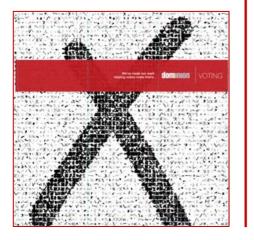
dominion VOTING

Election Workflow Automation

VOTELOON



Goran Obradovic Director of System Architecture Dominion Voting Systems Corp. www.dominionvoting.com e -Voting Workshop 2006 August 2nd to 4th, 2006



Agenda

- Introduction
- Dominion and e-Voting
- Election Cycles and Events
- Dominion Democracy Suite[™]
 - Elector Management
 - Election Event Management
- Traditional Voting
- Remote Voting
- Current Work Canadian and US Elections
- Q&A



Introductions



Conservative Leadership Convention

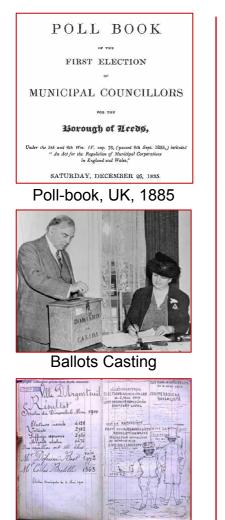


- Main office Toronto, Canada.
- Offices in Montreal, Calgary, Chicago, Ohio, Belgrade.
- Primary focus Canada and USA (for now)
- R&D 75%, PhD and M.Sc. 50%
- National Level (Canada)
 - 308 ridings, Everywhere Voting™
- Provincial Level
 - Real-time voter strike-offs
 - Elector management
 - Provincially approved tabulation equipment
- Municipal Level
 - Coast to coast British Columbia, Alberta, Ontario, Quebec, New Foundland
 - Tabulation, electronic remote voting, vote by mail
 - Real-time voter strike-offs
 - Elector management
 - Variety of election services
- Partners Microsoft, Cisco, Bell&Howel, DMTII, MPAC, Automark, Canada Post, Datafix, …





Dominion and e-Voting

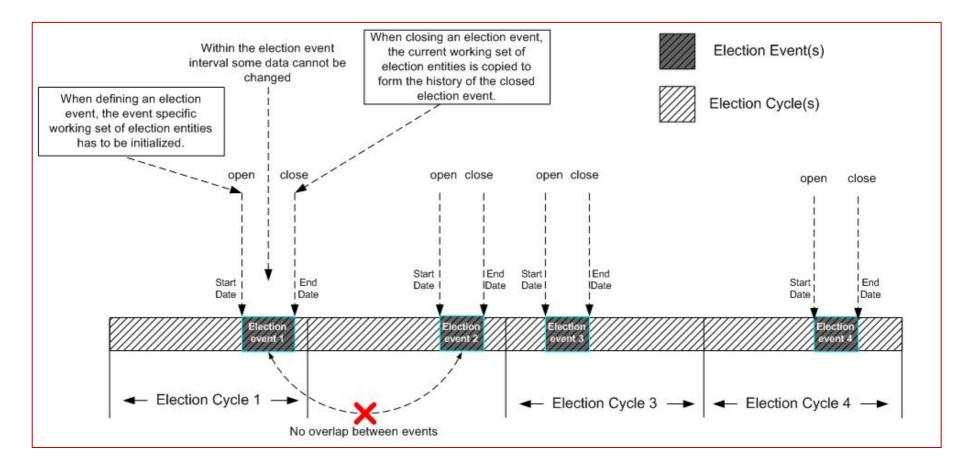


Election Results, Argentina, 1900

- e-Voting ≡ Internet Voting (usually)
- If 'e' means electronic than e-Voting means much more than Internet voting
- In essence we have tried to automate and computerize every aspect of the election process
- Internet Voting is just a subset of the Remote Voting together with Vote by Mail, telephony voting, fax-back voting, etc.
- Traditional voting will be in use for years.
- This is why we have worked on integrated, automated election workflow – Democracy Suite[™].



Election Cycles & Election Events







Dominion Democracy Suite™

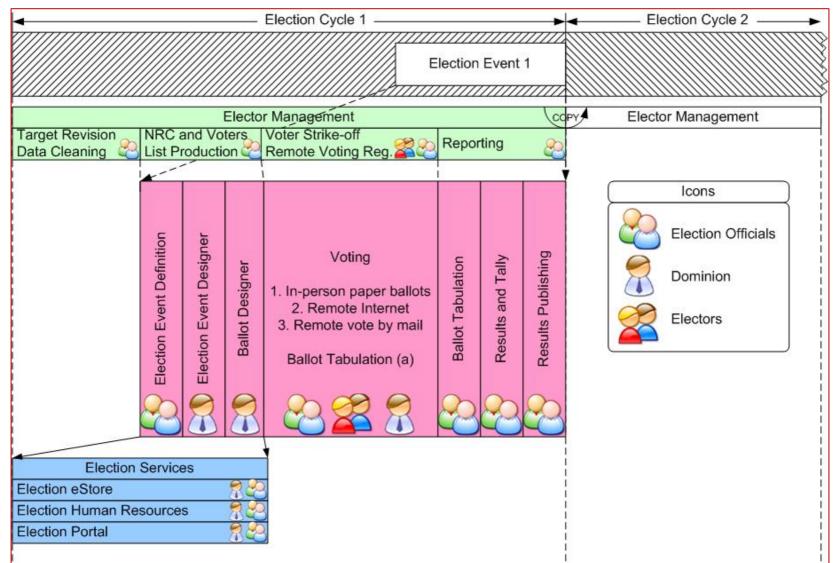
- Everywhere Voting[™]
- Elector Management
- Real-time Voter Strike-offs
- Election Event Management
 - Election Event Definition
 - Election Event Designer
 - Ballot Designer
 - Results and Tally
- Ballot Tabulation
- Remote Voting Internet, mail, fax
- Results Publishing
- Election Store (www.theelectionstore.com)
- Election Human Resources
- Election Customer Portal

dominion VOTING

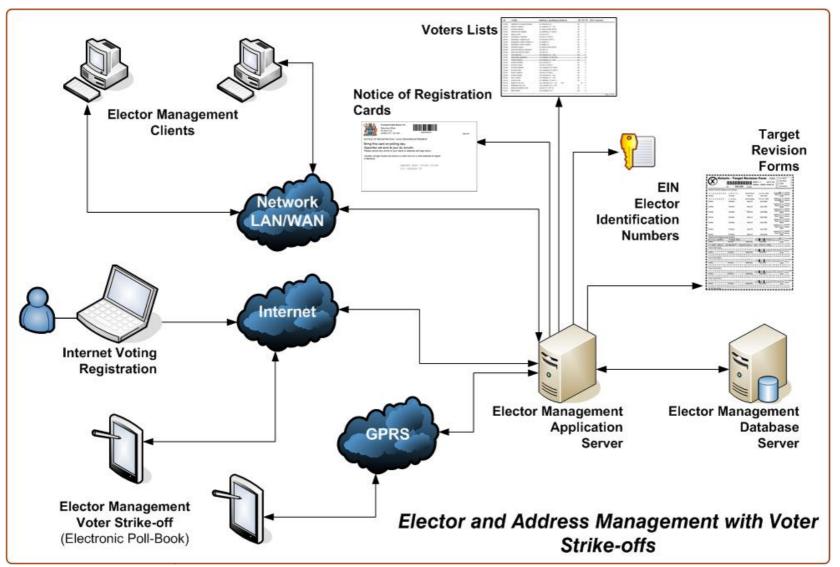
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Variety of products and services

Dominion Election Workflow









Create & manage your own permanent list of electors

- Interface with external data
- NRC (notice of registration cards) creation
- Cleanse data
 - Cleansing of elector and address data
 - Data comparisons & resolutions
- Where should I vote?'
- Elector list maintenance
- Updated elector lists
- Remote voting support
- Real-time voter strike-off support
- Extensive reporting capability



dominion Voting

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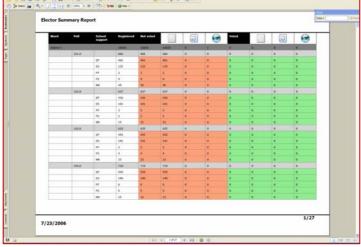
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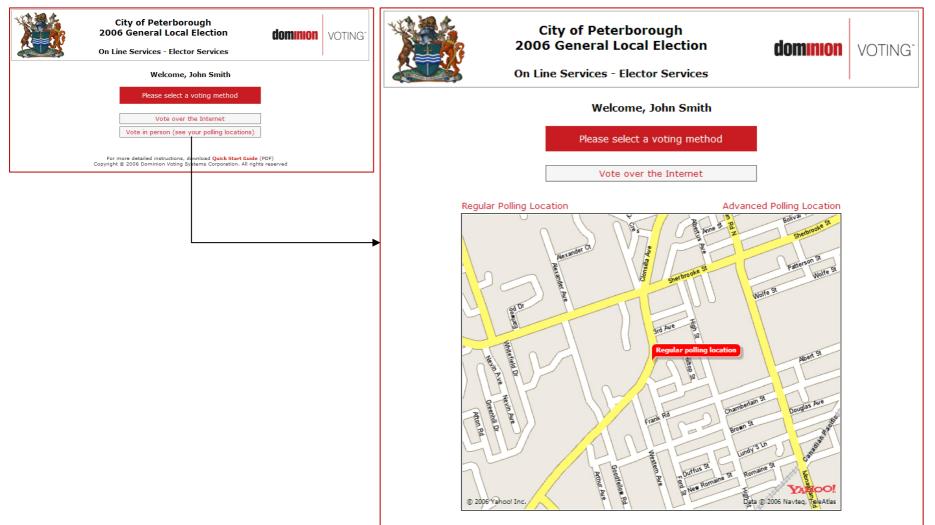
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Where Should I Vote?



For more detailed instructions, download **Quick Start Guide** (PDF) Copyright © 2006 Dominion Voting Systems Corporation. All rights reserved

dominion VOTING

X

Real-time voter strike-offs

- Every name on every voter list
- Real-time poll connectivity
- Minimize scope of fraud
- Client-server database synchronization
- Integrated with Elector Management
- Electronic poll-book



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The only

practical

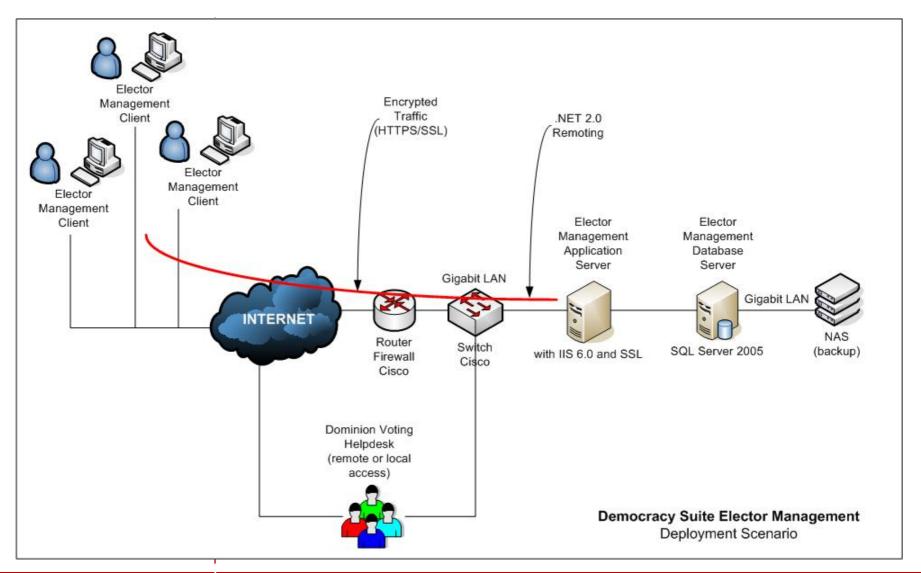
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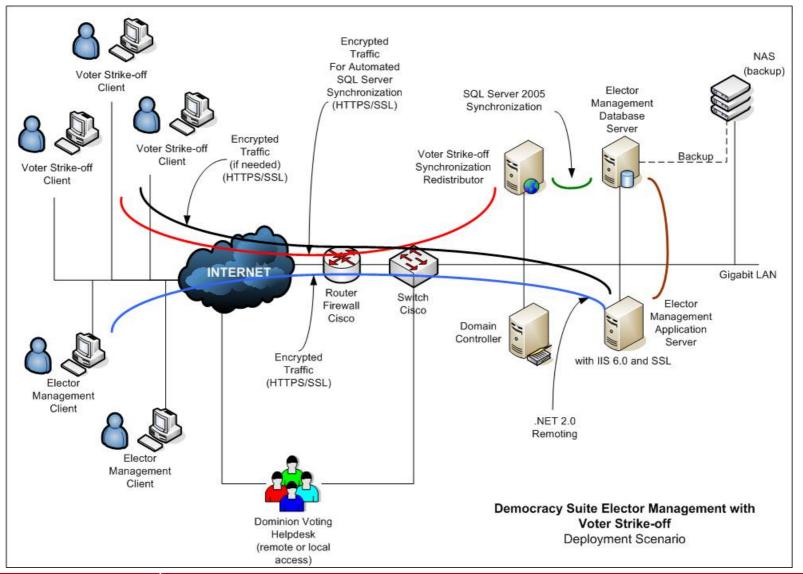


Elector Management Deployment 1



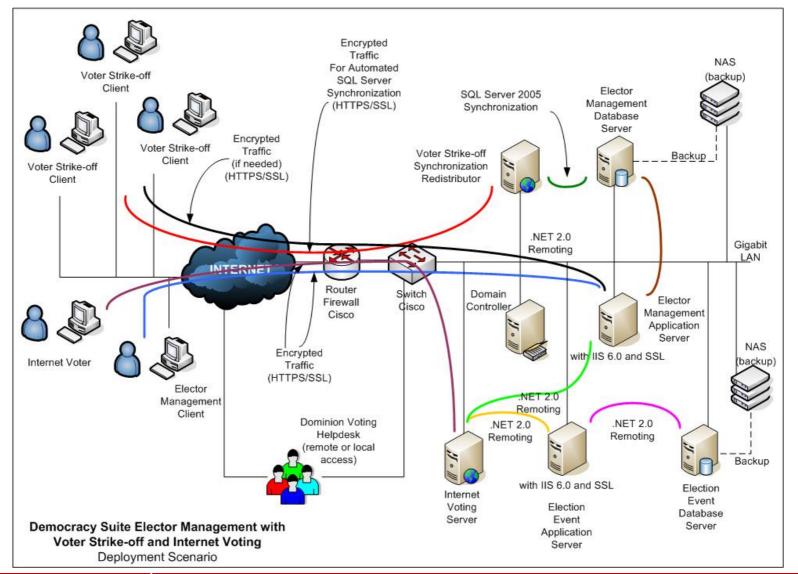


Elector Management Deployment 2



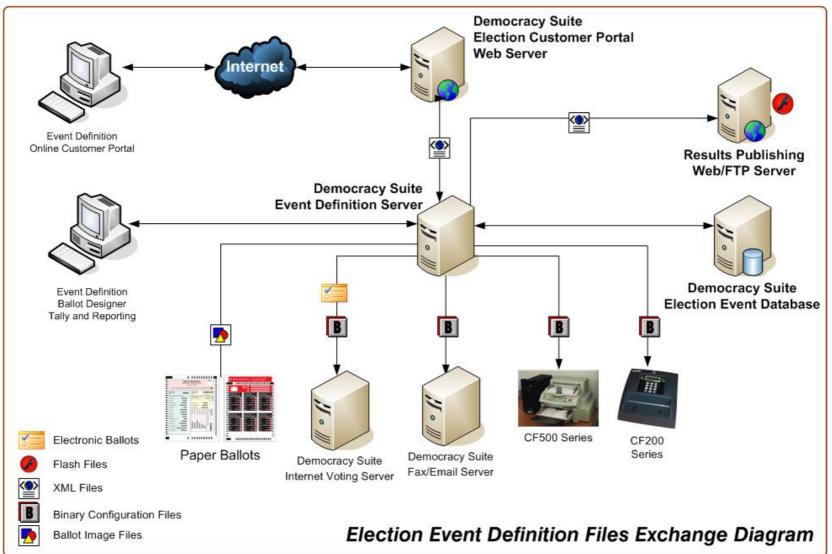


Elector Management Deployment 3





Election Event Management





Election Event Definition

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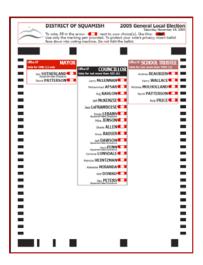
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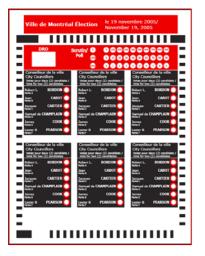
- Election event
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- Polling stations
- Contests
- Candidates
- Ballots
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Election Event Designer





- Initialize Election Event
- Import election definitions from Election Event Definer (XML)
- Encode all automated equipment
- Create results database
- Create ballots

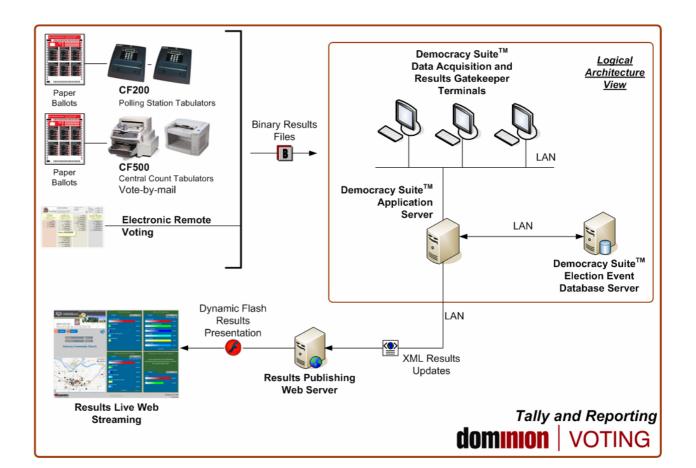
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Results Tally and Reporting

Single point gateway to the public

- Acquire results
 - From all voting locations
 - From all voting channels
- Release results
 - Set check flags for sanity checks
 - May be configured to withhold release of any poll result
 - Automatically releases reporting files to FTP site
- Results auditing
 - Every/any ballot image can be inspected





Election Results Publishing

- Results go everywhere you need them to go
- Election results are automatically reported to any public forum
 - City website, local news media
 - Council chambers
- Results transmitted in real time
- XML schema





Paper Ballots Tabulation

Decentralized and centralized ballot tabulation solutions for traditional paper-based voting

Poll Tabulation – CF200 Series



- High resolution image scanner
- Saves every ballot image
- Completely repeatable
- No restrictions ('X', "√", "←", "●")
- Integrated audio accessibility
- Ballot size up to A3, double sided

Central Tabulation – CF500 Series



- Same features as poll tabulation
- -6000 ballots per hour (actual)
- Very high throughput
- Ballot size up to A3, double sided



Accessibility

Universal access is not universal suffrage



Universal suffrage

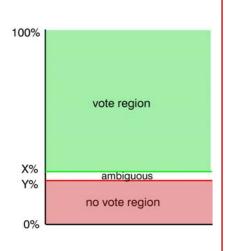
- (def) the right to vote, to all adults, without distinction as to race, sex, belief, or social status.
 - privileged men -> all men -> woman -> Asians -> native people -> inmates -> homeless (1867-2003)
- Universal access
 - The right to *a private* vote, to all adults, without distinction as to race, sex, belief, social status or *physical ability*
 - Universal access to Canadians (2003)

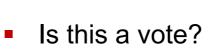


Is the mark a vote?

Is this a vote?

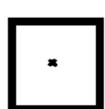
Election officials define what should be considered as a vote





Is this a vote?





- Make the smallest mark you count as a vote (X%)
- Make the largest mark you don't count as a vote (Y%)



Ballot watermarking

BALLOT FOR THE OFFICE MAYOR OF	OF	Candidate 1
1) Robert L. BORDON	a one (1) and choice, as	Candidate 2 🔳 🗌
1) Robert L. BORDON 2) Jean CABOT		15 20
3) Jacques CARTIER	1) Miles J. MAS	SEY P
4) Samuel de CHAMPLAIN	2) Menelaus P. O'DAI	
5) James COOK	3) Clause VON E	
6) Leif ERIKSSON		
7) John FRANKLIN	 Emily Jeanne Nellie Nellie Lucy M Lucy Mary Mary Fanny 	BALLOT FOR THE OFFICE OF Vote for up to
8) Henry HUDSON	tille tille tille tille tille tille tille tille	or up
9) Jake JOLIET		5 ¹¹ R
10) William L.M. KING		REE (
11) Wilfrid LAURIER	- Mo	to THREE (3) candidate
12) John A. MacDONALD	CARR MANCE MONTGOMERY PICKFORD ROSENFELD	AL
13) Lester B. PEARSON	CARR MANCE McCLUNG ITGOMERY PICKFORD OSENFELD	E B
14) Louis S. SAINT-LAURENT	ANCE LUNG FORD FORD	RM
15) Pierre E. TRUDEAU		ź
Nick Salvatore	-	

- Patented technology
- Every ballot is saved paper of electronic
- Ballot signature contains information about:
 - Voting marks for every contest
 - Pixel counts
- Supports preferential voting
- Supports write-in candidates
- Useful for logic and accuracy (L&A) testing
- Key for unquestionable auditing
- Eliminates recounts

dominion Voting

Vote for: OVER-VOT



Remote voting

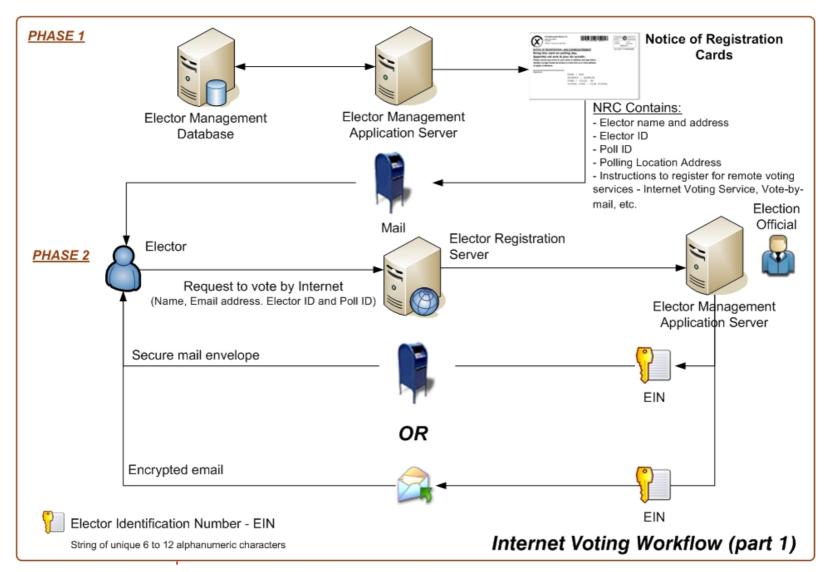
Maximize # of voters, not the # of votes

- Internet Voting
 - Easy, quick & slick
 - Can not be used as the only voting channel
 - Very convenient for those who can use it
 - Can vote last minute
 - Browser independent
 - In Canada City of Markham (2003, ES&S), City of Peterborough (2006, Dominion)
- Vote by Mail
 - Most accessible remote voting method
 - Voters mark traditional paper ballots
 - Centralized ballot tabulation



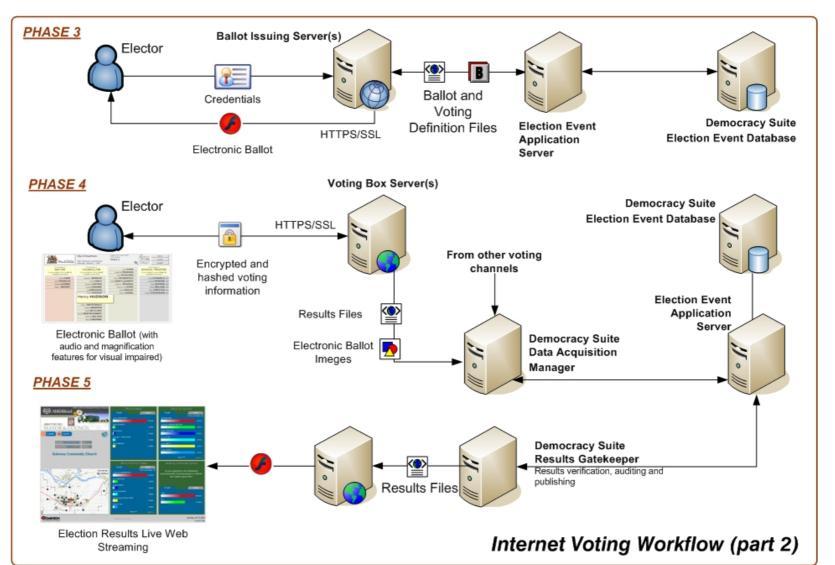


Electronic Remote Voting 1



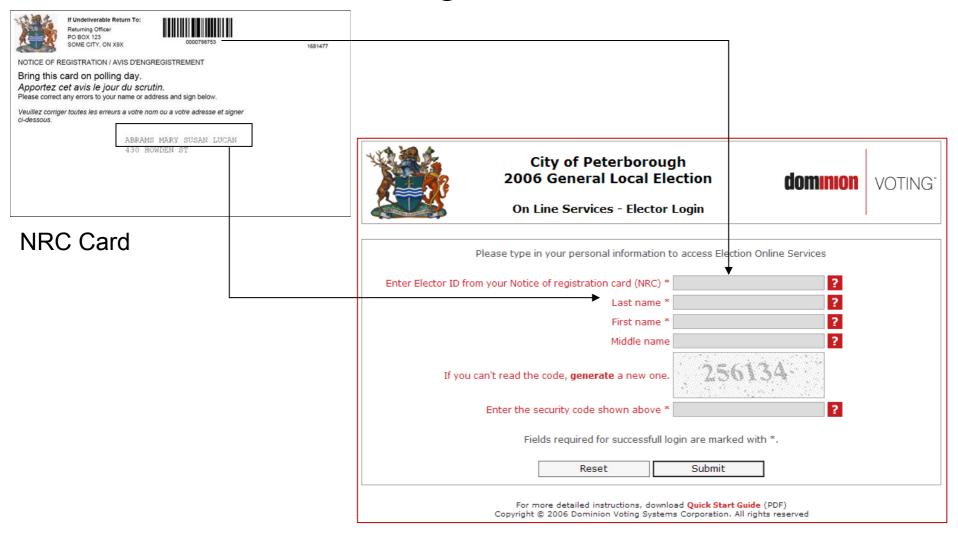


Electronic Remote Voting 2





Election Services Login







Internet Voting Registration

City of Peterborough 2006 General Local Election dominion VOTING [®] On Line Services - Elector Services Welcome, John Smith Please select a voting method	City of Peterborough City of Peterborough <th< th=""></th<>
Vote over the Internet Vote in person (see your polling locations) For more detailed instructions, devnload Quick Start Guide (PDF) Copyright © 2006 Dominion Voting Systems Corporation. All rights reserved	Welcome, John Smith (Elector ID: 0000195167) Please type in your address as printed on your Notice Of Registration card (NRC) Street number * ? Street name * Direction * Vnit type / number * ? Please type in additional information Year of birth *
If Undeliverable Return To: Returning Officer Document Document	Please select Personal Identification Number (PIN) delivery method

For more detailed instructions, download **Quick Start Guide** (PDF) Copyright © 2006 Dominion Voting Systems Corporation. All rights reserved

dominion VOTING

X

Internet Voting Login

	City of Peterborough 2006 General Local Election dominic	
	On Line Services - Internet voting login	1
I	Please type in your personal information to access and cast Internet ballot	
Enter Elector ID from	m your Notice of registration card (NRC) *	
Enter yo	ur Personal Identification Number (PIN) *	
If you can't read	d the security code, generate a new one. 504349	
	Enter the security code shown above *	
	Fields required for successfull login are marked with *.	



Electronic Ballot 1

	City of Peterborough Municipal Elections - City of Peterborough General Election for the office of City Councillor	District:
	You are entitled to vote for ${\bf 6}$ candidate(s) for this office	ce.
Robert L. BORDON	John PAGE	1
Henry HUDSON	Lester B. PEARSON X	0
Jean CABOT 🗙	Mary PICKFORD	
Jacques CARTIER	Fanny ROSENFELD]
George DADAMO	Louis SAINT-LAURENT]
	Pierre E. TRUDEAU X	
Jake JOLIET	Clause VON ESPIE	
William L.M. KING 🗙	Adam WIGLEY	1
Elliot LAWSON	Bonny ZHANG	1
John A. MACDONALD		
Kristine MAROW		
Nellie MCCLUNG 🗙		Step 2 of 3 O O
Lucy M. MONTGOMERY		
Micheal NELSON		HELP CLEAR
Steve OSBORNE		PREVIOUS NEXT



Electronic Ballot 2

	City of Peterborough City of Peterborough Municipal Elections - City of Peterborough General Election for the office of City Councillor	rict:	RBID: Litticitie Littici
	You are entitled to vote for 6 candidate(s) for this office.		
Robert L. BORDON 🗴	John PAGE		
Henry HUDSON	Lester B. PEARSON		
Jean CABOT	Mary PICKFORD		
Jacques CARTIER	Fanny ROSENFELD		
George DADAMO	Louis SAINT-LAURENT		
	Pierre E. TRUDEAU		
Jake JOLIET	Clause VON ESPIE		
William L.M. KING 🗙	Clause VON ESPIE		
Elliot LAWSON			
John A. MACDONALD			
Kristine MAROW		0.0.0	
Nellie MCCLUNG		Step 2 of 3	000
Lucy M. MONTGOMERY		UELD.	
Micheal NELSON X		HELP	CLEAR
Steve OSBORNE		PREVIOUS	NEXT



Electronic Ballot 3

	Information Office of City Councillor, vote for 6 you have UNDERVOTED (4) Office of School Trustee (EP), vote for 3 you have OVERVOTED (5) Are you certain you wish to cast this ballot? Yes No				
for the office of Mayor You have selected: John FRANKLIN	Indext of the office of City Councillor You have selected: Jean CABOT Lester B. PEARSON Pierre E. TRUDEAU Clause VON ESPIE	OVERVOTE for the office of School Trustee (EP) You have selected: Samuel DE CHAMPLAIN James COOK Patricia COSTER Jeanne MANCE Menelaus P O'DANIEL			



Electronic Ballot Becomes Paper Ballot

Ward 1 English-Language Public School Board	CITY OF ANYWHERE 1891 General Local Elect	DRO
	Saturday, January 1, 1891	
To vote, fill in the box next to	your choice(s), like this: T Use only t	the marking pen provided.
Office Of MAY Vote for no more than ONE (1)	YOR Office Of COUNCILLOR Vote for no more than SIX (6)	Office Of SCHOOL TRUSTEE Vote for no more than THREE (3)
Emily CARR	-	Samuel de CHAMPLAIN 🕘 💻
John FRANKLIN	Jean CABOT	James COOK 🗌 💻
Wilfrid LAURIER	Jacques CARTIER	Patricia COSTER 💽 💻
Miles J. MASSEY	George DADAMO	Jeanne MANCE 🗌 💻
		Menelaus P. O'DANIEL 💽 💻
	Henry HUDSON	
	Jake JOLIET	=
	William L.M. KING 🖲	-
	Elliot LAWSON	-
	John A. MacDONALD	
	Kristine MARROW	-
	Nellie McCLUNG 🖲	-
	Lucy M. MONTGOMERY	-
	Michael NELSON	-
	Steve OSBORNE 💽	-
	John PAGE	-
	Lester B. PEARSON 🖲	-
	Mary PICKFORD	
	Fanny ROSENFELD	-
	Louis SAINT-LAURENT 💽	
	Pierre E. TRUDEAU	-
	Clause VON ESPIE	-
	Adam WIGLEY	
-	Bonnie ZHANG 💽	
-		

- Recreate cast ballot at the back-end
- Every electronic ballot -> paper ballot
- Used for auditing
- Ballot can be printed, scanned and tabulated as any paper ballot
- Permanent record



Current Work - Canadian and US Elections

- Development of new poll-level optical tabulator – CF201
- US Certification
- HAVA compliance
- New release of EEMS Election Event Management System – for US
- Further development on rich-client Internet ballot with data hiding techniques
- Support for smart cards for remote voting
- Further integration of GIS into Elector Management system

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Election Workflow Automation

VOTELOON



Goran Obradovic Director of System Architecture Dominion Voting Systems Corp. www.dominionvoting.com e -Voting Workshop 2006 August 2nd to 4th, 2006

