



Clinical Decision Support for Public Health Surveillance: Three Open Source Examples

CSTE Annual Conference
Anchorage, AK
June 21, 2016

Noam H. Arzt, PhD, FHIMSS
Daryl Chertcoff
HLN Consulting, LLC



Background

- Clinical Decision Support (CDS) tools important to support surveillance
- Software can be costly, hard to configure, test, and maintain
- Open source solutions becoming available
- Distinct advantages to Open Source

SWOT Analysis: Open Source

Strengths

- No license fee to use
- No loss of access to source code if developer stops work
- Freedom to make/share changes
- Transparency in governance
- Enables more modular deployment

Weaknesses

- Risk of *detrimental* source code “forking”
- Burden of enhancements may fall to individual users/organizations
- Software support may be harder to secure

Opportunities

- “Joint development” can reduce cost of enhancements & support
- Commercial vendors often provide solid support
- More modular systems might enable more Open Source component use

Threats

- Public health community will not financially support product development
- Public health community expects open source market to behave like commercial market
- Commercial vendor reactions

Common Foundation

- Three described here – all use common framework and underlying CDS foundation and products
 - OpenCDS (<http://www.opencds.org/>)
 - HLN CDS Framework (<http://www.cdsframework.org>)
 - CDS Administration Tool (CAT) for:
 - Rule authoring
 - Testing
 - Terminology maintenance





1: Immunization Calculation Engine (ICE)

- Service-oriented, standards-based immunization forecasting software system
- Evaluates a patient's immunization history and generates the appropriate immunization recommendations
- Can be deployed in diverse technical environments, centrally or distributed
- Designed to easily integrate with registries, surveillance systems, clinical systems (EHRs, PHRs)





2: Reportable Condition Knowledge Management System (RCKMS)

- Service-oriented, standards-based which allows EHR systems to submit initial electronic case reports to public health based on “triggering” event
- Evaluates conditions for reportability to a state/local jurisdiction and returns decision and instructions
- Expected to be deployed nationally on a shared platform with authoring tool for local jurisdictions to configure their rules



3: Decision Support for Data Segmentation (DS2)

- Part of ONC HITECH SHARP research project in a state-level HIE environment
- Uses CDS to identify and redact selected sensitive conditions from clinical summary documents
- Includes a web-based "inference analyzer" for visualizing the effectiveness and the impact of probabilistic redaction
- Includes a suite of related tools for creating, importing, and editing Continuity of Care (CCD) documents; testing redacted CCDs



Strategies for Success with Open Source in Public Health

- Begin to move systems to modularity and SOA
- Leverage widely-used Open Source products where feasible (*e.g.*, Linux, PostgreSQL, HAPI, Mirth)
- Jointly develop/support more specialized products when necessary (*e.g.*, examples cited earlier)
- Look beyond public health community for collaboration (*e.g.*, EHRs, PHRs)
- Encourage one organization to maintain stewardship over and support each product to prevent “detrimental” forking (Managed Open Source)
- Recognize and manage any turbulence this may cause in the commercial product marketplace



Open Source Resources

- Open Source Initiative
<http://opensource.org/>
- Open Source Electronic Health Record Alliance
<http://osehra.org/>
- OSEHRA License Terms Document
https://www.osehra.org/sites/default/files/osehra_licensing_terms_v.1.0.pdf
- Draft Federal Source Code Policy
<https://sourcecode.cio.gov/>



Contact Information

Noam H. Arzt

President, HLN Consulting, LLC

858-538-2220 (Voice)

858-538-2209 (FAX)

arzt@hln.com

<http://www.hln.com/noam/> @noamarzt

Daryl Chertcoff

Project Manager, HLN Consulting, LLC

310-928-1051 (Voice)

daryl@hln.com