



Decisions at the speed of sight

Solution Profile

Data Management Platform for Agriculture Research and Extension Projects

- Improved institutional memory
- Increased project visibility
- Improved collaboration
- Monitoring & Evaluation

The **aWhere Data Management Platform** enables the efforts of agricultural research and extension to close the final mile – to achieve, analyze, and monitor measurable results down to the farm, field, village, or household while simultaneously allowing those results to be viewed at the regional level. The Platform creates a significant opportunity to realize the persistent value of data from improved execution through the value chain of local and national agricultural programs. aWhere's location-based 'business intelligence' platform delivers on a data management vision for the collection, integration, analysis, reporting, modeling, and monitoring of corporate, academic, and extension project efforts. With location and time as the architectural focus of its database schema, aWhere delivers on the vision of persistent value of data in domains such as agriculture where the complexity of managing information spatially and temporally has limited the success of traditional IT or GIS data management practices. This approach delivers accessible institutional memory to support strategic endeavors that strive for long-term impacts.

Connect the final mile – Generic recommendations across broad geographic areas fail. However, the analysis and management of data in precise geographic context leads to causality; and from causality, prediction. A 'recommendation domain' is the prediction that an agronomic package (variety + management practices) is a best practice for specific families (socio-economic assessment) in a target geography. This means agricultural research and extension can be leveraged to impact millions; field level recommendations - globally.

Monitor the actual impact - Data management, particularly for sustainable agricultural endeavors, function under constraints that have restricted the viability of project data access, institutional memory, and integration with geographic or contextual (causal) data.

Agricultural projects, particularly those funded through the Bill and Melinda Gates Foundation, have clear metrics stated throughout project documentation. Measurement towards confirmation of these goals frequently lacks essential connection to the overarching target of improved livelihoods for small holder farmers; to capture that traceable connection requires data collection and information management at the most granular level / highest resolution - the household, plot, farm, or village.



The results of a coordinated, location-based Data Management program are substantial. New local insight for multiple purposes highlight the attention to ‘the final mile’ inherent to the needs of sustainable agriculture. With quantifiable metrics in place, outcomes are measurable and initiatives are defined by their impact and not solely on project ‘activities.’ The aWhere Data Management Platform brings transparency and accountability connecting project efforts with funding sources. This offers a profound change in the mastery of sustainable agricultural efforts: donors and their funded partners are able to accurately identify opportunities for expanded efforts as well as identify lessons learned resulting in continued, measurable progress towards achievable goals.

Leverage data for planning and strategy - Beyond just the issues of data management and reporting, research and extension projects are confronted with the fact that agriculture is humanity’s most spatially extensive endeavor. Tropical agriculture, where the majority of the earth’s poor reside, is the most information demanding agricultural effort on the planet. Not only is the variety of crops (including livestock interaction) and their agronomic characteristics wide and substantial, but the environment varies from lowland to highland, from wet to dry, with inter-annual and inter-season weather and climate variation the norm. Efforts to improve agricultural production in the tropics require a comprehensive agriculture information system to incorporate details from field, plot, and village efforts and provide access to related location-specific information including weather, cultural and socio-economic needs of the population, and other environmental data. A solution must not only manage the data *from* research, but become an integral element to *strengthen* research and extension planning and strategy.

Think beyond “maps” - Traditional database efforts have relied upon 3rd party client software (‘GIS’ software) to manage spatial data – requiring that data be held in a closed “layer” architecture. This map-focused, non-transactional structure prevents interactive analysis and data reuse - greatly decreasing the value of geo-located data. aWhere leverages recently introduced support for spatial data types in industry standard business intelligence database systems (such as Microsoft SQL Server) to truly integrate spatial information with transactional and temporal data. When combined with well-established IT and big data management best practices this innovative approach creates wholly new opportunities to manage, access, and apply spatial data to solve problems that are inherently spatial and temporal in nature.

Share the insight – Today, the farmer’s supply chain partners are often ignored or not provided valuable information generated by research and extension projects. Partnerships with public institutions and private companies (often agri-service companies) can bring highly leverage-able connections that will greatly assist the impact of sustainable agricultural projects and achievement of stated project goals. These partners require information and ‘customer relationship’ effort – private partners in particular need program management. Data to drive better decisions are of great value across and between projects and project partners; in the past this information has often been a greatly neglected asset of BMGF and USAID funded efforts and agricultural activities.

Location-based data management serves as the foundation for project institutional memory. No longer will project results be inaccessible (i.e., on the desktop machine of a scientist), forgotten and isolated. A collaborative and iterative process emerges whereby separate projects working in the same geography are able to leverage knowledge and share data. This enterprise, scalable vision is a transformative step towards the realization of sustainable productivity growth. Risk is reduced as data systematically collected over time enriches the resources of current efforts resulting in more appropriate, accurate recommendations to the field and new insight aggregated to policy levels.

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One Solution, Three Integrated Applications

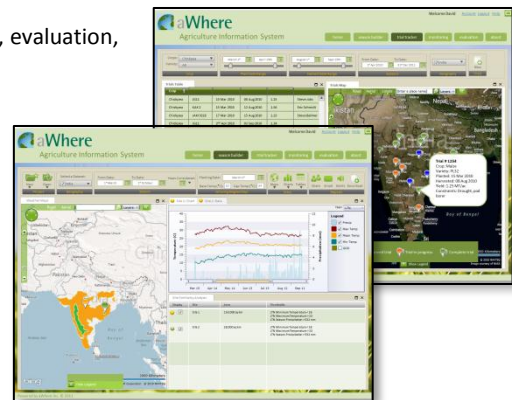
The aWhere Data Management Platform is the result of many years of systematic thinking about the value of integrated, location-specific information in support of agricultural investments. It brings enterprise-level, scalable data management practices to institutions that must cope with challenging data associated with spatially extensive agricultural research and extension services. Each of the Platform's applications, or "Systems", are optimized for a specific group of end users and deliver new insight based on quantifiable data analysis and facts.

System 1

Agricultural Project Information System - An interactive system to support planning, reporting and monitoring of research and extension projects. This data management and project information system integrates available project data, metrics, monitoring (surveys), and 3rd party agricultural data including weather, crop variety, production acres, crop protection supplies, fertilizer availability, food security monitoring data, satellite-based remote surveillance data, and predictive agricultural models (e.g. pests, harvest, and production/yield). The system provides evidence-based reporting to track trials, monitor project activity plus tactical analysis of project status against metrics and research results.

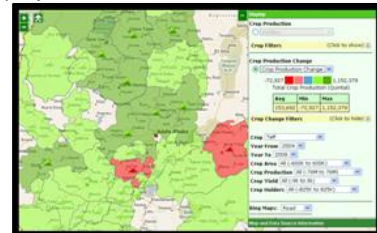
Key modules and components for planning, monitoring, evaluation, and impact assessment include:

- Trial planning, reporting & analysis
- Data administration
- Mobile survey management
- WeatherPin (season analysis)
- Harvest Predictor
- Pest Predictor
- Alerts (email and text)
- Remote (satellite) surveillance



System 2

Public Access Reporting System – An external-facing system to post and access project data. For those projects that require or offer public or controlled public access to project data and information, this web-based, interactive application provides external users the ability to view and leverage the insight generated by the project. Users can interact with the data by filtering or querying the project data, seeing visualizations of the data in interactive maps, tables, charts, and reports. Authorized users can also download the data for use in their own analysis or research. Of course, access rights and functionality are determined by the project leadership.



A key utility of this system is the ability to identify the people associated with the creation of the data. Collaboration is greatly enhanced by providing recognition and contact information of the researchers, technicians, or partners associated with the creation of the data.

System 3

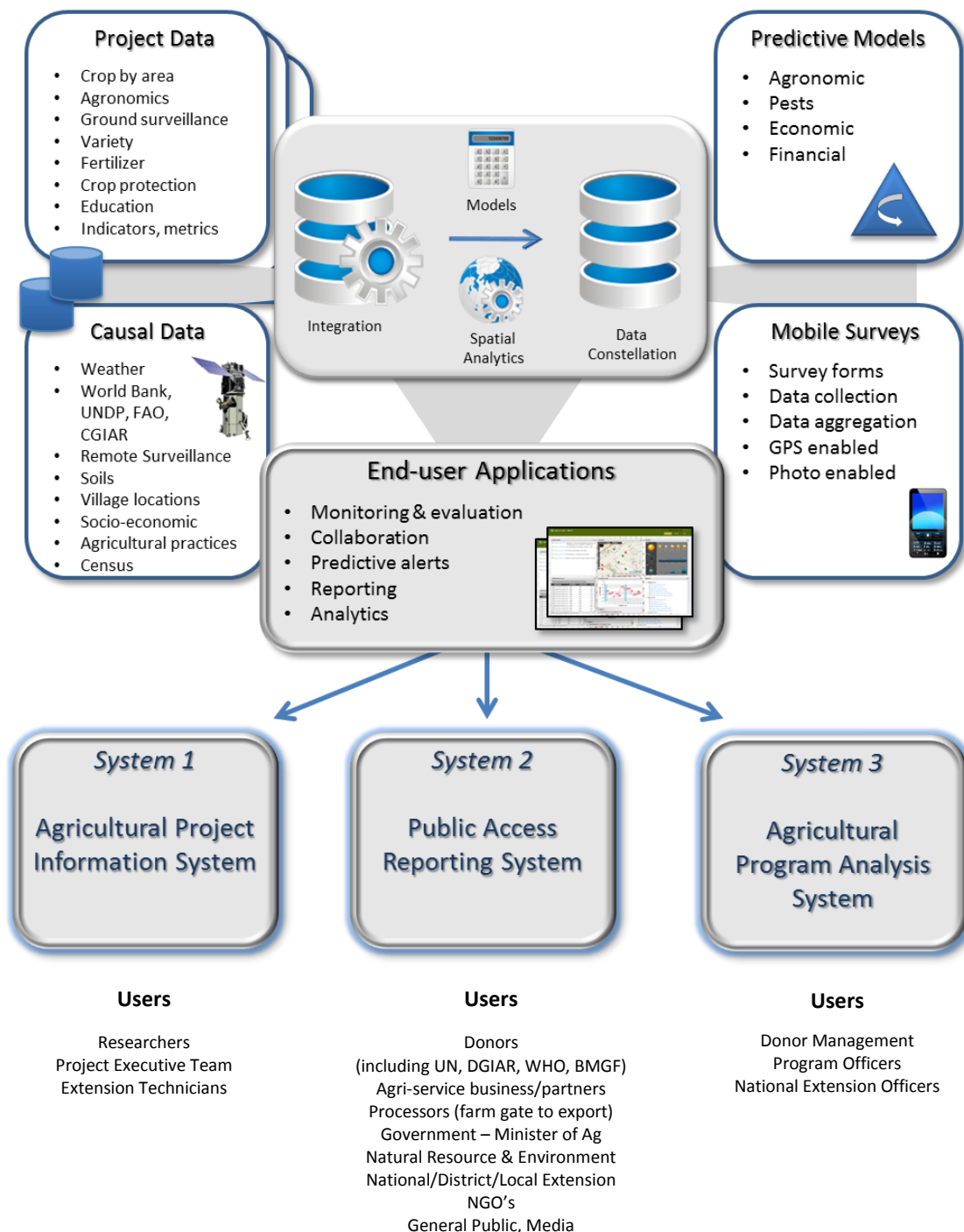
Agricultural Program Analysis System – An analytical and reporting system to aid in the quantitative analysis of locale-specific agricultural management practices, project data, and production specifics with economic demand and distribution models over-time. The result is an evidence-based monitoring and evaluation system providing insight to evaluate and determine optimal methods and agronomic combinations by time and location. The system will identify ROI to country-wide or global agricultural investments and investment scenarios within or across projects.



Many Sources of Data - One Common Platform

The aWhere Data Management Platform transforms complex data from many sources into actionable insight through comprehensive data collection, data integration, and location intelligence technologies. The platform developed by aWhere provides information rich, interactive applications, visualizations and reports that enable all users to interact with data, conduct analysis, and derive results with minimal training. With 'location' as its foundation, the platform enables the integration of a wide variety of geographically contextual data including collected local data, weather, events, operations, infrastructure, population, economic and agro-economic data, human activity, census, and more. This location-based approach enables agricultural programs to uncover the actionable insights buried in local databases, data warehouses, spreadsheets, and third party sources – within and across projects.

DATA MANAGEMENT PLATFORM



A Complete Data Management & Location Intelligence Solution

Each Data Management solution is developed on the aWhere location intelligence technology platform; a highly scalable, cloud-based computing and data management environment that provides spatial and temporal data integration and processing, data storage, complex predictive analytics models (agricultural, entomological and statistical), remote surveillance (satellite), mobile survey extensions, and multiple end-user applications. To meet the key demands of an agricultural information system and data management program, the Data Management Platform supports six core functions:

Data Collection	Collection includes acquiring and applying data from multiple sources in multiple formats such as existing logistics databases (silos of data), 3rd party data, manual data uploads from end-users, mobile survey data, satellite-based remote surveillance, and more.
Data Integration	The Platform is purpose built to integrate many disparate data sources and data types by each data set's most detailed attributes of time and location. This capability enables all users to view and analyze data at any level of geographic aggregation by time; household, habitat site, village, area, district, country, global.
Reporting	The Platform specializes in moving beyond the simple reporting of data to provide easy, rapid interpretation of complex data using numerous interactive, visualization methods; tables, graphs, charts, and dynamic maps that provide on-demand information by point in time, change over time, or current status at location-specific levels or any level of aggregation. Open data access means other systems have access to the same data.
Analysis	Beyond just reporting, the Platform incorporates numerous statistical methods to derive and present new quantifiable insight from the integration of all available causal data; determine cause, analyze relationships, and gain new insight
Predictive Modeling	Economic, agronomic, entomological, and other predictive or statistical models provide advanced views of potential outcomes based on current status or conditions.
Monitoring & Alerts	Command & control from facts – automated monitoring and alerting to understand status against objectives, gain new insight, and recognize new opportunities at local, regional and national levels.

Your Data in Your Control

aWhere solutions extend the value of your data, but always ensure that your data remains in your control. Built as an open system using Microsoft SQL Server Spatial and cloud-based technologies, the aWhere Platform is enterprise ready, secure, scalable (to manage big data), and has a modular architecture to deliver each project secure access to their data and tools.

- The client always owns their data.
- Access permissions to the data are controlled by the client.
- aWhere solutions do not require the client to purchase proprietary software to access the data; aWhere solutions use web-based applications requiring only a browser to access.
- Clients with their own analytical software (e.g. Excel, ArcGIS) can use their data directly from the aWhere data schema via downloads, scheduled feeds, and API access.
- All client data can be pulled from the aWhere cloud at any time using industry standard tools; any data that is loaded into an aWhere Data Star is stored in Microsoft SQL Server tables and can be accessed by any compatible system or ported to virtually any database system with relative ease.
- aWhere takes care of data back-ups, virtual security, physical security, and technology licenses.
- Cloud-based solutions allow hosting data and applications where it makes most sense for security and performance.
- aWhere storage mechanisms are completely scalable growing or shrinking as client data size demands – from megabyte to terabyte.

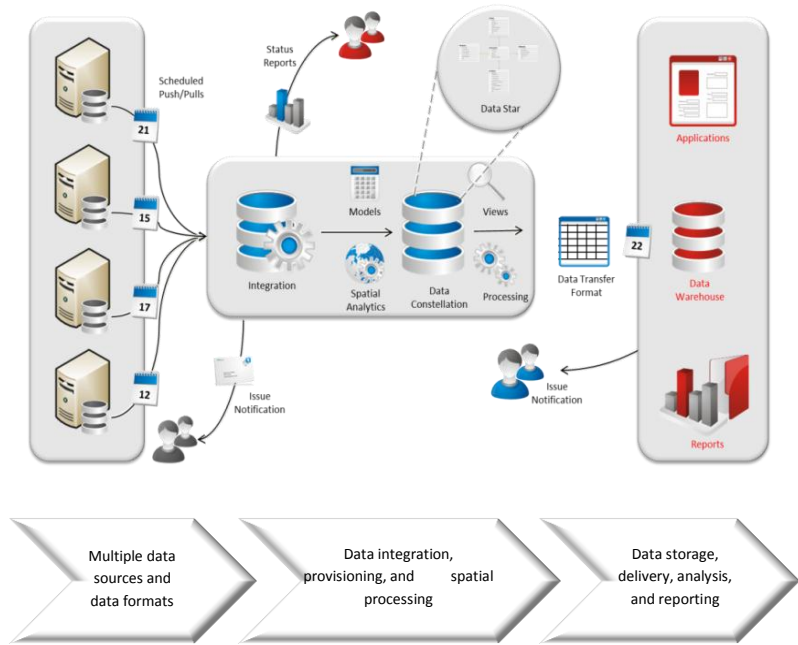
Data Management

aWhere implements spatial and temporal data types within a consistent star schema and robust enterprise database system. Business logic, web services and end user applications are then implemented in a framework that leverages reusability without compromising specific client requirements.

Built on Microsoft SQL Spatial, the aWhere Platform is enterprise ready, open, secure, scalable (to manage big data), and has a modular architecture designed to deliver each user segment access to their needed data and tools. Underpinning the aWhere Platform is the aWhere Data Universe housing Data Constellations which in turn consist of multiple Data Stars (Spatio-Temporal Attribute Repositories). By using a consistent schema across Data Stars and Constellations, multiple data sources and data formats can be easily and efficiently integrated;

data containers can be leveraged in multiple applications using plug and play and yet the flexibility to fine tune performance of each data container is still available. More importantly, the integration and aggregation of data from multiple sources or projects across time, location, and other categorizations, is fast to develop and deliver to aWhere's application components.

And of course, all the data remains accessible and open for use by any other approved user or system.



Solution Services

To ensure successful solution deployments and value, aWhere personnel provide hands-on support and thought leadership working directly with in-country personnel. aWhere Professional Services personnel provided during each project are comprised of U.S.-based and target country-based resources; the deployment services include the training and utilization of local staff for both short term and long term assignments.

Professional Services

- Project management
- Location intelligence and data strategy consulting
- Agronomic consulting
- Operational management consulting
- Satellite surveillance interpretation and feature extraction
- Software design, development, and quality assurance
- Data acquisition, data processing, and data management

Training

User Support & Administration

Mobile design and administration

Technical Services

- Platform hosting
- Data hosting

About aWhere

The focus of aWhere, Inc. since 1999 has been to develop and provide location intelligence software solutions on a worldwide basis to businesses and users seeking rapid, actionable, quantitative insight from geo-spatial data and analysis. Focused in agriculture and international development, aWhere's growth continues in markets where location and time are powerful performance indicators.



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