The new Belgian e-voting system

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I. Historical background of e-voting in Belgium.

II. The new system.

III. Some preliminary conclusions.
Historical Background

- 1991: testing of two different e-voting systems
- Expansion of e-voting
  - 1994: 1.4 million voters (20% voters)
  - 1999: 3.2 million voters (44% voters)
  - Since 1999 no further expansion
- e-voting: some controversy in Belgium for several years.
  “While the overall technical performance of the e-voting procedures would not appear to be fundamentally questioned, some political party officials, in particular of the French-speaking side, and civic group activists, have expressed concerns about e-voting. The focus of their criticism largely stems from concern with regard to the lack of effective public oversight of e-voting”. (OSCE Election Assessment Mission for the 2007 Federal Elections).
Security measures added at different stages:

- Publication of the source code of the voting software
- *College of Experts*: “independent” expert committee to monitor the use and proper working of e-voting
- Certification of the software and hardware by and independent external company
- Possibility for political parties with at least 2 representatives to nominate an IT expert to control the source code and electoral software.

  
  Ticketing system (VVPAT) for the 2003 elections
The 2007 BeVoting Study: Independent comparative study by 7 Belgian universities of different e-voting systems, presenting a proposal with the best e-voting system in order to respect international standards and Belgian electoral legislation.

Proposal: “improved paper-based voting system”


2008: cooperation agreement between the Belgian Federal Government and the Flemish and Brussels Region Governments. Joint tender launched by the 3 administrations for the development of the new voting system.
Belgium: communities, regions and provinces

Source: wikipedia (CC)
The new voting system

- Developed by Smartmatic + Steria + Wincor-Nixdorf

- Combination of a touch-based electronic voting machine (17” touchscreen), a barcode printer, a scanner and a opaque ballot box (e-urn).

- It will be used in Flanders and the Brussels Region for the first time in the provincial and municipal elections of 14 October 2012. The Walloon Region will continue to use the old system.

- Tested in 27/10/2011 on a large-scale public non-binding pilot test: 6,134 votes, 22 polling stations, 90 voting machines. 130 election staff.

- Some minor issues (electricity, printers and scanners failures) but reactions from the public very positive. Only “problem”: folding of the vote.
WORKING OF THE SYSTEM:

-The presidents equipment is started using the USB received from the Ministry of Interior (or, in the case of local elections, its equivalent at a Regional level).
-The president of the polling station activates then the voting machines with one of the USB keys, booting the each machine.
-After booting all the machines, the USBs are connected -and will remain connected- to the presidents´ computer as they store the vote count.
- Verification of the identity of the voter by the electoral staff: the voter is given a token (smartcard) which will allow him/her to activate the voting machine.
Voter goes to the separate voting booth and activates the voting machine with the smartcard.
- Voter chooses his/her candidate/s and confirms his/her vote in a tactile screen
- The machine prints out a voting paper containing two parts (a machine-readable part, similar to a QR, and a human-readable part).
- In case the voter wants to double-check, s/he can go to the voting booth equipped with a code-bar reader that will allow to verify that the human readable-part and the machine-readable part of their votes do correspond.
- Voter verifies that the printed vote is correct and is supposed to fold the paper in two (human-readable part on the inside) > voter takes vote to the polling station officials for inspection of marks.

- Voter goes to the ballot box, scans the barcode in the scanning unit and introduces the vote in the opaque sealed ballot box (e-urn).
TESTING OF THE SYSTEM:

- 27th October 2011: large-scale public non-binding pilot test.
- 6,134 votes cast in 22 different places with 90 voting machines.
- In every polling station a president, two assistants and two observers. Total of 130 election staff (all of them members of the Federal, Flemish or Brussels administrations).
- Minor issues reported (electricity failures, problems with printers and scanners, etc)
- Most of the reactions from the public very positive.
- Only moment of doubts > the scanning (a novelty of the system). Also big number of voters didn’t fold their votes before leaving the voting booth.
III. Some preliminary conclusions.

- The new system, with the introduction of the human readable part, improves the transparency and verifiability of the system. The new ballots could serve as VVPAT and would allow for audits and recounts.

- Some issues may still require attention:
  - Transparency
  - Secret suffrage
  - Machine readable / human readable part of the vote
  - Audit and certification
  - Election observation
**TRANSPARENCY**

- Acting in a transparent manner > ensure voters trust and confidence in the system

- Continue with the disclosure of the source code, on the night of the elections, as it was done until now.

- Disclosure of the certification report.

- Non transparent voting e-urn?
SECRET SUFFRAGE

- One of the main principles of democratic elections. Secret suffrage = free suffrage

- Assuring that there is no link between the voter and the vote (e-IDs?)

- Potential risks:
  - Folding of the paper
  - Possible need of assistance (old people, failures of the machines/printers, scanning)
  - Non encrypted code-bar?
  - Electromagnetic radiation
VOTE: MACHINE READABLE/HUMAN READABLE-PART

- Legislation establishing electoral process should establish clearly, in case of discrepancy, which type of vote takes precedence.

- The human-readable part should prevail, as it is the only part comprehensible to the voter.
AUDIT AND CERTIFICATION

➢ Audit and certification measures should be specifically included in the national and regional regulations that establish the electoral process.

- Use of paper trails should be combined with mandatory count of papers in statistical meaningful number of random selected polling stations (not known in advance by polling station officials).

- Certification: should be carried out by an independent body in the most transparent way and cover all aspects of e-voting.

- College of experts > increased
ELECTION OBSERVATION ("Who watches the watchmen?")

- National and regional legislation establishing the electoral process should include specific provisions to allow election observation.

- Election observation: international and domestic.

- Effective election observation should include, to the extent permitted by the law:
  - presence of accredited observers in polling stations and data processing sites
  - access to all levels of documentation and reports (minutes, meetings, certification, testing and audit reports, etc).
Dankeschön
Thank you verz much
Merci beaucoup
Muchas racias
(etc, etc ;)

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