



Health Informatics Initiative
TRANSFORMING VA HEALTH CARE DELIVERY



Virtual Patient Record (VPR) 1.1

Technical Manual

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Department of Veterans Affairs

Health Systems Design and Development

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Revision History

Date	Patch or Version	Page	Description	Project Manager	Author
7/30/2012	VPR*1.0*1	27	Updated checksum for VPRDPSOR	Deb Migliore	Ruth Markham
6/13/2012	VPR*1.0*1	5-7 11	Updated Clinical Procedures ICRs in External Relationships , renumbered the table, increased row height when necessary; changed revised date; fixed typo	Deb Migliore	Ruth Markham
5/18/2012	VPR*1.0*1	2	Added a paragraph about the VPR proxy	Deb Migliore	Ruth Markham
5/15/12	VPR*1.0*1	All	Changed header colors from blue to black; Corrected formatting issues; Added hyperlinks to revision history; Updated Overview to reflect changes with NwHN; Added new extract routines for Clinical Observations , Clinical Procedures , Insurance , Exams , Skin Tests , Patient Education ; Renamed Pharmacy extract Medications ; Renamed Pharmacy Inpatient extract to Inpatient Meds ; Renamed Pharmacy Outpatient extract Outpatient Meds ; Added Non-VA Meds and IV Fluids/Infusions extracts; Added section for Implementation & Maintenance ; Added section for patch description ; Modified list of new routines; Updated Routines List with new and modified extract routines; Added section for Security Keys ; Updated External relationships table; Added section for Files ; Updated Routine List table with new/changed routines and reordered elements alphabetically; Removed elements predecessor, successor, code from VPRDPL routine because they were never populated;	Deb Migliore	Ruth Markham





Date	Patch or Version	Page	Description	Project Manager	Author
			<p>Added elements acknowledgement [m], provider, and service to VPRDOR routine;</p> <p>Added element category to VPRDPXHF;</p> <p>Added element encounter to VPRDXIM routine;</p> <p>Added elements clinicStop, provider and type to VPRSDAM routine (clinicStop was inadvertently missed in the previous version of this TM);</p> <p>Added elements category, images and parent to VPRDTIU routine;</p> <p>Updated Checksums table;</p> <p>Added section Options section;</p> <p>Added a Glossary section;</p>		
08/08/11	VPR*1*0		VPR version 1.0 Release	Deb Migliore	Ruth Markham





Contents

Revision History ii

Overview - 1 -

Implementation & Maintenance - 2 -

 Patch VPR*1.0*1..... - 2 -

 Remote Procedure Calls..... - 3 -

 Security Keys - 4 -

External Relationships..... - 5 -

Files - 7 -

Routines - 7 -

 Routine List - 7 -

 Example..... - 26 -

 Checksums - 27 -

Options..... - 28 -

Glossary..... - 28 -





Overview

This document provides technical information for Virtual Patient Record (VPR) version 1.0.

VPR Version 1.0 is a foundation software package component of the Health Management Platform architecture. This architecture is part of the scope of the Health Informatics Initiative.

VPR extracts patient data from domains at local and remote VistA sites to provide a cached view of patient charts. It provides normalized fields with common field names and data structures across domains. VPR includes two remote procedure calls (RPCs), one comprised of routines that extract data from VistA and the other that returns the current version number for VPR.

The VPR RPC for data extraction was initially installed in the Nationwide Health Information Network (NwHIN) namespace, which was called NHIN, and the NwHIN client has been using most of the extract routines in production to get and share data.

At this time, the VPR RPCs will be installed in its own VPR namespace and renumbered as VPR version 1.0. NwHIN can continue to use the extract routines in its NHIN namespace, but will need to access VPR v1.0, or subsequent versions as they are released, in order to take advantage of future enhancements to the extract routines.

The VPR RPC for data extraction was initially installed in the Nationwide Health Information Network (NwHIN) namespace, and the NwHIN client had been using most of the extract routines in production to get and share data. After the VPR RPCs were installed in their own namespace with VPR 1.0, NwHIN began to use VPR to take advantage of future enhancements to the extract routines.





Implementation & Maintenance

Patch VPR*1.0*1

This patch will correct two reported issues with VPR 1.0, and make additional data domains available:

- Clinical Observations (CLiO)
- Clinical Procedures
- Inpatient Medications (complex orders)
- Insurance (from Integrated Billing)
- PCE Exams, Patient Education, and Skin Tests
- Women's Health Pregnancy Log, returned as a condition with the Problem List if the patient is currently pregnant

Seven routines in this patch are new, have not previously been released:

VPRDIB	Insurance Policies extract
VPRDMC	Procedures (Medicine/Cardiology) extract
VPRDMDC	Observations (CLiO) extract
VPRDPSOR	Medications, by order extract
VPRDPXAM.....	Exams extract
VPRDPXED.....	Education Topics extract
VPRDPXSK	Skin Tests extract

Important: Do not terminate the VPR Application Proxy from file 200. It must remain active for NwHIN to work. Please check your entry to make sure it looks similar to what is listed below.

NAME: VPR,APPLICATION PROXY	DATE ENTERED: SEP 08, 2011
SECONDARY MENU OPTIONS: VPR APPLICATION PROXY	
User Class: APPLICATION PROXY	ISPRIMARY: Yes
PROVIDER KEY (c): 0	





Remote Procedure Calls

Remote Procedure Call	M Entry Point
VPR GET PATIENT DATA	GET^VPRD
VPR DATA VERSION	VERSION^VPRD

The VPR DATA VERSION RPC gets the value of the current version from VPR, and returns it as a string. Any application with the appropriate Data Base Integration Agreements (DBIAs) can use this RPC to extract the version from VPR.

The VPR GET PATIENT DATA RPC retrieves data from VistA, and returns it as XML in a ^TMP global. Any application with the appropriate Data Base Integration Agreements (DBIAs) can use this RPC to extract data from VistA.

Input parameters can be specified to determine the type and amount of data that will be extracted from VistA:

- Internal entry number from Patient file #2 [optionally DFN;ICN for remote calls] [required]
- The kind(s) of data to extract, which may include:
 - Allergy/Reaction
 - Appointments
 - Consults
 - Demographics
 - Documents
 - Education Topics
 - Exams
 - Flags (Patient Record Flags)
 - Health Factors
 - Immunizations
 - Insurance Policies
 - Labs
 - Labs by Accession
 - Labs by Order/Panel
 - Medications
 - Medications by order
 - Observations (CLiO)
 - Orders
 - Problems





- Procedures
- Procedures (Medicine/Cardiology)
- Radiology Exams
- Skin Tests
- Surgical Procedures
- Visits/Encounters
- Vitals
- The date/time from which to begin searching for data [optional].
- The date/time at which to end searching for data [optional].
- The maximum number of items to return per data type [optional].
- The identifier of a single item to return [optional, but TYPE must also be defined when used].
- List of name-value pairs, further refining the search.

The output from this RPC is a text array formatted as XML in the temporary global ^TMP("VPR", \$J, n).

Security Keys

The VPR RPC package contains no security keys.





External Relationships

The following Database Integration Agreements (DBIAs) cover the use of the following routines and global references.

#	DBIA	Global Reference ICR #	Package
1	^ORA(102.4)	5679	Care Management
2	^MDC(704.101*)	5748	Clinical Procedures
3	^MDC(704.102*)	5809	Clinical Procedures
4	^MDC(704.117*)	5810	Clinical Procedures
5	^MDC(704.118*)	5811	Clinical Procedures
6	MDPS1	4230	Clinical Procedures
7	GMRCGUIB	2980	Consult Request Tracking
8	GMRCSLM1	2740	Consult Request Tracking
9	GMRVUT0	1446	Gen. Med. Rec. - Vitals
10	GMVRPCM	5702	Gen. Med. Rec. - Vitals
11	^DIC(31)	733	HINQ
12	XUSAP	4677	Kernel
13	^LR	525	Laboratory
14	^LAB(61)	524	Laboratory
15	^LRO(68)	1963	Laboratory
16	^LRO(69)	2407	Laboratory
17	LR7OR1	2503	Laboratory
18	LR7OU1	2955	Laboratory
19	^OR(100)	5771	Order Entry/Results Reporting
20	^ORD(100.98)	873	Order Entry/Results Reporting
21	^ORD(101.43)	2843	Order Entry/Results Reporting
22	ORCD	5493	Order Entry/Results Reporting
23	ORQ1	3154	Order Entry/Results Reporting
24	ORQ12	5704	Order Entry/Results Reporting





#	DBIA	Global Reference ICR #	Package
25	ORX8 [EN]	871	Order Entry/Results Reporting
26	ORX8 [\$OI, \$VALUE]	2467	Order Entry/Results Reporting
27	ORX8 [\$PKGID]	3071	Order Entry/Results Reporting
28	PSOORRL	2400	Outpatient Pharmacy
29	^AUPNVSIT	2028	PCE Patient Care Encounter
30	^AUTTHF	4295	PCE Patient Care Encounter
31	^PXRMINDX	4290	PCE Patient Care Encounter
32	PXAPI	1894	PCE Patient Care Encounter
33	PXPXRM	4250	PCE Patient Care Encounter
34	^AUPNPROB	5703	Problem List
35	GMPLUTL2	2741	Problem List
36	^RADPT	2480	Radiology/Nuclear Medicine
37	^RARPT	5605	Radiology/Nuclear Medicine
38	^DGS(41.1)	3796	Registration
39	^DGSL(38.1)	767	Registration
40	^DIC(42)	723	Registration
41	^DPT	5708	Registration
42	^DPT	5597	Registration
43	DGPFAP	3860	Registration
44	VADPT2	325	Registration
45	^DIC(40.7)	557	Scheduling
46	^SRF(130)	5675	Surgery
47	^SRO(136)	4872	Surgery
48	SROESTV	3533	Surgery
49	^TIU(8925.1)	5677	Text Integration Utilities
50	^TIU(8925.1)	2321	Text Integration Utilities
51	^TIU(8926.1)	5678	Text Integration Utilities
52	TIUCNSLT	5546	Text Integration Utilities



#	DBIA	Global Reference ICR #	Package
53	TIUCP	3568	Text Integration Utilities
54	TIULQ	2693	Text Integration Utilities
55	TIULX	3058	Text Integration Utilities
56	TIUSROI	5676	Text Integration Utilities
57	TIUSRVLO	2834	Text Integration Utilities
58	TIUSRVLO	2865	Text Integration Utilities
59	TIUSRVR1	2944	Text Integration Utilities
60	^WV(790.05)	5772	Women's Health

Files

There are no files released with VPR at this time.

Routines

Routine List

The VPR RPC includes the following routines:

#	Routine	Description
1	VPRD	<p>VPR GET PATIENT DATA RPC: responds to requests for data and serves as a broker, calling the appropriate VPR data extract routines to gather the requested data.</p> <p>VPR DATA VERSION RPC: returns a string identifying the current version of the VPR data extracts.</p>





#	Routine	Description
2	VPRDGMPL	<p>Problems Extract: responds to requests for problem list and pregnancy data and returns XML-formatted results for the following attributes:</p> <ul style="list-style-type: none"> • acuity • comment [m] • entered • exposure [m] • facility • history • icd • id • location • name • onset • problemType • provider • removed • resolved • sc • service • status • unverified • updated





#	Routine	Description
3	VPRDGMRA	<p>Allergy/ Reaction Extract: responds to requests for reaction data and returns XML-formatted results for the following attributes:</p> <ul style="list-style-type: none"> • comment [m] • drugClass [m] • drugIngredient [m] • entered • facility • id • localCode • mechanism • name • reaction [m] • removed • severity • source • type • verified • void
4	VPRDGMRC	<p>Consults Extract: responds to requests for consultation data and returns XML-formatted results for the following attributes:</p> <ul style="list-style-type: none"> • document [m] • facility • id • name • orderID • procedure • requested • result • service • status • type





#	Routine	Description
5	VPRDGMV	<p>Vitals Extract: responds to requests for vital measurements data and returns XML-formatted results for the following attributes:</p> <ul style="list-style-type: none"> • entered • facility • location • measurement [m] <ul style="list-style-type: none"> ○ id ○ void ○ name ○ value ○ units ○ metricvalue ○ metricUnits ○ high ○ low ○ qualifier [m] • removed [m] • taken
6	VPRDGPF	<p>Flags Extract: responds to requests for patient record flag data and returns XML-formatted results for the following attributes (only returns flags that are currently active):</p> <ul style="list-style-type: none"> • approvedBy • assigned • category • content • document • id • name • origSite • ownSite • reviewDue • type





#	Routine	Description
7	VPRDIB	<p>Insurance Policies Extract: responds to requests for insurance data and returns XML-formatted results for the following attributes (only policies that are currently active are returned):</p> <ul style="list-style-type: none"> • company <ul style="list-style-type: none"> ○ id ○ name ○ address ○ telecom • effectiveDate • expirationDate • groupName • groupNumber • id • insuranceType • relationship • subscriber
8	VPRDLR	<p>Labs Extract: responds to requests for chemistry results and returns XML-formatted results for the following attributes:</p> <ul style="list-style-type: none"> • collected • comment • facility • groupName • high • id • interpretation • labOrderID • localName • loinc • low • orderID • result • resulted • sample • specimen • status • test • type • units • void





#	Routine	Description
9	VPRDLRA	<p>Labs By Accession Extract: responds to requests for lab results grouped by accession and returns XML-formatted results for the following attributes:</p> <ul style="list-style-type: none">• collected• comment• document• facility• groupName• id• labOrderID• name• resulted• sample• specimen• status• type• value<ul style="list-style-type: none">○ high○ id○ interpretation○ localName○ loinc○ low○ result○ test○ units○ void





#	Routine	Description
10	VPRDLRO	<p>Lab Panel Extract: responds to requests for lab results grouped by order/panel and returns XML-formatted results for the following attributes:</p> <ul style="list-style-type: none">• collected• comment• facility• groupName• id• order• resulted• sample• specimen• status• type• value<ul style="list-style-type: none">○ high○ id○ interpretation○ loinc○ low○ result○ test○ units○ vuid





#	Routine	Description
11	VPRDMC	<p>Clinical Procedure Extract: responds to requests for medicine/cardiology procedure data, directly or via the Procedures extract, and returns XML-formatted results for the following attributes:</p> <ul style="list-style-type: none"> • category • consult • dateTime • document [m] • encounter • facility • hasImages • id • interpretation • location • name • order • provider • requested • status • type
12	VPRDMDC	<p>Observations (CLiO) Extract: responds to requests for clinical observation data and returns XML-formatted results for the following attributes (only verified observations are returned):</p> <ul style="list-style-type: none"> • bodySite • comment • entered • facility • id • location • method • name • observed • position • product • quality • range • status • units • value • void





#	Routine	Description
13	VPRDOR	<p>Orders Extract: responds to requests for order data and returns XML-formatted results for the following attributes:</p> <ul style="list-style-type: none"> • acknowledgement [m] • content • entered • facility • group • id • location • name • provider • service • start • status • stop
14	VPRDPROC	<p>Procedures Extract: responds to requests for procedure data. The domain is a combination of the Surgery, Radiology, and Clinical Procedures packages. Please refer to VPRDSR, VPRDRA, and VPRDMC in this table for attribute information.</p>
15	VPRDPS	<p>Medications Extract: responds to requests for medication data and returns XML-formatted results for attributes based on the type of medication. See the next four table entries for attribute details.</p>





#	Routine	Description
15a	VPRDPS: Inpatient (unit dose) Meds	<p>Medications Extract/Inpatient (unit dose) Meds returns XML-formatted results for the following attributes:</p> <ul style="list-style-type: none"> • currentProvider • dose [m] <ul style="list-style-type: none"> ○ conjunction ○ dose ○ doseStart ○ doseStop ○ duration ○ noun ○ order ○ route ○ schedule ○ units ○ unitsPerDose • facility • form • id • IMO • location • medID • name • ordered • orderID • orderingProvider • parent • pharmacist • product [m] <ul style="list-style-type: none"> ○ class ○ code ○ concentration ○ name ○ order ○ role ○ vaGeneric ○ vaProduct • sig • start • status • stop





#	Routine	Description
		<ul style="list-style-type: none"> • vaStatus • vaType
15b	VPRDPS: Non-VA Meds	<p>Medications Extract/Non-VA Meds returns XML-formatted results for the following attributes:</p> <ul style="list-style-type: none"> • currentProvider • dose [m] <ul style="list-style-type: none"> ○ noun ○ route ○ schedule ○ units ○ unitsPerDose • facility • form • id • location • medID • name • ordered • orderID • orderingProvider • product [m] <ul style="list-style-type: none"> ○ class ○ code ○ concentration ○ name ○ role ○ vaGeneric ○ vaProduct • sig • start • status • stop • type • vaStatus • vaType





#	Routine	Description
15c	VPRDPS: Outpatient Meds	<p>Medications Extract/Outpatient Meds returns XML-formatted results for the following attributes:</p> <ul style="list-style-type: none"> • currentProvider • daysSupply • dose [m] <ul style="list-style-type: none"> ○ conjunction ○ dose ○ doseStart ○ doseStop ○ duration ○ noun ○ route ○ schedule ○ units ○ unitsPerDose • expires • facility • fill [m] • fillCost • fillsAllowed • fillsRemaining • form • id • lastFilled • location • medID • name • ordered • orderID • orderingProvider • pharmacist • prescription • product [m] <ul style="list-style-type: none"> ○ class ○ code ○ concentration ○ name ○ role ○ vaGeneric ○ vaProduct





#	Routine	Description
		<ul style="list-style-type: none"> • ptInstructions • quantity • routing • sig • start • status • stop • supply • type • vaStatus • vaType
15d	VPRDPS: IV Fluids/ Infusions	<p>Medications Extract/IV Fluids/Infusions Meds returns XML-formatted results for the following attributes:</p> <ul style="list-style-type: none"> • currentProvider • dose [m] • facility • id • ivLimit • location • medID • name • ordered • orderID • orderingprovider • pharmacist • product <ul style="list-style-type: none"> ○ class ○ code ○ concentration ○ name ○ ordItem ○ role ○ vaGeneric ○ vaProduct • rate • start • status • stop • vaStatus • vaType





#	Routine	Description
16	VPRDPSOR	<p>Medications By Order Extract: responds to requests for medication data by order data and returns XML-formatted results for attributes corresponding to the type of medication. This routine returns data in the same four formats as VPRDPS, the exception being that inpatient medications may be returned with multiple doses instead of one dose per medication. See previous entry for VPRDPS for details.</p>
17	VPRDPT	<p>Demographics Extract: responds to requests for patient demographic data and returns XML-formatted results for the following attributes:</p> <ul style="list-style-type: none"> • address • alias [m] • bid • died • disability [m] • dob • ethnicity [m] • exposure [m] • facility [m] • familyName • flag [m] • fullName • gender • givenNames • icn • id • lrdfn • maritalStatus • race [m] • religion • sc • scPercent • sensitive • ssn • support [m] • telecom • veteran





#	Routine	Description
18	VPRDPXAM	<p>Exams Extract: responds to requests for patient exam data and returns XML-formatted results for the following attributes:</p> <ul style="list-style-type: none"> • comment • dateTime • encounter • facility • id • name • result
19	VPRDPXED	<p>Education Topics Extract: responds to requests for patient education data and returns XML-formatted results for the following attributes:</p> <ul style="list-style-type: none"> • comment • dateTime • encounter • facility • id • name • result
20	VPRDPXHF	<p>Health Factors Extract: responds to requests for health factor data and returns XML-formatted results for the following attributes:</p> <ul style="list-style-type: none"> • category • comment • encounter • facility • id • name • recorded • severity





#	Routine	Description
21	VPRDPXIM	<p>Immunizations Extract: responds to requests for immunization data and returns XML-formatted results for the following attributes:</p> <ul style="list-style-type: none"> • administered • comment • contraindicated • cpt • encounter • facility • id • location • name • provider • reaction • series
22	VPRDPXSK	<p>Skin Tests Extract: responds to requests for skin test data and returns XML-formatted results for the following attributes:</p> <ul style="list-style-type: none"> • comment • dateTime • encounter • facility • id • name • result





#	Routine	Description
23	VPRDRA	<p>Radiology Exams Extract: responds to requests for radiology exam data, directly or via the Procedures extract, and returns XML-formatted results for the following attributes:</p> <ul style="list-style-type: none"> • case • category • dateTime • document [m] • encounter • facility • hasImages • id • imagingType • interpretation • location • modifier [m] • name • order • provider • status • type
24	VPRDSDAM	<p>Appointments Extract: responds to requests for future scheduled visits and returns XML-formatted results for the following attributes:</p> <ul style="list-style-type: none"> • apptStatus • clinicStop • dateTime • facility • id • location • patientClass • provider • service • serviceCategory • type • visitString





#	Routine	Description
25	VPRDSR	<p>Surgical Procedures Extract: responds to requests for surgery data, directly or via the Procedures extract, and returns XML-formatted results for the following attributes:</p> <ul style="list-style-type: none"> • category • dateTime • document [m] • encounter • facility • id • modifier [m] • name • opReport • otherProcedure [m] • provider • status • type
26	VPRDTIU	<p>Documents Extract: responds to requests for documents and returns XML-formatted results for the following attributes:</p> <ul style="list-style-type: none"> • category • clinician [m] • content • documentClass • encounter • facility • id • images • localTitle • loinc • nationalTitle • nationalTitleRole • nationalTitleService • nationalTitleSetting • nationalTitleSubject • nationalTitleType • parent • referenceDateTime • status • subject • type





#	Routine	Description
27	VPRDVSIT	<p>Visits/Encounters Extract: responds to requests for visit data (inpatient and outpatient encounters) and returns results in XML-format for the following attributes (only primary, non-historical visits are returned):</p> <ul style="list-style-type: none"> • creditStopCode • dateTime • document [m] • facility • id • location • patientClass • provider [m] • reason • service • serviceCategory • stopCode • type • visitString <p>For admissions only:</p> <ul style="list-style-type: none"> • arrivalDateTime • departureDateTime • provider [m] • roomBed • specialty





Example

The following text paragraph contains a snippet of data that the VPRDGMV routine returned in response to a VPR GET PATIENT DATA RPC call for information about test-patient 229:

```
<vital>
<entered value='3050316.115625' />
<facility code='998' name='ABILENE (CAA)' />
<location code='158' name='7A GEN MED' />
<measurements>
<measurement id='14871' vuid='4500634' name='BLOOD PRESSURE'
value='168/68' high
='210/110' low='100/60' />
<measurement id='14869' vuid='4500636' name='PULSE' value='72'
high='120' low='60' >
<qualifiers>
<qualifier name='RADIAL' vuid='4688678' />
</qualifiers>
</measurement>
<measurement id='14872' vuid='4500635' name='PAIN' value='1' />
<measurement id='14870' vuid='4688725' name='RESPIRATION'
value='18' high='30' low='8' >
<qualifiers>
<qualifier name='SPONTANEOUS' vuid='4688706' />
</qualifiers>
</measurement>
<measurement id='14868' vuid='4500638' name='TEMPERATURE'
value='99' units='F' metricValue='37.2' metricUnits='C' high='102'
low='95' >
<qualifiers>
<qualifier name='ORAL' vuid='4500642' />
</qualifiers>
</measurement>
</measurements>
<taken value='3050316.1' />
</vital>
```





Checksums

The following table contains checksums for the VPR routines VPR GET PATIENT DATA.

#	Routine	Checksum
1	VPRD	28899728
2	VPRDGMPL	27790775
3	VPRDGMRA	22392321
4	VPRDGMRC	10880986
5	VPRDGMV	41671211
6	VPRDGPF	5569926
7	VPRDIB	12692505
8	VPRDLR	24712747
9	VPRDLRA	76300469
10	VPRDLRO	27350157
11	VPRDMC	58328454
12	VPRDMDC	44678829
13	VPRDOR	13221791
14	VPRDPROC	10570617
15	VPRDPS	18817165
16	VPRDPSI	41207623
17	VPRDPSO	15569449
18	VPRDPSOR	39128356
19	VPRDPT	70553505
20	VPRDPXAM	9620825
21	VPRDPXED	9831355
22	VPRDPXHF	10068928
23	VPRDPXIM	15857859
24	VPRDPXSK	9706647
25	VPRDRA	41770325
26	VPRDSDAM	20114385
27	VPRDSR	30371946
28	VPRDTIU	80235055
29	VPRDVSIT	89381077
30	VPRPI << post install routine	300624





Options

Name	Description
VPR APPLICATION PROXY	This option allows the VPR connector proxy access to the VistA system.

Glossary

Term	Description
CLiO	Clinical Observations
HMP	Health Management Platform
PCE	Patient Care Encounter
RPC	Remote Procedure Call
VistA	Veterans (Health) Information System Technology Architecture
VPR	Virtual Patient Record

