Providing continuity of Veteran Care during EHR Modernization and beyond

VISTA Data Project

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- Leverages DoD-developed EHR migration and decomssioning technology
- Leverages Federally-Certified Commercial Cloud technology
- Provides security, audit, analysis, and migration for *all* veteran data
- Supports rapid, reliable, and complete retirement of VISTA systems
- Provides Veteran-specific Integrated Cloud Care and Services (VICS)
- Execution 2016-2018

http://vistadataproject.info
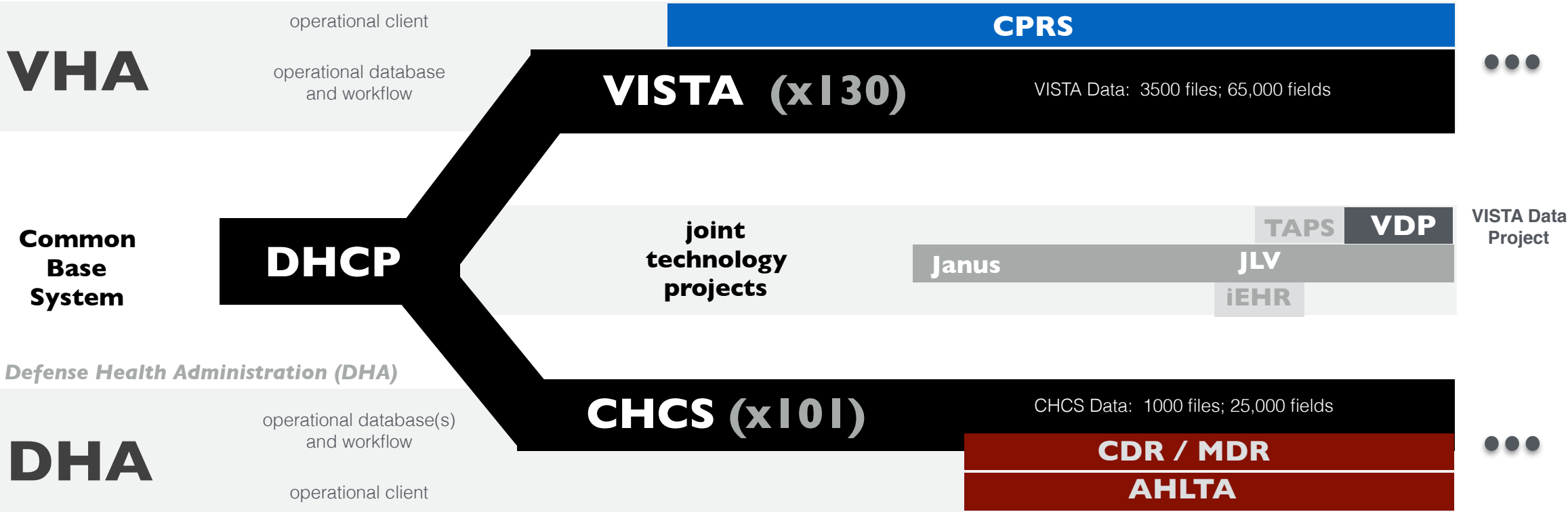
VHA-DHA Health IT Architecture

DHCP is the common base system

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VHA: 151 hospitals; 820 clinics; 300 vet centers; + other (total 1700 care sites)
DHA: 57 hospitals; 350 clinics + other

VHA: 130 VISTA systems operational (since 1981)
DHA: 101 CHCS systems operational (since 1985)
Total: 231 DHCP-based systems across VHA-DHA

- ■ DHCP-based systems
- ■ Common technology projects
- ■ VHA-specific interface and workflow
- ■ DHA-specific interface and workflow

Veterans Health Administration (VHA)

VHA

operational client — **CPRS**

operational database and workflow — **VISTA (x130)** — VISTA Data: 3500 files; 65,000 fields

Common Base System

DHCP

joint technology projects — Janus / **JLV** / iEHR / **TAPS** / **VDP**

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Defense Health Administration (DHA)

DHA

operational database(s) and workflow — **CHCS (x101)** — CHCS Data: 1000 files; 25,000 fields

operational client — **CDR / MDR** / **AHLTA**

While DHCP was similar in VHA and DHA originally, it has diverged over time. The most significant fork occurred in 2004 when DHA migrated a large portion of operational data and functions from CHCS to CDR and MDR databases. Therefore the variety, volume, and function of CHCS data is now approximately one-third that of VISTA.

	1980	1990	2000	2010	2017
VHA-specific		**VISTA**	CPRS		
Common	**DHCP**		JLV	iEHR TAPS	VDP
DHA-specific		**CHCS**	AHLTA / CDR	Genesis	

Note: Time scale simplified for clarity

1981 - DHCP - Decentralized Hospital Care Program - VA Fileman database and applications [VHA]
1985 - CHCS - (DHCP renamed to) Composite Health Care System; modified for DHA use [Leidos (SAIC)]
1994 - VISTA - (DHCP renamed to) Veterans Information Systems Technology Architecture [VHA]
1997 - CPRS - Computerized Patient Record System - graphical interface and workflow [VHA]
2004 - AHLTA/ CDR/ MDR - Armed Forces Health Longitudinal Technology Application [Northrup Grumman]

2003 - Janus (renamed to JLV in 2011) [DHA-VHA]
2011 - iEHR - Integrated Electronic Health Record [SMS]
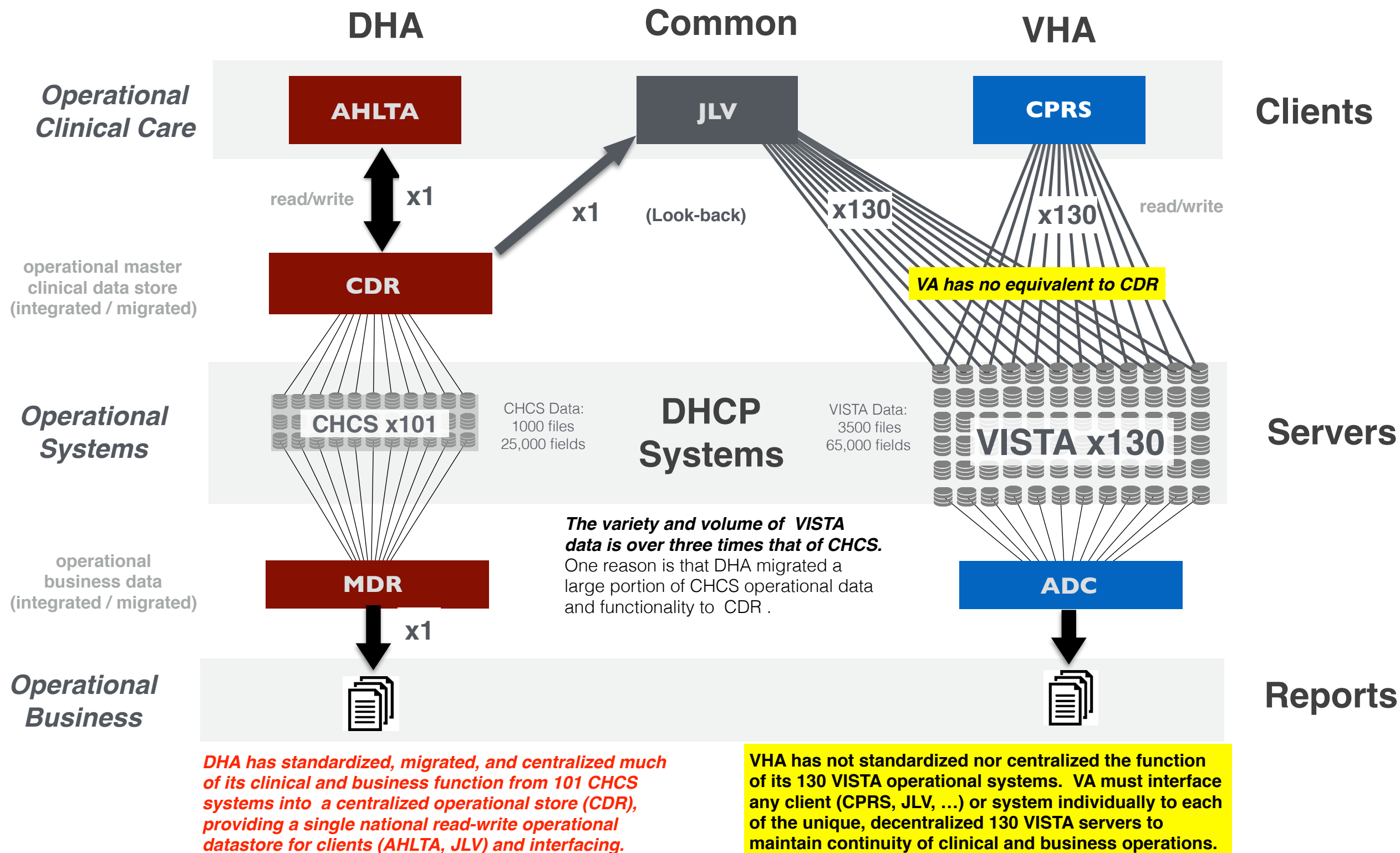2013 - TAPS - Transition Application Plan Support [DHA-VHA]
2016 - MHS Genesis (COTS EHR - Cerner)
2016 - VDP - VISTA Data Project

VHA-DHA Health IT Architecture

VHA is larger and more complex

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	DHA	**Common**	**VHA**	
Operational Clinical Care	**AHLTA**	**JLV**	**CPRS**	**Clients**

read/write **x1**

x1 (Look-back) **x130** **x130** read/write

operational master clinical data store (integrated / migrated)

CDR

VA has no equivalent to CDR

Operational Systems	**CHCS x101**	CHCS Data: 1000 files 25,000 fields	**DHCP Systems**	VISTA Data: 3500 files 65,000 fields	**VISTA x130**	**Servers**

operational business data (integrated / migrated)

MDR **x1**

The variety and volume of VISTA data is over three times that of CHCS. One reason is that DHA migrated a large portion of CHCS operational data and functionality to CDR .

ADC

Operational Business		**Reports**

DHA has standardized, migrated, and centralized much of its clinical and business function from 101 CHCS systems into a centralized operational store (CDR), providing a single national read-write operational datastore for clients (AHLTA, JLV) and interfacing.

VHA has not standardized nor centralized the function of its 130 VISTA operational systems. VA must interface any client (CPRS, JLV, …) or system individually to each of the unique, decentralized 130 VISTA servers to maintain continuity of clinical and business operations.

AHLTA - User Interface
CHCS - Composite Healthcare System (All operational data)
MDR - Military Data Repository (Operational business data)
CDR - Clinical Data Repository (Operational clinical data

CPRS - User Interface
VISTA - VA Information Systems Architecture (All operational data)
ADC - Austin Data Center (Operational business data)

VISTA is more than an EHR

Most of VISTA is Nonclinical and Business function

Content of largest 30 files in a VISTA system

|	#	File	Count
Clinical	P1	IMAGE (2005)	5,728,923
Business	P2	AR TRANSACTION (433)	5,595,597
Clinical	P3	GMRV VITAL MEASUREMENT (120.5)	5,582,099
Clinical	P4	V CPT (9000010.18)	5,533,193
Business	P5	ENROLLMENT/ELIGIBILITY UPLOAD AUDIT	5,525,976
Clinical	P6	ORDER (100)	5,243,872
Clinical	P7	TIU DOCUMENT (8925)	4,588,982
Clinical	P8	VISIT (9000010)	4,465,018
Clinical	P9	OUTPATIENT ENCOUNTER (409.68)	4,385,585
Business	P10	BCMA MEDICATION LOG (53.79)	3,901,198
Clinical	P11	V POV (9000010.07)	3,640,303
Clinical	P12	V PROVIDER (9000010.06)	3,446,623
Business	P13	ACRP TRANSMISSION HISTORY (409.77)	3,122,925
Business	P14	TRANSMITTED OUTPATIENT ENCOUNTER	2,697,388
Business	P15	IMAGE ACCESS LOG (2006.95)	2,524,259
Business	P16	PATIENT ENROLLMENT (27.11)	2,386,762
Business	P17	IB COPAY TRANSACTIONS (354.71)	2,291,380
Business	P18	BCMA REPORT REQUEST (53.69)	2,119,037
Business	P19	INTEGRATED BILLING ACTION (350)	2,065,742
Business	P20	CLAIMS TRACKING (356)	1,989,049
Business	P21	ADT/HL7 PIVOT (391.71)	1,987,001
Clinical	P22	PRESCRIPTION (52)	1,863,696
Business	P23	ORDER CHECK INSTANCES (100.05)	1,486,470
Business	P24	UNIT DOSE EXTRACT DATA (728.904)	1,475,497
Business	P25	ACCOUNTS RECEIVABLE (430)	1,466,346
Clinical	P26	V HEALTH FACTORS (9000010.23)	1,462,325
Business	P27	IVM FINANCIAL QUERY LOG (301.62)	1,439,880
Business	P28	IVM TRANSMISSION LOG (301.6)	1,285,905
Business	P29	IB BILL/CLAIMS DIAGNOSIS (362.3)	1,264,869
Business	P30	BCMA UNABLE TO SCAN LOG (53.77)	1,239,098

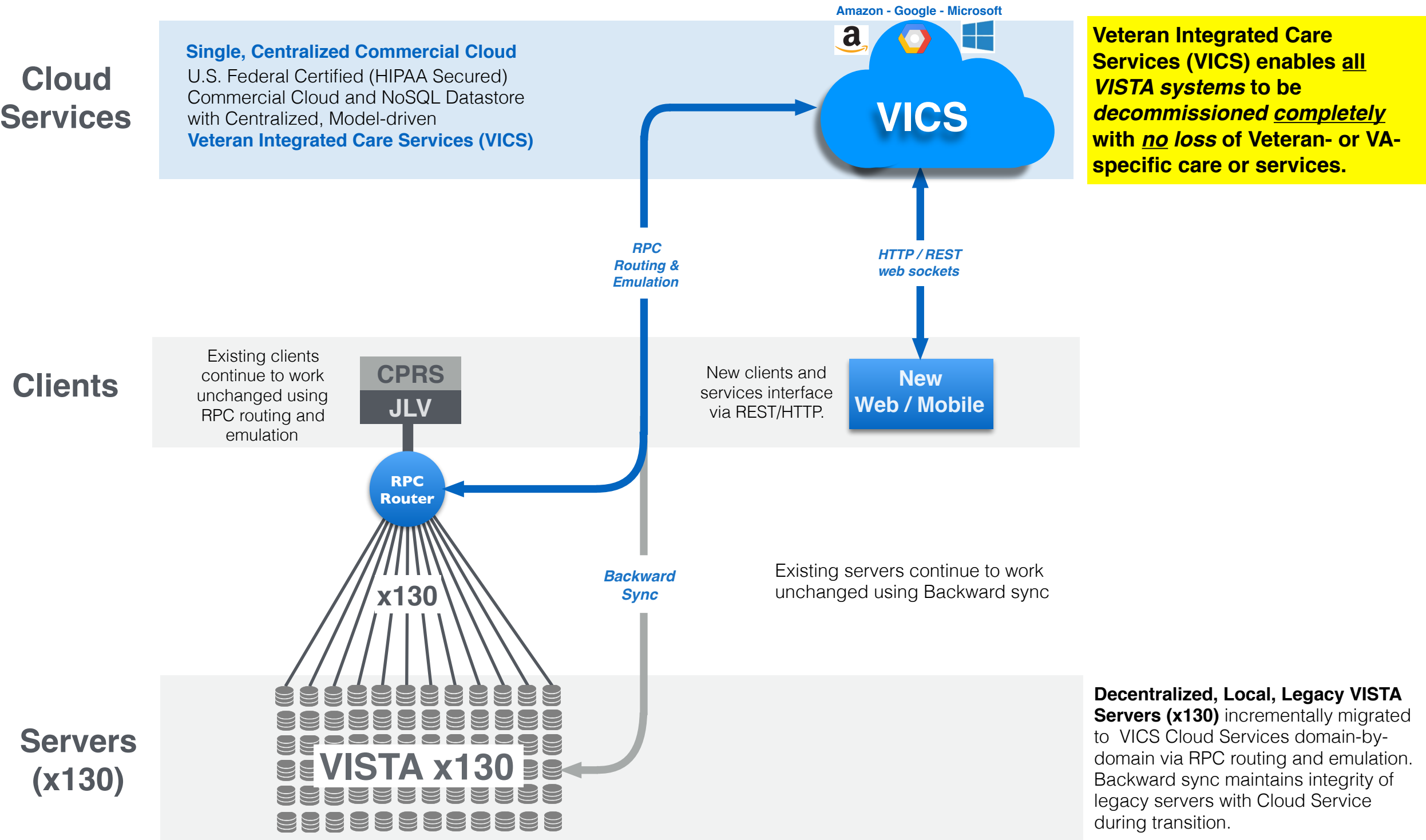|	
Total files	91,804,998
Clinical files	40,211,696
Business files	51,593,302
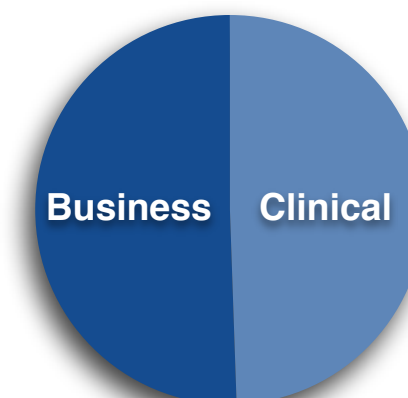
VISTA Packages (total 180)
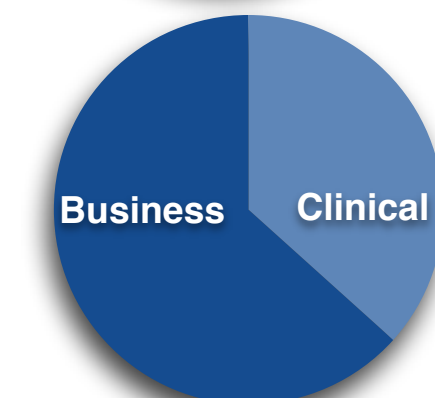
VISTA Files (largest 30)
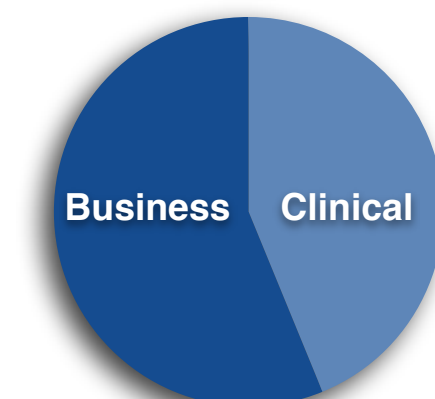
VISTA Data (>90 million)

==VISTA provides the data for over 100,000 business, operational, finance, regulatory, clinical, Congressional, and Federally-mandated safety, quality, and efficiency reports each year to ensure the highest quality of VA- and Veteran-specific care and benefits.==

VISTA Data Project
Migration from Servers to Services

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Cloud Services

Single, Centralized Commercial Cloud
U.S. Federal Certified (HIPAA Secured) Commercial Cloud and NoSQL Datastore with Centralized, Model-driven
Veteran Integrated Care Services (VICS)

Amazon - Google - Microsoft

VICS

Veteran Integrated Care Services (VICS) enables all VISTA systems to be decommissioned completely with no loss of Veteran- or VA-specific care or services.

RPC Routing & Emulation

HTTP / REST web sockets

Clients

Existing clients continue to work unchanged using RPC routing and emulation

CPRS
JLV

New clients and services interface via REST/HTTP.

New Web / Mobile

RPC Router

Backward Sync

x130

Existing servers continue to work unchanged using Backward sync

Servers (x130)

VISTA x130

Decentralized, Local, Legacy VISTA Servers (x130) incrementally migrated to VICS Cloud Services domain-by-domain via RPC routing and emulation. Backward sync maintains integrity of legacy servers with Cloud Service during transition.

Veteran Integrated Care Services (VICS)
Demonstration: Veterans Workload Service

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https://workload.vistadataproject.info

Veterans Workload Service and Website

Work Details Outpatient / PRIMARY

ID: 3490080
Primary DSS: PSYCHIATRY - INDIVIDUAL
Secondary DSS: COMP & PENS (C&P) EXAMS
Entered Date: 11-21-2008 09:39 am
CPTs: DISABILITY EXAMINATION (99456)
Primary Provider: JENSEN,CLYDE M
Location: ZZIOW C&P JENSEN
Entered By: GUZMAN,HARRIETT J
Sent to NPCD?: YES

PSYCHIATRY - INDIVIDUAL

Work Detail on Nov 21, 2008: C&P Disability Exam

Month View: Work Details color coded by work type.

Overview Timeline: All Workload for a specific patient by year and month

Outpatient Work Details (9)

- PSYCHIATRY - INDIVIDUAL (1)
- GENERAL INTERNAL MEDICINE (1)
- AUDIOLOGY (2)
- PRIMARY CARE_MEDICINE (1)
- OPTOMETRY (1)
- X-RAY (2)
- MH INTGRTD CARE IND (1)

Click for Details

Work Details in month of Nov 2008: Nine (9) Outpatient Encounters

Work Details Timeline

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2008											9	8
2009	3	12	11	15	5	3	6	4	3	2		1
2010	3	2	3	1	1	2	4	2	5			2
2011	2	3										

Work Details between Nov 2008 and Feb 2011 (total: 112 services)
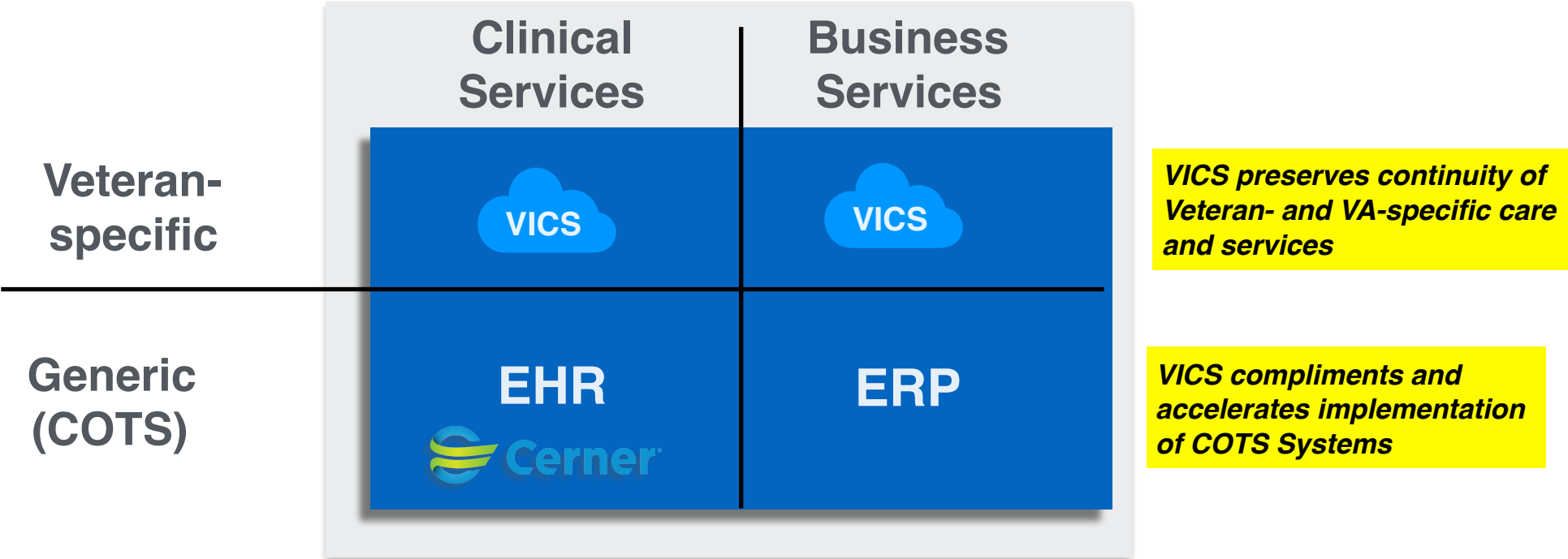
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VISTA Data project

VICS Compliments and Accelerates EHRM Success

VICS Compliments EHRM — Veteran Integrated Care Services (VICS) enables migration from 130 VISTA servers to a commercial clinical and business systems (COTS EHR / ERP) while maintaining continuity of veteran-specific care and services.

	Clinical Services	Business Services
Veteran-specific	VICS	VICS
Generic (COTS)	EHR — Cerner	ERP

VICS preserves continuity of Veteran- and VA-specific care and services

VICS compliments and accelerates implementation of COTS Systems

VICS Accelerates EHRM — The VICS Approach allows the decommissioning all 130 VISTA systems *independent of (and more rapidly than) COTS systems implementation - saving resources on VISTA maintenance, and focusing on strategic IT modernization.*

100% VISTA retired. Safely, rapidly and reliably retire *all* VISTA systems 100% - no residual technology to maintain.

100% Commercial Cloud solution - <u>no</u> GOTS, no legacy technology, nothing to maintain.

Continuity of VA-specifics and Veteran-specific care through Veteran Integrated (cloud) Care Services (VICS)
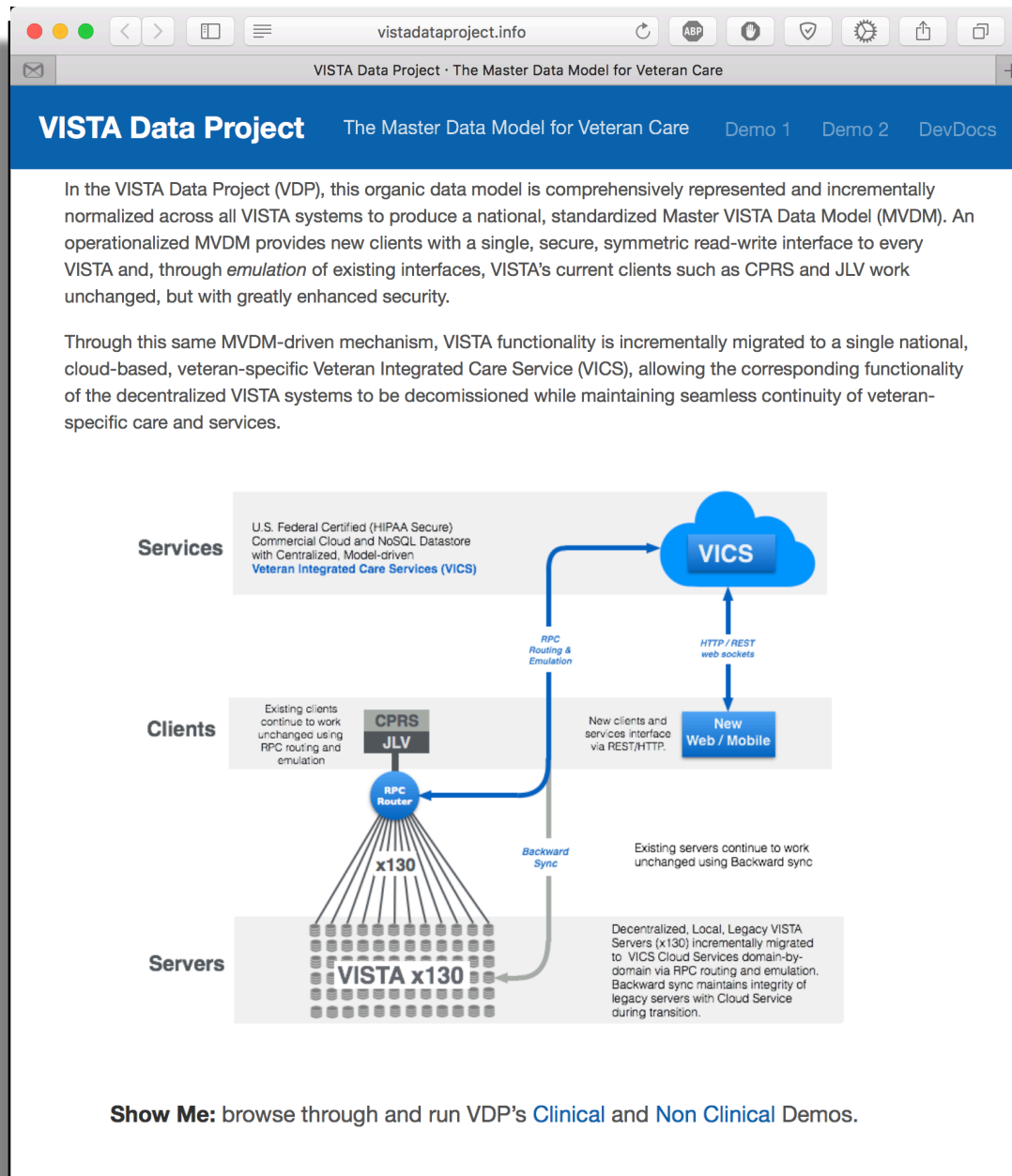
$$$ **Avoids cost** of future VISTA maintenance ($19B over next 10 years) for use in strategic IT modernization.

VISTA Data project
Contact

In the VISTA Data Project (VDP), this organic data model is comprehensively represented and incrementally normalized across all VISTA systems to produce a national, standardized Master VISTA Data Model (MVDM). An operationalized MVDM provides new clients with a single, secure, symmetric read-write interface to every VISTA and, through *emulation* of existing interfaces, VISTA's current clients such as CPRS and JLV work unchanged, but with greatly enhanced security.

Through this same MVDM-driven mechanism, VISTA functionality is incrementally migrated to a single national, cloud-based, veteran-specific Veteran Integrated Care Service (VICS), allowing the corresponding functionality of the decentralized VISTA systems to be decommissioned while maintaining seamless continuity of veteran-specific care and services.

Show Me: browse through and run VDP's Clinical and Non Clinical Demos.

Website
http://vistadataproject.info

Demo
http://vistadataproject.info/demo

Contact
rafael.richards@va.gov

END

Common Systems	**DHCP** (x231)		Fileman / Data-dictionary driven MUMPS information system

Common Tooling	**DHA** (CHCS x101)	**TAPS**	v1: POC: Fileman Query Language (FMQL) v2: IOC:
	VHA (VISTA x130)	**VDP**	v1: POC: RPC Emulation; Master VISTA Data Model v2: IOC: RPC Routing; Cloud-based VICS