Cancer Prevention Works

Cloud-based Solution for Real-time Reporting of Cancer Data

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CDC/NPCR Program Review

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Problem Statement, Need, and Solution

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Problem Statement

- Current data collection and reporting methods are hindered by manual processes
- Result is inherently needless time lags and costly inefficiencies

Overarching need for more timely cancer incidence data for

- Faster identification of cancer cases for evaluation and improvement of cancer control strategies
- Better-informed decisions about where resources need to be allocated for cancer prevention, control, and treatment

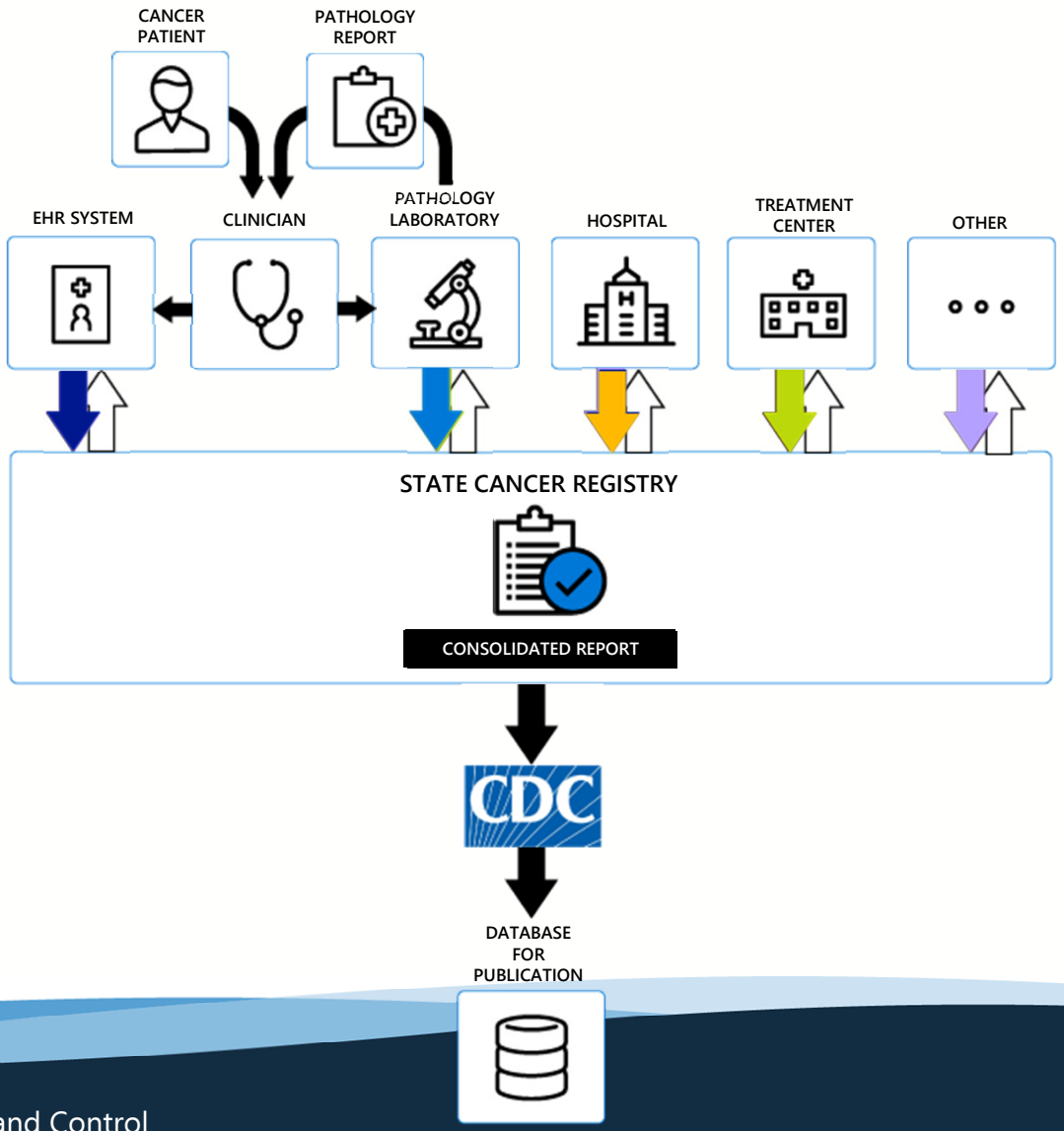
Solution

- Removal of inefficiencies to move from publishing on 24 month to real-time data
- Use of cloud-based platform to achieve real-time reporting to the central cancer registry

Current State

Current State:

National Program of Cancer Registries (NPCR) Information Flow



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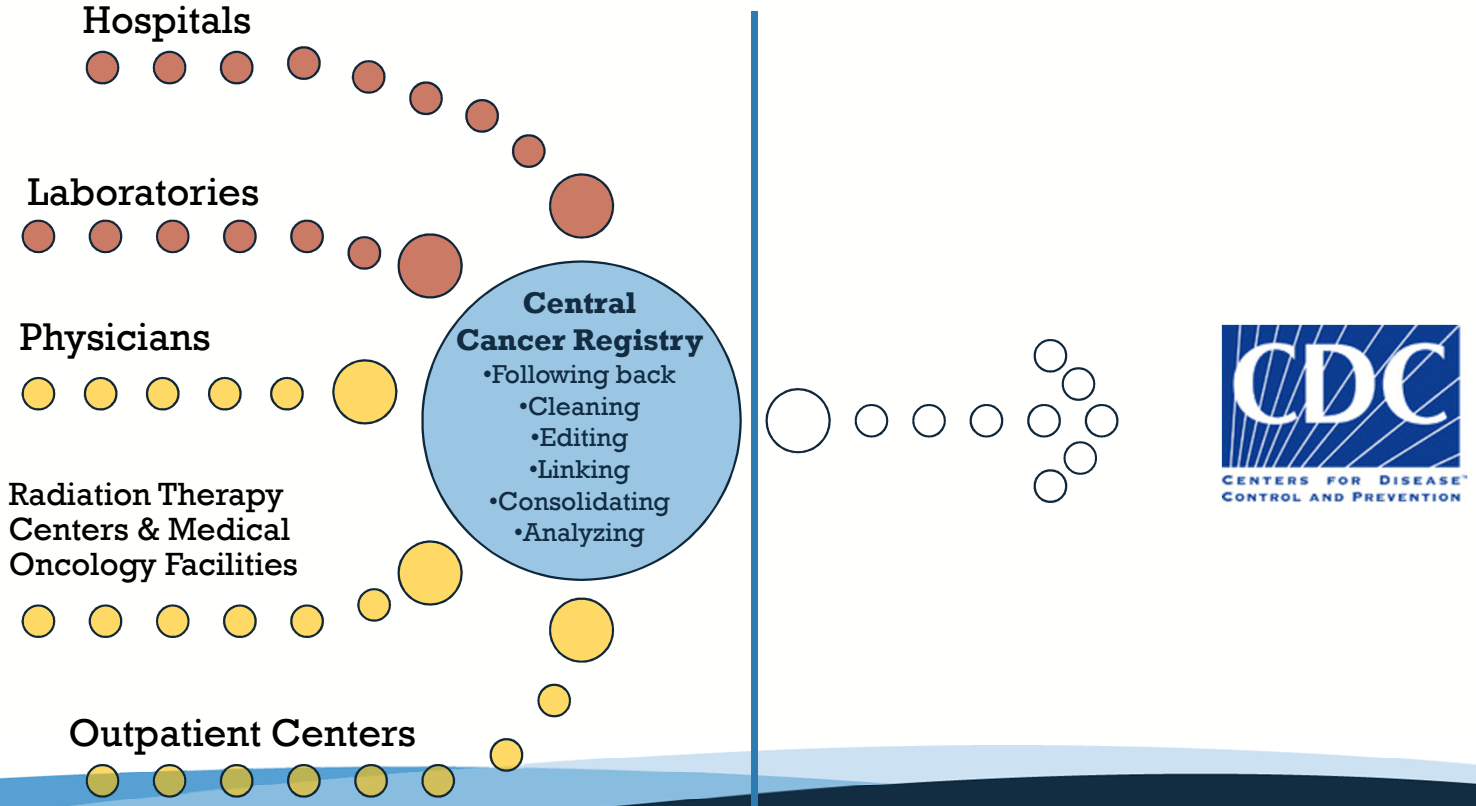

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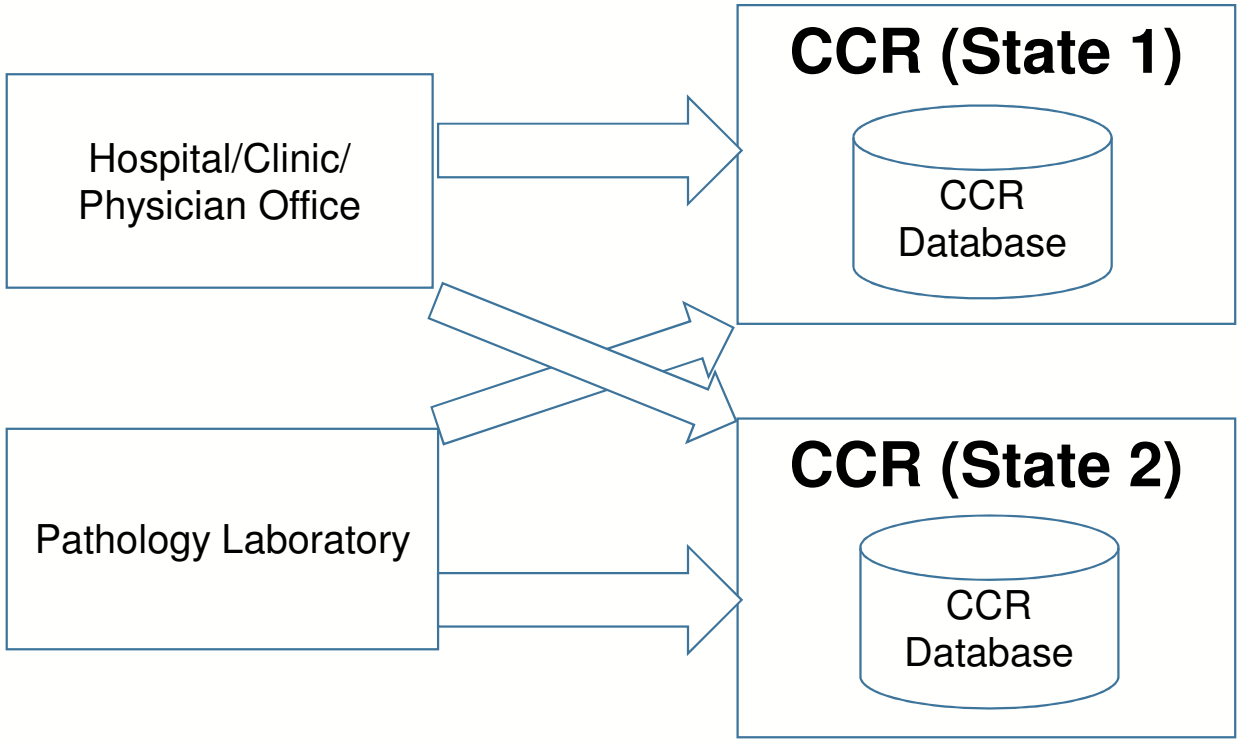


Future State

Future State: Cloud-based Computing Platform (CBCP) for Real-Time Reporting

Advantages

- Shorten time from case identification to completed incidence record available in CCR database
- Shift CCR staff work to spend less time on file processing, running multiple separate applications, and tracking down missing data, to more productive tasks

Vision

- Labs send electronic pathology reports in real time to cloud-based service
- Service automatically processes these reports by extracting and coding salient data elements

Future State: Cloud-based Computing Platform (CBCP) for Real-Time Reporting

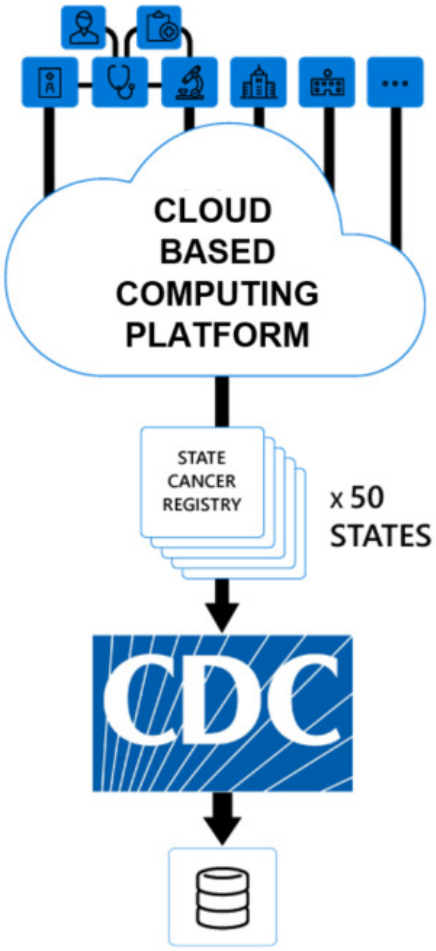
CBCP initiates abstracting process by automatically notifying the ordering facility to request that they complete partial abstract created by CBCP

Facility completes abstract via the cloud service(s)

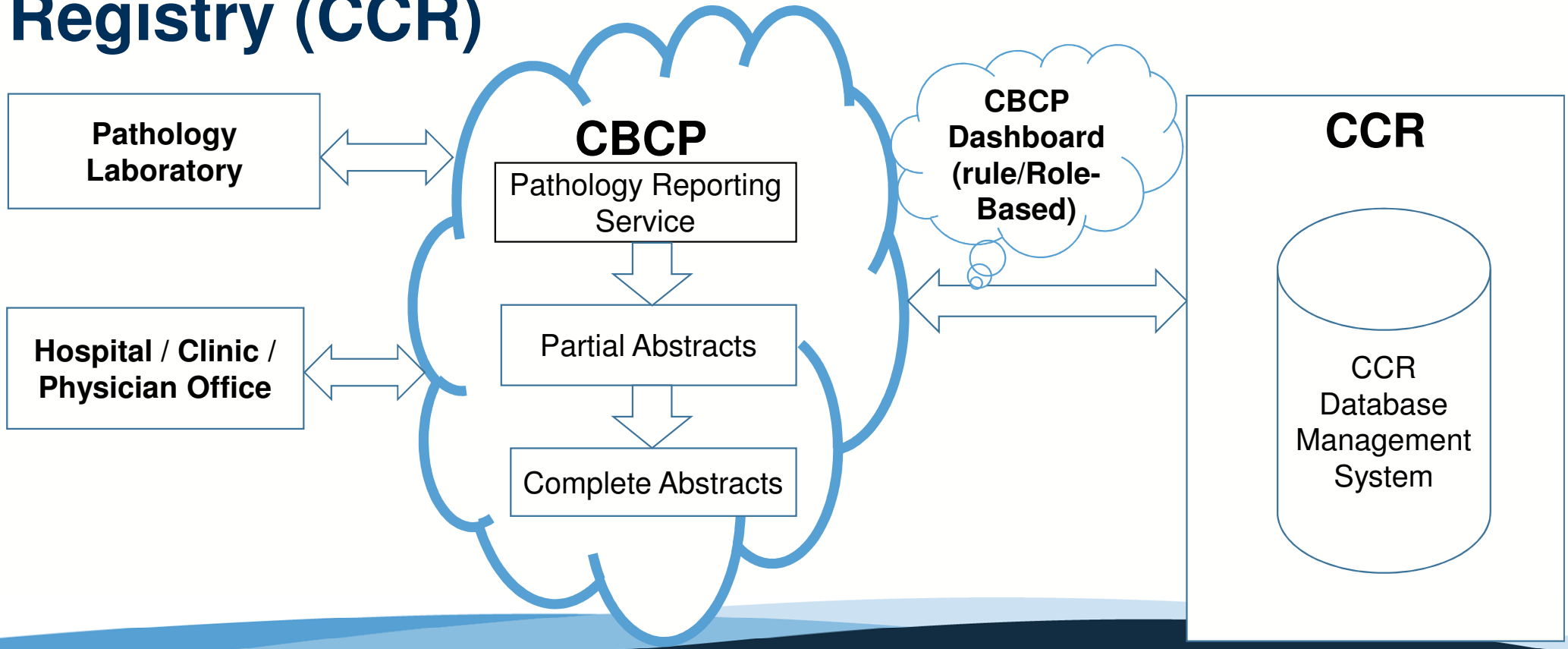
Dashboard interface to monitor abstracting and automatically send completed abstract to CCR, where it enters the usual reporting stream.

- For these reports, minimal to no CCR staff time is needed

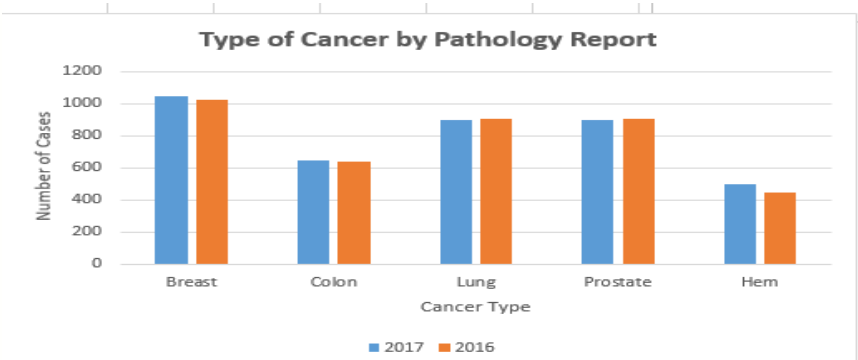
Future State: Cloud-based Computing Platform (CBCP) for Real-Time Reporting

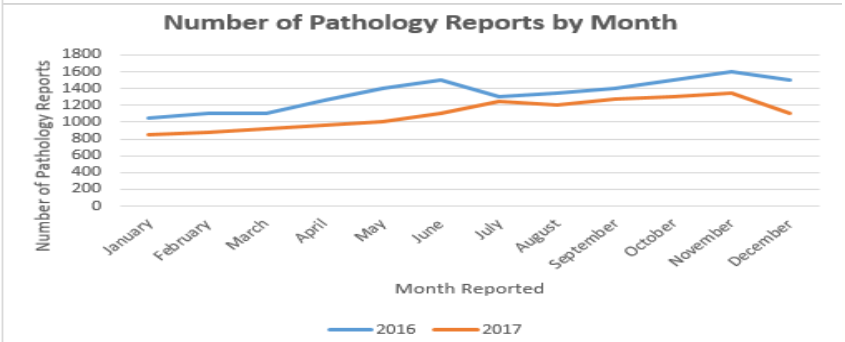


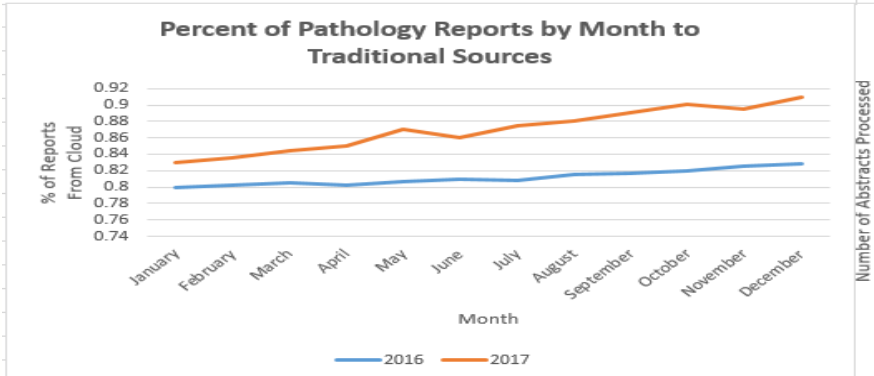
Future State: Cloud-based Computing Platform (CBCP) for Follow-Back by the Central Cancer Registry (CCR)

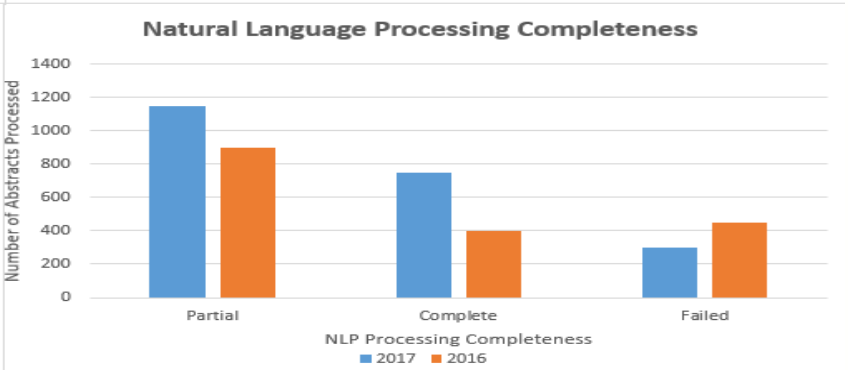


Future State: Dashboard Example









CBCP for Real-time Reporting Advantages

CBCP for Real-time Reporting Advantages

Coordinated funding	No siloed projects	Shared governance
Vetting of innovative concepts	Unified interface and single portal for pathology laboratories and EHR vendors	Reduced costs: cost sharing and lower direct costs
Native advanced security	Language neutral	Service can be used by other disease domains

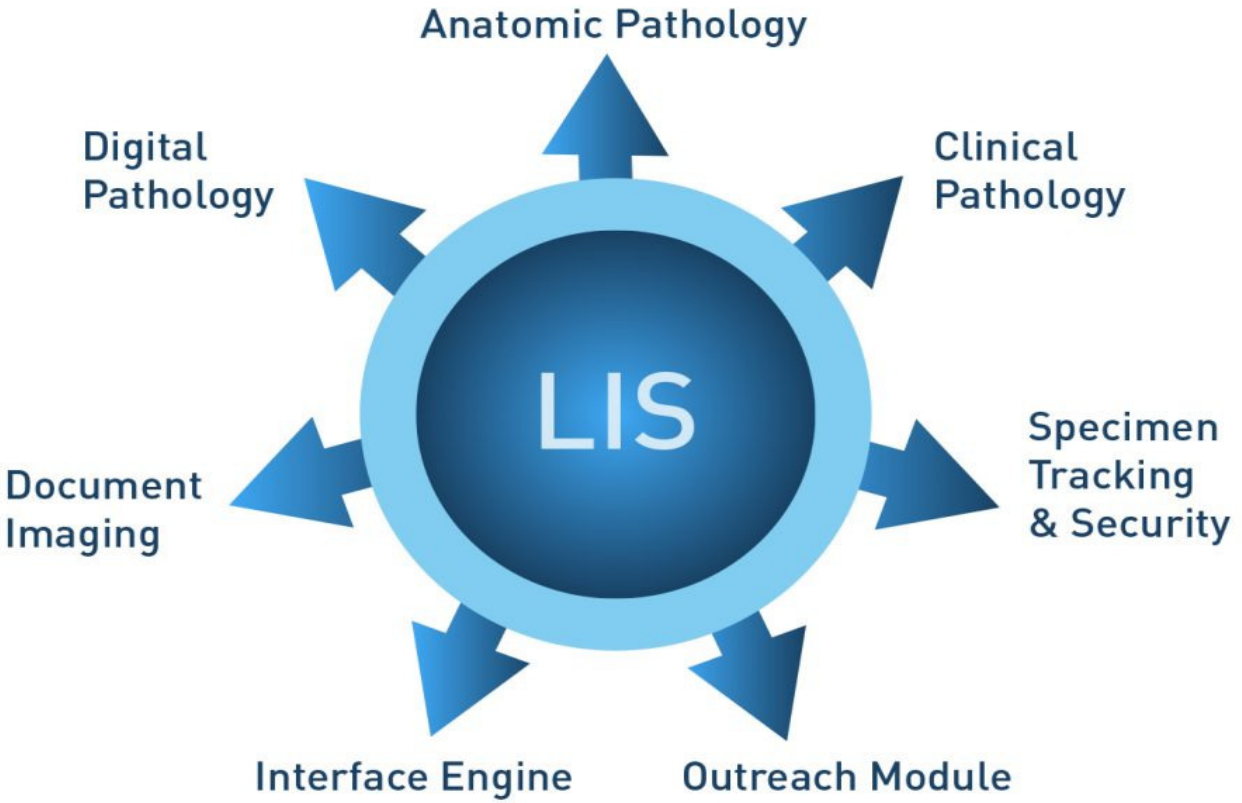
Shared Services

Cancer Surveillance Modernization

A cloud-based Platform of **shared services** allows different organizations to develop and support a **service**. These services can work in concert as a **fully functional system**.

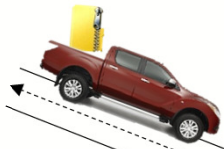
Cloud Services		Cancer	Other Disease Domains
	Laboratory Information System Interface	X	X
	Data Transport Service	X	X
	NLP/Machine Learning Service	X	X
	Patient Matching, Record Linkage, and Deduplication	X	X
	ePath Report Processing / Analysis	X	X
	EHR Report Processing / Analysis	X	X
	Web-based Abstracting Service	X	X
	Interface with Vendor-based Hospital Registry	X	X

Laboratory Information System Interface Service



Data Transport Service

Pathology Laboratories

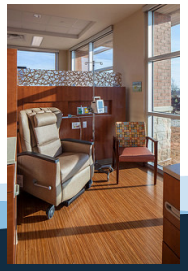


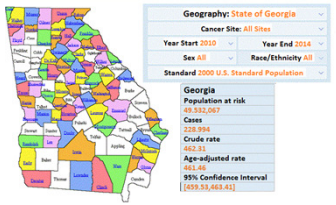
Physician Offices/ Ambulatory Providers

CBCP

Hospitals

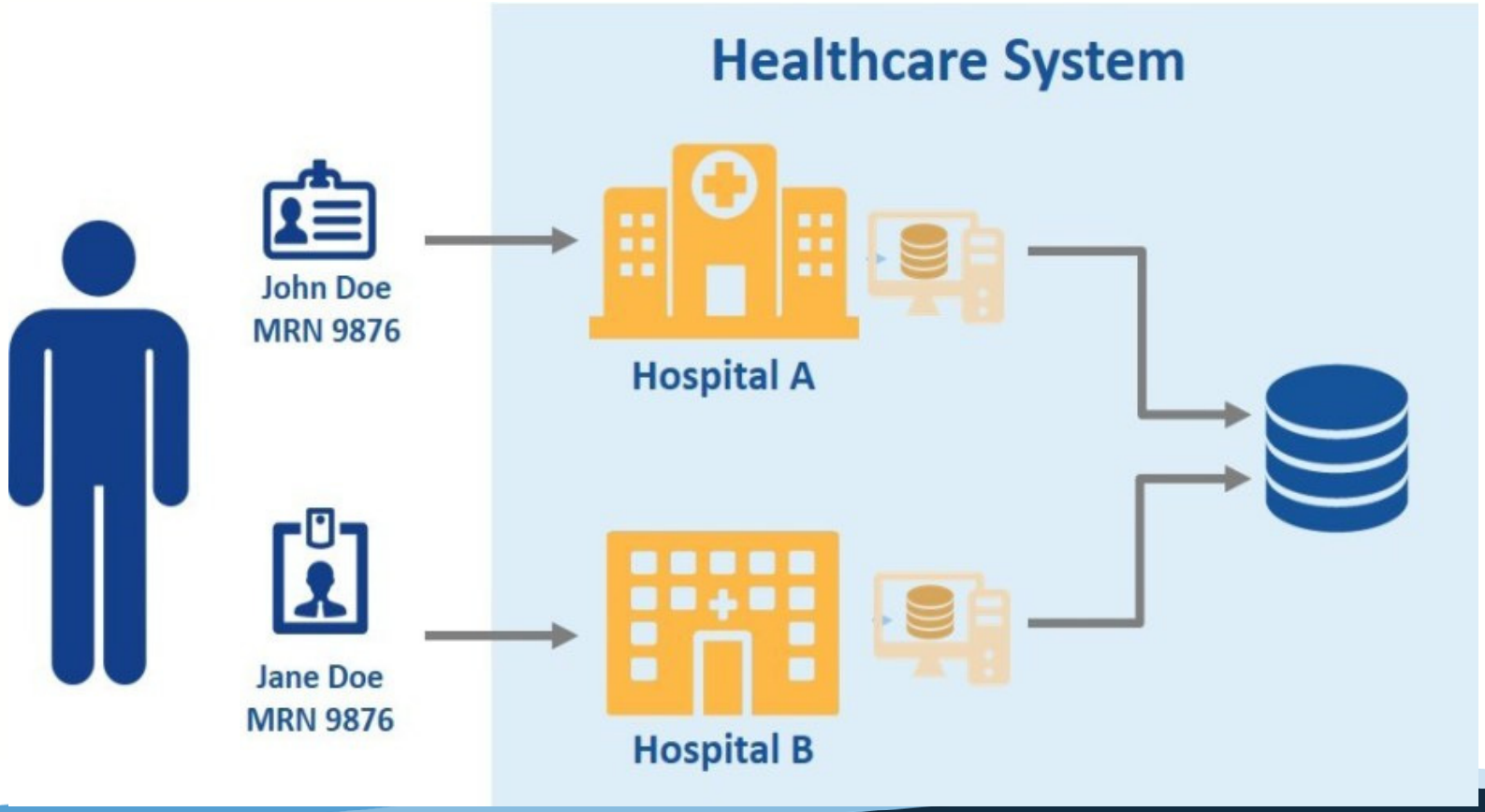
Radiation Therapy Centers & Medical Oncology Facilities





State Central Cancer Registries

Patient Matching, Record Linkage, and Deduplication Service



Web-based Abstracting Service

Web Plus

Any State Cancer Registry
email: WebPlusHelp@state.gov
999-999-9999

Home | New Abstract | Find/Open Abstract | Release Abstracts | Reports | Change Password | Help | Log out

Update abstract

All data items marked with an asterisk (*) are required.

GradeClin	2
GradePath	2
GradePost	
Diagnostic Confirm.	1
Reg Nodes Positive	98
Reg Nodes Exam	00
LVI	0
SchemaDisc1	
SchemaDisc2	
AJCCID	XX
SchemaID	00580

STAGE OF DISEASE

Summary Stage 2018	1
Summary Stage 2000	
Summary Stage 1977	
TumorSizeSumm	999
TNMEdition	08

TEXT - DIAGNOSIS

Physical Exam

PT PRESENTED IN 2018 WITH ABNORMAL DRE & HIGHPSA. HAS HAD URINARY SYPTOMS

Lab Tests

Save — Click to save the abstract and run data Edits. See th

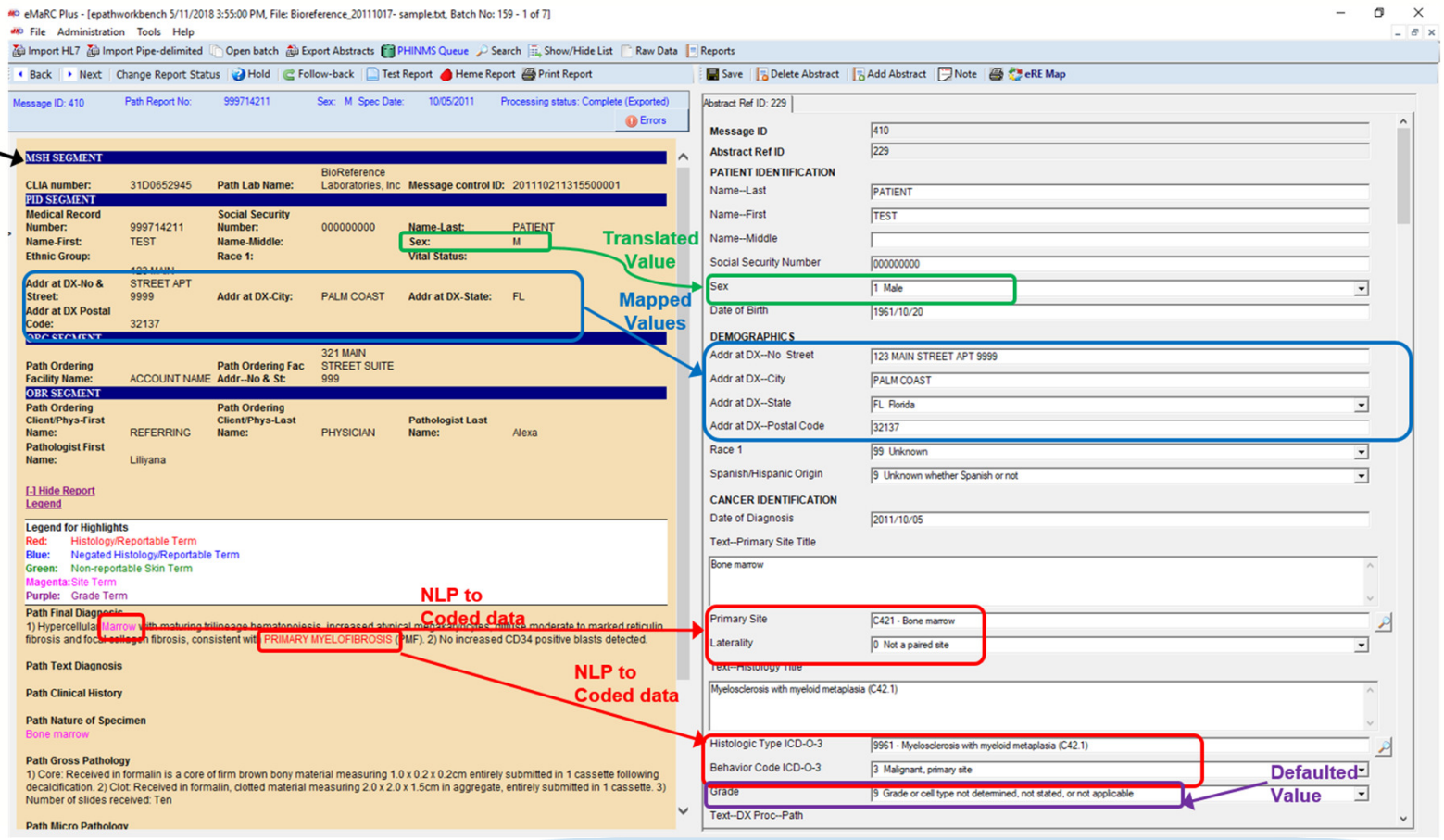
Summary Stage 2018 - Internet Explorer

Select a code from the table below:

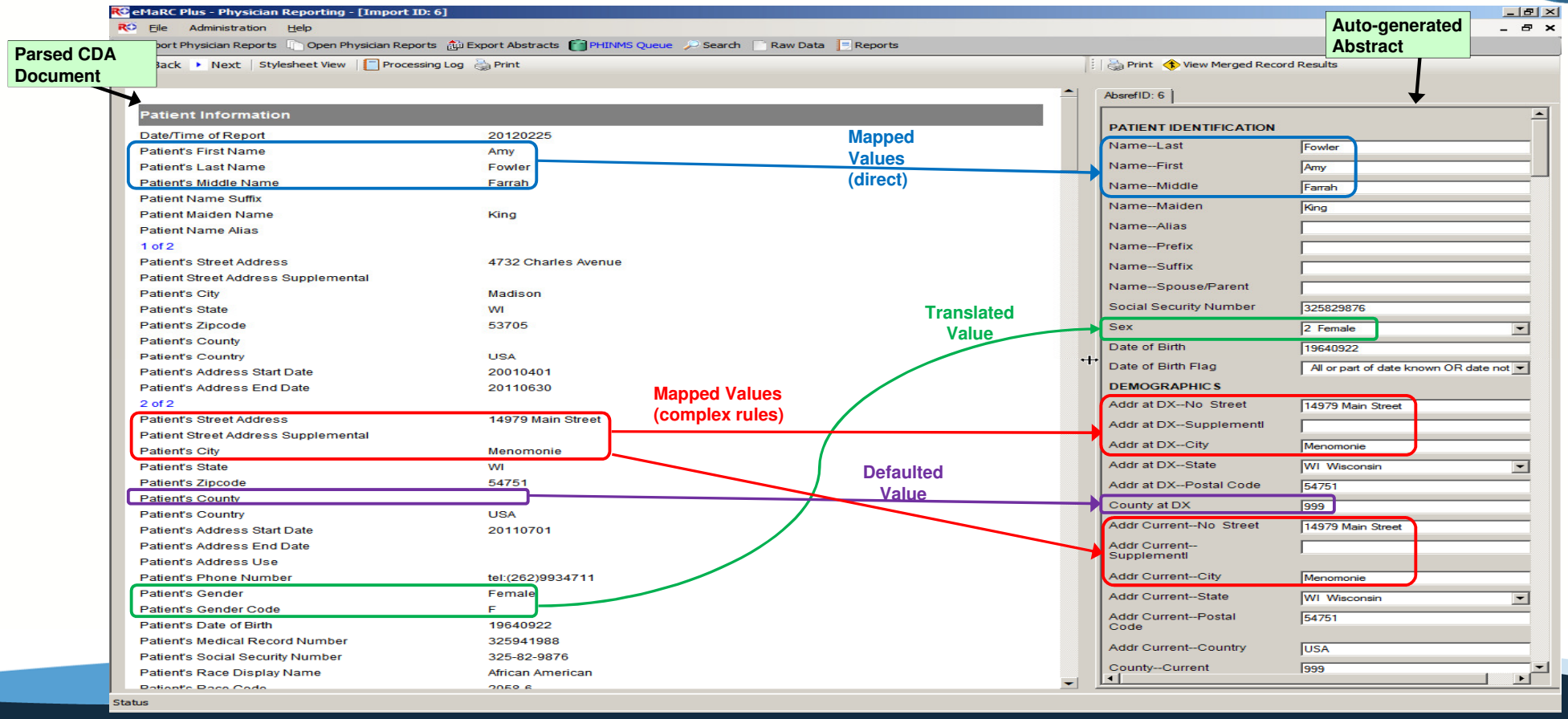
Prostate 8000-8700, 8720-8790, 9700-9701 C619 C619 Prostate gland **Note 1:** The following sources were used in the development of this chapter * SEER Extent of Disease 1988: Codes and Coding Instructions (3rd Edition, 1998) (https://seer.cancer.gov/archive/manuals/EOD10Dig.3rd.pdf) * SEER Summary Staging Manual-2000: Codes and Coding Instruction (https://seer.cancer.gov/tools/ssm/ssm2000/) * Collaborative Stage Data Collection System, version 02.05: https://cancerstaging.org/cstage/Pages/default.aspx * Chapter 58 *Prostate*, in the AJCC Cancer Staging Manual, Eighth Edition (2017) published by Springer International Publishing. Used with permission of the American College of Surgeons, Chicago, Illinois. **Note 2:** See the following chapters for the listed histologies * 8710-8714, 8800-8934, 8940-9137, 9141-9582: *Soft Tissue* * 8935-8936: *GIST* * 9140: *Kaposi Sarcoma* **Note 3:** See the *Urethra* chapter for transitional cell (urothelial) carcinoma of the prostatic urethra (C680). **Note 4:** Assign code 1 when there is only a TURP. **Note 5:** Imaging is not used to determine th clinical extension unless the physician clearly incorporates imaging findings into their evaluation. **Note 6:** If there is no information from the DRE, but the physician assigns a clinical extent of disease, the registrar can use that. * *Example:* DRE reveals prostate is "firm." Physician stages the patient as a cT2a. The T2a (localized) can be used since the physician has documented this. **Note 7:** Involvement of prostatic urethra does not alter the Summary Stage code. **Note 8:** "Frozen pelvis" is a clinical term which means tumor extends to pelvic sidewall(s) (code 7). **Note 9:** When prostate cancer is an incidental finding during a prostatectomy for other reasons (for example, a cystoprostatectomy for bladder cancer), use the appropriate code for the extent of disease found.

SS2018	Description
0	In situ, intraepithelial, noninvasive
1	Localized only (localized, NOS) - Clinically apparent or inapparent tumor - Confined to prostate, NOS - Intracapsular involvement only - Invasion into (but not beyond) prostatic capsule - No extracapsular extension - One or more lobes involved
2	Regional by direct extension only - Bladder neck - Bladder, NOS - External sphincter - Extraprostatic/extracapsular extension (beyond prostate capsule), unilateral, bilateral, NOS - Extraprostatic urethra (membranous urethra) - Fixation, NOS - Levator muscles - Periprostatic tissue - Rectovesical (Denonvillier's) fascia - Rectum - Seminal vesicles - Skeletal muscle - Through capsule, NOS - Ureter(s)
3	Regional lymph node(s) involved only - Hypogastric - Iliac, NOS + External + Internal (hypogastric) (obturator), NOS - Pelvic, NOS - Periprostatic - Sacral, NOS + Lateral (laterosacral) + Middle (promontory) (Gerota's node) + Presacral - Regional lymph node(s), NOS + Lymph node(s), NOS
4	Regional by BOTH direct extension AND regional lymph node(s) involved - Codes (2) + (3)
7	Distant site(s)/lymph node(s) involved - Distant site(s) (including further contiguous extension) + Bone + Extension to or fixation to pelvic wall or pelvic bone + "Frozen pelvis", NOS + Other organs + Penis + Sigmoid colon + Soft tissue other than periprostatic - Distant lymph node(s), NOS + Aortic (lateral [lumbar], para-aortic, periaortic, NOS) + Cervical + Common iliac + Inguinal (deep, NOS) * Node of Cloquet or Rosenmuller (highest deep inguinal) * Superficial (femoral) + Retroperitoneal, NOS + Scalene (inferior deep cervical) + Supraclavicular (transverse cervical) - Distant metastasis, NOS + Carcinomatosis + Distant metastasis WITH or WITHOUT distant lymph node(s)
9	Unknown if extension or metastasis

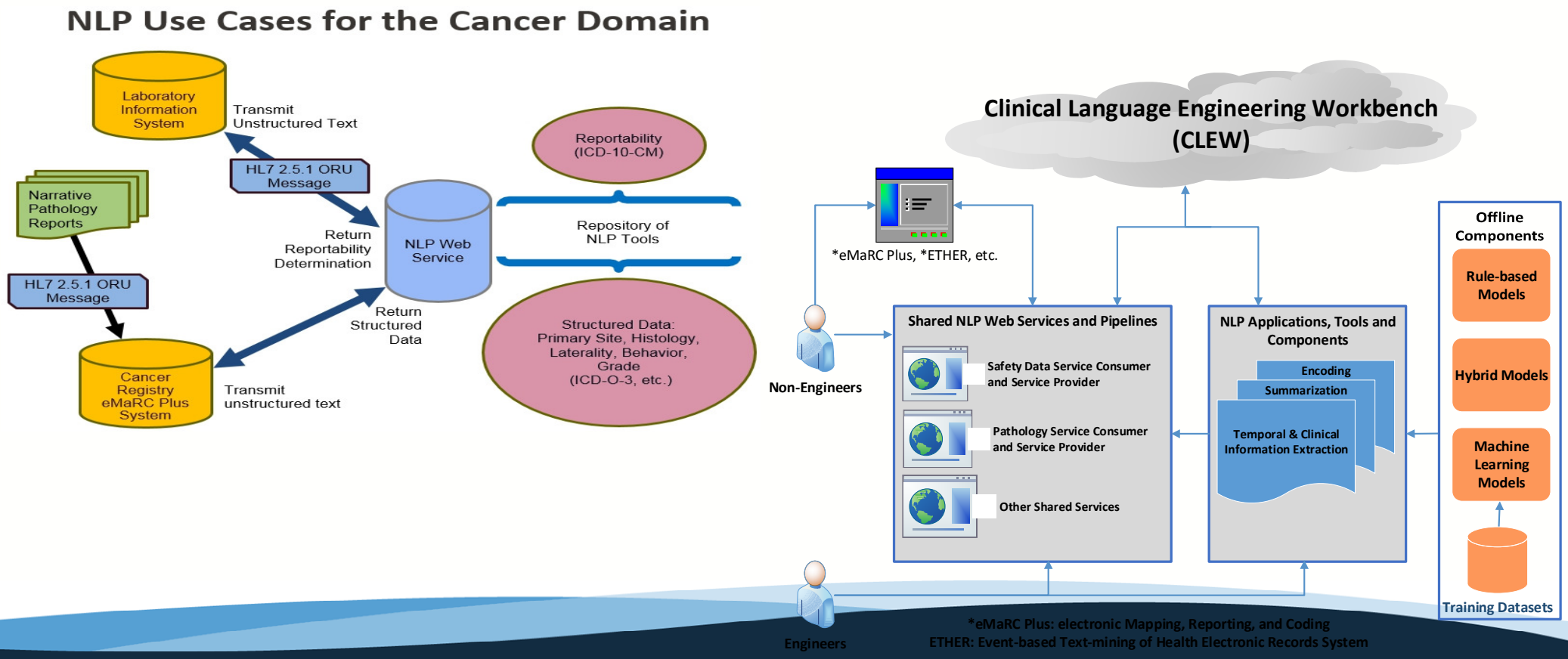
ePath Report Processing/Analysis Service



EHR Report Processing/Analysis Service



NLP/Machine Learning Service



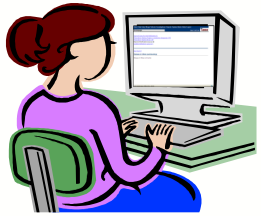
Interface with Vendor-based Hospital Registry Service

Hospital A Cancer Registry

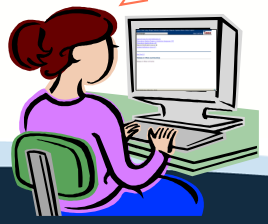
SERVICES

- Abstracting
- Follow-back
- Structured Data Capture

State A Central Cancer Registry



Hospital B Cancer Registry



State B Central Cancer Registry

Value of the Cloud and Real-time Data

Value of the Cloud and Real-time Data

- Much faster identification of cancer cases to evaluate and improve cancer control strategies and program planning
- Find out what interventions work or don't and adjust quickly
- Better-informed decisions about where resources need to be allocated
- Timelier identification of cancer patients cases for clinical trials
- Quickly identify where research needs are
- A model for real-time reporting of other chronic and infectious disease data

QUESTIONS?
COMMENTS?

Central Cancer Registry (CCR) Question and Answers

- Q: Where is the data stored in the cloud and for how long?

- A: When a request for proposal (RFP) is issued, the standards for server use and location can be stipulated. The CCR can determine how long that data is stored in the cloud (rule-based levels).

Central Cancer Registry (CCR) Question and Answers (continued)

- Q: Where is the data stored in the cloud and for how long?

Best	Consolidate reports from multiple facilities and route to CCR database management system
Better	Parse report, create a partial abstract, prompt a single facility to complete the abstract, route to CCR database management system
Good	Parse report and route to CCR database management system

Central Cancer Registry (CCR) Question and Answers (continued)

- Q: How will the cloud be governed and how will data access be controlled?

- A: A governance team will be made up of CCR representatives and other stakeholders. The CCR will have full control of their data via roles set up for each CCR administrator.

Central Cancer Registry (CCR) Question and Answers (continued)

- Q: What role will the CCR and CCR database management system have once the cloud is fully implemented?

- A: The CCR and its database management system will continue in its current role; however, the focus will be on case-finding, linking, consolidation, and quality control efforts. The cloud will focus on automating upstream processes and creating real-time data access.

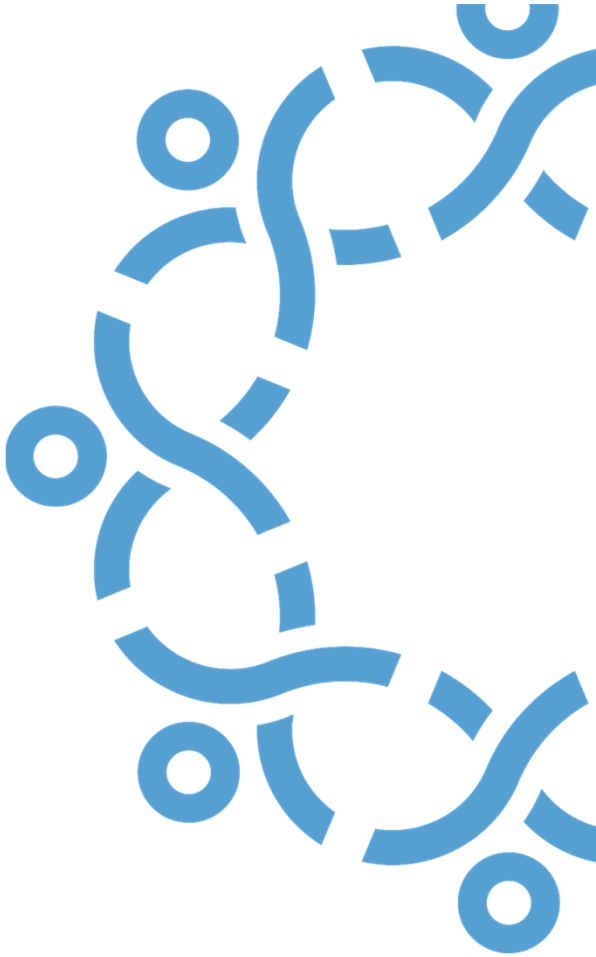
Project Leadership:

- Wendy Blumenthal, MPH, Health Scientist
- Sandy Jones, Public Health Advisor

Action is the foundational key to all success.
Imperfect Action is Better than Perfect Inaction
Success consists of going from failure to failure without loss of enthusiasm

"The best way to predict your future is to create it"

— Abraham Lincoln



Thank you!

Go to the official federal source of cancer prevention information:
www.cdc.gov/cancer

Cancer Prevention Works

Division of Cancer Prevention and Control

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