

**Open Voting Solutions**

**OpenScan Systems**



# ***Open Voting Solutions***

<http://openvotingsolutions.com>

Contact: Richard C. Johnson, Ph.D, CEO

(631) 827-6899 Office

(631) 689-3774 FAX

(631) 827-6899 Mobile

Or

David RR Webber, CTO

(301) 693 1000 Office

(509)-695-9479 FAX

**Open Voting Solutions**

**OpenScan Systems**



# *Capability Introduction*

## *August 2007*

*An Open Public Approach  
to Voting System Solutions*

***Products:***

OpenScan Precinct Optical Scan System  
OpenScan Central Tabulator

***Consulting:***

Assisting jurisdiction requirements  
analysis & onsite capability reviews

[info@openvotingsolutions.com](mailto:info@openvotingsolutions.com)

# ***Agenda***

**Open Voting Solutions**

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- *Brief Overview – Open Source & Standards*
- *Supporting the 5 Phases of an Election*
- *Voting Process Reviewed*
- *Tabulation & Results Publishing*
- *Summary*



# ***Brief Overview: Open Source & Open Standards***

- **Importance of publicly verifiable processes**
  - Proprietary designs cannot be substantiated (e.g. California review example)
- **Technology – why XML is important**
  - All election files can be viewed in plain text for open inspection
- **What public open source delivers**
  - Review and transparency



# ***Technology Roundup***

- *Election Markup Language (EML) standard*
  - Provides formal voting processes
  - Verifiable Conformance and Compliance testing
  - Ballot definitions and vote data are plain text in a standardized format
- *XML – foundation for information exchange*
  - Supported by off-the-shelf familiar software (Notepad, Word, etc)
  - Works with browser technology
  - Available since 1997
- *Public Open Source*
  - Provides peer review and validation

# EML Transactions Summary

Standard record structures to hold election information, ballot details and voting records

Document Name	Purpose
EML 110 – election event	Information about an election or set of elections. It is usually used to communicate information from the election organizers
EML 210 – candidate nomination	Used to nominate candidates or parties, consenting or withdrawing
EML 230 – candidate list	Contest and candidates details
EML 310 – voter registration	Used to register voters for an election
EML 330 – voter election list	Details of actual voters for an election
EML 340 – polling information	Notification to voter of an election, their eligibility and how to vote
EML 410 – ballot	Describes the actual ballot to be used for an election
EML 420 – voter authentication	Used for voter authentication during a voting process
EML 440 – cast vote	Actual record of vote cast
EML 460 – votes group	Group of votes being transferred for counting
EML 480 – audit log	Documents access to voting records and reason
EML 510 - count	Results of election contest(s) and counts
EML 520 - result	Communicating specific result details on candidates and elections



## Example - EML 230 Candidate List

```
<EML Id="230" SchemaVersion="5.0">  
  <TransactionId>OK-2007-09-1</TransactionId>  
  <CandidateList>  
    <Election>  
      <ElectionIdentifier Id="Oklahoma 2007" />  
      <Contest>  
        <ContestIdentifier Id="State Governor" />  
        <Candidate>Brad Henry</Candidate>  
        <Candidate>John Wayne</Candidate>  
        <Candidate>Bill Okapi</Candidate>  
        <Candidate>Jane Smith</Candidate>  
      </Contest>  
    </Election>  
  </CandidateList>  
</EML>
```

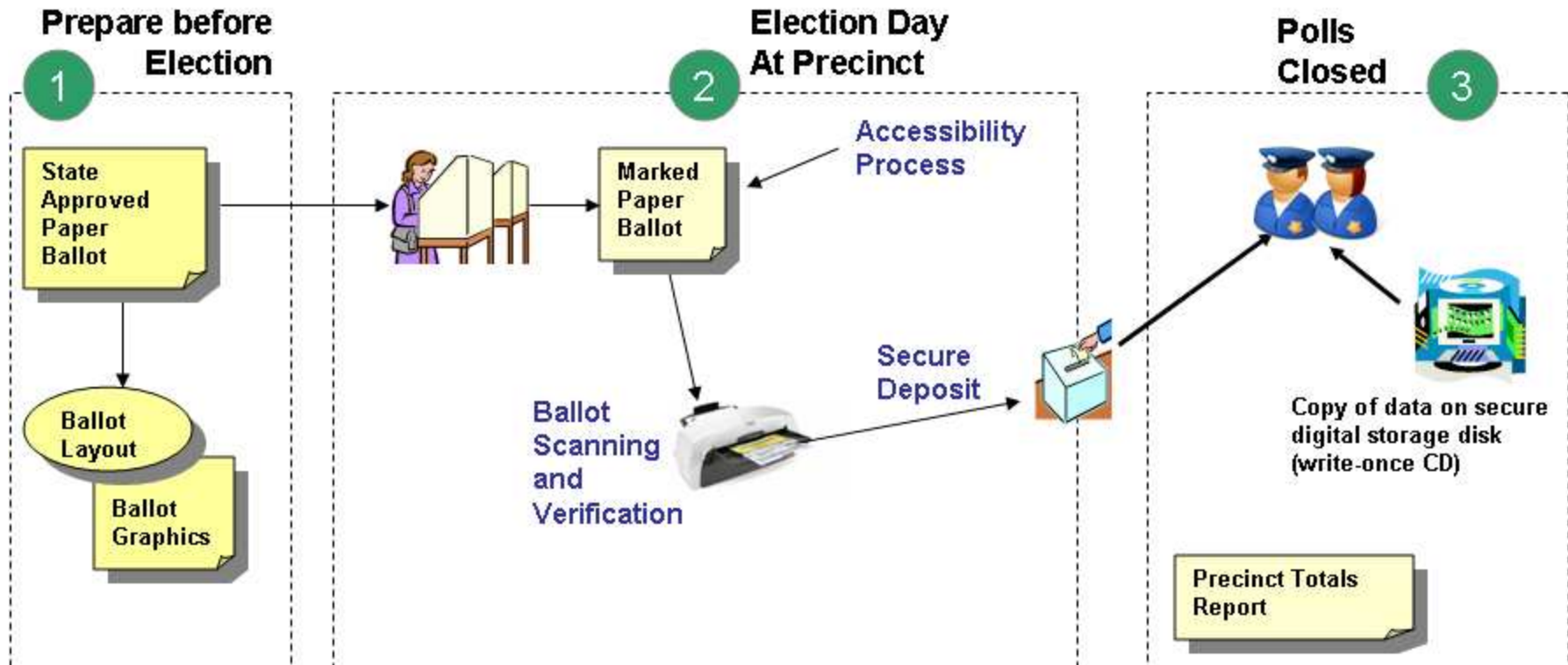
Example of an XML formatted file



# ***Supporting the 5 Phases of an Election***

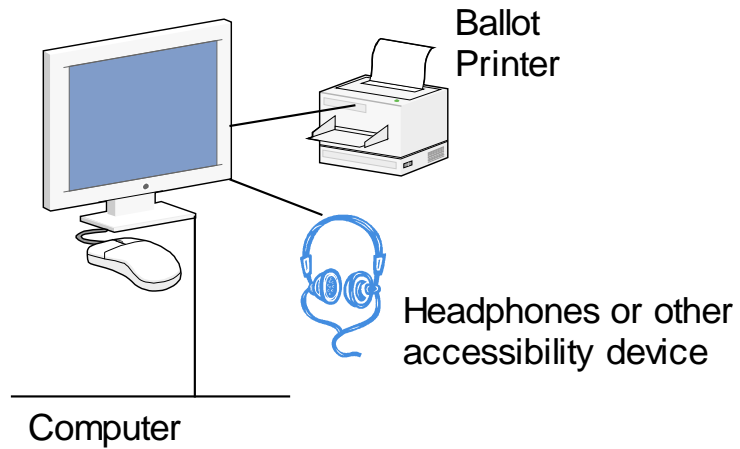
- *Ballot Preparation, Candidate & Proposal Details*
- *Voting & Accessibility Handling on Election Day*
- *Counting & Tabulating*
- *Declaration of Results*
- *Distribution and Archiving*

# Concept of Operations

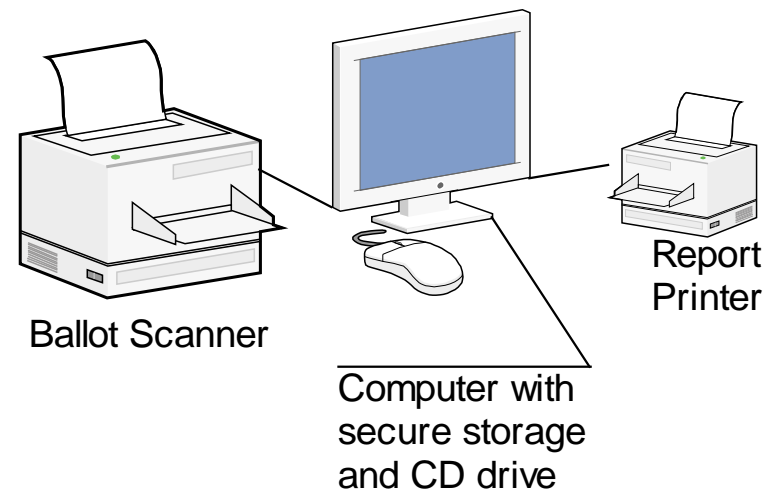


# Hardware Components

## ACCESSIBILITY STATION



## SCANNING STATION





# ***Ballot Preparation***

*From:*

*The official printed paper ballot*

*To:*

*Computerized ballot definition*

# Computerized Ballot Definition

After printed paper ballot is scanned, election staff can check the scanned ballot image

**YES**

**NO**

**PROPOSITION NUMBER ONE**  
Rail Preservation Bond Issue

To promote and assure the preservation and improvement of essential rail passenger and freight services to the inhabitants of the state, shall section two of chapter one hundred eighteen of the laws of nineteen hundred seventy-four, known as the rail preservation bond act of nineteen hundred seventy-four, authorizing the creation of a state debt in the amount of two hundred fifty million dollars (\$250,000,000) for capital facilities be approved?

**YES**

**NO**

**WESTCHESTER COUNTY**  
PROPOSITION NUMBER ONE

Shall there be approved and adopted in the County of Westchester, a Local Law passed by the Board of Legislators of Westchester County on August 19, 1974, entitled "A Local Law to amend section six (a) of Article II of the Westchester County Charter—changing the elected term of the County Board to four years," which enlarges the term of office of each member of the County Board of Legislators from two (2) years to four (4) years.

**YES**

**NO**

**PROPOSAL NUMBER ONE, A PROPOSITION**  
Rebuild New York Through Transportation Infrastructure Renewal Bond Issue

To promote and assure the preservation, renewal and improvement of the state's vital transportation systems, facilities and equipment for the benefit of the inhabitants of the state, shall section one of the chapter eight hundred and thirty-six of the laws of nineteen hundred eighty-three, enacting and constituting the "REBUILD NEW YORK THROUGH TRANSPORTATION INFRASTRUCTURE RENEWAL BOND ACT OF 1983" authorizing the creation of a state debt in the amount of one billion two hundred fifty million dollars (\$1,250,000,000) for construction, reconstruction, improvement, reconditioning and preservation of transportation systems and facilities, including the acquisition of equipment, be approved?

**YES**

**NO**

**PROPOSAL NUMBER FOUR, AN AMENDMENT**  
Continuation of the Services of a Judge or Justice After Retirement

Shall the proposed amendment to subdivision b of section 25 of article VI of the Constitution, authorizing the legislature, by law, to permit the continuation of the services of a judge or justice of certain courts after retirement upon appointment by the administrative board of the courts and providing for assignment of former justices of the supreme court and former judges of the court of appeals serving as justices of the supreme court under existing provisions of the Constitution by the administrative board of the courts rather than by the appellate division of the supreme court, be approved?

**YES**

**NO**

**PROPOSAL NUMBER FIVE, AN AMENDMENT**  
Temporary Assignments of Family Court Judges

Shall the proposed amendment to subdivision 1 of section 26 of article VI of the Constitution, permitting the temporary assignment of a judge of the family court to the supreme court in the judicial department of his residence, be approved?

**YES**

**NO**

**PROPOSAL NUMBER SIX, AN AMENDMENT**  
Exchange of Certain Property Within the Adirondack Park

Shall the proposed amendment to article XIV, section 1 of the Constitution, authorizing the conveyance of approximately ten acres of State land and buildings thereon to the Sagamore Institute, Inc. in exchange for approximately two hundred acres of wild forest land within the Adirondack Park in order to facilitate the preservation of certain historic buildings, be approved?

OFFICE	2 GOVERNOR AND LT.- GOVERNOR (VOTE ONE)	4 COMPTROLLER (VOTE FOR ONE)	5 ATTORNEY GENERAL (VOTE FOR ONE)	6 ASSOCIATE JUDGE OF THE COURT OF APPEALS (VOTE FOR TWO)		8 UNITED STATES SENATOR (VOTE FOR ONE)	10 JUSTICE OF THE SUPREME COURT (VOTE FOR FOUR)				13 REPRESENTATIVE IN CONGRESS (VOTE FOR ONE)	14 STATE SENATOR (VOTE FOR ONE)	15 MEMBER OF ASSEMBLY (VOTE FOR ONE)	16	17
<b>REPUBLICAN</b> A	Republican WILLIAM SULLIVAN for GOVERNOR NEIL CAREY for LT.-GOVERNOR	Republican MICHAEL SANTARCANGELO	Republican ARNOLD KRILL	Republican ERNEST SYNDER	Republican HERBERT DEVINE	Republican HARRY RIDER	Republican SAMUEL PATRICK	Republican HERBERT SCHWEPENHAUSER	Republican NORMAN POWERS	Republican JERRY PLATT	Republican FRANK PEARSON	Republican JAMES PIERSON	Republican MILDRED DUDO	Republican LOUIS DENN	Republican BARB JOSI
<b>DEMOCRATIC</b> B	Democratic STEPHEN MASSIMILIAN for GOVERNOR GLORIA DILLON for LT.-GOVERNOR	Democratic CHERYL SIMON	Democratic ROBERT SQUIRE	Democratic STEPHEN HARRICK	Democratic ANDRE DECKER	Democratic ELIZABETH MACK	Democratic ROBERT O'DONNELL	Democratic CAROL TUBBS	Democratic PETER TOOLEY	Democratic HELENA SLACK	Democratic LOIS KOSS	Democratic THEODORE KOPP	Democratic CALVIN MARINO	Democratic DONNA BERKE	Democratic ANDE CUL
<b>CONSERVATIVE</b> C	Conservative DOUGLAS STONE for GOVERNOR RICHARD RAPP for LT.-GOVERNOR	Conservative PETER F. SAXTON	Conservative ROBERT SQUIRE	Conservative JOEL KAISER	Conservative CRAIG HENDERSON	Conservative GAIL ROSS	Conservative HOMER H. PALMER	Conservative DAVID PAPA	Conservative LEON LEWIS	Conservative RALPH MILLS	Conservative DAVID PIDGEON	Conservative PAUL QUINN	Conservative LINDA HALL	Conservative JOCHHIM FLOWER	Conservative CECI CARI
<b>LIBERAL</b> D	Liberal ANNE NEET for GOVERNOR VICKI GALEY for LT.-GOVERNOR	Liberal FRANKLIN MARGO	Liberal RICHARD A. SILVER	Liberal CAROL RUSSELL	Liberal HEIDI PIDGEON	Liberal HARRY RIDER	Liberal THOMAS MATTHEWS	Liberal ANN-MARIE RUDDY	Liberal CARL MOORE	Liberal ANTHONY MYERS	Liberal BRIAN GETZ	Liberal HARRY SOSSÉS	Liberal CHARI PLAC	Liberal	Liberal



# ***What's behind the scanned ballot image?***

## ***Simple Columns of checkboxes for each Contest***

```
<column ID="1" offset="193">
  <checkbox ID="1" top="46">1</checkbox>
  <checkbox ID="2" top="95">0</checkbox>
</column>
<column ID="2" offset="191">
  <checkbox ID="1" top="200">0</checkbox>
  <checkbox ID="2" top="251">1</checkbox>
</column>
<column ID="3" offset="545">
  <checkbox ID="1" top="46">1</checkbox>
  <checkbox ID="2" top="95">0</checkbox>
</column>
.....
```

Row / Column offsets XML

- ***Makes definitions straightforward and intuitive process***
- ***Keeps definitions anonymous and secure***

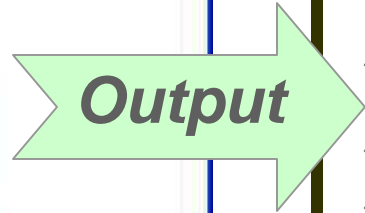
# Defining the Contests

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## Election Details Entry Software



```
<?xml version="1.0" encoding="UTF-8" ?>
-<EML Id="410" SchemaVersion="5.0"
- xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
- xmlns:ns1="urn:oasis:names:tc:ciq:xsd:schema:xNL:2.0"
- xmlns:ns2="urn:oasis:names:tc:ciq:xsd:schema:xAL:2.0"
- xmlns="urn:oasis:names:tc:evs:schema:eml">
  <TransactionId>2007-04-01</TransactionId>
  <MessageLanguage>en-US</MessageLanguage>
  <ManagingAuthority>
  <AuthorityIdentifier>Connecticut</AuthorityIdentifier>
  <AuthorityAddress />
  <ResponsibleOfficer>
  <Responsibility>Election Board</Responsibility>
  <Name PartyType="Employee" Code="CT-100" />
  </ResponsibleOfficer>
  </ManagingAuthority>
  <IssueDate>2006-05-04T18:13:51.0Z</IssueDate>
  <Ballots>
  <EventIdentifier Id="Official_Ballot" DisplayOrder="1">
  <EventName>State Election</EventName>
  <EventQualifier Id="CT-2007-1">CT-2007-Wilton</EventQualifier>
  </EventIdentifier>
  <EventDescription>
  <Message />
  </EventDescription>
  <Ballot>
  <ReportingUnitIdentifier Id="Wilton">Town of Wilton</ReportingUnitIdentifier>
  <Election>
  <ElectionIdentifier Id="2007-01">
  <ElectionName>State Election Officers</ElectionName>
  <ElectionGroup Id="CT-01">Connecticut</ElectionGroup>
  <ElectionCategory>State</ElectionCategory>
  </ElectionIdentifier>
  <Description>
  <Message />
  </Description>
  <Contest DisplayOrder="11" Completed="no">
  <ContestIdentifier Id="CT-2007-1">
  <ContestName>Governor and Lieutenant Governor</ContestName>
  </ContestIdentifier>
```

## Ballot Items Definition



# ***Voting Process***

- *Open Poll Procedures*
- *Vote and Scan process*
- *Accessible Voting*
- *Close Poll & Print – precinct totals*

# Opening Polls

- Power-on and Login to OpenScan system
- Print Start of Day totals report (zeroes)
- Voters arrive – present credentials – receive proper ballot

## Start of Day totals report (zeroes)

### Governor and Lieutenant Governor

Candidate	Affiliation	Votes
M. Jodi Reli and Micheal Fedele	Republican	
John DeStefano and Mary Messina Glassman	Democratic	
Joseph A. Zdonczyk and Jose E. Garcia	Concerned Citizens	
Clifford W. Thornton, Jr. and Jean de Smet	Green	
Write-in Votes	Write-in	

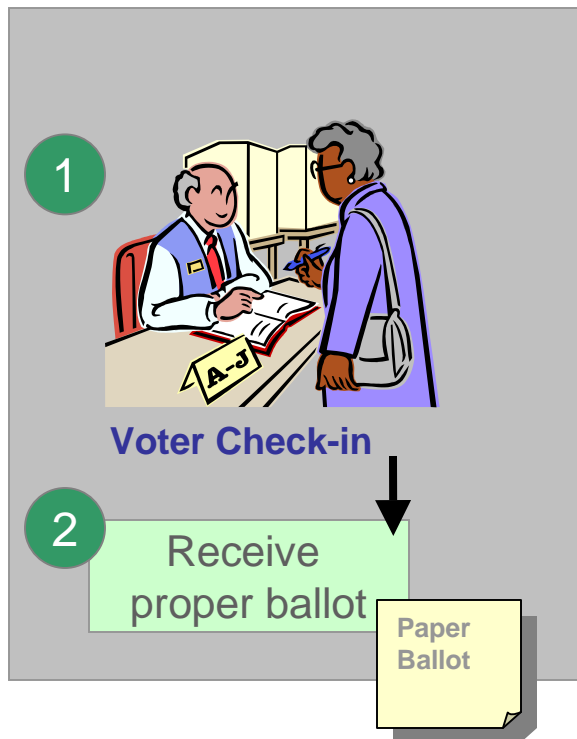
### United States Senator

Candidate	Affiliation	Votes
Alan Schlesinger	Republican	
Ned Lamont	Democratic	
Timothy A. Knubbs	Concerned Citizens	
Ralph A. Ferrucci	Green	
Joe Lieberman	Connecticut for Lieberman	
Write-in Votes	Write-in	

### Representative in Congress

Candidate	Affiliation	Votes
Christopher Shays	Republican	
Diane Farrell	Democratic	
Philip Z. Mayrmin	Libertarian	
Write-in Votes	Write-in	

Report





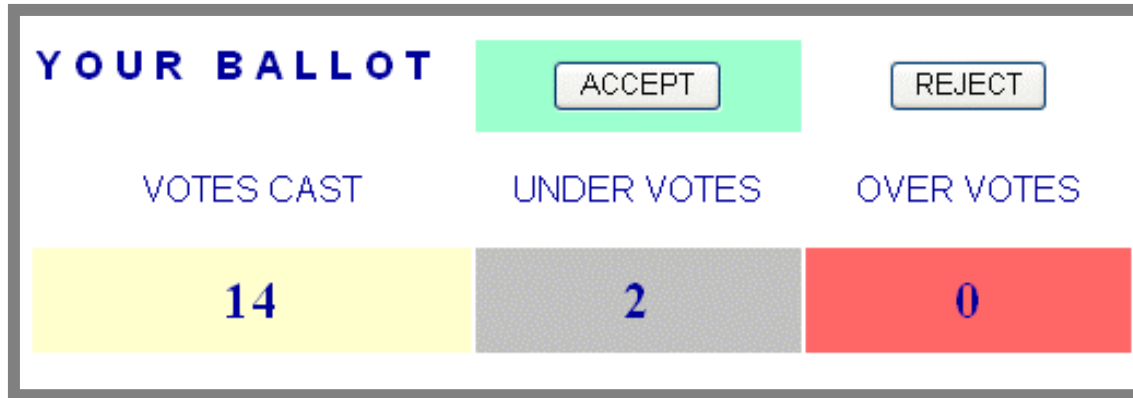
# ***Ballot Vote & Scanning Process***

- *Voter goes to voting station – enters selections on paper ballot*
- *Proceeds to scanner station – and scans in ballot...*

# Ballot Choices Review

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← Summary of all selections

<p><b>YES</b> <input type="checkbox"/></p> <p><b>NO</b> <input checked="" type="checkbox"/></p> <p><b>PROPOSITION NUMBER ONE</b> Rail Preservation Bond Issue</p> <p>To promote and assure the preservation and improvement of essential rail passenger and freight services to the inhabitants of the state, shall section two of chapter one hundred eighteen of the laws of nineteen hundred seventy-four, known as the rail preservation bond act of nineteen hundred seventy-four, authorizing the creation of a state debt in the amount of two hundred fifty million dollars (\$250,000,000) for capital facilities be approved?</p>	<p><b>YES</b> <input type="checkbox"/></p> <p><b>NO</b> <input checked="" type="checkbox"/></p> <p><b>WESTCHESTER COUNTY</b> <b>PROPOSITION NUMBER ONE</b></p> <p>Shall there be approved and adopted in the County of Westchester, a Local Law passed by the Board of Legislators of Westchester County on August 19, 1974, entitled "A local law to amend section six (6) of article 19 of the Westchester County Charter—changing the elected term of the County Board to four years" which enlarges the term of office of each member of the County Board of Legislators from two (2) years to four (4) years.</p>	<p><b>YES</b> <input checked="" type="checkbox"/></p> <p><b>NO</b> <input type="checkbox"/></p> <p><b>PROPOSAL NUMBER ONE, A PROPOSITION</b> Rebuild New York Thruway Transportation Infrastructure Renewal Bond Issue</p> <p>To promote and assure the preservation, renewal and improvement of the state's vital transportation systems, facilities and equipment for the benefit of the inhabitants of the state, shall section one of the chapter eight hundred and thirty-six of the laws of nineteen hundred eighty-three, amending and substituting the "REBUILD NEW YORK THRUWAY TRANSPORTATION INFRASTRUCTURE RENEWAL BOND ACT OF 1983" authorizing the creation of a state debt in the amount of one billion two hundred fifty million dollars (\$1,250,000,000) for construction, reconstruction, improvement, reconstruction and preservation of transportation systems and facilities, including the acquisition of equipment, be approved?</p>
<p><b>YES</b> <input checked="" type="checkbox"/></p> <p><b>NO</b> <input type="checkbox"/></p> <p><b>PROPOSAL NUMBER FOUR, AN AMENDMENT</b> Continuation of the Services of a Judge or Justice After Retirement</p> <p>Shall the proposed amendment to subdivision b of section 25 of article 19 of the Constitution, authorizing the legislature, by law, to permit the continuation of the services of a judge or justice of certain courts after retirement upon appointment by the administrative board of the courts and providing for assignment of former justices of the supreme court and former judges of the court of appeals serving as justices of the supreme court under existing provisions of the Constitution by the administrative board of the courts rather than by the appellate division of the supreme court, be approved?</p>	<p><b>YES</b> <input checked="" type="checkbox"/></p> <p><b>NO</b> <input type="checkbox"/></p> <p><b>PROPOSAL NUMBER FIVE, AN AMENDMENT</b> Temporary Assignments of Family Court Judges</p> <p>Shall the proposed amendment to subdivision 1 of section 26 of article 19 of the Constitution, permitting the temporary assignment of a judge of the family court to the supreme court in the judicial department of his residence, be approved?</p>	<p><b>YES</b> <input checked="" type="checkbox"/></p> <p><b>NO</b> <input type="checkbox"/></p> <p><b>PROPOSAL NUMBER SIX, AN AMENDMENT</b> Exchange of Certain Property Within the Adirondack Park</p> <p>Shall the proposed amendment to article XXV, section 1 of the Constitution, authorizing the conveyance of approximately ten acres of State land and buildings then to the Sagamore Institute, Inc. in exchange for approximately ten hundred and fifty acres of land within the Adirondack Park in order to facilitate the preservation of certain historic buildings, be approved?</p>

← Voter can optionally scroll with mouse device to verify whole ballot

OFFICE	2 GOVERNOR AND LT. GOVERNOR (VOTE FOR ONE)	3 COMPTROLLER (VOTE FOR ONE)	4 ATTORNEY GENERAL (VOTE FOR ONE)	5 ASSOCIATE JUDGE OF THE COURT OF APPEALS (VOTE FOR TWO)	6 UNITED STATES SENATOR (VOTE FOR ONE)	7 JUSTICE OF THE SUPREME COURT (VOTE FOR FOUR)	8 REPRESENTATIVE IN CONGRESS (VOTE FOR ONE)	9 STATE SENATOR (VOTE FOR ONE)	10 MEMBER OF ASSEMBLY (VOTE FOR ONE)	11	12	13	14	15	16	17
REPUBLICAN	WILLIAM SULLIVAN NEIL CAREY	MICHAEL SANTARCANGELO	ARNOLD KRILL	ERNEST SYNDER	HERBERT DEVINE	HARRY RIDER	PATRICK	HERBERT SCHWEPENHUSE	NORMAN POWERS	JERRY PLATT	FRANK PEARSON	JAMES PIERSON	MILDRED DUDO	LOUIS DENN	BARRY JOSEY	
DEMOCRATIC	STEPHEN MASSIMILIAN GLORIA DILLON	CHERYL SIMON	ROBERT SQUIRE	STEPHEN HARRICK	ANDRE DECKER	ELIZABETH MACK	ROBERT O'DONNELL	CAROL TUBBS	PETER TOOLEY	HELENA SLACK	LOIS KOSS	THEODORE KOPP	CALVIN MARINO	DONNA BERKE	ANDERS CULPO	
CONSERVATIVE	DOUGLAS STONE RICHARD RAPP	PETER F. SEXTON	ROBERT SQUIRE	JOEL KAISER	CRAIG HENDERSON	GAIL ROSS	HOMER H. PALMER	DAVID PAPA	LEON LEWIS	RALPH MILLS	DAVID PIDGEON	PAUL QUINN	LINDA HALL	JOCHIM FLOWER	CECIL CAREY	
LIBERAL	ANNE NEET VICKI GALEY	FRANKLIN MARGO	RICHARD A. SILVER	CAROL RUSSELL	HEIDI PIDGEON	HARRY RIDER	THOMAS MATTHEWS	ANN-MARIE RUDDY	CARL MOORE	ANTHONY MYERS	BRIAN GETZ	HARRY SOSSSES		CHARLE PLACE		

← Voter Choices Shown in Blue



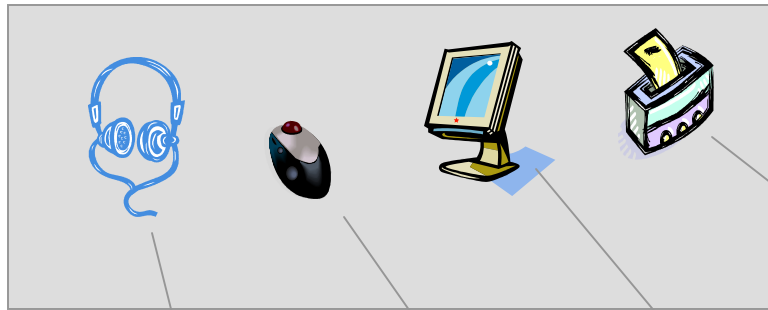
# Accessible Voting Process

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OASIS

## Accessibility Voting Station Components



1

Voter uses headphones for audio access to ballot choices

2

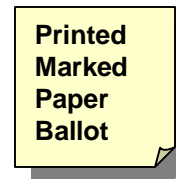
Voter confirms selections with simple voice 'confirm' response or clicking with mouse

3

Display is available as option for voter to confirm ballot choices

4

Printer prints marked ballot



blank paper sheet on top & bottom to protect voter privacy

5

Transfer printed ballot and scan at scanning station

(Poll worker may assist with ballot transfer to scanner)



# Close Poll & Print Precinct Report

- Log Out of Ballot Scanning
- Log in for Poll Administration
- Print End of Day totals report
- Write election data CD disk that contains:
  - ballot records
  - total reports
  - activity logs
  - checklist of CD content
  - checklist of computer files

## End of Day totals report (precinct)

Governor and Lieutenant Governor		
Candidate	Affiliation	Votes
M. Jodi Reil and Micheal Fedele	Republican	13
John DeStefano and Mary Messina Glassman	Democratic	7
Joseph A. Zdonczyk and Jose E. Garcia	Concerned Citizens	4
Clifford W. Thornton, Jr. and Jean de Smet	Green	1
Write-in Votes	Write-in	1
United States Senator		
Candidate	Affiliation	Votes
Alan Schlesinger	Republican	8
Ned Lamont	Democratic	10
Timothy A. Knibbs	Concerned Citizens	4
Ralph A. Ferrucci	Green	1
Joe Lieberman	Connecticut for Lieberman	1
Write-in Votes	Write-in	1
Representative in Congress		
Candidate	Affiliation	Votes
Christopher Shays	Republican	6
Diane Farrell	Democratic	7
Philip Z. Maymin	Libertarian	7
Write-in Votes	Write-in	
State Senator		



Secure digital storage disk  
(write-once CD)

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# ***Tabulating and Publishing Results***

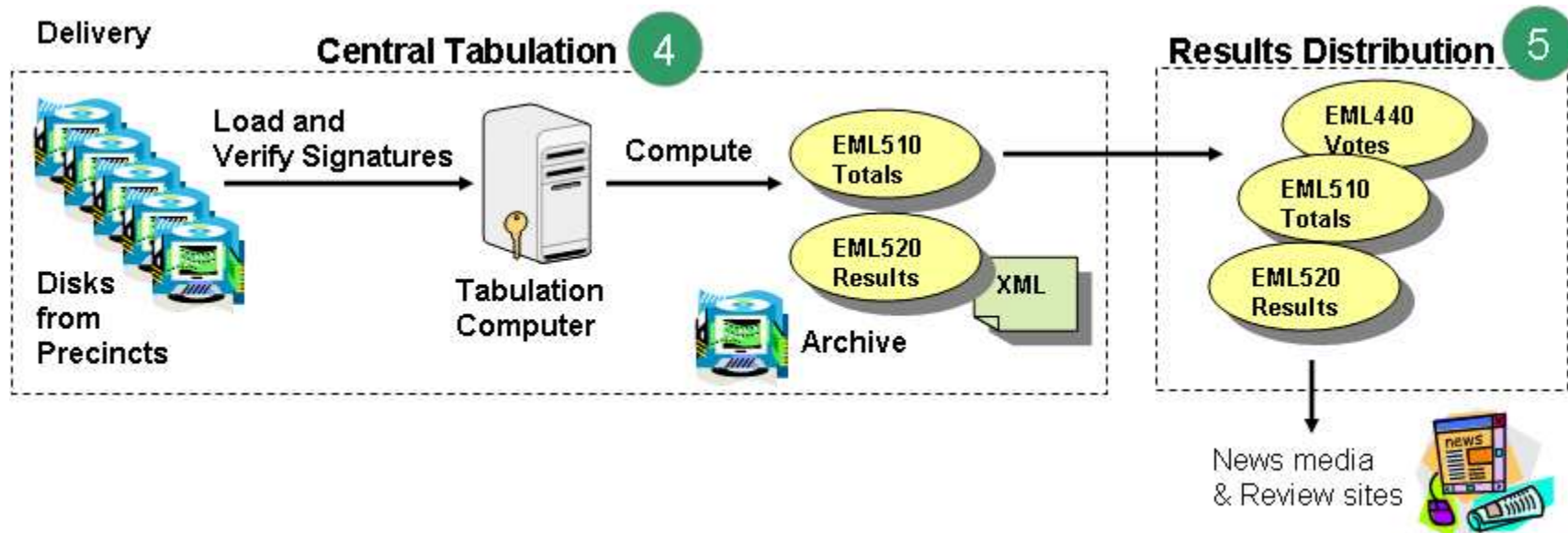
*OpenScan Central Tabulator*



# ***Central Tabulation***

- *Software to load files from and verify signatures on CDs received from precincts*
- *Each vote record is digitally signed by precinct voting station for security purposes*
- *Election Review – ensures files are received from each precinct (duplicate tabulation prevented)*
- *Result calculated, reported, and archived*

# Central Tabulation & Publishing Results



# Publishing Results

- Publicly Available Vote Records
- Fully Annotated Results  
( California 2006 Results Reporting Example )

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Ballot	Metric	Total
<b>Governor</b>	ContestID = 020000000000	
<b>STATEWIDE</b>	[PR=25090] [TP=25090]	
Phil Angelides [Party=Democratic]	[PVP=100.0%] [PVR=39.0%]	3376732
Arnold Schwarzenegger [Incumbent] [Party=Republican]	[PVP=100.0%] [PVR=55.9%]	4850157
Edward Noonan [Party=American Independent]	[PVP=100.0%] [PVR=0.7%]	61901
Peter Camejo [Party=Green]	[PVP=100.0%] [PVR=2.3%]	205995
Art Olivier [Party=Libertarian]	[PVP=100.0%] [PVR=1.3%]	114329
Janice Jordan [Party=Peace and Freedom]	[PVP=100.0%] [PVR=0.8%]	69934
<b>Alameda County</b>	[PR=1219] [TP=1219]	
Phil Angelides [Party=Democratic]	[PVP=100.0%] [PVR=56.5%]	229217
Arnold Schwarzenegger [Incumbent] [Party=Republican]	[PVP=100.0%] [PVR=36.6%]	148322
Edward Noonan [Party=American Independent]	[PVP=100.0%] [PVR=0.5%]	2231
Peter Camejo [Party=Green]	[PVP=100.0%] [PVR=4.5%]	18236
Art Olivier [Party=Libertarian]	[PVP=100.0%] [PVR=1.0%]	1784
Janice Jordan [Party=Peace and Freedom]	[PVP=100.0%] [PVR=0.8%]	3589
<b>Alpine County</b>	[PR=5] [TP=5]	
Phil Angelides [Party=Democratic]	[PVP=100.0%] [PVR=40.1%]	218
Arnold Schwarzenegger [Incumbent] [Party=Republican]	[PVP=100.0%] [PVR=54.3%]	295
Edward Noonan [Party=American Independent]	[PVP=100.0%] [PVR=0.5%]	3
Peter Camejo [Party=Green]	[PVP=100.0%] [PVR=2.6%]	14
Art Olivier [Party=Libertarian]	[PVP=100.0%] [PVR=1.4%]	8
Janice Jordan [Party=Peace and Freedom]	[PVP=100.0%] [PVR=1.1%]	6
<b>Amador County</b>	[PR=59] [TP=59]	
Phil Angelides [Party=Democratic]	[PVP=100.0%] [PVR=22.5%]	3354
Arnold Schwarzenegger [Incumbent] [Party=Republican]	[PVP=100.0%] [PVR=72.1%]	10755
Edward Noonan [Party=American Independent]	[PVP=100.0%] [PVR=1.2%]	172
Peter Camejo [Party=Green]	[PVP=100.0%] [PVR=2.7%]	390
Art Olivier [Party=Libertarian]	[PVP=100.0%] [PVR=0.9%]	148
Janice Jordan [Party=Peace and Freedom]	[PVP=100.0%] [PVR=0.6%]	100
<b>Butte County</b>	[PR=175] [TP=175]	
Phil Angelides [Party=Democratic]	[PVP=100.0%] [PVR=27.0%]	18672
Arnold Schwarzenegger [Incumbent] [Party=Republican]	[PVP=100.0%] [PVR=65.9%]	45591
Edward Noonan [Party=American Independent]	[PVP=100.0%] [PVR=0.8%]	593
Peter Camejo [Party=Green]	[PVP=100.0%] [PVR=4.2%]	2912

2006\_California\_General\_Election

20061107

Data Timestamp: 2006-12-14T20:06:12.003

**LEGEND**

- PR: Precincts Reporting
- TP: Total Precincts
- PVP: Percent Votes in Party
- PVR: Percent Votes in Race
- PVV: Percent Yes Votes
- PNV: Percent No Votes

EML 510 XML

```

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  <CountMetric Id="TP" Type="Total Precincts"> 25090</CountMetric>
</TotalVotes>
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  </Affiliation>
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</Selection>
  
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# **Summary – OpenScan Approach**

- *Empowers election authorities to control, inspect, verify, audit and manage voting systems.*
- *Dramatically lowers the cost of voting systems by using COTS hardware and free, public open source software.*
- *Adheres to open source principles and EML specifications to create transparency and verifiable elections.*
- *Creates trustworthy technology-enabled election solutions using paper ballots.*



# ***Open Voting Solutions Provides***

- *State-of-the-art voting technology*
  - Systems tailored to your State's specific needs
- *Consulting and training services*
  - Jurisdiction requirements analysis
  - Onsite capability reviews
  - Staff mentoring and solution design



# ***OVS demonstration offer***

*OVS is prepared to provide  
a generic, working demonstration  
in your state.*



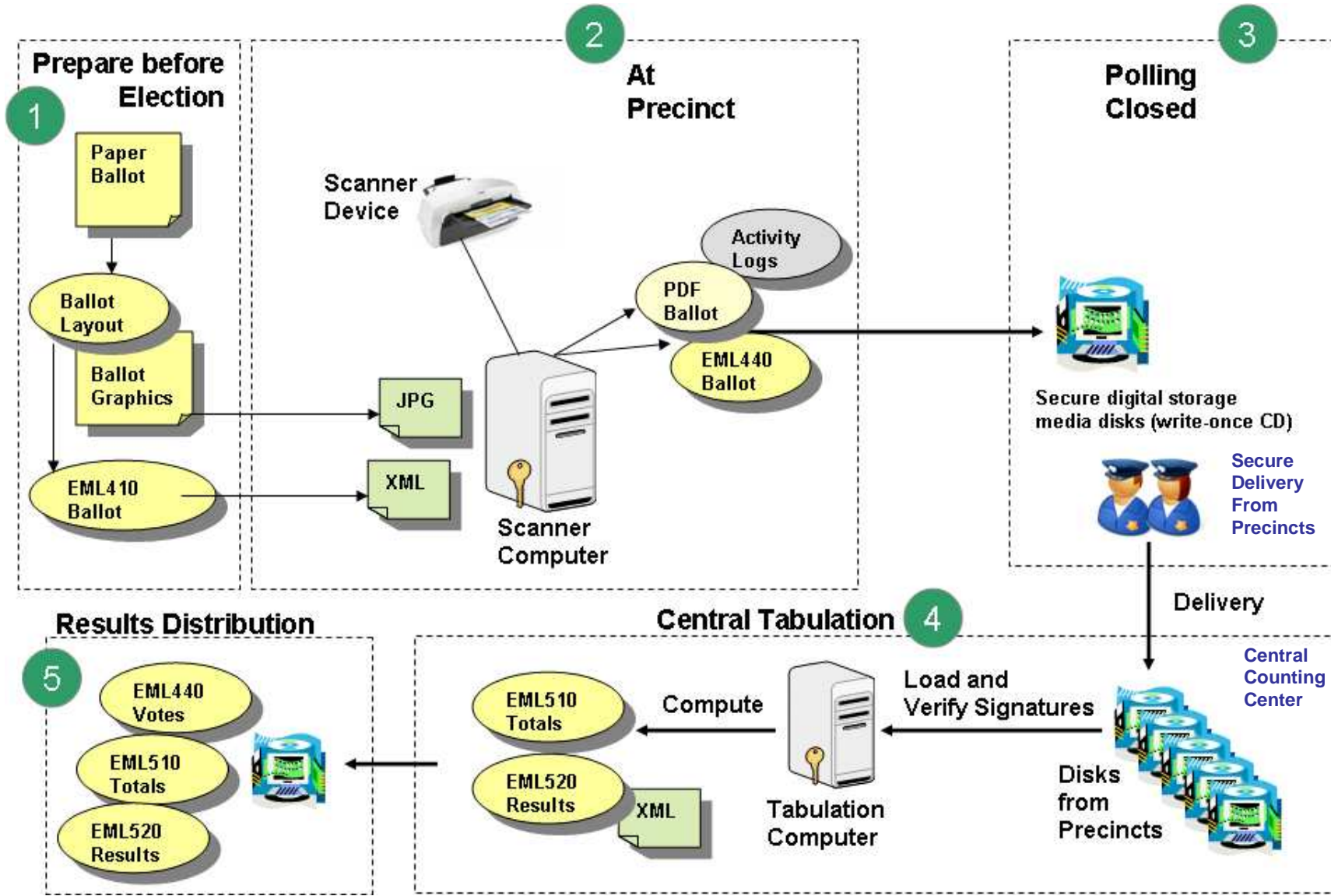
# ***Additional Supporting Slides***

*Supplemental Technology  
Details*

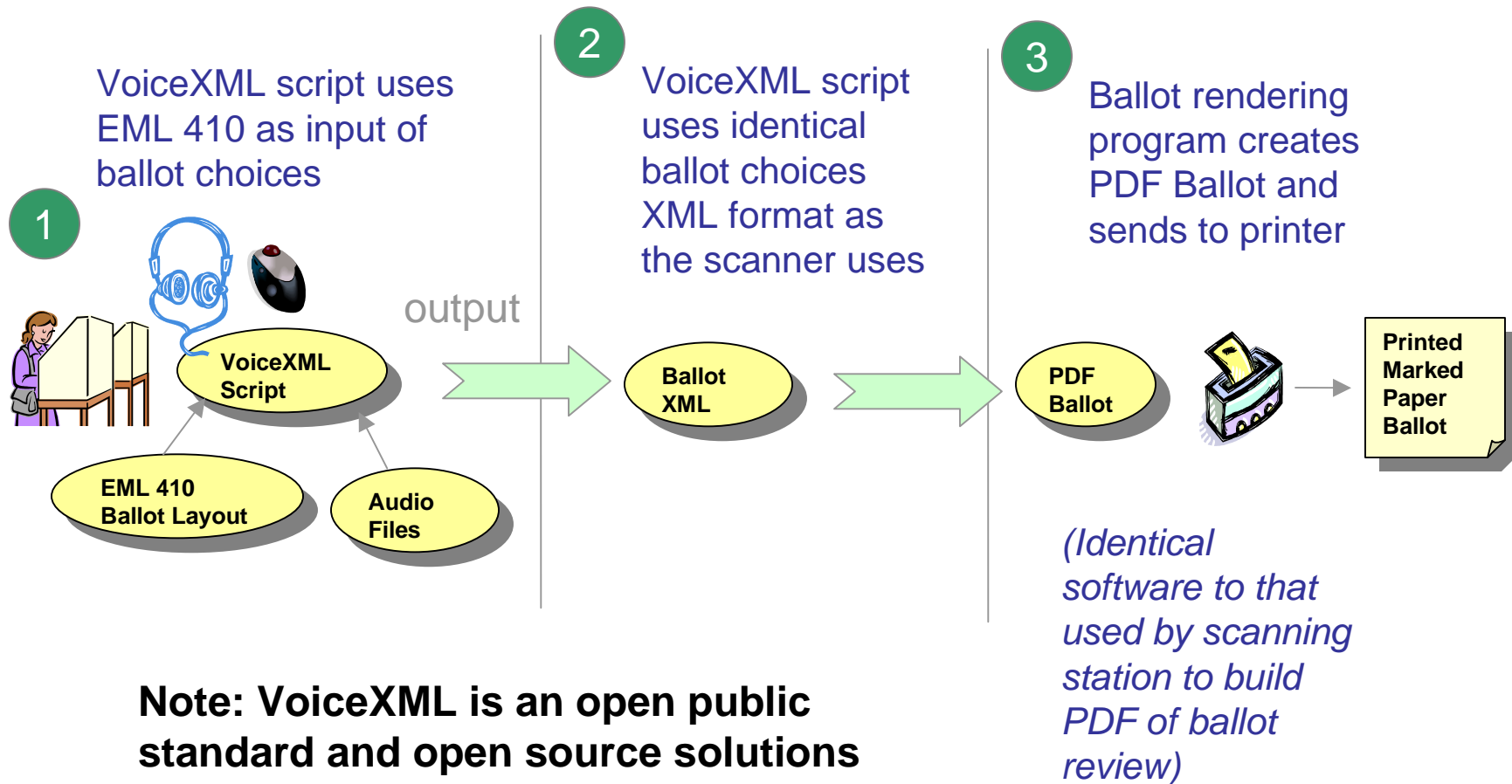
# Information Flow Details

Open Voting Solutions

OpenScan Systems



# Accessible Voting Technology



**Note: VoiceXML is an open public standard and open source solutions are widely used for public IVR telephone menu systems**



# Useful Voting Resources

- OASIS EML specifications site – <http://oasis-open.org/committees/election>
- Open Voting Consortium site – <http://openvotingconsortium.org>
- Brookings Institute Report - Agenda for Election Reform - <http://www.brook.edu/comm/policybriefs/pb82.htm>
- CalTech site on ensuring voting integrity - <http://vote.caltech.edu/reports>
- Analysis of counting irregularities in US elections - <http://ideamouth.com/voterfraud.htm>
- MIT Study on accuracy of voting systems - [http://vevo.verifiedvoting.org/vendors/studies/20040601\\_Ansolabeherepaper.pdf](http://vevo.verifiedvoting.org/vendors/studies/20040601_Ansolabeherepaper.pdf)
- Verified Voting site <http://www.verifiedvoting.org>
- Administration and Cost of Elections (ACE) - <http://www.aceproject.org/main/english/index.htm>
- NYVV – cost analysis of ballot scanners over DREs - <http://www.nyvv.org/paperballotVsDRE.htm>