EQuIS®: Transforming Environmental Data Governance, Automation, and Insight for Sustainable Decision-Making

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Challenges/Solutions

EQuIS®

Effective environmental remediation requires more than data

Challenges

- Fragmented data sources
- Limited accessibility
- Lack of actionable insights
- Errors and compliance risks
- Inefficient workflows
- Sustainability

Solutions

EarthSoft's EQuIS platform combines:

- Centralized data architecture
- Federated access
- Strong data governance
- Workflow automation

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Centralized Data Architecture & Federated Access

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Diverse Data Sources - Centralized Data - Federated Access

INPUTS

Structured & Unstructured Data

- Field/Analytical Data
- Sensors, Loggers, IoT, SCADA & Instrument Data
- Field and/or Lab Data (Web Forms Entry)
- Lab Information Management Systems (LIMS)
- Legacy Data
- Projects
- Financial
- Lab & Field Results
- Miscellaneous Sources
- Regulatory Reports
- Images
- Videos

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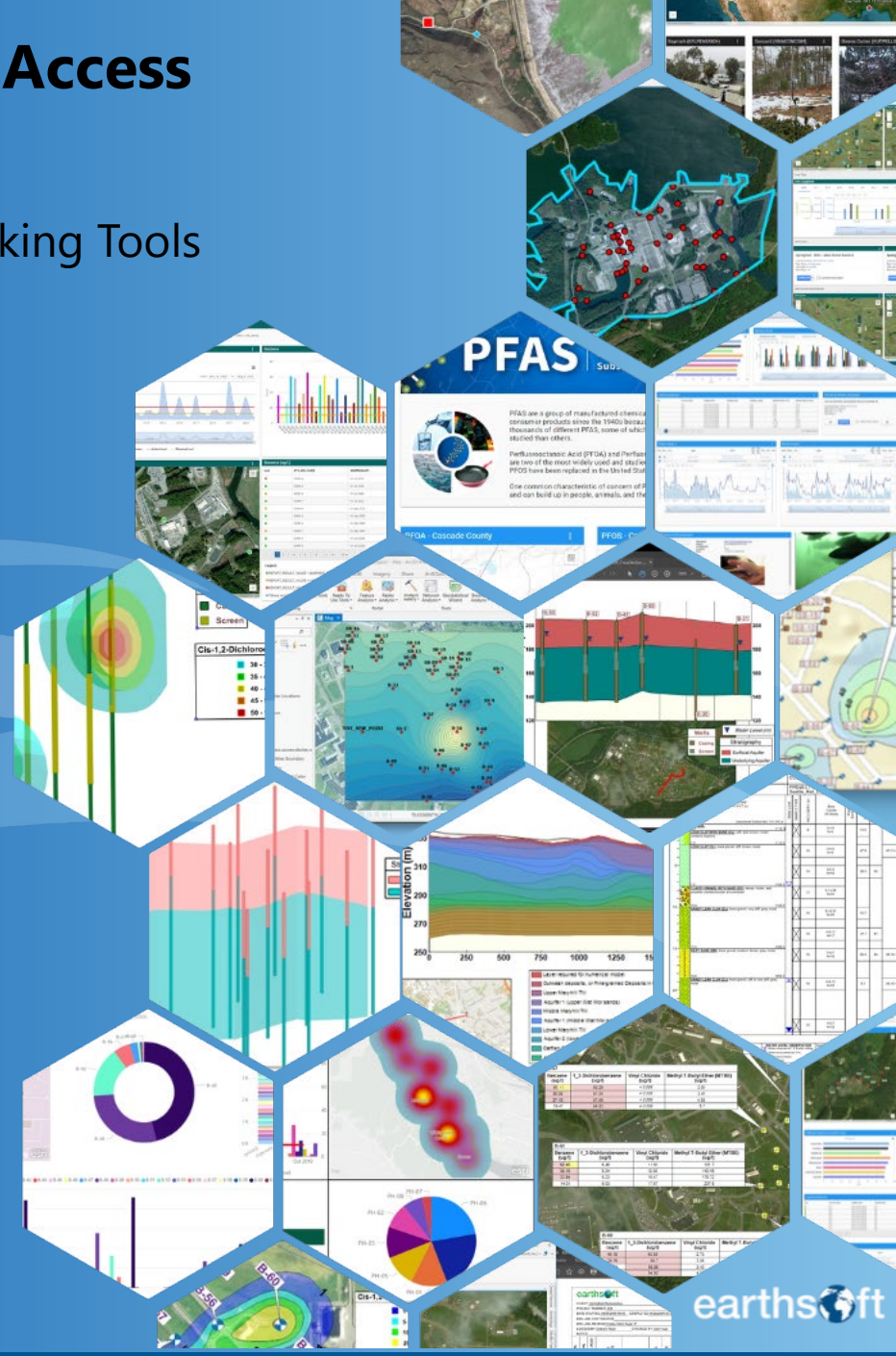
OUTPUTS

Decision Making Tools



- Air
- Radiological
- Chemical
- Geology
- Geotechnical
- Spatial
- Waste
- Noise
- Water: Ground, Surface, Storm
- Limnology
- Biology, Ecology Taxonomy
- Inspection
- Compliance
- Soil & Sediment
- Weather
- GHG

EQuIS Tools

EQuIS PlanEngage – Integrates EQuIS data with other sources for aggregated and comprehensive data views

EQuIS Helios – Knowledge management portal that uses Microsoft AI services

Data Federation – Visualization and Communication

Various Field Collection Apps

GIS Data

Financial Data

3D Models & Simulations

Document Management Systems

Project Management Systems

External Website & Communication

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AECOM

plan·engage™

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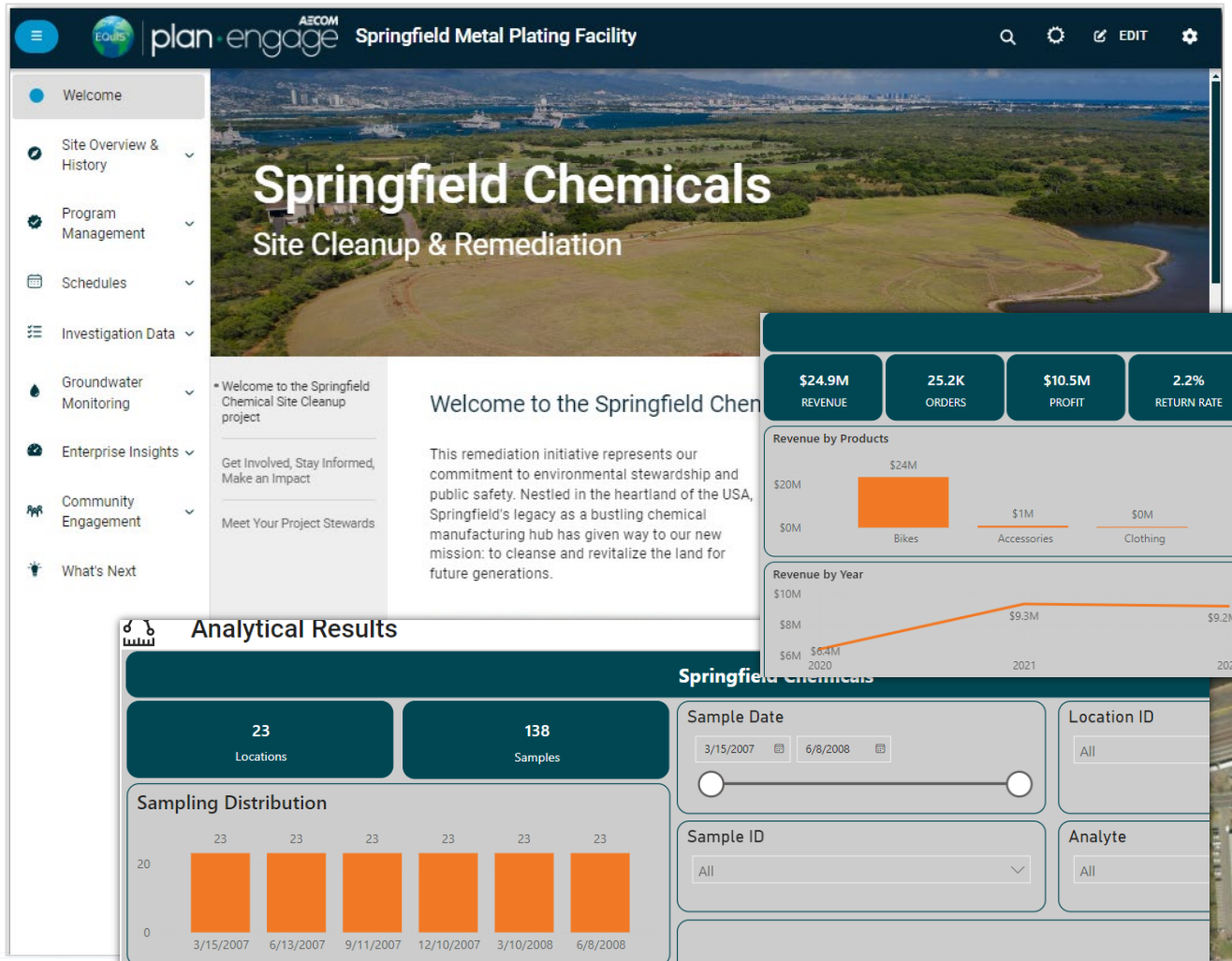
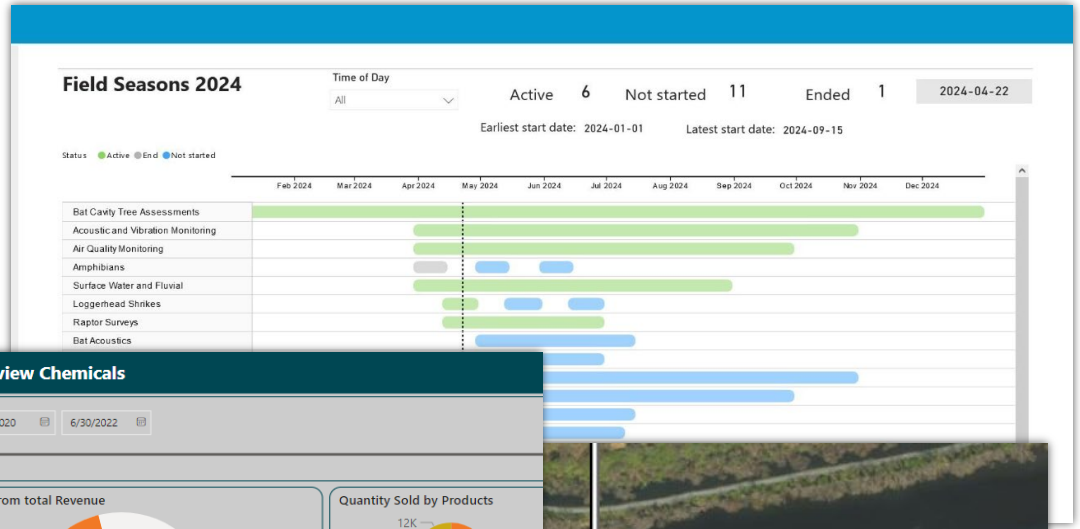
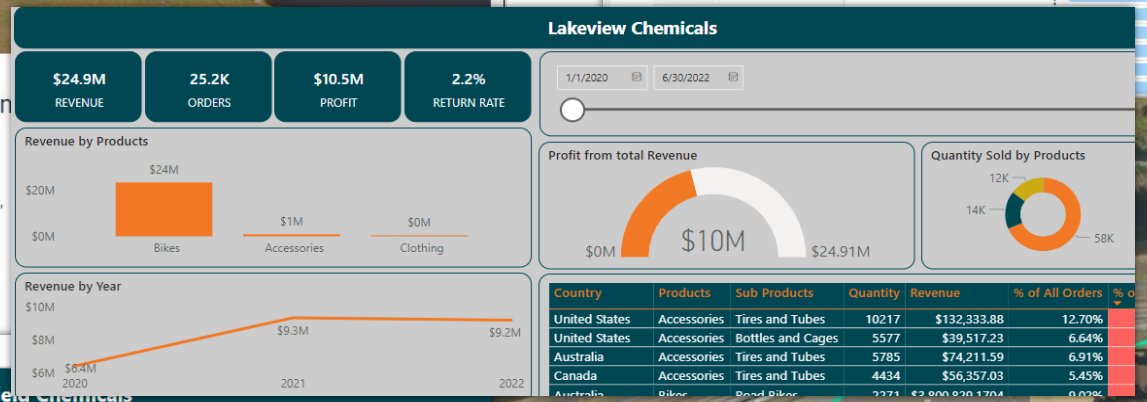
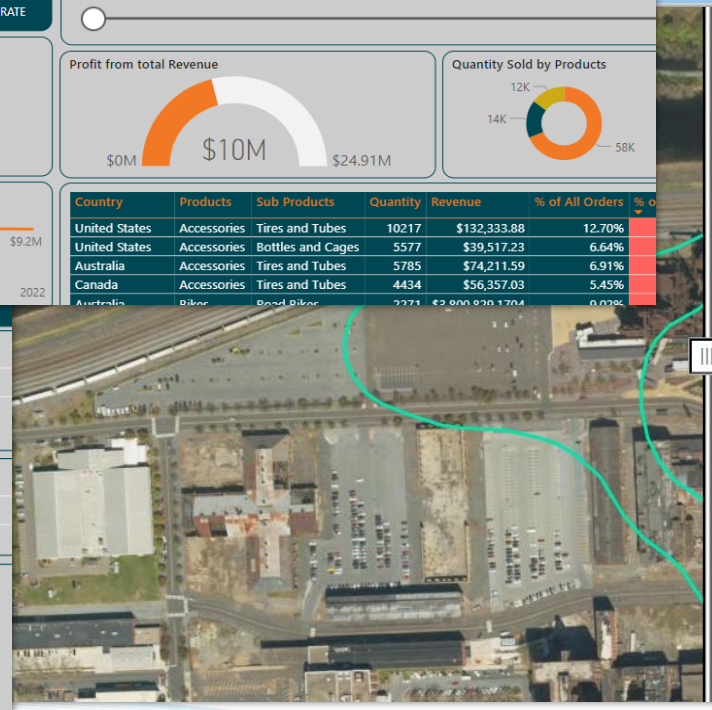
Portal Access – Data Federation









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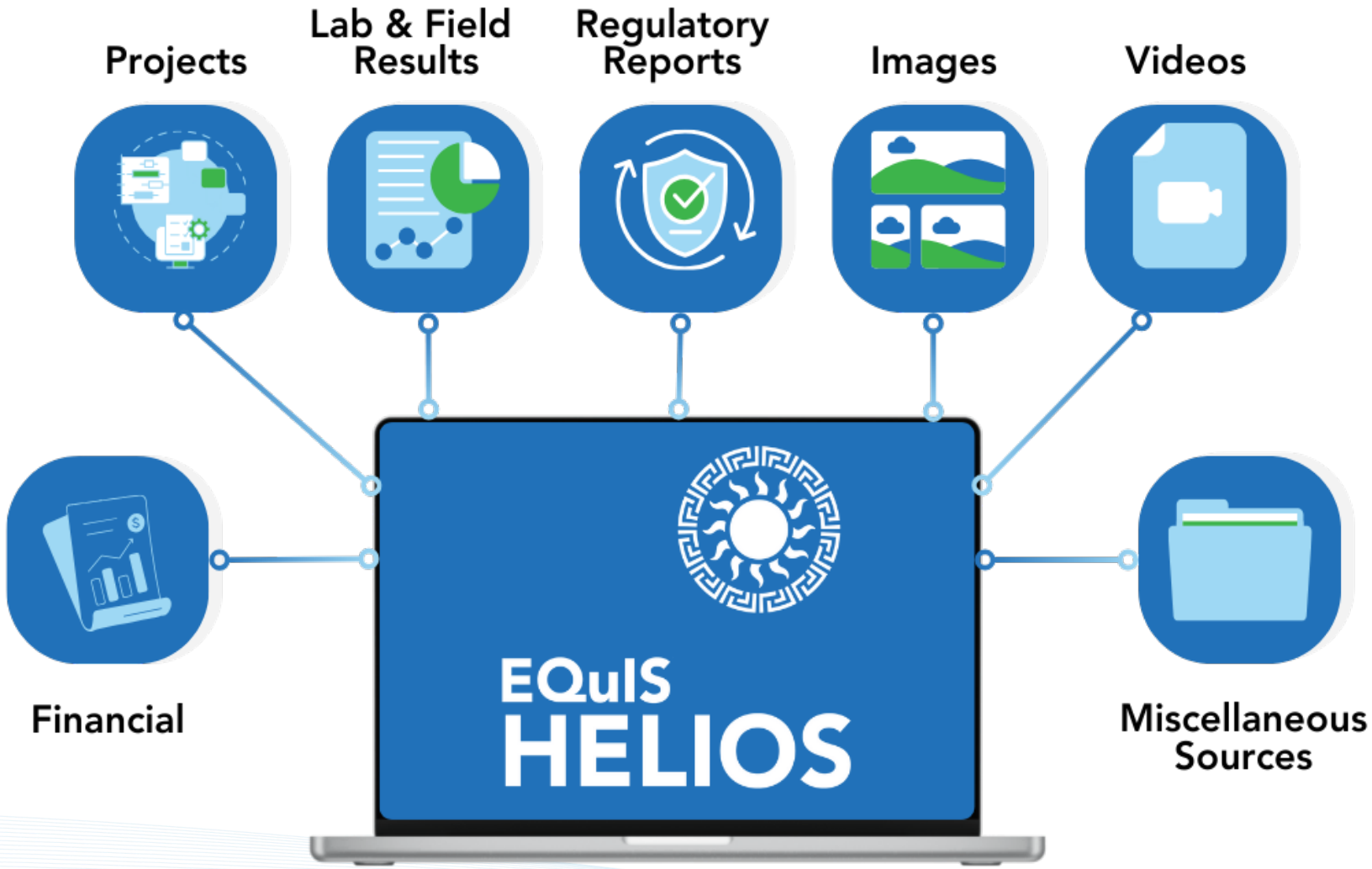
AI Integration for Unstructured Data



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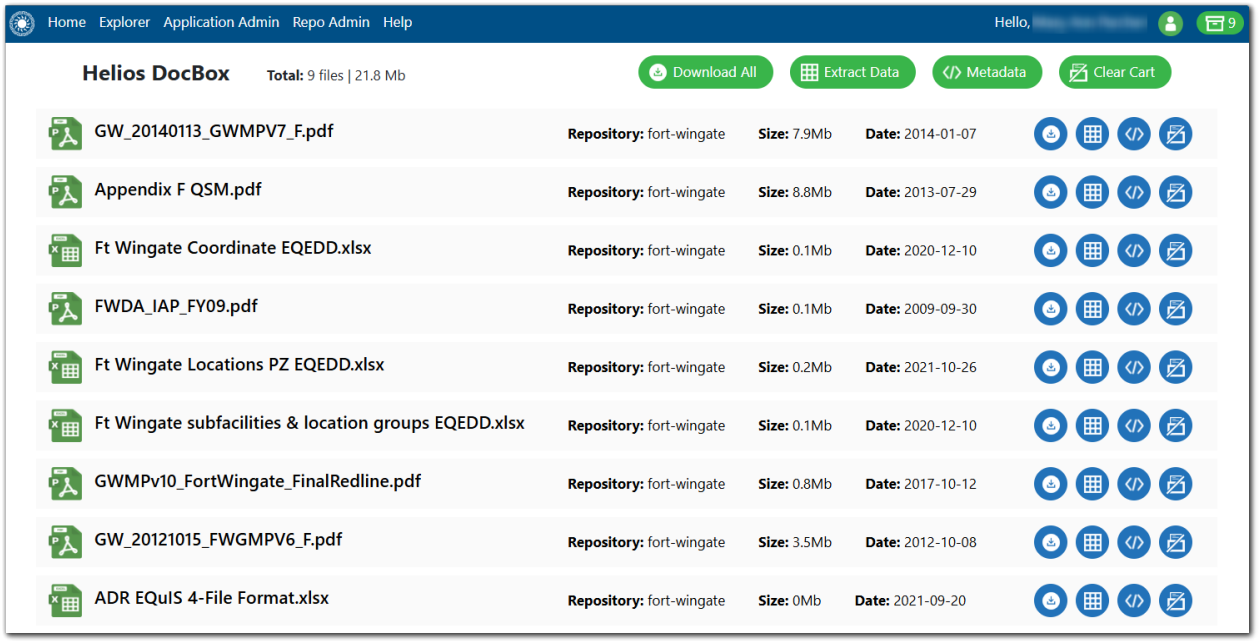
AI Integration for Unstructured Data

EQuIS Helios knowledge management portal uses Microsoft Azure AI services and optical character recognition (OCR) for:

- Simple drag and drop data loading and transformation
- Auto generate Content Summaries
- Auto extract Key Words and meta data
- Identify personally identifiable information (PII) and profanity
- Extract and convert structured content from unstructured formats for integration into EQuIS or other use



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Data Governance

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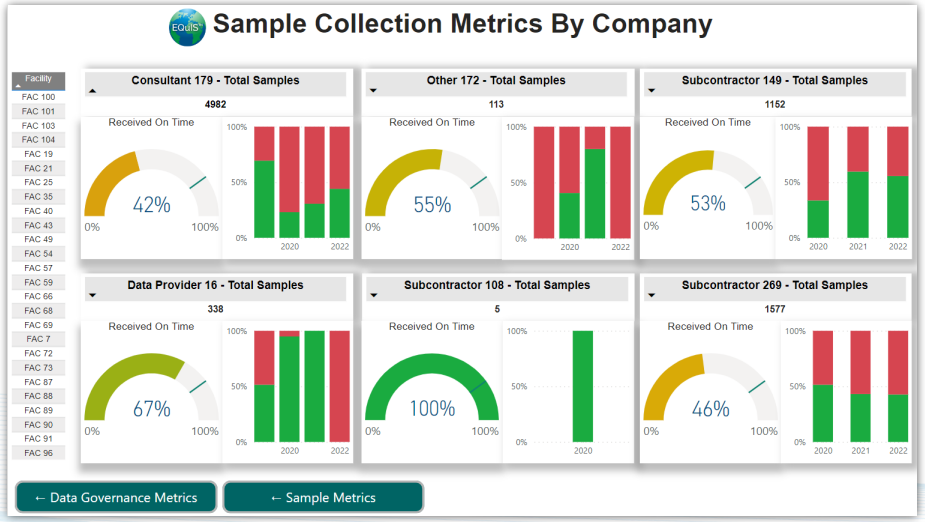
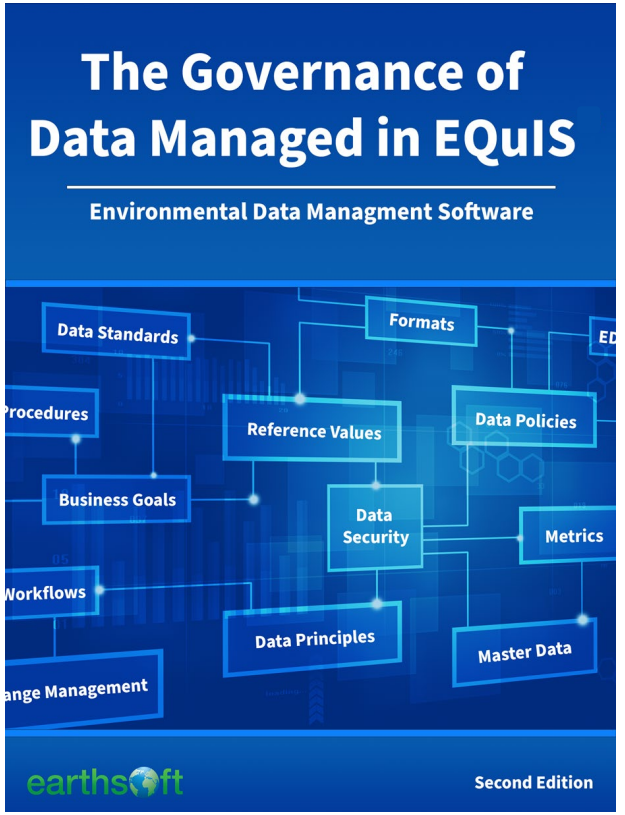
Data Governance

- EQuIS supports data governance
- Developed guidance organizations can leverage to establish and maintain a successful and sustainable data governance program

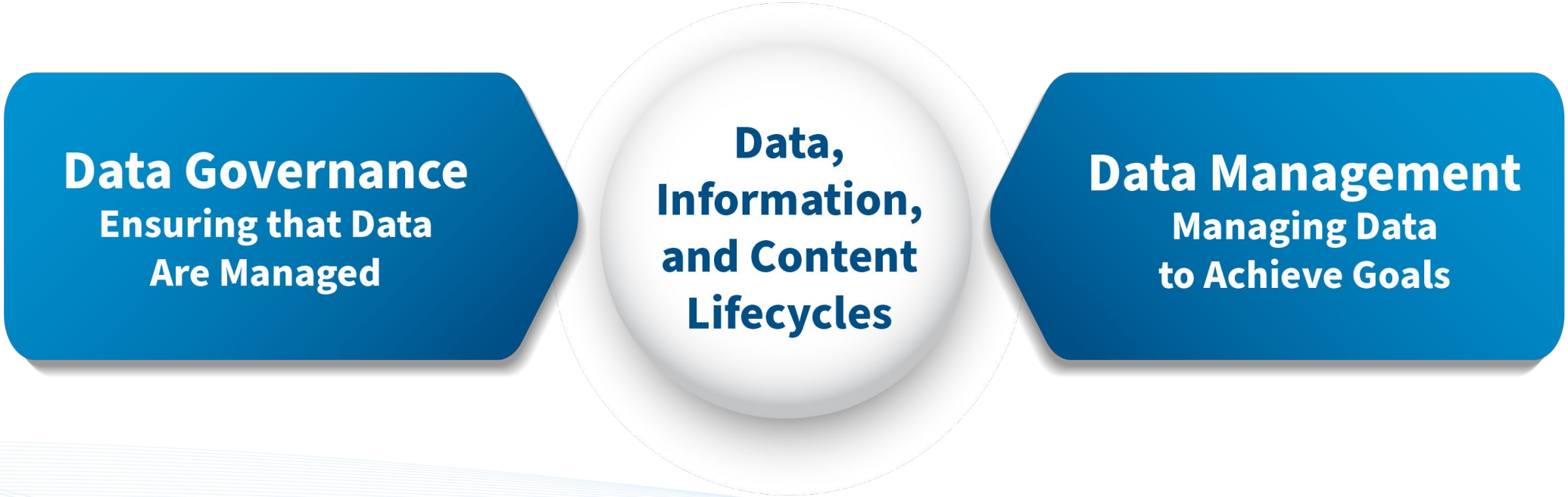




EQuIS Data Governance – What Is It?

Planning, monitoring, and enforcement for EQuIS Implementations.

EQuIS data assets must be protected and managed.



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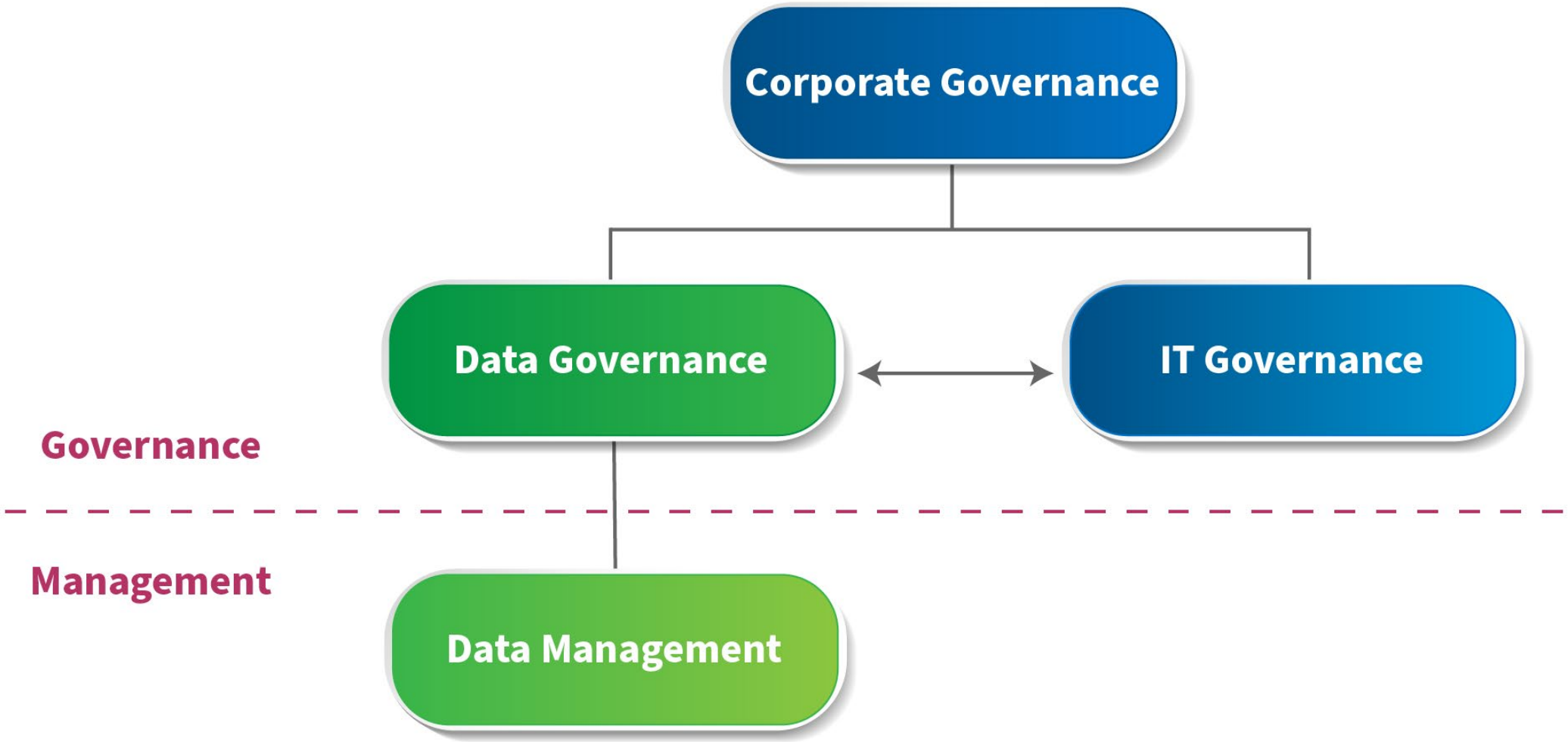
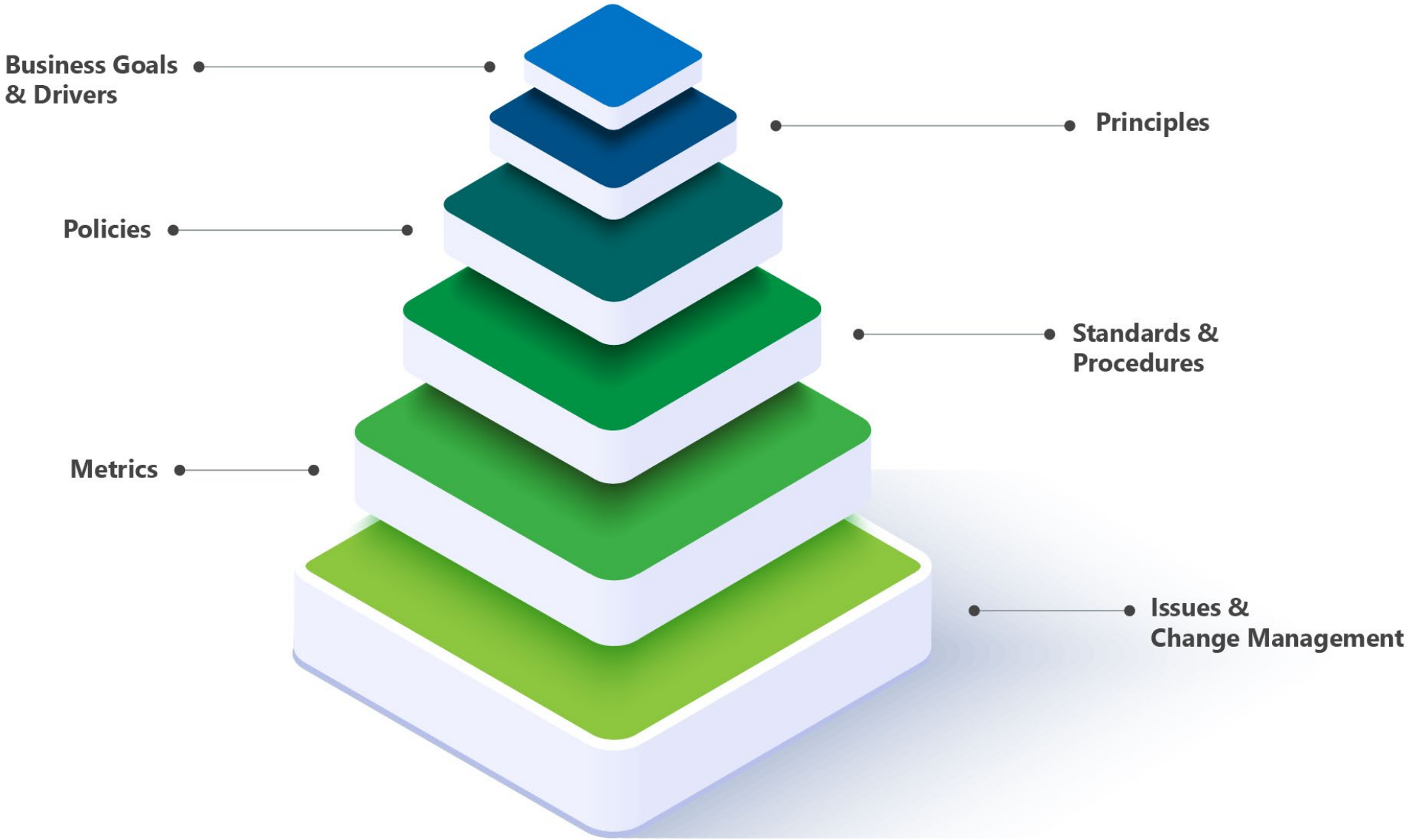
Governance Programs



Data Governance Program Elements



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Data Governance – Business Drivers

- **Growth / Business Agility** – Arrive at decisions and recommendations faster with increased efficiency and accuracy.
- **Lower Cost / Operational Efficiency** – Streamline workflows and automate data-related business processes.
- **Risk Management / Compliance and Security** – Define data standards, policies, and processes with clear roles and responsibilities to ensure compliance internal and external policies and regulations.
- **Improve Quality** – Ensure data are accurate, complete, timely, consistent with all requirements and business rules, and relevant for a given use.
- **Sustainability** of the investment.

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Lesson 1: Regulated Utility

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Challenges

- Multiple business units
- Inconsistent approach to valid values
- Existing field processes were optimized for data collection, but had significant office labor post field event to roll up to management
- Laboratory Program in place created resistance to change

Solutions

- ✓ Committee to align valid values
- ✓ Engage with field personnel early
- ✓ Demonstrate time and cost savings to Lab Program

Lesson Learned:
A team is stronger than an individual champion

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Lesson 2: Government Research Facility

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Challenges

- Lots of legacy data, with ownership of that data
- Highly structured EDMS in place, but was bespoke and few understood the schema
- Data Quality program had unique vocabulary
- Significant number of nuanced laboratory contracts
- Programs had nuanced sampling requirements

Solutions

- ✓ Document valid values with meaningful descriptions
- ✓ Provide a path for the bespoke experts for the future
- ✓ Plan for course-correction during EDMS implementation

Lesson Learned:
Change will happen.
Leave no one behind.
Plain language.

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Lesson 3: Oil and Gas (Among Others)

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Challenges

- Implementation went OK
- Systems were monitored by a single individual
- Individual left, governance languished, and program ground to a halt

Solutions

- ✓ Design governance plans with fault tolerance
- ✓ Make data providers own the quality of their deliverables
- ✓ Socialize location of governance documents

Lesson Learned:
Governance is bigger than one person

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Lesson 4: Mining Company

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Challenges

- No centralized platform for management or analytics
- Lack of consistency in data standards (collection methods, QA/QC, validation)
- Existing systems did not integrate well
- Majority of operations and surveillance performed remotely by third parties
- Lack of efficiency in sample collection/time burned on sample planning
- "We are very good at having standard processes and procedures for H + S but fall short on the E"

Solutions

- ✓ Keep solutions simple
- ✓ Invite everyone to the party (avoid myopia)
- ✓ Start develop governance approach early
- ✓ Find the right tool to visualize metrics

Lesson Learned:
See the big picture
(transactional vs. data as asset)

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Lessons Learned Summary

- ✓ A team is stronger than any individual champion. Governance is bigger than one person or department.
- ✓ Leave no one (department) behind
- ✓ Standards are needed
- ✓ Change Management
- ✓ Use plain language
- ✓ See the big picture (transactional vs. data as asset)
- ✓ Select the right Metrics

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Workflow Automation

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Workflow Automation

- Enforces data quality standards
- Automates workflows to increase efficiency and reduce errors
- Facilitates compliance and audit readiness
- Accelerate decision-making

Conclusions

The EQuIS platform:

- Support data ecosystem aligned with FAIR (Findable, Accessible, Interoperable, and Reusable) principles
- Meets evolving demands of environmental data professionals
- Integrates centralized database architecture with AI-powered tools and Federated access
- Supports efficient data processing, improved communication, and informed decision-making
- Provides extensive visualization capabilities, unstructured data integration, and automated data governance

Thank you!

EQuIS®

www.earthsoft.com

Own the Workflow,
Make Better Decisions

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