



WorldVista
www.worldvista.org

Community CCR/CCD Project*

Opensource CCR and CCD support
for Vista based systems

Presentation to the MMS CCR Symposium

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by

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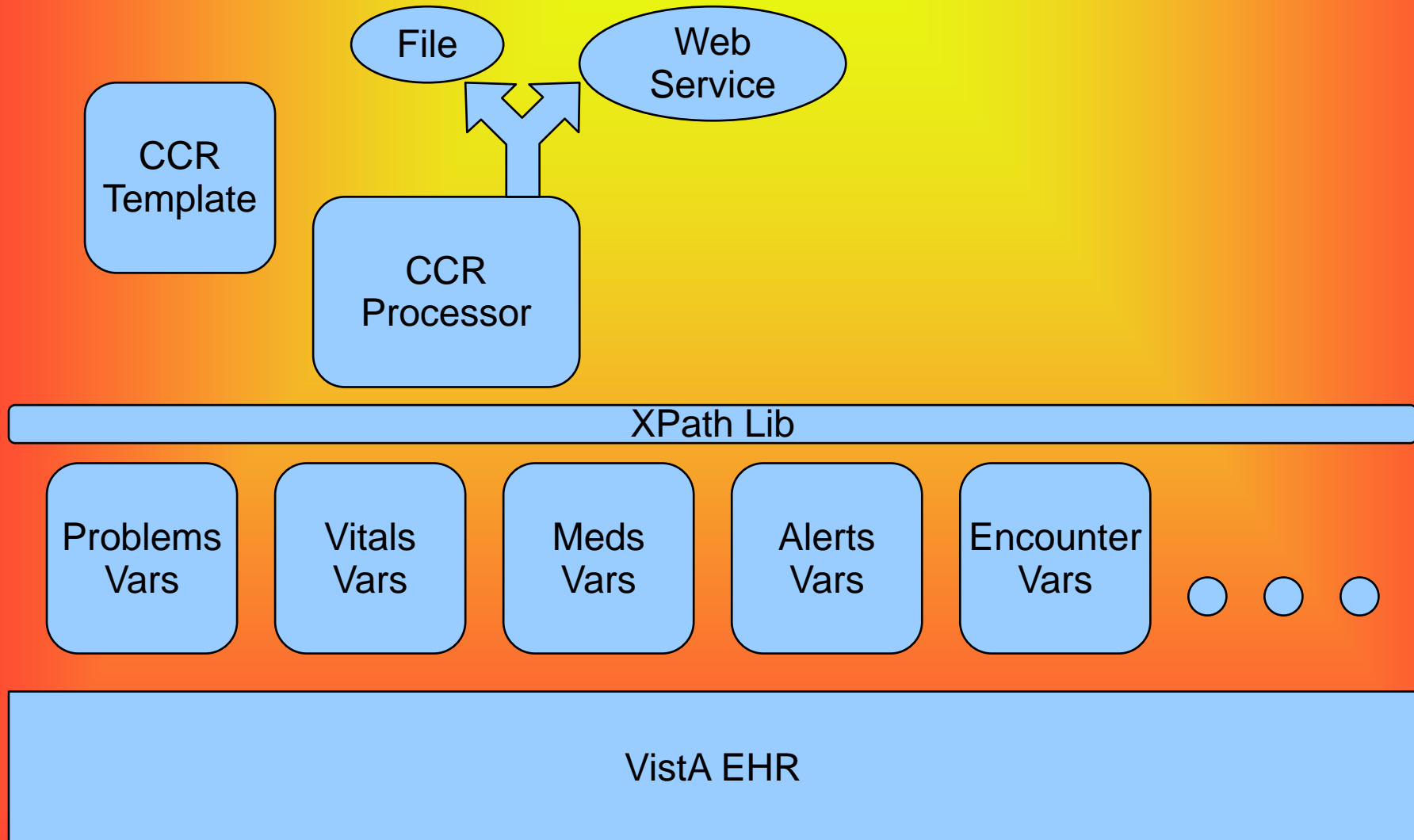
Topics

- Project Overview
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Project Overview

- **WorldVistA:** non-profit, fosters use of VistA outside the VA
 - Publishes WorldVistA EHR 1.0 - CCHIT Certified Opensource VistA System
 - MUMPS based, supported on GT.M (opensource) and Cache platforms
- **CCR/CCD Project:** 1 Year, community, mostly volunteer, prototype available now
 - Support the CCR and CCD on VistA
 - In Mumps, attempt at compatibility with all VistA variations

CCR Generation Approach



Use of XPath

```
//ContinuityOfCareRecord/Body/Problems
```

```
::<Problems>  
  ::<Problem>  
    ::<CCRDataObjectID> @ @PROBLEMOBJECTID @ @</CCRDataObjectID>  
    ::<Type>  
    ::<Text>Problem</Text>  
    ::</Type>  
    ::<Description>  
    ::<Text> @ @PROBLEMDESCRIPTION @ @</Text>  
    ::<Code>  
    ::<Value> @ @PROBLEMCODEVALUE @ @</Value>  
    ::<CodingSystem>ICD9CM</CodingSystem>  
    ::<Version> @ @PROBLEMCODINGVERSION @ @</Version>  
    ::</Code>  
    ::</Description>  
    ::<Source>  
    ::<Actor>  
    ::<ActorID> @ @PROBLEMSOURCEACTORID @ @</ActorID>  
    ::</Actor>  
    ::</Source>  
  ::</Problem>  
::</Problems>
```

Our CCR now has Header, Problems, Vitals, Meds, and Actors

Continuity of Care Record

Date Created: Thu Sep 04, 2008 at 11:15 AM UTC9-0500
From: ZZ ALBANY-PRRTP
 WorldVista EHR/VOE 1.0
To: PATIENT ZZZRETFOURFIFTYEIGHT (Patient)
Purpose: CEND PHR

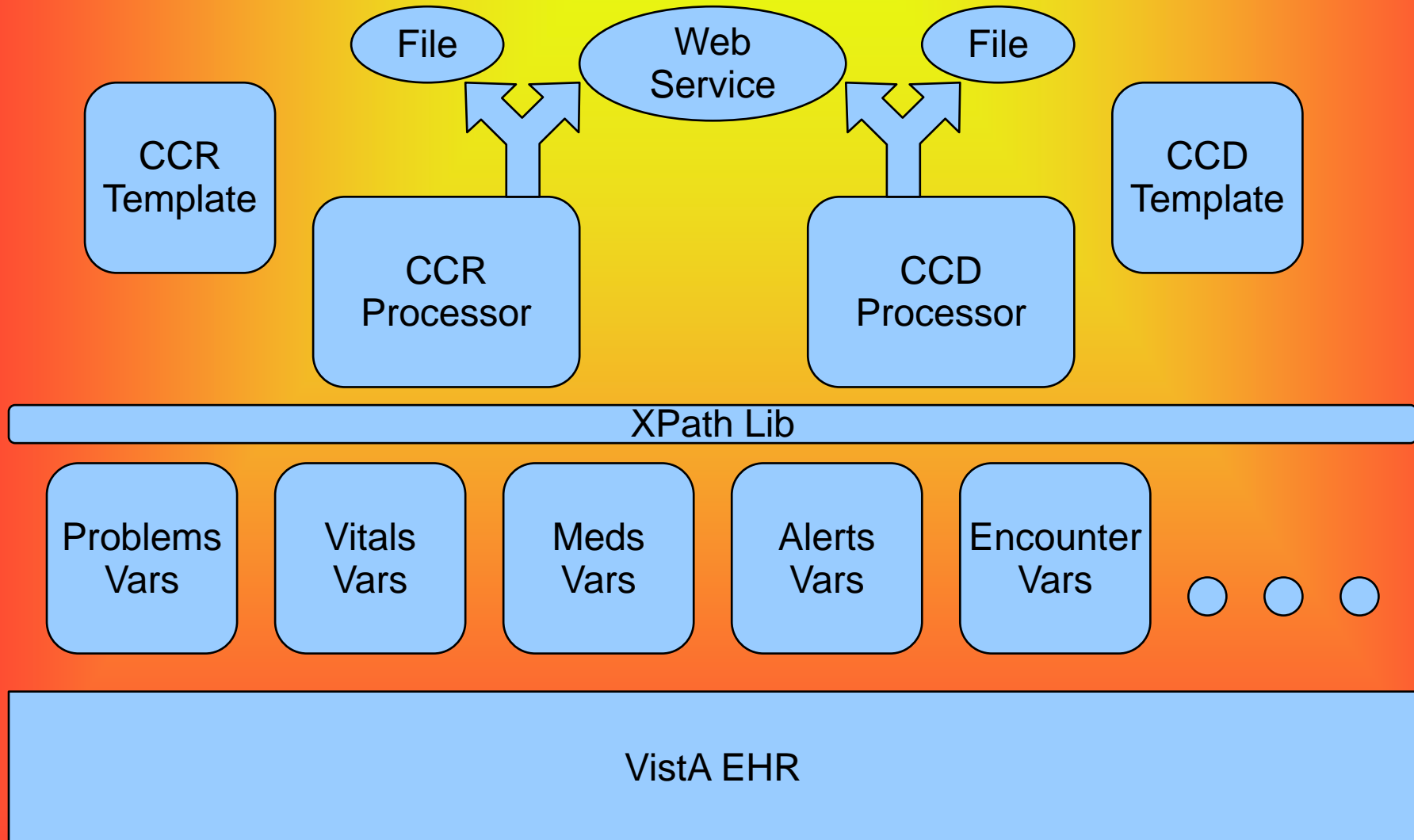
Patient Demographics

Name	Date of Birth	Gender	Identification Numbers	Address / Phone
PATIENT ZZZRETFOURFIFTYEIGHT	Jan 01, 1935	F	SSN 666909955	Home: ALBANY, NEW YORK 99998 Residential Telephone: 222-555-8235 Work Telephone: 222-555-7720

Problems

Type	Date Code	Description	Status	Source
Problem	296.01 (ICD9CM)	MANIC DISORDER-MILD		ONEHUNDREDNINETYONE PROVIDER Scholar Extraordinaire
Problem	442.0 (ICD9CM)	UPPER EXTREMITY		TWOHUNDREDNINETYSEVEN PROVIDER Scholar Extraordinaire
Problem	401.9 (ICD9CM)	Essential Hypertension		FIFTYTHREE WARDCLERK COMPUTER SPECIALIST
Problem	401.9 (ICD9CM)	Essential Hypertension		WARD CLERK
Problem	303.93 (ICD9CM)	ALCOH DEP NEC/NOS-REMISS		ONEHUNDREDNINETYONE PROVIDER Scholar Extraordinaire
Problem	309.82 (ICD9CM)	ADJUST REACT-PHYS SYMPT		ONEHUNDREDNINETYONE PROVIDER Scholar Extraordinaire

CCD Co-Generation



The CCD Template is Marked up with CCR Headings..

```
//ContinuityOfCareRecord/Body/Problems
```

```
;;<Problems>
;;<component>
;;<section>
;;<templateId root='2.16.840.1.113883.10.20.1.11'/>
;;<code code="11450-4" codeSystem="2.16.840.1.113883.6.1"/>
;;<title>Problems</title>
;;<entry typeCode="DRIV">
;;<act classCode="ACT" moodCode="EVN">
;;<templateId root='2.16.840.1.113883.10.20.1.27'/>
;;<id root="6a2fa88d-4174-4909-aece-db44b60a3abb"/>
;;<code nullFlavor="NA"/>
;;<entryRelationship typeCode="SUBJ">
;;<observation classCode="OBS" moodCode="EVN">
;;<templateId root='2.16.840.1.113883.10.20.1.28'/>
;;<id root="d11275e7-67ae-11db-bd13-0800200c9a66"/>
;;<code code="ASSERTION" codeSystem="2.16.840.1.113883.5.4"/>
;;<statusCode code="completed"/>
;;<effectiveTime>
;;<low value="@ @PROBLEMDATEOFONSET @@"/>
;;</effectiveTime>
;;<value xsi:type="CD" code="@ @PROBLEMCODEVALUE @@" codeSystem="2.16.840.1.113883.6.96"
displayName="@ @PROBLEMDESCRIPTION @@"/>
```


Our CCD uses most of the same code, and currently has the Problems Section

Continuity of Care Document

Created On: April 7, 2000

Patient: TEST ZZ PATIENT

MRN: @@ACTORIEN@@

Birthdate: 1-, 1945

Sex: Female

Guardian:

Next of Kin:

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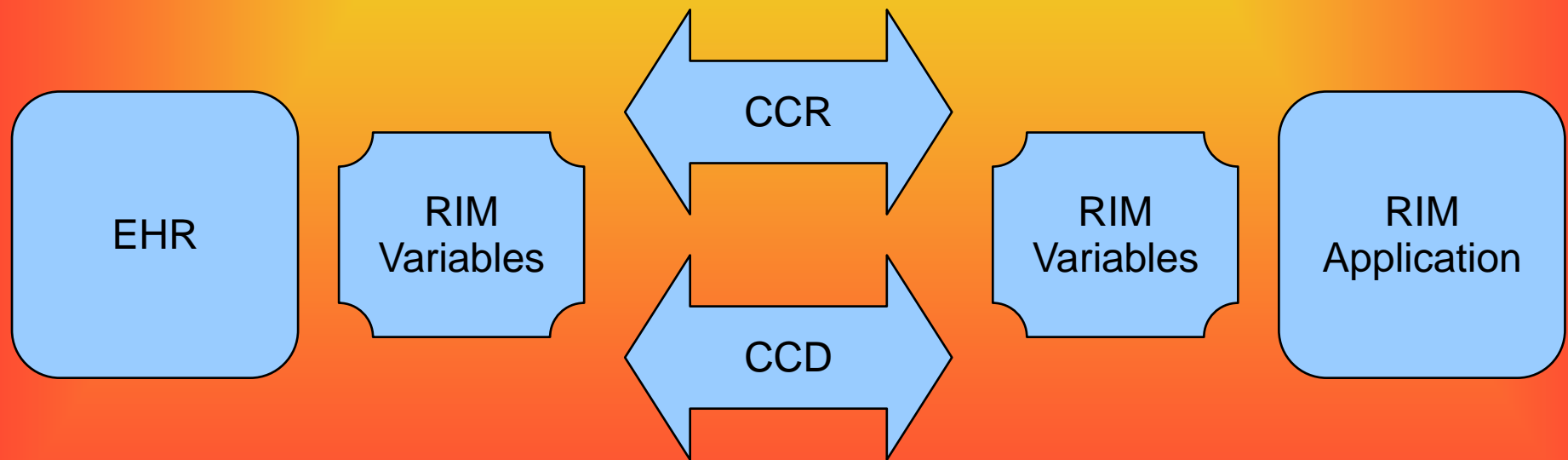
- [Problems](#)

Problems

Condition	Effective Dates	Condition Status
Diabetes Mellitus without mention of Complication, type II or unspecified type,		Active
Diabetes mellitus of mother, complicating pregnancy, childbirth, or the puerperi		Active
Diabetes Mellitus without mention of Complication, type II or unspecified type,		Active
Diabetes mellitus of mother, with delivery, with mention of postpartum complicat		Active
Family History of Diabetes Mellitus (ICD-9-CM V18.0)		Active
Heart failure (ICD-9-CM 428.9)		Active

RIM Variable Coherence Analysis

- *POV: The CCR and CCD are conveyances of RIM Variables to a RIM modeled application*



.. RIM Coherence

- Measures attributes of the variables extracted for an single health record
 - THE PRESENCE OF CLINICAL DATA IN A SECTION
 - ARE THE DATA ELEMENTS TIME-BOUND
 - ARE THE DATA ELEMENTS CODED WITH SNOMED OR LOINC ETC
 - ARE SOURCE ACTORS ASSOCIATED WITH THE DATA ELEMENTS
 - ARE ACTORS IDENTIFIED REGARDING THEIR ROLE
 - .. AND OTHER FACTORS YET TO BE DETERMINED
- Aggregated to organize Batch Processing and Testing

.. RIM Coherence

- Rim Coherence analysis may indicate:
 - The quality of the extraction process
 - The ability of the EHR to represent RIM variables
 - The quality of the Provider's workflow in maintaining a coherent health record

```
GTM>D CLIST^GPLRIMA
```

```
(RIMTBL_1:105) ^NOTEXTRACTED^HEADER^^^PROBLEMS^^^^^VITALS^^^^^MEDS
```

```
(RIMTBL_2:596) ^NOTEXTRACTED^HEADER^^^^^^^VITALS
```

```
(RIMTBL_3:44) ^NOTEXTRACTED^HEADER^^^PROBLEMS^^^^^VITALS
```

```
(RIMTBL_4:821) ^NOTEXTRACTED^HEADER
```

```
(RIMTBL_5:18) ^NOTEXTRACTED^HEADER^^^^^^^VITALS^^^^^MEDS
```

```
(RIMTBL_6:14) ^NOTEXTRACTED^HEADER^^^PROBLEMS
```

```
(RIMTBL_7:15) ^NOTEXTRACTED^HEADER^^^^^^^MEDI
```

```
(RIMTBL_8:5) ^NOTEXTRACTED^HEADER^^^PROBLEMS^^^^^^^MEDS
```

Use Cases

- **ePCRN**: Electronic Primary Care Research Network
 - University of Minnesota NIH funded research network (provides partial CCR/CCD project funding)
 - Plans to use WorldVista CCR for access by underserved community clinics
- **CCHIT**: CCD support is required for next WorldVista CCHIT certification
- **many, many other uses...**

Project Resources

- **WorldVista Website:**

- <http://worldvista.org>

- **Project Discussion Group:**

- <http://groups.google.com/group/ccd-ccr-project>

- **Source Code:** (public svn)

- <http://trac.opensourcevista.net/CCD-CCR-Project/browser/ccr/trunk/p>

- **Our Vista Community** (Hardhats):

- <http://groups.google.com/group/Hardhats>

Contributors

- HP
- KRM
- Medsphere
- Robert Morris University
- Sequence Managers
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