



Business Intelligence Analytics

Business Intelligence Platform for Diagnostic Imaging

Bialogics White Paper | February 2018



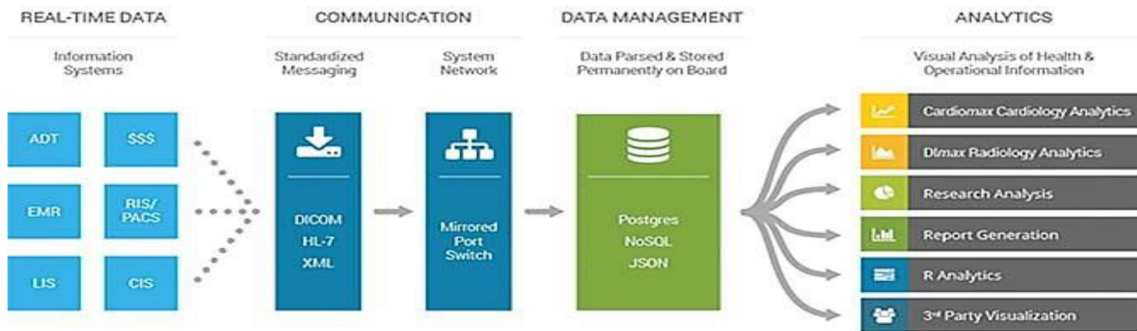
Requirements for today's BI Systems and building for the future

DI departments are building tremendous stores of data that contain the potential for improved patient outcomes and department efficiencies – if the value of the information can be unlocked, the insights can revolutionize the delivery of care. The right BI systems will access hundreds of individual HL7 and DICOM messages from RIS/PACS ADT, EHR along with other informatics systems to recreate the entire patient encounter through the use of structured data elements and radiologist reports. Over time, this database of information becomes a valuable information tool for the continual transformation of DI. However, only when clean, accurate and consistent data can be obtained will it be trusted as a source of truth for advanced data analytics. This source of truth will be the defining element leading to the intelligent DI departments of the future

The Biologics breakthrough

The Biologics Business Intelligence Analytics solution for Diagnostic Imaging, collects data from accurate, standardized sources including HL7, DICOM and XML message structures, with no impact on active production systems. It is designed to exceed the data analysis specifications of electronic health applications and can accommodate an unlimited number of independent data sources.

The system automatically captures, parses and stores health protocol messages travelling on a health network, copying every single message associated with the patient interaction. This methodology is sometimes termed *Line Data Analysis*, does not require complex interface or HL7 integrations and renders all systems as vendor agnostic data generators.



The power of the Biologics data engine lies in the integration of messages from multiple sources, allowing users to work in near real-time with a data set that draws from several core applications. Information from the EHR, RIS, PACS or schedulers can be combined with structured data elements coming from the Interventional Cath Lab, Echocardiology and Cardiac Diagnostics.

Biologics DImax analytics system brings all information into a single decisive support tool, designed for the effective management and operational performance needed by today's DI departments. Users can monitor patient wait times, analyze imaging procedures step by step, observe patient throughput, observe modality utilization rates, track turnaround times and much more. Most importantly **DImax** assists the DI Managers with immediate access to critical data such as wait times, backlog, unread studies and turn-around-times for reporting. By analyzing utilization rates of each modality, coupled with procedure times, effective procedure and staff scheduling can be accomplished while allowing the results to be monitored in real time. With advanced analysis for research and customizable reporting, **DImax** becomes the essential Business Intelligence Platform for Medical Imaging.



Operational intelligence

Over 100 standard KPI and analytical elements, empower staff to make informed decisions and identify clinical practice improvements.

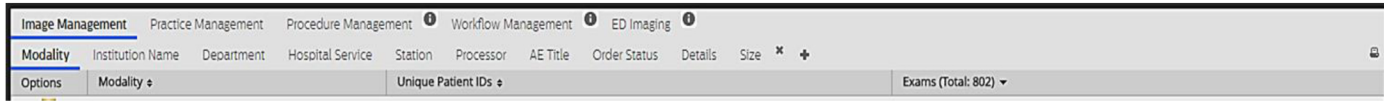
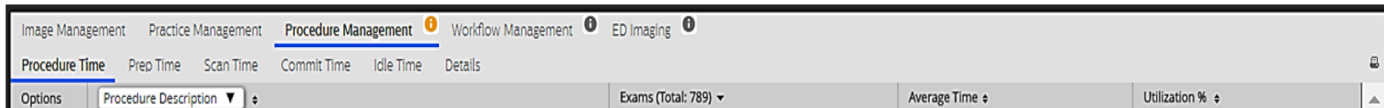


Image Management – Image Management provides analysis of operational data, with the ability to drill down to different modalities, source institutions, technologists, and to measure against numerous metrics. Users can determine the status of all tests ordered for a specific modality or compare source imaging by hospital, department or clinical service.



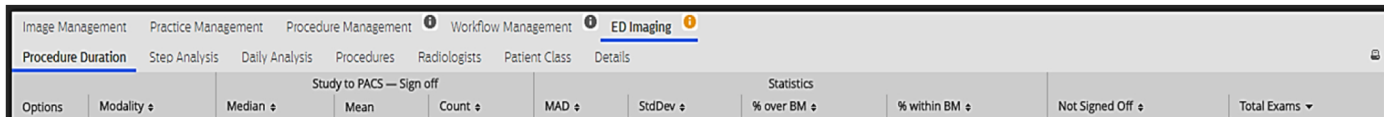
Practice Management – Access to practice management information – including where referrals are coming from, the types and frequencies of studies ordered – helps users make crucial decisions related to adjusting services and assets to meet market demands while also exceeding service level agreements.



Procedure Management – Designed to measure the time it takes to complete a procedure, from prep time to procedure start to last image sent to PACS, this function exposes variances in modality usage and productivity while helping users to address gaps in efficiency.



Workflow Management – Analysis of radiology workflow, including wait times, turnaround times and modality idle times. Helps to reveal departmental bottlenecks that may be leading to Emergency Department delays and bed management issues. Alerts are also used to signal when predefined service level agreement benchmarks are exceeded.



ED Imaging - Analysis by Patient Visits tracks patients as they move from ED to Inpatient or Outpatient status. Procedures, durations and scan times track peak demands and the need for resourcing highlights studies that exceed benchmark Turnaround Times. Visual displays tell the story with an interactive ED dashboard and detailed alerting and reporting.

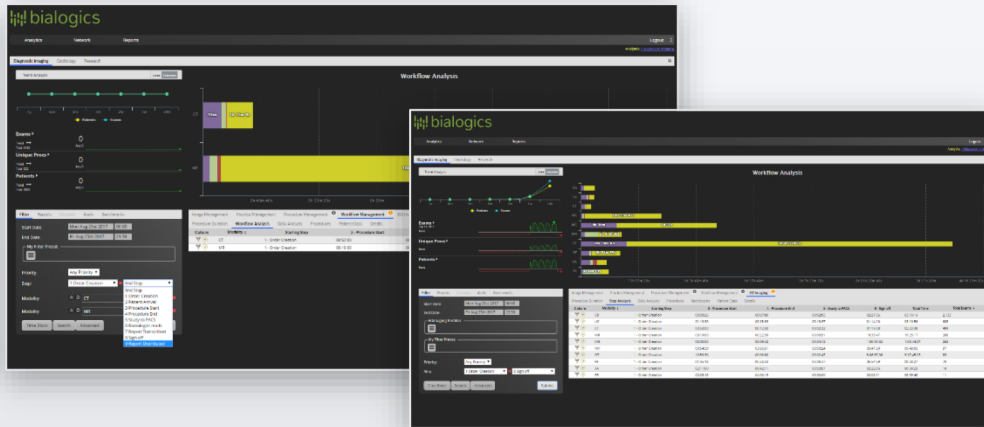


Enterprise Imaging Analysis

Ranking	Key Performance Indicator			
Image Management	Image Management	Data Capture	Display	Analysis
	Number of Exams per modality	DICOM	Application	Real Time / Trending
	Number of Patients per modality	DICOM	Application	Real Time / Trending
	Number of Exams by location	DICOM	Application	Real Time / Trending
	Number of exams by Hospital	DICOM	Application	Real Time / Trending
	Number of Exams by Modality	DICOM	Application	Real Time / Trending
	Number of Exams by AE Title	DICOM	Application	Real Time / Trending
	Number of FEM exams imported	DICOM	Application	Real Time / Trending
	Number of Exams by Clinical Service	DICOM	Application	Real Time / Trending
	Exams ordered by location / speciality	DICOM	Application	Real Time / Trending
	Number of In Patients Exams	DICOM	Application	Real Time / Trending
	Number of Out Patient Exams	DICOM	Application	Real Time / Trending
	Number of ED Patient Exams	DICOM	Application	Real Time / Trending
	Number of Exams per business day	DICOM	Application	Real Time / Trending
Number of exams per weekend	DICOM	Application	Real Time / Trending	
Number of exams in off-hours	DICOM	Application	Real Time / Trending	
Practice Management	Practice Management			
	Number of procedures by Modality	DICOM	Application	Real Time / Trending
	Number by Procedure Description	DICOM	Application	Real Time / Trending
	Number by Procedure Code	DICOM	Application	Real Time / Trending
	Number of exams by Imaging Protocol	DICOM	Application	Real Time / Trending
	Number of exams by Diagnosis	DICOM	Application	Real Time / Trending
	Number of Exams Performed by Technologist	DICOM	Application	Real Time / Trending
	Average Throughput by hour / day	DICOM	Application	Real Time / Trending
	Average number exams completed	DICOM	Application	Real Time / Trending
	Average Number of exams per patient	DICOM	Application	Real Time / Trending
	Highest Number of Exams by Patient	DICOM	Application	Real Time / Trending
	Number of Exams orders by Referring Physician	DICOM	Application	Real Time / Trending
	Number of exams read by Radiologist	DICOM	Application	Real Time / Trending
	Description of exams read by Radiologist	DICOM	Application	Real Time / Trending
Procedure Management	Procedure Management			
	Number of Procedures completed	HL7	Application /Dashboard	Real Time / Trending
	Number of studies marked "read"	HL7	Application /Dashboard	Real Time / Trending
	Number of studies not signed	HL7	Application /Dashboard	Real Time / Trending
	Average Procedure Time	HL7	Application /Dashboard	Real Time / Trending
	Average Prep Time by procedure	HL7	Application /Dashboard	Real Time / Trending
	Average Scan time by Procedure	HL7	Application /Dashboard	Real Time / Trending
	Average QA / Commit Time by Procedure	HL7	Application /Dashboard	Real Time / Trending
	Average Modality Idle Time	HL7	Application /Dashboard	Real Time / Trending
	Average procedure times by Technologist	HL7	Application /Dashboard	Real Time / Trending
	Utilization Assessment by procedure	HL7	Application /Dashboard	Real Time / Trending
	Utilization Assessment by modality	HL7	Application /Dashboard	Real Time / Trending
	Utilization Assessment by technologist	HL7	Application /Dashboard	Real Time / Trending
	Utilization by AE title	HL7	Application /Dashboard	Real Time / Trending
Workflow Management	Workflow Management			
	Procedure duration by modality	DICOM / HL7	Application / Dashboard	Trending / Benchmarked
	Average step time by procedure	DICOM / HL7	Application / Dashboard	Trending / Benchmarked
	Average procedure time by modality	DICOM / HL7	Application / Dashboard	Trending / Benchmarked
	TaT by Procedure	DICOM / HL7	Application / Dashboard	Trending / Benchmarked
	TaT by Modality	DICOM / HL7	Application / Dashboard	Trending / Benchmarked
	TaT by Radiologist	DICOM / HL7	Application / Dashboard	Trending / Benchmarked
	TaT by Patient	DICOM / HL7	Application / Dashboard	Trending / Benchmarked
	TaT by MR/CT priority (WTIS)	DICOM / HL7	Application / Dashboard	Trending / Benchmarked
	Time from Image to PACS to Marked read	DICOM / HL7	Application / Dashboard	Trending / Benchmarked
	TaT assessment against Benchmarks	DICOM / HL7	Application / Dashboard	Trending / Benchmarked
	CT/MR images by Priority Code	DICOM / H7	Application / Dashboard	Trending / Benchmarked
	Analysis by Radiology Step Procedure(Step 1 - 8)	DICOM / HL7	Application / Dashboard	Trending / Benchmarked
	Configurable alerting by text, email			
ED Image Management	ED Image Management			
	Number of exams by modality	DICOM / HL7	Application / Dashboard	Real Time / Benchmarked
	Peak utilization periods	DICOM / HL7	Application / Dashboard	Real Time / Benchmarked
	Studies by Emergency Physician	DICOM / HL7	Application / Dashboard	Real Time / Benchmarked
	TAT by Exam	DICOM / HL7	Application / Dashboard	Real Time / Benchmarked
	TAT by Priority	DICOM / HL7	Application / Dashboard	Real Time / Benchmarked
	Study Completion to CTAS benchmarking	DICOM / HL7	Application / Dashboard	Real Time / Benchmarked
	Number of patients by Visit Status	DICOM / HL7	Application / Dashboard	Real Time / Benchmarked
Configurable alerting by text, email				
Study Appropriateness	Study Appropriateness			
	Patient Exam Study Summary	DICOM / HL7	Searchable / Research	Drill down analysis
	Patient Exam Workflow Summary	DICOM / HL7	Searchable / Research	Drill down analysis
	Structured Data Elements	DICOM / HL7	Searchable / Research	Drill down analysis
	Procedure Details	DICOM / HL7	Searchable / Research	Drill down analysis
	Protocol Details*	DICOM / HL7	Searchable / Research	Drill down analysis
	Patient Diagnosis*	DICOM / HL7	Searchable / Research	Drill down analysis
	Studies with Contrast agent*	DICOM / HL7	Searchable / Research	Drill down analysis
	Studies with Anesthesia Delivery*	DICOM / HL7	Searchable / Research	Drill down analysis
	Raw Dose Data Capture	DICOM / HL7	Searchable / Research	Drill down analysis
	Radiology Report Analysis	DICOM / HL7	Searchable / Research	Drill down analysis
	Patient Follow-up / repeat procedure*	DICOM / HL7	Searchable / Research	Drill down analysis



Dimax Common Reports



Common Modality Reports:

- By Day
- By Week
- By Month
- By Trending Time Frame
- By Institution
- By Department and Service
- By AE Title
- By Ingestion of Foreign Exams
- By Order Status
- By Patient Class (I,O,E)

Common Utilization Reports:

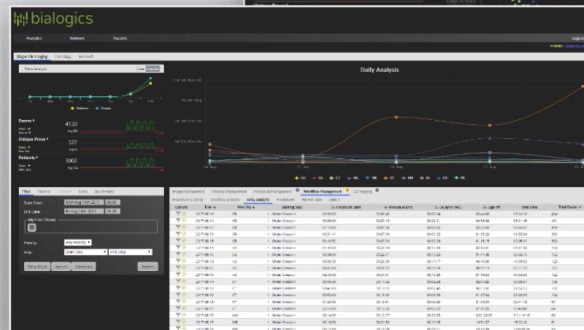
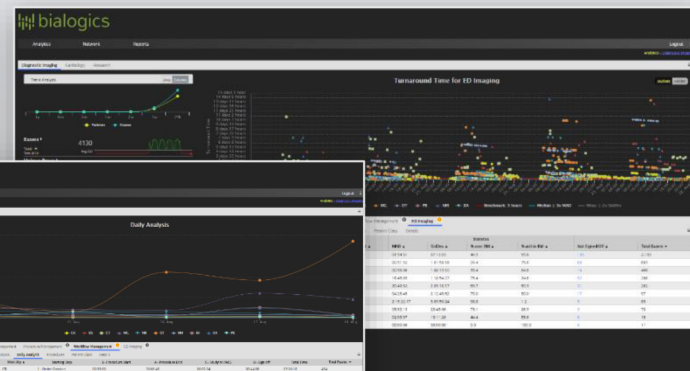
- By Procedure
- By Scan Time
- By Technologist

Common Radiologist Reports:

- Studies Read by Radiologist
- Procedure Codes by Radiologist

ED Imaging Reports:

- TAT for ED Patients
- ED Wait Times by Modality
- ED Referral Patterns,
- Resource Utilization by Shift



Common Workflow Reports:

- Wait Time Analysis by Modality
- CT / MRI Wait Time (WTIS)
- TAT by Modality
- TAT by Procedure
- TAT by Radiologist
- Daily Analysis Report Times
- Patient Class Report Times

