VISTA migration to National Veteran Care Services and OneVA Care System

Executive Brief and Update
April 14, 2017

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The VISTA Data Project

A joint project with the U.S. Department of Defense, Defense Health Agency

VA-DoD Common Core Systems Migration Strategy
Leverages DoD-developed EHR migration technology
Formalizes Veterans Care Model
Execution 2016-2017
http://vistadataproject.info

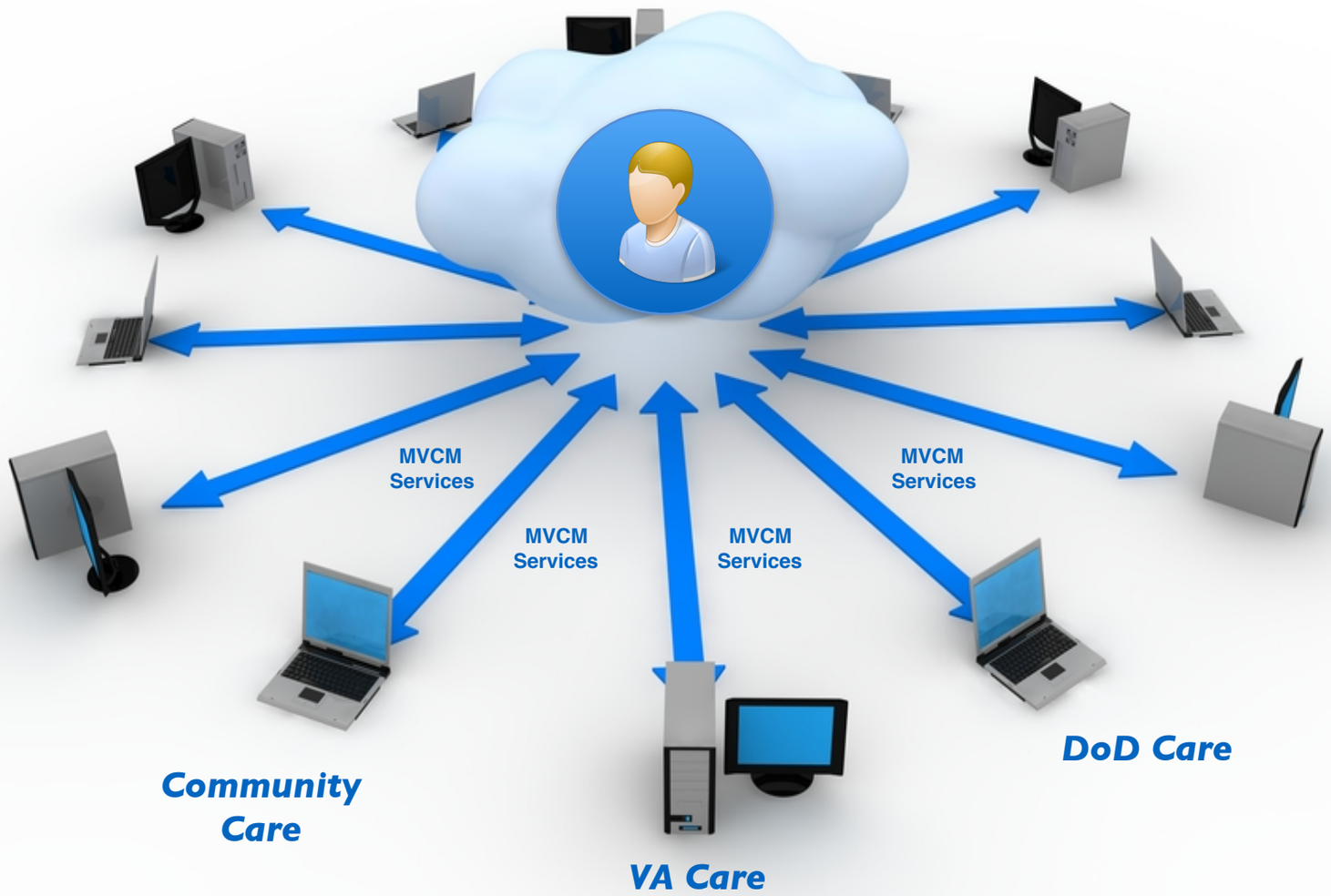
VA HEALTH CARE Defining EXCELLENCE in the 21st Century

OneVA Care System

PROPOSAL

Cloud-based, COTS-integrated
National Veteran Care Services
Preserving Continuity of Care

One Veteran.
Many Systems.
One Care Model.



Master Veteran Care Model (MVCM)
National Veteran Care Services

Preserves Veteran Continuity of Care
Prototyped and proven.
The VISTA Data Project
http://vistadataproject.info

Specialized Veteran Care Services
with integrated COTS

VISTA Migration to OneVA Care System

VISTA Data Project

History of VA-DOD Electronic Health Records

DHCP is the common base system of both agencies

Migrating from DHCP (VISTA/CHCS):

Continuity of Care Risks

Military/Veteran-specific care
Agency-specific business reports
Longitudinal / Life-long care

CPRS: Blueprint for VA Care

CPRS is the VISTA Server to the providers

VA Client Migration

Client-first approach (eHMP)

VA Server Migration

Server-first approach (VDP)

Migration to a Modern VA Server

VISTA Data Project
Joint VA-DOD Interagency project
Leverages DOD migration technology
Preserves Continuity of Care

Migration to a OneVA Care System

Leverages VISTA Data Project
Enables services migration to the Cloud
Allows integration of COTS

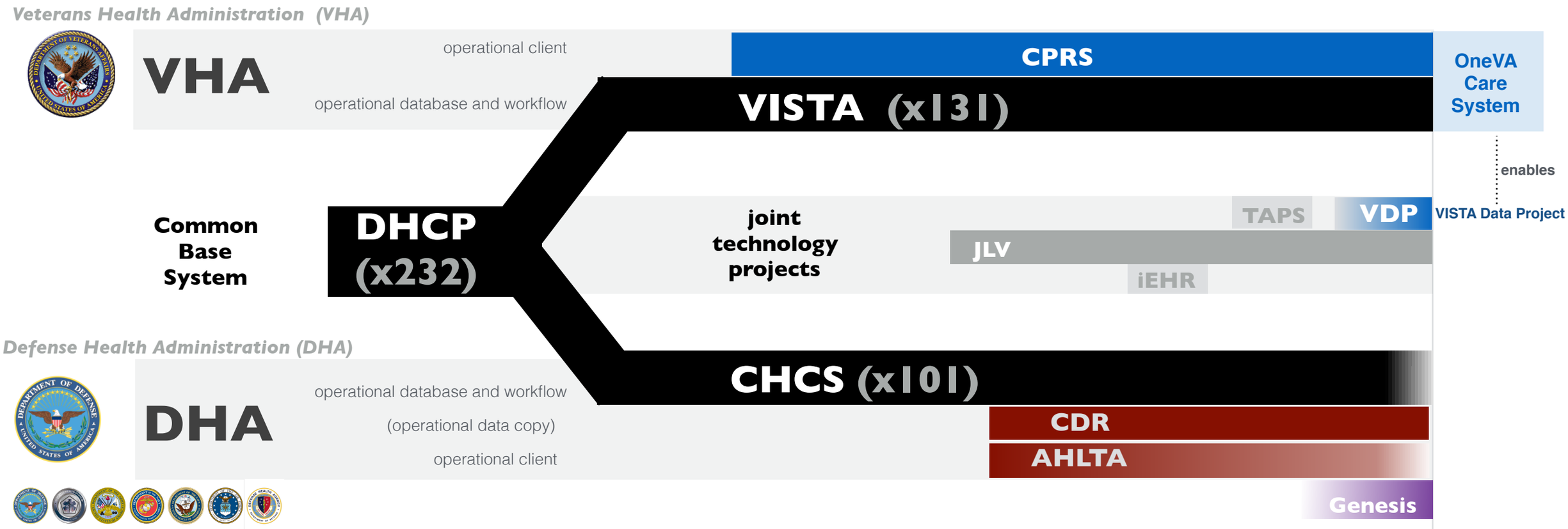
Evolution of VA-DoD Electronic Health Records

DHCP is the common base system

VHA: 151 hospitals; 820 clinics; 300 vet centers; + other (total 1700 care sites)
DHA: 55 hospitals; 350 clinics + other

VHA: 131 VISTA systems operational (since 1981)
DHA: 101 CHCS systems operational (since 1985)
Total: 232 DHCP-based systems across VHA-DHA

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



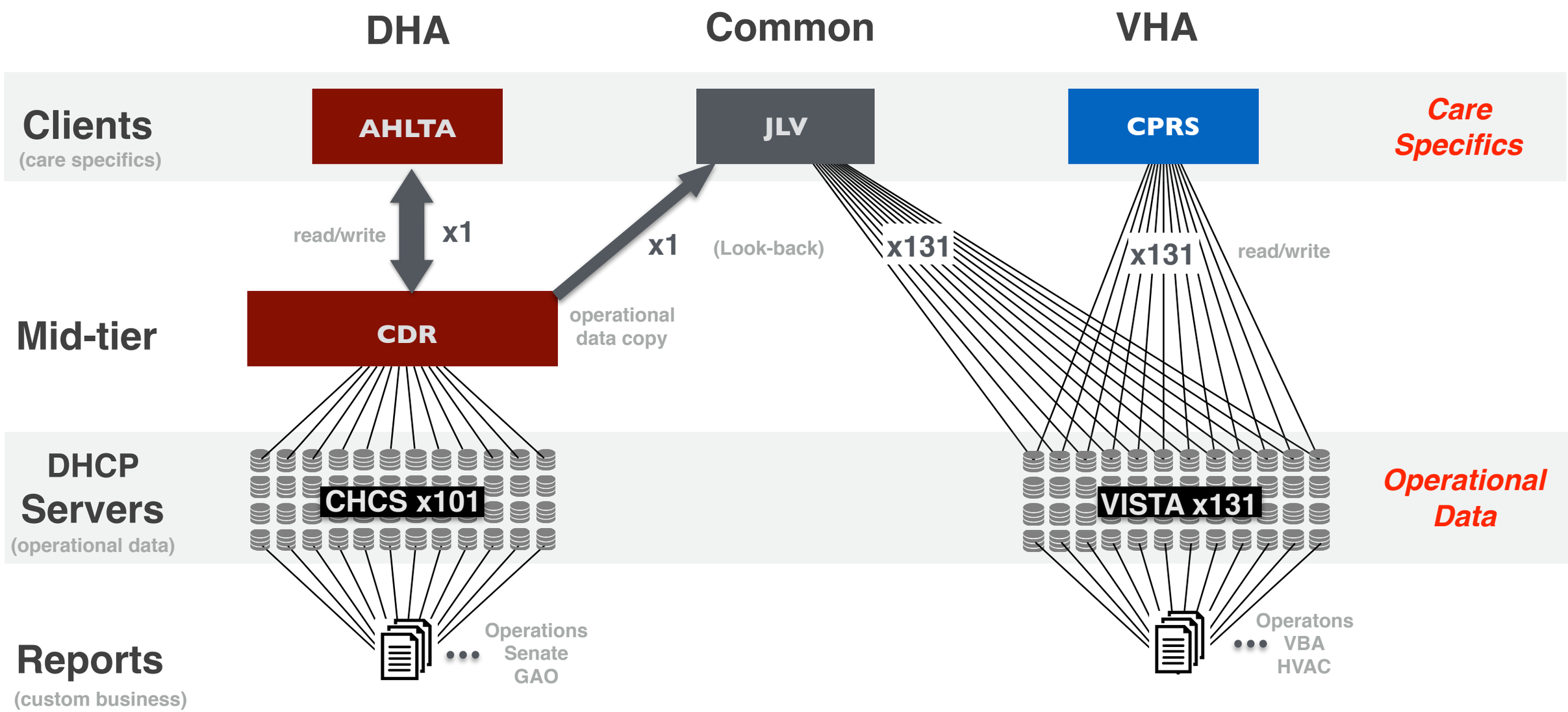
	1980	1990	2000	2010	present
VHA-specific		**VISTA**	CPRS		
Common	**DHCP**		JLV	iEHR TAPS	VDP
DHA-specific		**CHCS**	AHLTA / CDR		Genesis

Note: Time scale simplified for clarity

1981 - DHCP - Decentralized Hospital Care Program - VA Fileman database and applications [VHA]
1985 - CHCS - (DHCP renamed) Composite Health Care System; modified for DHA use [Leidos (SAIC)]
1994 - VISTA - (DHCP renamed) Veterans Information Systems Technology Architecture [VHA]
1997 - CPRS - Computerized Patient Record System - graphical interface and workflow [VHA]
2004 - AHLTA/CDR - Armed Forces Health Longitudinal Technology Application [Northrup Grumman]
2003 - JLV - (originally Janus; renamed to JLV in 2011) [DHA-VHA]
2011 - iEHR - Integrated Electronic Health Record [SMS]
2013 - TAPS - Transition Application Plan Support [DHA-VHA]
2015 - Genesis - Military Health System Genesis [Leidos / Cerner]
2016 - VDP - VISTA Data Project [DHA-VHA]

Migrating from DHCP Servers (VISTA/CHCS): Continuity of Care Risks

Continuity of Care depends on seamless access to Operational Data and Care Specifics



Continuity of Care Risks

DHA	Current	Migration
1. Military-specific care	AHLTA	?
2. DoD Custom Reports	CHCS x101	?
3. Longitudinal Care (Look-back)	CDR	CDR (read-only)

VHA	Current	Migration
1. Veteran-specific care	CPRS	?
2. VA Custom Reports	VISTA x131	?
3. Longitudinal Care (Look-back)	VISTA x131	?

CPRS: Blueprint for Veteran Longitudinal Care

CPRS is VISTA to Physicians, and Embodies all Veteran Care specifics

Veteran-specific

Built specifically around veteran care policies and practice

Department of Veterans Affairs **Memorandum**

Date: OCT 17 2012

From: Deputy Under Secretary for Health for Operations and Management (10N)

Subj: National Patient Record Flag for High Risk for Suicide

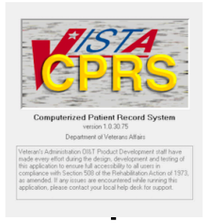
To: Network Director (10N1-23)
Chief Medical Officer (10N1-23)
Network Mental Health Liaisons

1. The purpose of this memo is to provide guidance for the implementation of a new Category I Patient Record Flag (PRF) for High Risk for Suicide.

Agent Orange

Agent Orange (AO) is an herbicide that was used in Vietnam between 1962 and 1971 to remove unwanted plant life that provided cover for enemy forces. The VA has recognized the following conditions as associated with but not necessarily caused by exposure to Agent Orange:

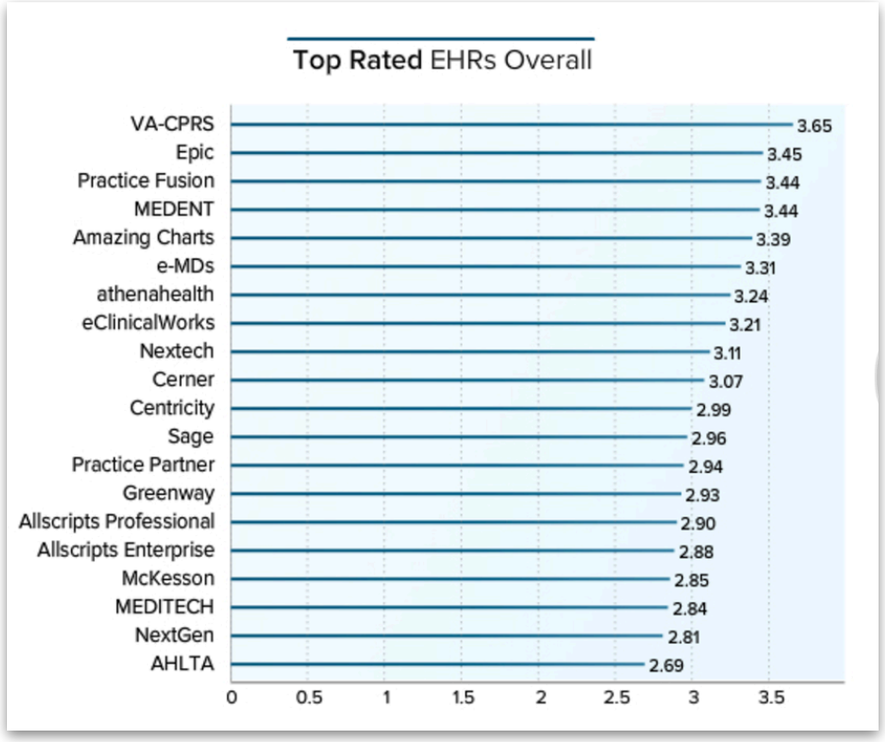
- AL Amylodosis
- Diabetes (type 2)



Physicians favorite

Medscape EHR Report 2016: Physicians Rate Top EHRs

Carol Peckham, Author; Leslie Kane, Sr. Director, Medscape Business of Medicine; Susanna Rosensteel, Editor | *August 25, 2016*



http://www.medscape.com/features/slideshow/public/ehr2016

Opportunity: ***Maintaining the CPRS client and its workflow (for a period) allows the retirement of the VISTA servers and the introduction of COTS while guaranteeing continuity of care and workflow.***

The VISTA Data Project (VDP): ***Is a "server-first" approach to preserving Veteran Continuity of Care. Because VISTA's interfaces (RPCs) capture the current clinical operational data model and business logic of the CPRS clients, migrating "VISTA first" ensures Continuity of Care.***

VA Client Migration and Upgrade

The objective of eHMP was to create a new web client to introduce new functionality and replace existing clients

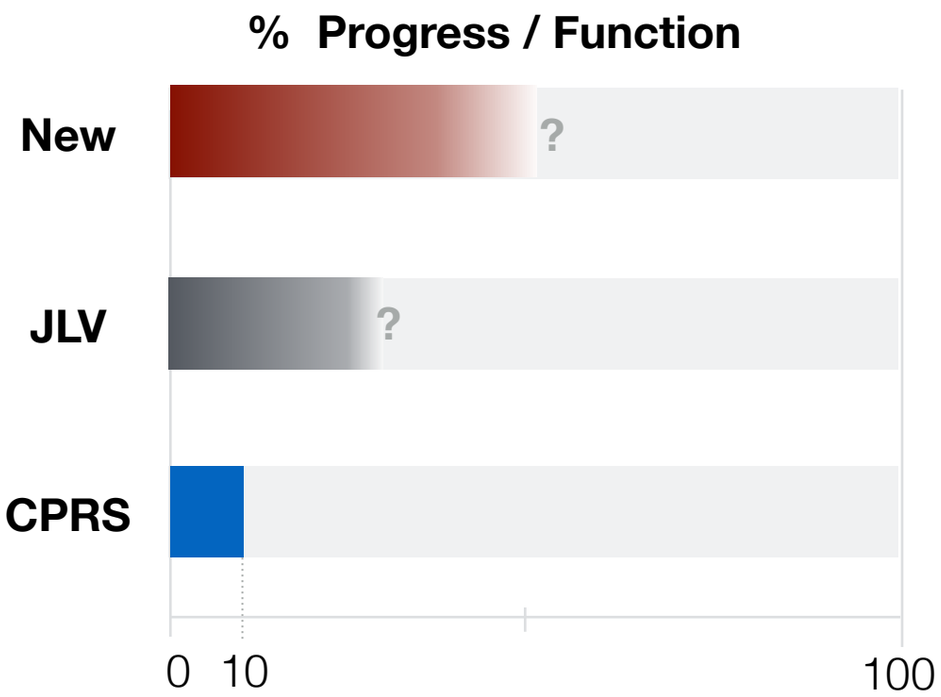
A Client-first approach

1. ***Create a New Client*** to introduce <u>new functionality</u> and then
2. ***Replace existing clients*** *with <u>existing veteran care functionality</u>*

New Client and Functionality (Team Care, Cohorts, CDS…) Largely self contained, independent (of VISTA/CPRS), and novel. Inspired by HMP. [No measurable endpoints to indicate completion or success.]

Exchange Client (JLV) Replacement: ("VISTA Exchange") Read-only patient record through interfaces used by JLV.

Clinical Client (CPRS) Replacement: Requires write back/sync over legacy pre-web VISTA remote server interfaces (RPCs). [Completion measured by % CPRS interfaces retired (Currently <10%)]



Issues Encountered

- **New and Old Simultaneously:** It is extremely difficult to both create new motifs and patterns of care while maintaining current patterns of care. These pull in different directions, and require different skills and technologies to address.
- **Server Interface Challenges:** The VISTA server has an opaque, undocumented, nonstandard, legacy remote procedure call (RPC) interface which pre-dates the Internet. It is thus very difficult to understand or use, making client interfacing and enhancement extremely challenging.
- **Foundations deferred**: By focusing almost exclusively on the client (GUI / UX) and on new features, the problems of the current server interface were largely ignored. This led to the roadblocks in replacing and enhancing client functionality.
- **Continuity of Care challenges.** Because access to VA's operational data was not preserved, nor was the veteran-specific care of the existing clients preserved, continuity of care cannot be preserved.

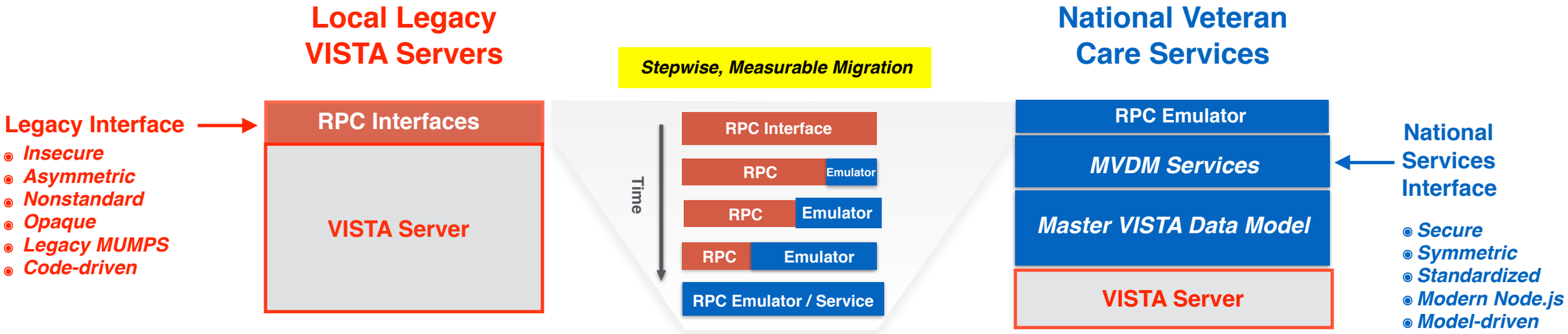
VISTA's Server Interface Challenges remain unresolved.
Continuity of Care is not preserved.

VA Server Migration and Upgrade

The objective of the VISTA Data Project is to migrate Local Legacy VISTA Servers to National Veteran Care Services

A Server-first approach

1. ***Create a National Services Interface:*** Establish a modern, model-driven web-based service interface for the 131 VISTA systems: Master VISTA Data Model (MVDM) Services.
2. ***Existing Clients Continue***: Emulate the current legacy VISTA server remote procedure call (RPC) interfaces over the new National Services interface, assuring all existing clients (CPRS, JLV) continue to work as-is, without change. ***This maintains retroactive Continuity of Care.***
3. ***New Clients Enabled***: Demonstrate ease of development of new clients directly on the new modern web-based service interface. ***This maintains future Continuity of Care.***



Lessons Learned

- By using CPRS as a blueprint for current care, it ensured that the new services interface met its goals
- The legacy VISTA RPC interfaces are riddled with redundancy and security problems
- Common off-the-shelf software for security, context management, data representation, and other applications can be used as-is with the Veteran Care Services interface (COTS-friendly interface)
- A clean service interface neatly distinguishes veteran-specific care from generic care. This is essential in preserving Veteran-specific Continuity of Care.

VISTA's Server Interface Challenges are resolved.
Continuity of Care is maintained.

VISTA Data Project
https://vistadataproject.info

VISTA Data Project

Stepwise Migration to a Modern, Model-driven VISTA server while maintaining Continuity of Care

CURRENT

- VHA-DHA Interagency project
- Migration Proof of Concept
- Leverages DHA-developed technology
- Formalizes Veterans Care Model
- Execution 2016-2017

CURRENT

Local Legacy VISTA Servers

Clients

CPRS / JLV

RPC Interfaces (x 1000s)

or

Insecure Asymmetric Opaque Legacy MUMPS Code-driven Interfaces

Key Features

- *Measurable, Stepwise Migration from Legacy VISTA server*
- *Leverages DoD-funded migration tooling for VA systems*
- *Migrates to model-driven server, based on CPRS blueprint*
- *Executable Master Data Model, regression tested*
- ***Maintains continuity of care:***
  - *CPRS continues to run without change*
  - *JLV continues to run without change*
- *Provides new National Veteran Care Services interface*
- *Enables new, mobile and web clients*

Stepwise, Measurable Migration

VISTA Data Project

National Veteran Care Services

CPRS / JLV (continue)

New web/mobile (enabled)

Clients (current + new)

Secure Symmetric Modern Node.js Model-driven Interface

x1

MVDM Services Interface

Legacy Server

RPC Interfaces

VISTA Applications

VISTA Database

MUMPS-driven VISTA Server *(unmaintainable)*

Time

RPC Legacy

RPC | **Emulator**

RPC | **Emulator**

RPC | **Emulator**

RPC Emulator / Service

RPC Emulator

MVDM Services

Master VISTA Data Model (MVDM)

VISTA Database

Node

New Server

Model-driven VISTA Server *(mainstream technology)*

M Legacy VISTA (MUMPS)

Master VISTA Data Model (MVDM) Node.js - Driven VISTA

Strategic Benefits

- *New, maintainable veteran care server based on mainstream technology*
- *New web and mobile clients enabled with mainstream technology*
- *Current clients remain operational as is*
- *May now safely incrementally retire legacy MUMPS VISTA [spaghetti]*
- ***Not in scope: COTS introduction / OneVISTA. BUT….***

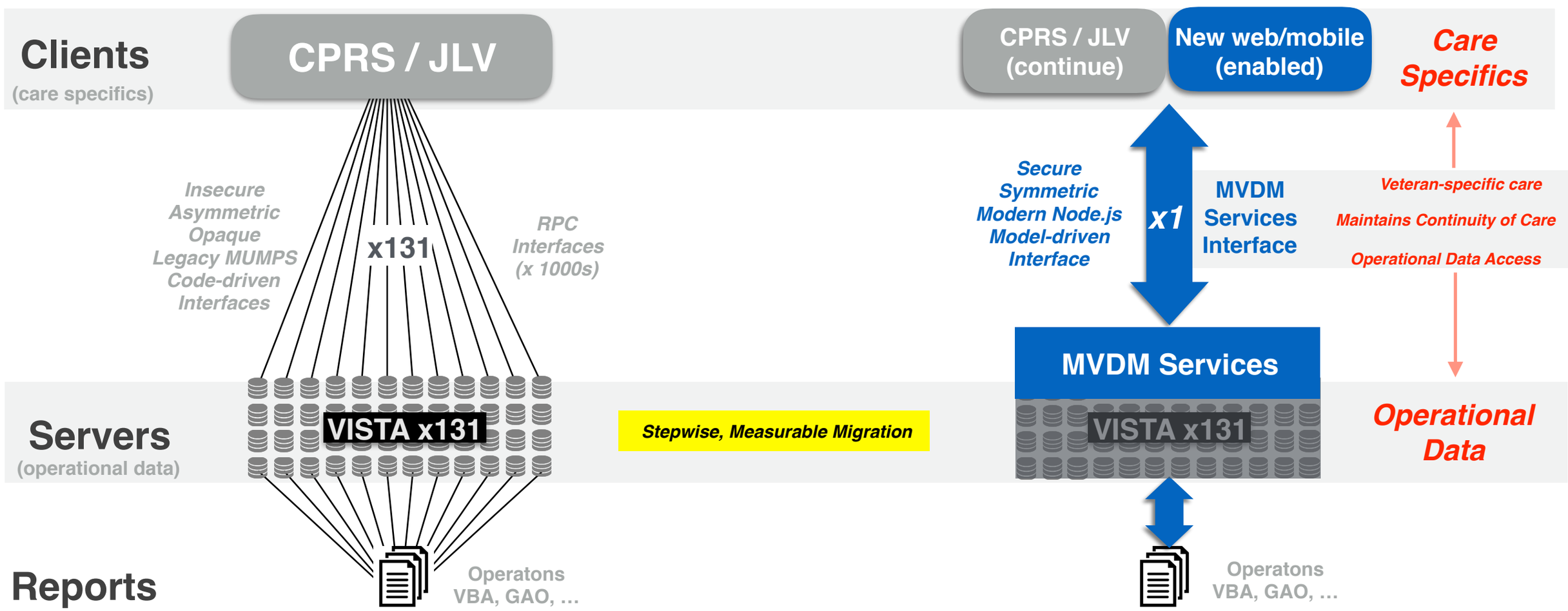
VISTA Data Project
https://vistadataproject.info

VISTA Data Project

Migration to a National Veteran Care Services while Maintaining Continuity of Care

CURRENT

- VHA-DHA Interagency project
- Migration Proof of Concept
- Leverages DHA-developed technology
- Formalizes Veterans Care Model
- Execution 2016-2017



Continuity of Care Risks

VHA - Local VISTA Servers	Current	Migration
Veteran-specific care	CPRS	?
VA Custom Reports	VISTA x131	?
Longitudinal Care (Look-back)	VISTA x131	?

Continuity of Care Mitigation

VHA - National Vet Care Services	Current	Migration
Veteran-specific care	CPRS	MVDM Services
VA Custom Reports	VISTA x131	MVDM Services
Longitudinal Care (Look-back)	VISTA x131	MVDM Services

OneVA Care System

PROPOSED

Migrate to COTS/Cloud-based National Veteran Care Services following the proven VISTA Data Project strategy

CURRENT

Clients
(care specifics)

Local Legacy VISTA Servers

CPRS / JLV

RPC Interfaces (x 1000s)

or

Insecure Asymmetric Opaque Legacy MUMPS Code-driven Interfaces

Local Servers (x131)

RPC Interfaces

VISTA Applications

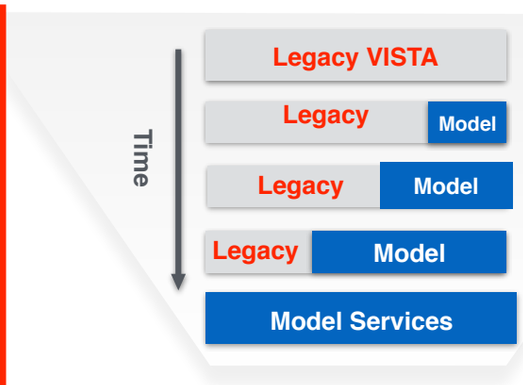
VISTA Database

VA Proprietary

Key Features

- *VISTA Data Project's Proven Migration Strategy*
- *Move to Single Veteran Integrated Care System*
- *Integrate best-of-breed COTS*
- *Incrementally retire 131 VISTAs*
- ***Maintains Continuity of Care***
  - *CPRS continues to run without change*
  - *JLV continues to run without change*
- *Enable new mobile and web clients*

Proven Migration Strategy of VDP



OneVA Care System

National Veteran Care Services

CPRS / JLV (continue)

New web/mobile (enabled)

Clients
(current + new)

Secure Symmetric Modern Node.js Model-driven Interface

x1

MVDM Services Interface

Cloud Server (x 1)

RPC Emulator

Node

MVDM Services

VA-specific applications | COTS | COTS | COTS | COTS

Specialized Veteran Care Services with integrated COTS

M Legacy VISTA (MUMPS)

Master Veteran Data Model (MVDM) Services

Industry Standard Modules (NEW)

Strategic Benefits

- *Single Integrated Veteran Care System*
- *Guarantees continuity of veteran care and services during migration*
- *VA stops maintaining features available in COTS*
- *Easily add new clients and services for providers and veterans*

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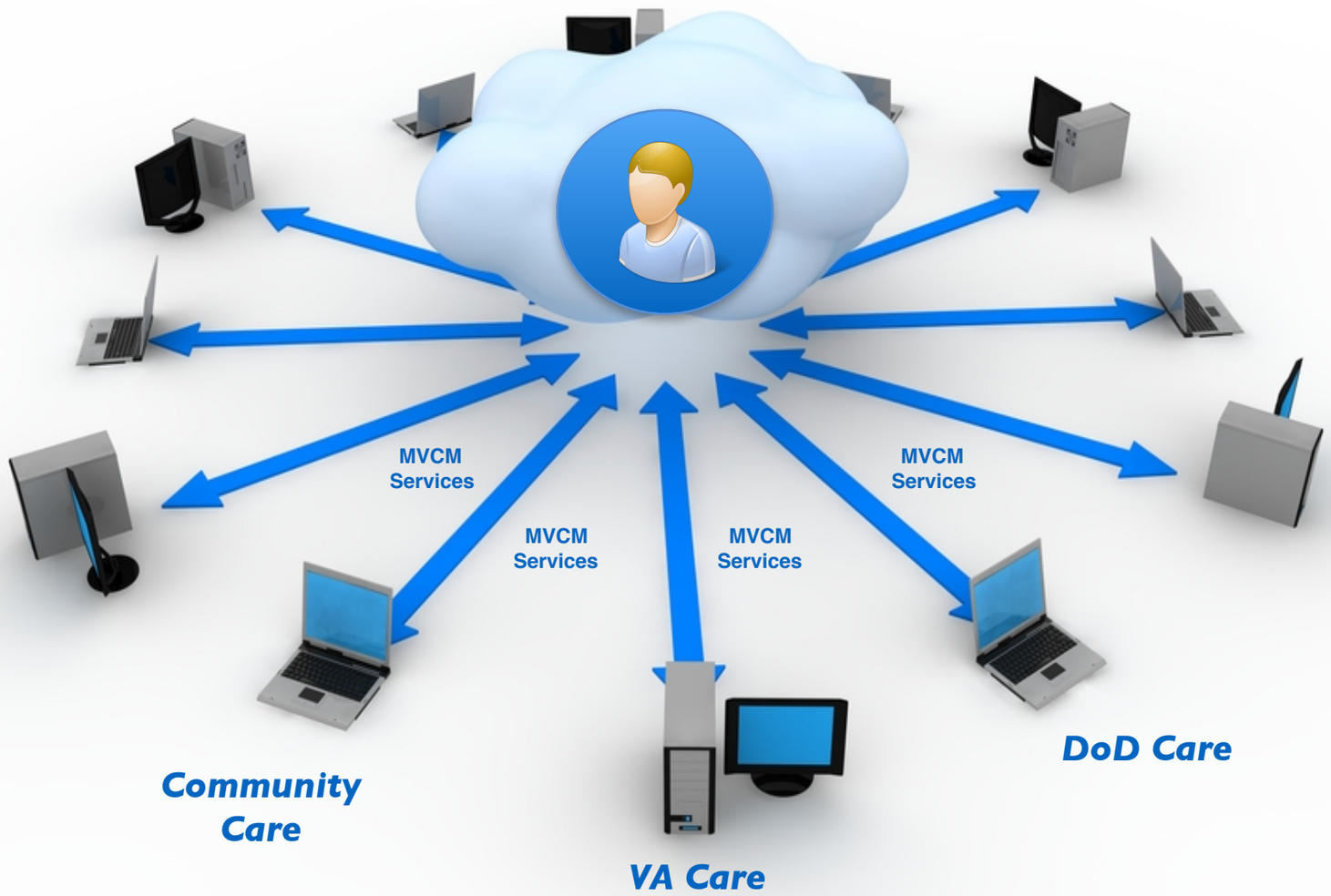

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VISTA Data Project

Contact and Information

Website

http://vistadataproject.info

Github

https://github.com/vistadataproject

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