

IEEE P1622 Meeting

March 8-9, 2012

Building 222/Room A314

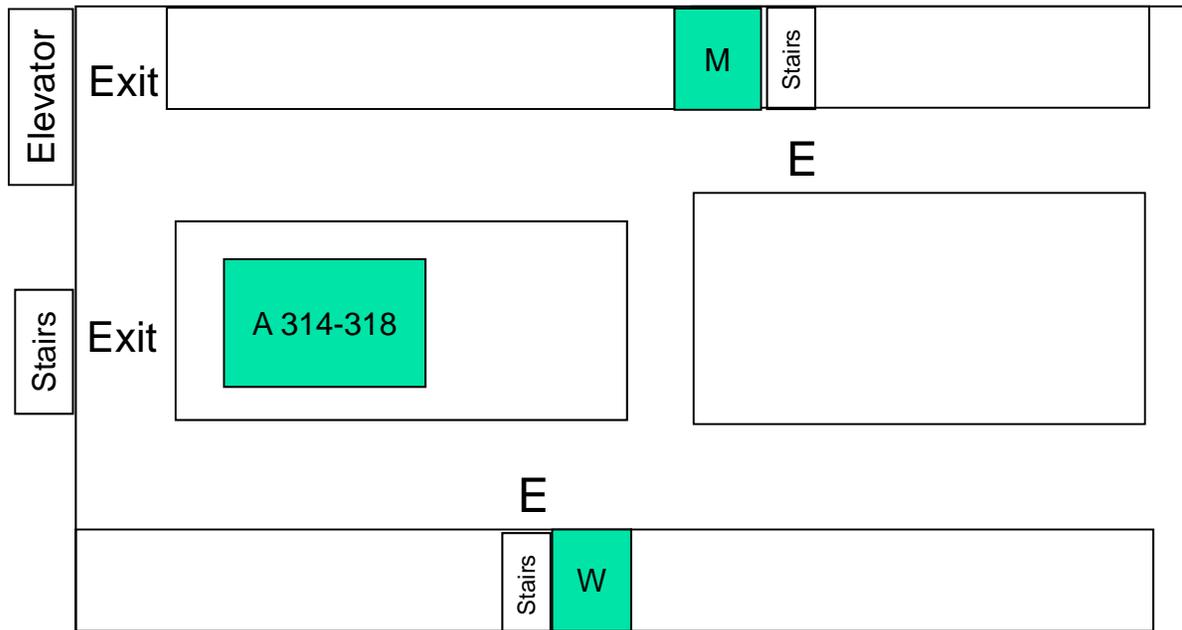
National Institute of Standards and Technology

<http://vote.nist.gov>

<http://grouper.ieee.org/groups/1622/>

Exits and Facilities

Chemistry Building (222 Third Floor)



M: Men's Room
W: Women's

Opening Messages

- Belinda Collins, NIST
- Malia Zaman, IEEE
- Arthur Keller, Chair

Meeting

- Elections of officers
 - Chair
 - Vice-chairs
 - Secretary
- Guidelines for SA Meetings
- Agenda overview

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This slide set is available
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Agenda Thursday March 8

- **8:30am – Opening**
 - Welcomes (John Wack, Belinda Collins, NIST, Malia Zaman, IEEE)
 - P1622 officer elections (Arthur Keller, Chair)
- **9:15am – Initial Roadmap Discussion**
 - Initial use cases under discussion and PAR structures (John Wack, NIST)
- **10:00am – Break**
- **10:20am – Use Case Standard Discussion 1**
 - Voter Registration DB export (John Lindback, Pew)
- **11:45am – Lunch (NIST cafeteria)**
- **1:00pm – Use Case Standard Discussion 2**
 - Election logging (Josh Franklin, EAC, Peter Zelechowski, ES&S)
- **2:30pm – Break**
- **2:45pm – Use Case Standard Discussion 3**
 - Interoperability
 - NIEM and P1622 (David Webber, Oracle)
- **4:00pm – Lessons Learned from P1622-2011 Standard**
 - Summary of issues and discussion (Arthur Keller, Chair, John Wack, NIST)
- **4:30pm – Adjourn**

Agenda Friday March 9

- **8:30am – Documenting EML Worked Examples**
 - Documenting examples of EML usage in US elections (John Wack, NIST)
- **9:00am – Use Case Standard Discussion 4**
 - Election statistics reporting (Shelly Anderson, EAC, David Beirne, FVAP)
 - EAC, FVAP surveys
- **10:30am – Break**
- **10:50am – Use Case Standard Discussion 5**
 - Election reporting (Paul Stenjborn, Scytl, Beth Ann Surber, SoS-CIO WV)
 - Audit information reporting (Neal McBurnett)
- **12:00pm – Lunch (NIST cafeteria)**
- **1:15pm – Decisions on Next Steps**
 - PAR structure and submission, IEEE policy changes (Malia Zaman, IEEE)
 - Ratification of next steps (Arthur Keller, Chair)
 - Next meeting date and meeting wrap-up
- **3:00pm – Adjourn**

Initial Roadmap Discussion

- Where are we in our work ahead?
- Are there other mutual efforts that can help us?
- What should we tackle first, second?
- How should we structure P1622 to accomplish it?

Our Strategy

- Develop small use case standards
 - Should be driven by needs of states
 - Also driven by related efforts, e.g., Pew
- Work first at the endpoints of the voting system
 - VRDB export into the voting system
 - Election results/audit reporting from the voting system
- Work inward towards device interoperability
 - E.g., ballot definition file interoperability

Other Related Efforts

- Our use case standards can work with and assist other related efforts
- These efforts may result in much faster implementation of a use case standard
- Pew
 - Voting Information Project (VIP)
 - VRDB modernization – the Election Records Information Center (ERIC)
- Mid-Atlantic Consortium
 - Election results reporting

Accomplishing All This

- Additional membership in P1622
 - Manufacturers
 - Current membership
 - Election officials
- Revising PAR structure
 - Need to decide how to structure, within IEEE, our use case standards
 - Need to begin writing new PARs

PAR Options

- Continue with series of 1622 standards, e.g., P1622.1, P1622.2
 - Each .1 and .2 project will have its own Title, Scope, and Purpose
 - When all parts have been developed, revise standard to roll up all the parts into one
- Develop amendments to P1622, i.e. 1622a, 1622b.
 - After 3 amendments, will need to be rolled up into one.
- Will be discussed in more detail on Friday after use case discussions conclude

EML Schemas

- 100 series – election information
- 200 series – candidate information
- 300 series – voter registration
- 400 series – voting, audit
- 500 series – results, reporting, mgmt

EML Schemas and Use Cases

Level	Use Case Standard Name	Associated EML Schemas
1	VRDB export	200, 300 series
1	Election results export	110, 210, 470, 510, 520, 530
1	Election audit export	500 series
2	Blank ballot export minus formatting details	505, 110, 230, 330, 410, 470
2	Event log export	480, TBD new
2	Cast vote record export	400 series
3	Ballot definition file export	TBD new
4	Voting device configuration data	TBD new

Break

Resume at 10:20am EST

Use Case Discussion 1

- Voter Registration Database Export
 - Update on Pew's VRDB Modernization – John Lindback, Pew
 - Additional scoping and modeling

Data fields to be submitted to ERIC by each participating jurisdiction, if available:

- All name fields
- All address fields
- Driver's license (anonymized) or state ID number
- Last four digits of Social Security number (anonymized)
- Date of birth (anonymized)
- Activity dates as defined by the Board of Directors
- Current record status
- Affirmative documentation of citizenship
- The title/type of affirmative documentation of citizenship presented
- Phone number
- E-mail address or other electronic contact method

ERIC reports to the states

- In-state matches
- Cross-state matches
- Deceased voters
- Potentially eligible but unregistered voters

Reporting on ERIC outcomes

1. Total number of registered voters
 - Active (where applicable)
 - Inactive (where applicable)
2. Number of voter registration applications new to the Member's jurisdiction submitted by the voter on a paper form
3. Number of new voter registration applications new to the Member's jurisdiction submitted by the voter electronically
4. Number of updates to a voter's existing voter registration submitted by the voter on a paper form
5. Number of updates to a voter's existing voter registration submitted by the voter electronically
6. Number of new voters to the Member's jurisdiction who registered and voted on the same day—, where applicable
7. Number of updates to a voter's existing registration submitted on the same day on which they voted, where applicable
8. Number of individual voters cancelled from the voter file, by reason
9. Number of individual voters moved from active to inactive status, by reason, where applicable
10. Number of individual voters moved from inactive to active status, where applicable
11. Total number of provisional ballots cast, by reason
12. Total number of provisional ballots counted
13. Number of individuals for whom contact was initiated and invited to register
14. Number of voter registration forms ordered, where applicable

Lunch

Resume at 1:00pm EST

Use Case Discussion 2

- Election Logging
 - Josh Franklin, EAC
 - Peter Zelechowski, ES&S
 - Additional scoping and modeling

Data Exchange for Audit Information

Joshua Franklin

Peter Zelechowski

VVSG View on Audit Logs

- **VVSG 2005 Volume 1 Requirement 2.1.5**

Election audit trails provide the supporting documentation for **verifying the accuracy** of reported election results. They present a concrete, **indestructible archival record of all system activity** related to the vote tally, and are **essential for public confidence** in the accuracy of the tally, for **recounts**, and for **evidence** in the event of criminal or civil litigation.

(Emphasis added)

VVSG View on Audit Logs (continued)

- Audit records shall be prepared for all phases of election operations performed using devices controlled by the jurisdiction or its contractors.
- The timing and sequence of audit record entries is as important as the data contained in the record.
 - systems shall provide the capability to create and maintain a real-time audit record
 - All audit record entries shall include the time-and-date stamp
 - Voting systems shall provide a capability for the status messages to become part of the real-time audit record.
 - (for shared computing environments) operating system audit shall be enabled for all session openings and closings, for all connection openings and closings, for all process executions and terminations, and for the alteration or deletion of any memory or file object

VVSG View on Audit Logs (continued)

- **Pre-election Audit Records**, the log shall include:
 - a. The allowable number of selections a contest
 - b. The combinations of voting patterns permitted or required by the jurisdiction
 - c. The inclusion or exclusion of contests as the result of multiple districting within the polling place
 - d. Any other characteristics that may be peculiar to the jurisdiction, the election or the polling place location
 - e. Manual data maintained by election personnel
 - f. Samples of all final ballot formats
 - g. Ballot preparation edit listings

VVSG View on Audit Logs (continued)

- **System Readiness Audit Records**, minimum requirements include:
 - a. Prior to the start of ballot counting ... generate a readiness audit record ... shall include the identification of the software release, the identification of the election to be processed, and the results of software and hardware diagnostic tests
 - b. systems used at the polling place ... shall include polling place identification
 - c. record the correct installation of ballot formats on voting devices
 - d. record the status of all data paths and memory locations to be used in vote recording
 - e. Upon the conclusion of (System Readiness) tests ... the audit record (shall record) that the test data have been expunged
 - f. results of the ballot reader and arithmetic-logic accuracy test
 - g. systems that use a public network (for sending ballots) report the test ballots ... include: the number of ballots sent, when each ballot was sent, the machine from which each ballot was sent, specific votes or selections contained in the ballot

VVSG View on Audit Logs (continued)

- **In-process Audit Records** document system operations during diagnostic routines and the casting and tallying of ballots. At a minimum they shall contain:
 - a. Machine generated error and exception messages
 - b. Critical system status messages ... include, but are not limited to: diagnostic and status messages upon startup; the “zero totals” check conducted before opening the polling place or counting a precinct centrally; for paper-based systems, the initiation or termination of card reader and communications equipment operation; for DRE machines, the event (and time, if available) of activating and casting each ballot
 - c. Non-critical status messages that are generated by the machine's data quality monitor or by software and hardware condition monitors
 - d. all normal process activity and system events that require operator intervention

Types of Logs

- AUDIT LOG
- CONFIGURATION LOG
- CONSOLE LOG
- INTERNAL AUDIT LOG
- MAINTENANCE LOG
- OPERATING SYSTEM LOG
- PROBLEM LOG
- SOFTWARE IDENTIFICATION VERIFICATION LOG
- SOFTWARE INTEGRITY VERIFICATION LOG
- VOTING SYSTEM CONFIGURATION LOG

Our Focus

Audit Logs

- A time-stamped record of significant events that occur during an election.

Source: Electronic Voting Glossary, Michael Shamos

- “A system generated record, in either machine readable or printed format, providing a record of activities and events relevant to initialization of election software and hardware, identification of files containing election parameters, initialization of the tabulation process, processing of voted ballots, and termination of the tabulation process.”

Source: Florida Voting System Standards Appendix

- An “electronically stored record of events and ballot images from which election officials may produce a permanent paper record with a manual audit capacity for a voting system using voting machines.”

Source: Ark. Code §7-1-101(2). Cf. AUDIT TRAIL (def. 2)

Items to Remember

- Not logging in XML
- Platform dictates logging methodology
- Data exchange of log information
- Not for older equipment

Some Goals of Logs

- A tool to reconstruct an election
- A tool for providing information not just data
- A way to identify faulty machines and poor election practices
- Provide a legally defensible continual chain of custody of their unaltered records
- A public record to support public confidence in the voting system

Poor Practices

- Not recording important/significant events (e.g., ballot cast)
- Difficult to access (e.g., encrypted, requires specialized knowledge, nonexistent) << encryption may be necessary when logging confidential information, it is not always a bad practice
- Ambiguous events (e.g., error)

Non-exhaustive List of Events

- Booting and shutting down of a system.
- Logging into and signing off of a system.
- Failed attempts at logging onto a system.
- Session connections by operators or sub-systems.
- Starting and stopping of a program (also when launched from a menu).
- Reading of precinct media into the central system.
- Data transfer from one machine or program to another machine or program by any means.
- Write operation to a data file or database
- Creation or modification of a ballot definition.
- Transfer of the ballot definition.
- Generation of reports.
- Manual inserts or modifications to election results.
- Error messages.
- Recovery from a power or component failure.
- Password changes.
- Readiness testing.
- Opening and closing of polls.
- Adding or removing precinct machines to the election setup and/or operational status

Source: EAC Request for Interpretation 2009-04 (Audit Log Events)

2010 General, Anderson Co., SC

PEB#12a0o7c067F(s0p16.66h3b6T&a00L

RUN DATE:01/14/11 09:19 AM

ELECTION ID: 04110210000

Votronic	PEB#	Type	Date	Time	Event
5101463	148741	SUP	10/01/2010	13:02:12	0000601 Zero terminal config data
		SUP	10/01/2010	13:02:14	0001607 Clear-n-test term flash successful
		SUP	10/01/2010	13:02:14	0000305 write PEB passwords to terminal
		SUP	10/01/2010	13:02:50	0001633 Terminal shutdown
	138696	SUP	10/09/2010	10:18:31	0001649 Term - entered service menus
		SUP	10/09/2010	10:18:44	0000114 Select: Setup & Configuration Menu
		SUP	10/09/2010	10:18:44	0000300 Start password procedure
		SUP	10/09/2010	10:19:09	0000116 Select: Configure Terminal
		SUP	10/09/2010	10:19:14	0000117 Select: Set Time and Date
		SUP	10/09/2010	11:20:14	0001656 Set terminal date and/or time
		SUP	10/09/2010	11:20:31	0001633 Terminal shutdown
	150268	SUP	11/02/2010	06:13:13	0002808 Terminal - opening state
		SUP	11/02/2010	06:14:10	0001303 Transfer PEB vote data to terminal
		SUP	11/02/2010	06:14:16	0002804 Terminal - blank state
		SUP	11/02/2010	06:14:16	0002802 Terminal - open state
		SUP	11/02/2010	06:14:16	0002808 Terminal - opening state
		SUP	11/02/2010	06:14:16	0001319 Update PEB's terminal record
		SUP	11/02/2010	06:14:16	0001303 Transfer PEB vote data to terminal
		SUP	11/02/2010	06:14:20	0001210 Transfer terminal vote data to PEB
		SUP	11/02/2010	06:14:46	0001211 Terminal votes to PEB successful
		SUP	11/02/2010	06:14:59	0002802 Terminal - open state
		SUP	11/02/2010	06:14:59	0001672 Terminal opened
		SUP	11/02/2010	06:15:07	0001633 Terminal shutdown
	148994	SUP	11/02/2010	07:04:46	0001510 Vote cast by voter
	150607	SUP	11/02/2010	07:07:00	0001510 Vote cast by voter
	148994	SUP	11/02/2010	07:09:24	0001510 Vote cast by voter
		SUP	11/02/2010	07:13:23	0001510 vote cast by voter
		SUP	11/02/2010	07:16:45	0001510 Vote cast by voter
	0	UNK	11/02/2010	07:16:52	0002400 PEB access failed
		UNK	11/02/2010	07:16:52	0002400 PEB access failed
		UNK	11/02/2010	07:17:04	0002400 PEB access failed
		UNK	11/02/2010	07:17:04	0000706 Failed to retrieve EQC from PEB
		UNK	11/02/2010	07:17:04	0001635 Terminal shutdown - IPS exit

Source: <http://www.scvotinginfo.com/wp/data/>

System Clock Integrity

What's wrong with these log entries recorded during a May 18 primary?

- **5/18/2010 05:36 AM - Polls Opened**
- **1/18/2019 04:44 AM - Security Disengaged**
- **5/18/2010 05:36 AM - Diagnostics**

Detecting Problems

What's wrong with these log entries recorded during a May 8 primary?

Machine 1

- 5/8/2010 01:00 AM Polls Opened

Machine 2

- 5/7/2010 09:13 PM Polls Opened

EML 480* (part 1)

- `<?xml version="1.0" encoding="UTF-8"?>`
- `<EML xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"`
- `xsi:schemaLocation="urn:oasis:names:tc:evs:schema:eml ../../480-auditlog-v7-0.xsd"`
- `xmlns="urn:oasis:names:tc:evs:schema:eml" xmlns:ts="urn:oasis:names:tc:evs:schema:eml:ts"`
- `xmlns:ds="http://www.w3.org/2000/09/xmldsig#"`
- `xmlns:al="urn:oasis:names:tc:ciq:xal:4" xmlns:nl="urn:oasis:names:tc:ciq:xnl:4"`
- `Id="480" SchemaVersion="7.0">`
- `<!--you will need to point the xsi at a server\folder where the schemas are available`
`in this example, we use the ../../ to point it at 2 folders up from where this document is stored -->`
- `<EMLHeader>`
- `<TransactionId> 480</TransactionId> <!--a static value that is always 480 for this EML message -->`
- `<SequenceNumber>1</SequenceNumber> <!--This is the first message in this EML480 set -->`
- `<NumberInSequence>2</NumberInSequence> <!--There are 2 EML480 messages in the set -->`
- `<SequencedElementName>Set20120309ABC</SequencedElementName>`
`<!--name for the set == the creator can make it anything they want but it needs to match across the set-->`
- `<OfficialStatusDetail>`
- `<OfficialStatus>Official</OfficialStatus>`
- `<StatusDate>2012-03-09</StatusDate> <!-- The current date when it is generated -->`
- `</OfficialStatusDetail>`
- `<!--The "SEAL" which contains a digital signature for the message goes here -->`
- `</EMLHeader>`

EML 480* (part 2)

- `<AuditLog>`
 - `<!--would like either a Type attribute or an AuditLogType child element -- allow for an enumeration that can be localized-->`
 - `<!-- Log types might include AUDIT LOG, CONFIGURATION LOG, CONSOLE LOG, INTERNAL AUDIT LOG, MAINTENANCE LOG, OPERATING SYSTEM LOG, PROBLEM LOG, SOFTWARE IDENTIFICATION VERIFICATION LOG, SOFTWARE INTEGRITY VERIFICATION LOG, VOTING SYSTEM CONFIGURATION LOG -->`
- `<EventIdentifier IdNumber="12345"/>`
- `<ElectionIdentifier IdNumber="X45N234">`
 - `<ElectionName>2012 Primary Election for Jurisdiction Alpha</ElectionName></ElectionIdentifier>`
- `<Update>no</Update>`
 - `<!--this is a yes or no value (case sensitive); no means it is the first issuance; yes means it updates a previous issuance -->`
- `<LoggedSeal>`
 - `<!--Logged Seal is a required element right now ; would like to make this not required, since we are "encouraging" use of the SEAL in the header -->`
- `<Seal><ds:Signature><ds:SignedInfo>`
- `<ds:CanonicalizationMethod Algorithm=""></ds:CanonicalizationMethod>`
- `<ds:SignatureMethod Algorithm=""></ds:SignatureMethod>`
- `<ds:Reference><ds:DigestMethod Algorithm=""></ds:DigestMethod>`
- `<ds:DigestValue></ds:DigestValue></ds:Reference>`
- `</ds:SignedInfo>`
- `<ds:SignatureValue></ds:SignatureValue>`
- `</ds:Signature>`
- `</Seal>`
- `</LoggedSeal>`

EML 480* (part 3)

- `<Message>log record 1</Message><!--This is an actual log record ;`
- `in many other spots we have the Messages structure which allows for multiple Message children;`
- `We need to modify this to use this parent/child structure-->`
- `<!--Also want to allow for some structure in the individual Message elements -->`
- `<!--attributes needed include:`
- `MachineIdentifier`
- `Phase (pre-election, system-readiness, in-process, other?),`
- `Type (EAC RFI 2009-04 listing, possibly others),`
- `UserId (identification code of the user, might be the system if it is a system level task),`
- `MessageCode ()`
- `Message Severity ()`
- `DateTime ()-->`
- `<!--child elements needed include: ??? -->`
- `<!--content needed include: TextualMessage -->`
- `</AuditLog>`

EML 480* (part 3 sample)

- <Messages>
- <Message Type="Boot" Phase="pre-election" MachineIdentifier="B2-E1-15-BE-1C-5B" UserId="none" MessageCode="A0001A01" MessageSeverity="Informational" DateTime="20120308T11:20:11.987">System Booted</Message>
- <Message Type="Login" Phase="pre-election" MachineIdentifier="B2-E1-15-BE-1C-5B" UserId="j2345" MessageCode="E1234C98" MessageSeverity="Informational" DateTime="20120308T11:21:22.876">Log In Failed</Message>
- <Message Type="Login" Phase="pre-election" MachineIdentifier="B2-E1-15-BE-1C-5B" UserId="j2345" MessageCode="A5467B21" MessageSeverity="Informational" DateTime="20120308T11:22:33.765">User Logged In</Message>
- <Message Type="ElectionDefinition" Phase="pre-election" MachineIdentifier="B2-E1-15-BE-1C-5B" UserId="j2345" MessageCode="B98967A11" MessageSeverity="Informational" DateTime="20120308T11:23:44.654">Open Election Definition</Message>
- </Messages>
- </AuditLog>

Break

Resume at 2:50pm EST

Use Case Discussion 3

- **Interoperability**
 - Levels of interoperability – John Wack, NIST
 - NIEM overview and impact on P1622 – David Webber, Oracle



NATIONAL INFORMATION EXCHANGE MODEL

ORACLE[®]

NIEM Introduction

Overview – Public Sector NIEM Team, March 2012



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Today's Session

- Overview of NIEM landscape
- How is Oracle supporting and advancing NIEM?
- Applying NIEM Today – SAR
- Summary and Review



Understanding NIEM today

OVERVIEW OF NIEM LANDSCAPE



Government Information Sharing

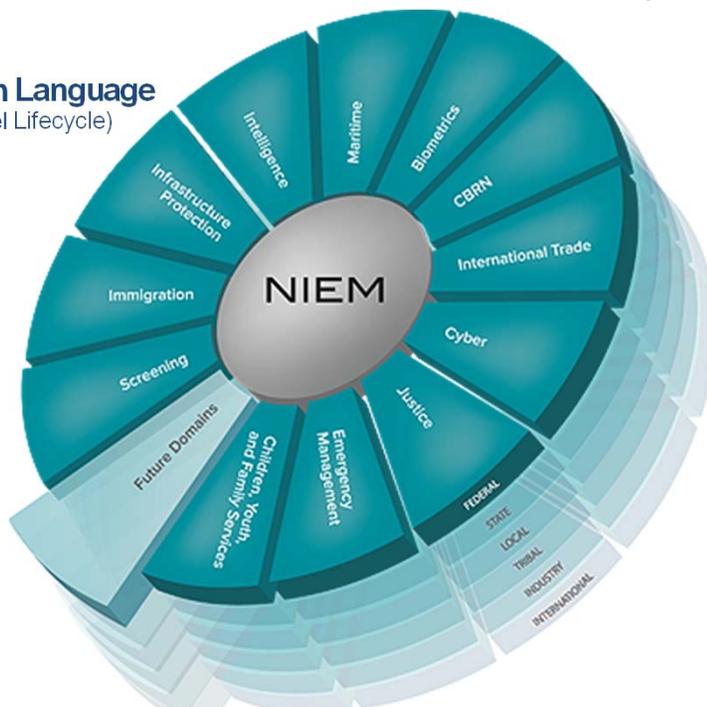
- A national program supported by the Federal government, connecting communities who share a common need to exchange information in order to advance their missions at state, local and tribal levels
- Provides a common vocabulary for information exchange
- Offers an online repository of information exchange package documents (IEPDs)
- Provides tools to support exchange development
- Provides a community of users and support that enables enterprise-wide information exchange.
- NIEM going international; Canada, Mexico, Europe.

Officially - What is NIEM?

- Joint DOJ / DHS / HHS program created to promote standardization of information exchange for cross jurisdictional information sharing.
- Provides the tools for enabling interoperability at the data layer within and across systems supporting information sharing, while preserving investments in current technology and optimizing new technology development.
- Going International – Canada, Mexico, EU

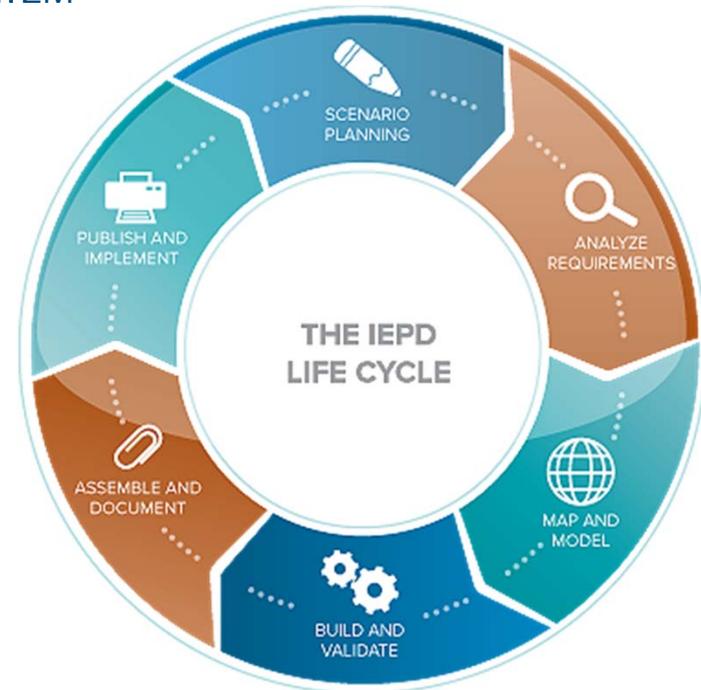
Components of NIEM

Common Language (Data Model Lifecycle)



Built and governed by the business users at
Federal, State, Local, Tribal and Private Sectors

THE IEPD LIFE CYCLE



Repeatable, Reusable Process
(Exchange Specification Lifecycle)

NIEM Governing Structure

- NIEM's governing structure is comprised of Federal, State, Local, Tribal and private organizations
- NIEM is managed at an executive level by the Department of Homeland Security (DHS), Department of Justice (DOJ), and Department of Health and Human Services (HHS)



Who steers NIEM currently?

Founders and Voting Members

- Dept of Justice
- Dept of Homeland Security
- Dept of Health and Human Services

Ex-Officio Members

- Global Justice Information Sharing Initiative
- Office of Management and Budget
- Program Manager, Information Sharing Environment (ISE)
- NASCIO

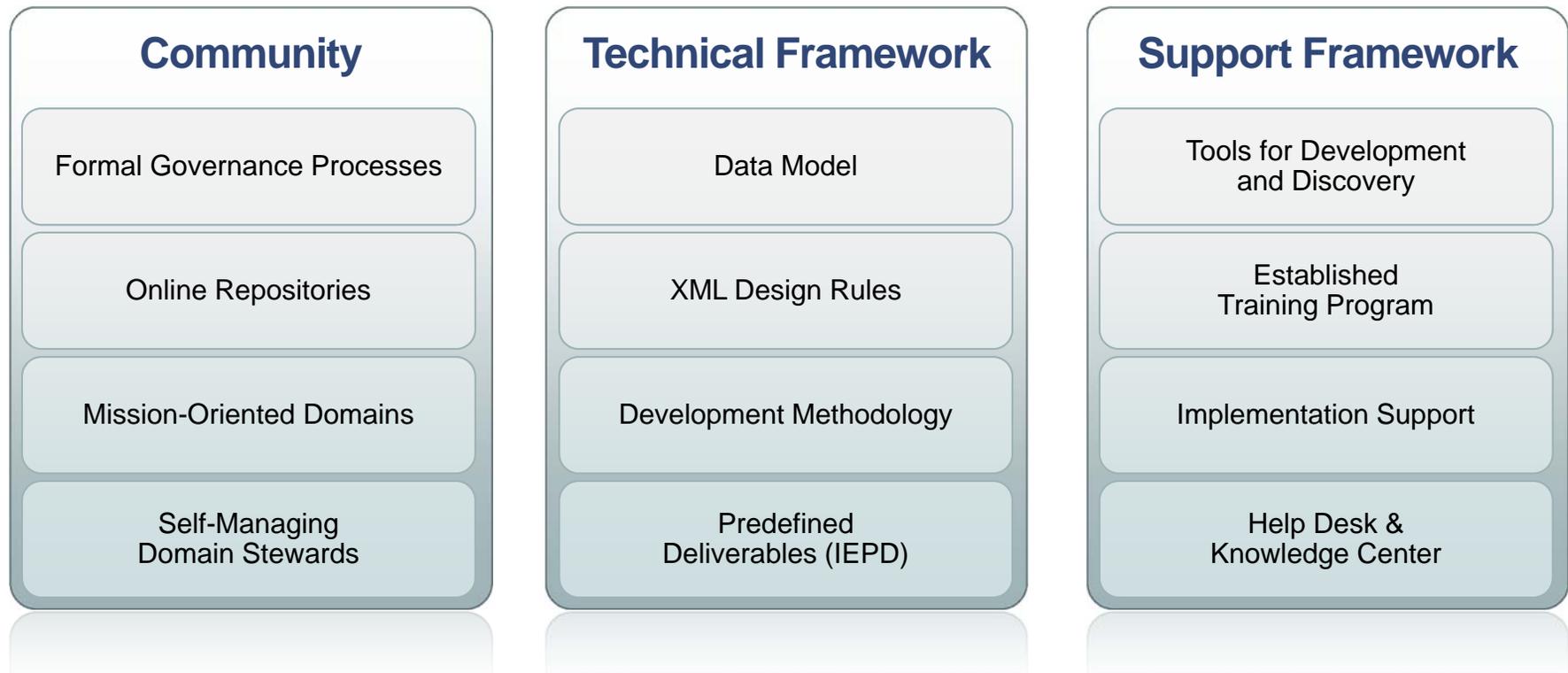
Partners

- Terrorist Screening Center
- Dept of Defense / Dept of Navy
- Dept of State, Consular Affairs (invited)



The NIEM Framework

NIEM connects communities of people who share a common need to exchange information in order to advance their missions, and provides a foundation for seamless information exchange between federal, state, local, and tribal agencies. Much more than a data model, NIEM offers an active user community as well as a technical and support framework.





The NIEM Data Model

NIEM's data model is a set of common, controlled, and approved XML data structures and definitions vetted through the Federal, State, Local, Tribal and Private Sectors.

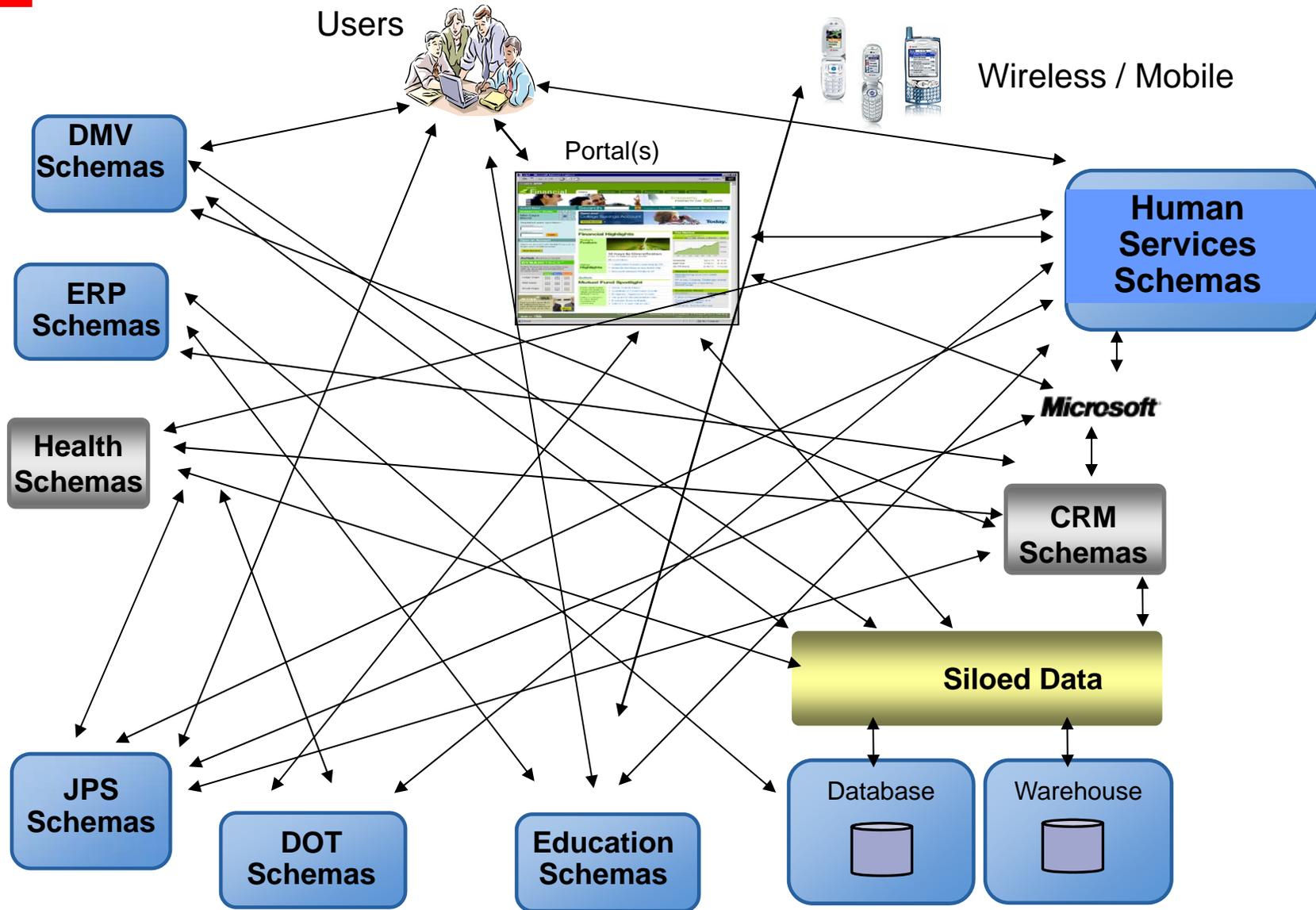
Data elements are organized into core and domain-specific components

Core components are used by multiple domains and can be described by structure, semantics, and definition universally

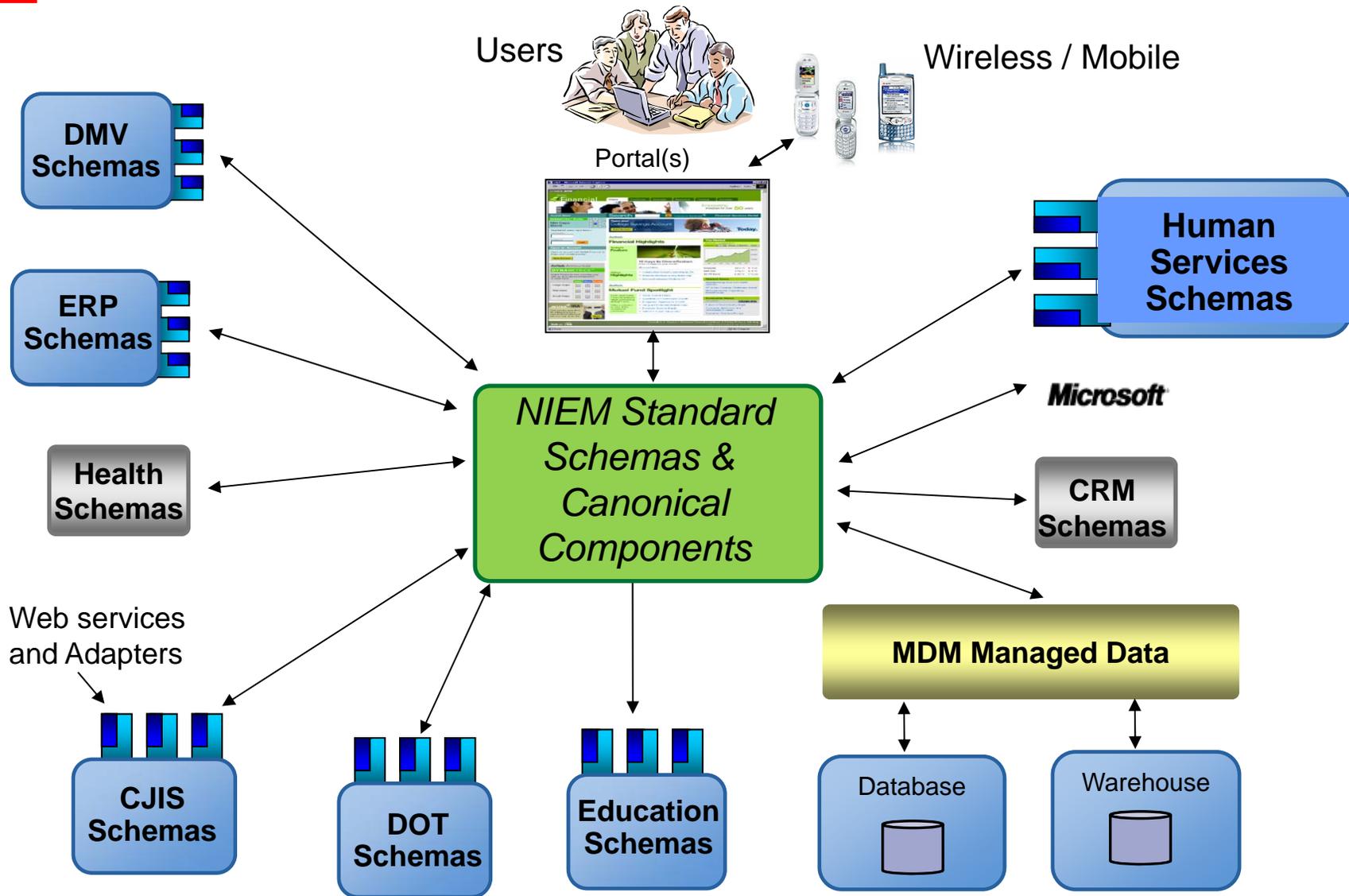
Domain-specific components are continually updated by subject matter experts that are actual NIEM participants and industry experts for their particular domain

NIEM Naming and Design Rules (NDR) specify how each of these components are defined and utilized

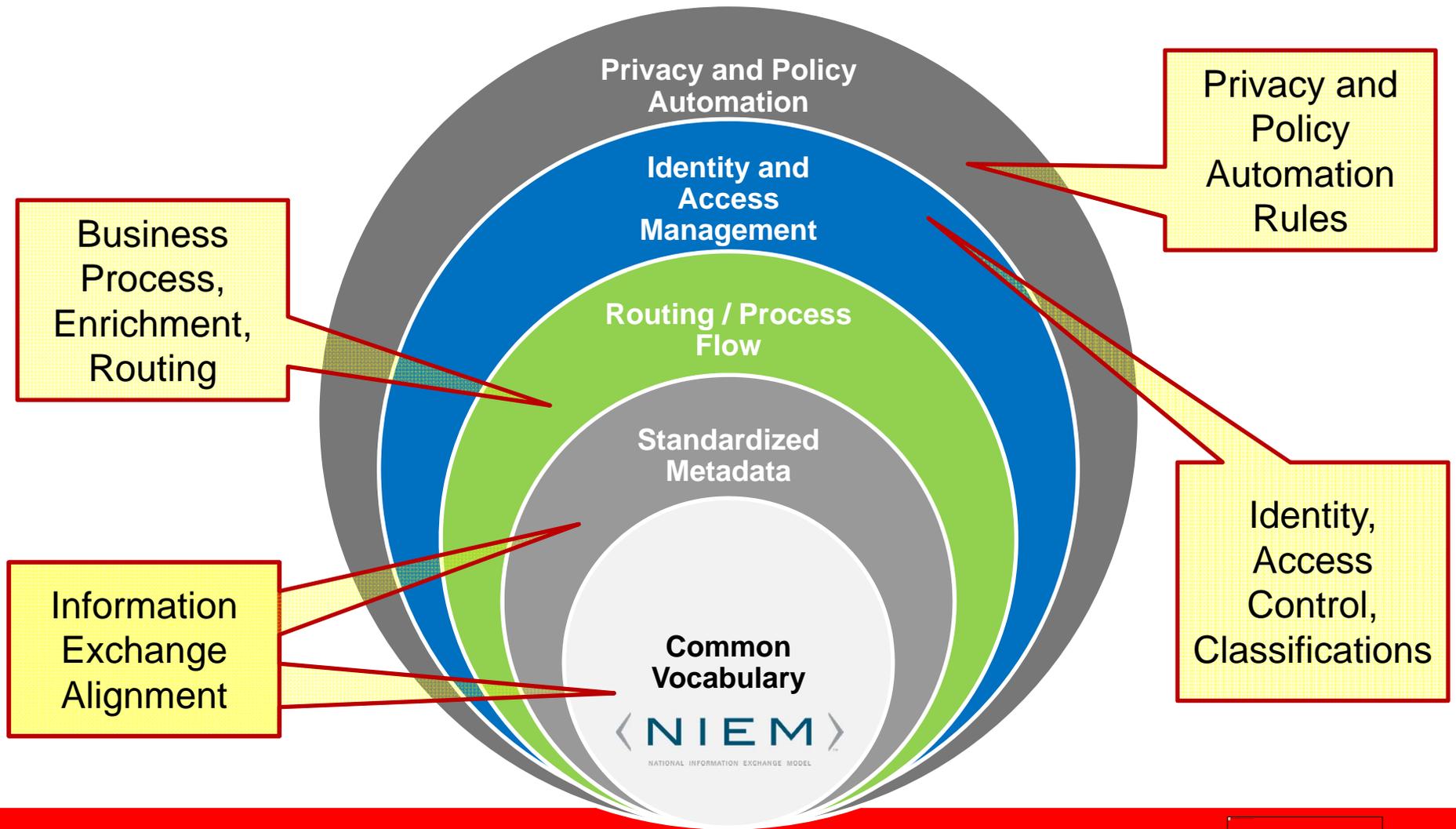
Information Integration Challenges



Aligned with standardized NIEM services



Information Sharing Components Stack





Initiatives for NIEM

HOW IS ORACLE ADVANCING NIEM TODAY?



NIEM Supporting Technology

- **NIEM**

- Information exchanges – transactional
- Business process orientated
- Common schema / dictionary definitions

Oracle NIEM resources site:

<http://www.oracle.com/goto/niem>

- **LEXS / GRA**

- Open communications infrastructure
- Patterns for message exchanges

LEXS community site:

<http://www.LEXSdev.org>

- **IEPDs / SDLC**

- IEPD – Information Exchange Package Documentation
- Formal deliverables and documentation needed in support of SDLC (Software Development Life Cycle) processes

NIEM community site:

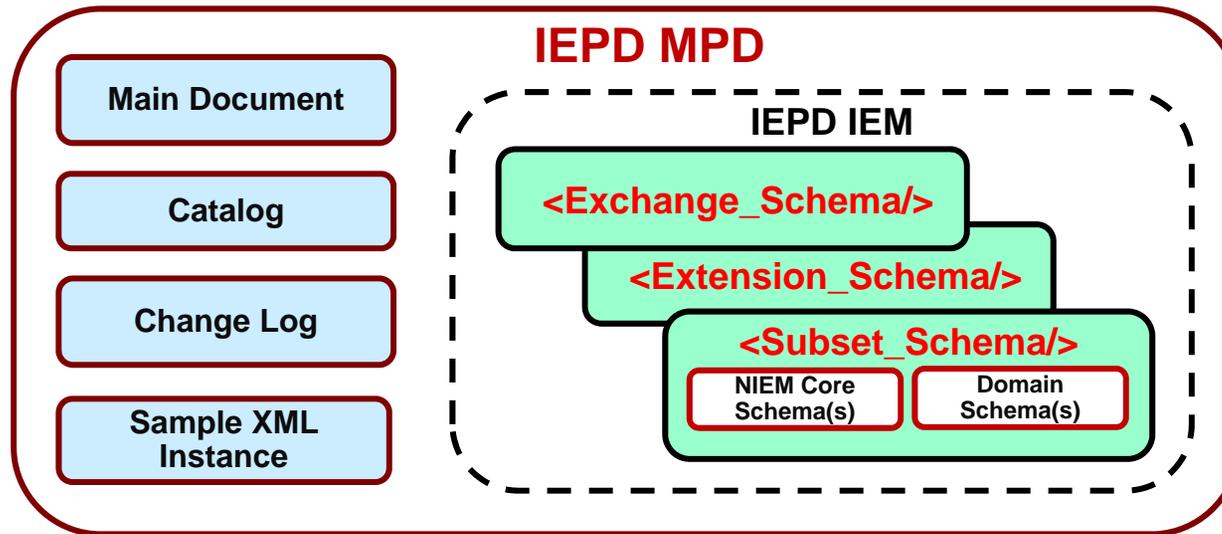
<http://www.NIEM.gov>

* NIEM – National Information Exchange Model

* IEPD – Information Exchange Package Documentation

* LEXS – Logical Entity eXchange System

IEPD Components & Requirements



In order to be NIEM-conformant, the IEPD must adhere to:

1. NIEM Conformance Document
2. NIEM Naming and Design Rules (NDR) v1.3
3. NIEM Model Package Description (MPD) Specification v1.0



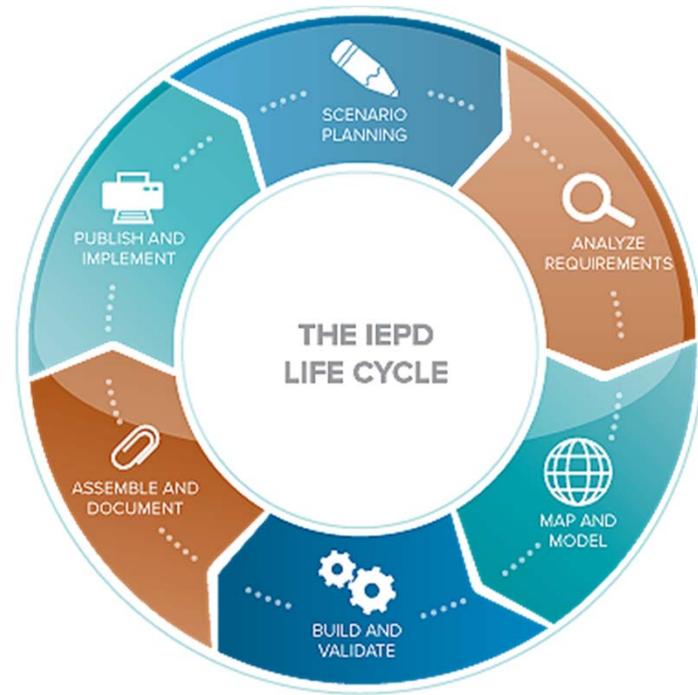
NIEM Focus Areas

- Sustaining member of IJIS – community committee work
- Technical support for NIEM NTAC work
- Standards work with OASIS and NIST
- Open source tools for NIEM
 - Exchange development with CAM editor (<http://www.cameditor.org>)
 - Test Suites, IEPD builder, Dictionaries, Visual designer
 - CAMV validation engine and middleware integration
 - Message Exchange starter kits (LEXS)
- Resources site for Oracle developers
- Solutions using NIEM
 - Proof of Concepts
 - Product integration of NIEM exchanges

The 8 "D"s and NIEM

- Design
- Develop
- Deploy
- Document
- Dictionaries
- Discovery
- Differentiate
- Diagnose

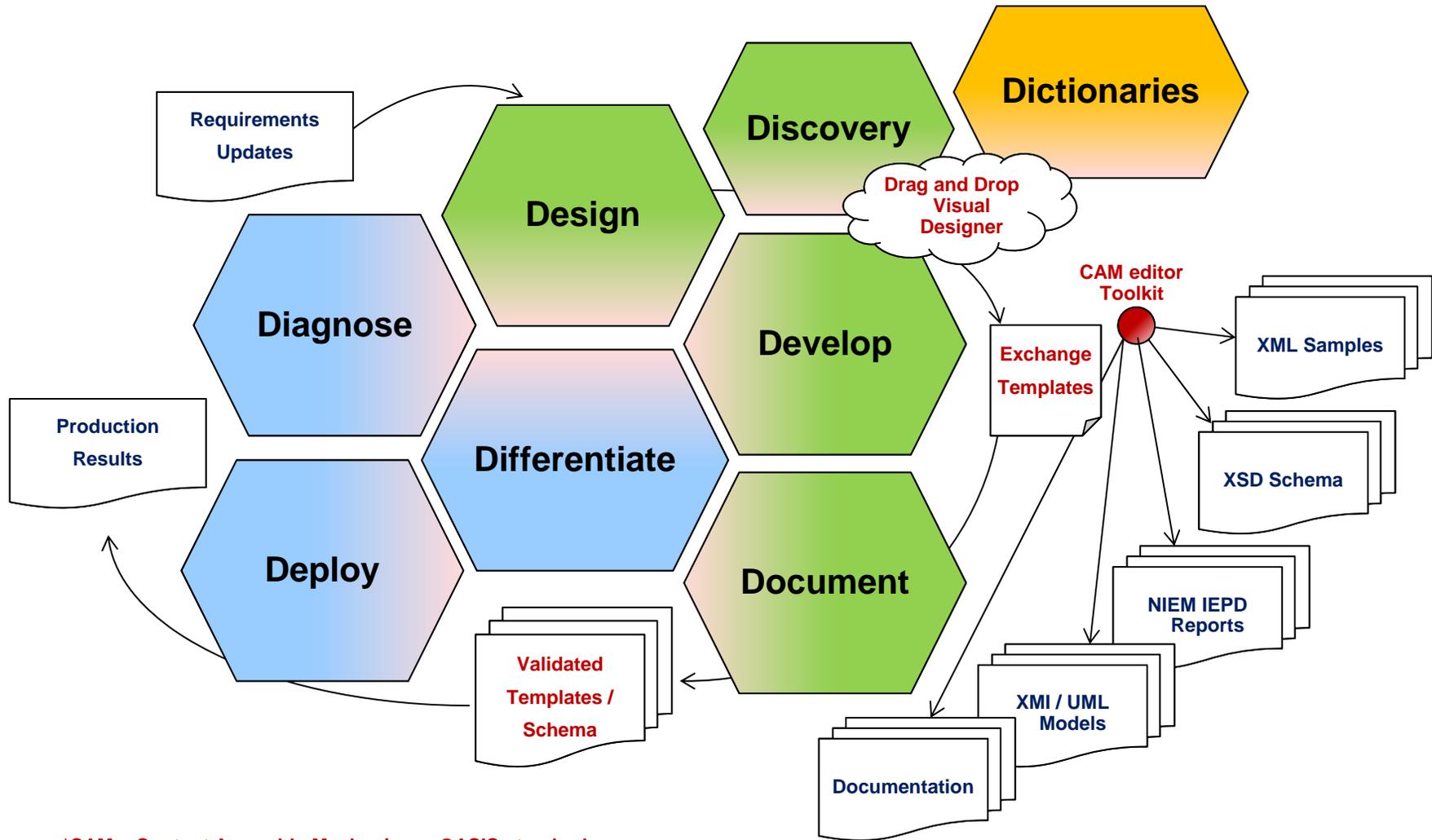
NIEM IEPD Process



Repeatable, Reusable Process
(Exchange Specification Lifecycle)

*IEPD - Information Exchange Package Documentation

Exchange Delivery Lifecycle



*CAM – Content Assembly Mechanism – OASIS standard



Reality – NIEM is still improving...

- Collections of complex XML Schema
- Attempt to marry modelling techniques and XSD Schema syntax
- Verbose components
- Embedded context in names
- Currently facing significant scaling challenges
 - Inconsistencies
 - Too much manual management
 - Slow lifecycles
- Dictionary technology incubating
- Enhanced code lists mechanism incubating
- UML profile is evolving initiative with OMG

Oracle's NIEM Solution: CAM

The screenshot displays the CAM Template Editor window for a file named 'HospitalStatus.cam'. The interface includes a menu bar (File, Edit, View, XML, Tools, Run, Window, Help), a toolbar, and several panes. The 'Structure' pane on the left shows a tree view of XML elements: <HospitalStatus>, <Hospital>, <Organization>, <EmergencyDepartmentStatus>, <HospitalBedCapacityStatus>, <ServiceCoverageStatus>, <HospitalFacilityStatus>, <HospitalEOCStatus>, <HospitalEOCPlan>, <ClinicalStatus>, <DeconCapacity>, <MorgueCapacity>, <FacilityStatus>, <SecurityStatus>, <Activity24Hr>, <CommentText>, <HospitalResourcesStatus>, and <LastUpdateTime>. The 'ItemRules' pane on the right contains a table with columns for Category, Action, and Item. The 'Rules' pane at the bottom shows a table with columns for Type and Conditions, Category, Item, and Action.

Category	Action	Item
DEFAULT	makeOptional()	//HospitalFaci
DEFAULT	restrictValues('Active' 'Inactive')	//HospitalFaci
DEFAULT	setDefault(Inactive)	//HospitalFaci

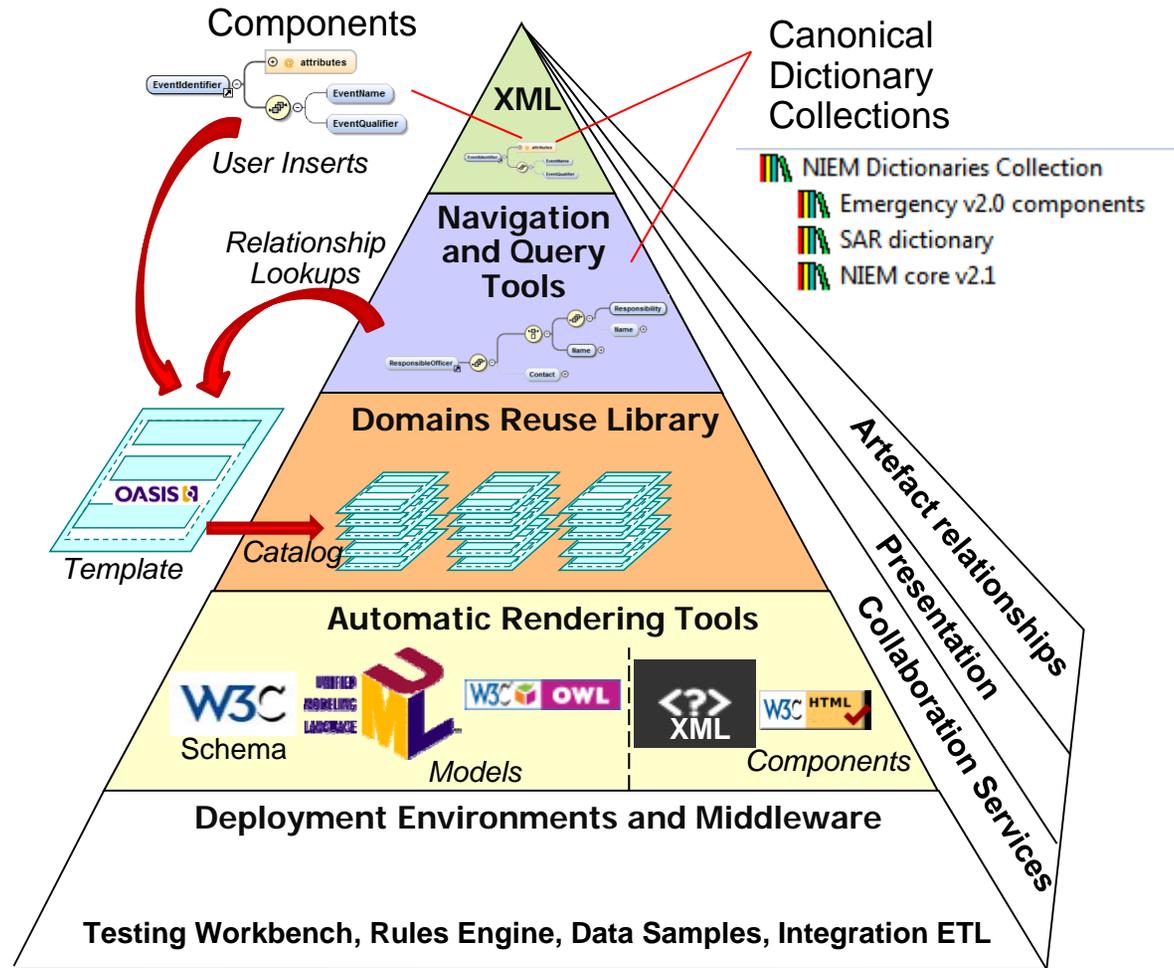
Type and Conditions	Category	Item	Action
default context	DEFAULT		



<http://www.cameditor.org>

CAM: Top Down Exchange Assembly

- 1 Canonical XML Components Dictionary
- 2 Component Associations and Couplings
- 3 Exchange Templates and Rules
- 4 W3C Schema and Model Representations
- 5 Delivery Control, Messaging, Security
- 6 Implementation Artifacts and Examples



*CAM – Content Assembly Mechanism – OASIS standard

Available XML Dictionaries

- NIEM 2.1 dictionaries

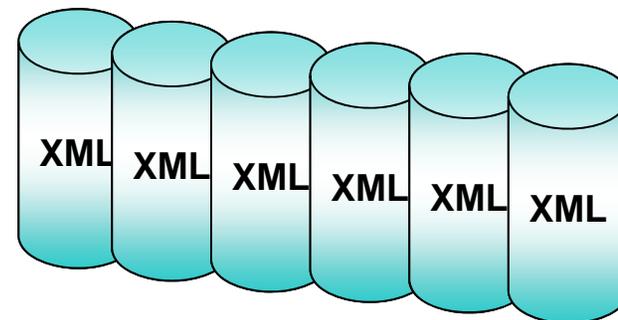
- CBRN dictionary
- Emergency dictionary
- Family dictionary
- Immigration dictionary
- Infrastructure dictionary
- Intelligence dictionary
- Justice dictionary
- Maritime dictionary
- Screening dictionary
- Trade dictionary
- Immigration blueprint
- **NIEM core dictionary**

Note: Those marked in bold are model style dictionaries with recursive components.

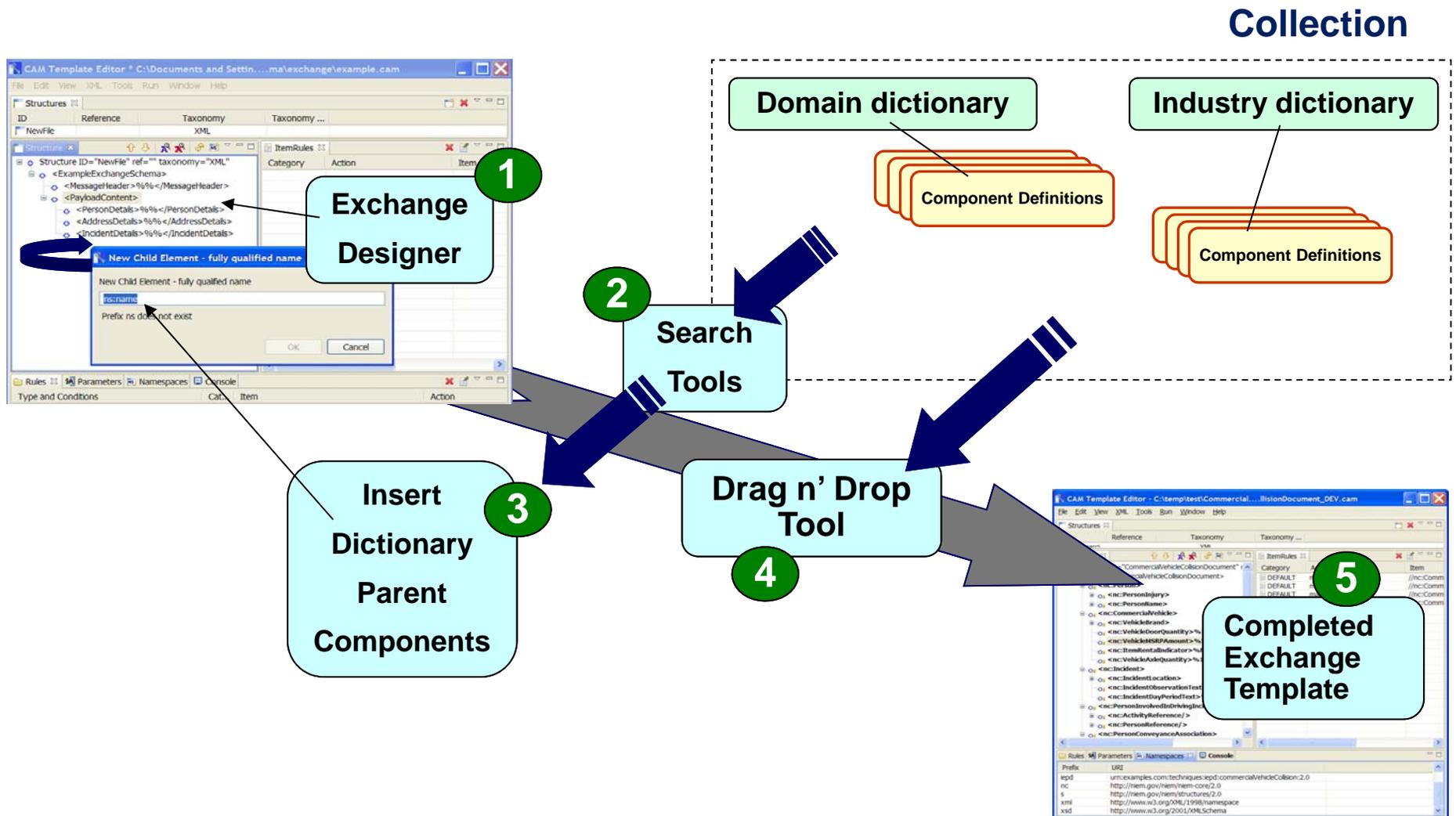
Available from download site

direct link:

<http://sourceforge.net/projects/camprocessor/files>
+ includes spreadsheets and sample models



Visual Designer with Dictionary Collection





Developing domain dictionaries (EIEM)

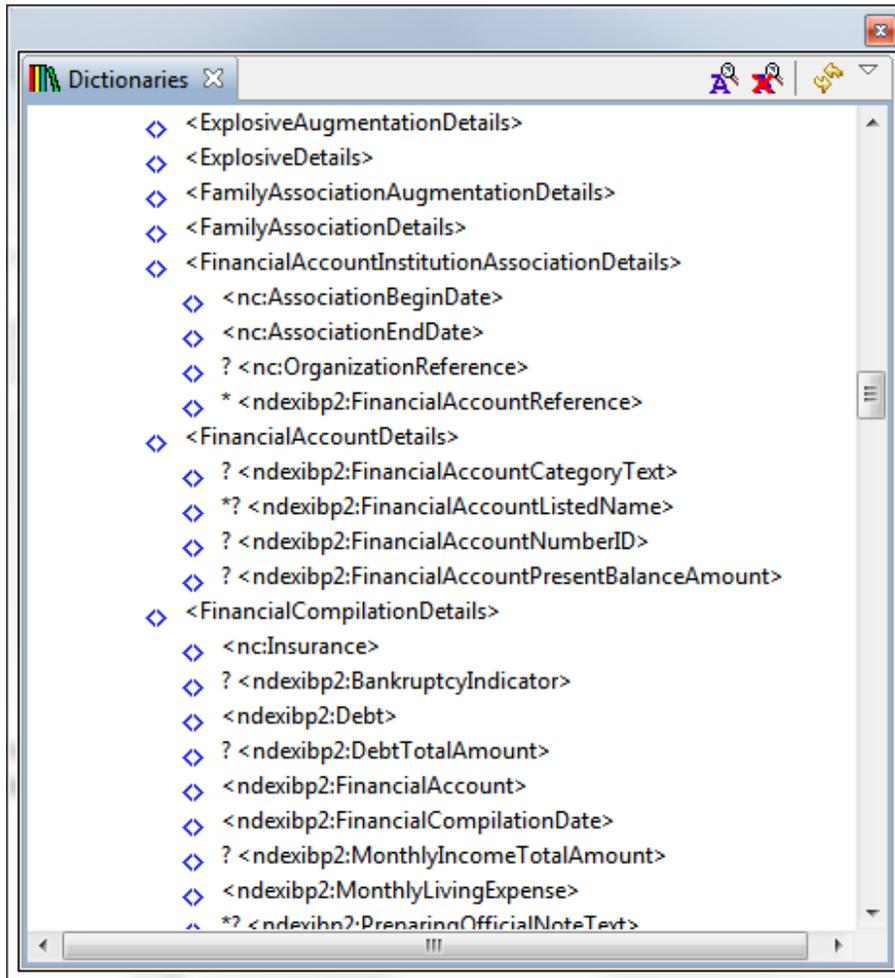
- Allows domains to manage their components libraries
- Provides consistency for project development teams
 - Sets of NIEM consistent XML exchange components
 - Aligned to enterprise data stores
 - Optimized for reuse and interoperability
- Save time and effort across the enterprise
 - Perennial question for developers – when should I use NIEM components, and when our own local ones?
 - Are there components already available for that purpose?
- Provide formal mechanisms and procedures to share components and collaborate across SDLC process
- Provide external parties consistent data views

CAM Toolkit for EIEM generation

*EIEM – Enterprise Information Exchange Model

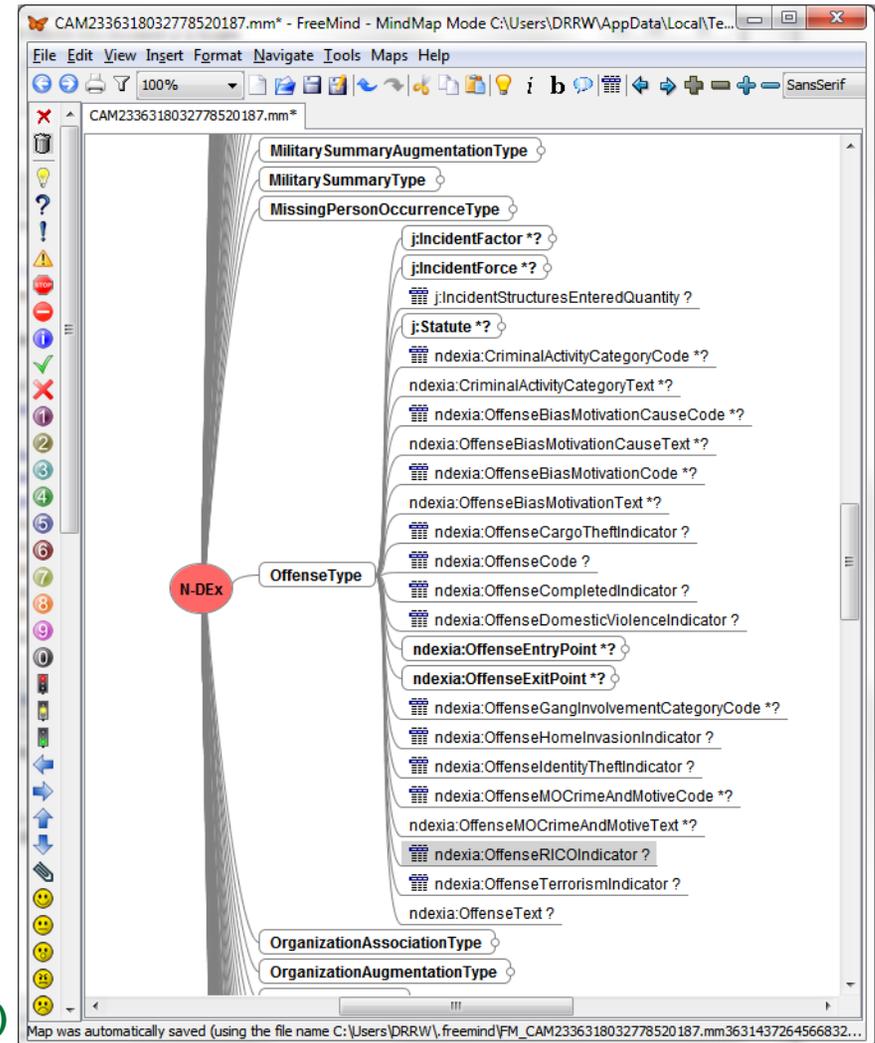
Example: N-DEX Dictionary and Model

Dictionary viewer with N-Dex components



(Harvested from N-DEX schema – ndexia.xsd and ndexibp2.xsd)

Freemind Interactive Model

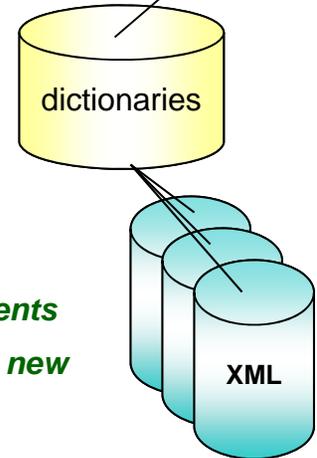


Example - Suspicious Activity Report V2.0

DRAFT

Dictionary Collection

- SAR v1.5 components
- NIEM core dictionary
- LEXS 3.1.4 dictionary



Definitions stored as syntax neutral canonical XML

Prefix	URI
lexs	http://usdoj.gov/leisp/lexs/3.1
lexsdigest	http://usdoj.gov/leisp/lexs/digest/3.1
lexslib	http://usdoj.gov/leisp/lexs/library/3.1
look	http://jcam.org.uk/LookupLists
nc	http://niem.gov/niem/niem-core/2.0
s	http://niem.gov/niem/structures/2.0
sari	http://niem.gov/dhs/sar/2.0
xml	http://www.w3.org/XML/1998/namespace

Namespaces of dictionary components



NIEM Exchange Delivery and Deployment

- Once structure information exchange is complete need to test and verify it
- Create realistic XML examples
- Validate those against the exchange template
- Share working examples with exchange partners
- Generate documentation (IEPD)
- CAMV validation framework and test suite tools
- **Tutorial and examples available**

CAM Editor resources site:

<http://www.cameditor.org>



CAM toolkit and CAMV validation engine

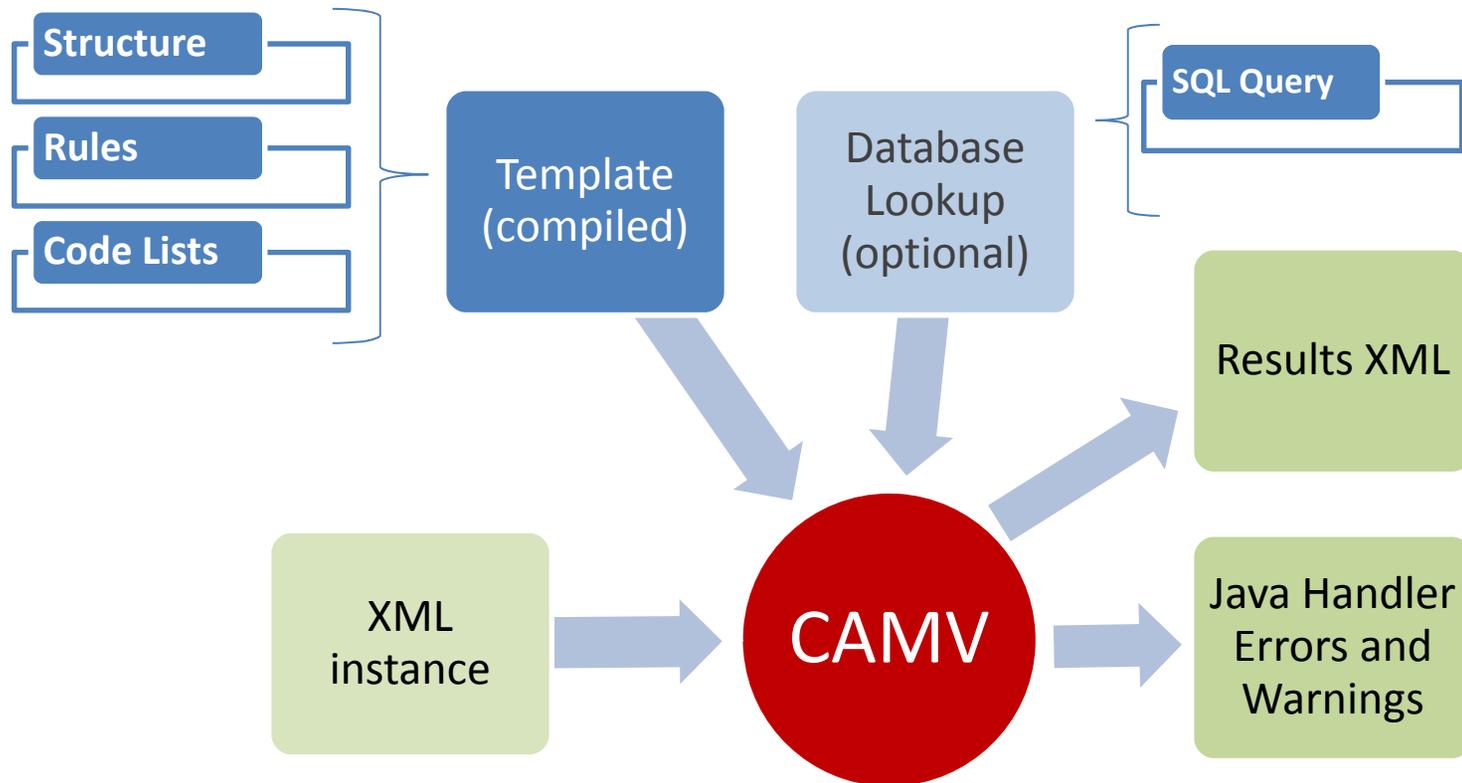
- Open source solutions – designed to support XML and industry vocabularies and components for information exchanges
- Implementing the OASIS Content Assembly Mechanism (CAM) public standard
- CAMV validation framework and test suite tools
- Development sponsored by Oracle
- State Department approve CAM for “gold disk”

distribution

CAM Editor resources site: <http://www.cameditor.org>

CAM Validation Framework

GITB – Global Interoperability Testbed initiative:
<http://www.ebusiness-testbed.eu>



Examples and instructions:

http://www.cameditor.org/#CAMV_Testing



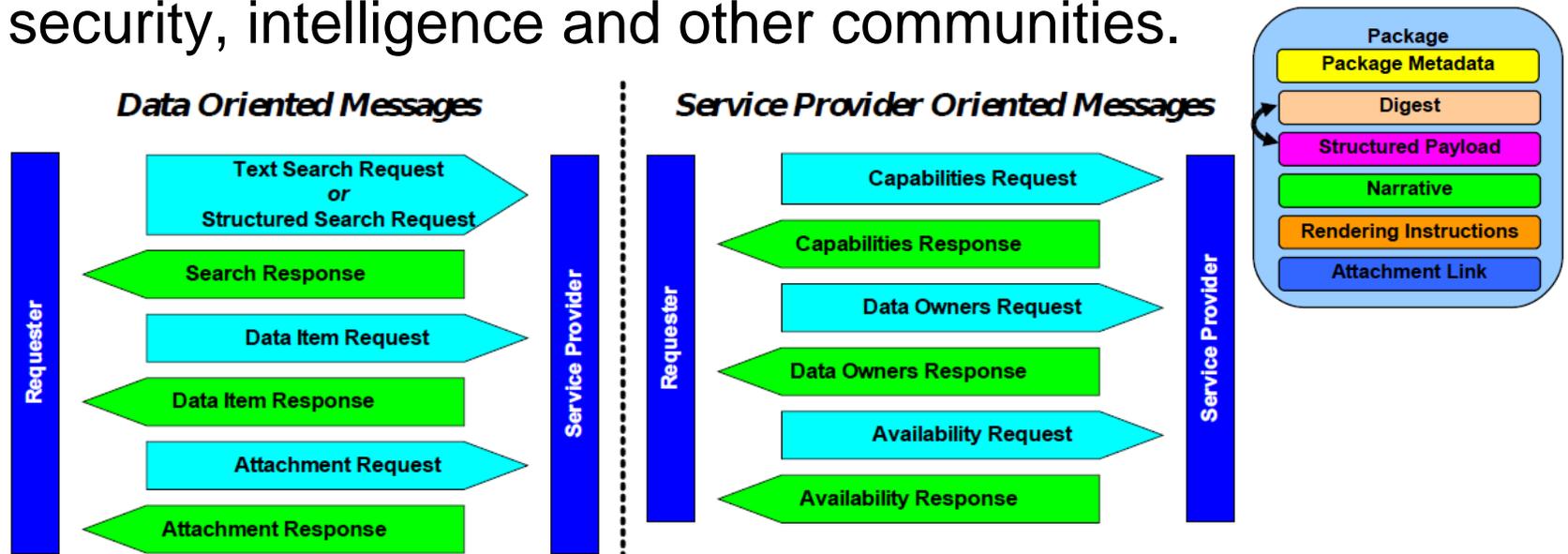
Understanding NIEM today

OVERVIEW OF LEXS MESSAGING EXCHANGES

* LEXS - Logical Entity eXchange System – <http://www.lexsdev.org>

What is LEXS?

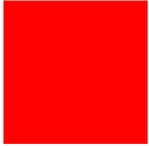
- LEXS: a comprehensive, NIEM-based, framework for the development of information exchanges. Initially developed for the law enforcement information sharing program at US Department of Justice, LEXS is now being widely used in criminal justice community at large, as well as by the homeland security, intelligence and other communities.





LEXS value proposition

- LEXS provides an extensible framework for consistent packaging of information, while defining common message formats and standard metadata.
- LEXS shields both data sources and data recipients from the complexity of multiple interfaces and allows for the multipurpose use of information.
- A data item created by a source can be consumed by multiple recipients who can understand as much, or as little, of the data as necessary.
- Implementers who are required to develop NIEM-based information exchanges can save themselves time and effort by leveraging LEXS, which is already NIEM-based.
- **Open source starter kits available from Oracle.**



Practical Application Example –
Suspicious Activity Reporting (SAR)

APPLYING NIEM TODAY

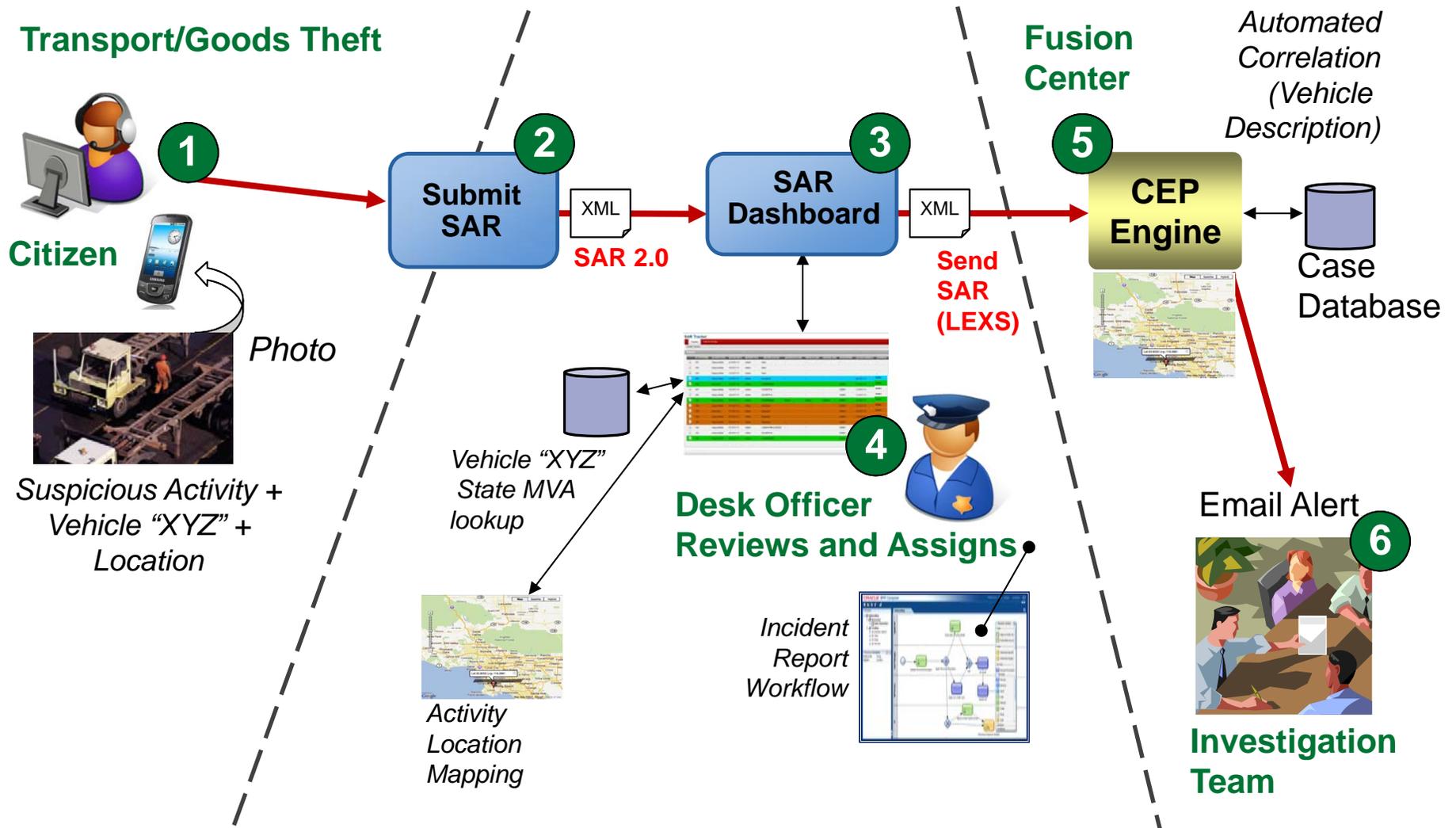




SAR v2.0 new capabilities summary

- Extended public safety use model
- Better workflow control and tracking
- Better security and privacy management
- Enhanced internationalization support
- Cleaner extended data model for supporting information
- Better details on threat types including Hazmats
- New section for local police reports and vetting done
- Witness and contact information now supported directly
- Threats & associated criminal activity separate sections
- Support for surveillance equipment reporting and locations including cyber, borders, restricted areas and extended exposed facilities such as pipelines
- Allows “test mode” for practice drills

Example – SAR + Complex Event Processing



Some SAR application snap shots

Suspicious Activity Report

SAR Entry Page

* **Activity Type**

- Chemicals
- Narcotics
- Gang Activity
- Prescription Drugs
- Weapons
- Chemicals
- Vehicles Theft
- Transport/Goods Theft**
- Prostitution
- Pornography
- Abduction Threats
- Internet
- Fraud
- Banking
- Property Threats
- Personal Threats
- Community Threats
- Infrastructure Threats
- Military Installation
- Travel/Immigration
- Terrorism

People Involved

No person information

Suspicious Activity Report

Activity Location

Location Details

Local 7/11 in Capachee Lake downtown.

Street

100 Main Street

City Capachee **State** Minnesota **Postal Code**

Highway **Intersection**

Gpslong **Gpslat**

SAR Mobile Device Interface



Activity Report

Activity Image file
 84065555_6yaoijfz.jpg

*Activity Type

Transport/Goods Theft

*Suspicious Activity

Items stolen from warehouse across the

Latitude
39.2435665

Longitude
-77.18997220000001

User can browse and select phone camera image

User can click here to allow sharing of the GPS coordinates from their phone location

SAR Tracker Review Dashboard

SAR Tracker

Tracker Data Exchange

Activity Tracker

Tracker

ACTIVITYID	ACTIVITYTYPE	REPORTDATE	REPORTTYPE	REPORTSTATUS	SENSITIVITYCODE	PRIVACYCODE	JURISDICTION	REVIEWEDBY	LASTACTIONDATE	ASSIGNTO
157	Gang Activity	01-NOV-11	Active	New	-	-	-	-	-	-
154	Gang Activity	18-OCT-11	Active	New	-	-	-	-	-	-
150	Gang Activity	13-OCT-11	Active	New	-	-	-	-	-	-
149	Gang Activity	13-OCT-11	Active	Assigned	-	-	-	-	28-OCT-11	DEMO
148	Narcotics	11-OCT-11	Active	CONFIRMED	-	-	-	DEMO	11-OCT-11	DEMO
147	Gang Activity	10-OCT-11	Active	DOUBTFUL	-	-	-	DEMO	11-OCT-11	DEMO
146	Gang Activity	10-OCT-11	Active	DOUBTFUL	-	-	-	DEMO	11-OCT-11	DEMO
142	Gang Activity	07-OCT-11	Active	CONFIRMED	Open	Public	Federal	DEMO	12-OCT-11	DEMO
140	Gang Activity	07-OCT-11	Active	Rejected	-	-	-	DEMO	13-OCT-11	DEMO
139	Narcotics	07-OCT-11	Active	Rejected	-	-	-	DEMO	13-OCT-11	DEMO
138	Gang Activity	07-OCT-11	Active	Rejected	-	-	-	DEMO	13-OCT-11	DEMO
136	Gang Activity	07-OCT-11	Active	Rejected	-	-	-	DEMO	13-OCT-11	DEMO
134	Gang Activity	07-OCT-11	Active	CANNOTBEJUDGED	-	-	-	DEMO	13-OCT-11	DEMO
133	Gang Activity	06-OCT-11	Active	DOUBTFUL	-	-	-	DEMO	13-OCT-11	DEMO
132	Gang Activity	06-OCT-11	Active	CONFIRMED	-	-	-	DEMO	13-OCT-11	DEMO

row(s) 1 - 15 of 91 Next

SAR Review with Mapping

SAR Tracker

Welcome: DEMO Logout Feedback

Tracker Data Exchange

Activity Tracker > Activity Details

Activity Details

Back < Previous

Report Date
18-DEC-2011 11:12:15 PM -05:00

Report Status
New

Notes

Reviewed By - **Last Action Date** - ***Assign To**

12 of 12

Assign/Re-Assign

Activity Information

Activity Type Transport/Goods Theft
Suspicious Activity Items stolen from warehouse across the street
Firearms present? Unknown



Activity Image

©2007 Michael Pike

Location

GPS Lat 39.2435665
GPS Long 77.1899722000001

Map



Customize

SAR Event Detection with CEP Alerts

Deployment Operations Dashboard ORACLE

Refresh Mark Clear Trace Thres...

Map Satellite Hybrid

Enter/Exit Alerts

Identifier	IntTime	Area	Type	InnerArea	MatchId	LocEvent	Action
SNK-8693	18:58:22	451	NEAR		3	11	Enter
RKS-9876	18:58:09	451	NEAR		2	10	Enter
ABC-1234	18:57:53	451	IN		1	9	Enter

SAR Incidents Reported

Area Match Events

Identifier	IntTime	Area	Type	InnerArea	EventId	LocEvent
SNK-8693	18:58:29	451	NEAR		4	12
SNK-8693	18:58:22	451	NEAR		3	11
RKS-9876	18:58:09	451	NEAR		2	10
ABC-1234	18:57:53	451	IN		1	9

In-Area Watch Match & Alert

Incident Report Events

Identifier	ExtTime	IntTime	EventId	Count	Lat	Lng
SNK-8693	18:58:29	18:58:29	12	1	34.2151	-118.3791
SNK-8693	18:58:22	18:58:22	11	1	34.2153	-118.3874
RKS-9876	18:58:09	18:58:09	10	1	34.2240	-118.3792
ABC-1234	18:57:53	18:57:53	9	1	34.2160	-118.3707
LDS-4569	18:57:43	18:57:44	8	1	34.2209	-118.3714
XZR-4509	18:57:26	18:57:26	7	1	34.2239	-118.3890

Protected Area

Map coordinates: Lat:34.2151 Lng:-118.3791

Notification from CEP - Inbox

From: CEP Notifications
 Subject: Notification from CEP
 Date: October 2, 2011 6:58:34 PM EDT
 To: SAR Event Notifications

SAREVENT: [EVENT DATA][ts=4843179666792]
 [SUSACTIVITYDATE:Sun Oct 02 18:58:29 EDT 2011]
 [LOCLAT:34.215126037597656][LOCLONG:-118.37905883789062][VEHLICENSEPLATE:SNK-8693]

Sides	Lat	Lng
4	40.7078	-73.9997
8	41.5004	-88.1164
9	34.2155	-118.3877
15	6.3014	-10.7965
4	6.2940	-10.7819
9	6.3291	-10.7986
4	6.2921	-10.8002

Global Event Tracking – NCTC WITS system

The screenshot displays the NCTC Worldwide Incidents Tracking System (WITS) interface. At the top, the NCTC logo and navigation links (Home, Published Reports, Exports, Methodology, Support) are visible. The main search area includes a search bar and a 'GENERATE REPORT' section with date filters (Begin Date: 01/01/2010, End Date: 12/31/2010) and a 'Generate Report' button. A red arrow points from the 'Generate Report' button to a text annotation: '• 6 month lag time on event updating'. Below the search filters, a 'My Search' section shows filters for 'Attack [x]', 'Range Filter: Incident Date On or After 01 Jan 2010', and 'Range Filter: Incident Date On or Before 31 Dec 2010'. A 'Date Range' section includes 'Presets: - Select a Preset -', 'Incident Date', 'After MM/DD/YYYY', and a 'Filter' button. A 'Numeric Range' section includes 'Facility Total Facilities' and a 'Filter' button. The 'Map Configuration' section includes 'Map Type: Google Map', 'Show Timeline', 'Display Type: Cluster Map', and 'Date Filter: 01/01/2010 to 12/31/2010'. The main map area displays 'Matching Attack Records: 11,636' and 'Displaying 11,635 Attacks' over a 'Time Span: 1.0 years'. The map shows various countries with colored circles indicating the number of attacks. A red arrow points from the 'USA events – arson attacks - 2010' annotation to a cluster of red circles over the United States. The map includes a legend, a scale bar (2000 mi), and map controls (Map, Satellite, Hybrid).

• 6 month lag time on event updating

• USA events – arson attacks - 2010



Reviewing NIEM technologies

SUMMARY AND REVIEW



Work in Progress

- NIEM – information exchange *services* development
- LEXS messaging systems and enabling secure information exchanges
- Middleware integration – SOA stack or OSS stack
- Dictionaries – domain canonical collections of NIEM components management
- Application solutions – SAR, Emergency Management, Child Services, Visa Services (Person Lookup)



Resource Center link

<http://www.oracle.com/goto/niem>

sourceforge

Visit project camprocessor
Register
Log In



page discussion view source history
Main Page

navigation

- Main Page
- Community portal
- Current events
- Recent changes
- Random page
- Help

search

toolbox

- What links here
- Related changes
- Special pages
- Printable version
- Permanent link

- On this page:
- Download
 - Installing
 - Sponsors
 - CAM tutorials
 - Screenshots
 - Uses of CAM
 - Features
 - Standards
 - License
 - Technical Details
 - Help Resources
 - Project Tracker
 - Documentation
 - History
 - Authors and contributors
 - Articles
 - Other Resources

CAM - Content Assembly Mechanism - toolkit

The CAM editor is the leading open source toolkit for building and deploying XML exchanges. The [OASIS CAM](#) is a public open standard. CAM can import, analyze and refactor existing exchange XML Schema for better compatibility and use in middleware, including generating model compliant XML Schema consistent with enterprise integration patterns.

CAM provides an intuitive approach using a WYSIWYG visual structure editor to dramatically simplify the process of developing and managing XML business information exchanges. This gives developers control, insights and analysis that are needed for consistent, interoperable and reliable exchanges. The CAM toolkit also automates the tasks of generating supporting artifacts such as business documentation, cross-reference spreadsheets, models, XML Schema and test XML instances. Compatible with the [NIEM](#) approach for information exchange integration with extensible profiles for NIEM, OASIS and more.

The CAM toolkit supports the use of Canonical Model dictionary components with visual Drag and Drop designing. Also provides a set of tools for harvesting and generating canonical dictionaries from existing XML Schema libraries or enterprise data modelling tools.

The standalone CAMV validation engine, written in Java, implements an XML validation framework using the OASIS CAM specification as the foundation. Also designed for integration with Service-Oriented Architecture (SOA), the CAMV XML validation framework supports use with other message based integration patterns such as Enterprise Application Integration (EAI), [LEXS](#) (Logical Entity Exchange System) and ebXML messaging systems.

Sponsors

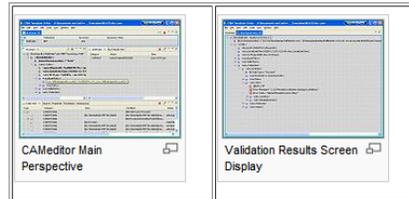


Oracle is a proud sponsor of the CAM project and its application to the National Information Exchange Model initiative along with XML information exchanges for public sector applications.

Screenshots

Illustrative screenshots from CAM editor main menu interface

CAMed Screenshots



Q & A



Download the CAM editor toolkit from:

<http://www.cameditor.org>

Lessons Learned from 1622-2011

- Persistent publication of example files (new IEEE process created for us, so won't be a problem next time).
- Any change requires updated digital signatures (a good thing!)
- Clerical error in PAR transcription (rules changed, so won't be a problem next time).
- Security issues – Use Case narrative makes it seem that security is in scope, but it is a “data exchange format standard.” Need more language indicating that the Use Case is illustrative.
- IEEE *SHOULD* vs. IETF *SHOULD*
- Issue tracking needed urgently
- Making the standards more about the XML and less about the use case description

Timeline

- 2011-01-30 First draft of Blank Ballot Distribution Use Case
- 2011-02-08/09 Meeting: Approve Use Case Strategy
- 2011-05-28 Ballot Pool Closes
- 2011-06-10 P1622 approved revised PAR
- 2011-06-13 First draft vote started in P1622
- 2011-07-07 Draft submitted for MEC
- 2011-08-01 Draft received from MEC
- 2011-08-18 Draft D2 submitted for Ballot
- 2011-09-14 PAR approved by NesCom
- 2011-09-17 Draft D2 ballot closes
- 2011-09-30 Draft D3 submitted for ballot
- 2011-10-10 Draft D3 ballot closes
- 2011-10-17 Draft D4 submitted for ballot
- 2011-10-17 Draft D4 submitted to RevCom
- 2011-10-23/24 Meeting
- 2011-10-27 Draft D4 ballot closes
- 2011-12-06 Draft D4 approved by RevCom
- 2011-12-07 Draft D4 approved by IEEE-SA Standards Board
- 2011-12-13 Notification by editorial manager

Timeline

- 2011-12-13 Feedback from assigned editor
- 2011-12-15 Given permanent URL for examples
- 2011-12-20 Need to store examples in ZIP and unzipped format
- 2011-12-20 Need to update EML505 to match permanent location
- 2011-12-20 Need to update digital signatures
- 2011-12-20 Updated figures with corrected URLs
- 2011-12-21 Notification about GET program for no charge distribution
- 2011-12-21 Updated example and digital signatures
- 2011-12-21 Suggestion to simplify URLs
- 2011-12-26 Decision to simplify URLs
- 2011-12-27 GET program process started
- 2011-12-29 New URLs chosen; suggestion to sign all documents; new files created
- 2012-01-04 Example files uploaded to IEEE website
- 2012-01-06 Example files regenerated with digital signatures and submitted to IEEE
- 2012-01-09 Final textual corrections provided to IEEE
- 2012-01-12 Official publication date of IEEE Std 1622-2011
- 2012-01-13 Notification of official publication

"SHOULD"

- IEEE *SHOULD*

- "The word *should* indicates that among several possibilities one is recommended as particularly suitable, without mentioning or excluding others; or that a certain course of action is preferred but not necessarily required (*should* equals *is recommended that*)."

- <http://standards.ieee.org/develop/policies/opman/sect6.html#6.4.7>

- IETF *SHOULD*

- "SHOULD This word, or the adjective "RECOMMENDED", mean that there may exist valid reasons in particular circumstances to ignore a particular item, but the full implications must be understood and carefully weighed before choosing a different course."

- <http://www.ietf.org/rfc/rfc2119.txt>

"SHOULD"

New IETF *SHOULD* (expired) drafts

- "SHOULD, RECOMMENDED: The words "ought", "encouraged" and "suggest strongly" can be used to connote something that is strongly urged."
 - <http://tools.ietf.org/html/draft-hansen-nonkeywords-non2119-00>
- **SHOULD**

This term means that the feature or behavior is a conditional requirement of the specification, so that an implementation has an obligation to implement the feature or to behave as defined unless there is a strong reason why it might be prudent not to do so in particular circumstances. Specification authors are strongly encouraged to clearly describe such reasons, along with the implications of not conforming with the conditional requirement. Those who implement the specification or deploy conformant technologies need to understand and carefully weigh the full implications of not conforming to the conditional requirement before doing so. The term "RECOMMENDED" is equivalent to "SHOULD".

 - <http://tools.ietf.org/html/draft-saintandre-2119bis-01#section-2.3>

Arthur's Suggestion on "SHOULD"

- We will not be able to use IETF definition of "SHOULD" again.
- Use "SHOULD" to mean IEEE definition.
- Use "URGE" (or "ARE URGED TO") to refer to the IETF definition, which we incorporate as normative language.

Issue Tracking

During 1622-2011 editing, tracking status of various issues was difficult using email

- Process was not transparent
 - Privy only to who was on the email
- Need a method to ensure more open access and to settle issues
- NIST can host – offer also from IETF to use trac

Making It About the XML

- The emphasis on blank ballot delivery focused people on (out-of-scope) security issues, among others
- This confuses the audience
- Our standards need to be oriented towards implementers, albeit with overview information
- Future standards should focus more on
 - Descriptions of elements and attributes
 - XSLTs as necessary
 - Worked examples

Adjourn

Resume at 8:30am EST Friday
March 9

Agenda Friday March 9

- **8:30am – Documenting EML Worked Examples**
- **9:15am – Use Case Standard Discussion 4**
 - Election statistics reporting (Shelly Anderson, EAC, David Beirne, FVAP)
 - EAC, FVAP surveys
- **10:30am – Break**
- **10:50am – Use Case Standard Discussion 5**
 - Election logging (Josh Franklin, EAC, Peter Zelechowski, ES&S)
- **12:00pm – Lunch (NIST cafeteria)**
- **1:15pm – Decisions on Next Steps**
 - PAR structure and submission, IEEE policy changes (Malia Zaman, IEEE)
 - Ratification of next steps (requires majority vote)
- **2:45pm – Wrap-up**
- **3:00pm – Adjourn**

Use Case Discussion 4

- Election Survey
 - EAC Survey – Shelly Anderson, EAC
 - FVAP Survey – David Beirne, FVAP
 - Additional scoping and modeling

EAC's Election Survey

- About the EAVS (history)
- The type of data collected in the survey
- Where the data come from and how they are reported to EAC
- Challenges/issues EAC has observed with states' data
- How might a common data format help?
- Looking ahead: EAC's 2014 EAVS

Break

Resume at 10:50am EST

Use Case Discussion 5

- Election Results Reporting
 - Update on Mid-Atlantic Consortium project
 - Paul Stenbjorn, ScytI
 - Additional Audit Information Reporting –
Neal McBurnett

COMMON DATA FORMAT IN ELECTION RESULTS REPORTING

Paul E. Stenbjorn

Background and Need



- Request of District of Columbia officials to provide Washington Post technology staff guidance on developing an election results platform for 2012 election.
- Opportunity for this Consortium to address this request and other common practice opportunities among states.
- Existing data standards identified for elections, notably EML

2011 Proof of Concept



- In 2011 April special election, DC BOEE produced XML feed to provide data to media outlets using a schema developed in-house
- DC BOEE produced election XSLT to produce formatted election results reports
- Used XML to generate Google Gadget

2011 Example

XSLT

Contest AT - LARGE MEMBER OF THE COUNCIL		
Candidate	Party	Votes
Alan Page	STATEHOOD GREEN	610
Dorothy Douglas	DEMOCRATIC	787
Bryan Weaver	DEMOCRATIC	6069
Arkan Haile	NO PARTY	137
Joshua Lopez	DEMOCRATIC	3343
Patrick Mara	REPUBLICAN	11851
Sekou Biddle	DEMOCRATIC	9373
Tom Brown	DEMOCRATIC	1036
Vincent Orange	DEMOCRATIC	13583
Write-in At Large		178

Contest MEMBER STATE BOARD OF EDUCATION WARD FOUR		
Candidate	Party	Votes
Andrew Moss		2553
D. Kamili Anderson		2787
Bill Quirk		672
An Almquist		629
Write-in Board of Education (4)		164

XML

```
<?xml version="1.0" encoding="ISO-8859-1"?><?xml-stylesheet type="text/xsl" href="xml_consume.xsl"?><DCBOEE><election ELECTION_NAME="2011 Special Election" election_date="2011-04-26"><CONTEST CONTEST_NAME="AT - LARGE MEMBER OF THE COUNCIL" BALLOT_ORDER="1"><CANDIDATE BALLOT_NAME="Alan Page" PARTY="STATEHOOD GREEN" CANDIDATE_ORDER="1"><PRECINCT PRECINCT_NAME="PRECINCT 1" PRECINCT_NUMBER="1" WARD="6" TOTAL_VOTES="2"/><PRECINCT PRECINCT_NAME="PRECINCT 2" PRECINCT_NUMBER="2" WARD="2" TOTAL_VOTES="0"/><PRECINCT PRECINCT_NAME="PRECINCT 3" PRECINCT_NUMBER="3" WARD="2" TOTAL_VOTES="6"/><PRECINCT PRECINCT_NAME="PRECINCT 4" PRECINCT_NUMBER="4" WARD="2" TOTAL_VOTES="1"/><PRECINCT PRECINCT_NAME="PRECINCT 5" PRECINCT_NUMBER="5" WARD="2" TOTAL_VOTES="3"/><PRECINCT PRECINCT_NAME="PRECINCT 6" PRECINCT_NUMBER="6" WARD="2" TOTAL_VOTES="4"/><PRECINCT PRECINCT_NAME="PRECINCT 7" PRECINCT_NUMBER="7" WARD="3" TOTAL_VOTES="4"/><PRECINCT PRECINCT_NAME="PRECINCT 8" PRECINCT_NUMBER="8" WARD="3" TOTAL_VOTES="3"/><PRECINCT PRECINCT_NAME="PRECINCT 9" PRECINCT_NUMBER="9" WARD="3" TOTAL_VOTES="1"/><PRECINCT PRECINCT_NAME="PRECINCT 10" PRECINCT_NUMBER="10" WARD="3" TOTAL_VOTES="3"/><PRECINCT PRECINCT_NAME="PRECINCT 11" PRECINCT_NUMBER="11" WARD="3" TOTAL_VOTES="12"/><PRECINCT PRECINCT_NAME="PRECINCT 12" PRECINCT_NUMBER="12" WARD="3" TOTAL_VOTES="0"/><PRECINCT PRECINCT_NAME="PRECINCT 13" PRECINCT_NUMBER="13" WARD="2" TOTAL_VOTES="1"/><PRECINCT PRECINCT_NAME="PRECINCT 14" PRECINCT_NUMBER="14" WARD="2" TOTAL_VOTES="3"/><PRECINCT PRECINCT_NAME="PRECINCT 15" PRECINCT_NUMBER="15" WARD="2" TOTAL_VOTES="10"/><PRECINCT PRECINCT_NAME="PRECINCT 16" PRECINCT_NUMBER="16" WARD="2" TOTAL_VOTES="9"/><PRECINCT PRECINCT_NAME="PRECINCT 17" PRECINCT_NUMBER="17" WARD="2" TOTAL_VOTES="7"/><PRECINCT PRECINCT_NAME="PRECINCT 18" PRECINCT_NUMBER="18" WARD="2" TOTAL_VOTES="4"/><PRECINCT PRECINCT_NAME="PRECINCT 19" PRECINCT_NUMBER="19" WARD="5" TOTAL_VOTES="6"/><PRECINCT PRECINCT_NAME="PRECINCT 20" PRECINCT_NUMBER="20" WARD="1" TOTAL_VOTES="1"/><PRECINCT PRECINCT_NAME="PRECINCT 21" PRECINCT_NUMBER="21" WARD="2" TOTAL_VOTES="0"/><PRECINCT PRECINCT_NAME="PRECINCT 22"
```



DC BOEE Election Results	
Contest AT - LARGE MEMBER OF THE COUNCIL	
Candidate	Party
Alan Page	STATEHOOD GREEN
Dorothy Douglas	DEMOCRATIC
Bryan Weaver	DEMOCRATIC
Arkan Haile	NO PARTY

Google Gadget

Plan for 2012



- Adopt a common framework based on EML 510/520/530
- Develop a common set of XSL transformations for media use
- Deploy results via Google Gadget for cloud-based consumption
- Development of XSLT for data conversion from vote tabulation systems

EML 510/520/530



- EML 510 contains contest information, reporting units and results, including:
 - ▣ Precincts reported
 - ▣ Candidate names
 - ▣ Voting precincts
- EML 520 contains election results data
- EML 530 contains jurisdiction statistics, including:
 - ▣ Turnout statistics
 - ▣ Reporting times

EML 520 XSL Example

```
<?xml version="1.0" encoding="ISO-8859-1"?>
<xsl:stylesheet version="1.0"
xmlns:xsl="http://www.w3.org/1999/XSL/Transform"><xsl:template match="/">
<html> <body>- Election Results <xsl:for-each select="//Election/Contest">
  <h2><xsl:value-of select="ElectionIdentifier/@Id"/></h2>
  <h2><xsl:value-of select="ContestIdentifier/@Id"/></h2>
  <table border="0" width="100%"> <tr bgcolor="#9acd32">
    <th align="left" width="40%">Candidate</th>
    <th align="left" width="40%">Affiliation</th>
    <th align="left" width="20%">Votes</th> </tr> <xsl:for-each select="Selection"> <xsl:if
test="CandidateIdentifier/CandidateName != 'NONE'">
  <tr> <td align="left" width="40%"><xsl:value-of select="CandidateIdentifier/CandidateName" /></td>
  <td align="left" width="40%"><xsl:value-of select="Affiliation/AffiliationIdentifier/RegisteredName" /></td>
  <xsl:if test="Votes > 0">
    <td align="left" width="20%"><xsl:value-of select="Votes" /></td>
  </xsl:if>
  <xsl:if test="Votes < 1">
    <td align="left" width="20%"></td>
  </xsl:if>
  </tr>
</xsl:if>
</xsl:for-each>
</table>
<hr/>
</xsl:for-each>
</body>
</html>
</xsl:template></xsl:stylesheet>
```

Deployment Plan



- States will develop independent plans for deployment using EML Schema documentation
- States will host XML files locally on state resources
- Consortium will coordinate with media outlets for publication of results

Future Direction



Group will coordinate efforts with:

- NIST and IEEE
- Offer other states the opportunity to benefit from results
- Allow development of election results reporting in the public domain

Lunch

Resume at 1:15pm EST

Decisions on Next Steps

- Overview of the IEEE-SA process – Malia Zaman, IEEE
 - PAR structure and submission
 - IEEE policy changes
- Ratification of next steps – Arthur Keller
- Next meeting date

Overview of the IEEE-SA Process

Malia Zaman
Program Manager
P1622 Working Group Meetings
March 8-9, 2012

In this Presentation we will cover:

- **Overview of the IEEE-SA Process**
- **Project Approval Process**
- **Development of Draft Standard**
- **Sponsor Balloting Process**
- **myBallot/myProject Access/Membership Services**
- **Standards Board Approval Process**
- **Policy updates**
- **Resources**

IEEE—A Global Organization

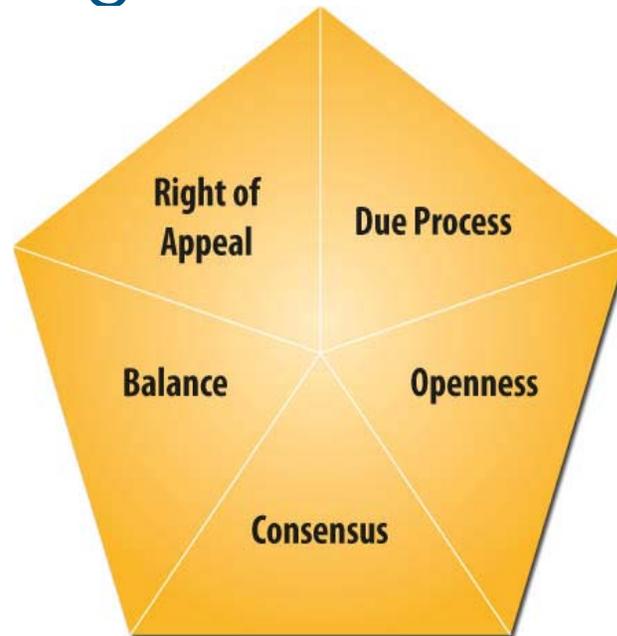
IEEE is a non-profit organization for scientific and educational advancement

IEEE is made up of international technical professionals living around the world who are fostering technological innovation and excellence for the benefit of humanity



IEEE Standards Development

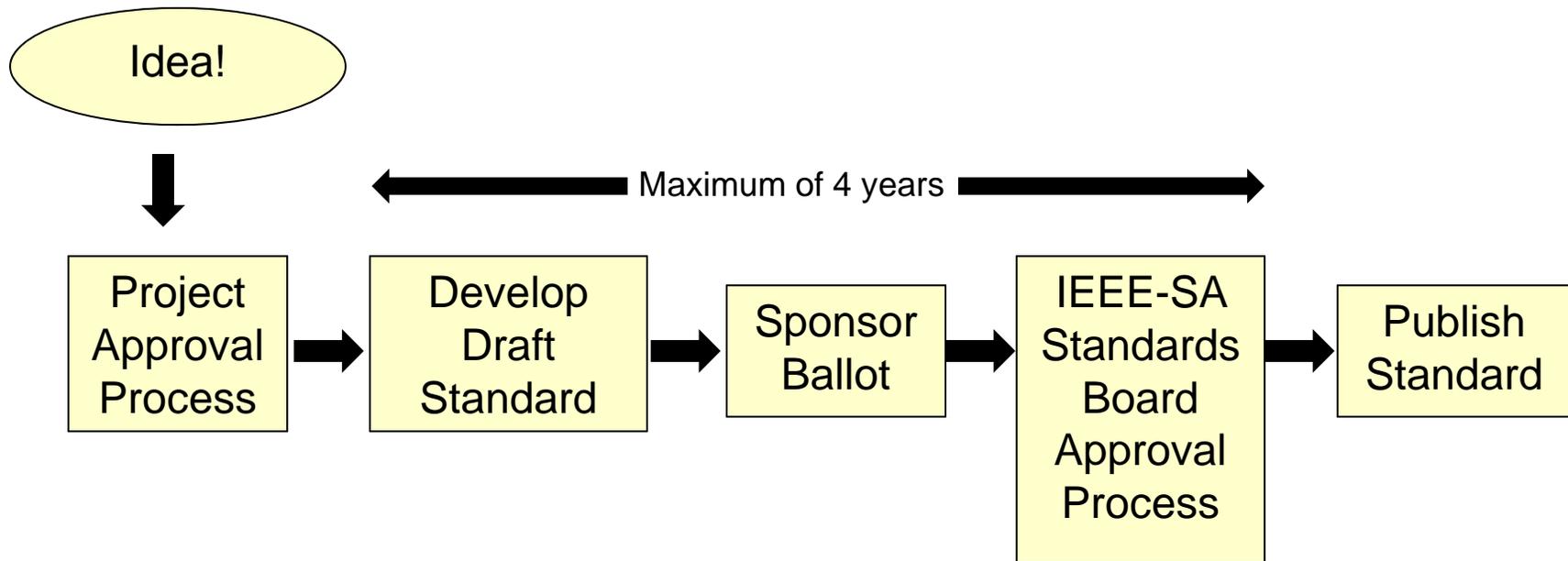
Five principles guide standards development



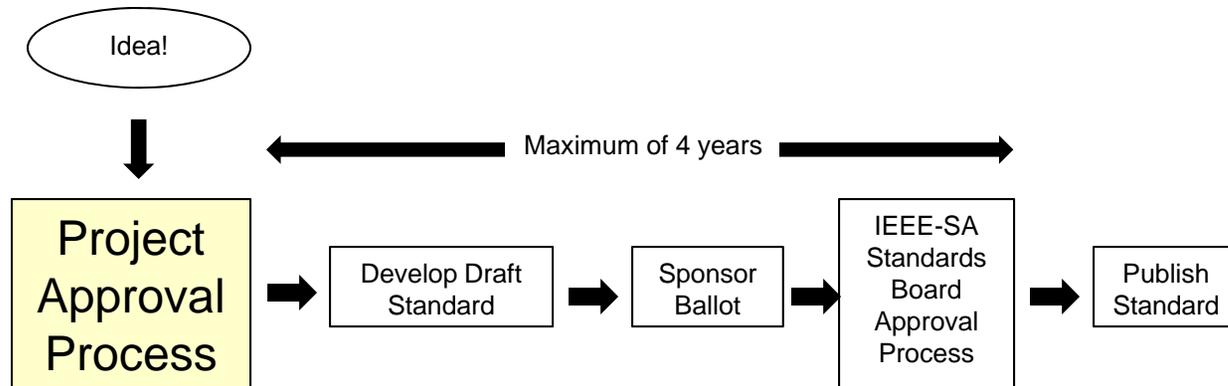
Ensuring integrity and wide acceptance for IEEE standards

IEEE standards reflect the standardization principles as stated by the WTO

IEEE Standards Development: Process Flow

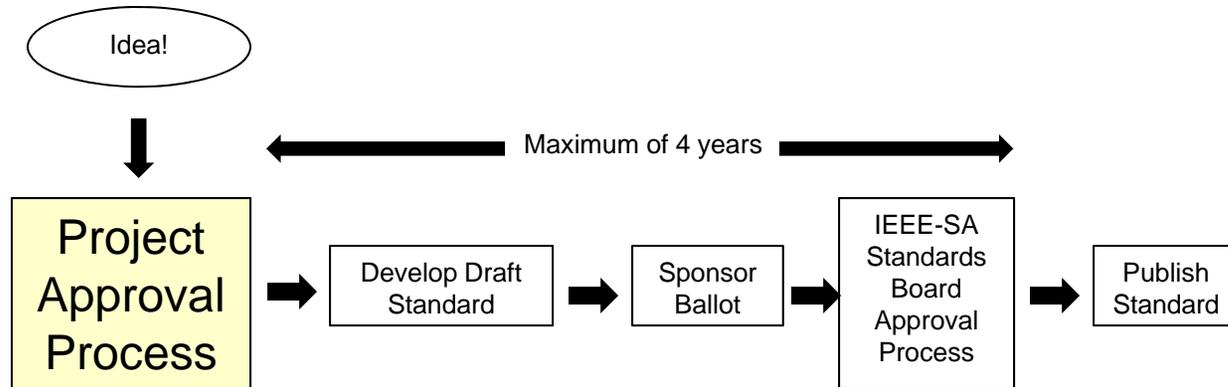


IEEE Standards Development: Project Authorization



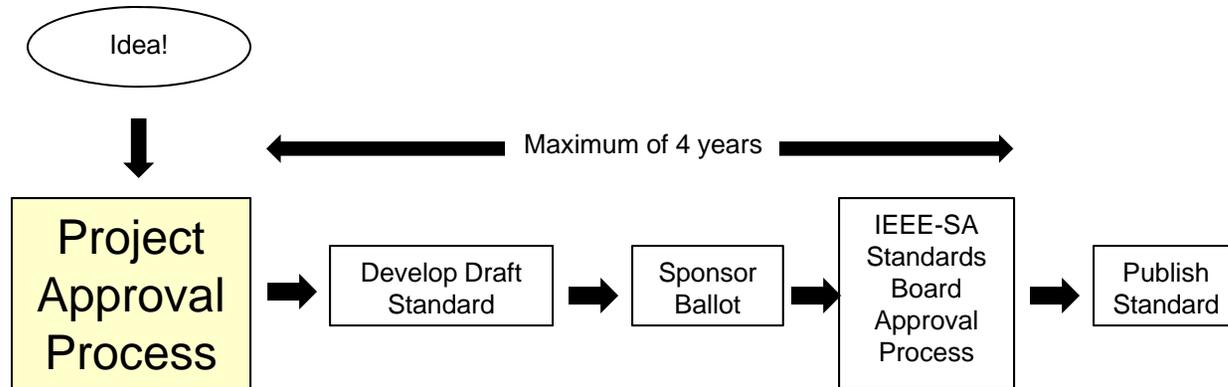
- A potential working group or study group gathers to work on the Project Authorization Request (PAR), up to six months before a PAR needs to be submitted.
- With the support of the sponsor, submit a PAR to IEEE-SA Standards Board (SASB) for an approval to start the project.
- PAR is reviewed by New Standards Committee (NesCom) and based on its recommendation, IEEE-SA Standards Board (SASB) approves/disapproves the project

IEEE Standards Development: Project Authorization



- Once the PAR's Title, Scope and Purpose has been determined, then it can be submitted to NesCom
- In order to meet the next meeting deadline, a PAR will need to be submitted by April 27th in order to be reviewed at the June 6-8th IEEE-SA Standards Boards Meeting

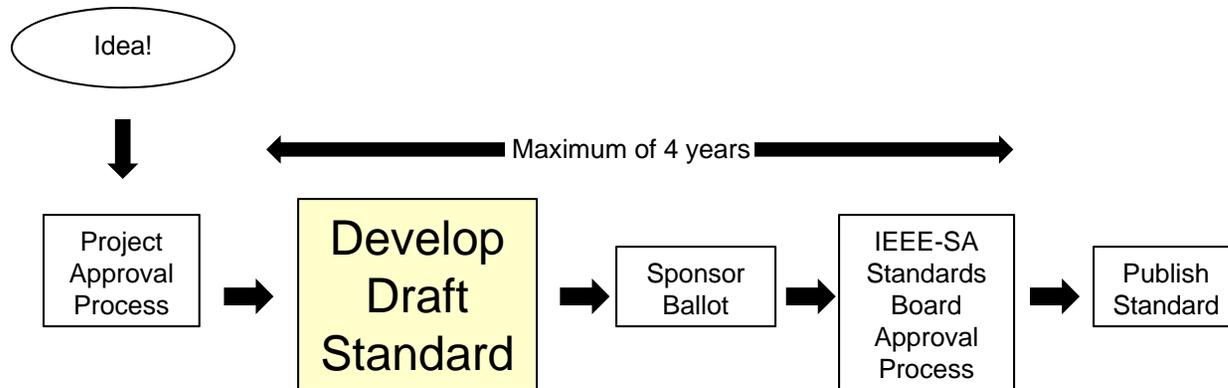
IEEE Standards Development: Project Authorization



PAR Options:

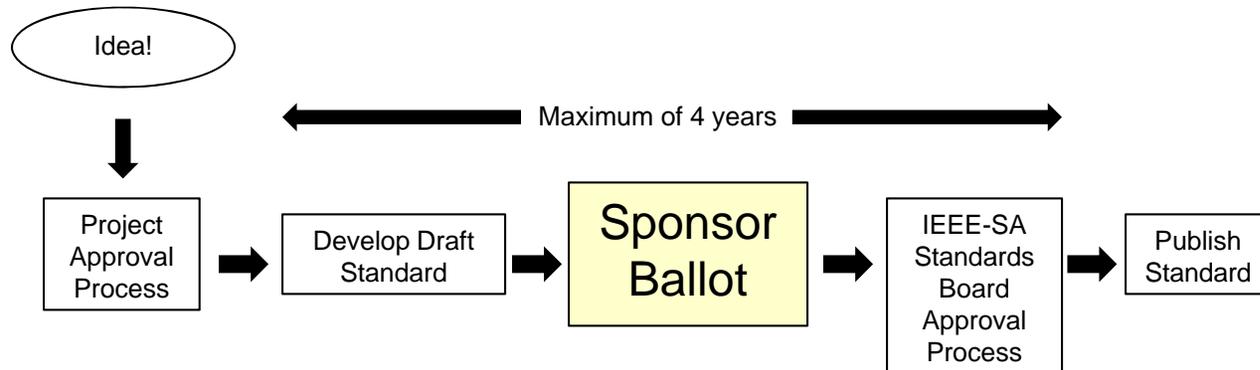
- **Option 1:** Continue with a series of 1622 Family of Standards, etc P1622.1, P1622.2 each project dedicated to a different topic. When all the parts have been developed, revise the standard to roll up all the parts into one standard. Each .1 and .2 project will have it's own Title Scope and Purpose.
- **Option 2:** Develop amendments to P1622, i.e. 1622a, 1622b. After 3 amendments the amendments will need to be rolled up. These may have its own scope but not necessary, and will only cover a particular clause, not an entire standard.

IEEE Standards Development: Draft Development



- Working group (WG) is created/maintained under policies and procedures (P&P) of the sponsoring committee
- WG officers are designated to start the development of the standard
- Write the draft of the standard
- Submit finalized draft for Mandatory Editorial Coordination (MEC) to ensure conformance with IEEE requirements.

IEEE Standards Development: Sponsor Balloting



- A ballot group is formed using an electronic balloting system called myProject/myBallot™ .
 - Composition of that balloting group cannot change when the ballot is initiated.
- A sponsor ballot is initiated with the draft, to be reviewed, commented, and voted by the ballot group.
 - Needs 75% return response rate from the ballot group, and needs 75% affirmative(approved) votes
- WG reviews all the approved and disapproved votes with comments submitted by the ballot group.
- Make a reasonable attempt to resolve all negative votes
 - Add or revise materials as suggested
 - Submit responses to the comments
- Recirculate the revised draft standard and comments out to the ballot group .

Creating a Web Account and MyBallot/myProject Access/Membership Services

- **Accessing the myProject system requires an IEEE Web Account:**

<https://webapps1.ieee.org/WebAccount/Registration>

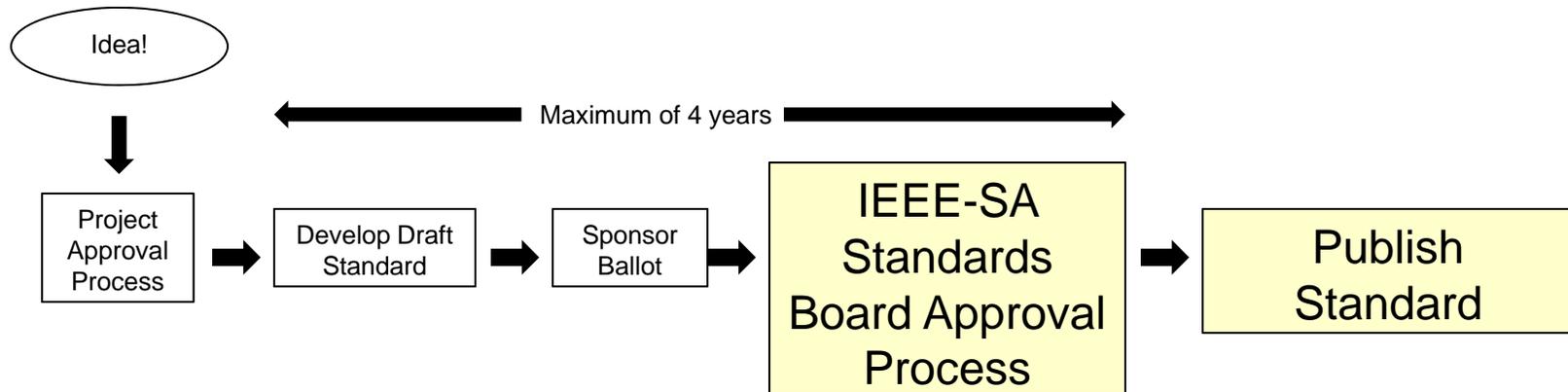
- **MyBallot /MyProject Link:**

<https://development.standards.ieee.org/my-site/home>

Membership Services:

<http://standards.ieee.org/membership/index.html>

IEEE Standards Development: Approval Process to Publication



- Submit the final draft standard to Standard Review Committee (RevCom).
- RevCom reviews the submitted documents and materials, and makes a recommendation to IEEE-SA Standards Board for an approval of the draft standard.
- IEEE-SA Standards Board reviews the recommendation and approve the draft standard.
- Publish Standard
- Complimentary copies sent to the WG.

Policy Changes

- ❑ Reaffirmation/Stabilization
- ❑ Interpretations
- ❑ ANSI Balance Rule
- ❑ Invited Experts
- ❑ Match Rule
- ❑ Public Notice/Patent Disclaimer

Reaffirmation/Stabilization

New Process for Maintaining Active Standards

- In June 2011, the IEEE-SA Board of Governors (BoG) and Standards Board (SASB) approved a new process for maintaining active standards.
- Changes are reflected in the policies and procedures:
 - SASB Bylaws
 - SASB Operations Manual
- The changes are available online at <http://standards.ieee.org/about/sasb/procom/reaff-changes.pdf>

Benefits

- The IEEE-SASB, which is comprised of appointed volunteers who oversee the standards development process, determined that it was important to:
 - Streamline/simplify the maintenance process to assist participants in complying with the policies and procedures of both IEEE and ANSI
 - Offer Sponsors and Working Groups additional time to review and complete a revision cycle
 - Enable Sponsors to focus on revisions of standards that require maintenance action, rather than a diffusion of Sponsor efforts to meet administrative requirements for reaffirmation or stabilization
 - Have a process that permitted a standard to be revised when addressing comments during maintenance so that IEEE standards will remain pertinent and of high technical value

Rationale

- Various options were considered and it was determined that the new process:
 - Was simplest and least taxing on volunteer resources
 - Allowed standards developers to concentrate on keeping IEEE standards relevant
 - Reduced IEEE's legal risk associated with outdated standards by making needed revisions where warranted by the Sponsor, Working Group, and Sponsor Balloting Group

Changes

Effective Jan 1, 2012

- There will be no new reaffirmation or stabilization ballots
- The only actions available to Sponsors will be:
 - Revision
 - Amendment/Corrigendum (does not impact maintenance cycle)
 - Withdrawal
- Standards will have a 10 year maintenance cycle (i.e., extended from 5 years to 10 years after the last date of approval or maintenance action)
- The status for a standard will be either **active** or **inactive**
- All standards must have a revision approved by the IEEE-SASB prior to the close of Year 10 in order to remain active
- Any standard not approved as a revision will become inactive after Year 10

Categories of Inactive Standards

- ***inactive-superseded***: These standards have been replaced with a revised version of the standard, or by a compilation of the original active standard and all its existing amendments, corrigenda, and errata.
- ***inactive-reserved***: These standards are removed from active status through an administrative process for standards that have not undergone a revision process within 10 years.
- ***inactive-withdrawn*** (*valid for standards categorized after 1 January 2012*): These standards have been removed from active status through a ballot where the standard is made inactive as a consensus decision of the balloting group.

Revisions

- A revision ballot may result in:
 - Changes to the standard
 - Changes to only the references or bibliography
 - No changes at all

Reaffirmation/Stabilization Transition Plan

- A. Standards reaffirmed/stabilized prior to 1 Jan 2012 – use the latest of the following dates to complete the revision process or standard will be transferred to inactive status:
- By 31 December 2018 – 7 years after start of new program, or
 - 10 years from initial approval, or
 - 10 years from last maintenance action
- B. Reaffirmation/Stabilization in invitation/ballot on 1 Jan 2012:
- 1 year to complete (approved at the December 2012 SASB meeting)
 - If not completed by 31 Dec 2012, then item A applies
- C. No new reaffirmation/stabilization invitations permitted after 31 Dec 2011

Input from Users of a Standard

- Users (those who use or implement a standard) can notify Sponsors or the IEEE if they believe a revision should occur prior to 10 years:
 - 1) In the front matter of each standard, users are notified that they can contact the Secretary of the IEEE-SASB to submit issues/concerns
 - 2) Users can contact the Sponsor directly online, or can contact a Staff Liaison who would be able to provide contact information or pass along the issues/concerns to Sponsors
 - 3) Sponsors can revise, amend or withdraw their standards at any time prior to Year 10
 - 4) An inaction on the Sponsor's part can be appealed to the IEEE-SASB where an appeal hearing can be performed

American National Standards

- An ANS can be revised prior to Year 10 if deemed appropriate
- Any standard that is currently an ANS will need to report to the administrator of the Standards Review Committee (RevCom) during Year 5 and explain whether a revision is in progress, or whether a revision is slated to be completed within the next 5 years
- IEEE has informally submitted the procedural changes to ANSI. No objections were obtained. The updated policies and procedures will be submitted to ANSI for audit in early 2012 along with all other 2011 procedural changes.

Interpretations

Elimination of Interpretations

- The IEEE-SA Standards Board approved a proposal to eliminate issuing interpretations in June 2011
- Current practice: Interpretations should not constitute an alteration to the original standard
 - At present, they are permitted to provide meaning to text that is ambiguous

Interpretations - Rationale

- Inefficient and a risk
 - Interpretation responses made in an attempt to clarify ambiguous text to be derived from a process that does not inform all materially interested parties of the activity
 - Does not require consensus to be achieved through the Sponsor balloting process

Interpretations - Solution

- More sensible to simply funnel comments on standards to Sponsors for handling
 - Any document changes would appear in a revision amendment/corrigendum
 - All require PARs – an open process & consensus through balloting
- Therefore interpretations as discrete documents should be discontinued

Interpretations – Going Forward

- Elimination of Interpretations
 - In order to maintain ANSI accreditation, we are required to have an interpretations policy.
 - Our interpretations policy can be that we do not supply Interpretations
- Changes will be effective 1 January 2012
- Changes to Ops Man, ByLaws, etc
 - “The IEEE does not offer interpretations of its standards”

Balance Rule

ANSI Essential Requirements- Balance Rule

- ANSI Essential Requirements require that interest categories for “safety-related” standards balloting can not be greater than 1/3 of balloters
- ANSI’s audit of IEEE-SA’s procedures for 2009 determined that
 - IEEE SA’s current rule that balance is achieved if no one classification is 50% or more

ANSI – Balance Rule

- “Safety Standard” was not defined or included by ANSI’s rule
- IEEE left with three choices
 - Adopt the 1/3 rule across the board
 - Define “safety standards”
 - Implement the 1/3 rule if the word “safety” was included anywhere in the document

ANSI – Balance Rule Resolution

- Changing the ANSI Essential Requirement would be difficult
- After significant deliberation, the Standards Board approved a motion:
 - Balance will be achieved by not permitting any single interest category to comprise more than 1/3 of the Sponsor balloting group
- Other categories can be considered beyond user, producer, general interest, etc.

ANSI – Balance Rule Going Forward

- Changes to IEEE- SASB Ops Man to be implemented 1 March 2012
-
- A Standards Board AdHoc will continue to create education material and to address implementation issues

Balance Rule Implementation

- Here are the new guidelines:
- 1) If your invitation was opened before 1 March 2012 you follow the 50% balance rule.
- If for some reason, the invitation goes stale (i.e., the initial ballot does not open within 6 months of the invitation close date), then a new invitation will need to occur under the 1/3 balance rule.
- 2) If your invitation opens on or after 1 March 2012 you follow the 1/3 balance rule.
- So for example: If the invitation open date is Feb 29th, they would follow the 50% balance rule. If it opens on Mar 1, it will follow the 1/3 balance rule.

Invited Experts

Invited Experts - Elimination

- Prior to 1998, IEEE membership was required to ballot on an IEEE standard
 - IEEE membership requires certain technical/educational credentials
 - Having invited experts beneficial then
- 1999 IEEE-SA created & IEEE membership no longer needed, just IEEE-SA
 - No technical/educational credentials

Invited Experts – Going Forward

- Invited Experts in IEEE's balloting process is no longer needed
 - Anyone can qualify for membership or can pay the per-ballot fee
- Removing Invited Experts will create an equal participation field for all those interested in an IEEE ballot
- Effective 1 January 2012 "Invite an Expert" will not be available

Match Rule

Match Rule - Elimination

- Current Practice: Title/Scope/Purpose of the PAR for new and revision projects must match that of the draft document
- Proposed change: Update ballot announcement in myProject to make it clear that one of the balloters responsibilities is to ensure that the scope of the draft is within the scope of the work authorized by the PAR

Match Rule - Rationale

- If the scope of an approved standard were to go beyond the scope of the PAR
 - Materially interested persons may not have the opportunity to participate
 - Fail to meet openness
- RevCom not to make judgment if scope of document is within scope of PAR
- Match rule created unnecessary Modified PAR requests

Match Rule – Going Forward

- It is the job of the balloters to determine if the scope of the final standard is within the scope of the work authorized by the PAR
 - It is okay for the scope of the draft to be less than the scope of the PAR
- Eliminate the Match Rule on January 1, 2012

Public Notice/Patent Disclaimer

Public Notice/Patent Disclaimer

- For published documents, at present, there are two options for frontmatter disclaimer language based upon whether or not a patent letter of assurance (LOA) was on file at the time of publication
- Goal is to have 1 public disclaimer in the document
 - Avoid the possibility of incorrect statement

Public Notice/Patent Disclaimer

- Creation of 1 disclaimer will eliminate:
 - Miscommunication if an LOA is accepted
 - Timing of the receipt of the patent LOA if received after a standard is approved
 - Misunderstanding by implementers as to whether or not they should refer to the patent listing for LOAs
- Effective January 2012

Questions

- URL for FAQs: <http://standards.ieee.org/faqs/reaff.html>
- The current version of the IEEE-SA Standards Board Bylaws is available at:
<http://standards.ieee.org/develop/policies/bylaws/index.html>
(HTML version)
http://standards.ieee.org/develop/policies/bylaws/sb_bylaws.pdf
(PDF version)
- [The current version of the IEEE-SA Standards Board Operations Manual is available at:](http://standards.ieee.org/develop/policies/opman/index.html)
<http://standards.ieee.org/develop/policies/opman/index.html>
(HTML version)
http://standards.ieee.org/develop/policies/opman/sb_om.pdf
(PDF version)



Thank You!

Contact Information

Malia Zaman, TPD Program Manager

Email: m.zaman@ieee.org

Tel: 732 562 3838

Resource Links

IEEE Standards Association Contact Us | FAQs | standards.ieee.org only | GO

Find Standards | **Develop Standards** | Membership | News & Events | About Us | myProject | Corporate Accounts

Develop Standards

Learn about the Standards Development Lifecycle, how to participate in standards development, search for working groups and standards in development and much more!

The Standards Development Lifecycle

IEEE Standards are developed using a time-tested, effective and trusted process that is easily explained in a six stage lifecycle diagram.

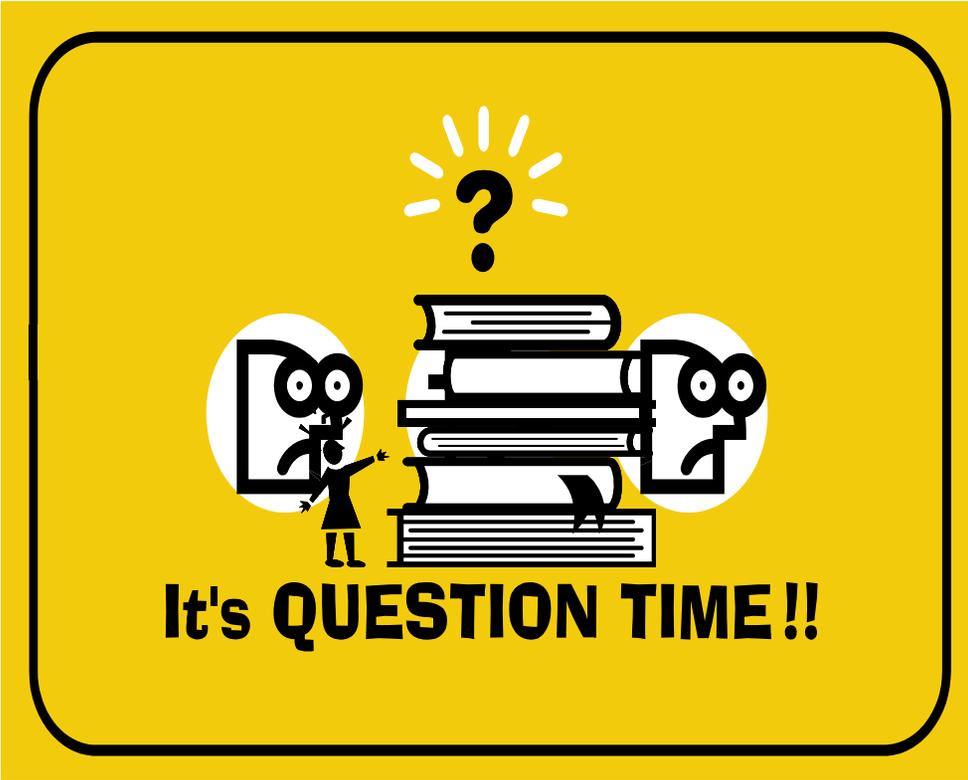
- [Overview](#) What are standards?
- [Policies](#) What are our guidelines?
- [Governance](#) Who oversees the process?
- [Process](#) How are standards made?

Click on an arrow for articles about each stage of development.

Additional Information:

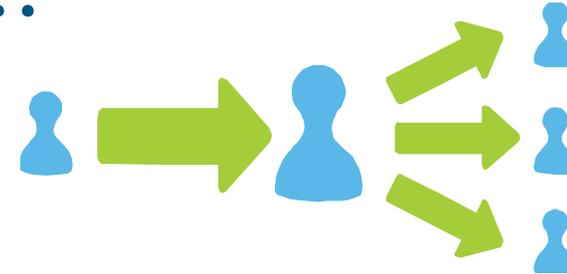
<http://standards.ieee.org/develop/index.html>

Comments/Questions:



For more information...

Contact:



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Program Manager
Technical Program Development
Phone: +1 732 562 3838
Email: m.zaman@ieee.org

Decisions on Next Steps

- Next steps – Arthur Keller
 - Choose a PAR structure
 - Choose which PARs first and their timelines
- Next meeting date

PAR Option 1

- Continue with a series of 1622 Family of Standards, etc. P1622.1, P1622.2 each project dedicated to a different topic. When all the parts have been developed, revise the standard to roll up all the parts into one standard. Each .1 and .2 project will have it's own Title Scope and Purpose.

PAR Option 2

- Develop amendments to P1622, i.e. 1622a, 1622b. After 3 amendments the amendments will need to be rolled up. These may have its own scope but not necessary, and will only cover a particular clause, not an entire standard.

PAR Option Vote

- Option 1: 1622.1, 1622.2, 1622.3, 1622.4
- Option 2: 1622a, 1622b, 1622c, merge

Choose Next PARs

- Voter Registration Database export
- Election Results/Audit Reporting
- Election Survey export
- Election Log export
- Interoperability (initially ballot definition file export)

Next Meeting

- June or July 2012?
- No regular meeting 3 months before election to 1 month after (telecons ok)
- January or February 2013?