

What XB-BIS Can Do For Your Organization

- **TransMed Systems Mission:** To impact human health by delivering solutions and services that support researchers and clinicians in identifying, discovering and analyzing genomic and phenotypic data for patterns that lead to successful treatment strategies and practices.

- Efficiently identify statistically significant genotype-phenotype correlations within complex datasets.

Accelerate Discovery

A significant benefit of the adoption of EMR by large health care organizations has been the development of vast repositories of clinical data ripe for exploration and analysis from the perspective of research and clinical care analysis. XB Bio-Integration Suite™ was designed to not only store, manage, and retrieve information and data pertaining to a subject, its derived samples and experiments, but to also statistically analyze these data, compile and test hypotheses, and identify viable diagnostic and therapeutic strategies. This multi-level functionality allows the user of the system to efficiently identify statistically significant genotype-phenotype correlations within complex datasets, produce a plausible hypothesis explaining the correlations identified, and then test this and any other additional hypotheses identified in the laboratory.

Accelerate Clinical Trials

The challenge of improving the national clinical trial process is well recognized: time to value, declining patient enrollment, Principal Investigator project abandonment and regulatory bureaucracy all lead to a clinical trial process that is uncompetitive at best, stifling innovation and adding unsustainable costs to the health care system. XB Bio-Integration Suite™ facilitates clinical trial management by easily identifying relevant cohorts, analyzing significant data trends and coordinating data sharing amongst participating parties. Real-time determination of patient populations that satisfy clinical trial eligibility criteria, including demographic, clinical, and molecular attributes for next generation targeted therapies, is managed within the XB Bio-Integration Suite™. In addition, XB Bio-Integration Suite™ serves as a unified platform to capture relevant clinical and molecular attributes across a multiple site clinical trial to expedite reporting, data analysis, and trial completion.

Enable Personalized Medicine

Personalized medicine has the potential to change the way we discover, diagnose and manage disease. Recent advancements in our understanding of how genes affect the way individuals respond to drug treatments has vast potential for enabling individual treatment strategies. However, the overwhelming volume of data emerging on genotypic and phenotypic states creates a huge challenge for Principal Investigators and Research Clinicians to accurately discover and identify meaningful hypothesis for treatment strategies. Using XB Bio-Integration Suite™ analysis takes personalized medicine a step further by allowing a patient to provide his/her own range of “normal” values rather than relying on samples taken from populations that may or may not be representative of a given patient. XB Bio-

Integration Suite™ is designed to support academic and industrial researchers and clinicians alike, allowing for the rapid discovery and implementation of molecular-based diagnostic and therapeutic approaches to medicine on an individual level.

Identify Clinical Quality and Safety Improvements

Hospitals diligently track and continuously improve their quality and safety record in their constant effort to provide the best possible care. EMR systems now digitize a vast proportion of health record data, which allows for an overwhelming amount of data to be reported. XB Bio-Integration Suite™ helps to pour over that voluminous EMR reporting data and synthesize it into meaningful and actionable clinical quality and safety improvements. For example, XB-BIS may provide a more detailed examination of data used to report AHRQ scores, allowing a clinical quality investigator to study the reasons behind the score and potentially highlight potential areas for improvement.

- Easily identify relevant cohorts, analyze significant data trends and coordinate data sharing amongst participating parties.

Enable Expert Decision Support Systems for Clinicians

As EMR data grows, the ability to analyze trends over the lifetime of a patient emerges. The storage of multiple data points for individual variables over time creates the opportunity to approach both research and clinical decision making in a novel way. Rather than simply responding to the latest data, clinicians can utilize trends to intervene earlier than ever in pathological processes, and researchers can incorporate longitudinal measures in diagnostic and prognostic algorithms. Today, Clinician Researchers are utilizing XB-BIS to retrospectively analyze large volumes of data looking at the relationship of BMI to length of ICU stay and applying published VAP scoring to patients on ventilators; to identify predictors of patients; to identify markers of inflammation in cystic fibrosis patients; to examine the utility of existing scoring systems in predicting which pediatric patients are likely to deteriorate to severe pancreatitis; and many other clinician-driven therapeutic strategy projects.

Enhance Productivity of Research Studies

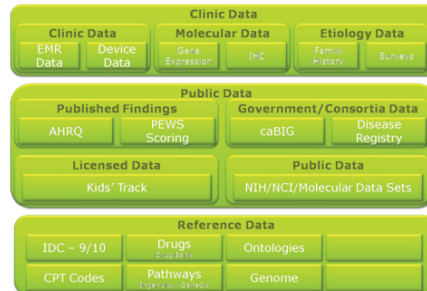
Utilizing XB Bio-Integration Suite™ researchers develop a set of preliminary evidenced-based hypotheses generated from analysis. Users can then easily revisit preliminary outcomes through an iterative analytical refinement process for continued exploration within the laboratory. This capability enables the seamless, circular flow of laboratory experimentation to data analysis and back to laboratory experimentation. Integrated with industry leading third-party solutions from GeneGO and Ingenuity, researchers can easily identify key hubs of biological activity within cellular pathways that may represent key targets for study and potentially therapy in the disease.

How XB-BIS Does It

Aggregate All Data Sources

Within XB-BIS, all data sources are integrated and made available in one system. This includes:

- Patient data such as health record data, molecular data, surveys, etc.
- Public data such as disease registries, licensed dataset, public datasets, etc.
- Reference data such as genes, medications, ICD-9 codes, etc.



This also likely includes pulling and reconciling historical patient data from decommissioned systems. Each customer defines their data sources and their set of unique attributes to capture and maintain to ensure consistency with existing data environments. Researchers can then come to one place to determine the availability of data for their research studies.

Integrated Research Platform

Utilizing XB Bio-Integration Suite,™ researchers are able to access a wide range of disparate data sources (both internal to the organization and external public data stores), create unique patient cohorts, analyze the data utilizing a broad spectrum of analytic and statistical tools and create unique, testable hypotheses. Whereas previously, a researcher would have to jump from one tool to another and manage multiple data files, using XB-BIS, this entire workflow is done in one, integrated platform, providing the researcher a seamless experience when advancing from one task to the next.

Personalized Medicine Module

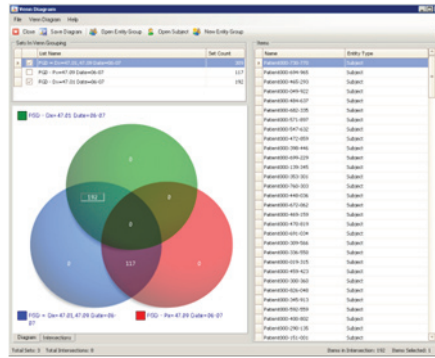
TransMed Systems offers a Personalized Medicine Module (PMM) as a component-off-the-shelf (COTS) add-on to XB-BIS. PMM leverages XB-BIS to generate a personalized medicine report that identifies molecularly targeted therapies based upon the unique molecular profile of a patient's cancer. The report correlates molecular characteristics of the patient's disease with potential drug therapies. The module leverages multiple algorithms and the results are merged and ranked for the oncologist's consideration. The PMM infrastructure is customized to meet each organization's unique requirements, including adding or changing methods, adding corporate branding and changing the report presentation.

RANK	DRUG	METHOD	SUPPORTING RESEARCH EVIDENCE			
			Drugs	Farms	Recombination	Other
1	sunitinib	Network Target Activity Method Network Convergence Method Network Divergence Method Drug Target Expression Method	+	+	+	+
2	raloxifene	Network Target Activity Method Network Convergence Method Network Divergence Method	+	+	+	+
3	celecoxib	Network Target Activity Method Network Convergence Method	+	+	+	+
4	bevacizumab	Network Target Activity Method	+	+	+	+
5	paclitaxel albumin-bound	Biomarker Based Rules - Indicate	+	+	+	+
6	getifinib	Network Target Activity Method Network Convergence Method	+	+	+	+

- Performing the full translational research workflow in one integrated tool platform increases the efficiency of the researcher by allowing them to focus on their hypotheses and discovery instead of being defocused by activities like moving, copying, formatting or organizing data.

Self-Service Cohort Identification

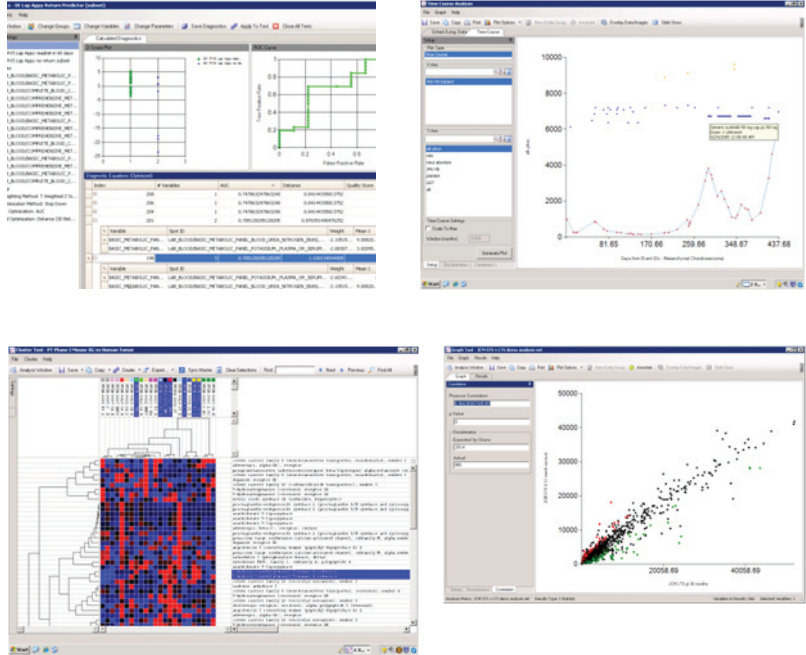
One of XB-BIS' main strengths is its ease of use. Researchers and clinicians are not required to learn SQL or other programming languages in order to perform complex queries and basic analysis; nor do they have to submit a research report request to IT in order to access data. XB-BIS provides a simple and intuitive user experience for querying and viewing data. For example, a researcher



interested in identifying and evaluating mesothelioma patients and the detection of tumor markers at various stages based upon age of patient, race and ethnicity. The researcher can quickly and easily utilize the self-service cohort identification application to identify the number of consented patients and tumors in the biorepository, and then further refine the analysis set based on queried phenotype and molecular data across all time.

On Demand Hypothesis Testing and Exploration

Once a researcher has identified their cohort and data of interest, XB Bio-Integration Suite™ provides a set of integrated analysis tools that allow them to perform comparative effectiveness research, test hypotheses, explore for new hypotheses, and identify pheno/bio-markers.



TransMed Systems, Inc.
21170 Canyon Oak Way
Cupertino, CA 95014