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Internet voting project

Internet voting : Status, Perspectives and Issues

ITU E-Government workshop
Geneva
6 June 2003





A few words about us



The State of Geneva has developed one of the first public Internet voting applications in the world.



We successfully held a first ballot using the Internet in January 2003, in a suburban municipality nearby Geneva.



Voters were offered three ways of casting their ballot : postal voting, polling stations and the Internet.



There are some 200'000 registred voters in Geneva



What am I going to tell you today ?

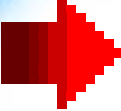
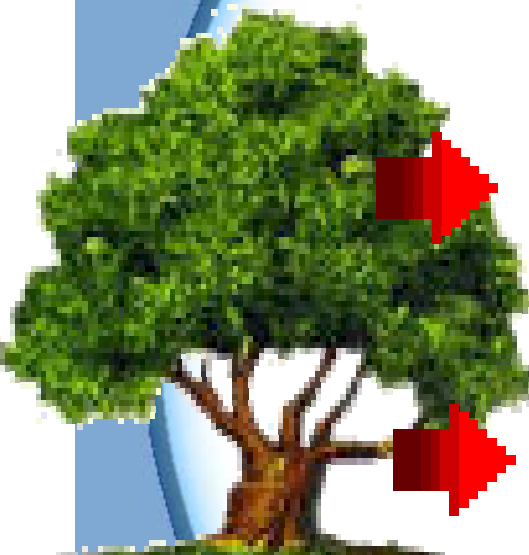
- Why did we develop an Internet voting application ?
- What are the issues to consider ?
- What has standardization to do with eVoting ?
- How did we proceed/How does our system work ?



Why did we
develop an
Internet voting
application ?




The roots of Internet voting



You may wonder why only few countries have so far developed an Internet based voting application.



Safety or privacy concerns do not tell it all.



"Cultural" factors are at least as important in influencing the authorities to launch a project and for the public to adopt it.



There are transition stages to Internet voting

EVE (*«Evaluating practices & Validating technologies in E-democracy»*, www.eve.cnrs.fr/) has shown that Internet voting is mostly being considered by countries that have already implemented changes the polling methods, such as :

- ▶ placing electronic ballot boxes in polling stations,
- ▶ introducing postal voting,
- ▶ using the Internet as political campaign tool.





The political system's role

- ▶ The structure of the political systems also plays a role in the decision to develop an Internet voting application.
- ▶ It is probably not a coincidence if the two leading countries in Internet voting, UK and Switzerland, are decentralized States.
- ▶ Vote secrecy hasn't the same weight everywhere. The more stringent the law on secrecy, the more difficult the implementation of Internet voting. UK and Switzerland have «soft» regulations.



So, what is there that Switzerland has and that other countries do not have?



Swiss voters want versatility

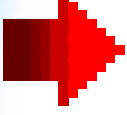
- ▶ Swiss citizens are called 4 to 6 times a year to the ballot.
- ▶ Postal voting has been generalized in 22 out of the 26 Swiss cantons
- ▶ In Geneva last year, 95% of the voters cast their vote by post. Nationwide, the percentage exceeds 50%.
- ▶ In Geneva, postal voting has increased the turnout by 20 percentage points over the last 8 years (from an average of 30%-35% to an average of 50%-55%).



The Swiss political system helps



A facilitating feature lies in the Swiss political system, which acts as a network of citizens, associations and political parties.



Therefore, a voting system based on a non-hierarchical computer network is not seen as depossessing neither the institutions nor the politicians of their prerogatives.



Finally, the technical prerequisite is fulfilled, as some 60% of the population are connected to the Internet.



Consolidating a positive trend



In a everchanging world, you must innovate to maintain your position. This is also true of public services.



We were looking for a way of consolidating the success of postal voting and increasing ballot flexibility.



We wanted to improve ballot access for citizens living abroad and disabled voters.



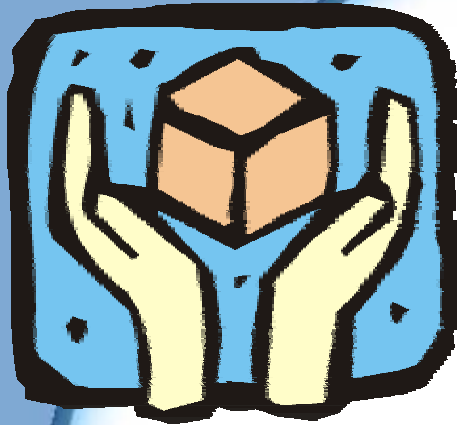
We wanted to take better into account the habits of many citizens, who travel on weekends and school holidays.





What are
the issues
to consider ?

The versatile nature of eVoting



Internet voting shares with postal voting the characteristic of being a remote ballot system.

But, because it is dematerialized (no material track or record of the votes cast), it is totally different technically and legally from known voting methods.

Another challenge is to take the social and legal context into account when developing the eApplication.



The cost issue

You think that Internet voting is cheaper :
ballot reading is automatic and no recounts
are needed, since no mistake is possible.

Well, think twice !

Some parameters influencing the cost factor :

Will you close polling stations or not ?

Will you issue smartcards or not ?

Should voters buy plug in devices or not ?

What is the cost of system maintenance ?

How often do you plan to upgrade
your application ?



Conditions for a democratic ballot

«Contracting parties undertake to hold free elections at reasonable intervals by secret ballot, under conditions which will ensure the free expression of the opinion of the people (...)»

(Art. 3 of Protocol 1 to the European Convention on Human Rights)



The 11 commandments of Internet voting (1)

► The provisions of the European Convention on Human Rights and our own legal rules define a 11 points terms of reference for Internet voting :

- 1) Votes cannot be intercepted nor modified,
- 2) Votes cannot be known before the official ballot reading,
- 3) Only registred voters will be able to vote,
- 4) Each voter will have one and only one vote,
- 5) Vote secrecy is guaranteed. It NEVER will be possible to link a voter and his/her vote,



The 11 commandments of Internet voting (2)

- 6) The voting web site will resist any denial of service attack,
- 7) Voters will be protected against identity theft,
- 8) The number of cast votes will be equal to the number of received ballots,
- 9) It will be possible to prove that a given citizen has voted,
- 10) The system will not accept votes outside the ballot opening period,
- 11) The system will be auditable.





Other possible issues are :

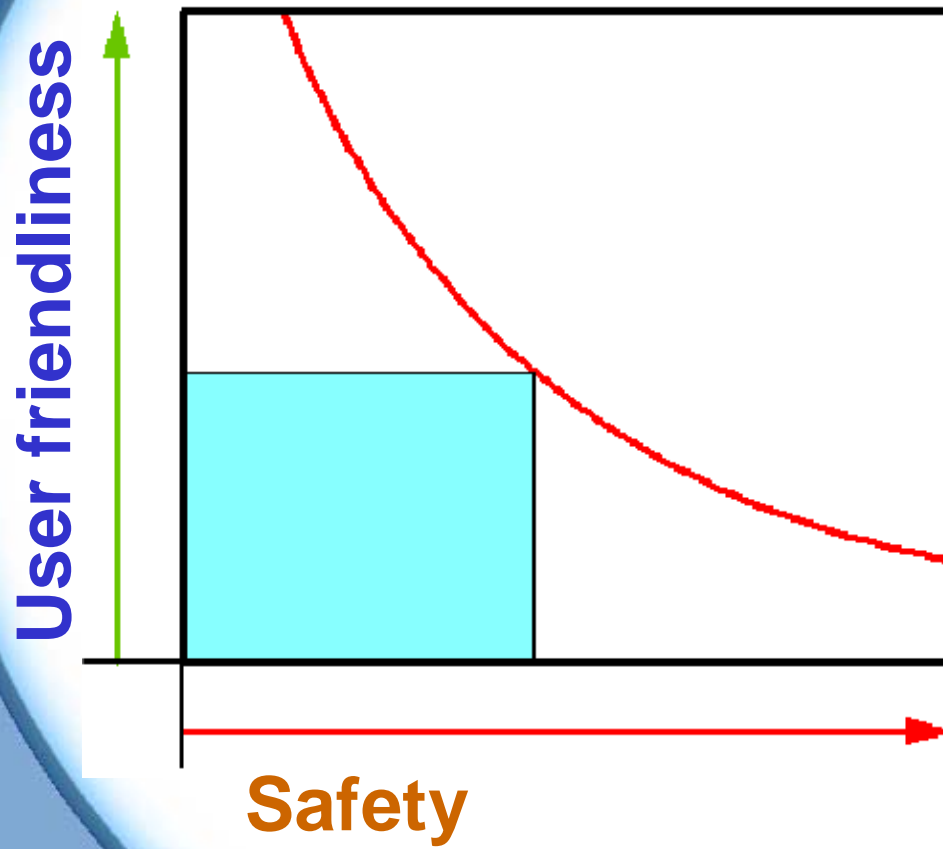
There are more issues to Internet voting than legal or technical ones. Here are a few :

- ▶ Psychological : voting is often a lay ceremony. What about a system where one votes home and cannot meet his/her kins at the polling station ?
- ▶ Legitimacy : will citizens accept a system where there is no material track of voting ?
- ▶ Risk management : What if the system has been tampered with and the eBallot box content might be inaccurate (we might even don't know if it really is)?
- ▶ Political : can Internet affect election rules in the long run? Will this uncertainty prevent the Parliament from adopting this new system?



An illustration

Here's the example of a simple issue : safety vs userfriendliness.



IT scholars told us to write a new OS and distribute it on CD-Roms to the population. For them, any other choice would have been unsafe.

Of course, we didn't, because nobody would have used it.

What has normalisation to do with eVoting ?



Normalisation's two faces

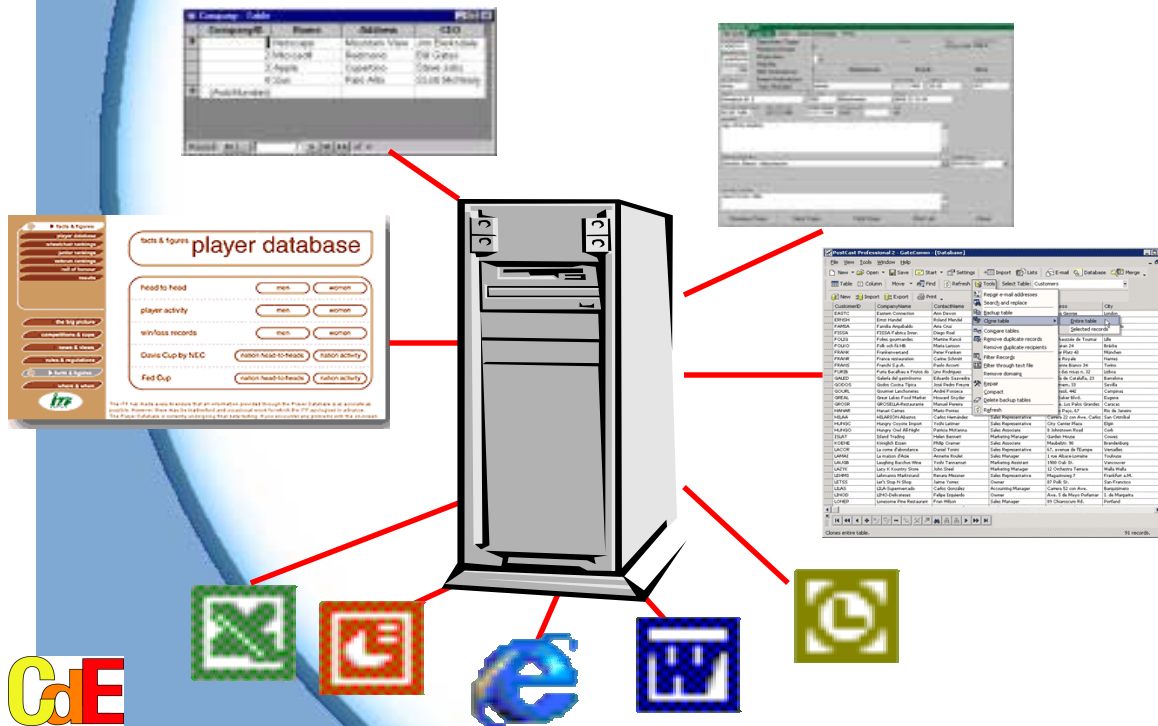
- ▶ There are two kinds of norms at work in Internet voting : legal and technical.
- ▶ A turnkey application might save you money, but will probably not comply with your national legal provisions for ballots. You could face a legitimacy problem.
- ▶ Such a solution is not necessarily compatible with other applications nor hardware.
- ▶ A tailor-made application is the best way of embedding your legal requirements into the project from the start.
- ▶ Norms exist that can make your proprietary application compatible with any standard software/hardware.



A possible scheme

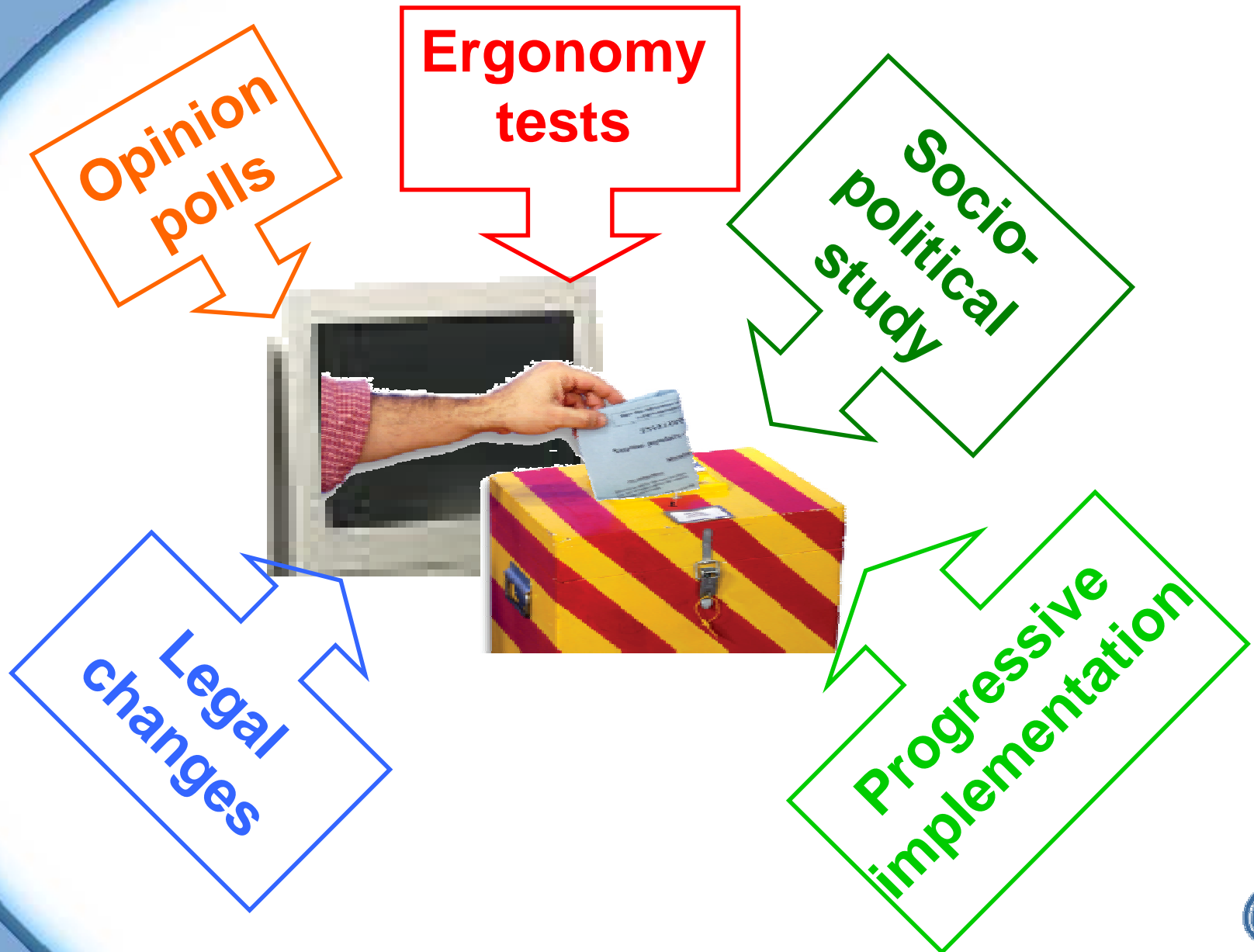
In the Internet voting, one wants for example to be able to run the application on different hardware and with different database formats and also to count the ballots with different software.

This last possibility is maybe the best one in case of doubts on the ballot counting, since doing a recount with the same tool will always give the same result.



How
did we
proceed ?/
How does
our system work ?

A multi-faceted approach





An idea whose time has come

In 2000, we felt that the public was receptive to Internet voting :

- **The number of internet connections had been growing steadily for a few years,**
- **eCommerce turnover grew significantly,**
- **A poll conducted in the whole country indicated that 66% of Internet users would like to be able to vote online,**
- **The federal Parliament reversed a previous negative vote and asked for Internet voting to be studied,**
- **The Geneva electoral law allows eVoting testing without prior local Parliament approval,**
- **Geneva's voters register was the only one in Switzerland to be already digitalized.**



A proprietary solution

In 2000, the State issued a tender to seek private partners to realize the eVoting application. Hewlett-Packard and Wisekey (digital certificate) were chosen as partners.

The tender

- underlined the legal requirements for ballots,
- proposed a structure for the system,
- imposed that the servers should be located in a secured environment, within the State premises,
- Imposed that the application's code should be available for independent experts to check (proprietary solution owned by the State).

(www.geneve.ch/chancellerie/E-Government/cahier_charges.html#3)



Slight legal changes were necessary

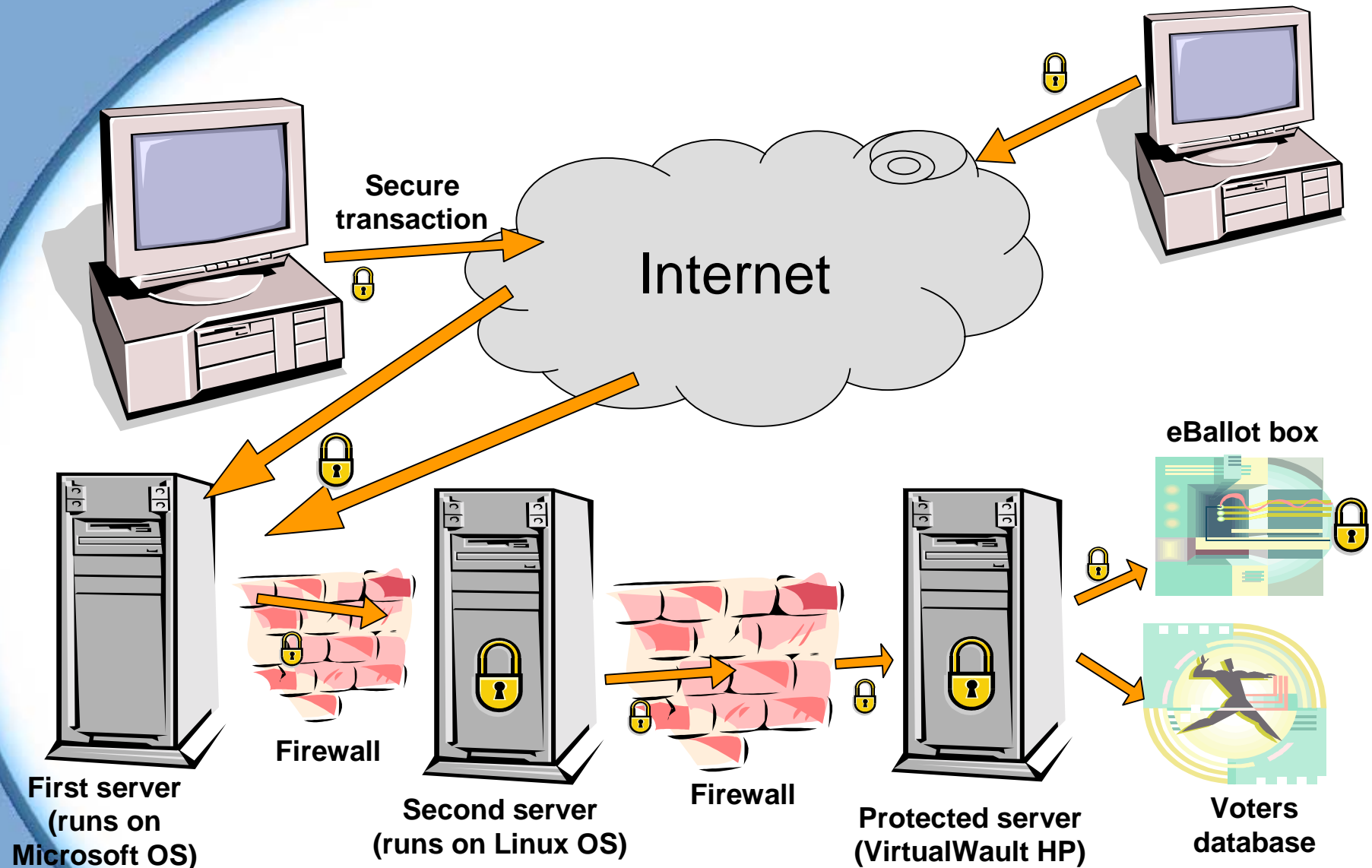
At the federal level, the election law had to be amended to authorize testing electronic ballots.

This law's enforcement decree was completed, in order to enshrine the «11 commandments» in our legal order.

The cantonal election law's enforcement decree was amended in the same sense.

The possibility given by the law to any citizen to attend ballot counting had to be modified. We now ask political parties to designate observers to attend the eBallot box opening.

The system's structure





This half contains the identification features for Internet voting

The other half is needed to vote by post or at the polling station





What we've done so far

- ▶ **March 2001:** the project is launched,
- ▶ **June and September 2001:** ergonomy tests are conducted with civil servants,
- ▶ **December 2001:** a test is made with 450 web users of all ages,
- ▶ **May 2002:** the application is tested in a real voting situation with 16.000 school attendees,
- ▶ **Two commissioned hacking attempts fail,**
- ▶ **The Geneva university has conducted a socio-political study,**
- ▶ **A system's safety audit has been done,**
- ▶ **A safety audit has been conducted to study the securization of domestic PCs,**
- ▶ **A first ballot using Internet has been organised in January 2003. Another will follow in autumn.**



The eBallot lessons

- The infrastructure and procedures have worked well,
- The political parties representatives should get a training in supervising the eBallot box opening,
- It was proved that you cannot vote twice, even by using two different ways (polling station and Internet, for example),
- The three polling methods' integration was problemless,
- The system can be used in a wider-scale ballot



More eBallot lessons

- The % of votes cast on the Internet was far greater than expected : 43,6% of the voters used the Internet and 49,9% postal voting.
- The three ballot system gave the same outcome, but percentages differed. There were 70% «yes» on Internet, 54% by post and 64% in the polling station (final result : 61% «yes».*
- There were more voters above 60 years old on the Internet (14%) than voters under 24 years (12%).
- 22% of the voters who used Internet are irregular voters or absenteeists.
- 93% of eVoters trust our system. The more they use Internet, the more they trust it. The younger they are, the less they trust it.

* By the way : this is another issue to consider : do you give detailed or consolidated results. We give consolidated ones.



The floor
is yours.
Thank you
for
your attention