

Implementing Biospecimen Management and Data Federation Technologies to Support the UHN Research Community

T. Michaelson

IT Development Team Leader

Biospecimen Management Technologies

and Data Federation

UHN/TECHNA

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Project Description

- Originally funded by a CFI grant
- Biospecimen Management and related Clinical Annotation was one theme among many in this grant
- Deploy a robust, centralised UHN Biospecimen Management System
- Federate data with other UHN databases
- Integrate legacy data where practical
- Federate data dynamically where possible
- Persist federated data where necessary
- Small focused Team
 - 4 FTE Bootstrap
 - 2.4 FTE Ongoing Development

Principles

- Broad Focus (cancer and non-cancer research)
- Flexible Federated Data Model
- Utilize Open Source Software where possible
- Leverage Existing Infrastructure
- Minimize data transcription and duplicate data entry
- Capitalize on Existing Development Skill-Sets
- Ongoing Operational & Research Commitment

Primary Software Tools- Open Source

■ CaTissueSuite/Open Specimen

- Biospecimen Management System
- Originally part of the caBig initiative
- Software renamed “Open Specimen”

■ Caisis

- Clinical Annotation System
- Developed at Memorial Sloan-Kettering
- Contains Pathology and other clinical data captured from source systems or data entered by the user

■ Features

- Web based
- Handles oncology and non-oncology datasets and specimens
- Global Community of Support
- No Ongoing Licensing Fees

Data Federation Tool

- SAP Business Intelligence
 - Robust data federation functionality
 - Aggregate data across multiple data sources
 - Data cleansing and parsing
 - Web-based interface and privilege-based access
 - Data visualisation via Dashboards and Reports
 - Federated data can be exported to a research analysis tool (Biomart, SAS etc.)
 - Software licensing required

Current state of the Project

- Current Implementations
 - UHN Biobank (All Technologies)
 - PM Cancer Registry (Federation Only)
 - UHN Cardiac Program (Federation Only)
- Undergoing Implementation
 - PM GU Bank
 - PM Leukemia Program
 - UHN Orthopaedics Program
 - Toronto Brain Bank
- Implementation Discovery Underway
 - UHN Liver Transplant
 - UHN Bone Marrow Transplant
 - Others...

Federation and Reporting Example

- User logs into a secure web portal
- Enters search criteria
- Returned results are dependent on the level of access granted to the users (e.g. scope of REB approval)
- Access to all systems and data included in the federation is permission based
- Permissions are granular to the field level
- Governance policies control who can access data in a particular system within the federation

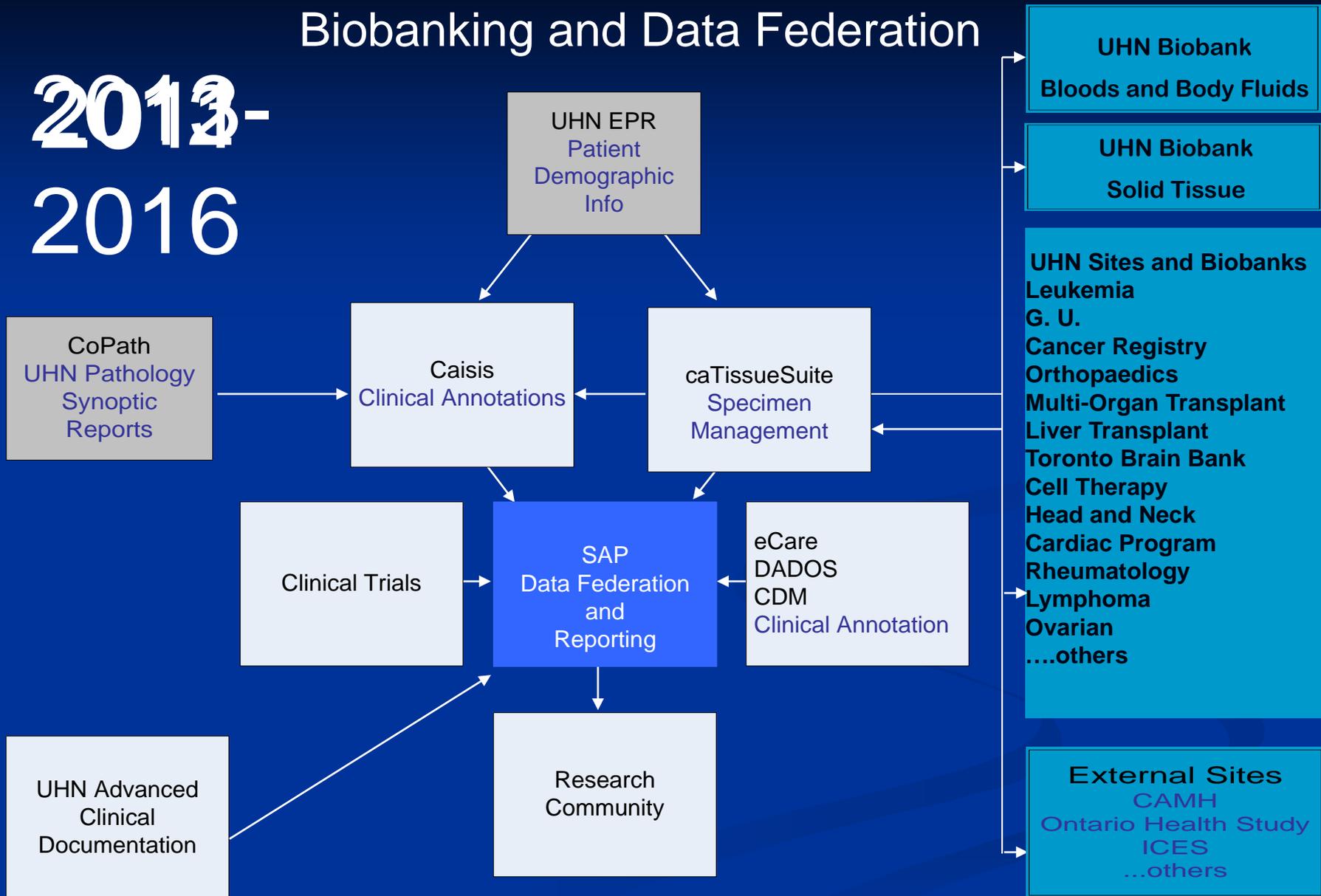
Example: Federated Reports via SAP

Malignant site is Breast, Estrogen Receptor is Positive, Specimen Type is Frozen Tissue with available quantity greater than 0

Clinical stage group	Path stage group	Malignant site	Morphology	Estrogen Receptor Results	Specimen Label	Tissue Site	Storage Container	Storage Location
IA	IA	Breast	Infiltrating duct carcinoma, NOS (C50._)	Results from other specimen: Positive (100% strong)	UHNL_G_4154 8_SRx_FzT_1	Breast, NOS	T6RJB9	35,1
IA	IA	Breast	Infiltrating duct carcinoma, NOS (C50._)	Results from other specimen: Positive (100% strong)	UHNL_G_4154 8_SRx_FzT_3	Breast, NOS	T6RJB9	36,1
IIA	IIA	Breast	Infiltrating duct carcinoma, NOS (C50._)	Results from other specimen: Positive	UHNL_G_2162 2_SRx_FzT_1	Breast, NOS	T6RIB3	46,1
IIB	99	Breast	Infiltrating duct carcinoma, NOS (C50._)	Results from other specimen: Positive	UHNL_G_3166 6_SRx_FzT_1	Breast, NOS	T6REB4	40,1
IIB	IIIA	Breast	Infiltrating duct carcinoma, NOS (C50._)	Results from other specimen: Positive	UHNL_G_3199 5_SRx_FzT_11	Axillary tail of breast	T6REB4	12,1
IV	IV	Breast	Infiltrating duct carcinoma, NOS (C50._)	Results from other specimen: Positive	UHNL_G_2158 3_SRx_FzT_1	Breast, NOS	T6RIB2	72,1
IV	IV	Breast	Infiltrating duct carcinoma, NOS (C50._)	Results from other specimen: Positive	UHNL_G_2158 3_SRx_FzT_2	Breast, NOS	T6RIB2	73,1

UHN Research/TECHNA Biobanking and Data Federation

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Biospecimen Management and Clinical Annotation

Thank You

Questions?

terry.michaelson@rmp.uhn.ca