



**VALG**  
e - valg 2011 - prosjektet

# The status of Internet Voting in Norway

Bregenz 11.07.2012

**Project Manager Henrik Nore**

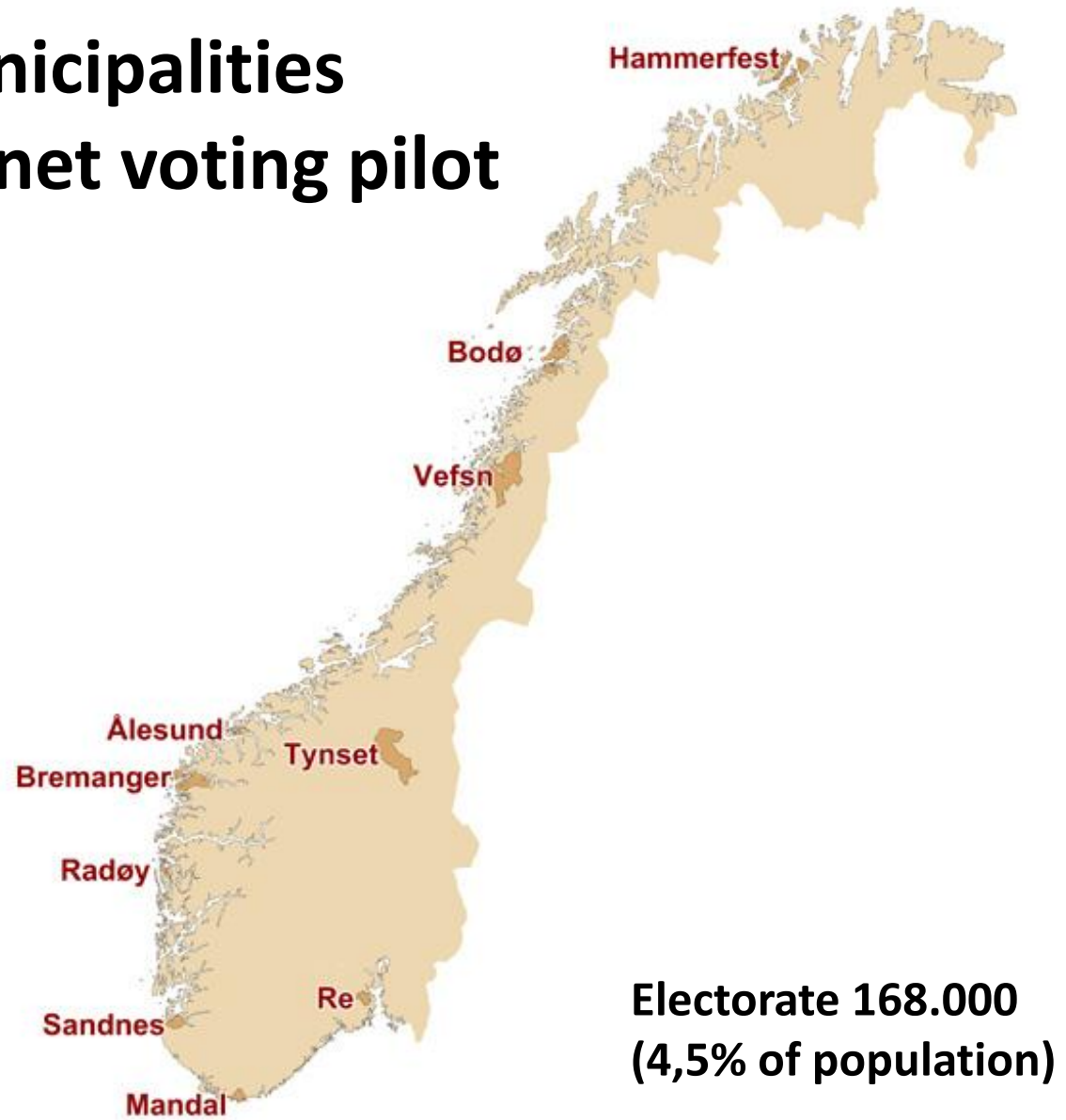
**Responsible Tech/Security Christian Bull**

The Ministry of Local Government and  
Regional Development

# Facts on voting in Norway

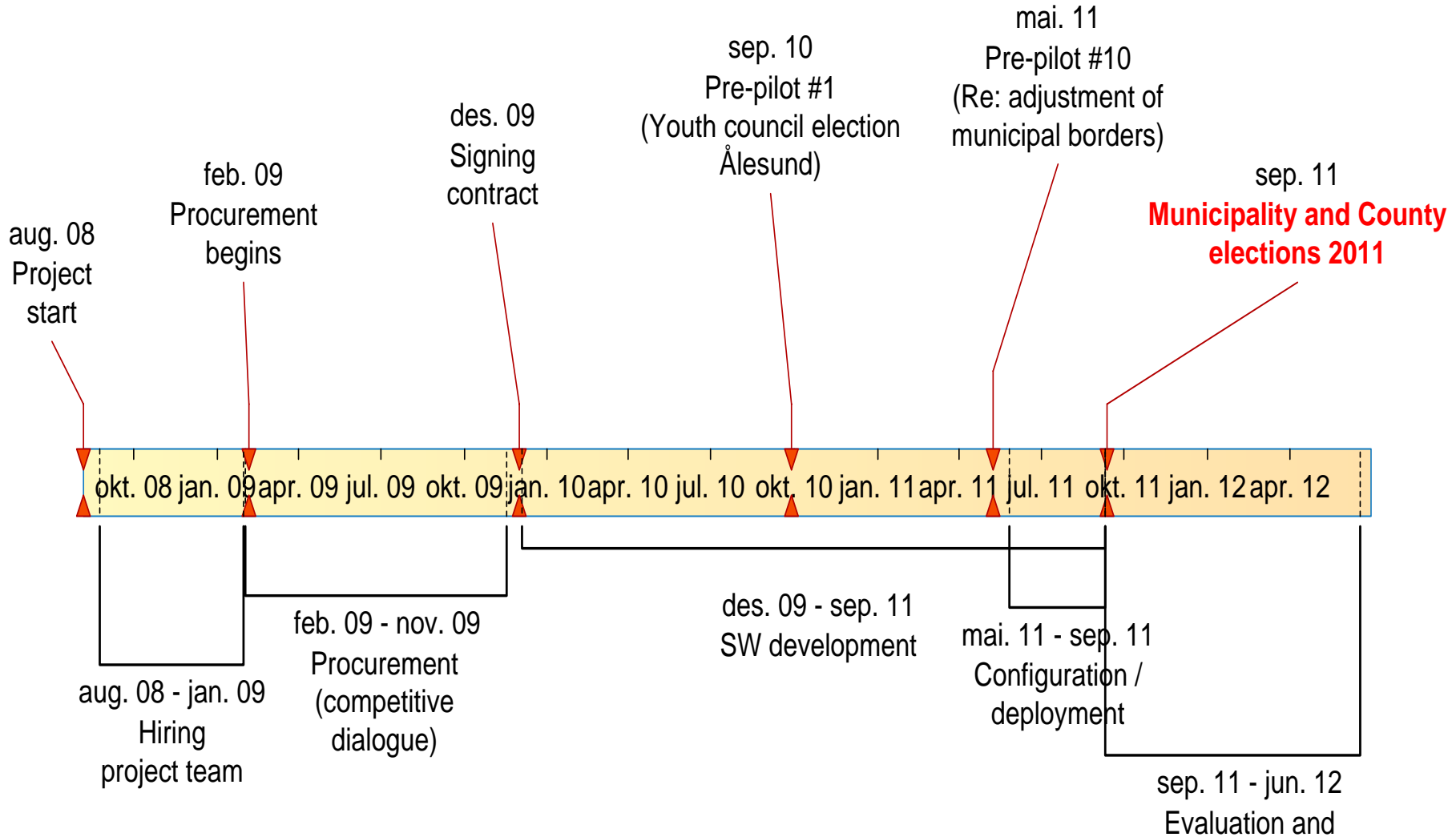
- EMB is within the Ministry of local government
- 3.800.000 in electoral roll
- Parliamentary and local every four years, offset by two years
- Complex ballot. Voters can make changes by reordering, adding and deleting candidates.
- 30 days voting period
  - Early voting possible in 500 poll stations
  - Voting on election day in 2800 poll stations
- *Remote* electronic voting was piloted in the 2011 local elections

# Participating municipalities in the 2011 Internet voting pilot



**Electorate 168.000  
(4,5% of population)**

# Milestones 2008-2012



# Reasons for piloting Internet voting in Norway

- Increasing availability for handicapped, expatriates, citizens on temporary stays abroad
- Proving quicker and more precise results
- Meeting expectations of new generations of voters
- Cost reduction (long term)

Increased turn-out is not a short term goal

# Why is Internet voting possible in Norway? (1)

- Legislation for piloting different voting methods is in place
- Very high trust in central election administration and elections in general
- Relatively low level of political conflict
- No history of electoral fraud
- Economical and academic resources to implement a secure Internet voting solution

# Why is Internet voting possible in Norway? (2)

- Widely available strong authentication mechanisms
- Everybody have access to Internet:
  - From home
  - From work
  - Public PCs (Library, municipal service center)
- Public services are commonly available online

# Norwegian Internet voting challenges

- Secrecy of the ballot is an absolute requirement
  - The only real controversy has been the possibility of coercion / family voting
  - The Conservative Party introduced a parliamentary motion to stop remote Internet voting in November 2010



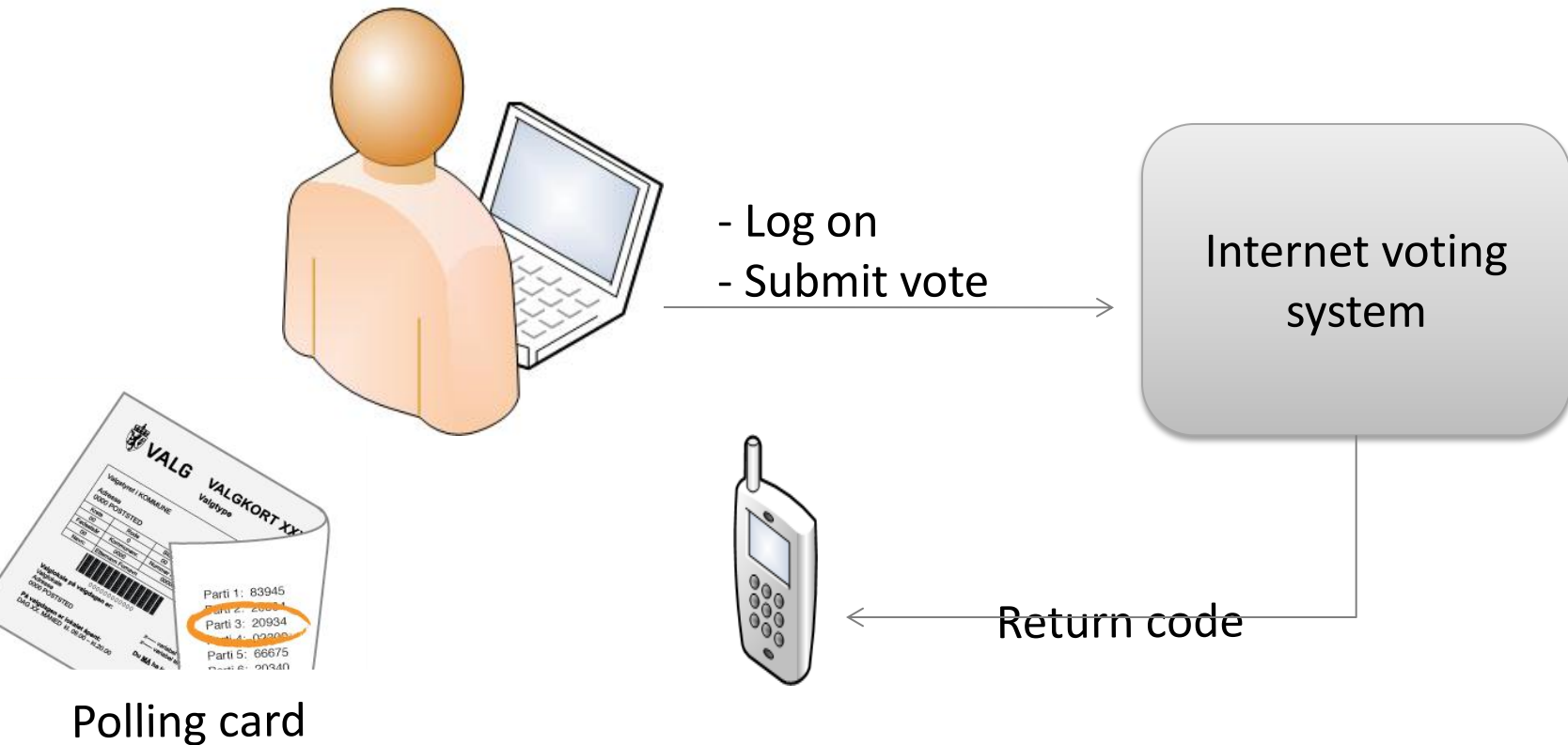
# Why not poll site e-voting in Norway?

- Low frequency of elections means that tailor-made voting machines will be seldomly used and will have higher cost than internet-voting
- Because of the well-functioning electoral system, voting machines will not significantly improve the correctness of results
- Risk of hacking might be greater in poll stations than on voter's own PC (!)
- However: cost/benefit *might* still be positive. Further pilots might be considered.

# **Evote 2011 project cost (including Administrative system)**

- Project cost 2008-2012 : 25 mill euros
- Hardware cost only 10% of total budget
- *evoting application 10% of total project budget*

# The Norwegian Internet voting system

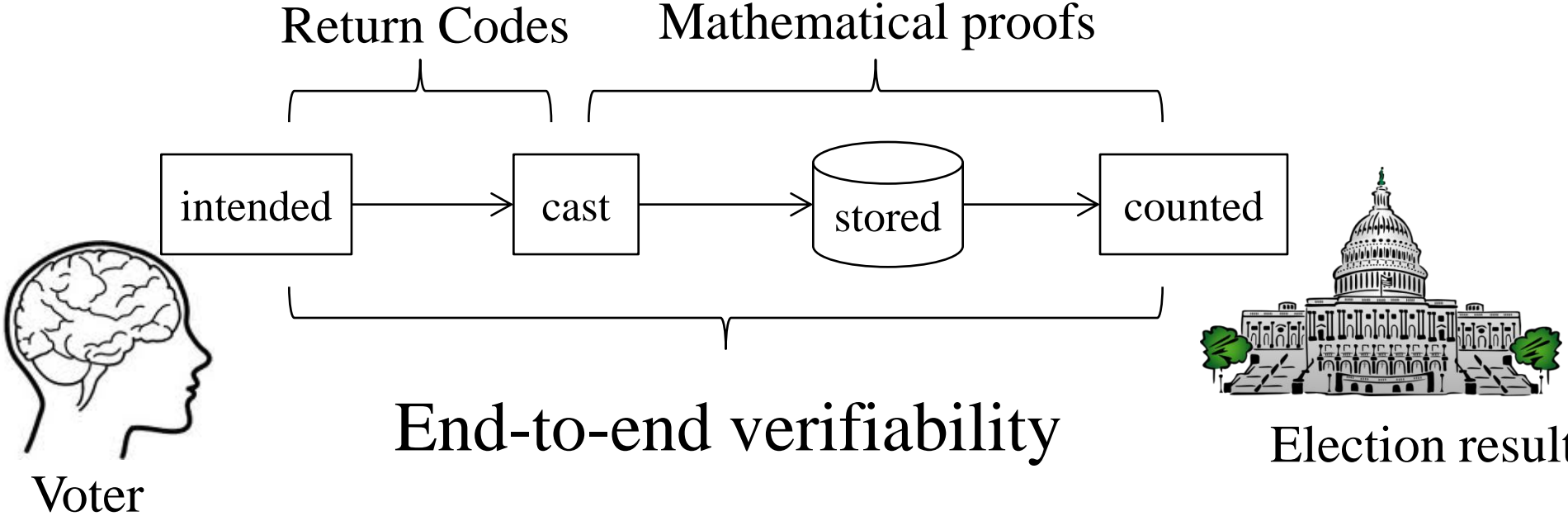


- You can e-vote as many times you want (re-voting)
- Possibility to cancel your e-vote by voting on paper

# Verifiability in Norwegian e-voting

- The return codes form the first link in a chain of *verifiability*
- Verifiability allows a voter or third party to mathematically prove that the vote has been correctly processed.
- NB: Source code review or certification is **not** the same as verifiability

# Norwegian approach to verifiability



# Why verifiability?

- Return codes makes attacks on voter pc's detectable
  - and voters appreciate feedback that the vote was successfully cast
- Verifiability builds trust among stakeholders
  - Academia will never trust a non-verifiable electronic voting system!
- Mathematical proofs of correct counting gives the EMB confidence that the system is working correctly

# Conclusions on e-voting

- If there is a lack of public trust in the EMB, e-voting is probably not the way to go
- Internet voting from home is cost-efficient but requires good public infrastructure
- e-voting in polling stations can improve transparency if implemented correctly
- You need at least 3-4 years from idea to pilot. Academia must be involved at an early stage.

## **E-voting status summer 2012**

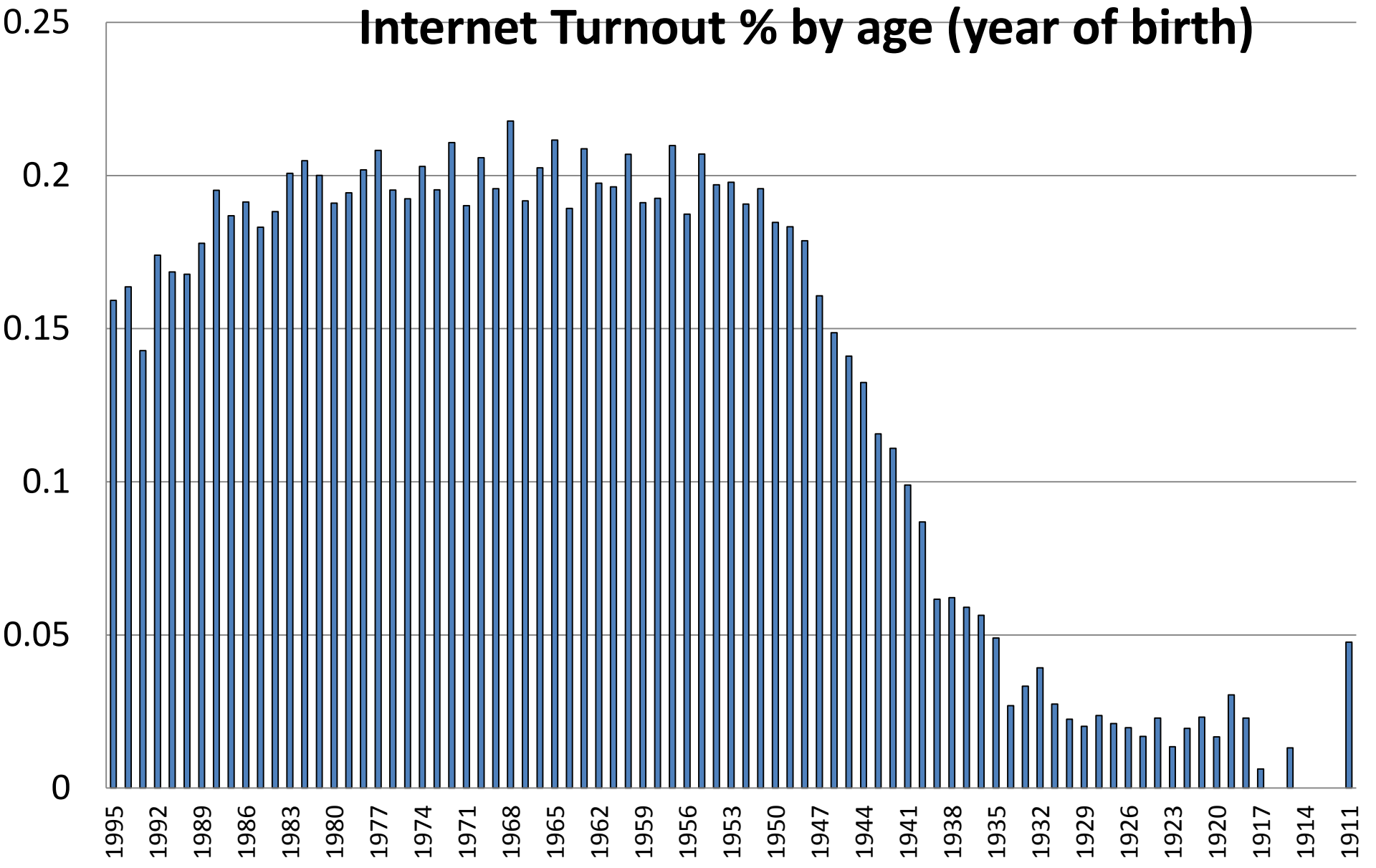
- OSCE report published in March 2012, follow up under way.
- We are considering steps to improve the technical solution as well as the legal framework and procedures
- Evaluation of pilots completed in June. Summary report to be presented in September.
- Political decision on any further pilots in 2013 yet to be made.



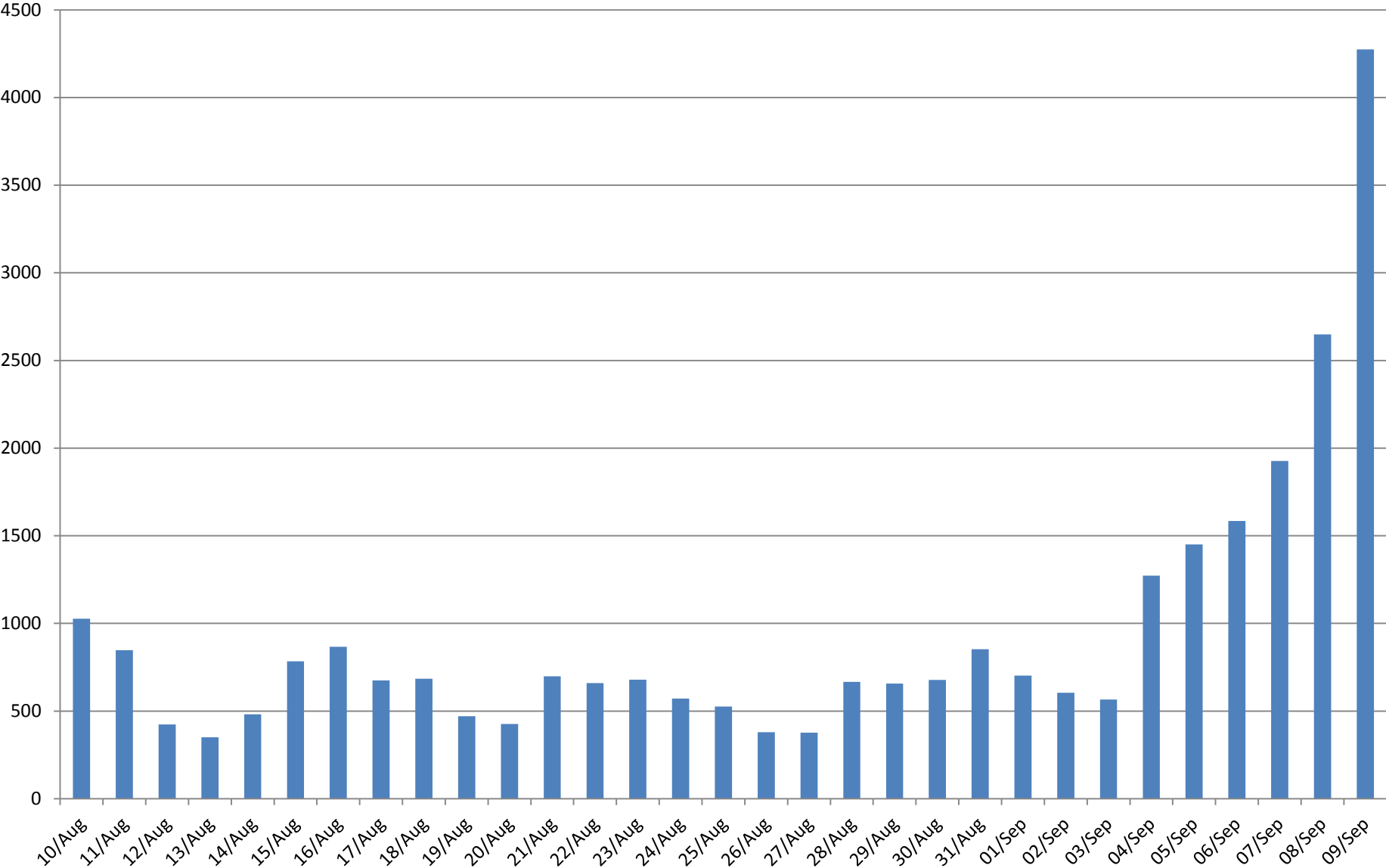
# Key numbers from the 2011 pilot

# Internet votes	55.775 ballots (in two contests)	73% of early votes via Internet, 27% paper votes
# Internet voters	28.001 voters	27% of total votes cast (paper+internet /early voting+voting day)
Max number of votes cast by one voter:	5 votes	
Multiple Internet voters	1020 voters	3,6% of e-voters
Multiple Internet ballots removed	1775	3.2% of ballots
Internet ballots cancelled by paper ballots	653 ballots	1,17% of ballots

# Internet Turnout % by age (year of birth)



# Voters per day



Questions?

More info: <http://evalg.stat.no>  
Evaluations: <http://tiny.cc/vpt9gw>

The screenshot shows the website for the E-VOTE 2011 project. At the top, there is a navigation bar with links for Bokmål, Nynorsk, Sámeigiella, and English, along with Topics A-Z, Help, and Contact. The main header features the Ministry of Local Government and Regional Development logo and a search bar. The central content area is titled "E-VOTE 2011-PROJECT" and includes a large image of hands typing on a laptop. Below the image, a headline states: "Voters in 10 municipalities have the option of voting electronically in the 2011 municipal and county elections." To the left of the main content, there is a sidebar with a "VALG" logo and text: "Velgere i 10 kommuner kan stemme elektronisk ved kommunestyre- og fylkestingsvalget i 2011". Below this, a list of links includes: Ministry home, Project frontpage, Technical documents, About the e-vote project, Evaluation of trials, and Source Code. To the right of the main content, there are sections for "LINKS" (Election statistics in Norway), "CONFERENCE" (The Norwegian E-vote 2011 Conference), and "ELECTIONS RESULTS AND STATISTICS" (Elections Results and statistics). Below the headline, there is a "NEWS" section with two entries: "The Norwegian E-vote 2011 Conference" [15.09.2011] and "Final results from the e-voting" [15.09.2011]. The first news entry includes a small icon of a laptop with a hand pointing at the screen and a "VOTE" label. The second news entry includes a small bar chart icon. The footer of the page contains a small logo and a copyright notice.

Bokmål | Nynorsk | Sámeigiella | English  
Topics A-Z | Help | Contact

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Search the Ministry of Local Government and Regional Development  
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Velgere i 10 kommuner kan stemme elektronisk ved kommunestyre- og fylkestingsvalget i 2011

Ministry home  
Project frontpage  
Technical documents  
About the e-vote project  
Evaluation of trials  
Source Code

**E-VOTE 2011-PROJECT**

**Voters in 10 municipalities have the option of voting electronically in the 2011 municipal and county elections.**

**LINKS**  
Election statistics in Norway (Statistisk sentralbyrå)

**CONFERENCE**  
The Norwegian E-vote 2011 Conference

**ELECTIONS RESULTS AND STATISTICS**  
Elections Results and statistics

**NEWS**

 **The Norwegian E-vote 2011 Conference**  
[15.09.2011]  
The Norwegian E-voting 2011 Conference, hosted by the Ministry of Local Government and Regional Development, took place in Oslo Sunday 11 September 2011. The Ministry had invited both Norwegian and international speakers to give presentations at the conference. The audience included among others electoral observers, representatives from electoral authorities in other countries and researchers in the field of electronic voting. See the program and the presentations.

 **Final results from the e-voting**  
[15.09.2011]