Service Definitions

The Surveillance Leadership Board's Platform Workgroup developed basic definitions for each of the initially identified 28 services. These Services were captured through consolidating a larger list from the Phase 1 Landscape Analysis.

As part of Phase 2, the 2016 Landscape Analysis findings will be updated and validated to ensure that it remains relevant and continues to address the major pain points. Outputs of this analysis will support the development of an integrated five-year Roadmap that lays out a comprehensive inventory of existing and planned services, the platforms, and a timeline of activities for the SDP Program. This will further create a shared services environment, in which, essential services provide valuable support for public health surveillance activities.

Analysis and Visualization Tools	Provide coordinated procurement and access to multiple analysis and visualization tools in a consistent and easy to use manner. Provide systematic method of evaluating and prioritizing new and emerging tools demanded by CDC scientists for inclusion in tools available. Provide guidance and assistance with use of tools. Example tools include SAS, R, R-Shiny, Tableau, Excel.	Data Analysis and Visualization	3
Collaborative Tools	Web conferencing and meeting software to assist in communication, coordination, development and use of services. Existing services include SharePoint, Skype/Lync, AdobeConnect.	Core	4
Consultation	Human resources to provide support for activities such as balloting, standards development, help-desk. This may have potential linkages to the Technical Assistance and Consultative Services service but was determined by the workgroup to be different enough to keep as separate services.	Core	3
Data Management and Storage	Extraction, transformation, and loading of data across CDC. Transforming of data from one format to another. Review and curation of data for quality checking and analysis. Secure and encrypted data storage. Example services include Consolidated Statistical Platform (CSP).	Core	3
Decision Support	Systematic sharing of feedback, guidelines, and quality improvement tools in both human readable and machine readable formats. Used by variety of external users including healthcare, immunization registries, cancer registries. Implementation of decision support tools could also help increase data completeness and accuracy.	Data Sharing and Dissemination	4
Enterprise Licensing	Coordinate and procure licensing, provide training and support, and support use of integration engine and other commonly used software products for states and other partners to process and send data to CDC. Existing products include OrionHealth Rhapsody. May include open source products that require support, such as Mirth.	Data Collection and Submission	2
Evaluation	Ongoing evaluation of platform services and other surveillance activities checking service requirements against performance measures. Includes both evaluation within a service and across services.	Core	4
Extract, Transform and Load (ETL)	Provisioning of data for access and use. Making data available in the appropriate location and format for use by epidemiologists, statisticians, and other users. Transforming of data and data sets from one format to another based on user preference and need, including combining, separating, and creating views of data. Ensures lossless access to all data sent by jurisdiction and required by programs, including both total number of records submitted as well as all fields submitted for each record. Supports import from and export to common data standards, formats, and systems (e.g., SQL, SAS, R, XML, RDF, CSV, JSON). Support adapters for transforming to and from formats supported by public health software vendors (e.g., Atlas, Maven) to send and receive messages. Existing services include BizTalk, Mirth, Rhapsody.	Data Parsing, Provisioning, Fusing, Linking and Preparing	3
Geocoding	Convert and clean addresses into geographic coordinates for mapping and spatial analysis. Provide geographic lookup services to identify census tract, zip code, city, and county by address or coordinates. Provide access to external partners for use within public health systems as well as internal CDC usage.	Data Parsing, Provisioning, Fusing, Linking and Preparing	3
Geospatial Analysis	Enterprise geospatial information system data access and sharing. Enables sharing of data layers and	Data Analysis and Visualization	4

	subscription service of maps, data, imagery, and analytics. Allows asynchronous sharing of processed datasets and analysis from multiple programs and stakeholders. Provides easy search and discovery of geospatial data and services. Comparable and convertible methods. Example services include GRASP.		
Linkage	Connecting data sets and data records based on simple direct matches, probabilistic matches. Supports use of cryptographic hashes for linking without revealing PII/PHI. Support applications and training (e.g., LinkPlus).	Data Parsing, Provisioning, Fusing, Linking and Preparing	4
Message Mapping Guide Development	Consultative service to assist programs to identify necessary data elements and create clear documentation and message standards that define the layout, structure, and content of messages. While terminology is specific to HL7, message mapping guides apply to any service or activity that requires a defined data dictionary and message format for exchange. Output of service includes both human understandable and machine understandable guides. Manages changes to guides through a versioning process. Existing services include the NNDSS Modernization Initiative Message Mapping Guide activity.	Data Collection and Submission	3
Message Testing and Validation	Review and validate incoming public health surveillance data, messages, and documents for validity by confirming syntax, semantics, and adherence to defined logical rules. Allows for definition of validation rules per message and topic. Allows for direct customization of rules by investigator and/or public health program. Supports messages using defined data standards (e.g., HL7, CDA, FHIR) as well as ad hoc (e.g., CSV, XML, JSON). Includes web-based testing harnesses to allow submitters to prepare for onboarding by self-assessing against structure, vocabulary, and business rules. Example services include Message Validation and Provisioning System (MVPS), Message Quality Framework (MQF), Message Evaluation and Testing Service (METS).	Data Parsing, Provisioning, Fusing, Linking and Preparing	2
Metadata Portal	Web site that allows for authoring and lookup of metadata related to data or platform services. Potential linkage to the Repository, Registry, and Catalog service.	Data Sharing and Dissemination	4
Metrics and Indicators	Repository of small-area descriptors (e.g., population counts, socioeconomic and health indicators, environmental hazards, crime and safety, etc.)	Data Analysis and Visualization	4
Natural Language Processing	An example application could include machine code occupation and industry information pulled from unstructured industry and occupation text that returns standard codes. Example applies to cause of death and cancer pathology. Another example would be to implement a multi-lingual Semantic Analysis Service to support contextual search and query of large unstructured textual products or databases. This capability could be used to process FOIA requests, filter e-mails and documents; provide contextual analysis of databases or social media, or do automatic redaction of sensitive reports or textual products. Support real-time risk communication of messaging. Potential to analyze Electronic Medical Records for indicators or patterns. Example services include Vital Stats' Validation and Edits Web Service (VIEWS).	Data Parsing, Provisioning, Fusing, Linking and Preparing	4
Partner and Public Access to Data	Easy to access data sets published by public health programs in variety of formats. Each data set is described and searchable. Easy to use dashboards, reports, and web-based analytic tools providing both aggregate and granular data. Supports both data sets and reports. Existing tools include Socrata (e.g., data.CDC.gov, chronicdata.cdc.gov), WONDER, WISQARS.	Data Sharing and Dissemination	2
PII and PHI Scrubbing	Automatically identify and redact potentially identifying or sensitive information. Note: machine learning techniques may be duplicative with NLP service above. Example services include MITRE Identification Scrubber Toolkit (MUST).	Data Parsing, Provisioning, Fusing, Linking and Preparing	2

Public Health Decision Support	Ability to remotely invoke/access case definitions and other public health algorithms. Ability to process message and data specific business rules for use in validation, transformation, routing, linking, and other purposes. Case calculation using configurable case definitions by disease, public health program, or jurisdiction.	Data Parsing, Provisioning, Fusing, Linking and Preparing	4
Reference Data	Facilitated access and use of reference data sets (e.g., numerator, denominator, acquired, or public data sets). Coordinate best practices and standards for denominator data sets used by public health programs. Provide accessible denominator data sets used by programs, including commonly used data sets such as Census (e.g., MSA, FIPS, DateState County, RaceAgeYear). Include predetermined indicators. Allow for authoring and review of denominator data sets.	Data Analysis and Visualization	2
Repository, Registry, and Catalog	Metadata and master data management. Directory of all data elements used by platform services. Collects form, template, and data collection instrument definitions. Supports data consistency across applications and messages. Question bank of harmonized and non-harmonized questions and data elements linked to data set, service, and surveillance activity. Includes data and messaging standards. Includes source code and issue tracking metadata (e.g., Jira, TFS, Github).	Core	2
Routing	Moving of data to location based on defined rules. Allows for single data submission to be sent to appropriate program or group within CDC based on data type, data content, or other defined rules. When combined with ETL services, can move subsets of larger messages to provide only the data of interest to a particular program or area within CDC. Example services include APHL Informatics Messaging Services (AIMS) Hub.	Data Parsing, Provisioning, Fusing, Linking and Preparing	1
Secure Data Exchange	Reliable transport of data and information from a diverse set of sending partners over the public internet using appropriate security and encryption to protect data in transit and at rest. No proprietary software should be required by sending party. Able to support common transmission types and protocols. Serve as a data receiver that supports multiple formats and transport protocols. Data is then made available to appropriate follow on service for routing, processing, or storage. Existing services include PHINMS, Direct Project, SAMS File Upload, Secure FTP.	Data Collection and Submission	1
Security	Identity proofing and authenticating users to allow them to access other services. While this is also a design principle for the platform and services, this is a dependency to almost all other services within platform that require restricted access. FIPS 140-2 validated symmetric key encryption capability for web and mobile devices with automated key management to allow for encryption of data by partners and other services. Includes authorization, key management. Existing services include CDC SAMS, OCISO Incident Response, OCISO Security Assessment and Authorization.	Core	1
Structured Data Capture (Data Collection Tools)	Support of the ONC Structured Data Capture initiative to access templates that contain structured data within an Electronic Health Record, automatically populate template with existing common data elements from the EHR, collect data from a user in addition to the common data elements, and transmit the completed form to the appropriate organization. Allows a standardized method for data collection from EHR and deployment of relevant public health forms to EHR.	Data Collection and Submission	3
Technical Assistance and Consultative Services	Assistance to CDC and partners in use of services, tools, and data. Example services include Security Awareness Training. Provides email and telephone support to triage problems and provide limited technical assistance. Provide support metrics for other service usage.	Data Sharing and Dissemination	4
Vocabulary	Online authoring, editing, searching, and distributing public health system codes, rules, and value sets. Connect with and link to existing standards (e.g., ICD, LOINC, SNOMED) through NLM/VSAC. Web-based access with both human and machine understandable interfaces. Versioning of all material. Notification and subscription to monitor changes. Allows programs to know whether standards exist for how questions are asked and answered so new options are only created if not available. Common lexicon for surveillance efforts, types, activities frequency, sources, data, and partner	Core	2

	information. Ability to develop schema files and transmission services using common code sets. Existing services include PHINVADS, NHSN, NLM Value Set Authority Center.		
Vocabulary Translation	Automatic translation between different vocabularies and value sets. Includes automatic transformation of medical billing codes to standard formats.	Data Parsing, Provisioning, Fusing, Linking and Preparing	3
Web Data Collection (Data Collection Tools)	Form-based data collection through a web site. Supports ability for investigators to design and publish instruments to partners for data entry. Data exported in common standard for analysis in variety of tools (e.g., SAS, R). Example services include EpiInfoWeb, REDCap.	Data Collection and Submission	3