



## From a CIO's Perspective:

# Why Hospitals Should Adopt Open Source?

*Healthcare transformation is evidenced in a number of key strategies worldwide – some of which are similar to ones undertaken at the NHS. For example, in order to support the primary care providers, the U.S healthcare provider Hartford Hospital has to be able to coordinate all the care that is being provided to their patients – inside and outside the hospital.*

*They are collaborating with Misys Open Source Solutions (MOSS) by participating in an open source community to build a Health Information Exchange (HIE) that will link the acute care hospitals with the ambulatory and tertiary care facilities along with the labs and diagnostic centres in the region.*

*Mr. Steve O'Neill l (CIO of Hartford Healthcare) sees huge potential in the cost effectiveness and openness using an open source approach for the healthcare industry and sees it as a critical way to solve the interoperability problem that has plagued the healthcare industry.*

## Background

Founded in 1854, Hartford Hospital was the first hospital to be built in Hartford, Connecticut (United States). Now it has grown into a leading acute care medical centre in Hartford and one of the finest hospitals in New England. Currently Hartford Healthcare has 7 hospitals around the area, supported by over 7,000 doctors, nurses and other staff members.

## Challenges

### *Interoperability*

Hartford Healthcare faces the challenge of sharing information between its different locations where different healthcare information systems are provided by different vendors. Under a proprietary business model, they need to use various data extraction tools to help them aggregate data and package it in a standardized format before sending to the HIE.

### *Business Proposition*

An U.S nationwide 2006 survey identified 136 organizations that were either planing ining or participating in community-based HIE initiatives. By 2007, 32 HIE initiatives were fully operational, and by 2008 an additional 10 initiatives (42 total) had reached the fully



operational stage . Accordingly, the high implementation cost coupled with the lack of a sustainable business model has created a significant challenge in the successful creation and successful deployment of HIEs. Additionally, the uncertainty associated with ongoing operational costs poses a significant barrier to adopt HIE initiatives .To encourage information sharing between Hartford Hospital and primary care providers, Hartford Healthcare is investing in the creation of a base platform that is required to exchange patient information.

## **Motivation**

### ***Benefits of Open Source***

Compared to proprietary systems, open source solutions drive down the cost and reduce some of the issues associated with vendor lock-in. Also, in the case of Hartford Healthcare, open source enables the hospital to incorporate features they believe they need in their organisation more easily than a pure proprietary model might. Hartford Healthcare believes that their open source interoperability platform will be a key enabler in increasing Electronic Health Record (EHR) adoption as the cost of data exchange will be low and the benefits great. Additionally, Hartford Healthcare sees the value in the speed with which open source can be used to help develop standards-based system integration across their enterprise.

### ***Value for Money***

For any proprietary HIE solution currently available in the U.S marketplace , the direct cost is estimated to be in the range of £645 to £1935 (\$1,000 to \$3,000) per physician per year. However, in the Hartford example, Mr. O'Neill estimates that the base direct cost of the open source HIE solution will be estimated under £64.5 (\$100) per physician per year.

### ***In-house Expertise***

Hartford Healthcare has an innovative and talented technology team that has participated in open source communities and routinely utilizes open source technologies in their internal development. They believe there is no difference between open source code and proprietary code relative to issues like security risks. There is no difference in their testing of open source or proprietary code is no difference in their testing of open source or proprietary code.

## **Issues to Be Addressed**

### ***Win CIO's Heart and Mind***



Initially, the biggest barrier to adopting open source within the Hartford Healthcare organisation came from the CIO. Mr. O'Neill's fear and trepidation centred around having a support model for the code base so that his organization would not be left an orphan in their support responsibilities to their customers.

Additionally, Mr. O'Neill had not been convinced that open source was something viable for a strong and substantial organisation like Hartford Healthcare. As a result of his concerns, he challenged his technology team to demonstrate open source was viable.

### ***Governance***

In the United States, one of the issues is to obtain patient consent to share the information with the HIE. Although the operational staff, such as physicians and other clinicians is very keen to begin to share the information right away, there is a complex legal governance process in the United States that hospitals have to go through in order to obtain the patient consent and to monitor and update the consents.

### **Collaboration Model**

#### ***Commercial Support***

The idea of having a commercial vendor as a development partner was crucial for Hartford Healthcare in making the decision to support an open source community project. Although Hartford Healthcare is making contributions to the project, they can not take over the support and maintenance of the resulting product and associated solution. To be a viable alternative, they needed a commercial entity to stand behind the solution.

#### ***Joint Development***

Although Hartford Hospital uses both proprietary and open source products in their enterprise, when it came to interoperability solutions, strategically, they could not support a proprietary black-box solution as the risk to them along with the cost would be too high. They felt that open source was the best alternative. In fact, before they contracted with MOSS, they had endeavoured to begin to build their own exchange but, due to competing priorities, were unable to make the required progress to satisfy their organization's needs. Seeing that they were strategically aligned with MOSS and that MOSS had been successful in building out some of the components that they had begun, they agreed that it would be both cost effective and strategically important to collaborate with MOSS to complete the rest of the solution stack. This requirement was evidenced in their agreements with MOSS and their dedication and contributions to the MOSS open source projects in which some of their code was contributed back to the open source community.



### *Competitive Selecting Process*

Before Hartford Healthcare selected MOSS, they actually had looked at a number of alternative HIE products in the marketplace. Finally Hartford Healthcare made the decision based on the following areas:

- *Shared Vision*

It was very important for Hartford Healthcare to understand what the vendor's vision was and how it would support their enterprise vision. What MOSS provided was best fit in Hartford Healthcare's long-term direction.

- *Open Source Arena*

To advance their strategic plan, Hartford Healthcare wanted to develop their HIE using open source, so that whatever they developed would be available to anybody in the industry. They also needed to use a standardized approach so that their solution would not become obsolete quickly.

- *Standards-based Development*

A key requirement for Hartford was that the chosen solution be standards-based. Since the Federal Government in the United States had funded the creation of the Nationwide Health Information Network (NHIN) which was based on the Integrating the Healthcare Enterprise (IHE) profiles, the IHE standards-based approach made sense. After the Federal Government made the NHIN codebase available to the open source community (shortly after Hartford Healthcare began evaluating the MOSS code), it was clear that IHE was the best path forward.

- *Pricing Model*

Many of the pricing models that other vendors used were based on the number of transactions that would be made or the number of providers who would be using the system. When Hartford Healthcare calculated the impact to its organization using this approach, it became apparent that the other vendor approaches were unaffordable. They decided to contract with MOSS because the upfront and ongoing maintenance costs were quite low compared to any of the competition.

### *Collaboration with Hospitals*

Hartford Healthcare has embraced any other hospital in Connecticut on the building and



implementation of the exchange platform. In fact, Hartford, using the MOSS platform, contracted with another competing Connecticut-based exchange to build a prototype of the exchange as an example for the State as to how the exchange could work. (Now the MOSS platform is being considered for the state-wide exchange.) Additionally, Hartford Healthcare also created code for their hospital systems to transform their data into a standardized Clinical Care Document (CCD) format so the information could be exchanged with the HIE. They have already contributed this code to the open source community to use in a project called “Open Passport” which is also available, along with the MOSS code, through the Open Health Tools Collabnet forge.

### **Outcome and Next Steps**

Hartford Healthcare is just beginning to install the HIE system.

So far the open source HIE seems cost effective as the real cost are estimated to be around 20% of what they would have spent if they were licensing equivalent software from a traditional proprietary software company. From the end user’s standpoint, there is so much more transparency compared to the proprietary system.

The open source practice has changed Steve O’Neill’s IT culture and now he embraces open source. The Hartford Healthcare’s IT staff is doing a lot of forward thinking about how to carry on this open source project. Hartford Healthcare can really see open source as becoming a much bigger part of their HIE going forward.

### **Recommendations**

From his own experience of being involved with open source development, Steve O’Neill has three recommendations for other CIOs as they evaluate an open source project:

- Trust the open source marketplace as being a valid supplier of technology
- Understand how the support infrastructure and resources will work once the open source technologies are adopted.
- Find ways to make existing software vendors more receptive to the idea of using open source and follow standards to increase the probability that the various systems will work together.