Solution Blueprint

Diebold
Intel® Atom™ Processor

Product Development

DIEBOLD®
INOVAÇÃO A SEU ALCANCE™

BRAZILIAN ELECTIONS: From Paper to the Technological Advances

For fourteen years, Brazilians have witnessed the evolution of electronic ballot boxes, from their more simple first version to the current ballot boxes based on the Intel® Atom™ Z510P processor, and the benefits they have provided Brazil.

"One of the advantages that stood out in this processor was the processing power with new technology that assures equipment longevity. Before signing the agreement with Intel, we researched other products in the market, but the Intel® Atom™ processor is the most up-to-date and the one that best meet our needs", says Marco Antônio Lallo, project manager at Diebold Brazil.

Profile

Procomp was founded in 1985, when it launched a banking automation solution. The company quickly won over Brazil's main banks. The company grew, evolved, extended and improved its factories to consolidate itself in the development of huge projects.

In 1999, the North-American company Diebold Incorporated acquired 100% of the company's stocks. Result: Diebold Brazil was born. The acquisition joined the competence and excellence of the Brazilian team to Diebold's globalized structure and commercial and industrial processes. Currently, the company has a factory in Manaus, dedicated to manufacturing ATMs, products for the PC line and ATM safes, in addition to an industrial plant in Santa Rita do Sapucaí (MG). The company has about 60% of market share just in the area of self-service banking products.

Within the Government line, the company has manufactured verification terminals for court proceedings in the states of São Paulo and Rio de Janeiro, won the bid for the production of 30 thousand machines for Caixa's lottery shops and is the main manufacturer of the electronic ballot boxes, having won six of the eight public bids of the Superior Electoral Court. In addition to this, it's present in the Health, Retail, Telecommunications, and "Utilities" segments, among others.

Scenario: Quick and Secure Vote

With the objective of reducing the number of frauds in the Brazilian elections, ensure the integrity and veracity of the votes, the Superior Electoral Court (TSE in Portuguese) has analyzed the country's scenario in order to develop the best formula to automatize the electoral process. In 1995 began the first public bid to select the supplier for the electronic ballot boxes for the 1996 elections. Faced with Brazil, which has a land extension of approximately 8.5 million square kilometers, 26 States and the Federal District divided into five regions (North, Northeast, Center-West, Southeast and South) with 190 million Brazilians of all races, religions and cultures, the TSE's challenge was to present a simple and efficient electronic equipment to Brazil that would forever change the way candidates are elected in the country.

The specific characteristics that the electronic ballot box had to have were detailed in the public bid. Items such as a screen with the candidate's number and photograph, a numeric keyboard that was similar to the one in a telephone, media with redundant recording of information – so there would be no risk of data loss -, were essential to ensure the product's proper functioning.

In total, there were eight public bids in 1996, 1998, 2000, 2002, 2004, 2006, 2008 and 2010. The evolution of the electronic ballot box's technology was inevitable. Every year, the TSE analyzed what worked well and what fell short of their expectations. The result of this process was the quality and consequent reliability that the machines gained with time.

Three characteristics requested by the TSE in the public bid of 2009 for the 2010 elections stood out: low energy consumption of the equipment, affordable cost and security. To fulfill the Court's demands entirely, Diebold Brazil relied on partnerships and their best engineers.

Technology to serve the Brazilian population

In a public bid, the winner is the one who presents a product that meets the minimum specifications required with the lowest cost. This demand isn't only typical of the Public Sector; common citizens also use these arguments when purchasing products. Thus, Diebold Brazil used creativity to produce what was being demanded with the lowest cost possible.

"When we participate in a bid we need to focus on the specifications so we don't risk producing something that wasn't requested. There are several companies working to win the bid. Our history of developing specific projects has consolidated our capacity to respond to a public bid," states Marcon Antônio Lallo, project manager at Diebold Brazil.

One of the biggest challenges, the need for low energy consumption in the ballot boxes, is justified by the large number of areas that are far away from large cities. There are many towns and villages that do not have a power network, such as the indigenous tribes. To ensure that every Brazilian voter can exercise their rights, the TSE was careful with this requirement so there wouldn't be any risk of the ballot box turning off before voting time ended. The equipment has an internal battery that guarantees energy to operate for 10 hours.

The company developed internal components to ensure low energy consumption. To support this demand Diebold Brazil used the Intel® Atom™ Z510P processor of the Embedded Menlow platform.

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For the security criteria, each electronic ballot box has a digital certificate. Therefore, the security devices demanded the development of a new motherboard. The ballot box already comes from the factory with

activated security devices and will never accept any program that does not have the TSE's signature. When voting time ended, the result computed by each ballot box is signed by this certificate that analyzes the veracity of the information.

Diebold Brazil made high investments and has made many of its engineers work hard to fulfill the public bid's demands. "Without a team that's committed to the cause, that's working hard to gain any advantage, we wouldn't have been able to produce this equipment. Developing a motherboard is not an easy task, precisely because the electronic ballot box is not a PC. We have to be very competitive, lowering costs every year," Lallo points out.

According to the executive, the affordable cost is always mentioned in the public bids - a requirement that was meticulously analyzed when adopting the Intel® Atom™ processors. For him, Intel has overcome challenges by broadening their participation in the market beyond PCs, just as Diebold Brazil, and has shown capacity to perform in other segments with the lowest cost.

This last version of the ballot boxes is the most technologically advanced one. In addition to the processor, which surpassed the performance expectations, the ballot box has world innovating security features such as biometrics and a digital signature, which provide more security to the elections. In addition to this, the new model has a colored screen and the election judge's table has a 2" LCD display to check the voter's photograph.

Since 2006, the electronic ballot boxes developed by Diebold have the biometric reader, used for the first time in the 2008 elections and then in 2010, but only with a small amount of the voters. In an official announcement made by the TSE after the first round of elections, the institution's president, Minister Ricardo Lewandowski, stated that in the 60 cities where the vote occurred with the biometric ballot box, 93.5% of the voters were successfully identified by their fingerprints. The other 7% were not identified for several reasons, such as the election judge's lack of training or worn-out fingerprints.

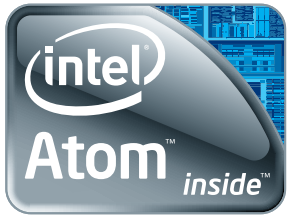
According to an announcement in January of 2011, 85% of the electronic ballot boxes network will have biometric readers. However, this resource will only be used in the entire county after 100% of the voters have been re-registered, which is expected for 2018.

Expansion that worked

The quality of elections in the country today is recognized worldwide, even by the greatest nations. Brazil is a consolidated democracy with 135 million voters that successfully use biometric records and electronic ballot boxes that eliminate fraud, enable the veracity of information, make voting easier – since the complexity of the paper ballot was eliminated – and the result comes out on the same day of the election, avoiding speculations and tension during the vote count.

In the 2010 elections, the deadline stipulated by the TSE to deliver the project and a working electronic ballot box that complied with the requested specifications was of 45 days, but Diebold Brazil's work was intense a year prior to that. "It was a long and complex process. During this period we counted on Intel's help to make this solution feasible," says Lallo.

Since it's a large project that requires a lot of technology, we demanded a lot of secrecy. Nothing could leak out because there is a lot of competition. Intel was our partner in preparing the proposal, answering our questions, defining the product and guaranteeing



information. We worked to find the best path and achieve low energy consumption, security and the lowest cost, all within the short deadline. It was a refined work."

The volume acquired since 2009 is of 312 thousand electronic ballot boxes. According to a balance statement from the TSE, in the first round of the 2010 elections, only 0.54% of about 450 thousand ballot boxes had to be replaced by reserved equipment and only six in all of Brazil had to be exchanged for manual voting.

Diebold's project manager, Marco Antônio Lallo, eagerly reports that he is proud of the work developed throughout the years. "We have always worked with projects that involve development – this one has expanded our performance and we ended up creating a very strong engineering department within the company. This is an extremely serious project, with serious people. For those who criticized Brazil saying that the country wouldn't be capable of producing equipment with extensive technology, here is the proof that we made it happen. I am proud of our engineers and partners. Together we helped write a small part of Brazilian history," he concludes.

Electronic Ballot Boxes

- Quantity of ballot boxes that the TSE acquired: 312 thousand
- Motherboard, Intel® Atom™ Z510P Processor
- Election judge's table with a 2" LCD display to check the voter's photo
- Colored Screen
- Each ballot box weighs 9 Kg

Benefits

- Fraud reduction
- Vote count on the day of the election
- Agility on election day
- Information veracity
- Elections credibility
- Credibilidade das eleições

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