# A Robust, Scalable Solution for Electronic Test Orders and Results (ETOR)

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Electronic Test Orders and Results (ETOR) enables laboratories and health care providers to directly exchange standardized test orders and results across different facilities and laboratory information management systems (LIMS) using agreed upon standards. ETOR presents opportunities for substantial efficiencies and data improvement, but the cost of implementation in terms of time and resources is a significant barrier to adoption. Public Health Laboratories (PHLs) need streamlined and scalable approaches to process ETOR. J Michael Consulting (JMC) has developed a robust, LIMS-agnostic ETOR solution - as well as a series of standardized tools, templates, and best practices - that allow laboratories to quickly begin onboarding ETOR trading partners.

## JMC ETOR Solution

Historically, ETOR between PHLs and providers involved heavy maintenance due to strict security requirements that required point-to-point VPN connections. Ramping up a novel VPN connection and maintaining connectivity between multiple partners became cumbersome and resource-intensive with each additional partner. Rhapsody's enterprise architecture with web service capabilities and security infrastructure can meet the expected standards of secured connectivity. This built-in and configurable solution supports secure transport with SSL certificates, user authentication and authorization, and "IP white-listing". ETOR data exchange partners can be onboarded quickly using this simplified and repeatable process rather than creating a new connection for each partner.

### JMC ETOR Onboarding Process

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| Initial Engagement | Assess readiness, review requirements, discuss scope and timeline, and exchange key information |
| Connectivity | Grant the provider's system access to the published web service, issue certificates and credentials, and complete integration testing |
| Validation | Conduct several cycles of validation on predefined test scenarios to ensure that orders and results are transmitted correctly to each facility |
| Final Setup | Perform final connectivity testing in production to ensure the process is ready for production |
| Production Cutover | Activate Rhapsody routes and schedule cron jobs in the LIMS as needed |

### JMC ETOR Reusable Tools

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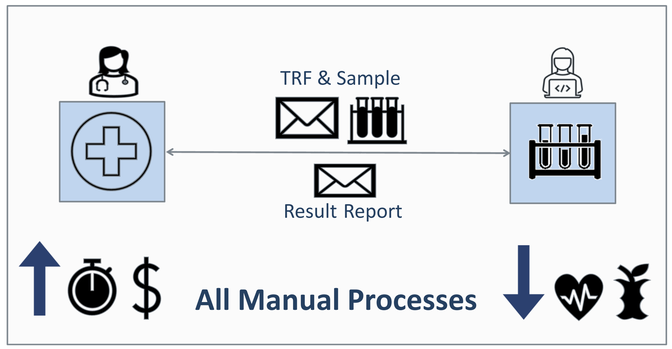
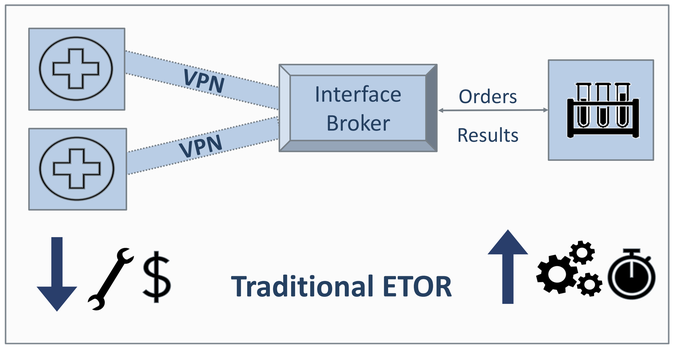
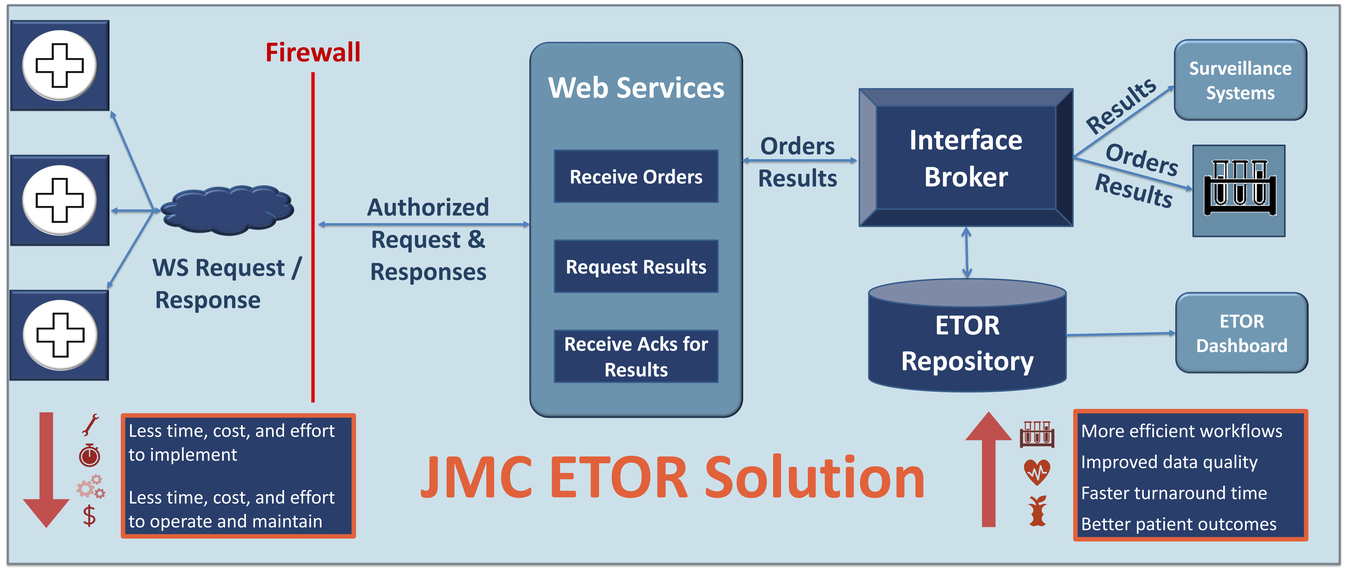
|---|---|
| Onboarding Packet | Defines ETOR requirements; includes the PHL-Specific HL7 Implementation Guide, the Test Compendium of ordered test codes, vocabulary value sets, and example messages |
| Message Validator Spreadsheet | Determines whether messages (inbound and outbound) comply with the Implementation Guide; used to determine if the partnering systems are ready to start end-to-end testing |
| Base Test Plan | Identifies the minimum number of test scenarios required for ETOR testing based on common lab workflows and system configurations |
| Validation Tracker | Stores and documents all test scenario descriptions, statuses, outcomes, screenshots, and approvals |
| Other Tools | Publicly available HL7 validation tools may include NIST's General Validation Tool (GVT)* and NewSTEPs' Newborn Screening Health IT Implementation Guide and Toolkit* |




**Adaptability**, **reusability**, and **scalability** are key tenets of our ETOR solution, from the initial technical designs to sustainable support tools. Our ETOR solution is fully configurable and extendable, meaning our team is quicker and more efficient at onboarding healthcare partners with minimum overhead. The onboarding process is collaborative and encourages sharing updates to existing templates between partners. Knowledge management is a pillar to our ETOR implementation; we focus on working ourselves out of a job by training PHL staff and healthcare partners. JMC's responsibility is to carry the load of the initial implementation while concurrently teaching PHL staff how to use the tools, onboard future partners, and configure the solution. We bring these principles to all our informatics designs and projects. Our goal is to assist PHLs in becoming self-sustaining, modernized organizations.

J Michael Consulting, Roswell, Georgia / *http://jmichael-consulting.com*
JMC specializes in laboratory informatics, surveillance informatics, data standards and interoperability, and project and program management. For more information, and to learn more about JMC's service offerings, email support@jmichael-consulting.com.

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