

# “From Read-Only Viewer to True Exchange” Bidirectional Health Information Exchange (BHIE)

## Improving Care to Wounded Warriors

### Transforming BHIE to a True Exchange:

Wounded warriors frequently transition to and from medical treatment facilities run by the Departments of Defense (DoD) and Veterans Affairs (VA). As a result, there has been a long established and ongoing need for providers in both the VA and DoD to see patient records from both systems. This need has been met by a series of data exchange capabilities, highlighted by the Bidirectional Health Information Exchange (BHIE), a program which now finds itself challenged in current scope and capabilities, limiting the continuity of care our troops could receive.

Rather than continuing to maintain and add features to the current, rapidly aging BHIE baseline, DoD and VA should invest in tactical and strategic upgrades to create a framework and platform that addresses both the current technical challenges and also brings the two departments into line with the current industry technologies and modern healthcare standards.

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### **Exchange of Data between the DoD and the VA**

The DoD and VA have taken a position of leadership in health information exchange, with many years of dedicated efforts via the Federal Health Information Exchange (FHIE), Bidirectional Health Information Exchange (BHIE) and Clinical/Health Data Repository (CHDR) capability. Indeed, these two departments share more clinical data than any other two large healthcare delivery systems. BHIE currently enables read-only access to a large set of data between DoD and VA providers.

This capability is utilized thousands of times per day (and growing rapidly) in the ongoing care of patients that are seen by both healthcare systems. However, BHIE:

- Is limited in bandwidth, response time, and completeness of information by its current architecture,
- Does not allow the data to be seen in the application of the provider, and

- Does not create the basis for exchanging data with civilian electronic health records (EHRs), where wounded warriors are frequently seen.

These limit the effectiveness of the exchange of data in the everyday practice of delivering world class healthcare to our troops.

### **Tactical Upgrade – Service-Oriented Architecture (SOA)**

Utilizing a SOA set of web services approach to upgrade the BHIE solution, coupled with smarter implementation and configuration of data sources would greatly enhance BHIE, several ways:

- Elimination of current redundancy
- More efficient data routing
- Conversion to standards developed under the National Health Information Network activities
- Decoupling to remove unnecessary dependencies

- Enabling “publish-subscribe” methods in addition to on-demand querying

This work requires a small investment and can be accomplished in 2009.

### **Strategic Upgrade – Insertion and Leveraging Natural Language Processing (NLP) Technologies**

It is generally understood that many of the intended/expected benefits afforded with the exchange of EHR information requires computable data from either system. Computable data is key to imbedded clinical decision support algorithms to greatly enhance patient safety and reduce cost at the point of service. It is also true that many providers do not like to be the ones to personally create such highly structured data. Fortunately, there are now solutions that can address both issues head-on.

Natural Language Processing provides use-case-independent, fully encoded data extraction from free text. Its application to healthcare records would provide the necessary computable data without requiring providers to document in any specific way. Providers would be able document their care electronically in a free text way and historical data can be “translated” into fully computable EHRs. This translation would greatly facilitate the needed exchange of data across all EHR systems, including connecting the DoD/VA with the civilian sector where substantial healthcare is delivered to the armed forces.

NLP is now becoming mature enough to enable implementation by 2010 for the BHIE.

### **Summary**

Great strides have been made in closing the gaps in the care of wounded warriors across the health care systems of the DoD and the VA. This BHIE capability continues to be of enormous value; however, its current architecture and technology present numerous challenges for ongoing maintenance and expansion of capabilities in support of seamless healthcare delivery to our troops. The solutions presented here not only address these current challenges, but would result in a true exchange, bringing the BHIE capability into compliance with modern standards and more into accord with modern technologies. Further, it would provide some very key web-services to a broader SOA architecture, enabling far simpler and faster integration opportunities. The addition of an NLP service to the platform would fully enable a change in paradigm for clinical documentation, while providing fully computable data for clinical decision support, research, and public health.