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HEALTHCARE

Lessons for Big Data From President Obama's Healthcare Implementation

Robert Plant, Associate Professor, School of Business Administration, University of Miami
11/20/2013
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In 2010, the United States government enacted the Patient Protection and Affordable Care act, intended to combine the best of public and private insurance coverage for the population, and thereby controlling and reducing healthcare costs. The act, better known as "Obamacare," has not been without controversy, and almost brought the country to default on its debt. The plan was enacted to enable citizens to gain lower rates for healthcare coverage, and requires them to interact with the government via a website to do so.

The system is, in essence, a big data implementation problem, with data being collected on a potential population in excess of 300 million people across the entire country. Unfortunately, the project has not progressed as planned, and has become mired in technological controversy. Analysis of the issues underneath the controversy does, however, present many lessons for IT project management teams on the dangers of underestimating the complexity of a big data system implementation.

Lesson one: Test everything before going live

- Every seasoned developer knows that systems brought to users without adequate testing will be fragile. For a small system that is based upon a rapid prototyping development process, this is sometimes acceptable; users can be warned, their feedback praised and then incorporated into the new design. However, when this is a high-profile system, such as the political hot potato of the healthcare act, under testing is not only unacceptable, it's unprofessional, and sheds a bad light on all technologists. One possible reason for this failure is the trend over the last decade towards agile, scrum, iterative build methodologies at the expense of formal, mathematically specified, algorithmically sound, specification approaches.

- There are two takeaway findings from this. Developers need to clearly understand when formality is more important than speed and code reuse. Second, quality assurance teams need to understand their role and the level of outcome required, potently through the use of strict, independent validation and verification third parties and adherence to the SEI Capability Maturity Model.

Lesson two: Don't over promise and under deliver

- As of November 13th, 2013, fewer than 27,000 people had signed up -- officials had predicted half a million would sign up in the first month. For any system there are always early adopters, and it is these users of the system who provide the impetus to more pragmatic-minded individuals to sign up and use the technology. Unfortunately, the system saw 275,000 people attempt to sign up, only to have their applications get hung up mid-way through the process, requiring them to return at a later date.

- Technologists need to remember the basic lessons learned during the dot com years of the 1990s. First, it is necessary to get the system's core correctly functionality running, even if this requires a selective implementation strategy. For example, allow only a small section of the total population access to a system until it is working as desired. These clients can be supported 100% through the process.

Lesson three: Start simple and build from there

- The Affordable Care act systems costs are yet to be defined completely, however, Health and Social Services Secretary Kathleen Sibelius indicated in testimony that the Federal system cost $174M, including $56M for technical support. The website itself was estimated by the Sunlight Foundation to have cost $70M. The states themselves have also implemented regional data

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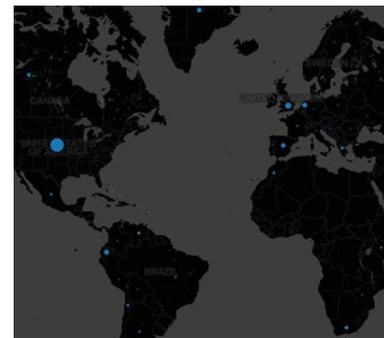**Tracking the Malaria Cure Conversation**

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sites, with California's costing $910M, New York $401M, and Kentucky $253M. Expensive projects that are now tainted by a failure to execute at start up.

- Solutions need to be designed for flexibility without complexity. This can be achieved if they are well defined, start small, and then grow in well considered steps. This was demonstrated by three, 20-year-old programmers from California who developed an alternative website to the official HealthCare.gov portal. Their Sherpa.com web site took only about three days' work and a few hundred dollars in effort. While this cannot be compared directly to the back office system requirements of the official site, the important consumer facing aspects were well executed and embraced by the user, allowing subsequent value adding components to be then developed.

Lesson four: Learn from predecessor projects

- Big projects, be they big data or simply mega beyond scale systems, have frequently proved unmanageable in the past. This is especially true in new and complex areas such as healthcare. The UK's NHS patient record system is probably the world's most expensive IT failure. The system to date has cost approximately GBP9.8B and includes regional health exchanges that have underperformed and excessively run over the initial budget.

- Mega projects require more than money -- they require adaptive, agile thinking. Using traditional methods and constructs without reflection on scalability simply won't work. Careful examination of the failures associated with prior implementations will be time well spent, saving money from potential repetition of prior failure traps.

While the Affordable Healthcare act rumbles along at the taxpayer's expense, for-profit CEOs can benefit if they consider it to be an experimental big data project and gain valuable insights, thus avoiding a similar fate implementing their own project. Hopefully, when the dust has settled, the big data gathered from the HealthCare.gov system will benefit the health of the population, and the IT lessons by the technical staff will be made public in order that future mega projects don't undergo a similar fate.

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AlphaEdge, User Rank: Exabyte Executive
11/30/2013 | 10:41:39 PM

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Re: When will the learning end?!
Indeed surprising. Apparently it was not tested very well.

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Qasim Bajwa, User Rank: Gigabyte Governor
11/30/2013 | 5:00:13 PM

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Re: When will the learning end?!
@Daniel, So from my understanding, the contracting company decided to take a *step backwards* into the past and develop the website of a project, which hasn't been anything less than being the only topic of debate in the US for the last 3-4 months? The sensitivity of this project should have been one of the compelling reasons why it deserved close monitoring and flawless implementation.

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Daniel Gutierrez, User Rank: Blogger
11/30/2013 | 4:34:52 PM

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Re: When will the learning end?!
Not only that, but the administration made a promise that the site will be in better shape by the end of Nov. but I'm still hearing statements like "the hope is that not too many people will hit the site all at once come Dec. 1." Why is that? If the site was developed with AWS in the cloud like it should have been to accommodate infinite scalability, this worry is a non-issue. I can't imagine that the ACA site was developed with physical servers.

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Salik, User Rank: Bit Player
11/30/2013 | 3:26:20 PM

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Re: When will the learning end?!
@Pradeepta - Well, you're right. It's not possible for a government site to behave this way, especially when huge sums of money have been poured into a project of such stature. I've said it time and again, there's something important about Obamacare that we the people don't know, which sounds phishy.

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Pradeepta Mishra, User Rank: Exabyte Executive
11/30/2013 | 7:26:39 AM

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Re: When will the learning end?!

The four point lessons are quite helpful. Now I am astonished and surprised that how come a website of national importance can so poorly built without proper testing. This witnesses how poor the project was managed in terms of implementation. They could have taken the help of the tech giants in implementing the project.

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dcawrey, User Rank: Exabyte Executive
11/27/2013 | 12:51:12 PM

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Re: When will the learning end?!
Interesting point I'd like to make about early adopters.

Yes, every technology has its early adopters. But I have a hard time believing that anyone really wants to be an early adopter of this system. People are being forced into this to get health insurance, and eventually they will have to pay a penalty if they do not "adopt" this. So, I wonder if that reference is really fair.

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Daniel Gutierrez, User Rank: Blogger
11/26/2013 | 9:47:39 PM

Re: When will the learning end?!
@Saul, I ran a company that built database-enabled web applications for 15 years. My team built fairly large scale apps and I think I have a good idea how to build systems that work. So when I hear of the problems of the ACA website, I scratch my head. How could a website of such importance to the country be so poorly managed in terms of development? Why wasn't it thoroughly tested? Why wasn't it built in the cloud for scalability? Why in the world would it cost $174M? Why could any client (the US government) sign a contract for $56M for tech support? There is absolutely no reason why a website like this should not work and cost such extreme amounts. My company could have built it for a few $ million and it would work! I think I know what happened ... they had a firm deadline for delivery so they threw a LOT of people at the project which is exactly the wrong way to complete a complex software project: the more people on the project, the LONGER it will take and the MORE likely to have bugs. A small team, no more than 20 people, would have been optimum.

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apl0379, User Rank: Bit Player
11/26/2013 | 12:05:06 PM

Shouldn't we have expected it?
You had an initiative that was involving the personal credibliity of politicians and a healthcare "product" affecting literally millions of people. Who would have exected that politicians would really care about project management practice and project progress when their personal credibility was at stake? What politician in their right mind would have understood that a website capable of handling the dozens of thousands of people trying to use a system should have been able to handle a hundreds of thousands of people?Too big to fail come to mind?

Translate this to REAL business and the same things happen. Project managers being honest to the core of their very existence saying "This isn't ready yet" but managers with personal credibility at stake are saying they heard you say that you are done. Let me be very clear. In business, project managers are tolerated at best and the sooner PMs recognize it, the knots in their stomach go away.

An interesting turn of events this week as I saw a companies health care plan premiums to be HIGHER than Obamacare for less coverage. In effect saying, you can take our coverage but you will pay for more than its true costs and also pay for labor costs to administrate the medical plan. The cynic in me asks if firms are now trying to make a profit on medical premiums? Tell me what would stop that from happening.

Returning to topic, the inmates are running the health care asylum. Those of us who would think differently need to take a close look at your paycheck. Would you be willing to lose your job by telling the truth about project progress? I was and I did lose my job. Some people cant handle the truth while others write their own truth.

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smkinoshita, User Rank: Exabyte Executive
11/26/2013 | 10:02:13 AM

Re: When will the learning end?!
Canadian here. Big tax breaks to companies is not a solution as the tax breaks may not be enough motivation alone for smaller businesses and it doesn't cover those who are unemployed but trying to find work -- even talented people could be left vulnerable for long periods of time.

I think the real lesson here that's applicable to Big Data is that insight should be shared and before undertaking a large project, do research to learn the do's and don'ts from others who have travelled that road.

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smkinoshita, User Rank: Exabyte Executive
11/26/2013 | 9:52:21 AM

Re: When will the learning end?!
@Saul Sherry: That's what I was thinking. Governments have always seemed to have problems with I.T. regardless of what they're trying to do.

I've heard many horror stories from I.T. people trying to work on government I.T. projects. Big part of the problem is entrenched management who simply won't adapt, which is terrible for I.T.

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