Table S1: Application of CTI Reference Model on Case Study 1.

Data Sources Demarcation						
Data Sources	**Raw Data Source**		-		Supplier A's CTI system should select private or public CTI products sources.	
	CTI Products Source		CTI products of public or private sources			
Reference Architecture Construction						
Layer	**Determine Functions' Components**				**Determine Layer Components**	
	Function	**Req.**	**Component**	**Remarks**	**Component**	**Remarks**
Selection	**CTI Products Selection**	*Yes*	*CTI products source selection*	*Supplier A's CTI system should select CTI products sources.*		
	Traceability	*Yes*	*Traceability*	*The under-design system should ensure that it gathers only CTI products from selected sources.*		
	Trustworthiness	*Yes*	*Trustworthiness*			
	Raw Data Selection	*No*	-			
	Stealthiness	*No*	-			
Surveillance	***Automatic Data Collection***	*Yes*	*Automatic Collection*	*The system should provide automatic or manual collection capabilities for both types of CTI sources.*		
	Manual Data Collection	*Yes*	*Manual Collection*			
	Large Volume of Data Collection	*No*	-	*The solution is expected to handle only normal volumes of data.*		
Processing	**Data Aggregation**	*Yes*	*Aggregation*	*Alpha's system requires a component that aggregates the different types of collected data.*		
	Data Enrichment	*No*	-			
Analytics	**Manual Analysis**	*No*	-			
	Attack Modeling	*No*	-			
	Knowledge Discovery	*No*	-			
Presentation	**Visualization**	*No*	-		*Transformation*	*The CTI system should transform the results to no CTI products*
	Anonymization	*No*	-	*The case study does not require anonymization of CTI products.*	*Reporting*	*According to the CTI system should support multiple types of reporting formats (e.g., bundles of CTI products or written reports).*
Communication	**CTI Products Exchange**	*Yes*	*Internal Exchange*	*Supplier A's CTI system should distribute the non CTI products internally to its user community*		
	Privacy Protection	*No*	-			
Quality Control	**Feedback Collection**	*No*	-			
	Quality Metrics Calculation	*No*	-			
	CTI Products Evaluation	*No*	-			
Collaboration	**CTI Operations Planning**	*No*	-			
	Analysts Collaboration	*No*	-			

Table S2: Application of CTI Reference Model on Case Study 2.

Data Sources Demarcation						
Data Sources	**Raw Data Source**		-		Supplier A's CTI system should select private or public CTI products sources.	
	CTI Products Source		CTI products of public or private sources			
Reference Architecture Construction						
Layer	**Determine Functions' Components**				**Determine Layer Components**	
	Function	**Req.**	**Component**	**Remarks**	**Component**	**Remarks**
Selection	**CTI Products Selection**	*Yes*	*CTI products source selection*	*Supplier A's CTI system should select CTI products sources.*		
	Traceability	*Yes*	*Traceability*	*The under-design system should ensure that it gathers only CTI products from selected sources.*		
	Trustworthiness	*Yes*	*Trustworthiness*			
	Raw Data Selection	*No*	-			
	Stealthiness	*No*	-			
Surveillance	***Automatic Data Collection***	*Yes*	*Automatic Collection*	*The system should provide automatic or manual collection capabilities for both types of CTI sources.*		
	Manual Data Collection	*Yes*	*Manual Collection*			
	Large Volume of Data Collection	*No*	-	*The solution is expected to handle only normal volumes of data.*		
Processing	**Data Aggregation**	*Yes*	*Aggregation*	*Alpha's system requires a component that aggregates the different types of collected data.*		
	Data Enrichment	*No*	-			
Analytics	**Manual Analysis**	*No*	-			
	Attack Modeling	*No*	-			
	Knowledge Discovery	*No*	-			
Presentation	**Visualization**	*No*	-		*Transformation*	*The CTI system should transform the results to no CTI products*
	Anonymization	*No*	-	*The case study does not require anonymization of CTI products.*	*Reporting*	*According to the CTI system should support multiple types of reporting formats (e.g., bundles of CTI products or written reports).*
Communication	**CTI Products Exchange**	*Yes*	*Internal Exchange*	*Supplier A's CTI system should distribute the non CTI products internally to its user community*		
	Privacy Protection	*No*	-			
Quality Control	**Feedback Collection**	*No*	-			
	Quality Metrics Calculation	*No*	-			
	CTI Products Evaluation	*No*	-			
Collaboration	**CTI Operations Planning**	*No*	-			
	Analysts Collaboration	*No*	-			

Table S3: Application of CTI Reference Model on Case Study 3.

Data Sources Demarcation						
Data Sources	**Raw Data Source**		Darknet		Alpha's CTI system should select CTI sources with either CTI products or raw data.	
	CTI Products Source		CTI products of the Boston Children's Hospital security team.			
Reference Architecture Construction						
Layer	**Determine Functions' Components**				**Determine Layer Components**	
	Function	**Req.**	**Component**	**Remarks**	**Component**	**Remarks**
Selection	**CTI Products Selection**	*Yes*	*CTI products source selection*	*Alpha's CTI system should select CTI products sources.*	*Selection Control Component*	*It controls the two selection components for the analysts to select among different sources.*
	Traceability	*Yes*	*Traceability*	*The under-design system should ensure that it gathers only CTI products from selected sources, such as the Boston Hospital's security team.*		
	Trustworthiness	*Yes*	*Trustworthiness*			
	Raw Data Selection	*Yes*	*Raw data source selection*	*Alpha's CTI system should select CTI raw data sources.*		
	Stealthiness	*Yes*	*Anonymity*	*Darknet's investigation using the real identity of Alpha's security team may further expose Hospital Alpha to potential attacker.*		
Surveillance	***Automatic Data Collection***	*Yes*	*Automatic Collection*	*The system should provide automatic or manual collection capabilities for both types of CTI sources.*		
	Manual Data Collection	*Yes*	*Manual Collection*			
	Large Volume of Data Collection	*No*		*The solution is expected to handle only normal volumes of data.*		
Processing	**Data Aggregation**	*Yes*	*Aggregation*	*Alpha's system requires a component that aggregates the different types of collected data.*	*Pre-processing*	*The system should store the collected data in this layer, but the data should be normalized and correlated before storage.*
	Data Enrichment	*Yes*	*Enrichment*	*A component belonging to this layer should connect the results of the analytics layer with the stored data.*		
Analytics	**Manual Analysis**	*Yes*	*Manual analysis*		*Results Collection*	*The CTI system should gather the produced analysis results by the two previous components and forwards them either to the enrichment component of the previous layer or to the next layer.*
	Attack Modeling	*Yes*	*Attack Modeling*	*The CTI system should offer structured analysis capability directing the analysis by following the attack's steps.*		
	Knowledge Discovery	*Yes*	*Knowledge discovery*	*CTI system should discover knowledge in information from the infrastructure of Hospital Alpha.*		
Presentation	**Visualization**	*Yes*	*Visualization*	*Alpha's CTI system should visualize the analytics layer results to the analysts.*	*Transformation*	*The CTI system should transform the results to CTI products.*
	Anonymization	*Yes*	*Anonymization*	*The case study does not require anonymization, however the anonymization of information included should be ensured when delivered outside Hospital Alpha.*	*Reporting*	*According to the CTI system should support multiple types of reporting formats (e.g., bundles of CTI products or written reports).*
Communication	**CTI Products Exchange**	*Yes*	*Internal Exchange*	*Alpha's CTI system should distribute the CTI products, either internally to Alpha's security systems or externally to potential members of a CTI community that Hospital Alpha participates.*		
			External Exchange			
	Privacy Protection	*Yes*	*Privacy Protection*	*CTI system should process the CTI products before their external distribution to ensure privacy.*		
Quality Control	**Feedback Collection**	*Yes*	*Feedback Collection*	*CTI system should gather quality measurements for CTI products distributed internally or externally.*		
	Quality Metrics Calculation	*Yes*	*Metrics Estimation*	*CTI system should estimate the quality metrics of the quality characteristics (e.g., relevance, timeliness),*		
	CTI Products Evaluation	*Yes*	*Evaluation*	*CTI System should evaluate automatically or manually the overall quality and updates stored CTI Products.*		
Collaboration	**CTI Operations Planning**	*Yes*	*Operations*	*The Alpha's CTI system architecture should coordinate the analysts' tasks and how all the other layers' components cooperates.*		
	Analysts Collaboration	*Yes*	*Analysts Collaboration*	*CTI systems should establish a communication channel for analysts within or outside of Hospital Alpha.*		

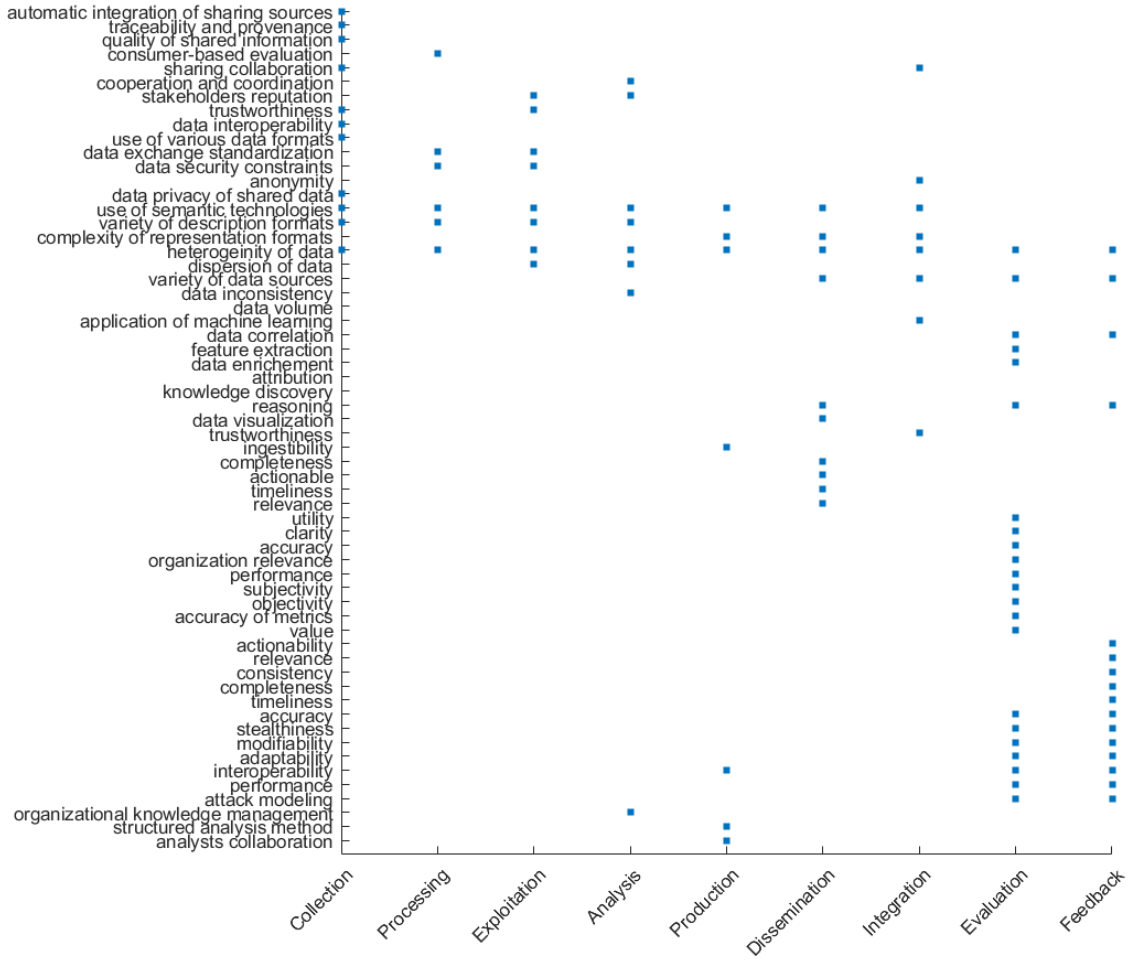

Figure S1: CTI complexity factors concerning CTI frame of reference.