



Decisions at the speed of sight

Solution Profile

Command & Control Platform for National Malaria Control Programs

- Improved efficacy
- Increased visibility
- Evidence-based decisions
- Monitoring & Evaluation

The **aWhere Malaria Command & Control Platform** improves program efficiency, enables logistical improvements, and expands nationwide malaria control operations capacity. The MCC Platform delivers fact-based insight enabled by comprehensive data collection and integration, location-based analytics, remote surveillance, and entomological monitoring to meet the objectives of malaria control efficacy plus monitoring and evaluation execution.

Currently, challenges in data collection, integration, and reporting hinder efforts to improve malaria control strategies and to enable monitoring and evaluation across many initiatives. A solution is required that can aggregate data from many different sources in many different formats then provision that data in such a way to deliver new insight and oversight; creating national malaria program intelligence that is reportable, interpretable, and leverage-able across the total NMCP / PMI operations.

Each of the Malaria Command & Control Platform's three applications, or "Systems", are optimized for a specific group of end users and deliver management and operations insight based on quantifiable data analysis and facts.

System 1

Vector Control Decision Information System - an interactive system to support logistics and operations management of IRS, ITN, or other intervention initiatives. The system integrates IRS operations data, ITN distribution and logistics data, mosquito control data, entomologic surveillance and monitoring data, satellite-based remote surveillance data, mobile survey data collection, and predictive entomological models. Provides evidence-based reporting to monitor control activity plus tactical, predictive identification of optimal control actions (IRS, larvae control, ITN, etc.) by location and time.

System 2

Malaria Control Program Analysis System - an analytical and reporting solution to aid in the quantitative analysis of locale-specific malaria control practices through the integration of vector control intervention data (IRS, LLIN, habitat treatments) with case data, epidemiology, and entomological data. The result is an evidence-based monitoring and evaluation system providing insight to evaluate and determine optimal control methods and control combinations by time and location.

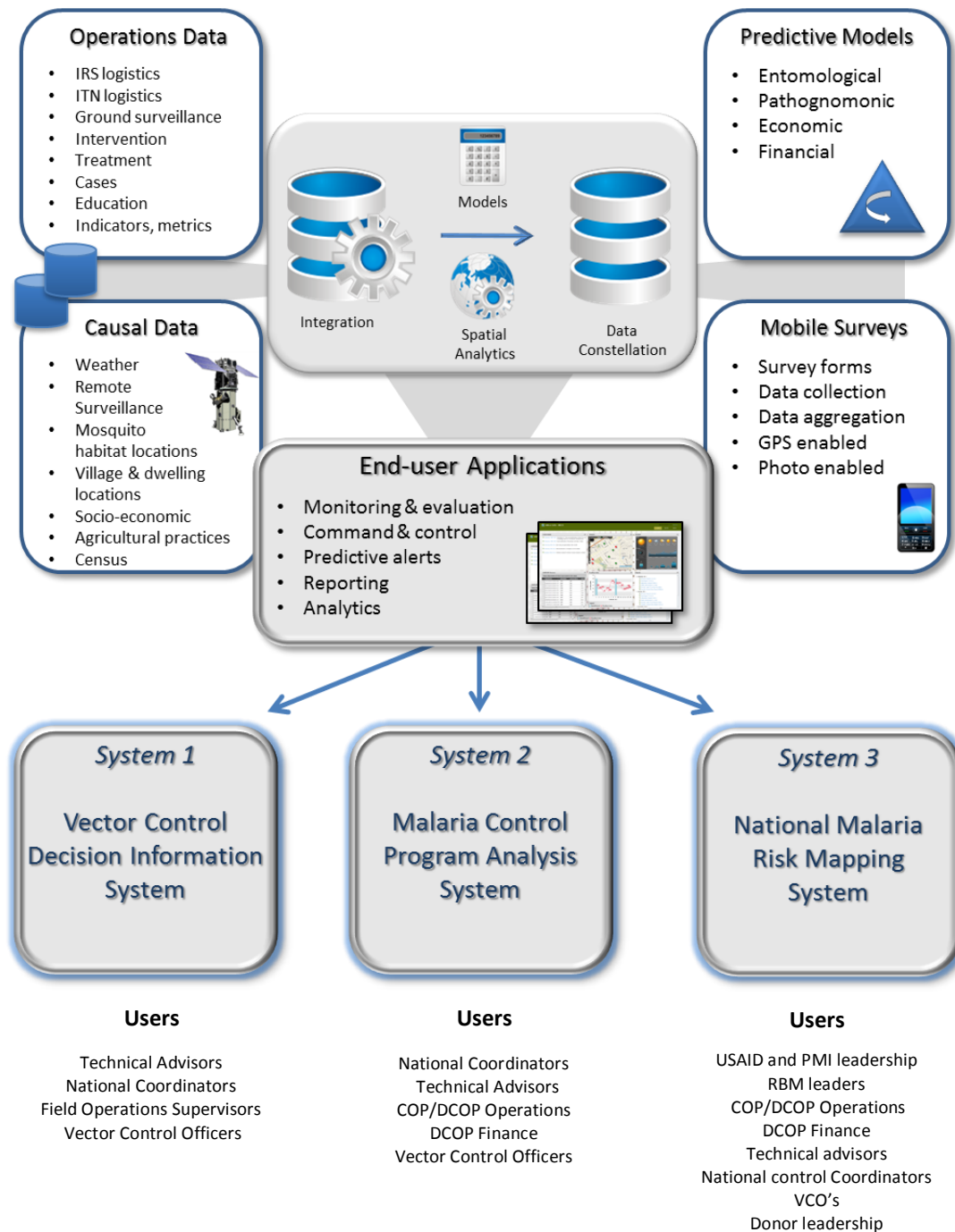
System 3

National Malaria Risk Mapping System - an analytical and reporting solution to aid in the development, monitoring, and evaluation of country-wide IVM strategies. The result will be an evidence-based monitoring and evaluation system providing dynamic, interactive analysis, reporting, and insight across the total malaria risk profile and NMCP/PMI initiatives.

Many Sources of Data - One Common Platform

The aWhere Malaria Command & Control 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 NMCP/PMI programs to uncover the actionable insights buried in local databases, data warehouses, spreadsheets, and third party sources.

MALARIA COMMAND & CONTROL PLATFORM



A Complete Data Management & Location Intelligence Solution

Each Malaria Command and Control 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 (entomological and statistical), remote surveillance (satellite), mobile survey extensions, and multiple end-user applications. To meet the key demands of any national malaria control program the overall Malaria Command & Control Platform provides six core functions:

Data Collection	Collection includes acquiring and applying data from multiple sources in multiple formats such as existing client databases (silos of data), 3rd party data, manual data uploads from end-users and administrators, 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 any user to view and analyze data at any level of aggregation; 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.
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	Entomological, pathognomonic, and economic predictive 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.

Solution Services

To ensure successful solution deployments and value, aWhere and IPHC personnel provide hands-on support and thought leadership working directly with in-country personnel. 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
- Entomological and epidemiological consulting
- Operational & integrated vector management consulting
- Satellite surveillance spectral signatures development
- Software design, development, and quality assurance
- Data acquisition, data processing, and data management

Training

User Support & Administration

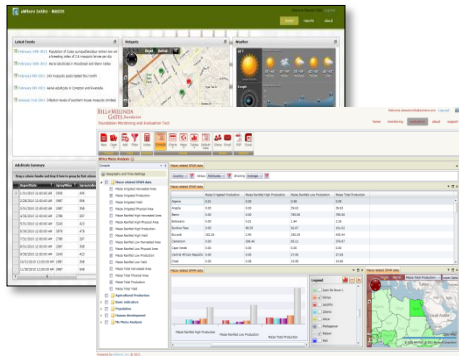
Mobile design and administration

Technical Services

- Platform hosting
- Data hosting

Key aWhere MCC Platform Components

End-user Applications



The aWhere MCC Platform provides an innovative combination of flexibility - for rapid application development and deployment - and robust architecture - for building enterprise level, performance-based, spatial and temporal business intelligence solutions. The MCC Platform provides for three distinct software “systems” (web-based applications) and unlimited mobile survey applications (see mobile below). Each application is configured specifically to each target user group providing the specific functionality and data to meet their unique needs.

Vector Control Decision Information System – the application used to directly monitor and manage local control operations effectiveness. It provides tactical, predictive identification of optimal intervention activity (IRS, ITN, larvae control, etc.) by location and time plus evidence-based reporting to monitor intervention activity and status.

Malaria Control Analysis System – the application providing evidence-based monitoring and evaluation with quantitative insight to determine optimal control methods and control combinations by time and location for both public and private sector programs. This system can also support additional analysis of insecticide resistance patterns, education effectiveness, clinic case data related to control data, and more.

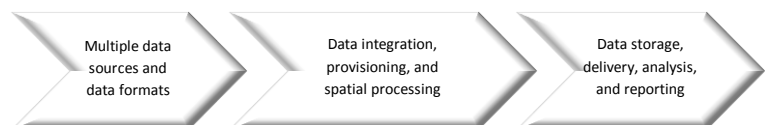
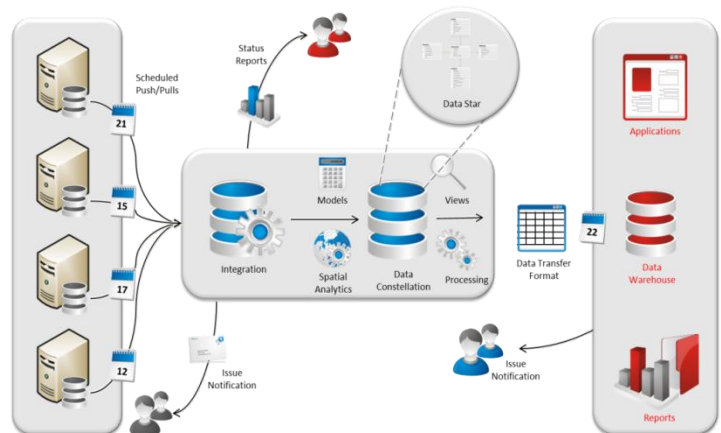
National Malaria Risk Mapping System – the application to enable visibility, refinement, command, and control of the country’s malaria control strategic direction and focus. Provides persistent value of the NMCP/PMI data for evidence of performance over time. The application will provide clear views of malaria risk and intervention status specific to household, or aggregated to village, areas, districts, regions, or country.

Data Management

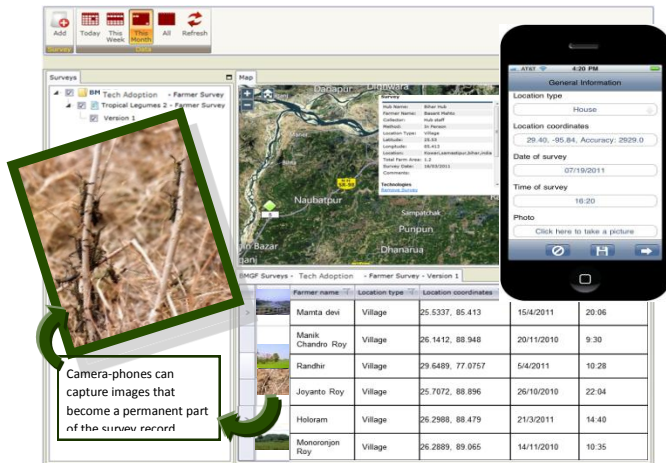
This is achieved by utilizing spatial and temporal data types within a consistent star schema implemented in a robust enterprise database system then stacking business logic, web services and end user applications in a framework that leverages reusability without compromising specific client requirements.

Built on Microsoft SQL Spatial, web services and Silverlight or AJAX clients (a Microsoft stack), the aWhere Platform is enterprise ready, 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 across time, location, and other categorizations, is fast to develop and deliver to aWhere’s application components. When necessary, new components can be built and plugged into the existing data framework to address specific customer needs. And of course, all the NMCP data remains accessible and open for use by any other NMCP-approved user or system.



Mobile surveys



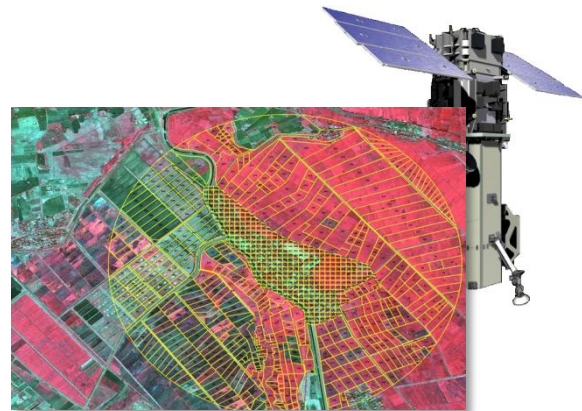
The aWhere Survey Service enables an organization to gain rapid access to local information. GPS and time-stamp capture of each survey action, rules-based questions, even photo evidence of collected data (household status, spray dates, practices, etc.) are all possible. The aWhere Mobile Survey service does not require proprietary hand-held devices as the platform supports most types of smart phones and functions even in areas with intermittent cellular or internet access.

Location-specific data collected by on-the-ground observers become data-points that are integrated into a project's (or multiple projects') overall data pool. Each collected mobile survey record includes basic information about the collector, as well as locally observed data specific to the topic of the survey. GPS and time-stamp capture of each survey instance, rules-based questions, and even photo evidence of collected data (household type, practices, etc.) are all possible. Survey management, questionnaire design and deployment, and user management are all conducted with aWhere's consultation and guidance. The survey monitoring console lets users quickly visualize surveys uploaded 'just now', as well as summary views of weekly, monthly, and overall survey activities.

Remote Surveillance

The satellite-based remote surveillance technology available from aWhere and IPHC (as applied in System 1) will provide substantial data and more insight to each national malaria control program. This technology will provide wide visibility to precise identification of mosquito larvae locations, land use/land cover changes, and even human household classifications (household location and construction type).

The remote surveillance technology not only provides high-resolution satellite imagery, but also processes the imagery with the spectral signatures of specific targets and generates a database of these targets and their attributes (e.g. larvae sites, household location and type, drainage ponds, rice fields). This spectral signature process means that System users are presented with precise locations of these targets as data elements which are integrated into the overall operations decision information tools.



About Us

The aWhere Malaria Command & Control Platform is the result of cooperative efforts by aWhere, Inc. and IPHC, LLC. aWhere, Inc. has developed its technology platform to transform complex data from multiple sources into local, actionable insight through location intelligence; exposing predictive insight by precise location by time. That same platform provides hosted software applications for monitoring, analysis, and management by specific location or aggregated to area, country, or global scenarios. IPHC, headed by Dr. Robert Novak, extends the value of the technology platform by providing mosquito and other vector habitat site classification models for satellite-based remote surveillance, entomological and epidemiological models, and extensive malaria-related pathogen research.

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