Summary of Comments from SIM HIT Council Members: Zato Demonstration

Zato Demonstration Dates: May 17, 2016 and May 23, 2016

HIT Council members attended a demonstration ("demo") of Zato capabilities in the spring of 2016. The first demo featured unidentifiable data, and the second demo contained identifiable data. Afterwards, members who attended were asked to complete an evaluation form. The evaluation form contained the following categories/questions:

(1) **In your opinion was the demonstration successful? Why or Why not?** (average score = 3.18)

(2) **Did Zato demonstrate the following functional requirements:**

    a. *Overarching Capabilities (Successfully deployed in a healthcare setting)* (average score = 2.82)

    b. *Data Source Interface* (average score = 3.18)

    c. *Data Retrieval and Aggregation capabilities* (average score = 3.04)

    d. *Reporting capabilities* (average score = 2.30)

    e. *Quality Measurement* (average score = 3.18)

(3) **Did Zato demonstrate the following non-functional requirements**

    a. *Data Security* (average score = 2.63)

    b. *Operations* (average score = 2.44)

    c. *Customization and Requirements for SIM Pilot* (average score = 2.77)

Members were asked to rate each category on a scale of 1-5 and provide written comments.

(1) poor, **(2)** fair, **(3)** good, **(4)** very good and **(5)** excellent

Approximately 7 HIT Council members, and 4 non-members provided numeric scoring, comments, or both. The average scores can be seen in green, above, and include both HIT Council and non-HIT Council members.

Detailed comments and further detail are in the subsequent pages. Comments are only from HIT Council members.

1.	In your opinion was the demonstration successful? Why or Why not?	Mean =3.18

1. Zato was able to demonstrate the technology that they have to date. However, it was not evident that they were prepared or had enough experience to support larger initiatives as SIM. More details below.
2. Scored a 2: I was able to hear from the content experts and get a demonstration of some of the aggregation options and search options within Zato and I was better able to understand how the technology might work – but it was not fully functional with a demonstration of how the technology worked. They also did not fully discuss how it would actually implemented it in one of the healthcare settings in CT. Nor did they fully describe what they were doing at Baystate.
3. The presenters were knowledgeable and very relevant. The software is by far the best example of interoperability I have seen demonstrated in over 13 states
4. I felt the presentation was disorganized – no context setting, no clear statement of "this is what we are going to show you today and why". The physician leading the discussion had an unfortunate tendency to   over-explain things as if we couldn't possibly understand his point. That being said, I do have a somewhat better understanding of the capabilities and limitations of Zato's technology.
5. Helped to be able to "see" it – very innovative product
6. Although the demonstration was intended to focus on edge processing and showcase ability to retrieve, aggregate, process and analyze data from multiple data sources, the demonstration focused on running queries on the data sourced from a single entity.
   - Another concern from the demonstration is that it illustrated that the system has the potential to   create multiple duplicate records in certain cases when data is retrieved from multiple provider entities. It will result in inaccuracies and skewed data analytic results. Zato recognized the potential for data duplication.

2.	**Did Zato demonstrate the following functional requirements:**	
A.	*Overarching Capabilities (Successfully deployed in a healthcare setting):*	**Mean =2.82**

1. Zato demonstrated that they have the technology for natural language processes and indexing. They showed some ability to aggregate data, but the reporting mechanisms and final reports were not demonstrated well. Right now Zato is only working with 2000 data set points (i.e. 2000 of Baystate's patients). It was difficult to determine if they would be able to aggregate data from a larger data set. Additionally, they don't have current experience with EPIC, which is a major concern considering many of the CT organizations are on this platform. The need for customization of their system was noted several times by Zato team to support the needs of SIM. This is concerning, as it likely reflects their lack of experience, existing and available technology. Customization could prove to be costly, and could potentially result in more testing time, errors and delays than accounted for in the existing timeline.

2. Scored a 2: Only discussed that it was implemented at Baystate – showed a search of de-identified data from Baystate – which was only one of the databases from that setting (Cerner but not sure if ambulatory vs hospital vs both). There are a number of additional databases that they were not connected to at this point (likely not required for the project they were doing – but they really did not describe what that project really is so it was very hard to understand how successful it is for that). Also they discussed that they had implemented at UConn – but did not discuss the details of that – I am aware that they have worked with UConn IT to extract data and also aware that no analysis has been done to date with regards to use…. So I would not count that as implemented yet as the jury is still out with regards to outcomes etc.…

3. Overall yes, still concern about primary care EMRs which differ from quality and availability of certain necessary data elements

4. Scored a 2: Verifiable and auditable

5. It is not deployed at Baystate. It is being piloted in TechSpring. The CFO and VP Strategy had no knowledge of Zato and no representative of Baystate was even in the room.

6. Unclear from the demonstration

B.	*Data Source Interface:*	**Mean = 3.18**
	1. Please see response above (#1 to question 2.A) 2. Scored a 2: No specific interface was directly demonstrated – it was discussed but not in detail and no diagram or details of how the interface actually works was discussed or demonstrated. This makes it difficult to assess how much work is involved in setting this up. The Zato team reassured us it was not difficult, but I have seen this require more time / effort and expertise than anticipated in the past. They did demonstrate two sources could be viewed in the same application window via a query but that is not the same as demonstrating or explaining the interface. They did speak technically correct about the types of technologies they utilize so I believe they have internal skill with making the interfaces work. 3. Many sources – use of data in federated model 4. They were able to demonstrate that they capture data from multiple sources but did not provide much detail on how that is done. 5. Data source used for the demonstration was a single entity's data source	

C.	*Data Retrieval and Aggregation capabilities:*	**Mean= 3.04**
	1. Please see response above (#1 to question 2.A) 2. Scored a 1.5: Two data sources were shown displayed in an application window – one from within Baystate (de-identified) and the other from a de-identified public source set of records with no overlap of patients so there was no aggregation. In essence the records were put into a window for viewing and could be separated by location or by measure (smoking status or other quality metric) but they only reported it was possible to aggregate them across settings but they did not have experience in the healthcare arena doing this – only in their government work. The issue of use of an EMPI was discussed and they theoretically could use this … but had not yet developed the software interfaces to do this across various healthcare enterprises and had relied on a patient index from within one organization. 3. Many examples 4. The one example they showed was a merger of two different data sets. They didn't show meaningful aggregation or integration of the data. Just that it was merged into a single pool. There was no patient matching ability demonstrated. 5. Demonstration did not showcase adequately; it appears to be a DRG identifier software.	

D	Reporting capabilities:	Mean = 2.30

1. The reporting that was demonstrated was not robust, and was not easily extracted from the data set. In addition, Zato referenced (again) the need for customization for more comprehensive reporting.
2. Scored a 2: While it is possible to put a reporting engine (or write code to pull together reports from the underlying database) this was not demonstrated in detail. This was discussed with the group as work that would occur as part of the customization. An example from within Baystate regarding a quality report was very briefly discussed and the ability to export queries to other reporting engines (Crystal, SAS etc.) was discussed but not directly demonstrated.
3. Issues related to evaluating [illegible] very goal, ability to create SAS analyzable data important. Still have questions about de-identified data which would need to have some ID date, e.g. age, R/E, language to do..is that problematics.
4. Many examples
5. They showed us an excel spreadsheet. I was underwhelmed, to say the least. In their defense they were clear that their core value isn't in reporting but in data aggregation and that they build reporting to meet the needs defined by their customer. But still, they didn't demonstrate any capability on this front. The quality measures we are contemplating are all nationally recognized measures – they certainly could have built a demo version of a better reporting UI than an Excel spreadsheet off of the Baystate data they had but they did not do this.
6. Demonstration did not address adequately; capabilities are unclear.

E.	*Quality Measurement:*	**Mean=3.18**

1. Zato demonstrated their ability to aggregate quality metrics based on an example for smoking cessation. It was unclear the other areas that they would be about collect, aggregate and report on quality measurements without customization.
2. Scored a 2: One of the key potential benefits of a solution like Zato could be the use of Natural Language Processing which seems to be the technology they profess to harness better than other solutions. How this is used in the generation of quality metrics was discussed but not directly demonstrated. The precision and recall of the NLP engine from Zato is in the 70 – 80% range per their website which means that it correctly identifies when a particular event is true from natural language about 70% of time. This might be close to humans doing this work quickly. There will also be a false positive. As a group we would need to come to terms with the potential inaccuracies in the data collection and aggregation methods as all will have some … I am not sure how much weight to put into the ability to correctly deal with more complicated quality metrics. But this might be true for any technology or method as well.
3. Seems very adaptable and subject to "slice" and "dice."
4. Several examples
5. They showed an example in the Excel spreadsheet that they could put together a measure.
6. Still a little unclear about how measures will be standardized consistent with NQF/NCQA guidelines.
7. The demonstration queried data to support the discussion related to HbA1c as an example.

3.	**Did Zato demonstrate the following non-functional requirements:**	
A.	*Data Security:*	**Mean = 2.63**

1. I didn't not see this area. However, the meeting was already in progress when I arrived and I could have missed this piece.
2. Scored a 2: Limited discussion about how data is held securely and no diagram that describes the architecture and how data is kept securely at the host institution – just a discussion about this as being required for HIPAA and an assurance that they meet those requirements. While I believe this is likely true, we should fully understand how this occurs prior to making a recommendation to proceed with a solution like this for the entire state.
3. No question de-identified data safe, still concern about who can get security clearance, and need for some to have more data. Need to address patient consent or at least notification.
4. Auditable and verifiable
5. No, they didn't demonstrate this. They stated it but did not demonstrate.
6. Did not demonstrate

B.	*Operations:*	**Mean = 2.44**

1. Pilot overview and future expectation
2. Scored a 2: I am not sure what this refers to – but I don't see this as in a production environment at Baystate or at UConn – they could not precisely describe what business or healthcare quality issue they were trying to solve.
3. I was able to get a decent sense of how working with Zato might proceed.
4. Zato Health does not have use cases and indicated that those will require future development.

C.	*Customization and Requirements for SIM Pilot:*	**Mean = 2.77**

1. As noted above, the biggest concern is that Zato alluded to the need for customization when asked questions about capabilities from committee members. They demonstrated that they might have some basic technology available that could be advantageous for SIM, but it very unclear whether they are prepared to take on the state of CT and the quality metrics we are requiring.
2. Scored a 2: It is clear that quite a bit of customization is required to meet the CT SIM needs – but if it would have been clear that the data would all be easily gathered, aggregated with correct assignment/attribution to patients and providers then I believe there is a possible way to customize this software, but it will require coders, database expertise and analytics skills. How the customization would occur and who would be responsible for it and at what time and fiscal cost was not discussed at all and attempts to have the Zato leaders answer that question were met with more discussions about their prior expertise and skills.
3. Will see when we pilot
4. Adhoc reporting use for multiple measures including choosing wisely
5. They seemed to think this was their sweet spot – flexibility and customization. I'd give them a 3 for demonstrating that but a 2 for my perspective that we don't actually need that much customization.
6. Zato Health indicated that there is ability to handle customization and that the parameters for the SIM Pilot would have to be defined, which may require funding to evaluate accuracy of Zato Health output.

ADDITIONAL COMMENTS AND/OR QUESTIONS:

1. I appreciate Minakshi and the PMO team organizing this visit. I can see why Zato is a potential option for SIM. However, I left with the feeling that we, as a state, should explore more available options before delving in selecting them as vendor. As mentioned, the need for customization for Zato, and their lack of experience for larger aggregation and systems as EPIC, could lead to more time and cost than accounted for and expected.

2. This felt like an initial demo to me – after which usually a company is able to come back with much more detailed answers and a demo clearly demonstrating an ability to meet our specific use case.

The problem is that this has been asked for several times in the past and the maturity of the demonstration leads me to believe that they are building this solution as they go for the healthcare quality industry. (They have supported billing for quite some time so have expertise that is clear in that area (ie the ability to point out possible diagnosis that are missing from doing an NLP search of text).

3. I think we are off the mark from a process point of view. Form should follow function. It's unclear to me that we've firmly established the ultimate function we are seeking. We have established the function we need for a small pilot – but what's the point of a small pilot that isn't done in the context of larger objectives? It would waste time, resources and money. Looking at the goals of SIM we need a data aggregation platform that can integrate clinical data, demographic data and claims data. Then we need user platforms that operate off of that aggregated data – to do quality measurement, to measure and report on socioeconomic factors, potentially to drive care management/community health interventions, etc. Zato might be the right tool for the data aggregation layer but the demo yesterday did not affirm that for me. I am not at all confident that Zato is the right tool for the quality reporting layer. There are countless PHM platforms in the market that have all of these measures pre-built and yet additional capabilities for customization (e.g. on demographic reporting we may want). We should take a step back and have small group of HIT council members develop a needs assessment and then go through an RFI/RFP process.

4. Would need ongoing process for providers/ACOs to disclose changes in relative real-time to assure continuity of data feed.

5. Overview:

- ZATO Health began with an overview. The ZATO management team has quite an impressive resume.

- They provided a technology overview. Overview of the technology from their website: Zato incorporates the most sophisticated medical ontology (the language of medicine) and natural language processing capability with a core search technology. Zato's search engine is fundamentally different from competitors in that it doesn't move data into a separate data center with the associated security risks and system-slowing liabilities, but instead creates a virtual data center that sits atop disparate, siloed data centers by indexing the constituent databases and fusing them in an ultra-secure virtual cloud. Our competitive advantage stems from a unique and disruptive approach to interoperability:

- Physical interoperability: Access and retrieve data from all localized data sources and data structures with intelligent search, without moving data

- Semantic interoperability: Understand and integrate data using legacy and site specific coding systems, acronyms, and nomenclature, without transforming or changing the data or removing meaning

- Zato indexing and ontology preserve local data context and integrity but normalize the data at each source node, allowing a normalized global view of the demographic and clinical content

- The ZATO technology is a web service that essentially creates a virtual data base and is an example of a federated data architecture that allows the data to reside within its host system. To interact with the ZATO tool, an index is defined that maps the data contained within the host based on very specific parameters. The data index is updated as frequently as defined by the parameters of the use. The ZATO technology is able to access both contextual and tabular data from the source. It has limited ability to map hand-written imaged technology outside of OCR type of capabilities.

- Parameters are used and set to determine matching criteria for patient to subscriber data, provider to provider groups and claims, diagnosis codes, clinical data and code sets, etc.. There are priorities that are defined by the overall application that are then applied to define acceptable matching levels for data.

- Privacy and security are of particular importance for a use such as the CT SIM. NOTE: we would have to ensure that the privacy and security requirements are met.

- This is a web-based service that has multiple layers of security which can be defined as set out by the parameters of the overall authorized use, type of entity (payer, provider, lab, hospital, research entity, or state, etc.), authorized role within a participating entity, etc.

- ZATO provided a demo of their technology with PHI data masked. A sample video of the technology (outside of demo) is available at: https://www.youtube.com/watch?v=93IbgDbc5G0

- As part of the demo they setup multiple queries based on a few of the Quality Measures established under the CT SIM. The underlying data came from multiple data sources, disparate claims and clinical systems from both contextual and tabular fields. The queries were fairly quick and the technology was very impressive.

- NOTE: I was impressed with the way in which the ZATO technology works. According to the Zato Health team presenting, the impact on the providers to "hook-up" to the ZATO technology through an index is minimal. (Quantified by 30-50 hours of work to setup the index and 20-40 hours of work when the data mapping index must be updated.) There would be no other cost per se with the CT model as all of the licensing fees for this participation were paid by the state.)

DESCRIPTIVE DATA ANALYSIS OF SURVEY DATA

Scoring included seven HIT Council members, and 4 non-members.

N=11 (HIT council members =7; others=4)

(1) poor, **(2)** fair, **(3)** good, **(4)** very good and **(5)** excellent

	N	RANGE	MIN	MAX	MEAN
OPINION	11	3	2	5	3.18
DEPLOYEDINHC	11	4	1	5	2.82
DATASOURCE	11	4	1	5	3.18
DATARETRIEVAL	11	4	1	5	3.04
REPORTING	10	4	1	5	2.30
QUALITY	11	3	2	5	3.18
SECURITY	9	4	1	5	2.63
OPERATIONS	10	4	1	5	2.44
CUSTOMIZATION	11	3	2	5	2.77