

## **Orca - The Outage That May Change History**

November 2012

The Romney campaign looked forward with confidence to the November 6, 2012, U.S. presidential election. Not only were many polls improving in its favor, but it had a secret weapon that it did not disclose until just before Election Day. Orca!

Orca was a massive, technologically sophisticated tool that was aimed at GOTV – Get Out The Vote – in the critical swing states that would decide the election outcome. In elections that are as close as this one was predicted to be, outperforming polls by a single point can mean that entire states and all their Electoral votes can be won.

But Orca failed. It never got off the ground on Election Day. Was this outage the cause of Governor Romney's loss to President Obama? We will never know the answer to this question, but it was quite likely a factor.

### **Orca**

Orca was a Web-based application that allowed 37,000 Romney campaign workers spread among the precincts of several key swing states to monitor and report who was voting. This data was sent in real time to a campaign War Room at Republican headquarters in the Boston Garden (now the TD Garden), where it was compared to known Romney supporters in those precincts. The data was used by campaign headquarters to deploy calls and volunteers to known Romney supporters who hadn't yet voted without wasting resources on those who had.

To use Orca, a volunteer logged into the Orca web site on his or her smart phone. The name and age of every voter in the volunteer's precinct was downloaded to the smart phone. As the volunteer was told by precinct workers that a particular person had voted, that person's name was checked off on the smart-phone list; and this information was sent immediately to the War Room to support the efficient deployment of volunteers to get out the Romney vote.

A backup call response system was provided as a means for volunteers to get data into the system in the event that their smart-phone connectivity failed.

Thus, Orca allowed the campaign to streamline from its campaign headquarters the efforts to maximize turnout of Romney backers.

Orca was created and managed by a small group within the Romney campaign. It reportedly comprised eleven database servers front-ended with a single application server that was fed messages from a single web server. Its details were kept a secret right up to Election Day in an attempt to prevent the hacking of the system.

Romney Deputy Political Director Dan Centinello said in a training call for Project Orca volunteers, "There's nothing that President Obama himself can do to even come close to what we are putting together here."

## **The Election Day Fiasco**

Orca was effectively dead as soon as the polls opened. The first hint of a problem was that the system almost immediately became overloaded with the traffic required to download voter lists simultaneously to thousands of volunteers. This slowed the system to a crawl.

Then, when voter data began to flow into Orca, the message rate was so high that Orca's ISP decided that this was a Distributed Denial of Service (DDoS) attack and began to reject the messages. When message flow was resumed, the system's response time was so slow that many volunteers decided that the system was not working. When they tried to phone in results, the backup response system was so backed up that all they heard was a recorded message to try again later. Cries for support to the headquarters help desk went unanswered. Many left their posts and went home in frustration.

Orca was reported to be crashing throughout the day. The problems were not limited to system problems. There were several operational problems as well. Many volunteers were given invalid PINs for logging into Orca, and the tool to reset PINs was not working. It was midday before this problem was resolved.

In addition, volunteers were told that this was a mobile app, but it couldn't be found in the iTunes or Android stores. This prevented volunteers from using the app in the first place. The problem was that Orca was not a mobile app. It was a web site that could be directly accessed by the smart phone's browser.

The result was that the Romney central command had no clear view of what was happening in the precincts, and it was unable to organize a GOTV campaign. Workers on the ground did not know which doors to knock on. There is no estimate of the number of additional votes in the swing states the Republicans might have garnered if Orca had functioned properly.

## **What Went Wrong?**

How could a system that appears to be functionally straightforward turn out so badly?

Orca was developed over seven months, a fairly short time to get such a system into production. Its development costs were several hundred thousand dollars, a small portion of the \$40 million that the Romney campaign spent on technology. It was not developed by a professional consulting firm but rather by an internal "skunk works" of campaign staffers and volunteers.

The developers clearly had little appreciation for the importance of testing. Though it underwent some beta testing, Orca was never tested in the complete environment of the Boston War Room. It was stress-tested with automated testing tools but clearly not to the level to which it would ultimately be exposed in the real world.

The developers also seemed not to have a grasp of the importance of proper training. Up to Election Day, the training programs comprised large dial-in sessions of hundreds of volunteers. These sessions discouraged volunteers from asking questions. Furthermore, experts had warned that Orca's training manuals could potentially confuse users.

If the system had been given a dry run with the volunteers or better yet tested in a real election environment such as during primary voting, these problems potentially would have been exposed. In addition, other serious problems would have been identified. The fact that users were given wrong PINs and the fact that the PIN reset tool didn't work would have been identified. Users would have learned that

Orca was a web site and not a mobile app, and they would not have given up when they couldn't find Orca in an app store. The limitations of the backup phone system would have been discovered

## **What Did the Democrats Do?**

The Democrats fared much better. They had experienced similar problems in the 2008 campaign. During that campaign, they had developed "Project Houdini" to do a similar function. Unfortunately, Project Houdini ran into challenges similar to what happened to Orca. However, the Democratic campaign had prepared a backup plan using telephone communications; and this plan was effective and let them achieve their GOTV goals.

In the 2012 campaign, the Democratic campaign implemented a new Orca-equivalent system that they dubbed "Narwhal." Narwhal went through two complete dry runs and worked perfectly during Election Day.

As an aside, a Narwhal is a toothed whale that lives year-round in the Arctic. The Orca is the natural predator of the Narwhal.

## **Lessons Learned**

President Obama won the electoral vote by 332 of the 538 total votes available (61.7% - almost a two-to-one margin). He won the popular vote by almost 3%. Could a properly functioning Orca have changed this outcome? We will never know, but it certainly would have closed the gap. Most of the swing states that gave President Obama his decisive electoral-vote margin were won by the Democrats by narrow margins.

It seems that there were two main problems with Orca:

- The higher than expected traffic caused it to initially crash and then to be unresponsive for the rest of Election Day.
- Volunteers could not access the system because of PIN difficulties, because they did not have the proper certification to monitor the voting activities, or because they could not use their smart phones in certain polling places.

Other aggravating factors were that there was no viable fallback plan and that training was inadequate. A major problem was that volunteers were not given access to Orca until Election Day. Otherwise, they would have been able to browse through the system to become familiar with it; they would have identified the PIN problem; and they would have found that Orca was a web application, not a mobile app.

One insightful question that has been asked after the fact is why Orca was implemented on a national basis with all control centered in the Boston campaign headquarters? Implementation at a state level would have been much more manageable. Traffic volumes would have been much less, and a problem in one center might not have been a problem in another center.

If Abraham Lincoln had lost his election, we might not have a multiracial President today. If Franklin Roosevelt had lost his election, we might not have Social Security today. If General Dwight Eisenhower had lost his election, we might not have our Interstate Highway System today. What would be different one hundred years from now if Governor Romney had not lost this election? We will never know, but certainly history would have taken a different path. And Orca would perhaps have played a role, a role that was denied it by incompetency.

## Acknowledgements

The material for this article was taken from the following sources:

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