LMR and Services Demo

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Overview

- CDS Service Goals
- Success Factors
- CDS Web Service Authored Rules
- CDS Web Service Architecture
- CDS Web Service and LMR Reminders
- LMR Reminder Display
- LMR Reminder Acknowledgement Display
- Recorded Demonstration

CDS Service Goals

- To understand the requirements for being able to interoperate across differing institutions, applications, and technologies in the area of clinical decision support, and in particular, to define standards for:
  - Terminology
  - Inputs to a CDS service
  - Outputs from a CDS service
- To demonstrate the workability of the above standards by means of design and implementation of:
  - Rules needed for the demonstrations
- A prototype service

Success Factors

1. Executable rules authored as represented by KTS team
2. Public web service delivered that executes the rules
3. Implementation of web service in EHR/LMR

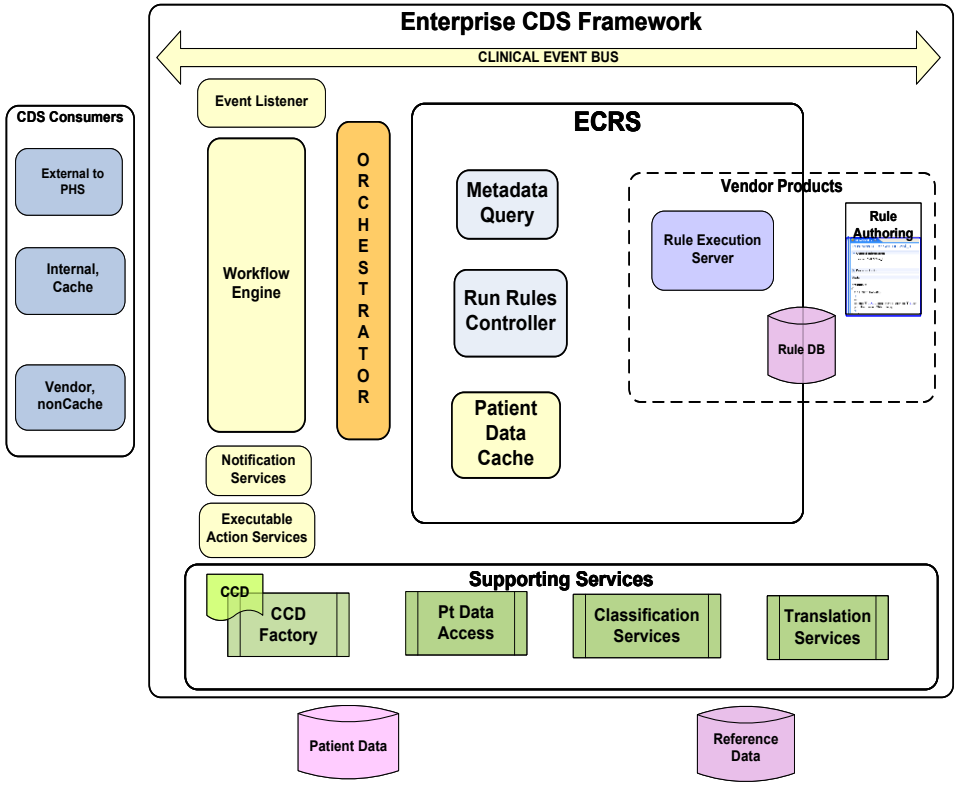
CDS web Service Authored Rules

1. Executable Rules Authored – L4

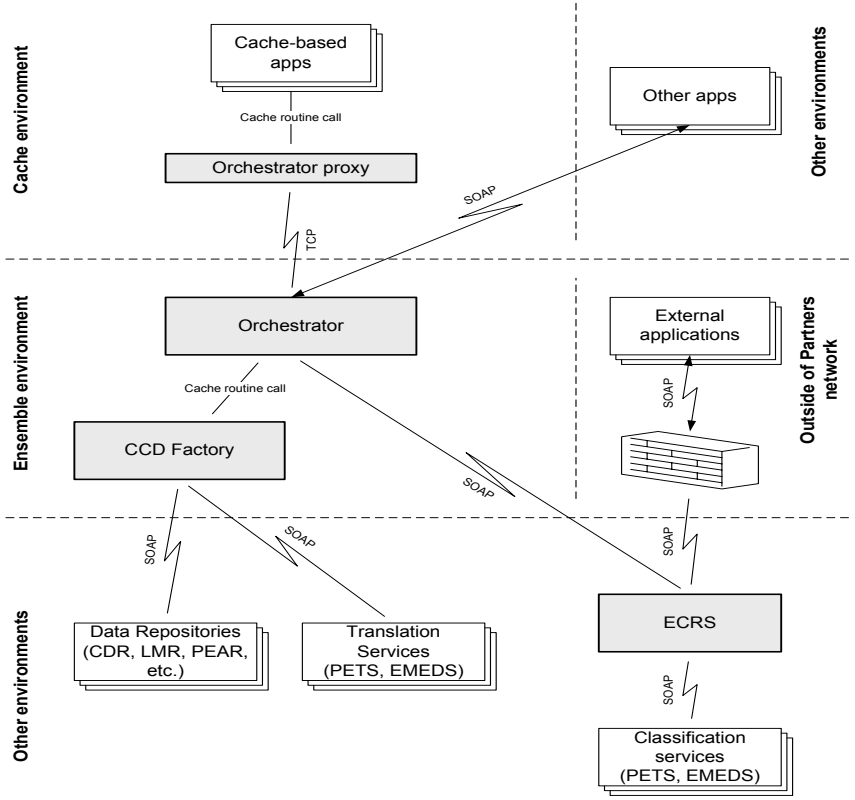

```
<?xml version="1.0" encoding="UTF-8"?>
<_extension_:ExtendedActionRule xmi:version="2.0" xmlns:xmi="http://www.omg.org/XMI"
      xmlns:_extension_="http://ilog.rules.brms.extension/default">
 <eAnnotations source="ilog.rules.base_type">
  <details key="baseType" value="model.brl.ActionRule"/>
 </eAnnotations>
 <name>OP0000009_Consider Anti-platelet therapy (Not on antiplatelet_Contraindications
      present)</name>
 <uuid>_qJy1sIznEd6ZxdsFwkG2cQ</uuid>
 <locale>en_US</locale>
 <definition><![CDATA[if          it is not true that thePatient has Active Clinical State with
      code "108972005" , code system is SNOMED , qualifier name "57646009" , qualifier
      name code system is SNOMED , qualifier value "18629005" and qualifier value code
      system is SNOMED          and thePatient has Active Clinical State with code
      "108972005" , code system is SNOMED , qualifier name "410536001" , qualifier name
      code system is SNOMED , qualifier value "405177001" and qualifier value code system
      is SNOMEDthen          declare 'theaction' as an action ; set theaction to a new
      empty Action of theRecommendation with rulename "OP0000009" , rule package "Anti-
      platelet Therapy Rules" , version "1" , guideline "Anti-platelet" , operator "and" ;
                add Message Request with the Message "Patient has CAD or equivalent,
      consider starting anti-platelet therapy, but potential contraindications exist." and Target
      Code "309343006" to the Request List of theaction ;          add Message Request with
      the Message "Because you have diabetes or heart disease, you might benefit from
      aspirin or other similar medications to prevent heart attacks and strokes, but there may
      be a good reason why your doctor has not prescribed it.  If you are not taking aspirin
      regularly, you may want to discuss whether or not you should take aspirin with your
      doctor." and Target Code "116154003" to the Request List of theaction ;      declare 'the
      RequestList' as a request list ;                set 'the RequestList' to add new RequestList
      ;          set the operation of 'the RequestList' to "or" ;      add Substance
      Administration Request with product code "C0004057" , route "C38288" , alternative
      text "Start aspirin" to 'the RequestList' ;      add Substance Administration Request with
      product code "C0070166" , route "C38288" , alternative text "Start clopidogrel" to 'the
      RequestList' ;          add 'the RequestList' to request lists of theaction ;
                add Knowledge Asset Request with title "Help me choose: Anti-platelet" ,
      identifier "http://Help me choose: Anti-platelet" , identifier type "URL" , knowledge
      resource type "308910008" , alternative text "" to theaction ;]]></definition>
 <status>deployable</status>
</_extension_:ExtendedActionRule>
```

CDS Web Service Architecture

2. Public web service that executes rules



Components and communication mechanisms between consuming applications, ECRS service, and CCD Factory service

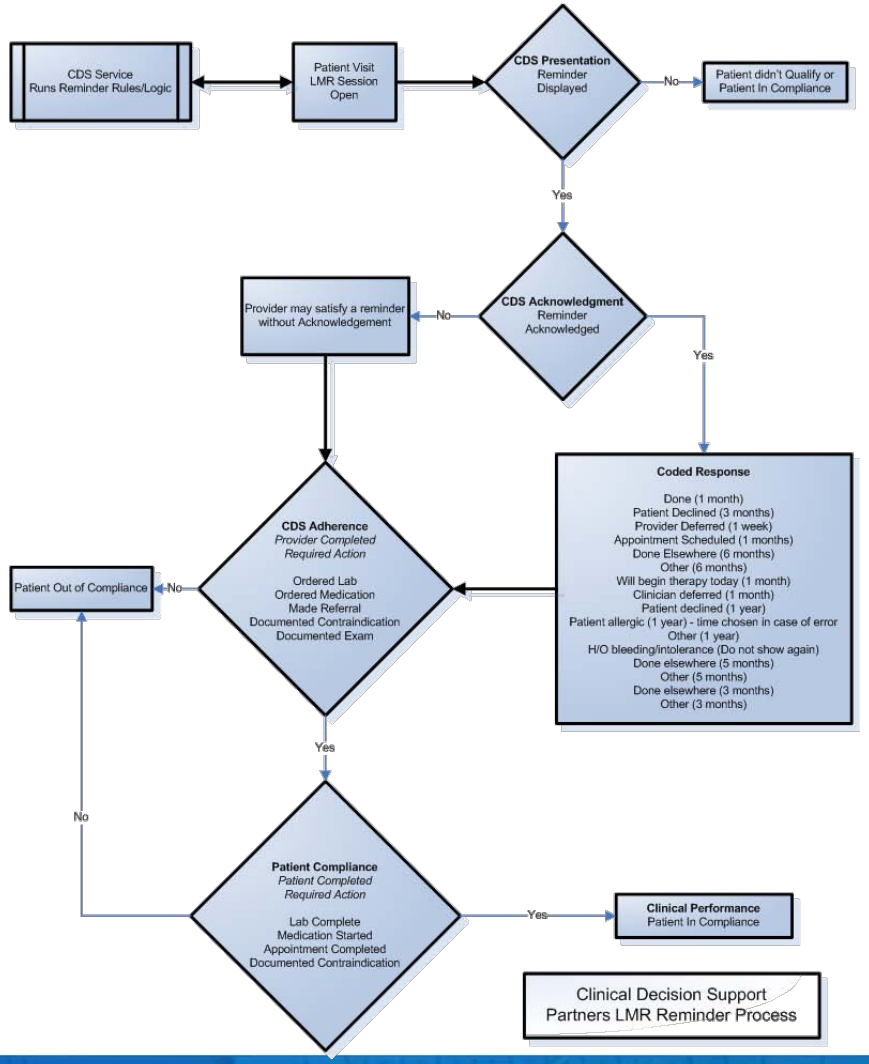


Communication mechanisms that are used from the various parts of the Enterprise CDS Framework

CDS Web Service and LMR Reminder

1. LMR Patient Session Opened
2. LMR Calls CDS Web Service
3. CCD is created and CDS Rules fire
4. CDS Web Service produces a Response Object that is fed back to LMR
   a. Patient qualifies for CDS Reminder
   b. Patient doesn't qualify for CDS Reminder
5. If patient qualifies the CDS Reminder fires and displays in patient record
6. Reminder satisfied by
   a. Physician acknowledging through a coded response
   b. Physician adhering to recommendation and patient complying
   c. Physician documenting contraindication

3. CDS Web Service Implemented in EHR/LMR



LMR Reminder Display: A1C testing

LMR DC3A1 SUMMARY - Microsoft Internet Explorer provided by Partners HealthCare System

File Edit View Favorites Tools Help

Address http://lmrintra.partners.org/scripts/phsweb.mwl?PKG=0&ZXSOPT=PFWEB&SESS=u339328516462376490119&ZXSPTVER=2&SERVICE=Choose&ID=103643534

Lmrsftest,Dmseven

20590154 (BWH) | 01/01/1970 (39 yrs.) F

Select | Desktop | Pt Chart: Summary | Oncology | Custom | Reports | Admin | Sign | Results | ? | Resource | Popup

Reminders

- No known documented smoking status. Click to enter status.
- Patient age 18-65 with high risk medical condition, due for Pneumovax. — Done — Execute
- Patient is overdue for pap smear (rec q 3 years). — Done — Execute
- Patient with DM overdue for urine microalb/creatinine ratio (rec: q1 year). — Order Urine Microalbumin/creatinine ratio — Execute
- Patient with DM overdue for HbA1C (rec: q 6 months). — Order HbA1C — Execute
- Patient with DM overdue for ophthalmology exam (rec: q 1 year). — Appointment scheduled — Execute

"Patient with DM overdue for HbA1C (rec: q 6 months)"

Congestive heart failure
Diabetes mellitus type 2

End of Visit Add New

Date/Time	Hx	Status	Provider
04/05/2007 15:08		Active	Janak Joshi
04/05/2007 15:08		Active	Janak Joshi

Visits

Date	Provider	Clinic

Advance Care Planning

Allergies Add New

Allergen	Reaction

Notes Add New

Date	Subject	Provider

Last Known Values

Test Description	Last Known	Date

Radiology

Family History Add New

Customize

Done | Local intranet

LMR Reminder Acknowledgement (Coded Response)

LMR OC3A1 HEALTHMAINTENANCE - Microsoft Internet Explorer provided by Partners HealthCare System

File Edit View Favorites Tools Help

Back Search Favorites Media

Address http://lmrintra.partners.org/scripts/phsweb.mwl?PKG=08&ZXSOPT=PFWEB&SESS=u339328516462376490119&ZXSPTVER=2&SERVICE=Choose&ID=103643534 Links

Lmrsftest,Dmseven

20590154 (BWH) 01/01/1970 (39 yrs.) F

Select | Desktop | Pt Chart: Health Maint | Oncology | Custom | Reports | Admin | Sign | Results | ? | Resource | Popup

HbA1c

HbA1c

Coded Responses List: - Select Coded Response -

Select Date

Result

Comments

- Select Coded Response -
Done elsewhere
Patient declined
Provider deferred
Done
Other
Appointment scheduled

The ADA recommends that Hgb A1C be measure at least twice per year, with more frequent intervals (every 3 months) being appropriate in the presence of poor diabetic control.

Ok | Cancel | History | References

Done Local intranet

LMR and Services Recorded Demonstration