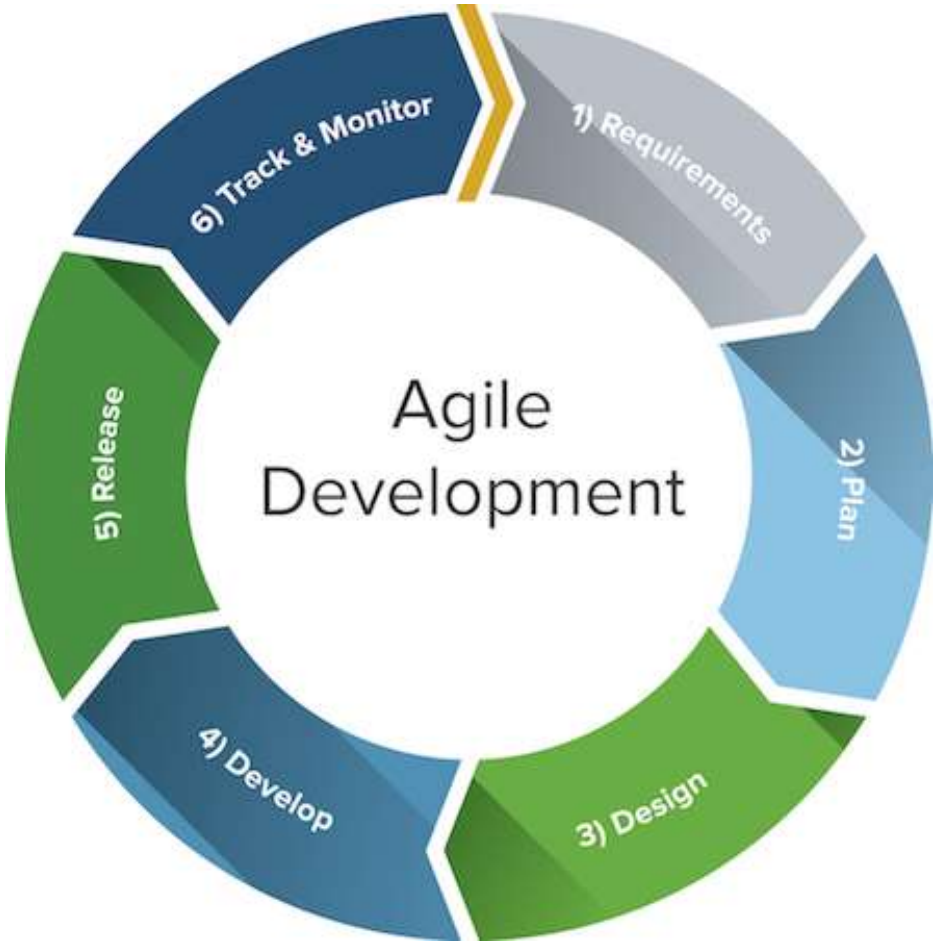
Gaining User Acceptance

- Collaboration through iterative development
- Leverage cloud platform to efficiently streamline releases
- Web development language facilitates prototyping



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Summary

- Gain efficiency through effective interface design
  - Achieve consensus on workflow and design
  - Automate where practicable
- Improve data quality with validation and diagnostics
  - Encode validation into forms, loaders, and database
  - Enable convenient access to routine diagnostics
- Convenient access to reporting and decision making tools
- Consider project goals and team input

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Questions?

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