

Oscar Canada Users Society

2011 BC User Group Meeting

Data Integration for clinical care

Marc Dumontier – Developer,
Oscar McMaster



Marc Dumontier

- Currently a developer at McMaster University, Department of Family Medicine. Developing OSCAR and related products.
- Former Lead Developer and IT Director at St. Michael's Hospital for the CAISI Project (2005-2010)
- Previously worked on open source, public good projects in the bioinformatics space (protein interaction and sequence databases)

Key Points

- Sharing of patient health data across clinics.
- Clinics can control who they share data with.
- Patients can control who has access to their data.
- OSCAR providers can do this now!

Introduction

- What problems are we trying to solve?
 - Private and protected patient health data is scattered across heterogeneous systems.
 - Outdated, versioning, and semantically similar data is difficult to make sense of.
 - Research and analysis of “big picture” data sets necessary for improving patient care from multiple perspectives.
- What are our goals?
 - Improved clinical care of patients
 - Improved productivity of health care providers
 - Secure access to data across front line providers

Major Challenges

● Privacy

- Be consistent with regional legislation (grey area)
- Be flexible enough to allow limitations set by providers and patients.
- Implement informative consent process.

● Security

- Adhere to strict encryption standards
- Systems housing data must be secure and tested (TRA)

● Data Ownership

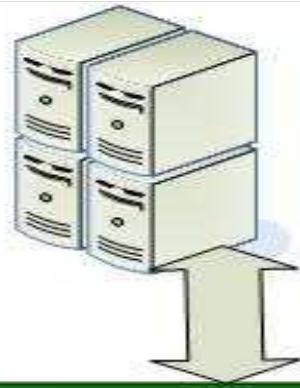
- Primary vs. secondary data sources

History of the Integrator sub-project

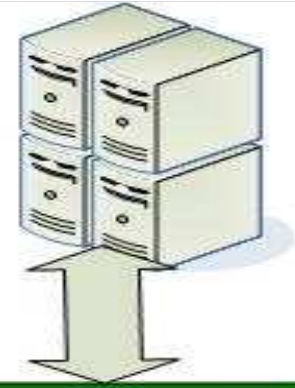
- Project initiated by CAISI (Client Access to Integrated Services and Information).
- Rewritten 2 times, after countless hours of internal and external discussions, focus groups, legal counsel, technical hurdles.
- Underwent independent 3rd party PIA and TRA.
- Deployed to ICHA (Inner City Health Associates)
- Extended and enhanced by OSP and McMaster

Architecture

- EMPI (Enterprise Master Patient Index) provides a persistent map which links patients across clinics.
- CACHE is a secondary data source which is periodically updated by member clinics.
- Web Services provides a standards based interface to the data in the repository.



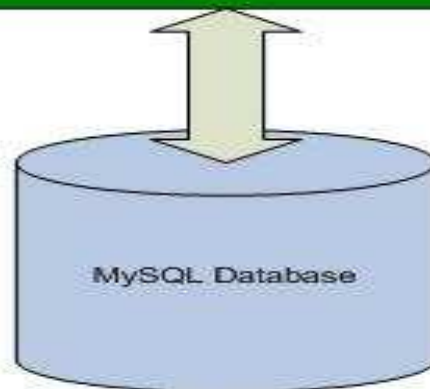
OSCAR
SERVERS



Web Services

EMPI

CACHE



MySQL Database

EMPI

- Enterprise Master Patient Index
- This is the component which maps patients from one system to another.
- Patient 004544 from Dr. Smith's clinic is the same person as patient 34233 from Dr. Johnson's practice.
- Deterministic vs. Probabilistic matching
- Persistent – Primary Data Source.
- Used to link data across clinics together.

Data Cache

- The data cache is where all the patient data is “temporarily” held.
- It consists only of replicated data from the primary sources (OSCAR systems).
- It is not backed up, and is often regenerated.
- The data is always accessed through the web services layer which provides additional services.

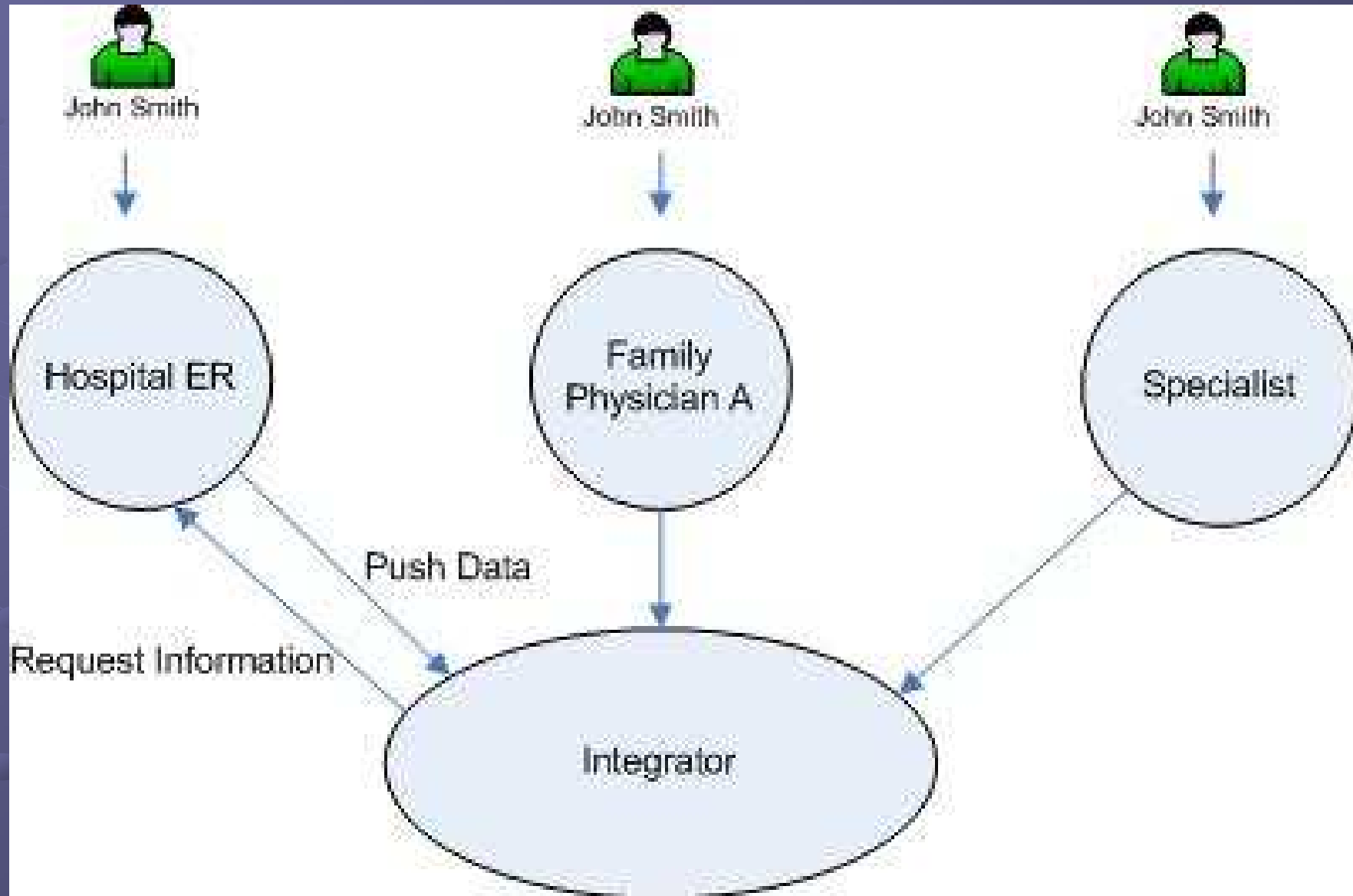
Other Data

- Logging – All transactions are logged
- Audit Trail – Provides additional context in order to determine who accessed what and when.

Web Services

- Provides an interface to OSCAR
- Provides Authentication and authorization services
- Executes relevant business logic
 - Querying
 - Collating
 - Filtering
 - Logging

Data Flow



Consent

- Patient consent is required in order to share information.
- There are multiple ways of presenting and obtaining consent
- Patients can exclude specific clinics from viewing their data and/or specific data types.
- Simple vs. Complex
- Consent is global to the integrated community
- Digital/Paper Signatures

Role Based Access

- Roles in OSCAR determine access to functions as well as to data.
- Roles can also be program based.
- Allows for integrator to be utilized across multiple sectors in order to provide holistic care (social services).

Data Sharing Agreement (DSA)

- Important pre-cursor to implementation
- Determine roles and responsibilities of member agencies.
- Determine processes.
- Define a lead entity.
- Preparation is **KEY** to a successful integration

Case Study: ICHA

- Group of independent physicians wanting to share patient information.
- 27 sites integrated.
- Operational since June 2009
- Health Number Registry
- Need administrative support to implement processes.

Current Implementation

- New Clients
- Client Linking
- Consent
- Notes/Issues
- Preventions
- Prescriptions
- E-Referrals

New Client

New Client

Please enter the following information. The system will try to determine if the client has already been entered into the system.

First Name	<input type="text" value="Jaden"/>
Last Name	<input type="text" value="Dumontier"/>
Birth Date	<input type="text" value="Month"/> <input type="text" value="Day"/> <input type="text" value="YYYY"/> (YYYY)
Gender	<input type="text" value="Any"/>
Health Card	<input type="text"/> <input type="checkbox"/> (version)




The following possible matches were found in the integrated community.

	Client Name	BirthDate	Gender	Matching Score
<input type="button" value="Copy to Local"/>	Dumontier, Jaden	2009-07-28	F	33
<input type="button" value="Copy to Local"/>	dumontier, marc	1978-04-26	M	16

Client Linking

Manage Linked Clients

Demographic

Linked	Photo	Score	Last Name	First Name	Birth Date	Gender
Local		100	Dumontier	Jaden	2009-07-28	F
Implicitly Linked		55	Dumontier	Jaden	2009-07-28	F
<input type="checkbox"/>		16	dumontier	marc	1978-04-26	M

save

cancel

Consent

Client consent

- I understand the purpose of CAISI, and the benefits and risks associated with consenting to integrate my personal information, including personal health information, among the participating CAISI integrating agencies, and I have been given a list of participating agencies. I consent to the integration of my information for the purposes described above.

Check to indicate which agencies to exclude from consent :

- Facility 1
 Facility 2

- I do not consent to the integration of my information for the integration purposes described above.
 Deferred : client wishes to consider consent at a future date.
 Deferred : staff decided that collection of consent not appropriate at this time.
 Refused to sign : client is not interested in integration.

Expiry of consent at a predefined time

Client Signature

- A paper copy of this consent has been signed and retained at this agency
 An electronic signature has been recorded

Issues/Notes

Search [] OSCAR Search [] Search []

Filter Calculators [] Templates []

Note from Integrated Facility : Facility 1

[27-May-2011 .:]
Patient is experiencing depression, prozac is prescribed. Follow up recommended in 30 days.
[Signed on 27-May-2011 22:46 by doctor oscar doc]

Editors: Encounter Date: 27-May-2011 22:46 rev N/A
Assigned Issues: Enc Type: "face to face encounter with client"
○ ICD_10:3090

Unresolved Issues +
BRIEF DEPRESSIVE REACT
Resolved Issues +
BRIEF DEPRESSIVE REACT
Decision Support Alerts +

Prescriptions

Patient Demographics

Name: Jaden Dumontier Age: 1 Preferred Pharmacy :

Patient Drug Profile [\(Print\)](#) [\(Reprint\)](#)

Rx Date	Prescription	Rescribe	Delete	Location Prescribed
Fri May 27 00:00:00 EDT 2011	PROZAC CAPSULES 10MG Take 1 Tabs PO OD for 30Days Qty:30 Repeats:1	<input type="button" value="Search to Re-prescribe"/>		Facility 1

[Show All](#) [Active](#) - [Inactive](#) - [All](#)

Preventions

Childhood Immunization (February)

[show/hide](#)

DTaP-IPV #

Hib #

Pneu-C #

MMR #

Age: 22 months
Date: 2011-05-27
(At facility : Facility 1)

MenC-C #

VZ #

HepB #

dTap #

Td #

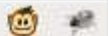
Flu #

http://localhost:8080/oscar_integrator2/oscarPrevention/display_rei

Prevention Type	MMR
At Facility	Facility 1
By Provider	oscardoc, doctor
Prevention Date	2011-05-27
Next Prevention Date	2011-07-27
neverReason	
manufacture	Astra Zeneca
location	clinic
route	343
lot	424234`
comments	No reactions
dose	10cc

close

Done



E-Referral

- E-Referrals across clinics
- Receiving clinic has the ability to accept or reject the referral.
- Accepting the referral forwards the user to the client search screen (This patient may not have a local record).
- Admission done through the standard intake form.

Search available programs

http://localhost:8080/oscar_integrator1/PMmodule/ClientManager.do?method=search_programs&program.name=★

Local Facility Search Results

<u>Name</u>	<u>Type</u>	Participation	Description
Facility 1 Inpatient Program	Bed	2/200 (0 waiting)	Sample Bed Program
Facility 1 Outpatient Program	Service	0/25 (0 waiting)	Sample Service Program

2 documents found, displaying all documents.

Remote Search Results

2 documents found, displaying all documents.

<u>Name</u>	Facility Name	<u>Type</u>	Description
Facility 2 Inpatient Program	Facility 2	Bed	Sample Bed Program
Facility 2 Outpatient Program	Facility 2	Service	Sample Service Program on Facility 2

2 documents found, displaying all documents.

Done

Complete referral form

Program Name	Type	Participation
Facility 2 Outpatient Program	Service	/ (waiting)

Reason for referral:	has proper symptoms
Presenting Problems:	dizziness

Referral Complete, Queue

Dumontier

Summary History Bed/Room Reservation Forms Refer Discharge Service Restrictions

Referrals

Nothing found to display.

Remote Referrals

<u>Facility / Program</u>	<u>Referral Date</u>	<u>Referring Provider</u>	<u>Reason for referral</u>	<u>Present Problems</u>
Facility 2 / Facility 2 Outpatient Program	2011-05-27 23:45:57	oscardoc,doctor	has proper symptoms	dizziness

Facility 2 Outpatient

General Staff Teams Clients Queue Access Client Status Service Restrictions

Local Queue

Queue is empty.

Remote Queue

		<u>Client Name</u>	<u>Referral Date</u>	<u>Referring Provider</u>	<u>Reason for referral</u>	<u>Presenting problems</u>
Admit	Reject	Dumontier, Jaden	2011-05-27	oscardoc, doctor	has proper symptoms	dizziness

Remote Admission complete

Current Programs

<u>Facility</u>	<u>Program</u>		<u>Program Type</u>	<u>Admission Date</u>	<u>Days in Program</u>	<u>Temporary Admission</u>
Facility 2	Facility 2 Outpatient Program		Service	2011-05-28 00:04	0	n/a
Facility 2	Facility 2 Inpatient Program		Bed	2011-05-27 22:07	0	n/a
local	Facility 1 Inpatient Program	E	Bed	2011-05-27 22:02	0	false

3 documents found, displaying all documents.

OntarioMD Certification

- Led by Indivica/CAISI in 2010
- Currently merging all updates in master which will become 11.06 shortly (extended/commercialized/new features)
 - Eforms
 - Documents
 - Labs
 - Ticklers
 - Delta

Future Direction

- Reporting (internal, govt)
- Disease surveillance/public health
- Multi-hub integration
- Integrating to other EMRs
- Integration with Health Infoways bus
- Extending to more data types
 - Partially done
- Need more real life scenarios
- Evolution