

## QlikLab *Designed by a lab manager for a lab manager.* *We understand the business, technology and your unique needs!*

Management Decision Systems, is a healthcare management consulting company incorporated in 1992 with core competencies in laboratory operations, process improvement and informatics. **MAST**, our flagship business intelligence application, provides the analytical engine for **QlikLab** and **QlikCare**. It has been installed in hospital and commercial laboratories and also used to perform hundreds of operational audits over the past 23 years.

### Functions

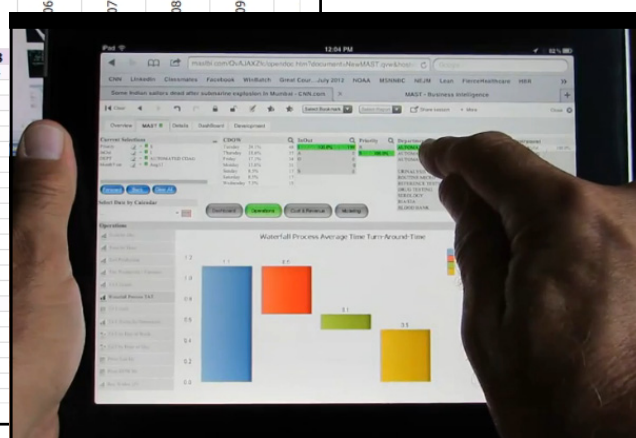
- Integrates Financial, Billing, Business, Risk Management, Geographic & Clinical application data
- Self Service Business Intelligence
- Visualize & interact with data anyway you want
- Analyze millions of records in seconds
- Financial & Operations Performance & KPI (Key Performance Indicators) Monitoring
- Staffing Optimizer
- Process Mining
- Statistical Process Control
- Service Turn-Around-Time Monitoring
- Integrated Dashboards, Reports
- Trigger E-mail Alerts
- Accommodates Cost Accounting to procedure level detail
- Profit Enhancer - Cost, Revenue & Volume Optimizer
- Utilization Monitoring

### Features

- Incredibly Simple to use
- Real-time collaboration with colleagues
  - Bookmarks, comments & decision notes
- Mobile-Ready: Insight anywhere, anytime
  - Apple, Droid & Blackberry compatible
- Built-in Geographic mapping tools
- Enterprise-Ready and IT friendly
  - Security & scalability
  - Wide range of deployment options
- Built-in Lean, Six Sigma Tools
- CRM, risk management data integration
- Customized to meet your specific needs

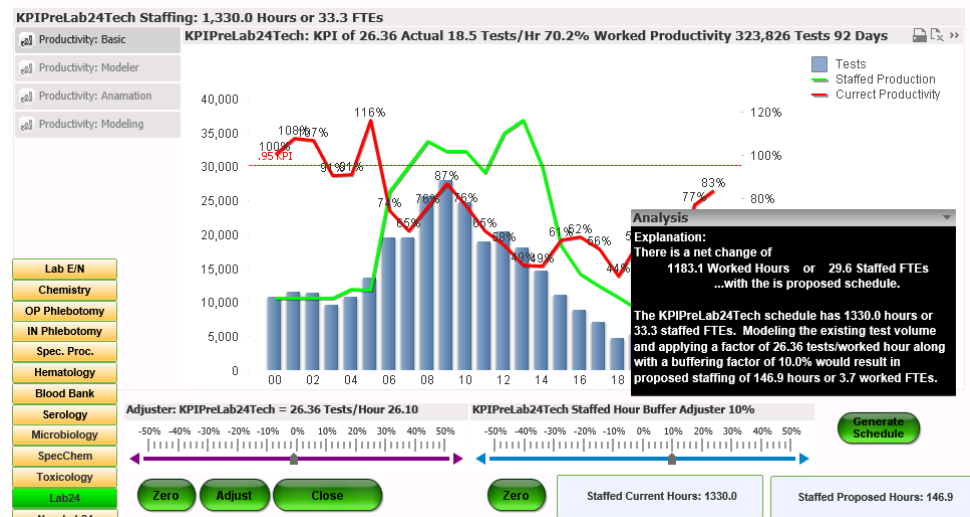
400,412 Tests associated with , AUTOMATED CHEM, AUTOMATED COAG, AUTOMATED HEMA, URINALYSIS

| Test         | Hr Verified   | Hour Verifi ed | 00          | 01          | 02          | 03          | 04          | 05          | 06 | 07 | 08 | 09 |
|--------------|---------------|----------------|-------------|-------------|-------------|-------------|-------------|-------------|----|----|----|----|
| <b>Tests</b> | <b>400412</b> |                | <b>2745</b> | <b>2814</b> | <b>2184</b> | <b>2251</b> | <b>2675</b> | <b>6278</b> |    |    |    |    |
| CBC          | 71320         |                | 294         | 265         | 196         | 234         | 282         | 1444        |    |    |    |    |
| CHEM14       | 61716         |                | 142         | 155         | 111         | 109         | 120         | 175         |    |    |    |    |
| CHEM8        | 40729         |                | 99          | 125         | 102         | 104         | 122         | 645         |    |    |    |    |
| PT           | 30467         |                | 8           | 10          | 8           | 7           | 21          | 186         |    |    |    |    |
| CBCNODIFF    | 27003         |                | 18          | 15          | 17          | 11          | 42          | 453         |    |    |    |    |
| UA           | 26439         |                | 178         | 210         | 167         | 177         | 163         | 149         |    |    |    |    |
| LIVER        | 16735         |                | 52          | 65          | 49          | 63          | 41          | 79          |    |    |    |    |
| CPK          | 13956         |                | 298         | 370         | 287         | 270         | 220         | 167         |    |    |    |    |
| PT/APTT      | 13668         |                | 186         | 190         | 151         | 154         | 152         | 447         |    |    |    |    |
| MG           | 12230         |                | 183         | 96          | 40          | 35          | 68          | 458         |    |    |    |    |
| TROPONIN I   | 9676          |                | 292         | 413         | 350         | 346         | 269         | 216         |    |    |    |    |
| RENAL        | 9310          |                | 3           | 5           | 3           | 2           | 15          | 170         |    |    |    |    |
| CK-MB        | 9082          |                | 299         | 398         | 333         | 317         | 279         | 203         |    |    |    |    |
| ESR          | 7054          |                | 8           | 1           | 4           | 4           | 4           | 4           |    |    |    |    |
| URIC         | 6193          |                | 3           | 2           | 2           | 4           | 2           | 16          |    |    |    |    |
| ABG RESP     | 4785          |                | 171         | 71          | 67          | 100         | 595         | 992         |    |    |    |    |
| HH           | 3788          |                | 56          | 35          | 33          | 27          | 27          | 112         |    |    |    |    |
| AMY          | 3602          |                | 29          | 52          | 38          | 40          | 42          | 42          |    |    |    |    |
| MDIFF        | 3499          |                | 17          | 23          | 13          | 14          | 11          | 22          |    |    |    |    |
| APTT         | 3266          |                | 53          | 68          | 65          | 88          | 68          | 94          |    |    |    |    |
| CREAT        | 2574          |                | 1           | 1           | -           | 1           | 4           | 17          |    |    |    |    |
| SCAN SLIDE   | 2459          |                | 8           | 8           | 3           | 10          | 6           | 21          |    |    |    |    |

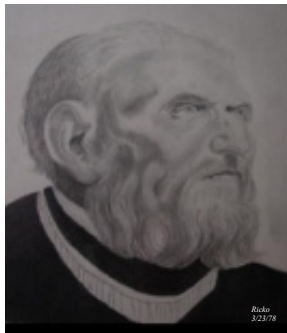


## Staffing

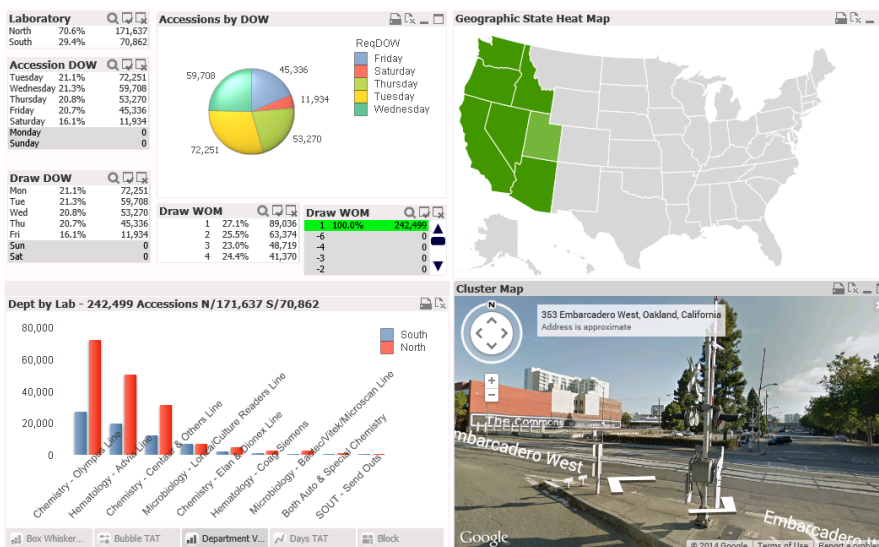
The Staffing Optimizer will analyze existing staffing schedules compared to test volume demands over a 24/7 basis. It will recommend optimized staff scheduling based on the results.



## Lazarus Technologies



Lazarus Technologies was named after the biblical character that died and was brought back to life. In the mid-1980's we recognized that clinical and financial enterprise database applications were not integrated and did not provide timely reporting. We set out to develop technologies to overcome these shortcomings focusing on 3 key areas: 1) Data Modeling 2) Data Extraction & Automation 3) Business Intelligence software development. In 1992 we introduced our flagship business intelligence application MAST (Management Accountability, Staffing & Service Tracker) to the laboratory industry, which has since been installed in hospitals and commercial laboratories and used to perform 100's of laboratory operational audits over the past 23 years. **QlikLab** and **QlikCare** are our newest BI tools.



## Geographic Analysis

If you commercialized your laboratory services it is important to tie client test volumes to location(s) for client ROI. **QlikLab** can geographically map patient service centers or physician office practices. You can even drill down to the street level to view the location.

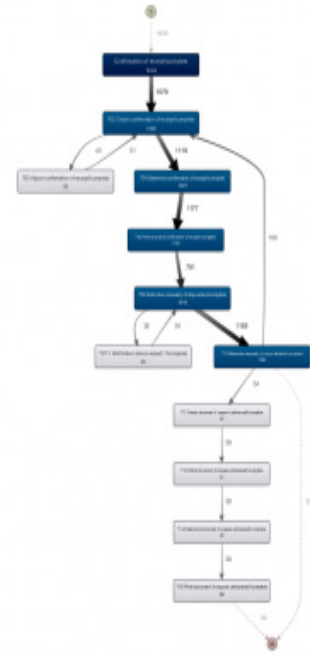
## Process Mining

Process mining is a technique enabling the analysis of business processes – as they have been executed – based on event LIS logs. This new science allows you to observe the organizational behavior, based on the actual steps, sequence and timeframes of activities that were followed to process each laboratory test. This provides a sound basis for in depth investigation of existing delays, bottlenecks and errors for future operational improvement.

Process Mining  
Special Note: Step Calculations are only performed for the last 7 days going back to 07/07/15.

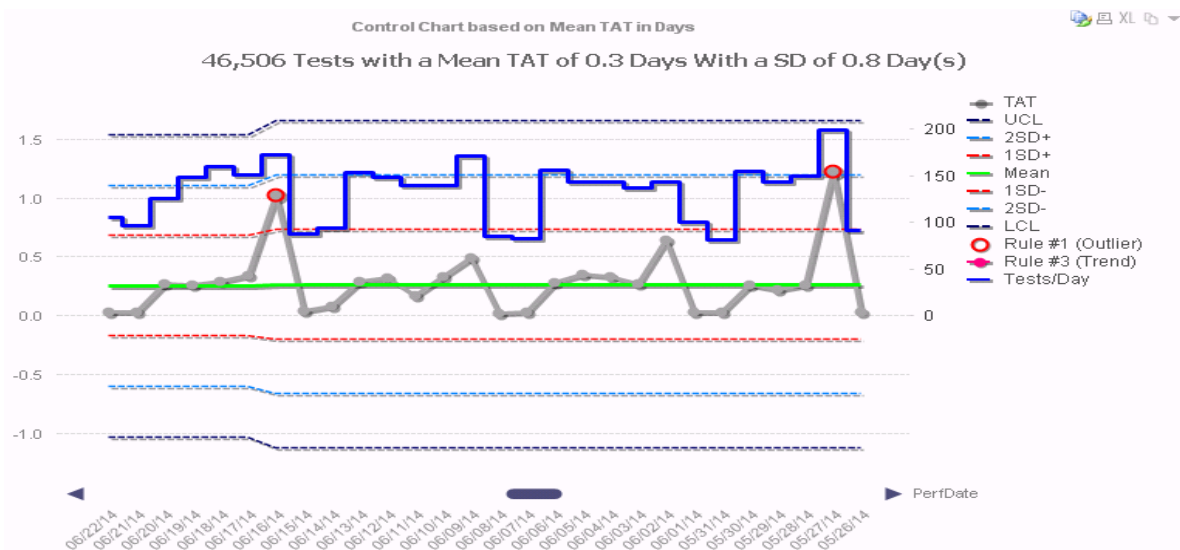
| Step              | Freq | % Total | Cumulative | Graph | Min  | Max     | Median | Mean | SD    |
|-------------------|------|---------|------------|-------|------|---------|--------|------|-------|
| PR Perform Report | 125  | 16.7%   | 16.7%      |       | 0.0  | 87.0    | 0.0    | 2.4  | 12.7  |
| AP Arrive Perform | 123  | 16.4%   | 33.1%      |       | 24.0 | 136.2   | 40.2   | 44.9 | 18.1  |
| CA Collect Arrive | 117  | 15.6%   | 48.7%      |       | 3.0  | 148.8   | 9.0    | 12.1 | 15.4  |
| GL Label List     | 102  | 13.6%   | 62.3%      |       | 0.0  | 0.0     | 0.0    | 0.0  | 0.0   |
| OG Order Label    | 91   | 12.1%   | 74.4%      |       | 1.2  | 64.8    | 1.2    | 2.2  | 6.7   |
| LC List Collect   | 81   | 10.8%   | 85.2%      |       | 4.2  | 607.2   | 16.8   | 39.6 | 90.9  |
| GC Label Collect  | 23   | 3.1%    | 88.3%      |       | 1.8  | 9.0     | 4.2    | 4.3  | 2.2   |
| OL Order List     | 21   | 2.8%    | 91.1%      |       | 1.2  | 1,864.8 | 4.2    | 97.9 | 405.3 |
| LG List Label     | 21   | 2.8%    | 93.9%      |       | 1.2  | 7.8     | 1.8    | 2.4  | 1.7   |
| OC Order Collect  | 13   | 1.7%    | 95.6%      |       | 4.8  | 27.0    | 12.0   | 13.2 | 7.0   |
| LO List Order     | 13   | 1.7%    | 97.3%      |       | 0.0  | 0.0     | 0.0    | 0.0  | 0.0   |
| CO Collect Order  | 8    | 1.1%    | 98.4%      |       | 7.2  | 223.8   | 73.5   | 84.4 | 73.9  |
| LA List Arrive    | 8    | 1.1%    | 99.5%      |       | 1.8  | 52.2    | 11.1   | 16.2 | 16.3  |
| LP List Perform   | 2    | 0.3%    | 99.7%      |       | 46.8 | 52.2    | 49.5   | 49.5 | 3.8   |
| AG Arrive Label   | 2    | 0.3%    | 100.0%     |       | 0.0  | 0.0     | 0.0    | 0.0  | 0.0   |
|                   | 750  | 100.0%  | 100.0%     |       | 0.0  | 1,864.8 | 4.2    | 18.6 | 77.4  |

| Sequence | Freq | % Total | Step 1 | Step 2 | Step 3 | Step 4 | Step 5 | Step 6 | Duration |
|----------|------|---------|--------|--------|--------|--------|--------|--------|----------|
| OGLCAPR  | 81   | 65%     | 1.20   | 0.00   | 16.80  | 9.00   | 40.20  | 0.00   | 76.80    |
| OLGCAPR  | 21   | 17%     | 4.20   | 1.80   | 4.20   | 6.00   | 31.80  | 0.00   | 55.20    |
| GLOCAPR  | 11   | 9%      | 0.00   | 0.00   | 13.20  | 7.20   | 40.80  | 0.00   | 66.00    |
| COGLAPR  | 8    | 6%      | 73.50  | 1.20   | 0.00   | 11.10  | 51.00  | 0.00   | 139.50   |
| LOGCAPR  | 2    | 2%      | 0.00   | 2.40   | 4.50   | 6.00   | 34.50  | 0.00   | 47.40    |
| OACGLPR  | 2    | 2%      | 6.30   | 115.50 | 0.00   | 0.00   | 49.50  | 0.00   | 171.60   |
|          | 125  | 100%    | 1.20   | 0.00   | 12.00  | 9.00   | 40.20  | 0.00   | 76.20    |

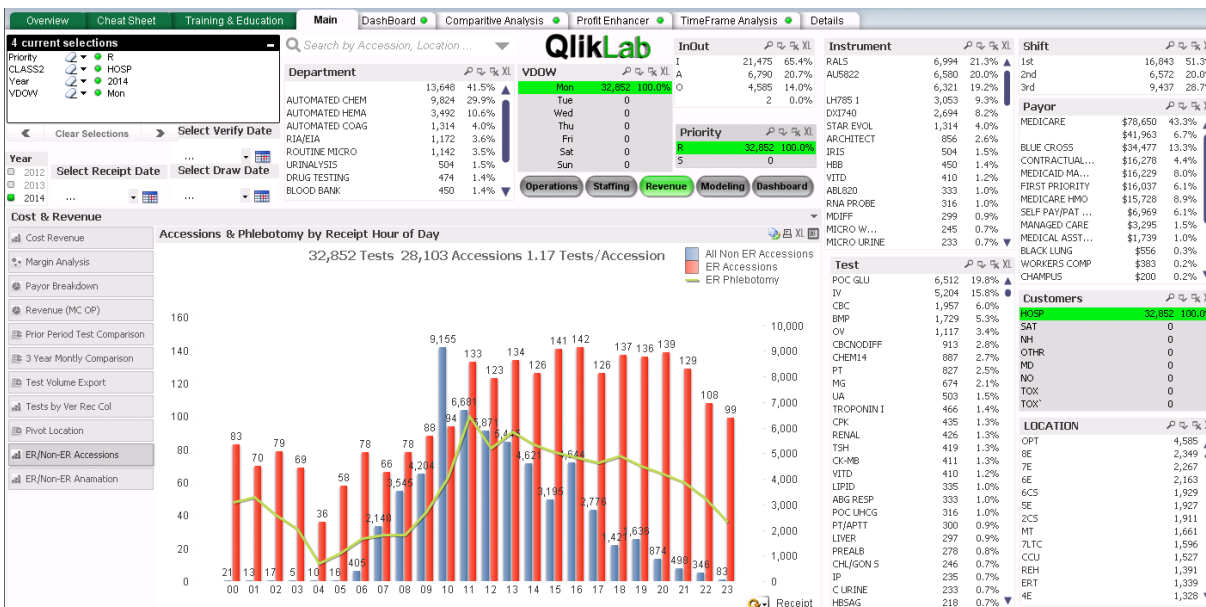


## Statistical Process Control

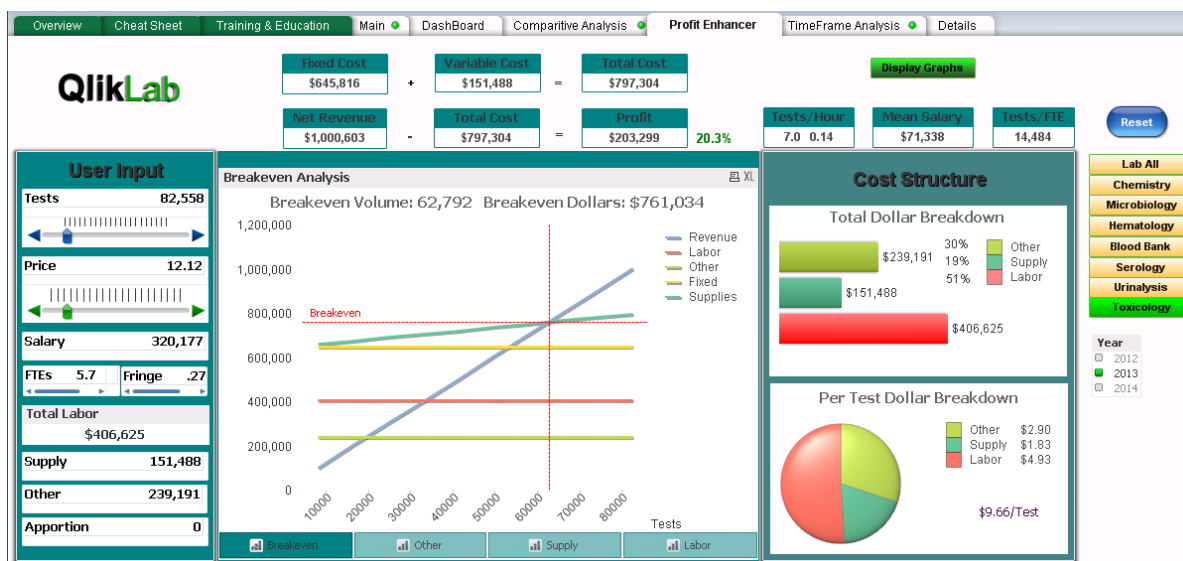
SPC is applied using control charts in order to monitor and control a process to ensure that it operates at its full potential. It can be applied to any process or activity, over any time period or dimension where output can be measured such as test utilization or turn-around-time. Mean, upper & lower control limits are automatically calculated and adjusted based on actual performance. Outliers and trending are automatically flagged as well.



**Intuitive Display** When a dashboard first loads it displays all of the data. Associated dimension volumes are arranged in descending order. After you select the dimensions of interest, **Green** highlights your selections, **White** displays your associated data and **Gray** displays the unrelated data, which enables your innate analytical skills through color recognition.

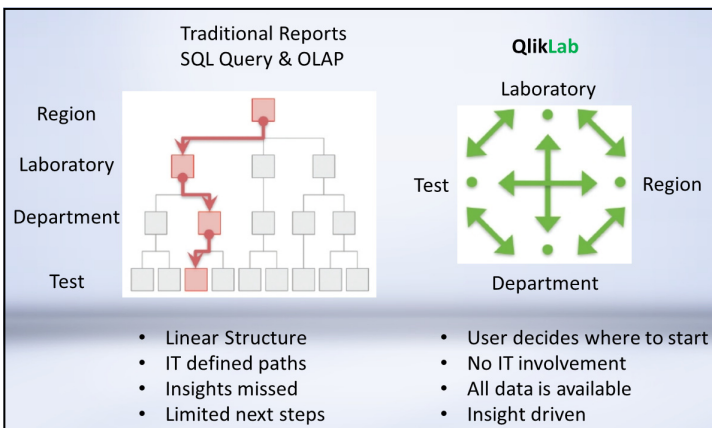
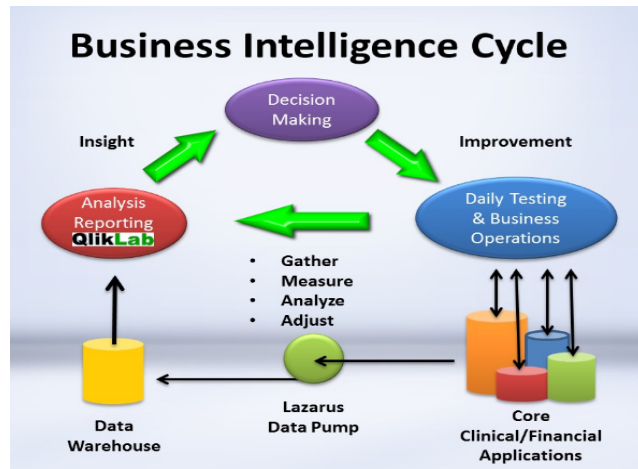


**Profit Enhancer** The Profit Enhancer integrates your costs (Labor, Supply & Other), test volumes and net revenues and lets you examine the results of your entire laboratory operation, individual profit centers or specific tests. You can simply select the profit center, e.g., Toxicology and the cost and profit performance will be displayed on the left. From there you can use the profit enhancer to vary pricing, volumes and/or cost components to perform marginal costing and sensitivity analysis.





Our Business Intelligence Cycle is closely tied to Deming's Plan-Do-Check-Act to provide insight for decision making and ongoing service and quality improvements. Management reporting needs are identified from core clinical and financial applications. Required data elements are then integrated into a relational star schema warehouse. The Lazarus Data Pump is used for the development of automation of data extraction and transformation routines making them available for analysis and reporting.



**QlikLab** facilitates direct user discovery. It provides an associative data experience that works across all data used in analysis. Limits are no longer placed on static reports, IT determined or preconfigured dashboards. Navigation of data is in the hands of the user, in any way they wish. Custom designed reports are available on the fly with no drag on the LIS.

#### Installation

- Customized to meet your unique needs
- Rapid installation: Usually 30 days after defining and obtaining data feeds
- Seamless data extraction from existing LIS/ LIM, e.g., Cerner, MediTech, McKesson, etc.
- Seamless data extraction from your financial & business applications for robust reporting
- Simple annual fee includes reports, service and technical updates

"Dashboard reports are easy to read and timely. They allow us to make strategic decisions and share data with lab staff, nursing units, quality and clinical effectiveness councils, the medical staff, and the quality board. We track productivity and turnaround time closely."

Brian Kuske  
Swedish Medical Center

Richard Ouellette, FACHE CLSSMBB MT(ASCP)H is the principal architect and developer at Lazarus Technologies. He is a certified medical technologist, certified Lean Six Sigma Master Black Belt and a Fellow in the American College of Healthcare Executives.

[Visit his Profile on...](#)



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