SOL4.6.1: New BPM workflows on legacy data

SOL4.7.1: Near real-time operational BI dashboards

SOL4.7.2: Support for Revenue Cycle Management (RCM)

SOL4.8: Virtual Data Warehouse (VDW) across data sources instead of a physical data warehouse, incl. an existing data warehouse

SOL4.5.1: Mobile app support through data services

BPEL Creation/ Orchestration

SOL4.7: Support for direct (or virtual data mart for) reporting, BI and analytics

SOL4.9: Logical Data Warehouse (LDW) that virtually adds new data sources to an existing data warehouse

SOL4.4: Interoperability, e.g., HIE

SOL4.5: Micro-services Architecture

SOL4.6: Event Processing/Driven Architecture

SOL4.10: Highly curated data provisioning to reporting, BI and analytics Big Data and other analytics

Eventual App Query Transform and Inverse Results Data Transform

APIs Configuration

Near real-time Updateable Hierarchical and Other Indexed Views

SOL4.11: Virtual graph database and graph visualization

SOL4.3.1: Patient/ customer provides healthcare providers/others access to own data

Unique Key II Biometric?

SOL4.12: EU General Data Protection Regulation (GDPR)

Write -back

HEALTHCARE-SPECIFIC:

SOL4.13: Match prescriptions to diagnoses

SOL4.2: Interactive link analysis and visualization

SOL4.3: Patient/ customer access to own data

Unique Key I

SOL4.14: Match late-stage cancer critically ill patients with clinical trials

SOL4.15: Combine genomics with healthcare data for analytics and personalized care

SOL4.1: Selective indexing and queries on own patients/customers

Selective CDC

SOL4.16: Patient/ Disease/Implant Registry

C O N F I G U R A T I O N

SOL4: Integration of data sources for a single customer/employee/patient and other perspective views

Master Data/Patient Index

Link Mapping

SOL3: Basic Integration of multiple data sources

Standard Data Model Mapping

SOL2: Improved query performance out of a single database/data warehouse

Independent Indexes and Indexed Views

| Data Quality | Data Masking and Tokenization | Text Categorization | Entity Extraction | Other Text Analytics |

SOL1: Automatic Data Discovery and Classification

| Device/Processes/Apps/Users/Data Discovery | Data Profiling | Distributed Metadata Repository | Data Security Classification |

D A T A   S E C U R I T Y

SOL5: Data Security

Optional Data Lake – Centralized or Distributed

Internal and/ or External Data Sources

| Mainframes | Databases | Data Warehouses | Files | Logs | Office docs | Applications | Email | Web docs | Social media | Big Data | Streaming | Cloud | IoT |

Hybrid SmartData Lake that accesses data stored in sources, in copies or in indexes

Solutions and Key Features
Revision 2.9

Solution ID	Solution	Key Feature ID	Key Feature Description
SOL1	Automated Data Discovery and Classification (ADDC)	KF01	Discovery of networks assets and devices, processes, apps, users, data sources and data
		KF02	Raw indexes on discovered data accessed by self-instantiating EIQ TurboAdapter(s)
		KF03	Data profiling using the tree part of raw indexes
		KF04	Distributed metadata repository
		KF05	Data security and classification
SOL2	Improved query performance from a single data source/database/data warehouse, e.g., Cassandra, HBase, IBM VSAM mainframe files and Oracle®	KF06	Changed data capture (CDC)
		KF07	Structured, unstructured and semi-structured data parser/tokenizer
		KF08	Data transformation for data quality
		KF09	Data transformation for data masking, tokenization and encryption (third-party format-preserving)
		KF10	Entity extraction using open source GATE, i.e., WhamEE™
		KF11	Other text analytics, e.g., categorization
		KF12	Production indexes accessed by EIQ TurboAdapters
		KF13	Indexed views for pre-aggregations, pre-calculations and pre-joins
		KF14	High performance parallel query processing
SOL3	Basic virtual integration of multiple data sources	KF15	Data transformation for standardization
		KF16	EIQ SuperAdapters and EIQ Federation Server(s)
		KF17	Mapping to a standard data views(s)
SOL4	Virtual integration of multiple data sources for a single customer/patient view and other entity views	KF18	Link mapping and Link Indexes™
		KF19	Master data management – seamless and automatic integration – not a separate system
SOL4.1	Selective indexing and queries on own customer/patient data from sources that contain other customers/patients data	KF20	Selective CDC – only specific data from a shared source – cannot even read other data
SOL4.2	Interactive virtual link analysis and visualization for data discovery, social network analysis, social media	KF21	Link visualization (Keylines OEM)
		KF22	Social Network Analysis (SNA)
		KF23	Event correlation (automation future work)

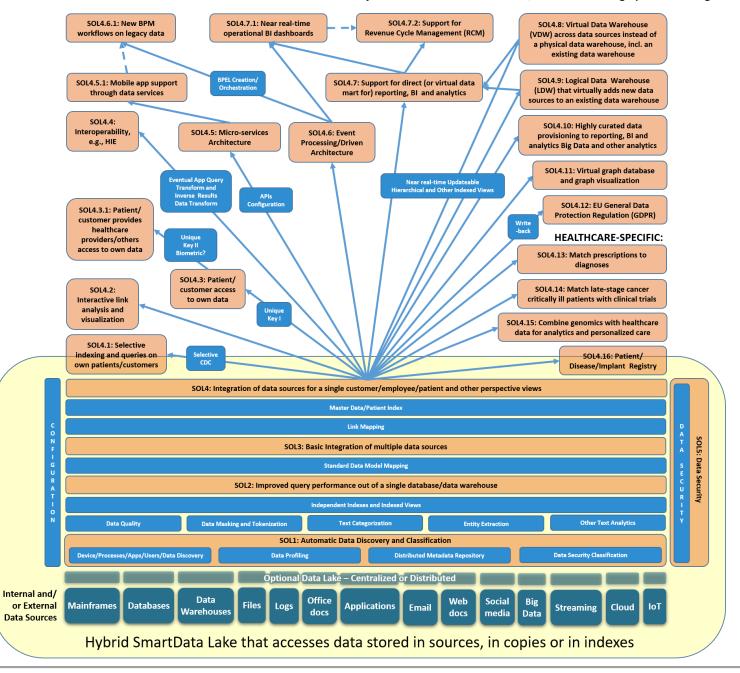| Solution ID	Solution	Key Feature ID	Key Feature Description
	analytics, fraud detection, money laundering and many other analytics	KF24	Anomaly Detection (future work)
SOL4.3	Customer/patient access to own data, regardless of where that data resides – also enables virtual partnering/healthcare networks	KF25	Unique logon and password and/or encryption/biometric key
SOL4.3.1	Customer/patient (could be unconscious) provides others/healthcare providers access to own data	KF26	Unique logon and password and/or encryption/biometric key (assumes patient could be unconscious) (different from KF25)
SOL4.4	Interoperability, e.g., Health Information Exchange (HIE) and many other applications – can write back to source systems	KF27	Application query transform and inverse results data transform back to application (N/A yet)
		KF28	Write back to data sources
SOL4.5	Micro-services Architecture	KF29	Catalog of available micro-services, e.g., FHIR REST APIs
SOL4.5.1	Mobile app support through data services	KF30	Mobile app platform support
SOL4.6	Event Processing/Driven Architecture	KF31	Monitoring and rules-based event processing – currently through WhamTech SDF stored procedures, but may add internal BPM workflows already used for SOL1 ADDC
SOL4.6.1	New BPM-based workflows on legacy data sources through data services	KF32	Support for external BPM workflows
SOL4.7	Support for direct (or virtual data mart for) reporting, BI and analytics	KF33	Near real-time updateable hierarchical and other indexed views
		KF34	Virtual data mart query construction
SOL4.7.1	Near real-time operational BI dashboards		Combined KF31 and KF33
SOL4.7.2	Support for Revenue Cycle Management		Combined KF31, KF33 and KF34
SOL4.8	Virtual Data Warehouse (VDW) across data sources instead of a physical data warehouse, incl. an existing data warehouse		Use KF17 to create a new relational, NoSQL/flat, ontological schema or more than one simultaneously
SOL4.9	Logical Data Warehouse (LDW) that virtually adds new data sources to an existing data warehouse	KF35	Extend existing data warehouse schema – possible to federate from within data warehouse
SOL4.10	Highly curated data provisioning to reporting, BI and analytics Big Data and other analytics	KF36	Streaming or incremental results data flow
		KF37	Tag and export data in specified formats, e.g., XML, JSON and delimited and/or write directly to data source

Solution ID	Solution	Key Feature ID	Key Feature Description
SOL4.11	Virtual graph database and graph visualization	KF38	Entity triple semantic model definitions
		KF39	Simple SQL queries to execute graph queries – avoids graph-specific query language
SOL4.12	EU General Data Protection Regulation (GDPR)	KF40	Personal data only with interactive full or partial "erasure" options
		KF41	Present additional information about personal data usage at a high data source-level and a low specific data-level
SOL4.13	Match prescriptions to diagnoses (Healthcare-specific)		
SOL4.14	Match late-stage cancer critically ill patients with clinical trials (Healthcare-specific)		
SOL4.15	Combine genomics with healthcare data for analytics and personalized care (Healthcare-specific)		
SOL4.16	Patient/Disease/Implant Registry (Healthcare-specific)		
SOL5	Data security/loss prevention (DLP) – lockdown access to important data as per Forrester's Zero Trust Data Security Framework	KF42	User authentication (third-party) integration, i.e., LDAP/AD and Kerberos
		KF43	Enable Single-Sign On (SSO) on all data sources, whether supported or not
		KF44	Cross/multi-domain SSO using LDAP Virtual Directory, e.g., Oracle Virtual Directory (OVD)
		KF45	Enforce Role-Based Access Control (RBAC) and Row-Level Security (RLS), whether supported or not by data sources

SmartData Fabric® security-centric distributed virtual data, master data and graph data management, and analytics

SOL4.6.1: New BPM workflows on legacy data

SOL4.7.1: Near real-time operational BI dashboards

SOL4.7.2: Support for Revenue Cycle Management (RCM)

SOL4.8: Virtual Data Warehouse (VDW) across data sources instead of a physical data warehouse, incl. an existing data warehouse

SOL4.5.1: Mobile app support through data services

BPEL Creation/ Orchestration

SOL4.7: Support for direct (or virtual data mart for) reporting, BI and analytics

SOL4.9: Logical Data Warehouse (LDW) that virtually adds new data sources to an existing data warehouse

SOL4.4: Interoperability, e.g., HIE

SOL4.5: Micro-services Architecture

SOL4.6: Event Processing/Driven Architecture

SOL4.10: Highly curated data provisioning to reporting, BI and analytics Big Data and other analytics

Eventual App Query Transform and Inverse Results Data Transform

APIs Configuration

Near real-time Updateable Hierarchical and Other Indexed Views

SOL4.11: Virtual graph database and graph visualization

SOL4.3.1: Patient/ customer provides healthcare providers/others access to own data

Unique Key II Biometric?

SOL4.12: EU General Data Protection Regulation (GDPR)

Write -back

HEALTHCARE-SPECIFIC:

SOL4.13: Match prescriptions to diagnoses

SOL4.3: Patient/ customer access to own data

SOL4.2: Interactive link analysis and visualization

Unique Key I

SOL4.14: Match late-stage cancer critically ill patients with clinical trials

SOL4.15: Combine genomics with healthcare data for analytics and personalized care

SOL4.1: Selective indexing and queries on own patients/customers

Selective CDC

SOL4.16: Patient/ Disease/Implant Registry

SOL4: Integration of data sources for a single customer/employee/patient and other perspective views	
Master Data/Patient Index	
Link Mapping	
SOL3: Basic Integration of multiple data sources	
Standard Data Model Mapping	
SOL2: Improved query performance out of a single database/data warehouse	
Independent Indexes and Indexed Views	

C O N F I G U R A T I O N

D A T A   S E C U R I T Y

SOL5: Data Security

Data Quality	Data Masking and Tokenization	Text Categorization	Entity Extraction	Other Text Analytics

SOL1: Automatic Data Discovery and Classification

Device/Processes/Apps/Users/Data Discovery	Data Profiling	Distributed Metadata Repository	Data Security Classification

Optional Data Lake – Centralized or Distributed

Internal and/ or External Data Sources

Mainframes	Databases	Data Warehouses	Files	Logs	Office docs	Applications	Email	Web docs	Social media	Big Data	Streaming	Cloud	IoT

Hybrid SmartData Lake that accesses data stored in sources, in copies or in indexes

About WhamTech, Inc.

WhamTech, Inc. (WhamTech) is a privately-held US-owned Delaware Corporation established in October 2000 and based in Dallas, Texas. WhamTech's mission is to develop indexed adapter-based data virtualization, federation integration and interoperability technology software products. WhamTech develops these products to anticipate, meet and exceed the demands of customers seeking an alternative to the conventional approaches of data warehouses, federated data access with conventional adapters and enterprise search. Our goal is to provide a better and more seamless way to work with data, by changing the way data is accessed, analyzed, integrated, shared and interoperated. WhamTech adapter products are based on independent, cleansed indexes that execute both structured and unstructured queries for data warehouse capabilities, including results when data sources are unavailable and for archive.

Information on WhamTech solutions, products, technologies, services, sales, and partnership and investment opportunities can be obtained through whamtech.com.